



DeltaV

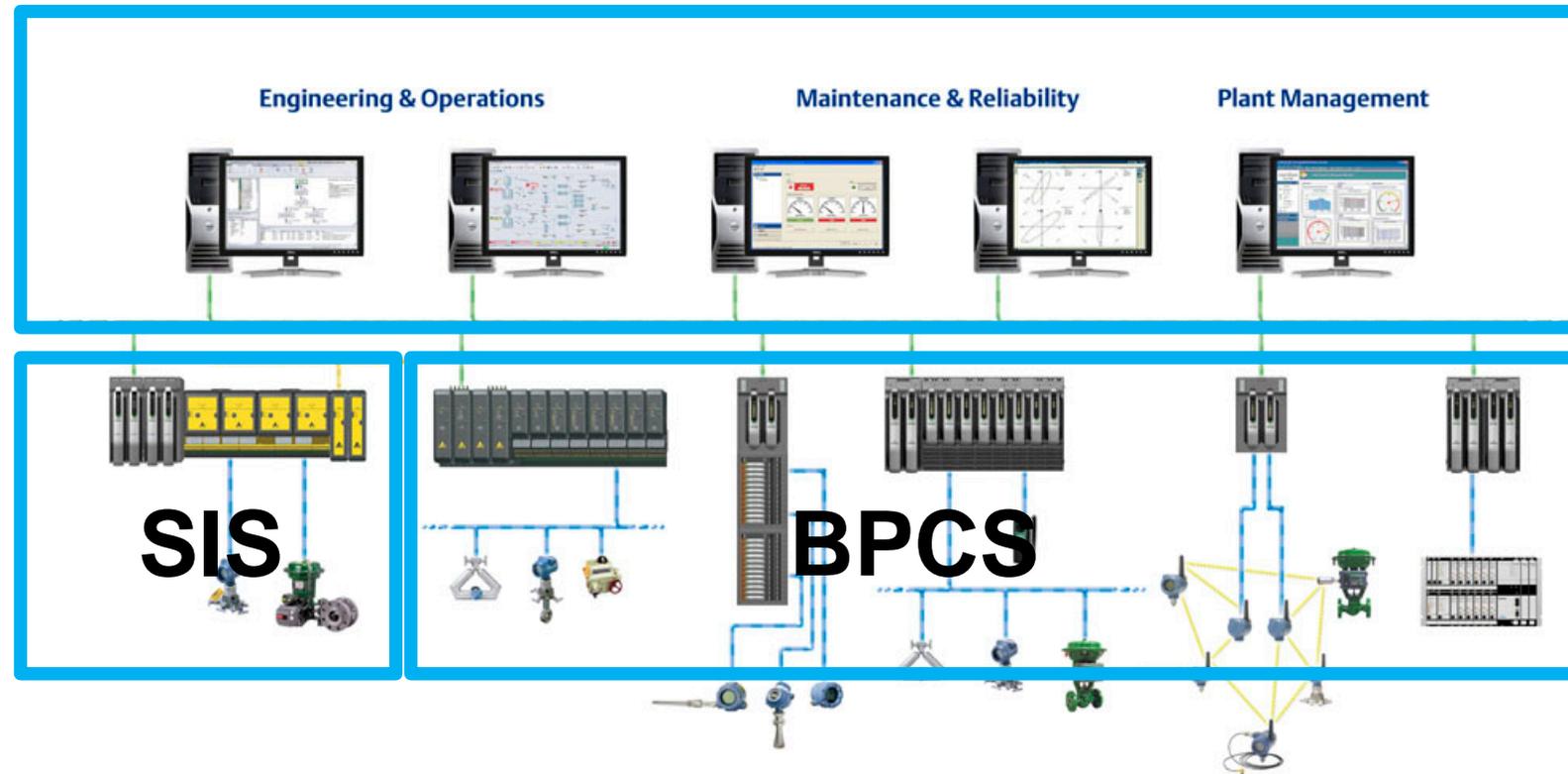
David Ascarza

Responsable Comercial IBS

24-02-2016

- **Arquitectura DeltaV**
- **Alta eficiencia en proyectos. Marshalling Electrónico**
- **Herramientas de Ingeniería y Operación**
- **Ciclo de Vida**

Same Platform



ICSS (Integrated Control and Safety System)

Asset Management Integrated

Plant Management

Process Safety

Process Automation

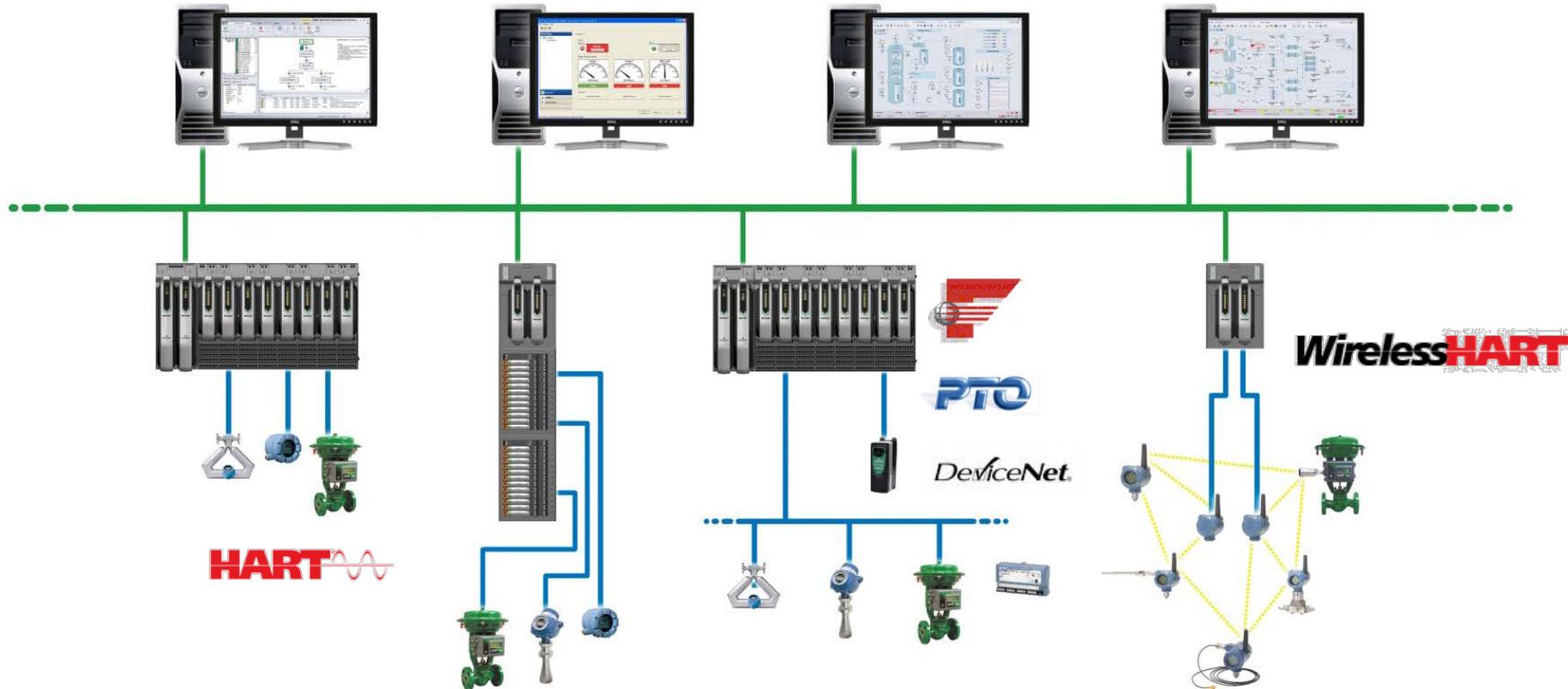
Asset Management

Version 13 available

Flexibility and adaptability



I/O on Demand



Wired (Classic I/O + EM)

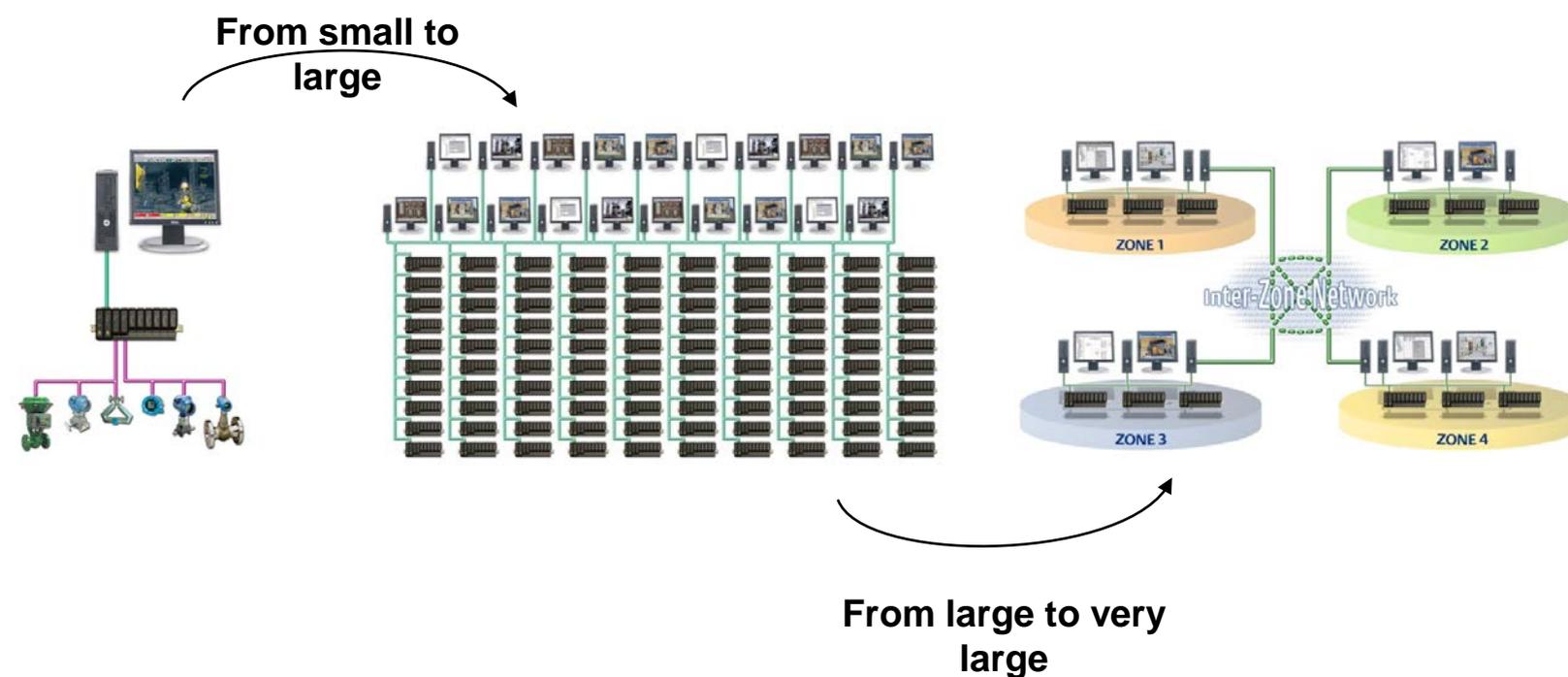
Bussed

Wireless

DeltaV Suite



Leverage your investment as your system grows



From 25 to 32.000 TAGs

128 nodes

Interzone Connection

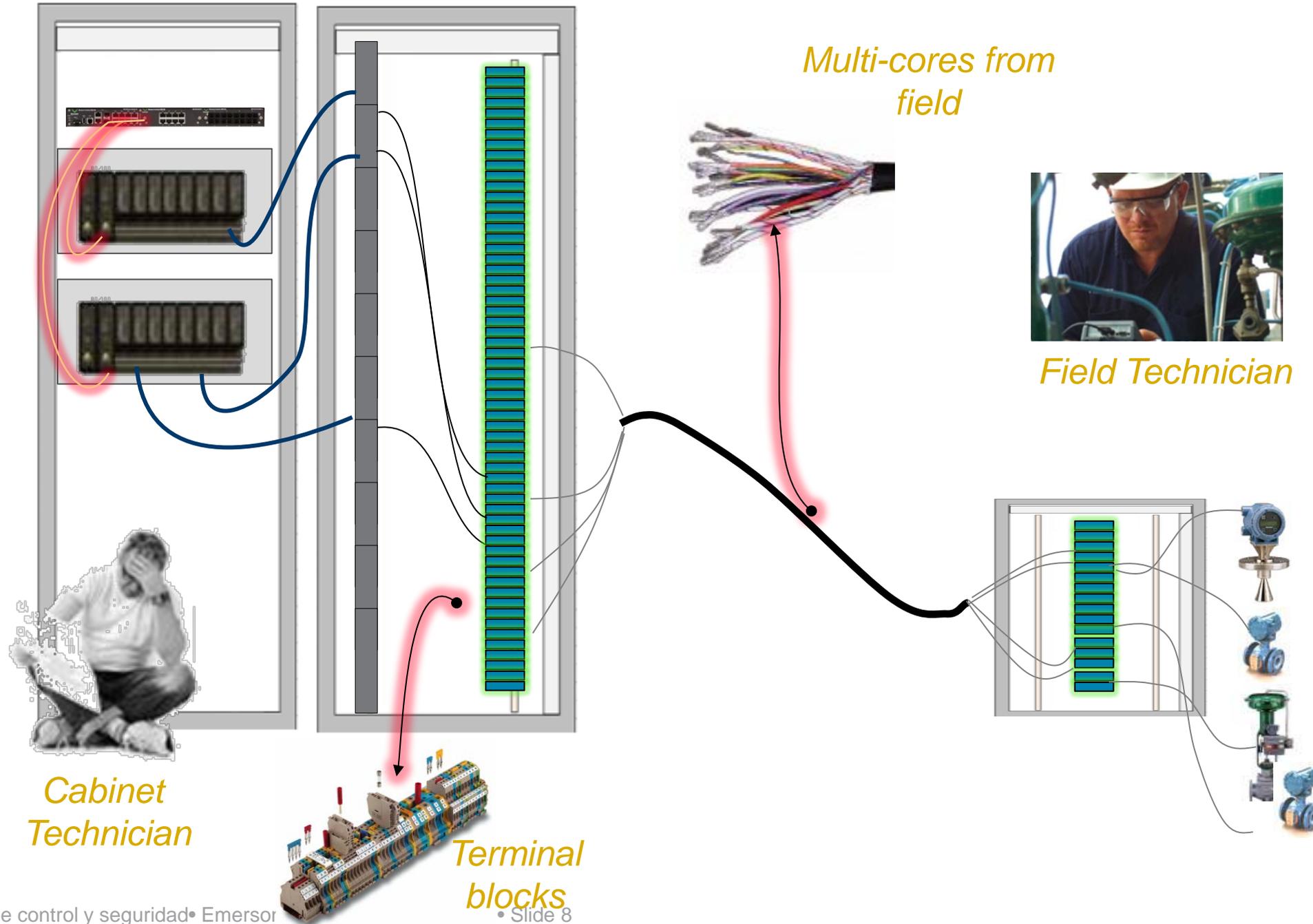
Inherent functionality regardless of size.

Agenda

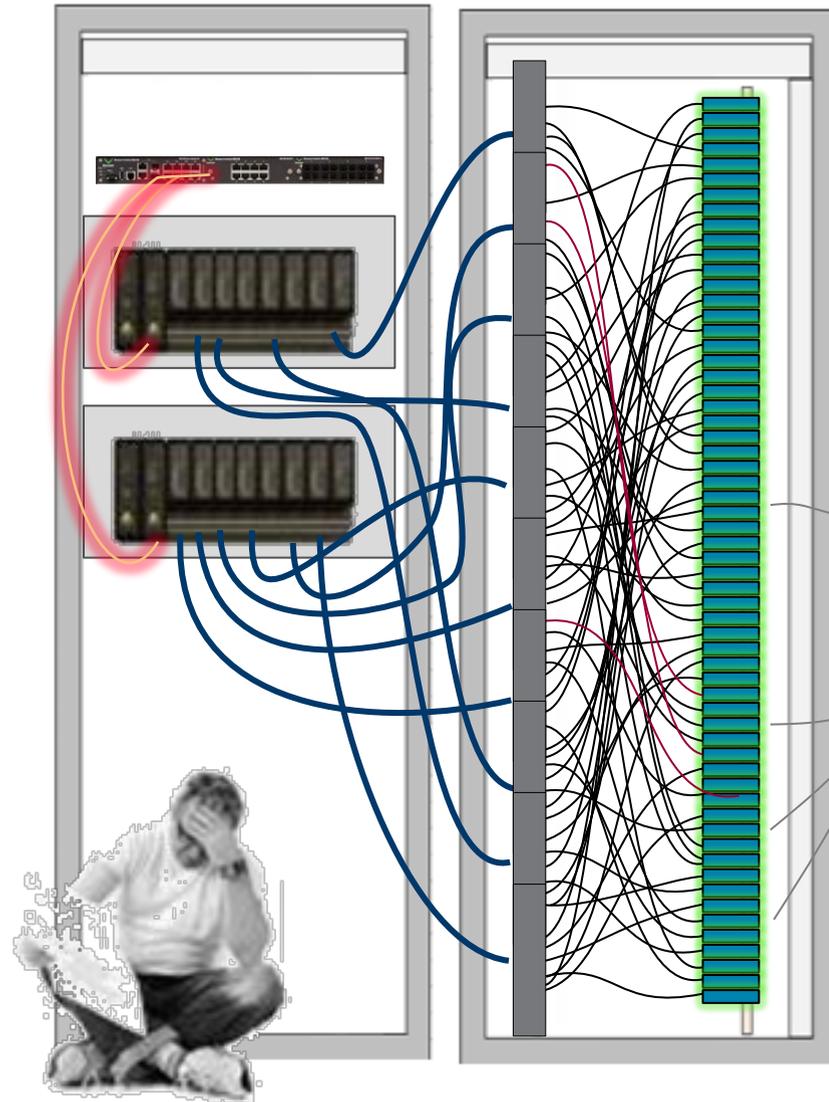


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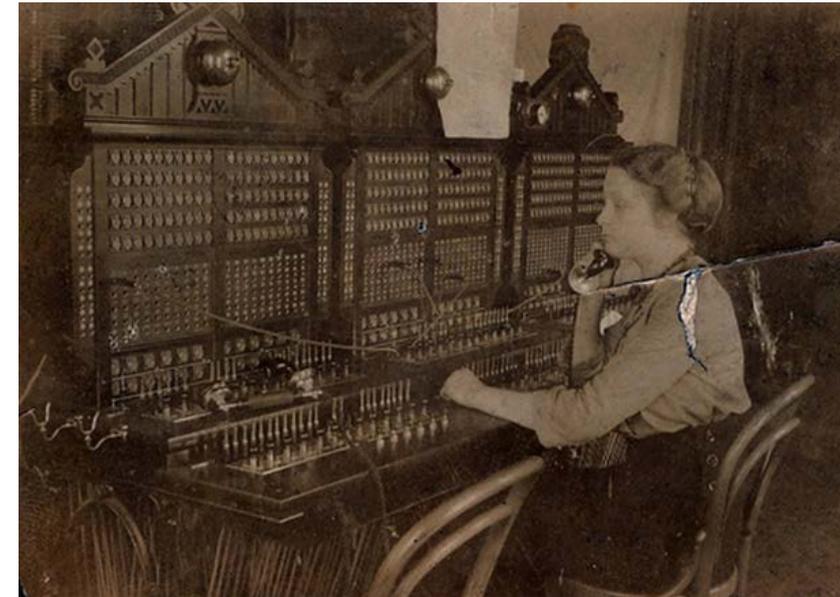
Traditional Practice



