

13 Considerations for your warehouse management system

Every warehouse is unique and faced with ever-changing requirements. Most warehouse management systems (WMS) available today cover the basic warehouse functions, but do they effectively address your specific needs? Here are some things you should consider in your WMS selection process.

Warehouse inventory volumes continue to escalate requiring more shelf space or better utilization of existing facility square footage. And with volume increases, operational workflows and processes have to quickly change to keep up, driving increased handling costs, equipment costs, and personnel costs. Selection of the right warehouse management system can be critical to efficiently managing goods from receipt, to storage location, to pick-and-pack, to shipment, and to control or better contain burgeoning costs.

Here are some basic things to consider while exploring the selection of a warehouse management system. It shows how PTC's MOVE WMS goes a step further in addressing some of the critical aspects of warehouse management.

13 considerations for effective warehouse management:

- 1. Operational flexibility (extensibility)** – As your business grows, changes to operational flow will increase. Many WMS products actually require changes to source code to effect the changes needed to keep pace with your ever-changing requirements. The MOVE Rules Engine provides the ability to change process flows for complex operations quickly and without source code changes to the system.

With MOVE, business rules are not hard-coded into the system but implemented via a “rules engine” repository making it much easier and less expensive to configure to your exact operational specifications. One prospect reported that, having selected another warehouse software package, the implementation and roll-out cycle of their warehouse system took significantly longer than estimated by their vendor, mostly due to hard-coded software changes.

A \$1.8B retailer in the furniture and decorative home furnishings market selected MOVE for their distribution center operations and was able to implement their ecommerce business as part of their DC operation without any impact on their existing operation. MOVE's flexibility let them configure their eCommerce business together with their current operation using the same instance of MOVE software within a 3-month implementation window.

- 2. Operation tasks** – Some warehouse systems have pre-defined processes that require users to follow each step of the process even if not required, needlessly wasting valuable time. In some cases, where process definition and capture is available, tasks are hard to implement. With MOVE, Task Type specifications and implementation are easily established enabling our clients to perform only the tasks they need for specific order types. For example, a special order might only require Pick and Ship processes while another order might require Pick/Pack/Consolidate/Load and Ship processes. MOVE helps improve labor productivity & process efficiency by helping minimize touch points and reducing time-wasting and unneeded processes. With MOVE's Directed Task capability order fulfillment accuracy is increased while decreasing order fulfillment time and cost.
- 3. Space utilization** – Space utilization is of paramount importance to the efficiency and cost containment for any active warehouse. A competent warehouse system must be able to help the operation effectively utilize every possible foot of usable space. The MOVE Rules Engine can increase space utilization by consolidating product where appropriate. Users can configure the system during the inbound process to consolidate by SKU, by like products or to otherwise find an empty location. The MOVE Rule Engine, can help prevent over-stocking products, taking into consideration the location's weight capacity, dimensions, and volumes.



- 4. Inventory management and attribute tracking** – Inventory accuracy is crucial to your operations ability to provide on-time and accurate shipments to end customers. The bane of any warehouse pick operation is to send a picker to a location with insufficient or incorrect inventory. Inventory discrepancies can cause overstocking of goods along with associated financial impacts or can create backorder issues impacting customer satisfaction.

Accuracy and real time visibility: MOVE keeps track of inventory from receiving to shipping with pin-point visibility during every step of the process. For instance, one of MOVE's users in the Commercial Aviation industry found that with MOVE's inventory visibility and warehouse location level, perpetual inventory accuracy at the ERP system was significantly improved. The direct benefits were increased order fill rate and reduced inventory carrying cost.

Attribute tracking: A user in the medical industry found that with MOVE's inventory attribute maintenance and tracking they could capture single and multi-level attributes such as LOT_ID, Expiry Date, and Branch (Business Unit) to satisfy FDA regulations and certification requirements.

Cycle counting vs. physical inventory process: MOVE users are enabled to perform their annual cycle count process while the system is in operation. A major provider of automotive parts had to shut down their facilities twice a year to perform cycle counts. They reduce their physical inventory cycle count to once a year and no longer have to shut down their facilities after implementing MOVE.

- 5. Real time order tracking and fill rate** – Warehouse operations often struggle with predictably forecasting delivery. An often-used guideline is for managers to "under-promise" and over-deliver. Predictable and dependable delivery is an ever-moving target requiring on-the-spot assessment and real-time tracking.

MOVE provides a holistic view of all the tasks (pending and completed) for a specific wave. Operation Managers can check the status of all orders that have to be shipped within the next couple of hours, giving them immediate visibility and tracking of orders in process.

