



AUDIT MANAGEMENT

Presented by: Zur Bar

Agenda

- Introduction to Beaconsuite software
- Audit Management
- Q&A



BEACONSUITE SOFTWARE

Beaconsuite software is classified for the following tasks:

- Audit management
- Configuration (Standard) management
- Administration management
- Data management
- Viewing

Target for Owner/Operator, EPC company, Vendor or Services Provider



beaconsuite™



- CooleyCore's Beaconsuite software application contains 16 different modules



cooleycoreTM
ASSOCIATES



ENGINEERING & DESIGN AUDIT

WHO BENEFITS FROM AUDITING

DOING MORE WITH LESS BUDGET

Roles:-

- SPI Administrators
- Quality Manager
- Package Owners
- Commissioning Teams
- Client Project Team
- Operations
- Engineers & Designers
- Automation Vendors

Loop	Report - Required	Report Required	7994	●
		Report Not Required	210	
Report		Has a Report	7030	●
		Does Not Have a Report	0	
Report Type		CAD	0	●
		Enhanced - Custom by loop	0	
		Enhanced - Custom by signal	0	
		Enhanced per loop	7810	
		Enhanced per signal	95	
		Manual	0	
		None	132	
Enhanced Reports Positioned		Has Positional Data	7842	●
		Does Not Have Positional Data	188	
Revision		Has Revision	7407	●
		Missing Revision	401	
Revision Details		Decommissioned / Demolished	0	●
		As-Built	0	
		IFC / IFP	7317	
		Other	90	
Drawing Name		Valid Drawing Name	0	●
		Invalid Drawing Name	8006	

Areas:-

- Project - progress & completion Readiness
- Project status & readiness for closeout
- SPI / SI upgrade
- Conformity to standard
- Cloning / Blending data
- SPI/SI db health

INSIGHT

Features

- Dozens of different engineering audit reports comprised of hundreds of queries
- Compiles the analysis of multiple queries into powerful, meaningful reports
- Easy to use interface empowers all stakeholders to do their own audits
- Audit reports encompass easy to read graphs, technical summaries, and detailed data findings
- Monitor/report Engineering design completion progress



AUDITING APPROACHES – AT A GLANCE UNDERSTANDING

Legend: (M) – Mandatory, (AR) – As Required

Name	Entered	Missing	Percentage	Visualization
Tag Name (M)	1429	0	100.00%	
Status (M)	1380	49	96.57%	
Instrument Type (M)	1429	0	100.00%	
Instrument Type Description (M)	1429	0	100.00%	
Instrument Designation (M)	0	1429	0.00%	
Tag Service Description (M)	1427	2	99.86%	
Loop Name (M)	1268	161	88.73%	
Loop Service Description (M)	1201	228	84.16%	
Equipment Name (M)	1376	53	96.29%	
Line Number (M)	1377	52	96.36%	
Site Name (M)	160	1269	11.20%	
P&ID Number (M)	1401	28	98.04%	
Location Plan (M)	1377	52	96.36%	
Location Drawing (AR)	386	1043	27.01%	
EPCM Company Name (M)	0	1429	0.00%	

Name	Entered	Missing	Percentage	Visualization
System (M)	426	1003	29.81%	
I/O Type (M)	1414	15	98.95%	
Signal Type (M)	981	448	68.65%	
Installation Detail (M)	242	1187	16.93%	
Fireproofed (M)	389	1040	27.22%	
Required Power (M)	389	1040	27.22%	
Hart Enabled (M)	101	1328	7.07%	
Manufacturer (AR)	902	527	63.12%	
Manufacturer Model (AR)	820	609	57.38%	
Serial Number (AR)	218	1211	15.26%	
Area Classification (AR)	240	1189	16.79%	
Project Name (AR)	1392	37	97.41%	
Project Number (AR)	0	1429	0.00%	
Winterized (AR)	286	1003	29.81%	
PO Number (AR)	1414	1143	20.01%	

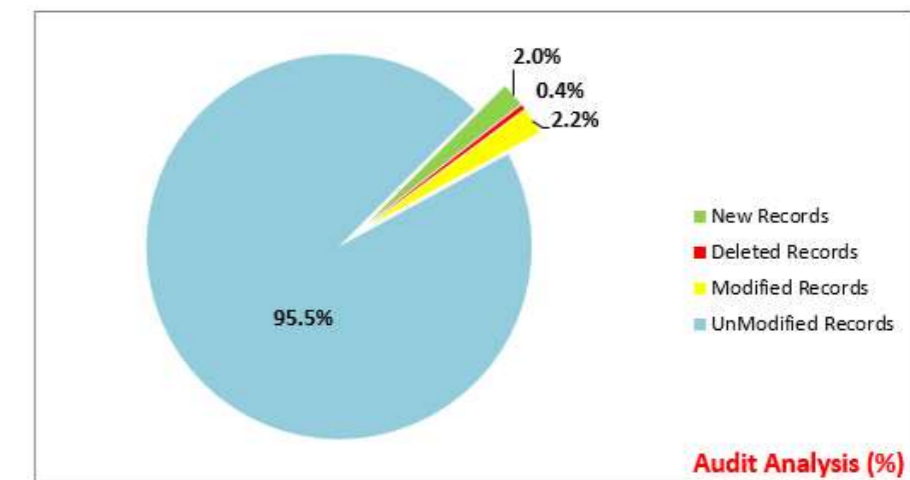
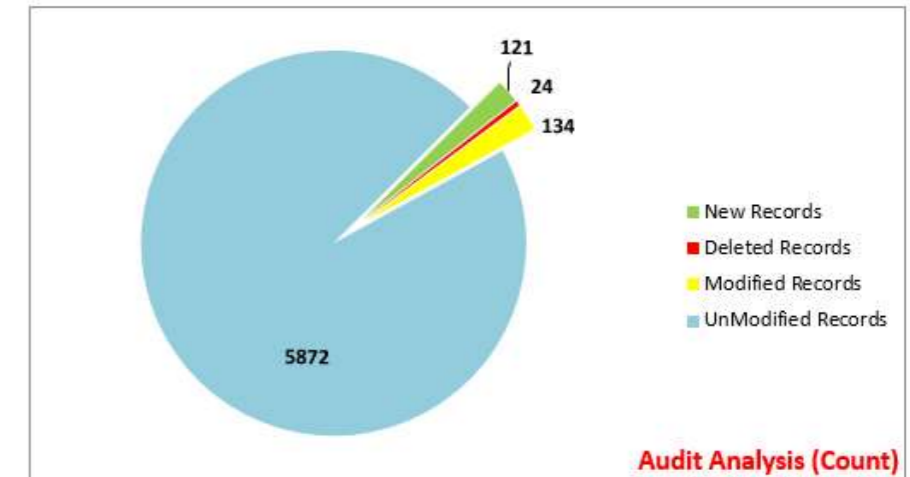
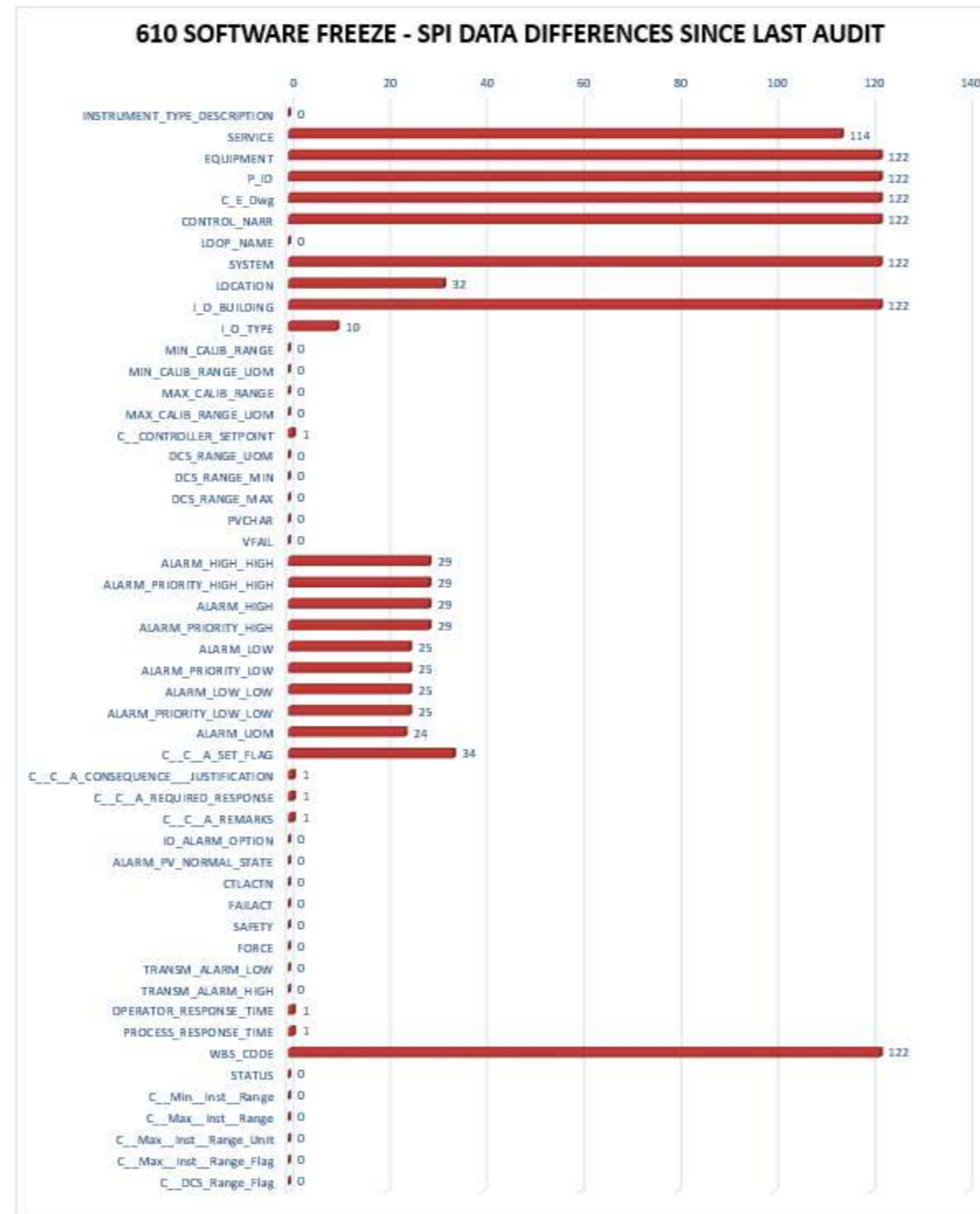
Name	Entered	Missing	Percentage	Visualization
Parent Instrument (AR)	15	1414	1.05%	
Interlock Number (AR)	0	1429	0.00%	
Instrument Range Min (AR)	194	1235	13.58%	
Instrument Range Max (AR)	194	1235	13.58%	
Instrument Range UOM Min (AR)	168	1261	11.76%	
Instrument Range UOM Max (AR)	189	1240	13.23%	
Calibration Range Min (AR)	218	1211	15.26%	
Calibration Range Max (AR)	218	1211	15.26%	
Calibration Range UOM Min (AR)	178	1251	12.46%	
Calibration Range UOM Max (AR)	216	1213	15.12%	
Hart Device Revision (AR)	0	1429	0.00%	
Hart Device Description (AR)	0	1429	0.00%	
FF Device Revision (AR)	276	1153	19.31%	
FF Device Description (AR)	0	1429	0.00%	

