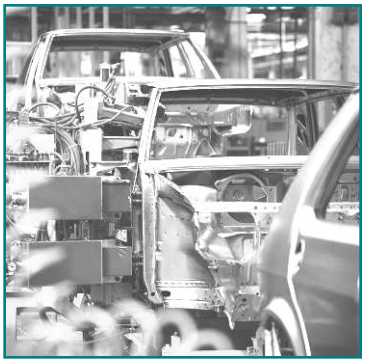

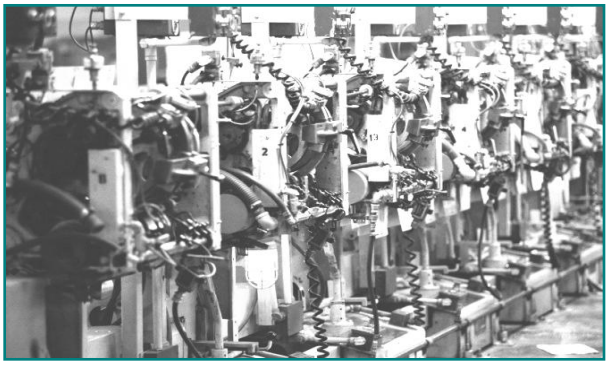

Real-time Visibility

Auto-ID enabled SAP Applications for Manufacturing

Reference Guide

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Delivering Real-Time Visibility to the Enterprise

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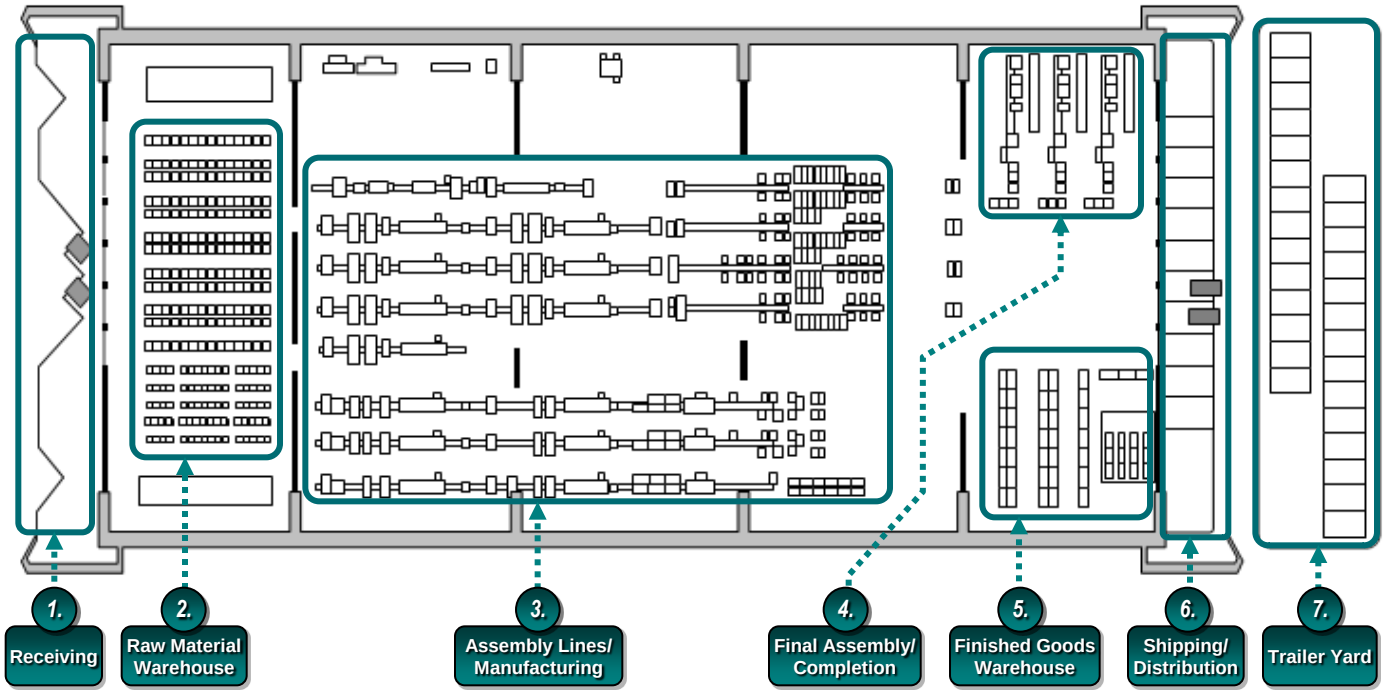
Real-time Manufacturing Visibility



An early misconception of Auto-ID technology was that it had to be deployed across the enterprise to deliver value. Now, many manufacturers are discovering that Auto-ID and sensor technology can provide critical visibility within the four walls of a single facility, increasing operational efficiency while reducing inventory and labor costs. Real-time enabling even a single facility can have an enterprise-wide impact. *Automating and error-proofing even a single business process can deliver a significant return on investment.*

Process-specific projects often pay for themselves within 9-12 months, and are targeted in one or more of the following areas:

- Shipping
- Receiving
- Container Tracking
- Kanban Management
- Cycle Counting
- Tool Tracking
- Work-in-Process Tracking
- Order Tracking
- Yard Management
- Audit & Inspection

This guide illustrates specific areas where manufacturers can quickly and cost-effectively Real-time enable their operations, using a single assembly facility as an example.

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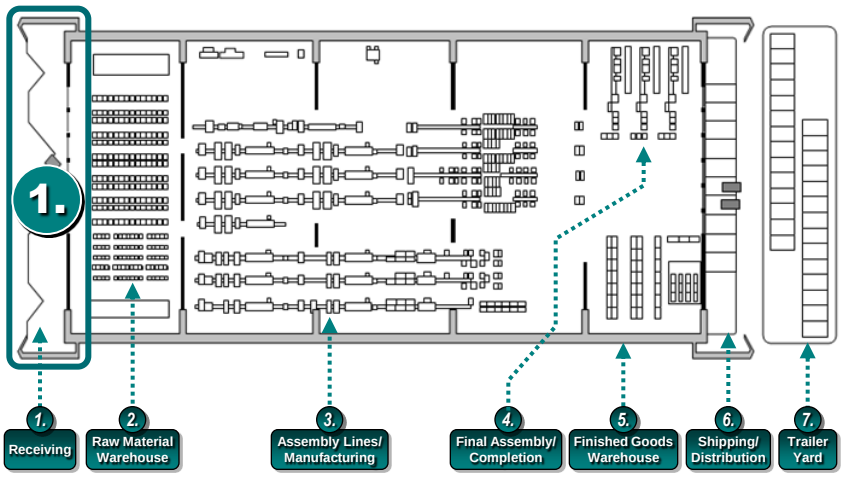
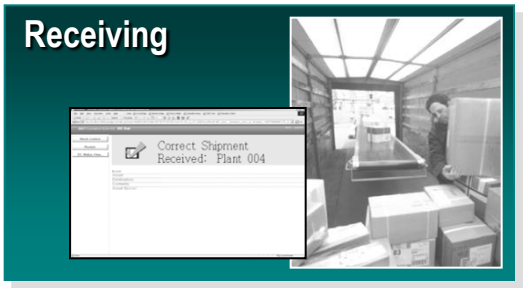
1. Auto-ID Applications in Receiving



Receiving



Auto-ID Application

- Automate receipt & verification of incoming goods

Web Services Integration Options for ERP & WMS Systems

- Compare received goods with content manifest or ASN
- Flag rush orders by comparing order number and special instructions
- Expedite rush orders
- Quarantine and track non-scheduled shipments

Auto-ID Value Add

- 100% automated tracking & reliable identification of shipments as they are received
- Significantly reduce error rates and costly correction processes
- Focus staff on exception handling vs. administrative paperwork

RTI (Returnable Transport Item) Tracking

Auto-ID Application

- Track reusable containers and contents from location to location

Web Services Integration Options for ERP & WMS Systems

- Pull parts manifest for each work order to track components
- Confirm final destination for each shipment & work order number
- Alert staff with a visual or audible alarm when a work order is received at the wrong location

Auto-ID Value Add

- Automate check-in/check-out processes
- Obtain real time status of work orders and components

Case Study:
Better Customer Satisfaction, Reduced Inventory Costs

A leading Electronics Manufacturer RFID-enabled its ERP and MES systems with OAT Asset Tracking to track component inventory, work-in-process, finished goods and deliveries.

