AUTOSAR Builder™

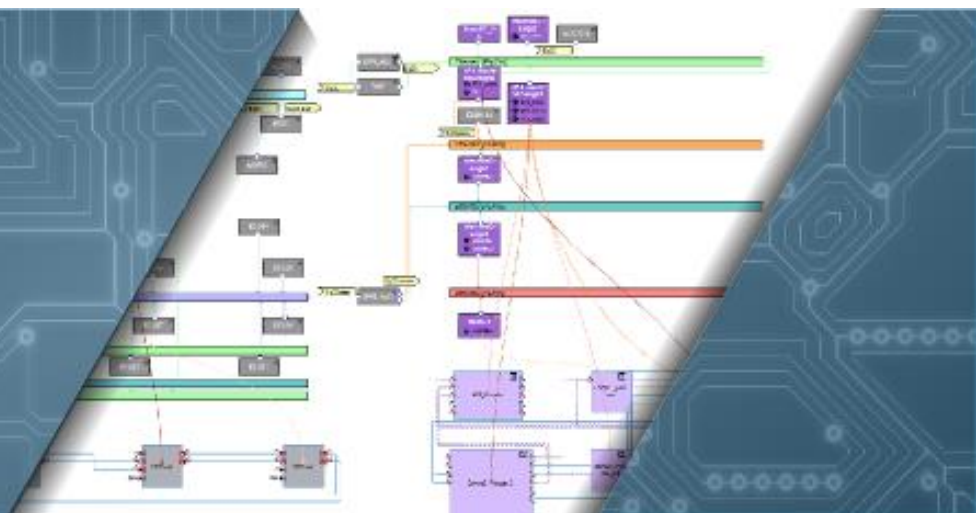## Welcome to AUTOSAR Builder 2020x

3DEXPERIENCE®

Performance
Never been so simple to create an
AUTOSAR System
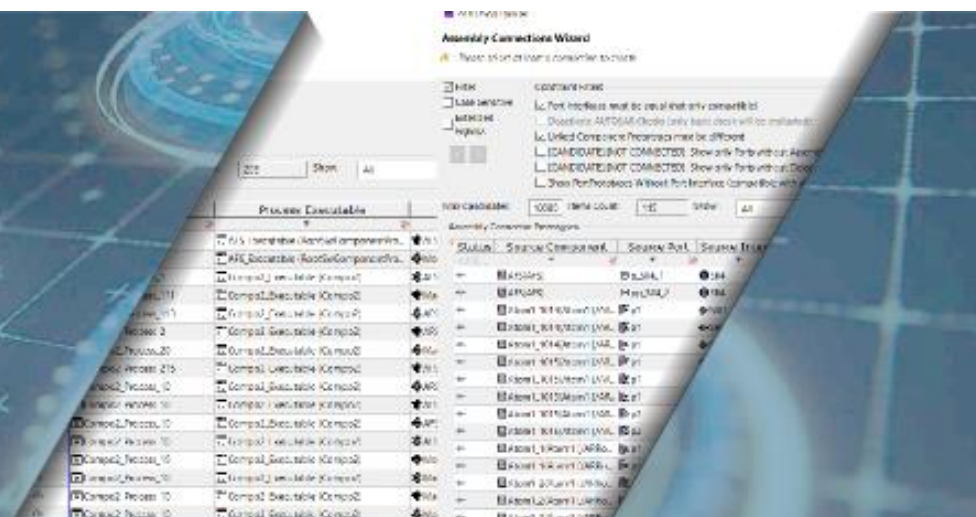
Innovation
Classic and Adaptive in the
same world

State-of-the-art
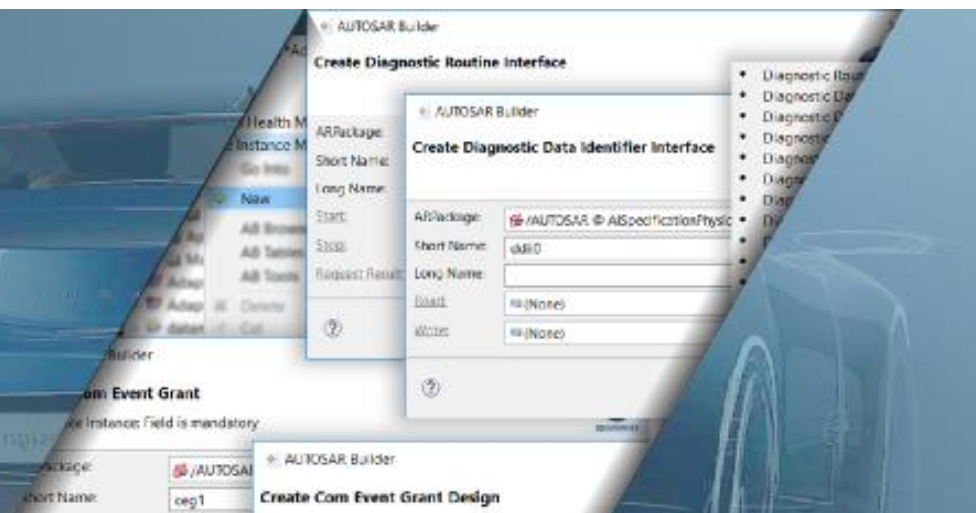Supports the latest AUTOSAR
Meta-Model 19-03

