Managed Smart Pallet Services: Improving Supply-Chain Efficiency While Driving Down Costs

Increasingly, companies are recognising that intelligent pallet solutions can deliver immediate benefits, which include cutting costs and streamlining operations within months of installation. Smart pallets also promise improvements in order management and forecasting, as well as inventory management, with the potential to drive considerable efficiencies throughout the supply chain in the medium to long term.

Pallet Management: A Weighty Burden

Whether transporting food and beverages, industrial components or apparel, logistics networks across the world depend on millions of reusable pallets to keep goods moving. It is estimated that there are 500 million of these returnable transport items (RTIs) in Europe alone. However, due to poor tracking and control of pallet stocks, the real quantity is unclear at this moment.

SIGNIFICANT INVESTMENT

With wooden pallets costing approximately €10 each, individually, they are a relatively low-cost item. However, if a company has an overall stock of many thousands of pallets, the annual expenditure for purchasing and repairs can run into millions of Euros.

When products cannot be stored and shipped without the use of RTIs, running out simply is not an option. So, in addition to investing significant funds each year into the replacement of pallets that have been damaged or lost, companies must also ensure that they have a 'security' stock of surplus pallets in addition to their actual transportation requirement.

### INADEQUATE TRACKING SYSTEMS

Managing and tracking large-scale pallet usage is a complex challenge. Most companies operate a policy of equal exchange with their suppliers and distributors: for each loaded pallet they receive, they provide a pallet that conforms with the same EPAL-approved criteria in return.

However, with many organisations using inefficient manual or spreadsheet-based systems, managing this process can prove problematic. Errors can occur when recording pallet movements and it is all too easy for omissions to happen. As a result, many organisations have a far from accurate view of the total number of RTIs they have in circulation and where they are located.

In addition, there is often a lack of proper checking procedures to ensure that the pallets received back actually meet EPAL standards and are in good condition. By introducing poor quality pallets that are in need of repair or do not conform to EPAL standards into the logistics network, organisations increase the risk of stock being damaged or of incurring security and safety issues.

"Almost every company has RTIs in use and only very few actually know how many of these (often very expensive) RTIs are in circulation or even where they are located. Nevertheless, each year many companies invest a lot of money in the procurement of new RTIs, instead of concerning themselves with the improvement and optimisation of their management."

The Management of RTIs by GS1 Standards, Identification and Process Description, GS1 Switzerland
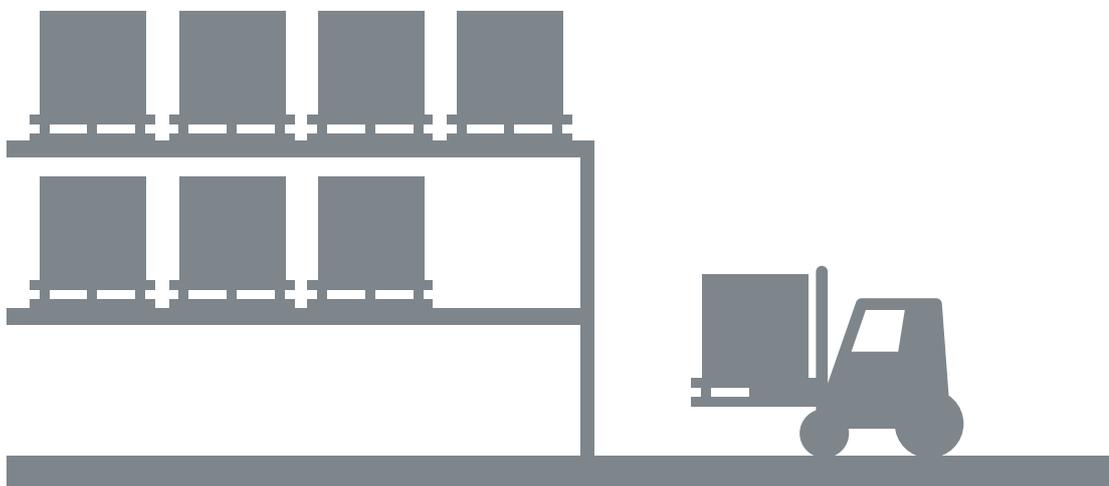
Smart Pallets: Improving Transparency Across The Supply Chain

To improve efficiency, many organizations are adopting intelligent pallet management solutions across their networks. These solutions introduce 'smart' radio-frequency identification (RFID)-enabled pallets into the supply chain.

ACCESS TO DETAILED INFORMATION

Each pallet is fitted with two RFID tags. These hold a unique identification number key (GRAI – Global Returnable Asset Identifier) issued by GS1. The RTI management system, which is also based on GS1 standards, records the current location of the pallet, its age, the number of exchange cycles it has so far completed and the length of time since it was last repaired or inspected.

