newCommerce: E-commerce’s effect on Network, Facility Design and Real Estate Strategies

Presented by: St. Onge Company
Bryan Jensen
Chairman/EVP
St. Onge Company
Topics

• Experience – “Why Listen”
• Some terms and definitions
• Network and facility strategies
• Design criteria trends…Big Data
• newCommerce – e-commerce effects on:
  • Equipment & systems inside the building
  • Logistics networks and facility equipment design
  • The demand for, and the demands of, the buildings themselves
• How the demands of e-commerce shape the Networks Outside the 4 Walls, affects the Design inside the 4 Walls, and even the very Nature of those Walls!
Fulfillment Experience

- H&M
- Finish Line
- The Children’s Place
- Sears
- Target
- HSN
- Shopko
- Zale Corp
- Netshops.com
- eFollet
- Walmart
- Golfsmith
- TJX
- Toys “R” Us
- QVC
- Gap Direct
- Home Depot
- Urban Outfitters
- Rue La La
- L.L. Bean
- David’s Bridal
- Staples
- Office Depot
- Office Max
- Sephora
- Ikea
- West Marine
- Liberty Interactive
- Zulily
- B&N.com
- Budgetext
- Petfooddirect.com
- LTD Commodities
- Nordstrom
- Williams-Sonoma
- S5A.com
- Dell
- Chico’s
- Scholastic Books
- Foot Locker
- Levi Strauss
- PetSmart
- JCPenney
Omni-channel: The current trend

- Customers experience a single type of touch-point
- Retailers have a single type of touch point

*The Legacy*

- Customer sees multiple touch-points acting independently
- Retailers’ channel knowledge and operations exist in technical & functional silos

*The Reality*

- Customer sees multiple touch-points as part of the same brand
- Retailers have a single view of the customer but operate in functional silos

*The Next Step*

- Customers experience a brand, not a channel within a brand
- Retailers leverage their ‘single view of the customer’ in coordinated and strategic ways

*The Goal*
Okay so then what’s “multi-channel”?

There are several basic network types and configurations for servicing direct to consumer customers. Those that are pertinent to our discussion and are detailed in some of the slides that follow are:

- **Combination Center** - Stores and on-line customers serviced from same facility
- **Dedicated Centers** – Stores and on-line customers serviced from separate locations
- **Store Distributed** – On-line customers are shipped from stores
- **Hybrid** – Combination of the above strategies based on geography, SKU segment (type or velocity)
Network Types – Location Strategy

- Single vs. Multiple locations – Strategy complexion that can apply to any of the identified network types

### Single Location

- **Combination Center** - Stores and on-line customers serviced from same facility
- **Dedicated Centers** – Stores and on-line customers serviced from separate locations
- **Store Distributed** – On-line customers are serviced from stores
- **Hybrid** – Combination of the above strategies based on geography, SKU segment (type or velocity)
Network Types – Location Strategy

• Single vs. Multiple locations – Strategy complexion that can apply to any of the identified network types
Dedicated Center(s)
Multi-channel Center(s)
Facility Trends

**Pre-Internet**
- Dedicated centers
- Catalog fulfillment
- Single Channel Center (except for wholesale/retail hybrids)

**1990’s – early 2000’s**
- Growing Internet demand
- Adding Multi-Channel Centers for faster delivery and to accommodate the smaller e-commerce volumes in its early stages

**Current Trends**
- Volume driving some back to large single channel centers
- Sophisticated designs with need for skilled operators
- Delivery time promises driving the need for smaller, urban centers
What are you selling?

- **Apparel**
  - Bagged & Labelled
  - Sort Friendly
  - Imperfect Conveyability

- **Hard Lines**
  - Cartons
  - Gentler Sorting
  - Best Conveyability

- **Non-Sortables**
  - Oversized/Asymmetrical
  - Too Small
  - No AutoID

In what Unit of Measure?

- **Consumer Products**
  - Low SKU count
  - Pallet in
  - Pallet and case out

- **Retail**
  - Higher SKU count
  - Pallet and case in
  - Case and piece out

- **Direct to Consumer**
  - Higher SKU count
  - Case and piece in
  - Piece out
Using Big Data in the Supply Chain

Finding
- ERP / WMS / WCS
- Backup/Archive Servers
- Websites
- Third party data sources

Mining (Extract)
- Proprietary Tools
- Third party analysts

Analyzing (Translate)
- Proprietary Tools
- Third party analysts

Deciding
- Designing
- Facilities
- Networks
- Scheduling
- Staffing
- Forecasting
- Sourcing

Continuous Improvement
## Order Analysis

### Days

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### Eq Cases by Week

![Graph showing eq cases by week]

