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Considerations For Developing A SmartPlant Instrumentation Seed File

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Before You Start

1. Determining the version of SmartPlant Instrumentation
2. Collect the relevant corporate standards
 - a) Naming Conventions
 - b) Installation Details
 - c) Approved Cable Types
 - d) Common Instrument Terminations
 - e) I/O Equipment Information
 - f) Typical Drawings - Loop & Wiring Diagrams



Administration Module

1. Owner Operator vs EPC Mode (Logo)
2. Default Plant-Area-Unit Structure
3. Naming Conventions
4. Disable Modules:
 - a) Process Data & Calculation
 - b) Document Binder
 - c) Maintenance
 - d) Calibration
 - e) Construction
5. User Groups and Rights
6. User Preferences
7. Custom User Defined Fields and Tables
 - a) Predefined Lists
 - b) Reserved – EPC, OO, users, project



2016

SmartPlant® Instrumentation

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Administration

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Browser/EDE Modules



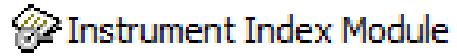
1. Instrument Index
 - a) Engineering, Design or unified
 - b) With or without construction information
 - c) Report vs data dump to construction
2. Cable Schedule
3. Alarm Set Point Index (MAC information exports)
4. External PSR Reports
5. Site Specific

The screenshot displays the Intergraph software interface. The main window shows a hierarchical diagram with 'Instrument' at the top, connected to 'Circuit' and 'Project'. The 'Item Types Explorer' on the left lists various categories like Cable, Calibration Results, and Electrical Equipment. The 'Attribute Explorer' on the right shows properties for the selected 'Instrument' item, including Calibration Data, Changes Tracking, and Identification. Below the diagram is a 'Query Preview' table showing instrument details.

Instrument Name	Instrument Service	Instrument Type	Instrument Manufacturer	Instrument Model	Loop Name	P&ID Drawing	Instrument I/O Type	Status
101-ALARM-001	PLC Cabinet General Alarm	ALARM - ALARM SIGNAL (General)			101-A -001		DI	
101-FE -100	Feed from V-8	FE - D/P TYPE FLOW ELEMENT (Flow)	FISHER-PORTER		101-F -100	100-PID01-001		N New

Description	Path
1.03 Instr Index by P&ID/Loop w/Unit	\\hoppdcx002\Drive\Tables\InTools\HO-C6KR\PSR\1.03_meiinstrindexby_pid_loop_w_unit_criteria.psr
2.05 Hardwired I/O by Project	\\hoppdcx002\Drive\Tables\InTools\HO-C6KR\PSR\2.05_MEI_Hardwired_IO_Summary_By_Proj.psr
9.02 YGET Report	\\hoppdcx002\Drive\Tables\InTools\HO-C6KR\PSR\9.02_YGET.psr
2.11 PCS SIS FGS IO & Func List-By IOLoc	\\hoppdcx002\Drive\Tables\InTools\HO-C6KR\PSR\2.12_MAC_Alarm_TripPoint_List.psr
2.01 All I/O Required	\\hoppdcx002\Drive\Tables\InTools\HO-C6KR\PSR\2.01_MEI_All_IO_Reqd.psr
1.09 Instr Index by P&ID/Tag	\\hoppdcx002\Drive\Tables\InTools\HO-C6KR\PSR\1.09_meiinstrindexby_pid_tag.psr

Index Module



1. Support Tables

- a) Instrument Types
 - i. Current ISA standard, old ISA standard or custom
 - ii. Software tags?
- b) I/O Types with Control System UDF/UDT vs custom
- c) Status types
- d) Locations

2. Custom Tables

- a) Control System
- b) Construction Work Package

Instrument Location	Description
Control Panel	Control Panel
Field	Field
On valve	On valve
Remote	Remote

Instrument Status	Description
DIS	Dismantle
EIP	Existing, to be reused in p
EM	Existing, to be modified
EMR	Existing, to be modified ar
ER	Existing, to be relocated a
EX	Existing
FTR	Future
NEW	New
OLD	Existing, not to be revamped

