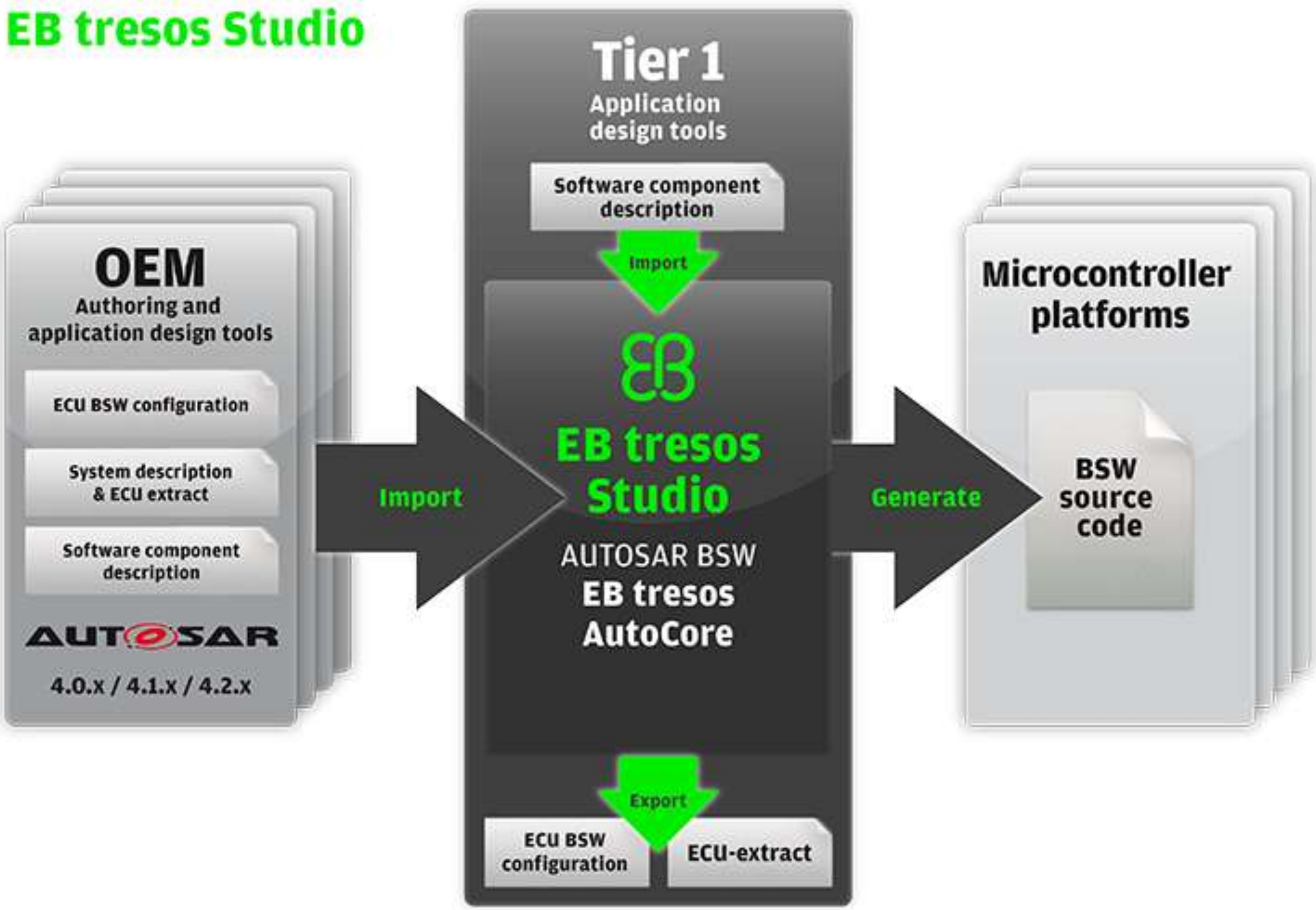
EB tresos classic AUTOSAR training - EB tresos Studio

Elektrobit

Chapter overview

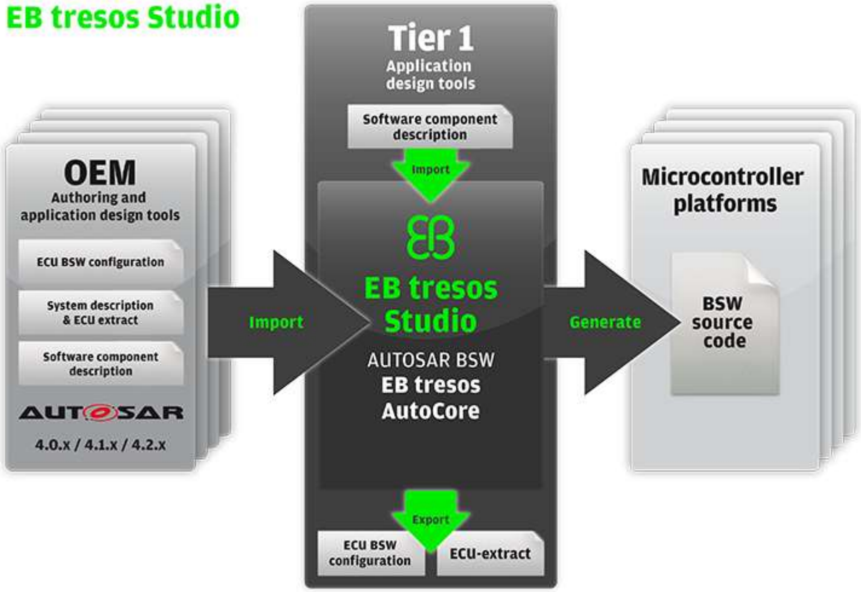
- Overview / Scope
- Installation and Plugin Structure
- Graphical user interface (GUI)
- System Description Importer & Viewer
- Assistants & Wizards
- Creating own Plugins
- EB tresos AutoCore Build environment

Overview


EB tresos Studio
OEM
Authoring and application design tools
ECU BSW configuration
System description & ECU extract
Software component description
AUTOSAR
4.0.x / 4.1.x / 4.2.x
Import
Tier 1
Application design tools
Software component description
Import
EB tresos Studio
AUTOSAR BSW
EB tresos AutoCore
Export
ECU BSW configuration
ECU-extract
Generate
Microcontroller platforms
BSW source code

Scope of EB tresos Studio

- EB tresos Studio is
  - **A Configuration** and **Generation** tool for ECU standard software
  - Follows the AUTOSAR Methodology
  - Fulfils the definition of an AUTOSAR **Generic** Configuration **Editor** (GCE) - but can be used for more than just configuring BSW modules
  - Focused on Tier1 needs: The Integration of Application with AUTOSAR Basic Software
  - Supports Selective modification of AUTOSAR System Description
- In addition, EB tresos Studio offers
  - Developer features for project specific extensions, including free usage of
    - Open Java API and code generator engines
    - Data model access
    - GUI

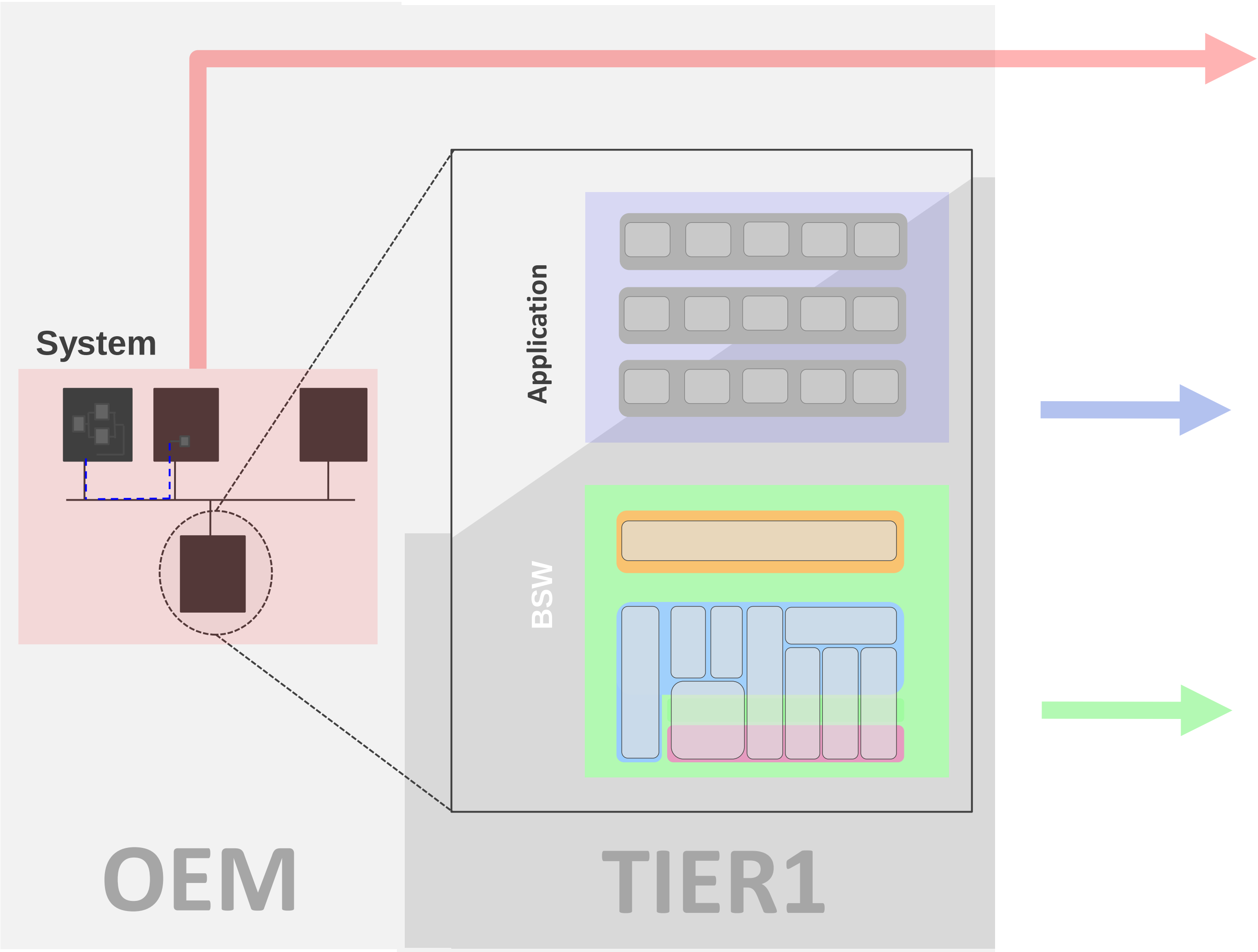


- But EB tresos Studio is not:
  - A Complete AUTOSAR Tool Implementation
  - System Design or AUTOSAR Authoring tool (AAT) Tool
  - A Software Development Kit

EB tresos Studio – key features

- Importer for AUTOSAR descriptions as well as for legacy formats (e.g. FIBEX and LDF)
- Easy navigation within the ECU configuration (tabbed editors, node view and clickable parameter references)
- Validation of ECU configuration parameters - Support of GUI hints and cross check module dependencies
- Eclipse based graphical user-interface
- Command line interface support for automation

AUTOSAR Methodology



AUTOSAR

Exchange Files

AUTOSAR SYS-D *.arxml*

AUTOSAR SWC-D *.arxml*

AUTOSAR BSW-Config *.epc, .xdm*

Tooling

Systemdesign, Software Architecture

- Define Hardware Topology
- Define SWCs, Runnables, Data
- Mapping of SWCs to ECUs
- Communication Matrix
- Export as AUTOSAR Sys-D

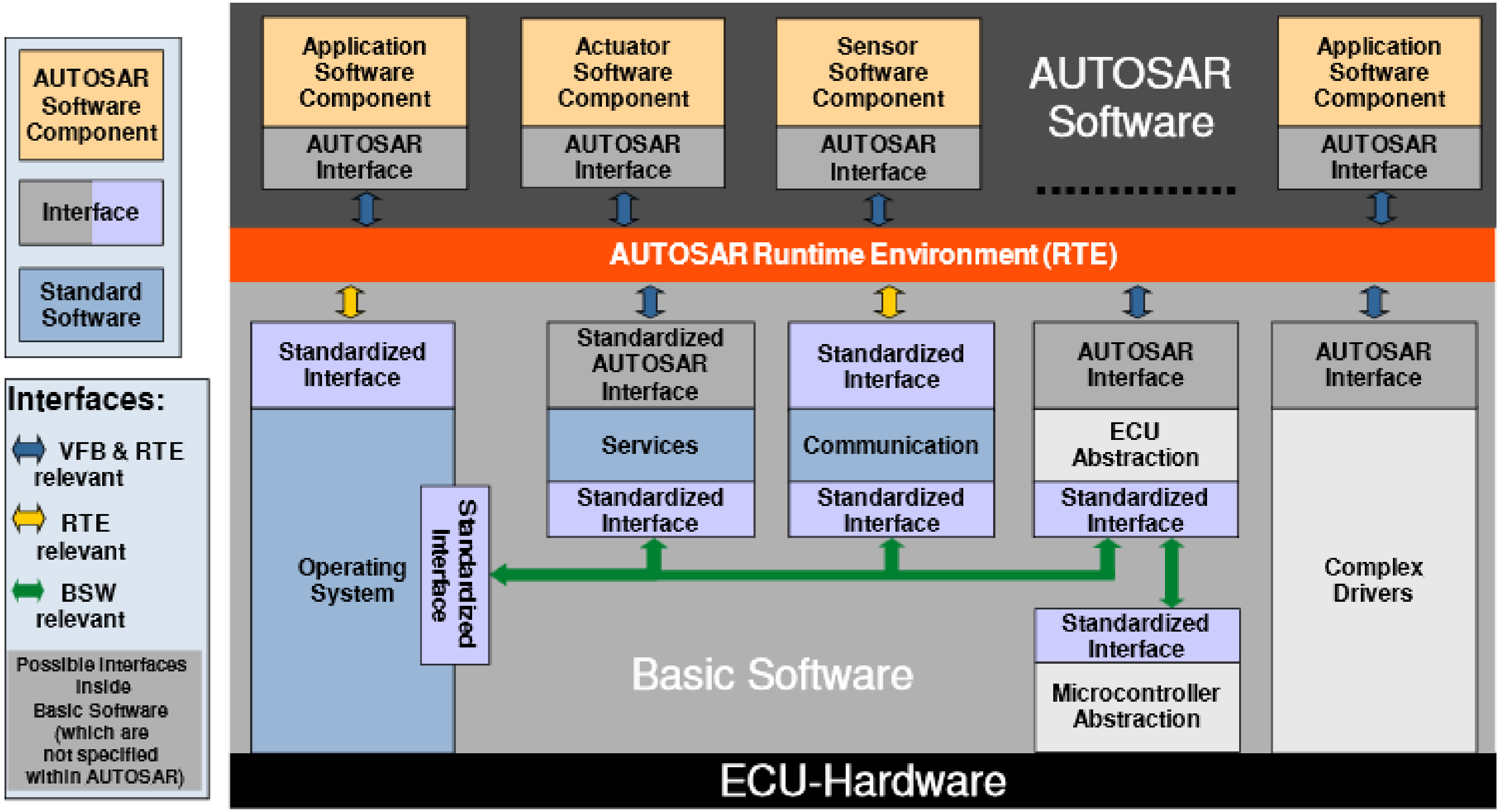
Definition of ECU Application (SWC)

- Model Application Behaviour
- Define ports and data types
- Create SWC Description
- Export SWC Description
- Generate application code

