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RTA Solution

ETAS BIP Cobra User Guide

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Content

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Introduction

What is Cobra

Cobra is a set of scripting add-ons which aims to improve integration efficiency during **C**ontinuous **D**evelopment **C**ontinuous **I**ntegration. Benefiting from open environment of Eclipse, RTA-CAR support using these external tools for extended customization functions depending on our common user requirements.

Cobra is also one part of ETAS Basic Integration Package (**BIP**). BIP provides an RTA-CAR integration baseline containing integration workflow, hints, demonstration project for supporting target microcontroller/microprocessor and a set of upper tester components as test cases.

What's this document about

Since BIP itself describes the integration workflow in <ETAS BIP Integration Guide RTA-CAR.pdf>, this document introduces only the manual of each Addon, such as argument and the necessary inputs. To find further information about when to use these addons during integration, please refer to ETAS BIP Integration Guide RTA-CAR.pdf.

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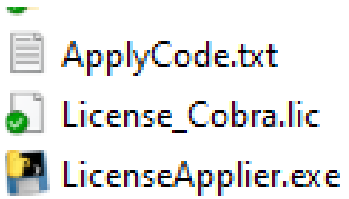
How to apply Cobra License

Cobra path: <BIP Package>\BasicSoftware\ecu_config\cobra

1. Run **LicenseApplier.exe** under Cobra path. (Each laptop shall have its unique license.)
2. **ApplyCode.txt** is generated in the same path. Send it to your ETAS partner.
3. We will generate **License_Cobra.lic** for you. Put in under the same path. Then you can use all Cobra Addons under this path.



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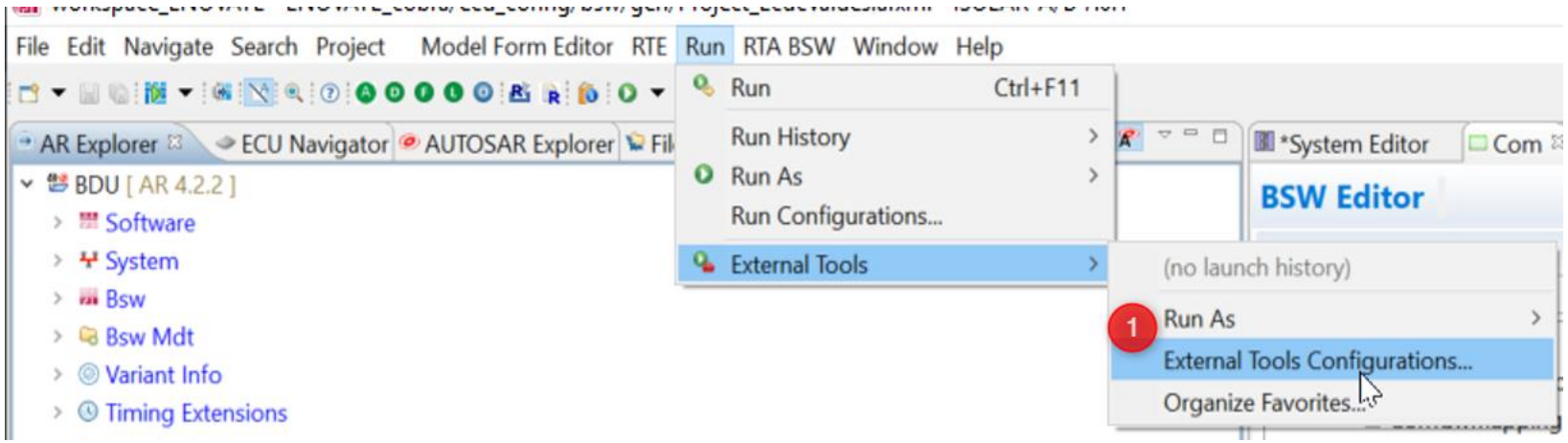
How to run Addons in ISOLAR-A/B

1. Open the External Tool Configuration wizard.
2. Create a new program configuration.
3. Rename the new configuration. Add the file path of the exe file to the Location.
4. Add the arguments from the Arguments.txt file and edit it regarding to specific usage.
5. Select your project, run Addon. Refresh project.



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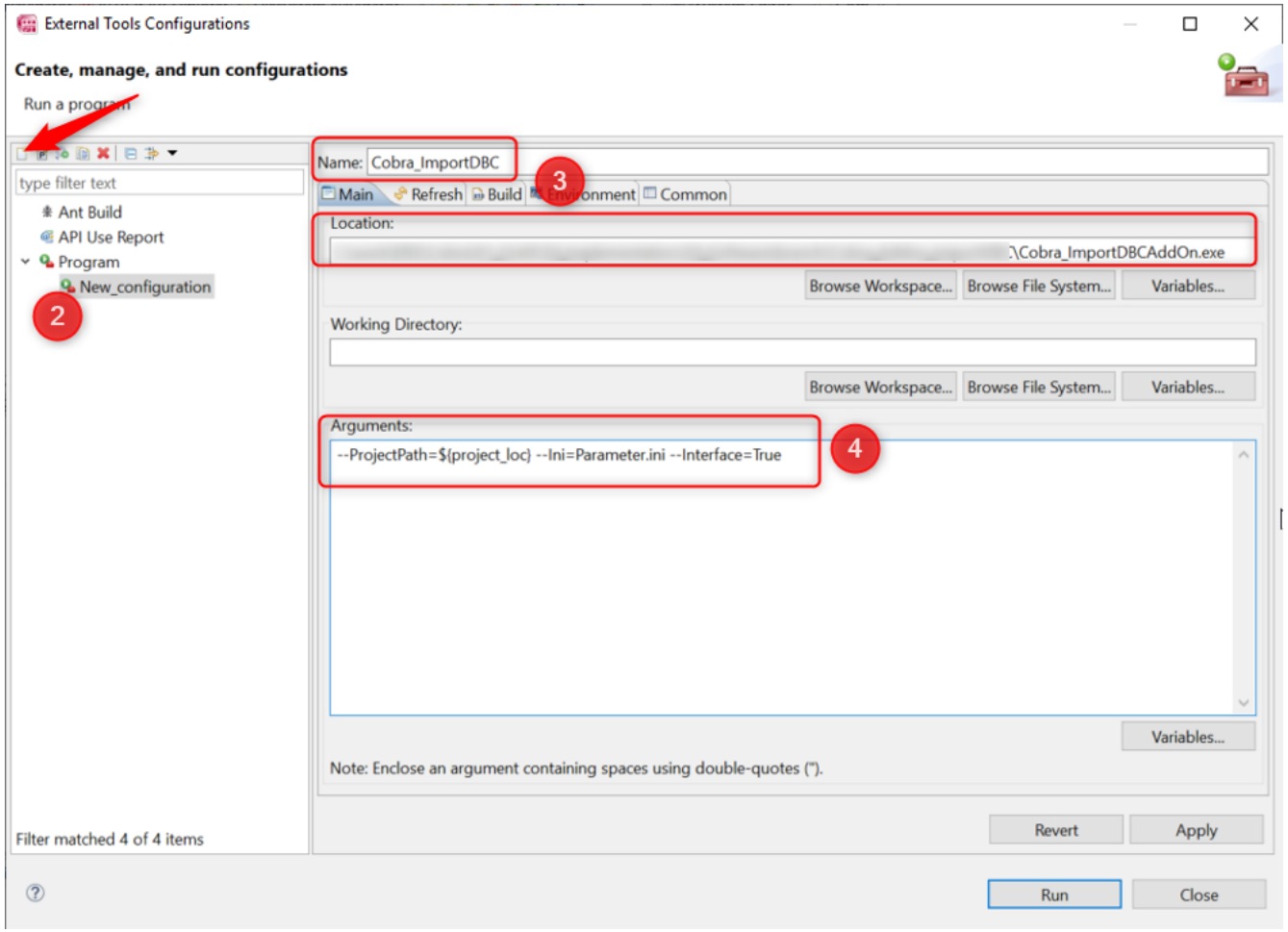

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How to run Addons in ISOLAR-A/B

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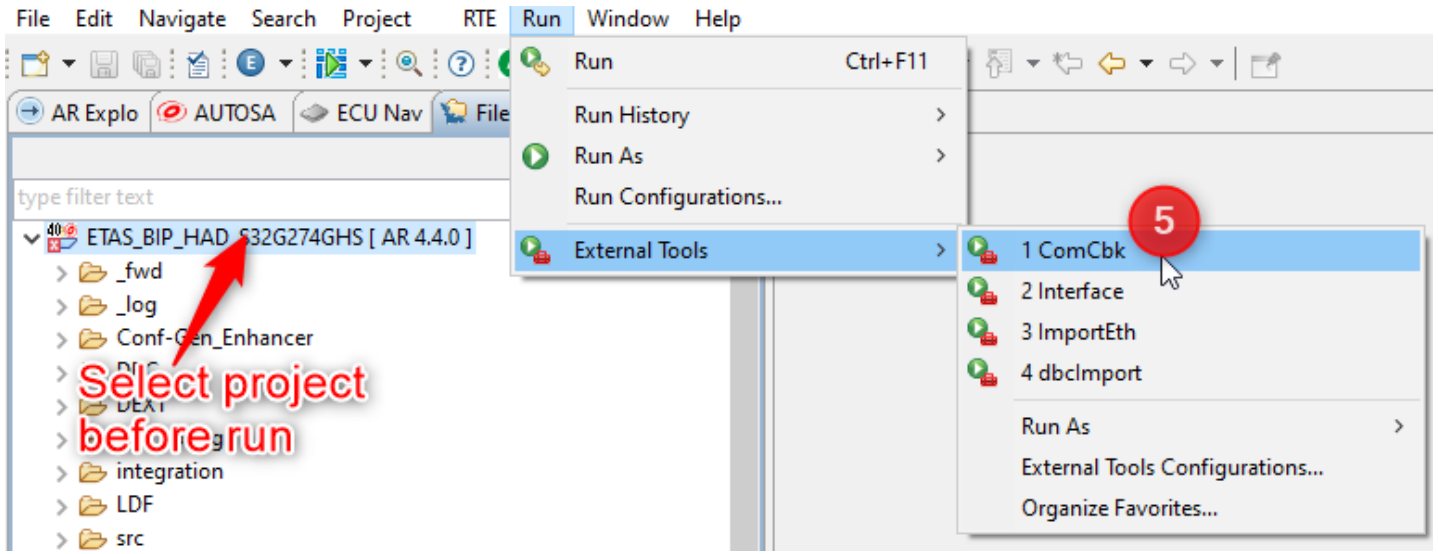

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Cobra_DBCImport AddOn

Description:

With Cobra_DBCImport Add-On, multiple DBCs (networks), multiple ECUs can all be imported into the system description file with one step operation.

Input:

- Parameter.ini
- DBC files

Output:

- DBC_SysDesc_Can_Network.arxml

Arguments:

--ProjectPath=${project_loc} --Ini=Parameter.ini

--ProjectPath: The path of the project obtained by selecting the project in navigator.

--Ini: The name of ini file.

Workflow:

1. Edit Parameter.ini file

Property	Description
Baudrate Configuration	If all networks and can drivers use the same parameter values, user only need to configure section CanBaudrate_default and CanControllerConfiguration_default. If specific values shall be configured copy and paste these two sections and modify the section name as following format. Hint: if network support CanFd, CANFD_Baudrate line shall be uncommented. CanBaudrate _<NetworkName> CanControllerConfiguration_<NodeName>
DBC files	In section DBC_FileList_Parameters, DBC files for multiple channels can be configured. Hint: The DBC files must be stored in DBC folder under the project path. Hint: The format is <NodeName>@<NetworkName>=<DBC_file1.dbc>, <DBC_file2.dbc> (if multiple DBCs for one network available). - Here the NodeName refers to CanCommunicationController of Ecu in the system description.
ECU Selection	The ECU names can be listed in section DBC_Parameters and split with ‘,’. Hint: the ECU who needs to be configured shall be placed at first place as target ECU.
Output Filename	User can define own output file name by editing Config_GenOutFileName.

```
;***
[CanBaudrate_default]
# Baudrate in kbps
CANFD_BaudRate = 2000
CAN_BaudRate = 500

;[CanControllerConfiguration_<Node Name>]
[CanControllerConfiguration_default]
CANFD_PaddingValue = 255
CANFD_TimeSyn_PropSeg = 0
CANFD_TimeSyn_Sjw = 0
CANFD_TimeSyn_Tseg1 = 10
CANFD_TimeSyn_Tseg2 = 0
CANFD_TrcvDelaycompensationOffset =
CANFD_TxBitRateSwitch = false
CAN_TimeSyn_PropSeg = 0
CAN_TimeSyn_Sjw = 0
CAN_TimeSyn_Tseg1 = 10
CAN_TimeSyn_Tseg2 = 0

;*** (NodeName@NetworkName=DBC files) Please note that the DBC files must be in th
[DBC_FileList_Paramters]
INFO_CAN@Can_Network_Info =
DIAG_CAN@Can_Network_Diag =
CH_CAN@Can_Network_CH =                                    .dbc
PT_CAN@Can_Network_PT =                                    .dbc
BODY_CAN@Can_Network_Body =                                .dbc
CHARGE_CAN@Can_Network_Charg                               .dbc
PTEX_CAN@Can_Network_PTEX =                                dbc
RADAR_CAN@Can_Network_RADAR                                .dbc

;*** If multiple ECUs are imported, please put the target ECU at the first place.
[DBC_Paramters]
Ecu_List = ETAS

[ImportDbcConfigParameters]
Config_DIAG = True
Config_NM = True
Config_XCP = True
Config_EnableCompuMethodsConvert = True
Config_GenOutFileName = DBC_SysDesc_Can_Network.arxml
```

Baudrate Configuration

DBC files configuration

ECU selection

Output file name

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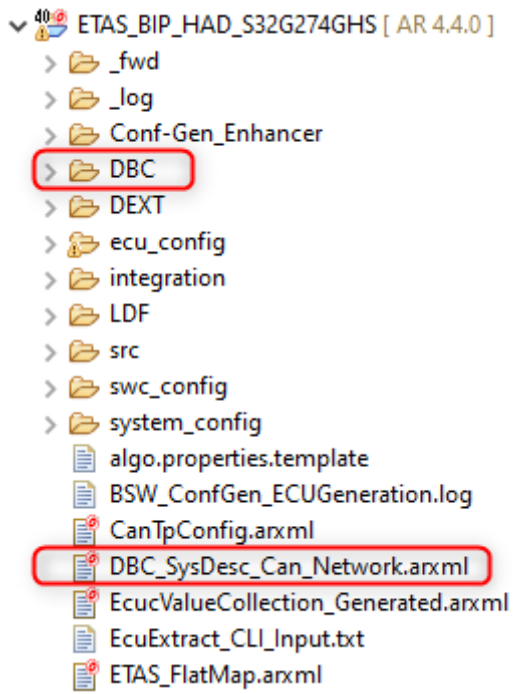
Cobra_DBCImport AddOn

Workflow:

2. Put all DBC files in <BIP Package>\BasicSoftware\DBC
3. Run AddOn. Refresh project. DBC_SysDesc_Can_Network.arxml is generated.



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Cobra_EthSysDesc AddOn

Description:

User could iteratively create and update their ISOLAR system description by using Cobra_EthSysDesc for

- add Ethernet network description
- Configure ethernet properties, e.g., Tcp, Udp, SoAd.

Note: Currently only one network is supported.

Input:

- Ethernet_Config_Template.xlsx

Output:

- Updated DBC_SysDesc_Can_Network.arxml
- SysDesc_Eth_Network.arxml
- Eth_Interface.arxml
- EthUT.arxml
- ServiceSWC.arxml (If service described)

Arguments:

--ProjectPath=${project_loc} --ExcelPath=Ethernet_Config_Template.xlsx

--ProjectPath: The path of the project obtained by selecting the project in navigator.

--ExcelPath: The name of input excel file describing Eth network.

Workflow:

1. Edit Ethernet_Config_Template.xlsx

Sheet	Description
ECU	Edit ECU name and MAC Address. Must same with DBC ECU name.
Pdus&Signals	Add Pdus and Signals inside Pdu. • If serial is true, only one signal is supported. • If multiple signals or signal groups inside one Pdu, split them by ';' • Signal(Startposition,Length)

	A	B
1	ECU	ETAS
2	MAC Address	00:4B:90:D2:E6:E0

A	B	C	D	E	F	G	H	I
PduType	Gen	Pdus	Pdu length(Bytes)	HeaderId	Signals	SignalGroups	Serialization	Direction
ISignalIPdu	No	ETAS_SignalBased_Tcp_Rx	4		ETAS_SignalBased_Tcp_Rx(0,32)		No	In
ISignalIPdu	No	ETAS_SignalBased_Tcp_Tx	4		ETAS_SignalBased_Tcp_Tx(0,32)		No	Out
ISignalIPdu	Yes	ETAS_SignalBased_Udp_Rx	4		ETAS_SignalBased_Udp_Rx(0,32)		No	In
ISignalIPdu	Yes	ETAS_SignalBased_Udp_Tx	4		ETAS_SignalBased_Udp_Tx(0,32)		No	Out
ISignalIPdu	Yes	ETAS_SomeIPXf_Tcp_Rx	2816	0x0	ETAS_SomeIPXf_Tcp_Rx(0,22464)		Yes	In
ISignalIPdu	Yes	ETAS_SomeIPXf_Tcp_Tx	2816	0x0	ETAS_SomeIPXf_Tcp_Tx(0,22464)		Yes	Out
SD_Ctrl	Yes	ETAS_SD_Ctrl_Rx	1500	0xffff8100			No	In
SD_Ctrl	Yes	ETAS_SD_Ctrl_Rx_Multicast	1500	0xffff8100			No	In
SD_Ctrl	Yes	ETAS_SD_Ctrl_Tx	1500	0xffff8100			No	Out
SD_Data	Yes	ETAS_Service19937_CurrntTime_Call	9	0x4de10005	ETAS_CurrentTime_Call(0,8)		Yes	Out
SD_Data	Yes	ETAS_Service19937_CurrntTime_Return	9	0x4de10005	ETAS_CurrentTime_Return(0,8)		Yes	In
SD_Data	Yes	ETAS_Service19937_Event0	8	0x4de1804d		ETAS_Service19937_SigG	No	In
XCP	Yes	ETAS_XcpOE_Rq	1472				No	In
XCP	Yes	ETAS_XcpOE_Rs	1472				No	Out

Workflow:

1. Edit Ethernet_Config_Template.xlsx

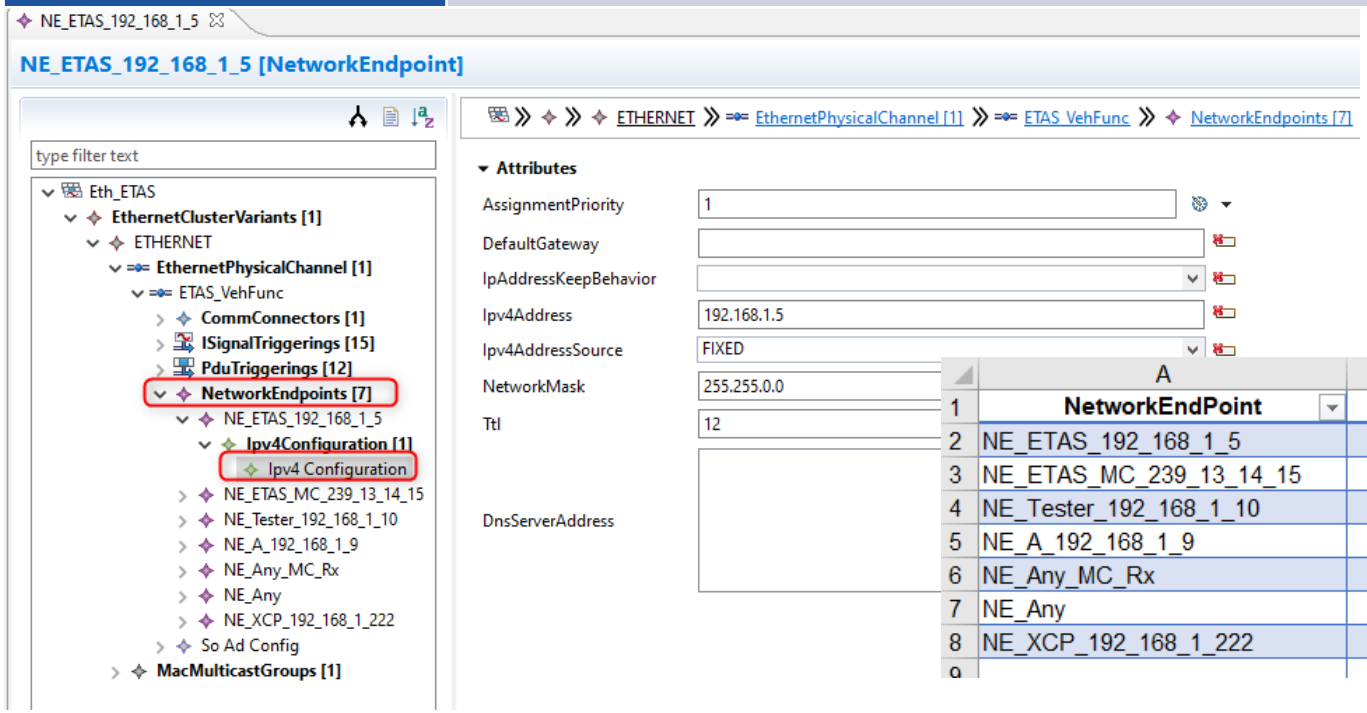
Sheet	Description
SignalGroups	Edit SignalGroups if you have. Add Signals inside. • SignalPosition (StartPosition,Length)

	A	B	C
1	SignalGroups	Signals	SignalPosition
2	ETAS_Service19937_SigGrp	ETAS_Sig00	0,8
3		ETAS_Sig01	8,8
4		ETAS_Sig02	16,8
5		ETAS_Sig03	24,8
6		ETAS_Sig04	32,8
7		ETAS_Sig05	40,8
8		ETAS_Sig06	48,8
9		ETAS_Sig07	56,8

Workflow:

1. Edit Ethernet_Config_Template.xlsx

Sheet	Description
Network EndPoint	Add all necessary NetworkEndPoints and its IPv4 configuration on the network.



	A	B	C	D
1	NetworkEndPoint	Ipv4Address	AssignmentPriority	NetworkMask
2	NE_ETAS_192_168_1_5	192.168.1.5	1	255.255.0.0
3	NE_ETAS_MC_239_13_14_15	239.13.14.15	2	
4	NE_Tester_192_168_1_10	192.168.1.10	1	255.255.0.0
5	NE_A_192_168_1_9	192.168.1.9		255.255.0.0
6	NE_Any_MC_Rx	239.60.0.3		
7	NE_Any	ANY		
8	NE_XCP_192_168_1_222	192.168.1.222	1	255.255.0.0
9				

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Cobra_EthSysDesc AddOn

Workflow:

1. Edit Ethernet_Config_Template.xlsx

Sheet	Description
Connectors	Add Connector for the target ECU. • NetworkEndPoints on this target ECU. • Multicast or not. • Only 1 connector is supported for now.
SocketAddress	Add all Socket Address (Application Network Endpoint) on the network. • Refer to NetworkEndPoint. • Select transport protocol. • Set Port Number for the socket.
Service	Add SomeIP Service if you have. • One line is one service instance: <ServiceID>_<InstanceID> • Event (refer to pdu) and EventGroup id. Max 2 eventscan be configured for now. • 1 method can be configured. (refer to Call and Return pdu)

	A	B
1	ETAS_ETH_Connector	Multicast
2	NE_ETAS_192_168_1_5	No
3	NE_ETAS_MC_239_13_14_15	Yes
4	NE_Any_MC_Rx	Yes
5		

	A	B	C	D
1	SocketAddress	NetworkEndPoint	TCP/UDP	PortNumber
2	SA_ETAS_Udp_192_168_1_5_10000	NE_ETAS_192_168_1_5	UDP	10000
3	SA_Tester_Udp_192_168_1_10_1111	NE_Tester_192_168_1_10	UDP	1111
4	SA_A_Tcp_192_168_1_9_9999	NE_A_192_168_1_9	TCP	9999
5	SA_ETAS_Tcp_192_168_1_5_6666	NE_ETAS_192_168_1_5	TCP	6666
6	SA_ETAS_Udp_192_168_1_5_40000	NE_ETAS_192_168_1_5	UDP	40000
7	SA_ETAS_Udp_MC_Rx_Any_50000	NE_Any_MC_Rx	UDP	50000
8	SA_ETAS_Udp_Any_DynamicPort_Remote	NE_Any	UDP	ANY
9	SA_ETAS_SD_Ctrl_Udp_192_168_1_5_30490	NE_ETAS_192_168_1_5	UDP	30490
10	SA_ETAS_SD_Ctrl_Udp_Any_DynamicPort_Remote	NE_Any	UDP	ANY
11	SA_ETAS_SD_Ctrl_Udp_MC_Rx_239_13_14_15_30490	NE_ETAS_MC_239_13_14_15	UDP	30490
12	SA_ETAS_Udp_192_168_1_5_25000	NE_ETAS_192_168_1_5	UDP	25000
13	SA_Xcp_Udp_192_168_1_222_22222	NE_XCP_192_168_1_222	UDP	22222

C34

	A	B	C	D	E	F	G	H
1	ServiceID_InstanceID	Provider	Event1	EventGroups1	Event2	EventGroups	Method_Call	Method_Return
2	19937_66	SA_ETAS_Udp_Any_DynamicPort_Remote	ETAS_Service19937_Event0	77			ETAS_Service19937_CurrntTime_Call	ETAS_Service19937_CurrntTime_Return
3								

Workflow:

1. Edit Ethernet_Config_Template.xlsx

Sheet	Description
Connection Bundles	Add Connection Bundles to connect the sockets. • One connection bundle can have 1 ServerPort and multiple ClientPorts (multiple bundled connections). • Server/Client ports refer to Socket Address. • Multiple Pdus can be assigned to one bundled connection. • If bundled connection transfers EventGroup.

	A	B	C	D	E	F
1	**SocketConnectionBundle**	**ServerPort**	**ClientPort**	**Service**	**EventGroup Multicast**	**Pdus**
2	SCB_Tester_ETAS_Udp	SA_ETAS_Udp_192_168_1_5_10000	SA_Tester_Udp_192_168_1_10_1111			ETAS_SignalBased_Udp_Tx
3						ETAS_SignalBased_Udp_Rx
4						
5						
6						
7	SCB_ETAS_A	SA_A_Tcp_192_168_1_9_9999	SA_ETAS_Tcp_192_168_1_5_6666			ETAS_SomeIPXf_Tcp_Rx
8						ETAS_SomeIPXf_Tcp_Tx
9						
10						
11						
12	SCB_SD_Data_ETAS_UDP	SA_ETAS_Udp_Any_DynamicPort_Remote	SA_ETAS_Udp_192_168_1_5_40000	19937_66		
13			SA_ETAS_Udp_MC_Rx_Any_50000	19937_66	Yes	
14						
15						
16	SCB_ETAS_SD	SA_ETAS_SD_Ctrl_Udp_192_168_1_5_30490	SA_ETAS_SD_Ctrl_Udp_Any_DynamicPort_Remote			ETAS_SD_Ctrl_Rx
17						ETAS_SD_Ctrl_Tx
18						

Workflow:

2. Run Cobra_EthSysDesc Addon. Refresh project.

3. Replace ./swc_config/EthUT/arxml/Eth_Interface.arxml, EthUT.arxml and ServiceSWC_xxxxx.arxml with the generated ones.

4. For SignalGroups, data types (ADT and IDT) can not be generated automatically. User shall configure them and reference them to SRInterface and SWC Internal behavior which transfer the signalgroup.

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Cobra_After_ConfGen AddOn

Description:

After user run RTA-BSW automatic configuration generation, EcuC values of most BSW modules can be generated. Some values are unnecessary default values and can be deleted for most cases.

Input:

- N/A

Output:

- Remove file ETAS_Project_EthTrcv_EcucValues.arxml
- Remove EthIfPhysCtrlRxMainFunctionPriorityProcessing in file ETAS_Project_EthIf_EcucValues.arxml
- Remove EthIfTransceiver: CouplingPort_ETAS_ETH_Controller

Arguments:

--ProjectPath=${project_loc}

--ProjectPath: The path of the project obtained by selecting the project in navigator.

Workflow:

Run after Confgen.

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Cobra_Interface AddOn

Description:

By Cobra_Interface Add-On, sender-receiver-interfaces of signals (contained in ISignalIPdu or NM-Pdu) in system description will be generated. Two SWCs (INP/OUTP_SWC) with R/P Ports of ComSignals can be generated for early phase communication test.

Input:

- System description arxml file
  (e.g. DBC_SysDesc_Can_Network.arxml)
- ETAS_Project_Com_EcucValues.arxml
  (optional)

Output:

- INP_SWC.arxml
- OUTP_SWC.arxml
- SRInterface.arxml

Arguments:

--ProjectPath=${project_loc} --Ecu=ETAS --NM=Yes

--ProjectPath: The path of the project obtained by selecting the project in navigator.

--Ecu: For which ecu in the system you want to generate the interfaces and SWCs.

--NM: Whether ports for NM Signal shall be generated in SWC or not.

Workflow:

Run and refresh the project.

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Cobra_ComCbk AddOn

Description:

AUTOSAR Com module provides call-backs to application through RTE. If SystemDataMappings are already available, ConfGen can generate callback configurations like ComNotification or ComTimeoutNotification. But if SystemDataMapping is done after ConfGen, user can use this AddOn to fill these callback configuration parameters.

Input:

- SenderReceiverToSignalMappings

Output:

- Updated ETAS_Project_Com_EcucValues.arxml

Arguments:

--ProjectPath=${project_loc}

--ProjectPath: The path of the project obtained by selecting the project in navigator.

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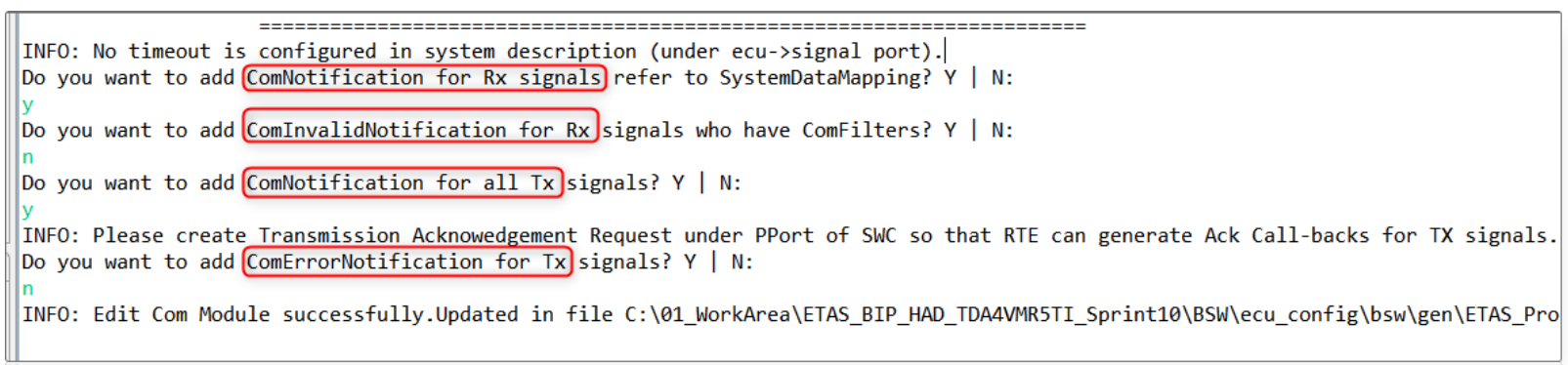
Cobra_ComCbk AddOn

Workflow:

1. Run Cobra_ComCbk AddOn.
2. Select the callback configuration you want to generate by choosing y/n.
3. Refresh project after Com module is updated.



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Cobra_MemMap AddOn

Description:

This AddOn generates memory map header files and example link files for supported targets and compilers. For BSW and RTE, all source files will be scanned to collect the sections defined by macros. For SWCs, Cobra generates all possible sections according to BIP partitioning, user can select whatever section you want in your source code. Memmap.h and example link files are target specific, not all targets are supported.

