Operational Excellence Through Process And Technology

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Presented by:

Chris Arnold

VP Logistics Strategy, Design, Engineering & Planning

Jerry Koch

Director of Product Management

Seminar Overview

Abstract

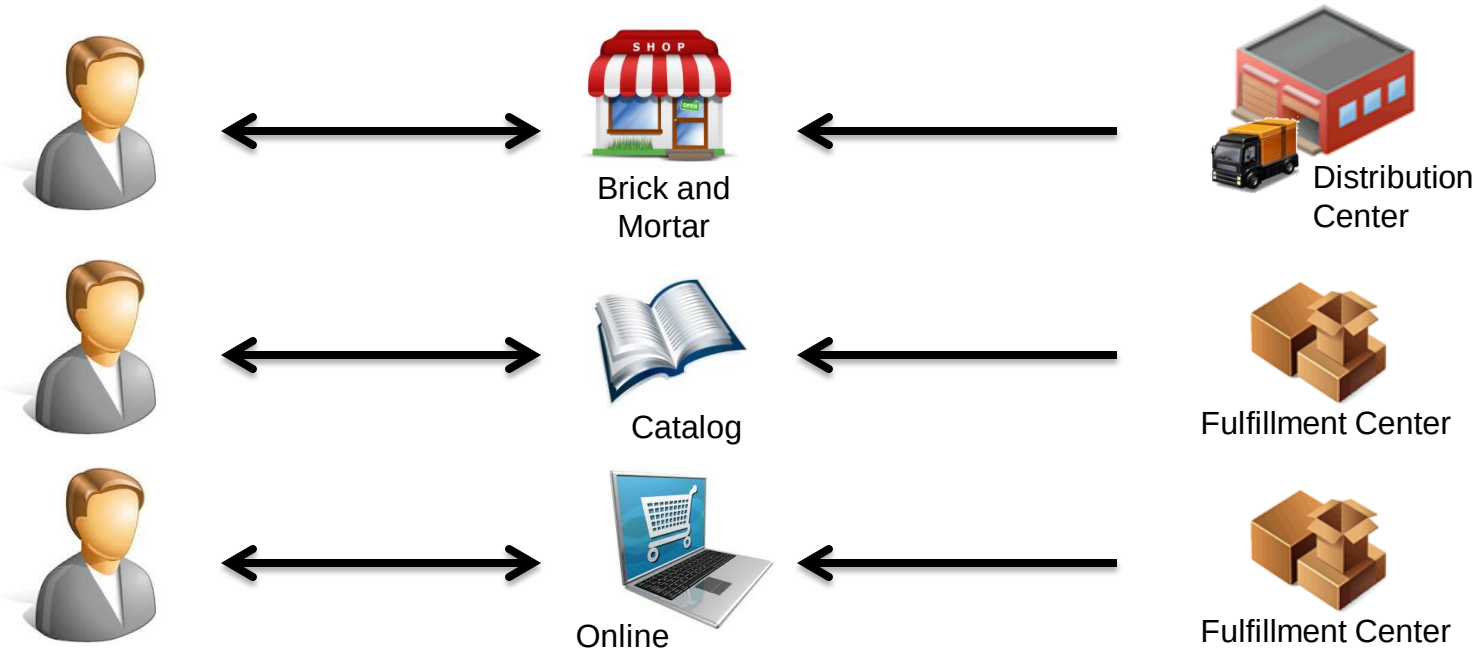
It takes more than the latest technology to drive operational success. This seminar will discuss the impact of omni-channel fulfillment requirements and how to increase system performance and efficiency through process and technology improvements.

Key topics

- Key performance indicators that expose areas for process improvements
- Processes and technologies that impact successful picking and sortation operations