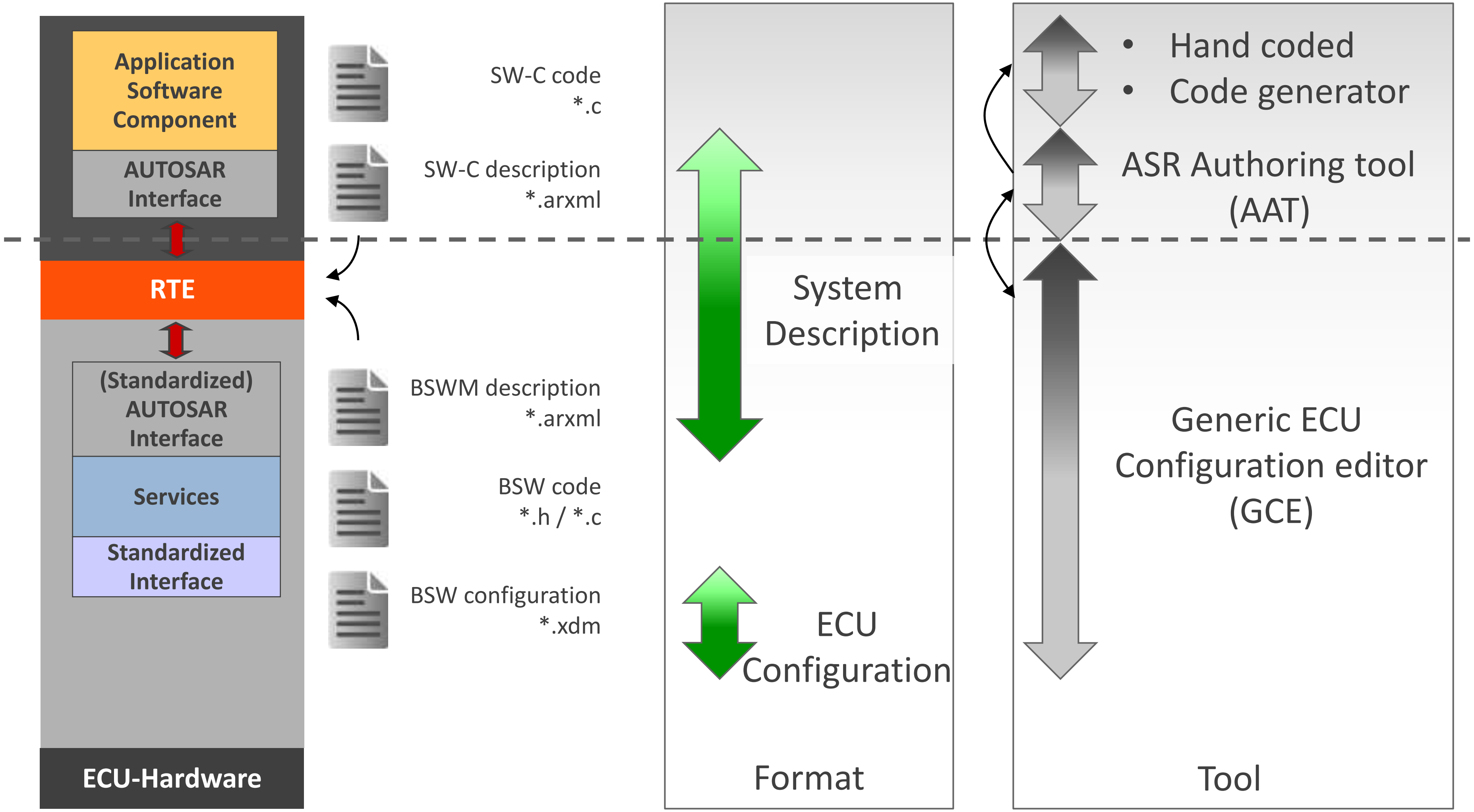
Configuration of ECU Basic Software

EB tresos Studio
EB tresos AutoCore

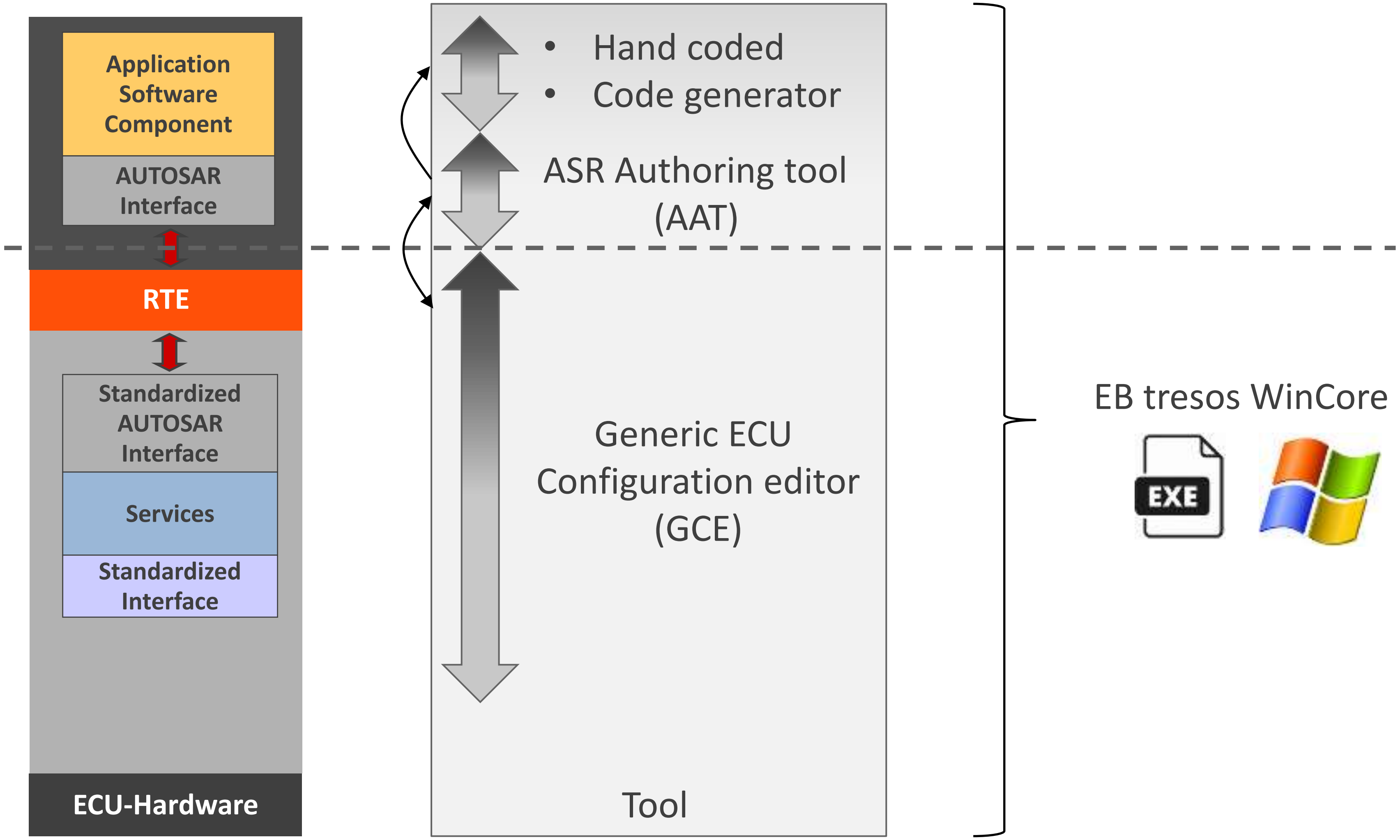
The AUTOSAR architecture



Formats and Tools



EB tresos WinCore



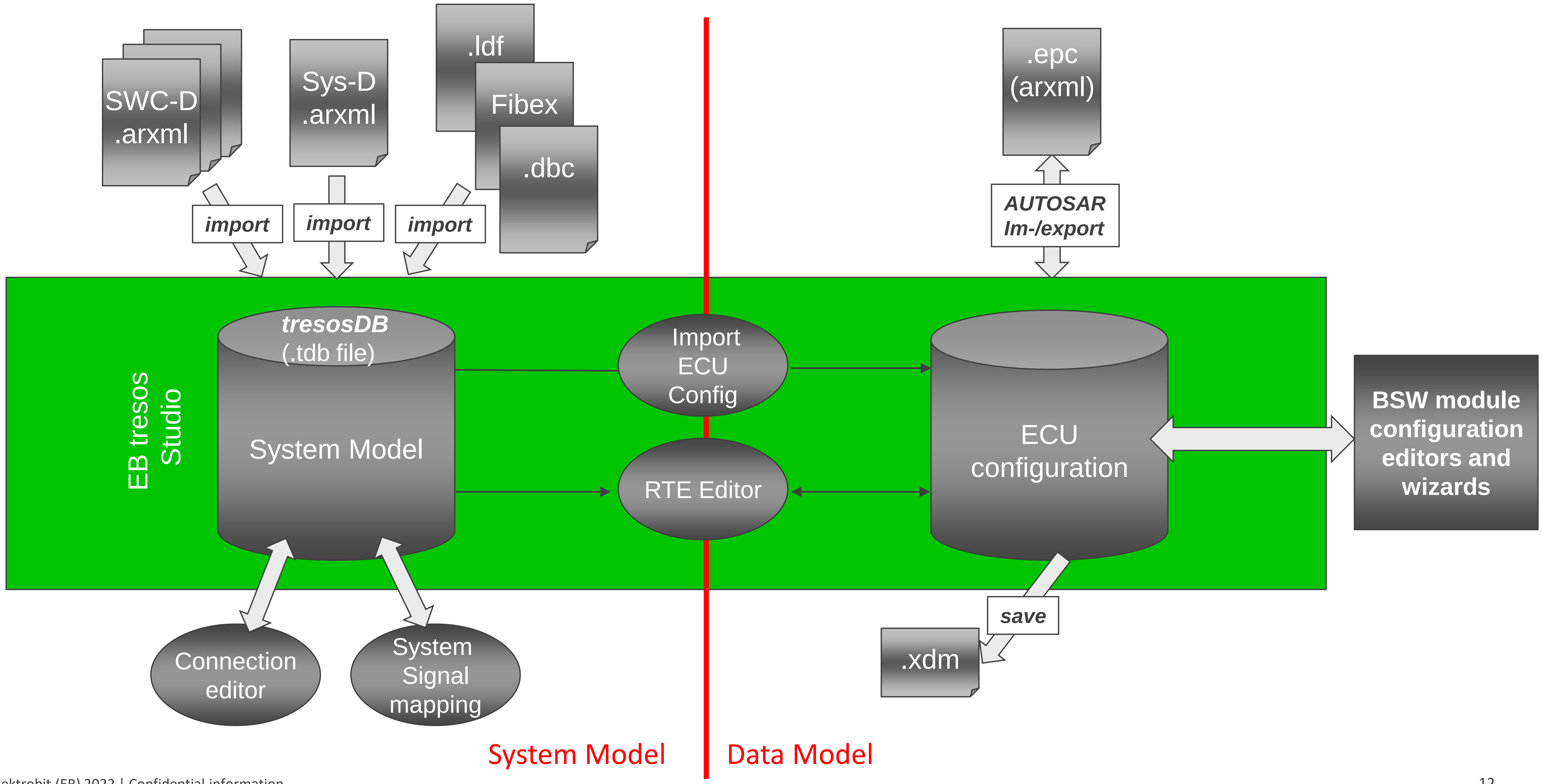
The xdm format - introduction

- EB tresos Studio specific format used for extended BSW module definition and description

- Used to **store** the data from **DataModel**
  - **schematic-tree** in the module's plugin XDM file (e.g. \plugins\BswM_TS_TxDxM1I15R0\config\BswM.xdm)
  - **data-tree** in the project specific config folder's XDM file (e.g. workspace\Training\config\BswM.xdm)

- XDM is more **flexible** than the AUTOSAR file formats
  - **Independent** of AUTOSAR versions (the format, not the content)
  - Allows to **influence GUI presentation** of the Generic Configuration Editor
  - Allows **validation** rules (even cross-module checks)
  - Allows **calculated** default values
  - Allows to store comments along with each parameter

EB tresos Studio - overview



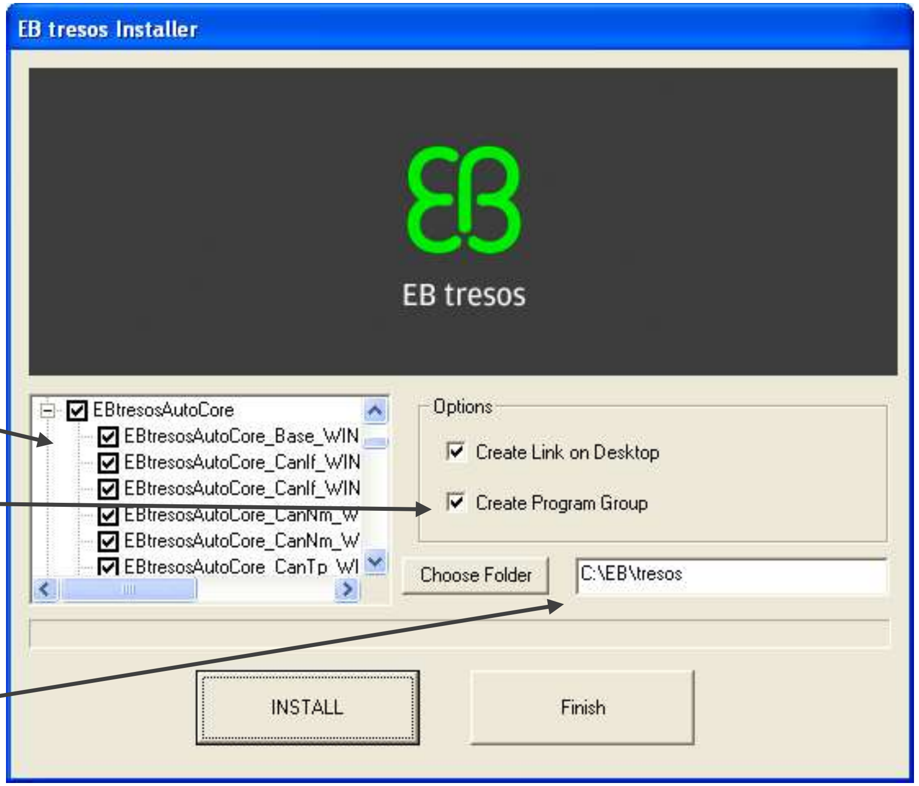
Installation and Plug-in Structure

A “setup.exe” is located on the command server delivery

Select plugins

Select options

Select installation path



- ☑ EBtresosAutoCore
  - ☑ EBtresosAutoCore_Base_WIN
  - ☑ EBtresosAutoCore_CanIf_WIN
  - ☑ EBtresosAutoCore_CanIf_WIN
  - ☑ EBtresosAutoCore_CanNm_W
  - ☑ EBtresosAutoCore_CanNm_W
  - ☑ EBtresosAutoCore_CanTp_WI

Options

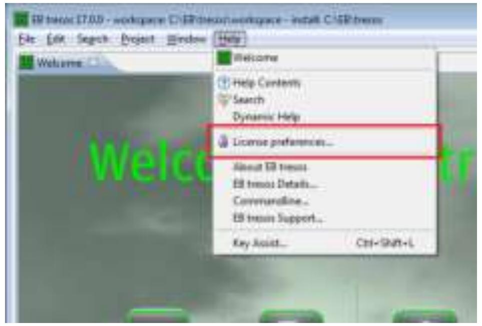
☑ Create Link on Desktop

☑ Create Program Group

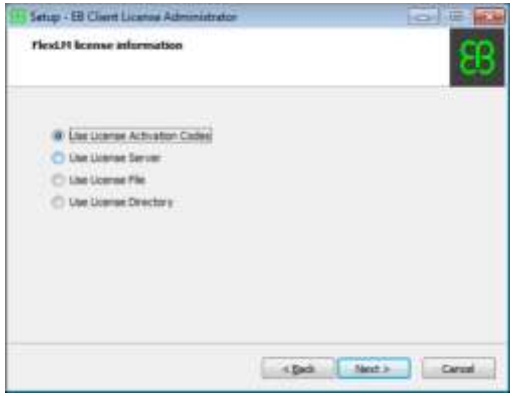
C:\EB\tresos

- Dongle based Licenses
  - To install the Wibukey dongle driver you need administrator permissions.
  - The dongle driver can be installed using the EB tresos Installer setup.exe

