Track and trace solution for returnable asset management

An industry whitepaper
Returnable asset management

Standardized, reusable containers have become increasingly popular among manufacturers and their trading partners to transport goods and drive efficiency throughout a supply chain. Returnable containers, which come in a variety of shapes and sizes, are provided to supply chain partners to simplify the transportation of parts and materials from a supplier to an original equipment manufacturer (OEM) and between OEM plants.

Because these containers are durable and reusable, and because they require little to no maintenance, they offer many benefits to manufacturers and suppliers, including reducing waste and cost; increasing efficiency, productivity, and competitiveness; and fulfilling “green” initiatives by reducing waste. However, the issues associated with managing these containers pose many challenges for manufacturers.

Millions of containers exist within large, multi-supplier supply chains. Lack of disciplined process and poor visibility into the location and movement of these containers can create significant levels of container surplus and waste. In fact, up to 30% of containers in manufacturers’ supply chains are in excess, underscoring the need to streamline these processes and gain visibility into the movement of containers.1

Suppliers struggle with the challenges of reducing surplus stock, locating damaged or lost containers, and identifying solutions that resolve these issues. These challenges exist because of the highly complex trading environments in which millions of containers are handled at high speeds without automated business processes: manual methods lead to tracking errors and mishandling. It is estimated that 5-15% of container inventory may be lost per year without effective tracking in place.

Visibility and traceability solutions provide a mechanism to share information about container movement. These solutions also offer advanced analytics and reporting capabilities, which provide insight and drive business decisions. Traceability technology allows manufacturers and suppliers to share RFID- or barcode-generated information about a container’s state and movement. The analytics and reporting capabilities associated with these solutions help alleviate pain points for manufacturers and enable highly efficient business processes that ultimately lead to reduced costs of ownership for returnable containers in the supply chain.

An inefficient supply chain

Over the last decade, businesses and supply chains have become increasingly more global. Between 1995 and 2007, the number of transnational companies more than doubled, increasing from 38,000 to 79,000, and foreign subsidiaries nearly tripled, from 265,000 to 790,000.2

In addition to spreading geographically, supply chains now involve more companies. Nearly 80 percent of executives say they expect the number of collaborative relationships with thirds parties to increase. 3 And an ever-broader range of activities is being outsourced: between 2007 and 2010, research and development outsourcing has been forecast to increase by 65 percent, and engineering servicers and product-design projects by more than 80 percent. 4

However, the current economic status, coupled with progression of internal productivity, downsizing, outsourcing, and delayering initiatives, is forcing OEMs and suppliers to improve quality cost, and cycle time to optimize supply chains, thereby maximizing competitiveness. In response, OEMs are implementing vertical integration, a strategy that seeks common goals, linked business processes, consistent improvement strategies, and cooperatives tactics throughout the OEMs and trading partners in the supply chain.
Although more information is available today than ever before, proportionally less is being effectively captured, managed, analyzed, and made available to the people who need it. The problem of supply chain visibility and inefficiency poses serious financial threats to handlers in the supply chain.

A complex supply chain flow

In a typical supply chain, container movement appears very simple. At a basic level, a complete cycle consists of the following steps:

- Transporting a container from an OEM to a supplier
- Packing the container at the supplier with parts
- Transporting the full container to an OEM’s plant
- Emptying the container at the plant
- Processing and storing the container at an OEM storage facility

In actuality, the process is more complicated. Empty containers are often shipped by a third party logistics company to a site where they are sorted, treated and refurbished. They are then reloaded onto pallets and shipped to the supplier. In this system, there are several nodes where containers check in and out, including sequencers, third-party logistics providers, suppliers’ manufacturing facilities, OEM manufacturing facilities, OEM warehouses and others, depending on individual business models. The following figure depicts some of the complexity of these relationships.

