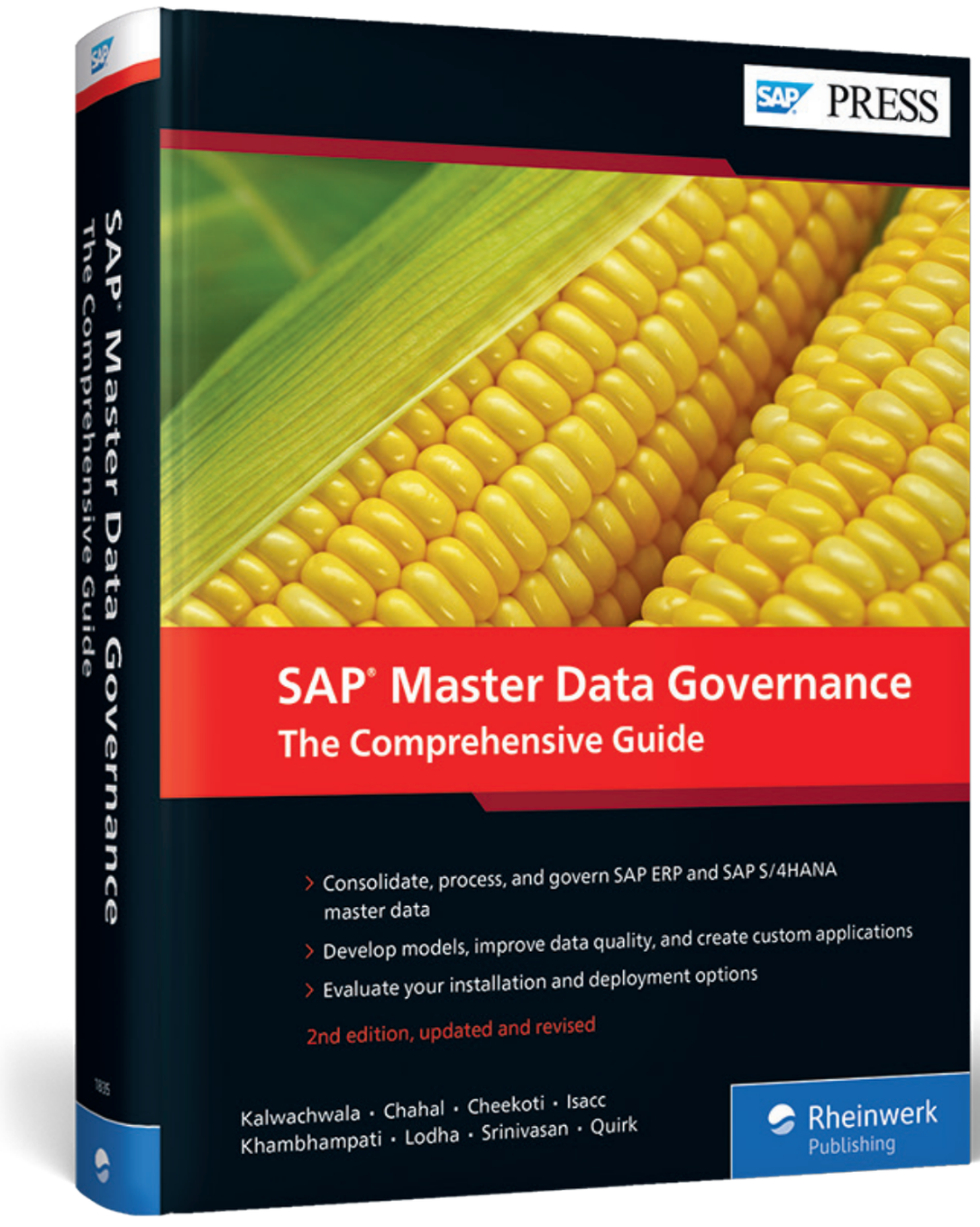

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This sample chapter provides a view into data modeling concepts, including different storage areas and storage types, as well as insights into delivered data models. We'll also discuss entities, attributes, and the relationships between entities. SAP Master Data Governance provides various options to enhance the delivered data models based on business needs.

"Central Governance: Data Modeling"

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SAP Master Data Governance: The Comprehensive Guide

774 pages, 2nd, updated and revised edition 2019, $89.95
ISBN 978-1-4932-1835-6

www.sap-press.com/4883

Chapter 3

Central Governance: Data Modeling

This chapter provides a view into data modeling concepts, including different storage areas and storage types, as well as insights into delivered data models. We'll also discuss entities, attributes, and the relationships between entities. SAP Master Data Governance provides various options to enhance the delivered data models based on business needs.

In the previous two chapters, we introduced the concept of master data management and SAP's master data management product—SAP Master Data Governance—including how it fits into the overall portfolio of enterprise information management (EIM) products. This chapter introduces the concept of data modeling in SAP Master Data Governance and provides an overview of SAP-delivered data models and their configuration.

The following data models are delivered by SAP as part of SAP Master Data Governance:

- **Material (MM)**
  For governing material master data.
- **Business partner (BP)**
  For governing business partner, customer, supplier, and contract accounts.
- **Financials (0G)**
  For governing financial master data, such as general ledger accounts, cost centers, profit centers, internal orders, and so on.

Note

The following data models are offered as partner solutions developed by Utopia:

- SAP Master Data Governance, retail and fashion management extension by Utopia
- SAP Master Data Governance, enterprise asset management extension by Utopia

SAP also provides a framework for extending the data models to create custom data models. Extending SAP delivered data models is explained in Section 3.4 of this chapter, and creating custom data model is explained in Chapter 10. Let's begin by exploring the data modeling process in SAP Master Data Governance.

3.1 Introduction to Data Modeling in SAP Master Data Governance

A key aspect of governing master data is the ability for all roles involved in the end-to-end governance process to manipulate data collaboratively in a staging environment. Therefore, data currently being used or ready to be used in transactions must be separated from data involved in a governance process. There are two storage areas in the context of SAP Master Data Governance:

- **Staging area**
  Contains data currently in a governance process and has an associated change request.
- **Active area**
  Contains data ready to be consumed by other applications or ready to be distributed to other systems.

In the following sections, we begin with the steps to create or change master data to understand the concept of change requests and staging data versus active data. In the sections that follow, we'll discuss the various elements of data modeling and go through the related configuration steps.

3.1.1 Master Data Create/Change Process

Figure 3.1 illustrates a simple master data create/change process.

First, the requester initiates a *change request* for creating or changing a master data record. (We'll discuss the concept of change request in detail in Chapter 5.) We'll explore two main scenarios, as follows:

- **Create scenario**
  In a create scenario, request details along with data entered by the requester are stored in the staging area after the requester submits the change request.
- **Change scenario**
  In a change scenario, the master data record is copied from the active area into the

staging area, and changes made by the requester, along with change request details, are stored in the staging area.

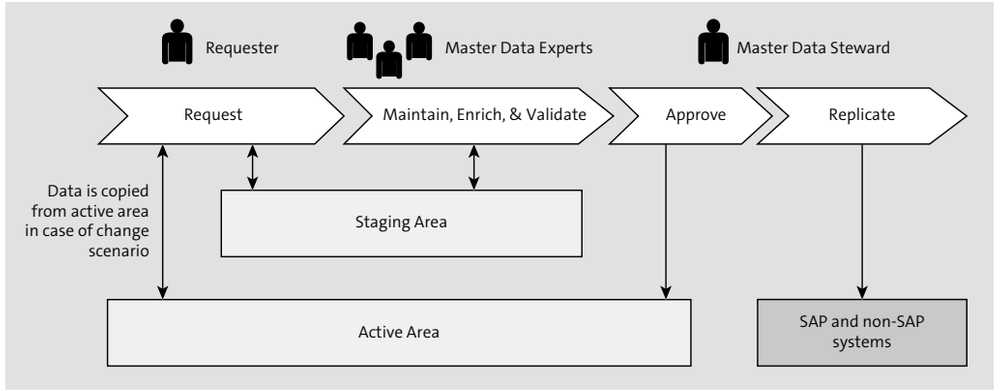

Figure 3.1 Staging and Active Area Concept for Master Data Create Scenario

Master data experts further maintain, enrich, and validate the record to ensure that the master data record submitted by the requester follows data quality rules. During this process, data is read from the staging area and saved back into the staging area if any data changes were made.

The master data steward processes the change request and does the final approval. In this process, the master data record is read from the staging area and is updated into the active area after the final approval step. This process is also known as *activation*. At this point, the master data record is ready to be consumed by any other applications if SAP Master Data Governance is installed in a co-deployment scenario. If SAP Master Data Governance is installed as a hub, once activated, data is ready for replication to other SAP or non-SAP systems.

The active areas in SAP Master Data Governance can be in either the flex mode or the reuse active area, as described here:

- **Flex mode**
  In this mode, a new set of database tables is generated when the data model is defined. This mode is used when there are no corresponding SAP S/4HANA or SAP ERP tables or when the activated data in SAP Master Data Governance is intended to be isolated from SAP S/4HANA and SAP ERP tables. If required, data can be replicated to SAP S/4HANA and SAP ERP master data tables. An example of such a

scenario is standard SAP Master Data Governance, Financials objects. All SAP Master Data Governance, Financials objects are delivered in flex mode to isolate them from financials tables and are only replicated when needed to SAP S/4HANA and SAP ERP master data tables or to transactional SAP S/4HANA and SAP ERP systems if SAP Master Data Governance is deployed as a hub.

- **Reuse active area**
  In this mode, existing SAP S/4HANA and SAP ERP tables are used. As an example, for a material master, these are reuse active area tables MARA, MARC, MARD, and so on. Figure 3.2 shows the difference between the flex and reuse modes of a data model. Data models for material masters and business partners are delivered in the reuse active area mode, which means that after a change request is activated, the corresponding SAP S/4HANA and SAP ERP master data tables are updated.

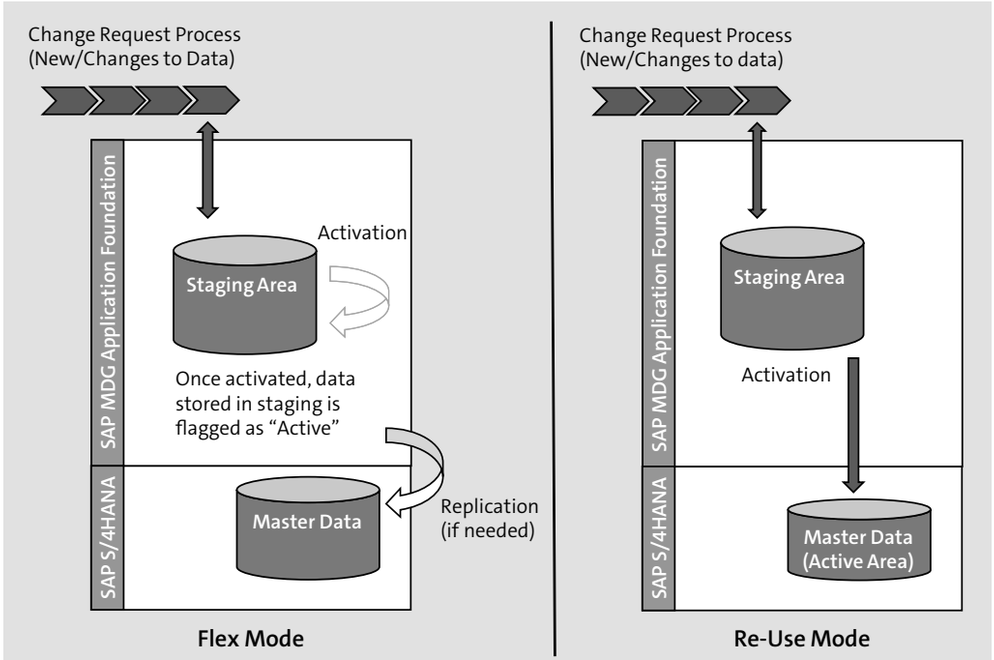

Figure 3.2 Flex and Reuse Modes

Data modeling in SAP Master Data Governance involves various elements, such as entity types, attributes, and relationships. Every master data object that needs to be governed using SAP Master Data Governance requires a data model and user interface (UI) to be built on top of it. Every data model in SAP Master Data Governance has several generated database tables that store data during the governance process.

