

Owner Operator Concerns Using SmartPlant Instrumentation

Fluor's SmartPlant
Implementation
Initiative



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Owner Operator SPI Concerns



- ◆ SPI Database Setup and Administration
- ◆ Initializing SPI in an Existing Plant
- ◆ Integration with other Plant Systems
- ◆ Utilizing Owner Operator SPI Functions
- ◆ SPI Access by Contractors
- ◆ Upgrading and Technical Support
- ◆ Tips and Tricks for Owner Operators



SPI Setup and Administration



◆ Hosting Concerns

- Who will Host the SPI Database
 - Owner Hosted
 - Third Party
 - Main Engineering Contractor
- Location of the SPI Database
 - Local Server
 - Remote Server
 - Cloud Based Server
- Remote User Access to the SPI Database
 - Citrix
 - Terminal Services
- What Technology will be used
 - Oracle
 - Microsoft SQL Server



SPI Setup and Administration



◆ SPI Administration and User base

- IT Administration
 - Experience with Oracle or Microsoft SQL Server
 - Experience with Citrix or Terminal Services
- Domain Administrator
 - Full time – Part Time – Training
- System Administrator
 - Full time – Part Time – Experience
- Technical Support
 - In House
 - Intergraph
 - Third Party
- SPI User base
 - Training – Experience



Initializing SPI in an Existing Plant



- ◆ **Operational Scope of SPI**
 - Interfacing with Other Plant Systems
 - Maintaining Instrument Index
 - Maintaining Spec Sheets
 - Maintaining Wiring
 - Maintaining Loops
- ◆ **Develop Initializing Standards**
 - Implementation Standard
 - Standard Forms and Reports
- ◆ **Initial Loading of SPI Data**
 - In-house Staff
 - Contractor
 - As part of a Project

Panel Strip No.	Instrument	Date	Type	Status	Unit No.	Loop No.	Signal	Source	Panel Strip No.
101-100	AI-100	01/01/00	AI	OK	101	100	101-100	101-100	101-100
101-101	AI-101	01/01/00	AI	OK	101	101	101-101	101-101	101-101
101-102	AI-102	01/01/00	AI	OK	101	102	101-102	101-102	101-102
101-103	AI-103	01/01/00	AI	OK	101	103	101-103	101-103	101-103
101-104	AI-104	01/01/00	AI	OK	101	104	101-104	101-104	101-104
101-105	AI-105	01/01/00	AI	OK	101	105	101-105	101-105	101-105
101-106	AI-106	01/01/00	AI	OK	101	106	101-106	101-106	101-106
101-107	AI-107	01/01/00	AI	OK	101	107	101-107	101-107	101-107
101-108	AI-108	01/01/00	AI	OK	101	108	101-108	101-108	101-108
101-109	AI-109	01/01/00	AI	OK	101	109	101-109	101-109	101-109
101-110	AI-110	01/01/00	AI	OK	101	110	101-110	101-110	101-110
101-111	AI-111	01/01/00	AI	OK	101	111	101-111	101-111	101-111
101-112	AI-112	01/01/00	AI	OK	101	112	101-112	101-112	101-112
101-113	AI-113	01/01/00	AI	OK	101	113	101-113	101-113	101-113
101-114	AI-114	01/01/00	AI	OK	101	114	101-114	101-114	101-114
101-115	AI-115	01/01/00	AI	OK	101	115	101-115	101-115	101-115
101-116	AI-116	01/01/00	AI	OK	101	116	101-116	101-116	101-116
101-117	AI-117	01/01/00	AI	OK	101	117	101-117	101-117	101-117
101-118	AI-118	01/01/00	AI	OK	101	118	101-118	101-118	101-118
101-119	AI-119	01/01/00	AI	OK	101	119	101-119	101-119	101-119
101-120	AI-120	01/01/00	AI	OK	101	120	101-120	101-120	101-120

Integrating SPI with Other Plant Systems



◆ Integration with DCS and Vendor Systems

– Use of Manufacture Specific Interfaces

- ABB, Inc. - System 800xA
- Emerson Process Management – Fisher FIRSTVUE®
- Emerson Process Management – DeltaV™
- Flowserve – Direct Data Exchange
- Honeywell – Experion™ Process Knowledge System
- Honeywell – Safety Manager
- Yokogawa Electric Corporation – CENTUM® CS 3000 R3
- Fluke – Fluke Calibration Tools