Improper container management leads to serious inefficiencies for the manufacturer, some of which can be addressed through container traceability:

- Container cycle time and handling of costs: lack of visibility de-optimizes container cycle speed through the system.
- Excess inventory: manufacturers carry excess inventory to withstand undetected and inefficient container movement.
- Container shrinkage and attrition: enhanced visibility into container location improves
- Identification and replacement of old or lost containers.
- Substitute cost: improved visibility reduces cost of replacing unnecessarily lost or misplaced containers.

That organizations in the trading network do not have sufficient or consistent tracking procedures compounds the need for greater visibility of container movement throughout the modern supply chain.
Recognizing business benefits

Data from visibility technologies such as RFID or barcodes, when combined with new traceability and data analytics offered by Frequentz’s Information Repository and Intelligence Server (IRIS) can alleviate the pain points for manufacturers, enabling highly efficient business processes and reduced container ownership costs.

This visibility of and insight into new data also creates shared ownership of returnable containers that simplifies their management and transport and provides the foundation of a truly valuable returnable asset management solution.

The true value of this smart supply chain technology lies in the new data visibility that RFID and barcodes provide---seeing inventory whether in motion or in stock at all times, reducing excess spending, and enabling more intelligent planning, inventory management, and procurement.

Production management

The receipt of reliable, accurate and complete data from the field and the automation of data capture and serialized containers (RFID and two- and three-dimensional barcodes) are two fundamental ingredients to sophisticated returnable asset management. However, additional value lies in how an OEM can leverage new data from traceability technology across multiple business processes, across several locations, and in innovative ways.

A typical OEM receives 30% of its parts just-in-time (JIT).6 Inventory that is missed or scanned incorrectly results in discrepancies in inventory status and contributes to larger problems of lost time and resources due to resolving inconsistencies, searching for parts, and rebuilding trust.7 The Aberdeen Group reports that 60% of companies use overly simplistic inventory management methods and that these companies frequently have 15-30% more inventory than they need.8 These companies stand to benefit from a production management system that allows for faster, more consistent, and more accurate management of all inventory---a system that reduces safety stock by over 40% and container shrinkage by over 50% and that can more effectively anticipate container shortfalls.

IRIS: Frequentz’s solution

Traceability technology provides a foundation for insight to container distribution, status and supplier performance. IRIS is Frequentz’s solution for track and trace. As the thought leader in the market, Frequentz’s IRIS advances its past success in traceability technology by enabling multiple business use cases through applications and business intelligence.

Built on IRIS, the Returnable Asset Management application (eRAM) enables companies to manage their supply chains using new data, offering scorecards, dashboards, and reports to set expectations and clearly identify cycle and turnaround times and inadequate performance by trading partners and suppliers.

In addition to being certified with GS1 EPCIS standard, IRIS also integrates with customer master data systems to provide additional business context with product, location, and supplier information.

By reducing turnaround time, loss, and expendable packaging and increasing the accuracy of cost allocation, a container management system can potentially produce a positive ROI in no time.

Frequentz’s global presence, coupled with its deep industry and business transformation expertise, has proven that the methodologies and experienced gained from thousands of worldwide engagements help clients achieve real business results and innovation, quickly and cost-effectively.
IRIS’s customizability and multi-solution benefits provide the foundation upon which customer can build all of their track and trace operations.

**eRAM product information**

For more detailed product information on Frequentz’s eRAM capabilities and reporting, please see the attachment.

**Bibliography:**

5. “Supply Chain Optimization: How to make your company more valuable to your OEM customer.” IMEC. May 11, 2009.

*Frequentz has entered into binding agreements with IBM Corp. and therefore possesses the express written permission and legal authority to use, reproduce, and/or duplicate any content, in full or in part, which is contained in this document.*
ATTACHMENT:

IRIS’s eRAM capabilities

Returnable assets are generally expensive and are often lost, stolen, damaged, and misplaced. A reusable asset more commonly known as a returnable container or returnable transport item is a secondary package that can be used several times in the same form and represents a major investment. Available in all shapes and sizes, and typically ranging in price from $200 to $5000 apiece, these assets are made of plastic and metal and many of them have very specialized uses. For example, some reusable assets are made specifically to bring an engine subassembly from point A to point B. Others are shipped to a supplier who will then fill them with machinery, pharmaceuticals, raw materials, gas or oil and ship the asset back to the source.