AUDITING APPROACHES - WE CAN DO BETTER

DISTILLED, CONCISE, MEANINGFUL REPORTING

- Graphs speak to people

Previous Database Audit --> Jun 08, 2015
 Current Database Audit --> Jul 07, 2015

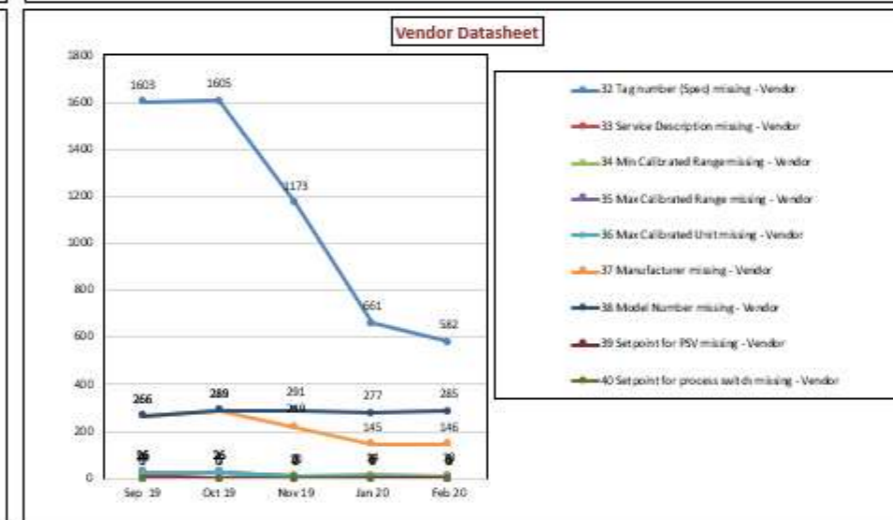
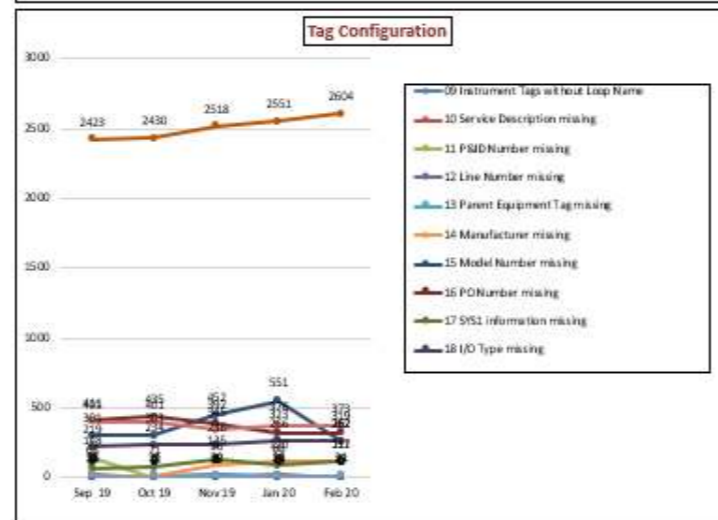
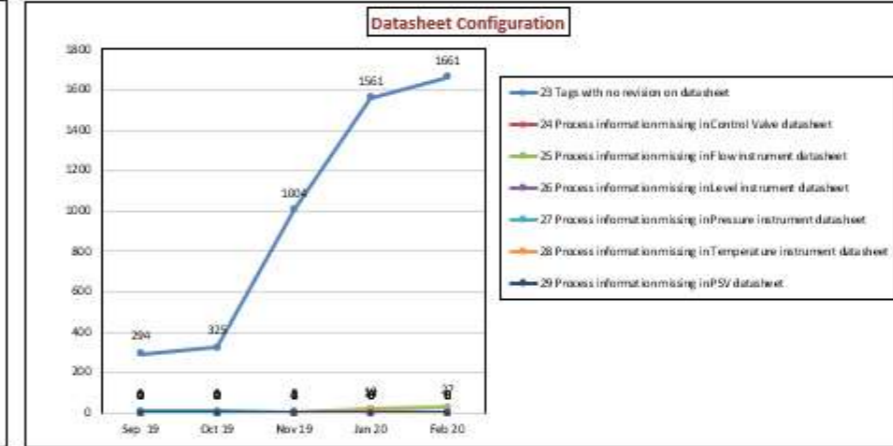
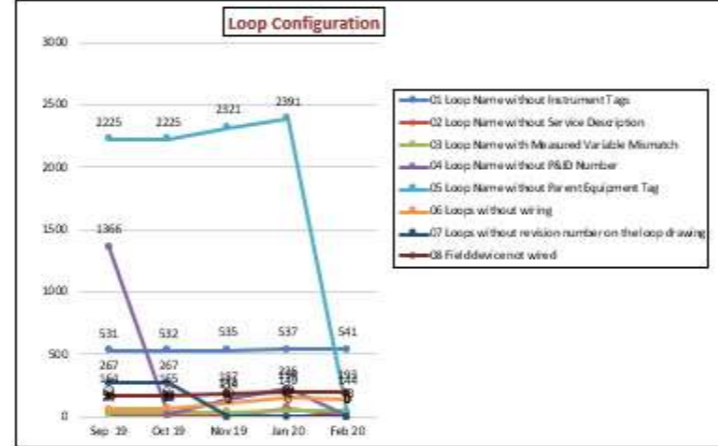
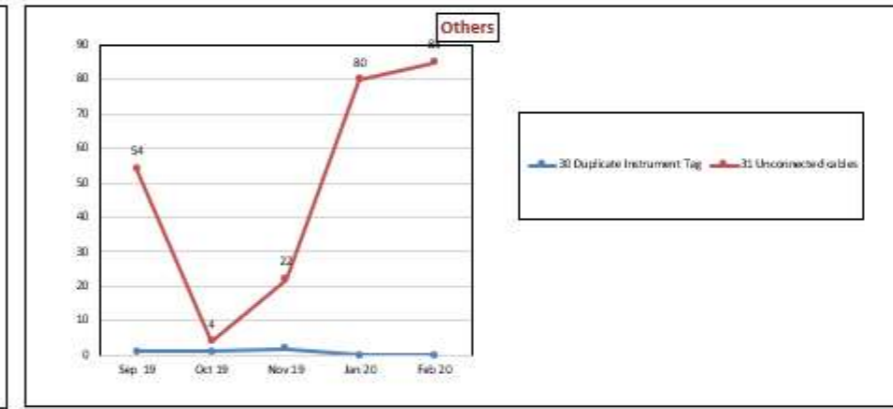
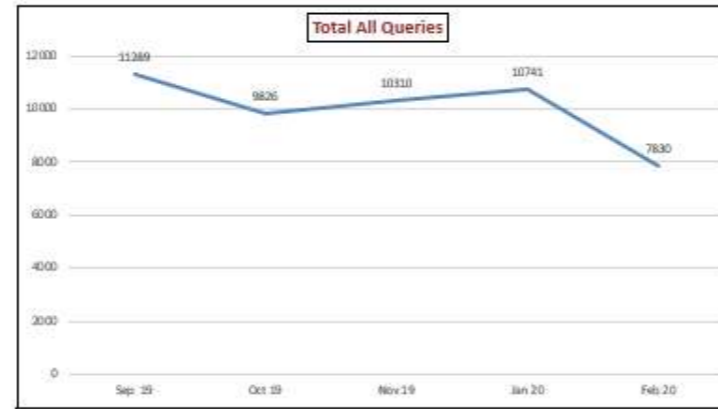


New Records	121	2.0%
Deleted Records	24	0.4%
Modified Records	134	2.2%
UnModified Records	5872	95.5%
Total Records in this Audit Run	6151	100.0%

[Executive Summary](#) |
 [Legend and Instructions](#) |
 [Changed Records](#) |
 [All Records](#) |
 [+](#)

