VECTOR

Vehicle System Group Support

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Abstract Support of Vehicle System Groups in MICROSAR DCM/DEM BSW modules

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1 Overview

This document describes the supported vehicle system groups (VSG) capability of the Vector MICROSAR R14 BSW modules DCM and DEM.

2 Vehicle System Groups

Vehicle system groups define a set of diagnostic functions, such as services, DIDs or DTCs which are meant to be activated or deactivated at runtime (post build selectable). They can be defined in:

- CANdelaStudio, using the Vehicle System Groups tab
- ODX V2.2.0, using SUB-COMPONENT elements

2.1 Configuration With CANdelaStudio

CANdelaStudio provides the direct editor option **Vehicle System Groups**. The configured data is stored within the CDD file.

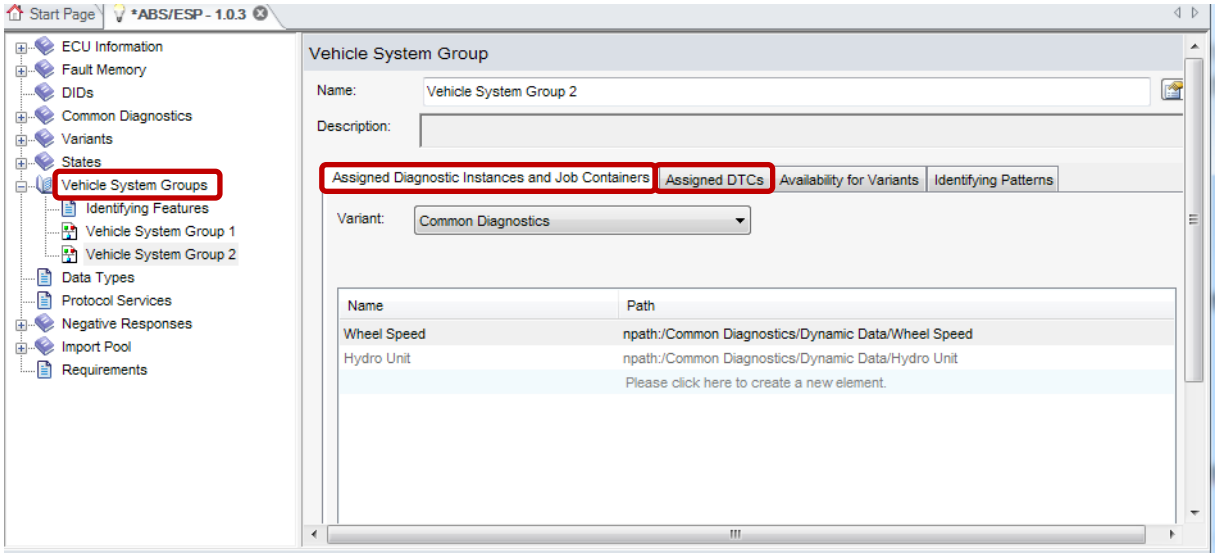

Figure 2-1 Vehicle System Groups in CANdelaStudio

Use the tab **Assigned Diagnostic Instances and Job Containers** to add references to existing diagnostic services, e.g. to define references to ReadDataByIdentifier services. Use the tab **Assigned DTCs** to define references to DTCs.

2.2 Configuration With ODX

ODX 2.2.0 provides the xml elements SUB-COMPONENT to define vehicle system groups:

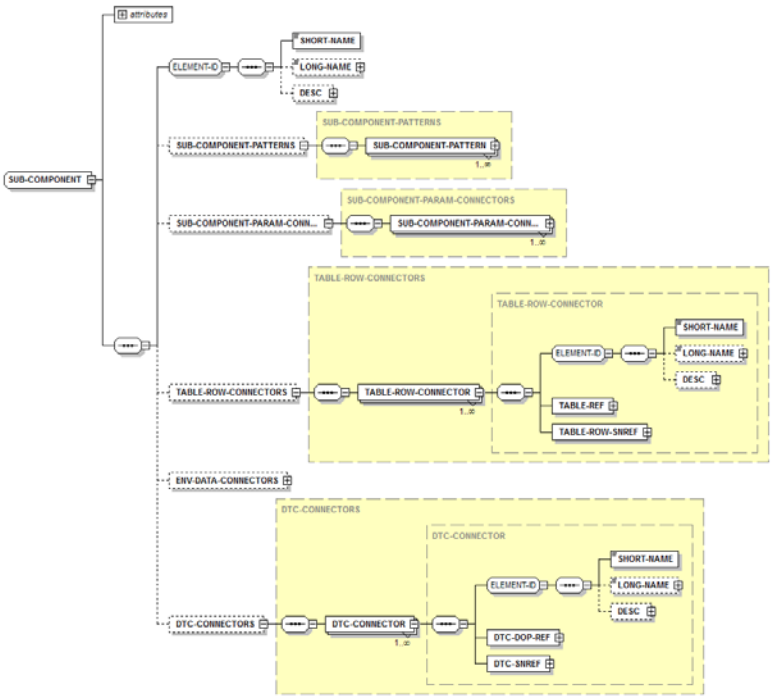

Figure 2-2 SUB-COMPONENTS modelling in ODX

3 Support in MICROSAR

DaVinci Configurator 5 reads configured vehicle system groups via **diagnostic data import** and provides post build selectable diagnostic functions in the BSW software.

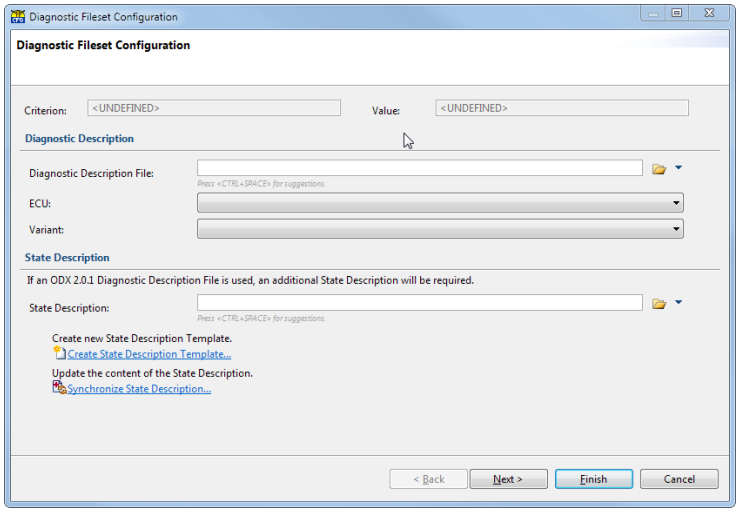

Figure 3-1 Diagnostic Fileset Configuration

3.1 Vehicle System Groups for DTCs

The complex device driver **Vsg** is used to select / deselect DTCs at a post build time. The Vsg provides a VsgItem container for each used vehicle system group. Inside this container a definition of multiple **Dem Event Parameter Ref** entries can be provided. Each **Dem Event Parameter Ref** references a DemEvent in the DEM module.

The DaVinci Configurator 5 diagnostic data import automatically sets the Vsg configuration based on the imported CDD or ODX file. The import will create a VsgItem for each Vehicle System Group in the input file and creates for each DTC in the imported vehicle system group one DTC reference entry.

