The Value of Software Intelligence & Integration to Leverage Automation

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Aging software, information overload, accelerated market changes…..

Let’s take a look at:
  – Distribution software
  – Accelerators of change
  – Asking the question ... Is my software intelligent?

Top 5:
  – Software intelligence trends
  – Ways to leverage software intelligence
  – Ways to embrace continuous integration
  – Accelerators of change
Distribution software looking back…..

- Slow “speed” of communications
- Rigid… slow to react to change
- Batch Processing Disparate Systems

"To improve is to change; to be perfect is to change often."

Winston Churchill (1874-1965)
Distribution software looking back …..

- **Legacy or Commercial Host Systems**
- **WM / WMS Stock Locator**
- **TMS**
- **WCS - AS/RS Vendor X**
- **WCS - Sorter Vendor Y**
- **WCS - Conveyor Vendor Z**
- **AS/RS PLC’s**
- **Sorter PLC’s**
- **Conveyor PLC’s**

**Stand alone black boxes**
**Slow or limited communications**

**Limited transparency between disparate systems**
**Batch processing in multiple systems**
Marketplace dynamics looking back...

Pallet in → Pallet out
Once a week deliveries
Wave “batch” planning
Automation use varies

Market conditions accelerating change

- Large batches of work
- Changing customer requirements
- Operational costs increase
- Single orders miss shipping deadlines
- Customer service levels decrease
- Worker productivity slows down
- Increasing customization
- Facility throughput decreasing
- Sub-optimization

Operational costs increase
Distribution software currently... 

Software must support market conditions

Increased real-time processing
System alerts
"Open" processing
Cartonization
Aging, no longer supported technology
Supply chain inventory visibility

More data available
Real-time interactions between systems

"The Cloud"
Adding business logic for decision making

WM / WMS

TMS

WCS - Conveyer / Sorter
Vendor Z

TMS

WCS - Conveyer / Sorter
Vendor Z

Commercial Host Systems
(Some Legacy)

WCS - AS/RS
Vendor Y

AS/RS PLC’s

Sorter PLC’s

Conveyor PLC’s
Marketplace dynamics currently...

- Pallet in → Case/each out
- More frequent deliveries
- Waveless processing
- Automation adaptation

Market conditions continue to accelerate change

Looking for faster, more efficient ways to pick goods, i.e. voice, pick/put to light, AS/RS

Amazon-ization

More frequent shipping / flexibility

Smaller orders, reduced shipping windows

Operational costs increase

Worker complexity increases

Trying to “squeeze” more processing in same facility

OMNI-channel distribution

Increasing customization

Sub-optimization improves

Facility throughput

Aging workforce
Marketplace dynamics currently...

Decisions as late as possible
Goods-to-person
Automated picking
Aging workforce

Market conditions continue to accelerate change

- Shorter planning horizons
- Increased returns handling
- Labor standards
- Total inventory visibility
- Automated picking, AGV’s, ASRS, carousels
- Requires quicker reaction to change
- Pick/Put-to-light
- Demanding consumer expectations
- GPS usage
- KPI measurements
- RFID adoption
- Voice
Distribution software in the future ....

Sub-second decision making  SaaS
Continuous processing  Predictive systems
“Waveless” adoption Dynamically
“Wearables” Voice
Proactively open shipping, reallocate workforce
packing lanes, pick mods
“Internet of Things”
Marketplace dynamics looking forward ...

- Interactive resource mgmt.
- Mobile inventory (stores)
- Non-replenishment DC’s
- Continuous processing

Millennials & technology will accelerate change

- **Goods-to-person**
  - Shorter planning horizons
  - Increased returns handling
  - Zone pick/pass

- **Labor standards**
  - KPI’s increased focus
  - Demanding consumer expectations

- **Total inventory visibility**
  - Automated picking, AGV’s, ASRS, shuttles
  - RFID adaption

- **KPI measurements**
  - Low energy consumption
  - GPS usage

- **Robots**
  - Drones

- **Requires quicker reaction to change**

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**Top 5**

- Fully Automatic Picking System
- Orchestration/Optimization
Leveraging intelligent software technology
Top 5 trends in software intelligence

1. Must optimize automation and manual operations
   – Continuous decision making
   – Dynamic flow optimization
2. Predictive capabilities
   – Sensor tags, A.I., analytics
3. Drones - unmanned aerial vehicle (UAV) solutions for inventory management challenges
4. 3D interactive operational views
   – Virtual reality / holographic displays
   – Actionable capabilities
5. Security and product safety as well as compliance with government and industry regulations
Top 5 ways to leverage software intelligence

1. Stay in tune with technology advancements
2. Perform semi-annual/quarterly system reviews
   - Process / resources
   - Equipment / technology
3. Consider replacing/upgrading your existing software / PLC controls
   - Configure vs. customize
4. Modernization
   - Do not replicate - innovate
5. Communication - leverage business KPI’s and employee polls - to help document the need to change
Top 5 ways to embrace continuous integration

1. Choose a global partner that provides options – allows organizational flexibility and adaptation to local context
2. Make it event driven – exchange data in a continuous flow
3. Integration should be specific enough to implement useful functionality, but general enough to allow change as needed
4. Plan for emerging technologies - evolution and extensibility
5. Minimize inter-dependencies where possible
Top 5 accelerators of change

1. Aging workforce → millennials adoption of technology
   - Robotics and drones
   - Lights out automated operations

2. Instant customization of products
   - 3D printing centers → In-home 3D printing

3. Co/location – light manufacturing within distribution centers

4. Big Data

5. Artificial intelligence
To sum it all up.....

• Have you performed a systems review lately?
• Consider updating your software
  – Better leverage existing/future hardware
  – Better utilize resources to gain efficiencies and reduce costs
• Choose your software partner carefully
  – Offer predictive capabilities, continuous decision making and optimized facility flow
  – Embraces technology – enables growth
  – Extensive experience with modernization
  – Choose software that is configured not customized
  – Ensure there is a capability product roadmap
Beneficial improvements are endless…

- Threefold increase throughput & productivity capacity
- Up to 30% order processing time reduction
- Avoid abrupt shutdowns
- Reduce operating and maintenance costs
- Security - prevent unauthorized control and access
- Balance workload
- Optimization of inventory storage

- More ergonomic systems
- Reduce energy consumption
- Fewer systems to support
- Reduced cost per handling unit
- Increased system availability
- 3.5+ times increased worker productivity
- Fine-tune operations
- Correct issues

- Modular architecture
- Positioned to leverage new technology
- Optimization of processes
- Up-to-date vendor supported systems
- Orchestrate continuous operational flow
- Optimization of resources
- Minimize errors
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