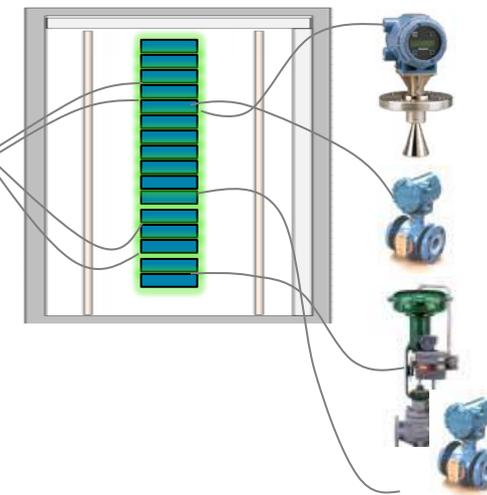
Traditional Practice



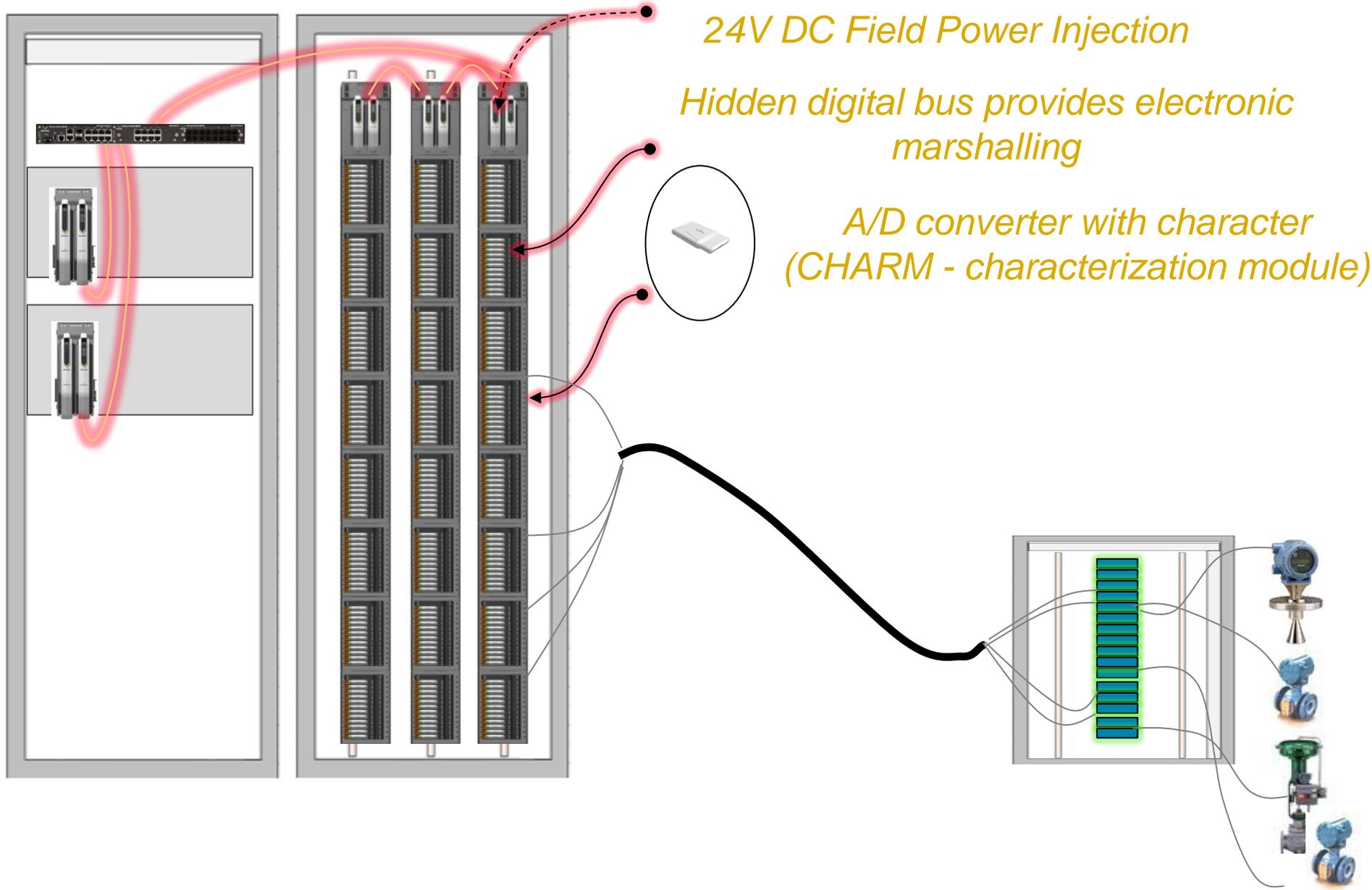
Cabinet Technician



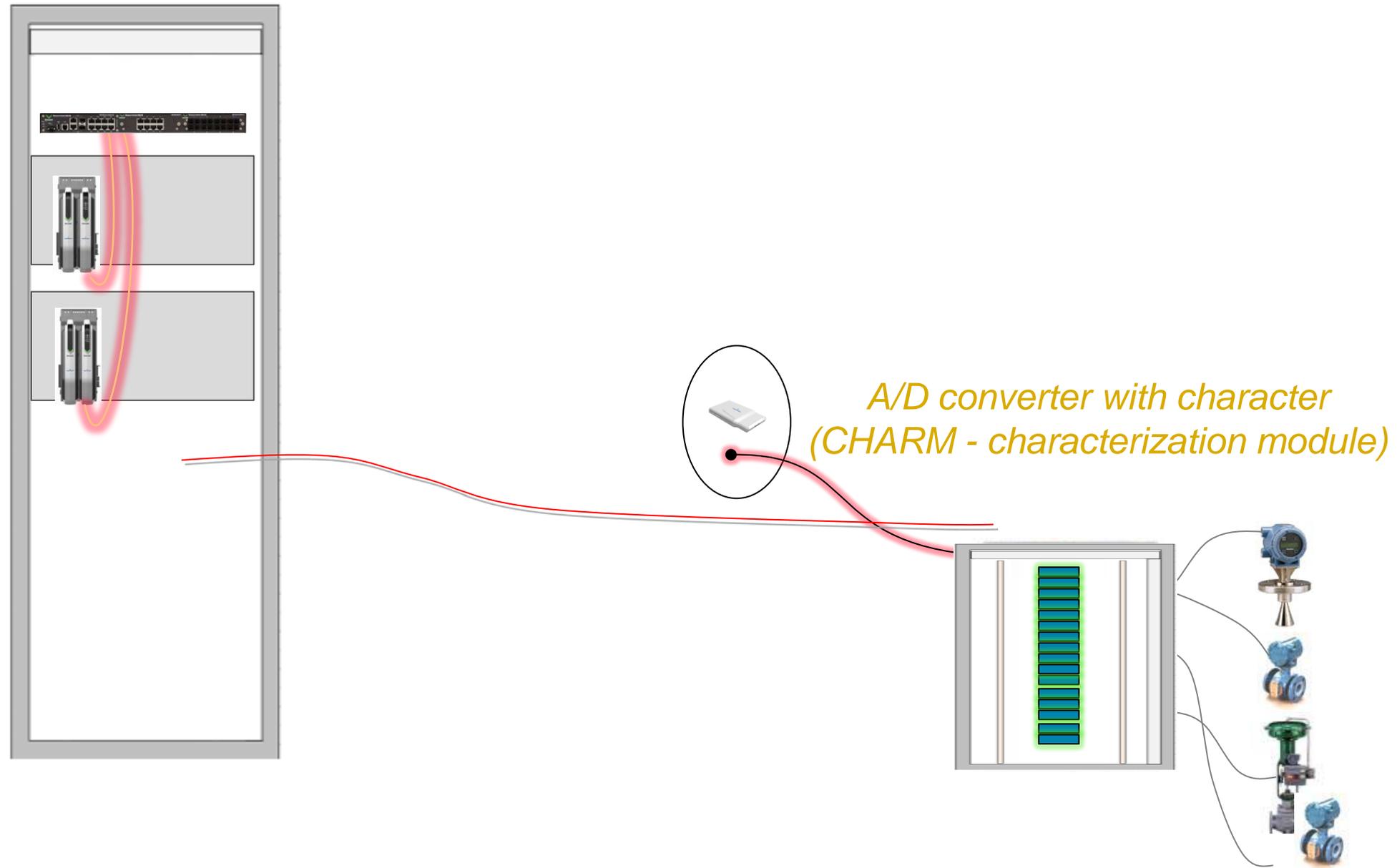
1914, Switchboard Operator



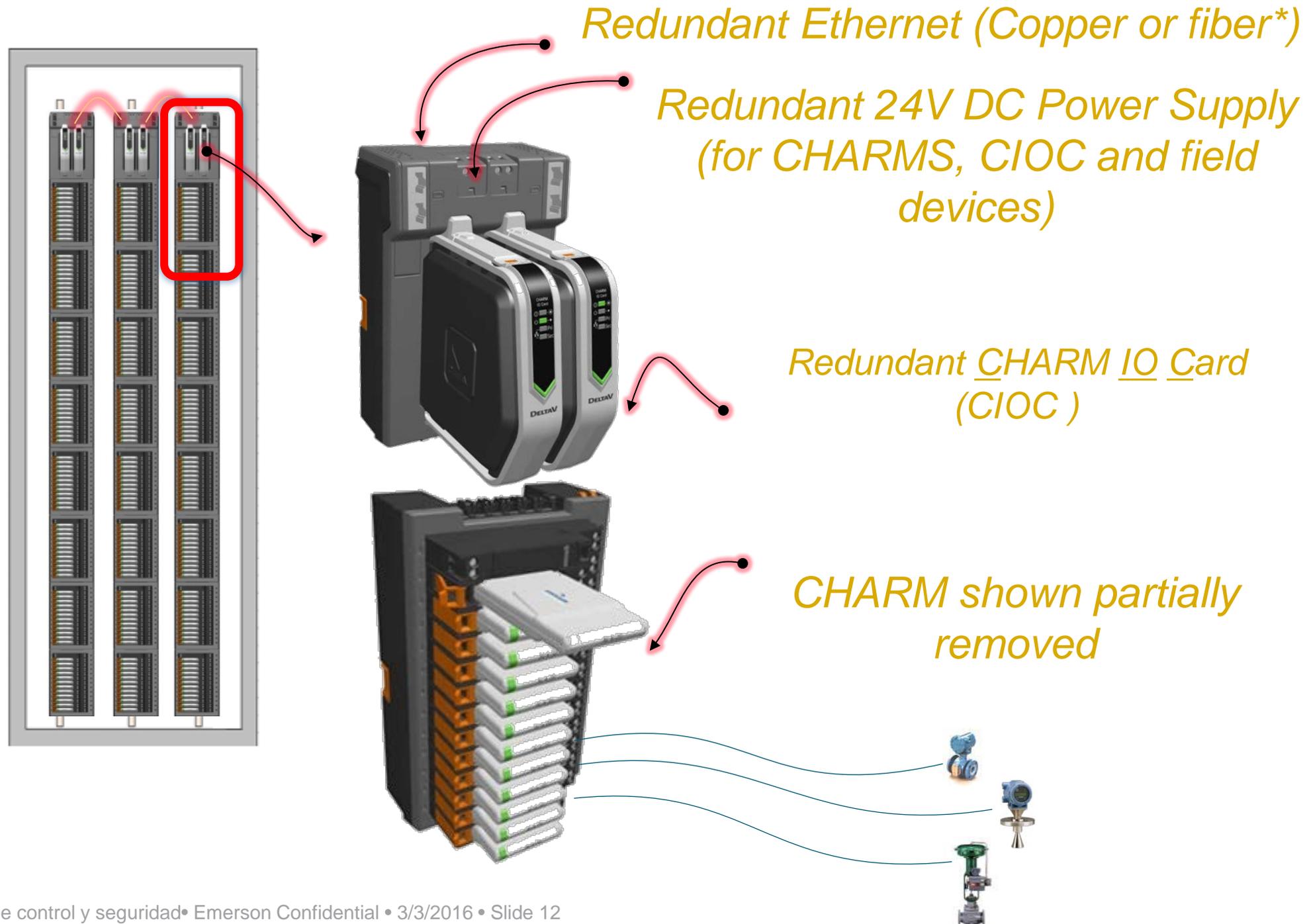
Electronic Marshalling (Centralized Solution)



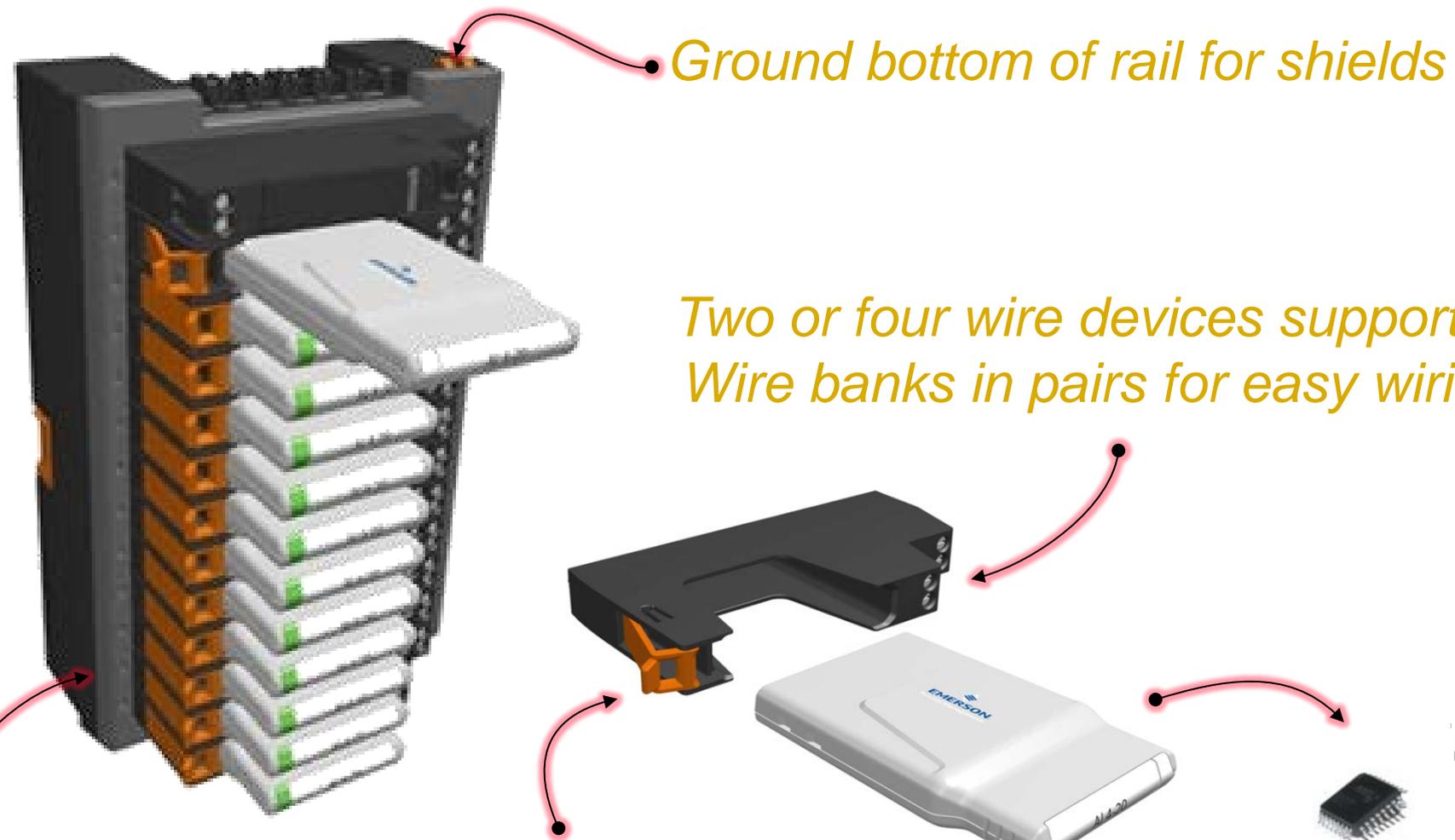
Electronic Marshalling (Junction box Solution)



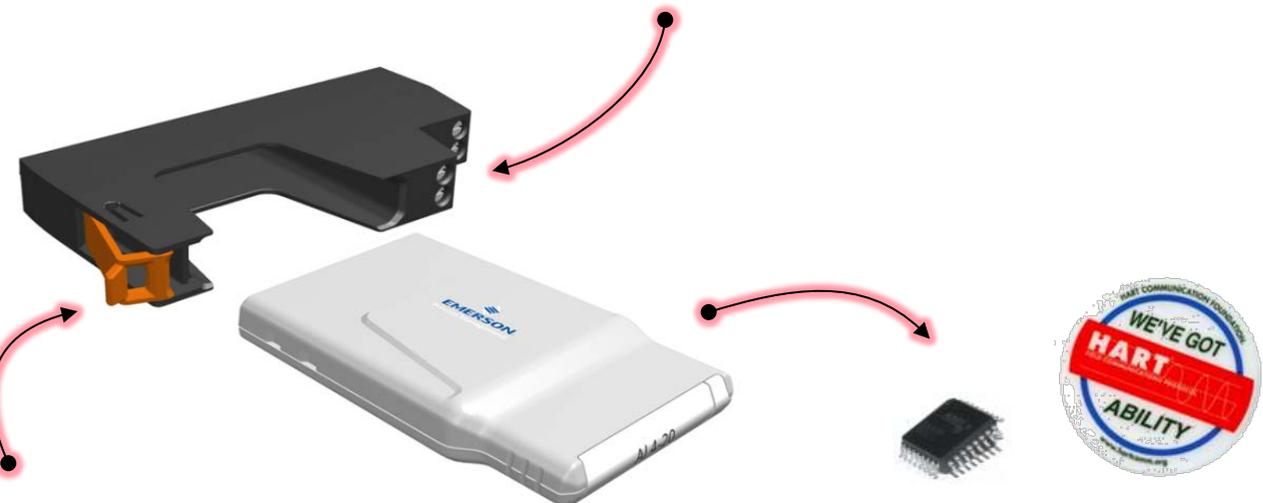
Electronic Marshalling Details



Electronic Marshalling Details



*Two or four wire devices supported
Wire banks in pairs for easy wiring*



*“No tool” easy eject
mechanism to release
CHARM for hot work*

*One HART v7
modem per
channel for fast
communications*

CHARM Types:

- AI 4-20mA 2/4W
- RTD
- Thermocouple/mV
- AI 0-10V isolated
- AO 4-20mA
- DI Namur
- DI 24VDC dry contact
- DI 24VDC isolated
- DO 24VDC High Side
- DO 100mA Energy Limited
- DO 24VDC Isolated
- 24VDC Power
- DI 120VAC Isolated
- DI 230VAC Isolated
- DO VAC Isolated

I/O Terminal Blocks:

- Standard Terminal Block
- Fused Injected Power TB
- 3-wire DI Fused Injected Power TB
- Relay Output TB
- Thermocouple mV TB

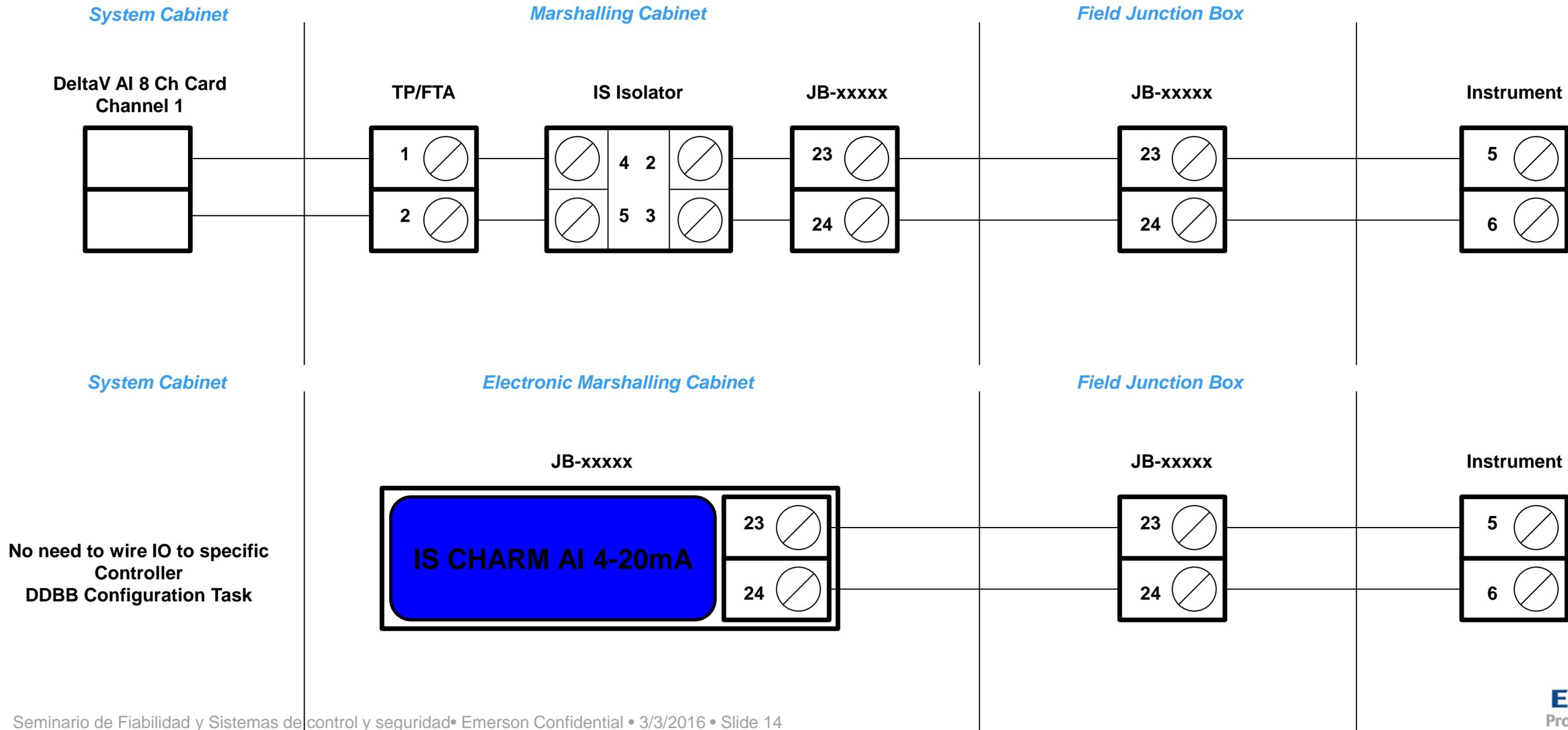
*“No tool” easy eject
mechanism to
release CHARM
terminal block*



