S4131

Managing Technical Objects in SAP S/4HANA

PARTICIPANT HANDBOOK
INSTRUCTOR-LED TRAINING

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Typographic Conventions

American English is the standard used in this handbook.

The following typographic conventions are also used.

This information is displayed in the instructor's presentation	
Demonstration	
Procedure	
Warning or Caution	
Hint	
Related or Additional Information	
Facilitated Discussion	
User interface control	*Example text*
Window title	*Example text*

Contents

Course Overview

TARGET AUDIENCE
This course is intended for the following audiences:

- Application Consultant
- Super / Key / Power User
- Project Manager

UNIT 1 Functional Locations

UNIT OBJECTIVES

- Structure functional locations
- Create functional locations
- Explain how SAP Fiori apps are used to manage Functional Locations
- Transfer data within technical object structures
- Define alternative labeling
- Fiori Apps for Functional Locations
- Summarize customizing for functional locations

Unit 1
Lesson 1

Structuring Functional Locations

LESSON OVERVIEW
In this lesson, you will learn how to structure functional locations and reference functional locations.

LESSON OBJECTIVES
After completing this lesson, you will be able to:

- Structure functional locations
- Create functional locations
- Explain how SAP Fiori apps are used to manage Functional Locations

Concept of Functional Locations

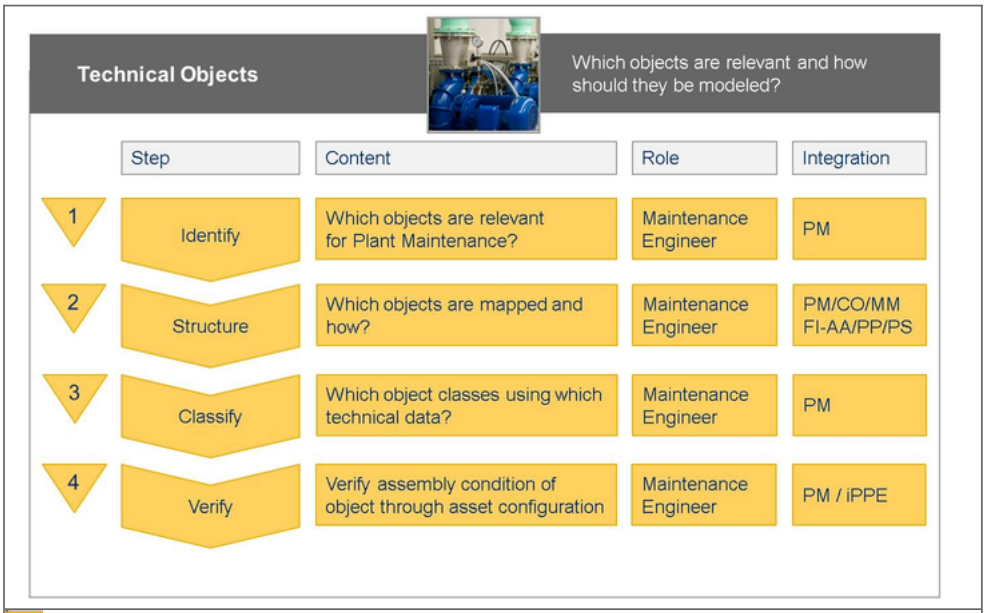

Figure 1: Process for Structuring Technical Objects

The following steps highlight the process of structuring technical objects:

1. Decide which objects require maintenance measures and which objects need to be evaluated.
2. Choose the structuring instruments for each object (functional location, equipment, assembly, material), and create the structure.

3. Create technical characteristics (for example, electrical output) and classes (for example, pump classes). All technical characteristics become available for an object when a technical object (for example, equipment) is assigned to a class.
4. Run a configuration check for a complex technical object structure on a to-be structure.

Criteria for Functional Locations

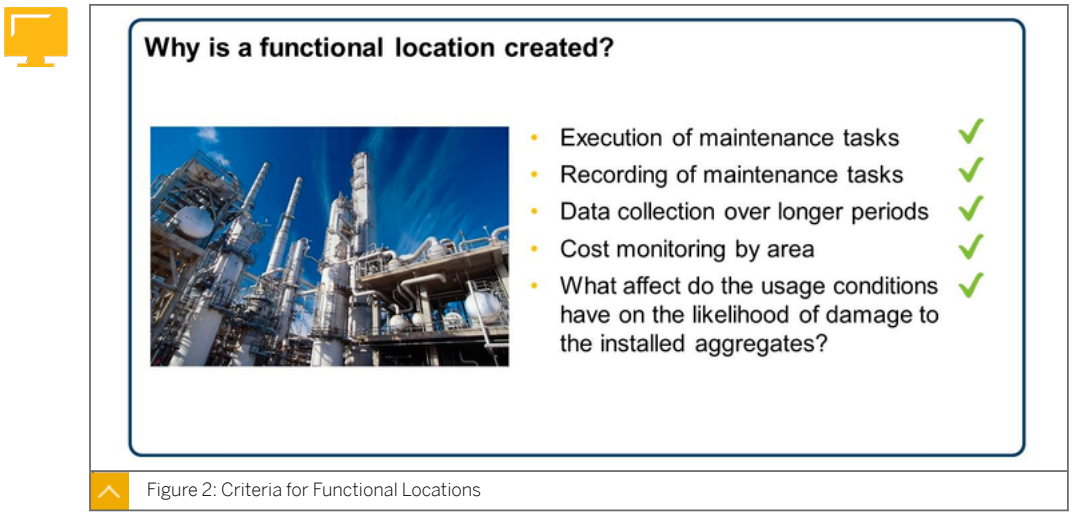

Figure 2: Criteria for Functional Locations

Use functional locations to structure your systems if the following conditions exist:

- You want to represent the structures of the technical systems in your company according to functional criteria.
- You need to perform maintenance tasks for the individual parts of your technical system and this work needs to be recorded.
- You need to collect technical data for certain parts of your technical system and evaluate it over a longer period of time.
- You need to monitor the costs of maintenance tasks for certain parts of your technical system.
- You want to perform analyses for the influence of usage conditions on damage susceptibility for the pieces of installed equipment.

