



RFID and the Commercial Record Center

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At the recent PRISM Business Across Borders Conference, I was delighted to continue to share information on what is happening in the world of RFID and its possible affects on the commercial records management industry. In today's fast moving, technology driven environment, RFID is regarded by many as the "cure all" for the automatic identification of items; an all-seeing, never-off, hands-free solution to all your tracking needs; a replacement for the humble barcode. But can it live up to the hype today or ever?

Let's quickly refresh our minds as to "what is RFID?"

RFID stands for radio frequency identification, an automatic identification technology whereby digital data encoded in an RFID tag or "smart label" is captured by a reader using radio waves. Put simply, RFID is similar to barcode technology but uses radio waves so a reader can capture data from tags, rather than optically scanning the barcodes on a label. RFID does not require the tag or label to be seen to read its stored data—that's one of the key characteristics of an RFID system.

So we can see that there are two major components: The RFID tag and the reader. RFID tags consist of an integrated circuit (IC) attached to an antenna—typically a small coil of wires—plus some protective packaging (like a plastic card), as determined by the application requirements. A reader is basically a radio frequency (RF) transmitter and receiver, controlled by a microprocessor or digital signal processor. They can come in many different guises from desktop readers, hand-helds and there is even an RFID enabled truck.

Sounds great, right? So why hasn't it been more quickly adopted?

Two of the barriers to the adoption of RFID have been the issues of standards and price. Standardization is important as it can help reduce production costs, increasing demand, which subsequently leads to lower prices. Most previous RFID implementations were proprietary in nature – one company controlled it all. Everything was custom – the readers, the tags and the data format. Standardization delivers one vision that's highly executable and drives the adoption forward.

So, first, let's look at the tags: Enter EPCglobal Inc., which is a joint venture between EAN International and the Uniform Code Council (UCC). This organization has been given the responsibility of guiding and developing standards towards achieving worldwide adoption and standardization of RFID and Electronic Product Code (EPC) technologies. The imperative – achieve interoperability and sharing of data across

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systems. What this means is that tags are now “standardized” giving us cheaper tags. A recent purchase of 2 million tags showed that prices are still around the \$0.25 to \$0.30 mark, but there is much optimism. “The cost of tags is likely to continue downwards,” says Bill Eccleston, Professor of Electronic Engineering at Liverpool University. “Very low cost non silicon tags are now in design and are predicted to cost well below 1 cent. It will happen when the big vendors want it,” he adds.

The next component is the reader. Unfortunately, interoperability at this time is still only at the tag level, which means that Gen2 readers from one vendor may not be able to read Gen2 tags from another vendor. This is because there is no standard for the reader-to-network interface. There is work going on in this area, but this lack of a generally accepted reader protocol standard is contributing to the continued high cost of readers.

Why would this technology be attractive to a record center?

There are 3 key areas that contribute to the idea that RFID is a desirable technology for the commercial center:

Cost Reduction/Resource Management: If you can track everything, including equipment, knowing exactly where it is at any time, you can better utilize resources, reduce manual checks, reduce handling costs and improve asset utilization.

Increased Visibility: Knowing where any product is at any time has great benefits. Is that filefolder still on the truck or has it been put away? Is that box still in the imaging room or back on the shelf? If you know without having to rely on manual barcode scans, you can improve pick rates, carry out routine audits, improve customer service and operational support – all resulting in greater peace of mind.

Competitive Advantage: Probably the most compelling reason to adopt any form of RFID today is to claim competitive advantage. That begins with marketing and flows through to better pricing and improved service, if the cost reductions and improved visibility gains can be leveraged.

So is the barcode dead? Long live RFID?

Because RFID has been a hot topic for some time now, with considerable discussion designed to hype its benefits, there’s some talk that it means the end of the barcode. That’s simply not true.

Right now, even with several successful pilots, RFID is going to take years to become pervasive throughout the enterprise environment. Many of today’s RFID implementations are at the pallet and carton level. And in these scenarios, RFID performs well with reportedly high percentage read-rates. However, unit-level item

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identification is still the domain of the barcode. Until every item is 100 percent RFID with 100 percent read efficiency, the barcode remains an important part of auto-id.

Moving forward, it is best to think of RFID and barcodes as complimentary to each other. Just like the many clubs in your golf bag, one is not mutually exclusive.

RFID - Does it work or doesn't it work?

I think we can all agree that the above information can lead to mixed messages, as to how and when RFID adoption can add measurable value to a record center. With comments such as: it works wonderfully here, but not there; the tags have a “standard” while the readers don't; the cost is high so a Return on Investment (ROI) is hard to determine; I still need the barcode so why should I introduce RFID? It's hardly surprising that many companies, though attracted to the idea of such innovation, are reluctant to jump in to this new technology.

