

# **TS450**

## **Sourcing and Procurement in SAP S/4HANA - Academy Part I 1/2**

### **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*

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# Course Overview

## TARGET AUDIENCE

This course is intended for the following audiences:

- Application Consultant



## Lesson 1

Identifying the SAP Fiori User Experience

3

## Lesson 2

Working with the SAP GUI

11

## UNIT OBJECTIVES

- Use the SAP Fiori launchpad
- Work with the SAP GUI



# Unit 1

## Lesson 1

# Identifying the SAP Fiori User Experience



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Use the SAP Fiori launchpad

## SAP Fiori User Experience

### Concepts and Influencing Factors

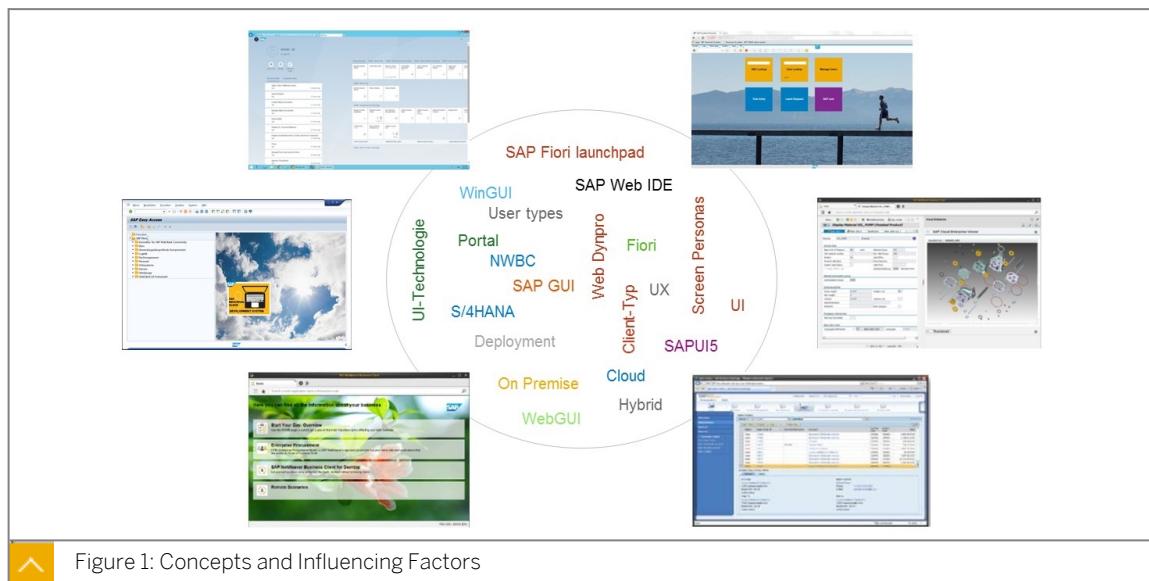


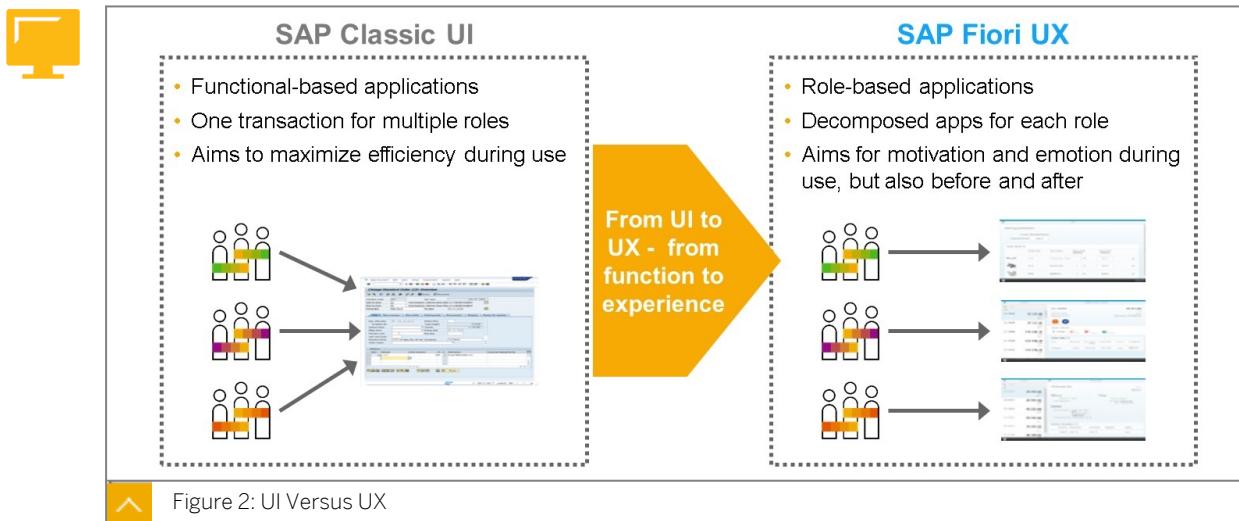
Figure 1: Concepts and Influencing Factors

IT and the use of electronic devices are no longer reserved just for experts, and have spread throughout all social groups. High-performance hardware stands against a wide variety of software products with different scopes and uses. As a result, it is important that software is easy-to-use.