Structure Indicator

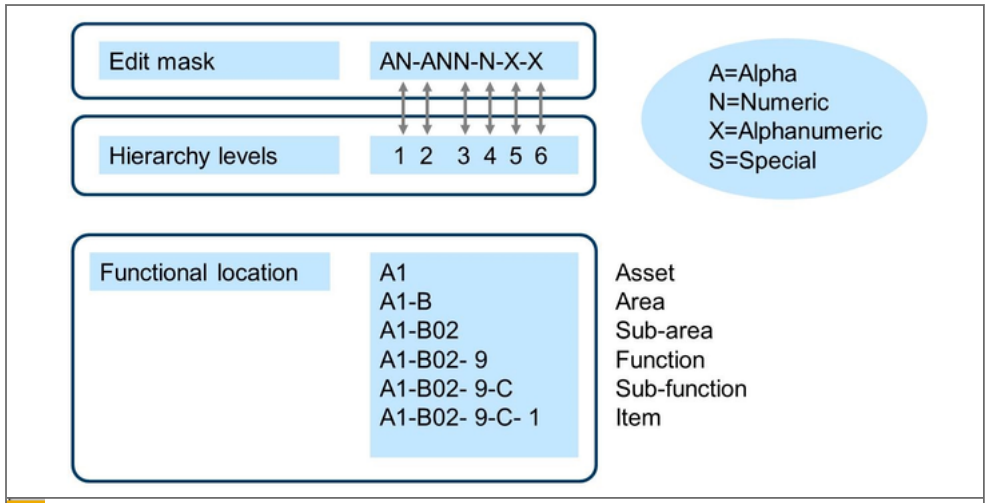

Figure 3: Structure Indicator

Functional location labels (previously, numbers) are created using the structure indicator. The structure indicator consists of two input fields:

- *Edit screen*
- *Hierarchy levels*

Use *Edit screen* to control which characters may be used when a label is assigned (letters, numbers, or both) and how these characters are grouped or split. Use *hierarchy levels* to define which level ends at which character and how many hierarchy levels the structure can contain.

The label for a functional location can comprise of a maximum of 40 characters (maximum length of the coding template).

Reference Functional Locations

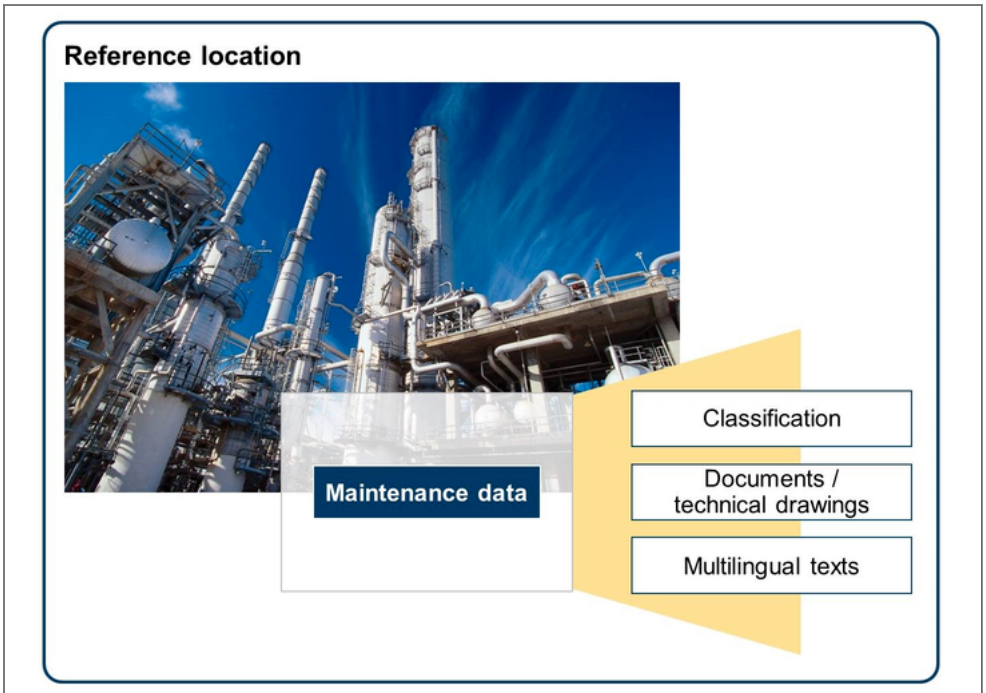

Figure 4: Reference Functional Location

You can use a reference functional location to help create and manage several similar functional locations in the system. Define and manage reference functional locations in individual master records. Reference functional locations do not represent actual locations; they are assigned to real functional locations as reference locations.

The master record of a reference functional location contains information that is valid for all of the functional locations assigned to it. When you create functional locations using reference functional locations, you only need to enter location-specific data.

The system manages the master records for reference functional locations at the client level. This means that their labels are unique for an entire corporate group.

Functional Location Creation

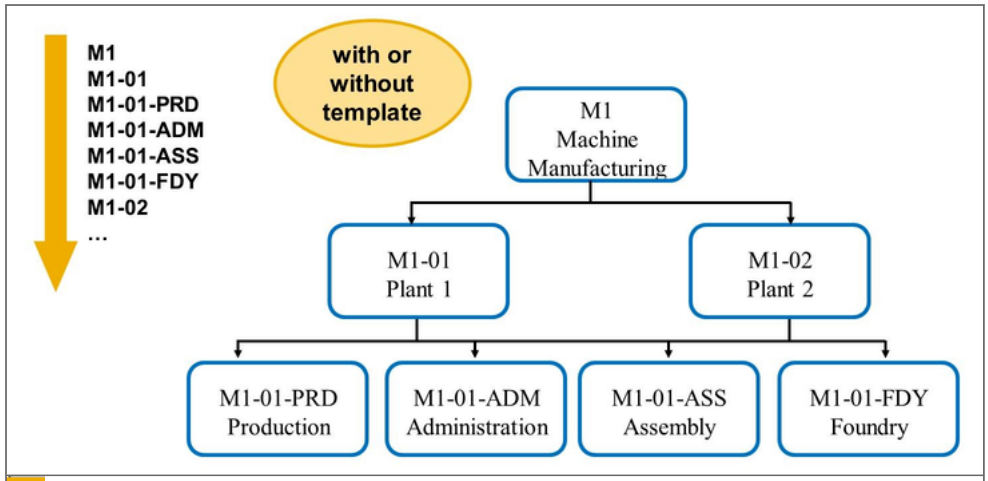

Figure 5: List Entry for Functional Locations

Enter a Master Record for a Functional Location

You can enter a master record for a functional location only when the following prerequisites have been met:

- The structure of the system to be represented in the system has been defined.
- The table settings for structuring functional locations have been entered in the system using the Customizing function.
- You know which level of the functional location to create so that you represent its hierarchical structure correctly in the system.
  - Apply the top-down principle, entering the uppermost level and then the respective subordinate levels.
- You know whether the description of the functional location needs to be entered according to a particular, company-specific system to simplify search operations.

