



## SmartPlant P&ID Interface

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Implementation Team



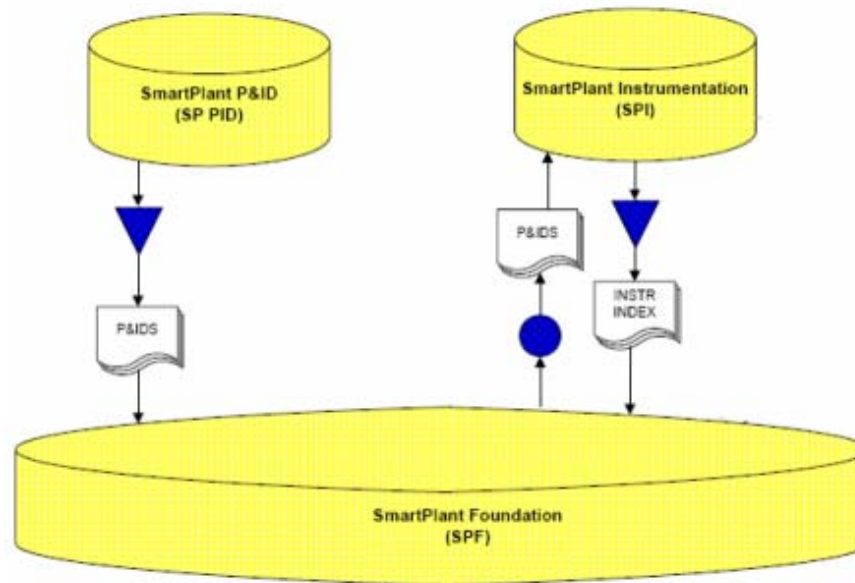
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**INTERGRAPH**

# What is the SP-PID to SPI Interface?



- ◆ SPI has two SP-PID interfaces:
  - The direct interface that works without the SPF share base
  - The SPF Interface that is mapped through the SPF
- ◆ This interface allows MOC between tags on the P&ID and SPI.



# SP-PID to SPI Interface



## ◆ PRE-REQUISITES:

### ◆ SPI and SP P&ID must be configured for integration

- Plant, Area, Unit structure needs to be compatible with the integrated environment

Note: Make sure to register all units associate with the plant for SP P&ID.

- SP P&ID Symbols library must be developed with any project specific modification included.
- Instrument Tag Naming Conventions from SPI and SP P&ID must be compatible for data correlation.
- The project configuration needs to register to SP PID client workstation.

# SP-PID to SPI Interface



## ◆ MINIMUM DATA REQUIREMENTS:

- The following table indicates the minimum type of information that is to be mapped and shared between applications

Information Type	Properties
Instrument Tag	Plant Group Name
	Measure Variable Code
	Instrument Type Modifier
	Tag Sequence Number
	Tag Suffix (As Required)
Equipment Tag	Plant Group Name
	Tag Sequence Number
	Tag Prefix
	Tag Suffix (As Required)
Line Number	Plant Group Name
	Fluid Code
	Tag Sequence Number
	Tag Suffix (As Required)
	Nominal Diameter
	Piping Material Class

Note1: Plant Group Name is defaulted to the current unit of the PID Drawing. Needs to make sure that correct unit is selected for item that not in the current drawing unit.

Note 2: Equipment and Pipe Run will not come across to SPI if no instrument is place on the equipment or pipe run.

Note 3: Items that do not have values for minimum data required will not be available for reception into other applications. They will only be present in SPF thru publish of PID drawing.

Note 4: Tag Suffix (As Require) – Example: There are cases that two the pumps have the same number except the suffix. For example: 00-P-100/A and 00-P-100/B

# SP-PID Properties Database



## ◆ Be Aware:

- Correct data development in SP P&ID is required for the integration to work properly
- Users that work in SP P&ID development must be properly trained to monitor the Property Data for the Instruments, Lines and Equipment
- Implied Tag numbers may need to be placed on a hidden layer on the P&ID for data to be passed through the Interface
- Note the absence of “Instrument Type” in the required data table (Tag numbers that exist in both SPI and SP-PID will associate)



# SP-PID Properties Database



## ◆ Tag Number Properties

- Instrument Type Modifier
- Measured Variable Code
- Plant Group Name (Unit)
- Tag Sequence Number

◆ Combine to make an equivalent Tag number for the Interface to associate

◆ Note: Unit Number inconsistency

SmartPlant P&ID - V\_V : FSP3D\_2007\_VV - [20.0000.000.041.22\_SP3D.pid]

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Rotation angle: 0.00 deg

Instrument - LV-9955

Instr Type	Control valve
Instr Type Modifier	V
Inventory Tag	
Item Tag	LV-209955
Location	
Loop Tag	
Loop Tag Suffix	
Measured Variable Code	L
Name	
Orifice Letter Designation	
Package Item Tag	
Part Number	
Plant Group Name	Unit 20
Plant Group Type	Unit
Plant Item Type	Instrument
Requisition No	
SP ID	A496F641A02C437A95E43448D0C
Sys Item Tag	
Tag Seq No	9955
Tag Suffix	

