# *The Value of Software Intelligence & Integration to Leverage Automation*

**PROMAT | 2015**

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**March 23-26, 2015**
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**US Software Sales & IT Consulting**

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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

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# Distribution software looking back…..

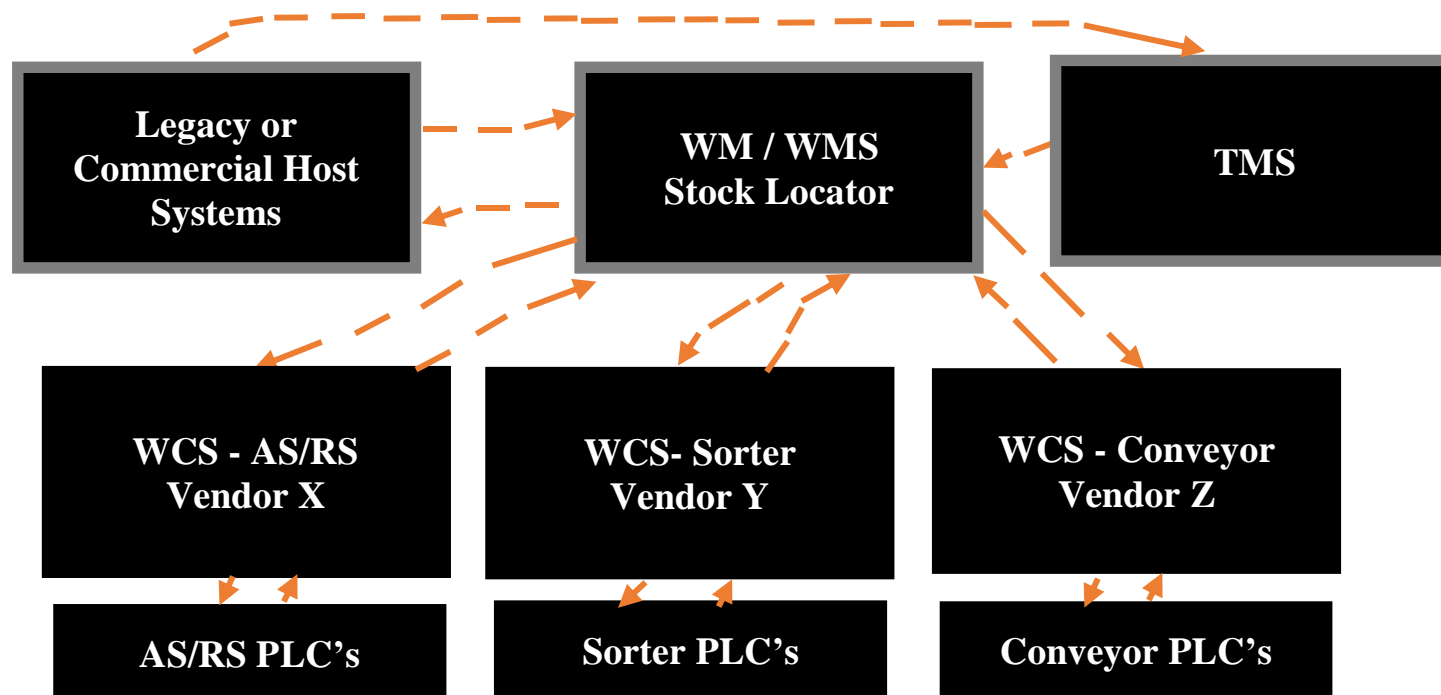| Slow "speed" of communications | Rigid… slow to react to change | Batch Processing Disparate Systems |
|---|---|---|

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

Winston Churchill *(1874-1965)*

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# Distribution software looking back …..