Every time a pallet is moved – from manufacturer to carrier to distributor and then from the distributor to the carrier and on to the retailer – the RFID tags are identified on the fly and the RTI management system is updated in real time. For example, a retailer receiving the pallet can see straightaway that it last underwent maintenance 40 days ago and was previously used in the food processing industry.

AUTOMATIC UPDATES

RFID readers situated at entry and exit points within warehouses automatically retrieve the GS1 identification key from the RFID tags on the smart pallets. The process information of what, when, where and why is then immediately updated in the corresponding local RTI management system. A secure authentication process can allow specific parties within the distribution network to access this information.
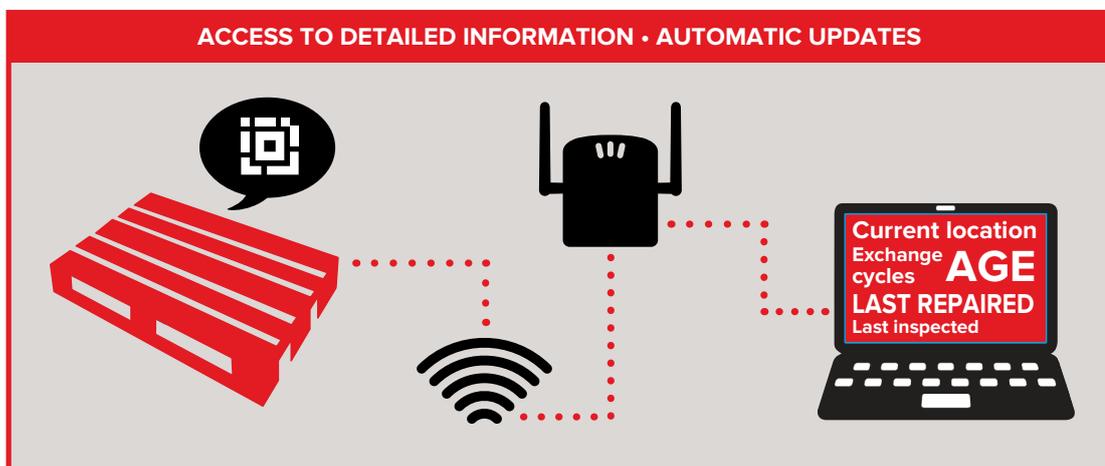
These automatic updates eliminate the need for manual recording of dispatch information. They also ensure that everyone in the supply chain can have access to up-to-date information about the pallet.

In seconds, warehouse managers can access reports that help them to identify issues and make accurate and timely resourcing decisions. At any time, they can see how many pallets are available and ready to use, and how many are due for inspection or planned main-tenance. They can also order new replacement pallets based on accurate figures about the current levels of pallets in use.

"...for a process that requires a new or newer pallet, a suitable pallet can more easily be identified."

The Management of RTIs by GS1 Standards, Identification and Process Description, GS1 Switzerland

ACCESS TO DETAILED INFORMATION • AUTOMATIC UPDATES

Current location
Exchange cycles **AGE**
LAST REPAIRED
Last inspected

LEADING THE WAY: THE EPAL EURO PALLET

The EPAL Euro Pallet is Europe's most commonly used pallet with 70 million produced each year. All pallets bearing the EPAL mark comply with strict EPAL quality standards. This ensures that goods arrive safely and can be stored in a stable manner, while providing a safe working environment.

The pallets are exchangeable worldwide and independent inspection companies maintain strict quality controls. RFID usage with the EPAL Euro pallet is tested and proven. It employs a data architecture that is defined and agreed between GS1 and EPAL.
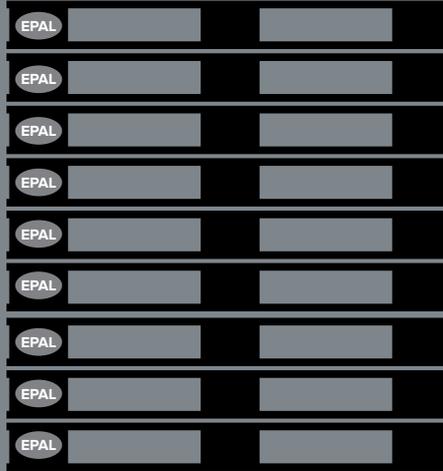
Improving Efficiency Across The Supply Chain

EARLY RETURN ON INVESTMENT

Intelligent pallet management solutions deliver quantifiable benefits from day one. According to GS1, smart pallet solutions can cut the number of RTIs going astray by up to 95%, with expenditure on searching for missing pallets dropping to 75%.[1]

Thanks to increased visibility of the number of pallets that are available and ready to use, companies can drastically reduce their security stock levels. Typical reductions of 10% can be achieved and represent a significant saving for companies looking to streamline operational costs.