Using MOVE, a major aircraft manufacturer in the civil avionics industry uses MOVE's real time Order Tracking facility to manage order line items as aircraft components move from stock room locations to the assembly line. Additionally, thanks to this feature in MOVE a large hardware supplier to the retail market is able to promise two-hour response time for their most critical orders. Their commitment to clients is same-day shipping for high priority orders.

6. **Shipping accuracy** - Shipping the right product the first time, improves customer satisfaction while reducing costs for handling returned items and re-delivery. MOVE's RF Picking Module directs the users to specific locations for picking specific products instead of paper based picking thereby helping to eliminate picking the wrong products. Additionally, MOVE packing consolidation features allow users to pack multiple parts into one box for a specific order and consolidate them to a pallet based on the "Ship To" address and helping MOVE users to potentially save significantly on shipment costs.
7. **Automation** - A majority of modern warehouse operations can benefit greatly from automation to help expedite processes and help physically move product within the warehouse. These include Pick-To-Light, Voice, and Carousel systems for high speed picking areas and conveyor systems for product transition from one area to another. MOVE provides for these facilities via a built-in Material Handling Equipment (MHE) interface, providing easy configuration of, and use with third party automation facilities.

MOVE has helped clients to improve their productivity by 25% with voice picking automation. One large retailer in the automotive parts industry

uses MOVE's MHE integration with an Automated Storage and Retrieval System (ASRS) to improve their location capacity. In this case, the AS/RS system improved their location capacities, using narrower aisles (i.e. 7' aisle vs. 12' aisles) thereby increasing warehouse space by 40%.

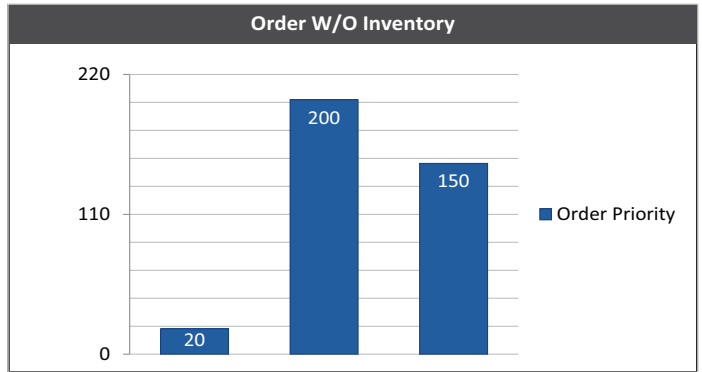
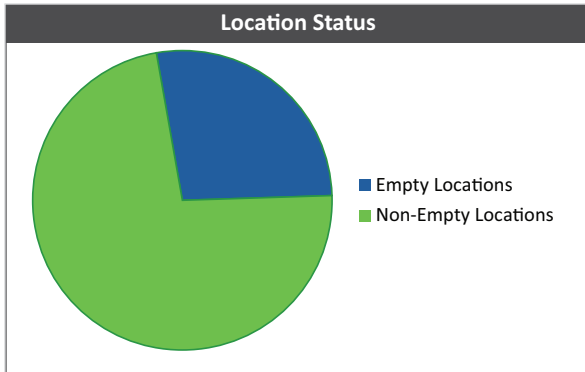


8. **Management visibility** - The Internet of Things (IoT) is reshaping the industry in ways not previously envisioned, and puts more operational visibility at the fingertips of management than otherwise possible. A key feature of any modern warehouse management systems is the ability to effectively support a competent IoT platform. And, you should look for a vendor that is intimately acquainted with IoT technology to help with designing and implementing applicable processes to take full advantage of the power that IoT puts into the hands of your warehouse personnel and management team.