With real-time visibility, the company was able to reduce its supply chain inventory by nearly 20% while significantly improving order accuracy.

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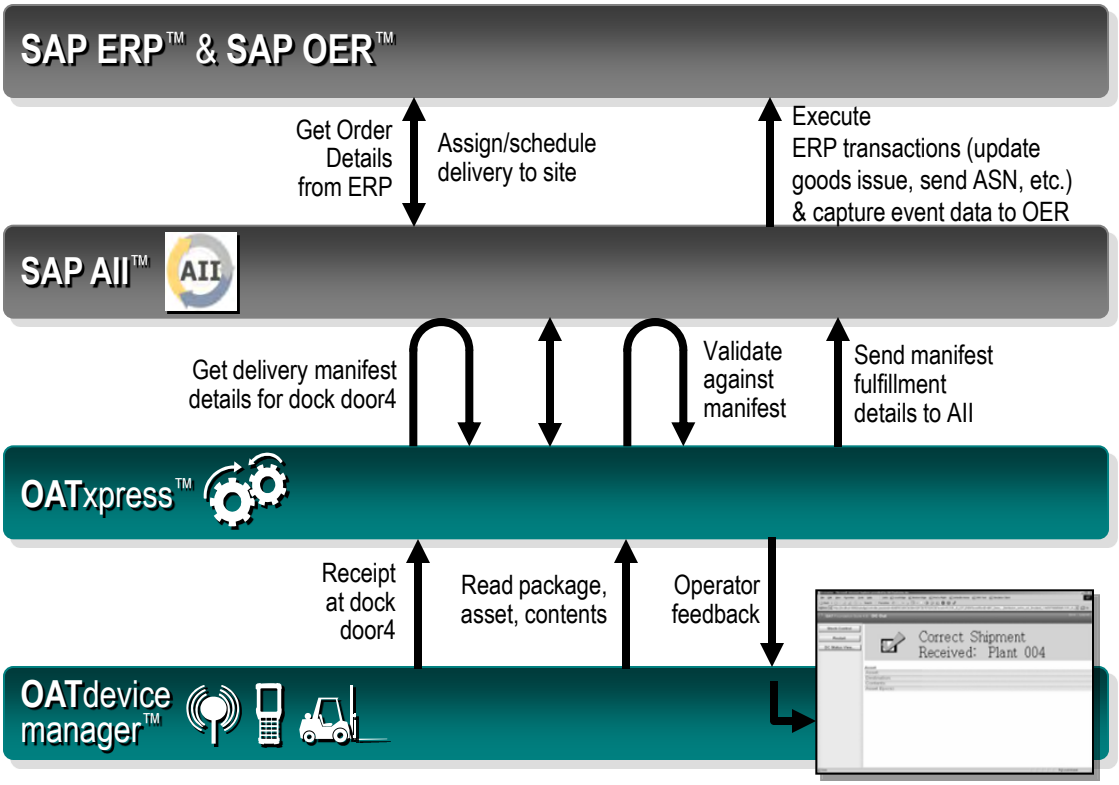
1. Receiving: Functional Process Flows

Receiving

Sample Process Flow

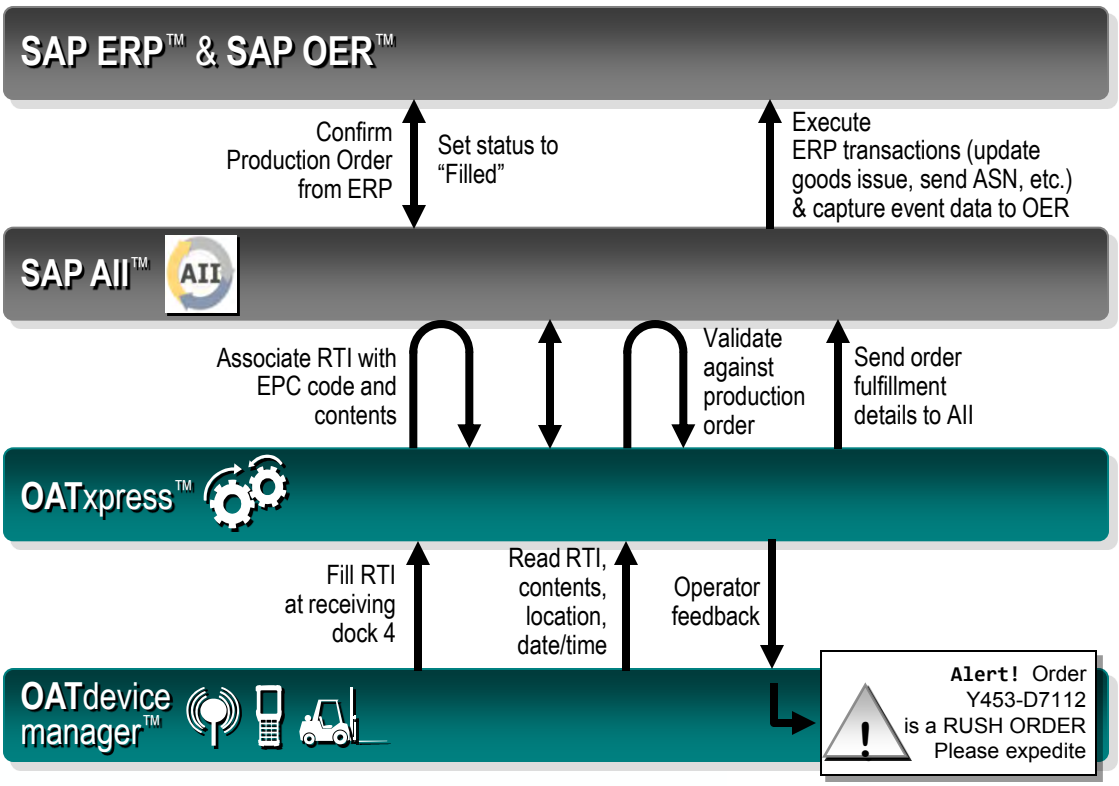
- Validating manifest details, ASN against physical shipments



RTI (Returnable Transport Item) Tracking

Sample Process Flow

- Validating order & manifest details against physical containers and their contents



