Navigating Distribution Fulfillment Center Software

Understanding the WMS, WCS, and WES

POWERED BY POSSIBILITIES.

SSI SCHÄFER

Presented by

Mark Dickinson

Director - Enterprise Solutions

North America

SSI SCHÄFER

POWERED BY POSSIBILITIES.

MODEX 2020

powered by MHI

Session Objectives & Actionable Takeaways

- Understand how fulfillment strategies have become critical for growth,

- Get clear knowledge on which software plays what roles within the Supply Chain ecosystem,

- Gain insight into how strategic decisions on how software will impact the bottom line.

POWERED BY POSSIBILITIES.

MODEX 2020

powered by MHI

Customer Demands

Ask retailers today what the key is when reaching consumers, and your likely to hear customization.

1. A Personalized/Customized Experience
2. Assortments of Products
3. Fast Delivery to Home

MODEX 2020
powered by MHI

Business Demands

1. Retain Customers
   - Eliminate need to go elsewhere
2. Increase Product Offerings
3. Improve Service Level Agreements to Customers
   - More Shipments
   - Less Consolidation

Customer + Business Demands = Supply Chain Strain

1. Customer Retention = Accuracy & Availability

2. More SKUs = More Space or Partnerships

3. Improved Service Levels (BOPUS, 2 Day Shipping, etc.) =
   - More Orders, Less Consolidation
   - More volume, More Throughput

Customer + Business Demands = Supply Chain Strain

Cost
Containment

Customer
Demands

Business &
Merchant Demands

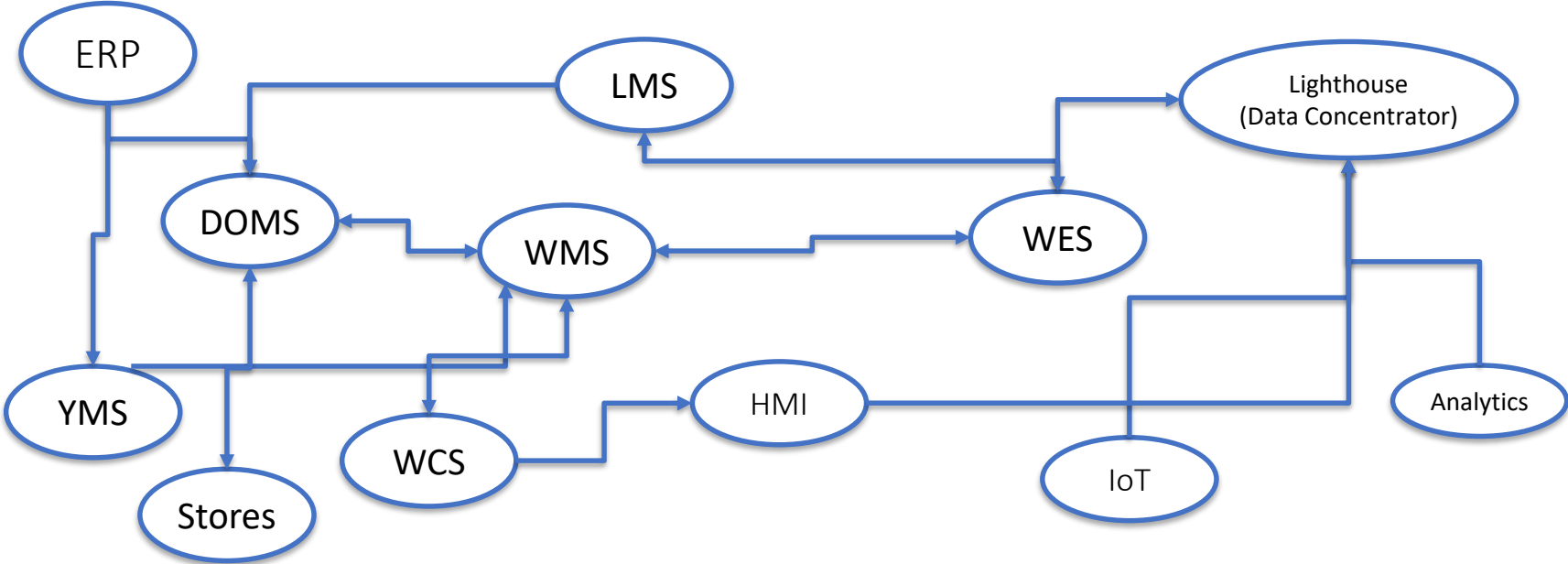# How do changing fulfillment strategies affect the business?

- In order to grow, the business must meet customer needs. The supply chain therefore must find a way to accommodate.