> **Note**
>
> In flex mode, the generated database tables use the USMD_ACTIVE field to identify whether the master data record is currently being processed in a change request or is already activated. After the record is activated, data is retained in these tables.
>
> In reuse mode, on the other hand, after a record is activated, data is removed from the generated database tables and moved to reuse active master data tables (e.g., table MARA, table MARC, etc., in the material master)

3.1.2 Entity Types

Different types of master data in a data model are represented by different entity types. SAP Master Data Governance automatically generates the database tables needed for master data processing. Every data model has at least one entity type. An important property of an entity type is **Storage/Usage Type**, which determines the type of information stored, whether entities belonging to an entity type are changeable via a change request or via entities belonging to other entity types, and whether database tables are generated or reused from the active area. The following four storage or usage types are available:

- **1: Changeable via Change Request; Generated Database Tables**
  This storage and usage type is used for main entities in the data model that are under governance. These entities are linked to change request types (Chapter 5 describes change request types in detail), and data stored in these can be changed via change requests. These entities have persistence, and SAP Master Data Governance automatically generates all necessary database tables, including check tables, text tables, and additional tables needed to store attachments and sets, for example. Key fields of this storage/usage type include the entity type itself, edition (if relevant), and other entity types linked to this entity type via relationships. The material entity in the material master data model is an example of a type 1 entity, as shown in Figure 3.3.

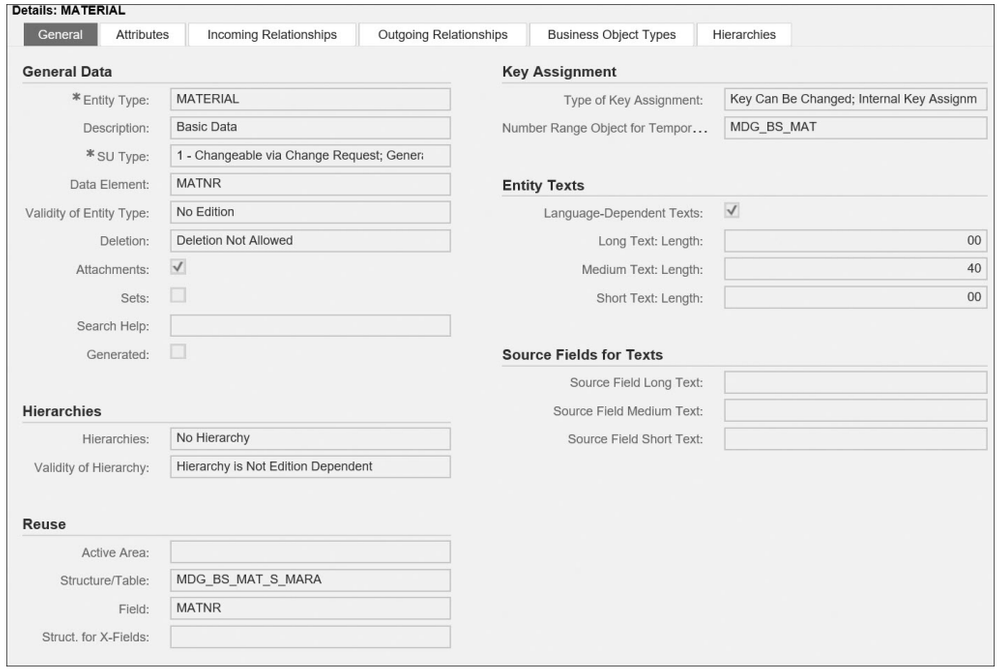

Figure 3.3 Example: Type 1 Entity Type

- **2: Changeable w/o Change Request; Generated Check/Text Tables**
  This storage and usage type is used for check tables that have persistence in SAP Master Data Governance. Data stored in this storage or usage type can be changed without a change request. SAP Master Data Governance generates only the check tables and text tables with the entity type, as well as with the entity types assigned to the entity type, through leading relationships as fixed key fields. The `DISPO` entity in the business partner data model is an example of a type 2 entity type.
- **3: Not Changeable via MDG; No Generated Tables**
  This storage and usage type is used for check tables that have no persistence in SAP Master Data Governance. Data stored in this storage or usage type can't be changed in SAP Master Data Governance. The `AKONT` entity in the business partner data model is an example of a type 3 entity type.
- **4: Changeable via Other Entity Type; Generated Database Tables**
  This storage and usage type is used for maintaining dependent data (e.g., plant data for material master and company code, sales data for customer master) and

can only be maintained together with an entity of type 1. This entity type needs to be in a relationship with the relationship type leading and assigned as the to-entity type to an entity type with storage and usage type 1. The system generates the check table as described for storage and usage type 1 but also generates the entity types that are assigned through qualifying relationships as key fields. The `MARCBASIC` entity in the material master data model is an example of a type 4 entity type.

An entity type can have the properties listed in Table 3.1.

Property	Explanation
General Data	
Entity Type	The name of the entity type.
Description	Language-dependent description of the entity type.
SU Type	Determines the generation of database tables for storage of master data.
Data Element	Determines properties such as **Data Type** and **Length** for the entity type to which it's assigned. Data types are restricted to **CHAR**, **NUMC**, or **CUKY**, and length is restricted to 45 characters. Data elements can't be assigned to entity types of storage/usage type 4. Storage/usage types also decide how to represent values if a value table or domain fixed values exist.
Validity of Entity Type	Determines whether the entity type is edition dependent.
Deletion	Determines whether deletion is allowed for the entities of this entity type via the change request process.
Attachments	When selected, attachments can be stored to entities of this entity type, and the system automatically provides a data store for storing these attachments. This can only be selected for entities with storage/usage type 1.
Sets	When selected, sets can be stored to entities of this entity type, and the system automatically provides a data store for this purpose.

Table 3.1 Properties of an Entity Type

Property	Explanation
Search Help	When a search help is assigned to a field, the input help executes the search help instead of reading the data in the check table or the fixed values of the domain of the data element. You should only use search help as an exception.
Generated	Specifies whether entity types were generated or manually created, and those entity types that are generated can't be changed or deleted via the **Edit Data Model** Customizing activity.
Hierarchies	
Hierarchies	Determines whether an entity type defines a hierarchy, whether hierarchies have versions, and whether they are synchronized.
Validity of Hierarchy	If the **Hierarchies** option is set to have a version, then this property determines the validity of the hierarchy.
Reuse	
Active Area	When a reuse active area is specified, the system stores active data solely in this reuse active area. The reuse active area can be assigned either at the data model level or at the entity type. When defined at the data model level, all entity types defined in that data model inherit the reuse active area. However, if a separate reuse active area for an entity type is specified at the entity type level, then it overrides the setting inherited from the data model.
Structure/Table	Used to establish the link between an entity type, attribute, or relationship, and a structure or database table defined in the ABAP Dictionary.
Field	Used to establish the link between an attribute or relationship and a field defined in the ABAP Dictionary that is part of a structure or a database table.
Struct. for X-Fields	Used to establish the link between an entity type and an associated structure defined in the ABAP Dictionary that contains a checkbox with type **CHAR** and **Length 1**, with values space and **X** for each resolved attribute.

Table 3.1 Properties of an Entity Type (Cont.)

Property	Explanation
Key Assignment	
Type of Key Assignment	The following options are available and determine how the key of the entity will be entered during the change request process: ■ **Key Cannot Be Changed; No Internal Key Assignment**: In this case, there is no internal key generation possible, and the user needs to maintain the key manually. After it's maintained, the key can't be changed. ■ **Internal Key Assignment Only**: SAP Master Data Governance automatically assigns an internal number upon activation of the change request. During the change request process, SAP Master Data Governance assigns a temporary key. ■ **Key Can Be Changed; No Internal Key Assignment**: The key of the entity needs to be explicitly defined. However, it can be changed as long as the change request isn't activated. ■ **Key Can Be Changed; Internal Key Assignment Possible**: Either the system can automatically generate a number during the change request activation, or the user can define his own key.
Number Range Object for Temporary Keys	Number range object for specifying temporary keys. For example, the `MDG_BS_MAT` number range object is specified for the `MATERIAL` entity type.
Entity Texts	
Language-Dependent Texts	Indicates whether the entity type can have language-dependent texts. Based on this selection, the system automatically includes **Language** as a key field when the database tables are generated for this entity type.
Long Text: Length	Determines the visible length of long text in the UI for this entity type.
Medium Text: Length	Determines the visible length of medium text in the UI for this entity type.
Short Text: Length	Determines the visible length of short text in the UI for this entity type.

Table 3.1 Properties of an Entity Type (Cont.)

Property	Explanation
Source Fields for Texts	
Source Field Long Text	Applicable to storage/usage type 3 entity types. Determines the check table field that contains long text.
Source Field Medium Text	Applicable to storage/usage type 3 entity types. Determines the check table field that contains medium text.
Source Field Short Text	Applicable to storage/usage type 3 entity types. Determines the check table field that contains short text.

Table 3.1 Properties of an Entity Type (Cont.)

The following is a summary of all storage/usage types:

- **Storage type 1:**
  - This storage type is used for entity types that are maintained in SAP Master Data Governance.
  - Maintenance is performed via change requests, and these entity types act as entry points for change requests.
  - Data storage is generated.
  - Additional data modeling is possible and can have attributes and references.
  - Data elements such as data type, length, field label, and so on can be assigned.
  - Check table and domain fixed values associated with the data element are ignored.
  - F4 is determined based on entries in generated check tables.
- **Storage type 2:**
  - This storage type is used for entity types that can't be maintained in SAP Master Data Governance via change requests but still can be maintained using other means, such as the SAP Master Data Governance file upload mechanism.
  - Data storage is generated.
  - Additional data modeling isn't possible; associated check and text tables are generated.
  - No maintenance occurs via change requests.
  - Mandatory data element assignment occurs for data type, length, field label, and so on.

  - Check tables and domain fixed values associated with the data elements are ignored.
  - F4 is determined based on entries in the generated check tables.
- **Storage type 3:**
  - This storage type is used for entity types that can't be maintained in SAP Master Data Governance using either the change request process or any other means.
  - No data storage is generated.
  - Additional data modeling isn't possible.
  - No maintenance occurs in SAP Master Data Governance.
  - Mandatory data element assignment occurs for data type, length, field label, and so on.
  - Check table and domain fixed values associated with the data element are used.
  - F4 is determined based on entries in associated check/text tables and/or domain fixed values associated with the data element. Nonkey fields in check tables are ignored.
- **Storage type 4:**
  - This storage type is used for entity types that are maintained in SAP Master Data Governance in the context of another entity type.
  - Maintenance is performed via change requests, but these entity types can't act as entry points for the change request. Maintenance is possible via owning the storage type 1 entity type.
  - Data storage is generated.
  - Additional data modeling is possible and can have attributes and references.

3.1.3 Attributes

An attribute defines a property of an entity type, and an attribute is defined for each property. Alternatively, an attribute can be defined as a storage/usage type 3 entity and linked to the entity type via a relationship (see the next section for details on relationships). An attribute can be defined only for storage/usage type 1 or 4 entity types. Every attribute can have the properties listed in Table 3.2.

Property	Explanation
Attribute	Name of attribute.
Key Field	Indicator to identify attribute as a key field.

Table 3.2 Properties of an Attribute

Property	Explanation
Data Element	Determines properties such as data type, length, and field label displayed on the UI and field help for input fields for the attribute to which it's assigned. The domain assigned to the data element determines the allowed values for the value help and the validation of values, either from the domain fixed values or from the assigned check table or text table. If there is no check table or fixed values assigned to the domain, then no input help is available, and no validation is carried out.
Required Entry	Indicator to identify whether the attribute is required for data entry.
Currency/UoM	Currency or unit of measure field if the attribute requires a currency or unit of measure.
Search Help	When a search help is assigned to a field, the input help executes the search help instead of reading the data in the check table or the fixed values of the domain of the data element. Search helps should only be used as an exception.
No Existence Check	Used for deactivating the existence check for attribute values. However, existence checks can't be suppressed for values that are derived from domain fixed values.
Description	Description of attribute.
Structure/Table	Used to establish the link between an entity type, attribute, or relationship, and a structure or database table defined in the ABAP Dictionary.
Field	Used to establish the link between an attribute or relationship and a field defined in the ABAP Dictionary that is part of a structure or a database table.
Generated	Specifies whether the attribute was generated or manually created, and those attributes that are generated can't be changed or deleted via the **Edit Data Model** Customizing activity.