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

**Limited transparency between disparate systems**
**Batch processing in multiple systems**

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# 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

**Single orders miss shipping deadlines**

Increasing customization

Changing customer requirements

**Customer service levels decrease**

**Operational costs increase**

Worker productivity slows down

*Sub-optimization*

Facility throughput decreasing

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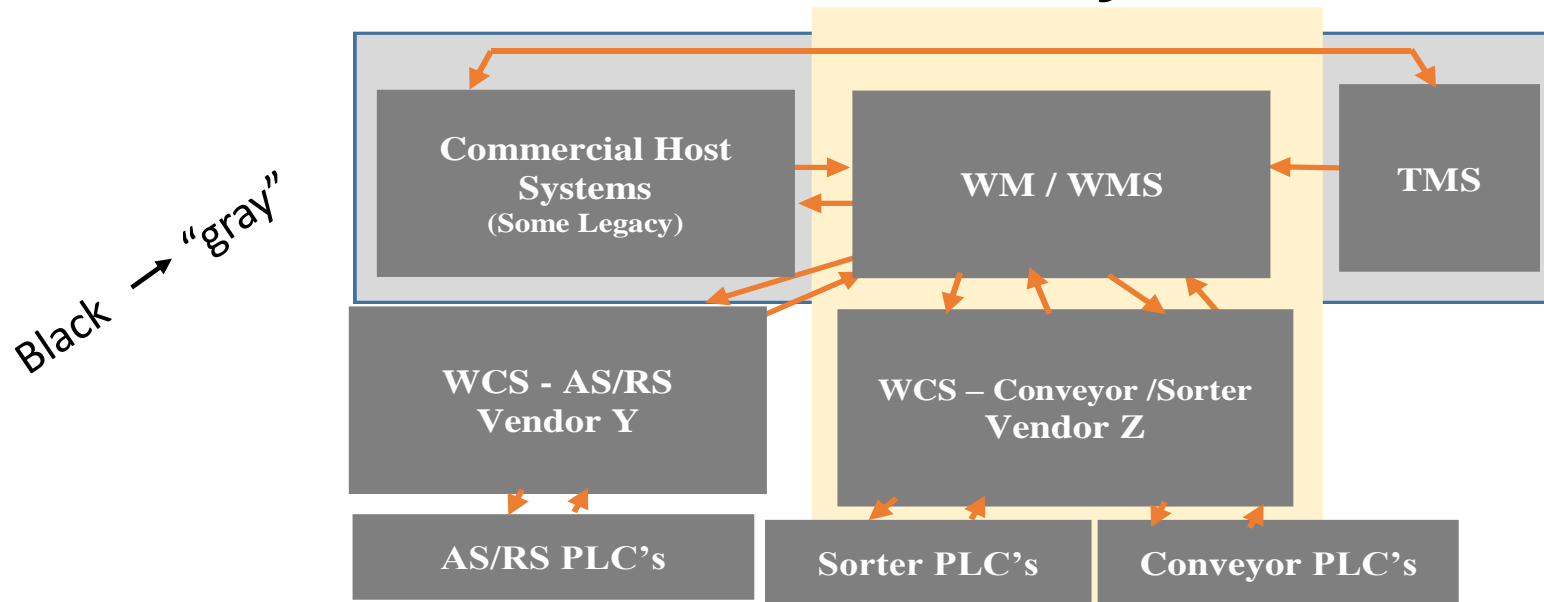
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# Distribution software currently….

Black → "gray"

| Commercial Host Systems (Some Legacy) | WM / WMS | TMS |

| WCS - AS/RS Vendor Y | WCS – Conveyor /Sorter Vendor Z |

| AS/RS PLC's | Sorter PLC's | Conveyor PLC's |

## Software must support market conditions

Increased real-time processing

System alerts    Cartonization

"Open" processing

Systems/functionality converging

More data available

Real-time interactions between systems

"The Cloud"

Adding business logic for decision making

Aging, no longer supported technology    Supply chain inventory visibility

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# **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

**Trying to "squeeze" more processing in same facility**

Increasing customization

Aging workforce

Facility throughput improves

OMNI-channel distribution

Sub-optimization

Operational costs increase

**Worker complexity increases**

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# Marketplace dynamics currently…

Decisions as late as possible

Goods-to-person

Automated picking

Aging workforce

## Market conditions continue to accelerate change

Zone routing pick/pass

Labor standards

Pick/Put-to-light

Shorter planning - processing horizons

Real-time business decisions required

Total inventory visibility

Demanding consumer expectations

GPS usage

Automated picking, AGV's, ASRS, carousels

KPI measurements

Voice

RFID adaption

Increased returns handling

Requires quicker reaction to change

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# Distribution software in the future ....