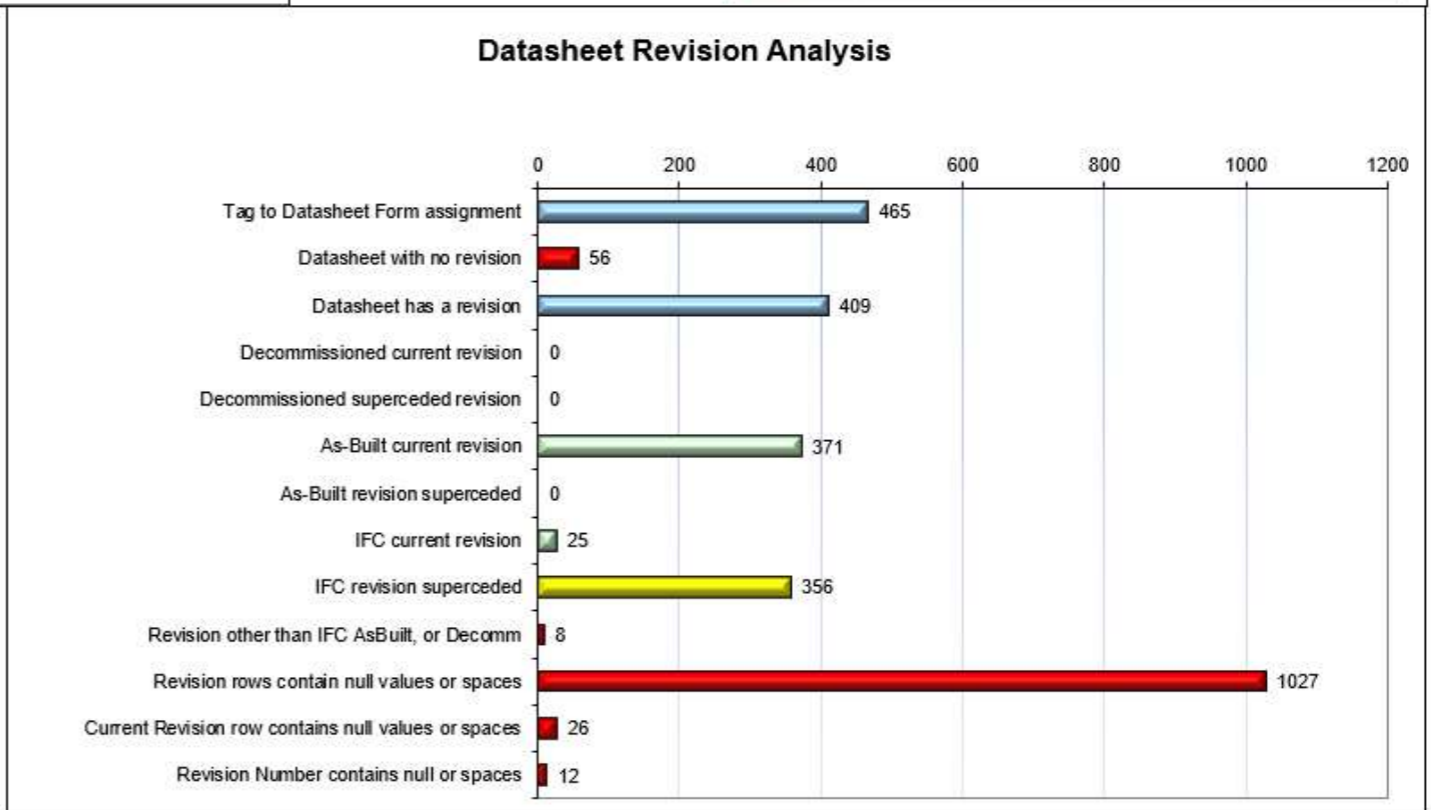
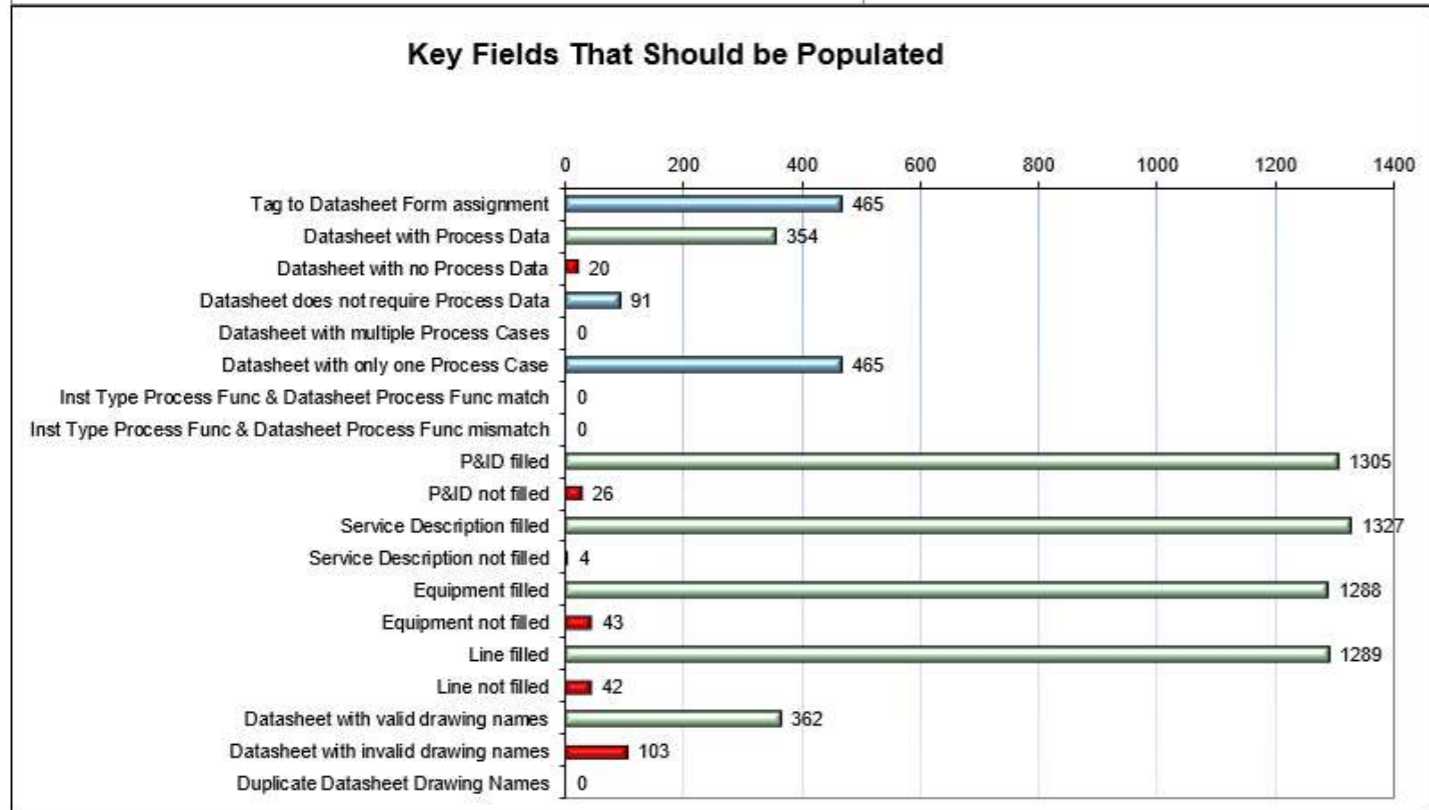
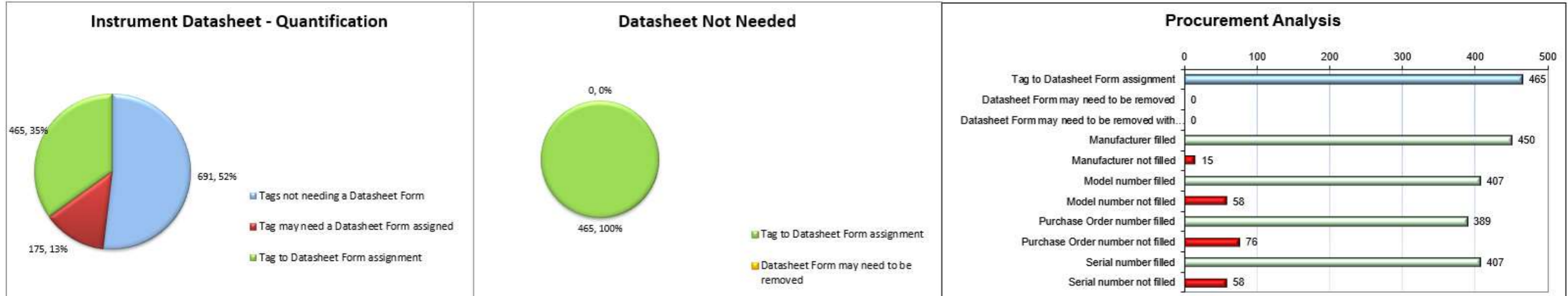
AUDITING APPROACHES - TRENDING

	NO	QUERY	Sep 19	Oct 19	Nov 19	Jan 20	Feb 20
Loop Configuration	01	Loop Name without Instrument Tag	531	532	535	537	541
	02	Loop Name without Service Description	20	9	0	69	0
	03	Loop Name with Measured Variable Mismatch	20	31	40	42	43
	04	Loop Name without P&ID Number	1366	12	143	226	0
	05	Loop Name without Parent Equipment Tag	2225	2225	2321	2391	0
	06	Loops without wiring	62	65	114	149	144
	07	Loops without revision number on the loop drawing	267	267	1	0	0
	08	Field device not wired	164	165	187	194	193
Tag Configuration	09	Instrument Tag without Loop Name	21	21	22	21	21
	10	Service Description missing	18	0	2	18	0
	11	P&ID Number missing	148	0	8	6	6
	12	Line Number missing	2	2	1	3	0
	13	Parent Equipment Tag missing	2	2	1	0	0
	14	Manufacturer missing	6	6	96	120	117
	15	Model Number missing	301	303	452	551	262
	16	PO Number missing	411	435	342	323	319
	17	SYS1 information missing	68	71	135	88	111
	18	I/O Type missing	219	234	236	266	262
	19	Signal Type missing	0	0	1	0	0
Data Sheet Configuration	20	Status field - Deleted tag to be removed prior to handover	2423	2420	2518	2551	2604
	21	Instrument Location information missing	13	12	13	13	13
	22	Instrument Tag not linked to datasheet	401	401	345	376	373
	23	Tag with no revision on datasheet	294	325	1004	1561	1661
	24	Process information missing in Control Valve datasheet	0	0	0	0	0
	25	Process information missing in Flow instrument datasheet	1	2	2	19	21
	26	Process information missing in Level instrument datasheet	0	0	0	0	0
	27	Process information missing in Pressure instrument datasheet	9	9	7	6	6
	28	Process information missing in Temperature instrument datasheet	0	0	1	14	5
	29	Process information missing in PSV datasheet	0	0	0	0	0
Vendor Datasheet	30	Duplicate Instrument Tag	1	1	2	0	0
	31	Uncollected cables	54	4	22	30	85
	32	Tag number (Spec) missing - Vendor	1603	1605	1173	661	582
	33	Service Description missing - Vendor	18	0	0	7	0
	34	Min Calibrated Range missing - Vendor	26	26	10	14	13
	35	Max Calibrated Range missing - Vendor	26	26	7	6	5
	36	Max Calibrated Unit missing - Vendor	26	26	7	6	5
	37	Manufacturer missing - Vendor	266	289	219	145	146
	38	Model Number missing - Vendor	266	289	291	277	285
	39	Setpoint for PSV missing - Vendor	0	0	0	0	0
40	Setpoint for process switch missing - Vendor	1	1	2	1	1	
	Total	11283	9826	10310	10741	7830	



AUDITING APPROACHES – DELIVERABLE ASSESSED

PROJECT CLOSE OUT AUDIT
DATASET REPRESENTS FEB 09, 2020



AUDITING APPROACHES - WE CAN DO BETTER

DISTILLED, CONCISE, MEANINGFUL REPORTING

- Compiled results expose meaningful patterns enabling quick resolution



Instrument Datasheet Summary Report

Revision:
Feb 10, 2022
ISSUED FOR REVIEW

DATASHEET PROGRESS REPORT PROJECT CLOSE OUT AUDIT

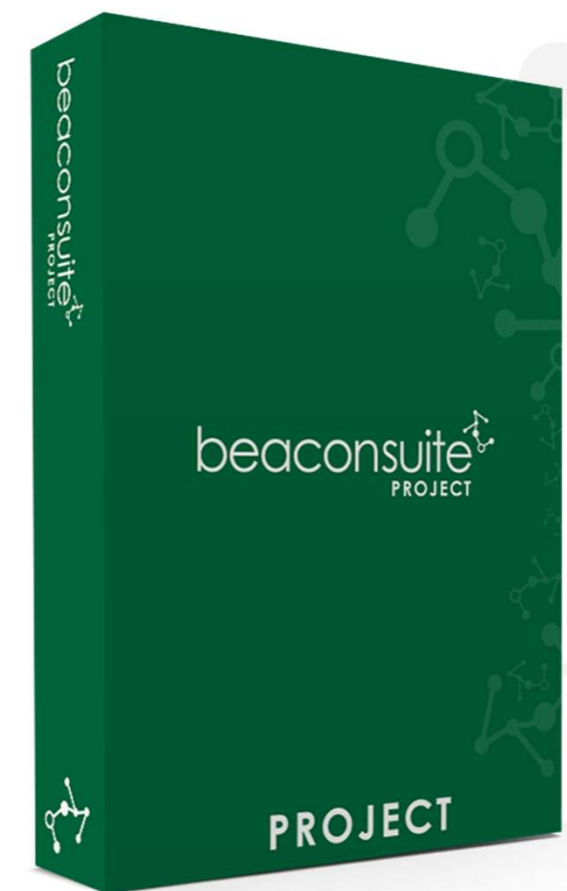
Instrument Datasheet - Quantification				Guiding Principles				Score	Guiding Principle - Explanation	Auditor Recommendation
Item No.	Finding	Grand Total Records	Percentage	Identification	Integrity	Access	Ownership			
DS001	Tags not needing a Datasheet Form	691	51.9%					Information		
DS002	Tag may need a Datasheet Form assigned	175	13.1%		X	X		Resolution Re	Data must be accurate Data shall be accessible from the user's work location	P&ID Check - Assign Datasheet Form to Instrument Tag, populate key Datasheet fields and apply As-Built revision. Vendor Datasheets (outside of SPI) may exist to source for data which can be As-Built into SPI. Source other engineering document Vendor packages. Field Survey may be required if information can not be obtained from other sources.
DS003	Tag to Datasheet Form assignment	465	34.9%					Information		
DS004	Datasheet Form may need to be removed	0	0.0%		X			Pass	Data must be accurate	Remove non Datasheet Form from Tag.

Procurement Analysis				Guiding Principles				Score	Guiding Principle - Explanation	Auditor Recommendation
Item No.	Finding	Grand Total Records	Percentage	Identification	Integrity	Access	Ownership			
DS003	Tag to Datasheet Form assignment	465	34.9%					Information		
DS004	Datasheet Form may need to be removed	0	0.0%		X			Pass	Data must be accurate	Remove non Datasheet Form from Tag.
DS006	Datasheet Form may need to be removed with revision	0	0%		X			Pass	Data must be accurate	Verify if Tag should have Datasheet Form removed. If so, delete the revisions and remove the form.
DS007	Manufacturer filled	450	97%					Information		
DS008	Manufacturer not filled	15	3%		X	X		Resolution Re	Data must be accurate Data shall be accessible from the user's work location	Field Survey, and data entry. Populate the fields.
DS009	Model number filled	407	88%					Information		
DS010	Model number not filled	58	12%		X	X		Resolution Re	Data must be accurate Data shall be accessible from the user's work location	Populate the model number
DS011	Purchase Order number filled	389	84%					Information		
DS012	Purchase Order number not filled	76	16%		X	X		Resolution Re	Data must be accurate Data shall be accessible from the user's work location	Was this instrument purchased. If so, capture the PO number.
DS013	Serial number filled	407	88%					Information		
DS014	Serial number not filled	58	12%		X	X		Resolution Re	Data must be accurate Data shall be accessible from the user's work location	Populate the serial number

PROJECT

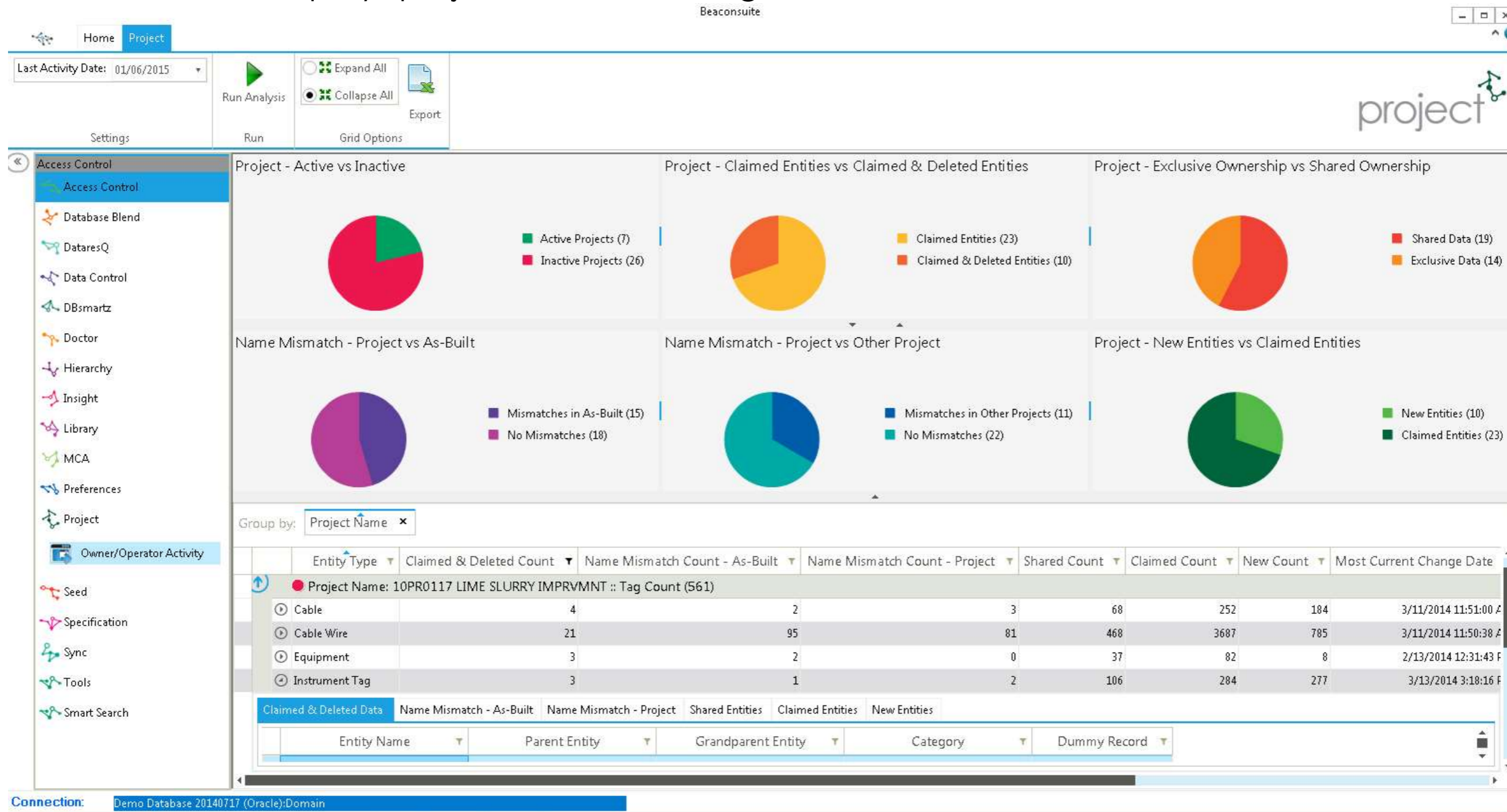
Features

- Quickly and effectively report all Owner/Operator projects
- Display number of active and inactive projects
- Identify projects that share data and which assets are shared
- Quantify project close out complexity, including claimed, deleted and renamed assets



PROJECT CLOSEOUT RESULTS – ACROSS ENTIRE DATABASE

Executive dashboard displays project closeout at a glance



PROJECT – IDENTIFY WHO IS WORKING ON WHAT

Operator Activity

- Claimed Data Analysis
 - Deleted records
 - **Release records**
 - Renamed records
 - Shared records
 - Claimed records
 - New records

The screenshot displays the 'Project' software interface. The main window shows a 'Grid Results (252 rows)' table with columns for Activity, Project, Classification, Entity Type, Entity Name, Parent Entity, Grand Parent Entity, Category, Inactive/Dummy Record, and Shared Project Name (if applicable). The table lists various records, including Instrument Tags, Loops, Panels, Segments, and Lines, with their respective statuses and names.

Activity	Project	Classification	Entity Type	Entity Name	Parent Entity	Grand Parent Entity	Category	Inactive/Dummy Record	Shared Project Name (if applicable)
No	54 WP Exch...	Claimed/Deleted Entity	Instrument Tag	54-TE -656D				No	
No	54 WP Exch...	Claimed/Deleted Entity	Instrument Tag	54-TI -656D				No	
No	24 SNAM T...	Claimed/Deleted Entity	Loop	24-H -2098				No	
No	54 WP Exch...	Claimed/Deleted Entity	Loop	54-F -650D				No	
No	54 WP Exch...	Claimed/Deleted Entity	Loop	54-L -653D				No	
No	54 WP Exch...	Claimed/Deleted Entity	Loop	54-T -656D				No	
No	24 Cap Eng...	Claimed/Deleted Entity	Panel	24-TT -743			Device Panel	No	
No	51 TPIT Ne...	Claimed/Deleted Entity	Panel	51-TT -159			Device Panel	No	
No	52 WP Reb...	Claimed/Deleted Entity	Panel	52-FT -255A			Device Panel	No	
No	52 WP Reb...	Claimed/Deleted Entity	Panel	52-FT -270			Device Panel	No	
No	52 WP Reb...	Claimed/Deleted Entity	Panel	52-FV -255A			Device Panel	No	
No	23 SNAM T...	Claimed/Deleted Entity	Segment	SnamTranche2B				No	
No	23 SNAM T...	Claimed/Deleted Entity	Segment	SnamTranche2D				No	
No	23 WP Hydr...	Claimed/Deleted Entity	Segment	SnamTranche2A				No	
No	23 WP Hydr...	Claimed/Deleted Entity	Segment	SnamTranche2C				No	
No	28 SNAM T...	Claimed/Deleted Entity	Segment	SNAM Tranche 2				No	
No	23 SNAM T...	Mismatched Entity Name	Instrument Tag	23-PSE -3112A				No	
No	24 SNAM T...	Mismatched Entity Name	Panel	24-PNL-2000 (2...				No	
No	24 SNAM T...	Mismatched Entity Name	Panel	?-24-FT -2198				No	
No	28 Cap Eng...	Mismatched Entity Name	Line	---				Yes	
No	28 SNAM E...	Mismatched Entity Name	Instrument Tag	28-FT -183				No	
No	28 SNAM T...	Mismatched Entity Name	Panel	28-PNL-102				No	

MCA

Features

- Quantify project close out complexity, including claimed, deleted, concurrent/shared and renamed assets; MCA provides recommendations
- Holistically flags deliverable revision issues (across source project, As-Built, and concurrent projects)
- Easy to use functionality to quickly close (merge) projects that have no claimed data
- Empowers file paths stored within SPI tables such as archive file paths per project to be updated after merge / project close out



MCA

MERGE CLAIM ANALYSIS AUDIT REPORT			SUMMARY MERGE CLAIM ANALYSIS REPORT									
PROJECT	10PR0030_MagOx		10PR0030_MagOx					Dummy Tag		Line Exists		
Engineering Name	Tag Name		Tag Name	Finding Category	Finding Message	Recommendation	Another Project	Project	As-Built	Another Project	Location Not Determined	
Percentage			100.0%	4								
GrandTotal			602				66	327	122	71	0	
10PR0030_MagOx	8100-LT -502-J	Y	8100-									
10PR0030_MagOx	8100-LT -502-K	Y	8100-									
10PR0030_MagOx	8100-LT -502-L	Y	8100-8100-AE -473	Caution	The claimed Loop Drawing has been RENAMED in the Project. Merging the Loop Drawing will result in the Loop Drawing in As-Built being	Review the changes to determine if any impact should be applied to the source Project Tag prior to merging into As-Built.						
10PR0030_MagOx	8100-TSH -964-D	Y	8100-1									
10PR0030_MagOx	8100-TT -885	Y	8100-AE -901-B	Danger	The As-Built Tag has been DELETED. Merging the Project Tag will restore it in As-Built.	Determine if the As-Built Tag should remain deleted. If i determined that the As-Built Tag should not have been deleted, proceed with the restore merge. If it is determined that the Tag should not have been claimed into the Project, Release the Project T	Y	N/A	N/A	Y		
10PR0030_MagOx	8100-VT -465	Y	8100				Y	N/A	N/A	Y		
10PR0030_MagOx	8100-VT -471	Y	8100				Y	N/A	N/A	Y		
10PR0030_MagOx	8100-XS -501-A	Y	8100-									
10PR0030_MagOx	8100-XS -501-B	Y	8100-									
10PR0030_MagOx	8100-XS -501-C	Y	8100-				Y	N/A	N/A	Y		
10PR0030_MagOx	8100-XS -502-A	Y	8100-									
10PR0030_MagOx	8100-XS -502-B	Y	8100-				Y	N/A	N/A	Y		
10PR0030_MagOx	8100-XS -502-C	Y	8100-				Y	N/A	N/A	Y		
10PR0030_MagOx	8100-XS -503-B	Y	8100-				Y	N/A	N/A	Y		
10PR0030_MagOx	8100-XS -503-C	Y	8100-				Y	N/A	N/A	Y		
10PR0030_MagOx	8100-XS -961-D	Y	8100-				Y	N/A	N/A	Y		
10PR0030_MagOx	8100-XS -962-D	Y	8100-				Y	N/A	N/A	Y		
10PR0030_MagOx	8100-XS -963-D	Y	8100-				Y	N/A	N/A	Y		
10PR0030_MagOx	8200-AE -907	Y	8200-									
10PR0030_MagOx	8200-ZY -090	Y	8200-				Y	N/A	N/A	Y		
10PR0030_MagOx	8210-AE -907	Y	8100-AIT -473	Caution	The Project Tag is ASSOCIATED to a Control System Tag.	Consider merging the Project Tag with the Control System Tag or a Dummy Project Tag will						
10PR0030_MagOx	8300-AE -105-DE	Y	8300									
10PR0030_MagOx	8300-AE -530	Y	8300									
10PR0030_MagOx	8300-AE -535	Y	83008100-AIT -473	Caution	The Project Tag is associated to a claimed Loop Name in another Project. The claimed Loop Name in the other Project has been RENAMED.	Determine the best order to which these Loop Names across the Projects should be merged.						
10PR0030_MagOx	8300-AE -540	Y	8300									
10PR0030_MagOx	8300-AE -541	Y	8300-									
10PR0030_MagOx	8300-AE -551	Y	83008100-AIT -473	Caution	The claimed Loop Drawing has been RENAMED in the Project. Merging the Loop Drawing will result in the Loop Drawing in As-Built being							
10PR0030_MagOx	8300-AE -555	Y	8300									
10PR0030_MagOx	8300-AE -578-A	Y	8300-									
10PR0030_MagOx	8300-AIT -105	Y	83008100-AIT -473	Caution	The Tag in another Project has been associated to a different Device Cable.	Review the changes to determine if any impact should be applied to the source Project Tag prior to merging into As-Built.		2"-FR-3027-A-50H-ET	2"-FR-3027-A-50H-ET	Y		
10PR0030_MagOx	8300-AIT -123	Y	8300					2"-PW-3149-A-40H-GT	2"-PW-3149-A-40H-GT	Y		
10PR0030_MagOx	8300-AIT -124	Y	8300					2"-PW-3150-A-40H-GT	2"-PW-3150-A-40H-GT	Y		
10PR0030_MagOx	8300-AIT -124	Y	8300					2"-PW-3150-A-40H-GT	2"-PW-3150-A-40H-GT	Y		
10PR0030_MagOx	8300-AIT -154	Y	83008100-AIT -473	Caution	Another Project has the Device Cable CONNECTED at both ends.	Determine if the other Project should be merged prior to the source Project.		2"-PW-3151-A-40H-GT	2"-PW-3151-A-40H-GT	Y		
10PR0030_MagOx	8300-AIT -184	Y	8300					3/4"-PW-3650-A-25-PF	3/4"-PW-3650-A-25-PP	Y		
			8100-DIT -473-A	Caution	The Project Tag has been claimed into another Project.	Determine if it is necessary for the Tag to be claimed into more than one Project. Having information in more than one project complicates the merging process of both						



DATA AUDIT

DOCTOR

Features

- Identifies inconsistent use of templates, symbols, title blocks that impact deliverables. Enables the user to fix the inconsistencies immediately
- Identifies loss of external data e.g. external archives (snapshots of deliverable revisions)
- Identifies and fixes data that is located in the wrong Plant, Area, Units. Findings are easily exported to files
- Identifies orphan records (broken links)
- Identifies data that is corrupted and, as a result, is invisible to the front end of SPI



DOCTOR – Duplicate Analysis & Fixes

Beaconsuite (32 bit)

Home Duplicate Analysis
doctor

Plant Area Unit Run Analysis Export Grids Export Scripts
Settings Action

Session Management

Database Blend

DatasesQ

Data Control

DBsmartz

Doctor

Align UDF/UDT

Duplicate Analysis

Merge Disconnect

Merge Release Flag

Object Registry Repair

Orphan Finder

PAU Cascade

Path Wizard

Resequencer

Hierarchy

Insight

Library

MCA

Preferences

Project

Seed

Smart DBsearch

Specification

Standards Manager

Sync

Tools

Select All Deselect All

- Names
 - Cable
 - Control System Tag
 - Equipment Number
 - Foundation Fieldbus Segment
 - Line Number
 - Loop
 - Panel
 - Tag
- Drawings
 - Calculation Reports
 - Instrument Datasheets
 - Loop Drawing
 - Other
 - P&ID
 - Panel Strip Drawing
 - Strip Signals (Enhanced)
 - Strip With Adjacent Conn...
 - Strip Without Adjacent Co...
 - Strip Without Adjacent Co...
 - Process Data Reports
 - Process Data Reports - Line
 - Process Data Reports - Tag
 - Segment Drawing
- Manufacturer & Models
 - Apparatus Manufacturer
 - Apparatus Manufacturer/Model
 - Apparatus Model
 - Cable Manufacturer
 - Cable Manufacturer/Model
 - Cable Model
 - Connector Manufacturer
 - Connector Manufacturer/Mod...
 - Connector Model
 - Intrinsic Safety Panel Manufa...
 - Intrinsic Safety Panel Manufa...
 - Intrinsic Safety Panel Model
 - Panel Manufacturer
 - Panel Manufacturer/Model
 - Panel Model
 - Panel Strip Manufacturer
 - Panel Strip Manufacturer/Model

Drag a column here to group by this column.