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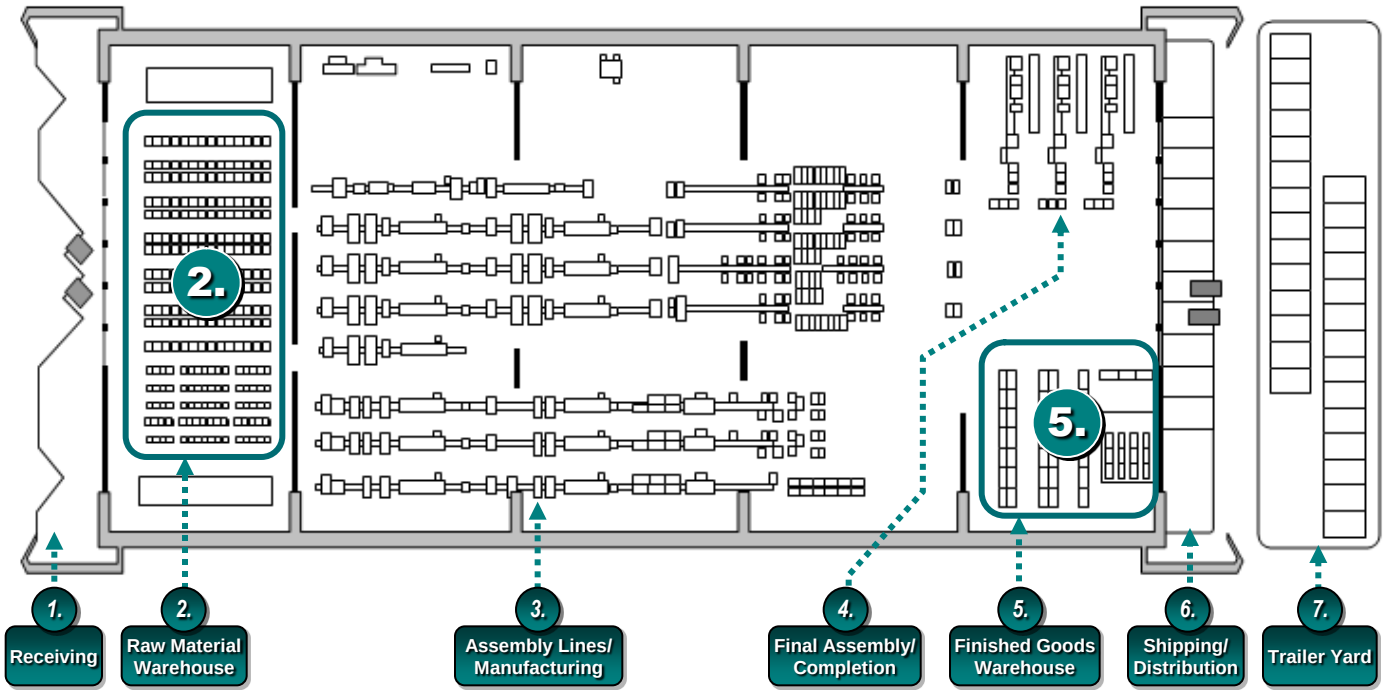
2. 5. Auto-ID Applications in Warehouses & Stores



Stock Taking/ Cycle Counting

Alert! Minimum Stock Level for Part AST7090 Auto-Replenishment Order in Process

Auto-ID Application:

- Automated stock taking and inventory updates

Web Services Integration Options for ERP & WMS Systems:

- Compare expected inventory with actual inventory
- Update inventory levels in enterprise systems and dashboards

Auto-ID Value Add:

- Faster, more frequent inventory counts, with no line-of-sight requirements
- More accurate item-level inventory

Kanban Management

Line-Side Replenishment

Alert! Minimum Stock Level Reached. Please Reorder

Auto-ID Application:

- Proactive inventory management and automatic replenishment

Web Services Integration Options for ERP & WMS Systems:

- Compare expected inventory with actual inventory
- Alert operator or automatically replenish when inventory levels are low

Auto-ID Value Add:

- More accurate inventory and replenishment
- Reduction in safety stock, labor costs
- Increased downstream productivity

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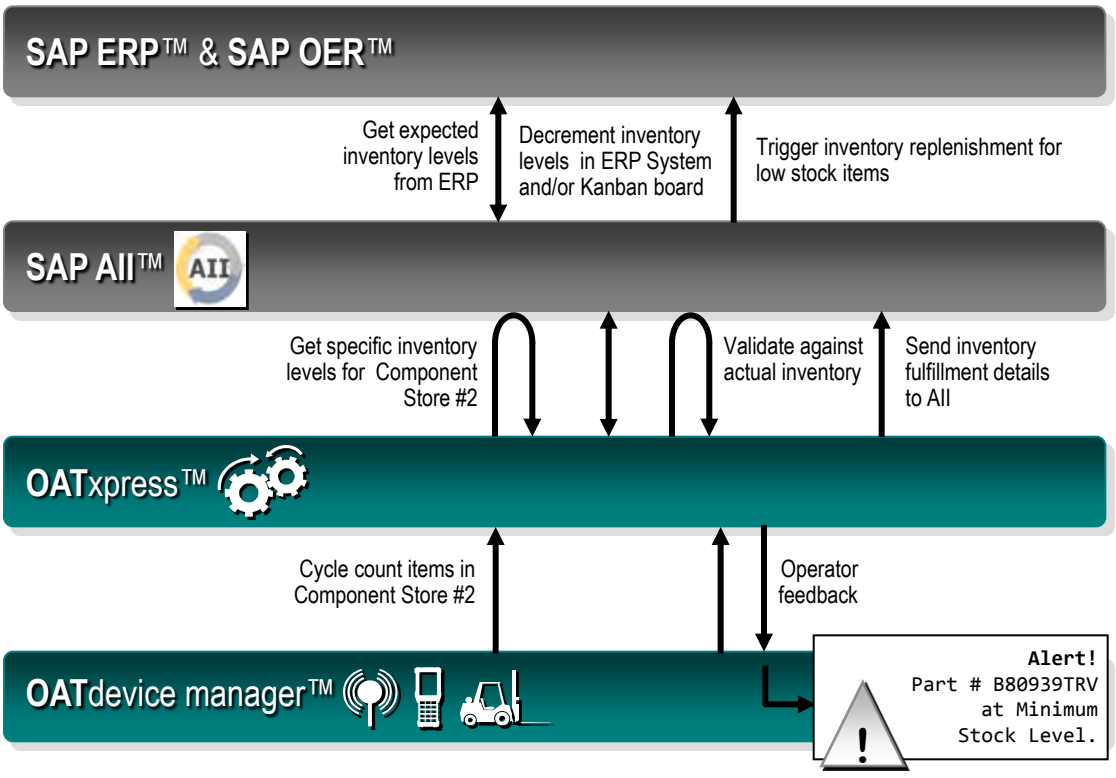
2. 5. Warehouses & Stores: Functional Process Flows

