Data Import

User Manual

Version 2.0

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1 History

Author	Date	Version	Remarks
Wk	2009-08-27	1.0	Initial version
Wk	2011-01-07	2.0	Document scope extended: description of general import mechanisms, description of special import functions completed

Contents

2 About this Document

This document describes the specific features of DaVinci Developer for importing data according to the AUTOSAR SWC Template. It is applicable for the import of AUTOSAR XML files or DCF files (DaVinci Configuration File).

For details about the import function for the ECU Configuration Template, please see TechnicalReference_EcuConfigurationFiles.pdf.

Abbreviations and Items used in this Document:

SWC	Software Component
PIM	Per-Instance Memory

3 Use Cases

The specific import/update features of DaVinci Developer are relevant for scenarios, where several involved persons (e.g. the OEM and the TIER1) both contribute SWC design artifacts to the overall project.

Figure 1 shows an example, where the TIER1 needs to integrate a SWC of the OEM

- OEM defines an atomic component type with some port prototypes (A). OEM exports the component type and passes it to the TIER1
- TIER1 imports the component type, and integrates it as component prototype into a composition type, which already has some other component prototypes and port prototypes (red color in B).
- OEM changes the atomic component type, e.g. by adding some port prototypes and removing others (C). OEM exports the component type and passes it to the TIER1
- TIER1 imports the component type, and expects that the changes of the OEM are incorporated (D)

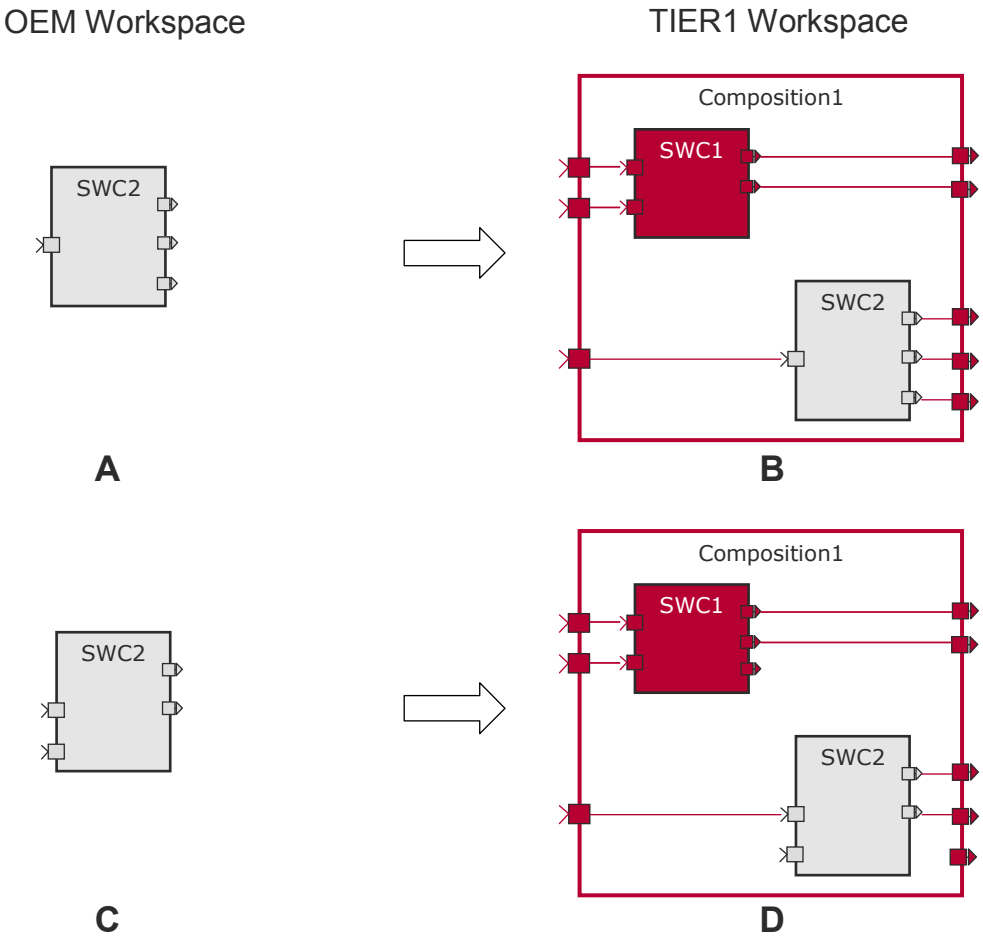

Figure 1: Import/Update Example 1

Figure 2 shows an example, where the TIER1 needs to extend a composition of the OEM

- OEM defines a composition type with some port prototypes and component prototypes (A). OEM exports the composition type and passes it to the TIER1
- TIER1 imports the composition type, and makes changes like adding further port prototypes, component prototypes and connector prototypes (red color in B). TIER1 considers these changes as “private” and does not return these changes to the OEM.
- OEM changes the composition, e.g. by adding some port prototypes and removing others (C). OEM exports the composition type and passes it to the TIER1
- TIER1 imports the composition type, and expects that the changes of the OEM are

incorporated as well as the changes done by the TIER1 (D)

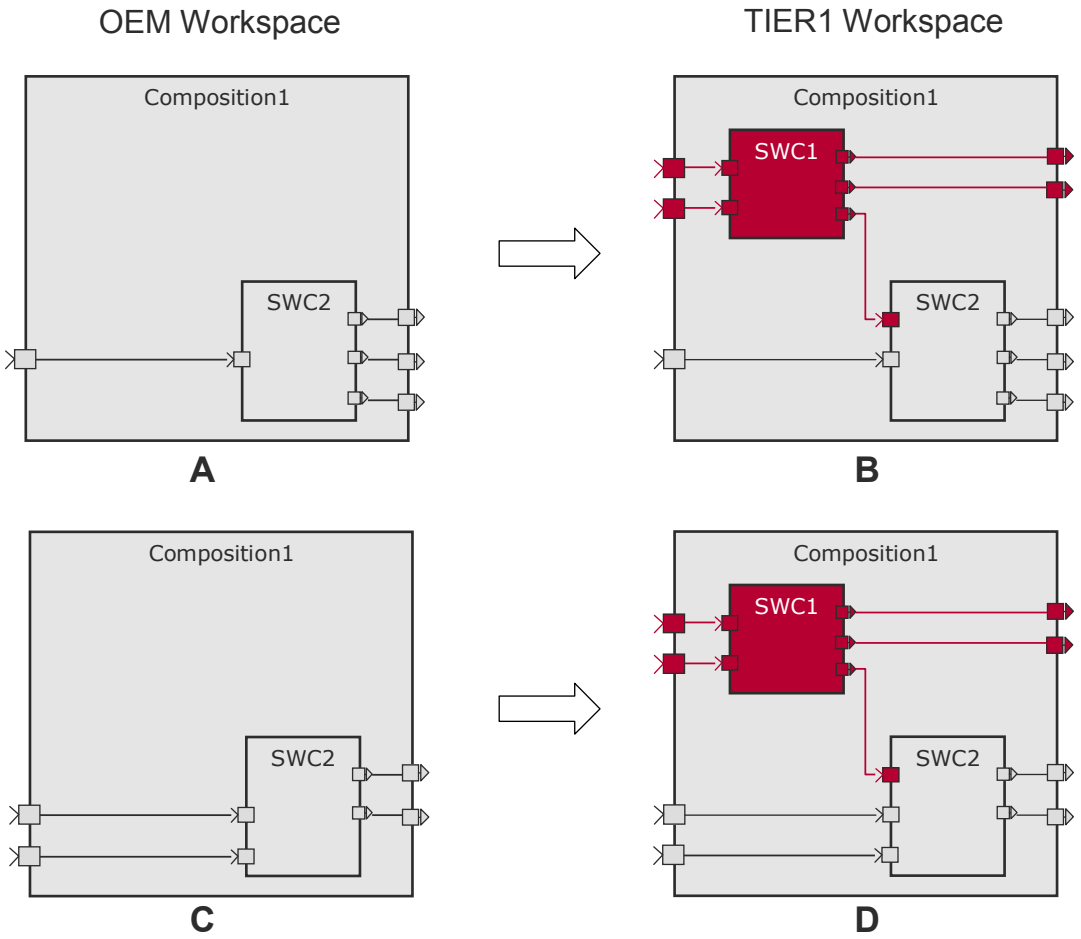

Figure 2: Import/Update Example 2

4 Approach

The import process in DaVinci Developer considers individual objects within the import context (set of AUTOSAR XML files or DCF files) and the workspace, see Figure 3. The objects are identified by the combination of object type and object short name. Based on this identification, the set of objects may be completely disjunctive, or (partially) overlap.

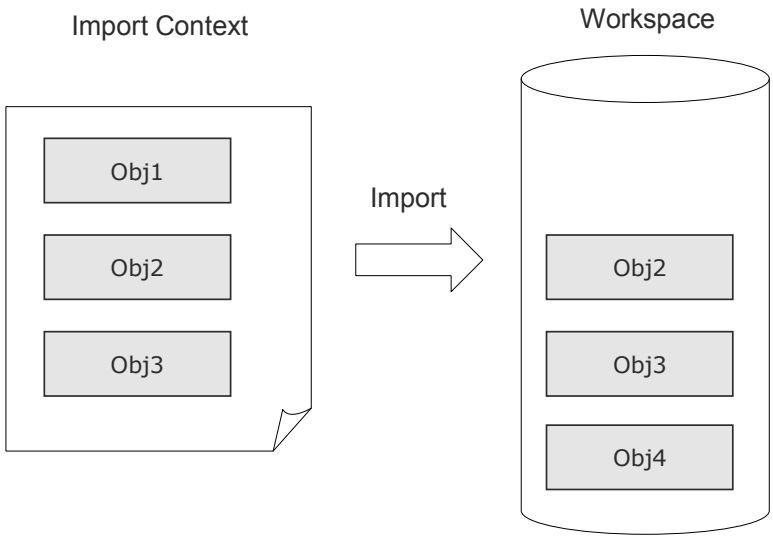

Figure 3: Import Context and Workspace

The **import mode** of an object controls the behavior of DaVinci Developer during the import process. The import mode is expressed from the target workspace point of view with the following options

- Keep
  The object in the workspace is not changed
- Overwrite
  The object in the workspace is overwritten by the imported object

DaVinci Developer supports the following ways to define the import mode of the objects

- Interactively during the import process (user decision not persistent)
- Via difference analysis before starting the import process (user decision not persistent)
- By presetting the import mode (persistent)

The user can select the approach individually for each import process by checking the according options in the import dialog.

4.1 Definition of import mode via difference analysis

Before running the import process DaVinci Developer opens a dialog showing the differences between the objects in the workspace and in the import context. This

difference dialog allows the user to browse the differences and select the import mode (“Keep” or “Overwrite”) for each object.

4.2 Interactive definition of import mode

During the import process DaVinci Developer raises dialogs allowing the user to define the import mode. Such dialog is raised for each individual object. For convenience reasons, these dialogs offer the option to remember the selected import mode for all other objects of the same type, or for all remaining objects.

The interactive definition of import mode offers “Merge object” as import mode. This option is relevant for objects, which have sub-objects. It performs an additive merge of the sub-objects. Instead of the import mode “Keep”, the option “Create new object” is offered. This option leaves the existing objects in the workspace unchanged, and creates a new object (with different name) instead.

4.3 Preset of import mode (automatic merge)

For the following types of objects:

- Port prototypes
- Component prototypes

the import mode (“Keep” or “Overwrite”) can be preset. So this approach is especially useful in case the import process will be repeated in future. These settings become effective, if the user chooses “Overwrite” as import mode for a component type.

4.3.1 Preparation of workspace

Before running the import process the user can specify the import mode as attribute for each object. These attributes are persistently stored in the workspace. To enable this approach the workspace must contains the following attribute definitions:

Attribute Definition	Object Type	Type	Range
IMPORT_MODE_PRESET_PORT	Port Prototype	Enumeration	Keep, Overwrite
IMPORT_MODE_PRESET_COMPONENT	Component Prototype	Enumeration	Keep, Overwrite

The recommended default for these attribute definitions is “Keep”. This will ensure that all new objects, which are created by the user, will get the import mode “Keep”.

These attribute definitions are also contained in the file ImportModePreset.arxml, located in the “Data” folder of the DaVinci Developer installation. By importing this file, the attribute definitions will be created.

After that, the user can set the attribute values to “Overwrite” for all those objects, which should be automatically updated and potentially deleted during import. The user can set the attribute values either manually (please refer to the DaVinci DEV online help for details) or using an according special import function (see chapter 5.1).

4.3.2 Automatic pre-setting of import mode for new imported objects

By an according option in the import dialog, the user may define the value of the import mode preset attribute for all those objects, which are created during the import process (i.e. which did not exist in the workspace before the import). It is recommended to set this option to “Overwrite”.

4.3.3 Resulting behavior of DaVinci Developer

Assuming that the recommendations mentioned above are fulfilled, DaVinci Developer will have the following behavior:

- All imported port prototypes and component prototypes have “Overwrite” as import mode preset
- All port prototypes and component prototypes created by the user have “Keep” as import mode preset
- The imported port prototypes and component prototypes will be automatically updated when the user runs the import again. This includes also deletion of formerly imported, now obsolete port prototypes and component prototypes.
- Port prototypes and component prototypes created by the user will remain unchanged

This behavior supports the typical use cases (see chapter 3)

5 Special Import Functions

Besides the generic import functionality, DaVinci Developer provides special import functions. These special import functions have a predefined behavior in terms of the imported content and in terms of how to react in case of conflicts.

5.1 Overwrite Import Mode Preset

You may use this function to initially prepare a given workspace for the usage of automatic merge based on the import mode preset attributes (see chapter 4.2). This function does not actually import any data, but it sets the import mode preset attribute for all objects in the workspace, which also exist in the import context. The user can define the value ("Keep" or "Overwrite"). The function is called via the menu **File | Special Import | Overwrite Import Mode Preset**. You may select the AUTOSAR XML files to be imported via the **Import from XML Dialog**. Please refer to the DaVinci DEV online help for details about this dialog.

Example: Assuming an initial workspace as shown in Figure 4, where all objects have attribute value "Keep" (e.g. because this is the default of the attribute definition). When calling this special import function and selecting "Overwrite" as value for the import mode preset attribute, the component prototype "SWC2" and all four port prototypes of the import context will be tagged as "Overwrite". All other objects remain at "Keep".

