W07 - Migration Strategies and Tools for Aging Distributed Control Systems

Mike Vernak
Global Program Manager
Agenda

- Legacy DCS Market Outlook
- Migration Tools – Reduce Risk and Cost
- Phased Migration or Rip and Replace
- How We Can Help
Legacy DCS Market Outlook
Global DCS Migration Market Outlook

65B worth of existing Process Automation systems nearing end of life

12B are 25 years or older

• End-User Challenges
  • Financial Justification (Economics)
  • Limited Downtime (JIT Inventory strategies)
  • Loss of Technical resources
  • Future road mapping (What? When?)

• End-User Persona
  • Risk Averse
  • System/Application Centric
End-User Challenges: Financial Justification – TCO vs Benefit Analysis

<table>
<thead>
<tr>
<th>Typical Total Life-cycle Costs</th>
<th>Typical Benefits of a DCS Migration</th>
</tr>
</thead>
<tbody>
<tr>
<td>- HW, SW, Networks (multi-systems PLC, Drives, DCS)</td>
<td>- Enhanced Optimization capabilities</td>
</tr>
<tr>
<td>- Engineering</td>
<td>- Reduced life-cycle costs</td>
</tr>
<tr>
<td>- Simulation</td>
<td>- Increase yield and quality</td>
</tr>
<tr>
<td>- Commissioning/Decommissioning</td>
<td>- Decrease product variability</td>
</tr>
<tr>
<td>- Support contracts</td>
<td>- Digital Bus Enabled</td>
</tr>
<tr>
<td>- Energy</td>
<td>- More data – faster decision making</td>
</tr>
<tr>
<td>- Spare Parts (multi-systems)</td>
<td>- Easier integration with 3rd party (OEMs, ERP, MES, etc)</td>
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<tr>
<td>- Floor Space</td>
<td>- PWC Scalable (10 to 10K I/O)</td>
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<tr>
<td>- Training - Operator, Maint, IT</td>
<td>- Integrated Power</td>
</tr>
<tr>
<td>- Upgrade, Expansion</td>
<td></td>
</tr>
<tr>
<td>- Off-spec product</td>
<td></td>
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<tr>
<td>- EPA Compliance</td>
<td></td>
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<tr>
<td>- Un-planned downtime</td>
<td></td>
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<tr>
<td>- Obsolescence Planning</td>
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<td>- Consulting</td>
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End-users require high value upgrades to help justify a DCS migration
Where We are Engaged...Industries

- Metals
- W/Wastewater
- Mining
- Specialty Chem
- Power
- Oil and Gas
Migration Tools – Reduce Risk and Cost
## DCS Migration and Modernization Solutions

<table>
<thead>
<tr>
<th>Competitor Solution</th>
<th>OPC Server Software</th>
<th>Database Conversion Tool</th>
<th>Custom Cables Designs or Wiring Solutions</th>
<th>Control Strategy Library</th>
<th>OLDI SAM Module for OPC Server</th>
<th>OLDI Dedicated Interface to CLX</th>
<th>Faceplate Library</th>
<th>Legacy I/O Scanner or Equal</th>
<th>Graphics and Configuration Conversion Services</th>
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OPC Servers

- Commercially available, field proven
- For use in architectures using “Whitebox” PCs, or PC56 – XP based PC in a ’56 rack
- Can be loaded directly on FT View Server
Integrated PROVOX Gateway

Benefits
- Peer-to-peer communication
- Increases performance
- Same environmental specs as ControlLogix system
- ControlLogix controller is data repository
- Integrated solution
- Optimized data server
Dedicated Bailey Interface – RA56-cATM-BLY90

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- Peer-to-peer communication
- Increases performance
- Same environmental specs as ControlLogix system
- ControlLogix controller is data repository
- Data is native to FactoryTalk applications
- Integrated solution
- Optimized data server
Dedicated Honeywell UCN Gateway – Using UCN Interface – SX101UCN

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- Peer-to-peer communication
- Increases performance
- ControlLogix controller is data repository
- Data is native to FactoryTalk applications
- Integrated solution
- Optimized data server

