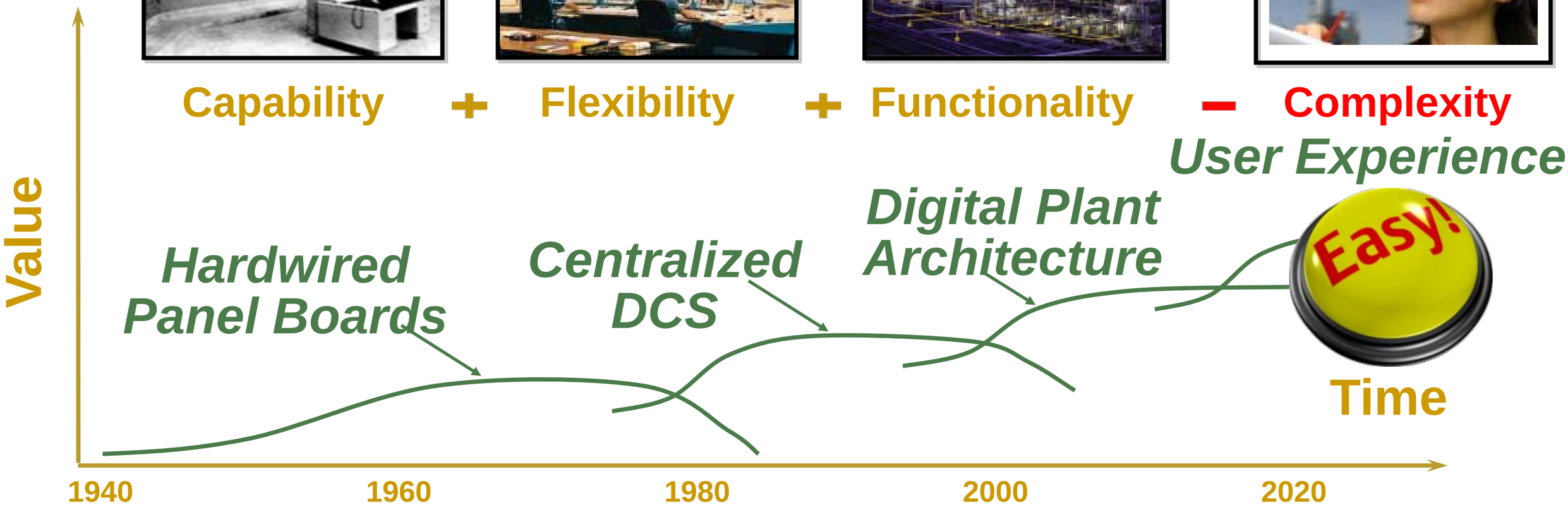
It is EASY with DeltaV

Neo Chow Yang
Director
Emerson Process Management

EMERSON™
Process Management

What is the next BIG thing?
What problems will it Solve?

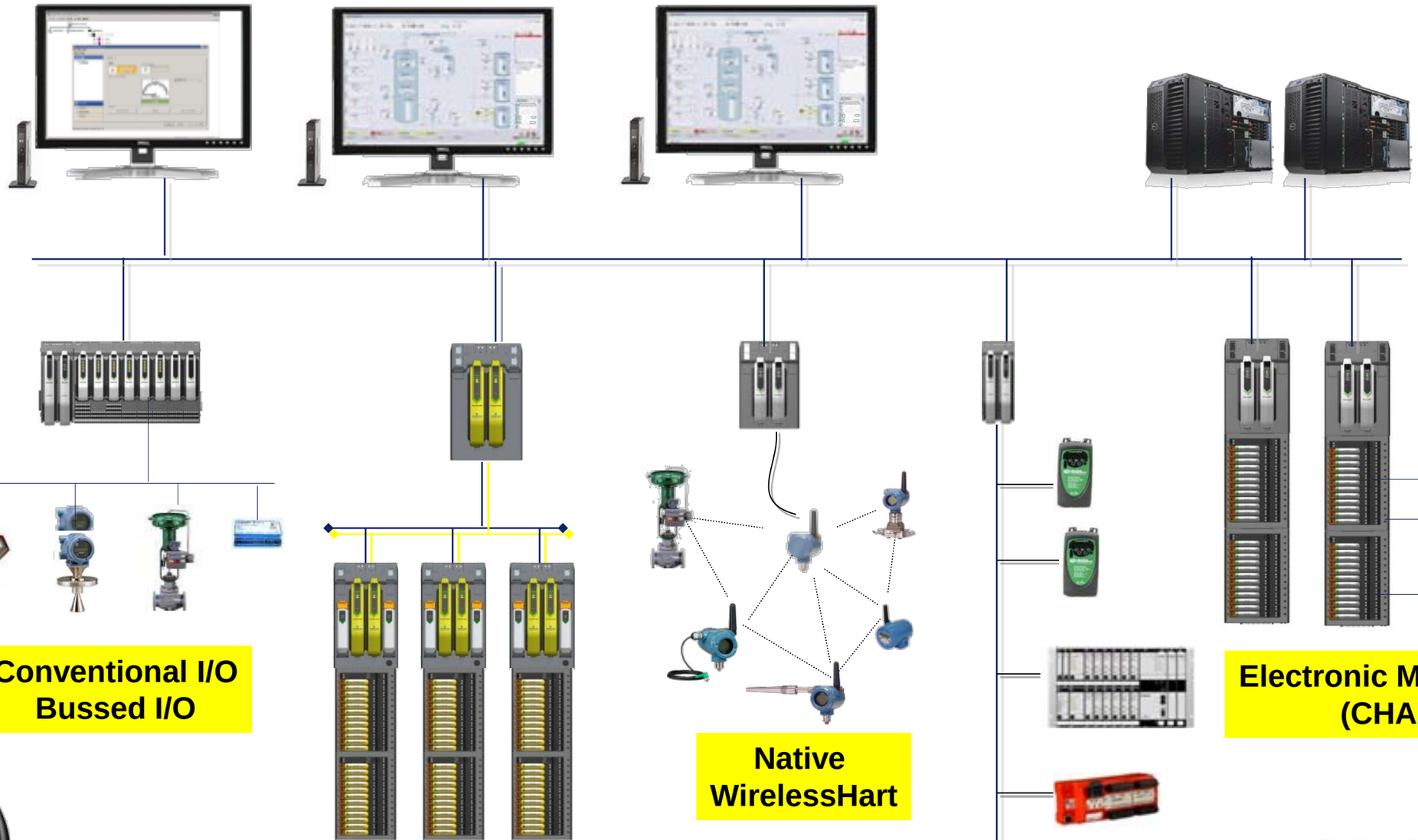
Capability + **Flexibility** + **Functionality** − **Complexity**



Control System is a small part of your plant investment
But it will touch and impact many aspects of your business

DeltaV

- All Native Hardware
- All Native Configuration
- Single Global Database



Conventional I/O
Bussed I/O

Integrated yet Separated SIS

Native WirelessHart

Comprehensive Integration

Electronic Marshalling (CHARM)

