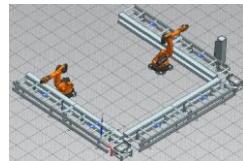


terry.taylor.ext@siemens.com

2016-05-09

AD Getting Started



This is the AD Getting Started working doc. Actual release doc is in SIPS (soon to be migrated to XCAT).

Doc Location

- this work doc for GS release 1 and 2 (and .mp4's) at
\\debonkl0c19\ADNX\Teams\Documentation\10_Meetings.
- actual source for GS release 1 (GS1) is in SIPS. Will be in xCat (XML publishing tool).

Chapters

GS1 content (already in SIPS):

- ch1. Concepts
- ch2. Overview (ok'd by Reinhard)
- ch3-12 (parts 1-3). step-by-step directions. (not include ch13).

GS2 content:

Part 4: describes future GS2.

Recent doc history

20160509: start over... search “20160509”

“11.1-3. 20160509” shows it basically working... started from 0 today and went thru most of it (except for EPLAN)

Search “201604xx” to find changes.

20160429. ch10. Ch8.

20160428. Ch7 (eplan), ch10.

20160426. Ch 11, ch 6 (mapping works).

20160425. Hacked around and somehow got “\$\$4/5 14.4. create ports, expressions, dynamic connection” to work ☺ lots of bugs... a mess...

20160422. Updated (much of it worked, with expressions)

- ch10 (template EPLAN)
- ch11 (template TIA)
- ch12 template (partially worked, with new dynamic expressions)

20160421 updated

- Ch6 mapping not work.
- ch7 non-template EPLAN
- ch8 non-template TIA (generated tia project is empty).

<http://proxyconf-uba.siemens.net/>

TIA SW CONFIG 20160420

somewhat finally got fd4 imported. Long story >>

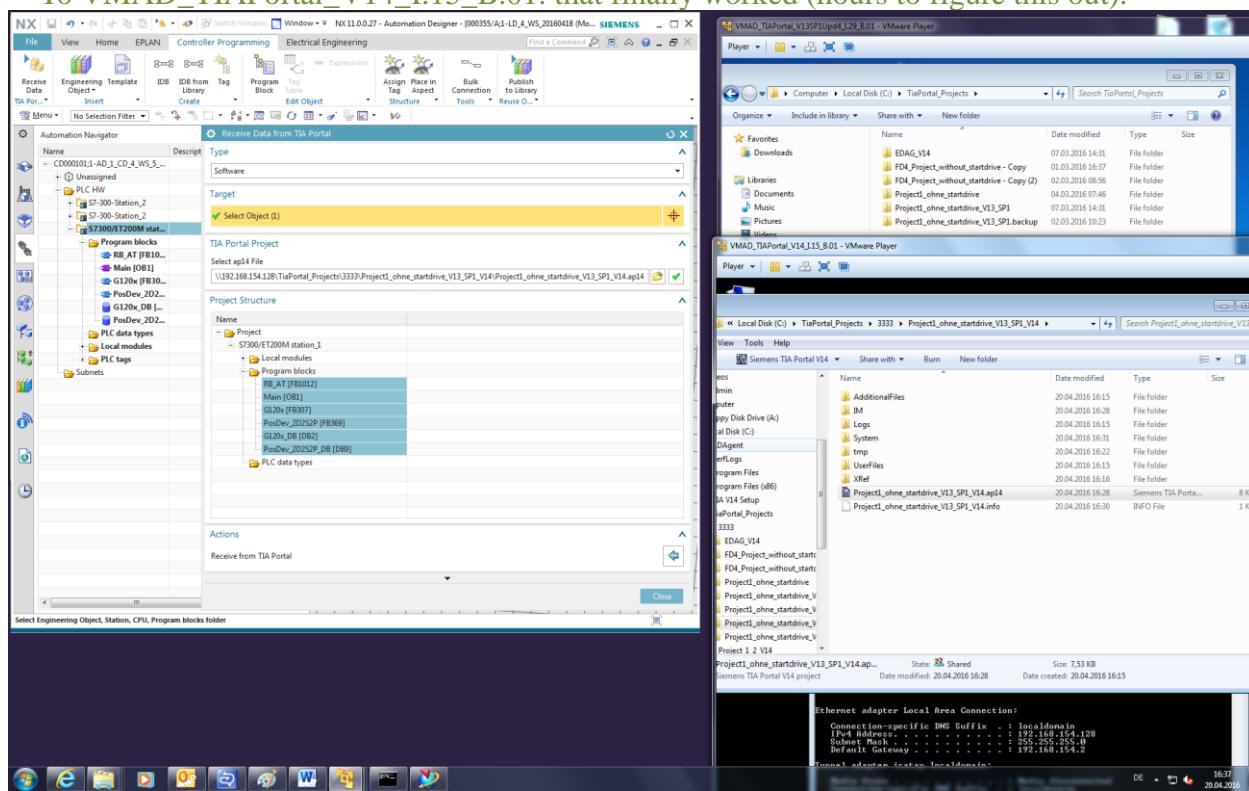
1. could not get FD4 SW (with RB_AT, etc.) from VMAD_TIAPortal_V14_I.14_B.01 to work in VMAD_TIAPortal_V14_I.15_B.01.

tried a lot, finally talked with Stephan, this does not work.

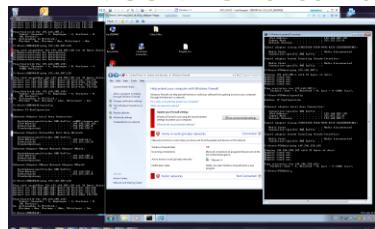
Can not go from V14-I.14 to V14_I.15 does not work.

2. went from VMAD_TIAPortal_V13SP1Upd4_I.29_B.01.

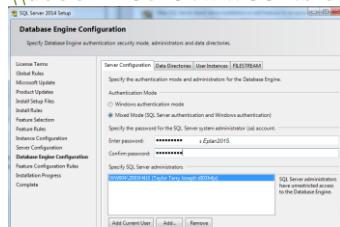
To VMAD_TIAPortal_V14_I.15_B.01. that finally worked (hours to figure this out).



EPLAN CONFIG 20160420



https://asrdwiki.siemens.com/AD/index.php?title=How_to_Install_MS-SQL_Express_for_EPLAN
\debonk\l0c19.ww004.siemens.net\ADNX\Tools\EPLAN\MS_SQL_Server_Express_2014



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Comments (20160314)

This page is not part of release doc.

Doc goal

The goal of this GS is

1. Hands-on training with minimal assistance.
2. Avoid bugs (steer the reader around them).
3. Focus on main workflows (not show all functionality).

I basically took the automotive example and described how to configure it step-by-step (all screenshots and movies in this GS are from my PC). step-by-step because the most difficult part of AD is simply all the numerous steps you must perform, the various tools involved, the details.

Formatting

This GS will be migrated to SIPS, then from SIPS to xCat. So I have not bothered with standard MS_Word formatting. Cross-references and numbering have been manually added. Section numbers are sometimes out of order, because I move sections but kept the numbering the same (to avoid confusion; pic files are usually named by section #). The English grammar mistakes, punctuation, capitalization will be fixed after I am done with the content.

Graphics

I created rough draft diagrams with Adobe Illustrator. Someone can easily "clean them up" to meet Siemens standards. I put them in this ms.word doc in .emf format.

The .ai source and .eps (for xcat) files are in \\debonkl0c19\ADNX\Teams\Documentation\10_Meetings\ai.

Variable names (20160216)

This chapter is not part of the released doc. Simply lists var names used in GS1 (need to standardize).

Ch 3, 4 create LD workset

Section	Type	Name
3.2	LD CD (Business object - plant design)	LD_1_CD
3.3	LD partition scheme	LD_2 PTS
3.4	LD partition	LD_3a_PTO_Line LD_3b_PTO_Station LD_3c_PTO_Zone
4.2	LD workset (Model - line designer study)	LD_4_WS
4.4	LD subset	LD_5_SS
4.5	??? TERRY: think this is auto-set you cant set it	(conveyors)

Ch 5 create ad workset

Section	Type	name
*(5.3)	AD CD	AD_1_CD_4_WS_5_SS
	AD partition scheme ?	
	AD partition ?	
5.3	AD workset	AD_1_CD_4_WS_5_SS
*(5.3)	AD subset	AD_1_CD_4_WS_5_SS
5.6		(EOs)

* AD CD and subset are autocreated when you create AD workset/project.

EODefs

EODef	Classification Root
1. EODATMname (created above)	Device / A ->1 purpose or task / AT
2. EOTLname	Device / U-Keep
3. EODGLname	Device / G-Generator / GL-Continuous flow
4. EODMAname	Device / M-Motor / MA-Electromagnetic
5. EO(DBGname	Device / B-Measurement / BG-Gauge,position
6. EOTFname	Device / T-Conversion / TF-Signals
7. EOKFname	Device / K-Processing / KF-Electrical signals
8. EODCHname	Devicefunction / Electrical / Input/output

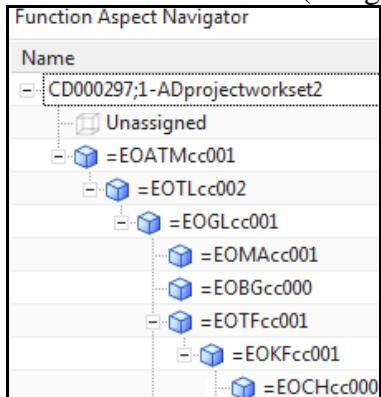
naming rules

Character code	Classification parent
1. EOATMcc (created above)	Device / A ->1 purpose or task / AT
2. EOTLcc	Device / U-Keep
3. EOGLcc	Device / G-Generator / GL-Continuous flow
4. EOMAcc	Device / M-Motor / MA-Electromagnetic
5. EO(BGcc	Device / B-Measurement / BG-Gauge,position
6. EOTFcc	Device / T-Conversion / TF-Signals
7. EOKFcc	Device / K-Processing / KF-Electrical signals
8. EOCHcc	Devicefunction / Electrical / Input/output

advanced aspect naming rules

EO type	Classification	Name in aspects / Product
Conveyor	Device -> G Generator -> GL Continuous flow of solid Materials	Conveyor
Sensors	Device -> B Measurement -> BG Gauge, position, length	Sensor
Motor	Device -> M Motor -> MA Electromagnetic	Motor
G120D Power Module	Device -> T Conversion -> TF Signals	Drive_Power
G120D Control Module	Device -> K Processing -> KF Electrical Signals	Drive_Controller

RESULT: Added EO's (using default names).



Ch 7 configure non-template EPLAN

C:\Users\Z003H4JX\Desktop\AD_EPLAN_Project_Template_V25.zw9

\debonkl0c19\ADNX\Teams\PRM\ExampleData and Geometries\ExampleProjects\Universal Templates\EPLAN_Macros\DRIVE_G120D_PM250D_1.emp.

	Device property	Value
1	General.Description	Page.Macro.Descr250
2	KF01.Function text	KF01.function text
3	KF01.Name	KF01.name
4	MA01.Function text	MA01.function text
5	MA01.Name	MA01.name
6	TF01.Function text	TF01.function text
7	TF01.Name	TF01.name
8	WD02.Function text	WD02.function text
9	WD02.Name	WD02.name
10	Description	Description250
11	Full page name	(locked)
12	Function	Functiontext 250
13	Location	Locationtext 250
14	Page name	I

Ch 8 configure non-template TIA

\debondk\10c19\ADNX\[PROJECT_SHARE_WITH_CYP]\TIA_Portal_XML\FD4_Project_without_startdrive.zip
Project1_ohne_startdrive.ap13

- OB1
- RB_AT
- G120x
- PosDev_2D2S2P

Tag	Properties	value
FRG_EStop	Name	FRG_EStop
	Memory Section	Input
	Data Type	Bool
	Description	FRG_EStop button
	Address	M%x.x
FRG_BS	Name	FRG_BS
	Memory Section	Input
	Data Type	Bool
	Description	FRG_BS button
	Address	M%x.x
IBN0	Name	IBN0
	Memory Section	Input
	Data Type	Bool
	Description	IBN0 button
	Address	M%x.x
Reset	Name	Reset
	Memory Section	Input
	Data Type	Bool
	Description	Reset button
	Address	M%x.x

Name	DI1
Memory Section	Input
Data Type	Boolean
Description	Sensor 1
Address	Xxx

"Symbolic Name" "Data Type" select "Value" "DI1sn".

Name	PID0
Memory Section	Input
Data Type	DWord
Description	PID0 descr
Address	2100

"Symbolic Name" "Data Type" select "Value" "PID0sn".

Category	Operational_1
Title/Alias	Fast_Speed
Data Type	String
Value	Real#20.0

The following table summarizes.

	Call param	Value	TYPE
1.	EN_ADV	ENABLE_ADV	Local variable
2.	EN_RTN	ENABLE_RTN	Local variable
3.	IL_ADV	INTERLOCK_ADV	Local variable
4.	IL_RTN	INTERLOCK_RTN	Local variable
5.	PB_ADV	PUSHBOTTOM_ADV	Local variable
6.	PB_RTN	PUSHBOTTOM_RTN	Local variable
7.	LS_ADV	DI1	Symbolic reference
8.	SW_FS_ADV	DI2	Symbolic reference
9.	SW_FS_RTN	DI3	Symbolic reference
10.	LS_RTN	DI4	Symbolic reference
11.	SEL_SLOW	RLO 0	Local variable
12.	AUTO_MODE	auto_inching	Local variable
13.	MANU_MODE	manual	Local variable
14.	MOTOR_PROT	RLO 1	Local variable
15.	MOTOR_TEMP	RLO 1	Local variable
16.	ERR_RESET	ERROR_RESET	Local variable
17.	LAMP_TEST	Lamptest	Local variable
18.	TM_OP	50	Local variable
19.	TM_LS	20	Local variable
20.	TV_STARTUP	20	Local variable
21.	Visu	Interface_Visu.Model[2]	Local variable
22.	Alarms	Interface_Alarms.Model[2]	Local variable
23.	ADV	OUT_ADV	Local variable
24.	RTN	OUT_RTN	Local variable
25.	FAST	OUT_FAST	Local variable
26.	SLOW	OUT_SLOW	Local variable
27.	MEMO_ADV	MEMO_ADV	Local variable
28.	MEMO_RTN	MEMO_RTN	Local variable
29.	POSIT_LS_ADV	POSIT_LS_ADV	Local variable
30.	POSIT_LS_RTN	POSIT_LS_RTN	Local variable
31.	LAMP_LS_ADV	LAMP_LS_ADV	Local variable
32.	LAMP_LS_RTN	LAMP_LS_RTN	Local variable
33.	TOTAL_FLT	TOTAL_FLT	Local variable

The following table summarizes.

	Call param	Value	type
1.	INPUT_ADDR	PID0	Symbolic reference
2.	I_M	PID1	Symbolic reference
3.	A_F	PID2	Symbolic reference
4.	FAST_SPEED	Real#20.0	Constant value
5.	SLOW_SPEED	Real#10.0	Constant value
6.	EN_FWD	OUT_ADV	Local variable
7.	EN_BWD	OUT_RTN	Local variable
8.	EN_FAST	OUT_FAST	Local variable
9.	EN_SLOW	OUT_SLOW	Local variable
10.	EM_STOP	ENABLE_SAFETY	Local variable
11.	ERR_RESET	ERROR_RESET	Local variable
12.	OUTPUT_ADDR	PQDO	Symbolic reference
13.	ACT_SPEED	ACT_SPEED	Local variable
14.	ACT_CURRENT	ACT_CURRENT	Local variable
15.	ACT_TORQUE	ACT_TORQUE	Local variable
16.	EN_MOTION_FWD	EN_MOTION_FWD	Local variable
17.	EN_MOTION_BWD	EN_MOTION_BWD	Local variable
18.	FAULT_ACTIVE	FAULT_ACTIVE	Local variable
19.	ALARM_ACTIVE	ALARM_ACTIVE	Local variable
20.	FAULT_MSG	FAULT_MSG	Local variable
21.	ALARM_MSG	ALARM_MSG	Local variable

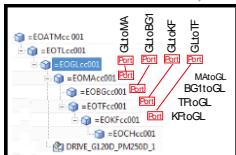
Set the absolute address of the top element GL to 2100. Enter the tag address 2100.

Ch 10 configure template ready eplan

- Function: subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
- Location: subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)
- GLtoKF, KFtoGL
- For 250 KF01.Name:
AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)

FINISH (OPTIONAL) =====

- GLtoMA, MAtoGL
- GLtoBG1, BG1toGL (2,3,4) (for 240)
- GLtoTF, TFtoGL
- GLtoKF, KFtoGL (created already in ch 10 for macro 250)



250 expressions (dark green completed earlier).

Device property	Value
KF01.Function text	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)
KF01.Name	KF01.name
MA01.Function text	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoMA")),Function)
MA01.Name	MA01.name
TF01.Function text	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoTF")),Function)
TF01.Name	TF01.name
WD02.Function text	WD02.function text
WD02.Name	WD02.name
Description	Description1
Full page name	(locked)
Function	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
Location	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)
Page name	1

\debonk\l0c19\ADNX\Teams\PRM\ExampleData and Geometries\ExampleProjects\Universal Templates\EPLAN_Macros\DRIVE_G120D CU240_IO_1.emp. 240 expressions.

Device property	Value
BG01.Name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG1")),Function)
BG02.Name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG2")),Function)
BG03.Name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG3")),Function)
BG04.Name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG4")),Function)
KF01:2.Function text	KF01:2. Functiontext
KF01:2.PLC address	E1-2
KF01:2.Symbolic address	KF01:2.SymAddr
KF01:4.Function text	KF01:4.Function text
KF01:4.PLC address	E1-4 ???
KF01:4.Symbolic address	KF01:4.SymAddr
KF01.Function text	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)
KF01.Name	KF01.name
MB01.Name	MB01.Name
MB02.Name	MB02.Name
Description	Description1
Full page name	(locked)
Function	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
Location	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)
Page name	1

Ch 11 config template ready TIA

symbolic names

RB_AT	AD_GetDesignation(AD_GetEngObject(),Function)+"_RB"
RB_AT_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_RBDB"
PosDev_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_POSDEVDB"
G120x_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_G120DB"

- Create ports BG1toCH1 and CH1toBG1
- For DI1 set the symbolic name to:
AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH1toBG1")),Function)+"_CH"
- For PID0 set the symbolic name to: AD_GetDesignation(AD_GetEngObject(),Function)+"_PID0"
- Create TLtoFRGEStop port (in EO TL)
- In RB_AT for DI1 set the symbolic name to the following expression .
First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)),"TLtoFRGEStop"))

FINISH (OPTIONAL) =====

Create TLtoFRGBS, TLtoIBN0, TLtoReset ports in EO TL.

TLtoFRGBS	First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)),"TLtoFRGBS"))
TLtoIBN0	First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)),"TLtoIBN0"))
TLtoReset	First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)),"TLtoReset"))

Category	Operational
Title/Alias	Slow_Speed
Data Type	String
Value	Real#10.0
	<ul style="list-style-type: none"> • CH2toBG2 • CH3toBG3 • CH4toBG4 • BG2toCH2 • BG3toCH3 • BG4toCH4

Tag	Properties	Value
DI2	Name	DI2
	Memory Section	Input
	Data Type	Boolean
	Description	Sensor 2
	Address	1.3
	Symbolic name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH2toBG2")),Function)+"_CH"
DI3	Name	DI3
	Memory Section	Input
	Data Type	Boolean
	Description	Sensor 3
	Address	1.4
	Symbolic name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH3toBG3")),Function)+"_CH"
DI4	Name	DI4
	Memory Section	Input
	Data Type	Boolean
	Description	Sensor 4
	Address	1.5
	Symbolic name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH4toBG4")),Function)+"_CH"

PIDs, PQD

Tag	Properties	Properties
PID1	Name	PID1
	Memory Section	Input
	Data Type	Dword
	Description	PID1 descr
	Address	2104
	Symbolic name	AD_GetDesignation(AD_GetEngObject(),Function)+"."+PID1"
PID2	Name	PID2
	Memory Section	Input
	Data Type	DWord
	Description	PID2 descr
	Address	2108
	Symbolic name	AD_GetDesignation(AD_GetEngObject(),Function)+"."+PID2"
PQD0	Name	PQD0
	Memory Section	Output
	Data Type	Dword
	Description	PQD0 descr
	Address	2112
	Symbolic name	AD_GetDesignation(AD_GetEngObject(),Function)+"."+PQD0"

RB_AT call to PosDev

Call param	Value	TYPE
SW_FS_ADV	DI2	Symbolic reference
SW_FS_RTN	DI3	Symbolic reference
LS_RTN	DI4	Symbolic reference

RB_AT call to G120x

Call param	Value	type
I_M	PID1	Symbolic reference
A_F	PID2	Symbolic reference
SLOW_SPEED	Real#10.0	Constant value
OUTPUT_ADDR	PQD0	Symbolic reference

Ch 12 create / instantiate template

- GL01. Click "System Design / Create Template". For "Name" enter "GL_template".
- TERRY: Andreas says in FD7 will change. Set the address of the top EO in template, and the rest have a relative address. 1. Set the absolute address of the top element GL to 2100.
- 2. modify the PID tag memory location (20151221)

0. Cover Page (20160310)

20160128 TERRY: following from operation manual.

Thank you for relying on Siemens quality and for choosing Automation Designer as your solution for electrical and automation engineering.

Automation Designer is intended for electrical engineers and automation engineers from the discrete industry who work in teams on multi-disciplinary projects. By focusing on reusability, rule-based engineering, and cross-discipline collaboration and data integration, Automation Designer improves the consistency of such projects, reduces the time and cost invested in them, and increases the productivity of the entire production engineering process.

This User Guide introduces the functionality of AD with hands-on step-by-step examples.

Chapter overview

Ch 1 "Concepts" introduces AD concepts.

Ch 2 "Overview of this Getting Started" provides an overview of each chapter.

Then there are 3 parts (130 pages total; each part has 3-4 chapters) that demo the basics.

"Part 1. Create LD/AD TC components" shows how to create the Teamcenter (TC) Line Designer (LD) and AD components. I show how the 4GD components in TC correspond to the AD and LD components (I wrote my best guess at what is going on behind the scenes).

"Part 2. Configure (non-template) LD, EPLAN, TIA" shows how to map LD-AD and generate EPLAN schematics and TIA (Total Integration Automation) SW blocks for a single conveyor without using expressions or ports. Its simply too complex for a student to introduce templates, expressions and ports before the student has gotten used to working with TC, AD, LD, EPLAN, and TIA (few students have experience working with all 5 of these tools).

"Part 3. Create/instantiate template" introduces expressions, ports and templates. Templates allow you to quickly create components.

Ch13 then shows 2 things. (1) How to complete the project. In parts 2-3 you created a project with only 1 sensor BG, 1 channel CH, etc. (to keep things simple). As a review you created the missing items. (2) How to "roundtrip" template changes (YOU CANT ROUNDTRIP NOW, SO JUST COMPLETE THE CONVEYOR AND CREATE A NEW TEMPLATE).

Part 4. Real-world examples

20160310 talked with Andreas about this.

maybe 3-4 different template demos, for different business segments.

Part 5. AD functional details

In this part try to take a lot from

1. AD_GS_v222_20160128_1522_second_half_20160302.doc
2. User guide

1. Concepts (20160217)

20160128 TERRY: this chapter not ready. Content is just my thoughts. Need a lot of review with experts (had no review yet).

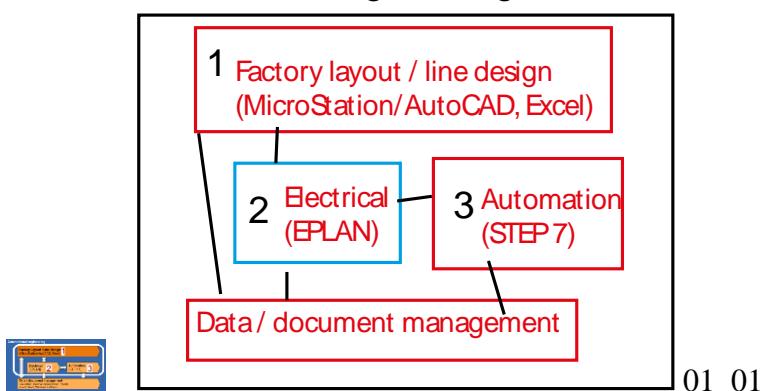
This chapter describes basic AD concepts.

- 1.1. Conventional automation/electrical engineering
- 1.2. Problems
- 1.3. Solution
- 1.4. Workflows
- 1.5. CD details

1.1. Conventional Automation/Electrical Engineering

Creation of the automation software (TIA) and electrical schematics (EPLAN) is traditionally not coupled with the factory layout (LD).

Conventional engineering



1. Factory layout and line design uses LD to design a production line.



2. Electrical engineering uses EPLAN to generate schematics for the production line.



3. Automation uses TIA to generate PLC SW and tags for specific PLC hardware.



1.2. Problems

There are 3 basic problems with the above situation:

1. The LD, EPLAN, and TIA designers must manually synchronize their configurations.
2. TIA SW and tag names have no relationship to EPLAN schematic variables.
3. EPLAN and TIA components that repeat (such as conveyors) must be created individually.

The diagram below shows the constant manual flow of information (emails, etc.) between the 3 development groups.

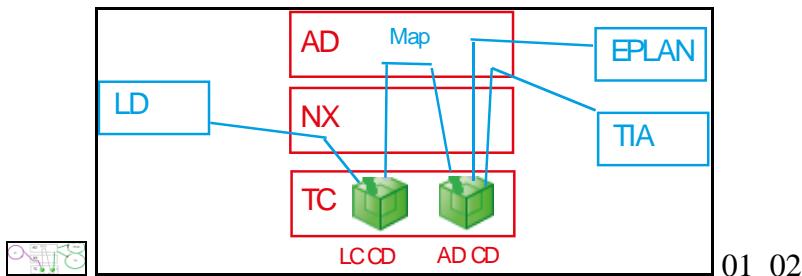


1.3. Solution

AD solves the problems above by

1. Enabling all 3 groups to work on a single platform (NX) as a single team.
2. Linking the LD CD with the EPLAN/TIA CD.

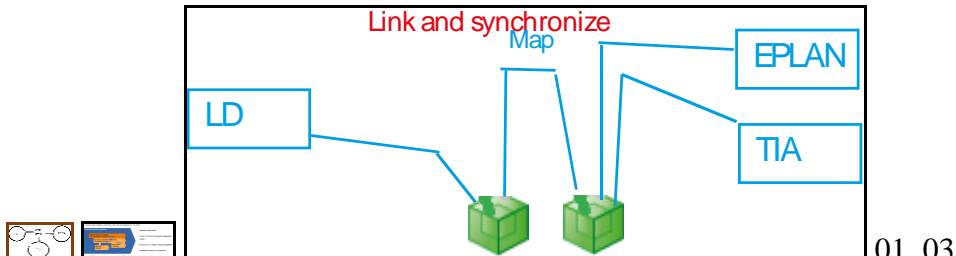
The following diagram shows how AD based on NX can serve as the central development tool for the entire project lifecycle for mechanics (LD), electrical (EPLAN) and automation (TIA). The 2 TC CDs (Collaborative Design), one for LD and another for EPLAN/TIA, are the central project databases (CDs are described in the next section). You can link (map) LD CD and AD CD elements (in this GS they are conveyors).



01_02

This allows you to

1. Easily determine when the LD configuration is not synchronized with the configuration used to generate EPLAN and TIA.



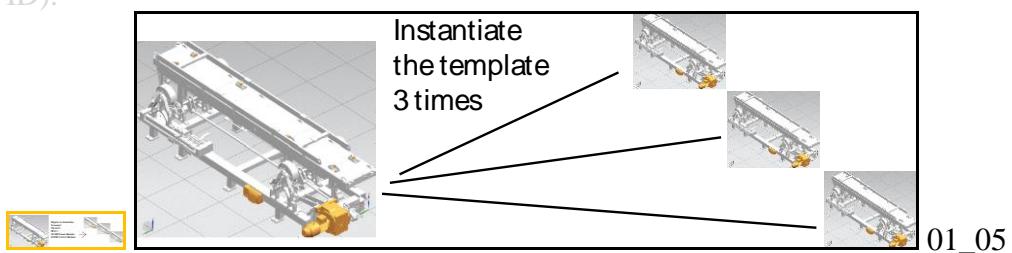
01_03

2. Derive EPLAN macro variables and TIA SW and tag names from the same source.



01_04

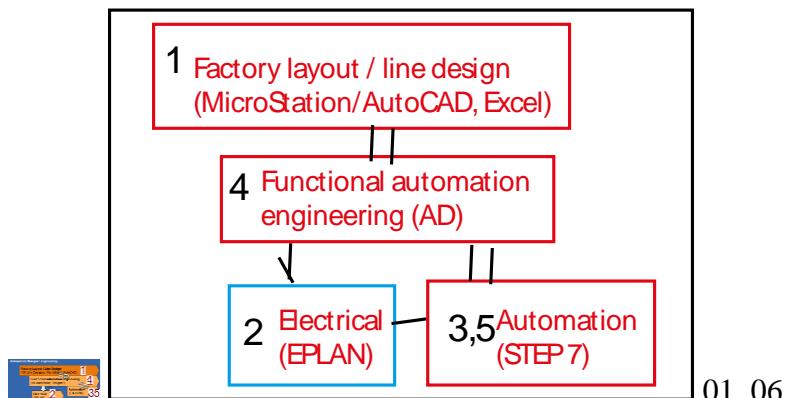
3. Use drag and drop to create components (such as conveyors) from templates for the AD CD. Create templates that can be instantiated multiple times (with the components in each instantiation having a unique ID).



01_05

1.4. Workflows (20160210)

Automation Designer engineering



01_06

The following describes the basic AD workflow with references to chapters in this GS.

1. Factory layout / line design (TC, LD)

In TC create the LD CD (ch 3).

In LD create 2 conveyors (ch 4).

2. Electrical (EPLAN)

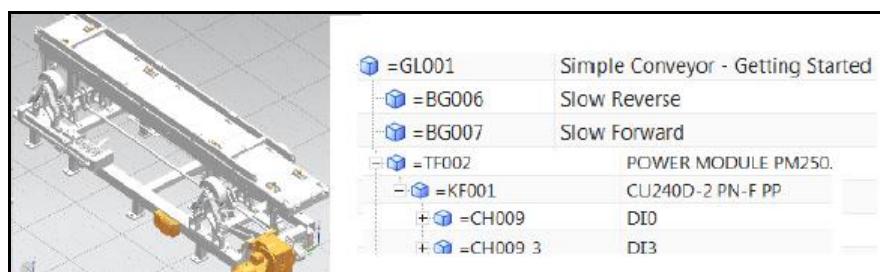
Assemble the required macros (for import later to AD).

3. Automation (TIA)

Configure the required TIA HW, SW and tags (for import later to AD).

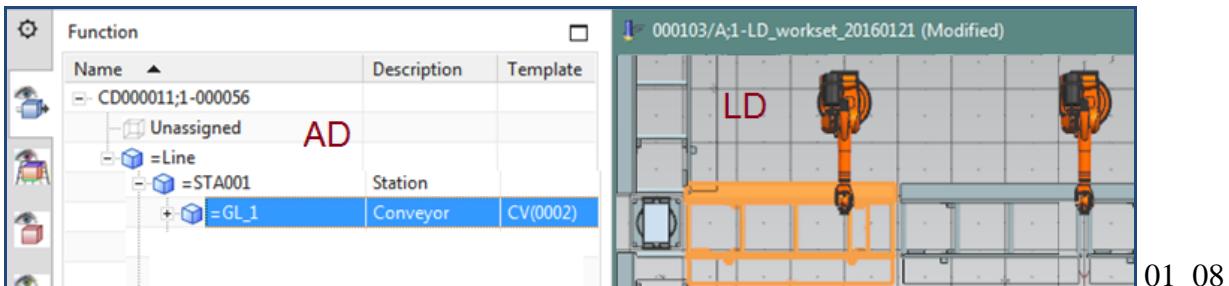
4. Functional automation engineering (AD)

1. In AD create a model of a single conveyor (ch 5).

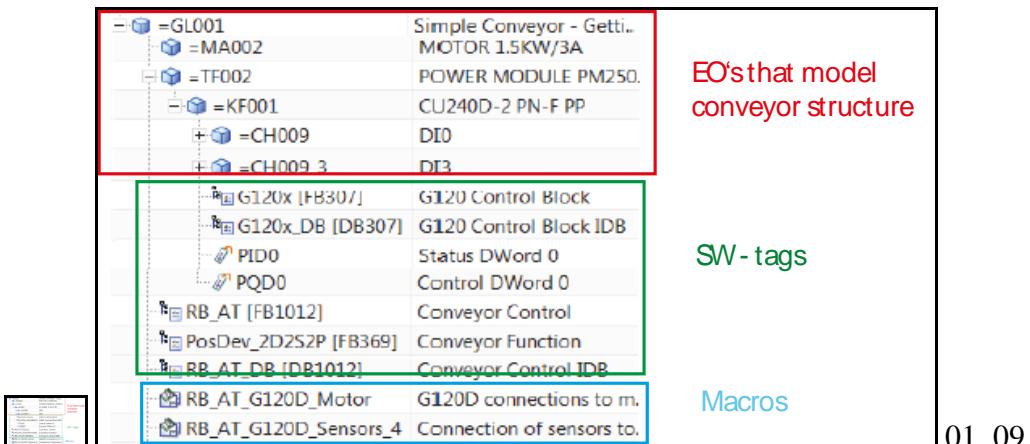


01_07

2. Map the AD conveyor to one of the LD conveyors (ch 6).

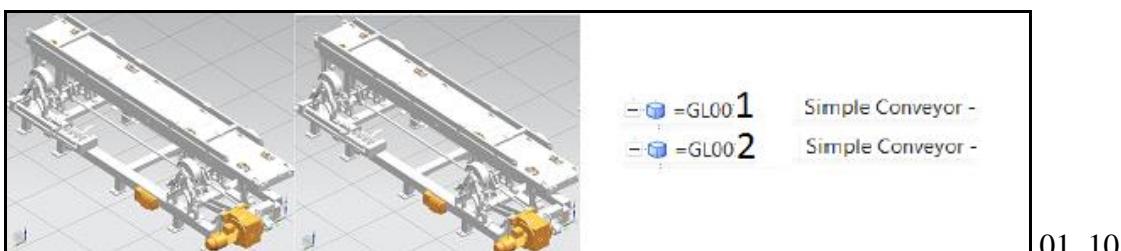


3. Add SW and EPLAN to the AD conveyor aspect tree and generate EPLAN/TIA (ch 7 and 8).

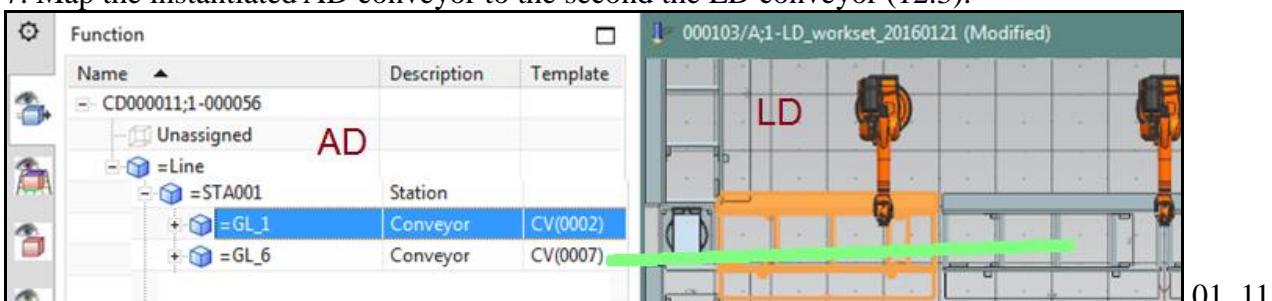


(Ch 9 is concepts chapter).

4. Configure EPLAN and TIA in the AD model for inclusion in templates (ch 10,11).
5. Create a template (12.0b).
6. Instantiate template with minimal modifications for a conveyor (12.1). You now have 2 conveyors.



7. Map the instantiated AD conveyor to the second the LD conveyor (12.3).



8. Generate EPLAN, TIA (12.4, 12.5).

xxxx5. Automation (TIA)

Test the project and download to the physical HW. (TERRY: ?????)

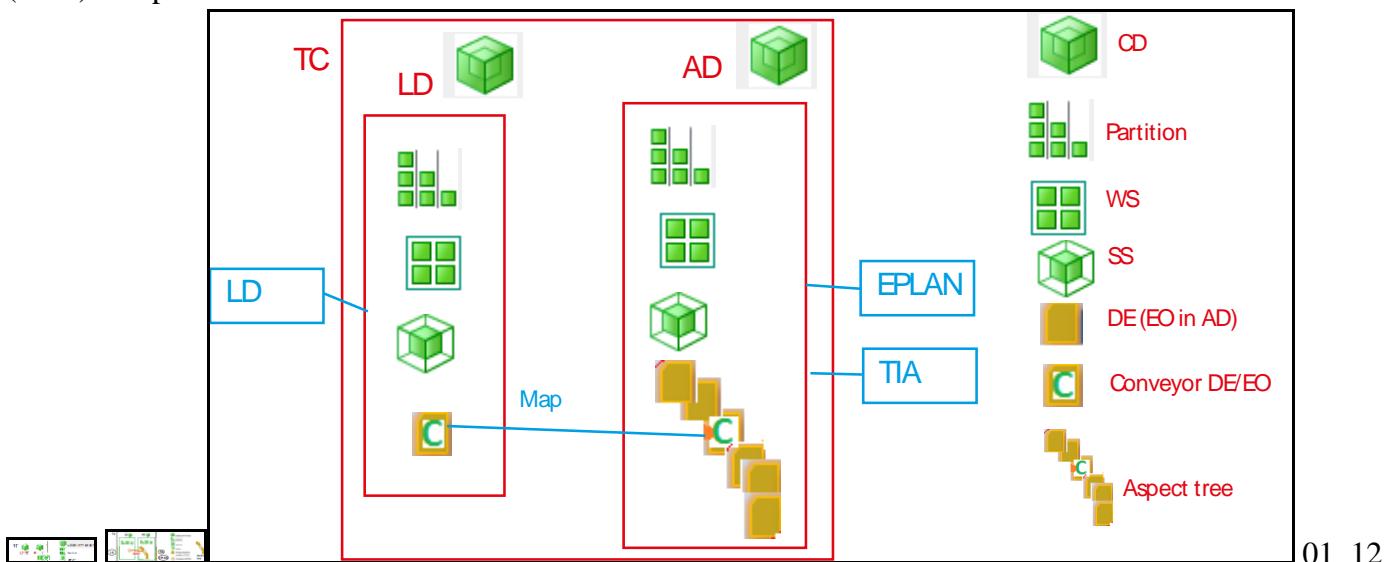
1.5. CD details

Working with AD means working with TC 4GD components. This section describes

- 1.5.1. LD/AD CD structure
- 1.5.2. 4GD component details
- 1.5.3. Creating LD CD components (ch 3-4)
- 1.5.4. Creating AD CD components (ch 5)

1.5.1. LD/AD CD components

The TC CDs for LD and AD shown in the section 1.3 are based on the following 4th Generation Design (4GD) components.



1.5.2. 4GD component details

1. CD
2. Partition scheme
3. Partition
4. Workset
5. Subset
6. Design element
- xxx7. Example

1. CD



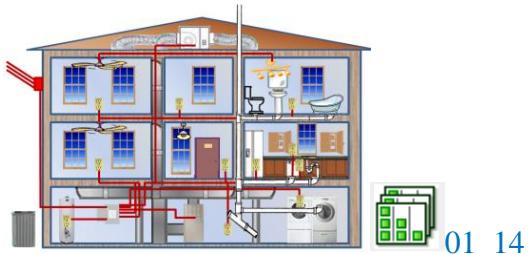
01_13

A collaborative design is a model of a project/product that is developed by a team of contributors. The elements of the model are arranged in a hierarchy that allows team members to collaborate and author common project/product information in an efficient manner.

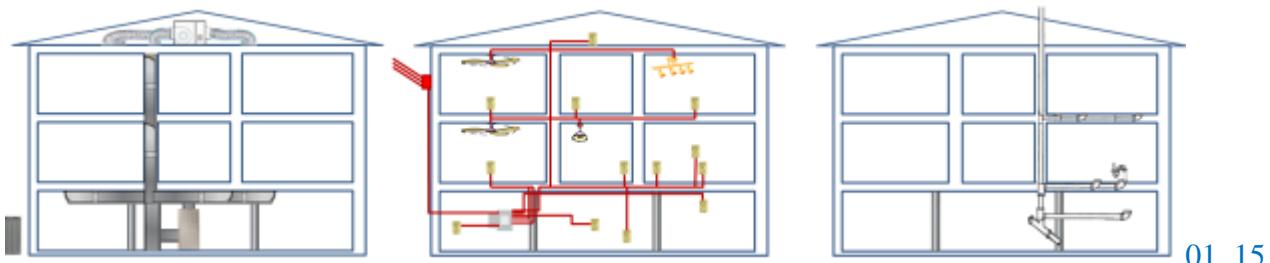
A collaborative design object is the container object in TCof all the design data that defines a product or a class of products.

2. Partition scheme

Partition schemes can be functional, spatial, or physical, by default. Partitions are created within partition schemes. For example, in a 4GD design of this house, different types of partitions can be used to organize the design elements.



- Functional: A functional partition scheme could contain partitions containing the HVAC (heating, ventilation and conditioning), electrical, and plumbing systems.



- Spatial: A spatial partition scheme could contain partitions for each floor. By default, spatial partitions are defined by a recipe so that new design elements are automatically added to the partition.



- Physical: A physical partition scheme could contain partitions organizing each individual physical room.



3. Partition



A partition object is an organizational container in the CD to help you organize and find data. Partitions can be organized in multiple ways, for example, by function, by spatial location, or by physical description.

Unlike traditional subassemblies, partitions do not control the position or any other property of a DE. DEs can be placed in multiple partitions. For example, in a CD of a house, a section of pipe might be part of a plumbing partition and part of the kitchen partition.

Partitions can be static, where designers must manually add DEs to them, or dynamic, where the contents of the partition are defined by search criteria.

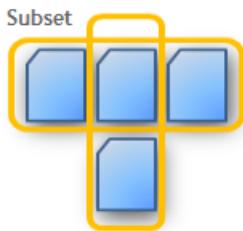
4. Workset



01_19

A workset object is the collection of DEs in your NX session. A workset is defined by one or more subsets. There may be many DEs within the workset you work on in your NX session.

5. Subset



01_20

A subset object selects a set of design elements you want to include in your workset.

The subset may include specific design elements, or it may contain a dynamic recipe which defines partitions to search, spatial locations, and other search criteria.

The illustration here indicates that the design elements in your session may come from multiple subsets.

6. Design element



01_21

A design element object is a representation of a component in the product. It is a unique occurrence of 3D geometry in a specific location in the product design.

There are different types of DEs. A DE can reference an NX part or assembly model, or other types of geometry.

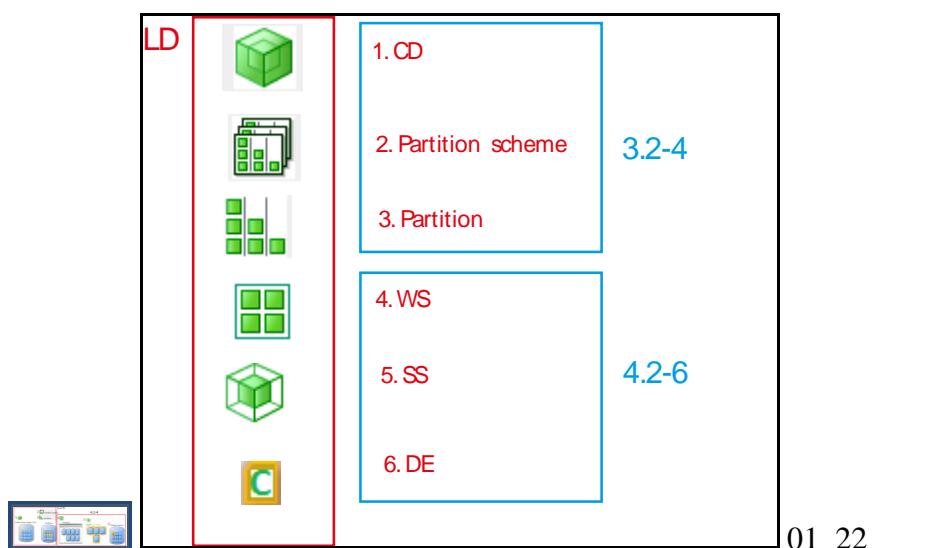
xxx7. Example

An example application would be a CD of a house in which multiple designers design the cabinets, appliances, plumbing, and wiring in the kitchen. This is the workflow:

1. CD. An administrator creates the CD object for the house design in TC.
2. Partition scheme and partition. An admin creates the partition scheme and partition objects in TC. The partition schemes for the house design might include a functional partition scheme for the systems, and a physical partition scheme for the rooms. The functional PS includes partition objects for plumbing, heating and wiring. The physical PS includes partition objects for the different rooms of the house, including the kitchen.
3. Workset and subset: The project leader creates a new workset in NX. The project leader adds a subset with a recipe for selecting all DEs in the volume of the kitchen. The project leader saves the workset, and assigns it to the responsible designers.

1.5.3. Creating LD CD components (ch 3-4)

In ch 3-4 you create an LD CD, workset and DEs (conveyors).
The following diagram shows the steps.

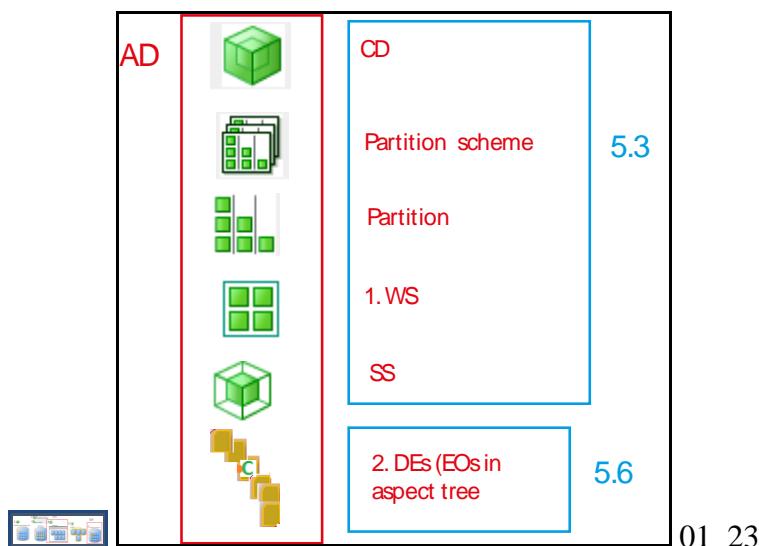


1.5.4. Creating AD CD components (ch 5)

In ch 5 you create an AD workset (which automatically creates a CD and subset) and engineering objects (EOs) in an aspect tree.

20160203 TERRY: partition scheme and partition are also automatically created?

The following diagram shows the 2 steps. In the last step you add the EOs (TC DEs) into the aspect trees (function, product and location aspects).



xxxx1.4.5. TC structures for EPLAN (ch 7) and TIA (ch 8)

Following shows when in this GS you use the data in the AD CD to create EPLAN and TIA.

1. Import into AD the EPLAN macros and TIA SW blocks and tags.

2. Configure.

3. Generate EPLAN and TIA output.



2. Overview of this Getting Started (20160217)

20160128 TERRY: proofread this chapter with Reinhard Simon. He ok'd it (with some corrections). It's a very short 6 page overview.

This chapter provides an overview of the steps described in chapters 3-13 for creating a very simple example AD project. The steps basically follow the work flow presented in the previous section "1.4. Workflows".

20160128 TERRY: don't talk about "parts" because I imagine that in xcat not possible to create this heading??

"Part 1: Create LD/AD mechatronic models" (25 pages)

Part 1 describes how to create the TC **mechatronic** models for LD and AD for a single conveyor.  

Ch 3 "TC: Create LD CD" describes how to create In TC the LD CD (collaborative design), partition scheme, and partition objects.

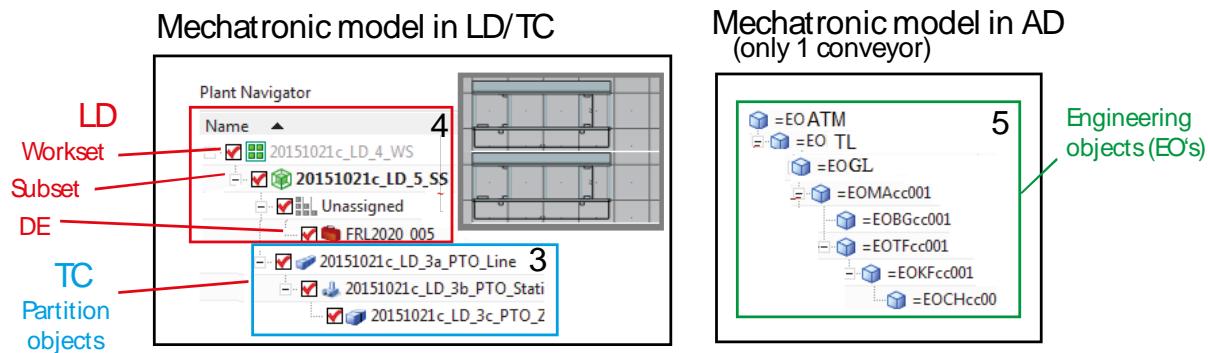
Ch 4 "LD: Create LD workset, subset + DEs" describes how to create DEs (design elements) for 2 conveyors.

Ch 5 "Create AD workset (and CD, SS) + EO's" describes how to Create an AD workset (which automatically creates the TC CD and subset) and AD engineering objects (EOs).

The following diagram shows the resulting models in LD and AD.

20160128 TERRY: talked with Reinhard about the EO names (EOMAcc001). I chose this type of name because it makes things clearer in examples (ask me for details).

Mechanical design in LD

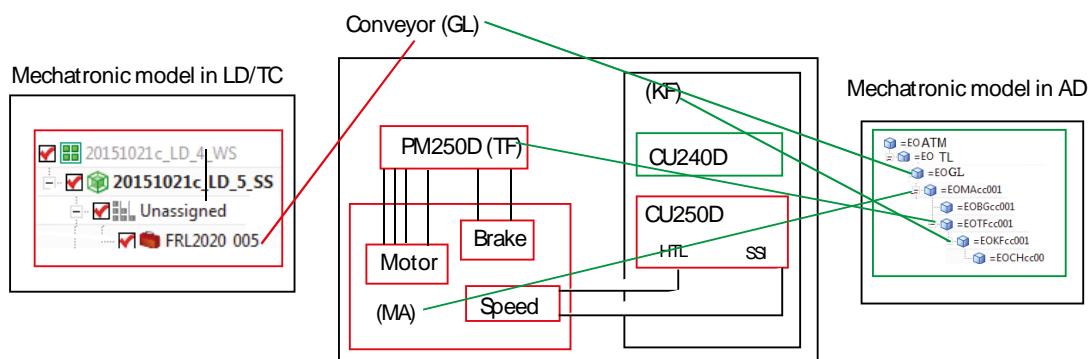


02_01

The following diagram shows how the LD DEs (design elements) correspond to the physical conveyor.  The following diagram shows how the AD EO's in aspect tree correspond to physical conveyor parts. 

The following diagram shows

1. LD DEs (left) that correspond to the conveyor (middle).
2. AD EO's (right) that correspond to conveyor components (middle).



02_02

"Part 2: Config LD (map), EPLAN, TIA" (40 pages)

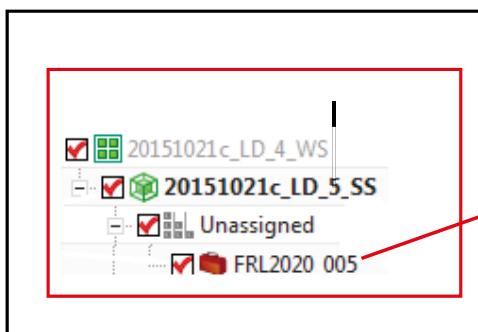
This part shows how to

1. Map the the LD and AD mechatronic models (ch 6).
2. Configure and generate EPLAN (ch 7).
3. Configure and generate TIA (totally integrated automation) (ch 8).

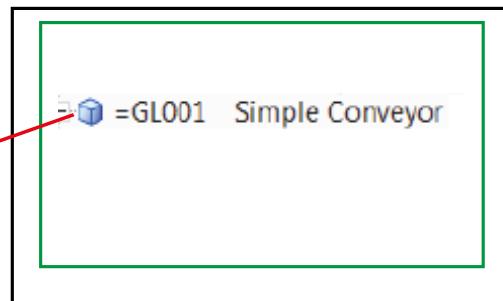


Chapter 6 "Map AD-LD" describes how to map the LD DE (for the conveyor) and AD EO GL (for the conveyor).

Mechatronic model in LD/TC



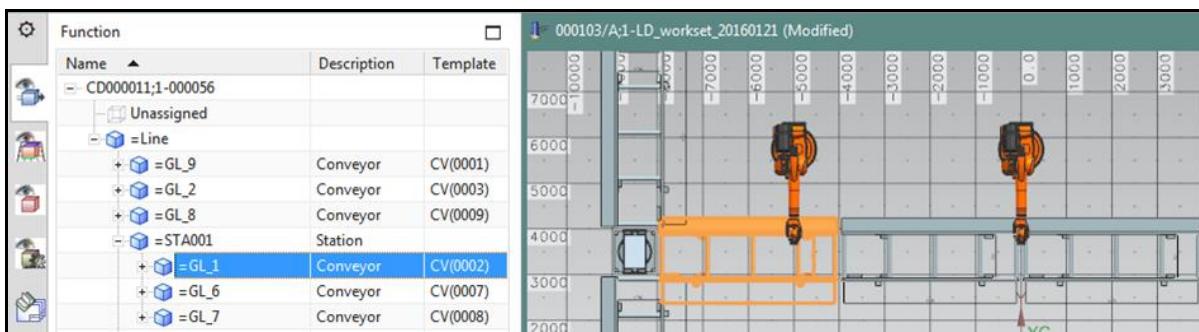
Mechatronic model in AD



02_03

After mapping, you can select the conveyor DE in LD (left) or the EO GL in AD (right) and the both EO and DE are highlighted.

20160128 TERRY: example from Reinhard (I deleted half the pic).



02_04



Original

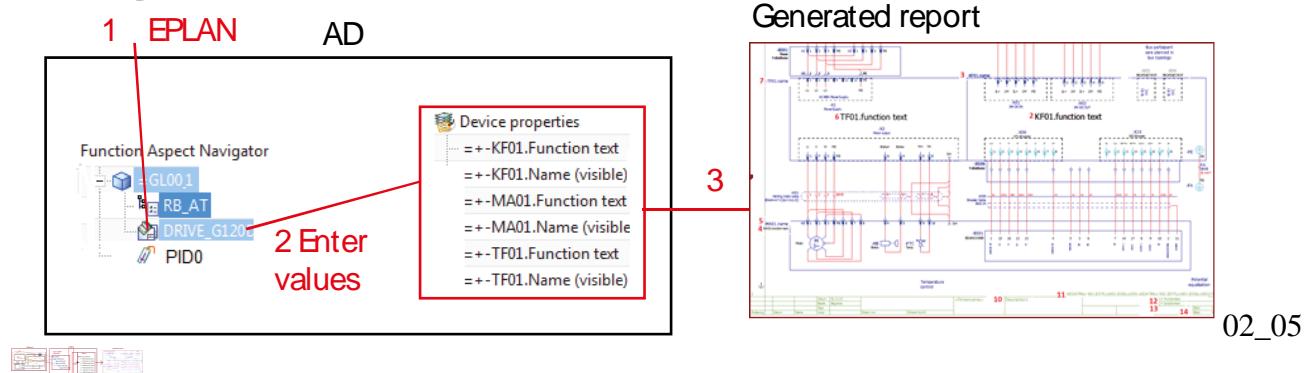


Modified

Chapter 7 "Configure EPLAN" describes how to

1. Import macros into AD.
2. Configure the macros (by setting values for the macro variables in AD).
3. Generate schematic diagrams and reports (BOM, etc.).

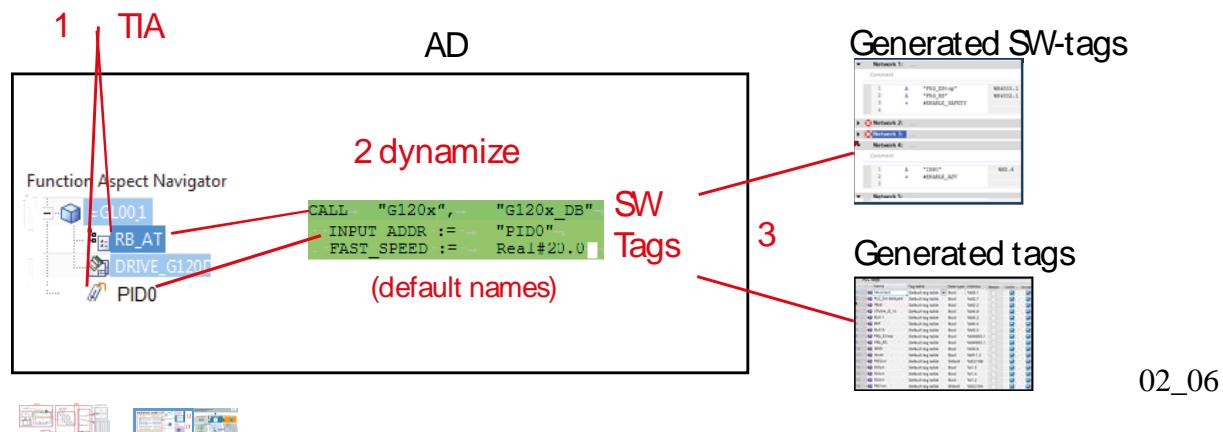
This diagram shows the actual equipment and the aspect model in AD of that equipment. you simply set the values for the macro variables in AD (in Part 3 you will learn how to use expressions/ports to use the aspect tree for macro vars).



Chapter 8 "Configure (non-template) TIA" describes how to

1. Import TIA SW blocks (and tags).
2. Dynamize the SW (for a description of dynamization see ch 8).
3. Generate application SW for export to TIA.

This diagram also shows the actual equipment and the aspect model in AD of that equipment. The default names of the SW-tags in AD are used for output to TIA (in Part 3 you will learn how to use expressions/ports to use the aspect tree for SW-tag symbolic names).



"Part 3: Using templates" (55 pages)

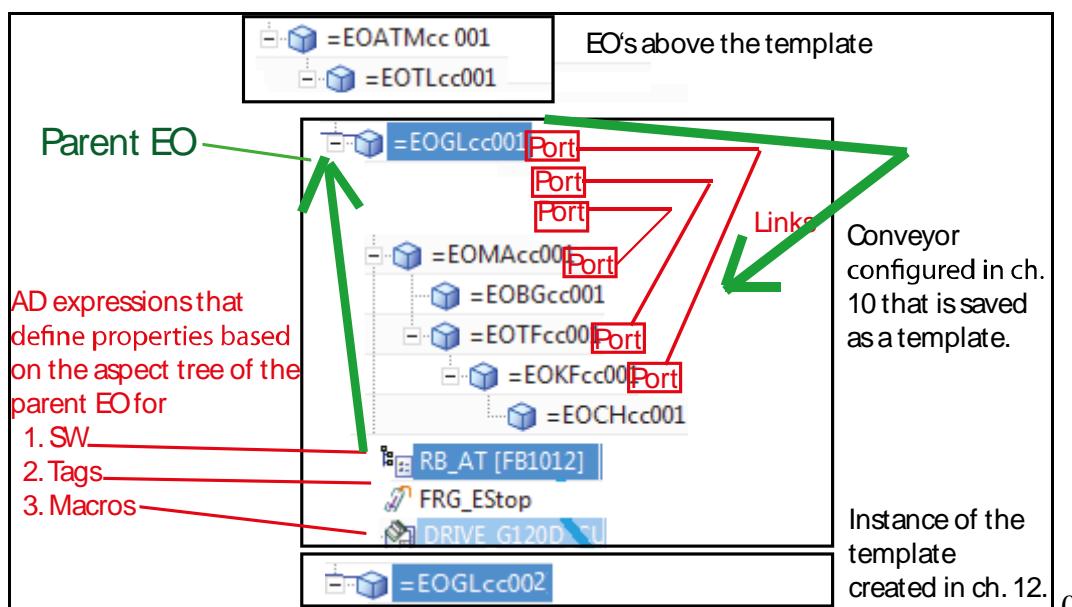
In this part you

1. modify the macros in AD as required for a template (ch 10).
2. modify the TIA SW blocks and tags in AD as required for a template (ch 11).
3. create a conveyor template in the reuse library, and then add to the project (ch 12).
4. manage template changes (ch 13).

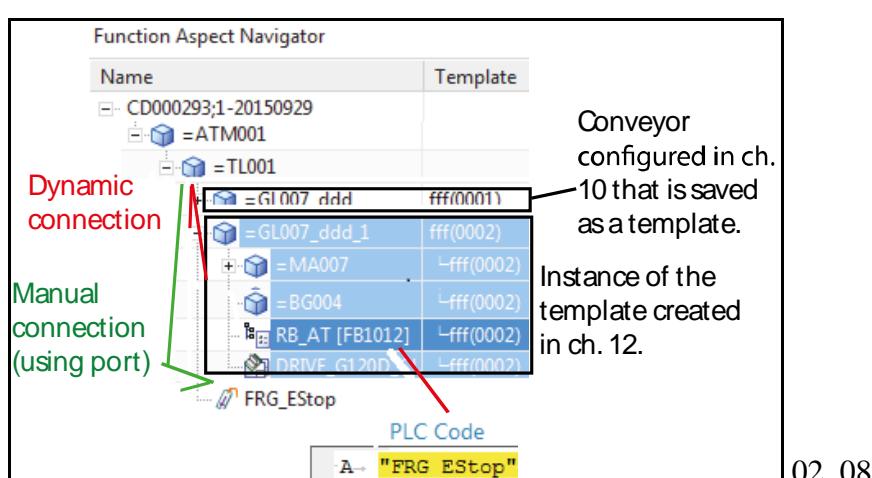


Ch 9 "Template-related concepts" describes

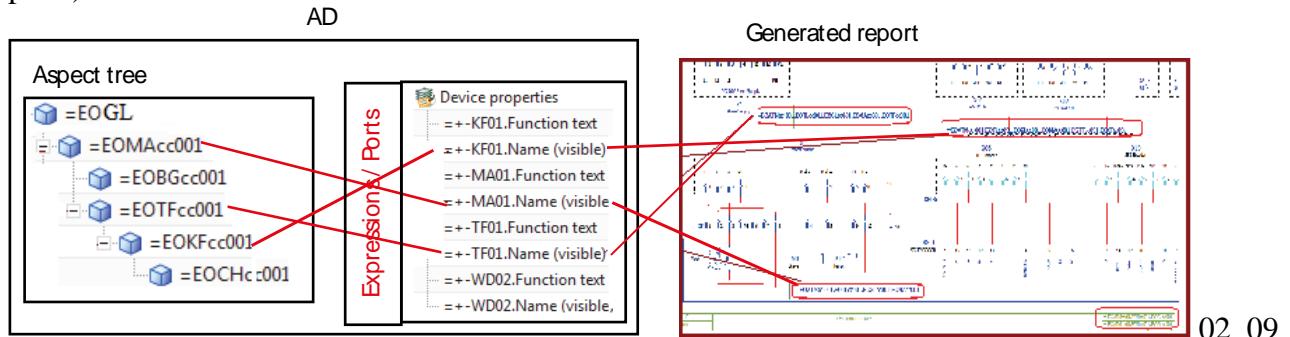
1. How macros, SW blocks and tags can access the aspect ID of an EO using expressions, ports, and links.



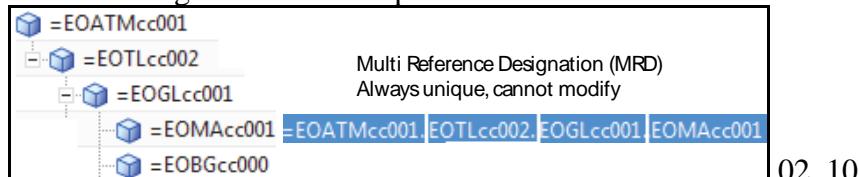
2. How dynamic connections allow an inserted template to automatically connect to tags outside the template.



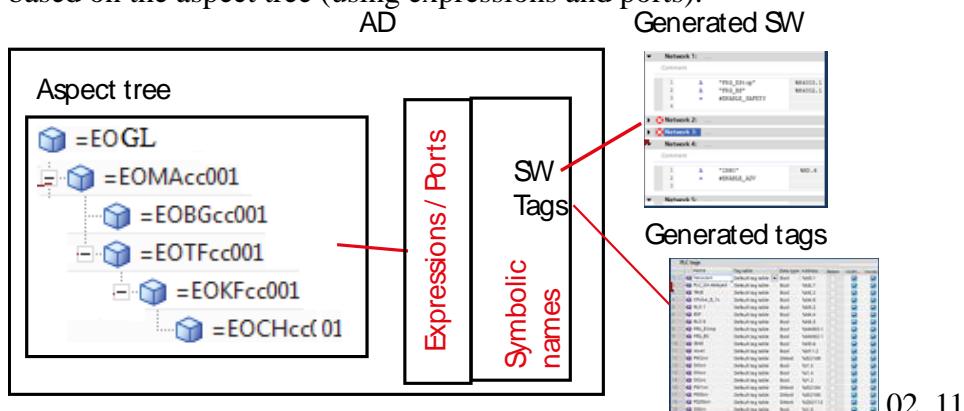
Ch 10 "Configure template-ready EPLAN" shows how to assign the value of macro variables to unique IDs (multiple reference designations, MRDs) based on the aspect tree (using expressions and ports).



The following shows an example MRD.



Ch 11 "Configure template-ready TIA" shows how to set the SW block and tag symbolic names based on the aspect tree (using expressions and ports).

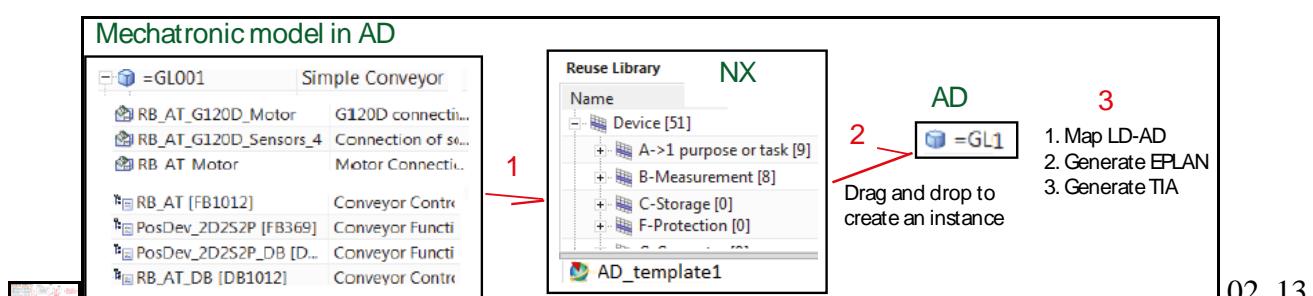


The following shows example symbolic names.



Ch 12 "Create/instantiate template" shows how to

1. Create a template and store in the reuse (solution) library.
2. Instantiate a template instance (for a conveyor).
3. Add LD mapping, generate ECAD documents and generate PLC application SW.



Part 1. Create LD/AD TC components

This part shows how to create the TC components for LD and AD.

- 3. TC: Create LD CD.**
- 4. LD: Create LD workset + DEs.**
- 5. AD: Create AD workset (and CD, SS) + EO's.**

3. TC: Create LD CD (20160415)

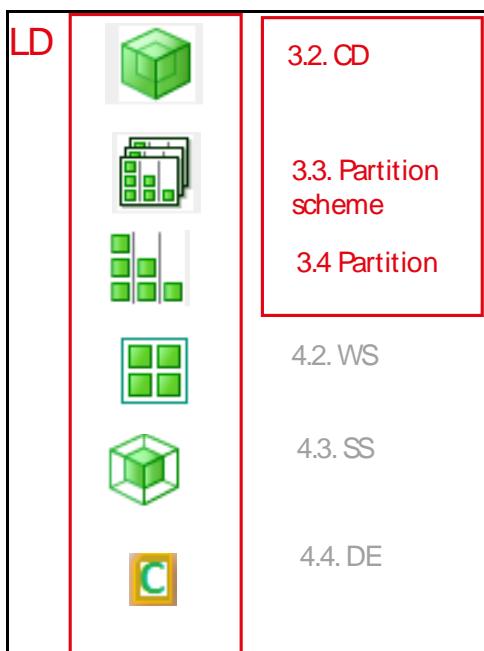
This chapter contains the following sections:

- 3.1. Workflow overview
- 3.2. Create plant design CD
- 3.3. Create partition scheme
- 3.4. Create partition objects
- xxx3.5. Result

3.1. Workflow overview



The following diagram shows the steps you perform in this chapter in TC.



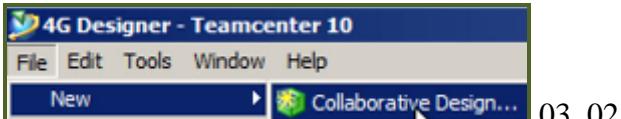
The following table shows the names you use. Such names make it easier to remember what they represent as you start adding other building blocks to your example.

Section	Type	Name
3.2	LD CD (Business object - plant design)	LD_1_CD
3.3	LD partition scheme	LD_2 PTS
3.4	LD partition	LD_3a_PTO_Line LD_3b_PTO_Station LD_3c_PTO_Zone

3.2. Create plant design CD



1. In 4GD Designer select File / New / Collaborative Design.

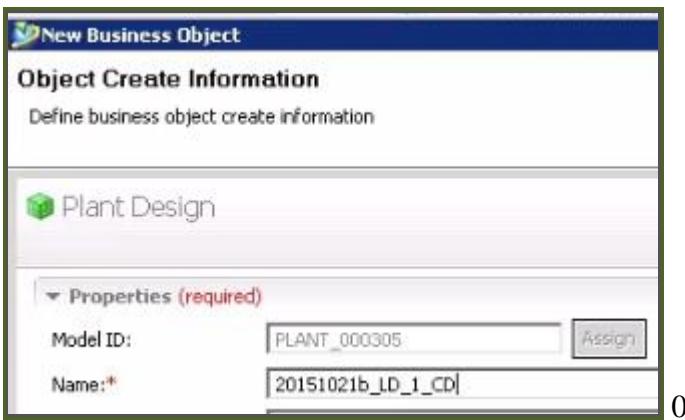


2. Select Plant Design.



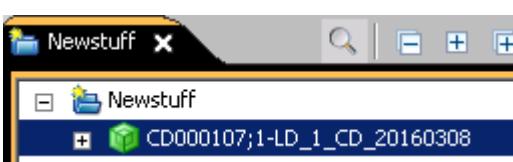
3. Create the plant with Name = "LD_1_CD".

Click assign.



03_04

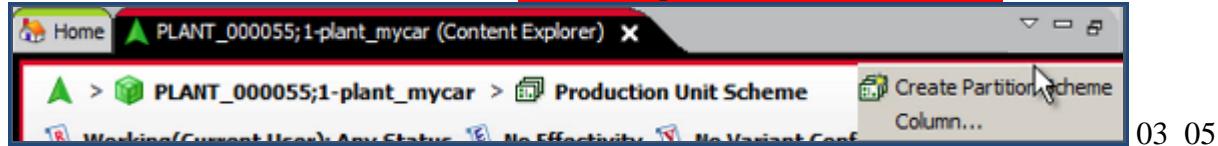
4. Click Finish. Click Close.



3.3. Create partition scheme

Partition scheme Partition scheme objects are organizational containers for partitions. They are created in Transceiver and appear in the Collaborative Design Navigator in NC.

1. Click on "Create Partition Scheme". Name at top should be "1-LD_1_CD"

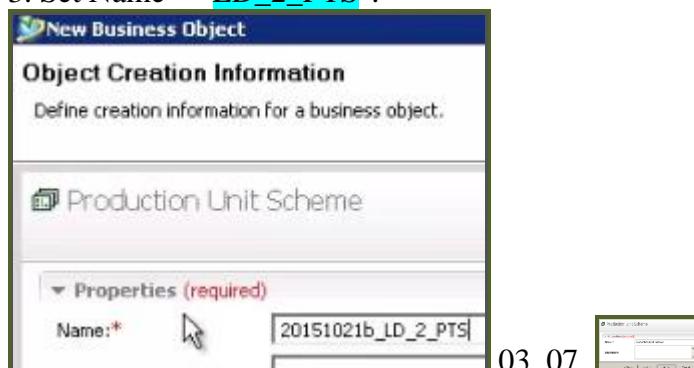


2. Select "Production Unit Scheme".



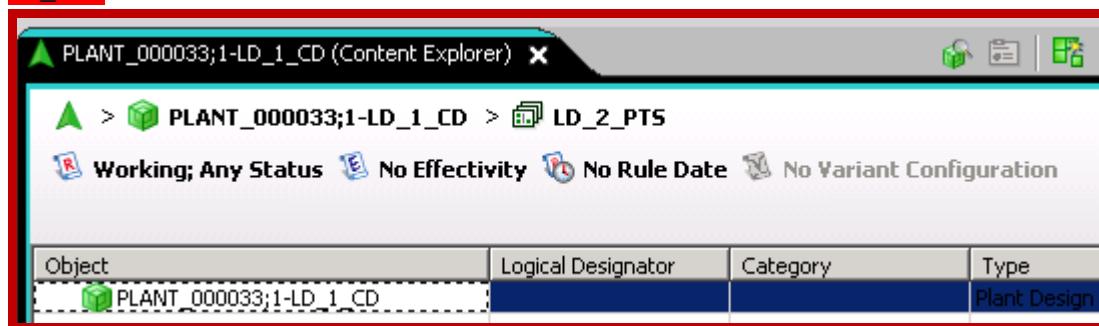
Click next

3. Set Name = "LD_2 PTS".



4. Click Finish. Click Close.

03_07b



3.4. Create partition objects

Create the partition objects (business objects) line, station and zone.



1. Click on "Create partition".



03_08

2. Select "Production Line". **Click NEXT**



03_09

3. Click Assign. Set Name = "[LD_3a_PTO_Line](#)".



03_10

4. Click Finish. Click Close.

Object	Logical Designator	Category	Type
PLANT_000059;1-territory			Plant Design
+ LINE_000032/001;			Production Line

03_11

03_10b

Object	Logical Designator	Category	Type
PLANT_000033;1-LD_1_CD			Plant Design
+ LINE_000011/001;1-LD_3a_PTO_Line			Production Line

5. Create a "Production Station" partition with Name = "LD_3b_PTO_Station".

20160301 TERRY. Does it matter where in the hierarchy this is?

6. Create a "Production Zone" partition with Name = "LD_3c_PTO_Zone".

Object	Logical Designator	Category	Type
PLANT_000059;1-terr			Plant Design
LINE_000032/001;			Production Line
STATION_0001			Production Station
ZONE_000			Production Zone

03_12

03_12b

PLANT_000033;1-LD_1_CD (Content Explorer)

Working; Any Status No Effectivity No Rule Date No Variant Configuration

Object	Logical Designator	Category	Type
PLANT_000033;1-LD_1_CD			Plant Design
LINE_000011/001;1-LD_3a_PTO_Line			Production Line
STATION_000012/001;1-LD_3b_PTO_Station			Production Station
ZONE_000013/001;1-LD_3c_PTO_Zone			Production Zone

7. Send to 4GDesigner.

Object	Logical Designator	Category	Type	Effectivity Formula
PLANT_000072;1-plan			Plant Design	
LINE_000047/001			Production Line	
STATION_000			Production Station	
ZONE_000			Production Zone	

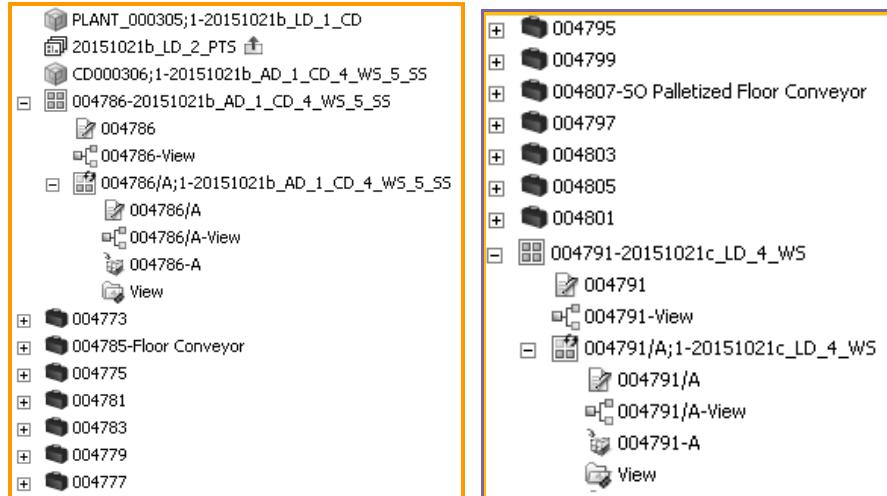
03_13

xxx3.5. Result in TC

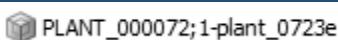
20160203 TERRY: leave this section out? Display in TC is strange, Andreas says maybe not discuss.

TERRY 20151027: on the left from a while back. On the right from 20151021. What objects should be in TC after adding LD objects? On the right where is Partition scheme? What about LD subset?

The following shows the resulting structure in TC.



1. CD.

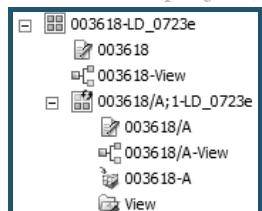


2. Partition scheme.



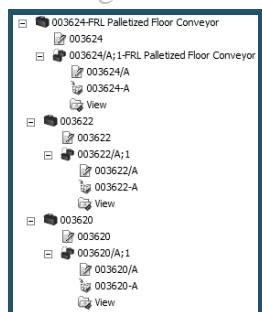
3. Partition?

4. Workset (project).



5. Subset? (this shown in LD, not TC??)

6. Design elements (conveyors).



4. LD: create LD workset, subset and DEs (20160428)

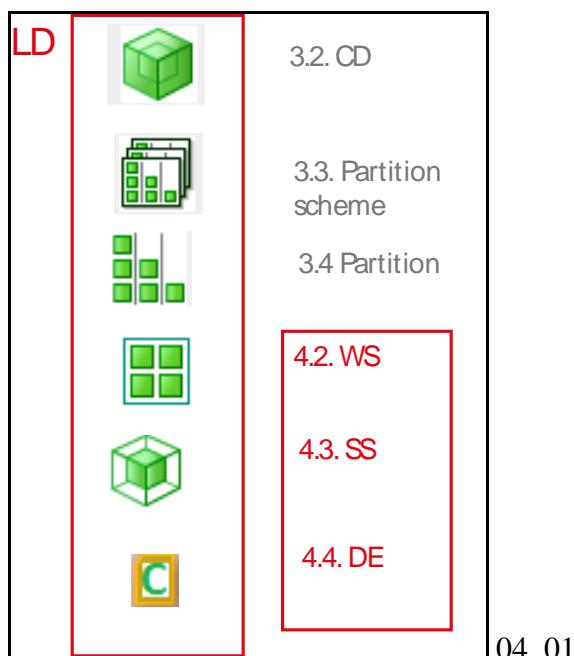
This chapter contains the following sections:

- 4.1. Workflow overview
- 4.2. Create LD workset
- 4.3. Create LD subset, add partitions (3) to recipe
- 4.4. Add 2 LD conveyors
- xxx4.5. Result

4.1. Workflow overview



The following diagram shows the steps you perform in this chapter in LD.



The following table shows the names you use. Such names make it easier to remember what they represent as you start adding other building blocks to your example.

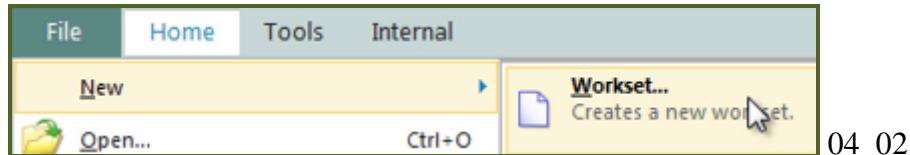
Section	Type	Name
4.2	LD workset (Model - line designer study)	LD_4_WS
4.4	LD subset	LD_5_SS
4.5		(conveyors)

4.2. Create LD workset

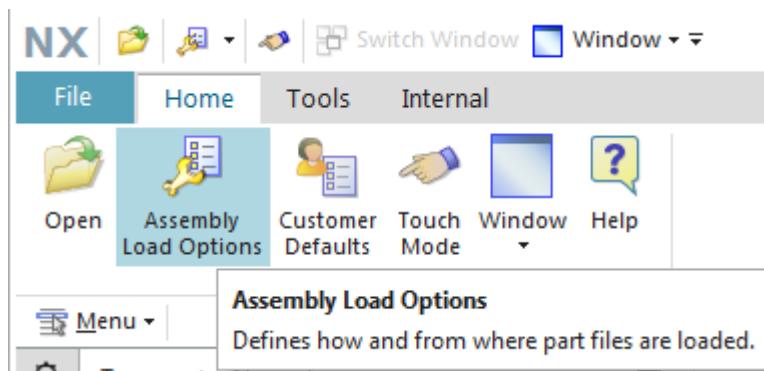
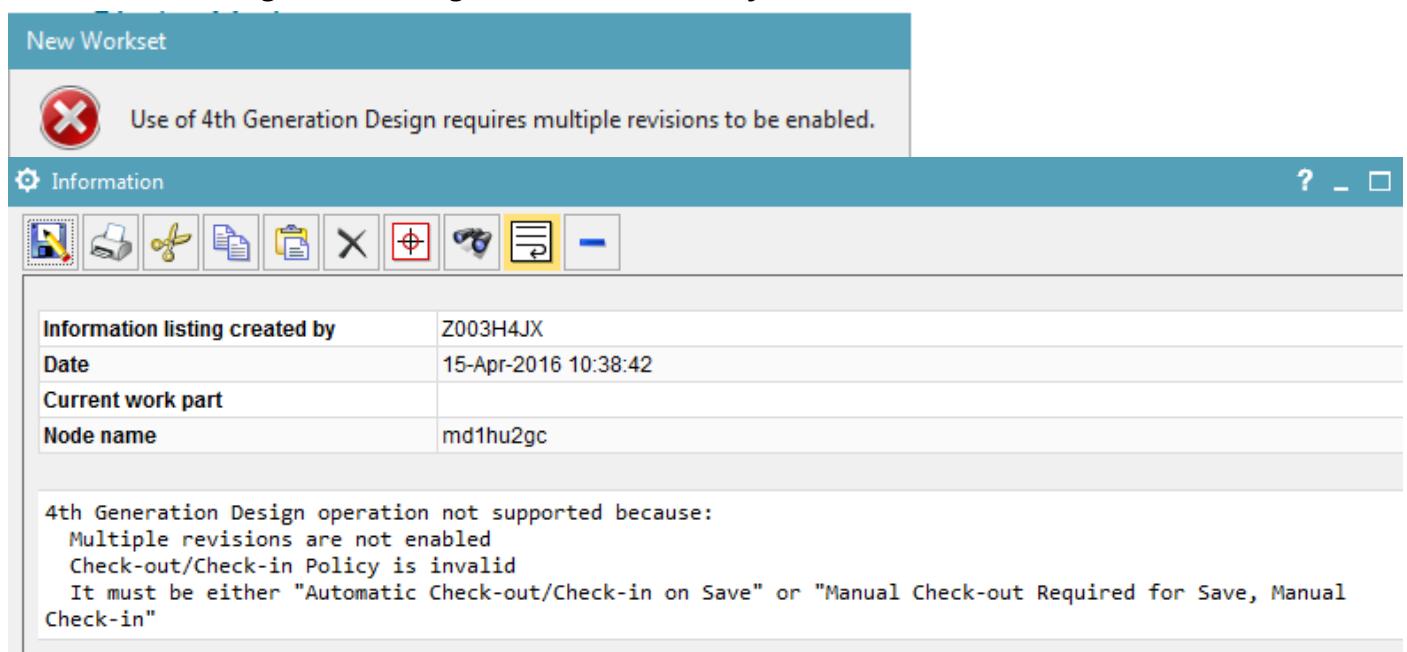


TERRY 20160301 TALK ABOUT HOW TO OPEN, SETUP NX?

1. Create a new workset.



20160415 TERRY: got this dialog.. never seen this before....



Assembly Load Options

Configuration Context

Configuration Details

Define or Load Context

Load from Teamcenter Define in NX

Revision Rule

Revision Rule Latest Working

Override Folder

Effectivity

Specify Effectivity

Variant Configuration

Variant Rule

Product Asse...	Variant Rule

Scope

Load

All Components

Use Partial Loading

Use Lightweight Representations

Load Interpart Data

Load Behavior

Update Subset on Load

No Update

Allow Replacement

Generate Missing Part Family Members

Cancel Load on Failure

Reference Sets

Bookmark Restore Options

Saved Load Options

OK Cancel

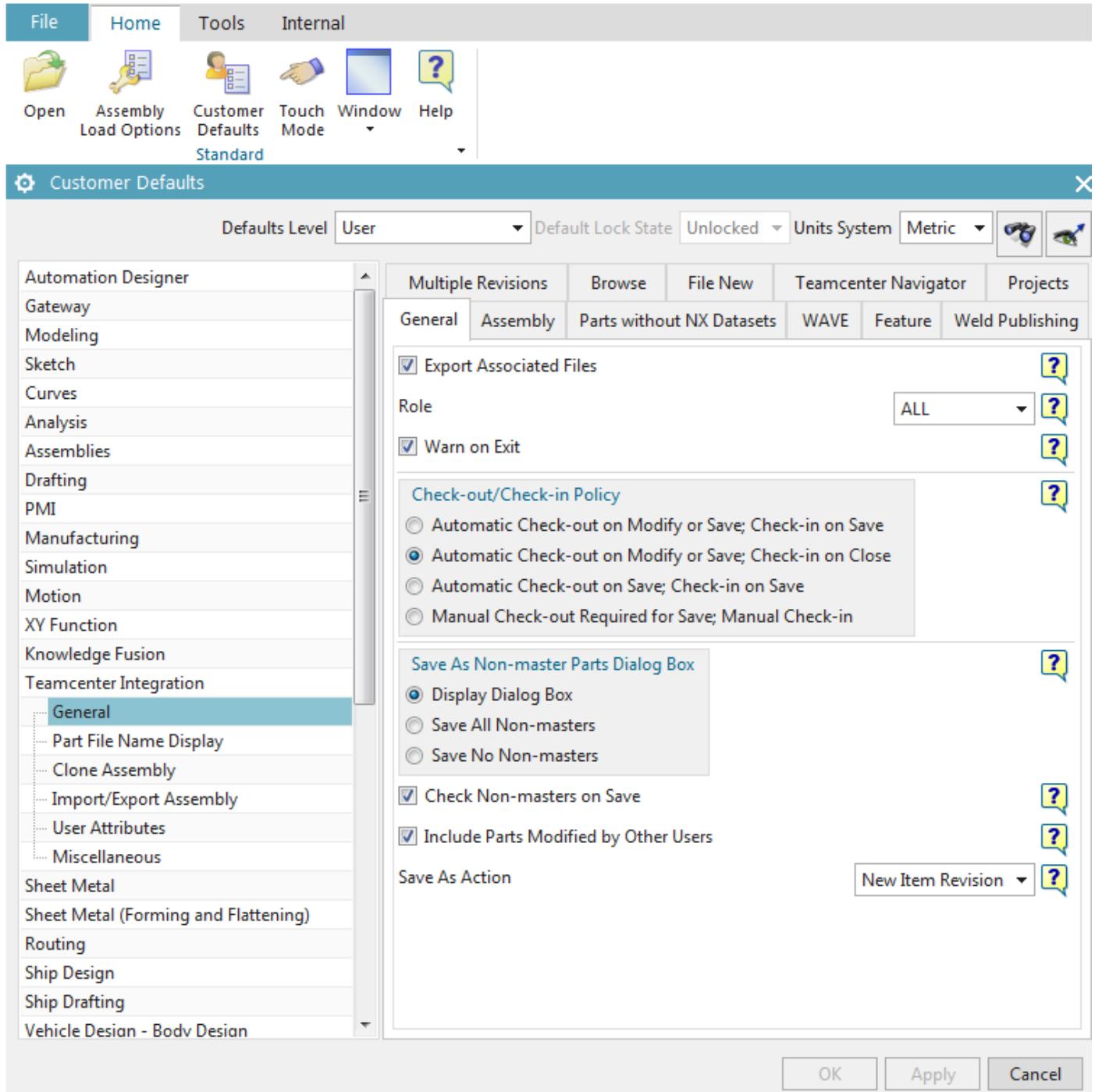
Revision Rule

Revision Rule Any Status; No Working

Override Folder

This did not solve it.

Try this....



Or this....?????????

Customer Defaults

Defaults Level: User | Default Lock State: Unlocked | Units System: Metric |

General	Assembly	Parts without NX Datasets	WAVE	Feature	Weld Publishing
Multiple Revisions	Browse	File New	Teamcenter Navigator	Projects	

Enable Multiple Revisions

Check Revisions on Load

Check Revisions on Save

Automation Designer
Gateway
Modeling
Sketch
Curves
Analysis
Assemblies
Drafting
PMI
Manufacturing
Simulation
Motion
XY Function
Knowledge Fusion
Teamcenter Integration

General
Part File Name Display
Clone Assembly
Import/Export Assembly
User Attributes
Miscellaneous

Enable Multiple Revisions

Customer Defaults

Changes to customer default options do not take effect until you have restarted your NX session.

Restart....



Information

Information listing created by Z003H4JX
Date 15-Apr-2016 11:04:48
Current work part
Node name md1hu2gc

4th Generation Design operation not supported because:
Check-out/Check-in Policy is invalid
It must be either "Automatic Check-out/Check-in on Save" or "Manual Check-out Required for Save, Manual Check-in"

New Workset

The Check-out/Check-in Policy for 4th Generation Design must be "Automatic Check-out/Check-in on Save" or "Manual Check-out Required for Save, Manual Check-in".

OK

So one problem was solved.

Customer Defaults

Defaults Level User Default Lock State Unlocked Units System Metric

Automation Designer
Gateway
Modeling
Sketch
Curves
Analysis
Assemblies
Drafting
PMI
Manufacturing
Simulation
Motion
XY Function
Knowledge Fusion
Teamcenter Integration
General
Part File Name Display

Multiple Revisions Browse File New Teamcenter Navigator Projects

General Assembly Parts without NX Datasets WAVE Feature Weld Publishing

Export Associated Files

Role ALL

Warn on Exit

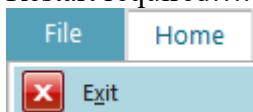
Check-out/Check-in Policy

- Automatic Check-out on Modify or Save; Check-in on Save
- Automatic Check-out on Modify or Save; Check-in on Close
- Automatic Check-out on Save; Check-in on Save
- Manual Check-out Required for Save; Manual Check-in

Save As Non-master Parts Dialog Box

- Display Dialog Box
- Save All Non-masters

Restart required.....



Works. ☺

New Workset

Model Automation Designer

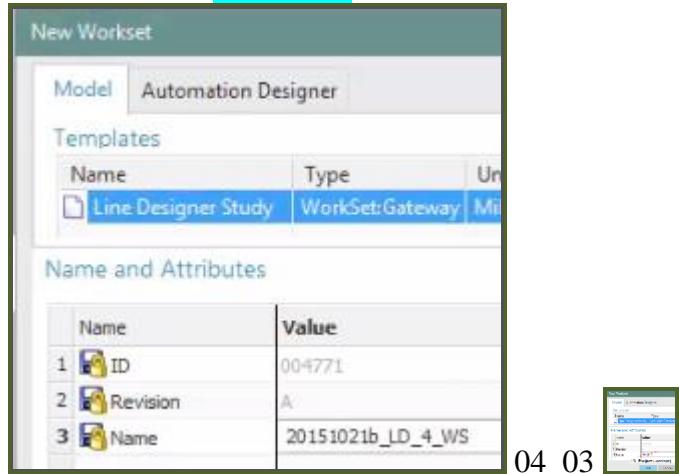
Templates

Units Millimeters

Name	Type	Units	Relationship	Owner	It
Line Designer Study	WorkSet:Gateway	Millimeters	master	infodba (d...)	V

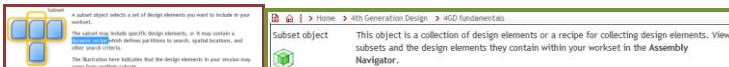
20160415 continue

2. Select Model / Line Designer Study.
3. Set Name = "LD_4_WS".



4. Click OK. The "Create Subset" dialog appears.

4.3. Create LD subset, add partitions (3) to recipe



1. For "Collaborative Design" select "LD_1_CD".

04_04a

This screenshot shows the 'Select Collaborative Design' dialog. In the 'Object' list, 'PLANT_000033;1-LD_1_CD' is selected. The 'Number' field shows 'PLANT_000033'. On the right, detailed properties are listed:

- Type: Plt0PlantDesign
- Revision:
- Relation:
- Owner: eng_user1 (eng_user1)
- Access: Write
- Last Modified: 2016/03/01 09:10:05
- Status: None
- Description:

2. For "Revision Rule" select "Any Status, No Working".

TERRY Is the plant (not just partitions) included in the recipe? what does "Any Status; No Working" mean?

This screenshot shows the 'Create Subset' dialog for 'Collaborative Design'. The subset is named '20151021b_LD_1_CD'. The 'Name and Attributes' section contains one item: 'Object Name' (20151021b_LD_1_CD), 'Name' (20151021b_LD_1_CD), and 'Description' (empty). The 'Configuration Context' section includes a 'Revision Rule' dropdown set to 'Any Status; No Working'. Other sections include 'Effectivity' (Specify Effectivity), 'Variant Configuration', and 'Variant Rule'.

04_04

20160415TERRY : I changed the name to SS.

Create Subset

Collaborative Design

LD_1_CD_20160415

Name and Attributes

Name	Value
1 Name	LD_1_SS_20160415
2 Description	
3 Logical Designator	
4 Include In Parts ...	False
5 Report In Where...	True

Secondary Attributes

Configuration Context

Revision Rule

Revision Rule: Any Status; No Working

Effectivity

Specify Effectivity

Variant Configuration

Variant Rule

Content Search

View Style

Tile (selected)

Tree

Collaborative

Show Shortcuts

Collaborative Design Navigator

CD000083:1-LD_1_CD_20160415:LD_1_SS_20160415

Any Status; No Working

No Effectivity

No Variant Rule

Content Search

View Style

Tree (selected)

Object	Number	Access	Type	Rev...	Design Category	Name
CD000083:1-LD_1_CD_20160415	CD000083:1-LD_1_CD_20160415		Production Uni...			CD000083:1-LD_1_CD_20160415
LD_2 PTS_20160415						LD_2 PTS_20160415
LINE_000041/001:1-LD_3a_PTO_Line_20160415	LINE_000041	+	Production Line	001		LD_3a_PTO_Line_20160415
STATION_000042/001:1-LD_3b_PTO_Station_20160415	STATION_000042	+	Production Stat...	001		LD_3b_PTO_Station_20160415
ZONE_000043/001:1-LD_3c_PTO_Zone_20160415	ZONE_000043	+	Production Zone	001		LD_3c_PTO_Zone_20160415

Object	Number
CD000083;1-LD_1_CD_20160415	CD000083;1-L
LD_2 PTS_20160415	
LINE_000041/001;1-LD_3a_PTO_Line_20160415	LINE_000041
STATION_000042/001;1-LD_3b_PTO_Station_20160415	STATION_000042
ZONE_000043/001;1-LD_3b_PTO_Zone_20160415	ZONE_000043

Add to Recipe ▾

-  Include
-  Exclude
-  Filter

Task Home Analysis View Tools Assemblies



Subset Properties

Target Pro

Collaborat

Subset Definitio

Subset Properties (Ctrl+Alt+P)

Launches the Subset Properties dialog.

Subset Properties

Collaborative Design

LD_1_CD_20160415

Name and Attributes

Object Name	Name
1 LD_1_SS_20160415	LD_1_SS_20160415

Secondary Attributes



Configuration Context

Secondary Attributes

Attributes

Context

Interaction Method: Traditional

Subset Element Attributes

Title/Alias	Value	Units	T...	Type	R...	D...	I...
-> Subset							
Description	<No Value>			String	File	Lock	Global
History Sync Status	<No Value>			String	File	Lock	Global
Include In Parts List	False			Boolean	File	Lock	Global
Logical Designator	<No Value>			String	File	Lock	Global
Name	LD_1_SS_20160415			String	File	Lock	Global
Report In Where Used	True			Boolean	File	Lock	Global
Revision ID	LD_1_SS_20160415			String	File	Lock	Global
Shape Data Last Modified Date	<No Value>			Date	File	Lock	Global
Source Object ID	CD000083			String	File	Lock	Global
Source Object Name	CD000083;1-LD_1...			String	File	Lock	Global
Source Object Type	Cpd0Collaborative...			String	File	Lock	Global
Type	Subset			String	File	Lock	Global
Variant Formula	<No Value>			String	File	Lock	Global
Version Number	<No Value>			Integer	File	Lock	Global
+ All Unset							

20160418 xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

NX | NX 11.0.0.27 - Subset Definition - [000355/A;1-LD_4_WS_20160418 (Modified)]

Task Home Analysis View Tools Assemblies Internal

Collaborative Design Navigator
CD000083;1-LD_1_CD_20160415:LD_1_CD_20160415ss

Any Status; No Working

No Effectivity

No Variant Rule

Content Search

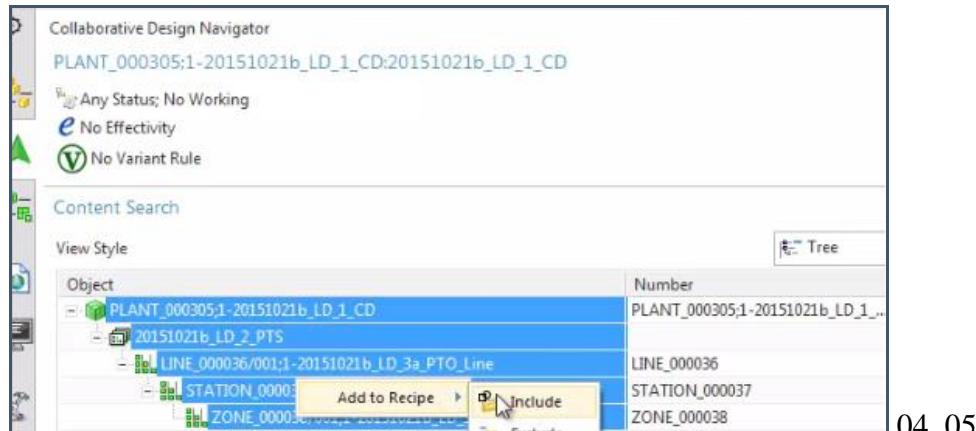
View Style: Tree

Object	Number
CD000083;1-LD_1_CD_20160415	CD000083;1-LD_1_CD_20160415
LD_2 PTS_20160415	
LINE_000041/001;1-LD_3a_PTO_Line_20160415	LINE_000041
STATION_000042/001;1-LD_3b_PTO_Station_20160415	STATION_000042
ZONE_000043/001;1-LD_3c_PTO_Zone_20160415	ZONE_000043

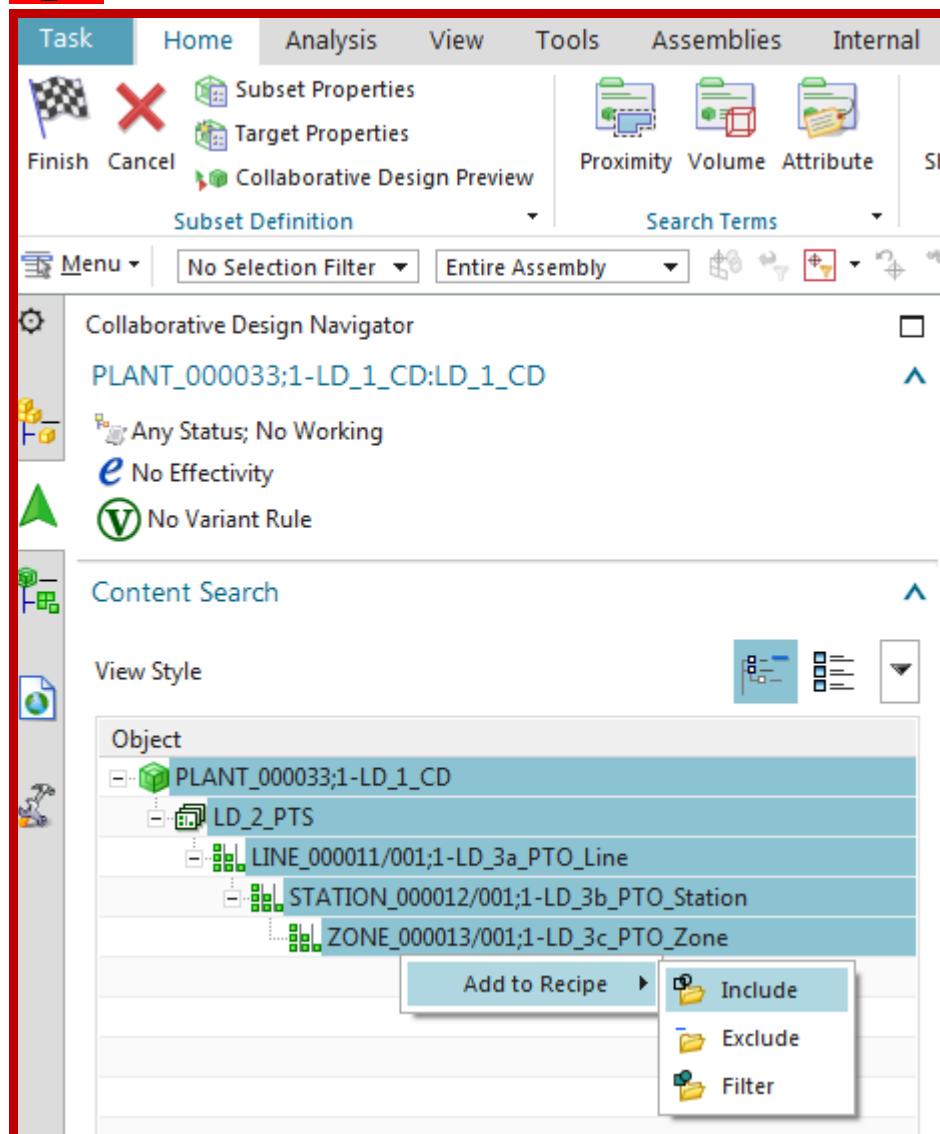
Object	Number
CD000083;1-LD_1_CD_20160415	CD000083;1-LD_1_CD_20160415
LD_2 PTS_20160415	
LINE_000041/001;1-LD_3a_PTO_Line_20160415	LINE_000041
STATION_000042/001;1-LD_3b_PTO_Station_20160415	STATION_000042
ZONE_000043/001;1-LD_3c_PTO_Zone_20160415	ZONE_000043
Add to Recipe ▶   Include	

20160415 continue

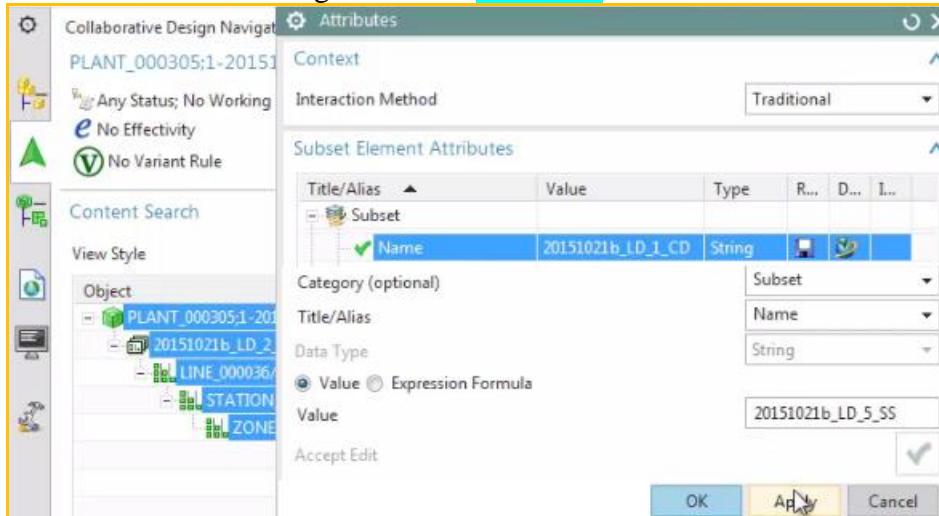
3. Click OK. Select all under "Object" and select "Add to Recipe / Include".



04_05a

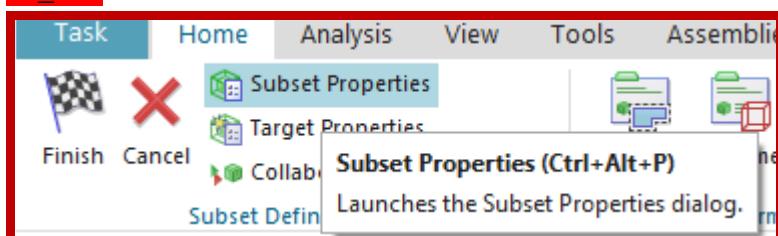


4. Recommended: Change name to "LD_5_SS".

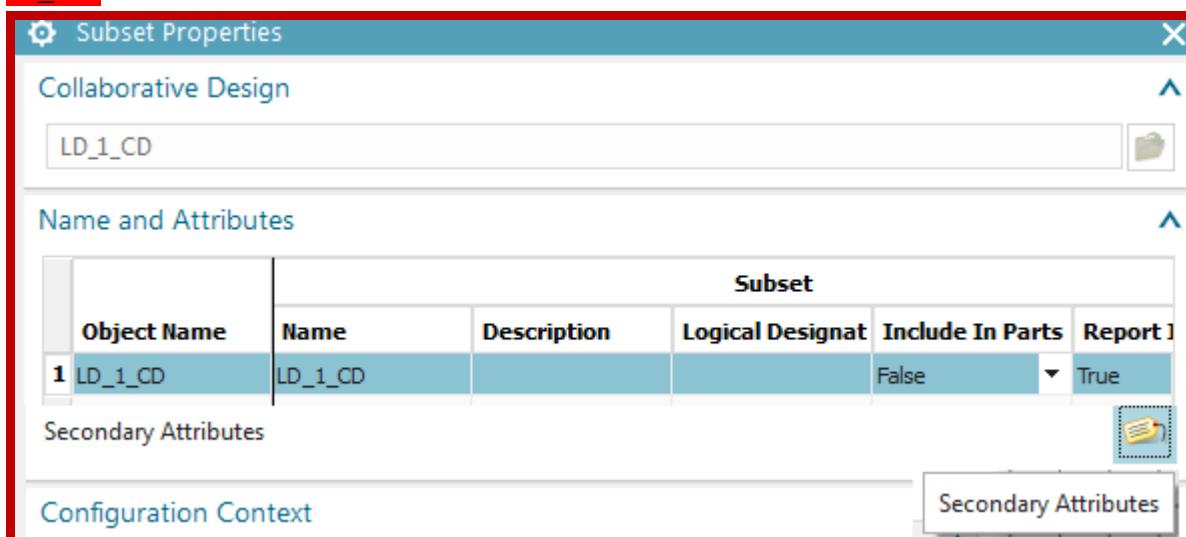


04_06

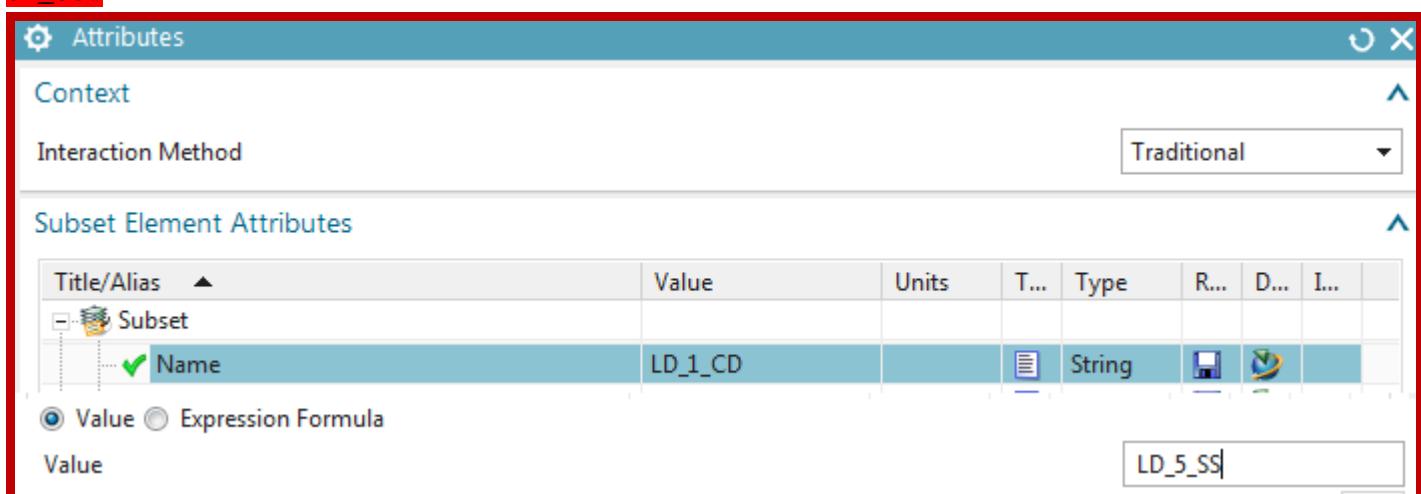
04_06b



04_06c

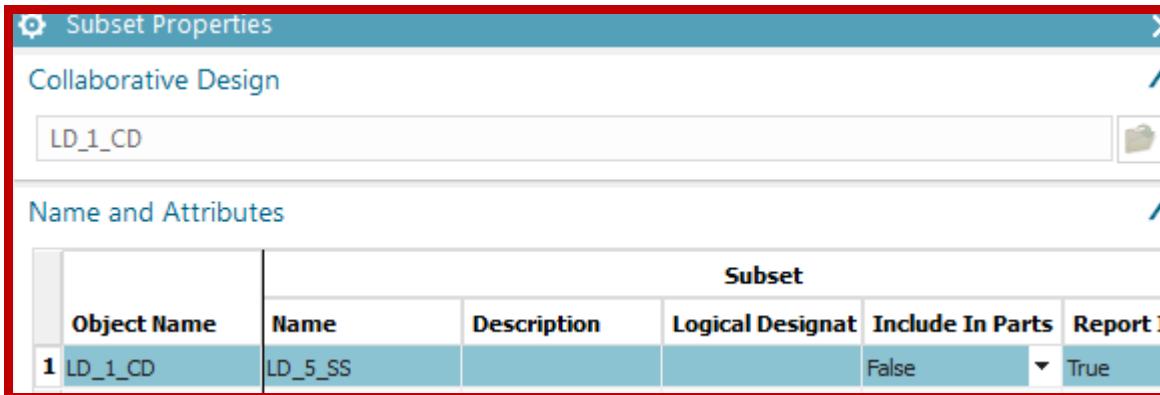


04_06d



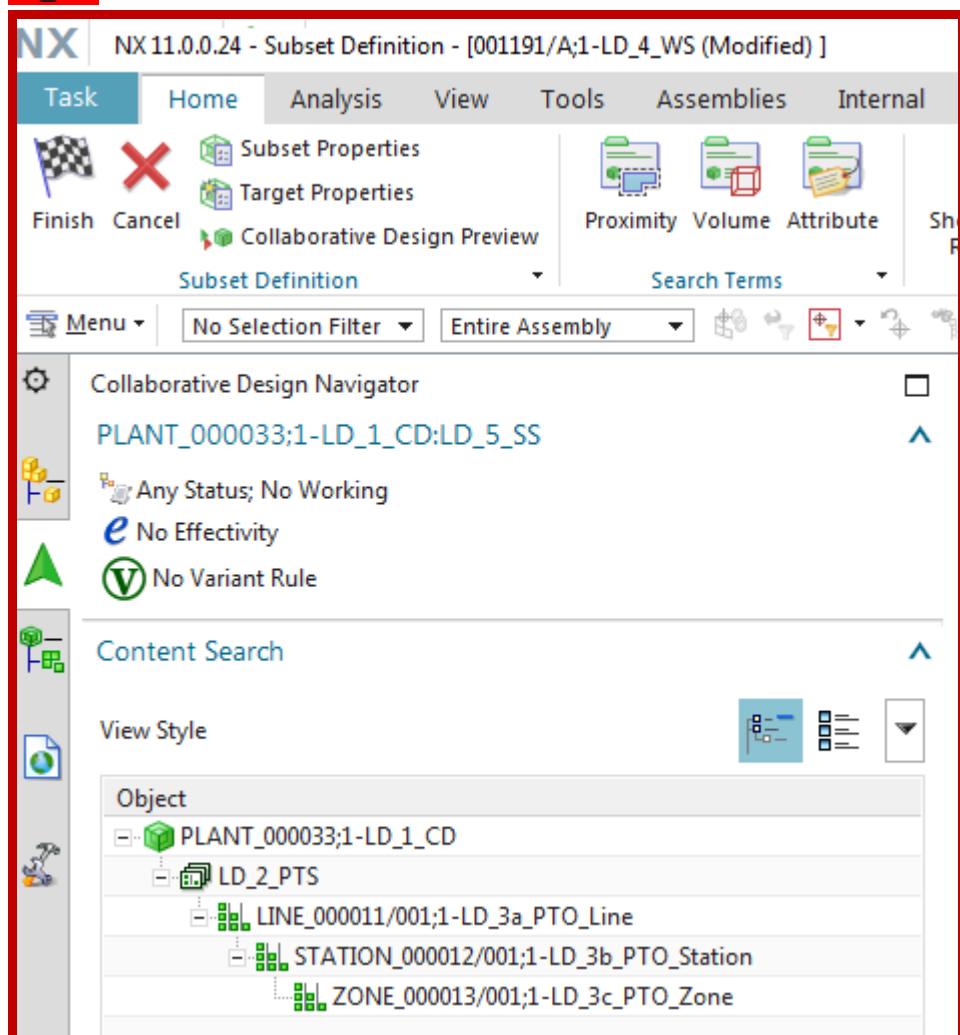
Click apply. Click ok.

04_06e



Click OK

04_06f



Collaborative Design Navigator

PLANT_000305;1-20151021b_LD_1_CD:20151021b_LD_5_SS

04_07

TERRY: below is result if I change the LD SS (subset) name manually. 20151023 I did not do this, and the SS name is the CD name (very confusing.. see pic at end of this page).

Note: If you don't change the name, then the subset name will be "LD_1_CD".

5. Click Home / Finish. The new workset is shown in the gateway.

NX 11.0.0.17 - Gateway - [004771/A;1-20151021b_LD_4_WS (Modified)]

Assembly Navigator	
Object	Number
Sections	
004771/A;1-20151021b_LD_4_WS (Order: Chronological)	004771
20151021b_LD_5_SS	20151021b_LD_5_SS

04_08

The above is with changed name.. below without

Sections	
-	<input checked="" type="checkbox"/> 004815/A;1-20151023_LD_4_WS (Order: Chronological)
	<input checked="" type="checkbox"/> 20151023_LD_CD

04_09

20160415

NX 11.0.0.27 - Gateway - [000330/A;1-LD_4_WS_20160416 (Modified)]

Assembly Navigator		Number	Revision	Info	Name	Source	Type	Description	M	Partition ...
Sections										
-	<input checked="" type="checkbox"/> 000330/A;1-LD_4...	000330	A		LD_4_WS_20160416	000330/A;1-LD_4_WS_20160416	Workset	000330		
	<input checked="" type="checkbox"/> LD_1_SS_201604...	LD_1_SS_20160415			LD_1_SS_20160415		Subset			Not Set

20160425

Assembly Navigator		Number	Revision	Info	Name	Source	Type	Description	M	Partition ...	Effectivity
Sections											
-	<input checked="" type="checkbox"/> 000421/A;1-LD_4_WS_20160425 (Or...	000421	A		LD_4_WS_...	000421/A;...	Workset	000421			
	<input checked="" type="checkbox"/> LD_1_SS_20160425	LD_1_SS_20160425			LD_1_SS_2...		Subset			Not Set	

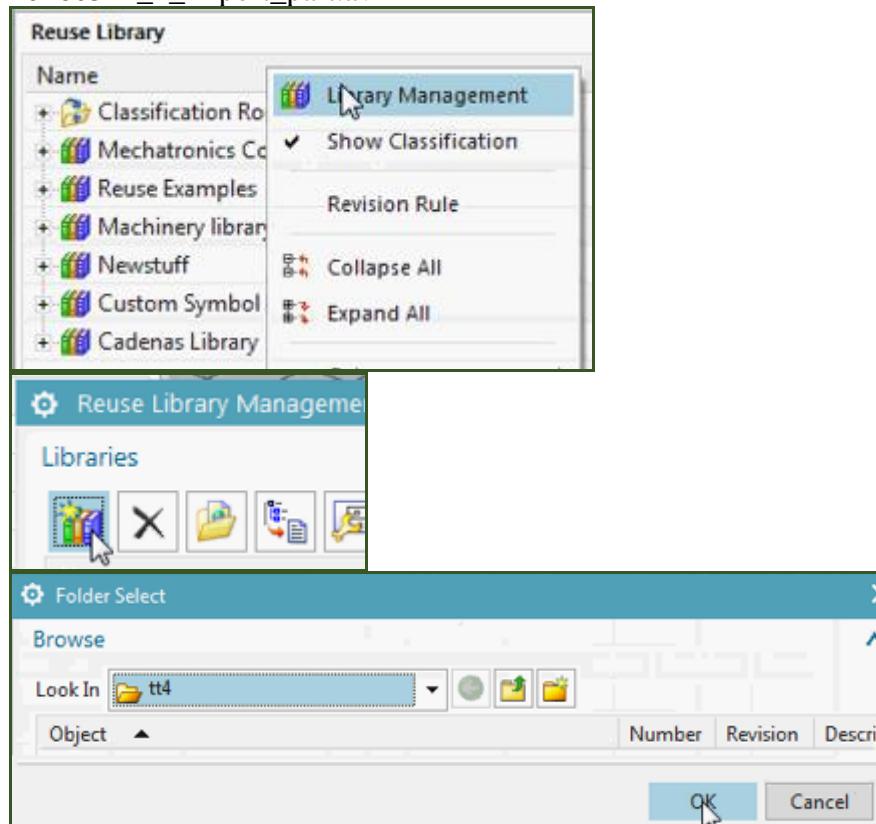
\$\$\$1/5 1.3. import roof parts (IF NOT IN RL) 20160323

1.3.1. Add dir to reuse library

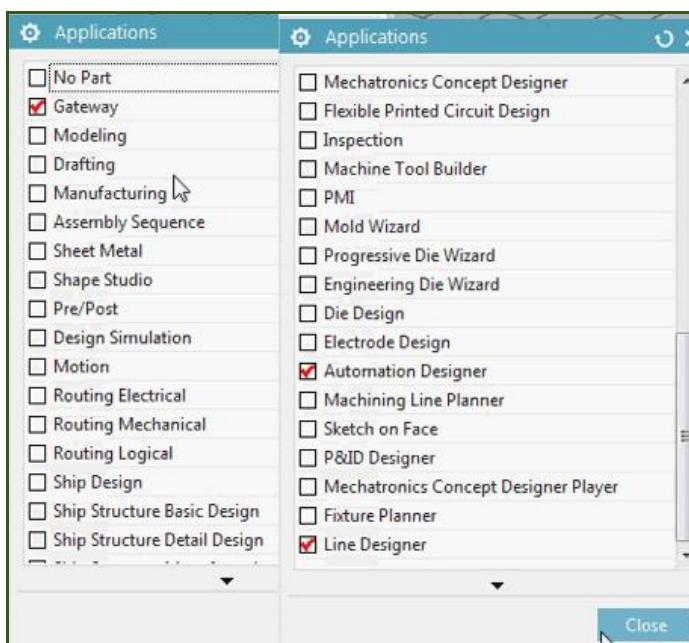
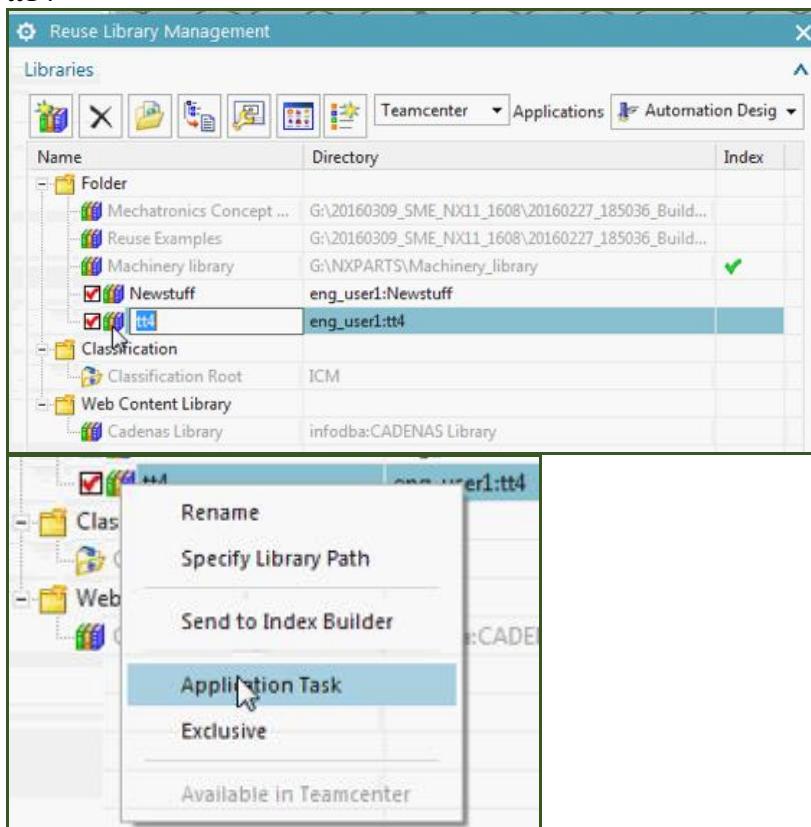
20160315_1_add_to_reuse_lib.avi

20160316_1_create_rl_dir_and_import_parts.avi

20160321_1_import_part.avi



tt14



1.3.2. Import (roof into TC) (GW) ????

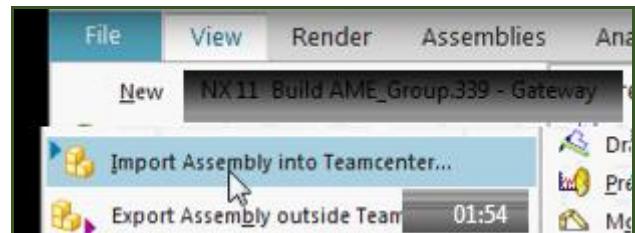
20160316_1_create_rl_dir_and_import_parts.avi

20160321_1_import_part.avi

000270_A_1_bg_5088234_a1a_jt.prt

Basically doing what was already assumed in ch4... parts in the reuse library.

Into reuse library.



20160415

Import Assembly into Teamcenter

Default Settings

Item Type: Part

Use Type from Part file

Name and Attribute Conversion

Numbering Source: OS Filename

Conversion Rule: With Prefix

Prefix: 20160415_

Default Name: \${DB_PART_NAME}

Default Description: \${DB_PART_DESC}

Components

Include Component Parts

Include Dependent Parts

Find Components: From Folder

Parts to Import

Select Assemblies or Parts

Select Log File to Set Up Import

Import from Folder

Adds selected assemblies or parts to the import operation.

Secondary Attributes

Import Assembly into Teamcenter

Suchen in: (F) Elements

Name	Änderungsdatum	Typ
000270_A_1_bg_5088234_a1a_jt.prt	18.08.2015 14:05	PRT-D

Dateiname: 000270_A_1_bg_5088234_a1a_jt.prt

Dateityp: Part Files (*.prt)

OK

Abbrechen

Import Assembly into Teamcenter

Default Settings

Item Type: Part

Use Type from Part file

Name and Attribute Conversion

Numbering Source: OS Filename

Name and Attributes for Parts to Import

Object Name	ID	Name
1 000270_A_1_bg_5088234_a1a_jt.prt	20160415_0002...	20160415_000270_A_1_bg_5088234_a1a_jt

=====
TEAMCENTER INTEGRATION IMPORT LOG
Date - Fri Apr 15 11:45:50 2016
=====

Default Parameters

&LOG Operation_Type: IMPORT_OPERATION
&LOG Default_Cloning_Action: USE_EXISTING
&LOG Default_Naming_Technique: OSFILE_NAME Default_Name_Rule_Type: APPEND_PREFIX Append_String: 20160415_
&LOG Default_Container: ":Newstuff"
&LOG Default_Use_Type_From_Part_File: No
&LOG Default_Part_Type: "Part"
&LOG Default_Part_Name: "\${DB_PART_NAME}"
&LOG Default_Part_Description: "\${DB_PART_DESC}"
&LOG Default_Associated_Files_Directory: ""
&LOG Default_DB_Owner: eng_user1 "Automation & Electrical Design Default Group"
&LOG Default_Validation_Mode: OFF

Part Specific Information

&LOG
&LOG Part: "F:\000270_A_1_bg_5088234_a1a_jt.prt"
&LOG Cloning_Action: DEFAULT_DISP
&LOG Naming_Technique: USER_NAME Clone_Name: @DB/20160415_000270_A_1_bg_5088234_a1a_jt/A
&LOG Container: ":Newstuff"
&LOG Part_Type: "Part"
&LOG Part_Name: 20160415_000270_A_1_bg_5088234_a1a_jt
&LOG Part_Description: 20160415_000270_A_1_bg_5088234_a1a_jt
&LOG Associated_Files_Directory: ""
&LOG

Forgot destination folder... do it agin.

Name and Attributes for Parts to Import

The screenshot shows a software interface for managing file associations. At the top, there's a table with columns: Object Name, Part Action, Item Type, Relation Type, Destination Fold, Associated Files Dir, and Valid. A row is selected with the object name '1 000270_A_1_bg...' and the destination fold set to 'master'. A modal dialog box titled 'Edit' is open over the table, specifically for the 'Destination Fold' field. The modal has a title bar with 'Edit', a help icon, and a close icon. It contains a label 'Destination Folder' and a text input field containing ':Newstuff'. Below the input field is a small folder icon. At the bottom of the modal are three buttons: 'OK', 'Apply', and 'Cancel'.

Information

```
=====
TEAMCENTER INTEGRATION IMPORT LOG
Date - Fri Apr 15 11:50:36 2016
=====

-----
Default Parameters
-----
&LOG Operation_Type: IMPORT_OPERATION
&LOG Default_Cloning_Action: USE_EXISTING
&LOG Default_Naming_Technique: OSFILE_NAME Default_Name_Rule_Type: APPEND_PREFIX Append_String: 26
&LOG Default_Container: ":Newstuff"
&LOG Default_Use_Type_From_Part_File: No
&LOG Default_Part_Type: "Part"
&LOG Default_Part_Name: "${DB_PART_NAME}"
&LOG Default_Part_Description: "${DB_PART_DESC}"
&LOG Default_Associated_Files_Directory: ""
&LOG Default_DB_Owner: eng_user1 "Automation & Electrical Design Default Group"
&LOG Default_Validation_Mode: OFF

-----
Part Specific Information
-----
&LOG
&LOG Part: "F:\000270_A_1_bg_5088234_a1a_jt.prt"
&LOG Naming_Technique: USER_NAME Clone_Name: @DB/20160415_000270_A_1_bg_5088234_a1a_jt/A
&LOG
```

Reuse Library

Name

- + Classification R
- + Reusable Object
- + eng_user1
 - Fastener Assem

Library Management

Show Classification

Revision Rule

Reuse Library Management

Libraries

Add Library

Folder Select

Browse

Look In Home

Object ▲

- Mailbox
- My Saved Searches

Create New Folder

Folder Select

Browse

Look In **Home**

Object

20160415_TT

Reuse Library Management

Libraries

Teamcenter Applications

Name	Directory
- Folder	
Reusable Object Library ...	F:\20160408_SME_NX11_1612_S54_Patch1\20160403_101027_Bui...
Fastener Assembly Config...	C:\Users\Z003H4JX\AppData\Local\Siemens\NX110
<input checked="" type="checkbox"/> eng_user1	eng_user1
<input checked="" type="checkbox"/> 20160415_TT	eng_user1:20160415_TT
- Classification	
Classification Root	ICM
- Web Content Library	
CADENAS Library	infodba:CADENAS Library
- Favorites	
Saved Search	C:\Users\Z003H4JX\AppData\Local\Temp

NX 11.0.0.27 - Gateway - [000330/A;1-LD_4_WS_20160416 (Modified)]

Reuse Library

Name

- + Classification Root
- + Reusable Object Library (Example Only)
- + eng_user1
- 20160415_TT**

Reuse Library Management

Libraries

Name	Directo...
- Folder	
Reusable Object Library ...	F:\20160408_SME_NX11_1612_S54_Patch1\20160403_101027_Bui...
Fastener Assembly Config...	C:\User...
<input checked="" type="checkbox"/> eng_user1	eng_us...
<input checked="" type="checkbox"/> 20160415_TT	eng_user1:20160415_TT
- Clas...	
- Web...	
- Fav...	

Rename

Specify Library Path

Application Task

Exclusive

Applications

No Part

Gateway

Automation Designer

Line Designer

Cant find part there.. so just use here.....

Reuse Library

Name
+ Classification Root
+ Reusable Object Library (Example Only)
- eng_user1
Mailbox
My Saved Searches
Newstuff
Automation Designer

Member Select

Object	Standard
20160415_000270_A_1_bg_5088234_a1a_jt	Part

Test ... switch to LD...

NX NX 11.0.0.27 - Line Designer - [000330/A;1-LD_4_WS_20160416 (Modified)]

Plant Navigator

Name	Revision	Descriptive Part Name
LD_4_WS_20160416	A	000330/A;1-LD_4_WS_20160416

Reuse Library

Name
- eng_user1
Mailbox
My Saved Searches
Newstuff
+ Automation Designer
UFT--1982884784
UFT--1985829376

Member Select

Object	Standard	Rev...
20160415_000270_A_1_bg_5088234_a1a_jt	Part	A

20160415:

YES!!!!!!

Assembly Navigator

Object	Number	Revision	Info	Name
Sections				
- 000330/A;1-LD_4...	000330	A		LD_4_WS_20160416
- LD_1_SS_201604...	LD_1_SS_20160415			LD_1_SS_20160415
- 20160415_000270...	20160415_000270_A_1_bg_50...	A		20160415_000270_A_1_bg_5088...

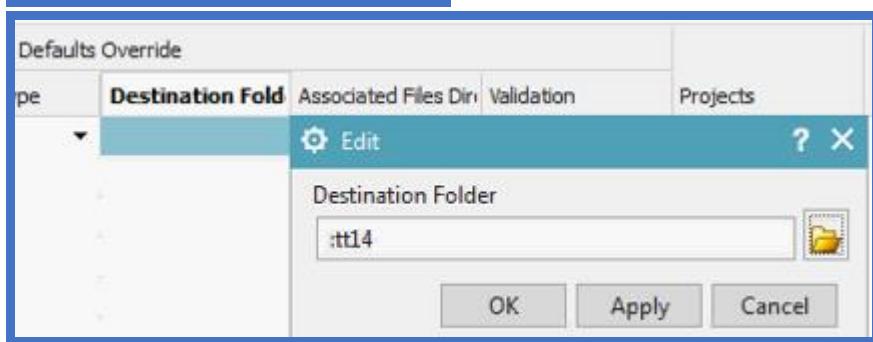
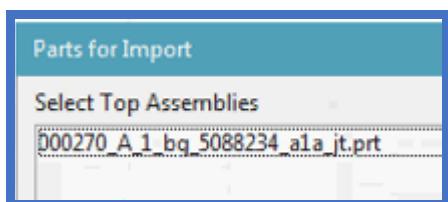
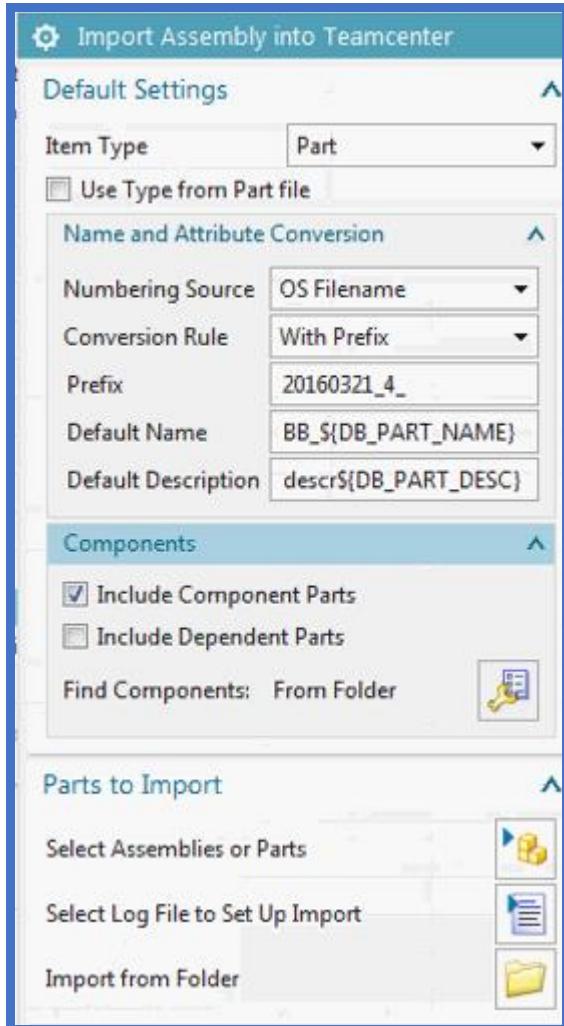
20160418

NX NX 11.0.0.27 - Gateway - [000355/A;1-LD_4_WS_20160418 (Modified)]

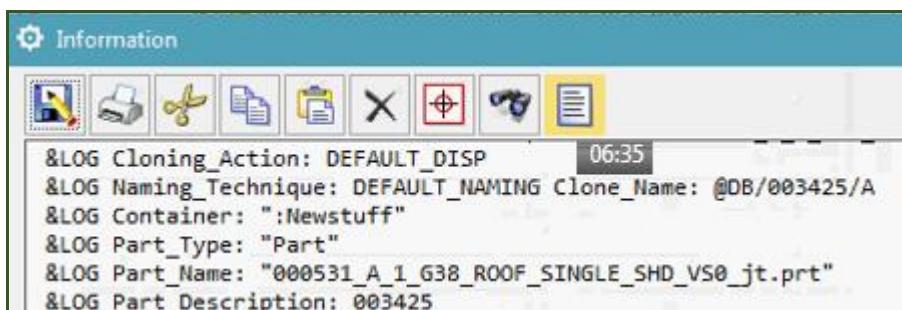
Assembly Navigator

Object	Number	Revision	Info	Name	Source	Type	Description	M	Partition ...	Effectivity
Sections										
- 000355/A;1-LD_4_WS_20160418 (Order: Chronological)	000355	A		LD_4_WS_20160418	000355/A;1-LD_4_WS_20160418	Workset	000355			
- LD_1_CD_20160415ss	LD_1_CD_20160415ss			LD_1_CD_20160415ss		Subset				
- 20160415_000270_A_1_bg_5088234_a1a_jt/A1 x 4	20160415_000270_A_1_bg_5088234_a1a_jt/A1 x 4			20160415_000270_A_1_bg_5088234_a1a_jt/A1 x 4	20160415_000270_A_1_bg_5088234_a1a_jt/A1 x 4	Part	20160415_000270_A_1_bg_5088234_a1a_jt/A1 x 4			

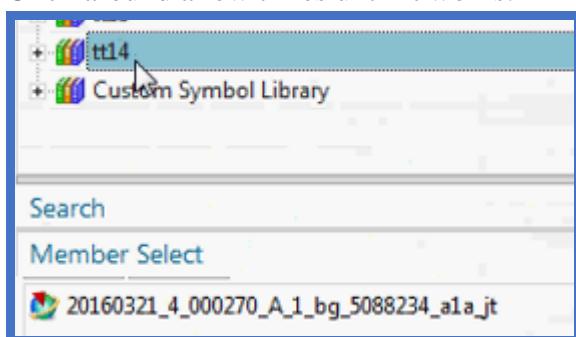
20160415 continue



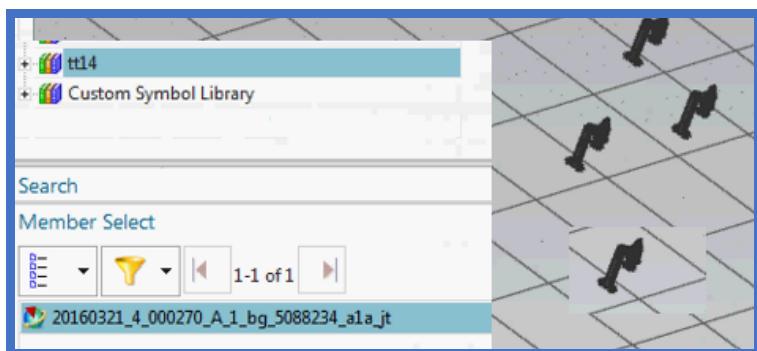
Object Name	Part			Part Revision	Information		
	ID	Name	Revision	Part State	Reason for Inclusion	Teamcenter Inform	
1 000270_A_1_bg...	20160321_4_00...	20160321_4_00...	A				?
Defaults Override							
	Existing Part Action	Item Type	Relation Type	Destination Fold	Associated Files Dir	Validation	Projects
	Default	Part	master	:tt14		Default	



Click around a few times until it works.



1.3.3. Test: Add 4



4.4. Add 2 LD conveyors 20160428

NX NX 11.0.0.27 - Line Designer

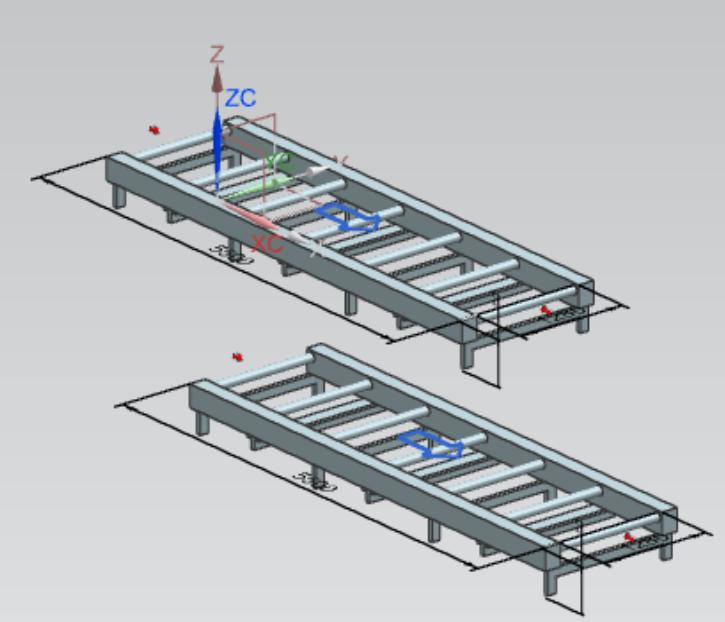
Reuse Library

Name

- Classification Root
 - + Automation Designer
 - Resource Management
 - Factory Resources [93]
 - Architectural [3]
 - Conveyors [13]
 - Package Conveyors [7] **(selected)**
 - Track Conveyors [6]
 - Industrial [32]
 - Material Handling [8]
 - Robots [3]
 - Space Consumption [2]
 - Weld Guns [30]
 - Workers [2]
 - Fixtures
 - Machines and Devices
 - New Resources [0]
 - Templates
 - + 20160415_TT
 - + Custom Symbol Library

Search

Member Select

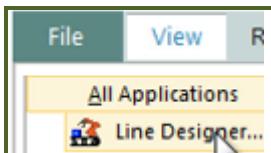
 - 1-7 of 7
 - Palletized Floor Conveyor
 - Palletized Turntable
 - Power Roller Turntable
 - SO Palletized Floor Conveyor
 - Floor Conveyor**
 - Grid Box Conveyor

4.4. Add 2 LD conveyors

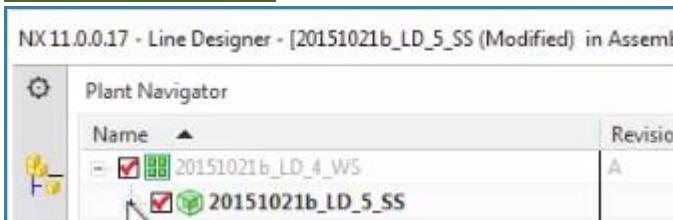
TERRY: add conveyor ... to what partition?



1. Switch to LD.

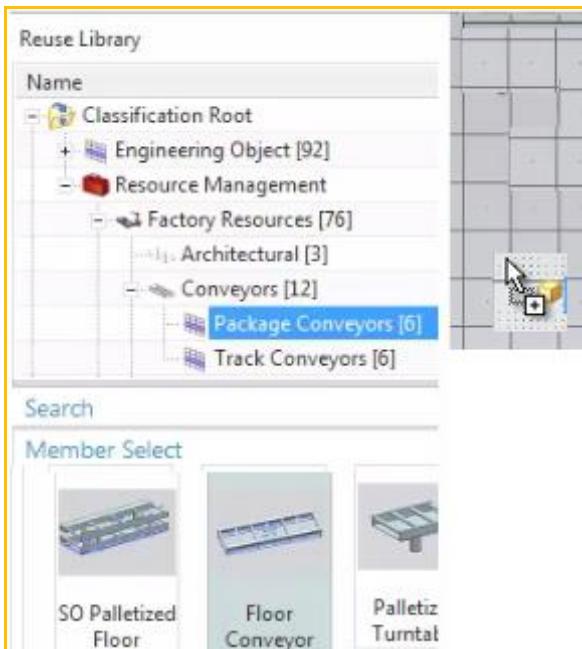


04_10



04_11

2. Add a conveyor.



04_12



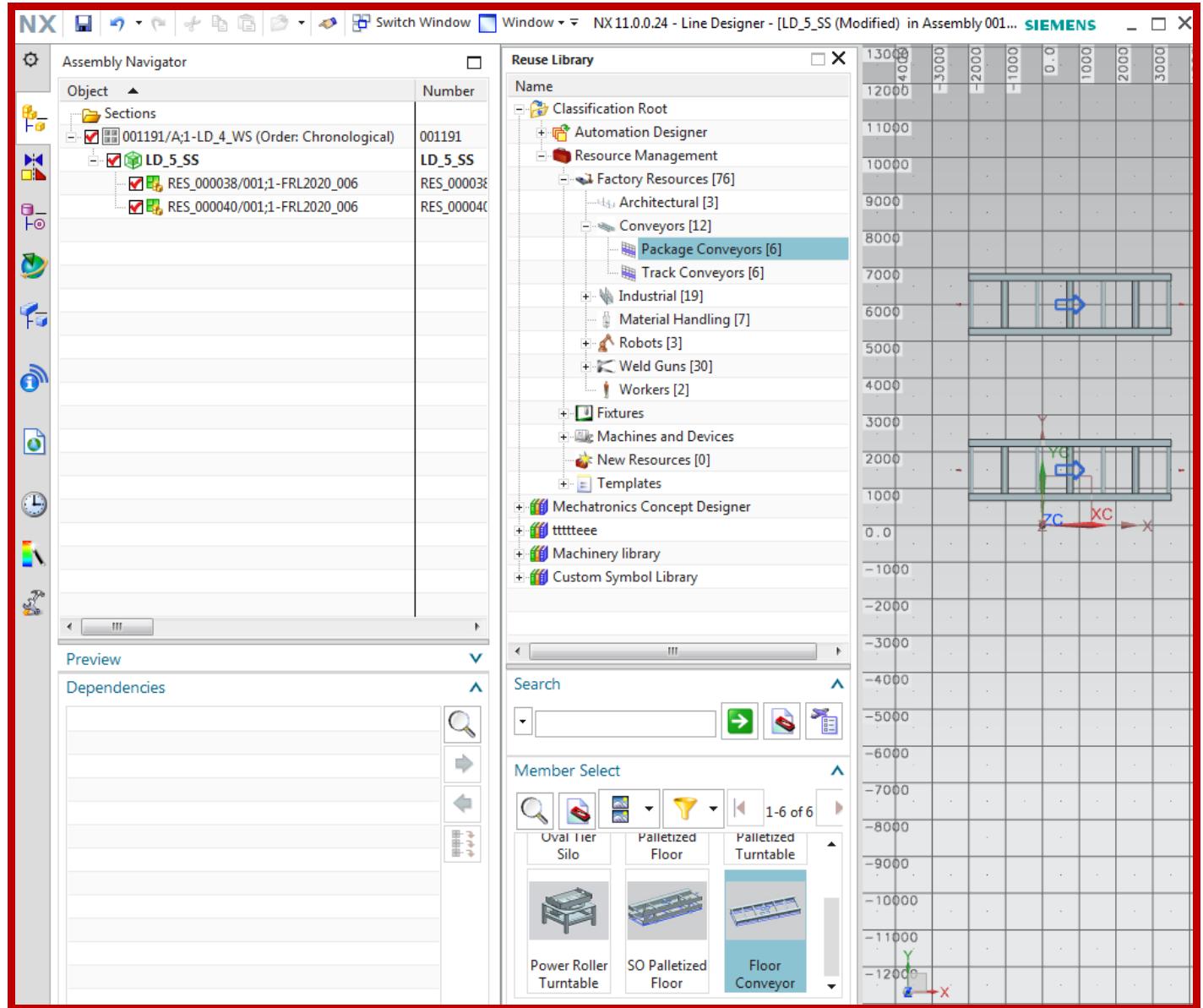
04_13



04_14

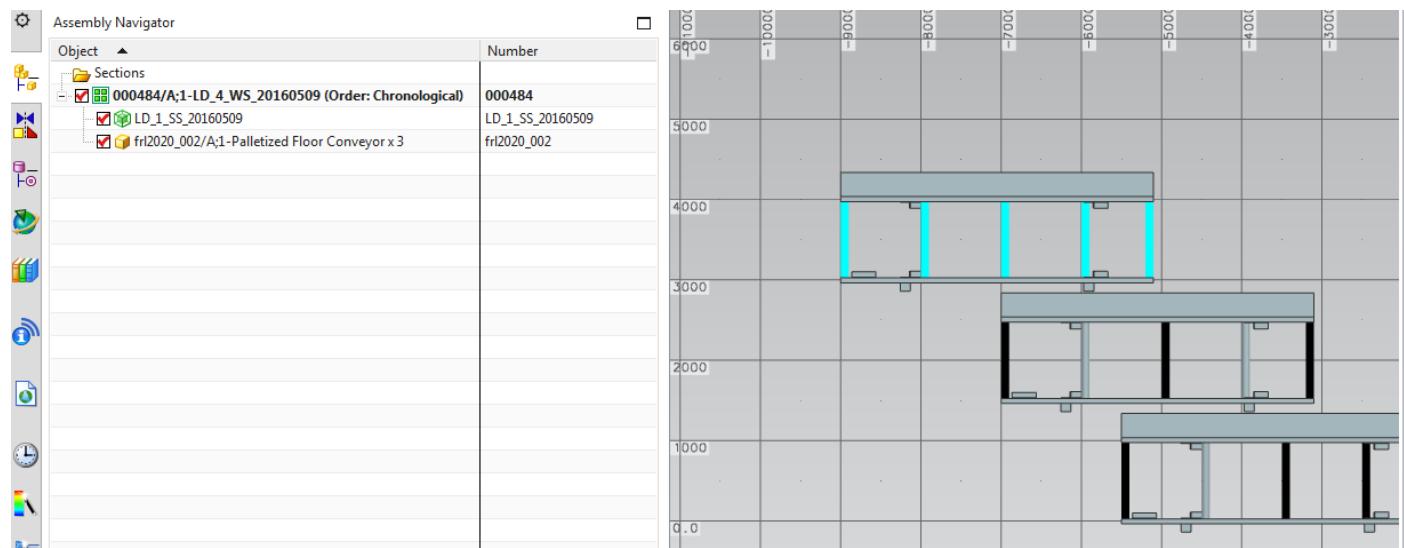
3. Add a second conveyor.

04_14b



Save the project. File/save.

20160509



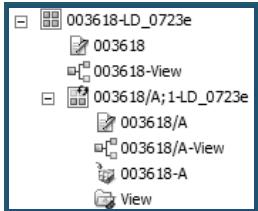
xxx4.5. Result in TC

20160203 TERRY: leave this section out? Display in TC is strange, Andreas says maybe not discuss.

The following shows the resulting structure in TC.

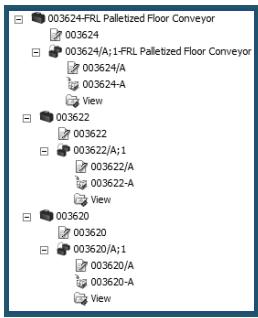
TERRY 20151027: on the left from a while back. On the right from 20151021. What objects should be in TC after adding LD objects? On the right where is Partition scheme? What about LD subset?

4. Workset (project).



5. Subset? (this shown in LD, not TC??)

6. Design elements (conveyors).



5. Create AD workset (and CD, SS) and EO's (20160428)

This chapter includes the following sections:

- 5.1. Workflow overview
- 5.2. Naming rules overview
- 5.3. Create project workset (and CD + subset)
- 5.4. Create EODef's
- 5.5. Create naming rules
- 5.6. Add EO's
- 5.7 Location/product aspects

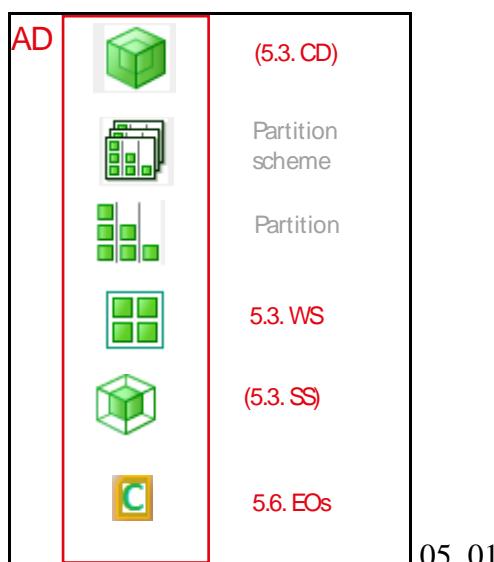
xxx5.8. Result in TC

5.1. Workflow overview

TERRY 20151022: are EO's actually DEs in TC?



The following diagram shows the steps you perform in this chapter in AD.



The following table shows the names you use. Such names make it easier to remember what they represent as you start adding other building blocks to your example.

Section	Type	name
*(5.3)	AD CD	AD_1_CD_4_WS_5_SS
	AD partition scheme ?	
	AD partition ?	
5.3	AD workset	AD_1_CD_4_WS_5_SS
*(5.3)	AD subset	AD_1_CD_4_WS_5_SS
5.6		(EOs)

* AD CD and subset are autocreated when you create AD workset/project. Collaborative designs are prepared in Teamcenter by project administrators, AD generates one when you create a workset. Users are assigned tasks through *worksets*. A workset is conceptually similar to a user sandbox. It allows you to check out local copies of subsets and assemblies and then make updates. Only one user at a time can check out a workset and changes are not shared with other users until they are checked in. TERRY:
https://asrdwiki.siemens.com/AD/index.php?title=How_to_Setup_AD_Collaborative_Design

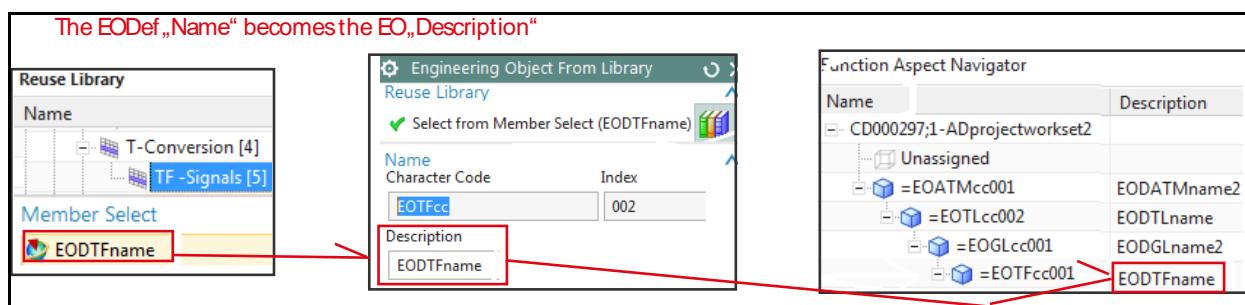
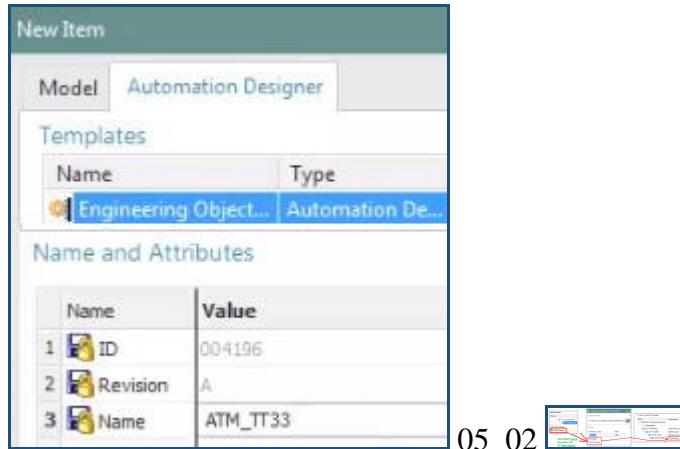
5.2. Naming rules overview

The naming rules determine the default name for an EO. For naming rules you specify:

1. EODef Name (EO Description)
2. Naming Rule "Character Code" (default aspect "Name")
3. Custom Aspect Naming

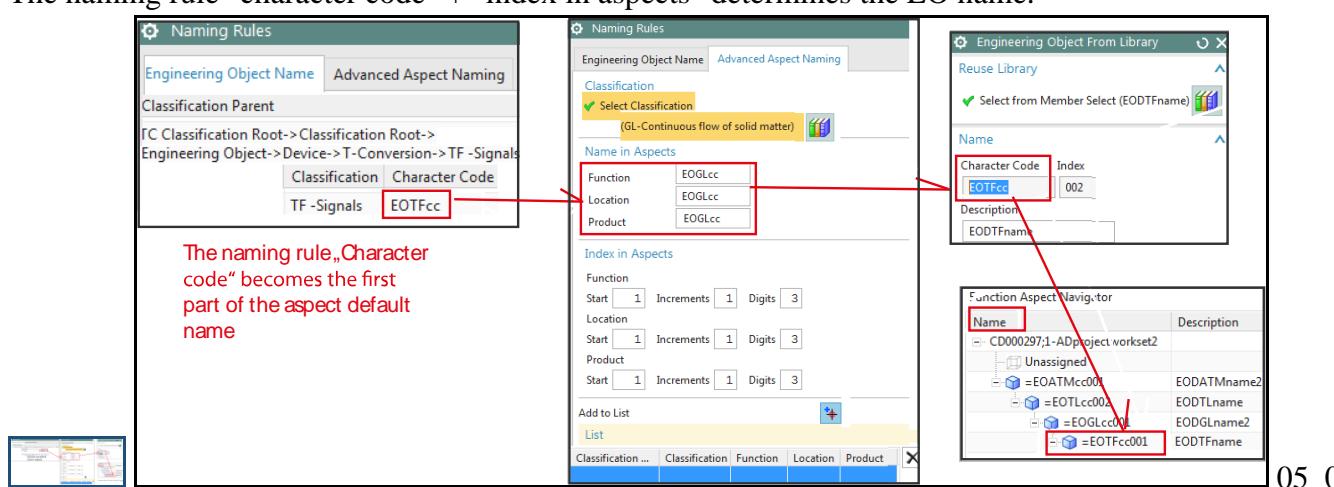
1. EODef Name (EO Description)

You configure the Reuse Library "Name" in 5.4 step 3 (this will be an instantiated EO "Description").



2. Naming Rule "Character Code" (default aspect "Name")

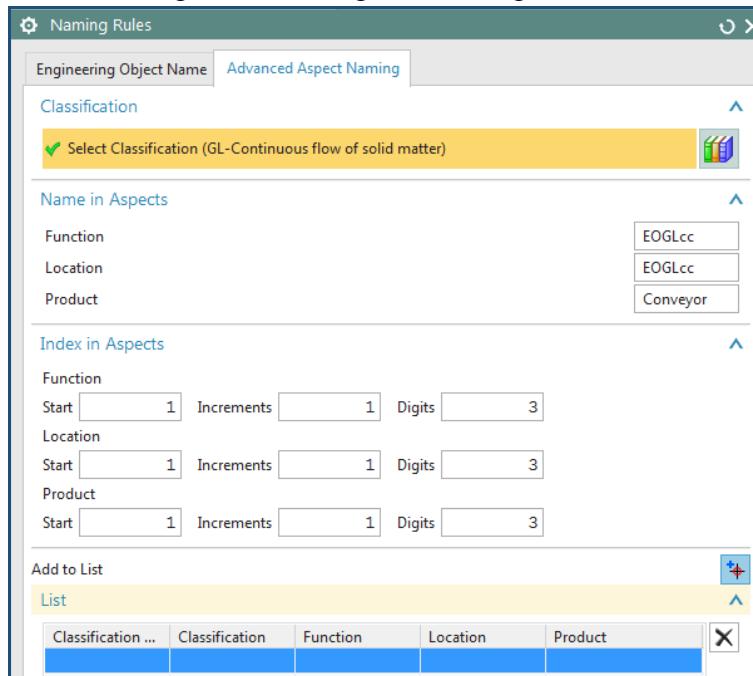
The naming rule "character code" + "index in aspects" determines the EO name.



3. Advanced Aspect Naming

When an EO is created from the Reuse library a default name is proposed by NX and cannot be edited directly. This default name is stored in the Engineering Object definition. In case the default name does not match the designer requirements it is possible to create specific naming rules associated to the Engineering Object classification. Purchasers understand descriptive product names, not the IEC standard. You need to configure naming to change the name within the Product Aspect.

