
RFID/EPC:
MANAGING THE
TRANSITION (2004-2007)

INTRODUCTION

Victor Hugo once said, “There is nothing more powerful than an idea whose time has come.” If the last half of 2003 is any indication, RFID/EPC fits that description.

RFID, or radio frequency identification, has created a storm that has captured the attention and, in some cases, the ire of the press, industry, government and consumers. From back-dock inventory tracking at Wal-Mart and pilot programs at the U.S. Department of Defense, to smart retail shelves in German retailer Metro AG’s Future Store, companies throughout the global consumer packaged goods (CPG) industry are learning about the benefits and challenges of electronic product code (EPC). Driving these efforts is the promise of complete inventory visibility that could significantly increase the efficiency of supply chains and transform product lifecycles.

Yet while the vision is compelling, the transition from today’s practices to the EPC-enabled future will be challenging. Initial economics are not always favorable and will ultimately depend on dramatic improvements in hardware and software and tag costs. Standards governing the use of this technology have not been established. Many technical issues of readability, tag placement and package design must still be resolved. How EPC data will be shared among trading partners is also unclear. Finally, consumer privacy issues are raising a lot of questions, causing some confusion and redirecting executive attention.

As a result, 2004 and 2005 will be a time of extended trials and pilots as we witness the maturation of RFID/EPC technology and practices.

MANUFACTURERS — PAYBACK REQUIRES COLLABORATION

In the consumer packaged goods industry, manufacturers and their trading partners must work more collaboratively to obtain the benefits of RFID/EPC.

Unlike many traditional technology implementations, these initiatives will have little initial benefit within the four walls of manufacturers’ factories and distribution centers. More progressive CPG manufacturers have spent the past several years on supply chain efficiency efforts—installing warehouse management systems (WMS), labor scheduling and inventory control systems. For these manufacturers, the incremental value of RFID/EPC case tagging is minimal.

For companies that have not invested in WMS and other supply chain technologies, the effort is not any easier. Although the potential improvement through RFID/EPC case tagging is more significant, they must first upgrade their supply chain systems to exploit the data, thereby substantially increasing their investments. Implementing RFID/EPC will require both investments in the tagging and reading systems as well as an initial investment in WMS and inventory systems to ensure that RFID/EPC data can be used.

For CPG manufacturers, most benefits will accrue through better retail execution of the supply chain and replenishment processes at retail warehouses and store locations. This will improve supply chain availability of products and create a more synchronized and accurate business planning environment. However, achieving these benefits will require a close working relationship with trading partners to ensure that the retail replenishment processes take advantage of the new case-level data.

RFID/EPC will affect retail business process for both retailers and manufacturers in four main areas (*see figure 1 on page 2*):

Reduced store level out-of-stocks. Tagging pallets and cases will allow for better tracking of goods within stores, thus reducing situations when goods are in-house but not available to consumers. Retailers must ensure that their back-room stock

replenishment systems and stock-keeping labor are responsive to the information generated. If case-level data shows a potential out-of-stock situation, the retailer must take action quickly and not wait until the night shift or another time to replenish. To this end, the retailer must have up-to-date stock inventory information available to its in-store labor associates. Otherwise, the benefits to both the retailer and supplier are compromised.

Reduced claims. Tracking pallets will reduce the number of unwarranted claims and claims-processing costs. This benefit is based on the current level of inaccuracies in invoices and receipts and the resulting time and effort spent reconciling shipping records. This also assumes that the retailer has accurate and synchronized product information to ensure that the RFID/EPC information matches shipping and

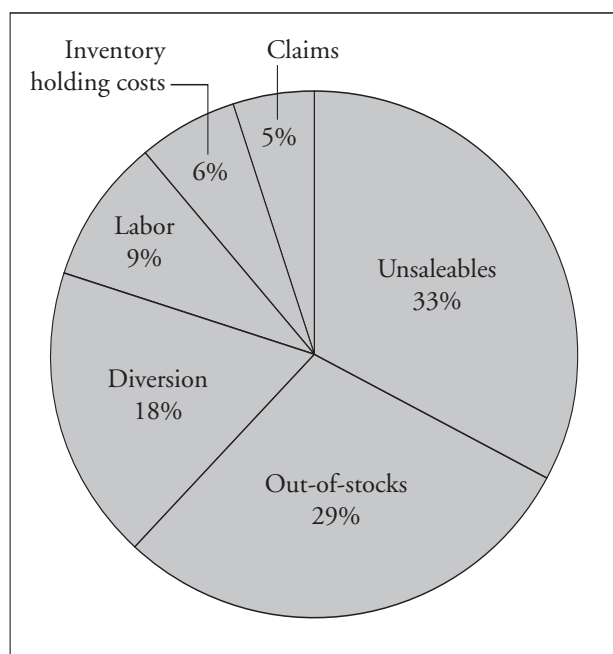
invoice records. To realize this benefit, industry data synchronization efforts will have to be accelerated.