Releases in Nov 2012
Bailey Database Conversion Tool

- Converts Bailey Console DB tags to FactoryTalk View OPC tags or CLX tags
- Used in conjunction with Rovisys OPC90 OPC Server and (whitebox) PC, and the OLDI BLY90
PROVOX Database Conversion Tool

- Converts PROVOX DB tags to ControlLogix tags
- Significantly reduces risk and conversion engineering hours
Honeywell Database Conversion Tool

- Converts Honeywell DB tags to ControlLogix tags
- Used in conjunction with LCN and UCN Interface
Foxboro I/A Database Conversion Tool

- Converts Foxboro I/A DB tags to CLX tags
- Used in conjunction with Matrikon OPC Server and (whitebox) PC, and the PC56-OPC
PROVOX I/O Scanner – CLX-PVX module from ProSoft

Benefits
- Operates in two modes – shadow and scanner
- Retains legacy I/O – significantly reducing front-end migration costs
- Fast and low risk legacy controller cutover
- Can be deployed in redundant configurations
- Supported by Rockwell Automation’s Tech Connect™

PROVOX Series10 or Series20 I/O

Now Includes SMART I/O
Benefits

- Operates in two modes – shadow and scanner
- Retains legacy I/O – significantly reducing front-end migration costs
- Fast and row risk legacy controller cutover
- Can be deployed in redundant configurations
- Supported by Rockwell Automation’s Tech Connect™

Releases in Dec 2012
PROVOX DCS Migration – Custom Cable Solutions - Series 10 I/O
PROVOX DCS Migration – Custom Cable Solutions - Series 20
Foxboro I/A DCS Migration – Custom Cable Solutions for FBM100 I/O

New Release for 2012
TDC3000 DCS Migration – Custom Cable Solutions
Planned Tool Developments for 2013…

- I/O Scanner for Foxboro FBM100/200 I/O
- DB Convert tool for Emerson Delta V
- Cabling Solution for Emerson Delta V
- DB Convert tool for SATTLine
- Cabling Solution for SATTLine
- DB Convert tool for Emerson Ovation
- Cabling Solution for Emerson Ovation
Phased Migration or Rip and Replace
**DCS Migration – Phased Approach**

**Phase I – HMI Migration**

Remove the least supported component of the Legacy System first – the HMI consoles

**Phase II – Interoperate Phase**

Interoperate new PAx controllers – leveraging the new HMI

**Phase III – Controller and I/O Migration**

Remove the Legacy controllers and, or I/O – leveraging the I/O Scanners or custom cabling solutions

*Image courtesy of Evans Consoles*
Legacy DCS Migration – What We Need from the Customer

- Exported console database – need the .dbf, .txt, .csv, or other files
- Hardcopy printouts of the legacy graphics
- Actual I/O counts and I/O module types
- Legacy controller configuration hardcopy printouts
- Existing loop descriptions and loop drawings
- Existing P&ID drawings
Legacy DCS Migration – What We Need from the Customer

We interview:

- ** Operators for their opinions and comments on current system operation – and how they control their processes
- ** Maintenance Personnel to understand how they troubleshoot and maintain the current system
- ** Systems Engineering/Plant Engineering to understand what they expect from their new process automation system
- ** Plant Managers to understand their production schedules, challenges, and how PlantPAx can improve production
Bailey Net90 / Infi90 Existing Architecture

Plant Loop or Infi Loop

OIS Op Station 1

Bailey EWS

OIS Op Station 2

PCU 1

PCU 2

CIU

TU

TU
Bailey Net90 / Infi90 Migration – Phase 1

Op Station 1 → RA EWS → Redundant Servers → Ethernet → Op Station 2

Bailey Gateway

OIS Op Station 1 → Bailey EWS → OIS Op Station 2

Plante Loop or Infi Loop

PCU 1 → TU → PCU 2
Bailey Net90 / Infi90 Migration – Phase 2

Op Station 1
RA EWS
Redundant Servers
Op Station 2

Bailey Gateway
CIU
CIU

Plant Loop or Infi Loop

PCU 1
CLX 1
TU

PCU 2
TU
APACCS Migration – Phase 2

Op Station 1  RA EWS  Redundant Servers  Op Station 2

Ethernet

CLX w/APACS I/O Scanner  MODULRAC 1  MODULRAC 2  IEM

Ethernet

ProcessSuite Development Node  ProcessSuite Client/Server Node

Ethernet

Modulbus

APACCS Gateway
APACCS Migration – Phase 3
Rip and Replace of a Foxboro I/A DCS
Comparison of the Conversion Strategies

