



**Enhanced Report  
Utility (AKA: ESL)  
By: Nezar M. Faitouri  
Mangan SPI SME**



# Introduction

- ESL Usage
- ESL Report Types
- ESL Backgrounds
- ESL Symbols
- ESL Saving Methods
- ESL Revision Control
- ESL/SPI Items and Documents
- ESL vs. CAD
- ESL Challenges
- ESL Enhancements



Enhanced Report Utility



Symbol Editor

# Usage

- Usage of ESL
  - ESL is part of the Intergraph SmartPlant products
  - It is widely used especially with SPI
  - It is considered as a mini-version of Intergraph SmartSketch software
  - It has the capability to work directly with the SPI database (Live Connection)
  - It has the capability of working offline
  - It has the capability of saving ESL files to CAD drawings (AutoCAD, SmartSketch, and MicroStation)

# Report Types

- ESL Report Types

- Loop Drawings
- Segment Drawings
- Wiring Drawings:
- Installation Details (Hookup) Dwgs
- Layouts
- Cable Block Drawings
- Telecom Drawings


+	+	Enhanced SmartLoop
+	+	Cable Layout
+	+	Panel-Strip
+	+	Wiring Equipment Connections
+	+	Segment Wiring
+	+	Communication Line
+	+	Fieldbus Loop
+	+	Network Class
+	+	Strip Signals
+	+	Single Speaker
+	+	PA Amplifier
+	+	Cable Harness
+	+	Location Layout
+	+	Panel Layout
+	+	Rack Layout
+	+	Profibus
+	+	Cable Block Diagram
+	+	Hook-Ups
+	+	Panel Signals

# Background Files


- ESL Backgrounds
  - An ESL background file is the drawing title block
  - ESL provides a set of default background files
  - Background files can be customized
  - The customization can be:
    - As minimum as changing a Logo
    - To a maximum as incorporating a full customized title block that matches a company title block (CAD drawing title block)

# Background Files

A Simple Background file with a Company Logo


NOTE:					Plant:		Drawing Name :	
					Area:			
					Unit:			
					Project:			
					Domain:			
Generated date :	Time :	No :	By :	Date :	Revision :	INSTRUMENT LOOP DIAGRAM	Loop Name :	

# Background Files

FIELD		JUNCTION BOX			MARHSALLING PANEL		CONTROL SYSTEM	
<p>A Customized Background File to show Headers and Sections</p>								
NOTES:				Plant:		 Drawing Name :		
				Area:				
				Unit:		INSTRUMENT LOOP DIAGRAM <span style="float: right;">Loop Name :</span>		
				Project:				
				Domain:				
Generated date :	Time :	No. :	By :	Date :	Revision :			

# Background Files

A Customized Title Block to Match Customer CAD Title Block

<p>THIS DOCUMENT HAS BEEN PREPARED BY SHELL INTERNATIONAL EXPLORATION AND PRODUCTION INC., USA. THE COPYRIGHT IN THIS DOCUMENT IS VESTED IN SHELL (DATE OF ISSUE OF DOCUMENT). ALL RIGHTS RESERVED. THIS DOCUMENT CONTAINS CONFIDENTIAL INFORMATION OF SHELL AND MAY NOT BE DISCLOSED TO OTHERS OR REPRODUCED, STORED IN ANY RETRIEVAL SYSTEM, TRANSMITTED OR OTHERWISE DISTRIBUTED IN ANY FORM OR BY ANY MEANS (ELECTRONIC, MECHANICAL, REPROGRAPHIC, RECORDING OR OTHERWISE) WITHOUT PRIOR WRITTEN CONSENT OF SHELL. NOTHING IN THIS DOCUMENT, INCLUDING POSSESSION THEREOF, SHALL BE CONSTRUED AS GRANTING A LICENSE UNDER INTELLECTUAL PROPERTY RIGHTS OF SHELL OR AN AFFILIATE OF SHELL, OR ANY RIGHTS IN RESPECT OF SHELL INFORMATION.</p>								
<p>PANEL WRING DIAGRAM</p>								
<p>dwg_name</p>								
REV.	DATE	DESCRIPTION	DRAW	CHK of TECH	DES. ENG.	PROJ. ENG.	<p>GENERATION DATE: _____ TIME: _____ SHEET _____ OF _____</p> <p>THIS DOCUMENT HAS AN ECGN OF EAR99</p>	



