Automating Manual Procedures in Continuous Process Applications Using the Concepts of ISA-106

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ISA106 Standards Committee

- Procedure Automation for Continuous Process Operations
- Membership
  - 168 members from 106 companies
  - 25 voting members
  - ~45% of members are from owner / operators
- Co-Chairmen
  - Yahya Nazer, Dow Chemical
  - Bill Wray, Bayer Material Sciences

Membership (partial)

- ABB
- Aramco Services Co
- AREVA
- Bayer MaterialScience
- BP Lubricants
- Braskem
- CDM Smith
- CH2M HILL
- Chevron
- Conocophillips
- DuPont
- Emerson Process Management
- ExxonMobil
- Herman Storey Consulting
- Honeywell
- Invensys
- Mustang Automation and Control
- NovaTech Process Solutions
- PAS
- Prosys
- Rockwell Automation
- RSI Simcon
- Saudi Aramco
- Savannah River Nuclear Solutions
- Shell
- The Dow Chemical Company
- Valero Energy Corp
- Yokogawa

ISA106 Work Items

- Published 1st Technical Report in 2013
  - Models and Terminology
  - Available in the ISA store at www.isa.org
- Working on the 2nd Technical Report
  - Work Processes

TECHNICAL REPORT

ISA-TR106.00.01-2013

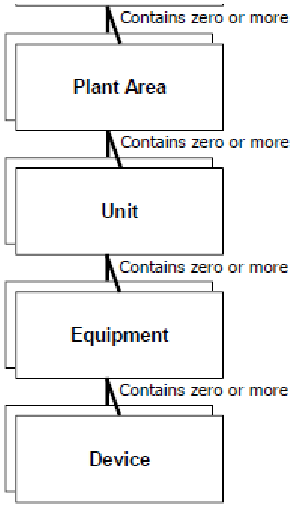
Procedure Automation for Continuous Process Operations – Models and Terminology

Approved 1 August 2013

- Work on the Standard is expected to start in 2014
  - Use industry feedback on the technical reports to create the standard

Technical Report 1: Models and Terminology

- States committee's current thinking on how to organize and approach procedure automation



- Models
  - Concepts to give the industry a common mental model
- Terminology
  - Definitions to give the industry a common language

3.1.45 state-based control

A plant automation control design based upon the principle that all process facilities operate in recognized, definable process states that represent a variety of normal and abnormal conditions of the process.

3.1.46 status notification

A notification generated by the BPCS that helps provide the operator situational awareness, is part of normal operation and does not require operator action.

ISA-106 Procedure Automation for Continuous Process Operations Technical Report 1 Summary 1 of 2

Technical Report Summary

Committee Purpose: Develop Standard for automating procedures in continuous process operations.

Scope of Technical report is to provide a common basis of understanding of the benefits, best practices application, and language including terms and definitions, that will allow for the application of procedural automation across the continuous process industries.

In agreement with the scope of the ISA106 Committee, this Technical Report focuses on automated Procedures that primarily reside on systems within the supervisory control, monitoring, and automated Process Control section of the production process. It is not the intent of the committee to have this Technical Report focus on Procedure execution at the operations management functional level.

Additionally, the focus of this Technical Report will be on continuous processes. However the contents of the technical report may be used in other types of Process Control such as batch or discrete.

The Technical Report is intended to be applicable to ProcessControl activities within the Basic Process Control System(BPCS) and Safety Instrumented Systems (SIS). RequiredSafety Instrumented Functions (SIFs) should be analyzed. and implemented in accordance with ISA-84.

Key Definitions

Basic process control system (BPCS): System which responds to input signals from the process, its associated equipment, other programmable systems and/or an operator and generates output signals causing the process and its associated equipment to operate in the desired manner but which does not perform any safety instrumented functions with a claimed SIL ≥ 1

Implementation method: A tool used to create a Task Example: Programming languages, BPCS configuration tools and a word processor

Operator confirmation operation: The command is performed by the control system, however the operator needs to verify.

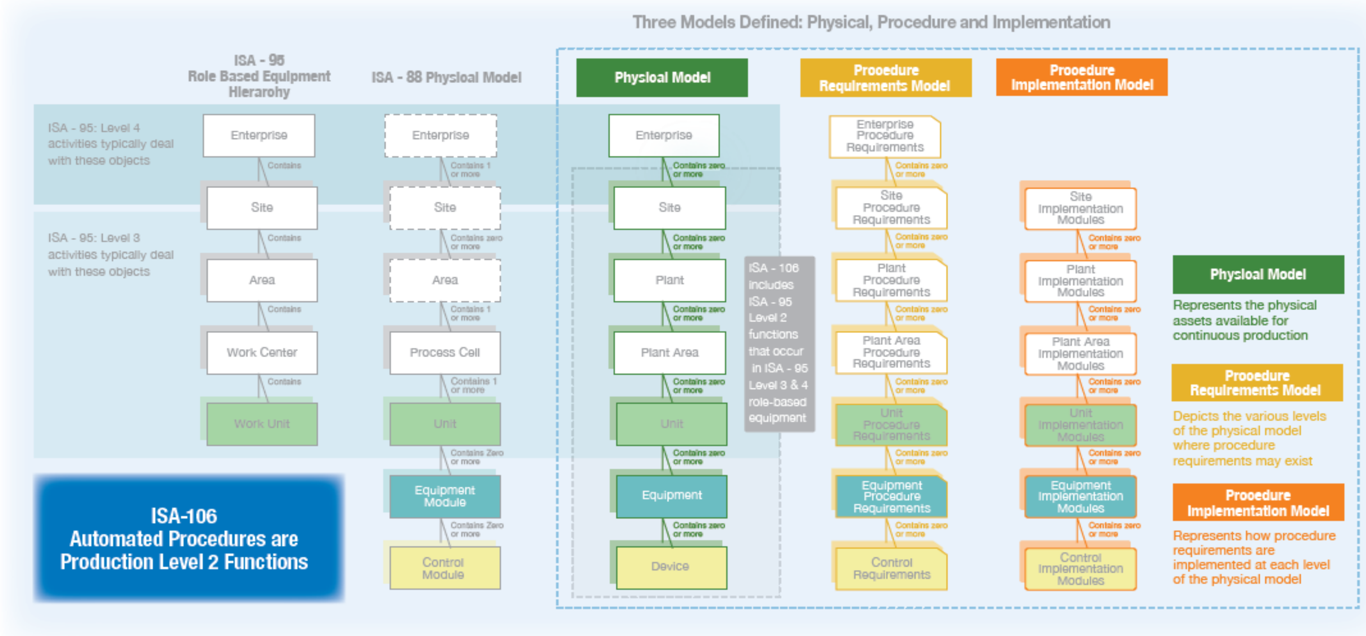
Procedural automation: Implementation of a procedure on a programmable mechanical, electric, or electronic system.

Process point of view: The view of a particular unit as a whole, not as a collection of individual loops. A control program written from the process point of view allows the operator to interact with the process as opposed to with control loops.

Process state: Distinct mode of operation that a unit moves through as it progresses from shutdown to operating and back to shutdown. Each Process State represents a unique operating regime that supports the unit's objectives of processing an input into a desired output.

State based control: A control program methodology that utilizes a framework that defines the "process states" through which equipment (general) passes during start-up, run, and shut-down conditions. These states determine the status of each controller, motor, block valve, and alarm for the unit operation.

State-based alarm (mode-based alarms): An alarm that is automatically modified or suppressed based on process state or conditions



Value Proposition Summary

1. Improved safety performance - Automating procedures and utilizing state awareness for alarm management the workload on the operational staff is reduced during abnormal conditions. This enables more effective responses to abnormal conditions and reduces the probability of human error.

2. Improved reliability - Automated procedures can aid in maintaining maximum production rates, minimizing recovery time and avoiding shutdowns.

3. Reduced losses from operator errors - Automating procedures enables operations staffs to standardize their operating procedures. A standardized approach both reduces the likelihood for human error contributing to abnormal conditions and also lessens the time required to recover from abnormal conditions.

4. Increased Production by improving startups and shutdowns - Operations may benefit by achieving faster, safer and more consistent startup and shutdown operations of processes by automating the procedural steps.

5. Increased Production and Quality via efficient transitions - Most operational requirements staffs require process transitions from one condition to another during normal operating conditions. Automating procedures enables operations to accomplish transitions with reduced variability and in less time.

6.Reduced losses through improved responses to disturbances. Automated procedures can be prepared for potential disturbances, reducing the time to return operations to desired steady state conditions.

7. Improved Operator Effectiveness - Reduces the time an operator spends carrying out repetitive tasks and enables them to focus on process optimization and avoidance of abnormal conditions.

8. Higher Retention and Improved Dissemination of Knowledge - Automated procedures can be used to retain the knowledge of the process. This is especially important for procedures that are not executed frequently.

9. Improved Training - As knowledge & best practices is captured into automated procedures, the resulting documentation and code can be used as material for training new operators on the process.

10. Improved insight into the process - By recording system and operator actions with procedural automation, users have the opportunity to review and analyze data from every startup, shutdown, process transition, and abnormal condition recovery.

11. More efficient change control - A structured, modular approach to procedural automation minimizes production change control costs.

12. Reduced costs of enterprise adaptation - Once the overall and standard structure for sequence control has been defined and implemented, it can be modularized into libraries of code/procedure/ documentation to allow easy cloning/replication from one area or site to another.

13. Common definitions and terminology - Operational staff have a common set of terms with uniform definitions to describe the requirements for improvements and changes in procedural automation. This improves communications with EPC's, system integrators, automation suppliers, and internal company departments.

Provided by YOKOGAWA

ISA-106 Procedure Automation for Continuous Process Operations Technical Report 1 Summary 2 of 2

Examples of Physical Model Level Names

Physical Model Level	Level Name Definition	Examples
Unit	An Equipment grouping to carry out one or more processing activities such as reaction, crystallization, or distillation. It combines all necessary physical processing and control process equipment required to perform those activities as an independent process equipment grouping.	-Reactor -Distillation Column -Wed End -Contactor -Dry End -Separator -Pulper -Dry/Wet Oil Tanks -Filters -LACT Unit -Compressor -Pipeline pumps -Well Head -Hydrocyclone -Reboiler -Floatation Cell
Equipment	A collection of physical devices and process hardware that performs a finite number of specific processing activities	-Pump set -Compressor -Control loop -Feed system -Analyzer and sampling system
Device	The lowest level of physical hardware in the Physical Model in a Process. Examples include control valves, instrument, and motors	-Analyzer -Pump -Control valve -Temperature transmitter

An Automation Style is a consistent approach to designing and implementing Implementation Modules. Automation Styles provide Operators with consistency in the use of automated Procedures and can lower engineering costs by providing a framework that fosters re-use of procedural logic.

There are any number of Automation Styles that cover a spectrum of operating styles from no automation resulting in full Manual Operation to complex automation with fully automated operation.

An important aspect of an Automation Style is how much process knowledge is to reside in the Automated Procedures. More complex Automation Styles contain more process knowledge and can therefore Perform more normal and abnormal process conditions automatically thereby providing more consistent and efficient operation of the Process. Simpler Automation Styles contain less process knowledge so the Operator must Perform more Procedures and more closely monitor the Process. Three examples of Automation Styles are:

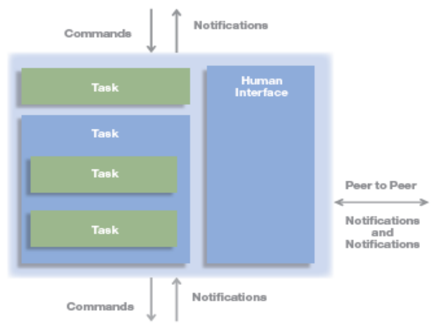
Manual Automation Style – The Operator is responsible for the Command, Perform And Verify work items. The Operator may use the BPCS console or local indicators and actuators in the field, but there is no computerized Procedural Automation involved.

Computer Assisted Automation Style - Implementation Modules are considered computer assisted when the Operator and computer share responsibility for the Command, Perform And Verify work items. The amount of automation used may vary.

Fully Automated Automation Style – Implementation Modules are considered fully automated when the computer is responsible for the bulk of the Command, Perform and Verify work items.

Implementation Modules

Implementation Modules - Consist of a set of ordered tasks. Tasks may contain other tasks. Each task provides plant operations with step by step instructions for accomplishing the actions that are to be performed and their verification. From an operational perspective a procedure is one or more implementation modules. Figure below shows the components and inputs/outputs of an implementation module.

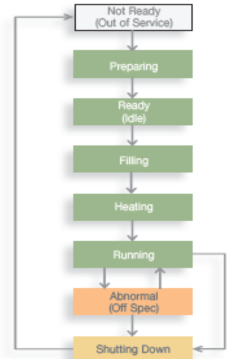


Process States

Process States- States-Use of Process States is one method that gives a framework for organizing automated Procedures as more complex Automation Styles are used.

When using Process States, Procedural Automation is centered on a major piece of process equipment, usually a Unit. States are defined based upon the physical conditions the process equipment passes through to ensure safe and efficient operation.

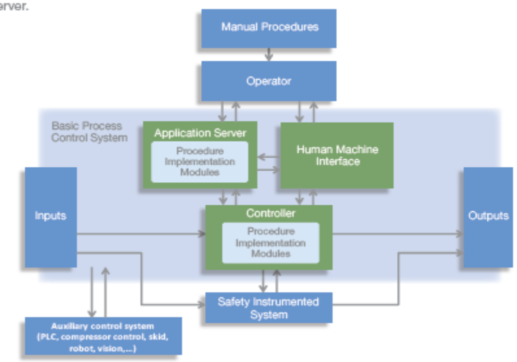
The process state concept can be expanded to implement State Based Control.



Example of State Transition Diagram

Mapping Implementation Modules to BPCS Components

Mapping Implementation Modules to BPCS Components - Implementation Modules are run in a BPCS controller or a BPCS application server. Figure below provides a conceptual diagram of a BPCS and shows Implementation Modules in the controller and application server.



When a Task's Implementation method results in a Task that cannot be run by a computer it is considered a manual Procedure and are beyond the scope of the BPCS. Some of these Implementation Modules may be performed by a field Operator using a printed or handheld electronic checklist. The decision to run Implementation Modules in an advisory computer or a controller is based upon safety, risk, cost and benefit.

An Implementation Module requiring fast time responses such as sequencing a set of pumps and valves with critical timing may be implemented in a real-time controller. Other Implementation Modules that do not require as high a speed response or involve more Operator interaction may be implemented in a PC/server based computer.