Reduced unsaleables. Goods with expiration dates can be better managed (moved more quickly when code dates are near), reducing the need for write-offs due to spoilage. This benefit is particularly important for perishable and date-specific products. It will require retailers to rotate older product to the front of the shelves to ensure proper sale before product expiry. Initially, only cases will be RFID/EPC tagged rather than individual products on the shelf; this approach will be more beneficial when item-level tagging is available.

Reduced diversion. RFID/EPC can improve tracking and reporting compliance along with revised promotion incentives. For many CPG products, this is an important benefit. Often, a product that is put on sale in one part of the country or within a specific retail channel is diverted to other regions where the product is not on sale. RFID/EPC case tagging can help to identify product that is being shipped to the wrong location.

For both retailers and their suppliers, success will depend on the ability to identify and measure these benefits and ensure that the benefits are being realized. The benefits rely on collaborative efforts and changes to existing business practices. Benefits will not be realized if RFID/EPC requirements are met by just applying the tags.

Figure 1: Initial and year-one benefits for manufacturers



Source: A.T. Kearney

TECHNOLOGY MATURITY — HOW WILL RFID/EPC EVOLVE?

If RFID is anything like other new technologies such as high-definition television (HDTV) and wireless communications (Wi-Fi), it is firmly ensconced in what research firm Gartner calls a “hype cycle.”¹ This cycle describes how technologies are introduced and how they mature over a period of time through

¹“Hype Cycle in Supply Chain Management,” Gartner, Inc., June 2003.

a boom, bust and stabilization phase. They first climb a steep “hype” curve, as pundits describe the benefits and paradigm-shifting characteristics of the technology. Next, they plummet into a “trough of disillusionment” as inflated expectations get pushed aside by the reality of performance. Finally, as the benefits are better understood and realized, mature and stable offerings emerge. The length and intensity of the cycle vary depending on the initial buildup generated and the ability of the technology to prove its worth. Technologies from HDTV to Wi-Fi and internet exchanges have all gone through this cycle. The best example is the boom and bust of the e-commerce revolution and the subsequent stabilization of industry players such as Amazon and eBay.

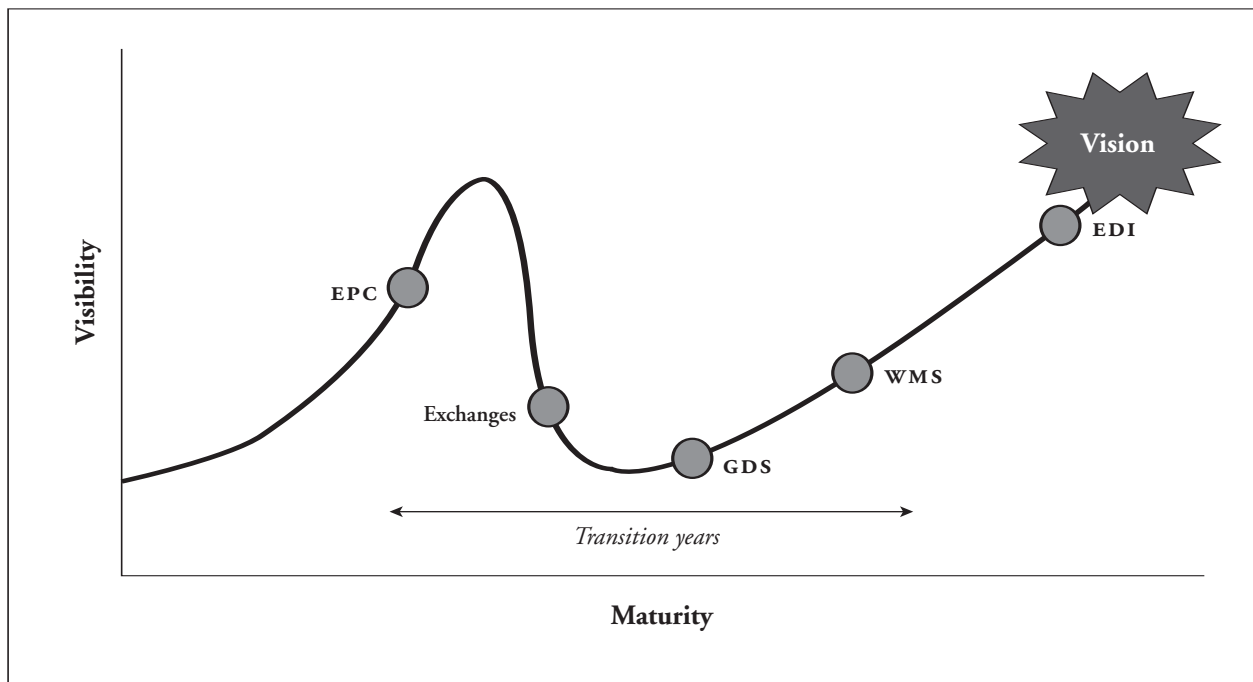
In the consumer packaged goods industry, numerous ideas have traversed this cycle (*see figure 2*).