This “confusion” is normal, as there are five main stages for the introduction of every technology and RFID must go through them, as it progresses down the path to widespread adoption. RFID is clearly in the early 2 stages...

Stage 1 – Make It Work. It's been demonstrated since 2004 that RFID technology works. 2005 brought a step toward initial deployment. Today, most people seem to accept that as a technology, RFID works. This means that companies can tag items in the supply chain such as pallets, cases and read them fairly reliably.

I know of several Commercial Record Center RFID projects at this stage. None have been able to give me a proven ROI yet, but I am sure they will. There are still a lot of unknowns, but each has been justified on “competitive advantage” and has contributed to a “win” in the market place.

Stage 2 – Make It Manageable. This is when the technology works, can be deployed, scaled at a reasonable cost with minimal overhead and you can begin to derive significant business benefits.

So the current challenge the industry faces is making RFID not just work, but also making it work at scale – make the technology manageable. There's a big difference between an RFID pilot with a couple of readers and a real implementation with tens or even many hundreds of readers. How are people going to deploy these readers reliably and monitor them to make sure they are working effectively? How will all the “reads” affect network traffic? If companies are going to rely on RFID data, they must be able to rely on the systems that gather that data.

Looking to the future...

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Stage 3 – Make It Essential. RFID will need to move from something that's useful, to a must-have in an operation, based on its proven business value.

Stage 4 – Make It Ubiquitous. This means that RFID will be everywhere in the enterprise. And finally...

Stage 5 – Make It Transparent. RFID will need to be so ubiquitous that it becomes transparent – it's everywhere, and been there so long that it's not noticed anymore.

So lets quickly go back to the main challenge with RFID today, which is going from the “Making It Work” phase to “Making It Manageable.”

Scaling on an enterprise-wide level must be addressed because RFID isn't really as simple as ripping out barcodes and replacing them with RFID tags. Scalability and sustainability of enterprise-wide RFID solutions encompasses the critical next stage. This means is that it must work seamlessly with other technologies such as barcode data capture, wireless networks and portable data terminals. The key here is in viewing RFID as one part of a broader solution set.

Also, in reality, the value proposition for RFID regarding each company is somewhat different and the decision has as much to do with the boardroom as it does the record center. Almost all parts of the organization could feel the effects of such an implementation, as well as suppliers and customers. Boardroom participation is essential – a failed RFID implementation could disrupt supplier or customer relationships and may even risk an organization's brand. If a customer insists that, as a supplier, your business must comply with an RFID mandate, the final decision has to rest on the value of that customer. If the customer represents a considerable percentage of your business, the decision can be fairly straightforward. However, if the request is made by a smaller company, the cost of non-compliance with that request can be preferable to the cost of implementing an RFID strategy. The issue only becomes more complicated if additional customers announce RFID mandates, leaving suppliers with little choice but to adopt RFID in one form or another.

In Summary

RFID is here and there is a considerable amount of money and resources being pumped into its future. Many companies are mandated to introduce it and are complying, but many are still doing so reluctantly. If you wish to adopt RFID for a particular project, keep the following in mind as you set your customers' and your own expectations:

RFID works, at least to a degree. What I mean here is that RFID has demonstrated its abilities in controlled environments, but it is getting better all the time. I am not aware that anyone can demonstrate a complete

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commercial records management facility that is 100% RFID tagged, with randomly managed cartons and folders, belonging to multiple clients, managed seamlessly without barcodes. The manageability and reliability of RFID is still a work in progress. RFID has many technology challenges. It needs to overcome these challenges before it can achieve complete adoption. With read rates less than 100% and the current cost of the technology, a return on investment may be still very difficult to realize.

RFID must be treated as part of a total solution. In other words, you should not expect to replace your current technology with RFID. Its adoption by the commercial record center is probably best found in one particular area to start, such as to facilitate audits or prove items were unloaded from a truck. It will take a while before it becomes pervasive throughout a facility and across all customers. So in the meantime, it is important that companies do not lose sight of the benefits of using the latest generation of barcode technology as well. There are so many other issues and discussion points relating to RFID that on September 18, 2006, a five-day RFID Online Summit discussion commenced, organized by the RFID Networking Forum. During this summit, arguments were heard from 150+ participants worldwide ranging from solution providers and analysts, to RFID users and academics – all pondering the great potential for RFID to customize goods and services along with the difficulties of quantifying these benefits.

I am sure that there is much more debate ahead but my current thoughts are that RFID will completely replace the barcode about the same time as the paperless office makes the commercial record center obsolete.

Note: A copy of the BAB 06 presentation, taped audio and detailed notes are available from PRISM International.

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