Instrument Loop Diagram Examples



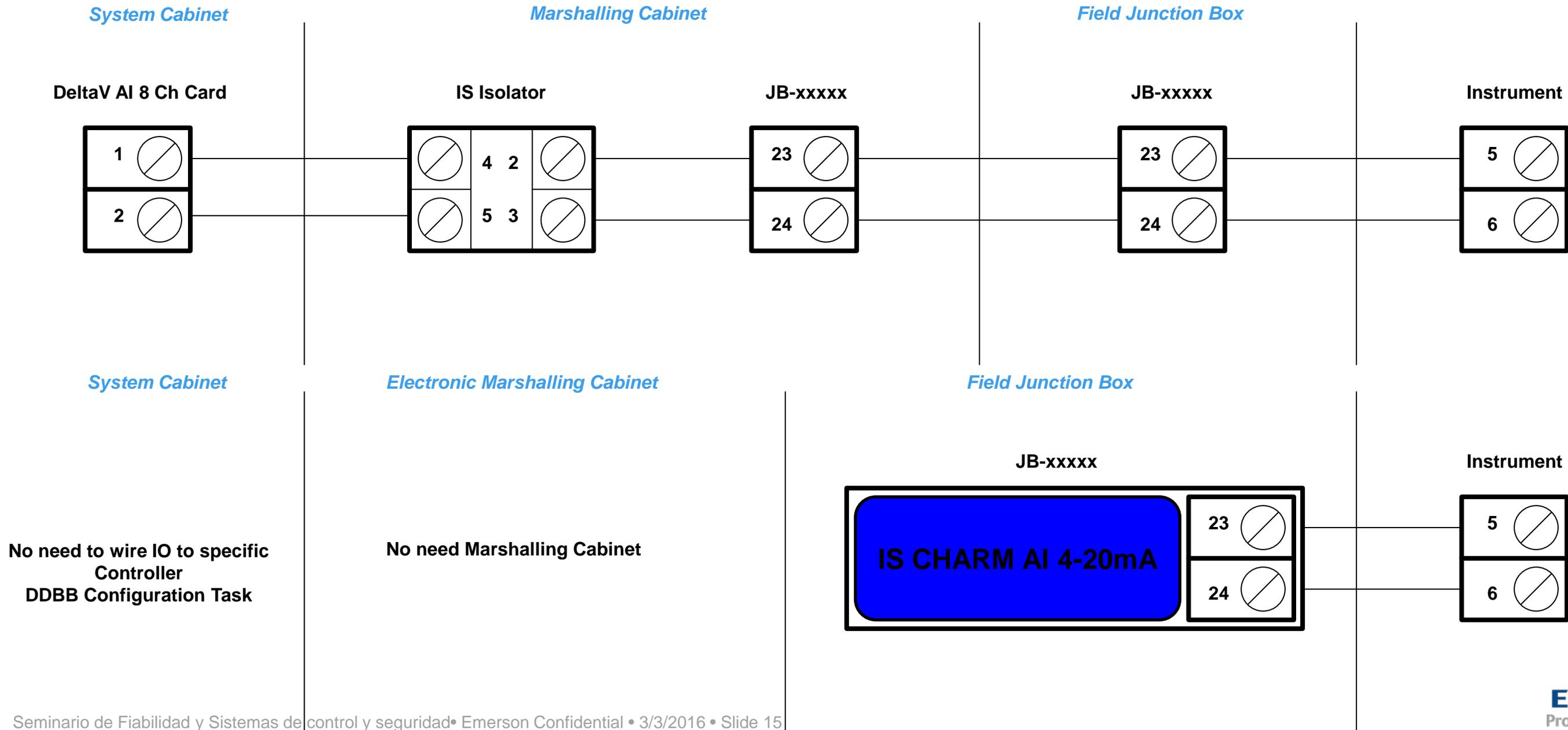
Classic AI ILD Template



Instrument Loop Diagram Examples



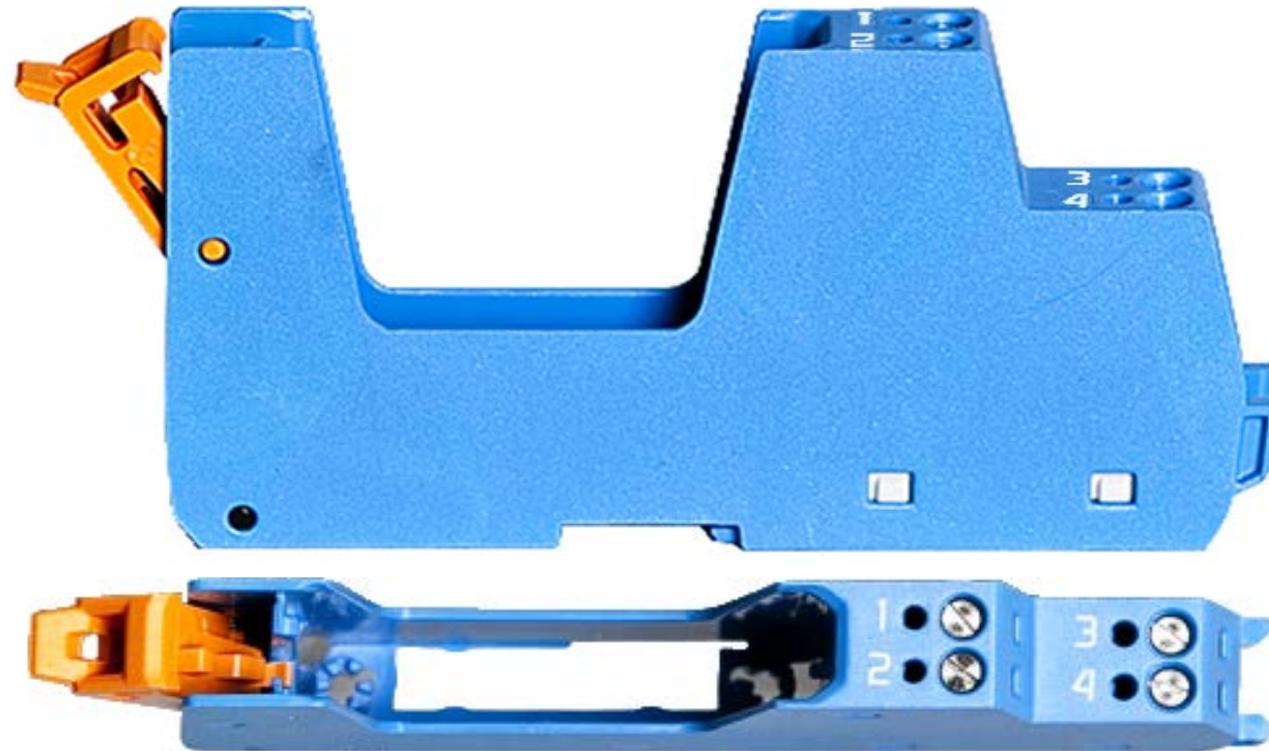
Classic AI ILD Template



I.S. Charms and I.S. Terminal Block



- IS CHARMS:
 - Hart Analog Input
 - Hart Analog Output
 - Discrete Input
 - Discrete Output
 - Thermocouple / mv
 - RTD

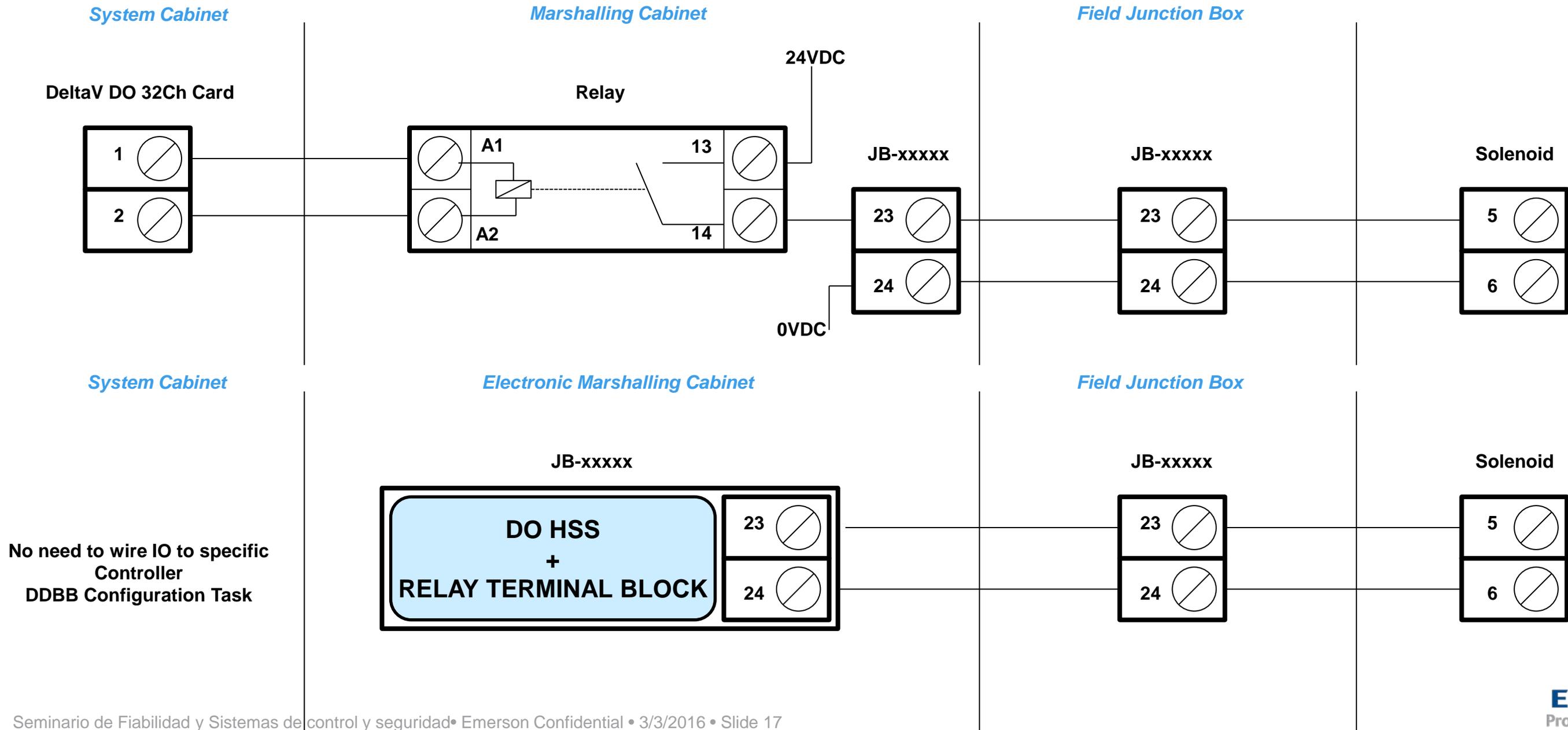


IS Terminal Block Will Only Accept IS CHARMS!

Instrument Loop Diagram Examples



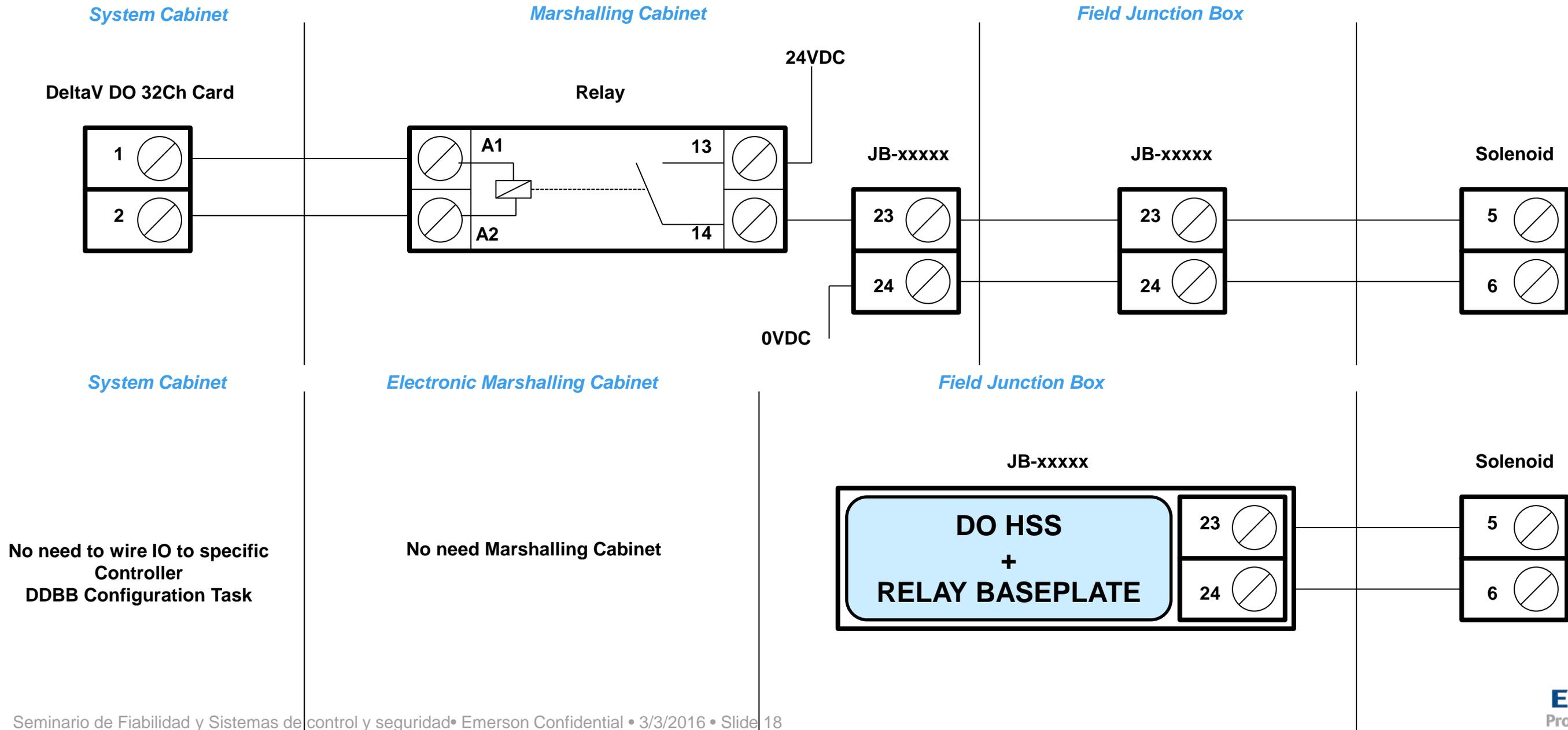
Classic DO ILD Template



Instrument Loop Diagram Examples



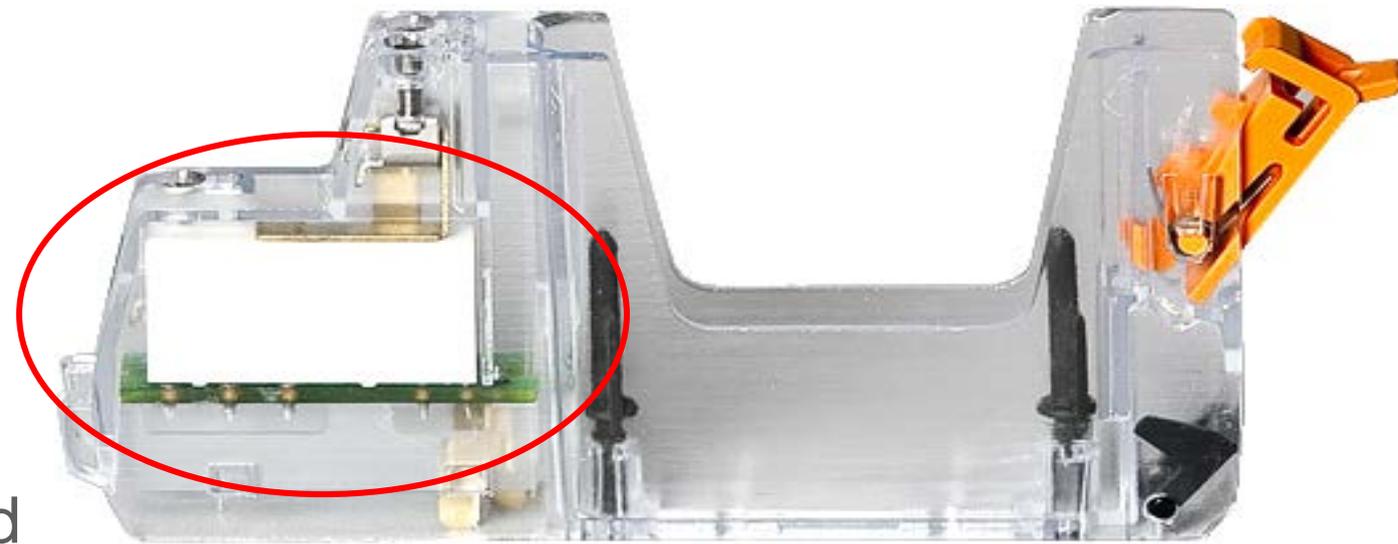
Classic DO ILD Template



Relay Output Terminal Block

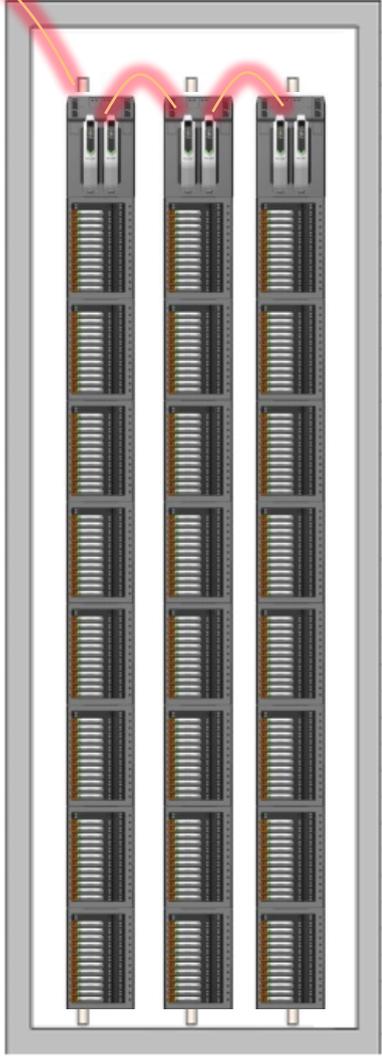
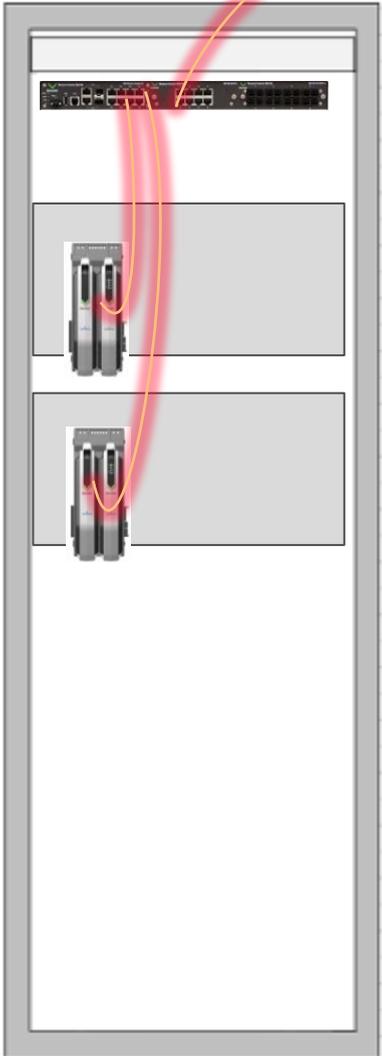
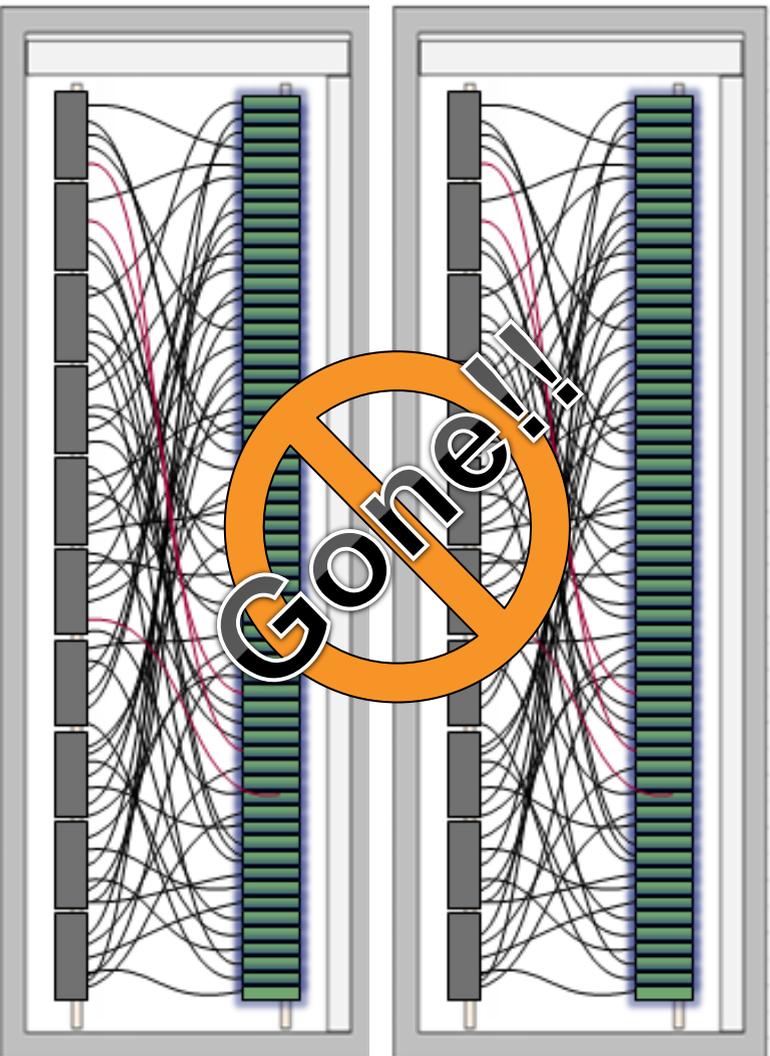


