AUTOSAR Builder™
Welcome to AUTOSAR Builder 2020x Refresh1

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 19-11
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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.
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 R19-11. Adaptive code generators are updated to support AUTOSAR Adaptive R19-11.

This release note summarizes updated features and new functionalities offered by AUTOSAR Builder 2020x Refresh1.

1. AUTOSAR Builder Fundamentals

1.1. Requirement Coverage

The requirement coverage information is now only stored in the .req file. This avoids modifying the original .arxml file.

Note: Any working model with coverage information which is authored with an older version of AUTOSAR Builder shall work in this version.
1.2. Customizing Preferences

1.2.1. Adaptive Preferences

The Adaptive preferences are introduced to configure settings for generating service instance to port prototype mappings from the processes diagram.

1.2.2. Runnable Generator

You can set the default values for Source folder and Template in Preferences > AUTOSAR Builder > AAT Environment > Runnable Generator.
2. AUTOSAR Builder for Classic

2.1. AB Validation for Classic Platform

The following new rules are added for AUTOSAR Classic platform:

<table>
<thead>
<tr>
<th>Category</th>
<th>Meta Model</th>
<th>Internal ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Authoring Environment / RTE Generator</td>
<td>(None)</td>
<td>RTE_R_43019</td>
<td>Missing Data Access Point on PRPortPrototype</td>
</tr>
<tr>
<td>Authoring Environment / Other / EB Tresos Studio Compatibility</td>
<td>(None)</td>
<td>EBT_40022</td>
<td>ClientServerOperationToSignalMapping shall reference a DataTransformer</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EBT_40023</td>
<td>ClientServerOperationToSignalMapping with DataTransformer shall be used in AUTOSAR version newer or equal than 4.2.1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EBT_40024</td>
<td>L’ attribute of a Longname is mandatory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EBT_40025</td>
<td>NetworkRepresentation of an ISignal is mandatory</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EBT_40026</td>
<td>UsesEndToEndProtection shall not be empty</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EBT_40027</td>
<td>EB Tresos Studio reject attributes present in arxml with no value</td>
</tr>
</tbody>
</table>

2.2. Table Technology Support

2.2.1. Software Component to ECU Mapping Editor

In the standardized user interface, the editor now supports the common functionalities of a mapping editor including constraint filters, advanced regular expressions, and column filtering. It also supports filtering based on clustered components and separated components. New tooltips, status indicators, and commands are introduced for creating valid mappings.
2.2.2. Delegation Connections Editor

The editor now supports the common functionalities of a mapping editor including constraint filters, advanced regular expressions, and column filtering.

2.3. Enhanced User Interface

2.3.1. Assembly Connections Editor

The top portion of the editor, which contains advanced filtering options and editor specific options, is reorganized. The interface list is enhanced to enable filtering based on specific interfaces. The status icons, warnings, and tooltips are also enhanced.
2.3.1. Data Mapping Editor

The Data Mapping Editor interface is unified with other mapping editors. The editor proposes candidate mappings for the sub prototypes, in case of composition prototypes, displays the detailed information on communication direction, and displays new tooltips, warnings, and information dialog boxes.

2.4. Initial Value of Data Elements

When defining the initial value using value specification of type array or record, you can edit the initial value directly or through its value specification.
3. AUTOSAR Builder Adaptive

3.1. Adaptive 19-11 Update

AUTOSAR Builder 2020x Refresh1 integrates Adaptive 19-11 meta-model and already delivers the updated interfaces for new concepts implemented in this meta-model.

3.2. Process Design Integration for Meta Model 19.11

3.2.1. Process Design to Machine Design Mapping

New interfaces are introduced to create:

- Process Design to Machine Design Mappings
- Process Design to Machine Design Mapping Sets

A mapping editor is also introduced to create and edit mappings easily.
3.2.2. Process to Machine Mapping Editor

As the process to machine mapping can now reference a process design to machine design mapping, the Mapping Design and Mapping Set columns are added in the mapping editor.

3.2.3. Service Instance to Port Prototype Mapping Editor

Service instance to port prototype mappings now reference a process design instead of a process.
3.2.4. Process Design Diagram

Process Diagram is renamed to Process Design Diagram and now shows the details of the process design.

3.2.5. Processes Diagram

The processes diagram now shows process designs and the processes which do not reference a process design.
3.2.6. System Mapping Diagram

The display of the mappings between adaptive components of the topology is enhanced.