Stock-Taking Cycle Counting

Sample Process Flow

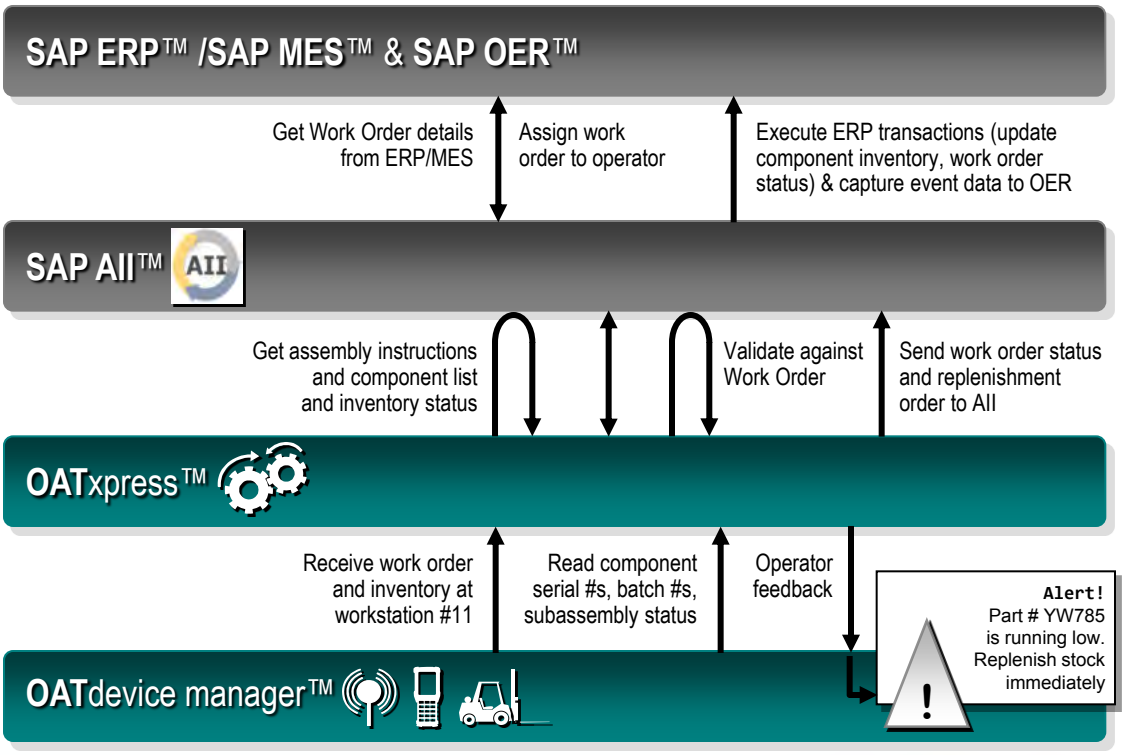
- Inventory Verification and Auto-Replenishment



Kanban Mgmt. Line-Side Replenishment

Sample Process Flow

- Verifying Component Inventory at Line-Side as Work Orders are assigned



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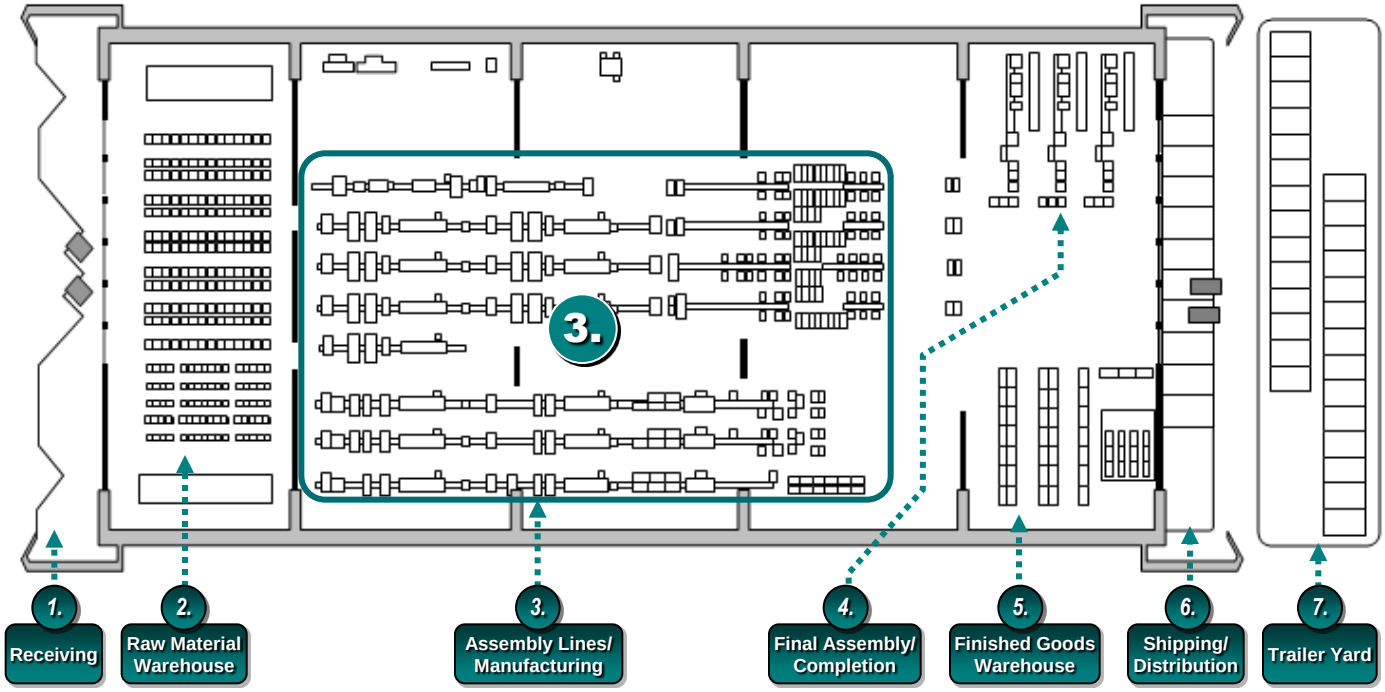
3. Auto-ID Applications in Assembly



Work in Process Tracking

Auto-ID Application:

- Real-time tracking of manufacturing work orders, component parts and subassemblies

Web Services Integration Options for ERP, MES & WMS Systems:

- Update inventory levels when component parts are assigned to new work orders
- Alert operator or replenish part store when inventory levels fall below a pre-defined threshold

Auto-ID Value Add:

- 100% automated tracking and reliable identification of work orders through the manufacturing process
- Reduction in safety stock and costly reusable containers
- Help prevent missing orders and rework, increasing throughput
- Audit trail of components, batch numbers for finished products

Tool Tracking

Auto-ID Application:

- Real-time tracking of tools and specialized equipment

Web Services Integration Options for ERP, MES & WMS Systems:

- Verify and update tool location and maintenance records when tools are checked in and out

Auto-ID Value Add:

- Automated inventory management
- Reduction in tool spares
- Fewer lost tools, increasing manufacturing uptime
- Audit trail of tool usage and calibration simplifies compliance