- Floating Licenses
  - FlexLM license server
  - Setting of license server in Preferences / Tresos Studio / Licenses



- Single user License / Evaluation License
  - License is activated using the EB Client License Administrator tool and an activation code provided by EB

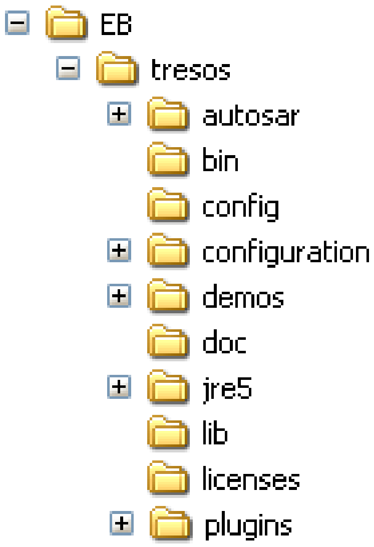


Setup - EB Client License Administrator

FlexLM license information

● Use License Activation Codes
○ Use License Server
○ Use License File
○ Use License Directory

- autosar – AUTOSAR Parameter definition files
- bin - contains the executable files to start EB tresos Studio
- config – used by legacy generator
- configuration – runtime information like tool cache
- demos – several demo plugins which showcase the EB tresos Studio API
- doc - Documentation for EB tresos Studio and Autocore
- jre – java runtime environement
- lib – internal program libaries
- licence - license agreements of third-party products
- plugins - modules which are part of your EB tresos Studio installation
- templates* – Examples of EB tresos Autocore
- workspace** - contains EB tresos Studio projects



```
⊟ EB
    ⊟ tresos
        ⊞ autosar
          bin
          config
        ⊞ configuration
        ⊞ demos
          doc
        ⊞ jre5
          lib
          licenses
        ⊞ plugins
```

* Depends on EB tresos Autocore delivery scope
** Default location

EB tresos Studio – Installation and Structure

- Every software module is delivered as a plugin
- The installed plugins are located in the plugins folder of your EB tresos Studio installation

  (e.g. `C:\EB\tresos\plugins\`)

- A plug-in has following naming scheme:

  Module_TS_TxDyMaIbRc   (e.g. Adc_TS_T16D4M2I0R0)

  - x   = Target   (16 –Tricore   / x –target independent)
  - y   = Derivative   (4 – TC1766 / x –target independent))
  - a   = Module Major Version
  - b   = Module Minor Version
  - c   = Reserved

EB tresos Studio – Installation and Structure

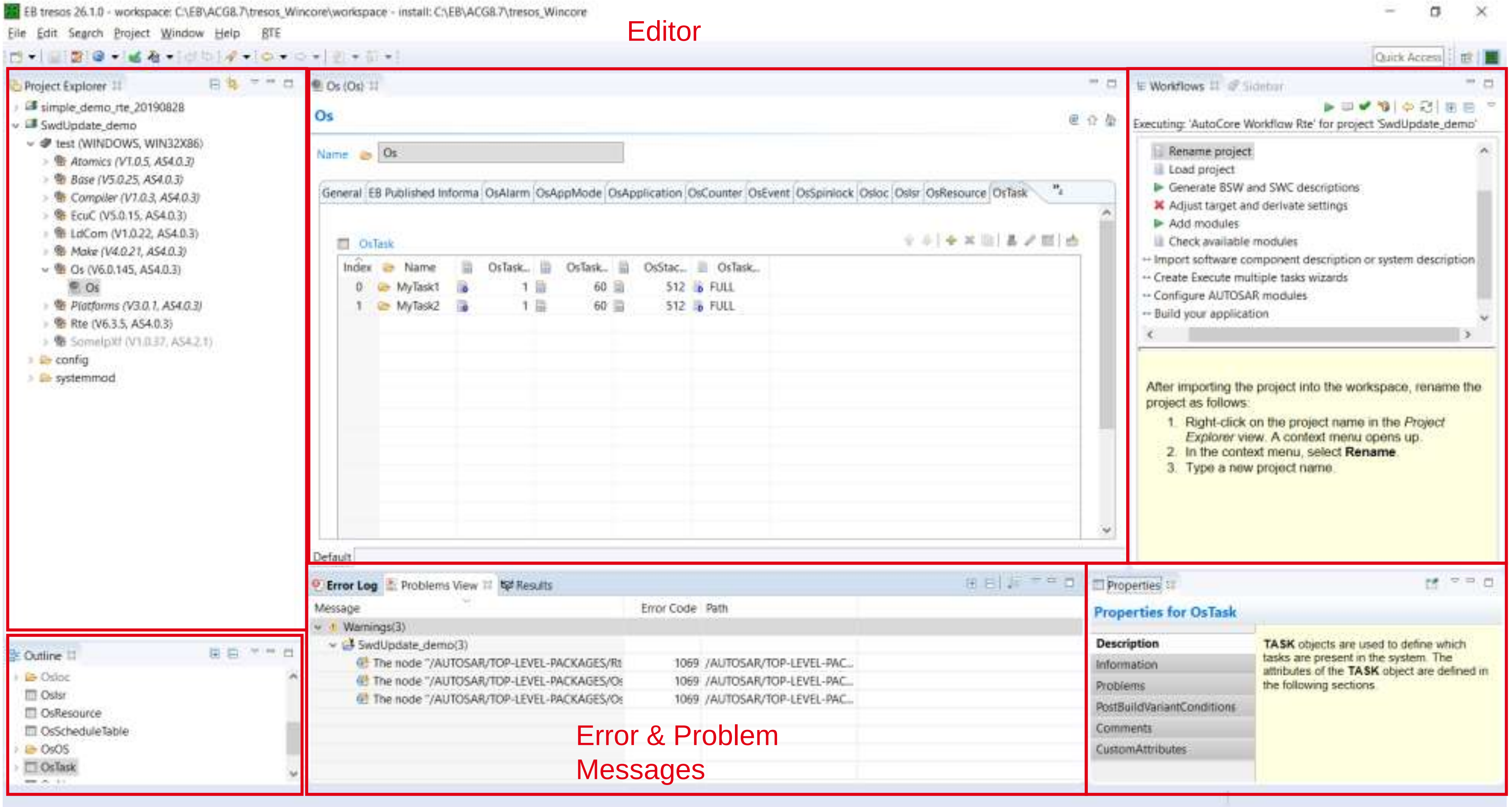
- Most plugins have the following subfolders

– autosar	-> AUTOSAR description file
– config	-> EB description file (*.xdm)
– generate	-> code templates for the generator
– include	-> header files
– lib*	-> build lib
– lib_include*	-> header files for library
– lib_src*	-> *.c files for library
– make	-> makefiles for the plug-in
– src	-> *.c files

(* optional)

Graphical user interface (GUI)

EB tresos Studio GUI – Main Views



- simple_demo_rte_20190828
- SwdUpdate_demo
  - test (WINDOWS, WIN32X86)
    - *Atomics (V1.0.5, AS4.0.3)*
    - *Base (V5.0.25, AS4.0.3)*
    - *Compiler (V1.0.3, AS4.0.3)*
    - EcuC (V5.0.15, AS4.0.3)
    - LdCom (V1.0.22, AS4.0.3)
    - *Make (V4.0.21, AS4.0.3)*
    - Os (V6.0.145, AS4.0.3)
      - Os
    - *Platforms (V3.0.1, AS4.0.3)*
    - Rte (V6.3.5, AS4.0.3)
    - SomeIpXf (V1.0.37, AS4.2.1)
  - config
  - systemmod

Os

Name: Os

General | EB Published Informa | OsAlarm | OsAppMode | OsApplication | OsCounter | OsEvent | OsSpinlock | OsIoc | OsIsr | OsResource | OsTask

OsTask

Index	Name	OsTask..	OsTask..	OsStac..	OsTask..
0	MyTask1	1	60	512	FULL
1	MyTask2	1	60	512	FULL

Executing: 'AutoCore Workflow Rte' for project 'SwdUpdate_demo'

- Rename project
- Load project
- Generate BSW and SWC descriptions
- Adjust target and derivate settings
- Add modules
- Check available modules
- Import software component description or system description
- Create Execute multiple tasks wizards
- Configure AUTOSAR modules
- Build your application

After importing the project into the workspace, rename the project as follows:

1. Right-click on the project name in the *Project Explorer* view. A context menu opens up.
2. In the context menu, select **Rename**.
3. Type a new project name.

- OsIoc
- OsIsr
- OsResource
- OsScheduleTable
- OsOS
- OsTask

```
Message                                        Error Code  Path
Warnings(3)
  SwdUpdate_demo(3)
    The node "/AUTOSAR/TOP-LEVEL-PACKAGES/Rt   1069        /AUTOSAR/TOP-LEVEL-PAC...
    The node "/AUTOSAR/TOP-LEVEL-PACKAGES/Os   1069        /AUTOSAR/TOP-LEVEL-PAC...
    The node "/AUTOSAR/TOP-LEVEL-PACKAGES/Os   1069        /AUTOSAR/TOP-LEVEL-PAC...
```

Properties for OsTask

Description	**TASK** objects are used to define which tasks are present in the system. The attributes of the **TASK** object are defined in the following sections.
Information	
Problems	
PostBuildVariantConditions	
Comments	
CustomAttributes	

Editor

Project Browser

(with access to BSW editors)

Workflows

Sidebar

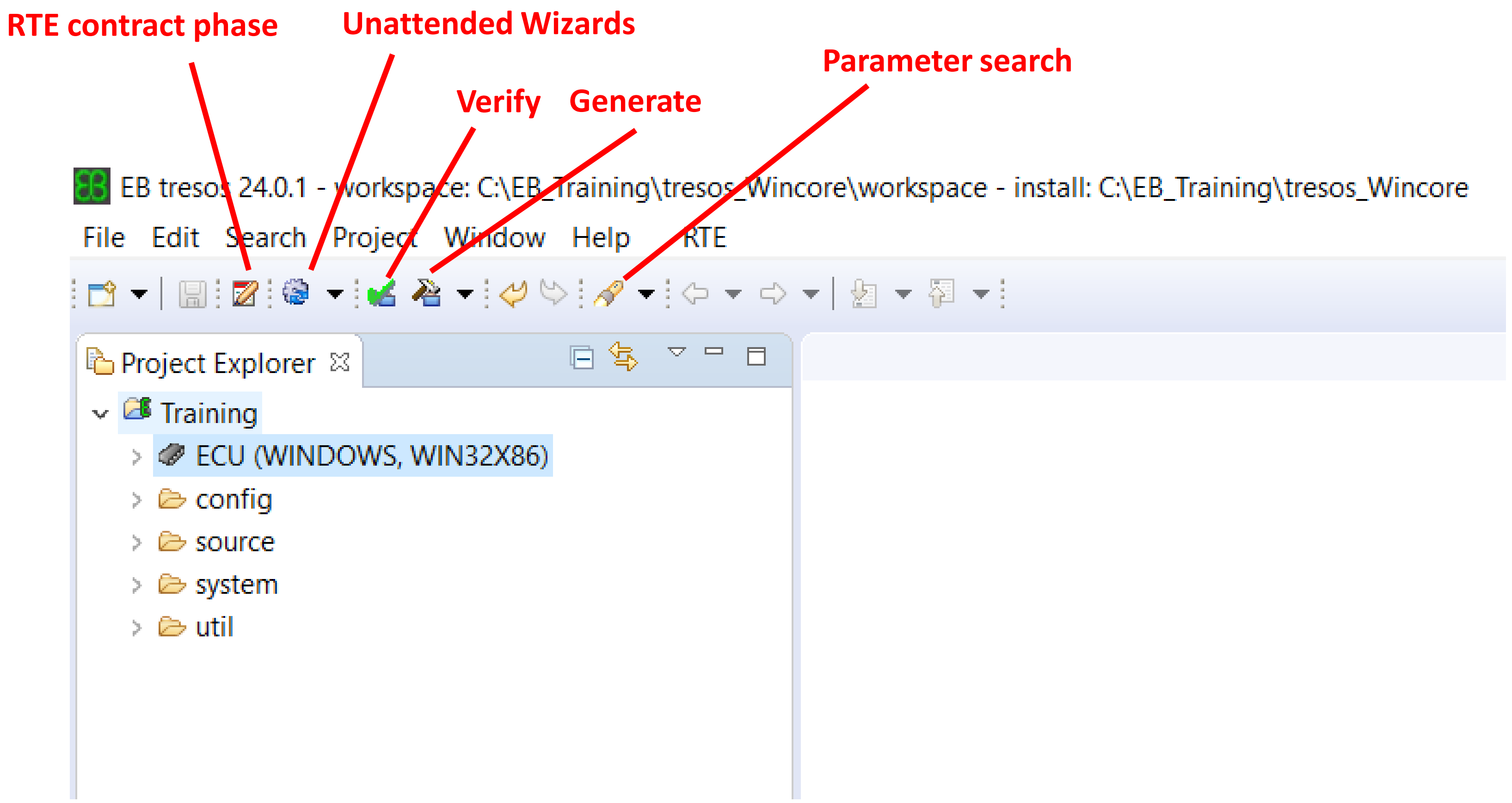
(additional editors and viewers)