The main drivers of this development are smartphones and tablets with their easy-to-use and flexible user interfaces. These user interfaces are no longer required to provide maximum functionality, but rather a comfortable user experience that puts the focus on the consumer.

Therefore, business software must also adapt and transform so that it provides good user experiences for all roles in an enterprise. The user interface plays an important role in supporting this trend. For SAP software products, the challenge is to keep a clear view and to understand the overall SAP strategy in the area of user experience.

## SAP User Experience

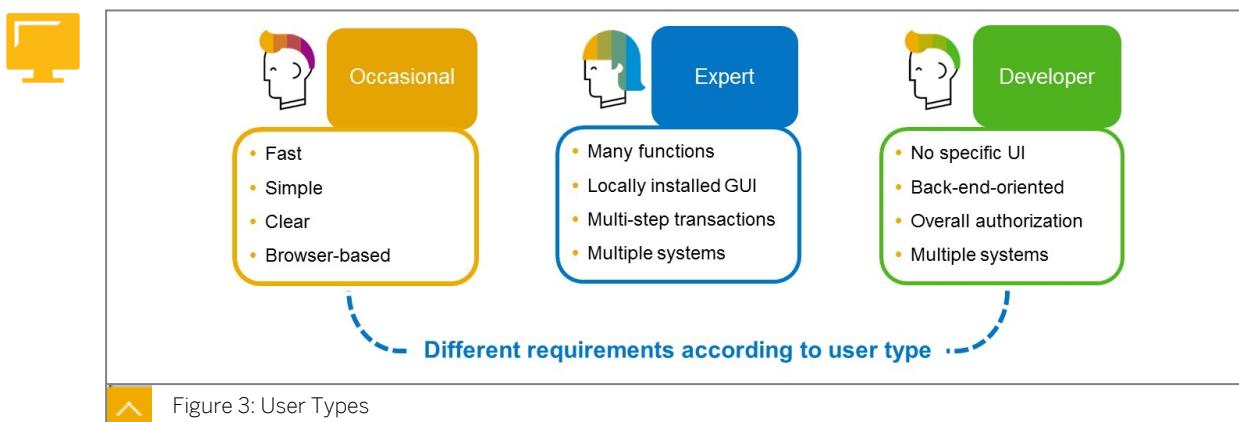


The terms user interface (UI) and user experience (UX) stand for two different ways of thinking.

UI, from a software perspective, describes the interface between the user and the device. It aims to maximize efficiency during use. The classic SAP user interface (UI) often offers a single complex transaction for many user roles.

UX takes on the perspective of the user. SAP Fiori decomposes the complex transactions in several discrete apps suited to the user roles. All apps are connected to each other so all the tasks of the transaction are still possible. However, they are only performed if the user really wants to perform them. The SAP Fiori launchpad then serves as the central entry point for all the user's apps. UX aims to create a positive and motivating experience for the user.

## User Types



There might be various user types in your organization, depending on the structure of the specialized area and the IT department, and the degree of digitization.

However, in almost every company there are three basic user types:

- Occasional user:

Only uses the system and therefore needs simple and easy-to-use applications. Often, single-step transactions are executed.

- Expert or key user:

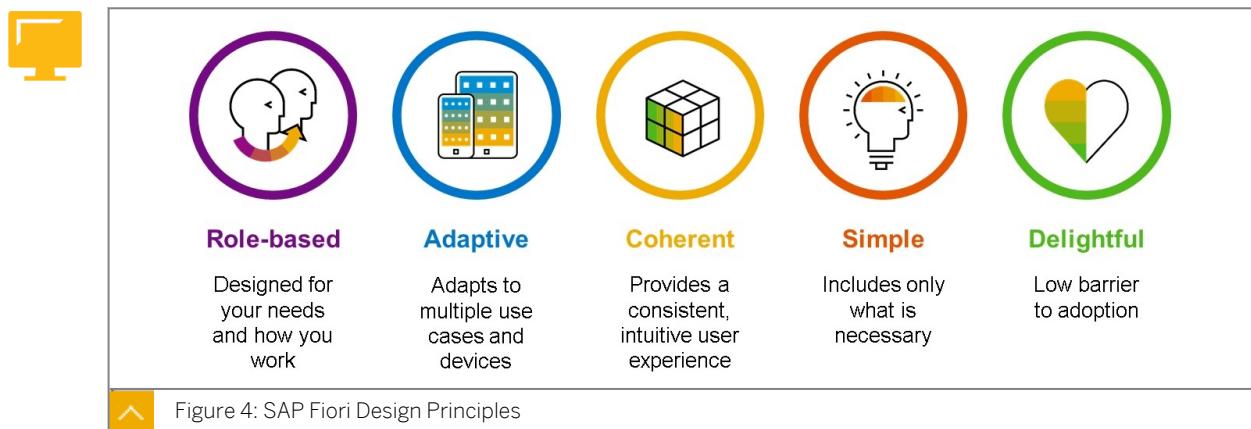
A fully trained SAP user knows the processes and available applications in detail. This user often uses multiple systems and different UIs.