EDI, or electronic data interchange, is well along the cycle and is now settling into a ubiquitous industry solution. Warehouse management systems (WMS) are also fairly widespread and continuing to grow.

Global data synchronization (GDS) is just emerging from the trough of disillusionment after several years of stalled efforts and industry investments. (GDS stalled due to conflicting industry communications, internal legacy systems and the low priority companies gave GDS compared to other initiatives.) Internet exchanges such as Transora and WWRE are also still wallowing in the trough. After inflated expectations in 2000, the exchanges are still trying to define their future.

The evolution of case-level EPC is still well into its climb up the hype curve, sparked by mandates from Wal-Mart and the U.S. Department of Defense

Figure 2: Traversing the “hype cycle”



Source: “Hype Cycle in Supply Chain Management,” Gartner, Inc., June 2003.

(DoD). If history is any indication, the path to maturity will not be a straight line; rather, there should be a rapid rise followed by a dramatic decline in interest followed by a leveling off in two or three years (*see figure 3*). We are already witnessing the land grab for media attention as RFID technology suppliers, consultants and systems integrators vie for seats at the table. The great reckoning will take place in 2004 and 2005 as the more astute vendors manage the transition and emerge as wiser and stronger players.

LEARNING FROM THE PAST — MAKING RFID AND EPC WORK

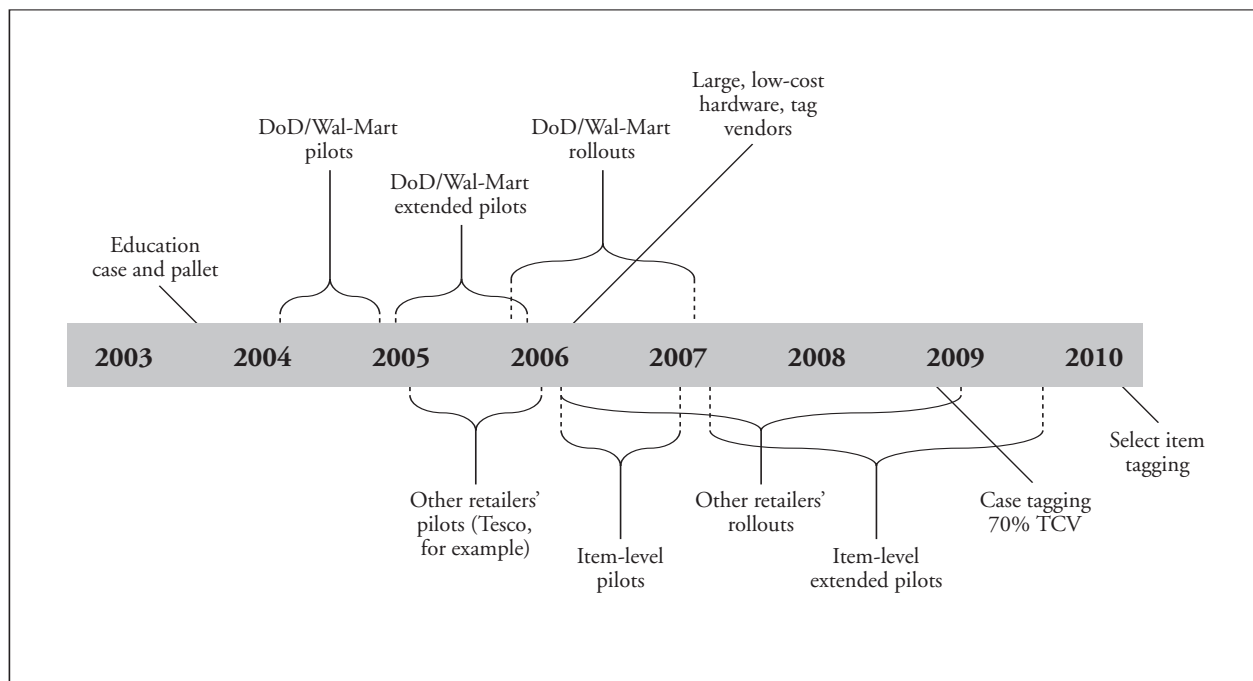
If we have learned anything from previous technology evolutions, it is that implementation always takes longer than anticipated. Even when the technology is fully functional and economical, it is