The RAM application helps:

• Reduce required reusable asset inventory and reduce or eliminate needed safety stock to lower inventory carrying costs.
• Gain advanced visibility of receipts and shipments of reusable assets with trading partner collaboration.
• Manage and improve supplier performance.
• Reduce risk by reducing reusable asset counterfeiting.
• Protects the investment in reusable assets.

Container owners in their warehouses can use RAM reports to help answer such important questions as these:

• Are safety stocks optimized?
• Are we losing too many assets?
• Are we shipping the right assets?
• Are transit times too long?

Business partners at their locations can use RAM reports to help answer questions such as the following:

• How many assets do we have available?
• Are we maintaining our targeted levels and cycle times?
• Are we shipping the right assets?
• Are we limiting the number of assets that are aged?

RAM is a packaged analytic application that uses the event and master data in IRIS to create a reporting database that can be used to track warehouse inventory and report on cycle times.

IRIS’s eRAM reporting

eRAM includes packaged reports that allow organizations to more effectively manage their returnable asset inventory and utilization. Three (3) reports are included in the eRAM application that are based on information that is refreshed, by default, hourly in the eRAM data mart; four (4) reports in the application are based on information that is refreshed, by default, once a day in the multidimensional cubes.
Hourly and daily are the recommended refresh rates; however, the refresh schedule can be customized.

The reports based on information refreshed hourly are:
• Current Asset Inventory
• Current Asset List
• Asset History

**Current Asset Inventory report**
This report shows the current asset inventory at each facility in the value chain. Use this report to assess inventory and expedite shipping or substitution needs.

**Current Asset List report**
This report shows a list of the assets of a given asset type that are at a location. Use this report to understand what assets are at a particular location or determine what might be lost or missing.

**Asset History report**
This report lists the event history of an asset. Use this report to determine when and where an asset was last observed. It can also be used to identify problems such as missing events, duplicate events, or cross events.

The reports based on information refreshed daily are:
• Inventory History
• Asset Cycle Time History
• Business Partner Cycle Time History
• Dwell Time History

**Inventory History report**
This report shows the asset inventory over time at each business and business location. Use this report to determine how efficiently and effectively business owners and business partners are managing returnable asset inventories.

**Asset Cycle Time History report**
This report shows how efficiently the assets are cycling through the storage locations. Use this report to compare the actual versus targeted cycle time performance for the specified storage locations.

**Business Partner Cycle Time report**
This report shows how efficiently each business partner (BP) and each business partner location is turning assets. Compare actual versus targeted cycle time performance for the business partner facility.

**Dwell Time History report**
This report shows the speed at which returnable assets move through a facility. Use this report to determine how efficiently assets are utilized throughout a supply chain.
IRIS’s eRAM dashboards

The RAM dashboards are a set of new reports that visually display the RAM metrics in graphs and charts.

- **Aged Asset Inventory dashboard**
  Searches one or more companies and asset types. Refine the search to specific locations within selected companies.

- **Asset Cycle Time History dashboard**
  Slices and dices the cubes and compare values by date, location, or asset types. An advanced search option is available.

- **Asset Inventory History dashboard**
  Slices and dices the cubes and compare values by date, location, or asset types. An advanced search option is available.

- **Business Partner Cycle Time History dashboard**
  Slices and dices the cubes and compare values by date, location, or asset types. An advanced search option is available.

- **Current Asset Inventory dashboard**
  Searches one or more companies and asset types. Refine the search to specific locations within selected companies.

- **Dwell Time History dashboard**
  Slices and dices the cubes and compare values by date, location, or asset types. An advanced search option is available.