T65 - Migrating Your Legacy DCS System
PlantPAx – It’s More Than a DCS

It’s a process automation system that gives you everything you want in a world-class, contemporary DCS plus. . .

- Plant-wide control capabilities
- Open, flexible architecture
- Integrated control, power, safety, and information
- Support by a global network of local experts
Agenda

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

Typical Total Lifecycle Costs
- HW, SW, Networks (multi-systems PLC, Drives, DCS)
- Engineering
- Simulation
- Commissioning/Decommissioning
- Support contracts
- Energy
- Spare Parts (multi-systems)
- Floor Space
- Training - Operator, Maint, IT
- Upgrade, Expansion
- Off-spec product
- EPA Compliance
- Un-planned downtime
- Obsolescence Planning
- Consulting

Typical Benefits of a DCS Migration
- Enhanced Optimization capabilities
- Reduced life-cycle costs
- Increase yield and quality
- Decrease product variability
- Digital Bus Enabled
- More data – faster decision making
- Easier integration with 3rd party (OEMs, ERP, MES, etc)
- PWC Scalable (10 to 10K I/O)
- Integrated Power

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
Agenda

Legacy DCS Market Outlook

Migration Tools – Reduce Risk and Cost

Phased Migration or Rip and Replace

Success Stories

How We Can Help
## DCS Migration and Modernization Solutions

### Legacy DCS Migration/Conversion Tools

<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>Dedicated Interface to CLX</th>
<th>Faceplate Library</th>
<th>Legacy I/O Scanner or Equal Graphics and Configuration Conversion Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bailey Net90/Infi90</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Honeywell TDC</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Honeywell IPC</td>
<td>no</td>
<td>partner</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Fisher PROVOX</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>partner</td>
<td>yes</td>
</tr>
<tr>
<td>Moore APACS</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Westinghouse WDPF</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>partner</td>
<td>yes</td>
</tr>
<tr>
<td>Rosemount RS3</td>
<td>yes</td>
<td>partner</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>partner</td>
<td>no</td>
</tr>
<tr>
<td>Rosemount RMV9000</td>
<td>yes</td>
<td>partner</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Foxboro IA</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>partner</td>
<td>yes</td>
</tr>
<tr>
<td>Taylor MOD300</td>
<td>yes</td>
<td>partner</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>partner yes</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Emerson Delta V</td>
<td>yes</td>
<td>partner</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>partner</td>
<td>yes</td>
</tr>
<tr>
<td>Yokogawa Micro XL</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

**Enablers that help mitigate risk and engineering costs**
OPC Servers

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

Benefits

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

Benefits

- 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

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

Releases in March 2014
Dedicated Honeywell LCN Gateway – Using LCN Interface – SX009

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

Releases in March 2014
Database Conversion Tools

- Converts Legacy DCS DB tags to FactoryTalk View OPC tags or CLX tags
- Used in conjunction with OPC Servers, (whitebox) PCs, or the Oldi SAM
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 row risk legacy controller cutover
- Can be deployed in redundant configurations
- Supported by Rockwell Automation’s Tech Connect™

Now Includes SMART I/O
APACS I/O Scanner – CLX-APX module from ProSoft

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™

Remote Modulrac

Releases in March 2014
Custom Cable Solutions
Foxboro I/A DCS Migration – Custom Cable Solutions for FBM100 I/O

Released in 2013
Planned Tool Developments

- DB Conversion tool for SATTLine
- Cabling Solution for SATTLine
Agenda

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

- **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

- OIS Op Station 1
- Bailey EWS
- OIS Op Station 2
- CIU
- PCU 1
- PCU 2
- TU

Plant Loop or Infi Loop
Bailey Net90 / Infi90 Migration – Phase 1
Bailey Net90 / Infi90 Migration – Phase 2