Grey → "transparent"

**Convergence Continues**



Commercial Host System(s) (Less Legacy) → TMS

WM WMS

WES Vendor Z

Robotics

Wearables

AS/RS PLC's | Sorter PLC's | Conveyor PLC's | Other PLC's

**Sub-second decision making**

SaaS

*Systems/functionality continue converging*

**Predictive systems**

**Dynamically**

Voice

Continuous processing

"Waveless" adoption

Continuous interactions

*Visual*

**Proactively open shipping, packing lanes, pick mods**

**reallocate workforce**

**"Wearables"**

**"Internet of Things"**

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# Marketplace dynamics looking forward …


**Fully Automatic Picking System**

Interactive resource mgmt.

Mobile inventory (stores)

Non-replenishment DC's

Continuous processing


**Orchestration/Optimization**

## Millennials & technology will accelerate change

**Goods-to-person**

Zone pick/pass

Labor standards

KPI's increased focus

Shorter planning - processing horizons

**Real-time business decisions required**

**Total inventory visibility**

**Drones**

Increased returns handling

Automated picking, AGV's, ASRS, shuttles

Demanding consumer expectations

**Robotics**

**Low energy consumption**

GPS usage

KPI measurements

RFID adaption

**Requires quicker reaction to change**

Top 5

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# Leveraging intelligent software technology

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# 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

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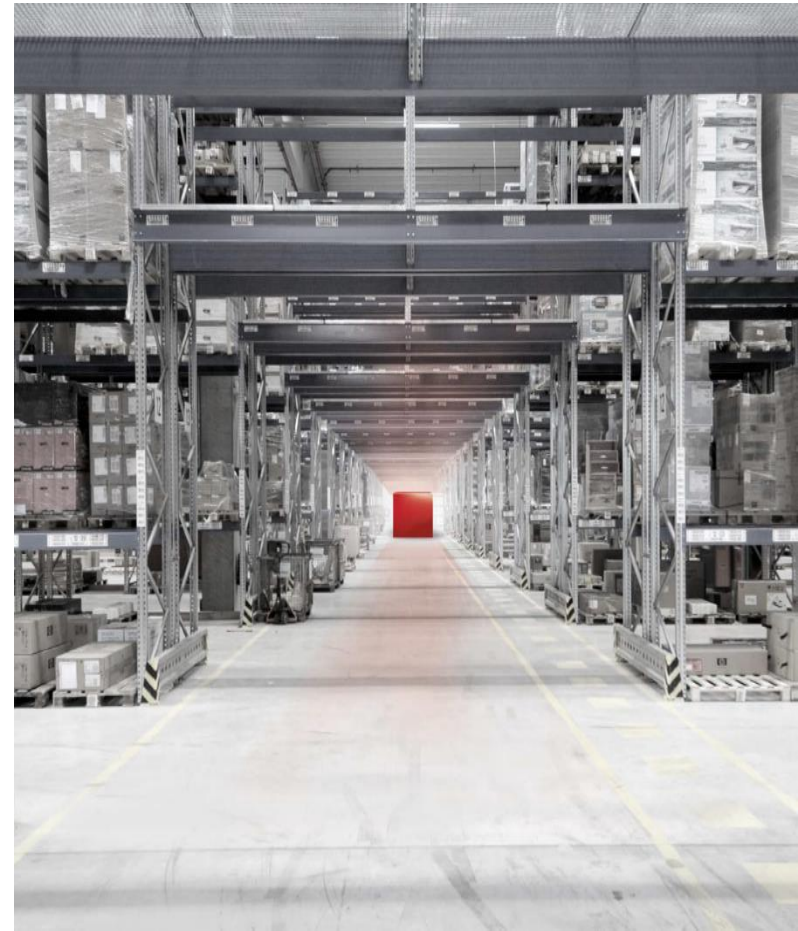
# Top 5 ways to leverage software intelligence

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



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# 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