Criteria for deciding the appropriate location of an Implementation Module include:

- Procedure implementation cost
- Procedure lifecycle cost
- Time responses required by the Process
- Health, safety and environmental risk
- Operating philosophy for Operator interaction with Procedures
- Availability of instrumentation to perform automated tasks
- Desire for incremental implementation of automated Procedures

Three work items are required for the Implementation Module to Execute

Command – The trigger to initiate the Implementation Module. When received this causes the Implementation Module to Perform its Tasks. A Command may be issued by an Operator or another Implementation Module.

Perform – The execution of a Implementation Module's Tasks. A Task may use any type of Implementation Method, but ultimately the Task is Performed by an Operator or a computer.

Verify - Verification that the Implementation Module's Tasks were Performed successfully or failed. The verification may use any type of Implementation Method, but ultimately the verification is Performed by an Operator or a computer.

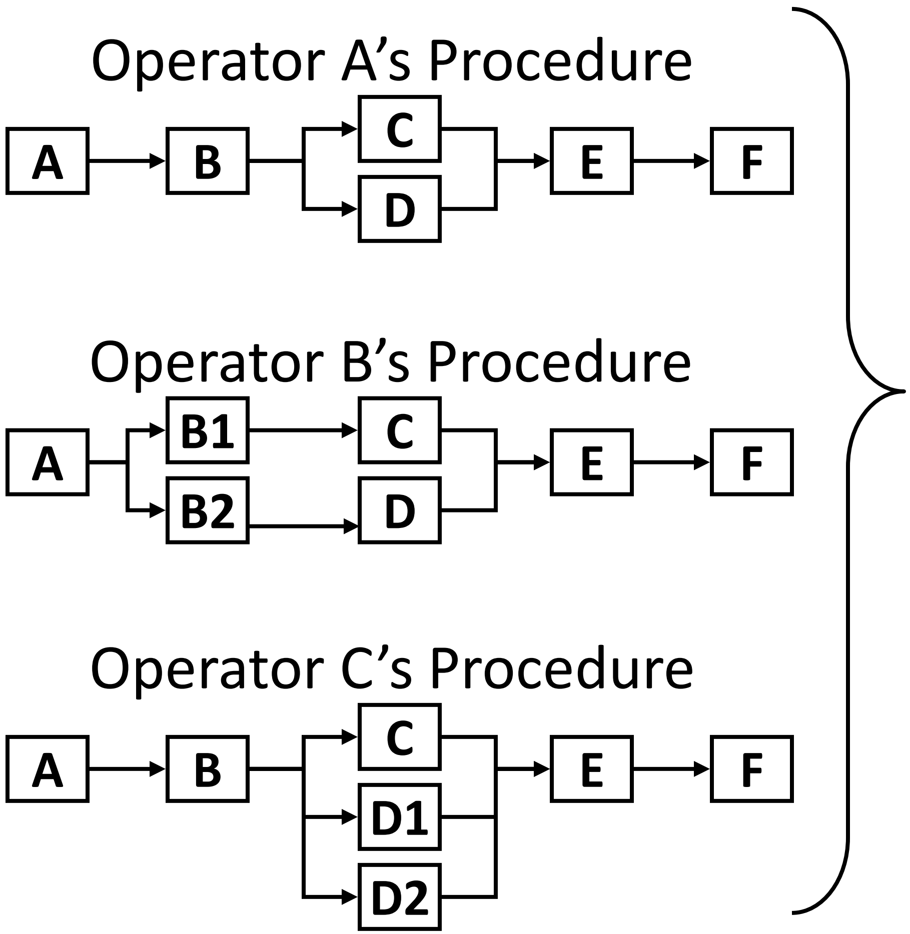
Typical Targets for Automated Procedures

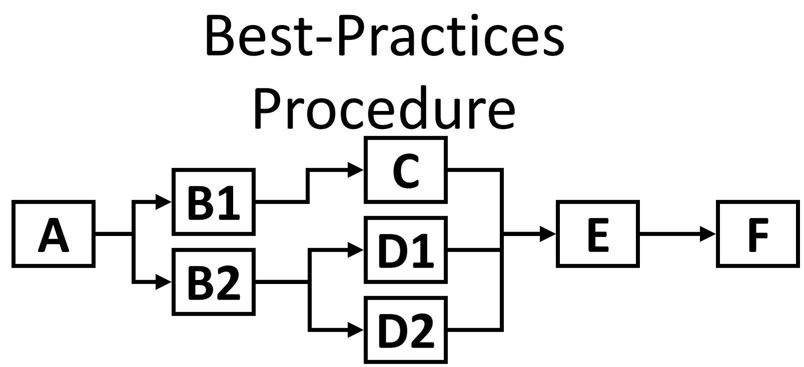
- Refining
  - Transition Management for Crude Switchover
  - Regeneration
- Petrochemical
  - Startup / Shutdown
  - Transition Management for Grade Changes
  - Line Switchover
  - Cleaning
- Polymers
  - Grade change
  - Switchover
- Furnaces
  - Decoking

Benefits of Using Procedure Automation

- Consistent operation
- Improved safety performance
- Increased production by improving startups and shutdowns
- Increased production and quality via efficient transitions
- Improved operator effectiveness
- Improved insight into the process
- Reduced losses through improved responses to disturbances.
- Reduces risk and losses due to fewer operational errors
- Ensures & documents compliance with procedures

Aim to Capture Best Operating Practices



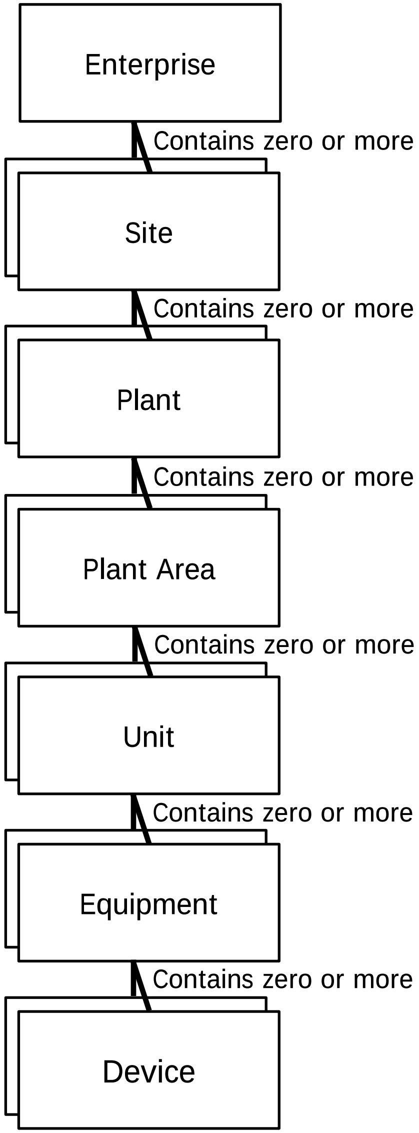


- Capture the Best Procedure from all operator inputs
- Combine into a Best Practice Procedure

Which Procedures Should Be Automated?

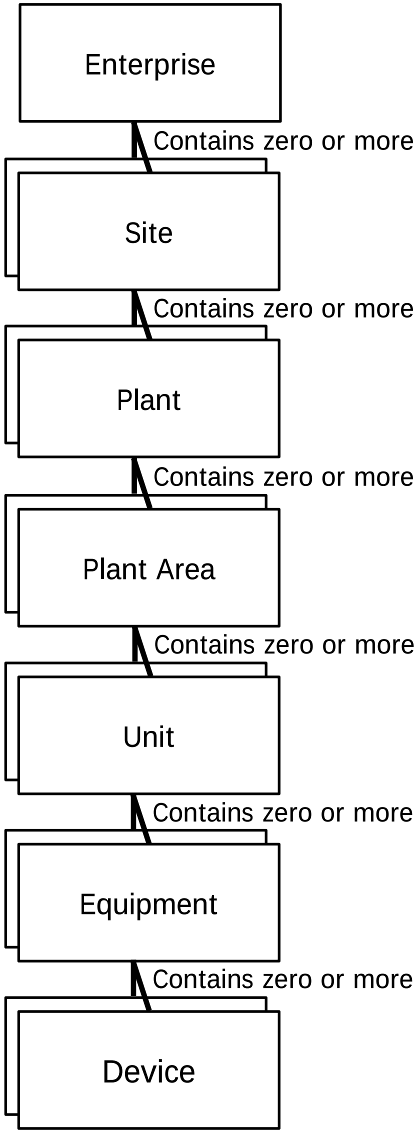
- Automating a procedure requires
  - Review and sometimes updating the current procedure
  - Engineering design, implementation and testing
  - Operator acceptance
- Base the decision upon what your business justification is
  - Where is your value
- Possible criteria
  - Risk reduction / Safety improvement
  - Consistent operation
  - Critical, low frequency procedures like startups and shutdowns
  - Complex procedures
  - Opportunities for improved profitability, as with transitions
  - Highly repetitive and low value tasks performed by the operator to free up their time for higher value work
- What is your experience level with automated procedures?

Physical Model



- Organizes physical equipment into a hierarchy
- Foundation of the ISA-106 work
  - Each item in the model can have procedures
- Provides a common set of terms and equipment levels for companies & industries to map their terms to
  - Common terms enable products and people to work more efficiently with different owner/operators.

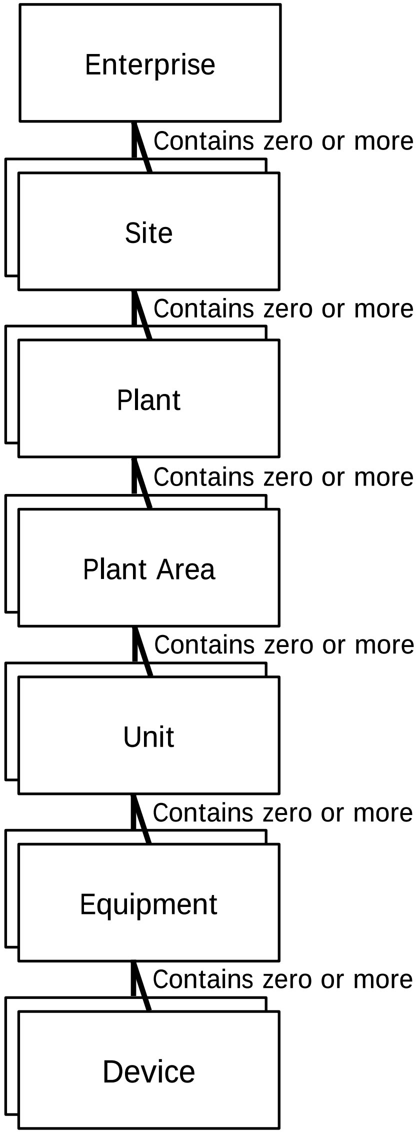
Physical Model - Today



Results of committee owner/operator terminology

ISA-106	Chemical Company	Oil Refinery	Offshore Oil Platform Example 1	Offshore Oil Platform Example 2	Paper Industry
Enterprise	Enterprise			Field	
Site	Site	Site	Platform	Platform	
Plant	Plant	Complex		Package	Mill
Plant Area	Area	Plant			
Unit	Unit	Unit			
Equipment	Equipment				
Device	Device	Device			

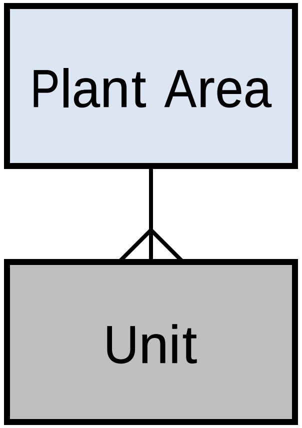
Physical Model - Examples

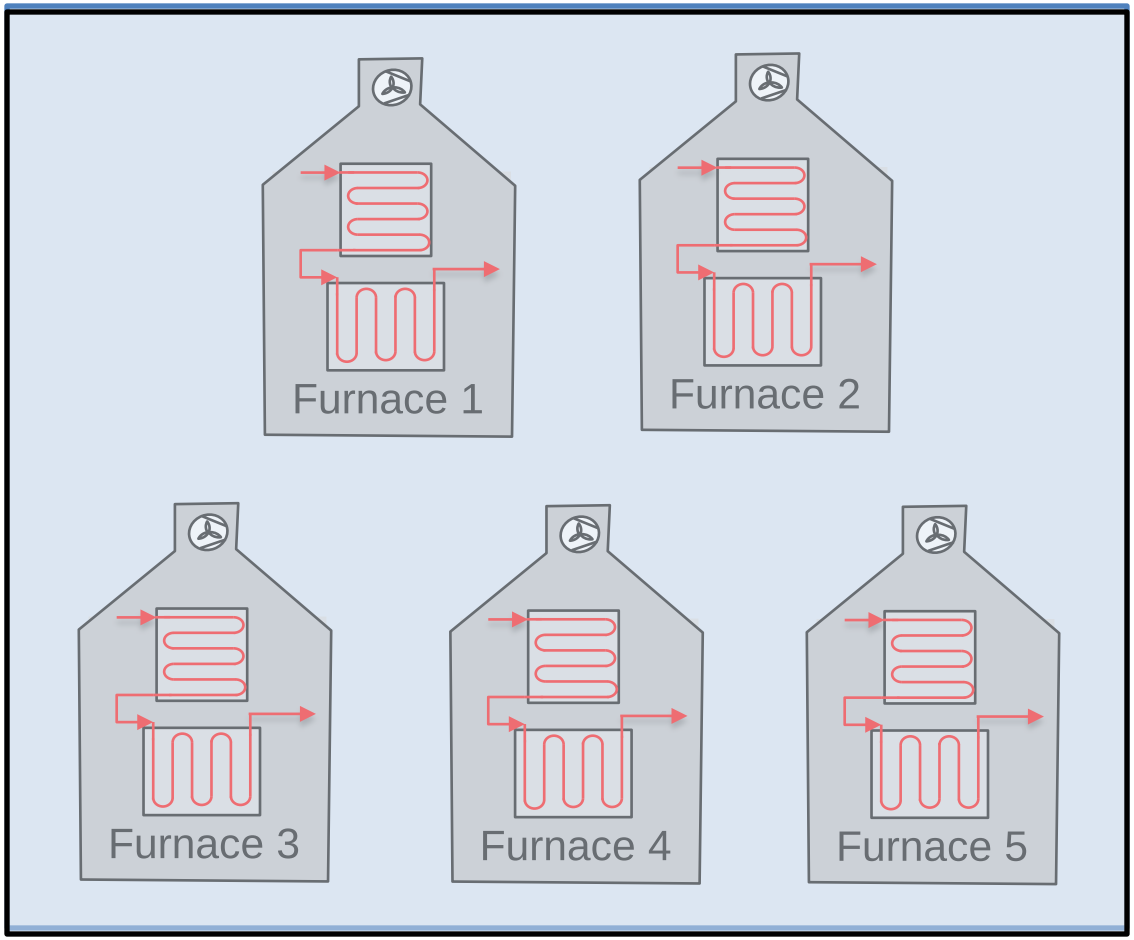


Results of committee owner/operator terminology

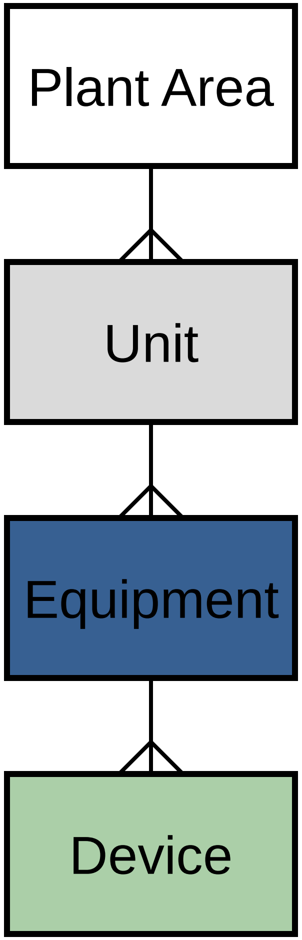
Enterprise	Corporate	Division	Business Unit		
Site	Complex	Train	Facility	Verbund	Field
Plant	Platform	Train			
Plant Area	Separation Injection	Train Utilities	Sub-sea Water Treating	Gas Compression Production Manifold	Dehydration Wells
Unit	Separator	Dry/Wet Oil Tanks	Pipeline Pumps	Hydrocyclone	Compressor
Equipment	Pump Set	Feed System	Reboiler	Sampling System	Compressor
Device	Control Valve	Transmitter	Pump	Analyzer	