- Developer or programmer:

Has detailed process and system knowledge, and deals with the adaptation and extension of existing applications. They usually look after several applications with different UIs.

## SAP Fiori

SAP Fiori offers a unified user experience for various clients. Users must have a consistent, coherent, simple, intuitive, and delightful user experience on all devices to be able to work better and more efficiently.



The five design principles of SAP Fiori are at the core of every SAP Fiori app to fulfill these goals:

### 1. Role-based:

A role-based user experience means that users get all of the information and functions they need for their daily work—but no more. In comparison to this, the classic SAP user interface often offers a single complex transaction for many user roles.

SAP Fiori decomposes these big transactions into several discrete apps suited to the user roles. All apps are connected to each other so that all the tasks of the transaction are still possible. However, they are only performed if the user really wants to perform them. The SAP Fiori launchpad then serves as the central entry point for all of the user's apps.

### 2. Responsive:

The application interface is responsive and it adapts to the size and device used by the user who accesses it.

### 3. Coherent:

The applications are developed with a coherent structure. All applications speak the same language and can be implemented in multiple landscapes and environments.

### 4. Simple:

The application scope is simple: The essential functions are easy-to-use and can be personalized to focus on the relevant tasks and activities.

### 5. Delightful:

Instant value through a low adoption barrier and making the work smarter.

## Application Types

The figure displays three examples of SAP Fiori applications:

- Transactional:** Task-based Access. Shows a screen for managing quotations with a sidebar for navigation and a main area for viewing and editing quotation details.
- Analytical:** Insights. Shows a dashboard with a bar chart titled "Budget vs. Costs - Quarterly" comparing actual and target values across various categories.
- Fact Sheet:** Search and Explore. Shows a detailed view of a cost center, including general information, contacts, internal orders, and controlling documents.

Figure 5: Application Types

SAP Fiori apps can be divided into the following application types:

- **Transactional apps:** These apps offer task-based access to tasks such as change, create, and display (documents, master records) or to entire processes with guided navigation.
- **Analytical apps:** These apps give a role-based insight into the real-time operations of your business by collecting and displaying key figures directly in your browser. They give you a visual overview of complex topics for monitoring or tracking purposes.
- **Fact sheets:** These apps display contextual information and key facts about central objects used in business operations. Fact sheets provide a 360-degree view of essential information about an object and contextual navigation between related objects.

## SAP Fiori Launchpad: One Entry Point for the User

The SAP Fiori Launchpad is a central entry point for users, featuring the following components:

- Navigation:** Located at the top left, it includes links to News and Links, Employee Self Services, Supplier and BP, Material Master, Sources of Supply Management, Purchase Requisition Processing, and more.
- Integrated Search Functionality:** A search bar located at the top right.
- User Action Menu:** A dropdown menu accessible from the top right, containing options like Recent Activities, Frequently Used, App Finder, Settings, Edit Home Page, About, and Sign Out.
- Home:** The main entry point, indicated by a yellow callout.
- Tile Group:** A group of tiles for Employee Self Services, including Create Purchase Requisition, My Purchase Requirements, Confirm Receipt of Goods - New, and Upload Supplier Invoices.
- SAP Fiori App:** A tile for the SAP Fiori App Library.
- Employee Self Services:** A category group containing tiles for Create Purchase Requisition, My Purchase Requirements, Confirm Receipt of Goods - New, and Upload Supplier Invoices.
- Supplier and BP:** A category group containing tiles for Manage Supplier Master Data and Maintain Business Partner.
- Access to Tile Catalogs, User Preferences and Personalization of the Home Page:** A callout pointing to the User Action Menu.

Figure 6: SAP Fiori Launchpad: One Entry Point for the User

The SAP Fiori launchpad is a shell that hosts SAP Fiori apps and provides services such as navigation, personalization, embedded support, and application configuration. It is also the entry point to SAP Fiori apps on mobile and desktop devices. The SAP Fiori launchpad displays a home page with tiles, which can display live status indicators such as the number of open tasks. Each tile represents a business application that the user can launch. The SAP Fiori apps on the home page are arranged in tile groups.