The following is the naming rules dialog:



05_05

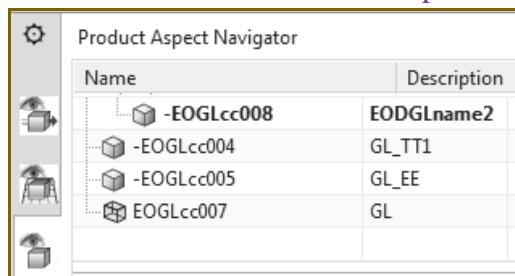
List				
Classification Parent				
TC Classification Root->Classification Root->Engineering Object->Device->G-Generator->GL-Continuous flow of solid matter				
Classification	Function	Location	Product	
GL-Continuous flow of solid matter	=EOGLcc001 +1	+EOGLcc001 +1	-Conveyor001 +1	

05_06

In 5.5 you create rules for the following.

EO type	Classification	Name in aspects / Product
Conveyor	Device -> Generator -> Continuous flow of solid Materials	Conveyor
Sensors	Device -> Measurement -> Gauge, position, length	Sensor
Motor	Device -> Motor -> Electromagnetic	Motor
G120D Power Module	Device -> Conversion -> Signals	Drive_Power
G120D Control Module	Device -> Processing -> Electrical Signals	Drive_Controller

TERRY 1 20151028: custom aspect naming rule error? not work for me.



05_07

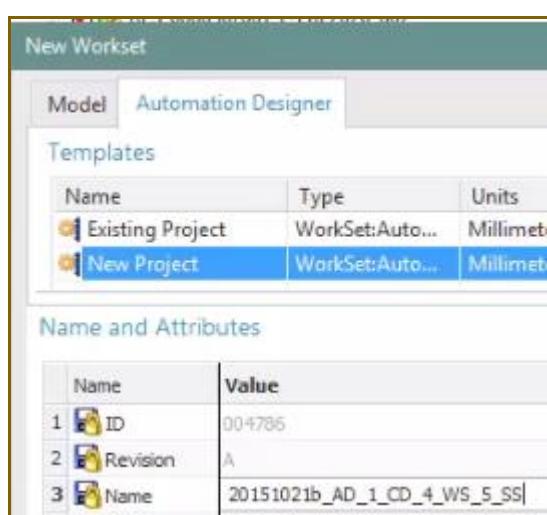
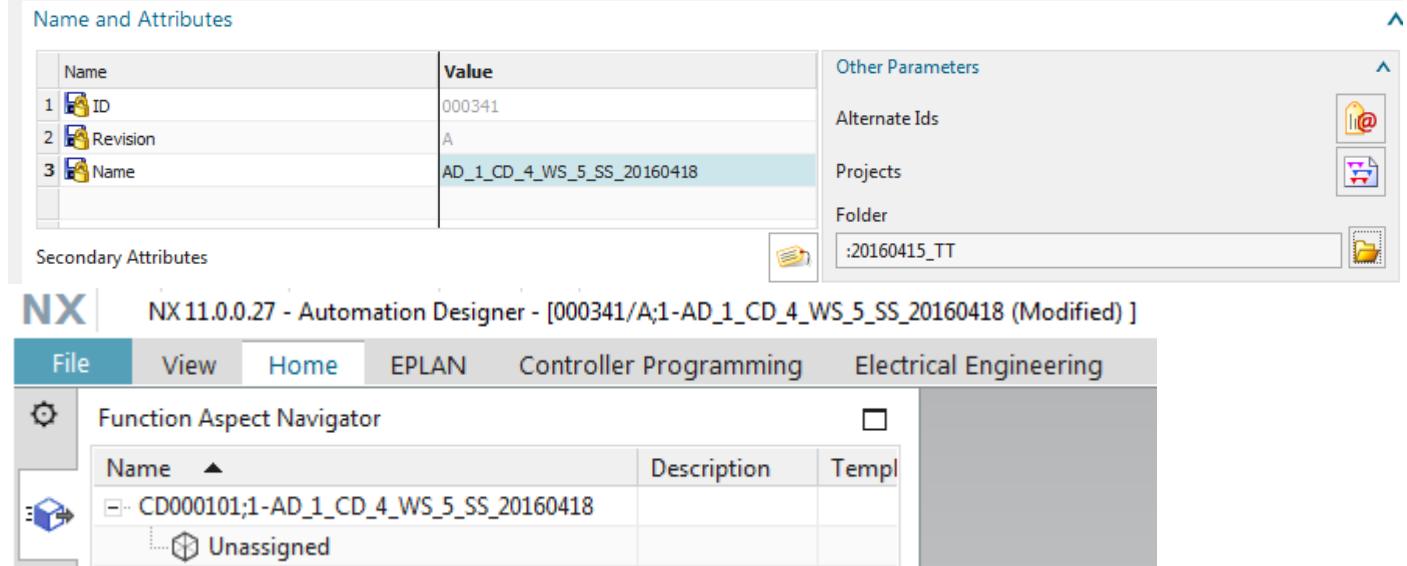
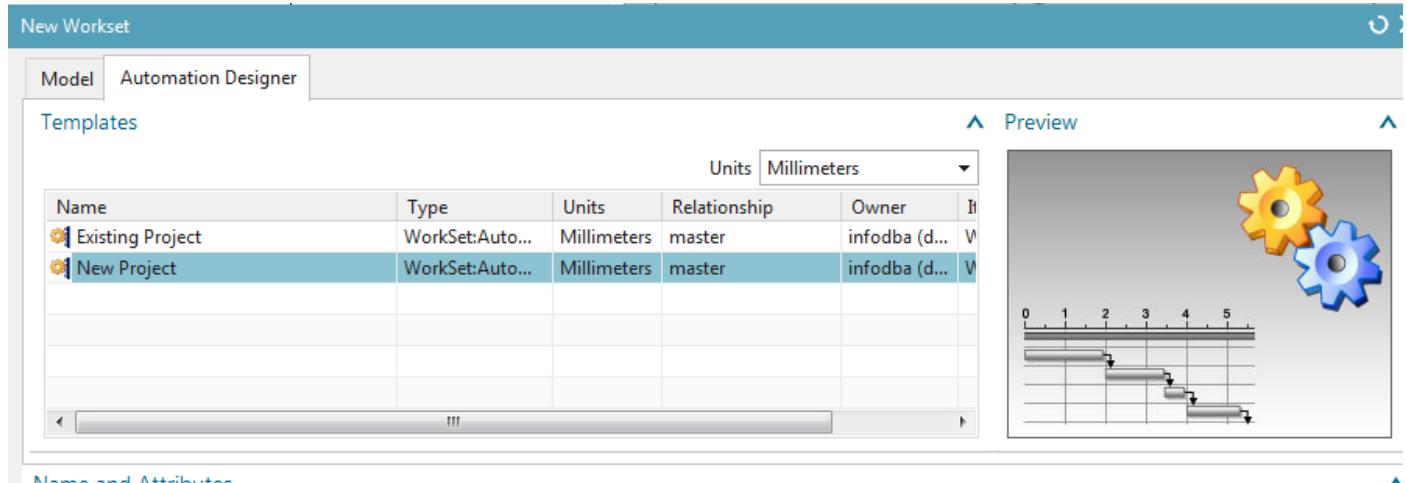
5.3. Create project workset (and CD + subset)

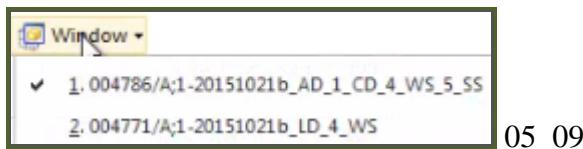
Open the AD WS.

2. Select "File / New / Workset".

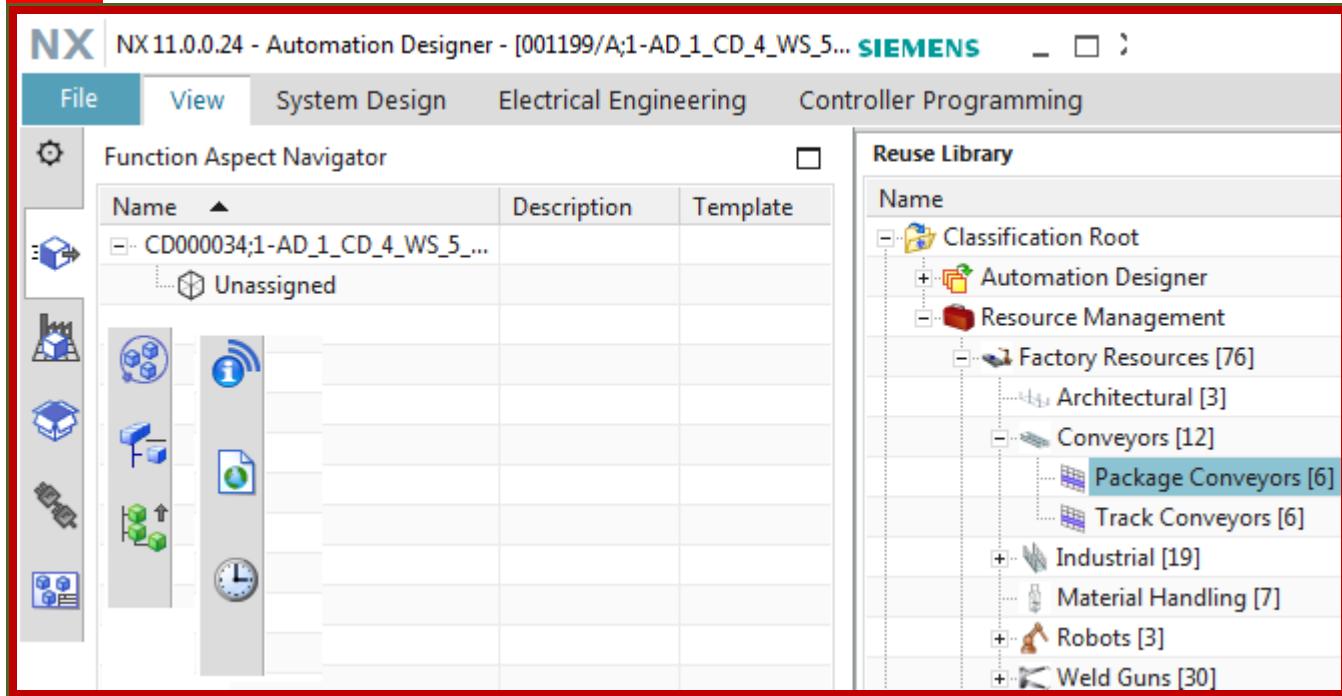
3. In tab "Automation Designer" select "New Project".

4. Create a new AD project with name "**AD_1_CD_4_WS_5_SS**".



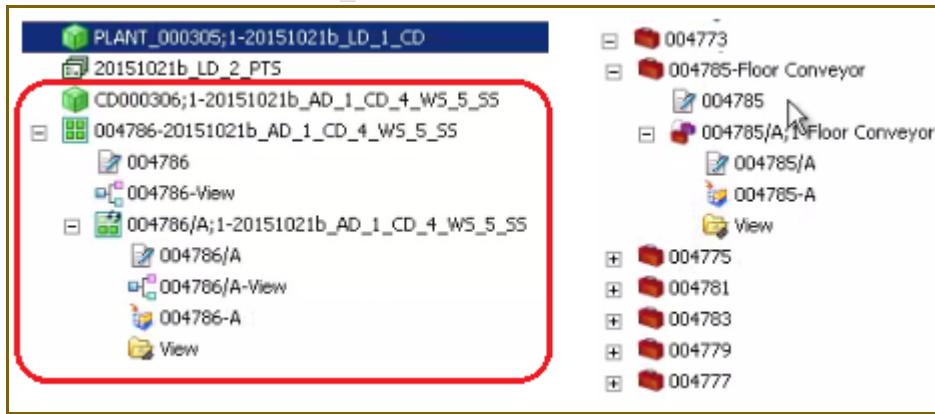


05_09b



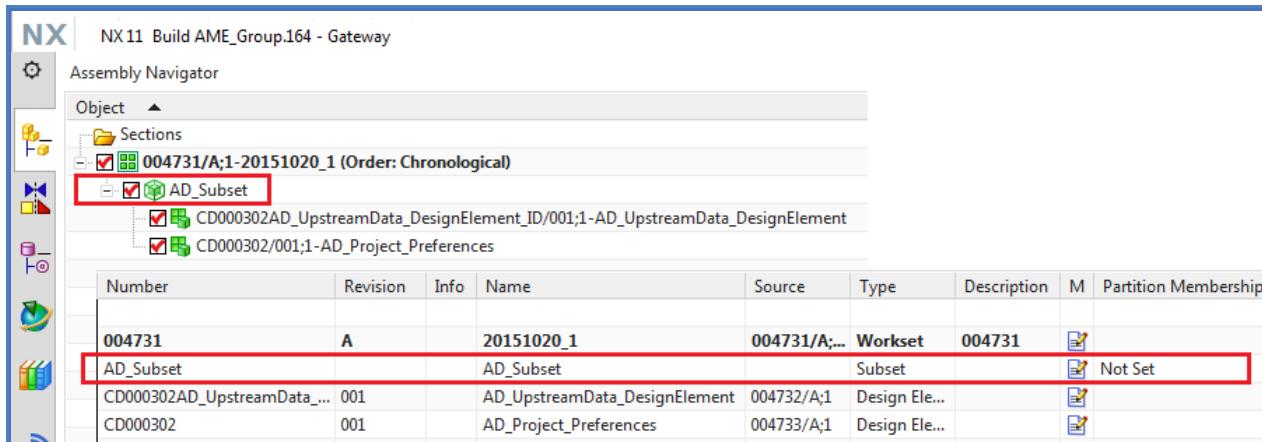
Look at results TC: Note that when you created workset you also created CD.

TERRY : where is the AD_subset in TC?



05_10xxxxx

Open the AD workset in the Gateway Assembly Navigator to see the subset.



05_11

05_11b

NX NX 11.0.0.24 - Gateway - [001199/A;1-AD_1_CD_4_WS_5_SS_b (Modif... SIEMENS - □ X

Assembly Navigator

Object ▲

Sections

- 001199/A;1-AD_1_CD_4_WS_5_SS_b (Order: Chronological)

- AD_Subset

- CD000034AD_UpstreamData_DesignElement_ID/001;1-AD_UpstreamData_DesignElement

- CD000034/001;1-AD_Project_Preferences

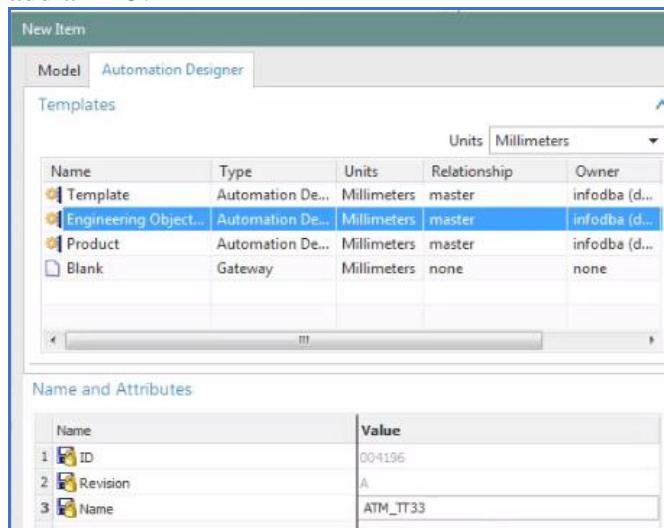
Source	Type	Description	M	Partition Membership	Effectivity	Quan...	Projects	Source St...
001199/A;1-AD_1_CD_4_WS_5_SS_b	Workset	001199						
	Subset			Not Set				
001200/A;1	Design Element							
001201/A;1	Design Element							

5.4. Create EODef's

In AD

Create the first EODef.

1. Select "File / New Item".
2. In tab "Automation Designer" select "Engineering Object Definition".
3. Enter the name "**EODATMname**". This will be locked after you set it. This is the "description" when you add an EO.



05_12

4. Click OK.

5. In the "Type" dialog select "Device / A ->1 purpose or task / AT".

Name	Value
1 Automation item	
2 Character Code	20160418

20160509_error.....

Classification Class

Name
AH-Information and ...
AJ-Information and s...
AK-Information and ...
AL-Process, mechani...
AM-Process, mecha...
AN-Process, mechan...
AQ-Process, mechan...
AR-Process, mechan...
AS-Process, mechan...
AT-Process, mechan...

Properties

Name	Value
1 Automation item	
2 Character Code	
3 Control voltage ...	
4 Control voltage ...	
5 Control voltage	

Properties

 Input string out of range.

Type

Name
Aspectnode
Connector
Device
A->1 purpose or task
AA-Electrical energy 1
AT-Process, mechan...

05_13

6. Click OK.

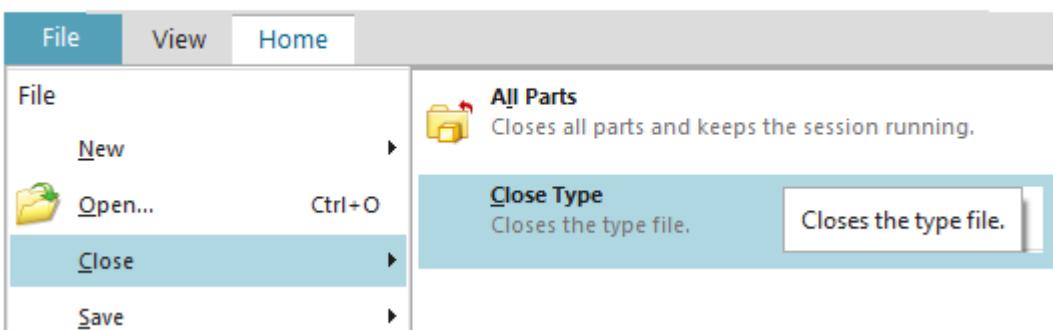
05_13b

NX 11.0.0.24 - Automation Designer - [001202/A;1-EODATMname_20160301 (Modified)]

File View Engineering Object Definition

Properties Label Aspects Manage Type Port Expressions Product Matching Rules Structure Manager Product

7. Select "File / Close / Close **Engineering Object** Definition". Click "Yes - Save and Exit".



20160418

8. Verify that the EODef is in the Reuse Library.

Reuse Library

Name

- Classification Root
 - Engineering Object [67]
 - Aspectnode [0]
 - + Connector [0]
 - Device [32]
 - A->1 purpose or task [5]
 - AA-Electrical energy1 [0]
 - AD_Electrical energy 2 [0]
 - + AT-Process, mechanical and civil 7 [5]
 - All Process, mechanical and civil 0 [0]

Member Select

ATM_TT

05_14

File View Home EPLAN Controller Programming Electrical Engineering

Reuse Library

Name
+ eng_user1
20160415_TT
+ Custom Symbol Library

Member Select

EODATMname

20160418

05_14b

Reuse Library

Name

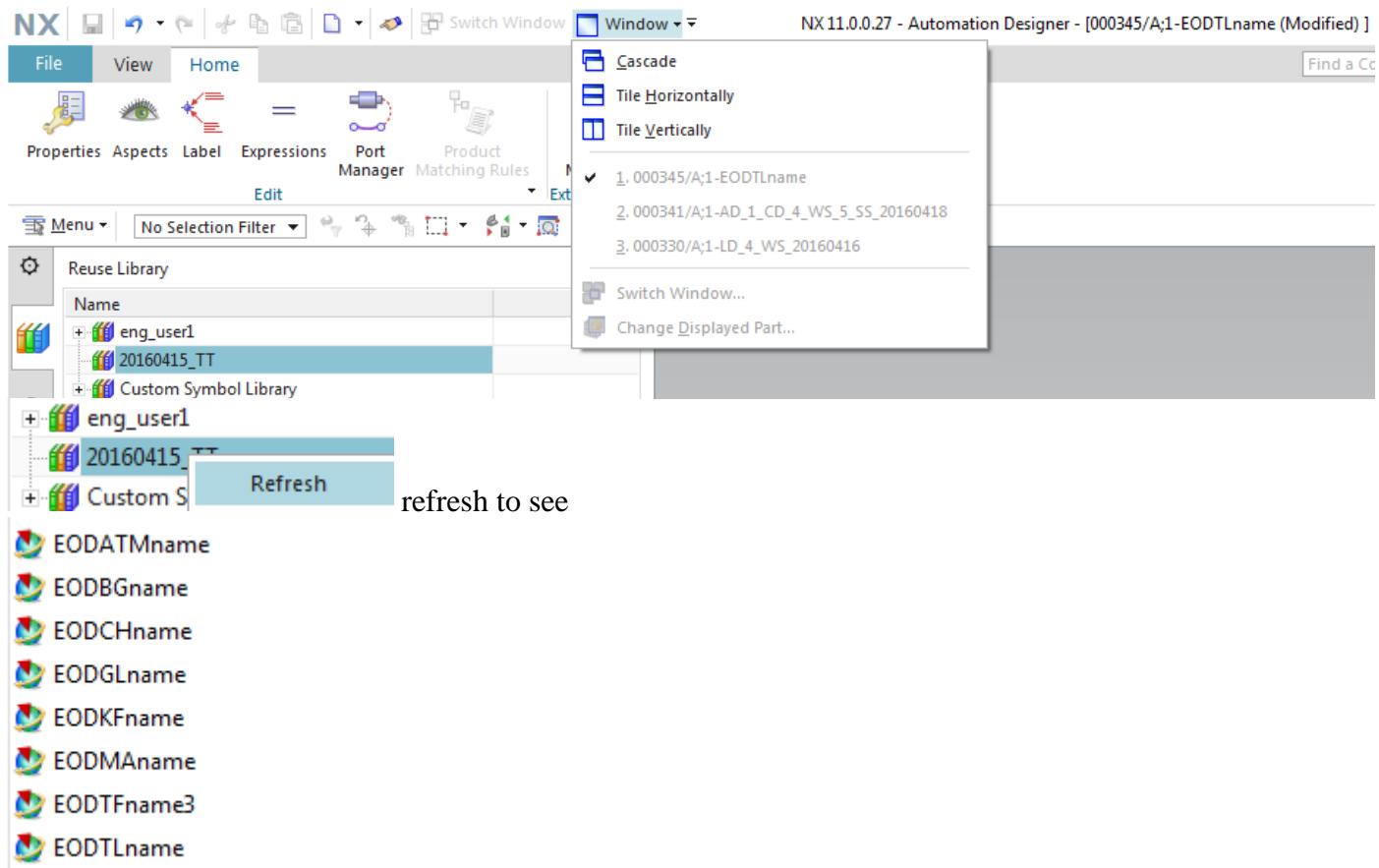
-	Classification Root
-	Automation Designer
-	Product Library [0]
+	Device [0]
-	Solution Library [1]
-	Type Library [190]
-	Device [159]
-	A- >1 purpose or task [25]
-	AT-Process, mechanical and civil 7 [1]

Member Select

 EODATMname_20160301 AT-Process, mechanical and civil 7

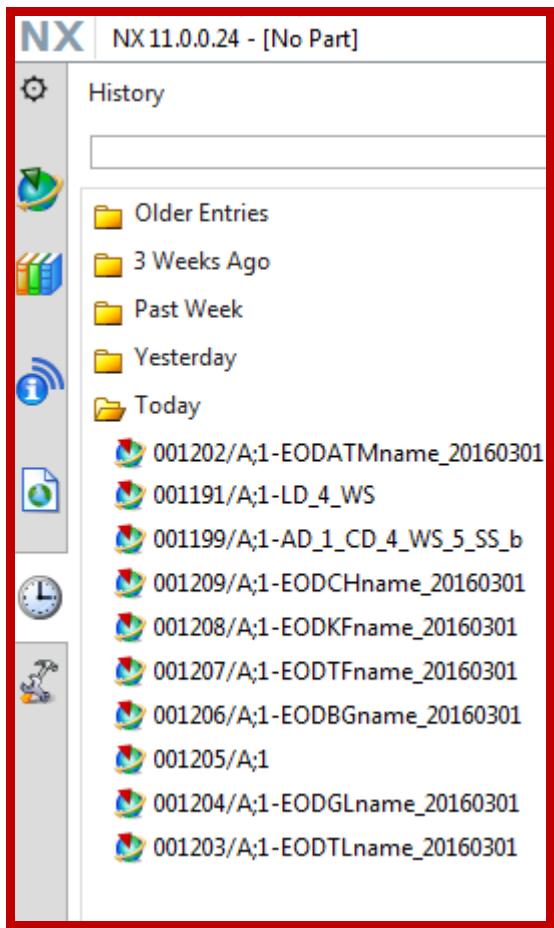
9. Create the remaining EODefs listed in the table below. Note: To avoid closing each part individually, leave all parts open after creating, then after creating all parts switch to gateway and close all parts.

20160418 TERRY ERROR: window is greyed out... cant switch to others.... New? Just create and then close each.

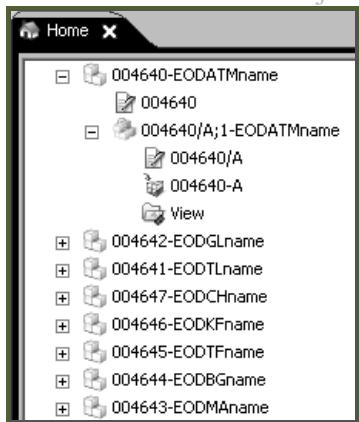


EODef	Classification Root
1. EODATMname (created above)	Device / A ->1 purpose or task / AT
2. EODTLname x	Device / U-Keep
3. EODGLname x	Device / G-Generator / GL-Continuous flow
4. EODMAname x	Device / M-Motor / MA-Electromagnetic
5. EODBGname x	Device / B-Measurement / BG-Gauge,position
6. EODTFname 3	Device / T-Conversion / TF-Signals
7. EODKFname x	Device / K-Processing / KF-Electrical signals
8. EODCHname x	Devicefunction / Electrical / Input/output

05_14c



xxxxNote the EODef objects in TC.



5.5. Create naming rules and add EO's 20160428

Engineering object name

Character code	Classification parent
1. EOATMcc (created above)	Device / A ->1 purpose or task / AT
2. EOTLcc x	Device / U-Keep
3. EOGLcc x	Device / G-Generator / GL-Continuous flow
4. EOMAcc x	Device / M-Motor / MA-Electromagnetic
5. EOBGcc x	Device / B-Measurement / BG-Gauge.position
6. EOTFcc x	Device / T-Conversion / TF-Signals
7. EOKFcc x	Device / K-Processing / KF-Electrical signals
8. EOCHcc	Devicefunction / Electrical / Input/output

Naming Rules

Engineering Object Name Advanced Aspect Naming

Add to List

List

Classification Class Parent	Classification Class	Character Code
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->A-Two or more purposes or tasks->AT-Process, mechanical and civil 7	AT-Process, mechanical and civil 7	EOATMcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->U-Keep	U-Keep	EOTLccc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->G-Generator->GL-Continuous flow of solid matter	GL-Continuous flow of solid matter	EOGLcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->M-Motor->MA-Electromagnetic	MA-Electromagnetic	EOMAcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->B-Measurement->BG-Gauge, position, length	BG-Gauge, position, length	EOBGcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->K-Processing->KF-Electrical signals	KF-Electrical signals	EOKFcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Devicefunction->Electrical->Input/output	Input/output	EOCHcc

Classification Class Parent	Classification Class	Character Code
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->A-Two or more purposes or tasks->AT-Process, mechanical and civil 7	AT-Process, mechanical and civil 7	EOATMcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->U-Keep	U-Keep	EOTLccc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->G-Generator->GL-Continuous flow of solid matter	GL-Continuous flow of solid matter	EOGLcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->M-Motor->MA-Electromagnetic	MA-Electromagnetic	EOMAcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->B-Measurement->BG-Gauge, position, length	BG-Gauge, position, length	EOBGcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->K-Processing->KF-Electrical signals	KF-Electrical signals	EOKFcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Devicefunction->Electrical->Input/output	Input/output	EOCHcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->T-Conversion->TF-Signals	TF-Signals	EOTFcc

Advanced aspect naming

Naming Rules

Engineering Object Name Advanced Aspect Naming

Classification

✓ Select Classification Class (GL-Continuous flow of solid matter)

Name in Aspects

Function	Conveyor_F
Location	Conveyor_L
Product	Conveyor_P

Index in Aspects

Function	Start 1 Increments 1 Digits 3
Location	Start 1 Increments 1 Digits 3
Product	Start 1 Increments 1 Digits 3

Add to List

List

Classification Class Parent	Classification Class	Function	Location	Product
TC Classification Root->Classifi...	AT-Process, mechanical an...	=ATM_F001 +1	+ATM_L001 +1	-ATM_P001 +1
TC Classification Root->Classifi...	U-Keep	=TL_F001 +1	+TL_L001 +1	-TL_P001 +1

EO type	Classification	Name in aspects / Product
ATM		ATM
TL		TL
Conveyor	Device -> G Generator -> GL Continuous flow of solid Materials	Conveyor
Sensors	Device -> B Measurement -> BG Gauge, position, length	Sensor
Motor	Device -> M Motor -> MA Electromagnetic	Motor
G120D Power Module	Device -> T Conversion -> TF Signals	Drive_Power
G120D Control Module	Device -> K Processing -> KF Electrical Signals	Drive_Controller

Naming Rules

Engineering Object Name Advanced Aspect Naming

Add to List

List

Classification Class Parent	Classification Class	Function	Location	Product
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->A-Two or more purposes or tasks->AT-Process, mechanical and civil 7	AT-Process, mechanical and civil 7	=ATM_F001 +1	+ATM_L001 +1	-ATM_P001 +1
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->U-Keep	U-Keep	=TL_F001 +1	+TL_L001 +1	-TL_P001 +1
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->G-Generator->GL-Continuous flow of solid matter	GL-Continuous flow of solid matter	=Conveyor_F001 +1	+Conveyor_L001 +1	-Conveyor_P001 +1
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->B-Measurement->BG-Gauge, position, length	BG-Gauge, position, length	=Sensor_F001 +1	+Sensor_L001 +1	-Sensor_P001 +1
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->M-Motor->MA-Electromagnetic	MA-Electromagnetic	=Motor_F001 +1	+Motor_L001 +1	-Motor_P001 +1
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->T-Conversion->TF-Signals	TF-Signals	=Drive_Power_F001 +1	+Drive_Power_L001 +1	-Drive_Power_P001 +1
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->K-Processing->KF-Electrical signals	KF-Electrical signals	=Drive_Controller_F001 +1	+Drive_Controller_L001 +1	-Drive_Controller_P001 +1

This time does not work again 😊



Function Aspect Navigator

Name	Description
- CD000124;1-AD_1_CD_4_WS_5_SS_20160...	
- EOATMcc 001	000344
- EOTLCcc001	000345
- EOGLcc002	000346
- EOMAcc001	000347
- EOBGcc001	000348
- EOTFcc001	000351
- EOKFcc001	000352
- EOCHcc001	000353

5.5. Create naming rules

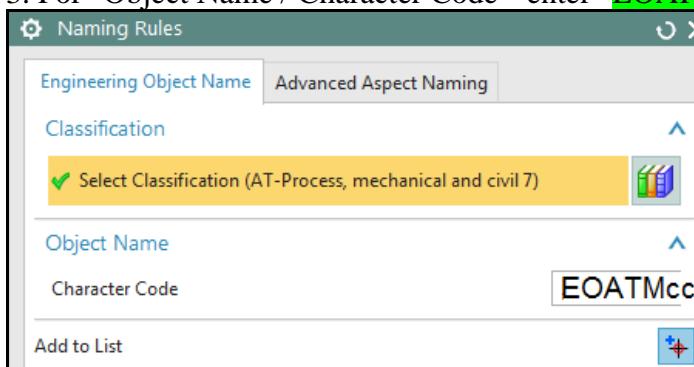
This section describes how to

5.5.1. Create EO Name (character code) list

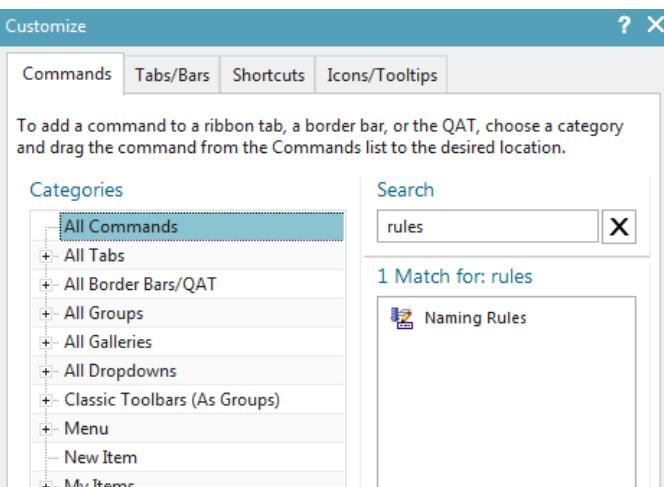
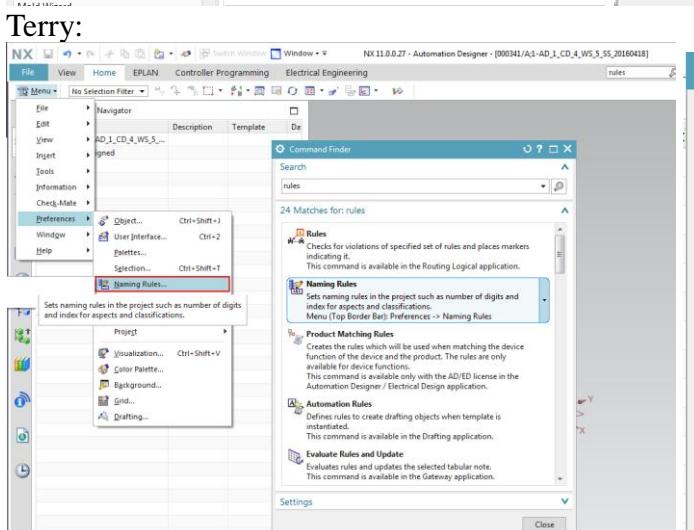
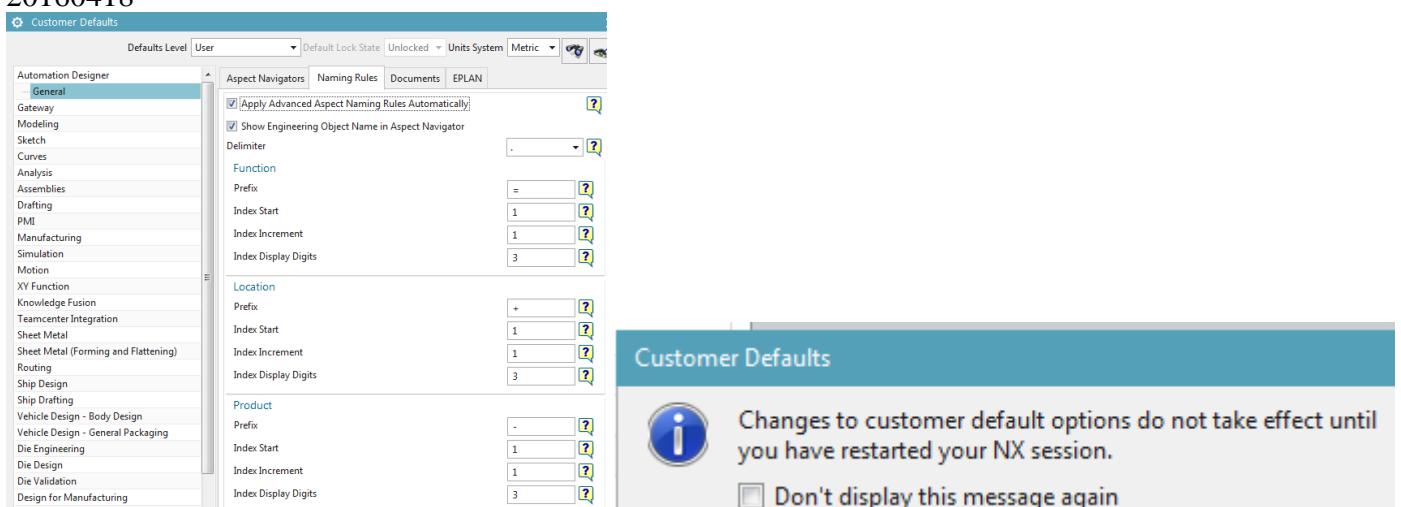
To create the first naming rule:

0. Open the AD CD.

1. Select "System Design / Naming rules".
2. Select for "Classification Parent" in the classification root " Device / A ->1 purpose or task / AT ".
3. For "Object Name / Character Code " enter "**EOATMcc**". This is the "name" when you add EO.



20160418



Reuse Library Management

Reuse Library

Applications

Automation Designer

Classification Class Parent

Classification Class Parent	Classification Class	Character Code
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->A-Two or more purposes or tasks->AT-Process, mechanical and civil 7	AT-Process, mechanical and civil 7	EOATMcc

List

Classification Class Parent	Classification Class	Character Code
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->A-Two or more purposes or tasks->AT-Process, mechanical and civil 7	AT-Process, mechanical and civil 7	EOATMcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->U-Keep	U-Keep	EOTLcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->G-Generator->GL-Continuous flow of solid matter	GL-Continuous flow of solid matter	EOGLcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->M-Motor->MA-Electromagnetic	MA-Electromagnetic	EOMAcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->B-Measurement->BG-Gauge, position, length	BG-Gauge, position, length	EOBGcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->T-Conversion->TF-Signals	TF-Signals	EOTFcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->K-Processing->KF-Electrical signals	KF-Electrical signals	EOKFcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Devicefunction->Electrical->Input/output	Input/output	EOCHcc

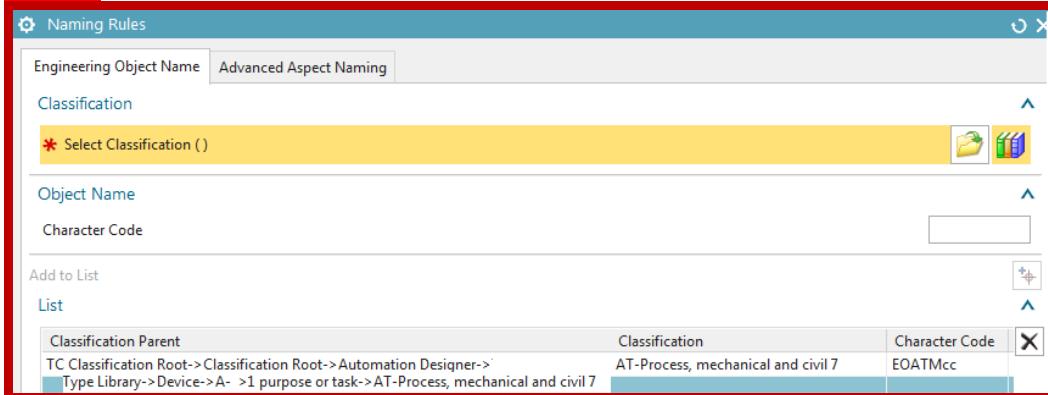
CheckOut

One or more objects were checked out by you. To check them in save the project

Don't display this message again

4. Click "Add to List".

05_15b



5. Create the remaining naming rules listed in the table below.

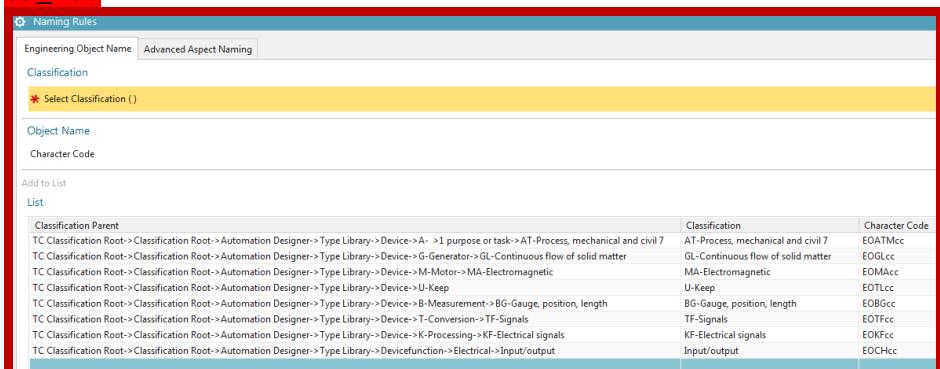
Character code	Classification parent
1. EOATMcc (created above)	Device / A ->1 purpose or task / AT
2. EOTLcc x	Device / U-Keep
3. EOGLcc x	Device / G-Generator / GL-Continuous flow
4. EOMAcc x	Device / M-Motor / MA-Electromagnetic
5. EOBGcc x	Device / B-Measurement / BG-Gauge.position
6. EOTFcc x	Device / T-Conversion / TF-Signals
7. EOKFcc x	Device / K-Processing / KF-Electrical signals
8. EOCHcc	Devicefunction / Electrical / Input/output

Result:

Classification Parent	Classification	Character Code
TC Classification Root->Classification Root->Engineering Object->Device->U-Keep	U-Keep	TL
TC Classification Root->Classification Root->Engineering Object->Device->T-Conversion->TF -Signals	TF -Signals	TF
TC Classification Root->Classification Root->Engineering Object->Device->M-Motor->MA -Electromagnetic	MA -Electromagnetic	MA
TC Classification Root->Classification Root->Engineering Object->Device->K-Processing->KF -Electrical signals	KF -Electrical signals	KF
TC Classification Root->Classification Root->Engineering Object->Device->G-Generator->GL-Continuous flow	GL-Continuous flow	GL
TC Classification Root->Classification Root->Engineering Object->Device->B-Measurement->BG-Gauge.position	BG-Gauge.position	BG
TC Classification Root->Classification Root->Engineering Object->Devicefunction->Electrical->Input/output	Input/output	CH
TC Classification Root->Classification Root->Engineering Object->Device->A->1 purpose or task->AT-Process, mechanical and civil 7	AT-Process, mechanical and civil 7	ATM
TC Classification Root->Classification Root->Engineering Object->Device->G-Generator->GA-Electrical signals	GA-Electrical signals	GA

05_16

05_16b



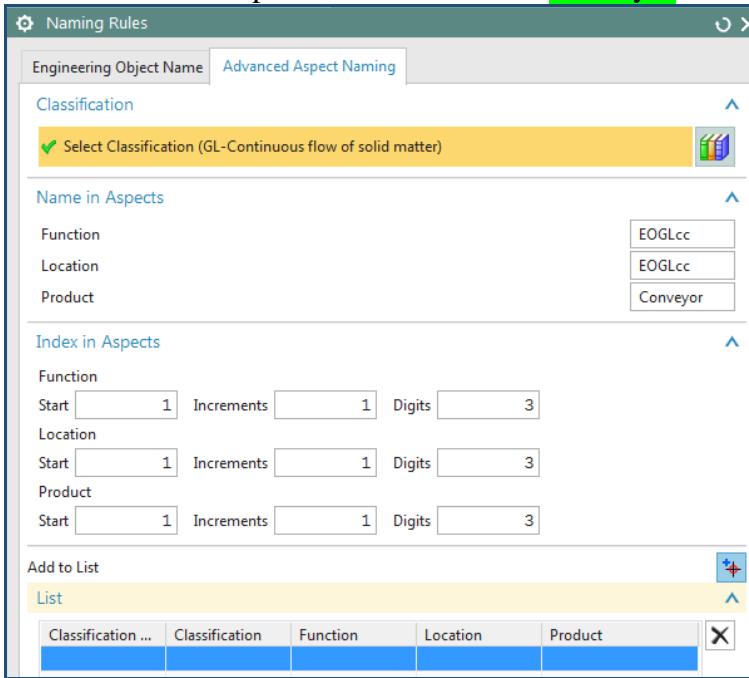
6. Click OK.

6. Click "Apply".

5.5.2. Create Advanced Aspect Naming (20150204)

To create the first rule:

1. Select "System Design / Naming rules / Advanced Aspect Naming".
2. Select for "Classification Parent" in the classification root "Device / A → 1 purpose or task / AT" "Device -> G Generator -> GL Continuous flow of solid Materials".
3. For "Name in Aspects / Product" enter "Conveyor". This is the first part of the "Name" when you add EO.



05_17

20160418

Naming Rules

Engineering Object Name Advanced Aspect Naming

Classification

✓ Select Classification Class (GL-Continuous flow of solid matter) 

Name in Aspects

Function	ConveyorF
Location	ConveyorL
Product	ConveyorP

Index in Aspects

Function	Start 1	Increments 1	Digits 3
Location	Start 1	Increments 1	Digits 3
Product	Start 1	Increments 1	Digits 3

Add to List

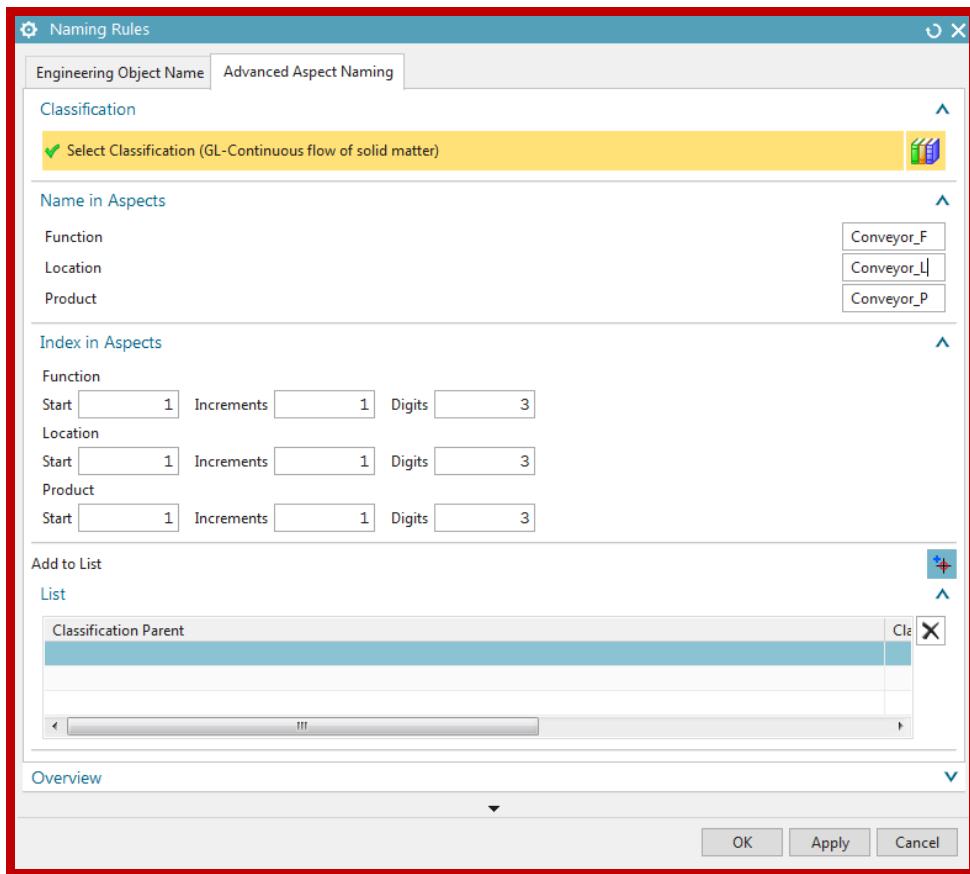
List 

Classification ...	Classification ...	Function	Location	Product	X
					X

List		Classification Class Parent	Classification Class	Function	Location	Product
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->G-Generator->GL-Continuous flow of solid matter		GL-Continuous flow of solid matter	=ConveyorF001 +1	+ConveyorL001 +1	-ConveyorP001 +1	

List		Classification Class Parent	Classification Class	Character Code
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->A-Two or more purposes or tasks->AT-Process, mechanical and civil	7	AT-Process, mechanical and civil	7	EOTMcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->U-Keep		U-Keep		EOTLcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->G-Generator->GL-Continuous flow of solid matter		GL-Continuous flow of solid matter		EOGLcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->M-Motor->MA-Electromagnetic		MA-Electromagnetic		EOMAcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->B-Measurement->BG-Gauge, position, length		BG-Gauge, position, length		EOBGcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->T-Conversion->TF-Signals		TF-Signals		EOTFcc
TC Classification Root->Classification Root->Automation Designer->Product Library->Device->K-Processing->KF-Electrical signals		KF-Electrical signals		EOKFcc
TC Classification Root->Classification Root->Automation Designer->Type Library->Devicefunction->Electrical->Input/output		Input/output		EOCHcc

05_17b



4. Click "Add to List".

List

Classification Parent			
TC Classification Root->Classification Root->Engineering Object->Device->G-Generator->GL-Continuous flow of solid matter			
Classification	Function	Location	Product
GL-Continuous flow of solid matter	=EOGLcc001 +1	+EOGLcc001 +1	-Conveyor001 +1

05_18

05_18b

List

Classification Parent			
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->G-Generator->GL-Continuous flow of solid matter			
Classification	Function	Location	Product
GL-Continuous flow of solid matter	=Conveyor_F001 +1	+Conveyor_L001 +1	-Conveyor_P001 +1

5. Create the remaining advanced aspect naming rules listed in the table below.

EO type	Classification	Name in aspects / Product
Conveyor	Device -> G Generator -> GL Continuous flow of solid Materials	Conveyor
Sensors	Device -> B Measurement -> BG Gauge, position, length	Sensor
Motor	Device -> M Motor -> MA Electromagnetic	Motor
G120D Power Module	Device -> T Conversion -> TF Signals	Drive_Power
G120D Control Module	Device -> K Processing -> KF Electrical Signals	Drive_Controller

[List](#)

Classification Parent

TC Classification Root->Classification Root->Automation Designer->Type Library->Device->G-Generator->GL-Continuous flow of solid matter

TC Classification Root->Classification Root->Automation Designer->Type Library->Device->B-Measurement->BG-Gauge, position, length

TC Classification Root->Classification Root->Automation Designer->Type Library->Device->M-Motor->MA-Electromagnetic

TC Classification Root->Classification Root->Automation Designer->Type Library->Device->T-Conversion->TF-Signals

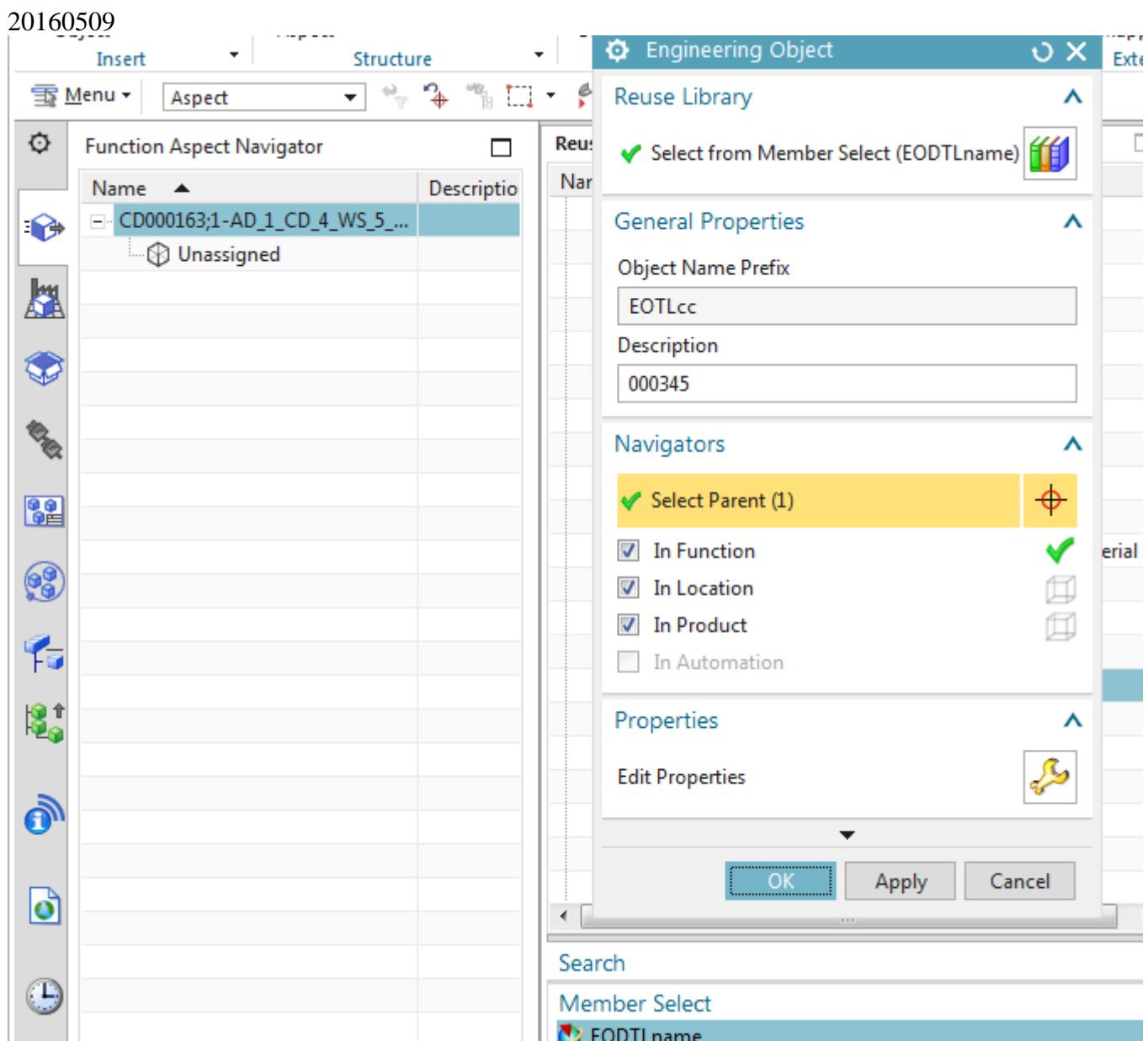
TC Classification Root->Classification Root->Automation Designer->Type Library->Device->K-Processing->KF-Electrical signals

Classification	Function	Location	Product
GL-Continuous flow of solid matter	=Conveyor_F001 +1	+Conveyor_L001 +1	-Conveyor_P001 +1
BG-Gauge, position, length	=EOBGcc001 +1	+Sensor_L001 +1	-Sensor_P001 +1
MA-Electromagnetic	=EOMAcc001 +1	+Motor_L001 +1	-Motor_P001 +1
TF-Signals	=EOTFcc001 +1	+Drive_Power_L 001 +1	-Drive_Power_P001 +1
KF-Electrical signals	=EOKFcc001 +1	+Drive_Controller_L001 +1	-Drive_Controller_P001 +1

6. Click "Apply". Click OK. Save the project.

5.6. Add EO's

You created the EODefs and the naming rules. Now you can drag&drop the EODefs to create the EO's.



201604189

Function Aspect Navigator

Name	Description
CD000101;1-AD_1_CD_4_WS_5...	
Unassigned	

Engineering Object

Reuse Library

Select from Member Select (EODATMname)

General Properties

Object Name Prefix: I

Description: 000344

Navigators

Select Parent (1)

In Function ✓

In Location

In Product

In Automation

Properties

Edit Properties

OK Apply Cancel

Reuse Library

Name

- Classification Root
 - Automation Designer
 - Resource Management
- eng_user1
 - 20160415_TT
- Custom Symbol Library

Member Select

- 000349
- 000350
- AD_1_CD_4_WS_5_SS_20160418
- EODATMname
- EODBGname
- EODCHname
- EODGLname
- EODKFname
- EODMAname
- EODTFname3
- EODTLname

Function Aspect Navigator

Name	Description
CD000101;1-AD_1_CD_4_WS_5...	
Unassigned	
=_001 [EODATMname]	000344

Function Aspect Navigator

Name	Description
- CD000101;1-AD_1_CD_4_WS_5_SS_20160418	
↳ Unassigned	
↳ =_001 [EOATMname]	000344
↳ =_004 [EOTLname]	000345
↳ =ConveyorF001 [EODGLname]	000346
↳ =MotorF001 [EODMAname]	000347
↳ =SensorF001 [EODBpname]	000348
↳ =DrivePowerF001 [EODTFname3]	000351
↳ =DriveControlF001 [EODKFname]	000352
↳ =EOCHcc001 [EODCHname]	000353

20160509 don't see the "name in aspects"

Function Aspect Navigator

Name	Description
- CD000163;1-AD_1_CD_4_WS_5_SS_20160509_2	
↳ Unassigned	
↳ =EOATMcc001	000344
↳ =EOTLcc001	000345
↳ =EOGLcc001	000346
↳ =EOMAcc001	000347
↳ =EOBGcc001	000348
↳ =EOTFcc001	000351
↳ =EOKFcc001	000352
↳ =EOCHcc001	000353

Wow .. works in this version 😊

To create the first EO (ATM):

1. Undock the Reuse Library tab .
2. In Reuse Library select "AT-Process, mechanical and civil".

Reuse Library

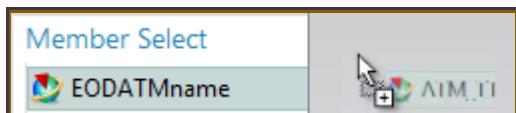
Name
- Classification Root
↳ Engineering Object [92]
↳ Device [51]
↳ A->1 purpose or task [9]
↳ AT-Process, mechanical and civil 7 [9]

Search

Member Select

05_19

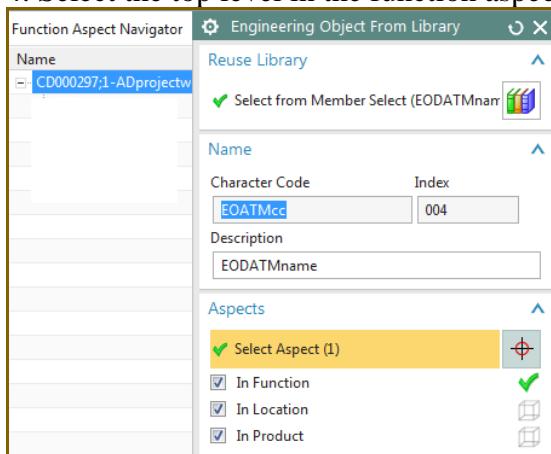
3. Under "Member Select" drag and drop "EO_ATM_name".



05_20

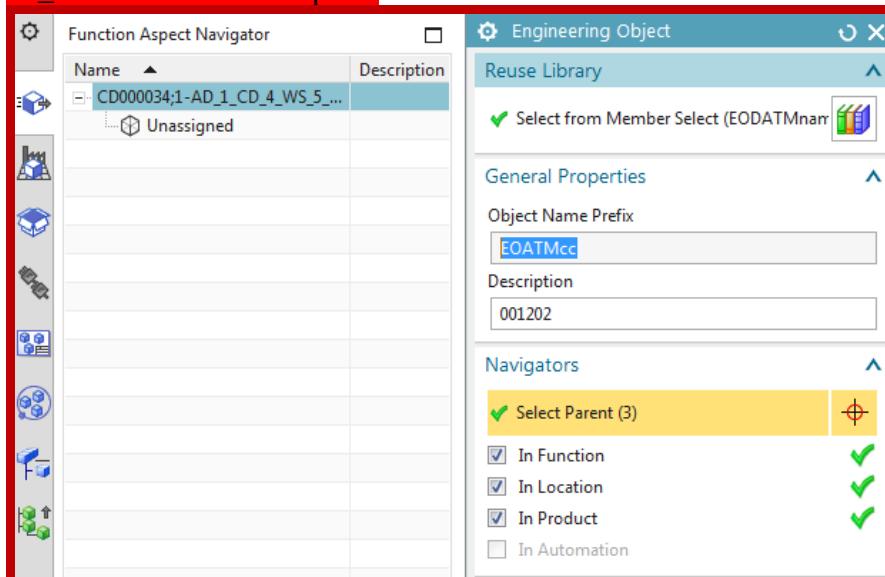
The "Engineering Object from Library" dialog appears.

4. Select the top level in the function aspect.

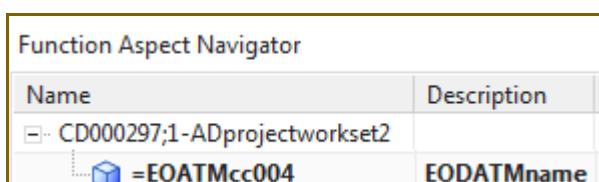


05_21

05_21b I added to all aspects

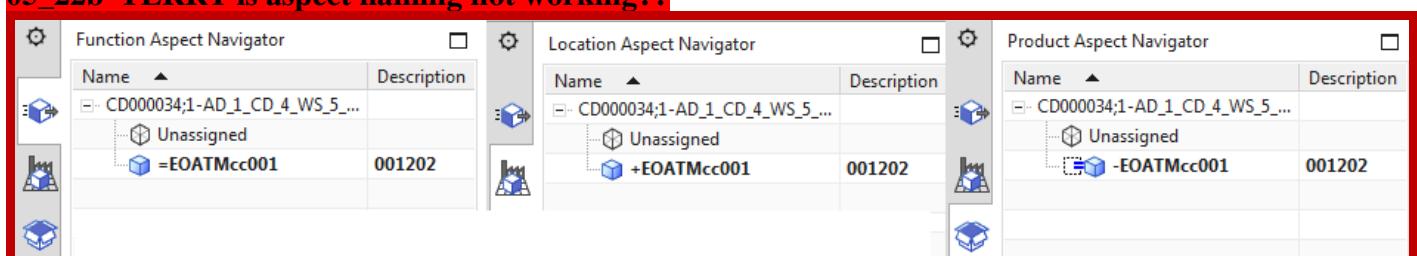


5. Click OK.



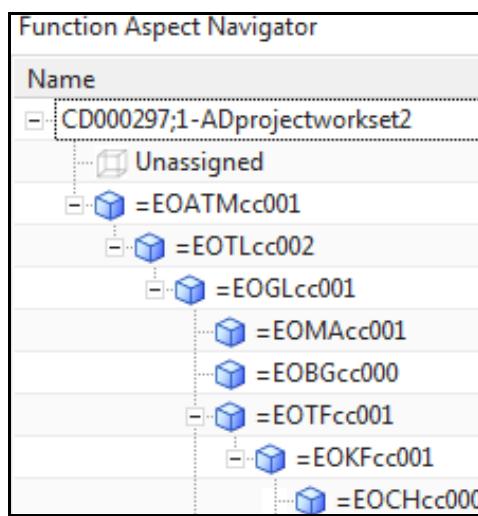
05_22

05_22b TERRY is aspect naming not working??

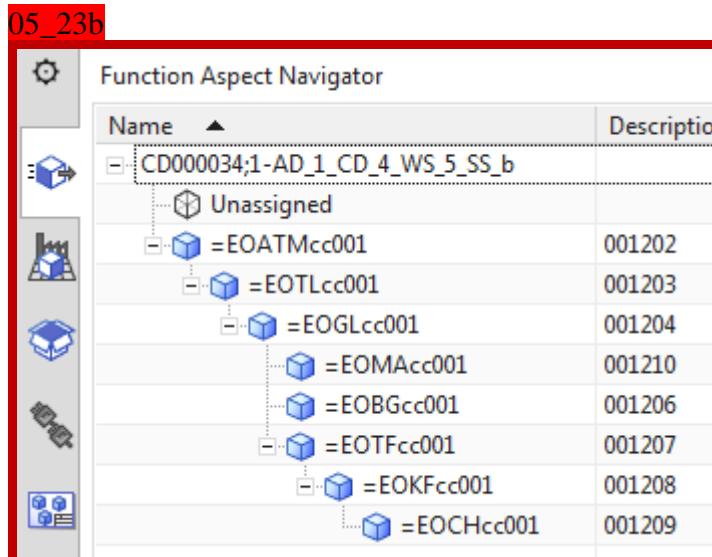


6. Add one each of the EO's listed in the table below until you have a **FUNCTION** aspect tree like that shown below.

Classification Root	EODef	Number to add
Device / A ->1 purpose or task / AT	1. EODATMname (created above)	1
Device / U-Keep	2. EODTLname	1
Device / G-Generator / GL-Continuous flow	3. EODGLname	1
Device / M-Motor / MA-Electromagnetic	4. EODMAname	1
Device / B-Measurement / BG-Gauge,position	5. EO(DBGname	1
Device / T-Conversion / TF-Signals	6. EODTFname	1
Device / K-Processing / KF-Electrical signals	7. EODKFname	1
Devicefunction / Electrical / Electro mechanical drive	8. EODCHname	1



05_23



7. Save the project.

TERRY 2: EO's are not shown in TC? 
Result (EO's are type "Design Element").

NX NX11 Build AME_Group164 - Gateway

Assembly Navigator

Object ▾

Sections

- 004648/A;1-ADprojectworkset2 (Order: Chronological)
 - AD_Subset
 - CD000297AD_UpstreamData_DesignElement_ID/001;1-AD_UpstreamData_DesignElement
 - CD000297EOLcc001/001;1-EODLcc001 x 2
 - CD000297EOMAcc001/001;1-EOMAcc001 x 2
 - CD000297EKFCc001/001;1-EOKFc001 x 2
 - CD000297EOATMcc001/001;1-EOATMcc001
 - CD000297EOTLcc002/001;1-EOTLcc002
 - CD000297ST5T001/001;1-ST5T001/ET200MP station_1
 - CD000297ST7001/001;1-ST7001
 - CD000297RA001/001;1-RA001
 - CD000297PL001/001;1-PL001
 - CD000297EOBGCc013/001;1-EOBGCc013 x 8
 - CD000297EOCHcc010/001;1-EOCHcc010 x 8
 - CD000297EOTFcc004/001;1-EOTFcc004 x 2
 - AD_Project_Preferences
 - CD000297EOLcc001/001;1-EODLcc001
 - CD000297EOMAcc001/001;1-EOMAcc001
 - CD000297EKFCc001/001;1-EOKFc001
 - CD000297EOATMcc001/001;1-EOATMcc001
 - CD000297EOTLcc002/001;1-EOTLcc002
 - CD000297ST5T001/001;1-ST5T001/ET200MP station_1
 - CD000297ST7001/001;1-ST7001
 - CD000297RA001/001;1-RA001
 - CD000297PL001/001;1-PL001
 - CD000297EOBGCc013/001;1-EOBGCc013 x 8
 - CD000297EOCHcc010/001;1-EOCHcc010 x 8
 - CD000297EOTFcc004/001;1-EOTFcc004 x 2

05_24

5_24b

NX 11.0.0.24 - Gateway - [001199/A;1-AD_1_CD_4_WS_5_SS_b (Modified)]

Assembly Navigator

Object ▾

Sections

- 001199/A;1-AD_1_CD_4_WS_5_SS_b (Order: Chronological)
 - AD_Subset
 - CD000034/001;1-AD_Project_Preferences
 - CD000034AD_UpstreamData_DesignElement_ID/001;1-AD_UpstreamData_DesignElement
 - CD000034EOGLcc001/001;1-EODGLname_20160301
 - CD000034EOMAcc001/001;1-EOMAcc_20160301b
 - CD000034EOBGCc001/001;1-EODBGname_20160301
 - CD000034EOTFcc001/001;1-EOTDFname_20160301
 - CD000034EOKFc001/001;1-EODKFname_20160301
 - CD000034EOCHcc001/001;1-EODCHname_20160301
 - CD000034EOATMcc001/001;1-EODATMname_20160301
 - CD000034EOTLcc001/001;1-EOTTLname_20160301

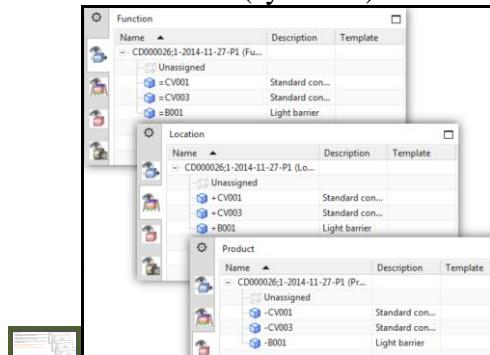
View the EO's in TC.



5.7. Location-Product aspects

Aspects are predefined engineering categories according to IED 81346 that specifies how to organize the different engineering objects and elements based on

1. Function (symbol =): Functional description (main function, sub-function, etc.).
2. Location (symbol +): Physical location (hall, sector, cabinet, etc.).
3. Product (symbol -): How the parts are purchased.



05_25

In the previous sections you only organized EO's in the Function aspect. Location and product aspects are shown below.

TERRY 3 20151012 where did s7001 come from?

Name	Description
- CD00002971-ADprojectworkset2	
+ Unassigned	
+EOATMcc001	EODATMname1
+EOTLcc002	EODTLname2
+EOGLcc001	EODGLname2
+EOMAcc001	EODMAname
+EOBGGcc002	EODBGname
+EOTFcc001	EODTFname
+EOKFcc001	EODKFname
+EOCHcc001	EODCHname
+EOCHcc001_1	EODCHname
+EOCHcc001_2	EODCHname
+EOCHcc001_3	EODCHname
+EOBGGcc002_1	EODBGname
+EOBGGcc002_2	EODBGname
+EOBGGcc002_3	EODBGname

05_26

Name	Description
- CD00002971-ADprojectworkset2	
+ Unassigned	
+EOATMcc001	EODATMname2
+EOTLcc002	EODTLname
+EOGLcc001	EODGLname2
+EOMAcc001	EODMAname
+EOBGGcc002	EODBGname
+EOTFcc001	EODTFname
+EOKFcc001	EODKFname
+EOCHcc001	EODCHname
+EOCHcc001_1	EODCHname
+EOCHcc001_2	EODCHname
+EOCHcc001_3	EODCHname
+EOBGGcc002_1	EODBGname
+EOBGGcc002_2	EODBGname
+EOBGGcc002_3	EODBGname

05_27

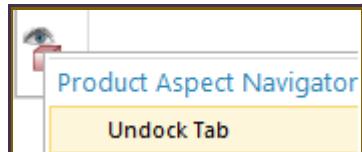
05_26b , 05_27b

Location Aspect Navigator	
Name	Description
- CD000034;1-AD_1_CD_4_WS_5_...	
+ Unassigned	
+ EOTLcc001	001203
+ EOGLcc001	001204
+ EOMAcc001	001210
+ EOBGcc001	001206
+ EOTFcc001	001207
+ EOKFcc001	001208
+ EOCHcc001	001209
+ EOATMcc001	001202

Product Aspect Navigator	
Name	Description
- CD000034;1-AD_1_CD_4_WS_5_...	
+ Unassigned	
+ EOTLcc001	001203
+ EOGLcc001	001204
+ EOMAcc001	001210
+ EOBGcc001	001206
+ EOTFcc001	001207
+ EOKFcc001	001208
+ EOCHcc001	001209
+ EOATMcc001	001202

Now you will configure the location and product aspects.

1. Undock the location and product aspects.



05_28

2. Organize (with drag and drop) the EO's in the Location and Product aspects.

Location Aspect Navigator	
Name	Description
- CD000297;1-ADprojectworkset2	
- Unassigned	
- EOATMcc001	+EOATMcc001
- EOATLcc002	+EOATLcc002
- EOGLcc001	+EOGLcc001
- EOMAcc001	+EOMAcc001
- EOBGcc000	+EOBGcc000
- EOTFcc001	+EOTFcc001
- EOKEFcc001	+EOKEFcc001
- EOCHcc000	+EOCHcc000
- EOCHcc002	+EOCHcc002
- EOCHcc003	+EOCHcc003
- EOCHcc004	+EOCHcc004
- EOBFcc002	+EOBFcc002
- EOBFcc003	+EOBFcc003
- EOBFcc004	+EOBFcc004

05_29

3. The result should be this.

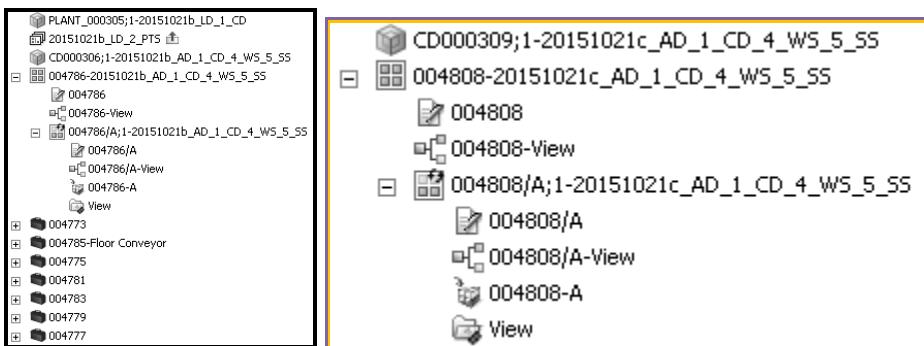
Function Aspect Navigator	Location Aspect Navigator	Product Aspect Navigator
Name	Name	Name
- CD000297;1-ADprojectworkset2	- CD000297;1-ADprojectworkset2	- CD000297;1-ADprojectworkset2
- Unassigned	- Unassigned	- Unassigned
- EOATMcc001	- EOATMcc001	- EOATMcc001
- EOATLcc002	- EOATLcc002	- EOATLcc002
- EOGLcc001	- EOGLcc001	- EOGLcc001
- EOMAcc001	- EOMAcc001	- EOMAcc001
- EOBGcc000	- EOBGcc000	- EOBGcc000
- EOTFcc001	- EOTFcc001	- EOTFcc001
- EOKEFcc001	- EOKEFcc001	- EOKEFcc001
- EOCHcc000	- EOCHcc000	- EOCHcc000
- EOCHcc002	- EOCHcc002	- EOCHcc002
- EOCHcc003	- EOCHcc003	- EOCHcc003
- EOCHcc004	- EOCHcc004	- EOCHcc004
- EOBFcc002	- EOBFcc002	- EOBFcc002
- EOBFcc003	- EOBFcc003	- EOBFcc003
- EOBFcc004	- EOBFcc004	- EOBFcc004
- EOBFcc002	- EOBFcc002	- EOBFcc002
- EOBFcc003	- EOBFcc003	- EOBFcc003
- EOBFcc004	- EOBFcc004	- EOBFcc004
- EOBFcc002	- EOBFcc002	- EOBFcc002
- EOBFcc003	- EOBFcc003	- EOBFcc003
- EOBFcc004	- EOBFcc004	- EOBFcc004

05_30

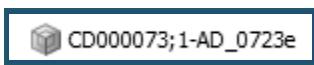
xxx5.8. Result in TC

The following shows the resulting structure in TC.

TERRY 20151021: What should this look like? On right where is partition scheme? After talking with Reinhard, there are probably too many errors in the TC display.. just leave this section out.



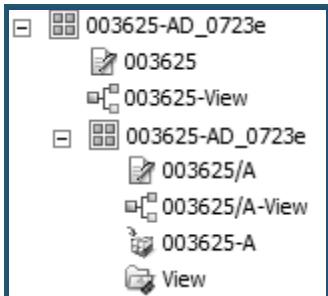
1. CD.



2. Partition scheme.

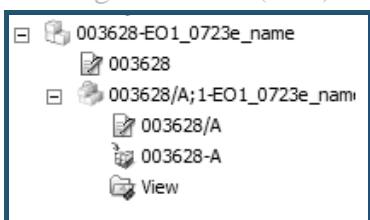
3. Partition.

4. Workset.



5. Subset: Shown in AD, not in TC?

6. Design elements (EOs).



Part 2. Config (non-template) LD, EPLAN, TIA

This part shows how to create the mapping, EPLAN reports, and TIA SW for a single conveyor. You will not create a template and will not use expressions or ports until part 3 (to keep things simple).

- 6. AD: Map LD-AD.**
- 7. AD: Configure EPLAN.**
- 8. AD: Configure (non-template) TIA.**

6. Map LD-AD (20160428)

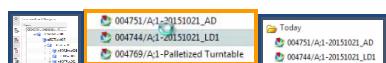
20160118 TERRY: see movie \\debonkl0c19\ADNX\Teams\Documentation\10_Meetings 20160115_map_ch6_TT.mp4, demos this, minimal changes.

The LD project is structured in TC using a Plant Design. The AD project is structured in TC using a CD. To connect the two designs you need to link the Plant Design (LD) with the CD (AD). This action needs to be done only once. After this you can map the mechanical layout (LD) to AD EO's.

This chapter describes:

- 6.2. Link AD and LD CD's
- 6.3. Map
- 6.4. Result

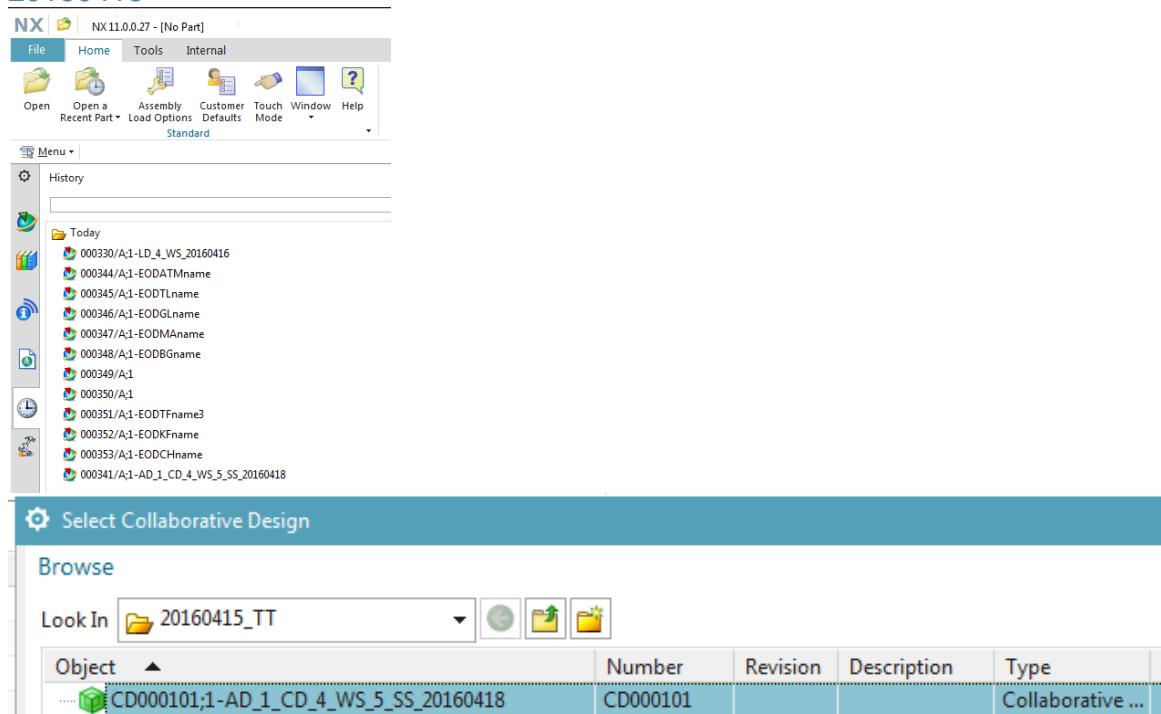
6.2. Link AD and LD CD's



To link AD and LD CDs:

0. CLOSE AD PROJECT:

20160418



0. CLOSE AD PROJECT:
20160418

NX | NX 11.0.0.27 - [No Part]

File Home Tools Internal

Open Open a Assembly Customer Touch Window Help

Recent Part Load Options Defaults Mode Standard

Menu History

Today

000330/A1-LD_4_WS_20160416
000344/A1-EODATMname
000345/A1-EODTLname
000346/A1-EODGLname
000347/A1-EODMAname
000348/A1-EODBName
000349/A1
000350/A1
000351/A1-EODTFname3
000352/A1-EODKFname
000353/A1-EODCHname
000341/A1-AD_1_CD_4_WS_5_SS_20160418

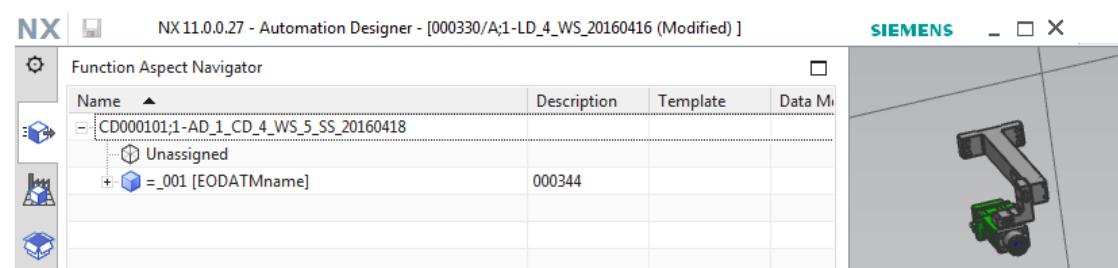
Select Collaborative Design

Object Number Revision Description Type

CD000101;1-AD_1_CD_4_WS_5_SS_20160418 CD000101 Collaborative ...

Look In 20160415_TT

Browse



NX | NX 11.0.0.27 - Automation Designer - [000330/A1-LD_4_WS_20160416 (Modified)]

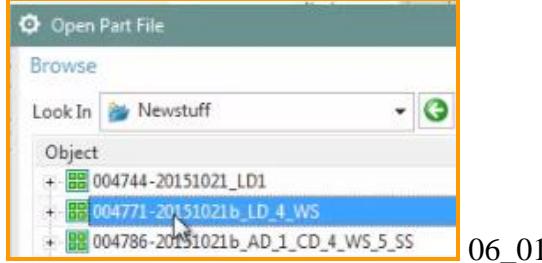
SIEMENS

Function Aspect Navigator

Name	Description	Template	Data M
CD000101;1-AD_1_CD_4_WS_5_SS_20160418			
Unassigned			
=_001 [EODATMname]	000344		

Works 😊

1. Open the LD CD.



06_01b

Open Part File							
Browse							
Look In							
Object	Number	Revision	Description	Type	Checke...	Statuses	Date Modified
+ 001199-AD_1_CD_4_WS_5_SS_b	001199		001199	Workset			01-Mar-2016 12:18:20
+ 001206-EODBName_20160301	001206		001206	Engineering Object Definition			01-Mar-2016 12:11:48
+ 001209-EODCHname_20160301	001209		001209	Engineering Object Definition			01-Mar-2016 12:11:48
+ 001210-EOMAcc_20160301b	001210		001210	Engineering Object Definition			01-Mar-2016 12:11:48
+ 001208-EODKFname_20160301	001208		001208	Engineering Object Definition			01-Mar-2016 12:11:48
+ 001202-EODATMname_20160301	001202		001202	Engineering Object Definition			01-Mar-2016 12:11:48
+ 001203-EODTLname_20160301	001203		001203	Engineering Object Definition			01-Mar-2016 12:11:48
+ 001207-EODTFname_20160301	001207		001207	Engineering Object Definition			01-Mar-2016 12:11:48
+ 001204-EODGLname_20160301	001204		001204	Engineering Object Definition			01-Mar-2016 12:11:48
+ 001205	001205		001205	Engineering Object Definition			01-Mar-2016 10:58:08
+ 001191-LD_4_WS	001191		001191	Workset			01-Mar-2016 10:58:05
+ 001198-AD_1_CD_4_WS_5_SS	001198		001198	Workset			01-Mar-2016 10:58:04
+ 001195	001195		Floor Convey...	Conveyor Resource			01-Mar-2016 10:00:11
+ 001197-Floor Conveyor	001197		Floor Convey...	Conveyor Resource			01-Mar-2016 10:00:11

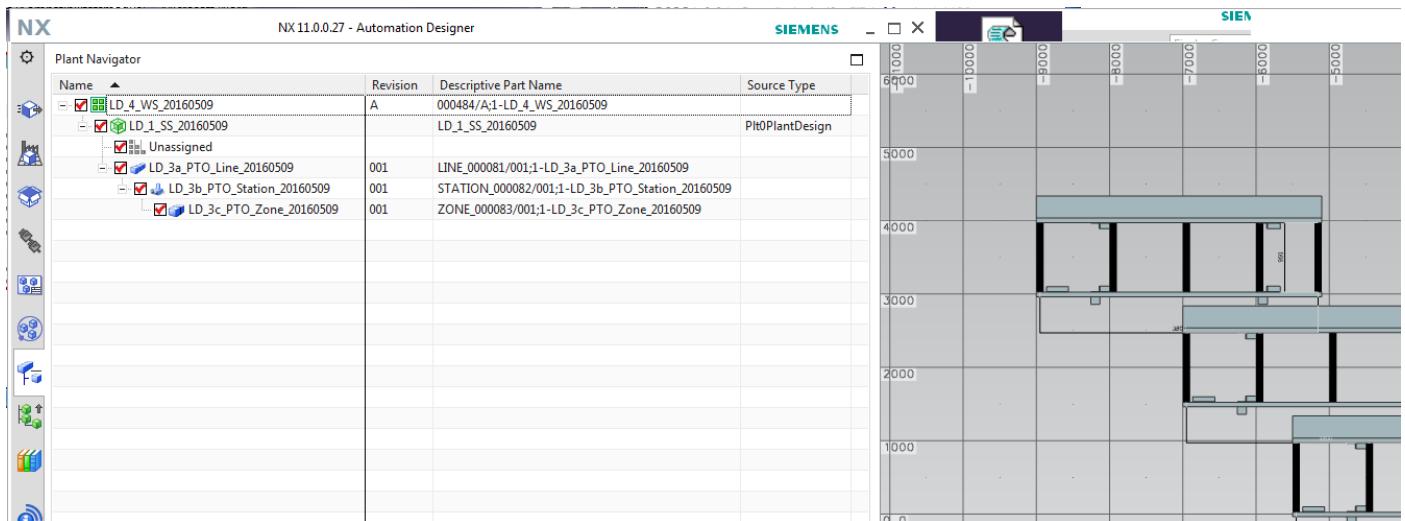
2. Switch to AD.

3. Select File → All Applications → Automation Designer.

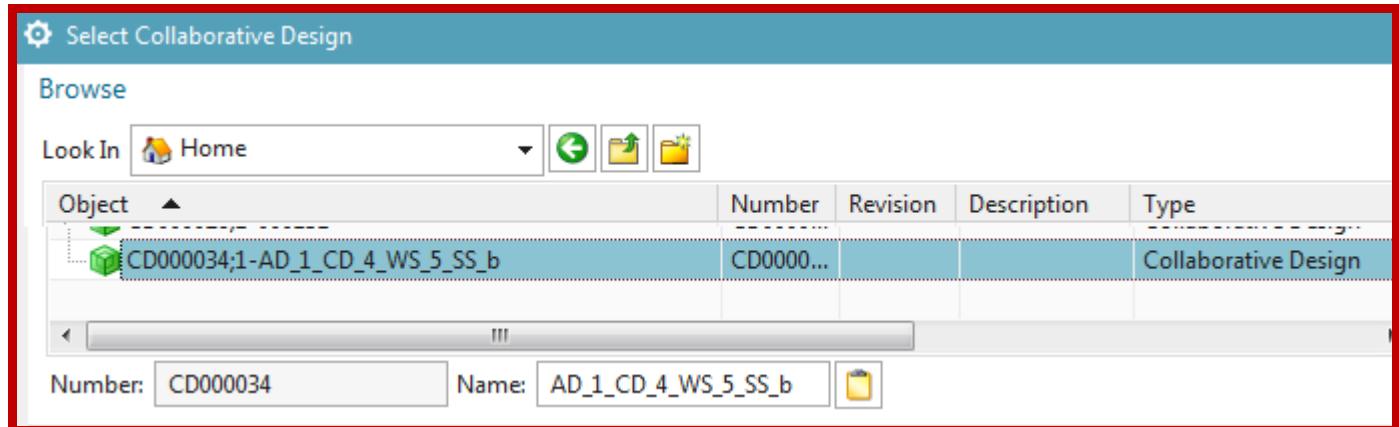
4. Select the AD Collaborative Design.

CD000306;1-20151021b_AD_1_CD_4_WS_5_SS CD000306 Collaborative Design 06_02

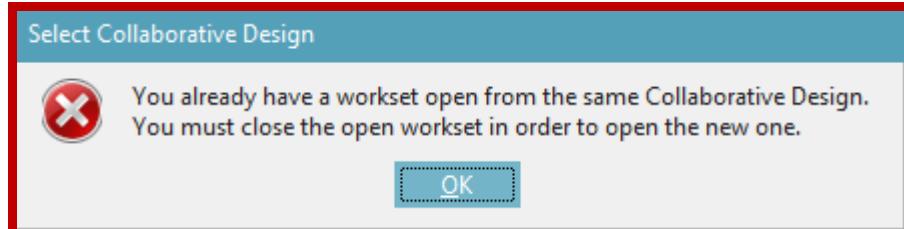
20160509



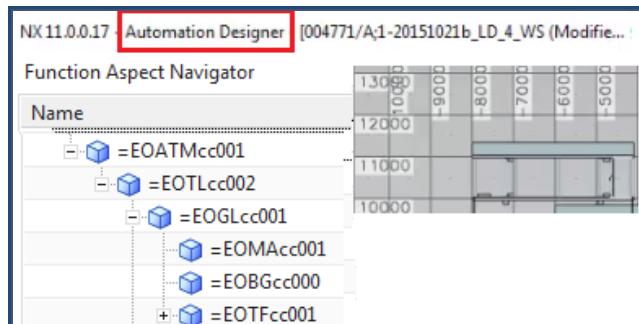
06_02b



06_02c get this if AD already open.. need to close first.

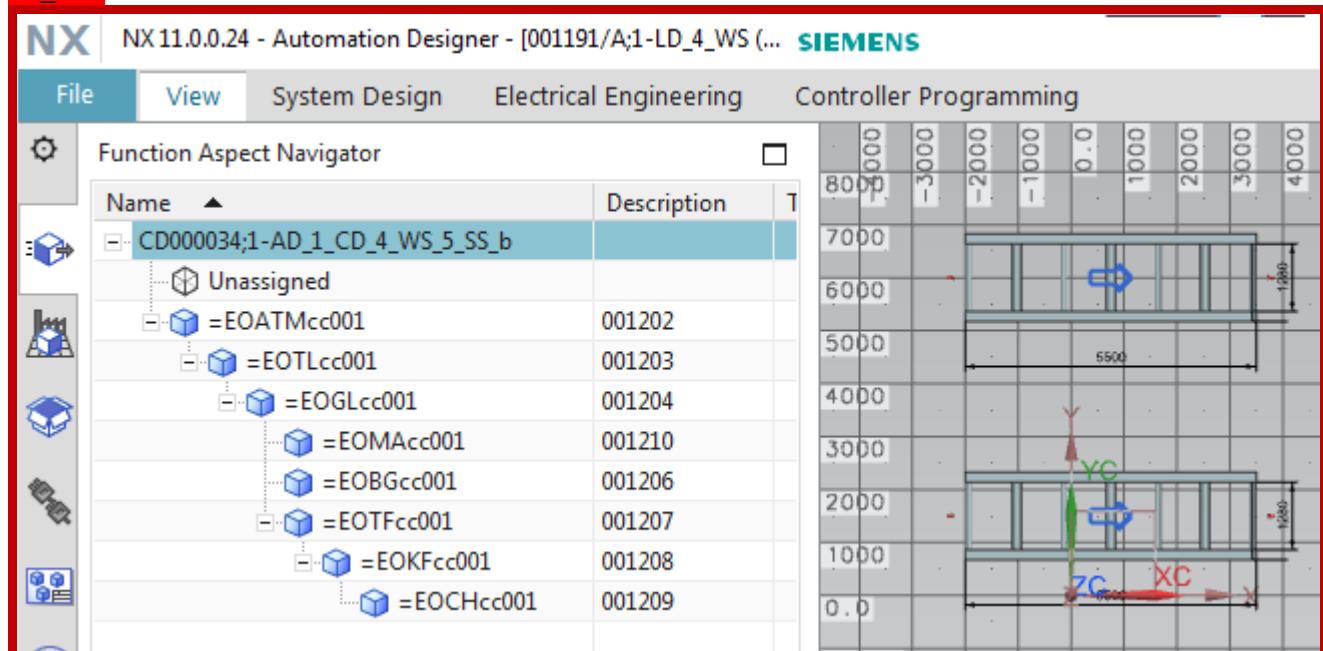


AD is on left, LD on right. They are now linked.



06_03

06_03b



\$ Manage type mapping 20160509

Object ▾ Insert Aspect Structure Selection

Menu ▾

Reuse Library

Name

- Classification Root
 - + Automation Designer
 - Resource Management
 - Factory Resources [93]
 - Architectural [3]
 - Conveyors [13]
 - + Package Conveyors [7]
 - + Track Conveyors [6]
 - Industrial [32]
 - Material Handling [8]
 - + Robots [3]
 - Space Consumption [2]
 - + Weld Guns [30]
 - Workers [2]
 - + Fixtures
 - + Machines and Devices
 - New Resources [0]
 - + Templates
 - + 20160415_TT
 - + Custom Symbol Library

Search

Member Select

1-7 of 7

Line Designer	Automation Designer

OK Apply Cancel

Manage Type Mapping

Line Designer

✓ Select from Member Select (Palletized Floor Conveyor)

Automation Designer

* Select from Member Select

Add Mapping

List

Manage Type Mapping

Line Designer

- ✓ Select from Member Select (Palletized Floor Conveyor)

Automation Designer

- ✓ Select from Member Select (EODGLname)

Add Mapping

List

Line Designer	Automation Designer
20160415_000270_A_1_bg_5088234_a1a_jt	EODGLname
TTTT000270_A_1_bg_5088234_a1a_jt	EODGLname
000435	EODGLname
Floor Conveyor	EODGLname
Palletized Floor Conveyor	EODGLname

Search

Member Select

1-6 of 6

- Test GL
- Template_2
- EODGLname**
- EODTLname_20160509
- AT_GL_120D
- GL-Continuous flow of solid matter

\$ Manage type mapping 20160428

Reuse Library

Name	Count
EPLAN Page Macro [4]	4
EPLAN Window Macro [1]	1
PLC [2]	2
Software [12]	12
Resource Management	
Factory Resources [93]	93
Architectural [3]	3
Conveyors [13]	13
Package Conveyors [7]	7
Track Conveyors [6]	6
Industrial [32]	32
Material Handling	
Robots [3]	3
Space Consumption	
Weld Guns [30]	30
Workers [2]	2
Fixtures	
Machines and Devices	
New Resources [0]	0
Templates	
20160415_TT	
Custom Symbol Library	

Search

Member Select

Icon	Label
🔍	Oval Tier Silo Conveyor
📎	Palletized Floor Conveyor
📦	Palletized Turntable
⚡	Power Roller Turntable
📦	SO Palletized Floor Conveyor
⚡	Floor Conveyor
📦	Grid Box Conveyor

Manage Type Mapping

Line Designer

✓ Select from Member Select (Floor Conveyor)

Automation Designer

* Select from Member Select

Add Mapping

List

Line Designer	Automation Designer

OK Apply Cancel

Add Mapping

List

Line Designer	Automation Designer
Floor Conveyor	EODGLname

xxx\$ Manage object mapping 20160428 ERROR

Plant Navigator

Name	Revision	Descriptive Part
AD_1_CD_4_WS_5_SS_20160426	A	000438/A;1-AD_1_CD_4_WS_5_SS_20160426

Assembly Navigator

Object	Number	Revision	Info	Name	Source	Type	Description	M	Partition ...
Sections	000438	A		AD_1_CD_4_WS_5_SS_20160426	000438/A;1-AD_1_CD_4_WS_5_SS_20160426	Workset	000438		
AD_Subset	AD_Subset			AD_Subset		Subset			Not Set
CD000124EOLcc002/001;1-EODGLname x2	000346	001		EODGLname	000346/A;1-EODGLname	Design Element			
CD000124EPLAN Page Macro005/001;1-DRIVE...	000344	001		DRIVE_G120D_PM250D_1	EPLAN Page Macro/A;1	Design Element			
CD000124EOTMcc001/001;1-EODATMname...	000345	001		EODATMname	000344/A;1-EODATMname	Design Element			
CD000124EOTLcc001/001;1-EODTLname x2	000345	001		EODTLname	000345/A;1-EODTLname	Design Element			
CD000124/001;1-AD_Project_Preferences	000345	001		AD_Project_Preferences	000440/A;1	Design Element			
CD000124DB001/001;1-DB	000345	001		DB	DB/A;1	Design Element			
CD000124EOMAcc001/001;1-EODMAname	000345	001		EODMAname	000347/A;1-EODMAname	Design Element			
CD000124FB001/001;1-FB	000345	001		FB	FB/A;1	Design Element			
CD000124EOCHcc001/001;1-EODCHname	000345	001		EOCHname	000353/A;1-EODCHname	Design Element			
CD000124EPLAN002/001;1-EPLAN Page Ma...	000345	001		EPLAN Page Macro	000389/A;1-EPLAN_Page_Macro_2_TT	Design Element			
CD000124OB002/001;1-OB	000345	001		OB	OB/A;1	Design Element			
CD000124ST001/001;1-CD000124ST001	000345	001		CD000124ST001	000441/A;1	Design Element			
CD000124_004/001;1-ssssssssssssssss	000345	001		ssssssssssssssss	000442/A;1-ssssssssssssssss	Design Element			
CD000124OKFcc001/001;1-EODKFname	000345	001		EODKFname	000352/A;1-EODKFname	Design Element			
CD000124EOTFcc001/001;1-EODTFname3	000345	001		EODTFname3	000351/A;1-EODTFname3	Design Element			
CD000124AT001/001;1-AT001	000345	001		AT001	AT-Process, mechanical and civil 7/A;1	Design Element			
CD000124EPLAN003/001;1-TypeObjName250	000345	001		TypeObjName250	000444/A;1-TypeObjName250	Design Element			
CD000124AD_UpstreamData_DesignElement...	000345	001		AD_UpstreamData_DesignElement	000439/A;1	Design Element			
CD000124EDBGcc001/001;1-EODBGname	000345	001		EODBGname	000348/A;1-EODBGname	Design Element			
000445/A;1-Floor Conveyor	000445	A		Floor Conveyor	000445/A;1-Floor Conveyor	Conveyor Resource	Floor Conv...		
000447/A;1-Floor Conveyor	000447	A		Floor Conveyor	000447/A;1-Floor Conveyor	Conveyor Resource	Floor Conv...		
TTT000270_A_1_bg_5088234_a1a_jt/A;1	TTT000270_A_1_bg_5088234_a1a_jt	A		TTT000270_A_1_bg_5088234_a1a_jt/A;1	TTT000270_A_1_bg_5088234_a1a_jt/A;1	Paragraph	TTT00027...		

Manage Object Mapping

Actions

Map to Existing in Project | Map to New | Map to New Based on Type | Unmap

Object Mapping

Show:

- Unhidden
- Hidden
- Unmapped
- Mapped
- Deleted
- All

External Name	External Type	Status	RDS	Type

\$ Manage object mapping 20160509 NOT WORKING

Mapping not working again ☺

Manage Object Mapping

Actions

Map to Existing in Project Map to New Map to New Based on Type Unmap

Object Mapping

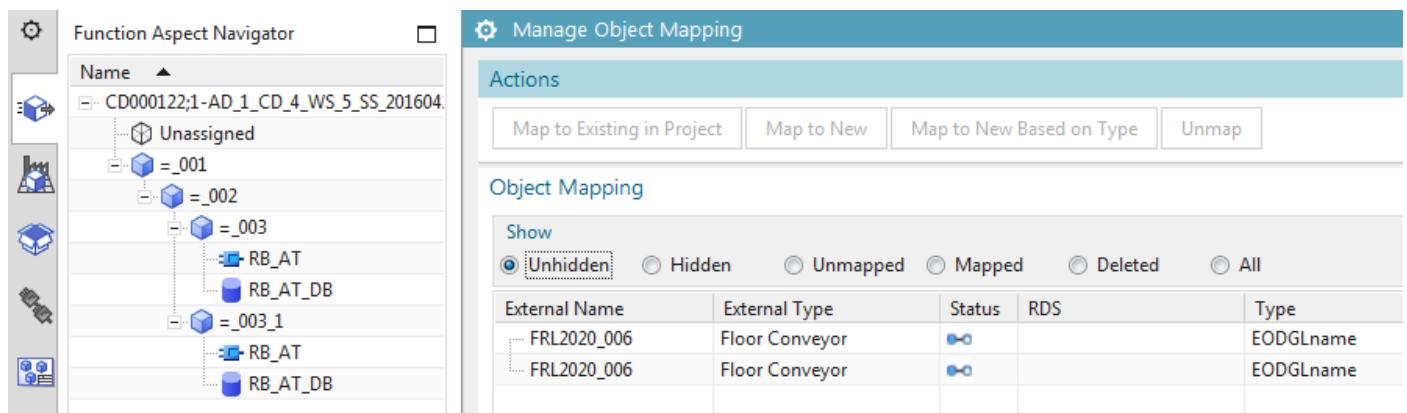
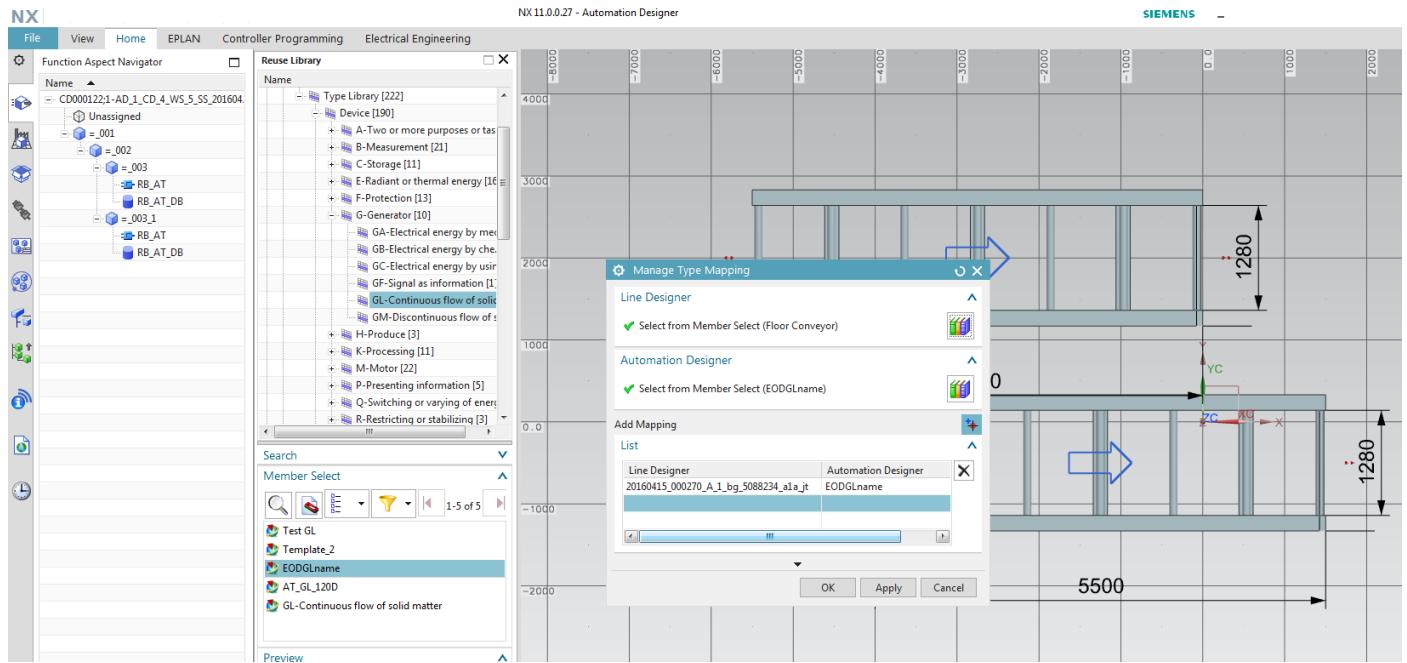
Show

Unhidden Hidden Unmapped Mapped Deleted All

External Name	External Type	Status	RDS	Type

\$ Manage object mapping 20160426 WORKS

Yesterday 25th I created new LD/AD CDs, this time mapping works. Maybe mistake I made previously.



Map to existing

The screenshot shows the 'Manage Object Mapping' dialog. On the left is the 'Function Aspect Navigator' tree, which includes a project node and several objects under 'Unassigned'. On the right is a 3D model of a conveyor system. A specific object in the model is selected and highlighted with an orange border. The 'Object Mapping' table at the bottom lists an external object 'FRL2020_006' (Floor Conveyor) and its mapped counterpart 'FRL2020_006' (Floor Conveyor). The 'Status' column shows a blue double-headed arrow icon, indicating a bidirectional mapping.

External Name	External Type	Status	RDS	Type
FRL2020_006	Floor Conveyor			EODGLname
FRL2020_006	Floor Conveyor			EODGLname

The screenshot shows the 'Map to Existing Object' dialog. It has two main sections: 'External Object' and 'Automation Designer'. In the 'External Object' section, a message says 'Select External Object (1)' with a red crosshair icon. In the 'Automation Designer' section, a message says 'Select Engineering Object (1)' with a red crosshair icon. There is also an unchecked checkbox for 'Map to Template'.

The screenshot shows the 'Object Mapping' dialog. It displays the same 3D model and mapping table as the top dialog. The table shows two entries for 'FRL2020_006' (Floor Conveyor), both with blue double-headed arrow icons in the 'Status' column, indicating successful bidirectional mapping. The 'Show' filter is set to 'Unhidden'.

External Name	External Type	Status	RDS	Type
FRL2020_006	Floor Conveyor			EODGLname
FRL2020_006	Floor Conveyor			=_001,_002,_003/+???,_003/-???,_003 EODGLname

Click ok.

Map to new

The screenshot shows the 'Manage Object Mapping' dialog. On the left is a 3D-like floor plan with orange outlines. The top navigation bar has tabs: 'Map to Existing in Project', 'Map to New' (which is selected), 'Map to New Based on Type', and 'Unmap'. Below the tabs is a 'Object Mapping' section with a 'Show' dropdown and several filter buttons: 'Unhidden' (selected), 'Hidden', 'Unmapped', 'Mapped', 'Deleted', and 'All'. A table lists object mappings:

External Name	External Type	Status	RDS	Type
FRL2020_006	Floor Conveyor			EODGLname
FRL2020_006	Floor Conveyor		=_001._002._003/+???._003/-???._003	EODGLname

Have to open the reuse library KF before opening the map dialog.

This screenshot shows the SIMATIC Manager interface. On the left is the 'Function Aspect Navigator' showing a tree structure with nodes like 'CD000122;1-AD_1_CD_4_WS_5_SS_201604' and its sub-nodes. In the center is the 'Reuse Library' dialog, which is open to the 'KF-Electrical signals [7]' category. On the right is the 'Manage Object Mapping' dialog, which is identical to the one shown in the first screenshot. The 'Map to New' tab is selected. The 'Object Mapping' table shows the same two entries as the first screenshot.

This screenshot shows the SIMATIC Manager interface again. The 'Function Aspect Navigator' on the left shows the same tree structure. The 'Manage Object Mapping' dialog is open on the right, with the 'Map to New' tab selected. The 'Object Mapping' table shows the same two entries as the previous screenshots.

Click ok.

Map to new based on type

Add another conveyor.

Mapping disappeared,,, had to add again.

Manage Type Mapping

Line Designer

Select from Member Select (Floor Conveyor)

Automation Designer

Select from Member Select (EODGLname)

Add Mapping

List

Line Designer	Automation Designer
20160415_000270_A_1_bg_5088234_a1a_jt	EODGLname
	EODGLname

Manage Object Mapping

Actions

Map to Existing in Project Map to New Map to New Based on Type Unmap

Object Mapping

Show

Unhidden Hidden Unmapped Mapped Deleted All

External Name	External Type	Status	RDS	Type
FRL2020_006	Floor Conveyor			EODGLname
FRL2020_006	Floor Conveyor			EODGLname
FRL2020_006	Floor Conveyor		=_001.._002.._005/+???.0...	EODKName
FRL2020_006	Floor Conveyor		=_001.._002.._003/+???.0...	EODGLname

Function Aspect Navigator

- Name
 - CD000122;1-AD_1_CD_4_WS_5_SS_201604
 - Unassigned
 - =_006
 - =_001
 - =_002
 - =_003
 - RB_AT
 - RB_AT_DB
 - =_003_1
 - RB_AT
 - RB_AT_DB
 - =_005

Manage Object Mapping

Actions

Map to Existing in Project Map to New Map to New Based on Type Unmap

Object Mapping

Show

Unhidden Hidden Unmapped Mapped Deleted All

External Name	External Type	Status	RDS	Type
FRL2020_006	Floor Conveyor			EODGLname
FRL2020_006	Floor Conveyor		=???.006/+???.006/-???.0...	EODGLname
FRL2020_006	Floor Conveyor		=_001.._002.._005/+???.0...	EODKName
FRL2020_006	Floor Conveyor		=_001.._002.._003/+???.0...	EODGLname

Generate TIA (CHECKMATE ERROR) 20160426

See what happens if take current simple example.

Function Aspect Navigator

Name	Description
CD000122;1-AD_1_CD_4_WS_5_SS_20160425	
Unassigned	
=_006	000346
=_001	000344
=_002	000345
=_003	000346
RB_AT	
RB_AT_DB	
=_003_1	000346
RB_AT	
RB_AT_DB	
=_005	000352

Automation Navigator

- Name
 - CD000122;1-AD_1_CD_4_WS_5_SS_20160425
 - Unassigned
 - 001..002..003_FBm [FB1012]
 - 001..002..003_DBx [DB1012]
 - 001..002..003_FB [FB1012]
 - 001..002..003_DBz [DB1012]
- PLC HW
 - S7300/ET200M station_1
 - Program blocks
 - Main [OB1]
 - PLC data types
 - Local modules
 - Rail_0
 - PLC_2
 - PLC tags
 - FC_left
 - FC_right
- Subnets

After clicking IMMEDIATELY got this

Bulk Connection

Source

- Select Object (1)
- Total Number of Objects (9)
- Descendants Included

Target

- Select Object (1)
- Total Number of Objects (1)
- Descendants Included

Port Type Filter

Ports

Source					Target				
Status	Port	Reference Designat	Object Type	Cor	Status	Port	Reference Designat	Object Type	Cor
1		=_001..002..003..	EODKName		1	+	S7300/ET200M s...	000429	
2	Block_C	RB_AT_DB	DB	Pro					
3		=_001..002..003..	EODGLName						
4	Block_C	RB_AT_DB	DB	Pro					
5		=_001..002/+???.00...	EODTLName						
6	Block_C	RB_AT	RB_AT	Pro					
7		=_001/+????..00...	EODATMname						
8	Block_C	RB_AT	RB_AT	Pro					
9		=_001..002..003..	EODGLName						

Connections

Source				Target			
Reference Designat	Port	Status	Status	Reference Designat	Port		
1	RB_AT_DB	Block_C	+	S7300/ET200M s...	Station_C		
2	RB_AT_DB	Block_C	+	S7300/ET200M s...	Station_C		
3	RB_AT	Block_C	+	S7300/ET200M s...	Station_C		
4	RB_AT	Block_C	+	S7300/ET200M s...	Station_C		
5	Main	Block_C	+	S7300/ET200M s...	Station_C		

Object Name	Count	Category	Part	Desig...	Rem...	Profile	Result	Skipp...	Heali...
- <input checked="" type="checkbox"/> Validate Object links (wrong PLC)	2		000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Failed		
- <input checked="" type="checkbox"/> S7300/ET200M station_1 - 001_002_003_DBz has Block Connection Error: 1 objects	1		000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Failed		
<input checked="" type="checkbox"/> UserPortR:826-2			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Failed		
- <input checked="" type="checkbox"/> S7300/ET200M station_1 - 001_002_003_DBx has Block Connection Error: 1 objects	1		000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Failed		
<input checked="" type="checkbox"/> UserPortR:1674-4			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Failed		
- <input checked="" type="checkbox"/> Validate Object links (Unlinked)	4		000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
- <input checked="" type="checkbox"/> S7300/ET200M station_1 - 001_002_003_DBz has Block Connection Error: 1 objects	1		000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> UserPortR:826-2			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
- <input checked="" type="checkbox"/> S7300/ET200M station_1 - 001_002_003_DBx has Block Connection Error: 1 objects	1		000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> UserPortR:1674-4			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
- <input checked="" type="checkbox"/> S7300/ET200M station_1 - 001_002_003_FB has Block Connection Error: 10 objects	10		000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:860-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:899-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:828-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:886-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:858-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:856-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:921-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:930-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:852-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:831-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
- <input checked="" type="checkbox"/> S7300/ET200M station_1 - 001_002_003_FBm has Block Connection Error: 10 objects	10		000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:921-1 was on layer 0 when the test was run.			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:869-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:922-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:857-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:1074-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:910-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:1149-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:1184-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:970-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:1226-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> PortR:1177-1			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed with Warning		
<input checked="" type="checkbox"/> Validate Unique Names			000421/A;1-LD_4_WS_20160425			Validate PLC for Export	Passed		

Check-Mate Result

UserPort:R:826-2

HD3D enabled **NX** **SIEMENS** **HD3D Check-Mate**

Check-Mate Object: *UserPort:R:826-2 results for [Validate Object links \(wrong PLC\)](#)*

Status:	Failed
Object Result Message:	Block Connection Error
Parent Profile:	Validate PLC for Export
Part:	000421/A;1-LD_4_WS_20160425
Layer:	0

▼ More Detail...

- Test was run at: 12:03 04/26/2016
- Test was run by: Z003H4JX

▼ Test Description

Validates that a PLC is acceptable for export to TIA.
It checks:
(a) ports of software blocks external references to different PLCs

▼ Test Parameters

Save Log in Part	FALSE
log_type	log_error
plcToCheck	"ST001"

Try anyway

Automation Navigator

- Name
- CD000122;1-AD_1_CD_4_WS_5_SS_20160425
 - Unassigned
 - PLC HW
 - S7300/ET200M station_1
 - Program blocks
 - Main [OB1]
 - 001..002..003_FBr [FB1012]
 - 001..002..003_DBx [DB1012]
 - 001..002..003_FB [FB1012]
 - 001..002..003_DBz [DB1012]
 - PLC data types
 - Local modules
 - Rail_0
 - PLC_2
 - PLC tags
 - FC_left
 - FC_right
 - Subnets

Send Data to TIA Portal

Source

Select Station (1)

TIA Portal project

New Project

Name: 20160426_1

Target Path: \\192.168.154.128\TiaPortal_Projects\3333

Settings

Send with Software and Tag

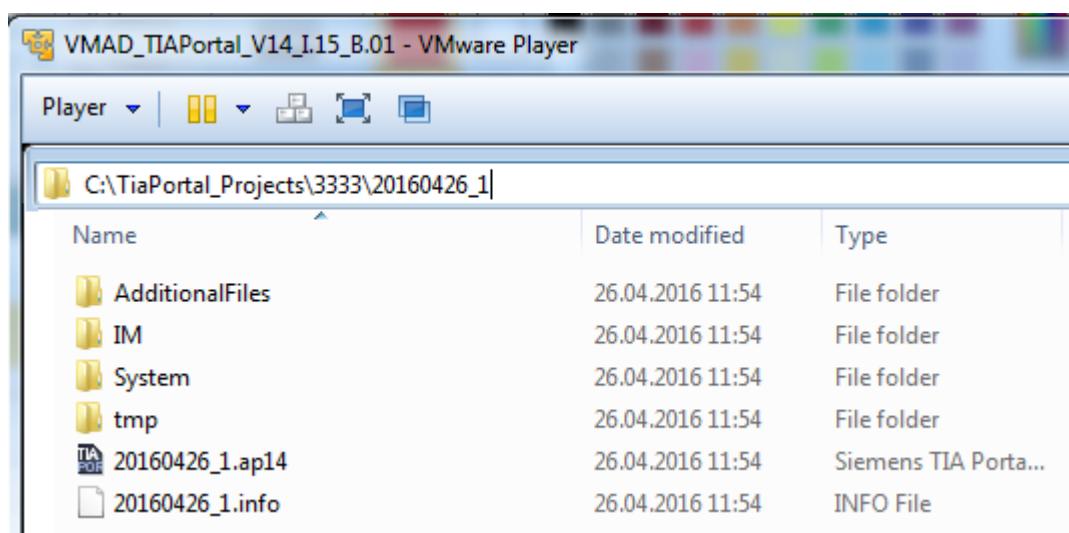
Open in TIA Portal

Compile Result in TIA Portal

Actions

Check Station

Send to TIA Portal



Send Data to TIA Portal

Source

Select Station (1)

TIA Portal project

New Project

Name: 20160426_1

Target Path: \\192.168.154.128\TiaPortal_Projects\3333

Settings

Send with Software and Tag

Open in TIA Portal

Compile Result in TIA Portal

Actions

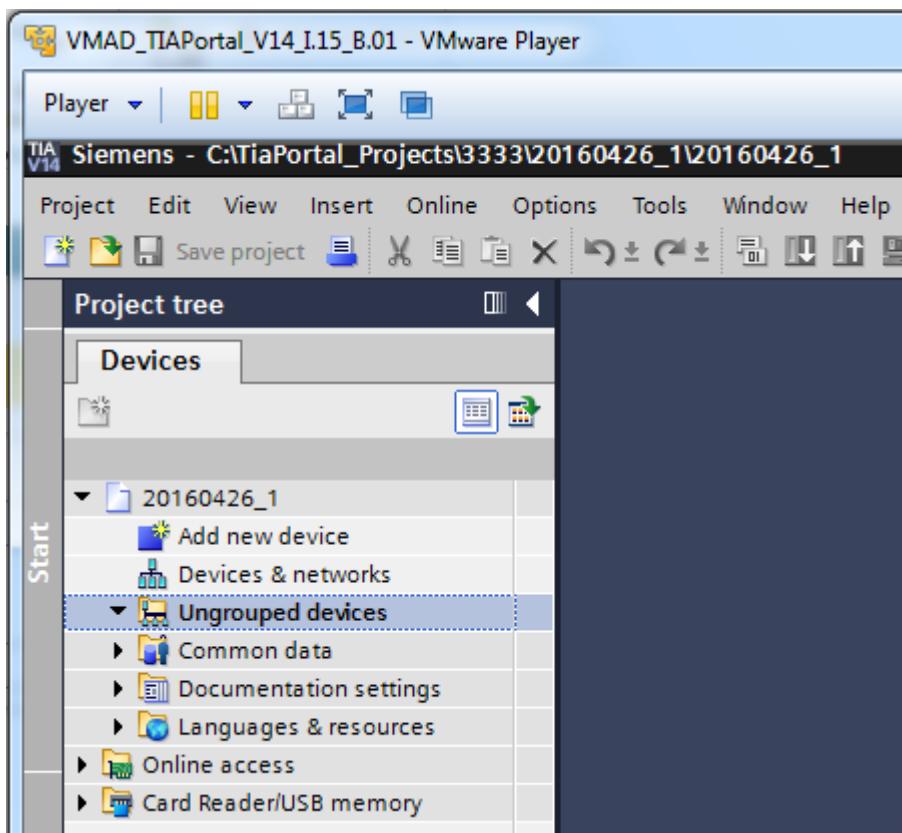
Check Station

Send to TIA Portal

Message



A problem occurred during the communication process. The data package is broken. Retry your action.



Try to fix.

This screenshot shows two windows side-by-side. On the left is the "Function Aspect Navigator" showing a hierarchy of function blocks and their addresses (e.g., _=006, _=001, _=002, _=003, _=003_1, _=005). On the right is the "Ports Manager" window. The "Source" dropdown is set to "DB001". The "Ports" table has a single entry under "User Defined": "DBtoTL" (Port _=002) connected to "TLtoDB" (Port _=001). The "Connection Type" is "Program Block" and the "Direction" is "Undirected". A tooltip over the "Disconnect" button says "Disconnects the selected port."

That was the error.

View Style

Tree

This screenshot shows the "Object Name" validation tool. It lists several items with validation status: "Validate Object links (wrong PLC)" is red with an error icon; "S7300/ET200M station_1 - 001,_002,_003_DBz has Block Connection Error: 1 objects" is also red with an error icon; "UserPort:R-826-3" is red with an error icon; "Validate Object links (Unlinked)" is yellow with a warning icon; and "Validate Unique Names" is green with a checkmark.

After this did an "undo" and now the project is screwed up.. restarted, etc. still same error. Great 😊

This screenshot shows an error dialog box. The message is "Hit OK to continue". Below it is an error message: "Internal error: memory access violation" followed by "File: o:\ugnx110\ip27\src\syss\error\ind\error.cxx, Line: 2526" and "General Fault Exception".

Z003H4JX27283b6b.syslog

xxx\$ Manage type mapping 20160418 ERROR

20160418

Screenshot of the EPLAN software interface showing the "Manage Type Mapping" feature.

The ribbon bar shows the following tabs: File, View, Home, EPLAN, Controller Programming, Electrical Engineering, Expressions, Bulk Connection Tools, Import File, Manage Object Mapping, External Data Exchange, Load Line Designer, Create Template, Publish to Library, and Naming.

The "Manage Object Mapping" icon is highlighted in the ribbon bar.

A tooltip for "Manage Type Mapping" is displayed, stating: "Connects a Line Designer Reuse library object to an Automation Designer Reuse Library object and saves it to an external type mapping to serve all future projects."

The main window displays two "Manage Type Mapping" dialog boxes:

- Reuse Library:** Shows the "Member Select" section with the item "20160415_000270_A_1_bg_5088234_a1a_jt" selected.
- Manage Type Mapping:** Shows the "Line Designer" section with "Select from Member Select (20160415_000270_A_1_bg_5088234_a1a_jt)" selected, and the "Automation Designer" section with "Select from Member Select (EODGLname)" selected.

The "Add Mapping" list shows the mapping between the Line Designer object and the Automation Designer object:

Line Designer	Automation Designer
20160415_000270_A_1_bg_5088234_a1a_jt	EODGLname

The "Manage Object Mapping" dialog box shows the following details:

- Actions:** Map to Existing in Project, Map to New, Map to New Based on Type, Unmap.
- Object Mapping:** Shows a table with columns: External Name, External Type, Status, RDS, and Type. The status column has radio buttons for Unhidden, Hidden, Unmapped, Mapped, Deleted, and All (selected).
- Properties:** Two tables for "External Object" and "Automation Designer" with columns Attribute and Value.

6.3. Manage object mapping

You can map LD objects to

1. Existing elements
2. New elements

Map one of the LD conveyors to the EO GL (an existing element).

1. Select "System Design / Manage Object Mapping".

06_04a

The screenshot shows the Function Aspect Navigator and the Manage Object Mapping interface.

Function Aspect Navigator: A tree view showing the hierarchy of objects. Under the root node 'CD000034;1-AD_1_CD_4_WS_5_SS_b', there is an 'Unassigned' node which contains several objects mapped to specific EOs:

- =EOATMcc001 (001202)
- =EOTLcc001 (001203)
- =EOGLcc001 (001204)
- =EOMAcc001 (001210)
- =EOBGcc001 (001206)
- =EOTFcc001 (001207)
- =EOKFcc001 (001208)
- =EOCHcc001 (001209)

Manage Object Mapping: This section contains the following components:

- Actions:** Buttons for 'Map to Existing in Project', 'Map to New', 'Map to New Based on Type', and 'Unmap'.
- Object Mapping:** A table showing the mapping of external objects to types. The 'Show' filter is set to 'Unhidden'. The table has columns: External Object, Type, Status, Automation Designer, and Definition.

External Object	Type	Status	Automation Designer	Definition
FRL2020_006	Floor Conveyor			
FRL2020_006	Floor Conveyor			

2. Select the conveyor.

06_04b

Function Aspect Navigator

Name	Description
CD000034;1-AD_1_CD_4_WS_5_SS_b	
Unassigned	
=EOATMcc001	001202
= EOTLcc001	001203
=EOGLcc001	001204
= EOMAcc001	001210
= EOBGcc001	001206
= EOTFcc001	001207
= EOKFcc001	001208
= EOCHcc001	001209

Manage Object Mapping

Actions

Map to Existing in Project Map to New Map to New Based on Type Unmap

Object Mapping

Show	Unhidden	Hidden	Unmapped	Mapped	Deleted	All
FRL2020_006	Floor Conveyor					
FRL2020_006	Floor Conveyor					

3. Click on "Map to Existing in Project".

06_04

4. Select the EO.

Function Aspect Navigator

Map to Existing Object

External Object

Select External Object (I)

Automation Designer

Select Engineering Object (I)

Map to Template

06_05

06_05b

The screenshot shows two overlapping windows. On the left is the 'Function Aspect Navigator' window with a tree view of objects under 'CD000034;1-AD_1_CD_4_WS_5_SS_b'. One node, '=EOGLcc001', is selected and highlighted in blue. On the right is the 'Map to Existing Object' dialog box. It has two sections: 'External Object' and 'Automation Designer'. In 'External Object', there is a green checkmark next to 'Select External Object (1)'. In 'Automation Designer', there is also a green checkmark next to 'Select Engineering Object (1)'. At the bottom are 'OK' and 'Cancel' buttons.

5. Click OK.

The screenshot shows the 'Object Mapping' dialog box. It lists three objects: '=EOATMcc001', '=EOTLcc002', and '=EOGLcc001'. The '=EOGLcc001' row is selected and highlighted in blue. The details for this row are shown in a table:

External Object	Type	Status	Automation Designer
FRL2020_002	Palletized Floor Conveyor		EOGLcc001

At the bottom right of the dialog box is a small icon labeled '06_06'.

06_06b

The screenshot shows the 'Manage Object Mapping' dialog box. Under 'Actions', the 'Map to Existing in Project' button is selected. In the 'Object Mapping' section, the '=EOGLcc001' row is selected and highlighted in blue. The details for this row are shown in a table:

External Object	Type	Status	Automation Designer	Definition
FRL2020_006	Floor Conveyor		EOGLcc001	EDGLname_20160301
FRL2020_006	Floor Conveyor			

6.4. Result

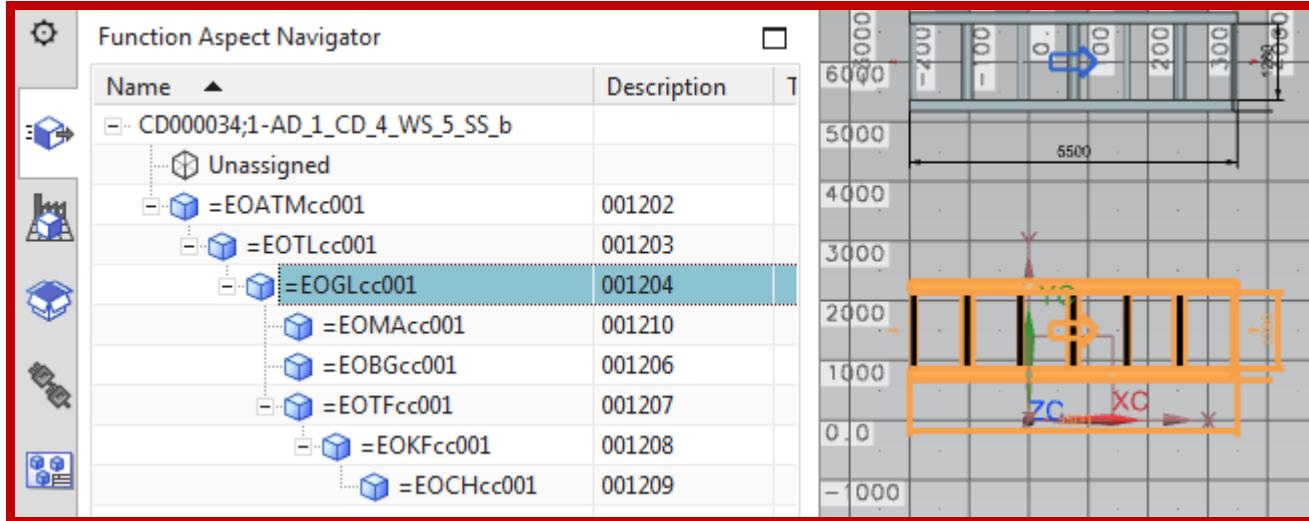
Click OK.

1. Click on the AD GL (conveyor) EO and the conveyor in LD is highlighted.

The screenshot shows the 'Function Aspect Navigator' window. The tree view shows nodes under 'CD000036;1-20151021b_AD_1...'. One node, '=EOGLcc001', is selected and highlighted with a red box around it. To the right of the tree view is a thumbnail image of a logic diagram (LD) showing a conveyor belt icon. A red arrow points from the selected node in the tree view to the conveyor belt icon in the thumbnail.

06_07

06_07b



Function Aspect Navigator

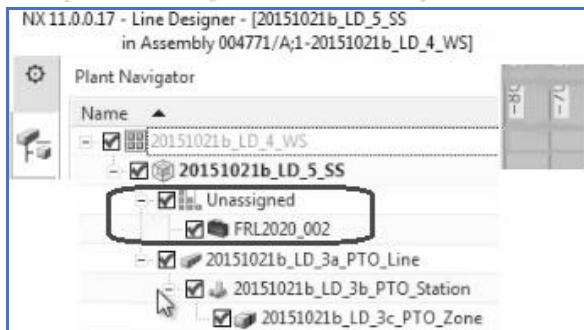
Name	Description
CD000034;1-AD_1_CD_4_WS_5_SS_b	
Unassigned	
=EOATMcc001	001202
=EOTLcc001	001203
=EOGLcc001	001204
=EOMAcc001	001210
=EOBGcc001	001206
=ETOFcc001	001207
=EOKFcc001	001208
=EOCHcc001	001209

20160204 TERRY: I think the text-pics I greyed out makes no sense. My mistake.

You can now view the LD workset and the LD and AD subsets.



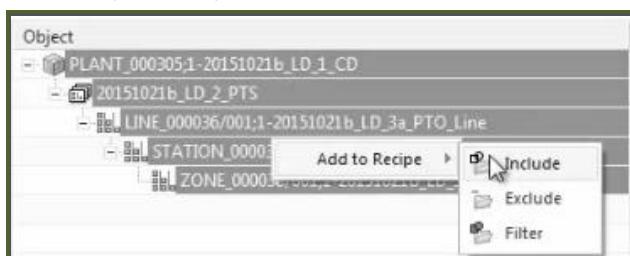
The partition object is the conveyor.



Plant Navigator

Name
20151021b_LD_4_WS
20151021b_LD_5_SS
Unassigned
FRL2020_002
20151021b_LD_3a_PTO_Line
20151021b_LD_3b_PTO_Station
20151021b_LD_3c_PTO_Zone

The line, station, and zone were added to subset recipe earlier.



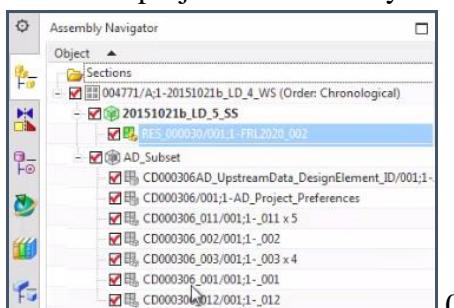
Object

Object
PLANT_000305;1-20151021b_LD_1_CD
20151021b_LD_2 PTS
LINE_000036/001;1-20151021b_LD_3a_PTO_Line
STATION_00003
ZONE_00003

Add to Recipe

- Include
- Exclude
- Filter

In the LD project the assembly navigator shows the LD and AD subsets.

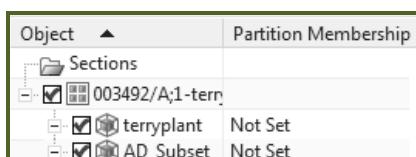


Assembly Navigator

Object
Sections
004771/A;1-20151021b_LD_4_WS (Order: Chronological)
20151021b_LD_5_SS
DES_000030/001;1/FRL2020_002
AD_Subset
CD000306AD_UpstreamData_DesignElement_ID/001;1
CD000306_001;1-AD_Project_Preferences
CD000306_011/001;1-_011 x 5
CD000306_002/001;1-_002
CD000306_003/001;1-_003 x 4
CD000306_001/001;1-_001
CD000306_012/001;1-_012

06_08

TERRY 4 TERRY 5 20151016 what does "partition membership = not set" mean?.



Object	Partition Membership
Sections	
003492/A;1-terry	
terryplant	Not Set
AD_Subset	Not Set

7. Configure (non-template) EPLAN (20160428)

7.0. error fix

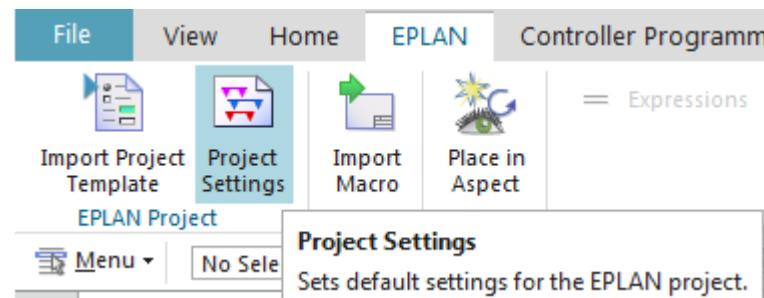
Marcus restarted

G:\20160408_SME_NX11_1612_S54_Patch1\20160403_101027_Build\automation_designer\adagent Siemens.AutomationDesigner.ADAgentUI.exe

That seemed to fix things.

Use project template D:\EPLAN\Data\Templates\SAG\IEC_bas001.zw9

7.2. Import EPLAN project template 20160428



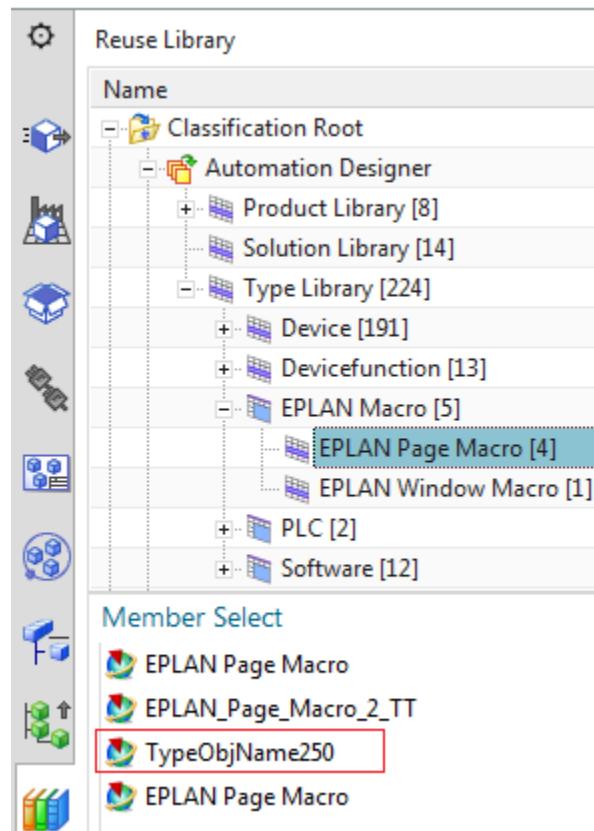
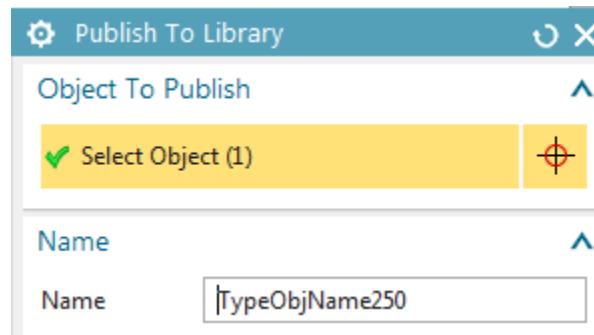
This screenshot shows the 'EPLAN Project Settings' dialog. In the 'Actions' section, the 'Import EPLAN Project Template' button is highlighted. To its right is a 'Select zw9 File' button with the path 'D:\EPLAN\Data\Templates\SAG\IEC_bas001.zw9' and a file icon.

This screenshot shows a confirmation dialog with the message 'Import of EPLAN Project Template was successful.' and an 'OK' button.

This screenshot shows the 'EPLAN Project Template' dialog with the imported template details listed in the 'EPLAN Project Template in Use' table:

Title	Value
File Name	IEC_bas001.zw9
Path	D:\EPLAN\Data\Templat...
Date	Thu Apr 28 11:16:52 2016 ...
User	Z003H4JX

\$EPLAN store in reuse 20160428



7.3a. Add PM250D macro 20160428

EPLAN Controller Programming Elec

Import Macro Place in Aspect Expressions Bulk Connection

Import Macro
Imports an EPLAN macro from the file system.

Function Aspect Navigator

Name	Description
CD000124;1-AD_1_CD_4_WS_5...	
Unassigned	
=_004	000442
=_001	000344
=_002	000345
=_003	000346
RB_AT	
RB_AT_DB	
EPLAN Page Macro	Description250
TypeObjName250	Description250
=AT001	AT-Process, ...

Import EPLAN Macro

Target

Select Engineering Object (1)

EPLAN Macro File

Select Macro File
C:\Users\Z003H4JX\Desktop\EPLAN_Macros\DRIVE_G120D_PM250D_1.emp

Properties

Name: DRIVE_G120D_PM250D_1
Description:

Actions

Show EPLAN Macro Layout Import EPLAN Macro

Properties

Input string out of range.

OK

Properties

Context

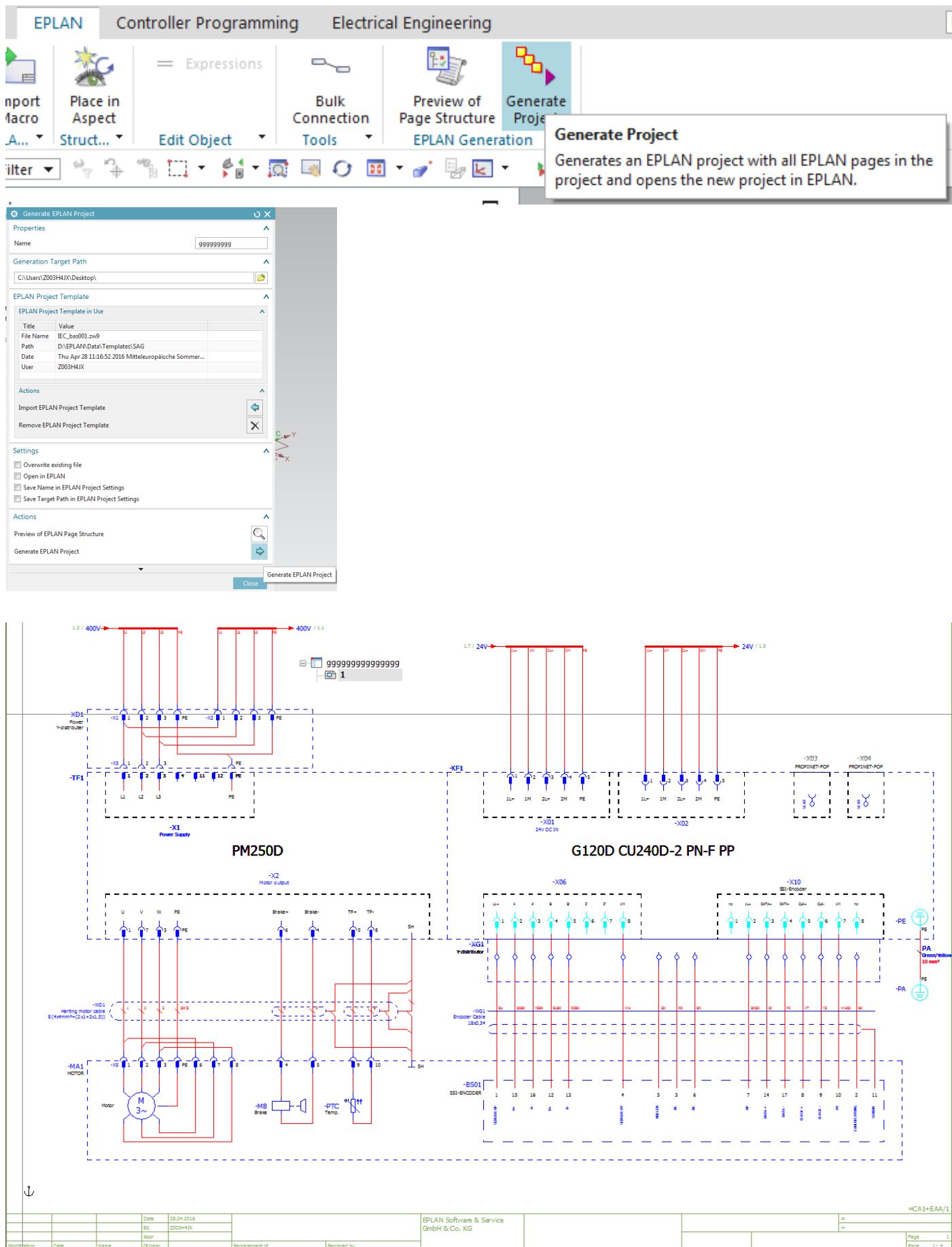
Interaction Method: Traditional

Engineering Object Attributes

Title/Alias	Value	Type	R...
Aspect Function			
Designated	False	Boolean	
Designation		String	
Multi-level Reference Designation	=_001	String	
Name	DRIVE_G120D_PM250D_1	String	
Parent	.001	String	
General			
Object Name	EPLAN Page Macro05	String	
Reference Designation Set	=_001	String	
Type	EPLAN Page Macro	String	
Type			
Character Code	EPLAN	String	
Description		String	
Full page name	1	String	
Function		String	
Location		String	
Name of EPLAN Macro	DRIVE_G120D_PM250D_1	String	
Object Name	EPLAN Page Macro	String	
Page Description		String	
Page name	1	String	
Unique Identifier	EPLAN Page Macro	String	

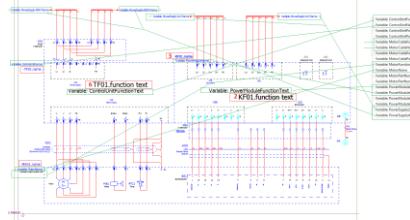
6. Enter the values listed below.

7.3b. generate 20160428



7.3c. Configure macro properties 20160428

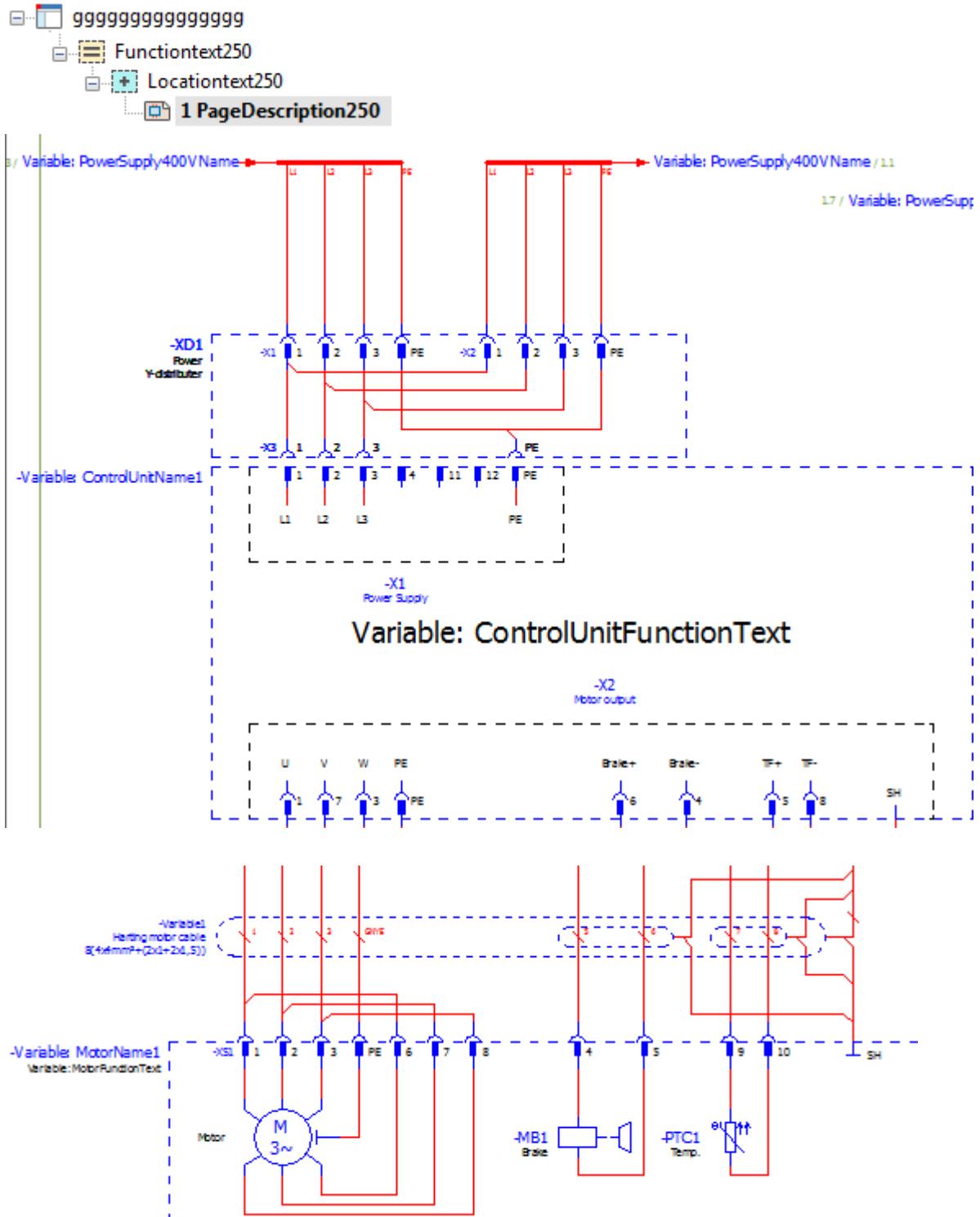
This pic shows new and old relationship



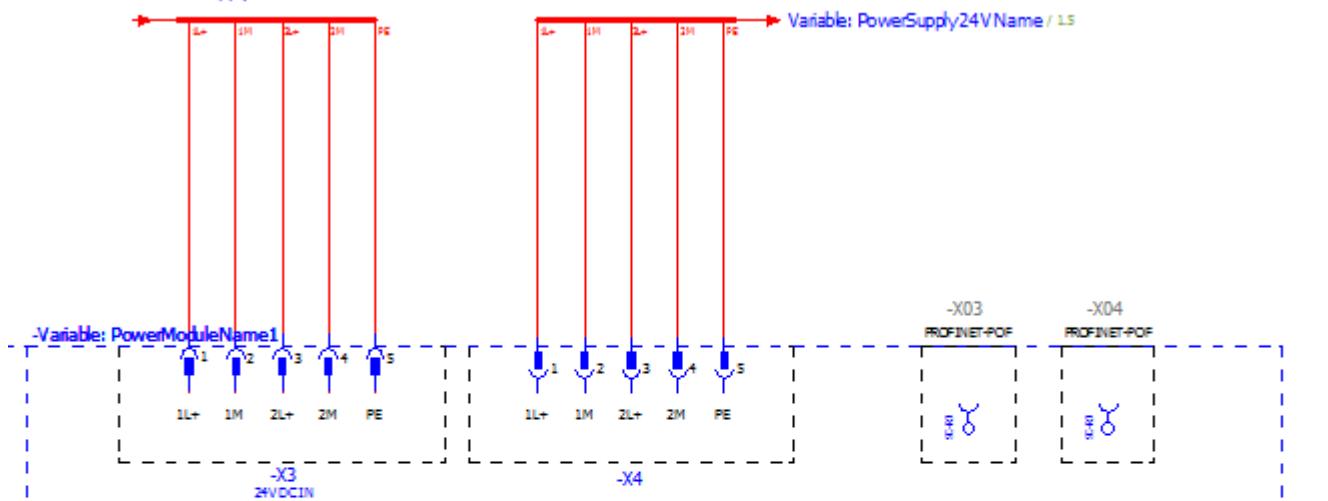
NOTE: In chapter 10 you will replace some of these values with expressions.

Device property old	Value old	Device property new	Value new
Aspect Function			
Designated			False
Designation			
Multi-level Reference Designation			=_001
Name			Name250
Parent			_001
General			
Object Name			ObjectName250
Reference Designation Set			=_001
Type			EPLAN Page Macro
Type			
Character code			EPLAN
Description	Description250		Description250
Full page name			1
Function	Functiontext250		Function250
Location	Locationtext250		Location250
Name of EPLAN Macro			NameOfMacro250
Object Name			TypeObjName250
Page Description			PageDescription250
Page Name	1		1
Unique Identifier			
TF01.Function text	TF01.function text	ControlUnitFunctionText	ControlUnitFunctionText
TF01.Name	TF01.name	ControlUnitName	ControlUnitName
		ControlUnitPartNumber1	ControlUnitPartNumber1
		ControlUnitPartNumber2	ControlUnitPartNumber2
WD02.Function text	WD02.function text	MotorCableFunctionText ??	MotorCableFunctionText
WD02.Name	WD02.name	MotorCableName ??	MotorCableName
		MotorCablePartNumber1	MotorCablePartNumber1
		MotorCablePartNumber2	MotorCablePartNumber2
MA01.Function text	MA01.function text	MotorFunctionText	MotorFunctionText
MA01.Name	MA01.name	MotorName	MotorName
		MotorPartNumber1	MotorPartNumber1
		MotorPartNumber2	MotorPartNumber2
KF01.Function text	KF01.function text	PowerModuleFunctionText	PowerModuleFunctionText
KF01.Name	KF01.name	PowerModuleName	PowerModuleName
		PowerModulePartNumber1	PowerModulePartNumber1
		PowerModulePartNumber2	PowerModulePartNumber2
		PowerSupply24VName	PowerSupply24VName
		PowerSupply400VName	PowerSupply400VName

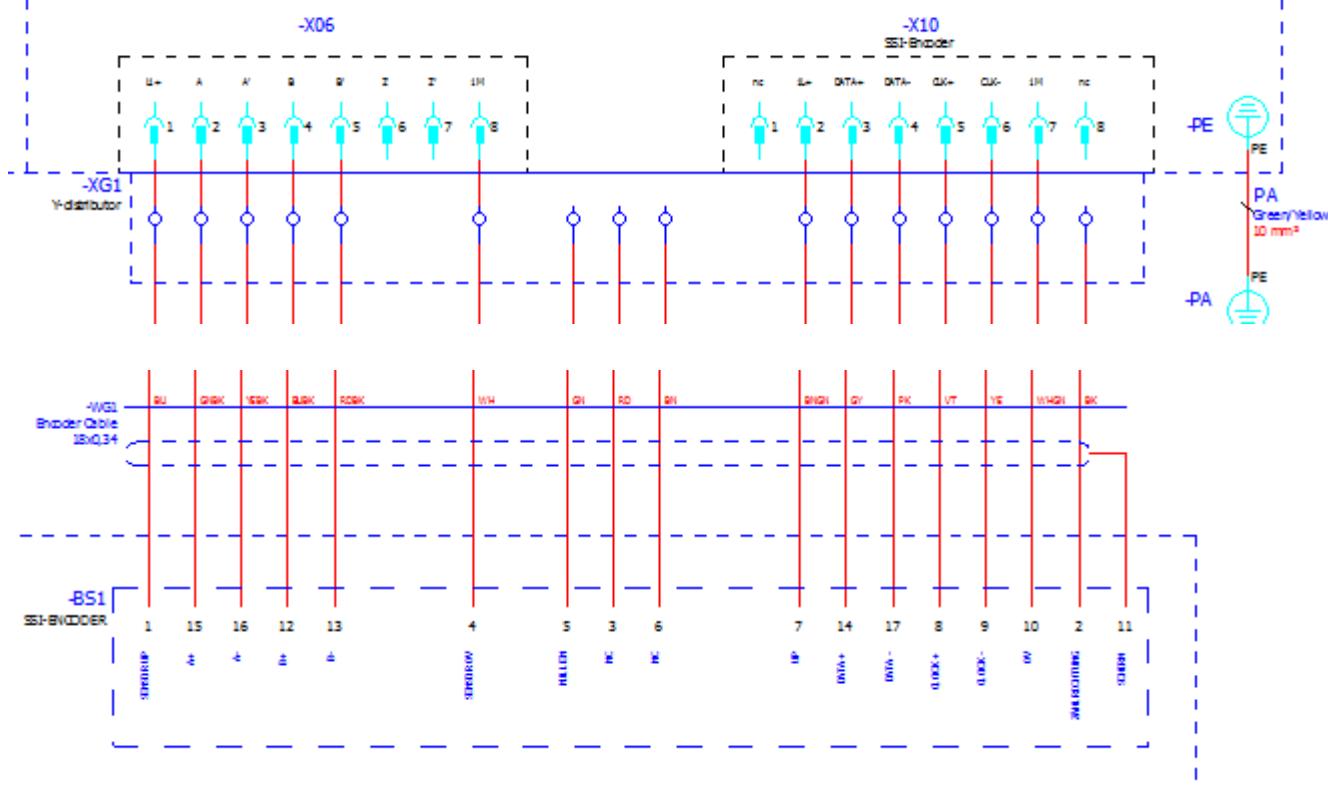
7.4. generate 20160428



1.7 / Variable: PowerSupply24VName



Variable: PowerModuleFunctionText



=Function250+Location250/1

		Date:	28.04.2016		
		Ed.:	2003HJK		
		Appr:			
Modification	Date	Name	Original	Replacement of	Replaced by

EPLAN Software & Service GmbH & Co. KG		PageDescription250		= Functiontext250	
				+ locationtext250	
				Page	1
				Page	4 / 4

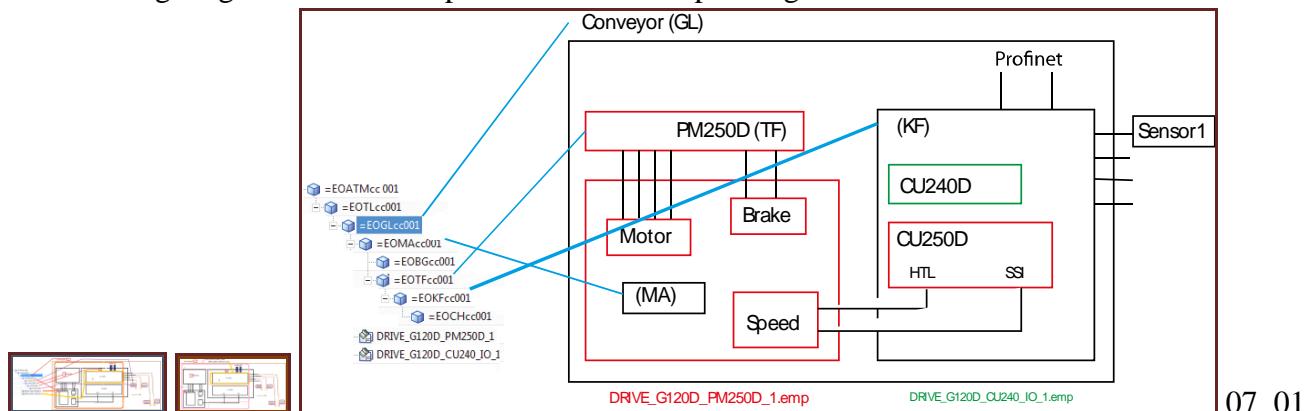
7. Configure (non-template) EPLAN (20160421)

This chapter describes how to configure 2 EPLAN macros in AD and generate EPLAN reports.

- 7.1. Macro overview
- 7.2. Import EPLAN project template
- 7.3. Add PM250D (TF + MA) macro / generate
- 7.4. Generate

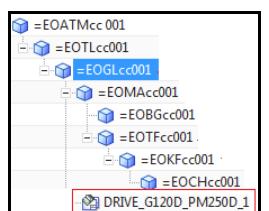
7.1. Macro overview

1. Following diagram shows an aspect tree and corresponding motor elements.



07_01

2. You add a macro to AD.



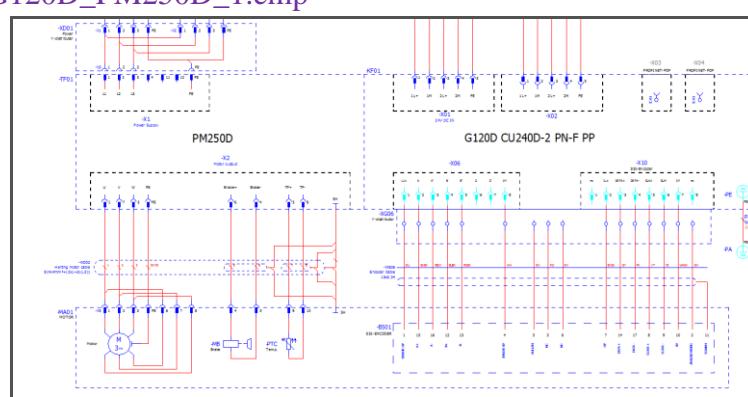
07_02

3. Below left is the AD property dialog for the PM250D macro. On the right is the macro output (default with no values set).

\debonkl0c19\ADNX\Teams\PRM\ExampleData and Geometries\ExampleProjects\Universal Templates\EPLAN_Macros DRIVE_G120D_PM250D_1.emp

EPLAN Page Attributes			
Title/Alias	Value	Type	R...
- Device properties			
=+ -KF01.Function text		String	<input type="button" value="..."/>
=+ -KF01.Name (visible)		String	<input type="button" value="..."/>
=+ -MA01.Function text		String	<input type="button" value="..."/>
=+ -MA01.Name (visible)		String	<input type="button" value="..."/>
=+ -TF01.Function text		String	<input type="button" value="..."/>
=+ -TF01.Name (visible)		String	<input type="button" value="..."/>
=+ -WD02.Function text		String	<input type="button" value="..."/>
=+ -WD02.Name (visible)		String	<input type="button" value="..."/>
- Page properties			
Description		String	<input type="button" value="..."/>
Full page name	2	String	<input type="button" value="..."/>
Function		String	<input type="button" value="..."/>
Location		String	<input type="button" value="..."/>
Page name	2	String	<input type="button" value="..."/>

07_03



07_04



In this chapter you simply enter text for the property values. But later (in part 3) you use expressions and ports that use EO's in the aspect tree to determine macro properties values.

