

Intel, Symbol Technologies and Oracle: Integrated RFID Retail Solutions That Deliver Extended Value

Making RFID Yield Business Advantage

RFID initiatives from leading retailers (Wal-Mart, Albertsons, Target, Tesco and METRO Group, among others) have driven RFID development over the last two years. Many retailers and their suppliers have gained experience with “basic” RFID: tags, readers and data formats. The result has been more data – lots of it – but not necessarily actionable information that leads to business benefit. The true value potential of RFID – increasing business agility and competitiveness – depends on architectures and solutions that help companies manage and use RFID-generated data to increase supply chain and inventory visibility, better collaborate with partners and make better decisions.

Intel, Symbol Technologies and Oracle are working together to deliver robust, deployable end-to-end solutions that not only provide high-performance RFID technology, but manage the availability, analysis and use of RFID-generated data. Taking an integrated approach, the companies bring proven capabilities from the retail selling floor to the supply chain to the enterprise back office.

These global leaders bring pre-configured, best-of-breed components – Intel for platform infrastructure, Symbol for the physical RFID layer, and Oracle for information architecture – as well as deep experience in retail and supply chain RFID deployments. Together, their expertise can accelerate results, reduce your risk and build your business advantage – in short, help you fulfill the potential of RFID and maximize the return on your RFID investments.



The Transformative Potential of RFID in Retail

The use of RFID technology to track items as they move through the retail supply chain has immense potential. Operating costs can be significantly reduced, as inventory-taking is automated and, more significantly, inventory errors are reduced. \$40 billion or 3.5 percent of total retail sales are lost annually due to supply chain data inefficiencies.¹ By combining RFID capabilities with data synchronization and Electronic Product Code (EPC) technology, traditional supply chains are transformed into “sense-and-respond” digital supply chains that automatically keep the right products in the right place in the right quantities – increasing turns and customer satisfaction. Because inventory visibility is increased across the supply chain, fewer safety stocks are needed and inventories can be reduced. Collaboration between supply chain partners is enhanced and the availability of high-quality,

The Joint Customer Value Proposition from Intel, Symbol and Oracle

- Proven, deployable, scalable end-to-end RFID solutions.
- Best-of-breed components that integrate easily.
- Extensive expertise in all areas of RFID technology for business impact.
- Fast deployment with lower risk.
- Fast return on investment and excellent investment protection.

Intel

- Multiple real-world RFID-EPC pilots with leading retailers and manufacturers.
- Extensive ecosystem relationships.
- Retail and manufacturing solution teams with solution and integration expertise.
- Leadership in RFID and EPC standards development.
- Cost-effective standards-based infrastructure building blocks.
- Continuing multi-billion dollar R&D investment.

Symbol

- Extensive expertise in real-world RFID-EPC deployments.
- Unmatched breadth of RFID and bar-code solution components.
- Proven performance leadership in all elements of RFID infrastructure.
- Systems approach that eases deployment, integration and extension.
- Leadership in RFID standards evolution and founding member of EPCglobal.

Oracle

- A complete portfolio of customer-proven software products that streamline and optimize business and IT operations.
- Management of all enterprise information – structured, unstructured and operational.
- Service-Oriented Architecture (SOA) providing an adaptable IT infrastructure that aligns IT with business processes.
- Oracle Grid technology that provides unsurpassed performance and reliability on groups of low-cost servers.
- Domain experience gained through 1900 Oracle Retail solutions deployments.

Intel, Symbol and Oracle have collaborated to deliver comprehensive RFID solutions that reduce risk and enhance ROI.

near-real-time data enables improved business processes and decision making. Robust end-to-end RFID solutions allow you to know sooner, act faster and decide smarter.

But realizing this potential involves significant challenges. An RFID strategy that can deliver value beyond simple compliance requires a systematic approach that considers technology, business process, ROI and risk mitigation. This is a complex process with a number of key steps:

- Identifying where and how RFID data can be used to improve processes and the flow of products in the supply chain.
- Modifying existing business processes and applications to take advantage of RFID data.
- Deploying a scalable, adaptable information architecture that can support new applications and grow incrementally as needs increase and as technologies evolve.
- Adopting global data standards such as EPC to facilitate collaboration across the supply chain.

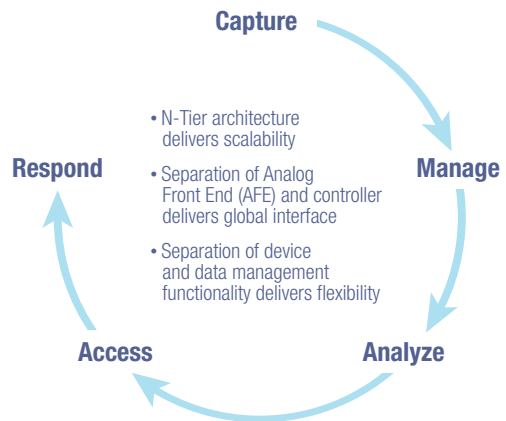
Managing the RFID Lifecycle

Intel, Symbol and Oracle provide the tools and the services that help you with the activities critical to realizing true RFID value. Our end-to-end solutions enable retailers and vendors to cost-effectively:

- **Capture** appropriate, filtered information from readers and sensors.
- **Manage** the explosion of data and events in a single source of truth that is scalable, reliable and secure.
- **Analyze** data and events in real time to provide business intelligence and business activity monitoring for continuous process improvement.
- **Access** information as needed – any time, anywhere, and by all appropriate people, applications and business processes, across a variety of mobile devices, including Personal Digital Assistants (PDAs), tablets, notebooks and smart phones.
- **Respond** to events and information automatically, and empower employees and trading partners to manage by exception.