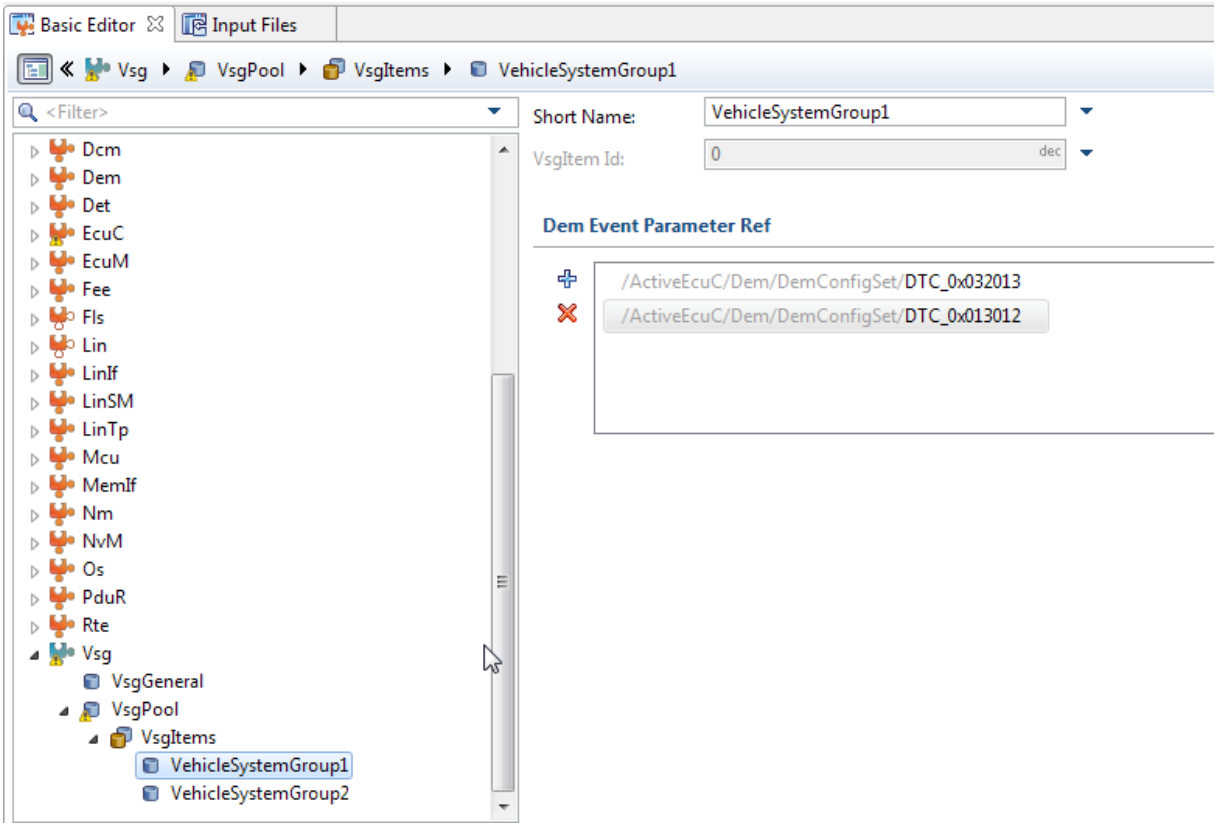

Figure 3-2 VehicleSystemGroup1

At runtime an application shall call the Vsg APIs: `Vsg_EnableVsg()` or `Vsg_DisableVsg()`, to switch a given vehicle system group on or off.

If a given vehicle system group is switched off, all DTCs referenced by the vehicle system group are treated as if they would not be present in the ECU. For further information see TechnicalReference_Cdd_Asr4DiagVsg.pdf.

3.2 Vehicle System Groups for diagnostic services

Vehicle system group support is provided for

- Services
- Subfunctions
- DIDs and DID operations (read/write)
- RIDs and RID operations (Start, Stop, Result)
- OBD: PIDs, MIDs

It is the application's responsibility to decide which service shall be available at runtime. The following APIs are provided:

`ServiceRequestManufacturerNotification_<SWC>_<Operation>`
`Dcm_FilterDidLookUpResult`
`Dcm_FilterRidLookUpResult`

to the application to implement a customer diagnostic service filter. For DIDs, DID operations and RIDs the extension APIs `Dcm_FilterXXX` are provided. All other uses cases shall be implemented, using the ServiceRequestNotification service interface.

Example to disable the DID 0x1234 read and DID 0x5678 write operation:

```
FUNC(Std_ReturnType, DCM_CODE) Dcm_FilterDidLookUpResult(Dcm_OpStatusType OpStatus, uint16
Did, Dcm_DidOpType DidOperation)
{
  Std_ReturnType result;

  result = E_OK;    /* As default all DIDs and operations are supported, disabling is
                       done selective on operation and DID */

  if (DCM_DID_OP_READ == DidOperation)
  {
    if (0x1234 == Did)
    {
      result = E_NOT_OK;  /* No read support for DID 0x1234*/
    }
  }

  if (DCM_DID_OP_WRITE == DidOperation)
  {
    if (0x5678 == Did)
    {
      result = E_NOT_OK;  /* No read support for DID 0x5678*/
    }
  }

  return result;
}
```

For detailed information, which API is used to enable/disable a certain diagnostic function, please refer **Table 9-8 Filter diagnostic objects and the corresponding filtering APIs / Callbacks** of TECHNICALREFERENCE_DIAG_ASR4DCM_VECTOR.PDF.

4 Additional Resources

TECHNICALREFERENCE_CDD_ASR4DIAGVSG.PDF

TECHNICALREFERENCE_DIAG_ASR4DCM_VECTOR.PDF

5 Contacts

For a full list with all Vector locations and addresses worldwide, please visit http://vector.com/contact/.