EMERSON.
Process Management

It is EASY with DeltaV

Expand without Constraint

Improve and Optimize with Ease

Operate with Confidence

Manage Safety without Compromise

EMERSON.
Process Management

It is EASY with DeltaV

Expand without Constraint

Improve and Optimize with Ease

Operate with Confidence

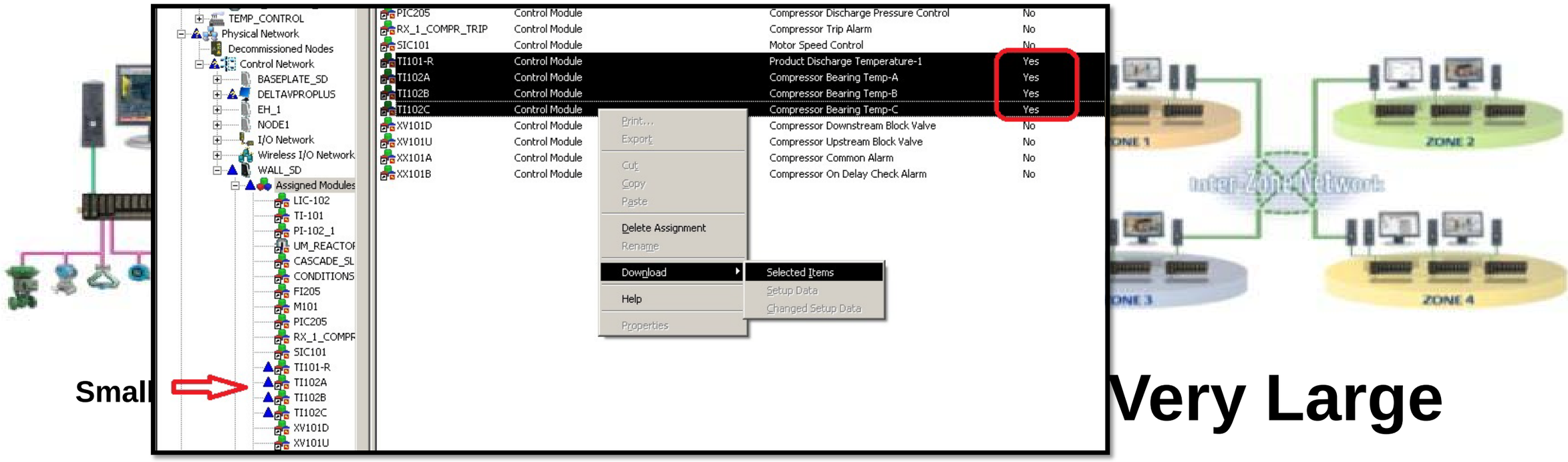
Manage Safety without Compromise

EMERSON.
Process Management

Leverage your investment across any system size

Ultimate Scalability

Add, Remove, Partial Download Anything Online



Small **Very Large**

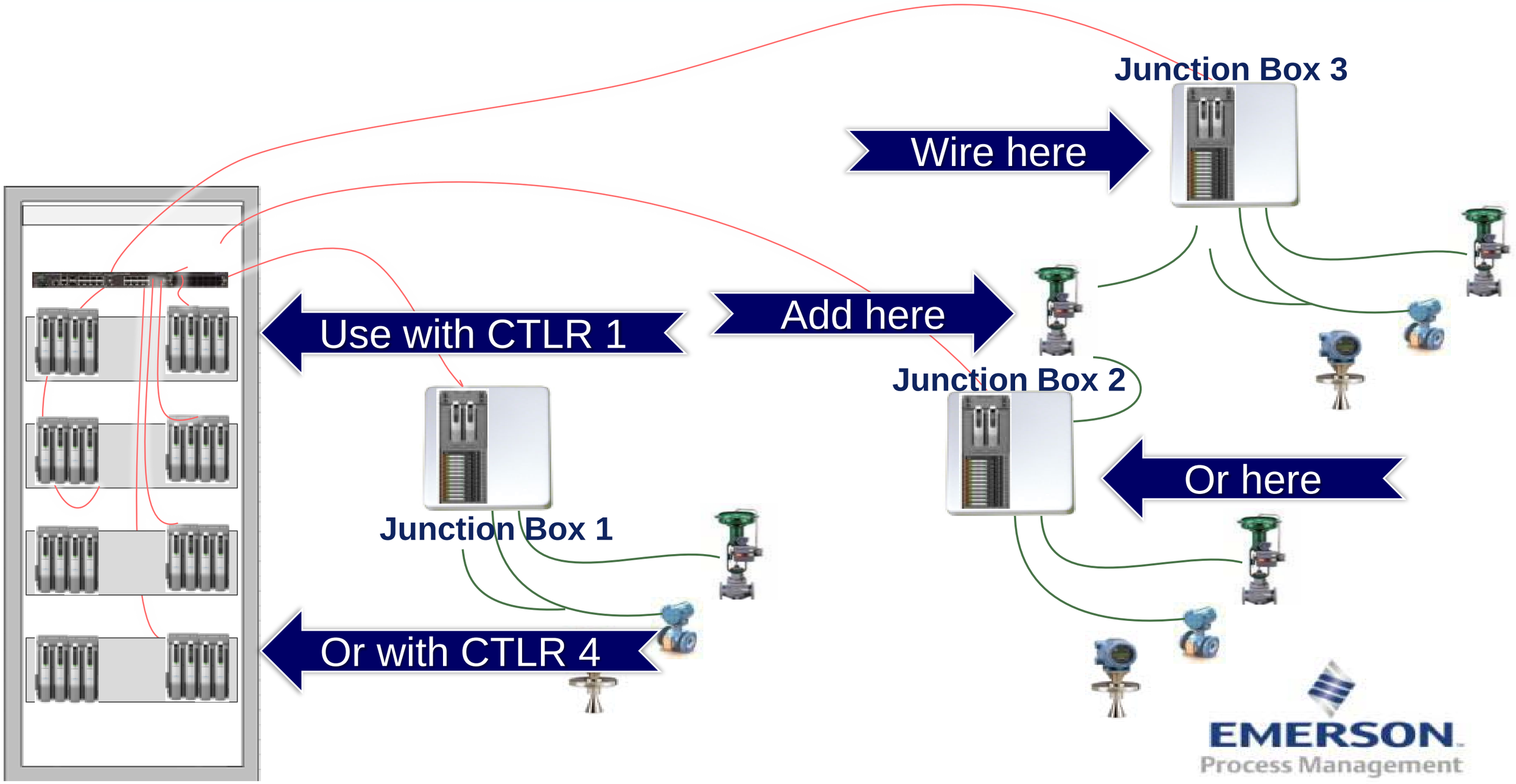
Inherent functionality regardless of size

Same Hardware, Same Applications, Same Database

What if I am using Electronic Marshalling (aka CHARM)?

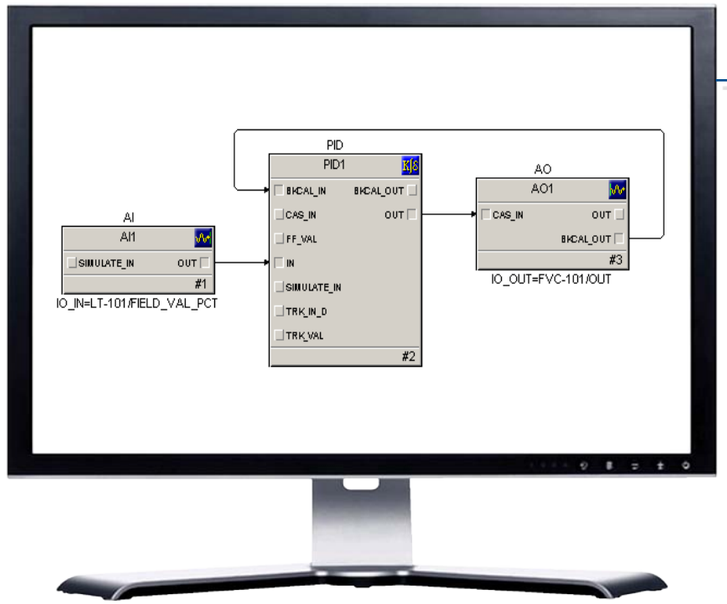
EMERSON.
Process Management

Ultimate Scalability and Flexibility



Commissioning Today – Need to check where the device is connected

ENGINEERING OFFICE



PLANT

Upfront I/O binding

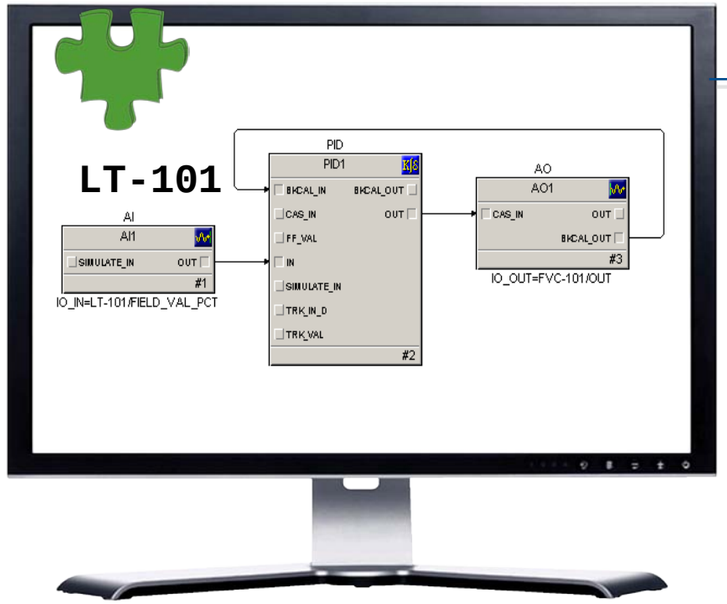
```
Address = Contrl_1/Card_4/Channel_5
```

Wiring Verification

Installation Verification

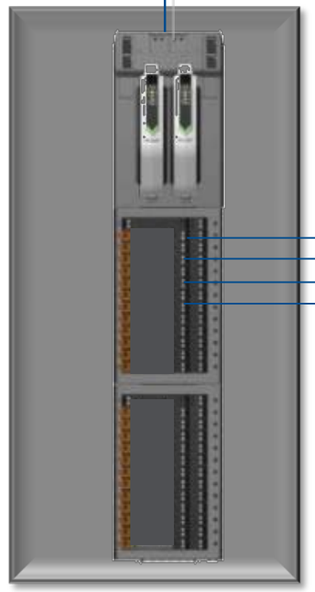
Smart Commissioning
The wire connection is irrelevant!