Omni-Channel Fulfillment

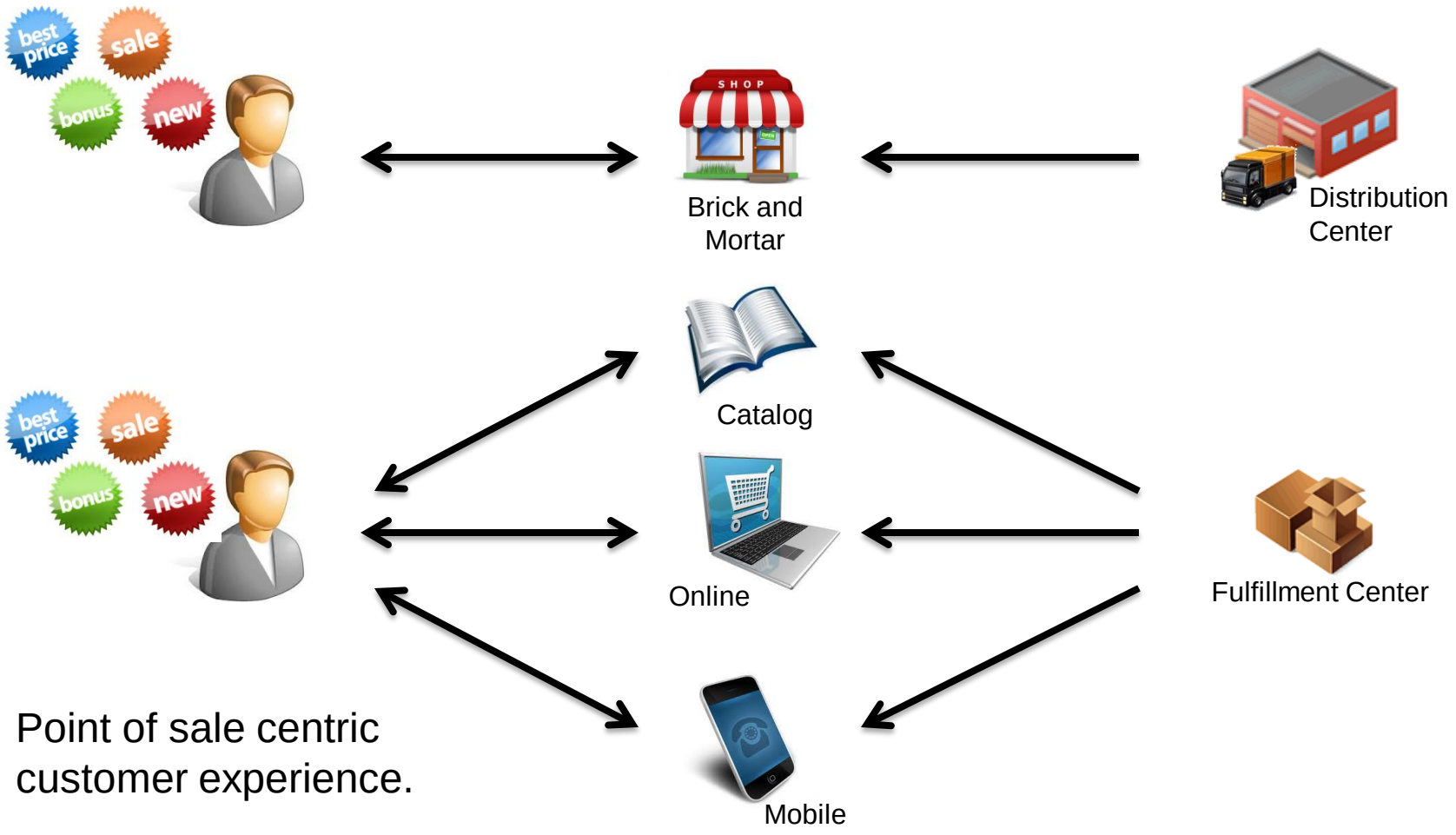
Traditional Retail Channels



Retail Evolution – from single to multi-channel retail channels. Multi-channel retailers sell directly to customer via more than one channel. Typically have isolated channel-centric operations with different pricing, promotions, as well as fulfillment operations and inventories.