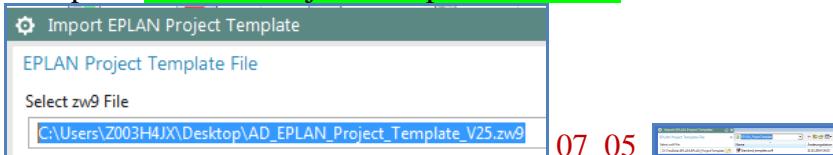
7.2. Import EPLAN project template

TERRY 20151201: new template for new eplan:
C:\Users\Z003H4JX\Desktop\AD_EPLAN_Project_Template_V25.zw9

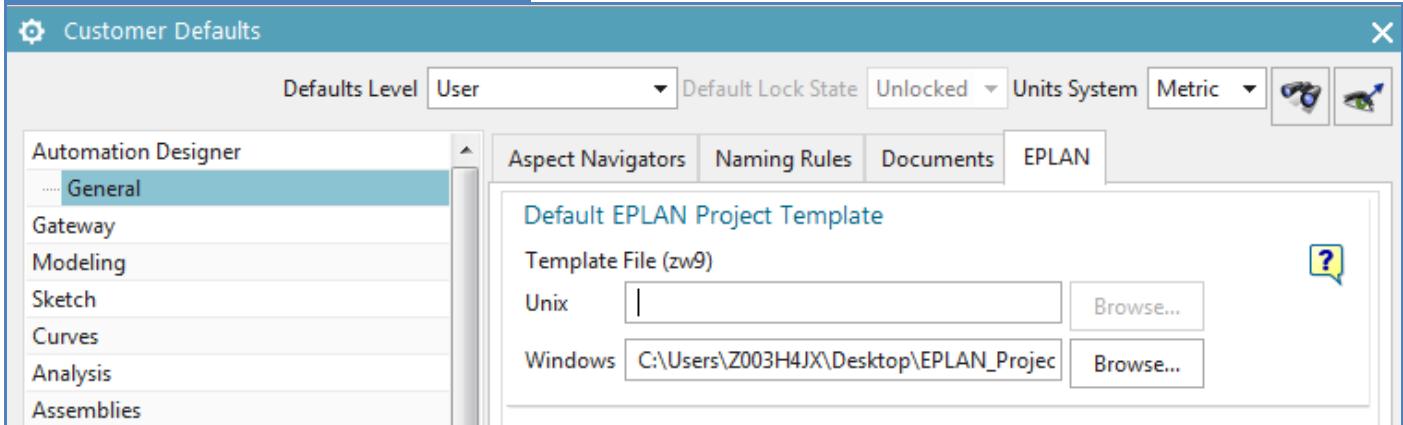
Name	Aenderungsdatum	Typ	Größe
AD_EPLAN_Project_Template_V22.zw9	03.02.2015 12:57	EPLAN data backup...	14.720 KB
AD_EPLAN_Project_Template_V25.zw9	04.09.2015 11:07	EPLAN data backup...	12.029 KB

1. Click "Electrical Engineering / Import EPLAN project template".

2. Import "EPLAN_Project_Template_V25.zw9".



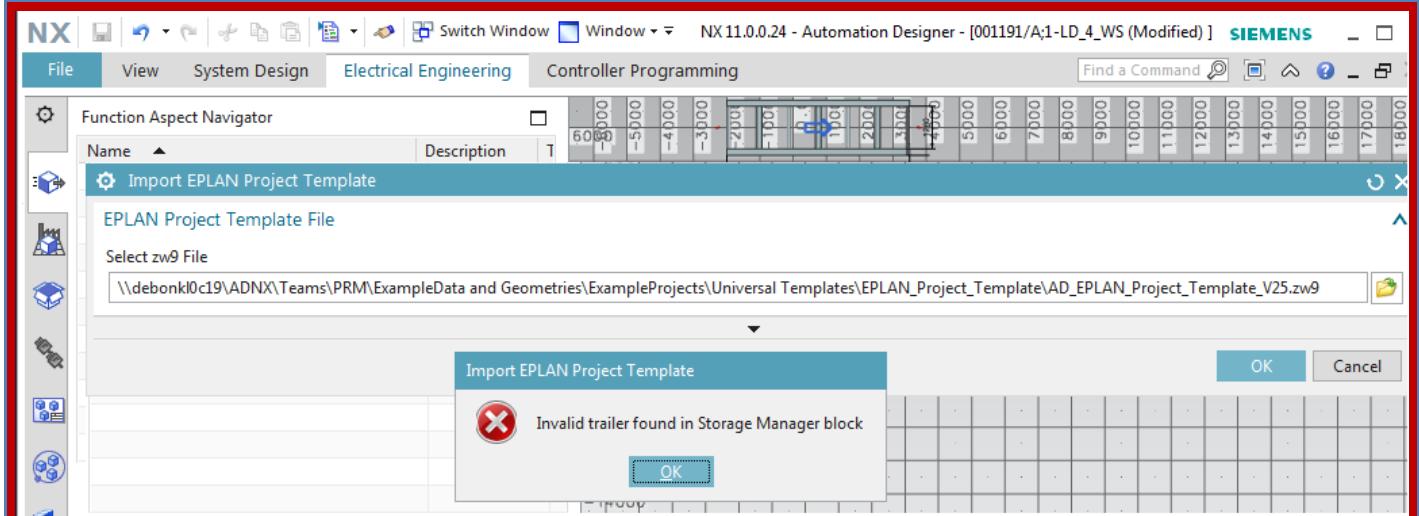
20160418 must do this first. Restart NX.



07_05b ERROR

\debonkl0c19\ADNX\Teams\PRM\ExampleData and Geometries\ExampleProjects\Universal
Templates\EPLAN_Project_Template
AD_EPLAN_Project_Template_V25.zw9

Markus said this is fixed in latest SME



\$EPLAN store in reuse 20160421

EPLAN Page Macro Description250

RB_AT Publish to Library...

Publish To Library

Object To Publish

Select Object (1)

Name

Name EPLAN_Page_Macro_2_TT

Properties

Input string out of range.

EPLAN Macro [4]
EPLAN Page Macro [3]
EPLAN Window Macro [1]
PLC [2]
Software [11]

Member Select

EPLAN Page Macro
EPLAN_Page_Macro_2_TT
EPLAN Page Macro

Preview

Name of EPLAN Macro = DRIVE_G120D_PM250D_1
Character Code = EPLAN
Unique Identifier = 000389
Description = Description250
Object Name = EPLAN Page Macro

Edit Classified Part

Attributes

Object Name	EPLAN Page Macro
Description	Description250
Unique Identifier	000389
Character Code	EPLAN
Name of EPLAN Macro	DRIVE_G120D_PM250D_1

Inherit Classification

Clear Attributes

Function Aspect Navigator

Name	
CD000101;1-AD_1_CD_4_WS_5_SS_20160418	
Unassigned	
=_001	
=_004	
=ConveyorF001	000344
=MotorF001	000345
=SensorF001	000346
=DrivePowerF001	000347
=DriveControlF001	000348
EOCHcc001	000349
EPLAN Page Macro	Description250
RB_AT	
RB_AT_DB	

Name	
=_001	000344
=_004	000345
=ConveyorF001	000346
=MotorF001	000347
=SensorF001	000348
=DrivePowerF001	000351
=DriveControlF001	000352
EOCHcc001	000353
EPLAN Page Macro	Description250
RB_AT	
RB_AT_DB	

Name	
EPLAN Page Macro	Description250

Engineering Object

Reuse Library

Select from Member Select (EPLAN Page)

General Properties

Object Name Prefix: EPLAN Page Macro

Description: Description250

Navigators

Select Parent (1)

In Function

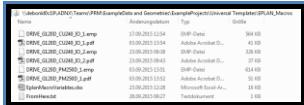
In Location

In Product

In Automation

7.3. Add/configure PM250D (TF + MA) macro

7.3. Add/configure PM250D (TF + MA) macro



201060421

The screenshot shows two overlapping windows from the EPLAN software interface.

Top Window: Import EPLAN Macro

- Target:** A green checkmark next to "Select Engineering Object (1)".
- EPLAN Macro File:** "Select Macro File" dropdown set to "C:\Users\Z003H4JX\Desktop\EPLAN_Macros\DRIVE_G120D_PM250D_1.emp".
- Properties:** A modal dialog box titled "Properties" with an error message: "Input string out of range." with an "OK" button.
- Bottom Bar:** "Import EPLAN Macro" and "Properties" tabs.

Bottom Window: Function Aspect Navigator

- Table:** Shows a hierarchical list of objects with columns: Name, Description, and Temp.
- Selected Item:** "EPLAN Page Macro" under the "CD000101;1-AD_1_CD_4_WS_5_SS_20160418" node.

20160418

Function Aspect Navigator

Name	Description	Template
CD000101;1-AD_1_CD_4_WS_5...		
Unassigned		
=_001 [EODATMname]	000344	
=_004 [EODTLname]	000345	
=ConveyorF001 [...]	000346	

Import EPLAN Macro

Target

Select Engineering Object (1)

EPLAN Macro File

Select Macro File

C:\Users\Z003H4JX\Desktop\EPLAN_Macros\DRIVE_G120D_PM250D_1.emp

Properties

Name: DRIVE_G120D_PM250D_1

Description:

Actions

Show EPLAN Macro Layout

Import EPLAN Macro

Lizenz prüfen (MAX 10.26)

Die Verbindung zum License Manager konnte nicht hergestellt werden.

Netzwerkadresse/Benutzer: debonmh0c09.ww004.siemens.net / WW004\Z003H4JX

Fehler [DCOM 0x0x80070422]: Der angegebene Dienst kann nicht gestartet werden. Er ist deaktiviert oder nicht mit aktivierte Geräten verbunden.

Siemens.AutomationDesigner.ADAgentUI

Siemens.AutomationDesigner.ADAgentUI funktioniert nicht mehr

Ein Problem hat die richtige Ausführung dieses Programms verhindert. Schließen Sie das Programm.

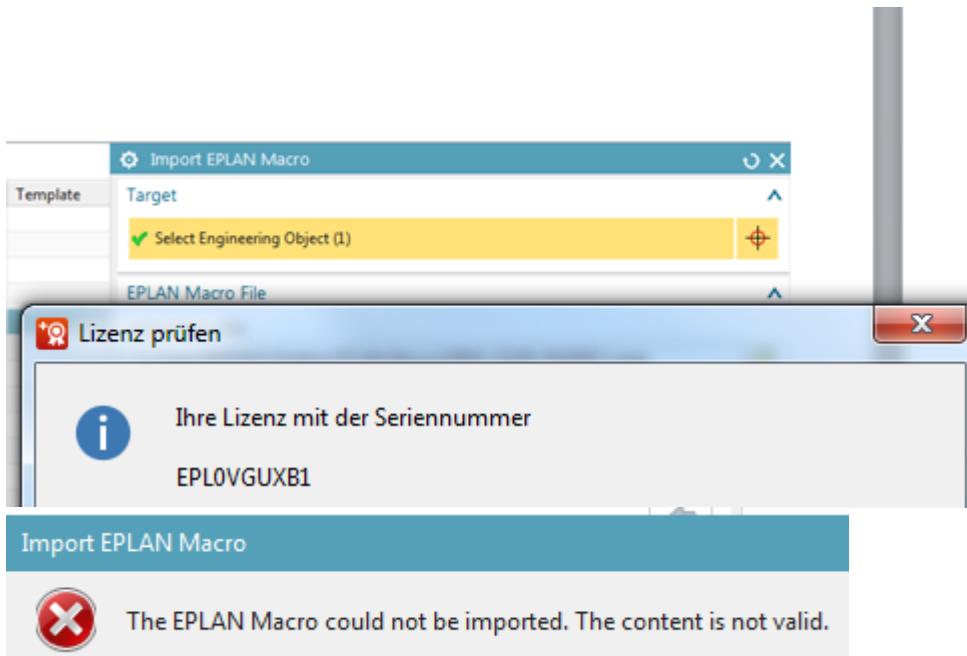
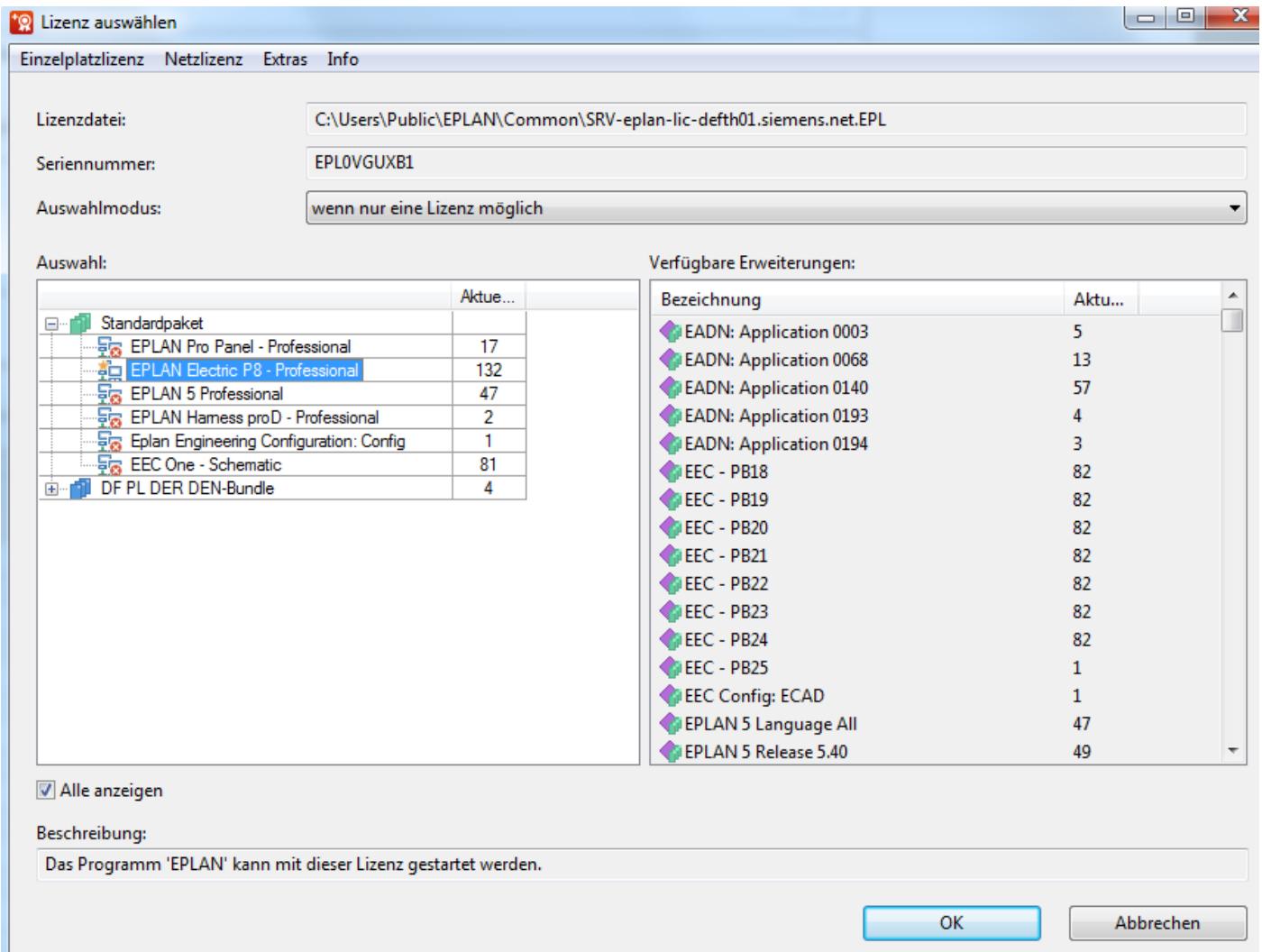
Programm schließen

Message

A problem occurred during the communication process. Retry your action.

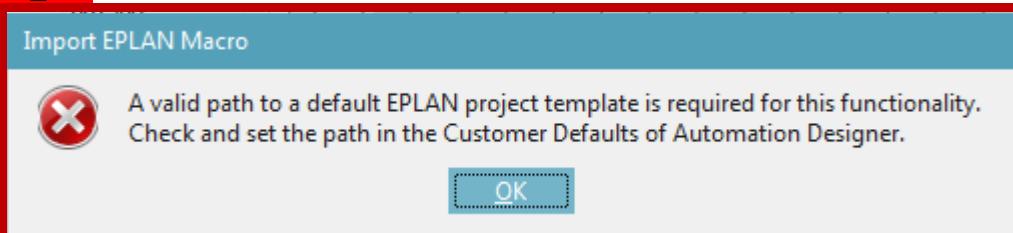
If this is not the first time you see this message, contact your system administrator for support.

Click ok then...

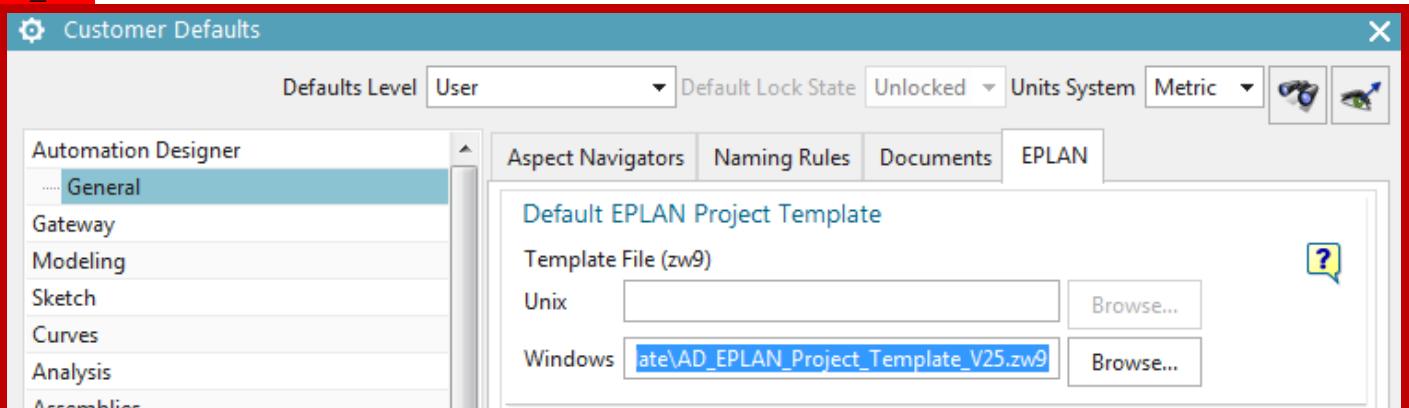


1. Click "Electrical Engineering / Import EPLAN macro".

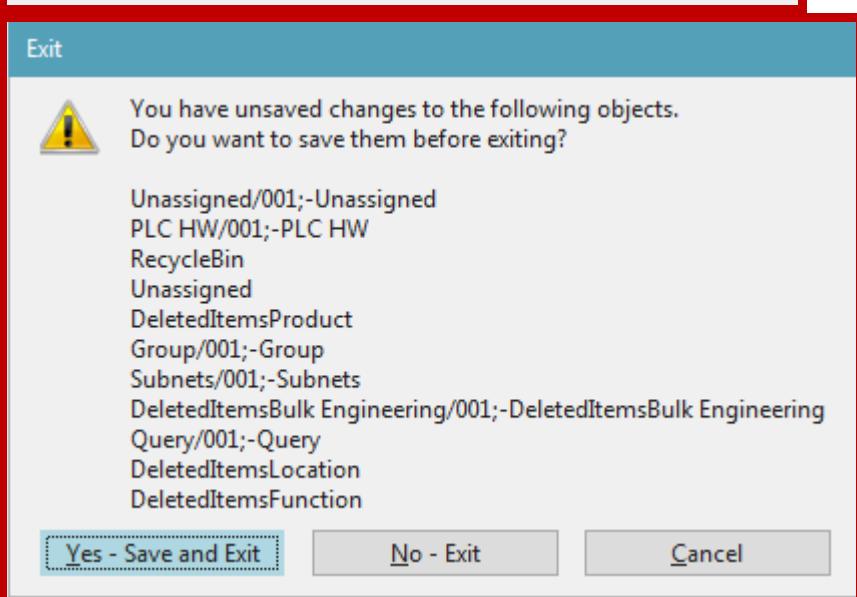
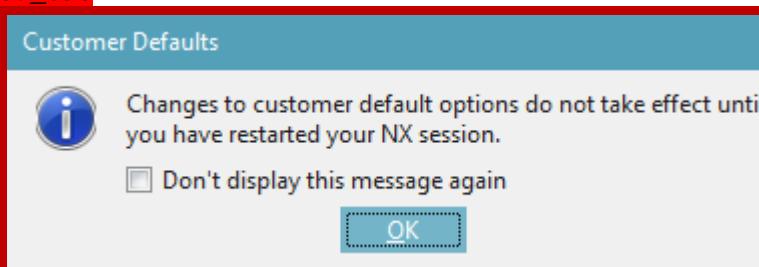
07_05c



07_05d



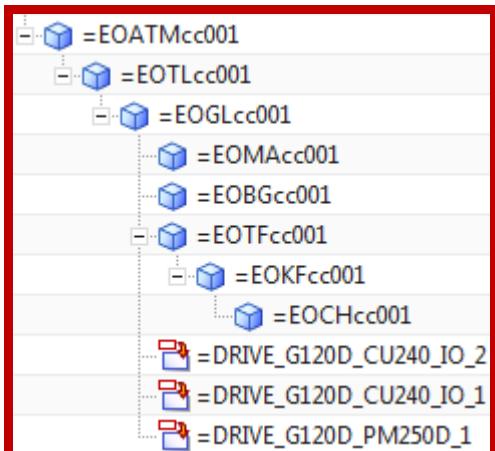
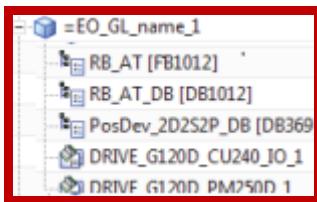
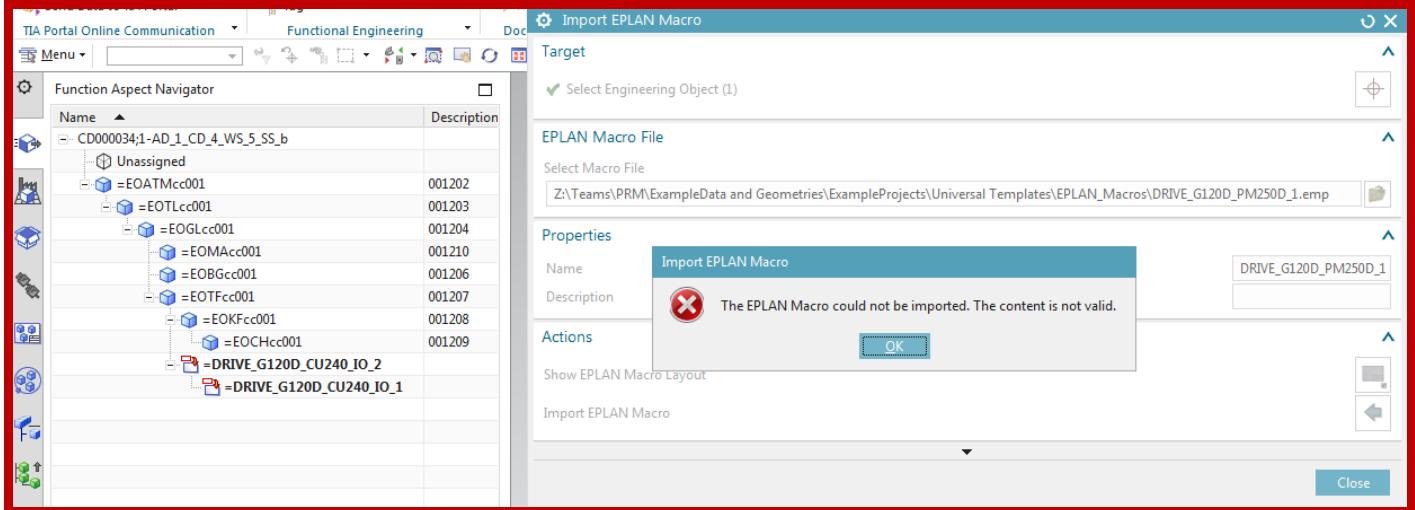
07_05e



2. Select the EO GL01 as the parent EO.

3. Select the macro file **DRIVE_G120D_PM250D_1.emp**.

07_05f ... got this error .. but macro was imported anyway.



4. Click Import. The macro appears in the aspect tree.

TERRY: if The select license dialog appears, select license. Click ok. license????????? Click close.

5. Right-click on the macro. Select "Properties".

Properties

Select Object

✓ Select Object (1)

Context

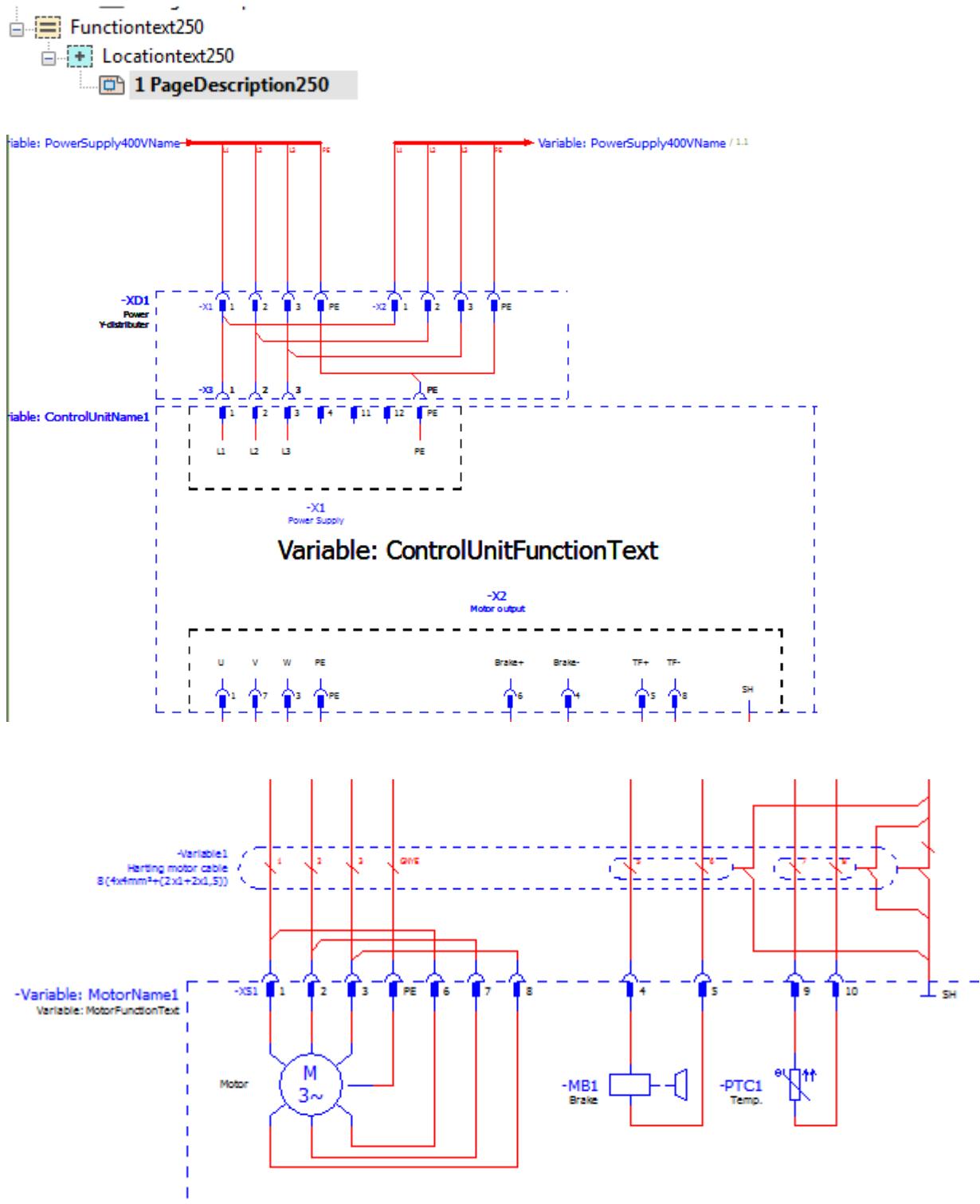
Interaction Method: Traditional

Engineering Object Attributes

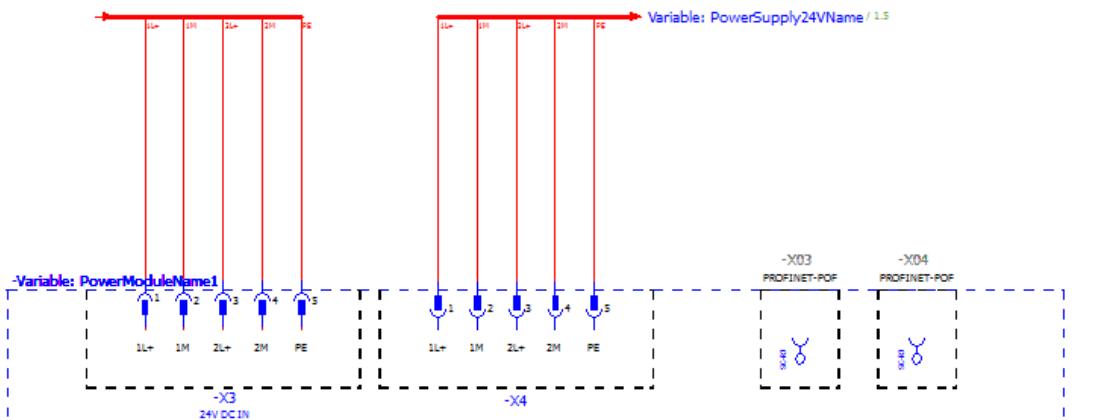
Title/Alias	Value	Units	T...	Type	R...	I...
- EPLAN Page Macro Properties						
Character Code	RR			String	Lock	Print
Description				String	Lock	Print
Name of EPLAN Macro	<No Value>			String	Lock	Print
Object Name	DRIVE_G120D_PM250D_1			String	Lock	Print
Unique Identifier	EPLAN Page Mac003			String	Lock	Print
- Function Aspect						
Designated	True			Boolean	Lock	Print
Designation	=DRIVE_G120D_PM250D_1			String	Lock	Print
Multi Reference Designation	=EOATMcc001.EOTLcc001.EOGLcc001.DRIVE_G120D_PM250D_1			String	Lock	Print
Name	DRIVE_G120D_PM250D_1			String	Lock	Print
Parent	=EOGLcc001			String	Lock	Print
- General						
Name of EPLAN Macro	DRIVE_G120D_PM250D_1			String	Lock	Print
Reference Designation Set	=EOATMcc001.EOTLcc001.EOGLcc001.DRIVE_G120D_PM250D_1			String	Lock	Print
- Page properties						
Full page name	1			String	Lock	Print
Function				String	Lock	Print
Location				String	Lock	Print
Page Description				String	Lock	Print
Page name	1			String	Lock	Print
- All Unset						
Name of EPLAN Macro	<No Value>			String	Lock	Print

7. Click OK.

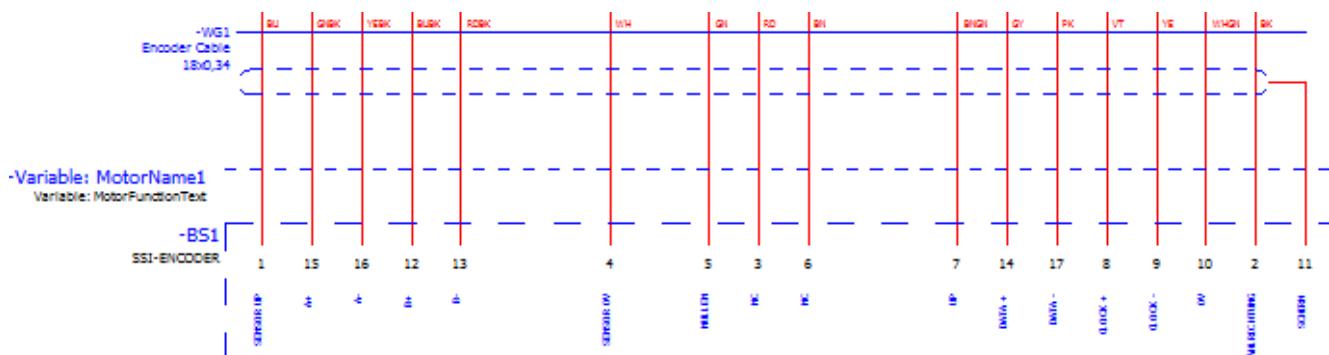
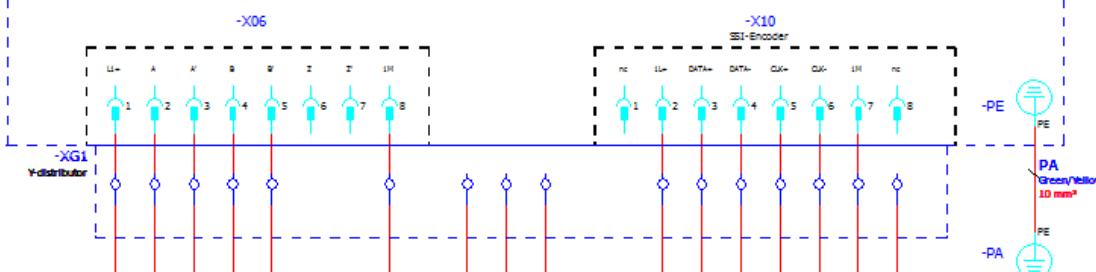
20160428 generate



1.7 / Variable: PowerSupply24VName



Variable: PowerModuleFunctionText



=Function250+Location250/1

		Date	28.04.2016		
		Ed.	2003H4JK		
		Appr			
Modification	Date	Name	Original	Replacement of	Replaced by

EPLAN Software & Service
GmbH & Co. KG

PageDescription250

= Functiontext250

+ Locationtext250

Page 1
Page 3 / 3

7.4. Generate

20160421

Generate EPLAN Project

Properties

Name: 20160421_01

Generation Target Path

C:\Users\Z003H4JX\Desktop\

EPLAN Project Template

EPLAN Project Template in Use

Title	Value
File Name	AD_EPLAN_Project_Template_V25.zw9
Path	C:\Users\Z003H4JX\Desktop\EPLAN_Project_Template
Date	Mon Apr 18 15:18:28 2016 Mitteleuropäische Sommerzeit
User	Z003H4JX

Actions

Import EPLAN Project Template

Remove EPLAN Project Template

Settings

Overwrite existing file

Open in EPLAN

Save Name in EPLAN Project Settings

Save Target Path in EPLAN Project Settings

Actions

Preview of EPLAN Page Structure

Generate EPLAN Project

Generate EPLAN Project

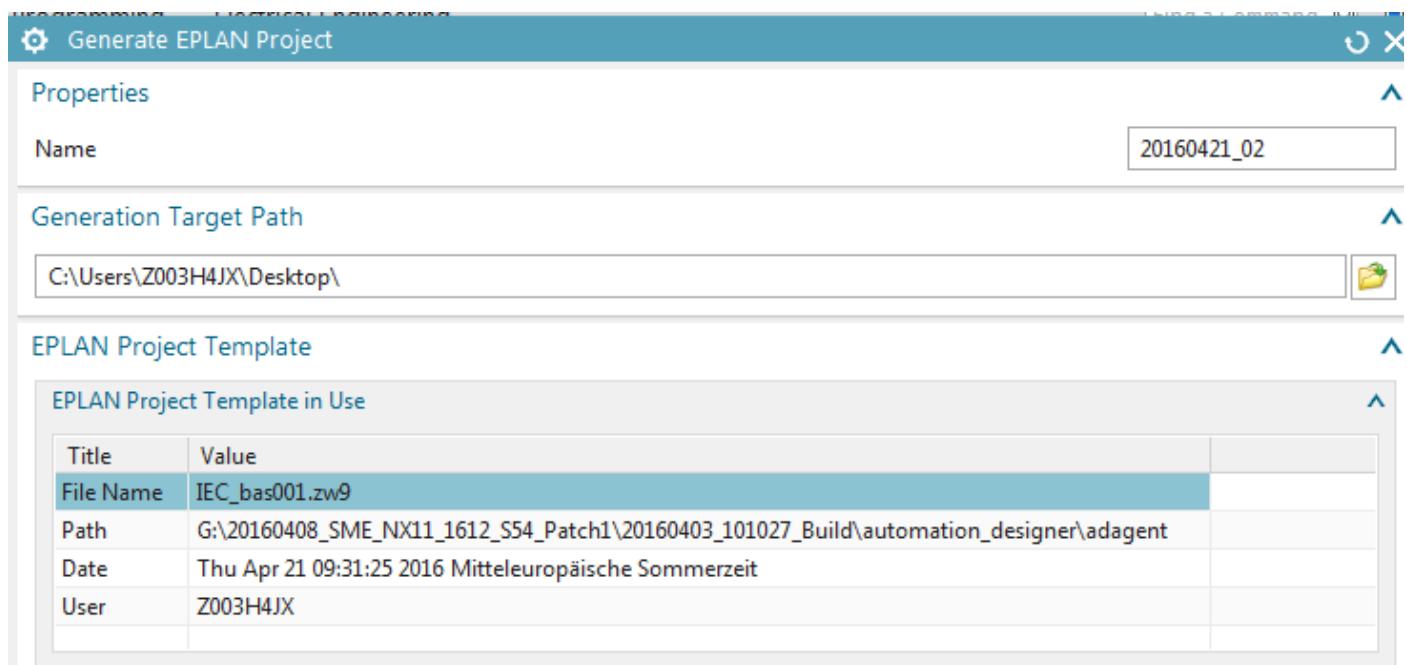
 Creating the project was not successful.

Most common reasons:

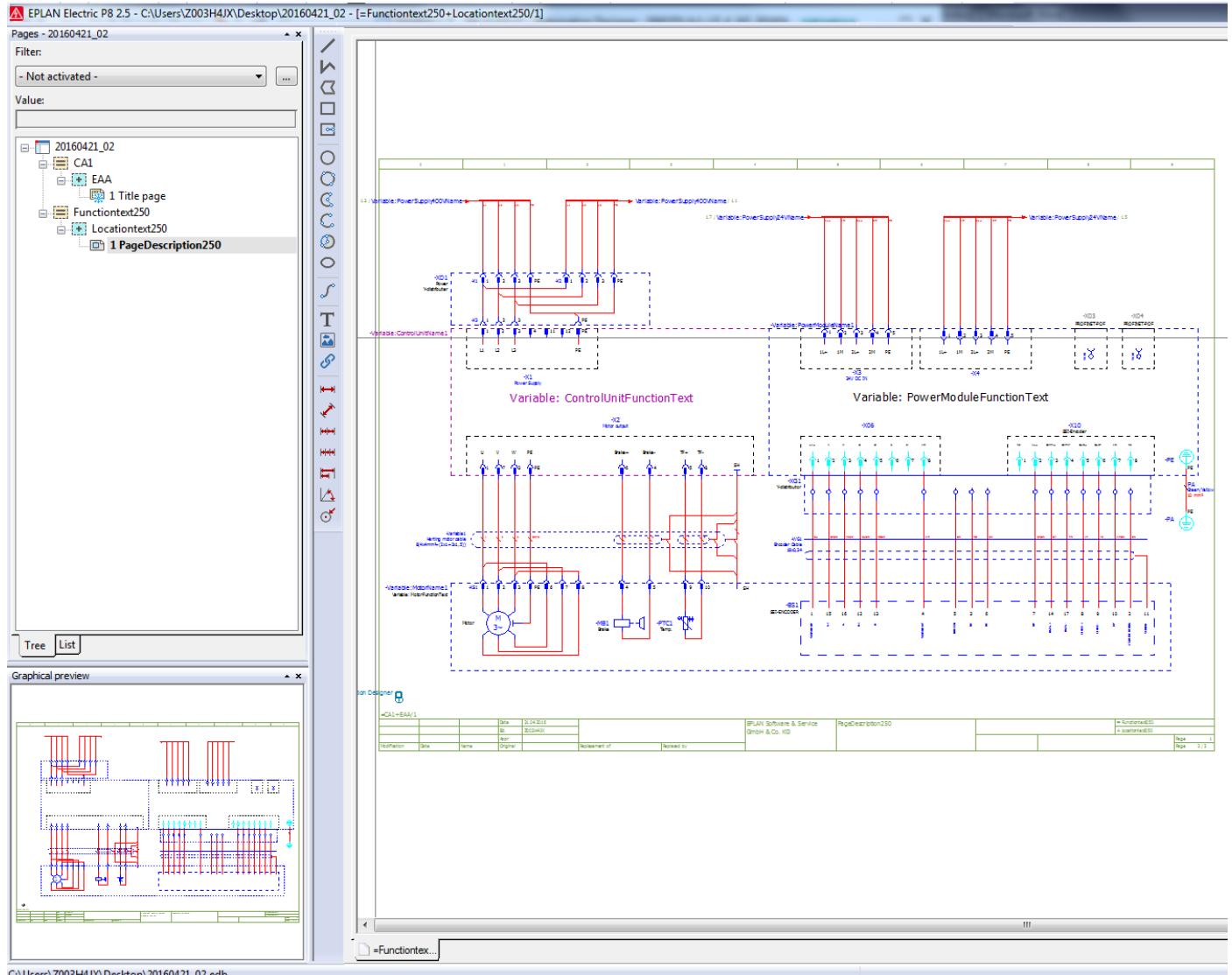
- The project template may be corrupt
- If the project already exists, it may be in use or write protected
- The target directory may be out of disc space.

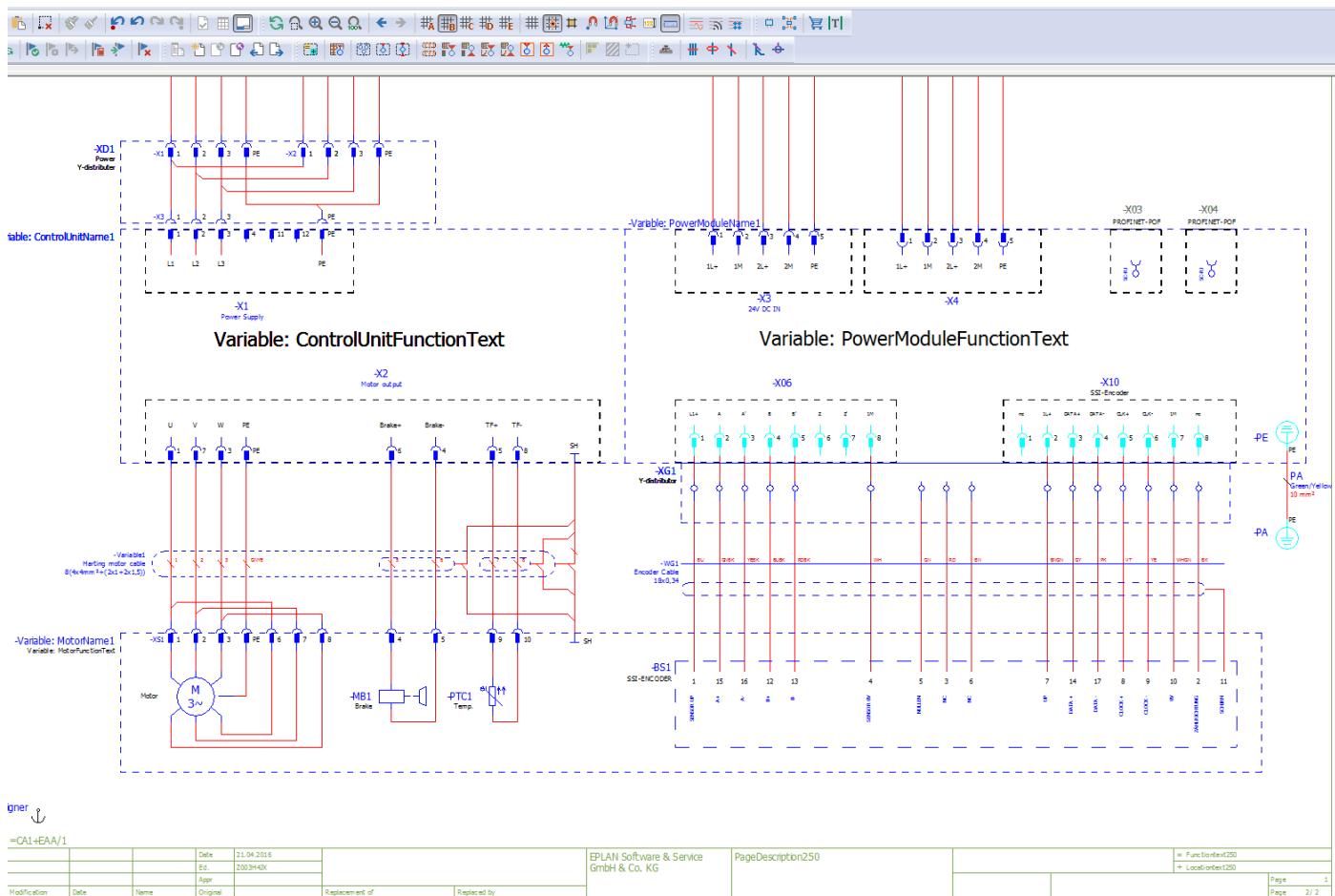
Try different template

G:\20160408_SME_NX11_1612_S54_Patch1\20160403_101027_Build\automation_designer\adagent\IEC_bas001.zw9



That worked.

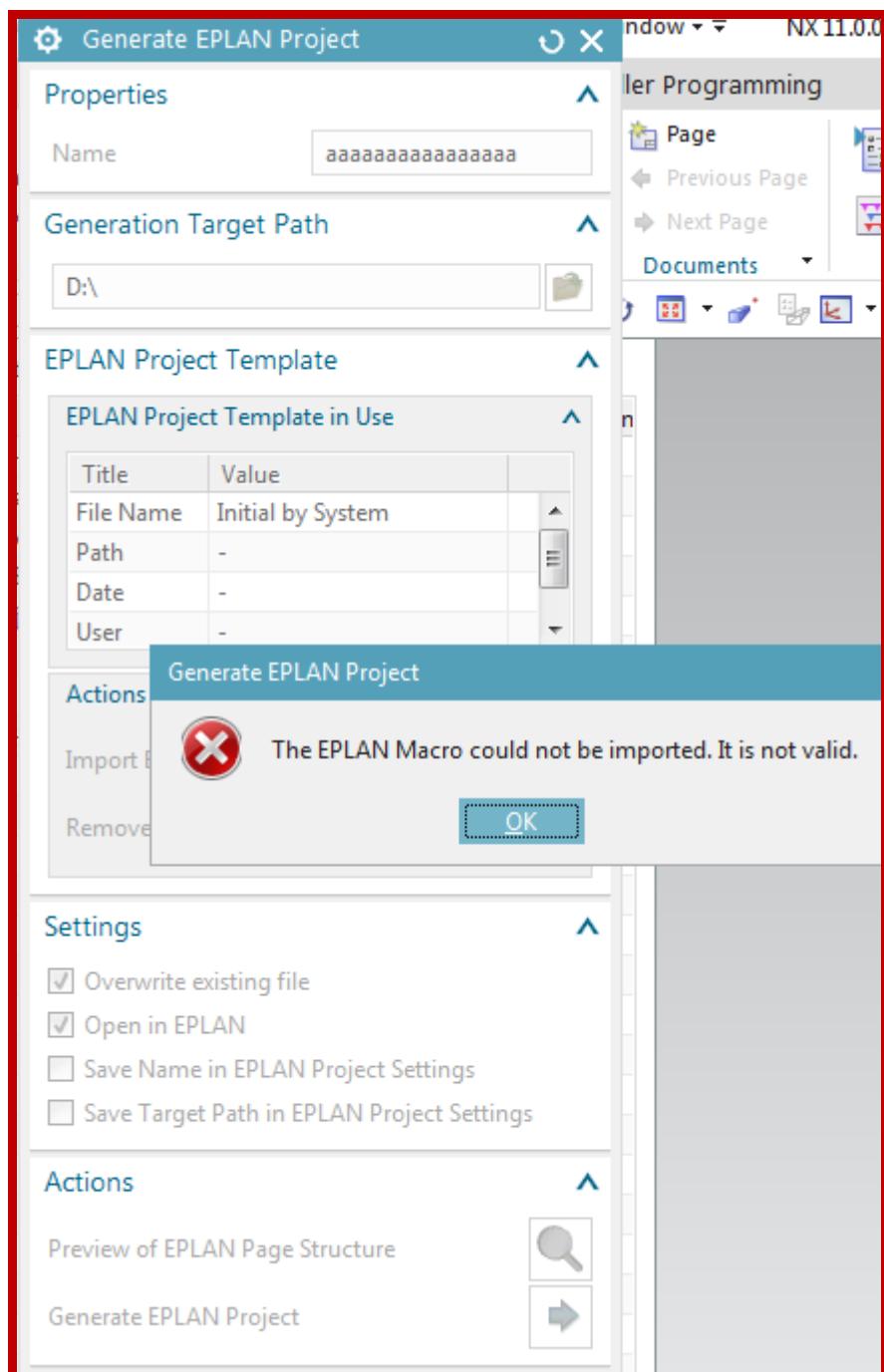




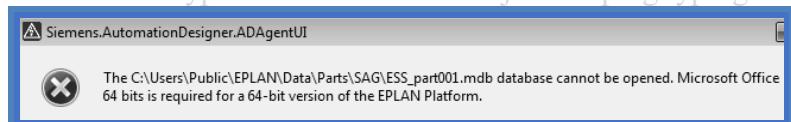
=CA1+EAA/1	Date	21.04.2016		EPLAN Software & Service GmbH & Co. KG	PageDescription250	FunctionRef250 + LocationRef250
	Ed.	2003+40K				
	Appr.					
Modification	Date	Name	Original	Replacement of	Replaced by	Page 1 Page 2 / 2

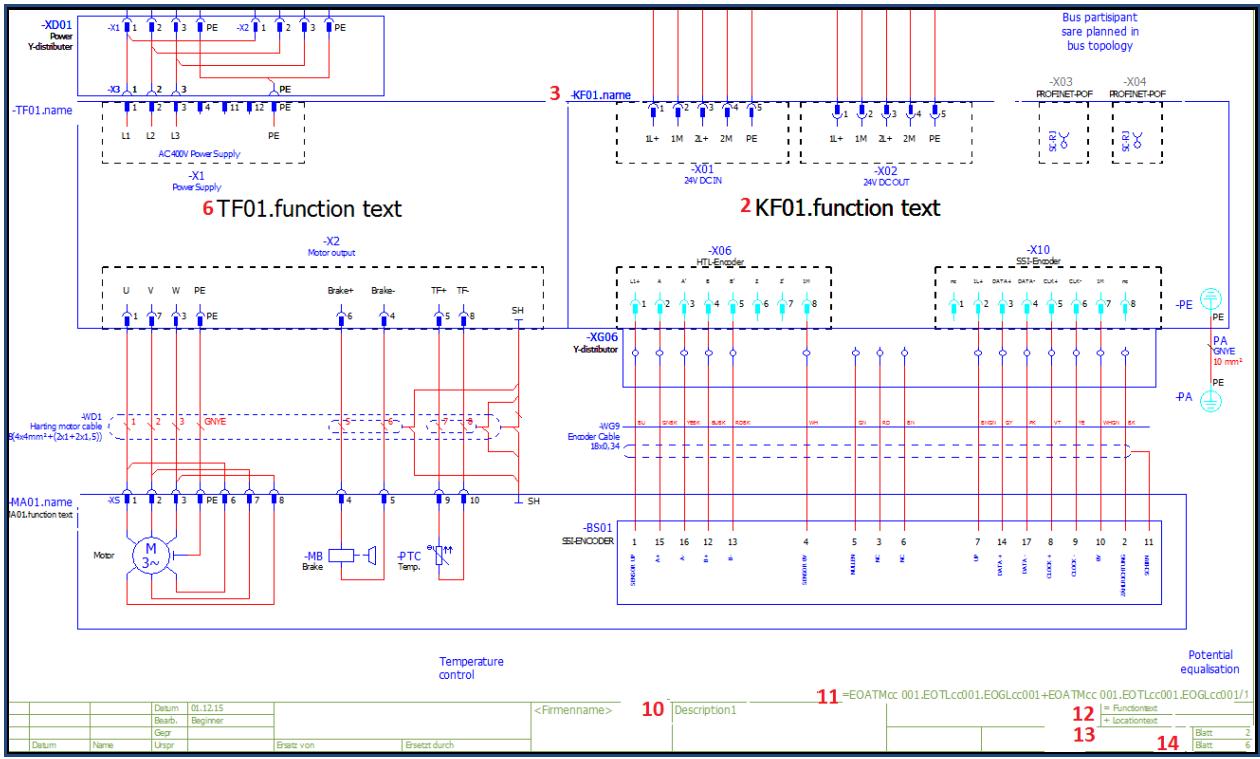
Properties (components): Placeholder object			
Placeholder object Display Symbol data			
Name: <input type="text"/> Assignment Values			
Category: All categories			
Row	Property	Current value	Variable
1	Interruption point		
2	=Functiontext250+ Locationtext250-Variable: PowerSupply400VName		
3	=Functiontext250+ Locationtext250-Variable: PowerSupply400VName		
4	=Functiontext250+ Locationtext250-Variable: PowerSupply24VName		
5	=Functiontext250+ Locationtext250-Variable: PowerSupply24VName		
6	Black box		
7	=Functiontext250+ Locationtext250-Variable: ControlUnitName1		
8	<10152> Revision marker (from property comparison)		
9	<10153> Revision change marker (from property comparison)		
10	<19030> Revision marker (change tracking)		
11	<19031> Revision marker format (change tracking)		
12	<19033> Creator (change tracking)		
13	<19307> Property arrangement	User-defined	
14	<20001> Name (full)	=Functiontext250+ Locationtext250-Variable: ControlUnitName1	
15	<20002> Name (visible)	-Variable: ControlUnitName1	<ControlUnitName>
16	<20011> Function text	Variable: ControlUnitFunctionText	<ControlUnitFunctionText>
17	<20021> Cross-reference display		
18	<20024> Mounting site (describing)		

1. Click on "Electrical Engineering / Generate EPLAN".
2. Enter the name.
3. Select the path.
4. Check "Open in EPLAN".
5. Click "Generate EPLAN Project". EPLAN opens with the macro page shown below.



20151216... typical EPLAN chaos... just keeping typing ok until it opens...



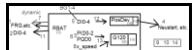


Note that the aspect chain was automatically added to "Full page name" instead of "Function text" + "LocationText".



8. Configure (non-template) TIA (20160429)

20160209 TERRY: This chapter assumes that the TIA project (HW, SW, tags) has been configured as described in the TEST_INSTALLATION_v221_20160128_0847b.doc.



[20160118_ch8_terry.mp4](#)

This chapter describes how to configure the project for generating TIA.

8.1. Receive HW/SW. Receive HW, SW and tags from TIA.

8.1b. Move RB_AT, create IDB's.

1. Move RB_AT to the conveyor part of the aspect tree (what will become the template).
2. Create the RB_AT IDB.
3. Create IDB's for PosDev and G120x in the conveyor part of the aspect tree.
4. View the ports between the FBs and IDBs.

8.2. Add/delete tags.

1. Verify the 4 RB_AT (FRG, etc.) tags were imported, the connections are OK, and the addresses are correct.
2. Verify the 7 Pos_Dever (Newstart, etc.) tags.
Delete the Pos_front_left, etc. tags and
3. Add boolean tag DI1 (under EO CH1).
4. Add DWord tag tag PID0 (under EO KF).

8.3. Create TL constant value.

The constant values in the top aspect EO TL allows you to reference in sub-EOS and thus easily make global changes.

8.4. Dynamize SW.

Fix the calls (OB1, RB_AT) and tag references (RB_AT, PosDev) in the imported SW blocks.

8.5. Assign SW to HW.

1. Set absolute tag address (future).
2. Modify PID0 tag memory location.
3. Modify DI1 tag HW connection.
4. Connect SW.

8.6. Generate TIA.

Send the SW to TIA.

8.1. Receive HW, SW

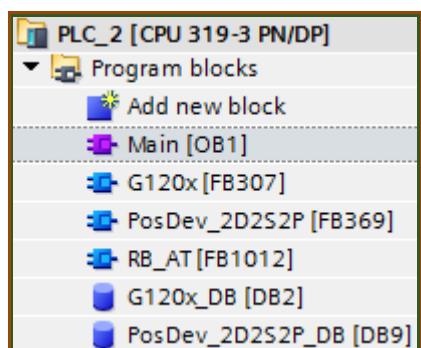
- 8.1.1. Overview of HW/SW/tags to import
- 8.1.2. Receive HW
- 8.1.3. Import SW-tags (OB1, G120x, PosDev, RB_AT)

Automation tab	Aspect top	Template
HW OB RB_ATFB FRG_EStop Newstart PosDev FB G120 FB	1	

08_001

8.1.1a. Overview of HW/SW/tags to import (20160118)

20160209 TERRY: for explanation of how to setup the tia sw see
TEST_INSTALLATION_v221_20160128_0847b.doc



08_002

	Name	Data type	Address	
1	slow_back	Bool	%M0.0	
2	Pos_front_left	Bool	%M0.1	
3	slow_forw	Bool	%M0.2	
4	pos_back_left	Bool	%M0.3	
5	FRG_EStop	Bool	%M0.4	
6	IBNO	Bool	%M0.5	
8	FRG_BS	Bool	%M0.7	
9	reset	Bool	%M1.0	
10	BliF	Bool	%M1.1	
11	TRUE	Bool	%M1.2	
7	RLO 0	Bool	%M0.6	
12	RLO 1	Bool	%M1.3	
13	CPulse_0_1s	Bool	%M1.4	
14	Newstart	Bool	%M1.5	
15	PLC_On delayed	Bool	%M1.6	
19	PID0	DWord	%MD4	
20	PID1	DWord	%MD8	
21	PID2	DWord	%MD12	
22	PQDO	DWord	%MD16	

08_003

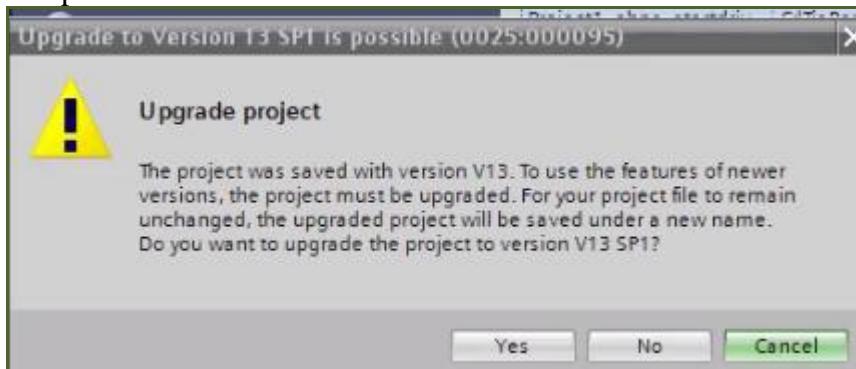
8.1.1b. config TIA SW (20160304 from TEST_INSTALLATION.doc)

1. upgrade

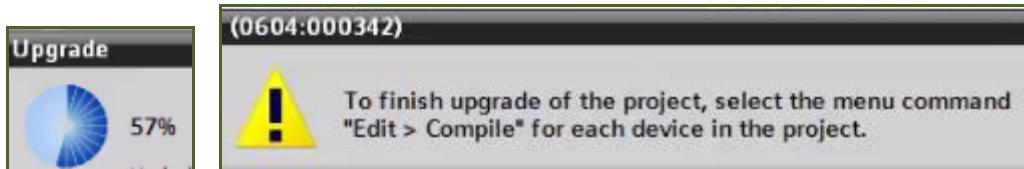
\debonkl0c19\ADNX\[PROJECT_SHARE_WITH_CYP]
\TIA_Portal_XML\FD4_Project_without_startdrive.zip

1. unpack

2. Open.



3. Click Yes.

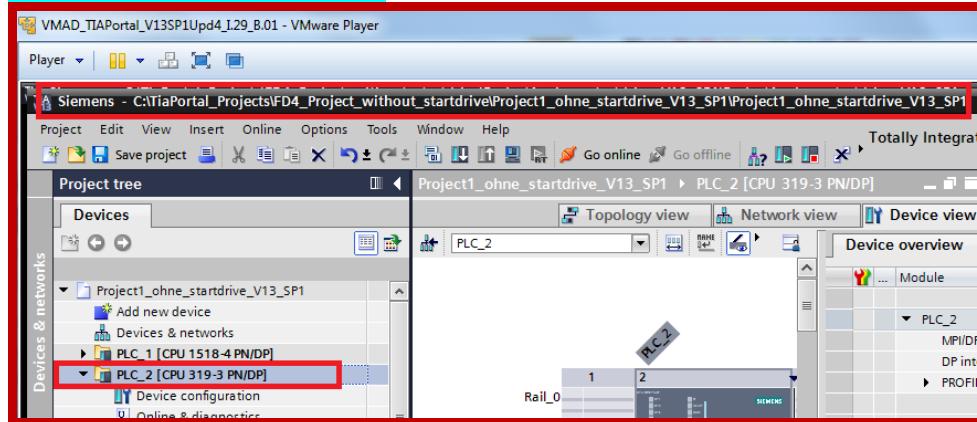


4. compile.

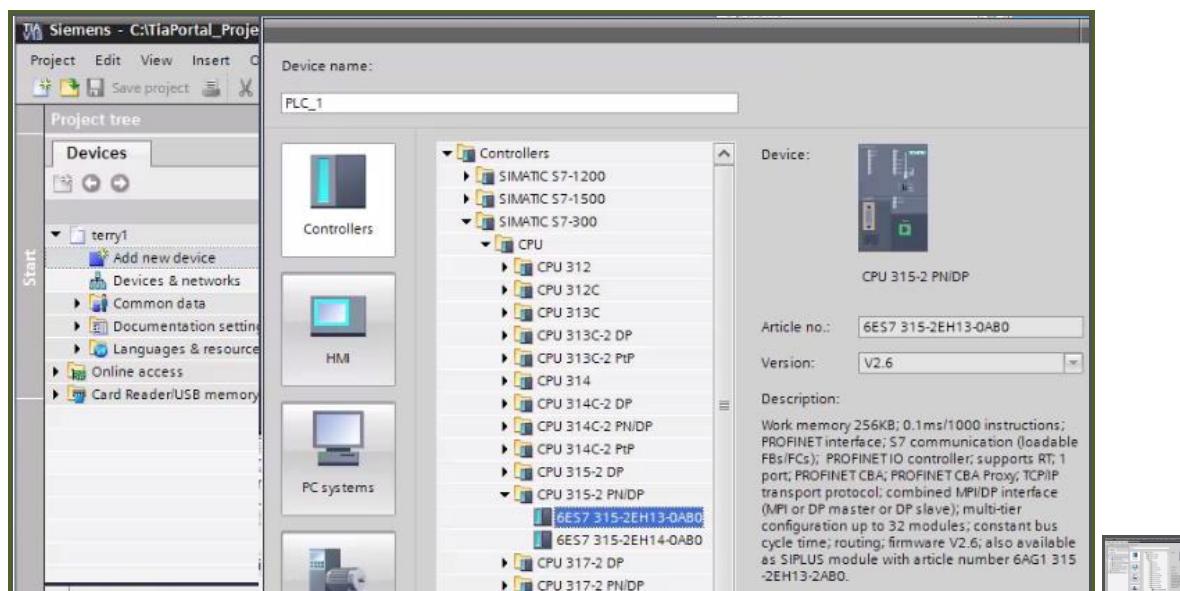


2. Add S300 CPU

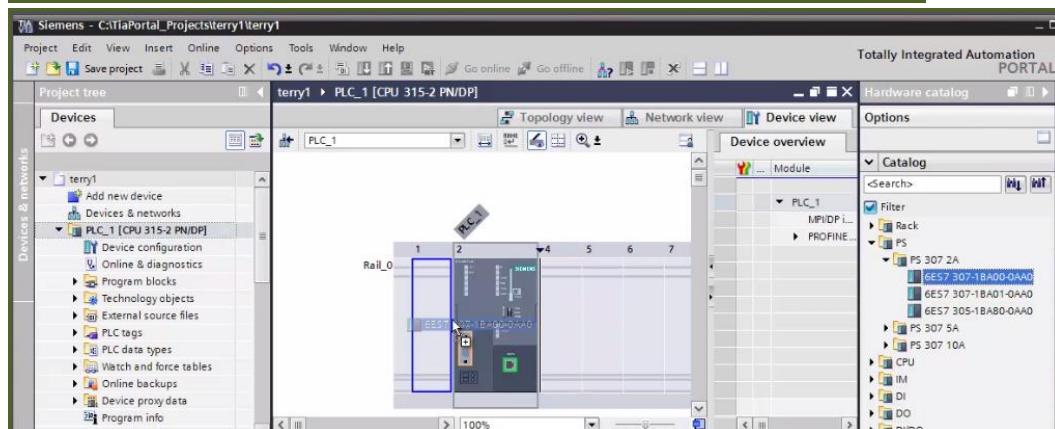
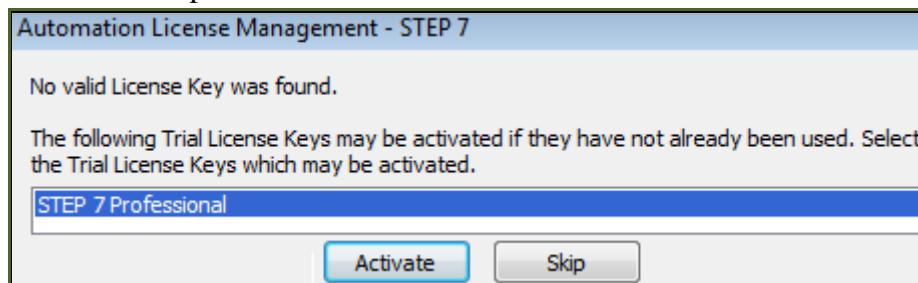
20160303 Must add s300 hw.



1. Add new S300 HW.



2. Activate step7.



xxx 3. Add I/O modules

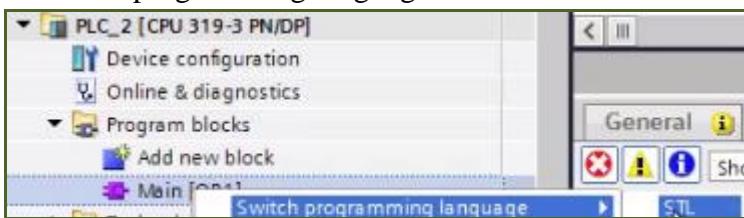
20160304 did not do this but should have.. did not cause problems.

Add 1 DI and 1 DO.



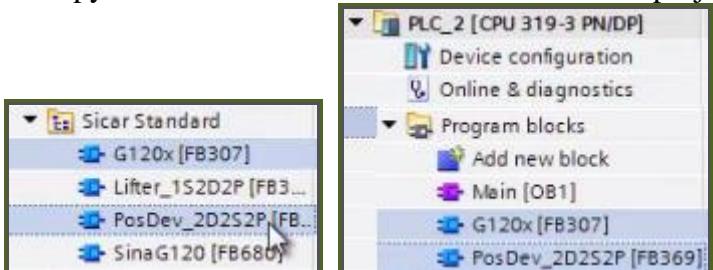
4. Change OB1 to STL

1. Switch programming language.



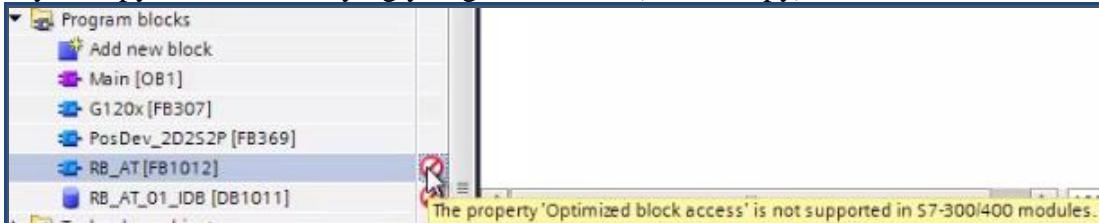
5. Copy S1500 PosDev, G120

1. Copy S1500 SW G120 and PosDev to the S300 project.



6. Modify S1500 RB_AT and copy

If you copy without modifying you get this error (do not copy).

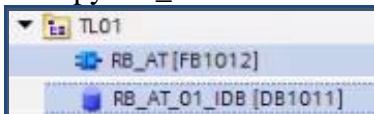


1. Change the S1500 RB_AT properties.

2. Compile.



3. Copy RB_AT to S300.

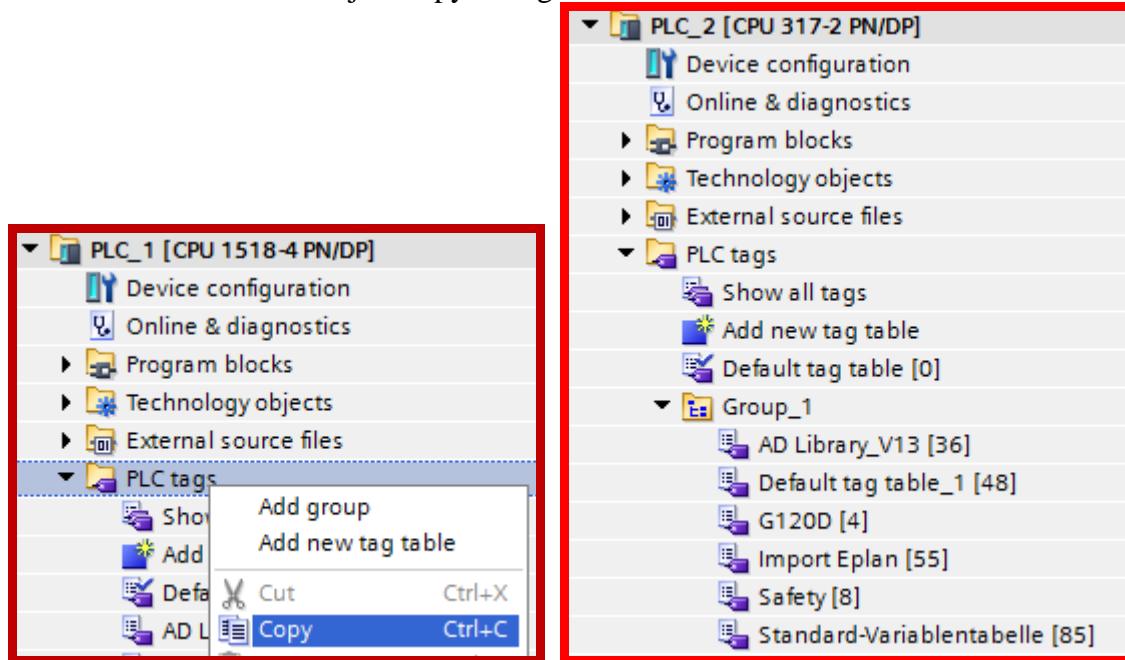


4. Compile.

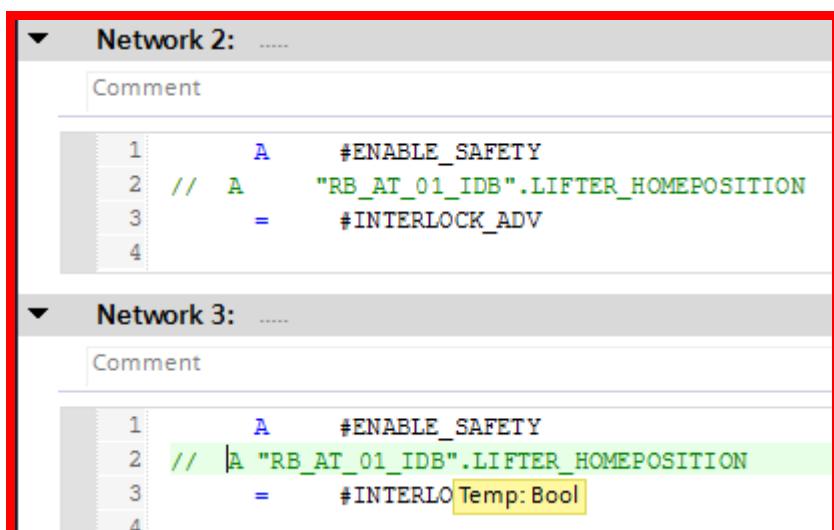
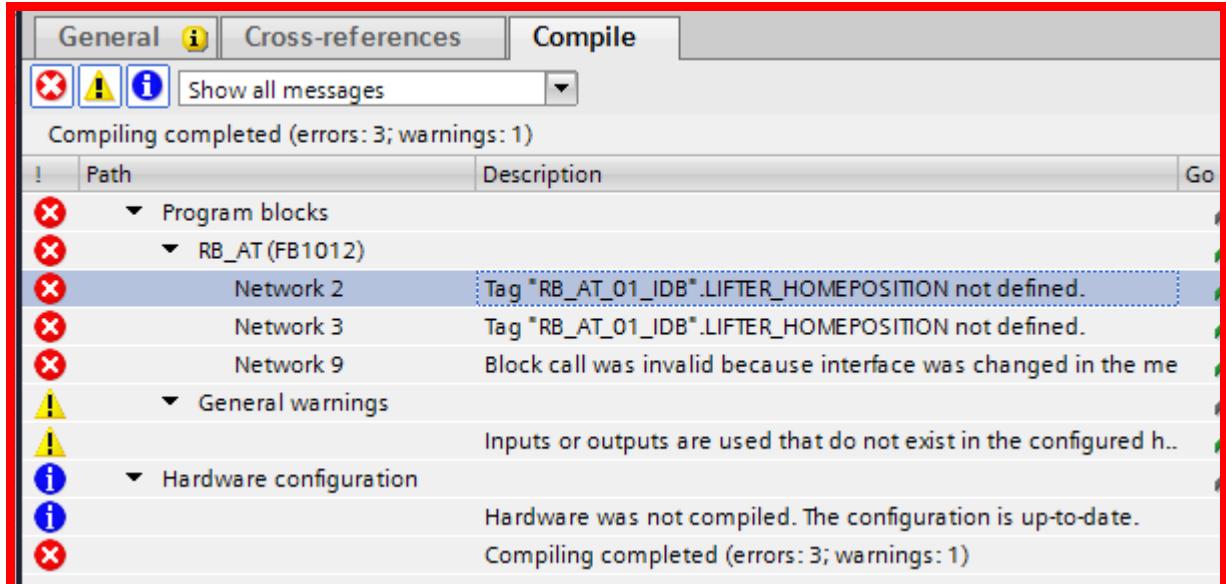


7. Copy all tags

20160302_0921 I tried to just copy all tagss



8a.NEW: fix sw errors (since did not copy all blocks)



```

1   CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"
2   ✘ Block call was invalid because ADV
3       interface was changed in the RTN
4       meantime. CK_ADV
5       IL_RTN :=#INTERLOCK_RTN
6       PB_ADV :=#PUSHBOTTOM_ADV
7       PB_RTN :=#PUSHBOTTOM_RTN
8       LS_ADV :="Pos_front_left"
9       SW_FS_ADV :="slow_forw"
10      SW_FS_RTN :="slow_back"
11      LS_RTN :="pos_back_left"
12      SEL_SLOW :="RLO 0"
13      AUTO_MODE :="auto_inching"
14      MANU_MODE :="manual"
15      MOTOR_PROT :="RLO 1"
16      MOTOR_TEMP :="RLO 1"
17      ERR_RESET :=#ERROR_RESET
18      LAMP_TEST :="Lamptest"
19      TM_OP :=50
20      TM_LS :=20
21      TV_STARTUP :=20
22      Visu :="Interface_Visu".Model[2]

```

Context menu for the highlighted line (Line 2):

- Open
- Open and monitor
- Cut (Ctrl+X)
- Copy (Ctrl+C)
- Paste (Ctrl+V)
- Delete (Del)
- Go to
- Cross-reference information (Shift+F11)
- Create instance...
- Update block call**
- Insert network (Ctrl+R)
- Properties (Alt+Enter)

General i Cross-references i Compile i Syntax i

Show all messages ▾

Compiling completed (errors: 1; warnings: 1)

!	Path	Description	Go to
✖	PLC_2		▶
✖	Program blocks		▶
✖	RB_AT (FB1012)		▶
✖	Network 9	Block call was invalid because interface was changed in the meantime.	▶
⚠	General warnings	Inputs or outputs are used that do not exist in the configured hardware.	▶
⚠	Hardware configuration	Hardware was not compiled. The configuration is up-to-date.	▶
✖		Compiling completed (errors: 1; warnings: 1)	▶

```

IV_STARTUP :=20
Visu :=      //Interface_Visu".Model[2]
Alarms :=//Interface_Alarms".Model[2]
ADV := i Output: Word
      :="Output: Word" ✘
      :="Output: Word"

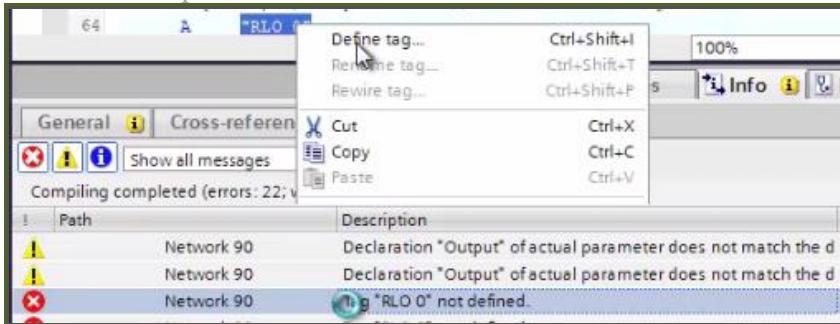
```

Fix errors until compile ok.

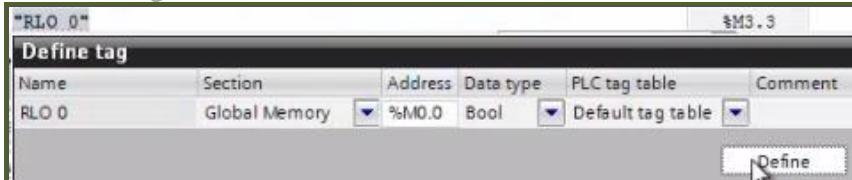
Save and close.

8b. OLD (6). Fix tags

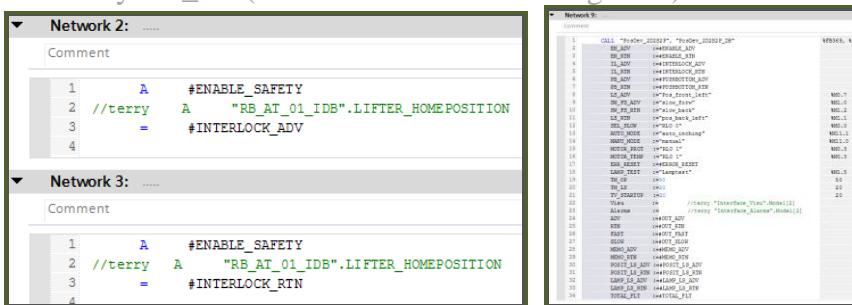
After the compile there are about 20 errors.



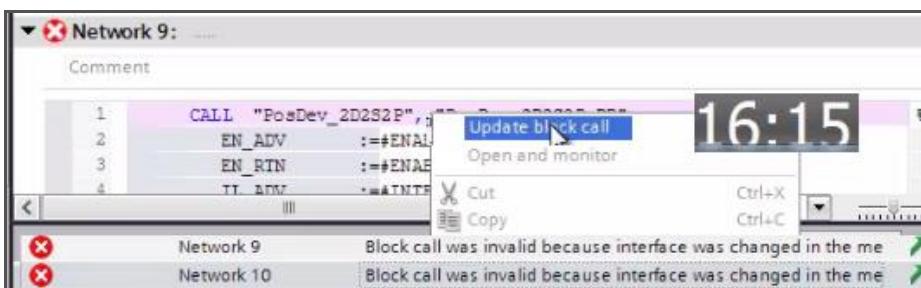
1. Fix all tags.



2. Modify RB_AT (comment out the following lines).



3. Fix the block call error.



Old interface:	New interface:
CALL "G120x", "G120x", I_M, A_F, EN_ADV, EN_RIN, TI_AIN, TOTAL_FLT	INPUT_ADDR := "P1", I_M := "P1", A_F := "P2", FAST_SPEED := #E1, SLOW_SPEED := #E1, EN_Pro := #E0, EN_SWD := #E0, EN_FAST := #E0, EN_SLOW := #E0, EN_STOP := #E1, ERR_RESET := #E1, OUTPUT_ADDR := "P2", ACT_SPEED := #AC, ACT_CURRENT := #A1, ACT_TORQUE := #A2
	INPUT_ADDR := "P1", I_M := "P1", A_F := "P2", FAST_SPEED := #E1, SLOW_SPEED := #E1, EN_Pro := #E0, EN_SWD := #E0, EN_FAST := #E0, EN_SLOW := #E0, EN_STOP := #E1, ERR_RESET := #E1, OUTPUT_ADDR := "P2", ACT_SPEED := #AC, ACT_CURRENT := #A1, ACT_TORQUE := #A2
	INPUT_ADDR := "P1", I_M := "P1", A_F := "P2", FAST_SPEED := #E1, SLOW_SPEED := #E1, EN_Pro := #E0, EN_SWD := #E0, EN_FAST := #E0, EN_SLOW := #E0, EN_STOP := #E1, ERR_RESET := #E1, OUTPUT_ADDR := "P2", ACT_SPEED := #AC, ACT_CURRENT := #A1, ACT_TORQUE := #A2
	INPUT_ADDR := "P1", I_M := "P1", A_F := "P2", FAST_SPEED := #E1, SLOW_SPEED := #E1, EN_Pro := #E0, EN_SWD := #E0, EN_FAST := #E0, EN_SLOW := #E0, EN_STOP := #E1, ERR_RESET := #E1, OUTPUT_ADDR := "P2", ACT_SPEED := #AC, ACT_CURRENT := #A1, ACT_TORQUE := #A2

4. Compile and save. You now have SW ready for S300.

9. delete s1500??

20160303... could not get s300's listed in ad... Igor said 2 problems.

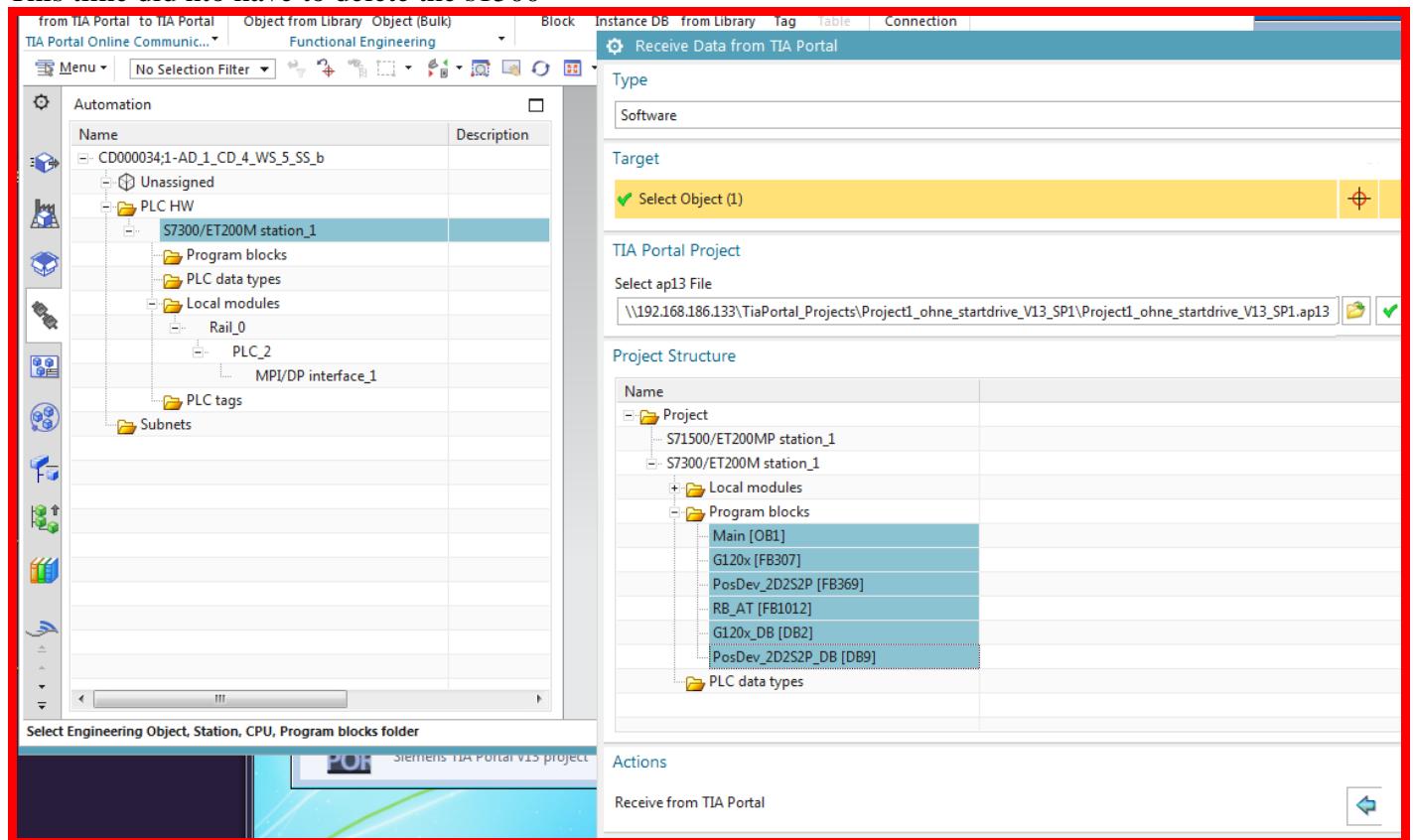
1. this sme only receives top of list , so s1500.

2. need to restart the agent, because its caching..

Anyway, strange problems... but after trying 3rd time got all items.

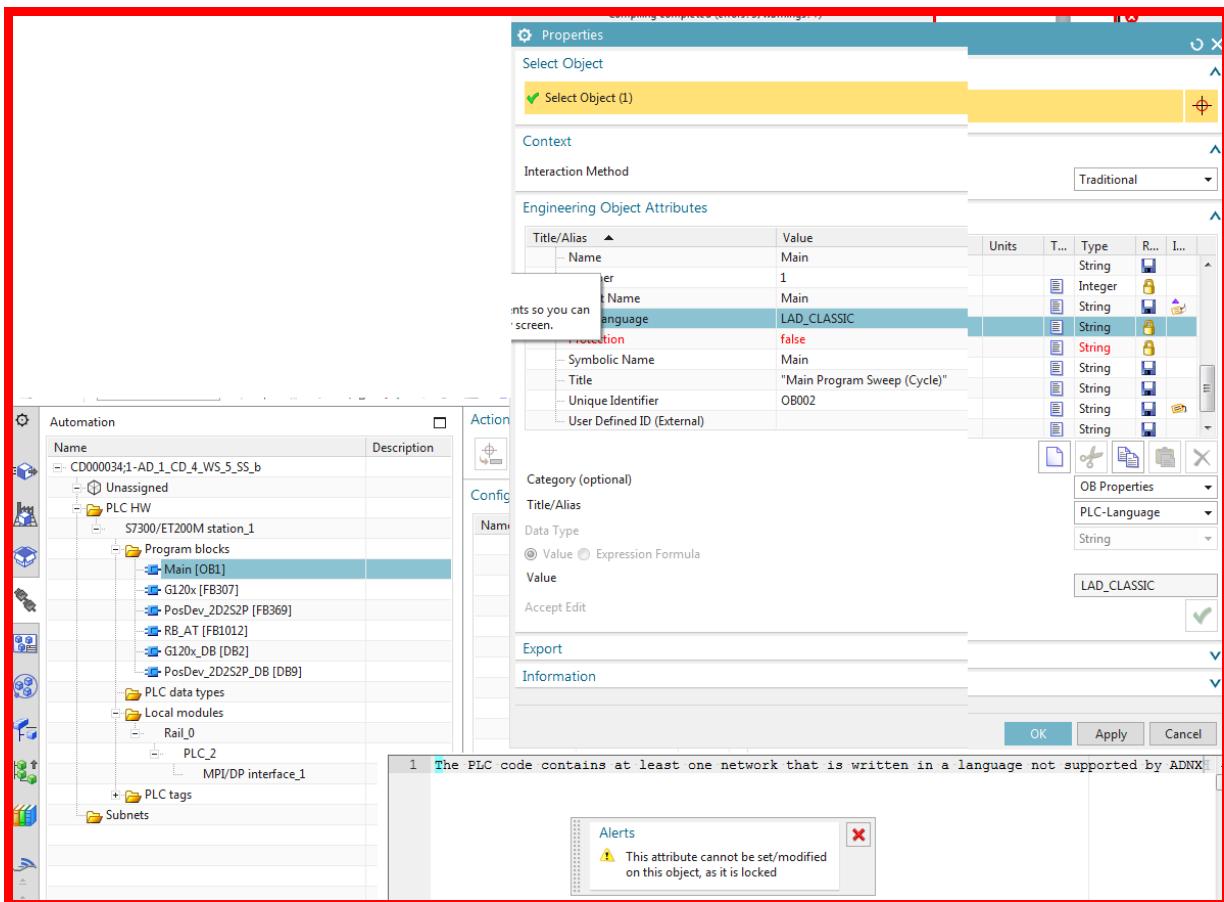
In any case, best to delete s1500 after getting sw.. have only 1 plc.

This time did not have to delete the s1500



10. fix main??

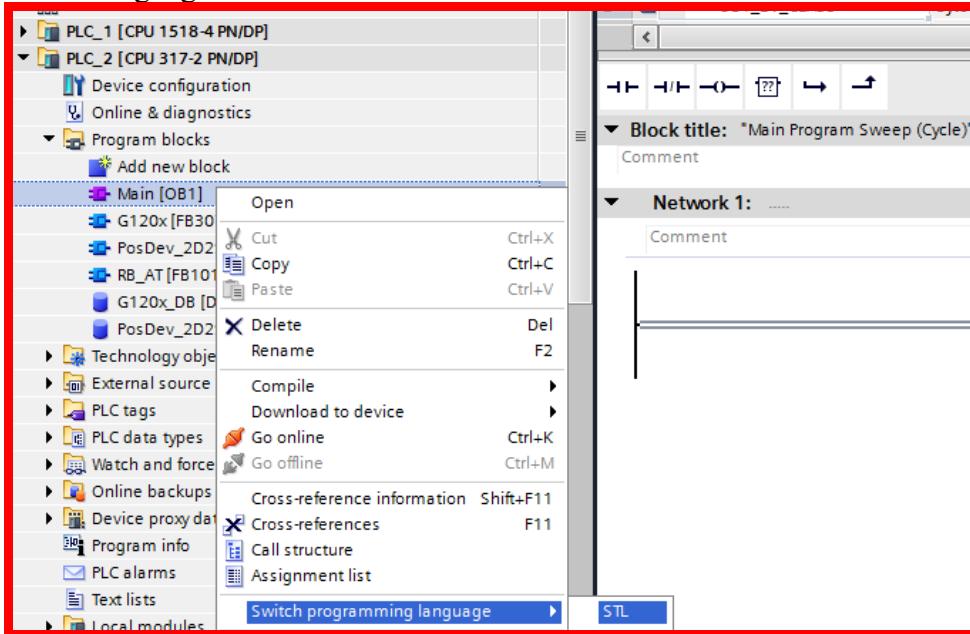
20160303 had problems with main... following discusses....



Or was it because was ladder? Try this first.

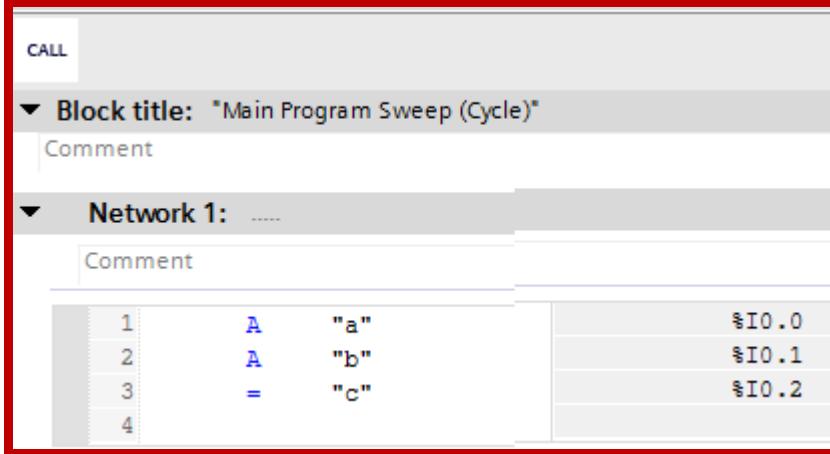


switch language... with no code?



Compile, save, exit.

20160303 imported... nothing imported. Added code. Not sure if required..



This time was imported 😊

Automation

Name Description

- CD000034;1-AD_1_CD_4_WS_5_SS_b
- Unassigned
- + PLC HW
 - S7300/ET200M station_1
 - + Program blocks
 - Main [OB1]
 - + PLC data types
 - + Local modules
 - Rail_0
 - PLC_2
 - MPI/DP interface_1
 - + PLC tags
 - + Subnets

Select Engineering Object, Station, CPU, Program blocks folder

Receive Data from TIA Portal

Type: Software

Target:

Select Object (1): Main [OB1]

TIA Portal Project

Select ap13 File: \\192.168.186.133\TiaPortal_Projects\FD4_Project_without_startdrive\Project1_ohne_startdrive_V13_SP1\Project1_ohne_startdrive_V13_SP1.ap13

Project Structure

Name

- Project
 - S7300/ET200M station_1
 - + Local modules
 - + Program blocks
 - Main [OB1]
 - + PLC data types
 - + S7300/ET200M station_2

Actions

Receive from TIA Portal

11. close TIA project in VM

Importan last step.

Cant open in ad if open in vm.

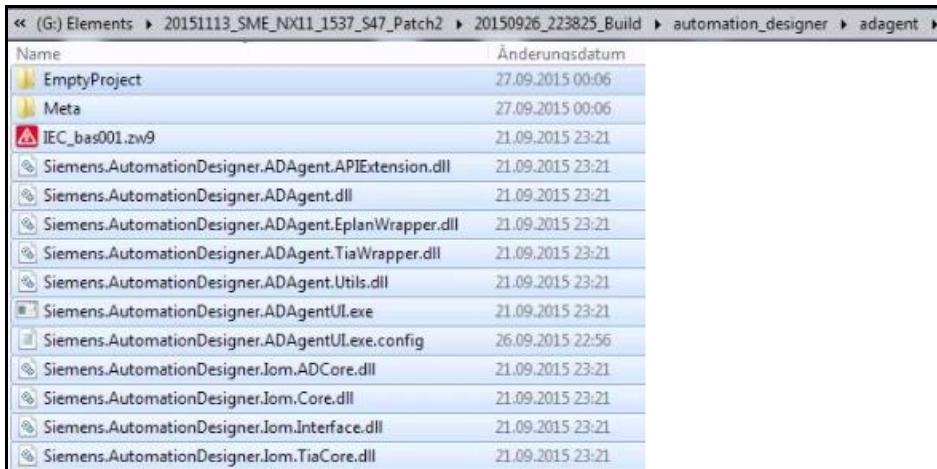
8.1.1c. config of VM (20160304 from TEST_INSTALLATION.doc)

20160301-2 TERRY: just set this up on desktop according to test_installation doc.. worked ☺
But... many new problems, especially with cache.. complex

1 (2.5). start Adagent in VM

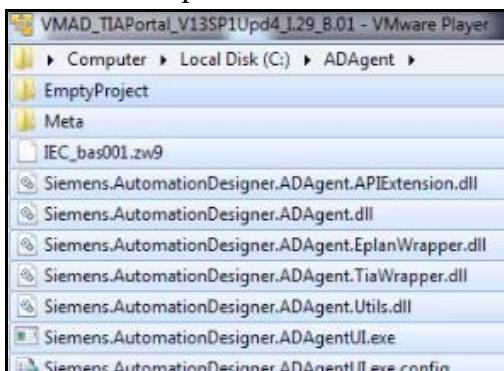
On the Host:

1. Open the SME folder (where the start scripts are located).
2. Navigate into the Build folder of the SME: <Date>_SME_Build.
3. Copy content of folder 'automation designer / adagent'.

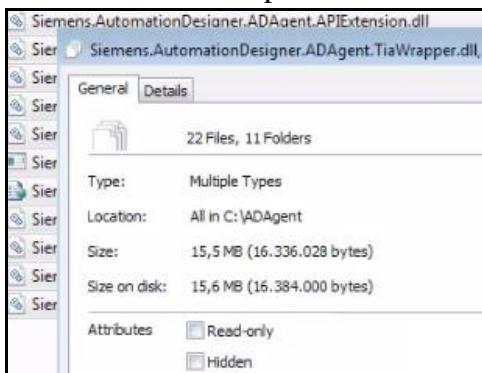


In the VM:

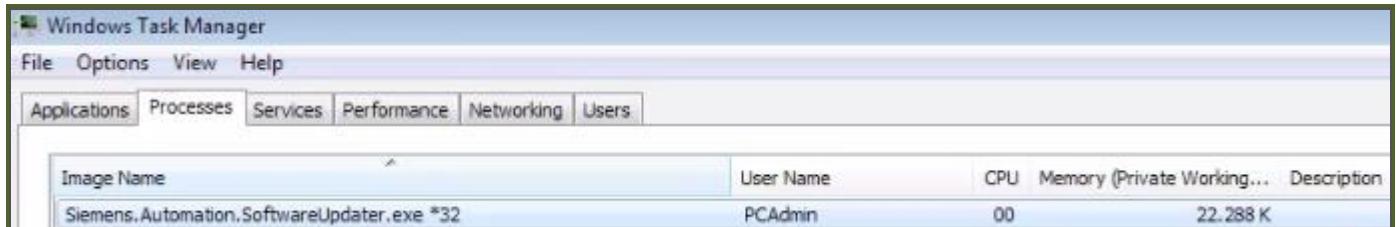
1. Create C:\ADAgent folder.
2. Paste the copied content into the folder (overwriting).



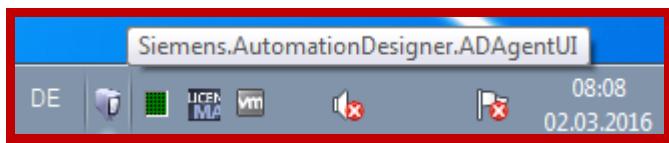
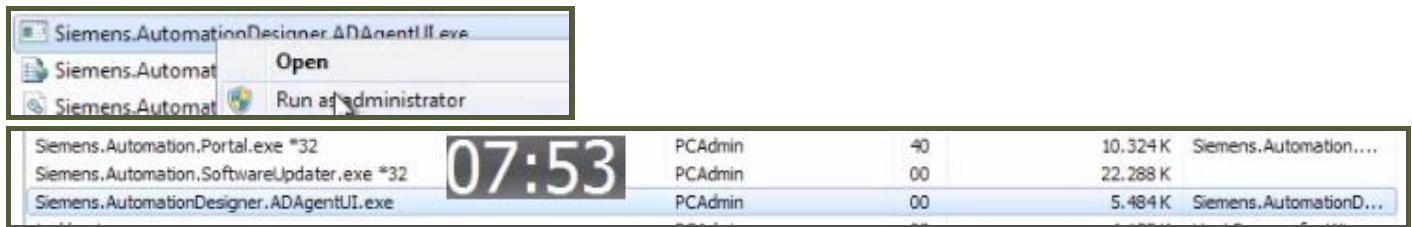
3. Remove the write protection of the files.



4. Double-click on Siemens.AutomationDesigner.ADAgentUI.exe.



5. TERRY: I had to right-click and run as admin.

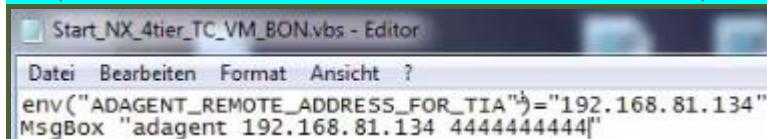


2 (4). Set ADAGENT_REMOTE_ADDRESS_FOR_TIA in VBS file

1. On the host set the TIA VM address.

20160301,04:

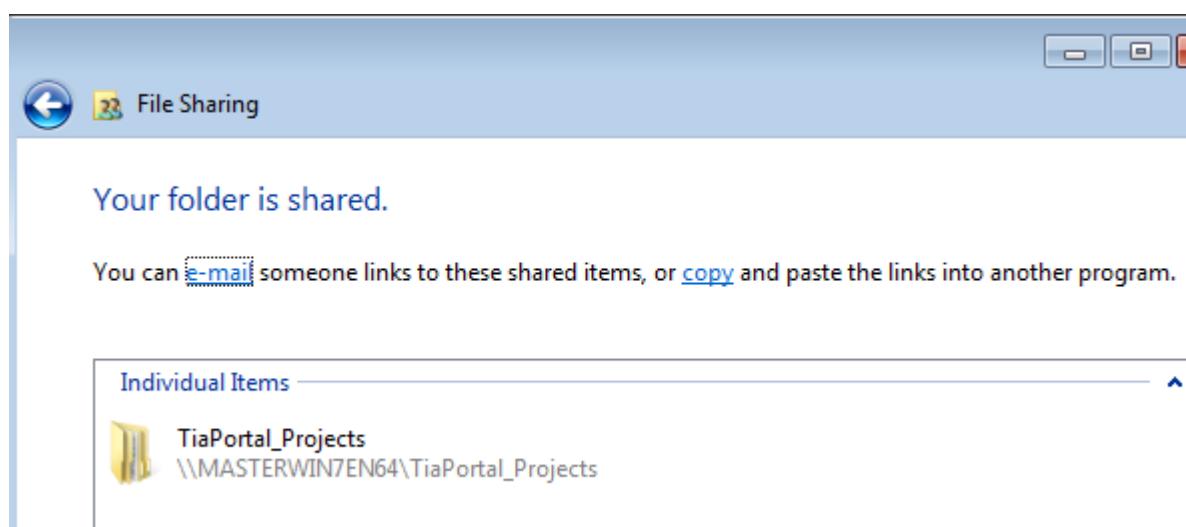
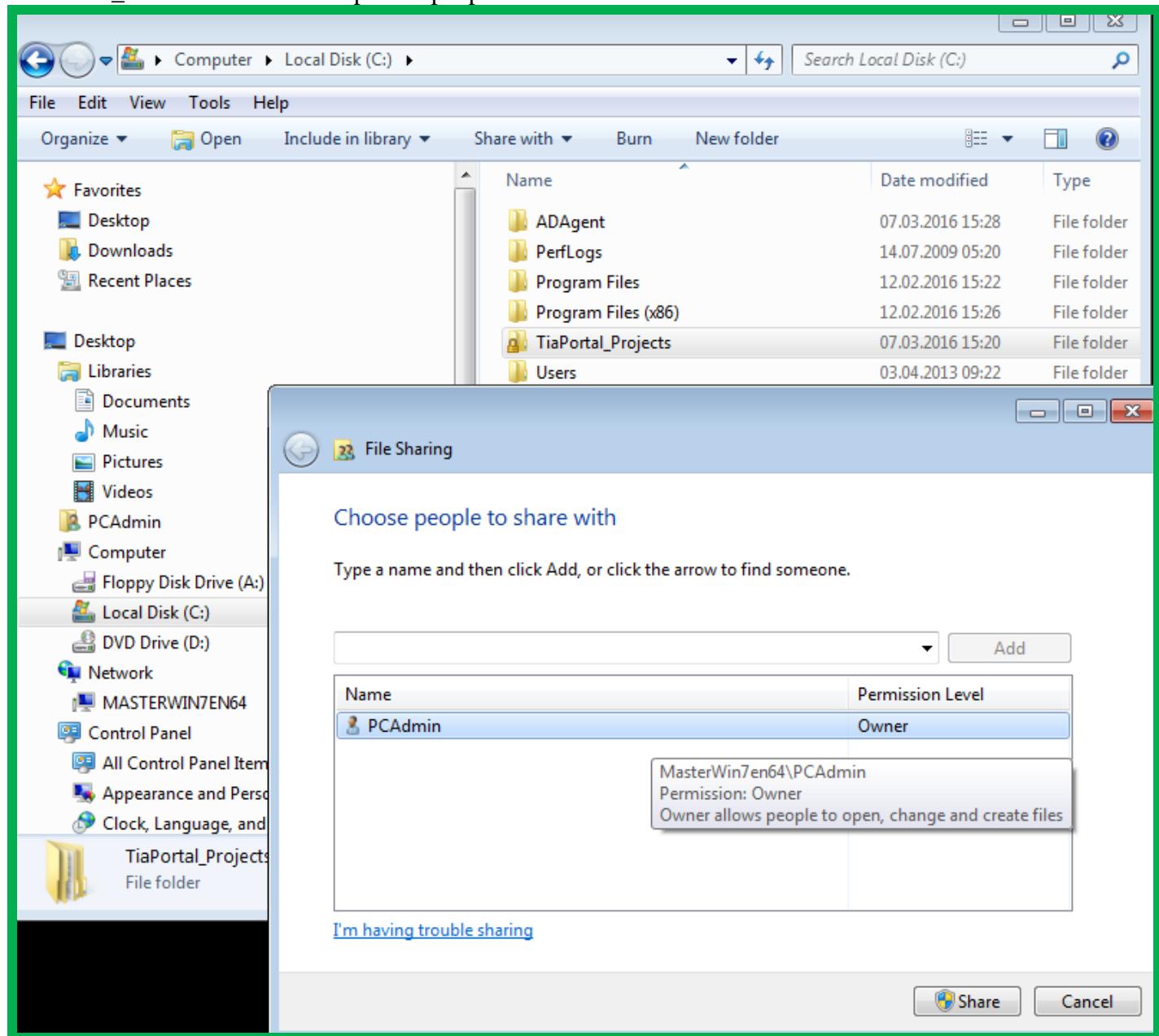
```
env("ADAGENT_REMOTE_ADDRESS_FOR_TIA")="192.168.186.133"
```



2. Save the file.

3 (5). map drive

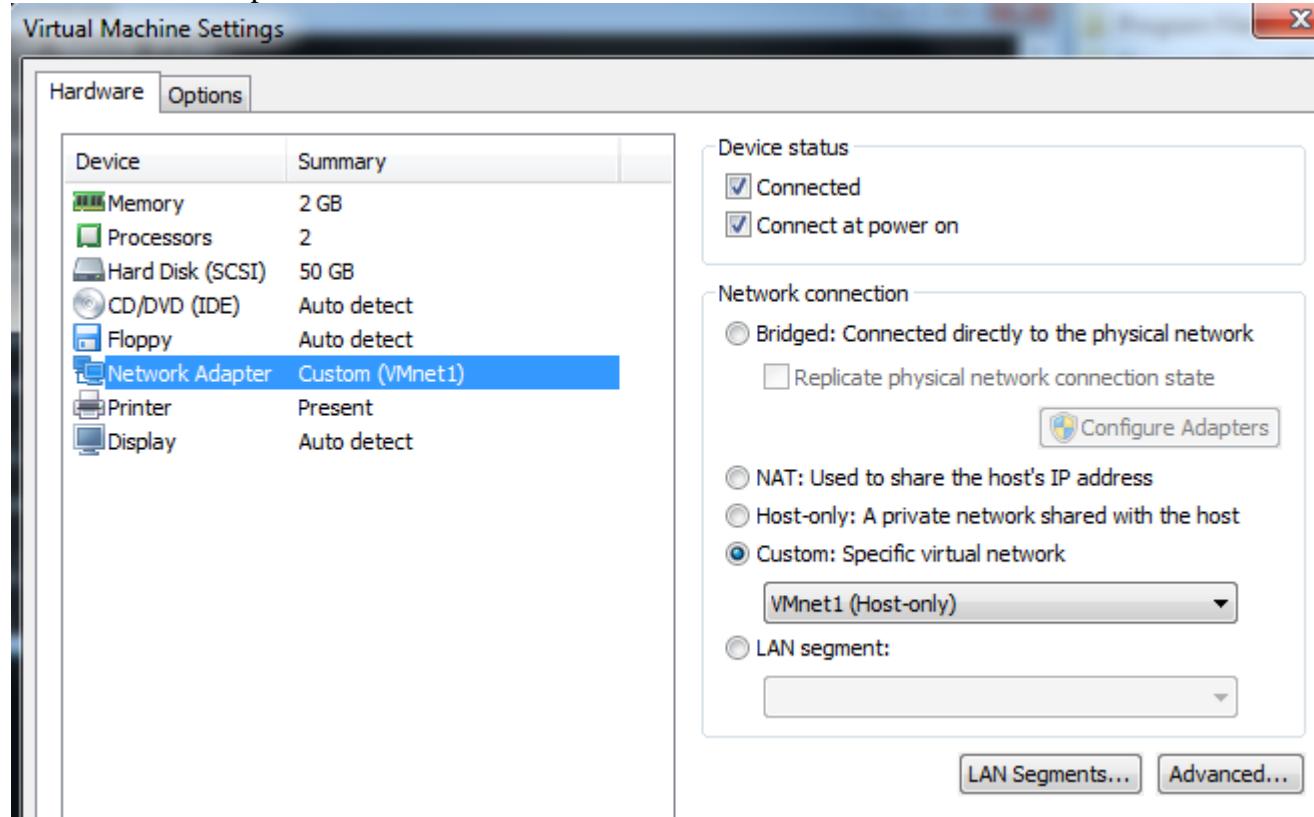
20160307_1636 share with specific people



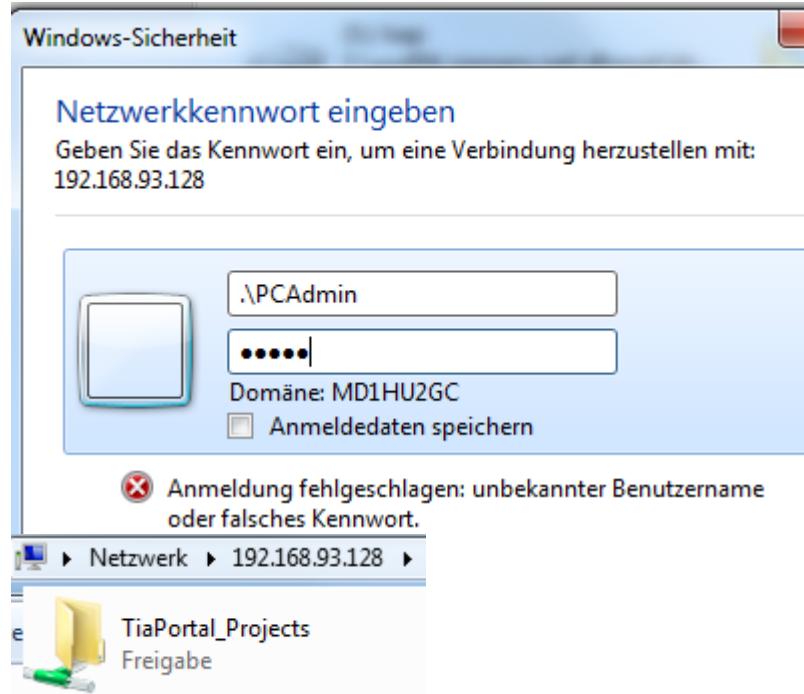
20160419

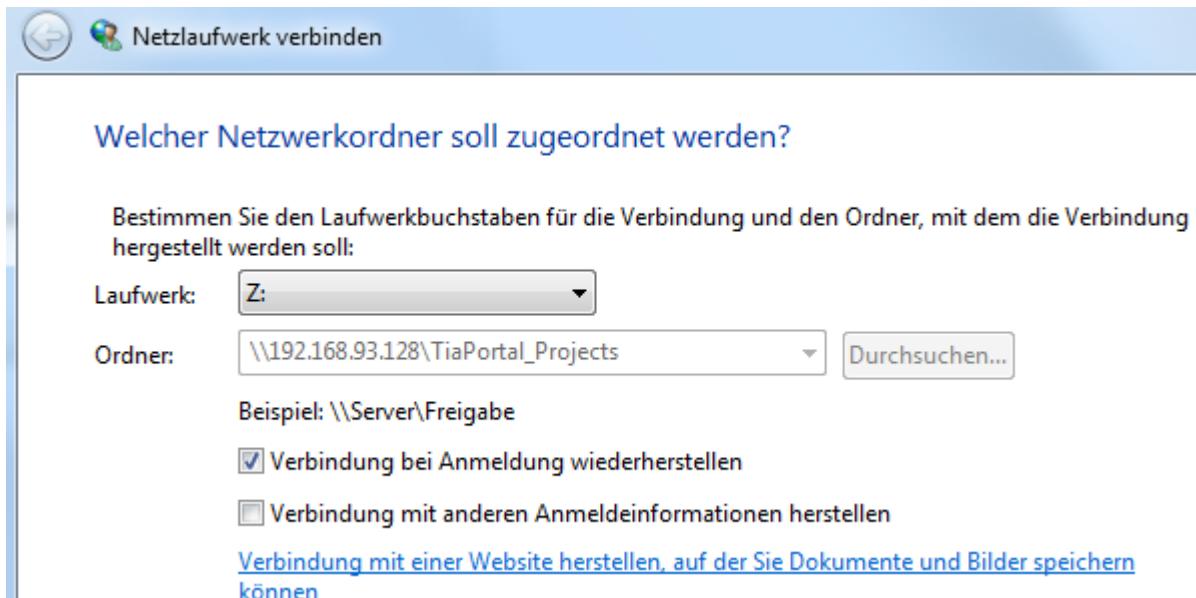
Steven pc

Had to do this setup

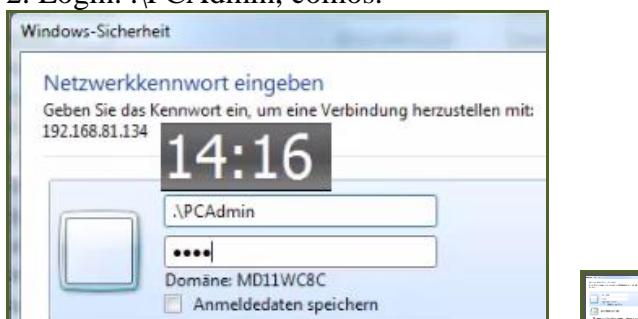


192.168.93.128

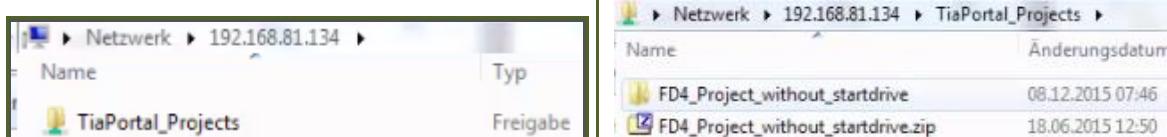




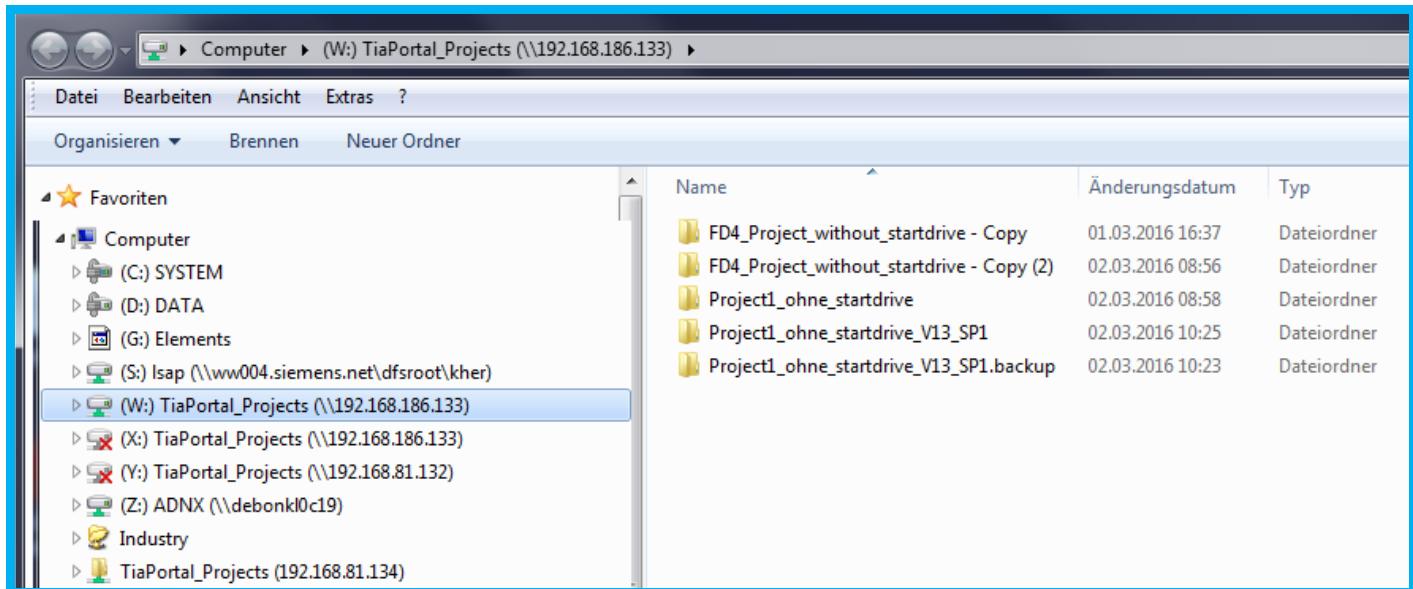
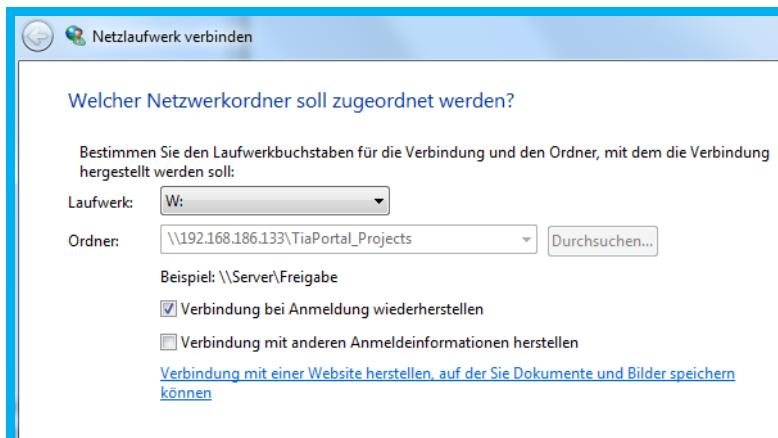
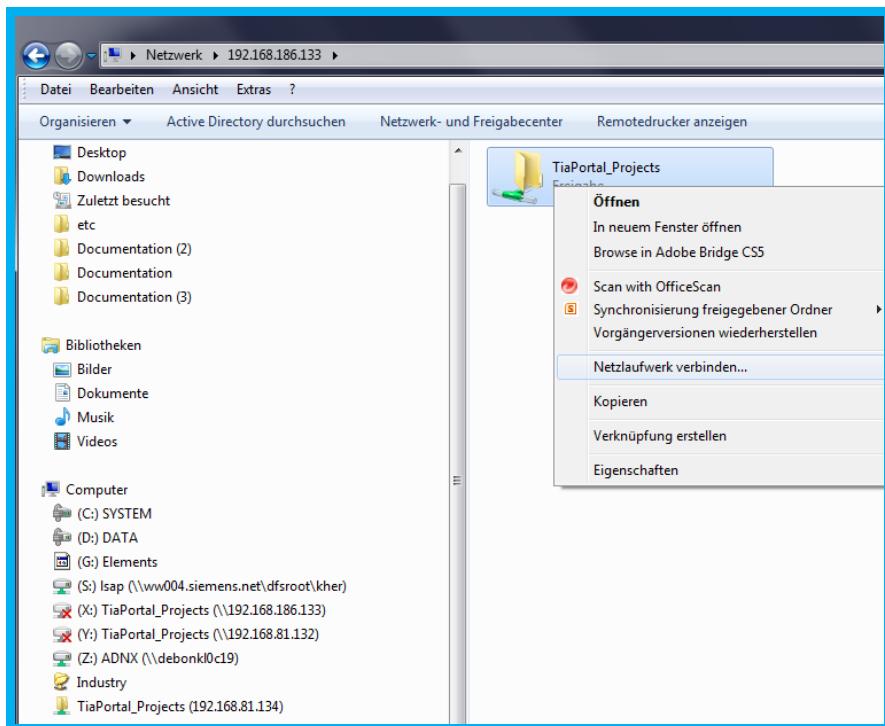
1. On host open VM address <\\192.168.186.133>.
2. Login. .\PCAdmin, comos.



After a delay the directory opens.



Map.



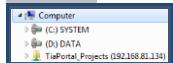
In TIA VM

C:\TiaPortal_Projects\FD4_Project_without_startdrive\Project1_ohne_startdrive_V13_SP1

Map this

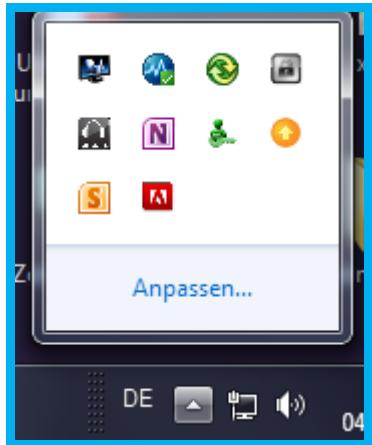
C:\TiaPortal_Projects
FD4_Project_without_startdrive 12.01.2016 12:32 File folder

Result.



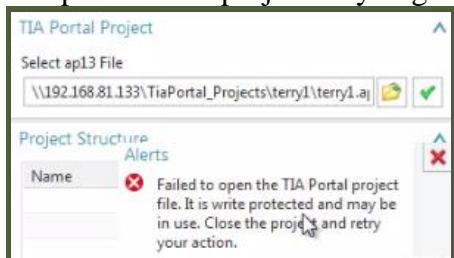
4 (2.4.4). start NX and agent

TEST_INSTALLATION_20151208_2.4.3-2.4.4.mp4



3. Start NX.

4. Open the TIA project. If you get this error, then close project in vm.



After start the agent is active.

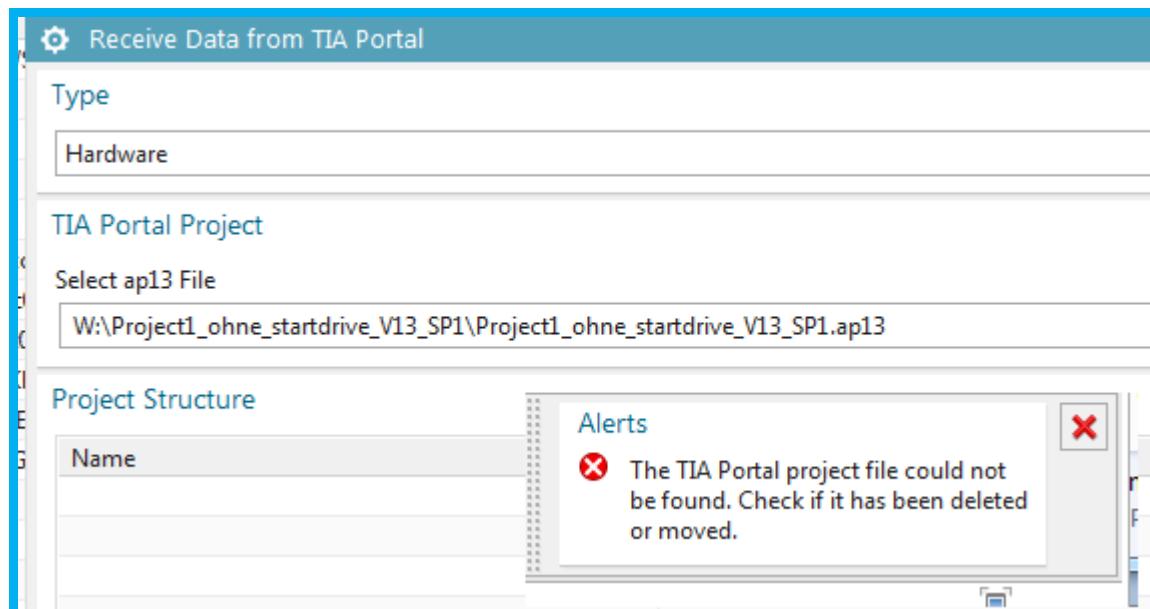
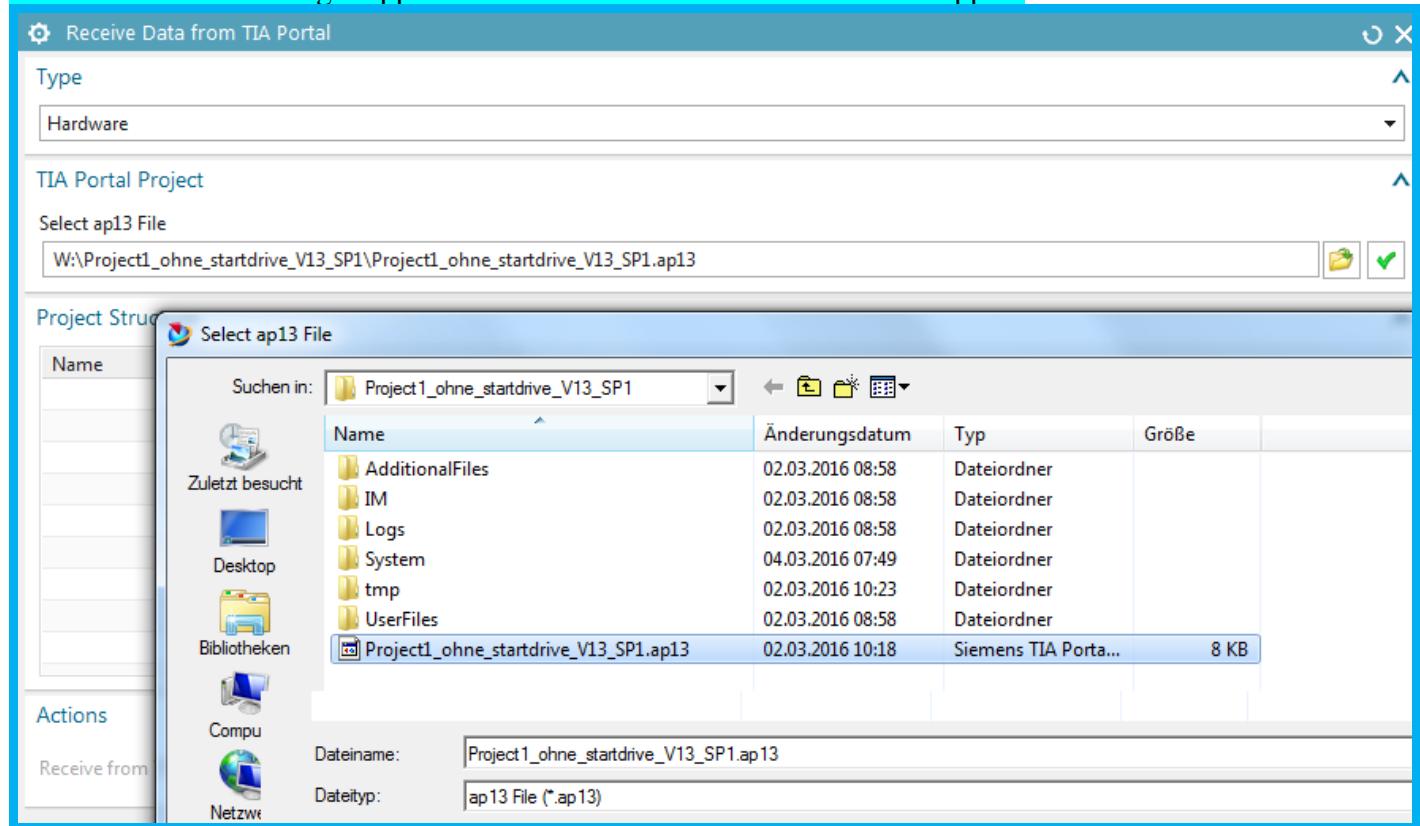


5. Import HW. OLD XXXX



6 (2.4.4). connect AD to TIA ap13

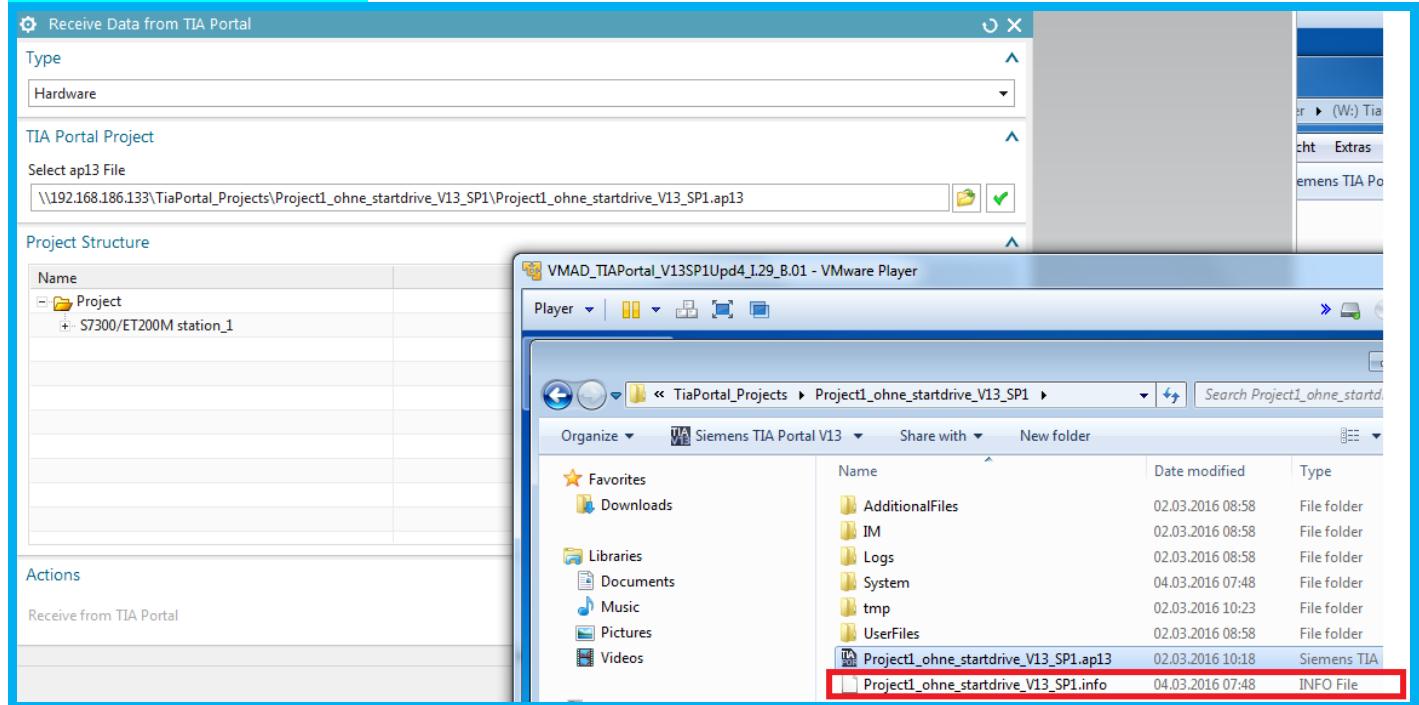
This does not work using mapped address.. but I think it still has to be mapped.



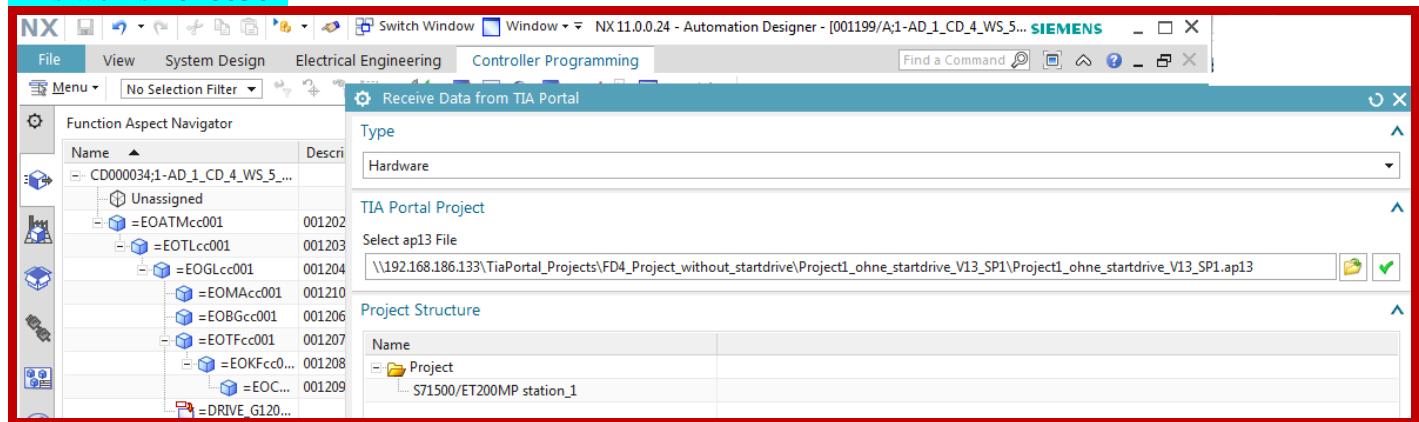
Have to enter address manually with TiaPortal_Projects also included.

\\\192.168.186.133\TiaPortal_Projects\Project1_ohne_startdrive_V13_SP1\Project1_ohne_startdrive_V13_SP1.ap13

This works 20160304_0752



This works 20160301



8.1.2a. NEW Receive HW 20160509

Function Aspect Navigator

Receive Data from TIA Portal

Type: Hardware

TIA Portal Project: \\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14

Project Structure:

- Project
 - S7300/ET200M station_1
 - Local modules
 - Rail_0
 - PS 307 10A_1
 - PLC_2
 - DI 16/DO 16x24VDC/0.5A_1
 - AI 4/AO 4x14/12BIT_1
 - Program blocks
 - PLC data types

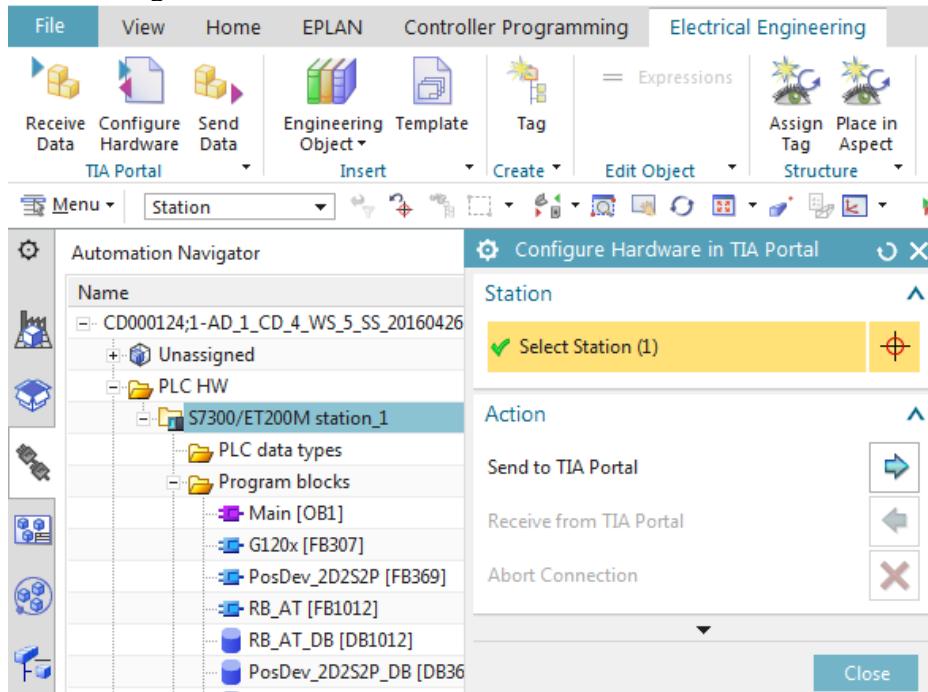
PLC HW:

 - S7300/ET200M station_1
 - Program blocks
 - PLC data types
 - Local modules
 - Rail_0
 - PS 307 10A_1
 - PLC_2
 - DI 16/DO 16x24VDC/0.5A_1
 - AI 4/AO 4x14/12BIT_1
 - PLC tags
 - RB_HA_01_POSIT_LS_DN
 - Subnets

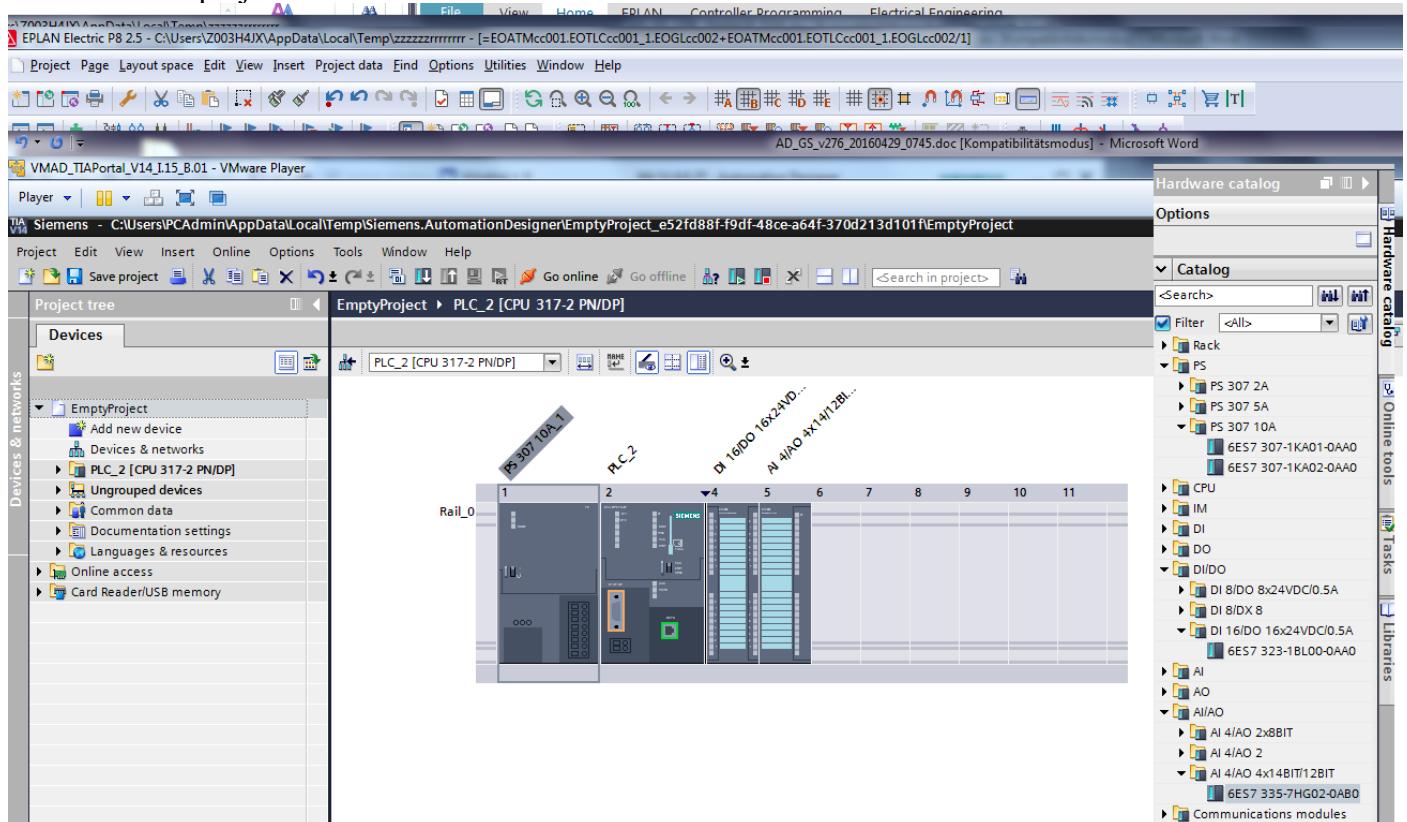
8.1.2a. Receive HW 20160429

Talking with igor. I need to update hardware. No io.

Tried configure hardware.

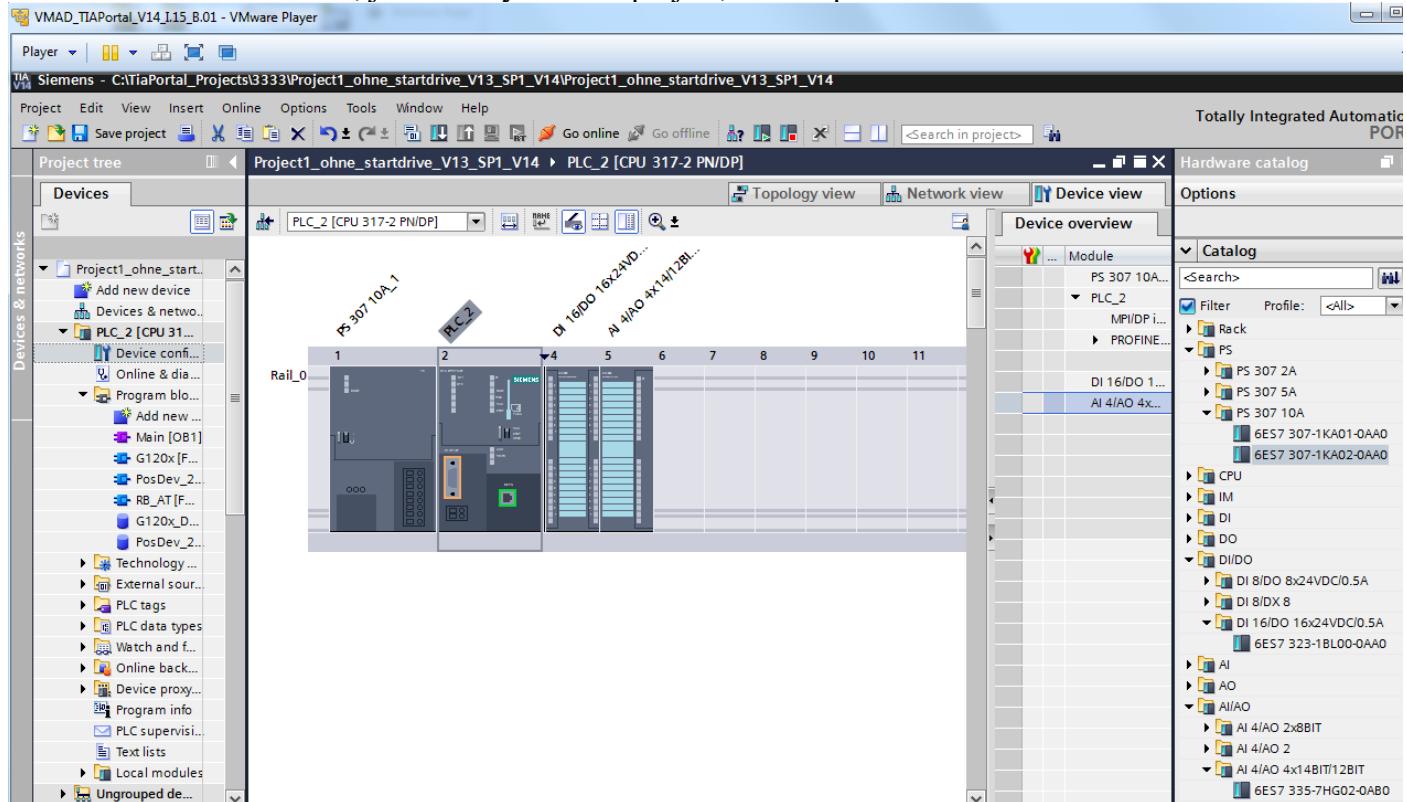


Created a new project in TIA... then should have received. But communication failed.



I closed the “config hardware” dialog above... and the temp project disappeared in tia. Nice ☺

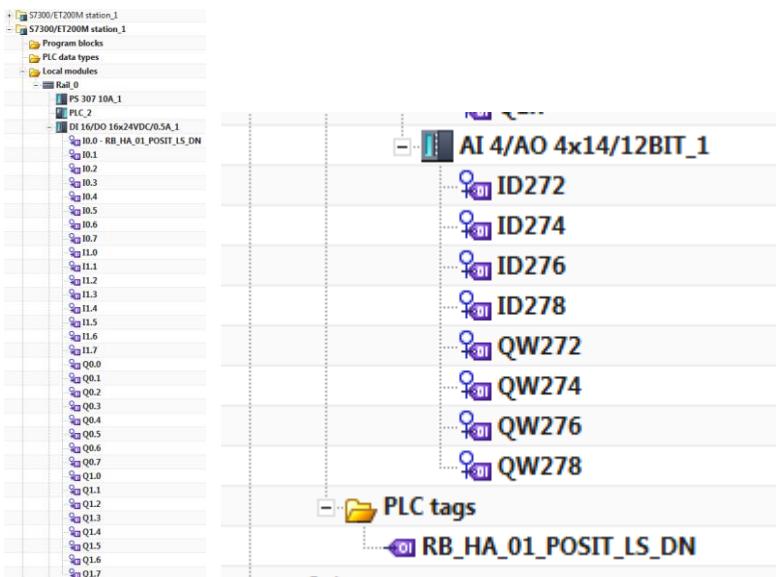
So.. start over.... This time, just modify the TIA project, then import to new HW in AD.



Compile and save.
Close.

Receive HW.

The screenshot shows the 'Receive Data from TIA Portal' dialog box. The 'Type' dropdown is set to 'Hardware'. The 'TIA Portal Project' section shows the path: \\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14. The 'Project Structure' section displays the hardware components imported from the TIA Portal project, including the Project folder, S7300/ET200M station_1, Local modules, Rail_0, and specific modules like PS 307 10A_1, PLC_2, DI16/DO 16x24VDC/0.5A_1, and AI4/AO 4x14BIT/12BIT_1.



Don't import the IDBs.

The screenshot shows the TIA Portal interface with the Automation Navigator on the left and the "Receive Data from TIA Portal" dialog on the right. The dialog settings are:

- Type: Software
- Target: Select Object (1)
- TIA Portal Project: Select ap14 File: \\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14

The Project Structure section shows the imported blocks:

- Project
 - S7300/ET200M station_1
 - Local modules
 - Program blocks
 - RB_AT [FB1012]**
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - G120x_DB [DB2]
 - PosDev_2D2S2P_DB [DB9]
 - PLC data types

The Automation Navigator on the left shows the imported blocks and their sub-blocks:

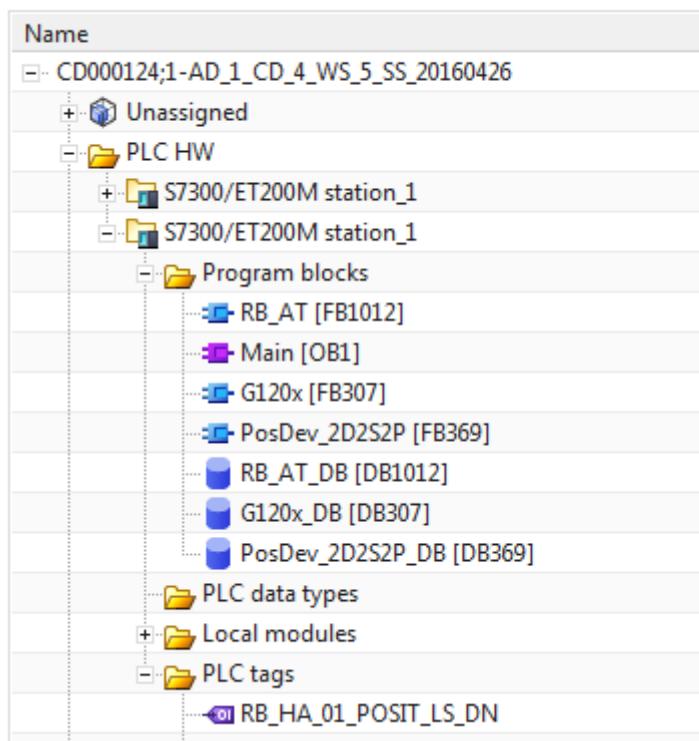
- Name: CD000124;1-AD_1_CD_4_WS_5_SS_20160426
 - Unassigned
 - PLC HW
 - S7300/ET200M station_1
 - S7300/ET200M station_1
 - Program blocks
 - RB_AT [FB1012]**
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - PLC data types
 - Local modules

The right pane lists the imported PLC tags:

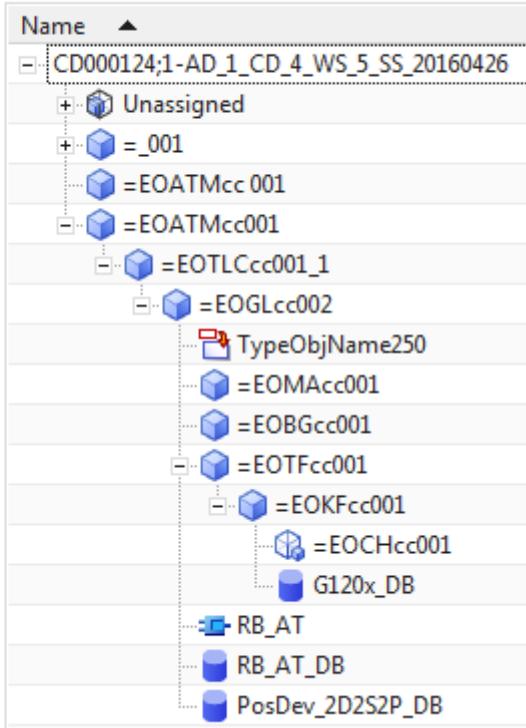
- RB_HA_01_POSIT_LS_DN
- Newstart
- PLC_On delayed
- TRUE
- CPulse_0_1s
- RLO 1
- BliF
- RLO 0
- FC_left
- FC_right
- FRG_Estop
- FRG_BS
- IBNO
- reset
- Pos_front_left
- slow_forw
- pos_back_left
- slow_back

Then add to aspects and create IDBs.

Automation Navigator



Function Aspect Navigator



8.1.2a. Receive HW (20160421)

Receive Data from TIA Portal

Type
Hardware

TIA Portal Project

Select ap14 File
\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14

TIA Portal Project

Select ap14 File
\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14

Project Structure

Name

Project

- S7300/ET200M station_1
 - Local modules
 - Program blocks
 - PLC data types

Actions

Receive from TIA Portal

Automation Navigator

Name
CD000101;1-AD_1_CD_4_WS_5_SS_20160418

Unassigned

PLC HW

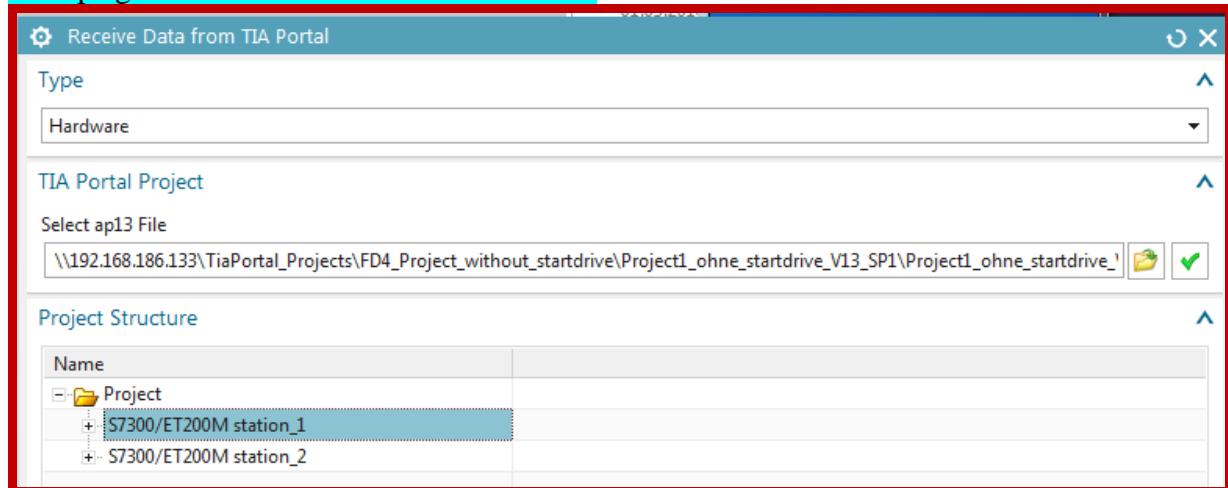
- S7300/ET200M station_1
 - Program blocks
 - PLC data types
 - Local modules
 - Rail_0
 - PLC_2
 - PLC tags
- Subnets

8.1.2b. Receive HW (20160304)

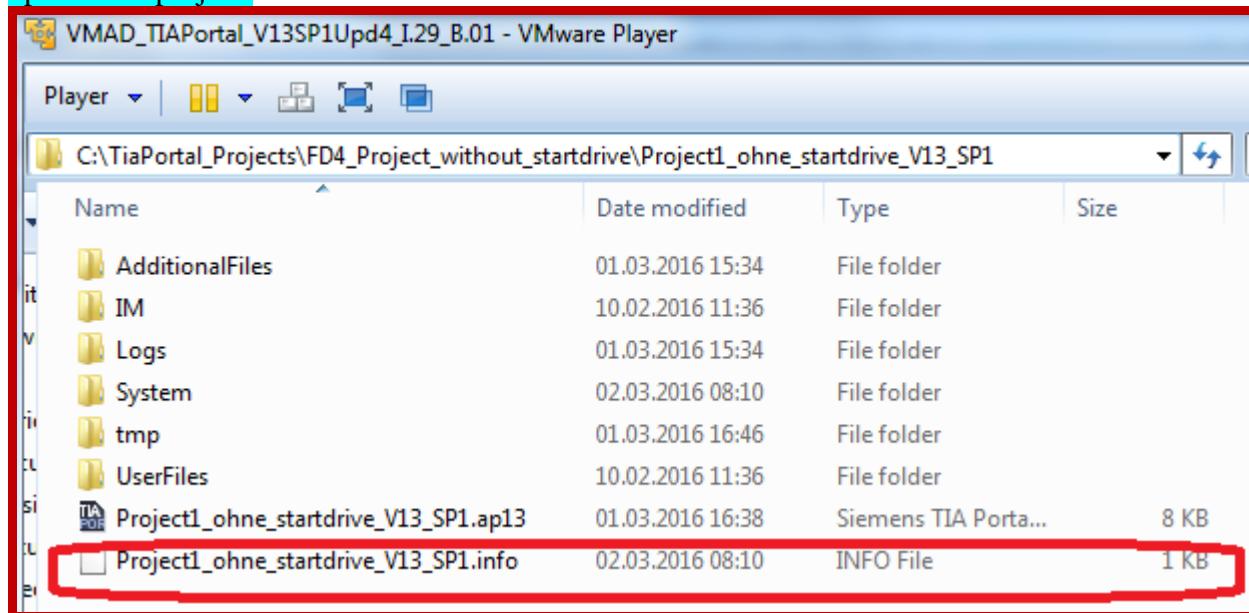
Not work.why?

Other problem as explained by Igor.

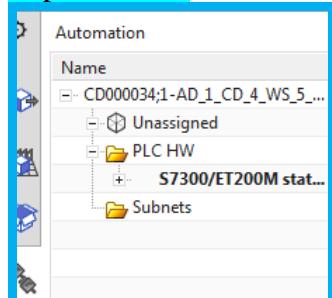
1. s1500 cant be in the project or wont import.
2. this sme only recognized s300.
3. I delete s1500. But still in cache.
4. stop agent. Restart. Then can see the s300s.



Note: after you click the green arrow you should see a temp file opened in the vm showing that nx has opened the project.



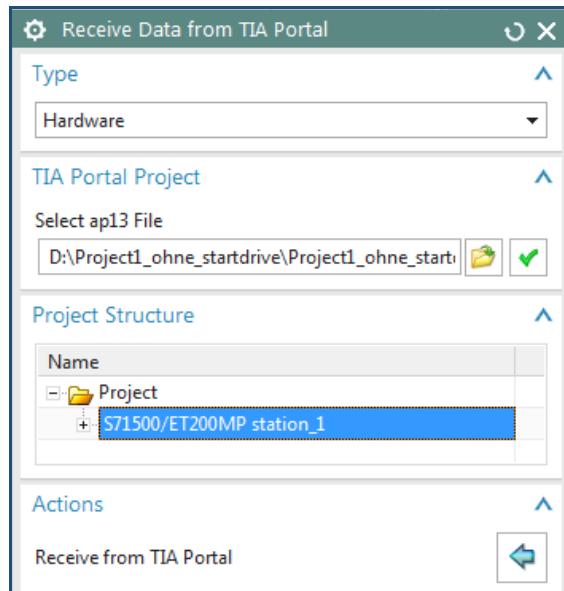
Import works.



Save project.

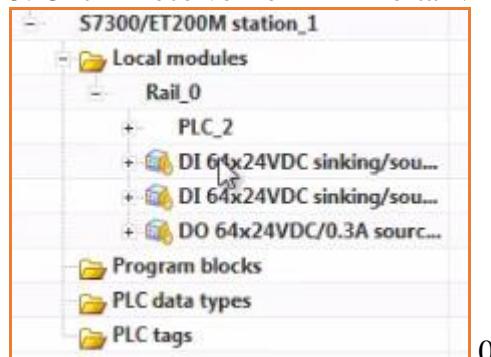
8.1.2c. Receive HW (20151221)

1. Click "Electrical Engineering / Receive Data from TIA Portal".
2. For "Type" select "Hardware".
3. Select the Project1_ohne_startdrive.ap13 file and click the green arrow.
4. Select the station.



08_004

5. Click "Receive from TIA Portal".

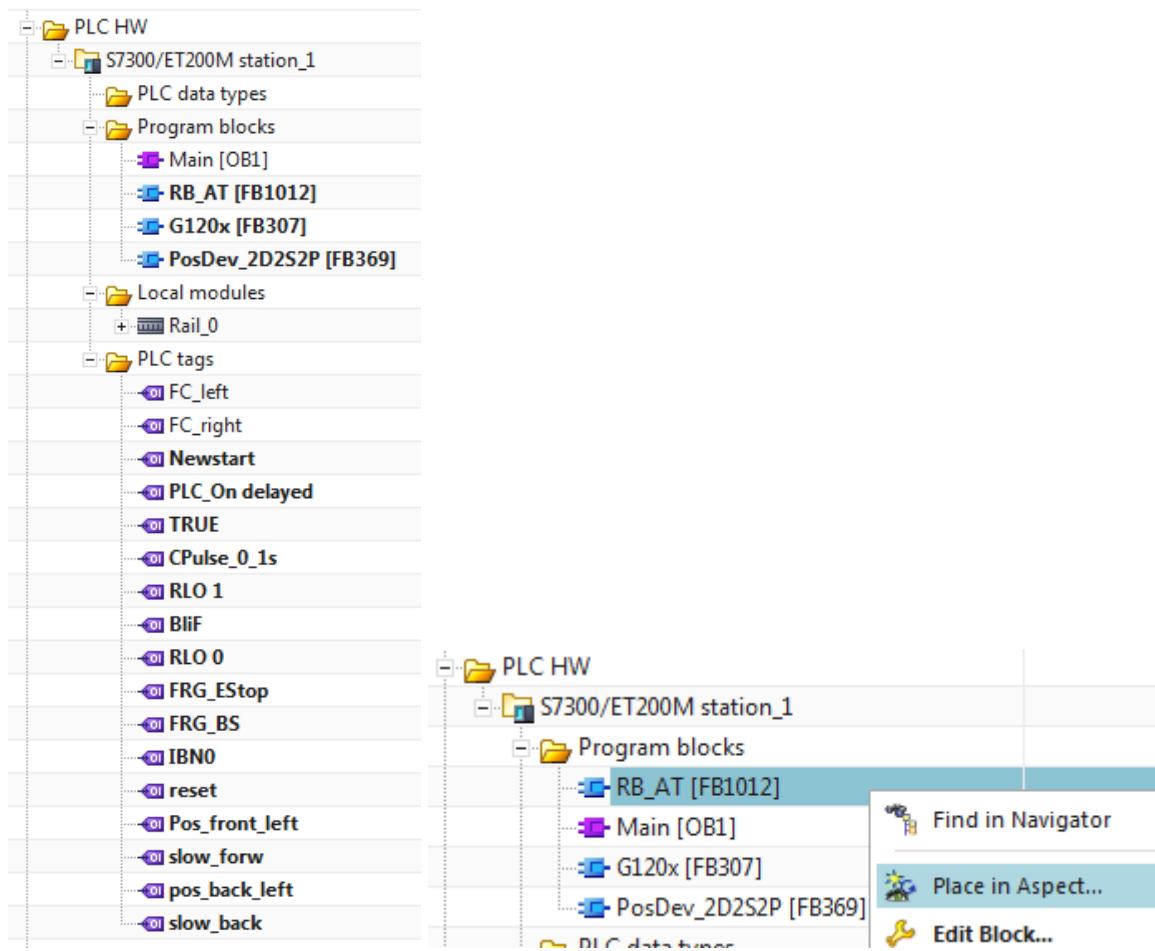


08_005



8.1.3a. Import SW-tags (OB1, G120x, PosDev, RB_AT) 20160509

maybe this way.....