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Order Commonality

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<td>[STF32R]</td>
<td></td>
<td></td>
<td>55</td>
<td>1%</td>
<td>1</td>
<td>63</td>
<td>0%</td>
<td>426</td>
<td>0%</td>
</tr>
</tbody>
</table>

Order %

Line %

Each %

For more detailed analysis, please refer to the attached Excel sheet.
Growth Considerations

- 5,000
- 10,000
- 15,000
- 20,000
- 25,000
- 30,000

Year 1: 16
Year 2: 
Year 3: 
Year 4: 
Year 5: 
Year 6: 
Year 7: 
Year 8: 
Year 9: 

orders
lines
units
So what does newCommerce mean to the systems and equipment inside the building?
D2C Order Fulfillment Progression

Pick Process & Equipment Complexity

Throughput
(Orders and Pieces per Day)

- Discrete Order Pick and Pack
- Order Cluster Pick and Pack with Replenishment
- Product to Picker
- Wave/Batch Pick with Post Pick Sort to Order
- Multiple Wave/Batch Pick with Pack Waves and Sort to Order
Picker to Product
Are Zone Divert Pick & Pass Modules “so 1990’s”?
Product to Picker

Mini-load

Vertical Lift Module

Carousel

Shuttle System
Unit Sort
Order Consolidation

Bombay

Cross belt

Tilt tray
Sort to Order

1 sort vs. 2-pass sort

automated

manual
Building cube utilization and mezzanines

Reserve pallet storage

Shipping

Receiving

Multi-Channel Fulfillment
Building cube utilization and mezzanines

D2C Pack and Seal

Shipping Sorter

Multi-Channel Fulfillment
Building cube utilization and mezzanines

Stores Carton Seal

Pack/Put to Light PTL (for stores)

Multi-Channel Fulfillment
Level of Service (Order Cycle Time) Will Drive Equipment Utilization/Needs

- 48 hour Level of Service achieved with 50% reduction in total facility throughput capacity
- 72 hour Level of Service achieved with 60.6% reduction in facility throughput capacity (graph not depicted)
Technology Rises to Meet the E-commerce Fulfillment Demand (and stays there)

- Investing to accommodate D2C peaks is significant
- Peak to Average ratios for a brief period do not payback investments to cover those peaks
- The Dilemma – How to maintain service for a significant peak and maintain profitability
- The Answer – Balance (1) CAPEX (2) Throughput Capacity and (3) Labor
Technology Rises to Meet the E-commerce Fulfillment Demand, finds common sense…

- Unit sorter
  - One sorter for 10 months
  - Active put walls in peak season

- AS/RS
  - Cranes based on average single pass/seasonal two part put process
  - Use two pass put wall in season

- Manual Solution
  - Cart pick to single put wall out of season
  - Use two pass put wall in season

- Coupled with additional shifts, the same site can support 4x to 10x peak to average demand, while only driving labor up 2x to 3x
In or Out of Control? Blurring lines between WMS and WCS

Warehouse Management System (WMS)
- Inbound Shipment Documents
- Transportation
- Shipment Management
- Receiving
- Order Management
- Cycle Counting
- Task Interleaving
- Inventory Management
- Putaway/Replenishment
- Location and Storage Management

Warehouse Control System (WCS)
- Move Management
- Equipment Interfaces
- Equipment Communication and Control
TYPICAL WMS FUNCTIONS

RECEIVING
- “Blind”
- ASN/EDI/Web
- Conventional/Automatic

PUTAWAY
- Dedicated, Random, Hybrid
- Location Selection: System/Operator
- Put Confirmation

PICKING & SHIPPING
- Pick by Order, Batch, Wave
- Pick Confirmation
- Shipping Manifests, BOL's
WAREHOUSE CONTROL SYSTEMS

1990’s: PLC’s for material handling storage & conveyor equipment control & diagnostics to speed item flow from receipt to order release, picking & shipment.

Today: PC’s & expanded functionality including order analysis, release & status monitoring, AIDC management & a host of additional equipment interfaces coupled with line & activity balancing.
THE LINES ARE BLURRING
WMS or WCS?

• Make sure the layout and processes are fixed first. Don’t overlay any WMS or WCS on flawed layouts & processes.

• If both make sense for your requirements, develop detailed specifications that define which system controls which functions, data synchronization processes and timing, exception handling – AND, who is accountable for overall system performance.

• Avoid customization – it adds cost, lengthens implementation time & increases risk.

