T88 - Move Towards The Connected Enterprise by Modernizing Your Control and Information Systems
Why Modernize?

It’s a business decision...

Faster Time to Market

Lower Total Cost of Ownership

Improved Asset Utilization

Enterprise Risk Management

...often driven by the need to satisfy a “new” requirement
Leadership Driven Change

Dannemiller Change Equation

CHANGE

Dissatisfaction + Vision + Next Steps → Resistance
**Dissatisfaction**

**CHALLENGE**
- Needed to increase production rates of existing manufacturing operations
- Legacy system required complete electrical shutdown to clear material jams

**CHALLENGE**
- Unacceptable unplanned downtime
- High risk due to aging assets

**CHALLENGE**
- Needed to increase output rate of existing machine

**CHALLENGE**
- Decrease cycle time to fold and cut metal sheets for enclosures of large appliances
- Modernize Safety Systems of existing operations – “reduce injuries”

**CHALLENGE**
- Unable to meet production quota
- Lacked access to real-time information to determine cause

**CHALLENGE**
- Better temperature control with less overshoot
- High ambient temperatures and limited space for controls

**CHALLENGE**
- Conveyor control on a horizontal form fill and seal machine must be tightly coordinated with servo drives

**CHALLENGE**
- Time consuming to fine tune machine settings after product changeover

**CHALLENGE**
- Unable to meet production quota
- Lacked access to real-time information to determine cause

**OPPORTUNITY**
Dissatisfaction “Unscheduled Downtime”

- A billion seconds ago it was ...
- A billion hours ago ...
- A billion dollars ago ...
- $20B in $100 bills stacked would be ...
Lifecycle Driven Modernization

PLC-5® Lifecycle Status – End Of Life

- 30 year protected investment
- PLC-5 & 1771 I/O End of life
- PLC-5 sales are currently restricted
- Many options for repair, inventory consolidation and lifecycle management services are available
- However, parts availability is becoming more restricted for installed base support
- Discontinuation June 2017

PLC-5® Lifecycle Status: End of Life
Discontinued July 1, 2017
Assess - Know Current State

Product Lifecycle Status:

- **Active**
  - This status indicates current product offering within a category of product.
- **Active Mature**
  - Products fully supported and available, but are nearing the end of their lifecycle.
- **End of Life**
  - A product discontinued date has been announced. Active support may not be available.
- **Discontinued**
  - New products no longer available. Replacement or other options may still be available.

Installed Base Evaluation™:

- **MRO analysis including location & optimization recommendations**
- **Identification of automation obsolescence risks**
- **Identification of product lifecycle status via plant hierarchy**
- **MRO stocking and obsolescence risks and opportunities for better storeroom management and migration planning**

Migration Profile:

- **Notification of product lifecycle**
- **Benefits of new technology**
- **Migration options and tools**

---

Step 1: Field Collection

- On-site data collected by a Rockwell Automation Field Service Professional

Step 2: Processing

- Off-site processing and analysis determines plant lifecycle risks and overall MRO inventory status

Step 3: Delivery

- Delivery of reporting to customer using a consultative approach
Design - Tools / Utilities

RSLogix™ Project Migrator:
- Converts legacy RSLogix™ 5 or 500 project export file to Logix project for MicroLogix™, SLC™ and PLC-5®
- Free download
- 7-step conversion

Integrated Architecture® Builder:
- Graphical, user-friendly software tool that automatically defines and configures a contemporary ControlLogix®-based architecture based on your legacy PLC-5® system
- Builds a detailed bill of materials based on your current PLC-5® based control system
RSLogix™ Project Migrator

- Start RSLogix™ Project Migrator
- Select “For PLC-5® to Logix migration”
- Click “Launch RSLogix™ 5” to prepare PLC-5® application for conversion
- Select your PLC-5® application

- Select location to save .15k file
- Select controller type
- Select version of Studio 5000® you wish to use
- The actual migrating/conversion of the code takes just seconds
- Select “Launch RSLogix 5000®”

- Create alias tag for existing PLC-5® symbols
  - Maintain consistent naming conventions with equipment
- Select “Migrate”
- Depending on size of the application, parsing may take several minutes