Function Aspect Navigator

Name	Description
- CD000163;1-AD_1_CD_4_WS_5...	
Unassigned	
=EOATMcc001	000344
=EOTLcc001	000345
=EOGLcc001	000346
=EOMAcc001	000347
=EOBGcc001	000348
=EOTFcc001	000351
=EOKFcc0...	000352

Place in Aspect

Object

✓ Select Engineering Object (1)

Placement

✓ Select Aspect Node (1)

Automation Navigator

- CD000163;1-AD_1_CD_4_WS_5_SS_20160509_2
 - + Unassigned
 - PLC HW
 - S7300/ET200M station_1
 - Program blocks
 - RB_AT [FB1012]
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - RB_AT_DB [DB1012]
 - PLC data types
 - Local modules

Function Aspect Navigator

Name	Description
- CD000163;1-AD_1_CD_4_WS_5_SS_20160509_2	
+ Unassigned	
- =EOATMcc001	000344
- =EOTLcc001	000345
- =EOGLcc001	000346
- =EOMAcc001	000347
- =EOBGcc001	000348
- =EOTFcc001	000351
- =EOKFcc001	000352
- =EOC...	000353
- RB_AT	
- RB_AT_DB	

Create IDB... Create IDB

Create the remaining IDBs.

Automation Navigator

- CD000163;1-AD_1_CD_4_WS_5_SS_20160509_2
 - + Unassigned
 - PLC HW
 - S7300/ET200M station_1
 - Program blocks
 - RB_AT [FB1012]
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - RB_AT_DB [DB1012]
 - G120x_DB [DB307]
 - PosDev_2D2S2P_DB [DB369]
 - PLC data types
 - Local modules

Function Aspect Navigator

Name	Description
- CD000163;1-AD_1_CD_4_WS_5_SS_20160509_2	
+ Unassigned	
- =EOATMcc001	000344
- =EOTLcc001	000345
- =EOGLcc001	000346
- =EOMAcc001	000347
- =EOBGcc001	000348
- =EOTFcc001	000351
- =EOKFcc001	000352
- =EOCHcc001	000353
- G120x_DB	
- RB_AT	
- RB_AT_DB	
- PosDev_2D2S2P_DB	

8.1.3a. Import SW-tags (OB1, G120x, PosDev, RB_AT) 20160429

Function Aspect Navigator

- Name
 - CD000124;1-AD_1_CD_4_WS_5_SS_20160426
 - Unassigned
 - =_004
 - =_001
 - =_002
 - =_003
 - RB_AT
 - RB_AT_DB
 - EOATMcc 001
 - EOTLCcc001
 - EOGLcc002
 - TypeObjName250
 - EOMAcc001
 - EOBGcc001
 - EOTFcc001
 - EOKFcc001
 - EOCHcc001

Receive Data from TIA Portal

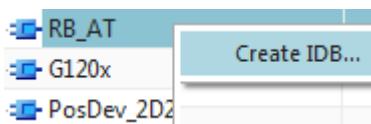
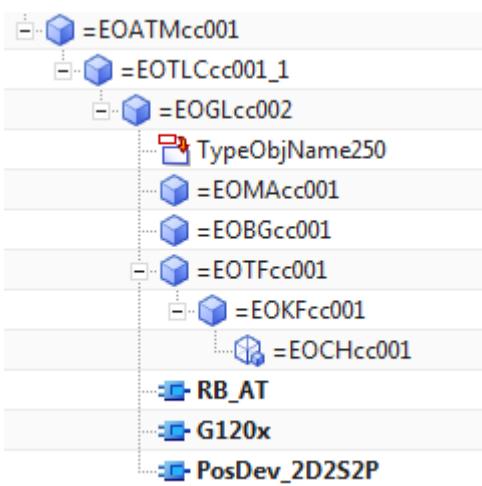
Type: Software

Target: Select Object (1)

TIA Portal Project: Select ap14 File: \\192.168.154.128\TiaPortal_Projects\333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14

Project Structure:

- Name
 - Project
 - S7300/ET200M station_1
 - + Local modules
 - Program blocks
 - RB_AT [FB1012]
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - G120x_DB [DB2]
 - PosDev_2D2S2P_DB [DB9]
 - PLC data types

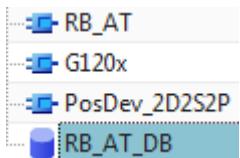


Create IDB

Type: Global IDB

Source: Selection Function Block (1)

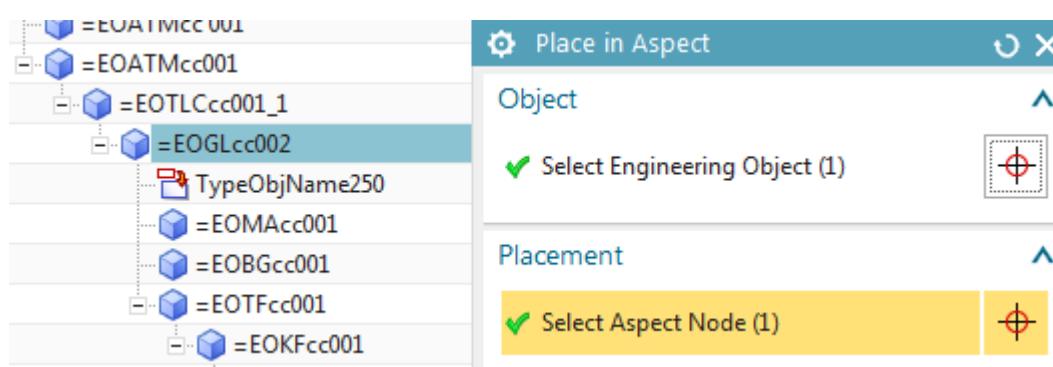
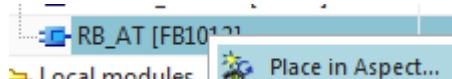
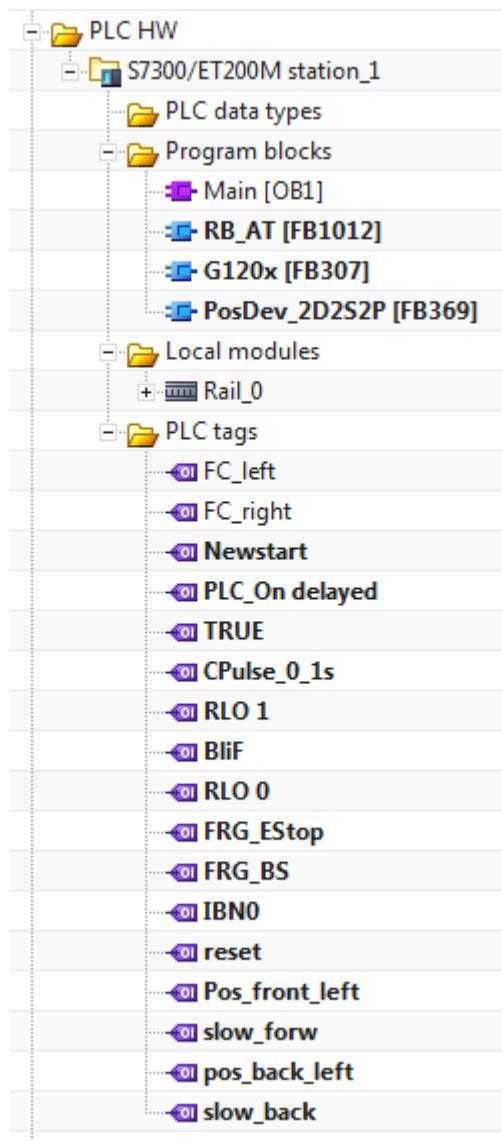
Parent: Select Engineering Object (1)

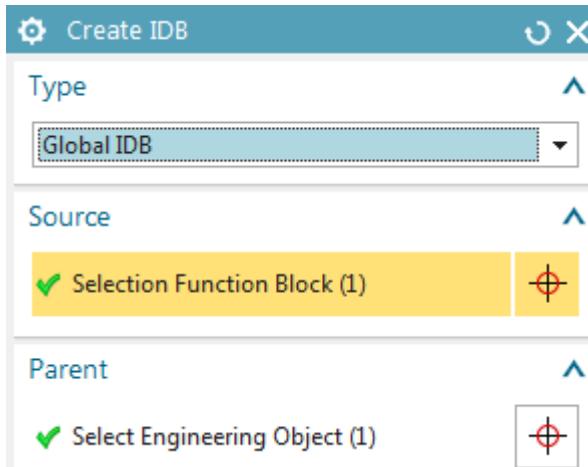
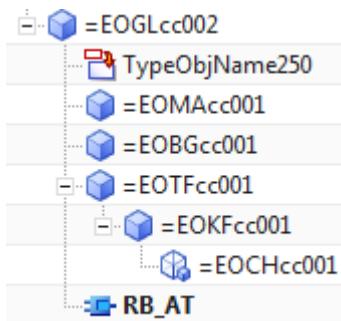


Create PosDev IDB.

Xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx

Not not that way.. maybe this way.....





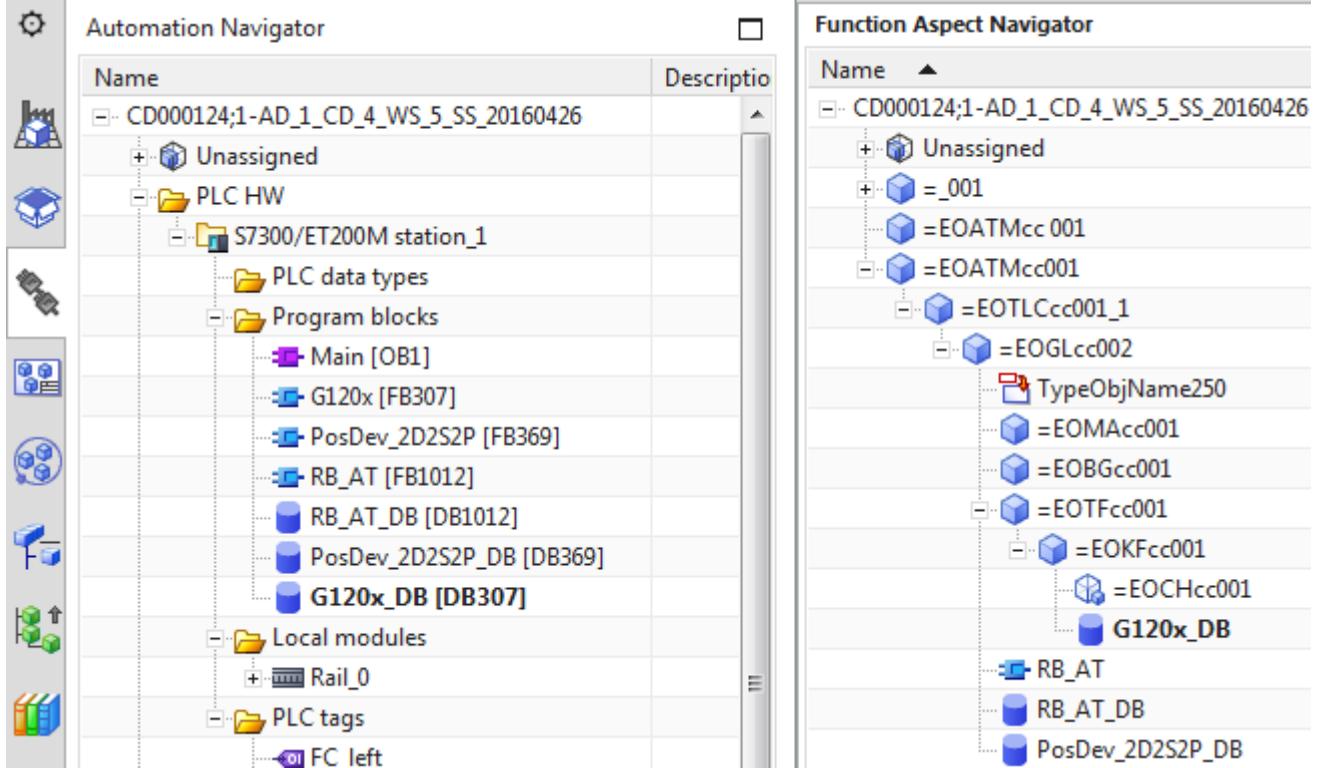
Automation Navigator

Name	Description
CD000124;1-AD_1_CD_4_WS_5_SS_20160426	
+ Unassigned	
PLC HW	
S7300/ET200M station_1	
PLC data types	
Program blocks	
Main [OB1]	
G120x [FB307]	
PosDev_2D2S2P [FB369]	
RB_AT [FB1012]	
RB_AT_DB [DB1012]	
Local modules	
Rail_0	
PLC tags	
FC_left	

Function Aspect Navigator

Name
CD000124;1-AD_1_CD_4_WS_5_SS_20160426
+ Unassigned
=_001
=EOATMcc 001
=EOATMcc001
=EOTLCcc001_1
=EOGLcc002
TypeObjName250
=EOMAcc001
=EOBGcc001
=EOTFcc001
=EOKFcc001
=EOCHcc001
RB_AT
RB_AT_DB

Create the remaining IDBs.



8.1.3a. Import SW-tags (OB1, G120x, PosDev, RB_AT) (20160421)

The screenshot shows three windows illustrating the import of software tags from a TIA Portal project into an Automation Navigator.

Automation Navigator:

- Name:** CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- PLC HW:**
 - S7-300-Station_2
 - S7-300-Station_2
 - S7300/ET200M station_1
 - S7300/ET200M station_1** (selected)
 - Program blocks
 - PLC data types
 - Local modules
 - Rail_0
 - PLC_2
 - PLC tags
 - Subnets

Receive Data from TIA Portal:

- Type:** Software
- Target:** Select Object (1) (highlighted in yellow)
- TIA Portal Project:** Select ap14 File: \\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14 (highlighted in green)
- Project Structure:**

Name
Project
S7300/ET200M station_1
Local modules
Program blocks
RB_AT [FB1012]
Main [OB1]
G120x [FB307]
PosDev_2D2S2P [FB369]
G120x_DB [DB2]
PosDev_2D2S2P_DB [DB9]
PLC data types

Actions: Receive from TIA Portal

Automation Navigator (Detailed View):

- Name:** CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- PLC HW:**
 - S7-300-Station_2
 - S7-300-Station_2
 - S7300/ET200M station_1
 - S7300/ET200M station_1
 - Program blocks
 - RB_AT [FB1012]**
 - Main [OB1]
 - G120x [FB307]**
 - PosDev_2D2S2P [FB369]**
 - G120x_DB [DB2]**
 - PosDev_2D2S2P_DB [DB9]**
 - PLC data types
 - Local modules
 - Rail_0
 - PLC_2
 - PLC tags
 - FRG_EStop
 - FRG_BS
 - IBNO
 - reset
 - Pos_front_left
 - slow_forw
 - pos_back_left
 - slow_back
 - FC_left
 - FC_right
 - Newstart
 - PLC_On delayed
 - TRUE
 - CPulse_0_1s
 - RLO 1
 - BliF
 - RLO 0
 - Subnets

8.1.3b. Import SW-tags (OB1, G120x, PosDev, RB_AT) (20160304)



20160303

Long long story... endless attempt to import a changed Main that had the wrong programming language... finally got it right.. ask me for details. The new cache feature is a real tricky issue.

The screenshot shows the SIMATIC Manager interface with a red border around the main content area. On the left, the project structure is displayed in a tree view:

- Automation** (selected)
 - Name: CD000034;1-AD_1_CD_4_WS_5_SS_b
 - Description: Unassigned
 - PLC HW
 - S7300/ET200M station_1
 - Program blocks
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - RB_AT [FB1012]
 - G120x_DB [DB2]
 - PosDev_2D2S2P_DB [DB9]
 - PLC data types
 - Local modules
 - Rail_0
 - PLC_2
 - MPI/DP interface_1
 - PLC tags
 - S7300/ET200M station_1
 - Program blocks
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - RB_AT [FB1012]
 - G120x_DB [DB2]
 - PosDev_2D2S2P_DB [DB9]
 - Main [OB1] (selected)
 - PLC data types
 - Local modules
 - PLC tags
 - Subnets

On the right, the **PLC Code** tab is active, showing the following code:

```

1 Network 1:-->
2 ..... A= "FC_left"
3 ..... = "FC_right"
4
5

```

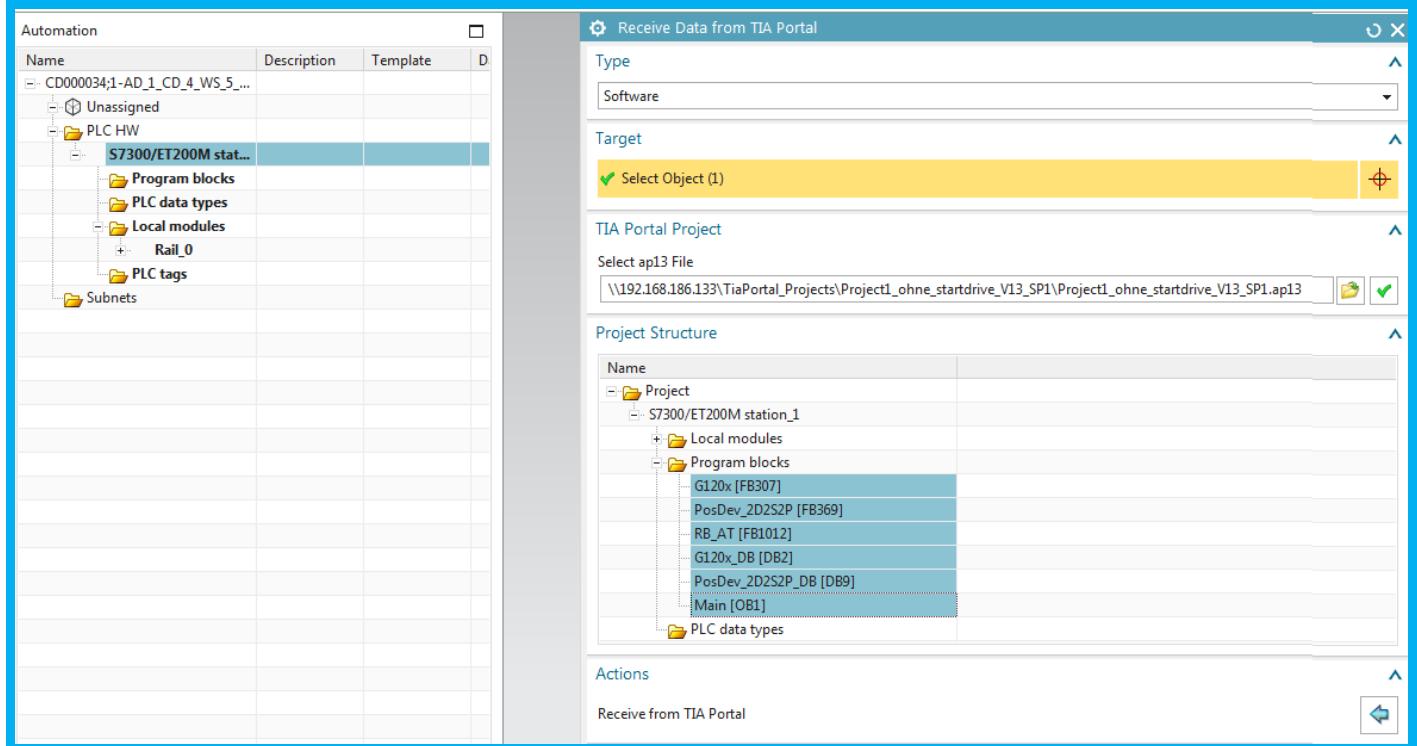
The screenshot shows the SIMATIC Manager interface with a red border around the main content area. On the left, the project structure is displayed in a tree view:

- Name: CD000034;1-AD_1_CD_4_WS_5_SS_b
- Unassigned
- PLC HW
 - S7300/ET200M station_1
 - S7300/ET200M station_2
 - Program blocks
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - RB_AT [FB1012]
 - G120x_DB [DB2]
 - PosDev_2D2S2P_DB [DB9]
 - Main [OB1] (selected)
 - PLC data types
 - Local modules
 - Rail_0
 - PLC_2
 - MPI/DP interface_1

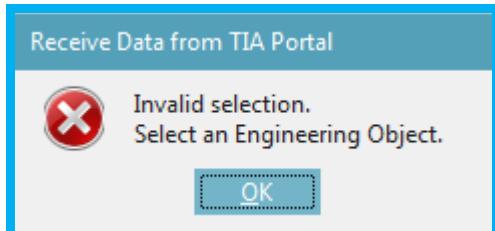
On the right, the **PLC tags** tab is active, listing the following tags:

- Newstart
- PLC_On delayed
- TRUE
- CPulse_0_1s
- RLO 1
- BliF
- RLO 0
- FRG_EStop
- FRG_BS
- IBN0
- reset
- Pos_front_left
- slow_forw
- pos_back_left
- slow_back
- FC_left
- FC_right

20160304



0827 Crashed.



Hw lost ... have to Reimport hw if not save project.

\\192.168.186.133\TiaPortal_Projects\Project1_ohne_startdrive_V13_SP1\Project1_ohne_startdrive_V13_SP1.ap13

Imported without IDBs ok.

The screenshot shows two main windows. On the left is the 'Automation' project tree under 'CD000034;1-AD_1_CD_4_WS_5...'. It includes sections for 'Unassigned', 'PLC HW' (with 'S7300/ET200M station...', 'Program blocks', 'PLC data types', 'Local modules', 'Rail_0', and 'PLC tags'), and 'Subnets'. On the right is a configuration dialog for 'Receive Data from TIA Portal'. The 'Type' field is set to 'Software'. Under 'Target', there is a green checkmark next to 'Select Object (1)'. The 'TIA Portal Project' section shows the path '\192.168.186.133\TiaPortal_Projects\Project1_ohne_startdrive_V1'. The 'Project Structure' pane shows a detailed tree of imported objects, including 'Project', 'S7300/ET200M station_1', 'Local modules', 'Program blocks' (containing 'G120x [FB307]', 'PosDev_2D2S2P [FB369]', 'RB_AT [FB1012]', 'G120x_DB [DB2]', 'PosDev_2D2S2P_DB [DB9]', and 'Main [OB1]'), and 'PLC data types'.

20160304_0839 trying to import IDBs causes error.

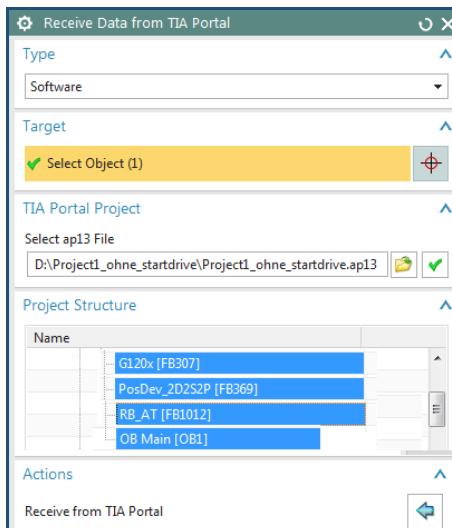
The screenshot shows the same project structure as above, but with a different focus. The 'Main [OB1]' object is selected in the 'Program blocks' folder. To the right, a modal dialog titled 'Receive Data from TIA Portal' displays an error message: 'Invalid selection. Select an Engineering Object.' with an 'OK' button.

Import without IDB. But cant create IDB either. strange error, did not have yesterday.

The screenshot shows the 'Automation' project tree under 'CD000034;1-AD_1_CD_4_WS_5_SS_b'. It includes 'Unassigned', 'PLC HW' (with 'S7300/ET200M station_1', 'Program blocks', 'PLC data types', 'Local modules', 'Rail_0', and 'MPI/DP interface 1'), and 'Subnets'. To the right, the 'Project Structure' pane shows a list of 'PLC tags' with names like 'Newstart', 'PLC_On delayed', 'TRUE', 'CPulse_0_1s', 'RLO1', 'Blif', 'RLO0', 'FRG_EStop', 'FRG_BS', 'IBNO', 'reset', 'Pos_front_left', 'slow_forw', 'pos_back_left', 'slow_back', 'FC_left', and 'FC_right'. This indicates that while IDBs are not explicitly shown in the tree, they are present in the imported structure.

8.1.3c. Import SW-tags (OB1, G120x, PosDev, RB_AT) (20151221)

1. For "Type" select "Software".
2. For "Target" select the station you just imported.
3. Select the Project1_ohne_startdrive.ap13 file and click the green arrow.
4. Select the following SW blocks (use CTRL + left-click to select multiple):
 - OB1
 - RB_AT
 - G120x
 - PosDev_2D2S2P



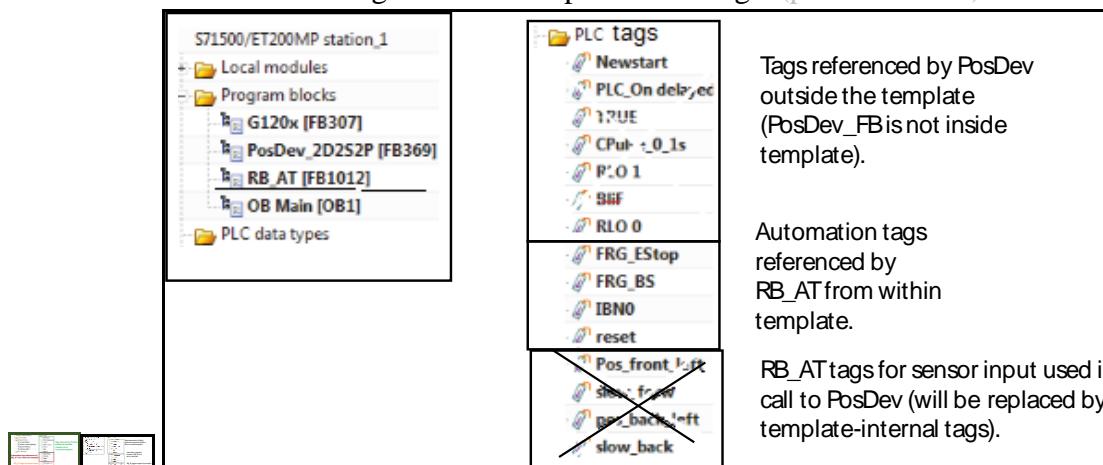
08_006

5. Select "Receive from TIA Portal".

```
Import of Software blocks
User 2003H4JK
Date of import Tue Oct 06 09:56:33 2015
*****
Block Target Status Failure Level Description
FB307 S71500/ET200MP station_1 imported INFORMATION
OB1 S71500/ET200MP station_1 imported INFORMATION
FB1012 S71500/ET200MP station_1 imported INFORMATION
FB369 S71500/ET200MP station_1 imported INFORMATION
*****
*****Summary*****
Successfully imported 4
Not imported 0
Errors 0
Warnings 0
```

08_007

6. Click Close. The following shows the imported SW/tags. (pic from 8.2.3)



08_007b

\$\$\$3/5 4.2. TIA store in reuse 20160421

S7300/ET200M station_1

- Program blocks
 - RB_AT [FB1012]
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]**
 - G120x_DB [DB2]
 - PosDev_2D2S2P_DB [DE]
 - RB_AT_DB [DB1012]
- PLC data types
- Local modules
 - Rail_0
 - PLC_2

Find in Navigator
Place in Aspect...
Edit Block...
Create Port...
Ports Manager...
Publish to Library...

Publish To Library

Object To Publish

Select Object (1)

Name

Name

Edit Classified Part

Attributes

Object Name	PD_ObjName_TT
Description	PD_descr_TT
Unique Identifier	FB6
Character Code	FB
Symbolic Name	PosDev_2D2S2P_sn
Comment (External)	comment ext
Creation Date (External)	2 Mar 2016
Last Modified Date (External)	20 Apr 2016
Title	PD_TT_title
PLC-Language	STL
Number	369
Interface Modified on	2 Mar 2016
Code/Data Modified on	20 Apr 2016
Protection	
External version	6.2
AutoNumber	
Creation by (External)	SIEMENS
User Defined ID (External)	

Reuse Library

Name

- Classification Root
 - Automation Designer
 - Product Library [8]
 - Solution Library [10]
 - Type Library [220]
 - Device [190]
 - Devicefunction [13]
 - EPLAN Macro [2]
 - PLC [2]
 - Software [11]
 - Block [10]
 - DB [1]
 - FB [6]**
 - FC [1]
 - OB [1]
 - UDT [1]

Search

Member Select

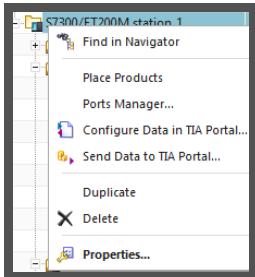
 - FB
 - Baustein_1
 - Baustein_2
 - RB_AT
 - G120x
 - PosDev_2D2S2P_TT**

Preview

Inherit Classification

Clear Attributes

>> HW? NO? but "PLC" is in classification root

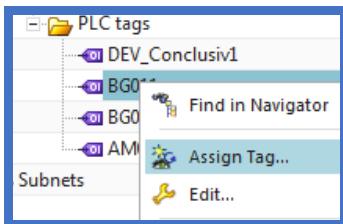


SW-FB, yes

Three screenshots from TIA Portal. The left screenshot shows the project tree with a selected function block 'FX001_FB [FB6]'. The middle screenshot shows the 'Publish To Library...' dialog with the object selected and the name 'FX001_FB' entered. The right screenshot shows the 'Classification Root' tree, where 'FX001_FB' is listed under the 'PLC [4]' category.

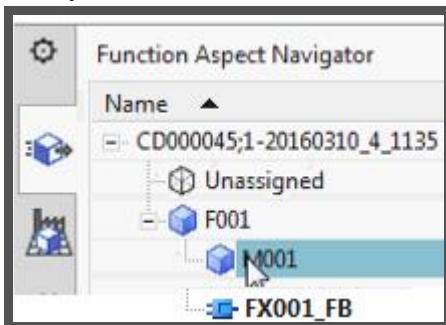
SW-DB?

SW-tags? NO?



4.3. TEST: import from reuse

Verify can add.



8.1b. Move RB_AT, create IDB's (RB_AT, G120x, PosDev)

In this section you

1. Move RB_AT
2. RB_AT_DB
3. G120x_DB
4. PosDev_DB
5. View the IDB-FB ports (3)

Automation tab	Aspect top	Template
OB		RB_AT_DB /
		RB_AT_FB
		PosDev_DB
PosDev FB		G120_DB
G120 FB		

08_008

1a. Move RB_AT 20160421

20160421

The screenshot shows the EPLAN software interface with the 'Place in Aspect...' dialog open. In the 'Object' section, 'Select Engineering Object (1)' is checked, and the object 'RB_AT [FB1012]' is selected. In the 'Placement' section, 'Select Aspect Node (1)' is checked, and the node 'ConveyorF001' is selected. To the left, the 'Function Aspect Navigator' lists various objects and their reference designations and descriptions.

Name	Description
CD000101;1-AD_1_CD_4_WS_5_SS_20160418	
Unassigned	
=_001	000344
=_004	000345
=ConveyorF001	000346
=MotorF001	000347
=SensorF001	000348
=DrivePowerF001	000351
=DriveControlF001	000352
=EOCHcc001	000353
EPLAN Page Macro	Description250
RB_AT	

From reuse library.

The screenshot shows the EPLAN software interface with the 'Reuse Operations' dialog open. In the 'Reuse Library' section, 'Select from Member Select (RB_AT)' is checked, and the member 'RB_AT' is selected. In the 'General Properties' section, 'Object Name Prefix' is set to 'RB_AT'. In the 'Navigators' section, 'Select Parent (1)' is checked. An error message at the bottom states: 'An identical reference designation set already exists. Choose a different name for the aspect.'

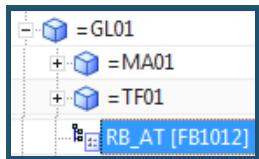
Cant put in same

The screenshot shows the EPLAN software interface with the 'Function Aspect Navigator' open. The object 'RB_AT' is selected. The navigator lists various objects and their reference designations and descriptions.

Name	Description
CD000101;1-AD_1_CD_4_WS_5_SS_20160418	
Unassigned	
=_001	000344
=_004	000345
=ConveyorF001	000346
=MotorF001	000347
=SensorF001	000348
=DrivePowerF001	000351
=DriveControlF001	000352
=EOCHcc001	000353
EPLAN Page Macro	Description250
RB_AT	

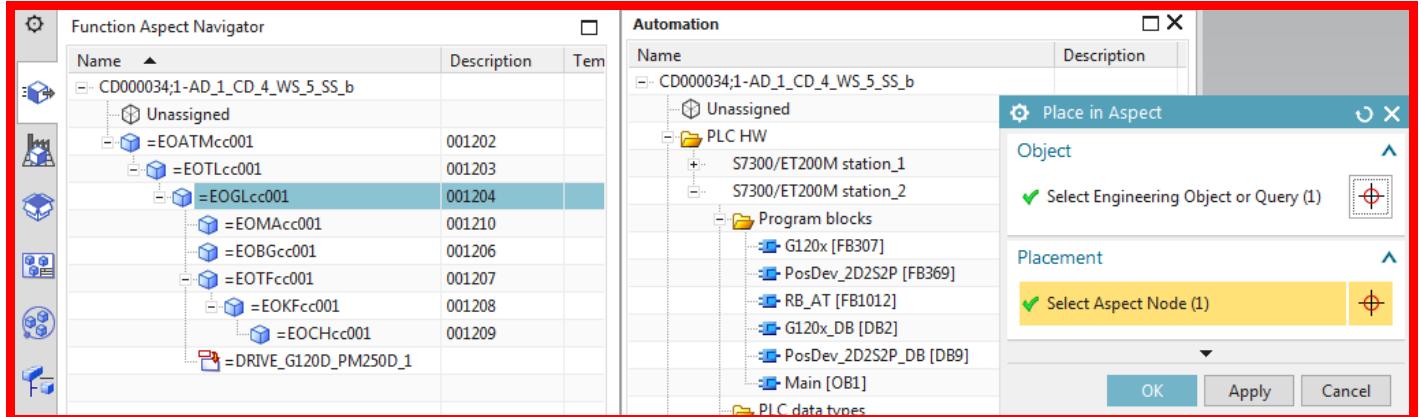
1b. Move RB_AT

1. Move RB_AT: Right-click on RB_AT and select "Cut".
2. In the Function aspect, right-click on GL01 and select "Paste".

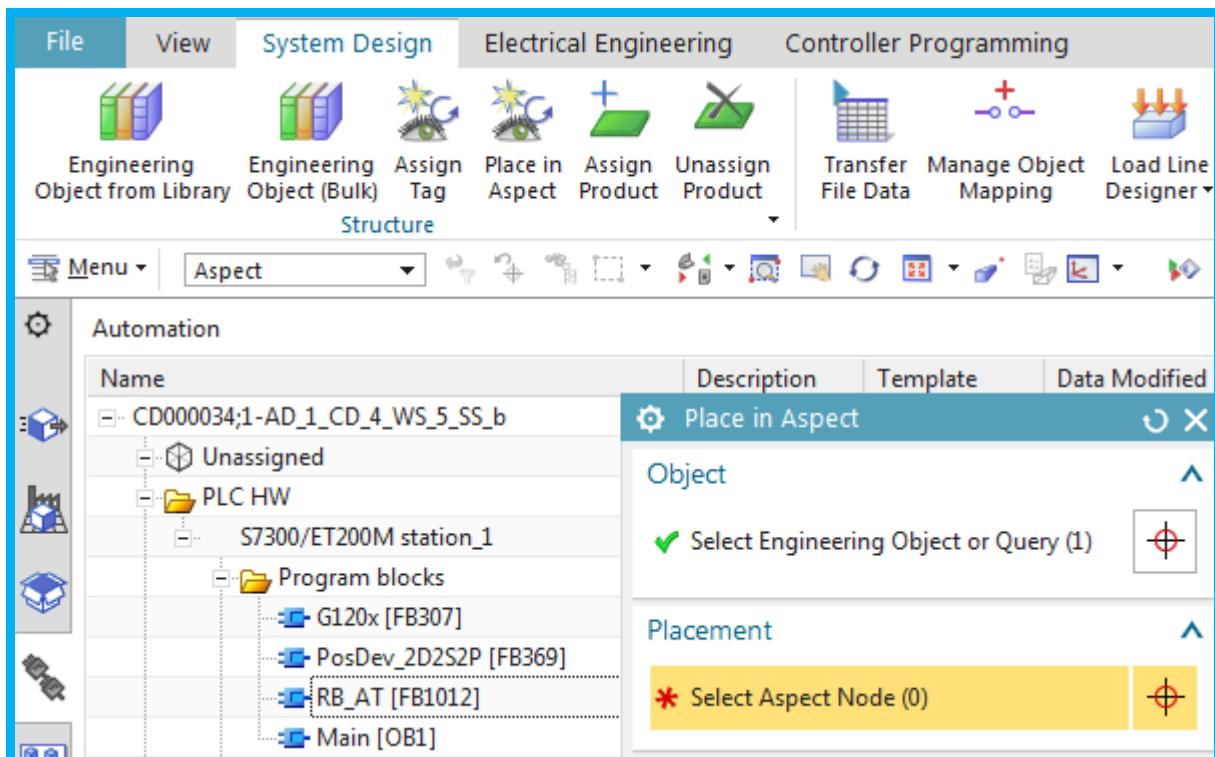


08_010

This copies, not move.



20160304



Function Aspect Navigator

Name	Description	Template	Data Modified	Data Check...
CD000034;1-AD_1_CD_4_WS_5_...				
Unassigned				
=EOATMcc001	001202			
=EOTLcc001	001203			
=EOGLcc001	001204			
=EOAcc001	001210			
=EOBGcc001	001206			
=EOTFcc001	001207			
=EOKFcc0... =EOC... =DRIVE_G120... =RB_AT	001208 001209			

Place in Aspect

Object

✓ Select Engineering Object or Query (1)

Placement

✓ Select Aspect Node (1)

Function Aspect Navigator

Name	Description
CD000034;1-AD_1_CD_4_WS_5_...	
Unassigned	
=EOATMcc001	001202
=EOTLcc001	001203
=EOGLcc001	001204
=EOAcc001	001210
=EOBGcc001	001206
=EOTFcc001	001207
=EOKFcc0... =EOC... =DRIVE_G120... =RB_AT	001208 001209

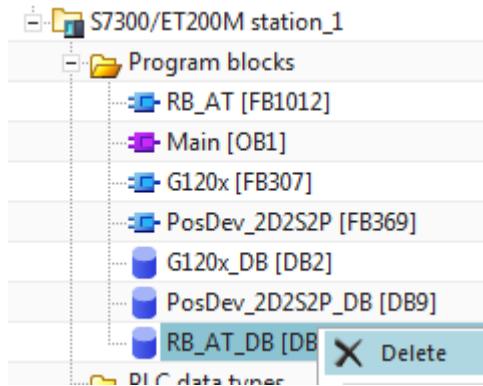
Automation

Name	
CD000034;1-AD_1_CD_4_WS_5_SS_b	
Unassigned	
PLC HW	
S7300/ET200M station_1	
Program blocks	
G120x [FB307]	
PosDev_2D2S2P [FB369]	
RB_AT [FB1012]	
Main [OB1]	

2a. RB_AT_DB 20160421

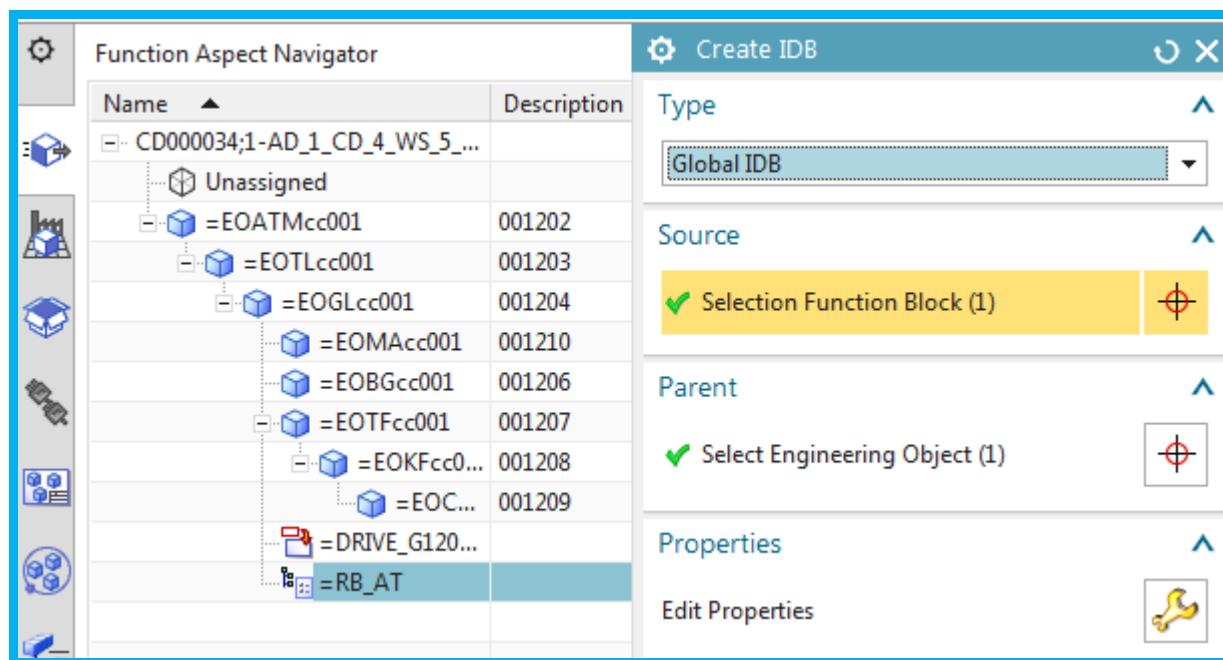
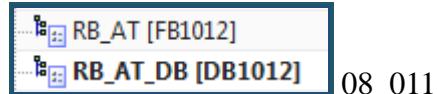
=_001	000344
-=_004	000345
-=ConveyorF001	000346
=MotorF001	000347
=SensorF001	000348
-=DrivePowerF001	000351
-=DriveControlF001	000352
=EOCHcc001	000353
=EPLAN Page Macro	Description250
=RB_AT	
=RB_AT_DB	

NO DON'T DELETE?

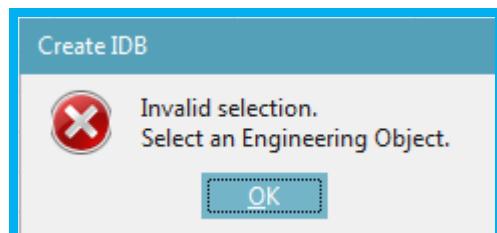


2b. RB_AT_DB

1. Right-click on RB_AT and select "Create IDB".
2. For "Type" select "Global IDB".
3. For "Parent" select GL01.
4. Click OK. The IDB is created.



20160304_0916: for some reason cant create idb.



3a. Move G120x 20160421

The screenshot shows the EPLAN Function Aspect Navigator interface. A context menu is open over the 'G120x [FB307]' block in the 'Program blocks' folder. The menu items are 'Find in Navigator' and 'Place in Aspect...'. The 'Place in Aspect...' option is highlighted.

The main window displays a hierarchical list of objects under 'CD000101;1-AD_1_CD_4_WS_5_SS_20160418'. The 'G120x' block is selected in the tree view.

Name	Description	Template
CD000101;1-AD_1_CD_4_WS_5_SS_20160418		
Unassigned		
=_001	000344	
=_004	000345	
=_ConveyorF001	000346	
=_MotorF001	000347	
=_SensorF001	000348	
=_DrivePowerF001	000351	
=_DriveControlF001	000352	
=_EOCHcc001	000353	
=_ConveyorF001	000346	
=_MotorF001	000347	
=_SensorF001	000348	
=_DrivePowerF001	000351	
=_DriveControlF001	000352	
=_EOCHcc001	000353	
G120x		
EPLAN Page Macro	Description250	
RB_AT		
RB_AT_DB		

A 'Place in Aspect' dialog box is open on the right side of the screen. It contains two sections: 'Object' and 'Placement'. The 'Object' section shows a green checkmark next to 'Select Engineering Object (1)'. The 'Placement' section shows a yellow background and a green checkmark next to 'Select Aspect Node (1)'.

3b. G120x_DB 20160421

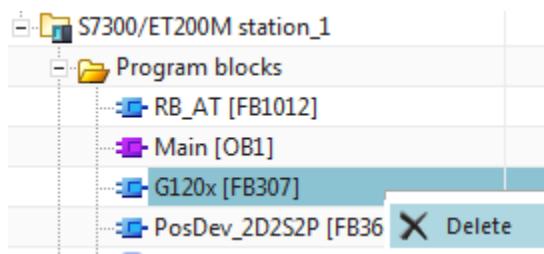
Already there... check ports?

Ports Manager							
Source							
Port	Connected Ob...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
- System Defined							
- Block_C			Control Scope	Program Block	Undirected	1	Controller
	S7300/ET200M ...	Station_C	Control Scope	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Data Type
- FB020			EO	FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
	DB006	G120x	EO	FB	Undirected	1	FB_Proxy

DB006 is the IDB.

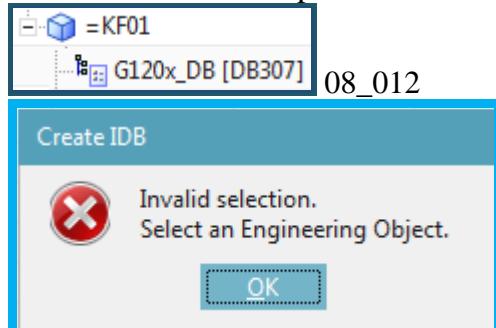
NO DON'T DELETE?

Deleting deletes also in aspect tree.



3b. G120x_DB

1. Create an IDB with parent KF01.

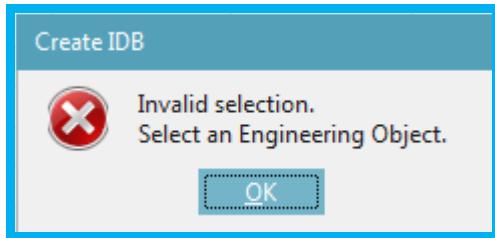


4a. PosDev_DB 20160421

The screenshot shows the EPLAN Function Aspect Navigator interface. At the top, there is a tree view of program blocks under the station_1 project. A context menu is open over the 'PosDev_2D2S2P [FB369]' block, with options like 'Find in Navigator' and 'Place in Aspect...'. Below this is the 'Function Aspect Navigator' window, which displays a hierarchical list of engineering objects. On the left, there are icons for different object types: Unassigned, Motor, Sensor, DrivePower, DriveControl, and EOCHcc. The main table lists objects with columns for Name, Description, and Template. A 'Place in Aspect' dialog is open on the right, showing a selected engineering object ('ConveyorF001') and a selected aspect node ('EOCHcc001').

Name	Description	Template
CD000101;1-AD_1_CD_4_WS_5_SS_20160418		
Unassigned		
=_001	000344	
=_004	000345	
=_ConveyorF001	000346	
=_MotorF001	000347	
=_SensorF001	000348	
=_DrivePowerF001	000351	
=_DriveControlF001	000352	
=_EOCHcc001	000353	
=_001	000344	
=_004	000345	
=_ConveyorF001	000346	
=_MotorF001	000347	
=_SensorF001	000348	
=_DrivePowerF001	000351	
=_DriveControlF001	000352	
=_EOCHcc001	000353	
=G120x		
=EPLAN Page Macro	Description250	
=RB_AT		
=PosDev_2D2S2P		
=RB_AT_DB		

4b. PosDev_DB



1. Create an IDB with parent GL01.



A screenshot showing two windows side-by-side. The left window is the "Function Aspect Navigator" and the right window is the "Automation" window. Both windows display the same hierarchical tree structure, indicating they are showing the same data. The tree starts with "CD000034;1-AD_1_CD_4_WS_5_SS_b" as the root node, which contains "Unassigned", "EOATMcc001", "EOTLcc001", "EOGLcc001", "EOMAcc001", "EOBGcc001", "EOTFcc001", "EOKFcc001", "EOCHcc001", "G120x_DB", "DRIVE_G120D_PM250D_1", "RB_AT", "RB_AT_DB", and "PosDev_2D2S2P_DB". The right window also shows "PLC HW" and "Program blocks" sections with similar items.

5a. View the IDB-FB ports (3) 20160421

1. Right-click on RB_AT. Select "Ports Manager". RB_AT ("Source") has a port "RB_AT" (table column 1 "Port") that is linked to the port RB_AT (column 3 "Connected Port") of IDB RB_AT_DB (column 2 "Connected Object").

Ports Manager							
Source		Ports					
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
Block_C	S7300/ET200M station...	Station_C	Control Scope	Program Block	Undirected	1	Controller
FRG_EStop	FRG_EStop	FRG_EStop	EO	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Da...
FRG_BS	FRG_BS	FRG_BS	EO	Tag	Undirected	1	Tag_Proxy
IBNO	IBNO	IBNO	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
reset	reset	reset	EO	Tag	Undirected	1	Tag_Proxy
Pos_front_left	Pos_front_left	Pos_front_left	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
slow_forw	slow_forw	slow_forw	EO	Tag	Undirected	1	Tag_Proxy
pos_back_left	pos_back_left	pos_back_left	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
slow_back	slow_back	slow_back	EO	Tag	Undirected	1	Tag_Proxy
PosDev_2D2S2...	DB007	DB007	EO	Caller	Undirected	N	IDB_Proxy, FC_Proxy
G120x_DB	DB006	DB006	EO	IDB_Proxy	Undirected	N	Any, Caller, Operand, Program Block, IDB
FB019	DB010	RB_AT	EO	Caller	Undirected	N	IDB_Proxy, FC_Proxy
				FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
				FB	Undirected	1	FB_Proxy

2. Open the ports manager for RB_AT_DB. The table is a mirror image of the above table.

Ports Manager							
Source		Ports					
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
Block_C	S7300/ET200M stati...	Station_C	Control Scope	Program Block	Undirected	1	Controller
RB_AT	FB019	FB019	EO	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Data...
DB010	OB004	Caller_1	EO	FB	Undirected	1	FB_Proxy
				FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
				Caller	Undirected	N	IDB_Proxy, FC_Proxy

3. View the G120x ports.

Ports Manager

Source

- FB020
 - G120x

Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
- Block_C			Control Scope	Program Block	Undirected	1	Controller
- S7300/ET200M ...	Station_C		Control Scope	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Data Type
- FB020			EO	FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
	DB006	G120x	EO	FB	Undirected	1	FB_Proxy

Ports Manager

Source

- DB006
 - G120x_DB [DB2]

Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
- Block_C			Control Scope	Program Block	Undirected	1	Controller
- S7300/ET200M ...	Station_C		Control Scope	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Data Type
- G120x			EO	FB	Undirected	1	FB_Proxy
- FB020	FB020		EO	FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
- DB006	FB019	G120x_DB	EO	IDB_Proxy	Undirected	N	Any, Caller, Operand, Program Block, IDB
				Caller	Undirected	N	IDB_Proxy, FC_Proxy

4. View the PosDev ports.

Ports Manager

Source

- FB021
 - PosDev_2D2S2P

Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
- Block_C			Control Scope	Program Block	Undirected	1	Controller
- S7300/ET200M ...	Station_C		Control Scope	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Data Type
- Newstart	Newstart		EO	Tag	Undirected	1	Tag_Proxy
- PLC_On delayed	PLC_On delayed		EO	Tag	Undirected	1	Tag, Any, Operand
- TRUE	TRUE		EO	Tag	Undirected	1	Tag_Proxy
- CPulse_0_1s	CPulse_0_1s		EO	Tag	Undirected	1	Tag_Proxy
- CPulse_0_1s	CPulse_0_1s		EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
- RLO 1	RLO 1		EO	Tag	Undirected	1	Tag_Proxy
- Blif	Blif		EO	Tag	Undirected	1	Tag_Proxy
- RLO 0	RLO 0		EO	Tag	Undirected	1	Tag_Proxy
- FB021	FB021		EO	FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
	DB007	PosDev_2D2S2P	EO	FB	Undirected	1	FB_Proxy

Ports Manager

Source

- DB007
 - PosDev_2D2S2P_DB [DB9]

Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
- Block_C			Control Scope	Program Block	Undirected	1	Controller
- S7300/ET200M ...	Station_C		Control Scope	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Data Type
- PosDev_2D2S2P	FB021		EO	FB	Undirected	1	FB_Proxy
- DB007	FB019	PosDev_2D2S2P...	EO	FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
				IDB_Proxy	Undirected	N	Any, Caller, Operand, Program Block, IDB
				Caller	Undirected	N	IDB_Proxy, FC_Proxy

5b. View the IDB-FB ports (3)

When you created the IDB's, AD created an FB port, an IDB port, and a link between them. These are the first ports you have created, and it's important to understand how ports work. The FB, IDB, and ports often have the same name, so it's important to understand the information in the ports manager.



1. Right-click on RB_AT. Select "Ports Manager". RB_AT ("Source") has a port "RB_AT" (table column 1 "Port") that is linked to the port RB_AT (column 3 "Connected Port") of IDB RB_AT_DB (column 2 "Connected Object").

Source							
Ports							
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardi...	Man...
RB_AT			EO	FB	Undefined	N	PLC_SOFTWARE_FUNCTION_BLOCK...
	RB_AT_DB	RB_AT	INTERNAL	PLC_SOFTWARE_FUNCTION_BLOCK_PORT	Undefined	ONE	FB
	S71500/ET200MP stati...	S71500/ET200M...	INTERNAL	PLC_SOFTWARE_FOLDER	Undefined	N	OB, FB, FC, DB, IDB

08_014

Source						
Ports						
Port	Connected Ob...	Connected Port	Port Type	Connection Type	Direction	
User Defined						
System Defined						
Block_C			Control Scope	Program Block	Undirected	
FRG_EStop	S7300/ET200M ...	Station_C	Control Scope	Controller	Undirected	
FRG_BS	FRG_EStop	FRG_EStop	INTERNAL	PLC_SOFTWARE_SYMBOLIC...	Undirected	
IBNO	FRG_BS	FRG_BS	EO	TAG	Undirected	
reset	IBNO	IBNO	EO	PLC_SOFTWARE_SYMBOLIC...	Undirected	
Pos_front_left			INTERNAL	TAG	Undirected	
slow_forw	reset	reset	EO	PLC_SOFTWARE_SYMBOLIC...	Undirected	
pos_back_left	Pos_front_left	Pos_front_left	EO	TAG	Undirected	
slow_back	slow_forw	slow_forw	INTERNAL	PLC_SOFTWARE_SYMBOLIC...	Undirected	
PosDev_2D2S2P_DB	pos_back_left	pos_back_left	EO	TAG	Undirected	
G120x_DB	slow_back	slow_back	INTERNAL	PLC_SOFTWARE_SYMBOLIC...	Undirected	
FB006	PosDev_2D2S2P_DB	DB007	EO	Callee	Undirected	
		DB007	EO	IDB	Undirected	
	G120x_DB		EO	Callee	Undirected	
		DB006	EO	IDB	Undirected	
	FB006		EO	FB	Undirected	
		DB005	RB_AT	INTERNAL	PLC_SOFTWARE_FUNCTION_BLOCK...	Undirected

2. Open the ports manager for RB_AT_DB. The table is a mirror image of the above table.

Source							
Ports							
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardi...	Man...
User Defined							
- System Defined							
- RB_AT			INTERNAL	PLC_SOFTWARE_FUNCTION_BLOCK_PORT	Undefined	ONE	FB
	RB_AT	RB_AT	EO	FB	Undefined	N	PLC_SOFTWARE_FUNCTION_BLO...

08_015

Source							
DB005							
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
- System Defined							
- Block_C				Control Scope	Program Block	Undirected	1
	S7300/ET200M station_2	Station_C	Control Scope	Controller	Undirected	N	Controller
- RB_AT			INTERNAL	PLC_SOFTWARE_FUNCTION_BLOCK_PORT	Undirected	1	PLC Tag, Program Blo...
	FB006	FB006	EO	FB	Undirected	N	FB, PLC_SOFTWARE_FUNCTION_BLOCK_PORT
DB005			EO	IDB	Undirected	N	EOAny, Callee, IDB, S...

3. View the G120x ports.

Source							
G120x							
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
- System Defined							
- G120x			EO				
	G120x_DB	G120x	INTERNAL				

08_016

Source							
G120x_DB							
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
- System Defined							
- G120x			INTERNAL				
	G120x	G120x	EO				

08_017

Source							
DB006							
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
- System Defined							
- Block_C				Control Scope	Program Block	Undirected	1
	S7300/ET200M station_2	Station_C	Control Scope	Controller	Undirected	N	Controller
- G120x			INTERNAL	PLC_SOFTWARE_FUNCTION_BLOCK_PORT	Undirected	1	PLC Tag, Program Blo...
	FB004	FB004	EO	FB	Undirected	N	FB, PLC_SOFTWARE_FUNCTION_BLOCK_PORT
- DB006			EO	IDB	Undirected	N	EOAny, Callee, IDB, S...
	FB006	G120x_DB	EO	Callee	Undirected	N	IDB, FC

4. View the PosDev ports.

Source							
PosDev_2D2S2P							
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
- System Defined							
- PosDev_2D2S2P			EO				
	PosDev_2D2S2P_DB	PosDev_2D2S2P	INTERNAL				

08_018

Source							
PosDev_2D2S2P_DB							
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
- System Defined							
- PosDev_2D2S2P			INTERNAL				
	PosDev_2D2S2P	PosDev_2D2S2P	EO				

08_019

8.2. Add/delete tags

- 8.2.1. Verify the 4 RB_AT (FRG, etc.) tags were imported, the connections are OK, and the addresses are correct.
- 8.2.2. Verify the 7 PosDev (Newstart, etc.) tags.
- 8.2.3. Add boolean tag DI1 (under EO CH1).
- 8.2.4. Add DWord tag tag PID0 (under EO KF).

Automation tab	Aspect top	Template
FRG_EStop 2 Newstart 2		DI1 2 PID1 2

08_020

8.2.1. Verify 4 RB_AT tag (FRG_EStop,FRG_BS,IBN0,Reset)

Verify that the following 4 tags were imported correctly.

5	FRG_EStop	Bool	%M0.4
6	IBN0	Bool	%M0.5
8	FRG_BS	Bool	%M0.7
9	reset	Bool	%M1.0

RB_AT Automation tab tags (FRG, ...)

08_021

TERRY 20151008 Andreas: these tags can be put in the automation aspect.. then instead of "Function" in expression use "Automation".

AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH2p")),Automation)+"_CH".
The automation tab tags are input to RB_AT.



TERRY 20160210: is this table really needed?

1. Verify the following for the tags:

Tag	Properties	value
FRG_EStop	Name	FRG_EStop
	Memory Section	Input
	Data Type	Bool
	Description	FRG_EStop button
	Address	%M0.4
FRG_BS	Name	FRG_BS
	Memory Section	Input
	Data Type	Bool
	Description	FRG_BS button
	Address	%M0.5
IBN0	Name	IBN0
	Memory Section	Input
	Data Type	Bool
	Description	IBN0 button
	Address	%M0.7
Reset	Name	Reset
	Memory Section	Input
	Data Type	Bool
	Description	Reset button
	Address	%M1.0

8.2.2. Verify 7 PosDev tags (Newstart, etc.)

Verify that the following 7 tags were imported correctly.

10	BLIF	Bool	%M1.1
11	TRUE	Bool	%M1.2
7	RI_O_N	Bool	%M0.6
12	RLO_1	Bool	%M1.3
13	CPulse_0_1s	Bool	%M1.4
14	Newstart	Bool	%M1.5
15	PLC_On delayed	Bool	%M1.6

PosDev Automation tag tags (Newstart, ...)

08_022

8.2.3a. Add 1 sensor tag (DI1) and PID0 20160509

The screenshot shows the Function Aspect Navigator and Automation Navigator interface. The Function Aspect Navigator on the right displays a tree structure of function blocks and their internal components. A new tag 'DI1' is being added under the 'Properties' tab, with its properties set to: Name = DI1, Memory Section = Input, Data Type = Bool, Description = , Address Offset Byte = 0, Address Offset Bit = 0, and Address = 0.1. The 'Hardware Connection' tab shows the selection of I/O Device 'IB0' for the tag. The Automation Navigator on the left shows the project structure, including local modules like Rail_0, PS 307 10A_1, PLC_2, and DI16/DO 16x24VDC/0.5A_1, and their associated tags.

Name	Description
CD000163;1-AD_1_CD_4_WS_5_SS_2016...	
=EOATMcc001	000344
=EOTLcc001	000345
=EOGLcc001	000346
=EOAMcc001	000347
=EOBGcc001	000348
=EOTFcc001	000351
=EOKFcc001	000352
=EOCHcc001	000353
=G120x_DB	
=RB_AT	
=RB_AT_DB	
=PosDev_2D2S2P_DB	

I/O Device Structure	Status	Tag Name	Tag Data Type
- IB0	Partial...		
I0.0	Used	*RB_HA_01...	*Bool
I0.1	Free		
I0.2	Free		
I0.3	Free		
I0.4	Free		
I0.5	Free		
I0.6	Free		
I0.7	Free		
+ IB1	Free		

Automation Navigator

- Name: CD000163;1-AD_1_CD_4_WS_5_SS_20160509_2
 - + Unassigned
 - PLC HW
 - S7300/ET200M station_1
 - Program blocks
 - RB_AT [FB1012]
 - Main [OB1]
 - G120x [FB369]
 - PosDev_2D2S2P [FB369]
 - RB_AT_DB [DB1012]
 - G120x_DB [DB307]
 - PosDev_2D2S2P_DB [DB369]
 - PLC data types
 - Local modules
 - Rail_0
 - PS 307 10A_1
 - PLC_2
 - DI16/DO 16x24VDC/0.5A_1
 - AI4/AO 4x14/12BIT_1
 - ID272
 - ID274
 - ID276
 - ID278
 - QW272
 - QW274
 - QW276
 - QW278
 - PLC tags
 - RB_HA_01_POSIT_LS_DN
 - Newstart

Function Aspect Navigator

Name	Description
CD000163;1-AD_1_CD_4_WS_5_SS_20160509_2	
+ Unassigned	
=EOATMcc001	000344
=EOTLcc001	000345
=EOGLcc001	000346
=EOGAcc001	000347
=EOBGcc001	000348
=EOTFcc001	000351
=EOKFcc001	000352
=EOCHcc001	000353
+ D11	
G120x_DB	
RB_AT	
RB_AT_DB	
PosDev_2D2S2P_DB	

Tag

Properties

Name	PID0
Memory Section	Input
Data Type	DWord
Description	
Address Offset Byte	0
Address Offset Bit	0
Address	272

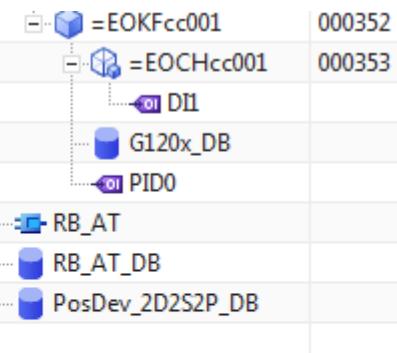
Hardware Connection

Select I/O Device (1)

I/O Device Structure	Status	Tag Name	Tag Data Type
ID272	Free		
+ IB272	Free		
I272.0	Free		
I272.1	Free		
I272.2	Free		
I272.3	Free		
I272.4	Free		
I272.5	Free		
I272.6	Free		
I272.7	Free		
IB273	Free		

Automation Navigator

- Name: CD000163;1-AD_1_CD_4_WS_5_SS_20160509_2
 - + Unassigned
 - PLC HW
 - S7300/ET200M station_1
 - Program blocks
 - PosDev_2D2S2P [FB369]
 - RB_AT_DB [DB1012]
 - G120x_DB [DB307]
 - PosDev_2D2S2P_DB [DB369]
 - PLC data types
 - Local modules
 - Rail_0
 - PS 307 10A_1
 - PLC_2
 - DI16/DO 16x24VDC/0.5A_1
 - AI4/AO 4x14/12BIT_1
 - ID272 - PID0
 - ID274
 - ID276
 - ID278



8.2.3a. Add 1 sensor tag (DI1) and PID0 20160429

The screenshot shows the Automation Navigator and Function Aspect Navigator windows in a software interface.

Automation Navigator:

- Name: G120x [FB307], PosDev_2D2S2P [FB369], RB_AT_DB [DB1012], G120x_DB [DB307], PosDev_2D2S2P_DB [DB369]
- PLC data types
- Local modules:
 - Rail_0:
 - PS 307 10A_1
 - PLC_2
 - DI16/DO 16x24VDC/0.5A_1:
 - I0.0 - RB_HA_01_POSIT_LS_DN
 - I0.1
 - I0.2
 - I0.3
 - I0.4
 - I0.5
 - I0.6
 - I0.7
 - I1.0
 - I1.1
 - I1.2
 - I1.3
 - I1.4
 - I1.5
 - I1.6
 - I1.7
 - Q0.0
 - Q0.1
 - Q0.2

Function Aspect Navigator:

Tag:

- Name: Hcc001/-???.EOCHcc001
- Properties:
 - Name: DI1
 - Memory Section: Input
 - Data Type: Bool
 - Description:
 - Address Offset Byte: 0
 - Address Offset Bit: 0
 - Address: 0.1
- Hardware Connection:
 - Select I/O Device (1)

I/O Device Structure	Status	Tag Name	Tag Data Type
IB0	Partial...		
I0.0	Used	*RB_HA_01...	*Bool
I0.1	Free		
I0.2	Free		
I0.3	Free		
I0.4	Free		
I0.5	Free		
I0.6	Free		
I0.7	Free		
IB1	Free		

Bottom Panel:

- =EOTFcc001 000351
- =EOKFcc001 000352
- =EOCHcc001 000353
 - DI1 DI1 tag descr
- G120x_DB
- RB_AT
- RB_AT_DB
- PosDev_2D2S2P_DB

PIDO

Automation Navigator

- Name
 - S7300/ET200M station_2
 - Program blocks
 - RB_AT [FB1012]
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - RB_AT_DB [DB1012]
 - G120x_DB [DB307]
 - PosDev_2D2S2P_DB [DB369]
 - PLC data types
 - Local modules
 - Rail_0
 - PS 307 10A_1
 - PLC_2
 - DI16/DO 16x24VDC/0.5A_1
 - AI4/AO 4x14/12BIT_1
 - ID272
 - ID274
 - ID276
 - ID278
 - QW272
 - QW274
 - QW276
 - QW278
 - PLC tags
 - RB_HA_01_POSIT_LS_DN
 - Newstart
 - PLC_On delayed
 - TRUE
 - CPulse_0_1s
 - RLO 1
 - BIF
 - Local modules
 - Rail_0
 - PS 307 10A_1
 - PLC_2
 - DI16/DO 16x24VDC/0.5A_1
 - AI4/AO 4x14/12BIT_1
 - ID272 - PID0
 - ID274

Function Aspect Navigator

Name	Description	Parent
CD000124:1-AD_1_CD_4_WS_5_SS_20160426		Select Object (1)
+ Unassigned	00034	Name
+ _001	00034	Properties
=EOATMcc 001	00034	
=EOATMcc001	00034	
+ =EOTLcc001_	00034	
+ =EOGLcc002	00034	
+ TypeObjName250	00034	
+ EOMAcc001	00034	
+ EOBGcc001	00034	
+ =EOTFcc001	00035	
+ =EOKfcc001	00035	
+ EOCHcc001	00035	
+ DII	DII ta	
+ G120x_DB		
RB_AT		
RB_AT_DB		
PosDev_2D2S2P_DB		

Hardware Connection

Select I/O Device (1)			
I/O Device Structure	Status	Tag Name	Tag Data Type
ID272	Free		
+ IB272	Free		
+ IB272.0	Free		
+ IB272.1	Free		
+ IB272.2	Free		
+ IB272.3	Free		
+ IB272.4	Free		
+ IB272.5	Free		
+ IB272.6	Free		
+ IB272.7	Free		
+ IB273	Free		
+ IB274	Free		
+ IB275	Free		

+ =EOKfcc001	000352		
+ =EOCHcc001	000353		
+ DII	DII tag descr		
+ G120x_DB			
+ PID0	PID0 descr		
RB_AT			
RB_AT_DB			

Edit dialog

Tag

Properties

Name	PIDO
Memory Section	Input
Data Type	DWord
Description	PIDO descr
Address Offset Byte	0
Address Offset Bit	0
Address	0

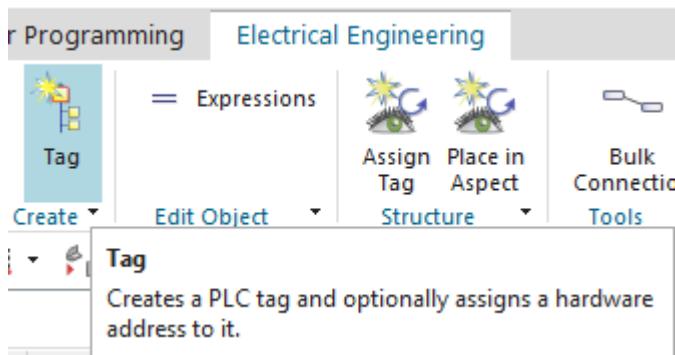
Hardware Connection

Select I/O Device (0)			
I/O Device Structure	Status	Tag Name	Tag Data Type

??

8.2.3a. Add 1 sensor tag (DI1) 20160421

Select =EOCHcc001



=_001.._004.ConveyorF001.DrivePowerF001.DriveControlF001.EOCHcc001/+???.EOCHcc001/-???.EOCHcc001

Forgot to put modules in imported... just use from other PLC for now.

The screenshot shows the SIMATIC Manager Automation Navigator. On the left, the tree view shows a project structure with a main folder 'CD000101;1-AD_1_CD_4_WS_5_SS_20160418' containing 'Unassigned', 'PLC HW', and 'Local modules'. Under 'Local modules', there is a 'Profilschiene_0' folder containing various I/O modules like PS 307 10A_1, PLC_0_317, and DI16/DO16 x 24V / 0,5A_1 through 6. The 'PLC tags' folder contains 'S7300/ET200M station_1' and 'S7300/ET200M station_1' with their respective subfolders for 'Program blocks', 'PLC data types', and 'Local modules'. On the right, a 'Tag' dialog box is open with the following properties:

Name	DI1
Memory Section	Input
Data Type	Bool
Description	Sensor1
Address Offset Byte	0
Address Offset Bit	0
Address	12.0

Below the properties, the 'Hardware Connection' section shows a table for selecting an I/O device:

I/O Device Structure	Status	Tag Name	Tag Data Type
IB12	Used		
I12.0	Used	*03B1DA	*Bool
I12.1	Used	*03B1DB	*Bool
I12.2	Used	*03B11A	*Bool
I12.3	Used	*03B11B	*Bool
I12.4	Used	*03B12A	*Bool
I12.5	Used	*03B12B	*Bool
I12.6	Used	*03B1BA	*Bool
I12.7	Used	*03B1BB	*Bool
IB13	Used		

6. For "Interaction Method" select "Traditional".
7. Select "Symbolic Name".
8. For "Data Type" select "**Value**".
9. For "Value" enter "**DI1sn**" (DI1 symbolic name).

The screenshot shows two windows side-by-side. On the left is the 'Function Aspect Navigator' with a tree view of project objects. On the right is the 'Properties' dialog box for a selected object.

Function Aspect Navigator:

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- Description: Unassigned
- Object Tree:
 - =_001 (ID: 000344)
 - =_004 (ID: 000345)
 - =ConveyorF001 (ID: 000346)
 - =MotorF001 (ID: 000347)
 - =SensorF001 (ID: 000348)
 - =DrivePowerF001 (ID: 000351)
 - =DriveControlF001 (ID: 000352)
 - =EOCHcc001 (ID: 000353)
 - DI1** (Symbolic Name: Sensor1, ID: 000354)
 - G120x
 - EPLAN Page Macro
 - RB_AT
 - PosDev_2D2S2P
 - RB_AT_DB

Properties Dialog Box:

Select Object: Select Object (1) ✓

Context: Traditional

PLC Tag Attributes:

Title/Alias	Value	Units	Type	R...	D...	I...
Address			String			
Address	0.0		Integer			
AddressOffsetBit	0		Integer			
AddressOffsetByte	0		Integer			
Data Type	Bool		String			
Memory Section	Input		String			
General			String			
Description	Sensor1		String			
ID	EOCHcc001.Tag1		String			
Name	DI1		String			
Symbolic Name	DI1sn		String			

8.2.3b. Add 1 sensor tag (DI1)

1. Verify that the 4 tags were imported.

1	slow_back	Bool	%M0.0
2	Pos_front_left	Bool	%M0.1
3	slow_forw	Bool	%M0.2
4	pos_back_left	Bool	%M0.3

DI1
DI2-4 (later chapter)

08_023

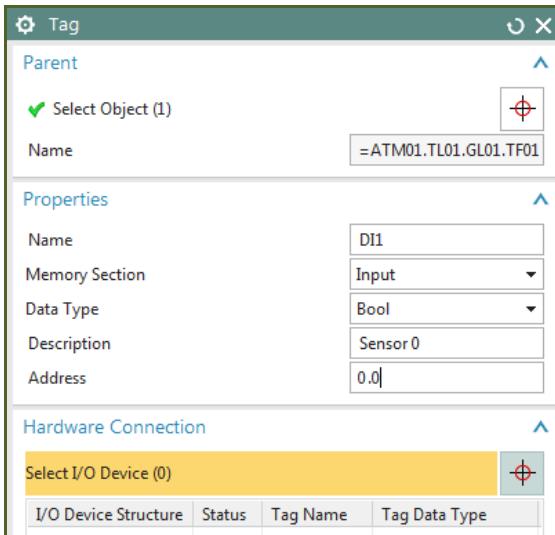


1. Delete Pos_front_left, slow_forw, pos_back_left, slow_back. These tags will be replaced by template instance vars DI0,2-4.

Add the tag DI1 for the boolean sensor data.

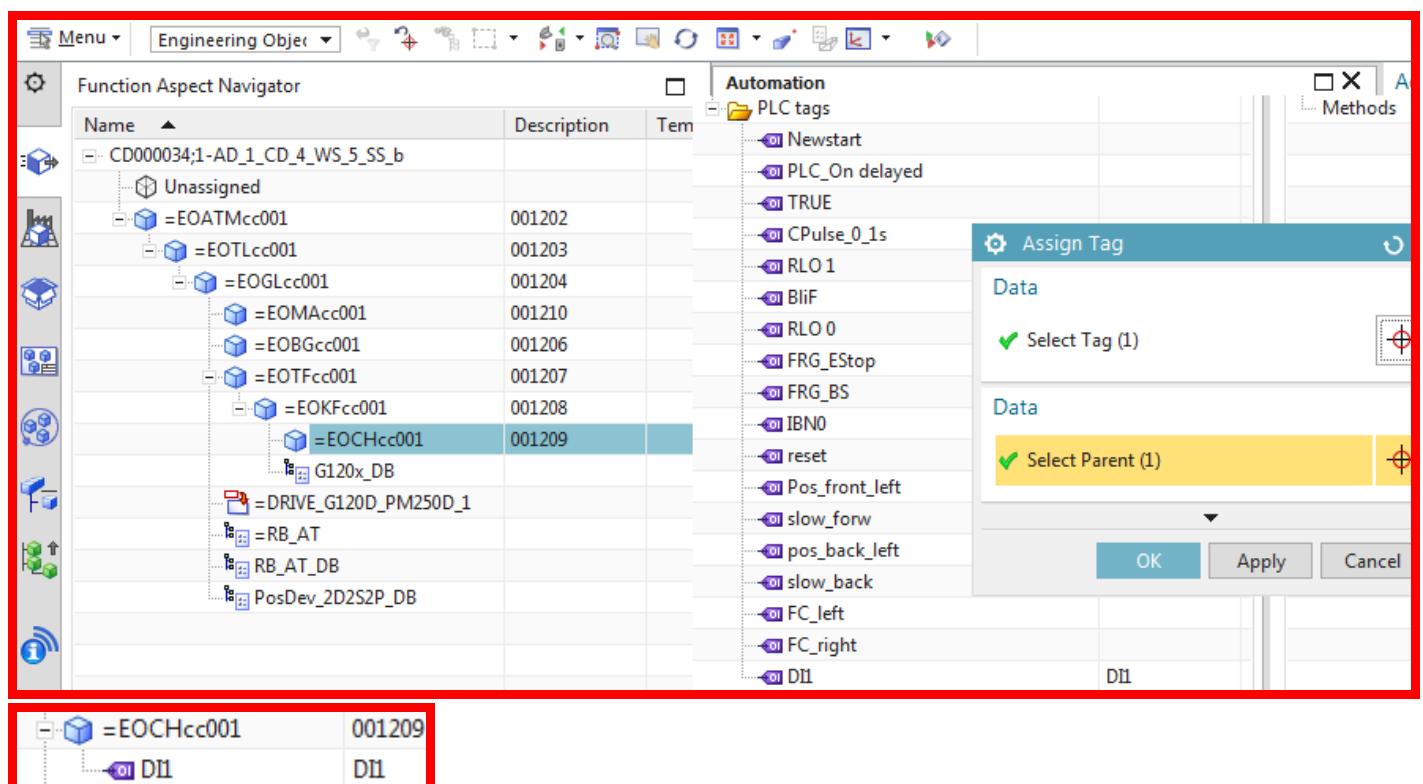
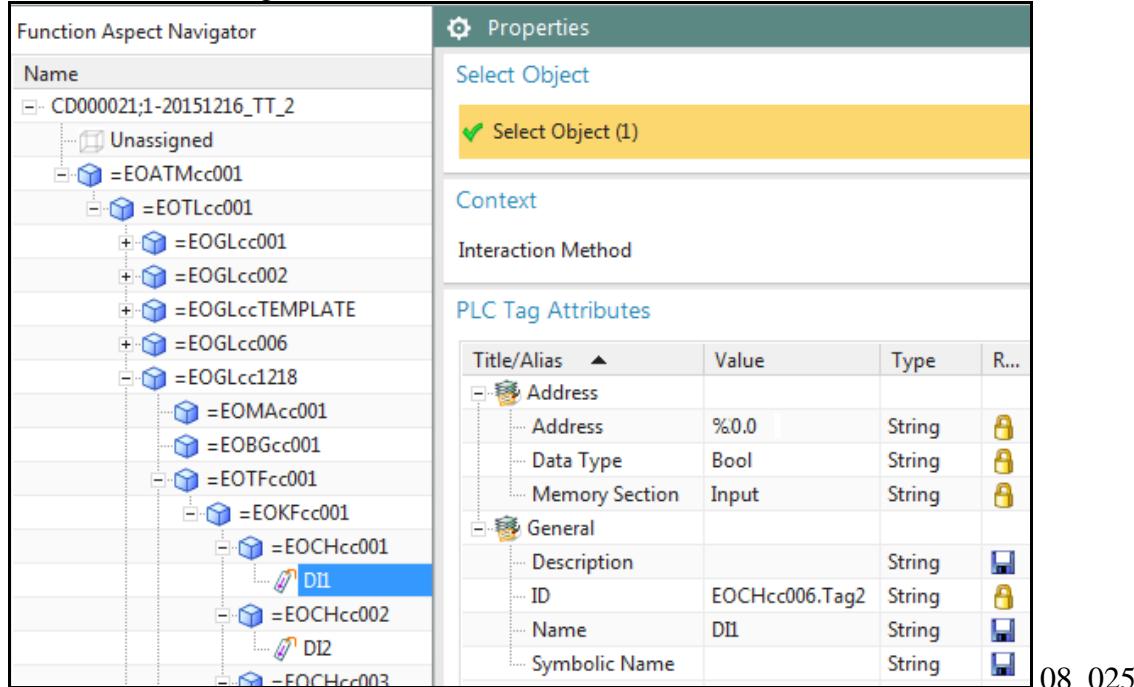
1. Click "Electrical Engineering / Add Tag".
2. Select EO CH1.
3. Enter the following:

Name	DI1
Memory Section	Input
Data Type	Boolean
Description	Sensor 1
Address	0.0



08_024

4. Click OK. The tag is added.



5. Right-click on DI1 and select "Properties".
6. For "Interaction Method" select "Traditional".
7. Select "Symbolic Name".
8. For "Data Type" select "Value".
9. For "Value" enter "DI1sn" (DI1 symbolic name).

Context

Interaction Method Traditional

PLC Tag Attributes

Title/Alias	Value	Type	R...
Description	DI1tag	String	
ID	CH103.Tag	String	
Name	DI000	String	
Symbolic Name	DI1_sn	String	

Category (optional) General

Title/Alias Symbolic Name

Data Type String

Value Expression Formula

Value DI1_sn

Accept Edit

08_026

10. Click on the green arrow and click OK.

8.2.4a. Add 1 DWord tag (PID0) 20160421

=_001._004.ConveyorF001.DrivePowerF001.DriveControlF001/+???.DriveControlL001/-???.DriveControlP001

Tag

Properties

- Name: PID0
- Memory Section: Input
- Data Type: DWord
- Description: PID0 description

Hardware Connection

I/O Device Structure Status Tag Name Tag Data Type

I/O Device Structure	Status	Tag Name	Tag Data Type
IB10	Used		
I10.0	Used	*01B10A	*Bool
I10.1	Used	*01B10B	*Bool
I10.2	Used	*01B11A	*Bool
I10.3			
I10.4			
I10.5			
I10.6			
I10.7	Used	*01B13B	*Bool
IB11	Used		

Alerts

⚠ It is not possible to assign a tag to a single bit when the tag is not of data type 'bool'.

Properties

Select Object

Context

Interaction Method: Traditional

PLC Tag Attributes

Title/Alias	Value	Units	Type	R...	D...	L...
Address	0		String			
AddressOffsetBit	0		Integer			
AddressOffsetByte	0		Integer			
Data Type	DWord		String			
Memory Section	Input		String			
General						
Description	PID0 description		String			
ID	_009.Tag1		String			
Name	PID0		String			
Symbolic Name	PID0sn		String			

8.2.4b. Add 1 DWord tag (PID0)

19		PID0	DWord	%MD4
20		PID1	DWord	%MD8
21		PID2	DWord	%MD12
22		PQD0	DWord	%MD16

PID0
PID1-2, PQD0 (later chapter)

08_027

Add the DWord tags that are input-output for the motor starter sent over the bus.



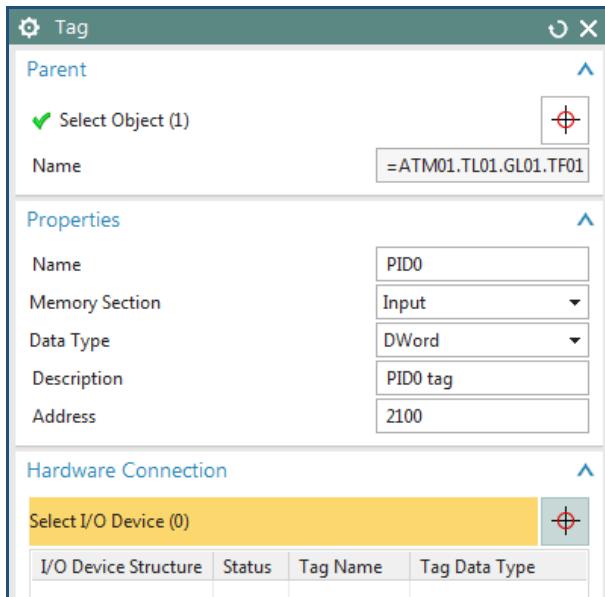
1. Click "Electrical Engineering / Add Tag".

2. Select the KF01 EO.

TERRY: what are (relative) addresses for PID,PQD tags?

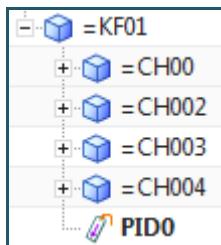
3. Enter the following:

Name	PID0
Memory Section	Input
Data Type	DWord
Description	PID0 descr
Address	2100



08_028

4. Click OK. The tag is added.



08_029

5. Right-click on PID0 and select "Properties".
6. For "Interaction Method" select "Traditional".
7. Select "Symbolic Name".
8. For "Data Type" select "**Value**".
9. For "Value" enter "**PID0sn**".

Context

Interaction Method	Traditional
--------------------	-------------

PLC Tag Attributes

Title/Alias	Value	Type	R...
Description	PID0 tag	String	
ID	KF031.Tag3	String	
Name	PID0	String	
Symbolic Name		String	

Category (optional)

General

Title/Alias

Symbolic Name

Data Type

String

Value Expression Formula

Value

PID0sn

Override Attribute

--

08_030

10. Click on the green arrow and click OK.

8.3a. Create TL constant value 20160429

Engineering Object Attributes

Title/Alias	Value	Units	T...	Type	R...	D...	I...
Category (optional)				Operational_1			
Title/Alias				FastSpeed			
Data Type				String			
<input checked="" type="radio"/> Value <input type="radio"/> Expression Formula							
Value	Real#90.0						
Add New Attribute							

Export

Operational_1	Real#90.0	String		OK	Apply	Cancel
FastSpeed						

8.3a. Create TL constant value 20160421

Screenshot of the PTC Creo Parametric Properties dialog for creating a new constant value.

Properties Dialog:

- Object Selection:** The path `=_001 > =_004 > =` is selected, with a context menu open showing the option **Properties...**.
- Select Object:** A yellow bar at the top indicates "Select Object (1)" has been selected.
- Context:** Interaction Method is set to **Traditional**.
- Engineering Object Attributes:**

Title/Alias	Value	Units	T...	Type	R...	D...	I...
+ Aspect Function							
+ Aspect Location							
+ Aspect Product							
+ General							
+ Type							
+ All Unset							
- Category (optional):** Operational_1
- Title/Alias:** FastSpeed
- Data Type:** String
- Value:** Real#20.0
- Add New Attribute:** A green checkmark icon is present.

Engineering Object Attributes:

Title/Alias	Value	Units	T...	Type	R...	D...	I...
+ Aspect Function							
+ Aspect Location							
+ Aspect Product							
+ General							
- Operational_1	Real#20.0			String			
+ Type							
+ All Unset							

8.3b. Create TL constant value

Create TL constant value Fast_Speed. This value can be referenced by SW calls, allowing them to be used to many times but changed in only one place.

Automation tab	Aspect top	Template	
	Fast_Speed 3		08_031

1. Right-click on TL01 and select "Edit Definition".
2. Click "Engineering Object Definition / Properties". Enter the following:

Category	Operational_1
Title/Alias	Fast_Speed
Data Type	String
Value	Real#20.0

Category (optional)	Operational
Title/Alias	Fast_Speed
Data Type	String
<input checked="" type="radio"/> Value <input type="radio"/> Expression Formula	
Value	Real#20.0
Add New Attribute	

08_032

3. Click the green arrow.

Properties			
Engineering Object Definition Attributes			
Title/Alias	Value	Type	R...
- Operational			
Fast_Speed	Real#20.0	String	

08_033

8.4. Dynamize SW

The SW blocks imported previously now need to be dynamized (reconnected).

- 8.4.1. Overview of calls/tags to be dynamized
- 8.4.2. RB_AT manual OB1 replace by call
- 8.4.4. RB_AT manual connect to RB_AT automation tags
- 8.4.5. RB_AT manual connect to CH DI tags
- 8.4.6. RB_AT->PosDev replace by call
- 8.4.7. RB_AT->G120x replace by call
- 8.4.8. PosDev manual connecto to AUTOMATION tags

8.4.1. Overview of calls/tags to be dynamized



The conveyor is a 2-position, 2-speed, 2-direction conveyor. The software to control the conveyor is based on a typical Siemens automotive standard. The following decribes the function of the SW blocks.

RB_AT - Conveyor controller

- Provide interlocks for interaction with other conveyors.
- Calls the underlying functional blocks for real operation (PosDev_2D2S2P, G120x).

PosDev_2D2S2P

- Controls conveyor.
- 2 directions, 2 speeds, 2 positions.
- Generates conveyor specific error and fault messaging.

G120x

- Operates G120 drive.
- Includes alarm functionality and fault messages.
- Controls speed.

The following describes how these SW blocks will be modified in the next sections.

1. OB1 (8.4.2)
2. RB_AT (8.4.4-7)
3. PosDev (8.4.8)
4. G120x (no changes)

1. OB1 (8.4.2)

In 8.4.2 replace calls with a call rule call to RB_AT.



Original:

```
Block title: "Main Program Sweep (Cycle)"  
Network 1:  
1 | CALL "FC_Init_FB", "FC_Init_FB_DB" $FB982, $DB982  
Network 2:  
1 | CALL "Call Operation modes_FB", "Call Operation modes_FB_DB" $FB983, $DB983  
Network 3:  
1 | CALL "FB_Zone1_messages", "FB_Zone1_messages_IDB" $FB1001, $DB1001  
Network 4:  
1 | CALL "Call_user_blocks_FB", "Call_user_blocks_FB_DB" $FB984, $DB984
```

08_034

Dynamized:

```
Network 1: RB_AT_DB  
//  
| | | | CALL "RB_AT", "RB_AT_DB"
```

08_035

2. RB_AT (8.4.4-7)

In 8.4.4 create a manual connection to the automation tab tags (probably already connected).

Configurations		
Name	Value	Type
Global Symbols		
Tags		
FRG_EStop	FRG_EStop_1b	Bool
FRG_BS		Bool

Interface

PLC Code

```
1 Network 1:--  
2 ..... A-- "FRG_EStop_1b"  
3 ..... A-- "FRG_BS"  
4 ..... = #ENABLE_SAFETY  
5 .....
```

08_036

Note: The colors indicate:

- Green: Connected tag
- Yellow: Unconnected tag
- Red: Wrongly connected tag

In 8.4.5 create a manual connection to the sensor (CH DI) tags.

Configurations		
Name	Value	Type
Global Symbols		
Tags		
Pos_front_left	DI1	Bool
slow_forw		Bool

Interface

PLC Code

```
51 Network 11:--  
52 ..... A-- "DI1"  
53 ..... A-- "slow_forw"  
54 ..... O--
```

08_037

In 8.4.6 dynamize the call to PosDev_DB.

Original:

```
Network 9:--  
CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"  
EN_ADV := #ENABLE_ADV  
EN_RTN := #ENABLE_RTN  
IL_ADV := #INTERLOCK_ADV  
IL_RTN := #INTERLOCK_RTN  
PB_ADV := #PUSHBOTTOM_ADV  
PB_RTN := #PUSHBOTTOM_RTN  
LS_ADV := "Pos_front_left"  
SW_FS_ADV := "slow_forw"  
SW_FS_RTN := "slow_back"  
LS_RTN := "pos_back_left"  
SEL_SLOW := "RLO 0"  
AUTO_MODE := "auto_inching"  
MANU_MODE := "manual"  
MOTOR_PROT := "RLO 1"  
MOTOR_TEMP := "RLO 1"  
ERR_RESET := "#ERROR_RESET"  
LAMP_TEST := "Lamptest"  
TM_OF := 50  
TM_LS := 20  
TV_STARTUP := 20  
Visu := "Interface_Visu".Model[2]  
Alarms := "Interface_Alarms".Model[2]
```

08_038



Dynamized:

```
CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"  
LS_ADV := "DI1"
```

08_039

In 8.4.7 dynamize the call to G120x_DB.

Original:

Network 10: CALL "G120x", "G120x_DB"	INPUT ADDR := "PID0" I_M := "PID1" A_F := "PID2" FAST SPEED := REAL#100.0 SLOW SPEED := REAL#20.0 EN_FWD := #OUT_ADV EN_BWD := #OUT_RTN EN_FAST := #OUT_FAST EN_SLOW := #OUT_SLOW EM_STOP := #ENABLE SAFETY ERR RESET := #ERROR RESET	OUTPUT ADDR := "POD0" ACT_SPEED := #ACT_SPEED ACT_CURRENT := #ACT_CURRENT ACT_TORQUE := #ACT_TORQUE EN_MOTION_FWD := #EN_MOTION_FWD EN_MOTION_BWD := #EN_MOTION_BWD FAULT_ACTIVE := #FAULT_ACTIVE ALARM_ACTIVE := #ALARM_ACTIVE FAULT_MSG := #FAULT_MSG ALARM_MSG := #ALARM_MSG	08_040
---	---	--	--------

Dynamized:

CALL "G120x", "G120x_DB"	INPUT ADDR := "PID0" FAST_SPEED := Real#20.0	08_041
--------------------------	---	--------

3. PosDev (8.4.8)

In 8.4.8. connect tags (probably already connected).

5 Network 2: 6 A "Newstart" 7 R #TM_STARTUP 8 R #EN_FAST 9 10 Network 3: 11 A #ERR_RESET 12 FP #Err_Reset_P 13 ON "PLC_On_delayed"	08_042
--	--------

4. G120x (no changes)

No changes required.

8.4.2a. OB1->RB_AT_DB replace by call 20160421

Automation Navigator

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_201604
- Unassigned
- PLC HW
 - S7-300-Station_2
 - S7-300-Station_2
 - S7300/ET200M station_1
 - S7300/ET200M station_1
 - Program blocks
 - RB_AT [FB1012]
 - Main [OB1] (selected)
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - G120x_DB [DB2]
 - PosDev_2D2S2P_DB [DB]

Actions

Configurations

Name	Value
Global Sym...	
Tags	FC_left FC_left FC_right FC_right
FB/IDB	
FC	
DB	
Ports	Caller P... Operand...

Interface

Name	Defa...	Data ...	Comments
Temp			
OB1_EV_CLASS	Byte	Bits 0-3 = 1 (Con	
OB1_SCAN_1	Byte	1 (Cold restart sc	
OB1_PRIORITY	Byte	Priority of OB Exe	

PLC Code

```

1 Network 1:-->
2 ..... A=> "FC_left"
3 ..... = "FC_right"
4 ..... 

```

Function Aspect Navigator

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- Unassigned
- =_001
- =_004
 - ConveyorF001
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001
 - =DriveControlF001
 - =EOCHcc001
 - EPLAN Page Macro
 - RB_AT
 - RB_AT_DB (selected)

Replace by Call

Properties

Name: Rule_1

Selection

Object Selection: Select Program Block (1)

Define Parameters

Parameter	Value	Type

Replace Parameter by

Symbolic Reference

Object Selection: * Select Object (0)

Condition

Define Condition

Remove Condition

Result

PLC Code

```

1 Network 1:-->
2 CALL "RB_AT", "RB_AT_DB"
3 ..... 
4 

```

Source							
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined							
Caller_1			EO	Caller	Undirected	N	IDB_Proxy, FC_Proxy
	DB010	DB010	EO	IDB_Proxy	Undirected	N	Any, Caller, Operand, Program Block, IDB
- System Defined							
Block_C			Control Scope	Program Block	Undirected	1	Controller
	S7300/ET200M ...	Station_C	Control Scope	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Data Type
FC_left			EO	Tag	Undirected	1	Tag_Proxy
	FC_left	FC_left	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
FC_right			EO	Tag	Undirected	1	Tag_Proxy
	FC_right	FC_right	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
OB004			EO	OB_Proxy	Undirected	N	Operand, Any, Program Block, OB

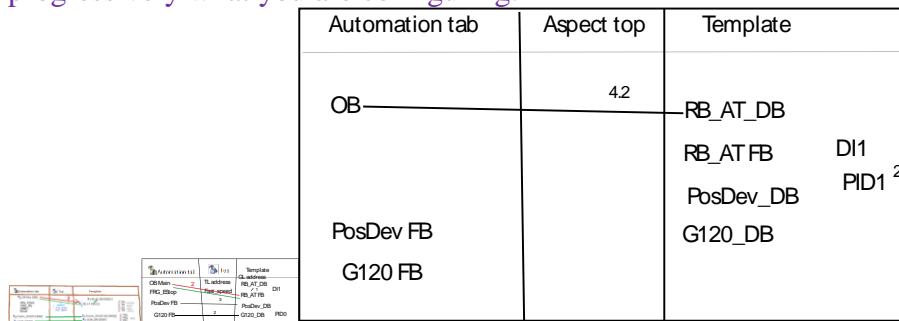
Source							
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined							
- System Defined							
Block_C			Control Scope	Program Block	Undirected	1	Controller
	S7300/ET200M station_1	Station_C	Control Scope	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Data Type
RB_AT			EO	FB	Undirected	1	FB_Proxy
	FB019	FB019	EO	FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
DB010			EO	IDB_Proxy	Undirected	N	Any, Caller, Operand, Program Block, IDB
OB004		Caller_1	EO	Caller	Undirected	N	IDB_Proxy, FC_Proxy

Source							
Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined							
- System Defined							
Block_C			Control Scope	Program Block	Undirected	1	Controller
	S7300/ET200M station_1	Station_C	Control Scope	Controller	Undirected	N	PLC Tag, Program Block, Object, PLC Data Type
FRG_Estop			EO	Tag	Undirected	1	Tag_Proxy
	FRG_Estop	FRG_Estop	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
FRG_BS			EO	Tag	Undirected	1	Tag_Proxy
	FRG_BS	FRG_BS	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
IBNO			EO	Tag	Undirected	1	Tag_Proxy
	IBNO	IBNO	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
reset			EO	Tag	Undirected	1	Tag_Proxy
	reset	reset	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
Pos_front_left			EO	Tag	Undirected	1	Tag_Proxy
	Pos_front_left	Pos_front_left	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
slow_forw			EO	Tag	Undirected	1	Tag_Proxy
	slow_forw	slow_forw	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
pos_back_left			EO	Tag	Undirected	1	Tag_Proxy
	pos_back_left	pos_back_left	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
slow_back			EO	Tag	Undirected	1	Tag_Proxy
	slow_back	slow_back	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
PosDev_2D2S2P_DB			EO	Caller	Undirected	N	IDB_Proxy, FC_Proxy
	DB007	DB007	EO	IDB_Proxy	Undirected	N	Any, Caller, Operand, Program Block, IDB
G120x_DB			EO	Caller	Undirected	N	IDB_Proxy, FC_Proxy
	DB006	DB006	EO	IDB_Proxy	Undirected	N	Any, Caller, Operand, Program Block, IDB
FB019			EO	FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
	DB010	RB_AT	EO	FB	Undirected	1	FB_Proxy

8.4.2b. OB1->RB_AT_DB replace by call , 20160429

Replace the OB calls with a single call rule.

20160208 TERRY: at the beginning of the next 6 sections is a diagram like this... idea is to show progressively what you are configuring.



08_043

1. Double-click on OB1. The "Configurations", "Interface" and "PLC code" is shown for OB1.

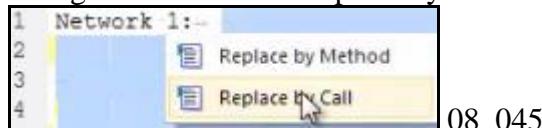
TERRY: Error, was not imported correctly.

TERRY: explain config, interface, plc code dialog.

08_044

2. Select every line of OB1 (its probably empty).

3. Right-click. Select "Replace by Call".



08_045

4. For "Selection" select "Object selection".

5. For the program block select the RB_AT_DB (IDB, not the FB) in the function aspect.

Note: You will configure "Define Parameters" later.

08_046

6. Click OK. The call contains the symbolic names of the FB and IDB.

```
Network 1: RB_AT_DB
// -----
CALL    "RB_AT", "RB_AT_DB" 08_047
```

8.4.4a. RB_AT manual connect to RB_AT AUTOMATION tags (FRG) 20160421, 20160429

Already connected.

RB_AT [FB1012]

Actions



Configurations

Name	Value
Global Symbols	
- Tags	
... FRG_EStop	FRG_EStop
... FRG_BS	FRG_BS
... IBNO	IBNO
... reset	reset
... Pos_front_left	Pos_front_left
... slow_forw	slow_forw
... pos_back_left	pos_back_left
... slow_back	slow_back
- FB/IDB	
... PosDev_2D2S2P_DB	PosDev_2D2S2P..
... G120x_DB	G120x_DB
FC	
DB	
- Ports	
... Caller Ports	
... Operand Ports	
- Rules	
... Calls	
... Methods	
... Operand	
Methods	

Interface

Name	Type	Default	Data Type	Comments
- Input				
- Output				
- InOut				
- Static				
... MEMO_ADV	Bool			Direction flag return
... MEMO_RTN	Bool			Limit pos. advance
... POSIT_LS_ADV	Bool			Limit pos. return
... POSIT_LS_RTN	Bool			Lamp output limit adva...
... LAMP_LS_ADV	Bool			Lamp output limit return

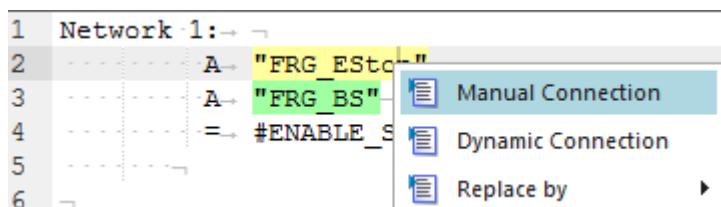
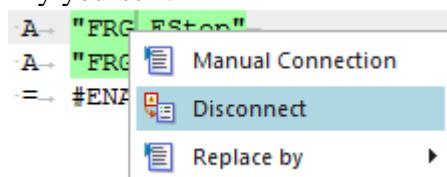
PLC Code

```

1 Network 1:-->
2     A-> "FRG_EStop"
3     A-> "FRG_BS"
4     =-> #ENABLE_SAFETY
5
6
7 Network 2:-->
8     A-> #ENABLE_SAFETY
9     // A-> "RB_AT_01_IDB".LIFTER_HOMEPOSITION
10    =-> #INTERLOCK_ADV
11
12
13 Network 3:-->
14     A-> #ENABLE_SAFETY
15     // A-> "RB_AT_01_IDB".LIFTER_HOMEPOSITION
16     =-> #INTERLOCK_RTN
17
18
19 Network 4:-->
20     A-> "IBNO"

```

Try yourself.



PLC tags

- FRG_EStop
- FRG_BS
- IBNO
- reset
- Pos_front_left
- slow_forw
- pos_back_left
- slow_back
- FC_left
- FC_right
- Newstart

Manual Connection

Source

FRG_EStop

Target

Select Object (1)

Select Port

Port	Connected Object	Connected Port	Port Type	Connection Ty...	Direc...
FRG_ES...			EO	Tag_Proxy	Undir...

```

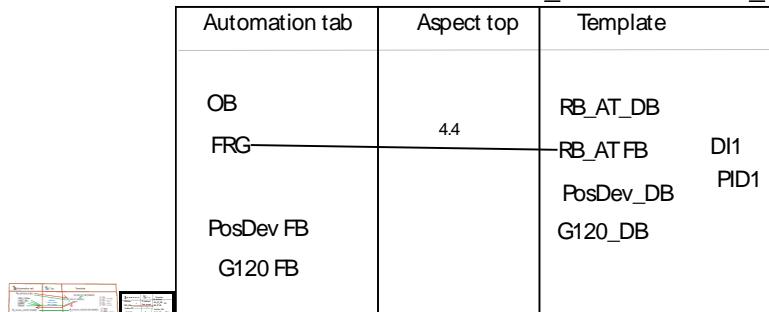
1 Network 1: →
2 ..... A → "FRG_EStop" →
3 ..... A → "FRG_BS" →
4 ..... = → #ENABLE_SAFETY →

```

✓ FRG_EStop	FRG_EStop	FRG_EStop	EO	Tag	Undirected	1	Tag_Proxy
				Tag_Proxy	Undirected	N	Tag, Any, Operand
✓ FRG_BS	FRG_BS	FRG_BS	EO	Tag	Undirected	1	Tag_Proxy
				Tag_Proxy	Undirected	N	Tag, Any, Operand

8.4.4b. RB_AT manual connect to RB_AT AUTOMATION tags (FRG)

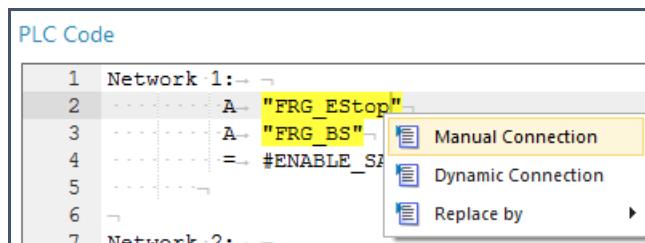
This section describes how to connect RB_AT to the FRG_EStop, etc. tags.



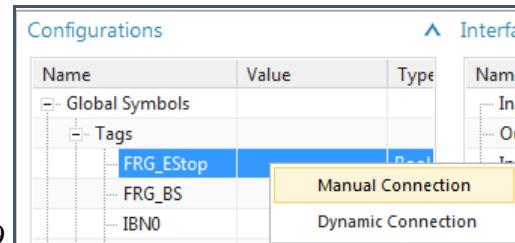
08_048

Note: In this GS the tags are probably autoconnected. So you do not need to do the following, but its explained anyway.

1. Double-click on RB_AT.
2. Right-click on line 2 "A "FRG_EStop" in "PLC Code" OR right-click on the tag in "Configurations". Select "Manual Connection".



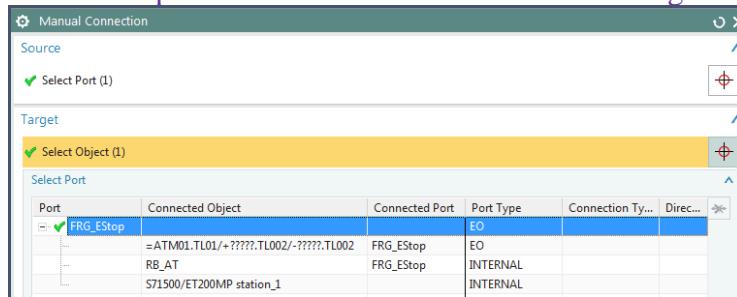
08_049



08_050

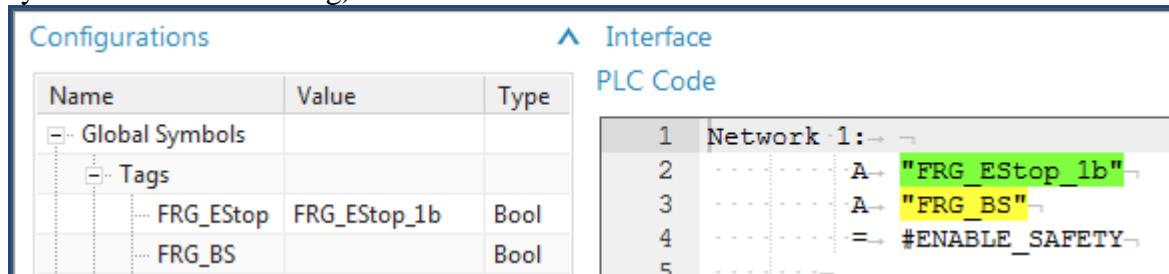
3. Select FRG_EStop.

TERRY: explain details of manual connection dialog.



08_051

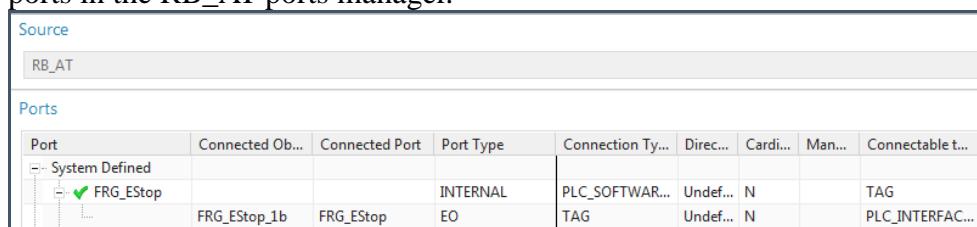
4. Click OK. The RB_AT tag reference has been connected to the FRG_EStop tag ("FRG_EStop_1b" is the symbolic name for the tag).



08_052

5. Manually connect the tags FRG_BS, IBN0, and reset.

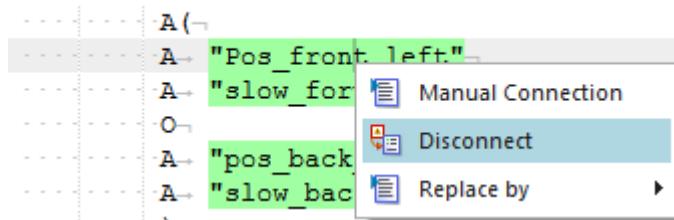
6. RB_AT and FRG_EStop were connected using ports. The following shows the RB_AT and FRG_EStop ports in the RB_AT ports manager.



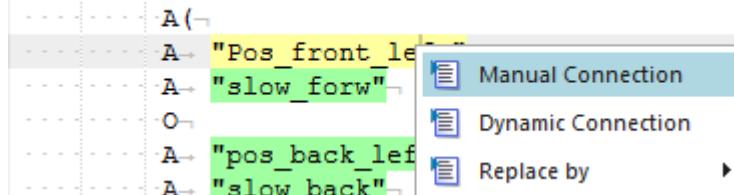
08_053

8.4.5a. RB_AT manual connect to CH DI tags 20160421

Network 11:

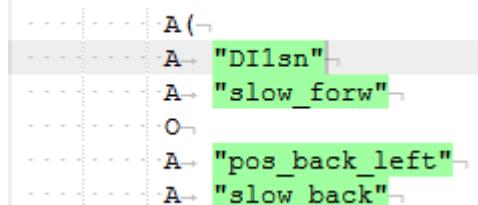


Network 11:



Port	Connected Object	Connected Port	Port Type	Connection Ty...	Dir...
DI1	S7-300-Station_2		INTERNAL	Tag_Proxy	Undir...
	I12.0	I12.0	INTERNAL		

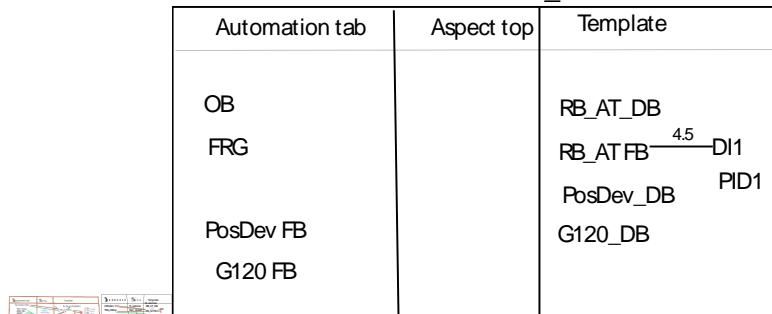
Network 11:



Pos_front_left			EO	Tag	Undirected	1	Tag_Proxy
slow_forw	DI1sn	DI1	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
pos_back_left			EO	Tag	Undirected	1	Tag_Proxy
slow_back			EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
			EO	Tag	Undirected	1	Tag_Proxy
			EO	Tag_Proxy	Undirected	N	Tag, Any, Operand

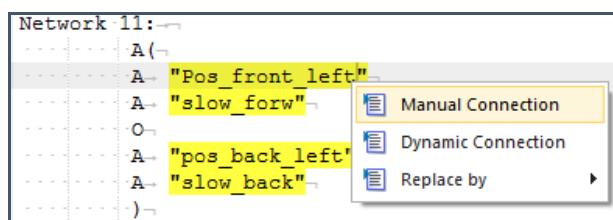
8.4.5b. RB_AT manual connect to CH DI tags

This section describes how to connect RB_AT to the CH DI tags.

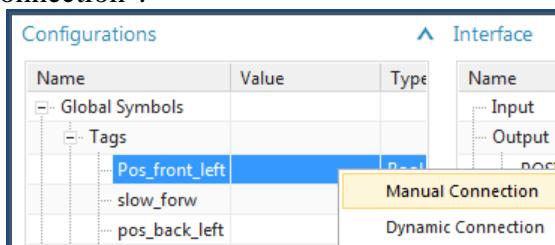


08_054

2. Right-click on "Pos_front_left" and select "Manual Connection".

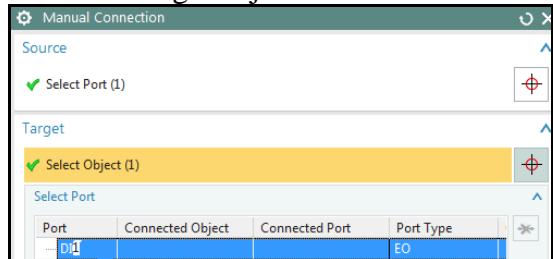


08_055



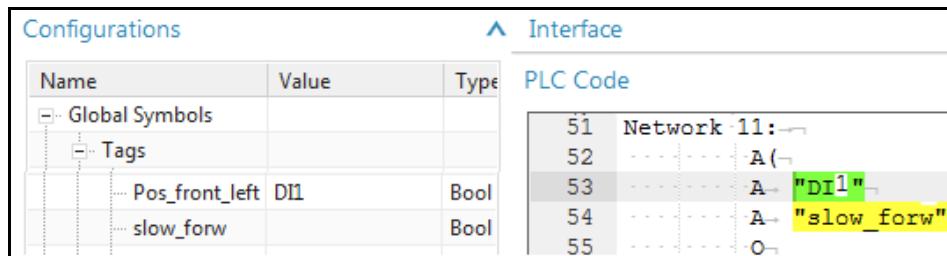
08_056

3. For the target object select DI1.



08_057

4. Click OK.

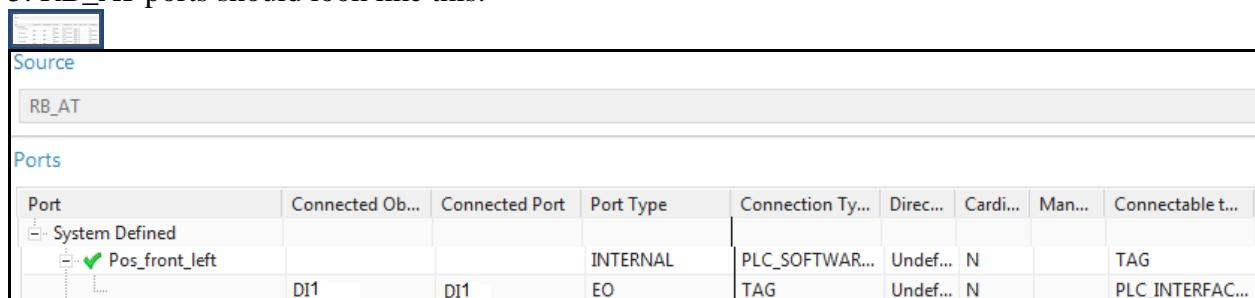


08_058

5. Connect the other 3 tags.



5. RB_AT ports should look like this.



08_059

8.4.6a. RB_AT->PosDev replace by call (20160421), 20160429

Actions

Configurations

Interface

Name	Value	Type
- Global Sym...		
- Tags		
-- FRG_...	FRG_EStop	Bool
-- FRG_...	FRG_BS	Bool
-- IBNO	IBNO	Bool
-- reset	reset	Bool
-- Pos...	D11sn	Bool
-- slow...	slow_forw	Bool
-- pos...	pos_back_left	Bool
-- slow...	slow_back	Bool

FB/IDB

- PosD... PosDev_2D2S2P...
- G120... G120x_DB

FC

DB

Ports

- Caller P...
- Operand...

Rules

- Calls
- Methods
- Operand
- Methods

PLC Code

```

41      := #ERROR_RESET
42
43
44 Network 9:- 
45     CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"
46     LS_ADV := "Pos_front_left"
47     SW_FS_ADV := "slow_forw"
48     SW_FS_RTN := "slow_back"
49     LS_BTN := "pos_back_left"
50     SEL_SLOW := "RLO 0"
51     MOTOR_PROT := "RLO 1"
52     MOTOR_TEMP := "RLO 1"
53     TM_OP := 50
54     TM_LS := 20
55     TV_STARTUP := 20
56
57 Network 10:- 
58     CALL "G120x", "G120x_DB"
59     FAST_SPEED := REAL#100.0
60     SLOW_SPEED := REAL#20.0
61
62
63 Network 11:- 
64     A( 

```

Replace by Call

Properties

Name: PosDev_2D2S2P_DB

Selection

Port Selection: Select Port (1)

Define Parameters

Parameter	Value	Type
PosDev_2D2S2P_DB		
+ Input		
-- EN_ADV	Bool	Bool
-- EN_RTN	Bool	Bool
-- IL_ADV	Bool	Bool
-- IL_RTN	Bool	Bool
-- PB_ADV	Bool	Bool
-- PB_RTN	Bool	Bool
-- LS_ADV	"Pos_front_left"	Bool
-- SW_FS_ADV	"slow_forw"	Bool
-- SW_FS_RTN	"slow_back"	Bool
-- LS_RTN	"pos_back_left"	Bool
-- SEL_SLOW	"RLO 0"	Bool
-- AUTO_MODE	Bool	Bool
-- MANU_MODE	Bool	Bool
-- MOTOR_PROT	"RLO 1"	Bool
-- MOTOR_TEMP	"RLO 1"	Bool
-- ERR_RESET	Bool	Bool
-- LAMP_TEST	Bool	Bool
-- TM_OP	50	Int
-- TM_LS	20	Int
-- TV_STARTUP	20	Int
+ Output		

Replace Parameter by

Reset to Default

Define Parameters

Parameter	Value	Type
PosDev_2D2S2P_DB		
+ Input		
- Output		
-- Visu		DWord
-- Alarms		Word
-- ADV		Bool
-- RTN		Bool
-- FAST		Bool
-- SLOW		Bool
-- MEMO_ADV		Bool
-- MEMO_RTN		Bool
-- POSIT_LS_ADV		Bool
-- POSIT_LS_RTN		Bool
-- LAMP_LS_ADV		Bool
-- LAMP_LS_RTN		Bool
-- TOTAL_FLT		Bool

Function Aspect Navigator

Name	Description
CD000101;1-AD_1_CD_4_WS_5_SS_20160418	
Unassigned	
=_001	000344
=_004	000345
=_ConveyorF001	000346
=_MotorF001	000347
=_SensorF001	000348
=DrivePowerF001	000351
=DriveControlF001	000352
=EOCHcc001	000353
=D11	Sensor1
=G120x	
=PDO	PID0 description
=EPLAN Page Macro	Description250
=RB_AT	
=PosDev_2D2S2P	
=RB_AT_DB	

Replace by Call

Properties

Name: PosDev_2D2S2P_DB

Selection

Port Selection: Select Port (1)

Define Parameters

Parameter	Value	Type
PosDev_2D2S2P_DB		
Input		
EN_ADV	Bool	
EN_RTN	Bool	
IL_ADV	Bool	
IL_RTN	Bool	
PB_ADV	Bool	
PB_RTN	Bool	
LS_ADV	D11sn	Bool
SW_FS_ADV	"slow_forw"	Bool
SW_FS_RTN	"slow_back"	Bool
LS_RTN	"pos_back_left"	Bool
SEL_SLOW	"RLO 0"	Bool
AUTO_MODE		Bool
MANU_MODE		Bool
MOTOR_PROT	"RLO 1"	Bool
MOTOR_TEMP	"RLO 1"	Bool

Replace Parameter by

Symbolic Reference

Object Selection: Select Object (1)

Expression

Return Value

Break Expression

Configurations

Name	Value	Type
Global Symbols		
Tags		
FRG_EStop	FRG_EStop	Bool
FRG_BS	FRG_BS	Bool
IBN0	IBN0	Bool
reset	reset	Bool
Pos_front_left	D11sn	Bool
slow_forw	slow_forw	Bool
pos_back_left	pos_back_left	Bool
slow_back	slow_back	Bool
FB/IDB		
PosDev_2D2...	PosDev_2D2S2P...	
G120x_DB	G120x_DB	
FC		
DB		
Ports		
Caller Ports		
Operand Ports		
Rules		
Calls		
Methods		
Operand		
Methods		

Interface

PLC Code

```

41     ... := #ERROR_RESET
42
43
44 Network 9:
45     CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"
46     LS_ADV := "D11sn"
47     SW_FS_ADV := "slow_forw"
48     SW_FS_RTN := "slow_back"
49     LS_RTN := "pos_back_left"
50     SEL_SLOW := "RLO 0"
51     MOTOR_PROT := "RLO 1"
52     MOTOR_TEMP := "RLO 1"
53     TM_OP := 50
54     TM_LS := 20
55     TV_STARTUP := 20
56
57 Network 10:
58     CALL "G120x", "G120x_DB"
59     FAST_SPEED := REAL#100.0
60     SLOW_SPEED := REAL#20.0
61
62
63 Network 11:
64     A(
65     A "D11sn"
66     A "slow_forw"
67     O

```

8.4.6b. RB_AT->PosDev replace by call (20160209)

This section describes how to "dynamize" (fix) the RB_AT call to PosDev.

Automation tab	Aspect top	Template
OB		RB_AT_DB
FRG		RB_AT FB 46 PosDev_DB DI1 PID1
PosDev FB		G120_DB
G120 FB		G120_DB

08_060

Original in TIA (shows addresses).

1 CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"	\$FB369, \$DB9	18 LAMP_TEST := "Lamptest"	\$M5.2
2 EN_ADV := #ENABLE_ADV		19 TM_OP := 50	50
3 EN_RTN := #ENABLE_RTN		20 TM_LS := 20	20
4 IL_ADV := #INTERLOCK_ADV		21 TV_STARTUP := 20	20
5 IL_RTN := #INTERLOCK_RTN		22 Visu := "Interface_Visu".Model[2]	
6 PB_ADV := #PUSHBOTTOM_ADV		23 Alarms := "Interface_Alarms".Model[2]	
7 PB_RTN := #PUSHBOTTOM_RTN		24 ADV := #OUT_ADV	
8 LS_ADV := "pos_front_left"	\$I2130.4	25 RTN := #OUT_RTN	
9 SW_FS_ADV := "slow_forw"	\$I2130.2	26 FAST := #OUT_FAST	
10 SW_FS_RTN := "slow_back"	\$I2130.0	27 SLOW := #OUT_SLOW	
11 LS_RTN := "pos_back_left"	\$I2130.3	28 MEMO_ADV := #MEMO_ADV	
12 SEL_SLOW := "RLO 0"	\$M3.3	29 MEMO_RTN := #MEMO_RTN	
13 AUTO_MODE := "auto_inching"	\$M11.1	30 POSIT_LS_ADV := #POSIT_LS_ADV	
14 MANU_MODE := "manual"	\$M11.0	31 POSIT_LS_RTN := #POSIT_LS_RTN	
15 MOTOR_PROT := "RLO 1"	\$M3.2	32 LAMP_LS_ADV := #LAMP_LS_ADV	
16 MOTOR_TEMP := "RLO 1"	\$M3.2	33 LAMP_LS_RTN := #LAMP_LS_RTN	
17 ERR_RESET := #ERROR_RESET		34 TOTAL_FLT := #TOTAL_FLT	

08_061

Original in AD. When you replace the call, you must manually replace all the call parameter references.

Network 9:-	CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"	ADV := #OUT_ADV
	EN_ADV := #ENABLE_ADV	RTN := #OUT_RTN
	EN_RTN := #ENABLE_RTN	FAST := #OUT_FAST
	IL_ADV := #INTERLOCK_ADV	SLOW := #OUT_SLOW
	IL_RTN := #INTERLOCK_RTN	MEMO_ADV := #MEMO_ADV
	PB_ADV := #PUSHBOTTOM_ADV	MEMO_RTN := #MEMO_RTN
	PB_RTN := #PUSHBOTTOM_RTN	POSIT_LS_ADV := #POSIT_LS_ADV
	LS_ADV := "pos_front_left"	POSIT_LS_RTN := #POSIT_LS_RTN
	SW_FS_ADV := "slow_forw"	LAMP_LS_ADV := #LAMP_LS_ADV
	SW_FS_RTN := "slow_back"	LAMP_LS_RTN := #LAMP_LS_RTN
	LS_RTN := "pos_back_left"	TOTAL_FLT := #TOTAL_FLT

08_062

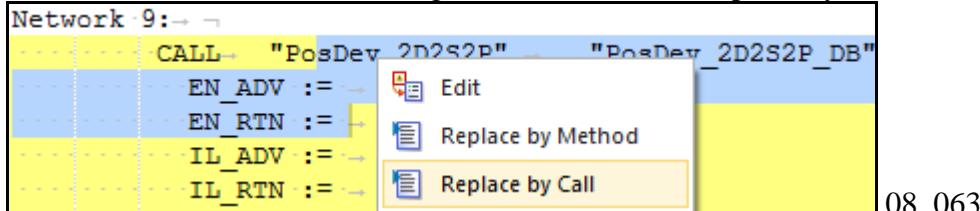
The following table summarizes.

	Call param	Value	TYPE
1.	EN_ADV	ENABLE_ADV	Local variable
2.	EN_RTN	ENABLE_RTN	Local variable
3.	IL_ADV	INTERLOCK_ADV	Local variable
4.	IL_RTN	INTERLOCK_RTN	Local variable
5.	PB_ADV	PUSHBOTTOM_ADV	Local variable
6.	PB_RTN	PUSHBOTTOM_RTN	Local variable
7.	LS_ADV	DI1	Symbolic reference
8.	SW_FS_ADV	DI2	Symbolic reference
9.	SW_FS_RTN	DI3	Symbolic reference
10.	LS_RTN	DI4	Symbolic reference
11.	SEL_SLOW	RLO 0	Local variable
12.	AUTO_MODE	auto_inching	Local variable
13.	MANU_MODE	manual	Local variable
14.	MOTOR_PROT	RLO 1	Local variable
15.	MOTOR_TEMP	RLO 1	Local variable
16.	ERR_RESET	ERROR_RESET	Local variable
17.	LAMP_TEST	Lamptest	Local variable
18.	TM_OP	50	Local variable
19.	TM_LS	20	Local variable
20.	TV_STARTUP	20	Local variable
21.	Visu	Interface_Visu.Model[2]	Local variable
22.	Alarms	Interface_Alarms.Model[2]	Local variable
23.	ADV	OUT_ADV	Local variable
24.	RTN	OUT_RTN	Local variable
25.	FAST	OUT_FAST	Local variable
26.	SLOW	OUT_SLOW	Local variable
27.	MEMO_ADV	MEMO_ADV	Local variable
28.	MEMO_RTN	MEMO_RTN	Local variable
29.	POSIT_LS_ADV	POSIT_LS_ADV	Local variable
30.	POSIT_LS_RTN	POSIT_LS_RTN	Local variable
31.	LAMP_LS_ADV	LAMP_LS_ADV	Local variable
32.	LAMP_LS_RTN	LAMP_LS_RTN	Local variable
33.	TOTAL_FLT	TOTAL_FLT	Local variable

However, for now (to keep things simple) you will only replace variable

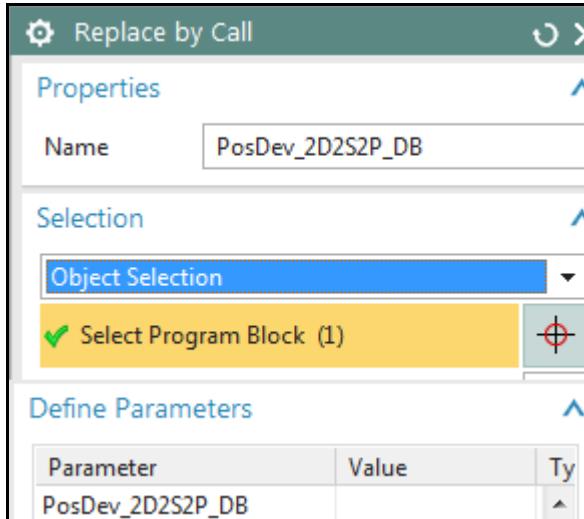
- LS_ADV
- (optional) SW_FS_ADV, SW_FS_RTN, LS_RTN.

1. Select some of the call text. Right click and select "Replace by Call".



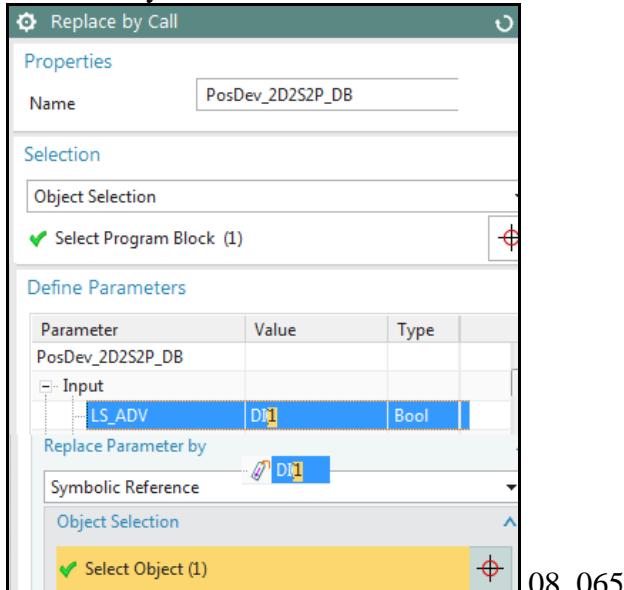
08_063

2. Select the PosDev IDB.



08_064

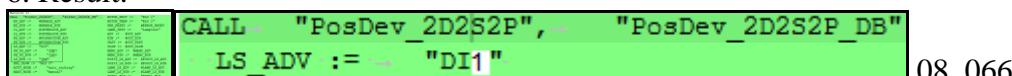
3. Define symbolic references for DI1.



08_065

5. Define Local Variables as listed in table above (if required).

6. Result.



08_066

8.4.7a. RB_AT->G120x replace by call (20160421), 20160429

20160429

```
44 Network 9:  
45     CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"  
46     LS_ADV := "DI1"  
47     SW_FS_ADV := "slow_forw"  
48     SW_FS_RTN := "slow_back"  
49     LS_RTN := "pos_back_left"  
50     SEL_SLOW := "RLO 0"  
51     MOTOR_PROT := "RLO 1"  
52     MOTOR_TEMP := "RLO 1"  
53     TM_OP := 50  
54     TM_LS := 20  
55     TV_STARTUP := 20  
56  
57 Network 10:  
58     CALL "G120x", "G120x_DB"  
59     INPUT_ADDR := "PID0"  
60     FAST_SPEED := Real#90.0  
61     SLOW_SPEED := REAL#20.0
```

20160421

FB/IDB

PosDev_2D2...	PosDev_2D2S2P...
G120x_DB	G120x_DB
FC	
DB	

PLC Code

```
57 Network 10:--  
58 ..... CALL "G120x",-- "G120x_DB"--  
59 ..... FAST_SPEED := -- REAL#100.0--  
60 ..... SLOW_SPEED := -- REAL#20.0--
```

Replace by Call

Properties

Name: G120x_DB

Selection

Port Selection

✓ Select Port (1)

Define Parameters

Parameter	Value	Type
G120x_DB		
Input		
INPUT_ADDR		DWord
I_M		DWord
A_F		DWord
FAST_SPEED	REAL#100.0	Real
SLOW_SPEED	REAL#20.0	Real
EN_FWD		Bool
EN_BWD		Bool
EN_FAST		Bool
EN_SLOW		Bool
EM_STOP		Bool
ERR_RESET		Bool
Output		
OUTPUT_ADDR		DWord
ACT_SPEED		Real
ACT_CURRENT		Real
ACT_TORQUE		Real
EN_MOTION_FWD		Bool
EN_MOTION_BWD		Bool
FAULT_ACTIVE		Bool
ALARM_ACTIVE		Bool
FAULT_MSG		Int
ALARM_MSG		Int

Replace Parameter by

Reset to Default

Condition

Replace by Call

Properties

Name	PIDO	PIDO description	G120x_DB
------	------	------------------	----------

Selection

Object Selection

- Select Program Block (1)

Expression

Return Value

Break Expression

Define Parameters

Parameter	Value	Type
G120x_DB		
<input checked="" type="checkbox"/> Input		
INPUT_ADDR	PID0sn	DWord
I_M		DWord
A_F		DWord
FAST_SPEED	REAL#100.0	Real
SLOW_SPEED	REAL#20.0	Real
EN_FWD		Bool
EN_BWD		Bool
EN_FAST		Bool
EN_SLOW		Bool
EM_STOP		Bool
ERR_RESET		Bool
<input checked="" type="checkbox"/> Output		
OUTPUT_ADDR		DWord
ACT_SPEED		Real
ACT_CURRENT		Real
ACT_TORQUE		Real
EN_MOTION_FWD		Bool
EN_MOTION_BWD		Bool
FAULT_ACTIVE		Bool
ALARM_ACTIVE		Bool
FAULT_MSG		Int
AI ARM MSG		Int

Replace Parameter by

Symbolic Reference

Object Selection

- Select Object (1)

Expression

Return Value

Break Expression

Reset to Default

Condition

Replace by Call

Properties

Name	=_004	000345	G120x_DB
------	-------	--------	----------

Selection

Object Selection

Select Program Block (1)

Expression

Return Value

Break Expression

Define Parameters

Parameter	Value	Type
G120x_DB		
- Input		
INPUT_ADDR	PID0sn	DWord
I_M		DWord
A_F		DWord
FAST_SPEED	Real#20.0	Real
SLOW_SPEED	REAL#20.0	Real
EN_FWD		Bool
EN_BWD		Bool
EN_FAST		Bool
EN_SLOW		Bool
EM_STOP		Bool
ERR_RESET		Bool
- Output		
OUTPUT_ADDR		DWord
ACT_SPEED		Real
ACT_CURRENT		Real
ACT_TORQUE		Real
EN_MOTION_FWD		Bool
EN_MOTION_BWD		Bool
FAULT_ACTIVE		Bool

Replace Parameter by

Constant Value

Object Selection

Select Object (1)

Property Selection

Property

Operational_1.FastSpeed

Reset to Default

Condition

Network 10:

```

CALL "G120x", "G120x_DB"
  INPUT_ADDR := "PID0sn"
  FAST_SPEED := Real#20.0
  SLOW_SPEED := REAL#20.0

```

8.4.7b. RB_AT->G120x replace by call (20160209)

This section describes how to replace the RB_AT call to G120x.

Automation tab	Aspect top	Template
OB		RB_AT_DB
FRG		RB_AT_FB
PosDev FB		DI1 PID1
G120 FB		PosDev_DB G120_DB

08_067

Original in TIA (shows addresses).

1	CALL "G120x", "G120x_DB"	\$FB307, \$DB2	12	ERR_RESET :=#ERROR_RESET	
2	INPUT_ADDR :=#PID0	\$ID2100	13	OUTPUT_ADDR :=#PQDO	\$QD2100
3	I_M :=#PID1	\$ID2104	14	ACT_SPEED :=#ACT_SPEED	
4	A_F :=#ID2	\$ID2108	15	ACT_CURRENT :=#ACT_CURRENT	
5	FAST_SPEED :=REAL#100.0	REAL#100.0	16	ACT_TORQUE :=#ACT_TORQUE	
6	SLOW_SPEED :=REAL#20.0	REAL#20.0	17	EN_MOTION_FWD :=#EN_MOTION_FWD	
7	EN_FWD :=#OUT_ADV		18	EN_MOTION_BWD :=#EN_MOTION_BWD	
8	EN_BWD :=#OUT_RTN		19	FAULT_ACTIVE :=#FAULT_ACTIVE	
9	EN_FAST :=#OUT_FAST		20	ALARM_ACTIVE :=#ALARM_ACTIVE	
10	EN_SLOW :=#OUT_SLOW		21	FAULT_MSG :=#FAULT_MSG	
11	EM_STOP :=#ENABLE_SAFETY		22	ALARM_MSG :=#ALARM_MSG	

08_068

Original in AD. When you replace the call, you must manually replace all the call parameter references.

Network 10:	CALL "G120x", "G120x_DB"	
	INPUT_ADDR :=#PID0	OUTPUT_ADDR :=#PQDO
	I_M :=#PID1	#ACT_SPEED
	A_F :=#ID2	#ACT_CURRENT
	FAST_SPEED :=REAL#100.0	#ACT_TORQUE
	SLOW_SPEED :=REAL#20.0	#EN_MOTION_FWD
	EN_FWD :=#OUT_ADV	#EN_MOTION_BWD
	EN_BWD :=#OUT_RTN	#FAULT_ACTIVE
	EN_FAST :=#OUT_FAST	#ALARM_ACTIVE
	EN_SLOW :=#OUT_SLOW	#FAULT_MSG
	EM_STOP :=#ENABLE_SAFETY	#ALARM_MSG
	ERR_RESET :=#ERROR_RESET	

08_069

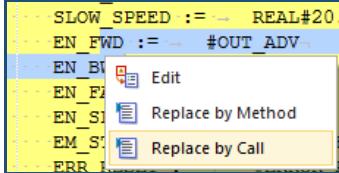
The following table summarizes.

	Call param	Value	type
3.	INPUT_ADDR	PID0	Symbolic reference
4.	I_M	PID1	Symbolic reference
5.	A_F	PID2	Symbolic reference
6.	FAST_SPEED	Real#20.0	Constant value
7.	SLOW_SPEED	Real#10.0	Constant value
8.	EN_FWD	OUT_ADV	Local variable
9.	EN_BWD	OUT_RTN	Local variable
10.	EN_FAST	OUT_FAST	Local variable
11.	EN_SLOW	OUT_SLOW	Local variable
12.	EM_STOP	ENABLE_SAFETY	Local variable
13.	ERR_RESET	ERROR_RESET	Local variable
14.	OUTPUT_ADDR	PQDO	Symbolic reference
15.	ACT_SPEED	ACT_SPEED	Local variable
16.	ACT_CURRENT	ACT_CURRENT	Local variable
17.	ACT_TORQUE	ACT_TORQUE	Local variable
18.	EN_MOTION_FWD	EN_MOTION_FWD	Local variable
19.	EN_MOTION_BWD	EN_MOTION_BWD	Local variable
20.	FAULT_ACTIVE	FAULT_ACTIVE	Local variable
21.	ALARM_ACTIVE	ALARM_ACTIVE	Local variable
22.	FAULT_MSG	FAULT_MSG	Local variable
23.	ALARM_MSG	ALARM_MSG	Local variable

However, for now (to keep things simple) you will only replace variables

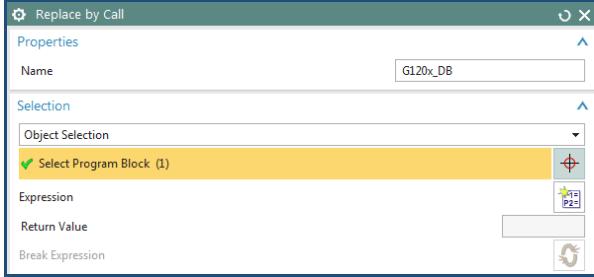
- INPUT_ADDR
- FAST_SPEED

1. Select some of the call text. Right click and select "Replace by Call".



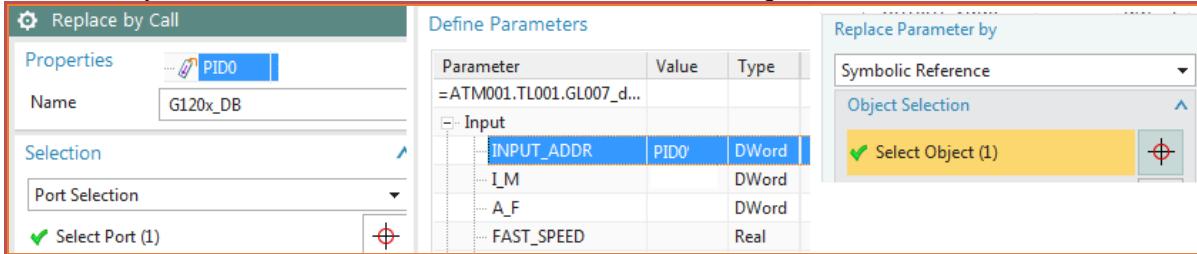
08_070

2. Select the G120x IDB.



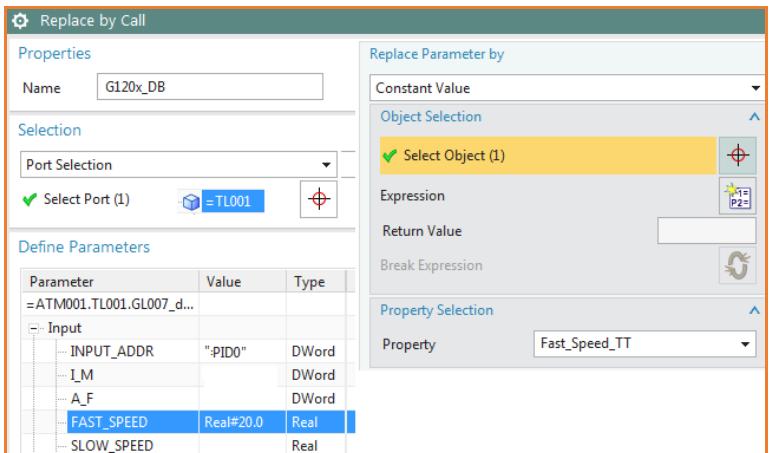
08_071

3. Define symbolic references as listed in table above (if required).



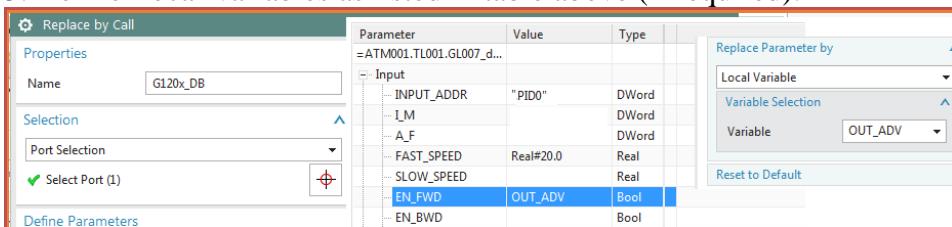
08_072

4. Define Constant Values as listed in table above.



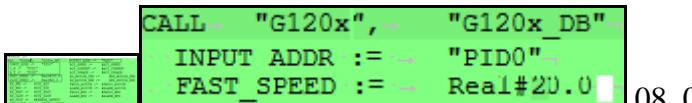
08_073

5. Define Local Variables as listed in table above (if required).



08_074

Result.



08_075

8.4.8a. PosDev manual connect to AUTOMATION tags (20160421), 20160429

Function Aspect Navigator

Name	Description
CD000101;1-AD_1_CD_4_WS_5_SS_20160418	
↳ Unassigned	
↳ =_001	000344
↳ =_004	000345
↳ =ConveyorF001	000346
↳ =MotorF001	000347
↳ =SensorF001	000348
↳ =DrivePowerF001	000351
↳ =DriveControlF001	000352
↳ =EOCHcc001	000353
↳ DIL	Sensor1
↳ G120x	
↳ PID0	PID0 description
↳ EPLAN Page Macro	Description250
↳ RB_AT	
↳ PosDev_2D2S2P	
↳ RB_AT_DB	

Actions

Configurations

Name	Value	Type
Global Symbols		
↳ Tags		
Newstart	Newstart	Bool
PLC_On dela...	PLC_On delayed	Bool
TRUE	TRUE	Bool
CPulse_0_1s	CPulse_0_1s	Bool
RLO 1	RLO 1	Bool
BliF	BliF	Bool
RLO 0	RLO 0	Bool
↳ FB/IDB		
↳ FC		
↳ DB		
↳ Ports		
↳ Caller Ports		
↳ Operand Ports		
↳ Rules		
↳ Calls		
-Methods		
↳ Operand		
-Methods		

Interface

Name	Defa...	Data ...
PLC Code		

```

1 Network 1:→ ...
2 ..... A→ TAR1→ #SAVE_AR1→ ...
3 ..... R→ TAR2→ #SAVE_AR2→ ...
4 → ...
5 Network 2:→ ...
6 ..... A→ "Newstart"→ ...
7 ..... R→ #TM_STARTUP→ ...
8 ..... R→ #EN_FAST→ ...
9 → ...
10 Network 3:→ ...
11 ..... A→ #ERR_RESET→ ...
12 ..... FP→ #Err_Reset_P→ ...
13 ..... ON→ "PLC_On delayed"→ ...
14 ..... JCN www→ ...
15 → ...
16 Network 4:→ ...
17 ..... A→ "TRUE"→ ...
18 ..... R→ #F_EN_FLT→ ...
19 ..... R→ #F_MOTOR_PROT→ ...
20 ..... R→ #F_MOTOR_TEMP→ ...
21 ..... R→ #F_LS_CHK→ ...
-- ...

```

8.4.8b. PosDev manual connect to AUTOMATION tags (20160209)

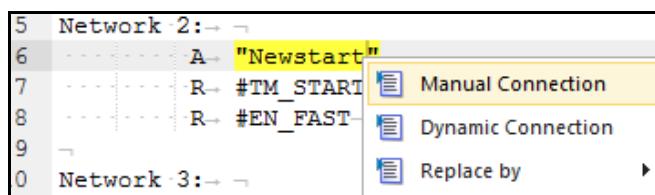
This section describes how to connect the PosDev automation tags.

Automation tab	Aspect top	Template
OB		RB_AT_DB
FRG		RB_ATFB DI1
Newstart		PID1
PosDev FB 4.8		PosDev_DB
G120 FB		G120_DB

08_076

Note: In this GS the tags are probably autoconnected. So you do not need to do the following.

1. Double-click on PosDev.
2. Right-click on line 6 in "PLC Code" OR right-click on the tag in "Configurations". Select "Manual Connection".

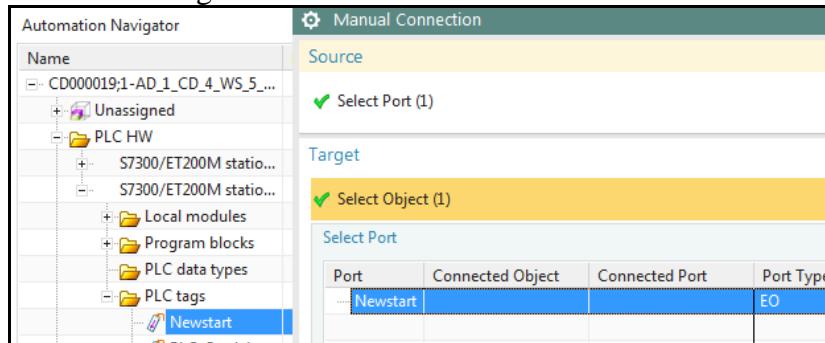


08_077

Configurations		
Name	Value	Type
Global Symbols		
Tags		
Newstart	PLI	Manual Connection
PLC_On delay...	PLI	Dynamic Connection
TRUE	TR	Dynamic Connection

08_078

3. Select the tag.



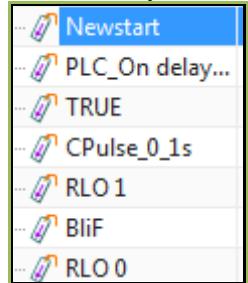
08_079

4. Click OK. The tag reference has been connected to the tag.

Configurations		PLC Code
Name	Value	
Global Symbols		
Tags		
Newstart	Newstart	1 Network 1: →
PLC_On delay...	PLC_On delay	2 TAR1 → #SAVE_AR1
TRUE	TRUE	3 TAR2 → #SAVE_AR2
		4
		5 Network 2: →
		6 A → "Newstart"
		7 #my command

08_080

5. Manually connect the remaining tags.



08_081

6. The following shows the ports in the ports manager.

Source								
PosDev_2D2S2P								
Ports								
Port	Connected Object	Connected Port	Port Type	Connection Ty...	Direc...	Cardi...	Man...	Connectable t...
User Defined								
System Defined								
- Newstart			INTERNAL	PLC_SOFTWAR...	Undef...	N		TAG
- PLC_On delayed	Newstart	Newstart	EO	TAG	Undef...	N		PLC_INTERFAC...
- TRUE	PLC_On delayed	PLC_On delayed	EO	PLC_SOFTWAR...	Undef...	N		TAG
- CPulse_0_1s	TRUE	TRUE	EO	PLC_SOFTWAR...	Undef...	N		PLC_INTERFAC...
- RLO1	CPulse_0_1s	CPulse_0_1s	EO	PLC_SOFTWAR...	Undef...	N		TAG
- BliF	RLO1	RLO1	EO	PLC_SOFTWAR...	Undef...	N		PLC_INTERFAC...
- RLO 0	BliF	BliF	EO	PLC_SOFTWAR...	Undef...	N		TAG
- PosDev_2D2S2P	RLO 0	RLO 0	EO	PLC_SOFTWAR...	Undef...	N		PLC_INTERFAC...
	PosDev_2D2S2P_DB	PosDev_2D2S2P	INTERNAL	PLC_SOFTWAR...	Undef...	ONE		FB
	S7300/ET200M station_1	S7300/ET200M station_1	INTERNAL	PLC_SOFTWAR...	Undef...	N		OB, FB, FC, DB, ...

08_082

8.5. Assign SW to HW (set tag Addrs, connect SW) 20160229

Automation Navigator

Name

- CD000124;1-AD_1_CD_4_WS_5_SS_20160426
 - + Unassigned
 - PLC HW
 - + S7300/ET200M station_1
 - S7300/ET200M station_2
 - Program blocks
 - RB_AT [FB1012]
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - RB_AT_DB [DB1012]
 - G120x_DB [DB307]
 - PosDev_2D2S2P_DB [DB369]
 - PLC data types
 - Local modules
 - PLC tags
 - RB_HA_01_POSIT_LS_DN
 - Newstart
 - PLC_On_delayed
 - TRUE
 - CPulse_0_1s
 - RLO1
 - BiI/F
 - RLO0
 - FC_left
 - FC_right
 - FRG_EStop
 - FRG_BS
 - IBNO
 - reset
 - Pos_front_left
 - slow_forw
 - pos_back_left
 - slow_back
 - Subnets

Function Aspect Navigator

Name	Description
- CD000124;1-AD_1_CD_4_WS_5_SS_20160426	
+ Unassigned	
+ _001	000344
EOATMcc 001	000344
EOATMcc001	000344
EOATCcc001_1	000345
EOGLcc002	000346
TypeObjName250	Description250
EOMAcc001	000347
EOBGCc001	000348
EOTFcc001	000351
EOKFc001	000352
EOCHcc001	000353
D11	D11 tag descr
G120x_DB	
PID0	PID0 descr
RB_AT	
RB_AT_DB	
PosDev_2D2S2P_DB	

Function Aspect Navigator

Name

- CD000124;1-AD_1_CD_4_WS_5_SS_20160426
 - + Unassigned
 - + _001
 - EOATMcc 001
 - EOATMcc001
 - EOTLCCc001_1
 - EOGLcc002
 - TypeObjName250
 - EOMAcc001
 - EOBGCc001
 - EOTFcc001
 - EOKFc001
 - EOCHcc001
 - D11
 - G120x_DB
 - PID0
 - RB_AT
 - RB_AT_DB
 - PosDev_2D2S2P_DB

Bulk Connection

Source

Select Object (1)

Total Number of Objects (15)

Descendants Included

Function

Target

Select Object (0)

Total Number of Objects (0)

Descendants Included

None

Port Type Filter

Control Scope

Ports

Source

Status	Port	Reference Design	Object
1	Block_C	RB_AT	FB
2	Block_C	PosDev_2D2S2P...	DB
3	Block_C	RB_AT_DB	DB
4	Block_C	G120x_DB	DB
5		=EOATMcc001.E...	EODKF
6		=EOATMcc001.E...	EODM4
7		=EOATMcc001 =EOATMcc001.EOTLCCc001_1.EOGLcc002.EOMAcc001/+???.EOMAcc001/-???.EOMAcc001	
8		=EOATMcc001.E...	EODCF
9		=EOATMcc001.E...	EODM1

Target

Status	Port	Reference Design	Object Type

Connections

Source			Target		
Reference Design	Port	Status	Status	Reference Design	Port
1	RB_AT	Block_C	1	S7300/ET200M s...	Station_C
2	PosDev_2D2S2P...	Block_C	1	S7300/ET200M s...	Station_C
3	RB_AT_DB	Block_C	1	S7300/ET200M s...	Station_C
4	G120x_DB	Block_C	1	S7300/ET200M s...	Station_C

Automation Navigator

- Name: CD000124;1-AD_1_CD_4_WS_5_SS_20160426
- Unassigned
- PLC HW
 - S7300/ET200M station_1
 - S7300/ET200M station_2
 - Program blocks
 - RB_AT [FB1012]
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - RB_AT_DB [DB1012]
 - G120x_DB [DB307]
 - PosDev_2D2S2P_DB [DB369]
 - PLC data types
 - Local modules
 - PLC tags
 - RB_HA_01_POSIT_LS_DN
 - Newstart
 - PLC_On delayed
 - TRUE
 - CPulse_0_1s
 - RLO 1
 - BliF
 - RLO 0
 - FC_left
 - FC_right
 - FRG_EStop
 - FRG_BS
 - IBNO
 - reset
 - Pos_front_left
 - slow_forw
 - pos_back_left
 - slow_back
 - Subnets

Bulk Connection

Source

Object	Function	Descendants Included
Select Object (1)		

Total Number of Objects (15)

Descendants Included: Function

Target

Object	Function	Descendants Included
Select Object (1)		

Total Number of Objects (1)

Descendants Included: None

Port Type Filter

Control Scope

Ports

Source

Status	Port	Reference Desig	Object Ty
1	Block_C	RB_AT	FB
2	Block_C	PosDev_2D2S2P...	DB
3	Block_C	RB_AT_DB	DB
4	Block_C	G120x_DB	DB
5		=EOATMcc001.E...	EODKF
6		=EOATMcc001.E...	EODMW
7		=EOATMcc001.E...	EODBG
8		=EOATMcc001.E...	EODCH
9		=EOATMcc001.E...	EODCM

Target

Status	Port	Reference Desig	Object Ty
1	Station_C	S7300/ET200M s...	000448

Connections

Source	Target				
Reference Designator	Port	Status	Status	Reference Designator	Port
1 RB_AT	Block_C	⊕	⊕	S7300/ET200M s...	Station_C
2 PosDev_2D2S2P...	Block_C	⊕	⊕	S7300/ET200M s...	Station_C
3 RB_AT_DB	Block_C	⊕	⊕	S7300/ET200M s...	Station_C
4 G120x_DB	Block_C	⊕	⊕	S7300/ET200M s...	Station_C
5 G120x	Block_C	⊕	⊕	S7300/ET200M s...	Station_C
6 PosDev_2D2S2P	Block_C	⊕	⊕	S7300/ET200M s...	Station_C
7 PosDev_2D2S2P...	Block_C	⊕	⊕	S7300/ET200M s...	Station_C
8 Main	Block_C	⊕	⊕	S7300/ET200M s...	Station_C

1:N and M:1 Connection

Connects many selected ports of cardinality = 1 to one selected port of cardinality = N.

Bulk Connection

At least one port of cardinality = 1 is already connected to another port. Do you want to overwrite already existing connections?

Yes **No** **Cancel**

Automation Navigator

- Name: CD000124;1-AD_1_CD_4_WS_5_SS_20160426
- Unassigned
- PLC HW
 - S7300/ET200M station_1
 - S7300/ET200M station_2
 - Program blocks
 - RB_AT [FB1012]
 - Main [OB1]
 - G120x [FB307]
 - PosDev_2D2S2P [FB369]
 - RB_AT_DB [DB1012]
 - G120x_DB [DB307]
 - PosDev_2D2S2P_DB [DB369]
 - PLC data types
 - Local modules

PLC tags

- RB_HA_01_POSIT_LS_DN
- Newstart
- PLC_On delayed
- TRUE
- CPulse_0_1s
- RLO 1
- BliF
- RLO 0
- FC_left
- FC_right
- FRG_EStop
- FRG_BS
- IBNO
- reset
- Pos_front_left
- slow_forw
- pos_back_left
- slow_back
- PID0
- D1

8.5. Assign SW to HW (set tag Addrs, connect SW) (20160210)

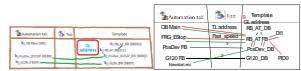
TERRY: seems like this chapter should be about all the details of assigning SW to specific HW. And that includes

1. Set absolute tag address (FD7)
2. Modify the PID tag memory location
3. Modify the DI tag HW connection
4. Connect SW

1. Set absolute tag address (FD7)

TERRY: Andreas says in FD7 will change. Set the address of the top EO in template, and the rest have a relative address.

You need to set the starting address of the GL address block.

Automation tab	Aspect top	Template	
		GLAddress 5.1	08_083

1. Set the absolute address of GL to 2100.

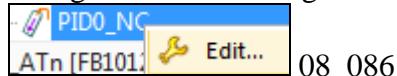
Properties	
Select Object	
<input checked="" type="checkbox"/> Select Object (1)	
Context	
Interaction Method	
Engineering Object Attributes	
Title/Alias	Value
+ Function Aspect	
- General	
Absolute address TT	2100

08_084

2. Modify the PID tag memory location (20160119)

Automation tab	Aspect top	Template	
		PID1 5.2	08_085

1. Right-click on the tag. Select edit.



2. Enter the tag address "2100".

Tag	
Properties	
Name	PID0_NC
Memory Section	Input
Data Type	DWord
Description	dword
Address	2100

08_087

Error:

Must enter in this format

3. Modify the DI tag HW connection

Automation tab	Top	Template
HW		DI1 5.3

08_088

1. Assign the tag to an input channel.

Tag Properties			
Name	DI1		
Memory Section	Input		
Data Type	Bool		
Description			
Address	30.0		

Hardware Connection			
Select I/O Device (1)			
I/O Device Structure	Status	Tag Name	Tag Data Type
IB30	Free		
I30.0	Partial...		
I30.1	Free		
I30.2	Free		
I30.3	Free		
I30.4	Free		
I30.5	Free		
I30.6	Free		
I30.7	Free		

08_089

4a. Connect SW 20160421

Select on the left “1” then CTRL-A.