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

Bailey Gateway → Bailey EWS

Plant Loop or Infi Loop

PCU 1 → CIU → Plant Loop or Infi Loop

CLX 1

TU

PCU 2

TU
APACCS Migration – Phase 2

Op Station 1
RA EWS
Redundant Servers
Op Station 2

Ethernet

ProcessSuite Development Node
ProcessSuite Client/Server Node

Ethernet

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

Modulbus

APACCS Gateway

Ethernet

IEM
APACCS Migration – Phase 3

Op Station 1

RA EWS

Redundant Servers

Op Station 2

CLX w/ APACS I/O Scanner

CLX 2

ProcessSuite Development Node

ProcessSuite Client/Server Node

Ethernet

APACCS Gateway

Ethernet

Modubus

IEM

MODULRAC 2
Rip and Replace of a Foxboro I/A DCS
Comparison of the Conversion Strategies

**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)

**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
Agenda

Legacy DCS Market Outlook

Migration Tools – Reduce Risk and Cost

Phased Migration or Rip and Replace

Success Stories

How We Can Help
The Rovisys Company – Bailey Migration

- Bailey Infi90 was migrated to CLX for soy bean extraction and refining
  - TI PLC migrated at the same time
  - Eliminate interface and duplicate tags in PLC and DCS
  - Consolidated tags in Plant Historian
Migration Project Plan and Documentation

- System Audit – Assess existing Hardware and Software
- System Design
  - Functional Spec - Architecture, Code & HMI
  - Electrical – Enclosures, Network, Power, I/O Cables
- Cutover Plan
  - Shutdown schedule
  - Installation Support/Management
  - Loop Checks
  - Final Tuning and Commissioning
Downtime Minimized

- Custom Cables to reuse N90 Field Terminations
Risk Mitigation Plan

- Dedicated PM
- One Lead Engineer for the complete project life cycle
  - Perform audit of the existing system
  - Establish client expectations
  - Total project ownership
- Weekly Meetings with client, installer, panel shop, E&I contractor
- Electrical Contractor Management included in scope
- Operator Training on new system
- Cutover Management by RoviSys and Client
Migration Project Execution

- Establish standards knowing both the old and new systems
  - Identification of dead code within the CADEWS
  - Coding Standards
  - Conversion of tuning parameters
  - Graphical Standards/Tag Naming Standards

- Collaborative design decisions – get buy in at all levels

- Custom cables to expedite cutover and ensure accurate wiring

- Cutover Plan
  - Requirements for staffing and downtime
  - Assign key responsibilities
  - Scope of Work for each phase
  - Testing Requirements
Lessons Learned

- Keys to a successful migration
  - Execute migration plan as separate effort, prior to migration
  - Ensure that all parties understand project magnitude
  - Set a reasonable schedule

- How did the migration help our customer achieve their goals?
  - Keep the system up!
  - Repaired key instruments
  - Can’t blame system any longer... improve operations
  - Fully documented system
  - Local Distributor support, with Rockwell and RoviSys

- 4,1800 & 10
Agenda

Legacy DCS Market Outlook

Migration Tools – Reduce Risk and Cost

Phased Migration or Rip and Replace

Success Stories

How We Can Help
Global Process Tech Consultants (GPTCs)

- 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 best practices of using PlantPAx
  - **A&E** – Develop specs for these firms to establish Rockwells platform
  - **Process OEMs** – Work to rewrite application on a Rockwell Platform

- DCS Migrations - Explain to customers migration paths to Rockwell

- Work across global regions and key customers to assist in project implementation (A&E, contractor, SI and end user)
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.
# 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

---

**PartnerNetwork™**

<table>
<thead>
<tr>
<th>Business Enterprise</th>
<th>Sales &amp; Solutions</th>
<th>Products &amp; Technologies</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Strategic Alliances</td>
<td>- Distributors</td>
<td>- Product Reference</td>
</tr>
<tr>
<td>- Enterprise Solution Partners</td>
<td>- Solution Providers</td>
<td>- Technology Licensing</td>
</tr>
<tr>
<td></td>
<td>- Machine Builders</td>
<td></td>
</tr>
</tbody>
</table>

A large global ecosystem for solutions and support of your Rockwell Automation installed base
More Information: White Papers Published

- Justification for a Legacy Control System Migration  PROCES-WP005
- DCS Migration Strategy and Project Implementation  PROCES-WP006
- Optimization after Migration  PROCES-WP008

http://Literature.rockwellautomation.com > Support > Product Resources >