Script	Recommended Action	Explanation	Proposed Name	Name	Unit Number	Project Name	Pla...	Area
<input checked="" type="checkbox"/>	Correlate Record	Project record and As-Built record need to be correlated.		1000-AIT-0560	1000	As-Built	UPGRA...	OrCrude 1000:
<input checked="" type="checkbox"/>	Correlate Record	Project record and As-Built record need to be correlated.		1000-AIT -0560	1000	LLK-BPP-019 DRU UPG	UPGRA...	OrCrude 1000:
<input checked="" type="checkbox"/>	Correlate Record	Project record and As-Built record need to be correlated.		1000-AIT-0562	1000	As-Built	UPGRA...	OrCrude 1000:
<input checked="" type="checkbox"/>	Correlate Record	Project record and As-Built record need to be correlated.		1000-AIT -0562	1000	LLK-BPP-019 DRU UPG	UPGRA...	OrCrude 1000:
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		1000-AS-0617	1000	13PR204 Corrosion Inhibito UPG	UPGRA...	OrCrude 1000:
<input checked="" type="checkbox"/>	Rename Record	Unable to provide recommendation, so rename with a Suffix.	1000-AS -0617~Dup1	1000-AS -0617	1000	13PR204 Corrosion Inhibito UPG	UPGRA...	OrCrude 1000:
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		1000-HX-0614	1000	LLK-BPP-019 DRU UPG	UPGRA...	OrCrude 1000:
<input checked="" type="checkbox"/>	Delete Record	Entity does not have Associated Tag(s).		1000-HX -0614	1000	LLK-BPP-019 DRU UPG	UPGRA...	OrCrude 1000:
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		1400-TT-4827-B	1400	As-Built	UPGRA...	OrCrude 1000:
<input checked="" type="checkbox"/>	Rename Record	Unable to provide recommendation, so rename with a Suffix.	1400-TT -4827-B~Dup1	1400-TT -4827-B	1400	As-Built	UPGRA...	OrCrude 1000:
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		1700-FV-7228	1700	As-Built	UPGRA...	OrCrude 1000:
<input checked="" type="checkbox"/>	Rename Record	Unable to provide recommendation, so rename with a Suffix.	1700-FV-7228~Dup1	1700-FV-7228	1700	As-Built	UPGRA...	OrCrude 1000:
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		1700-FY-7228	1700	As-Built	UPGRA...	OrCrude 1000:
<input checked="" type="checkbox"/>	Rename Record	Unable to provide recommendation, so rename with a Suffix.	1700-FY -7228~Dup1	1700-FY -7228	1700	As-Built	UPGRA...	OrCrude 1000:
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		2000-PV-003-	20	As-Built	SAGD	9100 Wellpads
<input checked="" type="checkbox"/>	Rename Record	Unable to provide recommendation, so rename with a Suffix.	2000-PV-003~Dup1	2000-PV-003-	20	As-Built	SAGD	9100 Wellpads
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		2000-PV-019-	20	As-Built	SAGD	9100 Wellpads
<input checked="" type="checkbox"/>	Rename Record	Unable to provide recommendation, so rename with a Suffix.	2000-PV-019~Dup1	2000-PV-019-	20	As-Built	SAGD	9100 Wellpads
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		2121-XV-101	2121	11PR0294 UPG	UPGRA...	Gasification 2f
<input checked="" type="checkbox"/>	Rename Record	Unable to provide recommendation, so rename with a Suffix.	2121-XV -101~Dup1	2121-XV -101	2121	11PR0294 UPG	UPGRA...	Gasification 2f
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		2121-XV-101	2121	As-Built	UPGRA...	Gasification 2f
<input type="checkbox"/>	No Action	No action needed for this Entity. All other related duplicates have been...		2122	2122	As-Built	UPGRA...	Gasification 2f
<input checked="" type="checkbox"/>	Delete Record	Entity does not have Associated Tag(s).		2122	2122	As-Built	UPGRA...	Gasification 2f
<input checked="" type="checkbox"/>	Delete Record	Entity does not have Associated Tag(s).		2122	2122	As-Built	UPGRA...	Gasification 2f
<input checked="" type="checkbox"/>	Delete Record	Entity does not have Associated Tag(s).		2122	2122	As-Built	UPGRA...	Gasification 2f
<input checked="" type="checkbox"/>	Delete Record	Entity does not have Associated Tag(s).		2122	2122	As-Built	UPGRA...	Gasification 2f
<input checked="" type="checkbox"/>	Delete Record	Entity does not have Associated Tag(s).		2122	2122	As-Built	UPGRA...	Gasification 2f
<input checked="" type="checkbox"/>	Delete Record	Entity does not have Associated Tag(s).		2122	2122	As-Built	UPGRA...	Gasification 2f
<input checked="" type="checkbox"/>	Delete Record	Entity does not have Associated Tag(s).		2122	2122	As-Built	UPGRA...	Gasification 2f
<input checked="" type="checkbox"/>	Delete Record	Entity does not have Associated Tag(s).		2122	2122	As-Built	UPGRA...	Gasification 2f

Connection: O/O v2016 (Oracle):Domain

DOCTOR – Orphan Finder → Pre-Upgrade Cleanup

- Identifies orphan records (records that do not have required parent)

Orphan's will not be registered during the upgrade – hiding legit issues

The screenshot shows the DOCTOR Orphan Finder interface. The top bar indicates "623 Tables Selected" and "PAU Scan" is selected. The main area displays a list of tables with their total row counts. The "COMPONENT" table is selected, showing a detailed view of its data.

CMPNT_NAME	CMPNT_ID	EQUIP_ID	LOOP_ID
101-PT -201	4230	4135	4228
101-LT -201	4233	4135	4232
101-TW -202	4249	4135	4248
101-TE -202	4252	4135	4248
101-TT -202	4254	4135	4248
101-TW -201	4266	4135	4265
101-TI -201	4270	4135	4265
101-LT -202	11410	4135	11409

DOCTOR – PAU Cascade → Pre-Upgrade Cleanup

- Identifies records that exist within incorrect units.
- Proposes and fixes / correctly moves records that exist within incorrect units.

The screenshot shows the Doctor software interface with the PAU Cascade tool active. The main window displays a table of equipment records. The table has the following columns: CASCADE_FINDING, CASCADE_TRIGGER_PARENT, ENGI..., P..., AREA_NAME, UNIT_NAME, and EQUIP_NAME. The data is as follows:

CASCADE_FINDING	CASCADE_TRIGGER_PARENT	ENGI...	P...	AREA_NAME	UNIT_NAME	EQUIP_NAME
!AU update due to name		As-Built	SAGD	8100 Inlet Treating::8200 De-Oiling	8100 Inlet Treating::8200 De-Oiling	8200-P-020-A/B
!AU update due to COMPONENT	8100-PIT -451	As-Built	SAGD	8500 Produced Gas Handling::8100 Inlet Treating	8500 Produced Gas Handling::8100 Inlet Treating	8100-V-004
!AU update due to COMPONENT	8100-AIT -908-B	As-Built	SAGD	8400 Steam Generation::8100 Inlet Treating	8400 Steam Generation::8100 Inlet Treating	8100-V-001-C
!AU update due to COMPONENT	8100-PIT -600	As-Built	SAGD	8200 De-Oiling::8100 Inlet Treating	8200 De-Oiling::8100 Inlet Treating	8100-E-026-A/B

Data located in incorrect units impacts the upgrade object registration process, ability to filter for data and the ability to successfully copy units.

DOCTOR – PathWizard – Broken Paths Identified & Fixed

Beaconsuite

Home Path Wizard

Preview Update Clear Export
Action Grid Operations

doctor

Doctor

- Access Control
- Session Management
- Database Blend
- DatasesQ
- Data Control
- DBsmartz
- Doctor**
- Duplicate Analysis
- Merge Release Flag
- Orphan Finder
- PAU Cascade
- Path Wizard
- Hierarchy
- Insight
- Library
- MCA
- Preferences
- Project

Folder View File View

Folder Exists	Folder Size	Folder	Edit - New Folder Path
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\Datasheet\	
Table Names			
DRAWING_TYPE			
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\EnhancedLoop\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\EnhancedMultiStrip\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\EnhancedMultiStripSignal\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\EnhancedPanelSignal\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\IoAssignment\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\ProcessData\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\PSWithAdjacent\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\PSWithoutAdjacentConnections(Style1)\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\PSWithoutAdjacentConnections(Style2)\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\Segment\	
No	0 B	\\CALNA3\SmartPlant\SPI\SPIP2\Datasheet\	
No	0 B	C:\InTools Import\	
Yes	0 B	C:\INTOOLS\CAD\BLOCKS\	
No	0 B	c:\intools\graphics\	
No	0 B	C:\Justin\	
No	0 B	C:\NEXEN03C3598\	

Connection: Demo Database 20140717 09.00.03.0248 (Oracle):Domain

DATAESQ

Features

- Identifies table structural differences
- Identifies table row count differences, row differences, and data differences on each row
- User configured synonyms enables only relevant differences to be reported
- Findings are easily exported to Excel files
- Compares two databases; compares combinations of Oracle, MS SQL Server, MS Excel
- Able to create a database snapshots for future comparisons



DATAESQ –DB Compare-> Table Structure & Record Analysis Pre & Post Upgrade

- Identifies if the client database structure aligns with Hexagon expectations

A customized table structure will likely impact the upgrade process.

The screenshot displays the DataresQ DB Compare tool interface. The main window shows a comparison of table structures between two database versions: DB_DEMO V2009 and DB_DEMO - V2016. The interface includes a navigation pane on the left with various tool options, a top toolbar with actions like 'Data Source', 'Table Selection', and 'Export', and a central table view showing the results of the comparison.

