

The Oracle Speaks

WMS vs. WCS

The Oracle states that many companies are at a crossroad as to whether or not to apply WMS or WCS functionality in an automated facility. He believes that if your host system can hard-allocate the inventory, and send a disposition as to where the inventory is required, based on demand, the WMS is not required. He also warned that most WCS solutions lack advanced WMS functionality. On the other hand, he states that the gap is closing. This paper presents a lively “discussion” of the topic.

My name is Isaac Edwards (Mr. IE). I was promoted to Director of North America Distribution and I work for a very large sporting goods retailer (we like to call it specialty retail). Our last major project was a large domestic supply chain strategy design that evaluated our North America supply chain after the acquisition of an East Coast competitor.

If you remember, we had three distribution centers and **THEY** had three distribution centers. The result of our supply chain analysis was to transition from six to five distribution centers, eliminate their private fleet and use a dedicated carrier that has a core competency in transportation, consolidation and store deliveries.

The transition actually required that we shut down two facilities and build a new facility in Indianapolis to service our Midwest customers. A positive about the acquisition is that both companies utilize the same WMS, but on different architecture platforms. Our CIO (Charles Overton) has set a strategy to transition all our distribution centers to a three-tier architecture (application, database and web services). However, when we implemented our WMS, the level of automation and integration was minimal.

The President of our company has made it his mission to open new stores, while reducing our inventory. Although we are a sporting goods retailer, we are focused on fashionable athletic



wear, shoes for kids, women and men, plus general athletic merchandise for all sports (baseball, basketball, football, fishing and camping). We are not a discount specialty retailer, and we are targeted to turn our inventory at six turns per year (up from 3.5).

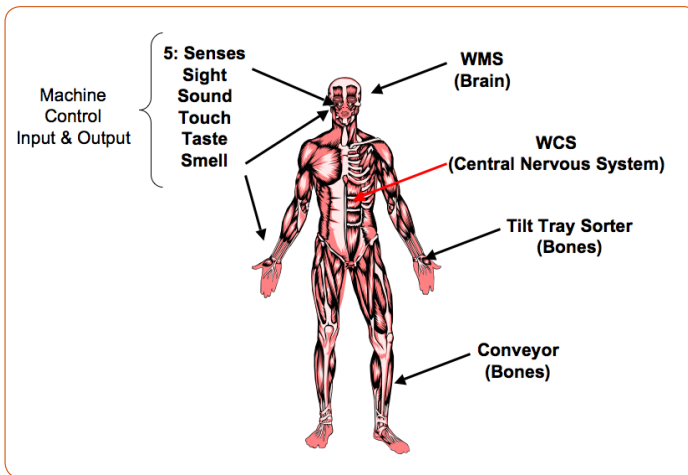
As the Director of North America Distribution, I have been chartered with designing the new Indianapolis distribution center and shutting down two current facilities. I engaged a consulting firm to complete the initial conceptual facility design and have contracted with a reputable material handling equipment manufacturer and integrator. This facility has advanced material flow strategies and material handling equipment. We have a universal routing sorter with a central merge

that directs our full case (x-dock cases) and our outbound flow through merchandise. The design encompasses a tilt tray sorter for picks (shoes and flat pattern apparel). Did I mention that we are consolidating our e-commerce into the distribution center? A section of the tilt-tray sorter will be used for e-commerce picking and packing. We ship three to four deliveries per week to our retail stores. (This has improved our turns and stock outs.)

As I discussed earlier, we have a WMS but, for the first time, we have a need for a Warehouse Control System (WCS) to manage the flow of material while it travels on the conveyors, merges, de-casing lines, tilt-tray sorters. This level of software is new to the company and there have been many heated conversations

as to where it fits. I called the Oracle for his advice and gave him the necessary facts and data to provide insight and direction.

