

# Create Your Own **SmartPlant<sup>®</sup>** *Instrumentation* Training Program

**FLUOR**

SmartPlant<sup>®</sup>

Implementation Team

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**INTERGRAPH**

# Introduction to SPI Training?



- ◆ While formal SmartPlant Instrumentation (SPI) training is always an option – some may wish to develop their own SPI training program or to customized a program to fit their work practices and unique organizational goals
- ◆ This presentation will introduce you to some of the elements and procedures to consider when setting up or customizing a SPI training program



# Why Do a SPI Training Program?



- ◆ **Consider your reasons for developing a SPI training program**
  - **To create or maintain your maximum SPI user capability**
  - **Optimizing the functionality of your SPI by the users**
  - **Consistent use of SPI for your Projects or Operations**
  - **Maintain the quality of your SPI deliverables**
  - **SPI update training for your users**
  - **To control costs of training**



# SPI Training Requirements



- ◆ **Target Your SPI Training Needs and Requirements**
  - **SPI Trainers and Administration Training**
  - **Update Training for existing SPI users**
  - **IT training for SPI on DBMS & Citrix**
  - **New and existing SPI user training**
  - **Supplemental or Focused Training**
    - **Instrumentation Training**
    - **Instrument Engineering**
    - **Instrument Design**
    - **Process Engineer**
    - **Process Tech**
    - **Maintenance**
    - **Operations**
    - **Management**



# SPI Training Formats



- ◆ **Consider the most viable formats for your training program**
  - **Presentation type Instructor Led Classroom training**
  - **Hands on Instructor Led Classroom training**
  - **Self Paced Computer Based user training**
  - **Lunch and Learn short sessions**
  - **Just in Time user training**
  - **One on One user training**
  - **On the Job user training**
  - **Guest instructors**
  - **Outside classes**
  - **Combinations**



# SPI Training Costs



- ◆ **Costs associated with SPI – Licensing, Support & Training**
- ◆ **Establish and Maintain a SPI Training Budget**
  - Based on Onsite or Offsite training
  - Is SPI Training Project Billable?
  - Included costs for SPI training
    - Preparation of materials
    - Software Licensing
    - Accommodations
    - Hardware costs
    - Trainers Time
    - Student Time
    - Travel Time
    - Other



# SPI Training Instructors

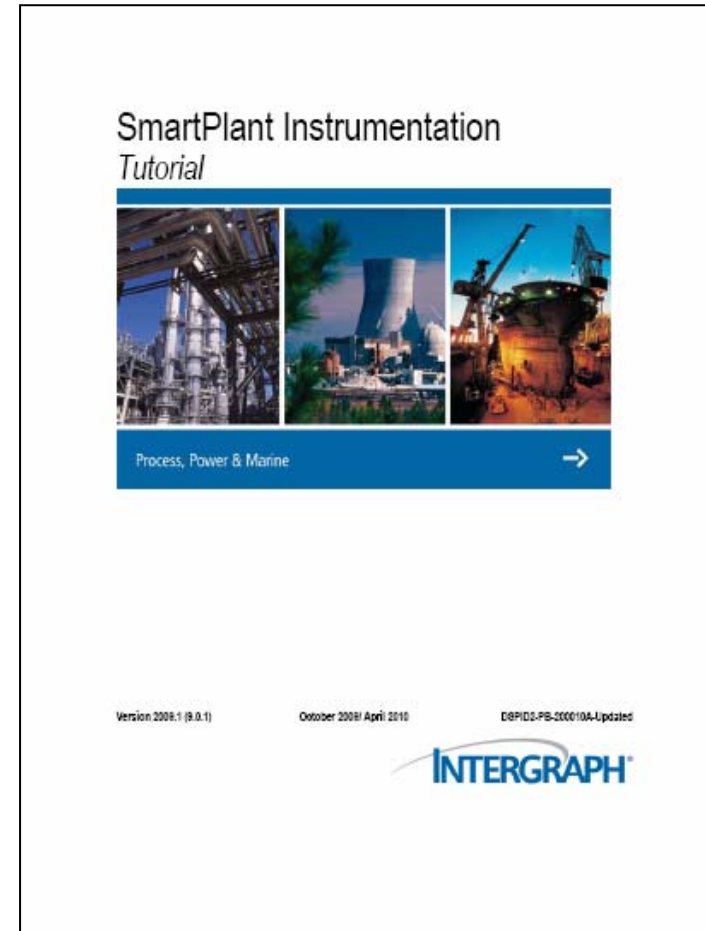
- ◆ **When Developing or Hiring SPI Training Instructors**
  - **Consider the Trainers knowledge and skills**
  - **Look for Outside Training resources**
  - **Develop Super Users as Trainers**
  - **Develop Specialty Trainers**
  - **Train the Trainers**



