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Implementing RFID with SAP

How to gain the best benefits from your RFID implementation
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Abstract

The RFID hype is rapidly turning to reality in 2005. Given the existing costs on tags and reader infrastructure, companies have to carefully consider how the use of electronic tags can achieve the maximum benefit. Many different types of implementations are in progress right now and companies have to stay updated on the best practices and achievable benefits in implementations in different industries and supply chain processes to attain success. One general rule is clear to everyone: The more integrated you run RFID activities with your SAP operations, the higher the benefits will be in your operation. Detailed RFID data has to be visible for your decision-making systems.

SAP Solutions for RFID

SAP has 2 solutions for RFID on the market:

1. **RFID enabled Supply Chain Execution**, supporting the fast movement of goods through the supply chain and utilizing SAP Event Management as EPC Information and tracking system, SAP Auto-ID Infrastructure (AII) as RFID data capture application and RFID adapters for mySAP ERP.
2. **RFID enabled Mobile Asset Management**, supporting the maintenance of machines and equipment using the offline capabilities of SAP Mobile Infrastructure in combination with RFID tags

Other process support for RFID operations is currently under development.

The „Top Down Approach“

Driven through the approach of multiple “RFID middleware” providers, many companies are starting to utilize RFID technology through what we call the “Bottom-Up-Approach”. Data capture takes place first, and then the middleware tries to find out what this scan is about and intends to aggregate the data and update the relevant decision and reporting systems such as supply chain management or ERP Systems. This requires a lot of parallel checks and business logic in the middleware systems, which might be different to the rules and checks in the decision support systems. In addition, the business process does not have the chance to do something different than before, because an operator will get aggregated data updates at times that cannot be foreseen. This limits the benefits of this technology.

Therefore, SAP recommends driving RFID implementations using a more integrated approach, which gives the decision systems the chance to utilize the granularity of RFID data in the best possible way. The system that is in charge of the business process decides what granularity of data it expects and generates so called “expected” events, which will be checked against reality through the RFID reads. This is what we call the “Top-Down Approach”.

Auto-ID Infrastructure standalone implementations

Even though the business benefit of RFID can be higher through a higher level of integration, many companies are simply searching for ways of doing this integration in a step-by-step approach. SAP supports these implementation needs through the capability of implementing Auto-ID Infrastructure in

this stepwise approach, starting with a standalone scenario. This means that, in the first implementation step, integration with other systems is not required. AII then just captures and tracks the RFID data without connecting to the relevant business process. In subsequent implementation phases, the connection to existing systems can be established and integration levels can be chosen.

Integration with Warehouse Management

Inside the four walls, implementations of RFID – for example, warehouse management – remain challenging. Right now, RFID technology does not offer many advantages over barcode for use in a warehouse environment. Bulk reads of RFID cases on pallets or within bins still do not achieve six sigma accuracy. Usable forklift readers are still a rarity. Conveyor scanners require orientation of the goods as well as barcode readers.

Most implementations focus on packaging and RFID application operations. These operations are supported by SAP as are loading operations at the dock.

Some companies have successfully implemented RFID as a system to track the position and movements of the forklift. Through this information – in combination with the knowledge which task or transfer the forklift is performing – the tasks are confirmed automatically and the position of the goods is tracked in the background. With this method of implementation you do not need tags on the goods, just RFID tags on the floor and storage bins, which provide all benefits of hands-free operation on forklifts. Of course, picking operations of single cases or goods still can cause picking content errors, but most of the benefits of this technology can be achieved through this method of implementation.

Utilizing Benefits in Asset Tracking

A high benefit potential in the use of RFID technology is achieved through asset tracking. Of course the following rule applies: “The higher the value of goods, the higher the benefit from applying the RFID label”.

Benefits result from a better knowledge as to where the goods are at what point in time. This can subsequently reduce shrinkage, counterfeiting and damage to the goods. Companies can also adjust the total number of tags they will need, by deciding where to apply the tags – on container / pallet / case or item level. Also, the multiple use of RFID tags in combination with returnable packaging materials offer benefits:

- Position of the tags on containers or pallets can be standardized
- Better protection against moisture, dust, damage, etc., is possible
- Higher read performance of tags
- Reduced tag costs through multiple use of same tag and saving application costs at new packages
- Reduced returnable packaging material costs through better inventory visibility

Through a better visibility in asset tracking, companies also have an active capability to reduce transport insurance costs. Last but not least, asset tracking is highly relevant for spare parts and service parts, as their utilization and maintenance history is important for maintenance decisions.

Collaborative Benefits

Done correctly, RFID provides value opportunities in collaborative processes such as difference handling, in-store visibility, active in-store-out-of-stock reduction, shrinkage reduction, deduction management, return management, counterfeit reduction and responsive replenishment. As these processes usually are not yet established in companies and require the establishment of partnerships between manufacturers, retailers, suppliers, wholesalers and logistics service providers, the implementation of these processes will be found at the bottom of the list of implementation activities with RFID. Nevertheless, these processes offer the highest potential benefit and will give innovative companies the chance to move ahead and put some distance between themselves and their competitors.