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General Presentation

AUTOSAR Builder is a complete ©AUTOSAR toolchain, starting from authoring to ECU configuration via ECU extract, RTE generation, simulation, and more features. It is a comprehensive tool for system and ECU design. It also enables you to import Model Based Design legacy descriptions and generate AUTOSAR compliant C code, ready to be embedded in target ECUs.

The AUTOSAR Builder tool suite includes:

- **Authoring Environment** – The AUTOSAR Authoring Tool for software modeling and network design
- **ECU Extractor**
- **ECU Environment** – The Generic ECU Configuration Editor for ECU configuration and BSW code generation
- **Rte Generator**
- **ASim** - AUTOSAR Simulation, covering the VFB level, and soon the ECU and Network levels
- **Adaptive Environment** – The AUTOSAR Adaptive environment for adaptive design

AUTOSAR Builder is based on Eclipse and uses ©Artop. Artop is an open AUTOSAR tool environment that is available for free. It enables you to build your own tools and integrate from other tool vendors.

For more details, see the AUTOSAR Builder Overview document.

1. System Requirements

AUTOSAR Builder is supported on Microsoft Windows 10, 8, 7, VISTA, XP (64 bit platforms).

The required minimum memory is:

- Approximately 600MByte hard-disk space
- 4 GB RAM*

(*)When working with large models in AUTOSAR Builder, it is recommended that at least 8GB of physical memory is allocated to enhance the performance.

2. Installation and Licensing

For more information related to the licensing of AUTOSAR Builder, see AB_Installation_Procedure.pdf.

3. AUTOSAR Builder EB tresos Studio Integration

Elektrobit

Due to the close collaboration with Elektrobit there have been a lot of improvements implementation related to the AUTOSAR Builder - EB tresos Studio interface. The ongoing strategic partnership between Elektrobit and Dassault Systèmes is targeting further enhancements and optimizations in the tool Integration.

Products integration starts at R&D level, continues at documentation level and goes to the support of each products.

New Features and Enhancements

1. Versions and AUTOSAR Builder

AUTOSAR Builder is based on:

- Eclipse Neon **4.6.3**
- ARTOP **4.6.1**
- CDT **9.2.1**

AUTOSAR Builder supports the AUTOSAR Classic **4.4.0** and AUTOSAR Adaptive **R19-03**.

This release note summarizes updated features and new functionalities offered by AUTOSAR Builder 2020x.