# Using the SPI Tutorial



- ◆ The SPI Tutorial is included in the Documentation of SPI
- ◆ The SPI Tutorial uses the In\_demo.db database installed as a stand alone Sybase or an Oracle or SQL Server project per Student
- ◆ Recommended supplemental material includes:
  - *SmartPlant Instrumentation User's Guide*
  - *SmartPlant Instrumentation Online Help*







# Using the SPI Tutorial

- ◆ **System Administrator Activities**
  - How to initialize a domain.
  - Add users to the SPI user list
  - Create and assign a Domain Administrator
- ◆ **Domain Administrator Activities**
  - Set up the plant hierarchy
  - Define tag and loop naming conventions
  - Define a group and assign users to the group
  - Assign access rights for a group
  - Add custom fields and tables to the Instrument Index
- ◆ **General Tasks**
  - Open a specific unit in SmartPlant Instrumentation.
  - Define default units of measure and preferences.

The screenshot shows the 'Global Access Rights' dialog box with the following configuration:

- Access mode:** Full (Add / Delete / Update)
- Group name:** All
- Domain level access rights:**
  - Enable item selection:
  - Item:** All
- Access rights on the level <Plant>:**
  - Enable item selection:
  - <Plant>:** All
  - Item:** All
- Access rights on the level <Unit>:**
  - Enable Item selection:
  - <Unit>:** All
  - Item:** All

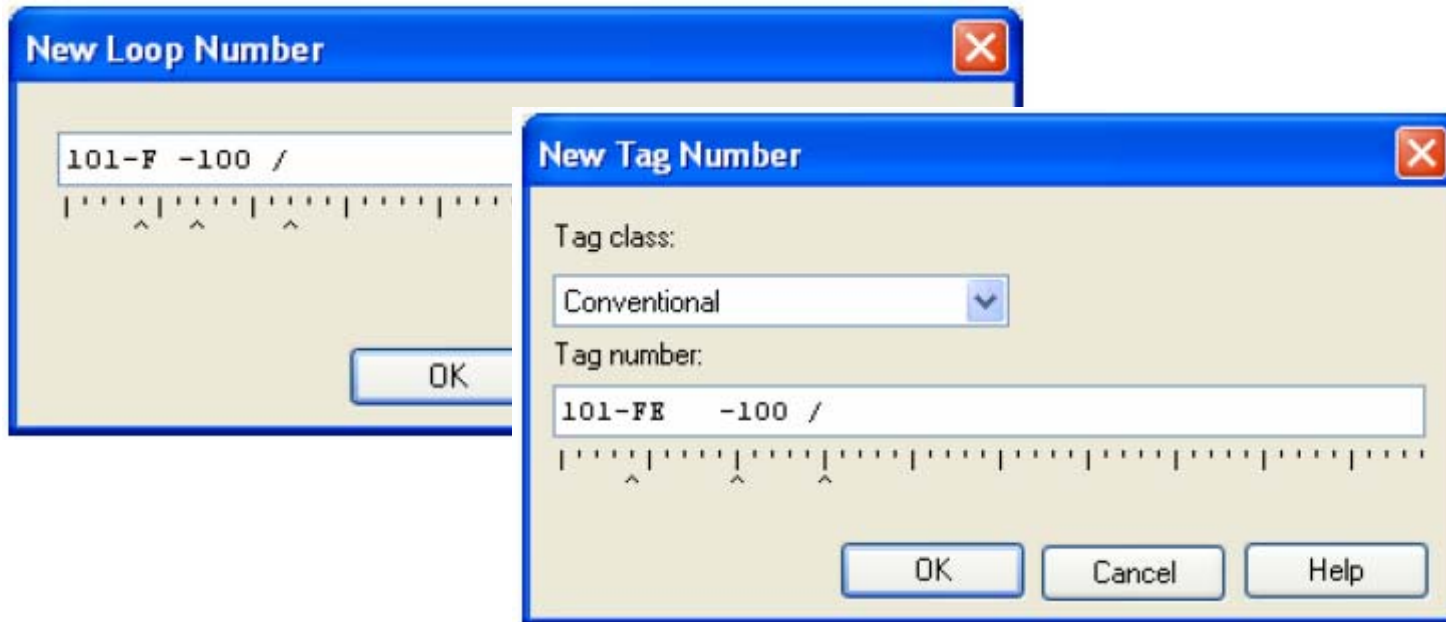
Buttons: OK, Cancel, Help

# Using the SPI Tutorial



## ◆ Creating Instruments and Loops

- Define data in supporting tables, including instrument type profiles, P&ID drawing numbers, and lines.
- Create loops and associated tags.
- View and edit instrument data using the Instrument Index Standard Browser.
- Generate and print out reports.