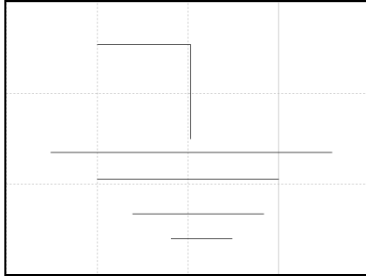
# Background Files

- Tips and Tricks:
  - When adding additional background macros, always copy and paste an existing macro, then change the macro
  - For the headers and section background, always group the headers and the lines together
  - It is recommended to place additional macros on the background file instead of the ESL layouts. This way, users cannot change these macros
  - For a list of Macros, see the ESL help menu – title block Macros

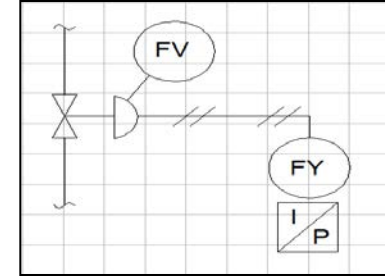
# Symbols

- ESL Symbols
  - ESL Symbols are used to generate the SPI drawing
  - ESL provides a set of default symbols that can be used
  - Symbols can be customized such as:
    - Symbol sizes, Symbol connection points, Symbol representation, Etc
    - Symbol customization is executed using the Symbol Editor Utility
  - Symbols can also be used as external objects on drawings such as Grounding, Fuses, Clouding, Etc
  - Symbols can be used as Smart Symbols (Macro imbedded symbols) or Dummy Symbols

# Symbols



Ground Symbol

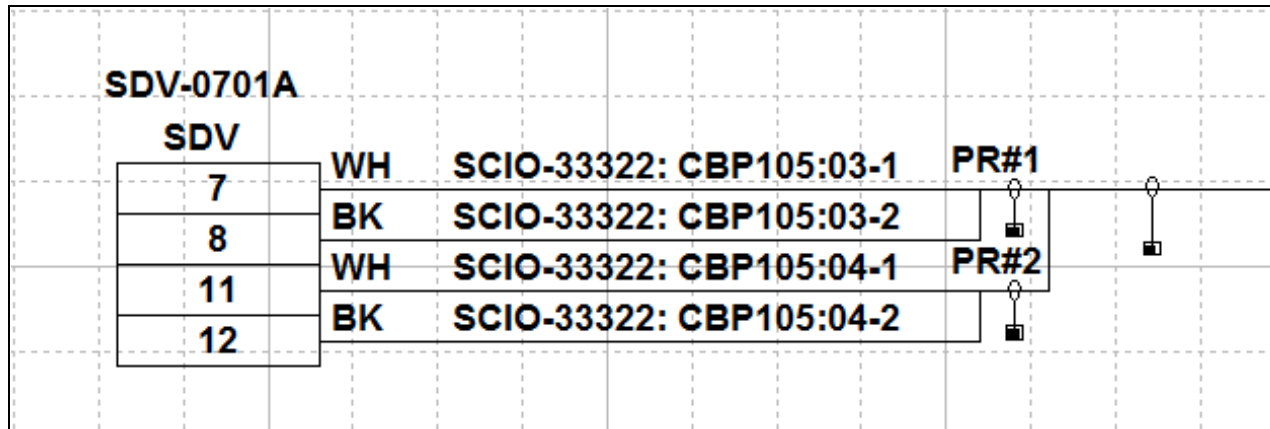


Flow Valve Symbol

DCS TAG:			
UCN NO.		SLOT NO.:	
MODULE 'A'/B'		CARD TYPE:	
PM 'A'			
SM 'B'			
FILE 'A'		FILE 'B'	
CARD 'A'		CARD 'B'	

