



**PROMAT** 2015

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**WMS + WCS =  
Warehouse  
Execution  
System**

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Presented by:  
**Nyle Morris**

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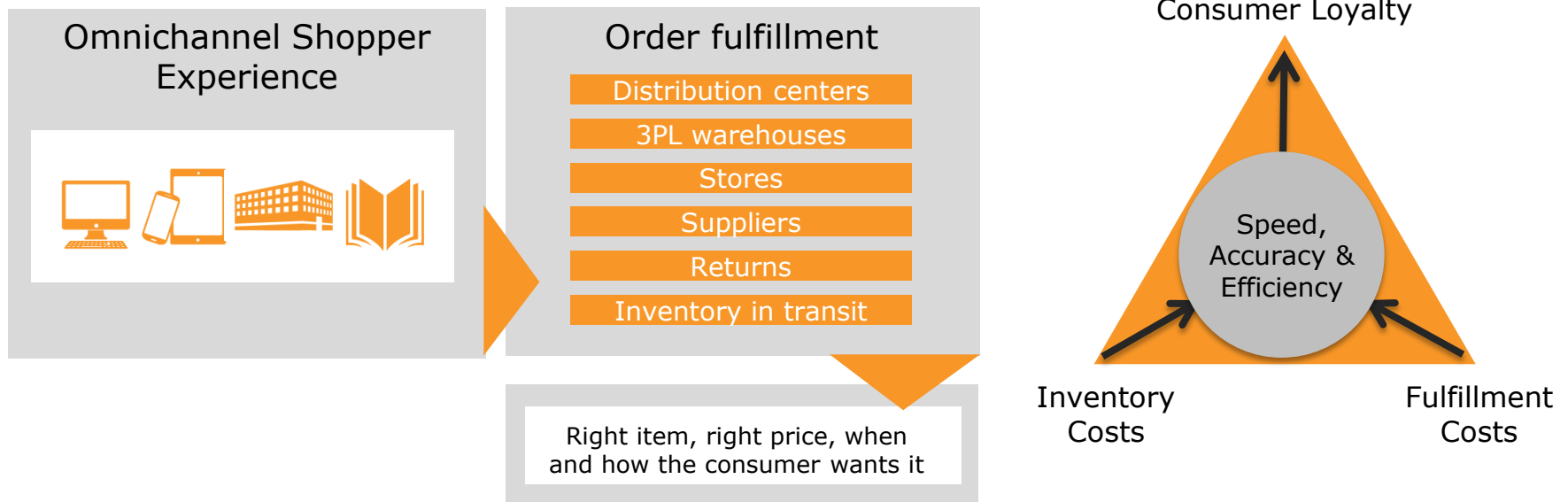
# Abstract

Speed, accuracy and efficiency define successful warehouse and fulfillment operations. Warehouse execution system drives **real-time efficiency** and responsiveness, utilizing adaptive, task-driven workflows and constant analysis of order priority, inventory, labor, process and equipment information and make **decisions at the speed of automation**. Learn what defines a WMS and WCS versus a warehouse execution system and the top KPIs measured by fulfillment operations.

**Key takeaway:** Combining warehouse execution system with material handling automation provides a unique, single-source solution for maximum throughput speed and greater operational service levels.

# State of the industry: omnichannel

- Service levels drive dynamic order wells
- Inventory leverage requires flexible fulfillment
- Labor efficiency requires adaptive and directed work flows
- **Goal** - Order speed/accuracy with lower shipping costs



# State of the industry: labor trends

- Requires intelligent directed workflows
  - The Boomerang – more retiring workers, fewer new workers
  - Millennial's labor participation at historic lows
  - 15% of workforce are supervisors and managers, 25% are 55+
  - 270,000 new jobs are expected in industry by 2018
- **Goal** - reducing labor costs