MODEX 2020
powered by MHI

# As your Supply Chain becomes more complex, so does the systems architecture

As your Supply Chain becomes more complex, so does the systems architecture

FULFILLMENT INTERACTIVITY

- Management Systems
- ERP – Business and $$$
- DOMS – Order Fulfillment Point
- Stores – Store Inventory & Availability
- WMS – Inventory & Locations
- WES – Order Grouping & Release
- LMS – Labor Planning & Reporting
- YMS – Yard & Dock Appointments
- WCS – Movement inside DC/FC
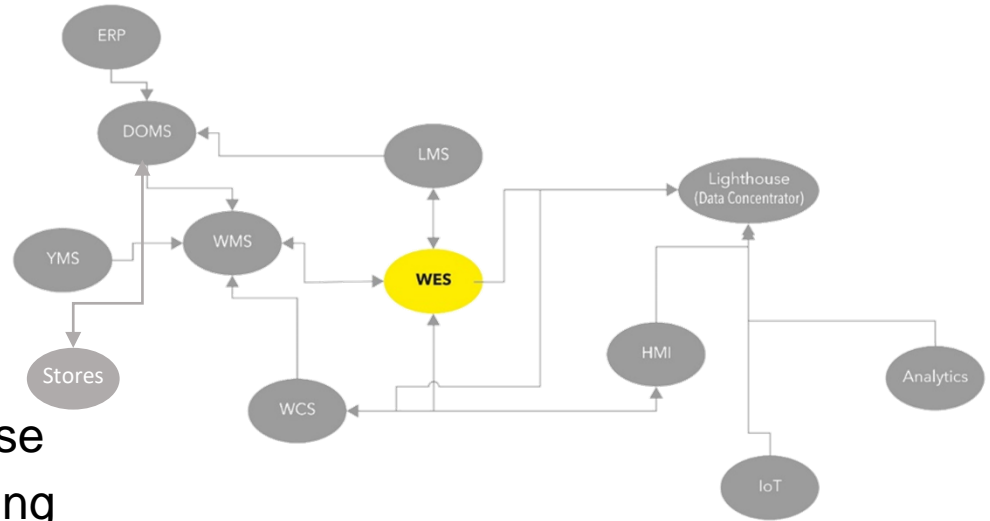
MODEX 2020
powered by MHI

Systems Architecture – Basic Decisions

Cloud vs. On-premise

MODEX 2020
powered by MHI

Systems Architecture – Basic Decisions

Cloud vs. On-premise, which one is best?

	Cloud Based	On Premise
Build Management	Homogenous	Heterogeneous
OpEx Options	Lease/Rent	Purchase
Systems Admin Requirements	3rd Party	On Staff
Upgrade Cycles	Months	Years
Scalability	Easy	Intricate
Response Times	>30ms	<30ms
Data Retention & Redundancy	Scalable	Equip Driven
Data Security	At-Risk?	Robust

MODEX 2020
powered by MHI

Systems Architecture

System	Direct Operational Execution	Indirect Operational Execution
Enterprise Resource Planning (ERP)		X
Distributed Order Management (DOMs)		X
Warehouse Management System (WMS)	X	
Warehouse Execution System (WES)	X	
Warehouse Control System (WCS)	X	
Yard Management (YMS)		X
Labor Management (LMS)		X
Transportation Management System (TMS) Rate Shopping		X
Stores Fulfillment	X	

MODEX 2020
powered by MHI

So what is it that these systems do?

POWERED BY POSSIBILITIES.

MODEX 2020
powered by MHI

Enterprise Resource Planning (ERP)

- Responsible for all accounting functions
- Interface to eCommerce and retail POS systems
- Manages all PO & Invoicing Systems
- Manages Inventory Reorders

Distributed Order Management System (DOMs)

The DOMs platform ingests multiple data streams and applies algorithms and rules to determine the final fulfillment point.

- Inputs from ERP, WMS, WES, TMS, LMS & Stores
- Output to WMS

MODEX 2020
powered by MHI

Warehouse Management System (WMS)

The WMS is responsible for knowing what is in the building, including inventory, orders, and resources. It's responsible for:

- Returns processing

- Receiving

- Put away

- Picking

- Shipping

- Manifesting

Warehouse Execution System (WES)

- The WES is responsible for the order start within the building. The WES is responsible for:

- Deciding when an order should be started

- Staggering the order start across multiple functional areas

- Metering or throttling the flow of work to an area based on capacities

Warehouse Control System (WCS)

The WCS is responsible for executing movement of units through the facility.