Honeywell TDC3000 Customized Symbol

# Symbols



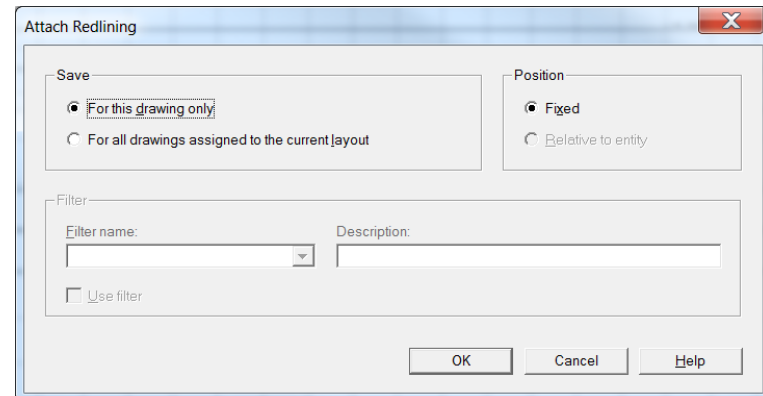
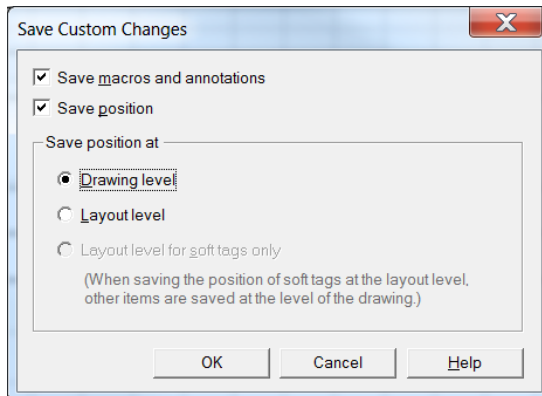
Customized Symbol Connection Points and Symbol Size

# Symbols

- Tips and Tricks:
  - When customizing a symbol, always start with an existing symbol
  - Unless necessary for the symbol, never change the X,Y positioning of the symbol
  - When Converting symbols to Smart Symbols, always do so using the Symbol Editor Utility, and always open the Symbol Editor Utility from within SPI (Ctrl + E or Tools – Symbol Editor)
  - It is recommended to place macros on the symbols instead of the ESL layouts. This way, users cannot change these macros

# Saving Methods

- ESL Saving Methods
  - There several methods to save ESL drawing data to SPI tables
    - Drawing Level
    - Layout Level
    - Soft Tag Level
    - Redlining Drawing Level or Redlining Layout Level)



# Saving Methods

	Drawing	Layout	Soft Tag	Redlining Drawing	Redlining Layout
Panels	Y	Y	Y	N	N
Cables	Y	Y	Y	N	N
Soft Tag	Y	N	Y	N	N
Macros	Y	Y	Y	N	N
Individual Macro	Y	N	Y	N	N
SmartText	Y	N	Y	N	N
Redlining	Y	N	Y	Y	Y

## Notes:

1. Y: Means the item is affected
2. N: Means the item is not affected
3. Individual Macro means moving an individual macro using the Control key. Individual Macro is at the Drawing Level
4. Macros are affected regardless if the drawing is saved to the drawing level or layout level
5. User must save Redlining from the Redlining attach Window, then Save custom changes as well
6. SmartText is at the Drawing Level
7. Remember, ESL Layouts are at the Domain Level. Therefore, if it is modified in As-Built, it will affect Projects

# Saving Methods

- Tips and Tricks
  - Utilize the SPI ESL access Rights to Control ESL drawings and Layouts (Plant Level)

Enhanced Report Chg. (Layout)	Full (Add / Delete / Update)
Enhanced Report Chg. (Report)	Full (Add / Delete / Update)