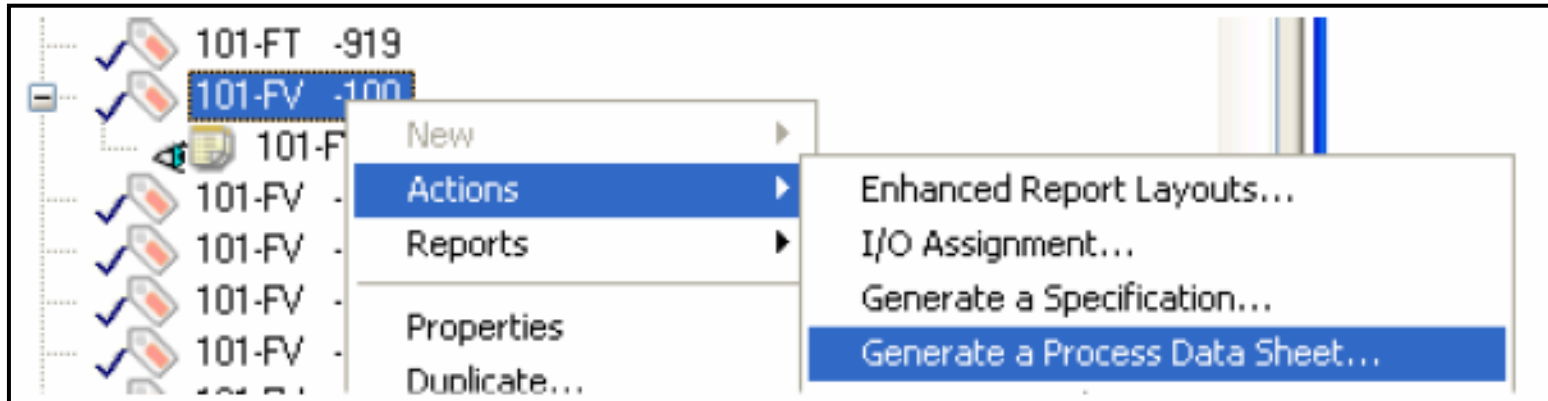


# Using the SPI Tutorial



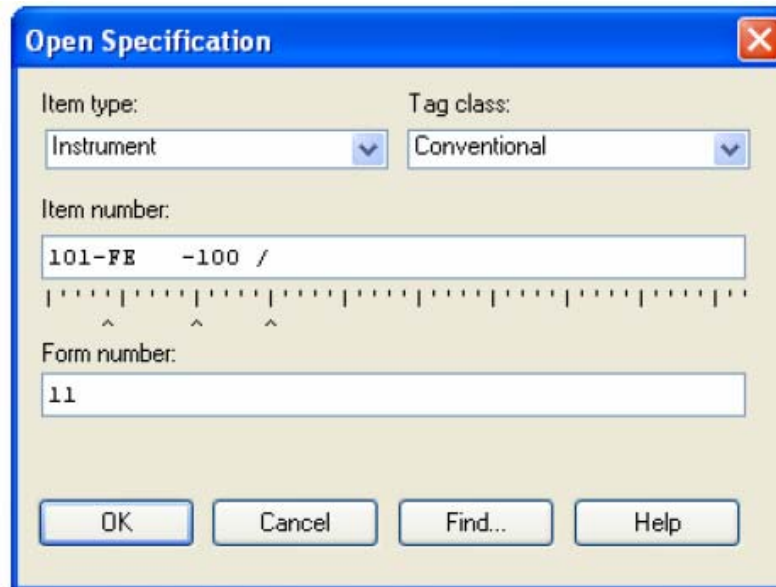
## ◆ Defining Process Data, Performing Calculations

- Create lines
- Define line process data
- Define instrument process data for flow elements, control valves, etc.
- Perform instrument sizing calculations



# Using the SPI Tutorial

- ◆ **Creating and Modifying Specifications**
  - Generate single-tag and multi-tag specifications
  - Copy data to specifications
  - Modify specification pages
  - Perform revisions on specifications.



Open Specification

Item type: Instrument

Tag class: Conventional

Item number: 101-FE -100 /

Form number: 11

OK Cancel Find... Help

# Using the SPI Tutorial



## ◆ Performing Wiring Operations

- Create panel-strip-terminal reference items and copy them to your plant.
- Create cable-set-wire reference items and copy them to your plant.
- Assign tags to DCS channels.
- Connect cables / wires as appropriate.
- Design the wiring for specific control loops, including connection type definitions and cross-wiring connections.

