

**SAP Solution in Detail**  
**SAP Railcar Management**



# **EFFICIENT MANAGEMENT OF RAIL OPERATIONS**

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## **EXECUTIVE SUMMARY**

Companies that transport goods and receive raw materials by rail are facing a number of vexing challenges. Competition is more intense than ever before, and companies must adhere to strict regulatory standards for rail transportation while satisfying demanding customers. Increased rail traffic on inadequate railroad infrastructures causes costly delays, and attempts to deal with these delays reveal widespread inefficiencies in many organizations' business processes. At the core of these inefficiencies are scattered legacy IT systems that keep vital business data "siloes" in many locations.

To improve their efficiency and profitability, these companies need one integrated, synchronized source of accurate business data. The SAP® Railcar Management application leads the industry in integrating rail transport data into companies' sales and distribution and asset management processes. When employees have up-to-the-minute business information from SAP Railcar Management at their fingertips, they make better business decisions, work more efficiently and productively, and provide outstanding customer service.

## INTRODUCTION

Companies that deliver cargo late not only pay a penalty but also often lose business because of disgruntled customers. Up-to-the-minute railcar tracking data enables a company to determine whether to transload shipments to truck or to send shipments from other plants to deliver the freight on time.

Although companies keep data on railcar locations, the information is often “siloed” and available only to selected employees via an ISP’s Web site or stand-alone software application. As a result, some segments of a company operate without timely information telling them where loaded and empty railcars are. This lack of data can be very costly.

Over the years, companies in many industries have accumulated an assortment of disparate IT systems ranging from legacy-based applications to Web-based solutions. Because of this, they are unable to share vital information that affects their essential business processes. With a host of complex IT systems to navigate, some companies find it difficult to stay ahead of the pack.

The relentless pressure of intense competition, changing government regulations, and today’s demanding customers means companies must strive to increase profits while lowering total cost of ownership. Integrating and aligning vital data and business processes to create a comprehensive overview of the enterprise is a must.



## OVERVIEW OF SAP RAILCAR MANAGEMENT

Companies in any industry can achieve an integrated, synchronized source of vital business data with the SAP Railcar Management application. SAP Railcar Management provides tools that enable companies to deliver cargo in a timely, cost-effective manner. The application also manages carrier selection, freight rating, and rail transport operations.

Logistics, fleet management, and maintenance should be fully integrated processes that leverage best practices from the world of private logistics and transportation service providers.

SAP Railcar Management integrates these processes and improves the efficiency of outbound and inbound logistical activities. For example, the railcar tracking tools included in SAP Railcar Management enable companies to:

- Track in-transit railcars assigned to deliveries or shipments
- Track the locations and status of railcars and other equipment on-site
- Get automatically updated arrival times for inbound or outbound shipments
- Receive alerts about delays and abnormal events such as off-route or damaged railcars

In addition, the freight-rating tools enable companies to:

- Choose the best carrier and route for any shipment by using configurable selection strategies based on cost, business share, and preference
- Generate customer freight invoices with charges that are separate from charges for carriers
- Easily maintain freight rates and simulate freight costs for quotations
- Determine road distances by outsourcing to distance-service providers

SAP Railcar Management includes these components, each of which may be licensed separately:

- Railcar extension
- On-site event management
- Freight cost extension
- Distance determination service

SAP Railcar Management is based on the SAP NetWeaver® platform, which is designed to integrate SAP as well as non-SAP applications. Because it is built on SAP NetWeaver, SAP Railcar Management enables online, real-time collaboration throughout your organization, as well as with customers, suppliers, and business partners. With SAP NetWeaver, you get business intelligence and analytical functionality for reports and analyses to improve decision making.

SAP Railcar Management interacts efficiently with other SAP business software, including the SAP™ ERP Financials solution, the SAP Supply Chain Management (SAP SCM) application, the SAP Product Lifecycle Management (SAP PLM) application, the SAP NetWeaver Portal component, and the SAP NetWeaver Business Intelligence (SAP NetWeaver BI) component.

## RAILCAR EXTENSION

### Railcar Tracking

Railcar extension (RCX) provides comprehensive software for tracking outbound and inbound railcars. The software monitors the locations of loaded and empty railcars to ensure that goods are delivered on time and equipment is returned to its original location. RCX also monitors inbound shipments from vendors to keep track of arrival times for important raw materials.

RCX uses standard route functionality provided by the SAP ERP application to maintain rail routes assigned to deliveries and shipments. Included in the route definition are the description, stages, and transit times that provide distances and travel times. This route data describes expected events that are compared to actual events. When the actual event varies from the expected, RCX automatically recalculates a shipment's time of arrival.

Integrated with the supply chain management functions of SAP SCM, RCX continuously checks for unusual conditions – such as a railcar broken down in transit – and dispatches user alerts in any format supported by the SAP alert framework (for example, Internet mail, short message service, pager, or fax). RCX-generated alerts are also displayed in the centralized SAP alert inbox, which enables individual users to subscribe to specific types of alerts.