Parameter Outline

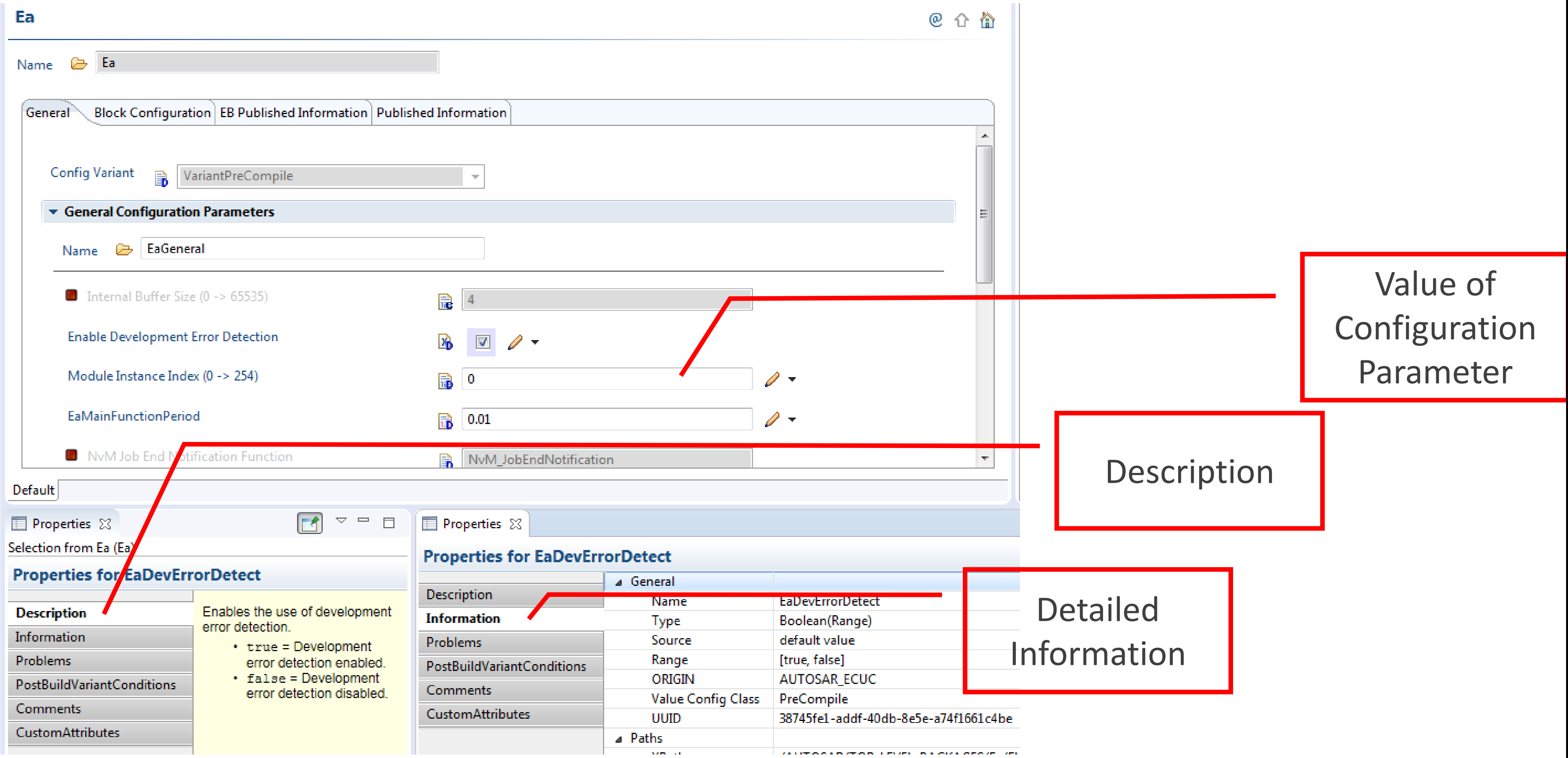
Error & Problem Messages

Parameter Information

EB tresos Studio GUI – Menu Bar



Generic configuration Editor - GUI



Ea

Name: Ea

General | Block Configuration | EB Published Information | Published Information

Config Variant: VariantPreCompile

General Configuration Parameters

Name: EaGeneral

Internal Buffer Size (0 -> 65535): 4

Enable Development Error Detection: ☑

Module Instance Index (0 -> 254): 0

EaMainFunctionPeriod: 0.01

NvM Job End Notification Function: NvM_JobEndNotification

Default

Properties

Selection from Ea (Ea)

Properties for EaDevErrorDetect

Description | Information | Problems | PostBuildVariantConditions | Comments | CustomAttributes

Enables the use of development error detection.

- `true` = Development error detection enabled.
- `false` = Development error detection disabled.

Properties

Properties for EaDevErrorDetect

Description | Information | Problems | PostBuildVariantConditions | Comments | CustomAttributes

General	
Name	EaDevErrorDetect
Type	Boolean(Range)
Source	default value
Range	[true, false]
ORIGIN	AUTOSAR_ECUC
Value Config Class	PreCompile
UUID	38745fe1-addf-40db-8e5e-a74f1661c4be
Paths	

Value of Configuration Parameter

Description

Detailed Information

Editor Icons

The type icon in the editor GUI gives you information about the parameter

- C: calculated – e.g. calculated by handle Id Wizard
- D: default
- I: imported – the element info gives information about the importer name
- P: preconfiguration – read only
- R: recommended configuration – editable
- a user comment is associated with this parameter
- a warning is associated with this parameter
- an error is associated with this parameter

– No Overlay → means the parameters are manually edited!

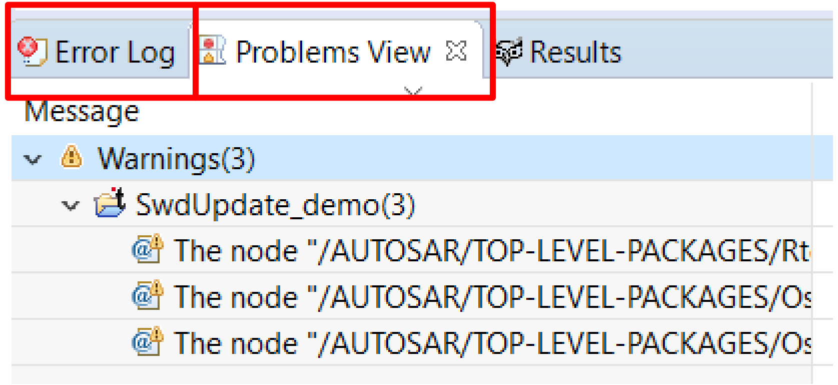
Validation

On demand validation → Error Log

- Via Menu Bar button ✓
- Includes On-the-fly validation
- **Extended check** in Code generators
- Results are listed in the **Error log**
- Included when generation is triggered
- 3 Severity levels (Info / Warning / Error)

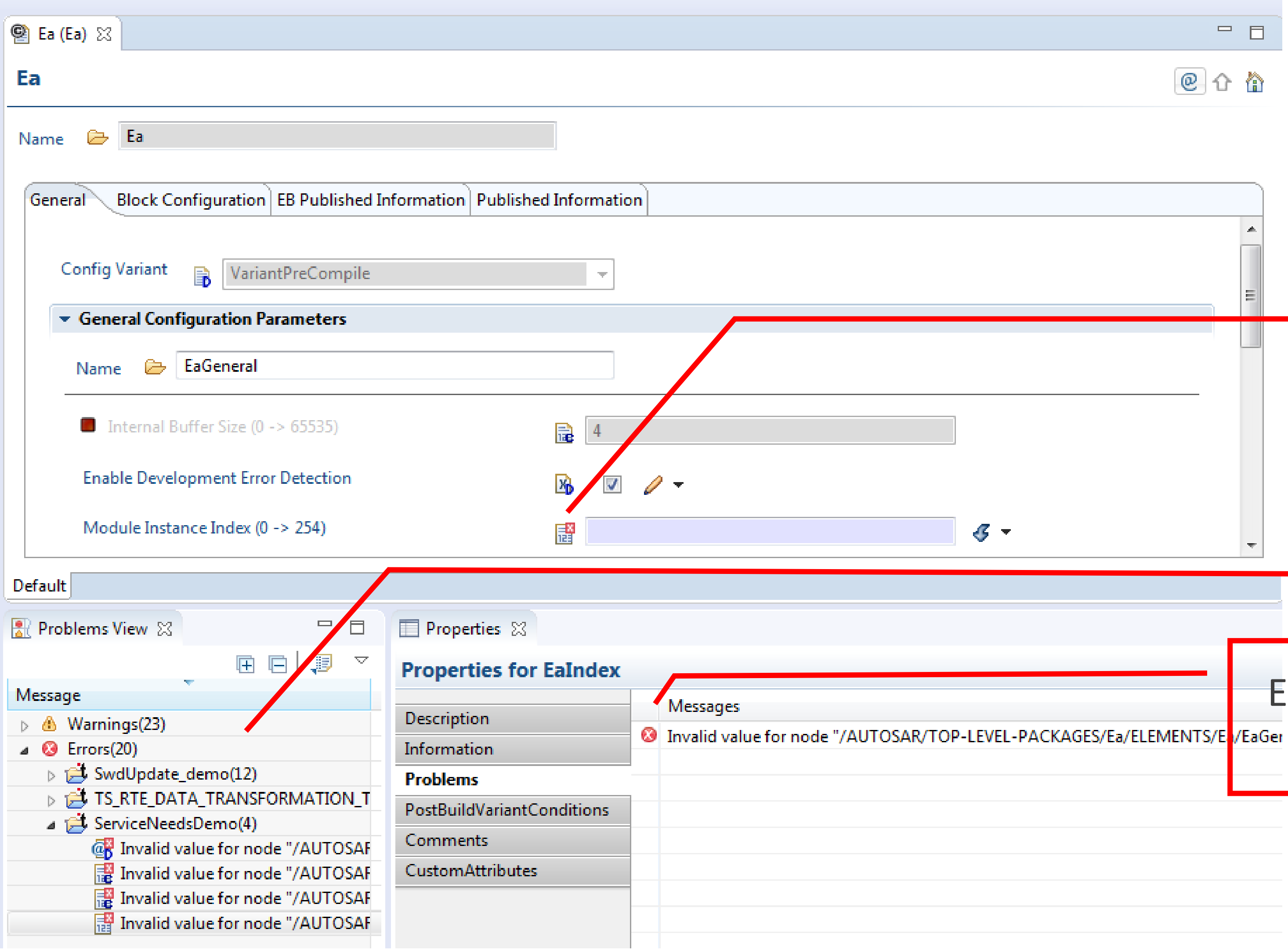
On-the-fly validation → Problems View

- Runs **continuously in the background**
- Results are listed in the **Problems View**
- Navigate to erroneous parameter value in the Generic Editor
- **Property View** shows error message for one parameter
- 3 Severity levels (Info / Warning / Error)



```
Message
⌄ Warnings(3)
  ⌄ SwdUpdate_demo(3)
      The node "/AUTOSAR/TOP-LEVEL-PACKAGES/Rt
      The node "/AUTOSAR/TOP-LEVEL-PACKAGES/Os
      The node "/AUTOSAR/TOP-LEVEL-PACKAGES/Os
```

On-the-fly validation (detailed view)



Name: Ea

Config Variant: VariantPreCompile

General Configuration Parameters

Name: EaGeneral

Internal Buffer Size (0 -> 65535): 4

Enable Development Error Detection: ☑

Module Instance Index (0 -> 254)

Message
- Warnings(23)
- Errors(20)
  - SwdUpdate_demo(12)
  - TS_RTE_DATA_TRANSFORMATION_T
  - ServiceNeedsDemo(4)
    - Invalid value for node "/AUTOSAF
    - Invalid value for node "/AUTOSAF
    - Invalid value for node "/AUTOSAF
    - Invalid value for node "/AUTOSAF

Properties for EaIndex

Messages

Invalid value for node "/AUTOSAR/TOP-LEVEL-PACKAGES/Ea/ELEMENTS/Ea/EaGer

Marker for erroneous values

List of errors and warnings in the project

Error message of selection

Advanced Editors

Advanced Editors offer a tool specific GUI for complex configuration jobs

- In the project explorer – some modules offer advanced editors as an alternative GUI to the generic configuration editor:
  - BswM Editor
  - Rte Editor
- As the advanced Editors hide configuration parameters from the GUI which are automatically handled there is always a Generic Editor available in case full access is needed

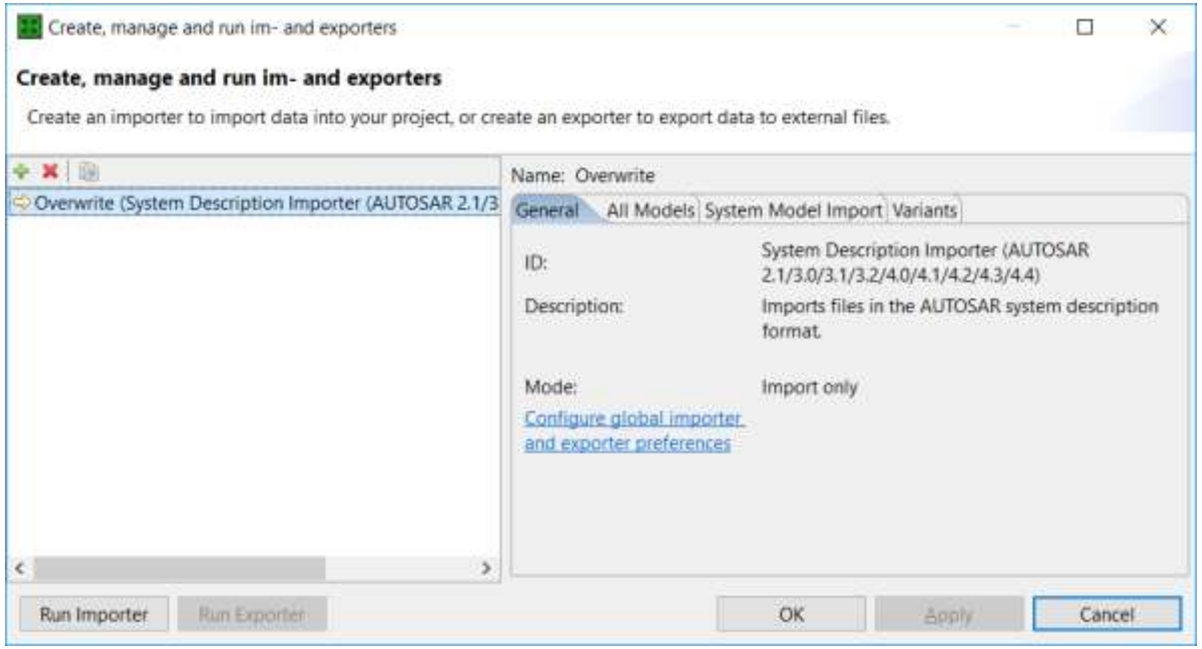
- The Rte Editor requires a valid Ecu Extract (see Ecu Extract Creator wizard)
- While the Rte Editor is opened, you are not able to import files, generate code or edit other configurations
- When the Rte Editor is closed it will remind you to run the “Calculate Service needs” wizard

System Description Importer & System Model Viewer

Elektrobit

System Description Importer Features & GUI

- Features
  - XSD validation (strict and non-strict XML schema possible)
  - Converts ASR version of file into the version of the project
  - Possibility to execute import customization
  - Resolve variants on import
  - Merge algorithm: recognition of moved elements (via UUID)
  - Merge of multiple input files: handling of atpSplitable (import only)



Create, manage and run im- and exporters

Create, manage and run im- and exporters

Create an importer to import data into your project, or create an exporter to export data to external files.

Overwrite (System Description Importer (AUTOSAR 2.1/3

Name: Overwrite

ID: System Description Importer (AUTOSAR 2.1/3.0/3.1/3.2/4.0/4.1/4.2/4.3/4.4)

Description: Imports files in the AUTOSAR system description format.

Mode: Import only

Configure global importer and exporter preferences

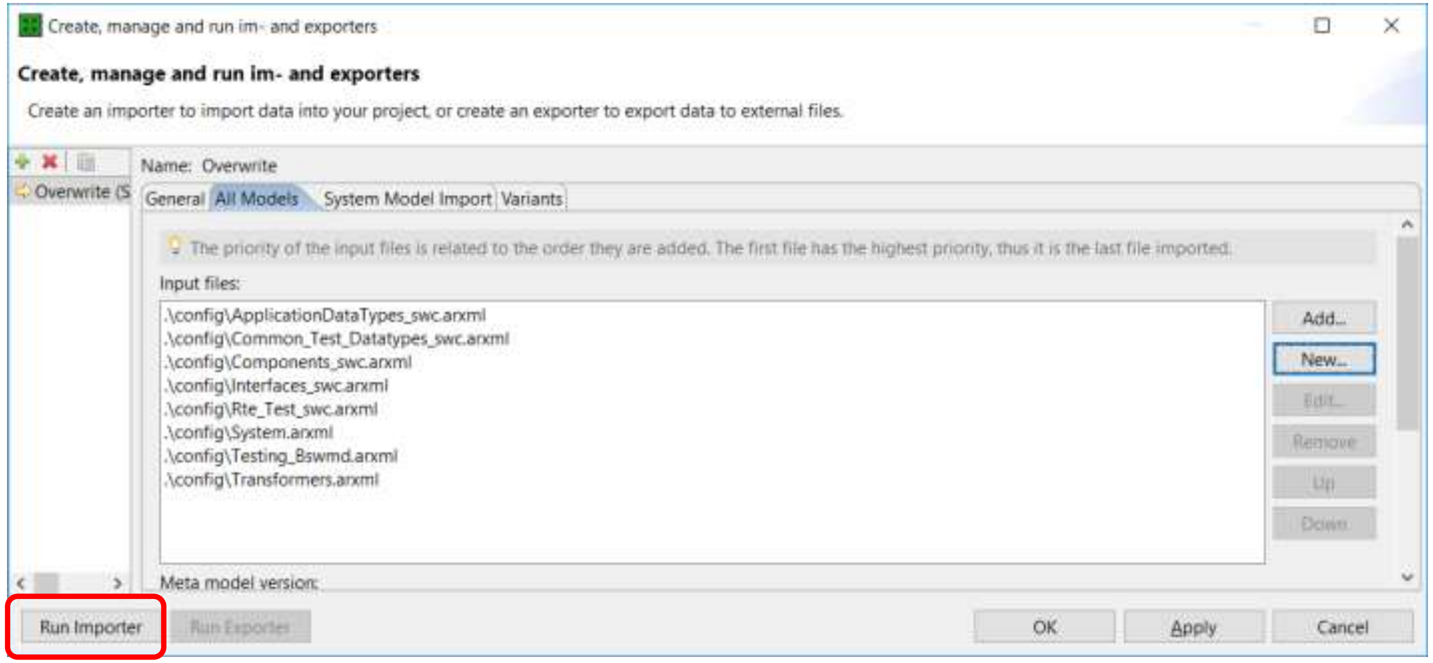
System Description Importer Dialog

- Add…
  → Use this to browse in the File explorer for single or multiple input files

- New…
  → Use this to add files via Wildcard and using relative file paths

- Order of the files imported does matter!

