



SAP for Automotive

SAP® RFID TECHNOLOGY IN THE AUTOMOTIVE INDUSTRY

Container Management and Kanban

Today, it's not enough for automotive companies to meet customer requirements – they must exceed them. And to do so, automotive companies must work closely with a multitiered, geographically dispersed network of partners. Manufacturers and suppliers alike must gather and share information about products and processes across the supply chain. Consequently, they spend time and effort trying to get systems and people to communicate, so that everyone in the supply chain can work with accurate and complete information.

The automotive industry makes extensive use of systems for container management and returnable packaging as well as kanban processes. The SAP® RFID technology enables you to exploit the full potential of automatically mapping physical goods movements. By combining cutting-edge technologies with SAP solutions, you can streamline your material flow systems, increase process security, and improve the quality and integrity of your data.

To meet just-in-time and just-in-sequence requirements, it's crucial that companies in the automotive industry have the ability to track reusable assets, such as containers, racks, bins, and totes. Considered costs, these assets are carried on balance sheets and must be managed and tracked. The value of these items is affected by shrinkage, wear, damage, and the inability to locate and reuse them.

Technologies such as radio frequency identification (RFID) bring new levels of precision to process control and the tracking of containers and returnable packaging. Using its technology expertise and working with experts in the field, SAP has developed an RFID offering that is seamlessly integrated with the SAP® solutions that are key to the automotive industry.

SAP RFID technology provides complete process support for capturing and handling RFID data, streamlining and automating supply chain processes, and integrating RFID information into enterprise systems. Companies can use RFID technology to adapt to changing conditions and events – and then drive rapid responses through supply chain management and execution systems. By enabling original equipment manufacturers, suppliers, and partners to identify and track container locations, contents, and condition, SAP RFID technology can help companies lower operating costs while improving asset management and service performance.