Input:

- Source codes.

Output:

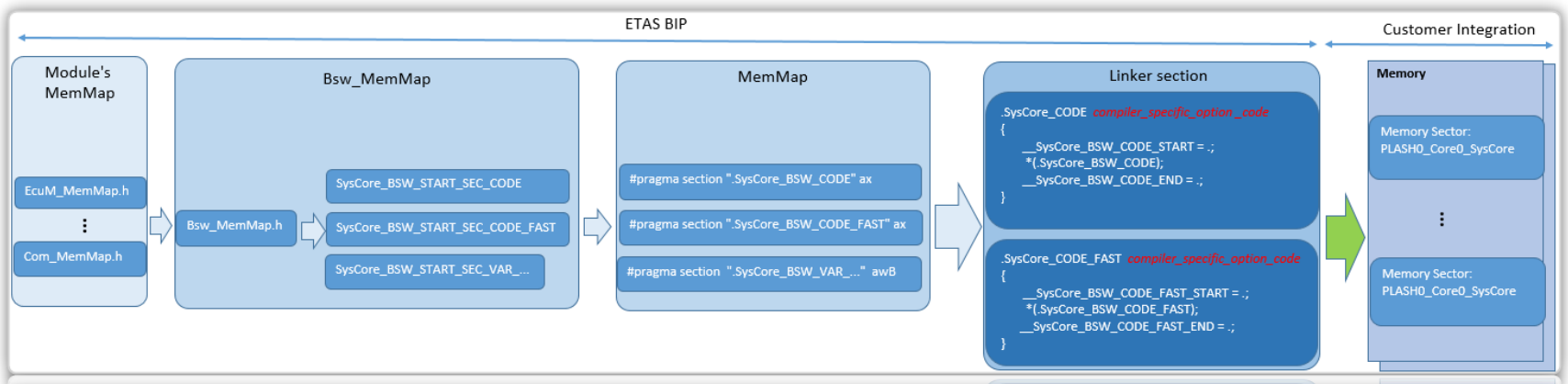
- [SWC]_MemMap.h
- Rte_MemMap.h
- Bsw_MemMap.h
- MemMap.h

Arguments:

--ProjectPath=${project_loc}

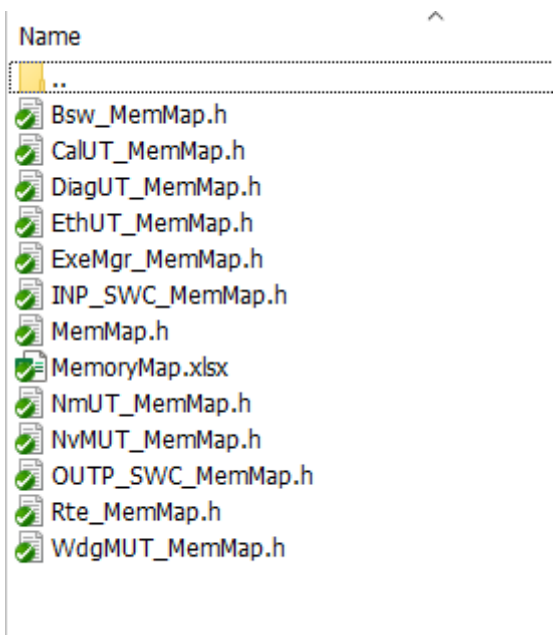
--ProjectPath: The path of the project obtained by selecting the project in navigator.

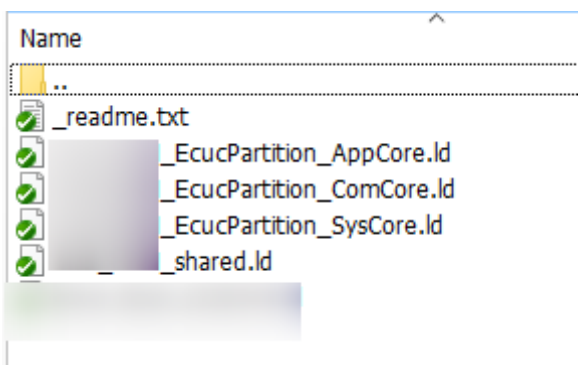
Note: Run MemMap.exe is enough. It will call port exe (e.g. HIGHTEC_AURIX.exe) during implementation.



Workflow:

1. Run AddOn. Bsw_Memmap.h and Rte_Memmap.h will be generated.
2. Choose whether you want to generate ASW(SWC) MemMap files or not.
3. Choose whether you want to generate example link files or not.
4. Include the generated link files to your main link file.





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For any questions, please contact your ETAS AUTOSAR contact person.