Automatic Assignment Upon Creation

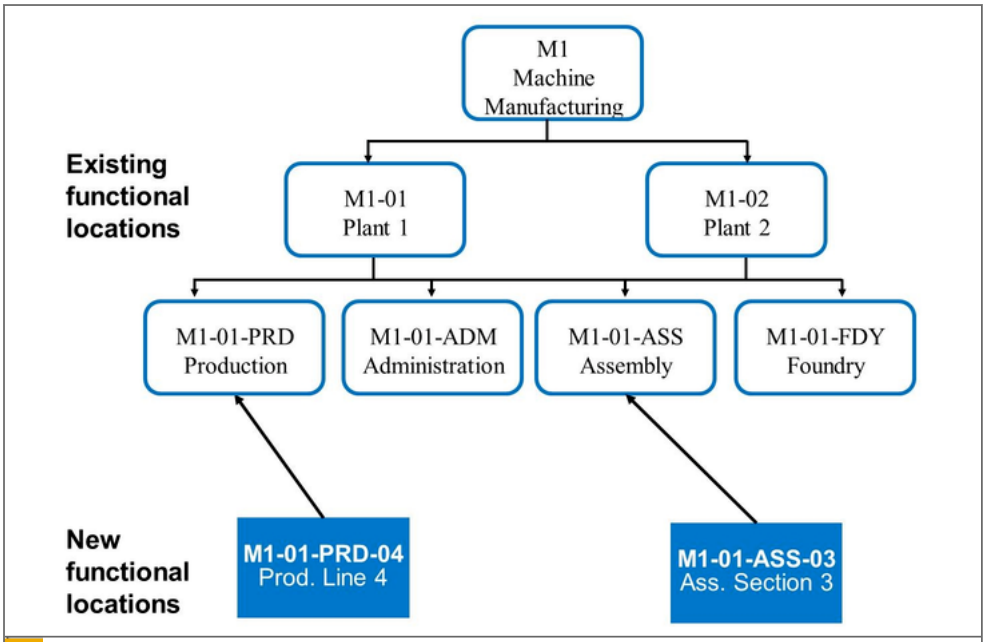

Figure 6: Automatic Assignment Upon Creation

If you create a functional location, the system uses the structure indicator to assign it automatically to the corresponding place in an already existing hierarchy with the same structure indicator.

Manual Assignment

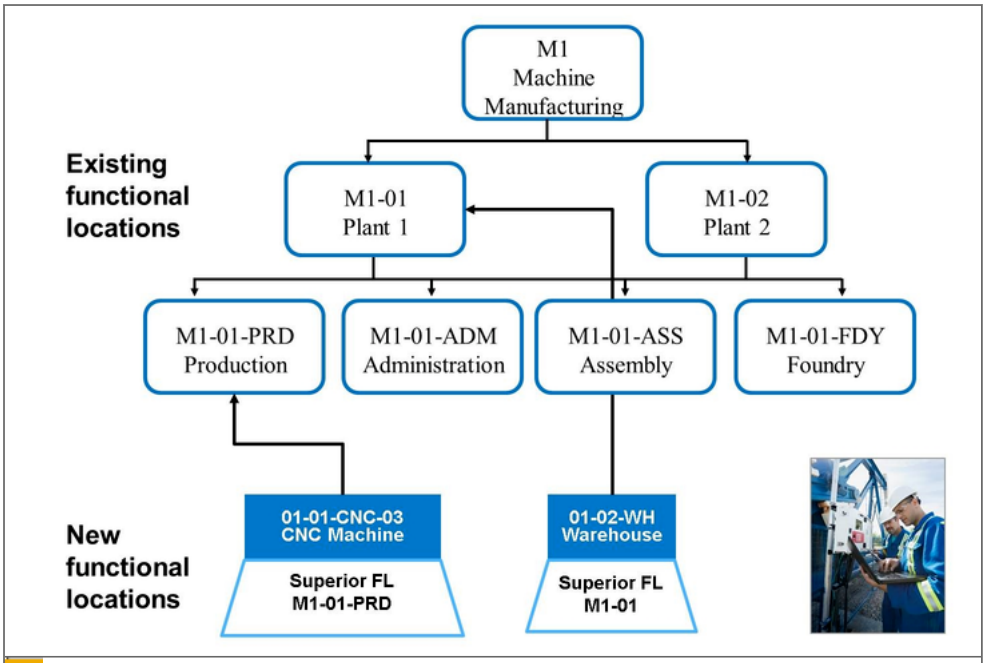

Figure 7: Manual Assignment

It is also possible to support the transfer of data from superior functional locations to subordinate functional locations, even if the generic structure of the location numbers has not been used within the location hierarchy. To complete this action, assign the directly superior location manually when you create a functional location, overriding automatic determination of the superior location.

This action is particularly necessary if individual units of a technical system in your company are identified by a label that describes the position of the unit in the system as a whole. These tag numbers often consist of a letter that stands for the equipment category (for example, M for Motor or P for Pump) and a sequential number (for example, pump station 0115). This identifier is only unique within a plant or technical system.