# Saving Methods

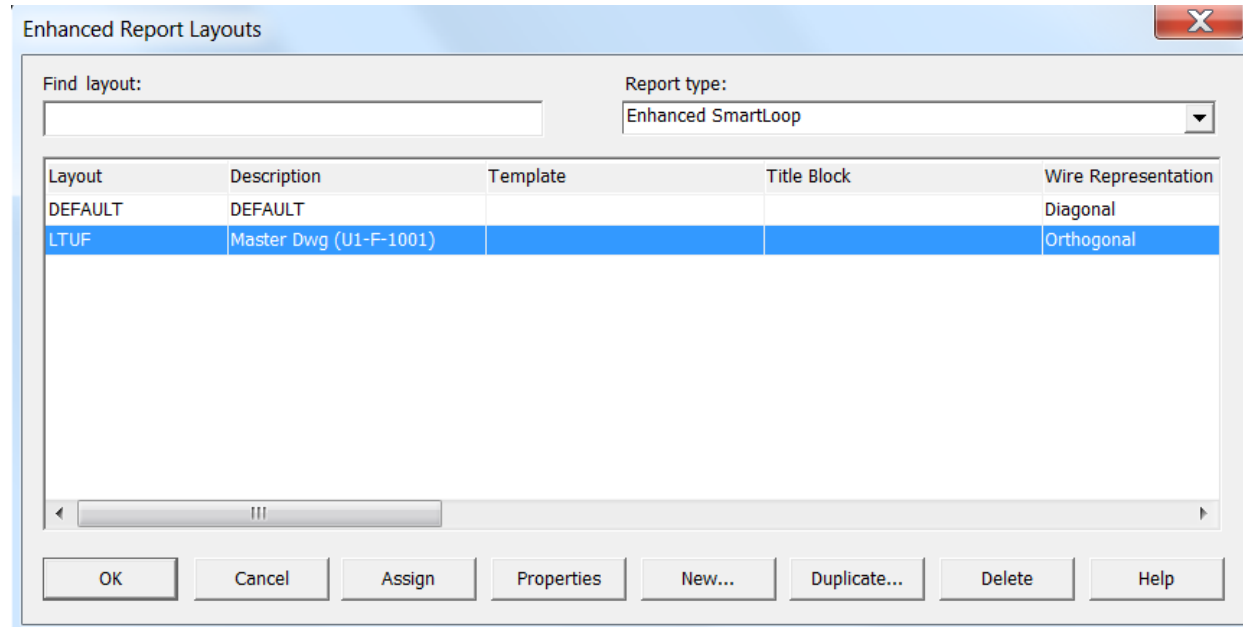
	Layout/Report	Layout/Report	Layout/Report	Layout/Report
	t	t	t	t
Access Rights	Full/Full	View/View	View/Full	Full/View
Positioning	Yes	No	Only to Dwg Level	Only to layout level
Redlining	Yes	No	No	Only to layout level
Macro	Yes	No	No	Only to layout level
Individual Macro	Y/Y	N/N	N/Y	No
SmartText	Y/Y	N/N	N/Y	No
Assign Layouts to Dwg's in SPI	Y/Y	N/N	Y/Y	Yes
Edit Layout in SPI	Y/Y	N/N	N/N	Yes

# Saving Methods

- Instead of creating different layouts for macros and redlining, always use the ESL filters options. This help reduce the amount of ESL layouts
- Use Redlining to represent OAS as Cut and Tape when one side of the OAS is not connected. By default, SPI do not have such symbol/function
- Always Save 1 drawing to the Layout level (Master Drawing) and the rest to the drawing level
- Saving the remaining items to the drawing level helps protect these items from being modified by a layout change

