How-To
Customizing Synchronization Between SAP MDG and SAP ERP or SAP S/4HANA

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Document History

Document Version	Description
1.0	First official release of this guide (April 2013)
2.0	Update, bringing SAP S/4HANA into context and providing updated information about MDG Customizing objects - January 2018
2.1	Update, provide information on Cross Landscape Distribution in SAP Solution Manager
2.2	Update to section 5.2. Reference to MDG Lists of Relevant Objects
3.0	Formatting, Code adjustments

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1. Business Scenario

SAP Master Data Governance provides business processes to find, create, change, and mark master data for deletion. It supports the governance of master data in a central hub and the distribution to connected operational and business intelligence systems.

The processes are workflow-driven and can include several approval and revision phases, and the collaboration of all users participating in the master data maintenance.

As a prerequisite for the distribution of master data, certain master data related customizing settings must also be synchronized between the systems that participate in the distribution.

This How To Guide supports SAP MDG implementation projects with general guidelines, templates, and links to documentation that can be used for the customizing synchronization process. It also includes lists of customizing objects that might be affected.

2. Introduction

In most cases SAP customers implementing SAP Master Data Governance (SAP MDG or SAP MDG on SAP S/4HANA) need to think about the synchronization of customizing across at least two systems to keep business processes that span across multiple systems consistent. This is particularly relevant when SAP MDG is applied in a hub deployment (MDG deployed on a different system than the operational S/4HANA or ERP system). The intention of this document is to support SAP MDG implementation projects with general guidelines, templates and links to documentation that can be a basis for the synchronization process - including lists of customizing objects that might be affected. Information in this document does not refer to S/4HANA Cloud systems.

In most cases a customizing synchronization between SAP MDG (either on ERP or on S/4HANA) and one or more SAP S/4HANA or ERP client systems is necessary, but there might be other systems as well. This is not an uncommon situation as many customers already use two or more SAP S/4HANA or ERP systems that need consistent customizing to execute processes that span multiple systems. Depending on the use case a different set of customizing needs to be synchronized and there might be several systems acting as the source for this data. This will be discussed in the next section: General Considerations.

Following the general considerations, the synchronization process needs to be defined including the tools that are useful to support such a process. See section Intial and Ongoing Synchronization for some deeper discussion about these topics.

After all of this, the most time-consuming task is probably to identify the relevant customizing objects. The last section covers available documentation from SAP as well as detailed lists which can be used as templates when deriving the project specific object lists. See section Object Lists.

3. General Considerations

Synchronizing customizing data means identifying the relevant data, determining where to maintain it and deciding how the synchronization process is managed. The following section provides some general guidelines regarding these topics.

Customizing data is data configured in the Implementation Guide (IMG) of the development system and imported into test and productive systems through the transport management system. It includes for example organizational units (e.g., company code, division, plants), units of measurement and many others. It should be identical in certain areas before data can be exchanged between connected systems. For non-identical customizing, value mapping in the data replication process can be used to overcome this restriction but should be minimized if possible.

In most scenarios, the customizing data will be maintained on the operational ECC or S/4HANA system and distributed to other systems (like MDG). This ensures that the customizing is maintained close to the business

processes and avoids release dependencies as the ERP (or S/4HANA) system may well be on a lower release level. Synchronization of customizing is generally done between the development systems and is separately transported (in a controlled fashion) in the ERP (or S/4HANA) and in the MDG landscape.

For in-depth considerations, it is helpful to think about different clusters of SAP customizing data. Some customizing data is "generic" and not closely bound to customer specific processes. Examples for these are codes that follow a common definition from standardization organizations (e.g. language, country, currency codes or units of measurement). This type of customizing data (often called "reference data") is probably best suited to be maintained on a central system like an MDG system. There are many others that might be classified to be maintained on the MDG system but also others that fall into a grey area in between "generic" and "customer specific" customizing. For a list of some very common reference data objects see section: Object Lists. Depending on the industry and other dimensions a specific group of customers would define some customizing objects as "clearly customer specific" and other customers would identify them as "generic". There is no complete list that can be used - there is always an individual point of view.