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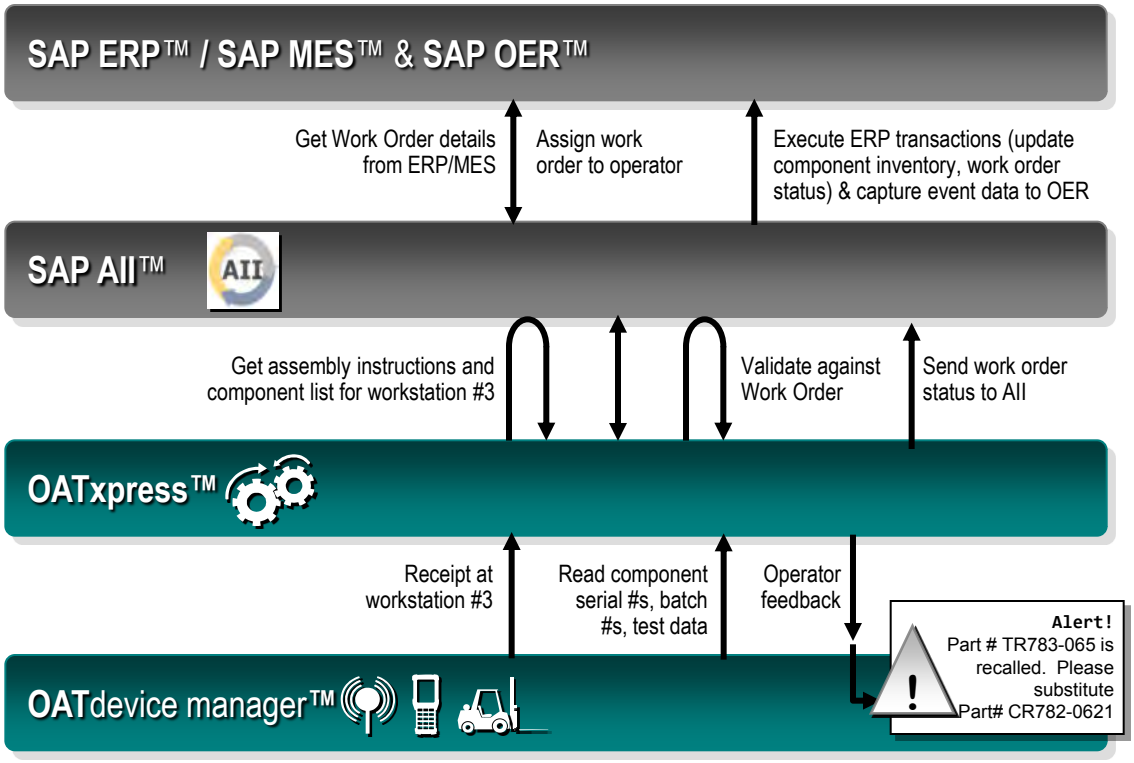
3. Assembly: Functional Process Flows

Work-in-Process Tracking

Sample Process Flow

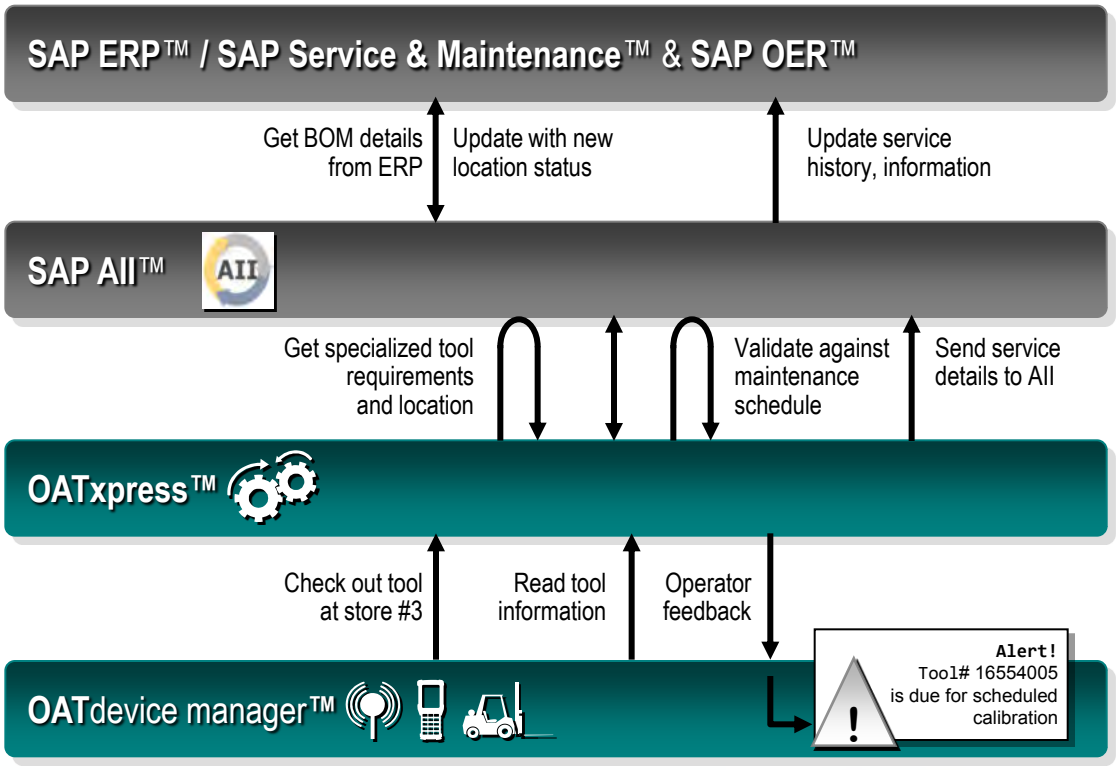
- Verifying Components as they are Assigned to Work Orders



Tool Tracking

Sample Process Flow

- Manage tool stores and calibration schedule



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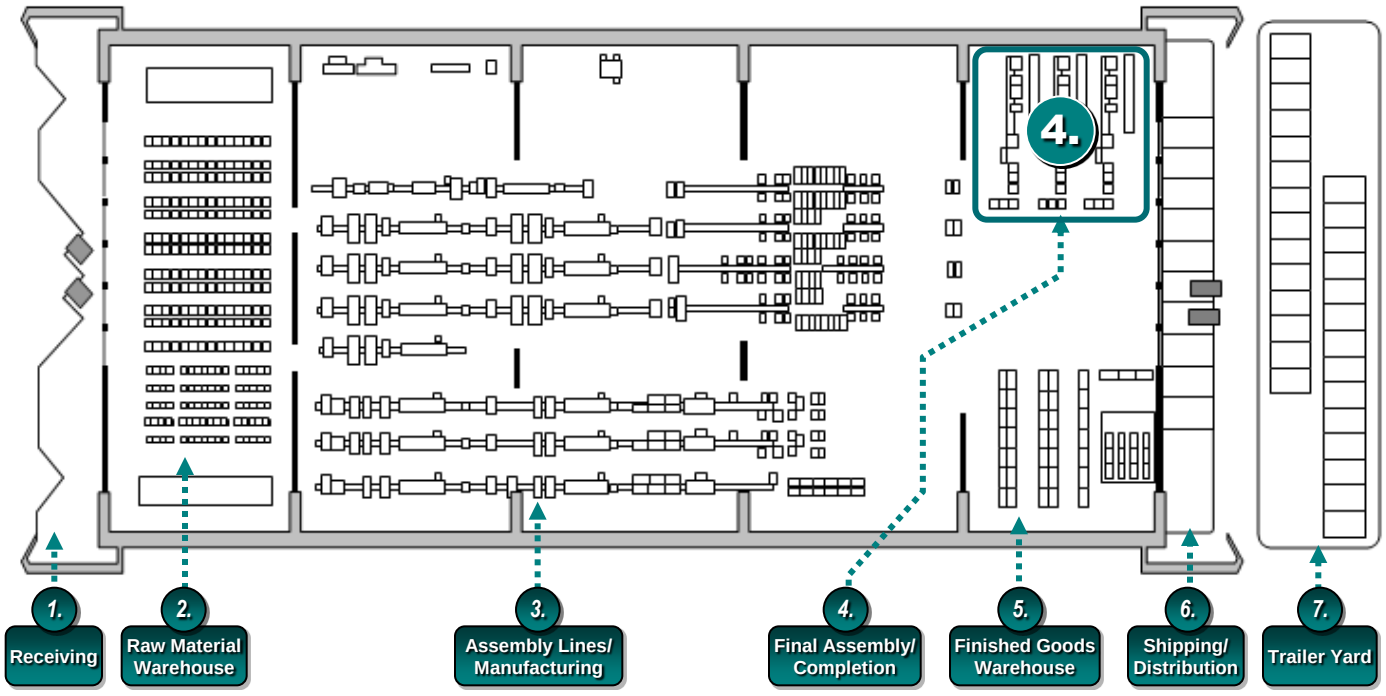
4. Auto-ID Applications in Final Assembly / Completion