Instrument Type	Description	CS Tag Instrument Type Alias
TC	TEMPERATURE CONTROLLER	TC
TDI	DIFFERENTIAL-TEMPERATURE INDICATOR	TDI
TE	SKIN T/C	TE
TE	THERMOCOUPLE	TE
TI	BI-METAL THERMO	
TSH	HIGH-TEMPERATUR	
TSL	LOW-TEMPERATUR	
TT	TEMPERATURE TRA	

I/O Type	Description
---	No I/O Type
AI	Analog Input
AO	Analog Output
DI	Digital Input
DO	Digital Output
FieldbusFF	Foundation Fieldbus
HART AI	HART AI
HART AO	HART AO

Specifications Module



1. Specification Page/Form Library
2. Specification Data Dictionary
3. Title Block Overlays

The screenshot displays three overlapping windows from the Specifications Module software:

- Select Specification Form:** A dialog box with a search field for form numbers and a table of existing forms.
- Spec Data Dictionary - Chromatograph Analyzer, 100:** A large table with columns for Tag Number, Service, Application, Equipment Number, P&ID Number, Line Number, Fluid, and various process data fields.
- Title Block Properties:** A dialog box for configuring title block elements, including field headers and document headers.

Form	Form Name	Multiple Tag	Custom	Process Function	Custom Title Block	Notes	Form Item Type	Page Style
100	Chromatograph Analyzer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
101	Combustible Toxic Gas Detector	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
102	Conductivity Analyzer Element	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
103	Conductivity Transmitter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
104	Consistency Meter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
105	Density Analyzer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
106	Gas Density Transmitter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
107	Hydrogen Sulfide (H2S) Monitor	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
108	Oxygen (O2) Analyzer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
109	pH Element	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
110	pH Transmitter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
111	Process Analyzer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
112	Complex Analyzer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
113	Miscellaneous Analyzer	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
114	Analyzer Equipment System	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
115	Analyzer Stream	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Analyzer	No		Instrument	Single-Sec
200	On Off Valve	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Control Valve	No		Instrument	Single-Section
201	Butterfly Valve	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Control Valve	No		Instrument	Single-Section
202	Control Valve	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Control Valve	No		Instrument	Single-Section

Field	Header	Field	Header
REV_UDF_C01	REV_UDF_C01	DWG_UDF_C01	DWG_UDF_C01
		DWG_UDF_C02	DWG_UDF_C02
		DWG_UDF_C03	DWG_UDF_C03
		DWG_UDF_C04	DWG_UDF_C04

