



**LIDD**  
SUPPLY CHAIN  
INTELLIGENCE

Keys to  
a successful

# WAREHOUSE MANAGEMENT SYSTEM

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(WMS)





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# UNDERSTAND HOW TO **EVALUATE** YOUR **CURRENT WMS** VS. **OTHER** **SOLUTIONS** ON THE MARKET

What exactly does a warehouse management system do? It may seem obvious, but with over ten years of experience in the WMS world, I still encounter executives who have trouble answering that question.

A “**CLEAR UNDERSTANDING**” WOULD BE BEING ABLE TO:

- ✓ Properly evaluate the performance of your current WMS
- ✓ Measure the strengths and weaknesses of other solutions on the market

The purpose of this eBook is to turn that fuzzy picture into a **CLEAR UNDERSTANDING** by looking at the meaning of each letter in the WMS acronym.



## “W” STANDS FOR **WAREHOUSE**

A **“warehouse”** is defined by any infrastructure where storage and distribution take place. These activities can lie anywhere along the supply chain; from raw materials to production, finished goods to customers.

Warehouse functions include receiving, putaway, replenishment, order assembly and shipping. Additionally, many warehouses have kitting, “value added” services and special packaging functions.

### EACH OF THESE FUNCTIONS HAVE INPUTS:

- › Labor
- › Packaging
- › Mobile equipment
- › Automated materials handling equipment
- › Storage equipment
- › Inventory
- › Vendors
- › Customers





Understanding that “W” does not stand for transportation, manufacturing, forecasting or billing, is the first step towards making a wise WMS purchase. Many organizations blur this line and end up buying a WMS that’s good at everything but supporting warehousing activities and their inputs.

A medium-sized chain of c-stores once asked me to evaluate their “**Warehouse Management System**” to see if it was time for an upgrade (this legacy system is older than I am). When we catalogued all the functions it performed, none of them could be described as warehouse activities. The system included several good purchasing and billing functionalities but nothing to support the warehouse itself.







## “M” STANDS FOR **PLANNING**

Management is really a catch-all term that covers three distinct elements: **planning, executing and managing warehouse activities.**

**PLANNING ENCOMPASSES TWO THINGS:**



**RESOURCES**



**TASKS**





# RESOURCE PLANNING

From all the data a WMS gathers in the execution of warehouse activities, it generates vital statistics on the resources used to perform any range of warehouse tasks (a role that no other system in your application park can play).

Although vital for management, understanding productivity is not enough to properly plan the activities of a distribution center. Visibility into the upcoming workload is also crucial. Since the WMS is not the entry point of transactional data, such as sales and purchase orders, it is dependent on a host system to provide insights on upcoming workloads.

A WMS should allow for these orders to be created within its data set without them being instantly turned into warehouse tasks. For instance, a sales order planned to ship 3 days from now can exist within the WMS without triggering picking tasks or having an impact on inventory availability.



**The combination of workload (Purchase Orders & Sales Orders) and historical production provides managers with the ability to forecast and plan upcoming resources requirements.**



You should expect a mature WMS to provide dashboards that integrate historical productivity levels and anticipated workloads with which resource level decisions can be made.



At any point in the shift, you should know how each resource is doing and when you can expect them to complete their task.



A manager should be able to look at his or her labor projections and compare it to the list of warehouse tasks to identify whether or not the next shift will be able to complete the work in time.







## TASK PLANNING

Along with resource planning, using a WMS, you should be able to plan the release and priority of warehouse tasks. A WMS should provide managers with configurable task creation triggers to which documents can be assigned.



Here are some of the task planning functions that your WMS should support:

- › **Configurable picking list creation triggers.** Often referred to as outbound waves, the WMS should allow you to plan which work shift or which work day a sales, return or transfer order will be performed and then automatically create pick lists at the designated time.
- › **Configurable warehouse location capacity and product location assignment.** While dynamic slotting is an advanced functionality rarely present in a WMS, you should still expect your WMS to provide insights on location usage to allow managers to plan the assignment of items to different locations.



