

Developing Autodesk AutoCAD P&ID and Plant 3D Content for Oil & Gas

Eng. Daniel Huamani
Autodesk Technical Specialist

The background of the slide is a photograph of an offshore oil rig at sunset. The sun is a large, bright yellow orb in the upper center, casting a long, shimmering reflection on the dark water below. The sky is filled with soft, orange and yellow clouds. The rig itself is a complex of steel structures, including a tall derrick and several cranes, silhouetted against the bright sky. Other smaller rigs are visible in the distance on the horizon.

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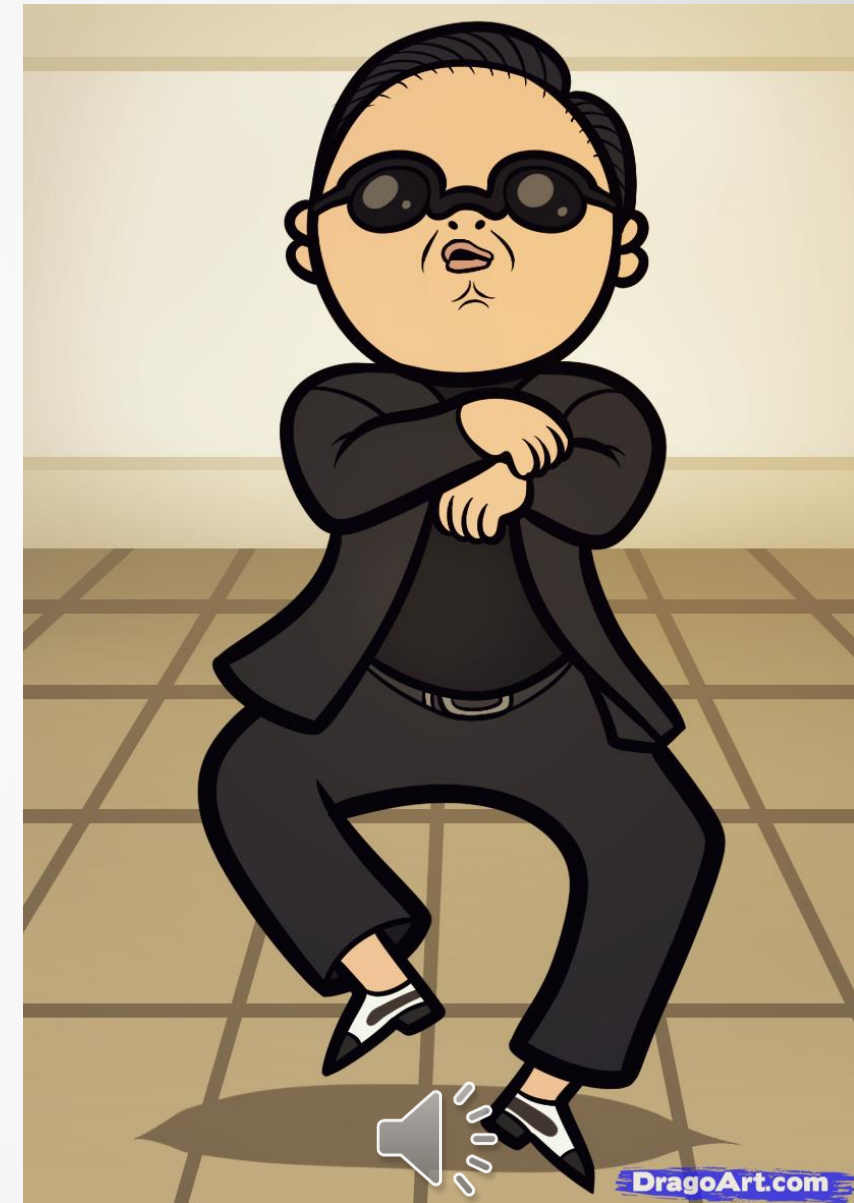
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Introductions

- **All-rounder-Jack-of-all-trades**
Mechanical engineer, P&ID drafter,
piper, field assistance, CAD manager...
- **Where I work**
Small local company

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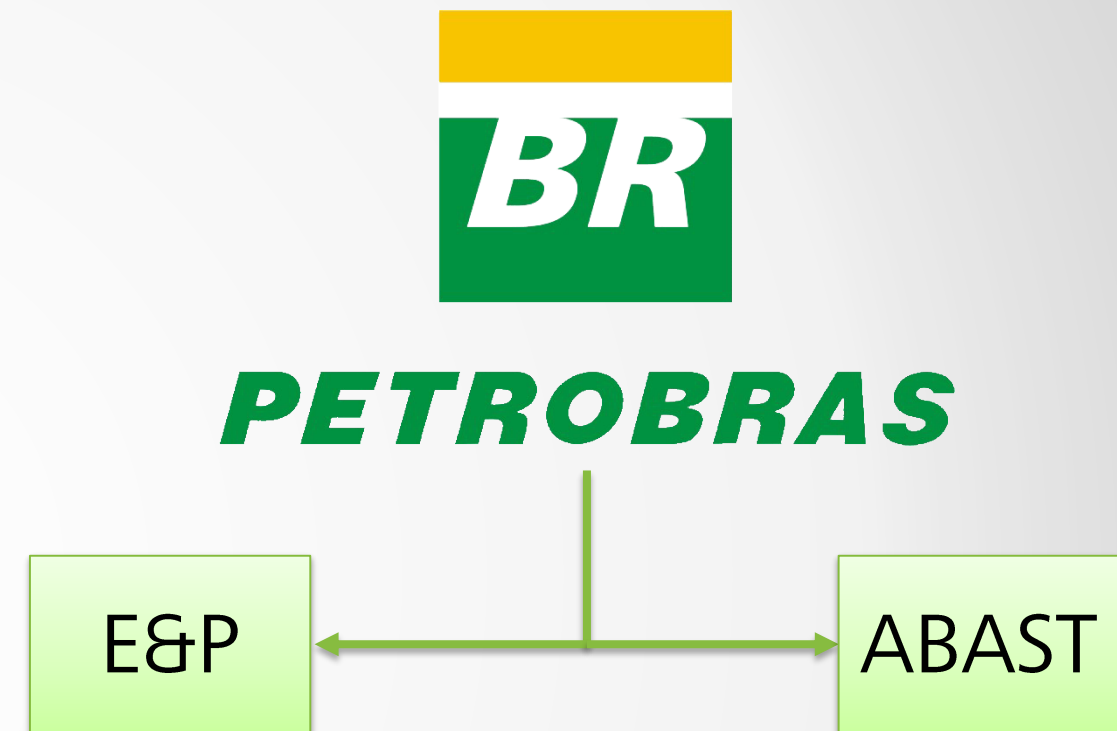