Besides "reference data", which might be best suited to be managed on the MDG system other types of customizing objects need to be taken into consideration. Some of them are connected to master data (probably best managed on the MDG system) and some are closer connected to transactional data (probably best managed on the operational ECC or S/4HANA system). And there is the last type which is MDG specific and needs to be maintained on the MDG system (e.g., Change Request specific customizing).

Apart from the question regarding where it should be maintained, there are other dimensions to be taken into consideration to define the best synchronization process. For example, the maintenance effort would be minimal if everything would "just be maintained on the operational ECC or S/4HANA system and sent to MDG". This could include customizing data that might not even be used on the MDG system as it is not used for the master data maintenance process at all. The cleaner approach which only synchronizes data that is needed on the MDG system leads to more effort. Having some data maintained in the operational ECC or S/4HANA system and some in the MDG hub also leads to more effort.

If the systems to be synchronized are on different releases, it is recommended that you compare the structures of the customizing tables that you want to distribute between the source and the target system. In general, it cannot be assumed that SAP customizing tables do not change. However, this rarely happens when the systems belong to the same SAP product. For example, if the operational system and the MDG system are both on SAP S/4HANA, and only the support package level is different, then we do not expect differences in the customizing tables.

More problems are to be expected when the systems that shall be synchronized are on different SAP products. These systems might follow different data models. For example, SAP CRM uses the CRM Business Partner data model instead of the ERP Customer and ERP Vendor data models.

This restriction does also apply if one system is on SAP ECC and the other system is on S/4HANA. Some functionalities in SAP ECC have been simplified, redesigned or decommissioned in S/4HANA. The corresponding customizing tables might have structural differences, or semantical differences. For example, a table might still exist, but it is not used any more, or only some attributes are still used, while other attributes are stored in other tables. You can find some examples of such tables in SAP note 2192251. A complete list of customizing tables that are affected by "simplification" is included in the simplification database. You can find it in transaction SYCM of an S/4HANA system. The latest version of the simplification database can be uploaded as described in SAP Note 2241080.

If the structure of the tables that you want to distribute is different, you might still be able to transport the table content between them. For example, if fields become longer, or additional fields are added in the target system, an automatic transport is still possible. Only if fields become shorter, or fields are removed in the target system, there is a risk of data loss. In general, it is less problematic to transport or distribute from a lower release into a higher release than vice versa.

If a table that you want to distribute is in the simplification database, you must check the reason for it. As a starting point read the note that is assigned to the simplification item. Most likely the table content cannot be transported or distributed any more. Here the SAP Solution Manager Customizing Distribution functionality can help with the definition of synchronization objects. It allows to create mapping rules between the cus-

tomizing structures in the source and target system.

It must also be decided how to execute customizing changes from a timing perspective. Possible options are "at transport recording", "at transport release", or by a regular background job. Customizing should be distributed between development systems and moved forward to the production systems via transport requests. Using Quality Gate Management (QGM) or Change Request Management (ChaRM) in SAP Solution Manager it is guaranteed that customizing in the MDG landscape is not imported earlier into the productive system than the customizing in the S/4HANA landscape.

4. Intial and Ongoing Synchronization

The customizing synchronization must be done initially and on an ongoing basis. For both processes, ideally the relevant customizing objects must be identified and distributed.

4.1. Initial Synchronization

The Transport Management System (TMS) and Business Configuration Sets (BC Sets) are the technical foundation for the distribution of customizing. They can be used for the initial synchronization when the MDG system has been installed and the object lists (see section: Object Lists) have been identified.

In this process the TMS might issue warnings informing the user about different releases of source and target system. This is because the TMS in general cannot assume that the customizing table structure has not changed – although it rarely does. BC Sets help to overcome release dependencies by providing export, import and activation functionality for customizing data. They are used in other scenarios (e.g., when a preconfigured SAP system should be set up or when SAP Rapid Deployment Solutions (RDS) including customizing data are delivered) and are therefore future proven.