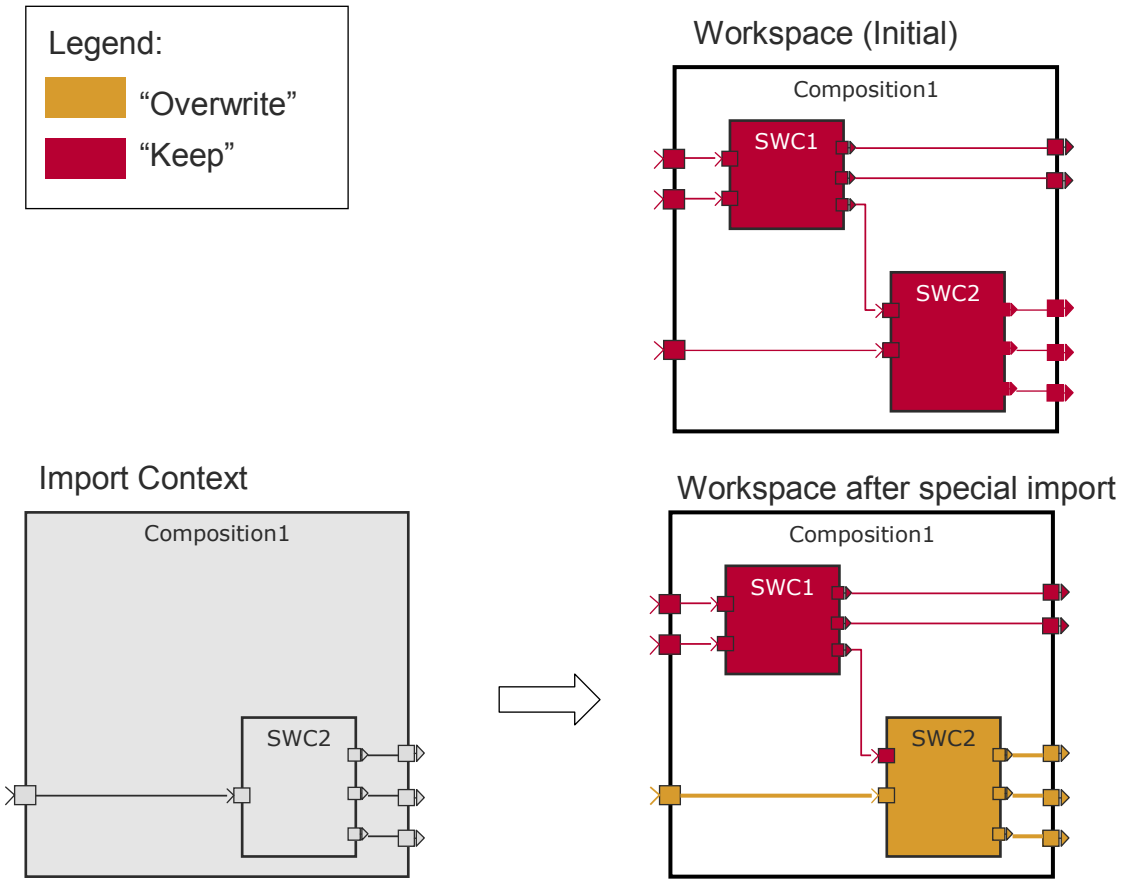

Figure 4: Function “Overwrite import mode preset”

5.2 Update Diagnostic Configuration

You may use this function to update those parts of the application SWCs in the workspace, which are related to diagnostic functionality. The function is called via the menu **File | Special Import | Update Diagnostic Configuration**. You may select the AUTOSAR XML files to be imported via the **Import from XML Dialog**. Please refer to the DaVinci DEV online help for details about this dialog.

This function ensures that the SWCs in the workspace match to the imported XML file, while preserving the modifications you made at the SWCs. This is reached by the following behavior:
If the objects in the imported XML file not yet exist in the workspace, they are created by the special import function. If an object already exists, the following update approach is performed:

- Constants are overwritten
- Data Types are overwritten
- Port Interfaces are overwritten
  - Exception: the Init Value of the Calibration Element Prototypes of Calibration Port Interfaces are not changed.
- Component Types
  - The Properties of the Component Type are overwritten, except for the Implementation Code Type and Supports Multiple Instantiation Flag
  - Port Prototypes
    - Existing Port Prototypes are overwritten, except for the Port API Options and the Communication Specification
    - Missing Port Prototypes are created
    - Obsolete Diagnostic Port Prototypes* are deleted

- Runnable Entities
  - Existing Runnable Entities are merged as follows: the Symbol and Can Be Invoked Concurrently is not changed, the Trigger list and Port Access lists are merged.
  - Missing Runnable Entities are created
- Exclusive Areas, Inter-Runnable Variables and Calibration Parameters
  - Existing objects are overwritten
  - Missing objects are added
- Per-Instance Memory
  - Existing PIMs are overwritten
  - Missing PIMs are added
  - Obsolete Diagnostic PIMs** are deleted

Note: This special import function does not consider the import mode preset attributes (see chapter 4.2).

*) Diagnostic Port Prototypes are Port Prototypes, which contain an attribute with a value other than the default for an attribute definition, which contains “PDM_ID” in its name

**) Diagnostic PIMs are PIMs, which contain an attribute with a value other than the default for an attribute definition, which contains “PDM_ID” in its name

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