Omni-Channel Fulfillment

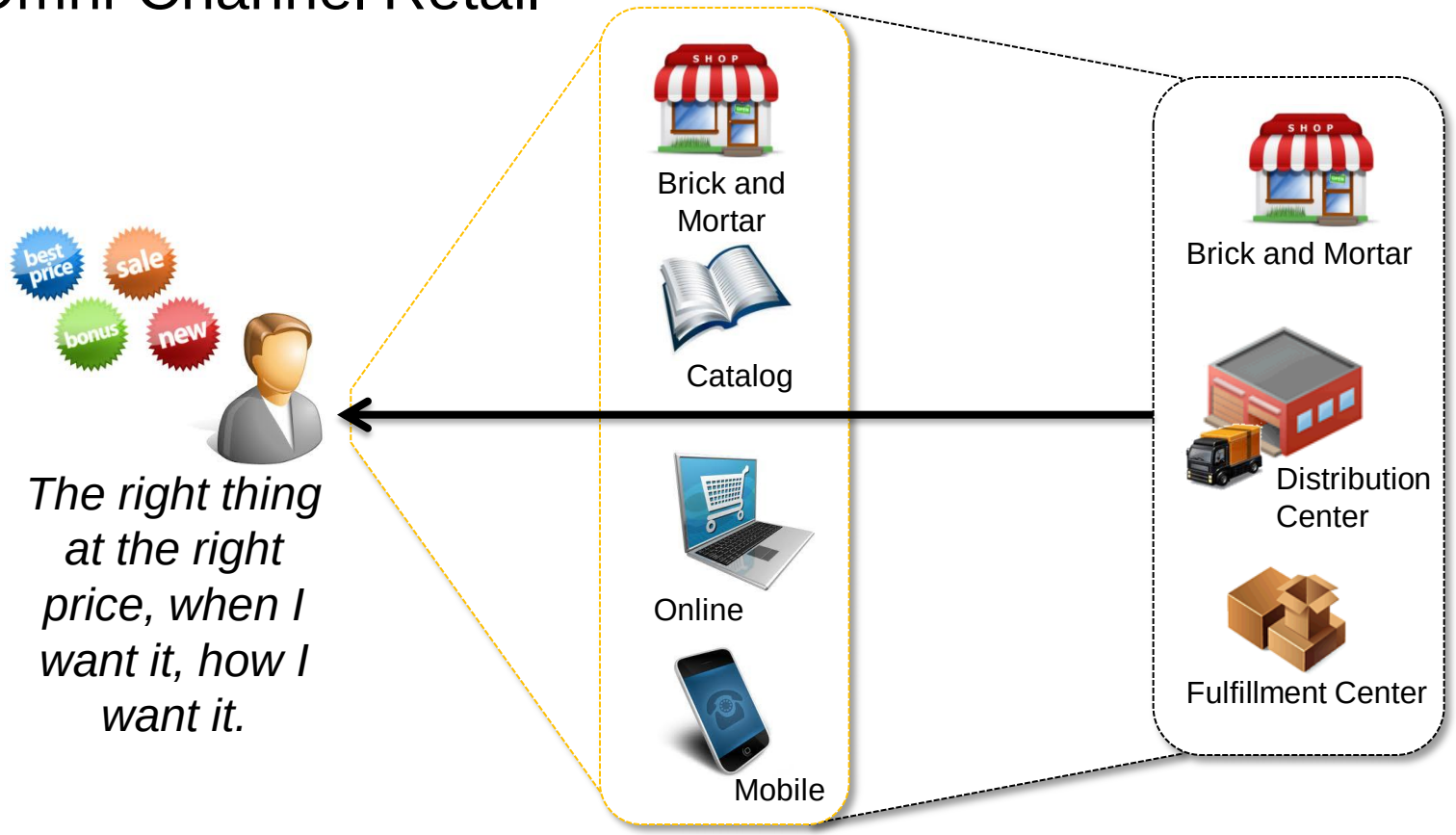
Multichannel Retail



Point of sale centric customer experience.

Omni-Channel Fulfillment

Omni-Channel Retail

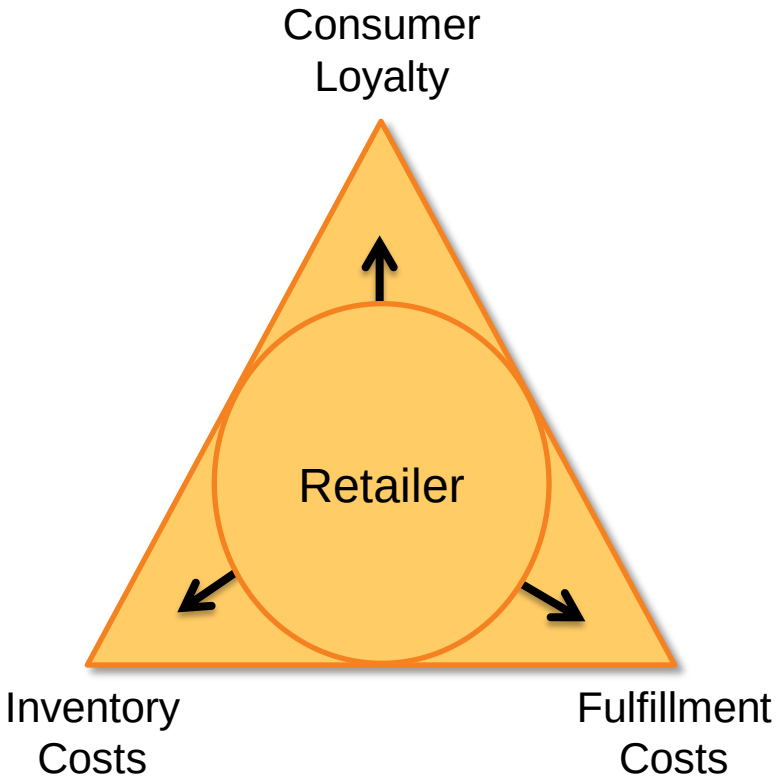


Strives to make a single customer experience based on a retailer's brand. Customers can access the same products, prices, and promotions through all channels and choose fulfillment of the 'perfect order'.

Omni-Channel Fulfillment

- eCommerce and mCommerce will continue to drive evolution of retail channels
  - Nielson: Nearly 50% of U.S. smartphone owners are using shopping apps each month
  - Booz & Co.: Showrooming or Showcasing by 40% of shoppers (practice of browsing in a store before buying online)

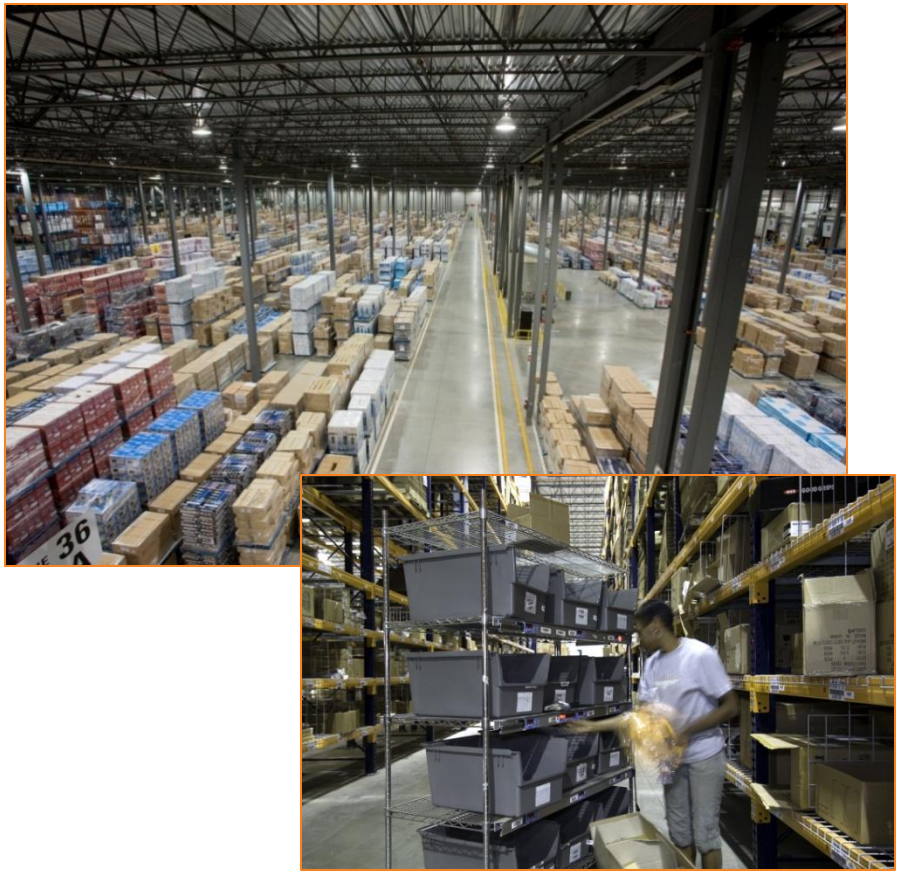
- The “Perfect Order” - delivered at the right time, to the right place, with the right product, in the right condition, in the right package and with the right documents.