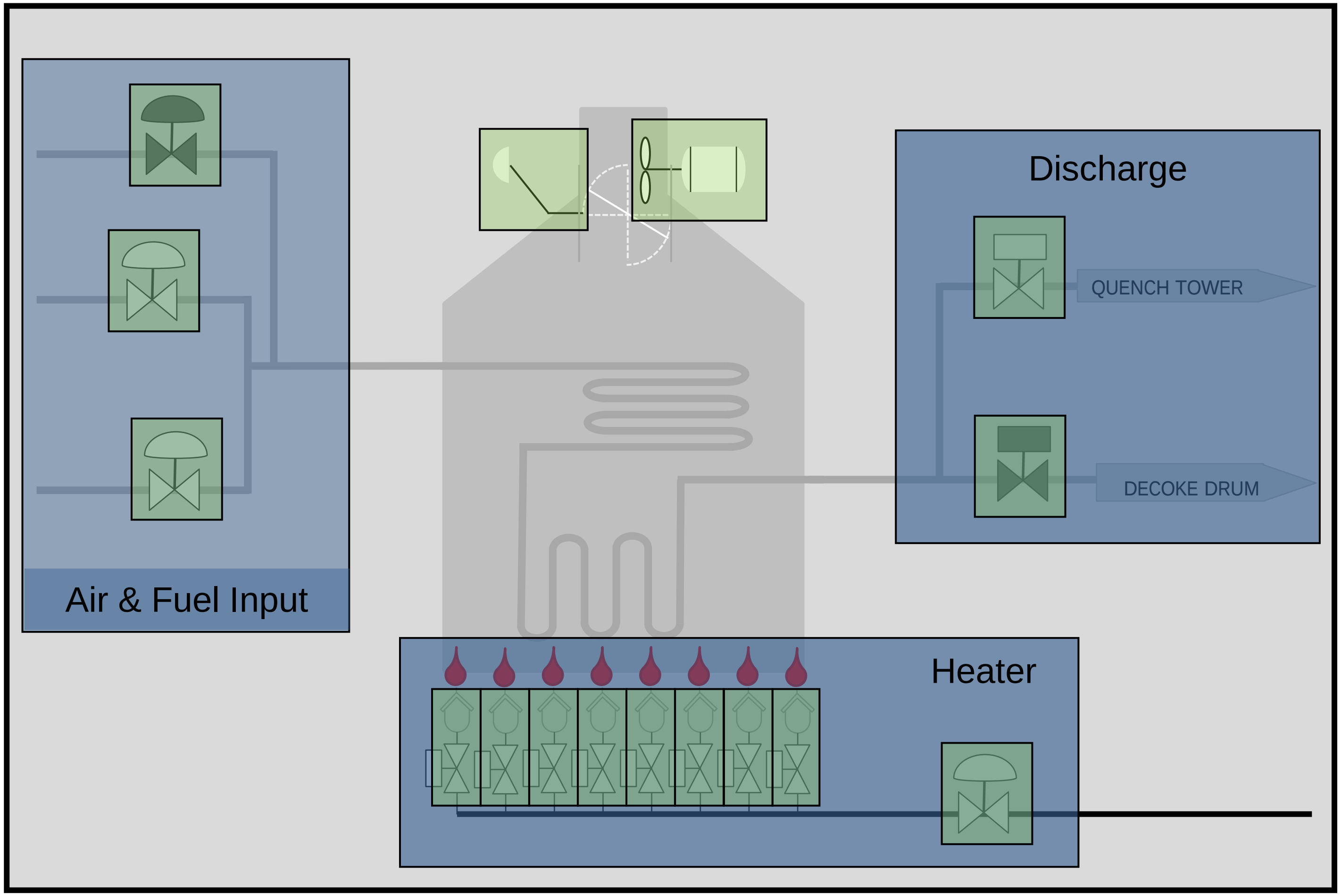
Ethylene Furnace Example



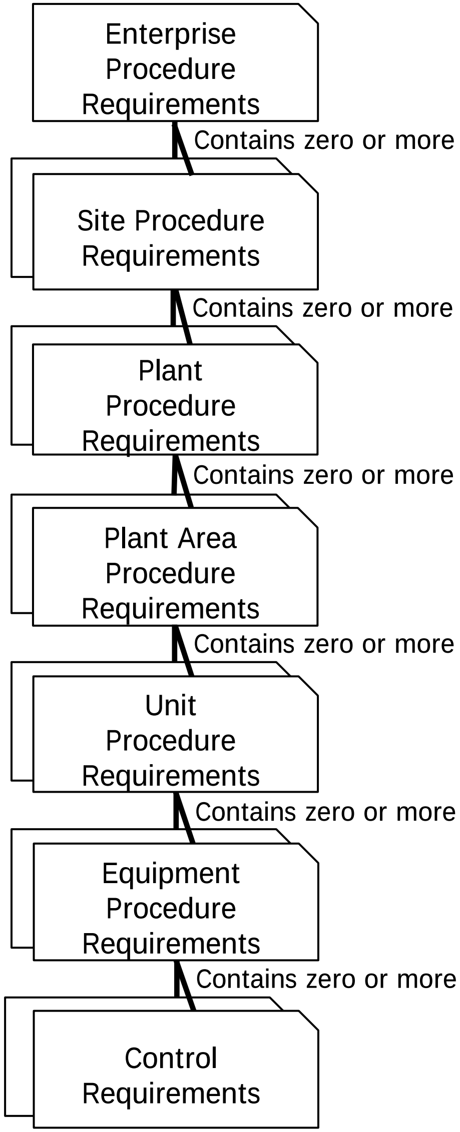


Ethylene Furnace Example





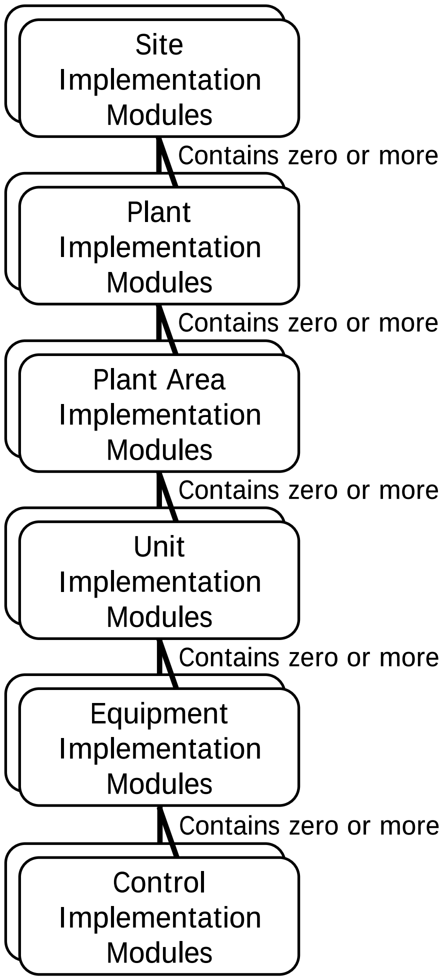
Procedure Requirements Model

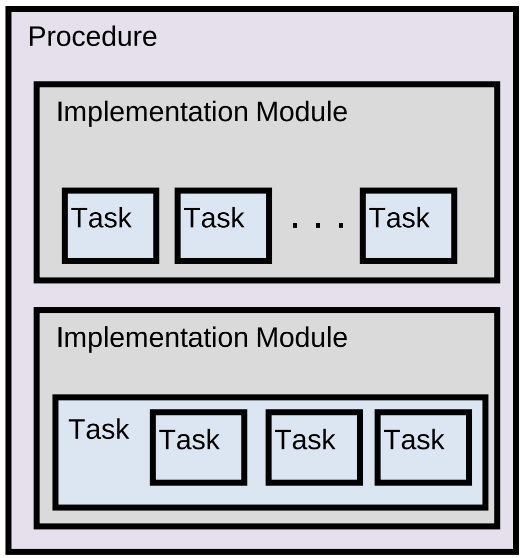


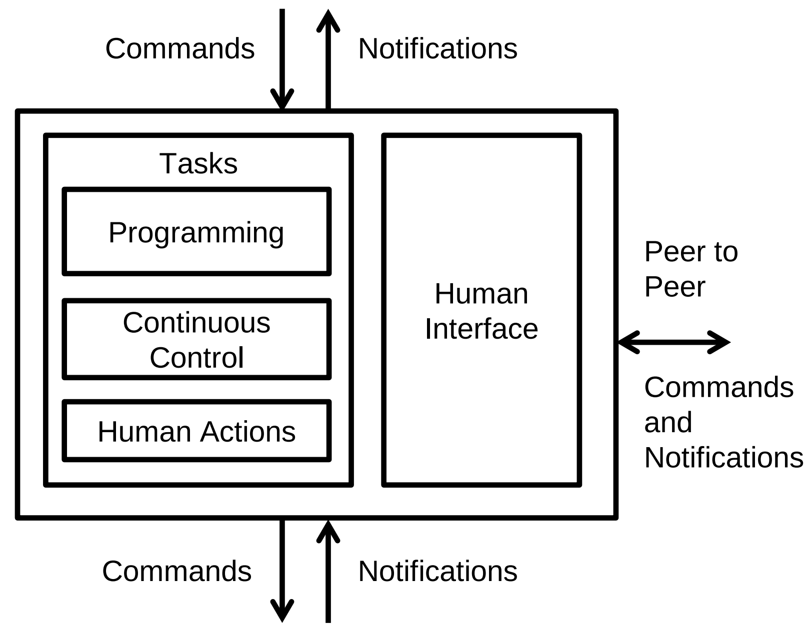
- Procedures are associated with objects in the physical model
  - Most common for units, equipment and devices
- Definition of the procedure
  - Actions that must be done to accomplish an objective
  - Functional requirement for the automated procedure

Procedure Implementation Model

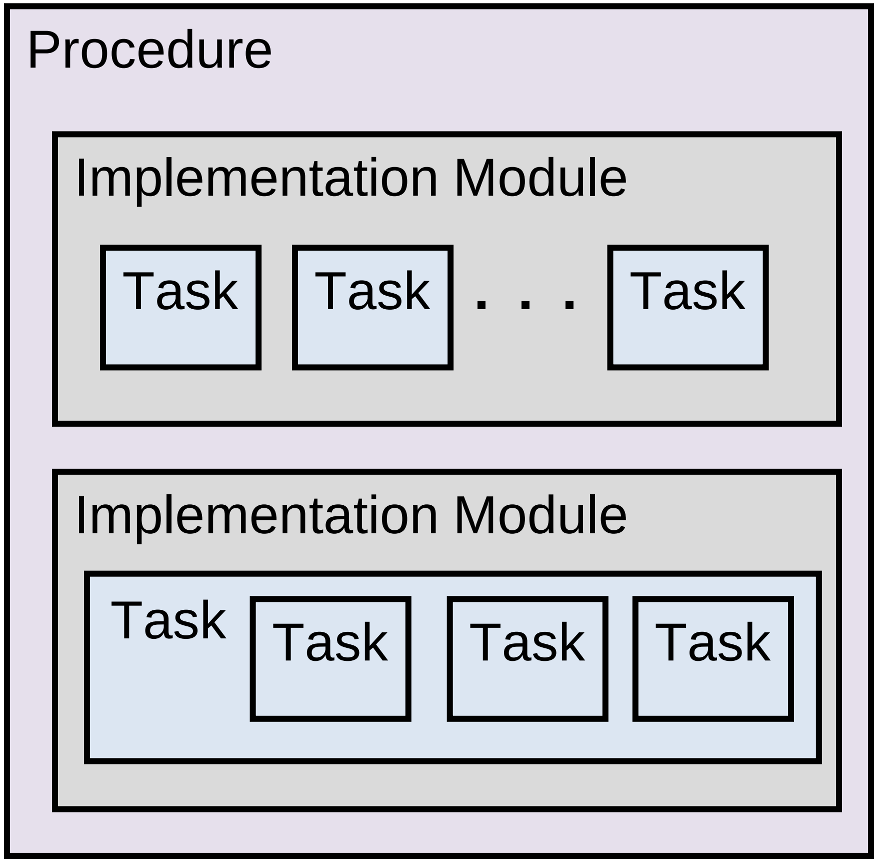
- The actual automated procedure
  - Program, function block, sequential function chart, flowchart,...
- The design of implementation modules is an engineering process





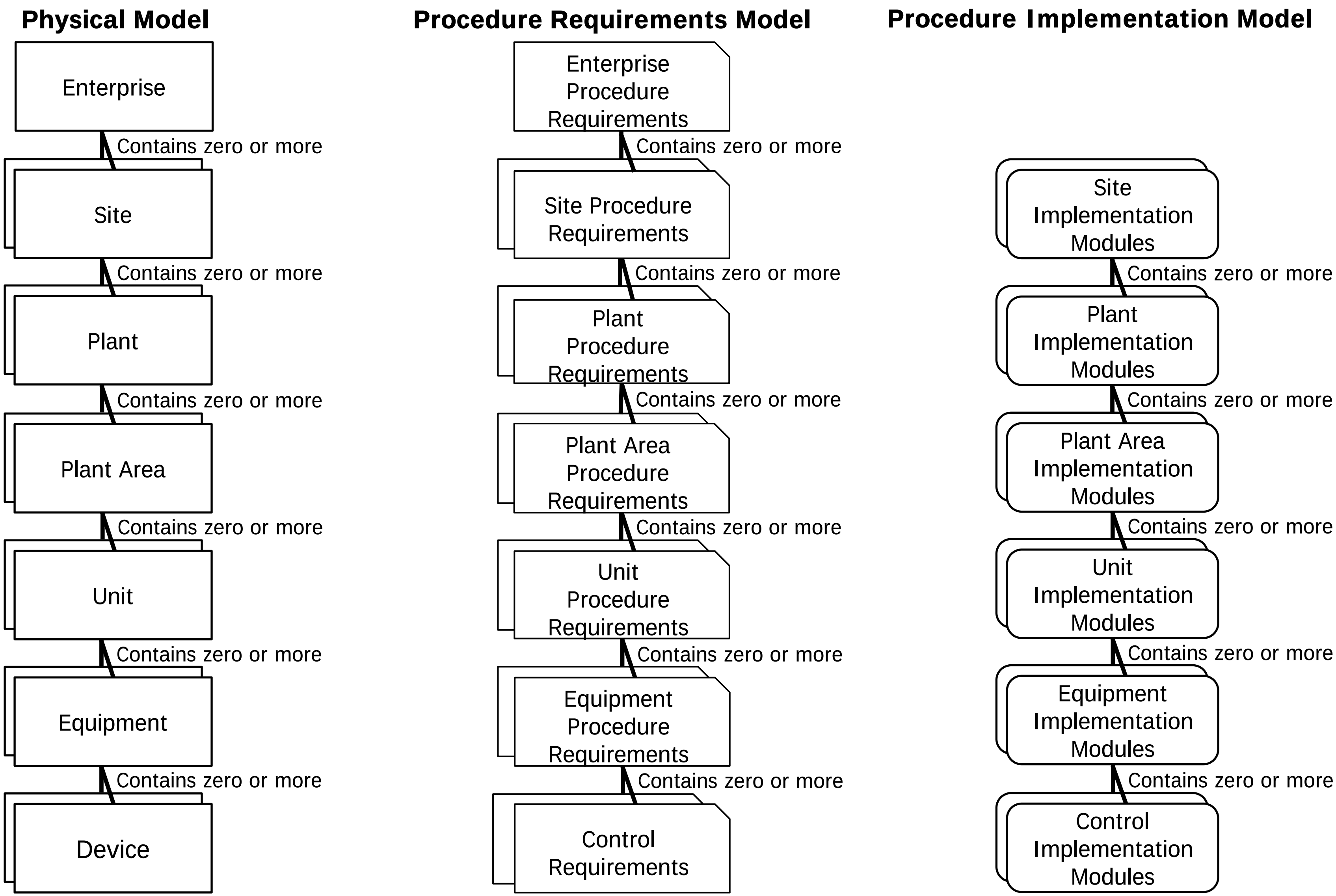


Procedure Execution



- Each Procedure, Implementation Module & Task has 3 execution work items
  - **Command** – Trigger
  - **Perform** – Actions
  - **Verify** – Success/Failure
- Computer/Human Mix
  - C-P-V work items can be done by a computer or human

Command ›››› Perform ›››› Verify


Physical Model
Procedure Requirements Model
Procedure Implementation Model
Enterprise
Contains zero or more
Site
Contains zero or more
Plant
Contains zero or more
Plant Area
Contains zero or more
Unit
Contains zero or more
Equipment
Contains zero or more
Device
Enterprise Procedure Requirements
Contains zero or more
Site Procedure Requirements
Contains zero or more
Plant Procedure Requirements
Contains zero or more
Plant Area Procedure Requirements
Contains zero or more
Unit Procedure Requirements
Contains zero or more
Equipment Procedure Requirements
Contains zero or more
Control Requirements
Site Implementation Modules
Contains zero or more
Plant Implementation Modules
Contains zero or more
Plant Area Implementation Modules
Contains zero or more
Unit Implementation Modules
Contains zero or more
Equipment Implementation Modules
Contains zero or more
Control Implementation Modules

Operator Notifications

Operator Notification Types	Operator is expected to take an action	Operator might need to be aware but is not required to take action
Arises from an abnormal process or equipment situation (ISA-18.2)	**Alarm**	**Alert**
Arises from a normal situation (ISA-106)	**Prompt**	**Status Notification**

ISA106 has worked with ISA18.2
which has published an alarm management standard

Automation Styles

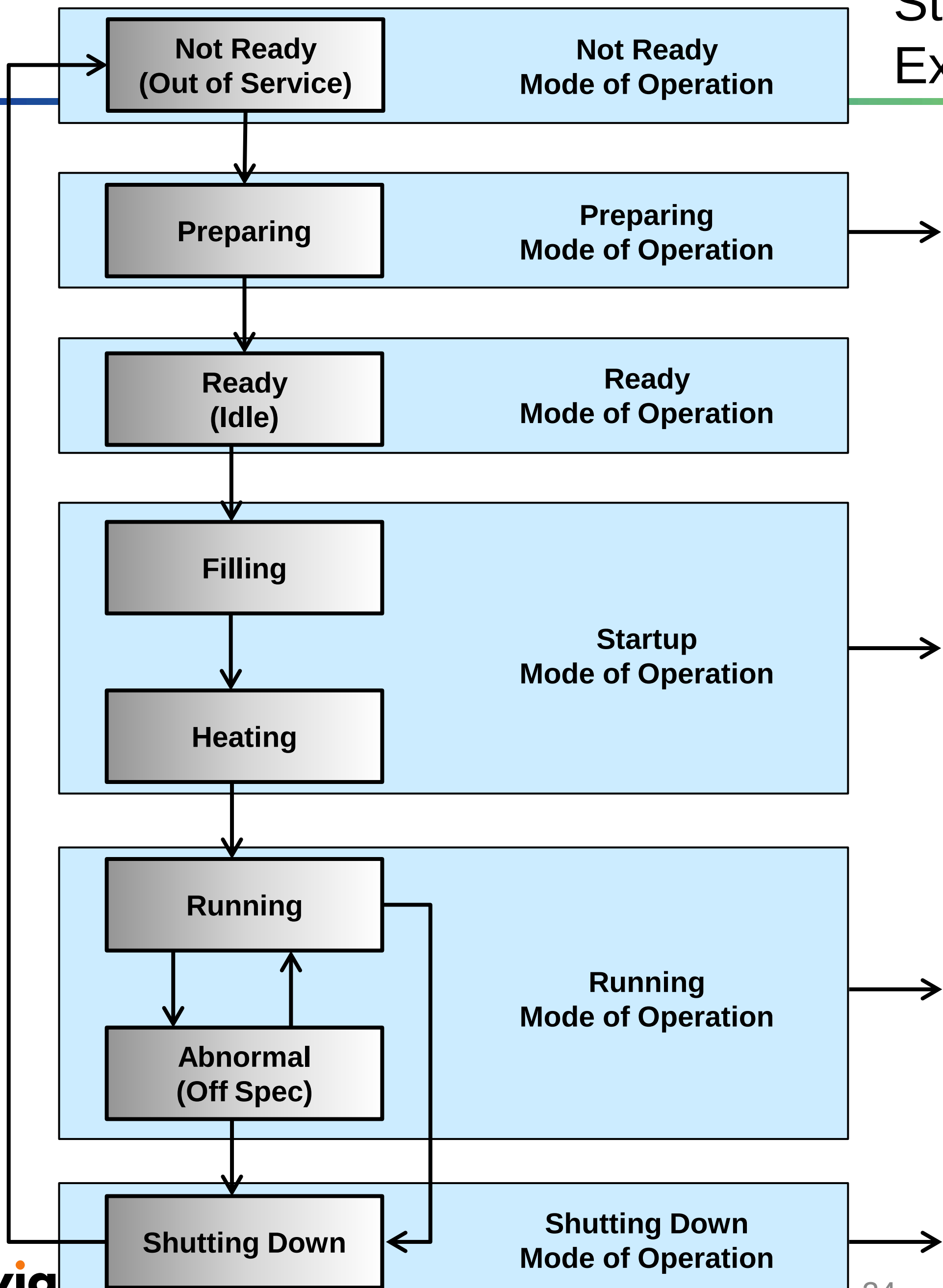
- Examples of Automation Styles
  - Organization of the structure of the implementation module such as using procedure sections or process states
  - Use of computer or operator action for command, perform, verify
  - Amount of precision used for verification
  - Human machine interface philosophy
  - Degree of automation from minimal automation to complex automation

Example Automation Style	Example Description
Manual	The Operator is responsible for the command, perform and verify work items, minimal automation is used
Computer Assisted	Operator and computer share responsibility for the command, perform and verify work items. The amount of automation used may vary.
Fully Automated	Computer is responsible for the bulk of the command, perform and verify work items.

State-based Control

- A plant automation control design technique that assigns process states and defined transition procedures
  - Most effective at the unit level
  - Provides a high degree of automation
    - Startup, Shutdown, Transitions, Abnormal Situation Responses

State-based Control Example

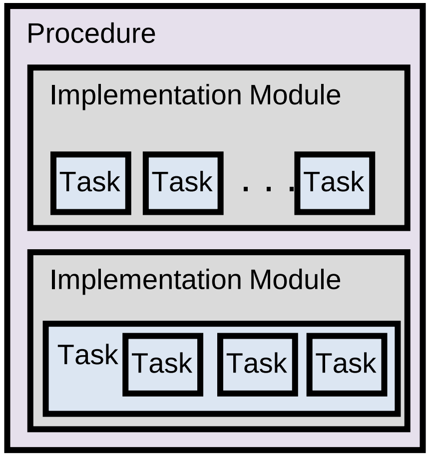


Prepare Procedure

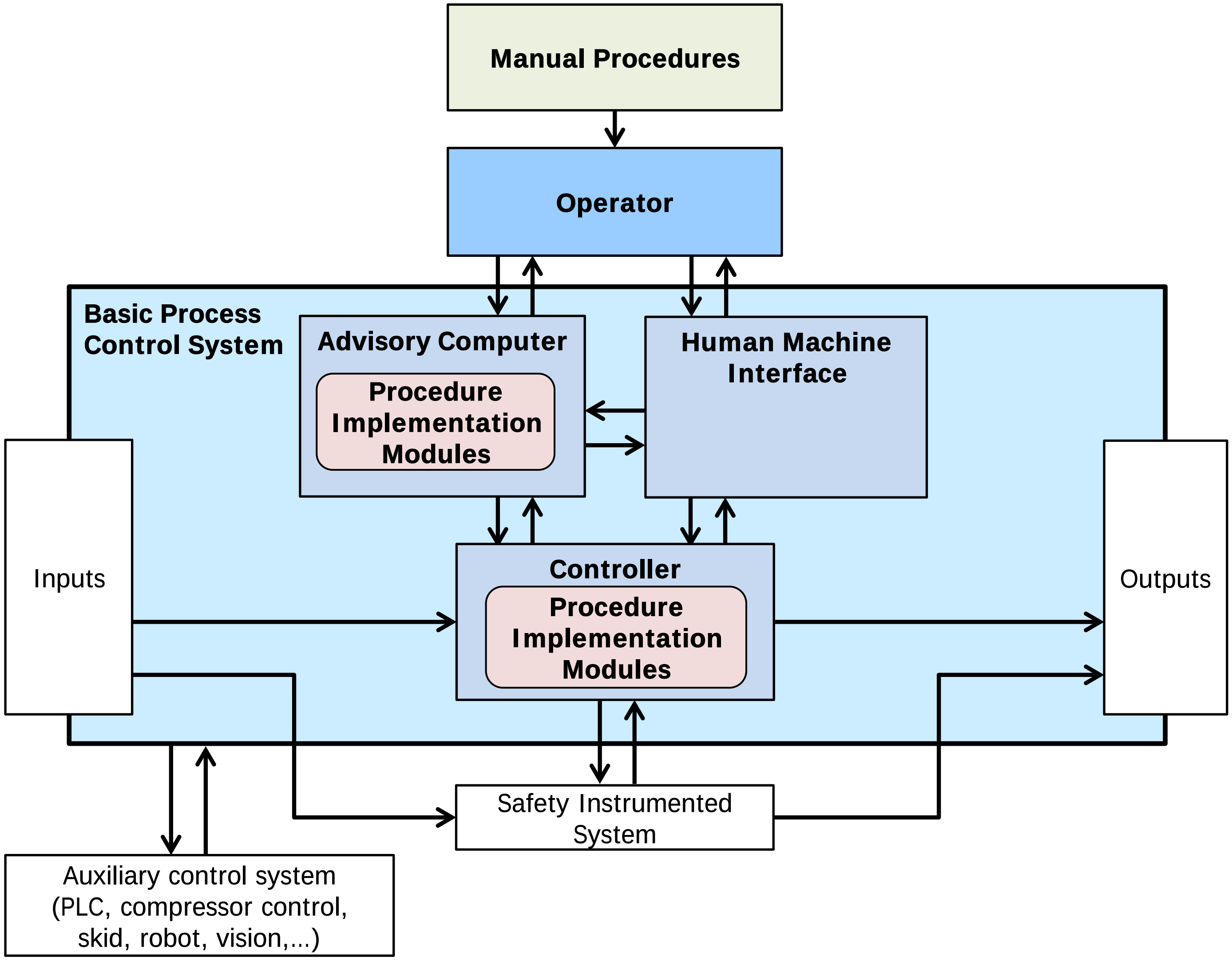
Startup Procedure

Production Rate of Change Procedure
Abnormal Condition Handling Procedure

Controlled Shutdown Procedure

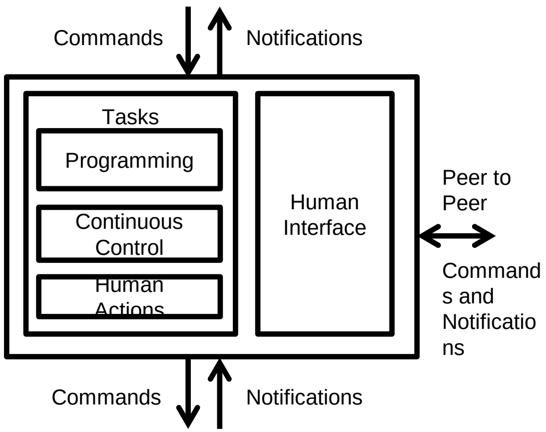


Control System Architecture



Implementation Modules Location

- Location is based upon safety, risk, cost and benefit.
- Criteria include:
  - Risk
  - Response time requirements
  - Operating philosophy for operator interaction with procedures
  - Availability of instrumentation to perform automated tasks
  - Implementation cost
  - Procedure lifecycle cost
  - Desire for incremental implementation of automated procedures



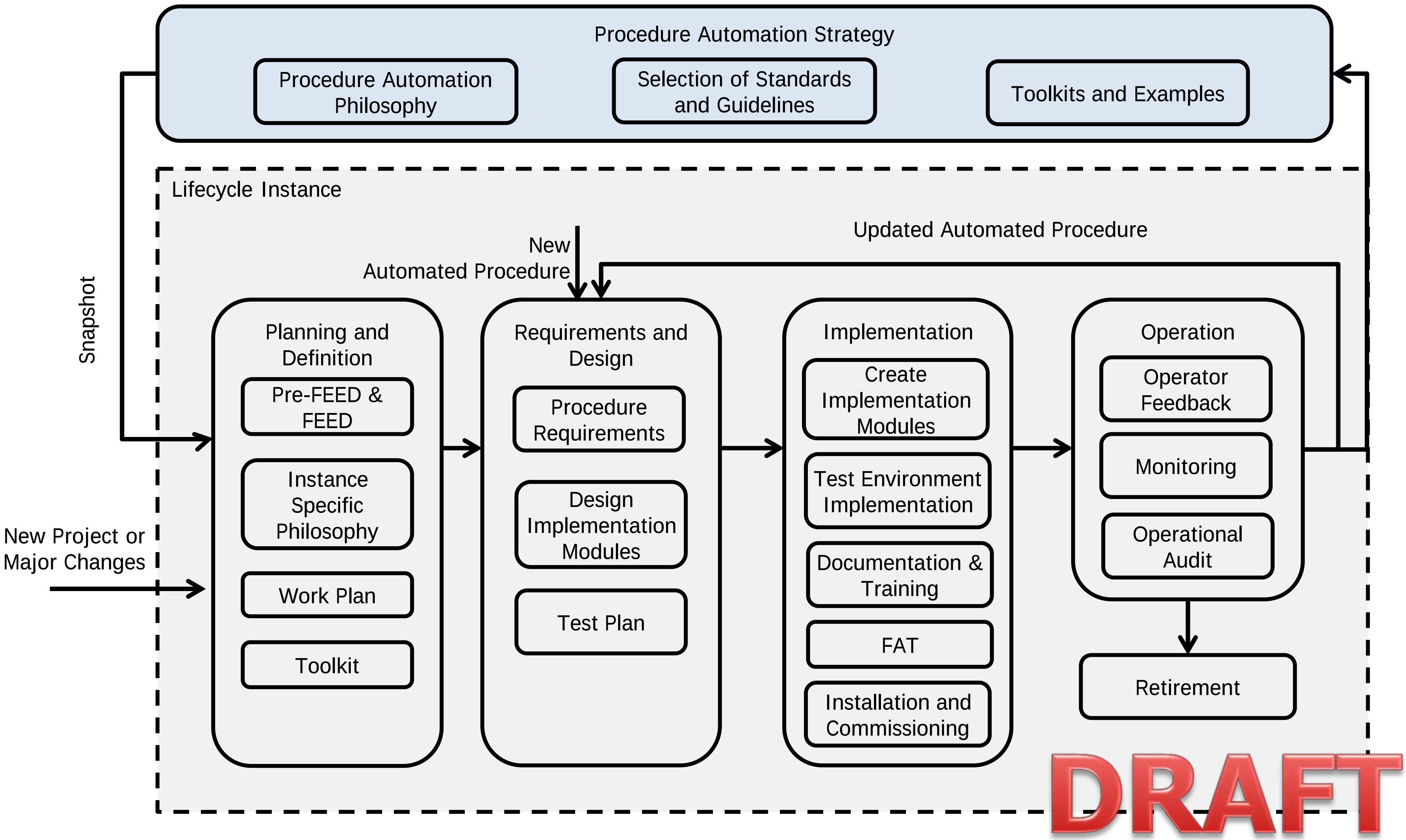
ISA-106 Technical Report 2

Procedure Automation for Continuous Process Operations – Work Processes

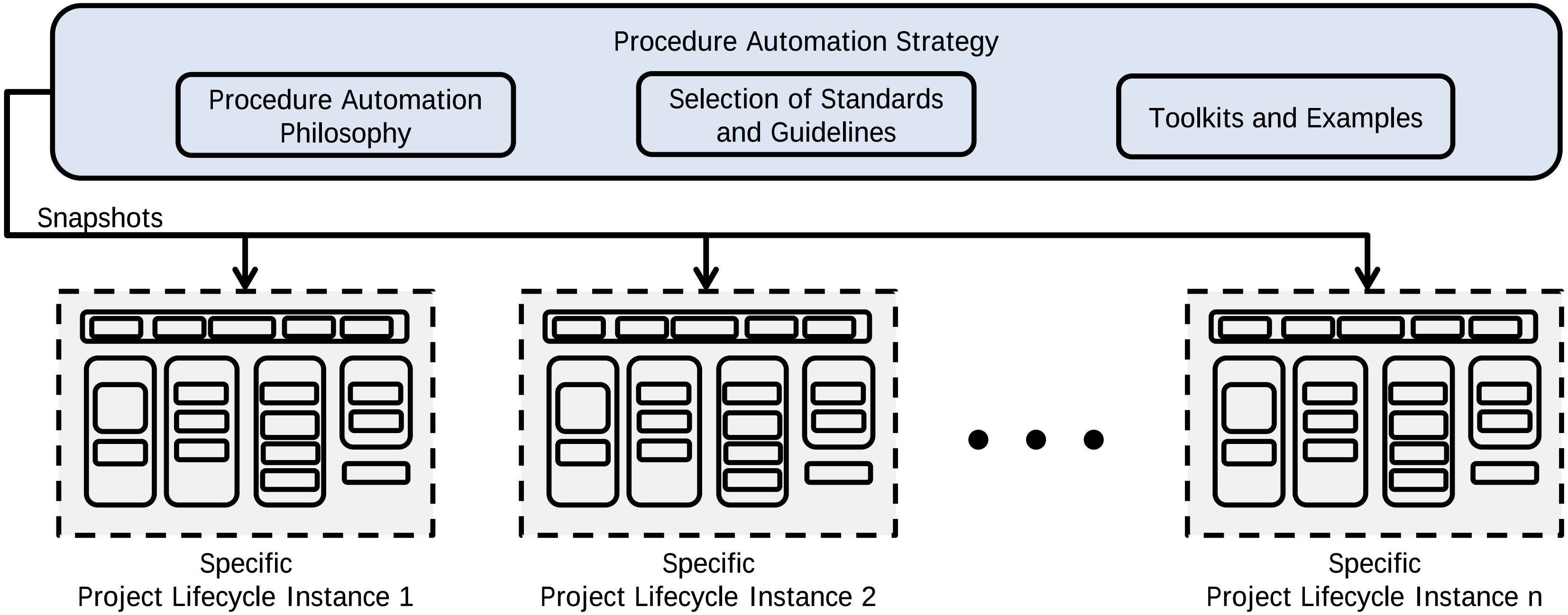
Technical Report 1: Models and Terminology

- States committee's current thinking on how to organize and approach procedure automation
- Models
  - Concepts to give the industry a common mental model for automated procedures
- Terminology
  - Definitions to give the industry a common language for automated procedures

Automated Procedure Lifecycle Reference Model



Snapshot for each Lifecycle Instance

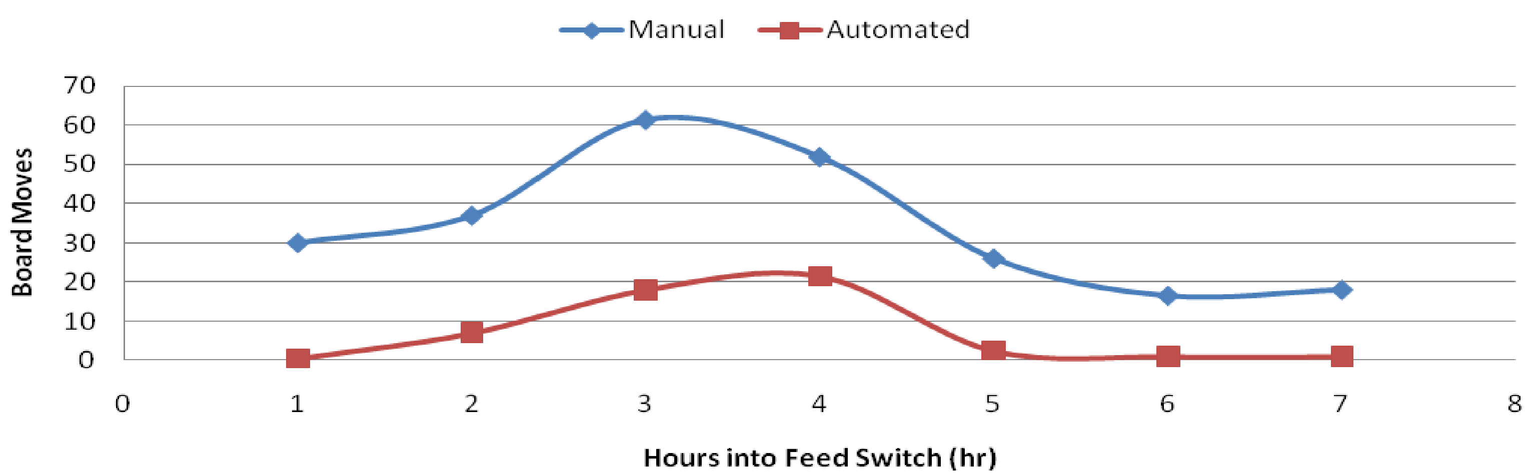


DRAFT

Examples

Refinery – Transition Automation

- Opportunity to automate a feed switch
- Benefits:
  - Operator workload reduced by 60%
  - A 42% reduction in product yield loss
  - Increased feed throughput during transition by 18%
  - Reduced feed switch transition time by 36%

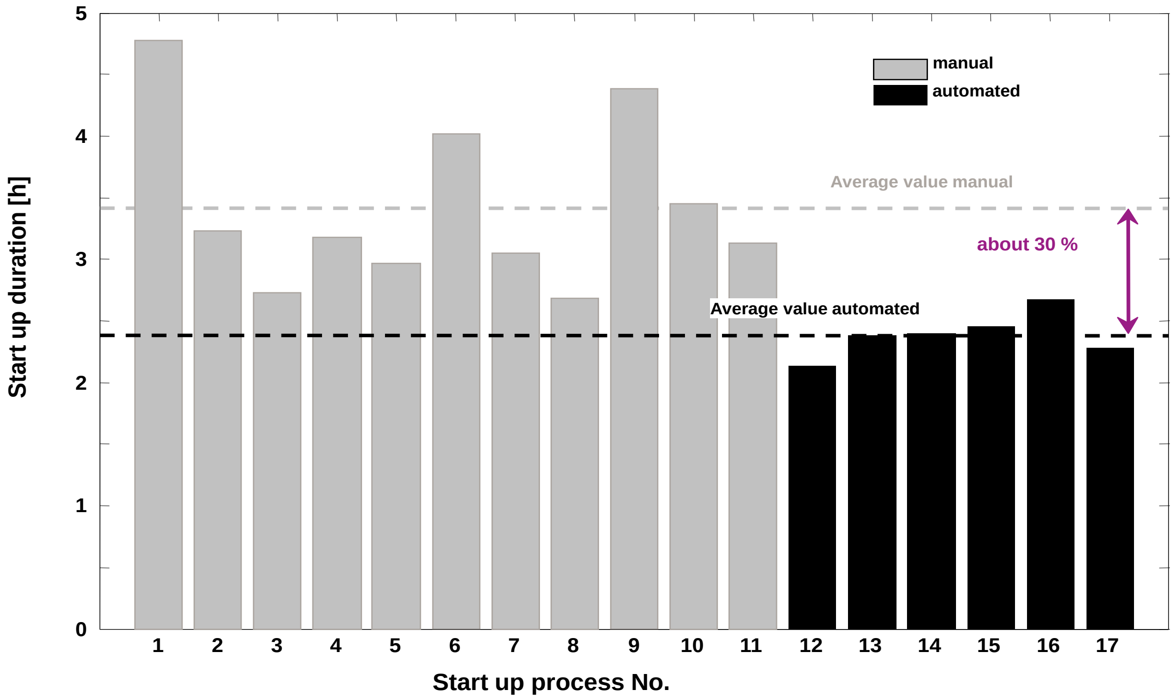


Console Operator Moves per Hour Comparison from paper "Improving Refinery Unit Transitions Using Process Automation Technology in a base Oil Hydroprocessing Facility. AIChE Spring 2011 Robert M. Tsai, Chevron, Richmond, CA

Acrylic Acid Production

Start up procedure of a column

EVONIK INDUSTRIES



- Start-up time to steady state was reduced by 30%
- Less variability in start-up time
- Reactors able to come on stream 70% faster
- Process safety margins, of explosive conditions during startup, were significantly increased

NPRA 2011: AM-11-67 New Developments and Best Practices in Automating Procedural Operations for Continuous Processes

Automate Ramp Up of Production Wells

- Define the opportunity
  - Consistent Well Ramp Up procedure will minimize the amount of time required to get to full production
  - Remove the variance between crews and experience level of operators
- Measure how Currently Executed
  - Historical data indicated that Ramp Up time was not the same for different operating crews.
  - Ramp Up time took longer than estimated and times varied significantly.
- Analyze information and determine opportunities for improvement
  - One Operator manages multiple wells.
  - Written procedure not up to date with current practices.
  - Well Choke movements based on fixed clock time.
  - Varying levels of experience with more than one method used for Ramp Up.