– System Integration using Custom Interfaces

- SAP – SAP R/3
- Excel – Export / Import
- Access Database Connection

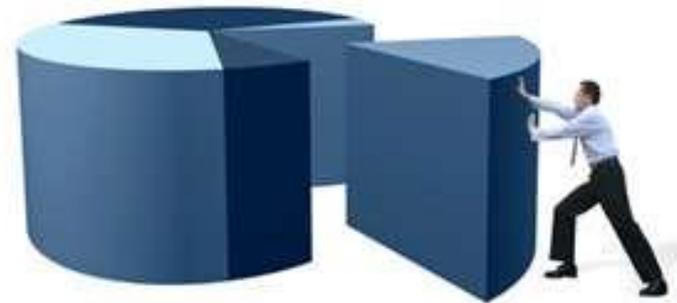
Integrating SPI with Other Plant Systems



- ◆ **Process Control Systems**
 - Basic Process Control Systems
 - Safety Instrumented Systems
 - Equipment Protection Systems
 - Fire and Gas Monitoring Systems

- ◆ **Digital Data Management Systems**
 - Plant Asset Management Systems
 - Process Data Historian Systems
 - Energy Management Systems
 - Preventative Maintenance Systems

- ◆ **Emerging Infrastructure Systems**
 - Bus Instrument Networks
 - Wireless Instrument Networks
 - Self Configuring Networks

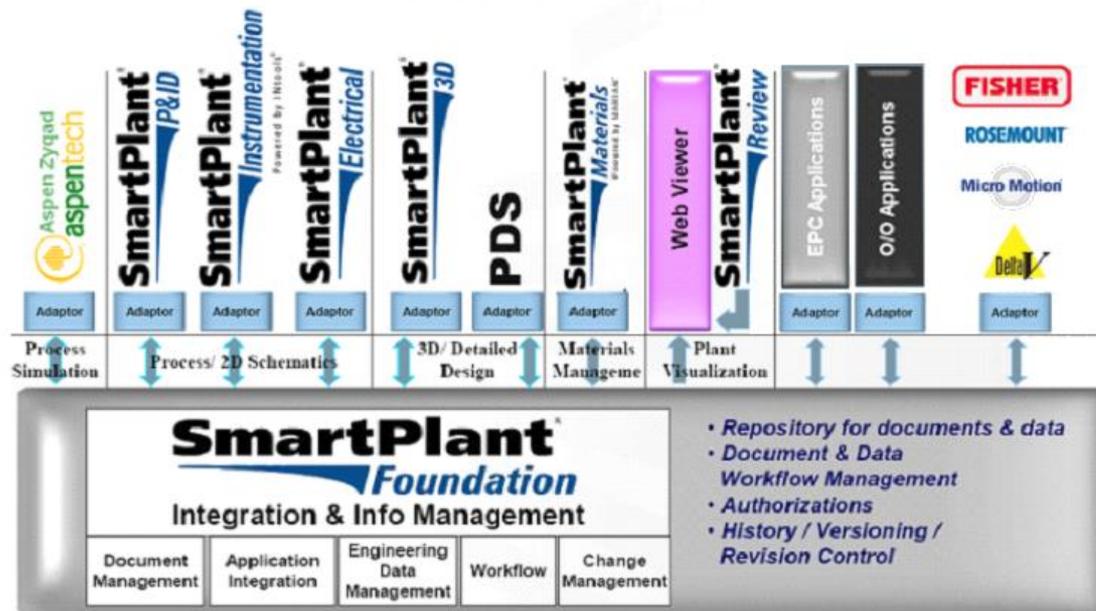


Integrating SPI with Other Plant Systems



◆ SmartPlant Foundation

- Application integration between operations, maintenance, and EPC systems for overall data and change management
- Operations, management and regulatory remote review portal
- Document management and control, including lists and sheets



Utilizing Owner Operator SPI Functions



◆ SPI Maintenance Module

- Breakdown Maintenance
 - Work Requests
 - Repair Forms
- Preventive Maintenance
 - Schedule Periodic Maintenance Activities