Copying a Complete Functional Location Structure

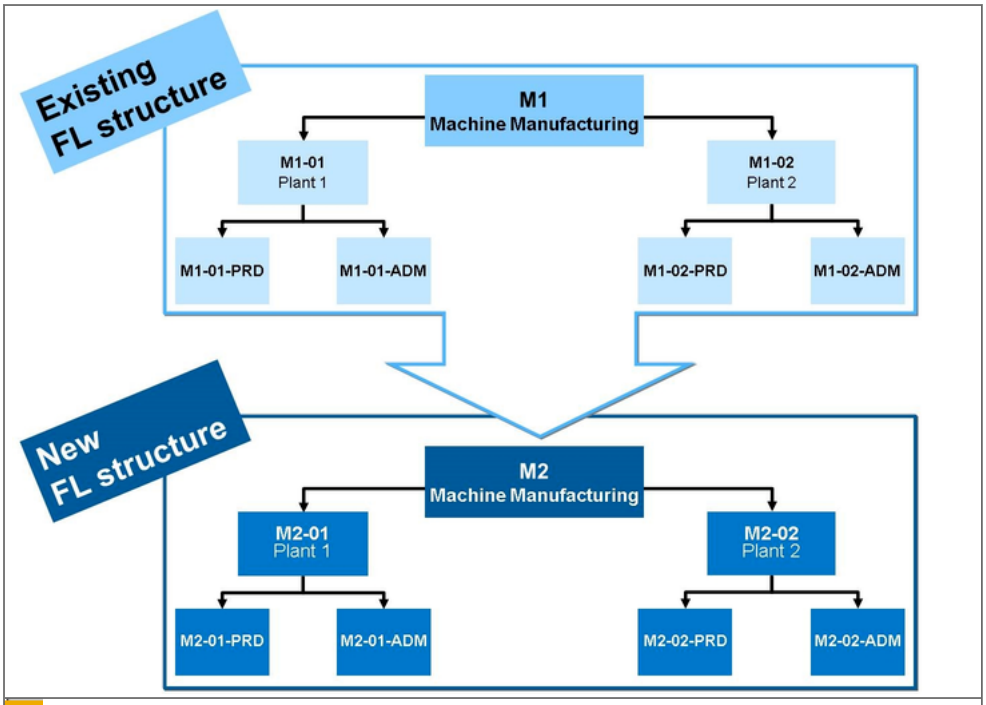

Figure 8: Copying a Complete Functional Location Structure

To represent a location structure that already exists in a similar form in the system, use this structure as a template for the new structure. You can use this function if the data of the similar structure has already been saved, and you can use this function to access the database and select the objects to be copied.

If the functional location that you are using as a template is based on a reference functional location, then this reference is copied at the same time. However, the superior functional location in the location structure is not copied by the system for the new functional location, but searched for again automatically.

If the location used as a template is classified, you can also copy its classification into the new functional location. If the location used as a template has assigned measuring points, you can also copy these measuring points into the new functional location.

The Change structurefunction facilitates the entry of similar structures within a functional location or reference functional location. You can use this function to change and insert a structure branch whose label only deviates at one level from the branch that is already entered. Use this function only if you have not saved the data of the similar structure to which you are referring. You cannot use this function to access the database.

Figure 9: Document Assignment

Information about technical objects that need to be maintained can exist in the form of documents (for example, construction drawings or photographs).

Documents are managed, visualized, and archived as master records in the Document Management System Document management is one of the central *Logistics* functions.

Since documents are often required when executing maintenance tasks, you can link the document master records directly to the master record of the technical object. You can make almost every type of document available to technical objects using the display program (viewer).

Several documents can also be assigned to a master record for a technical object.

Multilevel List

You can now display maintenance task list data and maintenance plan data in multilevel lists (transaction codes **`IL07`** and **`IE07`**), including the following:

- Operations
- Maintenance items
- Maintenance packages
- Maintenance dates

LESSON SUMMARY
You should now be able to:

- Structure functional locations
- Create functional locations
- Explain how SAP Fiori apps are used to manage Functional Locations

Hierarchical Data Transfer

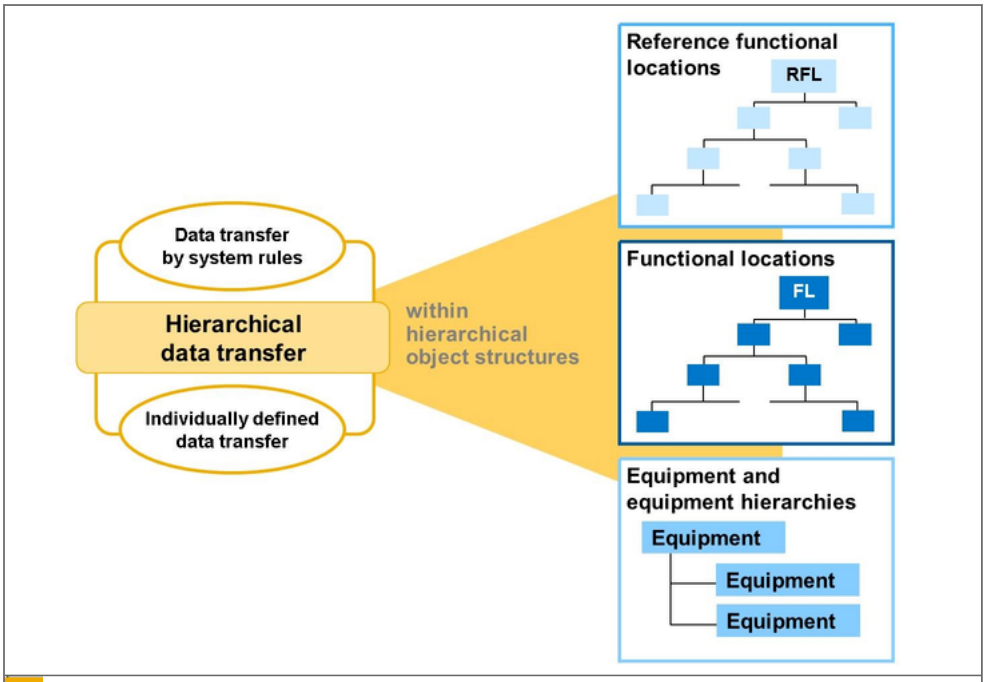

Figure 11: Hierarchical Data Transfer

Data Transfer in Functional Locations

The following principle applies to data transfer in functional locations and equipment hierarchies:

Starting point: superior object

For example, if a piece of equipment is installed from a functional location, there is no query with regard to data transfer. All fields in the equipment master that contain entries at this point remain unaffected and are identified as individually maintained fields. Data from the functional location is automatically copied to any fields that do not contain entries.

