How To… Develop a Custom Object with SAP MDG (Master Data Governance)

Implementing a custom object master data domain with SAP MDG incl. Data Model, Process Model and User Interface

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INTRO

Author Bio

Steffen Ulmer is an SAP Principal Consultant who works at SAP (Schweiz) AG. In this role, he has been a trusted advisor for large enterprises on topics and products like: SAP Master Data Governance, Central Governance, Consolidation and Mass Processing, Master Data Strategy and Architecture.

Summary

Many companies want to manage custom objects in a central Master data system to be able to harmonize this information across their landscape. Custom objects can be individual defined objects such as sites or plants. Custom objects are typically less complex master data objects with a small and simple data model. They are often used as reference data in major objects such as material, suppliers and customers. This How-To Guide describes the necessary steps to implement a custom object in SAP MDG, central governance. The guide is based on an object called “SITE” and includes the following steps during the implementation phase:

- Create a new Data Model
- Define a new Business Object and Activity
- Create a custom User Interface
- Process Modeling for logical action CREATE
- Test of the custom object

At the end of the document, you will find further information about potential next steps to further enhance the custom object application by a more complex data model and additional scenarios such as change processes or transforming reference data into customizing.

The audience of this document can be customers, technology consultants and architects.

About this Document

SAP Master Data Governance is a Master Data Management solution within the Business Suite and SAP S/4HANA, and is integrated into the ABAP Application Server of SAP. I really think that lots of you will have similar requirements in an MDG-based environment, and lots of you want to develop custom objects and processes which are not (and cannot be) delivered within the standard content. This document will describe how to develop a custom object in SAP MDG. It will show you, in some very basic steps, what you need to do to:

- Get your own data model into the system
- Configure your own User Interface with the SAP FPM (Floor Plan Manager)
- Reuse a preconfigured Business Workflow within your own Change Request Type
- Test your new custom object via a Change Request

Prerequisites

For this How-To Guide you should have access to a sandbox of your MDG Application Server with appropriate access rights. The ERP System must run on EhP (Enhancement Package) 8 and at least version SAP MDG 9.0 or on SAP S/4HANA 1709. You need some basic understanding of the following topics:

- SAP MDG
- SAP Business Workflow
- SAP Floorplan Manager (FPM)
Development skills are not required since not one single line of code will be written. If you want to save the configuration into an ABAP transport request, you need a workbench and customizing request/tasks. Depending on your experience levels, you will need 2-4 hours to complete the tasks in this guide.

**Scenario**

Let’s assume that you have already successfully implemented the SAP MDG standard objects such as Material, Suppliers, Financials and Customers. You are replicating this data to several ERP and Non-ERP Systems for usage within transactional matters. Your business department is generally happy with the solution, but they have an issue with some of the reference data. Reference data is information which is used within master data objects itself, or in transactions or programs as supporting information. In SAP, such data is typically displayed in F4 helps or drop-down value lists. Examples of such reference data are:

- List of plants which is used to assign a material or products to a physical facility
- List of countries which is used within many transactions and referenced in many data models.

Your business users identified that these lists of valid reference data are not harmonized within the landscape. This gap causes issues regarding data quality which ends up in inefficient business processes. A concrete example is the information object “Site” which is a valid list of geographical places where the company can have plants, unloading points or just generally assets.

**High-Level Requirements**

The business requests the following:

1. A central system in which the valid list of values for sites are managed
2. A governance process to be able to carefully add (or change) site objects
3. A web-based application to enter and govern the data in a User Interface
4. A search application to find existing sites

**Data Model**

In this How-To Guide the SAP MDG flex mode is used.
Handling of Active And Inactive Data

for Custom Objects

MDG separates
- **Active area** – Holds data that is ready to be used by applications
- **Staging** – Holds the data that is not yet approved, currently part of a change request

For optimized integration and flexibility MDG allows two modes for the **Active Area**
- **Re-Use active area (re-use mode)** – Existing structures (i.e. data base tables) of applications are used. For example, MDG for material makes use of the MARA table in ECC. Re-Use Class needed Used for MDG-S, MDG-C, MDG-M. Can be used for Custom Objects (starting with EhP6)
- **Generated active area (flex mode)** – Tables as defined in the MDG data model are used to store active data. Used for MDG-F. Has to be used for Custom Objects in EhP6.

