

User-defined attribute XML-export

Technical Reference

Version 1.3

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History

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1 Overview

With the DaVinci Developer 2.1 and later user-defined attribute definitions can be exported. This document describes the usage of the exported XML file format.

1.1 Terms and Acronyms

Term	Definition
DaVinci DEV	DaVinci Developer
AR	AUTOSAR – Automotive Open System Architecture
GUI	Graphical user interface
DCF	DaVinci configuration file workspace

2 User-defined attributes in DaVinci

DaVinci DEV are allows the definition of user-defined attributes for certain design elements visible within the GUI.

The set of design elements which are providing the definition of user-defined attributes depends on the tool version.

2.1 Creating user-defined attribute definition

To create a user-defined attribute definition open the workspace global attribute definition table available on the main menu 'View → Attribute Definition...'.

Each user-defined attribute is related to a DaVinci object type and must have a name which is unique in the scope of the attribute definition table.

The definition of minimum, maximum, and default value depends on the selected value type

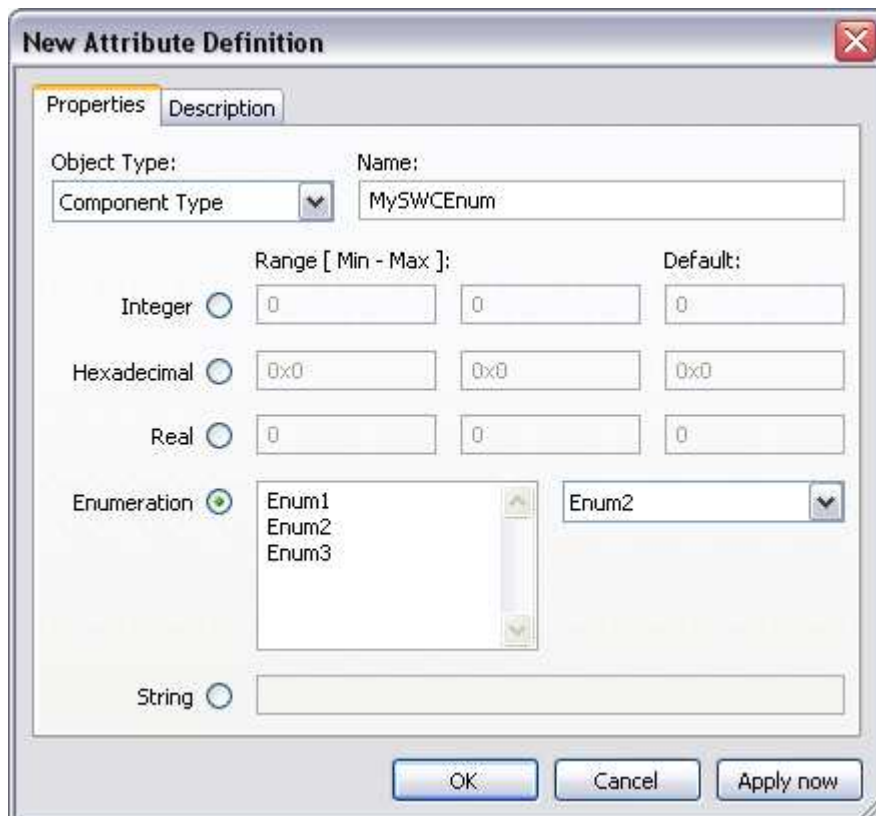


Figure 1: Definition of user-defined attribute

2.2 User-defined attribute usage

Attribute definitions can be used at certain design objects of the workspace. For each attribute which is defined within the global attribute table and associated with the object type of the design object, a local value definition can be specified.

These values are specific for each design object and are available in the properties dialog of the design object.

A design object can only use those user-defined attributes which are defined within the global attribute definition table.

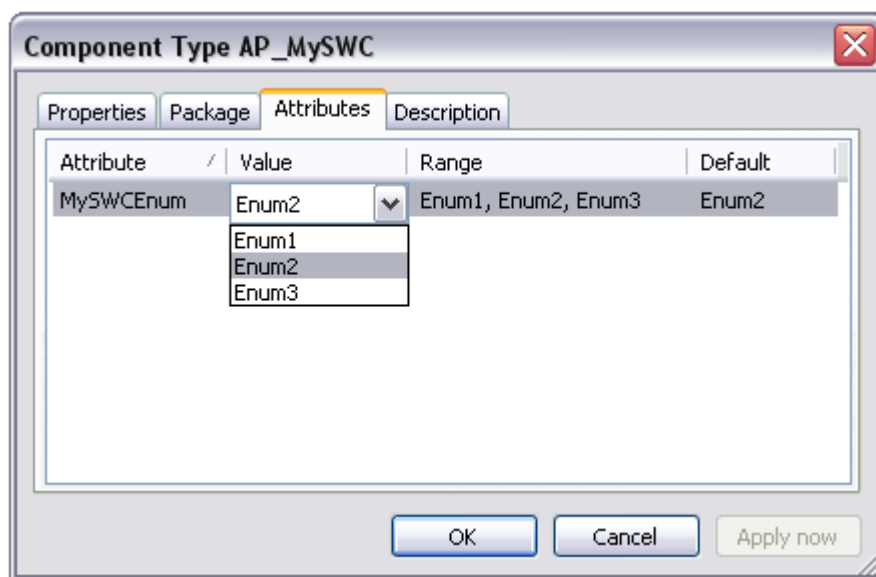


Figure 2: Definition of a local value of a user-defined attribute

2.3 Creating the XML-export

The export of user-defined attributes is always related to a preceded export of design elements. The export can be used with all supported AR versions.

To create the XML export, select the appropriate design element within DaVinci DEV and choose the 'XML Export...' command from the context menu.

The export dialog provides an option 'Export user-defined attributes'. If this option is selected an additional XML output file will be created. The name of the XML file is automatically created by using the name of the AR-XML output file plus the extension '_gen_attr' (e.g. 'System_gen_attr.xml').

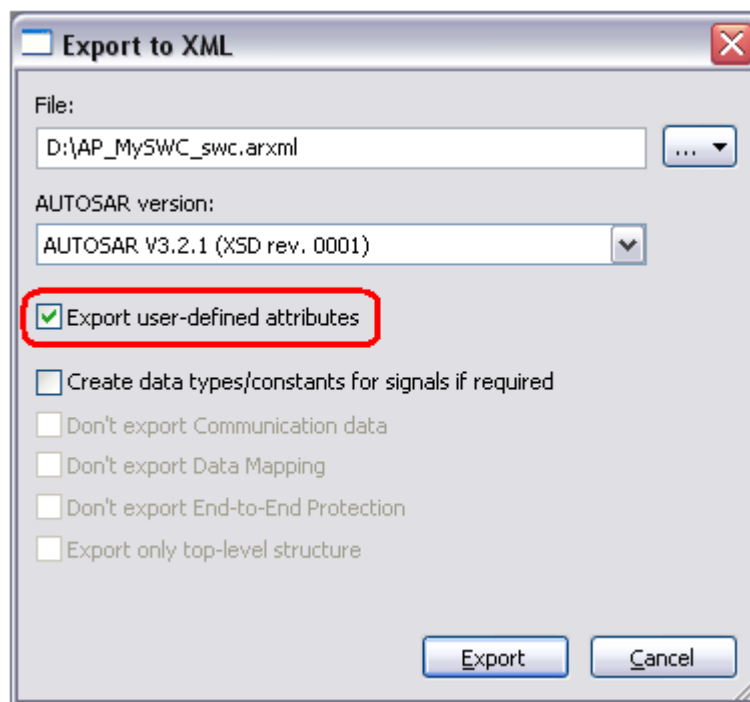


Figure 3: User-defined attribute export option for XML-exports

3 Design object reference

The design object reference clarifies in which way a certain design object is related to the user-defined attribute definition within the attribute export file.

An AR design object is referenced by an AR reference which contains the package path to the `SHORT_NAME` attribute of the referenced AR object.

This reference is stored within the **Reference** attribute of the **ARObjectReference** tag within the user-defined attribute export XML file.

Beside the AR reference the **ARObjectReference** tag also includes the XML tag of the referenced AR element within its **Type** attribute.

E.g. for a software component type 'AP_MySWC' following reference information is exported:

User-defined attribute export file:

```
<ObjectAttributeReference ObjectType="ComponentType">
  <ARObjectReference
    Type="APPLICATION-SOFTWARE-COMPONENT-TYPE"
    Reference="/ComponentType/AP_MySWC">
  </ARObjectReference>
  ....
</ObjectAttributeReference>
```

AR-export file:

```
<AUTOSAR>
  <TOP-LEVEL-PACKAGES>
    <AR-PACKAGE>
      <SHORT-NAME>ComponentType</SHORT-NAME>
      <ELEMENTS>
        <APPLICATION-SOFTWARE-COMPONENT-TYPE>
          <SHORT-NAME>AP_MySWC</SHORT-NAME>
          ....
        </APPLICATION-SOFTWARE-COMPONENT-TYPE>
      </ELEMENTS>
    </AR-PACKAGE>
  </TOP-LEVEL-PACKAGES>
</AUTOSAR>
```

4 Attribute definition resolution

The attribute definition resolution shows how a global user-defined attribute definition is referenced by a certain design object.

4.1 Reference of global attribute definition values

If a design object doesn't define a local value that is different from the global default value definition the user-defined attribute export will only export the reference to the relevant attribute definition table. This reference (**AttributeDefinitionTableRef**) contains a **Version** and an **ID** attribute which uniquely identifies the relevant attribute definition table of the item (see '**AttributeDefinitionTableRef**' of the example below).

By using the **ObjectType** attribute information of the **ObjectAttributeReference** tag the set of relevant attribute definitions for this item type can be identified (e.g. '**ComponentType**').

User-defined attribute export file:

```
<AttributeDefinition>
  <AttributeDefinitionTable Version="1.0" ID="{932D3FD0-2F6C-49BF-80CB-D1C3756D3868}">
    <Attribute Name="MySWCEnum" ObjectType="ComponentType">
      <ENUM Default="Enum2">
        <EnumValue Value="Enum1"></EnumValue>
        <EnumValue Value="Enum2"></EnumValue>
        <EnumValue Value="Enum3"></EnumValue>
      </ENUM>
    </Attribute>
  </AttributeDefinitionTable>

  <ObjectAttributeReference ObjectType="ComponentType">

    <ARObjectReference
      Type="APPLICATION-SOFTWARE-COMPONENT-TYPE"
      Reference="/ComponentType/AP_MySWC">
    </ARObjectReference>

    <AttributeDefinitionTableRef
      Version="1.0"
      ID="{932D3FD0-2F6C-49BF-80CB-D1C3756D3868}">
    </AttributeDefinitionTableRef>

  </ObjectAttributeReference>
</AttributeDefinition>
```


4.2 Reference of local attribute value

Each design object may define a local value for the user-defined attributes. These value definitions are exported with the **AttributeValue** tag within each **ObjectAttributeReference** tag. This tag contains a **Name** attribute which uniquely identifies a single attribute within the attribute definition table (e.g. the attribute 'MySWCEnum'). The **Value** attribute holds the local value of the design object.

User-defined attribute export file:

```
<ObjectAttributeReference ObjectType="ComponentType">
  <ARObjectReference
    Type="APPLICATION-SOFTWARE-COMPONENT-TYPE"
    Reference="/ComponentType/AP_MySWC">
  </ARObjectReference>

  <AttributeDefinitionTableRef
    Version="1.0"
    ID="{932D3FD0-2F6C-49BF-80CB-D1C3756D3868}">
  </AttributeDefinitionTableRef>

  <AttributeValue
    Name="MySWCEnum"
    Value="Enum3">
  </AttributeValue>

</ObjectAttributeReference>
```

5 DCF Workspaces

As DCF workspaces mainly consists of exported AR-XML files the user-defined attributes are also used in DCF workspaces. Thus all user-defined attributes can be loaded with the attribute definitions and their corresponding AR design objects during opening a DCF workspace.

5.1 Global attribute definition file

Nevertheless, if attribute definitions are defined without usage by a design objects, these definitions will be lost on opening the DCF workspace. To overcome this limitation all attribute definitions are stored in a global XML file named like the DCF workspace name with the extension `_attr_def.xml`

The format is the same as for user-defined attributes but the file contains the attribute definitions only.

5.2 Loading attribute definitions

On opening a DCF workspace the global attribute definition file is always loaded first. Thus all definitions exist and can be referenced by the further AR-XML import. A warning during AR-XML import is thrown if the attribute definition within a single `_gen_attr.xml` differs from the globally defined one. In this case the definition from the `_gen_attr.xml` is ignored and only the value of the attribute itself is imported to the design object.

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