

# PIP Proposal for new Practice

Proposed Title: Instrument Data  
Harmonization – Configuration of SmartPlant  
Instrumentation (SPI)

Disclaimer – The initial practice would focus on SmartPlant Instrumentation, however it would not preclude use by companies using other vendor's, or in-house developed, software.

# Process Industry Practices

A consortium of companies sharing the goal of reducing plant costs through development and implementation of common industry practices for detailed design, construction, procurement, operation, and maintenance of manufacturing facilities.



# PIP Member Consortium

Seventeen members  
established PIP in 1993.

Self-funded under CII.

Now includes 62 process  
industry companies:

- 35 owners
- 27 EPC contractors

Represents a significant share  
of the industry.



# PIP Member Companies – Owners

3M	Eastman Chemical	Occidental Oil & Gas
Aramco Services	Evonik Degussa	Pasadena Refining
Archer Daniels Midland	Flint Hills Resources	PPG
Arkema Inc.	FMC	REC Silicon
Ascend Performance Materials	Hess Corporation	Rentech Inc.
BP	Holly/Frontier	SABIC
Celanese	Honeywell	Sekisui
Chevron	Huntsman	Solutia
Citgo	Kemira	Sunoco
ConocoPhillips	Momentive	Tesoro Corp.
DuPont	Monsanto	UOP
	Mosaic Fertilizer	Western Refining

# PIP Member Contractor Companies

Ambitech Engineering

BE&K (a KBR Company)

Bechtel

Braskem America Inc.

Brinderson LP

Burns & McDonnell

CB&I

CDI Engineering Solutions

CH2M HILL

Chemtex International

ENGlobal Engineering Inc.

Fluor

GE Energy

Jacobs Engineering

KBR

Kvaerner

Merrick & Company

Middough Inc.

S&B E&C, Ltd.

SAIC (SEE&I)

Samsung Engrg. America Inc.

Shaw Energy & Chemicals Group

SK Engineering & Construction

SNC-Lavalin E&C, Inc.

Technip USA

URS Corporation

WorleyParsons Ltd.

# PIP Licensees

API

ASME

Autodesk

Bentley Systems, Inc.

Codeware Inc.

ConcepSys Solutions

IEEE

IHS

Intergraph

ISA

Lee College

National Institute of Building  
Sciences

National Insulation Association

Palomar College

PI/FlexPLANT

St. Paul Technical College

Texas A&M Corpus Christi

Thomson Reuters/Techstreet

University of North Dakota

# New Practice – Goals & Objectives

- Develop a PIP Practice which is based on the harmonization of existing company specific SPI configurations, Specification Sheets, and implementation standards
- Standardize the configuration of SmartPlant Instrumentation tables/fields
- Facilitate communication and sharing of data between companies.
- Create a Generic Practice where the receiving company could be a user of SPI, or any other database or spreadsheet, and still take advantage of the standard setup contained in this practice.
- Develop a standard numbering scheme for specification templates

# Justification for the new Practice

Current Issues in the industry:

- More Owner/Operators are requiring the handover of the SPI database from the EPC or other contractors
- No industry standard for required Instrument data
- No industry specification of the configuration of User Defined Fields (UDF) or within SPI
- Many projects are done by multiple EPCs, however the Owner needs a consolidated database in a single format. This practice would provide each company the ability to use their own setup during the project phase, yet establish a standard format for the turnover database

Current Practices define instrument specification sheets, but do not address how to connect the data contained in them to an instrumentation database.



# Example Differences in UDFs

## Company 1

UDF	Definition	Length	Type
udf_c01	Process Assembly	20	Character
udf_c02	IAS Assembly	20	Character
udf_c03	Elect Assembly	20	Character
udf_c04	Signal Assembly	20	Character
udf_c05	Mtg Assembly	20	Character
udf_c06	Supt Assembly	20	Character
udf_c07	Plan Drawing	20	Character

## Company 2

Table UDF\_Component

Database Name	Type	Field name
UDF_C01	CHAR(20)	
UDF_C02	CHAR(20)	
UDF_C03	CHAR(20)	
UDF_C04	CHAR(20)	
UDF_C05	CHAR(20)	
UDF_C06	CHAR(20)	
UDF_C07	CHAR(20)	

## Company 3

SWITCH WIRED	20	UDF_C01
IN/OUT	20	UDF_C02
TYPE	20	UDF_C03
SOFTWARE ADDRESS	20	UDF_C04
LIMIT DECR	20	UDF_C05
LIMIT INCR	20	UDF_C06
RANGE	20	UDF_C07

# Sample Output for UDF definitions to be included in the practice

Instrumentation Data Exchange Example.xlsx					
	A	B	C	D	E
1	PIP			SmartPlant Instrumentation	
2	Property Description	Source	Data Type	Property	Table name
3	Instrument Tag			Name	Component
4	Wire Tag			Name	Wiring
5	Alarm High	Specification Sheet	Character (20)	UDF_C31	Component
6	Alarm High High		Character (20)	UDF_C32	Component
7	Alarm Low		Character (20)	UDF_C33	Component
8	Alarm Low Low		Character (20)	UDF_C34	Component
9					
10					
11					
12					

# Next Steps ...

- Meet with your PIP Steering team or Process Controls Function team member to let them know if you support this proposed PIP Practice
- Let us (and them) know if you are interested in being on the Practice development team
- Let us know what the basis is for your current specification sheets (i.e., Intergraph OOTB, ISA, Company designed, etc.)
- Let us know if you are willing to provide an Excel (no calculations please) or .pdf of your companies standard Specification sheets, plus their current mapping in SPI.

**IMPORTANT NOTE:** We will not include any calculations. This information is for data dictionary purposes only.

# Benefits

- ✓ Provide Intergraph a set of Specifications Sheets which they can deliver OOTB that are compatible with an integrated environment.
- ✓ Harmonization of instrument data similar to the philosophy of ISO 15926 in a much simpler SPI compatible format
- ✓ Create a common set-up for SPI which Owners, Contractors and EPCs can agree on as a starting point for project closeout data transfer.
- ✓ Enable SPI users to write only one publish/retrieve adapter to exchange data with all companies who also create a PIP compatible adapter

# Questions or Comments?

Louis Archuleta

[louis.archuleta@aramcoservices.com](mailto:louis.archuleta@aramcoservices.com)

713-432-5936

Sharon Wildey

[sharon.wildey@ge.com](mailto:sharon.wildey@ge.com)

713-201-5419