

# MAN & MACHINE IN THE MODERN WAREHOUSE

## IT'S TIME TO REMASTER THE ART OF FULFILMENT

In recent years, the pace of change for the supply chain has continued to accelerate, adding new pressures and new challenges which require new innovations. The rise of e-commerce and omnichannel fulfilment, combined with labour volatility and cost constraints, has created more pressure on the supply chain than ever before. And the industry has responded with tremendous growth in the area of advanced automation.

### ROBOT REVOLUTION

The appeal is obvious. Automation is not affected by labour shortages and robots do not become fatigued or ill. And distribution centre robotics keeps getting better and better. Robots are more efficient, more sophisticated and faster than ever before. Advanced automation has become critical to the success of the modern warehouse.

The challenge is that different types of automation do not naturally communicate. They are not even aware of each other, much less the supporting workforce. Getting maximum throughput within the distribution centre requires coordinating and orchestrating every single asset to work together - automation, robotics and people.

Over the last decade, as fulfilment leaders have introduced advanced automation into the fulfilment centre, they have been forced to work with two distinctly different systems: warehouse management systems (WMS) and warehouse execution systems (WES) or warehouse control systems (WCS). Historically, the WMS was the single place able to recognise, optimise and allocate work, because it understood demand, capacity and, of course, stock levels. But legacy WMS solutions were never designed to manage the capacity and complexity of advanced automation on the level of robotics.

So, independent WES systems were developed to manage work-tasking prioritisation and the optimisation of mechanised automation. But WES systems did not understand demand, they did not understand stock levels and so they depended upon the WMS to provide a bulk of work to process.

### UNMATCHED FUSION OF MAN & MACHINE:

Fulfilment orchestration spanning man and machine, continually being optimised through artificial intelligence across advanced automation, robotics and human staff members means maximum asset utilisation, order throughput and fulfilment margins.

### UNPRECEDENTED INTELLIGENCE & OPTIMISATION:

The fastest, smartest optimisation available for direct-to-consumer, wholesale and store replenishment workflow means simultaneously handling any order type with reduced processing times, increased accuracy and higher service levels.



In addition, even the most advanced robots cannot adapt like a human: to think creatively, react to sudden changes, and problem-solve with agility and flexibility. Therefore, people still, and always will, remain an essential part of the equation. But integrating their skills with robotic capabilities is another matter.

The results have been downstream impacts on fulfilment margins and reduced utilisation because resources are siloed because of a lack of orchestration capabilities across man and machine. Fulfilment organisations are left trying to ensure stocks are not duplicated, and that resources are maximised – all while continuing to meet the ever-increasing demand of omnichannel fulfilment strategies.

It's time to unify the automation.

### COMMAND & CONTROL

In any distribution centre setting there are five 'natural' resources to manage: orders, stock, labour, planned work and automation. Manhattan Active® Warehouse Management has orchestrated four of those five with tremendous success over the past 30 years, and was recently recognised as a WMS leader in the Gartner Magic Quadrant for the 12th consecutive time.

And now Manhattan has added the fifth resource to deliver complete command and control of the modern warehouse with the industry's first WES built into a WMS. Seamlessly integrated, it has been engineered from the ground up to work with any type or complexity of automation. It doesn't matter what kind you have or how much of it you use. And Manhattan has made it easy for automation providers such as robotics pioneer Kindred to plug right into the new WES framework, creating an ecosystem that helps get automation initiatives up and running faster than ever before.

While the use of technology in the warehouse is exploding, it is important to remember that more human capital is being used than ever before. With the infusion of WES capabilities within the WMS, it is now possible to orchestrate workflows across both man and machine, so supply chain leaders get the best of both: the power of repeatable and predictable process and the ability to pivot, and think innovatively, while still retaining full control of building-wide stock that only a complete WMS can provide.

### WORK SMARTER

In addition to meshing the orchestration of human and automated assets, enhanced Order Streaming capabilities within Manhattan Active WM ensure that efficiency never stops improving. As workers – or machines – fulfil orders over time, the system will learn how long a task should take. When conditions change, Order Streaming adapts the expectation of how long the task will actually require, given the combination of historic data and numerous other conditions such as item characteristics, number of stops on the task, location information, or even day of the week and hour of the day. As the network capacity patterns are learned, Order Streaming disperses exactly the right amount of work to the right resource.

'What Manhattan has done is to greatly enhance the orchestration logic with real-time awareness of the capacity of both men and machines, as well as the availability of the necessary stock in the right location, to do a piece of work at a given time.'

— Steve Banker, Forbes

And the longer Order Streaming listens and learns, the more optimised the distribution centre becomes.

Coordination and collaboration across discrete and individual pieces of advanced automation in the warehouse only becomes more powerful when those systems are connected to, and aware of, each other. More than ever, warehouse management must be approached from a perspective that considers any combination of human and automation capacity together. With the combination of native WES and Order Streaming capabilities, Manhattan Active WM is the only solution that enables total visibility across the distribution centre, complete flexibility for automation growth and maximum utilisation of all resources.

Push Possible.

### For more information

To find out more about Manhattan Order Streaming, contact your Manhattan sales representative or visit: [manh.sg/products/warehouse-management](https://manh.sg/products/warehouse-management)