Select on the left '+' then CTRL+A.

Bulk Connection

Source

✓ Select Object (1)

Total Number of Objects (13)

Descendants Included

Function

Target

✓ Select Object (1)

Total Number of Objects (1)

Descendants Included

None

Port Type Filter

Control Scope

Ports

Source

	Status	Port	Reference Desig	Object Ty
1		Block_C	PosDev_2D2S2P	FB
2		Block_C	RB_AT	FB
3			=_001._004.Con...	EODGL
4				
5				
6				
7				
8		Block_C		

Target

	Status	Port	Reference Desig	Object Ty
1		Station_C	S7300/ET200M s...	000387
2				
3				
4				
5				
6				
7				
8				

Bulk Connection

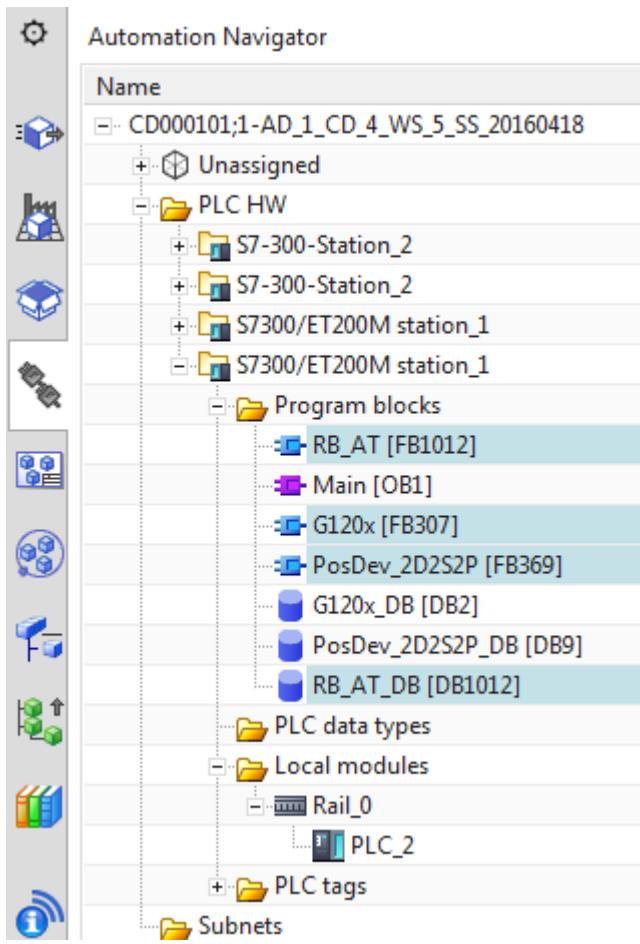
At least one port of cardinality = 1 is already connected to another port.
Do you want to overwrite already existing connections?

Yes No Cancel

Connections

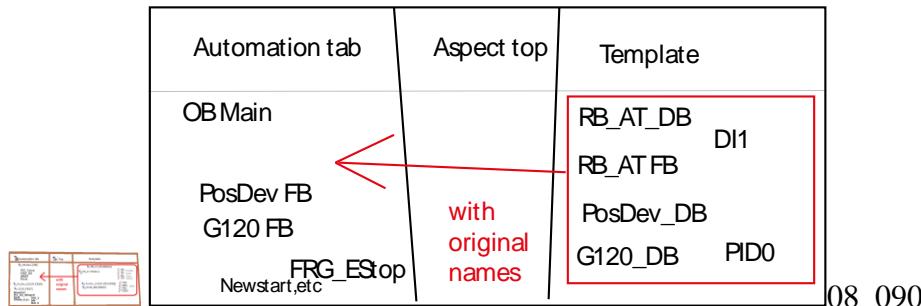
	Source			Target		
	Reference Designat	Port	Status	Status	Reference Designat	Port
1	PosDev_2D2S2P...	Block_C			S7300/ET200M s...	Station_C
2	RB_AT	Block_C			S7300/ET200M s...	Station_C
3	G120x	Block_C			S7300/ET200M s...	Station_C
4	RB_AT_DB	Block_C			S7300/ET200M s...	Station_C
5	PID0	PLCTAG_C			S7300/ET200M s...	Station_C
6	DI1	PLCTAG_C			S7300/ET200M s...	Station_C
7	Main	Block_C			S7300/ET200M s...	Station_C
8	G120x_DB	Block_C			S7300/ET200M s...	Station_C
9	PosDev_2D2S2P...	Block_C			S7300/ET200M s...	Station_C

Close



4b. Connect SW

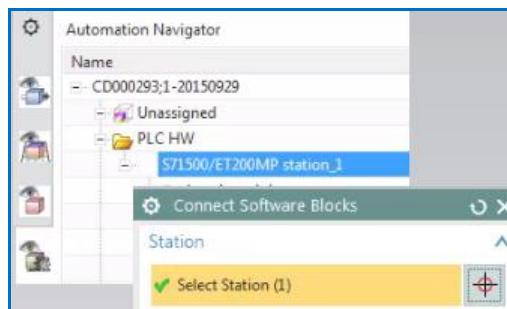
Connect the SW to the HW, creating the SW blocks and tags that will be exported to TIA.



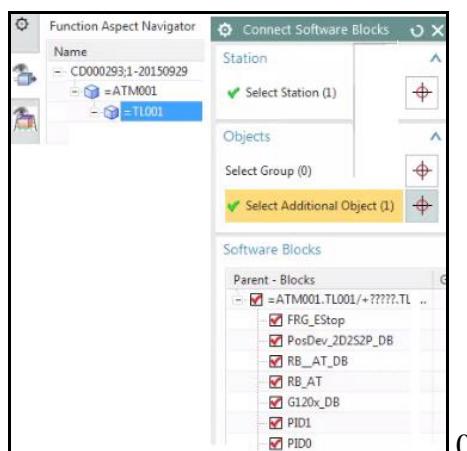
TERRY: need to discuss all the quirks about connecting sw. see 20151008_0andreas.mp4.

1. Click "System Design / Connect SW blocks".

2. Select the station.

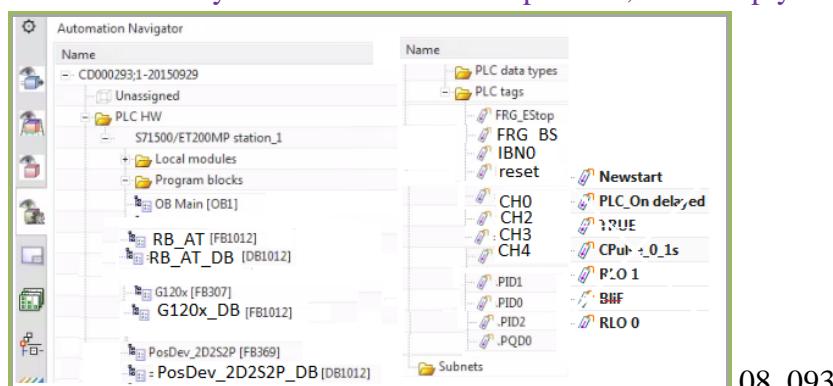


3. Select all SW.



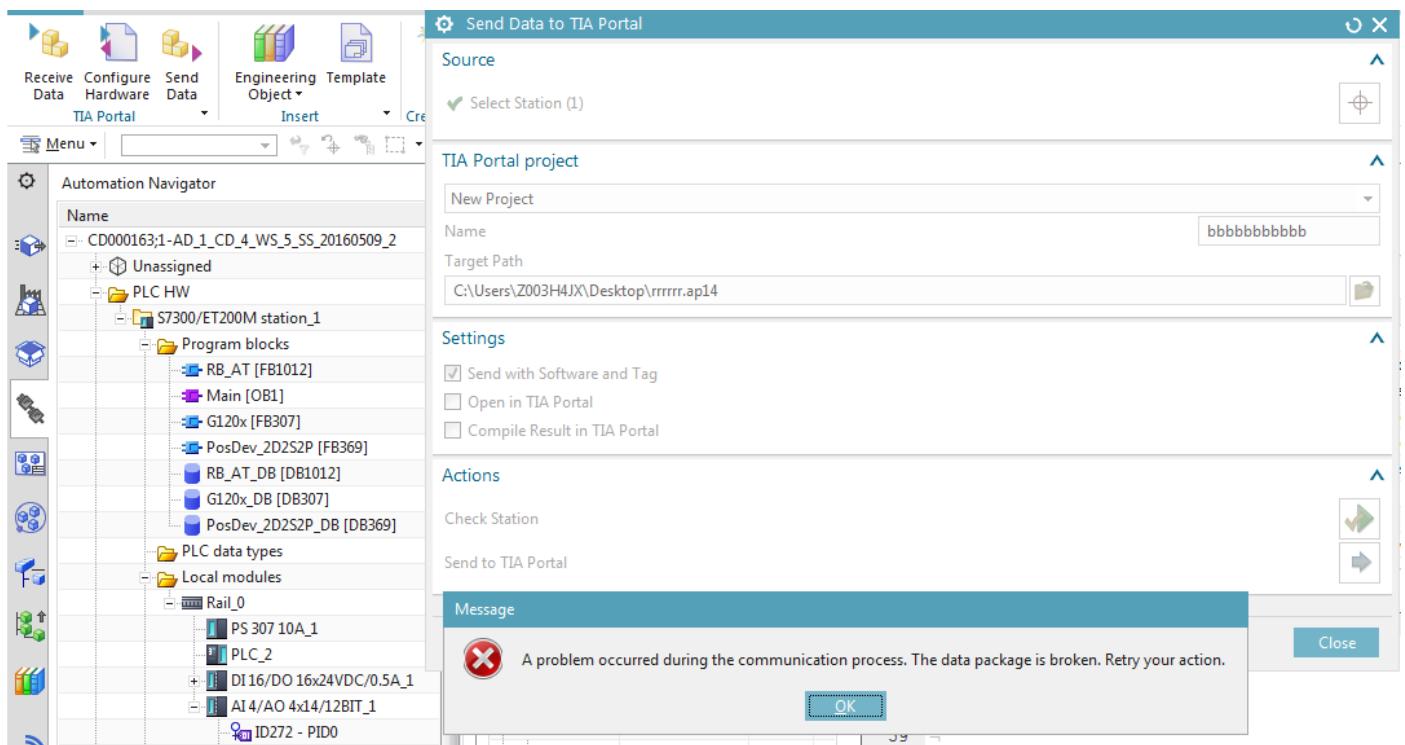
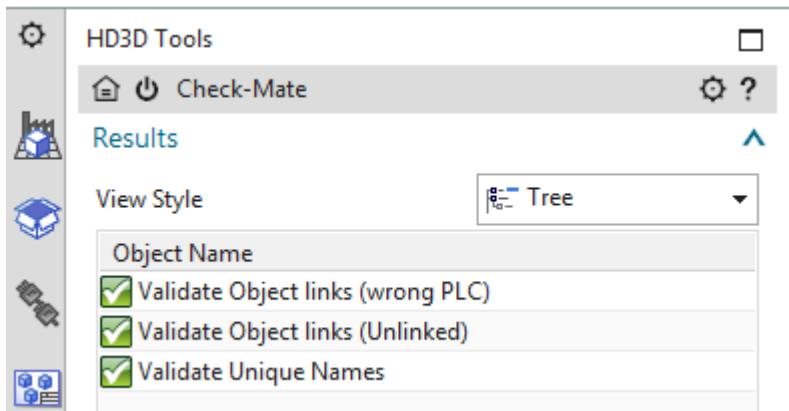
4. Click OK. The connected SW is now in the automation navigator.

TERRY: if the symbolic names are not specified, then simply the names are used, right?



8.6a. Generate TIA 20160509 ERROR

\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14

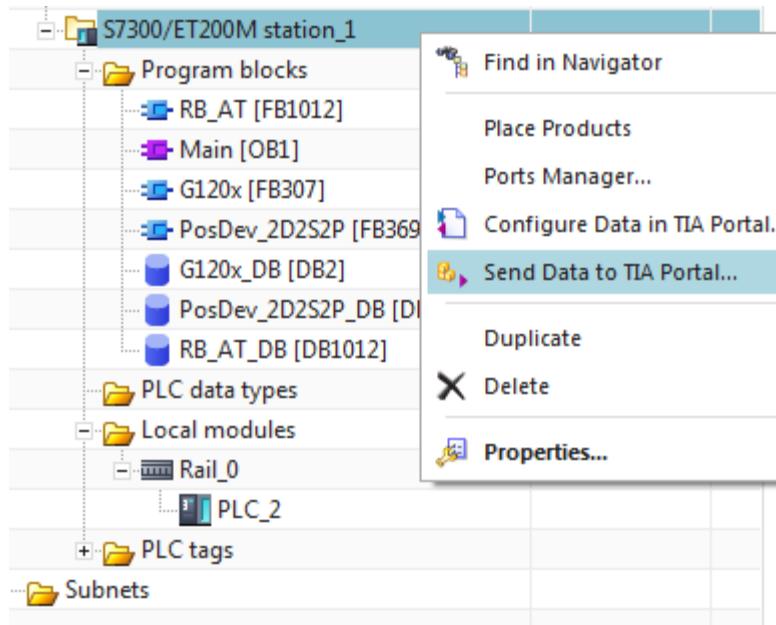


8.6a. Generate TIA 20160429 ERROR

The screenshot shows the HD3D Tools software interface with the 'Check-Mate' tool selected. The 'Object Name' validation section has three items checked: 'Validate Object links (wrong PLC)', 'Validate Object links (Unlinked)', and 'Validate Unique Names'. In the 'Source' section, 'Select Station (1)' is highlighted. The 'TIA Portal project' section shows a 'New Project' named '20160429_2' at path '\\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14'. The 'Settings' section includes options for sending with software/tag, opening in TIA Portal, and compiling results. The 'Actions' section contains 'Check Station' and 'Send to TIA Portal' buttons. A message dialog at the bottom left displays a red 'X' icon and the text: 'A problem occurred during the communication process. The data package is broken. Retry your action.'

I can import hw, sw, no problem, but send never works, even when restarting adagent on both ends.

8.6a. Generate TIA 20160421 (ERROR)



\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14

\192.168.154.128\TiaPortal_Projects\3333\test.ap14
(folder must exist)

The screenshot shows the Automation Navigator on the left and the 'Send Data to TIA Portal' dialog box on the right. In the Automation Navigator, the 'Name' section shows a hierarchy including 'CD000101;1-AD_1_CD_4_WS_5_SS_20160418' and 'PLC HW' which contains 'S7-300-Station_2' and 'S7300/ET200M station_1'. The 'S7300/ET200M station_1' node is selected. The 'Send Data to TIA Portal' dialog box has the following settings:

- Source:** Select Station (1) (highlighted in yellow)
- TIA Portal project:**
 - New Project
 - Name: 666
 - Target Path: \192.168.154.128\TiaPortal_Projects\3333\test.ap14
- Settings:**
 - Send with Software and Tag
 - Open in TIA Portal
 - Compile Result in TIA Portal
- Actions:**
 - Check Station
 - Send to TIA Portal

Check-Mate Results										
View Style										
Object Name	Count	Category	Part	Desig...	Rem...	Profile	Result	Skipp...	Hea...	
Validate Object links (wrong PLC)			000355/A;1-LD_4_WS_20160418			Validate PLC for Export	Passed			
Validate Object links (Unlinked)			000355/A;1-LD_4_WS_20160418			Validate PLC for Export	Passed			
Validate Unique Names			000355/A;1-LD_4_WS_20160418			Validate PLC for Export	Passed			

Computer > Local Disk (C:) > TiaPortal_Projects > 3333 > test.ap14 > 666 >

Name	Date modified	Type	Size
AdditionalFiles	21.04.2016 14:07	File folder	
IM	21.04.2016 14:07	File folder	
System	21.04.2016 14:07	File folder	
tmp	21.04.2016 14:07	File folder	
666.ap14	21.04.2016 14:07	Siemens TIA Porta...	8 KB
666.info	21.04.2016 14:07	INFO File	1 KB

```
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . : localdomain
IPv4 Address . . . . . : 192.168.154.128
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.154.2

Tunnel adapter isatap.localdomain:
```

Created project.. but empty.

TIA Siemens - C:\TiaPortal_Projects\3333\test.ap14\666\666

Project Edit View Insert Online Options Tools Window Help

Save project

Project tree 666 > Devices & networks

Devices

- 666
 - Add new device
 - Devices & networks
 - Ungrouped devices
 - Common data
 - Alarm classes
 - System diagnostic settings
 - Supervision settings
 - Logs
 - Instruction profiles
 - Documentation settings
 - Document information
 - Frames
 - Cover pages
 - Languages & resources
 - Project languages
 - Project texts
 - Online access
 - Card Reader/USB memory

8.6b. Generate TIA (20160210) (ERROR)

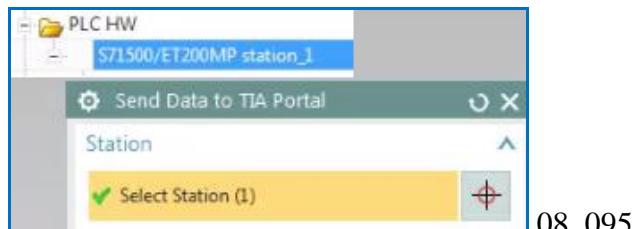
Send the SW blocks and tags to TIA.

TERRY: talk with Andreas: what shown here is correct steps (except Inot have TIA license). Problem is TIA.

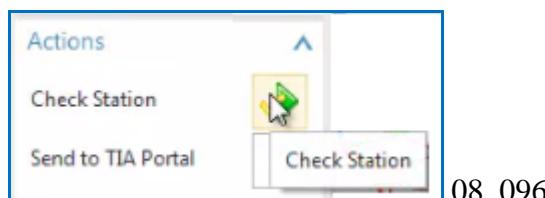
Automation tab	Aspect top	Template
HW OB RB_AT_FB RB_AT_DB FRG_EStop Newstart PosDev_FB G120_FB DI1 PID0 PosDev_DB G120_DB	1	

08_094

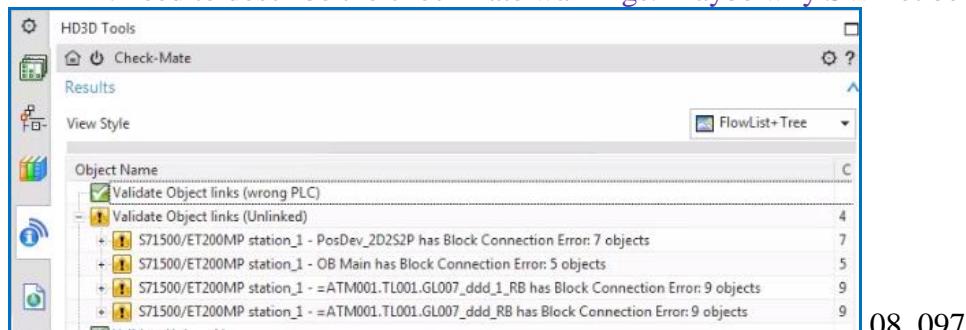
1. Select the station.



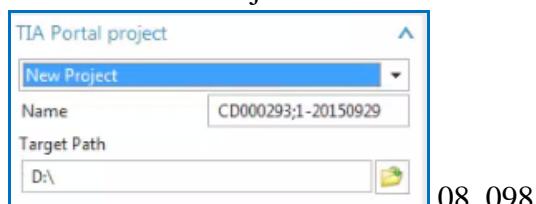
2. Click "Check Station".



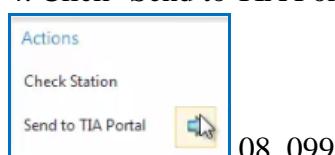
TERRY: need to describe the checkmate warnings. Maybe why SW not being sent to TIA.



3. Select "New Project". Enter the "Name" and "Target path".



4. Click "Send to TIA Portal".



The following shows the result.

TERRY: missing software. Andreas said this is an AD error, not mine. checkmate warnings are Maybe why SW not being sent to TIA.

OB Main			
Network 1:			
Comment			
1	CALL "RB_AT", "RB_AT_DB"		%FB1012, %DB1012

08_100

Network 1:			
1	A "FRG_EStop"		\$M4003.1
2	A "FRG_BS"		\$M4002.1
3	= #ENABLE_SAFETY		
Network 2:			
Network 3:			
Network 4:			
1	A "IBNO"		\$M3.6
2	= #ENABLE_ADV		
Network 5:			
1	A "IBNO"		\$M3.6
2	= #ENABLE_RTN		
Network 6:			
1	A "IBNO"		\$M3.6
2	= #PUSHBOTTOM_ADV		
Network 7:			
1	A "IBNO"		\$M3.6
2	= #PUSHBOTTOM_RTN		

08_101

Network 8:			
1	A "reset"		\$M11.2
2	= #ERROR_RESET		
Network 9:			
1	CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"		
Network 10:			
1	CALL "G120x", "G120x_DB"		
Network 11:			
1	A(
2	A "DI1sn"		\$I1.0
3	A "slow_forw"		\$I1.2
4	O		
5	A "slow_back"		\$I1.3
6	A "pos_back_left"		\$I1.4
7	,		
Network 12:			
1	AN "DI1sn"		\$I1.0
2	AN "slow_forw"		\$I1.2
3	AN "slow_back"		\$I1.3
4	AN "pos back left"		\$I1.4
5			

08_102

PLC tags			
	Name	Data type	Address
1	DI Newstart	Bool	%MB.1
2	DI PLC_On delayed	Bool	%M2.7
3	DI TRUE	Bool	%M2.2
4	DI CPulse_0_1s	Bool	%M4.0
5	DI RLO 1	Bool	%MB.2
6	DI Blif	Bool	%M4.4
7	DI RLO 0	Bool	%MB.3
8	DI FRG_EStop	Bool	%M4003.1
9	DI FRG_BS	Bool	%M4002.1
10	DI IBNO	Bool	%M3.6
11	DI reset	Bool	%M11.2
17	DI PID1sn	DWord	%ID2100
19	DI DI1sn	Bool	%I1.0

08_103

Part 3. Create/instantiate template

You created the aspect chain in part 1 ch 5, but in part 2 you only used the aspect chain in ch 6 "LD-AD mapping" (not in ch 7 EPLAN or in ch 8 TIA). The reason for this is you must use expressions-ports to add the aspect chains to macros, SW and tags, and it was best to avoid this complexity until now. Another reason is that this will normally be configured by template designer, so only he needs to know how to do this.

This part describes the following:

- 9. Template-related concepts.** Describes primarily how to get and modify the aspect chain ID using expressions and ports.
- 10. AD: Configure template-ready EPLAN.** Shows how to use aspect chain info in macro variables.
- 11. AD: Configure template-ready TIA.** Shows how to add use aspect chain info to rename SW blocks and tags.
- 12. AD: Create/instantiate template.** How to create, insert, and modify templates.

9. Template-related concepts (20160210)

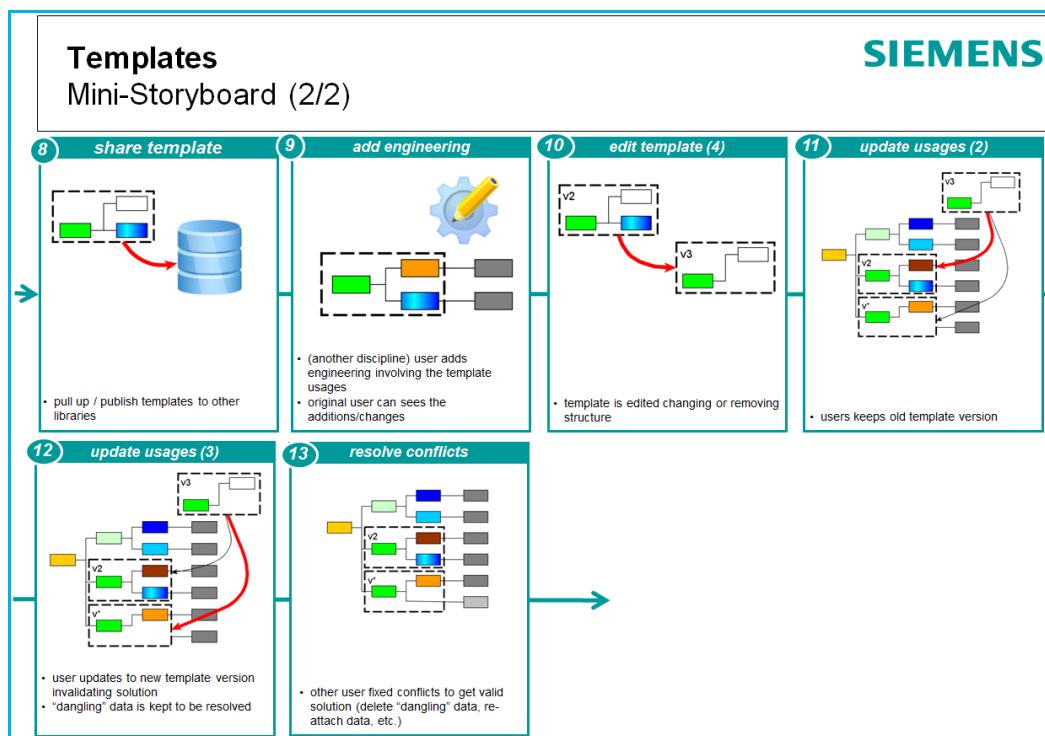
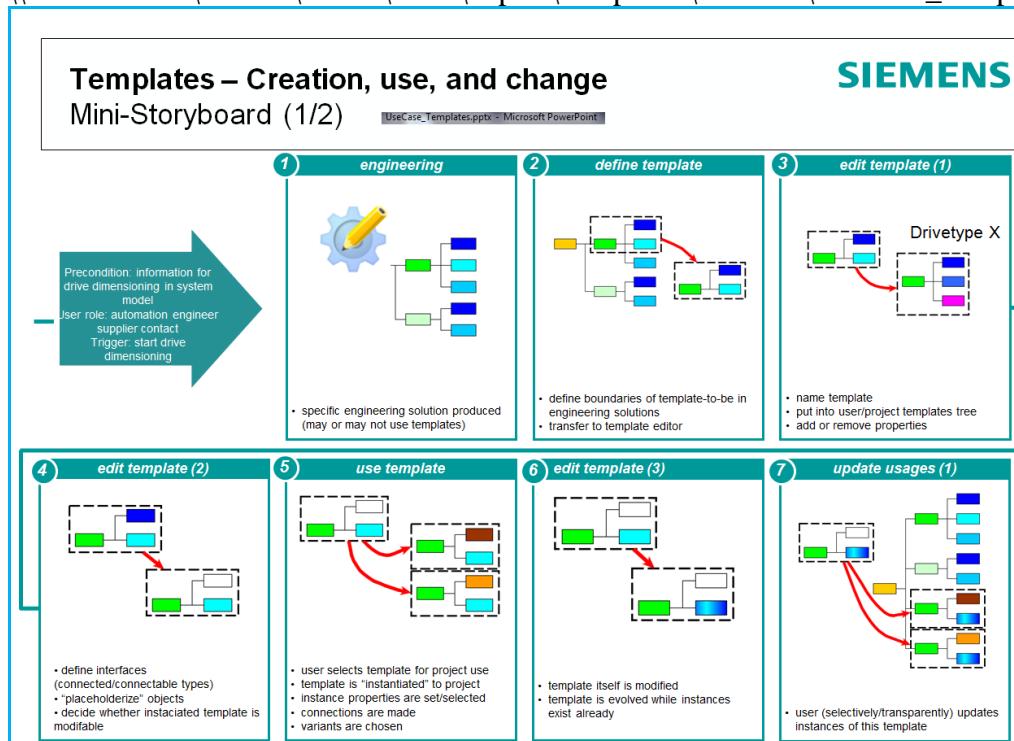
The template concept was introduced in Ch 1 "Concepts" section 1.3 "AD Solution". This chapter describes basic template concepts:

- 9.1. Getting aspect chain of parent EO using expressions
- 9.2. Getting aspect chain ID of non-parent EO: 2 Ports + link
- 9.3. Getting aspect chain ID outside template: Dynamic (SW only)
- 9.4. Automatic generation of calls for inserted SW

See ReqSpec_AD@NX_Templates.docx

20160311

\debonkl0c19\ADNX\Teams\PRM\Topics\Templates\Material\UseCase_Templates.pptx

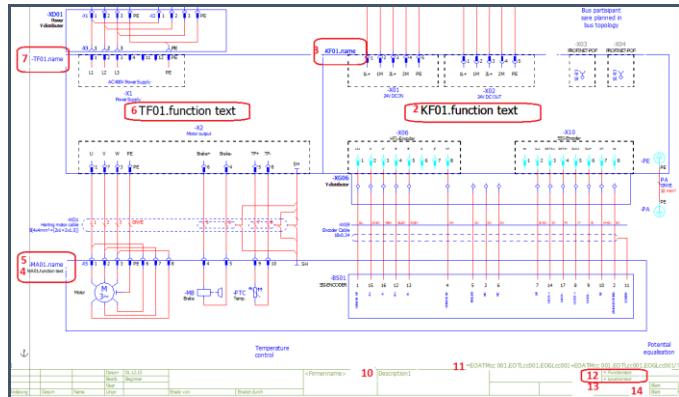


9.1. Getting aspect chain ID of parent EO using expressions

9.1.1. Problem

1. EPLAN

In 7.3." Add PM250D (TF+MA) macro" you simply entered text for the names of macro device properties.

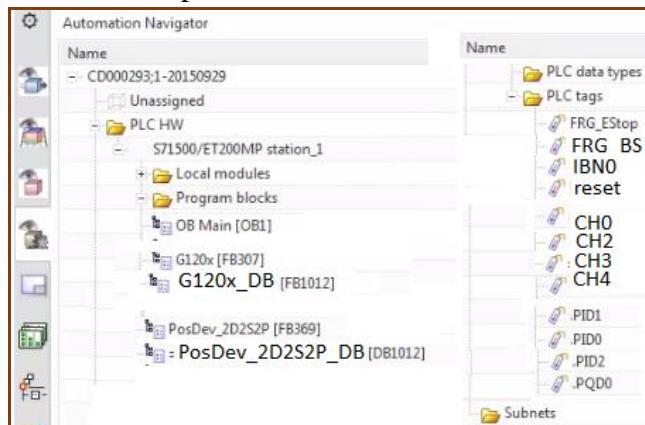


Entering the values manually is not a good idea because if you

1. Move the parent EO then the aspect would no longer be valid.
2. Add or copy a conveyor with same values, then you will have EPLAN reports with duplicate names.
With templates, you can drag and drop to create a template, and you also want a quick way to specify the macro variables.

2. TIA (SW blocks and tags)

In chapter 8 you created only one conveyor, so all SW block and tag names were globally unique. You did not use the aspect chain.



09_02

But if you add or copy a conveyor with same values, the ID (name) of SW blocks and tags will be repeated (which will generate an error in TIA). You would have to manually change (to avoid duplicate names).

9.1.2. Solution

The solution is to use the aspect chain of parent to define the unique names for macro properties and SW-tag symbolic names. For SW-tags, if you specify a symname expression that uses the aspect chain ID of the parent, then the symname is automatically used as ID of the SW tag (instead of property "Name").

In this GS you use 2 types of expressions

(1)

```
subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
```

The above expression elements are:

Expression	Returns
AD_GetEngObject()	Parent EO
AD_GetAttributeValue(xxx, "Multi Reference Designation", Function)	MRD (ID) of parent EO in function aspect
subString(yyy),2,1000000	Modified aspect chain name (starts at character 2)

(2)

```
AD_GetDesignation(AD_GetEngObject(),Function)+".RB"
```

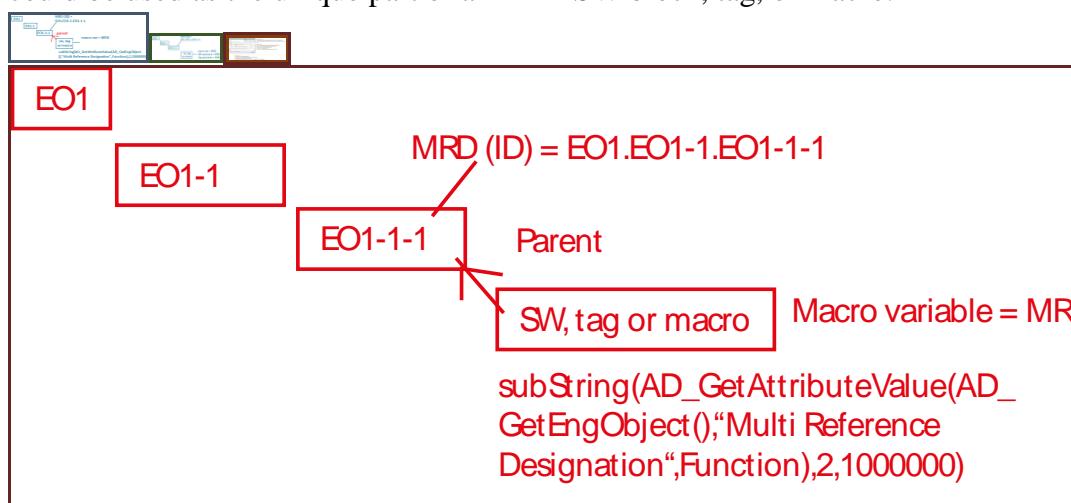
The above expression elements are:

Expression	Returns
AD_GetEngObject()	parent EO
AD_GetDesignation(xxx,Function)	MRD (ID) of parent EO in function aspect

If you use expressions, then:

1. Moving or copying EO's that has children macros, SW or tags is no problem.
2. Names are more descriptive (including the entire aspect ID chain which can also be modified with subString() and simple text commands like +).

The following diagram illustrates this. The expression would return the result "EO1.EO1-1.EO1-1-1", which could be used as the unique part of an ID in SW block, tag, or macro.



1. EPLAN (10.5)

In 10.5 for function and location you use the expressions shown below.

Device property	Value
Function	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
Location	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)

You enter the expressions in these dialogs

The screenshot shows the EPLAN Function Aspect Navigator on the left and the Properties dialog on the right. In the Properties dialog, under 'EPLAN Page Attributes', the 'Function' field is set to 'EOATMcc001.EOTLcc001.EOGLcc001'. The 'Location' field is also present. Below these fields, there is an 'Expression Formula' input field containing 'EOATMcc001.EOTLccC =' followed by a dropdown menu with 'Formula...' selected. The timestamp '09_04' is visible in the bottom right corner.

09_04

The screenshot shows the EPLAN Expressions dialog. It contains two entries: 'p20' with formula 'eee' and 'Value' 'EOATMcc001.EOTLcc001.EOGLcc001', and 'eee' with formula 'subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)' and 'Value' 'EOATMcc001.EOTLcc001.EOGLcc001'. The timestamp '09_05' is visible in the bottom right corner.

09_05

The expression result is show in the macro output.

```
= EOATMcc001.EOTLcc001.EOGLcc001
+ EOATMcc001.EOTLcc001.EOGLcc001
```

09_06

However, its not that simple for all of the macro device properties, because some are not from the macro parent EO. You have to use ports (described in 9.2).

2. SW (11.1.1)

In 11.1.1. "SW blocks (4)" you set the symbolic names for the following SW blocks / IDB's whose parent EO is GL.

RB_AT	AD_GetDesignation(AD_GetEngObject(),Function)+"_RB"
RB_AT_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_RBDB"
PosDev_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_POSDEVDB"
G120x_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_G120DB"

You enter the expressions in these dialogs (for RB_AT as example).

The screenshot shows the Function Aspect Navigator on the left and the Properties dialog on the right. In the Properties dialog, under POU Attributes, the Symbolic Name is set to =EOATMcc001.EOTLcc001.EOGLcc001.RB. The Expression Formula field contains =EOATMcc001.EOTLcc001.EOGLcc001.RB [FB1012].

09_07

The screenshot shows the Expressions dialog with two entries. The first entry is p46 with formula rrrrr and value "=EOATMcc001.EOTLcc001.EOGLcc001.RB". The second entry is 26 rrrrr with formula AD_GetDesignation(AD_GetEngObject(),Function)+"_RB" and value "=EOATMcc001.EOTLcc001.EOGLcc001.RB".

09_08

The SW block names are specified by the expressions.

The screenshot shows the Automation Navigator with a tree view of program blocks. A green box highlights the expression for the G120x [FB307] block, which is =ATM001.TL001.GL007_RB [FB1012]. Below it, other expressions are shown: =ATM001.TL001.GL007_RB_DB [DB1012], =ATM001.TL001.GL007_TF004.KF004_G120_DB [DB307], and =ATM001.TL001.GL007_PD2_DB [DB369].

09_09

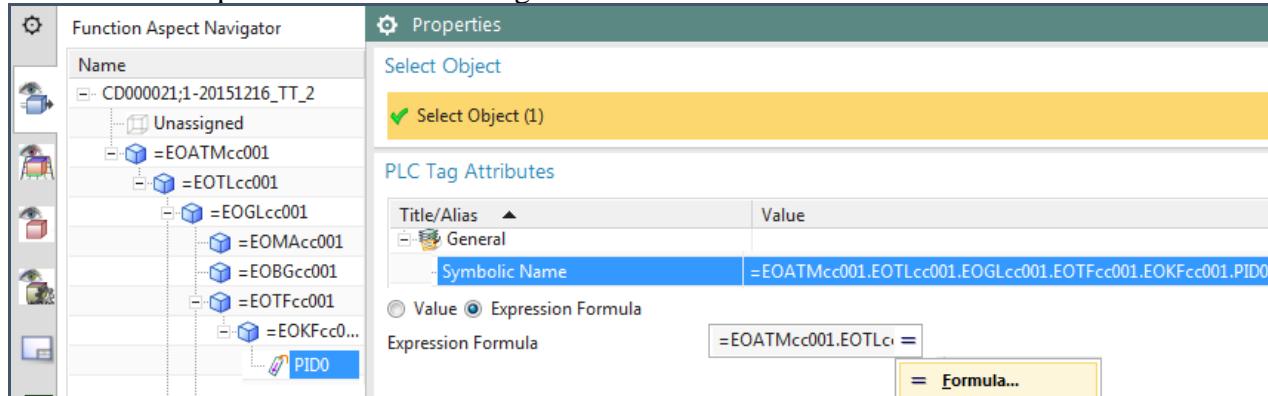
3. Tags (11.1.2,4)

11.1.2 and 11.1.4 you set the symbolic names of tags using expressions.

For example, in 11.1.4 you set the symbolic name for the PID0 tag whose parent is KF.

PID0 | AD_GetDesignation(AD_GetEngObject(),Function)+"."PID0"

You enter the expressions in these dialogs.

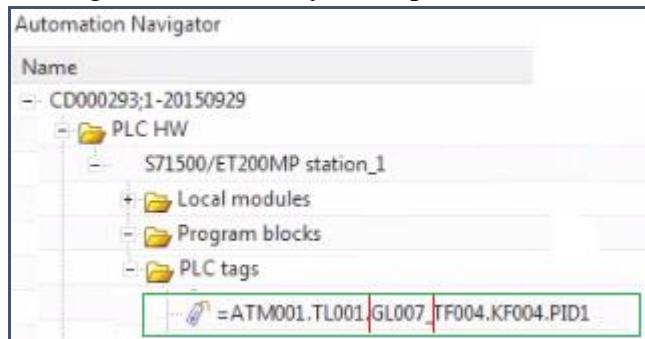


09_10

Expressions			
Name	Formula	Value	Type
1 p9	ddd	"=EOATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001.PID0"	String
3 ddd	AD_GetDesignation(AD_GetEngObject(),Function)+"."PID0"	"=EOATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001.PID0"	String

09_11

The tag names are set by the expressions.



09_12

However, its not that simple for all of the tags, because some use MRD not from the tag parent EO. You have to use ports (described in 9.2).

9.2. Getting aspect chain ID of non-parent: 2 Ports + link

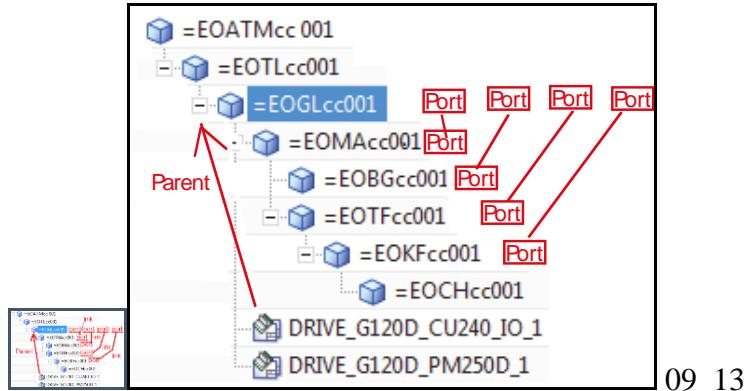
9.2.1. Problem: Can only get immediate parent

`AD_GetEngObject()` can only get the immediate parent EO. What can you do if you want to link to other EO's to use their aspect chain ID?

Note: "nth" is discussed in 9.3. can be used to get EO's higher up tree, but used only for templates. you still cant use only expressions to access "neighbor" EO's.

9.2.2. Solution: 2 ports and link

The solution is shown in the following diagram. The macros access "neighbor" EO's MA, BG, TF, and KF using a link between GL (parent) ports and MA, BG, TF, and KF ports.

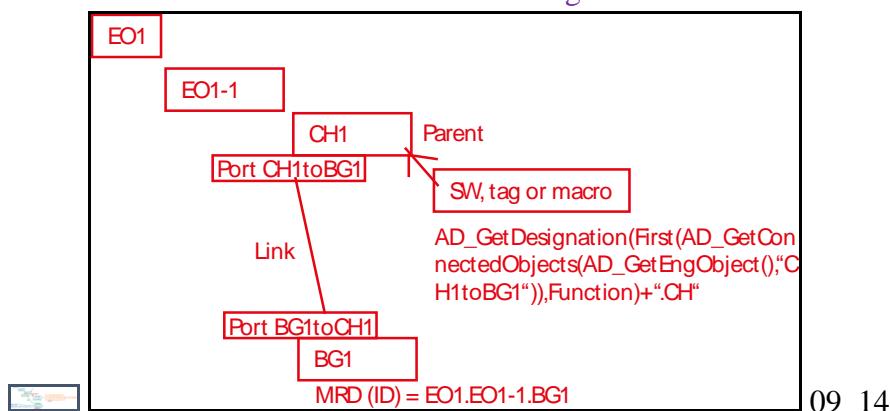


To use the aspect chain of a non-parent:

1. Create port for parent EO1.
2. Create port for target EO2.
3. Link the ports.
4. Reference the parent EO port name in a property expression.

The following diagram illustrates the general concepts. The expression would return the result "EO1.EO1-1.BG1.CH", which could be used as the unique part of an ID in SW block, tag, or macro.

TERRY: need to rename the EO's in this diagram.



The following describes example from this GS

1. EPLAN example (10.2)
2. SW Port example (none)
3. Tag port example (11.1.2)

1. EPLAN example (10.2)

In 7.3 "Add PM250 (TF+MA) macro" you simply entered text for device names. Since the EO's representing the devices are not the parent EO's of the macro, you do not have a link to the EO's to retrieve their MRD.

Device property	Value
3 KF01.Name	KF01.name

In 10.2 you use expressions and ports to get the aspect ID of KF. The steps are

1. Create GL (macro parent EO) port **GLtoKF** and KF port **KFtoGL**.

2. Connect ports.

Source

```
=EOATMcc001.EOTLcc001.EOGLcc001/+EOGLcc001/-EOGLcc001
```

Ports

Port	Connected Object	Connected Port	Port Type
User Defined			
GLtoKF	=EOATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001/+EOKFcc001/-EOKFcc001	KFtoGL	EO

09_15

3. In macro for 250 set KF01.Name to

```
AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)
```

Function Aspect Navigator

- Name
 - CD000021;1-20151216_TT_2
 - Unassigned
 - =EOATMcc001
 - =EOTLcc001
 - =EOGLcc001
 - =EOMAcc001
 - =EOBGcc001
 - =EOTFcc001
 - RB_AT [FB1012]
 - RB_AT_DB [DB1012]
 - PosDev_2D2S2P_DB [DB369]

Properties

Select Object

Select Object (1)

EPLAN Page Attributes

Title/Alias	Value
Device properties	
=+KF01.Function text	KF01.function text
=+KF01.Name (visible)	=EOATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001
Value	<input checked="" type="radio"/>
Expression Formula	
Expression Formula	=EOATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001
	= Formula...

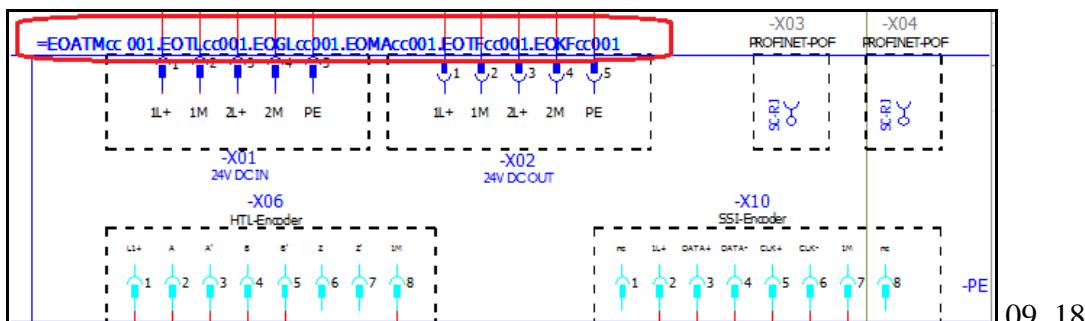
09_16

Expressions

Name	Formula	Type
1 p5	aaa	String
2 aaa	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)	String

09_17

The result is the aspect ID of KF is used in the macro.



2. SW Port example (none)

In this GS you don't have an example where a SW block uses a port to access the aspect ID of a non-parent EO to use as the symname. Normally you would not do this.

3. Tag port example (11.1.2)

In 11.1.2 you have a DI input tag for the boolean data from the light sensors. You want to use the aspect chain ID of the physical sensor (the BG EO) as the symbolic name of the tag (CH). The steps are

1. Create BG port **BG1toCH1** and CH port **CH1toBG1**.

2. Connect the ports.

Source			
<code>=EOATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001.EOCHcc001/+EOCHcc001/-EOCHcc001</code>			
Ports			
Port	Connected Object	Connected Port	Port Type
User Defined			
CH0toBG0	<code>=EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc001/+EOBGcc001/-EOBGcc001</code>	BG0toCH0	EO

09_19

3. Change DI0 symbolic name to use **CH1toBG1**.

```
AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH1toBG1")),Function)+"."CH"
```

09_20

Expressions			
Name	Formula	Value	Type
1 p4	ggg	<code>"=EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc001.CH"</code>	String
2 ggg	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH0toBG0")),Function)+"."CH"</code>	<code>"=EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc001.CH"</code>	String

09_21

The above expression elements are:

Expression	Returns
<code>AD_GetEngObject()</code>	Parent EO
<code>AD_GetConnectedObjects(xxx,"CH1toBG1")</code>	List of objects (neighbors) connected to parent port CH1toBG1
<code>AD_GetDesignation(First(yyy),Function)</code>	Returns function MRD (aspect chain ID) of neighbor

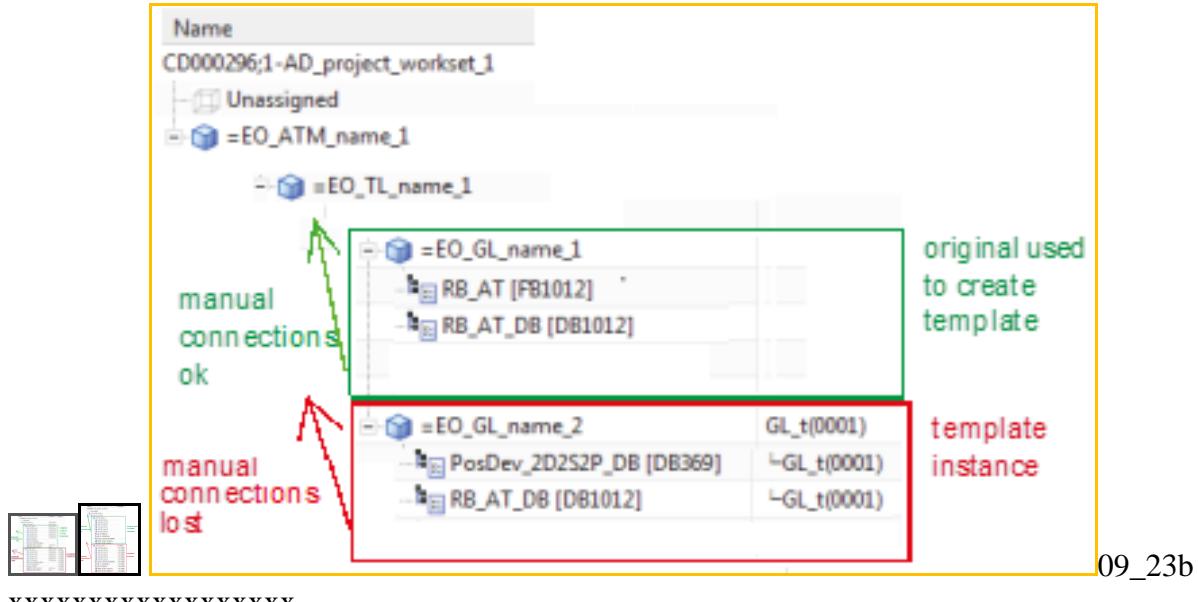
The result is the aspect ID of the sensor BG1 is used as the symbolic name for tag CH1.

09_22

9.3. Getting aspect chain ID outside template: Dynamic

9.3.1. Problem

Following shows the EO's added to the aspect chain for a conveyor (top). These EO's were then used to create a template. The template was then instantiated to create the aspect chain for a second conveyor (bottom).



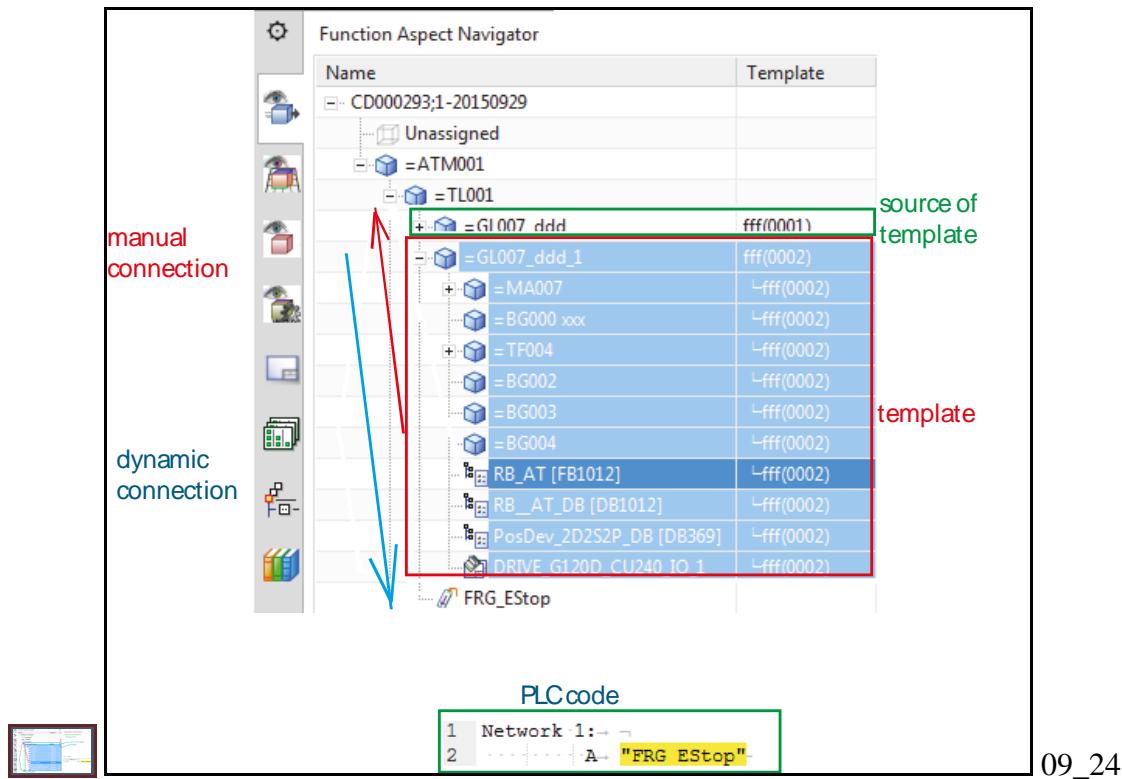
XXXXXXXXXXXXXXXXXXXX

The problem is if a SW block (or tag) in the aspect chain of the first conveyor had a link to an EO outside of the conveyor aspect chain, then this link information would not be valid if you instantiated the template (the instantiated conveyor could be under a different parent EO than the first conveyor). The link in the template needs to be defined with expressions that specify the relative location of the parent outside of the template.

Note: This is also true for macros, but macros don't usually need access to an EO outside of the conveyor aspect chain.

9.3.2. Solution

With a dynamic expression (red arrow to TL01) the template instance automatically locates the required parent EO TL01.



For example, in 11.2 in RB_AT properties you set the value of the FRG_EStop tag to:

```
First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)), "FRG_Estop"))
```

The following describes how the expression is evaluated:

TERRY 20160205: should be nth 2 or nth 1??

Expression	returns
AD_GetEngObject(),Function	GL001 (parent of RB_AT)
nth(2,AD_GetAncestors(xxx))	TL01 (GL001 ancestor)
AD_GetConnectedObjects(yyy), "FRG_Estop"	All objects connected to port FRG_EStop
First(zzz)	First object in list (FRG_EStop tag)

xxx 9.4. Automatic generation of calls for inserted SW

TERRY 6 20151126: not sure about this... just think should describe how when you instantiate a template then OB1, for example, will auto-add a call to the template.

10. Configure template-ready EPLAN (20160429)

This chapter includes the following sections.

- 10.1. Overview
- 10.5. Function-Location expressions
- 10.2. KF01.name ports, link, and expression
- 10.6. Test
- 10.7. FINISH (optional)

10.1. Overview (NEW)

The following gives an overview of this chapter.

10.5. Function/Location expresssions

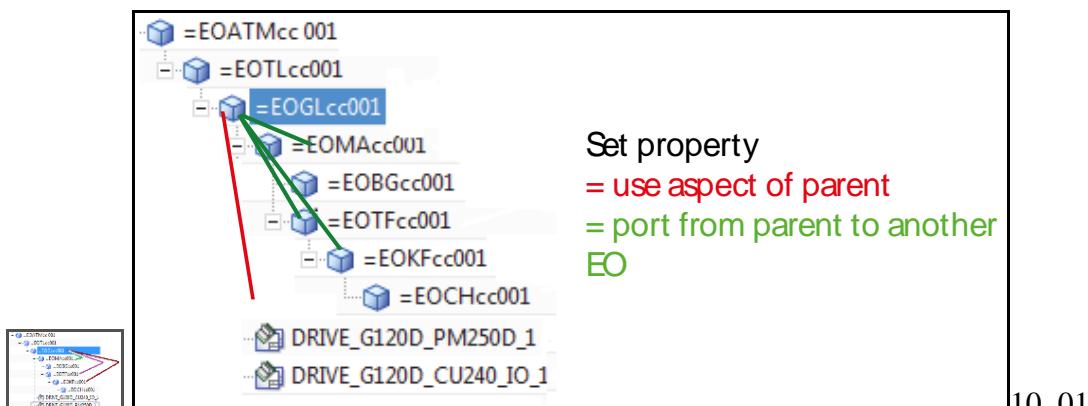
The values for Function and Location are taken from the parent EO, so no expressions or links required.

Device property	Value
Function	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
Location	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)

10.2. KF01.name ports, link, and expression

The values for KF01.Function text are taken from the corresponding EO (which are not the parent EO). Therefore you will need the following ports (and the link between them):

- GLtoKF, KFtoGL



The following are the required expression.

Device property	Value
KF01.Function text	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)
KF01.Name	KF01.name

10.6. test

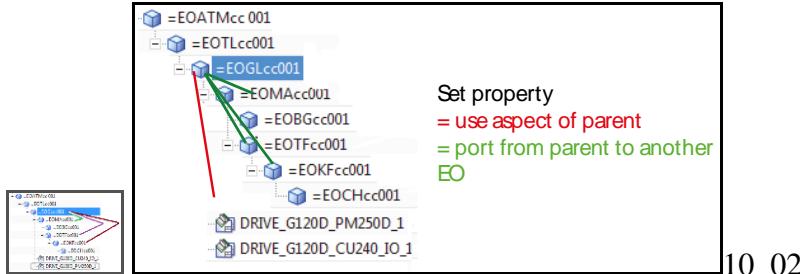
Generate EPLAN to test.

10.7. finish (optional)

This section shows how to complete the macros for the example, but does not introduce any new concepts.

1. The values for MA01.Function text and TF01.Function text are taken from the corresponding EO's (which are not the parent EO). Therefore you will need the following ports (and the link between them):

- GLtoMA, MAtoGL
- GLtoMA, MatoGL



The following are the required expression.

Device property	Value
MA01.Function text	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoMA")),Function)</code>
MA01.Name	MA01.name
TF01.Function text	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoTF")),Function)</code>
TF01.Name	TF01.name

2. add 240 macro.

Copy BG1 to BG2-4, create ports and link.

Add macro

BG2-4 expressions,link.

BG01.Name	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG1")),Function)</code>
BG02.Name	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG2")),Function)</code>
BG03.Name	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG3")),Function)</code>
BG04.Name	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG4")),Function)</code>

Other (:4, etc.)

Just set manually??

KF01:2.Function text	KF01:2. Functiontext
KF01:2.PLC address	E1-2
KF01:2.Symbolic address	KF01:2.SymAddr
KF01:4.Function text	KF01:4.Function text
KF01:4.PLC address	E1-4 ???
KF01:4.Symbolic address	KF01:4.SymAddr

KF01.Function text

`AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)`

Function

`subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)`

location

`subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)`

10.5a. Function / Location expressions 20160428 (WORKS)

	Name	Formula	Value	Units
1	p0	p2	=EOATMcc 001.EOTLCcc001.EOGLcc002"	mm
2				

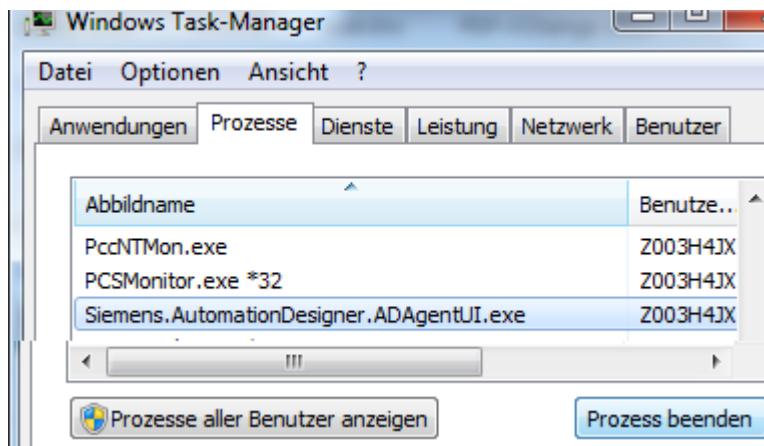
Function: =EOATMcc 001.EOTLCcc001.EOGLcc002
 Location: Location250

Generate EPLAN Project

A problem occurred during the communication process. Retry your action.
 If this is not the first time you see this message, contact your system administrator for support.

File Structure:

- CA1
 - EAA
 - 1 Title page



No luck.... Restart...

NO “=” !!!!!!!!!!!!!!!

	Name	Formula	Value
1	p0	subString(p2,2,1000)	=EOATMcc 001.EOTLCcc001.EOGLcc002"
2			

Note the extra space... its was in the naming rules.

Change rule, replace EO. Then ok,

Function	EOATMcc001.EOTLCcc001_1.EOGLcc002
Location	EOATMcc001.EOTLCcc001_1.EOGLcc002
<hr/>	
= EOATMcc001.EOTLCcc001_1.EOGLcc002	
+ EOATMcc001.EOTLCcc001_1.EOGLcc002	
Page 1	
Page 2 / 2	

10.5b. Function / Location expressions 20160421

1. Add the expression for Function.

Type

Character Code	EPLAN	String	Locked
Description	Description250	String	Locked
Full page name	1	String	Locked
Function	xxxxxx	String	Locked
Location	Locationtext250	String	Locked
Name of EPLAN Macro	DRIVE_G120D_PM250D_1	String	Locked
Object Name	EPLAN Page Macro	String	Locked
Page Description	PageDescription250	String	Locked
Page name	1	String	Locked
Unique Identifier	EPLAN Page Macro	String	Locked
Variable: ControlUnitFunctionText	Variable: ControlUnitFunctionText	String	Locked

Category (optional)

Title/Alias

Data Type

Value Expression Formula

Expression Formula

Accept Edit

Export

Apply Cancel

A dropdown menu is open over the 'Expression Formula' field, showing options: = Formula..., f(x) Function..., Extended Text..., Reference, and Make Constant. The 'Formula...' option is highlighted.

	Name	Formula	Value
1	p5	""	""
2	aaa	subS	"_001,_004.ConveyorF001"
3	rrrr	subS	"=_001,_004.ConveyorF001"
4	ssss	p2	"ConveyorF001"
5	tttt	p4	

Apply New Expression

New Expression

Edit...

Copy (Ctrl+C)

Edit

Formula

A $f(x)$   

Reference Object Attribute

Function Aspect Navigator

Name	Description
CD000101;1-AD_1_CD_4_WS_5...	
Unassigned	
=_001	000344
=_004	000345
=_ConveyorF001	000346
=_MotorF001	000347
=_SensorF001	000348
=_DrivePower...	000351
=_DriveCo...	000352
=_EOC...	000353
=_D11	Sensor1
=G120x	
=_PID0	PID0 descripti...
=EPLAN Page ...	Description250
=RB_AT	
=PosDev_2D2S...	

Reference Attribute

Referenced Object

+ Select Object

Select Object

✓ Select Engineering Object (1)

Engineering Object Attributes

Title/Alias	Value	Units	Type
Aspect Function			
Designated	True		Boolean
Designation	ConveyorF001		String
Multi-level Reference Designation	=_001._004.ConveyorF...		String
Name	ConveyorF001		String
Parent	_004		String

Edit

Formula

p7

#	Name	Formula	Value	Units	Dimensionality	Type
1	p5	bbb	"_001._004.ConveyorF001"			String
2				mm	Length	Number
3	aaa	p7	"=_001._004.ConveyorF001"			String
4	bbb	subString(aaa,3,1000000)	"001._004.ConveyorF001"			String
5	rrrr	subString(ssss,2,1000000)	"_001._004.ConveyorF001"			String
6	ssss	p2	"=_001._004.ConveyorF001"			String
7	tttt	p4	"ConveyorF001"			String

Function Aspect Navigator

Name	Description	Template
CD000101;1-AD_1_CD_4_WS_5...		
Unassigned		
=_001	000344	
=_004	000345	
=_ConveyorF001	000346	
=_MotorF001	000347	
=_SensorF001	000348	
=_DrivePower...	000351	
=_DriveCo...	000352	
=_EOC...	000353	
=_D11	Sensor1	
=G120x		
=_PID0	PID0 descripti...	
=EPLAN Page ...	Description250	
=RB_AT		
=PosDev_2D2S...		
=RB_AT_DB		

Properties

Select Object

✓ Select Object (1)

Context

Interaction Method

Engineering Object Attributes

Title/Alias	Value	Units	Type
Type	EPLAN Page Macro		String
Character Code	EPLAN		String
Description	Description250		String
Full page name	1		String
Function	001._004.ConveyorF001		String
Location	Locationtext250		String
Name of EPLAN Macro	DRIVE_G120D_PM250D_1		String
Object Name	EPLAN Page Macro		String

Category (optional)

Title/Alias

Data Type

Value Expression Formula

Expression Formula: p5

Break Expression Link

Accept Edit

Page properties

Function

String

001._004.ConveyorF001

This error out of nowhere... tried many things, cant solve it....

Generate EPLAN Project



Creating the project was not successful.

Most common reasons:

- The project template may be corrupt
- If the project already exists, it may be in use or write protected
- The target directory may be out of disc space.

10.5c. Function / Location expressions

The values for Function and Location are taken from the parent EO, so no expressions or links required.



10_03

1. Add the expression for Function.

```
subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
```

Name	Formula
1 p9	sss
8 sss	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
9	

	Value	Type
	"EOATMcc 001.EOTLcc001.EOGLcc001"	String
	"EOATMcc 001.EOTLcc001.EOGLcc001"	String

10_04

EPLAN Page Attributes			
Title/Alias	Value	Type	R...
+ Device properties			
- Page properties			
Description		String	
Full page name	=EOATMcc 001.EOTLcc001.EOGLcc001/2	String	
Function	EOATMcc 001.EOTLcc001.EOGLcc001	String	
Location		String	
Page name	2	String	

10_05

2. Add the expression for Location.

```
subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)
```

Name	Formula
1 p10	ttt
10 ttt	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)
11	

	Value	Type
	"EOATMcc 001.EOTLcc001.EOGLcc001"	String
	"EOATMcc 001.EOTLcc001.EOGLcc001"	String

10_06

EPLAN Page Attributes	
+ Page properties	
Description	
Full page name	=EOATMcc 001.EOTLcc001.EOGLcc001+EOATMcc 001.EOTLcc001.EOGLcc001/2
Function	EOATMcc 001.EOTLcc001.EOGLcc001
Location	EOATMcc 001.EOTLcc001.EOGLcc001
Page name	2

10_07

10.2a. KF01.name ports, link, and expression 20160429 (WORKS)

Port

Properties

Name: KFtoGL

Configuration

Port Type: EO

Connection Type: Program Block

Direction: Undirected

Cardinality: N

Connectable Types

OB_Proxy

Click add connection to list.

Add Connection to List

Port	Connected Object	Connected Port
.... GLtoKF	EOGLcc002	GLtoKF

For interaction method choose “Traditional”.

P11 = GL general / object name.

Expressions

	Name	Formula	Value
1	p9	""	""
2			
3	p3		
4	p6		

Formula

p11

A f(x) S

```
subString(GetMRD(GetListElementAt(GetConnectedObjects(p11,"GLtoKF"),1),Function),3,1000)
```

	Name	Formula
1	p9	subString(GetMRD(GetListElementAt(GetConnectedObjects(p11,"GLtoKF"),1),Function),3,1000)
2		

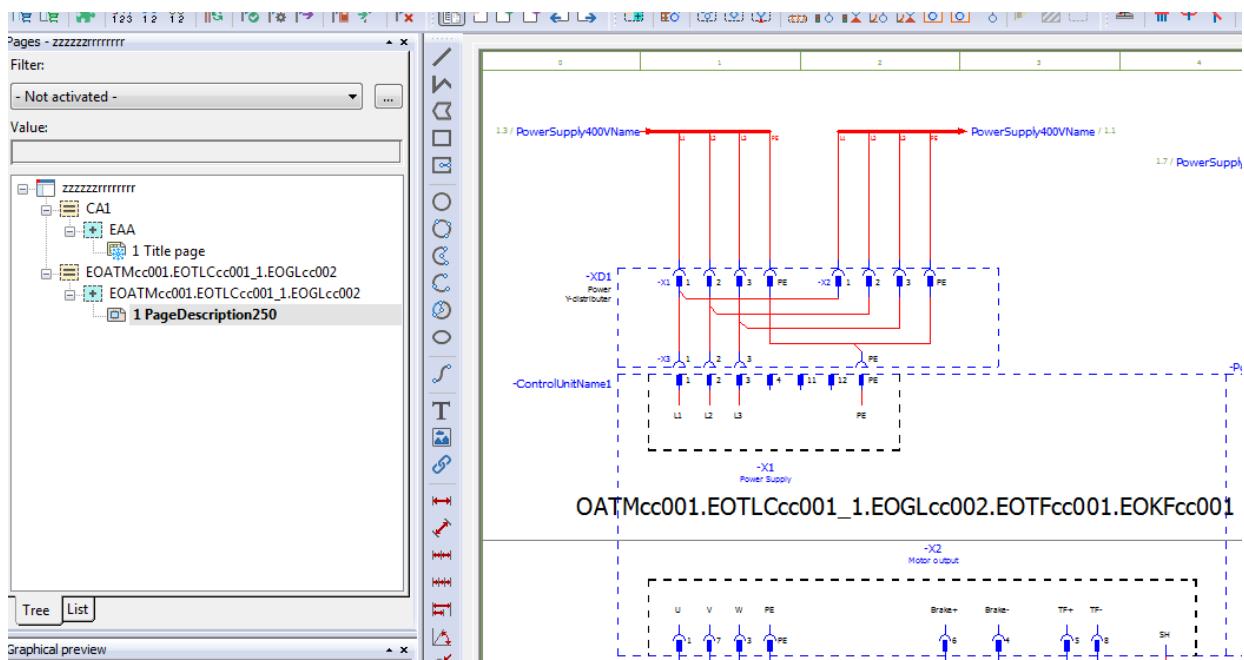
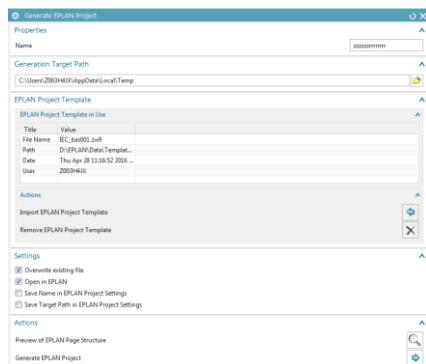
	Value	Type
	"OATMcc001.EOTLccc001_1.EOGLcc002.EOTFcc001.EOKFcc001"	String

Variable: ControlUnitFunctionText	ControlUnitFunctionText	String
Category (optional)	Variable	
Title/Alias	Variable: ControlUnitF	
Data Type	String	
<input type="radio"/> Value <input checked="" type="radio"/> Expression Formula		
Expression Formula	OATMcc001.EOTLCcc =	
Accept Edit		

Click green arrow.

Variable: ControlUnitFunctionText	OATMcc001.EOTLCcc001_1.EOGLcc002.EOTFcc001.EOKFcc001	String
Category (optional)	Variable	
Title/Alias	Variable: ControlUnitF	
Data Type	String	
<input type="radio"/> Value <input checked="" type="radio"/> Expression Formula		
Expression Formula: p9	OATMcc001.EOTLCcc =	
Break Expression Link		
Accept Edit		

Generate

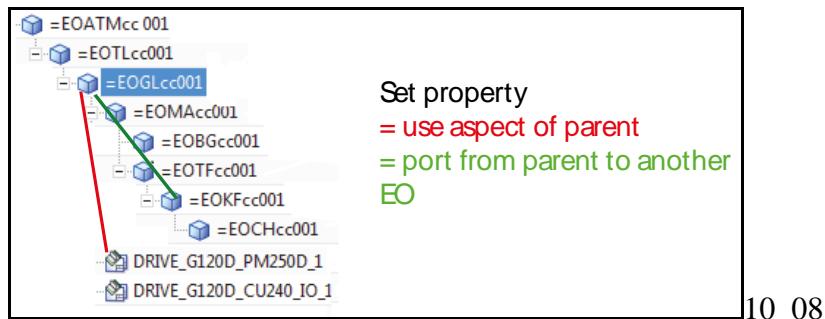


10.2b. KF01.name ports, link, and expression 20160422

Terry: this is very confusing and complicated.

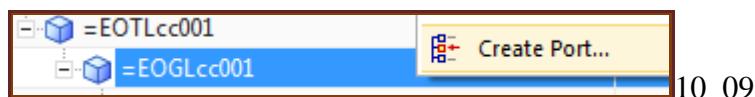
The value for KF01.Function text is taken from the corresponding EO KF (not the parent EO). Therefore you will need ports for the parent EO and EO KF and the link between them.

1. Ports
2. Connection (link)
3. Expression



1. Ports

1. Right-click on EO GL and select "Create Port...".



2. Enter the following information.

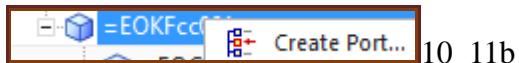
Properties	
Name	GLtoKF

Configuration	
Port Type	EO
Connection Type	Any
Direction	Undirected
Cardinality	N

Connectable Types	
Program Block	
Tag_Proxy	
UDT_Proxy	

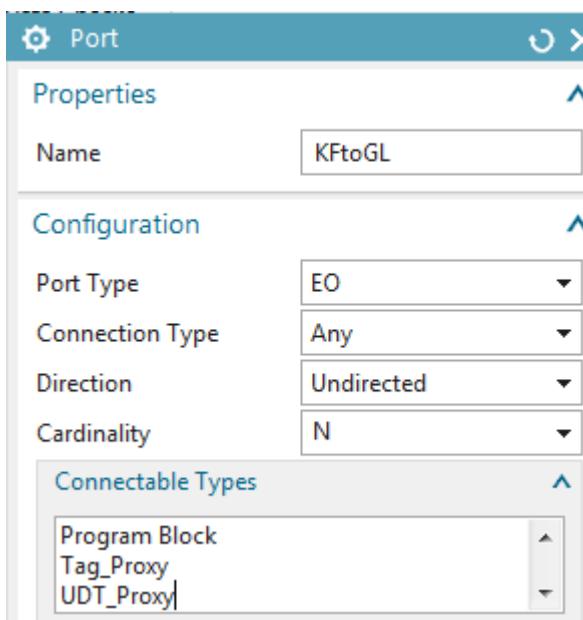
3. Click OK.
4. Right-click on EO GL and select "Ports manager...".

5. Right-click on EO KF and select "Create Port...".



6. Enter the following information.

NOT “ANY” ... use “PROGRAM BLOCK”



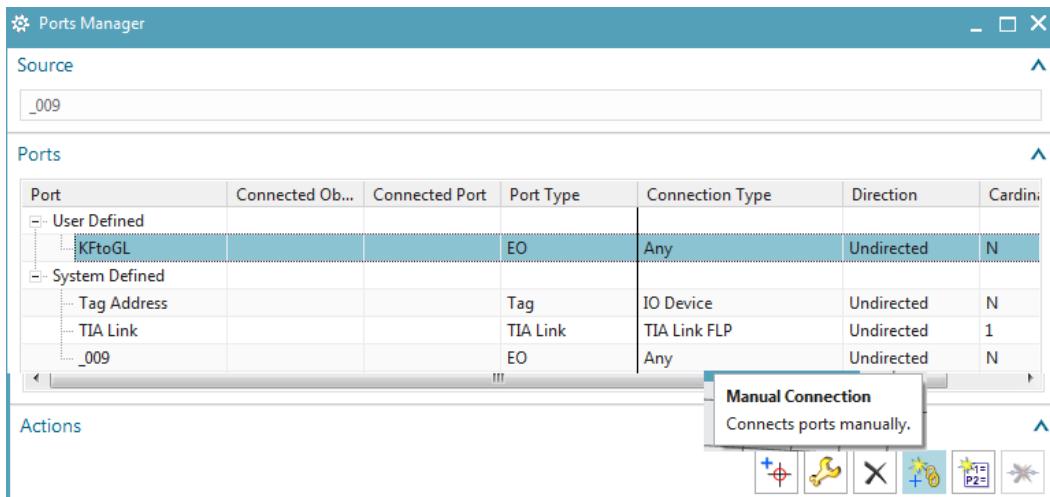
7. Click OK.

8. Right-click on EO KF and select "Ports manager...".

2. Connection (link)

You now need to link the 2 ports. The link can be created starting from either EO.

1. In the ports manager for KF, right-click on the port and select "Manual connection".



2. Select the target EO GL.

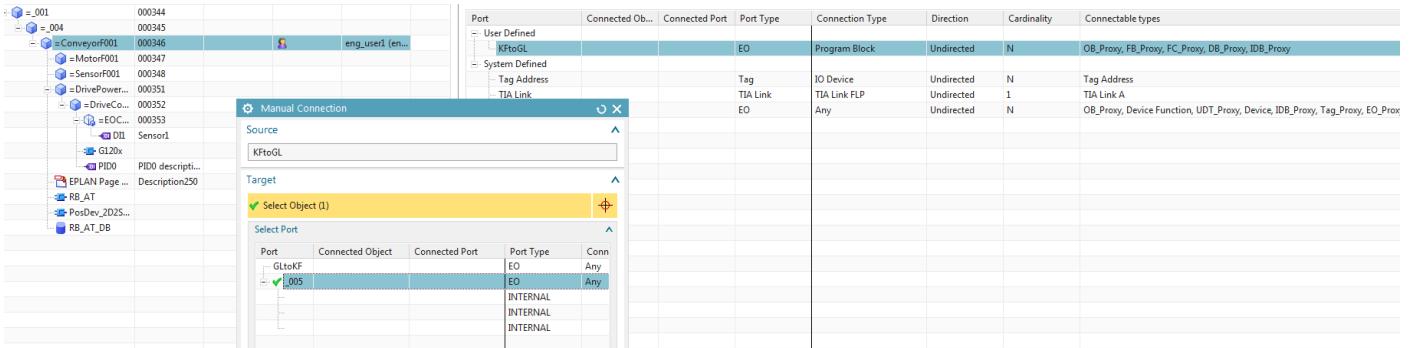
3. Select the port GLtoKF.

Port not there.

This screenshot shows two windows side-by-side. On the left is the 'Function Aspect Navigator' showing a tree structure of objects, with a node for 'ConveyorF001' expanded to show its sub-components: MotorF001, SensorF001, and DrivePower... On the right is the 'Manual Connection' dialog. The 'Source' field contains 'KFtoGL'. The 'Target' field has a yellow background and contains the message 'Select Object (1)'. Below it is a 'Select Port' table with columns: Port, Connected Object, Connected Port, Port Type, and Conn. There is one entry: 'GLtoKF' under 'Connected Object' and 'EO' under 'Port Type'.

This screenshot shows the 'Ports Manager' window again. In the 'Source' section, there is one entry: '_005'. In the 'Ports' section, there is a table with columns: Port, Connected Obj..., Connected Port, Port Type, Connection Type, Direction, and Cardinality. A row for 'GLtoKF' is selected, showing '_005' as the Connected Object, '_005' as the Connected Port, EO as the Port Type, Any as the Connection Type, Undirected as the Direction, and N as the Cardinality.

Igor showed me... have to chose the connection types that can connect together...now “Any” cant connect with “Any” (its designed this way... why? and we wonder why working with this is such a challenge ☺). Below “connection type” changed to “program block”. Not sure if should do it this way, but it works.



4. Click OK. The ports are linked.

>> 3. Expression

Terry: expressions dialog is very confusing... be careful of each little step.

1. Open the properties for the EPLAN macro.

2. For "Apply to" select "EPLAN page".

TERRY: I am still not sure which attribute is now "KF01.Function text".. just choose first one.

3. Click on "Variable: ControlUnitFunctionText".

4. Click "Expression Formula".

5. Click on the arrow for "Expression Formula". A drop-down list appears.

Title/Alias	Value	Units	Type
Variable: ControlUnitFunctionText	Variable: ControlUnitFunctionText		String
Variable: ControlUnitName	Variable: ControlUnitName		String
Variable: ControlUnitPartNumber1	Variable: ControlUnitPartNumber1		String
Variable: ControlUnitPartNumber2	Variable: ControlUnitPartNumber2		String
Variable: MotorCableFunctionText	Variable: MotorCableFunctionText		String
Variable: MotorCableName	Variable: MotorCableName		String
Variable: MotorCablePartNumber1	Variable: MotorCablePartNumber1		String
Variable: MotorCablePartNumber2	Variable: MotorCablePartNumber2		String
Variable: MotorFunctionText	Variable: MotorFunctionText		String
Variable: MotorName	Variable: MotorName		String

Category (optional)

Title/Alias

Data Type

Value Expression Formula

Expression Formula

= Formula...
f(x) Function...
Extended Text...
Reference
...
bbb
Make Constant
GtoKF

6. Click "Formula". The Expressions dialog appears.

7. In the first empty row under "Name" enter "hhh".

8. Under "Formula" right-click and select "Edit".

9. enter the following.

GetPort()

10. Click on the icon.

11. Select the conveyor "Object name".

Object Name

eng_user1 (en...)

Port

- User Defined
 - GtoKF
- System Defined
 - Tag Address
 - TIA Link
 - .005

Reference Attribute

Referenced Object

Select Object

Select Engineering Object (1)

Engineering Object Attributes

Title/Alias	Value	Units	Type
Object Name	.005		String
Reference Designation Set	=_001..004.Convey...		String
Type	GL-Continuous flo...		String
Type			

12. add “, “GLtoKF”“.

13. click OK.

	Name	Formula	Value	Units	Dimensionality	Type
8	hhh	GetConnectedObjects(p10,"GLtoKF")	{"_009"}			List

14. enter eee

	Name	Formula	Value	Ur	Dir	Type
5	eee	GetListElementAt(hhh,1)	"_009"			String
8	hhh	GetConnectedObjects(p10,"GLtoKF")	{"_009"}			List

15. enter fff

	Name	Formula	Value	Ur	Dir	Type
6	fff	GetMRD(eee,Function)	"= _001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
5	eee	GetListElementAt(hhh,1)	"_009"			String
8	hhh	GetConnectedObjects(p10,"GLtoKF")	{"_009"}			List

16. enter iii

	Name	Formula	Value	Ur	Dir	Type
9	iii	subString(fff, 3, 1000000)	"001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
6	fff	GetMRD(eee,Function)	"= _001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
5	eee	GetListElementAt(hhh,1)	"_009"			String
8	hhh	GetConnectedObjects(p10,"GLtoKF")	{"_009"}			List

17. assign p12

	Name	Formula	Value	Ur	Dir	Type
1	p12	iii	"001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
9	iii	subString(fff, 3, 1000000)	"001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
6	fff	GetMRD(eee,Function)	"= _001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
5	eee	GetListElementAt(hhh,1)	"_009"			String
8	hhh	GetConnectedObjects(p10,"GLtoKF")	{"_009"}			List

P12 details....

	Name	Formula	Value	Ur	Dir	Type	Source	Status	Comment	Checks
1	p12	iii	"001._004.ConveyorF001.DrivePowerF001.DriveControlF001"	String			(EPLAN Page Mac005::Type Attribute: Variable: ControlUnitFunctionText)			

18. select p12 row. Click ok.

19. click the green arrow.

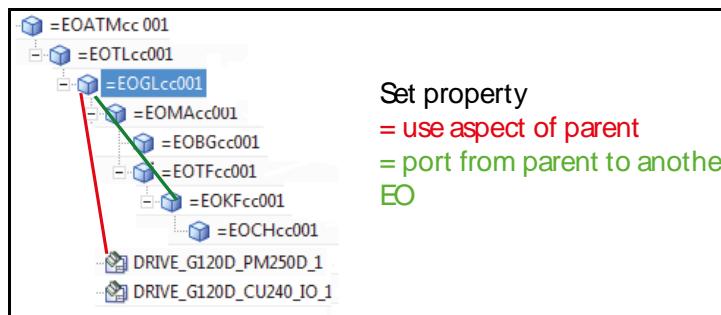
20. make sure that it was set (TERRY: this is very bug-prone and confusing). Should be like this:

22. Click ok. Save project.

10.2c. KF01.name ports, link, and expression

The value for KF01.Function text is taken from the corresponding EO KF (not the parent EO). Therefore you will need ports for the parent EO and EO KF and the link between them.

1. Ports
2. Connection (link)
3. Expression



10_08

1. Ports

1. Right-click on EO GL and select "Create Port...".



10_09

2. Enter the following information.

Properties

Name	GLtoKF
Configuration	
Port Type	EO
Connection Type	Any
Direction	Undefined
Cardinality	N
Mandatory Connection	<input type="checkbox"/>

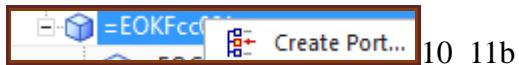
10_10

3. Click OK.
4. Right-click on EO GL and select "Ports manager...".

Source								
Ports								
Port	Connected Obj...	Connected Port	Port Type	Connection Ty...	Direc...	Cardi...	Man...	Connectable t...
-> User Defined								
GLtoKF			EO	Any	Undef...	N		Device Function...

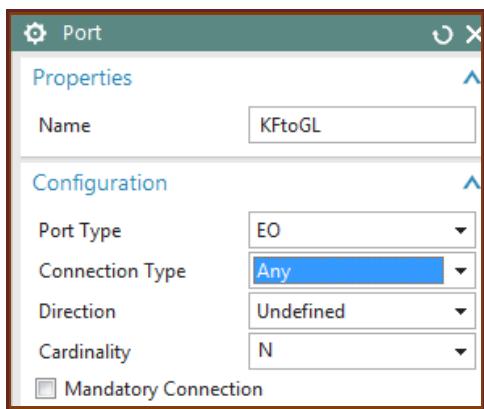
10_11

5. Right-click on EO KF and select "Create Port...".



10_11b

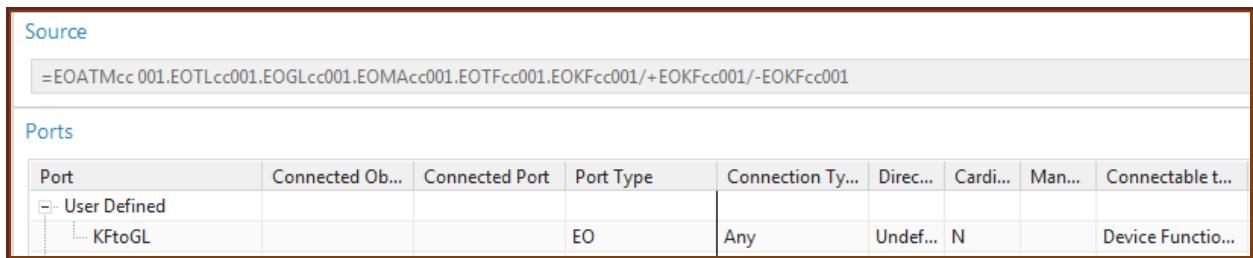
6. Enter the following information.



10_12

7. Click OK.

8. Right-click on EO KF and select "Ports manager...".

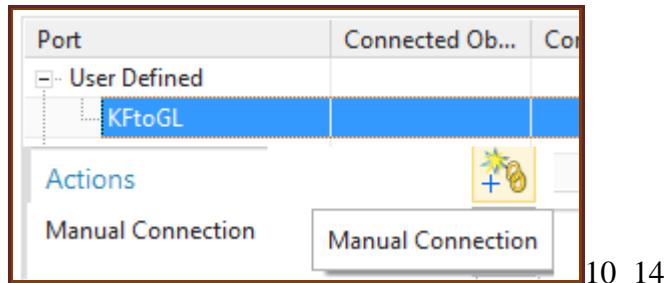


10_13

2. Connection (link)

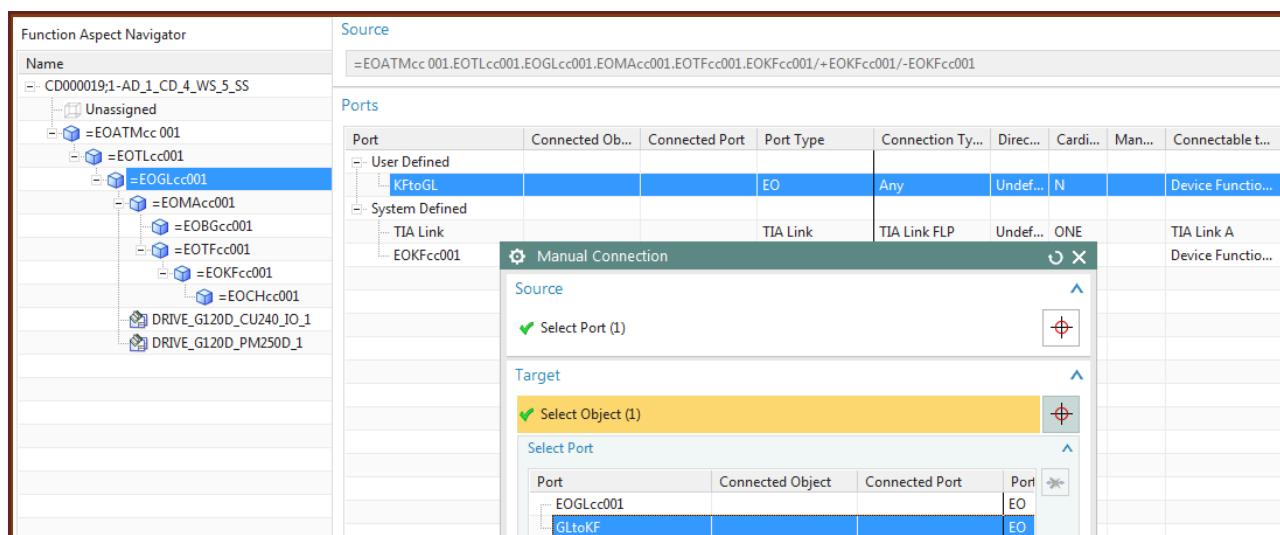
You now need to link the 2 ports. The link can be created starting from either EO.

1. In the ports manager for KF, right-click on the port and select "Manual connection".

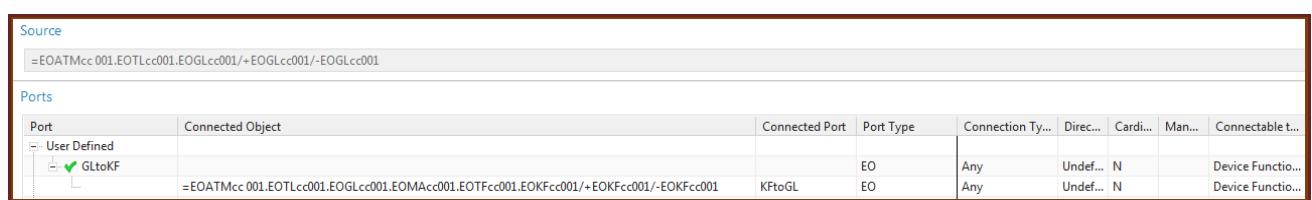
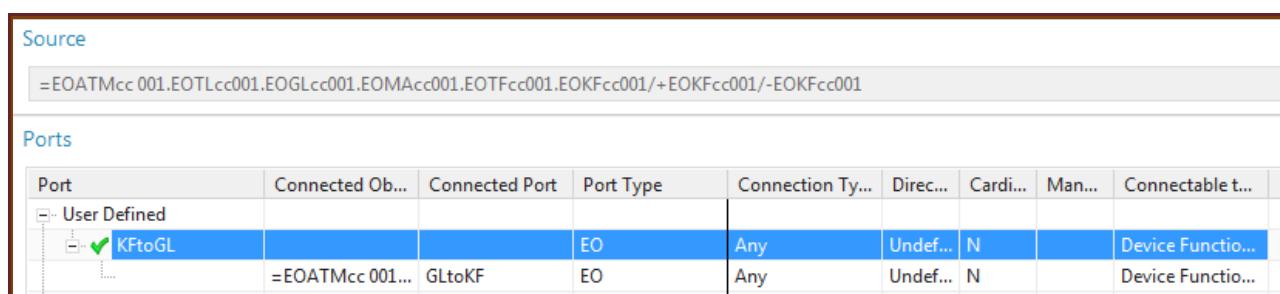


2. Select the target EO GL.

3. Select the port GLtoKF.

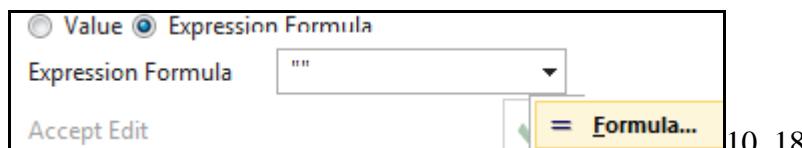


4. Click OK. The ports are linked.



3. Expression

1. Open the properties for the EPLAN macro.
2. For "Apply to" select "EPLAN page".
3. Click on "KF01.Function text".
4. Click "Expression Formula".
5. Click on the arrow for "Expression Formula". A drop-down list appears.



10_18

6. Click "Formula". The Expressions dialog appears.
7. In the first empty row under "Name" enter a short name.
8. Under "Formula" enter the following.
`AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)`
9. Change the focus. The resulting value should be displayed.

Name	Formula
1 p4	""
6 eee	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)</code>

Value	Type	Dimension
"	String	
<code>"=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001.EOKFcc001"</code>	String	

10_19

10. Click OK.
11. Open the formula dialog again. The row that defines the select property variable is highlighted. In this row in column "Formula" enter the name you entered in (7) above.
12. Change the focus to see the value.

Expressions		
Name	Formula	
1 p4	eee	
2 eee	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)</code>	

Value	Type
<code>"=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001.EOKFcc001"</code>	String
<code>"=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001.EOKFcc001"</code>	String

10_20

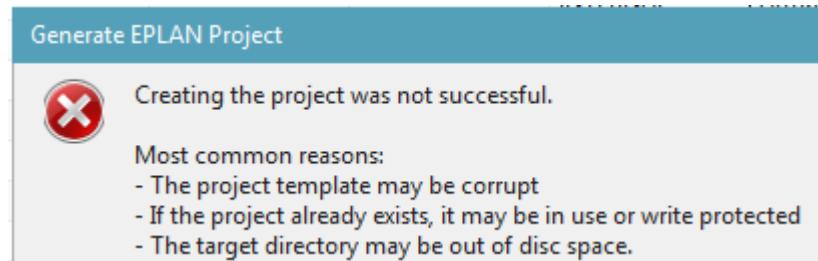
13. Click OK. The aspect chain for EO KF is assigned to KF01.Name.

EPLAN Page Attributes			
Title/Alias	Value	Type	R...
- Device properties			
=+KF01.Function text		String	<input type="button" value="..."/>
=+KF01.Name (visible)	<code>=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001.EOKFcc001</code>	String	<input type="button" value="..."/>

10_21

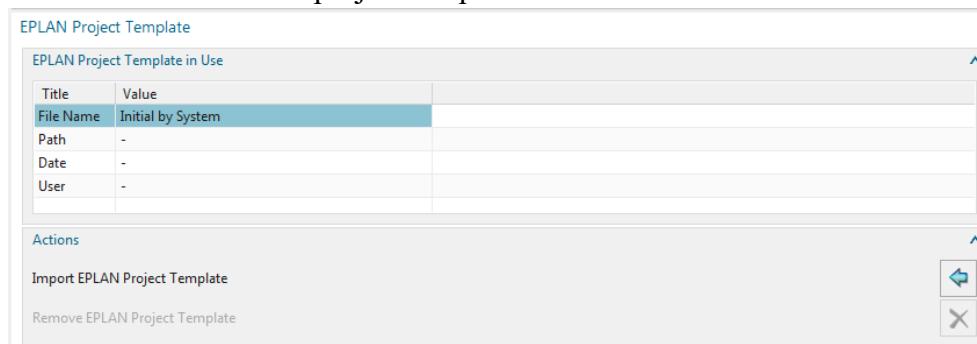
10.6a. Test 20164022

This is getting old.....

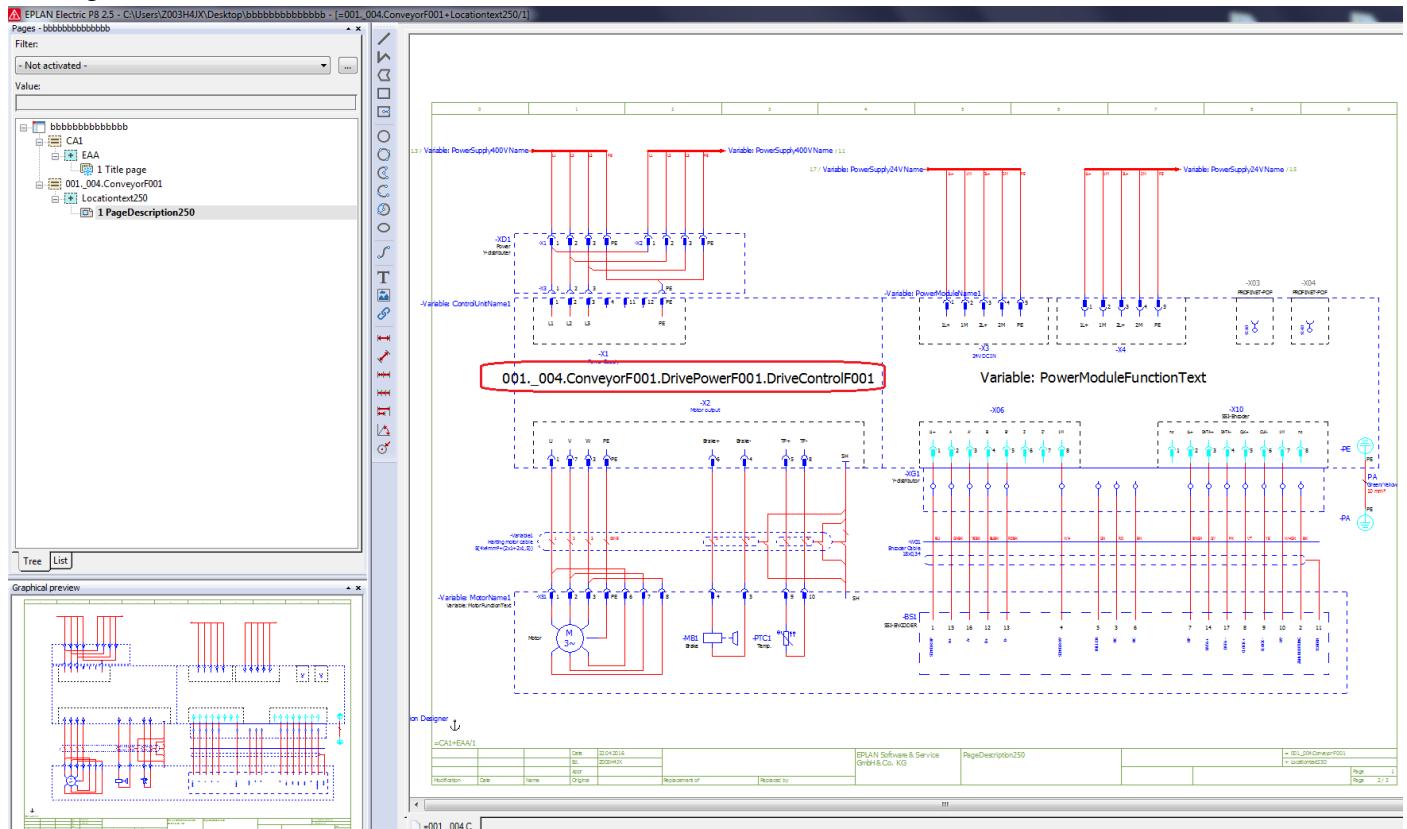


Problem was: have to use the default template (other has error).

Click "remove EPLAN project template"



Click generate. created



=CA1+EAA/1	Date 22.04.2016 Ed. Z003H4JX	EPLAN Software & Service GmbH & Co. KG	PageDescription250 = 001_004.ConveyorF001 + Locationtext250	Page 1 Page 2 / 2
Modification	Date	Name	Original	Repl

10.6b. Test

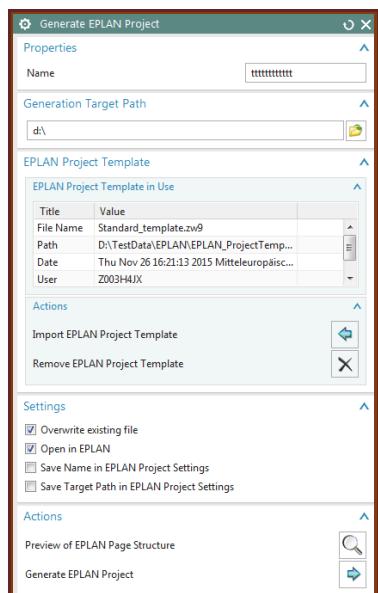
Now test what you have created so far.

1. Click on "Electrical Engineering / Generate EPLAN".



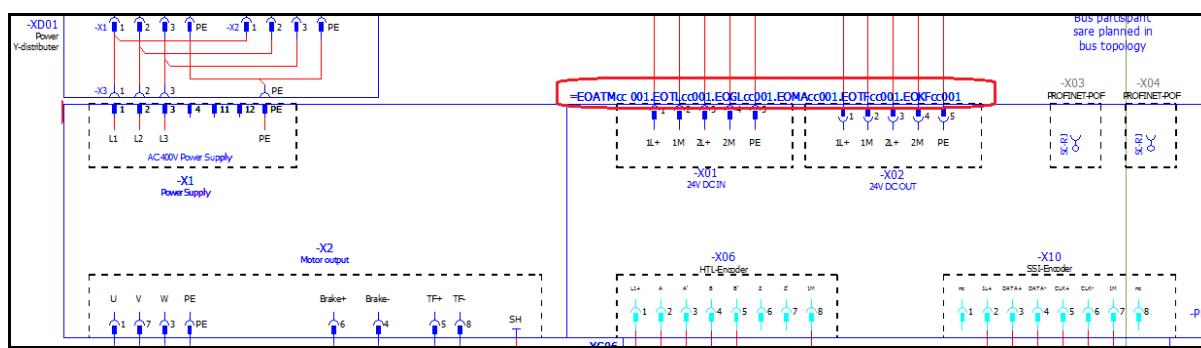
10_22

2. Enter the name.
3. Select path.
4. Check "Open in EPLAN".



10_23

5. Click "Generate EPLAN Project". EPLAN opens. Note the value for KF.



10_24

10.7. FINISH (optional)

this section show how to complete the EPLAN example. You can skip if you want, there are no new concepts introduced in this section.

10.7.1. Finish 250 macro

10.7.2. Add 240 macro

10.7.3. TEST xxx

10.7.1. Finish 250 macro

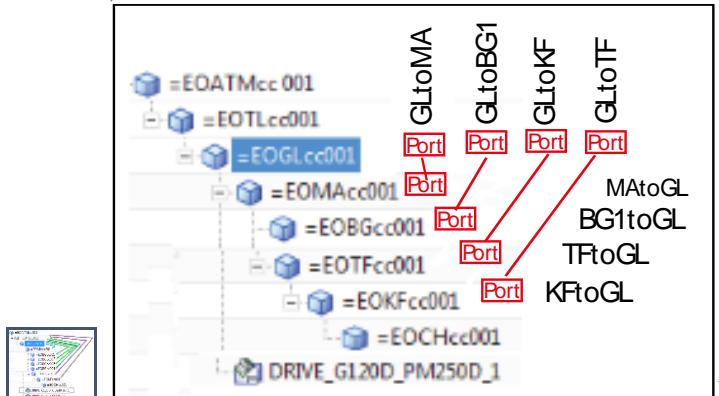
13.2.1.1. MA01.Name

13.2.1.2. TF01.Name

You need following ports:

GLtoMA, MAtoGL

GLtoTF, TFtoGL



10_25

250 expressions (dark green completed earlier).

Device property	Value
KF01.Function text	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)
KF01.Name	KF01.name
MA01.Function text	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoMA")),Function)
MA01.Name	MA01.name
TF01.Function text	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoTF")),Function)
TF01.Name	TF01.name
WD02.Function text	WD02.function text
WD02.Name	WD02.name
Description	Description1
Full page name	(locked)
Function	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
Location	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)
Page name	1

13.2.1.1. MA01.Name

1. Ports

GLtoMA
MAtoGL

2. Connection

Source							
Ports							
Port	Connected Object	Connected Port	Port Type	Connection Ty...	Direc...	Cardi...	Man...
- User Defined - MAtoGL	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001/+EOMAcc001/-EOMAcc001		EO	Any	Undef...	N	

10_26

Source							
Ports							
Port	Connected Object	Connected...	Port Type	Connection Ty...	Direc...	Cardi...	Man...
- User Defined - GLtoKF			EO	Any	Undef...	N	Device Functio...
- GLtoMA	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001.EOKFcc001/+EO...	KFtoGL	EO	Any	Undef...	N	Device Functio...
	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001/+EOMAcc001/-EOMAcc001	MAtoGL	EO	Any	Undef...	N	Device Functio...

10_27

3. Expression

AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoMA")),Function)

Name	Formula
11 p15	fff
3 fff	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoMA")),Function)

Value	Type
=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001"	String
"=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001"	String

10_28

EPLAN Page Attributes	
Title/Alias	Value
- Device properties - KF01.Function text	=++KF01.Function text
- KF01.Name (visible)	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001.EOKFcc001
- MA01.Function text	=++MA01.Function text
- MA01.Name (visible)	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001
- TF01.Function text	=++TF01.Function text
- TF01.Name (visible)	=++TF01.Name (visible)
- WD02.Function text	=++WD02.Function text
- WD02.Name (visible)	=++WD02.Name (visible)

10_29

13.2.1.2. TF01.Name

1. Ports

GLtoTF
TFtoGL

2. Connection

Source								
Ports								
Port	Connected Object	Connected...	Port Type	Connection Ty...	Direc...	Cardi...	Man...	Connectable t...
User Defined ✓ TFtoGL	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001/+EOTFcc001/-EOTFcc001	GLtoTF	EO	Any	Undef...	N		Device Functio...

10_30

Source								
Ports								
Port	Connected Object	Connected...	Port Type	Connection Ty...	Direc...	Cardi...	Man...	Connectable t...
User Defined ✓ GLtoKF	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001+EOKFcc001/-EO...	KFtoGL	EO	Any	Undef...	N		Device Functio...
✓ GLtoMA	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001/+EOMAcc001/-EOMAcc001	MAtoGL	EO	Any	Undef...	N		Device Functio...
✓ GLtoTF	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001/+EOTFcc001/-E...	TFtoGL	EO	Any	Undef...	N		Device Functio...

10_31

3. Expression

AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoTF")),Function)

Name	Formula
1 p23	ggg
4 ggg	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoTF")),Function)

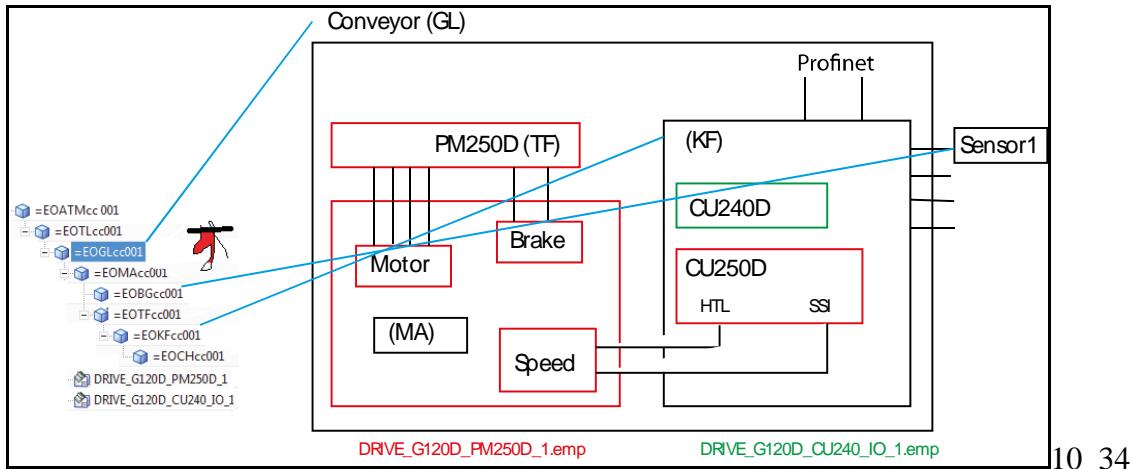
Value	Type
"=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001"	String
"=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001"	String

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EPLAN Page Attributes	
Title/Alias	Value
- Device properties	
... -KF01.Function text	
... -KF01.Name (visible)	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001.EOKFcc001
... -MA01.Function text	
... -MA01.Name (visible)	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001
... -TF01.Function text	
... -TF01.Name (visible)	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001
... -WD02.Function text	
... -WD02.Name (visible)	

10_33

10.7.2. Add 240 macro



10_34

13.2.2.2. copy BG1 to BG2-4 (if needed), create GL ports, link

13.2.2.3. Add CU240D (KF) macro

13.2.2.4. BG01-4 expressions

13.2.2.5. :4, :2 PLC ADDRESS, symbolic address???

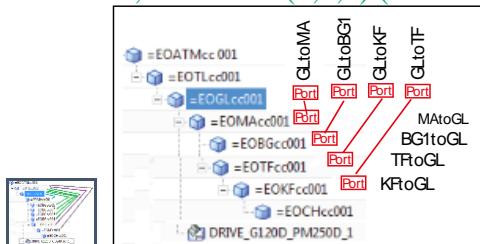
13.2.2.6. KF01.Function text (not name???)

13.2.2.7. Function

13.2.2.8. Location

You need following ports:

GLtoBG1, BG1toGL (2,3,4) (for 240)



10_35

240 expressions.

Device property	Value
BG01.Name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG1")),Function)
BG02.Name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG2")),Function)
BG03.Name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG3")),Function)
BG04.Name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG4")),Function)
KF01:2.Function text	KF01:2. Functiontext
KF01:2.PLC address	E1-2
KF01:2.Symbolic address	KF01:2.SymAddr
KF01:4.Function text	KF01:4.Function text
KF01:4.PLC address	E1-4 ???
KF01:4.Symbolic address	KF01:4.SymAddr
KF01.Function text	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)
KF01.Name	KF01.name
MB01.Name	MB01.Name
MB02.Name	MB02.Name
Description	Description1
Full page name	(locked)
Function	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation".Function),2,1000000)
Location	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation".Location),2,1000000)
Page name	1

13.2.2.2. copy BG1 to BG2-4 (if needed), create GL ports, link

1. Copy BG1 3 times.
2. Rename to BG2-4.
3. rename BG1toGL ports.

Source			
<code>=EOATMcc001.EOTLcc001.EOGLcc001.EOBG2</code>			
Port	Connected Obj...	Connected Port	Port Type
User Defined			
BG1toGL			EO
BG1toCH1			EO

10_36

4. for GL create GLtoBG# ports and connect.

13.2.2.3. Add CU240D (KF) macro

1. Click "Electrical Engineering / Import EPLAN macro".
2. Select the EO GL01.
3. Select the macro file [DRIVE_G120D_CU240_IO_1.emp](#).
4. Click Import. The macro appears in the aspect tree.

13.2.2.4. BG01-4 expressions

5. Right-click on the macro. Select "Properties".

BG01.Name	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG1")),Function)</code>
BG02.Name	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG2")),Function)</code>
BG03.Name	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG3")),Function)</code>
BG04.Name	<code>AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoBG4")),Function)</code>

13.2.2.5. :4, :2 PLC ADDRESS, symbolic address???????????????

Just set manually??

KF01:2.Function text	KF01:2. Functiontext
KF01:2.PLC address	E1-2
KF01:2.Symbolic address	KF01:2.SymAddr
KF01:4.Function text	KF01:4.Function text
KF01:4.PLC address	E1-4 ???
KF01:4.Symbolic address	KF01:4.SymAddr

13.2.2.6. KF01.Function text (not name???)

1. Ports

Already created. YES??

GLtoKF

KFtoGL

2. connection

Already created

3. expression

```
AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)
```

	Name	Formula
1	p28	ccc
2	ccc	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"GLtoKF")),Function)

10_37

EPLAN Page Attributes			
Title/Alias	Value	Type	R...
- Device properties			
... =+-BG01.Name (visible)		String	<input type="button" value="..."/>
... =+-BG02.Name (visible)		String	<input type="button" value="..."/>
... =+-BG03.Name (visible)		String	<input type="button" value="..."/>
... =+-BG04.Name (visible)		String	<input type="button" value="..."/>
... =+-BG05.Name (visible)		String	<input type="button" value="..."/>
... =+-BG06.Name (visible)		String	<input type="button" value="..."/>
... =+-KF01:2.Function text		String	<input type="button" value="..."/>
... =+-KF01:2.PLC address		String	<input type="button" value="..."/>
... =+-KF01:2.Symbolic address		String	<input type="button" value="..."/>
... =+-KF01:4.Function text		String	<input type="button" value="..."/>
... =+-KF01:4.PLC address		String	<input type="button" value="..."/>
... =+-KF01:4.Symbolic address		String	<input type="button" value="..."/>
... =+-KF01.Function text	=EOATMcc 001.EOTLcc001.EOGLcc001.EOMAcc001.EOTFcc001.EOKFcc001	String	<input type="button" value="..."/>
... =+-KF01.Name (visible)		String	<input type="button" value="..."/>
... =+-MB01.Name (visible)		String	<input type="button" value="..."/>
... =+-MB02.Name (visible)		String	<input type="button" value="..."/>

10_38

13.2.2.7. Function

No port or connection. Use parent.

3. Expression

```
subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)
```

	Name	Formula
1	p38	aaa
2	aaa	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Function),2,1000000)

10_39

Page properties	
Description	String
Full page name	=EOATMcc 001.EOTLcc001.EOGLcc001/1
Function	EOATMcc 001.EOTLcc001.EOGLcc001
Location	String
Page name	1

10_40

13.2.2.8. Location

No port or connection. Use parent.

3. Expression

```
subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)
```

	Name	Formula
1	p43	bbb
3	bbb	subString(AD_GetAttributeValue(AD_GetEngObject(),"Multi Reference Designation",Location),2,1000000)

10_41

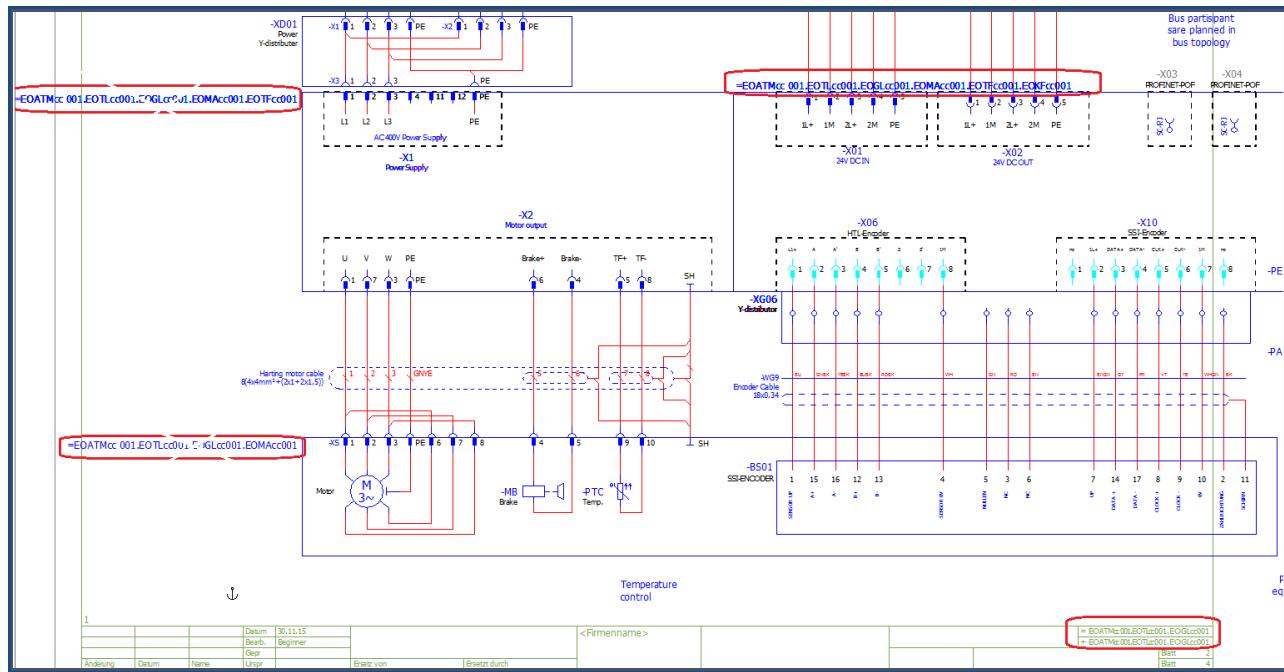
Page properties	
Description	String
Full page name	=EOATMcc 001.EOTLcc001.EOGLcc001+EOATMcc 001.EOTLcc001.EOGLcc001/1
Function	EOATMcc 001.EOTLcc001.EOGLcc001
Location	EOATMcc 001.EOTLcc001.EOGLcc001
Page name	1

10_42

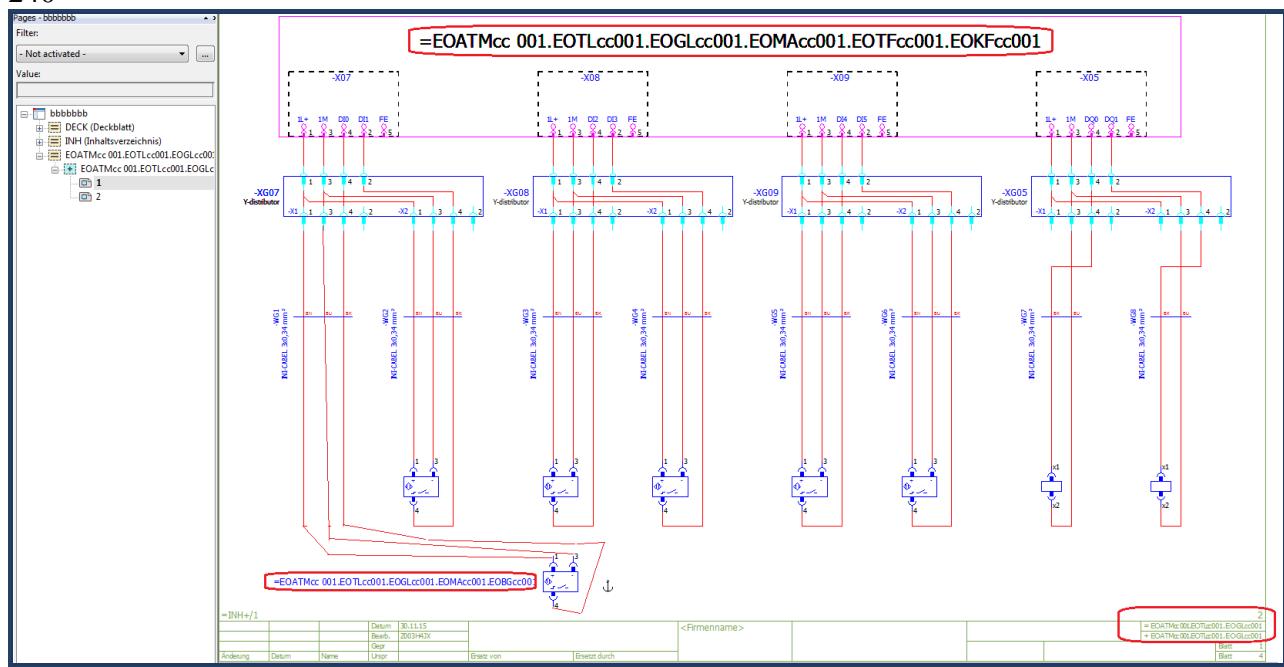
10.7.3. Test (20160209_1252)

1. Click on "Electrical Engineering / Generate EPLAN".
2. Enter the name.
3. Select path.
4. Check "Open in EPLAN".
5. Click "Generate EPLAN Project". EPLAN opens with 2 macro pages.

250



240



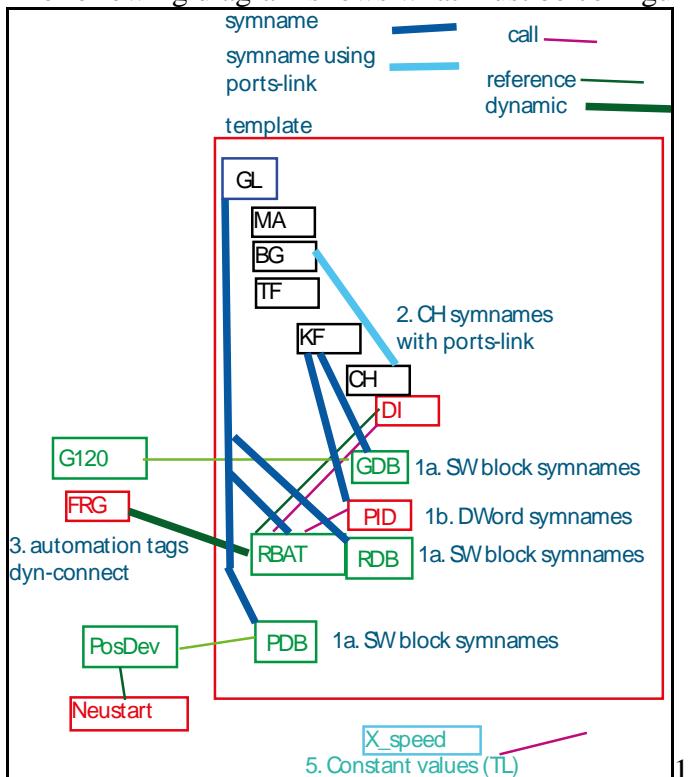
11. Configure template-ready TIA (20160426)

This chapter includes the following sections.

- 11.0. Overview (NEW)
- 11.1. Create symbolic names with expressions (SW blocks, tags (PID0))
- 11.2. Create symbolic names with ports/links (CH0)
- 11.3. Create automation-tags dynamic connections (FRG_EStop)
- 11.4. Test
- 11.5. FINISH (optional)

11.0. Overview (20160208)

The following diagram shows what must be configured.



11_01

11.1a. create symbolic names for SW. Set the symbolic names for the following SW blocks / IDB's.

RB_AT	AD_GetDesignation(AD_GetEngObject(),Function)+"_RB"
RB_AT_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_RBDB"
PosDev_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_POSDEVDB"
G120x_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_G120DB"

11.1b. For PID0 set the symbolic name to:

`AD_GetDesignation(AD_GetEngObject(),Function)+".PID0"`

11.2. create ports-link BG1toCH1 and CH1toBG1. For DI0 set the symbolic name to:

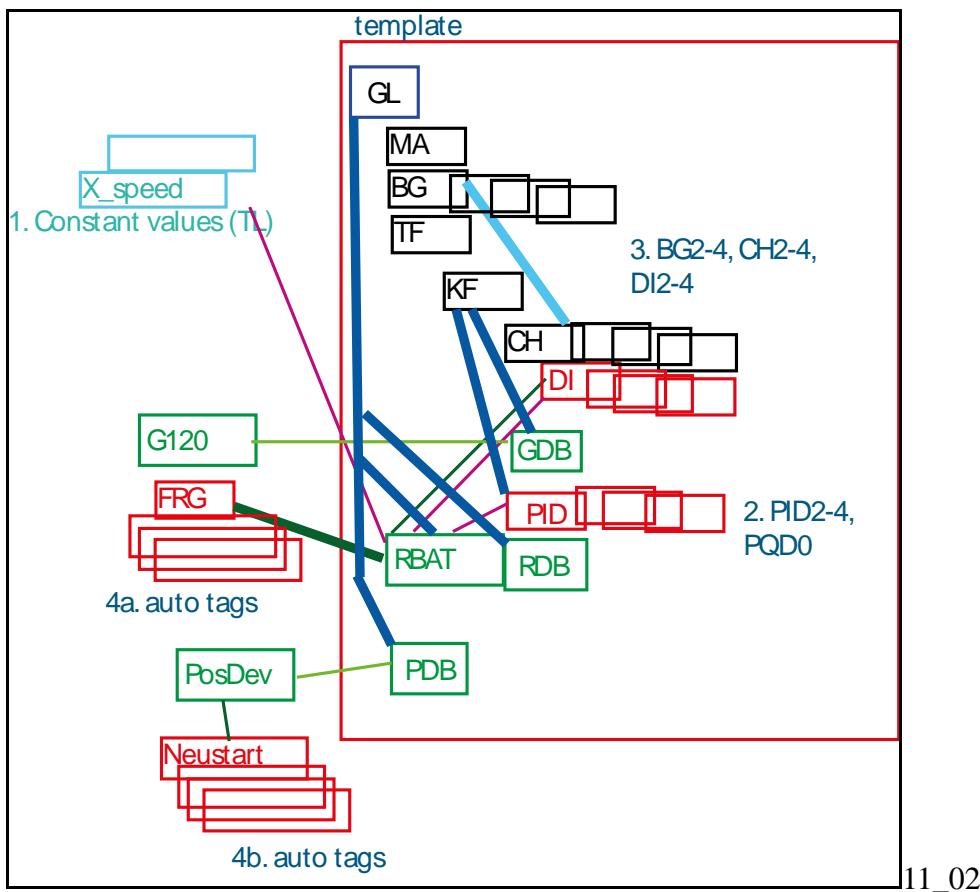
`AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH1toBG1")),Function)+".CH"`

11.3. create dynamic connection to automation tag. Enter the following expression.

`First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)), "TLtoFRGEStop"))`

11.4 test.

11.5. finish. (optional). Add the extras shown below.



11_02

TL constant value

Category	Operational
Title/Alias	Slow_Speed
Data Type	String
Value	Real#10.0

PID1, PID2, PQD0.

Tag	Properties	Properties
PID1	Name	PID1
	Memory Section	Input
	Data Type	Dword
	Description	PID1 descr
	Address	2104
	Symbolic name	AD_GetDesignation(AD_GetEngObject(),Function)+"."+PID1"
PID2	Name	PID2
	Memory Section	Input
	Data Type	DWord
	Description	PID2 descr
	Address	2108
	Symbolic name	AD_GetDesignation(AD_GetEngObject(),Function)+"."+PID2"
PQD0	Name	PQD0
	Memory Section	Output
	Data Type	Dword
	Description	PQD0 descr
	Address	2112
	Symbolic name	AD_GetDesignation(AD_GetEngObject(),Function)+"."+PQD0"

CH2-4, BG 2-4 ports.

```
CH2toBG2
CH3toBG3
CH4toBG4
BG2toCH2
BG3toCH3
BG4toCH4
```

DI2-4 properties.

Tag	Properties	Value
DI2	Name	DI2
	Memory Section	Input
	Data Type	Boolean
	Description	Sensor 2
	Address	1.3
	Symbolic name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH2toBG2")),Function)+".CH"
DI3	Name	DI3
	Memory Section	Input
	Data Type	Boolean
	Description	Sensor 3
	Address	1.4
	Symbolic name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH3toBG3")),Function)+".CH"
DI4	Name	DI4
	Memory Section	Input
	Data Type	Boolean
	Description	Sensor 4
	Address	1.5
	Symbolic name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH4toBG4")),Function)+".CH"

RB_AT call to PosDev values:

Call param	Value	TYPE
SW_FS_ADV	DI2	Symbolic reference
SW_FS_RTN	DI3	Symbolic reference
LS_RTN	DI4	Symbolic reference

Ports/links for 3 automation tags.

1. Create TLtoFRGBS, TLtoIBN0, TLtoReset ports in EO TL.
2. Manual connect the 3 ports to the tags (tags do not need a port).
3. Create dynamic connections from RB_AT to 3 tags.

TLtoFRGBS	First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)),"TLtoFRGBS"))
TLtoIBN0	First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)),"TLtoIBN0"))
TLtoReset	First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)),"TLtoReset"))

Test.

11.1-3. 20160509

RB_AT

P4 = GL Function MRD

	Name	Formula	Value
1	p0	subString(p4,3,1000)+"_RB"	"OATMcc001.EOTLcc001.EOGLcc001_RB"
CALL → "OATMcc001.EOTLcc001.EOGLcc001_RB", → "GLcc001_RBDB"			

RB_AT_DB

	Name	Formula	Value
1	p0	subString(p4,3,1000)+"_RBDB"	"OATMcc001.EOTLcc001.EOGLcc001_RBDB"
CALL → "OATMcc001.EOTLcc001.EOGLcc001_RB", → "OATMcc001.EOTLcc001.EOGLcc001_RBDB"			

PD_DB

1	p0	subString(p2,3,1000)+"_PD_DB"	"OATMcc001.EOTLcc001.EOGLcc001_PD_DB"
Network 9: → RB_AT			
CALL → "PosDev_2D2S2P", → "OATMcc001.EOTLcc001.EOGLcc001_PD_DB"			
LS ADV := → "DII"			

G120 db

1	p0	subString(p2,3,1000)+"_GDB"	"OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001_GDB"
CALL → "G120x", → "OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001_GDB"			
INPUT ADDR := "D1D0"			

PID0

p0	subString(p2,3,1000)+"_PID0"	 "OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001_PID0"
CALL "G120x", "OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001_GDB" INPUT_ADDR := "OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001_PID0" FAST_SPEED := Real#89.9, SLOW_SPEED := REAL#20.0		

DI1 (just do simple way)

1 p0	subString(p2,3,1000)+"_DI1"	 "OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001.EOCHcc001_DI1"
44 Network 9: 45 CALL "PosDev_2D2S2P", "OATMcc001.EOTLcc001.EOGLcc001_PD_DB" 46 LS_ADV := "OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001.EOCHcc001_DI1" 47 SW_FS_ADV := "slow_forw" 48 SW_FS_RTN := "slow_back" 49 LS_RTN := "pos_back_left" 50 SEL_SLOW := "RLO 0" 51 MOTOR_PROT := "RLO 1" 52 MOTOR_TEMP := "RLO 1" 53 TM_OP := 50 54 TM_LS := 20 55 TV_STARTUP := 20		
56 57 Network 10: 58 CALL "G120x", "OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001_GDB" 59 INPUT_ADDR := "OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001_PID0" 60 FAST_SPEED := Real#89.9, 61 SLOW_SPEED := REAL#20.0		
62 63 64 Network 11: 65 A(66 A+ "OATMcc001.EOTLcc001.EOGLcc001.EOTFcc001.EOKFcc001.EOCHcc001_DI1" 67 A+ "slow_forw" 68 O 69 A+ "pos_back_left" 70 A+ "slow_back"		

New,.....XXXXXXXXXX

P6 is RB_AT FB self.

	Name	Formula	Value
1	eee2	nth(3,ddd)	"EOTLcc001"
2		""	""
3	ddd	GetAncestors(p6,Function)	{"FB001","EOGLcc001","EOTLcc001","EOATMcc001"}
4	p0	subString(p4,3,1000)+"_RB"	"OATMcc001.EOTLcc001.EOGLcc001_RB"

Port

Properties

Name: TLtoFRGEStop

Configuration

Port Type: EO

Connection Type: Any

Direction: Undirected

Cardinality: N

Connectable Types

Program Block
Tag_Proxy
UDT_Proxy

Port	Connected Obj...	Connected Port	Port Type
User Defined	TLtoFRGEStop		EO
System Defined	Port_1		
Tag Address			
TIA Link			
EOTLcc001			

Manual Connection
Connects ports manually.

FE

Screenshot of a PLC configuration software interface showing the Ports and Object Tree panes.

Ports pane:

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction
User Defined	Manual Connection				
TLtoFRGEStop	Source				
Port_1					
System Defined					
Tag Address					
TIA Link					
EOTLcc001					

Object Tree pane:

- G120x [FB307]
- PosDev_2D2S2P [FB369]
- OATMcc001.EOTLcc001.EC
- OATMcc001.EOTLcc001.EC
- OATMcc001.EOTLcc001.EC
- PLC data types
- Local modules
 - Rail_0
 - PS 307 10A_1
 - PLC_2
 - DI16/DO 16x24VDC/0.5
 - AI 4/AO 4x14/12BIT_1
 - ID272 - PID0
 - ID274
 - ID276
 - ID278
 - QW272
 - QW274
 - QW276
 - QW278
- PLC tags
 - RB_HA_01_POSIT_LS_DN
 - Newstart
 - PLC_On delayed
 - TRUE
 - CPulse_0_1s
 - RLO 1
 - BiF
 - RLO 0
 - FRG_EStop

Stupid eee and eee2 are there, but not displayed....

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable typ...
User Defined				Any	Undirected	N	OB_Proxy, Device...
TLtoFRGEStop	FRG_EStop	FRG_EStop	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand

Name	Formula	Value	Units	Dimensionality	Type	Source
1 ggg	First(fff2)	"ST001.Tag65"			String	
2 ddd	GetAncestors(p6,Function)	{"FB001","EOGLcc001","EOTLcc001","EOATMcc001"}			List	
3 fff	GetConnectedObjects(eee2,"TLtoFRGEStop")	{"ST001.Tag65"}			List	
4 fff2	GetConnectedObjects(eee2,"TLtoFRGEStop")	{"ST001.Tag65"}			List	
5 p0	subString(p4,3,1000)+"_RB"	"OATMcc001.EOTLcc001.EOGLcc001_RB"			String	(FB001::Type Attribute

```

A-> "FRG_EStop"
A-> "FRG_BS"
= #ENABLE_SAFETY

```

RESULT AFTER COPY

Function Aspect Navigator

- Name: CD000163;1-AD_1_CD_4_WS_5_SS_2016...
- Configurations:
 - Global Sym... Tags: FRG_EStop, FRG_BS, #ENABLE_SAFETY
 - FB/DB: Network 1, Network 2, Network 3, Network 4, Network 5, Network 6, Network 7, Network 8, Network 9, Network 10, Network 11, Network 12.
 - Ports: Caller P..., Operand..., Rules: Calls, Methods, Operand, Methods.
- Actions: A "FRG_EStop", A "FRG_BS", #ENABLE_SAFETY, A "reset", A "#ENABLE_SA1", A "RB_2", #INTERLOCK, A "RB_AT_08", //At least one called IDB is not connected to a valid FB, A "IBNO", #ENABLE_AD, #INTERLOCK, A "slow", A "pos", A "slow", A "#ENABLE_RT", A "IBNO", #ENABLE_RT, A "IBNO", #PUSHBOTTO, A "IBNO", #CONVEYOR_OCCUPIED, A "pos_back_left", A "slow_back", AN #OUT_ADV, AN #OUT_RTN, A "pos_back_left", A "slow_back", AN #OUT_ADV, AN #OUT_RTN.

FIX PosDev IDB to FB link.

Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
- Block_C							
- PosDev_2D2S2P	S7300/ET200M ...	Station_C	Control Scope	Program Block	Undirected	1	Controller
- DB003	FB003	FB003	EO	Controller	Undirected	1	PLC Tag, Program Block, Object, PLC Data Type
-	FB001	PosDev_2D2S2P_DB	EO	FB_Proxy	Undirected	1	FB_Proxy
-							

Source

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
- Block_C							
- PosDev_2D2S2P							
- DB006							
-	FB004	PosDev_2D2S2P_DB	EO	IDB_Proxy	Undirected	N	Any, Caller, Operand, Program Block, IDB
-							

Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
- Block_C							
- PosDev_2D2S2P			EO	Program Block	Undirected	1	Controller
- DB006			EO	FB	Undirected	1	FB_Proxy
-	FB004	PosDev_2D2S2P_DB	EO	IDB_Proxy	Undirected	N	Any, Caller, Operand, Program Block, IDB
-							

Manual Connection

Source: PosDev_2D2S2P

Target: Select Object (1)

Select Port:

Port	Connected Object	Connected Port	Port Type	Conn
- FB003	DB003	PosDev_2D2S2P	EO	EO

DB006							
Ports							
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
System Defined							
Block_C			Control Scope				
PosDev_2D2S2P			EO	Program Block	Undirected	1	Controller
	FB003	FB003	EO	FB_Proxy	Undirected	1	FB_Proxy
	DB006		EO	IDB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block, IDB
		FB004	PosDev_2D2S2P_DB	Caller	Undirected	N	IDB_Proxy, FC_Proxy

```

Network 9:-->
CALL "PosDev_2D2S2P", "OATMcc001.EOTLcc001.EOGLcc001_1_PD_DB"
    LS_ADV := "OATMcc001.EOTLcc001.EOGLcc001_1.EOTFcc001.EOKFcc001.EOCHcc001_DI1"
    TM_OP := 50
    TM_LS := 20
    TV_STARTUP := 20

Network 10:-->
//At least one called IDB is not connected to a valid FB.

```

Fix G120 the same...

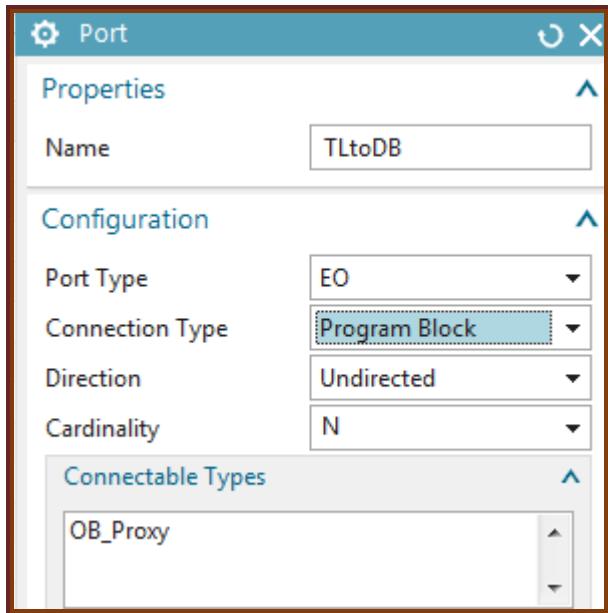
Aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa

3. TLtoDB (TL is _002)

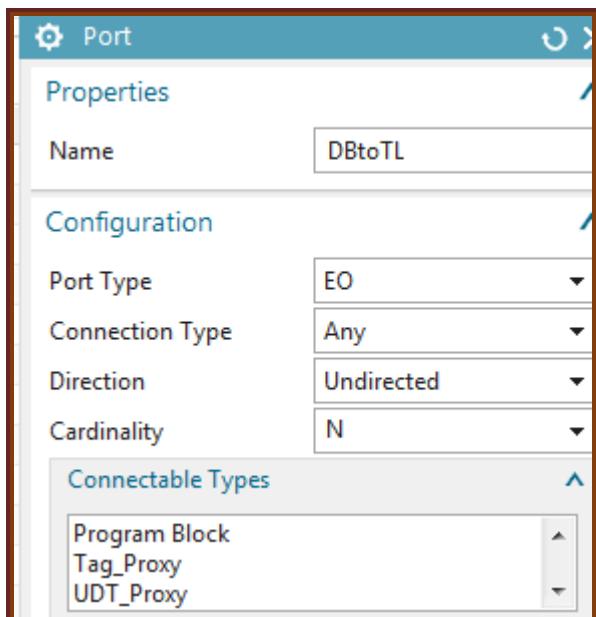
Connection type = program block.

Or DBtoTL is program block.

Cant have both as Any.



4. DBtoTL



5. dynamic connection , getPort

The screenshot shows the Function Aspect Navigator interface. On the left, the 'Function Aspect Navigator' tree view displays a function named 'CD000122;1-AD_1_CD_4_WS_5_SS_201604'. Under 'Unassigned', there are three ports: '_001', '_002', and '_003'. '_003' is connected to 'RB_AT' and 'RB_AT_DB'. On the right, the 'Source' tab shows 'DB001' in the 'Ports' section. A table lists a port 'DBtoTL' with its details: Connected Object is '_002', Connected Port is 'TLtoDB', Port Type is 'EO', Connection Type is 'Program Block', Direction is 'Undirected', Cardinality is 'N', and Connectable is 'OB_Proxy, F...'. A tooltip for 'Dynamic Connection' states: 'Connects ports dynamically by using expressions.' Below the table are several icons for port management.

For DB P4 = conveyor object name.

	Name	Formula	Value
1		""	""
2	aaa	GetPort(GetParent(p4,Function),"TLtoDB")	"TLtoDB"
3	p0	subString(GetMRD(GetParent(p2,Function),Function),3,1000)+"_DB"	"001._002._003_DB"

The screenshot shows the Function Aspect Navigator interface. On the left, the 'Function Aspect Navigator' tree view displays a function named 'CD000122;1-AD_1_CD_4_WS_5_SS_201604'. Under 'Unassigned', there are three ports: '_001', '_002', and '_003'. '_003' is connected to 'RB_AT' and 'RB_AT_DB'. On the right, the 'Source' tab shows 'DB001' in the 'Ports' section. A table lists a port 'DBtoTL' with its details: Connected Object is '_002', Connected Port is 'TLtoDB', Port Type is 'EO', Connection Type is 'Program Block', Direction is 'Undirected', Cardinality is 'N', and Connectable is 'OB_Proxy, F...'. Another row shows a port 'EOTLcc001_Port3' with its details: Connected Object is 'EOTLcc001', Connected Port is 'TLtoDB', Port Type is 'EO', Connection Type is 'Any', Direction is 'Undirected', Cardinality is 'N', and Connectable is 'OB_Proxy, D...'. Below the table are several icons for port management.

	Name	Formula	Value	Units	Dimensionality	Type
1	ddd	GetPort(bbb,"TLtoDB")	"EOTLcc001.Port3"			String
2	bbb	GetParent(p8,Function)	"EOTLcc001"			String
3	p0	subString(p4,3,1000)+"_RBDB"	"OATMcc001.EOTLcc001.EOGLcc001_RBDB"			String

The screenshot shows the Function Aspect Navigator interface. On the left, the 'Function Aspect Navigator' tree view displays a function named 'CD000122;1-AD_1_CD_4_WS_5_SS_201604'. Under 'Unassigned', there are three ports: '_001', '_002', and '_003'. '_003' is connected to 'RB_AT' and 'RB_AT_DB'. On the right, the 'Source' tab shows 'DB001' in the 'Ports' section. A table lists a port 'DBtoTL' with its details: Connected Object is 'EOTLcc001', Connected Port is 'TLtoDB', Port Type is 'EO', Connection Type is 'Any', Direction is 'Undirected', Cardinality is 'N', and Connectable is 'OB_Proxy, F...'. Another row shows a port 'EOTLcc001' with its details: Connected Object is 'EOTLcc001', Connected Port is 'TLtoDB', Port Type is 'EO', Connection Type is 'Program Block', Direction is 'Undirected', Cardinality is 'N', and Connectable is 'OB_Proxy, D...'. Below the table are several icons for port management.

6. change main -> RBAT DB call port

P1=TL

The screenshot shows the SIMATIC Manager interface with several tabs open:

- Table View:** Shows two rows of data:

	Name	Formula	Value	Units	Dimensionality	Type
1		""	""			String
2	bbb	GetConnectedObjects(p1,"TLtoDB")	{"DB001"}			List
- Ports:** Shows a tree structure with nodes like "Caller P...", "Calle...", and "OATMcc001.EO...".
- Rules:** Shows a tree structure with nodes like "Calls" and "Rule 1".
- Configurations:** Shows a table of configurations with columns "Name", "Value", and "Type". One row is selected: "Name" =EOTLcc001, "Value" 000345, "Type" Unassigned.
- Interface:** Shows a table of interface parameters with columns "Name", "Default", "Data...", and "Comments". Examples include "OB1_EV_CLASS", "OB1_SCAN_1", "OB1_PRIORITY", etc.
- PLC Code:** Shows the following code in a network editor:


```

1 Network 1:-->
2 CALL "OATMcc001.EOTLcc001.EOGLcc001_RB", "OATMcc001.EOTLcc001.EOGLcc001_RBDB"
3
        
```
- Call Tree:** Shows a detailed tree view of symbols and their definitions, including EOTLcc001, EOGLcc001, and various function blocks and data types.
- PLC Code (Bottom):** Shows the following code in a network editor:


```

1 Network 1:-->
2 CALL "OATMcc001.EOTLcc001.EOGLcc001_RB", "OATMcc001.EOTLcc001.EOGLcc001_RBDB"
3 CALL "OATMcc001.EOTLcc001.EOGLcc001_RB", "OATMcc001.EOTLcc001.EOGLcc001_RBDB"
4
        
```

IT WORKED !!! (kind of)

11.1-3. 20160429

P4 is SELF.

7 fff	GetConnectedObjects(eee2,"TLtoFRGEStop")	{"ST004.Tag10"}	List
6 eee2	nth(3,ddd)	"_004"	String
4 ddd	GetAncestors(p4,Function)	{"FB019","_005","_004","_001"}	List
↑ Name		Value	
1 p0	subString(GetMRD(GetParent(p2,Function),Function),2,1000)+"_BOOL"	"EOATMcc001.EOTLCcc001_1.EOGLcc002.EOTFcc001.EOKFcc001_BOOL"	
2			
3 aaa	GetAncestors(p2,Function)	{"EOCHcc001","EOKFcc001","EOTFcc001","EOGLcc002","EOTLCcc001","EOATMcc001"}	

Just do it simply.. this work?

↑ Name	Formula	Value
1 p0	subString(GetMRD(p4,Function),2,1000)+"_BOOL"	"EOATMcc001.EOTLCcc001_1.EOGLcc002.EOBGcc001_BOOL"
2		

No.

Probably do get ancestors

For CH1 tag

1 p0	subString(GetMRD(p4,Function),2,1000)+"_BOOL"	"EOATMcc001.EOTLCcc001_1.EOGLcc002.EOBGcc001_BOOL"
2		
3 cccc	GetParent(p2,Function)	"EOKFcc001"
4 bbb	GetConnectedObjects(p2,"CH1toBG1")	{"EOBGcc001"}
5 aaa	GetAncestors(p2,Function)	{"EOCHcc001","EOKFcc001","EOTFcc001","EOGLcc002","EOTLCcc001","EOATMcc001"}

THIS IS RIGHT

P is self.

↑ Name	Formula	Value	Type
1 p0	subString(GetMRD(First(bbb),Function),2,1000)+"_CH"	"EOATMcc001.EOTLCcc001_1.EOGLcc002.EOBGcc001_CH"	String
2			
3 aaa	GetAncestors(p2,Function)	{"EOCHcc001","EOKFcc001","EOTFcc001","EOGLcc002","EOTLCcc001","EOATMcc001"}	List
4 bbb	GetConnectedObjects(p2,"CH1toBG1")	{"EOBGcc001"}	List
5 cccc	GetParent(p2,Function)	"EOKFcc001"	String

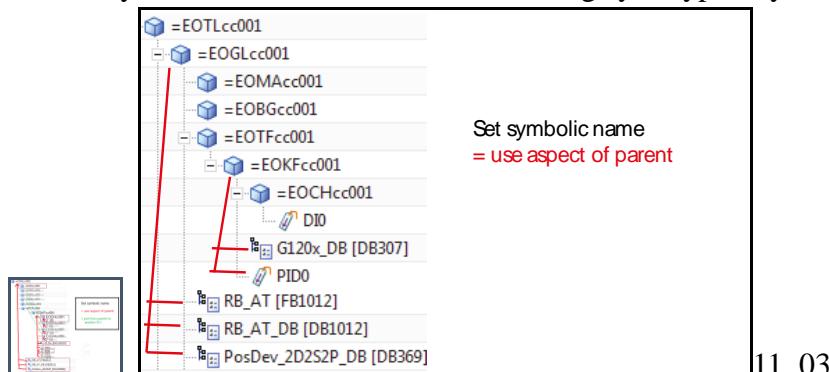
Symbolic Name

EOATMcc001.EOTLCcc001_1.EOGLcc002.EOBGcc001_CH

No.. doing something wrong... ask andreas 9 may.

11.1a. Create symbolic names with expressions (SW blocks, tags (PID0) 20160422

For the symbolic names of SW blocks and tags you typically use the aspect chain of the partent EO.



11_03

Set symbolic names using expressions (no ports) for

11.1.1. SW blocks (4)

11.1.2. PID0

11.1. SW blocks (4)

aaa

Function Aspect Navigator

The screenshot shows the EPLAN Function Aspect Navigator for a function named "aaa". On the left, the tree view shows a hierarchy of blocks, including "Unassigned", "=_001", "=_004", "=ConveyorF001", "=MotorF001", "=SensorF001", "=DrivePowerF001", "=DriveControlF001", "=EOCHcc001", "G120x", "PID0", "EPLAN Page Macro", "RB_AT", "PosDev_2D2S2P", and "RB_AT_DB". A red box highlights the "Select Object" step in the "Reference Attribute" dialog. The "Referenced Object" section shows "Select Object" and "Select Engineering Object (1)" (which is highlighted). The "Engineering Object Attributes" table shows the following data:

Title/Alias	Value	Units	Type	R...
Aspect Function				
Designated	True		Boolean	
Designation	ConveyorF001		String	
Multi-level Reference Designation	=_001._004.ConveyorF001		String	
Name	ConveyorF001		String	
Parent	_004		String	

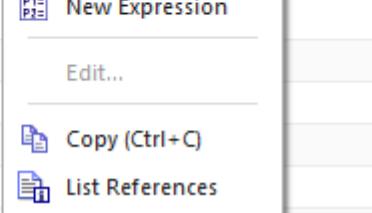
	Name	Formula	Value	Type
1	p0	bbb	"001._004.ConveyorF001"	String
4	bbb	subString(aaa, 3, 1000000)	"001._004.ConveyorF001"	String
3	aaa	p2	"=_001._004.ConveyorF001"	String

Symbolic Name	RB_AT	String	
Category (optional)	Type		
Title/Alias	Symbolic Name		
Data Type	String		
<input type="radio"/> Value <input checked="" type="radio"/> Expression Formula			
Expression Formula	001._004.ConveyorF001 =		
Accept Edit			

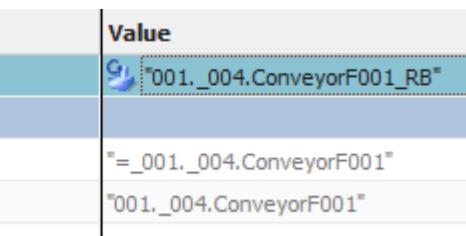
Symbolic Name	001._004.ConveyorF001	String	
Category (optional)	Type		
Title/Alias	Symbolic Name		
Data Type	String		
<input type="radio"/> Value <input checked="" type="radio"/> Expression Formula			
Expression Formula: p0	001._004.ConveyorF001 =		
Break Expression Link			
Accept Edit			

I forgot to add the “.RB”.

So tried to edit.. cant.

	Name	Formula	Value
1	p0	bbb	"001._004.ConveyorF001"
2			
3	aaa	p2	"=_001._004.ConveyorF001"
4	bbb	subString(aaa, 3, 1000000)	"001._004.ConveyorF001"
			 <ul style="list-style-type: none"> New Expression Edit... Copy (Ctrl+C) List References

Just edit p0.

	Name	Formula	Value		
1	p0	bbb+_RB"	"001._004.ConveyorF001_RB"		
2					
3	aaa	p2	"=_001._004.ConveyorF001"		
4	bbb	subString(aaa, 3, 1000000)	"001._004.ConveyorF001"		
			 <ul style="list-style-type: none"> New Expression Edit... Copy (Ctrl+C) List References 		
			<table border="1"> <tr> <td>Symbolic Name</td> <td>001._004.ConveyorF001_RB</td> </tr> </table>	Symbolic Name	001._004.ConveyorF001_RB
Symbolic Name	001._004.ConveyorF001_RB				

Automation Navigator

Name
CD000101;1-AD_1_CD_4_WS_5...
Unassigned
PLC HW
S7-300-Station_2
S7-300-Station_2
S7300/ET200M statio...
S7300/ET200M statio...
PLC data types
Program blocks
G120x_DB [DB...
001._004.Con...
G120x [FB307]
PosDev_2D2S...
PosDev_2D2S...
Main [OB1]
Local modules
Rail_0
PLC_2
PLC tags
Subnets

Actions

Configurations

Name	Value
Global Sym...	
Tags	FC_left, FC_left, FC_right, FC_right
FB/IDB	
FC	
DB	
Ports	Caller P..., Calle..., RB_AT_DB
Operand...	

Interface

Name	Defa...	Data ...	Comments
Temp			
OB1_EV_CLASS	Byte		Bits 0-3 = 1 (Coming eve...
OB1_SCAN_1	Byte		1 (Cold restart scan 1 of ...
OB1_PRIORITY	Byte		Priority of OB Execution
OB1_OB_NUMBR	Byte		1 (Organization block 1, ...
OB1_RESERVED_1	Byte		Reserved for system
OB1_RESERVED_2	Byte		Reserved for system
OB1_PREV_CYCLE	Int		Cycle time of previous O...
OB1_MIN_CYCLE	Int		Minimum cycle time of ...

PLC Code

```

1 Network 1:-->
2      CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
3      -----
4

```

Need to do for the rest. Set the symbolic names for the following SW blocks / IDB's.

RB_AT	AD_GetDesignation(AD_GetEngObject(),Function)+"_RB"
RB_AT_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_RBDB"
PosDev_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_POSDEVDB"
G120x_DB	AD_GetDesignation(AD_GetEngObject(),Function)+"_G120DB"

11.2. DWord tag (PID0)

For PID0 set the symbolic name to:

The screenshot shows the EPLAN Function Aspect Navigator on the left and the Properties dialog on the right.

Function Aspect Navigator:

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- Unassigned
- =_001
- =_004
 - =ConveyorF001
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001
 - =DriveControlF001
 - +EOCHcc001
 - G120x
 - PID0
 - EPLAN Page Macro
 - RB_AT
 - PosDev_2D2S2P
 - RB_AT_DB

Properties Dialog - PLC Tag Attributes:

Title/Alias	Value	Units	Type	R...	D...	I...
Address			String			
Address	0		Integer			
AddressOffsetBit	0		Integer			
AddressOffsetByte	0		Integer			
Data Type	DWord		String			
Memory Section	Input		String			
General			String			
Description	PID0 description		String			
ID	009.Tag1		String			
Name	PID0		String			
Symbolic Name	PID0sn		String			

Comments:

- Bits 0-3 = 1 (Coming eve...)
- 1 (Cold restart scan 1 of ...)
- Priority of OB Execution
- 1 (Organization block 1, ...)
- Reserved for system
- Reserved for system
- Cycle time of previous O...
- Minimum cycle time of ...
- "orF001_RB", "RB_AT"

Formula... dropdown menu:

- Function...
- Extended Text...
- Reference
 - bbb+_RB*
 - bbb
 - GetListElementAt(hhh,1)
 - iii
- Make Constant

The screenshot shows the EPLAN Function Aspect Navigator on the left and the Reference Attribute dialog on the right.

Function Aspect Navigator:

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- Unassigned
- =_001
- =_004
 - =ConveyorF001
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001
 - =DriveControlF001
 - +EOCHcc001
 - G120x
 - PID0
 - EPLAN Page Macro
 - RB_AT
 - PosDev_2D2S2P

Reference Attribute Dialog - Reference Object:

Select Object

Reference Attribute Dialog - Engineering Object Attributes:

Title/Alias	Value
Aspect Function	
Designated	True
Designation	DriveControlF001
Multi-level Reference Designation	=_001._004.ConveyorF001.DrivePowerF001.DriveControlF001
Name	DriveControlF001
Parent	DrivePowerF001

Expressions

	Name	Formula	Value	Units	Dimensionality	Type
1	p0	mm	mm			String
2				mm	Length	Number
3	ggg	p2	"=_001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String

	Name	Formula	Value	Units	Dimens
1	p0	subString("ggg", 3, 100)	"g"	mm	Length
2					
3	ggg	p2	"_001._004.ConveyorF001.DrivePowerF001.DriveControlF001"		

Edit dialog for p0:

Formula: subString

str: ggg

ilow: 3

ihigh: 100

Buttons: OK, Apply, Cancel

Change to this and STILL SHOWS AN ERROR FOR p0!!!

	Name	Formula	Value
1	p0	subString("ggg", 3, 100)	"g"
2			
3	ggg	p2	"_001._004.ConveyorF001.DrivePowerF001.DriveControlF001"

Edit dialog for p0:

Formula: subString(ggg, 3, 100) + "_PID0"

Click ok and get this.....

Symbolic Name: PID0sn

Category (optional): General

Title/Alias: Symbolic Name

Data Type: String

Value (radio button selected)

Expression Formula: DriveControlF001_PID0 = subString(ggg, 3, 100) + "_PID0"

Accept Edit

Click the green arrow and ok. Absolute chaos.

Symbolic Name: 001._004.ConveyorF001.DrivePowerF001.DriveControlF001_PID0

Category (optional): General

Title/Alias: Symbolic Name

Data Type: String

Value (radio button selected)

Expression Formula: p0

Break Expression Link

Accept Edit

Network 10: RB_AT

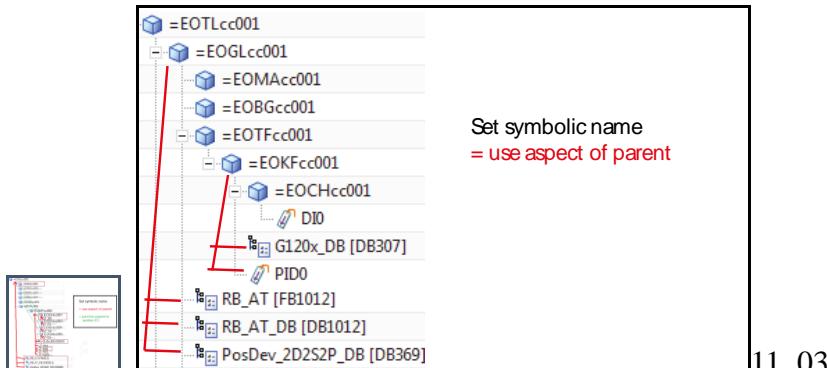
```

CALL "G120x", "G120x_DB"
INPUT_ADDR := "001._004.ConveyorF001.DrivePowerF001.DriveControlF001_PID0"
FAST_SPEED := Real#20.0
SLOW_SPEED := REAL#20.0

```

11.1b. Create symbolic names with expressions (SW blocks, tags (PID0))

For the symbolic names of SW blocks and tags you typically use the aspect chain of the parent EO.



11_03

Set symbolic names using expressions (no ports) for

11.1.1. SW blocks (4)

11.1.2. PID0

11.1. SW blocks (4) >>> FIX CALL??

Set the symbolic names for the following SW blocks / IDB's.

RB_AT	<code>AD_GetDesignation(AD_GetEngObject(),Function)+".RB"</code>
RB_AT_DB	<code>AD_GetDesignation(AD_GetEngObject(),Function)+".RBDB"</code>
PosDev_DB	<code>AD_GetDesignation(AD_GetEngObject(),Function)+".POSDEVDB"</code>
G120x_DB	<code>AD_GetDesignation(AD_GetEngObject(),Function)+".G120DB"</code>

11_04

Expressions			
Name	Formula	Value	Type
1 p46	rrrr	"=EOATMcc001.EOTLcc001.EOGLcc001.RB"	String
26 rrrr	<code>AD_GetDesignation(AD_GetEngObject(),Function)+".RB"</code>	"=EOATMcc001.EOTLcc001.EOGLcc001.RB"	String

11_05

11.2. DWord tag (PID0) >>> FIX CALL??

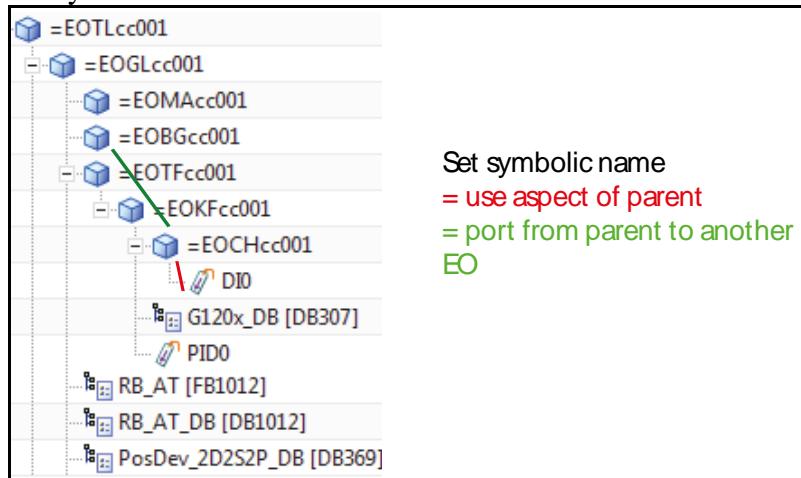
For PID0 set the symbolic name to:

`AD_GetDesignation(AD_GetEngObject(),Function)+".PID0"`

11_06

11.2a. Create symbolic names with ports/links (CH0) 20160422

CH refers to the data channel. BG is the name of the physical sensor. You want to use the BG aspect chain as the symbolic name for CH.



11_07

In this section you:

1. Create ports BG1toCH1 and CH1toBG1
2. Link the ports.
3. Change DI1 symbolic name.

1. Create ports BG1toCH1 and CH1toBG1

For EO BG1 create port **BG1toCH1**.

The screenshot shows the Function Aspect Navigator on the left and a Port configuration dialog on the right.

Function Aspect Navigator:

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- Unassigned
 - _001
 - _004
 - =ConveyorF001
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001
 - =DriveControlF001
 - =EOHcc001
 - DII
 - G120x
 - PIDO

Port Configuration Dialog:

Properties:

- Name: BG1toCH1

Configuration:

- Port Type: EO
- Connection Type: Any
- Direction: Undirected
- Cardinality: N

Connectable Types:

- Program Block
- Tag_Proxy
- UDT_Proxy

The screenshot shows the Ports Manager window.

Source: _007

Ports:

Port	Co...	C...	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined							
- BG1toCH1			EO	Any	Undirected	N	OB_Proxy, Device Function, UDT_Proxy, Device, IDB_Proxy, Tag_Proxy, EO_Proxy, FB_Proxy, FC_Proxy, DB_Proxy, Program Block
- System Defined							
- Tag Address			Tag	IO Device	Undirected	N	Tag Address
- TIA Link			TIA Link	TIA Link FLP	Undirected	1	TIA Link A
_007			EO	Any	Undirected	N	OB_Proxy, Device Function, UDT_Proxy, Device, IDB_Proxy, Tag_Proxy, EO_Proxy, FB_Proxy, FC_Proxy, DB_Proxy, Program Block

For EO CH1 create port **CH1toBG1**.

The screenshot shows the Function Aspect Navigator on the left and a Port configuration dialog on the right.

Function Aspect Navigator:

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- Unassigned
 - _001
 - _004
 - =ConveyorF001
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001
 - =DriveControlF001
 - =EOHcc001
 - DII
 - G120x
 - PIDO

Port Configuration Dialog:

Properties:

- Name: CH1toBG1

Configuration:

- Port Type: EO
- Connection Type: Program Block
- Direction: Undirected
- Cardinality: N

Connectable Types:

- OB_Proxy

The screenshot shows the Ports Manager window.

Source: EOHcc001

Ports:

Port	Connected Ob...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined							
- CH1toBG1			EO	Program Block	Undirected	N	OB_Proxy, FB_Proxy, FC_Proxy, DB_Proxy, IDB_Proxy
- System Defined							
- TIA Link			TIA Link	TIA Link FLP	Undirected	1	TIA Link A
EOHcc001			EO	Any	Undirected	N	OB_Proxy, Device Fu...

2. Connect ports

1. Connect the ports.

The screenshot shows the EPLAN software interface for connecting ports. At the top, there are tabs for "Manual Connection" and "Dynamic Connection". A central dialog box titled "Manual Connection" is open, showing a tree view of objects under "Source" (CH1toBG1) and "Target" (Select Object). A table lists connected ports, with one entry selected: "BG1toCH1" connected to "EOCHcc001" with port type "EO". To the right, the "Ports Manager" window is visible, displaying a table of all connections. Below the main windows, a "Ports Manager" section shows the "Source" (EOCHcc001) and a detailed "Ports" table.

Manual Connection

Ports Manager

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality
User Defined CH1toBG1	_007	BG1toCH1	EO	Program Block	Undirected	N
				Any	Undirected	N

3. Change DI1 symbolic name

For DI1 set the symbolic name to name of BG1 + CH:

I will not do it this way....

	Name	Formula	Value	Ur	Dir	Type
1	p12	iii	"001_004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
9	iii	subString(fff, 3, 1000000)	"001_004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
6	fff	GetMRD(eee,Function)	"=_001_004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
5	eee	GetListElementAt(hhh,1)	"_009"			String
8	hhh	GetConnectedObjects(p10,"GLtoKF")	{"_009"}			List

Try simpler way... not sure will work though in template. start

The screenshot shows the EPLAN software interface. On the left is the 'Function Aspect Navigator' tree view, which includes sections for CD000101;1-AD_1_CD_4_WS_5_SS_20160418, Unassigned, and various functional blocks like =_001, =_004, ConveyorF001, MotorF001, SensorF001, DrivePowerF001, DriveControlF001, EOCHcc001, G120x, PID0, EPLAN Page Macro, and RB_AT. In the center is the 'Reference Attribute' dialog, which has a 'Referenced Object' section with a 'Select Object' button and a 'Select Object' section with a 'Select Engineering Object (1)' button. Below that is the 'Engineering Object Attributes' table, which lists attributes for the selected object: Title/Alias (Aspect Function), Designated (True), Designation (SensorF001), Multi-level Reference Designation (=_001_004.ConveyorF001.SensorF001), Name (SensorF001), and Parent (ConveyorF001). At the bottom is the 'Expressions' table, which contains three rows: p2 (Formula: "", Value: ""), mmm (Formula: p6, Value: "=_001_004.ConveyorF001.SensorF001"), and a summary row for p2 (Value: "", Units: mm, Dimensionality: Length, Type: Number).

	Name	Formula	Value
1	p2	""	""
2	mmm	p6	"=_001_004.ConveyorF001.SensorF001"

	Name	Formula	Value	Units	Dimensionality	Type
1	p2	subString(mmm,3,1000)+"_CH"	""			String
2	mmm	p6	"=_001_004.ConveyorF001.SensorF001"	mm	Length	Number

So error above? NO... just click OK and accepted. Expression are chaos, absolute chaos....

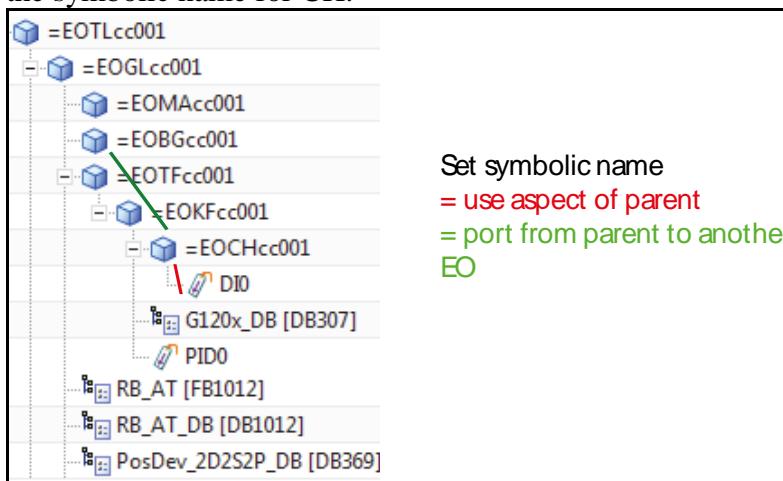
The screenshot shows the 'Expression Formula' dialog. It has tabs for 'Symbolic Name' (001_004.ConveyorF001.SensorF001_CH), 'Value' (001_004.ConveyorF001.SensorF001_CH), and 'Accept Edit'. Below the tabs are fields for 'Category (optional)', 'Title/Alias', 'Data Type', and 'Accept Edit'. A large text area at the bottom contains the expression: 'CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB" LS_ADV := "001_004.ConveyorF001.SensorF001_CH" SW_FS_ADV := "slow_forw"'. A green arrow icon is visible on the right.

Click green arrow.

The screenshot shows the 'Expression Formula' dialog with a green checkmark icon indicating successful acceptance. The dialog fields are identical to the previous screenshot, and the expression text area remains the same: 'CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB" LS_ADV := "001_004.ConveyorF001.SensorF001_CH" SW_FS_ADV := "slow_forw"'. The green checkmark icon is located in the bottom right corner of the dialog.

11.2b. Create symbolic names with ports/links (CH0)

CH refers to the data channel. BG is the name of the physical sensor. You want to use the BG aspect chain as the symbolic name for CH.



Set symbolic name
= use aspect of parent
= port from parent to another EO

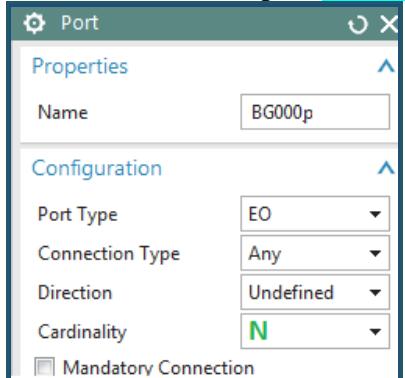
11_07

In this section you:

1. Create ports **BG1toCH1** and **CH1toBG1**
2. Link the ports.
3. Change DI1 symbolic name.

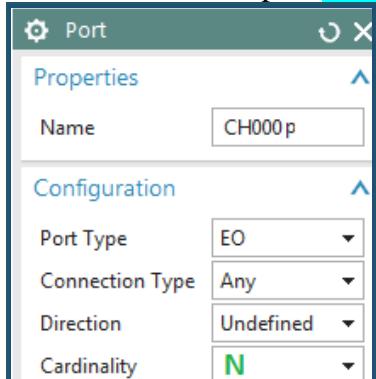
1. Create ports **BG1toCH1** and **CH1toBG1**

For EO BG1 create port **BG1toCH1**.



11_08

For EO CH1 create port **CH1toBG1**.



11_09

2. Connect ports

1. Connect the ports.

Source

```
=ATM01.TL01.GL01.TF01.KF01.CH000/+?????.CH099/-?????.CH099
```

Ports

Port	Connected Object	Connected Port
User Defined CH000p		

Actions

- Manual Connection
- Dynamic Connection

Manual Connection

Manual Connection

11_10

Manual Connection

Source: =BG00

Select Port (1)

Target

Select Object (1)

Select Port

Port	Connected Object	Connected Port	Port Type
BG102			EO
BG000p			EO

11_11

Result.

Source

```
=ATM01.TL01.GL01.TF01.KF01.CH000/+?????.CH099/-?????.CH099
```

Ports

Port	Connected Object	Connected Port	Port Type	Connection Ty...	Direc...	Cardi...	Man...	Connectable t...
User Defined CH000p	=ATM01.TL01.GL01.BG00/+?????.BG098/-?????.BG098	BG000p	EO	Any	Undef...	N		Device Functio...

11_12

Source

```
=ATM01.TL01.GL01.BG00/+?????.BG098/-?????.BG098
```

Ports

Port	Connected Object	Connected Port	Port Type	Connection Ty...	Direc...	Cardi...	Man...	Connectable t...
User Defined BG000p	=ATM01.TL01.GL01.TF01.KF01.CH000/+?????.CH099	CH000p	EO	Any	Undef...	N		Device Functio...

11_13

3. Change DI1 symbolic name >> FIX CALL??

For DI1 set the symbolic name to:

```
AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH1toBG1")),Function)+"_CH"
```

Name	Formula
1 p4	CH000
2 CH000	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH000p")),Function)+"_CH"

Value

Value	Type
=ATM01.TL01.GL01.BG00_CH	String
=ATM01.TL01.GL01.BG00_CH	String

11_14

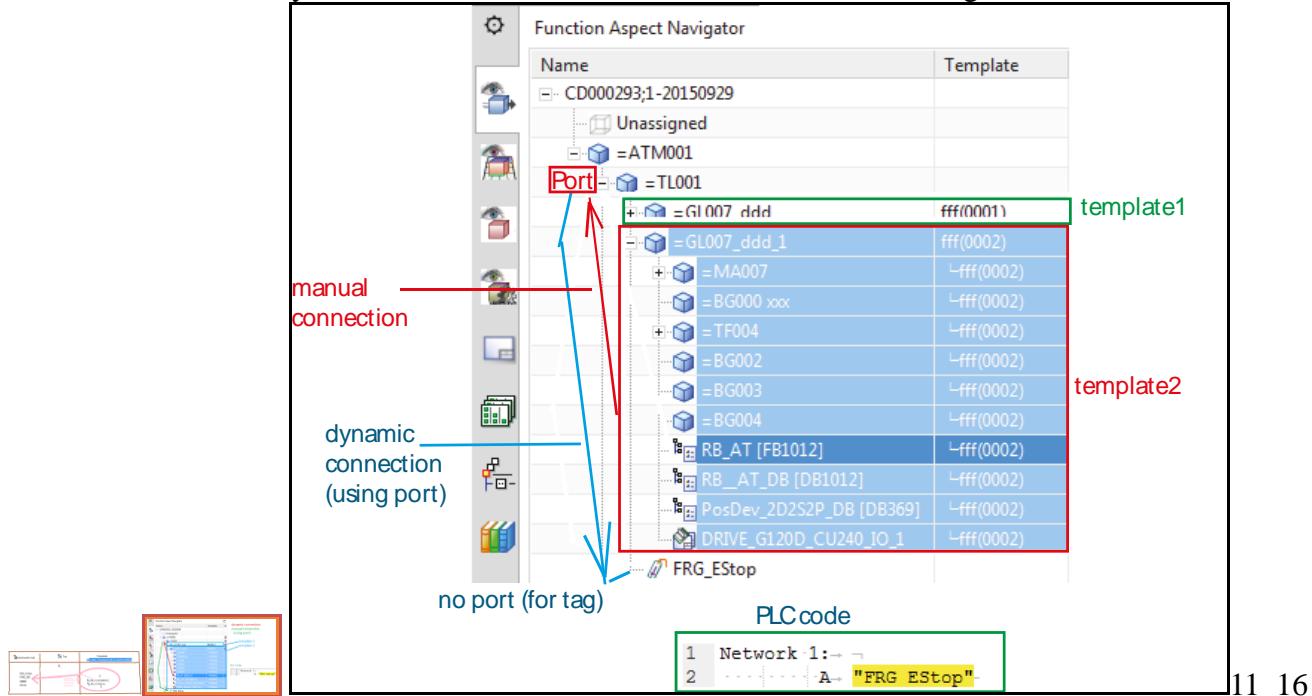
PLC Tag Attributes

Title/Alias	Value	Type	R...
Symbolic Name	=ATM01.TL01.GL01.BG00_CH	String	

11_15

11.3a. Create dynamic connection for automation-tag (FRG_EStop) 20160422

You need to create a dynamic connection from RB_AT to the referenced tag.



In this section you:

1. Create port **TLtoFRGEStop** port (in EO TL).
2. Manual connect TL01 to FRG_Estop using the port.
3. Create RB_AT to FRG_Estop dynamic connection.

1. Create port **TLtoFRGESTop** (in EO TL)

The screenshot shows the Function Aspect Navigator and Port configuration dialog.

Function Aspect Navigator:

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- Unassigned
- =_001
- =_004
 - =ConveyorF001
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001
 - =DriveControlF001
 - =EOCHcc001
 - D11
 - G120x
 - PID0

Port Configuration Dialog:

- Properties:**
 - Name: TLtoFRGESTop
- Configuration:**
 - Port Type: EO
 - Connection Type: Any
 - Direction: Undirected
 - Cardinality: N
- Connectable Types:**
 - Program Block
 - Tag_Proxy
 - UDT_Proxy

Ports Manager:

Ports							
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
TLtoFRGESTop			EO	Any	Undirected	N	OB_Proxy, Device Function, UDT_Proxy, Device, IDB_Proxy,...
System Defined							
Tag Address			Tag	IO Device	Undirected	N	Tag Address
TIA Link			TIA Link	TIA Link FLP	Undirected	1	TIA Link A
=_004	FB019	FAST_SPEED	EO	Any	Undirected	N	OB_Proxy, Device Function, UDT_Proxy, Device, IDB_Proxy,...
			INTERNAL	PLC_EXPRESSION_PARA...	Undirected	1	OB_Proxy, Device Function, Any, Operand, UDT_Proxy, ID...

2. Manual connect TL01 to FRG_Estop using the port

Automation Navigator

- Name
 - CD000101;1-AD_1_CD_4_WS_5_SS_20160418
 - + Unassigned
 - PLC HW
 - S7-300-Station_2
 - S7-300-Station_2
 - S7300/ET200M station_1
 - S7300/ET200M station_1
 - PLC data types
 - Program blocks
 - G120x_DB [DB2]
 - 001..004.ConveyorF001_R
 - G120x [FB307]
 - PosDev_2D2S2P_DB [DB9]
 - PosDev_2D2S2P [FB369]
 - Main [OB1]
 - Local modules
 - Rail_0
 - PLC_2
 - PLC tags
 - !o! FRG_Estop
 - !o! FRG_BS

Manual Connection

Source

TLtoFRGEStop

Target

Select Object (1)

Port	Connected Object	Connected Port	Port Type	Conn
FRG...	FB019	FRG_Estop	EO	Tag_P
			EO	

Add Connection to List

List

Port	Connected Object	Connected Port

Ports Manager

Source

.004

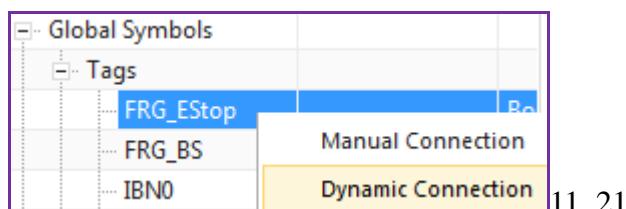
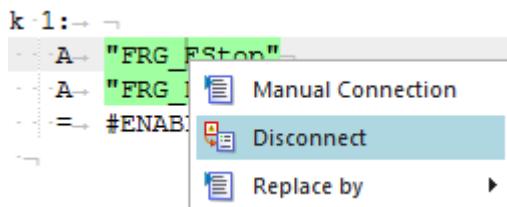
Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
TLtoFRGEStop	FRG_Estop	FRG_Estop	EO	Any	Undirected	N	OB_Proxy, Device Function, UDT_Proxy, Device, IDB_Proxy
				Tag_Proxy	Undirected	N	Tag, Any, Operand

3. Create RB_AT to FRG_EStop dynamic connection

20160209 TERRY: you have to create dynamic connection here.. you can't in template editor. Do not have to assign secondary expression.

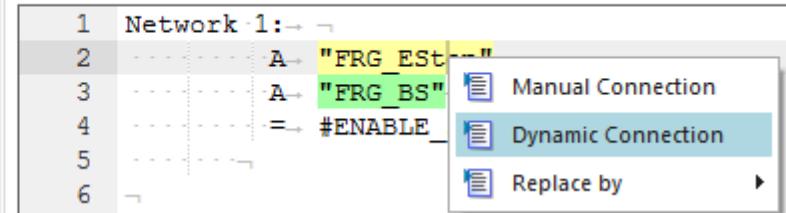
1. In the row for FRG_EStop right click and select "Dynamic Connection" or right-click on the tag in the code window. Note: If you do not see the popup "Dynamic connection", then disconnect first.



11_21

Name	Value	Type
Global Sym...		
Tags		
FRG_EStop		
FRG_BS		
IBNO		
recet	recet	Bool

PLC Code



Stuff Already there.....

Expressions		
↑ Name	Formula	Value
1	""	""
2 aaa	p2	"=001._004.ConveyorF001"
3 bbb	subString(aaa, 3, 1000000)	"001._004.ConveyorF001"
4 p0	bbb+_RB"	"001._004.ConveyorF001_RB"

Do something like this? NO

	↑ Name	Formula	Value	Ur	Dir	Type
1	p12	iii	"001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
9	iii	subString(fff, 3, 1000000)	"001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
6	fff	GetMRD(eee,Function)	"=_001._004.ConveyorF001.DrivePowerF001.DriveControlF001"			String
5	eee	GetListElementAt(hhh,1)	"_009"			String
8	hhh	GetConnectedObjects(p10,"GLtoKF")	{"_009"}			List

P4 is SELF.

2 ddd	GetAncestors(p4,Function)	{"FB019","_005","_004","_001"}
-------	---------------------------	--------------------------------

1	eee	nth(2,ddd)	"_005"				String	▼
---	-----	------------	--------	--	--	--	--------	---

Should be one higher...

7	eee	nth(3,ddd)	"_004"				String
---	-----	------------	--------	--	--	--	--------

6 fff	GetConnectedObjects(eee,"TltoFRGEStop")	{"\$REF\$"}		List	▼
-------	---	-------------	--	------	---

This?????????????????????????????????

1	eee2	nth(3,ddd)	_004"				String
2	fff3	GetPort(eee2,"TLtoFRGEStop")	"_004.Port1"				String

MAYBE THIS, just playing around this happened. Seems what I want?

7	fff	GetConnectedObjects(eee2,"TltoFRGEStop")	 {"ST004.Tag10"}	List
6	eee2	nth(3,ddd)	"_004"	String
4	ddd	GetAncestors(p4,Function)	{"FB019","_005","_004","_001"}	List

Wow... seems like maybe works?

Configurations

[Interface](#)

Name	Value	Type
- Global Sym...		
- Tags		
FRG_...	FRG_EStop	Bool
FRG_...	FRG_BS	Bool
IBNO	IBNO	Bool

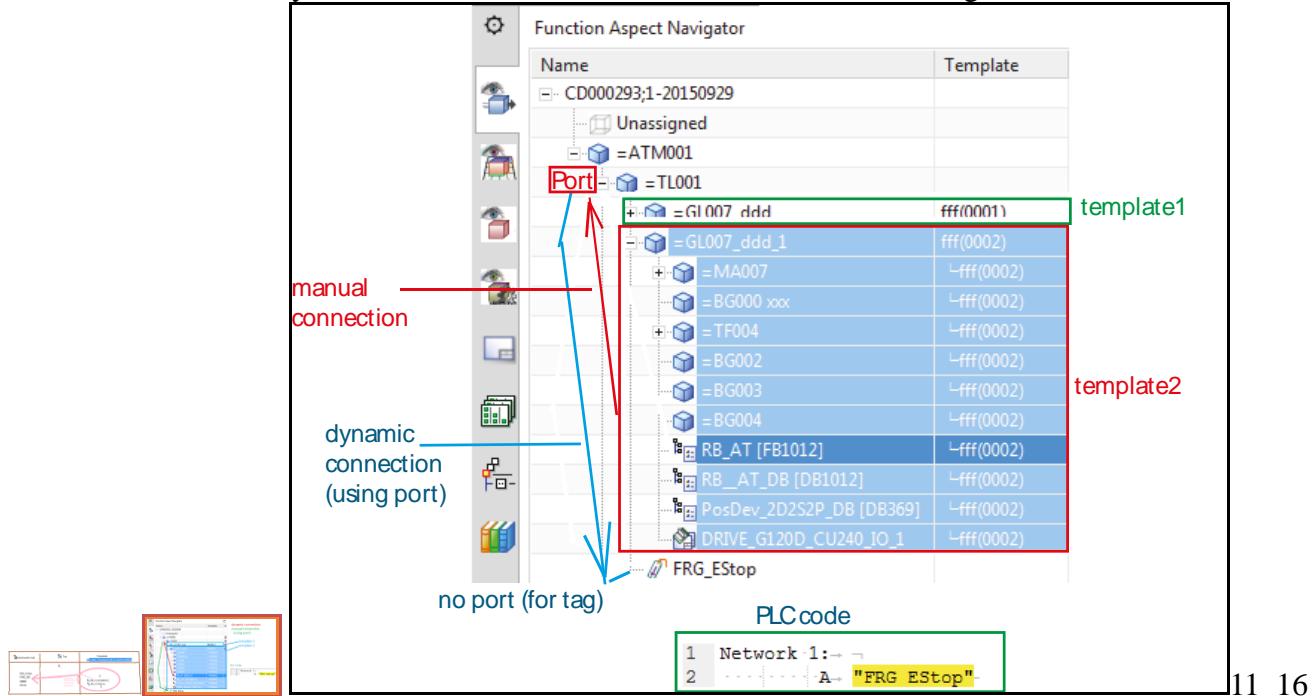
```
PLC Code

1 Network 1: →
2 ..... A → "FRG_EStop"
3 ..... A → "FRG_BS"
4 ..... = #ENABLE_SAFETY_
5
```

Now need to try in template. All of these expressions.

11.3b. Create dynamic connection for automation-tag (FRG_EStop)

You need to create a dynamic connection from RB_AT to the referenced tag.



11_16

In this section you:

1. Create port **TLtoFRGEStop** port (in EO TL).
2. Manual connect TL01 to FRG_Estop using the port.
3. Create RB_AT to FRG_Estop dynamic connection.

1. Create port **TLtoFRGEStop** (in EO TL)

The screenshot shows the 'Port' configuration dialog. The 'Properties' tab is selected. The 'Name' field is set to 'TLtoFRGEStop'. The 'Configuration' tab is selected. The 'Port Type' dropdown is set to 'EO'. The 'Connection Type' dropdown is set to 'Any'. The 'Direction' dropdown is set to 'Undefined'. The 'Cardinality' dropdown is set to 'N'. The 'Mandatory Connection' checkbox is unchecked. The '11_17' label is located at the bottom right of the dialog.

11_17

2. Manual connect TL01 to FRG_Estop using the port

The 'Ports' window displays a table with columns: Port, Connected Object, and Connected Port. A row under 'User Defined' shows 'FRG_Estop' connected to 'FRG_Estop_sn'. Below the table, there are two buttons: 'Manual Connection' and 'Dynamic Connection'.

11_18

The 'Manual Connection' dialog box has two sections: 'Source' and 'Target'. Under 'Source', 'Select Port (I)' is checked. Under 'Target', 'Select Object (I)' is checked. In the 'Select Port' table, 'FRG_Estop' is selected with 'Port Type' set to 'EO'.

11_19

The 'Source' code editor contains the assignment: '=ATM01.TL01/+?????.TL002/-?????.TL002'. Below it, the 'Ports' table shows a connection from 'ITLoFRGEStop' to 'FRG_Estop_sn' with 'Port Type' as 'EO'.

11_20

3. Create RB_AT to FRG_Estop dynamic connection

20160209 TERRY: you have to create dynamic connection here.. you cant in template editor. Do not have to assign secondary expression.

1. In the row for FRG_Estop right click and select "Dynamic Connection" or right-click on the tag in the code window. Note: If you do not see the popup "Dynamic connection", then unconnect first.

The 'Global Symbols' window shows a tree structure with 'Tags'. The 'FRG_Estop' tag is selected, and a context menu is open with options: 'Manual Connection' and 'Dynamic Connection'.

11_21

The ladder logic diagram shows a coil labeled 'Manual Connection' connected to a terminal labeled 'Dynamic Connection'. The coil is connected to a normally open contact 'FRG_Estop' and a normally closed contact 'FRG_BS'. The rung also includes a coil for '#ENABLE_S'.

11_22

2. Enter the following expression.

```
First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)),"TLtoFRGEStop"))
```

The 'Expressions' window shows a table with 'Name' and 'Formula' columns. A new entry 'aaa' is selected, with its formula being 'First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)),"FRG_Estop"))'. Below the table, a value table shows 'Value' as 'ST001.Tag18' and 'Type' as 'String'.

11_23

The 'Configurations' window shows 'Global Symbols' with 'FRG_Estop' and 'FRG_BS' assigned to 'FRG_Estop_sn'. The 'Interface' window shows the ladder logic with 'FRG_Estop_sn' and 'FRG_BS' connected to the 'FRG_Estop' coil in Network 1.

11_24

>>FBm \$\$\$4/5 14.4. create ports, expressions, dynamic connection 20160429

2, not 3

↑ Name	Formula	Value
1 p0	subString(GetMRD(GetParent(p2,Function),Function),3,1000)+"_FB"	"OATMcc001.EOTLCcc001_1.EOGLcc002_FB"
Symbolic Name	EOATMcc001.EOTLCcc001_1.EOGLcc002_FB	
p0	subString(GetMRD(GetParent(p2,Function),Function),2,1000)+"_DB"	"EOATMcc001.EOTLCcc001_1.EOGLcc002_DB"
DB of	EOATMcc001.EOTLCcc001_1.EOGLcc002_FB	
Symbolic Name	EOATMcc001.EOTLCcc001_1.EOGLcc002_DB	
CALL - "EOATMcc001.EOTLCcc001_1.EOGLcc002_FB", -"EOATMcc001.EOTLCcc001_1.EOGLcc002_DB"		
↑ Name	Formula	Value
1	""	""
2 aaa	GetPort(GetParent(p4,Function),"TLtoDB")	"TLtoDB"
3 p0	subString(GetMRD(GetParent(p2,Function),Function),2,1000)+"_DB"	"EOATMcc001.EOTLCcc001_1.EOGLcc002_DB"

Source

```
DB026
```

Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type
User Defined				
DBtoTL	EOTLCcc001	TLtoDB	EO	Any
				Program Block

↑ Name	Formula	Value
1	""	""
2 bbb	GetConnectedObjects(p1,"TLtoDB")	{"DB026"}

Caller P... OB1_MIN_CYCLE Int Minimum cycle time of ...

Calle... EOATMcc001.EOTLCcc001_1.EOGLcc002_DB PLC Code

Operand...

Rules

Calls

```
1 Network 1:-
2 CALL - "EOATMcc001.EOTLCcc001_1.EOGLcc002_FB", "EOATMcc001.EOTLCcc001_1.EOGLcc002_DB"
3
```

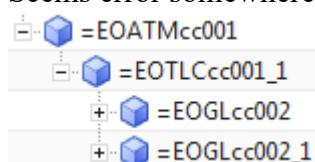
Copy. Result.

```
CALL - "EOATMcc001.EOTLCcc001_1.EOGLcc002_FB", -"EOATMcc001.EOTLCcc001_1.EOGLcc002_DB"
CALL - "EOATMcc001.EOTLCcc001_1.EOGLcc002_FB", -"EOATMcc001.EOTLCcc001_1.EOGLcc002_DB"
```

Change original and copied DB symname to 1,2. Result.

```
CALL - "EOATMcc001.EOTLCcc001_1.EOGLcc002_FB", -"EOATMcc001.EOTLCcc001_1.EOGLcc002_DB2"
CALL - "EOATMcc001.EOTLCcc001_1.EOGLcc002_FB", -"EOATMcc001.EOTLCcc001_1.EOGLcc002_DB1"
```

Seems error somewhere... aspect name is not appearing above.



Maybe its my mistake.. but the correct way to do things is something like that above.

FBm \$\$\$4/5 14.4. create ports, expressions, dynamic connection 20160426 #1

Lets try this again.. need to figure out how this works, this time with simpler example.

Drag and drop

The screenshot shows the Function Aspect Navigator window. It displays a tree structure of function blocks under a project named "CD000122;1-AD_1_CD_4_WS_5_SS_20160425". The tree includes nodes for "Unassigned", "=_001", "=_002", "=_003", "RB_AT", and "RB_AT_DB".

Or import.....

The screenshot shows the Automation Navigator window. On the left, the navigation tree shows a project structure with "PLC HW" expanded, showing "S7300/ET200M station_1" which contains "Program blocks", "Local modules", and "PLC tags". A specific program block named "Main [OB1]" is selected. On the right, the "Reuse Library" panel is open, showing the "Receive Data from TIA Portal" dialog. The "Type" field is set to "Software" and the "Target" field has "Select Object (1)" checked. The "TIA Portal Project" section shows the path "\192.168.154.128\TiaPortal_Projects\3333\Project1_ohne_startdrive_V13_SP1_V14\Project1_ohne_startdrive_V13_SP1_V14.ap14". The "Project Structure" pane shows the imported project structure with "Main [OB1]" highlighted.

The screenshot shows the "PLC HW" navigation tree. It includes "S7300/ET200M station_1" which contains "Program blocks" (with "Main [OB1]" selected), "PLC data types", "Local modules" (containing "Rail_0"), and "PLC tags".

1. RBAT FB, DB symnames

FB

↑ Name	Formula	Value
1 p0	subString(GetMRD(GetParent(p2,Function),Function),3,1000)+"_FB"	"001._002._003_FBFB"

p2 = RBAT_FB

Reference Attribute

Referenced Object

← Current Object

Engineering Object Attributes

Title/Alias	Value
+ Aspect Function	
- General	
Object Name	FB001
Reference Designation Set	=_001._002._003
Type	FB
+ Type	

Symbolic Name: 001._002._003_FBFB

Type: String

Category (optional)

Title/Alias

Data Type

Value Expression Formula

Expression Formula: p0

001._002._003_FBFB =

Break Expression Link

Accept Edit

DB

↑ Name	Formula	Value
1 p0	subString(GetMRD(GetParent(p2,Function),Function),3,1000)+"_DB"	"001._002._003_DB"

Symbolic Name: 001._002._003_DB

Type: String

Category (optional)

Title/Alias

Data Type

Value Expression Formula

Expression Formula: p0

001._002._003_DB =

Break Expression Link

Accept Edit

2. main -> RBAT DB call port

The screenshot shows the SIMATIC Manager interface with the 'Function Block Call' tab selected. A context menu is open over a line of code in the 'Main [OB1]' block. The menu options are:

- Replace by Method
- Replace by Call
- Create Method

The code in the block is:

```
1 Network 1:--> Main [OB1]
2     A-> "FC_left"
3     =-> "FC_right"
4
5
```

The screenshot shows the Function Aspect Navigator and the 'Replace by Call' dialog box.

Function Aspect Navigator:

Name	Description
CD000122;1-AD_1_CD_4_WS_5_SS_20160425	
Unassigned	
=_001	000344
=_002	000345
=_003	000346
RB_AT	
RB_AT_DB	

Replace by Call Dialog:

Properties:

- Name: Rule_1
- Selection: Object Selection
- Result: Select Program Block (1)

Buttons:

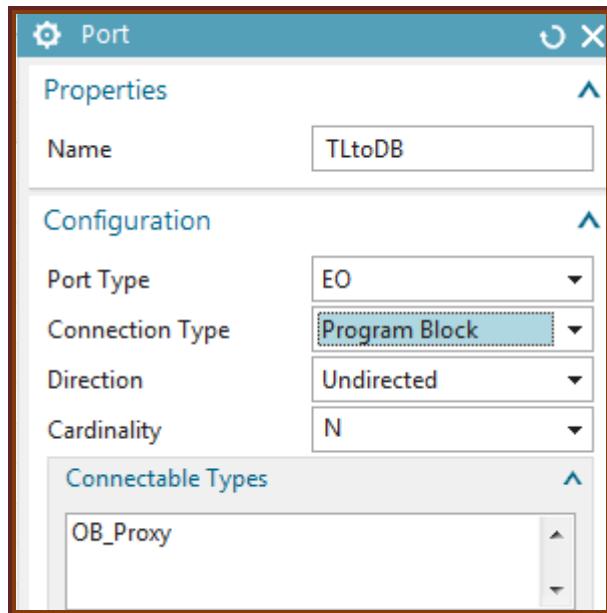
- P1=
- P2=
- Cancel
- OK

The screenshot shows the SIMATIC Manager interface with the 'Function Block Call' tab selected. The generated code in the 'Main [OB1]' block is:

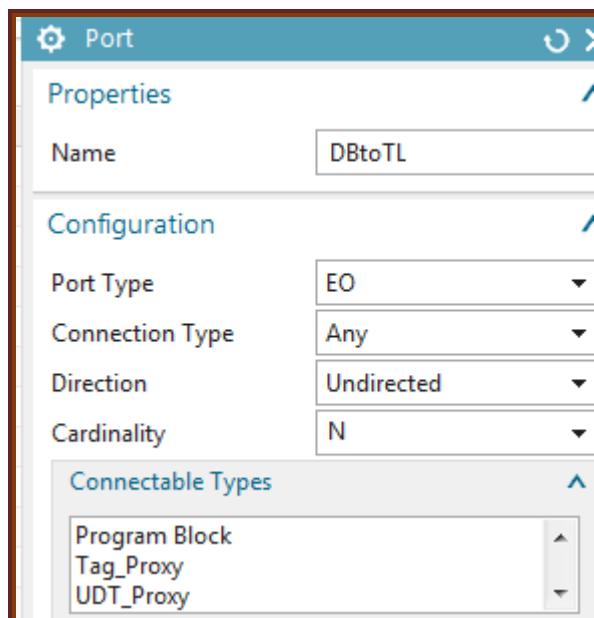
```
1 Network 1:-->
2     CALL    "001._002._003_FB", "001._002._003_DB"
```

3. TLtoDB (TL is _002)

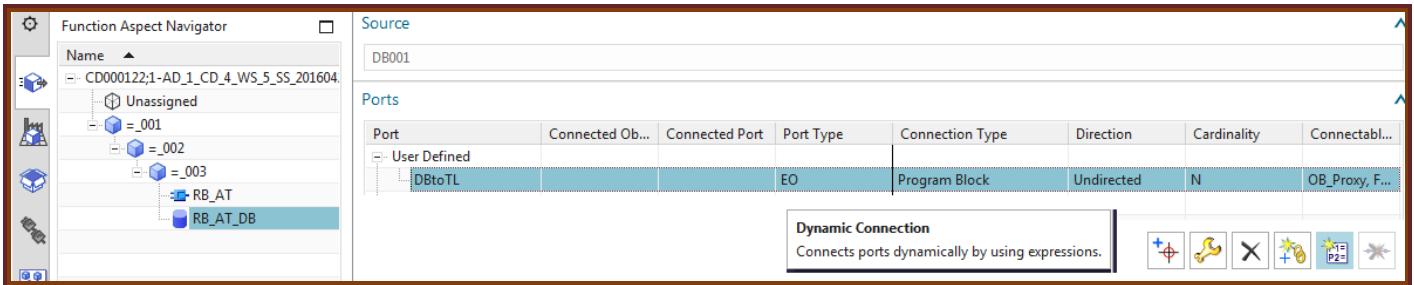
Connection type = program block.
Or DBtoTL is program block.
Cant have both as Any.



4. DBtoTL

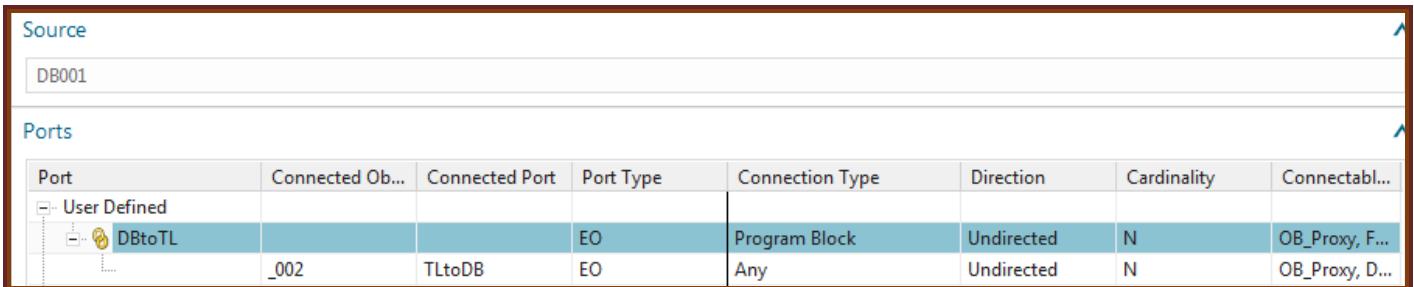


5. dynamic connection , getPort



For DB P4 = conveyor object name.

	Name	Formula	Value
1		""	""
2	aaa	GetPort(GetParent(p4,Function),"TLtoDB")	"TLtoDB"
3	p0	subString(GetMRD(GetParent(p2,Function),Function),3,1000)+"_DB"	"001._002._003_DB"



6. change main -> RBAT DB call port

Automation Navigator

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- PLC HW
 - S7-300-Station_2
 - S7-300-Station_2
 - S7300/ET200M station_1
 - PLC data types
 - Program blocks
 - Main [OBJ]
 - G120x [FB307]
 - G120x_DB [DB2]
 - PosDev_2D252P_DB [DB9]
 - RB_AT [FB1012]
 - PosDev_2D252P [FB369]
 - Local modules
 - Rail_0
 - PLC_2
 - PLC tags
 - S7300/ET200M station_1
 - PLC data types
 - Program blocks
 - G120x_DB [DB2]

Main [OB1]

Actions

Configurations

Name	Value	Type
Global Sym...		
Tags	FC_left, FC_right	Bool
FB/IDB		
FC		
DB		
Ports		
Caller P...	001..004.ConveyorF0...	Operand...
Rules		
Calls	Rule_1	
Methods		
Operand		

Interface

Name	Defa...	Data ...	Comments
Temp			
OB1_EV_CLASS	Byte	Bits 0-3 = 1 (Coming eve...	
OB1_SCAN_1	Byte	1 (Cold restart scan 1 of ...	
OB1_PRIORITY	Byte	Priority of OB Execution	
OB1_OB_NUMBR	Byte	1 (Organization block 1, ...	
OB1_RESERVED_1	Byte	Reserved for system	
OB1_RESERVED_2	Byte	Reserved for system	
OB1_PREV_CYCLE	Int	Cycle time of previous O...	
OB1_MIN_CYCLE	Int	Minimum cycle time of ...	

PLC Code

```

1 Network 1:-->
2 CALL "001..004.ConveyorF001_FB2", "001..004.ConveyorF001_DB2"
3 . . . . .
4 . . . .

```

Caller P...

- Calle...
- 001..004.C

Operand...

Rules

Manual Connection

Disconnect

DD

Ports

- Caller P...
- Calle...
- Operand...

PLC Code

```

1 Network 1:-->
2 . . . . . /////Caller on the position [Rule_1] is not connected with a
3 . . . . .
4 . . . .

```

Caller P...

- Calle...

Operand...

Rules

Manual Connection

Dynamic Connection

P1=TL

↑	Name	Formula	Value
1		""	""
2	bbb	GetConnectedObjects(p1,"TLtoDB")	{"DB001"}

Ports

- Caller P...
- Calle...
- 001..002..003_DB
- Operand...

PLC Code

```

1 Network 1:-->
2 CALL "001..002..003_FBF", "001..002..003_DB"
3 . . . .
4 . . . .

```

Automation Navigator

- Name: CD000122;1-AD_1_CD_4_WS_5_SS_20160418
- PLC HW
 - S7300/ET200M station_1
 - Program blocks
 - Main [OBJ]

Source

OB001

Ports

Port	Connected Ob...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectab...
User Defined			EO	Caller	Undirected	N	IDB_Proxy, F...
Caller_1		DB001	EO	IDB_Proxy	Undirected	N	Any, Caller, ...

7. test, copy, change names

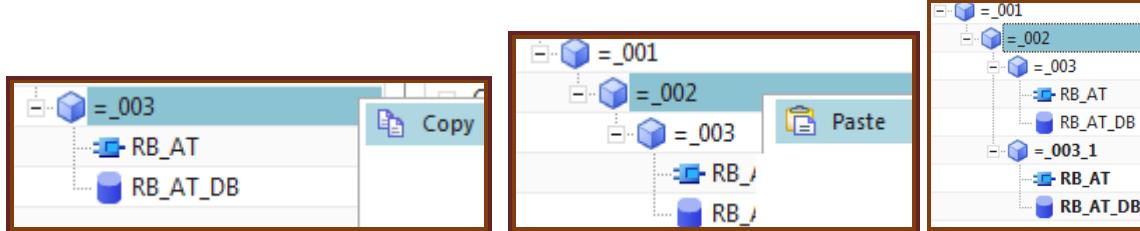
Change DB symname.

Name	Formula	Value
1 p0	subString(GetMRD(GetParent(p2,Function),Function),3,1000)+"_DBx"	"001._002._003_DBx"

immediate

```
CALL "001._002._003_FB", "001._002._003_DBx"
```

Copy conveyor.



Result. Names are same, but the links are correct (see below).

```
CALL "001._002._003_FB", "001._002._003_DBx"
CALL "001._002._003_FB", "001._002._003_DBx"
```

Change 003_1 DB to "...y".



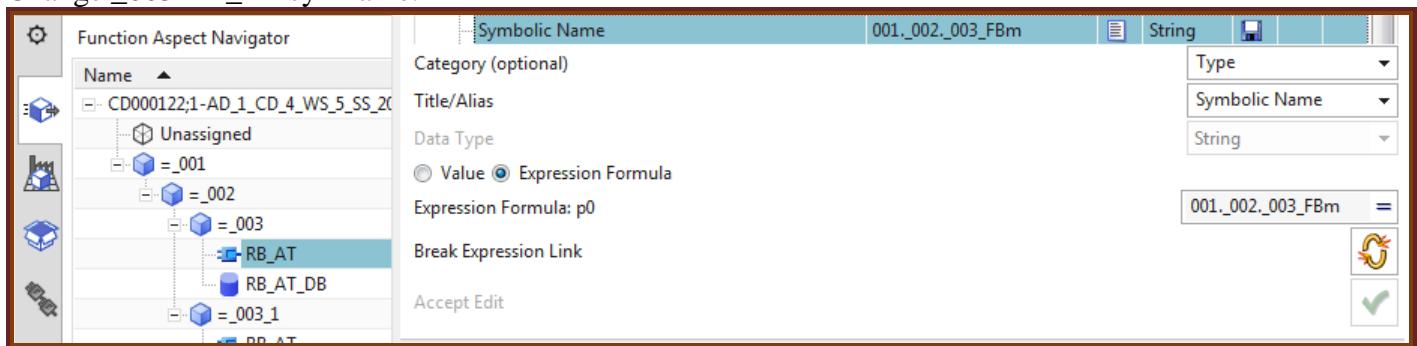
No change.

Change symbolic name of 003_1 DB to "...z" and immediately after pressing OK key in properties dialog:

```
CALL "001._002._003_FB", "001._002._003_DBz"
CALL "001._002._003_FB", "001._002._003_DBx"
```

But where is "003_1"?

Change _003 RB_AT symname.



Immediately after pressing ok key in properties dialog:

```
CALL "001._002._003_FB", "001._002._003_DBz"
CALL "001._002._003_FBM", "001._002._003_DBx"
```

So it works... kind of.

\$\$\$\$4/5 14.4. create ports, expressions, dynamic connection 20160425 #2

1. RBAT, DB symnames

2. main -> RBAT DB call port

3. TLtoDB

4. DBtoTL

5. dynamic connection , getPort

For DB P8 = conveyor.

Expressions			
	↑ Name	Formula	Value
1		getPort(xxx,"TLtoDB3")	""
2	xxx	GetParent(p8,Function)	"_004"
3	aaa	GetParent(p3,Function)	"_004"
4	eee	GetParent(p5,Function)	"_004"
5	p2	subString(GetMRD(GetParent(p6,Function),Function), 3, 1000)+_DB2"	"001._004.ConveyorF001_DB2"

Ports Manager						
Source						
DB023						
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardi
- User Defined						
DBtoTL			EO	Any	Undirected	N
_004	TLtoDB	EO	Program Block	Undirected	N	
DBtoTL2			EO	Any	Undirected	N
_004	TLtoDB2	EO	Program Block	Undirected	N	
DBtoTL3			EO	Program Block	Undirected	N
_004	TLtoDB3	EO	Any	Undirected	N	

Expressions			
	↑ Name	Formula	Value
1		""	""
2	aaa	GetParent(p3,Function)	"_004"
3	eee	GetParent(p5,Function)	"_004"
4	p2	subString(GetMRD(GetParent(p6,Function),Function), 3, 1000)+_DB2"	"001._004.ConveyorF001_DB2"
5	xxx	GetParent(p8,Function)	"_004"

6. change main -> RBAT DB call port

The screenshot shows the Siemens SIMATIC Manager interface for a project named CD000101;1-AD_1_CD_4_WS_5_SS_20160418. The main window displays the configuration of the Main [OB1] block.

Automation Navigator:

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- Unassigned
- PLC HW
 - S7-300-Station_2
 - S7-300-Station_2
 - S7300/ET200M station_1
 - PLC data types
 - Program blocks
 - Main [OB1]
 - G120x [FB307]
 - G120x_DB [DB2]
 - PosDev_2D2SP_DB [DB9]
 - RB_AT [FB1012]
 - PosDev_2D2SP [FB369]
 - Local modules
 - Rail_0
 - PLC_2
 - PLC tags
 - S7300/ET200M station_1
 - PLC data types
 - Program blocks
 - G120x_DB [DB2]

Main [OB1] Configuration:

- Actions:** Includes icons for New, Open, Save, Print, etc.
- Configurations:**
 - Global Sym... (Tags, FB/DB, FC, DB)
 - Ports (Caller P..., Rules, Calls, Methods, Operand...)
- Interface:** Shows a table of system variables with their names, types, and descriptions.
- PLC Code:**

```

1 Network 1:-
2     CALL "001._004.ConveyorF001_FB2", "001._004.ConveyorF001_DB2"
3
4

```

Caller P...:

Caller P...	Calle...	001._004.C
Operand...	Manual Connection	
Rules	Disconnect	

Operands:

Caller P...	Calle...	Manual Connection
Operand...	Dynamic Connection	
Rules		

Expressions:

#	Name	Formula	Value
1		""	""
2	ffffggg	GetConnectedObjects(p1, "TLtoDB3")	{"DB023"}

P1=TL

Ports:

Ports	OB1_PREV_CYCLE	Int	Cycle time of previous O...
Caller P...	OB1_MIN_CYCLE	Int	Minimum cycle time of ...

PLC Code:

```

1 Network 1:-
2     CALL "001._004.ConveyorF001_FB2", "001._004.ConveyorF001_DB2"
3
4

```

7. test, copy, change names

The screenshot shows the SIMATIC Manager interface with a tree view of objects and a configuration table for the Main [OB1] block.

Object Tree:

- =ConveyorF001_4
 - RB_AT
 - RB_AT_DB
- =ConveyorF001_4_1
 - RB_AT
 - RB_AT_DB

Main [OB1] Configuration:

- Actions:** Includes icons for New, Open, Save, Print, etc.
- Configurations:**
 - Global Sym... (Tags, FB/DB, FC, DB)
 - Ports (Caller P..., Rules, Calls, Methods, Operand...)
- Interface:** Shows a table of system variables with their names, types, and descriptions.
- PLC Code:**

```

1 Network 1:-
2     CALL "001._004.ConveyorF001_FB2", "001._004.ConveyorF001_DB2"
3     CALL "001._004.ConveyorF001_FB2", "001._004.ConveyorF001_DB2b"
4
5

```

Its only bring up the original.. maybe a bug? I give up.

Previously.... did what shown below. Is that what I had to do?????????????????????????

1	Network 1:	→	→
2		CALL	"001._004.ConveyorF001_RB", "RB_AT_DB"
3		CALL	"001._004.ConveyorF001_RB", "RB_AT_DB"
4		⋮	⋮

Names are wrong...

Modify the symbolic names The problem is the names are not being properly created??.

Expressions			
	↑ Name	Formula	Value
1	p6	subString(GetMRD(GetParent(p8, Function), Function), 3, 1000) + "_DB"	"001._004.ConveyorF001"
2	Network 1:	→	→
3		CALL	"001._004.ConveyorF001_RB", "RB_AT_DB"
4		CALL	"001._004.ConveyorF001_RB", "001._004.ConveyorF001_DB"
Expressions			
	↑ Name	Formula	Value
1	p0	bbb + "_RBxx"	"001._004.ConveyorF001_RB"
Expressions			
	↑ Name	Formula	Value
1	p0	bbb + "_RByyy"	"001._004.ConveyorF001_4_RB"
2	Network 1:	→	→
3		CALL	"001._004.ConveyorF001_4_RByyy", "RB_AT_DBxx"
4		CALL	"001._004.ConveyorF001_RBxxx", "001._004.ConveyorF001_DB"

ANOTHER BUG.

The proper symname was not updated until I changed them. !!!

\$\$\$4/5 14.4. create ports, expressions, dynamic connection 20160425 #1

20160425: terry this is a chaotic buggy mess, following tries to sort it out.. but works somehow.

14.4.1. Create TL port "TLtoDB2"

The screenshot shows two windows from a software interface:

Function Aspect Navigator (Top Left): Shows a tree structure under 'Name' with nodes like 'CD000101;1-AD_1_CD_4_WS_5_SS_20160418', 'Unassigned', '_001', '_004', and '_005'. The node '_004' is selected.

Ports Manager (Top Right): Shows a 'Source' list with '_004' and a 'Ports' table. The 'Actions' section includes a 'Create Port' button with the tooltip 'Creates a new Port.' and several icons for port operations.

Port (Bottom Left): A configuration dialog for a new port named 'TLtoDB2'. It includes sections for 'Properties' (Name: TLtoDB2), 'Configuration' (Port Type: EO, Connection Type: Program Block, Direction: Undirected, Cardinality: N), and 'Connectable Types' (OB_Proxy).

Ports Manager (Bottom Right): Shows a 'Source' list with '_004' and a 'Ports' table. The table lists various ports, including 'User Defined' entries like 'TLtoFRGEStop' (Connected Object: FRG_EStop, Connected Port: FRG_EStop, Port Type: EO, Connection Type: Any, Direction: Undirected, Cardinality: N, Connectable types: OB_Proxy, Device Func...), 'TLtoDB' (Connected Object: DB022, Connected Port: DBtoTL, Port Type: EO, Connection Type: Tag_Proxy, Direction: Undirected, Cardinality: N, Connectable types: Tag, Any, Operand), and 'TLtoDB2' (Connected Object: DB010, Connected Port: DBtoTL, Port Type: EO, Connection Type: Program Block, Direction: Undirected, Cardinality: N, Connectable types: OB_Proxy, FB_Proxy, F...). There are also 'Custom Defined' entries for 'DB021' and 'DB010'.

14.4.2. Create RBAT DB port "DBtoTL2"

The screenshot shows the EPLAN Function Aspect Navigator and Port Manager interfaces.

Function Aspect Navigator:

- Name: CD000101;1-AD_1_CD_4_WS_5_SS_20160418
- Unassigned
- =_001
- =_004
 - =ConveyorF001
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001
 - =DriveControlF001
 - EPLAN Page Macro
 - RB_AT
 - PosDev_2D2S2P
 - RB_AT_DB
 - =ConvevorF001

Port Manager (Top):

Properties:

- Name: DBtoTL2

Configuration:

- Port Type: EO
- Connection Type: Any
- Direction: Undirected
- Cardinality: N

Connectable Types:

- Program Block
- Tag_Proxy
- UDT_Proxy

Ports Manager (Bottom):

Source:

- DB010

Ports:

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
DBtoTL		_004	EO	Any	Undirected	N	OB_Proxy, Device Func...
DBtoTL2		TLtoDB	EO	Program Block	Undirected	N	OB_Proxy, FB_Proxy, F...
				Any	Undirected	N	OB_Proxy, Device Func...

14.4.3. Create RBAT DB getPort to TL

Ports Manager

Source
DB010

Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
DBtoTL		_004	EO	Any	Undirected	N	OB_Proxy, Device Func...
DBtoTL2		TLtoDB	EO	Program Block	Undirected	N	OB_Proxy, FB_Proxy, F...
				Any	Undirected	N	OB_Proxy, Device Func...

Right click on DBtoTL (what I created earlier). The bbb expression does not display, but its there. These constant bugs make this quite complicated.

Expressions

↑ Name	Formula	Value
1 bbb	""	""
2 aaa	GetParent(p3,Function)	"_004"

Alerts

**⚠️ bbb: The expression name is invalid.
The specified expression variable already exists.**

Create dynamic connect on DBtoTL2. Create expressions on RBAT DB that auto-connect (getPort) to TL.

Ports Manager

Source
DB010

Ports

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
DBtoTL		_004	EO	Any	Undirected	N	OB_Proxy, Device Func...
DBtoTL2		TLtoDB	EO	Program Block	Undirected	N	OB_Proxy, FB_Proxy, F...
System Defined				Any	Undirected	N	OB_Proxy, Device Func...

Actions

Dynamic Connection
Connects ports dynamically by using expressions.

Expressions

↑ Name	Formula	Value
1 eee	""	""
2 aaa	GetParent(p3,Function)	"_004"

Edit

Formula
GetParent(

A f(x) Reference Object Attribute

Function Aspect Navigator

- Name
 - CD000101;1-AD_1_CD_4_WS_5_SS_2016041
 - Unassigned
 - =_001
 - =_004
 - =ConveyorF001
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001
 - =DriveControlF001
 - =EOCHcc001
 - D11
 - G120x
 - PID0
 - EPLAN Page Macro
 - RB_AT
 - PosDev_2D2S2P
 - RB_AT_DB

Reference Attribute

Referenced Object

Select Object

✓ Select Engineering Object (1)

Engineering Object Attributes

Title/Alias	Value	Units	T...	Type	R...	D...
Object Name	_005			String		
Reference Designation Set	=_001._004.Convey...			String		
Type	GL-Continuous flo...			String		
+ Type						

Edit

Formula

```
GetParent(p5)
```

Expressions

	↑ Name	Formula	Value	Units	Dimensionality	Type
1		""	""			String
2	eee	GetParent(p5,Function)	"_004"			String
3	aaa	GetParent(p3,Function)	"_004"			String

The "getPort" command establishes the connection.

Expressions

	↑ Name	Formula	Value
1	fff	GetPort(eee,"TLtoDB2")	""
2	eee	GetParent(p5,Function)	"_004"
3	aaa	GetParent(p3,Function)	"_004"

?????????????

This was for TLtoDB

	↑ Name	Formula	Value
1	bbb	getPort(aaa,"TLtoDB")	"TLtoDB"
2	aaa	GetParent(p3,Function)	"_004"

It connected anyway... bugs bugs bugs....

Ports Manager							
Source							
Ports							
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined							
DBtoTL			EO	Any	Undirected	N	OB_Proxy, Device Func...
_004		TLtoDB	EO	Program Block	Undirected	N	OB_Proxy, FB_Proxy, F...
DBtoTL2			EO	Any	Undirected	N	OB_Proxy, Device Func...
_004		TLtoDB2	EO	Program Block	Undirected	N	OB_Proxy, FB_Proxy, F...

This was previous.....

Ports Manager							
Source							
Ports							
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined							
DBtoTL			EO	Any	Undirected	N	OB_Proxy, Device Func...
_004		TLtoDB	EO	Program Block	Undirected	N	OB_Proxy, FB_Proxy, F...
Custom Defined							

14.4.4. create OB call to objects connected to the TL port

THIS WAY DOES NOT WORK NOW... FOR SOME REASON.....DID AT FIRST



Second caller port 2 was added.

Main [OB1]

Actions

Configurations Interface

Name	Value	Type
Global Sym...		
Tags		
FC_left	FC_left	Bool
FC_ri...	FC_right	Bool
FB/IDB		
FC		
DB		
Ports		
Caller P...		
Calle...		
Calle...		
Calle... RB_AT_DB, RB...		
Calle... RB_AT_DB, RB...		
Operand...		

Name	Defa...	Data ...	Comments
Temp			
OB1_EV_CLASS	Byte	Bits 0-3 = 1 (Coming eve...	
OB1_SCAN_1	Byte	1 (Cold restart scan 1 of ...	
OB1_PRIORITY	Byte	Priority of OB Execution	
OB1_OB_NUMBR	Byte	1 (Organization block 1, ...	

PLC Code Main [OB1]

```

1 Network 1:-->
2   CALL  "001._004.ConveyorF001_RB", "RB_AT_DB"
3   CALL  "001._004.ConveyorF001_RB", "RB_AT_DB"
4   CALL  "001._004.ConveyorF001_RB", "RB_AT_DB"
5   ...
6

```

Edit **Delete**

Lets switch to 2nd port.

Properties

Name Rule_1

Selection

Object Selection

Select Program Block (0)

Expression

Return Value {"DB022","DBC022"}

Break Expression

Define Parameters

Parameter	Value	Type

Replace Parameter by

Symbolic Reference

Object Selection

* Select Object (0)

Expression

Return Value

Break Expression

Click on exprssion, EMPTY. Bug.

	Name	Formula	Value
1		---	---

	Name	Formula
1	cccc	---

Break.

Select block... nothing happens.... Object selection I used for #1 earlier, but now cant.

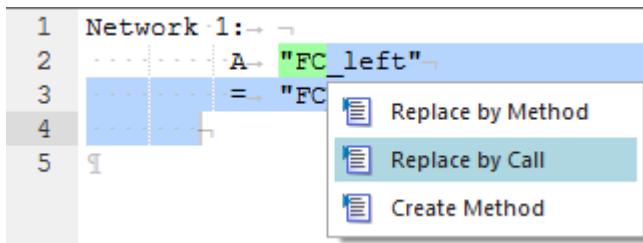
The screenshot shows the EPLAN Function Aspect Navigator on the left and the 'Replace by Call' dialog on the right. In the Function Aspect Navigator, there's a tree structure under 'CD000101;1-AD_1_CD_4_WS_5_SS_201604'. The 'Replace by Call' dialog has 'Rule_1' selected in the 'Name' field. Under 'Selection', 'Object Selection' is chosen, and a yellow-highlighted 'Select Program Block (0)' button is visible. Other tabs in the dialog include 'Properties', 'Expression', 'Return Value', 'Break Expression', and 'Define Parameters'.

Cant save.

Just delte.

```
1 Network 1: -->
2 ..... CALL "001._004.ConveyorF001_RB", "RB_AT_DB
3 ..... CALL "001._004.ConveyorF001_RB", "RB_AT_DB
4 ..... CALL "001._004.ConveyorF001_RB", "RB_AT_DB
```

The screenshot shows the EPLAN Network editor with a network labeled 'Network 1'. Line 4 contains a 'CALL' instruction: 'CALL "001._004.ConveyorF001_RB", "RB_AT_DB'. A context menu is open over this instruction, with the 'Delete' option highlighted.



Main [OB1]

Actions

- Global Sym...
- Tags
- FB/IDB
- FC
- DB
- Ports
- Caller P...
- Calle...
- Calle...
- Calle... RB_AT_DB, RB_...
- Calle... RB_AT_DB, RB_...
- Operand...
- Rules

Configurations

Name	Value	Type
Global Sym...		
Tags		
FC_left	FC_left	Bool
FC_right	FC_right	Bool
FB/IDB		
FC		
DB		
Ports		
Caller P...		
Calle...		
Calle...		
Calle... RB_AT_DB, RB_...		
Calle... RB_AT_DB, RB_...		
Operand...		
Rules		

Replace by Call

Properties

Name: Rule_1

Selection

Port Selection: Select Port (1)

Define Parameters

Parameter	Value	Type

PLC Code

```

1 Network 1:→ →
2 CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
3 CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
4 CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
5

```

Main [OB1]

Actions

Configurations

Name	Value	Type
Global Sym...		
Tags		
FC_left	FC_left	Bool
FC_right	FC_right	Bool
FB/IDB		
FC		
DB		
Ports		
Caller P...		
Calle...		
Calle...		
Calle...	RB_AT_DB, RB_...	
Calle...	RB_AT_DB, RB_...	

Replace by Call

Properties

Name: Rule_1

Selection

Port Selection: Select Port (1)

Define Parameters

Parameter	Value	Type

PLC

Replace Parameter by: Symbolic Reference

Change first to this

Expressions

#	Name	Formula	Value
1		nn	nn
2	vvv	GetConnectedObjects(p3,"TLtoDB2")	{"DB010"}

Expressions

#	Name	Formula	Value
1		nn	nn
2	vvv	GetConnectedObjects(p3,"TLtoDB2")	{"DB010"}

Select first port no change. Even after bulk connect.

1	Network 1:	CALL "001. 004.ConveyorF001_RB", "RB_AT_DB"
2		CALL "001. 004.ConveyorF001_RB", "RB_AT_DB"
3		CALL "001. 004.ConveyorF001_RB", "RB_AT_DB"
4		CALL "001. 004.ConveyorF001_RB", "RB_AT_DB"
5		

CONNECT DIFFERENTLYXXXXXXXXXXXXXXXXXXXX

Go back select again

	Name	Formula	Value
1		""	""
2	vvv	GetConnectedObjects(p3, "TLtoDB2")	{"DB010"}

This time connects correctly.

PLC Code

```
1 Network 1:-->
2      CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
3
```

Selected second.

Main [OB1]

Actions

Configurations

Interface

Properties

Name: Rule_1

Selection

Port Selection

Select Port (1)

Define Parameters

Parameter Value Type

Replace Parameter by

Symbolic Reference

Object Selection

PLC Code

```
1 Network 1:-->
2      CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
3
```

Now correct. Wait names are wrong!!!

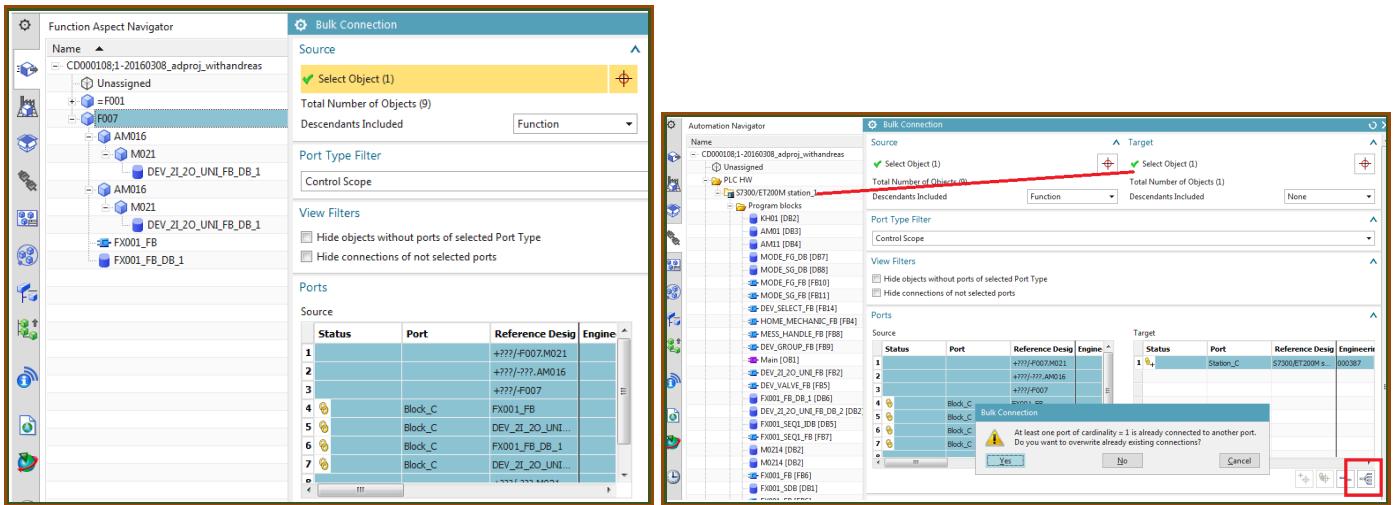
```
1 Network 1:-->
2      CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
3      CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
4      CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
5
```

An absolute chaotic mess.

14.5.2. TEST: copy conveyor, should auto update OB call #1

Copy and paste.
Nothing.

Then bulk connect



Result.

Main [OB1]

Actions

Configurations Interface

Name	Value	Type
- Global Sym...		
- Tags		
FC_left	FC_left	Bool
FC_right	FC_right	Bool
- FB/IDB		
- FC		
- DB		
- Ports		
- Caller P...		
Calle...	RB_AT_DB	
Calle...	RB_AT_DB	
Calle...	RB_AT_DB, RB...	
Operand...		
- Rules		
- Calls		
Rule 1		

Name	Defa...	Data ...	Comments
- Temp			
OB1_EV_CLASS	Byte		Bits 0-3 = 1 (Coming eve...)
OB1_SCAN_1	Byte		1 (Cold restart scan 1 of ...)
OB1_PRIORITY	Byte		Priority of OB Execution
OB1_OB_NUMBR	Byte		1 (Organization block 1, ...)
OB1_RESERVED_1	Byte		Reserved for system
OB1_RESERVED_2	Byte		Reserved for system
OB1_PREV_CYCLE	Int		Cycle time of previous O...
OB1_MIN_CYCLE	Int		Minimum cycle time of ...

PLC Code

```

1 Network 1:-->
2   CALL "001_004.ConveyorF001_RB", "RB_AT_DB"
3   CALL "001_004.ConveyorF001_RB", "RB_AT_DB"
4   CALL "001_004.ConveyorF001_RB", "RB_AT_DB"
5

```

Wow... somehow it worked! 😊

But... names are same.....

14.5.2. TEST: copy conveyor, should auto update OB call #2

```

1 Network 1:→ →
2 | CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
3 |
4

```

Copy and paste.

Immeidate result..

```

1 Network 1:→ →
2 | CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
3 | CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
4

```

Names are wrong...

BUG XXXXXXXXXX This time use different expression....

	Name	Formula	Value
1	p6	subString(GetMRD(GetParent(p8, Function), Function), 3, 1000)	"001._004.ConveyorF001"
2			
3	aaa	GetParent(p3, Function)	"_004"
4	eee	GetParent(p5, Function)	"_004"

Function Aspect Navigator

- CD000101;1-AD_1_CD_4_WS_5_SS_20160418
 - Unassigned
 - ._001
 - ._004
 - =ConveyorF001
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001
 - =DriveControlF001
 - =EOCHcc001
 - DI1
 - G120x
 - PID0
 - =EPLAN Page Macro
 - =RB_AT
 - =PosDev_2D2S2P
 - =RB_AT_DB
 - =ConveyorF001_1
 - =ConveyorF001_2
 - =MotorF001
 - =SensorF001
 - =DrivePowerF001

Properties

Select Object

✓ Select Object (1)

Context

Interaction Method

Traditional

Engineering Object Attributes

Title/Alias	Value	Units	Type	R...	D...	I...
Symbolic Name	001._004.ConveyorF001		String			
Title			String			

Category (optional)

Title/Alias

Data Type

Value Expression Formula

Expression Formula: p6

Break Expression Link

Accept Edit

```

1 Network 1:→ →
2 | CALL "001._004.ConveyorF001_RB", "RB_AT_DB"
3 | CALL "001._004.ConveyorF001_RB", "001._004.ConveyorF001"
4

```

	Name	Formula	Value
1	p6	subString(GetMRD(GetParent(p8, Function), Function), 3, 1000)+"_DB"	"001._004.ConveyorF001"
2			
3			
4			

	Name	Formula	Value
1	p0	bbb+"_RBxx"	"001._004.ConveyorF001_RB"

	Name	Formula	Value
1	p0	bbb+"_RByyy"	"001._004.ConveyorF001_4_RB"

SUCCESS

```
1 Network 1:→ ↵
2   CALL "001._004.ConveyorF001_4_RByyy", "RB_AT_DBxx"
3   CALL "001._004.ConveyorF001_RBxx", "001._004.ConveyorF001_DB"
```

ANOTHER BUG.

The proper symname was not updated until I changed them. !!!

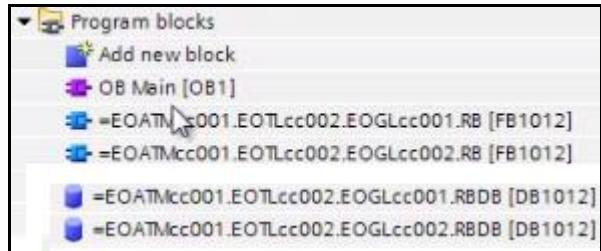
11.4. Test 20160422 ERROR

TERRY: This will not work... TIA export not working. But previous chapters show that basically dynamization works.. have to figure out tia error later.

11.4b. Test

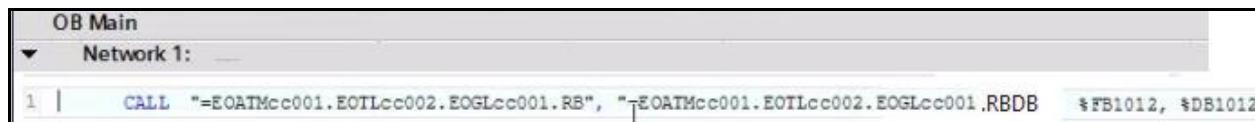
1. Connect the SW. Send to TIA.
2. Verify the following:

2a. Program blocks.



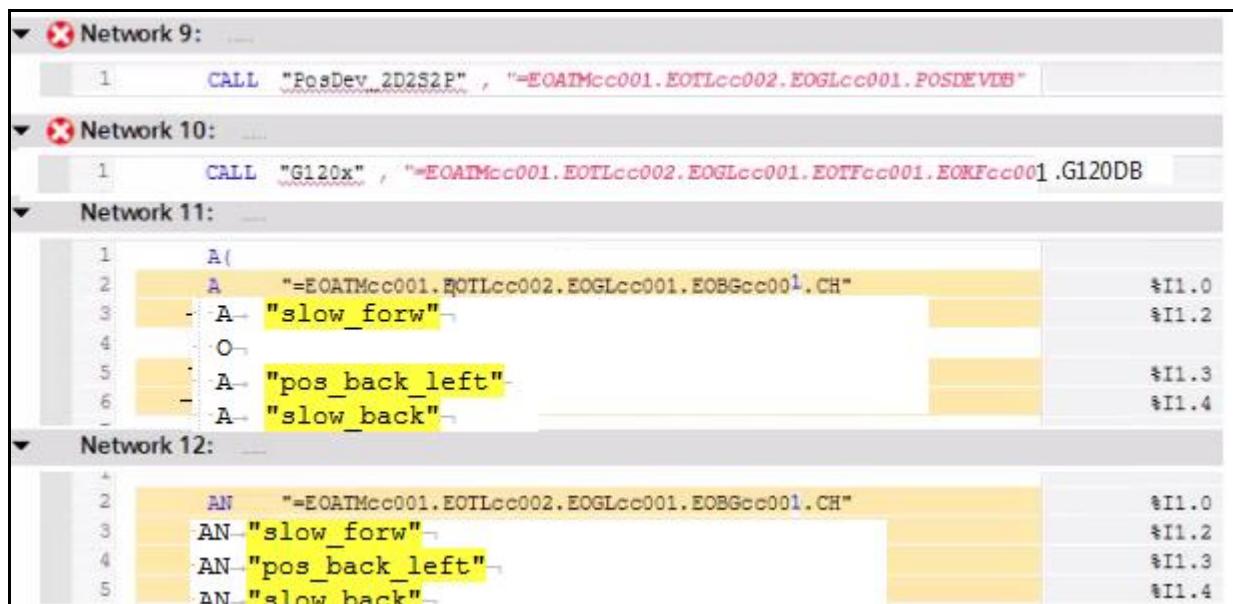
11_25

2b. OB Main call.



11_26

2c. RB_AT code.



11_27

20160209 TERRY ERROR: Ambiguous address... same address for 2 tags?

A	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc000.CH"	\$I1.0
!	Access to "=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc000.CH" with ambiguous address.	\$T1.2
	002.EOGLcc001.EOBGcc000.CH	Access to "=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc000.CH" with ambiguous address.
	with ambiguous address.	02.EOGLcc001.EOBGcc003.CH

2d. PosDev (ERROR, not sent to TIA).

```

1 Network 1:- ~
2 .....| TAR1- #SAVE_AR1~-
3 .....| TAR2- #SAVE_AR2~-
4 ~
5 Network 2:- ~
6 .....| A- "Newstart"-
7 .....| R- #TM_STARTUP-
8 .....| R- #EN_FAST-
9 ~
10 Network 3:- ~
11 .....| A- #ERR_RESET-
12 .....| FP-#Err_Reset_P-
13 .....| ON "PLC_On delayed"-
14 .....| JCN www-
15 ~
16 Network 4:- ~
17 .....| A- "TRUE"-

```

11_28

2e. G120x (contains no dynamized SW or tags) (ERROR, not sent to TIA).

```

1 Network 1:- ~
2 .....| TAR1- #SAVE_AR1- // Save adress register 1-
3 .....| TAR2- #SAVE_AR2- // Save adress register 2-
4 ~
5 ~
6 Network 2:- ~
7 .....| LAR1- #STW-
8 .....| TAR2- // Offset as absolute value of address is
9 .....| +AR1-
10 .....| L- #INPUT_ADDR-
11 .....| T- DI-
12 ~
13 Network 3:- ~
14 .....| A- #EM_STOP- // SiFa-
15 .....| =- #En_OK- // Control voltage On-
16

```

11_29

2f. Tags.

20160209 TERRY: make sure not using same address space.

PLC tags		Name	Data type	Address
1	→	Newstart	Bool	%M8.1
2	→	PLC_On delayed	Bool	%M2.7
3	→	TRUE	Bool	%M2.2
4	→	CPulse_0_1s	Bool	%M4.0
5	→	RLO 1	Bool	%M8.2
6	→	BiIF	Bool	%M4.4
7	→	RLO 0	Bool	%M8.3
8	→	FRG_Estop	Bool	%M4003.1
9	→	FRG_BS	Bool	%M4002.1
10	→	IBNO	Bool	%M8.6
11	→	reset	Bool	%M11.2
17	→	=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc001.CH	Bool	%I1.0
15	→	"slow_forw"	Bool	%I1.1
12	→	"pos_back_left"	Bool	%I1.2
13	→	"slow back"	Bool	%I1.3
24	→	=EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.PID0	DWord	%ID2100
25	→	=PID1	DWord	%ID2104
26	→	=PID2	DWord	%ID2108
27	→	=PQDC	DWord	%QD2112

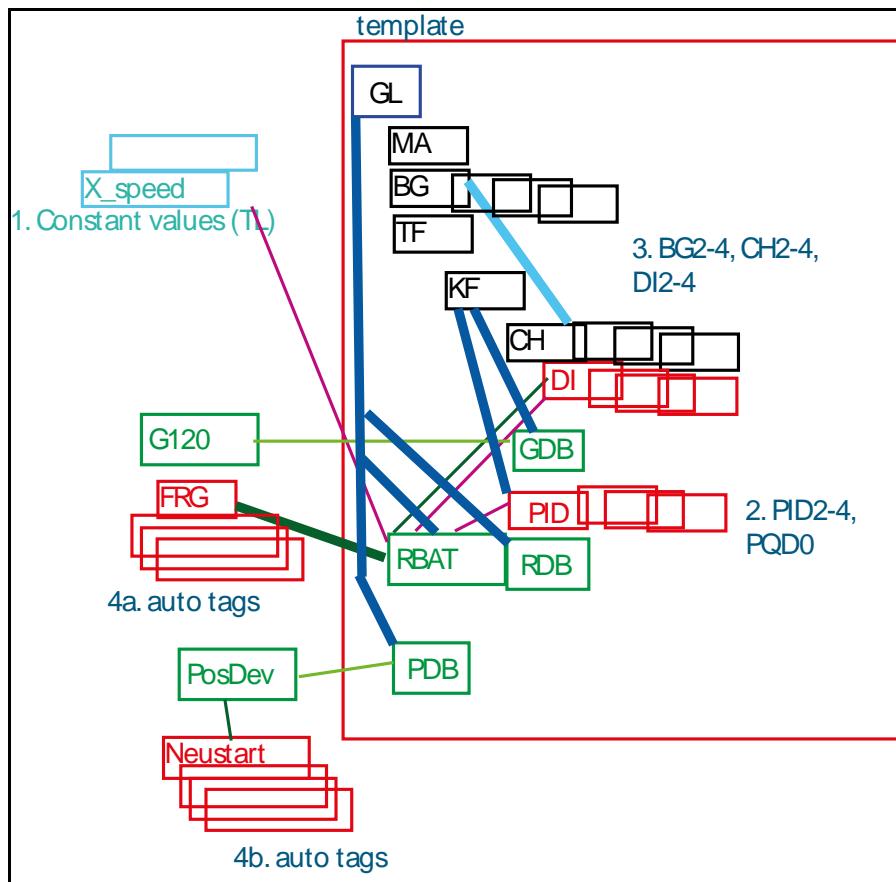
11_30

11.5. FINISH (optional)

- 11.5.1. create TL constant value
- 11.5.2. PID, PQD tags
- 11.5.3. CH2-4 (3) (and DI2-4), BG2-4
- 11.5.4. automation tags 3 dynamic connections
- 11.5.5. Newstart, etc.
- 11.5.6. TEST xxx



Add the extras shown below.



11_31 (11_02)

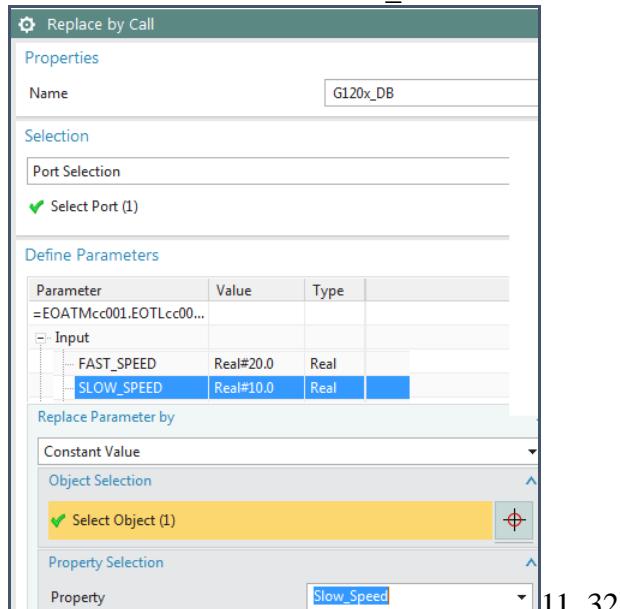
11.4.1. Create TL constant value (1) >> FIX CALL??

In "8.3. Create TL constant values" you created Fast_Speed. Now create Slow_Speed.

1. Define constant value for TL.

Category	Operational
Title/Alias	Slow_Speed
Data Type	String
Value	Real#10.0

2. Add the constant to the RB_AT call.



Result.

```
Network 10:-
CALL  "G120x",  "G120x DB"
  FAST_SPEED :=  Real#20.0
  SLOW SPEED :=  Real#10.0
```

11_33

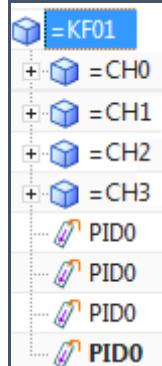
11.4.2. PID,PQD tags >>> FIX CALL??

13.3.1.7. RB_AT->G120x replace by call PID,PQD tags, SLOW_SPEED

13.3.1.4. Add 3 Profibus tags (PID1-2, PQD0)

Add the 3 remaining DWord tags that are input-output for the motor starter.

1. Right-click on PID0 and select "Copy".
2. Right-click on KF01 and select "Paste" 3 times.



11_34

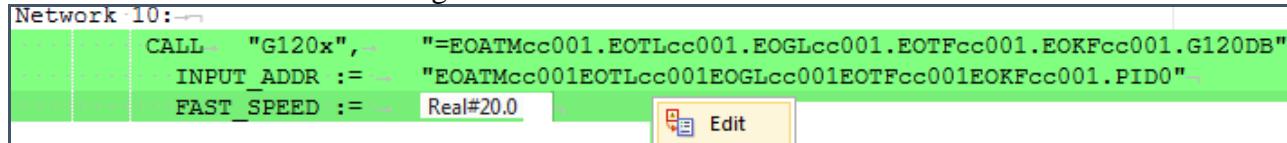
3. Set the following for the 3 tags.

Tag	Properties	Properties
PID1	Name	PID1
	Memory Section	Input
	Data Type	Dword
	Description	PID1 descr
	Address	2104
	Symbolic name	AD_GetDesignation(AD_GetEngObject(),Function)+".PID1"
PID2	Name	PID2
	Memory Section	Input
	Data Type	DWord
	Description	PID2 descr
	Address	2108
	Symbolic name	AD_GetDesignation(AD_GetEngObject(),Function)+".PID2"
PQD0	Name	PQD0
	Memory Section	Output
	Data Type	Dword
	Description	PQD0 descr
	Address	2112
	Symbolic name	AD_GetDesignation(AD_GetEngObject(),Function)+".PQD0"

You need to for the RB_AT call to G120x replace the following:

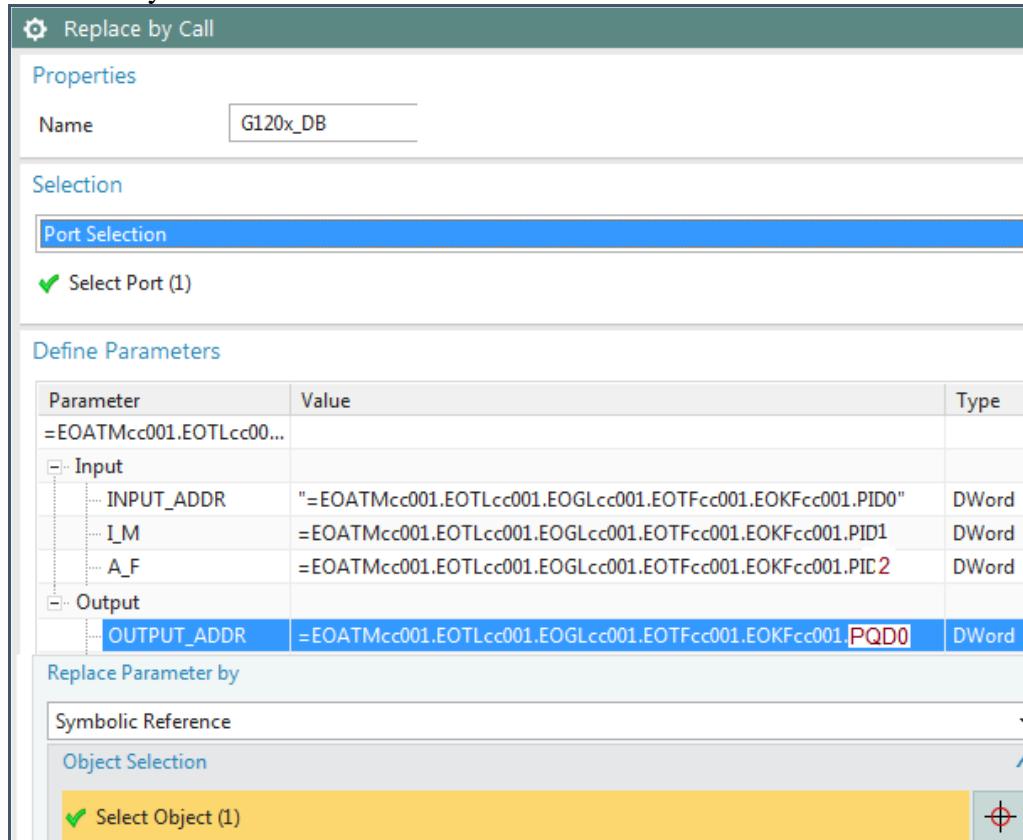
Call param	Value	type
I_M	PID1	Symbolic reference
A_F	PID2	Symbolic reference
OUTPUT_ADDR	PQD0	Symbolic reference

1. Select some of the call text. Right click and select "Edit".



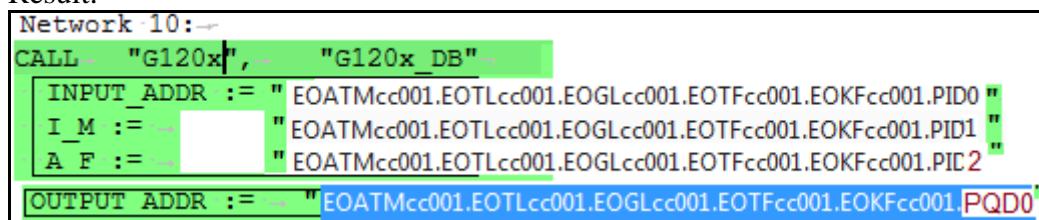
11_35

2. Define symbolic references as listed in table above.



11_36

Result.



11_37

11.4.3. CH2-4 (3) (and DI2-4), BG 2-4

Add CH2-4 (3) (and DI2-4), BG 2-4, connect ports, set property values.

1. Copy CH1 (and DI1) to CH2-4 (and DI2-4), rename ports

1. Copy CH1 3 times.
2. Rename EO's to CH2-4.
3. Rename tags to DI2-4.
4. rename CH2-4 ports to

CH2toBG2

CH3toBG3

CH4toBG4

2. Rename BG2-4 ports

1. If you did not copy BG 3 times and rename in 10.7.2, then do so now.
2. Rename BG2-4 ports.

BG2toCH2

BG3toCH3

BG4toCH4

3. Connect ports

1. Connect the ports (BG2toCH2 connect with CH2toBG2, etc.).

4. Set tag DI2-4 property values

1. For DI2-4 set the following

Tag	Properties	Value
DI2	Name	DI2
	Memory Section	Input
	Data Type	Boolean
	Description	Sensor 2
	Address	1.3
	Symbolic name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH2toBG2")),Function)+".CH"
DI3	Name	DI3
	Memory Section	Input
	Data Type	Boolean
	Description	Sensor 3
	Address	1.4
	Symbolic name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH3toBG3")),Function)+".CH"
DI4	Name	DI4
	Memory Section	Input
	Data Type	Boolean
	Description	Sensor 4
	Address	1.5
	Symbolic name	AD_GetDesignation(First(AD_GetConnectedObjects(AD_GetEngObject(),"CH4toBG4")),Function)+".CH"

5. RB_AT manual connect to DI tags (3)

1. Connect to DI2-4.

```

51 Network 11:-->
52     A(--) 
53     A-> "EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc001.CH"
54     A-> "EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc002.CH"
55     O(--) 
56     A-> "EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc003.CH"
57     A-> "EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc004.CH"
58     )-->
59     AN-> #OUT_ADV
60     AN-> #OUT_RTN
61     =-> #CONVEYOR_OCCUPIED

62 Network 12:-->
63     A(--) 
64     AN-> "EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc001.CH"
65     AN-> "EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc002.CH"
66     AN-> "EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc003.CH"
67     AN-> "EOATMcc001.EOTLcc001.EOGLcc001.EOBGcc004.CH"
68     AN-> #OUT_ADV
69     AN-> #OUT_RTN
70     =-> #CONVEYOR_FREE
71

```

11_38

6. RB_AT->PosDev replace by call DI tags (3) >>> FIX CALL??

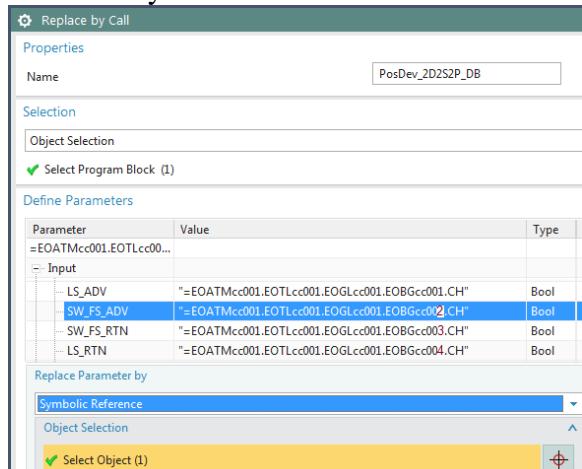
For the RB_AT call to PosDev replace the following:

Call param	Value	TYPE
SW_FS_ADV	DI2	Symbolic reference
SW_FS_RTN	DI3	Symbolic reference
LS_RTN	DI4	Symbolic reference

1. Select some of the call text. Right click and select "Edit".

11_39

2. Define symbolic references as listed in table above.



11_40

3. Result.

11_41

11.4.4. Automation tags 3 dynamic connections

Create TL to automation-tags dynamic connections for remaining 3 tags (IBN,etc.)

1. Create **TLtoFRGBS, TLtoIBN0, TLtoReset** ports in EO TL. (tags do not need a port)
2. Manual connect the 3 ports to the tags.
- 3. Create RB_AT to 3 tags dynamic connections.**

TLtoFRGBS	First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)), "TLtoFRGBS"))
TLtoIBN0	First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)), "TLtoIBN0"))
TLtoReset	First(AD_GetConnectedObjects(nth(2,AD_GetAncestors(AD_GetEngObject(),Function)), "TLtoReset"))

Source								
Ports								
Port	Connected Ob...	Connected Port	Port Type	Connection Ty...	Direc...	Cardi...	Man...	Conne...
- User Defined								
- FRG_EStop	FRG_EStop	FRG_EStop	EO	Any	Undef...	ONE	Device	
- FRG_BS	FRG_BS	FRG_BS	EO	TAG	Undef...	N	PLC_IN	
- IBN0	IBN0	IBN0	EO	Any	Undef...	N	Device	
- Reset	Reset	Reset	EO	Any	Undef...	ONE	Device	
				TAG	Undef...	N	PLC_IN	

11_42

11.4.5. Newstart, etc tags (3) ??

In PosDev make sure that tags are connected (should be already).

```

1 Network 1:-->
2     .---- TAR1-- "#SAVE_AR1"
3     .---- TAR2-- "#SAVE_AR2"
4
5 Network 2:-->
6     .---- A-- "Newstart"
7     .---- R-- #TM_STARTUP
8     .---- R-- #EN_FAST
9
10 Network 3:-->
11    .---- A-- #ERR_RESET
12    .---- FP--#Err_Reset_P
13    .---- ON--"PLC_On_delayed"
14    .---- JCN--www
15
16 Network 4:-->
17    .---- A-- "TRUE"
```

11_43

11.4.6. Test

20160209 TERRY: not work yet, so I modified pics (to show how things should be).

1. Click "Send to TIA Portal".
2. Open the project in TIA portal. Verify the following:
 - 2a. Program blocks (same as in 11.4).
 - 2b. OB Main call (same as in 11.4).
 - 2c. RB_AT code.

The screenshot shows the TIA Portal ladder logic editor with four networks:

- Network 9:** Contains one coil assignment: 1 CALL "PosDev_2D2S2P", "=EOATMcc001.EOTLcc002.EOGLcc001.POSDEVDS".
- Network 10:** Contains one coil assignment: 1 CALL "G120x", "=EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.G120DB".
- Network 11:** Contains six coil assignments:

1	A(
2	A	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc001.CH"	\$I1.0
3	A	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc002.CH"	\$I1.2
4	O		
5	A	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc003.CH"	\$I1.3
6	A	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc004.CH"	\$I1.4
- Network 12:** Contains five coil assignments:

1			
2	AN	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc001.CH"	\$I1.0
3	AN	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc002.CH"	\$I1.2
4	AN	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc003.CH"	\$I1.3
5	AN	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc004.CH"	\$I1.4

11_44

20160209 TERRY ERROR: Ambiguous address... same address for 2 tags?

A	"=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc000.CH"	\$I1.0
!	/ Access to "=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc000.CH" with ambiguous address.	\$T1.2
X	!02.EOGLcc001.EOBGcc002.CH"	Access to "=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc000.CH" with ambiguous address.

2d. PosDev (ERROR, not sent to TIA).

```

1 Network 1: ~
2 .....| TAR1~ #SAVE_AR1~|
3 .....| TAR2~ #SAVE_AR2~|
4 ~
5 Network 2: ~
6 .....| A~ "Newstart"~|
7 .....| R~ #TM_STARTUP~|
8 .....| R~ #EN_FAST~|
9 ~
10 Network 3: ~
11 .....| A~ #ERR_RESET~|
12 .....| FP~#Err_Reset_P~|
13 .....| ON "PLC_On delayed"~|
14 .....| JCN www~|
15 ~
16 Network 4: ~
17 .....| A~ "TRUE"~|

```

11_45

2e. G120x (contains no dynamized SW or tags) (ERROR, not sent to TIA).

```

1 Network 1: ~
2 .....| TAR1~ #SAVE_AR1~ // Save adress register 1~|
3 .....| TAR2~ #SAVE_AR2~ // Save adress register 2~|
4 ~
5 ~
6 Network 2: ~
7 .....| LAR1~ #STW~|
8 .....| TAR2~ // Offset as absolute value of address is ~|
9 .....| +AR1~|
10 .....| L~ #INPUT_ADDR~|
11 .....| T~ DI~|
12 ~
13 Network 3: ~
14 .....| A~ #EM_STOP~ // SiFa~|
15 .....| =~ #En_OK~ // Control voltage On~|
16 ~

```

11_46

2f. Tags.

20160209 TERRY: make sure not using same address space.

PLC tags			
	Name	Data type	Address
1	Newstart	Bool	%M3.1
2	PLC_On delayed	Bool	%M2.7
3	TRUE	Bool	%M2.2
4	CPulse_0_1s	Bool	%M4.0
5	RLO 1	Bool	%M3.2
6	BiF	Bool	%M4.4
7	RLO 0	Bool	%M3.3
8	FRG_EStop	Bool	%M4003.1
9	FRG_BS	Bool	%M4002.1
10	IBNO	Bool	%M3.6
11	reset	Bool	%M11.2
17	=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc001.CH	Bool	%I1.0
15	=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc002.CH	Bool	%I1.1
12	=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc003.CH	Bool	%I1.2
13	=EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc004.CH	Bool	%I1.3
24	=EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.PID0	DWord	%ID2100
25	=EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.PID1	DWord	%ID2104
26	=EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.PID2	DWord	%ID2108
27	=EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.PQD0	DWord	%QD2112

11_47

12. Create/instantiate template (20160422)

This chapter shows you how to create and instantiate a template.



This chapter describes:

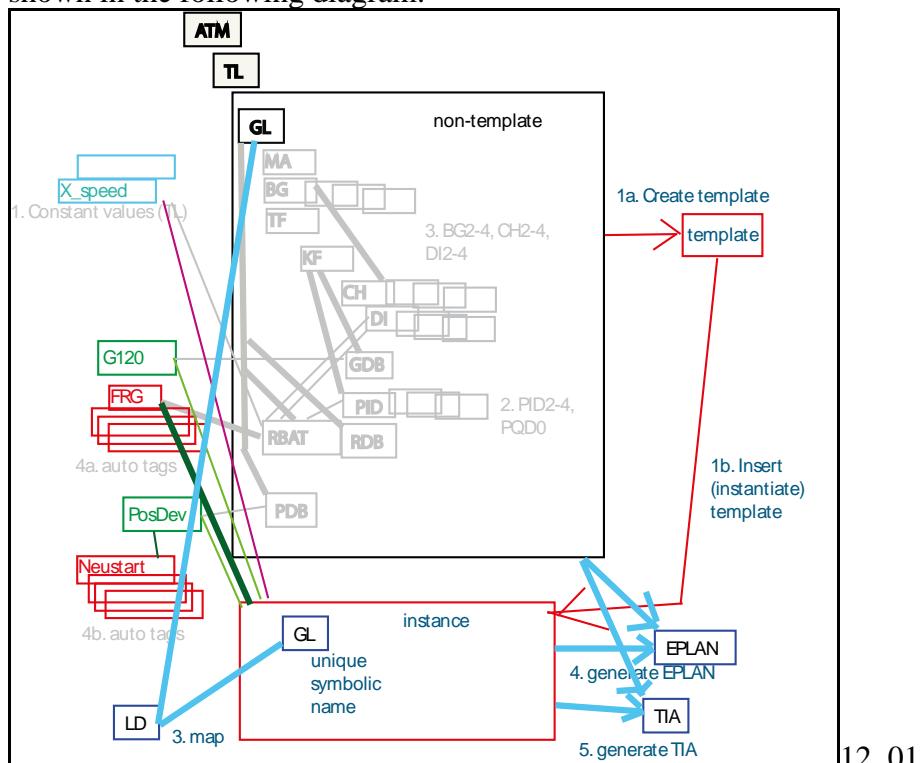
- 12.1. Overview (NEW)
- 12.2. Create template
- 12.3. Insert template
- 12.4. Map LD
- 12.5. Generate EPLAN
- 12.6. Generate TIA

12.1. Overview (NEW)

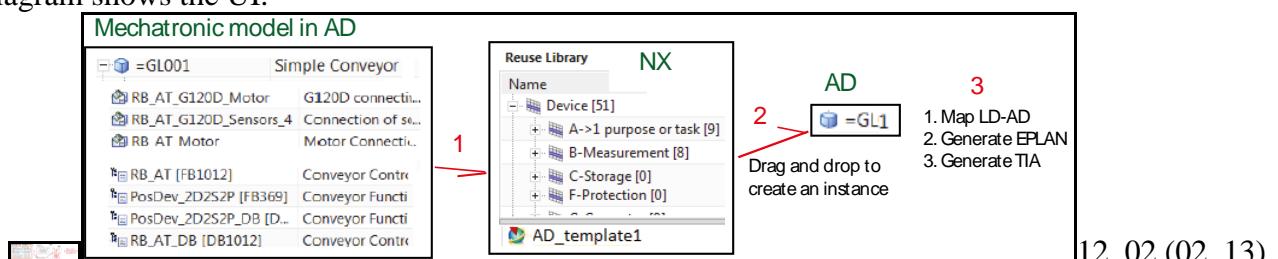
This chapter shows how to

1. Create a template and store in the reuse (solution) library.
2. Instantiate a template instance (for a conveyor).
3. Map the GL EO of the instantiated conveyor to the LD conveyor DE.
4. Generate ECAD documents.
5. Generate PLC application SW.

This is shown in the following diagram.

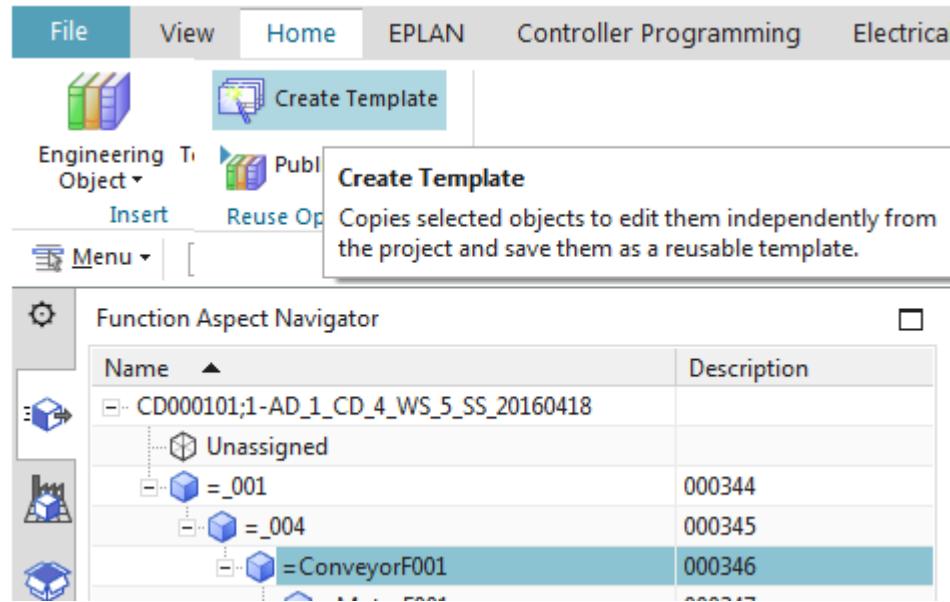


This diagram shows the UI.

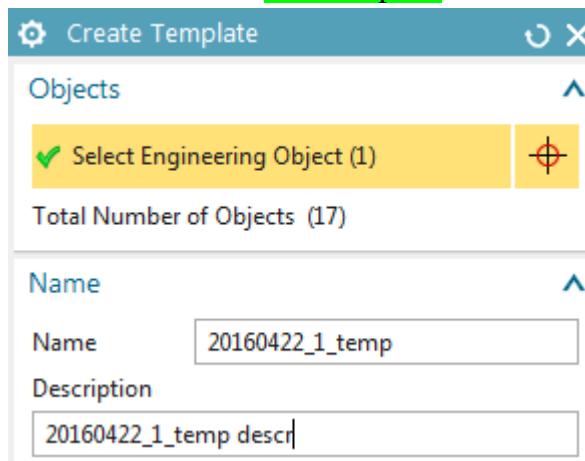


12.2a. Create template 20160422

1. Select GL01. Click "System Design / Create Template".

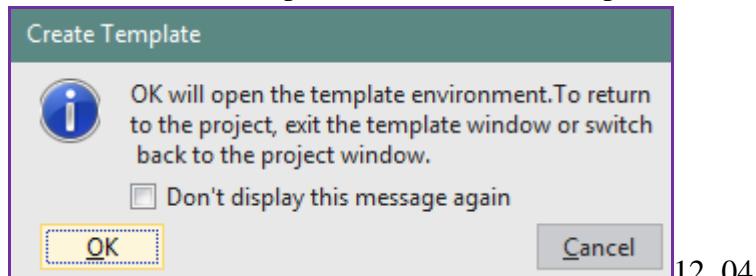


For "Name" enter "GL_Template".



20160209 TERRY: What is fragment?

2. Click OK. The template is shown in the template editor.



Don't see classification for templates....

5. For "Classification" select "Classification Root / Engineering Object / Template". ?????

Classification Class

Name
+ Device
+ Devicefunction
+ EPLAN Macro
+ PLC
- Software
- Block
- DB
- FB
- FC
- OB

Properties

	Name	Value
1	AutoNumber	
2	Character Code	

Function Aspect Navigator

Name	Description
- 20160422_1_temp	
- Unassigned	
- =ConveyorF001	000346
- =MotorF001	000347
- =SensorF001	000348
- =DrivePowerF001	000351
- EPLAN Page Macro	Description250
- RB_AT	
- PosDev_2D2S2P	
- RB_AT_DB	

3. Select "File / Close / Close template".

File View Home EPLAN Controller Programming Electrical Engineering

All Parts
Closes all parts and keeps the session running.

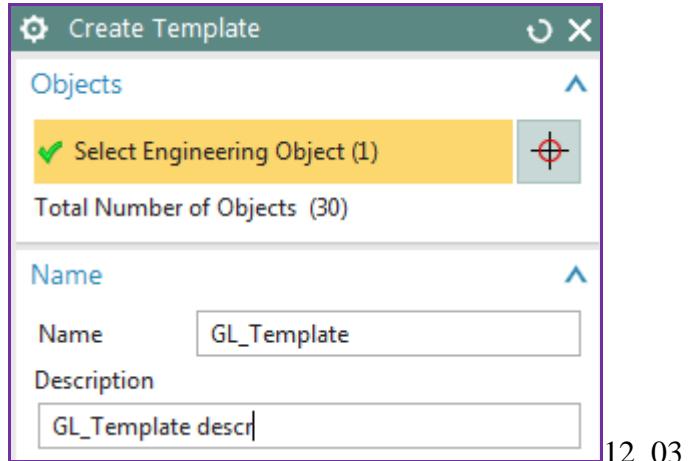
Close Template
Closes the template file.

The Template includes objects in the Unassigned folder.
When inserted into the Project, the objects will always be inserted into the Unassigned folder in the relevant Aspect.

Don't display this message again

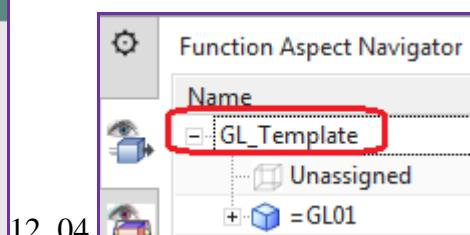
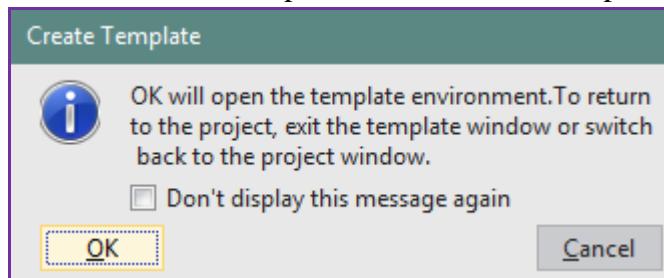
12.2b. Create template

1. Select GL01. Click "System Design / Create Template". For "Name" enter "GL_Template".



20160209 TERRY: What is fragment?

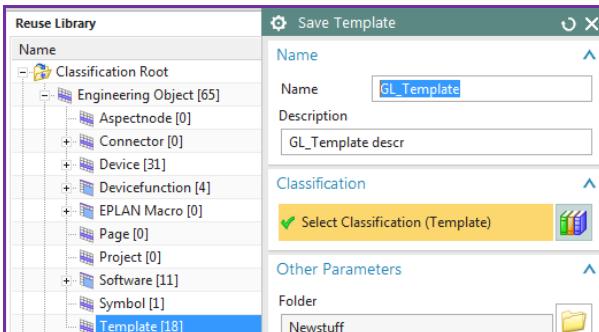
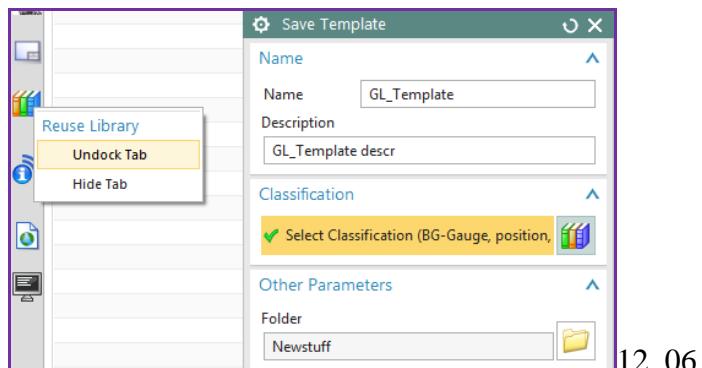
2. Click OK. The template is shown in the template editor.



3. Select "File / Close / Close template".

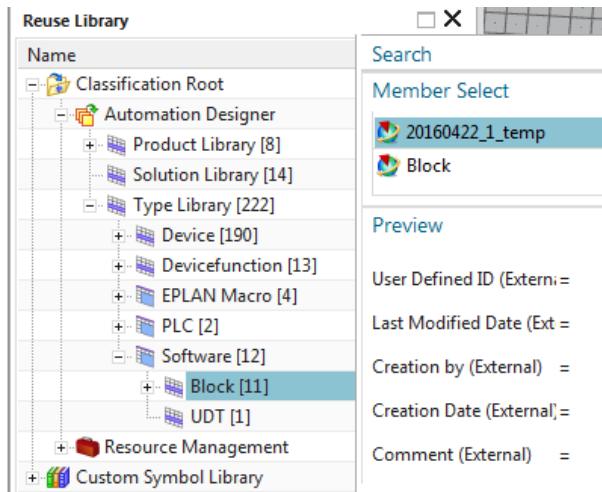
4. Click "Yes, save and close".

5. For "Classification" select "Classification Root / Engineering Object / Template".

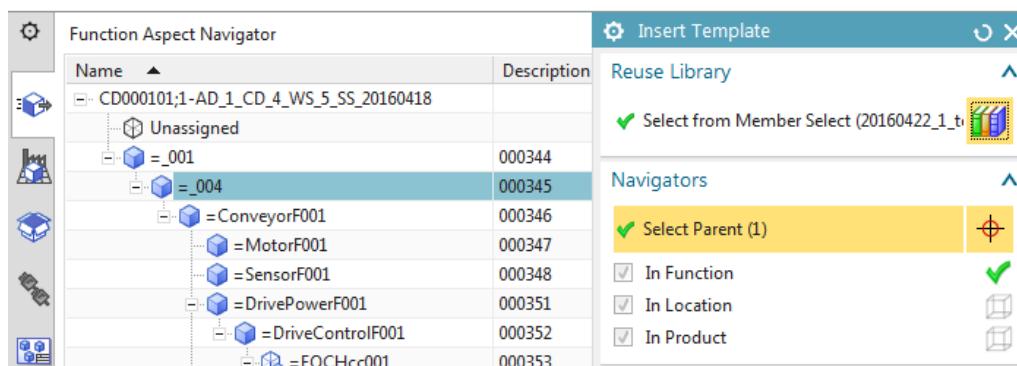


6. Click OK.

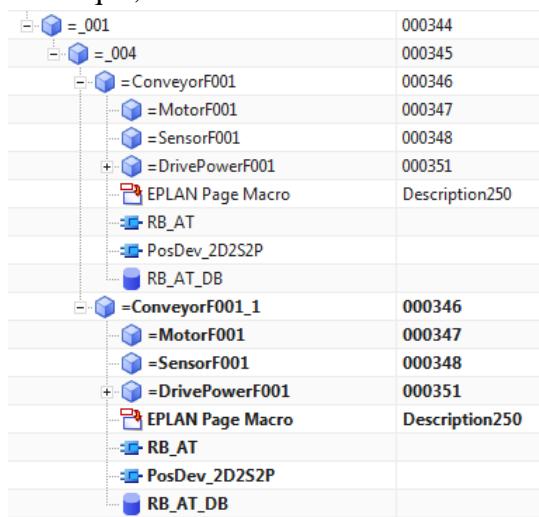
12.3a. Insert template 20160422



1. Undock the Reuse Library.
2. In the Reuse Library select "Classification Root / Engineering Object / Template".
3. Drag & drop the template from the member select. The "Insert Template" dialog appears.
4. Click on "Select Aspect".
5. Click on TL01.



6. Click OK. The template instance is added. Change the name of the GL EO in the instance (this name must be unique, but the names of sub-EOS match those in the other conveyor).



Wow... some of it worked 😊

Configurations

Name	Value
Global Symbols	
Tags	
FRG_EStop	FRG_EStop
FRG_BS	
IBNO	
reset	
Pos_front_left	001_004.ConveyorF001_1.SensorF001_CH.S_ADV
slow_forw	
pos_back_left	
slow_back	
FB/IDB	
PosDev_2D2S...	
G120x_DB	
FC	
DB	

Interface

PLC Code

```

1 Network 1:-->
2 ..... A= "FRG_EStop"
3 ..... A= "FRG_BS"
4 ..... = #ENABLE_SAFETY

```

Network 9:

```

CALL "PosDev_2D2S2P", "PosDev_2D2S2P_DB"
EN_ADV := #ENABLE_ADV
EN_RTN := #ENABLE_RTN

```

Network 10:

```

80 Network 10:-->
81 //////////////////////////////////////////////////////////////////// Caller on the position [G120x_DB] is not connected with a valid block.
82
83
84 Network 11:-->
85 ..... A(
86 ..... A= "001_004.ConveyorF001_1.SensorF001_CH"
87 ..... A= "slow_forw"
88 ..... O(
89 ..... A= "pos_back_left"
90 ..... A= "slow_back"
91 ..... )
92 ..... AN #OUT_ADV
93 ..... AN #OUT_RTN
94 ..... = #CONVEYOR_OCCUPIED

```

RBAT ports

Source

FB033	RB_AT
-------	-------

Ports

Port	Connected Object	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
User Defined							
Caller_1			EO	Caller	Undirected	N	IDB_Proxy, FC_Proxy
System Defined							
Block_C			Control Scope	Program Block	Undirected	1	Controller
FRG_Estop	FRG_EStop	FRG_EStop	EO	Tag	Undirected	1	Tag_Proxy
FRG_BS			EO	Tag	Undirected	1	Tag_Proxy
IBNO			EO	Tag	Undirected	1	Tag_Proxy
reset			EO	Tag	Undirected	1	Tag_Proxy
Pos_front_left	001_004.ConveyorF001_1.SensorF001_CH	D11	EO	Tag_Proxy	Undirected	N	Tag, Any, Operand
slow_forw			EO	Tag	Undirected	1	Tag_Proxy
pos_back_left			EO	Tag	Undirected	1	Tag_Proxy
slow_back			EO	Tag	Undirected	1	Tag_Proxy
PosDev_2D2S2P_DB			EO	Caller	Undirected	N	IDB_Proxy, FC_Proxy
G120x_DB			EO	Caller	Undirected	N	IDB_Proxy, FC_Proxy
FB033	DB012	RB_AT	EO	FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block
				FB	Undirected	1	FB_Proxy

Try to fix

CD000101;1-AD_1_CD_4_WS_5_SS_20160418

Source: FB034

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types	
User Defined								
- System Defined								
- Block_C				Control Scope	Program Block	Undirected	1	Controller
FB034				EO	FB_Proxy	Undirected	N	Any, FB, Operand, FB, Program Block

Manual Connection
Connects ports manually.

PLC HW

- S7-300-Station_2
- S7-300-Station_2
- S7300/ET200M station_1
- S7300/ET200M station_1
 - PLC data types
 - Program blocks
 - G120x_DB [DB2]
 - PosDev_2D2S2P_DB [DB9]
 - Main [OB1]
 - PosDev_2D2S2P [FB369]
 - 001..004.ConveyorF001_RB [FB1012]
 - RB_AT_DB [DB1012]
 - G120x [FB307]
 - Local modules
 - Rail_0
 - PLC_2
- PLC tags

Manual Connection

Source: FB034

Target: Select Object (1)

Select Port:

Port	Connected Object	Connected Port	Port Type	Conn
G120x			EO	FB
	FB020	FB020	EO	



The target port has cardinality = 1 and it is already connected. Do you want to overwrite the connection?

So that's the problem?

Ports Manager

Source: DB006

Ports: G120x_DB [DB2]

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types	
User Defined								
- System Defined								
- Block_C				Control Scope	Program Block	Undirected	1	Controller
	S7300/ET200M ...	Station_C		Controller	Undirected	N		PLC Tag, Program Block, Object, PLC Data Type
- G120x			EO	FB	Undirected	1		FB_Proxy
	FB020	FB020	EO	FB_Proxy	Undirected	N		Any, FB, Operand, FB, Program Block
- DB006			EO	IDB_Proxy	Undirected	N		Any, Caller, Operand, Program Block, IDB
	FB019	Caller_1	EO	Caller	Undirected	N		IDB_Proxy, FC_Proxy
	FB019	G120x_DB	EO	Caller	Undirected	N		IDB_Proxy, FC_Proxy

Lets try with posdev

The screenshot shows the SIMATIC Manager interface with several windows open:

- Automation Navigator:** Shows the project structure with nodes like "CD000101;1-AD_1_CD_4_WS_5_SS_20160418" and "Unassigned".
- Ports Manager:** Shows the "Source" section with "FB035" selected and the "Ports" section listing various PLC objects.
- Manual Connection:** A dialog box where "FB035" is selected as the source and "FB021" is selected as the target. It lists "Connected Object" (PosDev_2D2S2P_DB [DB9]) and "Connected Port" (FB021). The "Port Type" column shows "EO" and "FB".
- Table:** A table showing connections between FB035 and DB007, both connected via PosDev_2D2S2P.

The screenshot shows the SIMATIC Manager interface with the following components:

- Configurations Tab:** Shows the project structure with nodes like "CD000101;1-AD_1_CD_4_WS_5_SS_20160418" and "Unassigned".
- Interface Tab:** Shows the "Configurations" tab with sections for "Tags", "FB/DB", and "PLC Code". The "PLC Code" section displays the following code:

```

36      : = "#PUSHBOTTOM_BTN"
37
38
39 Network 8:-
40      : = "reset"
41      : = "#ERROR_RESET"
42
43
44 Network 9:-
45      CALL: "PosDev_2D2S2P", "PosDev_2D2S2P_DB"
46
47 Network 10:-
48      CALL: "G120x", "G120x_DB"
49

```

- Replace by Call Dialog:** An open dialog box titled "Replace by Call" with the following details:
 - Properties:** Name: PosDev_2D2S2P_DB
 - Selection:** Object Selection: Select Program Block (1)
 - Expression:** (empty)
 - Return Value:** (empty)
 - Break Expression:** (empty)
 - Define Parameters:** (empty)
 - Replace Parameter by:** (empty)
 - Symbolic Reference:** (empty)
 - Object Selection:** (empty)
 - Condition:** (empty)

Do for g120x also.

```

44 Network 9:-
45      CALL: "PosDev_2D2S2P", "PosDev_2D2S2P_DB"
46
47 Network 10:-
48      CALL: "G120x", "G120x_DB"
49

```

In non-template connections remain, so kind of a mess... figure out next week.

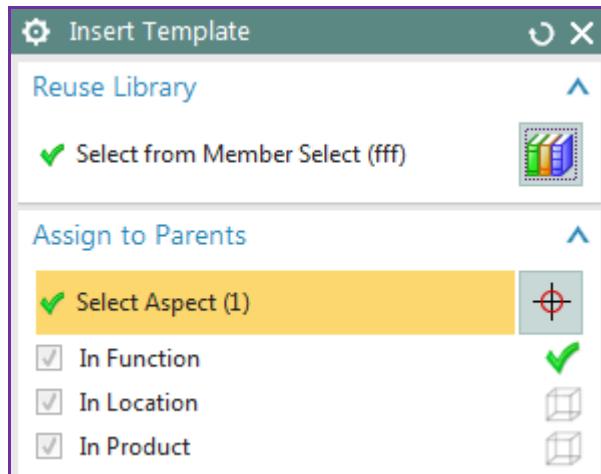
```

1 Network 1:-
2      CALL: "001_004.ConveyorF001_RB", "RB_AT_DB"
3
4      Main [OB1]

```

12.3b. Insert template

1. Undock the Reuse Library.
2. In the Reuse Library select "Classification Root / Engineering Object / Template".
3. Drag & drop the template from the member select. The "Insert Template" dialog appears.
4. Click on "Select Aspect".
5. Click on TL01.



12_08

6. Click OK. The template instance is added. Change the name of the GL EO in the instance (this name must be unique, but the names of sub-EOS match those in the other conveyor).

Function Aspect Navigator

Name	Description	Template
- CD000297;1-ADprojectworkset2		
└ Unassigned		
└ =EOATMcc001	EODATMname2	
└ =EOTLcc002	EODTLname	
└ =EOGLcc001	EODGLname2	
└ =EOMAcc001	EODMAname	
└ =EOBGcc000	EODBGname	
└ =EOTFcc001	EODTFname	
└ =EOBGcc002	EODBGname	
└ =EOBGcc003	EODBGname	
└ =EOBGcc004	EODBGname	
└ RB_AT [FB1012]		
└ RB_AT_DB [DB1012]		
└ PosDev_2D2S2P_DB [DB369]		
└ =EOGLcc002	EODGLname2	GL_t2(0001)
└ =EOMAcc001	EODMAname	└ GL_t2(0001)
└ =EOBGcc000	EODBGname	└ GL_t2(0001)
└ =EOTFcc001	EODTFname	└ GL_t2(0001)
└ =EOBGcc002	EODBGname	└ GL_t2(0001)
└ =EOBGcc003	EODBGname	└ GL_t2(0001)
└ =EOBGcc004	EODBGname	└ GL_t2(0001)
└ RB_AT [FB1012]		└ GL_t2(0001)
└ RB_AT_DB [DB1012]		└ GL_t2(0001)
└ PosDev_2D2S2P_DB [DB369]		└ GL_t2(0001)

12_09

\$\$\$\$5b/5 12.4a. Add LD mapping (NEW 20160415)

Manage object mapping >> 1. map to existing in project

The screenshot shows the 'Manage Object Mapping' dialog box. At the top, there is a toolbar with buttons: 'Map to Existing in Project' (highlighted with a mouse cursor), 'Map to New', 'Map to New Based on Type', and 'Unmap'. Below the toolbar is a section titled 'Object Mapping' with a 'Show' dropdown menu containing options: Unhidden (selected), Hidden, Unmapped, Mapped, Deleted, and All. A table below lists external objects with columns: External Name, External Type, Status, RDS, and Type. The table contains five rows, with the last row being the selected item.

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...	■○		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■○		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■○		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■○		M00x_template
0000099A001127-A-...	0000099A001127-A-1-E...	■○	EOGLcc004	

The screenshot shows the 'Function Aspect Navigator' on the left and the 'Map to Existing Object' dialog box on the right. The 'Function Aspect Navigator' tree view shows a hierarchy of objects, with 'M002' selected. The 'Map to Existing Object' dialog has two main sections: 'External Object' and 'Automation Designer'. In 'External Object', there is a message 'Select External Object (1)' with a plus sign icon. In 'Automation Designer', there is a message 'Select Engineering Object (1)' with a plus sign icon. There is also an unchecked checkbox for 'Map to Template'.

The screenshot shows the 'Object Mapping' table with the results of the mapping operation. The table has columns: External Name, External Type, Status, RDS, and Type. The table contains four rows, all of which have been mapped to the 'M002/M002/-F001.M006' template.

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...	■○	M002/M002/-F001.M006	
20160321_4_000270_...	20160321_4_000270_A_1...	■○		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■○		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■○		M00x_template

Do again to second in row.

Manage object mapping >> 2. map to new

Manage Object Mapping

Actions

- [Map to Existing in Project](#)
- [Map to New](#) **(Selected)**
- [Map to New Based on Type](#)
- [Unmap](#)

Object Mapping

Show

Unhidden Hidden Unmapped Mapped Deleted All

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M006	
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M008	
20160321_4_000270_...	20160321_4_000270_A_1...			M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...			M00x_template
0000099A001127-A-...	0000099A001127-A-1-E...		EOGLcc004	

Cannot select template.

X-Connecting (7)

Engineering Object

Reuse Library

Select from Member Select (X-Connecting)

General Properties

Object Name Prefix: -

Description:

Navigators

Select Parent (0)

In Function
 In Location
 In Product
 In Automation

Function Aspect Navigator

- Name
 - CD000034;1-AD_1_CD_4_WS_5
 - Unassigned
 - + =EOATMcc001
 - F001
 - + M002
 - FX001_FB
 - + FX001_FB_DB
 - + M002
 - + M002
 - + -001

Manage Object Mapping

Manage object mapping >> 3. map to new based on type

Manage Object Mapping

Actions

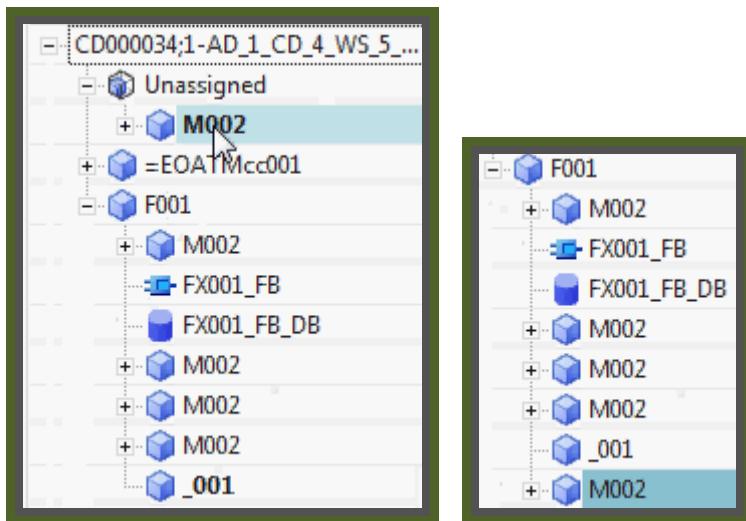
Map to Existing in Project | Map to New | **Map to New Based on Type** | Unmap

Object Mapping

Show: Unhidden (radio button selected), Hidden, Unmapped, Mapped, Deleted, All

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...	Unmapped	M002/M002/-F001.M006	
20160321_4_000270_...	20160321_4_000270_A_1...	Unmapped	M002/M002/-F001.M008	
20160321_4_000270_...	20160321_4_000270_A_1...	Unmapped	_001/_001/-???._001	
20160321_4_000270_...	20160321_4_000270_A_1...	Unmapped		M00x_template
0000099A001127-A...	0000099A001127-A-1-E...	Unmapped	EOGLcc004	

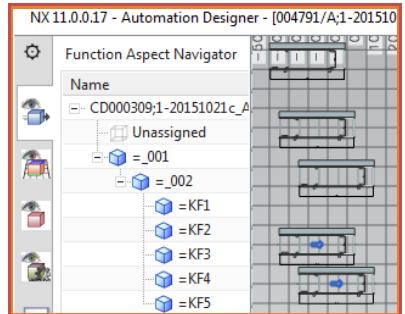
External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...	Unmapped	M002/M002/-F001.M006	
20160321_4_000270_...	20160321_4_000270_A_1...	Unmapped	M002/M002/-F001.M008	
20160321_4_000270_...	20160321_4_000270_A_1...	Unmapped	_001/_001/-???._001	
20160321_4_000270_...	20160321_4_000270_A_1...	Unmapped	M00x_template(0003)	M00x_template
0000099A001127-A...	0000099A001127-A-1-E...	Unmapped	EOGLcc004	



12.4. Add LD mapping

20151029 TERRY: seems like you must close everything and then open the LD CD to do the mapping?

1. Close the AD CD.
2. Open the LD CD.
3. Switch to AD.



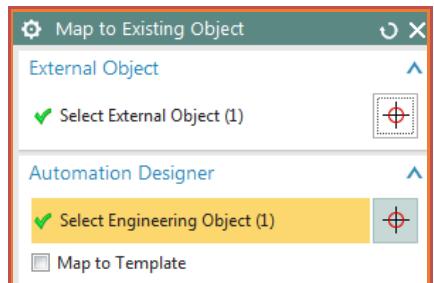
12_10

4. Click "Manage Object Mapping". The column "External Object" lists LD DE's (conveyors). The column "Automation Designer" lists AD EO's that have been mapped to an LD DE.
5. Select the unmapped conveyor.

External Object	Type	Status	Automation Designer	Definition
FRL2020_005	SO Palletized Floor Conveyor	Mapped	_003	EODKFname
FRL2020_005	SO Palletized Floor Conveyor	Unmapped		

12_11

6. Click "Map to existing".
7. Click "Select Engineering Object".
8. Select the AD EO.



12_12

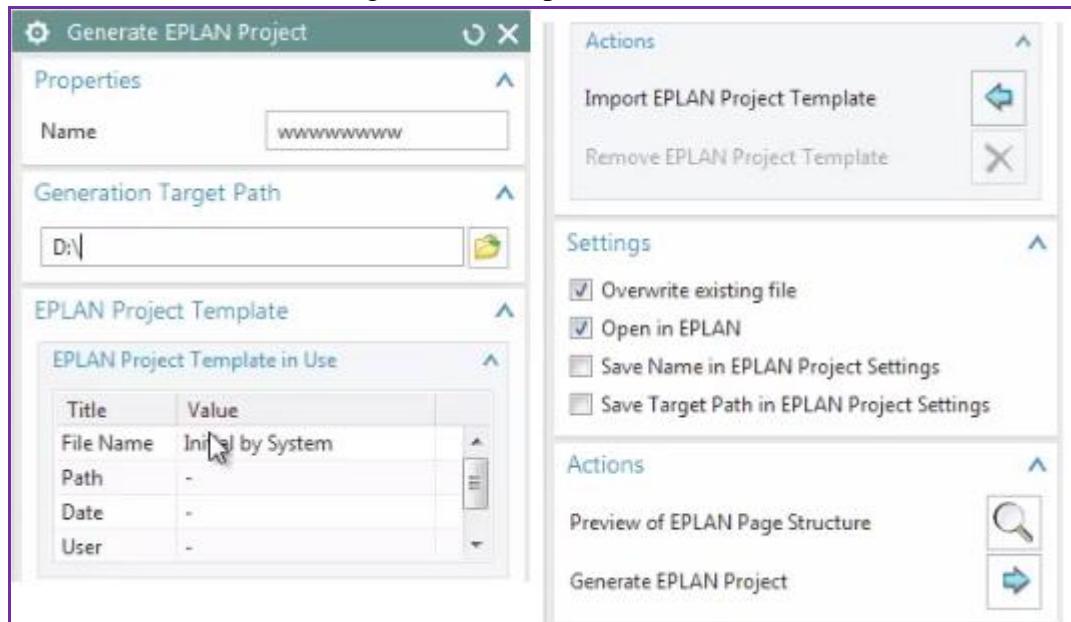
9. Click OK. The LD DE and AD EO are mapped.

External Object	Type	Status	Automation Designer	Definition
FRL2020_005	SO Palletized Floor Conveyor	Mapped	_003	EODKFname
FRL2020_005	SO Palletized Floor Conveyor	Mapped	_004	EODKFname

12_13

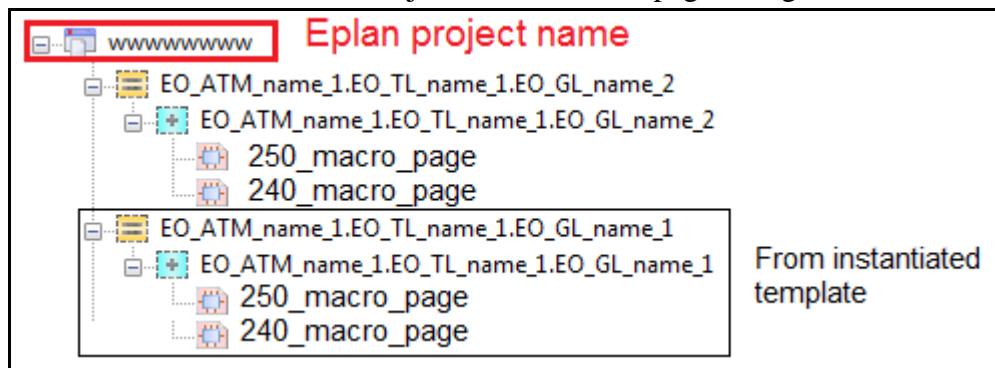
12.5. Generate EPLAN

1. Click "Electrical Engineering / Generate EPLAN Project".
2. Enter "Name" (anything) and "Generation Target Path".
3. Check "Overwrite existing file" and "Open in EPLAN".



12_14

3. Click "Generate EPLAN Project". The 2 macro pages are generated.



12_15

12.6. Generate TIA

12.5.1. FIX ERRORS in instance (TERRY internal notes)

12.6.1. Set tag addresses

12.6.2. Connect SW

12.6.4. Send to TIA

xxx 12.5.0 FIX ERRORS in instance (TERRY internal notes)

This internal section shows how to correct some errors (I imagine this will be corrected before release).

1. Fix port errors for PosDev, G120x.
2. Redo variable connections in RB_AT for G120x, PosDev.

1. Fix port errors for PosDev, G120x

1. Open RB_AT. Note the problem for the calls to PosDev and RB_AT.

```
44 Network 9:->
45     ///////////////////////////////////////////////////////////////////Caller on the position [PosDev_2D2S2P]
46
47 Network 10:->
48     ///////////////////////////////////////////////////////////////////Caller on the position [G120x_DB]
49
```

2. Open PosDev IDB port manager. Note that the port is not connected.

Port	Connected Obj...
User Defined	
System Defined	PosDev_2D2S2P

3. Manually connect the port to the PosDev FB.

Name	Description	Template
C0002971-ADprojectworkset2		=EOATMcc001.EOTLcc002.EOGLcc002.POSDEVDB
+ Unassigned		
- PLC HW		
- ST1500/ET200MP_station_1		
+ Local modules		
- Program blocks		
_ G120x (FB307)		
_ G120x (FB309)		
_ G120x (FB60)		
_ G120x (FB61)		
_ EOATMcc001.EOTLcc002.EOGLcc001...		
_ PIC data types		
- PLC tags		
_ Newstart		
_ PLC_On_delayed		
_ TRUE		
_ CPulse_0_1s		
_ RLO1		
_ BIF		
_ RLO0		
_ FRG_Estop		
_ FRG_B5		

Ports

Port	Connected Object
PosDev_2D2S2P	PosDev_2D2S2P_DB

Manual Connection

Source: Select Port (1)

Target: Select Object (1)

Port	Connected Object	Connected Port	Port Type
PosDev_2D2S2P	PosDev_2D2S2P_DB		INTERNAL

Result.

System Defined
PosDev_2D2S2P

```
44 Network 9:->
45     CALL "PosDev_2D2S2P",      "=EOATMcc001.EOTLcc002.EOGLcc002.POSDEVDB"
46
47 Network 10:->
48     ///////////////////////////////////////////////////////////////////Caller on the position [G120x_DB]
49
```

4. Do the same for G120x.

System Defined
G120x

Ports

Port	Connected Object
G120x	G120x

Manual Connection

Source: Select Port (1)

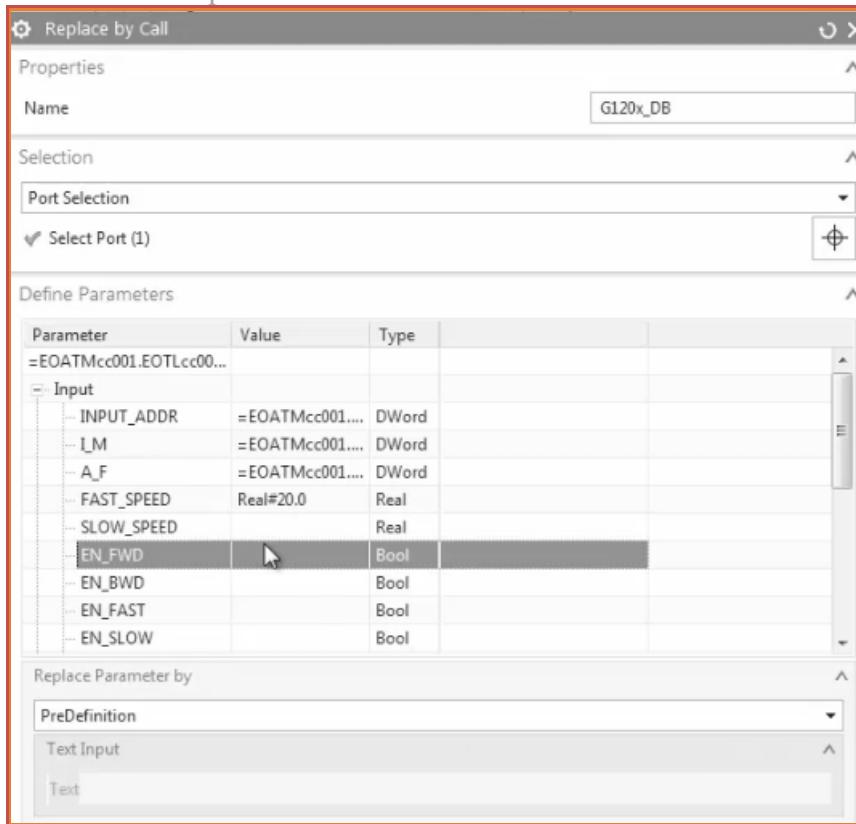
Target: Select Object (1)

Port	Connected Object	Connected Port	Port Type
G120x	G120x		INTERNAL

```
4 Network 9:->
5     CALL "PosDev_2D2S2P",      "=EOATMcc001.EOTLcc002.EOGLcc002.POSDEVDB"
6
7 Network 10:->
8     CALL "G120x",              "=EOATMcc001.EOTLcc002.EOGLcc002.POSDEVDB"
9
```

2. Redo variable connections in RB_AT for G120x, PosDev

1. Right-click on the call in Network 10 to G120x. Select "Edit".
2. Redefine the parameters.



Result.

```
44 Network 9:--  
45     CALL    "PosDev_2D2S2P",      "=EOATMcc001.EOTLcc002.EOGI"  
46 --  
47 Network 10:--  
48     CALL    "G120x",      "=EOATMcc001.EOTLcc002.EOGI"  
49     INPUT_ADDR :=      "=EOATMcc001.EOTLcc002.EOGI"  
50     I_M :=      "=EOATMcc001.EOTLcc002.EOGI"  
51     A_F :=      "=EOATMcc001.EOTLcc002.EOGI"  
52     FAST_SPEED :=      Real#20.0  
53     OUTPUT_ADDR :=      "=EOATMcc001.EOTLcc002.EOGI"
```

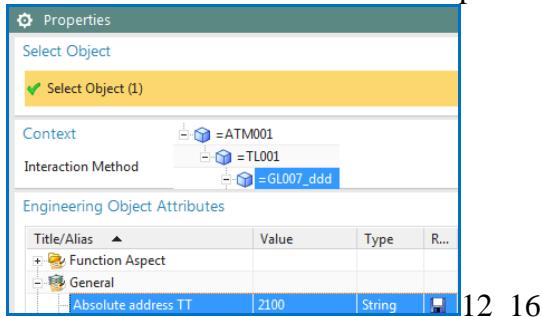
12.6.1. Set tag addresses

1. Set absolute tag address (FD7)
2. Modify DI tag HW connections
3. Modify DW tag addresses

1. Set absolute tag address (FD7)

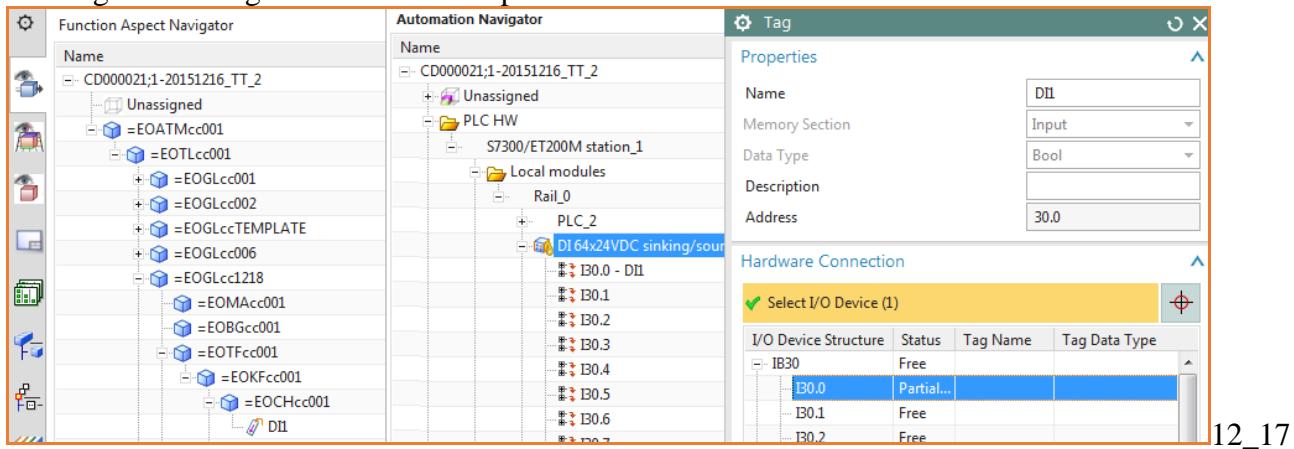
20160209 TERRY: Andreas says in FD7 will change. Set the address of the top EO in template, and the rest have a relative address. I am not sure what to write here... just guessing.

1. Set the absolute address of the top element GL to 2200 (the address of the non-template GL is 2100).



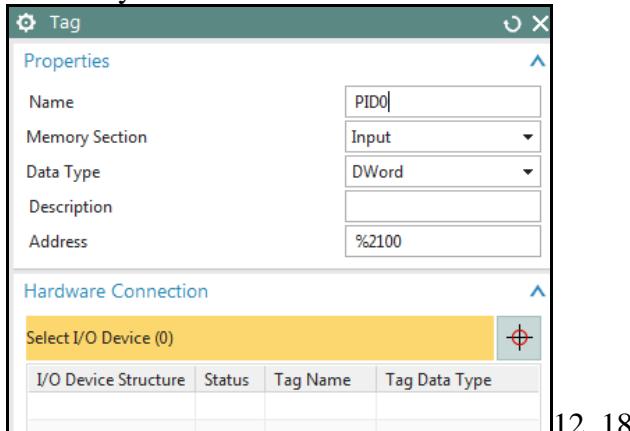
2. Modify DI tag HW connections

1. Assign the DI tags to an available input channel.



3. Modify DWord tag addresses

1. Right-click on the DWord tag. Select "Edit".
2. Modify "Address".



12.6.2. Connect SW

ERROR 1 20151014: missing PIDs. 002 tags missing.

11:45 Restart NX. Connect SW blocks. TO FIX ERROR restart and reconnect sw. result:

20151029



1. Click on "System Design / Connect SW Blocks".

2. Select all software blocks.

12_19

3. Select the station.

12_20

4. Click OK. The SW block and tag names are unique (because you used expressions that used the aspect EO chain to create unique SW block names).

20160209 TERRY: modified pic.. shows the correct names.

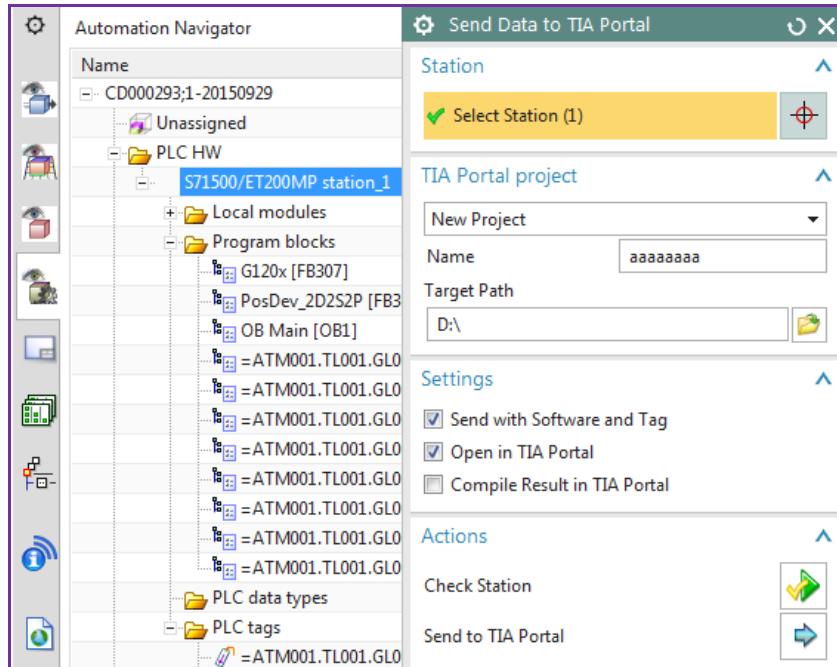
12_21

12.6.4. Send to TIA

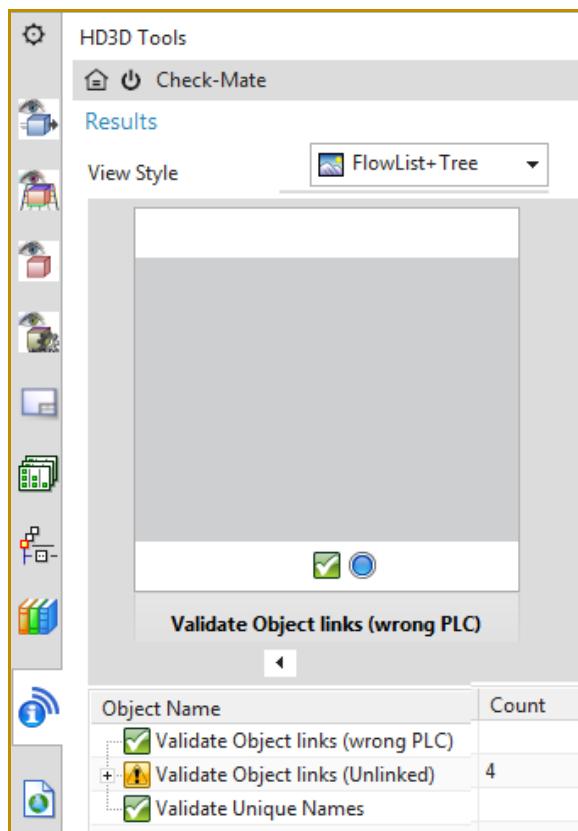
xxx12.6.3. Send Data to TIA

20150209 TERRY: serious problems with what was created in TIA.

1. Click on "Electrical Engineering / Send Data to TIA Portal".



2. Click "Check Station" to check for errors.



20151014 ERROR: wrong PLC.

yesterday was getting a wrong PLC Error. There was only 1 PLC. Could not figure out from looking at info below (the numbers "R-1022-1" etc) what the problem was.

Object Name	Count
- <input checked="" type="checkbox"/> Validate Object links (wrong PLC)	1
S71500/ET200MP station_1 - =EO_ATM_name_1.EO_TL_name_1.EO_GL_name_2_RB has Block Connection Error: 4 objects	4
<input checked="" type="checkbox"/> Port:R-1022-1	
<input checked="" type="checkbox"/> Port:R-834-1	
<input checked="" type="checkbox"/> Port:R-840-1	
<input checked="" type="checkbox"/> Port:R-858-1	
+ <input type="checkbox"/> Validate Object links (Unlinked)	4
<input checked="" type="checkbox"/> Validate Unique Names	

So deleted a connection, and then only 3 errors, so it was the connection to BG CH in the second conveyor (the template) that caused error.

Network 11:		
Name	Description	Template
= CD0002961-AD_project_workset_1		
Unassigned		
<input checked="" type="checkbox"/> =EO_ATM_name_1	EOD_ATM_des...	
<input checked="" type="checkbox"/> =EO_TL_name_1	EOD_TL_descr	
<input checked="" type="checkbox"/> =EO_GL_name_1	EOD_GL_descr	
<input checked="" type="checkbox"/> =EO_BG_name_1	EOD_BG_descr	
<input checked="" type="checkbox"/> =EO_MA_name_1	EOD_MA_descr	
<input checked="" type="checkbox"/> =EO_TF_name_1	EOD_TF_descr	
<input checked="" type="checkbox"/> =EO_BG_name_2	EOD_BG_descr	
<input checked="" type="checkbox"/> =EO_BG_name_3	EOD_BG_descr	
<input checked="" type="checkbox"/> =EO_BG_name_4	EOD_BG_descr	
<input checked="" type="checkbox"/> RB_AT [FB1012]		
<input checked="" type="checkbox"/> RB_AT_DB [DB1012]		
<input checked="" type="checkbox"/> PosDev_202S2P_DB [DB369]		
<input checked="" type="checkbox"/> DRIVE_G120D CU240 IO_1	cu240 macro	
<input checked="" type="checkbox"/> DRIVE_G120D PM250D_1	2descr	
<input checked="" type="checkbox"/> =EO_GL_name_2	EOD_GL_descr	GL_t(0001)
<input checked="" type="checkbox"/> =EO_BG_name_1	EOD_BG_descr	~GL_t(0001)
<input checked="" type="checkbox"/> =EO_MA_name_1	EOD_MA_descr	~GL_t(0001)
<input checked="" type="checkbox"/> =EO_TF_name_1	EOD_TF_descr	~GL_t(0001)
<input checked="" type="checkbox"/> =EO_BG_name_2	EOD_BG_descr	~GL_t(0001)
<input checked="" type="checkbox"/> =EO_BG_name_3	EOD_BG_descr	~GL_t(0001)
<input checked="" type="checkbox"/> =EO_BG_name_4	EOD_BG_descr	~GL_t(0001)
<input checked="" type="checkbox"/> PosDev_202S2P_DB [DB369]		~GL_t(0001)
<input checked="" type="checkbox"/> RB_AT [FB1012]		~GL_t(0001)
<input checked="" type="checkbox"/> RB_AT_DB [DB1012]		~GL_t(0001)
<input checked="" type="checkbox"/> DRIVE_G120D CU240 IO_1	cu240 macro	~GL_t(0001)
<input checked="" type="checkbox"/> DRIVE_G120D PM250D_1	2descr	~GL_t(0001)

I try again today morning and first get warning about new session (previous timed out), and then the problem is gone. I changed nothing.

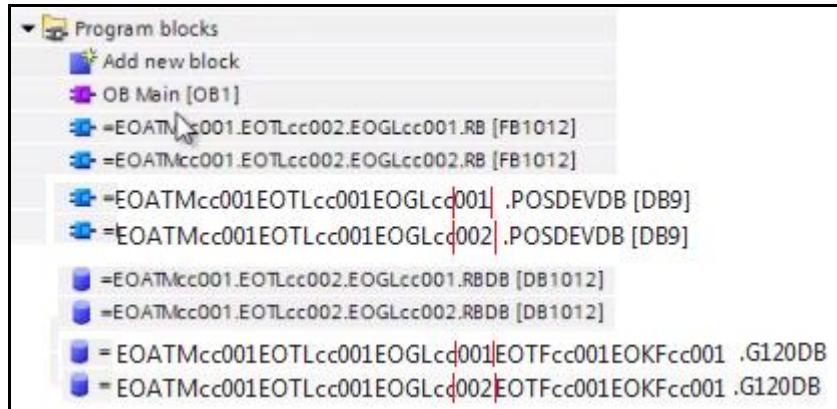
Object Name	Count
- <input checked="" type="checkbox"/> Validate Object links (wrong PLC)	
- <input type="checkbox"/> Validate Object links (Unlinked)	4
S71500/ET200MP station_1 - PosDev_202S2P has Block Connection Error: 7 objects	7
<input checked="" type="checkbox"/> Port#R-1123-7	
<input checked="" type="checkbox"/> Port#R-1126-7	
<input checked="" type="checkbox"/> Port#R-1117-7	
<input checked="" type="checkbox"/> Port#R-1114-7	
<input checked="" type="checkbox"/> Port#R-1112-7	
<input checked="" type="checkbox"/> Port#R-1110-7	
S71500/ET200MP station_1 - OB Main has Block Connection Error: 4 objects	4
<input checked="" type="checkbox"/> Port#R-1220-3	
<input checked="" type="checkbox"/> Port#R-1218-3	
<input checked="" type="checkbox"/> Port#R-1216-3	
<input checked="" type="checkbox"/> Port#R-1214-3	
S71500/ET200MP station_1 - =EO_ATM_name_1.EO_TL_name_1.EO_GL_name_2_RB has Block Connection Error: 2 objects	2
<input checked="" type="checkbox"/> Port#R-799-1	
<input checked="" type="checkbox"/> Port#R-858-3	
S71500/ET200MP station_1 - =EO_ATM_name_1.EO_TL_name_1.EO_GL_name_3_RB has Block Connection Error: 1 objects	1
<input checked="" type="checkbox"/> Port#R-110-2	
<input checked="" type="checkbox"/> Validate Unique Names	

So... if this happens, restart NX.

20160209 TERRY: not work yet, so I modified pics (to show how things should be).

1. Click "Send to TIA Portal".
2. Open the project in TIA portal. Verify the following:

2a. Program blocks.



12_24

2b. OB Main call.

OB Main		
Network 1:		
1	CALL " =EOATMcc001.EOTLcc002.EOGLcc001.RB", " -EOATMcc001.EOTLcc002.EOGLcc001.RBDB	\$FB1012, \$DB1012
2	CALL " =EOATMcc001.EOTLcc002.EOGLcc002.RB", " -EOATMcc001.EOTLcc002.EOGLcc002.RBDB	\$FB1012, \$DB1012

12_25

2c. RB_AT code.

Network 9:		
1	CALL "PosDev_2D2S2P", " =EOATMcc001.EOTLcc002.EOGLcc001.POSDEVDB"	
Network 10:		
1	CALL "G120x", " =EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.G120DB	
Network 11:		
1	A(
2	A " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc001.CH"	\$I1.0
3	A " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc002.CH"	\$I1.2
4	O	
5	A " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc003.CH"	\$I1.3
6	A " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc004.CH"	\$I1.4
Network 12:		
1		
2	AN " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc001.CH"	\$I1.0
3	AN " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc002.CH"	\$I1.2
4	AN " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc003.CH"	\$I1.3
5	AN " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc004.CH"	\$I1.4

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20160209 TERRY ERROR: Ambiguous address... same address for 2 tags?

A " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc000.CH"	\$I1.0
! Access to " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc002.CH"	\$T1.2
with ambiguous address.	Access to " =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc000.CH" with ambiguous address.

2d. PosDev (ERROR, not sent to TIA).

```

1 Network 1:- ~
2 ..... TAR1- #SAVE_AR1-
3 ..... TAR2- #SAVE_AR2-
4 ~
5 Network 2:- ~
6 ..... A- "Newstart"->
7 ..... R- #TM_STARTUP-
8 ..... R- #EN_FAST-
9 ~
10 Network 3:- ~
11 ..... A- #ERR_RESET-
12 ..... FP-#Err_Reset_P-
13 ..... ON "PLC_On delayed"->
14 ..... JCN www-
15 ~
16 Network 4:- ~
17 ..... A- "TRUE"->

```

12_27

2e. G120x (contains no dynamized SW or tags) (ERROR, not sent to TIA).

```

1 Network 1:- ~
2 ..... TAR1- #SAVE_AR1- // Save adress register 1-
3 ..... TAR2- #SAVE_AR2- // Save adress register 2-
4 ~
5 ~
6 Network 2:- ~
7 ..... LAR1- #STW-
8 ..... TAR2- // Offset as absolute value of address is
9 ..... +AR1-
10 ..... L- #INPUT_ADDR-
11 ..... T- DI-
12 ~
13 Network 3:- ~
14 ..... A- #EM_STOP- // SiFa-
15 ..... =- #En_OK- // Control voltage On-
16

```

12_28

2f. Tags.

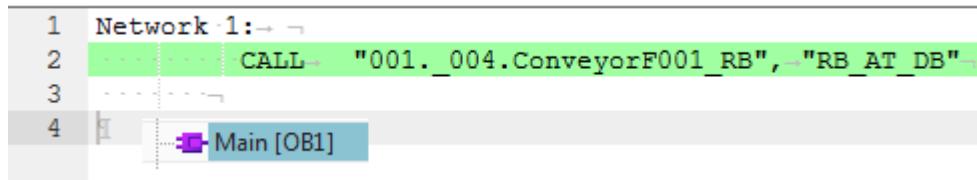
20160209 TERRY: make sure not using same address space.

PLC tags			
	Name	Data type	Address
1	-#I Newstart	Bool	%M3.1
2	-#I PLC_On delayed	Bool	%M2.7
3	-#I TRUE	Bool	%M2.2
4	-#I CPulse_0_1s	Bool	%M4.0
5	-#I RLO 1	Bool	%M3.2
6	-#I Blif	Bool	%M4.4
7	-#I RLO 0	Bool	%M3.3
8	-#I FRG_EStop	Bool	%M4003.1
9	-#I FRG_BS	Bool	%M4002.1
10	-#I IBNO	Bool	%M3.6
11	-#I reset	Bool	%M11.2
17	-#I =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc001.CH	Bool	%I1.0
15	-#I =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc002.CH	Bool	%I1.1
12	-#I =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc003.CH	Bool	%I1.2
13	-#I =EOATMcc001.EOTLcc002.EOGLcc001.EOBGcc004.CH	Bool	%I1.3
18	-#I =EOATMcc001.EOTLcc002.EOGLcc002.EOBGcc001.CH	Bool	%I1.4
23	-#I =EOATMcc001.EOTLcc002.EOGLcc002.EOBGcc002.CH	Bool	%I1.5
14	-#I =EOATMcc001.EOTLcc002.EOGLcc002.EOBGcc003.CH	Bool	%I1.6
16	-#I =EOATMcc001.EOTLcc002.EOGLcc002.EOBGcc004.CH	Bool	%I1.7
24	-#I =EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.PID0	DWord	%ID2100
25	-#I =EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.PID1	DWord	%ID2104
26	-#I =EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.PID2	DWord	%ID2108
27	-#I =EOATMcc001.EOTLcc002.EOGLcc001.EOTFcc001.EOKFcc001.QD0	DWord	%QD2112
22	-#I =EOATMcc001.EOTLcc002.EOGLcc002.EOTFcc001.EOKFcc001.PID0	DWord	%ID2200
21	-#I =EOATMcc001.EOTLcc002.EOGLcc002.EOTFcc001.EOKFcc001.PID1	DWord	%ID2204
20	-#I =EOATMcc001.EOTLcc002.EOGLcc002.EOTFcc001.EOKFcc001.PID2	DWord	%ID2208
19	-#I =EOATMcc001.EOTLcc002.EOGLcc002.EOTFcc001.EOKFcc001.QD0	DWord	%QD2212

12_29

\$\$\$\$5a/5 PART4 ch15,17 instead of Part3 ch12? (maybe in future.. not now)

20160414 TERRY: add the auto-link functionality in ch 15,17 to part1-3 example, but this would take some time.....



Part 4. GS release 2 (20160329)

GS1 (parts 1-3) was based on a too realistic and complicated automotive example.