- › **Inventory rotation and expiration data management.** In a warehouse with perishable products, the host system should understand product availability according to expiration dates in order to allow management of specific customer shelf life requirements. You should expect to use WMS tools to properly plan inventory rotation within the warehouse and take action when items are no longer within saleable tolerances.
- › **Push notification such as e-mails and text messages when specific events occurs.** A manager can't be expected to refresh a page every minute and with the latest in information technology, they shouldn't need to. Event intensive software like your WMS should provide configurable message triggers to notify people when they need to act on specific thresholds or give approval to a given portion of a document's life cycle e.g., "Manager, BOL 43432 is ready for processing, please complete your approval."

**These are a few examples of WMS tools that you can expect to be available out of the box. Think of these as the steering wheel of a high performance car. No matter how well your tires grip, if you can't control the car's direction, you will not be able to take a curve or avoid upcoming obstacles.**



**If you have ever been exposed to a full-blown distribution environment, you can understand how critical it is to be able to react quickly to issues as they arise.**





## EXECUTION

A WMS has a significant and immediate impact on the execution of warehouse activities. Without execution functionality, there's no point in having resource and task planning tools. Many executives make the mistake of giving inadequate weight to the quality of a WMS' execution support when evaluating competing systems. Although who can blame them... since when does "M" stand for execution?

### WMS EXECUTION INCLUDES:



System-driven execution



Data collection



Task confirmation



A WMS assigns and controls all tasks within a warehouse. While these tasks are being executed, the WMS works to gather vital data relevant to warehouse operation.

This is a fundamental aspect of the WMS and the quality of the data gathered will often differentiate mature applications from less refined ones.

Every event in a warehouse generates data. Storing and converting that data into valuable Key Performance Indicators (KPIs) requires experience and a solid object model and database structure.

Understanding the overall productivity of a warehouse is important, but how much can you expect your WMS to tell you about what is being executed by your employees? The truth is, almost everything. While it is nearly impossible to know what happens during downtime, actual productivity levels can be expressed clearly. This is one of the reasons why gathering productivity data is critical.

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*One of these critical data elements revolves around one the most complex resources a warehouse has to handle - Humans!*



**It is important to note that counting the number of receiving or picking events performed by an individual during a time period is a good start, but it lacks precision.**



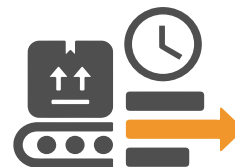


This is where event counting becomes incomplete. Proper labor reporting should provide the specific time range of executed events. For instance, if the 30 picks were performed from 7h20 to 7h40, then this individual's actual productivity for 20 minutes equates to 90 lines picked per hour. This type of observation is true for all tasks executed by all warehouse employees, from receiving to shipping.

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*If Joe executes 30 picks from 7am to 8am, is he picking 30 lines per hour?*

*What if he was sweeping the floor from 7h20 to 7h40?*



You should not only consider your WMS as the application that tracks the execution of warehouse tasks by your employees but also as the application that directs these users through their tasks.

In addition to directing your employees throughout the warehouse, you should also expect your WMS to utilize the most efficient possible ways of doing so. This is typically achieved by finding the optimal path to take while executing a list of moves and picks or, with more advanced systems, by looking for opportunities to insert tasks in between operations. This task interleaving functionality allows the system to push a stock count task to a user while he is performing picking activities.



Another important element of execution is task creation and assignment. The breakdown here is very important to understand since creating and assigning tasks are not the same thing.

It's important to understand that a WMS is the tool that will translate a document created in the host system of your application park, most likely your Enterprise Resource Planning (ERP) system, into a task that needs to be executed on your warehouse floor.

**Here are some of the most common tasks that are pushed from a host system:**

- Purchase orders, customer returns or transferred orders to be received
- Trailers to be unloaded
- Sales orders, vendor returns or outbound transfers to be shipped

**The WMS will create other tasks itself including:**

- Putaway tasks of received items
- Translation of outbound documents into picking and shipping tasks
- Cycle count and inventory control tasks
- Bin-to-bin replenishment based on demand and min/max



Whether pushed from another system or created by the WMS, these tasks must reach a user for execution. Because each work environment is unique, various options are available tailored to your business' specific needs.