- Studio 5000® will prompt you to save the .ACD (native file format for ControlLogix® platform)
- Import the .15k file into your newly created project
RSLogix™ Project Migrator

- From the main menu bar, select “Search”
- In the search dialog box
  - Find What: PCE
- Make sure all selections in options for Ladder Diagrams are selected
- Click “Find All”

- Search results pane at the bottom of Studio 5000® select and copy all results
- Open notepad or a Word document
- Paste selection into document
- A single reference point to refer all PCE “error” instructions in your code
- Time to clean up the code
- Example of what the rung looked like in RSLogix™ 5 and the converted rung result
- Refer to publication 1756-RM085 - Converting PLC-5® to ControlLogix®
Configure Your ControlLogix® System

- Integrated Architecture® Builder to generate your BOM for hardware
- Simple project creation, configurations, and hardware generated
- FREE download from the Rockwell Automation® website

- Create new project
- Select PLC-5® Migration Wizard
- Name your workspace
- Click “OK”
- Add your chassis
- Give your chassis a name
- Click “OK”

- Select your Chassis size
- Select ControlLogix® size from the options provided
- Select the PLC-5® Power Supply
- Select ControlLogix® PS from the options

- Select the PLC-5® Controller
- Select the Logix processor from the options provided
- Since we selected L40B controller, the options include DHRIO modules to satisfy communications requirements
- Select Processor and Channel communications you need
Configure Your ControlLogix® System

[Images of computer interfaces showing configuration options for ControlLogix systems]
Implement – Tools, Utilities, Services

Hardware and Wiring Conversion:

- Seamless conversion without removing any field wires in minutes

RSView®32 Migration Reference Documents

- RSView®32 to FactoryTalk® View SE Migration Guide
- Literature Library Doc ID: FLA03-GR004A LIN P
- Covers details on what does and does not convert, importing RSView®32 app into FactoryTalk® View SE
- KnowledgeBase articles
- 27700 - RSView®32 to View SE Conversion Guidelines
- 87700 - How to convert an RSView® project to FactoryTalk® View SE (Distributed)
- 51770 - Sample app showing VSA migration
- 70810 - FactoryTalk® Alarms and Events with Win 8.1
- 47690 - RSView, FactoryTalk®, and Parts Reference

PLC-5 Packaged Migration
Scalable, Phased Migration Option

- System hardware and code conversion in one catalog #
- Available option bundles (engineering and hardware)
- Migrates the rack “Zero” PLC-5 rack
- Lays the foundation for future modernization

Ideal for:
- Discrete applications communicating to devices and remote I/O racks
- End user, system integrator, or OEM
- Obsolesce risk mitigation
Wiring Conversion System Demo

- Turnkey hardware
- Fast
- Simple
- Reliable
- Accurate
- Complete
PanelView™ Migration

Product Lifecycle

Active
- PanelView™ Plus 7
- PanelView™ Plus 6

Active Mature
- PanelView™ Standard
- PanelView™ Plus/PanelView CE

End of Life

Discontinued

PanelView Migration Tools

PanelBuilder Migration to FactoryTalk View ME

Understanding Your Needs
- Migrate to PanelView Plus & take advantage of technology advancements!

Q: If I have a PanelView now, what tools are available to help with migration?

A:
- Step Forward incentive program
- Rockwell Automation Literature Library
- Rockwell onsite conversion services

Competitive Application Conversion Utilities

- HMI project conversion services for selected competitor products to our channel partners at no charge
  - Wonderware InTouch, versions 6.x to 11
  - Intellution iFIX, version 2.5 to 5.5
  - Intellution FIX32, versions 6.0 and 7.3
- Projects converted to RSView®32 or FactoryTalk View ME are on the same platform as the current solution, with the same functionality available.
RSView® Migration and Conversion

Training Services: PanelView Conversion

“FactoryTalk View ME and PanelView Plus Conversions”
- 1 day course
- Learn the skills to migrate a PanelView to PanelView Plus

Course Agenda:
- Prepare a PanelView Plus
- Migrate a PanelView application
- Update the displays with new features
- Download to the PanelView Plus

