

<b>SmartPlant Instrumentation Technical User Forum P2C2 (Houston SPI TUF) Meeting</b>	<b>May 13, 2014 7:30 am CB&amp;I</b>
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<b>Attendees</b>	29 Members in attendance 8 Online Connections	<b>Copied To</b>	Houston SPI LTUF Website
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<b>Called By</b>	John Dressel	<b>Prepared By</b>	Betty Alexander & John Dressel
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Item	Topic	Notes	Action/Due
1	Welcome	Welcome to CB&I Safety Moment      Gene Haney, CB&I	
2	Chairman's Notes	John Dressel, Fluor <ul style="list-style-type: none"> <li>• Announced HxGN 2014 and Global TUF meetings in Las Vegas</li> <li>• Minutes from prior meeting were approved.</li> <li>• Introductions were done.</li> </ul>	
3	Presentation	SPI Project Integrity      Lauhael (Lo-cal) Godinho, PAS  About PAS <ul style="list-style-type: none"> <li>• Founded in 1993               <ul style="list-style-type: none"> <li>○ Provider of Human Reliability Software™ for safe production                   <ul style="list-style-type: none"> <li>▪ Human reliability is a metric that relates to human factors that help minimize human error and lead to optimum human performance.</li> </ul> </li> <li>○ Serving Power, Oil &amp; Gas, and Processing industries globally</li> <li>○ Sustainable and profitable growth</li> </ul> </li> <li>• Business Strategy               <ul style="list-style-type: none"> <li>○ Innovative technologies inspired by domain expertise</li> <li>○ Strategic customer relationships</li> <li>○ Mission critical software solutions</li> <li>○ 20% annual R&amp;D Reinvestment</li> </ul> </li> <li>• Thought Leadership &amp; Strategic Partnerships               <ul style="list-style-type: none"> <li>○ Alarm Management and HP HMI Handbooks</li> <li>○ AIChE, NPRA, EPRI, ISA, EMMUA 191, OSHA</li> <li>○ Honeywell, Invensys, Intergraph, NovaTech and regional partners</li> </ul> </li> </ul> SPI-DCS/SIS Database Reconciliation <ul style="list-style-type: none"> <li>• Intergraph Smart Plant Instrumentation (SPI) Used by EPC for designing Instrumentation</li> <li>• DCS/SIS Vendors use SPI database to build control database               <ul style="list-style-type: none"> <li>○ SPI and DCS database begin to diverge</li> <li>○ Revisions continue in SPI-DCS/SIS databases, creating discrepancies</li> </ul> </li> <li>• During several stages in the project, manual work process used to reconcile divergent databases               <ul style="list-style-type: none"> <li>○ I/O Slot locations</li> </ul> </li> </ul>	

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		<ul style="list-style-type: none"> <li>○ Tag names</li> <li>○ Engineering units</li> <li>○ Descriptions</li> <li>○ Device manufacturer for smart devices</li> <li>○ Ranges</li> <li>○ Etc.</li> </ul> <p>Typical Effort for Reconciliation</p> <ul style="list-style-type: none"> <li>● 1 DCS with 10,000 I/O, 4 SIS with 1000 I/O each <ul style="list-style-type: none"> <li>○ 7 man weeks</li> <li>○ 3 weeks calendar time</li> </ul> </li> <li>● Reconciliation typically done 3 to 4 times during the project <ul style="list-style-type: none"> <li>○ Detailed Design</li> <li>○ Pre FAT</li> <li>○ Post FAT</li> <li>○ Post SAT</li> </ul> </li> <li>● Total Effort <ul style="list-style-type: none"> <li>○ 28 Man Weeks</li> <li>○ 12 weeks calendar time</li> </ul> </li> </ul> <p>Integrity System Validation</p> <ul style="list-style-type: none"> <li>● Integrity Automatically identifies mismatches between the databases <ul style="list-style-type: none"> <li>○ I/O Slot locations</li> <li>○ Tag names</li> <li>○ Engineering units</li> <li>○ Descriptions</li> <li>○ Device manufacturer for smart devices</li> <li>○ Ranges</li> <li>○ Etc.</li> </ul> </li> <li>● Saves engineering effort, improves quality</li> <li>● Can be extended to validate other connected systems <ul style="list-style-type: none"> <li>○ DCS to SIS, APC, Historian, PLC's etc</li> <li>○ SPI upgrades, SPI to SPI database versions</li> </ul> </li> <li>● Ensures accurate interfaces between disparate control systems throughout the life cycle of plant from design through operations</li> </ul> <p>Benefits &amp; Savings – 14,000 I/O Project</p> <ul style="list-style-type: none"> <li>● Shorten FAT and SAT <ul style="list-style-type: none"> <li>○ Less time spent identifying discrepancies, determining “who is right”</li> <li>○ Faster startup (less time tracking down errors)</li> <li>○ Errors found and remediated in the engineering offices, not at FAT or onsite</li> <li>○ Savings in the millions of dollars by shortening FAT and SAT by several weeks</li> </ul> </li> <li>● Reduction in costs - Manpower <ul style="list-style-type: none"> <li>○ 28 Weeks Without Integrity, 4 Weeks With Integrity</li> <li>○ 24 Weeks (86% Savings) Reduction in I&amp;E engineering effort (\$170,000)</li> </ul> </li> <li>● Database validation continually occurs, finding errors quickly and improving project quality</li> <li>● Automatic validation of SPI database post startup <ul style="list-style-type: none"> <li>○ I&amp;E techs use SPI database to drive instrument reliability program</li> </ul> </li> <li>● Validation can be extended to other integrated databases</li> </ul>	



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		<ul style="list-style-type: none"> <li>○ LAB 8: Create a Query of Instrument- Line List</li> <li>○ LAB 9: Wrong Result Query -Instrument to PAU</li> <li>● Appendix A- A list of important Properties <ul style="list-style-type: none"> <li>○ Plant Hierarchy <ul style="list-style-type: none"> <li>▪ Highest Plant Group (Plant for example)</li> <li>▪ Intermediate Plant Group (Area for example)</li> <li>▪ Lowest Plant Group (Unit for example)</li> </ul> </li> <li>○ Plant Reference Differentiation <ul style="list-style-type: none"> <li>▪ Plant/Reference (Plant/Reference Panel, Cable, etc...)</li> </ul> </li> <li>○ User Defined Fields are shown as “Custom Fields”</li> <li>○ MOC Property is in “Change Date and Changed by”</li> <li>○ Identification categories exist for most elements (exception – Table ID’s)</li> </ul> </li> </ul> <p>SPI 2015 Engineering Data Editor</p> <ul style="list-style-type: none"> <li>● The Engineering Data Editor (EDE) is accessed with the EDE Explorer on the SPI Toolbar: <ul style="list-style-type: none"> <li>○ EDE Types in Folders are visible to all users</li> <li>○ EDE Types in Private Folder are unique to user</li> <li>○ New EDE Types can be added by users</li> <li>○ EDE Types Properties may be edited by users</li> <li>○ EDE Types are subject to Report Management in the Administration Module for Custom Title Blocks and Archiving Definitions</li> </ul> </li> <li>● The EDE is divided into three sections: <ul style="list-style-type: none"> <li>○ The View Actions for specific Function control</li> <li>○ The EDE Main Window for Viewing and Editing Data</li> <li>○ The EDE Explorer for Selecting the EDE Types</li> </ul> </li> <li>● The EDE Explorer uses three icons for EDE Type: <ul style="list-style-type: none"> <li>○ A Custom browser that cannot be converted to EDE</li> <li>○ A Supplied browser that can be converted to EDE</li> <li>○ A Converted browser that is already converted to EDE</li> </ul> </li> <li>● Converting a Query to a EDE View: <ul style="list-style-type: none"> <li>○ In the Reference Explorer select a Query and Generate EDE View – then Name the view and set the View Type</li> </ul> </li> <li>● EDE View Main Window Header Functions: <ul style="list-style-type: none"> <li>○ Restore, Close and Float Tab the Edit Window</li> <li>○ Search, Group, Sort, Filter and Arrange View Layout</li> </ul> </li> <li>● EDE View Main Edit Window Functions: <ul style="list-style-type: none"> <li>○ Copy (Ctrl+C) and Paste (Ctrl+V) across cells and columns</li> <li>○ Supporting Table columns can be Edited (pencil click)</li> <li>○ Right-Click Menu in the EDE Edit Window</li> </ul> </li> <li>● EDE View Main Edit Report Functions: <ul style="list-style-type: none"> <li>○ In the Admin Module – Report Management: <ul style="list-style-type: none"> <li>▪ Set the Title Block, Save and Archiving Options</li> </ul> </li> <li>○ In the Comparison Wizard – EDE Type <ul style="list-style-type: none"> <li>▪ Select the View, Revision and Summary Type (Output)</li> </ul> </li> </ul> </li> </ul> <p>SPI 2015 As-Built Management</p> <ul style="list-style-type: none"> <li>● Major changes in the As-Built functionality of SPI will be in the Version 2015 rollout <ul style="list-style-type: none"> <li>○ Improve the visibility of Items that are copied to or from a Project</li> <li>○ Improve the management of Items that are copied to or</li> </ul> </li> </ul>	

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		<ul style="list-style-type: none"> <li>○ from a Project</li> <li>○ Unify SPI services and user interfaces</li> <li>○ Improve the strength/robustness of supported workflows</li> <li>○ Harmonize the process with the below operations:</li> <li>○ A) Claim</li> <li>○ B) Merge</li> <li>○ C) Project export (backup of engineering project)</li> <li>○ Remove the constraint of multi users operations when data is merged.</li> <li>● Basic principles of the new Project - As Built: <ul style="list-style-type: none"> <li>○ Creation of new Projects are in the Administration Module</li> <li>○ All Claim and Merge actions are now done from within SPI</li> <li>○ Copying Items are done from Source to Target <ul style="list-style-type: none"> <li>▪ Source may be As-Built or Project</li> <li>▪ Target may be Project or As-Built (If As-Built – action is Merge)</li> </ul> </li> <li>○ Copying Items can be with or without a buffer which is called the Project To-Do List (pTDL) <ul style="list-style-type: none"> <li>▪ The pTDL may function as a Claim or Merge Buffer</li> <li>▪ The pTDL is set Per Project</li> </ul> </li> <li>○ Copying Items are defined by the User as Active – additional related items will be copied for data integrity are Inactive</li> <li>○ Hierarchy for items that are Claimed or Copied to the pTDL: <ul style="list-style-type: none"> <li>▪ The wiring hierarchy level below the claimed Item (Its child) will be Active (editable)</li> <li>▪ The wiring hierarchy above the claimed Item (the parents) will be Inactive (view only)</li> </ul> </li> <li>○ Item Types defined as Root Items can be selected from the Domain Explorer (EDE), for Claim, Merge or Copy <ul style="list-style-type: none"> <li>▪ Loop</li> <li>▪ Instrument</li> <li>▪ Uncoupled CS Tag</li> <li>▪ Process Equipment</li> <li>▪ Line</li> <li>▪ Panel</li> <li>▪ Rack</li> <li>▪ Slot</li> <li>▪ Wiring Equipment</li> <li>▪ Terminal Strip</li> <li>▪ Terminal</li> <li>▪ Channel</li> <li>▪ Cable</li> <li>▪ Wire</li> <li>▪ Fieldbus Segment</li> </ul> </li> <li>○ From the upper menu select Tools &gt; Project To Do List <ol style="list-style-type: none"> <li>1. List View (Buffer and Delete Instructions)</li> <li>2. Tree View (Hierarchy of Items)</li> <li>3. Graphic View / Wiring Diagram (wiring Items)</li> </ol> </li> <li>○ The Project Activities options of the Domain Explorer:</li> </ul> </li> </ul>	