The Oracle broke it down in a very simplistic form and used the human anatomy as a means of explaining it to me. He stated, "Your mechanization (conveyor, case sorter and tilt- tray



Functionality	WMS	WCS (PC-Based) with Independent Database
ASN Receiving	■	■
PO Receiving	■	■
Base Case and Pallet Receiving	■	■
Discipline Cross-Docking	■	Contingent upon HOST
Directed Put-away	■	
Suggested or Manual Put-away	■	■
Advanced Put-away Configuration	■	
Advanced Replenishment Strategies	■	
Base Picking	■	■
Advanced Picking	■	
Wave Management	■	■
Advanced Allocation Logic	■	
Cycle Counting	■	■
Trailer Build and Load	■	
Carrier Compliance (BOL and Parcel)	■	
Direct Machine Control (I/O)		■
Tilt-Tray Sorter Store to Chute Assignment		■
Dynamic Chute Allocation		■
Report Building	■	■
RF Work Directives	■	■
Task Management	■	
User Configuration	■	■
Human Machine Interface (HMI)		■
Yard Management	■	

sorter) is the physical structure or skeleton. Your skeleton is rigid, and not easy to change once it is in place. Your WMS is the brain of your anatomy; you need to maximize it. The WCS layer is your spinal cord; you cannot walk, run, or be mobile without it, and the machine control and input/output (I/O) that tells the mechanization to complete a task, is like your five senses. The I/O is constantly monitoring

the surroundings." He sent me an illustration (shown here) to support his analogy.

The Oracle stated that many companies are at the same crossroad, trying to decide whether to apply WMS or WCS functionality in an automated facility. In our case, we have four new receiving processes. Three of our processes are full-case receiving to our conveyor: 1) cross-dock of full cases, 2) cross-dock of musicals (mixed LOT sizes), 3) flow through and 4) non-conveyable receipts (kayaks, hockey tables and bicycles).

I believe that we do not need a WMS solution for product that moves exclusively on our conveyor or is sorted with our tilt-tray sorter. The Oracle agreed, and said, "If your host system can hard-allocate the inventory, and send a disposition as to where the inventory is required, based upon demand, the WMS is not required." He did warn me that many host solutions do not have the ability to hard-allocate inventory.

Fortunately, our HOST system can pre-allocate, soft- and hard-allocated inventory. He also warned that most WCS solutions lack advanced WMS functionality and stated that he has been in a number of high-volume retail distribution centers that did not use a WMS and many of the users wished they had a WMS to perform exception processes and to

FPO
WMS Solution illustration

change business processes.

He did state that the gap is closing being WMS and WCS software as it relates to base warehousing management system functionality to receive, pick, pack and ship orders. The WMS vendors have the upper hand in non-automated facilities and WCS vendors have the upper hand in highly automated facilities. Unfortunately, there is not a vendor that does both; hence, both a WMS and WCS solution are required.

So I asked the obvious question, where do we apply the technology and software to lower our total cost of ownership? We all know that upgrades are expensive, yet we need the flexibility to change our WMS and WCS for both continuous improvement and changing business requirements.

The Oracle really never tells me the answers, as he uses the Socratic approach and asks me a lot of questions that will allow me to figure it out. He asked the following questions:

1. Can our host hard-allocate inventory?
2. Do we require complex wave management and inventory allocation logic to pick from multiple zones (forward pick, reserve and an area called "residual")?
3. Do we ship for multiple sales channels?
4. Do we require dynamic chute allocation?
5. Do we require batch picking across multiple distros (retail orders)?
6. Do we need to track inventory within one solution or two solutions; i.e., (does product that is cross-docked or moves straight to the tilt-tray sorter require inventory tracking within the WMS?) Note this product is in and out of the DC within four hours.

The Oracle also made a few observations : Keep it simple, and leverage the appropriate solution to optimize the flow of material through

the distribution center, while ensuring that customer service is not jeopardized.

The Oracle said to use the WMS to fill in the WCS gaps. 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.

On the other hand, many (most?) WMS solutions cannot and do not manage the execution of pick-to-light, carrousel, case sorters, unit sorters, merges, print and apply. Perhaps one day there will be a solution that does both but, for now, we must maximize the WCS when product moves exclusively on our mechanization and maximize the WMS for non-conveyable, wave management and inventory control (Reference illustration.) In addition, we use our current WMS to manage and execute our exception processes (returns, quality assurance and defective product).

I have never forgotten what the Oracle told me once: Our retail supply chain is a "glass

pipe." Do not impede the flow of the water by adding constraints (policy, process, people or technology).

I have some decisions to make. It looks like we need to research and select a WCS solution that works as the "spinal cord and central nervous system" of our new distribution center.

For more information about this article, please contact us at 877-684-7700 or via email at inforequest@envistacorp.com.