Drive the **Operational Excellence in Warehousing** with SAP Extended Warehouse Management

Andrea Ricciarelli, EMEA Center of Excellence | Digital Supply Chain | SAP

November 2017
Market Trends and Factors accelerating business transformation to a Digital Logistics

Automation, Digital Inventory and Lot Size of One

Customer Lifecycle

Omni-Channel Logistics
Warehousing, ... A Traditional Business

- Bulk Storage
- Packing Work Center
- Small Parts
- Resource Management
- Handling Units
- Stock Transparency
- Labelling
- Warehouse Automation
- Value Added Services
- Warehouse Operations, Bulk Storage, Packing Work Center, Small Parts, Resource Management, Handling Units, Stock Transparency, Labelling, Warehouse Automation, Value Added Services
Digital Supply Chain, powered by SAP Leonardo

Intelligently connecting People, Things and Businesses

Connected Data | Integration | Design Thinking | Collaboration | Mobile | Big Data | Business Process Innovation

Machine Learning | Real-time Analytics | APIs | Natural Language | Experience | IoT | Networks | Micro-services

© 2017 SAP SE or an SAP affiliate company. All rights reserved
Digital Supply Chain, powered by SAP Leonardo
Combine Business Transactions with Intelligent Systems

System of Record
- Digital Product Innovation
- Digital Response and Supply Management
- Digital Manufacturing
- Digital Logistics
- Digital Business Planning
- Digital Operations

Business System

Intelligent Systems
- Machine Learning
- Analytics
- Big Data
- Data Intelligence
- Internet of Things
- Blockchain

System of Innovation

© 2017 SAP SE or an SAP affiliate company. All rights reserved
Digital Logistics, powered by SAP Leonardo

Balance customer service and delivery costs through efficient digital logistics and order fulfillment

**Warehouse Management**
- Optimize freight, shipping, and warehouse operations

**Transportation Management**
- Reduce costs and improve service, speed, efficiency, and sustainability

**Logistics Networks**
- Aligning distribution and fulfillment processes and collaborating with logistics participants

- Leonardo IoT Bridge
- Logistics Network Hub
- Vehicle Insights
SAP Extended Warehouse Management (SAP EWM)
Best-in-class warehouse management

**Functional**
- Continuous core improvement for SCE
- New industry capabilities

**Integration**
- Enhanced SCE platform integration
- Enhanced integration with SAP S/4HANA

**Deployment**
- SAP EWM in SAP S/4HANA
- SAP EWM with SAP ECC
  - Cloud solution

**IoT**
- Next-generation automation
- Enhanced device and asset connectivity
SAP Extended Warehouse Management fit

**Production Warehouse**
- Raw-material handling
- Integration of quality management
- Production supply
- Receipt from production
- Staging and consumption

**Distribution Center**
- Complex process and high volume
- High degree of automation
- Wave management
- Slotting and rearrangement
- Replenishment

**Service Parts Warehouse**
- Low to very high complexity
- Kitting and value-added service
- High volatility
- Serial numbering
- Heterogeneous product range

**Cross-Dock or Transit Warehouse**
- Regional hubs, gateways, and container freight station
- Air and ocean freight handling
- Unit-load device and container handling
- Receive from and send to airport or seaport (drayage)
SAP Extended Warehouse Management – Overview

Inbound Processing • Storage and Operations • Outbound Processing

Analytics • Transit warehousing • Labor management • Cross-docking • Compliance
Native technologies • Implementation tools
SAP Extended Warehouse Management – Inbound Processing

**Inbound Processing**
- Transportation unit processing
- Goods receipt management and optimization
- Inbound quality management
- Internal routing

**Business Benefits**
- Optimize use of manpower
- Facilitate cross-docking
- Streamline receiving and dock management
- Optimize inventory placement in the warehouse with flexible put-away strategies
- Improve inbound inventory visibility
SAP Extended Warehouse Management – Storage and Operations

Storage and Operations

- Physical inventory
- Slotting
- Replenishment and rearrangement
- Kit-to-stock management
- Value-added services
- Transit warehouse
- Warehouse billing

Business Benefits

- Track every unit to the lowest level of detail
- Manage inventory balances on an ongoing basis
- Reduce effort for annual physical counts
- Eliminate inefficient movement and redundant effort
- Improve facility utilization
SAP Extended Warehouse Management – Outbound Processing

Business Benefits
• Increase inventory accuracy and availability
• Reduce picking, shipping, and billing errors
• Raise customer service levels through high efficiency and accuracy
• Shorten order turnaround times
• Take advantage of cross-docking opportunities

Outbound Processing
• Outbound planning, including route, wave, and bin planning
• Picking optimization, packing, staging, and load management
World-class Analytics with SAP Extended Warehouse Management

### Real-time information on overall Warehouse Execution Quality of current shift

- monitor the workload
- determine overdue outbound deliveries or inbound delivery items in real-time
- monitor the average goods issue delay time