- Relay is operated by standard DO 24 VDC High Side CHARM
- Provides Normally Open/Normally Closed contacts
- Field circuit power is provided separately



**Embedded Relay Provides Up to 6 A
Continuous Power at Up to 250 VAC!**

Electronic Marshalling Footprint



320 Classic Card IO with Wired Marshalling

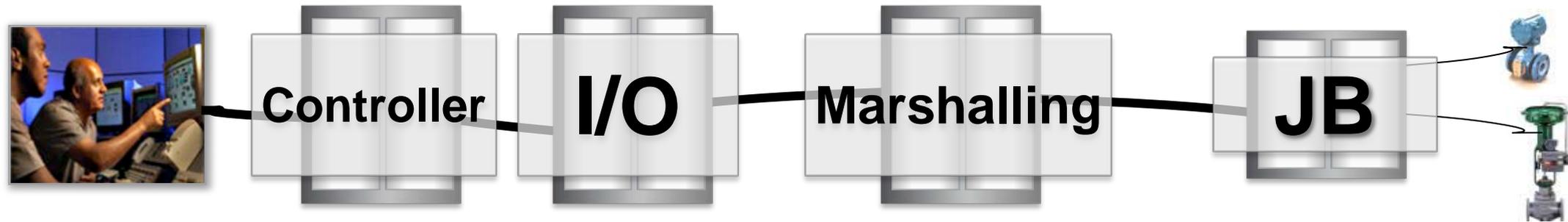
600 Electronic Marshalled IO

BEFORE

AFTER



Project Task Analysis - BEFORE



Work

- I/O lists & controller sizing
 - Power, grounding & fusing design
- I/O design
- Spares sizing
- Cabinet design
- Conduit & cable layout
 - P&IDs
 - Process narratives
- Installation package

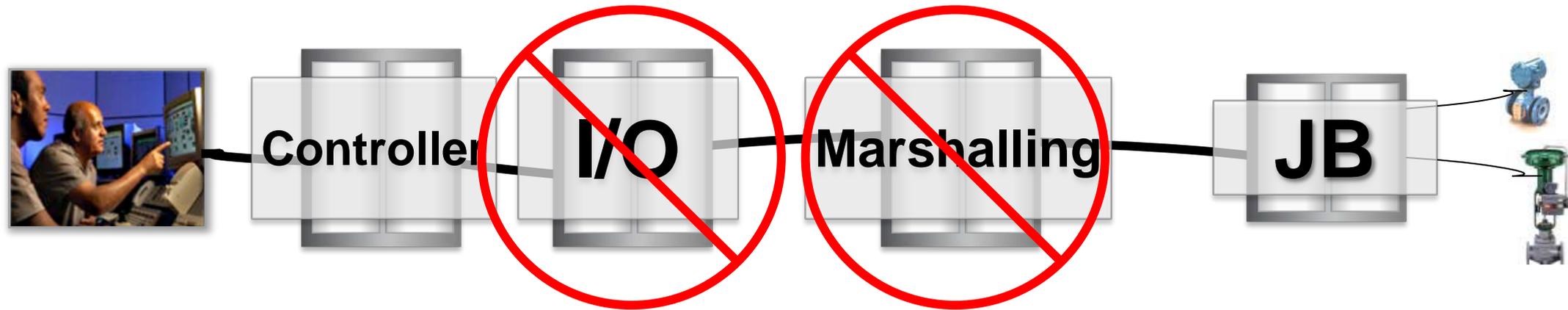
Work

- Cabinet design
- Jumpers & terminations
 - Wiring diagrams
- Cable layout

Work

- JB design
- Jumpers & terminations
 - Wiring diagrams
- Cable layout

Project Task Analysis - NOW!



Work

- I/O lists & controller sizing
 - Power, grounding & ~~fusing design~~
 - ~~I/O design~~
 - ~~Spares sizing~~
 - ~~Cabinet design~~
- Conduit & cable layout
 - P&IDs
 - Process narratives
 - Installation package

Work

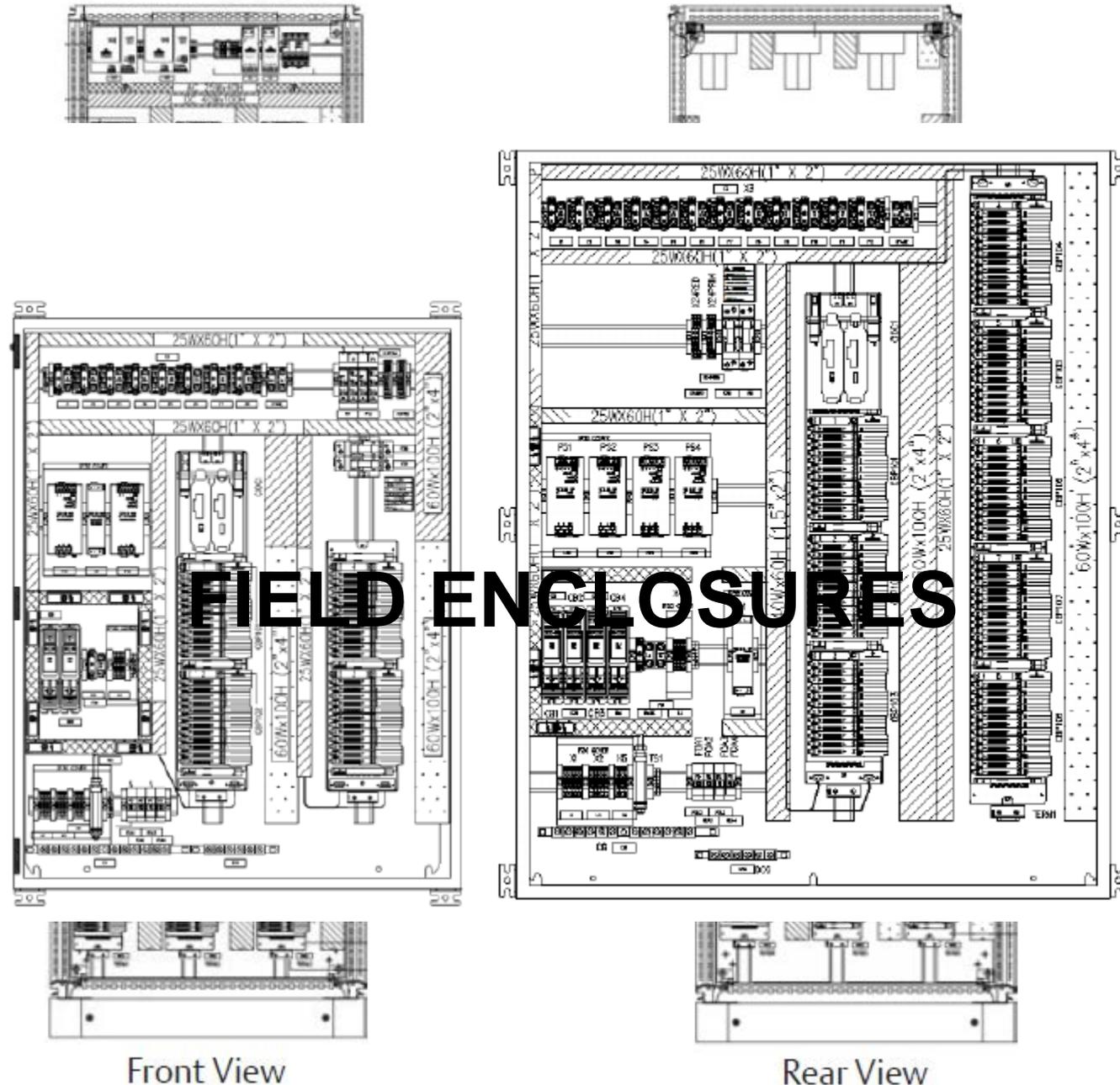
- ~~Cabinet design~~
- ~~Jumpers & terminations~~
- ~~Wiring diagrams~~
- ~~Cable layout~~

Work

- JB design
- Jumpers & terminations
 - ~~Wiring diagrams~~
- Cable layout

As Built

Cabinet Design → Configured To Order Cabinets



Fast Delivery
Reduce Footprint
PreDesigned
Fully Documented

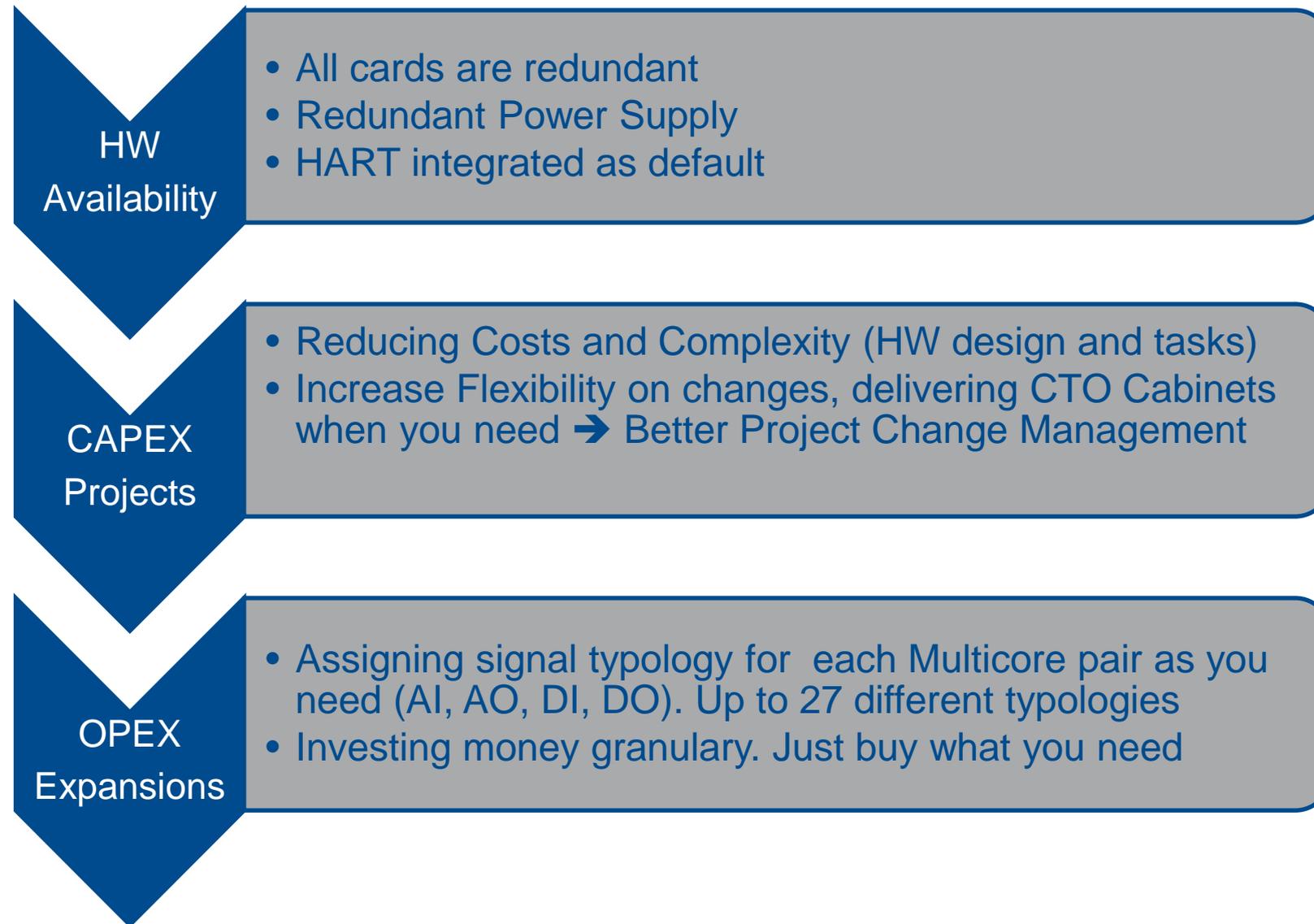
Different World Areas standards and regulations (CE)
From 288 to 576 I/O (Charms)

CTO

Cabinet Specifications ready for Ordering
Drawings and Engineering PreDesigned

Double 220VAC or 24VDC Power Supply
Non IS or IS
Grounding Bars
FO Patch Panels

Summary



Agenda

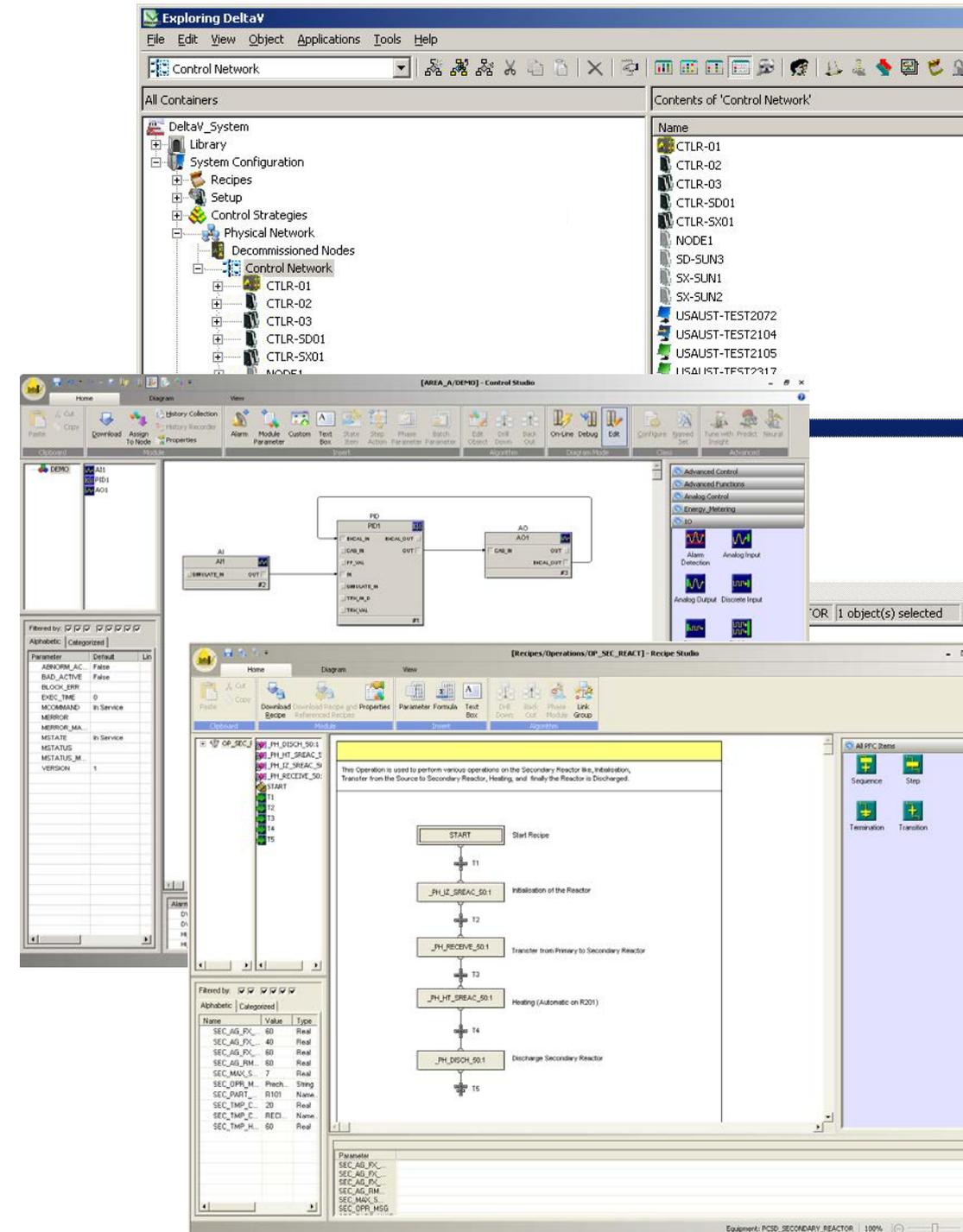


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- **Herramientas de Ingeniería y Operación**
- **Ciclo de Vida**

DeltaV Configuration - Ease of Deployment



- ✓ Single, Integrated Automation System (ICSS)
- ✓ Single Database
- ✓ Object Oriented Configuration – Device to Display
- ✓ ISA S88 Standard
- ✓ Drag and Drop Engineering
- ✓ Standard or customized format file to import – export massive system information



DeltaV Configuration – DeltaV Explorer



The screenshot shows the DeltaV Explorer application window. The left pane displays a tree view of the system hierarchy, with 'Control Network' selected. The right pane shows a table of the contents of the selected 'Control Network'.

Name	Type	Description	Needs Downl...	Control Network Number	Primary IP Address
CTRL1	Controller		No	1	010.004.000.126
CTRL2	Controller		No	1	010.004.000.130
PROPLUS	ProfessionalPlus Station		No	1	010.004.000.006
I/O Network	I/O Network		No		
Wireless I/O Network	Wireless I/O Network		No		

DeltaV Configuration – DeltaV Explorer



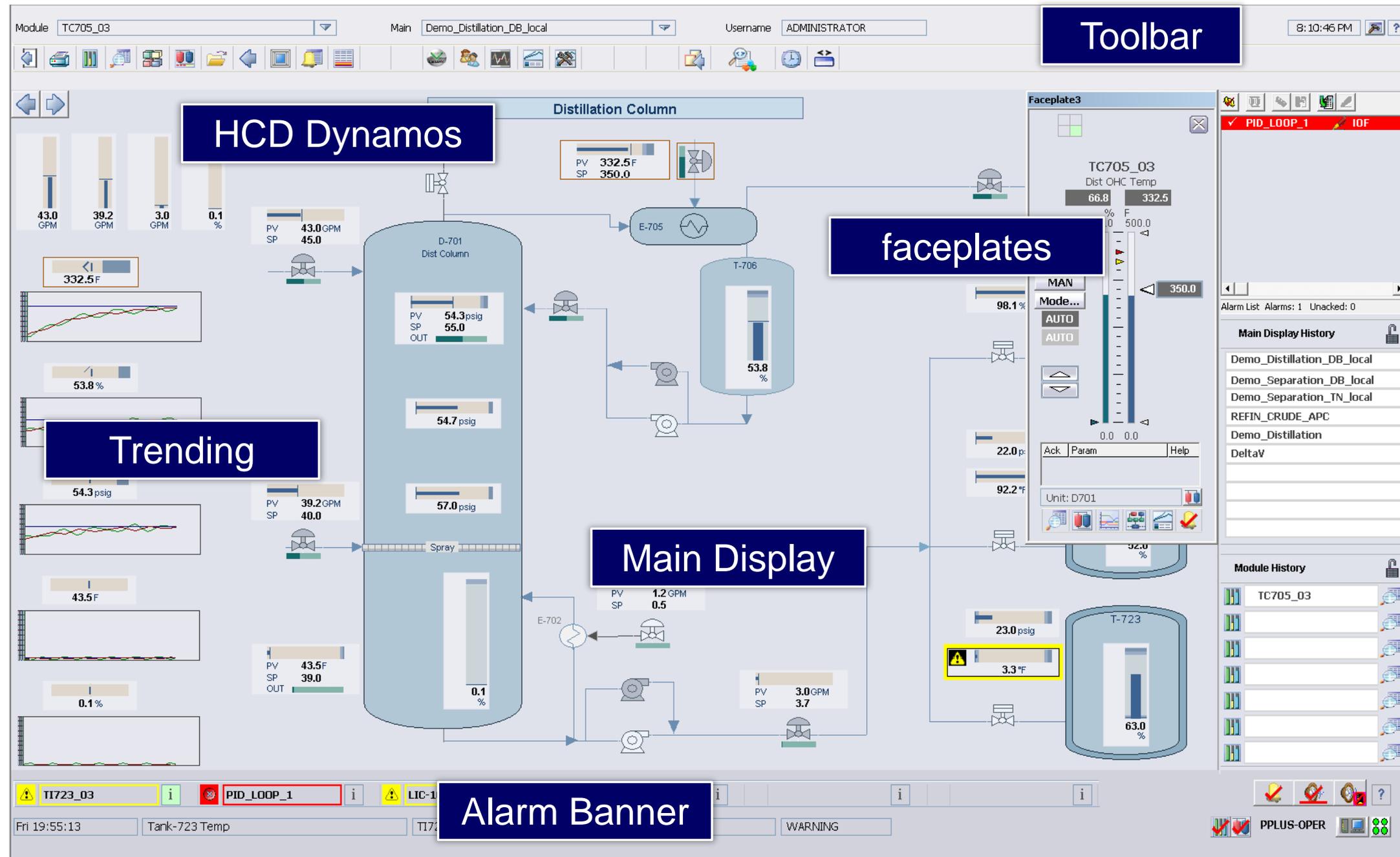
The screenshot shows the DeltaV Explorer interface. On the left is a tree view of the system hierarchy. On the right is a table titled 'Contents of 'Control Network''.