Tag Number	Service	Application	Equipment Number	P&ID Number	Line Number	Fluid	pd_fluid	pd_fluid_name	Components to be Analyzed
1									
2									
3									
4									
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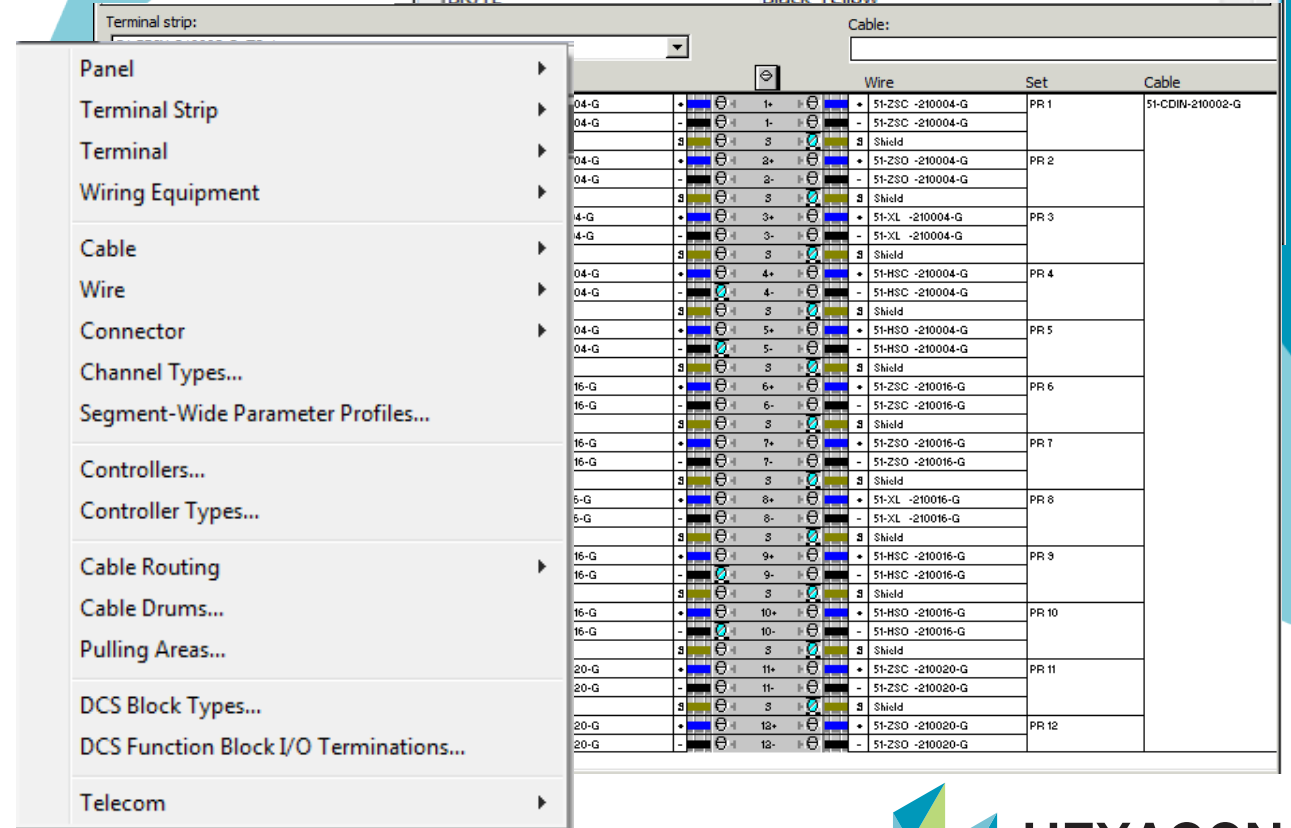
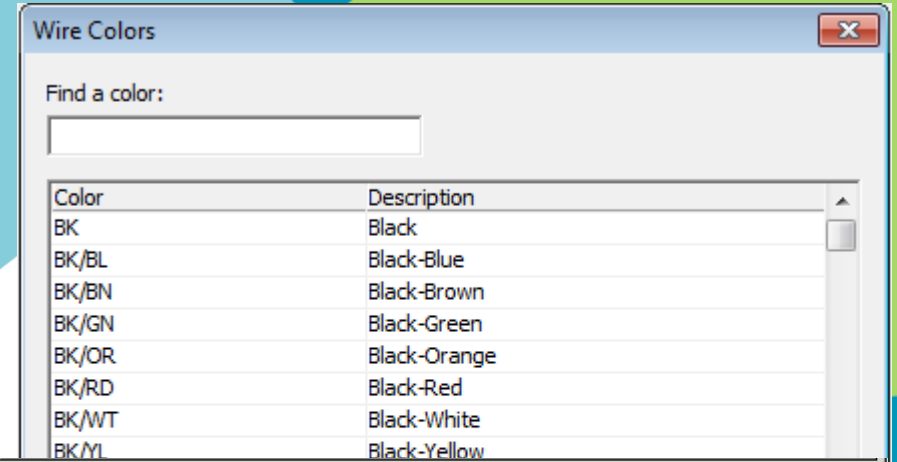