**Rip and Replace**
- Does require extended shutdown for entire project
- Requires capital expense $ approval (full system)
- Can be funded with maintenance $(vertical slice or by area)
- Is considered high risk to customer
- Can replace entire system in weeks (lower TCO)
- Requires less legacy DCS expertise for delivery engineering team
- Cannot be easily switched back to legacy system

**Phased**
- Does not require shutdown for HMI replacement
- Can be funded with maintenance $
- Is considered low risk to customer
- Can be easily switched back to the legacy system as part of a contingency plan
- Requires more legacy DCS expertise for delivery engineering team
- Can take multiple years to migrate entire system (higher TCO)
How We Can Help
Process Tech Consultants (GPTC’s)

- Primary task is to work with delivery partners to assist in the technology adoption of Rockwell’s process control to the application

- Main Customer Types
  - Large End Users – Consult work with corporate engineers to establish standard for operations.
  - Solution Provider – Train on the best practices of using PlantPAx
  - A&E – Develop specifications for these firms to establish Rockwell’s platform
  - Process OEMs – Work with the OEM to re-write their application on a Rockwell Platform

- DCS Migrations – Help customers understand how we can migrate from legacy DCS to Rockwell

- Work across global regions and key customers to assist in project implementation (A&E, contractor, SI, and end user)
Process Tech Consultants (GPTC’s)
Global Solutions
Bringing You a World of Experience

Global Execution
- Manage projects that span multiple geographies
- Standard business & project processes
- The right team for your project from our worldwide talent

Domain Expertise
- Combining technology & application knowledge
- All major industries
- Best practices from multiple industries

Project Management
- Based on PMI® PMBOK®
- Certified project managers
- Repeatable, measurable, auditable
- Risk Management

Helping you exceed your business goals.

Information | Process | Discrete Automation | Power & Motion | Sustainable Production | Technology Migration | Hardware Integration

80 Countries | 20 Languages | 2500+ employees | Average 13+ Years Experience | Single point of contact
Meet Your Everyday Technical Needs
Online & Phone Support
Training Services
OnSite Services
Repair Services

Maximize Your Automation Investment
MRO Asset Management
Safety Services
Energy Services
Network & Security Services
Legacy System Migration Plans
Legacy System Migration Turn-Key Projects

Services & Support
Global Support. Local Address. Peace of Mind.

Maximize Productivity
Optimize Plant Assets
Improve Financial Performance

80 Countries | 20 Languages | 6 Remote Support Centers | 10 Remanufacturing Depots | 9 Exchange Hubs | Average 13+ Years Experience
Partner Ecosystem

Business Enterprise Partners
...Strategic Alliances with companies like Cisco Systems, Endress+Hauser, and Microsoft

Sales and Solutions Partners
...Approximately 320 Distributors and over 100 Solution Providers worldwide for local support

Product and Technology Partners
...Over 1000 products from over 100 companies worldwide help to extend our technology into adjacent areas

A large global ecosystem for solutions and support of your Rockwell Automation installed base
Who should you call for help?

- Your local Distributor Sales representative
- Your local Rockwell Automation Sales representative
- Your local NA District or Regional Process Sales Leader
- Your local Systems Integrator or Solution Partner

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White Papers and Migration Webinars…

**DCS Migration White Papers available on Literature Library:**
* Justification for a Legacy Control System Migration  PROCES-WP005A-EN-P
* DCS Migration Strategy and Project Implementation  PROCES-WP006A-EN-P
* Optimization after Migration  (Coming soon in Nov’12)


**DCS Migration Webinar Series:**
* Justification for a Legacy Control System Migration – Dec 6th 11am EST
* DCS Migration Strategy and Project Implementation – Feb 12th 11am EST
* Optimization after Migration – April 17th 11am EST

Register Now: