

SmartPlant Instrumentation Technical User Forum P2C2 (Houston SPI TUF) Meeting	August 9, 2016 8:00 am FLUOR
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Attendees	32 Members in attendance 24 Online Connections	Copied To	Houston SPI LTUF Website http://www.spi-ltuf.org
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Called By	John Dressel	Prepared By	John Bolmanski, & John Dressel
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Item	Topic	Notes	Action/Due
1	Welcome 8:00	Welcome & Safety Moment <ul style="list-style-type: none"> Welcome to Fluor David Hoepfner, Fluor Safety using Pokemon GO Emeka Nwagbara, Fluor 	
2	Chairman's Notes 8:10	Announcements and Introductions John Dressel, Fluor Companies represented in room and online: <ul style="list-style-type: none"> Intergraph, Fluor, SNC-Lavalin, Chevron, Emerson, Lubrizol, Mangan, Saudi Aramco, Rolta International, POWER Engineers, Honeywell, BASF Corporation, CoSyn, BASF, Poyry, Olin Corporation, Burns & McDonnell, ProLytX, Contech, Jacobs. IHI E&C, Chart E&C, Overload Services, Burrow Global, CB&I, Dow, Puffer-Sweiven, Worley Parsons, Technip USA, Air Liquide, Amec Foster Wheeler Announced Intergraph PP&M IUSA 2016, September 21 at Marriott Sugar Land. Announced David Kaiser and Guy Masin will be sharing the Product Owner Responsibilities Links to the SPI GTUF and PPM GTUF are at the top of the SPI LTUF Website 	
3	Presentation 8:30	Intergraph @ HxGN LIVE 2016 John Dressel, Fluor Sun 06/12/2016 8:00 - 12:00 - SmartPlant GTUF <ul style="list-style-type: none"> 8:00 a.m. Opening remarks of the Schematics and 3D-Viz TUF Chairs 8:10 a.m. Update on Intergraph PP&M Tools Organization (Tom Szoka, Intergraph) 8:30 a.m. Intergraph PP&M 2D and 3D-Viz Commonalities (2D & 3D TUF chairs) 8:45 a.m. Split to the E&S Combined Session and the S3D-Viz Session 8:50 a.m. Opening remarks and Introductions (E&S TUF Chairs) <ul style="list-style-type: none"> P&ID TUF Chair – Adam Williams and Christine Rech SPEL TUF Chair – Earl Trindel SPI TUF Chair – John Dressel 9:00 a.m. Overview on Engineering & Design Tools Products (Frank Joop, Intergraph) 9:45 a.m. Case Study on the Integrated Workflow (Ron Jackson, Fluor) 	

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		<ul style="list-style-type: none"> • 10:10 a.m. Break/Networking • 10:25 a.m. CR Ranking Update (Dennis Cooley, Cooleycore) • 10:55 a.m. Update on Master Tag Registry (MTR) (John Simmons, Intergraph) • 11:25 a.m. Update on SmartPlant Reference Data (SPRD) (Satish Hota, Intergraph) • 11:40 a.m. SmartPlant Roundtable Summery and Conclusions • 12:00 p.m. TUF luncheon & Networking • 1:00 p.m. Instrumentation, Electrical & Process Design breakout meetings <p>Sun 06/12/2016 1:00 - 4:30 - SPI Global TUF</p> <ul style="list-style-type: none"> • 1:00 p.m. Opening remarks and Introductions (John Dressel, Fluor, SPI TUF chair) • 1:15 p.m. SPI 2016 Overview (Guy Masin, Intergraph) • 2:00 p.m. SPI 2016 Training (John Dressel, Fluor) • 2:30 p.m. Break / Networking • 2:45 p.m. Upgrading to SPI 2016 (Ron Jackson, Fluor) • 3:15 p.m. Innovations with SPI (Dennis Cooley, Cooleycore) • 3:45 p.m. Documenting Emerging Wiring Methods in SPI (Nezar Faitouri, Mangan) • 4:15 p.m. Open Q&A session and SPI Forum • 4:30 p.m. Formal meeting close / Networking <p>Mon 06/13/2016 HxGN LIVE 2016 ANA Opening Day</p> <ul style="list-style-type: none"> • 8:00am – 12:00pm – SPI 2016 Hands On Training (Paid Training) • 4:30pm – 5:00pm – Instrumentation Fit for new Challenges (TV Spot) • 5:30pm – 7:00pm – How Great Stories Take Shape (Key Note) • 7:30pm – 9:30pm – Taste of HxGN (Welcome Reception) <p>Tue 06/14/2016 Intergraph @ HxGN LIVE 2016 ANA</p> <ul style="list-style-type: none"> • 10:00 - Key Note: Intergraph Project Execution Track Introduction • 11:00 - Upgrading to the New SmartPlant Instrumentation 2016 • 1:30 - Partner Session: Integrated Project Execution Design • 4:30 - Implement Process Safety Using SmartPlant Solutions • 5:30 - Innovation 360 Technology Expo at the Zone <p>Wed 06/15/2016 Intergraph @ HxGN LIVE 2016 ANA</p> <ul style="list-style-type: none"> • 10:00 - Reduce Risk with Vendor Interfaces in SPI 2016 • 1:30 - Ensure Consistency and Productivity in SPI 2016 • 3:30 - Better SPI and SP-P&ID Integration at Fluor (Me!) • 7:30 - Mix & Stir Happy Hour + A Night at Disneyland <p>Most Impressive Software @ HxGN 2016</p> <ul style="list-style-type: none"> • The SPI 2016 Release was a favorite topic at the conference • The new Query Builder, Engineering Data Editor and To Do 	

