How to Plan for 1 Million + SKUs and Units / Day Throughput—Even with Labor Shortages

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Learning Objectives

• Dramatic change is happening in the retail supply chain
• There are winners and losers
• The future state of e-commerce intralogistics
• The next generation solution
• Case study
Demanding Customers

- 34% Demand broader selection from single source*
- 39% Speed of delivery top priority*
- 44% Sales lost due to lack of inventory available**

*UPS White Paper

**Oliver Hyman White Paper
Customer Trends are Changing Retail

Retailers are adopting new supply chain strategies to meet consumer demands.

- Consumer Demands
- Product Mix
- Channel Strategy
The largest players recognize that specialized DC’s with large product variety and high throughput are a critical part of the strategy.
A Big and New Problem

- 1 million SKU’s
- 1 million units/day
- 1 million sq. ft.
- 15-20 million units active inventory
- 1 hour order lead time

Off peak efficiency
Labor requirements

How to meet the challenge?
What is the impact to market share and the bottom line?
Key Questions

• How to offer the selection needed quickly to all areas?

• What orders are filled from/shipped to store vs. central location? SKU availability? Cost implications?
Key Questions

• Parcel service dictates DC location.

• Large DCs yielding competitive advantage are needed in these areas.
Labor Demand

• A 400% increase for labor in peak season causes lack of localized labor availability.
Urgency

• Supply chain effectiveness is driving competitive advantage

• The software and automation solutions in a supply chain enable best-in-class performance, increased market share and better bottom-line results

“Let our advance worrying become advance thinking and planning.”

- Winston Churchill
Complete Discrete Picking – Limited Scalability and Concept Challenges
Not suitable for the largest operations

- 1 million SKU's
- 1 million units/day
- 1 million sq. ft.
- 1 hour order lead time
- 15-20 million units active inventory
- Off peak efficiency
- Labor requirements
Manual Pick Mod and Sort – Footprint and Capacity

Zone 1  Zone 2  Zone 3  ...  Zone n

Unit Sorter

Put Wall

Shipping Sorter
Don’t Be a Prisoner to Old Habits

1 million SKU’s

Off peak efficiency

1 million units/day

Labor requirements

1 million sq. ft.

1 hour order lead time

15-20 million units active inventory
“Our traditional e-commerce batch concept would have required over 2 million sq. ft. and thousands of people to scale to 1 million units/day. But irrespective to this, we don’t believe it scales above 250k units/day.”

SVP Logistics, Large Retailer
Waveless GTP Pick – Solves Storage Density and Offers Great Pick Performance

1 million sq. ft.
Waveless GTP Pick – Footprint, Complexity, Order Lead Time at Scale

- Travel distances become too great = speed problem
- Staffing by module and multiple touches = operational challenges
Not Quite the Future State

1 million SKU’s

1 million units/day

1 million sq. ft.

Off peak efficiency

Labor requirements

1 hour order lead time

15-20 million units active inventory
Software is Key to Next Gen Automation

• Huge advantages for WMS/WES combination
• Simple receipt of product and logging inventory no longer acceptable – this is fulfillment!
• Decision points must be dynamic
• 15 to 20 decision points are typical for an item progressing through system
• And it begins before products are even received
Decisions, Decisions – 200 per Second

- Requires a new approach
Dynamic Order Processing

ORDER POOL AT 9:30

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PRIORITY ORDER* DROPS AT 10:00

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ORDER POOL AT 10:00

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Order Pool Management

Each order pool has its own logic depending on picking methodology.

The completion of orders is based on order release parameters in pool.
Order Pool and System Management

Future best in class: Using AI powered systems to increase operational flow and maximize utilization.
Next-Gen Comparison

The Old World

• Supply Chain is managed by cost
• Distribution Automation is chosen based on large labor pool availability
• Automation is evaluated on legacy parameters for return on investment
• Store retail automation concepts are adapted for e-commerce
• Order processing for e-commerce driven in large batches
• Speed of equipment is critical
• Short falls in achieving operational goals

The New World

• Supply Chain is managed for competitive advantage and to increase market share
• Distribution Automation is chosen to provide operational cost advantage, and accounts for labor shortages
• Automation is evaluated on it’s ability to enable strategic goals (e.g. throughput and getting close to “lights out”)
• E-commerce automation has an accepted best practice process – the best way to automate that process differentiates the winners
• Order processing for is real time, featuring advanced algorithms to gain efficiency with short order lead times
• Utilization of equipment is the important element for performance, combined with effective operational management enhanced with data analytics
• Exceeding operational goals and driving trends in the market
The Next Gen Solution

Manual storage
Automated storage
Returns
Value-added services

INDUCTION
- Induction stations Goods to Person (G2P/Automatic)
- Induction Person to Goods (P2G)

BUFFERING
- Dynamic buffer (returns, residuals, pre-picks, fast mover)

SEQUENCING
- Batch buffer
- Sequencer (matrix sorter)

PACKING
- Ergonomic packing stations
- Automatic packing stations

Shipment

2 Touches
Driven by Software
Highlight Project – Fashion E-com

- **Warehouse size:**
  < 1 million sq. ft.

- **All fashion products:**
  Flat Pack, GOH, Accessories, Shoes

- **SKU:**
  No Limits

- **Performance:**
  > 1,500,000 pcs/day

- **Storage capacity:**
  > 1,000,000 cartons

- **Technology:**
  AS/RS, Pick-Tower, Pocket-Sorter

- **IT:**
  SAP EWM, WAMAS® WES
Next-Gen Evaluation

1. Next Gen Solutions enable best of breed supply chains
2. Best of breed supply chains enable competitive advantage
3. High Density AS/RS + Pouch sorter + next generation software = next generation e-commerce solution
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