# Saving Methods

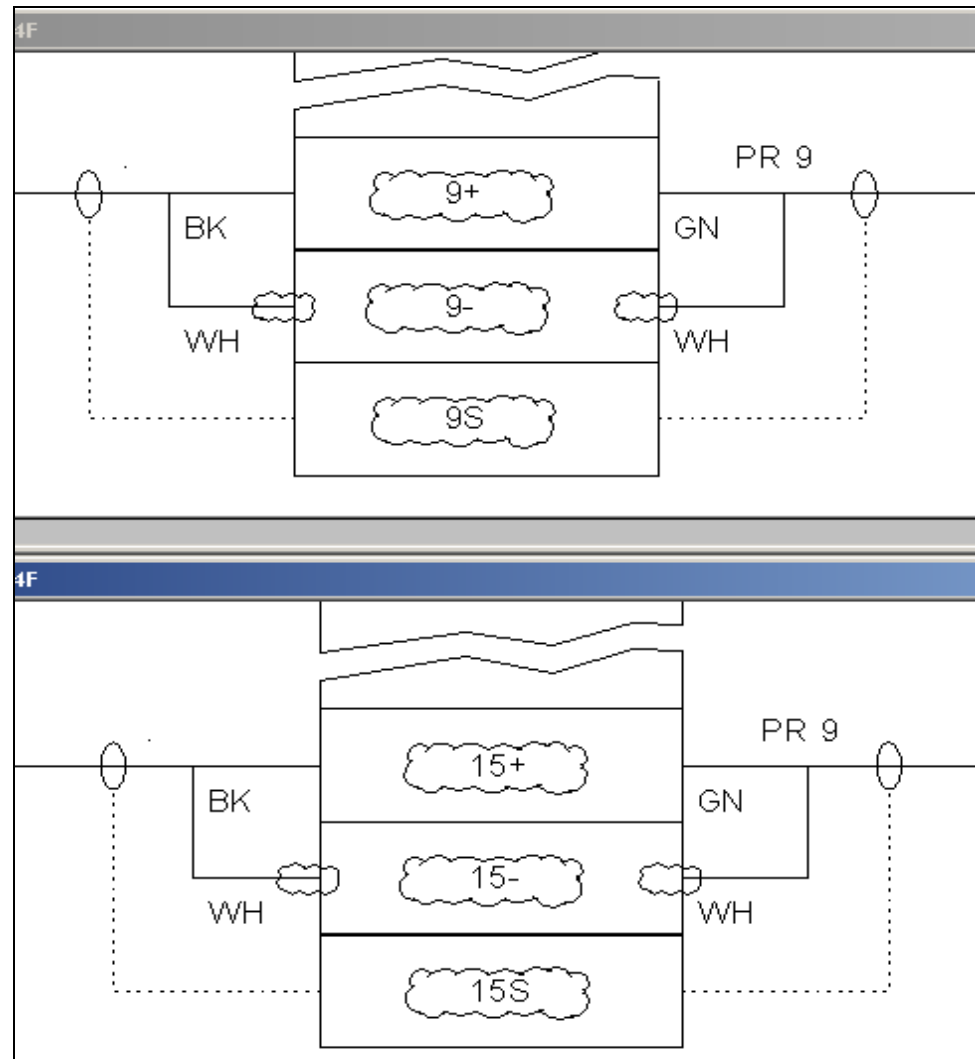
- Use the ESL Layout Description field to document the Master Drawing Name (Item name)



# Revisions

- ESL Revision Control
  - Most (if not all) ESL drawings have the revision control (archiving) capability
  - The archiving option is turned ON in the SPI admin module. It is per project
  - The archiving option allows the user to generate/print reports at any revision level
  - The archiving option allows the user to compare between revisions. And, ESL will cloud the changes automatically