Table 3.2 Properties of an Attribute (Cont.)

3.1.4 Relationships

If more than one entity type is defined in a data model, a relationship between entity types can be established. A relationship represents a link between entity types. Every

relationship has a relationship type and cardinality. Relationship types determine whether one entity type (from-entity type) is at a higher level than another entity type (to-entity type), or whether it should be copied as an attribute of the other entity type in the check table.

The following relationship types are available:

- **Referencing**
  This relationship type is used to specify the from-entity type as an attribute of the to-entity type.
- **Leading**
  If this relationship type is used, then the from-entity type is on a higher level than the to-entity type.
- **Qualifying**
  This relationship type is similar to the leading relationship type with the exception that the qualifying relationship is possible when the to-entity type is of storage/usage type 4.
- **Foreign key relationship**
  This relationship type is used if certain attributes or key fields of the to-entity type use the from-entity type as a foreign key.

Figure 3.4 provides a summary of leading, qualifying, and referencing relationship types.

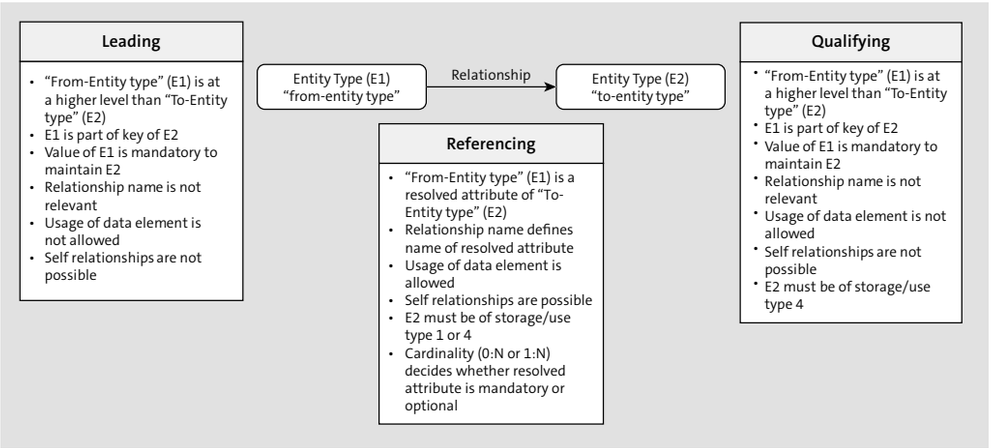

Figure 3.4 Summary of Relationship Types

3.1.5 Hierarchies

SAP Master Data Governance offers modeling hierarchies based on configurations of the entity types. The definition of hierarchies includes setting the hierarchies as edition dependent and synchronous. If a hierarchy is set up for an entity type, the system automatically generates database tables for storing hierarchies. Refer to the hierarchy-related properties explained earlier in Table 3.1. The following sections explain each of these hierarchy-related properties in detail.

Hierarchies Property

The **Hierarchies** property of an entity type determines whether the entity type defines a hierarchy. If used, it also determines whether the property is version-dependent or synchronized:

- **Version-dependent**
  Version dependency enables a hierarchy to have multiple versions. Hierarchy versions can be defined under Customizing by following the IMG path, **MDGIMG • Process Modeling • Hierarchies • Create Hierarchy Versions**.
- **Synchronized**
  In a synchronized hierarchy, the substructure defined will remain the same throughout. A different structure can't be defined within the same hierarchy or in a different hierarchy for the same entity.

The **Hierarchies** property allows for a combination of version dependent and synchronous hierarchies. Following are the available options:

- **No Hierarchy** (hierarchy can't be set up for the entity type)
- **Yes – Version-Dependent/Synchronized**
- **Yes – Not Version-Dependent/Synchronized**
- **Yes – Not Version-Dependent/Not Synchronized**
- **Yes – Version-Dependent/Not Synchronized**

Validity of Hierarchies

This property is applicable in scenarios where the **Hierarchies** property is set to have version-dependent hierarchies. Using the property, an entity type can be set to have **Edition** or **No Edition**, and the system uses the edition to delimit the validity of the hierarchy. In such scenarios, an edition needs to be assigned to the hierarchy-defining entity type during hierarchy processing.

Apart from the preceding two properties that are available at the entity type level, there are additional configurations that complete the entire hierarchy setup.

Entity Types for Hierarchies

Using this configuration, you can model the role of additional entity types that are part of a hierarchy setup for a selected entity type. This configuration can be maintained using the IMG path, **MDGIMG • General Settings • Data Modeling • Edit Data Model**, and then selecting the **Entity Types for Hierarchies** view under **Entity Types**.

The following options are available for each entity type in the hierarchy setup:

- **Hierarchy Name**
  If this usage is selected for an entity type, then such entities act as root nodes for a hierarchy and hence define the hierarchy name. For any entity type, to complete a hierarchy setup, an additional entity type needs to be defined with this usage. Such an entity type can't be used as a to-entity type in a leading relationship.
- **No Special Use**
  If entity types are defined with this usage, then they can be used as actual nodes and as lower-level hierarchy nodes in a hierarchy.
- **Ranges Permitted on End Nodes**
  An entity type that is used as a lower node in a hierarchy can have a range of values.

Hierarchy Attribute and Hierarchy Attribute from Reference

Hierarchy attributes can be defined for each relationship between nodes in a hierarchy. These hierarchy attributes are available during hierarchy processing:

- **Hierarchy Attribute**
  Hierarchy attribute for a relationship between nodes is set using data elements.
- **Hierarchy Attribute from Reference**
  Hierarchy attribute for a relationship between nodes is set using a reference to an entity type.

Figure 3.5 shows an example of hierarchy attributes defined for an entity type consolidation group with an **Entity Type** of node consolidation unit (**CONSUNIT**) from **Data Model 0G**.

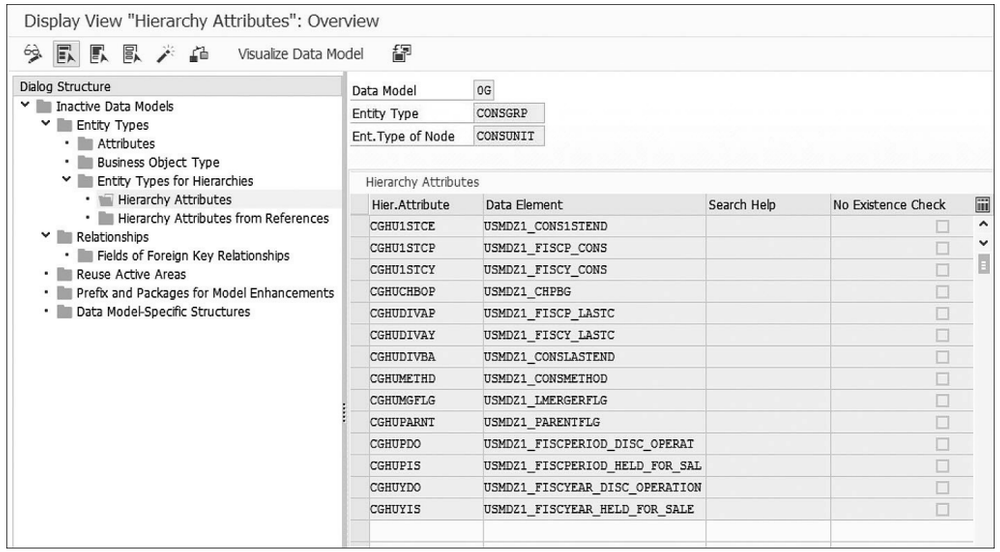

Figure 3.5 Example: Hierarchy Attribute

See Section 3.3.2 to understand how the business partner hierarchy is set up in the business partner data model. Chapter 5, Section 5.4.4, provides details on how to create a hierarchy using an example.

3.1.6 Entity Relationship Model Diagram

As basic data model building blocks were explained in previous sections, this section explains how each of the building blocks come together to form a data model. This is explained using an entity relationship model (ERM) diagram, as shown in Figure 3.6. The following are some important aspects of a data model and its associated building blocks:

- A data model can have more than one entity type.
- A data model can have many relationships defined.
- An entity type can have one or more attributes.
- Many attributes can have the same data element.
- An entity type can occur in multiple hierarchies.
- Two entity types can have many relationships.

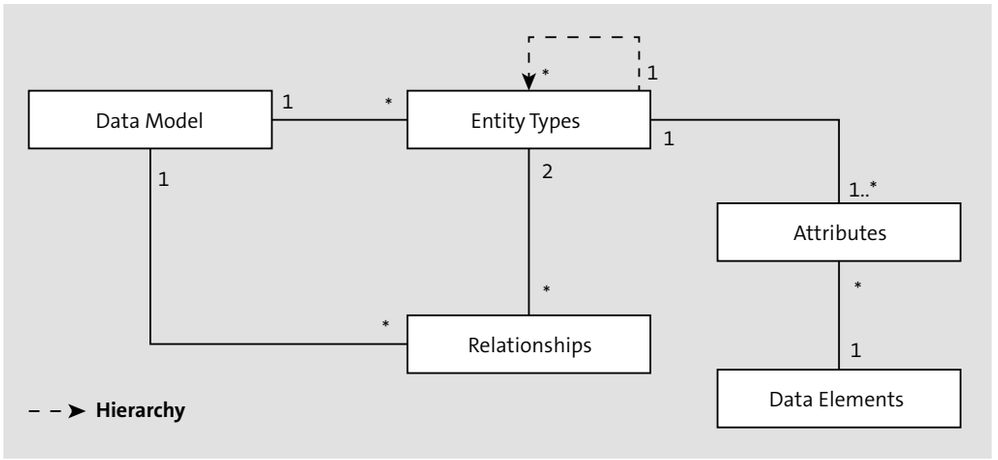

Figure 3.6 ERM Diagram of a Data Model

3.2 Configuring Data Models

SAP MDG offers all data modeling-related Customizing activities grouped under Transaction MDGIMG. In this section, we'll review all available Customizing nodes under the **Data Modeling** section of Transaction MDGIMG.

3.2.1 Define Business Object Type Codes and Entity Types

In this Customizing activity, new business object type codes can be added for custom data models. For all standard data models, there is no need to add any new business type object codes because SAP has already delivered these. The IMG path for accessing this activity is **MDGIMG • Data Modeling • Define Business Object Type Codes**. Figure 3.7 shows the business object type codes.

If two or more entity types are assigned to the same business object type code, you can specify which entity types should be used by the business object type code. The IMG path for accessing this activity is **MDGIMG • Data Modeling • Define Entity Type to Be Used by Business Object Type**.

Display View "Business Object Type Code": Overview

Business Object Type Code

BO Type	Description
1376	Key Mapping
1405	Business Partner Relationship
1410	Value Mapping
147	Business Partner
154	Company
158	Cost Center
159	Customer
1770	Product Allocation Procedure
183	Individual Material
185	Installation Point
192	Logistics Area
194	Material
200	Organisational Center

Figure 3.7 Business Object Type Codes

3.2.2 Define Prefixes for Internal Key Assignment

In a data model, when an entity type with internal number assignment is used, a temporary key number range assignment is required (refer to the **Key Assignment** options in Table 3.1). For example, the `MATERIAL` entity in the material master data model uses the `MDG_BS_MAT` number range object for temporary keys. Similarly, the `BP_HEADER` entity type in the business partner data model uses the `MDG_BP` number range object.

Using this Customizing activity, a prefix can be assigned to the temporary number generated for internal number assignment scenarios to indicate that the generated number is a temporary number (see Figure 3.8). SAP Master Data Governance has **$** as the default **Prefix**, which can be changed if needed. The menu path for accessing this is **MDGIMG • Data Modeling • Define Prefixes for Internal Key Assignment**.