Agenda

- Context
- P&ID library creation methods
- Pipe specs creations
- Lessons Learned

Context

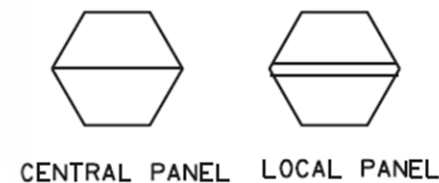
- Develop P&ID libraries
- Develop Pipe Specs
- Develop templates



Context

- 1700+ P&ID symbols
- 180 pipe specs
- Properties
- Behaviours
- Title Blocks

RAS	TECHNICAL SPECIFICATION	No.	I-ET-3000.00-1200-941-PPC-002
	AREA OR UNIT	E & P	SHEET 4
	TITLE	SYMBOLS AND ABBREVIATIONS	SIZE



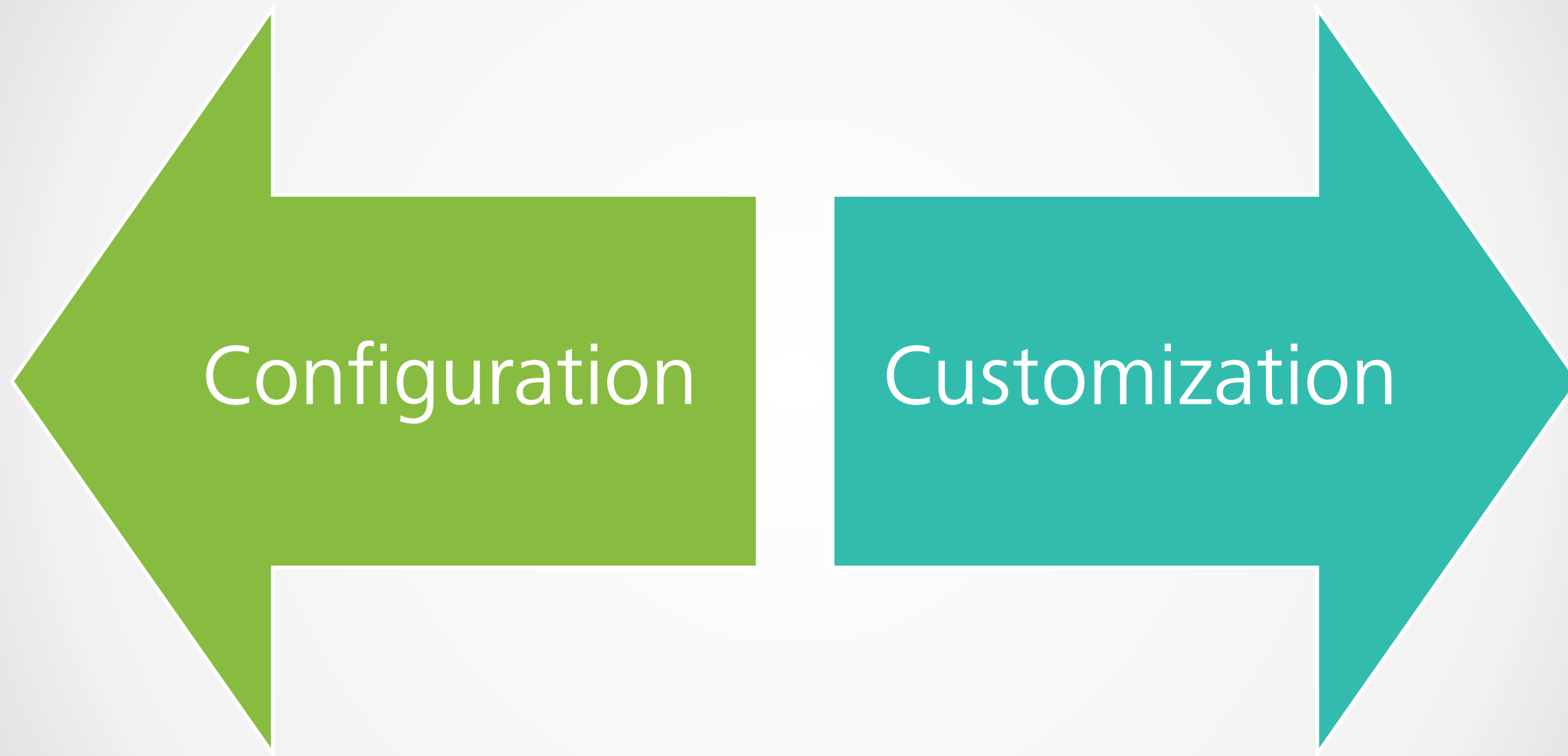
- INSTRUMENT INSTALLED ON FRONT OF PANEL

IFICATION	DR-ENGP-1.1		REV: A	
E&P			SHEET: 138 of 194	
TECHNICAL SPECIFICATION ET-200.03 AND MATERIAL FOR OIL PRODUCTION AND PROCESS FACILITIES				
6)	Temp. Range	Corrosion Allowance	Class	Standard
are Process, Drain System) in rosive Hydrocarbon)	-46°C / 110°C	(1,6mm)	1500	G6R