◆ SPI Calibration Module

- Customizable Calibration Forms
- Multiple Instrument Type Profiles
- Allows Tracking and Calibration of Test Equipment
- Calibration Certificate Snapshot
- Recorded Errors for Each Calibration Point
- Fluke Documenting Calibrators Integration

Utilizing Owner Operator SPI Functions



SPI As-Built Functionality

- ◆ **As-Built is created automatically when initializing an Owner Operator Domain**
 - Set claim mode (exclusive or non-exclusive)
 - Set delete merged items or keep view-only records
- ◆ **The As-Built is the Master Project that contains all Formatting for all other Projects.**
 - The As-Built cannot Be Deleted
 - As-Built data can be Claimed to each Engineering Project



Utilizing Owner Operator SPI Functions



SPI As-Built Functionality (Continued)

- ◆ **The Domain Administrator creates Project Schemas for each Engineering Project**
 - New Engineering Project data is separate from the As-Built
 - Modified Clamed Data is only changed in the Engineering Project
- ◆ **When complete an Engineering Project is Merged into the As-Built**
 - Merging Engineering Project data with As-Built cannot be reversed
 - Engineering Projects are usually deleted after Merge



SPI Access by Contractors

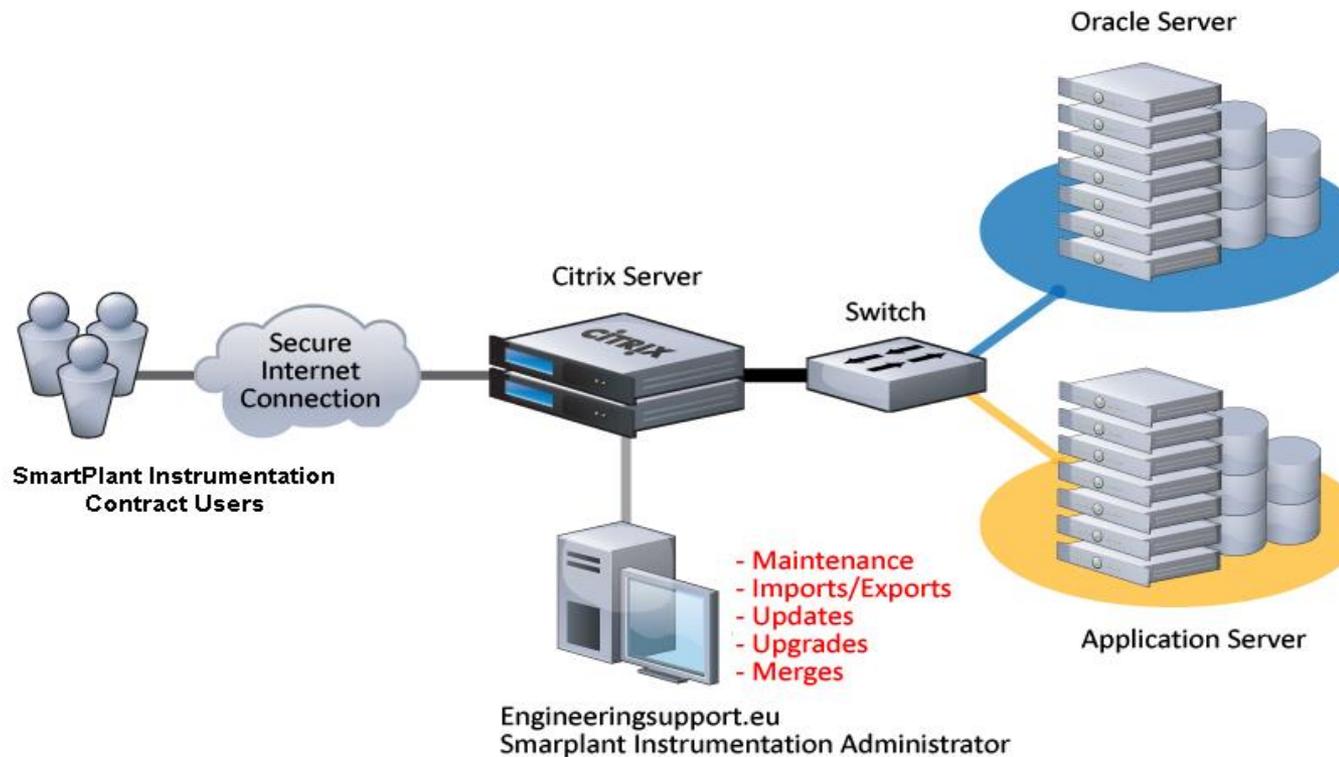


- ◆ **How to police contractors from changing plant standards**
 - Best Method – Use As-Built Functionality
 - Restrict Access Rights (not secure)
- ◆ **Implementation Specification**
 - Define Contractors Scope in SPI Specification
 - Require any changes in Standard tables to be approved