Name	Type	Description	Needs Downl...	Control Network Number	Primary IP Address
CTRL1			No	1	010.004.000.126
CTRL2			No	1	010.004.000.130
PROPLUS			No	1	010.004.000.006
I/O Network			No		
Wireless I/O Netw			No		

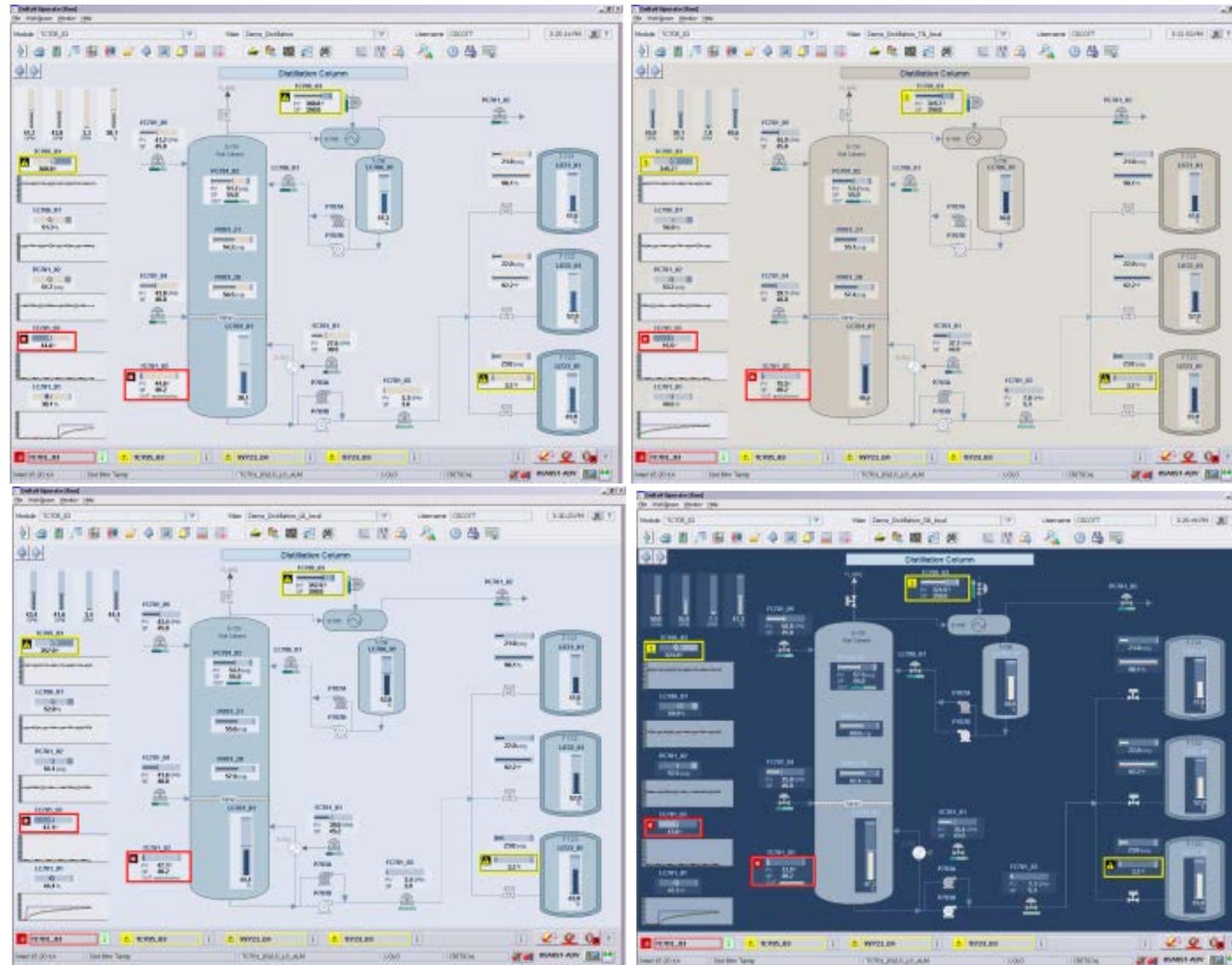
A red dashed line is drawn across the table, separating the first three rows (CTRL1, CTRL2, PROPLUS) from the last three rows (I/O Network, Wireless I/O Netw, CIOC1, WIOC1). A blue box labeled 'Logical' is placed over the first three rows, and another blue box labeled 'Physical' is placed over the last three rows.



Standard Operator Layout -Main display



Different Profiles (Themes) Are Available



Alarms (Classic or Mosaic View)



Alarm List

Ack	Time In	Unit	Module/Param	Description	Alarm	Message	Priority
	8/3/2009 1:17:54 PM	D701	FC701_03/LO_LO_ALM	Dist Btm Out	LOLO	Low Low Alarm Value 1.8832	CRITIC
	7/22/2009 1:20:25 PM	D701	TC705_03/HI_HI_ALM	Dist OHC Temp	HIHI	High High Alarm Value 95.31	CRITIC
	8/3/2009 1:17:53 PM	D701	LC701_01/LO_ALM	Dist Btm Level	LOW	Low Alarm Value 4.7482	Lim WARN
	7/22/2009 1:26:47 PM	D701	FC701_01/LO_ALM	Dist Reboil Stm	LOW	Low Alarm Value 4.84874	Lir WARN
	7/22/2009 1:20:03 PM	D701	TC705_03/HI_ALM	Dist OHC Temp	HIGH	High Alarm Value 91.3815	Li WARN
<input type="checkbox"/>	7/22/2009 1:19:01 PM	D701	TC701_03/LO_LO_ALM	Dist Btm Temp	LOLO	Low Low Alarm Value 0.7102	CRITIC
<input type="checkbox"/>	7/22/2009 1:18:59 PM	D701	TC701_03/LO_ALM	Dist Btm Temp	LOW	Low Alarm Value 4.70226	Lir WARN
<input checked="" type="checkbox"/>	7/22/2009 1:17:28 PM	T721	TI721_03/HI_HI_ALM	Tank-721 Temp	HIHI	High High Alarm Value 98.1	CRITIC
<input checked="" type="checkbox"/>	7/22/2009 1:17:28 PM	T723	TI723_03/LO_ALM	Tank-723 Temp	LOW	Low Alarm Value 3.3	Limit 5 WARN
<input checked="" type="checkbox"/>	7/22/2009 1:17:28 PM	T722	TI722_03/HI_ALM	Tank-722 Temp	HIGH	High Alarm Value 92.2	Limit WARN
<input checked="" type="checkbox"/>	7/22/2009 1:17:28 PM	T721	TI721_03/HI_ALM	Tank-721 Temp	HIGH	High Alarm Value 98.1	Limit WARN
<input checked="" type="checkbox"/>	7/20/2009 11:04:03 AM	D701	FC701_03/LO_ALM	Dist Btm Out	LOW	Low Alarm Value 0	Limit 5 WARN

Unack: 7 Total: 12

Alarm List Alarms: 12 Unacknowledged: 7

Mon 13:17:54 Dist Btm Out FC701_03/LO_LO_ALM LOLO CRITICAL USAUST-7

Alarm Mosaic

1s 5s 15s 30s 1m 5m 15m 30m 1h 2h 4h

Characteristic Filter

- 7 LOW
- 6 LOLO

Plant Area (1)

- 7 TANK_FARM
- 6 HEATER
- 4 DESALTER

4/22/2015 1:41:33 PM 1:45 PM 1:50 PM 4/22/2015 1:50:48 PM

Alarm List

Ack	Priority	Date/Time	Unit	Module/Parameter	Description	Type
<input type="checkbox"/>	WARNING	4/22/2015 1:49:30 PM	HEATER	TI-HTR4413A/LO_LO_ALM	Heater top temperature very low	LOLO Low L
<input type="checkbox"/>	WARNING	4/22/2015 1:49:09 PM	TANK_FARM	LI-TK1101/LO_LO_ALM	Crude Storage Tank 4	LOLO Low L
<input type="checkbox"/>	ADVISORY	4/22/2015 1:49:02 PM	HEATER	TI-HTR4413A/LO_ALM	Low heater top temperature	LOW Low A
<input type="checkbox"/>	WARNING	4/22/2015 1:49:00 PM	HEATER	FIC-HTR1717/LO_LO_ALM	Heater inlet flow lost	LOLO Low L
<input type="checkbox"/>	WARNING	4/22/2015 1:48:51 PM	DESALTER	FIC-DS4237/LO_LO_ALM	Desalter water near depletion	LOLO Low L

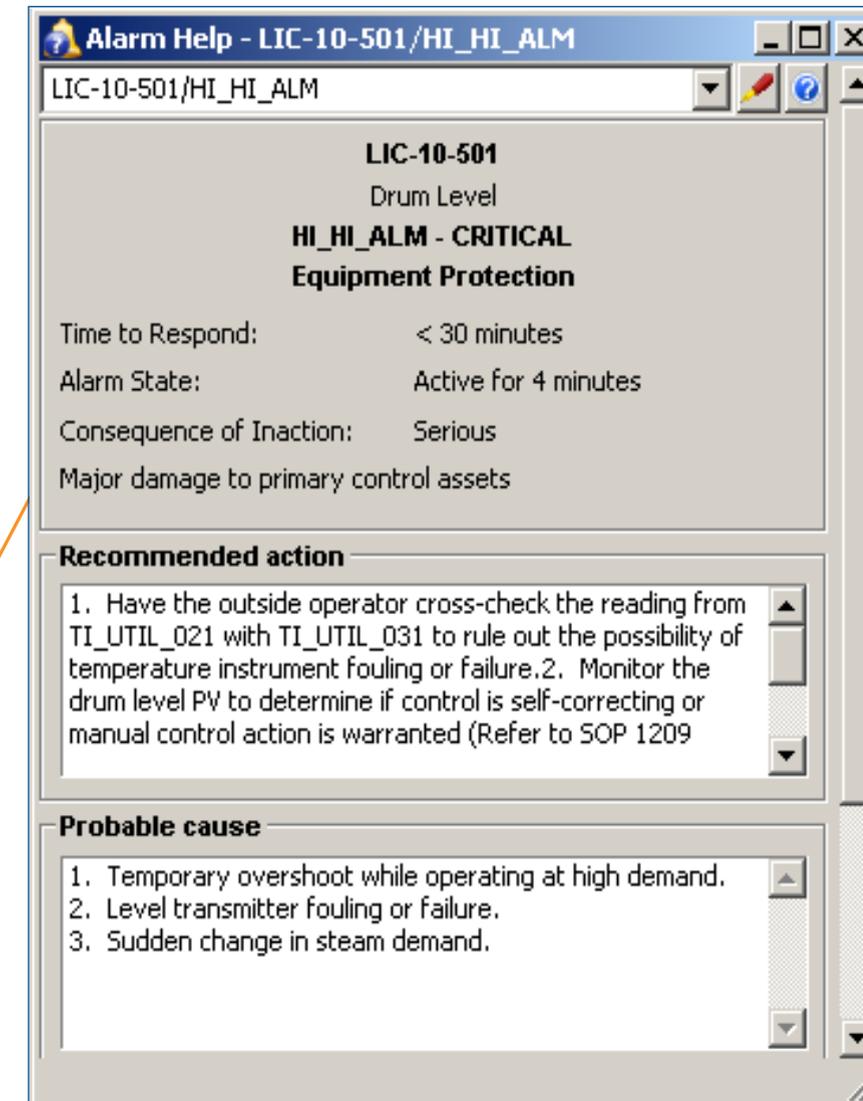
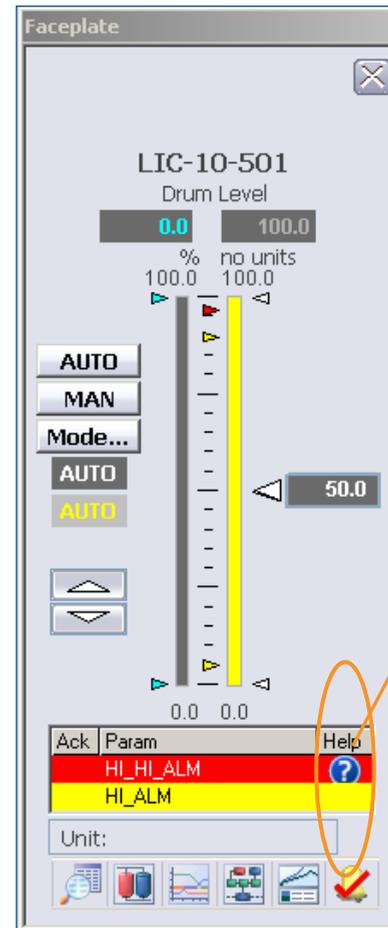
Control Actions (Event Chronicle Server: MOSAIC)

Date/Time	Area	Unit	Module	Parameter	Change
4/22/2015 1:48:04 PM	REACTORS_AREA	TANK_FARM	FIC-TK0100	PID1/MODE.TARGET	NEW VALUE = MAN
4/22/2015 1:47:35 PM	REACTORS_AREA	DESALTER	FIC-DS4237	PID1/MODE.TARGET	NEW VALUE = AUTO

Total Alarms: 17 Unacknowledged: [17] Time Span: 00:09:15 Container Time Interval: 00:00:15 Connected to MOSAIC User name: ADMINISTRATOR 4/22/2015 1:50:50 PM

Alarm Help

- Alarm lists and faceplates indicate if help exists
- Alarm help is in-context and persistent



LIC-10-501
Drum Level
HI_HI_ALM - CRITICAL
Equipment Protection

Time to Respond: < 30 minutes
Alarm State: Active for 4 minutes
Consequence of Inaction: Serious
Major damage to primary control assets

Recommended action

1. Have the outside operator cross-check the reading from TI_UTIL_021 with TI_UTIL_031 to rule out the possibility of temperature instrument fouling or failure.
2. Monitor the drum level PV to determine if control is self-correcting or manual control action is warranted (Refer to SOP 1209)

Probable cause

1. Temporary overshoot while operating at high demand.
2. Level transmitter fouling or failure.
3. Sudden change in steam demand.

“One click access to recommended action!”

Easy To Engineer And Maintain



- Alarm properties include essentials for an ISA-18.2 compliant master alarm database
- Provides ISA-18.2 alarm rationalization, documentation and management of change.

No special tools or applications required!

Alarm Properties

General | Advanced | Alarm Help

Recommended Action:

1) Crosscheck reading from TI_UTBR3_021 with TI_UTBR3_022 and TI_UTBR3_031 (ref SOP1209_sect2.2)
2) Monitor trend on TI_UTBR3_021 for 3 minutes. If alarm persists for more than 5 minutes, manually place the inlet valve to 0% and request the external operator verify.

Time to Respond: < 10 minutes

Consequence of Inaction: Serious Environmental

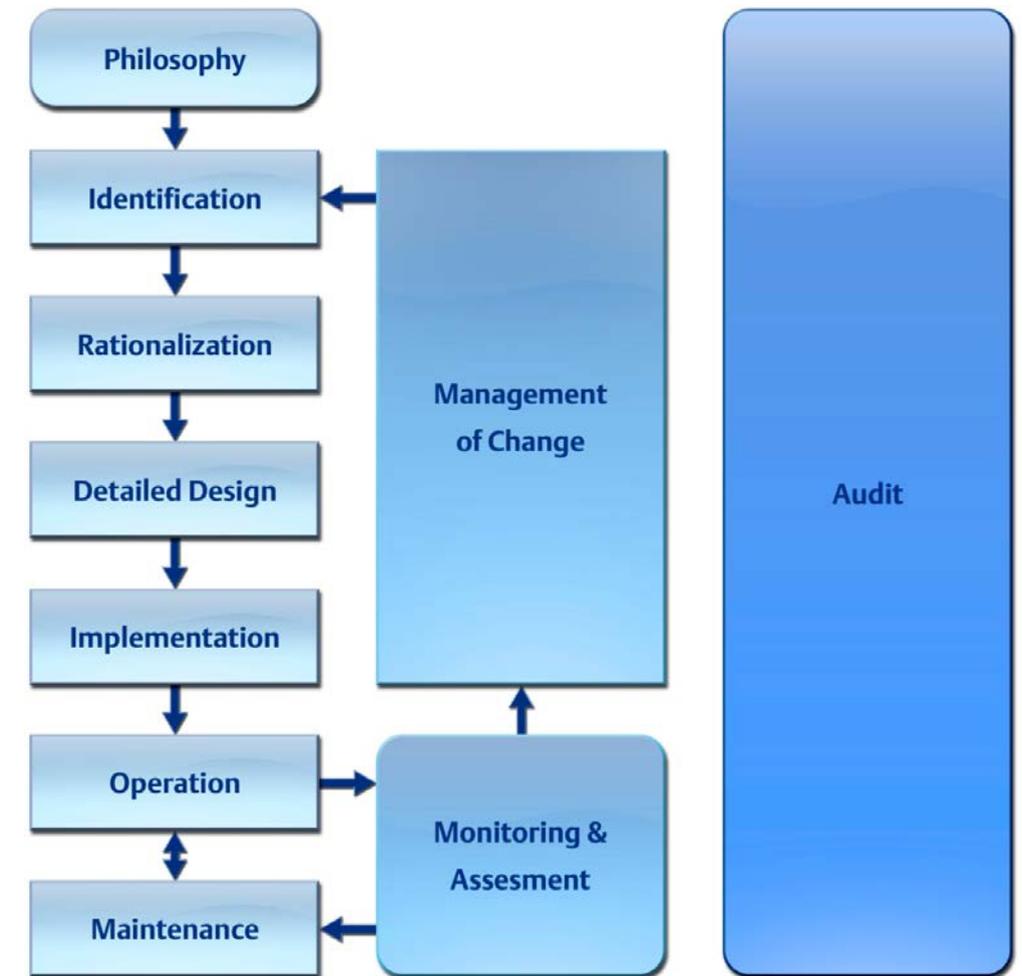
Probable Cause:

1) Temporary control overshoot while operating at high demand levels.
2) Temperature instrument fouling or failure.
3) Sudden change in fuel composition or heat rating.

Design Information:

If unchecked overheating could result in an EPA reportable emission of SO₂. The high limit of 905 degF was selected based on a theoretical temperature climb to 1200 degF in 10 minutes, the point at which the SO₂ scrubber may become ineffective.

OK Cancel Help



Operators Can Add Knowledge



Modify Alarm Help - PC701_02/HI_ALM

Recommended action

Verify pressure problem: Temperature on column should also be rising
If pressure verified: Increase reflux flow into column.

If valve is wide open: Reduce steam flow to column to decrease vapor load.

Time to Respond: < 30 minutes

Consequence of Inaction: Serious

Probable cause

High pressure is caused by:

Not enough reflux coming into the column or too much feed.

Pressure measurement, Reflux valve or reflux pumps may be malfunctioning

Consequence

If pressure continues to increase, at 70 psig the column will start to flare. Flaring requires Environmental Incident form 472 to be initiated.

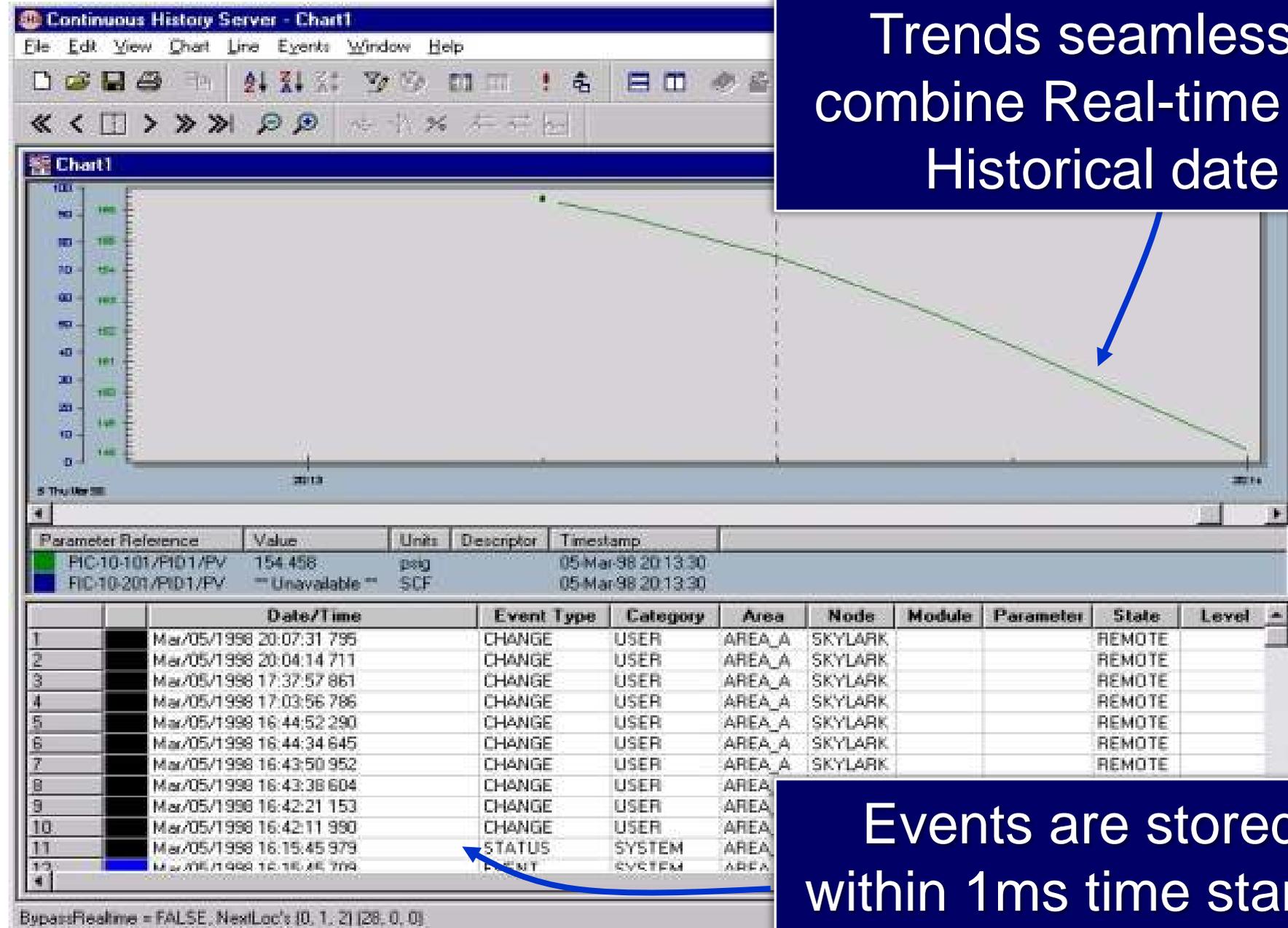
Column is shut down if pressure reaches 76 psig, causing loss of production for at least 24 hours.