Initial synchronization can be done by a system or client copy from the S/4HANA system into the MDG system.

Or you can identify the relevant customizing objects before, and only transfer the relevant settings (explicit synchronization). This can be done by transport requests. The report RSIMG_COLLECT allows you to collect all customizing settings under a certain IMG node into a transport request.

Or you can create simple or hierarchical BC Sets and include customizing objects under certain IMG nodes.

The recommended approach of an explicit synchronization and a minimal but complete object list guarantees that only relevant customizing will be used in MDG. Based on this, a clean and complete ongoing customizing synchronization process can be defined. Only if this approach is not feasible, an implicit synchronization via system copy or client copy could be considered. It guarantees that all relevant customizing is synchronized even without a complete object list. Bear in mind that this approach leads to a higher risk as it might not be possible to cleanse the system. In the ongoing synchronization process only customizing included in the objects list will be refreshed from the operational ECC or S/4HANA system and other customizing data might become outdated.

4.2. Ongoing Synchronization

Defining how to synchronize the customizing on an ongoing basis is a more difficult topic spanning options that are purely manual to options that are highly automated. Automation with the tools described below takes place on different levels:

- Capturing the relevant customizing data that changed since the last synchronization
- Organizing the distribution (from a technical and a organizational point of view)

From a technical point TMS or the BC Sets should be used (just as for the initial synchronization). Therefore, the remaining part of this section mostly covers the options that do have an influence on the organizational processes. These options are based on feedback from MDG implementation projects ranging from "very man-

ual" to "almost completely automated" processes.

4.2.1. Manual or Semi-Automatic Synchronization

Not using the options mentioned further below - especially ALE Customizing Distribution and SAP Solution Manager - or any other homegrown or 3rd party tool means organizing the synchronization process manually. This means that (manual) workflows must be defined, emailing chains and forms have to be set up and processes have to be established throughout the organization. Without closely following these processes errors are likely to occur.

Combining the manual option with some additional functionality can lead to more stable processes. In one implementation example BC-Sets are created manually based on transport requests in the ERP landscape (filtered against the object list). The BC sets are exported and imported into the MDG development systems. After checking and activating, the data is transported through the MDG landscape (from development to test and productive system). Using Quality Gate Management (QGM) or Change Request Management (Charm) in SAP Solution Manager, it is guaranteed that customizing in the MDG landscape is not imported earlier into the productive system than the customizing in the operational ERP landscape. This process could probably be enhanced by automatically creating the BC Sets.

4.2.2. Homegrown Solution: Pull Approach

A simple and lean way to synchronize the customizing data is used in another MDG implementation. In this scenario neither TMS nor BC Sets are used. Instead, they use a custom-built job in the MDG system which reads the corresponding customizing data from the S/4HANA or ERP production system(s) via RFC. This job runs based on a defined object list and updates the corresponding tables in the MDG system periodically. An advantage of this method is that the master data related customizing is only available and usable in the MDG system when it is already in the productive system. This means no inconsistent data can be created on the MDG hub based on non-aligned transports between the different system landscapes.

4.2.3. ALE Customizing Distribution

The ALE Customizing Distribution - a component in the SAP Application server basis - can be configured without major additional effort and helps to automate the process of capturing the relevant customizing. This would have to be done manually if only TMS were used to synchronize the customizing. As it uses the TMS as the technical basis for the customizing distribution the implications mentioned above with regards to different releases apply here. This option is a predecessor of the SAP Solution Manager based Customizing synchronization (see next section) and currently no MDG implementation is known where this technology is used.