Display View "Prefix for Temporary Keys": Overview

Prefix for Temporary Keys

Data Model	Entity Type	Prefix
BP	ADDRNO	$
BP	BP_HEADER	$
MM	MATERIAL	$

Figure 3.8 Prefix for Temporary Keys

3.2.3 Edit Data Model

This Customizing activity provides an entry point for the entire list of data models available in the system and the list of entities, attributes, and relationships. Various views available in this Customizing activity enable you to extend or create new data models and activate them. The system uses the data model to generate database tables.

This activity can be accessed using two different IMG paths, and each path offers a different way to define or edit data models. Both options, described here, provide a way to access the list of assigned active areas and associated access classes at the data model level:

- **Edit data model functionality using SAP GUI**
  Figure 3.9 shows the business partner data model as an example using this IMG path. This Customizing activity also provides additional functionalities such as **Visualize Data Model** and **Adjust Staging Area of Linked Change Requests**. See the list of reports provided later in this section for additional details.

  The menu path for accessing this is **MDGIMG • Data Modeling • Edit Data Model**.

Display View "Entity Types": Overview

Visualize Data Model

Dialog Structure
- Inactive Data Models
  - Entity Types
    - Attributes
    - Business Object Type
    - Entity Types for Hierarchies
      - Hierarchy Attributes
      - Hierarchy Attributes from References
  - Relationships
    - Fields of Foreign Key Relationships
  - Reuse Active Areas

Data Model: BP

Entity Types

Entity Type	Storage/Use Type	Val.Entity	Data Element	Hierarchies	Val.Hier.
ADDRESS	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
ADDRNO	Changeable via Change Reques	No Edition	AD_ADDRNUM	No Hierarchy	Hierarch
AD_CNTRY	Not Changeable via MDG; No G	No Edition	LAND1	No Hierarchy	Hierarch
AD_CONSNO	Not Changeable via MDG; No G	No Edition	AD_CONSNUM	No Hierarchy	Hierarch
AD_EMAIL	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
AD_FAX	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
AD_NAME_O	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
AD_NAME_P	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
AD_NATION	Not Changeable via MDG; No G	No Edition	AD_NATION	No Hierarchy	Hierarch
AD_POSTAL	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
AD_TEL	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
AD_URL	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
AKONT	Not Changeable via MDG; No G	No Edition	AKONT	No Hierarchy	Hierarch
ALAND	Not Changeable via MDG; No G	No Edition	ALAND	No Hierarchy	Hierarch
ASSGNM_ID	Not Changeable via MDG; No G	No Edition	MDG_BP_ASSIGNMENT_ID	No Hierarchy	Hierarch
AUFSD	Not Changeable via MDG; No G	No Edition	AUFSD_X	No Hierarchy	Hierarch
AUGRP	Not Changeable via MDG; No G	No Edition	BU_AUGRP	No Hierarchy	Hierarch
AUOBJ	Not Changeable via MDG; No G	No Edition	BU_AUOBJ	No Hierarchy	Hierarch
BANK_ID	Not Changeable via MDG; No G	No Edition	BU_BKVID	No Hierarchy	Hierarch
BEGRU	Not Changeable via MDG; No G	No Edition	BRGRU	No Hierarchy	Hierarch
BP_ADDR	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
BP_ADDUSG	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
BP_ADRKND	Not Changeable via MDG; No G	No Edition	BU_ADRKIND	No Hierarchy	Hierarch
BP_BKDTL	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
BP_CENTRL	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
BP_COMPNY	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
BP_CPGEN	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
BP_CUSDUN	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch
BP_CUSFCN	Changeable via Other Entity	No Edition		No Hierarchy	Hierarch

Figure 3.9 Business Partner Data Model: Edit Data Model

- **Configuration Workbench**
  The Configuration Workbench is a Web Dynpro application that acts as an alternative to the **Edit Data Model** Customizing activity. The Configuration Workbench includes all the functions that the **Edit Data Model** Customizing activity provides, presents data model details in a tabular format per entity type, and distinguishes relationship information into outgoing and incoming relationships for each entity. The Configuration Workbench can also be accessed using Transaction MDGDT.

  Figure 3.10 shows the business partner data model using the Configuration Workbench.

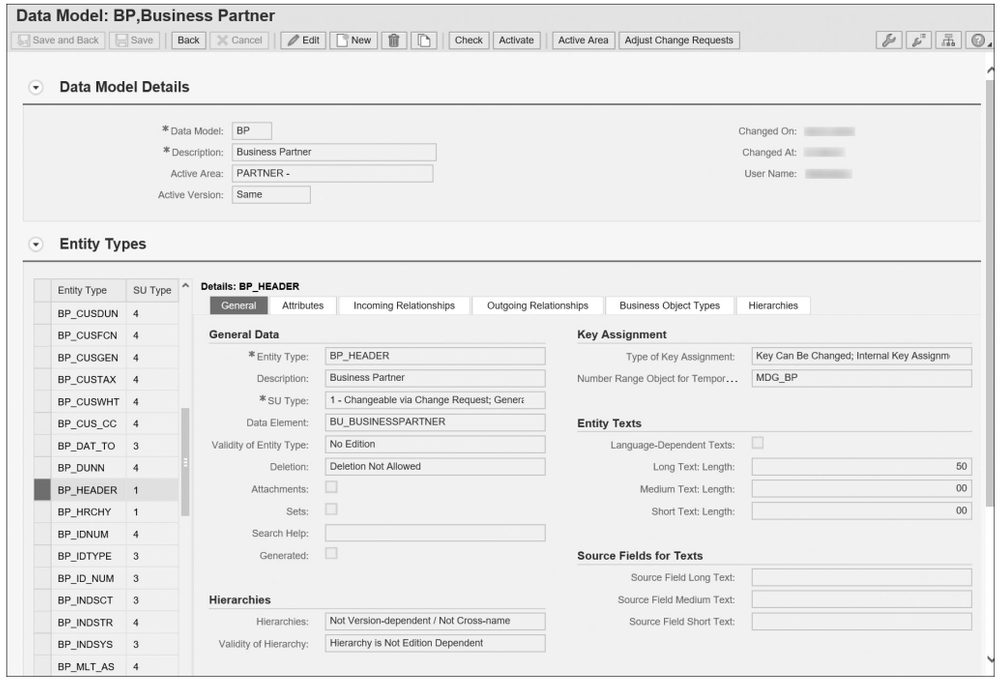

Figure 3.10 Business Partner Data Model: Configuration Workbench

SAP Master Data Governance offers several reports related to data models; the most commonly used are as follows:

- **Visualize Data Model (report USMD_DISPLAY_DATAMODEL)**
  This report offers a hierarchical view of entity types and attributes in a data model. This report also offers overview, detail view, and graphical display modes as well. Figure 3.11 shows the output of this report for the business partner data model as an example.

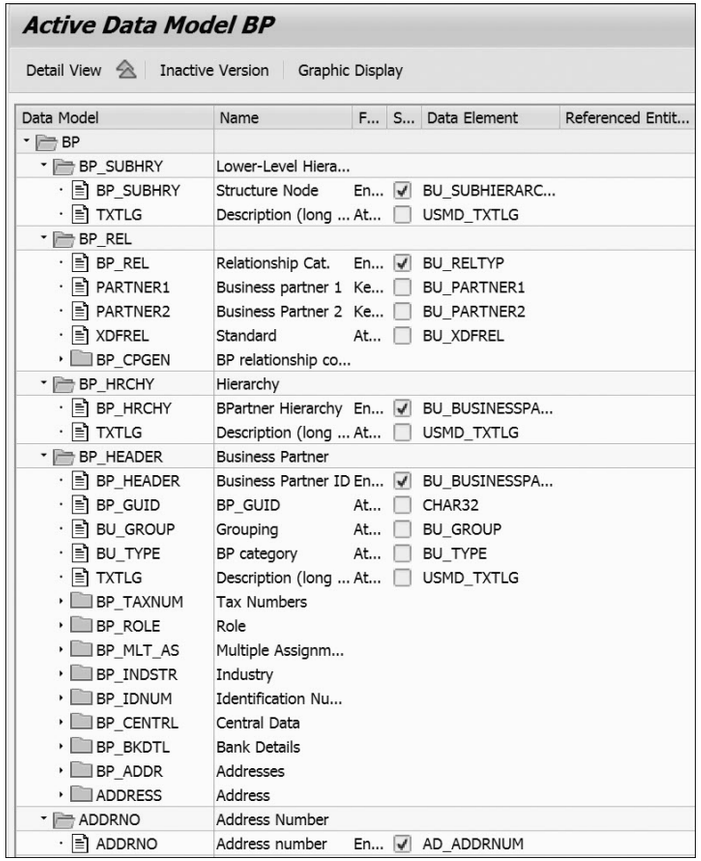

Figure 3.11 Output of Report USMD_DISPLAY_DATA_MODEL for the Business Partner Data Model

- **Data Model Generated Tables (report USMD_DATA_MODEL)**
  This report displays data model entity types and generated database tables. It's also possible to display counts of active and inactive records for each of these tables.

- **Compare Data Model (report USMD_COMPARE_DATA_MODEL)**
  This report compares active and inactive versions of a data model and provides a list of comparison results.
- **Delete Data Model (report USMD_DELETE_DATA_MODEL)**
  This report can be used to delete a data model. This functionality can also be triggered from the **Edit Data Model** IMG node or the Configuration Workbench. However, you should exercise caution because this report deletes the entire data model.
- **Adjust Staging Area of Linked Change Requests (report USMD_ADJUST_STAGING)**
  For the selected data model, this report verifies whether any changes were made to the data model; if yes, it adjusts the change requests that are in process per the changes made in the data model. This report needs to be run in all relevant clients and target systems after data model changes.

3.2.4 Define Authorization Relevance per Entity Type

This Customizing activity (see Figure 3.12) is used to determine whether the system uses predefined authorizations from the reuse active area or SAP Master Data Governance-specific authorizations using authorization object `USMD_MDAT`. By default, the system always uses predefined authorizations from the reuse active area. If the option to select SAP Master Data Governance-specific attributes is chosen, then configurations for authorizations at the entity type level and authorization-relevant attributes need to be set up. Note the following:

- If the reuse active area is used, then settings made under **Authorization for Entity Types** and **Authorization-Relevant Attributes** views will be ignored.
- SAP S/4HANA and SAP ERP authorization checks are always performed for the business partner and material master data models; any additional settings performed under this Customizing activity aren't supported.

The menu path for accessing this activity is **MDGIMG • Data Modeling • Define Authorization Relevance per Entity Type**.

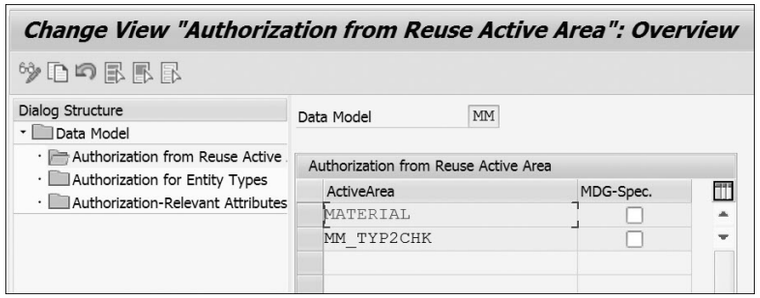

Figure 3.12 Define Authorizations per Entity Type and Attributes

3.2.5 Generate Data Model-Specific Structures

Each data model and entity type can have the following structures in the Data Dictionary:

- PDF-based forms
- Service Mapping Tool (SMT) with structures used for the configuration of enterprise services
- Mapping between staging area and reuse active area
- Data replication framework
- SAP Enterprise Search
- Field control of attributes
- Field properties of attributes and key fields
- Key fields

This Customizing activity is used to generate the preceding data model-specific structures. These structures need to be regenerated whenever a data model is changed. For all standard data models, these structures are delivered as well. The IMG path for accessing this activity is **MDGIMG • Data Modeling • Generate Data Model-Specific Structures**.