3.2.7. Tree View

The following modifications are done in the Tree view:

- Process Design node is moved from Adaptive Deployment view to Adaptive Design view.
- Systems node is added in Adaptive Deployment view.
3.3. Processes Diagram

You can now create consistent mappings between service instances and port prototypes from processes diagram. The diagram supports Edit Mode and Viewer Mode.
3.4. Service Interface Elements

The elements of the service interface are now listed and configurable from the service interface creation dialog box.

3.5. Communication Specification

You can create communication specifications for the ports using a context menu command. Some new attributes are introduced in the AB Form of the specifications.
3.6. AB Validation for Adaptive Platform

The following new rules are added for AUTOSAR Adaptive platform:

<table>
<thead>
<tr>
<th>Category</th>
<th>Meta Model</th>
<th>Internal ID</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Design</td>
<td>19-11</td>
<td>ADTV_40245</td>
<td>Combination of CppImplementationDataTypeElement.isOptional and CppImplementationDataTypeElementQualifier.inplace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40246</td>
<td>Applicability of attribute PersistencyRedundancyEnum.redundantPerKey</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40249</td>
<td>Qualified combinations of PortPrototypes and PhmSupervisedEntityInterface on application software level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40250</td>
<td>Qualified combinations of PortPrototypes and PhmRecoveryActionInterface on application software level</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40251</td>
<td>Restriction regarding the modeling of the PhmRecoveryActionInterface.recovery</td>
</tr>
<tr>
<td>Application</td>
<td>19-11</td>
<td>ADTV_40247</td>
<td>Consistency of values of attributes PersistencyInterface.redundancy and PersistencyRedundancyHandling.scope</td>
</tr>
<tr>
<td>Manifest</td>
<td></td>
<td>ADTV_40252</td>
<td>Value of UcmDescription.identifier in the scope of a VehiclePackage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40253</td>
<td>Existence of attribute activationSwitch set to True in the context of the enclosing UcmStep</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40254</td>
<td>Simultaneous existence of SoftwarePackageStep.preActivate and SoftwarePackageStep.verify</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40255</td>
<td>Restriction for attribute SoftwarePackageStep.activationSwitch</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40256</td>
<td>Multiplicity of reference LogicalSupervision.initialCheckpoint</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40257</td>
<td>Multiplicity of reference LogicalSupervision.finalCheckpoint</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40258</td>
<td>Multiplicity of reference LogicalSupervision.transition</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40259</td>
<td>Multiplicity of reference GlobalSupervision.localSupervision</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40260</td>
<td>Multiplicity of reference SupervisionCheckpoint.phmCheckpoint</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ADTV_40261</td>
<td>Multiplicity of aggregation LocalSupervision.transition</td>
</tr>
<tr>
<td>Machine Manifest</td>
<td>19-11</td>
<td>ADTV_40244</td>
<td>Eligible subclasses of HeapUsage in the context of StateDependentStartupConfig.resourceConsumption</td>
</tr>
<tr>
<td>Service Instance</td>
<td>19-11</td>
<td>ADTV_40248</td>
<td>ProvidedSomeipServiceInstance shall be unique in respect of serviceinstanceId, serviceInterfaceId and majorVersion</td>
</tr>
<tr>
<td>Manifest</td>
<td></td>
<td>ADTV_40243</td>
<td>Target of reference SoftwareActivationDependencyCompareCondition.softwareActivationDependency</td>
</tr>
<tr>
<td>System Design</td>
<td>19-11</td>
<td>ADTV_40243</td>
<td>Target of reference SoftwareActivationDependencyCompareCondition.softwareActivationDependency</td>
</tr>
</tbody>
</table>

3.7. Adaptive Software Component Code

As a prototype, AUTOSAR Builder 2020x Refresh1 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 getting an access to it, please contact Arthur GAUTHIER: arthur.gauthier@3ds.com
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<thead>
<tr>
<th>IP Asset Name</th>
<th>IP Asset Version</th>
<th>Copyright notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>InnoSetup</td>
<td>5.5.9</td>
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</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>IP Asset Name</th>
<th>IP Asset Version</th>
<th>Copyright notice</th>
</tr>
</thead>
<tbody>
<tr>
<td>MinGW (delivered for convenience in a separate package)</td>
<td>4.9.2</td>
<td>Copyright © 2016 - MinGW.org</td>
</tr>
</tbody>
</table>
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