

4-7 JUNE 2012 LAS VEGAS, NEVADA, USA

SmartPlant Instrumentation

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Process, Power & Marine Division



Agenda



- Robustness of integration & performance
- Functionality enhancements
- Ease of use & improving user experience
- Lowering administration cost

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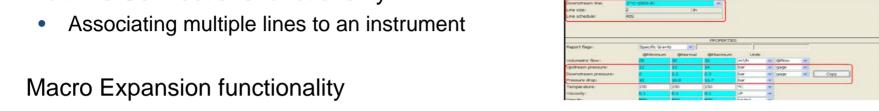
SmartPlant Instrumentation - Robustness of integration & performance



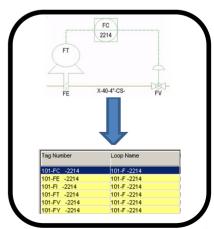
Functional Enhancements for SPI 2009 SP3



Multiline Connections functionality



- - Created the needed supplement instruments and loops in addition to what was retrieved from SPP&ID.
 - Ability to decided which of the supplement created instrument should be published back to SPP&ID.
 - During this functionality's development the To-Do-List capabilities were enhanced:
 - The Macro-Expansion task consolidated all relevant tasks per macro.
- Show parent Showing the task's instrument origin



SPI 2009 SP4 – Publish enhancements



•Publishing large data sets:

Parameter Date set	Time to publish in SPI 2009 SP3	Time to publish in SPI 2009 SP4
2,500 tags	16 min	4 min
10,000 tags	N/A	26 min
100,000 tags	N/A	7 hour

These results are statistic averages

Publishing from Plant level

SPI 2009 SP4 – Retrieve enhancements



Enhancing SPI retrieve capabilities

Parameter Date set	Time to retrieve in SPI 2009 SP3	Time to retrieve in SPI 2009 SP4
500 task (from SPEL)	27 min	4 min
1,755 task (Wiring tasks)	3 hours	10 min
200 PID drawings (1386) tasks	N/A	19 min

These results are statistic averages

SPI 2009 SP4 – Multi-Document Publish enhancements



Batch document publish was limited to 50 documents which would take approximately 60 minutes.

Parameter Date set	Sum Time 2009 SP3 (Min)	Sum Time 2009 SP4 (Min)	Comments
1500 specification	N/A	81	with PDF (view file) All 1000 xml files created All 1000 pdf created
1000 specification	N/A	40	with no PDF (view file) All 1000 xml files created

These results are statistic averages

SPI 2009 SP4 – Multi-Document Revise enhancements



Batch document revise was limited to 50 documents which would take approximately 60 minutes.

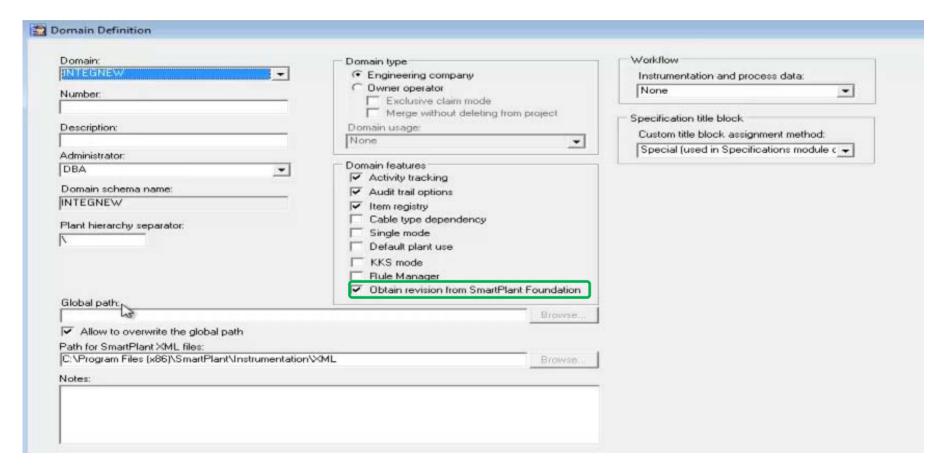
Parameter Date set	Sum Time 2009 SP3 (Min)	Sum Time 2009 SP4 (Min)	Comments
1000 specification + 120 PD sheets	N/A	2.5	From click the finish button in the wizard until revise window open

These results are statistic averages

SPI 2009 SP4 – SPI's revisions & Integration enhancements INTERGRAPH



- Ability to use SPI's (internal) revisions:
 - Use of the Spec Binder in an integrated environment.



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SPI 2009 SP4 – The To-Do-List enhancement

