

JDA Material Handling Integration

Automation from A to Z



In over three decades of helping leading companies around the world drive greater efficiency, productivity and profitability in their fulfillment operations, JDA Software has integrated its JDA Warehouse Management system (WMS) to virtually every major type of automated material handling equipment (MHE) and vendor—from ABB to Zebra. JDA has integrated to hundreds of equipment types and manufacturers at thousands of customer sites—from ADS to Zoto's— with one result—driving best-practice execution flows between our WMS and the MHE.

JDA's integration approach involves a partnership between JDA, the customer and the MHE vendor to produce a joint operational solution capable of delivering improved efficiency and cost savings to support a clear ROI strategy for the customer. The team jointly ensures the integration workflows are properly defined to meet the customer's requirements and that best practice approaches are used. The team creates the proper monitoring, controls and milestones for each project to intelligently guide the process. JDA has long-standing partnerships with leading MHE vendors to help facilitate these outcomes.

Integration Options

No two integrations are alike, but they do consistently fall into one of two categories—black-box and directed. As the name implies, a black-box integration involves handing off a request to the MHE and receiving a response without controlling how the MHE executes the request. An example would be for the WMS to make a pick request to an automated storage and retrieval system (AS/RS). While the WMS remains the system of record for the inventory, it doesn't care where the AS/RS stores the inventory within its grid or how it retrieves it. In black-box integrations like this, the WMS typically communicates through a warehouse control system (WCS), although this is not required, for sub-second decision-making. JDA's WMS synchronizes all activities and maximizes asset utilization. It also has intelligent exception handling and embedded analytics to keep any disruptions to a minimum and help analyze deviations.

In directed integration, JDA's WMS directly controls all workflows, with the MHE treated like any other storage location. The WMS not only is the system of record for all inventory, it also knows exactly where each inventory item is within the MHE. In directed integration, the WMS workflows may go through a WCS or go direct to the MHE. The WMS directly manages such actions as put-away, replenishment, picking and cycle counting. The WMS directly controls all inventory movement throughout the MHE and facility under this approach.

The Integration Process

Whether using a black-box or direct integration strategy, the key to success is a joint implementation approach between JDA, the customer and the MHE vendor. They jointly design an integration strategy that best meets the customer's environment and business processing requirements. This includes the design of the most efficient information flows, provisions for exception handling, and adherence to best practices for data interchange.

The team jointly examines JDA's standard automation APIs and decides if any deviation is needed. Processes for monitoring integration flows are developed and control parameters are defined. Milestones for measuring project completion are also created along with metrics for measuring project success and ROI. The joint team coordinates development, testing, commissioning and go-live of the integration using the monitors, controls and milestones previously agreed upon. Integration success and ROI are measured using the agreed upon metrics and changes can be made, if needed. The result is a smooth, efficient and metrics-based integration process that drives costs and total cost of ownership down while driving ROI up.





Integration Technology

The majority of interfaces to MHE today utilize Ethernet and TCP/IP. The principal reason for this approach is:

- Speed and flexibility of the Ethernet connection
- Decreasing cost of networking components
- Support for open systems by automation vendors
- Ease of long term software and hardware support

These implementations include communication via a number of mechanisms including:

- Near real time inter-process messages
- File transfers - rcp or ftp
- Shared data – NFT

In addition, JDA has provided direct serial connections and other communication interfaces to devices such as:

- Rockwell Automation Pyramid Integrators
- Rockwell Automation KF2 modules
- In-line scanners
- In-line scales
- Sizers
- Label applicators

JDA WMS Embeds Monitoring and Diagnostics

JDA's Integrator EAI framework has been designed to streamline the process of data mapping and manage "events" and responses associated with transactional exchange between applications. It provides an intelligent, configurable interface tool that handles variable or fixed data formats. Integrator is an integral part of JDA's services-oriented architecture (SOA). It enables customers to personalize workflows to address the specific data exchange nuances of their work processes and substantially reduces the cost and time associated with cross-application integration.

In systems implemented by JDA involving MHE, JDA's Warehouse Management system accounts for all inventory across the building or campus. For example, in a Pick-to-Light system, the WMS will retain responsibility for accounting of all inventories by location within the Pick-to-Light controlled locations. When product movement out of an automated subsystem is required, the WMS will pass to the automation controller the location from which inventory is to be picked and, if applicable, the quantity.

