

WMS VS. WCS VS. WES



WMS manages the flow of inventory, labor tasks and orders from receipt to shipping



EXPLORING THE SPECIFIC FUNCTIONALITIES OF EACH SOLUTION IN DEPTH AND PINPOINTING WHERE THE SYSTEMS INTERSECT WILL ALLOW BUSINESSES TO DETERMINE WHICH FUNCTIONS BEST MEET THEIR NEEDS.

Many companies are at a crossroad as to whether to invest in a warehouse management system (WMS), warehouse control system (WCS), warehouse execution system (WES) or a combination of the three. The decision is made more confusing because of the overlap of some of the functions of each system. Exploring the specific functionalities of each solution in depth and pinpointing where the systems intersect will allow businesses to determine which functions best meet their needs, and in turn, which system or combination of systems will work best.

In order to better understand the roles of the three systems, compare them to the human body. Envision the mechanization in the warehouse, including conveyors, case sorters, tilt-tray sorters and more, as the skeleton. It is rigid and not easy to change once it is in place. The WMS acts as the brain of the facility, indicating what needs to be done and communicating those instructions to the body. The WCS can be compared to the spinal cord; you cannot walk, run or be mobile without it.

The WES is somewhat of a combination of the two other systems. It is less intelligent than a WMS but still brings some brain power, as well as the majority of the spinal cord.

DEFINING SYSTEMS

What is a WMS?

A WMS is a highly specialized business application that controls the flow of inventory into, within and out of a company's distribution center (DC) or multiple DCs. A WMS can verify receipts, put away inventory, replenish inventory to a forward pick location, complete cycle counts, hard allocate inventory to an order (to be picked), consolidate orders on a dock, and create pack slips, BOLs and carrier compliant labels. Of the three systems being compared, the WMS is the most mature, intelligent and widely known because it manages the flow of inventory, labor tasks and orders from receipt to shipping.

The WMS knows where products are at all times, as inventory control is its big differentiator; neither a WES nor WCS can

manage all functions of inventory in a distribution center. The inventory management component allows businesses to manage inventory across the DC and track inventory across every single move. The fundamental data model difference between a WMS, WES and WCS is the ability for a WMS to manage, track and control inventory across multiple channels and customers (used in 3PLs).

The WMS can also be used for exception processes, including: returns, quality assurance and defective product. In addition, most WMS incorporate:

- Wireless data terminals (RF devices)
- Bar-coded pallets, cases and item labels
- Radio frequency identification tags (RFID)
- Conveyor systems/material handling equipment
- Voice enabled RF devices
- Carrier compliant labels
- Retail compliant labels

While WMS encompass vast capabilities, there are some functions they do not perform, including:

- Controlling machine language (ladder logic and PLCs)
- Machine control (starters and motors)
- Put light, sorters, conveyors, print and apply and ASRS
- Tracking carton-level LPNs on automation equipment
- GUI (ACAD) layout of an automation system

What is a WCS?

A WCS is a real-time, integrated control solution that manages the flow of items, cartons and pallets as it travels on many types of automated equipment, such as conveyors, sorters,

ASRS, pick to light, carrousel, print and apply, merges and de-casing lines. A WCS is able to exchange real-time communication, command processing, discrete equipment signals and the optimization of material. Most WCS solutions lack advanced WMS functionality. However, the gap is closing as WCS vendors are adding more and more functionalities available in the WMS space. Traditionally, WCS solutions are well-suited for highly-automated facilities, but there are few WCS vendors that have the necessary functionality to manage and control all warehousing processes. Most WCS include:

- Pack sort management
- Ship sort management
- Automated pick management
- Pick-to-light and put-to-light management
- Automated conveyor zone skipping
- Mobile scanner integration
- Fixed scanner integration
- Machine control integration
- In line scales
- In line print and apply

Functions that WCS do not encompass include:

- The ability to interface with an enterprise resource planning (ERP) system (in most cases, however, there are exceptions)
- Hard allocating inventory in reserve or forward pick locations
- Supporting wave management strategies
- Supporting extensive cycle counting and physical inventory processes
- Supporting labor management and allocation
- Supporting transportation planning and shipping execution

Small and mid-sized retailers can often benefit from a WES because it helps to manage fulfillment both to consumers and to stores.



What is a WES?

A WES is a newer breed of solution, compared to a WMS or WCS. A number of systems integrators, WCS control software companies and material handling equipment manufacturers are moving up stream in terms of adding basic WMS functionality into their existing WCS or creating a WES from scratch. Many WES encompass nearly all functions that are also included in a WCS and some functions of a WMS. As a result, a WES is considered a more all-inclusive solution. Think of a WES as a light version of a WMS with controls functionality. WES is encroaching on the WMS territory when it comes to tasks related to wave management, light task management, inventory management (single channel), picking and shipping.

For some businesses, a WES may be all that is needed. Small and mid-sized retailers can often benefit from a WES because it helps to manage fulfillment both to consumers and to stores, but if the retail chain is large, it will likely need the more advanced inventory management component available only in a WMS. Most WES include:

- Basic receiving
- Shipping management
- Replenishment management

- Small-parcel manifesting
- Non-automated pick management
- Voice data capture
- Inventory management
- Mobile scanner integration
- Pack sort management
- Ship sort management
- Automated pick management
- Pick-to-light management
- Automated zone skipping
- Mobile scanner integration

Functions that WES do not encompass include:

- Supply chain integration
- ERP integration (depends)
- Management reporting
- Transportation management
- Reverse putaway
- Order management
- Wave management
- Slotting
- Multi-variable standard labor management

THE CROSSOVER



DETERMINING WHICH SYSTEM TO IMPLEMENT

The answer to the question, “which system is right for a business?” is always two words – it depends. There are many factors that must be considered when deciding which system, or combination of systems, is best for a facility; there simply is no one size fits all solution. Understanding the way inventory moves throughout a facility is key in determining which solution is best. Typically non-automated facilities will need the sophistication of a WMS while highly-automated facilities will need the control a WCS or WES provides, though a WMS might sometimes also be necessary.

There are numerous questions to ask when deciding which system or systems best meet a business’ need.

1. How automated or non-automated is the facility?
2. How does inventory move through the facility?
3. Is the distribution center single channel or multi-channel?
4. Is this a 3PL with multiple customers with single sign on requirements?
5. How many end users do you have (10 or closer to 1,000)?
6. How many facilities do you have and do they require a single view of truth?
7. How important is inventory management in your operation?

When deciding which system to implement, keep future goals in mind. As these systems can sometimes be extremely costly to implement and maintain, it’s a decision that is not just about where a company is now, but where its leaders want it to go. Working with a team of supply chain professionals who understand the intricacies and differences between each system allows businesses to ensure they are getting the best system for their unique needs at the right price.



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