Starting point: subordinate object

If the installation is performed from the equipment master record, the data transfer can be influenced using the *Installation with Data Transfer* function. You can then select the field that needs to be maintained individually (or independent of the functional location) and the field that needs to be copied from the functional location.

You can use the *Data Origin* function to change the data inheritance options for each field for the functional location. For equipment, the switch is made by dismantling the equipment and then installing and configuring fields using the *Installation with Data Transfer* function.

Horizontal Data Transfer

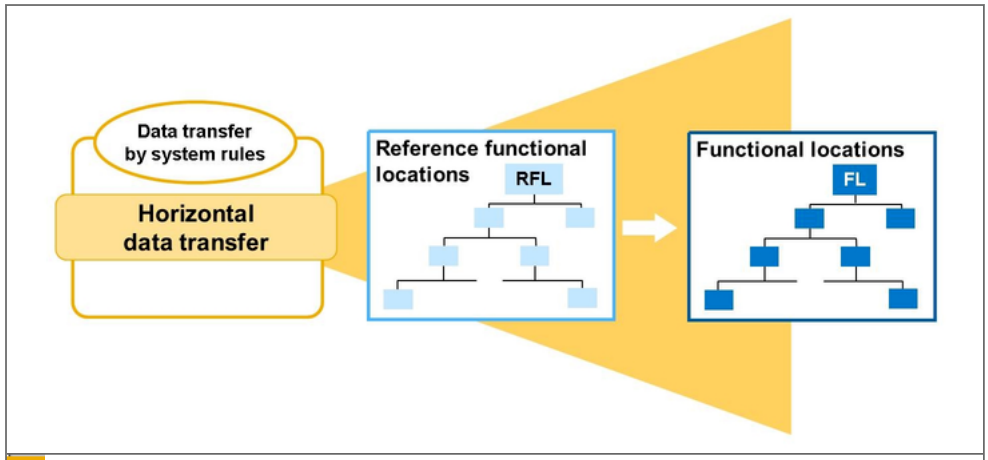

Figure 12: Horizontal Data Transfer

By using reference functional locations, you have the option of specifying category-specific data one time for each asset category, and then transferring this data to the corresponding functional locations and pieces of equipment and sub-equipment installed at them.

For example, the responsible work center of the functional location *Ventilators* changes for several functional locations. The employee responsible for maintaining master data changes the master record for the reference functional location *Ventilators* and saves the entry. The system changes automatically for all functional locations that have been assigned to this reference location and pieces of equipment that are installed at these locations. It then issues a message informing the employee of the number of functional locations and pieces of equipment to which the data was transferred.

Data Transfer for Locked Objects

When the data of a master record is changed and this change is to be copied into other master records using data transfer, it may be that the objects in question are locked by another user at this time. In this case, the system displays an overview of the objects to which data could not be transferred as well as the names of the users who are blocking the objects.

The employee responsible will not always be able to process the list of locked objects immediately. For this reason, the system stores a list of the objects that were locked during the data transfer in a separate database table.

Display the list of these objects from the screen Technical Objects by choosing *Environment >Take up data transfer* .

The screen *Take Up Data Transfer* is displayed, containing a list of all technical objects that still have to be processed for the data transfer. Position your cursor on the object you require and choose Edit Edit object .

You go directly to the master record of the object you selected. The system automatically performs the data transfer and issues a message to inform you of this. Save the master record. In this way you save the transferred data, and return to the list of objects. Position the cursor on the next required object, and repeat steps 2 and 3 for all other objects that you want to process.

Data Origin

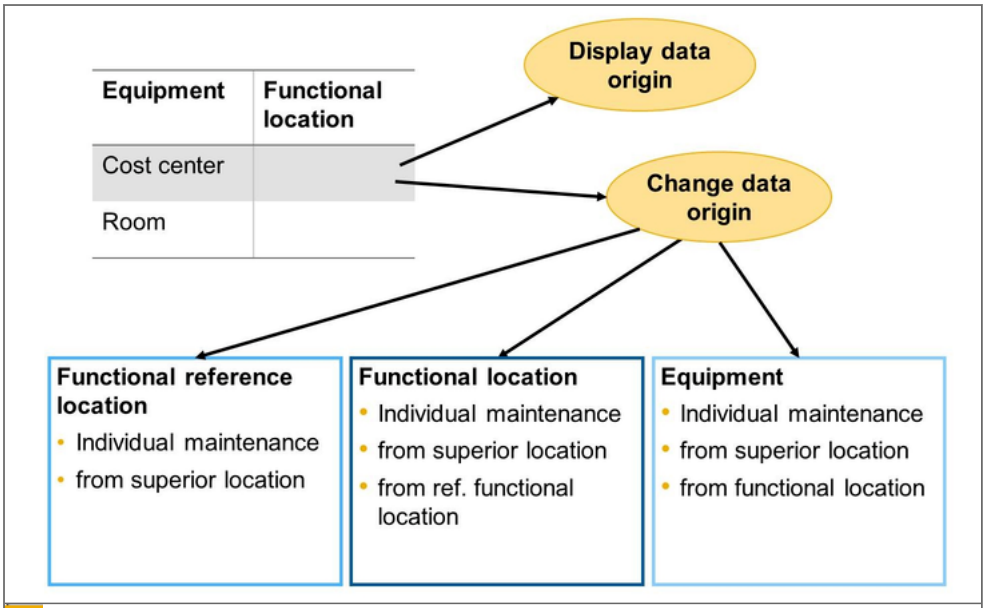

Figure 13: Data Origin

For reference functional locations and functional locations, you can display the origin of the data in the master data fields. There are two different display options available, including the following:

- Individual display for an individual field
- Overview display

For reference functional locations and functional locations, you can determine where entered data needs to originate for the individual master data fields. For reference functional locations, you can specify whether the data needs to originate from a superior location in the structure or needs to be maintained individually for the master record. For functional locations, you can specify whether data needs to originate from a superior location in the structure or reference functional location, or whether it needs to be maintained individually for the master record.

