Order Streaming: A New Take On Fulfillment

Presented by:

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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

- Allocated Order Pool
- Equipment/Automation
- Replenishments
- Labor

Dynamic Work Release (the main brain of the DC)

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

Determine Work Path & Resource Types

Reprioritize & Release

Visibility

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

Order Streaming’s Waveless Capabilities

Prioritize

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

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**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
## Order Streaming – What is the Value?

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-30%</td>
<td>Fewer Replenishments</td>
</tr>
<tr>
<td>15-20%</td>
<td>Increased Packing Productivity</td>
</tr>
<tr>
<td>5-10%</td>
<td>Increased Sorter Utilization</td>
</tr>
<tr>
<td>15-20%</td>
<td>Increased Fulfillment Capacity</td>
</tr>
<tr>
<td>20-40%</td>
<td>Fewer Upgraded Shipments</td>
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</tbody>
</table>

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
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Minimal Automation

Minimal Labor
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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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