- Conveyor decision points
- Load Unit Routing
- Dynamic Destination Assignments

Yard Management System (YMS)

The YMS solution allows customers to plan, track, and view inbound shipments through the ERP. The YMS also manages:

- Additional yard storage
- Outbound movement
- Dock & Yard Planning & Appointment Management

Labor Management System (LMS)

The LMS solution allows for the reactive review of an operator's performance. This can be task related and it also makes suggestions to change labor force.

- Identify operator is in right location,
- Task and time analysis,
- Engineered labor standards.
- Labor Planning & Prescriptions

Transportation Management System (TMS) & Rate Shopping

The TMS solution is primarily used in omnichannel scenarios. Other core competences:

- Freight audits, Label validation & Carrier Selection

Rate Shopping

- Primarily for eCommerce solutions
- Parcel management & alerts
- Interface to ERP/Customer Experience Management

Stores Fulfillment

- Evolving systems have created ability for stores to act as fulfillment point

- Stores Module interfaces directly with POS system to determine semi-real time store level inventory.
  - Actual inventory will not be known due to customers holding stock from shelf to POS

- Interfaces to DOMs to provide inventory levels

MODEX 2020
powered by MHI

Basic Systems Architecture
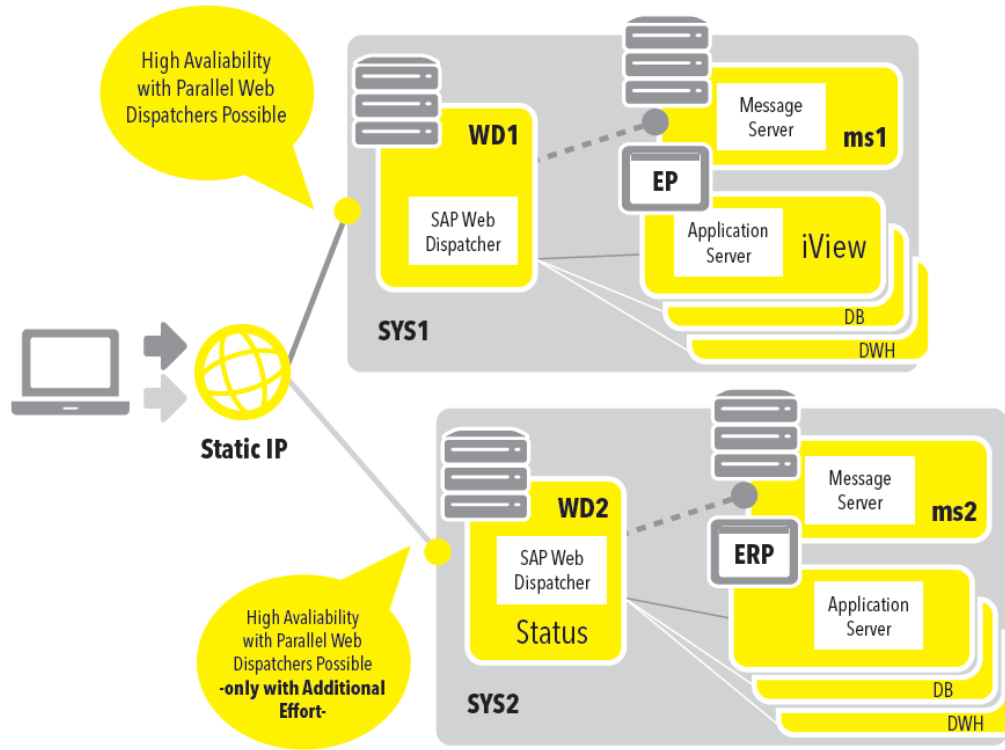
# Highly Complex Systems Architecture
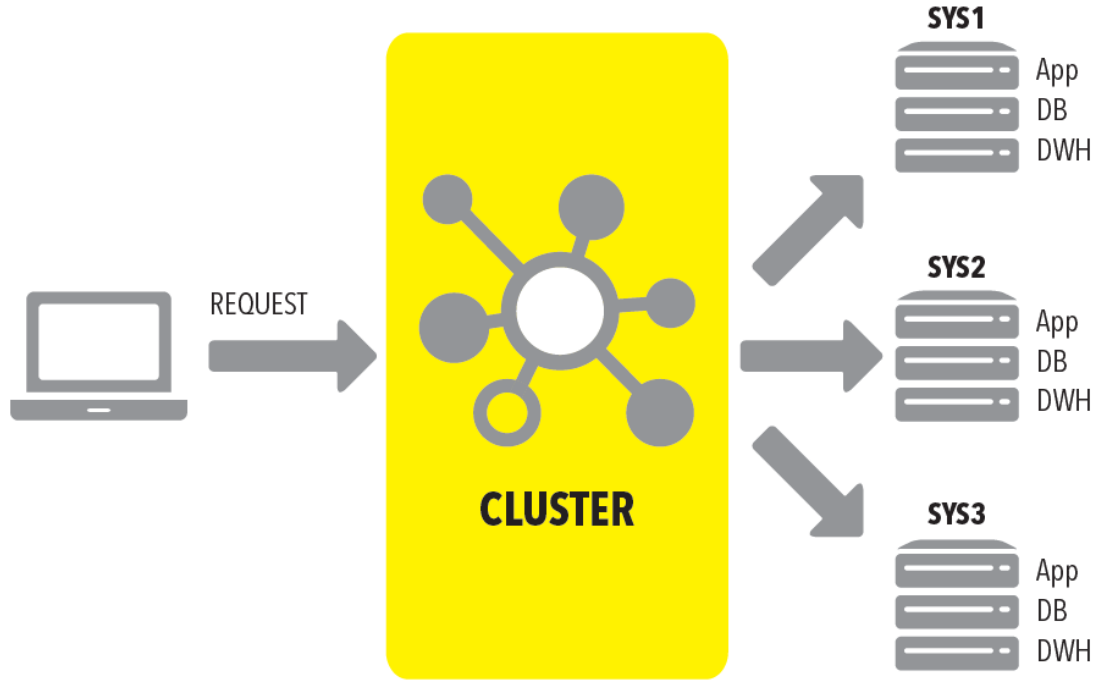
Dashboards & Reporting