Balancing the ‘perfect order’ with the costs of fulfillment requires constant pursuit of operational excellence .

Common Operational Challenges

- Lack of qualified labor
- Labor cost
- Accuracy
- Space
- Customer service
- Customer demands
  - Value added services
- Data → information
- Site locations
- Supply chain uncertainty



What is driving the desire for increased automation?

- Changing labor force
  - Qualified labor for warehouse operations diminishing
  - Baby boomers
  - Today's generation wants something different
- Smaller order quantities, both store and direct-to-consumer
- Customers demanding faster, more accurate shipments
  - Higher accuracy equates to less human interaction

- Evolving warehouse control systems
  - Built to manage speed and accuracy required today

It's all about speed, accuracy and the RIGHT mix of automation

- Finding the right mix of automation to augment labor is key to cost justification and ROI

- Keys to Operational Excellence
  - People
  - Processes
  - Technology

Maximum Productivity + Maximum Accuracy =

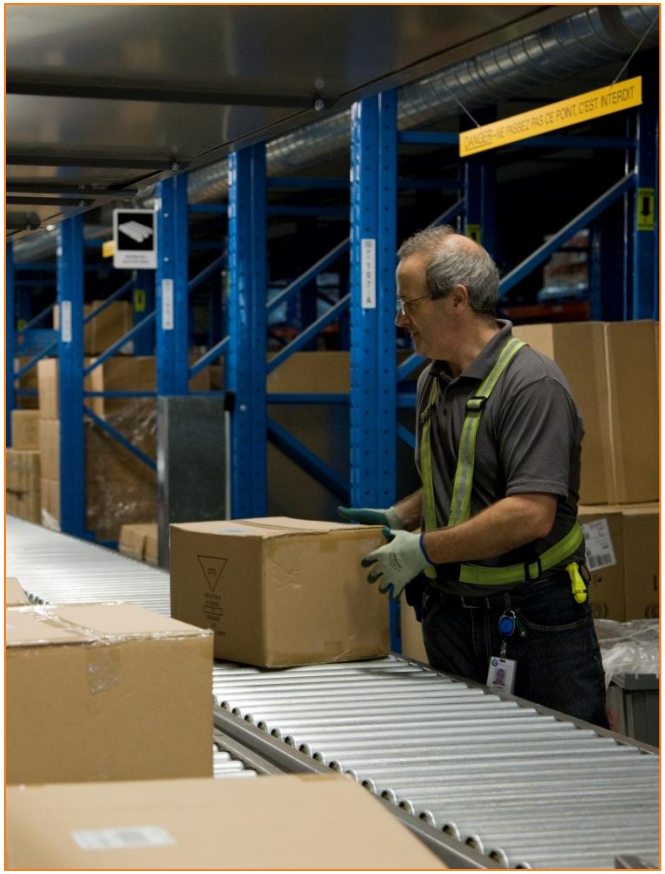
Maximum ROI

Operational Excellence

The importance of people

People are key to success or failure

- Find, keep and grow your people
- Treat fairly and with respect
  - Know their names!
- Pay for performance
  - Fair and accurate engineered standards
  - Labor management software
- Do more with the people that you have
  - Use the RIGHT automation to augment your people



Get them, keep them, grow them!

- Develop well defined processes and workflows
- Provide training and documentation
- Enable performance through the right tools and systems
- Train, train and train again
- Use SMART metrics everyone knows