Audit & Inspection

Auto-ID Application:

- Real-time tracking of quality assurance activities and maintenance schedules

Web Services Integration Options for ERP Systems:

- Confirm required components are included in each finished product or custom order
- Alert staff if a specific component is missing, is near or past expiration date, or requires maintenance
- Verify and update maintenance records when products are serviced

Auto-ID Value Add:

- Faster final inspection process
- Fewer spare components required
- Audit trail simplifies compliance and reverse logistics

Order Tracking

Auto-ID Application:

- Track orders & their individual items from location to location

Web Services Integration Options for ERP & WMS Systems:

- Pull order details to track supplier, end customer, final destination & item numbers
- Alert staff with a visual or audible alarm when an order Is received at the wrong location, or needs to be expedited

Auto-ID Value Add:

- Real-time order status
- Reduce manual labor in confirmation, verification & search activities

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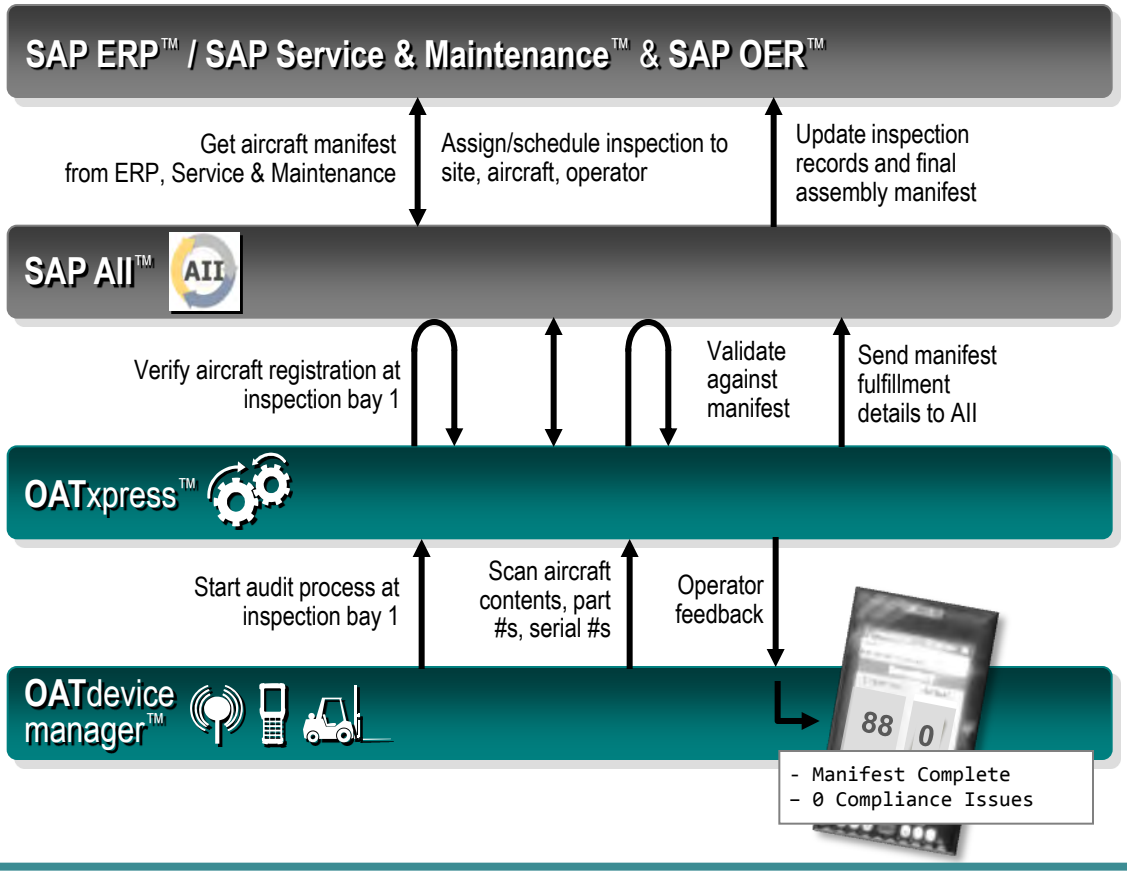
4. Final Assembly & Completion: Functional Process Flows

Audit & Regulation

Sample Process Flow

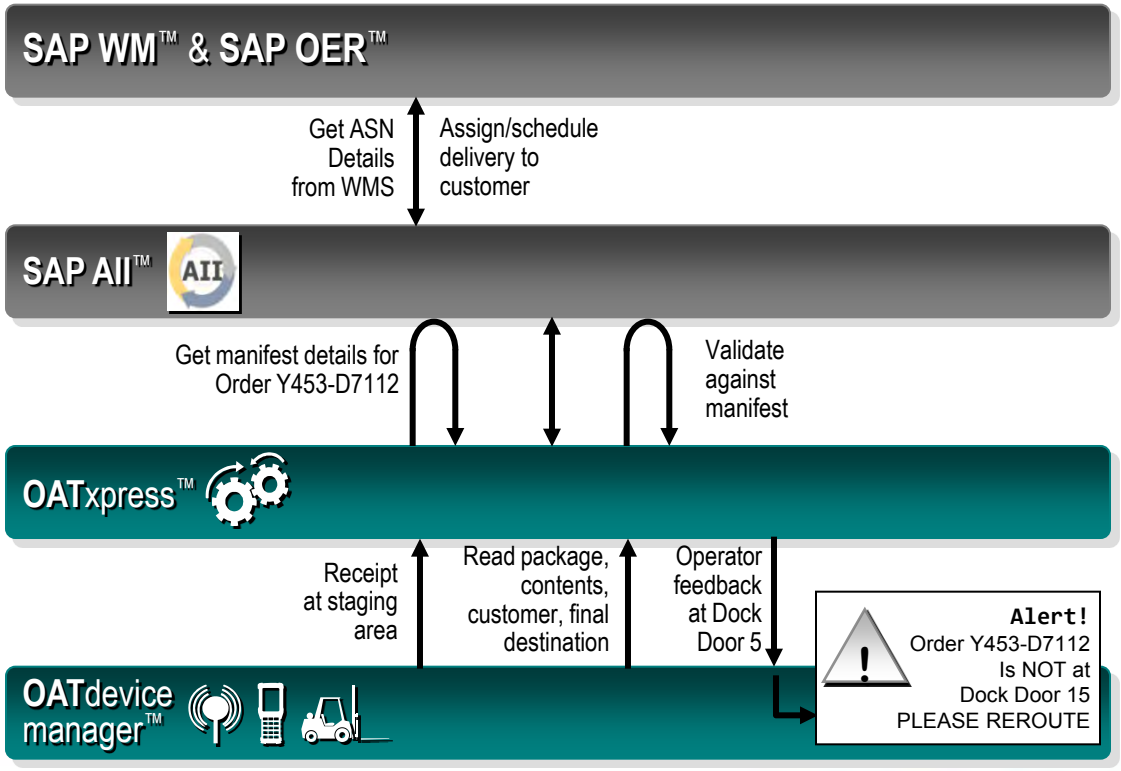
- Confirm required components are on board aircraft