4.2.4. Customizing Distribution in SAP Solution Manager

The more advanced - and therefore recommended - model is to use the SAP Solution Manager based Customizing Synchronization which uses BC Sets as the underlying technology. This approach is followed by several MDG implementation projects and in many other projects. It automates the customizing synchronization for selected customizing objects only. You can maintain customizing objects in synchronization groups and only distribute the selected customizing objects. You can also restrict the values in these tables (e.g. because you do not want to distribute all material types). The selected customizing objects can be locked against changes in the target systems of the distribution in order to ensure single source. It also supports customizing mappings if the customizing table structures in the source and target system are not identical. The synchronization should take place between the development systems. It can be configured at transport recording, at transport release, or by a regular background job.

As a prerequisite, the customizing objects to be distributed must be BC Set enabled. Customizing objects in the customer namespace can also be distributed, if they have a maintenance dialog.

The transport to be distributed is sent from the sender development system to the SAP Solution Manager. There the customizing objects which are included in a synchronization group are identified and put into BC Sets. The BC Sets are then activated in the target development systems of the distribution. There the acti-

vated customizing is saved in a transport request. An example of how a synchronization process could look is shown below:
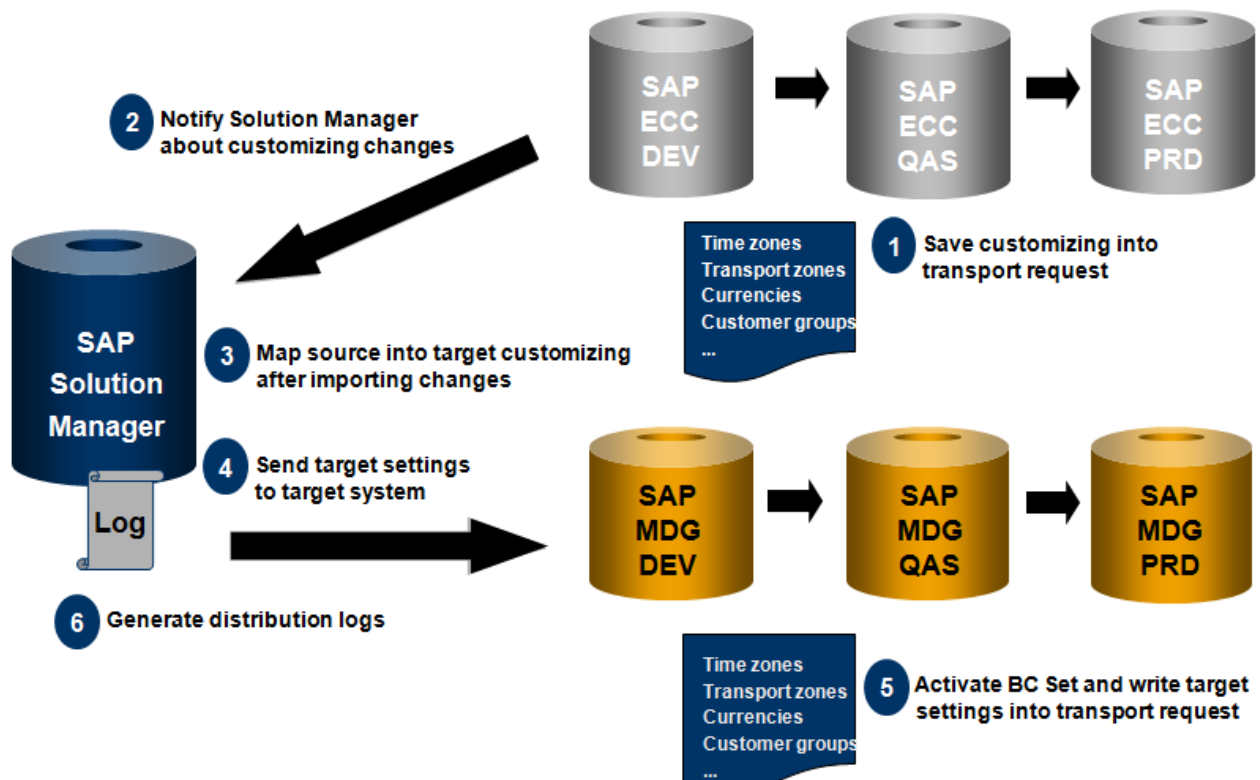
Example: all customizing managed on the operational ERP system supported by the SAP Solution Manager (also applies to environments with operational S/4HANA system instead of operational ERP).