Table Statistics: # of Tables - Compared: 616, # of Tables - With Differences: 65, Schema Statistics: Total Differences: 632

Column Name	DB_DEMO V2009	DB_DEMO - V2016
Table Name: CABLE		
EXTERNAL_ROUTING_LENGTH		FLOAT
EXTERNAL_ROUTING_LENGTH_UOM_ID		NUMBER(38,0)
EXTERNAL_ROUTING_PATH		NVARCHAR2(1800)
REQUIRED_ROUTING		NCHAR(1)
ROUTING_STATUS		NUMBER(38,0)
SEGREGATION_LEVEL		NUMBER(38,0)
Table Name: CALIBRATION_EQUIPMENT_RESULT		
Table Name: CALIBRATION_RESULT		
Table Name: CALIBRATION_RESULT_BODY		
Table Name: CALIBRATION_RESULT_POINTS		
Table Name: COMPONENT		
REQ_NO	NVARCHAR2(25)	NVARCHAR2(60)
Table Name: COMPONENT_CATEGORY		
Table Name: CONNECTOR_TYPE		
Table Name: DIMENSIONAL_GROUP		
Table Name: DRAWING		
DOCUMENT_TYPE_ID		NUMBER(38,0)
TYPE_GEN		NCHAR(1)
Table Name: DRAWING_OBJECT		
Table Name: ENGINEERING_SCOPE_LEVEL		
Table Name: ESL_DRAWING_ATTRIBUTE		

DATAESQ –DB Compare-> Table Structure & Record Analysis Pre & Post Upgrade

- Identifies records differences between pre and post upgrade activities

Addresses concerns about what has changed due to the upgrade!

The screenshot shows the DataresQ DB Compare tool interface. The main window displays a comparison between two database sources: DEMO V2009 (Source 1) and DEMO - V2016 (Source 2). The interface includes a navigation pane on the left, a top toolbar, and a main table displaying table statistics and row counts.

Data Sources:
 Source 1: DEMO V2009
 Source 2: DEMO - V2016

Table Statistics:
 # of Tables - Compared: 72
 # of Tables - With Differences: 0
 With Matching Row Counts: 0
 With Mismatching Row Counts: 126

Row Statistics:
 Source 1 Total: 407689
 Source 1 Difference: 9698
 Row Difference: 520321
 Source 2 Total: 908614
 Source 2 Difference: 510623
 Data Difference: 153958

Table	Row Count Source 1	Row Count Source 2	Row Count Difference	Source 1 Unique Rows	Source 2 Unique Rows	Data Difference Row Count	Row Differences Display	Data Differences Display
CALC_PD_PROPERTY_PAU	7290	13365	6075	0	6075	0	Show Differences	Show Differences
CMPNT_CRITICALITY	18	23	5	0	5	0	Show Differences	Show Differences
COMPONENT	31836	93398	61562	44	61606	8570	Show Differences	Show Differences
COMPONENT_CERTIFICATION	3	6	3	0	3	0	Show Differences	Show Differences
COMPONENT_DIMENSIONAL	27984	88985	61001	49	61050	3515	Show Differences	Show Differences
COMPONENT_DOCUMENT	2	388	386	0	386	0	Show Differences	Show Differences
COMPONENT_FUNCTION_BLOCK	6538	11947	5409	32	5441	953	Show Differences	Show Differences
COMPONENT_FUNCTION_TYPE	395	644	249	0	249	18	Show Differences	Show Differences
COMPONENT_LOCATION	22	74	52	0	52	0	Show Differences	Show Differences
COMPONENT_MFR	359	540	181	0	181	0	Show Differences	Show Differences
COMPONENT_MOD	3270	6841	3571	0	3571	3	Show Differences	Show Differences
COMPONENT_PROFILE_WIRING	152	169	17	2	19	0	Show Differences	Show Differences
COMPONENT_SYS_IO_TYPE	22	31	9	0	9	0	Show Differences	Show Differences
CONTROL_SYSTEM_TAG	20307	38170	17863	55	17918	1789	Show Differences	Show Differences
DRAWING	76433	140328	63895	58	63953	76375	Show Differences	Show Differences
DRAWING_TYPE	19441	31034	11593	6912	18505	1290	Show Differences	Show Differences
EQUIPMENT	2625	5959	3334	2	3336	855	Show Differences	Show Differences
EQUIPMENT_TYPE	39	120	81	0	81	0	Show Differences	Show Differences
LINE	7410	17470	10060	8	10068	1910	Show Differences	Show Differences
LINE_TYPE	45	132	87	0	87	11	Show Differences	Show Differences
LOOP	15318	38431	23113	10	23123	1158	Show Differences	Show Differences

Connection: DEMO V2009 (Oracle):Domain

cooleycoreTM
ASSOCIATES



CONFIGURATION/STANDARD AUDIT

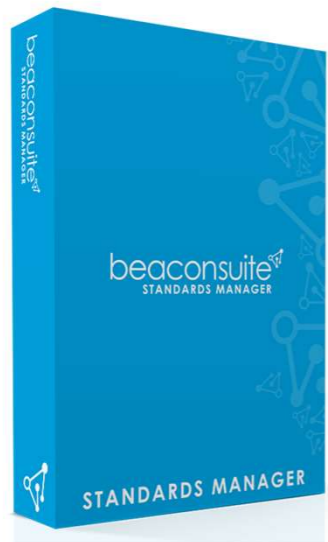
COMPARE DOMAIN STANDARDS

COOLEYCORE'S BEACONSUITE™ STANDARDS MANAGER SOFTWARE

- Rapidly assesses the alignment of standards across two different databases; without this application, it would take many more hours to do the same assessment
- Application to be used to determine the required effort in order to merge (blend) different SPI databases
- Non-conformances between the two databases can be reviewed and approved (if required)
- Assess high priority separate from low priority standards

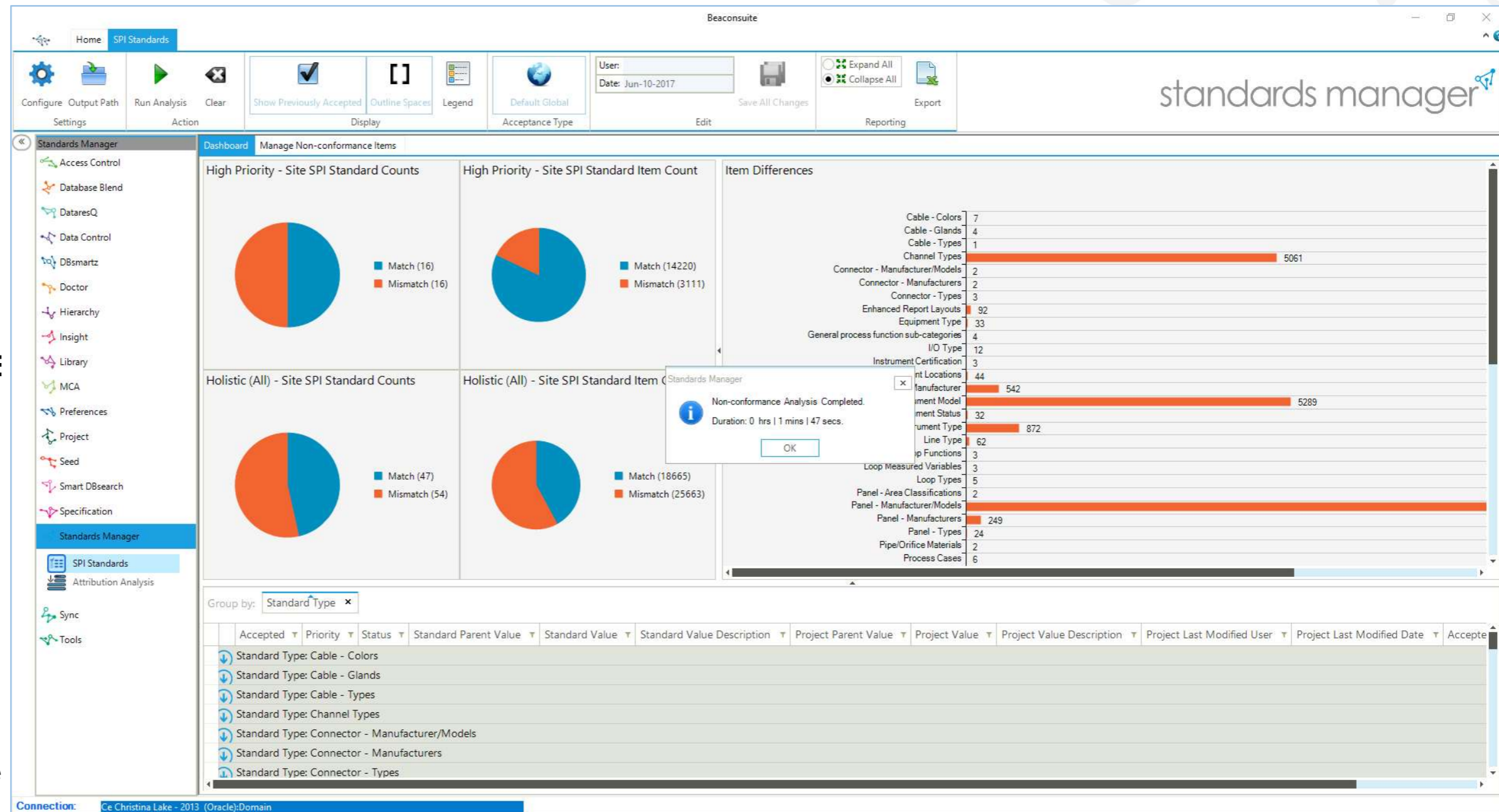


INNOVATIVE APPROACH TO MANAGING STANDARDS

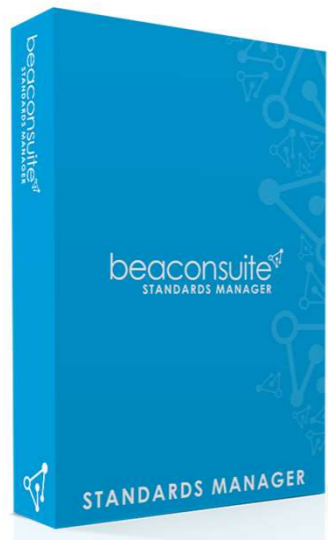


COOLEYCORE'S BEACONSUITE STANDARDS MANAGER

- Assesses alignment of ~101 standards
- Reports all differences
- Mechanism to approve non conformances
- Compares any two databases
- View Only re: SPI database



INNOVATIVE APPROACH TO MANAGING STANDARDS



COOLEYCORE'S BEACONSUITE STANDARDS MANAGER

- Assesses alignment of ~101 standards
- Reports all differences
- Mechanism to approve non conformances
- Compares any two databases
- View Only re: SPI database