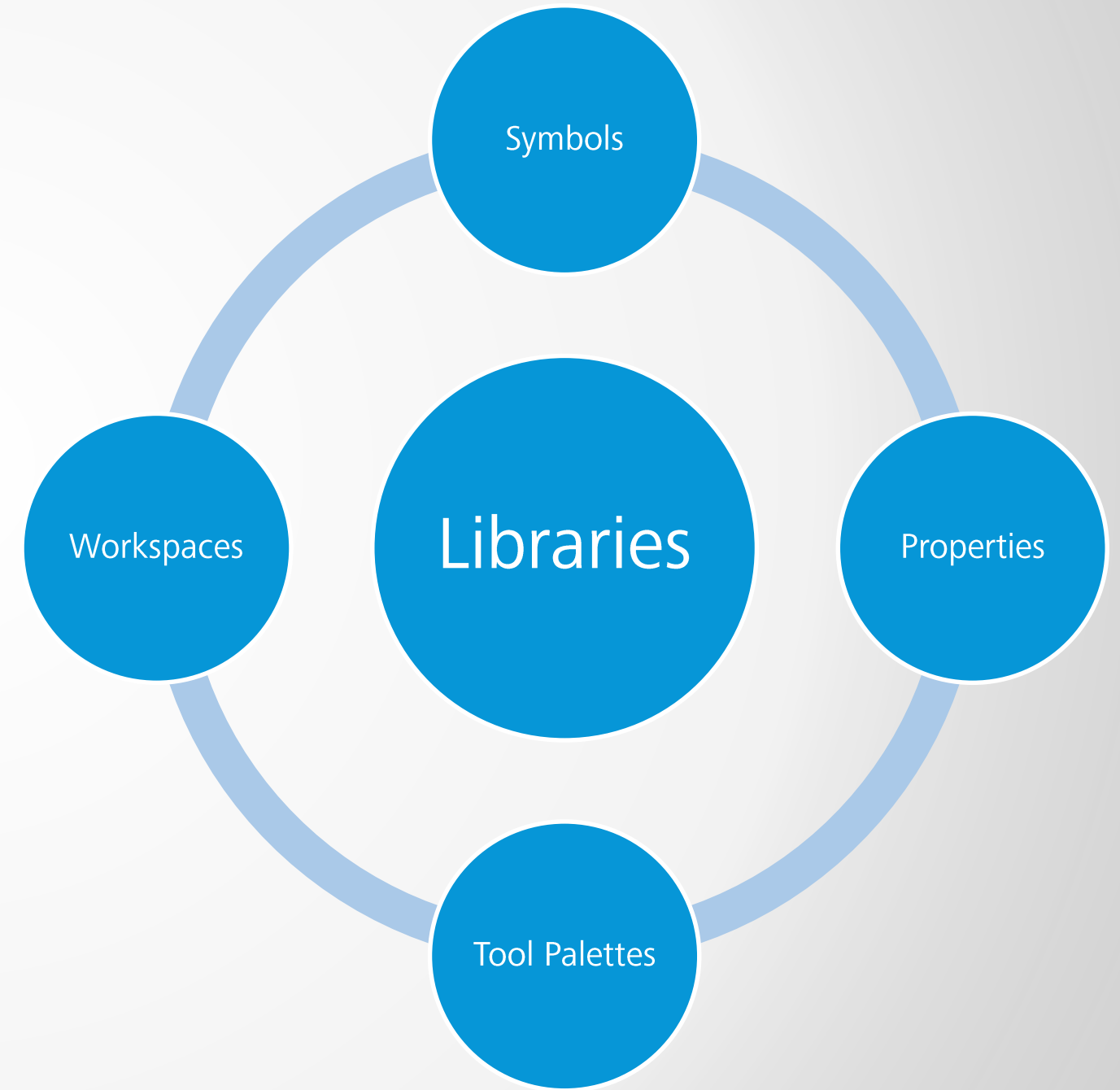
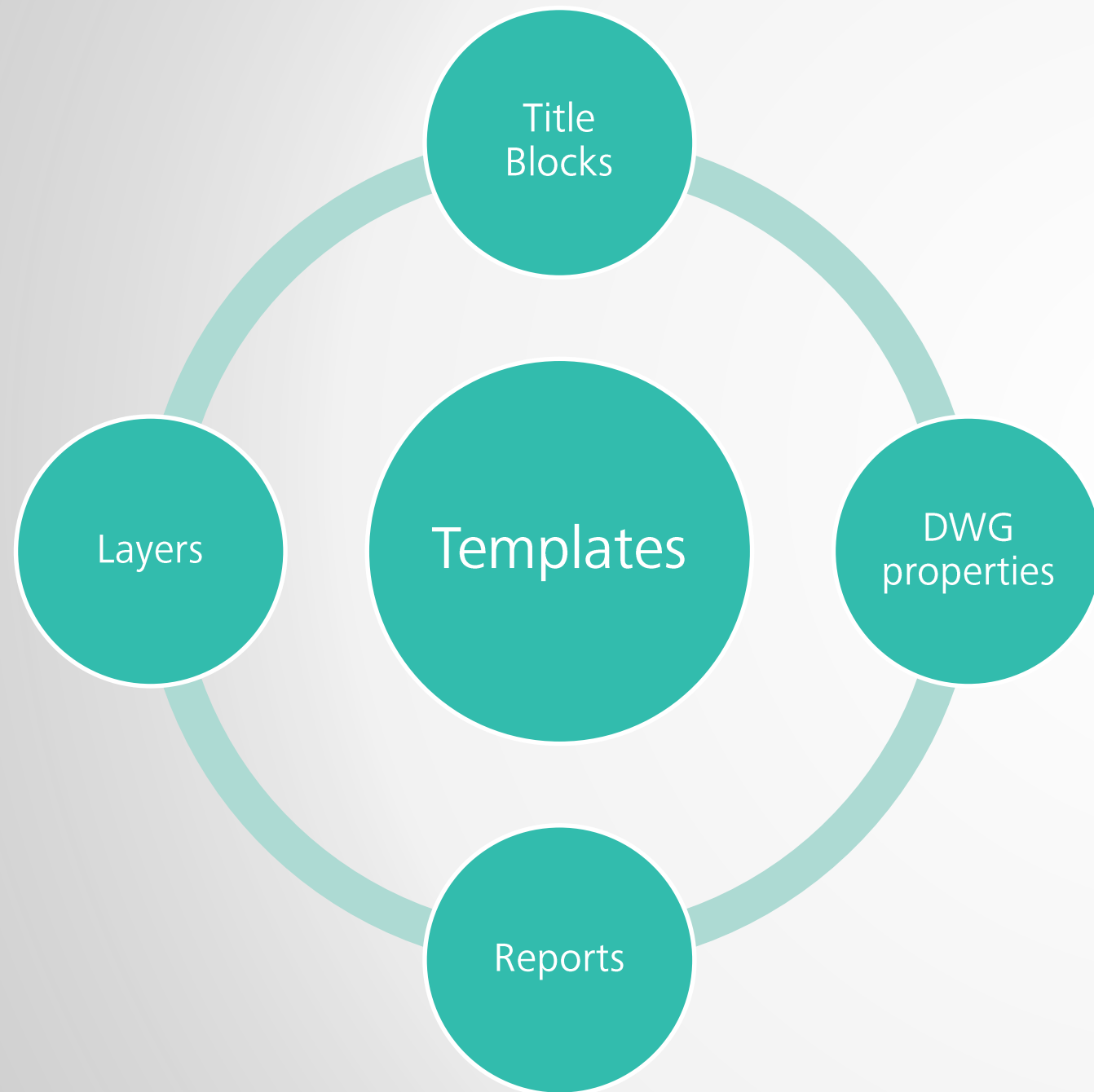