**Governance Process**

The governance process is also very simple and includes just a 2-step approval. The following graphic shows a high-level view of the governance process:

Requestor: Enter site data
Approver: Review & Approve

This guide uses the SAP MDG Rule-Based Workflow template to model this process.
STEP-BY-STEP GUIDE

Data Modeling

Create Business Object Type Code (OTC)

Logon with SAP GUI and start transaction MDGIMG. Navigate to General Settings → Data Modeling → Define Business Object Type Codes

Use New Entries to create BO Type ZK_BO1

Save your changes

Create New Data Model

Navigate to Configuration Workbench (alternatively you can use the old “Edit Data Model”)

Use New Entries to create a new Data Model with the following:
- Data Model: ZK
- Descr.: MDG Site
- Active Area: provided by MDG
- Namespace: ZSZK
- Package: $TMP

Click New in the Entity Types section
Add SITE
Use the values as shown on the right:
- Storage: Type 1
- Data Element: ORTID
Click on Attributes tab and add New attributes for the domain:
(Attribute)     (Data Element)
CITY             AD_CITY1
COUNTRY          LAND1
DESCR            AD_REMARK1
NAME             AD_NAME1
STREET           AD_STREET
ZIP              AD_PSTCD1

Select the Required Entry checkbox for the NAME attribute

Click Business Object Types and assign the BO Type ZK_BO1
Select the Root checkbox

Save the Data Model

**Activate** the Data Model
System will show a success message

This will take several seconds. The system generates the active area and all dependent ABAP Structures

Info: The system generates many structures and also the genIL model (for single processing, multi-record processing and even hierarchy processing)

**View Log**

**Verify Active Version**
Go back into the data model and check the Model Generation Information

Active Version should be **Same**
[OPTIONAL]
Verify the structure and the generated tables
Run report USMD_DATA_MODEL via SE37/38

[OPTIONAL]
Verify that structures have been created.
If they are not created, regenerate the data model using classic IMG “Data Model” (repeat activation)
Use se80 to review

[OPTIONAL]
Call transaction genil_model_browser to verify that the genIL structures have been created
Component: ZSP_ZK

Workflow and Process Modeling

Create New Bus. Activity
Start MDGIMG and navigate to Create Business Activity

Use New Entries to create a business activity as follows:
Bus. Activity: ZKBA
Descr: Site Bus Act ZK
Data Model: ZK
BO Type: ZK_BO1
Log. Action: CREATE

Save your changes

Create New CR Type

Start MDGIMG and navigate to Create Change Request Type

Use New Entries to create a new CR as shown.
Type of CR: ZKCREATE
Data Model: ZK
Don't forget to mark the checkbox for Single Object processing
Main Entity Type: SITE
Use WF Template WS46000027 which has the 2-step approval flow
Assign the **Entity Type SITE** to the CR Type

Assign **Bus. Activity ZKBA** to the CR Type

Save your settings
Configure/Create Workflow Model

Revise Steps for Standard Workflow

Navigate to Define Change Request Step Numbers and look for WS46000027

Verify that steps 0-4 are maintained, otherwise add them using the descriptions shown on the right

Define WF Step Processors (for Standard Workflow Template WS46000027)

Navigate to Assign Processor to Change Request Step Number (Simple Workflow)

Add steps 0-2 for your CR type (ZKCREATE), assign an Object US (User) and Agent ID (User ID)

Use your own user instead of the one shown on the screen.

User Interface

Search UI
Start MDGIMG and navigate to Manage UI Configurations

Select USMD_SEARCH – USMD_SEARCH_TEMPLATE and click on Copy

Deselect the rows for FPM_SEARCH_UIBB and FPM_LIST_UIBB_ATS

Change Target Configuration ID:
- App_Config: Z_USMD_SEARCH_ZK
- UI Config: Z_USMD_SEARCH_OVP_ZK

Click on Start Deep-Copy

Make sure the Change Affixes popup doesn't come up! Place the cursor at Z_USMD_SEARCH_RESULT_ZK to make sure it works. If the Change Affixes popup does appear for some reason, click Cancel and click Start Deep-Copy again.

