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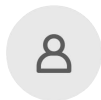
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Vocabulary-Based Annotation Support in Service Builder

former_member196472
Explorer

2014 Jan 21 1:11 PM

👍 | **19 Kudos**   👁 15,923

SAP Managed Tags: SAP Gateway

So far using SAP NetWeaver Gateway you can annotate OData elements only with SAP annotations, now it is possible to enhance the metadata with custom-annotations also and this can be done with vocabulary-based annotation. Basically vocabularies provide the ability to annotate metadata. A vocabulary file is a namespace that contains terms and these terms are used to annotate OData artifacts.

This blog will explain how you can annotate metadata with consumer specific vocabulary using SAP NetWeaver Gateway Service Builder tool.

This feature is available from SAP NetWeaver Gateway SP07.

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Step-by-Step Procedure

Following are steps which you need to follow

- Upload Vocabularies into the Vocabulary Repository
- Create a Project
- Import a vocabulary file
- Add Vocabulary-Based Annotations
- Generate Runtime Artifact
- Registration and Activation of the Generated Service

Upload Vocabularies into the Vocabulary Repository

Start the Service Builder by using the transaction `SEGW`.

To upload a vocabulary file into the Vocabulary Repository in the Service Builder, proceed as follows:

1. From menu bar choose *Extras ->Vocabulary Repository* . The central Vocabulary Repository opens and shows a table for displaying the vocabulary ID, version, namespace, and description. Any previously uploaded vocabulary files are displayed here, otherwise the table is empty.
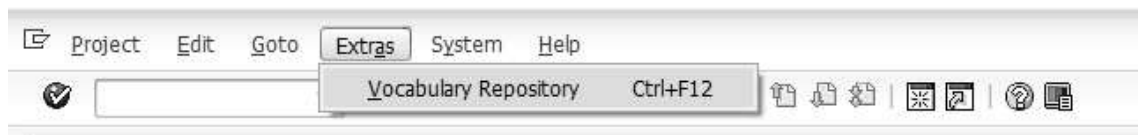
2. Change to edit mode and choose *Append Row* to add a new row to the table.
3. Enter a unique vocabulary ID for the vocabulary file you want to upload. Version 1 is assigned automatically to the first version of the vocabulary file you upload.
4. Click the *Upload* icon in the *Upload Vocabulary Content* column to navigate to the vocabulary file you want to upload. The namespace of the vocabulary file is entered automatically.
5. Enter a description for the newly uploaded vocabulary file.
6. Save the changes and choose *Enter*.

Create a Project

1. Create a New Project by clicking on

2. Select *Service with **Vocabulary-Based Annotations*** in order to use custom annotations.

3. Use any of the available options(like *Import ,Redefine etc*) to create OData
service.

Import a vocabulary file

- In the edit mode, right click on the *Data Model*, choose *Import->Vocabulary* in
  the resulting menu.
- The *Vocabulary Repository* window appears.
- Select the required vocabulary(s) and click continue.

- In the Tree view a new folder with the name *Vocabularies* will be created under
  the Data Model
  and the vocabularies imported into this folder.

- Double click on the *Terms* node under the Vocabularies folder to see the details of the imported annotations in the mass maintenance view.