**Cable Connection Definition**

Cable:  
E-101-MR-DCS-001

Cable end to connect  
Location: DCS  
 End 1  
 End 2 MARSHALING

Panel:  
101-DCS-001

Terminal strip:  
TB1

Start at terminal:  
1-x

Cable set connection details

Seq	Cable Set	Connection Type	Terminal Side
1	Pt 1	3 in a row	<input checked="" type="radio"/> L <input type="radio"/> R
2	Pt 2	3 in a row	<input checked="" type="radio"/> L <input type="radio"/> R
3	Pt 3	3 in a row	<input checked="" type="radio"/> L <input type="radio"/> R
4	Pt 4	3 in a row	<input checked="" type="radio"/> L <input type="radio"/> R
5	Pt 5	3 in a row	<input checked="" type="radio"/> L <input type="radio"/> R
6	Pt 6	3 in a row	<input checked="" type="radio"/> L <input type="radio"/> R
7	Pt 7	3 in a row	<input checked="" type="radio"/> L <input type="radio"/> R
8	Pt 8	3 in a row	<input checked="" type="radio"/> L <input type="radio"/> R

Select all cable sets

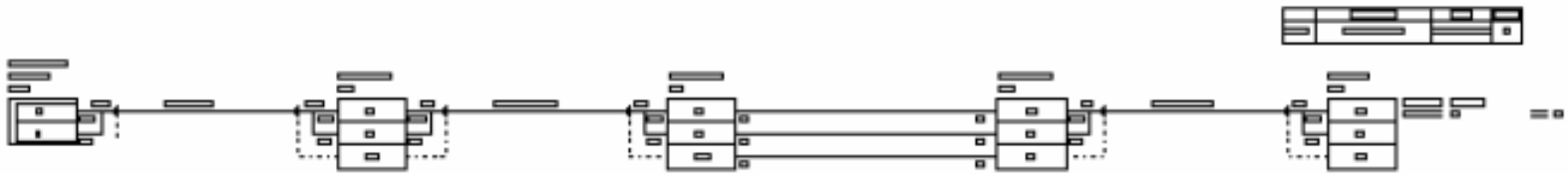
Connect Cancel Help



# Using the SPI Tutorial

## ◆ Generating Loop Drawings

- View and modify a loop drawing.
- Display additional data in enhanced SmartLoop using macros
- Change layout settings and include annotations for enhanced reports
- Create block types and blocks for CAD loop drawings.
- Associate block with instruments.
- Add revisions.
- Browse macros.
- Generate a CAD loop drawing





# Using the SPI Tutorial

- ◆ **Generating Hook-Up Drawings**
  - Create hook-up types and hook-ups
  - Add items in a hook-up library.
  - Assign hook-up items to hook-ups.
  - Assign instruments to hook-ups.
  - Generate a Bill of Material.
  - Generate a hook-up drawing using the Enhanced Report Utility
  
- ◆ **You may wish to use the included SPI tutorial as a basis for your custom training program**

The screenshot shows the 'Hook-Up Properties' dialog box with the following fields and controls:

- Global path:** Global path is not defined
- Hook-up type:** VALVES (dropdown menu)
- Hook-up:** CONTROL VALVE WITH I/P FIG.1
- Hook-up description:** CONTROL VALVE WITH I/P
- Item sub-library:** Default Sub-Library (dropdown menu)
- Applied generation method:** (empty text field)
- Drawing block name:** HookUp\_CV.sym
- Drawing block file name and path:** C:\Program Files\SmartPlant\Instrumentation\RAD\Symbc (with a 'Browse...' button)
- Generation output path:** (empty text field)

Buttons on the right side include: OK, Cancel, < Previous, Next >, Pipe Specs, View, and Help.

# Customizing Your Training Program



- ◆ **The SPI Tutorial is limited and will probably need to be supplemented with additional training as required**
  - Training for specific users: Process, Design, Maintenance etc...
  - Training for specific tasks: Fieldbus, Spec Sheets, Process data etc...
  - Training scaled to purpose: Lunch & Learn, Manager training etc...
  - Training based on upgrades: Update training, New feature training etc...
  - Training for consistency: Seed and Standard practices training etc...
  - Training for additional modules: External Editor, Import Module etc...