### SAP Fiori Launchpad User Personalization

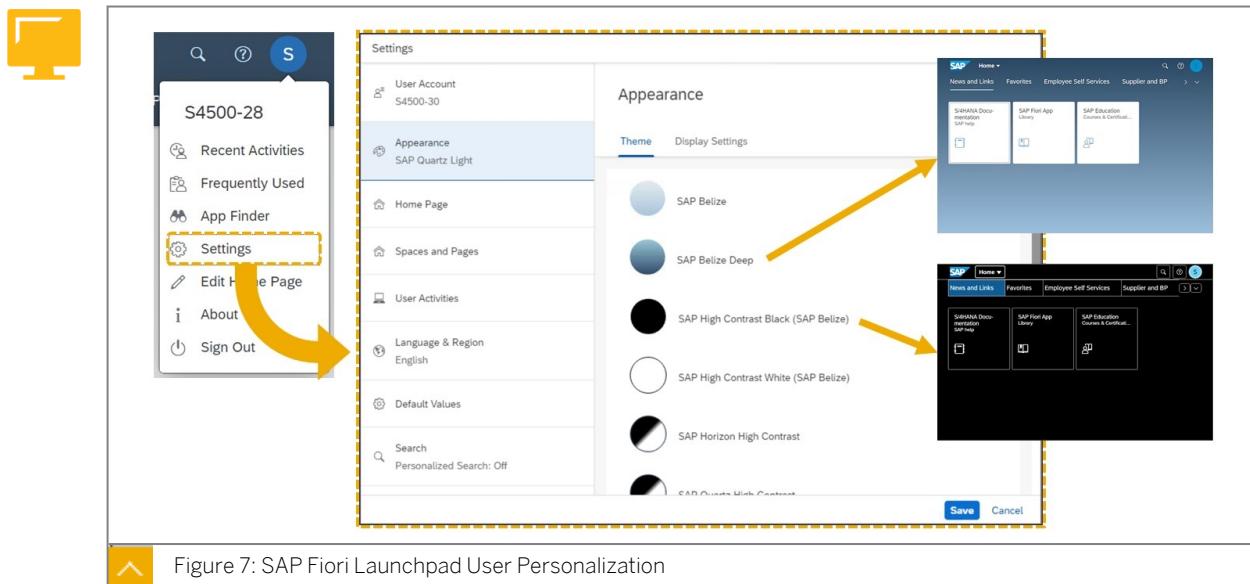


Figure 7: SAP Fiori Launchpad User Personalization

Users can personalize their own variant of the SAP Fiori launchpad. The settings can be accessed through the Me Area. It is possible to get information about the user account, home page, language, and region. Depending on the configuration of the SAP Fiori launchpad for the user, the following settings can be changed:

- Selection of design theme
- Settings for the home page (show all content of the user role or show only one tile group at a time)
- Settings for language and region
- Activation of user profiling
- Maintenance of default values

As well as changing general settings like appearance, users can edit the home page. They can rearrange groups and tiles, create new groups, and add or delete tiles to or from an existing group. To add tiles to groups, the launchpad provides a tile catalog that displays all the tiles that are available to a user.

