

SAP Solution in Detail
SAP RFID



RFID TECHNOLOGY: CHANGING BUSINESS DRAMATICALLY, TODAY AND TOMORROW

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EXECUTIVE SUMMARY

Is your company currently working to implement radio frequency identification (RFID) technology to track and control goods moving through the supply chain? To help you get the most from your RFID investments, which are often significant, SAP seamlessly integrates the technology into a broad range of systems and processes, extending it to achieve broader business benefits.

SAP provides RFID technology as both an easy starter package and a robust infrastructure that can handle the large amounts of data generated by RFID applications. With that infrastructure, you can use RFID to increase inventory visibility, perform exception-based reporting and event management, and automate transactions and processes. In the long run, comprehensive SAP® RFID technology will enable you to create new processes and new ways of doing business as well as achieve new levels of responsiveness and adaptation.

THE PUSH TOWARD RFID

In an era marked by change, uncertain economic conditions, and relentless competition, you and most company decision makers must constantly be on the lookout for ways to optimize your supply chain network. This is the key to cutting costs, increasing revenue, and reducing working and fixed capital.

As part of the optimization effort, you may be exploring the use of RFID technology, which enables the noncontact identification, control, and tracking of goods and items throughout the entire value chain. That exploration is being encouraged in large part by major companies such as Wal-Mart, Albertsons, Target, Tesco, and Metro – and by government organizations such as the U.S. Department of Defense – all of which require suppliers to provide goods with RFID tags. To comply with these requirements, many suppliers find that they need to make broad investments in RFID tags, readers, and hardware and software infrastructure.

The move to RFID has been challenging in many ways. For one thing, standards for the technology are still evolving; for another, RFID strategies and approaches vary from one organization to the next. Analysts predict that RFID integration may result in a 10- to 15-fold increase in data volume. But you need to ensure that the systems you adopt are well integrated so that you can avoid the high costs involved in maintaining multiple interfaces between RFID and warehouse management and ERP systems.

In short, you need to take the same evolutionary approach to RFID that you do with any new technology – an approach that does not disrupt current capabilities. That means implementing a software architecture that can encompass current and future technology, combined with a data architecture that enables you to manage massive amounts of data at a low total cost of ownership.

THE SAP SOLUTION

SAP has been investing in RFID technology over the past six years, working with its customers to find out how RFID can best meet their needs. Through this experience, it has developed a vision that guides its RFID efforts:

“SAP will build end-to-end RFID solutions to help customers automate RFID-enabled business processes to drive adaptive supply chain networks.”

For SAP, this vision translates into several practical steps for moving RFID forward. These include:

- Integrating the multiple technologies involved in the RFID infrastructure
- Building an infrastructure to manage large amounts of RFID data
- Building RFID adapters that enable companies to integrate RFID seamlessly into existing applications
- Building new applications and technologies that support and enable new business concepts based on RFID

These steps have already produced practical results in the form of SAP RFID technology, which is now used to support a number of supply chain processes including those used for inbound and outbound warehouse operations. SAP is convinced that RFID will do more than simply replace existing technologies; it will drive new business processes. And SAP RFID is the technological foundation designed to support an expanding range of RFID-enabled processes.

To provide this support, SAP is focusing on the seamless integration of RFID data into applications, an integrated approach that promises to extend RFID potential far beyond simple compliance with customer requirements. This approach enables you to use the technology for automating processes and transactions throughout the supply chain to achieve better inventory visibility, perform exception-based reporting and event management, and ultimately become more responsive and adaptive to customer demands and market changes.

A COMPREHENSIVE AND INTEGRATED APPROACH

SAP RFID combines the virtual world of transactions, business rules, and processes with the physical world of products and people. It automates the execution of processes by providing sophisticated mechanisms that distribute data to various applications.

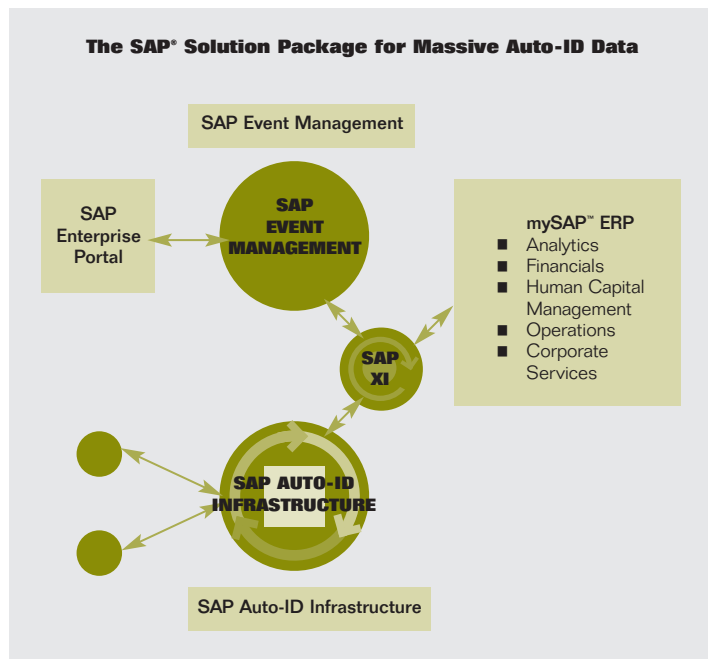


Figure 1: SAP RFID Solution Package

Based on the SAP NetWeaver™ platform, SAP RFID is designed to handle the massive amount of additional data accumulated from scanning RFID tags. It minimizes the replication of data across systems and processes by:

1. Focusing on business-related events rather than all data captured in the RFID infrastructure
2. Basing decision-support applications on aggregated, rather than granular data as much as possible

As shown in Figure 1, SAP's approach to RFID lets you take advantage of several SAP technologies. These include:

■ SAP Auto-ID Infrastructure

This SAP NetWeaver component enables you to integrate all automated communication and sensing devices including bar-code devices, Bluetooth devices, and RFID readers and printers. It not only filters, buffers, verifies, and aggregates data coming from different hardware sources, but also gives business context to the data, drawing on the applications in mySAP™ ERP that support the business processes in question – inventory management and warehouse management, for example.

The auto-ID infrastructure is designed to be lean and fast. Boasting its own SQL database, it can be installed at a local site such as a plant, distribution center, or store. This allows it to be close and responsive to the real-time actions of local devices (readers, printers, and so forth). The infrastructure can also incorporate non-SAP applications such as legacy warehouse-management systems.

- **ERP adapters**

The adapters let you control and use the auto-ID data involved in the warehouse management, fulfillment, delivery, and handling of unit-oriented (pallet) activities. ERP adapters are responsible for synchronizing electronic product code number ranges across multiple auto-ID infrastructures. They also support packing, unpacking, loading, unloading, and advanced shipping notification (ASN) processes that involve RFID data. And they can be used to integrate RFID into existing systems from previously installed SAP R/3® and SAP R/3 Enterprise software. (Note: The latest release in the ERP product line, mySAP ERP, does not need these adapters because they are built into the solution.)

- **SAP Event Management**

This software tracks and exchanges auto-ID data through the various infrastructures and systems used by your supply chain partners, providing cross-warehouse and cross-company inventory visibility. It enables automated triggering and alert notification of expected and unexpected events, and enables you to use RFID data to create standardized reports on key performance indicators for the supply chain.

- **SAP Enterprise Portal**

The portal provides role-based access to – and a single view of – key RFID information coming from supply chain activities. It enables your supply network partners to access event management and report information.

- **SAP Exchange Infrastructure**

SAP Exchange Infrastructure (SAP XI) helps minimize administrative effort by queuing and sequencing messages being exchanged among mySAP ERP, auto-ID infrastructure, and event management software. With its business process management capabilities, it merges data from different systems, combining, for example, ASN with RFID data. Not only is SAP XI part of the SAP NetWeaver platform, it is also the main integration technology used to map auto-ID data with other systems, formats, and integration methods.

THE BENEFITS OF INTEGRATED RFID TECHNOLOGY

SAP's approach to RFID provides you with both short-term and long-term benefits. From a technology standpoint, it:

- Protects your investment in existing systems, both SAP and non-SAP
 - Provides an out-of-the-box solution that enables you to comply with the RFID requirements of Wal-Mart and other major channel partners
 - Can be quickly implemented and integrated
 - Leverages standard components with SAP NetWeaver technology
 - Is highly scalable at both the local and central levels
 - Can easily incorporate new business processes
 - Gives you centralized administration capabilities for distributed auto-ID infrastructures and auto-ID hardware
 - Minimizes RFID data replication through the clear separation of data updates – that is, it separates the information that is integrated into operations and decisions from the information that is used in tracking, tracing, and triggering events as well as from the information used to monitor detailed history on a local basis
 - Supports controlled changes and continuous ramp-up in a production environment
 - Supports information exchange with business partners
- **Increase operational flexibility and efficiency**
Hands-free warehouse execution and the automation of outbound processes accelerate warehouse processes – an acceleration that translates into reduced fulfillment lead times and workloads.
 - **Increase business visibility and insights**
RFID-enabled processing greatly enhances visibility into stock levels and reveals the status of the logistics and execution processes used by your partners in the supply chain network, enhancing both planning and execution.
 - **Provide timely, instantly communicated and verified goods-issued stock data**
RFID-enabled processing helps ensure that the pallets and cases issued by a warehouse conform to outbound fulfillment requirements by verifying actual reads versus expected reads – in the warehouse, as activities are taking place. Exceptions and errors can be spotted in real time, allowing warehouse staff to make corrections prior to shipment.