<table>
<thead>
<tr>
<th>Items for Pick-Plan By Process Type</th>
<th>Items for Picking By Process Type</th>
<th>Items for GI By Staging Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>130</td>
<td>132</td>
</tr>
<tr>
<td>Pick into Shipping HU 36</td>
<td>Pick and Move to Pac 94</td>
<td></td>
</tr>
<tr>
<td>Pick and Move to Pac 20</td>
<td>Pick into Shipping HU 30</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of Open Items By Planned GI Hour</th>
<th>Items Overdue By Ship-to-Party</th>
<th>Average Delay (minutes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>91</td>
<td>126</td>
<td>91,31</td>
</tr>
<tr>
<td>now</td>
<td>now</td>
<td>now</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outbound Analysis (EWM) Last 15 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Order Outbound Delivery</td>
</tr>
<tr>
<td>Number of Items Outbound Delivery</td>
</tr>
<tr>
<td>Net Weight (KG) Outbound Delivery</td>
</tr>
<tr>
<td>Volume (M3) Outbound Delivery</td>
</tr>
</tbody>
</table>

© 2017 SAP SE or an SAP affiliate company. All rights reserved
Stock Transparency with SAP Extended Warehouse Management within the warehouse…

Bins | Resources | Work centers | Staging areas | Door bins

Stock can be managed with or without Handling Units
Example of a warehouse structure
SAP Extended Warehouse Management
Stock and Process Transparency

Stock Transparency
- Visibility of stock on storage bins in the inner warehouse, on staging areas, on work stations and on resources

Process Transparency
- Control and Track&Trace of respective process steps and involved resources
Stock Transparency with SAP EWM

... and outside the warehouse in the yard

- Stock is loaded in transportation units
- Transportation Units can either be a truck or a container that requires a vehicle
Yard Management with SAP EWM

Yard-Movements
Physical movements of trucks within the yard.

Yard-Stock
Showing the stock on transportation units to support loading and unloading activities.

Yard-Location-Management
Physical locations (parking lots and doors) managed as yard bins and Objects (trucks) managed as transportation units.
Built-in Optimization in SAP Extended Warehouse Management
Wave management, labor management, and slotting

Slotting

Advanced storage concept; ABC goods classification

Cartonization

Automatic shipping-unit determination

Wave management

Optimized work orders; efficient pick path

Labor management

Reduced labor costs; improved labor planning
## Native integration with SAP Business Suite

Comprehensive, smooth, and real-time process integration

### Sales and distribution
- Order processing
- Customer relationship management (CRM)
- Back-order processing (global available to promise)
- Advanced claims and returns management
- Track and trace

### Procurement
- Advance shipping notification (ASN)
- Inbound quality management

### SAP Manufacturing
- Advanced Manufacturing Integration (Production/Process orders and crate parts)

### SAP Environment, Health, and Safety Management
- Dangerous goods handling
- Storage and document printing

### SAP Global Trade Services
- Compliance with import and export regulations
- Customs; bonded warehouse

### SAP Quality Management
- Pre-sampling in Production, Acceptance Sampling before GR, Inspection Lot Summary, Recurring Inspection, Control Invoice Verification
SAP’s Internet of Things Strategy and Digital Logistics
Leading-Edge Warehouse Technology Integration

- Mobile devices
- RFID scanners
- Pick by voice
- Augmented reality
- Pagers and phones
- Label printers
- Scales

- Conveyors
- Lifts
- Cranes
- Robots
- Picking systems
- Manufacturing execution systems
- Automated storage and retrieval system (ASRS)
- Automatic guided vehicle (AGV)
Digitization of Logistics | Intra Logistics | Warehouse Fleet Management

**Benefits**

- Increase of speed of warehouse processes
- Reduction of failures and manual system activities
- Increased safety
- Increase assets utilization

**Automatic Assignment**
- Task and order assignment

**Failure Detection**
- Live monitoring

**Automatic Confirmation**
- Real-time confirmation
Fetch Robotics Partners with SAP to Deliver Virtual Conveyor Solution for Warehouse and Logistics Industries

Fetch Robotics today announced a partnership with SAP that incorporates SAP Extended Warehouse Management (SAP EWM) application with the Fetch and Freight robots from Fetch Robotics. Fetch Robotics builds robot systems for the logistics industry. Unveiled in May 2015, the Fetch Robotics system is comprised of an autonomous mobile platform (called Freight) and an advanced mobile manipulator (called Fetch). Fetch and Freight use a charging dock for continuous operations, allowing the robots to charge when needed and then continue on with their tasks. In addition, the system includes accompanying fleet management software, fetchcore, to support the robots and integrate with the warehouse environment.
Virtual Reality for Warehousing and Transportation
SAP Extended Warehouse Management
Success Stories and Benefits achieved
Warehouse Management is part of SAP Digital Logistics platform for Today’s & Tomorrow’s business needs

Digital logistics aims at **planning**, **orchestrating**, and **executing** the physical movement of goods

Key processes include **transportation management**, **warehouse management**, and **logistics networks**

SAP software supports efficient logistics processes across all participants of the value chain: **Shippers, freight forwarders, carriers, and consignees**

**Best-in-class functionality** paired with business integration allows cost-effective operations

**Increased customer service** and improved asset utilization are key drivers of value

Tracking and tracing of products, assets, and business processes creates high visibility and ensures **real-time integrity and compliance**

Convergence of separate business areas **breaks up silos**
any questions?
Thank you.

Contact information:

**Andrea Ricciarelli**
EMEA Center of Excellence | Digital Supply Chain | SAP

andrea.ricciarelli@sap.com