For pieces of equipment, there is an overview display (list of data origin) for each tab page, but there is no field-based display or change option.

Mass Changes

Mass Changes and Data Origin

When you perform a mass change, note the following points regarding data origin:

- Fields for which no data origin has been specified (for example, *Description*) are changed for all of the selected objects.
- Fields for which a data origin has been specified are only changed if the data origin is set to *Maintained Individually*. If the data origin is *Functional Location* or *Superordinate (Superior)*

Equipment (for equipment) or *Reference Location* or *Functional Location* (for functional locations), then the mass change is not performed.

Inheritance Breaks

- When you perform a mass change, all of the technical objects that are under the selected technical object in the hierarchy are also changed. If a large number of objects have to be processed, you may experience lock table overflow. Resulting inheritance breaks can be processed in transaction code **`IL21`**.
- If there is an inheritance break in an object before you perform a mass change, this inheritance break is repaired during the mass change. It is also repaired for the other objects under the same superior object.
- If inheritance breaks are repaired, the message log contains a general message to this effect. It does not contain messages for each individually repaired object. This is to avoid cluttering the message log with information that is not related to the mass changes function.

LESSON SUMMARY
You should now be able to:

- Transfer data within technical object structures

Unit 1
Lesson 3

Defining Alternative Labeling

LESSON OVERVIEW
In this lesson, you will learn how to define alternative labeling.

LESSON OBJECTIVES
After completing this lesson, you will be able to:

- Define alternative labeling

Alternative Labeling

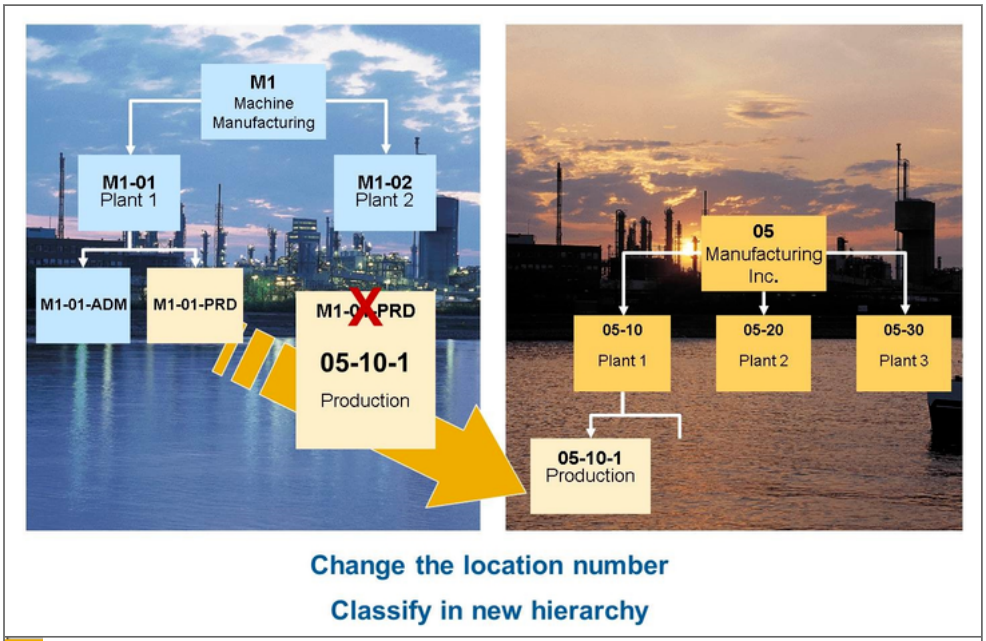

Figure 14: Alternative Labeling of Functional Locations 1

In alternative labeling of functional locations, you can change labels for functional locations.

This change can "renumber" a functional location (changing the primary key) or the definition of an additional view that displays the object using a different numbering scheme. When the primary label is changed, you are asked whether the renumbered functional location should be classified in a new hierarchy (if available).

Alternative labeling of functional locations also enables you to use different labeling systems for the same hierarchy. For example, the manufacturer of a technical system can work with a labeling system that is different from the one used by the customer.

Although alternative labeling systems are available through an internal structure indicator, they do not affect the structure of the object. The structure is determined by the primary labeling system.

The labeling system is defined in Customizing. The selection of the appropriate labeling system is controlled by a user profile, in which you can create and activate the required views.

Note:
Alternative Labeling must be activated in Customizing. It is not active in the standard system. You should comprehensively test this feature before you use it because it can affect system performance.

Note:
When Alternative Labeling is activated a new table IFLOS is created in addition to the existing table ILFOT. In addition, the primary key of the functional location from now on will be an internal key which is linked with the labels set by the user.

The new table IFLOS contains the alternative labels, the old table IFLOT contains the standard fields. Both tables are linked via the primary key of the functional location.

To optimize performance, execute the report RI_IFLOT2IFLOS (using transaction code **SE38**) after you active alternative labeling.

You can also deactivate alternative labeling; however, this system is not reset to its initial status before activation. In certain cases, deactivation may lead to poorer system performance.

Product Structure Browser

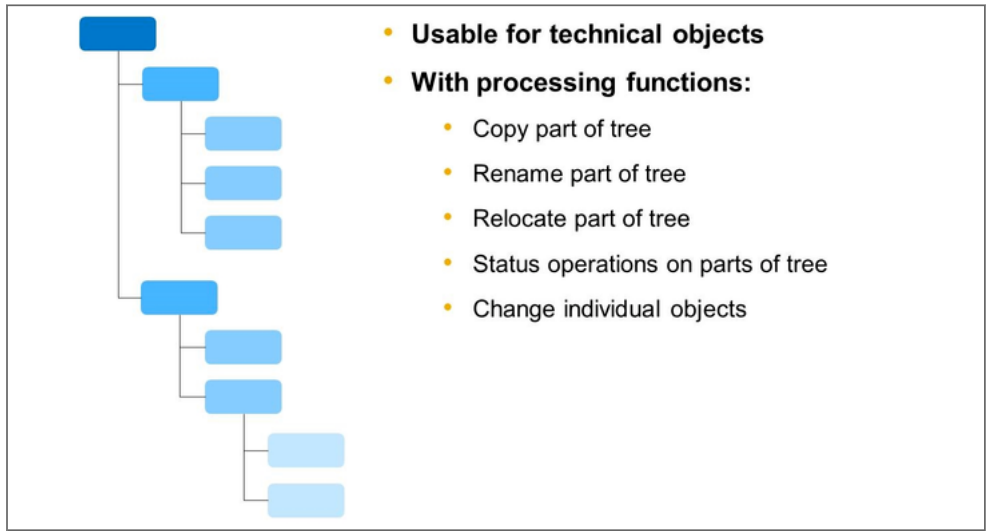

Figure 15: Product Structure Browser

The product structure browser is part of Product Data Management (PDM) and is used to display and edit product structures.