Database
XML Waterfall
The Cloud IDOCS
Scrum
Agile Continuous Integration
Development
Project Management FTP
System Integration
Methods EDI
ALE
Format

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# 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

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# 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
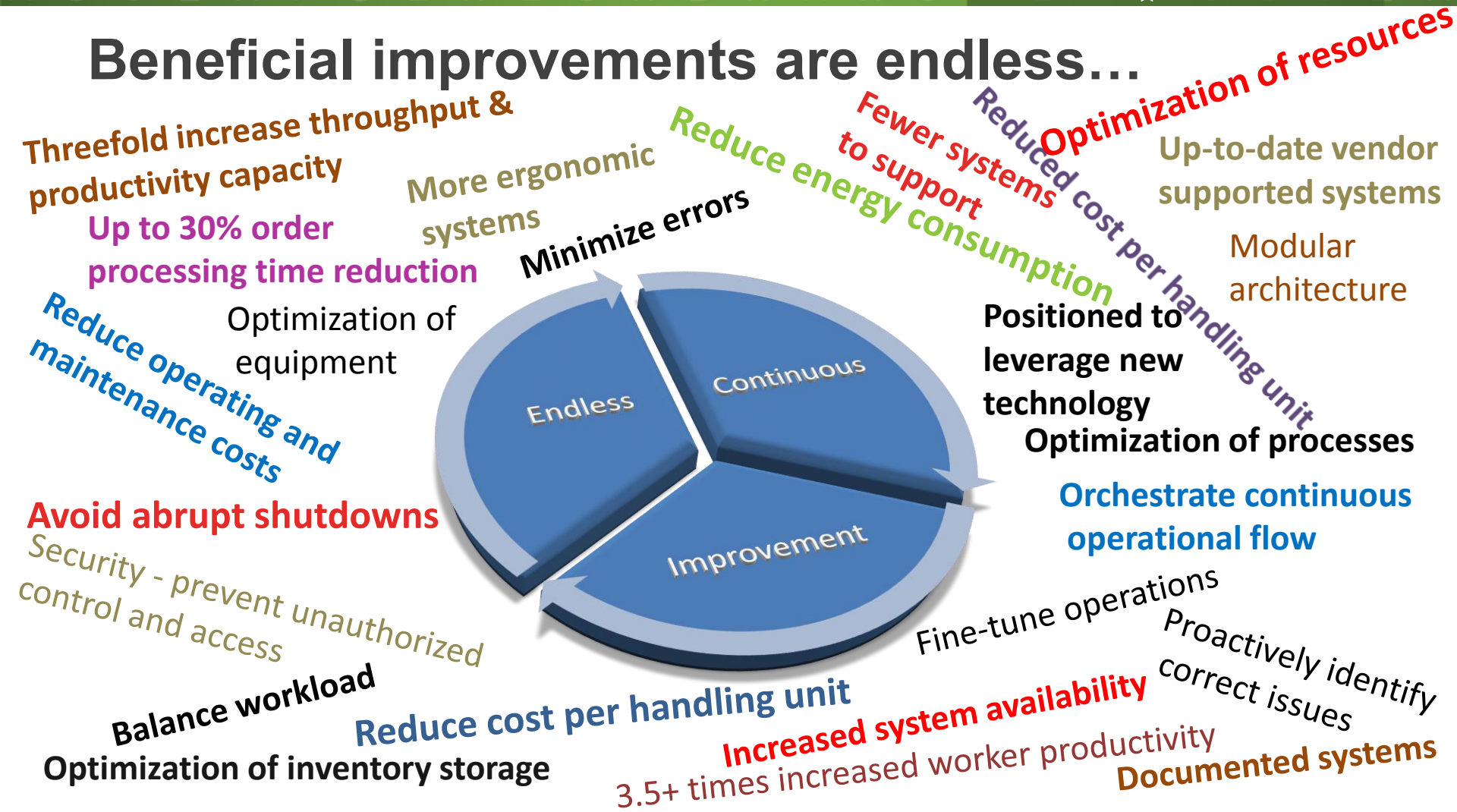  - Ensure there is a capability product roadmap

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