Understanding what drives RFID

While emerging applications are fueling acceptance of RFID, issues related to deployment, privacy and ROI may threaten its continued proliferation.

By Cheryl Ajluni

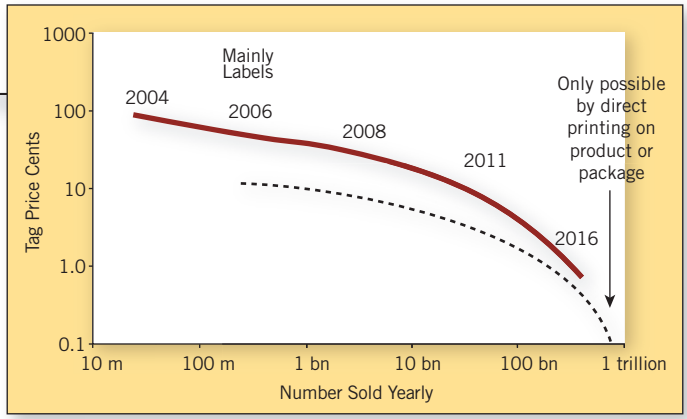

Figure 1. In this graph, IDTechEx projects the expected average tag price for the next 10 years. These numbers encompass active and passive tags of all shapes and sizes, including passive tags that cost up to $8 each to meet high military and aerospace requirements as well as tags printed directly onto products and packaging in 2016. The dashed line is a rough indication of the lower limit of price by year and quantity, excluding giveaways and highly loss-making commitments.

The new year is now upon us and there appears to be no end in sight to the growing spread of radio frequency identification (RFID) technology. In part, this growth has been driven by standards like EPC Gen 2 and Global Reader Management version 1.0, as well as the recent ratification of the UHF Gen 2 Air Interface protocol—published under ISO 18000-6 part C—by the International Organization for Standardization (ISO). RFID technology has also benefited from support from Wal-Mart and the United States Department of Defense (DoD), as well as other governmental agencies looking to deploy it in public distribution systems to avoid theft, track the trail of criminals and monitor traffic.

The way Mike Liard, research director for RFID and contactless technologies at ABI Research, describes it, RFID made some fairly significant strides forward in 2006 and much of the same can be expected in 2007."In 2006, we saw a number of partner-based solutions become available, in which vendors that offer different pieces of the puzzle partnered to provide a total compliance solution." In 2006, RFID technology even made its way into the mainstream consciousness, having been featured in the plot of a TV episode of the popular "Law and Order" series.

Despite these advances, a number of issues continue to obstruct the universal adoption of RFID readers and tags. Standards, for example, are still being worked out and leading to concerns that any incompatibility with specifications may prove problematic for an open supply chain crossing both industries and territories. In addition, prices are still relatively expensive, making large-scale implementation of RFID technology difficult (Figure 1). A new RFID tag manufacturing facility at the Seriperumbudur electronic park in Chennai, India is hoping to address this issue head on. Owned by Gemini Traze, the facility will initially roll out 45 million UHF tags annually. Eventually, it will scale that number up to 100 million—a move that could drive down the cost of RFID tags by as much as 60%.

Some of the other important trends for RFID that we can look to in 2007 include:

■ Deployment

According to one estimate, the RFID market will grow from $3 billion in 2005 to $25 billion in 2025. In order for the market to grow to this extent though, deployments will need to incorporate end-to-end business process integration and automation as well as interoperability with other existing data acquisition systems like barcodes. Additionally, companies will need to address the issue of return on investment (ROI). Some analysts suggest that to date, the ROI figures on RFID deployments have been far from encouraging. According to one estimate alone, a companywide rollout of RFID used to track cases and pallets of goods throughout the supply chain, at a hypothetical $5 billion initial investment might—in the best-case scenario—pay off in nine to 10 years. To improve ROI, companies must do two things. First, they need to focus deployment on certain items like DVDs, which are low cost and high volume, rather than on trying to track everything.

Second, they must adopt a network-centric approach to deployment whereby RFID readers belong to the enterprise network and can, therefore, leverage existing infrastructure to enhance, as well as enable new applications.