You can display and edit technical objects and their structures in the product structure browser. In contrast to the traditional structure display in Plant Maintenance, the product structure browser allows you to edit directly in the structure tree (for example, copy parts of structures, add new objects).

You can use a filter to specify which objects are displayed and which are hidden. Editing is supported by functions like drag and drop (for example, inserting and removing equipment, moving functional locations).

The transaction code of the product structure browser is **CC04**. In the menu tree, the product structure browser is located in the central functions of the *Logistics* in the *Engineering* area.

LESSON SUMMARY

You should now be able to:

- Define alternative labeling

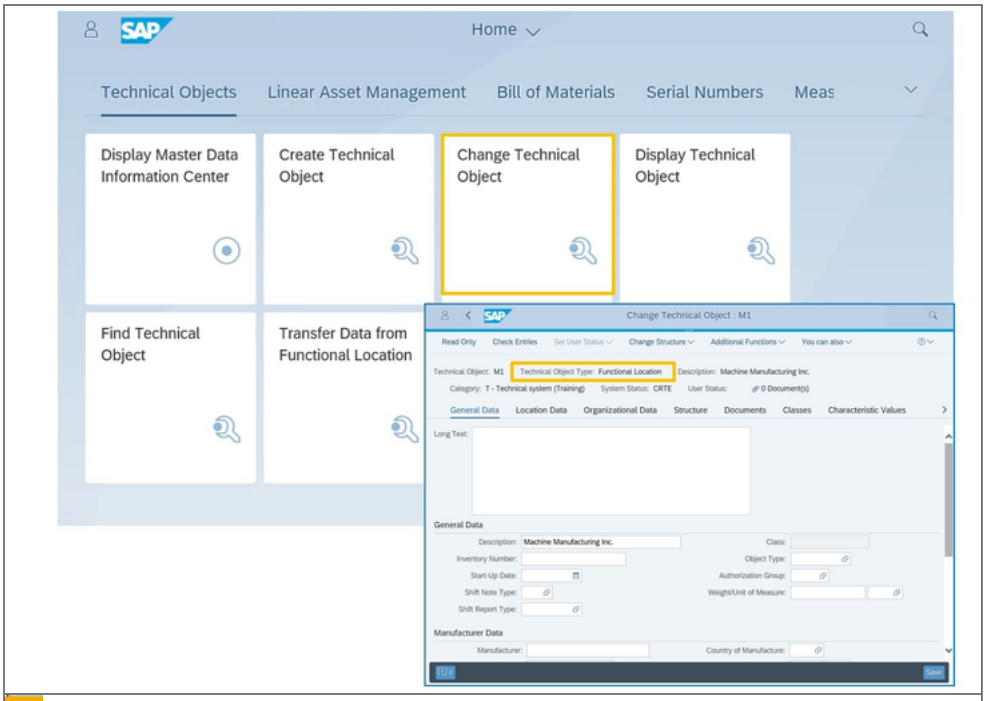

Figure 16: Change Technical Object

Three apps are provided for processing a technical object: Create Technical Object, Change Technical Object, and Display Technical Object. As a maintenance planner, you can create and change technical objects to efficiently manage and evaluate technical assets and maintenance objects, and to monitor the costs involved. You can specify general data, location data, organizational data, and structure data. You can also edit classification data and characteristic values, and assign documents.

Additionally, you can use various SAP Fiori apps that support the management of technical objects.

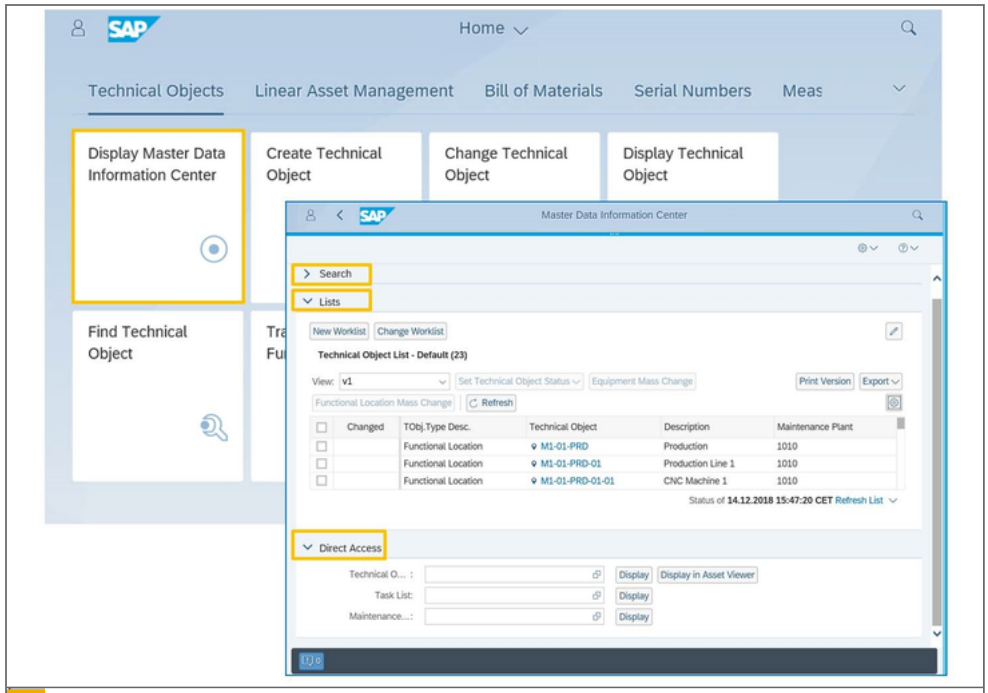

Figure 17: Master Data Information Center

As a maintenance planner and as a maintenance technician, you can use this app to access the Master Data Information Center. The Master Data Information Center serves as a central point of access for working with master data. In it, you can use the SAP NetWeaver Enterprise Search, work with different lists, and you have direct access to individual task lists, maintenance plans, and technical objects.