• WMS and WCS have complementary solution sets that need to work together. Instead of looking at this as a battle between WMS & WCS, solutions providers need to look at finding the right balance of both that results in the best answer for the customer’s operational needs.
So what is newCommerce driving in logistics networks and the MHE within the buildings that populate them?
Pragmatic Combination Centers Specialty Retail

• Stores and on-line customers are serviced from same facilities
• Both store replenishment and e-com fulfillment require pick and pack operations
• Bi-weekly transfer shuttles between DCs to balance inventory serve as an option to drive single parcel order shipments

• A good mix of minimized cycle time to the customer, operating costs advantages and minimal inventory penalty drives this network
• Order volume is low enough, and inventory cube is small enough that the direct to consumer channel does not really demand its own facility
• Like order processing operations (pick and pack for both stores and e-com) allows for processing economies

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Find Your WOW
High Volume Direct to Consumer Facility Design

Within Multi-Channel Concept
• Stores and on-line customers serviced from dedicated facilities for each channel

• Multiple e-com locations serve customers by geography as shown on map to the left (Retailer’s store DCs not shown illustrative simplicity)

• Service areas for customers can overlap

This network was driven by the size of the D2C and Store DC network demands. Demand was too large for the channels to effectively be in the same building, and D2C demand eventually drove the need for a second fulfillment center.

Inventory location is an issue. A decision making tool addresses the alternatives to supplying the customer when all items are not in stock in the same DC by comparing the options below:

• Ship two packages
• Ship one package from the suboptimal facility
• Ship the out of stock item from one facility to the other and ship a single order to the customer

The decision making can be influenced by customer preference (They want one package)
Single channel E-Commerce concept
Lower capital peak season solution
Pragmatic Dedicated Centers Office Supply

• Numerous dedicated direct to consumer and business to business centers
• Map is illustrative only, there are over 30 such centers
• Multiple e-com locations serve customer by geography as shown on map to the left

• Speed to the customer is paramount above all other considerations
• Allowing a customer to place their order even one hour later for next day delivery is considered a significant competitive advantage for this specialty direct to consumer retail channel
• While overall volume is significant (over 500,000 orders per day on a light day across the network) no one facility processes more than 5% of the broken pack volume.
Dedicated D2C/B2B Centers Office Supply
Pragmatic Store Distributed Specialty Retailer

This network allows for direct to consumer customers to be serviced from stores.

The servicing store is selected based on inventory availability and proximity to the customer.

Service areas overlap extensively based on where inventory is available.

Allowing maximum customer access to even the smallest of inventory quantities is the main strategy driver in this case.

There are lower volumes of e-com demand.

Inventory visibility by store is critical and focused on to ensure product is truly available.

Did not increase inventory at the store level (inventory is not stocked at the stores solely for direct to consumer business).

Store service

Direct to consumer

Store Locations
• This network is a hybrid utilizing all three network types
  • One direct to consumer facility
  • Multiple DC store replenishment centers
  • Hundred plus stores
• Consumer orders can be shipped from the D2C
• If not available in the D2C facility and available at ANY store product is sourced from the store
• The servicing store selected based on inventory availability and proximity to the customer
• Service areas overlap extensively based on where inventory is available

• Allowing maximum customer access to even the smallest of inventory quantities while ensuring the customer receives the absolute maximum in customer service is the main strategy driver in this case
• This type of network has been combined with free standard shipping on every order to drive maximum customer satisfaction and lowered bar for transit time on standard shipping
So what does newCommerce mean to the building to be filled with equipment or positioned in the network?
Industrial vacancy rates are at all time lows...
There are big boxes being developed as fast as possible...
For Distribution Assets given new customer demands – new Commerce is a bit like time travel...

...but better thought of as “Everything old is NEW again.”
In light of newCommerce, what is this?
In light of newCommerce…

What is this? A backlot set for a 1970’s Gang film?
In light of newCommerce…
What is this? The direct result of ‘safe’ nuclear power?
In light of newCommerce…
That was a seven story prime distribution asset…
Optimally located for last mile delivery…

In the heart of the five boroughs…
Recap – The Supply Chain…

OUTSIDE the Four Walls…

• Logistical Options Driven by the Supply Chain at Hand

Drives the available options INSIDE the Four Walls…

• Facility, Equipment, System and Process Options Driven by the Pragmatics of the location’s Design Criteria

The need for the building locations, and the acceptance of configurations, of those WALLS…

• Urban locations supporting same day delivery utilizing unconventional configurations

All of which is Driven by

• Suppliers and Customers - AKA the Alpha and Omega of the “Supply Chain”

…of newCommerce
Questions?
For More Information

Speaker: BJensen@stonge.com
Website: www.stonge.com

Or visit our Booth S1855