Terms

Name	EType	ESet	CTy..	Pro..	Nav..	Asso.	ASet	Term	Ref..	Fun..	Par..	Type Kind	Data Type	Coll..	Summary
ConformanceLevel	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Enum Type	ConformanceLevelType	☐	
SupportedFormats	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Core Type	Edm.String	☑	Media types of supported formats, including format p...
AcceptableEncodings	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Core Type	Edm.String	☑	List of acceptable compression methods for ($batch)...
AsynchronousRequestsS...	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Type Definition	Tag	☐	Service supports the asynchronous request preference
BatchContinueOnErrorSu...	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Type Definition	Tag	☐	Service supports the continue on error preference
IsolationSupported	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Enum Type	IsolationLevel	☐	Supported odata.isolation levels
CallbackSupported	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	CallbackType	☐	Supports callbacks for the specified protocols
CrossJoinSupported	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Type Definition	Tag	☐	Supports cross joins for the entity sets in this contain...
ChangeTracking	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	ChangeTrackingType	☐	Change tracking capabilities of this service or entity set
CountRestrictions	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	CountRestrictionsType	☐	Restrictions on /$count path suffix and $count=true ...
NavigationRestrictions	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	NavigationRestrictionsType	☐	Restrictions on navigating properties according to OD...
IndexableByKey	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Type Definition	Tag	☐	Supports key values according to OData URL convent...
TopSupported	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Type Definition	Tag	☐	Supports $top
SkipSupported	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Type Definition	Tag	☐	Supports $skip
BatchSupported	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Type Definition	Tag	☐	Supports $batch requests
FilterFunctions	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Core Type	Edm.String	☑	List of functions supported in $filter
FilterRestrictions	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	FilterRestrictionsType	☐	Restrictions on $filter expressions
SortRestrictions	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	SortRestrictionsType	☐	Restrictions on $orderby expressions
ExpandRestrictions	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	ExpandRestrictionsType	☐	Restrictions on $expand expressions
SearchRestrictions	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	SearchRestrictionsType	☐	Restrictions on $search expressions
InsertRestrictions	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	InsertRestrictionsType	☐	Restrictions on insert operations
UpdateRestrictions	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	UpdateRestrictionsType	☐	Restrictions on update operations
DeleteRestrictions	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Complex Type	DeleteRestrictionsType	☐	Restrictions on delete operations

Core Type
Type Definition
Enum Type
Complex Type
EntityType

Note: Terms can be classified into following types

1. Core Type
2. Type Definition
3. Enum Type
4. Complex Type
5. Entity Type

Add Vocabulary-Based Annotations

Once the vocabulary definitions are added to the data model, the terms from the vocabulary definition can be used to annotate the vocabulary based services if the term applies to the respective OData artifacts.

To add annotations to artifacts for which vocabularies define applicable terms, proceed as follows:

- Double-click the subfolder that contains the artifacts you want to annotate, for example, Entity Sets. Existing entity sets are listed in the mass maintenance view.
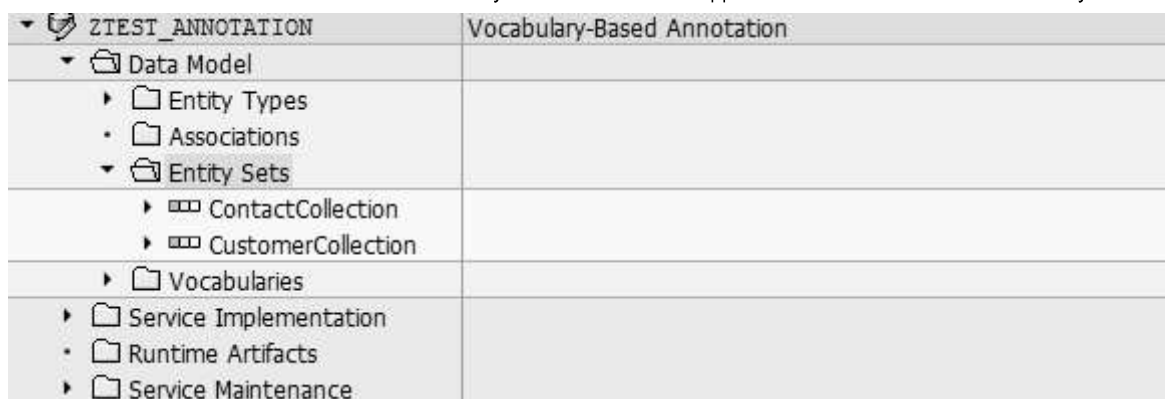
- Choose the Annotations pushbutton to see the vocabulary that is valid for these entity sets. If more than one vocabulary defines applicable terms, you can select the vocabulary you want to use to annotate the entity set and, if required, toggle between the different vocabularies. If none of the imported vocabularies includes applicable terms for entity sets, for example, this pushbutton is not enabled.
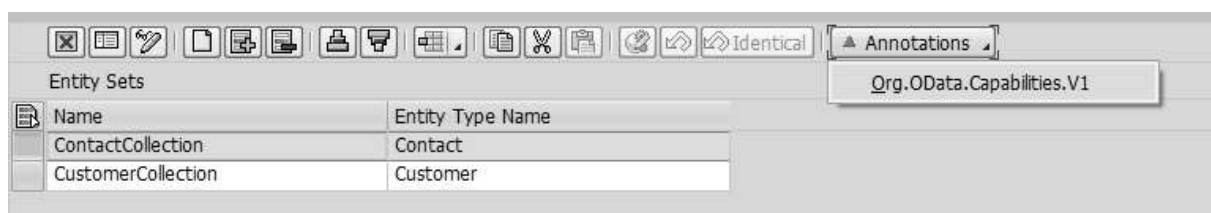
- After you have selected the vocabulary you want to use for the annotations, all entity sets are displayed in a table in the mass maintenance view with the name of the applicable vocabulary displayed as a header.