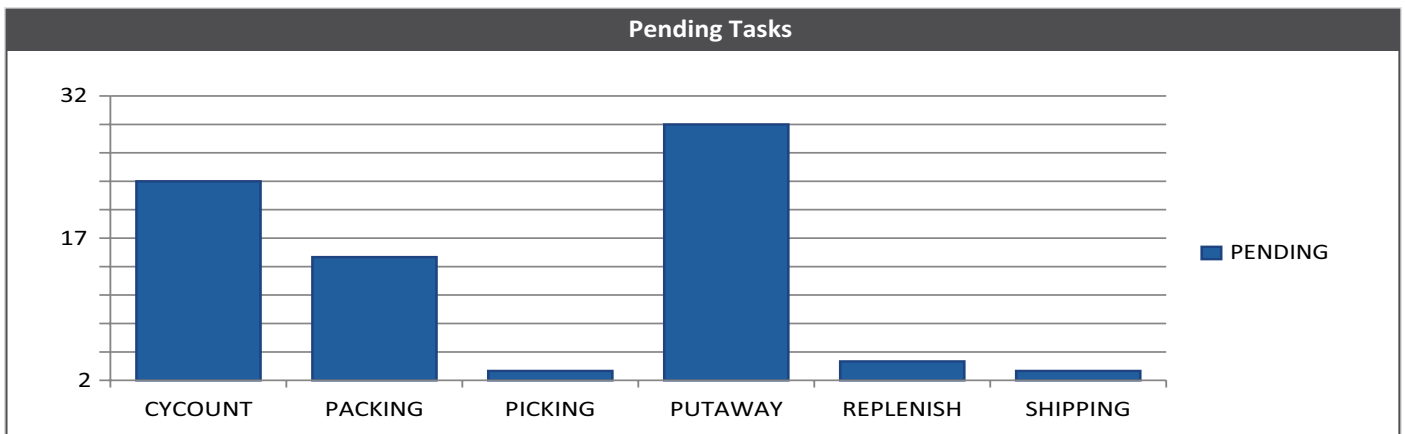
As a leading supplier of IoT technology, PTC understands the power of real-time visibility to help streamline operations. And the MOVE team at PTC is in a unique position to not only understand IoT but to help you fully utilize its power in management of your warehouse. For example, MOVE had been demonstrated together with PTC's ThingWorx IoT platform.

The following mashup screens provide executive and operational dashboards to higher management:

Pending Tasks: Presents all the open tasks at the DC level



Managerial Dashboard – Provides view of open and populated locations as well as high priority orders w/o available inventory



9. PLM visibility & QA Inspection Process –

Wouldn't it be nice to have product-specific data access in the warehouse tied to the design system, and a feed-back loop from your warehouse to the product design activities within your organization? With the proper IoT connectivity, design teams can see, for instance how vendors are performing in terms of order fulfillment accuracy, on-time and at-the-right-time delivery, and quality of goods and packaging delivery. Armed with this kind of information, better decisions can be made about supplier selection and visibility into product quality issues can happen sooner in the supply cycle.

MOVE has been shown to quickly and efficiently connect to PLM systems such as PTC's FlexPLM via the PTC ThingWorx IoT platform. With IoT connectivity MOVE can display product images at the warehouse directly from the PLM system, enable warehouse-located Quality Inspection Processes to be captured directly from the design engineers, Accept or Reject delivery samples and release or fail the samples and respective inventory, all while providing visible to anyone in the supply chain with access rights.

Using an IoT platform, item images can be provided and cross-tied between the WMS and PLM systems to aid incoming inspection accuracy and quality assurance checks.