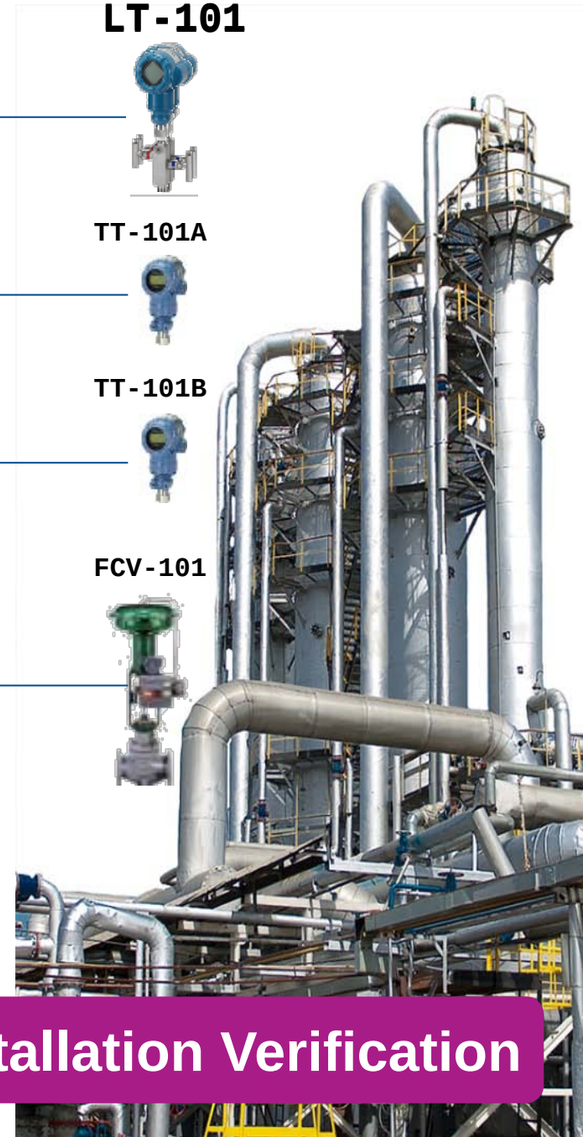
ENGINEERING OFFICE | A | PLANT



Automatic I/O binding

`Address = LT-101`





Guarantees the Right Device in the Right Loop

~~Wiring Verification~~

Installation Verification

It is EASY with DeltaV

Expand without Constraint

Improve and Optimize with Ease

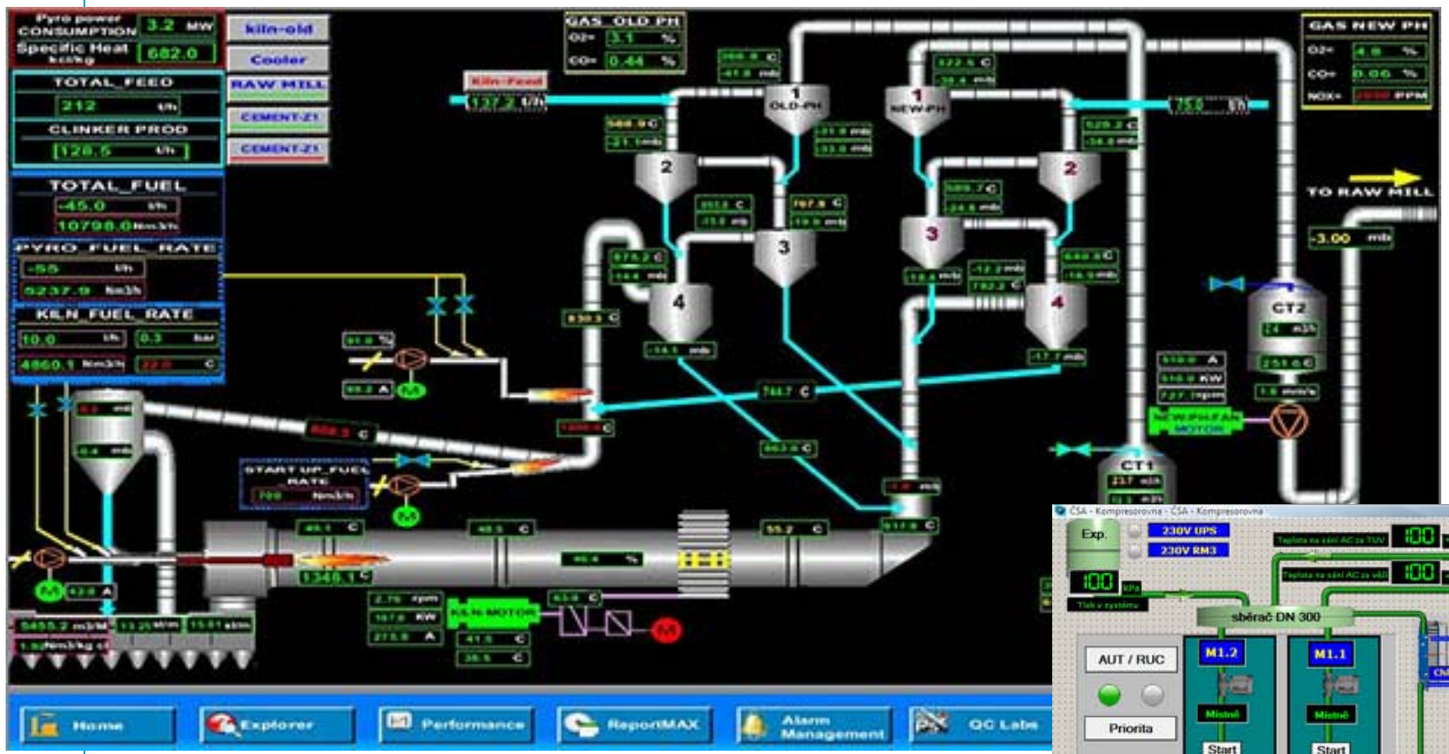
Operate with Confidence

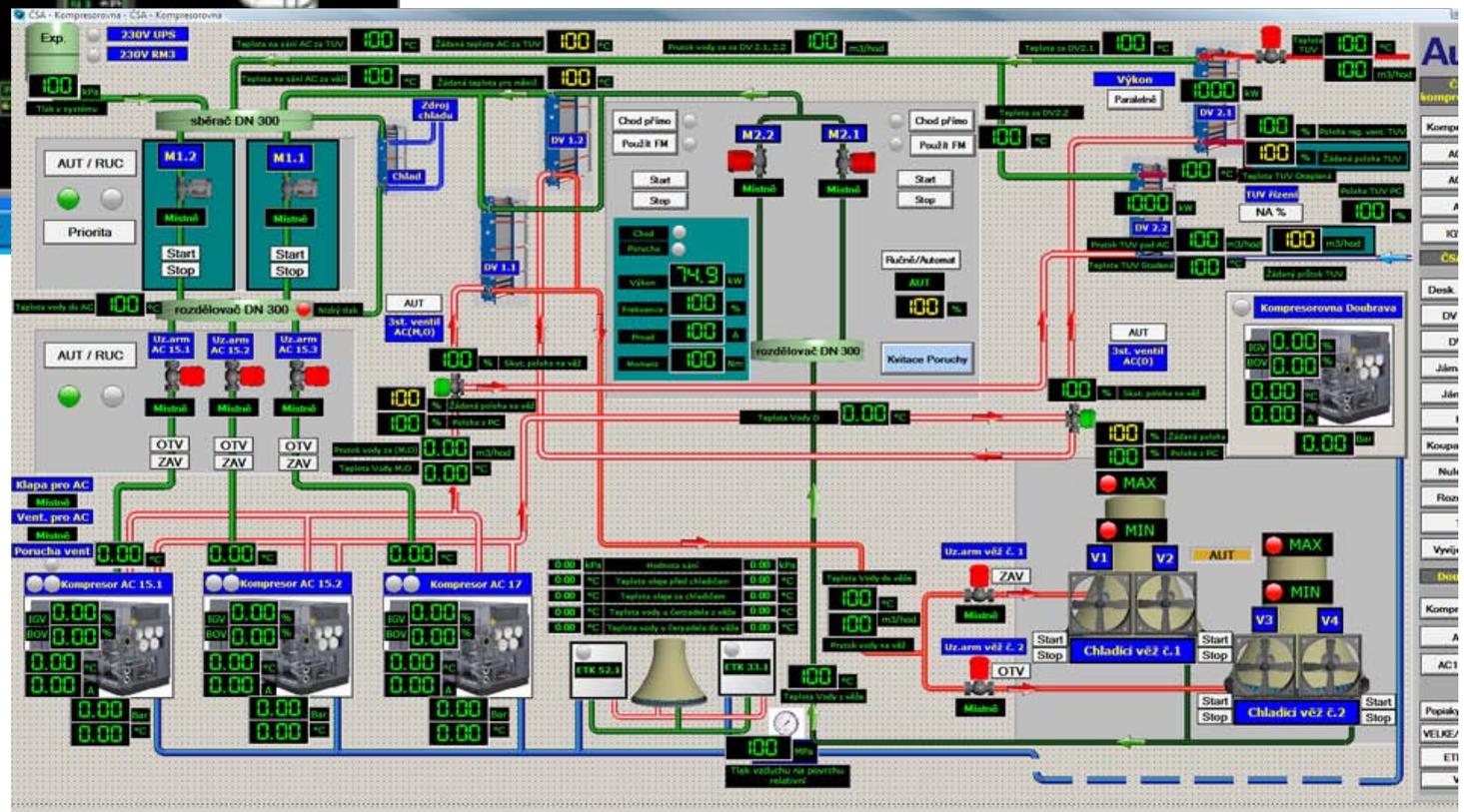
Manage Safety without Compromise

EMERSON. Process Management

If you are still using something like this…

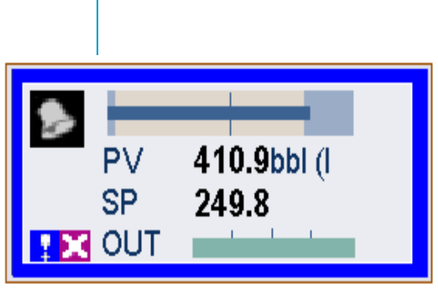
EMERSON
Process Management

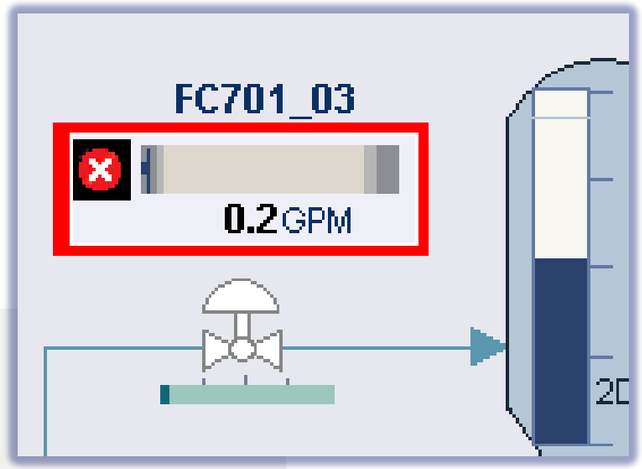


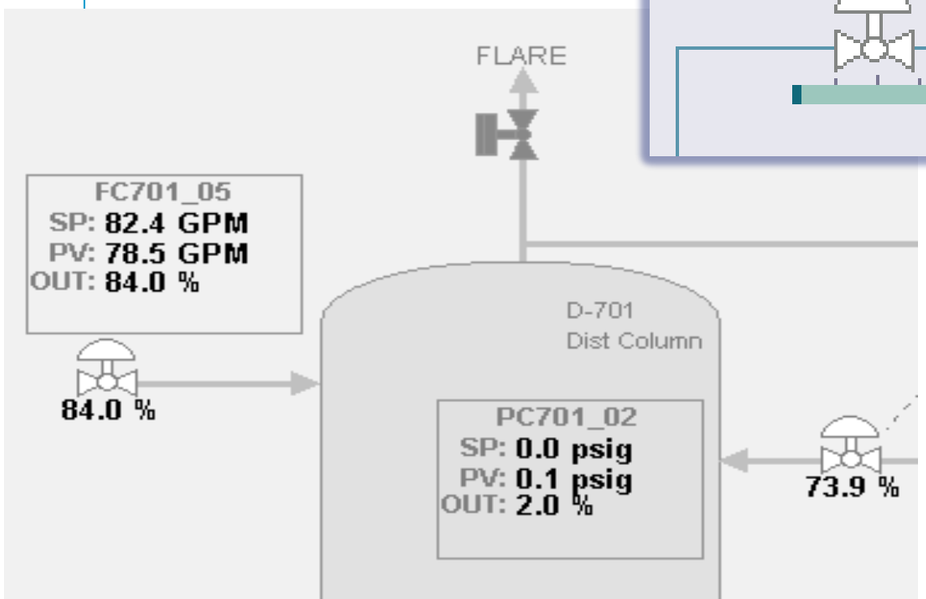


80 to 200 to 400: Empower Your Operators

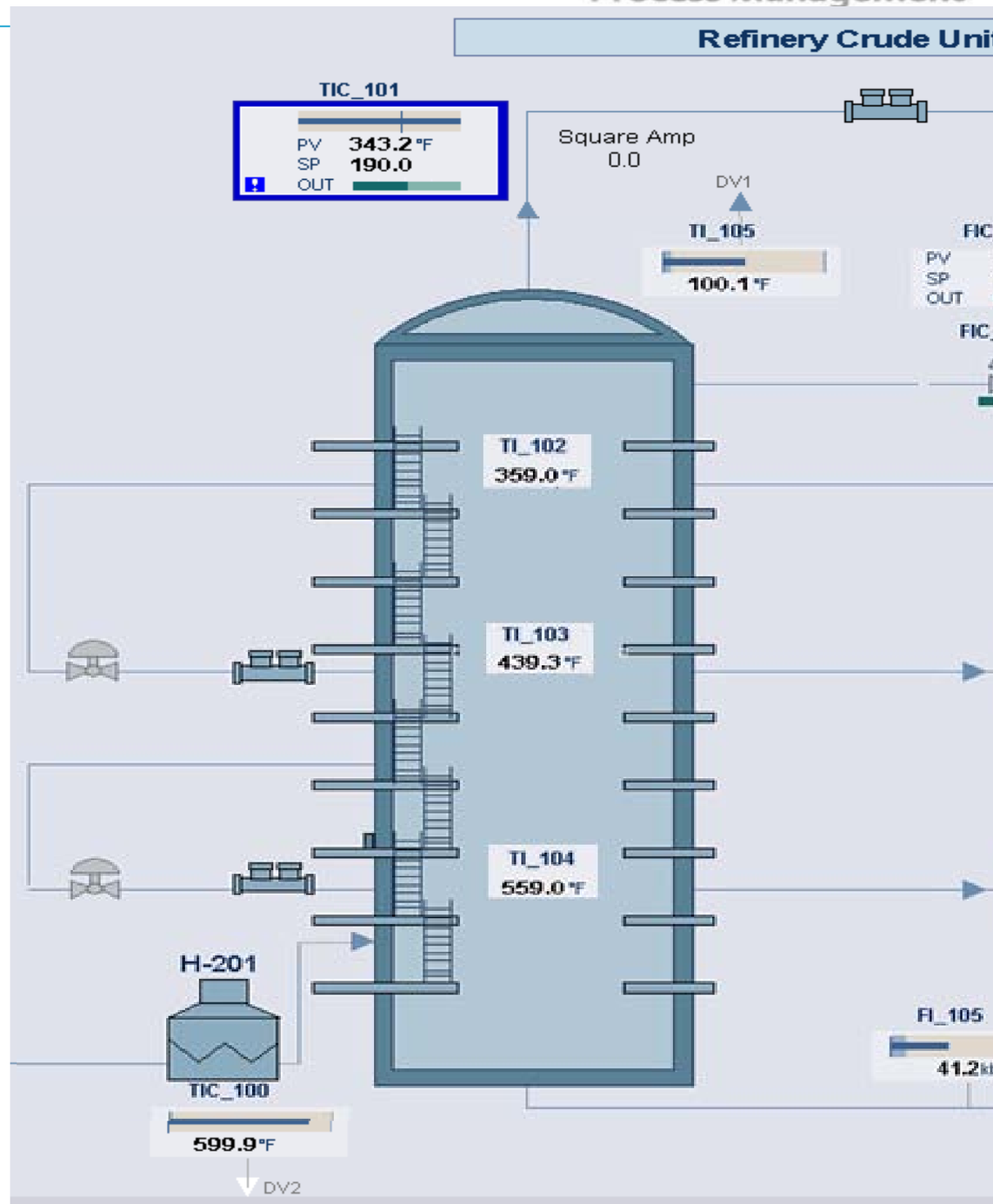
- Empower operators to make quick and better decisions
  - Remain Alert through Quick Scan
  - Identify Problem Early and Decide on the Fly
  - Handle Difficult Situation