# Customizing Your Training Program



- ◆ **Other options for Custom SPI Training and Support are:**
  - Build a “Sandbox” plant in your SPI project for training and experimentation
  - Bring your global champions together and have an SPI Training Summit
  - Place Tutorials on your companies Knowledge Sharing program
  - Join LinkedIn SPI Forum Groups and ask specific questions
  - Send your super users to attend training at HEXAGON conferences
  - Check out the Intergraph PP&M Resource Center for Whitepapers & Webinars



<http://www.intergraph.com/ppm/webinars.aspx>

**Intergraph is considering developing a web based SPI virtual training program and is looking for companies to partner with to assist in developing such a program**

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Instrumentation

# Training Program Resources



- ◆ **Intergraph PP&M Training: SmartPlant Instrumentation**
  - Register for classes Online, or call 1-800-766-7701
  - Outside of Houston – Contact your local Intergraph Office:

## North America



[Canada](#)

[www.intergraph.com/global/ca/](http://www.intergraph.com/global/ca/)



[Mexico](#)

[www.intergraph.com/global/mx/](http://www.intergraph.com/global/mx/)



[United States](#)

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## Europe, Middle East, and Africa (EMEA)



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Instrumentation










# Training Program Resources



- ◆ **Intergraph PP&M Training: SmartPlant Instrumentation**
  - Outside of Houston – Contact your local Intergraph Office:

## Europe, Middle East, and Africa (EMEA)

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	<a href="http://www.intergraph.com/global/fr/">France</a>	<a href="http://www.intergraph.com/global/fr/">www.intergraph.com/global/fr/</a>
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	<a href="#">Ireland</a>	<a href="#">Multiple Websites</a>
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	<a href="http://www.intergraph.com/global/ro/">Romania</a>	<a href="http://www.intergraph.com/global/ro/">www.intergraph.com/global/ro/</a>
	<a href="#">Slovenia</a>	
	<a href="#">South Africa</a>	<a href="#">Multiple Websites</a>
	<a href="http://www.intergraph.com/global/tr/">Turkey</a>	<a href="http://www.intergraph.com/global/tr/">www.intergraph.com/global/tr/</a>



# Training Program Resources



- ◆ **Intergraph PP&M Training: SmartPlant Instrumentation**
  - Outside of Houston – Contact your local Intergraph Office:

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 <a href="#">Indonesia</a>	<a href="http://www.intergraph.com/global/id/">www.intergraph.com/global/id/</a>
 <a href="#">New Zealand</a>	<a href="http://www.intergraph.com/global/nz/">www.intergraph.com/global/nz/</a>
 <a href="#">Thailand</a>	<a href="#">Multiple Websites</a>
 <a href="#">India</a>	<a href="http://www.intergraph.com/global/in/">www.intergraph.com/global/in/</a>
 <a href="#">Myanmar</a>	<a href="http://www.credent-asia.com">www.credent-asia.com</a>
 <a href="#">Singapore</a>	<a href="#">Multiple Websites</a>
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 <a href="#">South Korea</a>	<a href="#">Multiple Websites</a>
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 <a href="#">Argentina</a>	<a href="#">Multiple Websites</a>
 <a href="#">Ecuador</a>	
 <a href="#">Brazil</a>	<a href="http://www.sisgraph.com.br">www.sisgraph.com.br</a>
 <a href="#">Panama</a>	

 <a href="#">Chile</a>	<a href="#">Multiple Websites</a>
 <a href="#">Peru</a>	
 <a href="#">Colombia</a>	<a href="#">Multiple Websites</a>
 <a href="#">Venezuela</a>	<a href="http://www.intergraph.com/global/ve/">www.intergraph.com/global/ve/</a>

# Training Program Resources



- ◆ **Intergraph PP&M and Overload Services Inc. offer the following courses:**
  - SmartPlant Instrumentation for Users (TINT1001)
  - SmartPlant Instrumentation Installation and System Administration (TINT1003)
  - SmartPlant Instrumentation Customization & Data Management (TINT1004)
  - SPI 2009 Update Class (TINT1005)
  - SmartPlant Instrumentation Advanced Wiring & Reporting (TINT1006)
  - SmartPlant Instrumentation As-Built/Operating Owner (TINT1007)
  - Infomaker Customization (TINT1065)
  - SmartPlant® 3D Virtual Training (SPVT)
  - SmartPlant Electrical Basic User (TELE1001)
  - SmartPlant Electrical Advanced User (TELE1002)
  
- ◆ **Custom courses can be developed specifically for a licensed user and the classes can be taught at Intergraph or Overload Services Inc. location in the Houston area or at your facility**

# SPI Training Questions?



**If you think training is expensive,  
the lack of it will cost you more!**