Reset ...

Apply Download OK Cancel

Authorized Operators can modify the alarm help at the operator station!

DeltaV Continuous Historian



Trends seamlessly combine Real-time and Historical data

Events are stored to within 1ms time stamped at the source



User Security



- Define your own security philosophy
 - New operators? Minimize what they can do
 - Experienced operators? Give them more responsibility

User defined security

The screenshot shows the DeltaV User Manager interface for a system named USAUST-TEST2725. It features three main panels:

- Users:** A table listing user accounts with columns for User Name, Full Name, and Description. Users include CONFIGURE, FRED, FRED2, Guest, JOE ENGINEER (joe engineer), JOE OPERATOR (Joe), JOSE OPERATOR (Jose), MAINTAINER, and several DeltaV service accounts.
- Locks:** A table listing various system locks and their types, all set to 'Write'. Locks include Alarms, Batch Operate, Build Recipes, Can Calibrate, Can Configure, Can Download, Control, Diagnostic, Restricted Control, System Admin, System Records, Tuning, and a series of User Locks (01-10).
- SIS Locks:** A table listing Safety Instrumented System (SIS) locks and their types, all set to 'Write'. Locks include SIS Alarms, SIS Can Calibrate, SIS Can Configure, SIS Can Download, SIS Control, SIS Diagnostic, SIS No Access, SIS Restricted Control, and a series of SIS User Locks (01-10), plus SIS Version Control.

At the bottom of the window, there is a status bar that reads "For Help, press F1" and a "NUM" button.

Poor control costs your company money. DeltaV InSight provides a cost effective way to improve control performance:

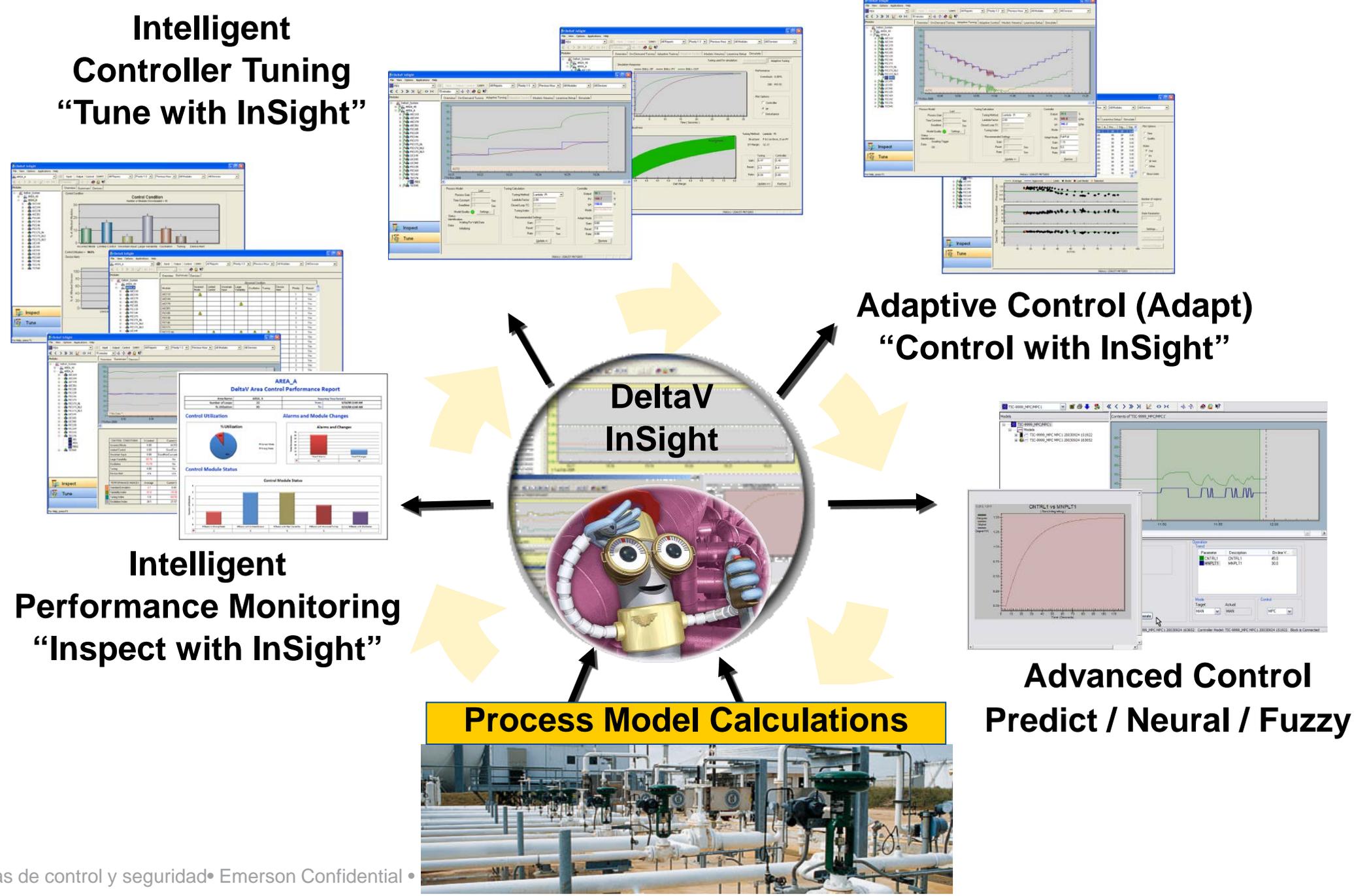


- Easily identify control problems
 - Performance monitoring and reporting
 - Device diagnostics
- Quickly tune loops for improved control
 - On-demand and adaptive tuning
 - Test tuning with simulation
 - Closed loop adaptive control
- Gain insight with embedded learning
- Easy to Use – Out of the Box
 - No Configuration Required
 - Adapts to system configuration changes

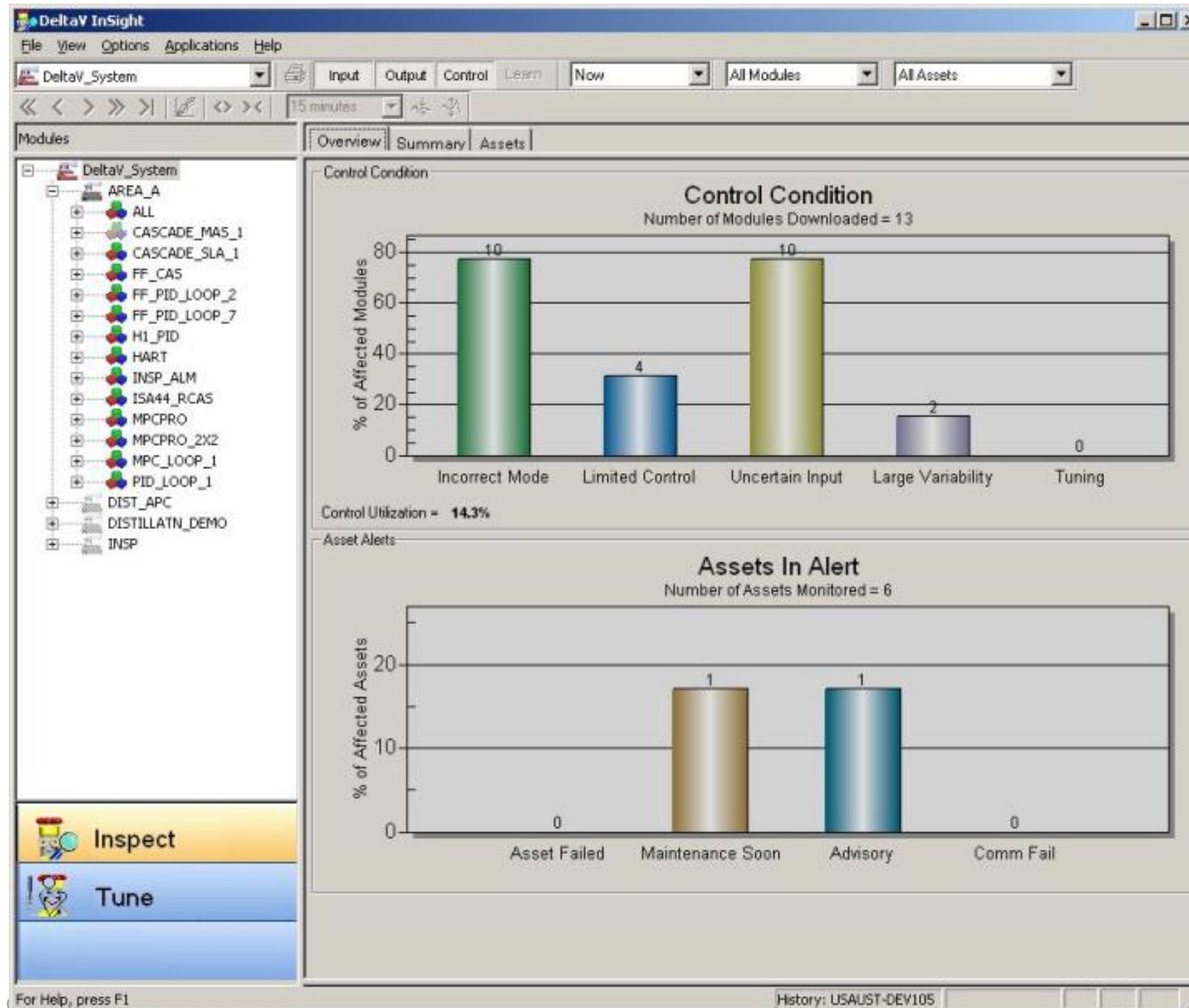
Benefits:

- Better control can increase plant profitability up to 5%
- Predictive intelligence can decrease maintenance costs by up to 20%

DeltaV InSight – A Control Performance Suite



DeltaV InSight – Integrated User Interface

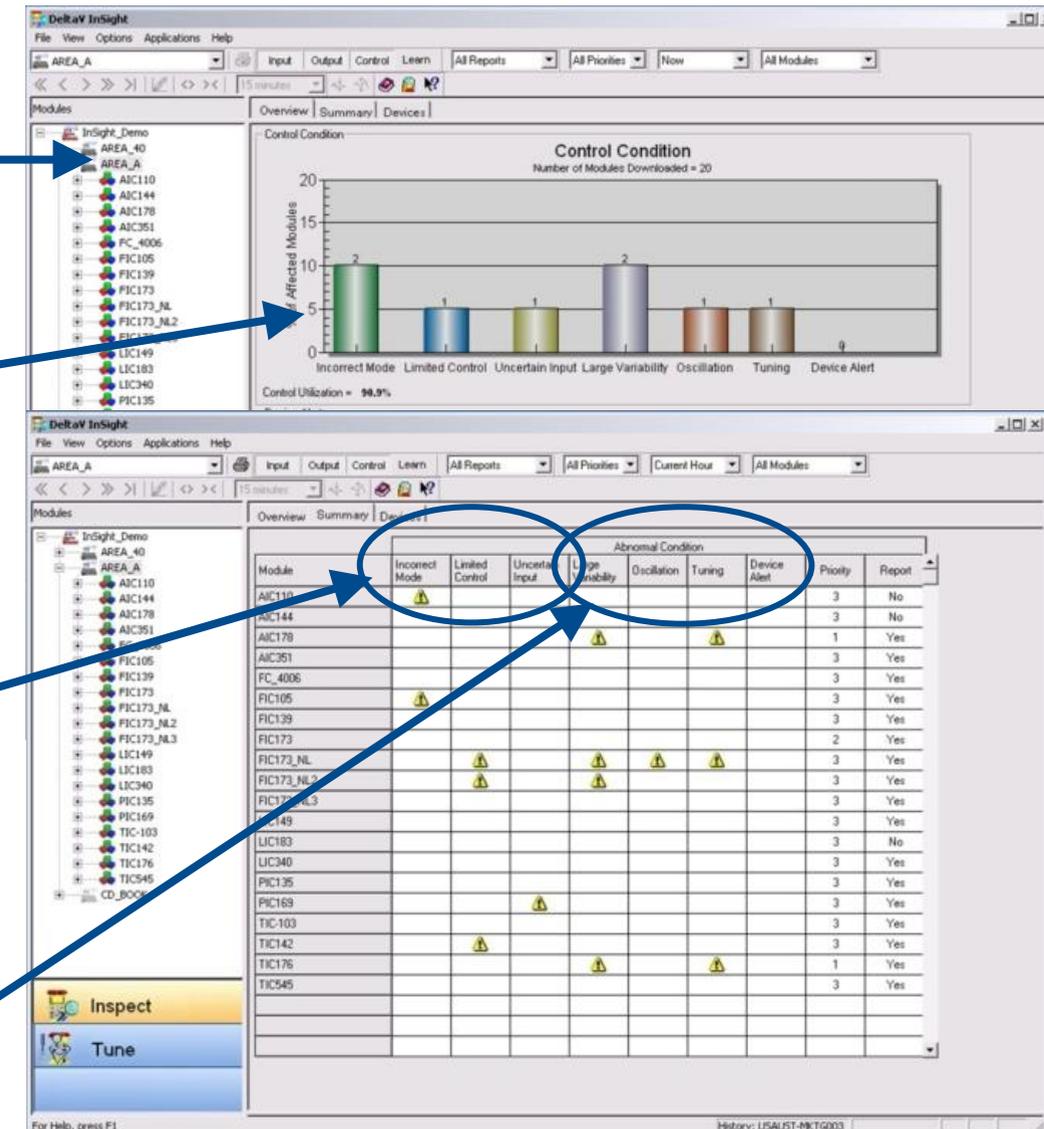


Control Performance Monitoring



“Inspect with InSight”

- Explorer tree allows easy navigation of control hierarchy
- Overview display summarizes performance for System, Area, Units and Modules
- Abnormal Control Conditions indicated for Problem Loops:
 - Control Service Status:
 - Incorrect mode
 - Limited control output
 - Bad/Uncertain input
 - Control Performance Status:
 - Standard Deviation
 - Variability Index
 - Oscillation Index
 - Tuning Index
 - Device and Valve Diagnostics



On-Demand Tuning - Options for the Expert



Power for the Advanced User !

Typical - PI
Ziegler-Nichols - PI
Lambda - PI
Lambda-Smith Predictor
IMC - PID
Typical - PI
Typical - PID
Dead time dominant

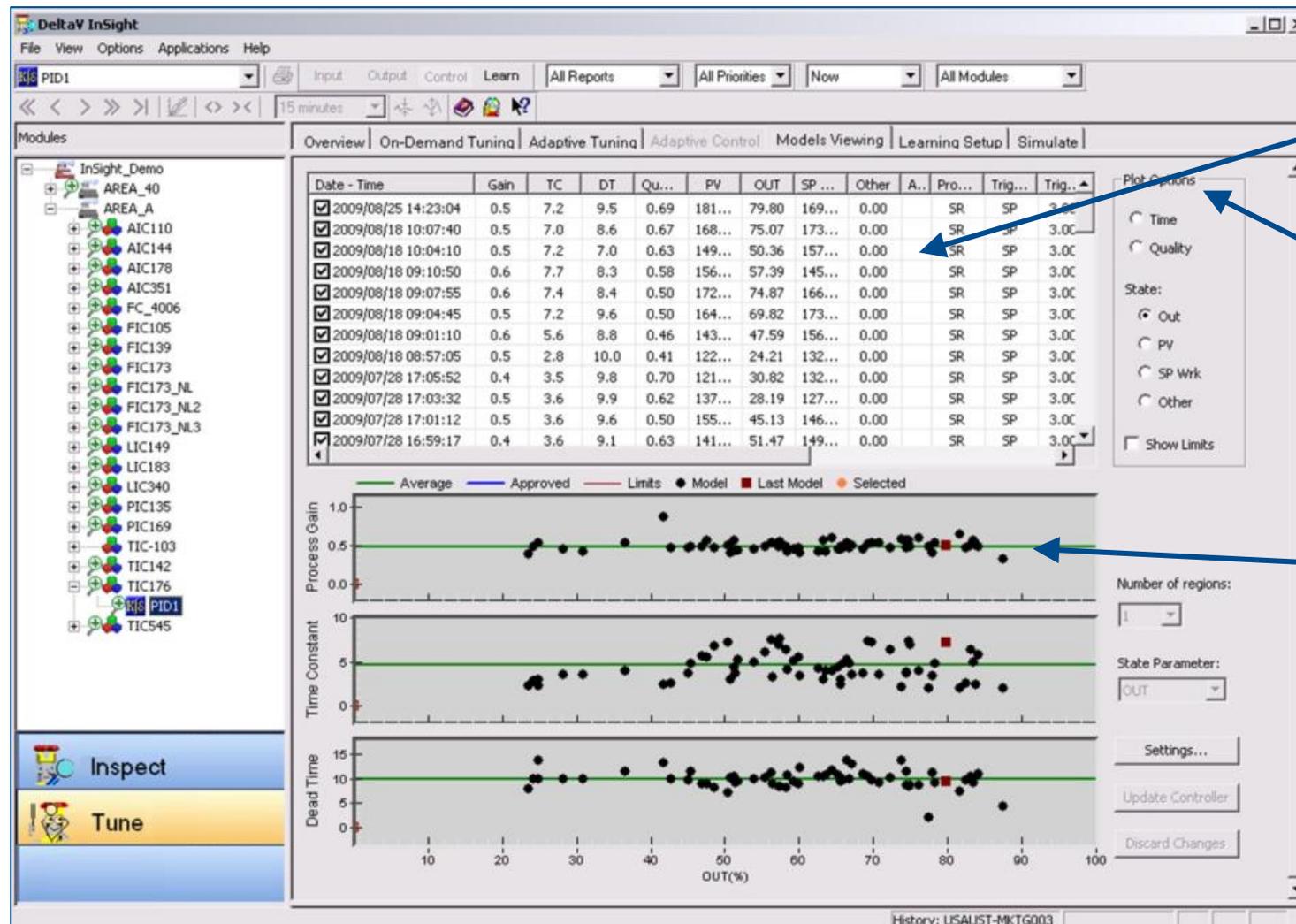
Parameter	Value	Unit
Ultimate gain	4.47	
Ultimate period	8.25	Sec
Process dead time	1.8	Sec
Process Gain	1.2	
Process time constant	6.9	Sec