P&ID Library Creation Methods

Types of work

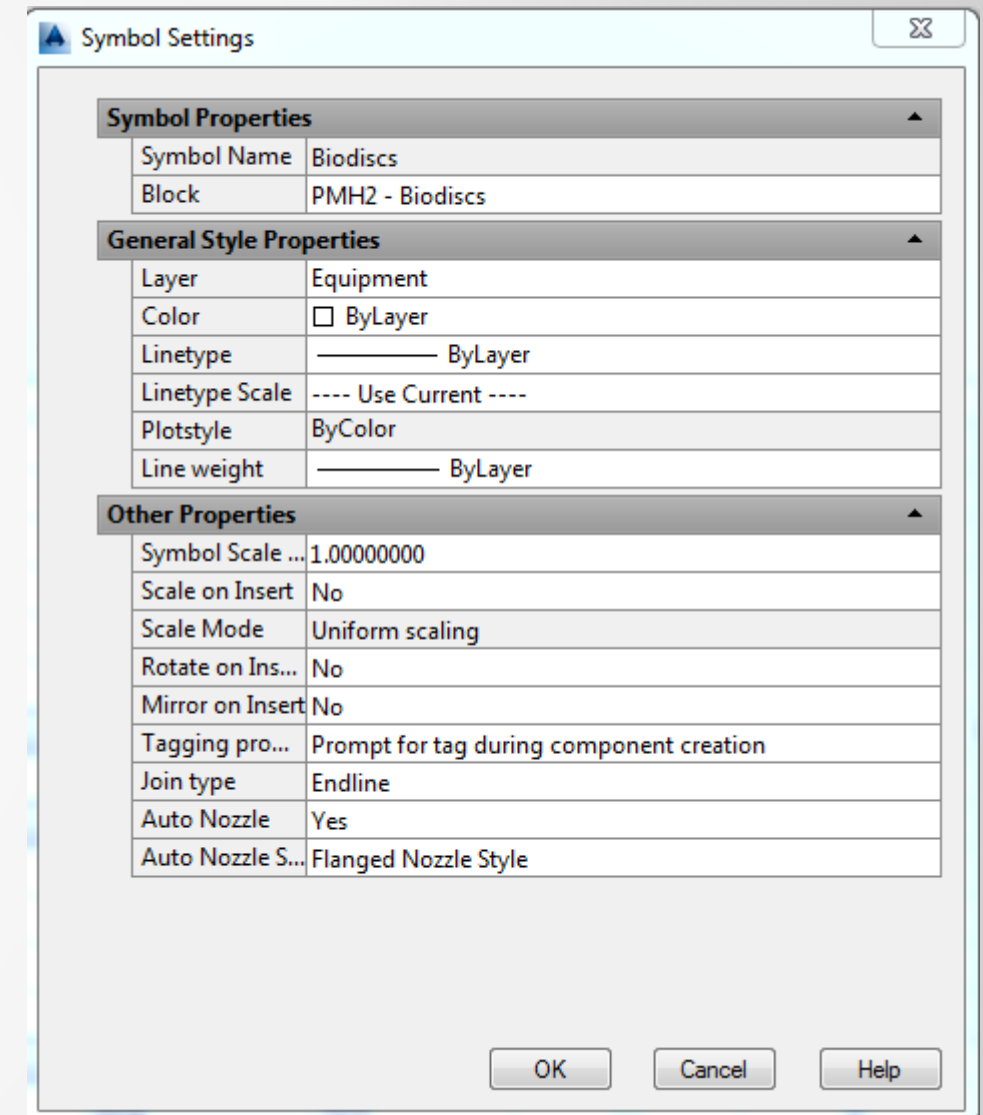
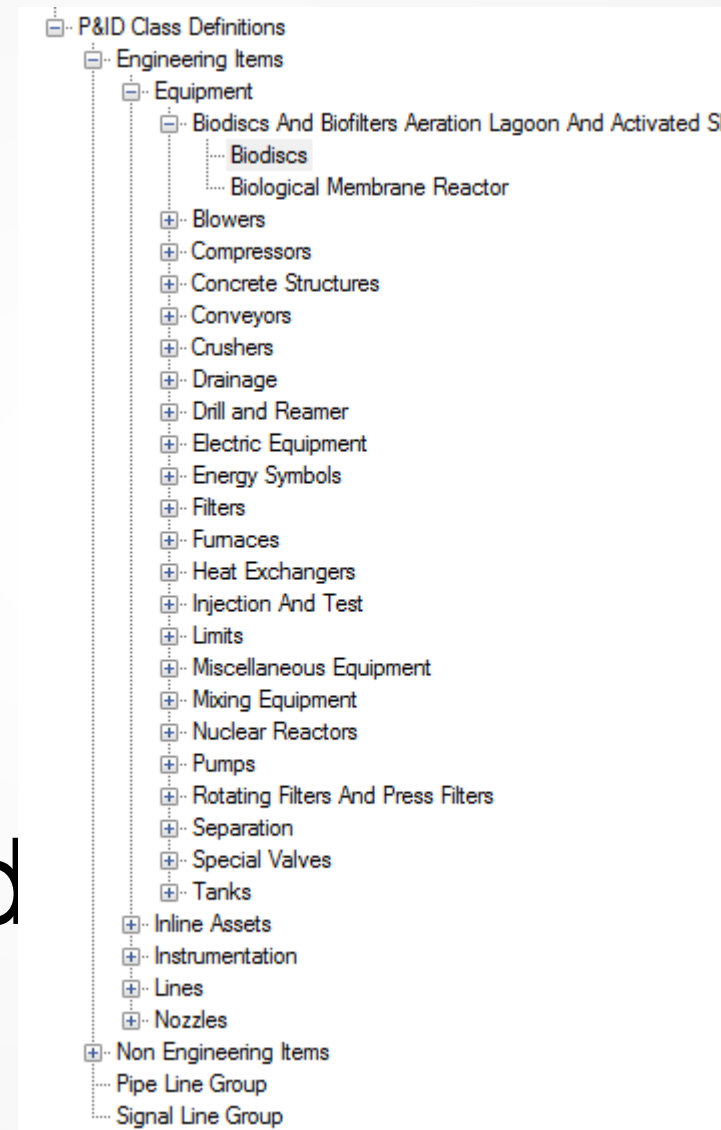