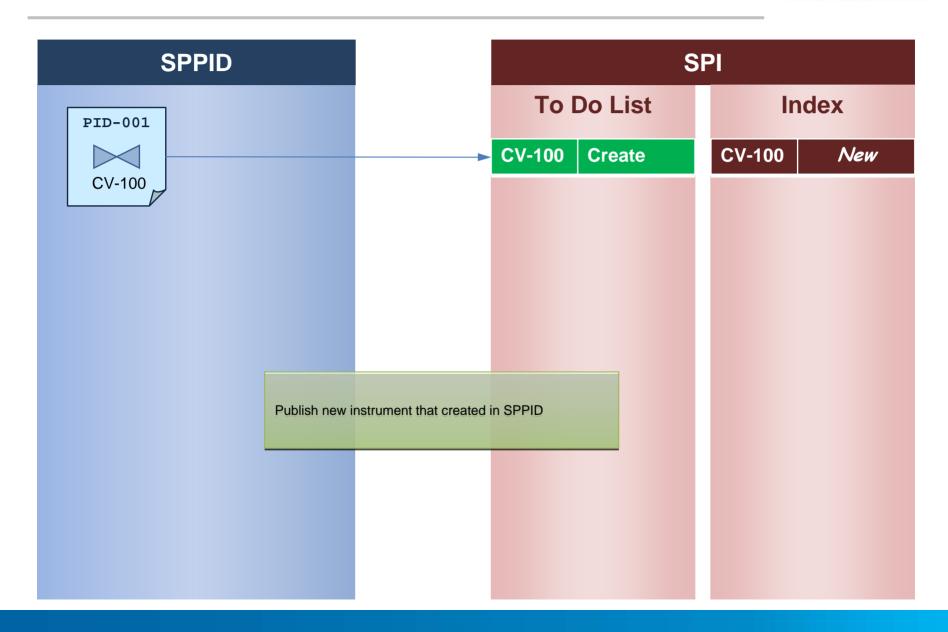


- Remove redundant of conflicting tasks
 - Handling tasks with duplicated item tags.
- Mark for Deletion functionality.

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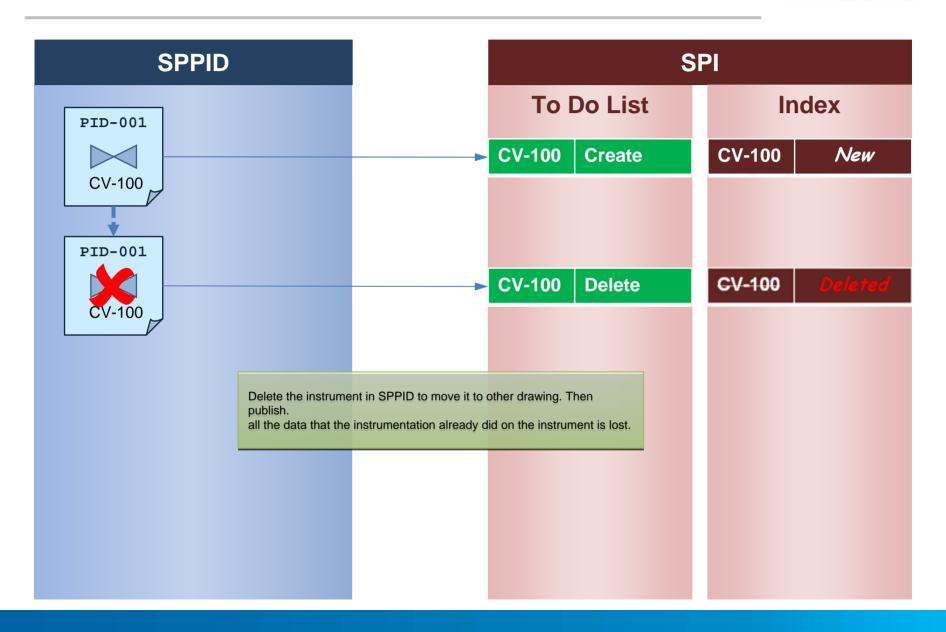
Current status