Parameter	Value	Unit
Gain	0.86	
Reset	5.5	Sec
Rate	0.00	Sec

DeltaV InSight - Model Analysis



Gain Process Insight with Model Analysis

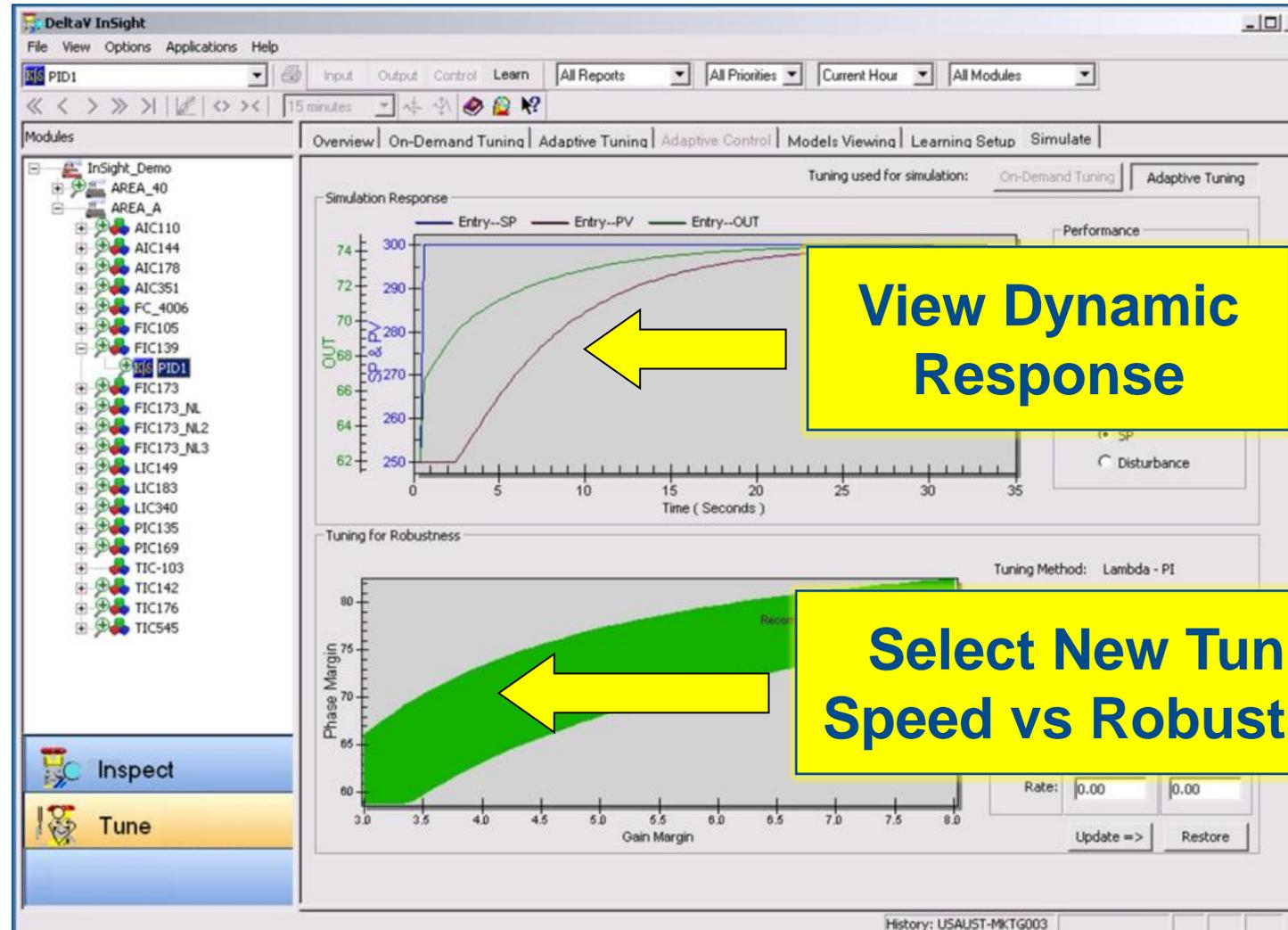


- Models automatically stored in a model database
- Various plot options to analyze impact of operating conditions on process models
- Average of selected models may be utilized to establish the recommended tuning

DeltaV InSight - Control Simulation



Test your tuning with Dynamic Simulation



- Closed loop simulation of setpoint and disturbance changes for recommended tuning
- Simulation for both Adaptive and On-demand Tuning

Agenda



- **Arquitectura DeltaV**
- **Alta eficiencia en proyectos. Marshalling Electrónico**
- **Herramientas de Ingeniería y Operación**
- **Ciclo de Vida**

Life Cycle Care



Guardian Support



Reliability

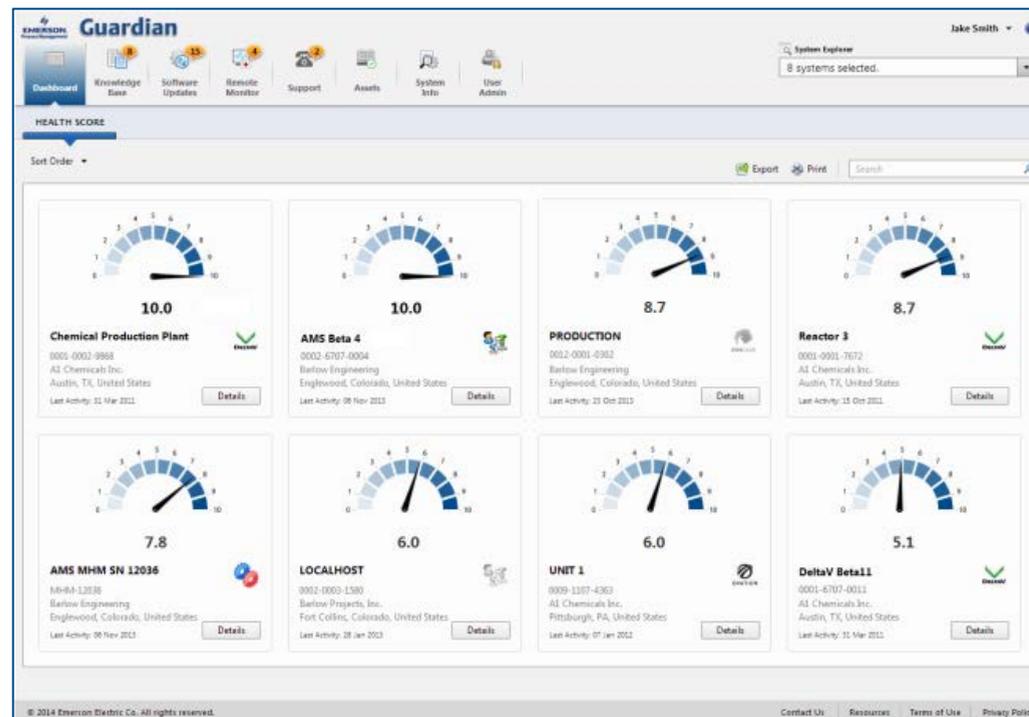


Performance



Maintenance

Real-time visualization and proactive management of lifecycle requirements



- User-personalized, actionable information enables **better decision making**
- **Improved staff productivity** through global collaboration
- Shift to predictive and proactive maintenance results **in lower costs**
- Access to experts and remote system diagnosis **increases operating performance**
- Increased investment life means **improved capital efficiency**



Guardian Support



Reliability



Performance



Maintenance

Guardian Support Key Features

- Remote System Diagnosis
- Services Engineers Onsite presence
- DeltaV Suite Updated
- Dedicated Website
- Software Update Delivery Service
- Automated E-mail Service Notification
- System Analysis Report
- Local 24x7x365 Expert Technical Phone Support
- Assistance 24 hours after problem detected
- Preventive Maintenance
- Hours Bank for Services
- Evergreen Program
- Spare Stock
- Total Cost OwnerShip



SURESERVICE™

Emerson Process Management
 NOMBRE DEL CLIENTE
 CSC-0-2016 A
 OFERTA CONTRATO MANTENIMIENTO 2016

Logo	Sistema	ID del Sistema
	DELTA V	XXXX-XXXX-XXXX
	AMS	XXXX-XXXX-XXXX

Emerson Process Management 2016- Confidential and Proprietary



System Analysis Report

Customer: A1 Chemicals, Inc. Location: Austin, TX, United States System: Chemical Production Plant (ID: 0001-0002-9868)	Date of Report: July 15, 2014 Reporting Period: January 1, 2014 to July 1, 2014 Emerson Contact: Carlo Israel Almeer Technical Services Co. (W.L.L.) (Kuwait) Email: Carlo.Israel@emerson.com Phone:
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Overall System Analysis Ratings:

Rating:	Positive	Neutral	Concerning
	No system management concerns identified	System management concerns identified but minor or mitigated	Subject for System Management priority consideration and preventive maintenance
Availability <small>Short-term risk to provide uninterrupted operational uptime.</small>	■	■	■
Sustainability <small>Risk to preservation of system investment, future supportability, and serviceability.</small>	■	■	■

Availability and sustainability ratings represent the subjective assessment of Emerson's SureService DeltaV factory and/or local specialists, based upon this system's observed service history, and consideration of beneficial and adverse factors identified for this system's content and condition.

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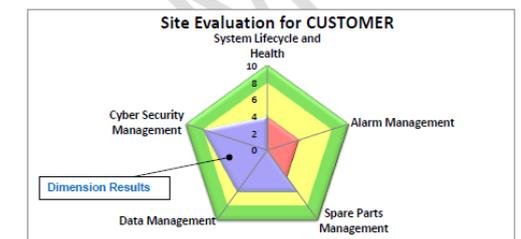
Executive Summary:

This report is a starting point to develop an automation roadmap and prevent reliability issues by rectifying future obsolescence through planned upgrades. This report also identifies the alarm issues that can help CUSTOMER take necessary timely actions to increase operator effectiveness. During the site evaluation visit, system (ID: 0001-0002-XXXX) components were checked for five dimensions considered potential areas for reliable and optimal performance of the system.

The dimensions listed below are ordered in the priority indicated by CUSTOMER during data gathering visit.

Priority	Site Assessment Dimensions	Score (Possible 10)	Composite Score (Out of 10)
1	System Lifecycle and Health	4.00	4.80
2	Alarm Management	6.00	
3	Spare Parts Management	6.00	
4	Data Protection	6.00	
5	Cybersecurity Management	6.00	

(See next page for Rating Explanations)



Guardian Support

System Health Monitoring: Tool Example



Reliability



Performance

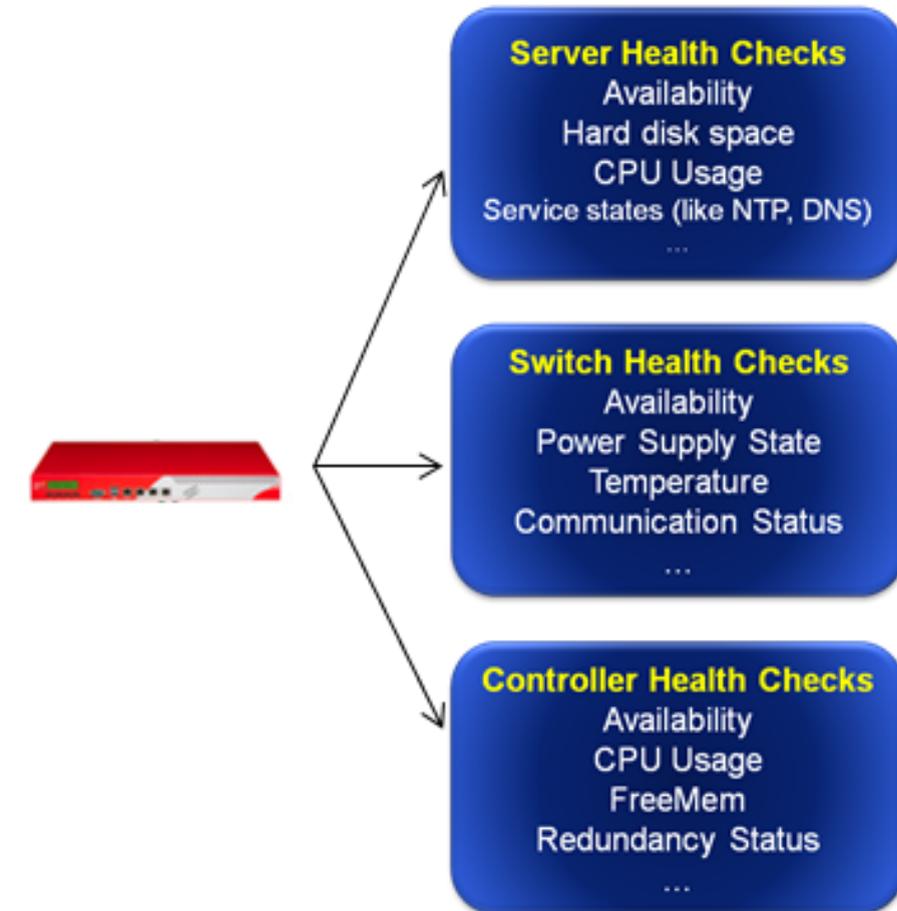


Maintenance

- System Health Monitoring

- Key Performance Indicators for system management
- SHM Events are presented (like CTS Calls)
- Automated Notification and SHM Section in SAR

System Name (ID)	Brief Description	Open Date	Last Update
✓ B132 Production System 2 (0001-0002-5994)	PROBLEM: SHM_ping_108xx on Multiple Nodes is CRITICAL Call Number: NC-1401-8261	23 Apr 2014 (3 months ago)	30 Apr 2014 (3 months ago)
✓ B132 Production System 2 (0001-0002-5994)	PROBLEM: SHM_OPCDAnw_Overall_Integrity on B1422AS002 is CRITICAL Call Number: AC-1400-5073	22 Apr 2014 (3 months ago)	30 Apr 2014 (3 months ago)
⚠ AMS (0002-0003-4705)	PROBLEM: SHM_OPCDAnw_Overall_Integrity on B1422AS002 is CRITICAL Call Number: NC-1402-4268	30 May 2014 (2 months ago)	10 Jun 2014 (2 months ago)
⚠ AMS (0002-0003-4705)	PROBLEM: SHM_NTP on B1422AS004 is CRITICAL Call Number: NC-1401-4575	31 Mar 2014 (4 months ago)	15 Apr 2014 (4 months ago)



Life Cycle Care Services: Alarm Management



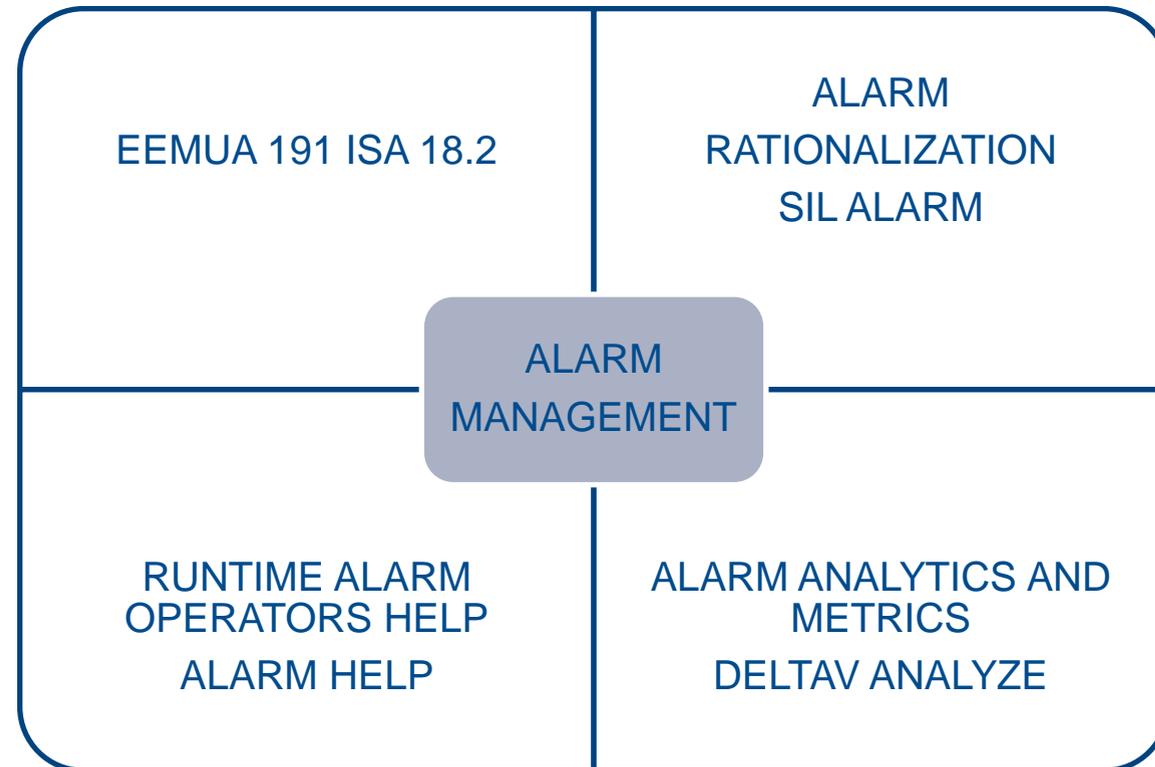
Reliability



Performance



Maintenance



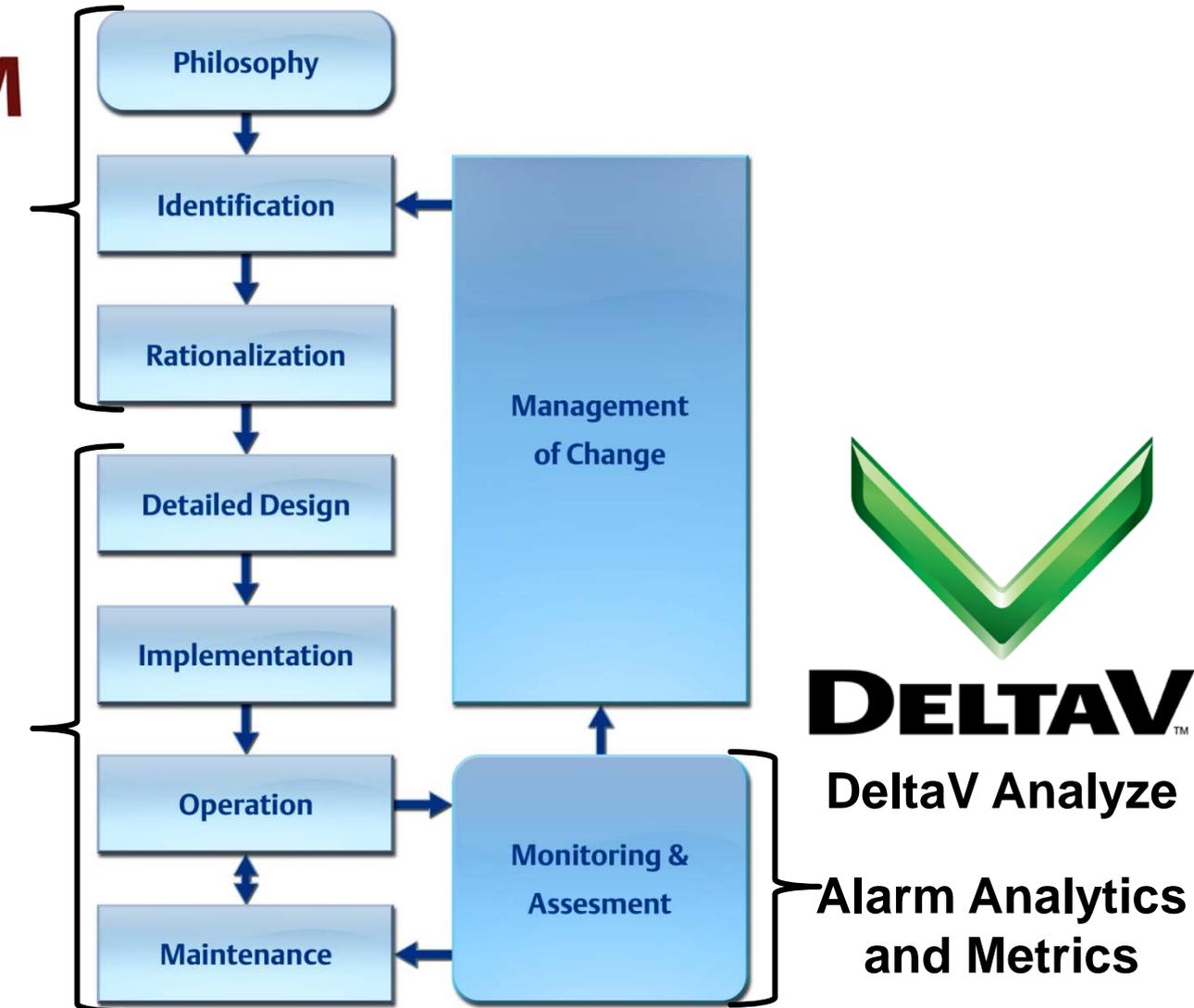
SIL LARM

Master Alarm Database



DELTAVTM

Runtime Alarm System with Alarm Help



A problem has been detected and windows has been shut down to prevent damage to your computer.

The problem seems to be caused by the following file: SPCMDCON.SYS

PAGE_FAULT_IN_NONPAGED_AREA

If this is the first time you've seen this Stop error screen, restart your computer. If this screen appears again, follow these steps:

Check to make sure any new hardware or software is properly installed. If this is a new installation, ask your hardware or software manufacturer for any windows updates you might need.