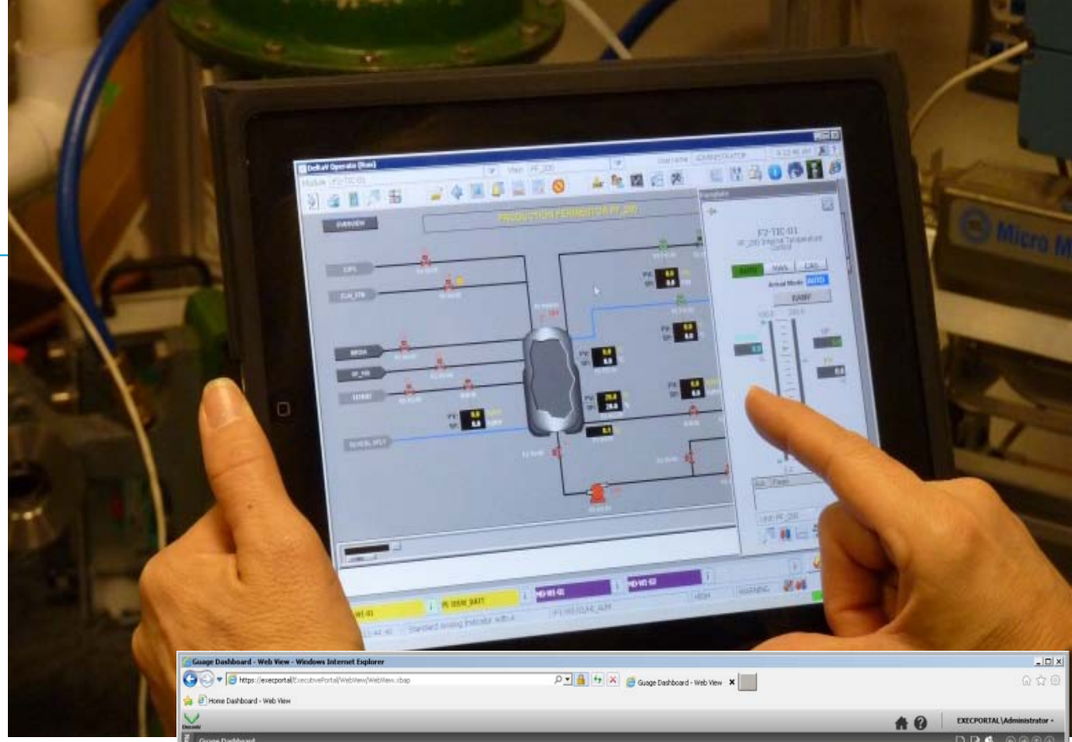


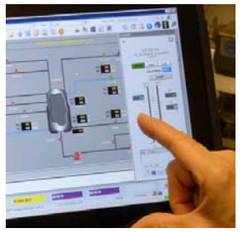
EMERSON
Process Management



"I Want to Monitor from Anywhere"

- DCS data consumers are not just in the control room
- DeltaV Executive Portal
  - DeltaV displays anywhere
  - Read-only
  - View event chronicle and alarming
  - Access Historical process trends

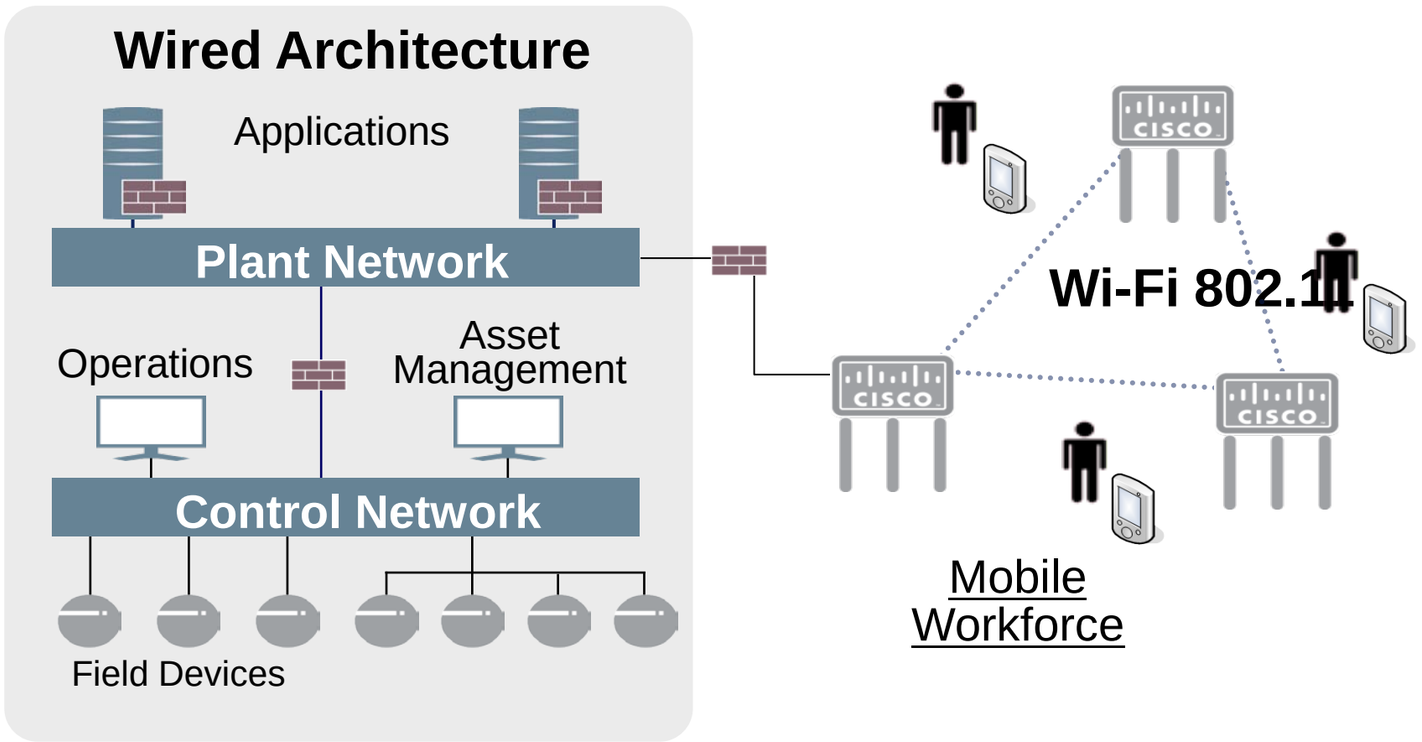




Executive Portal

"I Need to Operate from Anywhere"

EMERSON
Process Management



- **Business drivers**
  - Operator productivity
    - Remote DCS client
    - Operator rounds
    - Terminal mgmt/OMS
  - Maintenance productivity
    - Remote asset management client
    - Maintenance rounds / procedures
  - Accuracy and Certainty

Hardened 13" PC clients

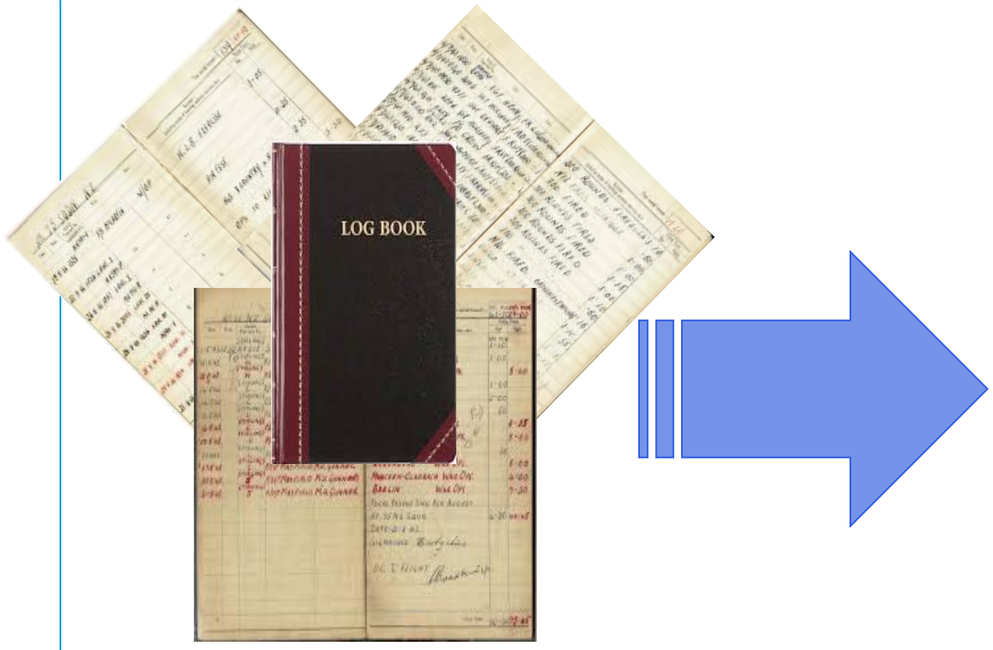
New ToughPad

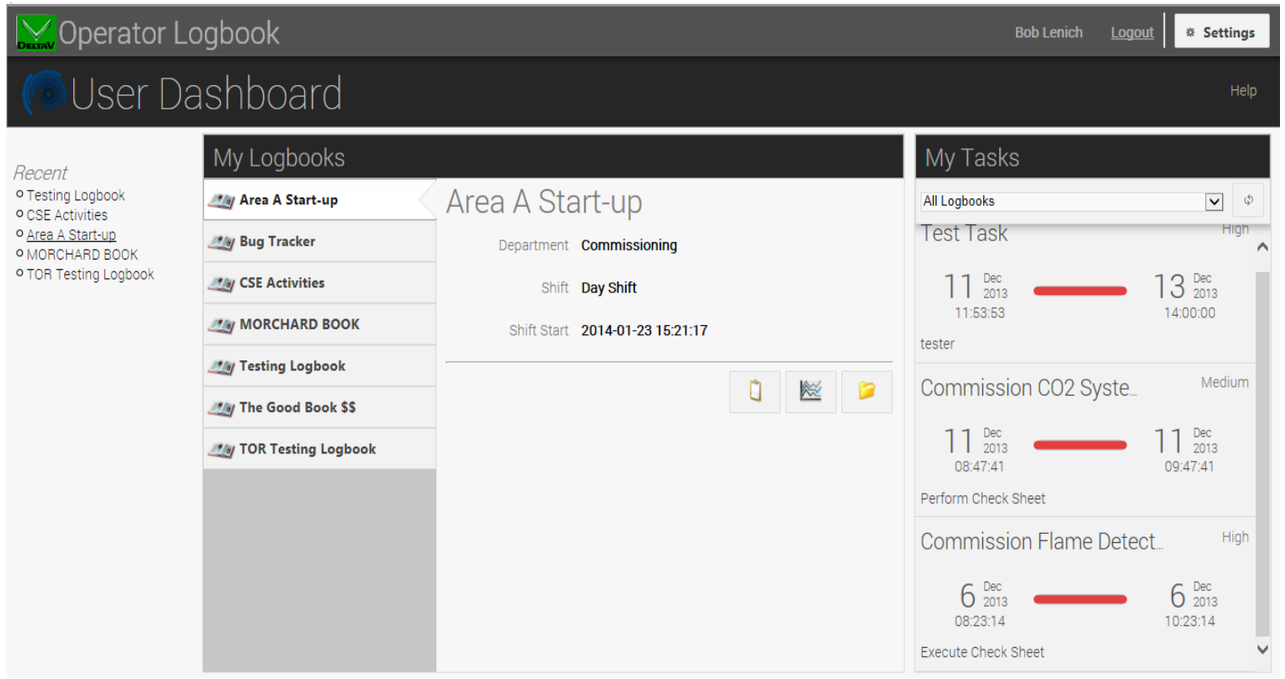
Ecom Tab-Ex

Bartec Pixavi AgileX

Apple iPad + Rugged enclosure

Love the Work but Hate the Paper?