Engineering Data Editor

# SP-PID Properties Database



## ◆ Pipe Run Properties

- Fluid Code
- Nominal Diameter
- Piping Material Class
- Plant Group Name (Unit)
- Tag Sequence Number

◆ Combine to make an equivalent Line number for the Interface to work

◆ Note: Only Lines that have Instrument Tag Numbers will propagate to SPI

SmartPlant P&ID - V\_V : FSP3D\_2007\_VV - [20.0000.000.041.22\_SP3D.pid]

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Catalog Properties

Pipe Run - P-20108

Fluid Code	P
Fluid System	Process
Hydraulic Circuit Item Tag	
HydroTest Package No	
Inventory Tag	
Item Tag	P-20108
Loop Tag	
Nominal Diameter	8"
Pipe Spec Revision	
Piping Materials Class	HAP
Pipe Run Class	Piping
Pipe Run Type	Piping
Plant Group Name	Unit 20
Plant Group Type	Unit
Plant Item Type	Pipe Run
Requisition No	
SP ID	7F39F6C83B7746A48474E91EBCFC
Tag Seq No	108
Tag Suffix	

Engineering Data Editor

# SP-PID Properties Database



## ◆ Equipment Properties

- Fluid Code
- Plant Group Name (Unit)
- Tag Sequence Number

◆ Combine to make an equivalent Equipment number for the Interface to work

◆ Note: Only Equipment that has Instrument Tag Numbers associated to it will propagate to SPI

SmartPlant P&ID - V\_Y : FSP3D\_2007\_VY - [20.0000.000.041.22\_SP3D.pid]

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Catalog

Properties

Pipe Run - P-20108

Fluid Code	P
Fluid System	Process
Hydraulic Circuit Item Tag	
HydroTest Package No	
Inventory Tag	
Item Tag	P-20108
Loop Tag	
Name	
Package Item Tag	
Part Number	
Pipe Run Class	Piping
Pipe Run Type	Piping
Plant Group Name	Unit 20
Plant Group Type	Unit
Plant Item Type	Pipe Run
Requisition No	
SP ID	7F39F6C83B7746A48474E91EBCFL
Tag Seq No	108
Tag Suffix	

Engineering Data Editor



# SP-PID Review Process

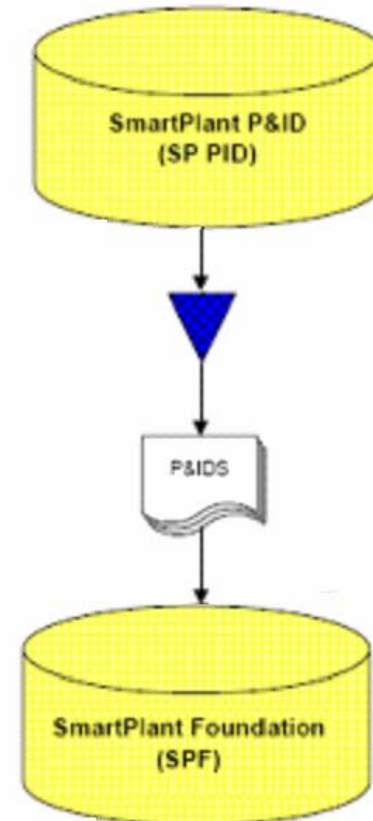


- ◆ Make sure PID go thru process review and check by each discipline
- ◆ Make sure PID development meets the requirement of drafting basic.
  - All objects and label will comply with the authorized data set issued by the project. Request for modifications to the data set will be handled as specified by the Project Procedure Manual
  - No plant items will be left in either plant stockpile or Drawing stock pile
  - No “Connection Points Unattached” indication will be left unresolved in pipe runs
- ◆ Make sure all the Instrument tags are correctly input to SP P&ID
- ◆ Based on the project requirement soft tag can be published or omitted

# Publish SP-PID to SmartPlant Foundation



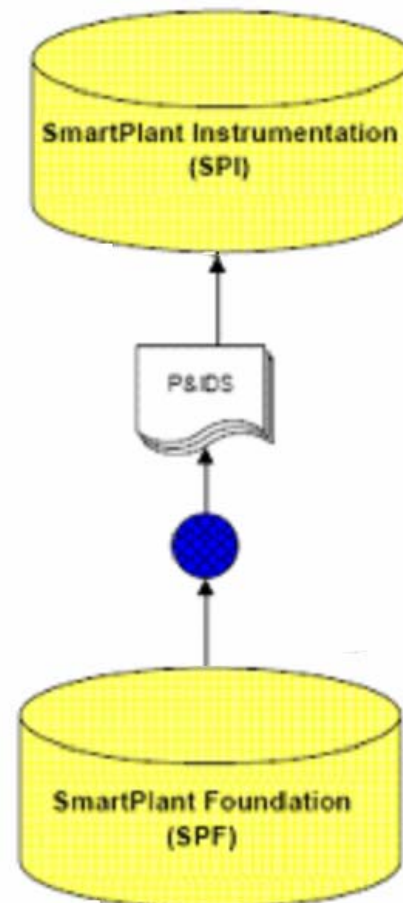
- ◆ When P&ID is ready to publish to SPF, a revision needs to be created and assigned to the P&ID.
- ◆ The P&ID can be re-published anytime with a new version number
  - If P&ID Revision Number does not change before re-publish, The SPF interface will assign a sub-number to the current revision.
  - A P&ID may be published as many time as necessary to maintain a data centric interface