Intel: The Powerful, Flexible Foundation

RFID increases the need for scalable, flexible infrastructure to capture and manage RFID data, run new applications and provide mobile information access. Intel building block technologies offer a powerful, cost-effective foundation for end-to-end RFID solutions that enhances business agility and reduces deployment time. Servers based on the Intel® Xeon® processor family deliver flexible platforms to consolidate and filter data at the enterprise edge, as well as to run new applications that extract, analyze and present RFID data. Platforms incorporating the Intel® Itanium® 2 processor or 64-bit Intel Xeon processor MP offer a choice of 64-bit architectures to handle demanding 64-bit and 32-bit databases and applications.



Solutions from Intel, Symbol and Oracle meet retail supply chain needs throughout the RFID lifecycle.

PCs powered by the Intel® Pentium® 4 processor with Hyper-Threading Technology² enhance productivity with outstanding performance for desktop analysis and communication of results derived from RFID applications. Intel® Centrino® mobile technology-based notebooks and Intel® Mobile Media technology-based handheld devices improve manufacturing responsiveness by enabling workers to access and act on RFID data and applications when and where they need it. Intel Mobile Media technology will also power a new generation of intelligent RFID readers.

Intel invests billions of dollars annually in developing robust technology infrastructure and solutions to business problems. In addition to ongoing performance increases, Intel delivers value through platform technologies that enhance security, multitasking, mobility, manageability, reliability and flexibility. Intel's innovations in multi-core technology and other aspects of platform performance mean companies that base their RFID deployments on the Intel® architecture can count on technologies that protect their IT investments and keep pace with their evolving business needs.

Intel is working with its own value chain to deploy RFID. A recent pilot within Intel's manufacturing organization tracked 80,000 microprocessors with a value of over \$17 million from the end of the manufacturing line, through Intel's warehouse, into a major customer's warehouse and onto the customer's factory floor. This pilot generated key learnings that Intel brings to bear as it works with other companies on their RFID deployments.

Symbol: High-Performance RFID Technology

As a world leader in EPC UHF RFID technology, Symbol takes a systems approach in designing and delivering tools that capture, move and manage information in real time. This approach results in a remarkable set of products that are not only performance leaders, but integrate seamlessly to build – or extend – powerful end-to-end solutions.

RFID Impact on Retailers and Supply Chain Partners

Capability	RFID Impact
Supply chain visibility and responsiveness	<ul style="list-style-type: none"> • Supply chains are connected to demand and respond much more quickly, resulting in fewer lost sales and lower inventories. • Adaptive processes adjust to changing market conditions and competitive threats.
Shopper's in-store experience	<ul style="list-style-type: none"> • Better visibility into sales and inventory trends leads to improved product availability and higher customer satisfaction. • Customer loyalty increases as fewer sales are lost to stock-outs.
Collaboration and decision making	<ul style="list-style-type: none"> • Standards-compliant RFID solutions make it easier to integrate with trading partners' solutions and to collaborate. • Enterprise-wide business intelligence enables increased collaboration between business units. • Availability of high-quality, near-real-time data powers better business processes and improved decision making.
Cost reduction and return on investment	<ul style="list-style-type: none"> • Improved quality of supply chain information leads to significant cost savings through fewer mis-ordered items, fewer erroneous shipments and fewer returns and charge-backs. • Increased inventory efficiency significantly reduces inventory carrying costs and increases available working capital. • Flexible, standards-based solutions allow you to gradually expand existing solutions as conditions change, protecting your investment.

Symbol is a leader in every key system element of an RFID solution – tag and inlay design, reader design and performance, reader systems, application development, software intelligence and support services. Symbol tools are based on industry standards, and offer multi-protocol support for EPC Gen 1 and Gen 2 devices.

- **Tags and inlays:** Symbol UHF tags and inlays meet performance/cost needs and include a full line of supply chain specific solutions such as cargo, pallet, carton, pharmaceutical and metal variants. Read-only and read/write EPC-compliant, full-duplex communication protocol RFID tags and inlays speed accurate data communication in any application.
- **Readers:** Symbol's broad range of open standards-based fixed and handheld readers meet the demands of industrial environments, and the industry-standard Symbol MC9000-G* was rated best overall among handheld readers.³ Symbol's multi-protocol reading and writing capabilities enable you to rapidly identify and track assets labeled with Gen 1 Class 0 and Class 1 EPC-compliant RFID tags.
- **Antennas:** With an array of UHF antenna models that can adapt to multiple usage models and settings, Symbol antennas provide long-range and large-area tag reading, giving your solutions the versatility and performance needed for precise, uninterrupted reader-tag communications.
- **Reader Systems:** Complete portal platform systems allow you to quickly and easily deploy RFID solutions. Rugged and easy to install, these solution packages provide proven readers and high-performance antennas in turnkey, portal RFID implementations – helping you lower your total cost of ownership and maximize uptime.
- **Emerging Technology Services:** As pioneer in the implementation of working RFID solutions, Symbol knows the technology and understands how to integrate it effectively. Symbol's experience and in-depth knowledge can take you from discovery to pilot to enterprise deployment, so you can capitalize on the advantages of RFID.