- Attach documents
- Capture conversations
- Schedule tasks and track progress
- Effective Shift Change

- Identify entries that require resolution
- Sort, filter and report on Log Entries
- Perform full text searches
- Record and Audit Trail

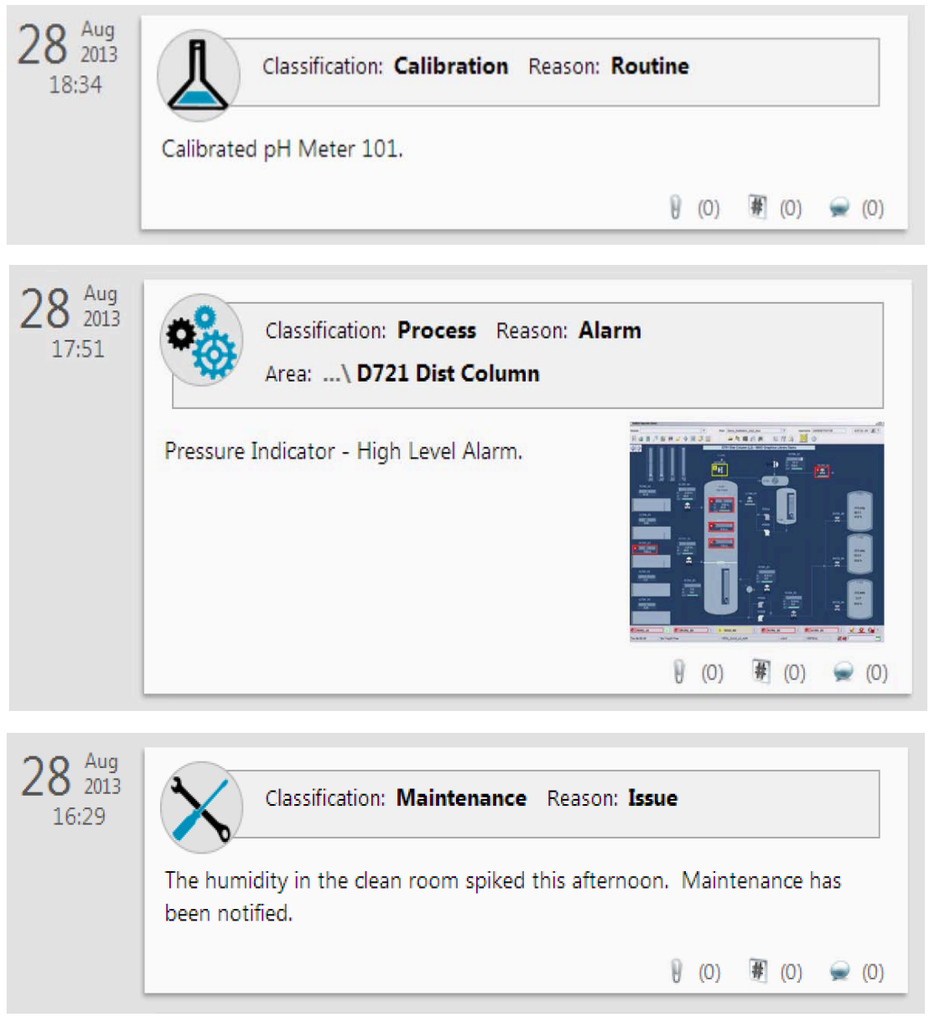
Improve communication accuracies and accountability via paperless logbook entries

Captures Operator's Thoughts

Notes

Images

Discussion

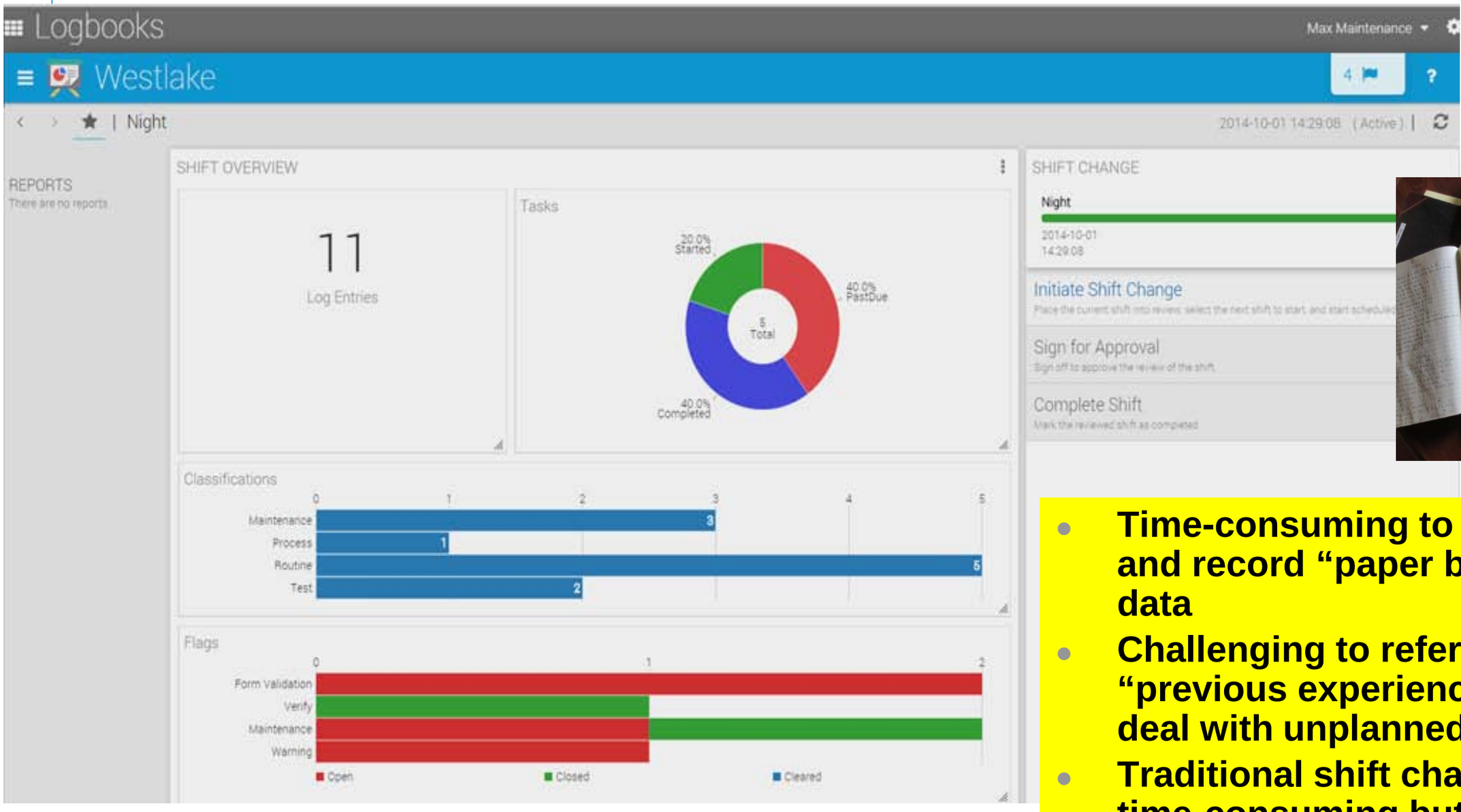


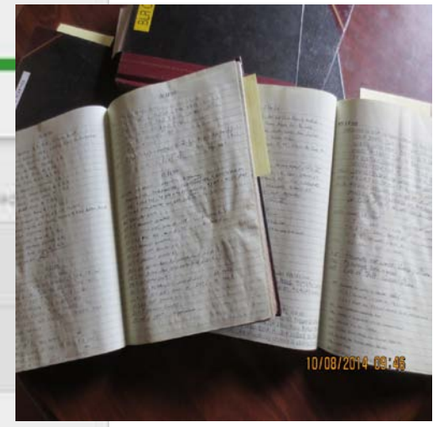
Form

Signatures

Attachments

Shift Dashboard

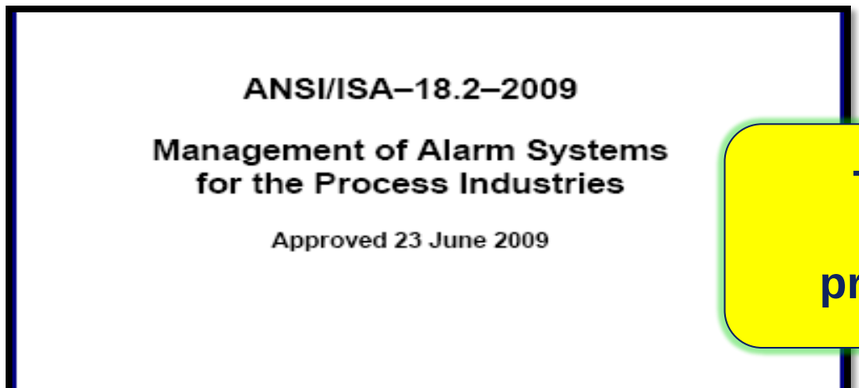




- **Time-consuming to collect and record “paper based” data**
- **Challenging to refer to “previous experience” to deal with unplanned events**
- **Traditional shift change is time-consuming but yet has gaps**

How much is too much?

	Oil & Gas	PetroChem	Power	Other	Best Practice	Standard	
Average Alarms per Day	1200	1500	2000	900	~150-300	~150-300	Alarm Overload
Average Alarms/ 10 Minute Interval	6	9	8	5	~ 1-2	~ 1-2	
Peak Alarms per 10 Minutes	220	180	350	180	≤ 10	≤10	Alarm Floods
Average Standing Alarms	50	100	65	35	<10	< 5	Nuisance Alarms
Distribution % (Low/Med/High)	25/40/35	25/40/35	25/40/35	25/40/35	80/15/5	80/15/5	Incorrect Priority
	Actual				*Recommended*		


ANSI/ISA–18.2–2009

Management of Alarm Systems for the Process Industries

Approved 23 June 2009

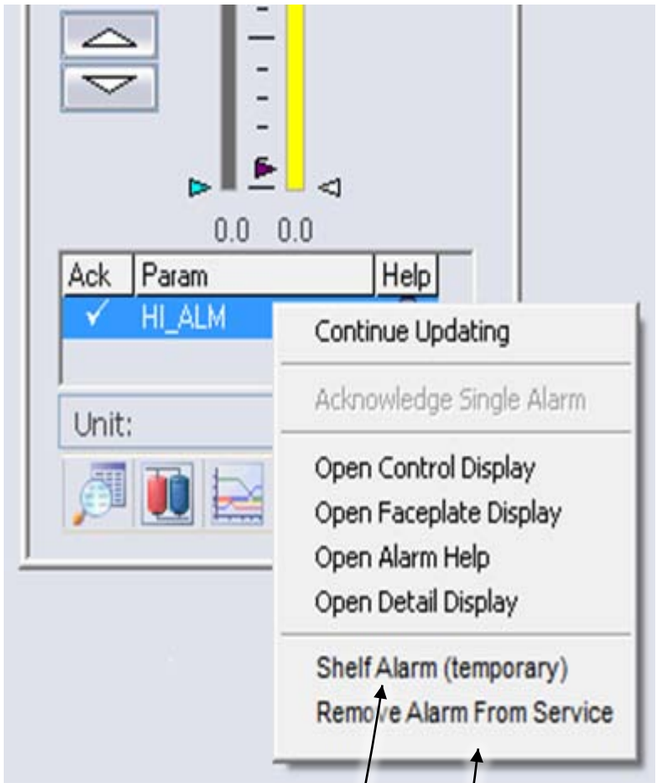
The international equivalent is in progress, IEC62682.