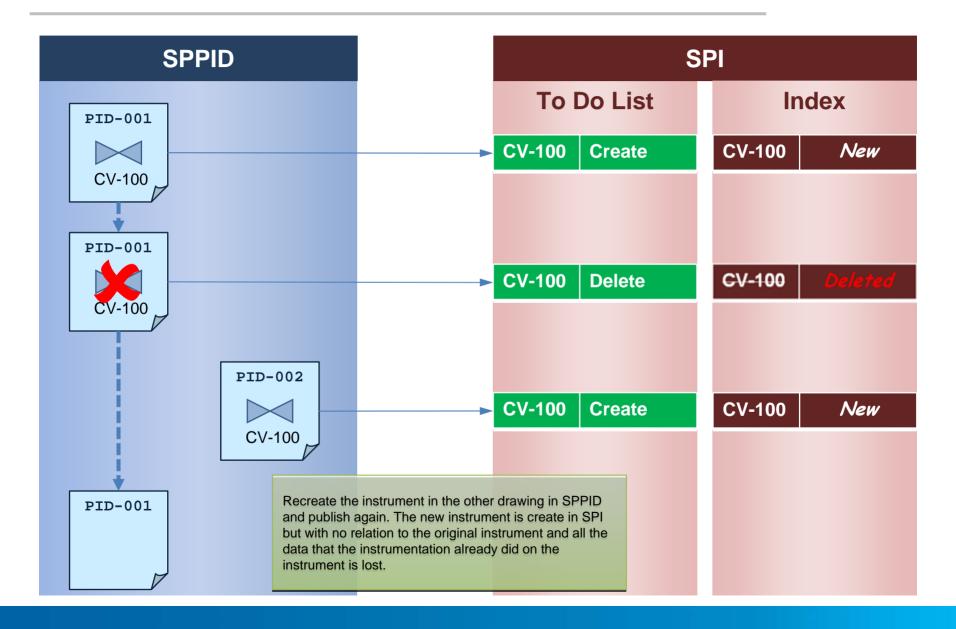
Current status



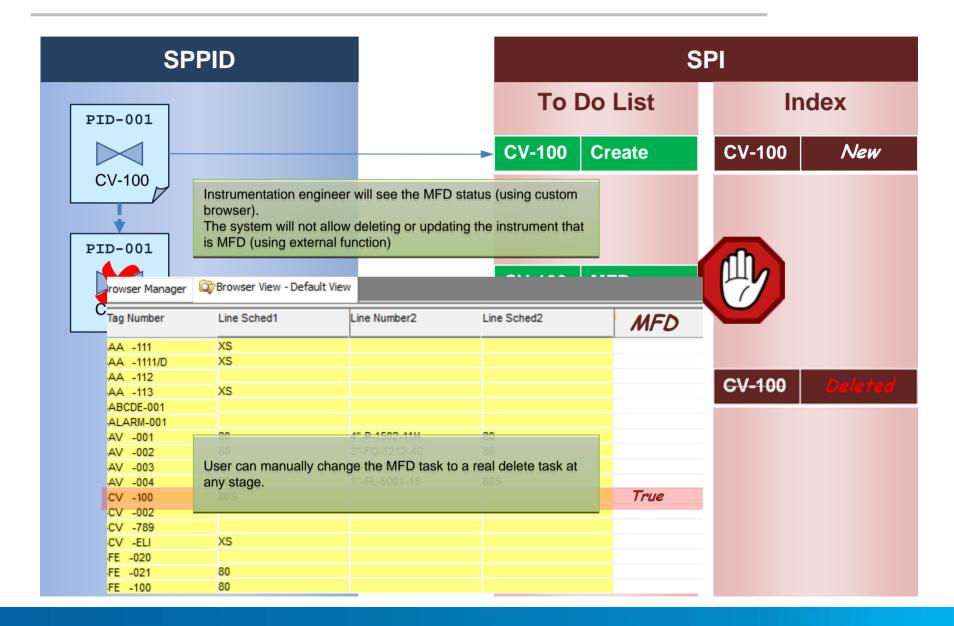


Current status

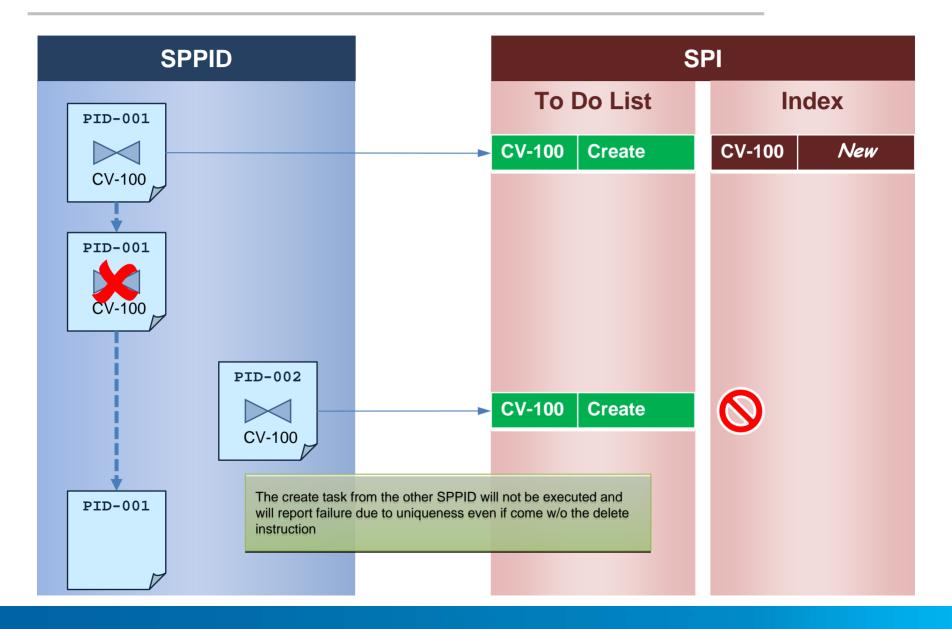




New: "Mark For Delete" (MFD) status in stead of delete in the TDL INTERGRAPH"

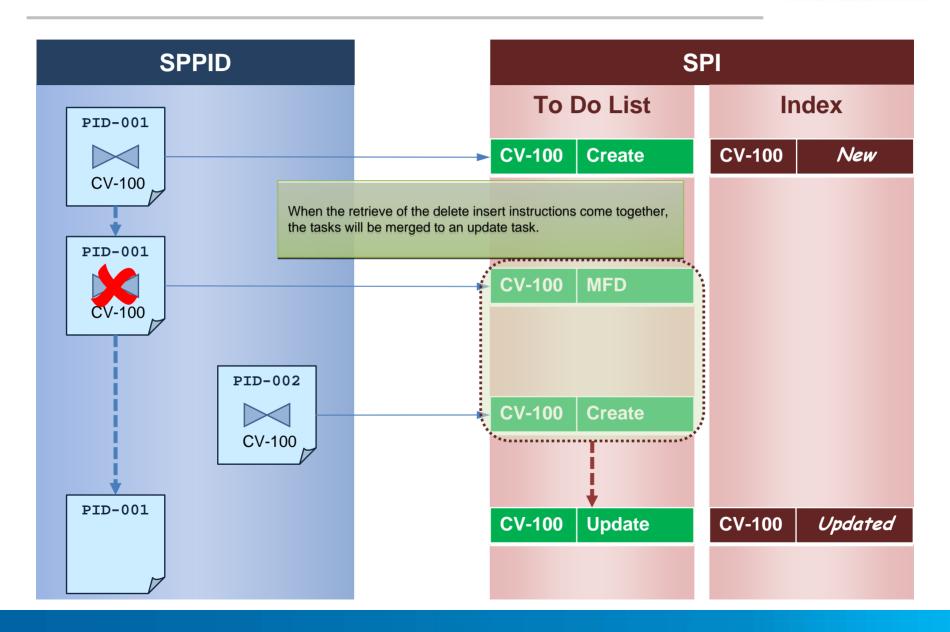






Recreating Deleted item may be on same P&ID or another one INTERGRAPH





SPI v2013



To-Do-List Enhancement

- Approve Inconsistencies
- Containment of redundant or conflicting tasks
- Remove design basis relationship from an Object
 - For example: An already retrieved and then altered instrument has been deleted from its origin drawing in SPP&ID; There will be a possibility to dissociate this instrument and associate it to a different SPP&ID instrument (if exists)