Wiring Module



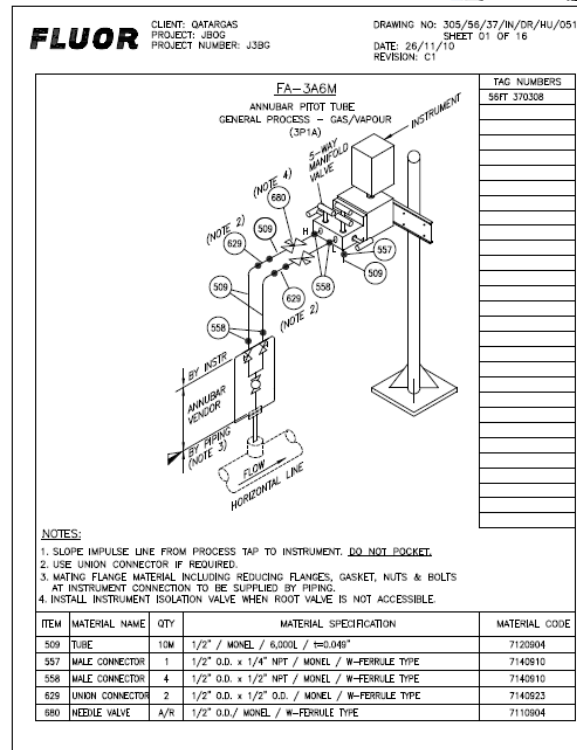
1. Equipment Tables
 - a) Panel
 - b) Terminal Strip
 - c) Terminal
 - d) Wiring Equipment
2. Wiring Support Tables
 - a) Cable
 - b) Wire
 - c) Connector
3. Telecom
4. Other Tables
5. Standard Reports

Types
Colors
Manufacturers
Models



Hook-Up Module Hook-Ups Module (Instrument Installation Details)

1. Use corporate details
2. Use supporting images?
3. Use Bill Of Material?
4. Use Item libraries?
5. Data transfer to other tools



Domain Explorer

- Hook-Ups
 - AIR SUPPLY ASSEMBLY
 - SUPPORT ASSEMBLY
 - MOUNTING ASSEMBLY
 - IM01
 - IM02
 - IM03
 - IM04
 - IM05
 - IM06
 - ELECTRICAL ASSEMBLY
 - FLOW ASSEMBLY
 - FLOW ASSEMBLY - ELECTRIC TRACED
 - FLOW ASSEMBLY - STEAM TRACED
 - LEVEL ASSEMBLY
 - LEVEL ASSEMBLY - ELECTRIC TRACED
 - LEVEL ASSEMBLY - STEAM TRACED
 - PRESSURE ASSEMBLY
 - PRESSURE ASSEMBLY - ELECTRIC TRACED
 - PRESSURE ASSEMBLY - STEAM TRACED
 - PRESSURE GAUGE ASSEMBLY
 - PRESSURE DIFFERENTIAL ASSEMBLY