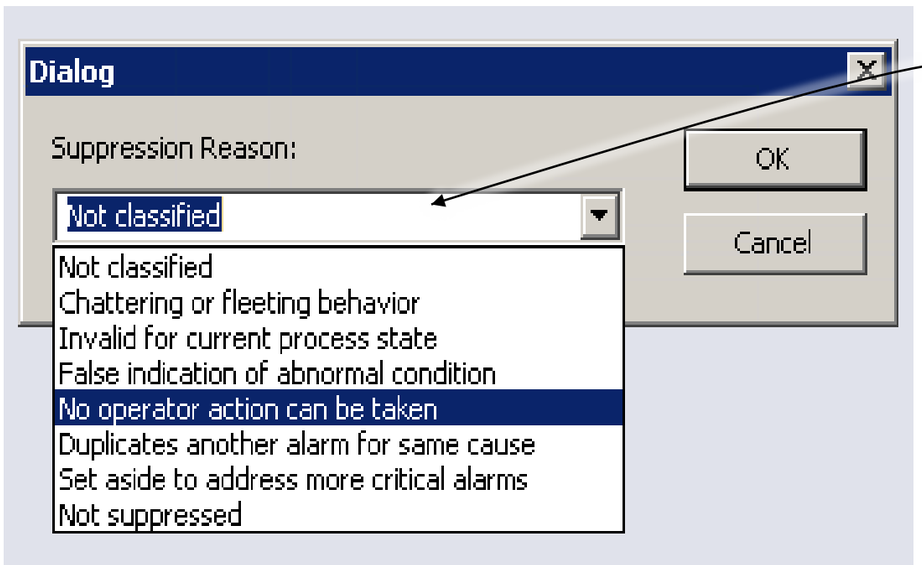
What else is ISA18.2 saying…

- **ISA-18.2 -**
- …
- 11.2.2c The interface shall provide the ability for the operator to place alarms out-of-service through access controlled methods as allowed in the philosophy.
- 11.2.4a The interface should provide an alarm shelving function.
- …
- 11.7.3.2 Shelved alarm displays shall provide the following functions: a) sorting of alarms by chronological order of shelving or shelved time remaining; b) sorting of alarms by priority
- 11.7.3.3b Shelved alarms displays should provide operator entry of the reason the alarm was shelved
- 11.8.2 Out-of-service alarm display, or equivalent list capabilities, shall be provided for the alarm system.

Suppression Ownership and Accountability

- When You Execute a Suppression:
  - Distinction of shelved vs. out of service alarms
  - Separation of privileges
  - Entry of reason for suppression
  - Timing, Distinction and Reason captured in event history





Reason for suppression can be specified by the owner, or by dynamic suppression logic
ISA18.2 11.7.3.3 ✓

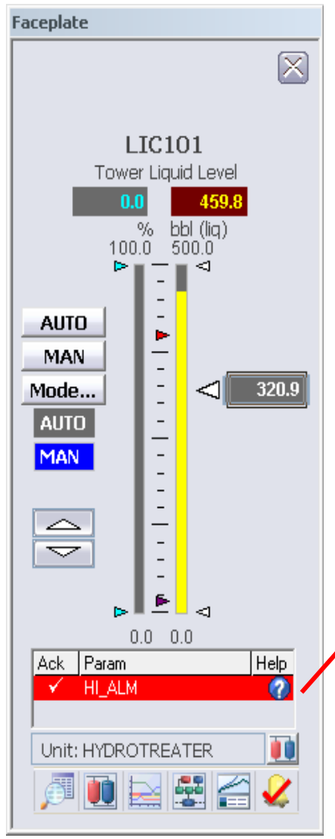
The operator retains accountability
ISA 18.2 11.2.4 ✓

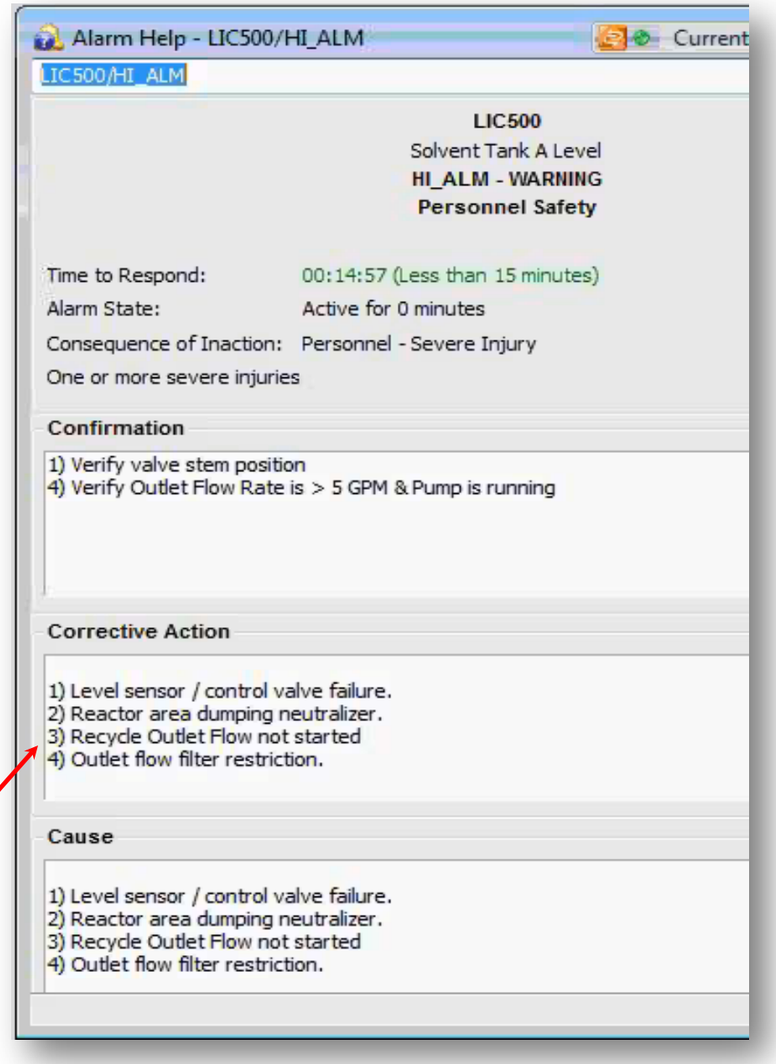
Accountability transfers to maintenance
ISA18.2 11.2.2 ✓

Alarm Help – Knowledge Transfer!

- In-context operator guidance for a consistent correct alarm response
- Enables knowledge capture from senior operators via DeltaV Operate
- Configurable to accommodate any external master alarm database
- Separately downloaded to workstations without effect on control modules

Knowledge and Experience Transfer – Do Now before They Retire!