# Retrieve SP-PID from SPF to SPI

- ◆ Only the current revision of the published P&ID is retrievable
- ◆ **Note!** Tags that are in both SPI and SP\_PID will correlate to each other without having to identify new Tags in SPI
- ◆ This will allow SPI users to create an Instrument index in SPI before P&ID publishing without having data overwritten
- ◆ For Tag correlation to work the Unit Number conflict must be corrected with a “Hot Fix”



# Process SP-PID from SPF in SPI



- ◆ Review Action To-Do list items
- ◆ If it is the first retrieve
  - Run Create Instrument tags in SPI
  - Run Create Line in SPI
  - Run Create Piping Port 1, 2 in SPI
- ◆ If it is not the first retrieve
  - If New Tag
    - Run Create Instrument tags in SPI.
    - Run Create Line in SPI
    - Run Create Piping Port 1, 2 in SPI
  - If Existing Tag
    - Run Update / Delete Instrument tags in SPI
    - Run Update / Delete Line in SPI



# Process SP-PID from SPF in SPI

## ◆ Sample SPI To-Do list

Create command means that instrument is not yet in SPI, when you run create it will create instrument in SPI with new value.

Instruments already in SPI with matching Tags will associate with SP-PID Tags

Task Type	Item Type	Item Name	Created Date
✓ Create	Instrument	20FT -640	9/22/2008 10:28:23
✓ Create	Instrument	20LT -633	9/22/2008 10:28:22
✓ Create	ProcessEquipment	V-20111	9/22/2008 10:28:22
✓ Update	Instrument	20LG 58	9/22/2008 10:28:22
✓ Update	Instrument	20LT -631	9/22/2008 10:28:22
✓ Create	Instrument	20LG -58	9/22/2008 10:28:22
✓ Update	Instrument	20LT -633	9/22/2008 10:28:22
✓ Create	Instrument	20LT -631	9/22/2008 10:28:22
✓ Create	Line	P-125-1"-FAE-	9/22/2008 10:28:21



# Process SP-PID from SPF in SPI



## ◆ Sample Create Tag

Create command will create a new instrument in SPI with new values.

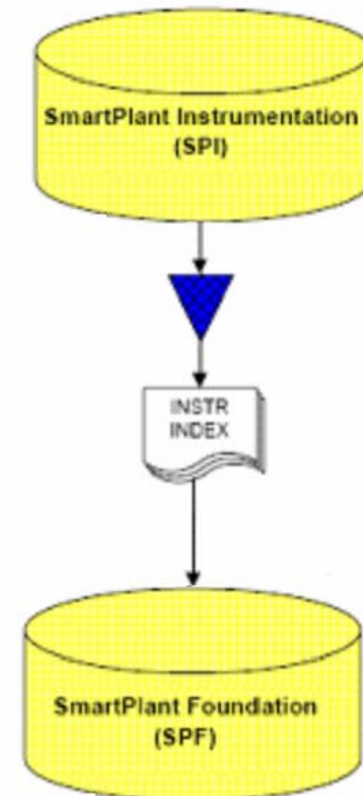
Created Instruments must be edited to add proper Instrument Type, associate to Loop and re-launch profiles for Spec, Process and wiring data

Active	Ignored	Property	New Value
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tag Number	20FT -640
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location	Field
<input checked="" type="checkbox"/>	<input type="checkbox"/>	P&ID	20.0000.000.041.22
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Status	NEW

# Publish SPI data to SPF



- ◆ Verify and Review data from Instrument Index
  - When Instrument Index is ready to publish to SPF, the revision needs to be assigned to the document.
  - Each time new instruments are retrieved and created in SPI, an index must be published to SPF with the new tags to complete the establishment of the required relationships.
  - Once the Instrument index is published, the instrument tags on the index will be correlated with SP PID and the necessary relationships will be established, and Instrument will change status to share from SPF



# Change Management



- ◆ Because P&ID's on a project are subject to strict change management procedures, when you implement the P&ID's with integration, the incorporation of approved changes must apply to the shared data as well as the P&ID drawings.
- ◆ To support this work process, the P&ID's and associated data available for retrieval into SPI must be kept current with the project scope. This requires that the P&ID's be maintained in SP P&ID and published to Smart Plant foundation as changes are approved.