1. AUTOSAR Builder Fundamentals

1.1. System Mapping Diagram

A new diagram supporting both AUTOSAR Adaptive and AUTOSAR Classic is introduced which provides a convenient way to visualize mappings between various components of a system. It displays, as in topology diagram, all physical channels, ECU instances and machine designs which are involved in the system. It also shows the links, using communication connectors, between ECU instances and physical channels, and machine designs and physical channels.
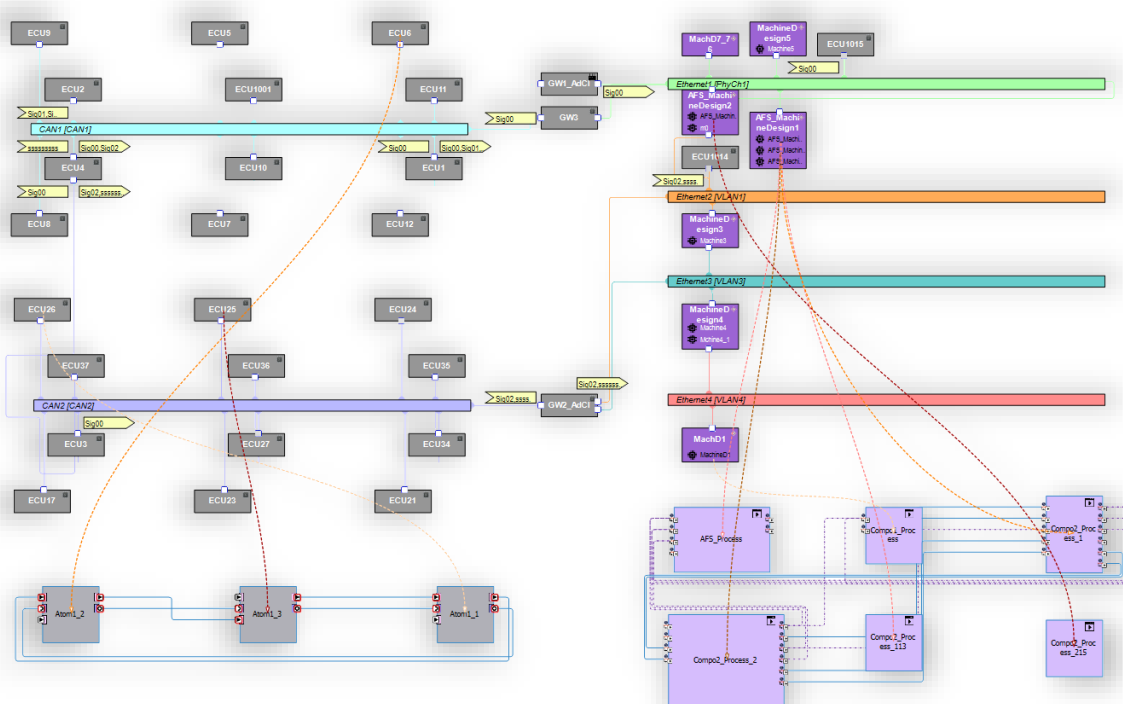
1.2. Da Vinci Validation Profile

A new validation profile has been introduced which checks the compatibility of the generated .arxml with the DaVinci tool.
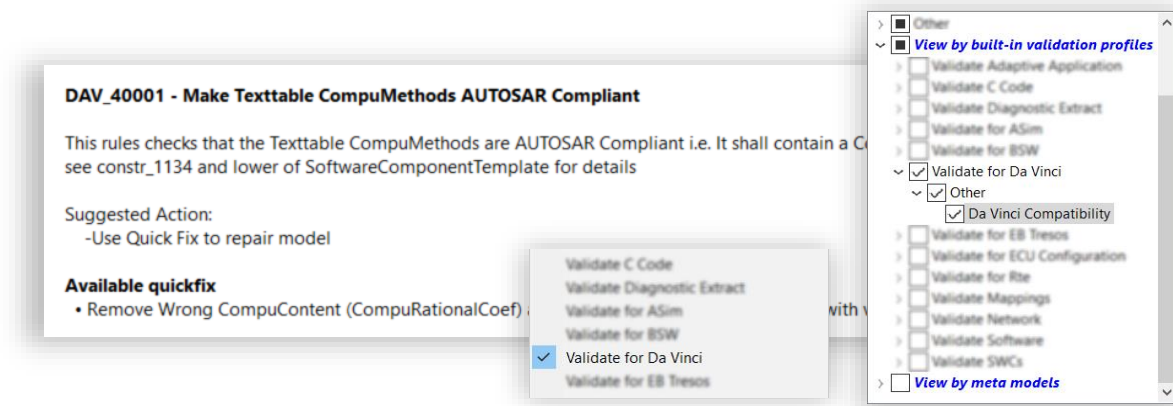
2. AUTOSAR Builder for Classic

2.1. AB Validation for Classic Platform

The following new rules are added for AUTOSAR Classic platform:

Category	Meta Model	Internal ID	Description
Authoring Environment / Network Designer	4.3.0	NET_40344	Service Discovery SocketConnection clientPort reference to a TpPort
		NET_40345	clientIpAddrFromConnectionRequest and clientPortFromConnectionRequest settings for SD SocketConnections
Common	4.3.1	COMM_40018	Revision Label regex
ECU Environment / BSW Designer	4.0.1	(None)	Default Value for LinkerSymbolParameterDef
ECU Environment / BSW Designer	(None)	EPC_40009	Check specific Ecuc Constraints
Other / EB Tresos Compatibility	(None)	EBT_40019	In case of ECU Extract, Root ARPackage will be renamed EcuExtract
		EBT_40020	Uncheck "Strict Checking" during EB Tresos import
		EBT_40021	Some AUTOSAR elements are not supported

2.2. Connection Checking

During components connection operation, this feature allows user to connect ports which are in fact incompatible.

It is available in assembly or delegation wizards or via drag and drop in composition diagram.