The GS should describe very simple, step-by-step demos that guide user through

1. complex configuration
2. complex user interface
3. bugs

And be more easily updated when have config changes (new SME, TC VM, TIA, EPLAN, etc.).

So this GS2 focuses on

1. simple examples (LD whose only part is a cylinder)
2. basic workflows
3. detailed steps for my particular setup (with many notes about errors, etc.).

I don't have much input from customers or application engineers, so guessing at many things.

GS2 describes step-by-step how to create a project with

1. single cylinder type (000270_A_1_bg_5088234_a1a_jt.prt)
2. F-protection EO
3. with multiple sub M-Motors
4. that automatically add themselves to FX001 call.
5. these components.

TC ESX VM	192.168.117.107 (.110 not working)
SME	G:\20160309_SME_NX11_1608
TIA	G:\20160307_VMAD_TIAPortal_V14_I.14_B.01.7z EDAG_V14.ap14

Videos >>>

\debonkl0c19\ADNX\Teams\Documentation\10_Meetings

20160323_1 to _8.mp4

(_6 is corrupt, no camtasia license, can only record in nx, nx crashed, movie corrupt, lost good video).

A future release (in SIPS or XCAT) of this complete GS2 would contain

- ch1-2 of GS1.
- this part 4.
- Real world examples (part 5). Not step-by-step, but general description.
- AD functional details (part 6).

TOC

i. workflow Overview

basic components overview

how used in real applications

what you do in this GS

A. pre-config (admin)

B. create AD template (template designer)

C. round-trips (customer; show how easy to use)

A. pre-config (LD, AD, EPLAN, TIA) (initial setup... import required parts, create CDs)

1. LD (import parts, create LD CD, create LD WS, SS).

2. AD (create AD CD, WS, SS, EO's into RL).

3. EPLAN (import into RL via AD)

4. TIA (import into RL via AD)

B. create AD template: auto-tab, aspect EO's, EPLAN/TIA, templates

7. automation tab

8. aspects (add EO's)

10. config non-template EPLAN

11. config non-template TIA

13. config template-ready EPLAN

14. config template-ready TIA

15. create / instantiate (test) templates

C. round-trips

17. LD-AD

18. AD-EPLAN

19. AD-TIA

D. dynamic connection outside of template (under construction).....

What of the above you do depends on your role:

Role	Do
Admins	A
template designers	B
Customer (initial trainings and demos)	C

i. workflow overview

Following diagrams I tried to create a "big picture".

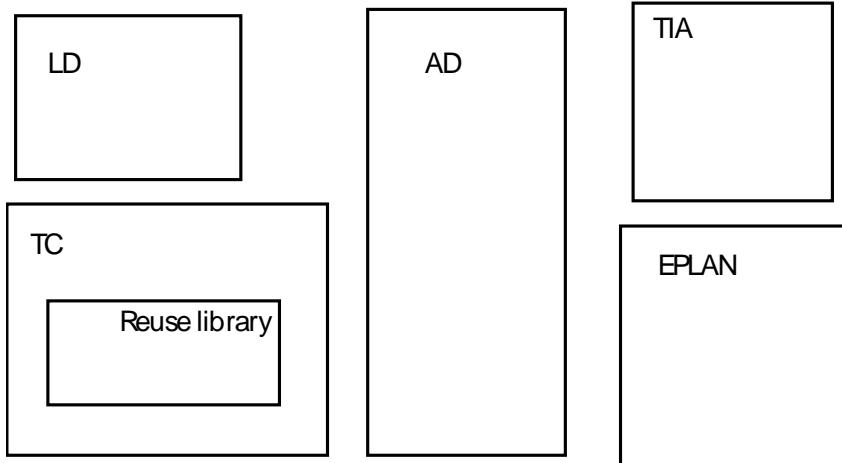
basic components overview

how used in real applications

what you do in this GS

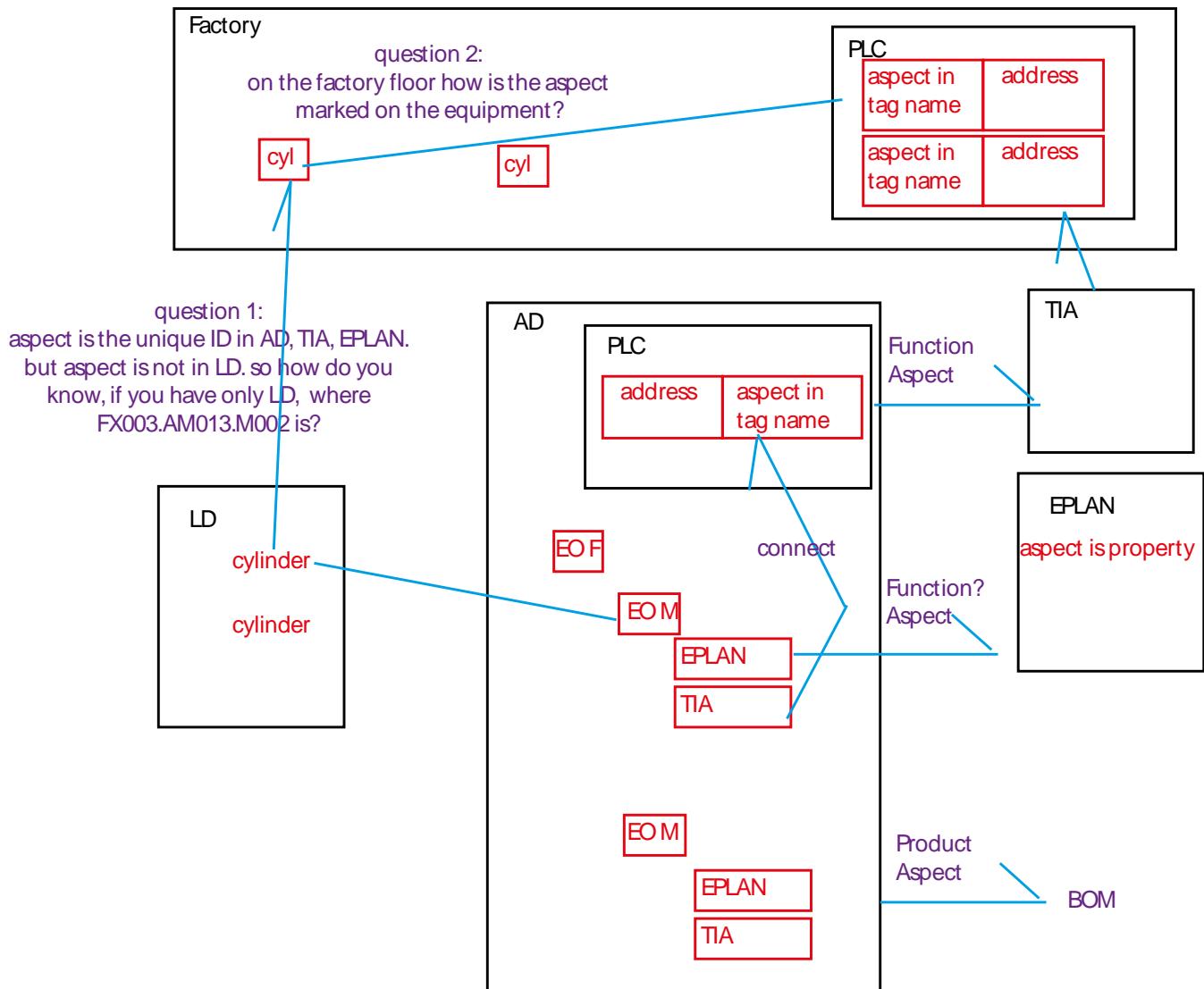
- A. pre-config (admin)
- B. create AD template (template designer)
- C. round-trips (customer; show how easy to use)

basic components overview



how used in real applications

TERRY: the idea here is some kind of diagram that shows how AD interacts with the factory floor. For example, how the aspects names show up on equipment, tag names, sw-blocks, etc. just my guess... don't know enough about this to complete anything.



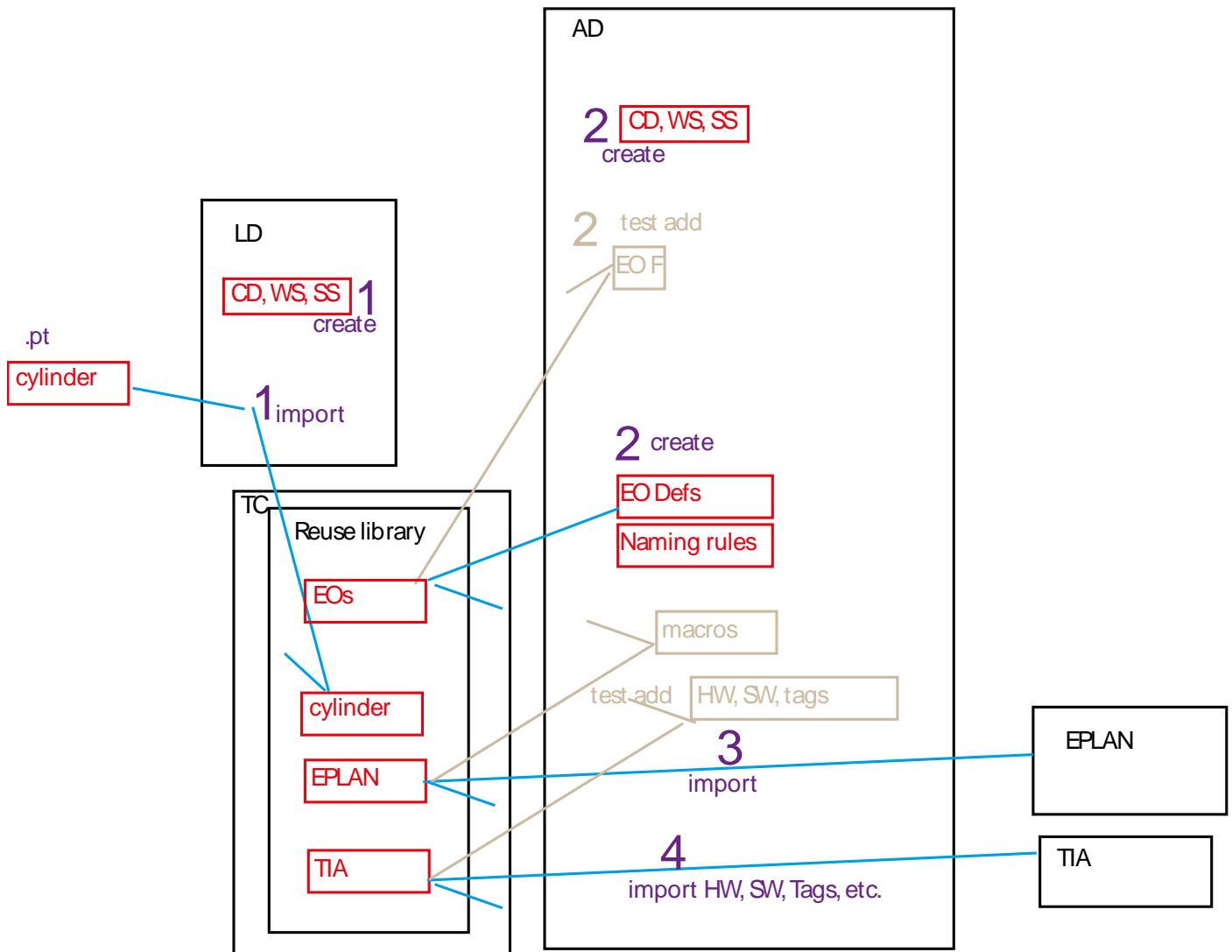
what you do in this GS

- A. pre-config (admin)
- B. create AD template (template designer)
- C. round-trips (customer; show how easy to use)

Note: the big purple numbers are chapter-section.

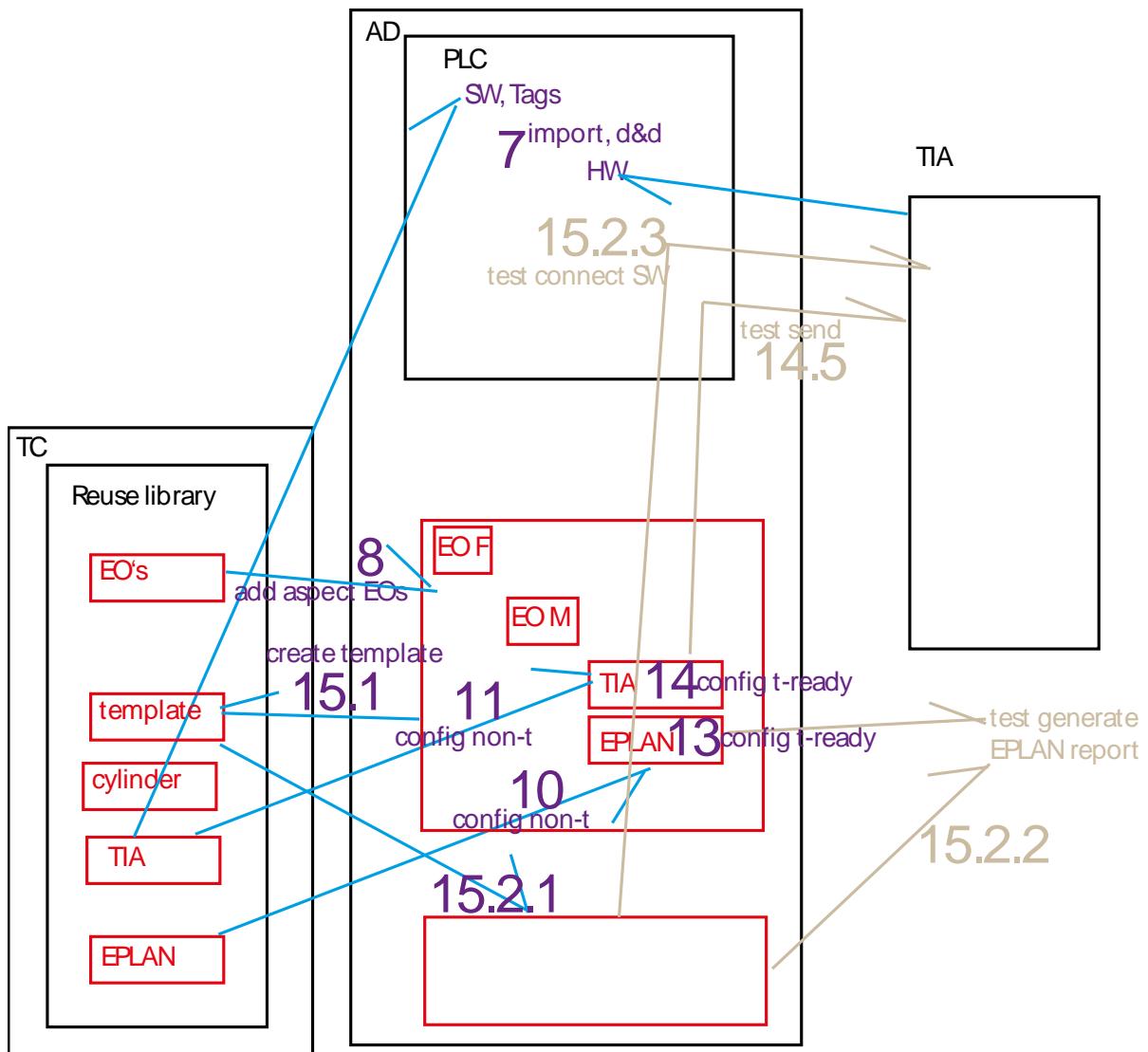
A. pre-config (admin)

As admin Setup LD/AD CDs, import EPLAN/TIA.



B. create AD template (template designer)

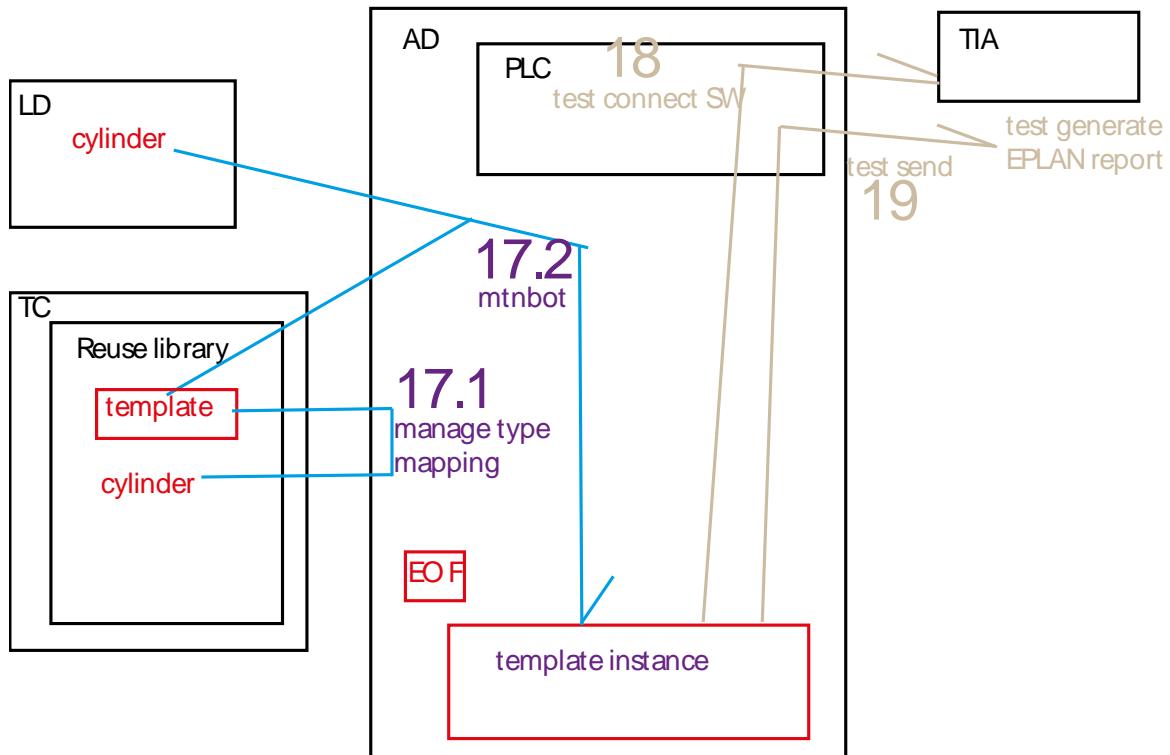
As a template designer create an AD template.



C. round-trips (customer; show how easy to use)

As an end user use templates to build a line.

Focus on the round-trip engineering between AD and LD, EPLAN, TIA (I still don't understand much about round-trips... need to add more content later).



A. pre-config (LD, AD, EPLAN, TIA)

1. (GS1-3,4) LD (create CD, WS, SS, import parts)
2. (GS1-5) AD (create CD, WS, SS, RL EO's, test add EO to aspect)
3. EPLAN (import into RL via AD) (20160322 errors)
4. TIA (import into RL via AD) (20160322 OK)

1. (GS1-3,4) LD (create CD, WS, SS, import parts)

1.1. (GS1-3) create LD CD

Same as part 1 ch 3.

1.2. (GS1-4) create LD WS, SS

Same as part 1 ch 4.

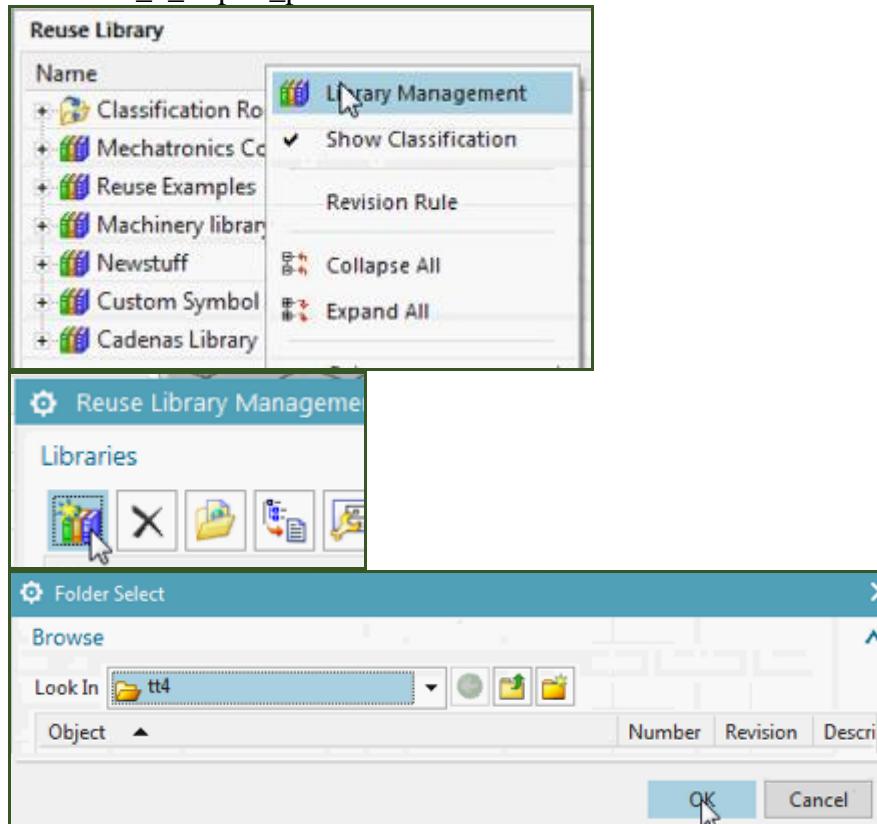
*1.3. import roof parts (IF NOT IN RL) 20160323

1.3.1. Add dir to reuse library

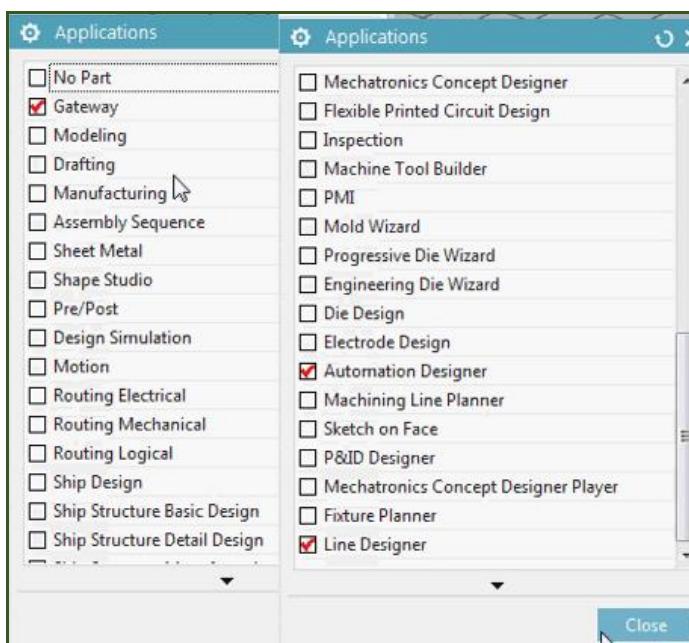
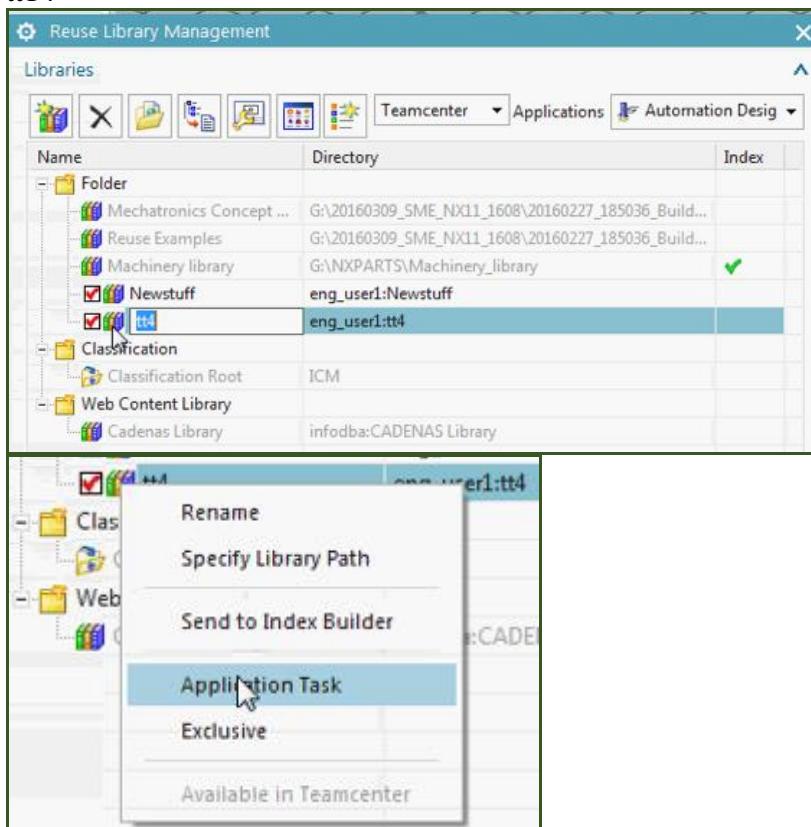
20160315_1_add_to_reuse_lib.avi

20160316_1_create_rl_dir_and_import_parts.avi

20160321_1_import_part.avi



tt14



1.3.2. Import (root into TC) (GW) ????

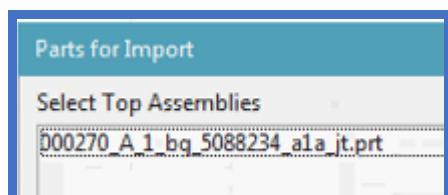
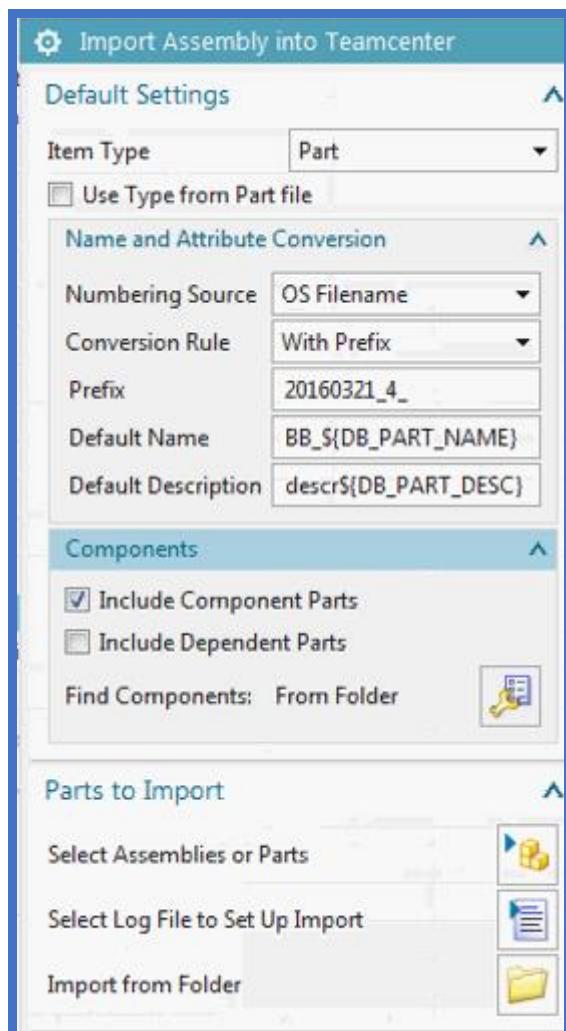
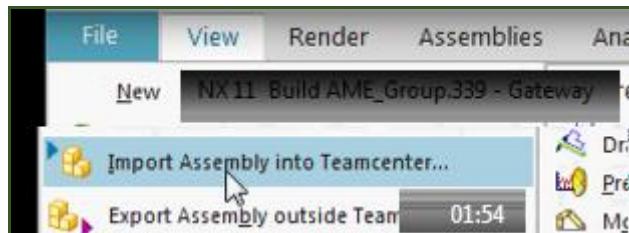
20160316_1_create_rl_dir_and_import_parts.avi

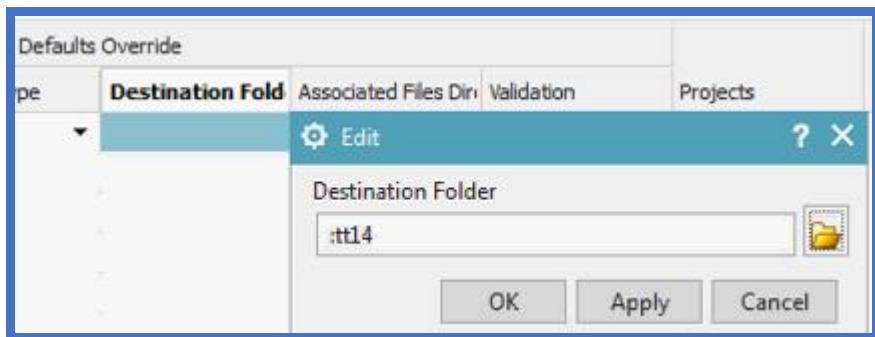
20160321_1_import_part.avi

000270_A_1_bg_5088234_a1a_jt.prt

Basically doing what was already assumed in ch4... parts in the reuse library.

Into reuse library.



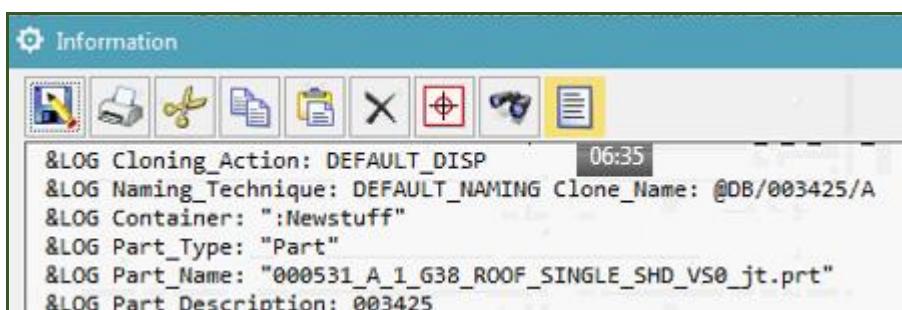


Name and Attributes for Parts to Import

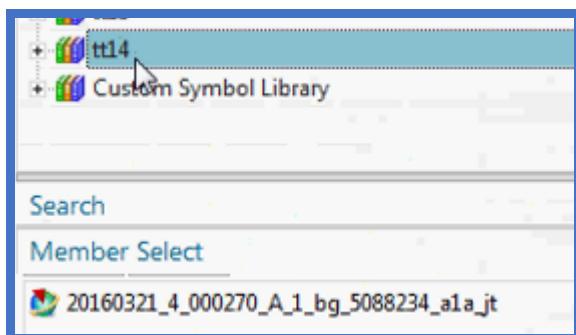
Object Name	Part		Part Revision		Information		
	ID	Name	Revision	Part State	Reason for Inclusion	Teamcenter Information	
1 000270_A_1_bg...	20160321_4_00...	20160321_4_00...	A				

Defaults Override

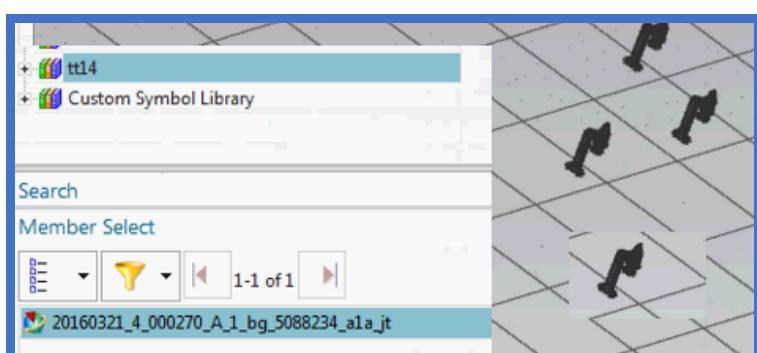
Existing Part Action	Item Type	Relation Type	Destination Fold	Associated Files Dir	Validation	Projects
Default	Part	master	:tt14		Default	



Click around a few times until it works.



1.3.3. Test: Add 4



2. (GS1-5) AD (create CD, WS, SS, RL EO's, test add EO to aspect)

20130629 TERRY: this would be similar to part 1 ch5.

2.3. Create project workset (and CD + subset)

*2.4. Create EODef's (F, G) (IF NOT IN RL)

*2.5. Create naming rules (IF NOT ALREADY)

This section describes how to

- 5.5.1. Create EO Name (character code) list
- 5.5.2. Create Advanced Aspect Naming

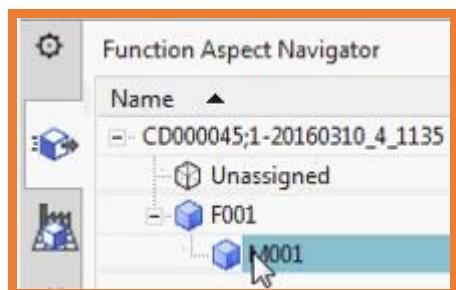
2.5.1. Create EO Name (character code) list

2.5.2. Create Advanced Aspect Naming (20150204)

2.6. TEST: Add EO's

You created the EODefs and the naming rules. Now you can drag&drop the EODefs to create the EO's.

test add to aspect. Result.

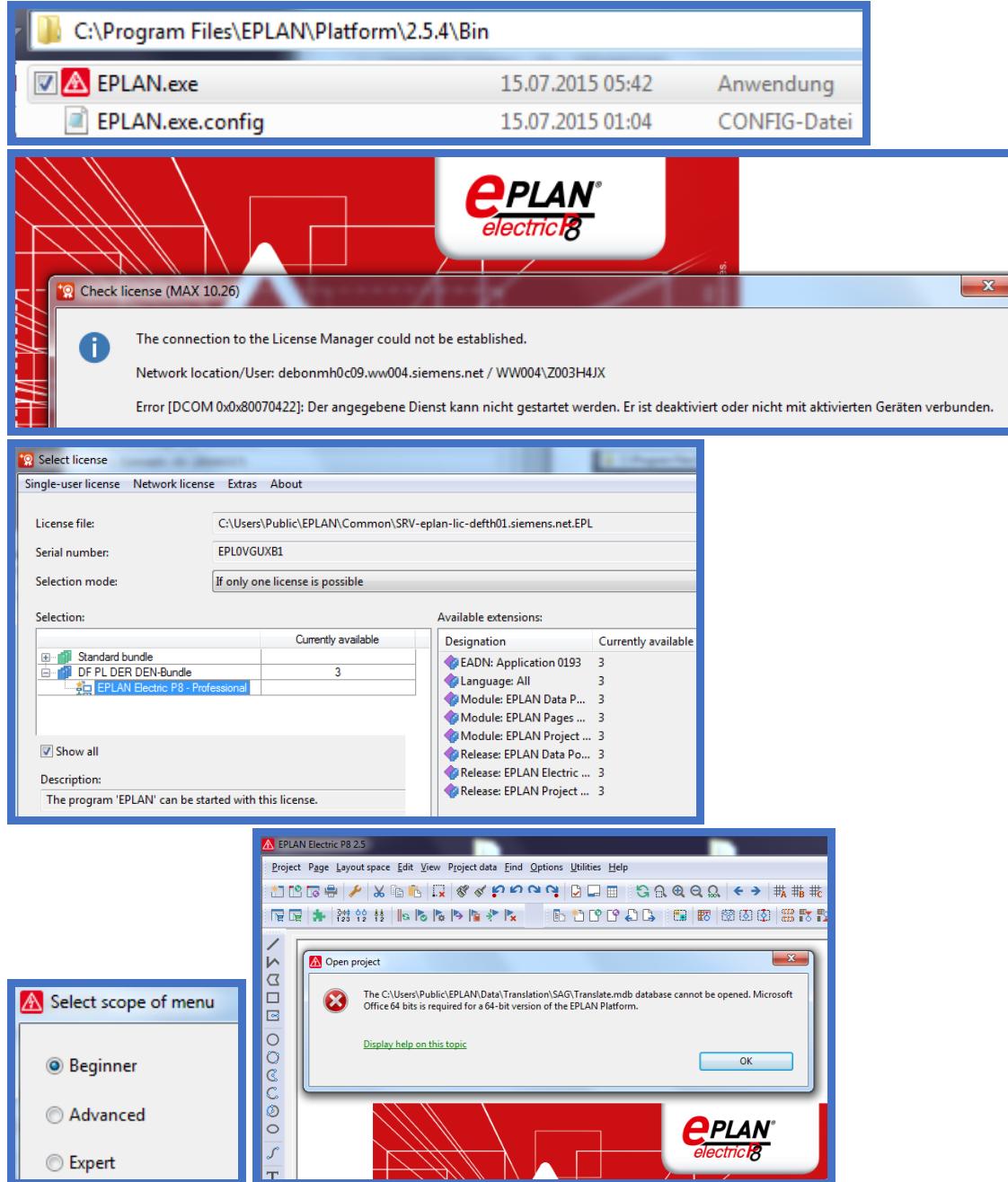


3. EPLAN (import into RL via AD) (20160322 errors)

\debonkl0c19\ADNX\Teams\PRM\ExampleData and Geometries\ExampleProjects\Universal Templates\EPLAN_Macros

20160322 TERRY: I tried to use EPLAN, but not work. Marcel said try with new SME. Not want to mess with this now... so just documented what I tried.

3.1. Start EPLAN



3.2. template

EPLAN Electric P8 2.5 interface showing the 'Zuletzt verwendetet' (Recently used) folder structure. The 'EPLAN_Project_Template' folder is selected.

Select project template / basic project

Name	Änderungsdatum	Typ
AD_EPLAN_Project_Template_V22.zw9	03.02.2015 12:57	EPLAN da
<input checked="" type="checkbox"/> AD_EPLAN_Project_Template_V25.zw9	04.09.2015 11:07	EPLAN da

Dateiname: AD_EPLAN_Project_Template_V25.zw9 Dateityp: EPLAN basic project (*.zw9) Path: \\debonk\0c19\A...\EPLAN_Project_Template

Create project *

Project name: New project(4)

Storage location: \$(MD_PROJECTS)

Template: \\debonk\0c19\ADNX\Teams\PRM\ExampleData and Geometries\ExampleProjects\Universal Templates\EPLAN_Project_Template\AD_EPLAN_Project_Template_V25.zw9

Specify creation date
03.02.2015 12:51:27

Specify creator
adwoma19

Create project

C:\Users\Public\EPLAN\Projects\SAG\New project(4).elk

Overall progress:

New project

The C:\Users\Public\EPLAN\Translation\SAG\Translate.mdb database cannot be opened. Microsoft Office 64 bits is required for a 64-bit version of the EPLAN Platform.

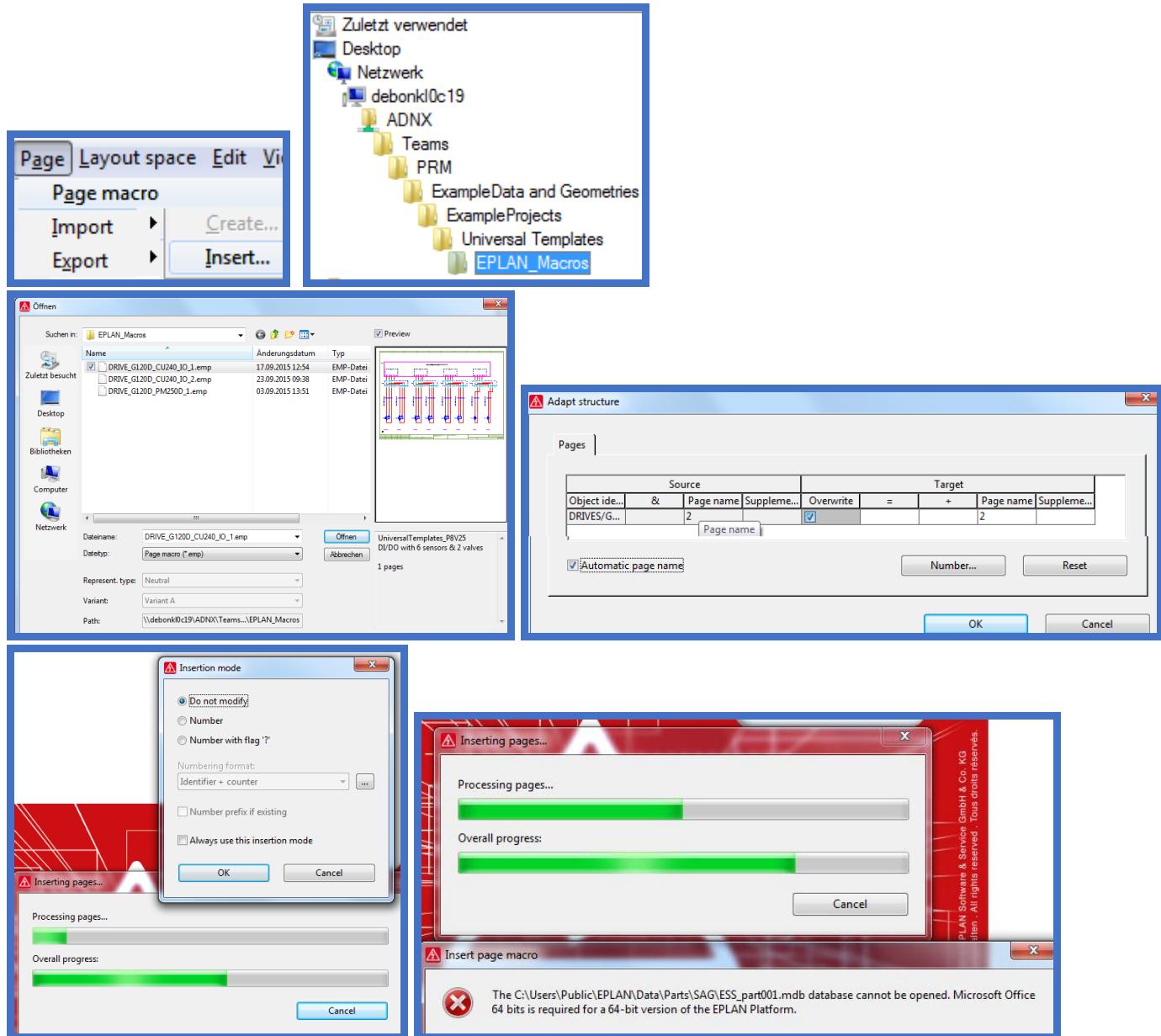
Project properties: New project(4)

Properties Statistics Structure

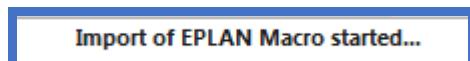
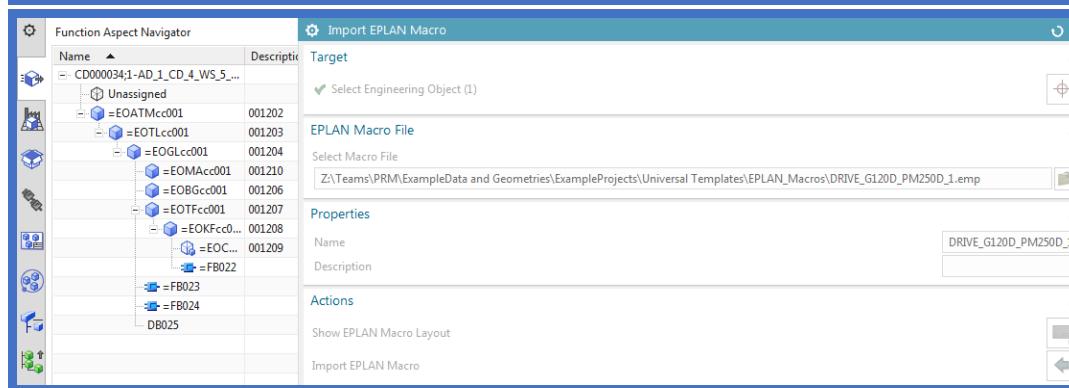
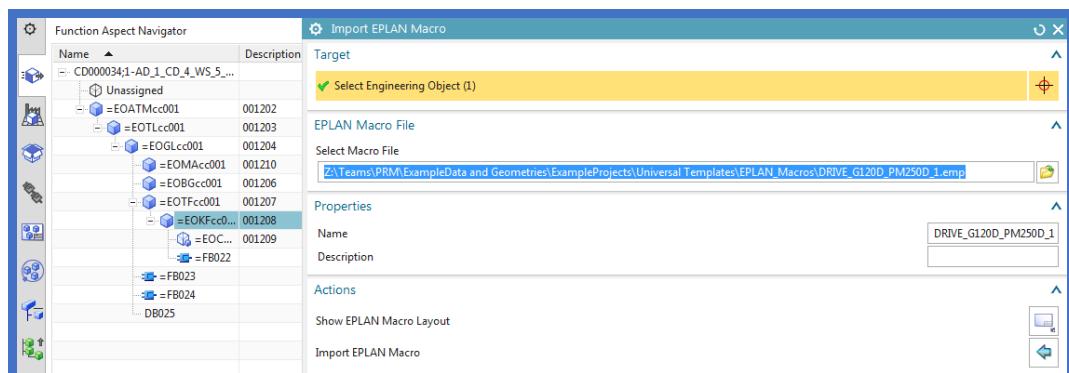
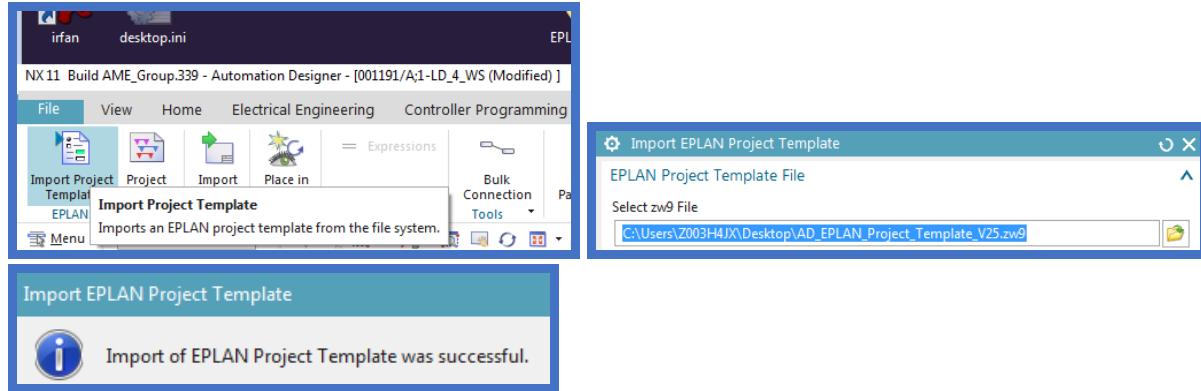
Category: All categories

Property name	Value
Project description	<Projektbeschreibung>
Job number	<Projektnummer>
Commission	<Kommission>
Company name	<Firmenname>
Project start	22.03.16 09:45:27
Location	<Standort>
Customer: Short name	<Kunde>
Creator: Street	<Straße>
Creator: Zip code (City)	<PLZ>
Creator: City	<Ort>
Creator: Phone	<Telefon>
Type of project	Schematic project
Revision marker format (change tracking)	[14<10155,1,0,0,0,0,0,0,0,0>][LF][14...

3.3. Insert macro



3.4. AD: import project template

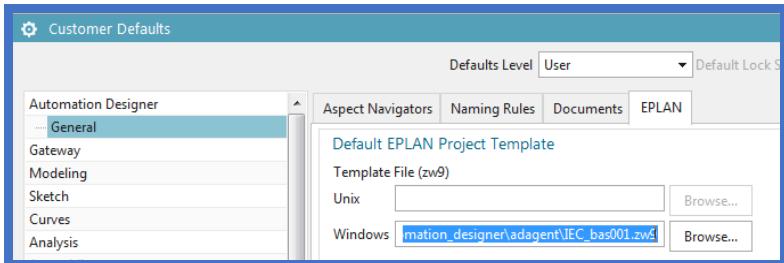


Never finishes. Error.

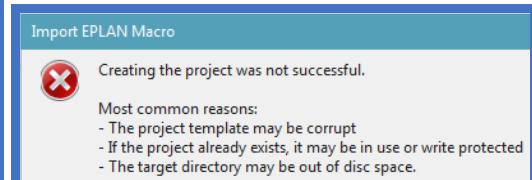
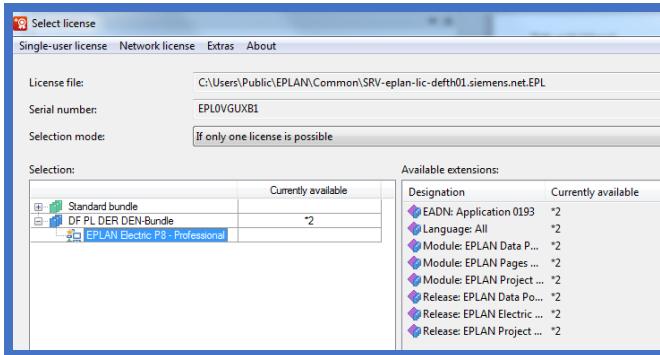
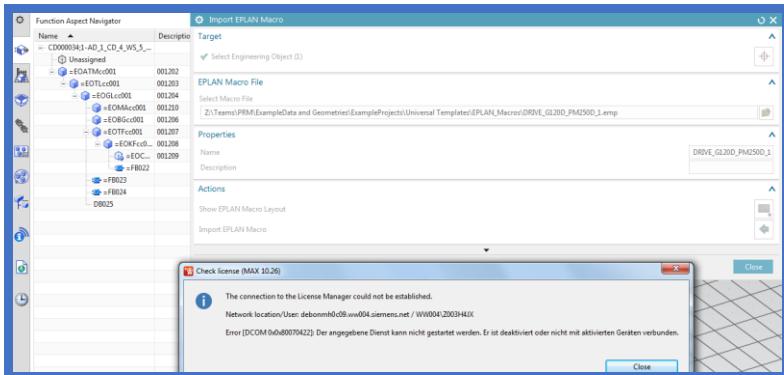
3.5. NX general settings for EPLAN

Talk with Marcel.....

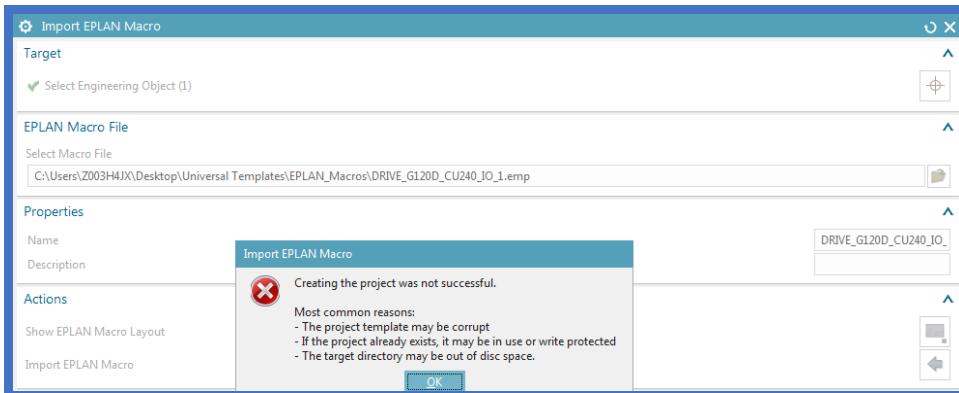
Use this



G:\20160309_SME_NX11_1608\20160227_185036_Build\automation_designer\adagent\IEC_bas001.zw9
Restart



Try with local....



20160322 TERRY Marcel recommends with more later SME. Steps above are correct.

3.6. import from EPLAN

3.7. store in reuse

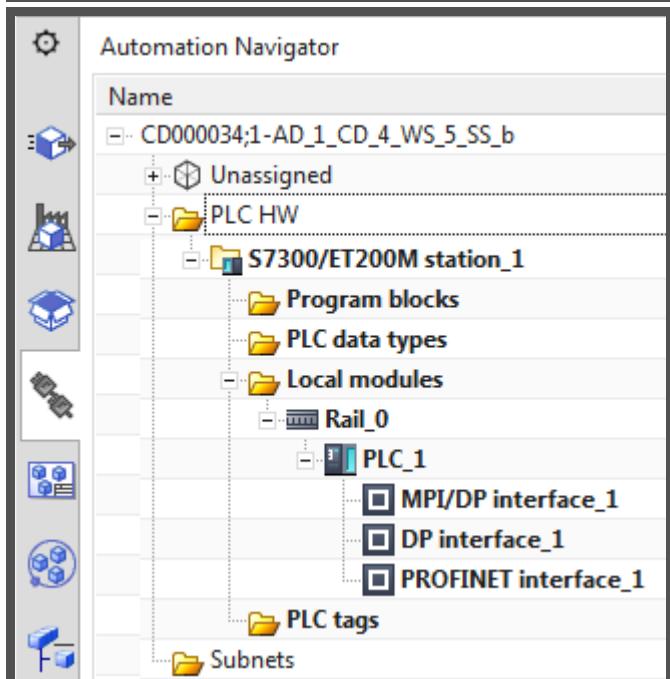
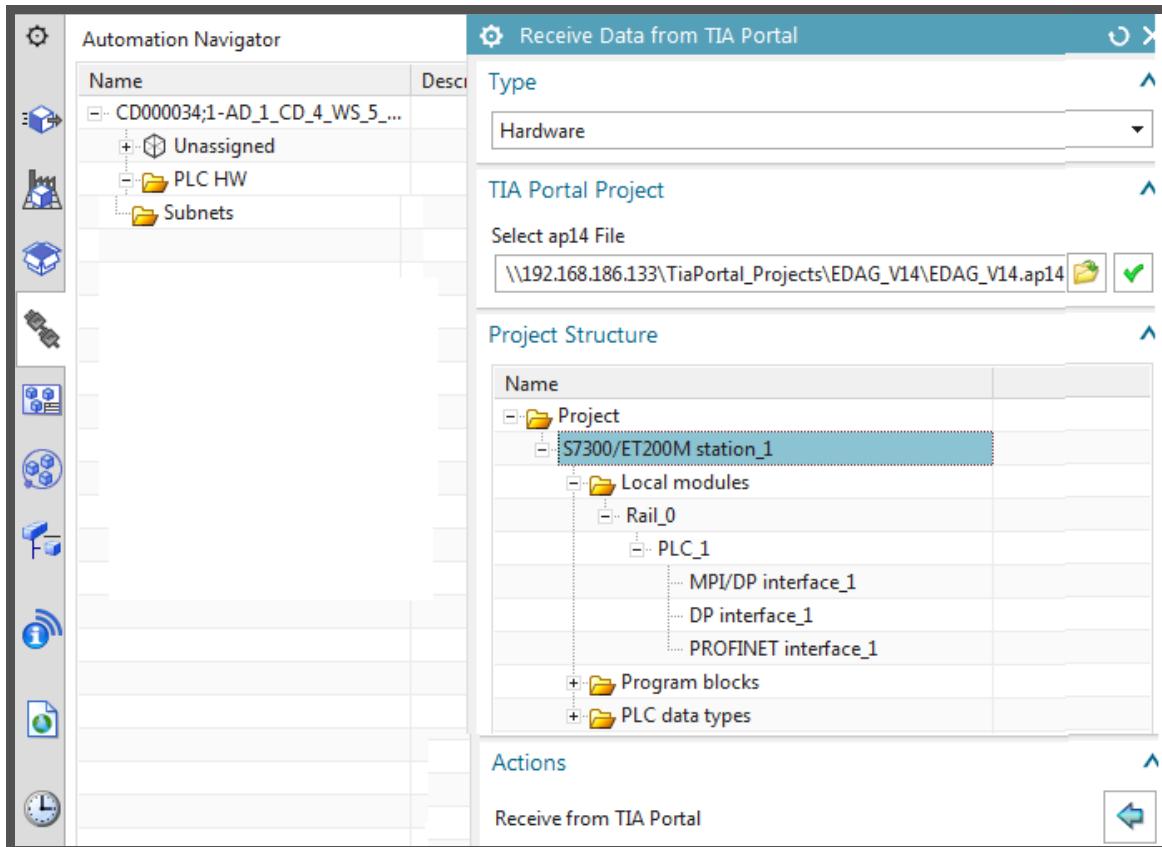
3.8. TEST: import from reuse

4. TIA (import SW into RL via AD)

4.1. import HW SW from TIA

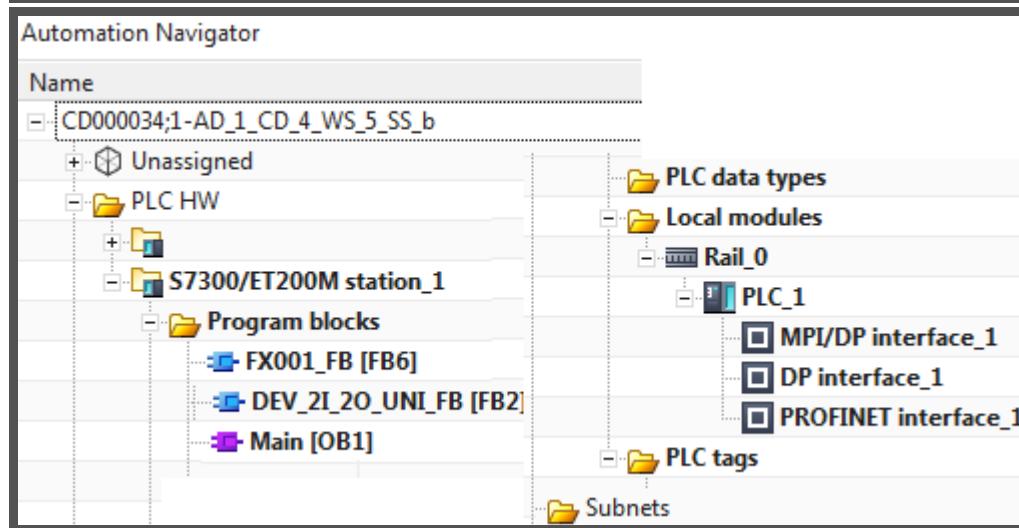
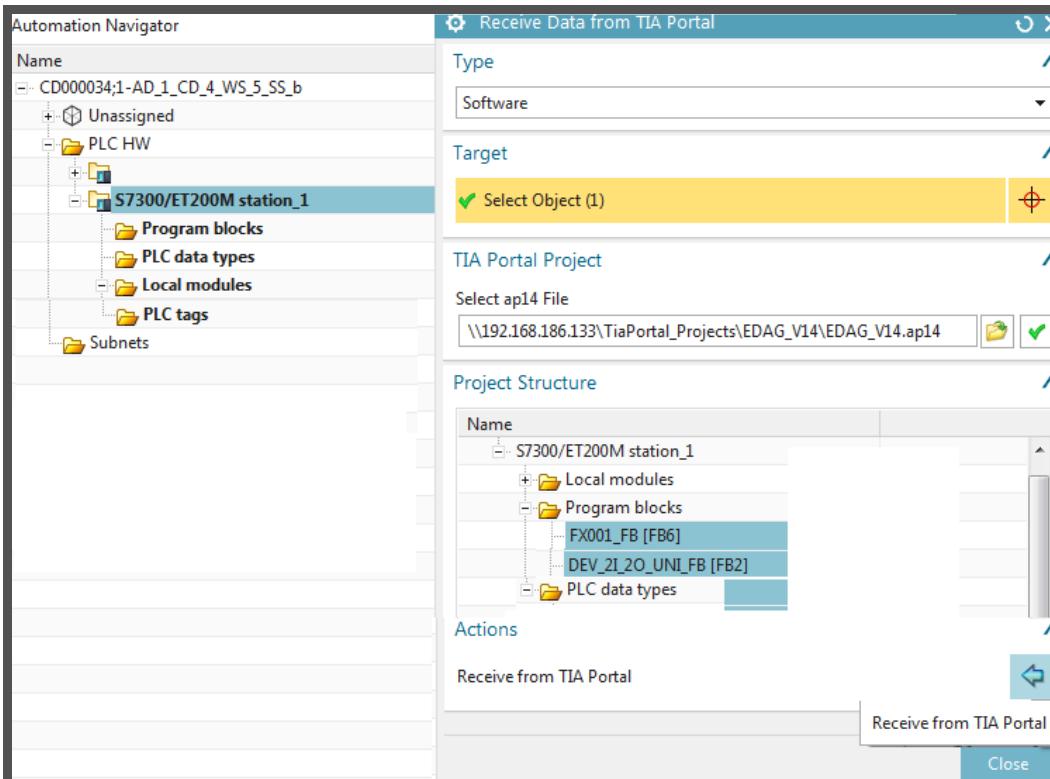
TERRY: seems cant put HW in RL? To put SW in RL, you must import HW?

HW



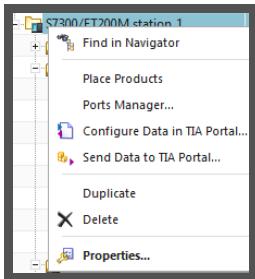
SW

Just import FX001_FB, DEV_2I_2O_UNI_FB.

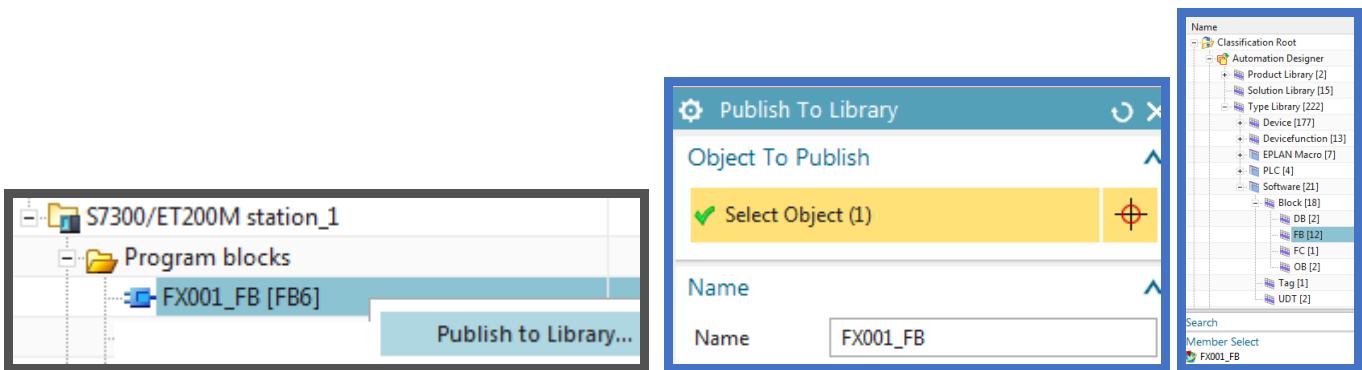


4.2. store in reuse

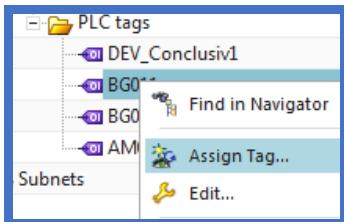
HW?



SW-FB

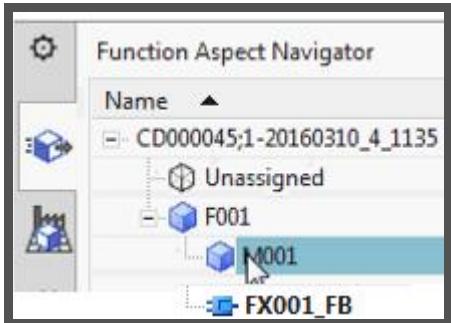


SW-tags?



4.3. TEST: import from reuse

Verify can add.



B. create AD template: auto-tab, aspect EO's, EPLAN/TIA, templates

7. automation tab (import HW, d&d SW)

8. aspects (add EO's)

10 (GS1-7). Config non-template EPLAN XXX

11 (GS1-8). Config non-template TIA

13 (GS1-10). Config template-ready EPLAN

14 (GS1-11). Config template-ready TIA

15 (GS1-12,13). Create/instantiate template

7. automation tab (import HW, d&d SW)

Automation Navigator

- CD000034;1-AD_1_CD_4_WS_5...
- + Unassigned
- PLC HW
 - PLC data types
 - Program blocks
 - G120x [FB307]
 - Main [OB1]
 - RB_AT [FB1012]
 - PosDev_2D2S...
 - Subnets

Receive Data from TIA Portal

Type: Hardware

TIA Portal Project: \\192.168.186.133\TiaPortal_Projects\EDAG_V14\EDAG_V14.ap14

Project Structure:

```

Name
- Project
  - S7300/ET200M station_1
    - Local modules
      - Rail_0
        - PLC_1
          - MPI/DP interface_1
          - DP interface_1
          - PROFINET interface_1
    - Program blocks
    - PLC data types
  
```

Actions: Receive from TIA Portal

Automation Navigator

- CD000034;1-AD_1_CD_4_WS_5_SS_b
- + Unassigned
- PLC HW
 - S7300/ET200M station_1
 - Program blocks
 - PLC data types
 - Local modules
 - Rail_0
 - PLC_1
 - MPI/DP interface_1
 - DP interface_1
 - PROFINET interface_1
 - PLC tags
 - Subnets

Receive Data from TIA Portal

Type: Hardware

TIA Portal Project: \\192.168.186.133\TiaPortal_Projects\EDAG_V14\EDAG_V14.ap14

Project Structure:

```

Name
- Project
  - S7300/ET200M station_1
    - Local modules
      - Rail_0
        - PLC_1
          - MPI/DP interface_1
          - DP interface_1
          - PROFINET interface_1
    - Program blocks
    - PLC data types
  
```

Drag and drop sw

Function Aspect Navigator

Name	Description
CD000034;1-AD_1_CD_4_WS_5...	
+ Unassigned	
+ EOATMcc001	001202
+ EOTLcc001	001203
+ EOGlc001	001204
+ EOMAcc001	001210
+ EOBGcc001	001206
+ EOTFcc001	001207
+ EOKFcc0...	001208
+ EOC...	001209
+ FB022	
+ FB023	
+ FB024	
DB025	

Engineering Object

Reuse Library

- Select from Member Select (FX001_FB)

General Properties

Object Name Prefix: FX001_FB

Description:

Navigators

- Select Parent (1) (highlighted in yellow)
- In Function
- In Location
- In Product
- In Automation

Properties

Edit Properties

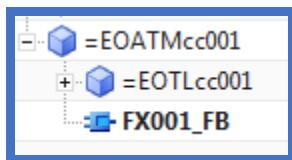
Reuse Library

Name

- Classification Root
- Automation Designer
- Product Library [2]
- Solution Library [15]
- Type Library [223]
 - Device [177]
 - Devicefunction [13]
 - EPLAN Macro [7]
- PLC [4]
- Software [22]
 - Block [19]
 - DB [2]
 - FB [13] (highlighted in blue)
 - FC [1]
 - OB [2]
 - Tag [1]
 - UDT [2]

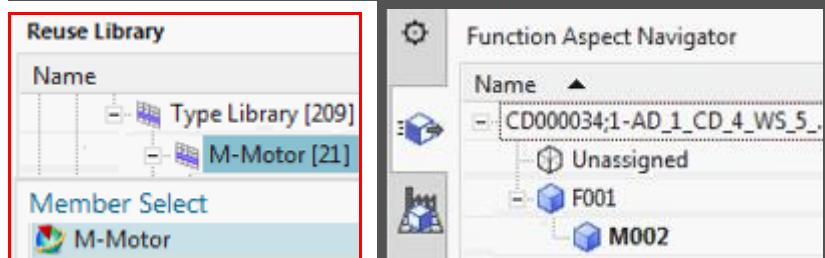
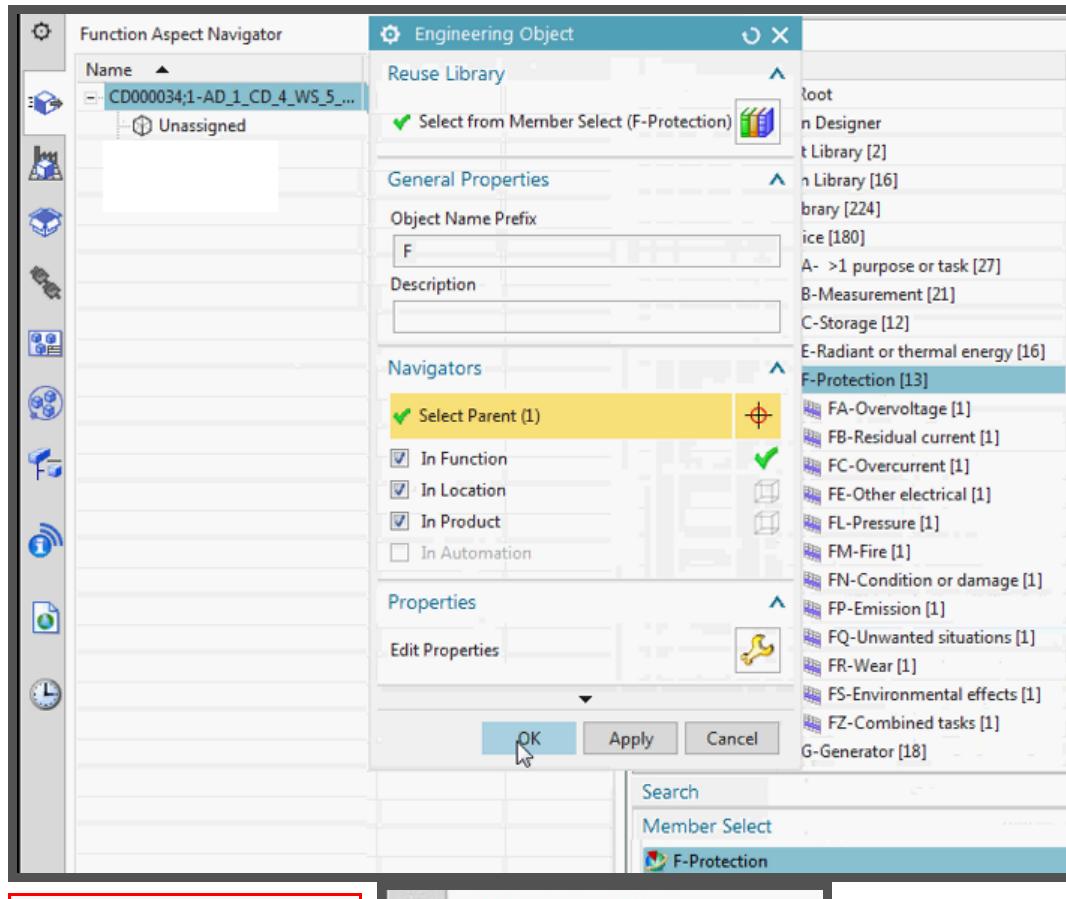
Member Select

- FX001_FB



8. aspects (add EOs)

Add F and M.



xxx 10 (GS1-7). Config non-template EPLAN

EPLAN not working with my SME.. need to try in future.
Tried templates in RL.. not work.

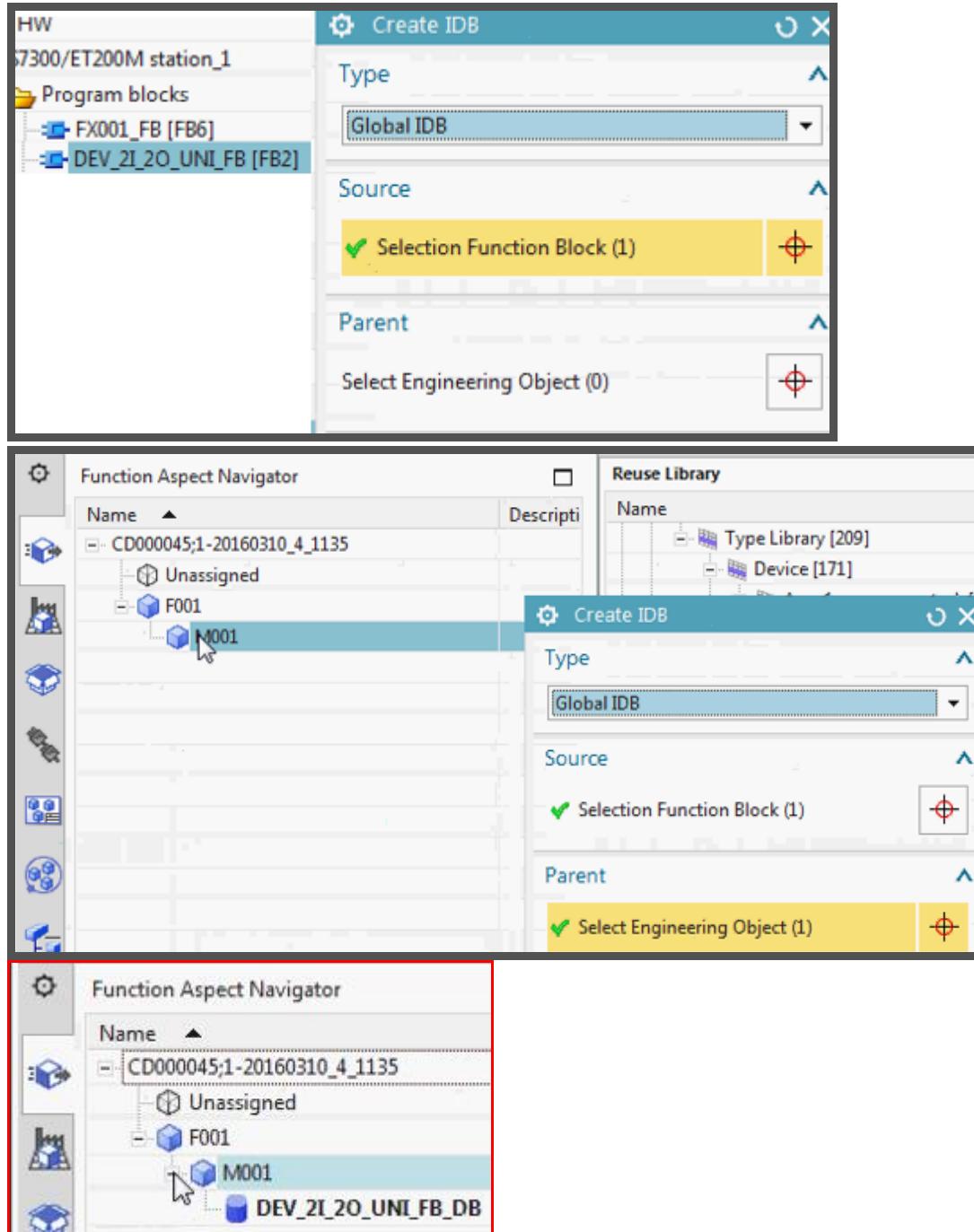
What template to use with roof demo?

Need to talk with Andreas when he returns.

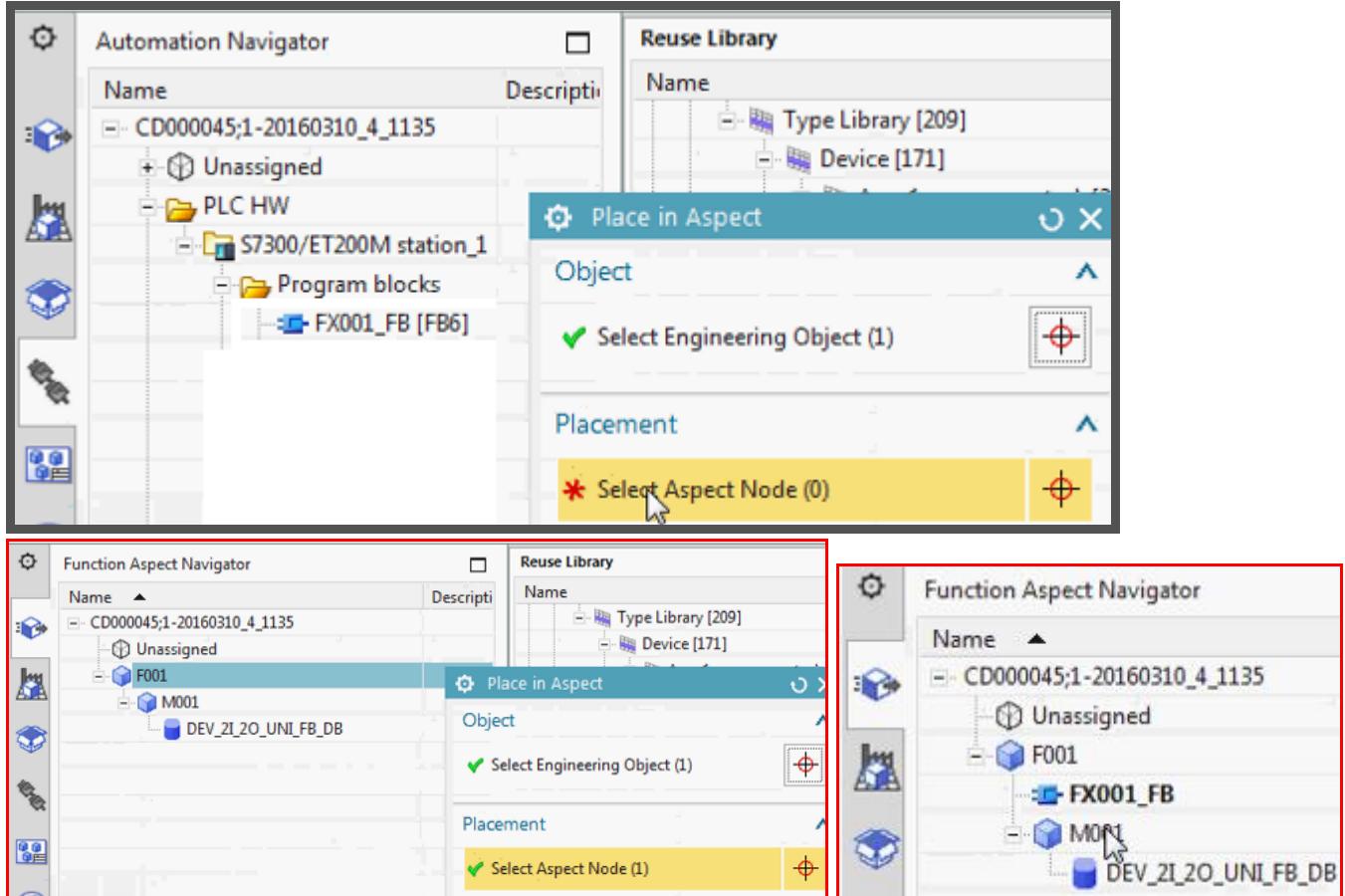
11 (GS1-8). Config non-template TIA

11.1. Add IDBs, FBs

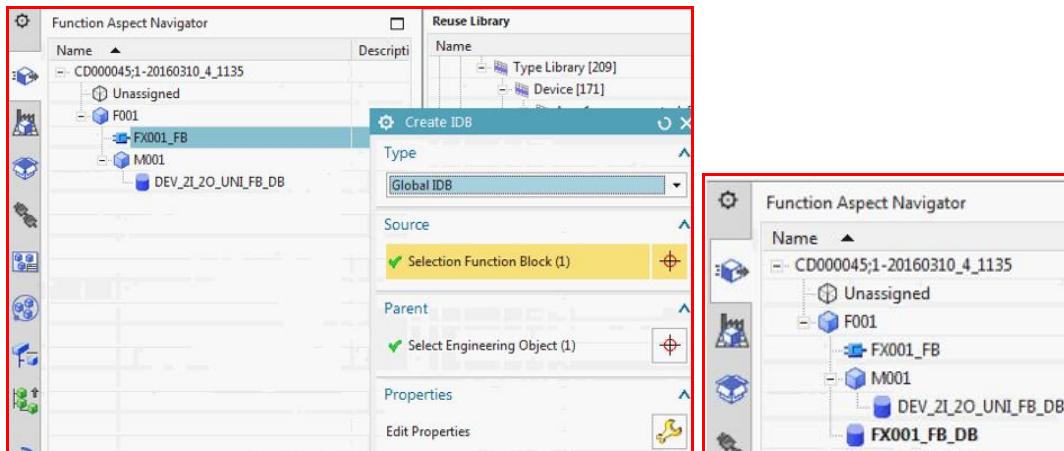
Add Dev_2I_2O IDB under M.



Add FX FB.



Add FX IDB.



11.2. fix calls

Configurations

Name	Value	Type
- Global Sym...		
Tags		
FB/IDB		
KH01		
AM01		
AM11		
FX00...		
FC		
DB		
- Ports		
Caller P...		
Operand...		
- Rules		
Calls		
Methods		
Operand		

Interface

PLC Code

```

18 Network 3:-
19 /////Caller on the position [KH01] is not connected with a valid block.-
20
21
22 Network 4:-
23 /////Caller on the position [AM01] is not connected with a valid block.-
24
25
26
27 Network 5:-
28 /////Caller on the position [AM11] is not connected with a valid block.-
29
30
31
32
33 Network 6:-
34 /////Caller on the position [FX001_SEQ1_IDB] is not connected with a valid block.-
35

```

FB/IDB

- KH01
- AM01
- AM11
- FX00...

AM01 context menu: Manual Connection, Dynamic Connection

Function Aspect Navigator

- CD000034;1-AD_1_CD_4_WS_5_SS_b
 - Unassigned
 - =EOATMcc001
 - F001
 - M002
 - DEV_2I_20_UNI_FB_DB
 - FX001_FB
 - FX001_FB_DB

Manual Connection

Port	Connected Object	Connected Port	Port Type	Conn
DB042			EO	IDB

Configurations

Name	Value	Type
- Global Sym...		
Tags		
FB/IDB		
KH01	DEV_2I_20_UNI...	
AM01	DEV_2I_20_UNI...	
AM11	DEV_2I_20_UNI...	
FX00...	DEV_2I_20_UNI...	
FC		
DB		
- Ports		
Caller P...		
Operand...		
- Rules		
Calls		
Methods		
Operand		

Interface

PLC Code

```

18 Network 3:-
19 CALL "DEV_2I_20_UNI_FB", "DEV_2I_20_UNI_FB_DB"
20
21
22 Network 4:-
23 CALL "DEV_2I_20_UNI_FB", "DEV_2I_20_UNI_FB_DB"
24
25
26
27 Network 5:-
28 CALL "DEV_2I_20_UNI_FB", "DEV_2I_20_UNI_FB_DB"
29
30
31
32
33 Network 6:-
34 CALL "DEV_2I_20_UNI_FB", "DEV_2I_20_UNI_FB_DB"

```

11.3. connect

Bulk Connection

Function Aspect Navigator

Bulk Connection

Source

Select Object (1)

Total Number of Objects (5)

Descendants Included Function

Port Type Filter

Control Scope

View Filters

Hide objects without ports of selected Port Type

Hide connections of not selected ports

Ports

Source

Status	Port	Reference Designat	Engineering
1		+??/-??,F001	
2		+??/-??,M002	
3	Block_C	DEV_2I_2O_UNI...	
4	Block_C	+??/-??	FX001_FB
5	Block_C	FX001_FB_DB	

Automation Navigator

Bulk Connection

Source

Select Object (1)

Total Number of Objects (5)

Descendants Included Function

Target

Select Object (1)

Total Number of Objects (1)

Descendants Included None

Port Type Filter

Control Scope

View Filters

Hide objects without ports of selected Port Type

Hide connections of not selected ports

Ports

Source

Status	Port	Ref	At least one port of cardinality = 1 is already connected to another port.	sig	Engineering
1		+???	Do you want to overwrite already existing connections?		
2		+???			
3	Block_C	DEV_			
4	Block_C	+??/-??		FX001_FB	
5	Block_C	FX001_FB_DB			

Connections

Source	Status	Target
Reference Designat Port	Status	Reference Designat Port
1 DEV_2I_2O_UNI... Block_C	+	S7300/ET200M s... Station_C
2 MODE_FG_DETAIL... UDT_C	+	S7300/ET200M s... Station_C
3 MODE_FG_DETAIL... UDT_C	+	S7300/ET200M s... Station_C
4 MODE_FG_DETAIL... UDT_C	+	S7300/ET200M s... Station_C
5 MODE_FG_DETAIL... UDT_C	+	S7300/ET200M s... Station_C
6 MODE_FG_DETAIL... UDT_C	+	S7300/ET200M s... Station_C
7 MODE_FG_DETAIL... UDT_C	+	S7300/ET200M s... Station_C

11.4. Test export to TIA

The screenshot shows the SIMATIC Manager software interface. On the left, the Automation Navigator tree view displays a project structure under 'CD000034;1-AD_1_CD_4_WS_5_SS_b'. A right-click context menu is open over a folder named 'S7300/ET200M station_1'. The menu path 'Send Data to TIA Portal' is selected, which opens a configuration dialog on the right.

Send Data to TIA Portal Dialog:

- Source:** 'Select Station (1)' is checked.
- TIA Portal project:** 'New Project' is selected. The 'Name' field contains 'oooooooooooo' and the 'Target Path' field contains 'W:\EDAG_V14\'.
- Settings:** 'Send with Software and Tag' is checked, while 'Open in TIA Portal' and 'Compile Result in TIA Portal' are unchecked.
- Actions:** Buttons for 'Check Station' and 'Send to TIA Portal' are present.

Windows-Sicherheit Dialog:

Pw: comos

Netzwerkennwort eingeben
Geben Sie das Kennwort ein, um eine Verbindung herzustellen mit:
192.168.186.133

APCAdmin
Kennwort
Domäne: MD11WC8C
Anmelddaten speichern

File Explorer:

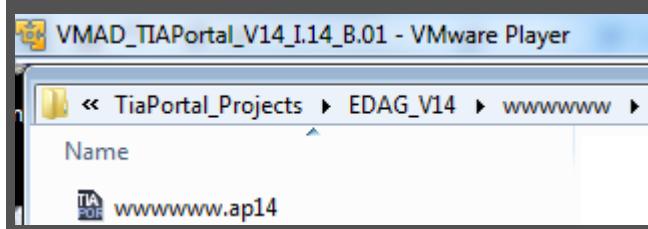
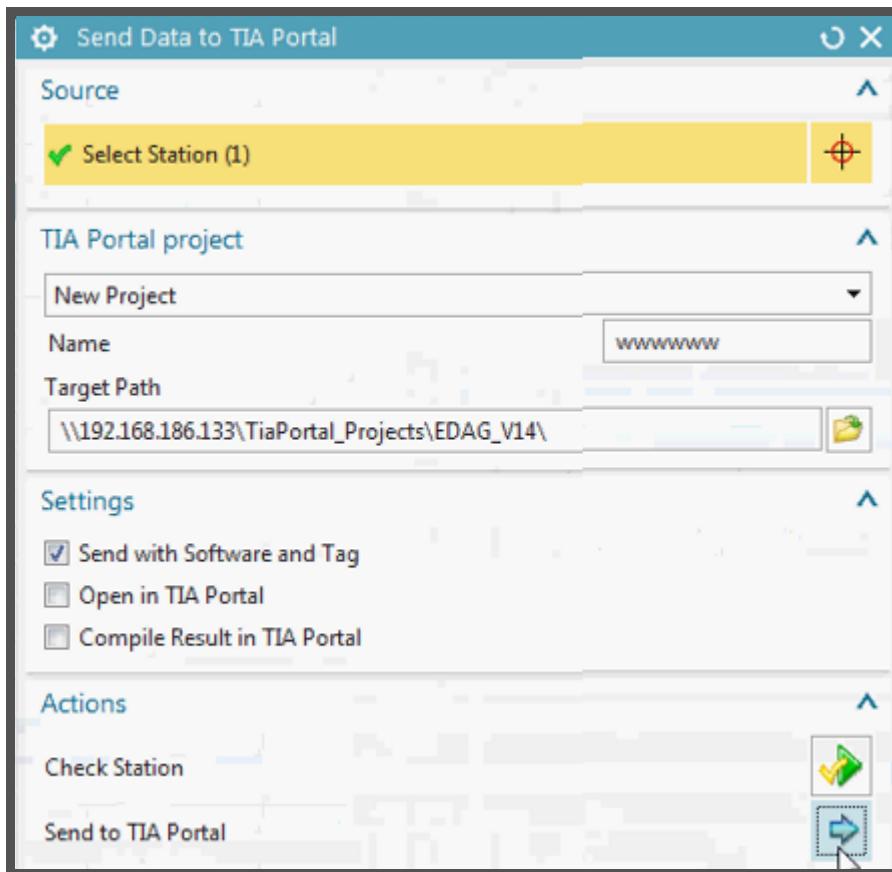
(W:) TiaPortal_Projects (\\"192.168.186.133)

- Name
- EDAG_V14
- EDAG_V14_wrong_language
- Project1_ohne_startdrive_V13_SP1

Must enter the IP.

Message

A problem occurred during the communication process. The data package is broken. Retry your action.



xxx 13 (GS1-10). Config template-ready EPLAN

EPLAN not working with my SME.. need to try in future.
Tried templates in RL.. not work.

What template to use with roof demo?

Need to talk with Andreas when he returns.

14 (GS1-11). Config template-ready TIA

20160318: copied from ch 13.

14.3. Fix names

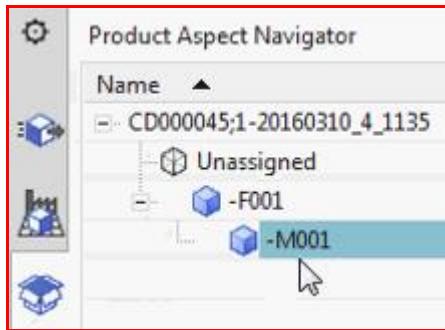
14.4. create ports, expressions, dynamic connection

14.5. test

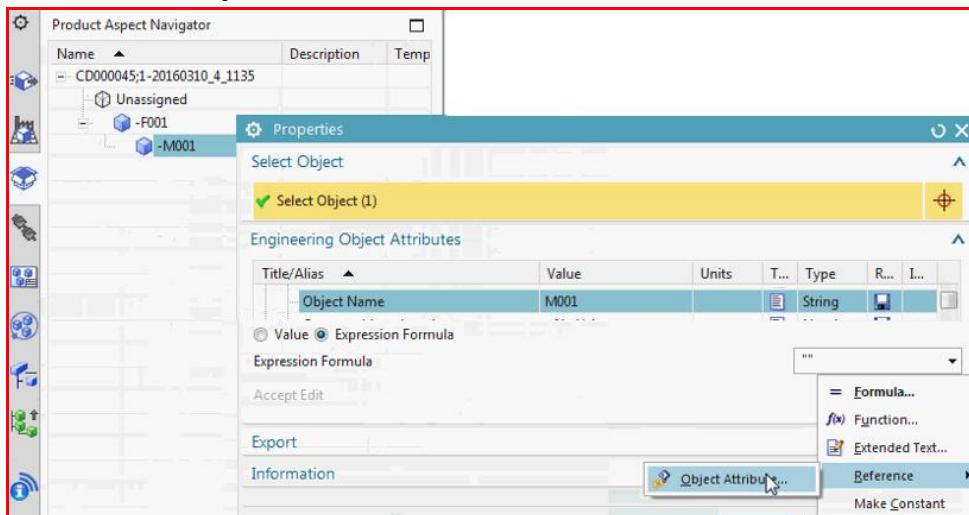
14.3. Fix names

14.3.2. M001 P-aspect "object name" expression

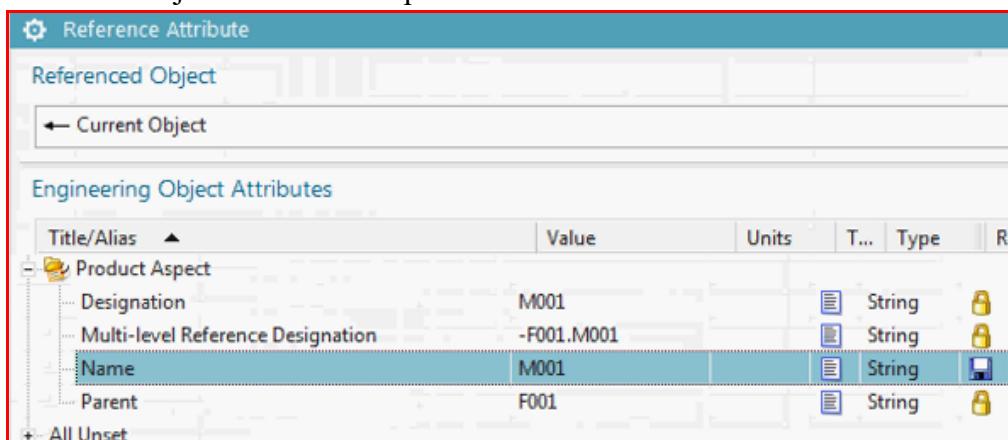
20160310_6_part1.avi 03:30



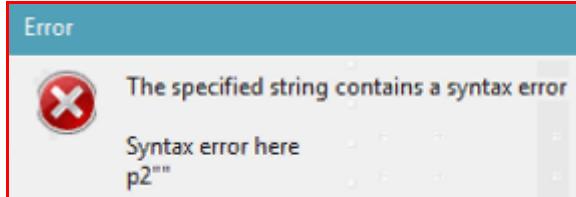
2. Reference / object attribute.



3. Current object ... Product aspect / name



4. p2 error

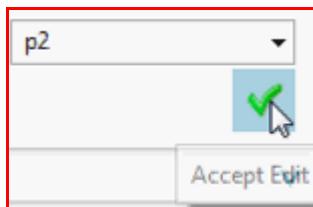


5. Change to p2



6. CLICK ENTER.

7. CLICK GREEN ARROW.



8. THEN CLICK OK.



14.3.3. Set F-aspect DB symbolic name

Reference / object attribute.

Function Aspect Navigator

- Name: CD000045;1-20160310_4_1135
- Unassigned
- F001
 - FX001_FB
 - M001
 - DEV_2I_2O_L
 - FX001_FB_DB

Reuse Library

- Type Library [209]
 - Device [171]

Properties

Select Object: Select Object (1)

Engineering Object Attributes

Title/Alias	Value	Units	Type	R...	I...
Symbolic Name	DEV_2I_2O_UNI_FB_DB		String		

Value Expression Formula

Expression Formula: ""

Accept Edit

Export Information

Object Attribute Reference

M001 product aspect / MRD

Function Aspect Navigator

- Name: CD000045;1-20160310_4_1135
- Unassigned
- F001
 - FX001_FB
 - M001
 - DEV_2I_2O_L
 - FX001_FB_DB

Reuse Library

- Type Library [209]
 - Device [171]

Reference Attribute

Referenced Object: Select Object

Select Object: Select Engineering Object (1)

Engineering Object Attributes

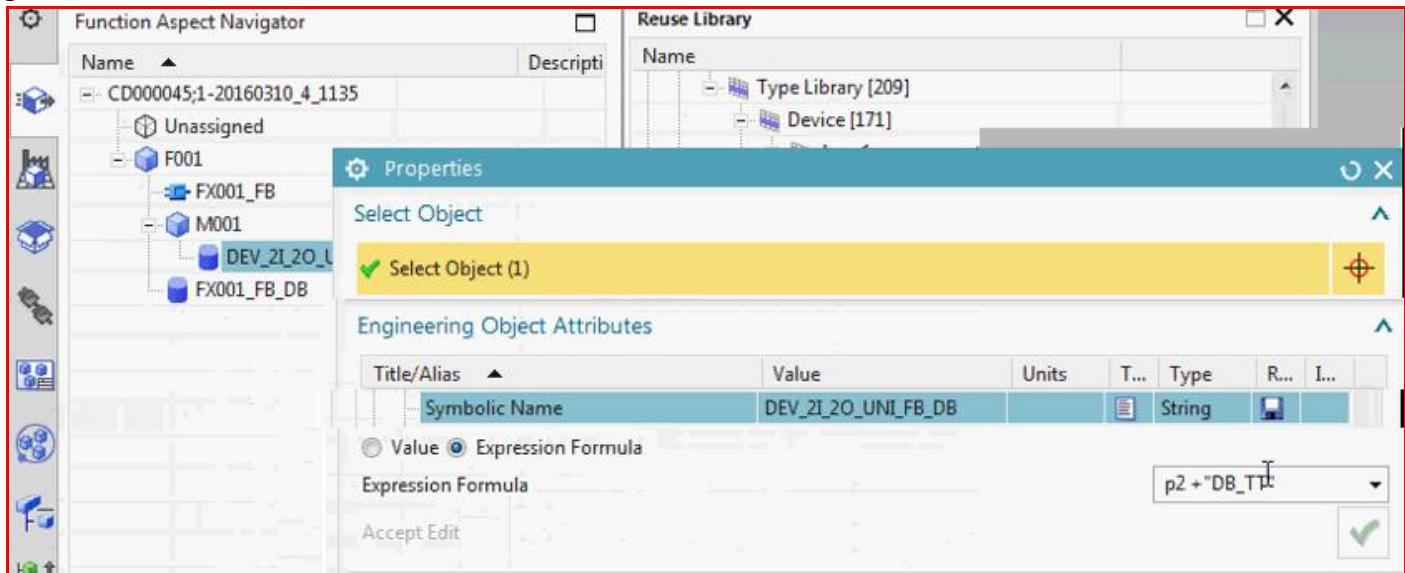
Title/Alias	Value	Units	Type	R...	D...
Product Aspect					
Designation	M001		String		
Multi-level Reference Designation	-F001.M001		String		

Error

The specified string contains a syntax error

Syntax error here
p2""

p4 + "_DB"



ENTER

GREEN ARROW

Symbolic Name

-F001.M001DB_TT

OK.

14.4. create ports, expressions, dynamic connection

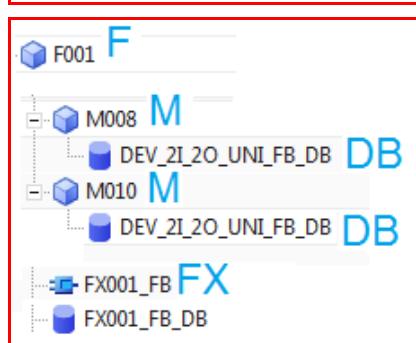
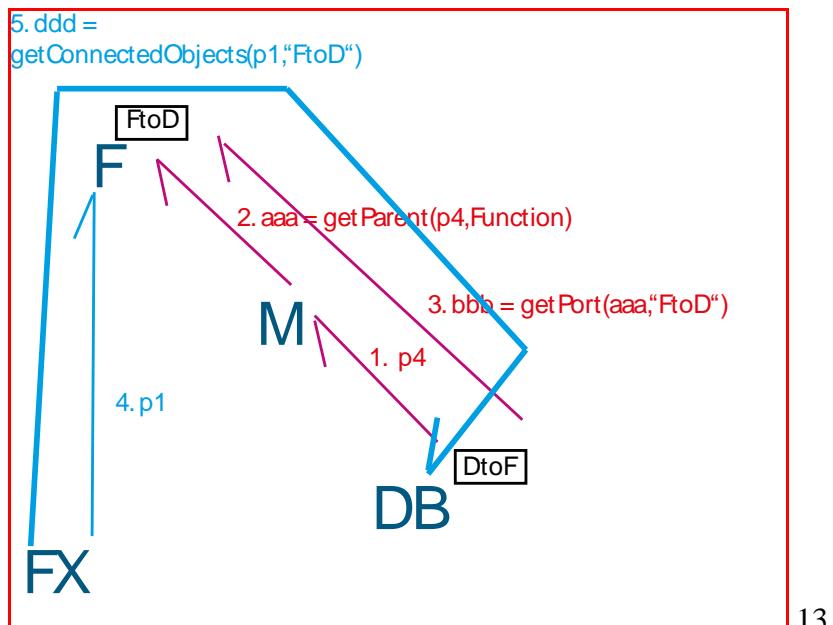
20160318_2_create_ports_expressions_dyn_connect.avi

Following Diagram shows what you do

14.4.1. create ports FtoD, DtoF.

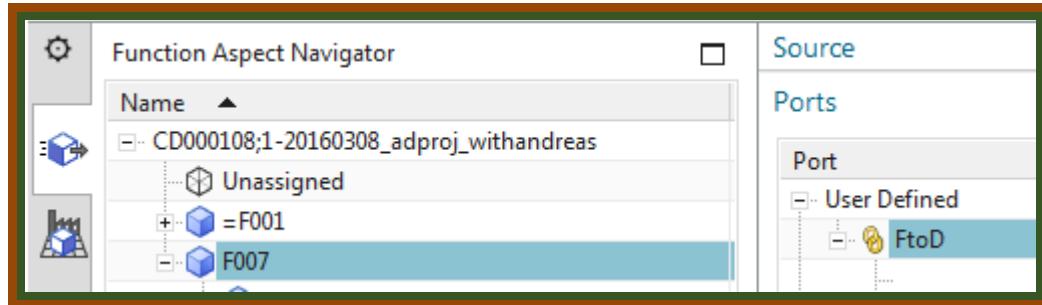
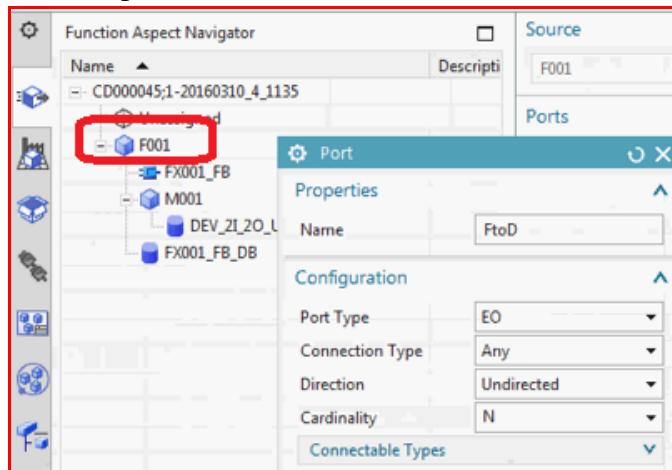
14.4.2. DB's connect themselves to F: port DtoF gets the F port FtoD.

14.4.3. FX gets the connected ports, thus getting all existing DBs.



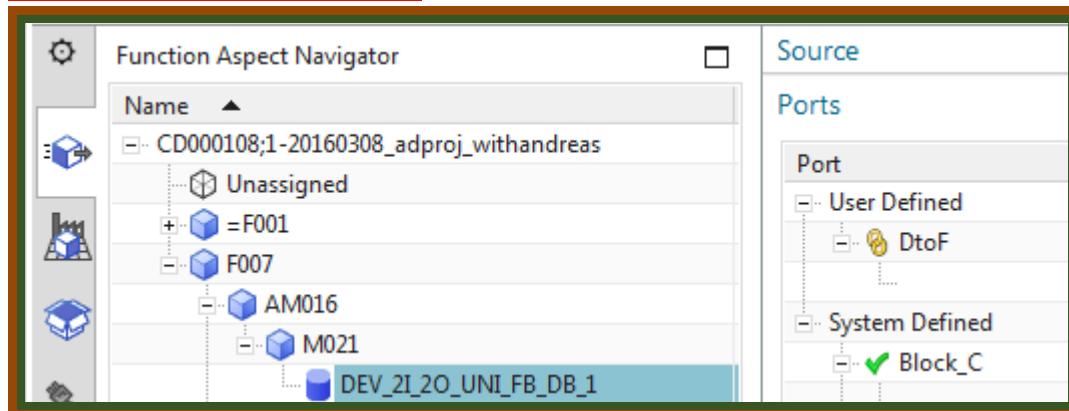
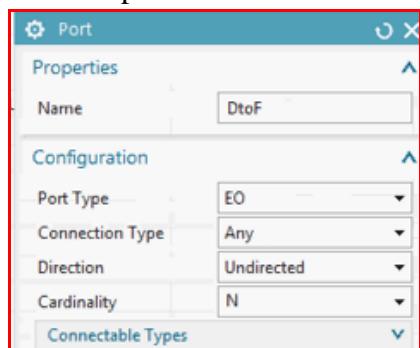
14.4.1. Create port F007 (FtoD)

Create a port on F007. F to D.



14.4.2. Create port DB (DtoF)

Create a port on DB. D to F.



14.4.3. Create DB getPort to F

Create expressions on DB that auto-connect (getPort) to F007.

The screenshot shows a table titled "Ports" with columns: Port, Connected Obj..., Connected Port, Port Type, Connection Type, Direction, Cardinality, and Connectable types. A row under "User Defined" is selected, showing "DtoF" in the Port column and "EO" in the Connected Port column. The "Connection Type" is "Any" and "Direction" is "Undirected". The "Cardinality" is "N" and "Connectable types" is "Device Function, E...". A tooltip for "Dynamic Connection" explains: "Connects ports dynamically by using expressions". Below the table is a toolbar with icons for creating, deleting, and modifying connections.

This already there

The screenshot shows a table titled "Expressions" with columns: Name, Formula, Value, Type, Dimensionality, and Units. Two rows are present: "1 p0" with Formula "p2 +\"DB_TT\"", Value "-F001.M001DB_TT", Type String, and "2 aaa" with Formula "", Value "", Type String. The "Value" column for "aaa" has a dropdown arrow icon.

Create first expression.

The screenshot shows the same Expressions table. A context menu is open over the "Edit" button for the second row ("2 aaa"). The menu items are "Commit New Expression", "New Expression", and "Edit...". The "Edit..." option is highlighted with a red box.

The screenshot shows the Expressions table with the "Edit" dialog open for the second row ("2 aaa"). The dialog title is "Edit" and it contains a "Formula" field with "GetParent()", a toolbar with icons, and a "Source" tab showing "DB008".

The screenshot shows the "Function Aspect Navigator" with a tree view of objects. Under "CD000045;1-20160310_4_1135", there is an "Unassigned" node, an "F001" node, an "FX001_FB" node, and an "M001" node. The "M001" node is selected. To the right, the "Reference Attribute" panel shows "Referenced Object" and "Select Object" fields, with "Select Object" containing "Select Engineering Object (1)".

The screenshot shows the formula editor with the title "Edit" and the formula "GetParent(p4,Function)" entered.

The screenshot shows the Expressions table with the following data:

Name	Formula	Type
1 aaa	GetParent(p4,Function)	String
2 p0	p2 +\"DB_TT"	String

Create second expression.

Name	Formula	Value	Type
1 aaa	GetParent(p4,Function)	"F001"	String
2 bbb	getPort(aaa,"FtoD")	"F001.Port1"	String
3 p0	p2 +"DB_TT"	"F001.M001DB_TT"	String

The "getPort" command establishes the connection.

Not sure if important to select before clicking ok.

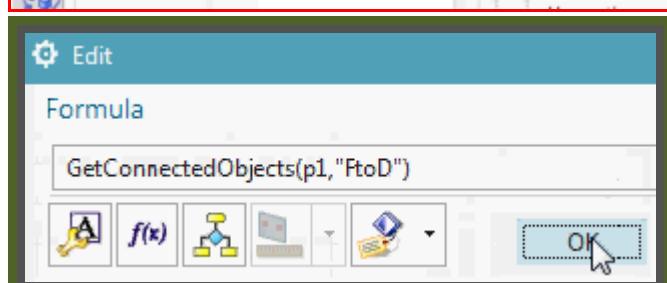
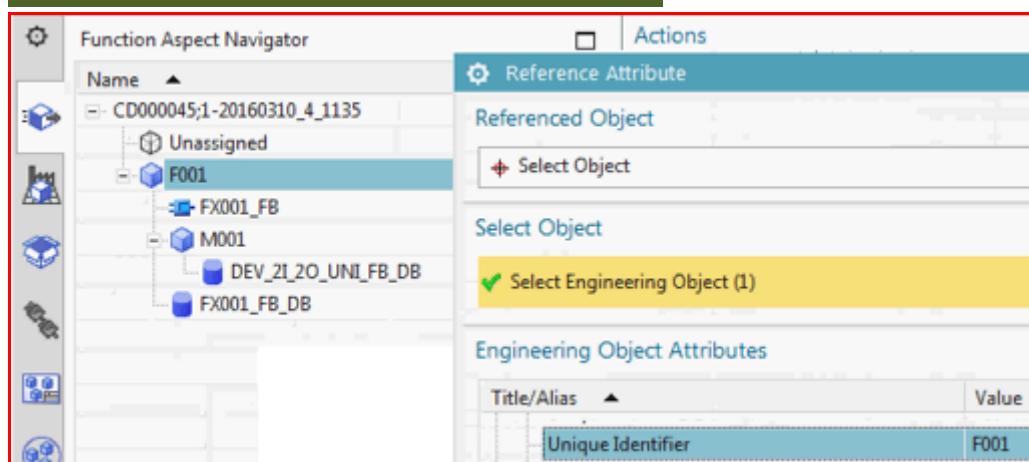
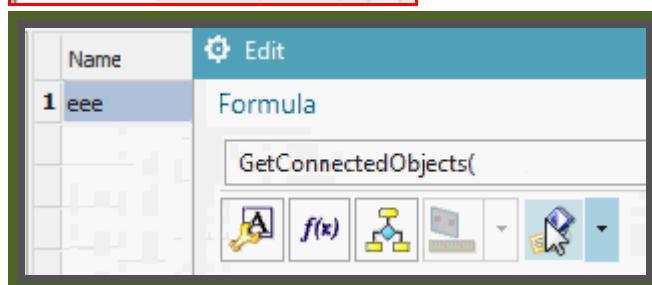
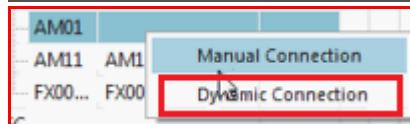
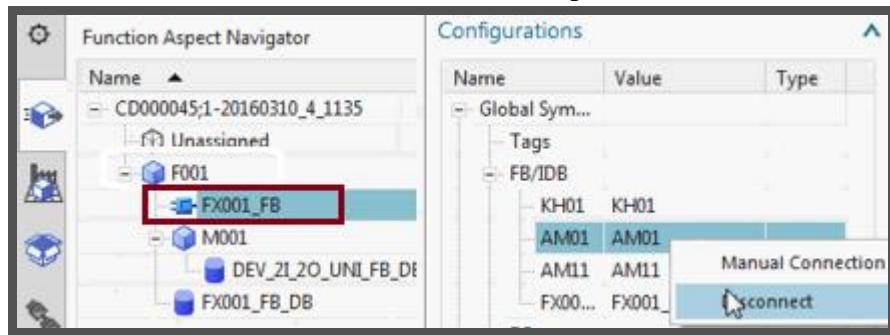
Name	Formula	Value	Type
1 aaa	GetParent(p4,Function)	"F001"	String
2 bbb	getPort(aaa,"FtoD")	"F001.Port1"	String
3 p0	p2 +"DB_TT"	"F001.M001DB_TT"	String
4 ==	==	==	String

Result.

Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined							
- DtoF	F001	FtoD	EO	Any	Undirected	N	Device Function, E...

14.4.4. create F call GetConnectedObjects to FtoD port

create a connection in FB to the F007 FtoD port.



Name	Formula	Value	Type
1 ddd	GetConnectedObjects(p1, "FtoD")	{"D6008"}	List
2	" "	" "	String

Result.

```
Network 4:-
CALL "DEV_2I[20_UNI_FB", "-F001.M001DB_TT"
```

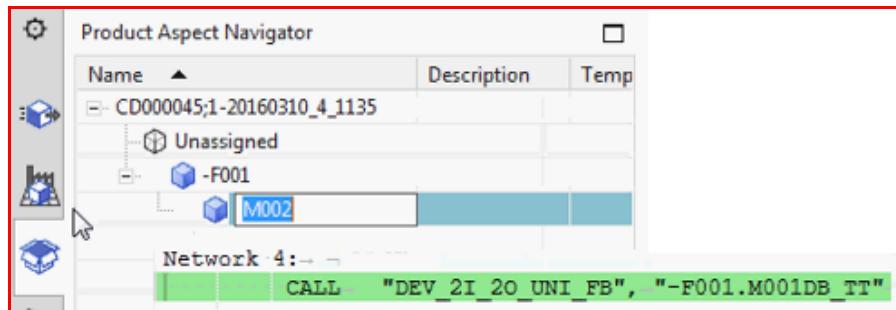


14.5. test

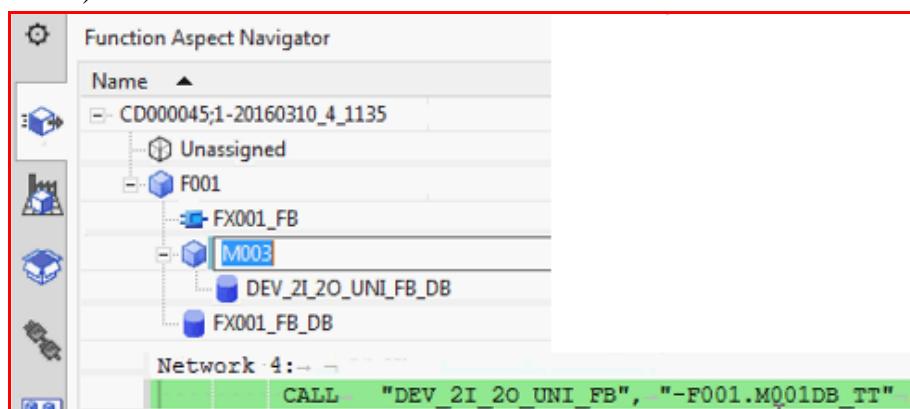
14.5.1. change M00x name... one step behind (movie 2)

product aspect change name is always one step behind.

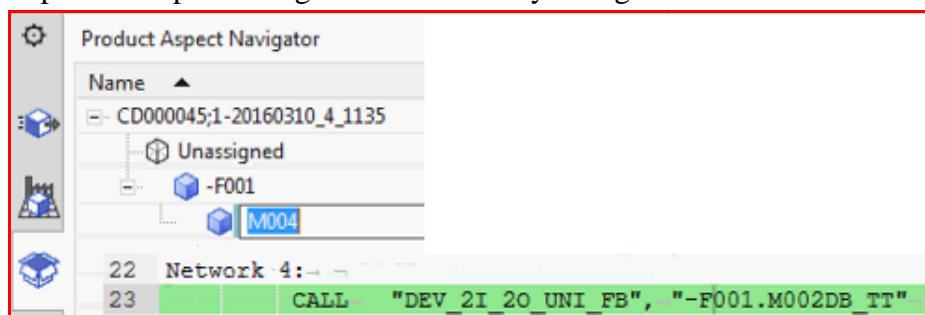
in product aspect change to m002. No change.



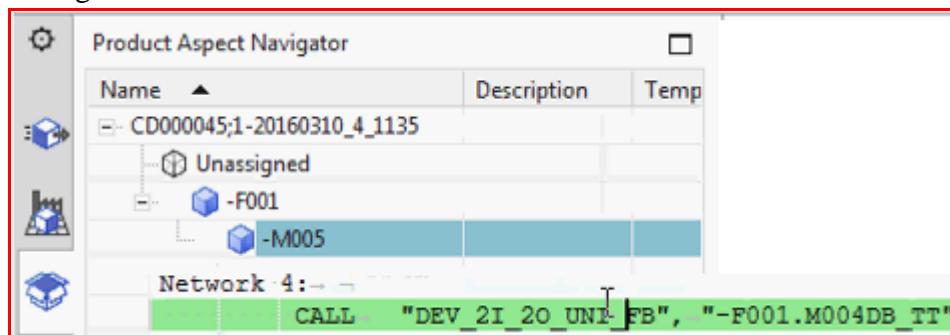
In function aspect change to m003. No change. Change only shown in function aspect when you click on (ui errors).



in product aspect change to m004.. finally changes to m002.



Change to m005

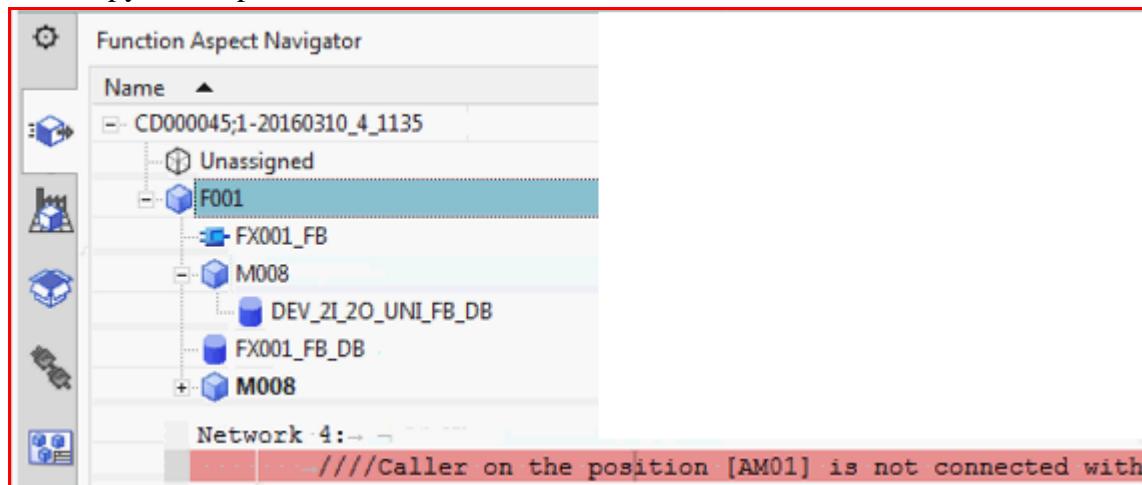


Always one behind,only behind changes made in product aspect.

14.5.2. TEST: copy the Mxxx, should auto update FB call

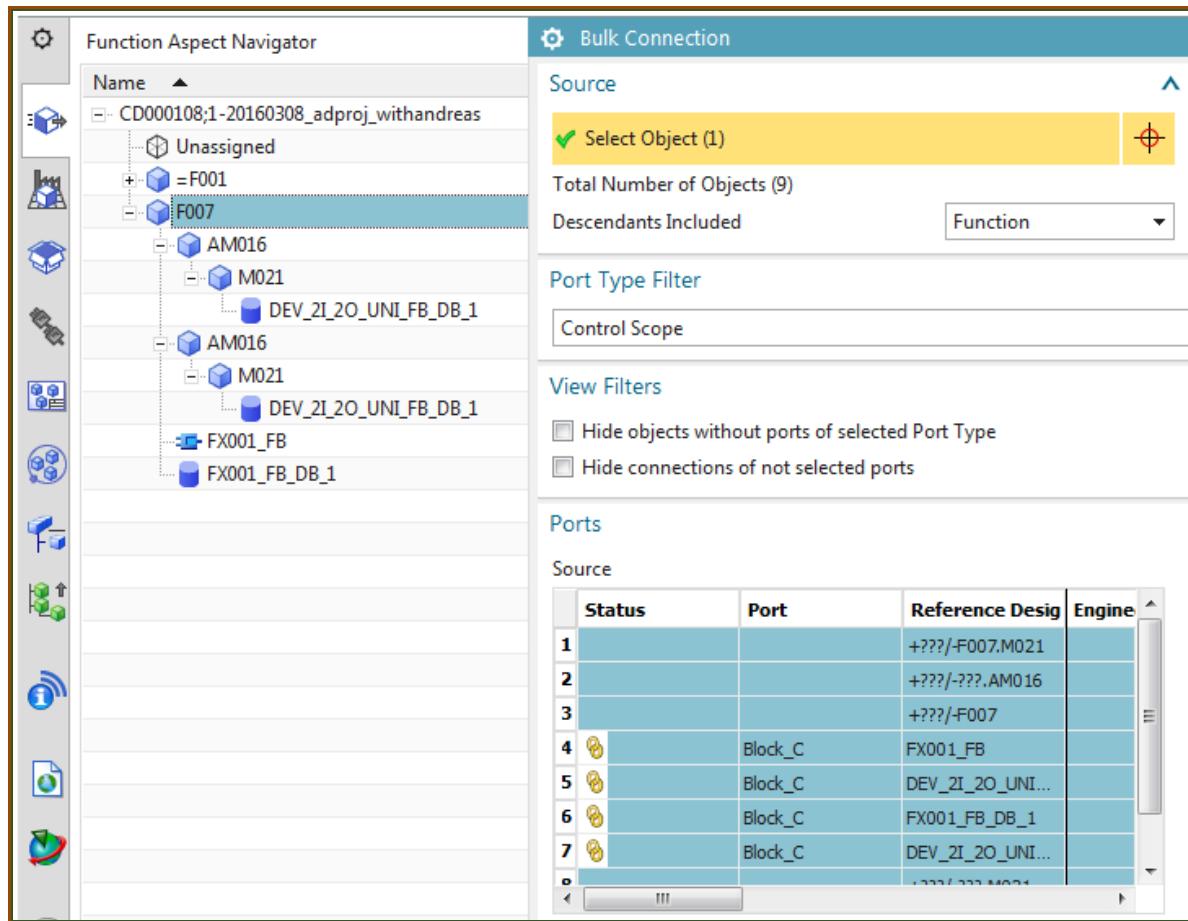
20160318_3_copy_M_rename.avi

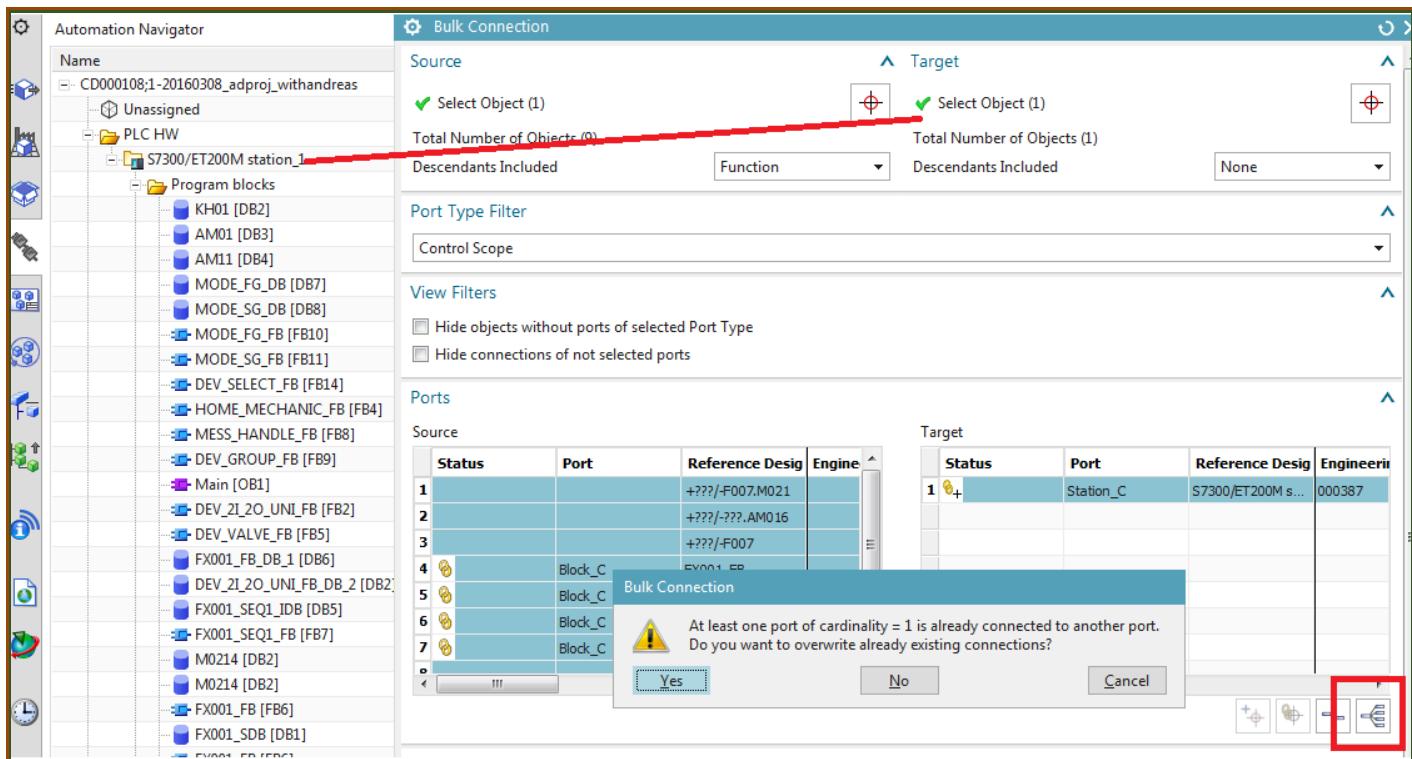
Now copy m001, paste to F001. Note same names.



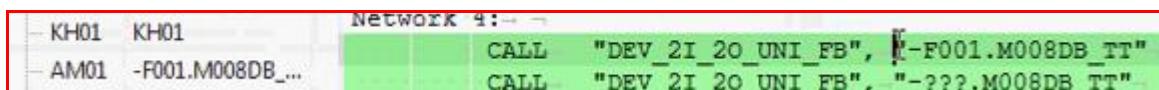
Error in call

bulk connect to register change (several bugs to battle with).

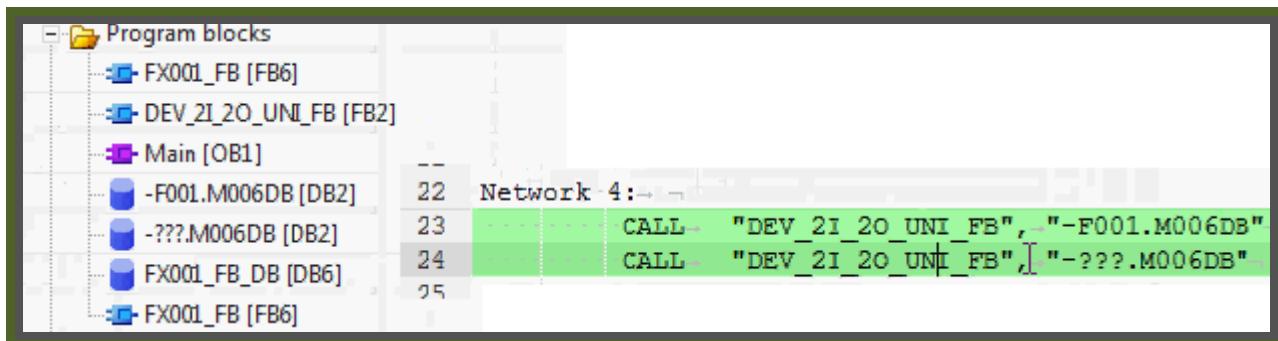




Result.

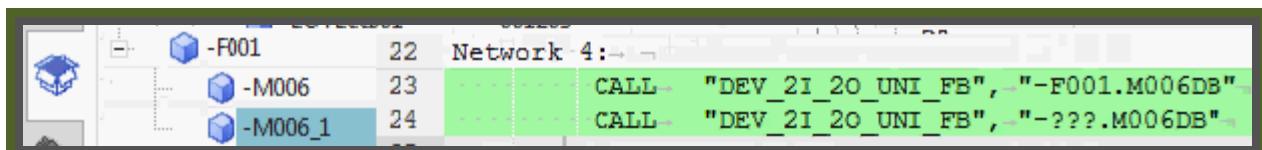


20130623

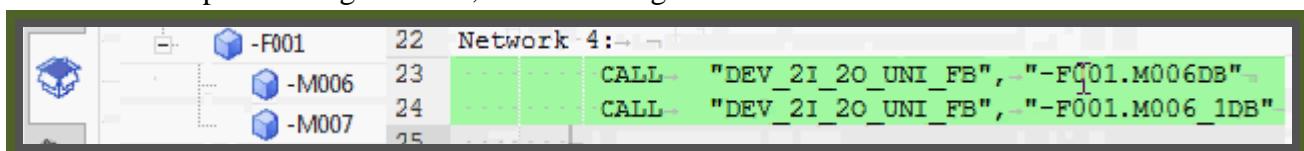


Move the second M in product aspect.

20160323



Rename in P aspect. Change in code, but one change behind.



But it worked 😊

14.5.3. TEST: export to TIA xxxxxxxxxxxxxxxxxxxxxxxxx

15 (GS1-12,13). Create/instantiate template

20160318: copied from ch 13.

20160318_4_create_instantiate_template.avi

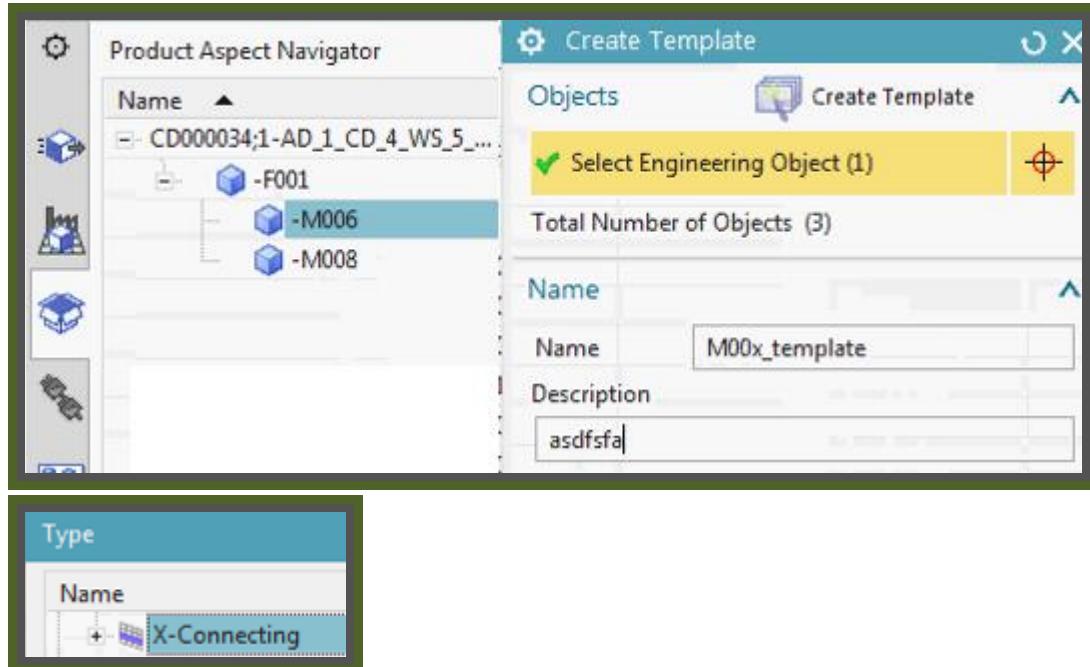
*** 13.7. Create template; insert template; modify (20160311)

20160311_1_0824_insert_template_delete_motor.avi

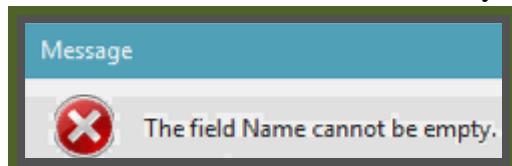
15.1. Create template 20160323

20160323_4_ch15_create_instant_template_errors.avi

1. Create a template of M00x. from P aspect??



Ran into this error several times today.. not sure why.

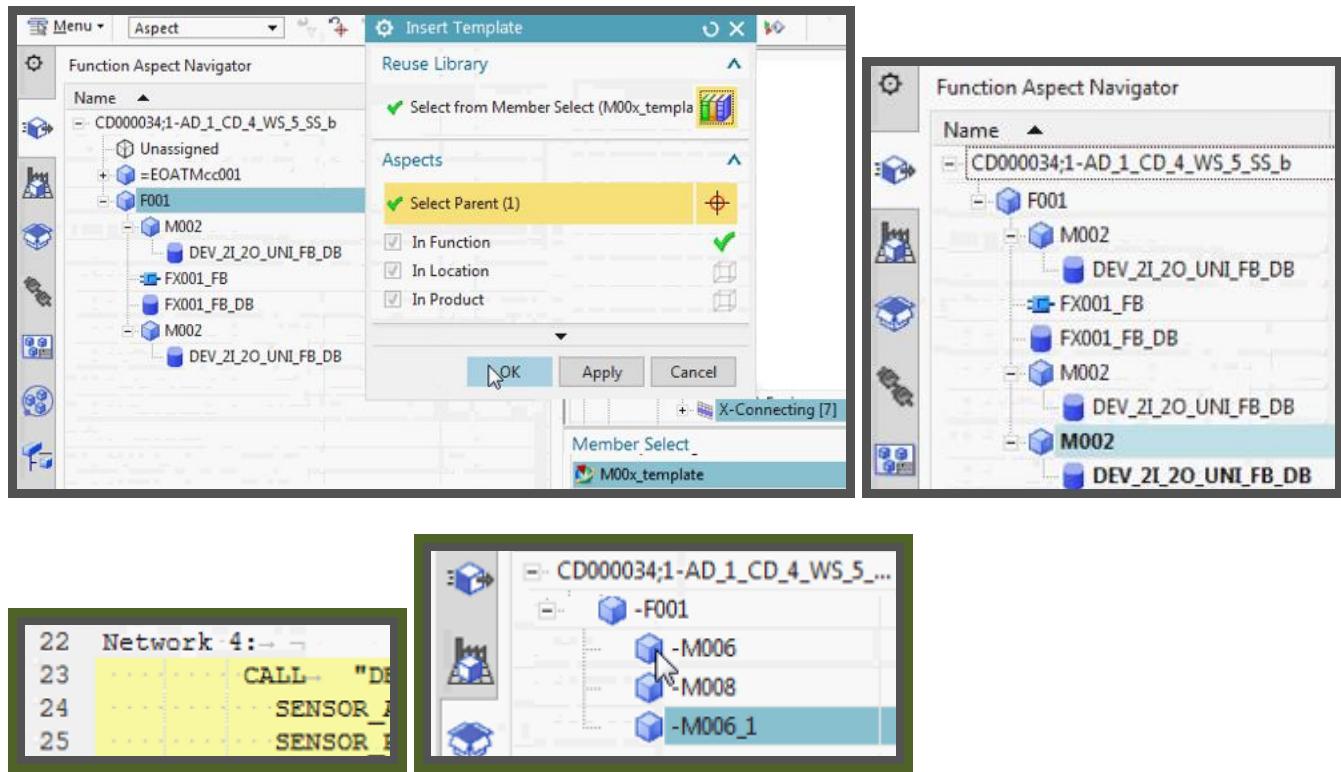


Close template

15.2a. test NEW 20160323

20160323_4_ch15_create_instant_template_errors.avi

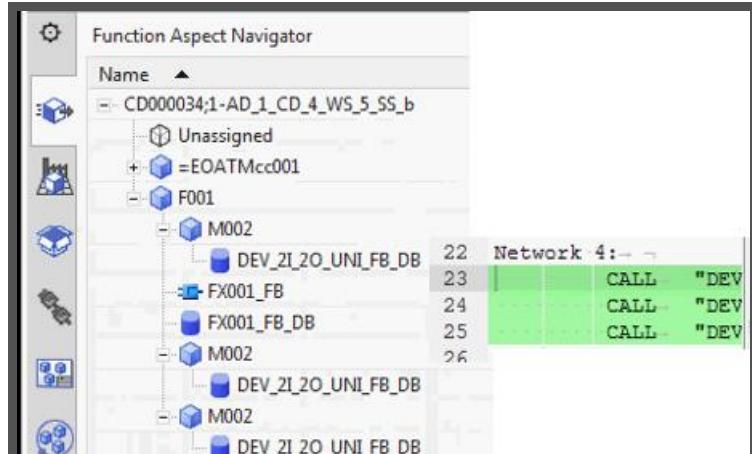
1. insert template (not mtncbot)



Bulk connect. Not fixed.

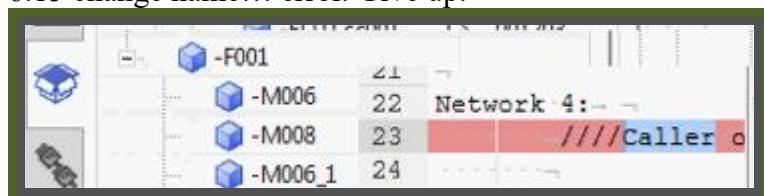
4:00 redo dynamic connection.

5:20 fixed.



5:40 add again. No change.

6:15 change name... error. Give up.

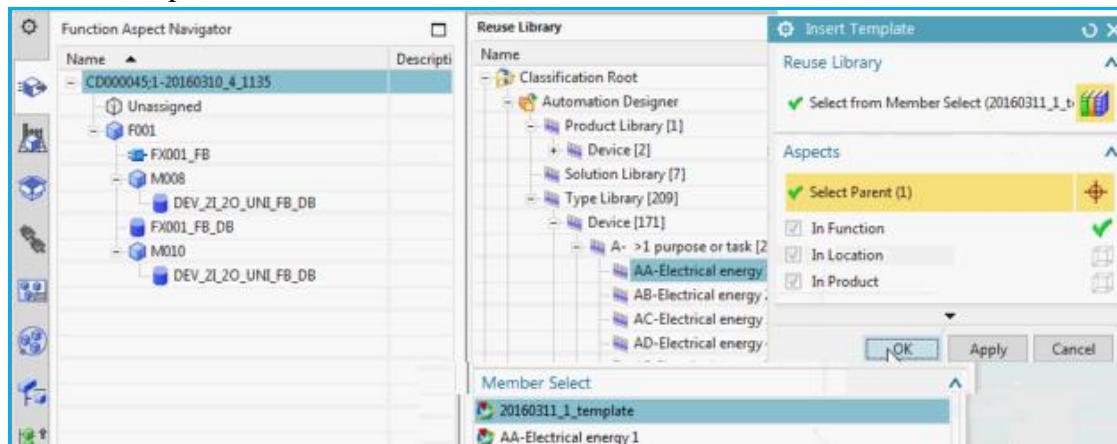


In 20160323_5_ch15_reconnect.avi reconnect.

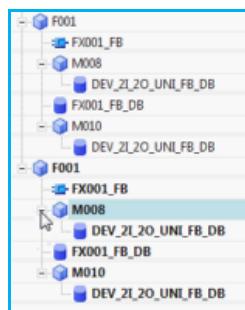
15.2b. test (old)

1. insert template (not mtnbot)

2. Insert template.



Result.

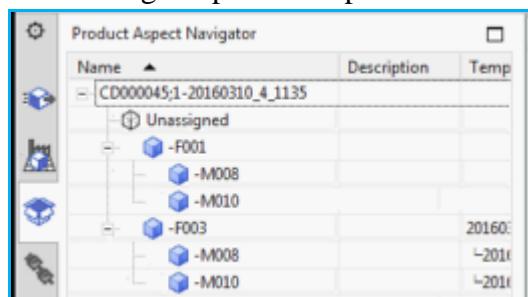


xxxxxxxxxxxxxxxxxxxxx3. Change name to F002. no effect.

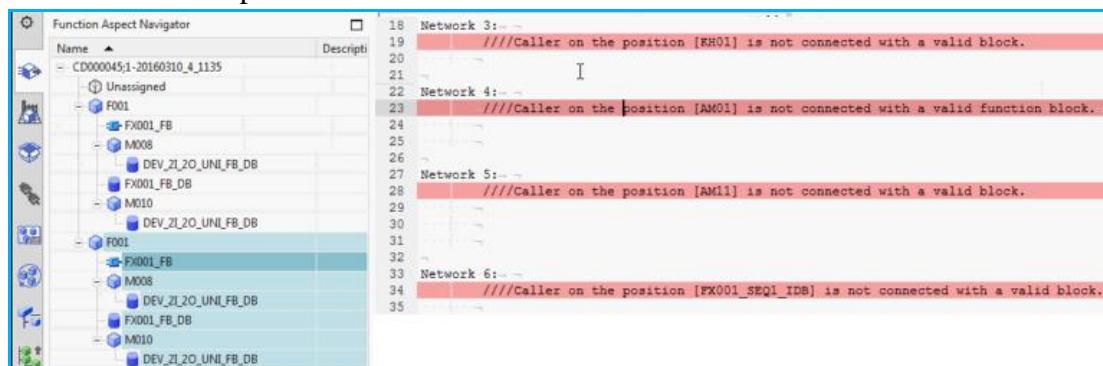
Change and no effect?



4. Rearrange in product aspect.



calls are messed up. 06:20



5. Connect

The screenshot shows the SIMATIC Manager interface with the 'Automation Navigator' and 'Reuse Library' tabs open. In the Automation Navigator, a connection is being established between a 'Program blocks' item and a 'Device [171]' item in the Reuse Library. A red line highlights the connection path. The 'Control Scope' and 'View Filters' sections are visible at the top right. A 'Ports' table lists connections from 'Source' to 'Target'. A 'Bulk Connection' dialog box is open, asking if the user wants to overwrite existing connections, with 'Yes' selected.

OK now.

```

18 Network 3:-
19   CALL "DEV_VALVE_FB", "KH01"
20
21
22 Network 4:-
23   CALL "DEV_2I_2O_UNI_FB", "-F006.M010DB_TT"
24   CALL "DEV_2I_2O_UNI_FB", "-F006.M008DB_TT"
25
26
27
28 Network 5:-
29   CALL "DEV_1I_10_ONOFF_FB", "AM11"
30
31
32
33
34 Network 6:-
35   CALL "FX001_SEQ1_FB", "FX001_SEQ1_IDB"
36

```

6. Delete a motor.

The screenshot shows the SIMATIC Manager interface with a tree view of objects. Two 'M010' components are selected. A context menu is open over the bottom one, with the 'Delete' option highlighted. A blue border surrounds the selected objects.



Call auto-adjusted. ☺

The screenshot shows the SIMATIC Manager interface with a tree view of objects. The previously deleted 'M010' components have been replaced by their respective function block instances ('FX001_FB') and their associated data blocks ('FX001_FB_DB'). A blue border surrounds the newly created objects.

xxx2. generate EPLAN

3. generate TIA xxx

C. round-trips

17 (NEW). LD-AD round-trips 20160323-24

17 (OLD). LD-AD round-trips

18. AD-EPLAN round-trips

19. AD-TIA round-trips

17 (NEW). LD-AD round-trips 20160323-24

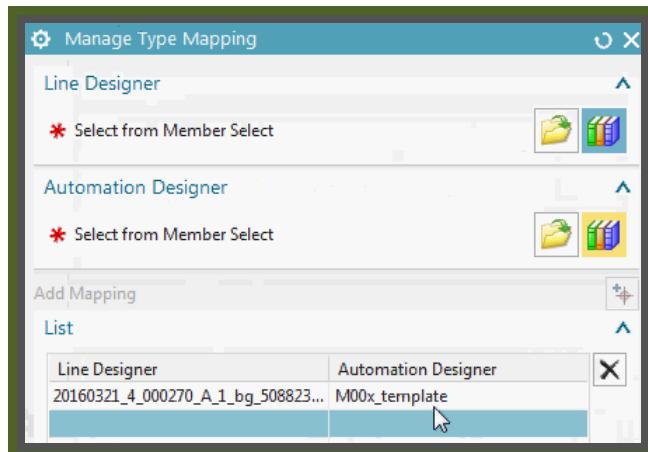
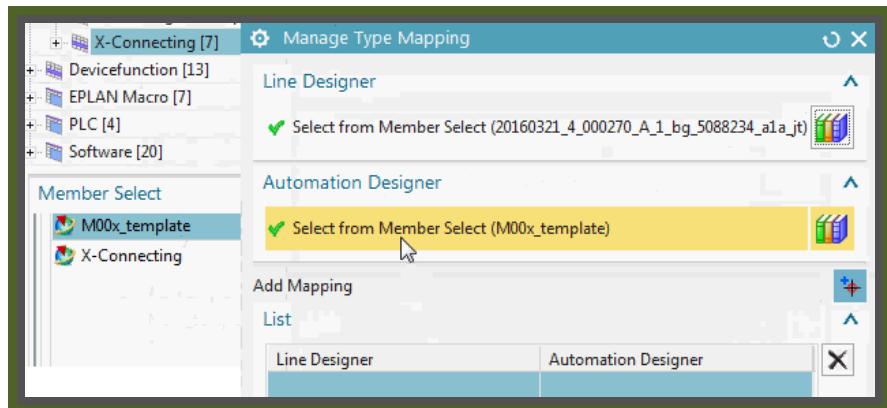
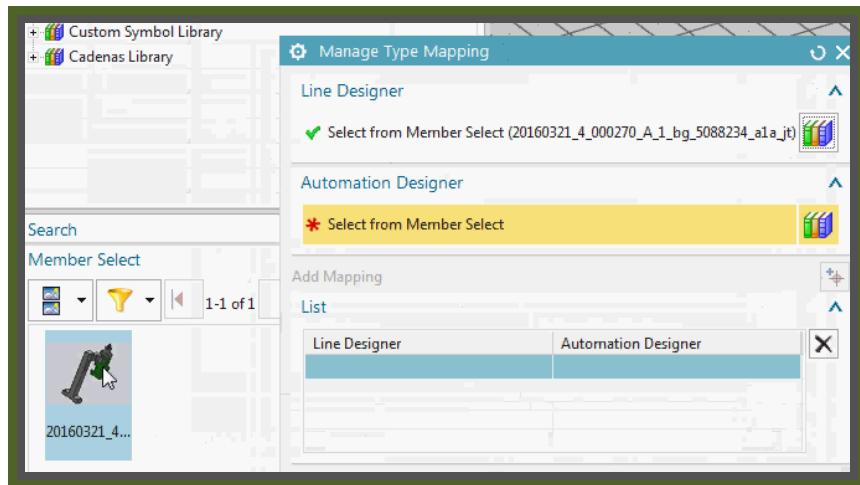
20160323_6_ch17_CORRUPT.avi

In this movie I think I added 4 parts.. not sure, nx crashed and movie with it.. but in next movie there are 4 more unmapped parts.

WAIT.. maybe not.. I think those 4 were from the beginning. I just never mapped them yet.

20160323_7_ch17_map.avi

Manage type mapping



Manage object mapping >> 1. map to existing in project

Manage Object Mapping

Actions

- Map to Existing in Project
- Map to New
- Map to New Based on Type
- Unmap

Object Mapping

Show

- Unhidden
- Hidden
- Unmapped
- Mapped
- Deleted
- All

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...	■■		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■■		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■■		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■■		M00x_template
0000099A001127-A-...	0000099A001127-A-1-E...	■■	EOGLcc004	

Function Aspect Navigator

- CD000034;1-AD_1_CD_4_WS_5_
 - Unassigned
 - =EOATMcc001
 - F001
 - M002
 - FX001_FB
 - FX001_FB_DB
 - M002
 - M002
 - M002

Reuse Library

Map to Existing Object

External Object

Select External Object (1)

Automation Designer

Select Engineering Object (1)

Map to Template

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...	■■	M002/M002/-F001.M006	
20160321_4_000270_...	20160321_4_000270_A_1...	■■		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■■		M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...	■■		M00x_template

Do again to second in row.

Manage object mapping >> 2. map to new

Manage Object Mapping

Actions

- [Map to Existing in Project](#)
- [Map to New](#) **Map to New**
- [Map to New Based on Type](#)
- [Unmap](#)

Object Mapping

Show

Unhidden Hidden Unmapped Mapped Deleted All

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M006	
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M008	
20160321_4_000270_...	20160321_4_000270_A_1...			M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...			M00x_template
0000099A001127-A-...	0000099A001127-A-1-E...		EOGLcc004	

Cannot select template.

X-Connecting (7)

Engineering Object

Reuse Library

Select from Member Select (X-Connecting)

General Properties

Object Name Prefix: -

Description:

Navigators

Select Parent (0)

In Function
 In Location
 In Product
 In Automation

Function Aspect Navigator

Name

- CD000034;1-AD_1_CD_4_WS_5
 - Unassigned
 - + =EOATMcc001
 - F001
 - + M002
 - + FX001_FB
 - + FX001_FB_DB
 - + M002
 - + M002
 - + M002
 - _001

Manage Object Mapping

Actions

- [Map to Existing in Project](#)
- [Map to New](#)
- [Map to New Based on Type](#)
- [Unmap](#)

Object Mapping

Show

Unhidden Hidden Unmapped Mapped Deleted All

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M006	
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M008	
20160321_4_000270_...	20160321_4_000270_A_1...		_001/_001/-???._001	M00x_template
20160321_4_000270_...	20160321_4_000270_A_1...			M00x_template
0000099A001127-A-...	0000099A001127-A-1-E...		EOGLcc004	

Manage object mapping >> 3. map to new based on type

Manage Object Mapping

Actions

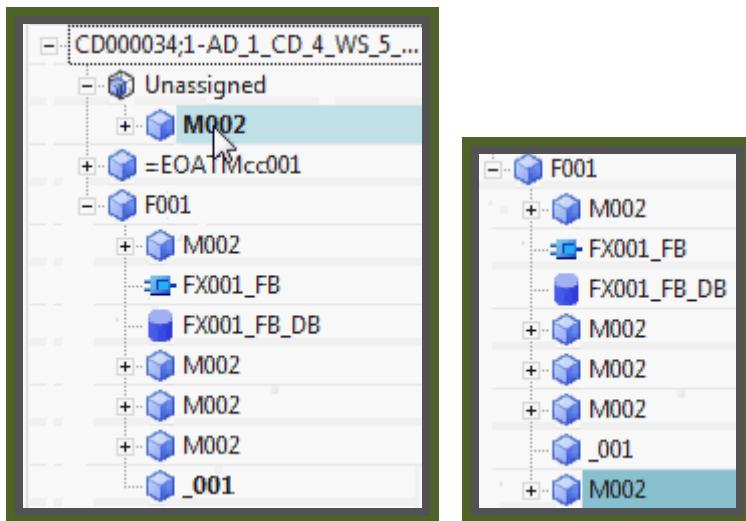
Map to Existing in Project | Map to New | **Map to New Based on Type** | Unmap

Object Mapping

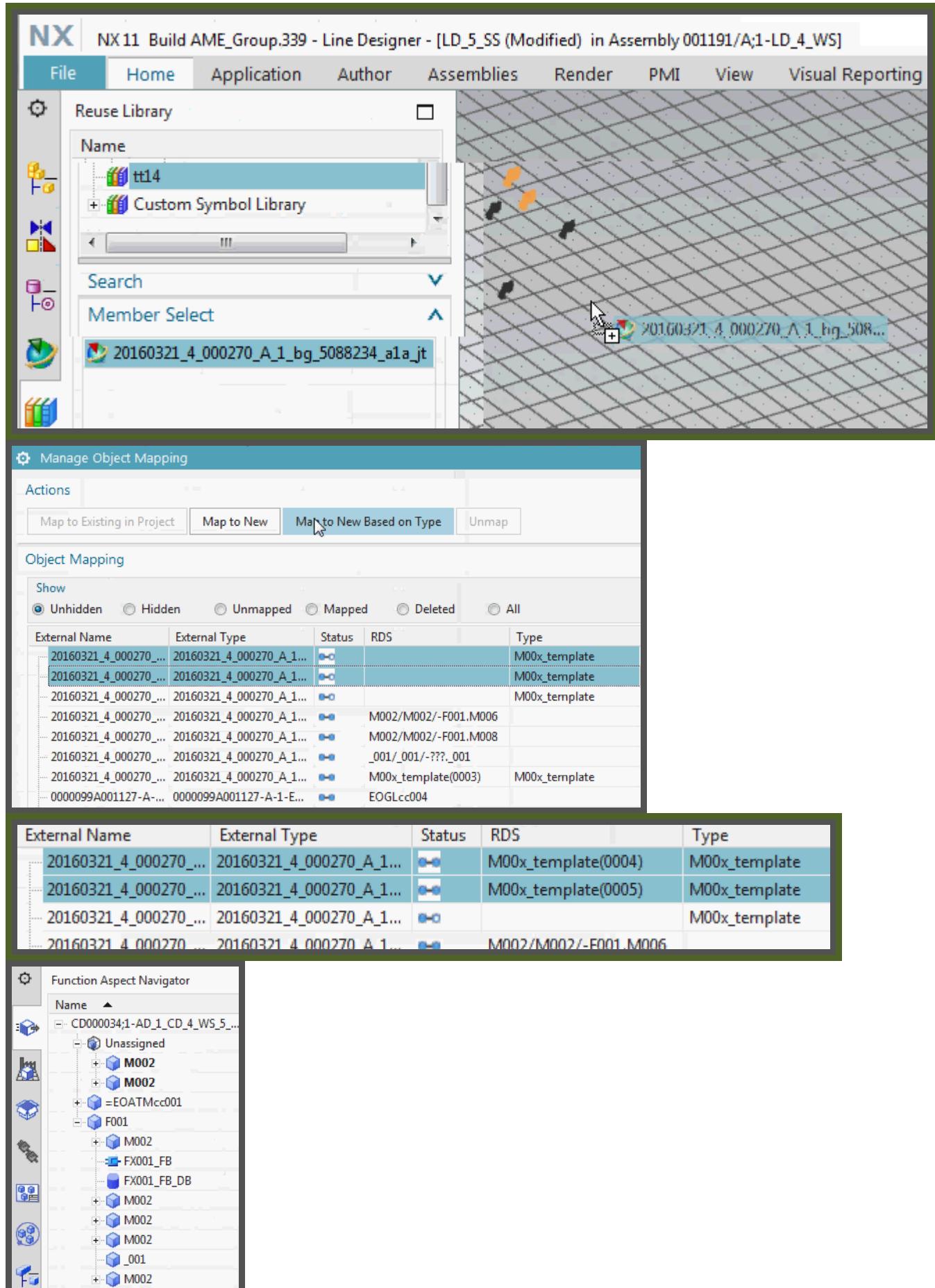
Show: Unhidden Hidden Unmapped Mapped Deleted All

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M006	
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M008	
20160321_4_000270_...	20160321_4_000270_A_1...		_001/_001/-???._001	
20160321_4_000270_...	20160321_4_000270_A_1...			M00x_template
0000099A001127-A...	0000099A001127-A-1-E...		EOGLcc004	

External Name	External Type	Status	RDS	Type
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M006	
20160321_4_000270_...	20160321_4_000270_A_1...		M002/M002/-F001.M008	
20160321_4_000270_...	20160321_4_000270_A_1...		_001/_001/-???._001	
20160321_4_000270_...	20160321_4_000270_A_1...		M00x_template(0003)	M00x_template
0000099A001127-A...	0000099A001127-A-1-E...		EOGLcc004	

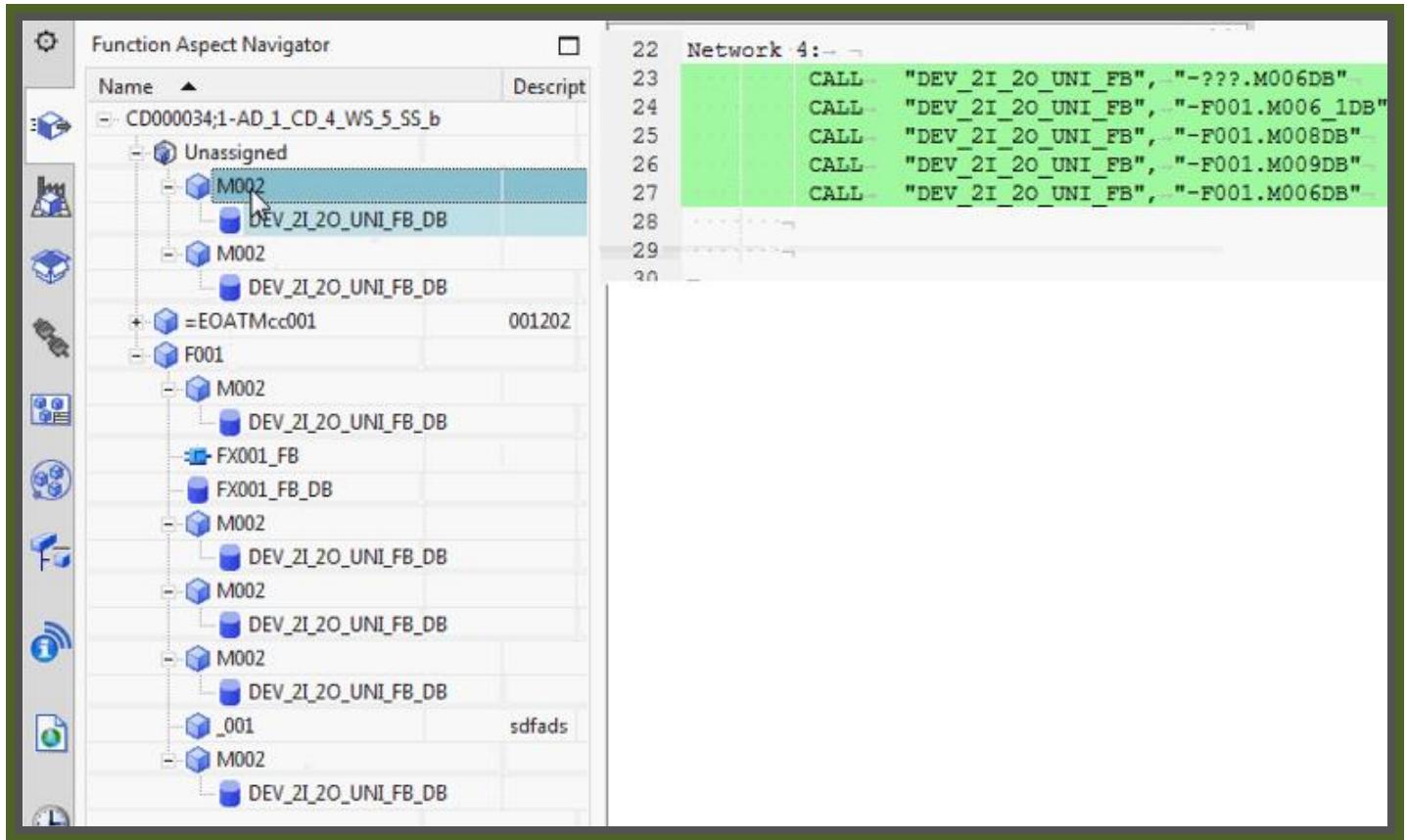


20160323_8_ch17_add_part_map.avi



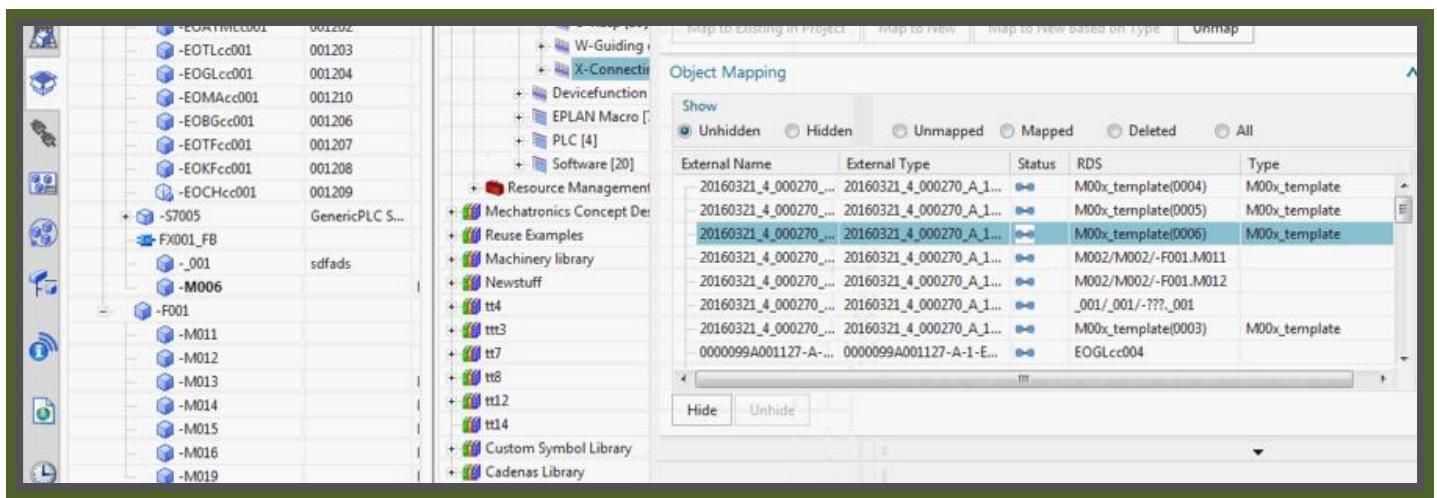
20160324_9.avi

Not added to call.. try all kinds of stuff... nothing works.