- Importer only runs if triggered via the Run Importer button!



Create, manage and run im- and exporters

Create, manage and run im- and exporters

Create an importer to import data into your project, or create an exporter to export data to external files.

Name: Overwrite

The priority of the input files is related to the order they are added. The first file has the highest priority, thus it is the last file imported.

Input files:

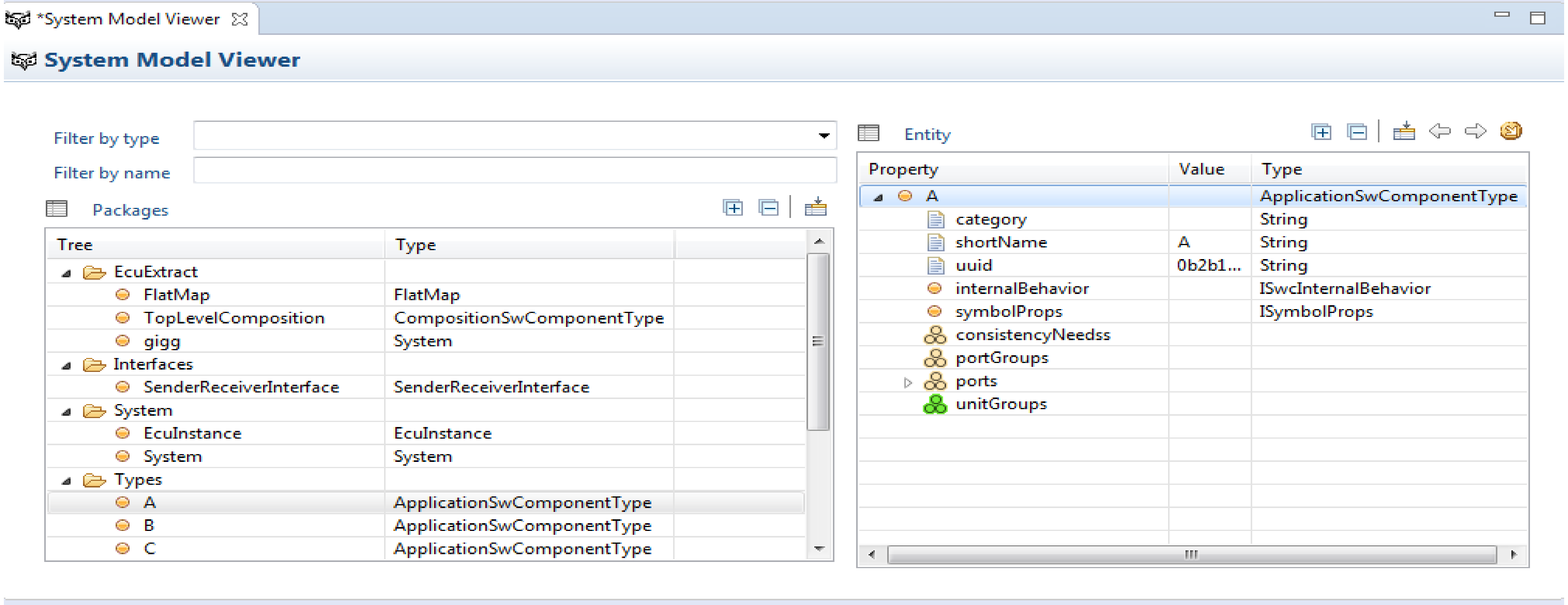
```
.\config\ApplicationDataTypes_swc.arxml
.\config\Common_Test_Datatypes_swc.arxml
.\config\Components_swc.arxml
.\config\Interfaces_swc.arxml
.\config\Rte_Test_swc.arxml
.\config\System.arxml
.\config\Testing_Bswmd.arxml
.\config\Transformers.arxml
```

Meta model version:

System Model Viewer

Shows model of the data imported into EB tresos Studio from

- AUTOSAR System Description, SW-C Description and Diagnostic Extract
- FIBEX, DBC and LDF



System Model Viewer

Filter by type:

Filter by name:

Packages

Tree	Type
EcuExtract	
FlatMap	FlatMap
TopLevelComposition	CompositionSwComponentType
gigg	System
Interfaces	
SenderReceiverInterface	SenderReceiverInterface
System	
EcuInstance	EcuInstance
System	System
Types	
A	ApplicationSwComponentType
B	ApplicationSwComponentType
C	ApplicationSwComponentType

Entity

Property	Value	Type
A		ApplicationSwComponentType
category		String
shortName	A	String
uuid	0b2b1...	String
internalBehavior		ISwcInternalBehavior
symbolProps		ISymbolProps
consistencyNeedss		
portGroups		
ports		
unitGroups		

Importer

- The importer settings are saved in the following file:

  workspace\<projectName>\

  - pref_imp_exp_<ImportName>.xdm - One file per importer. Contains all importer settings
  - pref_general.xdm - Contains information about used modules
  - <WizardName>.mem - Wizard settings. Also contains visual information like window sizes.
  - <WizardName>_pref_wizard.xdm - Registers a wizard. Only exists for renamed (duplicated) wizards.

- If your input files are located in your project directory (or a subfolder) then tresos Studio will save the path to the input files relative rather than absolute. This has the advantage that not all project members working on the project need to use the same location and thus can reuse / share the same importers

Assistants & Wizards

Elektrobit

Assistants and Wizards – Overview

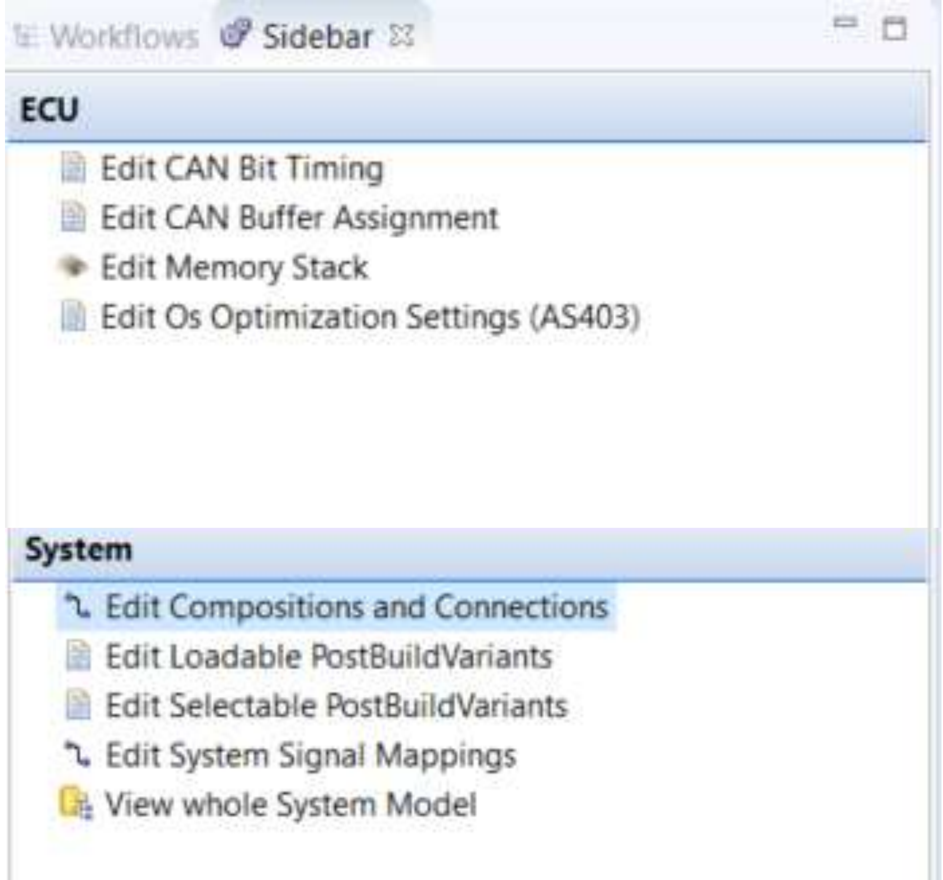
- Main goal
  - Guidance through difficult configuration jobs → Assistants
  - Handling of routine task → Unattended Wizards

- Assistants (in the Sidebar)
  - Assistants for System Model
  - Assistants for ECU Configuration

- Automation Features
  - Unattended Wizards
  - Multiple Tasks Wizard (user defined combination of im-/exporters, unattended wizards, generation, external commands)
  - Workflow view
  - Command Line

Assistants in the Sidebar

- ECU
  - CAN Bit Timing & CAN Buffer Assignment
  - Memory Stack
  - Os Optimization Settings
- System
  - Edit Composition and Connection
  - Edit Loadable/Selectabele PostBuildVariants
  - Edit System Signal Mappings
  - View whole System Model



ECU

- Edit CAN Bit Timing
- Edit CAN Buffer Assignment
- Edit Memory Stack
- Edit Os Optimization Settings (AS403)

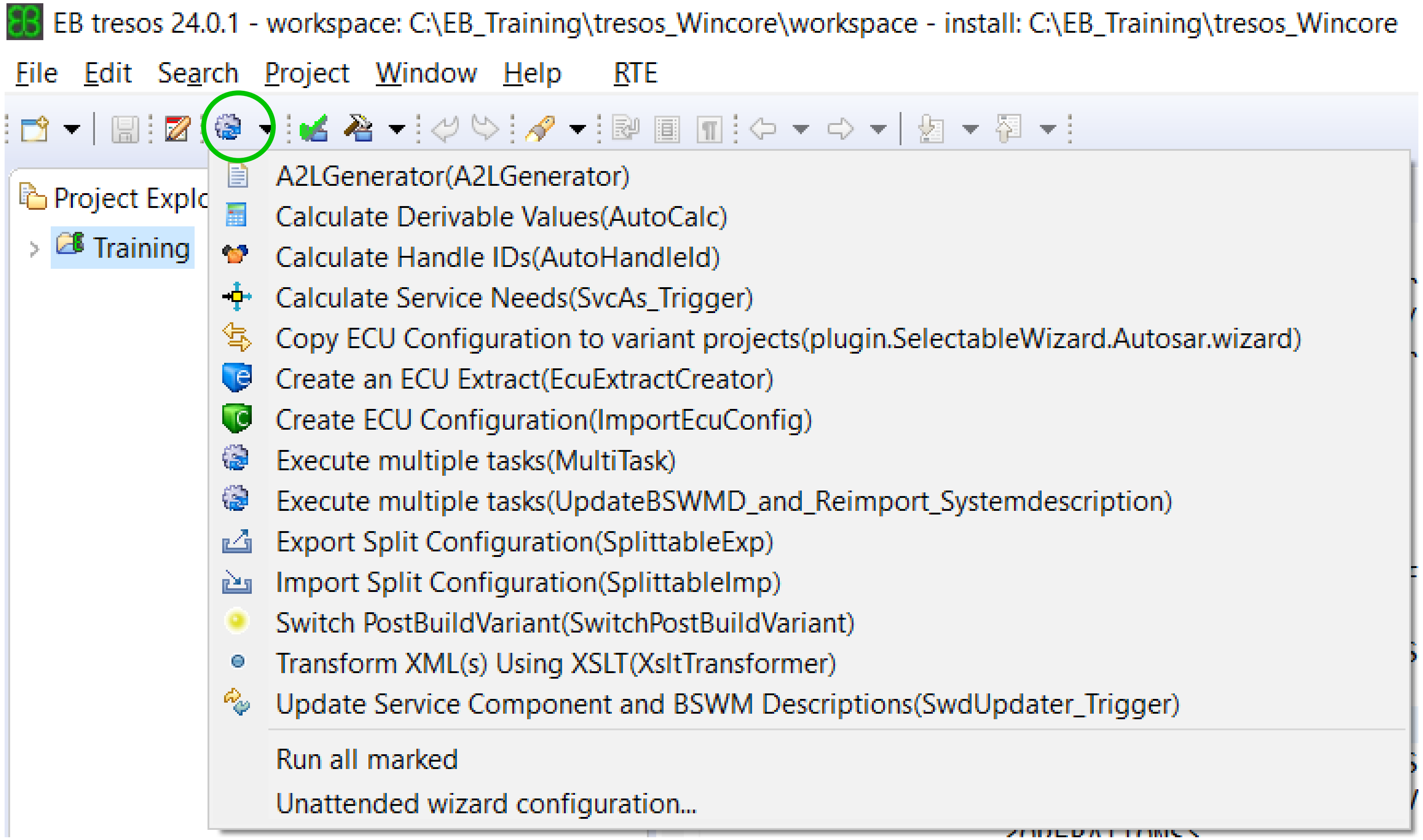
System

- Edit Compositions and Connections
- Edit Loadable PostBuildVariants
- Edit Selectable PostBuildVariants
- Edit System Signal Mappings
- View whole System Model

Unattended Wizards

- Assistants for the System Model
  - Update Service Component and BSWM Descriptions (Deprecated since ACG8.7)
  - Create an ECU Extract

- Assistants for the Data Model (ECU config)
  - Calculate Derivable Values
  - Calculate Handle Ids
  - Service Needs Wizard
  - Create ECU Configuration