Order Tracking

Sample Process Flow

- Validate physical items against ASN & customer order to track supplier, end customer, final destination and item numbers



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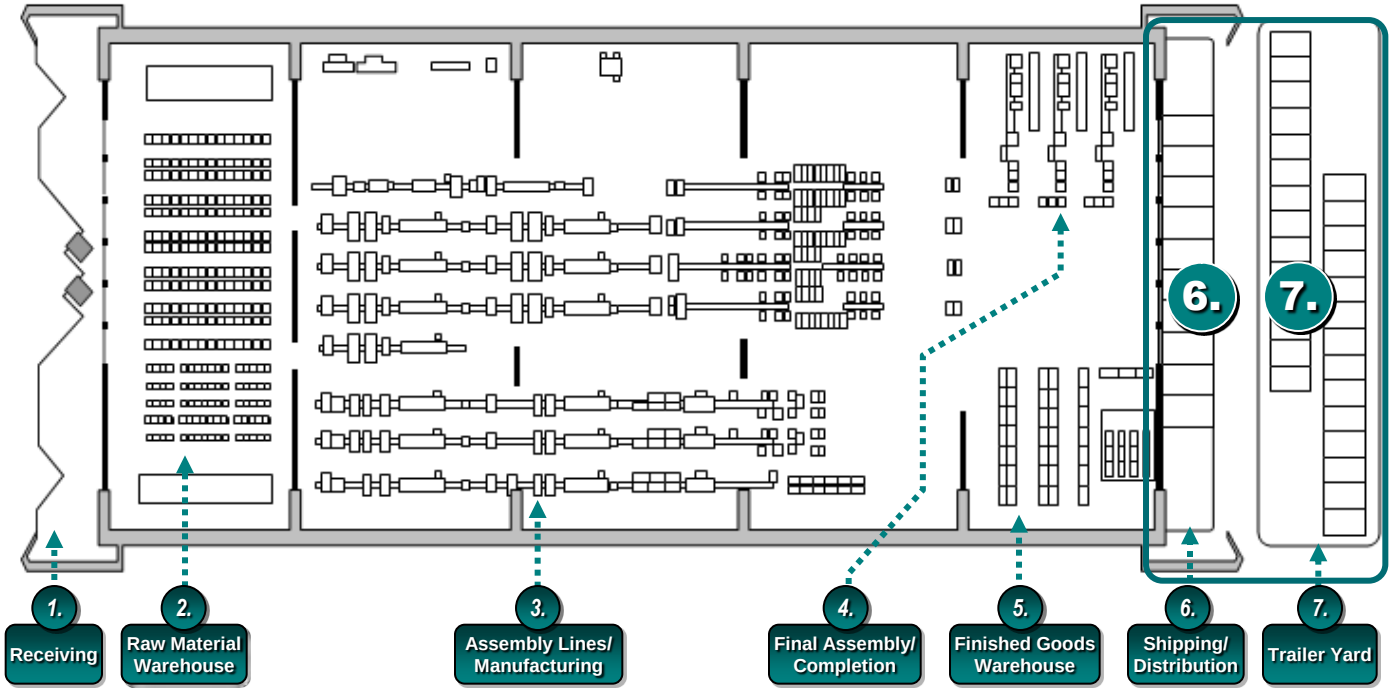
6. 7. Auto-ID Applications in Distribution



Shipping

Auto-ID Applications:

- Automate Advanced Shipping Notices (ASNs)
- Verify outgoing orders
- Automate tracking of delivery vehicles and associated orders

Web Services Integration Options for ERP & WMS Systems:

- Expedite rush orders
- Verify individual items with customer orders
- Verify final destination, carrier and dock door
- Flag rush orders by comparing order number & special instructions

Auto-ID Value Add:

- 100% automated tracking & reliable confirmation of orders as they are shipped
- Significantly reduce error rates and costly correction processes
- Focus staff on exception handling vs. administrative paperwork

Yard Management

Auto-ID Application:

- Automate tracking and identification of trailers and their contents as they arrive, exit or move within a laydown yard

Web Services Integration Options for ERP & WMS Systems:

- Compare trailer contents with manifests, ASNs and work orders
- Update inventory and place replenishment orders as needed

Auto-ID Value Add:

- Significantly reduce error rates, correction processes and 3rd party service costs
- Minimize driver and trailer detention time
- Minimize the need for extra trailers, safety stock and expedite costs

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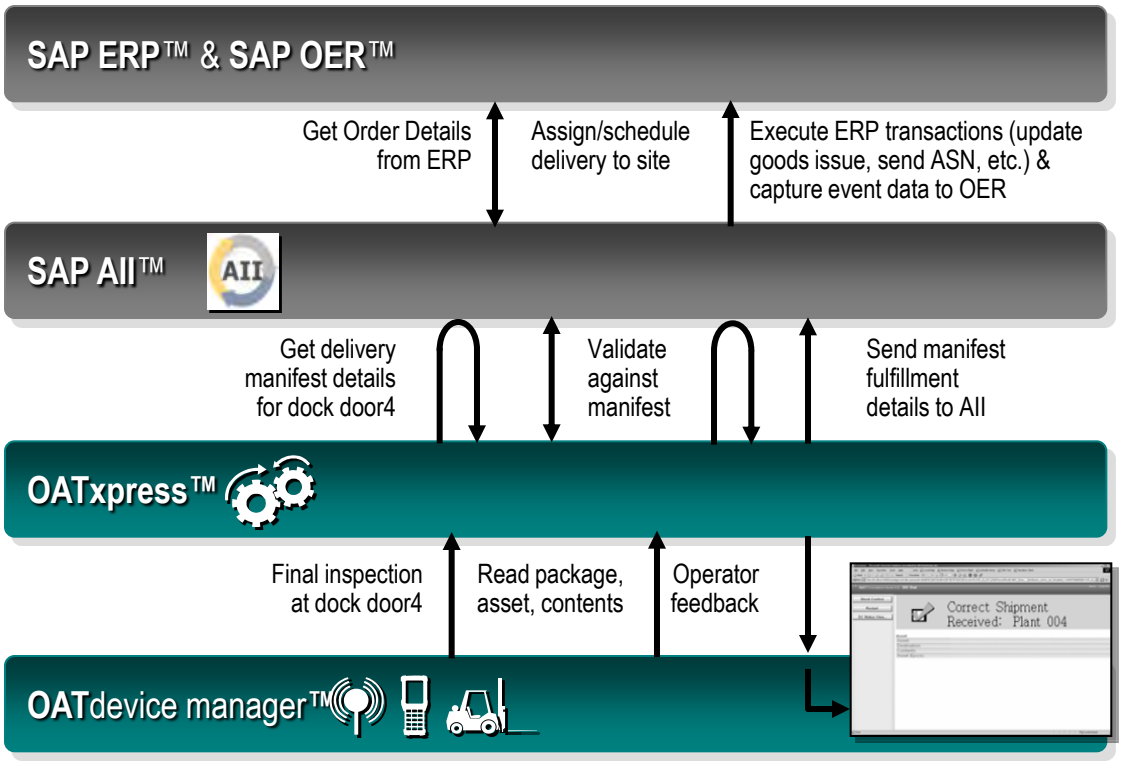
6. 7. Distribution: Functional Process Flows