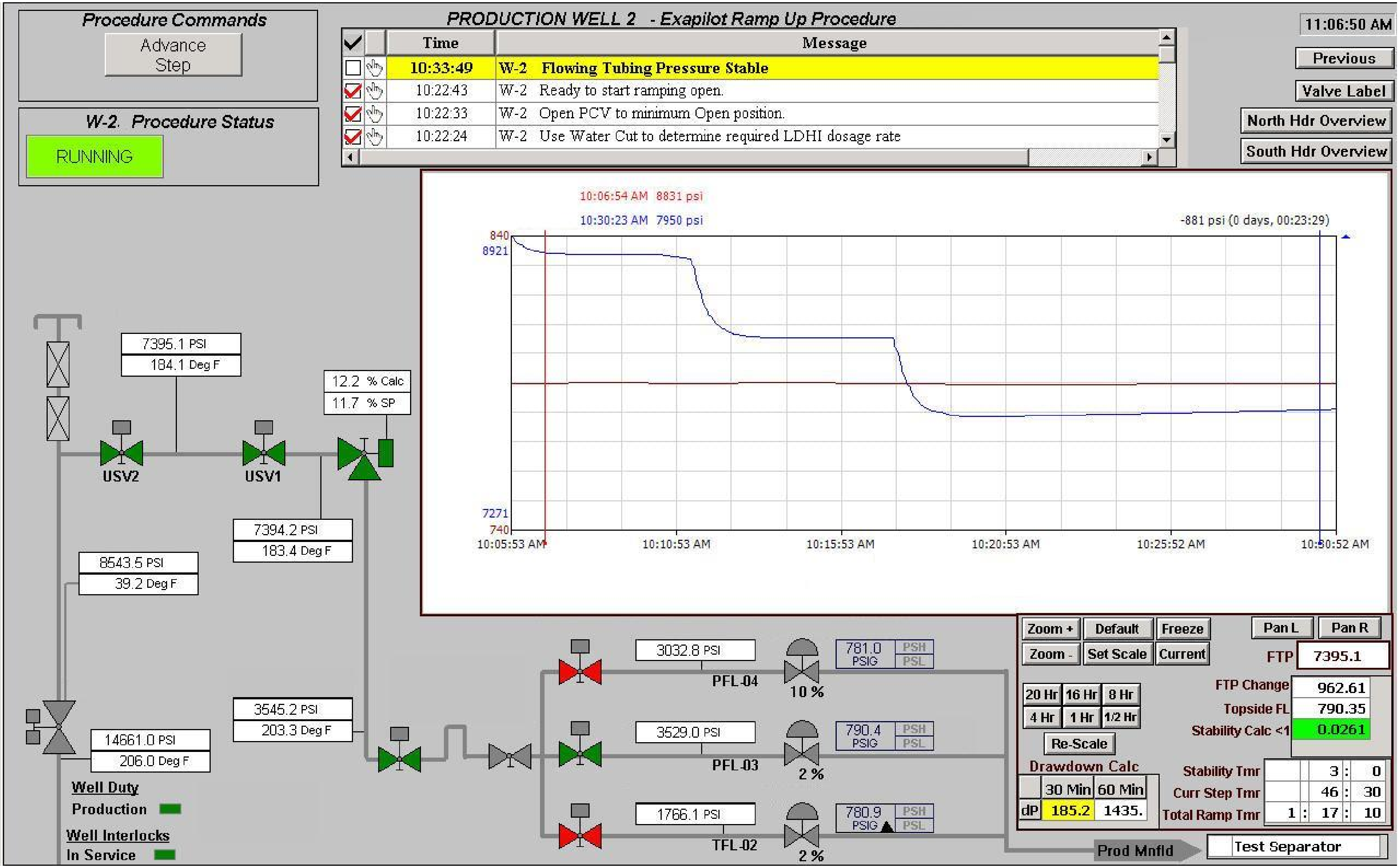
Modular Procedure Automation in Gulf of Mexico Deepwater Operations, Wayne Hawkins, Chevron at the 2012 Yokogawa Users Group Conference

Automate Ramp Up of Production Wells

- Improve the Procedure
  - Develop one updated operating procedure with Operator input.
  - Develop Exapilot procedure as a tool to aid Operator
    - Allow the Operator to easily manage multiple wells
    - Determine when to make well choke changes based on pressure stability criteria rather than a fixed time.
    - Dynamic simulator used to validate procedure steps.
    - Exapilot integrated into 3rd party process control system.
  - Exapilot procedure will leverage the knowledge of the experienced Operator so that new Operators are able to achieve improved results.
- Control the Process to Ensure Repeatability
  - Implement Exapilot Modular Automated Procedure in operating environment
  - Training of Operators on new procedure. Operators should understand how the automated procedure makes decisions and executes steps.
  - Monitor results and develop metric to monitor performance.

Modular Procedure Automation in Gulf of Mexico Deepwater Operations, Wayne Hawkins, Chevron at the 2012 Yokogawa Users Group Conference

Well Ramp Up Operator Screen for Drill Center



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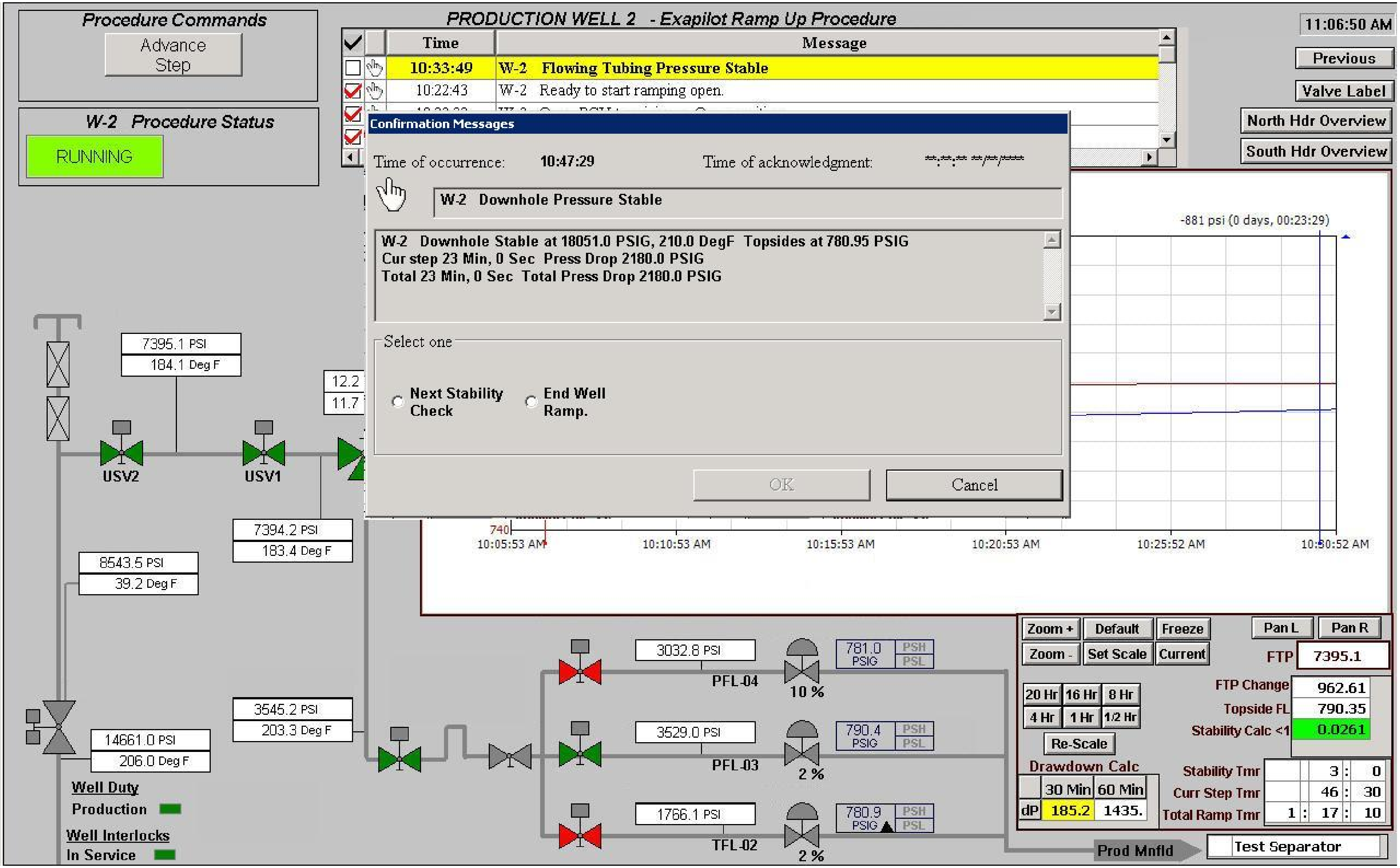
Modular Procedure Automation in Gulf of Mexico Deepwater Operations, Wayne Hawkins, Chevron at the 2012 Yokogawa Users Group Conference

Well Ramp Up Operator Screen for Drill Center



Modular Procedure Automation in Gulf of Mexico Deepwater Operations, Wayne Hawkins, Chevron at the 2012 Yokogawa Users Group Conference

Unit Based Modular Design Concept

"One Unit Procedure" for Multiple Wells

Well # 8105

Well # 8106

1 Initialization
2 SSESD
3 ESD
4 BVSD
n End

GENERIC NAME	TAG NUMBER ACTUAL UNIT	
	QAY8105	QAY8106
PMV	PMV8105	PMV8106
PWV	PWV8105	PWV8106
XOV	XOV8105	XOV8106
PCV	PCV8105	PCV8106
CID1	CID18105	*
CIT2	*	CIT28106

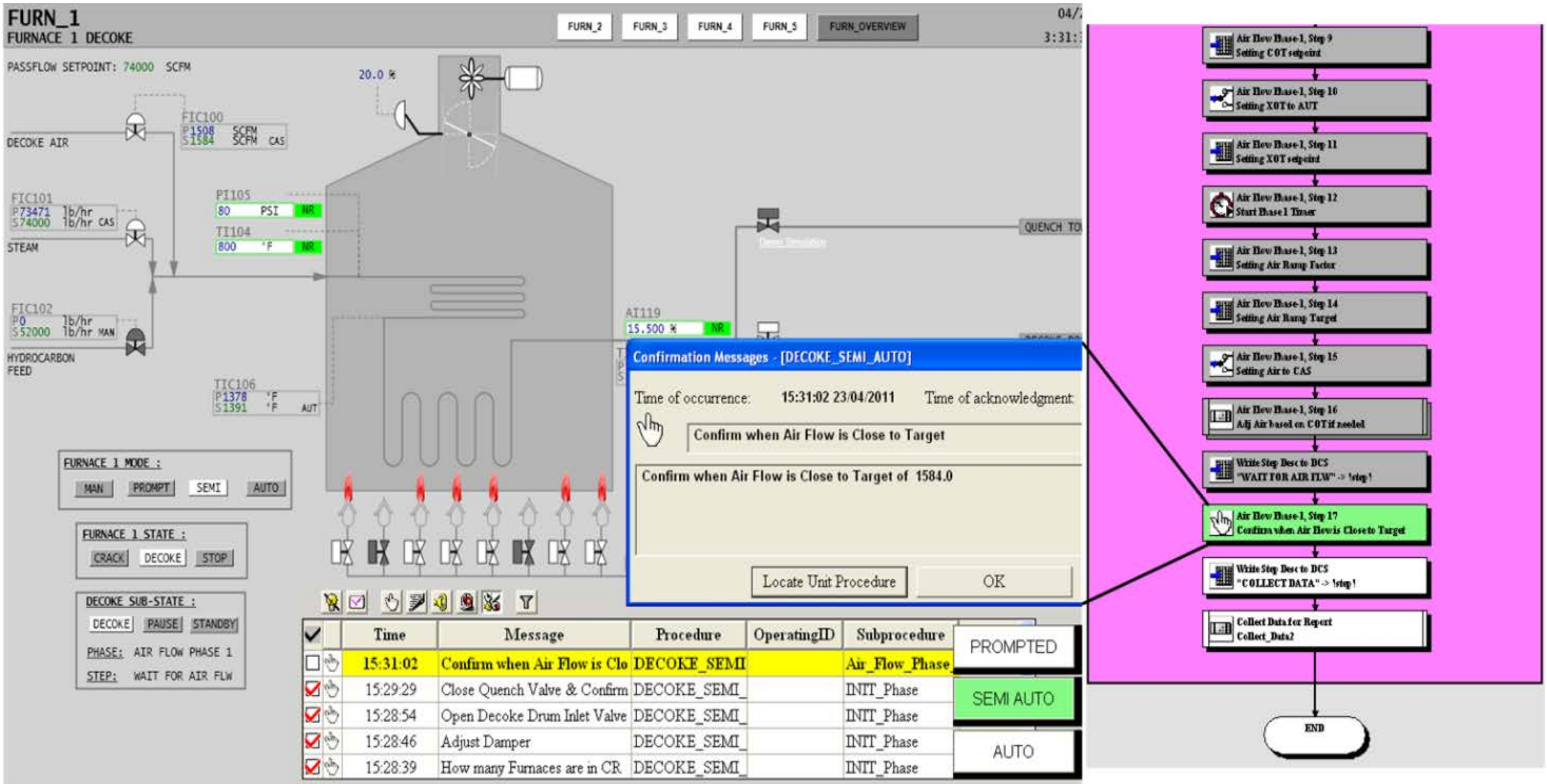
Instrumentation per tree can be configured differently using "*" in the table if not required.