Additionally, Solution Manager Quality Gate Management (QGM) can be used to bundle transports across the ERP and the MDG landscape under the same change and thus align the timing of customizing imports into the test and production systems. Change Request Management (ChaRM) offers in addition a workflow for the approval, execution and test of a change between all involved parties. Retrofit can be used if parallel system landscapes (one productive landscape and one project landscape) need to be synchronized.

When the SAP Solution Manager is available to the MDG implementation team, the configuration is straight forward. However, getting access to such a central system is sometimes hard to get. Additionally, it puts more requirements on the SAP Solution Manager operation as it assumes that this system is almost always available.

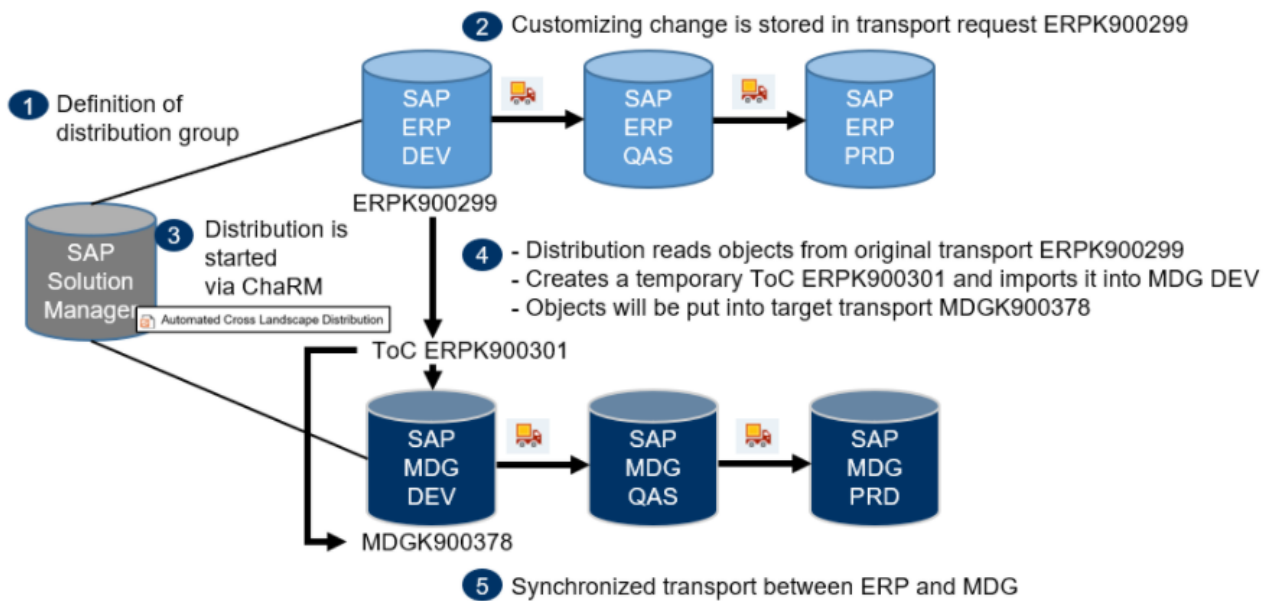More information is available in the online help:

http://help.sap.com/solutionmanager → Application Help → Landscape Management → Customizing Synchronization

4.2.5. Cross-Landscape Distribution in SAP Solution Manager

The Cross-Landscape Distribution function (XLD function) is another function in the SAP Solution Manager to distribute customizing from one development system into one or multiple receiver development systems. It is integrated in Change Request Management. That means Change Request Management must be used at least in the source system of the distribution.