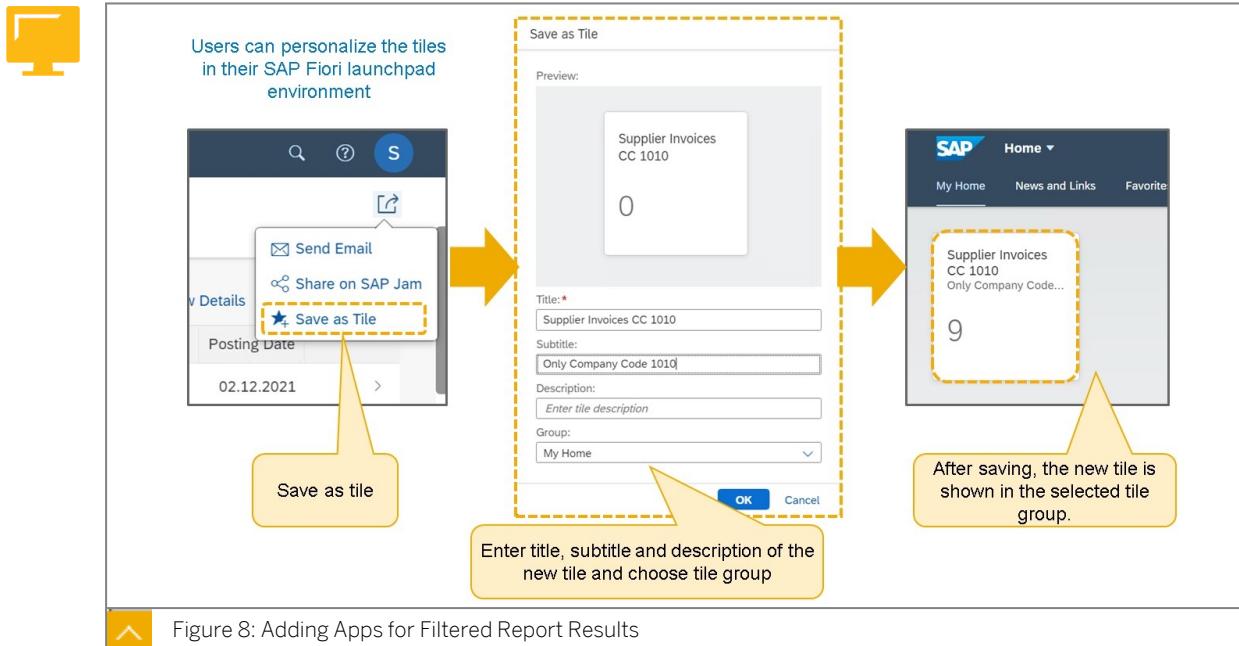


**Note:**

The ability to personalize the home page must be enabled in the SAP Fiori launchpad configuration.

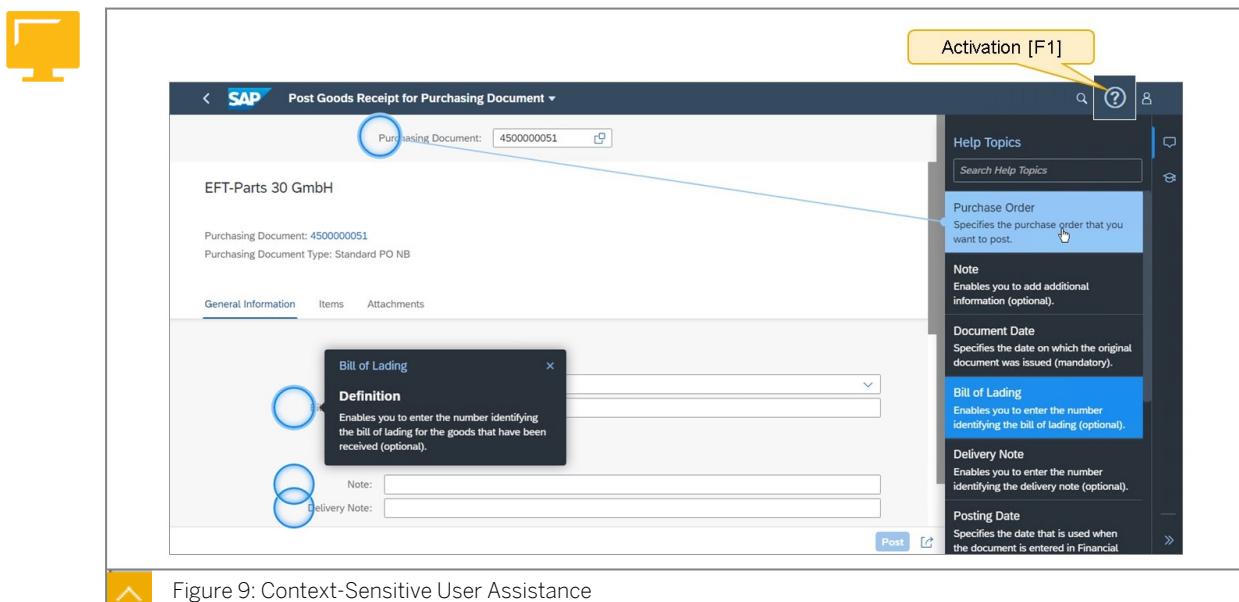
Modifying and adding applications for filtered report results is another personalization option available in the SAP Fiori launchpad.

For example, if a cash manager is interested in the market of a particular country, they can create an application that takes them directly to the cash position for that country. In the future, this will enable them to access the cash position of the country directly from the SAP Fiori launchpad home page with a single click.



## Help Functionality

The SAP Fiori launchpad offers help functionality that includes a guided tour for an app. This context-sensitive user assistance can be started by choosing the question mark in the upper right corner or by pressing F1.



A help area with help topics is displayed to the right of the app, and bubbles are displayed in the app window to indicate the most important elements in the app. When you select a topic or bubble, an information dialog box appears with more information about the feature.