Types of Configurations



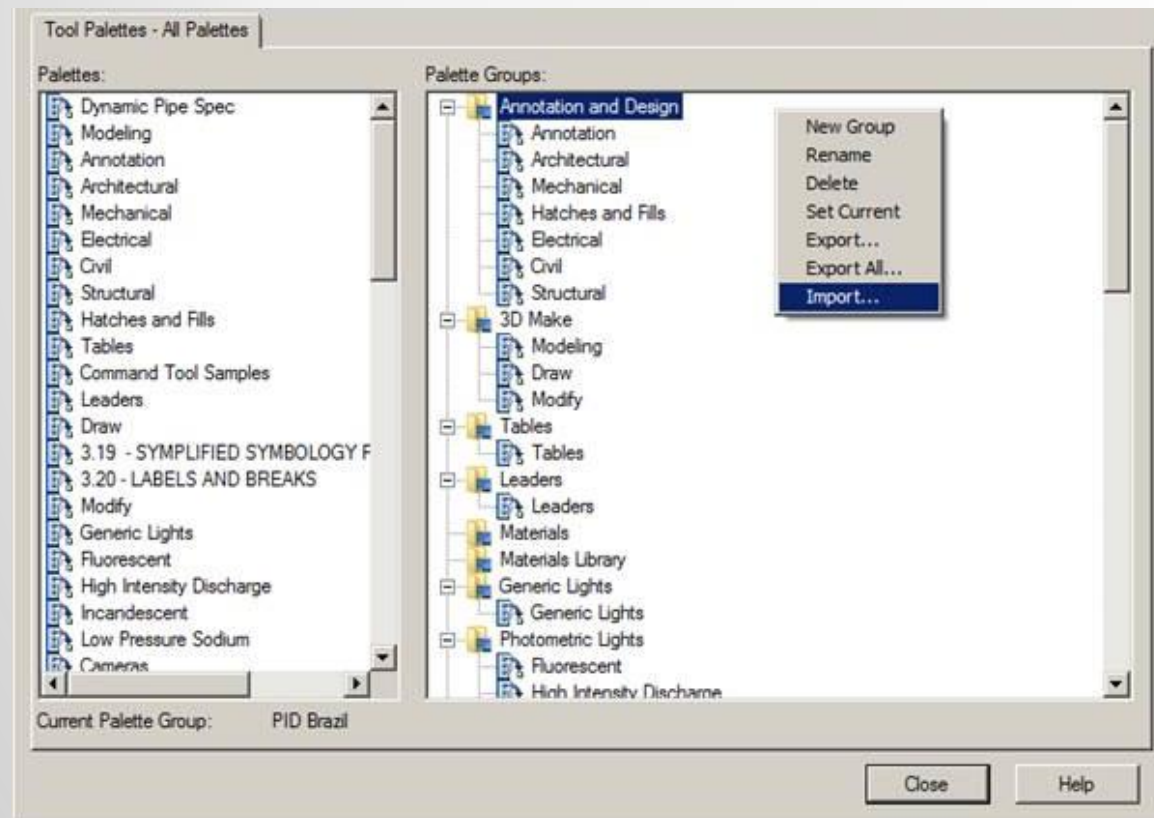
Library Creation Method

1. Treat existing blocks
2. Create new blocks
3. Import and associate
4. Create Tool Palette and Workspace



Distribution

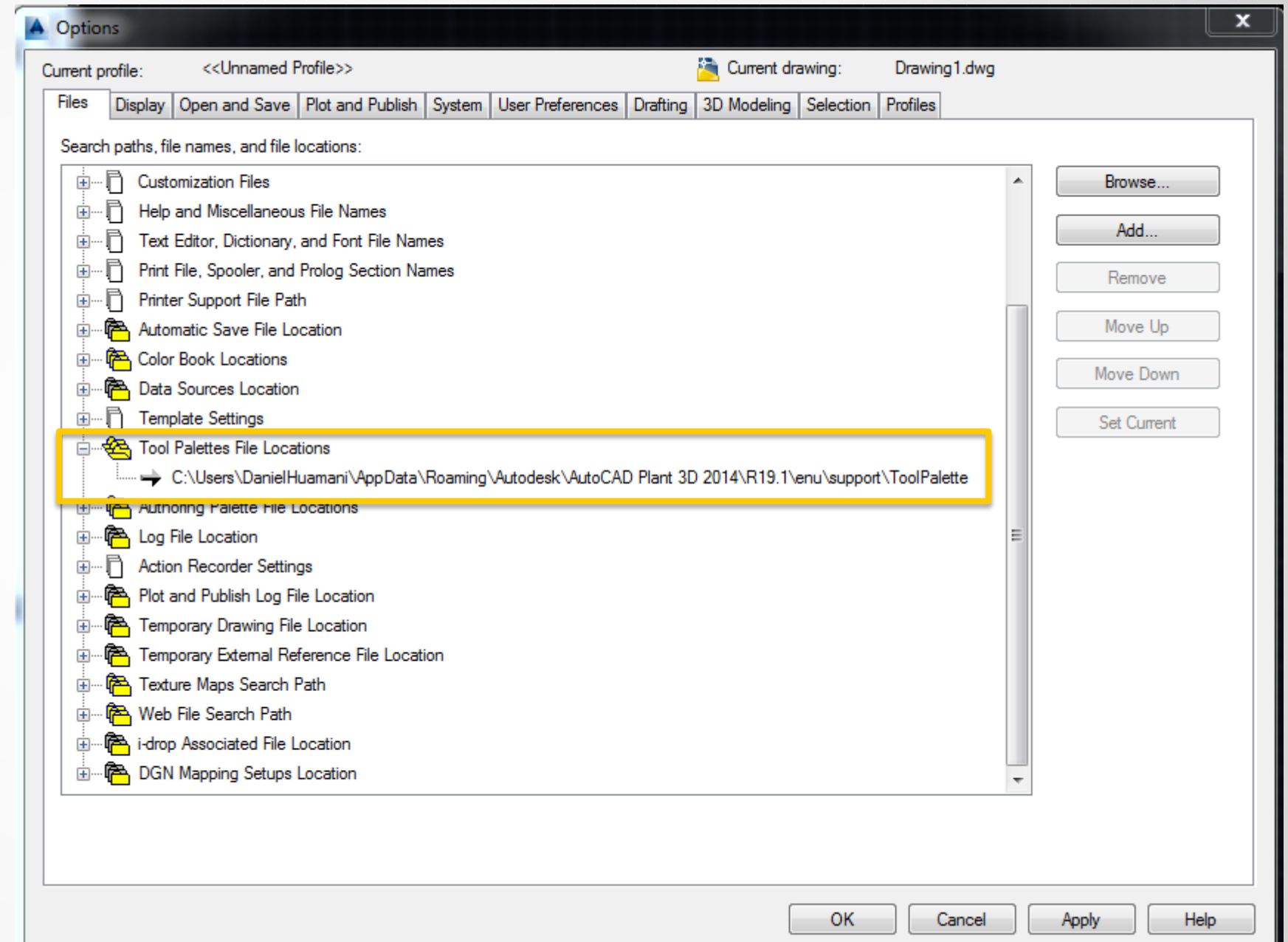
- C:\Users\<whatever>\AppData\Roaming\Autodesk\AutoCAD Plant 3D 2014\R19.1\enu\Support
 - Tool Palettes folder
 - File PNP.CUIX