Ability to group tasks per mutual (same) type (like a pipe-run)

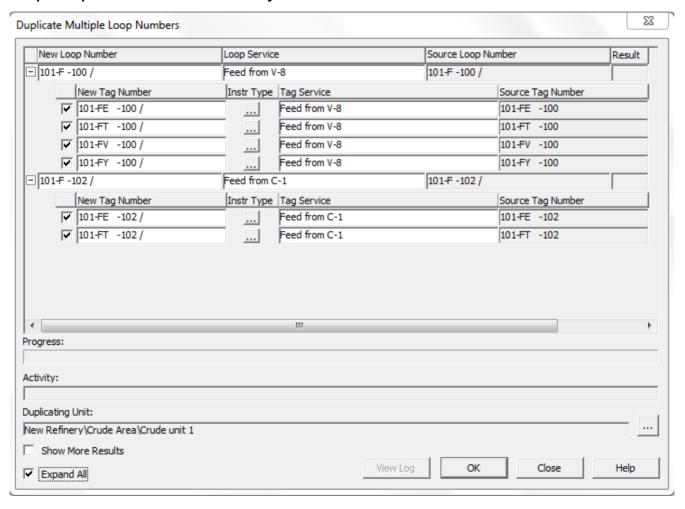
SmartPlant Instrumentation – Functionality enhancements



SPI 2009 SP4 Enhancements

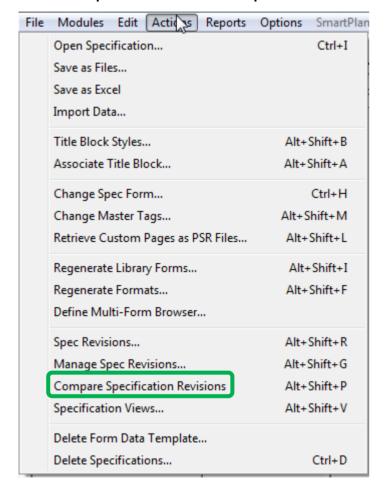


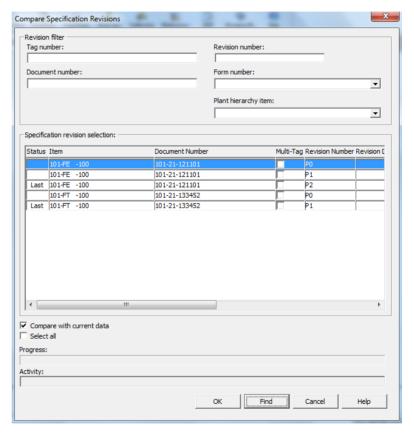
Batch Loop Duplication functionality enhancement:





Batch Specification Compare functionality enhancement:

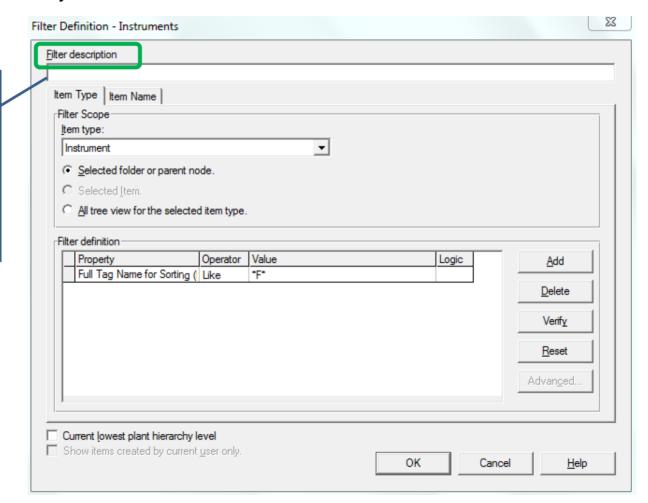






Domain Explorer Filter usability enhancement:

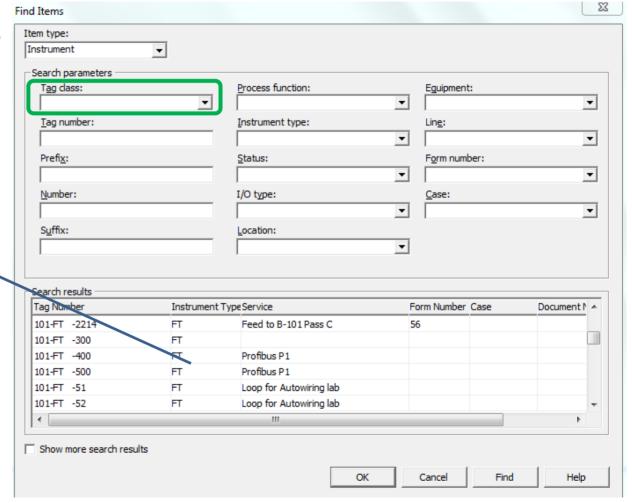
No need to insert filter name (changed to a description)





Find Window Enhancement:
Associate Conventional & Bus
Tags with the <u>same Spec</u>
<u>Multi list</u>

Conventional & Bus

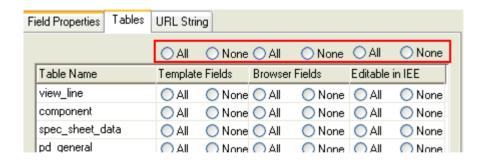


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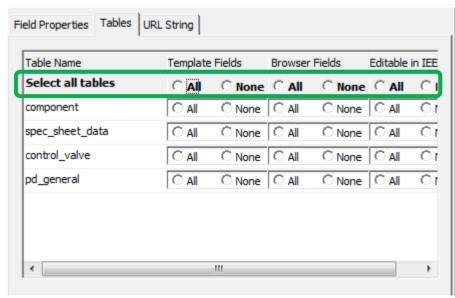