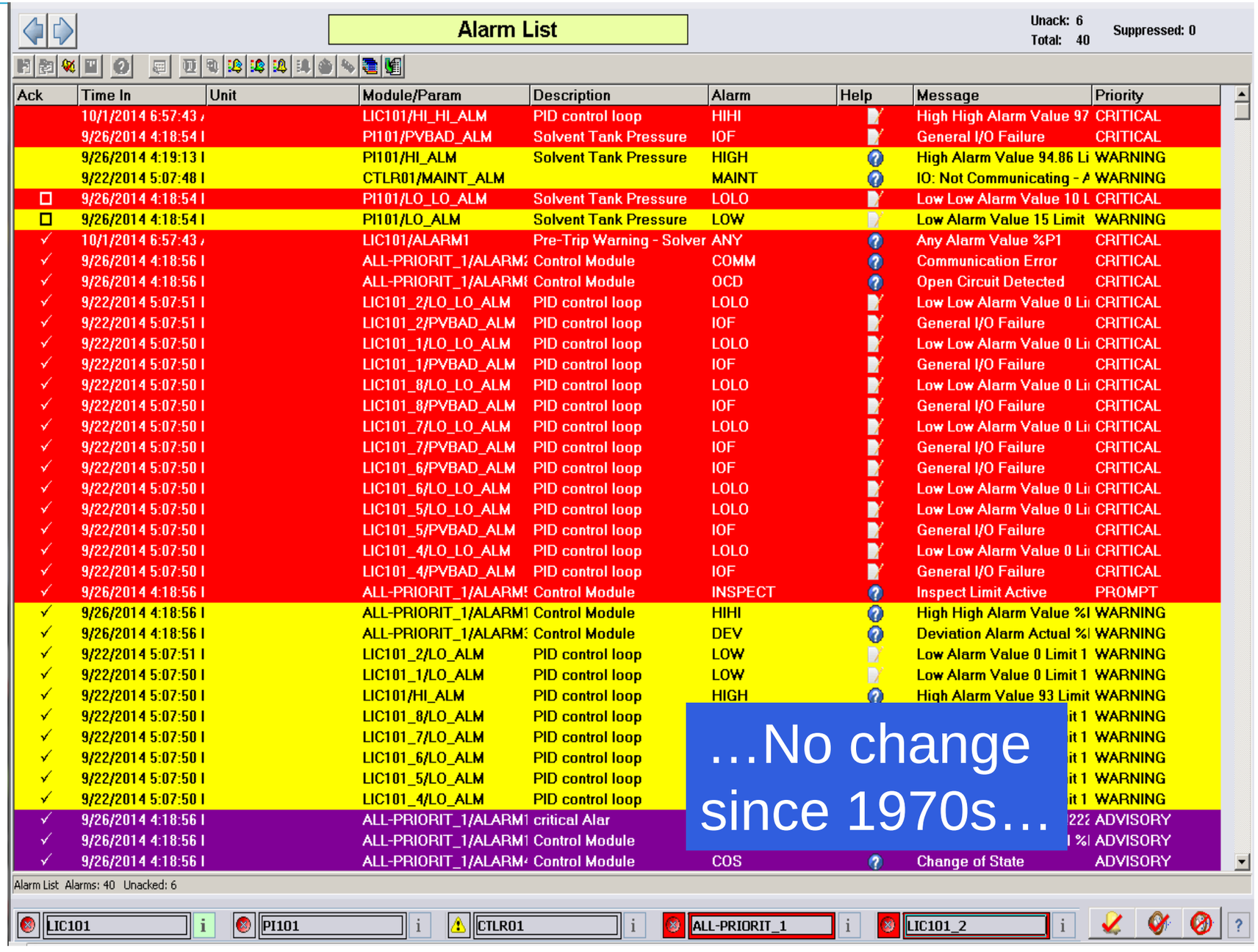


ISA18.2 14.2 ✓

….. Alarm response procedures shall be readily accessible to the operator

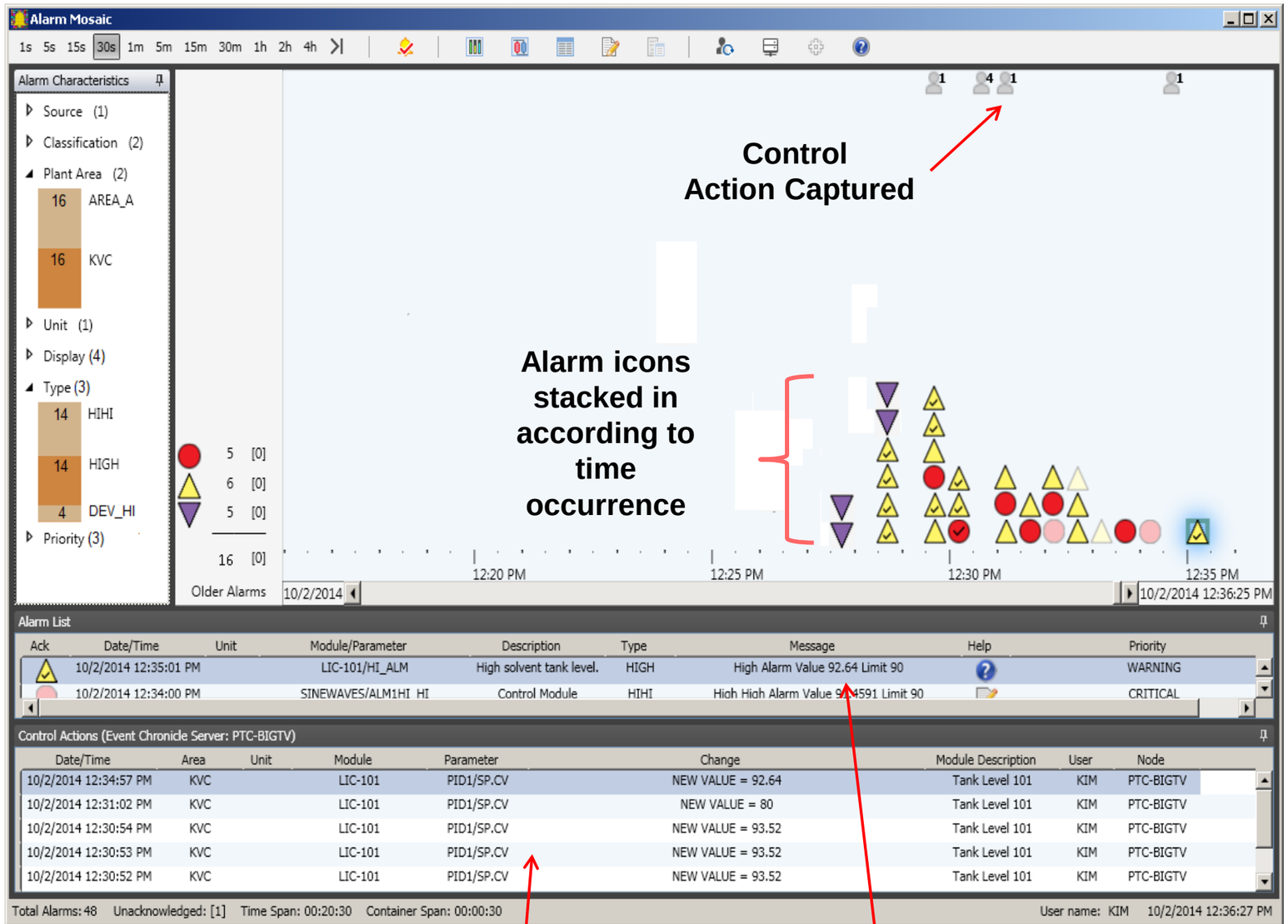
Classic Alarm List

- The classic alarm list – text, text, text…
- Beyond a certain number, some alarms require the scroll bar to see.
- The dynamic motion of scrolling will make it difficult to follow when there is flooding
- But in a flood the most immediate need is to discern the probable single cause for the event.



DeltaV Mosaic Alarm View for Alarm Floods

- Purpose:
  - Optimized to reduce stress and help operators maintain situational awareness in an alarm flood
- Zero configuration required
- Alarm presented holistically as recognizable patterns
- Automatically identifies alarms with common characteristics
  - Areas, Units, Types
- Identifies control actions that may have precipitated the flood



It is EASY with DeltaV

Expand without Constraint

Improve and Optimize with Ease

Operate with Confidence

Manage Safety without Compromise

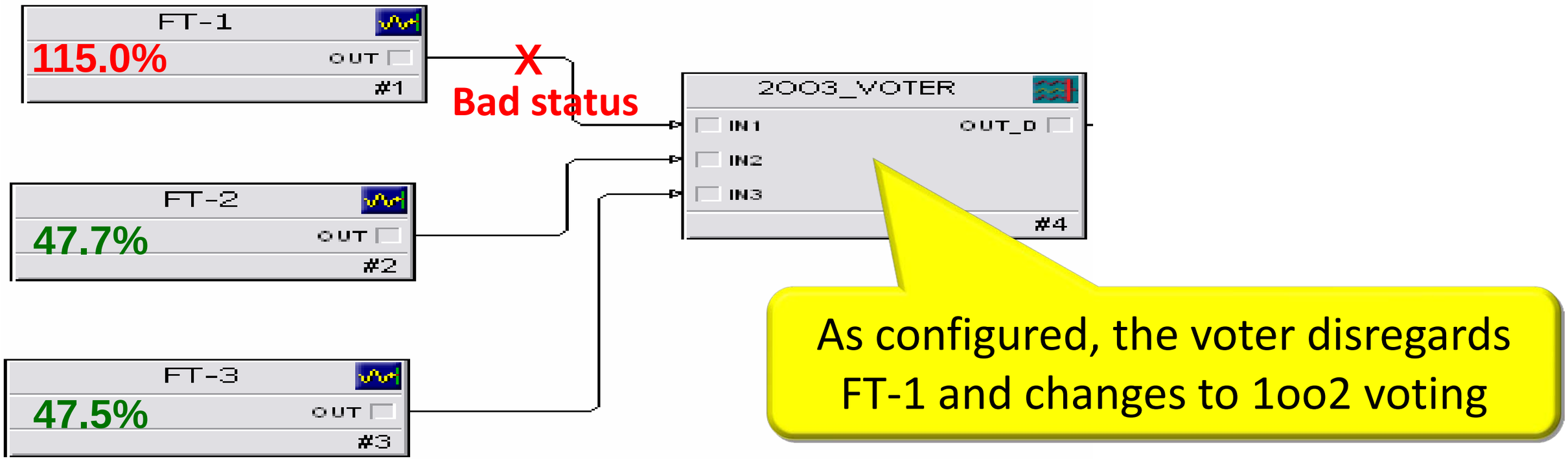
Optimized Process Reliability

A key component of Emerson's Smart SIS

SMART SIS

Shuts down your plant when needed for safety, but keeps you running safely when components fail.

“To be or not to be, that is the question…”

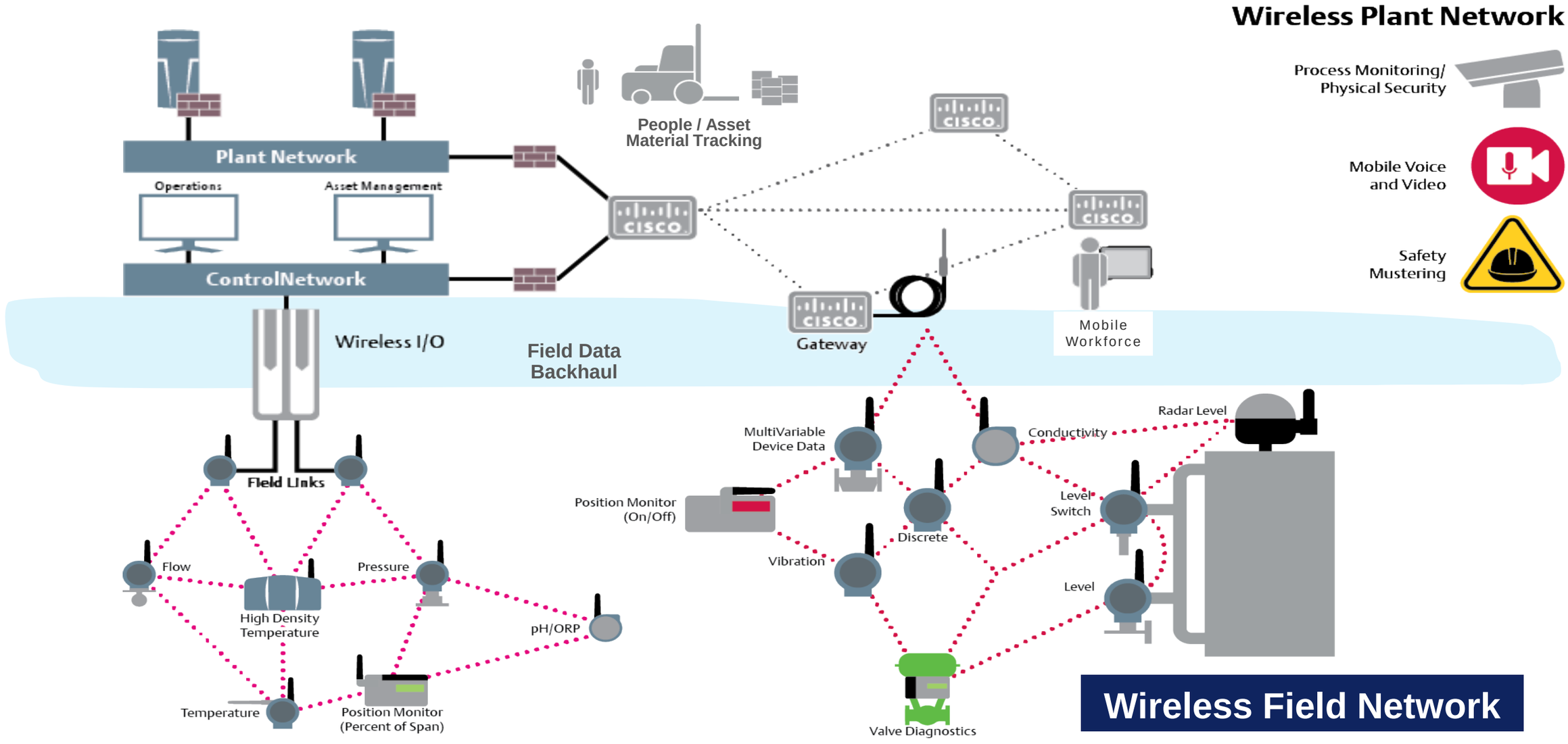


Process is still running but logic is downgraded from 2oo3 to 1oo2 voting.