SPI Access by Contractors

◆ Typical Contractor SPI Access using Citrix Server



SPI Upgrading and Technical Support



Upgrading SmartPlant Instrumentation

◆ Types of Upgrades

- **Version** – A full version Upgrade is necessary when the current Version is no longer supported by Intergraph
- **Service Packs** – Need to be applied if they add missing Functions or Fix Issues that you need
- **Hot Fixes** – Need to be applied if they repair known issues in the database, they may also keep your current version up to date longer.



SPI Upgrading and Technical Support



Upgrading SmartPlant Instrumentation (Continued)

◆ Upgrade Procedure

- Backup current SPI Database

- Timing Considerations

- All Users must be out of Database
- Best to do between major Projects
- Wait until Current Versions or Service Packs have been updated by others.

- After Upgrade

- Check all functions (Index – Specs – Wiring)



SPI Upgrading and Technical Support



◆ Technical Support

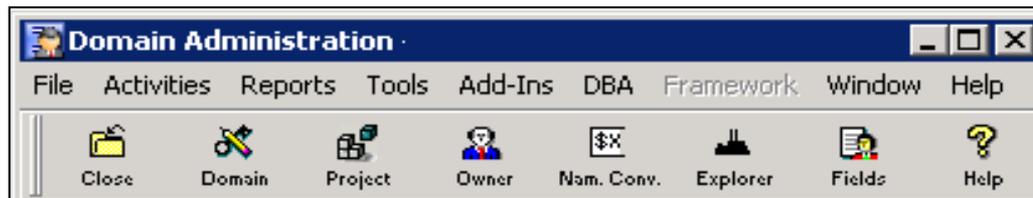
- Don't go it alone – Sign a technical support contract with Intergraph or qualified Intergraph Support Provider.
- In-house Technical Support needs to be Full Time dedicated to SmartPlant Instrumentation Administration
- Keep Administrator and User Training current by taking advantage of Intergraph and OSI training programs.
- Cross train IT and SPI specialists for best optimization of manpower
- Take advantage of Technical Conferences, Intergraph Webinars and SPI-LTUF functions to keep up to date on SPI



Tips and Tricks for Owner Operators



- ◆ Never Delete the “DEFAULT” Plant Area and Unit. You can hide the “DEFAULT” Plant by un-checking the “Default plant use” checkbox in the Domain Definition.
- ◆ Keep or Return to the Administrator “DBA” Username and Password when issuing an SPI Seed File. This will assure user and administration connectivity when you deliver Sybase versions of the SmartPlant Instrumentation database later on a project.
- ◆ If you are currently logged on as the System Administrator, you can switch to the Domain Administrator level without the need to log on again. You can do this only if the Domain Administrator user name and password are the same as the System Administrator's.



Tips and Tricks for Owner Operators



- ◆ It is important that IT initializes the Oracle server properly. Provide IT with: “*SmartPlant Instrumentation Installation Guide, Installing SmartPlant Instrumentation on Oracle, Running Oracle Database Setup, Oracle Database Server Table spaces*” Documentation. You should also be specific about the proper character set to use in the Oracle instance.
- ◆ If you are initializing an Oracle instance from a MS-SQL source, you must run special script files against the original file before initialization. When in doubt, run the scripts against the Sybase Watcom before initializing.



Tips and Tricks for Owner Operators



- ◆ If two Units have the same number it is possible to maintain separation by numbering the units with an offset (Units 12 for example might be numbered 12 and 012) then use the substring “Start” and “Length” to reference the proper characters in the naming conventions.