Specification Data Dictionary select all:

Now



SPI 2009 SP4





Additional item worked on

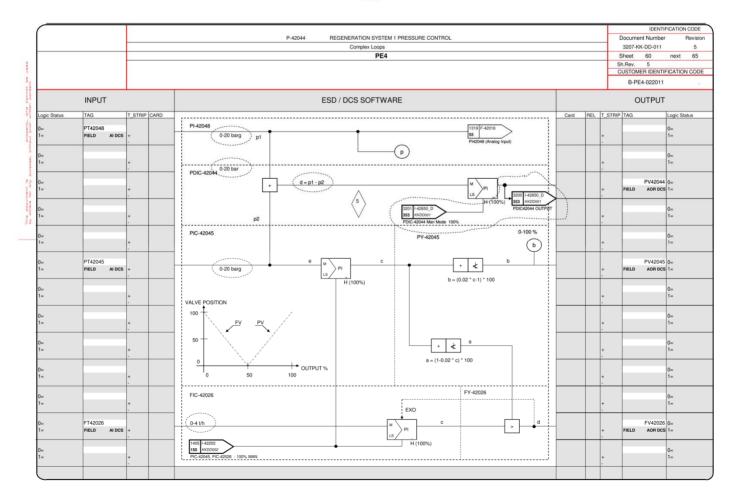
- Viewing documents from an UN-logged unit
- Update ASME pipe standard to ASME B36.10M-2004 & ASME B36.19M-2004
- Document binder revision failure (For example due to power failure) roll-up to previous
- Browser Save As (Plant/ Area/ Unit) an additional field will be added (Path + Unit number)
- Import utility create cables with complete structure using reference cable type identification
 - To have the ability to import a new plant cable to SPI based on the reference cable name
 - The mechanism should copy the reference cable from the reference data and name the cable according to the source (the cable name in the external file)
- Honeywell DCS bidirectional integration support
- Ability to integrate CHARM configuration

