

Order Streaming: A New Take On Fulfillment

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Question of the Day:

How can you maximize return on investment (ROI) in your DCs?

(What are the primary expenses & variables?)

People? Inventory? Storage? Channels?

Service Levels? Automation? Transportation?

Fulfillment Excellence requires balance & access to all of the DC “Natural Resources”



What if the resources aren't balanced?

- Orders vs Inventory
 - Longer order cycle times due to inventory shortages
OR
 - Higher inventory carry costs
- Labor vs Equipment
 - \$\$\$
OR
 - \$\$\$
- Getting each of those right by themselves doesn't guarantee an optimal result!

Other Factors:

- 1) Channels & Order Profiles
- 2) Inventory Storage & Sharing

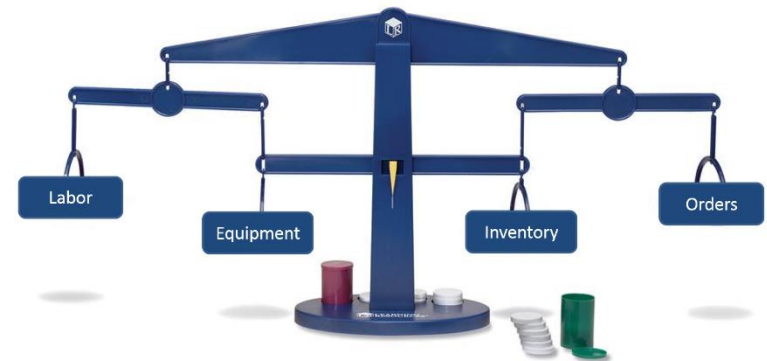
Other Factors:

- 1) Temporary Labor
- 2) Heterogenous Automation

The right systems are key

- Which system is best positioned to provide balance across all 4 critical natural resources?
- The answer lies in the system that has the best line of sight
 - Labor – **WMS**
 - Equipment – WCS
 - Inventory – **WMS**
 - Orders – **WMS** and ERP
- Typical Recipe for Success:

ERP + WMS* + WCS



The right WMS* system...

- Supports wave, waveless, and/or flow through order fulfillment strategies to drive channel-appropriate processing
- Includes built-in “WES” logic to continuously and dynamically advance orders based on sense-and-respond signals from equipment – across automation types & vendors
- Oversight & governance for all inventory & storage locations (automated & non-conveyable/bulk)
- Leverages embedded capabilities for:
 - *Yard Management & Appointment Scheduling*
 - *Receiving, Returns, & Audits/Inspections*
 - *Replenishment, Picking, Packing, & Putwalls*
 - *Value Added Services, Consolidation, & Loading*
 - *Transportation Planning & Execution*
 - *Labor Management & Slotting Optimization*
 - *Mobile Device Visibility & Execution Workflows*



E-Com Fulfillment presents several unique challenges:

- Relatively unpredictable order volume, but 24x7
- Smaller orders vs. retail or wholesale
- Rapid order fulfillment expectations
- Significant holiday/promo/seasonal spikes
- Parcel carrier cutoffs impact delivery SLAs
- Piece-pick operations complicate product handling
- General need to maximize facility throughput
- Use of expensive automation equipment



Order Streaming – What Is It?



Waveless Order Fulfillment

Continuous evaluation & optimization of the order pool.

Orders are actioned immediately upon arrival in the WMS.



Pull Model (vs. Push)

Labor & Equipment availability dictates task creation & assignment.

The goal is *higher asset utilization*.