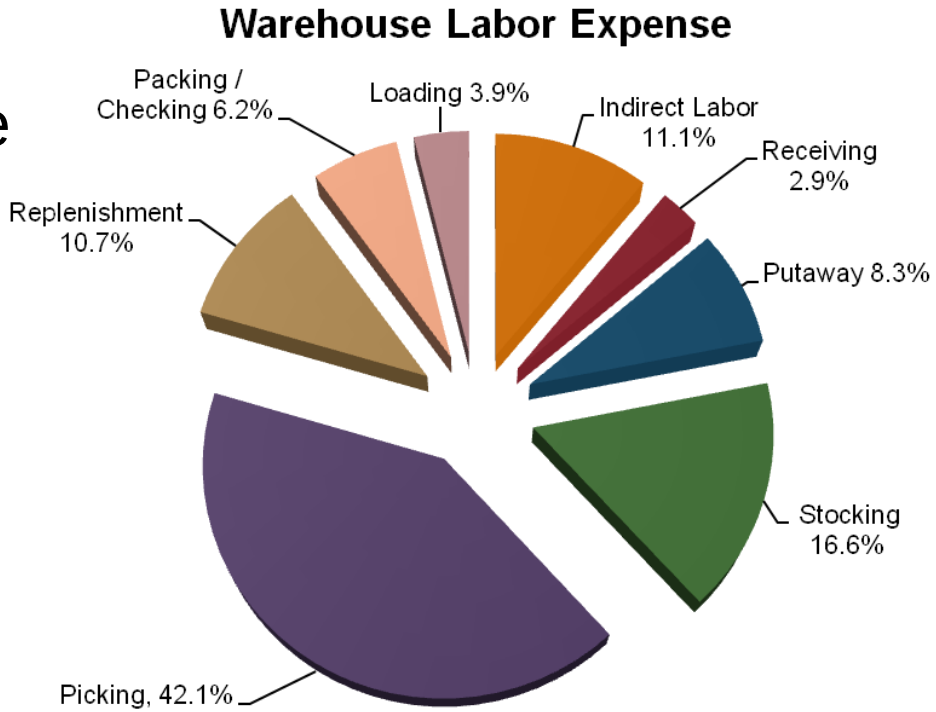
Operational Excellence

Improve your processes

Improve Your Processes: Order Fulfillment

- Order filling is the most crucial and labor-intensive process within the distribution center

- It is costly and typically accounts for 50%-65% of warehouse labor expense

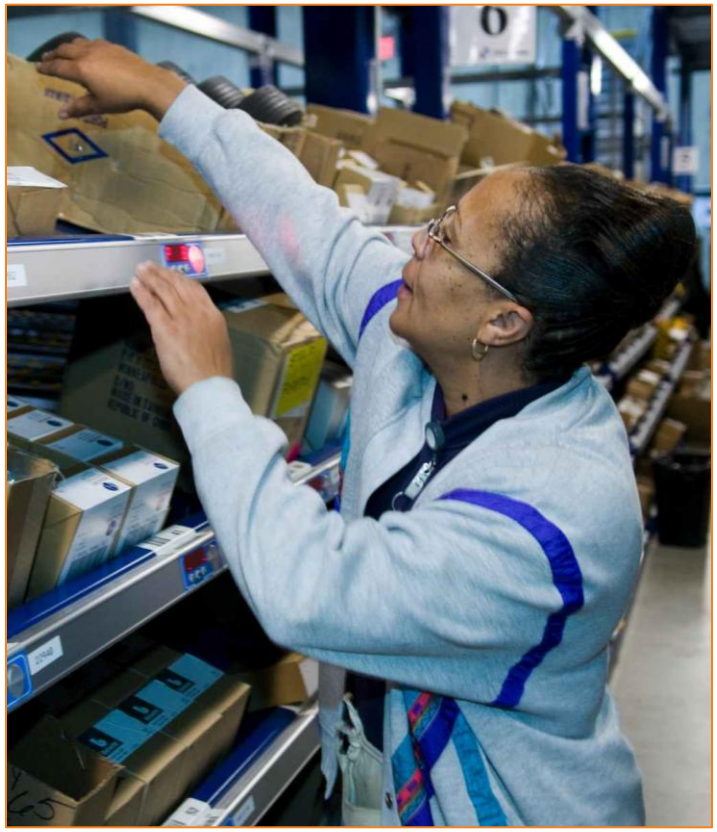


Know Your Operation & Keep Your Order Fillers Filling!

- How many types of order filling do you have?
- Are you slotted correctly?
- Do the order fillers have the proper tools?
  - Are they maintained?
  - Is there enough?
  - Are they charged?
- Is your material handling system being put through a preventive maintenance program to ensure up time?

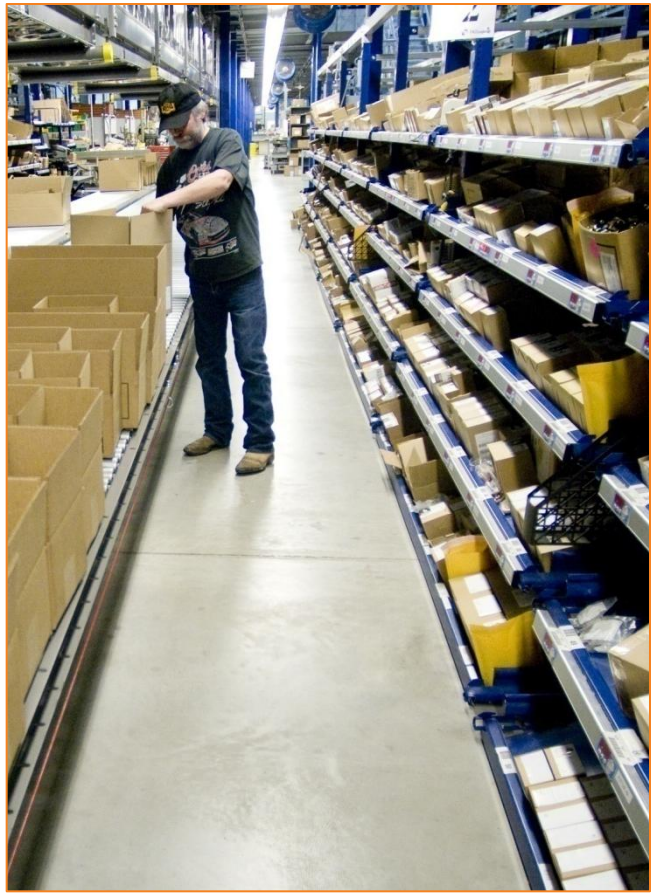
Improve Picking Accuracy

- Reduce bad picking motions
- Synchronize receiving and slotting
- # of slots for high velocity
- Do not slot similar items next to each other
- Stock merchandise in location based on pick unit quantity
- Stocking should occur prior to picking
- Think about slotting for reserve and prime
- 80/20 starts with 60/10 (% volume / % SKU)