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		<p>lists are soon to be incorporated in other SmartPlant Products</p> <ul style="list-style-type: none"> • SmartPlant Reference Data (SRD) is a reference data platform that allows building structured reference material that can be used to build standard libraries • Reference data from projects can be captured and reused • Master Tag Registry (MTR) Gathers and Correlates all Tags from SPF, S3D, SP-P&ID, SPI and SPEL with automatic change management • Software is on a Phased release schedule but should be usable on some projects now • SmartPlant Engineering Integrity (SEI) Allows rules to be written for data validation with SP-P&ID, SPI and SPEL with a smart dashboard and focused links • Engineering Integrity comes with comprehensive sets of rules and users can easily add new validation rules as needed • Smart Enterprise Portal (SEP) replaces SmartPlant Explorer as the web based document management, reporting and reference system • Graphic menu driven tool able to easily view and produce almost all reports from any SmartPlant Product • SmartPlant Fusion will rapidly find, capture, organize, link, and visualize large volumes of data and documents through a simple Web portal. • It can handle both structured and unstructured data <p>HxGN LIVE 2016 ANA Observations</p> <ul style="list-style-type: none"> • The Sunday GTUF meetings were an early kickoff to the HxGN Live 2016 Intergraph Users Conference • Registration on Monday morning was quick and easy with tee shirts and back packs for everyone • The Keynote Presentations were more on the technical side this year instead of the usual sales pitches of last year • The Zone Expo gave users hands on access to applications and one on with developer experts and vendors • The Hands on Training was available as both paid sessions on Monday and walk in sessions during the week • SmartPlant Product Presentations were well attended and showed off many new feature of the programs • Vendor and Customer Presentations introduced the user experiences with the SmartPlant tools • Television Interviews and Social Media Presentations were produces and displayed throughout the conference • Meals were adequate with the dining hall attached to the Zone for easy access to the tech expo • The receptions at the pedestrian mall in front of the convention center took advantage of the California weather • The "Taste of HxGN" food truck opening day reception was different and fun with a distinct California flair • The next PP&M TUF meeting in ANAHEIM, CA on June 11, 	

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		<p>2017 before HxGN LIVE ANA June 12-15, 2017 (Later announced that WE'RE GOING BACK TO LAS VEGAS! HxGN LIVE 2017 13-16 JUNE 2017, THE VENETIAN LAS VEGAS so the PP&M TUF meeting will be June 12, 2017 in Las Vegas))</p> <ul style="list-style-type: none"> • Online Links • http://hxgnlive.com/ana2016 • http://www.spi-1tuf.org/GTUF16 • http://www.spi-1tuf.org/GTUF16/SPI 	
4	Presentation 8:30	<p>DDP data interface with SPI and Fisher First 2 Keith Herbsleb, Puffer-Sweiven Tom Podhajsky, Emerson</p> <p>Fisher First 2 to SPI and S3D Helping EPC's complete piping design sooner</p> <p>How can an EPC complete piping design, easier, faster, and more reliably, as it relates to control valves?</p> <p>Topics covered</p> <ul style="list-style-type: none"> • Current State • New Capability • Process • Pre-Requisites and Limitations • Benefits <p>Pain of current method</p> <ul style="list-style-type: none"> • Submitting PDF valve spec sheets and outline drawings has room for improvement. • EPC's project schedule must include queue time to manually enter data into Smart Plant Instrumentation and create/modify 3D control valve shapes for their piping design. • 500 data sheets x ½ hour average per tag = 250 hours = 2 people for 2 weeks lead time • Manually entering data and double checking is a lot of work effort. • 500 data sheets x 2 revisions per tag x ½ hour = 500 hours of work • Manual data entry mistakes for dimensional data for piping can be costly and time consuming to fix if discovered during construction. • Risk: Cost of rework during construction and project schedule delays. <p>PDF Document vs Data</p> <ul style="list-style-type: none"> • "PDF" Method <ul style="list-style-type: none"> ○ Manual data entry (15-45 mins per valve) ○ Longer Queue (200 valves with 1 person = 2 weeks) ○ Longer Project Schedule ○ Occasional data entry mistakes ○ Orientation changes drive Hold Fab & Change Orders 	