- Distributor:
 - Command *CUSTOMIZE* and export the Palette Group
- Receptor
 - Command *CUSTOMIZE* and import the Palette Group

Distribution | Network folder

■ AutoCAD Options



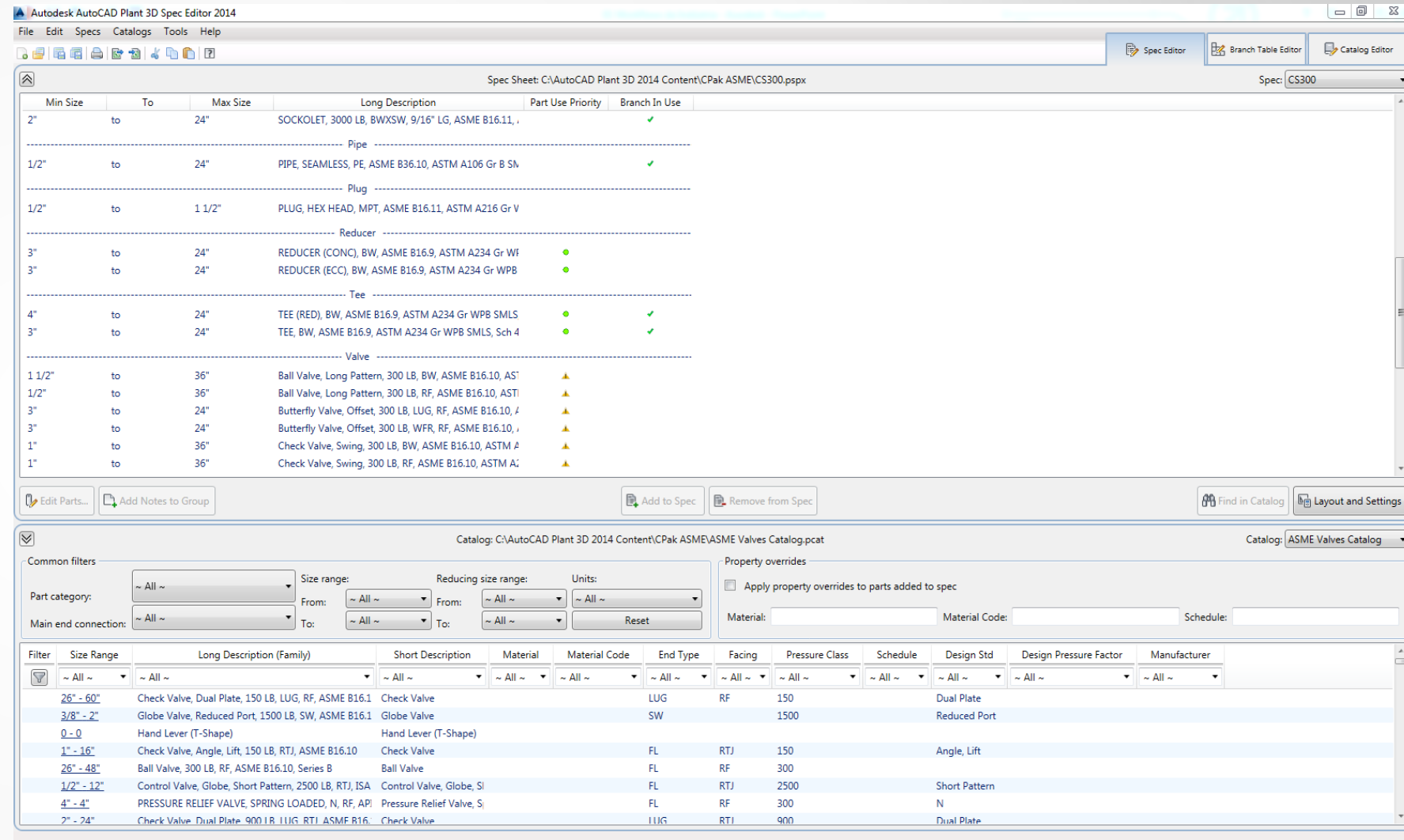
A detailed 3D CAD rendering of an offshore oil platform. The platform features multiple levels with complex piping systems, including large red and grey pipes. Several large grey storage tanks are visible on the upper decks. Yellow structural elements, including cranes and railings, are prominent. The platform is situated in a blue sea under a clear sky. A semi-transparent grey rectangular box is overlaid across the center of the image, containing the title text.