difficult to achieve 100 percent compliance among companies. Based on an analysis of previous initiatives, and our own client experience, we offer the following lessons learned:

It is not about technology. Technology-driven initiatives are doomed to failure without a strong business case and a business-oriented implementation. RFID/EPC has to be about improving consumer value and solving complex business issues. Yet, it is already heading down the wrong (technology) path as people spend more time talking about how the RFID chip can be used, rather than the business issues that RFID will resolve.

Ensure there is a positive consumer point of view. Efficient Consumer Response (ECR) was criticized because the industry forgot the “C”—the consumer. Ultimately, consumers can make or break

Figure 3: Potential (hypothetical) timeline for RFID/EPC



Source: A.T. Kearney

RFID/EPC initiatives as they have with biotechnology foods. A strong, positive consumer viewpoint must be understood and communicated.

Set goals and measure results. Both retailers and suppliers must understand the economics and benefit drivers of RFID/EPC to ensure implementation is focused on delivering results. All too often an initiative gains its own life and we forget the real reason we started it.

Increase communications. Messages must be consistent from the CEO on down through the organization. Many other initiatives have stalled due to confusing and inconsistent communications from senior leaders or from lack of follow-through once started.

Be realistic about costs and savings—don't increase the hype cycle. If only we could relive the dot.com era and moderate the hype before it got out of hand. There is a fine line between out-of-the-box visions and inflated expectations. Given our too-recent memory of the dot.com industry, it is best to be realistic about costs and benefits.

Maintain flexibility and technology options. The key is to manage the pace of implementation to achieve the benefits, not accelerate the rollout of technology. RFID/EPC is a great technology solution—but not for all problems. A flexible approach using best practices and technologies will yield maximum benefits and long-term viability.

MANAGING THE TRANSITION YEARS — 2004 TO 2007

RFID/EPC initiatives have many of the critical components for success: There are strong industry leaders driving the change (Wal-Mart, DoD, Metro AG), major technology providers and vendors are investing in the technology, and a business-led industry standards structure, such as EPCGlobal, is in place.

For CPG manufacturers and retailers, the next

two to three years will offer essential opportunities to either expand or minimize the inevitable hype cycle. Managing the intensity and the length of the cycle will depend on the ability to direct communications, manage the technology rollout and realize benefits. For the industry as a whole, and for individual companies in particular, there are several key steps to take:

1. Complete data synchronization efforts.

The industrywide effort to standardize data formats and automatically synchronize product data is being managed by EAN/UCC and the global registry under UCCNet. However, individual companies have been slow to adopt the data synchronization efforts and subscribe to the global registry. As a result, many retailers and manufacturers still exchange inaccurate product data, which results in large numbers of claims and manual reconciliation of invoices. The problems are aggravated by issues with older legacy systems and multiple product databases. These issues must be resolved and the data files updated before RFID can be implemented commercially. In fact, without data synchronization between trading partners, the future of RFID will result in vast amounts of data being captured and exchanged—much of it wrong.