With sortation systems, the WMS passes a divert list to the sortation controller containing, at a minimum, the carton license plate and the divert destination. The sortation controller then passes acknowledgment of successful divert back to the WMS. Where this is not possible, the WMS can be interfaced directly to in-line scanners on the conveyor system, and divert decisions can be made dynamically. In this case there is more processing responsibility on the WMS, and response time could be an issue, especially in high-speed conveyor systems.

At the communications level, an ACK/NAK protocol is used to assure the arrival and processing of messages between the WMS and device controllers. The WMS is generally isolated from the Level 2 controllers, which are responsible for the communication with PLCs, relays, or other devices. In the past, JDA systems have had to interface with these low level devices. At present, it is more common for controllers to communicate with these devices. The transition has been made by most MHE suppliers from PLC controlled devices to microprocessor based controllers.

Integration in Action

JDA has successfully integrated its WMS to virtually all major MHE vendor systems for hundreds of customers at thousands of sites around the world. The following are just two quick samples of how these integrations have helped JDA's customers to improve operations, reduce costs and increase service levels.

American Standard

JDA's Warehouse Management was implemented at the American Standard distribution center interfaced to an automated control system that manages all routing and communicates with the PLCs. The American Standard operation includes six Dematic cranes, six conveyors, two transfer cars and 150 automated pick stations.

When an order comes in, it is processed by the host sales application and then interfaced to the JDA Warehouse Management system. JDA Warehouse Management reconciles the order with existing stock and delivery status and feeds the request into a Dematic automated picking system in the mass storage area.

JDA Warehouse Management defines products to be picked in two ways: precisely by an individual high-bay pick face, or generally by product identity and specification. The Dematic system plots the most efficient path for picking the desired product so the cranes can deliver the pallet or item to central picking locations. Operators then come to these central picking locations where they collect the items and move them by hand or fork truck to the appropriate loading area.

Following the installation of the JDA WMS, the site achieved a steady increase in throughput and now handles a 15 percent increase in workload with the same number of resources. American Standard has implemented the system in a number of sites with interfaces to the host SAP system.





CooperVision – Global multi-site, multi-product roll out

CooperVision is the second largest global manufacturer of contact lenses, with facilities in eight countries worldwide. The company chose to implement JDA solutions globally at their distribution centers in three locations over a period of three years – JDA Warehouse Management (WMS) and JDA Labor Management (LMS) at West Henrietta, New York and JDA WMS at Delta Park, UK and Liege, Belgium.

The first site went live in New York, the largest and most complex DC, where an average of 64,000 order lines are received per day. CooperVision chose both WMS and LMS to interface with their WCS in order to manage the workflow of some 118,000 active SKUs in 210,000 storage locations. Voice and RF technology facilitated full pallet and case picking for wholesale and retail stores, as well as individual pick & pack for direct customer delivery.

The global multi-site roll-out required close collaboration between the joint JDA and CooperVision project teams in the US and Europe. The US, UK and Belgium teams worked together with the MHE vendors throughout the phases of each project utilizing the knowledge and experience they gained to improve the implementation process. The UK site went live in a phased approach and the Belgium site followed.

The processes managed by JDA systems are similar in the three DCs. All CooperVision sites use lot control specific to their requirements. Outbound

items require validation checks at the pack station for shelf life and held lots. Expiry date validation is performed during the inbound process for parts that are stored within the Automatic Storage and Retrieval System (AS/RS).

JDA Integrator was crucial to the success of each project as it interfaced with the company's ERP system and the WCS, which in turn manages multiple types of material handling equipment, including carousel conveyors, A-frame racking, the P2L controller and voice picking.

All of the facilities run on Windows and the SQL servers that are centrally located in the US. In addition, centralized system administration manages the process for all three sites.

The JDA MHE Integration Advantage

JDA has the functional and technical capabilities to intimately integrate and drive automation solutions to complement best practice execution flows within the JDA WMS. With over three decades of experience integrating to virtually every major MHE vendor from A to Z for hundreds of customers and thousands of sites across North and South America, Europe, Africa and Asia Pacific, JDA has unmatched experience and expertise that helps ensure not only integration success, but also real ROI. That is the JDA MHE integration advantage no other WMS vendor can match.

About JDA Software Group, Inc.

At JDA, we're fearless leaders. We're the leading provider of end-to-end, integrated retail and supply chain planning and execution solutions for more than 4,000 customers worldwide. Our unique solutions empower our clients to achieve more by optimizing costs, increasing revenue and reducing time to value so they can always deliver on their customer promises.

Using JDA, you can plan to deliver.

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