When incompatible ports are connected, validation rules will raise errors because model remains invalid but this feature allows the connection of components during an iterative design phase.

2.3. Assembly Connections

The assembly connections wizard is now enhanced with table technology. It provides advanced filtering capabilities like filters on each column, filter history, filter state persistence, and filtering using extended regular expressions. Detailed tooltips provide convinient access to information about the connections.
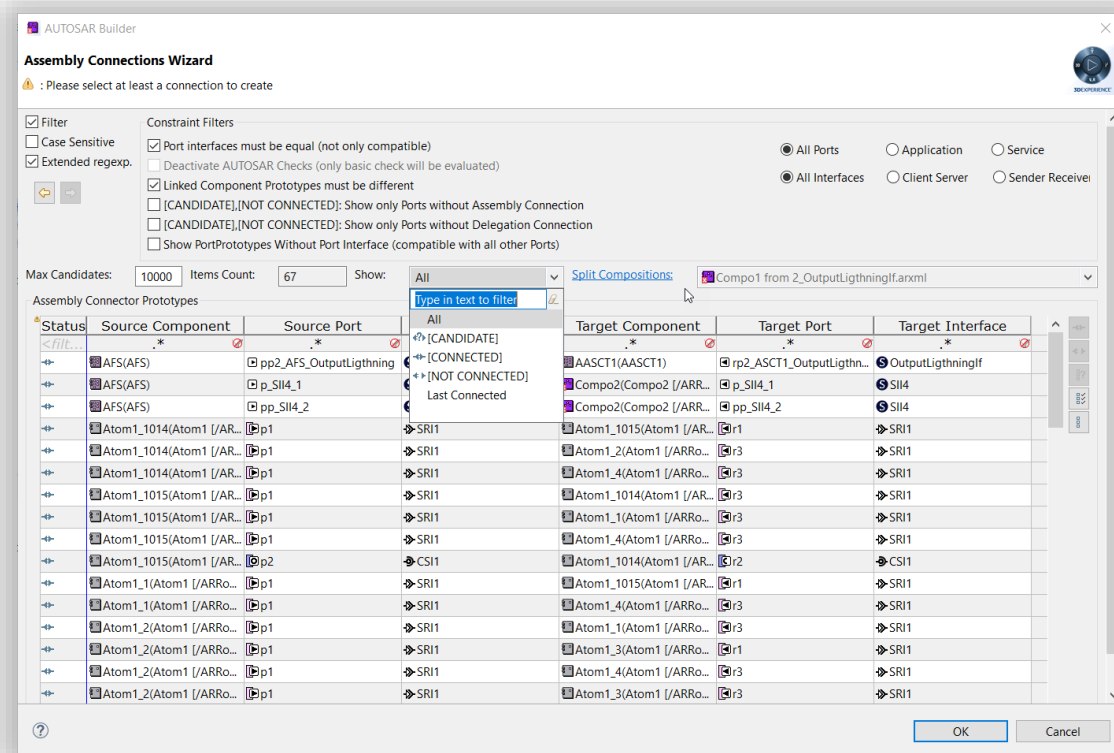
2.4. Communication Specifications Propagation

AUTOSAR Builder now provides the ability to propagate existing communication specifications of top level ports to the ports of target subset components. A wizard allows convenient creation and propagation of the specifications to all the ports or just the final port. Formatting rules are implemented to conditionally highlight the ports depending on the existence and compatibility of communication specifications.
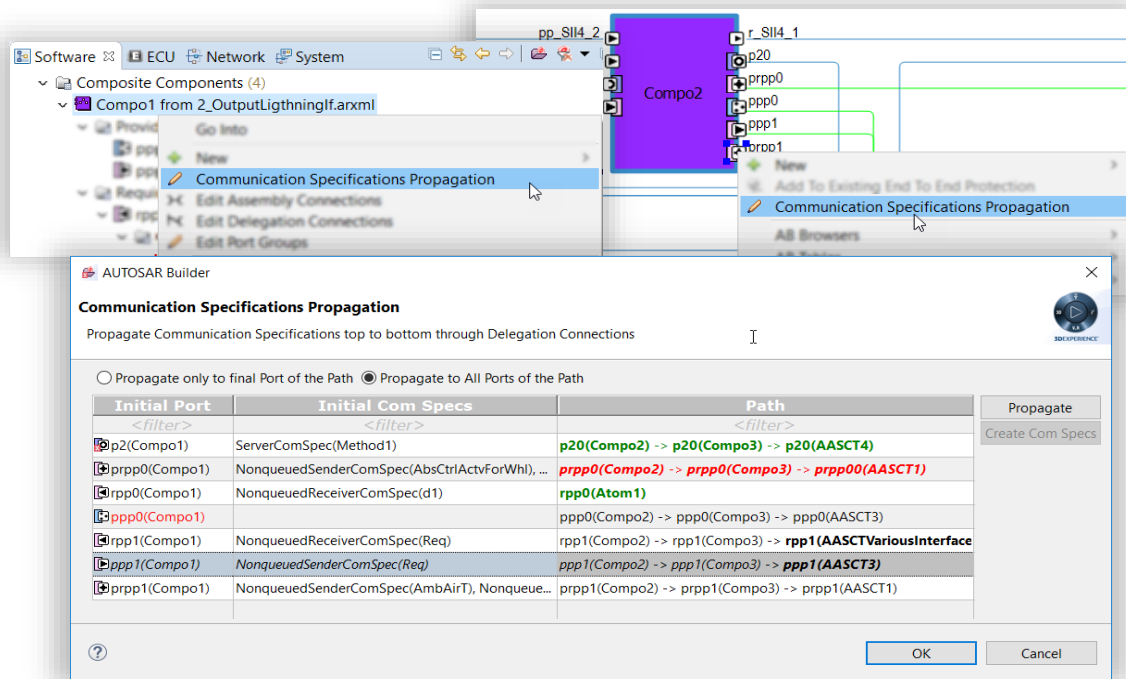
3. AUTOSAR Builder Adaptive

3.1.   Adaptive 19-03 Update

AUTOSAR Builder 2020x integrates Adaptive 19-03 meta-model and already delivers the updated interfaces for new concepts implemented in this meta-model.

3.2.   Adaptive Software Component Code

As a prototype, AUTOSAR Builder 2020x now supports advanced capabilities for code design, application generation and execution. A suite of tools allows you to:

- Generate application code skeleton
- Generate the ARA Layer
- Compile the application as a linux application
- Execute the linux application on Qemu

For more information about this prototype and get an access to it, please contact Arthur GAUTHIER: arthur.gauthier@3ds.com
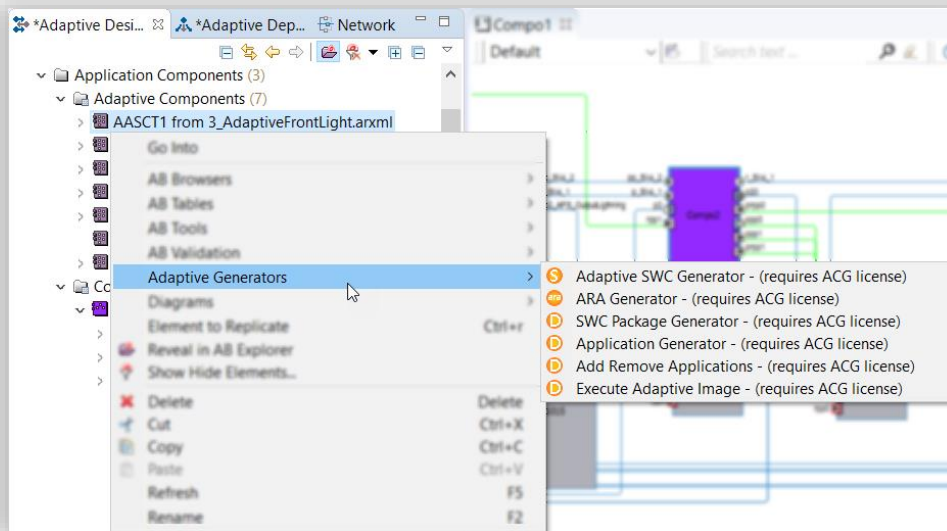
3.3.   Diagnostic Port Interfaces