Unit (for QAY8105)
Smart-Parts
I/O Layer (From TPU)

Unit (for QAY8106)
Smart-Parts
I/O Layer (From TPU)

Unit Block Development, Modular Design Approach to Subsea MCS, Zara Kerkan, Shell and Nicholas Yim, Yokogawa at the 2012 Yokogawa Users Group Conference

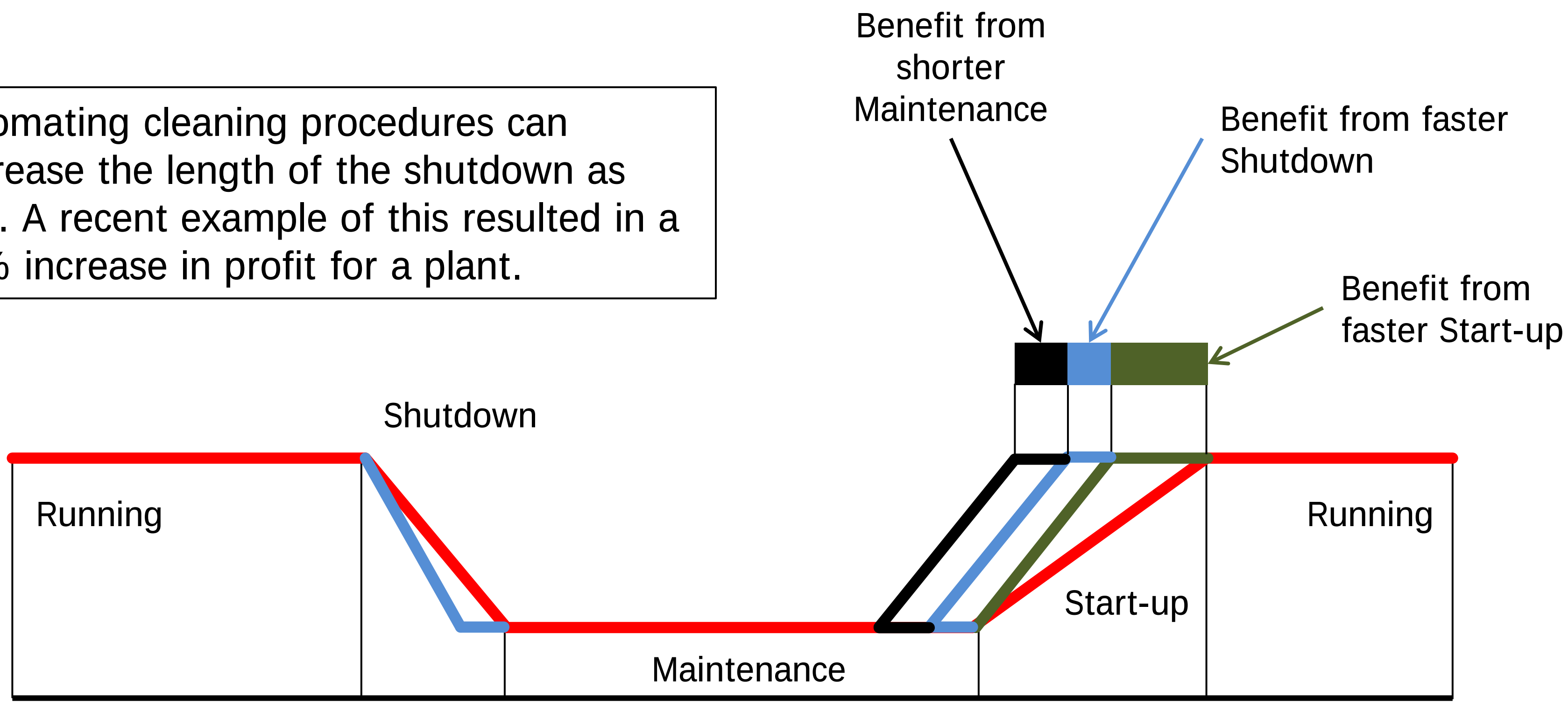
Decoking Procedure



State-based Control

- The Dow Chemical Company, at the 2011 ARC Forum, explained how state-based control provides them a financial benefit

Automating cleaning procedures can decrease the length of the shutdown as well. A recent example of this resulted in a 16% increase in profit for a plant.



Yahya Nazer, Ph.D. and Eric Cosman, The Dow Chemical Company, ARC Forum 2011

Procedural Assistance

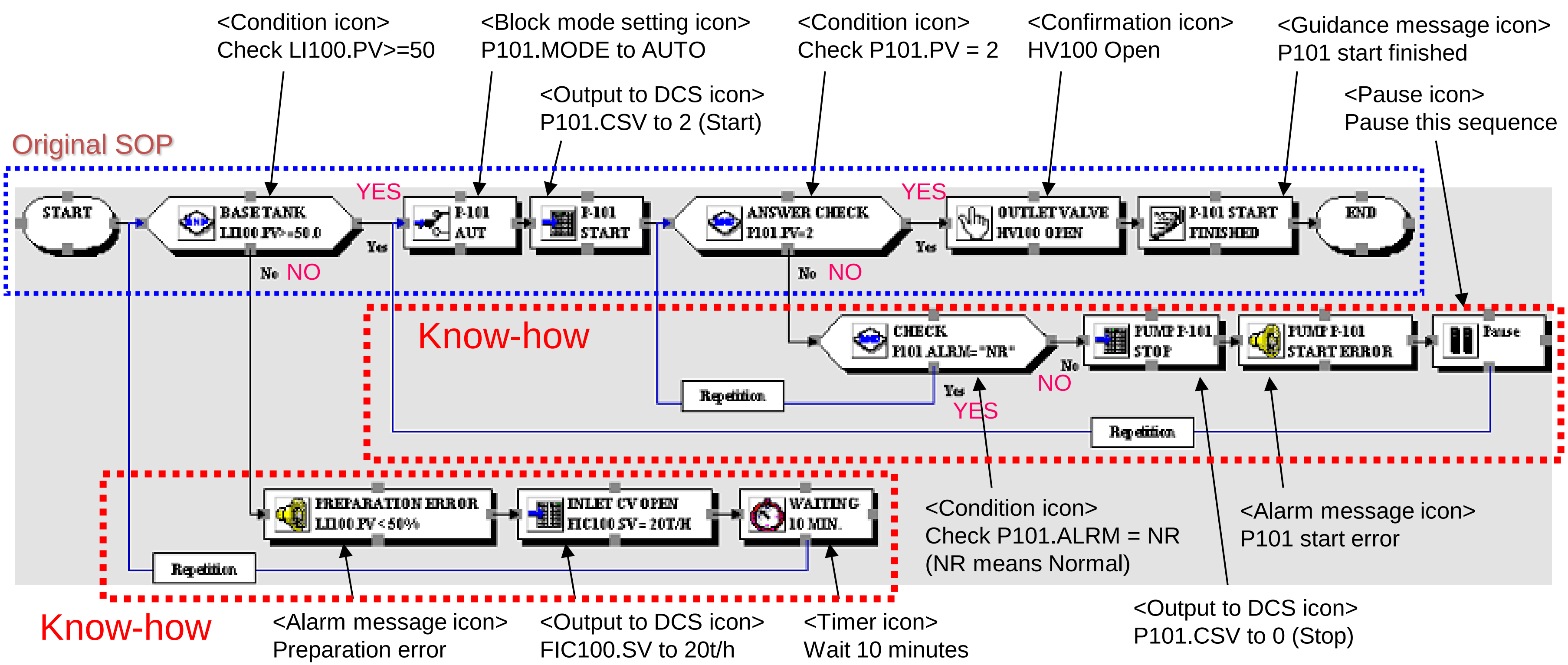
- Procedures can guide and prompt operator
  - Command – operator decides when to take action
  - Perform – board operator performs control actions
  - Verify – computer or operator can verify actions successfully done
- Can help new operators become more confident and have constant backup
- Analysis of procedure execution can identify areas of variability
  - Good candidates for full automation

Capturing Operator Knowledge

Original SOP (Standard Operating Procedure)

(1) Check base tank level LI100.PV >= 50%
(2) Start pump P-101
(3) Check answer back flag
(4) Confirm field operator to open hand valve HV100

Capture Operator Knowledge!



Alarm Response Procedures

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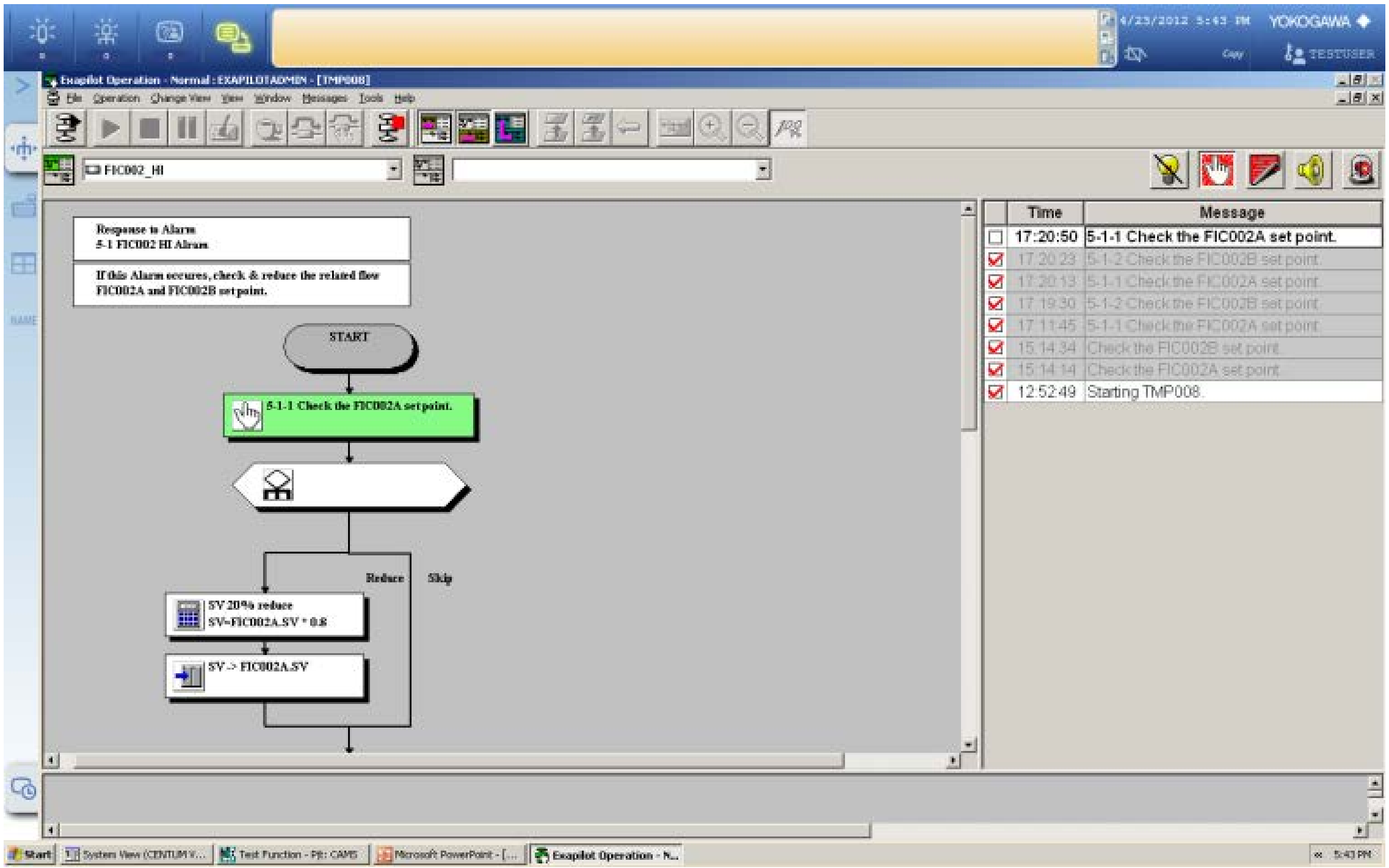
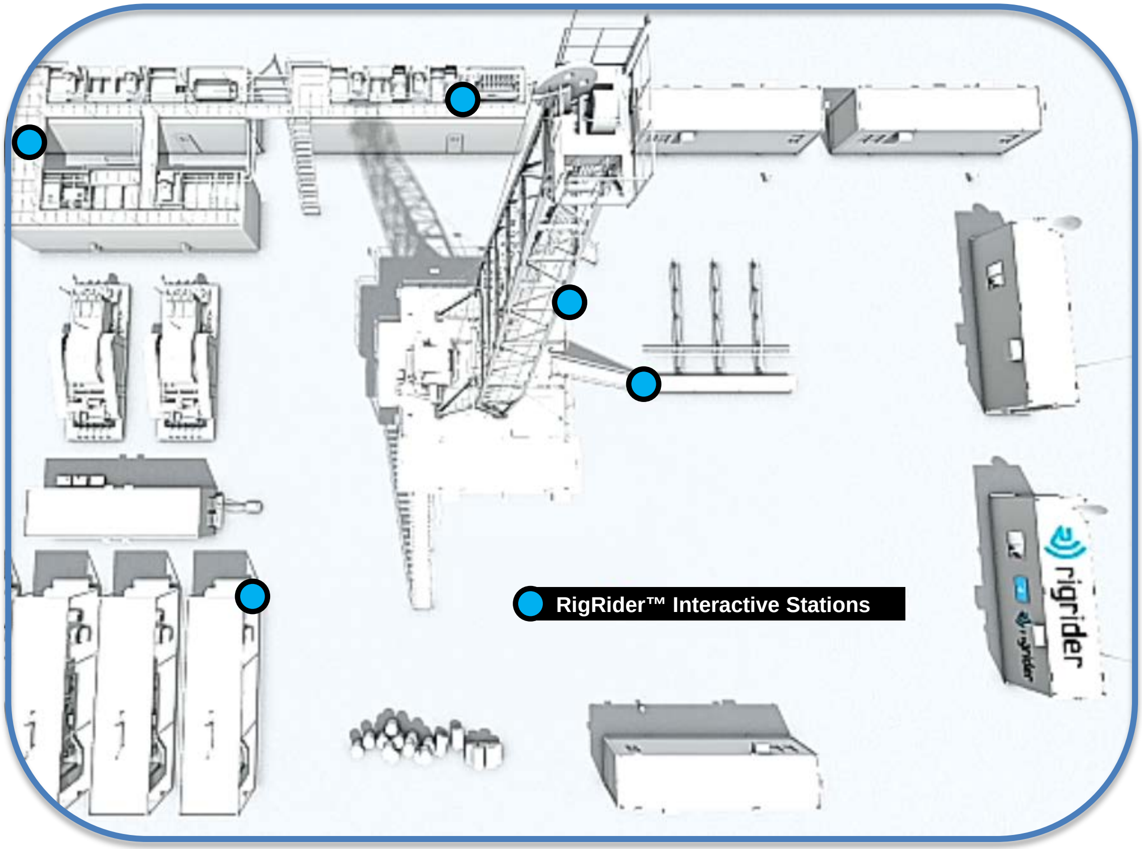
- Provide if-then-else scenarios to respond to alarms based on the process conditions or changes made by the operator



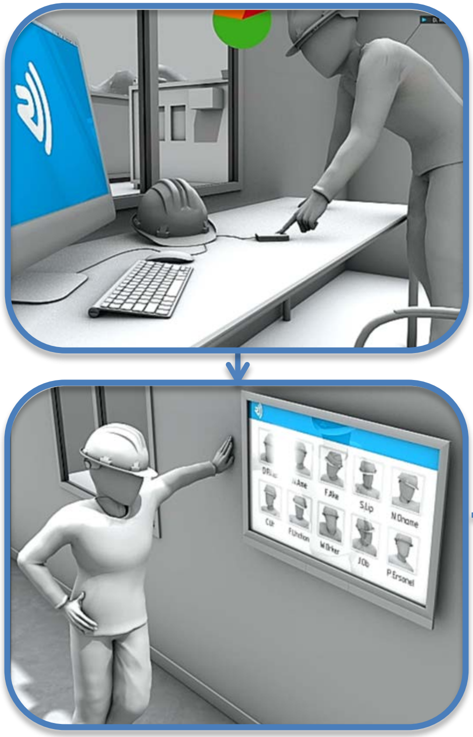
Rider Interactive Stations



15 or 21 inch touch screen with RFID reader to log-in

Rider Interactive Station (RIS) recognize and check the competence status of the specific person and presents a task list for the planned job.