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		<ul style="list-style-type: none"> • “Data” Method <ul style="list-style-type: none"> ○ Data imports directly into SPI for I&C Engineer ○ Data published to S3D for Piping Designer ○ Project schedule reduced by weeks (release piping spool pieces to fabricators weeks earlier) ○ Reduce data entry mistakes ○ Orientation changes resolved much earlier. <p>SPI Form 90 – Fisher Specification Sheet</p> <ul style="list-style-type: none"> • Fisher reviewed dozens of EPC control valve specification sheets, took the most popular fields, and worked with Intergraph to create SPI Form 90, the standard control valve spec sheet for Fisher products. • (The ISA control valve spec sheet in SPI is rarely used on projects since it lacks many fields needed by EPC’s.) <p>EPC’s using custom valve spec sheet in SPI</p> <ul style="list-style-type: none"> • EPC’s typically create a custom spec sheet form in SPI for each project. <ul style="list-style-type: none"> ○ No problem. The new process can handle either... <ul style="list-style-type: none"> ▪ SPI Form 90 – standard Fisher control valve specification sheet in SPI or ▪ Custom valve spec sheet form in SPI • If EPC is using a custom control valve spec sheet form in SPI, the Fisher FCEC FF2 team, as a paid service, can create the map needed to populate it. <p>Dimensional Data for Piping</p> <ul style="list-style-type: none"> • Emerson/Fisher provides the DDP data in a .csv file (that can be opened in Excel): • Tags - Standard 3D shapes are referenced - Up to 30 dimensions per 3D shape • Intergraph and Emerson have pre-defined 3D shapes for control valves with up to 30 dimension variables for each for use in Intergraph Smart 3D (S3D). • We reference the Intergraph shape and provide the 30 dimensions for each tag. <p>FF2-to-SPI Data File</p> <ul style="list-style-type: none"> • The .csv data file includes both the Control Valve Spec Sheet and DDP combined • Approx. 400 columns of Control Valve Spec Sheet data • Approx. 40 columns of associated Dimensional Data for Piping (DDP) • Dimensional Data for Piping (DDP) data values are published by tag within Intergraph. • Using Intergraph Smart 3D, piping designer inserts the control valve 3D shape into the pipeline <p>Benefits - Reduced Schedule, Effort, and Errors</p> <ul style="list-style-type: none"> • EPC can complete piping design a couple weeks earlier. This allows spool pieces to be released to piping fabricators a couple weeks earlier. This is often critical path on the EPC’s project schedule. 	

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		<ul style="list-style-type: none"> • The manual effort to enter data sheet and dimensional data is significantly reduced; neither the EPC, Emerson, nor the Fisher sales office need to tediously manually populate thousands of dimensions in Excel files or 3D models on projects. • By reducing manual data entry, there are fewer data entry errors. • The EPC and Sales Office can finalize actuator orientation changes earlier. <p>Pre-Requisites and Limitations</p> <ul style="list-style-type: none"> • Control Valve Spec Sheet data: <ul style="list-style-type: none"> ○ To transfer SPI Spec Sheet data, customer must have <ol style="list-style-type: none"> 1. Intergraph SPI version 2009 R1 or greater. 2. And user must have user access rights to use the Intergraph Import utility in SPI. ○ Note: If the EPC is using a custom valve spec sheet form in SPI, and if there are fields with no equivalent field in First 2, then those field values will not be populated. In most cases, we'll have the fields the EPC needs. • Dimensional Data for Piping (DDP): <ul style="list-style-type: none"> ○ To transfer DDP data, the customer must have the following... <ol style="list-style-type: none"> 1. Intergraph SPI - version 2009 R1 or greater 2. Intergraph SmartPlant Foundation (SPF) - version 2009 R4 or greater 3. Intergraph Smart 3D (S3D) - version 2011 R1 or greater 4. And user must have user access rights to use the Intergraph Import utility in SPI. ○ Standard Product Scope: Not all Fisher valves have dimensional data for piping, such as special design valves. In general, if the outline drawing is available from FF2, the standard DDP is available. A custom DDP file would need to be manually populated (or traditional outline drawings can be submitted). <p>Frequently Asked Questions</p> <ul style="list-style-type: none"> • Can we only import the construction information fields from the CSV data file into the SPI spec sheet, so we don't overwrite the process conditions? <ul style="list-style-type: none"> ○ Yes. We can configure to only import certain fields from the CSV file into SPI. • Revision Management – How does the SPI user know what fields changed? <ul style="list-style-type: none"> ○ SPI has a compare feature that will highlight changes from a previous revision. <p>Discovery Questions</p> <ul style="list-style-type: none"> • What data will be transferred... <ul style="list-style-type: none"> • Just the Spec Sheet (Need Intergraph SPI) • Or both Spec Sheet and DDP (Also need Intergraph S3D) 	