## LESSON SUMMARY

You should now be able to:

- Use the SAP Fiori launchpad



# Unit 1

## Lesson 2

# Working with the SAP GUI



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Work with the SAP GUI

## SAP GUI User Experience

### SAP Logon

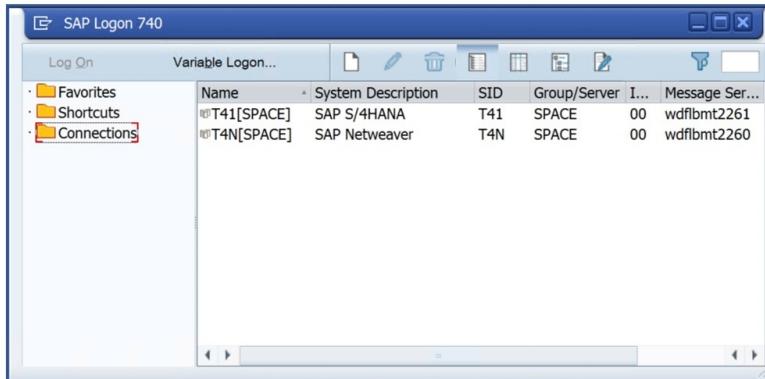


Figure 10: SAP Logon

The SAP graphical user interface (GUI) is the front-end program used to access SAP systems. Several variants of the SAP GUI are available and are adapted for use in different environments.

The SAP GUI program connects the front-end computer to a specific SAP system. To start the SAP GUI, SAP provides another program, SAP Logon. When the user launches SAP Logon, a screen displays a list of available SAP systems. This list is derived from a file on the front-end computer and is preconfigured and made available to users.

## Logon Screen of an SAP System



Figure 11: Logon Screen of an SAP System

Once you have started the logon process for a system, you must enter, among other things, your user and password on the logon screen of the selected system. You also have the option of specifying a particular client and a logon language when you log on. Usually, the client is already filled appropriately. After logging on successfully, you will reach the initial screen of the SAP system, the **SAP Easy Access screen**.

If you want to use more processing windows, you can work in several sessions (processing windows of the SAP system) simultaneously within one logon. With the system parameter, your system administrator can specify how many sessions are possible for one logon to an SAP system.

## Choose Functions

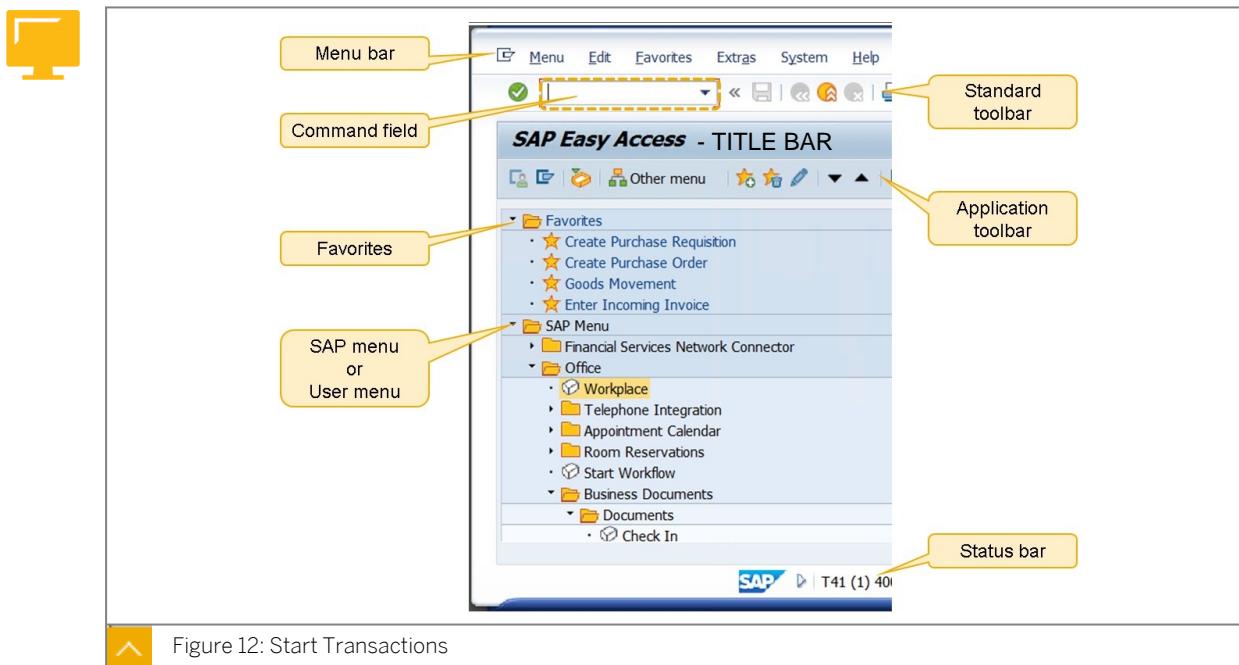


Figure 12: Start Transactions

The SAP Easy Access screen is the standard initial screen in SAP systems. In the left screen area, you see a tree hierarchy diagram of the menus available in the SAP system. You can use the overview tree structure to select functions. This structure is divided into *Favorites* and *SAP Menu*, or *Favorites* and *Role-Based User Menu*. The entries in the favorites area are created by the user. The entries in the SAP menu or in the user menu are specified centrally by the system administrator. The user menu is a menu that contains a limited selection of task-specific functions. It is the role-based working environment of a user.