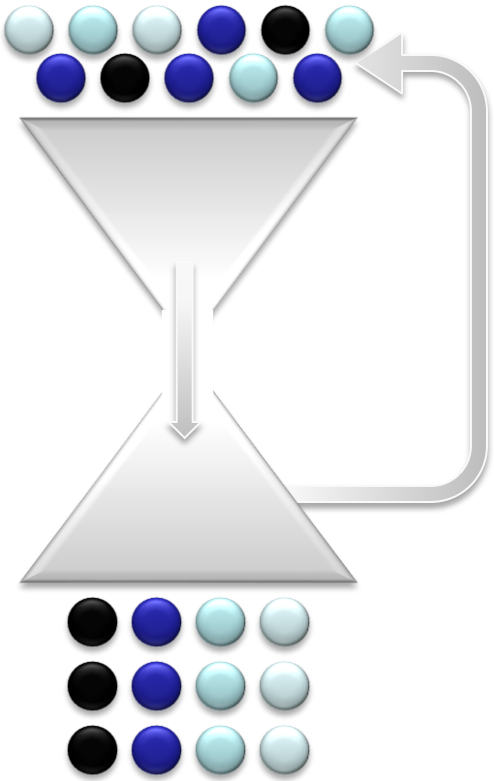
Improve Picking Productivity

- Map the process
  - Understand touches
  - Delete unnecessary activities
  - Keep your order fillers order filling!
- Observe every shift
- Preparation readiness
  - Orders
  - Stock
  - Material
  - People
- Compare accuracy with productivity
  - Accountability
  - Quality checks



Improve Sortation Processes

- Minimize recirculation
  - Avoid gridlock
  - Downstream and upstream must be balanced
- Minimize no-reads
  - Ensure labels always start in a readable location
- Minimize jams and side-by-sides
  - Ensure carton alignment and orientation through the system
- Scalable system
  - Operate efficiently and handle peaks when necessary



Operational Excellence

Use the right technology

Is a Warehouse Management System (WMS) enough?

- Reliable, but massive like ERP systems
- Focused on planning and inventory management
- Manages more and more non real-time data
- Built specifically for manual warehouses
- Bulk of system focuses on human error detection and resolution
- Good for long-term labor scheduling and standards
- Lacking responsiveness and real-time adjustment of labor needs

The importance of a good Warehouse Control System (WCS)

- Real-time subsystem management, monitoring and adjustments
- Maximizes value of automation
- Real-time directives for fast order fulfillment and efficient product routing
- Simpler to deploy with less risk and less cost
- Configurable workflows
- Modular in nature
- Cost less to modify or configure to accommodate growth, process changes and increased automation
- Collect statistical data on operational performance to best understand

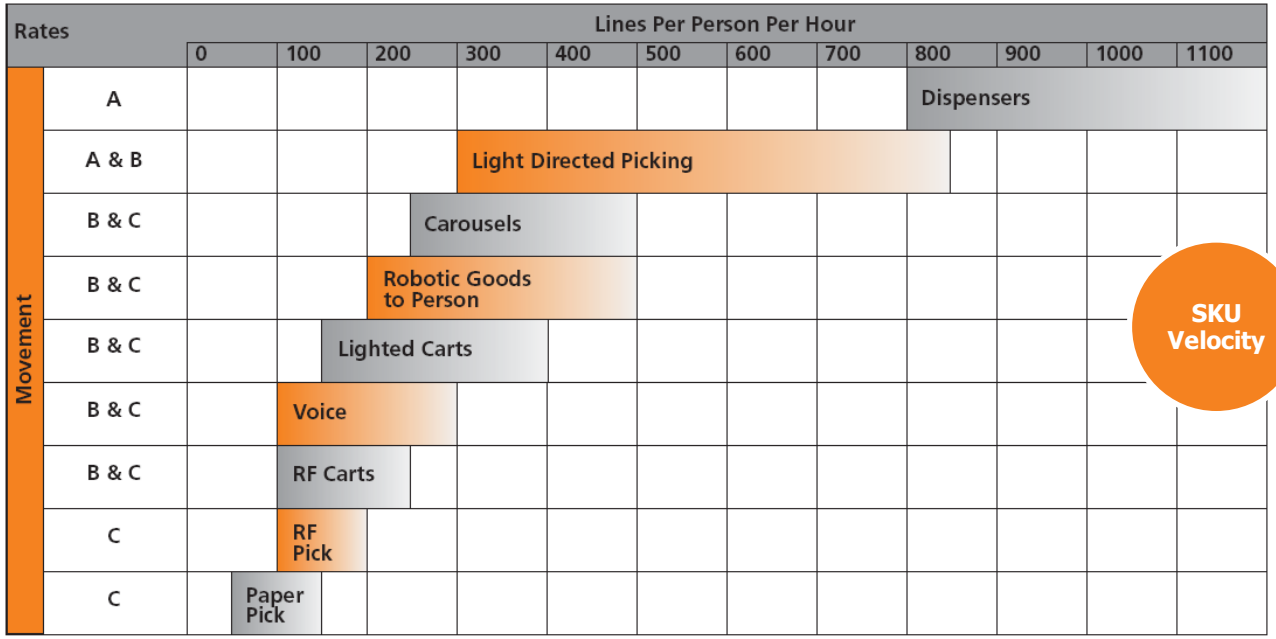
What makes a good WCS?