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		<ul style="list-style-type: none">• Does the EPC have the pre-requisite Intergraph tools and versions?<ul style="list-style-type: none">• See the earlier Pre-requisite slide. • Which SPI control valve spec sheet will be used?<ul style="list-style-type: none">• See SPI Form 90 (This is the standard control valve spec sheet in SPI for Fisher products.)• EPC's own custom form in SPI (Emerson/Fisher/FCEC can provide the service to create the necessary set up files.) • Establish primary contacts at the EPC and Fisher Sales Office for further discussions.	

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5	Presentation 10:00	<p data-bbox="496 184 1279 239">Cable Management with SmartPlant Instrumentation 2016 and Smart3D 2016 Michael Henry, Intergraph</p> <p data-bbox="496 275 1154 300">Overview of Smart 3D Cable Routing During FEED...</p> <ul data-bbox="545 310 1304 1167" style="list-style-type: none"> • Workflow diagram of Electrical Design during FEED (Front End Engineering Design) phase • First phase is creating cable schedule in SPI/SPEL • After this, you want to begin laying out major equipment in S3D workspace. This is necessary because equipment defined in the cable schedule must be present in S3D for cable processing • With equipment in place, cable schedule can then be retrieved and created. • Before being processed, the S3D Cable Validation Command can be ran to validate that all necessary equipment is in the workspace, and the cable is in the catalog. • After cable is created and processed in the workspace, cableway runs can be created for cable routing. Best practice is to route with zero-spec cableway as a space reservation, and then later replace the cableway with appropriate cable tray parts. • With a cable route defined, this information can be updated back in SPI/SPEL to update the respective cable properties with information such as cable length and route path components • Integrating SPI/SPEL with S3D allows for an iterative process during modeling. As modeling continues, cableway arrangement can be altered and adjusted to your preference with the necessary parts, and cable route efficiency can be optimized with help from the new Cable Path Quality Analysis Report <p data-bbox="496 1203 1122 1228">Integrated 3D Cable Routing Before SPI/S3D 2016</p> <ul data-bbox="545 1239 1252 1413" style="list-style-type: none"> • Cable schedule could only be retrieved from SmartPlant Electrical through SmartPlant Foundation in order for Smart3D to retrieve it. • SmartPlant Instrumentation cable schedule had to go through SmartPlant Electrical before being able to be retrieved from Smart3D. <p data-bbox="496 1449 1094 1474">Integrated 3D Cable Routing With SPI/S3D 2016</p> <ul data-bbox="545 1484 1276 1759" style="list-style-type: none"> • Cable schedule can now be retrieved from SmartPlant Electrical and SmartPlant Instrumentation through SmartPlant Foundation in order for Smart3D to retrieve it. • Now, parallel workflow exists so that Cable Schedule can also be retrieved directly from SPI via SPF • Saves users the step of going through SPEL. • SPI can still go through SPEL if users wants to maintain a unified cable schedule or keep up with current practices in place. <p data-bbox="496 1822 948 1848">Retrieving Cable Schedule from SPI</p> <ul data-bbox="545 1858 1284 2095" style="list-style-type: none"> • Cable Schedule can be created and managed for reporting in SPI, and used in S3D for modeling. However, before cable can be successfully retrieved in S3D, a few items need to be in place. <ul data-bbox="643 1976 1284 2095" style="list-style-type: none"> ○ Electrical Equipment must exist in S3D Model ○ SPI and S3D Equipment Names Must Match Exactly ○ Cable Tags in SPI Catalog Must Match S3D Cable 	