20160324_10.avi

Add this, play around a while, move things.. connect.. never updates calls.



20160324_1530

So lets look at ports.... Looks ok.

Name	Description	Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types				
CD000034;1-AD_1_CD_4_WS_5_SS_b		User Defined											
Unassigned		FtoD			EO	Any	Undirected	N	Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
+EOATMc001	001202				EO	Any	Undirected	N	Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
+EOTLcc001	001203				EO	Any	Undirected	N	Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
F001					EO	Any	Undirected	N	Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
M002					DB049	DtoF	EO		Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
DEV_2I_2O_UNI_FB_DB					DB048	DtoF	EO		Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
FX001_FB					DB050	DtoF	EO		Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
FX001_FB_DB					DB051	DtoF	EO		Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
M002					DB047	DtoF	EO		Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
DEV_2I_2O_UNI_FB_DB					DB045	DtoF	EO		Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
M002					DB043	DtoF	EO		Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
DEV_2I_2O_UNI_FB_DB					DB046	DtoF	EO		Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
M002					DB042	DtoF	EO		Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
DEV_2I_2O_UNI_FB_DB					System Defined								
TIA Link						TIA Link FLP	Undirected	1	TIA Link A				
F001						EO	Any	Undirected	Device Function, EOAny, PLCPortType, OB, PLC_CHANNEL_POR				
						INTERNAL	AttributePortType	Undirected	PLCPortType, AttributePortType				
						INTERNAL	AttributePortType	Undirected	PLCPortType, AttributePortType				

Check connection...

Name	Formula	Type	Dimensionality	Units	Source	Status	Comment	Chg Group
1 fff	GetConnectedObjects(p3, "FtoD")	List						Default Group
2 p1	\$(Attribute)	String			(F001::Type:Unique Identifier)			Default Group
3 p3	\$(Attribute)	String			(F001::Type:Unique Identifier)			Default Group
4 "	"	String						Default Group

**Click OK... and VIOLA! links finally updated.
Strange. But the goal we wanted. ☺ ☺ ☺**

Name	Value	Type
Global Sym...		
Tags		
FB/IDB		
KH01	-F001.M011DB	
AM01	-F001.M010DB -F001	
AM11	-F001	
FX00...	-F001	

Name	Defa...	Data ...	Comments
Input			
CONF_TIME_ONOFF			Time
CONF_HOME_PATTERN_OFF			Word
CONF_HOME_PATTERN_ON			Word
InOut			
Static			
MODE_FG			"MOD..."
Input			

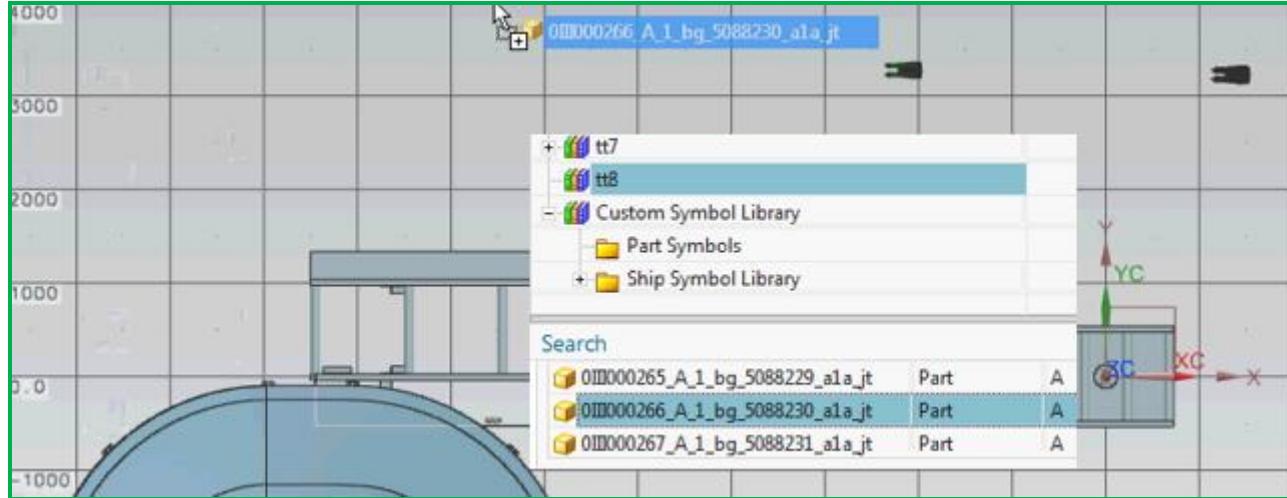
PLC Code	
22 Network 4: -	
23 CALL "DEV_2I_2O_UNI_FB", "-F001.M019DB"	
24 CALL "DEV_2I_2O_UNI_FB", "-F001.M016DB"	
25 CALL "DEV_2I_2O_UNI_FB", "-F001.M11DB"	
26 CALL "DEV_2I_2O_UNI_FB", "-F001.M006DB"	
27 CALL "DEV_2I_2O_UNI_FB", "-F001.M015DB"	
28 CALL "DEV_2I_2O_UNI_FB", "-F001.M013DB"	
29 CALL "DEV_2I_2O_UNI_FB", "-F001.M012DB"	
30 CALL "DEV_2I_2O_UNI_FB", "-F001.M014DB"	
31 CALL "DEV_2I_2O_UNI_FB", "-F001.M011DB"	
32	

17 (OLD). LD-AD round-trips

20160318_5_add_LD_part_manage_type_map_mtnbot.avi

17.1. "manage type mapping" (LD DE's to AD templates)

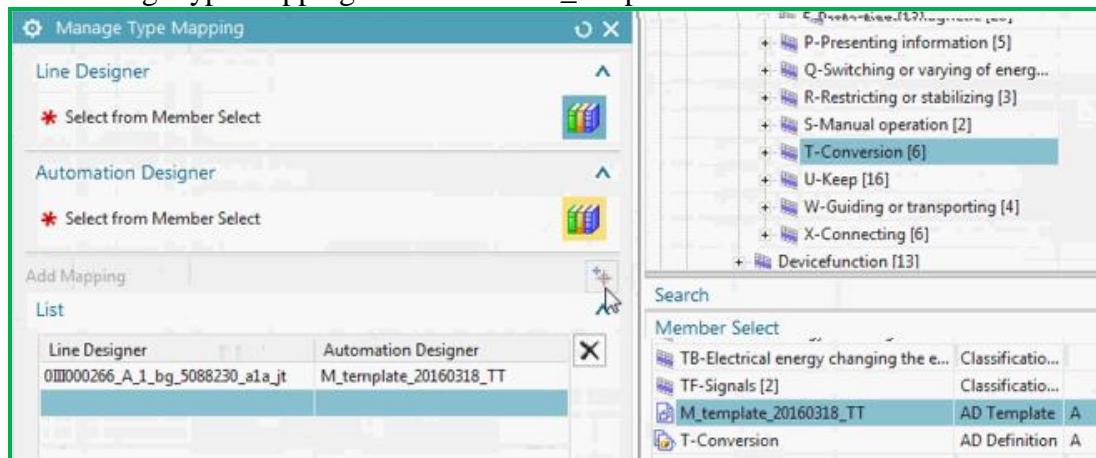
0:00 add LD parts 50883230



Add 4.



0:55 manage type mapping 50883230 to M_template



17.2. (ch6) mtntbot (add mapped template instances)

1:50 manage object mapping

The screenshot shows the 'Manage Object Mapping' window with a green border. At the top left are icons for 'Manage Object Mapping', 'Load Line Designer', 'Manage Type Mapping', and 'Note'. Below is a toolbar with buttons: 'Map to Existing in Project', 'Map to New' (selected), 'Map to New Based on Type' (highlighted with a cursor), and 'Unmap'. The main area is titled 'Object Mapping' and contains two tables. The first table has columns: External Name, External Type, Status, RDS, and Type. It lists five rows of data. The second table has the same columns and lists four rows of data. Both tables have a 'Show' dropdown at the top and filter buttons for Unhidden, Hidden, Unmapped, Mapped, Deleted, and All.

External Name	External Type	Status	RDS	Type
OIII000266_A_1_BG_5088230_A1A_JT	OIII000266_A_1_bg_5088...	■■■		M_temp
OIII000266_A_1_BG_5088230_A1A_JT	OIII000266_A_1_bg_5088...	■■■		M_temp
OIII000266_A_1_BG_5088230_A1A_JT	OIII000266_A_1_bg_5088...	■■■		M_temp
OIII000266_A_1_BG_5088230_A1A_JT	OIII000266_A_1_bg_5088...	■■■		M_temp
OIII000262_A_1_BG_5088226_A1A_JT	OIII000262_A_1_bg_5088...	■■■	K001/K001/-???,K001	

External Name	External Type	Status	RDS	Type
OIII000266_A_1_BG_5088230_A1A_JT	OIII000266_A_1_bg_5088...	■■■	M_template_20160318_T...	M_temp
OIII000266_A_1_BG_5088230_A1A_JT	OIII000266_A_1_bg_5088...	■■■	M_template_20160318_T...	M_temp
OIII000266_A_1_BG_5088230_A1A_JT	OIII000266_A_1_bg_5088...	■■■	M_template_20160318_T...	M_temp
OIII000266_A_1_BG_5088230_A1A_JT	OIII000266_A_1_bg_5088...	■■■	M_template_20160318_T...	M_temp

2:30 rename

The screenshot shows the 'Product Aspect Navigator' window with a green border. On the left is a sidebar with icons for Product, Project, Configuration, and Model. The main area shows two projects under 'CD000023:1-AD Project'. The first project's 'Unassigned' folder contains objects named '-M004', '-M004', '-M004_2', '-M004_3', and '-F004'. The second project's 'Unassigned' folder contains objects named '-F004', '-M002', '-M004', '-M0011', '-M0012', '-M0013', and '-M0014a'. The object '-M004' in the first project's 'Unassigned' folder is highlighted with a cursor.

3:00 put in F aspect

The screenshot shows the Function Aspect Navigator with a tree structure. The root node is 'CD000023;1-AD Project'. Under 'Unassigned', there is a node 'F004' which contains 'FX001_FB', 'M002' (with 'DEV_2I_2O_UNI_FB_DB'), 'FX001_FB_DB', 'M004' (with 'DEV_2I_2O_UNI_FB_DB'), 'M0011' (with 'DEV_2I_2O_UNI_FB_DB'), 'M0012' (with 'DEV_2I_2O_UNI_FB_DB'), 'M0013' (with 'DEV_2I_2O_UNI_FB_DB'), and 'M0014a' (with 'DEV_2I_2O_UNI_FB_DB'). Below the tree, a 'Network 4' section shows three 'CALL' statements:

```
CALL "DEV_2I_2O_UNI_FB", "-F004.M002_DB"
CALL "DEV_2I_2O_UNI_FB", "-AM01"
CALL "DEV_2I_2O_UNI_FB", "-F004.M004_DB"
```

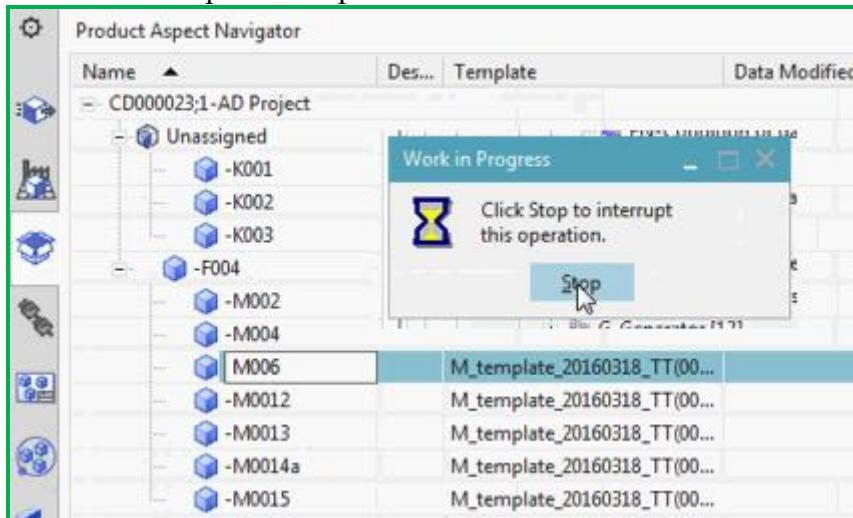
3:18 bulk connect, no effect

4:15 insert another template

The screenshot shows the Product Aspect Navigator. A dialog box titled 'Insert Template' is open, showing the 'Reuse Library' tab. It lists 'Select from Member Select (M_template_20160318_TT)' under 'Aspects' and has checkboxes for 'In Function', 'In Location', and 'In Product', all of which are checked. The 'OK' button is highlighted. To the right of the dialog is a 'Reuse Library' panel with sections for 'T-Conversion [6]', 'U-Keep [16]', 'W-Guiding or transporting [4]', 'X-Connecting [6]', and 'Devicefunction [13]'. Below the dialog, the main workspace shows the same tree structure as before, but now includes a new node 'M0015' under 'M004'.

4:45 bulk connect no change

5:50 rename in product aspect ... worked



However.... At 6:07 I paused the movie record.

When work in progress ended the result was what wanted. Something like this:

Network 4:	
	CALL - "DEV_2I_20_UNI_FB", "-F004.M002_DB"
	CALL - "DEV_2I_20_UNI_FB", "-AM01"
	CALL - "DEV_2I_20_UNI_FB", "-F004.M004_DB"
	CALL - "DEV_2I_20_UNI_FB", "-F004.M011_DB"
	CALL - "DEV_2I_20_UNI_FB", "-F004.M012_DB"
	CALL - "DEV_2I_20_UNI_FB", "-F004.M013_DB"
	CALL - "DEV_2I_20_UNI_FB", "-F004.M014a_DB"
	CALL - "DEV_2I_20_UNI_FB", "-F004.M015_DB"

But then switched to LD, back to AD, and all of AD was gone (I forgot to save while working). Also the last portion of the movie (after 6:07) was gone.

But basically it worked.

18. AD-EPLAN round-trips

XXX

19. AD-TIA round-trips

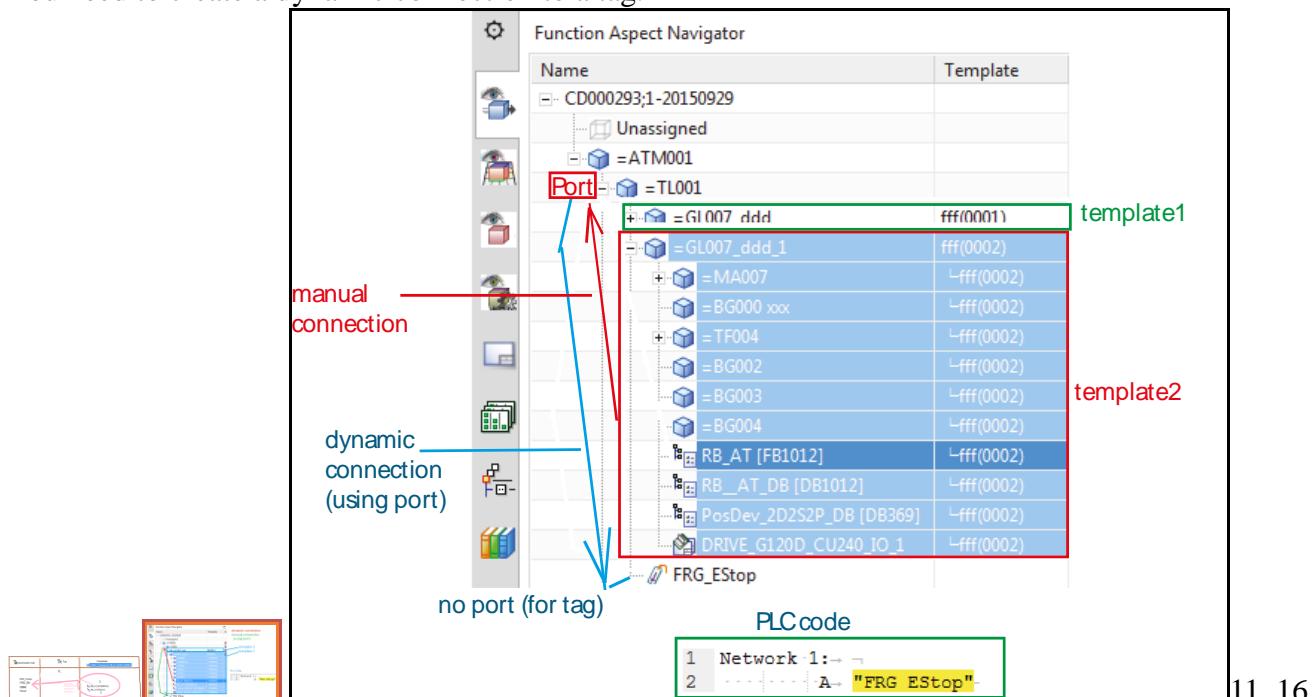
Xxx

D. dynamic connection outside of template (20130329)

11.3. Create dynamic connection for automation-tag

20160329 TERRY: I lost everything this morning that I did in the previous chapters... a bug with TC. So start over. Instead of doing all over, just in this section do a simple example starting with new project. I used RB_AT because not have S7 license and cant edit EDAG14, so just used from RL.

You need to create a dynamic connection to a tag.

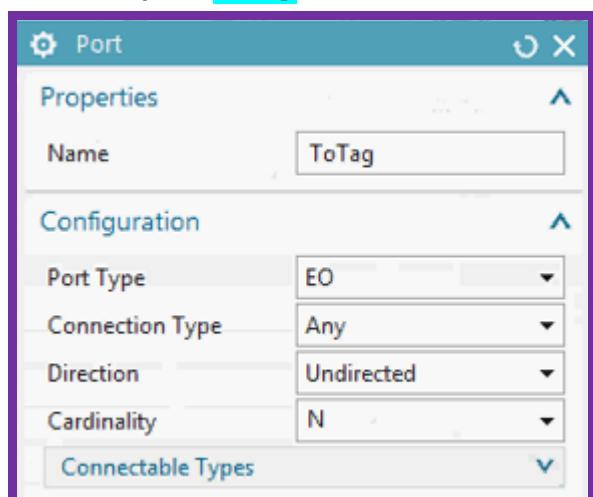


11_16

In this section you:

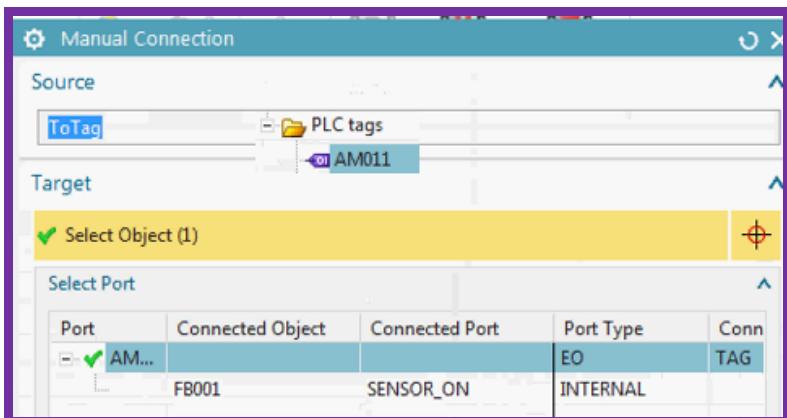
1. Create port **ToTag** port (in EO P001).
2. Manual connect P001 to AM001 using the port.
3. Create RB_AT to AM001 dynamic connection.

1. Create port **ToTag** (in EO P001)



2. Manual connect TL01 to FRG_Estop using the port

Ports							
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined ToTag		EO		Any	Undirected	N	Device Function, EOAny, PLC...
- System Defined TIA Link P001	Manual Connection Connects ports manually			TIA Link FLP Any	Undirected Undirected	1 N	TIA Link A Device Function, EOAny, PLC...



Ports							
Port	Connected Obj...	Connected Port	Port Type	Connection Type	Direction	Cardinality	Connectable types
- User Defined ToTag	AM011	AM011	EO	Any	Undirected	N	Device Function, EOAny, PLC...
- System Defined				TAG	Undirected	N	PLC SOFTWARE_SYMBOL_P...

3. Create RB_AT to tag dynamic connection

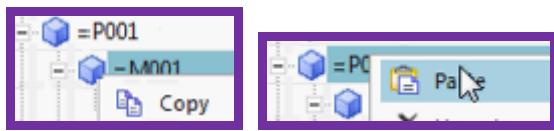
1. In the row for the tag right click and select "Dynamic Connection" or right-click on the tag in the code window. Note: If you do not see the popup "Dynamic connection", then unconnect first.

Name	Formula	Type	Dimensionality
1 dddd	GetConnectedObjects(p1,"ToTag")	List	
2	"	String	

Name	Value	Type
- Global Sym...		
- Tags		
FRG_...	BG011	Bool
FRG_...		Bool
IBNO	AM011	Bool
reset		Bool
Pos_...		Disconnected

Error: connection info not shown.

Name	Formula	Type	Dimensionality
1	"	String	



Function Aspect Navigator

Name	Value	Type
- Global Sym...		
- Tags		
FRG_...	Bool	
FRG_...	Bool	
IBN0	AM011	Bool
reset	Bool	
Pos_...	Bool	
slow...	Bool	

PLC Code

```
19 Network 4: --> "AM011"
20 -----#ENABLE_ADV
21
22
23
24 Network 5: --> "AM011"
25 -----#ENABLE_BTN
26
27
28
29 Network 6: -->
```

Properties

Select Object

✓ Select Object (1)

Context

Interaction Method: Traditional

PLC Tag Attributes

Title/Alias	Value	Units	T...	Type	R...	L...
- General						
Name	AM011b			String		
Symbolic Name	AM011			String		

Value: AM011sym

Configurations

Name	Value	Type
- Global Sym...		
- Tags		
FRG_...	BG011	Bool
FRG_...		Bool
IBN0	AM011sym	Bool

PLC Code

```
19 Network 4: --> "AM011sym"
20 -----#ENABLE_ADV
21
22
23
24 Network 5: --> "AM011sym"
25 -----#ENABLE_BTN
26
27
28
29 Network 6: -->
```

Part 5. Real-world examples

20160310 talked with Andreas about this.

maybe 3-4 different template demos, for different business segments.

14a. Demo_Cell (EDAG)

14b. Demo_Cell (terry)

14c. ExampleProject_Automotive

15. material handling (baggage line)

16. packaging (tetra)

14a. Demo_Cell (EDAG) (20160316)

Why study Demo_Cell?

I want to eventually redo the existing "GS" to something like "GS for Demo_cell", to create a more start-to-finish, realistic, complete GS.

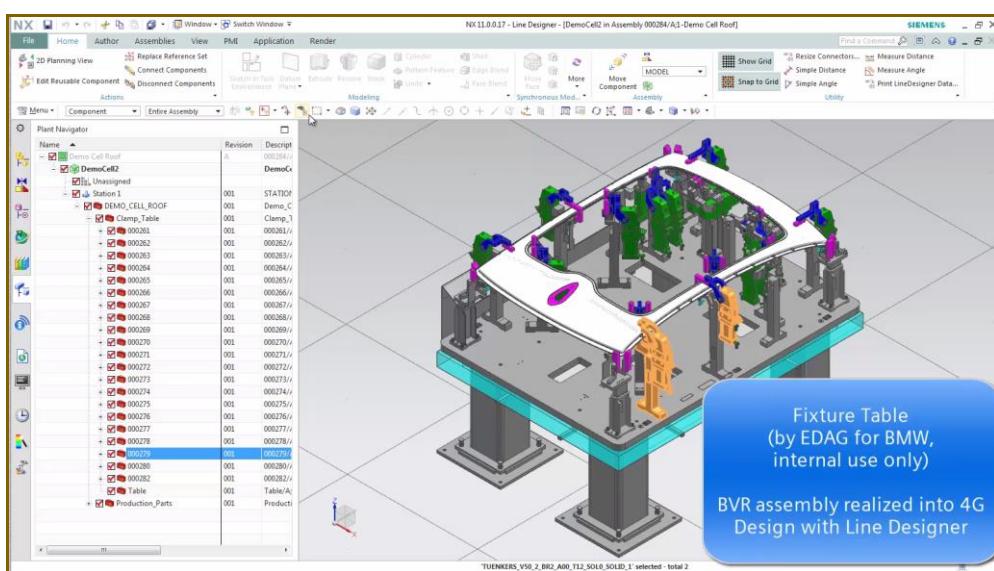
1. First step (this chapter) is to understand the EDAG Demo_Cell demo.

This chapter describes the EDAG Demo_cell movie (I rearrange the sequences).

the sentence in this chapter in **highlighted red** a few pages later shows main goal of AD as I understand it.

\debonkl0c19\ADNX\Teams\PRM\Video\2015-12 SystemTest

DEAP_201511_7min_commented.mp4



2. Second step (ch 14b) is to create a version of Demo_Cell that integrates parts 1-3 of this GS.

Step-by-step description

Note:

"14b.1" means that this is demo'd in next chapter 14b "Demo_cell Terry" section 1.
"ch3-4" means corresponding quick start chapters.

Assume

1. LD CD setup (14b.1, ch3-4)
2. AD CD setup (14b.2, ch5)
3. AD template (cylinder) created (14b.3, ch7-13)
4. AD template -> reuse library (14b.4)
5. Reuse library setup and import (14b.5,6)
6. LD parts (DEs) already added (14b.7, ch4)

This chapter content:

1. (AD) map LD DE to AD EO

xxx AM clamp group

6:30 manage type mapping MM cylinder (14b.8)

2. (AD) clamp groups (AM)

2:10 insert AM clamp group (no mtnbot)

3. (AD) cylinders (MM)

1:35 mtnbot MM cylinders (14b.9, ch6)

2:30 Cylinders to clamp (should work here, but have to connect to sw block)

2:55 not connected; Call Rules

3:20 connect sw block

3:45 Send to tia

4. (LD, AD) how it should work... ADD CYLINDER

5:00 LD: add cylinder SZK 270

5:40 AD: mtnbot: add new AD EO for LD DE based on type mapping

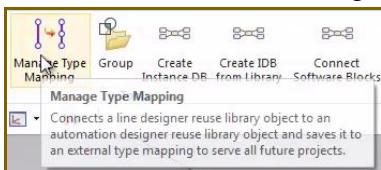
xxx 0:00 sensor Demo mtnbot 1

xxx 6:55 sensor Demo mtnbot 2

6:30 1. (AD) map LD DE to AD EO (manage type mapping)

CREATE MECHATRONIC LIBRARY (cylinder).

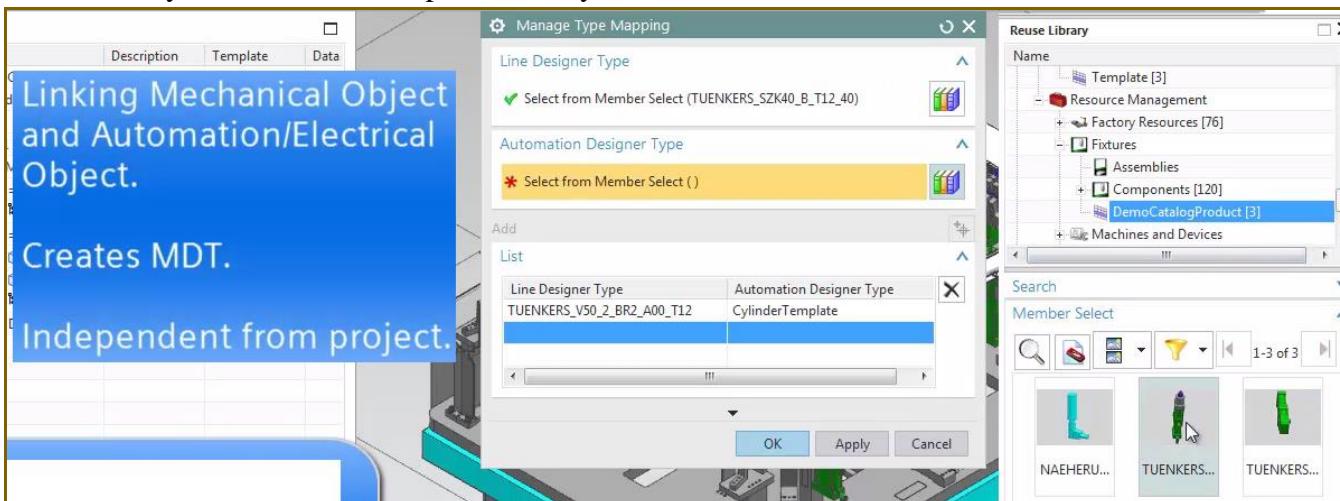
This is what I was not doing, why I could not map.



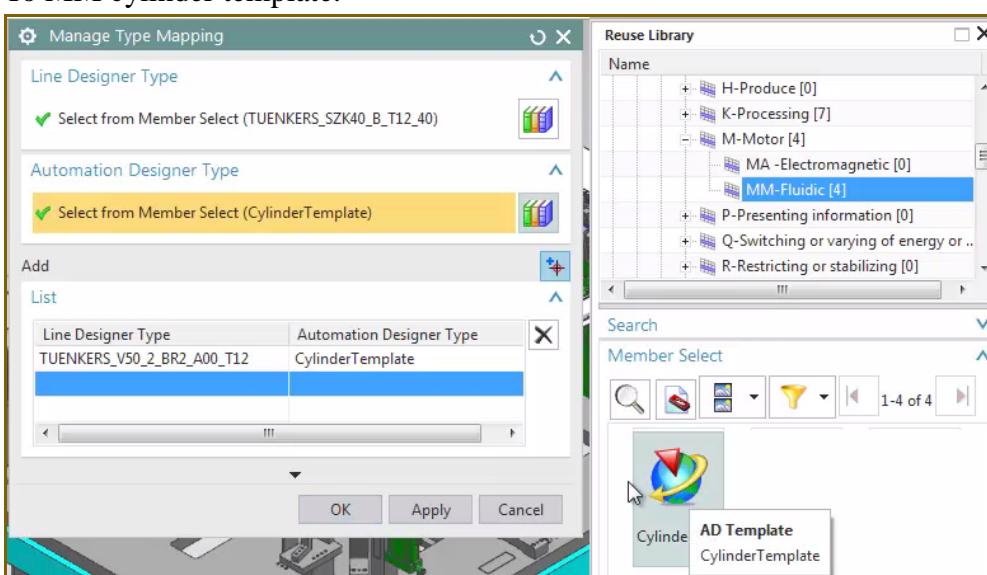
xxx AM clamp group

6:30 MM cylinder

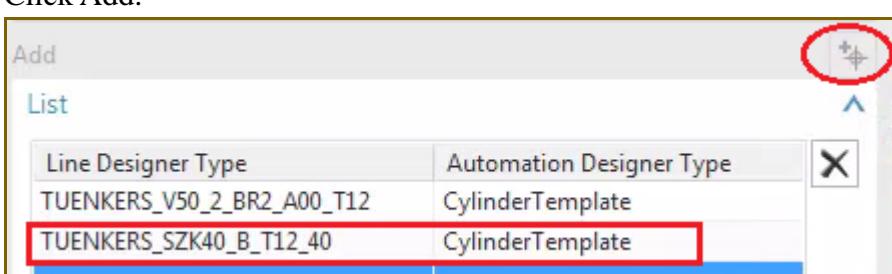
In movie they demo'd how to map the SZK cylinder.



To MM cylinder template.

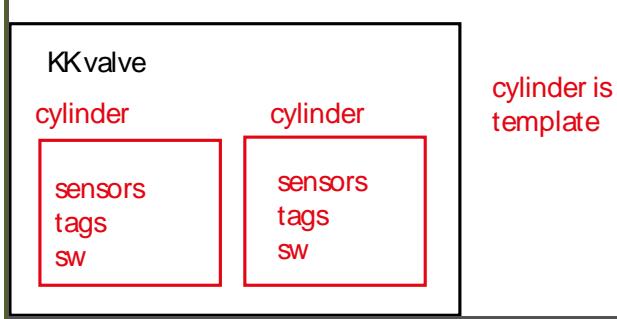


Click Add.



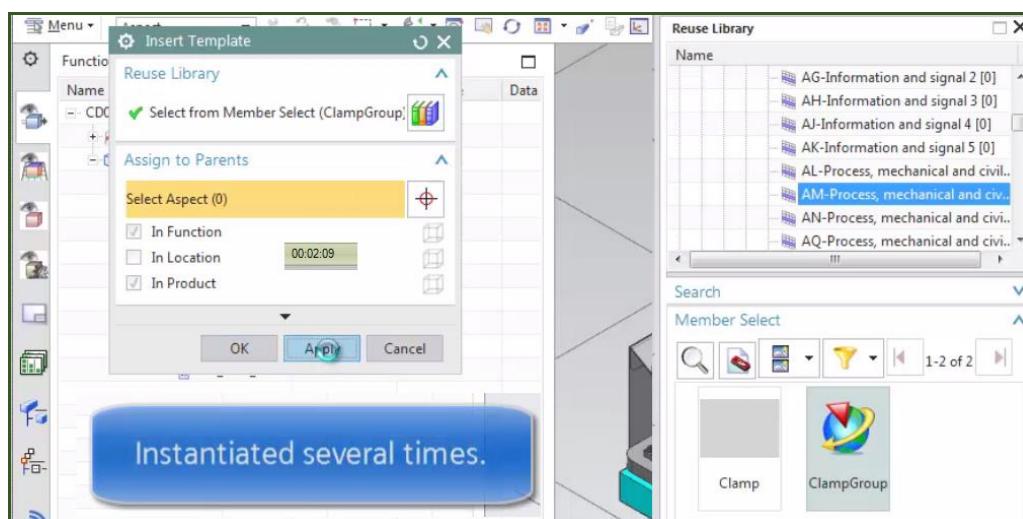
2. (AD) clamp groups (AM)

AM clamp group (7)



2:10 AM clamp group / insert (no mtnbot, no mechanical)

AM is clamp group. From what I understand, this does not correspond to a specific LD DE, therefore you don't mtnbot, just insert. Put under FX. I think also AM DEV_ADV_PN... is not called? Add 7.



+	=MM11_20	Cylinder	CylinderTem...
+	=AM001	Clamp	ClampGroup(...)
+	=AM001_1	Clamp	ClampGroup(...)
+	=AM001_2	Clamp	ClampGroup(...)
+	=AM001_3	Clamp	ClampGroup(...)
+	=AM001_4	Clamp	ClampGroup(...)
+	=AM001_5	Clamp	ClampGroup(...)
+	=AM001_6	Clamp	ClampGroup(...)
	=SG001		

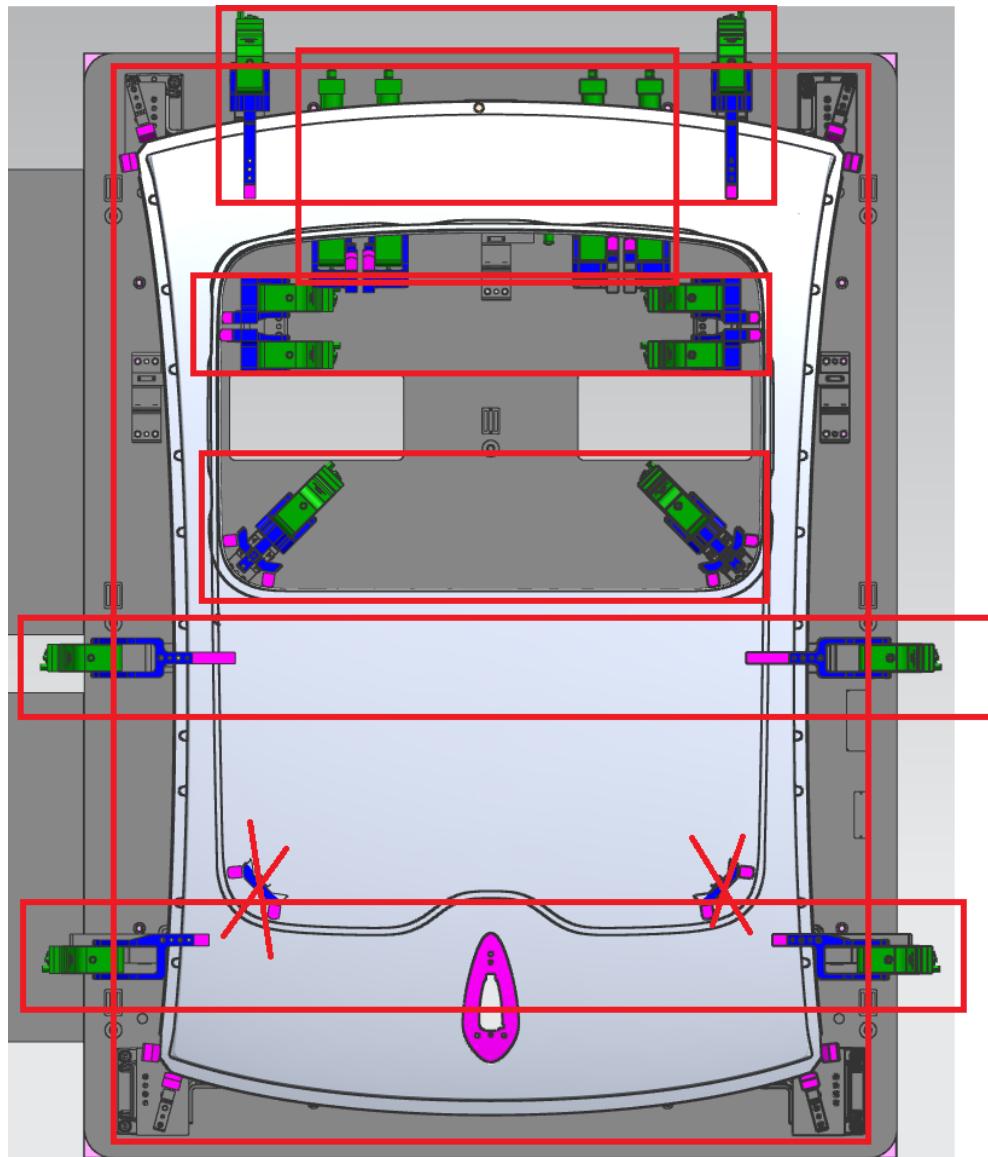
-	=SG001		
-	=FX001	Fixture	
-	- =AM001	Clamp	
-	- =KK11	Valve	
-	- DEV_VALV...		
-	- =MM11_2	Cylinder	
-	+ =BG0	Sensor	
-	+ =BG1	Sensor	
-	- DEV_ADV...		
-	- DEV_ADV_PN...		
+	=AM001_1	Clamp	ClampGroup(...)
+	=AM001_1_1	Clamp	ClampGroup(...)
+	=AM001_2	Clamp	ClampGroup(...)
+	=AM001_3	Clamp	ClampGroup(...)
+	=AM001_4	Clamp	ClampGroup(...)
+	=AM001_5	Clamp	ClampGroup(...)
+	=AM001_6	Clamp	ClampGroup(...)

-	=SG001		
-	- =FX001	Fixture	
-	- =AM001	Clamp	
-	- =KK11	Valve	
-	- DEV_VALV...		
-	- =MM11_2	Cylinder	
-	+ =BG0	Sensor	
-	+ =BG1	Sensor	
-	- DEV_ADV...		
-	- DEV_ADV_PN...		
-	- =AM001_1	Clamp	ClampGroup(...)
-	- =KK11	Valve	ClampGrou...
-	- DEV_ADV_PN...		ClampGrou...
-	- =AM001_1_1	Clamp	ClampGroup(...)
-	- =KK11	Valve	ClampGrou...
-	- DEV_ADV_PN...		ClampGrou...
-	- =AM001_2	Clamp	ClampGroup(...)
-	- =KK11	Valve	ClampGrou...
-	- DEV_ADV_PN...		ClampGrou...
-	- =AM001_3	Clamp	ClampGroup(...)
-	- =KK11	Valve	ClampGrou...
-	- DEV_ADV_PN...		ClampGrou...

Question: why 7 AM's? not sure but maybe because the 18 cylinders would be arranged in 7 clamp groups like I suggest below (7 red squares). 2 of the cylinders I think are not needed (red X). the biggest red box includes the 4 cylinders in each corner (different kind than others).

What I suggest is probably not 100% correct, but a good guess.

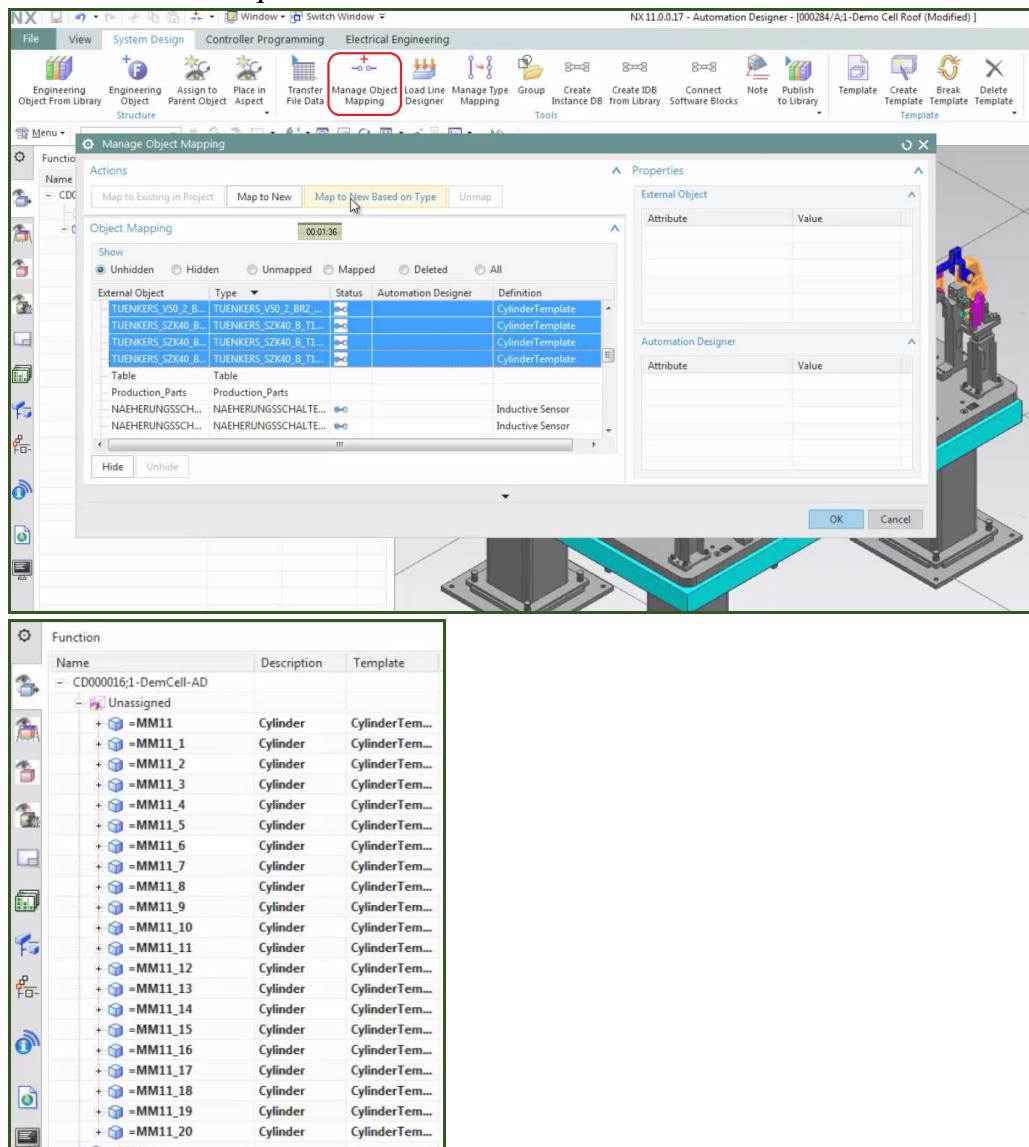
See tuenkers.com/d3/de_product_detail.cfm?productid=P0013011



3. (AD) cylinders (MM)

1:35 cylinders mtnbot

The cylinder LD DE (external object in AD dialog below) has been type mapped to "cylinder template" MM, therefore in AD in the "manage object mapping" dialog its shown as unmapped. So all you do is mtnbot to create required EO's in AD.



2:30 Cylinders to clamp

Now move the cylinders to the clamp groups.

Have to add cylinders manually why? Why not put all in a clamp template?

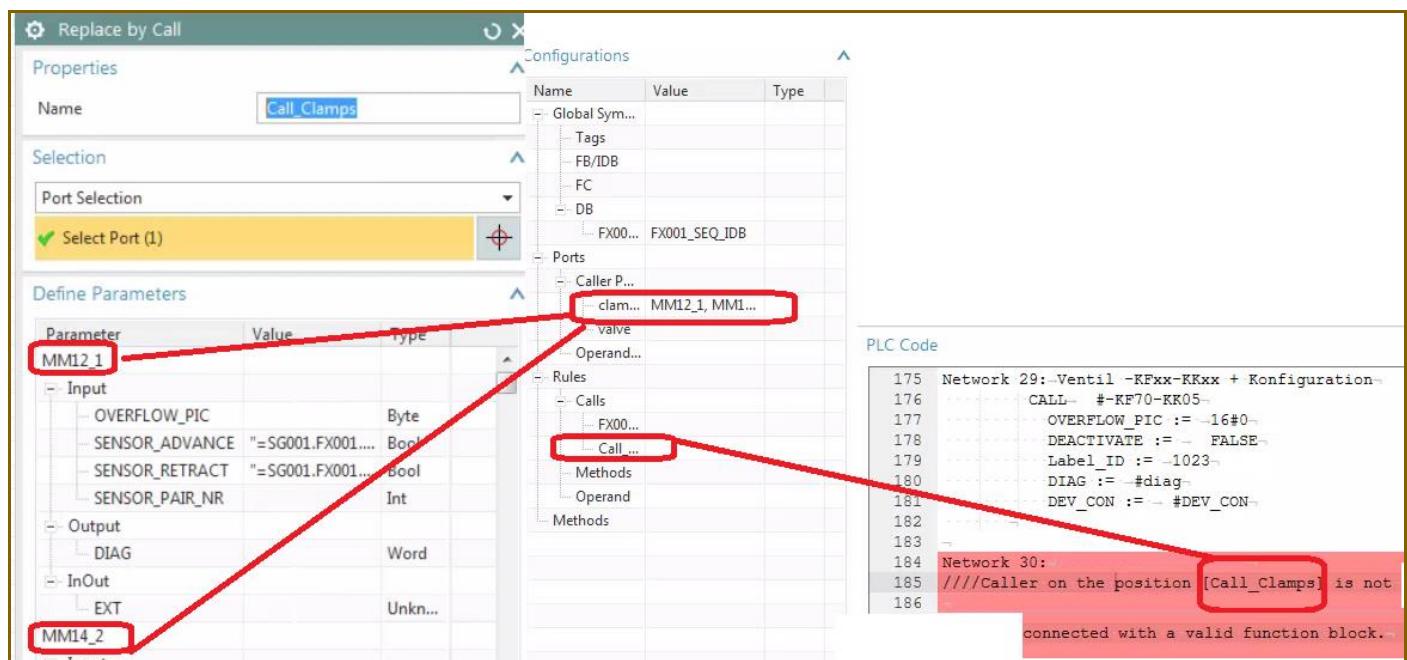
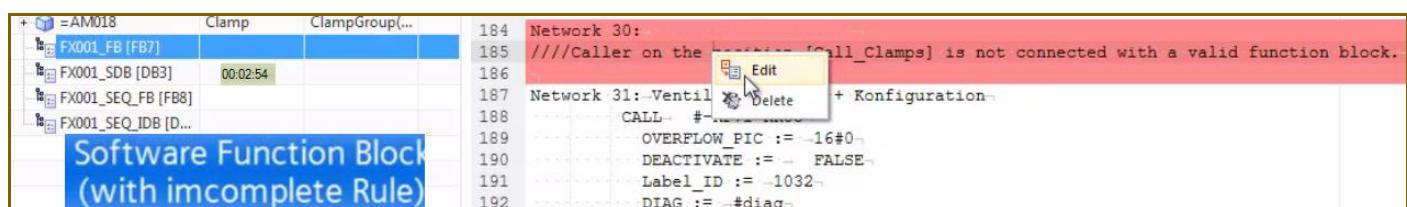
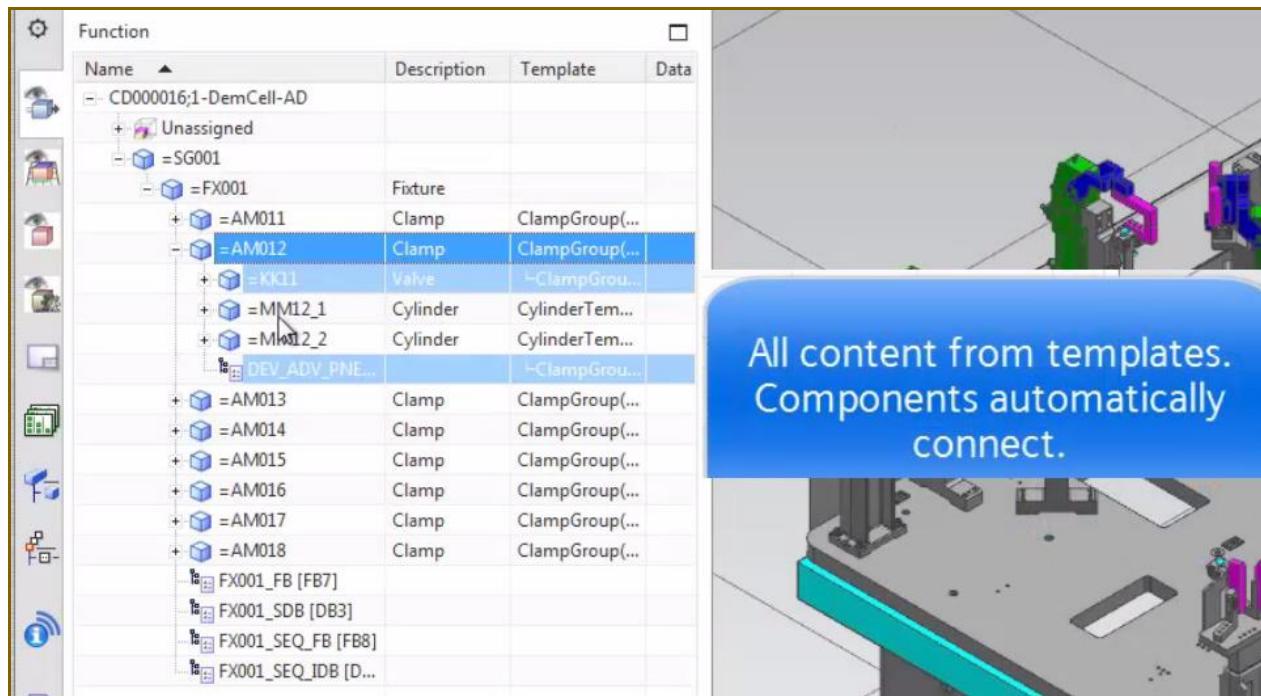
- =AM001_1_1	Clamp	ClampGroup(...
+ =KK11	Valve	↳ ClampGrou...
+ DEV_ADV_PN...		↳ ClampGrou...
- =MM11_18	Cylinder	CylinderTem...
+ =BG0	Sensor	↳ CylinderTe...
+ =BG1	Sensor	↳ CylinderTe...
+ DEV_ADV...		↳ CylinderTe...
- =MM11_19	Cylinder	CylinderTem...
+ =BG0	Sensor	↳ CylinderTe...
+ =BG1	Sensor	↳ CylinderTe...
+ DEV_ADV...		↳ CylinderTe...
+ NAM001_2	Clamp	ClampGroup(...

Seems like do nothing with the clamp group sw.. the FX block simply calls the cylinder DEV_ADV.. block (1 for each cylinder) and references the 2 sensor tags (sensors on the cylinder for 2 positions?).

2:55 not connected; Call Rules

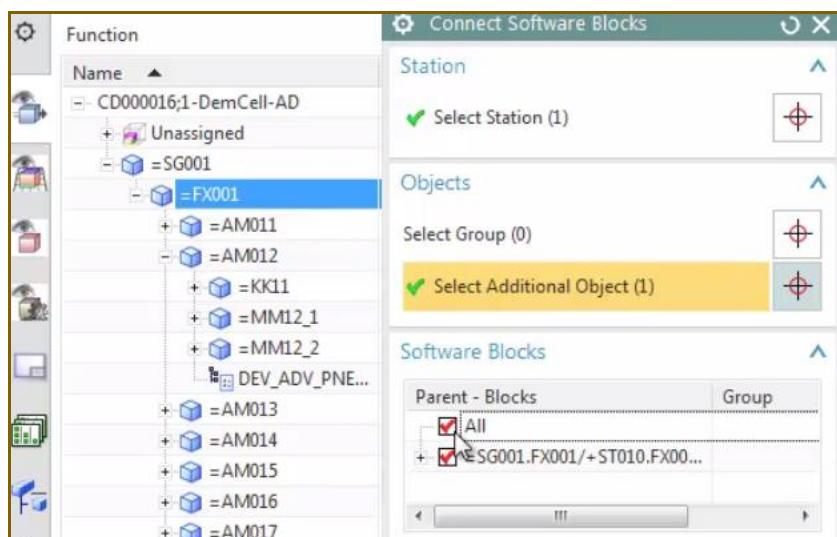
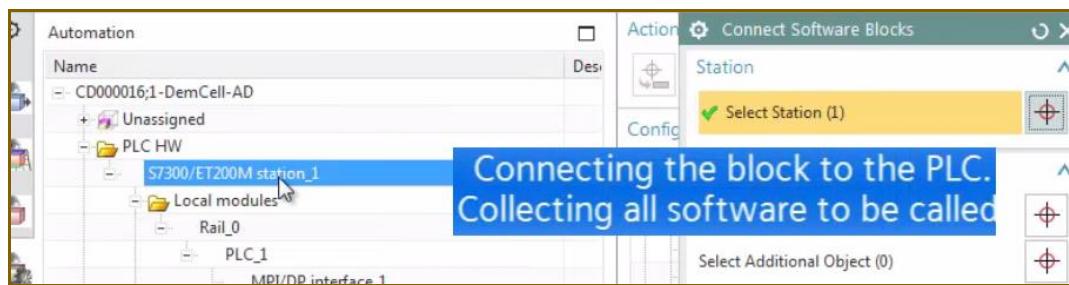
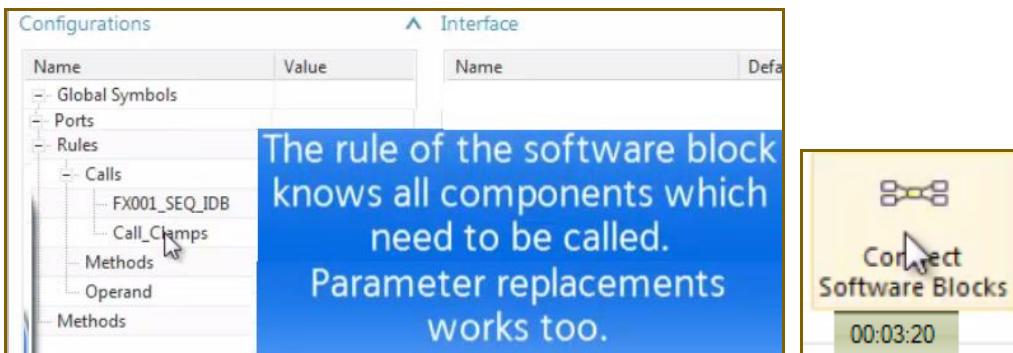
The call rule for FX auto-finds the cylinder SW blocks. But must connect SW to fix.

HOW THIS IS DONE?



3:20 connect sw block

Connect sw to fix.



3:35 all fixed

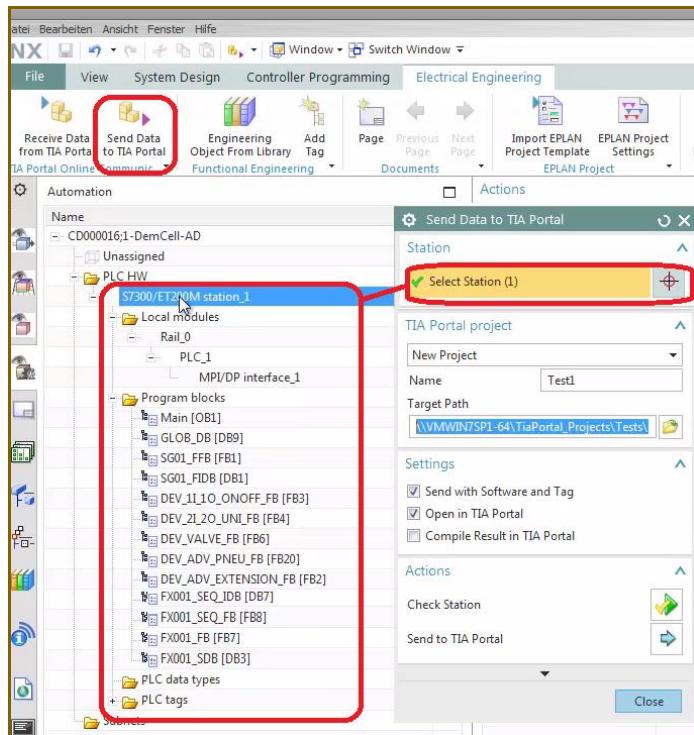
```
184 Network 30: DEV_ADV_EXTENSION_DB
185 // 00:03:32
186 | CALL #MM12_1
187 | SENSOR_ADVANCE := "=SG001.FX001.AM012.MM12_1.BG1"
188 | SENSOR_RETRACT := "=SG001.FX001.AM012.MM12_1.BG0"
189
190 Network 31: DEV_ADV_EXTENSION_DB Everything is called.
191 // 00:03:32
192 | CALL #MM14_2
193 | SENSOR_ADVANCE := "=SG001.FX001.AM014.MM14_2.BG1"
194 | SENSOR RETRACT := "=SG001.FX001.AM014.MM14_2.BG0"
```

what did above is the main goal. Quickly created new
EPLAN/TIA when changes in LD. ☺

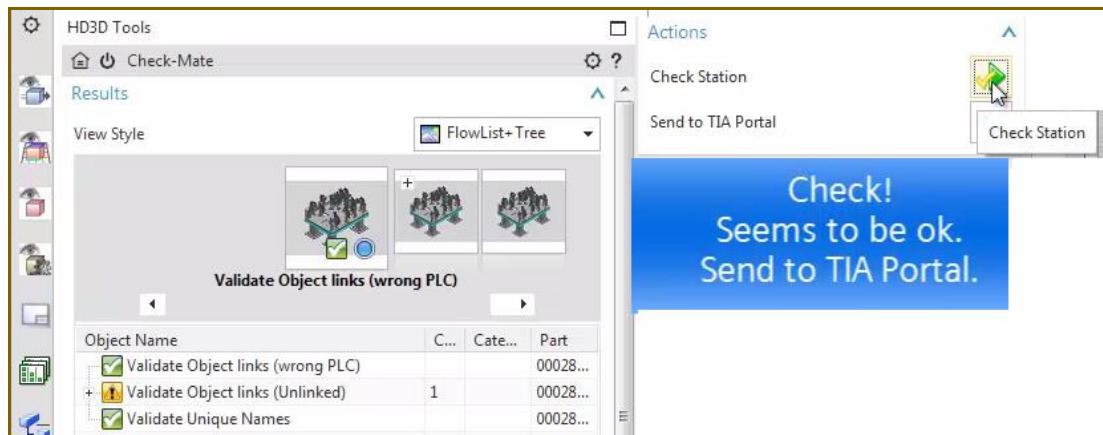
except, of course, that should work without having to connect sw.

3:45 Send to tia

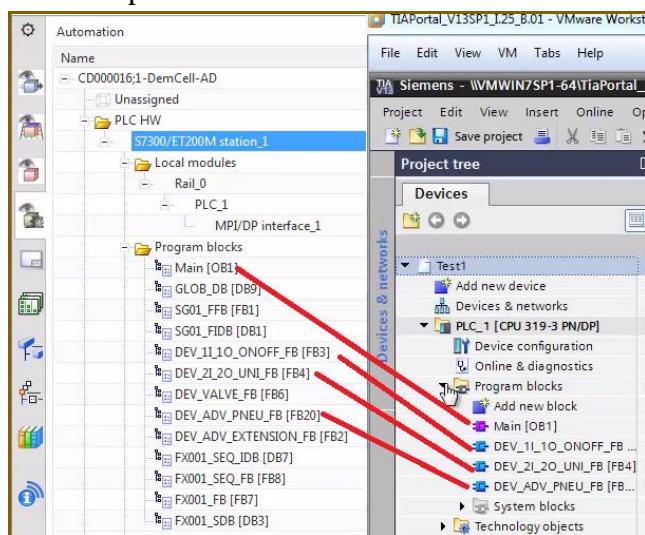
3:45 send to tia



4:10 checkmate ok



4:55 compare TIA and AD



Tags.

Automation

Name

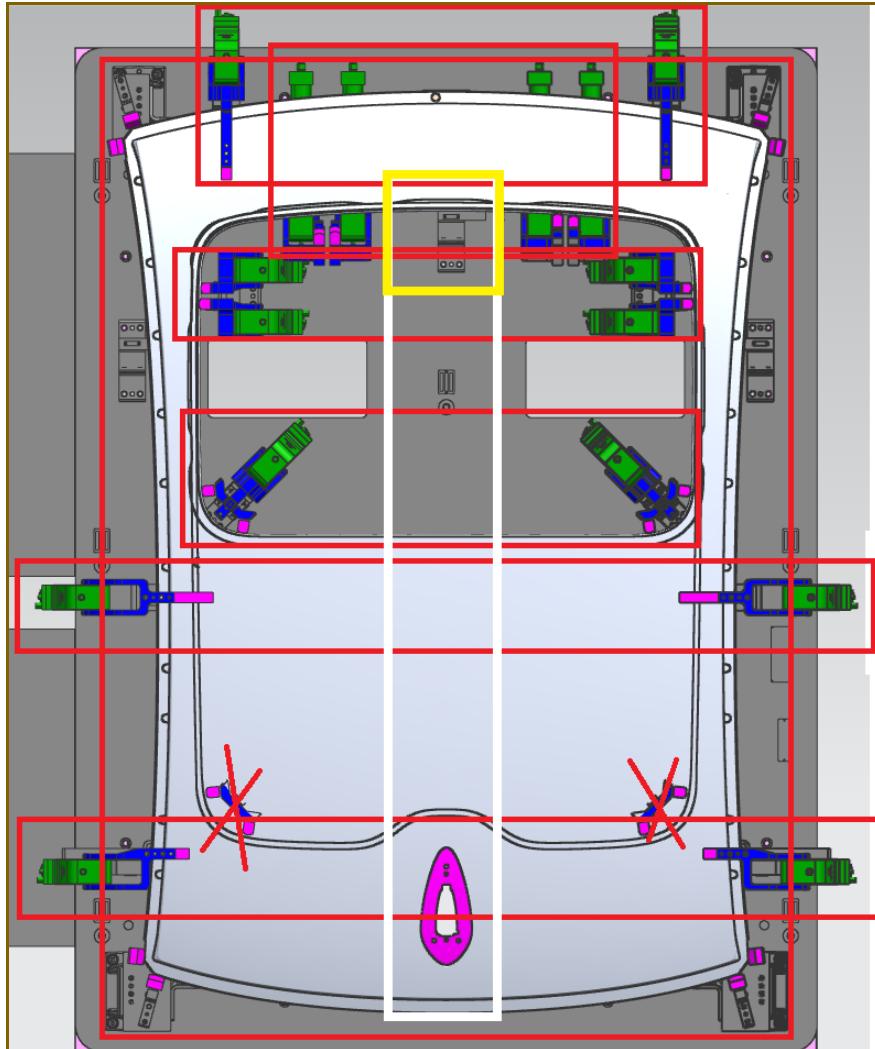
- PLC tags
 - =SG001.FX001.AM012.MM12_1.BG0
 - =SG001.FX001.AM012.MM12_1.BG1
 - =SG001.FX001.AM012.MM12_2.BG0
 - =SG001.FX001.AM012.MM12_2.BG1
 - =SG001.FX001.AM014.MM14_2.BG0
 - =SG001.FX001.AM014.MM14_1.BG1
 - =SG001.FX001.AM014.MM14_1.BG0
 - =SG001.FX001.AM014.MM14_2.BG1
 - =SG001.FX001.AM011.MM11_1.BG0
 - =SG001.FX001.AM011.MM11_1.BG1
 - =SG001.FX001.AM016.MM16_2.BG1
 - =SG001.FX001.AM016.MM16_2.BG0
 - =SG001.FX001.AM016.MM16_1.BG1
 - =SG001.FX001.AM016.MM16_1.BG0

Test1 > PLC_1 [CPU 319-3 PN/DP] > PLC tags

Tags User constants System constant

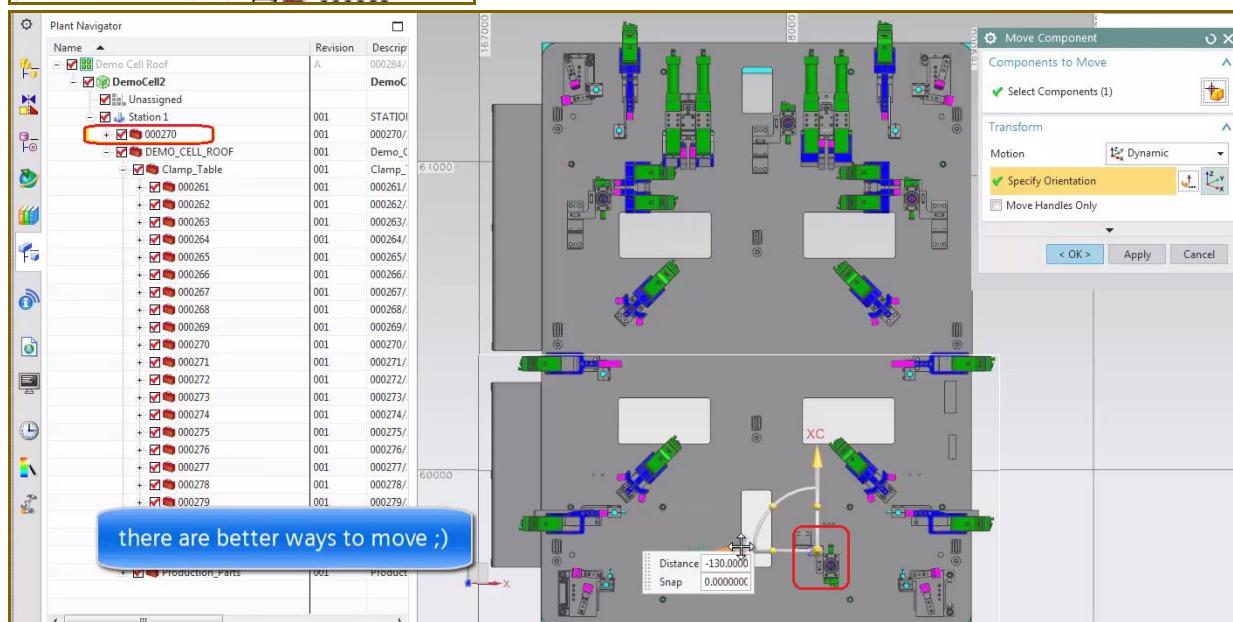
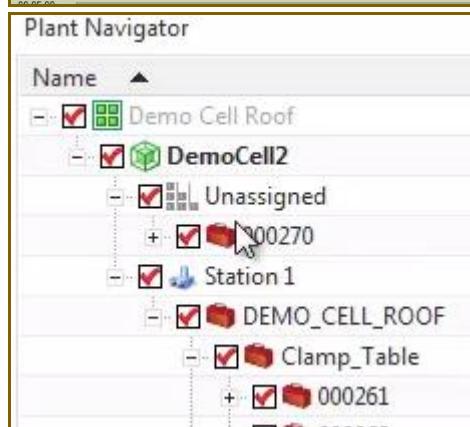
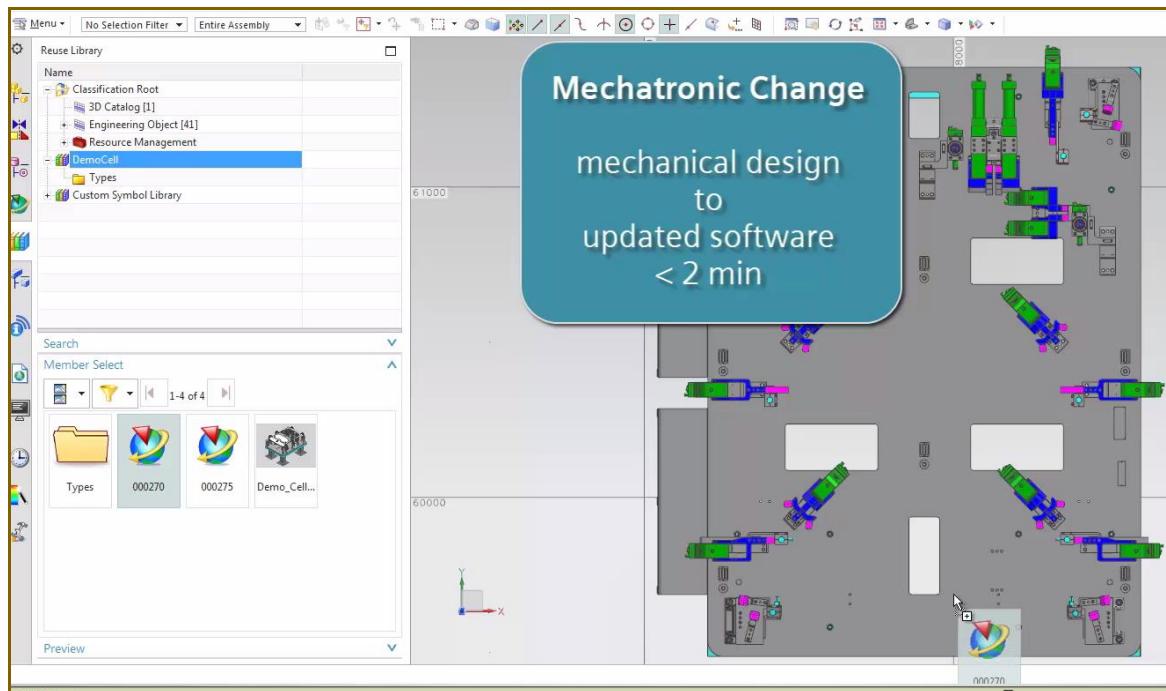
Name	Tag table	Data type
1 =SG001.FX001.AM012.MM12_1.BG0	Default tag table	Bool
2 =SG001.FX001.AM012.MM12_1.BG1	Default tag table	Bool
3 =SG001.FX001.AM012.MM12_2.BG0	Default tag table	Bool
4 =SG001.FX001.AM012.MM12_2.BG1	Default tag table	Bool
5 =SG001.FX001.AM014.MM14_1.BG0	Default tag table	Bool
6 =SG001.FX001.AM014.MM14_1.BG1	Default tag table	Bool
7 =SG001.FX001.AM014.MM14_2.BG1	Default tag table	Bool
8 =SG001.FX001.AM015.MM15_2.BG0	Default tag table	Bool
9 =SG001.FX001.AM015.MM15_1.BG1	Default tag table	Bool
10 =SG001.FX001.AM015.MM15_1.BG0	Default tag table	Bool
11 =SG001.FX001.AM011.MM11_1.BG0	Default tag table	Bool
12 =SG001.FX001.AM017.MM17_1.BG0	Default tag table	Bool
13 =SG001.FX001.AM018.MM18_1.BG0	Default tag table	Bool
14 =SG001.FX001.AM018.MM18_1.BG1	Default tag table	Bool
15 =SG001.FX001.AM018.MM18_2.BG0	Default tag table	Bool
16 =SG001.FX001.AM015.MM15_2.BG0	Default tag table	Bool

The 8 tags groups maybe correspond to 8 squares below? (yellow are SZK, pneunatik stiftziehzylinder? Productid=P0013050, added in movie).



4. (LD, AD) how it should work... ADD CYLINDER

5:00 LD: add cylinder SZK 270



5:40 AD: mtnbot: add new AD EO for LD DE based on type mapping

Add the EO.

External Object	Type	Status	Automation Designer	Definition
TUENKERS_V50_2_B...	TUENKERS_V50_2_BR2...		CylinderTemplate(0080)	CylinderTemplate
TUENKERS_V50_2_B...	TUENKERS_V50_2_BR2...		CylinderTemplate(0081)	CylinderTemplate
TUENKERS_SZK40_B...	TUENKERS_SZK40_B_T1...			
TUENKERS_SZK40_B...	TUENKERS_SZK40_B_T1...			
TUENKERS_SZK40_B...	TUENKERS_SZK40_B_T1...			
TUENKERS_SZK40_B...	TUENKERS_SZK40_B_T1...		CylinderTemplate(0085)	CylinderTemplate
TUENKERS_SZK40_B...	TUENKERS_SZK40_B_T1...			

Move the EO.

Name	Description	Template	Data
- CD000016;1-DemCell-AD			
- Unassigned			
+ =MM11_2	Cylinder	CylinderTem...	
+ =MM31_1	Cylinder	CylinderTem...	
+ =MM31_2	Cylinder	CylinderTem...	
+ =MM32_1	Cylinder	CylinderTem...	
+ =MM32_2	Cylinder	CylinderTem...	

- =SG001		
- =FX001	Fixture	
- =AM011	Clamp	ClampGroup(...)
+ =KK11	Valve	↳ClampGrou...
+ =MM11_1	Cylinder	CylinderTem...
+ =MM11_2	Cylinder	CylinderTem...
+ DEV_ADV_PNE...		↳ClampGrou...
- =AM012	Clamp	ClampGroup(...)

Note that the new EO is included in the main call.

SG001	FX001	Fixture	
- =AM011	Clamp	ClampGroup(...)	
- =AM012	Clamp	ClampGroup(...)	
+ =AM013	Clamp	ClampGroup(...)	
+ =AM014	Clamp	ClampGroup(...)	
+ =AM015	Clamp	ClampGroup(...)	
+ =AM016	Clamp	ClampGroup(...)	
+ =AM017	Clamp	ClampGroup(...)	
+ =AM018	Clamp	ClampGroup(...)	
- FX001.FB [FB7]			
- FX001.SDB [DB3]			
- FX001_SEQ_FB [FB8]			
- FX001_SEQ_IDB [D...			

FX001_SEQ_IDB

Ports

- Caller P...
- clam: MM11_2, MM12_1, MM14_2, MM12_2, MM14_1, MM17_2, MM11_1, MM17_1, MM18_1, MM15_2, MM15_1, MM13_2, MM13_1, MM16_2, MM18_2, MM16_1
- valve

Rules

- Calls
- FX001...
- Call...
- Methods
- Operand
- Methods

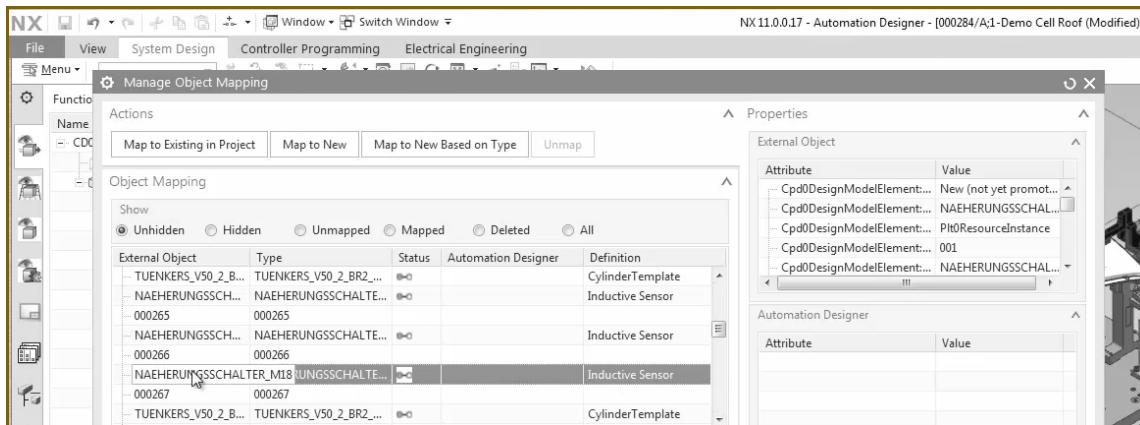
```

1 Network 1: Aufruf MODE_FG_FB
2      CALL #MODE_FG
3          DIAG := #diag
4
5 Network 2: Do not output messages, error bits are not analyzed
6      A = "GLOB_DB".SYS.AlwaysFALSE
7          = "GLOB_DB".MODE.FG[14].IN_COMMISSIONING.NO_MODE_MANIPULATION
8

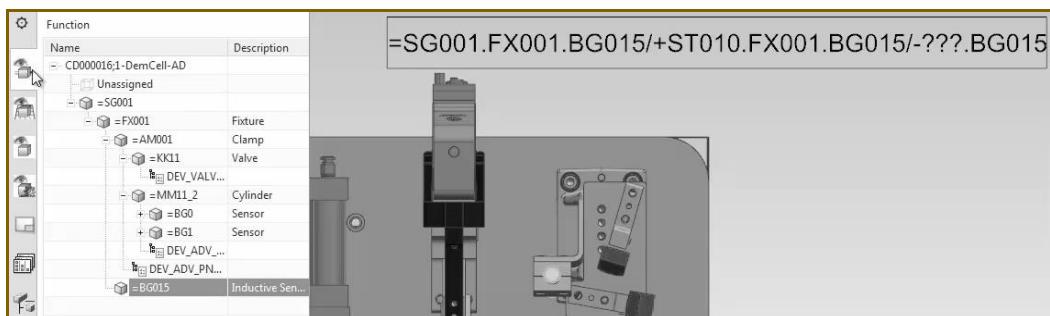
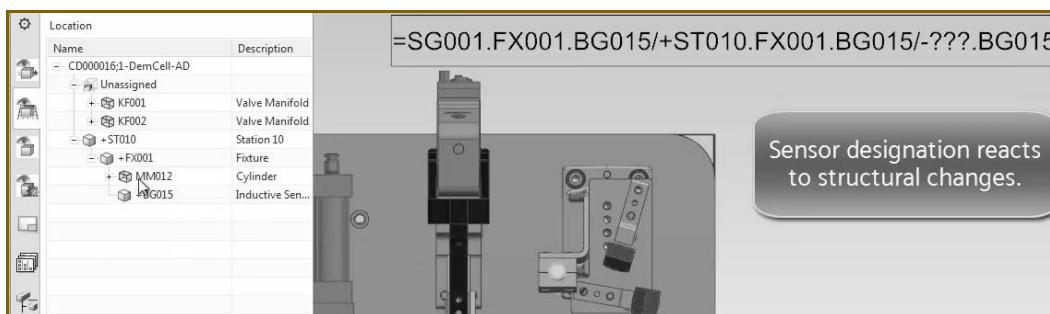
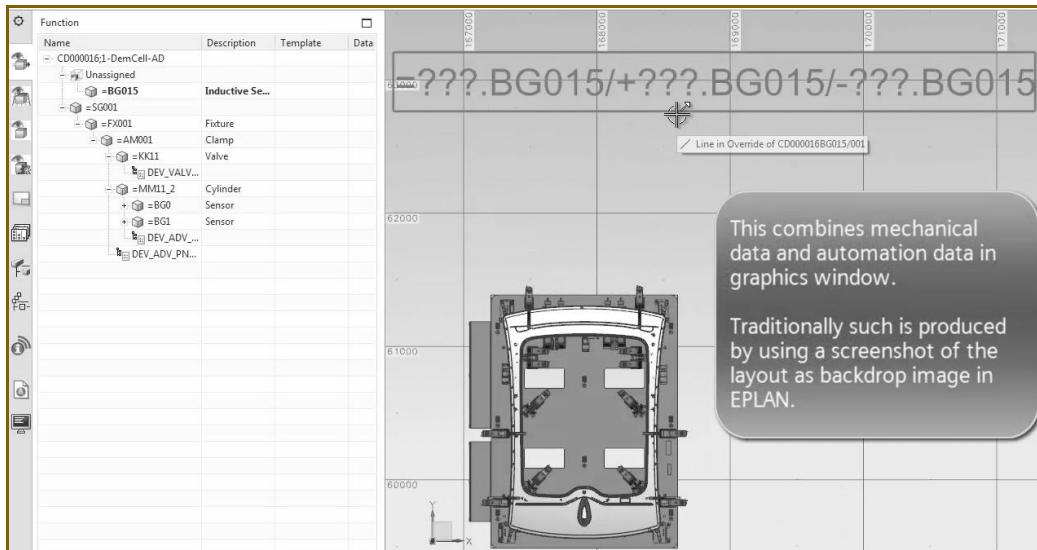
```

what did above is the main goal. Quickly created new EPLAN/TIA when changes in LD. ☺

xxx 0:00 sensor demo mtntbot 1



After mtntbot the new EO in AD.



xxx 6:55 sensor Demo mtnbot 2

Manage Object Mapping

Actions: Map to Existing in Project, Map to New, Map to New Based on Type, Unmap

Object Mapping:

External Object	Type	Status	Automation Designer	Definition
TUENKERS_V50_2_B...	TUENKERS_V50_2_BR2...	Unmapped		CylinderTemplate
NAEHERUNGSSCHALTE...	NAEHERUNGSSCHALTE...	Unmapped		Inductive Sensor
000265	000265	Unmapped		
NAEHERUNGSSCHALTE...	NAEHERUNGSSCHALTE...	Unmapped		Inductive Sensor
000266	000266	Unmapped		
NAEHERUNGSSCHALTER_M18	RUNGSCHALTER_M18	Unmapped		Inductive Sensor
000267	000267	Unmapped		
TUENKERS_V50_2_B...	TUENKERS_V50_2_BR2...	Unmapped		CylinderTemplate

Properties:

Attribute	Value
Cpd0DesignModelElement...	New (not yet promot...
Cpd0DesignModelElement...	NAEHERUNGSSCHAL...
Cpd0DesignModelElement...	Plt0ResourceInstanc...
Cpd0DesignModelElement...	001
Cpd0DesignModelElement...	NAEHERUNGSSCHAL...

Project then already knows what to instantiate into Electrical/Automation.

Can be automated and used in mass instantiation.

OK Cancel

Function

Name	Description	Template
- CD000016;1-DemCell-AD		
- Unassigned		
- =BG015	Inductive Se...	
- =SG001		
- =FX001	Fixture	
- =AM001	Clamp	
- =KK11	Valve	
- =DEV_VALV...		
- =MM11_2	Cylinder	
+ =BG0	Sensor	
+ =BG1	Sensor	
- =DEV_ADV_...		
- =DEV_ADV_PN...		

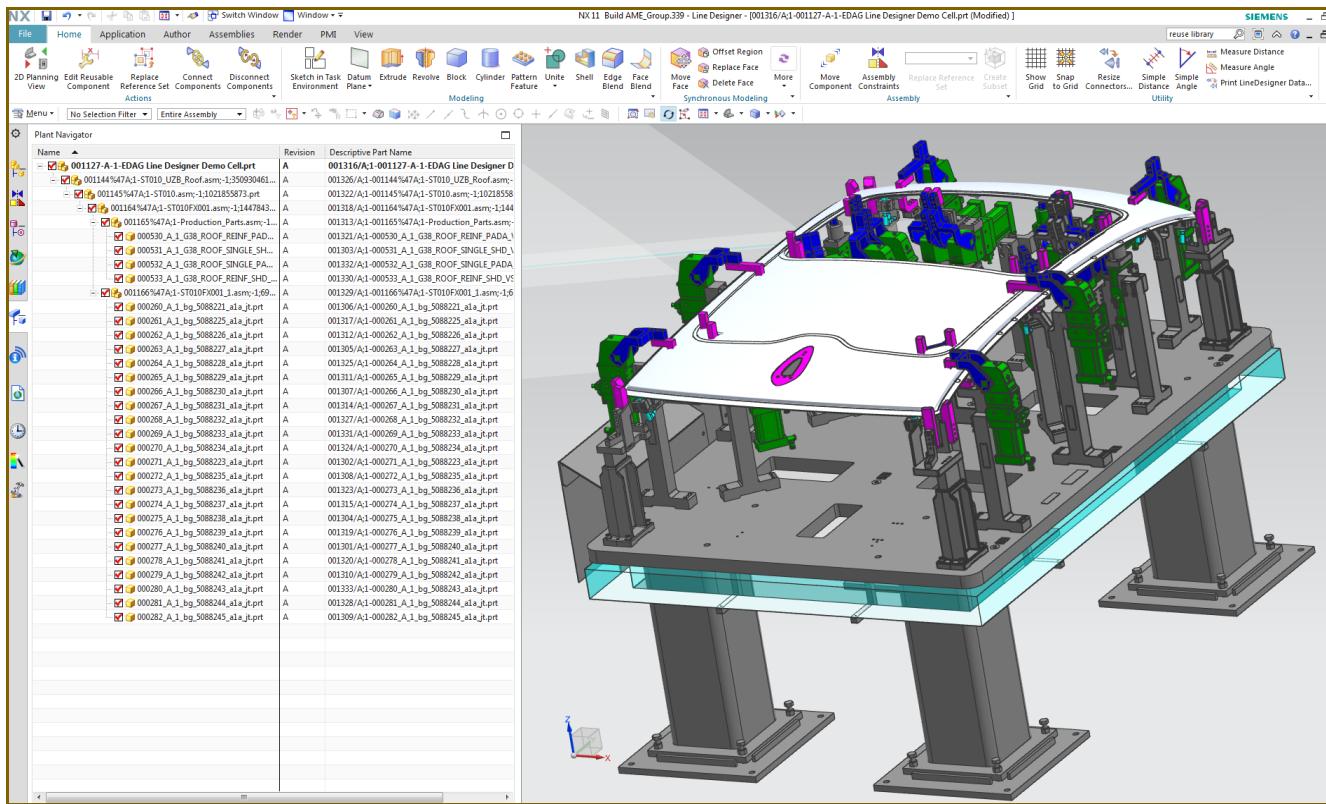
14b. Demo_Cell (terry) (20160317)

This chapter describes my version of demo_cell.

I used (Andreas has simplified, far fewer parts, easier to load and work with)

\debonkl0c19\ADNX\Teams\PRM\Customer Project Data\EDAG FFT - do not distribute\Fixture Table\EDAG-Tooling - NX\001127_A_1_EDAG_Line_Designer_Demo_Cell

Screenshots are from 20160314_5_last_try.avi, what I did on 192.168.117.107.



20160316 new videos:

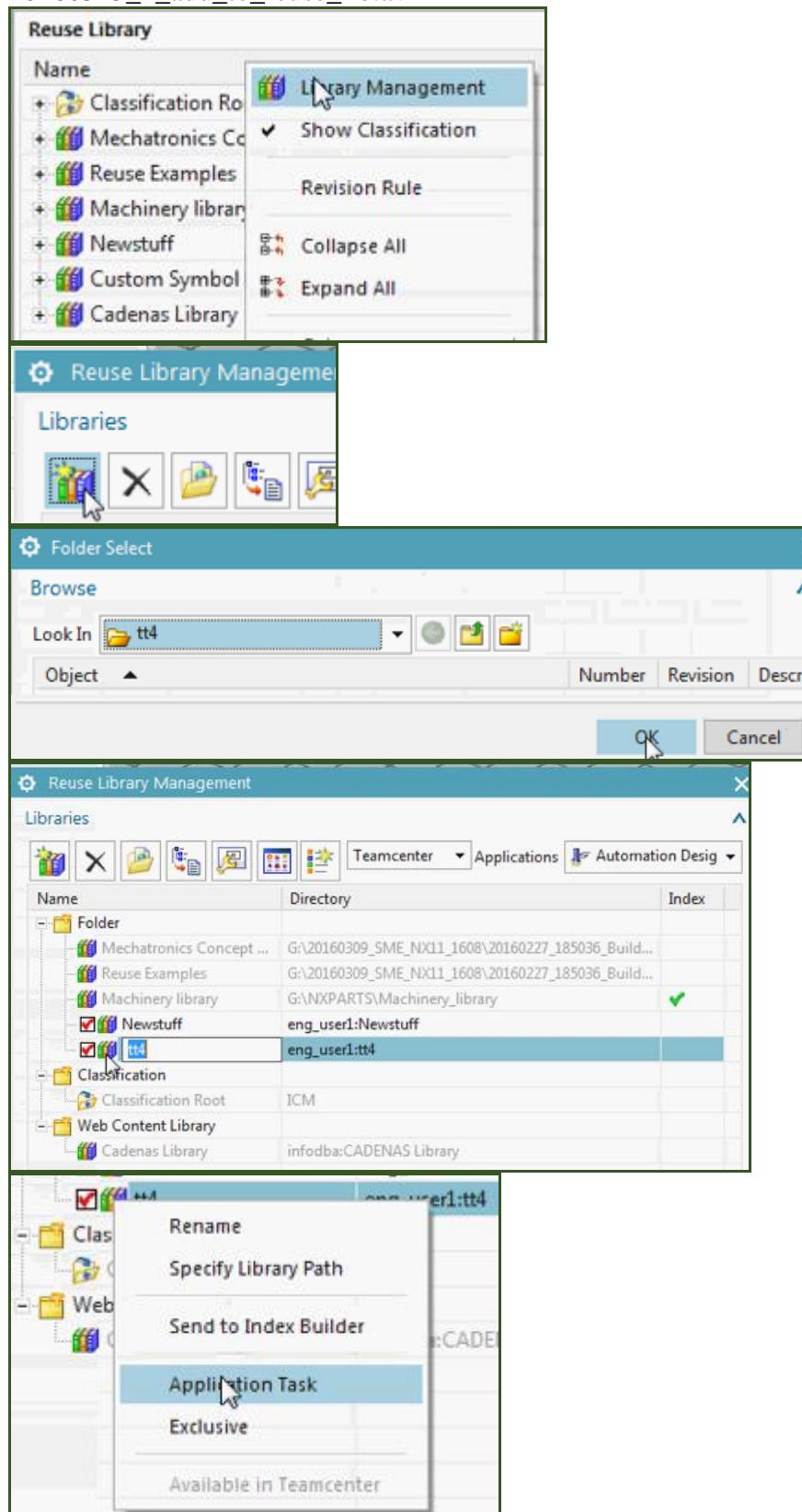
- 5: 20160316_1_create_rl_dir_and_import_parts.avi
- 7: 20160316_2_add_to_LD.avi
- 17,18: 20160316_3_create_type_map_and_mtbot.avi

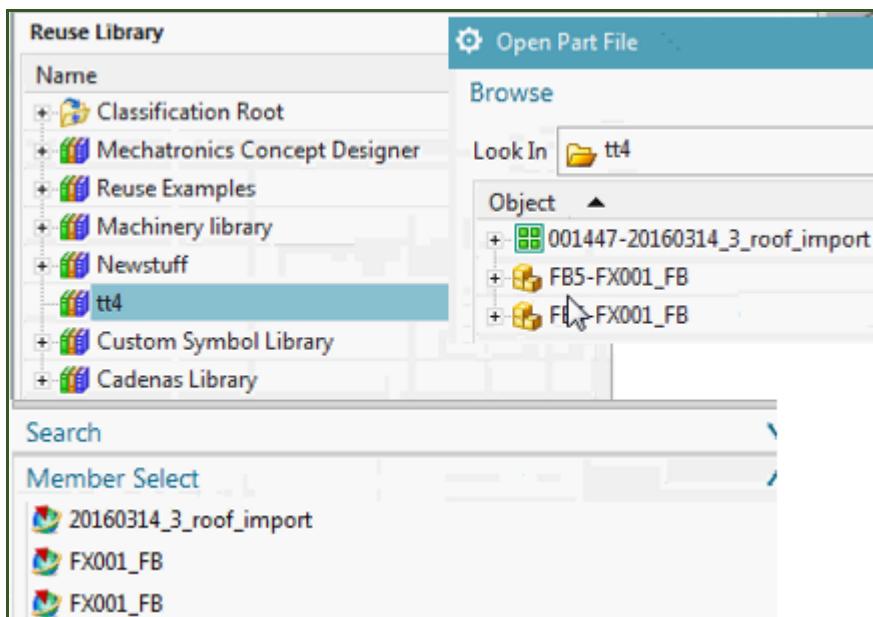
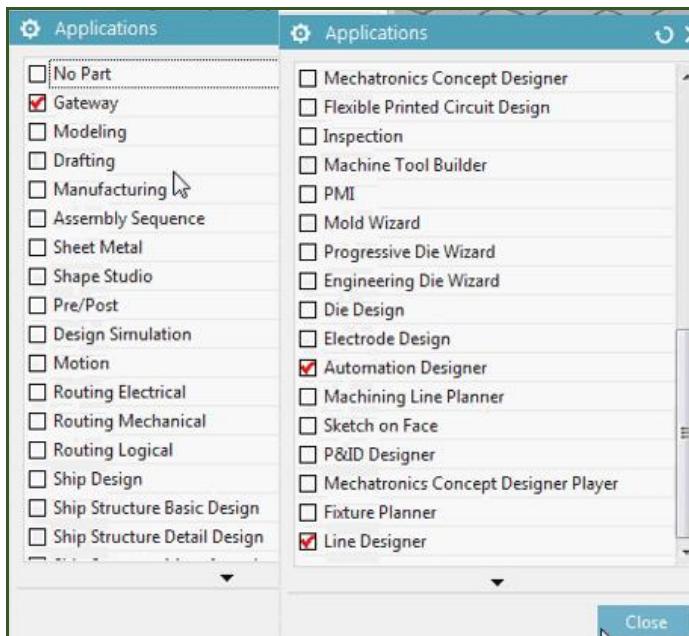
5. import roof parts

3.1. Add dir to reuse library

20160316_1_create_rl_dir_and_import_parts.avi

20160315_1_add_to_reuse_lib.avi

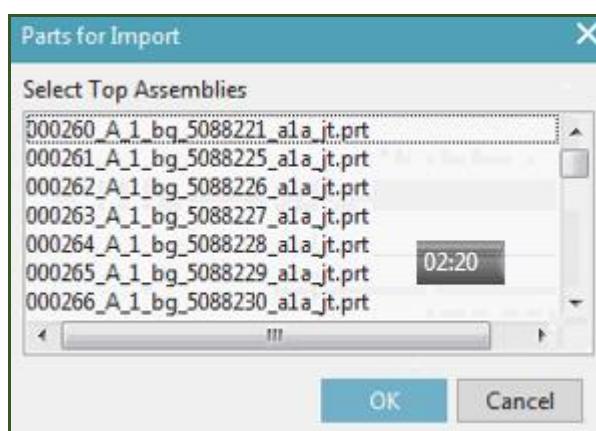
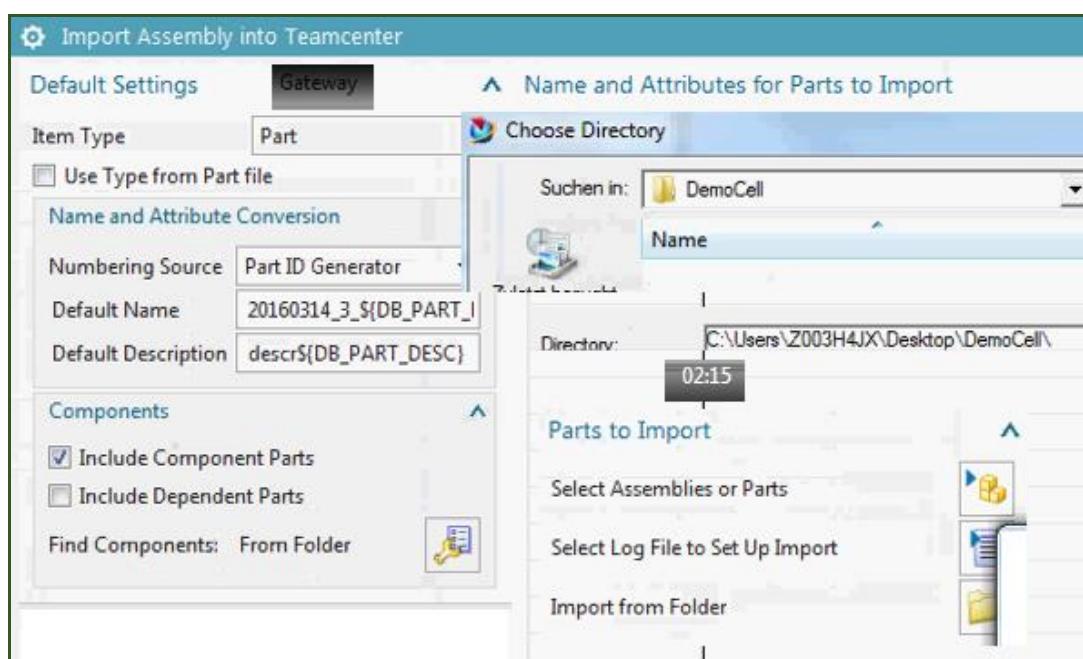
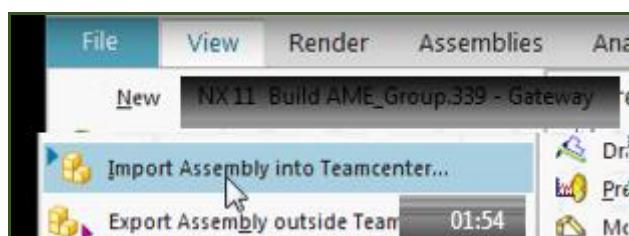




3.2. Import (root into TC) (GW) ????

20160316_1_create_rl_dir_and_import_parts.avi

Basically doing what was already assumed in ch4... parts in the reuse library.
Into reuse library.



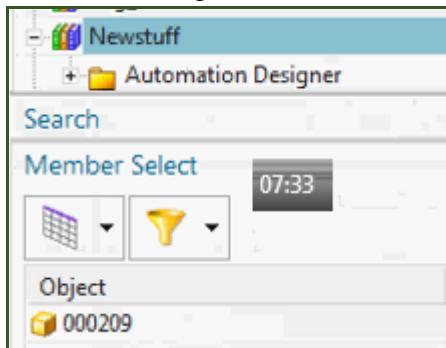
Where select target dir?????????????????

Name and Attributes for Parts to Import						
Object Name	ID	Name	Revision	Information		
				Part State	Reason for Inclusion	Team
1 000260_A_1_bg_5088221_a1a_jt.prt	003395	000260_A_1_bg...	A		Component of 00...	?
2 000261_A_1_bg_5088225_a1a_jt.prt	003398	000261_A_1_bg...	A		Component of 00...	?
3 000262_A_1_bg_5088226_a1a_jt.prt	003399	000262_A_1_bg...	A		Component of 00...	?
4 000263_A_1_bg_5088227_a1a_jt.prt	003415	000263_A_1_bg...	A		Component of 00...	?
5 000264_A_1_bg_5088228_a1a_jt.prt	003412	000264_A_1_bg...	A		Component of 00...	?

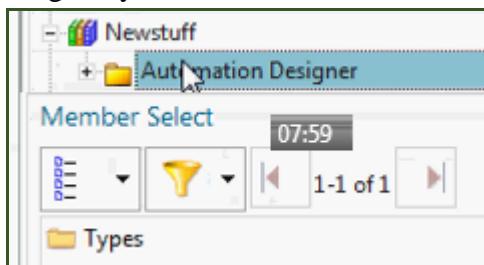
Information

```
&LOG Cloning_Action: DEFAULT_DISP 06:35  
&LOG Naming_Technique: DEFAULT_NAMING Clone_Name: @DB/003425/A  
&LOG Container: ":Newstuff"  
&LOG Part_Type: "Part"  
&LOG Part_Name: "000531_A_1_G38_ROOF_SINGLE_SHD_VS0_jt.prt"  
&LOG Part_Description: 003425
```

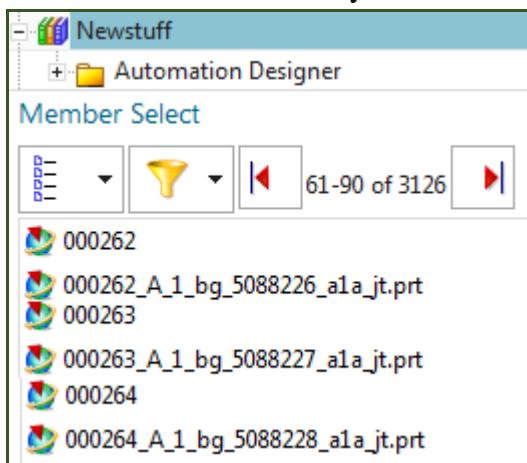
Arrows missing



MAGICALLY RETURNS.



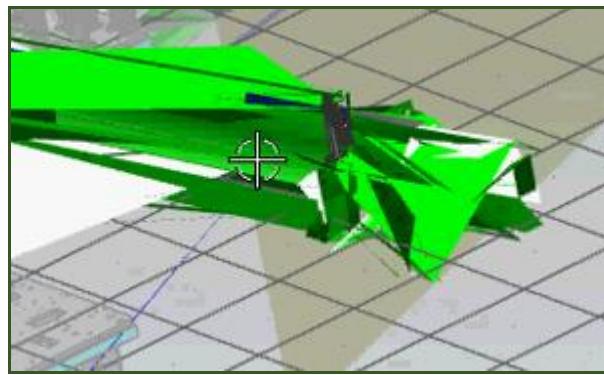
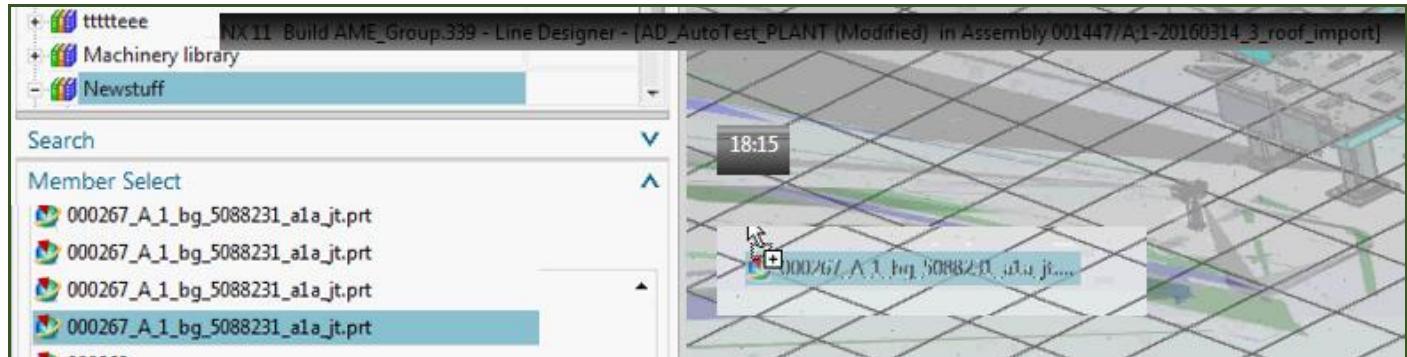
Parts are in the reuse library.



7. (ch4) create LD workset, subset, TEST add parts (DE's) to LD layout

20160316_2_add_to_LD.avi

Basically doing part of ch 4.

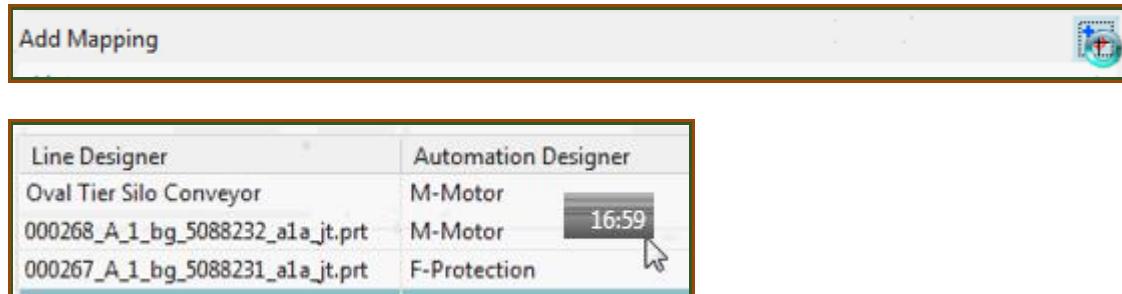
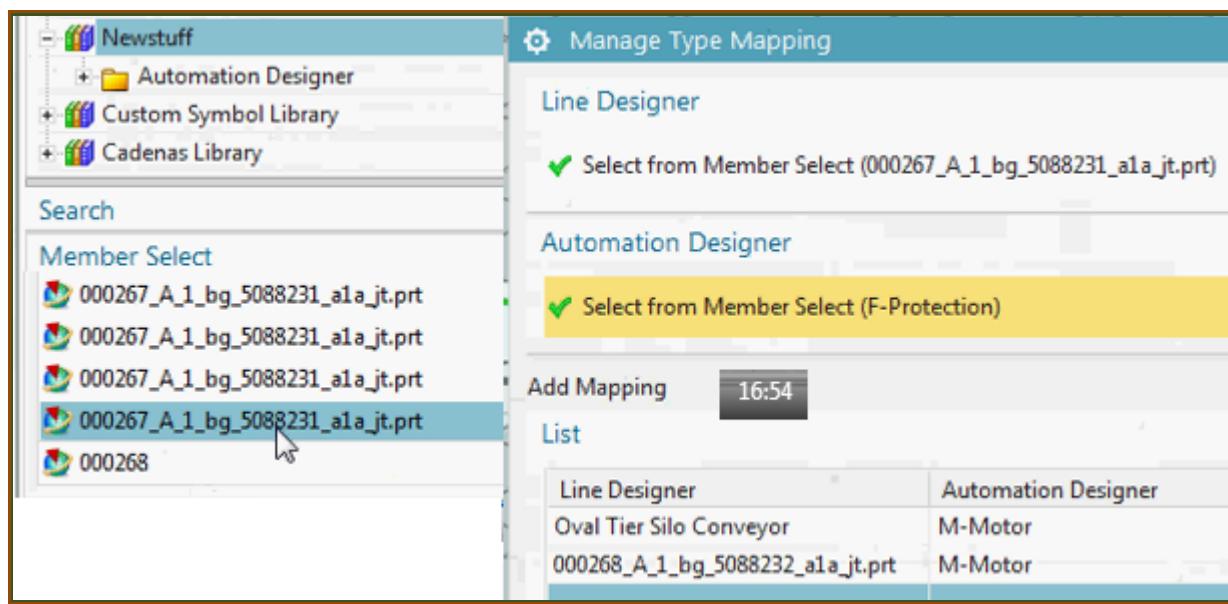
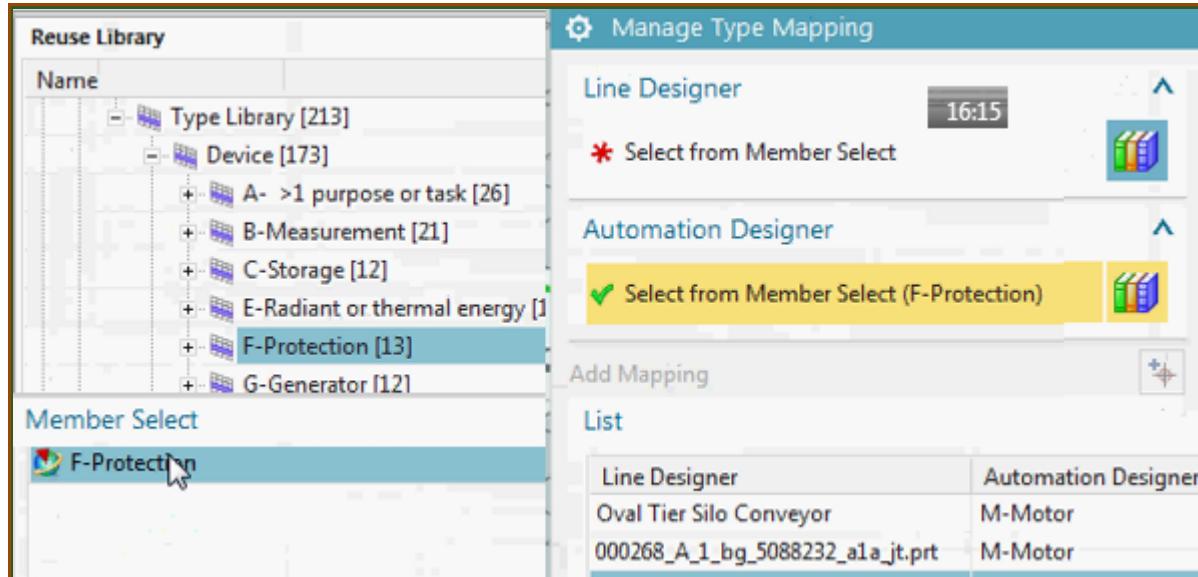


17. "manage type mapping" (LD DE's to AD templates)

20160316_3_create_type_map_and_mtobot.avi

For this movie could only map the top level... I think its because that's what I imported.

Basically doing part of ch 6.



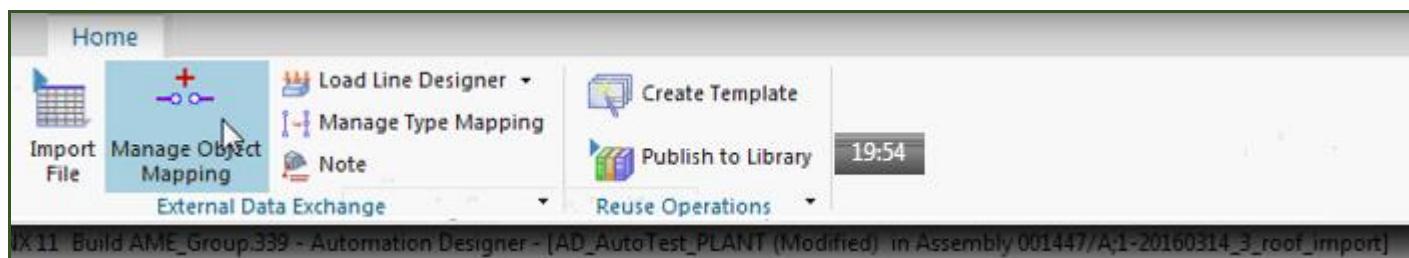
18. (ch6) mtnbot (add mapped templates)

20160316_3_create_type_map_and_mtnbot.avi

For this movie could only map the top level... I think its because that's what I imported.

mtnbot (map to new based on type)

Basically doing part of ch 6.



This screenshot shows the 'Manage Object Mapping' dialog box. The title bar says 'Manage Object Mapping'. The 'Actions' tab has four buttons: 'Map to Existing in Project', 'Map to New', 'Map to New Based on Type', and 'Unmap'. The 'Map to New Based on Type' button is highlighted with a blue border. On the right, there is a 'Properties' panel with sections for 'External Object' and 'Attribute'. The main area is titled 'Object Mapping' and shows a table of mappings. The 'Show' filter is set to 'Unhidden'. The table columns are 'External Name', 'External Type', 'Status', 'RDS', and 'Type'. The data rows are:

External Name	External Type	Status	RDS	Type
001500	000267_A_1_bg_5088231...	●●		F-Protection 19:59
001488	000268_A_1_bg_5088232...	●●	=???.M001/M001/-???.M...	
001441	000264_A_1_bg_5088228...			
001425	000263_A_1_bg_5088227...			

Unmap do again....

This screenshot shows the 'Manage Object Mapping' dialog box again. The 'Actions' tab has four buttons: 'Map to Existing in Project', 'Map to New', 'Map to New Based on Type', and 'Unmap'. The 'Map to New Based on Type' button is highlighted with a blue border. The 'Object Mapping' table is identical to the one in the previous screenshot, showing the same list of external names and types. The 'Show' filter is still set to 'Unhidden'.

Manage Object Mapping

Actions

- Map to Existing in Project
- Map to New
- Map to New Based on Type
- Unmap**

Object Mapping

Show

External Name External Type Status RDS Type

001500	000267_A_1_bg_5088231...	F002/-???.F002	21:58
001488	000268_A_1_bg_5088232...	=???.M001/M001/-???.M...	
001441	000264_A_1_bg_5088228...		
001425	000263_A_1_bg_5088227...		

Hide Hide/Unhide

Properties

External Object

Attribute	Value
Cpd0DesignModelElement...	RES_000048
Cpd0DesignModelElement...	001
Cpd0DesignModelElement...	001500
Cpd0DesignModelElement...	Plt0ResourceInstance
Cpd0DesignModelElement...	1

Automation Designer

Attribute	Value
Reference Designation Set	+??/-???.F002
Type	F-Protection
Type	F-Protection
Multi-level Reference Desig...	+???
Designation	!!!

Product Aspect Navigator

Name Des... Template

- CD000023;1-AD Project
 - Unassigned
 - G001
 - _001
 - M001
 - F001
 - F002**

22:16

Did not show up in function aspect!!

Do again.

Product Aspect Navigator

Name

- CD000023;1-AD Project
 - Unassigned
 - G001
 - _001
 - M001
 - F001
 - F002
 - F003**

Manage Object Mapping

Actions

- Map to Existing in Project
- Map to New
- Map to New Based on Type
- Unmap**

Object Mapping

Show

External Name External Type Status RDS

001500	000267_A_1_bg_5088231...	F003/-???.F003	22:53
001488	000268_A_1_bg_5088232...	=???.M001/M001/-???.M001	
001441	000264_A_1_bg_5088228...		
001425	000263_A_1_bg_5088227...		

Somehow it worked 😊

After this could do EPLAN and TIA for a full realistic demo.

20160308 first import of roof

Setup terry desktop

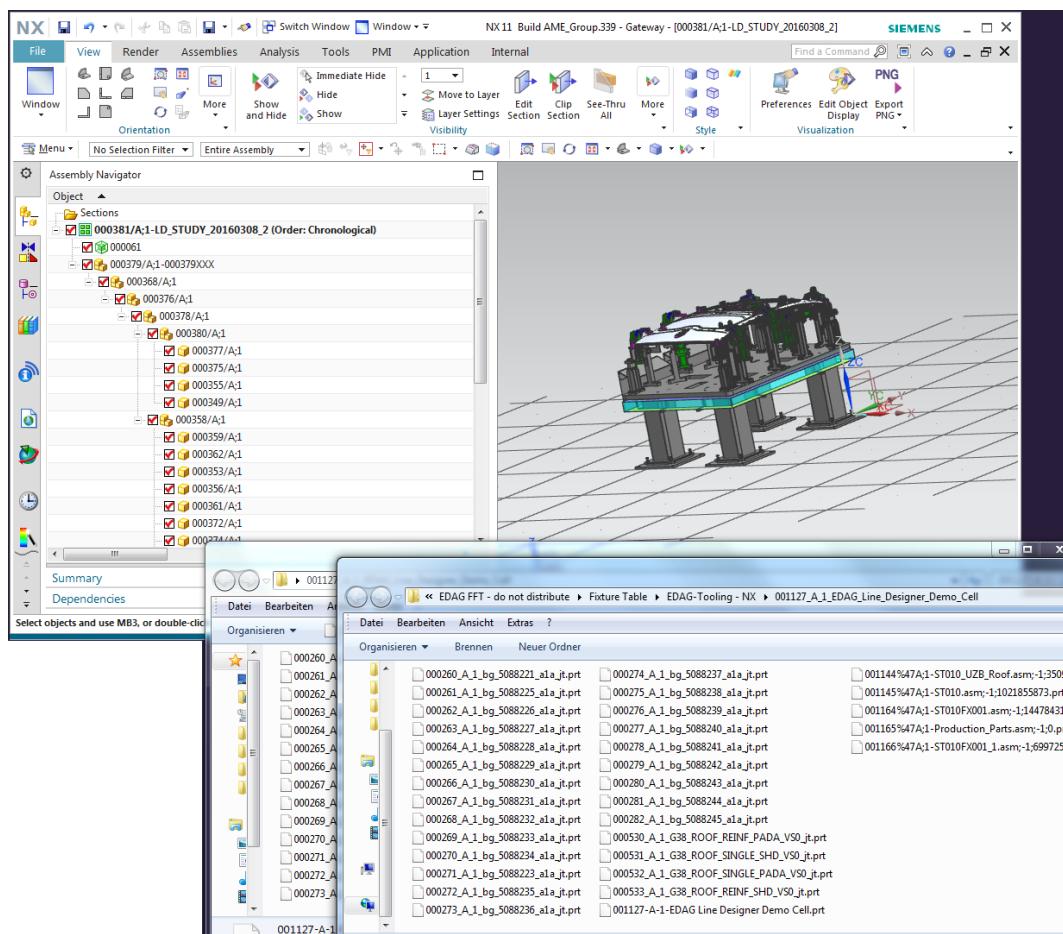
1. TC VM: Deploy 18 it's basically for SME53 but should work with SME52 as well.
192.168.117.110

2. SME: G:\20160307_SME_NX11_1608\20160227_185036_Build

3. LD PROJECT: From Andreas... imported.

`\debonkl0c19\ADNX\Teams\PRM\Customer Project Data\EDAG FFT - do not distribute\Fixture Table\EDAG-Tooling - NX\001127_A_1_EDAG_Line_Designer_Demo_Cell`

My local pc. not sure if I did it right. Much simpler than in the past.



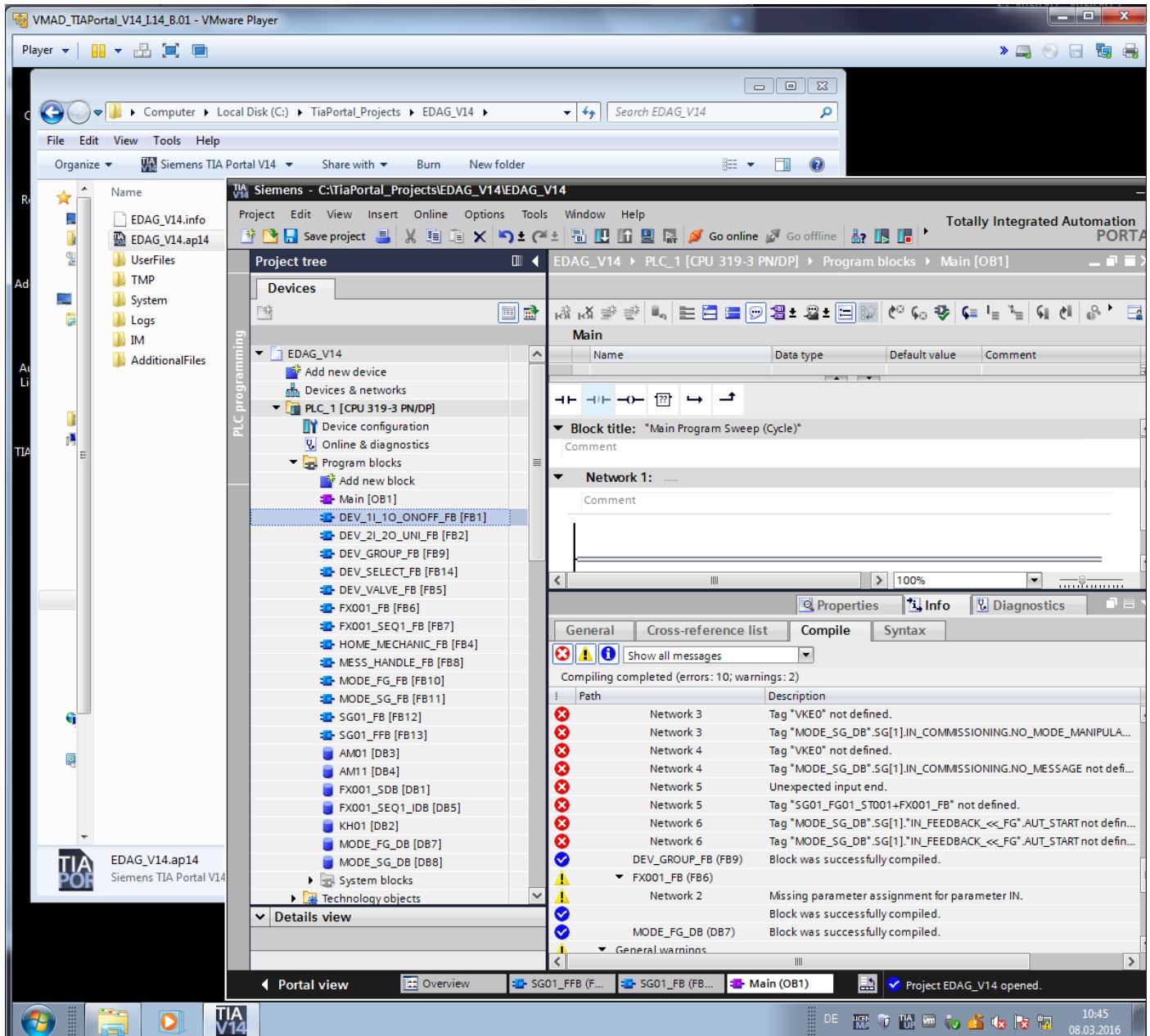
4. Try this more complex version later.

`\debonkl0c19\ADNX\Teams\PRM\Customer Project Data\EDAG FFT - do not distribute\Fixture Table\FixtureTable - Geometry.7z\`

5. TIA VM

G:\20160307_VMAD_TIAPortal_V14_I.14_B.01.7z

Wrong language, tag errors... waiting for Andreas help...



After these problems fixed...

6. Import hw/sw.
7. Create aspect tree, add sw, dynamize, Create expressions like what Brent sent.
8. create template, Instantiate template, Map to LD.
9. add clamp table, without a few components, instantiate template, delete parts, and it auto-adjusts?
10. Do this over for GS automotive example ch13. (no customer info).

14c. ExampleProject_Automotive

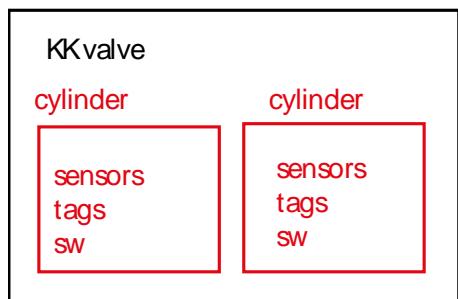
\debonkl0c19\ADNX\Teams\PRM\ExampleData and Geometries\ExampleProjects\ExampleProject_Automotive

G:\20160311_PRM\ExampleData and Geometries - ExampleProjects\ExampleProject_Automotive

20160314 spindelhubsäule

G:\20160311_PRM\ExampleData and Geometries - ExampleProjects\ExampleProject_Automotive\AutomotiveLayout\spindelhubsaeule

Imported. Very slow too many parts. I think the chain cable is the problem.. delete somehow?
AM clamp group (7)



cylinder is template

14d. material handling (baggage line)

Own model from fd4, can be used.

\debonkl0c19\ADNX\Teams\PRM\ExampleData and Geometries\ExampleProjects\ExampleProject_Automotive

14e. packaging (tetra)

xxx

Part 6. AD functional details

In this part try to take a lot from

1. user guide
2. AD_GS_v222_20160128_1522_second_half_20160302.doc (most of this was taken from the requirements spec).

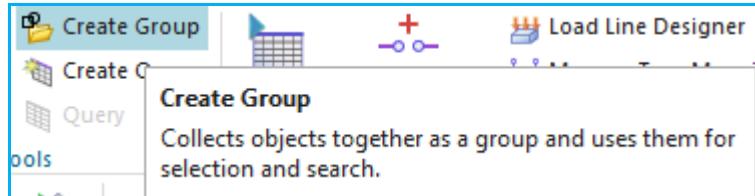
16. Projects

16.1. projects and worksets

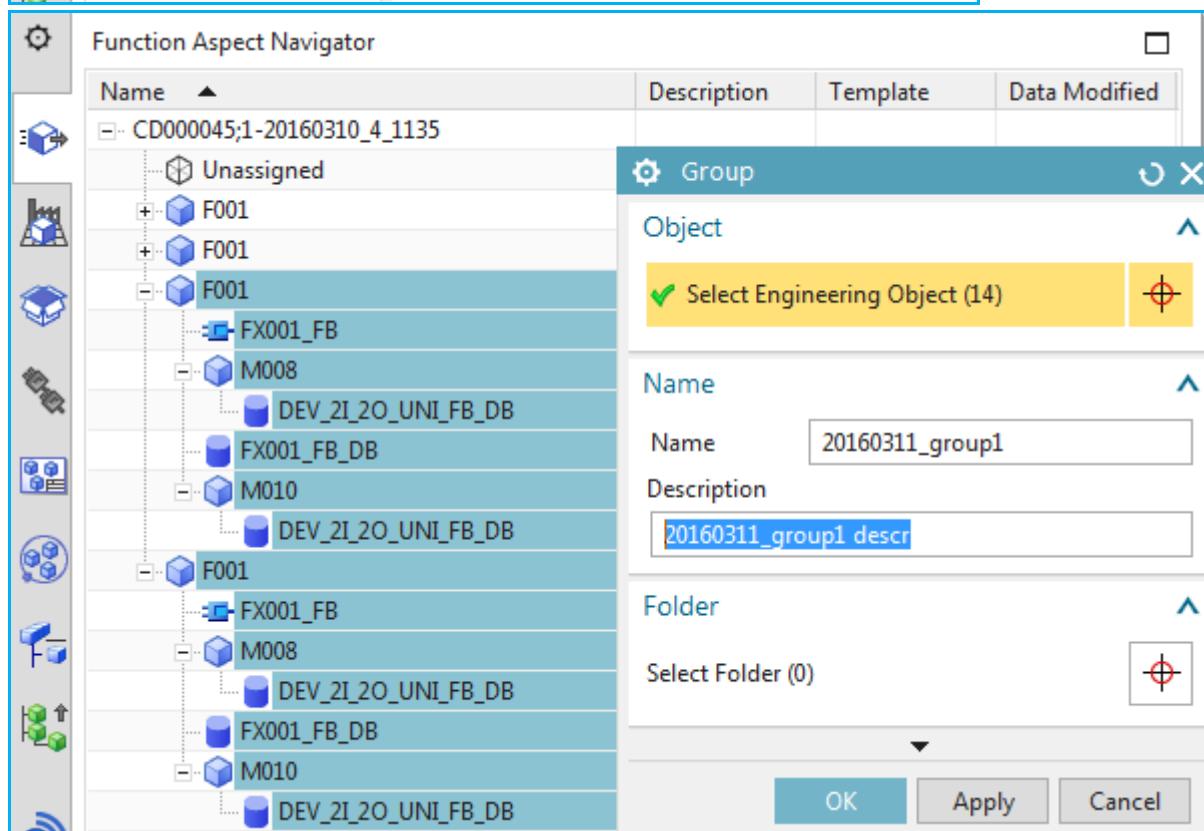
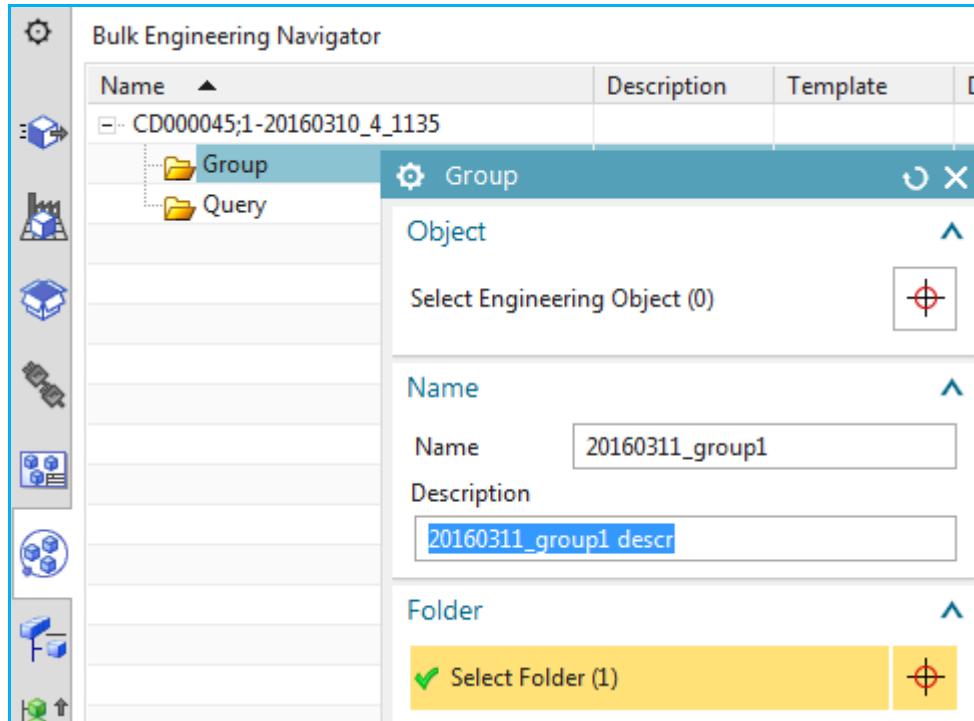
16.2. show and hide, highlight, notes

17.4. Groups (20160311)

20160311 my first guess at what you might do with groups. Demo.



1. Create group.



Result.

Bulk Engineering Navigator

Name	Description	Template
CD000045;1-20160310_4_1135		
Group		
20160311_group1	20160311_group1 descr	
DEV_2I_2O_UNI_FB_DB		20160311_1_template(0003)
DEV_2I_2O_UNI_FB_DB		20160311_1_template(0003)
DEV_2I_2O_UNI_FB_DB		20160311_1_template(0002)
DEV_2I_2O_UNI_FB_DB		20160311_1_template(0002)
F001/F001/-F011		20160311_1_template(0002)
F001/F001/-F012		20160311_1_template(0003)
FX001_FB		20160311_1_template(0003)
FX001_FB		20160311_1_template(0002)
FX001_FB_DB		20160311_1_template(0003)
FX001_FB_DB		20160311_1_template(0002)
M008/M008/-F011.M008		20160311_1_template(0002)
M008/M008/-F012.M008		20160311_1_template(0003)
M010/M010/-F011.M010		20160311_1_template(0002)
M010/M010/-F012.M010		20160311_1_template(0003)
Query		

2. Usage example: Bulk connection.

Bulk Engineering Navigator

Bulk Connection

Source

Select Object (15)

Total Number of Objects (15)

Descendants Included

Function

Port Type Filter

Control Scope

View Filters

Hide objects without ports of selected Port Type

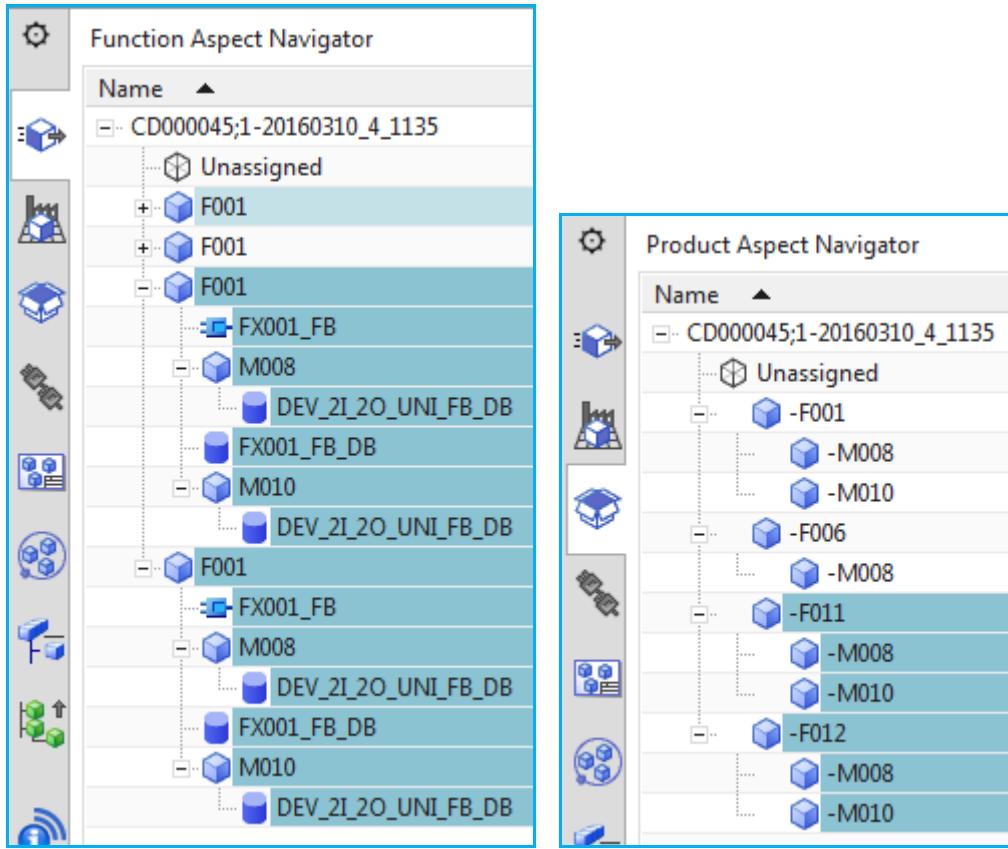
Hide connections of not selected ports

Ports

Source

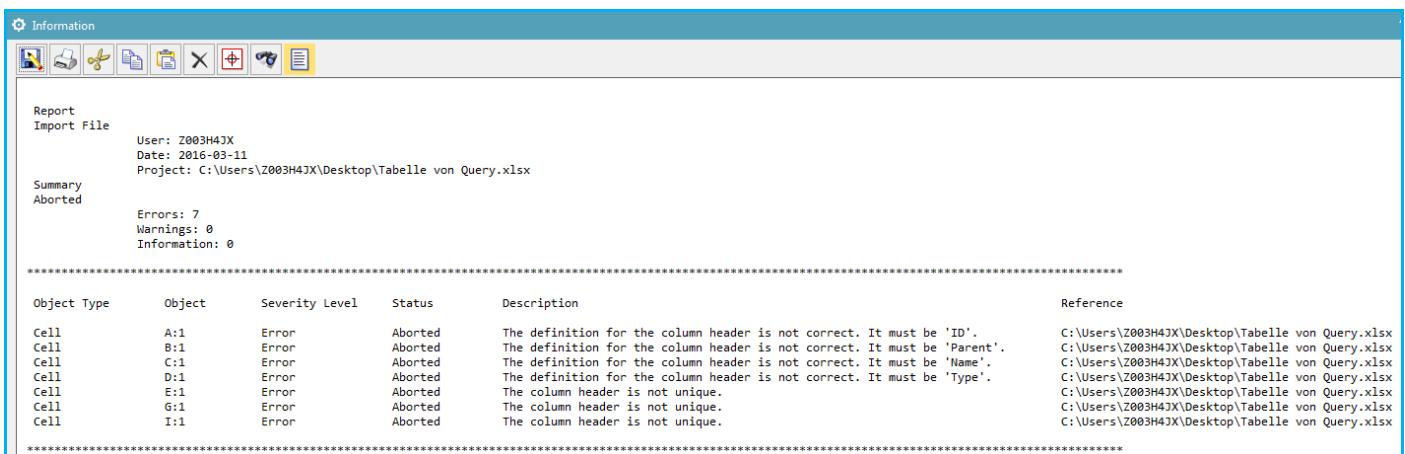
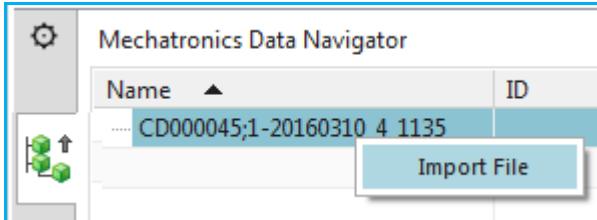
Status	Port	Reference Designat	Engine
1	Block_C	DEV_2I_2O_UNI...	
2	Block_C	FX001_FB_DB	
3		+??-/F012.M010	
4	Block_C	DEV_2I_2O_UNI...	
5	Block_C	FX001_FB_DB	
6		+??-/F011.M010	
7	Block_C	DEV_2I_2O_UNI...	
8		FX001_FB	

Note that selected also in aspects.



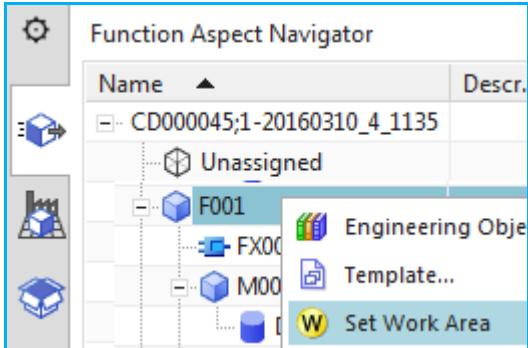
17.5. Excel import (mechatronics data navigator) ERROR (20160311)

TERRY: how to do this?

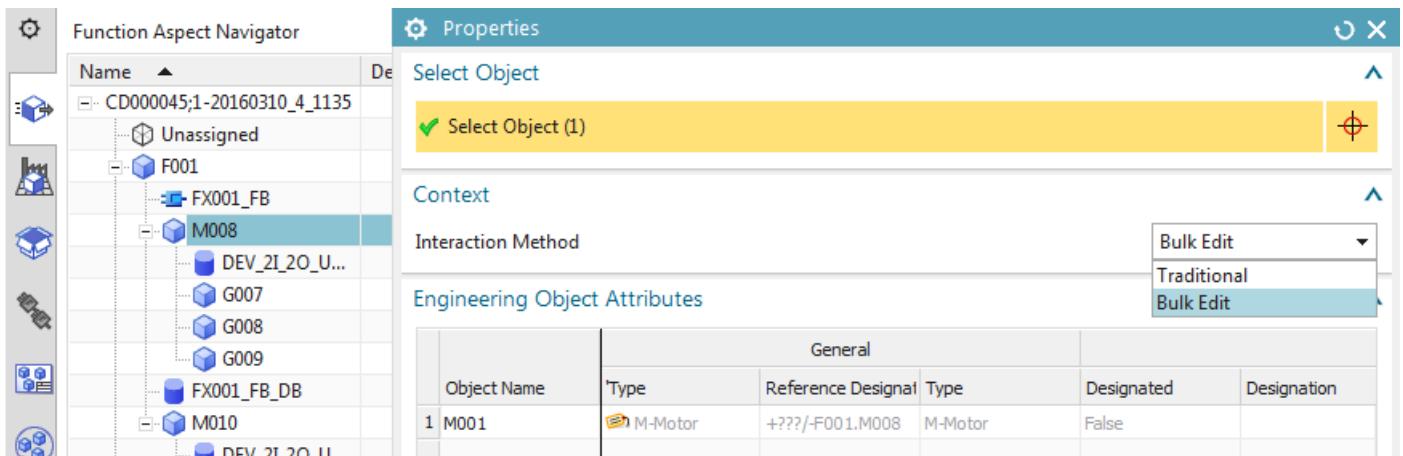


17.6. Workarea DON'T UNDERSTAND

TERRY: what is purpose of workarea?

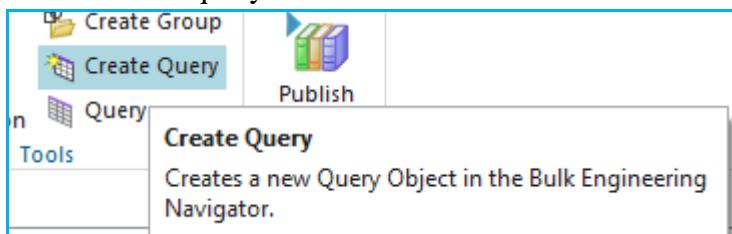


17.7. Bulk edit DON'T UNDERSTAND

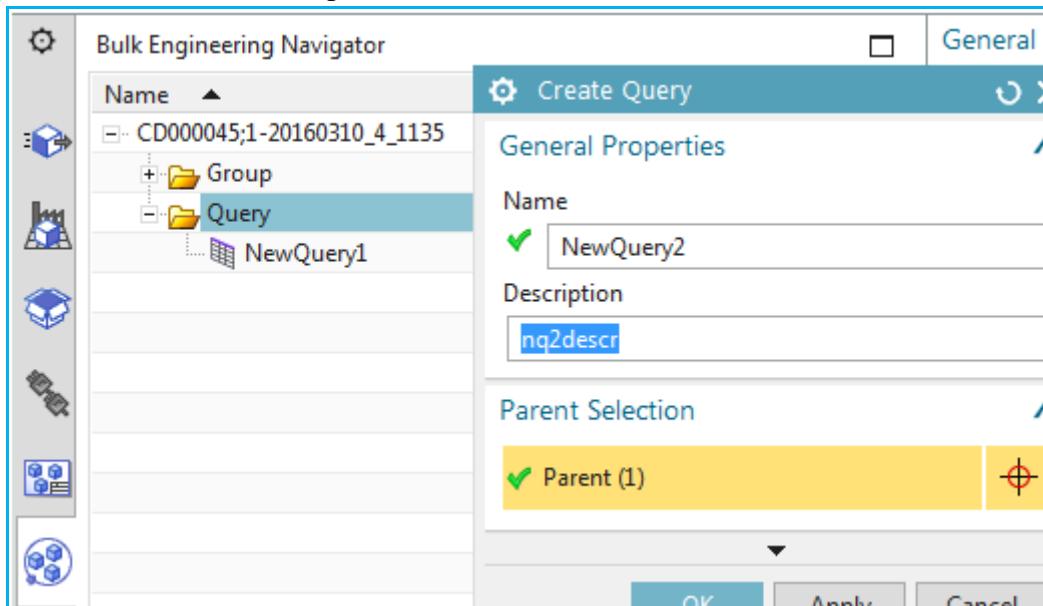


17.8. Query (20160311)

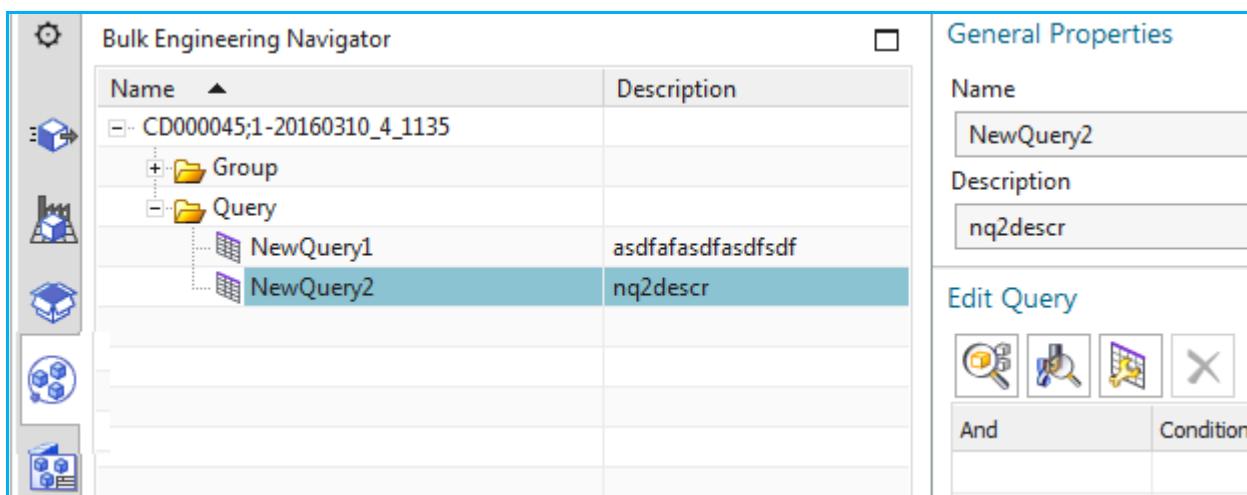
1. click create query.



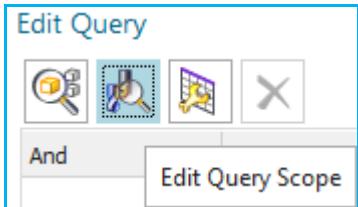
2. Enter name and select parent.



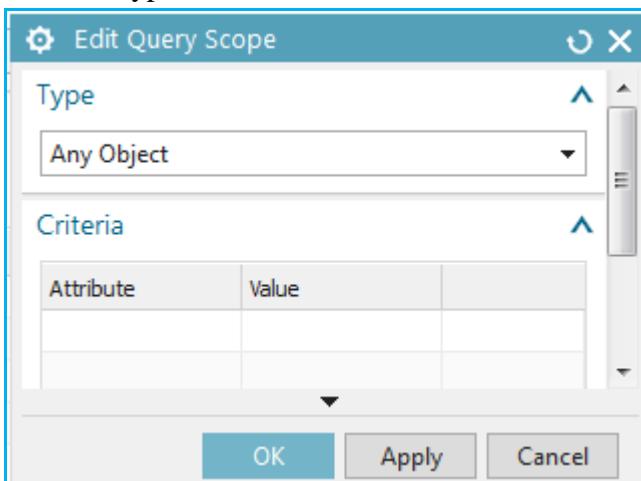
Result.



3. Click "Edit Query Scope".



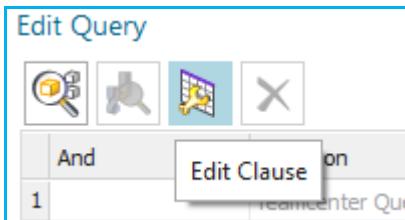
4. Select type.



5. Click OK.

	And	Condition	Operator	Value	Path
1		Teamcenter Query	Is	Any Object	

6. Click "Edit clause".



7. Select classification.

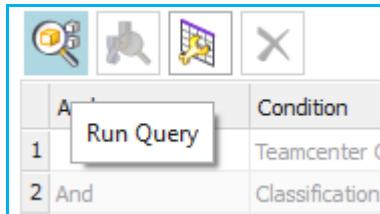
The screenshot shows the 'Edit Clause' dialog box. In the 'Classification' section, 'Select Classification (F-Protection)' is checked. In the 'Select Property' section, several properties are listed:

	Property	Operator
1	Power frequency...	
2	Power frequency...	
3	Temperature (max)	
4	Temperature (min)	
5	Power loss	
6	Control voltage ...	
7	Control voltage ...	
8	DC control voltag...	
9	DC control voltag...	

8. Click ok.

And	Condition	Operator	Value	Path
1	Teamcenter Query	Is	Any Object	
2 And	Classification	As	F-Protection	Automation Desi...

9. Click "Run query".



Seems like templates not shown?

A screenshot of the 'Product Aspect Navigator' and 'General Properties' dialog. The Navigator shows a tree structure of product aspects. Two specific nodes are highlighted with blue boxes: '-F001' and '20160311_1_template(0002)'. A red box highlights the 'Edit Query' section of the General Properties dialog. The 'Edit Query' table shows two conditions: '1 Teamcenter Query Is Any Object' and '2 And Classification As F-Protection Automation Des...'. The 'Query Result' section shows a table with two rows:

Object Name	Reference Designation	Designation	Multi Reference Designation	Product Aspect	
				Designation	Multi Reference Designation
1 F001	+??-/F006		+???	F006	-F006
2 F001	+??-/F001		+???	F001	-F001

The 'Designation' column for both rows contains a dotted box with 'F006' and 'F001' respectively, which are also highlighted with red boxes.

10. Select all objects.

Query Result

Select All Objects in Query Result

Function Aspect Navigator

Name	Descr...	Template	Data
CD000045;1-20160310_4_1135			
Unassigned			
F001			
FX001_FB			
M008			
DEV_2I_2O_U...			
FX001_FB_DB			
M010			
DEV_2I_2O_U...			
F001			
FX001_FB			
M008			
DEV_2I_2O_U...			
FX001_FB_DB			

General Properties

Name: NewQuery2
Description: nq2descr

Edit Query

Query Result

General	
Object Name	Reference De
1 F001	+??-/F006
2 F001	+??-/F001

11. Export to spreadsheet.

Query Result

Export Query Result to Spreadsheet

Object Name

Tabelle von Query

	A	B	C	D	E	F	G	H	I	J
1		General	Function Asp	Function Asp	Location Asp	Location Asp	Asp Product Aspe	Product Aspe	Product Aspect	
2		Object Name	Reference De	Designation	Multi Referen	Referen	Designation	Multi Referen	Referen	Designation
3	1	F001	+??-/F006				+???	F006	-F006	
4	2	F001	+??-/F001				+???	F001	-F001	

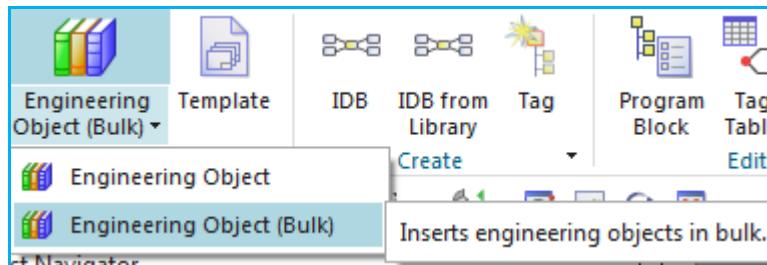
17.9. types

17. Safety (DON'T UNDERSTAND)

\debonkl0c19\ADNX\Teams\PRM\Topics\TIA portal\Safety

18. Objects and the aspect tree

18.x. Engineering object (bulk) DON'T UNDERSTAND



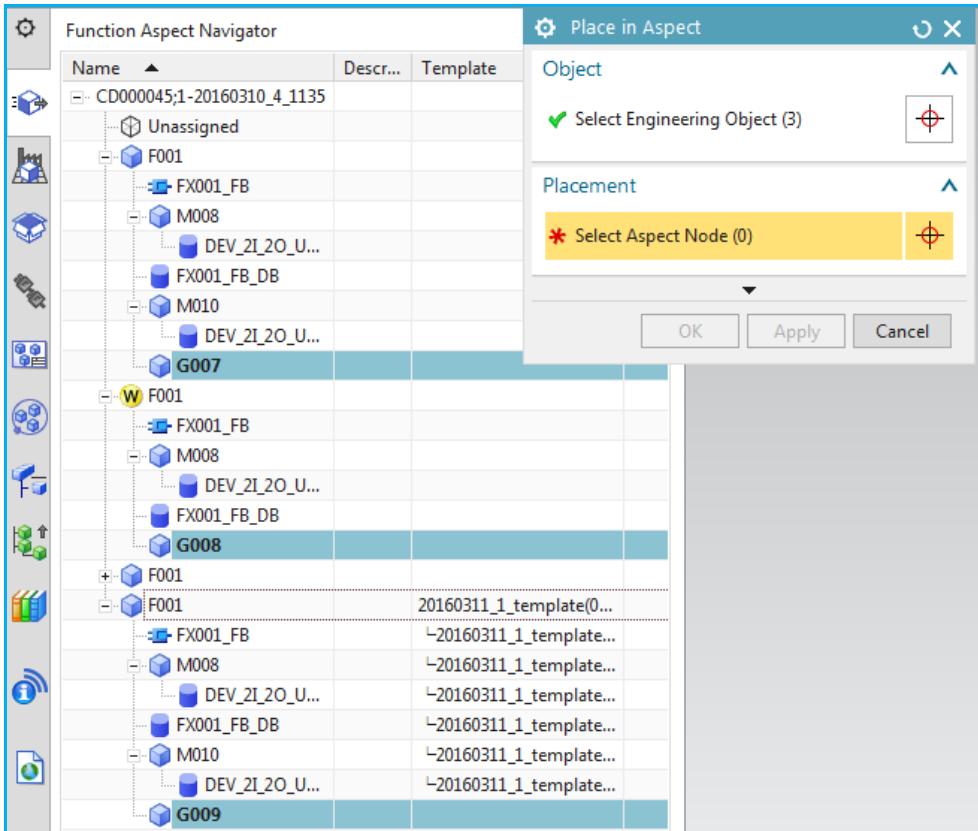
1. select member.

The screenshot shows the SIMATIC Manager interface with the 'Reuse Library' dialog open. In the 'Member Select' dropdown, 'G-Generator' is selected. To the right, the 'Engineering Object (Bulk)' dialog is displayed, showing the 'Select from Member Select (G-Generator)' checkbox is checked. The 'Parent Selection' section contains a yellow-highlighted field 'Select Engineering Object (0)'.

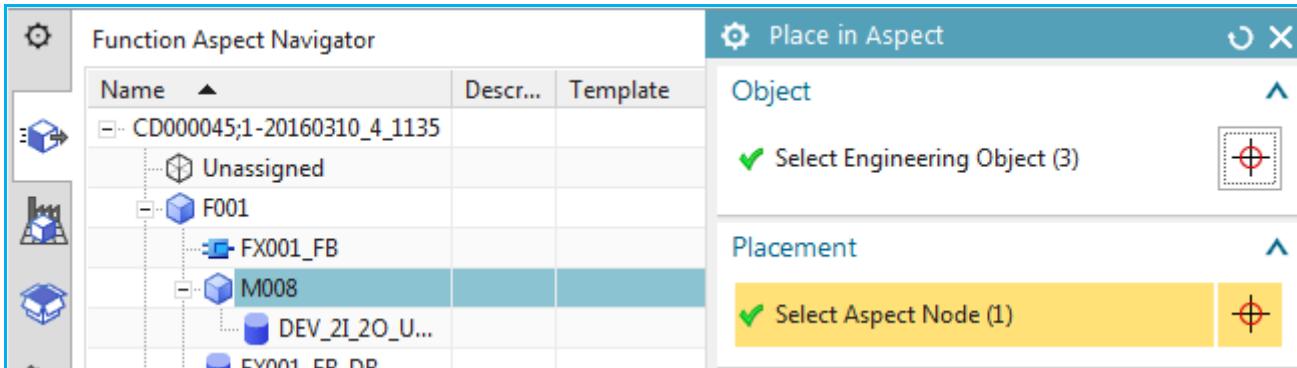
2. select parent(s).

The screenshot shows the SIMATIC Manager interface with the 'Function Aspect Navigator' dialog open. The tree view on the left shows multiple nodes under 'F001'. To the right, the 'Engineering Object (Bulk)' dialog is displayed, showing the 'Select from Member Select (G-Generator)' checkbox is checked. The 'Parent Selection' section contains a yellow-highlighted field 'Select Engineering Object (3)'. The 'Settings' section at the bottom has the 'Continue with Aspect Placement' checkbox checked.

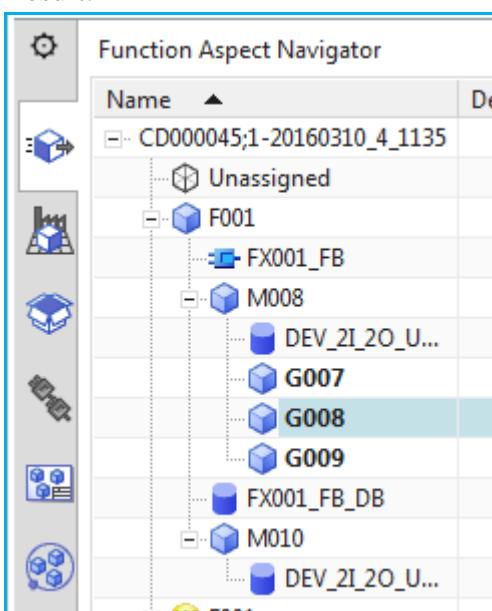
3. click ok. 3 objects created. Placement dialog still open.



4. Select aspect node to place in.



Result.



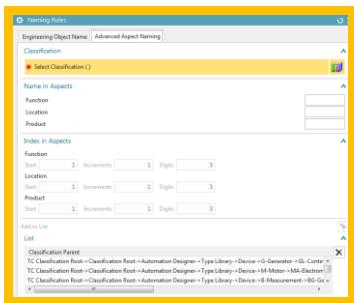
resource library, library imports

assign product, product selection

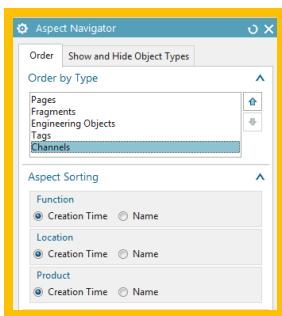
EOs (properties, etc.)

Bulk (multiple connections)

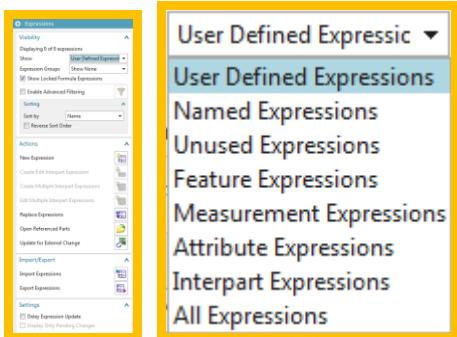
Naming



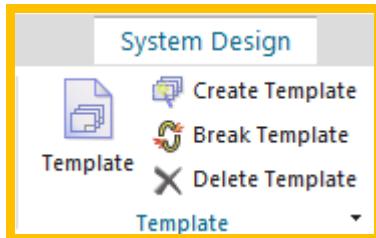
Aspects



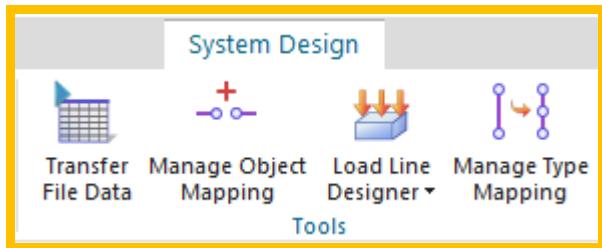
19. Expressions



20. Templates?



21. LD



Upstream (import xlsx file)

Load LD objects

mapping

22. EPLAN

EPLAN details, template, preview

Document (replacement for EPLAN)

23. TIA

Automation tab (details)?

TIA round-trip

TIA config HW in TIA portal

Bulk (multiple connections)

ports and connections

Port types.