

Illustrative Example for Service Configuration with the SHAPE Service Variability Tool

This presents an example for defining a service configuration with the Service Variability technique that is developed in the SHAPE project.

The example is based on the *Manage Goods Movement* service provided by SAP. The service refers to the physical or logical movement of materials that causes a change in material stocks or assigns materials directly for use. The original interface of the service is shown in Figure 1.



Figure 1: Original Interface of the “Manage Goods Movement” service

Figure 2 represents the message type *GoodsMovement* which is used in the most of the service operations as type for the input and output messages. For the example only a simplified variant is used. The original has a more associated data types and additional fields.

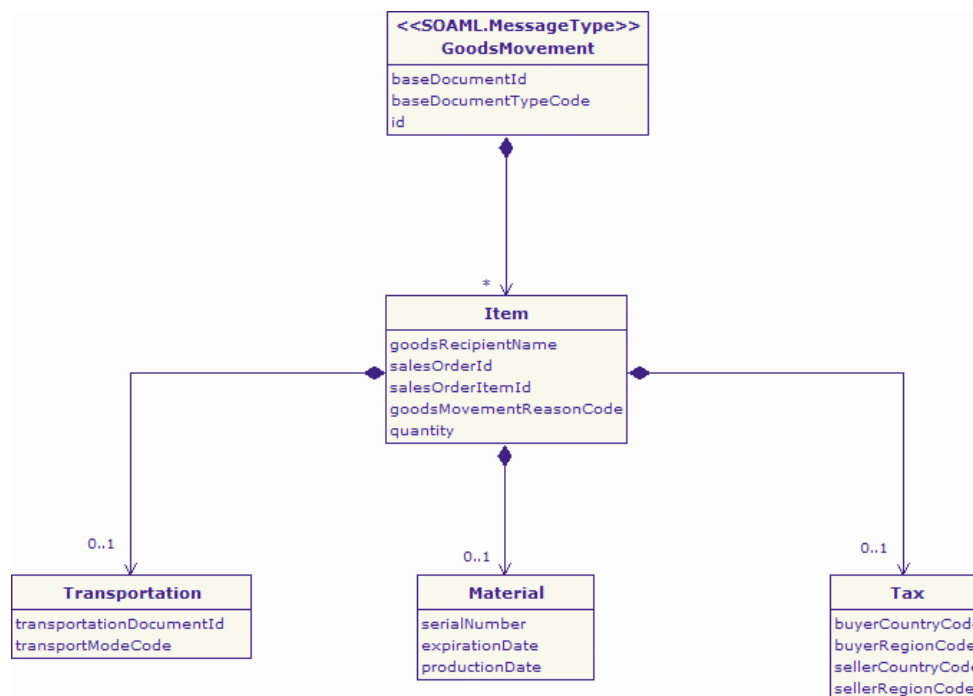


Figure 2: MessageType of the “Manage Goods Movement” service

In this example a *Configuration Specification* for the “Manage Goods Movement” will be described. The service has five operations which are optional. For creation of a Goods Movement two operations exist. The difference between both is, that a goods movement can be created with reference to existing documents (purchase order, inbound delivery, outbound delivery or customer returns) or not. These can be modelled with the help of *ComplexConfigurableOperation*. The benefit for the consumer is that operations with a similar aim are grouped, and that he only has to deselect one complex operation. There also some constraints for selecting operations, for example if the consumer wants to use the “Cancel Goods Movement” operation he also has to select the “Read Goods Movement” operation. The configuration specification for the service operations is shown in Listing 1.

The most operations of a service interface are related to one data type. But there are differences in the field usage of a data type (**Listing 2** and Listing 3). For example the “Id” of a goods movement must not be set in a create request, because this field will be set after the request on provider side, and will be submitted with the confirmation, but for cancelling a goods movement the field is required. A second example is the “baseDocumentId” – this field must be provided if a goods movement with reference will be created, because the field points to the referenced document. An example for pre-configuring values is the tax data type. Because the service is pre-configured for Germany the value of “buyerCountry” is fixed to “Germany”, and the default value of “SellerCountry” is also “Germany”.

ConfigurationSpecification

- Description: Variability description for Manage Goods Movement Service preconfigured for movements in Germany.
- Name: ManageGoodsMovementGermany
- Namespace: www.example.com
- **ComplexConfigurableOperation**
 - Id: 1, Name: Create Goods Movement
 - Description: Creates a goods movement, which can be a goods issue, transfer posting, or goods receipt.
 - minSelection: 1, maxSelection: 2
 - **SimpleConfigurableOperation**
 - Id: 1, Name: Create Goods Movement
 - Usage: Optional
 - **BoundOperation:** *CreateGoodsMovement*
 - **ConfigurableMessage:** see *Fehler! Verweisquelle konnte nicht gefunden werden.*
 - **SimpleConfigurationOperation**
 - Id: 2, Name: Create Goods Movement with Reference
 - Description: Create a goods movement with reference to an inbound delivery, outbound delivery, customer returns delivery or a purchase order.
 - Usage: Optional
 - **BoundOperation:** *CreateGoodsMovementWithReference*
 - **ConfigurableMessage:** see *Fehler! Verweisquelle konnte nicht gefunden werden.*
- **SimpleConfigurableOperation**
 - Id: 2, Name: Read Goods Movement
 - Usage: Optional
 - **BoundOperation:** *ReadGoodsMovement*
 - **ConfigurableMessage:** *ReadGoodsMovementQuery*
- **SimpleConfigurableOperation**
 - Id: 3, Name: Cancel Goods Movement
 - Usage: Optional
 - **Condition**
 - Id: 1
 - Condition: If you choose this operation you also have to choose "Read Goods Movement".
 - **BoundOperation:** *CancelGoodsMovement*
 - **ConfigurableMessage:** *CancelGoodsMovementRequest*

Listing 1: Variability Model of "Manage Goods Movement" service

ConfigurableMessage

- Name: Create Goods Movement Request
- **ConfigurableMessagePart**
 - Name: Goods Movement
 - **BoundMessagePart:** *GoodsMovement*
 - **SimpleConfigurableType**
 - Name=id, Usage: prohibited
 - ...
 - **SimpleConfigurableType**
 - Name=baseDocumentId, Usage: **prohibited**
 - ...
 - **ComplexConfigurableType**
 - Name=Item, Usage: optional
 - **ComplexConfigurableType**
 - Name=Material, Usage: optional
 - **SimpleConfigurableType**
 - Name=SerialNumber, Usage: required
 - **BoundType:** *serialNumber*
 - ...
 - **ComplexConfigurableType**
 - Name=Tax, Usage: optional
 - **SimpleConfigurableType**
 - Name=BuyerCountry, Usage: required
 - fixedValue: Germany
 - **BoundType:** *buyerCountry*
 - **SimpleConfigurableType**
 - Name=SellerCountry, Usage: required
 - defaultValue: Germany
 - **BoundType:** *sellerCountry*
 - ...

Listing 2: Variability Model for Input Message for “Create Goods Movement”

ConfigurableMessage

- Name: Create Goods Movement with Reference Request
- **ConfigurableMessagePart**
 - Name: Goods Movement
 - **BoundMessagePart:** *GoodsMovement*
 - **SimpleConfigurableType**
 - Name=id, Usage: prohibited
 - ...
 - **SimpleConfigurableType**
 - Name=baseDocumentId, Usage: **required**
 - ...
 - ...

Listing 3: Variability Model for Input Message for “Create Goods Movement with Reference”