With unmatched retail and supply chain expertise, Symbol delivers RFID system elements that work in complex, real-world environments and help you reap the benefits of RFID. And as a technology leader, Symbol is at the forefront of new capabilities and is committed to delivering innovative new solutions.

Oracle: Converting Data into Business Insight

True business insight is achieved by combining the intelligence residing within IT systems with operational insight such as the status of physical assets, products, devices, people and processes. Oracle provides a complete business insight solution – a consolidated infrastructure that unlocks the true value of operational and information assets – all delivered through a common interface that puts information in context and allows users to collaborate. This enables organizations to adapt quickly to changing market dynamics and seize the initiative – creating sustainable competitive advantage.

Oracle Fusion Architecture is a SOA that facilitates the development of enterprise applications as modular business services that can be easily integrated and reused, creating a truly flexible, adaptable IT infrastructure. It is an open, standards-based foundation that enables next-generation applications by providing the linkage between enterprise applications, middleware and RFID infrastructure technologies. This capability allows you to protect, extend and evolve your retail and supply chain applications and create full business value from RFID data:

- **Protect** existing applications and processes to maximize the value of existing IT investments.
- **Extend** your capabilities by integrating silo-ed data into a single consolidated source of accurate data and linking disparate business processes into new integrated applications that can fully leverage RFID data from across the enterprise.
- **Evolve** your capabilities by enabling new applications and processes with real-time visibility between trading partners using global information sharing and coordinated business processes.

Oracle Fusion Architecture enables an SOA which facilitates the development of enterprise applications as modular business services that can be easily integrated and reused, creating a truly flexible, adaptable IT infrastructure.

Based on Oracle Fusion Architecture, Oracle Fusion Middleware is a portfolio of leading, standards-based and customer-proven software products, including Oracle Application Server 10g,* Oracle Business Intelligence 10g,* Oracle Portal* and Oracle Web Services Manager* and Sensor Edge Server,* that streamline and optimize business and IT operations while increasing the accuracy and timeliness of business decisions.

Oracle Retail solutions help you drive better planning and execution, more-accurate demand forecasting, faster inventory turns, and lower supply chain costs. Using this robust set of tools tailored to retail challenges, you can power collaboration between supply chain partners to ensure the right merchandise is in stock; execute compelling pricing and promotions; and integrate data across multiple sales channels. By connecting all your business processes and enabling you to share information across the enterprise and with your supply chain partners, Oracle Retail solutions help you improve the efficiency of corporate operations, adapt rapidly to changes in your supply chain and service customers more effectively. More than 1,900 companies rely on Oracle Retail solutions to create insight-driven enterprises that stay competitive by basing their decisions on accurate, timely information. Whether you implement one module at a time or an entire solution suite, Oracle can help you run a smarter, more profitable retail or supplier business.

Shorten Your Path to RFID Success

Intel, Symbol and Oracle are working together to provide end-to-end RFID solutions that help you accelerate your time-to-solution and maximize your return on investment. Leaders within the retail and consumer package goods industry realize that there is significant value potential in RFID, and forward-thinking firms are taking steps to capture that value.

Work with Intel, Symbol and Oracle as you create your RFID strategy and plan your deployments. Our RFID experts and leading technologies can help you navigate the challenges and reap the rewards. We invite you to contact a member of our RFID teams directly:

Intel: David Greenberg, david.greenberg@intel.com

Oracle: Kevin Wilson, kevin.wilson@oracle.com

Symbol: Kristine Kuhn, kristine.kuhn@symbol.com

Learn More

- For information on Intel and Retail/Consumer Package Goods, see www.intel.com/go/retail
- For information on Intel and RFID, see www.intel.com/go/rfid
- For information on Oracle and RFID, see www.oracle.com
- For information on Symbol and RFID, see www.symbol.com/rfid

Solution provided by:



¹Internet Week, April 1, 2003.

²Hyper-Threading Technology requires a computer system with an Intel® Pentium® 4 processor supporting HT Technology and a HT Technology enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software you use. See www.intel.com/homepage/and/hyperthreading_more.htm for additional information.

³Odin Technologies, The RFID Handheld Reader Benchmark (June 2005). The Symbol MC 9000-G led the testing results with 9 of 16 possible best in class performances. It won top honors in 3 of 5 reader performance categories, 3 of 8 categories of flexibility and swept all 3 of 3 ergonomic criteria.

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