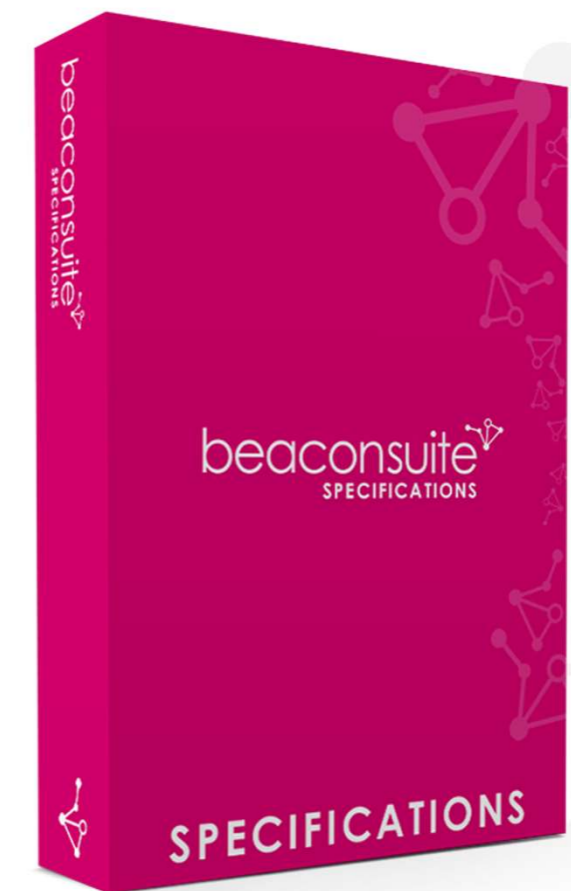
The screenshot displays the Beaconsuite Standards Manager interface. The top navigation bar includes 'Home' and 'SPI Standards'. Below this is a toolbar with icons for 'Configure', 'Output Path', 'Run Analysis', 'Clear', 'Show Previously Accepted', 'Outline Spaces', 'Legend', 'Default Global', 'Acceptance Type', 'User', 'Date', 'Save All Changes', 'Expand All', 'Collapse All', and 'Export'. The main dashboard area is titled 'Manage Non-conformance Items' and contains several configuration panels: 'Beaconsuite Configuration', 'Standards Configuration', 'Project Configuration', and 'Selected Priority'. A central table displays a list of standard types with columns for 'Accept', 'Acceptance Type', 'Status', 'Standard Parent Value', 'Standard Value', 'Standard Value Description', 'Project Parent Value', 'Project Value', and 'Project Value Description'. The table is currently filtered to show 'I/O Type' standards, with one row highlighted in blue: 'Schema Only' with a status of 'Project Only' and a description 'Requires Electrical Connection or Cable'.

Accept	Acceptance Type	Status	Standard Parent Value	Standard Value	Standard Value Description	Project Parent Value	Project Value	Project Value Description	Projec
<input type="checkbox"/>	Schema Only	Standard Only		AI Red	Analog Input with Redundant				
<input type="checkbox"/>	Schema Only	Standard Only		DI - AC	Digital Input, 120 Vac				
<input type="checkbox"/>	Schema Only	Standard Only		DI Red	Digital Input with Redundant				
<input type="checkbox"/>	Schema Only	Standard Only		DO - AC	Digital Output, 120 Vac				
<input type="checkbox"/>	Schema Only	Standard Only		DO Red	Digital Output with Redundant				
<input type="checkbox"/>	Schema Only	Standard Only		Elec					
<input type="checkbox"/>	Schema Only	Standard Only		IAI	Isolated Analog Input				
<input type="checkbox"/>	Schema Only	Standard Only		LLAI	LOW LEVEL ANALOG INPUT				
<input type="checkbox"/>	Schema Only	Standard Only		LLAIM	LOW LEVEL ANALOG INPUT MUX				
<input type="checkbox"/>	Schema Only	Standard Only		Modbus					
<input type="checkbox"/>	Schema Only	Standard Only		PI	Pulse Input				
<input checked="" type="checkbox"/>	Schema Only	Project Only					Elec	Requires Electrical Connection or Cable	MSKULM

SPECIFICATIONS

Features

- Compares Instrument Specification Forms in use across two different SPI domains / databases
- Compares and aligns Instrument Specification Form Data Dictionary (field mappings) across two different SPI domains
- Safely migrates data between SPI data fields, warning if the targeted field already has data or is incompatible



SPECIFICATIONS – FORM CORRELATION BWT DATABASES

Beaconsuite

Home

Credentials: System (selected), Domain

Connection: Assess_Suncor_Firebag

Connect to Selected | Manage

Current Connection | Database Connections

specifications

Run | Preview | CSV Export

Database: Source Database: Assess_Suncor_Firebag09 - 91.72 | Target Database: Assess_Suncor_Denver2009

Data retrieval complete: displaying 194 rows

Datasheet Form Number	Source Form Name	Target Form Name	Result Message
1	Control Valve	Control Valve	
100	Analyzer	Analyzer	
101	Combustible Gas Toxic Detector	Combustible Gas Toxic Dtct	Target name does not match source.
102	Conductivity Element/Sensor	Conductivity Element/Sens	Target name does not match source.
104	Consistency Meter	Consistency Meter	
105	Density Transmitter	Density Transmitter	
106	Gas Density Transmitter	Gas Density Transmitter	
107	Hydrogen Sulfide Monitor	Hydrogen Sulfide Monitor	
108	Oxygen (O2) Analyzer	Oxygen (O2) Analyzer	
109	pH Element	pH Element	
11		Orifice Plate	Source does not contain this data sheet.
111	Process Analyzer	Process Analyzer	
112	Complex Analyzer-Single Stream	Complex Analyzer	Target name does not match source.
113	Miscellaneous Analyzer	Miscellaneous Analyzer	
114	Analyzer Equip Sys - MultiStream	Anal Equip Sys-Multistream	Target name does not match source.
115	Analyzer Stream - Used w/114	Analyzer Stream	Target name does not match source.
116	Auto Sampler	Auto Sampler	
117	Sand Erosion Monitor		Target does not contain this data sheet.
120	Water-Cut Analyzer		Target does not contain this data sheet.
16		Level Gauge	Source does not contain this data sheet.
17		Oxygen Analyzer	Source does not contain this data sheet.
19		Limit Switch	Source does not contain this data sheet.
2		Solenoid Valve	Source does not contain this data sheet.
20		Electronic Converter	Source does not contain this data sheet.
202	Control Valve	Control Valve	
204	Diff. Pressure Regulator	Diff Pressure Regulator	Target name does not match source.
205	Emergency Block Valve	Emergency Block Valve	
207	Solenoid Valve	Solenoid Valve	
208	Press Control Valve Self Act	Press Cntrl Valve Self Act	Target name does not match source.
209	Pressure Regulator	Pressure Regulator	
210	Temperature Regulator	Temperature Regulator	

Connection: Assess_Suncor_Firebag09 - 91.72 (MSSQL):Domain

SPECIFICATIONS – DATA DICTIONARY ALIGNMENT

Beaconsuite

Home

Credentials: System / Domain

Connection: Assess_Suncor_Firebag09 - 91.72

Connect to Selected / Manage

Current Connection / Database Connections

specifications

Source Database: Assess_Suncor_Firebag09 - 91.72

Target Database: Assess_Suncor_Denver2009

Filter Options: Datasheet Form: 202 - Control Valve

Only Display Differences

Run: Preview, CSV Export, Replace

Results

	Datasheet Form Number	Datasheet Form Name	Data Field	Source Header	Target Header	Error Message (if applicable)
▶	202	Control Valve	cmpnt_mfr_id	cmpnt_mfr_id	Actuator MFR	
●	202	Control Valve	cmpnt_mod_id	cmpnt_mod_id	Actuator Model	
●	202	Control Valve	comp_flow_uom	comp_flow_uom_flg	comp_flow_uom	
●	202	Control Valve	comp_trim_size_uid	comp_trim_size_uid	B&T Trim size uom	
●	202	Control Valve	compute_1	compute_1	Line Size uom	
●	202	Control Valve	line_num	Line Number	Flow Action To	
●	202	Control Valve	line_sched	Line Sched Inlet	Line Schedule Inlet	
●	202	Control Valve	line_size	Line Size Inlet	Line Size Inlet	
●	202	Control Valve	line_uom	Line Size UOM	Line Size uom Inlet	
●	202	Control Valve	pd_compres_flow_max	Inlet Compress Max	Inlet Compressibility Factor @max flow	
●	202	Control Valve	pd_compres_flow_min	Inlet Compress Min	Inlet Compressibility Factor @min flow	
●	202	Control Valve	pd_compres_flow_nor	Inlet Compress Norm	Inlet Compressibility Factor @normal flow	
●	202	Control Valve	pd_cp_cv_max	Spec Heats Ratio Max	Inlet Specific Heats Ratio @max flow	
●	202	Control Valve	pd_cp_cv_min	Spec Heats Ratio Min	Inlet Specific Heats Ratio @min flow	
●	202	Control Valve	pd_cp_cv_nor	Spec Heats Ratio Norm	Inlet Specific Heats Ratio @normal flow	
●	202	Control Valve	pd_dens_max	Density Max	Density max	
●	202	Control Valve	pd_dens_min	Density Min	Density min	
●	202	Control Valve	pd_dens_nor	Density Norm	Density normal	
●	202	Control Valve	pd_dens_uid	Density UOM	Density uom	
●	202	Control Valve	pd_flow_max	Flow Rate Max	Flow Rate max	
●	202	Control Valve	pd_flow_min	Flow Rate Min	Flow Rate min	
●	202	Control Valve	pd_flow_nor	Flow Rate Norm	Flow Rate normal	
●	202	Control Valve	pd_flow_uflg	Flow UOM Flg	pd_flow_uflg	
●	202	Control Valve	pd_flow_uid	Flow UOM	Flow Rate uom	
●	202	Control Valve	pd_max_shut_off_press_dif	Diff Press	Max shutoff Differential Pressure	
●	202	Control Valve	pd_max_shut_off_press_dif...	Diff Press UOM	Differential Pressure uom	
●	202	Control Valve	pd_press_des_uflg	Des Press UOM Flg	pd_press_des_uflg	

Connection: Assess_Suncor_Firebag09 - 91.72 (MSSQL):Domain

QUESTIONS?



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