SPI 2014 Enhancements

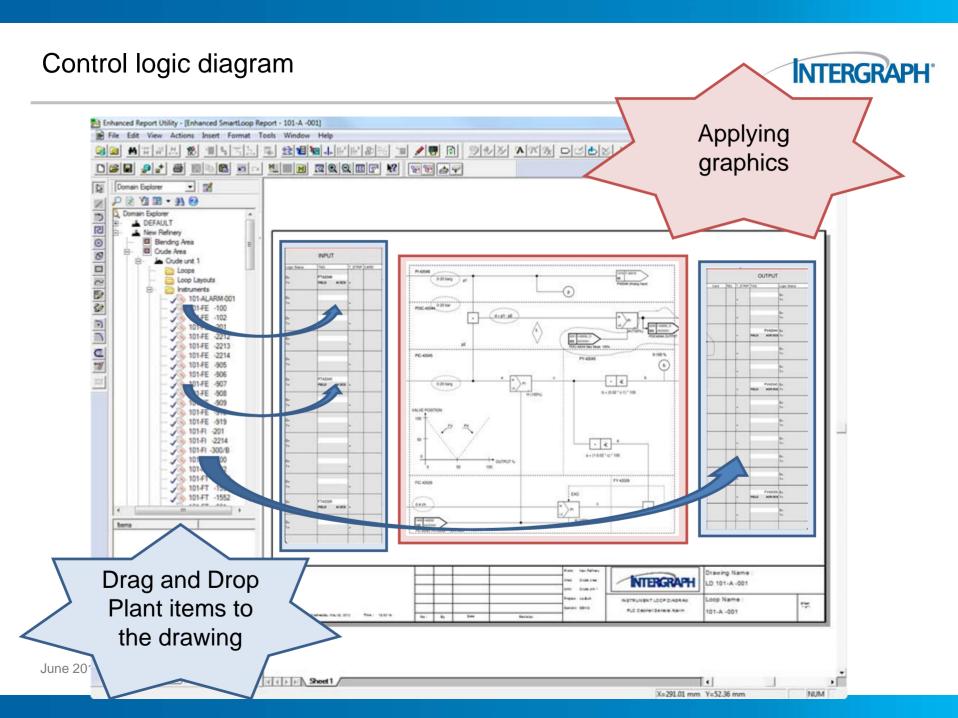


Control Logic Diagram

P-42044

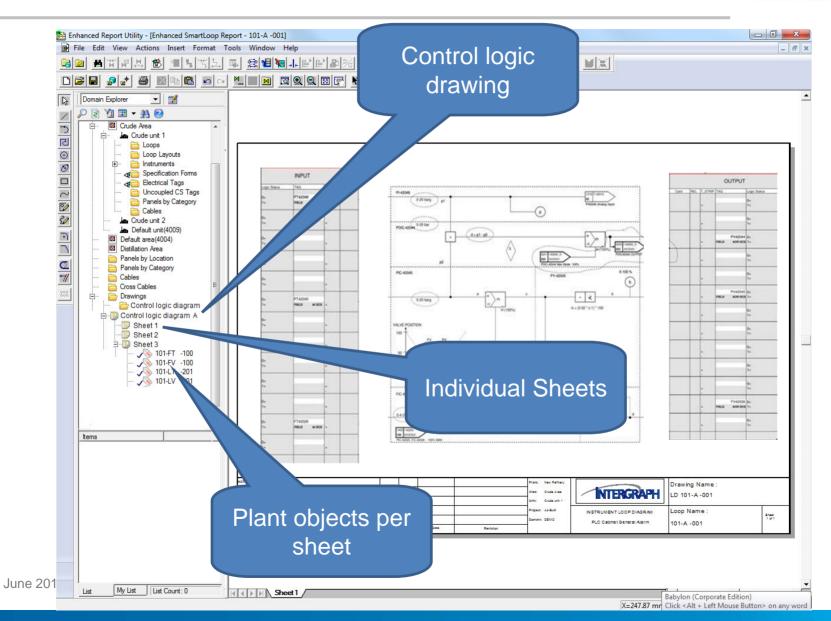


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Control logic diagram





SmartPlant Instrumentation - Ease of use & improving user experience



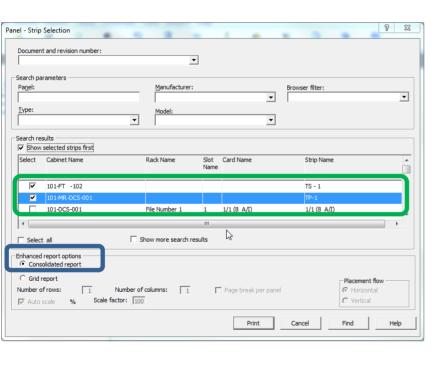
SPI v.2009 SP4 enhancements



- Add ability to batch print Hook-up drawings based on flexible criteria
 - enable batch print Hook-up drawings using flexible user definable criteria, so that required Hook-up document packages can be quickly, efficiently and easily prepared

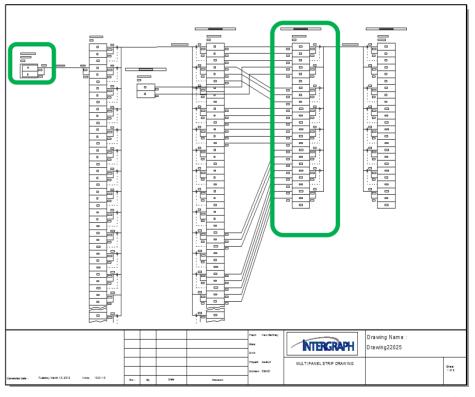


 Consolidated Multi Strip Report- Showing choseable panels, their interconnections and each of their adjacent equipment.



New report format

Chosen panels



Smart Query Builder & Enhance EDE (Browser) module (2014)

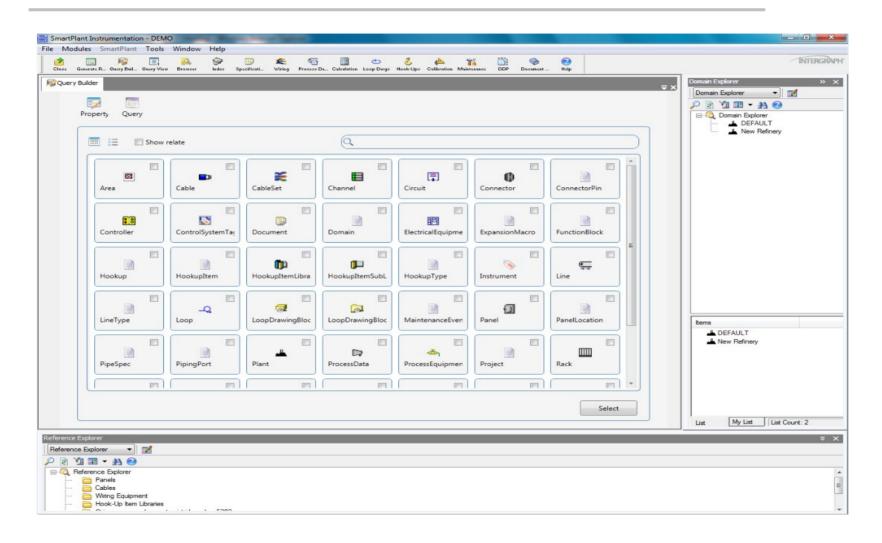


- SmartPlant Query (first milestone) allows users to create instantly any possible query from SPI
 - No need to know the SPI data model
 - Simple to use and provide engineering and design context
 - Replace the needs of Infomaker
 - Browser module will be able to use the smart query instead of customize browser
 - In future plans to expand beyond and be platform to other modules of SPI, as well for other E&S applications
- SPI's Enhanced EDE (Browser) module
 - Enhanced Functionality and user experience.
 - Modern look and feel

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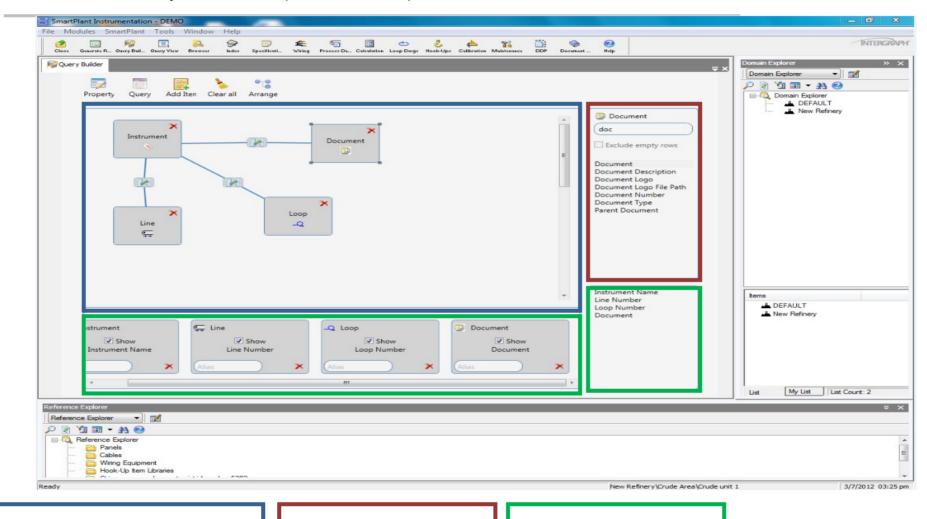
Smart Query Builder (within SPI) - Type Selection