Pipe Spec Creations

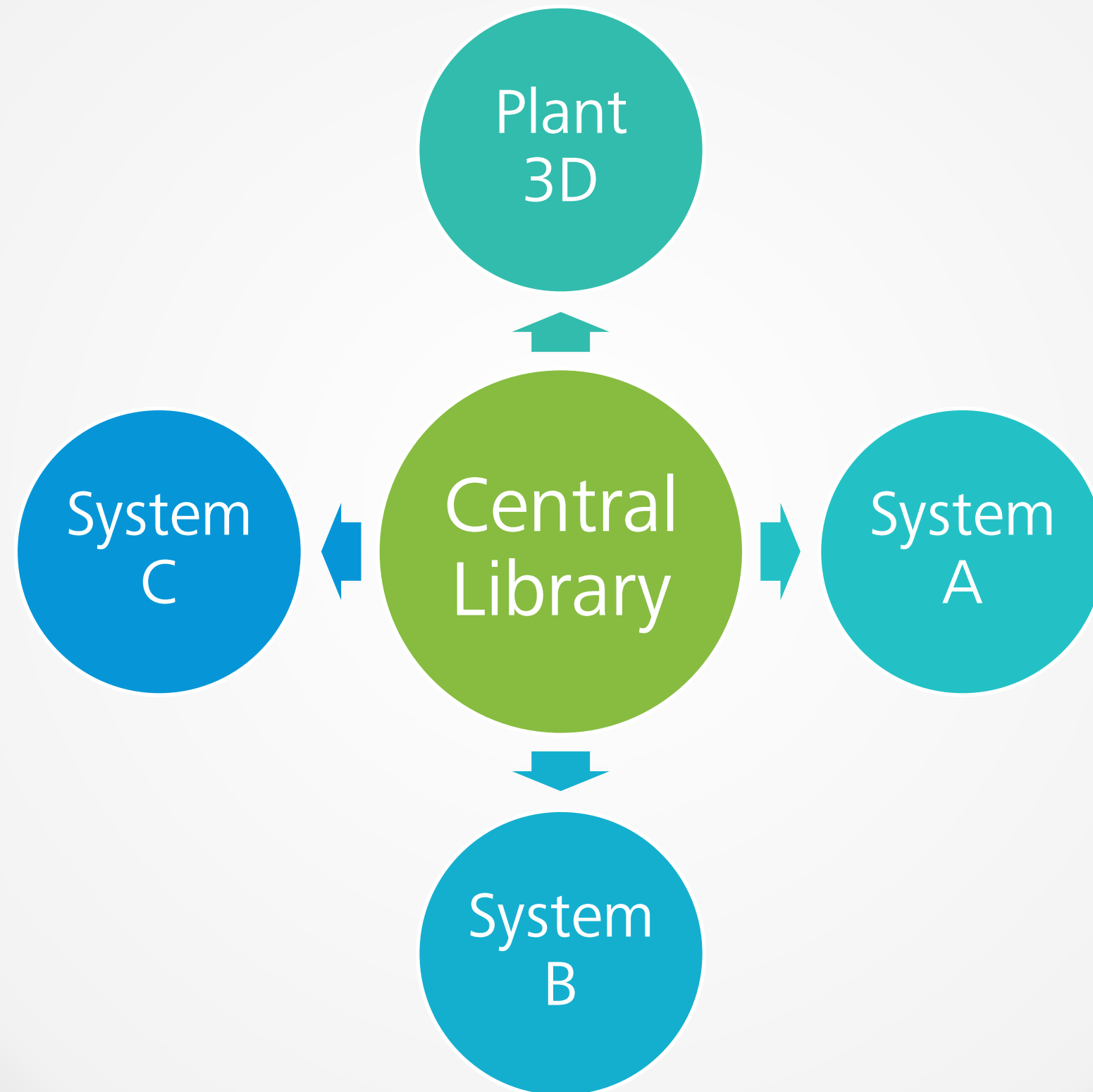


Spec Editor

- Creates the pipe specs
- International Catalogs
- Catalog Editor
- Has APIs!



Creation Method



Pipe Specs

- System exports the specs
- New properties must be added to Plant 3D project too

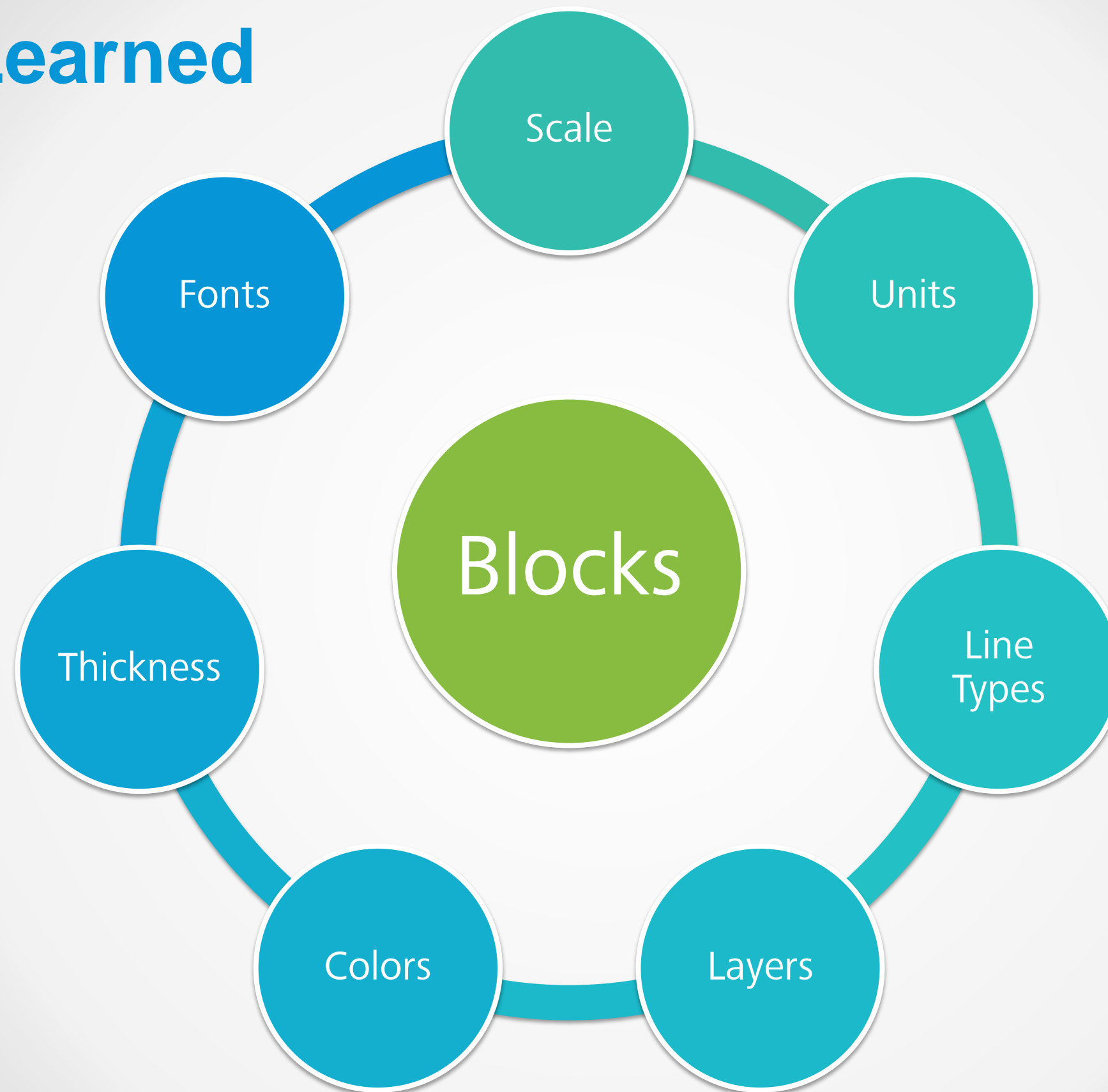




Lessons Learned



Lessons Learned



Lessons Learned

- Classes with no special chars.
- Default Values properly set
- Structure of classes prior to DO anything

Class settings: Horizontal Centrifugal Pump

Symbol

Horizontal Centrifugal Pump Style

Add Symbols...