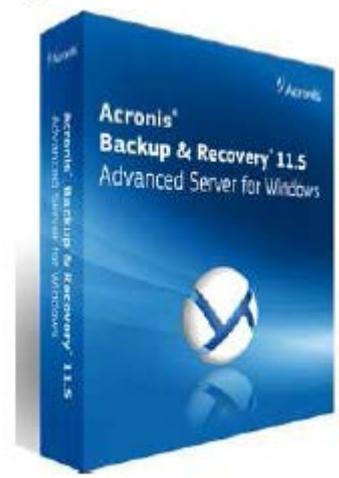
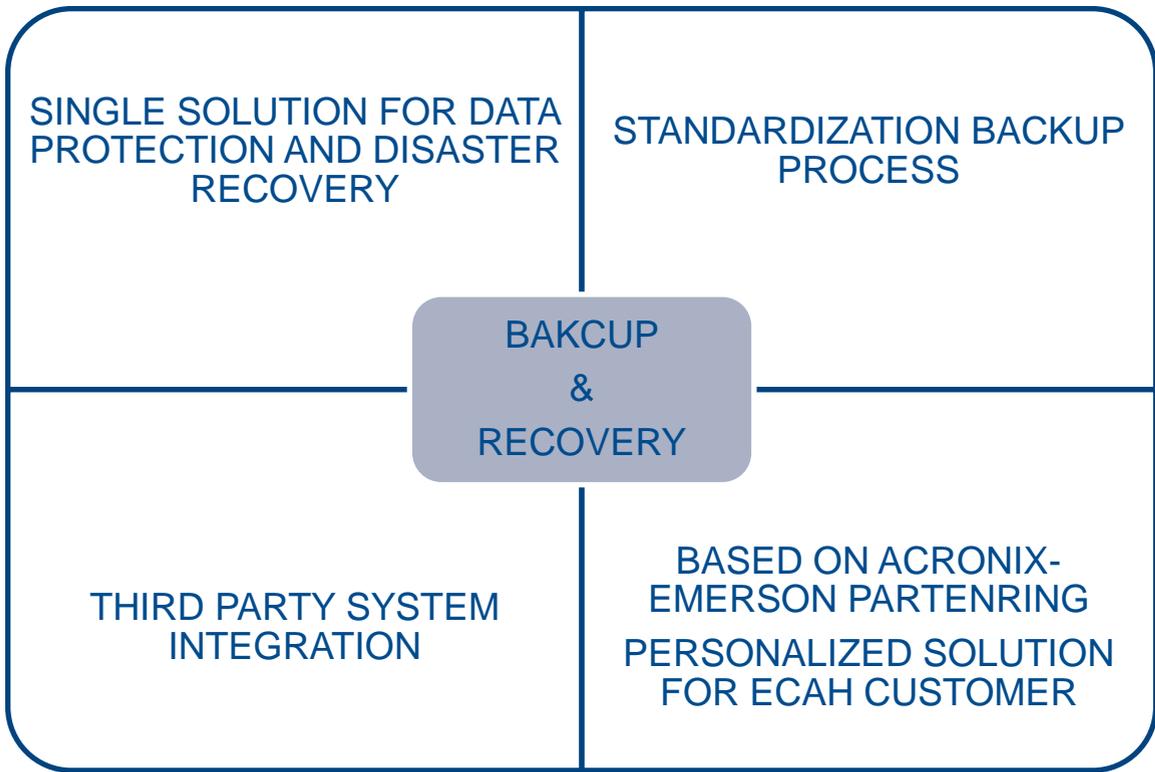
If problems continue, disable or remove any newly installed hardware or software. Disable BIOS memory options such as caching or shadowing. If you need to use Safe Mode to remove or disable components, restart your computer, press F8 to select Advanced Startup Options, and then select Safe Mode.

Technical information:

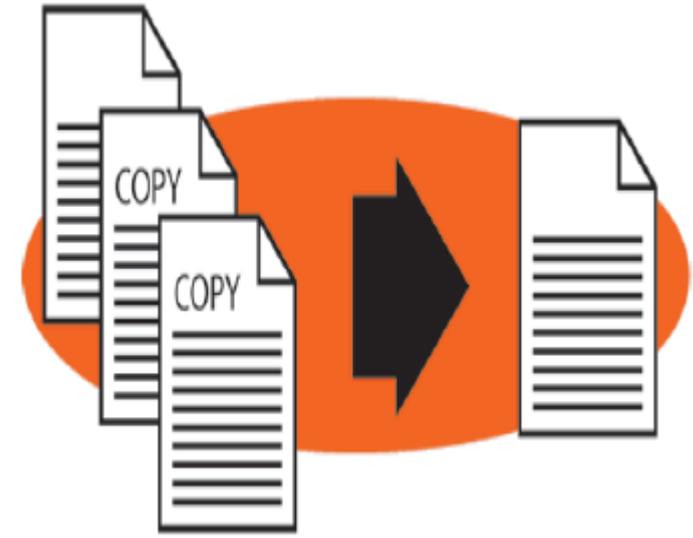
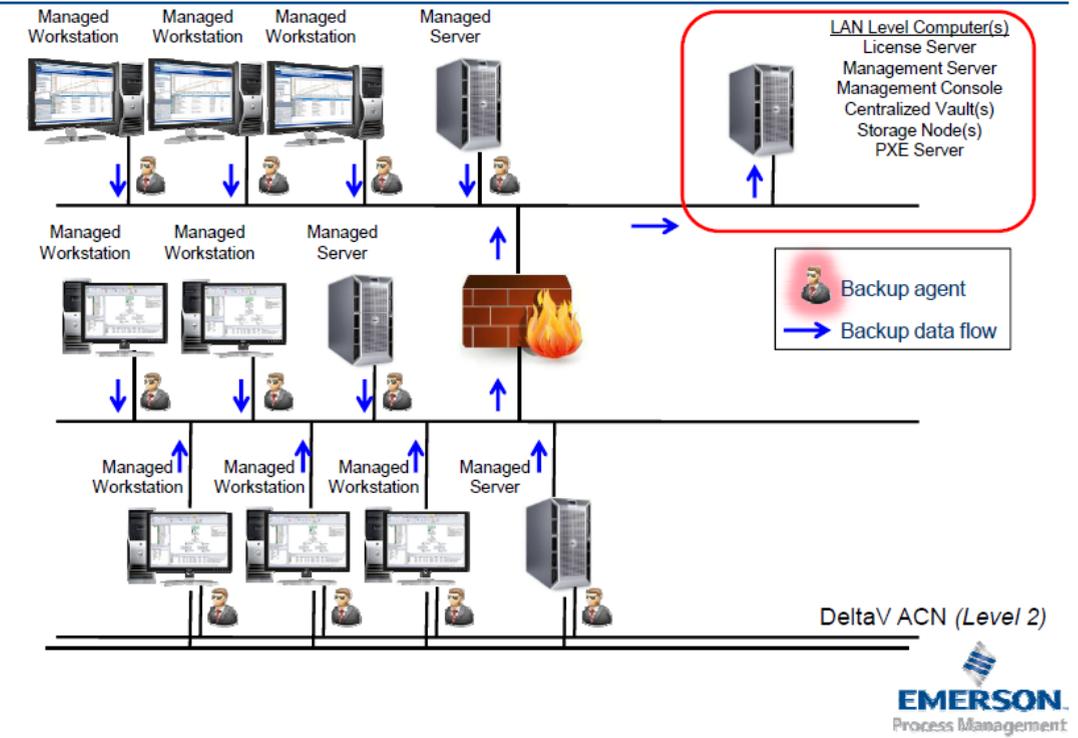
*** STOP: 0x00000050 (0xFD3094C2,0x00000001,0xFBFE7617,0x00000000)

*** SPCMDCON.SYS - Address FBFE7617 base at FBFE5000, DateStamp 3d6dd67c

Life Cycle Care Services: Backup and Recovery



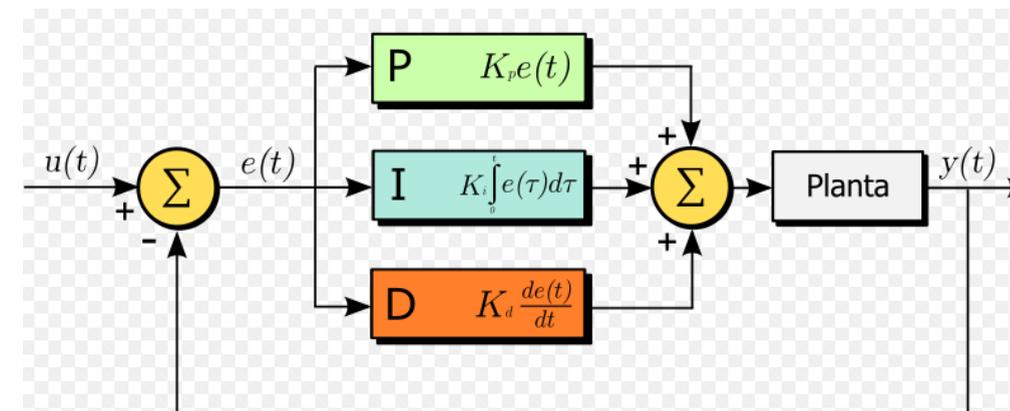
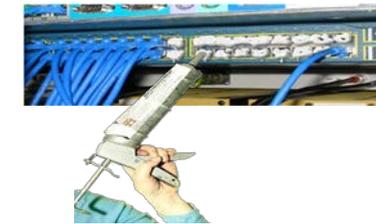
Option 3: Management Server On L3 Network



Life Cycle Care Services: More...



- Patch Management:
 - Automatic Software Updates
 - Applied right updates
- Cyber Security:
 - Capable to define ICSS connection between different layers and IT Dpt.
 - Capable to install and maintain FireWalls
 - DeltaV guarentees itself
- Advanced Process Control:
 - Improving existing Control Strategy making an holistic approach
 - Defining APC Applications totally system integrated



Embedded APC Tools – What's new?



- **NO** extra databases
 - **NO** database synchronization issues
- **NO** watchdog timers
- **NO** fail/shed logic design
 - **NO** custom DCS programming
 - **NO** interface programming
- **NO** operator interface development



Traditional Advanced Control

Embedded APC:

- Can run in DCS controllers
- Redundant and fast (1/sec)
- Integrated operator user interface
- Configuration through standard Control Studio
- Automated step testing and Model ID
- Off-line simulation and training

Life Cycle Care Services: More...



Reliability



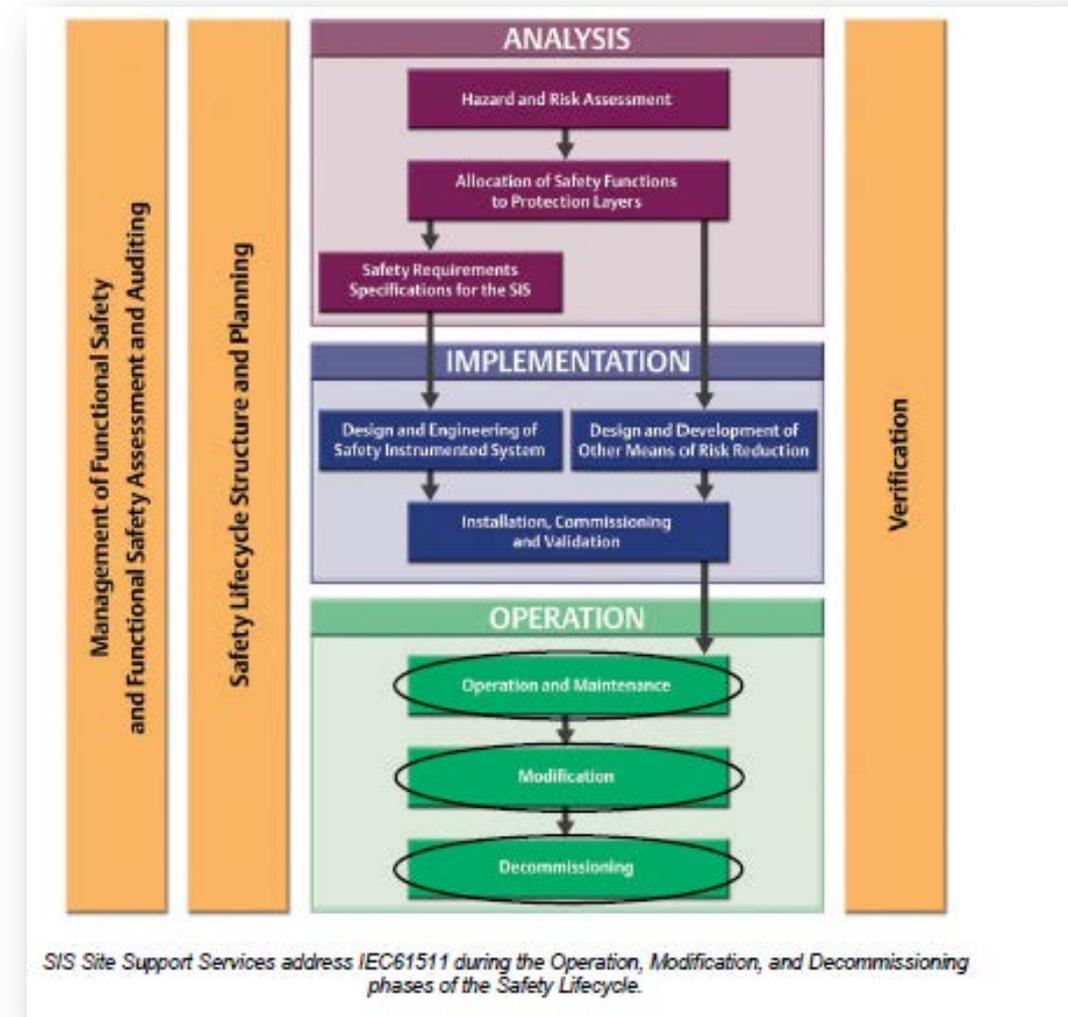
Performance



Maintenance

- Site Support Services:

- Ensure SIS is up to date
- Provide verification for all modification keeping SIL assigned
- Project and System audited trail
- Comply with IEC65511 requirements



Life Cycle Care Services: More...



- Big portfolio
- Global Consistency
- Local Presence and Flexible Programs

SERVICIOS de formación
¡Optimice su inversión!



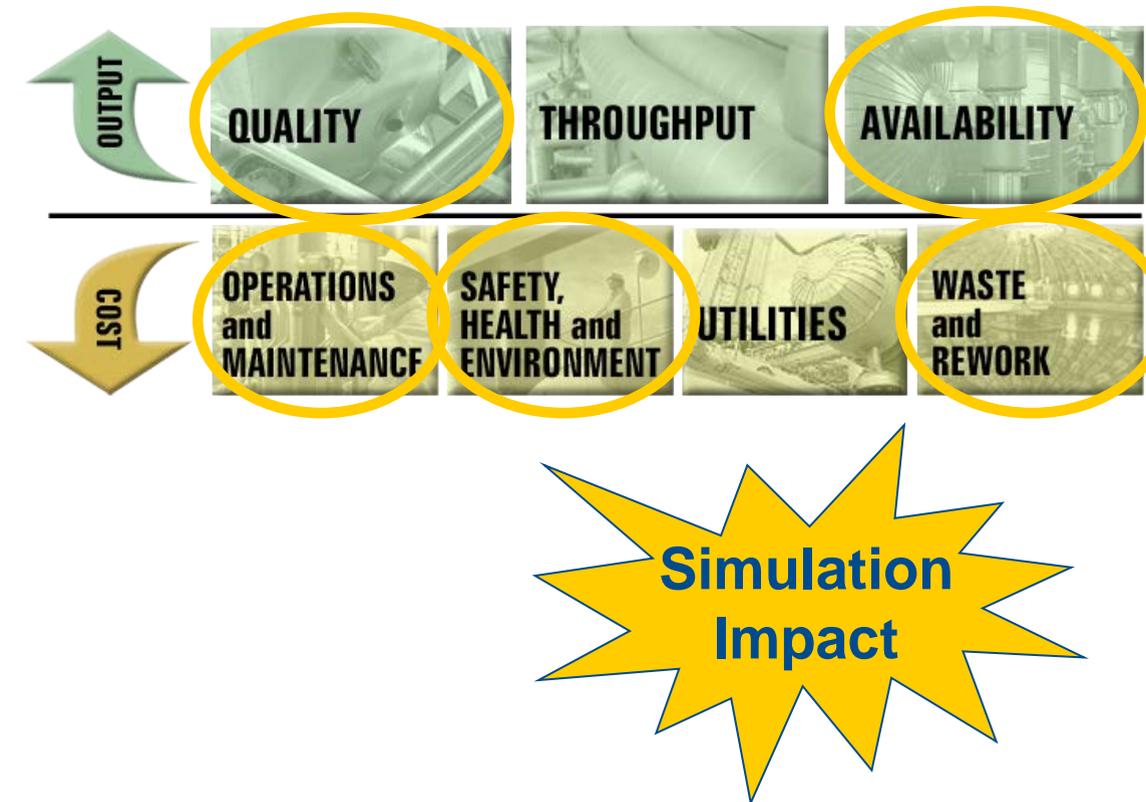
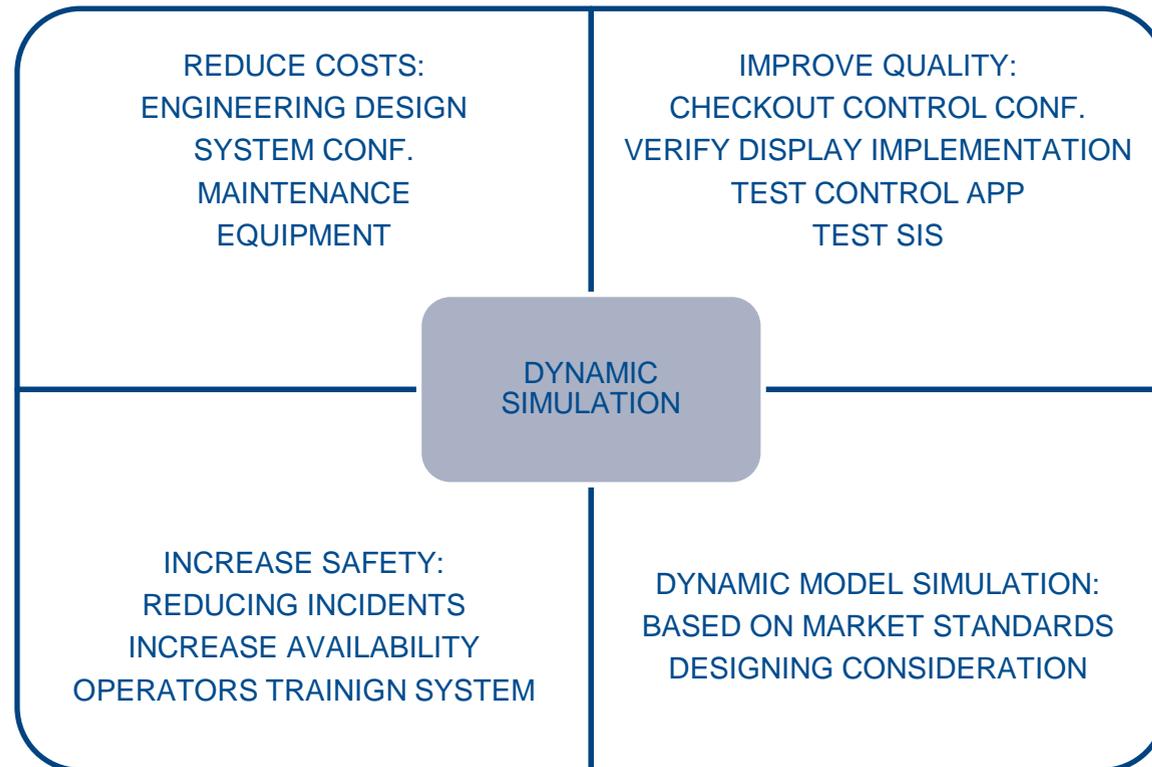
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Regulación y Control final

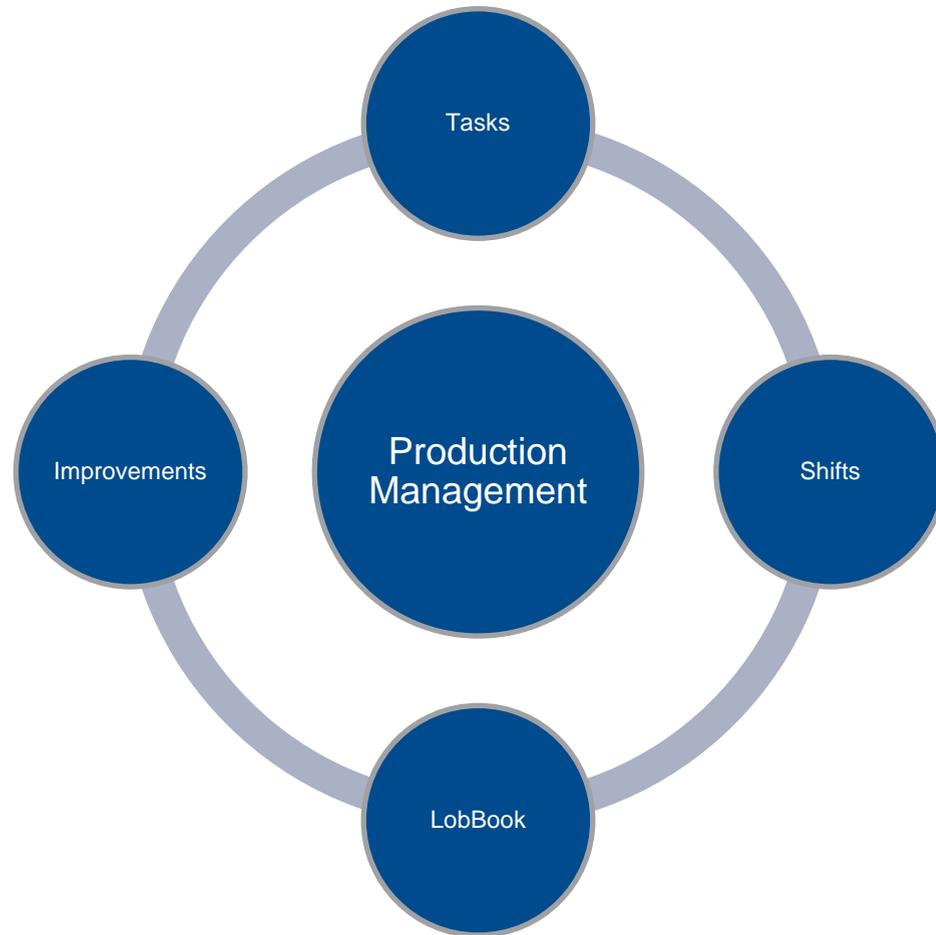
Catálogo de cursos 2016



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LogBooks, Operations and Production Management



- ✓ **Tasks Management**
- ✓ **Shift Changes**
- ✓ **Electronic LogBook**
- ✓ **Reporting and improvements**

Muchas Gracias!!

David.ascarza@emerson.com