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

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Success Stories

How We Can Help
# DCS Migration and Modernization Solutions

## Legacy DCS Migration/Conversion Tools

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<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 Conversion Services</th>
<th>Graphics and Configuration Conversion Services</th>
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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

Bailey Plant Loop
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 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

**Diagram:**

1. Initialize Project
2. Check Console Tags
3. Get Controller Configurations
4. Create OPC90 CSV File
5. Create HMI Tag Structure
6. Create RSVIEW Files
7. Done

**Project Initialization:**

- Project Name: Example Conversion Project
- Base Projects Directory: DCS HMI Conversions

**Buttons:**

- Create New Project
- Reset Current Project
- Load Existing Project
- View Project Log File
**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

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- Retains legacy I/O – significantly reducing front-end migration costs
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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
Bailey Net90 / Infi90 Migration – Phase 1
Bailey Net90 / Infi90 Migration – Phase 2
APACCS Migration – Phase 3

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
CLX 2

Ethernet

MODULRAC 2

IEM

APACCS Gateway

Ethernet

Modulbus
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
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

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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 Rockwell 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

Helping you exceed your business goals.

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

Global Execution

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

Domain Expertise

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

Project Management
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
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 >
Questions?