

Executive Summary

The ability to access information anytime, anywhere is vital in today's fast-paced world. More than ever, people need mobile information solutions to improve productivity and operate more efficiently. This technical brief discusses the impact of RFID on retailers, future innovations in retailing and recent developments in widespread deployments.



Image courtesy of the Auto-ID Center: <http://www.autoidcenter.org>

Pallet with EPC tag

Introduction

RFID technology is used to tag, identify and track individual items, cases and pallets as they move from the manufacturing floor through the supply chain and into the hands of the buyer or consumer. As the objects move through the supply chain, wireless RFID readers can communicate with an RFID tag on the object, collect information about the object (such as a unique number) and match that number in a database to access a complete record about the object. This real-time technology provides unprecedented speed and accuracy in the supply chain.

EPC and RFID

Electronic product code (EPC™) is a new standard that is reviewed in the second section of this brief. EPC is well positioned to become the open standard for RFID technology and a key information tool in the retail supply chain. EPC-RFID has great potential to deliver bottom-line business benefits on a mass scale.

The Impact of EPC on Retailers

Interest in RFID technology is driven by the desire of companies to achieve greater speed and visibility into their supply chains, while increasing both operational efficiency and store effectiveness. An efficient supply chain operation ensures that goods can be delivered to the place and at the time consumers are ready to purchase. Potential gains from the visibility RFID generates include lower inventory levels, reduced labor costs and increased sales—the bottom line: increased profitability.

Several major retailers and consumer packaged goods (CPG) companies have designed and deployed successful pilots of EPC-RFID. Also, several companies have announced target timeframes for expanded implementations. The number and scope of these efforts can be expected to grow as companies create business and process models that will maximize their return on investment (ROI) for EPC implementation. The following summarizes the benefits that retailers hope to capture with RFID-based solutions. The benefits can be grouped into issues of speed and visibility:

Benefits of Speed:

- ▶ Eliminate lost sales due to out of stocks
- ▶ Speed up store receiving, processing, replenishment and returns processing
- ▶ Notification of units needed on sales floor upon store receipt
- ▶ Satisfy customer requests immediately by locating products on sales floor and in the backroom
- ▶ Faster and more accurate inventory audits
- ▶ Increased distribution center efficiency and accuracy

Benefits of Visibility:

- ▶ Unit, carton and pallet-level visibility throughout supply chain
- ▶ Immediate identification of exceptions at check points
- ▶ Visibility to replenish the right product to the right place at the right time
- ▶ Block receipt of defective and counterfeit merchandise

In the near term, the emphasis for RFID is on “the supply chain to the store backroom” applications—tagging pallets, cartons and reusable containers to track the movement of goods throughout the distribution system. Longer-term users are just beginning to assess the impact of tagging individual items on the retail sales floor.

The Future — Innovations in Retailing Enabled by RFID

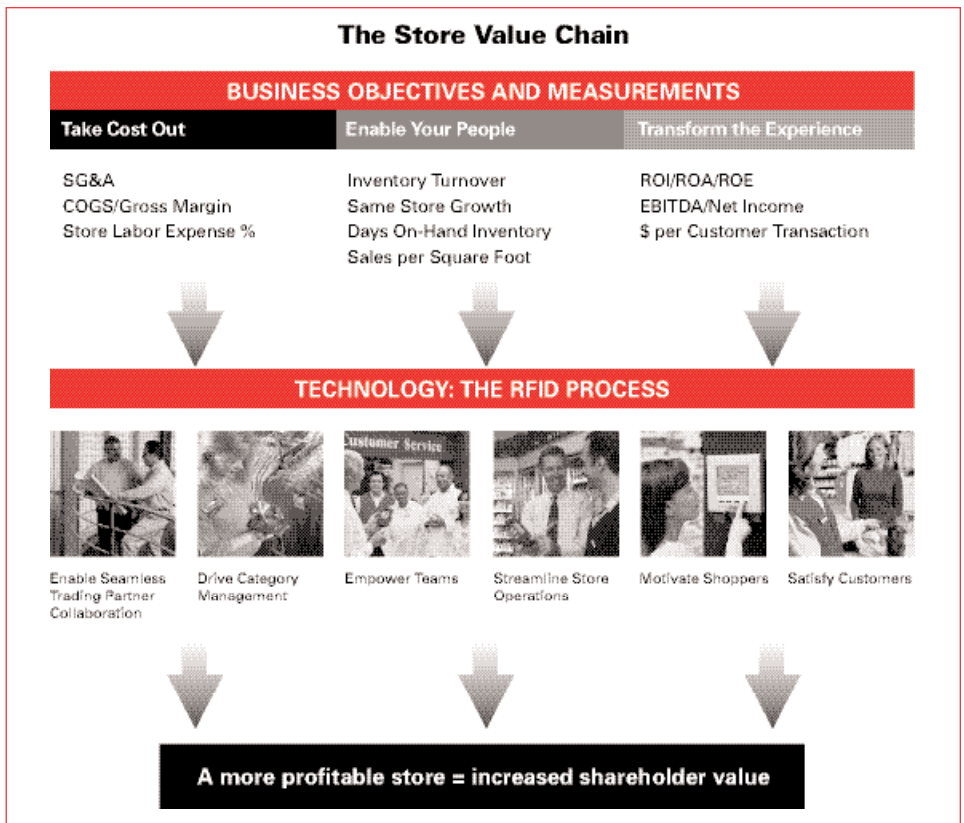
The real-time features of RFID open the way for a variety of innovative applications. This is especially true in retail where having visibility into actions and accuracy of information is critical to speed of execution. Several retail executives have identified points in which RFID solutions would increase profitability. These include:

- ▶ Scan-based trading (SBT) for merchandise
- ▶ Item-level information that can be leveraged by management
- ▶ Real-time, supply chain-wide inventory

visibility by reading the RFID tags that are incorporated in the merchandise at the manufacturer, supply chain and store levels

- ▶ A barrier to the sale and distribution of counterfeit merchandise
- ▶ An in-store customer service platform and a high-value, in-store selling tool
- ▶ True integrated retailing, where the inventory in transit, in the distribution center and in every store could be leveraged to complete sales
- ▶ A barrier to the return of stolen merchandise for cash
- ▶ An item-level quality control tool to provide enhanced control over suppliers

Figure 1



Creating more profitable stores is easily facilitated by RFID technology. The combination of focused business objectives and measurements plus RFID technology provides a powerful formula for achieving increased shareholder value.

Store Operations and RFID

There have been several pilots testing the effectiveness of RFID in store operations. Those store pilots generally show positive trends in revenues and operating performance. Figure 1 summarizes the key objectives and measurements in the retail space and the link between those goals and RFID.

EPC as the Standard — Underpinning the New RFID Reality

EPC represents an industry consensus on the best technological approach to successful implementation of RFID. EPC emerged from the Uniform Code Council, a partnership between almost 100 companies and 5 of the world's leading research universities including the Massachusetts Institute of Technology (MIT). Many globally recognizable names—Wal*Mart®, Target Corporation, Home Depot®, Procter & Gamble, Unilever and Tesco plc were very involved in the development of EPC.

At its most basic level, EPC is a coding scheme for RFID data that will identify an individual item's manufacturer, product category and unique serial number. But the EPC concept encompasses much more than data structures—it's a complete network of integrated technologies, software and systems combined to take full advantage of RFID technology. The overall EPC concept is designed to work in a range of retail supply chain applications—from “backroom” applications such as pallet and carton tracking to “selling floor” applications such as item-level tagging.

Early in the development of EPC, end users identified the challenge of management and integration of RFID data into their IT systems. As a result, EPC was developed not just as a tag technology but rather as a system which includes software elements to make EPC data more manageable. The system includes components—object name service (ONS) for tag identification and Savant, the

“nervous system”¹ of the EPC network—for intelligent data filtering and management.

EPC has made great strides in eliminating the barriers to widespread RFID deployments which include:

▶ *Standards*

There are now real standards in the RFID space. EPC-compliant products are available from a number of manufacturers. The broad acceptance is that EPCglobal™ now provides the globally accepted standard for the data format, communications technology, data interchange and other interoperability factors that enable seamless integration between manufacturers, distributors and retailers.

▶ *Functionality*

EPC-compliant solutions concentrate around the 868 to 950 MHz ultra high frequency (UHF) band. While there is not a single global standard, there is considerable commonality of design elements in the EPC-compliant space to allow for the economies of product design. Common reader designs with moderate changes should work throughout much of the commercial world.