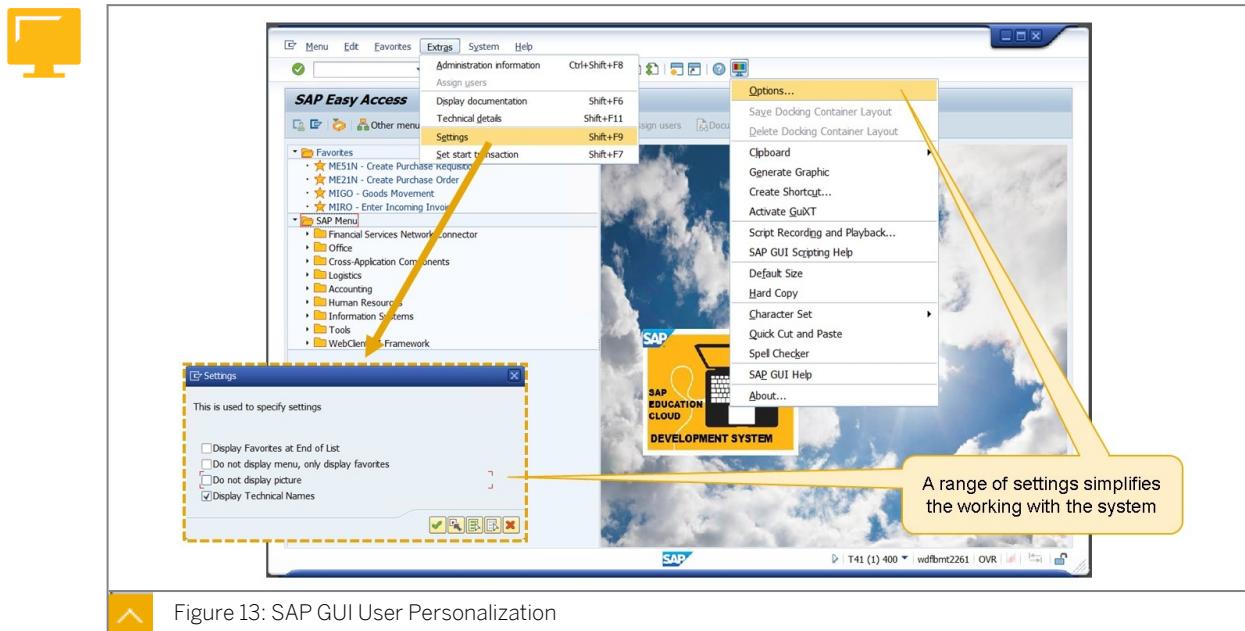
You can navigate in the following different ways in the system:

- Use the menu bar.
- Enter transaction codes in the command field.
- Use the favorites, the user menu, or the SAP menu.

### SAP GUI User Personalization

Users have several personalization options at their disposal. Some are described here.

You can use *Extras* → *Settings* to change the appearance of the initial screen, for example, by turning off the graphics display on the right side of the screen or by displaying technical names (transaction codes) on the SAP Easy Access screen.



With the customizing of the local layout you can, among other things, make the following settings:

- Select a different color schema for your GUI, or change the font settings.
- Determine the speed at which the tooltip is displayed and specify which messages (success message, warning message, error message) are to be displayed in a dialog box.
- Manage the input history for input fields.
- Determine that in addition to the description, the key of an entry is displayed in dropdown lists, and whether the entries are sorted according to keys or descriptions (You can recognize a dropdown list by on the right-hand side in the input field).

The favorites list on the SAP Easy Access screen and the status bar display variants provide more personalization options.



### LESSON SUMMARY

You should now be able to:

- Work with the SAP GUI

## Learning Assessment

1. Which requirements do occasional users usually have concerning their UI?

*Choose the correct answers.*

- A It should be browser-based
- B It should be back-end-oriented
- C It should be simple
- D It should have many functions

2. How do you call the field in an SAP GUI where you can enter a transaction code to start a transaction?

*Choose the correct answer.*

- A SAP Fiori launchpad
- B Command field
- C SAP Easy Access Favorite
- D Menu bar

## Learning Assessment - Answers

1. Which requirements do occasional users usually have concerning their UI?

*Choose the correct answers.*

- A It should be browser-based
- B It should be back-end-oriented
- C It should be simple
- D It should have many functions

Correct. Occasional users – in contrast to experts or even developers – don't need any back-end orientation or functional overhead. Instead, they are interested in simple, browser-oriented applications. For more information, see the Identifying the SAP Fiori User Experience lesson in the S4500 (or TS450) training material.