Customizing settings or workbench objects can be distributed via transport of copies between development systems. The functionality is illustrated in the following diagram:

Cross Landscape Distribution (XLD)

2 Customizing change is stored in transport request ERPK900299

1 Definition of distribution group

SAP ERP DEV
ERPK900299

SAP ERP QAS

SAP ERP PRD

3 Distribution is started via ChaRM

SAP Solution Manager — Automated Cross Landscape Distribution

4
- Distribution reads objects from original transport ERPK900299
- Creates a temporary ToC ERPK900301 and imports it into MDG DEV
- Objects will be put into target transport MDGK900378

ToC ERPK900301

SAP MDG DEV

SAP MDG QAS

SAP MDG PRD

MDGK900378

5 Synchronized transport between ERP and MDG

The tool can be customized in different ways. With the flexible distribution option everything can be distributed to everywhere. That means the developer can decide if he wants to distribute a particular transport request into another landscape.

In the strict mode a whitelist of relevant objects for distribution must be maintained in distribution groups. Then only the objects in the distribution groups can be distributed.

The distribution can be triggered manually by the developer. A wizard which is integrated into the Transport Assignment Group of Change Request Management can be used. The receiver transport request must be created in the receiving development system before the distribution is started. A ChaRM condition can be implemented to avoid, that the distribution is forgotten.
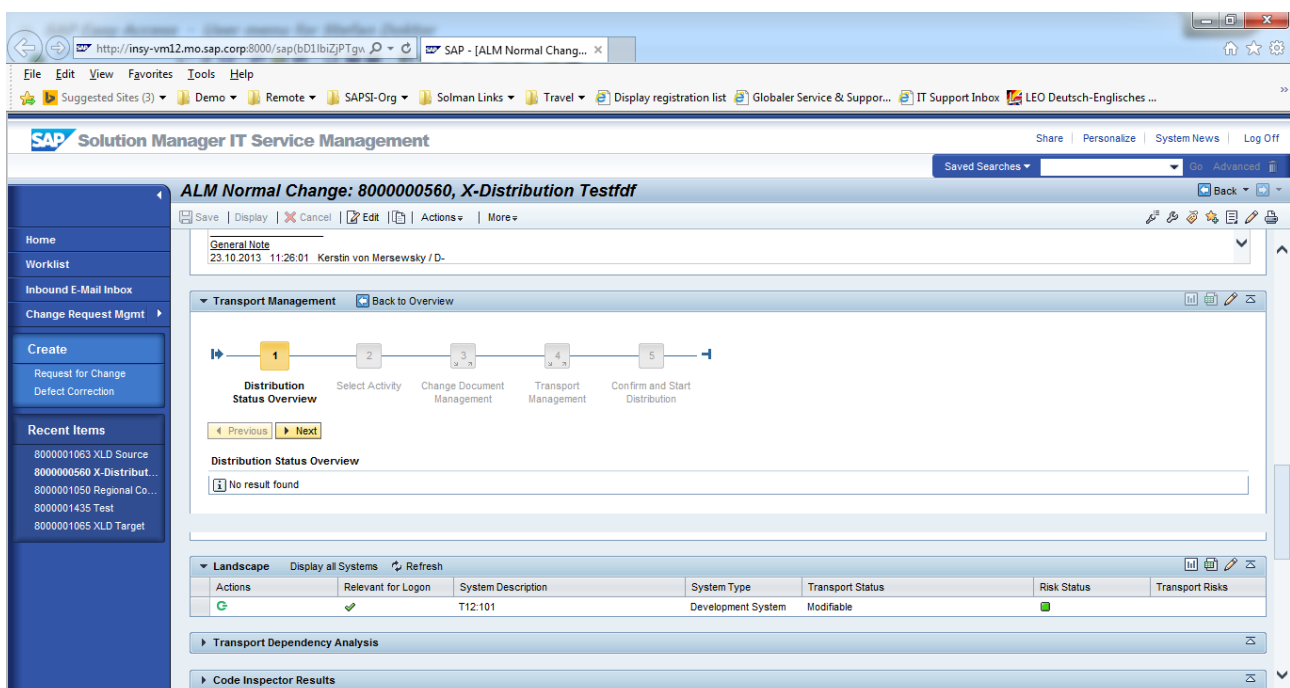
There is also an automatic distribution option which can be used for the strict mode. With this option, the relevant customizing settings or workbench objects which have been maintained in the distribution groups before, will be distributed automatically when the change document is switched into a certain status. A