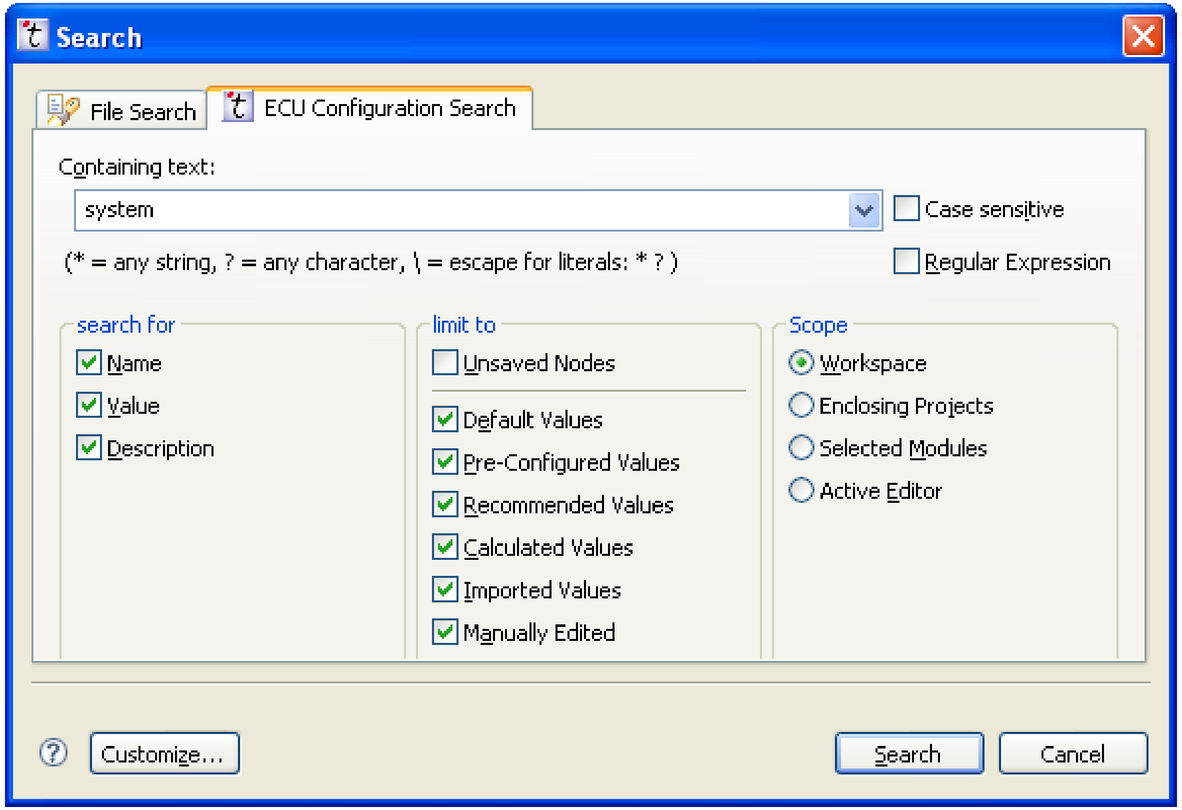
EB tresos 24.0.1 - workspace: C:\EB_Training\tresos_Wincore\workspace - install: C:\EB_Training\tresos_Wincore

File
Edit
Search
Project
Window
Help
RTE
Project Explo
Training
A2LGenerator(A2LGenerator)
Calculate Derivable Values(AutoCalc)
Calculate Handle IDs(AutoHandleId)
Calculate Service Needs(SvcAs_Trigger)
Copy ECU Configuration to variant projects(plugin.SelectableWizard.Autosar.wizard)
Create an ECU Extract(EcuExtractCreator)
Create ECU Configuration(ImportEcuConfig)
Execute multiple tasks(MultiTask)
Execute multiple tasks(UpdateBSWMD_and_Reimport_Systemdescription)
Export Split Configuration(SplittableExp)
Import Split Configuration(SplittableImp)
Switch PostBuildVariant(SwitchPostBuildVariant)
Transform XML(s) Using XSLT(XsltTransformer)
Update Service Component and BSWM Descriptions(SwdUpdater_Trigger)
Run all marked
Unattended wizard configuration...

Further useful features

Elektrobit

ECU Configuration Search



Containing text: system

□ Case sensitive

(* = any string, ? = any character, \ = escape for literals: * ?)

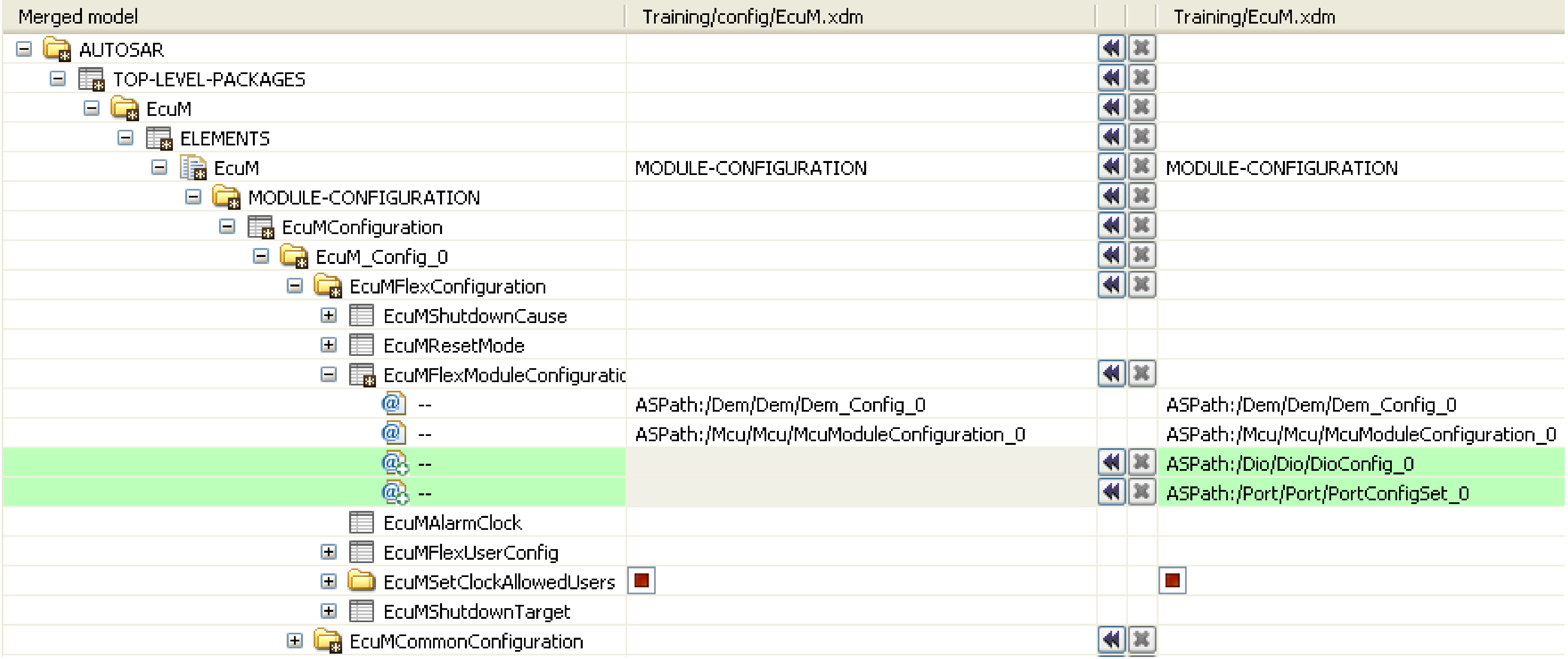
□ Regular Expression

search for
- ☑ Name
- ☑ Value
- ☑ Description

limit to
- □ Unsaved Nodes
- ☑ Default Values
- ☑ Pre-Configured Values
- ☑ Recommended Values
- ☑ Calculated Values
- ☑ Imported Values
- ☑ Manually Edited

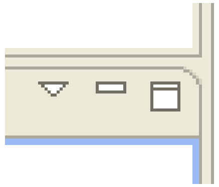
Scope
- ● Workspace
- ○ Enclosing Projects
- ○ Selected Modules
- ○ Active Editor

Team Collaboration - diff



Merged model	Training/config/EcuM.xdm	Training/EcuM.xdm
AUTOSAR		
TOP-LEVEL-PACKAGES		
EcuM		
ELEMENTS		
EcuM	MODULE-CONFIGURATION	MODULE-CONFIGURATION
MODULE-CONFIGURATION		
EcuMConfiguration		
EcuM_Config_0		
EcuMFlexConfiguration		
EcuMShutdownCause		
EcuMResetMode		
EcuMFlexModuleConfiguratic		
--	ASPath:/Dem/Dem/Dem_Config_0	ASPath:/Dem/Dem/Dem_Config_0
--	ASPath:/Mcu/Mcu/McuModuleConfiguration_0	ASPath:/Mcu/Mcu/McuModuleConfiguration_0
--		ASPath:/Dio/Dio/DioConfig_0
--		ASPath:/Port/Port/PortConfigSet_0
EcuMAlarmClock		
EcuMFlexUserConfig		
EcuMSetClockAllowedUsers	🟥	🟥
EcuMShutdownTarget		
EcuMCommonConfiguration		

GUI filter



- The small triangle button customizes the displayed elements.

- Which elements are filtered depends on the window.
  - Project explorer
  - Hide tree view of modules
  - Error Log
  - Hide Infos/Warnings/Errors
  - Preferences of Error Log (max. size / entries)
  - Outline View
  - Hide specific container elements

Creating own PlugIns

EB tresos Studio - Creating own plugins

- Motivation
  - Own Software Module in one toolchain
  - Configuration via GUI
  - using powerful EB tresos generators
  - Access to system configuration

- Use cases
  - Complex Device Driver
  - Generation of I/O Hardware Abstraction

Workflow

- Identify necessary configuration parameter
  - Define type of configuration parameter
  - Checkboxes (Boolean)
  - Choice boxes
  - Text arrays
  - Ids
  - References to other configuration parameter

- Create XML (xdm) configuration description, specify
  - Default values
  - Range of values
  - Validation checks

Workflow

EB tresos Studio offers two demos for developing a plugin

- Template Based Generator
  - Used template code with XPath expression to access the configuration data
  - Recommended for simple configurations

- PublicApi Generator
  - Used Java functionality
  - Recommended for complex modules and algorithm

- Using an (existing) external generator (gen.exe/gen.bat)

Workflow

- Add static (configuration independent) C code to the plugin

- Test GUI elements and C code

- Further information can be found in „EB tresos Studio developer‘s guide“
  \tresos_Wincore\doc\2.0_EB_tresos_Studio\2.4_Studio_documentation_developers_guide.pdf (Chapter “Developing modules”)

EB tresos AutoCore Build Environment

EB tresos AutoCore Build Environment

- Projects have the following folder structure

workspace

project_name:

➢ config	- configuration files
➢ (doc)	- example documentation
➢ output	- generated files/ objects / *.hex files
➢ source	- project source files
➢ util	- user adaptable makefiles / compiler settings

- Projects will be built in a command console

- Environment will be set by running `Project/util/launch.bat`

Make rules

- make generate
  - starts EB tresos Studio generator – equivalent to “generate button”
  - necessary on some architectures for external generators
- make
  - compiling and linking
- make clean
  - removes *.obj

Common PlugIns

- Base plugin contains AUTOSAR common files
  - Std_Types.h
  - ComStack_Types.h
  - Memcopy routines

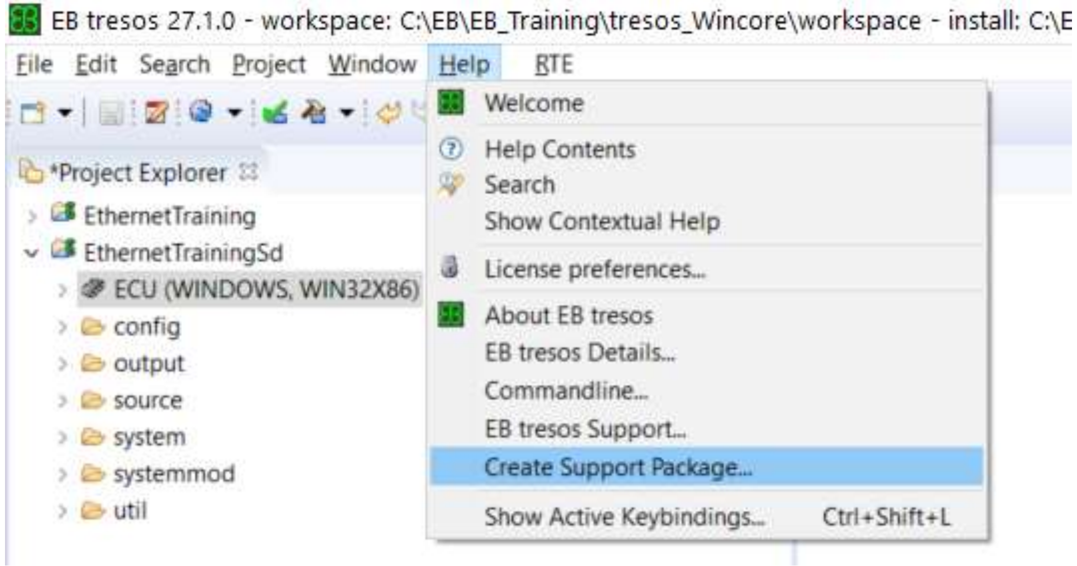
- Resource plugin is used for selecting the subderivate, which differs in
  - Package
  - Available memory
  - Number of pins

- Platforms contains target specific files
  - Compiler.h
  - Files for atomic accesses
  - Memmap.h

Log information and EB tresos Support Package

- Tresos saves the log information into a file located in workspace\.metadata\.tresoslog

- If you contact EB support, please create a Support package which contains additional information about the used environment



Get in touch!