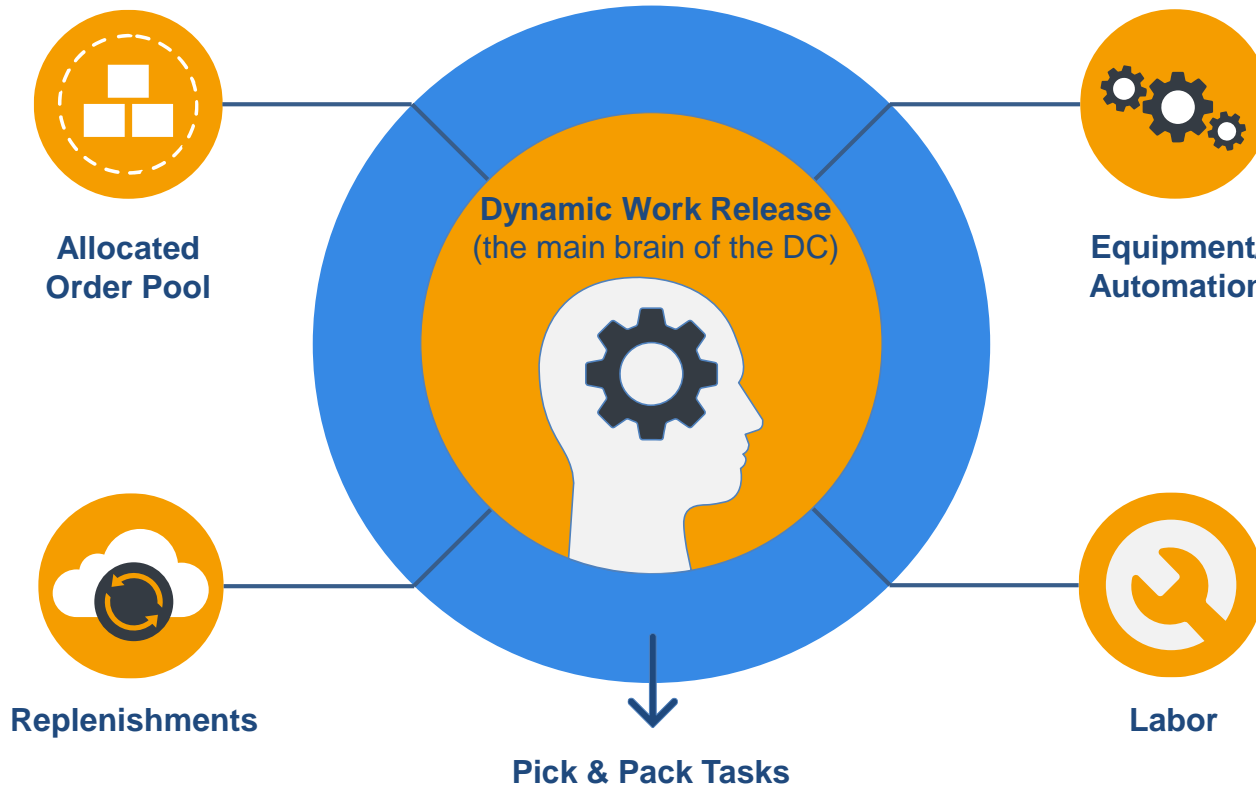


Delayed Decisions / Commitments = Better Results

Work is dynamically assembled into tasks and assigned to equipment when capacity is available for fulfillment.

The highest priority work is assigned based on “then current” conditions.

Order Streaming Includes: Automated, Continuous Work Release



Order Streaming's Waveless Capabilities



Prioritize

Immediately take action on new orders upon receipt in the WMS. Determine order priorities using flexible criteria based on order attributes.



Allocate

Automatically allocate inventory to orders, determine package contents and calculate shipping cutoff times. Allocation in turn creates replenishments as needed.



Determine Work Path & Resource Types

Evaluate the eligible resource type(s) for each LPN in the pending pool of work.



Reprioritize & Release

Work is constantly reprioritized. As labor, inventory and equipment capacity becomes available, the solution releases the highest priority work from the pending pool.



Visibility

Tablet App to view pending and active work by pick zone and equipment type.

Order Streaming – What is the Value?

Order Streaming – Saves Time

The system continuously evaluates the order pool to prioritize orders and advance orders through the process without human intervention

High priority orders are completed in less time

Order Streaming – Improves Asset Utilization

Work release delayed...until Labor or Equipment capacity is available

Pull-based processing honors capacities and constraints in real-time as compared to a push-based alternative that simply builds a plan (wave/batch) based on static, modeled capacities

Reduced
Order Cycle
Time

Improved
Facility
Throughput

Improved
Asset
Utilization

Order Streaming – What is the Value?



20-30%

Fewer Replenishments



15-20%

Increased Packing Productivity



5-10%

Increased Sorter Utilization



15-20%

Increased Fulfillment Capacity



20-40%

Fewer Upgraded Shipments



Single system with visibility across labor and automation

Order Streaming: In Summary



Ability to flex between different levels of automation depending on DC characteristics



System of record for all key DC Natural Resources: Inventory, Orders, Labor, & Equipment



Single system driving inventory allocation decisions across all channels & inventory locations



Modern, sophisticated, cloud-ready, componentized architecture supports rapid innovation & mobile workflows



Equipment abstraction layer enables low level, vendor agnostic orchestration of automation



Single vendor warehouse intelligence leading to vastly improved projects & support (vs integrated approach)

High Automation

Minimal Labor

Minimal Automation

High Labor

Recommendations Depend on Your Environment

- What selling channels do you utilize?
- How many orders processed per day?
- Number of order lines per order?
- How much automation exists today? Tomorrow?
- What are your picking strategies?
- What are your customer's expectations?

Key Takeaways

- Consider leveraging a best-of-breed WMS solution featuring order streaming for dynamic waveless processing of e-commerce orders for more continual, fluid decision making based on the DC natural resources
- Improve your key metrics:
 - *Reduced Order Cycle Times*
 - *Increased Asset Utilization*
 - *Increased Facility Throughput*

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