Edit Symbol...

Remove Symbol...

Edit Block...

Add to Tool Palette ...

Properties

Property Name	Property Description	Display Name	Default Value	Property Type	Acquisition	Read Only	Visible
*Number		Number		String	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*Tag	System pro...	Tag		String	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*Type	System pro...	Type	P	List	None	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
*Weight		Weight		String	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*FlowCapa...		Flow Capa...		Number	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*Frequency		Frequency		String	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*Insulation		Insulation T...		Number	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*Insulation...		Insulation T...		List	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*Phase		Phase		String	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*Power		Power		Number	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*TotalDyna...		Total Dyna...		Number	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
*Voltage		Voltage		String	None	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Annotation...			Equipm...	Annotation			
Substitution			True	Boolean			
Supported...			3	Bitwise Flag			
DisplayName			Horizontal ...	String			
GraphicalS...			Horizo...	Graphical			
TagFormat...			Equipm...	Tag Format			

Add...

Edit...

Remove

Tag format

Equipment Tag 2 [Area-Type-Number]
Equipment Tag [Type-Number]

New...

Modify...

Delete

Annotation

Equipment Tag

Add Annotation...

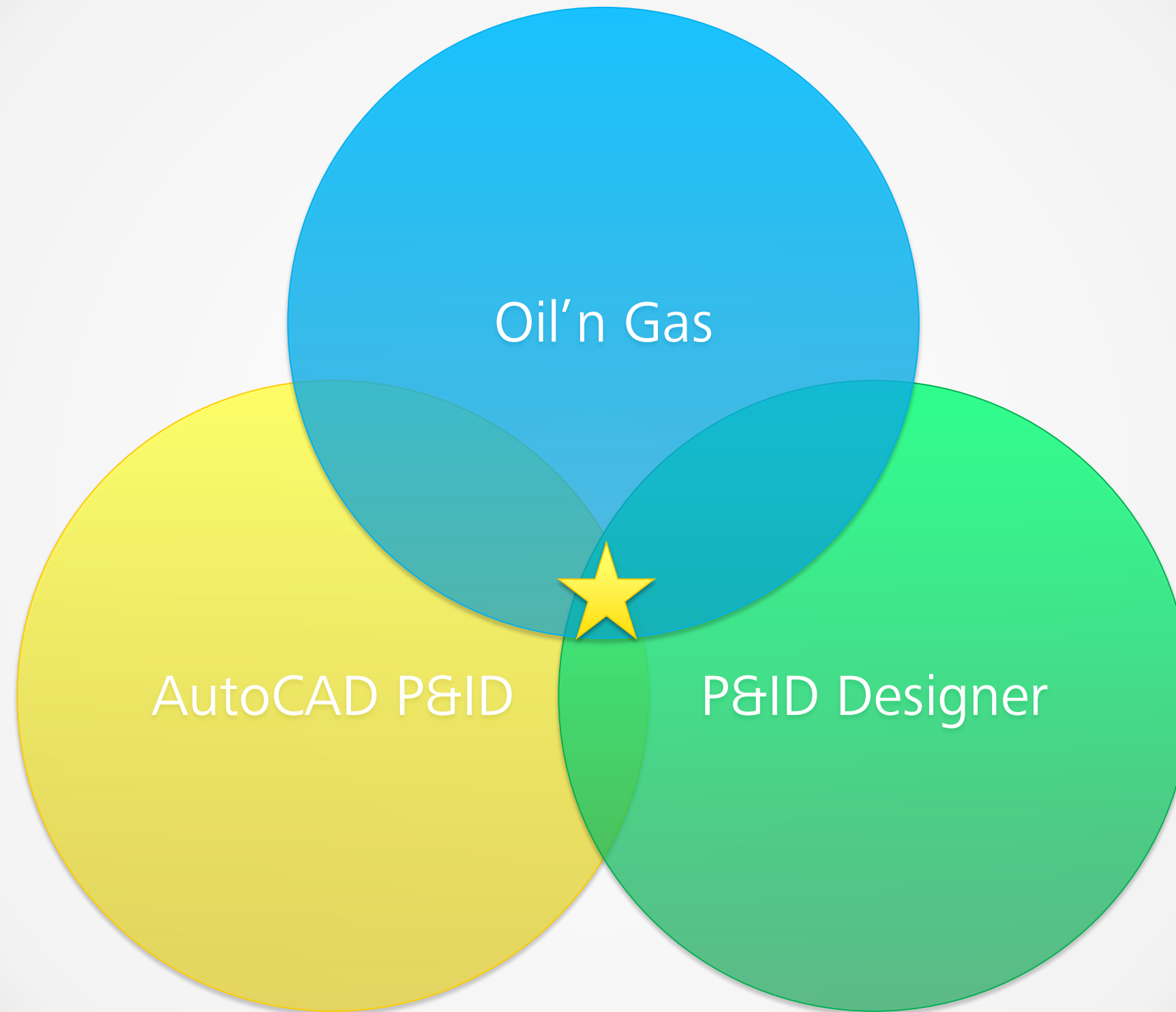
Edit Annotation...

Remove Annotation...

Edit Block...

#<Equipment.Tag>

Lessons Learned



Short Demo

Daniel Huamani

- Youtube

www.youtube.com/666danielh



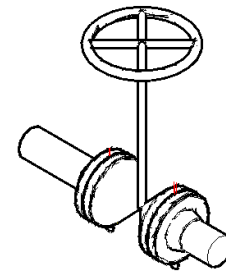
- LinkedIn

<http://br.linkedin.com/in/danielhuamani/>



- Plant Exchange

<http://autocad.autodesk.com>



- Best document on configuring AutoCAD P&ID

<http://autocad.autodesk.com/ama/orig/plant/CustomizationFromTagsAndAnnotationsToSymbols.pdf>



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