AUTOSAR Builder now supports the new Adaptive feature dedicated to the creation of diagnostic port interfaces. You can now define these interfaces to enable the interaction of the application software with the AUTOSAR diagnostic manager.
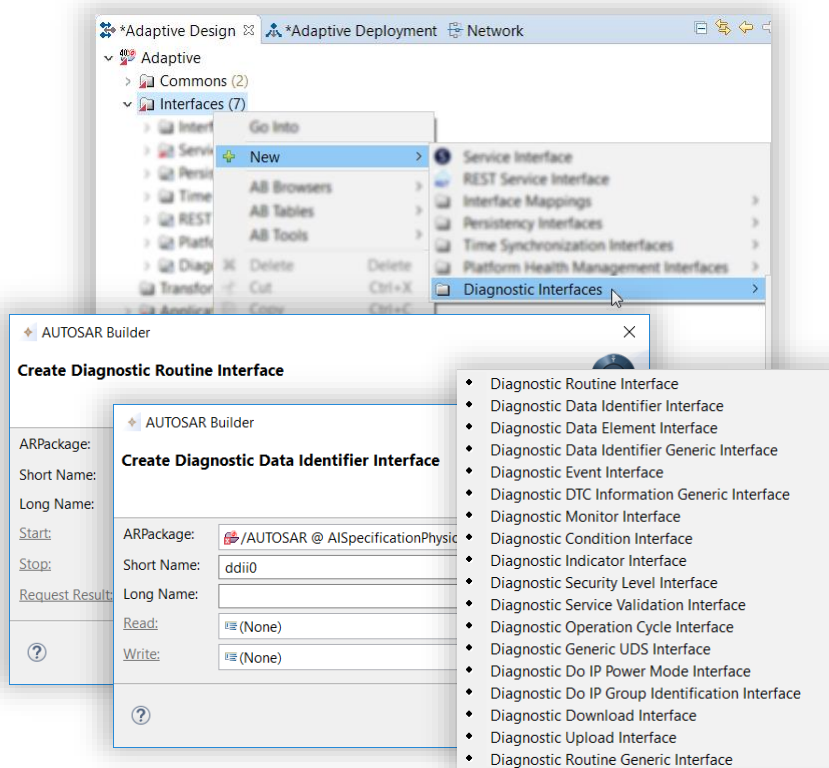
3.4. Identity and Access Manager

AUTOSAR Builder implements the aspect of Identity and Access Manager configuration defined in R19-03 MM. The modelling of permissions, granted by the platform software, is implemented as *Grant Designs* and *Grants.*
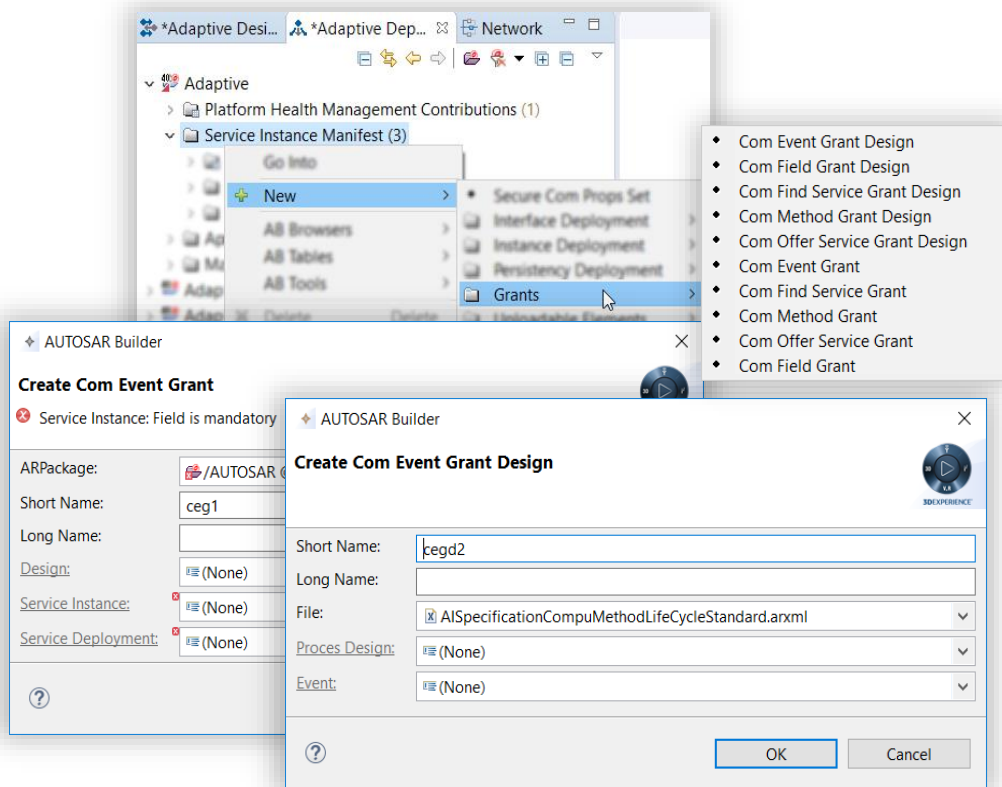
3.5.   Editing Processes to Machine Mapping