3.2.6 Assign Package and Define Package Groups

When an entity type delivered by SAP is enhanced to include additional attributes, the system automatically writes these attributes to Customizing includes during the

generation of data model-specific structures explained in the previous section. In this Customizing activity, a package can be assigned for the customizing includes used during data model enhancements. The IMG path for accessing this activity is **MDGIMG • Data Modeling • Assign Package for Customizing Include**.

This Customizing activity has views for structures as well as mapping for each data model. Figure 3.13 shows the material master data model structures as an example.

Display View "Structures": Overview

Generate Selected Structures

Dialog Structure
- Data Models
  - Structures
  - Mapping

Data Model: MM

Structures

Entity Type	Where Used	Prefix/Namespace	Name of Structure	Package
BSCDATTXT	F-Based Forms	/MDGMM/	PDF_BSCDATTXT	
BSCDATTXT	Mapping of Reuse Active Area	/MDGMM/	PP_BSCDATTXT	
BSCDATTXT	Search Application	/MDGMM/	ES_BSCDATTXT	
BSCDATTXT	Field Control for Attributes	/MDGMM/	FC_BSCDATTXT	
BSCDATTXT	Field Properties for Attribu…	/MDGMM/	FP_BSCDATTXT	
CLASSASGN	PDF-Based Forms	/MDGMM/	PDF_CLASSASGN	
CLASSASGN	Mapping of Reuse Active Area	/MDGMM/	PP_CLASSASGN	
CLASSASGN	Search Application	/MDGMM/	ES_CLASSASGN	
CLASSASGN	Field Properties for Attribu…	/MDGMM/	FP_CLASSASGN	
INTCMNT	PDF-Based Forms	/MDGMM/	PDF_INTCMNT	
INTCMNT	Mapping of Reuse Active Area	/MDGMM/	PP_INTCMNT	
INTCMNT	Search Application	/MDGMM/	ES_INTCMNT	
INTCMNT	Field Control for Attributes	/MDGMM/	FC_INTCMNT	
INTCMNT	Field Properties for Attribu…	/MDGMM/	FP_INTCMNT	
MARAPURCH	Mapping of Reuse Active Area	/MDGMM/	PP_MARAPURCH	
MARAPURCH	Search Application	/MDGMM/	ES_MARAPURCH	
MARAPURCH	Field Properties for Attribu…	/MDGMM/	FP_MARAPURCH	
MARAPURCH	Key Fields of an Entity Type	/MDGMM/	KF_MARAPURCH	
MARASALES	Mapping of Reuse Active Area	/MDGMM/	PP_MARASALES	
MARASALES	Search Application	/MDGMM/	ES_MARASALES	
MARASALES	Field Properties for Attribu…	/MDGMM/	FP_MARASALES	
MARASALES	Key Fields of an Entity Type	/MDGMM/	KF_MARASALES	
MARCATP	Mapping of Reuse Active Area	/MDGMM/	PP_MARCATP	
MARCATP	Search Application	/MDGMM/	ES_MARCATP	
MARCATP	Field Properties for Attribu…	/MDGMM/	FP_MARCATP	
MARCBASIC	Mapping of Reuse Active Area	/MDGMM/	PP_MARCBASIC	
MARCBASIC	Search Application	/MDGMM/	ES_MARCBASIC	

Figure 3.13 Material Master Data Model Structures

Figure 3.14 shows **SMT Mapping from Active Area** and **SMT Mapping to Active Area** for the material master data model as an example.

Display View "Mapping": Overview

Dialog Structure
- Data Models
  - Structures
  - Mapping

Data Model: MM

Mapping

Entity Type	Where Used	SMT Mapping from Active Area	SMT Mapping to Active Area
BSCDATTXT	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
BSCDATTXT	Field Control for Attributes	MDG_BS_MAT_MAP_2FC	
CLASSASGN	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
CLASSASGN	Field Control for Attributes	MDG_BS_MAT_MAP_2FC	
INTCMNT	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
INTCMNT	Field Control for Attributes	MDG_BS_MAT_MAP_2FC	
MARAPURCH	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARASALES	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCATP	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCBASIC	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCCSTNG	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCFRCST	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCFRGTR	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCFRPAR	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCMRPFC	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCMRPLS	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCMRPMI	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCMRPPP	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCMRPSP	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCPURCH	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCQTMNG	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCSALES	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCSTORE	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MARCWRKSD	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MATERIAL	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MATERIAL	Field Control for Attributes	MDG_BS_MAT_MAP_2FC	
MBEWACTNG	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MBEWCSTNG	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP
MBEWVALUA	Mapping of Reuse Active Area	MDG_BS_MAT_MAP_2STA	MDG_BS_MAT_MAP_2PP

Figure 3.14 Material Master Data Model Mappings

You can also define package groups that consist of one or more packages. A package group can be assigned to a mapping (see the next section). The F4 help of the transformation tool displays only classes that are contained in one of the specified packages.

Figure 3.15 shows an example of a package assignment to a material master **Package Group MDG_BS_MM**. The IMG path for accessing this activity is **MDGIMG • Data Modeling • Create and Edit Mappings • Define Package Groups**.

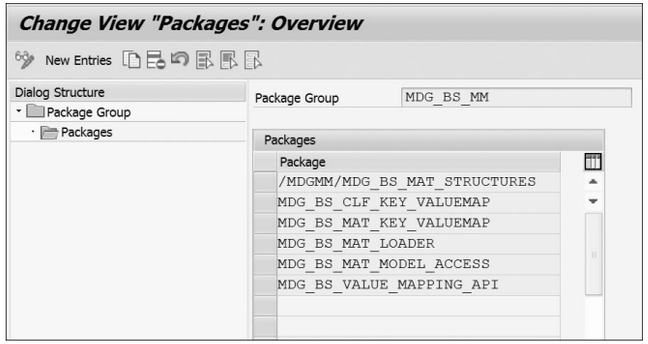

Figure 3.15 An Example of Package Assignment to a Package Group

3.2.7 Service Mapping Tool

You need to understand a bit more about SMT before moving on to the following sections. SMT is a program that enables you to fill target structures using sets of source structures. SMT supports simple and complex mappings, mappings with field transformations, and field checks. The main uses of SMT are to transform SAP internal format to enterprise services format and vice versa.

Figure 3.16 shows an example of mapping for the MDG_BS_MAT_MAP_2STA structure and associated mapping steps. Refer to Section 3.2.5 for details on data model-specific structures and Section 3.2.6 for details on package groups.

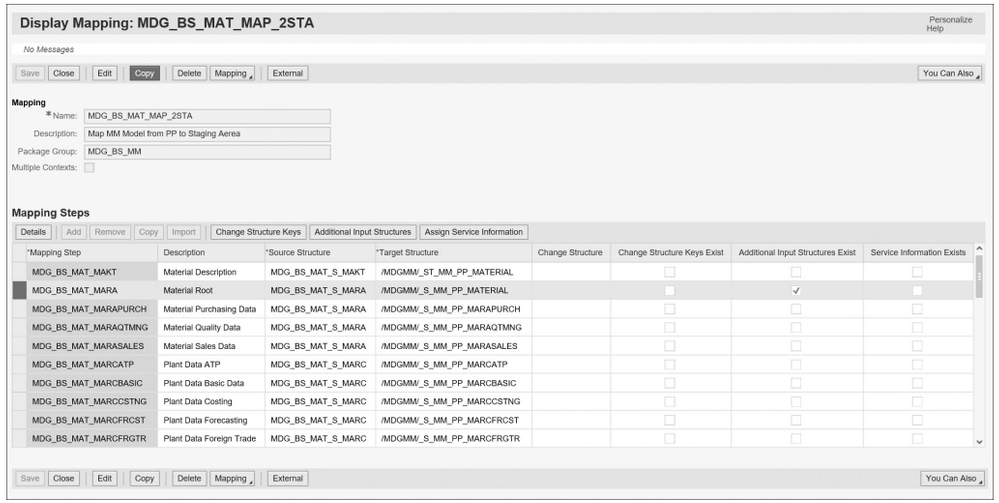

Figure 3.16 Example: SMT Mapping

Figure 3.17 shows mapping step MDG_BS_MAT_MARA as an example along with transformations and field mappings.

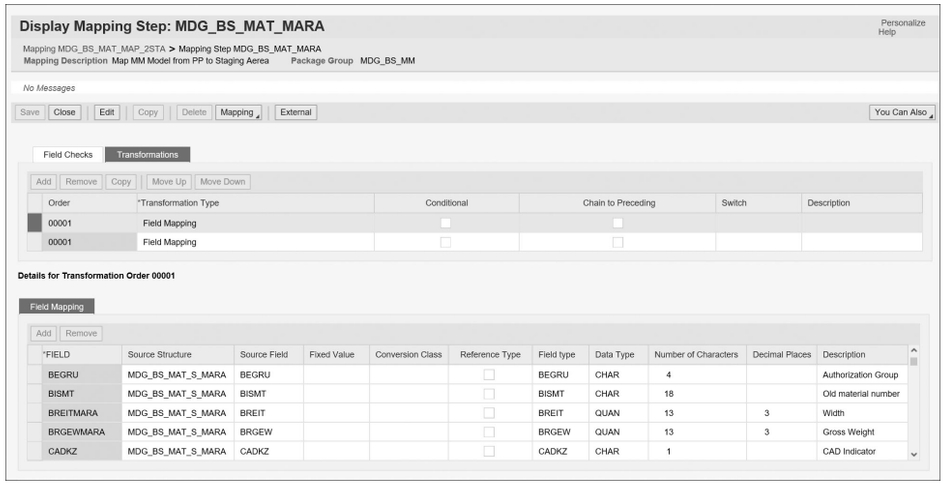

Figure 3.17 Example: Mapping Step

Following are the configurations available for either **Create and Edit Mappings** or **Extend Mappings**:

- **Create and Edit Mappings**
  This Customizing activity is used for creating new mappings and mapping steps, and for creating or editing transformations and field checks. The IMG path for accessing this activity is **MDGIMG • Data Modeling • Create and Edit Mappings • Create and Edit Mappings**.
- **Extend Mappings**
  This Customizing activity is used for extending existing and delivered mappings, but it can't be used to create new mappings or mapping steps. The IMG path for accessing this activity is **MDGIMG • Data Modeling • Extend Mappings • Extend Mappings**.

Now, let's explore the standard data models provided by SAP.

> **Note**
>
> In addition, report RSMT_CHECK can be executed for a specific mapping or for the entire configuration and checks the entire mapping Customizing. The IMG path for accessing this activity is **MDGIMG • Data Modeling • Create and Edit Mappings • Check Customizing**.

3.3 Standard Data Models

In this section, we'll go through the standard data models (material master, business partner, and financial) delivered by SAP at a high level and understand how entities are structured in each data model. This section also covers the scope of each data model.

3.3.1 Material Master Data Model

The material master data model in SAP Master Data Governance covers most of the material master attributes that are commonly used across industries. Figure 3.18 shows an overview of the material master data model.

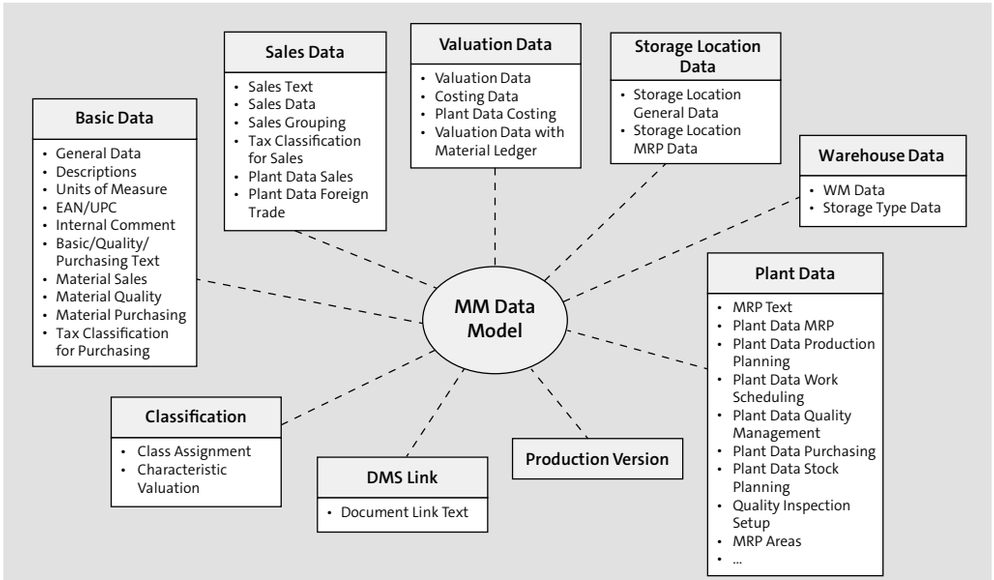

Figure 3.18 Material Master Data Model

Following are some of the highlights of the material master data model:

- Four storage/usage type 1 entity types
- Several type 2 and type 3 entity types acting as check tables
- Several type 4 entity types representing plant data, storage location, valuation, and warehouse data
- No defined hierarchies

Table 3.3 lists **SU Type** 1 and 4 entity types of the material master data model.

