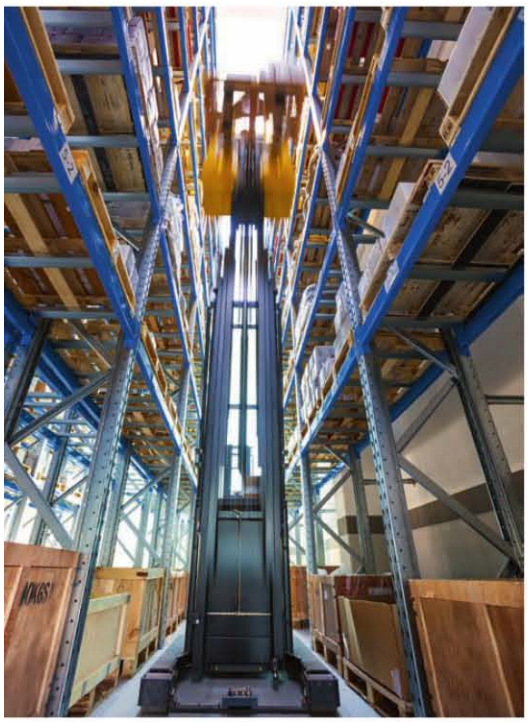

WMS Start-Ups

The high incidence of delays in warehouse management system start-ups within highly automated DCs can be avoided by realistic planning and careful management. Jeffrey Graves* writes

Despite their importance, successful implementation of warehouse management systems (WMS) is seldom fully realised in highly automated distribution centers. This is evident in the many warehouse management systems of new and upgraded distribution centers that are not adequately functional and fully utilised by the DC's staff, in some cases years after they were targeted to be completed. It is also evident in the excessive cost overruns caused by WMS delays that were not properly planned and executed.

Today, simply selling and installing material handling equipment is not enough. A more holistic perspective is required for starting up successfully operating distribution centers. Without a fully functional warehouse management system (WMS) operating at 100 percent at go-live or shortly thereafter, the greenfield or upgraded DC will fail to perform at expected levels of throughput and efficiency, and the anticipated ROI will be unrealised, or delayed at best.

Warehouse Management System

The objective of the WMS is to provide a set of computerised procedures to manage the movement of inventory and orders within the warehouse, and enable a seamless link to order processing, logistics management and material handling equipment (MHE) systems within the facility.These MHE systems handle receiving, put-a-way, storage, picking, packing, labeling, sortation, shipping and returns.External to the warehouse, the WMS links to shipping carriers

for incoming deliveries and outgoing order delivery confirmation.

Highly automated distribution centers may have many material handling equipment components and sub-systems, each with their own discrete control systems (such as warehouse control systems and programmable logic controllers), which require integration with the warehouse management system into a single-source point of control.

Additionally, warehouse control systems (WCS), traditionally functioning as middleware real-time interfaces between the WMS and programmable logic controllers (PLCs) that control the material handling equipment are now taking on more functionality and looking more like a WMS, effectively blurring the lines between conventional WCS and WMS applications.

Such WMS functions like managing order activity and batching orders for waving can now be accessed through a WCS allowing distribution executives another option to fine-tune their DCs while optimizing their investment in software.

Depending on the degree of MHE automation in use within the warehouse, an arsenal of automatic identification and data capture (AIDC) technology can be employed, such as barcode scanners, mobile computers, wireless LANs, magnetic stripes, optical character recognition (OCR) and radio-frequency identification (RFID) to efficiently monitor the flow of goods.

These units capture and relay data throughout the distribution system in real-time via wireless transmission to the WMS, which then can make available comprehensive and detailed reports about the status of inventory and orders moving through the warehouse.

Warehouse management systems process huge volumes of data on a split-second, real-time basis with near flawless accuracy, while integrating with ERP, shippers, hundreds of AIDC units, and dozens of MHE systems operating thousands of I/O.

Clearly, the WMS is the most central and critical component of a warehouse's operation.

Risks Affecting WMS Implementation

Despite the importance of warehouse management systems, approximately 30 percent of WMS installs fall behind schedule and fail to be ready for operation at go-live. When delayed, WMS installs typically hang-up from three to twelve months before becoming fully operational.By any engineering standard, this statistic is unacceptable. The costs in additional time, personnel, underutilised facilities and equipment, and loss of throughput can be sizable.

So, what is it that hangs up the WMS from going live on time? Quite often, it is not the WMS itself that is causing the hold up, but another software system that is being developed which needs to integrate with the WMS.

This could be a web portal for inventory visibility, which is behind schedule, but is slowing up the whole implementation and testing of the WMS.

Sometimes it is the integration of the WMS with the company's host ERP that is causing the trouble. As there are no standard interfaces to ERP systems, there is always customization that needs to be programmed and tested, which can easily be underestimated. It may be that the company's homegrown ERP has been so neglected that the extensive modifications to the ERP system are taking much more time than expected. Or, possibly the company's legacy ERP is so tethered to the prior WMS, which is now being replaced, that a new ERP has been slated for installation, and the full WMS install is waiting on the ERP.

Interfaces with the WCS for the various material handling automation, and the transfer of information back and forth between the PLCs in the equipment and the WMS, have to be seamlessly put together before the material handling equipment can be fully operational.