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6	Presentation 10:45	<p>SPI – Roadmap Intergraph David Kaiser,</p> <p>Version 2016 (11): April -2016</p> <ul style="list-style-type: none"> • Major enhancements: <ul style="list-style-type: none"> ○ Query Builder ○ Engineering Data Editor (EDE) ○ Project / As-Built ○ To-do-List (Integration) • Other enhancements: <ul style="list-style-type: none"> ○ UDF/UDT ○ SPI –S3D cable integration ○ Overhaul of the interface with Fisher CV <p>Query Builder</p> <ul style="list-style-type: none"> • Type Selection • Relationship definition • Item Properties • Browser Columns <p>Engineering Data Editor (EDE)</p> <ul style="list-style-type: none"> • EDE Explorer • Search • Layout History • Cross Column Filter <p>EDE Expression Builder</p> <ul style="list-style-type: none"> • Easily accessible from the Actions Pane • Familiar expression interface <p>Query Builder & EDE Combination</p> <ul style="list-style-type: none"> • Edit your EDE in the QB, • Once saved your EDE will be updated <p>Project Management (OO mode)</p> <ul style="list-style-type: none"> • Domain Explorer • Scope –Table view • Scope –Tree view • Scope –Graphic view <p>Enhanced To-Do List Integration</p> <ul style="list-style-type: none"> • Flexible Views with drag/drop and other EDE Functionality • P&ID Viewable directly within SPI • Intuitive Color Coding <p>UDF/UDT Editor</p> <ul style="list-style-type: none"> • UDT Defined in SPI Admin • UDF Configurable Lists • Supply additional constraints • Changes occur throughout SPI <p>S3D Cable Integration</p> <ul style="list-style-type: none"> • Cable type • Quantity needed • Lengths/routing required 	

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		<ul style="list-style-type: none"> • More accurate validation and procurement • Integrated with Smart 3D <p>Overhaul of SPI –Fisher CV interface</p> <ul style="list-style-type: none"> • Based on new Spec form • Revised links (for import module) • Includes DDP data <p>SPI 2016 Supported Platforms</p> <ul style="list-style-type: none"> • Microsoft Windows Standard/Datacenter Server 2012 R2 <ul style="list-style-type: none"> ○ Oracle 12c R1 (12.1) ○ Microsoft SQL Server 2014 • Application Publishing: <ul style="list-style-type: none"> ○ Citrix XENApp7.6 • Enterprise Virtualization: <ul style="list-style-type: none"> ○ Citrix XENServer6.5 • Prerequisites: <ul style="list-style-type: none"> ○ MS Office 2013 ○ SPLM 2012 • Operating Systems: <ul style="list-style-type: none"> ○ Microsoft Windows 7 Professional & Enterprise 64bit SP1 ○ Microsoft Windows 8.1 Professional & Enterprise 64bit ○ Microsoft Windows 10 • Database Clients: <ul style="list-style-type: none"> ○ Oracle 12c R1 Client (12.1) ○ MSSQL 2014 Client <p>Beyond 2016</p> <ul style="list-style-type: none"> • SPI v2016 SP1 • Q4 2016: • Update Explorers: Domain, Reference, Wiring, Document Binder • Performance improvements (EDE, Find) • New Find toolbar • SPI v201x • Tentatively scheduled for End -2018 • Introduce replacement technology to Infomakerforms • Web APIs • Support Enterprise Platform 2017 • Disconnected workshare, Offsite projects handling (overhaul) • Control Logic Diagrams <p>Viewing -Portal</p> <ul style="list-style-type: none"> • SmartPlant Enterprise Portal <p>Intergraph USA Conference 2016</p> <ul style="list-style-type: none"> • Date –September 21, 2016 • Location –Sugar Land Marriott • 2015 –300+ customers attended • http://intergraphusersconference.com/IUSA/ 	
7	LTUF Forum	<p>Forum Discussion Topics</p> <ul style="list-style-type: none"> • SPI & S3D Cable Management 	All Attendees

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	11:15	<ul style="list-style-type: none"> • SPI Alarm and Trip Management • SPI 2016 Specification Management • SPI 2016 External Interfaces • Mobile Data Access 	
8	Close 11:55	<ul style="list-style-type: none"> • Next meeting was tentatively be November 8, 2016 but that is Election Day so it was agreed to change the date. <p><i>(After the meeting ProLytX offered to host the next meeting on November 15, 2016 at 10300 Town Park Drive, Houston, TX 77072)</i></p> <ul style="list-style-type: none"> • John Dressel closed meeting and thanked everyone for attendance 	