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5	Presentation	<p>SMARTER INTEGRATION</p> <p>Rethinking SmartPlant P&amp;ID and SmartPlant Instrumentation Integration John Dressel, Fluor</p> <ul style="list-style-type: none"> <li>• Business Problem - The Integration of Data between Intergraph SmartPlant P&amp;ID and SmartPlant Instrumentation is not being done effectively</li> <li>• Solution - We must Rethink how we use SmartPlant P&amp;ID and SmartPlant Instrumentation in an Integrated data centric environment</li> <li>• Benefits - By Rethinking our SmartPlant P&amp;ID and SmartPlant Instrumentation work processes we will be able to improve the quality and quantity of the integrated data</li> <li>• Anticipated Long-Term Benefits - Better integration of data between SmartPlant P&amp;ID and SmartPlant Instrumentation will improve the overall quality of Control Systems Engineering, Procurement and Construction</li> <li>• Future Plans/Strategy or Summary Statement - We plan to utilize multiple solutions for integration by changing how we use SmartPlant P&amp;ID and employing other Intergraph integration tools for data management</li> </ul> <p>Rethinking SmartPlant P&amp;ID and SPI</p> <ul style="list-style-type: none"> <li>• Integration of SP-P&amp;ID with SPI - The Story <ul style="list-style-type: none"> <li>○ The Great Story of SP-P&amp;ID Integration</li> </ul> </li> <li>• SmartPlant P&amp;ID Integration Issues <ul style="list-style-type: none"> <li>○ Timing of Publish and Retrieve cycle</li> <li>○ Handling of Instrument Types and Technology</li> <li>○ Expanding and Excluding Integrated Tags</li> <li>○ Quality and Quantity of P&amp;ID Data</li> </ul> </li> <li>• Fluor's SmartPlant P&amp;ID Integration <ul style="list-style-type: none"> <li>○ Fluor's NEXTGENERATIONsm Initiative</li> <li>○ Correlation of P&amp;ID Tags from SPF to SPI</li> </ul> </li> <li>• Tools for Integration of SP-P&amp;ID with SPI <ul style="list-style-type: none"> <li>○ SPI Batch Loop Creation Templates</li> <li>○ SPI Macro Expansion of Implied Tags</li> <li>○ SmartPlant P&amp;ID Engineering Data Editor</li> <li>○ SmartPlant P&amp;ID Engineering Integrity</li> </ul> </li> <li>• Applying what we have learned by Rethinking Smart</li> </ul>	

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6	Presentation	<p>SPI Workshare: Documenting Challenges and Solutions Dee Dee Honea, Foster Wheeler</p> <ul style="list-style-type: none"> <li>• Business Problem - Documenting changes on datasheets generated using Workshare resources</li> <li>• Solution - SPI has multiple "Mark Change" methods built into the software. We will explore the different methods.</li> <li>• Benefits - Time saving &amp; more efficient than manually checking each datasheet for changes</li> <li>• Anticipated Long-Term Benefits - Completion of the Project on time/under budget</li> <li>• Future Plans/Strategy or Summary Statement - All future Workshare projects will use established "Best Practices" document change methods.</li> <li>• Topics Discussed: <ul style="list-style-type: none"> <li>○ Workshare Challenges <ul style="list-style-type: none"> <li>▪ Language</li> <li>▪ Time Difference</li> <li>▪ Cultural Differences</li> <li>▪ Internet Connections</li> <li>▪ Communication</li> </ul> </li> <li>○ SPI Documenting Change Methods (Pros/Cons of each method) <ul style="list-style-type: none"> <li>▪ Archiving</li> <li>▪ Mark Changes</li> <li>▪ Document Binder</li> <li>▪ Other Methods</li> </ul> </li> </ul> </li> <li>• Conclusions <ul style="list-style-type: none"> <li>○ Using WorkShare Resources in SPI can be beneficial for companies to reduce costs. Good communication and proven "Best Practices" at the beginning of the project can result in accurate data that is on time and under budget</li> <li>○ Some key points to remember: <ul style="list-style-type: none"> <li>▪ Good Communication</li> <li>▪ Training</li> <li>▪ Identify the best way to divide the work</li> <li>▪ Decide on a plan</li> </ul> </li> </ul> </li> </ul>	
7	Forum Topics	<p>Forum Topics</p> <ul style="list-style-type: none"> <li>• SPI Integration</li> <li>• SPI Version 2015</li> <li>• SPI Cable Management</li> <li>• Other SPI Topics</li> </ul>	All Attendees
8	Close	<ul style="list-style-type: none"> <li>• Next meeting will be hosted by Fluor on August 12, 2014</li> <li>• John Dressel closed meeting and thanked CB&amp;I for Hosting</li> </ul>	
		<ul style="list-style-type: none"> <li>•</li> </ul>	