The tracking data stored by RCX can also be extracted to SAP NetWeaver BI, where analytic reports provide decision support based on accumulated data. For example, SAP NetWeaver BI can analyze transit times by carrier, route, plant, material, or customer.

With RCX, you can view inbound, outbound, and return trips by drilling down from the standard SAP shipment document. You can also access current tracking data through reports such as the exception monitor, which lets you view railcar and shipment information for exceptions such as off-route, delayed, or malfunctioning railcars.

The exception monitor functionality is supplemented with a variety of interactive reports for monitoring railcars and shipments. Query transactions are integrated with supply chain event management to provide information about railcar sightings, sighting history, status, estimated time of arrival, and contents.

### Fleet Management

When integrated with SAP PLM, RCX addresses several areas of rail fleet management. Fleet management functionality includes the following:

- Object master data
- Costing and consumption calculation, including fleet operation and maintenance costs
- Maintenance, including regular checkups based on time, distance, and usage
- Functional locations to support fleet assignment
- Assignment by plant, fleet, subfleet, and product group
- Object integration with supply chain event management
- Lease and sublease reporting

### Detention Billing

The detention-billing functionality of RCX speeds up billing by automatically calculating charges incurred when a customer holds a railcar for an excessive amount of time. Rates are applied generically for equipment or individually for specific customers. These rates can include other parameters – such as material properties – that may affect allowed time and charges. All rates have established validity periods that let you charge different rates at different times of the year.

Detention billing improves the efficiency of the billing process by determining the correct charges for each piece of equipment for a predetermined period and providing approval of the charges that should actually be billed.

### **Mileage-Credit Reporting**

The mileage-credit reporting functionality of RCX facilitates auditing by automatically calculating mileage credits for privately owned and leased railcars based on Association of American Railroads (AAR) mileage rates. Mileage-credit reporting includes functions for loading mileage rates provided by AAR, manually updating mileage rates, creating reports that calculate the mileage credit for carriers and lessors, and looking up the mileage rate for railcars at a facility.

### **Lease and Sublease Reporting**

The lease and sublease reporting functionality of RCX allows you to manage costs and revenue for the leasing and subleasing of equipment. The reporting-only function monitors the time that equipment is out of service so the lessee is not billed for that time. RCX also lets you maintain contractual agreements that include attached equipment.

### **SAP PLM Interfaces for Plant Maintenance**

In many companies, managers and maintenance employees lack the visibility into the railcar management process. Without an overall view, it's difficult to control the process, make sound decisions, and collaborate effectively. RCX provides interfaces that give improved visibility of railcar assets, including the following:

- **Equipment synchronization** – When fleet objects are created in SAP PLM, an abstract version of the objects is created in SAP Railcar Management.
- **Functional location synchronization** – As functional locations are created in SAP PLM, they are simultaneously sent to SAP Railcar Management to update the fleet, subfleet, and product grouping on the application's equipment table.
- **Periodic maintenance (metering)** – For maintenance purposes, the distance and number of railcar trips recorded by SAP Railcar Management are sent to SAP PLM.



## ON-SITE EVENT MANAGEMENT

On-site event management (OSEM) offers comprehensive software to help on-site personnel manage daily activities by tracking the location and status of railcars after they are delivered to a rail yard, plant, or other facility.

On-site event management relies on messages logged in by personnel as events happen. To log messages in, employees can use the OSEM interactive cockpit, mobile devices running OSEM transactions, radio frequency readers for railcars equipped with radio frequency ID (RFID) tags, or interfaces with automated rail yard equipment (such as scales and metering devices). OSEM improves efficiency by filling the gap in status reporting from the time railcars are placed in a facility to the time they are released from that facility.

### Rail Yard Layout

OSEM lets rail yard managers easily define the layout of rail yards and obtain information they need to make sound decisions. The search functionality in OSEM lets you locate railcars by ID, contents, equipment properties, number of days on hand, ownership, fleet assignment, and other characteristics. The drag-and-drop functionality enables easy monitoring of cars as they move from one location to another, while interfaces to external data sources such as RCX tracking show cars in transit to a site and cars reported on hand (“placed”) at the site.

### Rail Yard Activity Tracking

OSEM provides more than a picture of each rail yard; it also provides information about all rail yard activities. It maintains a complete record of all activities pertaining to each railcar while at the yard, which helps managers make the best choices for scheduling and maintenance of railcars. OSEM allows manual entry of activity-event data and provides interfaces for automatic data capture as well. This data, stamped with date, time, and user ID, can be easily viewed in OSEM by double-clicking on any railcar icon on-screen.