2. Promote consumer-level benefits.

Despite a concentrated effort to improve efficiency and effectiveness, many industry initiatives can be derailed due to poor consumer communications and misunderstandings. A coordinated, active industry approach is needed to address some of the more important consumer issues and privacy concerns. Additionally, stronger communication and education of consumer benefits should be addressed:

- *Consider item traceability for food safety.* The issues of food adulteration and the recent bovine spongiform encephalopathy (mad cow disease) issues have increased consumer attention to food origination and security.

- *Provide an approach to control counterfeit products.* The issue of counterfeit drugs is critical today. RFID provides a practical tool to manage counterfeit product and ensure authenticity.

- *Provide easier access to warranty information.* For consumer electronics and other products, RFID can provide easier access to return and warranty information, allowing consumers easier services management.

3. Understand the benefit drivers. Over the next several years, the focus should be on accelerating the benefits and realizing the progress from RFID/EPC. It is especially important for manufacturers to understand and negotiate the benefits that will be realized through retailers' business processes. This will require a deep understanding of retailers' processes, from replenishment and stock rotation to warehouse and delivery. The focus should be on the capture and tracking of case-level data and the improved work processes that will result.

4. Actively solicit other supply chain partners. Manufacturers should actively engage other retailers to get involved in EPC, and retailers should continue to engage all of their suppliers. To achieve supply-chain-wide inventory visibility and retail in-stock position, the applications must be widely adopted. For most manufacturers, one retailer (no matter how large) will not be enough to justify the expense or generate the benefits.

5. Expect to manage parallel systems for several years. Bar codes are not going away and it will take some time for most retailers to adapt to the RFID/EPC systems. Both manufacturers and retailers must ensure that their management systems are agile enough to accommodate a variety of data capture technologies, from bar codes to RFID.

6. Adapt business processes to take advantage of new supply chain data. Case-level tracking will open up a host of new opportunities in inventory

management, product tracking and recall management. RFID/EPC is not a replacement for bar codes. Rather, it offers new and unique capabilities to manage and track case-level data through the entire supply chain. For direct-store delivery operations, it will allow fundamental changes to how products are received and invoiced. Realizing the benefits will require a substantial change in both retail and supplier business processes, including a serious assessment of enterprisewide systems platforms.

7. Leverage the invested infrastructure. Given the large investments in readers, tags and information systems, it is important to consider other EPC applications and uses of the product tracking information. For example, can the retail store systems be used for merchandising opportunities? Can the manufacturer and retail distribution center systems be used to track and trace recalls?

8. Do not simply address the Wal-Mart and DoD requirements. While the mandates from Wal-Mart and DoD have accelerated the industry toward full RFID/EPC implementation, companies might be tempted to implement only the minimum needed to meet these mandates. To gain full advantage of the EPC benefits and use of the supply chain information, the EPC network must be extended to all retailers and suppliers. For most suppliers, it is to their advantage to help other retailers use the EPC infrastructure and network.

9. Technology suppliers will need good navigation skills. In the next few years, the suppliers of RFID/EPC technology will see a rapid ascension up the hype curve followed by a prompt descent and consolidation. Eventually, tags and readers will become commodities and system integration and services will dominate.

Yet as plans for rapid expansion and increased capacity progress, the timing of the market maturation is still unknown. Initially, management consultants

and system integrators will be the primary beneficiaries of the EPC initiatives. For some technology companies, the transition period will prove to be too great a challenge and they will fall victim to the inevitable industry consolidation. For companies that successfully navigate the transition, this will be a period of market definition and time to establish a foothold in the future growth of the RFID/EPC vendor industry.

First movers can quickly lose their advantage to savvy competitors that know when to invest and when to wait. By mid-2006 and 2007, successful industry players will have emerged, able to thrive and grow with the expected market demand.

THE PATH FORWARD

The path forward, although uncertain, will likely follow the expansions and consolidations of other step-change industry initiatives. The future can be navigated by learning from the past. Although RFID/EPC can improve manufacturing and retail business processes, they also run the risk of sinking under their own weight. How the industry and companies respond over the next two to three years will determine the eventual success or failure of RFID/EPC and the new era of information sharing. Remember, this is not about the technology, but rather what we can achieve with the technology.

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