Operational dashboards give a real-time overview of all the data collected. These dashboards and reporting functions are part of the WES, and can display anywhere and can even be app driven:

- System status,
- Resources,
- Order completion.

Intelligent Decisions – Fulfillment View

- Use Case
  - Inventory allocation is greater than physical stock
- Solution
  - WMS queries YMS
  - If stock is available in yard, priority is changed
- Benefit
  - Stock out & backorders prevented
  - Happy Customers
  - Labor used more effectively

WMS

YMS
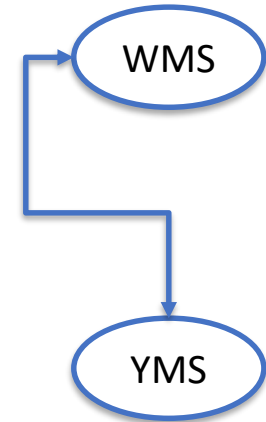
Intelligent Decisions – Fulfillment View

- Use Case
  - Predictive Analytics for workforce planning
- Solution
  - LMS uses analytics modules to obtain historical production rates
  - LMS looks to WES to determine production requirements
  - Suggests staffing levels in each functional area
- Benefit
  - Able to retain quality labor for a sustained period
  - Able to smooth work flows between peaks rather than react to influx
  - Labor is used more effectively for lower overall OPEX costs
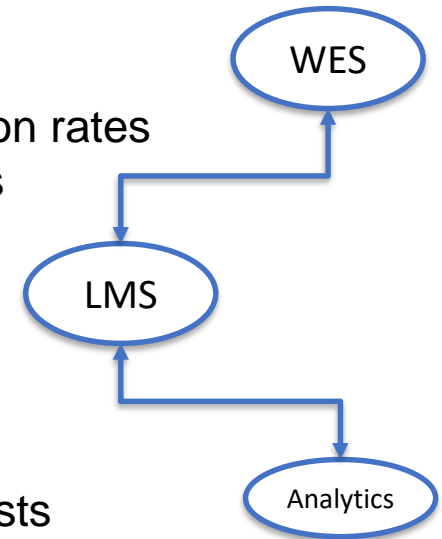
Intelligent Decisions – Customer View

- Use Case
  - Customers want visibility into the status of the order

- Solution
  - Provide real time feedback on order status
  - Connection through APIs can trigger updates to web portal
  - Based on order and item availability, could suggest an additional product

- Benefit
  - Allowing customers to see the order status can drive additional decision criteria
    - Add an item
    - Shipping Upgrade

Intelligent Decisions – Bottom Line

Connected Fulfillment Centers can provide
- Real time operational visibility for effective decision making
- More effective labor planning and utilization
- More transparency to the customers

MODEX 2020
powered by MHI

Questions?

Mark Dickinson

Director - Enterprise Solutions
North America

Schaefer Systems International, Inc.

mark.dicksinson@ssi-Schaefer.com

SSI SCHÄFER

MODEX 2020
powered by MHI