Elektrobit

sales@elektrobit.com
www.elektrobit.com

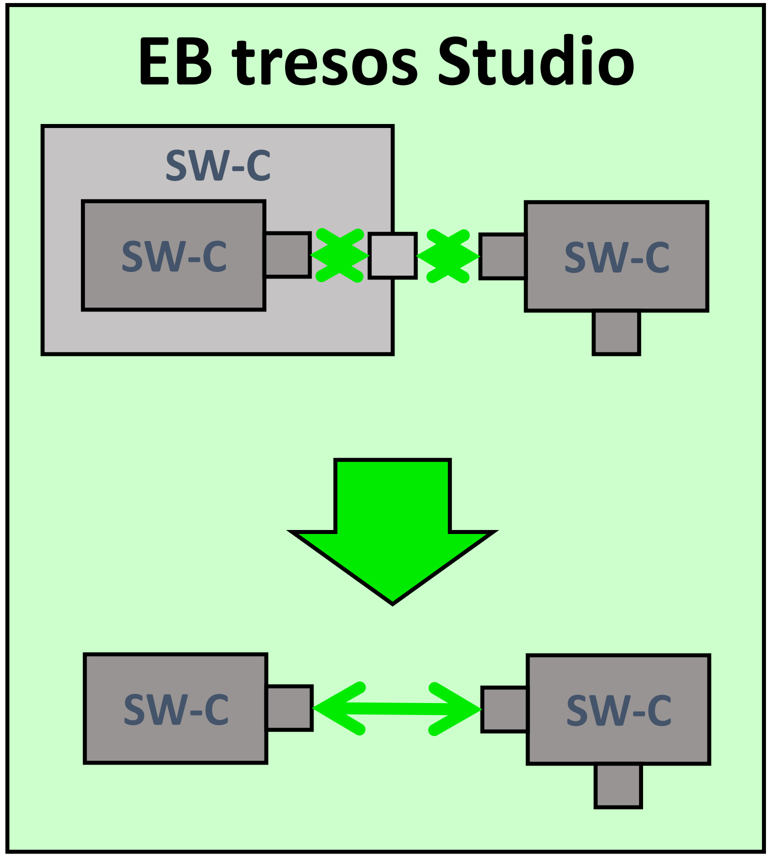
Unattended Wizards Details

Elektrobit

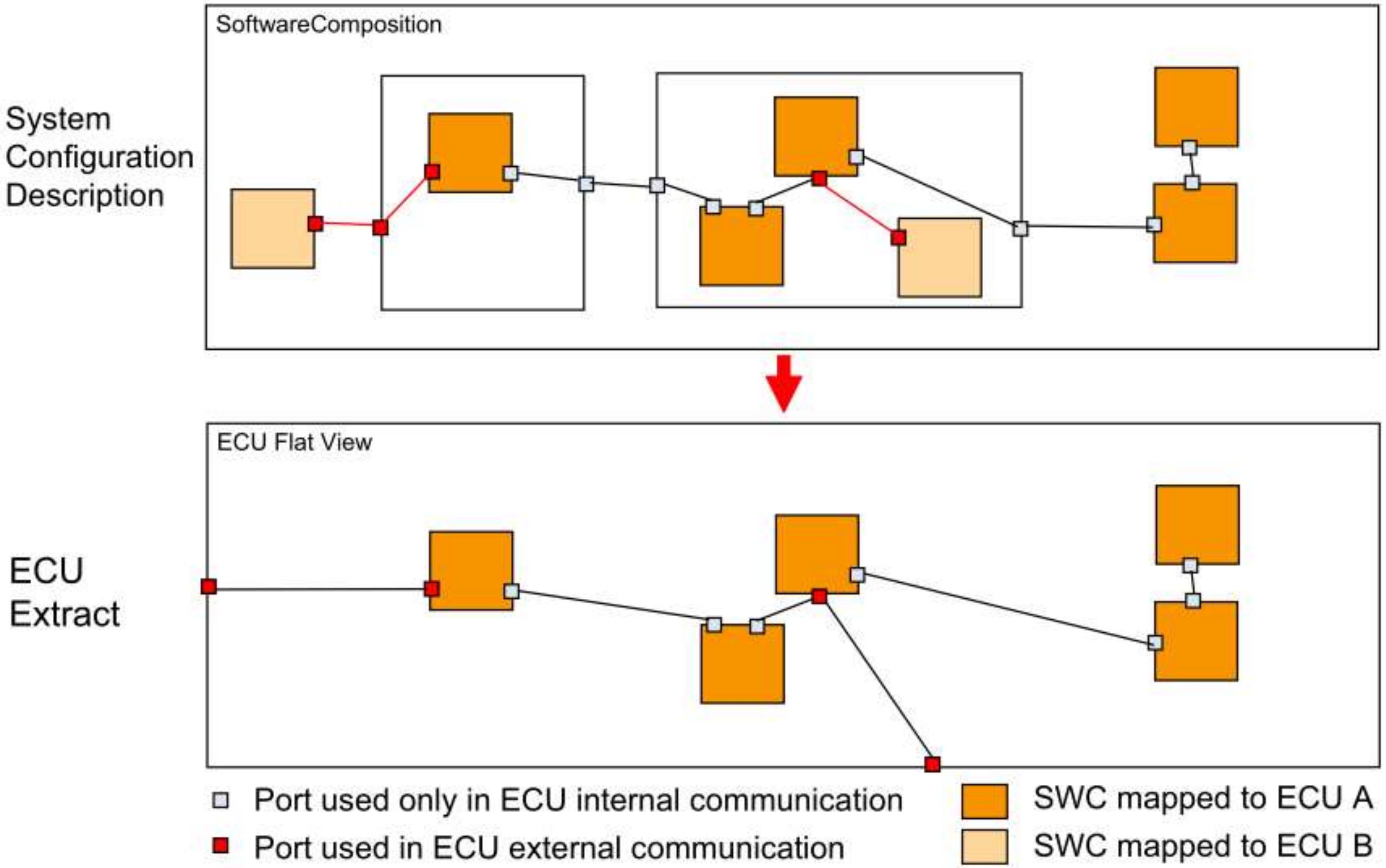
ECU Extract Creation Wizard

- Transforms a hierarchy of Software Components (SW-C) into a flat representation (aka ECU Extract)
- Combines Port Connections
- Aggregates Port Interface Mappings
- Aggregates Signal Mappings

- The ECU Extract serves as input model for the RTE, **so it is mandatory to be used.**



ECU Extract Excursion: AUTOSAR_TPS_SystemTemplate.pdf

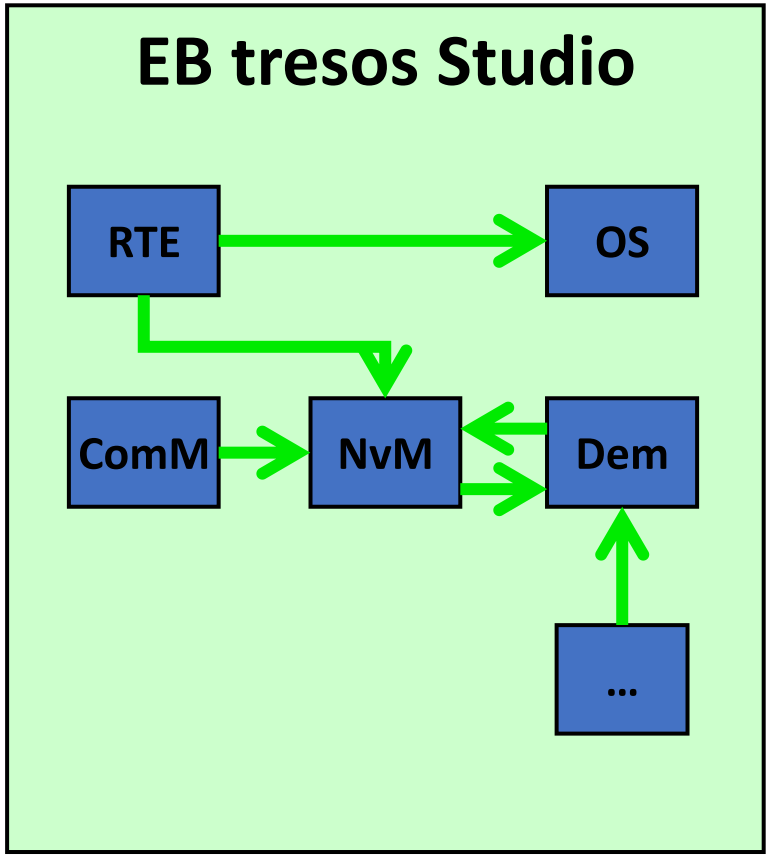

SoftwareComposition
System Configuration Description
ECU Flat View
ECU Extract
Port used only in ECU internal communication
Port used in ECU external communication
SWC mapped to ECU A
SWC mapped to ECU B

Calculate Service needs (SvcAs)

- Automatically creates ECU configuration elements according to the needs of other BSW modules.
- Collects the requests from the service requester and performs the necessary configuration changes in the service provider.

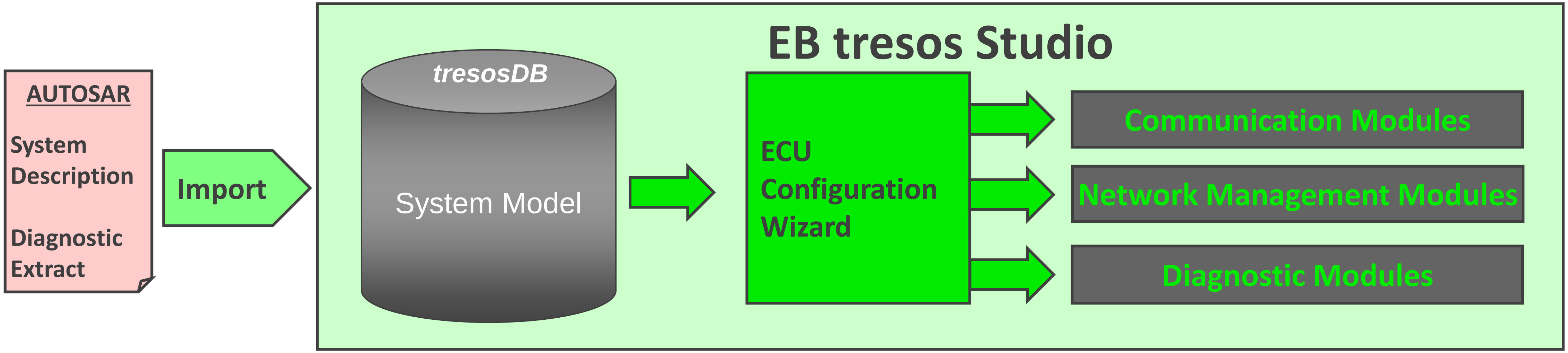
Examples of BSW modules which can be configures using the SvcAs :

- OS: Tasks, Alarms, Events, IoC channels
- NvM: Nv Blocks
- Dem: Diagnostic Events
- LdCom
- EcuM
- Xfrm
- Com



Create ECU Configuration Wizard

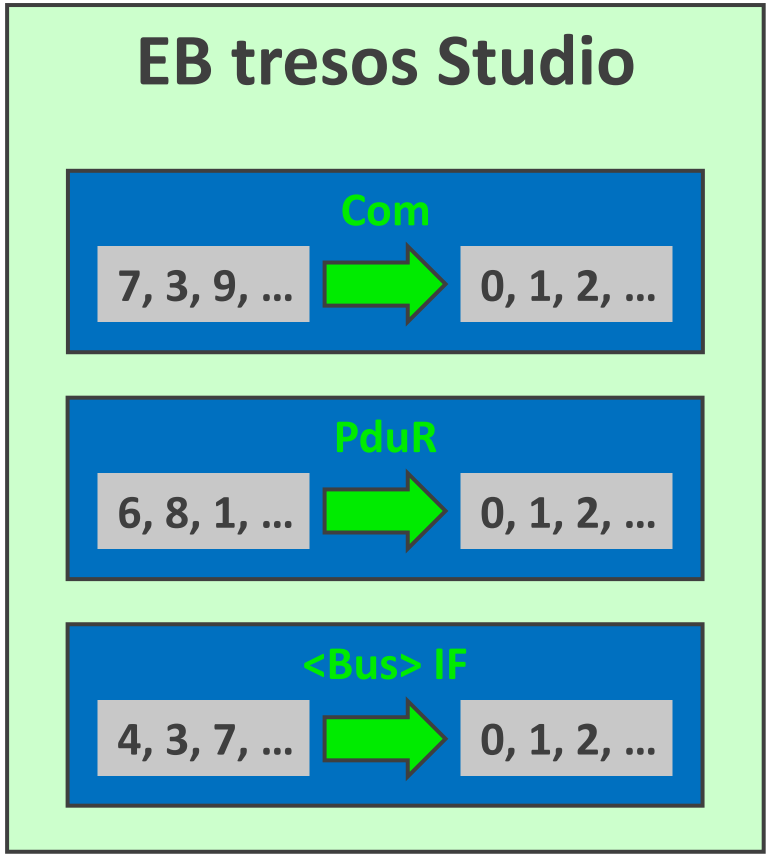
- This wizard allows to Create and Update ECU configuration from the project specific System Model:
  - System Description (Communication, Network Management…)
  - Diagnostic Extract (Diagnostic modules)
- Dedicated documentation available: EB_tresos_ECU_Configuration_Wizard_documentation



Handle ID Wizard

- Automatically calculates Handle IDs to match certain policies
- Policy is defined by BSW modules
- Enable or disable calculation for certain groups of identifiers

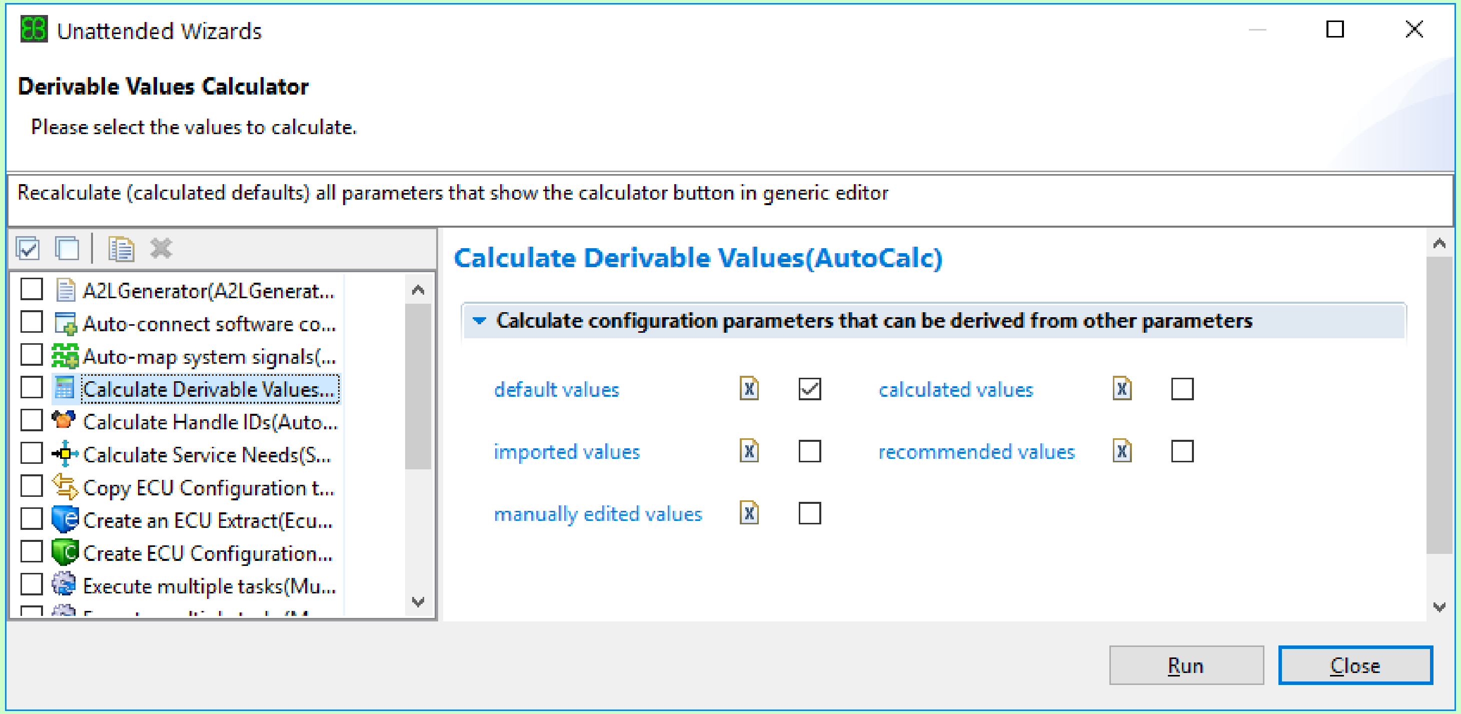
- Example:
  - PDU IDs in the Communication Stack have to be zero-based and consecutively numbered



Calculate Derivable Values wizard

- The Calculate Derivable Values recalculates the value of nodes which must have a default value
- If you choose this wizard, the Error Log view displays a list of all values that have been recalculated or changed
- Recommendation: Only use the option: default values

EB tresos Studio



Unattended Wizards

Derivable Values Calculator

Please select the values to calculate.

Recalculate (calculated defaults) all parameters that show the calculator button in generic editor

- □ A2LGenerator(A2LGenerat...
- □ Auto-connect software co...
- □ Auto-map system signals(...
- □ Calculate Derivable Values...
- □ Calculate Handle IDs(Auto...
- □ Calculate Service Needs(S...
- □ Copy ECU Configuration t...
- □ Create an ECU Extract(Ecu...
- □ Create ECU Configuration...
- □ Execute multiple tasks(Mu...