Entity Type	SU Type	Description
MATERIAL	1	Basic Data
DRADBASIC	1	Basic Data for Document Link
MATCHGMNG	1	Material Change Management
MKALBASIC	1	Production Version
BSCDATTXT	4	Basic Data Text
CLASSASGN	4	Class Assignment (Classification)
DRADTXT	4	Document Link Text
INTCMNT	4	Internal Comment
MARAPURCH	4	Material Purchasing Data
MARAQTMNG	4	Material Quality Data
MARASALES	4	Material Sales Data
MARASPM	4	Material Service Parts Management
MARASTOR	4	Material Storage Data
MARCATP	4	Plant Data ATP
MARCBASIC	4	Plant Data Basic Data
MARCCSTNG	4	Plant Data Costing
MARCFRCST	4	Plant Data Forecasting
MARCFRGTR	4	Plant Data Foreign Trade
MARCFRPAR	4	Plant Data Forecast Parameters
MARCMRPFC	4	Plant Data MRP Forecast (View Planning)
MARCMRPLS	4	Plant Data MRP Lot Size (View Lot Size)
MARCMRPMI	4	Plant Data MRP Misc. (View Manufacturing)
MARCMRPPP	4	Plant Data MRP Production Planning (View Material)

Table 3.3 Material Master Data Model SU Type 1 and 4 Entity Types

Entity Type	SU Type	Description
MARCMRPSP	4	Plant Data MRP Stock Planning (View Procurement)
MARCPURCH	4	Plant Data Purchasing
MARCQTMNG	4	Plant Data Quality Management
MARCSALES	4	Plant Data Sales
MARCSTORE	4	Plant Data Storage
MARCWRKSD	4	Plant Data Work Scheduling
MARDMRP	4	Storage Location MRP Data for Material
MARDSTOR	4	Storage Location General Data for Material
MBEWACTNG	4	Material Accounting Data
MBEWCSTNG	4	Material Costing Data
MBEWMLAC	4	Material Ledger: Prices
MBEWMLVAL	4	Material Ledger: Period Totals Records Values
MBEWVALUA	4	Material Valuation Data
MDMABASIC	4	MRP Area Basic Data
MEAN_GTIN	4	International Article Numbers (EANs) for Material
MLANPURCH	4	Tax Classification for Purchasing
MLANSALES	4	Tax Classification for Sales
MLGNSTOR	4	Material Warehouse Management Data
MLGTSTOR	4	Material Storage Type Data
MPGDPRODG	4	Material Data for Product Group
MRPTXT	4	Material MRP Text
MVKEGRPNG	4	Sales Grouping
MVKESALES	4	Sales Data
PURCHTXT	4	Material Purchasing Text

Table 3.3 Material Master Data Model SU Type 1 and 4 Entity Types (Cont.)

Entity Type	SU Type	Description
QINSPTXT	4	Material Quality Inspection Text
QMATBASIC	4	Parameters for Inspection Type
SALESTXT	4	Material Sales Text
UNITOFMSR	4	Units of Measure for Material
VALUATION	4	Characteristic Valuation (Classification)

Table 3.3 Material Master Data Model SU Type 1 and 4 Entity Types (Cont.)

Table 3.4 lists the reuse active areas and associated access classes assigned to the material master data model.

Active Area	Description	Access Class
DRAD	Document-object link	CL_MDG_BS_MAT_DRAD_ACCESS
DRATYP2CHK	Type 2 entities (attributes) for document-object link (DRAD)	CL_MDG_BS_MAT_DRAD_TYP2CHK_ACC
MATERIAL	Material master (MM01 – MM03 in active area)	CL_MDG_BS_MAT_ACCESS
MM_TYP2CHK	Type 2 entities (attributes) for material master	CL_MDG_BS_MAT_TYP2CHK_ACCESS

Table 3.4 Material Master Data Model: Reuse Active Areas

Now that you understand all the data model building blocks from Section 3.1, we can focus on the material master data model and understand how some of the entities and relationships are modeled. Figure 3.19 shows the MARCBASIC entity type and its associated relationships as an example. Some of the highlights of this example are as follows:

- The MATERIAL entity has a leading relationship of cardinality 1:N to entity type MARCBASIC.
- The PRCTR entity type has a referencing relationship of cardinality 0:N to entity type MARCBASIC.
- The WERKS entity type has a qualifying relationship of cardinality 1:N to entity type MARCBASIC.

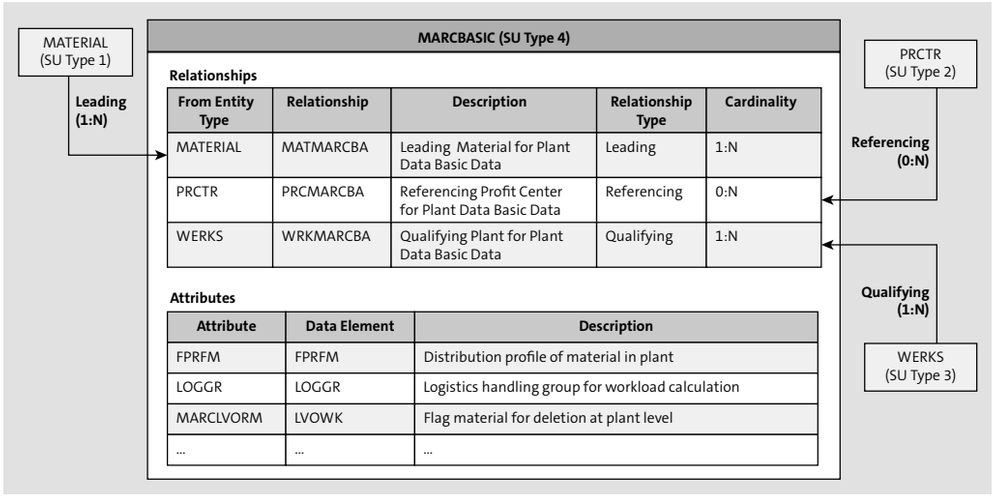

Figure 3.19 Material Master Data Model Example

3.3.2 Business Partner Data Model

The business partner data model caters to business partner, customer master, supplier, and contract account domains in SAP Master Data Governance. This helps in having all common attributes in the appropriate business partner-related entity types. As discussed in Chapter 2, Section 2.4.3, customer-vendor integration (CVI) plays an important role in creating business partner and associated customer/vendor records. Business partner relationships are used for creating customer and supplier contacts in SAP Master Data Governance. Figure 3.20 shows an overview of the business partner data model and how business partner data and corresponding SAP S/4HANA and SAP ERP customer and vendor data are linked.

Some of the highlights of the business partner data model are as follows:

- Multiple storage/usage type 1 entity types are available.
- Multiple type 4 entity types are available.
- Business partner hierarchy is possible.
- Business partner and corresponding SAP S/4HANA and SAP ERP customer and/or vendor data are linked via the multiple assignments entity type.

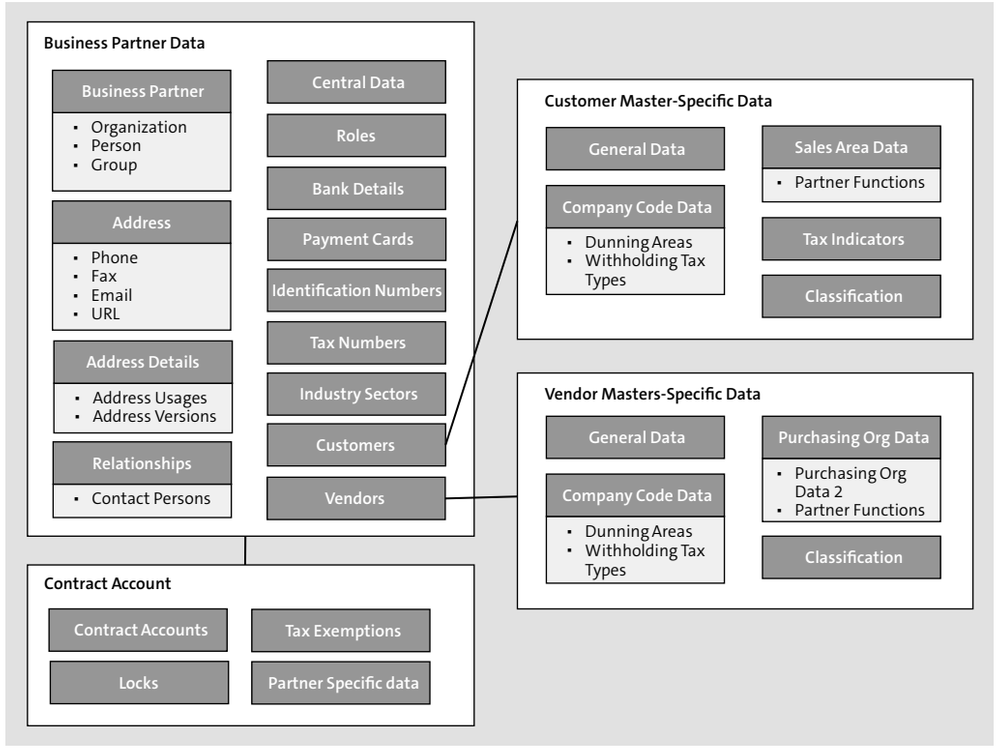

Figure 3.20 Business Partner Data Model

Table 3.5 lists **SU Type** 1 and 4 entity types of the business partner data model.

Entity Type	SU Type	Description
ADDRNO	1	Address Number
BP_HEADER	1	Business Partner
BP_HRCHY	1	Hierarchy
BP_REL	1	Relationships
BP_SUBHRY	1	Lower-Level Hierarchy
FKKVK	1	Contract Account

Table 3.5 Business Partner Data Model SU Type 1 and 4 Entity Types

Entity Type	SU Type	Description
ADDRESS	4	Address
AD_EMAIL	4	Email Address
AD_FAX	4	Fax Number
AD_NAME_O	4	Names of Organizations
AD_NAME_P	4	Names of Persons
AD_POSTAL	4	Physical Address
AD_TEL	4	Telephone Number
AD_URL	4	Internet Address
BP_ADDR	4	Addresses
BP_ADDUSG	4	Address Usage
BP_BKDTL	4	Bank Details
BP_CCDTL	4	Payment Cards
BP_CENTRL	4	Central Data
BP_COMPNY	4	Company Code
BP_CPGEN	4	BP Relationship Contact Person General Data
BP_CUSCLA	4	Customer: Class Assignment (Classification)
BP_CUSDDB	4	Basic Data for Document Link
BP_CUSDUN	4	Dunning Data (Customer)
BP_CUSFCN	4	Customer: Partner Function
BP_CUSGEN	4	General Data (Customer)
BP_CUSTAX	4	Tax Classification for Customer
BP_CUSULP	4	Unloading Points for Customer
BP_CUSVAL	4	Customer: Characteristic Valuation (Classification)
BP_CUSWHT	4	Customer: Extended Withholding Tax

Table 3.5 Business Partner Data Model SU Type 1 and 4 Entity Types (Cont.)