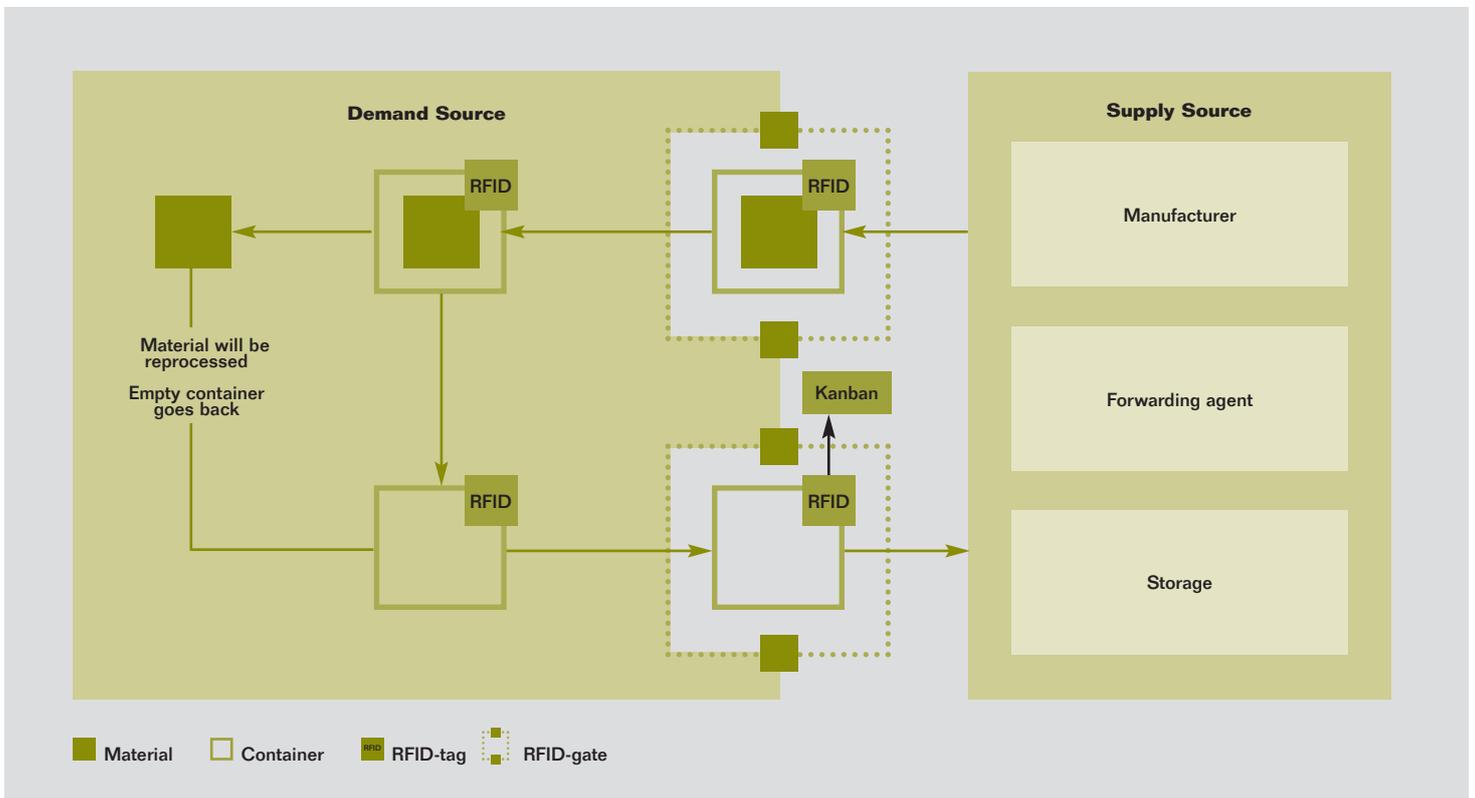


Figure 1: RFID Integration Streamlines Kanban Processes

How SAP RFID Technology Supports the Automotive Industry

RFID technology uses transponders or tags that have data written to them that can be read by RFID readers. This enables containers equipped with transponders or tags to be identified automatically. Typically, a transponder contains data such as a kanban number, container identifier, batch identifier, or other identifier. However, the content depends on the transponder: in general, active tags contain more information than passive tags, which contain only one unique number.

RFID readers are installed at pick-up and drop-off points where they read the data. Using radio frequency waves, transponders identify each container automatically – without additional handling or human intervention – as it passes through these points, even if the material is packed on a pallet within other containers.

SAP RFID technology 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. The technology is focused on the seamless integration of RFID data into applications, an integrated approach that promises to extend the potential of RFID far beyond simple compliance with customer requirements. This approach enables automotive companies 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.

The process described above is supported by SAP RFID technology and includes SAP Auto-ID Infrastructure, a component of the SAP NetWeaver™ platform. SAP Auto-ID Infrastructure helps bridge the gap between the technical and virtual worlds. On the one hand, it connects RFID read/write systems with back-end systems. On the other, it offers functions for managing, communicating, and linking RFID data.

SAP Auto-ID Infrastructure takes unstructured RFID data, parses it, translates it into useful information, and makes it available for other business processes. For example, data can be linked through the SAP NetWeaver Exchange Infrastructure (SAP NetWeaver XI) component in real time for use by SAP solutions such as mySAP™ ERP, mySAP Supply Chain Management (mySAP SCM), the SAP NetWeaver Business Intelligence component, and the SAP Event Management application.

What Is Kanban?

Kanban is a Japanese term meaning “signal.” The term is used worldwide to denote a form of replenishment signal used to transmit information regarding the movement or production of products. A kanban system signals the authorization to move material or product from the supplying location to the consuming location. It can also signal the authorization to produce or acquire additional product.

Under the kanban system pioneered by Toyota, parts are delivered to a workstation along the assembly line only when the workstation sends a request by signaling that a container is empty. This request then flows back through the tiers. This approach changes parts flow from a system in which suppliers “push” parts to the plant to one in which manufacturers “pull” parts in as needed.

Increased Process Security

Companies can gain several benefits when they implement an RFID solution for production and logistics processes. For example, they can reduce the time it takes to process orders, and they can keep less stock on hand with improved visibility and material ordering processes. The ability to seamlessly track reusable assets, such as containers and returnable packaging, in the transport and delivery processes ensures greater process security while lowering operating costs, improving asset management, and enhancing service performance.

By using SAP RFID technology, automotive companies can eliminate material shortfalls of containers, which can lead to delivery delays and, in the case of time-sensitive shipments, can cause production downtime. Manufacturers, suppliers, dealers, and freight forwarders can all benefit by reducing launch and assembly delays resulting from errors in part quantities, types, and locations for containers targeted for production lines.

SAP Auto-ID Infrastructure helps aggregate and map all relevant stock movements. When containers are equipped with RFID tags, employees can ascertain the specific location of each container at any time. Moreover, they can access detailed stock overviews for each container type. Linking the material and the container enables automatic posting of goods receipt and issue, resulting in the following potential benefits:

- Reduced container stock
- Less risk of production downtime due to missing containers
- Visibility into stock and movements of containers and parts
- Automated process control
- Process optimization throughout the entire supply chain network

Streamlined Material Flow with Support for Kanban Processes

If the status of a kanban container changes, for example, because an employee enters data manually or with a bar code reader, time may elapse between the actual withdrawal and its posting in the system. As a result, warehouse stock information could be incorrect or not available, requiring warehouse employees to enter inventory data manually.

RFID technology eliminates these disadvantages, since status messages are generated automatically when the container passes by an RFID reader, which identifies the kanban number from the RFID tag. Because the kanban number on the tag is linked with other data through SAP Auto-ID Infrastructure, event or status messages can be issued, depending on the specific process step.

Fully automated replenishment brings the following benefits:

- Prompt delivery of kanban containers
- Reduced shrinkage due to fraud or theft
- Reduction in direct and indirect labor costs since manual identification is not necessary
- Faster reaction to production, warehouse, and goods receipt problems
- Reduced stock in transfer

Data Integration with Supply Chain Management Solutions

Inventory status information enables planners to deploy or rebalance inventory across the distribution network to resolve exceptions such as inventory shortages, overages, or delayed shipments. With visibility into sudden variations in process that extend to in-transit material, work in process, and scheduled receipts, planners can determine a new operational plan for assembly operations and warehouse locations.