Data Transfer for Locked Objects

When the data of a master record is changed and this change is to be copied into other master records using data transfer, it may be that the objects in question are locked by another user at this time. In this case, the system displays an overview of the objects to which data could not be transferred as well as the names of the users who are blocking the objects.

The employee responsible will not always be able to process the list of locked objects immediately. For this reason, the system stores a list of the objects that were locked during the data transfer in a separate database table.

Data transfer for locked objects can also be executed from within the SAP Fiori Launchpad. Use Fiori Apps *Transfer Data* , *Transfer Data from Functional Location* and *Transfer Data from Equipment*.

LESSON SUMMARY

You should now be able to:

- Fiori Apps for Functional Locations

Unit 1
Lesson 5

Summarizing Customizing for Functional Locations

LESSON OVERVIEW
In this lesson, you will learn about the Customizing settings for functional locations.

LESSON OBJECTIVES
After completing this lesson, you will be able to:

- Summarize customizing for functional locations

Customizing Settings for Functional Locations

This section describes the Customizing settings for functional locations.

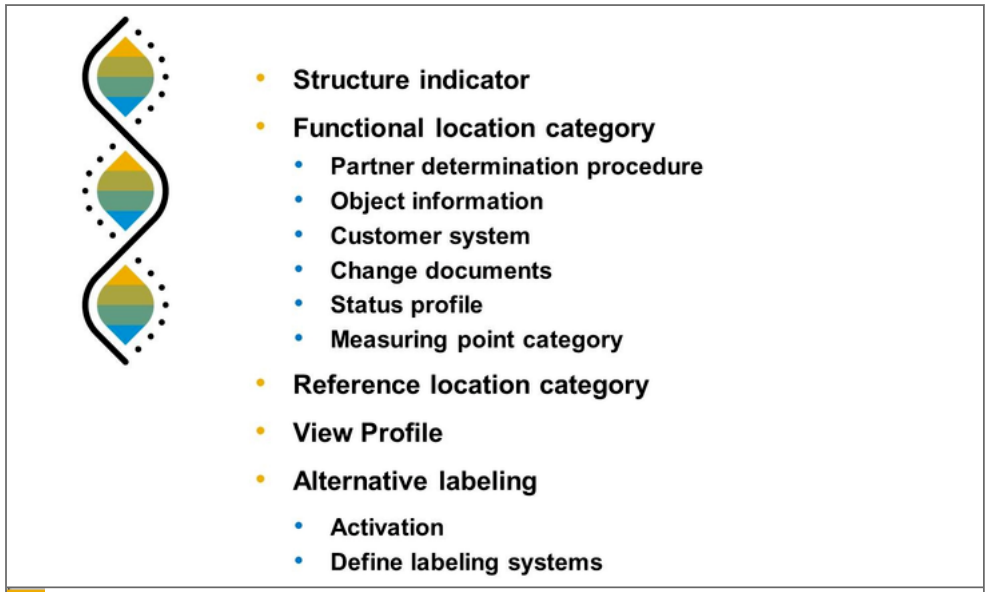

Figure 18: Customizing Settings for Functional Locations

Menu Paths for Functional Location Customizing Settings

Access to Customizing

On the *SAP Menu screen*, choose *Tools* → *Customizing* → *IMG* → *Execute Project* → *Goto* → *SAP Reference IMG*.

Table 1: Menu Paths for Functional Location Customizing Settings

The following table provides menu paths for common functional location Customizing settings.

Field name or data type	Menu Path
Alternative Labeling	*Plant Maintenance and Customer Service → Master Data in Plant Maintenance and Customer Service → Technical Objects → Functional Locations → Alternative Labeling for Functional Locations*
View Profile	*Plant Maintenance and Customer Service → Master Data in Plant Maintenance and Customer Service → Technical Objects → General Data → Set View Profiles for Technical Objects*
Structure Indicator	*Plant Maintenance and Customer Service → Master Data in Plant Maintenance and Customer Service → Technical Objects → Functional Locations → Create Structure Indicator for Reference Locations/Functional Locations*
Functional Location Category	*Plant Maintenance and Customer Service → Master Data in Plant Maintenance and Customer Service → Technical Objects → Functional Locations Define Category of Functional Locations*
Reference Functional Location Category	*Plant Maintenance and Customer Service → Master Data in Plant Maintenance and Customer Service → Technical Objects → Functional Locations → Define Category of Reference Functional Location*

LESSON SUMMARY

You should now be able to:

- Summarize customizing for functional locations

Unit 1

Learning Assessment

1. What is the correct process for structuring technical objects?

   Arrange these steps into the correct sequence.

   - [ ] Choose the structuring instruments for each object, and create the structure.
   - [ ] Create technical characteristics and classes.
   - [ ] Verify assembly condition of the object through asset configuration.
   - [ ] Decide which objects require maintenance measures and which objects need to be evaluated.

2. Which function allows you to change the data inheritance options for certain fields for the functional location?

   Choose the correct answer.

   - [ ] A Installation with Data Transfer
   - [ ] B Create
   - [ ] C Data Origin
   - [ ] D Change selection

3. Which of the following are true about Alternative Labelling?

   Choose the correct answers.

   - [ ] A Once activated it cannot be deactivated
   - [ ] B It can be activated/deactivated in Customizing.
   - [ ] C You can change the functional location ID within the primary labelling system.
   - [ ] D There is only one primary labelling system.

4. Which of the following is not a Customizing setting for functional locations?

   Choose the correct answer.

   - [ ] A Assigning a document.
   - [ ] B Alternative labeling
   - [ ] C Structure indicator
   - [ ] D Functional location category