Shipping

Sample Process Flow

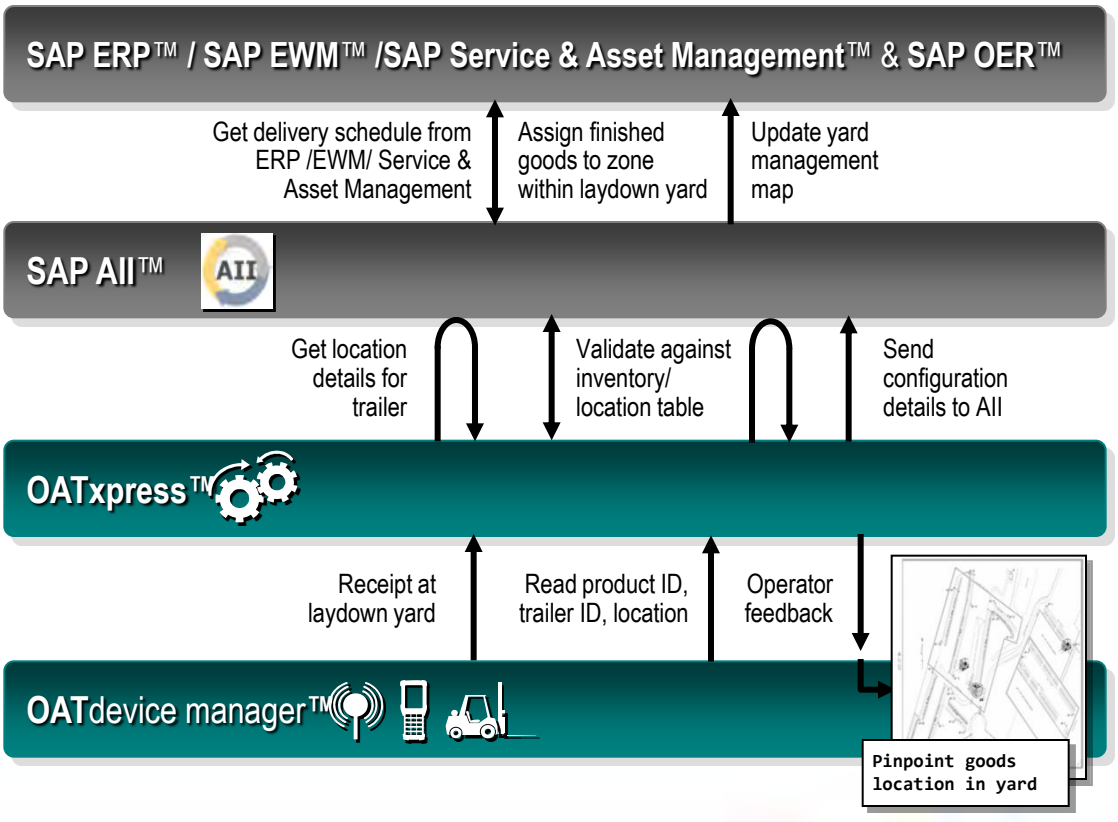
- Verifying outgoing orders, validating Packages against ASN



Yard Management

Sample Process Flow

- Verifying Finished Goods Location and Maintenance during Check-In/ Check-Out Process



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Leveraging Your Production Systems

	Auto-ID Integration Examples
Enterprise Resource Planning (ERP) Systems	• Verify physical components against bill of materials • Trigger inventory replenishment when low stock is detected
Manufacturing Execution Systems (MES)	• Track physical products at each stage of testing & assembly • Confirm that custom orders match manifest • Locate missing parts & equipment
Warehouse Management Systems (WMS)	• Verify manifest & destination for outgoing shipments • Prevent mis-shipments with visual/audible alarms • Track finished goods inventory
Maintenance & Repair (MRO) Systems	• Verify parts & equipment against service orders • Monitor installation & maintenance history • Locate recalled or expired service parts
Business Activity Monitoring (BAM) Dashboards	• Automatically update dashboards to reflect: – Physical inventory levels – Orders shipped – Manufacturing efficiency

ERP, MES, WMS, MRO systems & business activity dashboards are the lifeblood of many manufacturing and services organizations. Auto-ID-enabling these production systems incorporates real-time production and delivery status into day-to-day business metrics. This enables staff to uncover and address process errors before they impact production schedules, customer orders and downtime.

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Auto-ID-enabling the Value Chain

	1. Supply Chain	2. Logistics & Distribution	3. Manufacturing / Assembly Lines	4. Maintenance & Reverse Logistics
Items to Track:	• Component Parts • Supplier • Batch Number • Due Date	• Carrier • Order Number • Order Contents • Final Destination • Due Date	• Work-in-Process • Tools and Equipment • Test Results • Custom Order Details	• Service History • Replacement Parts • Part Expiration Date • Service Due Date
Processes to Enable:	Sourcing Shipping/ Receiving	Shipping/Receiving Yard Management Transportation	Shipping/Receiving Line-side Replenishment Assembly Asset Tracking Tool Tracking	Line-side Maintenance Reverse Logistics
Enterprise Systems to Enable	ERP MMS WMS	ERP WMS	ERP MMS MES WMS	Field Service Enterprise Asset Management
Infrastructure to Enable	Barcode, RFID, CMBs, Wi-Fi	Barcode, RFID, Wi-Fi, RTLS, GPS	Barcode, RFID, CMBs, Wi-Fi, PLCs, Stack Lights & other sensors	Barcode, RFID, CMBs, Wi-Fi, RTLS, GPS
Quantifying Value:	Increased Forecast Accuracy Reduced Safety Stock Reduced Expedite Costs	Streamlined Shipping Costs Increased Order Accuracy & Customer Satisfaction	Improved Product Quality, Fewer Returns Reduced Downtime Reduced Scrap & Rework Reduced Expedite Costs	Increased Time in Service Fewer Audits & Regulatory Fines Reduced Maintenance and Repair Costs

Beyond the four walls of each manufacturing facility, there are common operational challenges in supply chain, logistics and maintenance processes that can be addressed with real-time visibility.

By Auto-ID-enabling existing applications and implementing Auto-ID packaged solutions, Manufacturers can reduce deployment time and accelerate the return on their technology investment.

Case Study:
Auto-ID-enabled Tractor-Trailer Monitoring

A leading electronics manufacturer with six North American production facilities realized over 250% ROI in under 12 months by recovering lost material, reducing excess inventory and labor costs with OAT Asset Tracking software and Wi-Fi tagged delivery vehicles.

The most significant cost savings came from automating and error proofing manifesting, loading and unloading processes, along with eliminating non-value added tasks such as searching for missing orders and components.

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About OATSystems

OATSystems has helped more than 100 companies take advantage of Auto-ID to streamline operations, enhance customer satisfaction and increase bottom line results. OAT is the recognized Auto-ID solution leader with software that empowers businesses to achieve both cost savings and competitive advantage. As a pioneer in the development of Auto-ID technology, OAT has been setting the standard in RFID for nearly a decade and has provided real-time enabled solutions to leading companies such as Airbus, Chevron, Best Buy, Tesco, Kimberly-Clark, Cephalon, Tyco Electronics, Shell and others.

Contact OATSystems today at www.oatsystems.com or 781-907-6100 and get ready to take control of your operations.

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