Entity Type	SU Type	Description
BP_CUS_CC	4	Customer Company Code Data
BP_DUNN	4	Dunning Data
BP_IDNUM	4	Identification Numbers
BP_INDSTR	4	Industry
BP_MLT_AD	4	Multiple Addresses of Customer/Supplier
BP_MLT_AS	4	Multiple Assignment of Customer/Supplier
BP_PORG	4	Purchasing Organization
BP_PORG2	4	Purchasing Data
BP_ROLE	4	Role
BP_SALES	4	Sales Data (Customer)
BP_TAXGRP	4	Tax Groupings (Suppliers)
BP_TAXNUM	4	Tax Numbers
BP_VENCLA	4	Supplier: Class Assignment (Classification)
BP_VENDDB	4	Basic Data for Document Link
BP_VENFCN	4	Supplier: Partner Functions
BP_VENGEN	4	General Data (Supplier)
BP_VENSUB	4	Supplier Subrange
BP_VENVAL	4	Supplier: Characteristic Valuation (Classification)
BP_WHTAX	4	Extended Withholding Tax
BP_WPAD	4	BP Contact Person Workplace Address
CUSCCTXT	4	Texts (Customer Company Code Data)
CUSGENTXT	4	Texts (Customer General Data)
CUSSALTXT	4	Texts (Customer Sales Data)
FKKLOCKS	4	Business Locks (Contract Account)

Table 3.5 Business Partner Data Model SU Type 1 and 4 Entity Types (Cont.)

Entity Type	SU Type	Description
FKKTAXEX	4	Tax Exemptions (Contract Account)
FKKTXT	4	Texts (Contract Account)
FKKVKCORR	4	Correspondence for Relationship Contract Account<->Partner
FKKVKP	4	Contract Account Partner-Specific (Contract Account)
FKKVKTD	4	Contract Account (Time Dependence)
VENCCTXT	4	Texts (Supplier Company Code Data)
VENGENTXT	4	Texts (Supplier General Data)
VENPOTXT	4	Texts (Supplier Purchasing Organization)
WP_EMAIL	4	Workplace Address: Email Address
WP_FAX	4	Workplace Address: Fax Number
WP_POSTAL	4	Workplace Address: International Versions
WP_TEL	4	Workplace Address: Telephone Number
WP_URL	4	Workplace Address: Internet Address

Table 3.5 Business Partner Data Model SU Type 1 and 4 Entity Types (Cont.)

Table 3.6 lists the reuse active areas and associated access classes assigned to the business partner data model. Note that the entity types BP_HRCHY and BP_SUBHRY are assigned with SAP Master Data Governance as active areas, which implies that these entity types aren't defined as reuse entity types and don't use the PARTNER reuse active area defined at the business partner data model level.

Active Area	Description	Access Class
CUS_DRAT2C	Type 2 Entities (Attributes) for Document-Object Link (DRAD)	CL_MDG_BS_BP_DRAD_TYP2CHK_ACC
CUS_TYP2CH	Type 2 Entities (e.g., tax classification) for Customer Master	CL_MDG_BS_CUST_TYP2CHK_ACCESS
FKKVK	Contract Account	CL_MDG_FICA_ACCESS_MASTER

Table 3.6 Business Partner Data Model: Reuse Active Areas

Active Area	Description	Access Class
PARTNER	N/A	CL_MDG_BS_BP_ACCESS_MASTER
SUP_TYP2CH	Type 2 Entities (e.g., plant) for Vendor Master	CL_MDG_BS_SUPPL_TYP2CHK_ACCESS
VEN_DRAT2C	Type 2 Entities (Attributes) for Document-Object Link (DRAD)	CL_MDG_BS_BP_DRAD_TYP2CHK_ACC

Table 3.6 Business Partner Data Model: Reuse Active Areas (Cont.)

Next let's focus on the business partner data model and understand how some of the entities and relationships are modeled. Figure 3.21 shows how some of the important entity types are related to each other in the business partner data model.

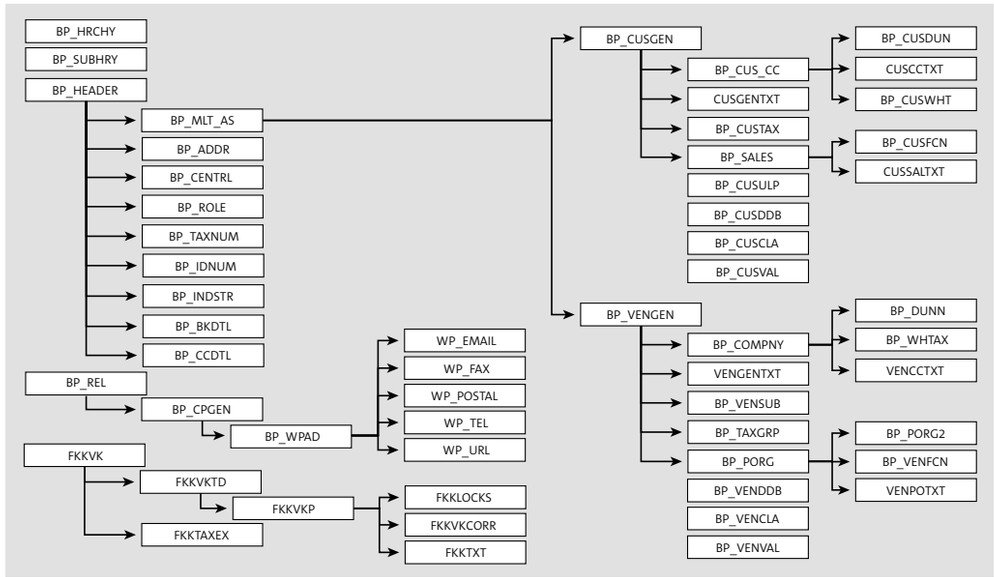

Figure 3.21 Business Partner Data Model: Entity Types

The business partner data model also can model hierarchies for business partners. From the persistence perspective, entity types BP_HRCHY and BP_SUBHRY are modeled to be flex entity types (the active area is defined as "MDG" at the entity type level). It's important to note that the business partner hierarchy isn't related to the SAP S/4HANA and SAP ERP customer or vendor hierarchies. Figure 3.22 shows how entity types BP_

HRCHY, BP_SUBHRY, and BP_HEADER are modeled to facilitate hierarchy creation for business partner records. The following are some important aspects of modeling these three entity types:

- Entity types BP_HRCHY ❶ and BP_SUBHRY ❷ aren't modeled as hierarchies; **Hierarchies** is set to **No** (as shown Figure 3.22).
- Entity type BP_HEADER ❸ is modeled as a hierarchy; **Hierarchies** is set to **Yes – Not Version-Dependent/Not Synchronized**.
- For BP_HEADER, the **Entity Types for Hierarchies** customization ❹ is maintained as the following:
  - BP_HRCHY is defined as **Hierarchy Name**.
  - BP_SUBHRY is defined as **No Special Use**.
  - BP_HEADER is defined as **No Special Use**.

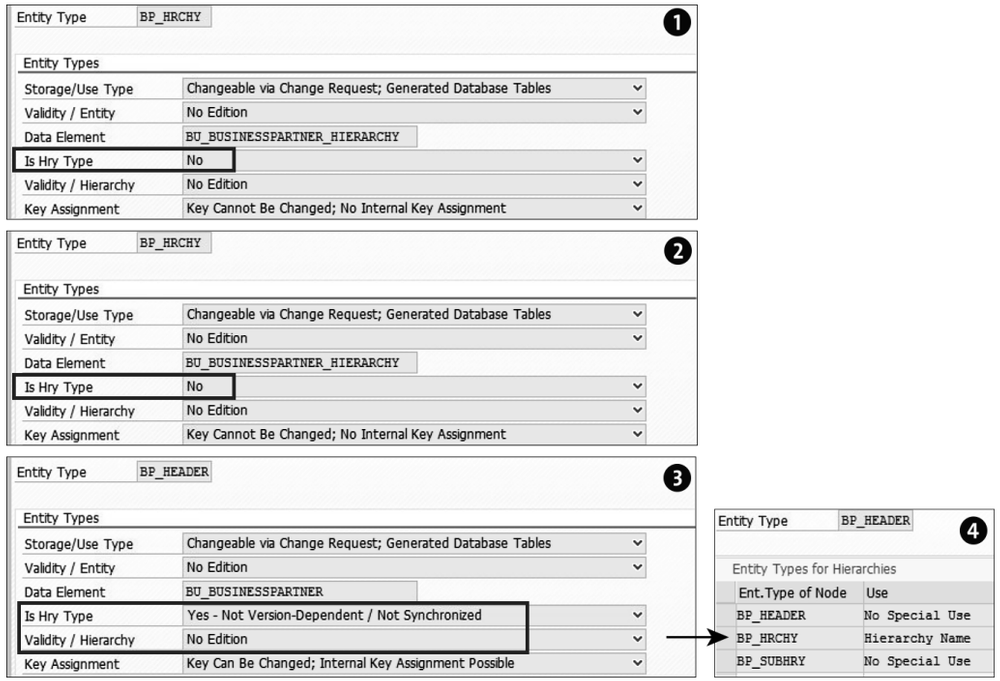

Figure 3.22 Business Partner Data Model: Hierarchy

Now, let's move on to discuss the financial data model delivered by SAP.

3.3.3 Financial Data Model

The SAP standard financial (0G) data model caters to the data governance of various finance objects such as cost center, profit center, cost element, general ledger account, and so on. Refer to Chapter 2, Section 2.4.4, for a complete list of finance objects in SAP S/4HANA and SAP ERP.

Table 3.7 shows a list of all **SU Type** 1 and 4 entity types of the financial (0G) data model

Entity Type	SU Type	Description
ACCCCDET	1	SAP General Ledger Account (Company Code)
ACCOUNT	1	SAP General Ledger Account (Chart of Accounts)
BDC	1	Breakdown Category
BDCSET	1	Breakdown Category Set
CCTR	1	Cost Center
CCTRG	1	Cost Center Group
CCTRH	1	Cost Center Group Hierarchy
CELEM	1	Cost Element
CELEMG	1	Cost Element Group
CELEMH	1	Cost Element Group Hierarchy
COMPANY	1	Company
CONSCHAR	1	Consolidation Characteristic
CONSGRP	1	Consolidation Group
CONSGRPH	1	Consolidation Group Hierarchy
CONSUNIT	1	Consolidation Unit
FRS	1	Financial Reporting Structure
FRSI	1	Financial Reporting Structure Item
FSI	1	Item

Table 3.7 SU Type 1 and 4 Entity Types of the Financial Data Model

Entity Type	SU Type	Description
FSIH	1	Item Hierarchy
FSIT	1	Text Item
IORDER	1	Internal Order
PCTR	1	Profit Center
PCTRG	1	Profit Center Group
PCTRH	1	Profit Center Group Hierarchy
SUBMPACK	1	Cause for Submission
TRANSTYPE	1	Transaction Type
ACCCCAUDT	4	SAP ERP Audit Information for G/L Account (Company Code)
ACCNTAUDT	4	SAP ERP Audit Information for G/L Account (Chart of Accounts)
BDCSUBSEL	4	Assignments of Subassignments
CCTRAUDIT	4	SAP ERP Audit Information for Cost Center
CELEMAUDT	4	SAP ERP Audit Information for Cost Element
CGGCURR	4	Entity for Currency Assignment
CUVERS	4	Entity Related to Consolidation Unit Entity
FRSITXT	4	Financial Report Texts
FSIAUDIT	4	SAP ERP Audit Information for Item
FSIVERS	4	Entity Related to Item Entity
IORDAUDT	4	ERP Audit Information for Internal Order
PCCCASS	4	Assignments of Profit Centers
PCTRAUDIT	4	SAP ERP Audit Information for Profit Center

Table 3.7 SU Type 1 and 4 Entity Types of the Financial Data Model (Cont.)

Figure 3.23 shows type 1 entity types of the financial data model grouped under three main areas. Note that the financial area also uses profit center, profit center group, and profit center hierarchy.

