Manufacturing Transformation: From Push to Pull

Dassault Systemes
3DX Forum – Las Vegas
November 12, 2014
Agenda

1. Introduction / AGCO Background
2. Apriso Project / Implementation
3. Post Implementation
4. Lessons Learned
AGCO Background

- AGCO Corporation
  - Established in 1990 with purchase of Deutz Allis Corporation
  - Branded heritage reaching back to the mid-1800s
  - Become a worldwide farm machinery company through market growth, strategic acquisitions, and cutting edge agricultural solution
  - Largest manufacturer in the world purely focused on agricultural equipment
  - Currently 272 on the Fortune 500
  - Purchased Hesston (Hay & Forage Ind.) in 1991
AGCO Background
AGCO Background

[Image of an aerial view of a large industrial complex with various buildings and parking areas highlighted with red outlines.]
AGCO Background

Fabrication

De-coil

Machine Weld

Fabrication De-coil

Machine Weld

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DELmIA Apriso Project Business Drivers

- MES Solution to Drive Demand Flow Manufacturing / Push to Pull
- Eliminate Work Order Packets / Reduce Labor
- Material Reductions:
  - Inventory Levels
  - Obsolescence
  - Line Loss
  - Scrap / Rusted Material Loss
  - FTE Reduction / Overtime
- Productivity Improvements
  - Rework Costs / Overtime
- Warranty Cost Reduction
- Market Competitiveness
Apriso Project / Implementation

- Implementation Approach
  - AGCO / Apriso Team Develop Value Assessment

- Identify Areas of Potential Savings
- Define Cost Reduction Areas has Hard/Soft Savings
- Add Quantifiable Metrics To Calculate Savings
- Calculate ROI
- Project Future Savings

### ROI% over 3 Years (NPV)

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<tr>
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<th>Average ROI% per year</th>
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<td>396%</td>
<td>131.85%</td>
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<tr>
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<th>Avg. Savings BreakEven</th>
<th>Internal Rate of Return (5 yrs)</th>
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<td>1.06 months</td>
<td>1088%</td>
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Apriso Project / Implementation

- ‘Big Bang’ Approach – All Business Areas With The Exception of Maintenance

Apriso Hard Benefit Opportunities

- People
  - Time and Labor
- Process
  - Production
  - Quality
- Material
  - Warehouse

- ‘Big Bang’ Approach – ‘Flip the Switch’
  - Push to Pull Overnight
  - 100% Paperless Overnight
Apriso Project / Implementation

- Key Process Objectives
  - Synchronous Manufacturing
    - Part Management / WIP & Stores Inventory
    - Pull Material to Assembly Process
    - Sequential Manufacturing on Assembly Lines
    - Task Based System – What To Do When
    - Relieve Inventory at the Time Of Consumption
    - Kitting – Reduce Line Side Inventory
    - Create Flat BOM
  - Eliminate Paper – No More Work Order Packets
  - Time & Labor – No More EBAY!!!!
Apriso Project / Implementation

- **Project Implementation Timeline**

  - 2007 to 2009 – Infrastructure Upgrade
    - Web Based Application
    - Better Throughput
  
  - September 2008 – Project Kickoff
  
  - February 2009 – Project Start (After Apriso completed design documentation)
  
  - September 2009 – Go-Live
  
  - December 2009 – System Shutdown/Reconfiguration
  
  - January 2010 – System Restart
  
  - 2010-2012 – Stabilization Phase / Continuous Improvement
Apriso Project / Implementation

- Shop Floor Support???
Post Implementation

- **Measurable Areas of Success**
  - **Inventory**
    - High-rise Storage Area Reduced by approx. 40%
    - Line Side Inventory Reduced by approx. 80%
    - Inventory Accuracy Increased by approx. 10%
  - **Quality**
    - Missing Parts Represented 90% of Defect Rate
    - Look Ahead Report – 400% Improvement Right First Time
    - Scrap / Rework Cost Reduced by approx. 15%
  - **Labor**
    - Material Handling FTE Hours Reduced by approx. 20%
    - Reduction In Material Headcount by 10%

- **Unplanned Savings**
  - Safety Metrics Improved by approx. 10% – On Going
3 - Simultaneous Transformations

- **Business Transformation**
  - Reengineering the manufacturing process that had been in place for decades

- **Cultural Transformation**
  - Required a collective acceptance of change to shop-floor job responsibilities around a disciplined, repeatable paperless process

- **Technology Transformation**
  - Distributed the use of technology across the entire manufacturing shop-floor. Replace data entry gathering from a small group of clerks located in a centralized dispatch office
Lessons Learned

- Develop a Good Plan!!
  - Understand Your Business
    - Document Current Processes
    - Document Ad-Hoc Processes
    - Dive Deeper Into The Work Force In Development Stage
  - System Readiness
    - Test Test Test Test Test!!!
    - User Acceptance Testing
    - High Volume Stress Testing
    - Test Interfaces – Understand Processing Time
    - Apriso Training IT & Developers
  - Establish Call Center
    - Staffed 24/7 – Document All Issues

- Ultimate Flexibility Can Result In Ultimate Complexity!!
  - Understand your needs – Keep It Simple!
Future Plans / Summary

- Future Plans
  - Apriso 9.6 Upgrade Go-Live December 2014
  - SAP Integration 2016

- Summary
  - By providing a reliable and flexible platform, Apriso has been a key enabler for AGCO to develop tools necessary to meet market demand and sustainable growth.
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Questions & Answers!!