#### THE MOST COMMON WMS WORK ASSIGNMENT METHODS, HOWEVER, ARE THE FOLLOWING:



##### PAPER BASED TASKS LISTS

These might seem old fashioned but are still widely used. Keep in mind that such work assignments involve clerical work in order to have the data entered back into the WMS. This method also has the inconvenience of not having the possibility to deliver real time event tracking.



##### ELECTRONIC LIST SELECTION

This involves tasks accessibility from a mobile device. Most systems will also provide various tools to filter down tasks lists per process or per user. A key feature of this method is that you should expect to have the ability to assign the work directly to those devices.



##### BARCODED LABEL TASK LIST

Since several shipping processes are label intensive, it is common for a system to request a scan of a barcode label list to launch a specific task. This requires all labels for a given process to be printed before the warehouse activity begins.





# MANAGEMENT

You will need to manage your WMS – it is a complex system requiring regular maintenance. These maintenance tasks can be broken down into four groups.

1

## WMS SPECIFIC INTERFACES

A WMS exchanges information with other software applications, both within your company and outside of it (such as a courier's Application Programming Interface API). Because of this, you should expect to pay attention to potential transactions failures.

2

## DEVICE MANAGEMENT

As a quick guideline, here is an overview of devices commonly found in a WMS driven operation:

- › Handheld scanners and other radio frequency (RF) data capture devices
- › Antennas supporting the warehouse Wi-Fi coverage
- › Wedge scanners
- › Scales
- › Label printers
- › Paper printer

With several capture tools embedded in your distribution environment, conducting regular maintenance and updates will require specific planning in which repairing broken devices will be included.



3

### EVOLVING BUSINESS NEEDS

As your business grows and changes, so will your WMS requirements. This is where owning your WMS configuration becomes important. Having a manager in charge of owning the distribution process and making sure that you have WMS super users capable of process configuration are key success factors in keeping your WMS up to date with your business goals.

4

### MASTER DATA

Conceptually, your WMS should always be considered as the slave to the host system when it comes to master data. The item card, customer card, courier service, etc. are all elements that are created and maintained in the host system. These are best practices and should be strictly enforced within your organization.

However, you can expect to maintain the following elements directly within your WMS:

- › **Physical warehouse layout.** To operate properly, your warehouse management system needs to represent all warehouse locations. There is no logical place to host such data other than directly within your WMS.
- › **Product slotting.** The link between a warehouse bin and the product it is assigned to must also remain within your WMS driven tables.
- › **Document definition.** Bill of Lading (BOL), Packaging Slip, Labels





## “S” STANDS FOR **SYSTEM**

The textbook definition of a “system” is a group of components forming an integrated whole. A WMS is just that – a group of three technology components:

1

### LOGIC TIER

**Where data is taken from external systems or collected from the warehouse in real-time to help make operating decisions.**

- › These rules dictate how each of the hundreds of warehouse activities occur.
- › They also dictate how these hundreds of activities are prioritized and sequenced.

2

### DATABASE TIER

**Stores all the necessary data used in the logic tier.**

- › The data can be sourced from external systems such as your ERP or a supplier’s EDI transmissions.
- › The warehouse activities themselves create data such as the storage location for a particular lot of product once it has been put away.

3

### USER-INTERFACE TIER

**Organizes how users interact with the logic and database tiers through a variety of mobile and fixed devices.**

- › In the warehouse environment, users can be accessing the system through RF guns, tablets, rugged mobile phones or fixed terminals.





# HERE ARE THE KEY TAKEAWAYS

A WMS will not operate without a strong supporting ERP. It is, in many ways, a slave to this host system.

1

The WMS is the warehousing leg of a greater entity, the business application park. Its job is to plan and execute warehouse related activities, period.

2

Management means: Execution, planning and reporting.

3

The WMS, like all other software, will require its own set of maintenance, so you should plan accordingly.

4

Getting these facts across to your management and I.T. teams will help you assess your needs and define in which software your logistics-oriented business decisions should actually sit.



# CONTACT US



Schedule a **Discovery Call** to talk about your goals & define your needs



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