Description		Start	Length
UNIT NUMBER	▼		22
INSTRUMENT TYPE	▼		15
COMPONENT NUMBER	▼		16
COMPONENT SUFFIX	▼		13

- ◆ For problems printing or viewing, Specs Sheets or Reports, or even speed problems with Citrix, check the User Preferences “General / Temporary Path” and reset the Temporary Path

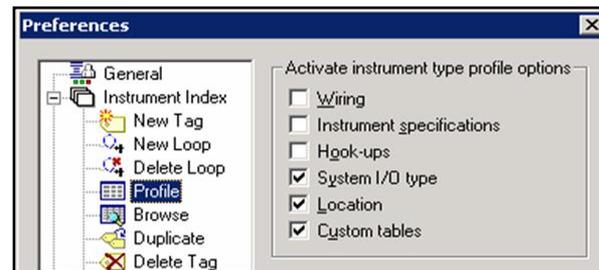
Tips and Tricks for Owner Operators



- ◆ When working with the Line data table; enter only the Size and Spec instead of the entire line number. This saves time, shortens line table selection and users still have all required line information to do sizing calculations

4"-11H instead of 4"-P-1501-11H

- ◆ If the Instrument Type profiles are not set properly before you start adding tags to the database, De-activate the Profile options in the “Preferences / Instrument Index / Profile”. Then launch each option as needed from the “Browse / Action” menu



Tips and Tricks for Owner Operators



- ◆ Be concise and conservative with Instrument Types. Don't create an Instrument Type for every minor variation. Keeping Instrument Type profiles to a minimum will result in less chance for error.
- ◆ Use Global Revisions dialog box for Specifications, Process Data, Calculations, Loops, Hook-Ups, or Wiring to make revisions more consistent and better use of time.
- ◆ When moving tags from one unit to another, Use the Loop Move command or drag and drop the Loops in the Domain Explorer to move all the tags associated to a loop at one time. **NEVER DELETE AND REBUILD TAGS!**
- ◆ Do not allow tag creation in the Spec, Process or Calculation Modules. Adding Tags from Modules other than the Instrument Index will allow tags to be created without complete data

Tips and Tricks for Owner Operators



- ◆ The Instrument Tag Class is used as a wiring method identifier.
- ◆ In P&ID Table, do not use the description callout unless P&ID reference is shown on Loop Diagrams.

P&ID Drawing	Description
100-PID01-001	
100-PID01-002	

- In the System I/O Type table – Do Not change the standard “AI”, “AO”, “DI”, “DO” or “FieldbusFF” I/O Types if you are using an External Interface

System I/O Type	Description
AI	Analog Input
AO	Analog Output
DI	Discrete Input
DO	Discrete Output
FieldbusFF	Foundation Fieldbus

Tips and Tricks for Owner Operators



- In the Status Table the “Status” column and the “Description Field” should match to prevent the pick list from being different than the data column.

Instrument Status	Description
FN	Furnished by others
N	New Instrument
REL	Relocated Device

Status	Location
N	Field
Furnished by others	Field
New Instrument	Field
Relocated Device	

Instrument Status	Description
FURNISH	FURNISH
NEW	NEW
RELOCATE	RELOCATE
DELETE	DELETE

Status	Location
NEW	Field
DELETE	Field
FURNISHED	Field
NEW	
RELOCATE	

Tips and Tricks for Owner Operators



- ◆ When you set a browser view to be your default view, also set it to be personal so others cannot change it. Do not check “Set as default view”. The profile will turn on the default view when you save.

View profile

View name:
My View

View description:

Data level
Unit

Set as default view ← DO NOT CHECK!
 Count per group
 Personal view
 Set as Instrument Index browse view (per user)

Save
Cancel
Help

- The most common error when working with Browser Views is to allow users to work at the **Plant** or **Area** Data Levels. These levels should only be used for reporting purposes. All adding and editing of Tag Numbers, Panels and Cables should be done at the **Unit** Data Level

Tips and Tricks for Owner Operators



- ◆ Do not use single quotes in view names (JOHN'S INDEX) this will cause problems in the View list. Note: The View Name is also the Report Name in the Header of an Index Browse Report.
- ◆ Number your browser view names by placing a number before the name. Reserve 01 to 09 for your most frequently used queries and ask users to put there initials in their browser View names
- ◆ The Revision Description will not show in the header of the Standard Browse Index report. (Only in Versions before 2013)
 - **Work around: Use the “Approved” field, it will take up to 20 Characters**