# State of the industry: automation

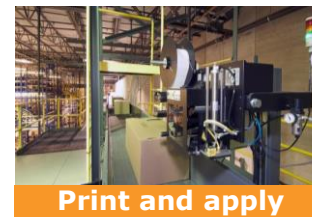
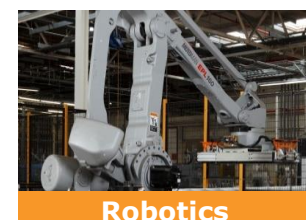
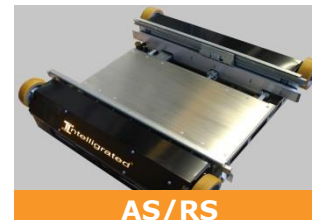
- Increasing capacity, speed and efficiency
  - Labor-only operations peak at 2,000–3,000 orders per day
  - Requires decisions at the speed of automation with operational information
  - Drive throughput to outbound in best trailer load sequence for store and direct-to-consumer deliveries
- **Goal** - maximizing automation throughput



# State of the industry: software

- WCS expansion into traditional WMS territory
- Intensified demand for visibility and efficient coordination with conveyables, non-conveyables, plus “islands” of automation synchronization
- WCS increased role in the operations of an automated intensive Fulfillment Center and evolving into an “execution” system
- **Goal**- one software execution system to provide maximum throughput speed enabling greater operational service levels

“islands” of more automation



# Warehouse software evolution

- Traditional warehouse management systems
  - Originally designed for manual processes
    - Inventory, purchasing and outbound order management
    - Cycles of planning, executing, monitoring and adjusting
    - Focused on sequence and exception handling
  - “Manual real-time” and design of planning and execution cycles limit ability to optimize work
  - Requires supplemental order fulfillment, labor management, slotting and warehouse control software
- Next generation: warehouse execution system
  - Traditional separate WMS, WCS and order fulfillment packages not enough to meet today’s requirements
  - Warehouse execution system to change the game within the four walls and beyond
    - Unprecedented efficiency and accuracy
    - Higher throughput at lower costs
    - Maximize automation speed and investment

# Warehouse execution system



**50,000 – 150,000 orders per day**  
Tilt-Tray / Cross-Belt Fulfillment & Returns Sortation

**10,000 – 50,000 orders per day**  
Zone Routing Pick-and-Pass & Sortation

**10,000 – 50,000 orders per day**  
Smart GoKarts, Sortation & Goods-to-Person Put Wall

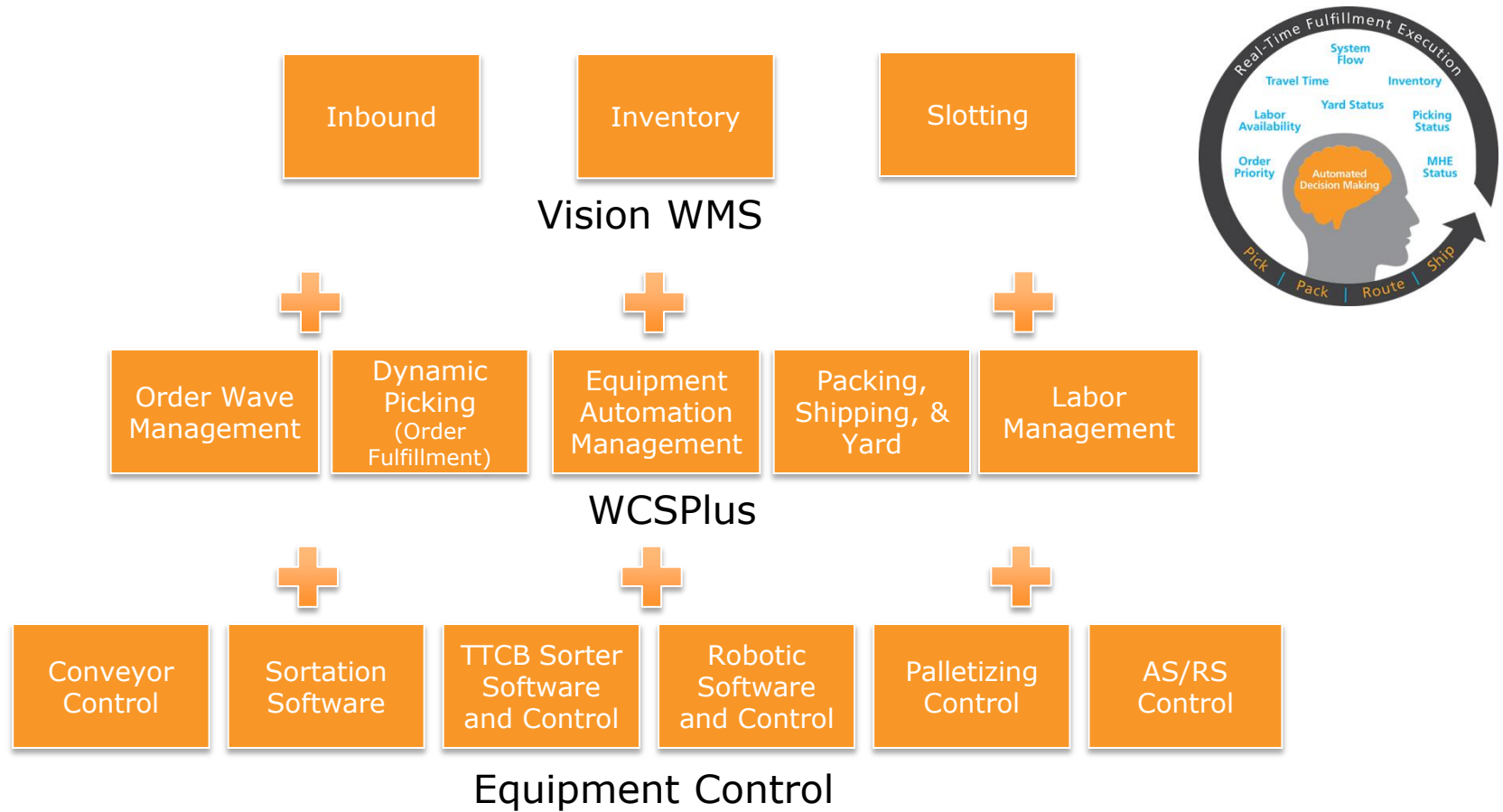
**10,000 – 30,000 orders per day**  
Smart GoKarts to Put Wall