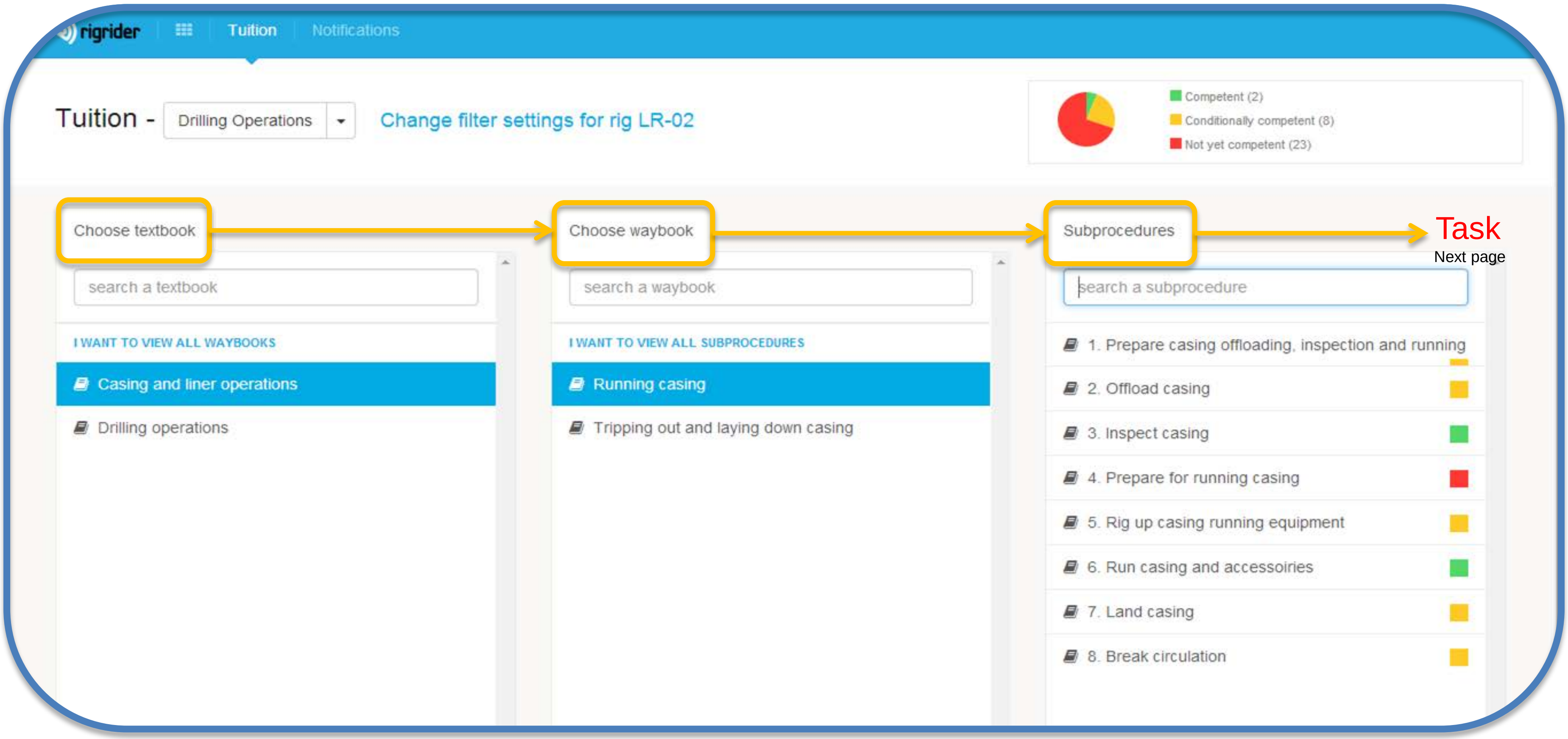
Rider Personal on Board system



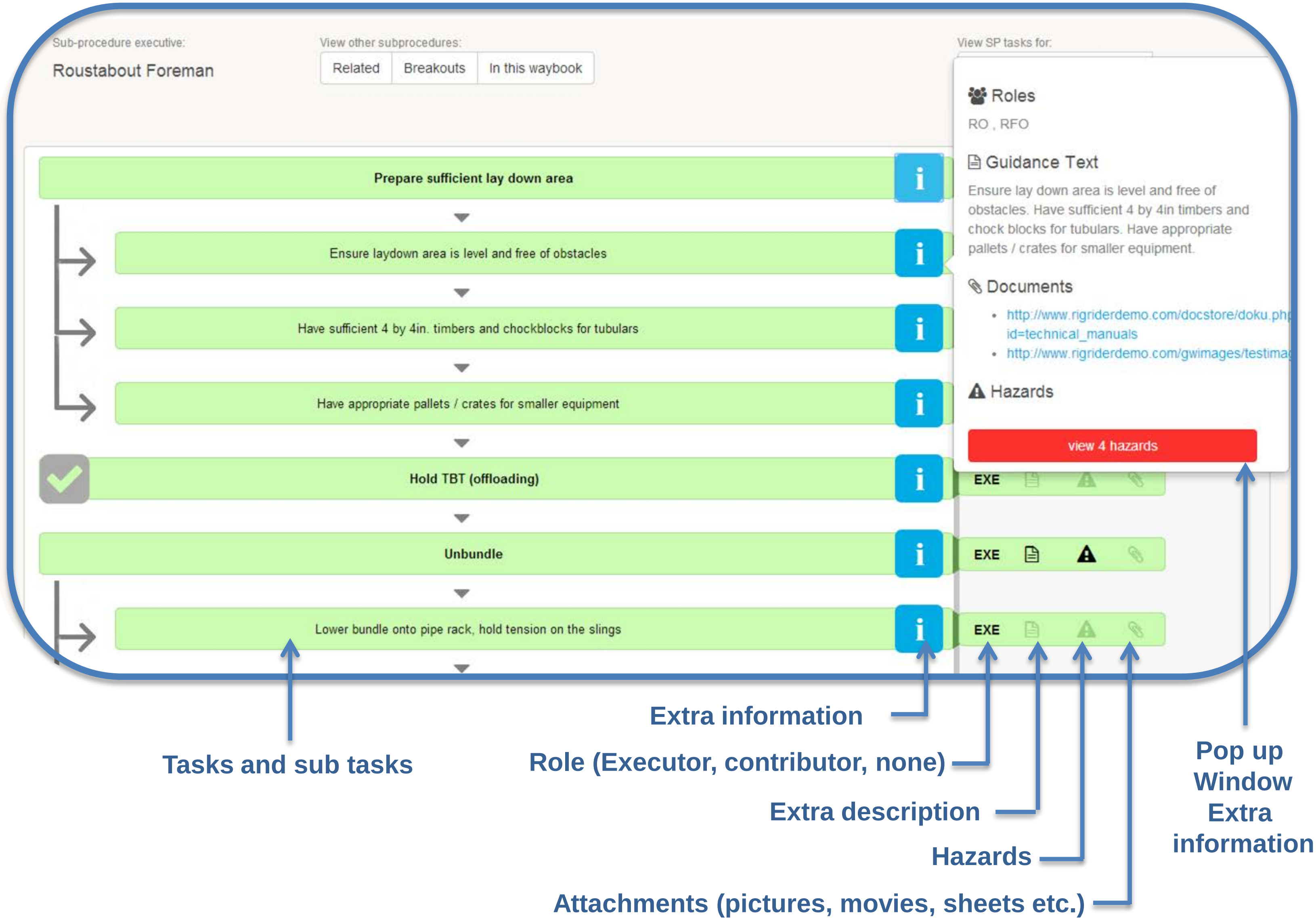
Personnel on Board screen

Every person receives a RFID card to log in on the Rider Interactive Station (RIS)

Rider navigation

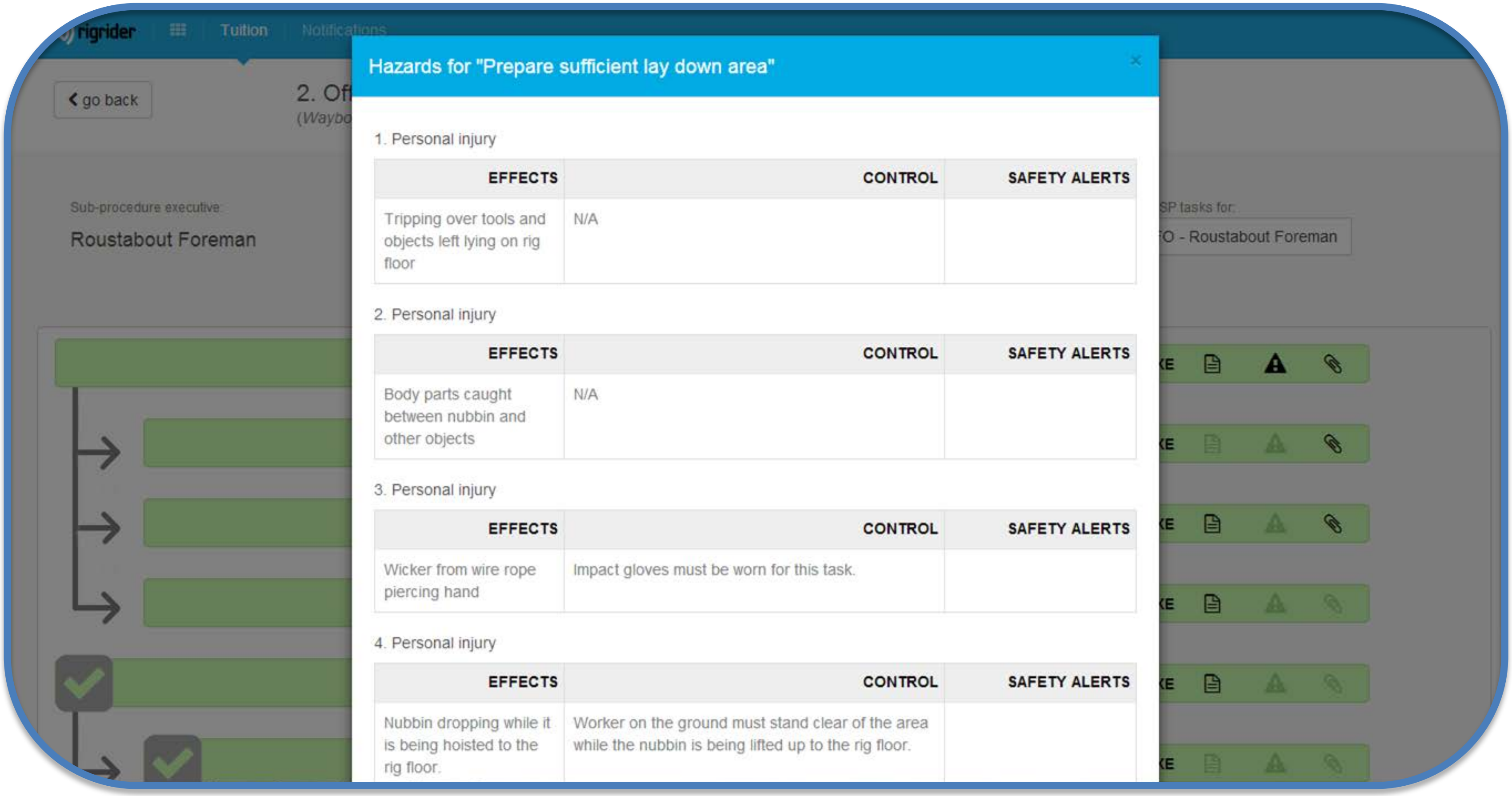


Rider tasks



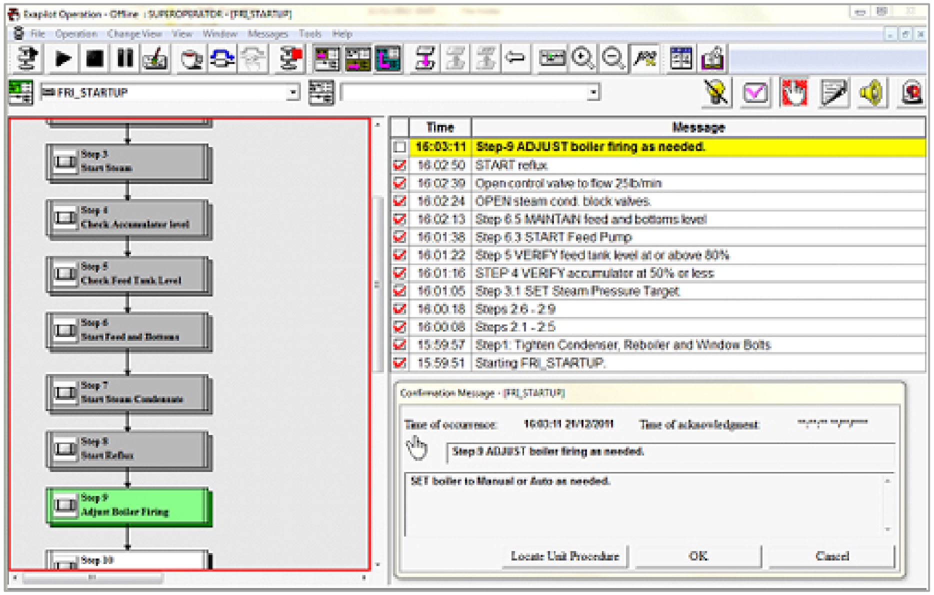
Sub-procedure executive:
Roustabout Foreman
View other subprocedures:
Related
Breakouts
In this waybook
View SP tasks for:
Prepare sufficient lay down area
Ensure laydown area is level and free of obstacles
Have sufficient 4 by 4in. timbers and chockblocks for tubulars
Have appropriate pallets / crates for smaller equipment
Hold TBT (offloading)
Unbundle
Lower bundle onto pipe rack, hold tension on the slings
EXE
Roles
RO , RFO
Guidance Text
Ensure lay down area is level and free of obstacles. Have sufficient 4 by 4in timbers and chock blocks for tubulars. Have appropriate pallets / crates for smaller equipment.
Documents
http://www.rigriderdemo.com/docstore/doku.php
id=technical_manuals
http://www.rigriderdemo.com/gwimages/testima
Hazards
view 4 hazards
Extra information
Tasks and sub tasks
Role (Executor, contributor, none)
Extra description
Hazards
Attachments (pictures, movies, sheets etc.)
Pop up Window Extra information

Integrated hazards



Modular Procedural Automation (MPA)

- Yokogawa consulting service
- Work with you to
  - Asses the current state of standard operating procedures
  - Identify opportunities for automation
  - Capture best practices from most experienced operators
  - Automation team member



Summary

- Participate on the ISA106 committee
  - Have input to the standard
  - Receive copies of the draft standard
  - Contact Dave Emerson or Bill Wray, or any committee member
- How can the ISA-106 procedure automation concepts be used in your plant?
  - Yokogawa Advanced Solutions group is available to talk about this

Thank-You