▶ *Favorable price trends of RFID tags*

A benefit of standards and a strong demand is that EPC-compliant RFID is now attracting large amounts of innovative design focus and investment capital. The certain result is that the quality of RFID products is being pushed up, and the prices are declining. Reflecting the assessment that total cost of ownership (TCO) declines as usage increases, buyers are piloting and evaluating large-scale implementations.

The successful emergence of EPC-compliant RFID products addresses many of the core issues inherent in RFID deployment and

business case development. The EPC standard will drive the growth of RFID solutions and acceptance of RFID as a useful tool by retailers.

Summary — Clearing the Dust Around EPC-RFID

EPC-compliant products are central to the rapid growth of RFID developments. Key drivers include:

- ▶ Emergence of a standard
- ▶ Governance of EPC has been placed with EPCglobal™, a joint venture of UCC/EAN
- ▶ Companies are embracing the EPC standard, both as customers using EPC and vendors developing EPC-compliant solutions

Finally, and importantly, end users recognize that in order for EPC to be successful, it needed to be developed and managed on an ongoing basis by an entity with strong credentials in developing and implementing real-world retail automatic identification standards.

Symbol Technologies and EPC-RFID

Symbol designs EPC-RFID solutions that integrate seamlessly with other key technology and product offerings, including advanced data capture devices such as bar code scanners and imagers, mobile computers and wireless infrastructure.

As of 2004, the increasing interest in RFID has expanded beyond retail and government. Virtually every market Symbol serves, including manufacturing, transportation and logistics, wholesale distribution and healthcare can benefit from RFID solutions. Symbol's commitment to RFID products and solutions has been and continues to be a top corporate priority. This is demonstrated in the recent acquisition of Matrics, a leading developer of RFID solutions. Symbol global sales and support capability coupled with the Matrics

continued on back...

portfolio of products and experience provides customers with a fully capable solution for their RFID needs.

For more information, contact Symbol at +1.800.722.6234 or +1.631.738.2400, or visit us on the web at www.symbol.com/rfid

Symbol Enterprise Mobility Services

Symbol's global services organization offers a full range of professional and customer support services—from project planning and network design through integration and installation to ongoing service and support.

Professional services address the following phases of a systems implementation:

- ▶ **Planning:** consulting services, network design services, site survey and project management.
- ▶ **Development:** system integration, custom training, custom hardware development and application development.
- ▶ **Implementation:** physical installation of hardware and software as well as configuration and test of the system both before and after installation.

Contact Symbol to ensure a customized, innovative mobility solution that not only addresses your specific business issues but also exceeds your expectations.

About Symbol Technologies

Symbol Technologies, Inc., The Enterprise Mobility Company™, manufactures and services enterprise mobility systems, delivering products and solutions that capture, move and manage information in real time to and from the point of business activity. Symbol enterprise mobility solutions integrate advanced data capture products, radio frequency identification technology, mobile computing platforms, wireless infrastructure, mobility software and services programs under the Symbol Enterprise Mobility Services brand. Symbol enterprise mobility products and solutions are designed to increase workforce productivity, reduce operating costs, drive operational efficiencies and realize competitive advantages for the world's leading companies. More information is available at www.symbol.com

References:

1. The Auto-ID Center—http://www.autoidcenter.org/aboutthetech_indepthlook6.asp

Additional Resources:

1. Uniform Code Council (UCC)—<http://www.uc-council.org/>
2. EAN International—<http://www.ean-int.org/>

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Corporate Headquarters
Symbol Technologies, Inc.
One Symbol Plaza
Holtsville, NY 11742-1300
TEL: +1.800.722.6234/+1.631.738.2400
FAX: +1.631.738.5990

For Asia Pacific Area
Symbol Technologies Asia, Inc.
(Singapore Branch)
Asia Pacific Division
230 Victoria Street #05-07/09
Bugis Junction Office Tower
Singapore 188024
TEL: +65.6796.9600
FAX: +65.6337.6488

For Europe, Middle East and Africa
Symbol Technologies
EMEA Division
Symbol Place, Winnersh Triangle
Berkshire, England RG41 5TP
TEL: +44.118.9457000
FAX: +44.118.9457500

For North America, Latin America and Canada
Symbol Technologies
The Americas
One Symbol Plaza
Holtsville, NY 11742-1300
TEL: +1.800.722.6234/+1.631.738.2400
FAX: +1.631.738.5990

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