Smart Query Builder (within SPI) - main screen





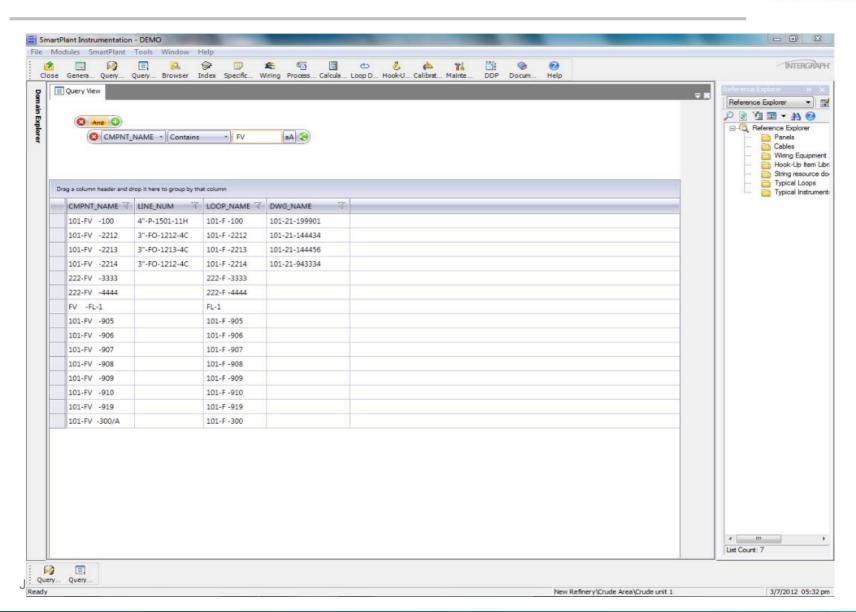
Relationship definition

Item Properties

Browser Columns

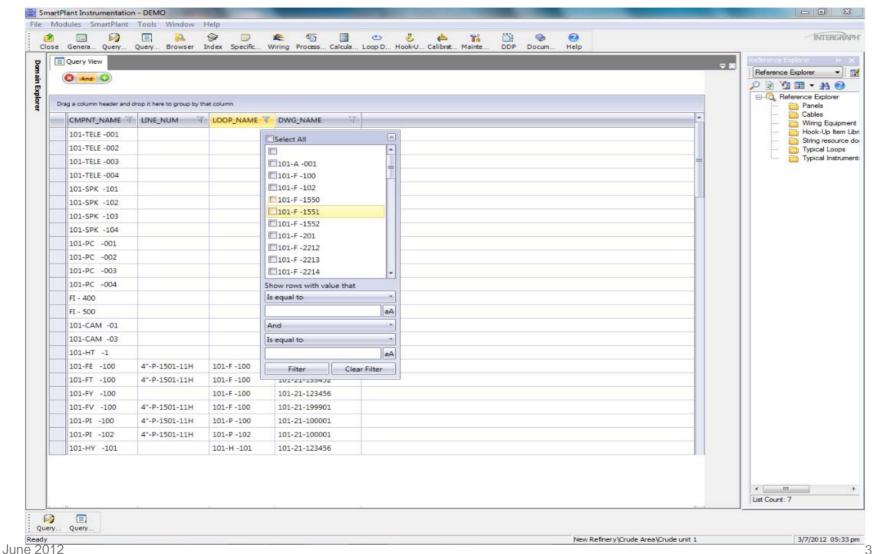
Get the feel of SPI's new EDE (Browser) – Filter (1 of 2)





Get the feel of SPI's new EDE (Browser) – Filter (2 of 2)

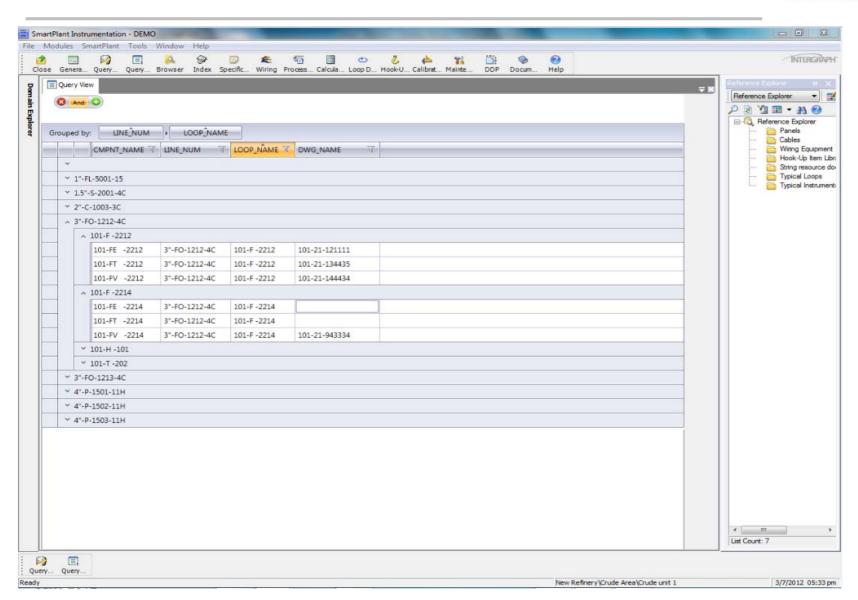




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Get the feel of SPI's new EDE (Browser) - Grouping





SmartPlant Instrumentation - Lowering administration cost



Lowering Administration cost



SPI 2009 SP3

- Smart Upgrade
 - Faster process.
 - No need for manual SQL execution.
- More stability and new look and feel of the UI (Tab view, text + icon)
- AutoCAD 2009, 2010 and 2011 supported
- Performance improvement under Citrix environment

SPI 2013

- Supporting Oracle 11
- Add separate access rights to Instrument Index supporting tables

SPI 2014

- SPI supported under SPEM
- Project-As Build Enhancements.