- To create annotations for an entity set, select either the entire row to create all available annotations, or select the applicable cells for each annotation you want to create and choose the Create Annotation pushbutton. You can select more than one row and more than one cell to enable the mass maintenance of multiple entity sets and annotations, for example.

- Annotation value can be maintained in *Annotation Data* table.
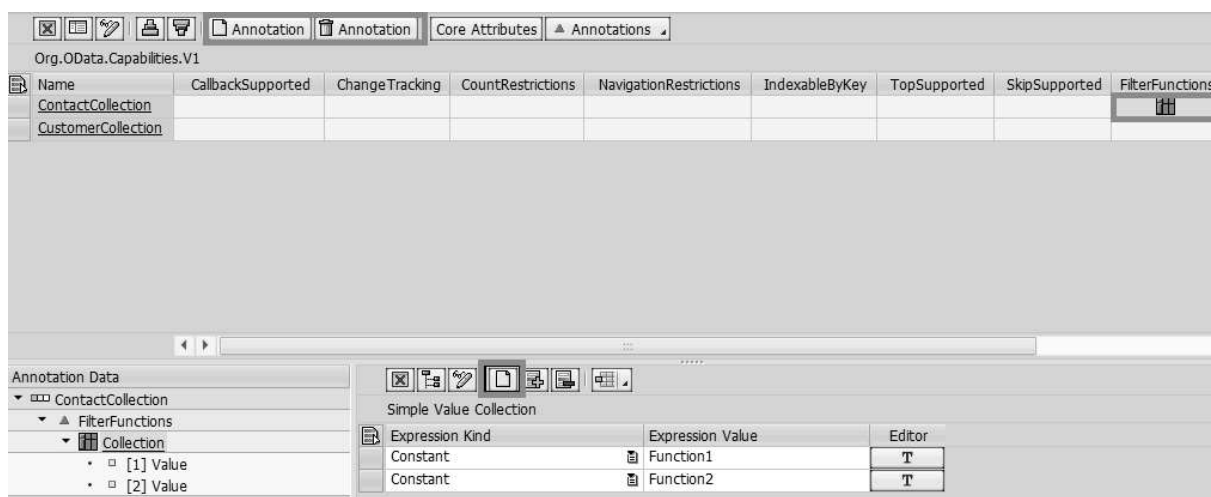
- If you want to delete any annotations, select the relevant rows or cells and choose the Delete Annotation pushbutton.
- Save your entries.

Generate Runtime Artifact

Vocabulary related code can be found in **DEFINE_VOCAB_ANNOTATIONS( )** of generated MPC class.

```
lo_reference = vocab_anno_model->create_vocabulary_reference( iv_vocab_id = '/IWBEP/VOC_CAPABILITIES'
                                                              iv_vocab_version = '0001').
lo_reference->create_include( iv_namespace = 'Org.OData.Capabilities.V1' ).
lo_reference = vocab_anno_model->create_vocabulary_reference( iv_vocab_id = '/IWBEP/VOC_CORE'
                                                              iv_vocab_version = '0001').
lo_reference->create_include( iv_namespace = 'Org.OData.Core.V1' ).
lo_ann_target = vocab_anno_model->create_annotations_target( 'ContactCollection' ).
lo_annotation = lo_ann_target->create_annotation( iv_term = 'Org.OData.Capabilities.V1.FilterFunctions' ).
lo_collection = lo_annotation->create_collection( ).
lo_simp_value = lo_collection->create_simple_value( ).
lo_simp_value->set_string( 'Function1' ).
lo_simp_value = lo_collection->create_simple_value( ).
lo_simp_value->set_string( 'Function2' ).
```

In SP7, commented code gets generated for annotation. Follow the instructions provided in method.