Assign a package (like $tmp)

Navigate to the App Config
Go to *Edit* mode and change the OTC, Data Model and Entity on this level as follows:

**OTC:** ZK_BO1  
**USMD_MODEL:** ZK  
**USMD_ENTITY:** Site  

Save your changes.

Navigate to the UI Config.

On the Overview Page Schema tab, rename the Config IDs for *Search Criteria* and *Search Results* using these names:

- Z_USMD_SEARCH_DQUERY_ZK  
- Z_USMD_SEARCH_RESULT_ZK

Save the changes.

Select the *Search Criteria* line and click on *Configure UIBB*.

A *Create Configuration* popup appears, which you confirm by choosing *OK*. 
Enter the feeder class:

CL_USMD_SEARCH_GUIBB_DQUERY

Change the settings for the Feeder Class and Parameters by entering the following:

Component: ZSP_ZK
Dyn Query Name: DynamicQuerySITE

After changing the Feeder Class Parameters, you can model your search screen.

Remove Search Criteria lines as you require (see example on the right).

Save your settings

Go back to the Search OVP

Select the Search Results line and click Configure UIBB
A Create Configuration popup appears, which you confirm by choosing OK.

Define the feeder class:

**CL_USMD_SEARCH_GUIBB_RESULT**

Define Parameters as follows:

**Component:** ZSP_ZK  
**Object Name:** SITE

Design the Search Results columns as you require (see example on the right).

Save your settings

On the Toolbar Schema tab you may remove all buttons except the first one.

The first one is the New button to trigger the creation of a new object from the search result.

All other functions are not part of this guide.

Go back to the OVP and define Wire Schema on OVP level as follows:

**Component:** FPM_LIST_UIBB_ATS  
**Config ID:** Z_USMD_SEARCH_RESULT_ZK  
**Source Component:**
Review the Attributes of the wire:

Port Type: Collection  
Port Identifier: STANDARD  
Connector Class: CL_FPM_CONNECTOR_BOL_IDENTIT

Create a Communicator for Search:
Start MDGIMG again and navigate to Manage UI Configurations. Click the red icon of your Search configuration application.  
Click on the link and create an empty communicator.  
The icon has then changed to green.

Single Processing UI

Start MDGIMG and navigate to Manage UI Configurations

Choose Copy

Use the following names:
Z_BS_OVP_ZK  
Z_BS_OVP_ZK_CBA  
Z_BS_ZK_OVP

Click on Start Deep-Copy

Make sure the Change Affixes popup doesn’t come up! Place the cursor at Z_USMD_SEARCH_RESULT_ZK to make sure it works. If the Change Affixes popup does appear for some reason, click Cancel and then click Start Deep-Copy again.
Click on the highest level Z_BS_OVP_ZK

Only change the USMD_OTC entry at this level, as follows:

**USMD_OTC: ZK_BO1**

Save your settings

Navigate to Z_BS_ZK_OVP

Add a new *Form Component* UIBB to the section.

Use the following name:

**Z_BS_LOCATION_FORM**

Ignore the error for now.

Select the line with the UIBB and click on *Configure UIBB*
Confirm the popup

Define the feeder class:

**CL_MDG_BS_GUIBB_FORM**

Define the Parameters:

**Component: ZSP_ZK**

**Object Name: SITE**

Select the *Editable* checkbox.

Confirm your entries by choosing *OK*.

Design your screen as you require (see example shown)

*Note: You can rename the label from *Location ID* to *Site ID***

Save your changes for the Form UIBB

Go back to the OVP
Define the wiring on the Wire Schema tab as follows:

Component: FPM_FORM_UIBB_GL2
Config ID: Z_BS_LOCATION_FORM
Connector Class: CL_USMD_CONNECTOR_BOL_QRY

After entering the connector you will see additional attributes:

Component Name: ZSP_ZK
Query Name: DynamicQuerySITE

Save your changes

Start Manage UI Configurations again and create the communicator for the new OVP. The communicator makes sure that the CR Header is added.