DEMO		My View		
Plant: New Refinery		Sort name: P&ID+LOOP	Filter name:	LOCATION
Area: Crude Area				
Unit: Crude unit 1				
Document No.: 12345E7890		Revision No.: 1		
By: JED		Checked: HIM		
Approved: <u>For Construction</u>		Signed by: BOS		
NO DESCRIPTION - USE Approved				
Tag Number	Service	Instrument Type	Process Function Type	IO Type Name

Tips and Tricks for Owner Operators



- ◆ When using the “Find”, click the “As Typed” radio button to assure that the find is working as you enter the search string.
- ◆ When executing a series of commands – Look for Hot Key combinations to assist you. A key sequence like “Ctrl-a, Alt-o, F, Enter” could be used to reset the location field without touching the mouse.
- ◆ The Instrument Type column contains the instrument type name, the instrument type description and the Process Function. To isolate this data - Create a custom view and use the columns CMPNT_FUNC_TYPE_NAME, CMPNT_FUNC_TYPE_DESC and PROC_FUNC_ID fields to show the names and descriptions separately.

Instrument Type		
FO	Flow Orifice, Restriction	Flow
FO	Flow Orifice, Restriction	Flow

Tips and Tricks for Owner Operators

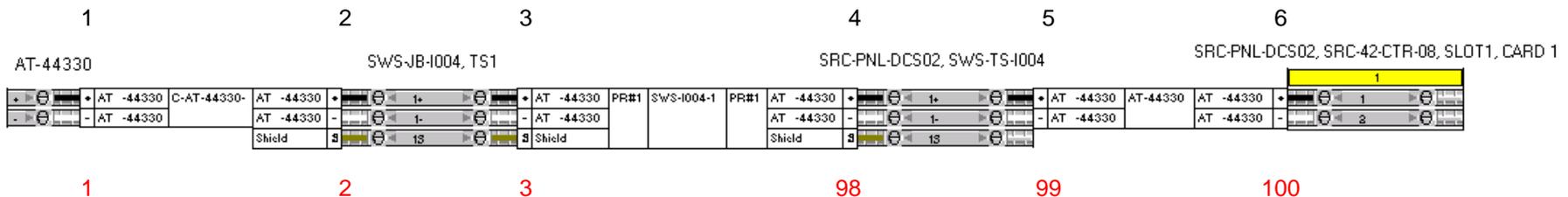


- ◆ A modified title box will not show up on the second notes page. An overlaid title box will show on the second sheet. If you modify a title box, create an overlay title box and associate it to sheets that use a second notes page.
- ◆ To provide a margin at the top of datasheet reports, set a parameter “TOPMARGIN = 250” in the INTOOLS.INI file [PRINTER] section.
- ◆ When adding a column to a spec page, Use the Page Editor in SPI to select an unused column. InfoMaker allows selection of columns that are already on the Spec.
- ◆ Enter the Form Numbers in the Description field of the Page Editor so you know what forms a page is used on.

Tips and Tricks for Owner Operators



- ◆ A modified title box will not show up on the second notes page. An overlaid title box will show on the second sheet. If you modify a title box, create an overlay title box and associate it to sheets that use a second notes page.
- When loading loop wiring, start wiring from the Field Device, not the DCS. SPI sequences wiring from the Field Device (starting with termination 1) into the DCS. If loop wiring is started from the DCS, SPI will start with termination 100 and number down. This will cause inconsistencies in the termination sequence.



Best Tips and Tricks for Owner Operators



◆ TRAIN YOUR USERS!

- The investment you have made in SPI can only be realized with users who are trained to use the tools well and get the most out of it

◆ KEEP IT SIMPLE!

- Use the minimum amount of data in SPI to support the deliverables you are creating. Remember that the data in SPI will need to be maintained for the life of the Project and/or Plant in an As-built configuration

◆ PLAN AHEAD!

- SPI depends on Instrument Types, Profiles and Support Tables being configured correctly. Every minute you spend properly configuring SPI at the beginning of a Job or Project, will save hours in rework throughout the life cycle of the database

◆ USE SPI!

- Use the tool as it is designed to be used. Don't try to make the software fit your work processes, change your work processes to fit the software. Don't take shortcuts. Work Through SmartPlant Instrumentation, not around it.



Questions?