**Up to 10,000 orders per day**  
Smart GoKarts (Paper, RF, Voice or Lights)

**Up to 5,000 orders per day**  
Voice Order Picking



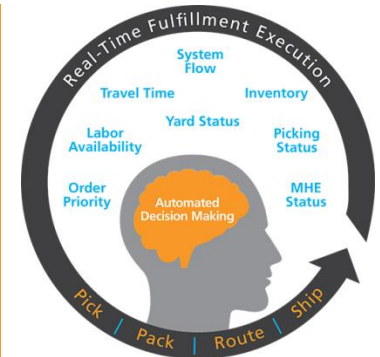
# WMS + WCS + Automation = Warehouse execution



# ERP/WMS/WCS evolving landscape































## Speed and Accuracy



**Warehouse Execution Systems**  
 how much labor + how much automation + real-time execution software = the highest ROI

# Warehouse execution system vs. traditional WMS

Function/Capability	Traditional WMS	Warehouse Execution System
Retail & E-Commerce Functionality		
Overall Performance		
Architecture		
Fulfillment Center Intelligence		
Real-time Visibility & Response Time		
Process Handling		
Slotting		
Inventory Management		
Labor Management		
Order Fulfillment Technology		
Equipment Integration		
Yard Management		
Graphical Automation and Work Process Views		
Business Intelligence Tools		

## Warehouse Execution System

- Proactive system using information from all sources in milliseconds to actively control and adapt
- Architected from machine controls view out
- View and control over automation and labor
- Execution system tying together all work areas
- Oversees operations, adapting automation and labor to accomplish workload
- Ideal for high-throughput, automated facilities
- One inventory to satisfy all distribution channels
- Dynamic and intelligent slotting with labor planning and standards increases space and decreases labor
- Full visibility of inbound, outbound, automation flow, inventory and yard

# Key takeaway: when evaluating warehouse execution systems, look for:

- Proactive system using information from all sources in milliseconds to actively control and adapt
- One single physical inventory to satisfy all channels
- Real-time optimization based on order priority, labor, equipment
- Labor management / performance incentive
- Maximizing the speed of automated material handling equipment
- **Goal** - one hybrid WMS/WCS plus execution system to drive and manage the operations – minimizing both integration and support costs and risk

## ***For More Information:***

Speaker email: [nyle.morris@intelligrated.com](mailto:nyle.morris@intelligrated.com)

Website: [www.intelligrated.com](http://www.intelligrated.com)

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