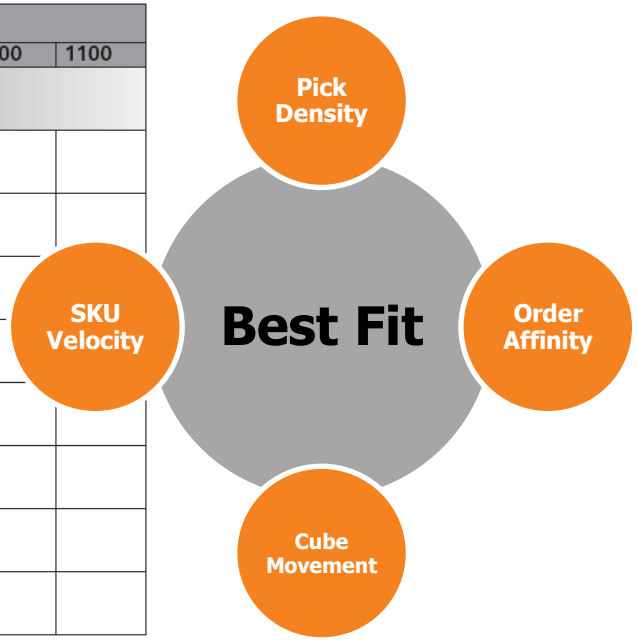
- Fully integrated and designed from machine control out
  - Effectively controls equipment
  - Maximizes machine operations
  - Optimizes both equipment and human performance
- Expands and enhances the value of a WMS or ERP
  - Exchanges information required to efficiently manage the daily operations in real time
  - Coordinates and optimizes workflows and equipment usage
  - Incorporates a number of decision points within the physical flow to efficiently balance the work throughput and report conditions back to the WMS/ERP

Pick the right picking technology

- Workflow flexibility
- Order accuracy
- Selection productivity
- Replenishment and stocking rates

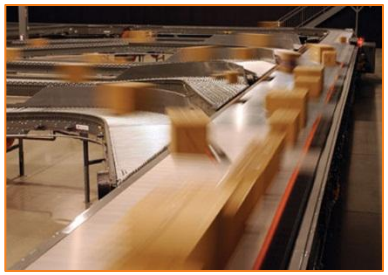
- SKU variability
- Horizontal and vertical space constraints
- Achieving targets now and in the future

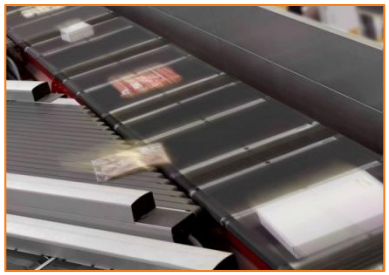




Sort out your sortation options

	Maintained Orientation Line Sortation							Right Angle Line Sortation				Loop Sortation		
	Deflectors on Belt Conveyor	Wheel Divert in MDR	Pop-Up Wheel in Belt Conveyor	Pop-Up Wheel in Strip Belt Conveyor	Activated Roller Belt	Sliding Shoe Sorter	Belt Slat Sorter	Pushers on Belt Conveyor	Right Angle Transfers	Pop-Up Roller in Strip Belt Conveyor	Dual Activated Roller Belt	Tilt Tray	Cross Belt	Bomb-Bay
Max Speed (feet per minute)	300	180	350	300	350	650	350	300	180	200	250	610	610	200
Min Gap (inches) **or** (dependent upon...)	Arm Length	Zone Length	18	18	6	4	9	26	Zone Length	> 36	Carton Width	Cart Pitch	Cart Pitch	Cart Pitch
Max incline/decline angle (degrees)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	10	10	n/a
Min product size (width x length) (inches)	6 x 6	9 x 9	9 x 9	6 x 6	2 x 2	4 x 6	4 x 4	6 x 6	9 x 9	9 x 6	3 x 3	2 x 3.5	2 x 3.5	2 x 2
Max product size (width x length) (inches)	36 x 36	36 x 36	36 x 36	32 x 40	n/a	36 x 72	36 x 72	36 x 36	36 x 36	32 x 36	n/a	39 x 37	31 x 55	28 x 28
Min product weight (pounds)	2	2	2	2	< 1	< 1	< 1	< 1	2	2	< 1	< 1	< 1	< 1
Max product weight (pounds)	50	75	100	100	200	120	100	100	75	100	200	55	110	15