Moreover, with the need for time-consuming tracking and manual recording of pallet movements eliminated, administration costs are reduced and staff can be redeployed onto other tasks. Plus, a more effective inspection and maintenance regime extends the life-cycle of RTIs.

Overall, typical cost reductions for pallet management can be as high as 50% for distributors and retailers and 25% for manufacturers. With savings on this scale, payback on the original investment within 100 days is not uncommon.

STREAMLINED OPERATIONS

In addition to pallet management efficiencies, RFID-enabled smart pallets provide improved availability of information about product movements. This can drastically improve efficiency across the wider supply chain.

The ability to track and count stock items faster and more accurately can result in inventory management savings of up to 28%. Meanwhile, administrative costs associated with the receipt of goods can fall by up to 70%, while loading and unloading times can be cut by as much as 13%.

ROI

By implementing a fully managed solution, you can expect an overall return on investment within

8 to 12 MONTHS

1. The Management of RTIs by GS1 Standards, Identification and Process Description, GS1 Switzerland

Overcoming Barriers To Adoption

While the Smart Pallet solution is economically viable and the advantages are clear, partly because its based on proven and reliable RFID technology, adoption to date is still limited. Research reveals several perceived barriers:

- **IMPACT ON OPERATIONS**
Radically changing existing identification methodologies, such as barcoding, can have a significant operational impact. However, by using barcodes that are printed on each RFID tag, companies can ensure a smooth transition during the ramp up to full RFID automation.

- **INTEGRATION RISK**
The tag, reader and software usually have different suppliers. This means the technology needs to be properly integrated to work effectively.

- **DATA MANAGEMENT**
Compared to traditional barcodes, RFID technology may generate a multiplicity of data that needs to be filtered and transferred. This will impact on backend systems such as ERP solutions and changes to hardware and software may be required.

- **PARTNER COLLABORATION**
A successful implementation requires close cooperation with supply chain partners. As well as manufacturers and distributors, customers must also have the technology in place to read the RFID tag and manage the data.

- **INVESTMENT**
A significant investment is required to replace existing pallets with RFID-enabled models. Where pallets are exchanged on a like-for-like basis, detailed asset management is required to ensure effective tracking.

Integration across three different areas is key to overcoming these barriers:

- **TECHNOLOGY**
Integration of the tag, reader equipment and software.

- **INFORMATION MANAGEMENT**
A middleware solution is required to secure, link, enrich, analyze and transfer data.

- **LOGISTICS**
Vertical integration of supply chain partners is needed.

Integration across three different areas is key:

- **Technology**
- **Information management**
- **Logistics**

Straightforward Deployment With Managed Services

When offered as an integrated managed service, smart pallets become considerably more accessible to a wide range of companies. The solution can be deployed in a "plug and play" roll out that does not impact significantly on backend systems and does not necessitate investment in new equipment. A managed service also facilitates vertical integration with external partners.

Ideally, the solution should complement existing processes, using generally accepted data transfer standards, and with equipment managed as a pooling service. The service provider will handle data interpretation and exchange as well as pallet supply and recovery.

Transforming Future Logistics Operations

As smart pallet solutions become more widespread, organisations will benefit from greater transparency of stock movements across entire logistics networks. Having accurate, real-time information about the quantity and location of different products will help organisations to forecast more accurately.

Real-time visibility of product movements will enable companies to see easily when stocks of a particular product are running low and when they need to be replenished to avoid stock-out situations. In this way, organisations can serve their customers more efficiently, improving satisfaction levels and increasing sales.

"RFID-enabled pallets have the potential to transform warehouse and logistics operations," says Daniel Dombach, EMEA Director for Industry Solutions at Zebra Technologies. "Better visibility of information will mean that participating organisations throughout the supply chain will benefit from lower costs, increased profits and happier customers."

The implementation guide, "The management of RTIs by GS1 Standards", is available in English and German and may be downloaded at http://www.gs1.ch/en/gs1-system/brochures-and-downloads/gs1-epcglobal#Section5

Contributors

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The Tag Factory
MANUFACTURER OF RFID TAGS

Pim van Loosbroek, CEO, The Tag Factory
The Tag Factory is a leading manufacturer of RFID tags and the official supplier of EPAL pallet tags.

2Return
member of Rotom-group

Toine Domensino, General Manager, 2Return
2Return is a European service provider that maintains and manages reusable transport items.

GS1
Switzerland

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The GS1 system of standards is the most widely used supply chain standards system in the world.

BEXTER

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Bexter provides a managed UHF RFID solution, based on the international EPC global standards to create full supply-chain transparency.

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