“Hamlet” by William Shakespeare

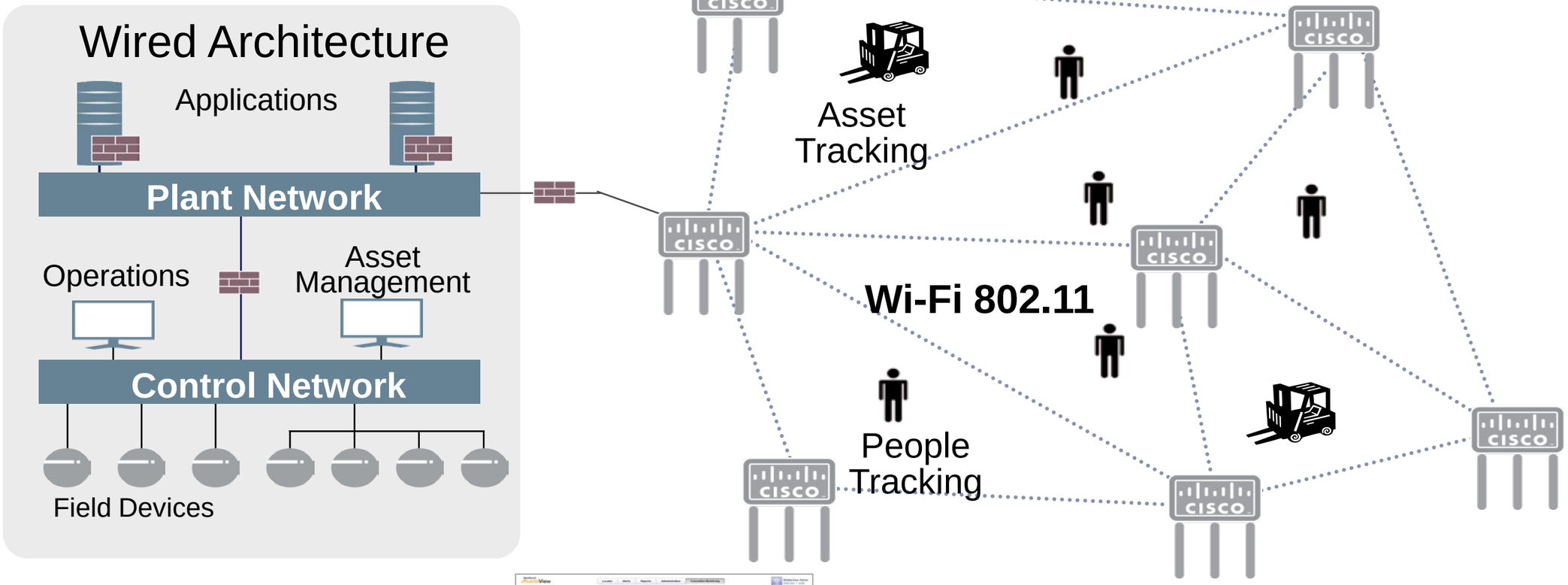
Emerson Smart Wireless

EMERSON
Process Management



Safety Mustering and Asset Tracking

EMERSON
Process Management



People and Asset Tracking

RFID Exciters - RFID Tags

Location Management Application

Questions you should be asking:
- Where the heck is he/it/everyone?
- What on earth is he doing THERE?
- Stationary > 5 mins …is he ok?

Are you able to ask these questions?

It is EASY with DeltaV

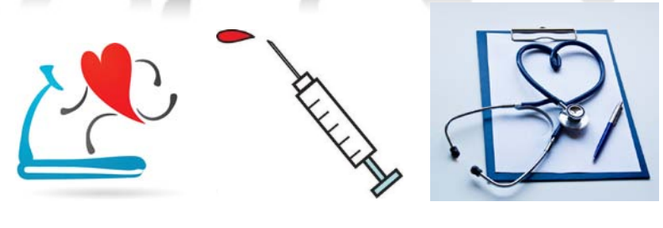
Expand without Constraint

Improve and Optimize with Ease

Operate with Confidence

Manage Safety without Compromise

Lifecycle



- Have you gone for your annual checks?
  - What about your DCS system?
- Process Loop Performance Check
  - DeltaV InSight
- System Health Check
  - Site Evaluation Services

DeltaV InSight

- Easily identify control problems
  - Loop service and variability monitoring
  - Device diagnostics
- Quickly tune loops for improved control
  - On-demand and no PhD needed
  - Test tuning with simulation
- Easy to Use – Out of the Box
  - No Configuration Required
  - Adapts to system configuration changes

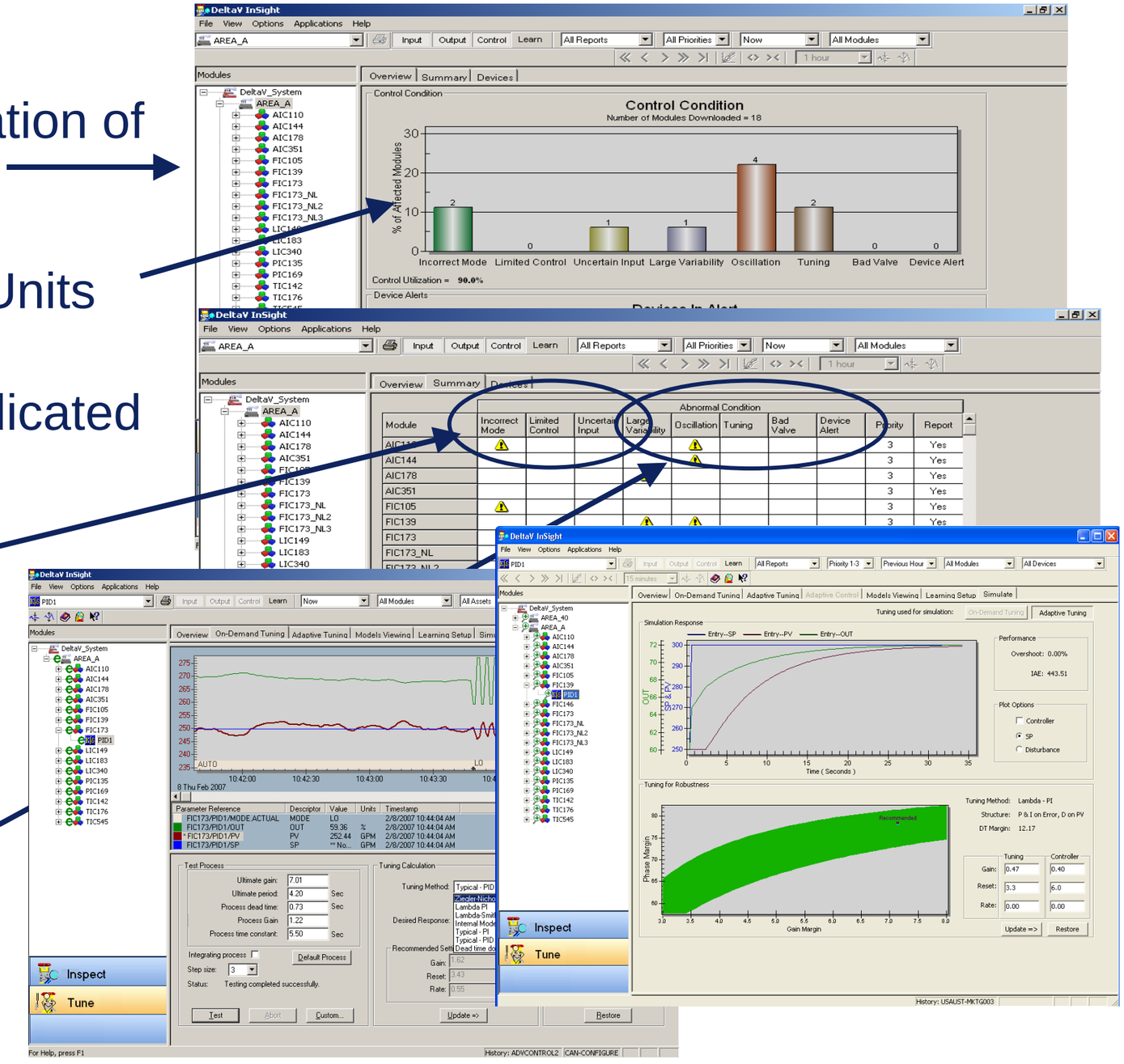
Poor control costs your company money

“Start Small, Start from Fundamentals…”
but start where?

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



What is Site Evaluation Services?

EMERSON
Process Management

Multi Dimensions of a Site Evaluation

- Lifecycle Status and System Health
- Spare Parts Management

System Availability and Reliability

- Cybersecurity Management
- Data Management

System Security

- Alarm Management

System Performance

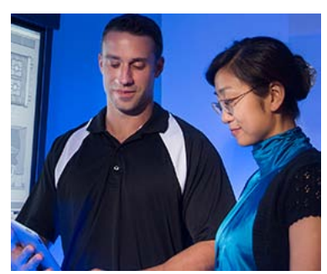
- Power and Grounding

System Installation

Consultation and Data Collection

Analysis, Report Presentation

Discussion and Action Plans



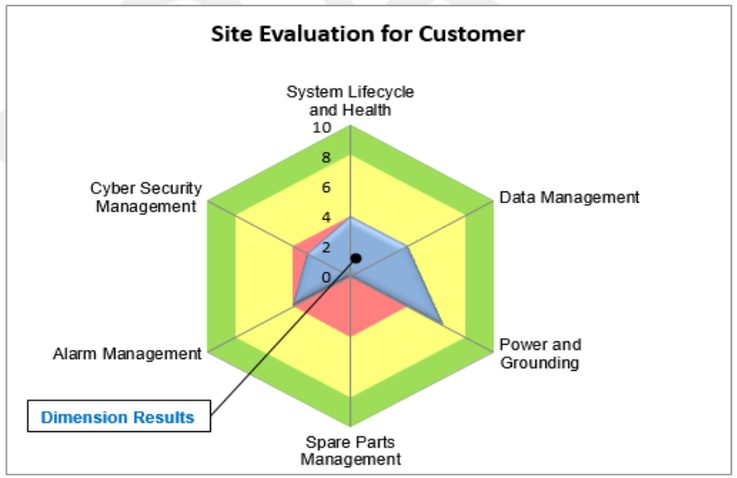
Site Evaluation Service Report

Executive Summary:

This report is a starting point to develop an automation roadmap to achieve the maximum operational performance and reliability from your DeltaV control system. The report will aid in assessing the configuration state and performance of the main elements of your system against Emerson's best practices. This assessment will be used to determine areas for improved performance and highlight potential issues to process performance and uptime.

During the site evaluation visit, system (ID: 0001-0001-XXXX) components were checked for the five Site Evaluation Dimensions listed below

Priority	Site Evaluation Dimensions	Score (Possible 10)	Composite Score (Out of 10)
1	System Lifecycle and Health	4.00	3.58
2	Data Management	4.00	
3	Power and Grounding	6.50	
4	Spare Parts Management	0.00	
5	Alarm Management	4.00	
6	Cyber Security Management	3.00	



1.0 System Lifecycle and Health:

System Lifecycle and Health includes – Knowledge Based Articles and hotfixes, Basic System Diagnostics, Lifecycle status of installed Hardware and DeltaV software compatibility.

No.	Key Performance Indicator (KPI)	4.00 (Max 10)
1	KBAs and Hotfixes	0 (Max 4)
2	Diagnostics	2 (Max 2)
3	Lifecycle (Software)	1 (Max 2)
4	Lifecycle (Hardware state)	1 (Max 2)

Findings:

1. During the analysis, 2 un-dismissed KBA's identified as 'Mandatory' or 'Next Service Interval' was found. Based on Emerson's analyses of customer calls, the primary reason for process downtime at customer facilities is due to the KBA's not reviewed for any required action.

CONCERN: There could be KBA's related to product safety or hotfixes for an identified problem. Not acting on KBA's or dismissing them on a regular basis could lead to possible system downtime and loss of revenue.

2. High level DeltaV health checks conducted during the site visit did not find any issues.
3. The required service pack for the software version is not installed.

CONCERN: In case of workstation failure, the replacement workstations will have software version 11.3.1 installed which will force updating the entire system. Hotfixes are not available for the installed software version 11.3.

4. All 8 workstations in the system are in Supported® state. Product support for these workstations is available, but oriented towards maintenance.

CONCERN: Increased likelihood of WS failure with age. WS obsolescence creates supply issues and reliable replacements are difficult to source. Replacement cost increases over time.

It is EASY with DeltaV

Expand without Constraint

Improve and Optimize with Ease

Operate with Confidence

Manage Safety without Compromise

Thank You

EMERSON™
Process Management