Dashboards need to be built for management team visibility to display KPIs related to productivity. As well, dashboards are needed for customer service that might be integrating with customers to give them updates on their orders, inventory or shipments.

There are many factors that need to be carefully thought through and ensured are seamlessly integrated when building a new WMS platform.

Planning is Key

Believe it or not, some WMS installations have gotten so stalled that they were eventually shelved and abandoned. This, of course, is the worst thing that can happen to an install. For whatever reason – tried to implement too much, or established unrealistic dates, or did not fund an adequate project team – too many things needed to be working right that were just not coming together to make this project go live any time soon.

Not quite so disastrous is the WMS project that goes live, but was not configured correctly, so the repair workload, tracking of problem orders and problem inventory becomes such a burden that the only solution is to add a battery

of IT technicians to solve the problems.

Of course, this substantially increases the cost of the project.

Then there are the WMS projects that implemented without too much delay or cost overruns, but for some reason are not delivering the expected capability or benefits.

What adversely affects warehouse management system installs more than any other factor, however, is the expectation that an off-the-shelf WMS product can be put in with minimal modifications. In reality, these projects end up with much more modification to the software than what was anticipated. Usually, inadequate due diligence is the culprit here, on the WMS selection process.

Companies have fixed processes that they have grown up with on their legacy WMS that they do not want to give up. The new WMS they have selected may not support these processes in the way that they were being performed. So, they are either forced to change the process or modify the software to allow them to continue functioning as before.

The more modifications, the more risk for delay and cost overruns, and the more risk for testing and interface issues. Going this route, well over 1,000 software modifications could be expected on some projects. Once software starts to be modified this heavily there is no path to upgrades, so they get stuck with a heavily customized WMS. Five years up the line, when the company is looking at an 'upgrade', it is faced with having to get an entirely new WMS.

A tough start-up of a WMS does not just happen in the two weeks prior to go-live. These scenarios are caused by inadequate pre-planning from the very beginning, and poor project management.

Following are several critical actions that are usually missing or inadequate in failed WMS projects, which need to be in place to pull off a successful WMS installation:

1) Detailed Definition of WMS Operations – A clear identification of the needs and wants from a WMS as determined from senior-level logistics executives in the company. This encompasses MHE selection and integration, ERP suitability, business projections, inventory allocation and flow strategies, system design criteria, and labor management and transportation management systems. A complete ROI analysis is prepared, comparing current operating procedure to the new, proposed WMS operating structure.

2) Process Determines the WMS – Too many supply chain executives are approaching warehouse management systems from the wrong

way around. They are making the fundamental mistake of selecting a WMS, and expecting to change their processes to fit into it. Where, in fact, identifying a company's best processes, then finding a WMS that will support these processes, with minimal modifications, should be the initial central approach of any WMS solution. Approaching WMS design from a process perspective does not necessitate the implementation of any specific IT solution, but leaves the door open to any options to achieve the objectives of the distribution center's supply chain executives.

3) Coordinated WMS Installation Plan – Typically, the WMS is being built while the MHE systems are being installed, and potentially when a new ERP is going in. The precise date coordination of equipment testing, system conversion and equipment start-up with the WMS build is critical to ensure the interlinked material handling systems in the new warehouse, and ERP, come up without interruptions. Usually time underestimated, this plan must allow for potential MHE and ERP delays, as well as potential time delays for unforeseen WMS modifications.

4) WMS Change Management – a critical link in the smooth WMS transition into functionally efficient live operations. It is so vital that inadequate WMS change management can be isolated as a key reason why warehouses with newly implemented WMS are not operating at full capacity. Despite its importance, successful WMS change management strategy is seldom fully embraced by those responsible for the WMS installations. Before the WMS goes live, the coordination of equipment testing, system conversion and equipment start-up is critical to ensure the interlinked material handling systems come up without interruptions. Well before the go-live or switchover takes place, it is vitally important for the DC's staff to be fully trained in the operation of the WMS and the dozens of functions involved with the operation of the facility. This requires considerable coordination between equipment manufacturers and installers, the warehouse executives and operational personnel, and the company's executive management to ensure targeted actions are completed as specified in the WMS Installation Plan.

Leveraging Objectivity

Implementing successful WMS strategies can be challenging, even for the most seasoned supply chain executives under the best of conditions. Negotiating with system installers, IT technicians, equipment manufacturers and company executives requires a broad perspective on every aspect of WMS installations, and the know-how to keep the project on track and on schedule. Such management tasks are ideally suited for independent logistics consultants who are uniquely equipped to embrace and coordinate the full functionality of all activities within the scope of the project.

Logistics consultants draw on solutions from many WMS options that are used in different industry applications, thus providing a broad perspective on potential solutions that might otherwise not be considered.

This depth of experience can make the critical difference in selecting and managing implementation of the right WMS that will meet the requirements for throughput and efficiency, minimize capital outlay and deliver the expected return on investment.

Only with the selection of the correct WMS for the application, careful navigation around the installation challenges that so many distribution centers have encountered, and the management capability to keep the WMS project on schedule and budget, will the new WMS go-live on schedule and on budget, and operate at full expected functionality.

**Jeffrey Graves has held the position of President of Sedlak Management Consultants since 1989.*