OSEM provides interactive transactions and interfaces to capture data about the following rail yard activities:

- **Receiving** – Records the date and time that a railcar was received into the facility, the carrier who delivered it, the location to which it was delivered, and its loaded/empty status
- **Releasing** – Records the date and time that a railcar was released from the facility, the carrier pulling it, and the location from which it was released
- **Switching** – Records both planned and actual switch times, with to/from locations and loaded/empty status
- **Moving** – Records the date and time with to/from locations and comments
- **Inspecting** – Records the date and time, inspector, inspection type, and condition and also provides “bad order” and “do not use” flags
- **Repairing** – Records the date and time, repairer, repair type, and comments
- **Cleaning** – Records the date and time, cleaner, cleaning type, material used, and comments
- **Loading** – Records the date and time, loader, material, batch, loaded quantity, previous quantity, and comments (for both single- and multiple-compartment cars)
- **Unloading** – Records the date and time, unloader, material, unloaded quantity, and comments (for both single- and multiple-compartment cars)
- **Regrading** – Records the date and time along with old and new material, batch, plant, and storage location values
- **Weighing** – Records the date and time, weighing device, quantity, gross weight, actual tare, tare weight, and comments
- **Sealing** – Records the date and time as well as multiple seal identifiers, locations, and comments

### Integration

When OSEM is integrated with RCX, you have complete visibility into railcar locations and status whether the cars are in transit or on-site at your plant, a customer facility, or a repair shop. Also, the railcar activity tracked in OSEM can drive the railcar assignment process in RCX. Cars received into an OSEM site and loaded at that site become available to be assigned to shipments originating in the same location. In turn, cars tracked by RCX are seen as available to be received into OSEM sites.

You can achieve more complete integration – and more efficient business processes – by configuring the SAP Event Management application to automatically create one event upon the posting of another. For example, the report of an actual placement of a railcar tracked by RCX would automatically result in the receipt of that car into an OSEM site. Releasing the car from the site would automatically start the shipment to which the car has been assigned. SAP Event Management configuration options make RCX tracking data drive other supply chain processes. For example, receipt of an inbound railcar carrying raw materials could automatically post a goods receipt in SAP ERP.



## FREIGHT COST EXTENSION

Freight cost extension (FCX) adds flexibility to standard SAP routing and freight-rating functionality, giving you increased control over carrier selection and freight billing. This component consists of two parts: the routing guide, which provides enhanced carrier selection based on SAP ERP, and freight cost extensions, which offer several extensions to standard freight rating.

### Routing Guide

The routing guide offers an alternative to carrier selection and route determination in SAP SCM. An SAP ERP–based solution, the routing guide lets you create your own strategy for determining a route and the orders, deliveries, or shipments for that route. Routes and carriers are selected using one of these strategies:

- **Low-cost carrier** – The cheapest route is chosen based on actual shipping cost via each route.
- **Business share** – A route is chosen based on the percentage of business or the total amount of product allocated to each route.
- **Preferred carrier** – A route is selected based on a numerical value assigned to determine the order of preference.

The routing guide also tracks the history of carrier selection and identifies noncompliant service agents.

### Customer Freight Invoicing

The FCX customer freight invoicing functionality lets you charge a given customer a different amount than the fee paid to a carrier for transportation services. This functionality creates a customer freight document that can use an alternate pricing procedure to override shipment data. Customer freight invoicing lets you handle variations in a customer freight charge calculation that occur due to conditions such as equalization, competitive freight discounts, and out-of-territory moves.

The way you configure FCX determines the customers, shipment types, shipments, or deliveries that are used for FCX freight costing, as well as the pricing procedures you use. Configuration also determines when FCX-calculated freight costs appear on billing documents.

Because this functionality applies to standard sales-order transactions, you can easily simulate and display freight charges. You can also create customer freight documents individually or in groups to store calculated freight charges.

### **Shipment Cost Inquiry**

The FCX shipment cost inquiry functionality enables you to quickly and easily simulate shipment costs for the purposes of quoting. Costs are simulated by changing parameters on an existing shipment (without actually affecting the shipment), matching a delivery with one or more shipment profiles, or matching a shipment profile with an origin and destination.

### **Tariff Reference Data**

The FCX tariff reference data functionality helps your transportation management process become more organized by making it easy to display and change the “condition” records that store the freight rates in SAP ERP. FCX adds fields to these records so you can store data in related groups, such as the data that carriers typically use to identify their tariffs. You can use these additional reference fields to display and maintain all condition records associated with a given tariff.

## **DISTANCE DETERMINATION SERVICE**

Distance determination service (DDS) is an open interface that helps you recover the real costs of road shipments by retrieving road distances from third-party distance providers and posting the results to the SAP ERP shipment document. The results can be used for calculating distance-dependent freight costs. DDS supports Rand McNally’s MileMaker and ALK PC\*MILER.

With DDS you can use multiple distance providers, use multiple versions of distances classified by validity-date ranges, store external-provider results in a local distance repository, and create business rules to determine when and from which source distances should be retrieved.



## **CONCLUSION**

To solve the problem of disparate IT systems that provide incomplete, inaccurate business data resulting in costly delays, SAP Railcar Management delivers a single, integrated IT landscape and unified data to employees when and where they need it. The application improves the efficiency of many railcar management activities from tracking to event management to routing to invoicing. To learn more about SAP Railcar Management, please contact your SAP representative or visit us on the Web at [www.sap.com/services/customdev](http://www.sap.com/services/customdev).







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