PanelView Conversion Services
- A bundled service offering for migration including:
  - Project supervision
  - Hardware
  - Conversion Engineering Services
    - Leverage past experiences
    - Reduce overall project time
    - Improve turn around
    - Start-up & Acceptance Services
      - Delivered OnSite by local PanelView Plus experts
      - Standardized service bundle
      - Delivered for a fixed price – predictable results

Technical Tools: HMI Application Conversion Utilities (ACU)

- Application Conversion Utility
  - No charge service to convert Wonderware (InTouch) or GE Fanuc (iFIX) projects to RSView32
  - Converted projects can be migrated to FactoryTalk View SE through FactoryTalk View Studio
  - Converts graphics, database files and animations, but not scripting – not a 100% conversion; additional engineering is necessary to complete the conversion

- How do I get a project converted?
  - The tool is available using the Rockwell Software Extranet
    - www.software.rockwell.com/extranet/acu/
  - Upload or email the project file
  - The converted project file will be sent back to you within one week
  - Complete the conversion manually
    - Exception report provided for items not converted

http://www.rockwellautomation.com
Legacy DCS Conversion Opportunity

Integrated Gateway Solutions

3rd Party Interfaces
- PROVIOX Data Highway
- Bailey PLCs
- Honeywell
- Honeywell

3rd Party OPC Scanners
- PROVIOX
- APACS
- IPC620

Custom Cable Solutions
- Bailey
- Foxboro I/A
- PROVIOX
- Honeywell
- APACS

Database Conversion Tools
- Converts Legacy DCS DB tags to FactoryTalk View OPC tags or ControlLogix tags
- Used in conjunction with OPC Servers, (whitebox) PCs, or the Softing “SAM”

Legacy Process Control System Migration and Conversion Solutions

White Papers to Help Guide you

DCS Migration White Papers available on Literature Library
http://literature.rockwellautomation.com > Support > Product Resources
PLC-5® Lifecycle Status – End Of Life

- 30 year protected investment
- PLC-5 & 1771 I/O End of life
- PLC-5 sales are currently restricted
- Many options for repair, inventory consolidation and lifecycle management services are available
- However, parts availability is becoming more restricted for installed base support
- Discontinuation June 2017

It’s time for a migration plan to ControlLogix®

PLC-5® End of Life
Discontinued July 1, 2017

Traditional Lifecycle Driven Modernization
Modernization / Migration Opportunities
Technology Driven Modernization

The key to loosening the status quo

Communication changes over the past 30 years
Navigation and Planning 30 Years Ago

Navigation changes over the past 30 years
Gas 4 Less
Presale Information
Gas: $/gal, availability
- $1.79, 5 of 8 pumps
- $1.79, 3 of 8 pumps
- $1.72, 7 of 8 pumps

Post-sale Information
Store # 128 203 Church Street
Mayberry, Ohio 44144
Pump #4: 14.8 gal of 91 octane
01/28/2016, 16:40 eastern

Big Store
E-Shopping List
- Toilet Paper
- Paper towels
- Laundry Detergent

Get Lube Inc
9,782 miles since last service
Store # 27 102 Main St
Mayberry, Ohio 44144
Current Wait: 3 minutes
Avg Review: ⭐⭐⭐⭐
Manager Name: Joe
Special: Free Wiper blade Replacement with Oil Change
Human Data

Rockwell Software® TeamONE™

Device Data
Increase Productivity Now and Again . . .
Plant Assessment

- Management By Objectives (MBO)
- Management By Walking Around (MBWA)
- Gemba – Japanese term for “real place”
  - *Japanese detectives refer to the crime scene as gemba*
  - *In quality management gemba means manufacturing floor*
  - *Gemba visits are not scripted nor are they bound*
  - *To be customer-centric one must go to the customer’s gemba to understand the customer’s problems and opportunities*
PLANT WALK-THROUGH GUIDE

People, Process and Technology are the Backbone of Every Successful Implementation

INFO-BR-009A-EN-P – February 2018
The Manufacturing Process

SUPPLIERS

RECEIVE
Goods & Materials
Bad
Warehouse

MAKE/BUILD
Assemble/Produce
Rework
Repair

VALIDATE
Test/Audit
Bad
Scrap/Waste

PACKAGE
Package & Palletize
Label
Track??