# Revisions

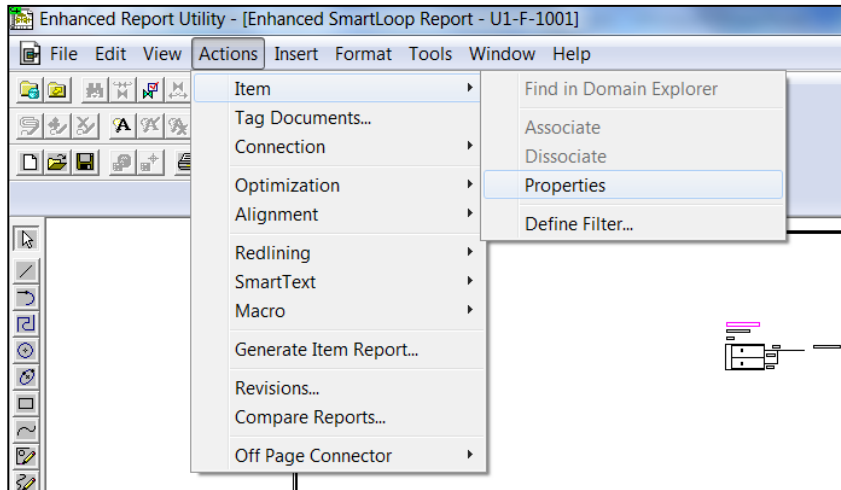


# SPI Items and Documents

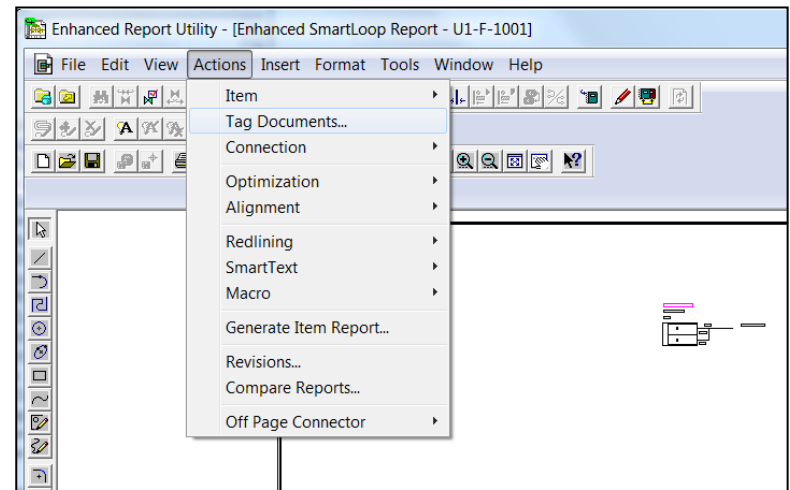
- ESL/SPI Items and Documents
  - ESL has the capability to access SPI items for editing
  - ESL has the capability to access SPI documents for viewing and printing
  - The document viewing and printing function helps eliminate having a lot of macros on drawings and paper

# SPI Items and Documents

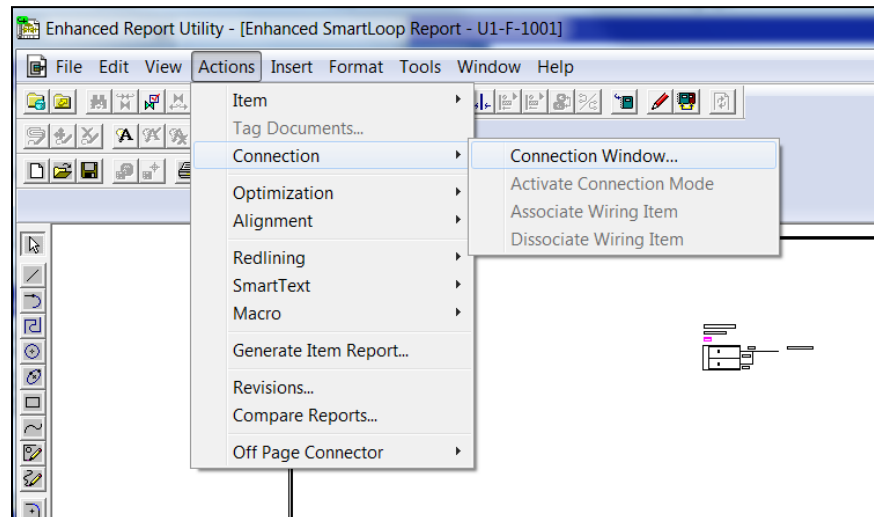
## SPI Item property Window



## SPI Tag documents list or wiring reports



## SPI wiring connection window



# Comparison ESL and CAD

- ESL vs. CAD
  - For the majority of SPI project work, ESL is the tool of choice
  - For some projects, CAD is the tool of choice
  - CAD Blocks is limited to the SPI report types it can be used with. CAD can only be used with Loop Drawings and Hookup Drawings
  - All ESL drawings can be saved as CAD drawing; however, these drawings are using ESL formats



# Comparison ESL and CAD

	ESL	CAD
License	Y (with SPI)	Y
Citrix	Y	Y
Revision Control	Y	N
Save to Database	Y	N
All SPI Drawing Reports	Y	N
SPI Man Hours	650 – 750 Hours	1000 – 1500 Hours

Notes:

1. SPI man hours is based on 1000 loop drawings
2. SPI man hours includes index and wiring data
3. Mangan executed several SPI projects. Majority is using ESL and very few uses CAD. The Estimate cost saving was 30% to 50% based loop drawings and a bill rate of 75 per hour

# Challenges

- ESL Challenges
  - Symbols and background files are External Files
  - Too many preferences to Manage
  - User Knowledge with ESL and Preferences
  - Macro and Redlining saving mechanism
  - Owner Operator project challenges with ESL and claims/merges
  - No easy function to apply layout format (positioning, macros, etc) to drawings without having to generate drawings
  - No standard reports to view ESL data (positioning data, SmartText, etc)

# Enhancements

- ESL Enhancements
  - Store Redlining Symbols in the database as objects
  - Store Symbols and Background files as objects in the database
  - Provide an export and import function for these symbols and background files
  - Include ESL tables to the new V2015 EDE module

# Questions