From a business perspective, SAP RFID technology can help increase stock accuracy, reduce administrative effort, reduce inventory levels, and improve planning. When used to support warehouse processes, it enables you to:

THE RFID ROAD MAP

RFID technology is relatively new and still evolving, and SAP is building on its success with RFID-enabled warehouse processes to bring the technology to a range of applications. These applications fall into two categories:

1. Applications in which tags need only a minimal amount of memory and typically store only the data needed to identify the physical object and move it through the supply chain
2. Applications in which tags contain more data about the physical object but tend to move less in the supply chain

In the first category, you generally do not need to rewrite to the tag. Applications in this category support processes such as warehouse management, manufacturing, vendor-managed inventory (VMI), collaborative replenishment, and value-added services in warehouses. In these applications, RFID enablement helps you increase supply chain speed and inventory visibility.

In the second category, however, you usually do need the ability to write additional data to the tag. Applications in this category typically support asset management-related activities such as service parts handling, field services, and maintenance, repair, and overhaul (MRO). In these applications, RFID enablement allows you to gather data that would not otherwise be captured.

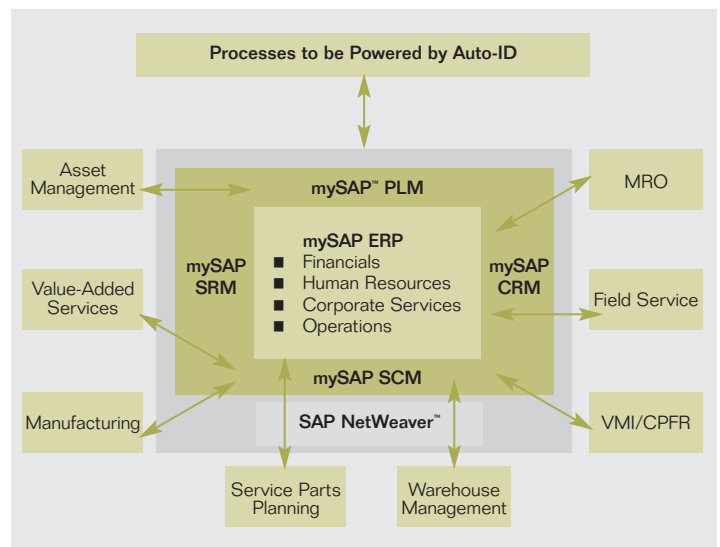


Figure 2: Potential Business Impact of RFID Technology

In addition to these specific applications, SAP is working on more general RFID-related issues. These include:

- **Privacy**

When the identification of goods is connected with personal information, you run into privacy concerns. In fact, the usage, evaluation, and analysis of the combined data is restricted by law in many countries. SAP is working to protect customer and consumer privacy information – and restrict the use of personal information – through the design of its business applications.

- **Master data**

An increasingly important RFID-related topic is the harmonization and synchronization of master data among business partners. SAP has already integrated the requirements from standards organizations such as UCC.Net into the master data management (MDM) component of the SAP NetWeaver platform and will apply standards-based MDM to the RFID world.

- **Business intelligence**

SAP is working to deepen the integration of business intelligence capabilities into the overall handling and extraction of data. This can enhance event management and enable the more detailed extraction and analysis of data across different auto-ID infrastructures and business partners.

- **Easier integration of devices and other hardware into the auto-ID infrastructure**

These efforts target the connecting, administering, and monitoring of new hardware in order to simplify the rollout of new RFID devices.

NEW WAYS TO CREATE VALUE

Your company, like many others, is being pressured by customers to adopt RFID – a technology that is critical to your success.

But before you do so, it makes sense to look beyond the short-term demands of your customers to the broader benefits RFID can bring you in the long run. SAP sees long-term opportunities in many areas. These opportunities include:

- Enhancing collaborative processes such as responsive replenishment; collaborative planning, forecasting, and replenishment (CPFR); the consumer-driven supply chain; and returns and claims management
- Improving the exchange and monitoring of information about in-store out-of-stock situations
- Increasing in-store visibility into backroom stock, shelf stock, and misplacements, which will lead to better forecasting and reduced inventory levels throughout the supply chain
- Increasing visibility into customer demand, with the availability of more accurate and near real-time information
- Improving the ability to limit counterfeiting problems and decrease theft

From SAP's perspective, RFID is a disruptive technology that has the potential to change business dramatically. It enables you to tie together the physical flow of materials and the flow of information in the supply chain network and to operate with unprecedented levels of accurate, timely information.

With SAP RFID, you choose not only a comprehensive technology but also a partner committed to helping you meet the demands of today while positioning you to take advantage of tomorrow's RFID-enabled processes.

As part of its ongoing commitment to information transparency concerning RFID, and to help resolve issues and promote discussion of ideas concerning this innovative technology, SAP has launched a public RFID Web community at www.sap.com/community/rfid. This community provides a forum for dialogue on key RFID topics. We invite you to participate in it.

To find out how SAP RFID can help your company streamline its supply chain, visit www.sap.com/rfid or contact your local SAP representative via www.sap.com/contactsap

www.sap.com/contactsap