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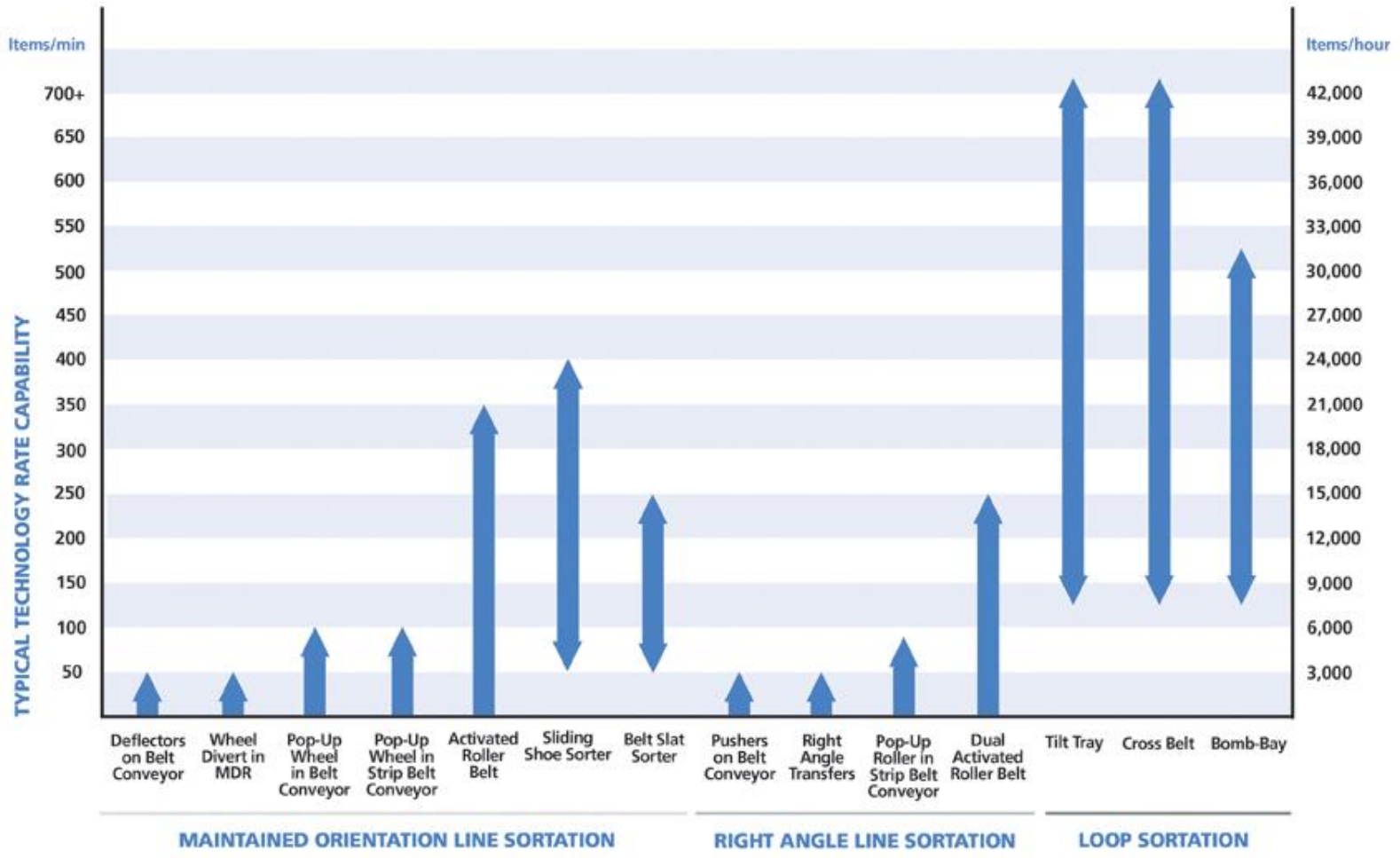

Summary

- It's all about speed and accuracy
- Finding the right mix of automation to augment labor is key to cost justification and ROI
- Keys to Operational Excellence
  - People: Find them, keep them, grow them
  - Processes: Drive efficiency, productivity and accuracy
  - Technology: Augment and adjust to fit your labor

Maximum Productivity + Maximum Accuracy =

Maximum ROI

Operational Excellence

Metrics for Success

Key Performance Indicator (KPI) Measurements

Inventory

- Paid inventory ratio
  - On-hand inventory that has been paid vs. inventory that has not.
- Inventory accuracy %
  - Actual SKU units / system SKU units
- Inventory days on hand
  - Monthly inventory $ (avg) / daily sales per month
- Inventory visibility
  - Inventory system receipt time – physical receipt time
- Damaged inventory %
  - Total damaged inventory $ / total inventory value at cost

Order Fulfillment

- Order fill rate
  - Orders filled complete / total order shipped
- Order accuracy
  - Orders error free / total orders shipped
- Order cycle time (hrs)
  - Actual ship date – customer order date
- On-time delivery
  - Orders on-time / total orders shipped

Key Performance Indicator (KPI) Measurements

Receiving

- Dock to stock hrs
  - Total dock to stock hrs / total receipts
- $ Value per unit received
  - Total received inventory $ / total units received

Productivity

- Units per labor hour
  - (Orders or units or items or lines) Picked or packed / total DC labor hours
- Sales per labor hour
  - Total sales / total DC labor hours

Key Performance Indicator (KPI) Measurements

Operational

- Cost labor hour
  - Total variable costs / total labor hours
- Storage utilization %
  - Total cubic feet occupied / total available capacity cubic feet
- Rate
  - Volume / hours worked
- Utilization %
  - Hours worked / hours paid

Operational

- Productivity
  - Rate X utilization
- Costs as % of sales
  - Total costs / total revenue
- Cost per unit or case
  - Total costs / total units or cases shipped
- Controllable cost per unit or case
  - Total controllable costs / total units or cases shipped

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For More Information:

Speaker: Chris Arnold: chris.arnold@intelligrated.com

Speaker: Jerry Koch: jerry.koch@intelligrated.com

Home Page: www.intelligrated.com.com

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