receiver transport request will be created automatically in the same change document. The receiver transport request will be automatically released and imported into the test and production systems together with the source transport request when the status of the change document is moved forward. As a prerequisite for the automatic distribution the source and target development systems of the distribution must be in the same ChaRM cycle.

In addition, it is possible to lock the objects in the distribution groups in the receiver systems. This should be done to avoid inconsistencies, so that each object or customizing setting can only be changed in a single development system and client.

More information on the Cross Landscape Distribution is available in the online help:

https://help.sap.com/viewer/product/Focused_Build_Focused_Insights → Focused Build Standalone Extensions → Cross-Landscape Distribution

…and in the following blogs:

https://blogs.sap.com/2021/01/22/how-to-keep-sap-master-data-governance-mdg-customizing-in-sync-with-sap-erp-or-sap-s-4hana/

https://blogs.sap.com/2018/04/05/cross-landscape-distribution-focused-build-standalone-extensions-part-1/

5. Object Lists

In order to define your project specific object list, consider 4.1 documentation and 4.2 object lists which have been published.

5.1. Documentation

For **MDG for Material** in 9.x, you can have a look at e.g., http://help.sap.com/MDG → *Master Data Governance Product Page* → choose the appropriate version → *SAP Master Data Governance* under *Application Help* → *Configuration of SAP Master Data Governance* → *Configuration of SAP MDG, Central Governance* → *Master Data Governance for Material* → *Configuring Master Data Governance for Material*, chapter *More Information*, then *Impact of Material Master Customizing* to get a first idea about what needs to be synchronized.

For **MDG for Material** in S/4HANA, you can have a look at e.g., http://help.sap.com/MDG → *Product Assistance* from *Master Data Governance on SAP S/4HANA* → choose the appropriate release → *How to Get Master Data Governance Running* → *Configuration of SAP MDG, Central Governance* → *Master Data Governance for Material* → *Configuring Master Data Governance for Material*, chapter *More Information*, then *Impact of Material Master Customizing* to get a first idea about what needs to be synchronized.

To learn more about the relevant customizing and which objects might be important see also:

SAP Customizing Implementation Guide → SAP NetWeaver / General Settings → Enterprise Structure → Logistics - General / Material Master / Basic Settings → Logistics - General / Material Master / Settings for Key Fields → Sales and Distribution / Master Data → Production / Material Requirements Planning / Plant Parameters

For **MDG-S and MDG-C** you can have a look at the MDG Implementation Guide (transaction `MDGIMG` in the SAP MDG system). Under Master Data Governance, Central Governance:

Master Data Governance for Business Partner (relevant for MDG-S and MDG-C) → Set up Business Partner

Master Data Governance for Supplier (MDG-S) → Integration with Vendor Master in ERP → Set up Vendor Master for Master Data Governance for Supplier

Master Data Governance for Customer (MDG-C) → Integration with Customer Master in ERP → Set up Customer Master for Master Data Governance for Customer

5.2. Reference to MDG Lists of Relevant Objects

Be aware that the linked customizing object lists should be understood as a template which can help to define the project specific list. There might be missing objects or there might be objects listed that would not be on the project specific list. Additionally, you might want to restrict the values in these tables (e.g. because you do not want to govern all material types). For example, depending on the governance scope you can use a filter in the column "Level" for MDG-M to limit the number of relevant objects. General Customizing for the system or client or Customizing necessary for other applications are not mentioned.

Objects for Customizing Synchronization lists have been published in SAP Community in the section *How-to Information for SAP Master Data Governance* → section Conversion, Upgrade, Deployment Recommendations, Customizing Synchronization.