Registration and Activation of the Generated Service

Refer to section "*Registration and Activation of the Generated Service*" of my blog on SPI.

You will find new tags namely *Annotation Targets* in metadata file.

```
– <edmx:DataServices m:DataServiceVersion="2.0">
  – <Schema Namespace="ZTEST_ANNOTATION1_SRV" xml:lang="en" xmlns="http://schemas.microsoft.com/ado/2008/09/edm">
    + <EntityType Name="Customer" sap:content-version="1">
    + <EntityType Name="Contact" sap:content-version="1">
    + <EntityContainer Name="ZTEST_ANNOTATION1_SRV_Entities" m:IsDefaultEntityContainer="true">
    – <Annotations Target="ContactCollection" xmlns="http://docs.oasis-open.org/odata/ns/edm">
      – <Annotation Term="Org.OData.Capabilities.V1.FilterFunctions">
        – <Collection>
            <String>Function1</String>
            <String>Function2</String>
        </Collection>
      </Annotation>
    </Annotations>
      <atom:link rel="self" href="https://███████████████/sap/opu/odata/sap/ZTEST_ANNOTATION1_SRV/$metadata"
        xmlns:atom="http://www.w3.org/2005/Atom" />
      <atom:link rel="latest-version" href=███████████████/sap/opu/odata/sap/ZTEST_ANNOTATION1_SRV/$metadata"
        xmlns:atom="http://www.w3.org/2005/Atom" />
  </Schema>
  </edmx:DataServices>
</edmx:Edmx>
```

That is all for now and if need be this blog be enhanced, stay tuned :wink: Any feedback is highly appreciated :smile:

Add tags

Comment

8 Comments
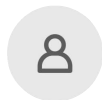
former_member202801
Explorer

2014 Jan 22 5:09 PM

👍 | 0 Kudos

Very elaborate...

Former Member

2014 Jan 30 8:28 PM

👍 | 0 Kudos

Great blog, thanks for the input

WRoeckelein
Active Participant

2014 May 13 5:58 AM

👍 | 0 Kudos

How can I add a Description/LongDescription from Org.OData.Core.V1 to an Entity or an Attribute in SEGW?
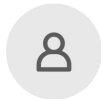
former_member227839

Discoverer

2015 Aug 05 3:46 PM

👍 | **0 Kudos**

i am not getting com.sap.vocabularies.UI.v1 in my vocabularies list.. any idea?

SAP **CarlosRoggan**

Product and Topic Expert

2016 Jul 29 10:22 AM

👍 | **0 Kudos**

Very instructive and easy to follow - who could ask for more? 😉

Thanks for the great blog, Ashish!
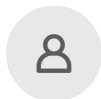
former_member604150

Explorer

2019 Jul 10 10:42 PM

👍 0 **Kudos**

Do You know how in the mean time? I don't 🙂

Do anyone have an idea?

D   **david_fryda2**
          Participant

                                                          ⊙
                                        2022 Apr 10 9:57 AM

👍 0 **Kudos**

Hi,

First thanks.

Do I have to implement sorting and filter methods on server side?

Thanks.
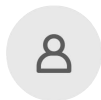
⚇   **former_member151833**
          Explorer

                                                          ⊙
                                        2022 May 30 2:25 AM

👍 0 **Kudos**

Can I edit the **DEFINE_VOCAB_ANNOTATIONS( )** ? because when I edit annotation in SEGW, there is some annotation parameter can't find. for example, the 'Qualifier', I

want to edit method DEFINE_VOCAB_ANNOTATIONS and add this parameter. but after I added this parameter, how do I RUN it and make it effective? thank you.

Comment

↩ **B** *I* U̲ S̶ ⚠ ☺ 🔗 📷 🎥 ☰ ▾ ☰ ▾ A ▾

T↕▾ A ▾ •••

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