■ **A growing global presence**

Global acceptance of RFID technology will continue in 2007 with deployments occurring everywhere around the world. According to IDTechEx, RFID is now more global then ever before with activities in place in more than 75 countries, including the United States, United Kingdom, Japan, Germany, China, France, Netherlands, Korea, Canada and Australia.

Another indication of the global presence of RFID can be seen in the recent activity surrounding the active RFID ISO-18000-7 standard. At the end of 2006, for example, the United States DoD sent out a request for information (RFI) on the commercial availability of active RFID tags and readers that comply with the ISO-18000-7 standard. Just prior to this move, the China State Radio Regulation Committee (a division of the China Ministry of Information Industry) authorized the use of active RFID products that are compatible with this standard throughout the country. Similar approvals have been reported in Europe, South America and other Asian countries, including South Korea, Taiwan and Singapore. Japan is currently evaluating the standard. Having a universally supported active RFID standard is expected to lower the barrier to enabling the broad adoption of "smart containers" in global supply chains.

RFID is proving itself capable of delivering the data today's companies require, the real question moving forward will be how they chose to use it in the years ahead.

■ **Privacy**

The issue of privacy is a prime concern for RFID and will remain so in 2007. The technology can, for example, allow pharmaceutical manufacturers and distributors to track their products across the supply chain and support law enforcement in preventing counterfeit or misappropriated drugs from slipping through the cracks. But, there must first be assurances that the data the technology generates will not be used inappropriately or compromise consumer privacy. Increased public awareness and education on RFID will play a crucial role in easing the public's apprehension over any potential privacy violations.

■ **RFID and mobility**

Contactless payment, such as for transportation ticketing and open system payments (e.g., open credit, debit and e-purse payments), is on the rise. In fact, according to ABI Research, spending on contactless payments hardware and software will increase from $260 million in 2006 to $870 million in 2011. In North America, its adoption will be driven by open system payments, while in Europe it will be spurred on by contactless ticketing systems. The greatest adoption though is anticipated in countries like Japan and Korea where the addition of mobility into the equation is now making contactless payment-enabled mobile handsets possible. Such mobile handsets will also likely develop to enable contactless payments in other countries as well, but to date debate in the United States and Europe over how payment applications will be deployed and managed on wireless handsets has delayed any rollout.

■ **New markets realized**

Two key markets for RFID in 2007 and beyond are transportation and healthcare. In the transportation market, airport applications like baggage handling will take center stage. Additionally, new applications using RFID technology will emerge to solve other airport problems and inefficiencies, including security and safety issues. RFID-based airport applications, for example, are now controlling passenger traffic flow, security/access control, and personnel locating. One obstacle to the adoption of RFID in this market is the existence of legacy barcode tracking infrastructure used by airlines around the world. While less flexible than RFID, it is well-entrenched and works most of the time.

On the healthcare front, Wi-Fi and active RFID technologies are competing for control of the emerging healthcare asset-tracking market. According to ABI Research, currently less than 5% of North American healthcare facilities are equipped with asset-management systems. Considering that hospitals own a great deal of equipment which, at any given time, may be in use or in storage and, therefore, difficult to track, it is easy to see the value in a technology like RFID. Active RFID systems would allow hospitals to know where their equipment is, thereby eliminating problems with over-inventory and under-use of assets.

Conclusion

There is little doubt that 2007 will witness further proliferation of RFID technology. In some instances, that may mean an increased presence in countries like China where the government is the overriding force behind its adoption. In fact, In-Stat forecasts that more than 2.9 billion tags will be shipped in China by 2009. It may also mean the emergence of new applications. Pallet and case-level tagging and item-level tagging will continue to draw attention, but so too will smart cards (including key fobs), vehicles, e-tickets, conveyance, intermodal containers/ULD, e-passports, clickers/immobilizers, baggage tracking, people and livestock. RFID is proving itself capable of delivering the data today's companies require, the real question moving forward will be how they chose to use it in the years ahead. EWT