SHIP
Customer
Warehouse
Distributor
Plant Assessment

- Tour your customer facility
  - Watch the People
  - Watch the Materials
  - Watch the Data

Three basic principles to observe on a tour:

**People Flow – People**
- Non-value added time – (walking to filling cabinets looking for documentation)
- Tribal knowledge –
  - Decisions based on 'gut or experience' instead of data
  - Data stuck in the 'head' of the local SME?
- Workforce flexibility
  - Can an operator only run one operation/station?
- Reference manuals, note books in work area
  - (workmanship standards, process specifications, recipes)
- How does an employee know if they've had a good day?

**Material Flow – Process**
- Are there constraints in the process
  - Strained process, excess raw material stock up, excess WIP stock up, production station stopped due to materials shortage, excess finished goods
  - Does the material/products have bar codes?
    - Are they scanned throughout the process or only in receiving?
    - What is being tracked in the process?
      - (specifications, scrap, process validation, rework)

**Data Flow – Technology**
- Using spreadsheets, filing cabinets for documentation
- People are using paperwork to complete tickets for scrap, defect data entry
- Reports are displayed on paper (are they dated?)
  - How often are they updated?

A “Typical” Model

During the Tour:
Only ask questions based on your observations...
"I see that you..."
People Flow

Observation based question:

..."I see clusters of people around one area of production floor, what’s going on there?"
Observation based question:

"I noticed several scrap bins, what's driving the amount of scrap?"
Observation based question:

…”I see clipboards being used to document production information, who uses that data and when?”
Assessment Survey

**People Assessment Survey**

Do you have the right skilled people to manage the new process?

Will the process require a different level of relationship between departments? Will you need less data entry skills and more data analysis?

Are people required to be certified to perform an operation? How do you verify that the operator is certified?

How does an operator report a machine issue? How do you know if the operators are adding value? Are there steps in the process that are dependent on specific individuals?

How is labor efficiency measured?

What level of involvement do your executives play in your smart manufacturing journey?

Are your service provider’s considerations within your operations strategic?

Is your IT organization able to fulfill the requirements of plant floor connectivity and enabling new technologies?

**Material Assessment Survey**

Have you defined & quantified the value & KPIs for your organization?

Can you use data to improve productivity or continuous improvement?

How do you record data for historical purposes?

How do you track that people maintain certification?

How important is the usage of an analysis of data for your business model? (Customer data, product data, machine equipment data)

To what extent do you have a real-time view of your production and can dynamically react on changes in demand?

Can you eliminate manual entry in favor of automated data collection?

Are you creating value from the data on the plant floor in your operations?

What parts of the process could potentially be eliminated or optimized?

Do you track the cost of WIP?

Does the WIP have a “shelf life” such that it has to be scrapped if not used in time?

How do you handle scrap/rework? Do you know the cause of the scrap/rework? Do you record it? Do you record both time and material in this?

Are you doing in-process quality inspections? How do you report quality issues?

For downtime events do you know if the issue is material, equipment, quality related, or a people issue?

**Data Assessment Survey**

Do people have to manually collect the production information at the end of the day or shift?

Can you share data outside your organization – suppliers, machine builders, other facilities?

How do you measure performance? Do you use OEE or some other measure of production efficiency? How do you record this?

Are your machine/equipment connected to your business or manufacturing systems?

Are you capturing the causes, durations, and reaction times when an incident occurs?

Are there certain issues that must be corrected by a validated technician?

How would you stay your degree of digitization of your vertical value chain?

How advanced is the digitization of your production equipment (sensors, IoT connections, monitoring, automation, remote access).

How mature is your IT & data architecture to gather, aggregate and interpret real-time manufacturing data.

How important are new technologies like mobility, analytics, cloud computing for your business operations.

Are you able to ensure that your intellectual property of your digital assets and services are properly protected.

Does your technology fully support the new process?

How is your collaboration with partners, suppliers for deployment in smart manufacturing?
Why Modernize?

It’s a business decision...

Faster Time to Market  
Lower Total Cost of Ownership  
Improved Asset Utilization  
Enterprise Risk Management

...often driven by the need to satisfy a “new” requirement
Thank You!