Click on the red icon

Create the new object and confirm.

Select settings on the left-hand side and add crWires

Define the details exactly as follows:

Page ID: MAIN (case sensitive!)
Connector: CL_MDG_BS_CONNECTOR_BOL_CR_REL
Source Component: FPM_FORM_UIBB_GL2
Source Config Name: Z_BS_LOCATION_FORM

Save your changes

Link UIs to Actions

Add the following 2 entries (otherwise the New button will not work, for example!):
Start MDGIMG and navigate to Link Log. Actions with UI Application and Bus. Activity: Custom Definition

Enter the following:

- **BO Type**: ZK_BO1
- **Log Action**: *
- **Current UI App**: *
- **Target UI App**: USMD_OVP_GEN
- **Target UI Config**: Z_BS_OVP_ZK
- **Bus. Acty**: ZKBA

Save your entries

Start MDGIMG and navigate to Link Logical Actions with Business Activity: Custom Definition

Enter the following:

- **UI App**: USMD_OVP_GEN
- **UI Config**: Z_BS_OVP_ZK
- **Log. Action**: CREATE
- **Bus. Acty**: ZKBA

Save your entries

### Role Model

In your SAP GUI system, call transaction PFCG

Create a new role from scratch with the name ZK_MDG_SITE

On the **Menu** tab, create a new folder with the name: MDG SITE ZK
Within this folder:
Create a new transaction by choosing *Transaction → Web Dynpro Application*

Enter the following details:

**USMD_SEARCH Z_USMD_SEARCH_Z K**

Important:
Assign your test user to the role
Save the role

**Test**

Start NWBC

Select role **Z_MDG_SITE**

The UI appears:
Info: If the task assignment (log no current processor) fails, please check if the base configuration of MDG is done. You might need to configure the task 54307924 as a general task as shown here:

![Configuration screenshot]

- Search for the new record

![Search results screenshot]
**NEXT STEPS**
To enrich the application, you may want to do the following things:
1. Add more entities and attributes to the data model and use relationships
2. Build a Change Request Type for log. action CHANGE to be able to modify existing records
3. Use multi-record processing mode
4. Use CBA to have a more dynamic UI
5. Introduce an auto ID for the Site/Location ID
6. Switch to a reuse model

**APPENDIX**

**OUT OF SCOPE**
This guide does not include topics like:
- Data Quality features with BRFplus or BAdIs
- Reporting capabilities

**HINTS & ADDITIONAL INFORMATION**

**Helpful Transactions**

*Tcode USMD_DELETE_CREQUEST*

*Tcode genil_model_browser*

*Tcode USMD_DATA_MODEL*

**View Generated Data Model**

1. View generated tables:
   Execute report USMD_DATA_MODEL in SE80 and go into the Data Model

2. The generated tables are displayed.
Display Data in Staging Table

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Just double-click on the Physical Name and you will get forwarded to the content</td>
</tr>
<tr>
<td>2.</td>
<td>Alternative method: Display table entries. Call up SE16 and enter a technical table name</td>
</tr>
<tr>
<td>3.</td>
<td>Choose Execute</td>
</tr>
<tr>
<td>4.</td>
<td>Inspect the result</td>
</tr>
</tbody>
</table>

**Tcode USMD_DELETE_DATA_MODEL**

Delete a Data Model

If you want to delete a data model (and all dependent objects), you can do the following:

1. Make sure you are in the cross-system client.
2. Call up MDGIMG → General Settings → Data Modeling → Edit Data Model.
3. Select the corresponding data model and delete the line.
4. If this is not possible due to an active version, call up SE80 and run USMD_DELETE_DATA_MODEL. This will delete the active version and all dependent objects (except UI Configurations).
5. Repeat Step 3.
6. Important: You must SAVE and EXIT the MDGIMG when you’re done.

**Browser**

Depending on which version you are using, you might experience some issues displaying the content with Internet Explorer. If so, using Google Chrome usually works.