You can now manage Process to Machine Mappings using a wizard with table technology. The wizard provides advanced filtering capabilities similar to the Assembly Connections Wizard.
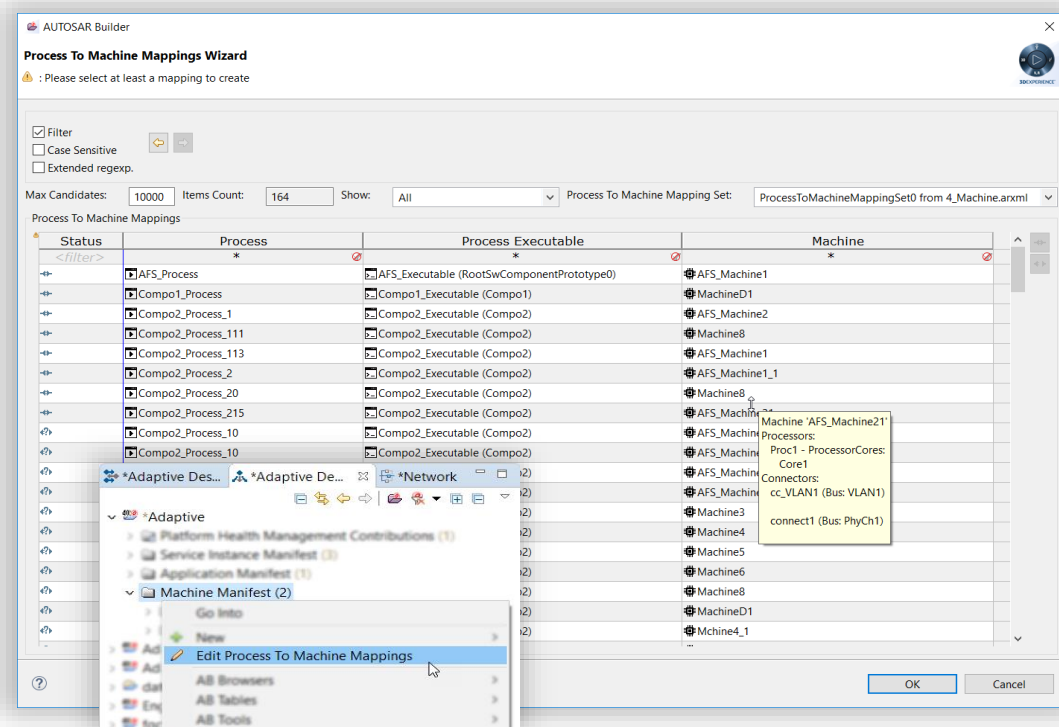
3.6.   DDS Concept Support

AUTOSAR Builder now supports creation of service interface instances and service interface deployments for a Data Distibution Service.

- DDS Service Interface Instance: You can now create and configure a provided and required service interface instances for implementation on top of a Data Distribution Services.
- DDS Service Interface Deployment: You can now create DDS configuration settings for a service interface.
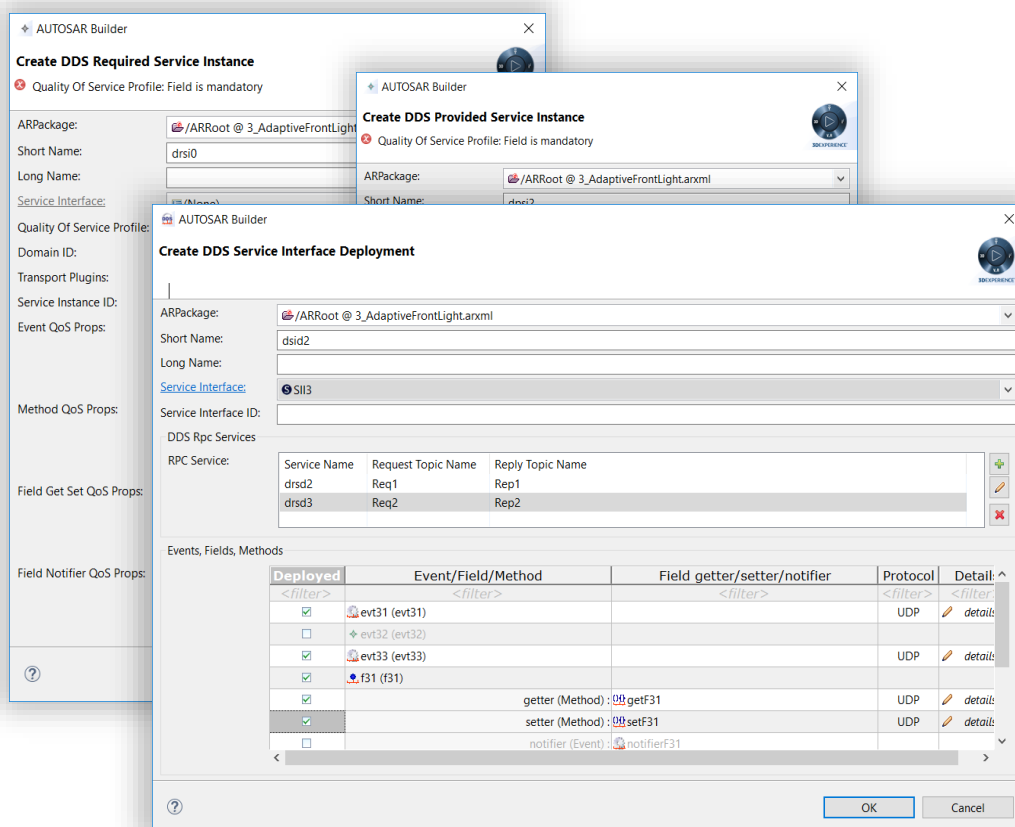
3.7. AB Validation for Adaptive Platform