Calculate Derivable Values(AutoCalc)

Calculate configuration parameters that can be derived from other parameters

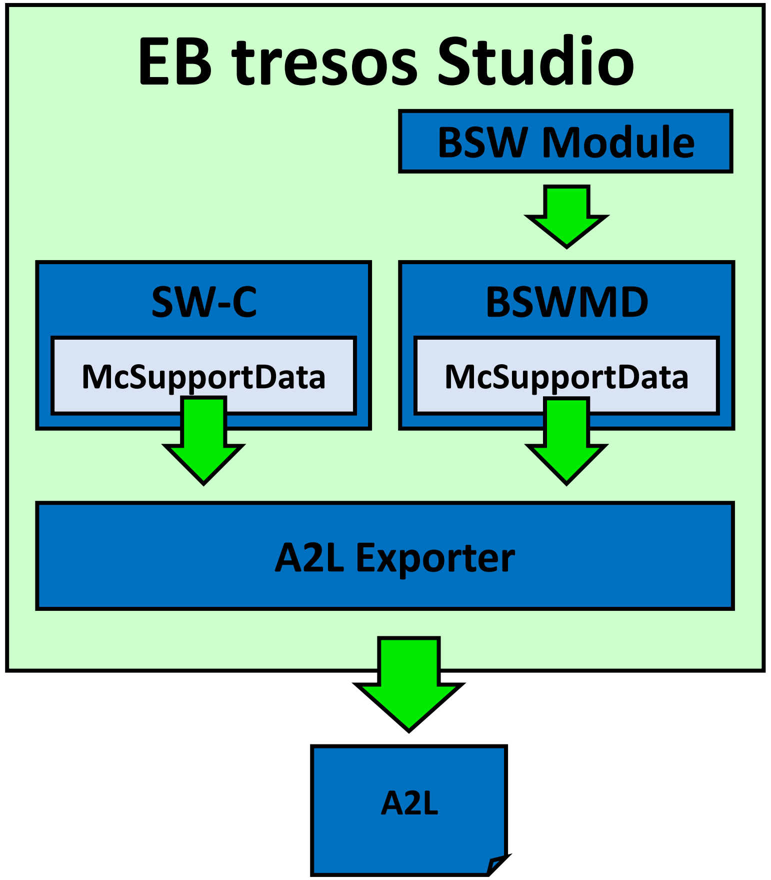
default values ☑	calculated values □
imported values □	recommended values □
manually edited values □	

© Elektrobit (EB) 2022 | Confidential information

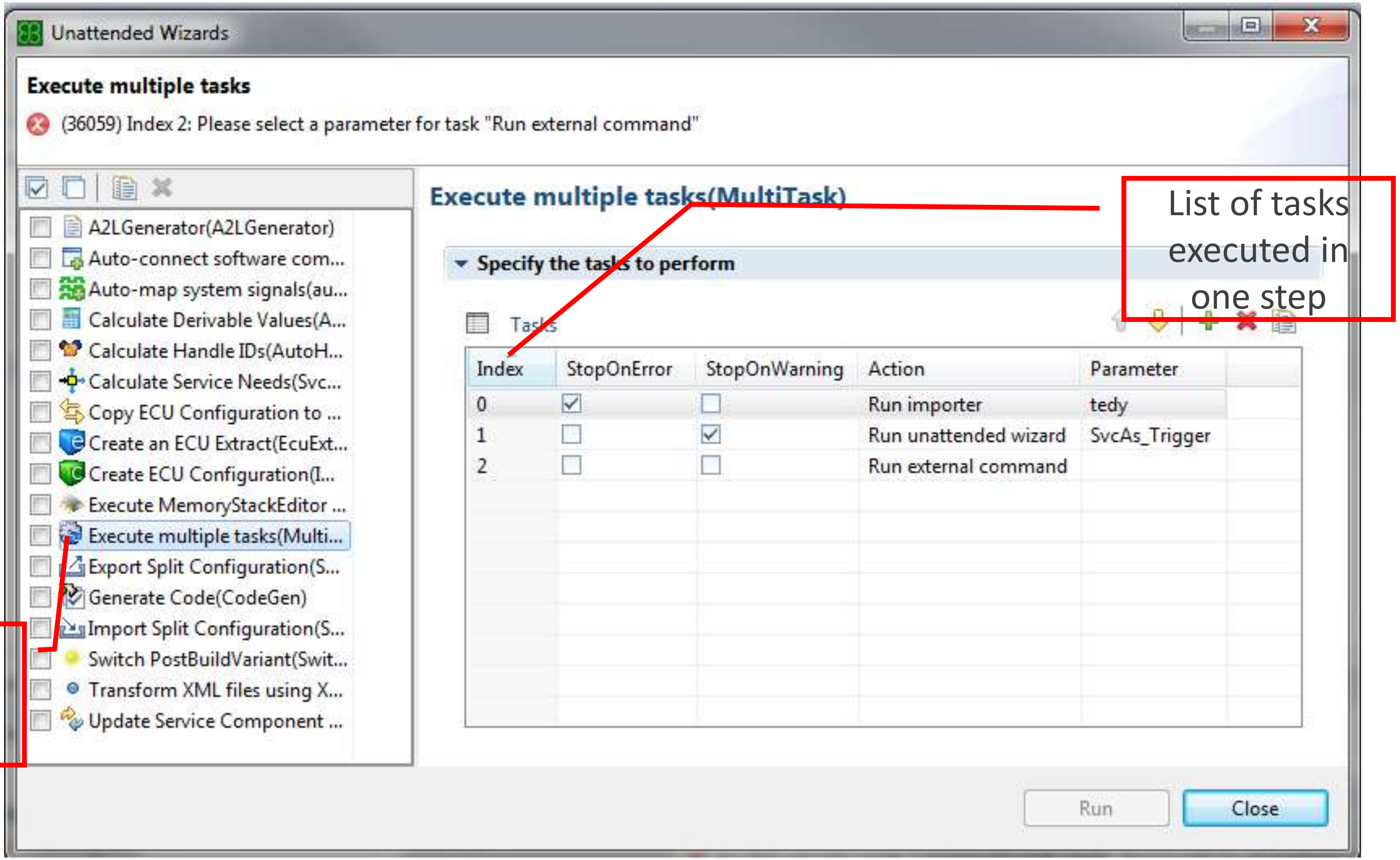
A2L Generator

- Export measurement and calibration data to A2L format

- Measurement and Calibration Data can be provided by:
  - Software Components
  - BSW Modules



Execute multiple tasks



Unattended Wizards

Execute multiple tasks

(36059) Index 2: Please select a parameter for task "Run external command"

☐ A2LGenerator(A2LGenerator)
☐ Auto-connect software com...
☐ Auto-map system signals(au...
☐ Calculate Derivable Values(A...
☐ Calculate Handle IDs(AutoH...
☐ Calculate Service Needs(Svc...
☐ Copy ECU Configuration to ...
☐ Create an ECU Extract(EcuExt...
☐ Create ECU Configuration(I...
☐ Execute MemoryStackEditor ...
☐ Execute multiple tasks(Multi...
☐ Export Split Configuration(S...
☐ Generate Code(CodeGen)
☐ Import Split Configuration(S...
☐ Switch PostBuildVariant(Swit...
☐ Transform XML files using X...
☐ Update Service Component ...

Execute multiple tasks(MultiTask)

▾ **Specify the tasks to perform**

Tasks

Index	StopOnError	StopOnWarning	Action	Parameter
0	☑	☐	Run importer	tedy
1	☐	☑	Run unattended wizard	SvcAs_Trigger
2	☐	☐	Run external command	

List of tasks executed in one step

Name of combined tasks

Multiple Tasks Wizard

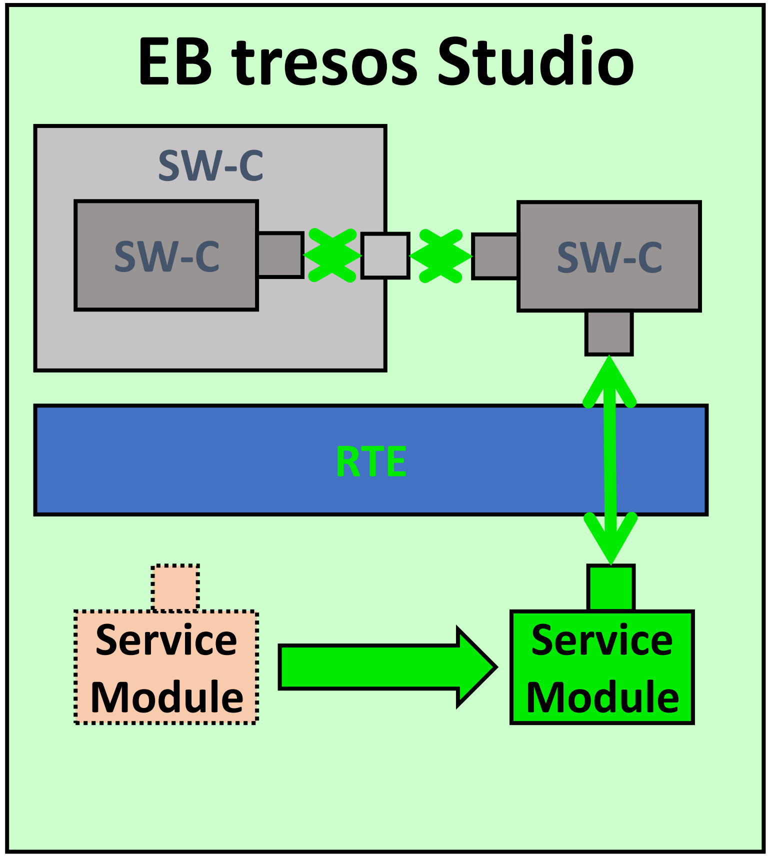
- Available Actions
  - Run importer
  - Run exporter
  - Run other unattended wizards
  - Run code generation
  - Call an external tool

- With the settings **StopOnError** and **StopOnWarning** it is possible to control execution of the wizard
- The result of the wizard execution is shown in the **Results** view.

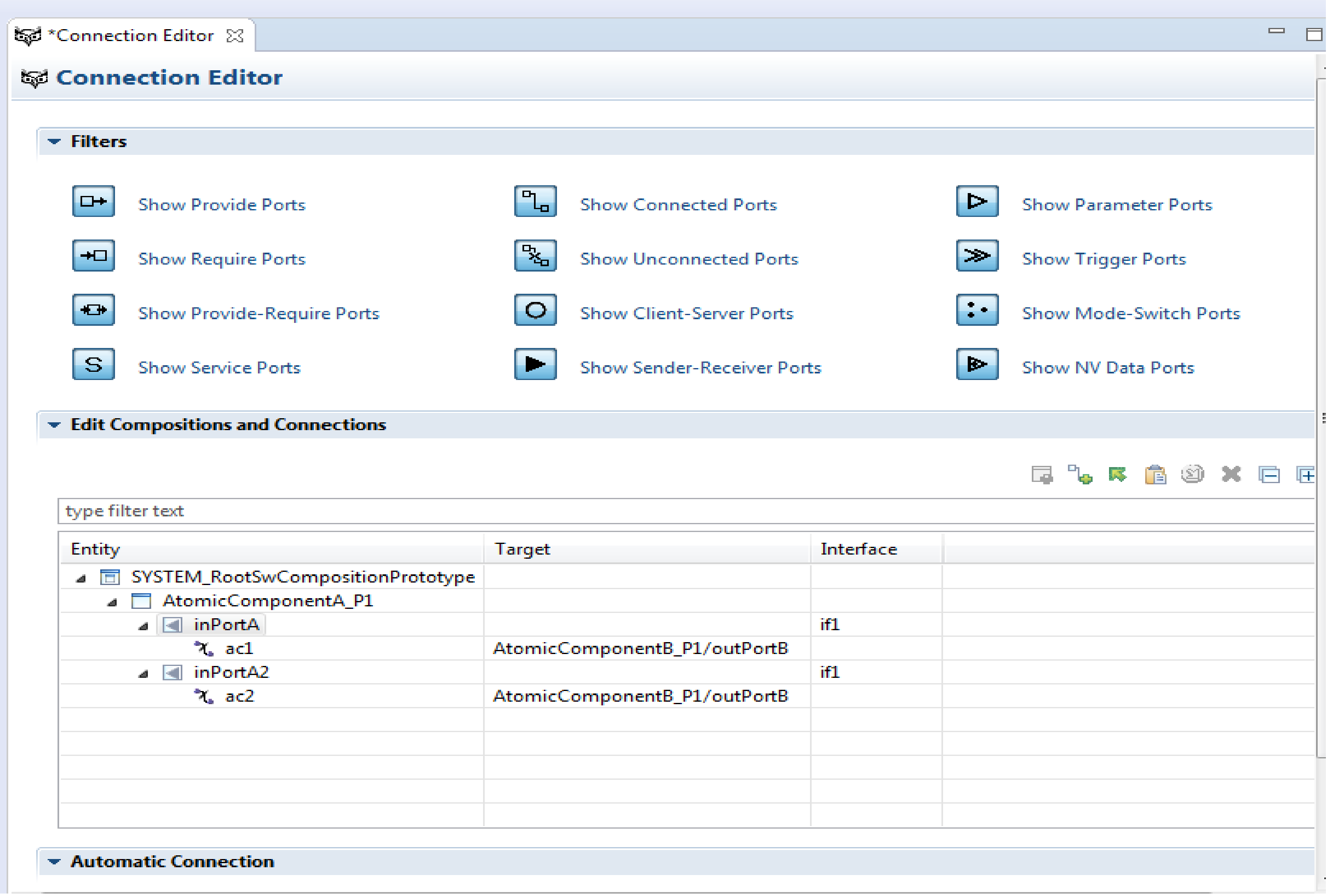
Sidebar editors
Details

Connection Editor

- Interactive Editor which allows the following:
  - Create instances of Service Modules (e.g. Nvm, Dcm) in the Top-level Software Composition
  - Connect ports between Software Components (SW-Cs)
  - Connect Service Ports
  - Automatically connect ports using regular expressions



Connection Editor



Filters

- Show Provide Ports
- Show Require Ports
- Show Provide-Require Ports
- Show Service Ports
- Show Connected Ports
- Show Unconnected Ports
- Show Client-Server Ports
- Show Sender-Receiver Ports
- Show Parameter Ports
- Show Trigger Ports
- Show Mode-Switch Ports
- Show NV Data Ports

Edit Compositions and Connections

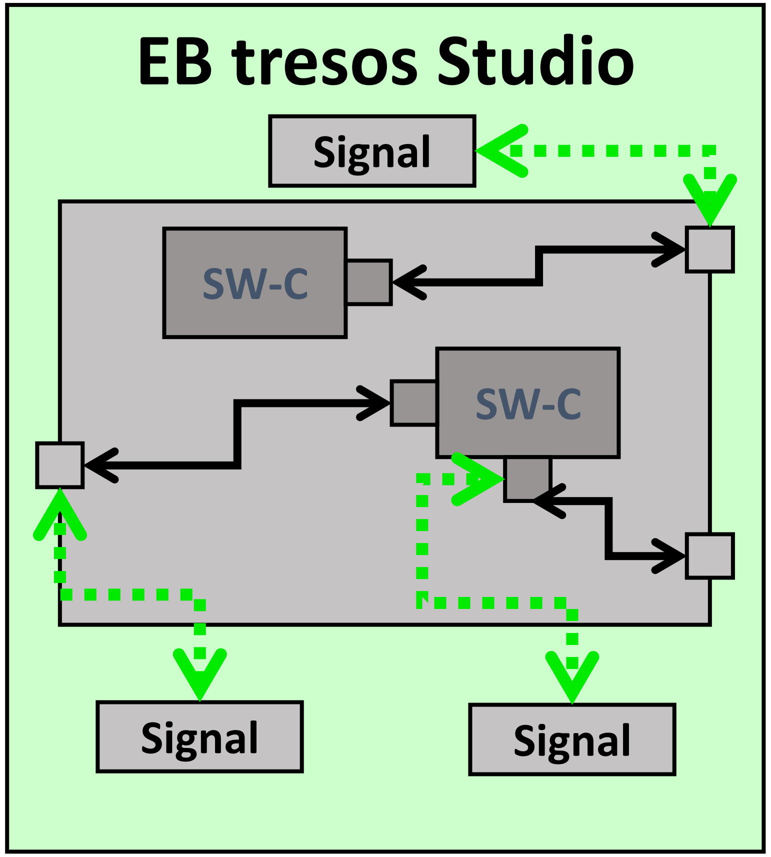
type filter text

Entity	Target	Interface
SYSTEM_RootSwCompositionPrototype		
AtomicComponentA_P1		
inPortA		if1
ac1	AtomicComponentB_P1/outPortB	
inPortA2		if1
ac2	AtomicComponentB_P1/outPortB	

Automatic Connection

Signal Mapping Editor

- Assign Signals to Ports
- Signal Mapping is used by the RTE for communication between Software Components placed on different ECUs


EB tresos Studio
Signal
SW-C
SW-C
Signal
Signal