Projects/ As Build, improve usability



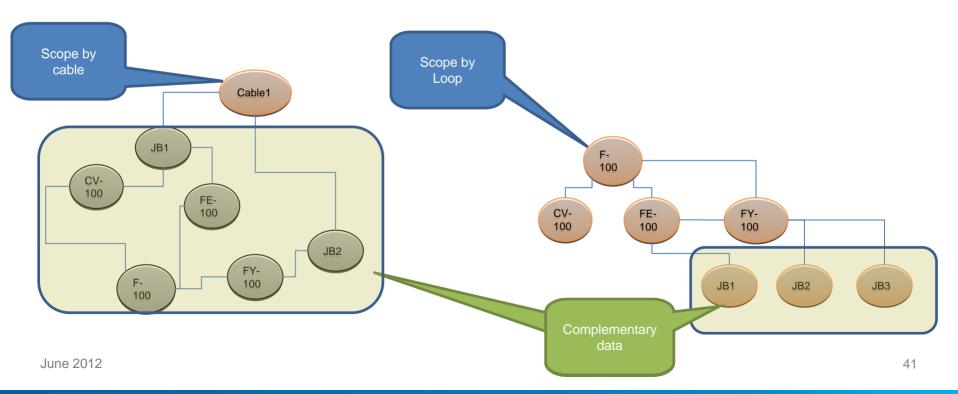
- Improve the visibility of what is scoped when we claim or merge
- Improve the stability of the procedure and remove special cases
- Give engineers better view of what the results
- Harmonize the scoping process with the below operations
 - Claim
 - Merge
 - Integration shared correlation engine and opening our engineering projects to integrate with SPF
 - Project export (backup of engineering project + ICCx)
- Remove the constraint of multi users operations when you merge data

Projects/ As Build, improve scoping



Challenge

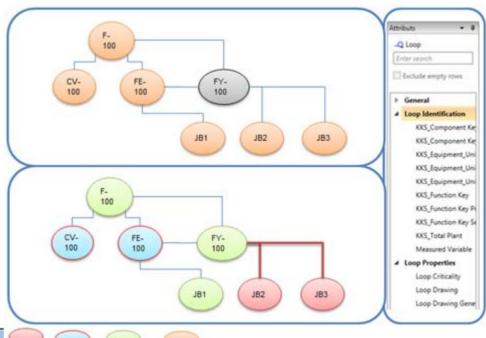
- When claiming, merging, or moving data between 2 SPI environments, there is some complementary information that need to be moved in order to give the full engineering mean to the data.
- Scope the minimum complementary data that is required by the system to maintain integrity.



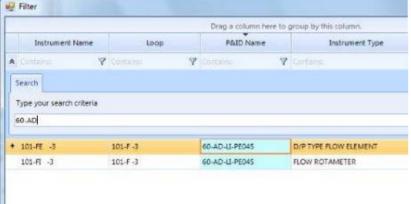
Projects/ As Build, improve functionalities



Compare between source and target with color coding and more meaningful view



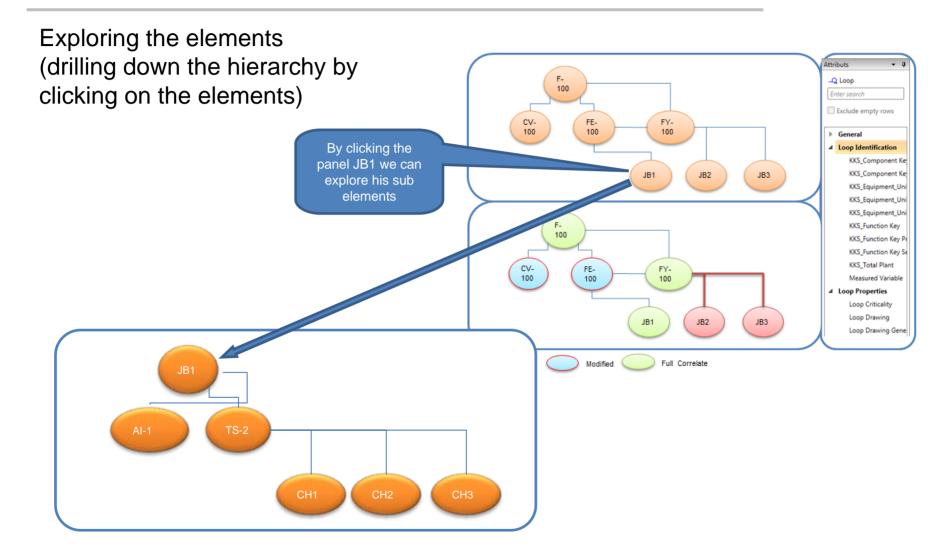
Full Correlate Full control at



Better control of your "root" elements and "scope" data by simplify the UI and provide easy search, filters and sort capabilities

Projects/ As Build, improve User Experience





Summary



- Making the changes and Improving
- Focus is on the market and business drivers
 - Integration
 - Consolidation
 - Lower cost of ownership
 - Innovation, offer a difference to make you and us competitive
- Supporting the work process
 - Documented supported work processes
 - Integrated with complementary partners
- Driven by Industry
 - TUF input key to a win-win
 - Focus teams for D&ID and Sunflower
- Making you successful
 - Support and services
 - Rule #1 'never let a customer down'

Never Stop Changing to become Perfect