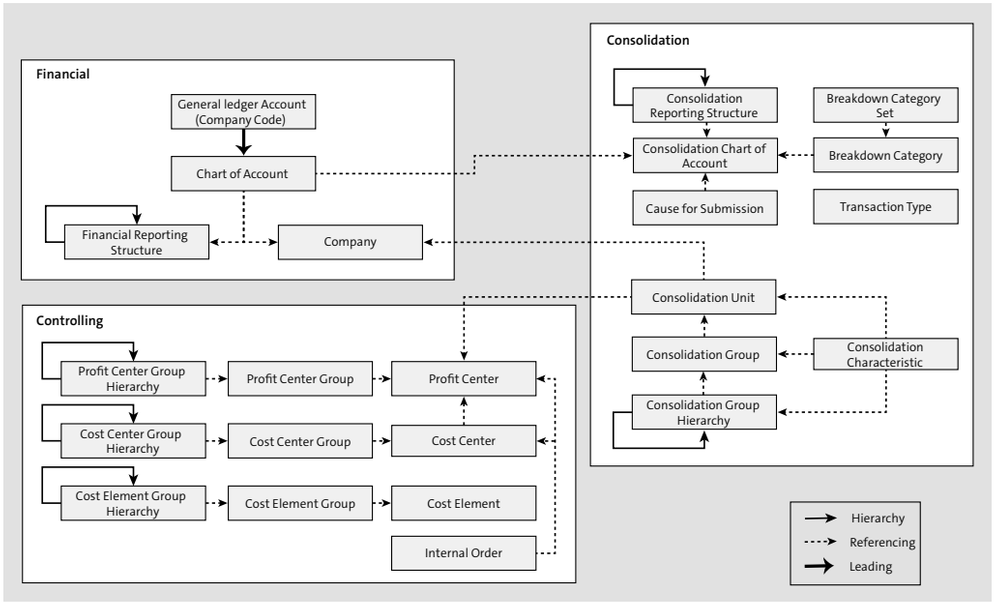

Figure 3.23 Financial Data Model: Type 1 Entity Types

Note

Prior to SAP Master Data Governance 9.1, the 0G data model followed the SAP ERP template; however, now it's split into two different code lines:

- The standalone SAP Master Data Governance 9.2, which can be used with SAP ERP as an add-on
- SAP Master Data Governance on SAP S/4HANA 1809

Please refer to SAP Note 202146 for additional details on the list of supported fields in data model 0G and how SAP Master Data Governance on SAP S/4HANA 1809 versus standalone SAP Master Data Governance distinguishes the concept of cost elements.

Note

Internal order governance is delivered only as part of SAP Master Data Governance on SAP S/4HANA 1809 and SAP Master Data Governance 9.2 onwards.

3.4 Extending Standard Data Models

The data that needs to be managed and governed via a governance process is determined by the data model definition. The standard content provides the option to configure what data needs to be governed based on the available data entities and attributes of the data model. It also provides the option to add additional entities or attributes that aren't part of the standard data model.

Some common use cases for data model extension are adding industry-specific master data attributes, adding enhanced data fields that already exist in the master data repository tables (extended SAP S/4HANA and SAP ERP tables), adding process-specific attributes, and adding fields that need to exist only in SAP Master Data Governance staging tables and not in SAP S/4HANA and SAP ERP tables (flex option), among others. These requirements can be achieved by adding additional entities or extending the standard entities with new attributes. These new entities can be mapped to the reuse area or can be flex entities. The relationships between the new entities and the existing entities need to be maintained to validate the data. The most common use cases for a data model extension include the following:

- **Adding existing standard fields (reuse option)**
  This involves the requirement to extend the standard SAP Master Data Governance data model with standard fields that aren't part of the SAP Master Data Governance data model. Examples of such fields include those that come with industry-specific solution add-ons, fields related to standard database tables that aren't in the SAP Master Data Governance standard scope, and so on. Based on the number of fields and the type of fields (check tables, text fields, etc.), these fields could be added as attributes to the standard entities or custom entities in the standard data model.
- **Adding custom fields (reuse option)**
  This involves the requirement to extend the standard SAP Master Data Governance data model with custom/enhanced fields that were added to the standard SAP S/4HANA and SAP ERP tables or custom tables that are linked to the standard tables. Based on the number of fields and the type of fields (check tables, text fields, etc.), these fields could be added as attributes to the standard entities or custom entities in the standard data model.
- **Adding custom fields (flex option)**
  This involves the requirement to extend the standard SAP Master Data Governance data model with custom fields that need not be mapped to the active area.

  Examples of such fields include process-specific fields that are used to determine process flows, fields based on user entry, extending data model with additional flex fields, and so on.

The following sections discuss various steps to implement these data model enhancements, from adding attributes to the standard data model to adding new entities to data models.

3.4.1 Adding Attributes to Standard Data Models

Adding attributes to the standard data model can be accomplished by adding attributes to the existing entities or defining an entity relationship. Attributes can be added only to storage type 1 or type 4 entities. The new entities can be flex entities or reuse entities, based on the entity definition and type of data (master, reference, process-specific, etc.). If the newly added field is part of a check table or has foreign keys, then a storage type 3 entity is defined, and a relationship is configured with the linked entity. If the field already exists in the SAP S/4HANA and SAP ERP tables (reuse option), mappings between the staging and active area need to be maintained through the SMT mapping.

For the business partner data model, if the business partner-related field needs to be part of the customer or vendor UI, CVI mapping needs to be defined to map the field from the business partner model to the corresponding customer or vendor field. Because the finance data model (0G), unlike the material master or business partner data model, is based on the flex option, SMT mapping isn't required.

The customer namespace for adding fields is ZZ or YY. A namespace and custom package needs to be provided on configuration; the structures are generated on activation of the data model. They can be visualized in the configuration view to display the graphical model. The generated tables can also be verified by Transaction MDG_DATA_MODEL.

After the data model is extended, the data model is activated and generated so that the extended fields can be used in the governance process. The staging area needs to be adjusted by running report USMD_ADJUST_STAGING, which helps in adjusting the staging area for the linked change requests. The generated structures are used to configure and extend the UIs, based on the entity/attribute relationships.

After the attributes to be enhanced or added are identified, the standard data model can be extended. The configuration paths and detailed navigation for each of these

extension steps are described in Section 3.2. For the business partner data model enhancements, CVI mapping needs to be updated if the business partner fields need to be mapped to the customer/supplier structure, as discussed in Chapter 2 (Section 2.4.3). You can extend the model by following these steps:

1. Extend the SAP S/4HANA and SAP ERP table (for new reuse fields), if it doesn't already exist (reuse option for business partner and material master data models).
2. Using Transaction MDGIMG, select the data model, and extend it with the new attributes in the corresponding entity definition associated with the SAP S/4HANA and SAP ERP table or with a referencing relationship.
3. Activate the date model.
4. Generate data model-specific structures. Structures for mapping between staging and active areas (for reuse area models) and field properties are mandatory. Other structure usage types (structures for PDF-based forms, for SAP Enterprise Search, and for field control) may be added as required. Additional metadata structures may need to be extended based on the domain. For example, for the material domain, extend structure `MDG_BS_MAT_S_MAT_DATA`, and check/adjust corresponding table type structures `MDG_BS_MAT_S_<table>*` and `CMD_BS_MAT_S_<table>*`, as needed (for more information, check the help documentation).
5. For the reuse option, enhance the access and respective handler classes (for the business partner model) to read and write in the reuse area. Access classes control the handler class calls. Handler classes need to be enhanced to read and save data for custom entities and attributes. A single handler class is responsible for a single object operation.
6. Define SMT mapping (for reuse fields). This defines the field mapping between the staging area and primary persistence area in both directions so that, upon activation of the change requests, the data is saved to the reuse area (active area).
7. Adjust the staging area for linked change requests.

3.4.2 Adding New Entities to the Data Model

The data model can be extended with additional entities. The data associated with these entities can be stored in SAP Master Data Governance or in SAP S/4HANA and SAP ERP tables upon activation of the change request. The newly defined entities need to be linked to other entities via relationships as defined in Section 3.1.4. The cardinality of the relationship is determined based on the data set.

The steps to extend the standard data model with new entities are the same as those mentioned in Section 3.4.1. For the material data model, the `MDG_BS_MAT_API_SEGMENTS_EXT` Business Add-In (BAdI) is also implemented.

After the data model is extended, the UI needs to be enhanced. For the business partner model, the Generic Interaction Layer (GenIL) model is also extended to connect the data model with the GenIL model, which integrates the model fields to the UI. The mapping of the GenIL model to the data model is done through view cluster `VC_MDG_BS_GENIL_C` (Transaction SM34).

3.5 Summary

This chapter covered the building blocks of SAP Master Data Governance data modeling, including entity types, attributes, and relationships. After introducing the building blocks of data modeling, this chapter covered the customization aspects of data modeling. We covered the standard data models for material master, business partner, and financials, as well as how standard data models are modeled and standard delivered data models can be extended.

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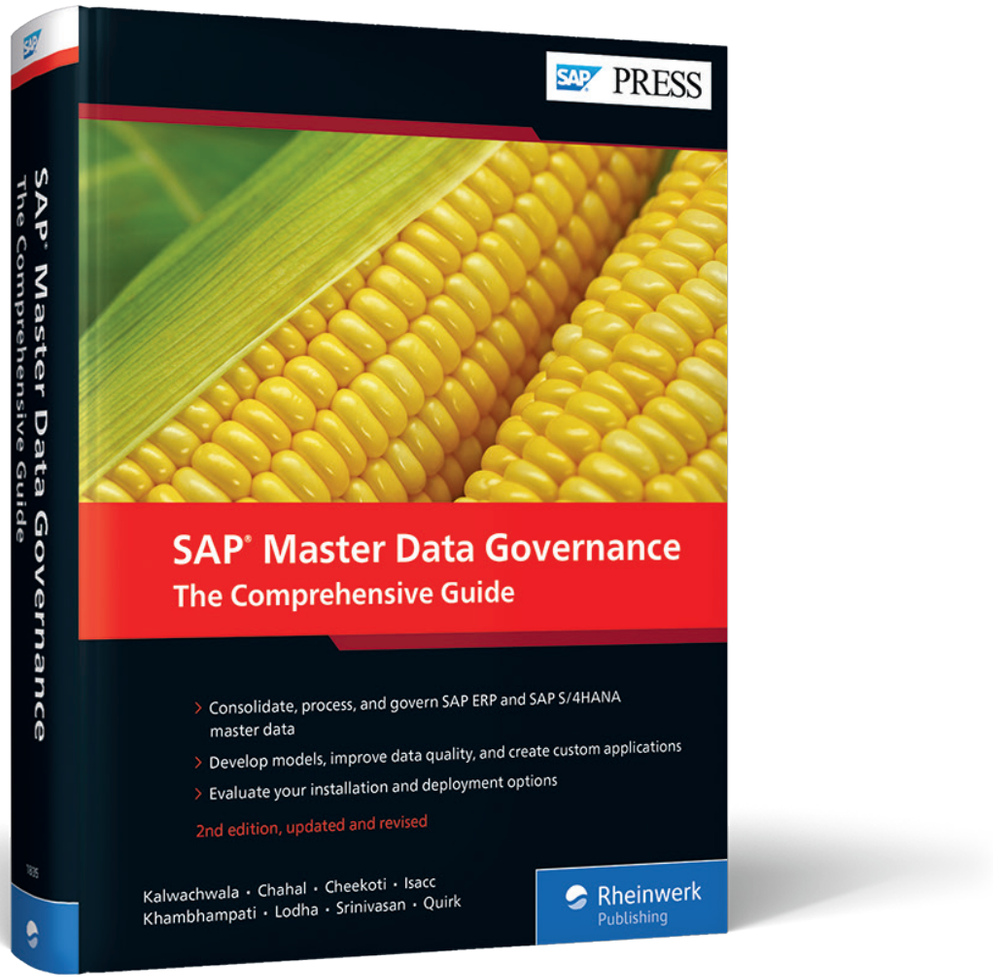
X

XML view 658



Homiar Kalwachwala, Sandeep Chahal, Santhosh Cheekoti, Antony Isacc, Rajani Khambhampati, Vikas Lodha, Syama Srinivasan, David Quirk

SAP Master Data Governance: The Comprehensive Guide

774 pages, 2nd, updated and revised edition 2019, $89.95
ISBN 978-1-4932-1835-6

www.sap-press.com/4883

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