Reference Explorer

- Hook-Up Item Libraries
 - DEMO HOOK LIBRARY
 - Default Sub-Library

Reference Explorer

1. Panels

- a) Device
- b) Junction Boxes
- c) Marshalling Rack
- d) DCS/SIS
- e) PLC

2. Cables

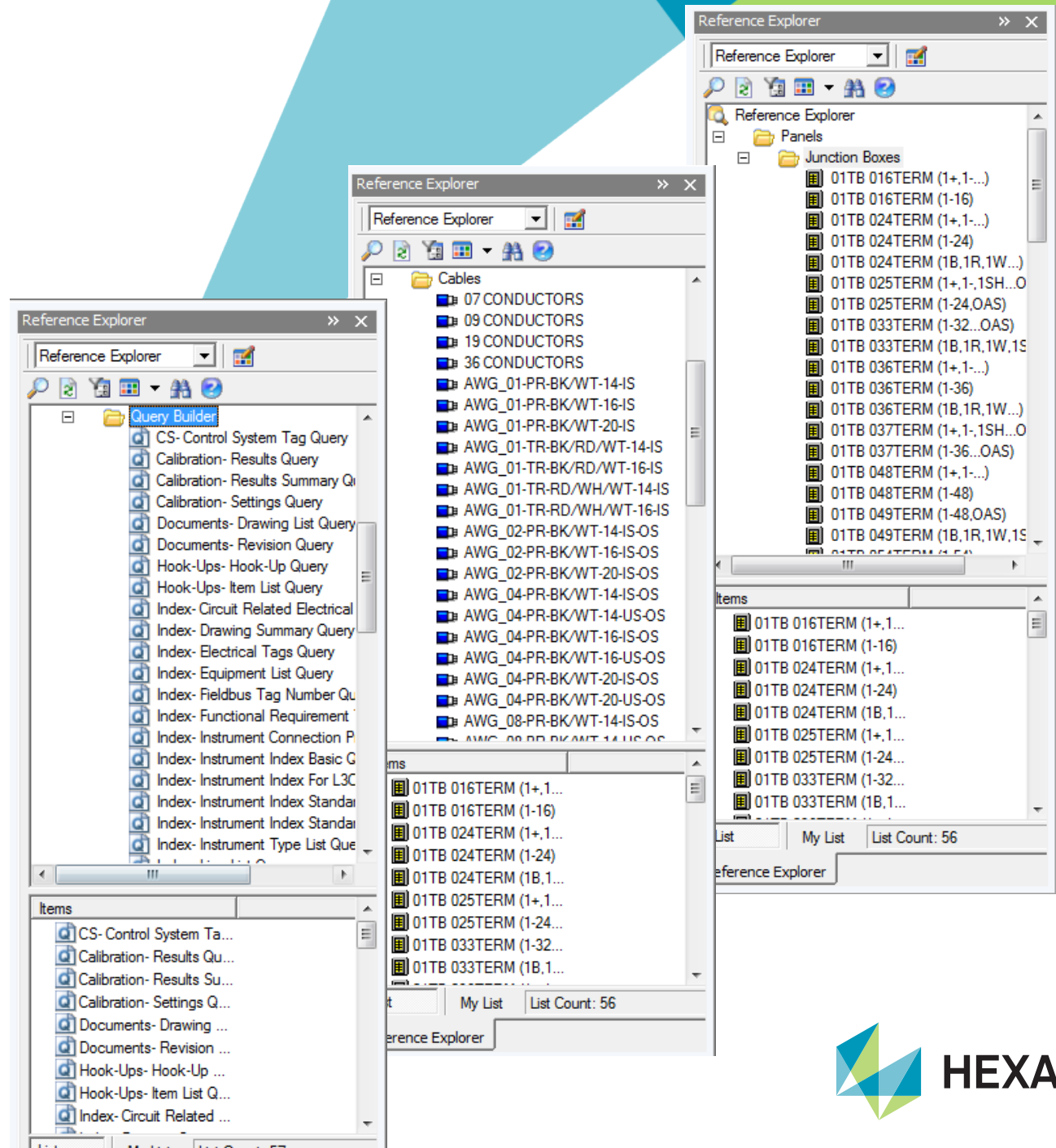
- a) Common cables – IEC/AWG
- b) Vendor configurations

3. Wiring Equipment - DCS Vendor catalogs

4. Macros

5. Typical Instrument

6. Queries



Wrapping things up

1. CheckDB
2. Validate the database
3. Develop Drawing Templates
4. Develop Custom Symbols

SEED Package Files

1. SEED file backup
2. Setup Guidelines
3. Implementation Guidelines
4. User Guidelines
5. Drawing Templates
6. Custom Symbols

SEED Package Files

1. Agenda Item

a) Agenda Item

b) Agenda Item

i. Agenda Item

ii. Agenda Item

- Agenda Item
- Agenda Item
- Agenda Item
- Agenda Item
- Agenda Item

— THANK YOU —



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