Improved Data Quality

Bridging the gap between the technical world and real world, SAP Auto-ID Infrastructure connects RFID readers on the shop floor and in the warehouse with back-end systems. It translates the collected unstructured data into useful information and offers additional functions for managing and communicating that information. More specifically, RFID technology supports the following functions:

- Goods issue and receipt, with automatic shipping and receiving processing based on RFID and bar code reads
- Automatic generation of advanced shipping notices with associated product information
- Handling unit picking and packing, with RFID picking, packing, and task management

SAP Event Management can be used with RFID to monitor supply chain processes and inventory, updating plans and schedules in response to new circumstances flagged by SAP RFID technology. Information is made available throughout the value chain for all partners. When a plan is updated, affected parties are notified, ensuring that all participants can adapt, thereby increasing efficiency and accelerating operations. For the automotive industry, the following benefits are relevant:

- Improved communication with trading partners on asset status due to the ability to track and trace inventory at the item and unit level
- Increased operational efficiency with alerts that flag exceptions such as out-of-stock situations or incorrect shipment quantities
- Enhanced decision making through analysis of key supply chain and inventory metrics

To find out more about how RFID-enabled kanban and container management can streamline your material flow, increase process security, and improve the quality and integrity of data, please visit www.sap.com/automotive or contact the SAP sales office nearest you.

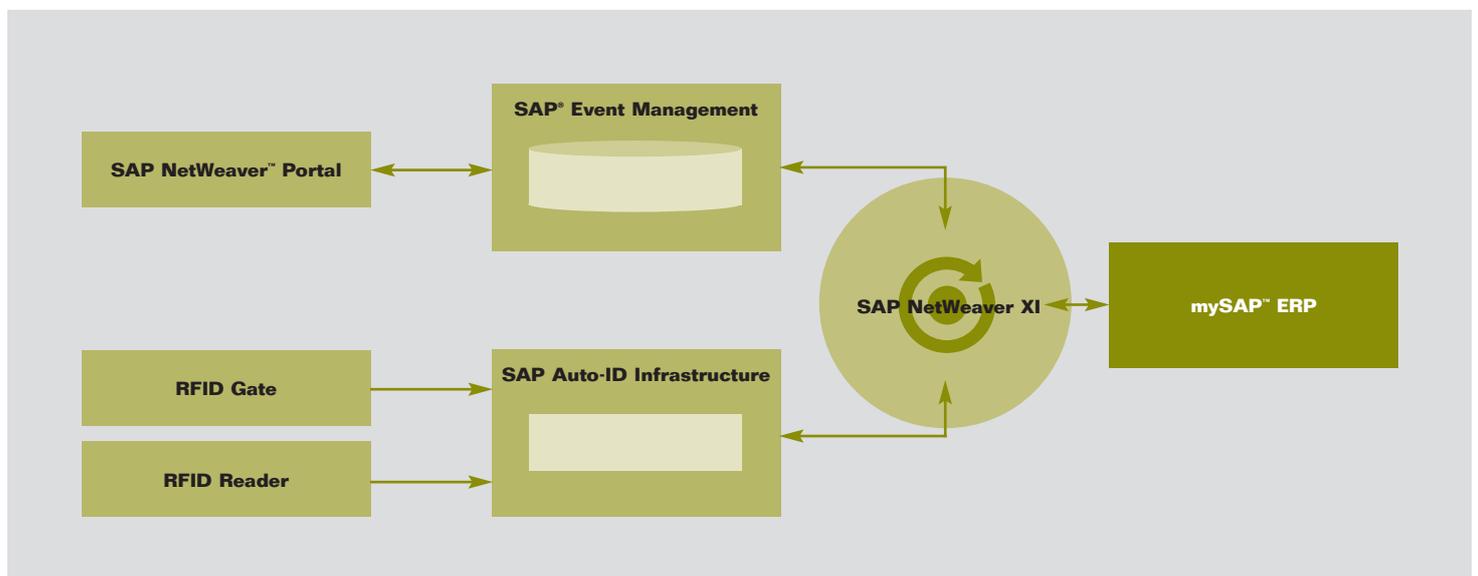


Figure 2: Technology Used with the RFID Solution

www.sap.com/contactsap

THE BEST-RUN BUSINESSES RUN SAP™



50 075 241 (05/07)

© 2005 by SAP AG. All rights reserved. SAP, R/3, mySAP, mySAP.com, xApps, xApp, SAP NetWeaver, and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP AG in Germany and in several other countries all over the world. All other product and service names mentioned are the trademarks of their respective companies. Data contained in this document serves informational purposes only. National product specifications may vary. Printed on environmentally friendly paper.

These materials are subject to change without notice. These materials are provided by SAP AG and its affiliated companies ("SAP Group") for informational purposes only, without representation or warranty of any kind, and SAP Group shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP Group products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.