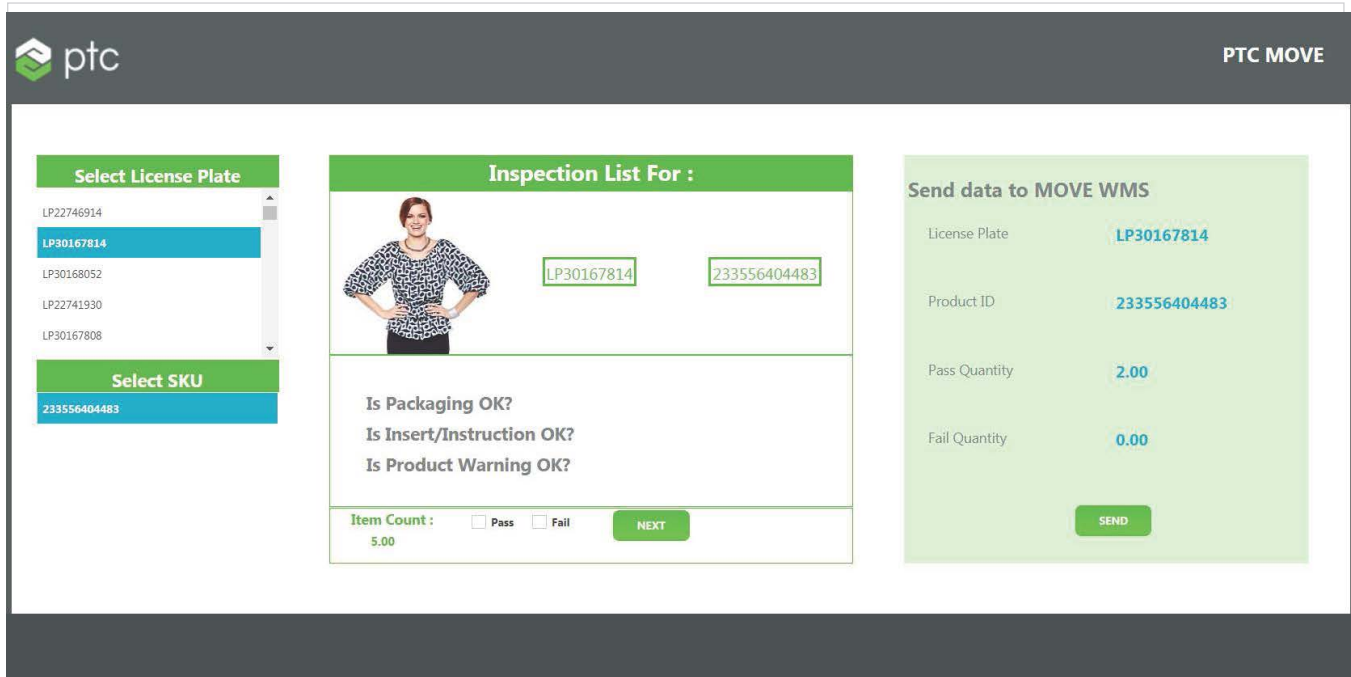


Figure 1 – MOVE + FlexPLM IoT Mashup



Figure 2 – A New Vision for Connecting the Digital and Physical Worlds

As a supplier of industry-leading technologies for retail product lifecycle management (FlexPLM), warehouse management (MOVE), and Internet of Things platform management (ThingWorx), PTC is uniquely positioned to understand the challenges your organization faces and is ready with end-to-end solutions to help you better manage resources and costs while helping achieve your company's goals for customer satisfaction.

10. On-time maintenance - When clients have an issue, they don't have to wait for months or years to receive a maintenance release, often with the overhead costs associated with upgrading to a potentially operations-changing new product version. When looking for your next warehouse management system, assure you can get the help you need when you need it. MOVE's Application Structure allows PTC to deliver specific patches to resolve issues reported by our clients. They don't have to wait 6 months or longer to receive a maintenance release nor will they have to upgrade to a new version.

11. Dedicated support - Warehouse downtime is a very unhappy event to any company, potentially costing 10s or 100s of thousands of dollars in unproductive resource costs and the potential for many unhappy customers resulting from late shipments. A major factor in selection of the right warehouse solution is availability of qualified experts to help you when things go wrong. With over 20+ years of fielded success, MOVE customers can count on a stable and mature technology from the get-go. But, unforeseen problems could arise, and if they do you can count on PTC's staff of MOVE-dedicated subject matter experts to help. MOVE team support personnel have more than 10+ years' experience, providing the highest possible knowledge and quality support to our clients.

12. Best-in-class, focused solution - Many vendors in the manufacturing and supply chain market offer many pieces of the whole, potentially

including the CRM, ERP, Financial systems and provide warehouse management capability to their offering. Very often the focus of the vendor is very strong in their initial area of expertise, but very weak in other component parts of the offering. It is very important to consider the impact to the overall enterprise success when a poorly envisioned and supported warehouse system is implemented.

While one-stop-shopping may have its advantages, it also can have its drawbacks, including lack of state-of-the-art warehouse-specific features or automation capabilities. When in search of your next warehouse solution supplier, you should avoid those with weak warehouse-specific technical and operational support expertise, or those who supply only pre-canned WMS features to fit other provided application requirements but may not fit your company's processes or operational needs.

13. WMS scalability and operational uptime - If you expect your business to remain static and never grow or change, perhaps a "one size fits all" warehouse management system would be just fine. However, solutions that are rigid and hard to maintain are seldom operationally adequate, and one size seldom fits all. With growth and change in mind, you should look for a warehouse solution that is not only scalable to meet your future growth plans, but easily maintainable during your current day-to-day operations. The MOVE application is effectively being used in all warehouse and Distribution Center sizes and complexities, from small and medium-sized warehouses with single locations to large facilities with over one million square feet, and those with multiple distribution center locations. And, even in the most complex scenarios, MOVE easily support millions of transactions per day without requiring daily maintenance to keep the system up and running.

There is a lot involved and a lot at stake in the selection of your next Warehouse Management System. The underlying technology and its ability to keep up with the growth and changes facing your company do make a difference and the focus and maturity of the warehouse software experts supporting your operational staff is critically important to the success of your enterprise. Consider PTC and MOVE in your WMS selection plan. You'll be glad you did!

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