The following new rules are added for AUTOSAR Adaptive platform:

Category	Meta Model	internal ID	description
Application Design	19-03	ADTV_40217	Relation of Executable, ProcessDesign, and Process
		ADTV_40228	Compatibility of data types with category VALUE
		ADTV_40229	Compatibility of data types with category BOOLEAN
		ADTV_40230	Compatibility of data types with category STRING
		ADTV_40231	Compatibility of data types with category ARRAY
		ADTV_40232	Compatibility of data types with category ARRAY with variableSize
		ADTV_40233	Compatibility of data types with category ARRAY with fixedSize
		ADTV_40234	Compatibility of data types with category STRUCTURE
		ADTV_40235	Compatibility of ApplicationRecordDataType and CppImplementationDataType that both represent an Optional Element Structure
		ADTV_40236	Compatibility of data types with category ASSOCIATIVE_MAP
		ADTV_40237	No data type mapping for CppImplementationDataType of category VARIANT
		ADTV_40238	Forbidden mappings to CppImplementationDataType
		ADTV_40239	DataTypeMap for composite data types
Application Manifest	19-03	ADTV_40213	Modeling of a startup dependency between different Processes
		ADTV_40214	SoftwareCluster shall only be referenced by a single SoftwarePackage
		ADTV_40216	Value of schedulingPriority

Diagnostic Mapping	19-03	ADTV_40219	ClientServerOperation aggregated by DiagnosticRoutineInterface
		ADTV_40220	Restriction for ClientServerOperation aggregated by a DiagnosticDataIdentifierInterface or DiagnosticDataElementInterface
		ADTV_40221	Target SwcServiceDependency of DiagnosticClearConditionPortMapping.swcServiceDependencyInExecutable
		ADTV_40222	Target SwcServiceDependency of DiagnosticIndicatorPortMapping.swcServiceDependencyInExecutable
		ADTV_40223	Target SwcServiceDependency of DiagnosticMemoryDestinationPortMapping.swcServiceDependencyInExecutable
		ADTV_40224	Target SwcServiceDependency of DiagnosticSecurityLevelPortMapping.swcServiceDependencyInExecutable
		ADTV_40225	Target SwcServiceDependency of DiagnosticServiceDataIdentifierPortMapping.swcServiceDependencyInExecutable
		ADTV_40226	Target SwcServiceDependency of DiagnosticGenericUdsPortMapping.swcServiceDependencyInExecutable
		ADTV_40227	Target SwcServiceDependency of DiagnosticUploadDownloadPortMapping.swcServiceDependencyInExecutable
Machine Manifest	19-03	ADTV_40211	Definition of machine state
		ADTV_40212	StateDependentStartupConfig shall only refer to function group states of the same function group
		ADTV_40215	UcmModuleInstantiation.identifier shall be unique
Service Instance Manifest	18-10	ADTV_40207	qosProfile mandatory for DdsProvidedServiceInstance
		ADTV_40208	qosProfile mandatory for DdsRequiredServiceInstance
		ADTV_40209	At least one transportPlugin definition required for each DdsProvidedServiceInstance
		ADTV_40210	At least one transportPlugin definition required for each DdsRequiredServiceInstance
	19-03	ADTV_40218	Semantics of a Grant depends on the existence of IamModuleInstantiation
		ADTV_40241	Usage of DoIpNetworkConfiguration.eidUseMac
		ADTV_40242	Supported values of TlsSecureComProps.category.category
System Design	19-03	ADTV_40240	Only one SomeipServiceDiscovery configuration per VLAN is allowed

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