2. How do you call the field in an SAP GUI where you can enter a transaction code to start a transaction?

*Choose the correct answer.*

- A SAP Fiori launchpad
- B Command field
- C SAP Easy Access Favorite
- D Menu bar

Correct. This SAP GUI field is called Command field. The SAP Fiori launchpad is used to access SAP Fiori transactions, and the Easy Access favorites can be shown along with the SAP menu. The menu bar however, is on top of the SAP GUI. For more information, see the Working with the SAP GUI lesson in the S4500 (or TS450) training material.

### Lesson 1

Delineating Procurement Processes

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### Lesson 2

Creating a Purchase Order

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### Lesson 3

Posting a Goods Receipt

33

### Lesson 4

Entering an Invoice

37

### UNIT OBJECTIVES

- Describe the whole procurement cycle
- Explain some special procurement processes
- Create a purchase order
- Post a goods receipt for a purchase order
- Execute an invoice verification



# Unit 2

## Lesson 1

# Delineating Procurement Processes



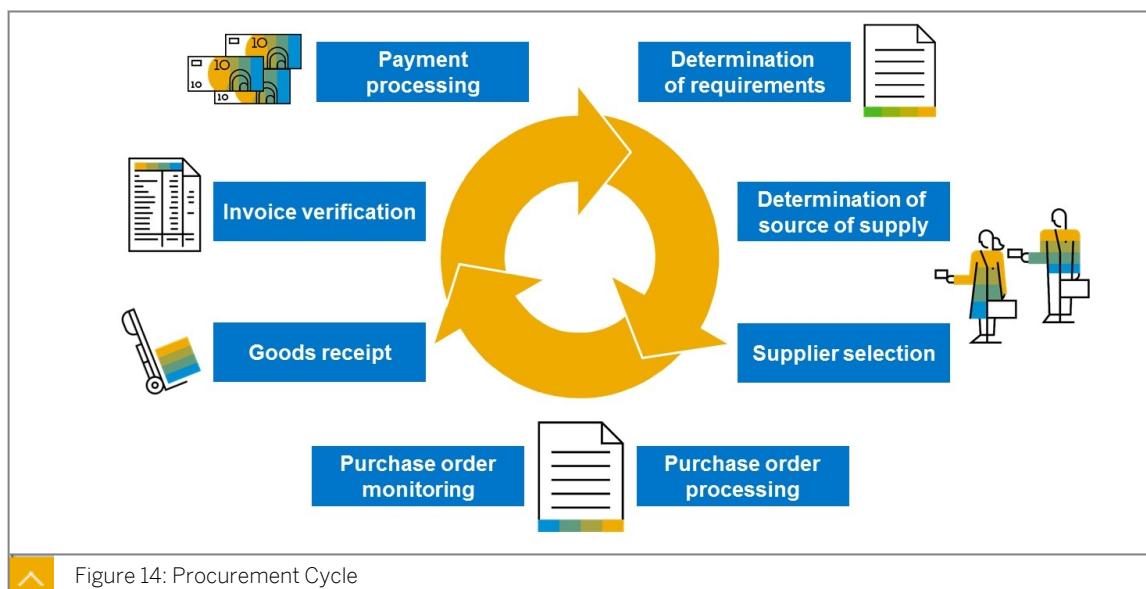
## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe the whole procurement cycle
- Explain some special procurement processes

## External Procurement Process

The external procurement of materials is based on a cycle of general activities.



In detail, a typical procurement process includes the following phases:

- Determination of Requirements:

Employees of a business department can manually create a purchase requisition to inform the purchasing department about material requirements. If you have set a materials requirements planning (MRP) procedure for a material in the material master, the SAP system automatically generates a purchase requisition.

- Determination of Supply Source / Supplier Selection:

The system supports buyers in determining possible supply sources. You can refer to purchase orders, outline agreements, and purchasing information records that already exist in the system. In addition, you can create requests for buyer quotations (RFQs).

To find out which supplier has the best prices you can carry out price comparisons between various supply sources or quotations.

- Purchase Order Processing:

Similar to purchase requisitions, you can create purchase orders manually or let the system create them automatically. When you create purchase orders, you can copy data from other documents (such as purchase requisitions or quotations) to reduce the amount of entries that need to be made.

- Purchase Order Monitoring:

Monitor the processing status of the purchase orders in the system. For example, you can determine whether a delivery or invoice has already been received for a purchase order item. You can also remind vendors about outstanding deliveries.

- Goods Receipt:

Enter inbound deliveries in the system by referring to the associated purchase order to reduce the number of entries that need to be made. Referring to the associated purchase order also allows you to check whether the goods and quantities delivered match the purchase order. The system updates the purchase order history.

- Invoice Verification:

Enter invoices in the system by referring to the previous purchase order or delivery to check the calculations and accuracy of the invoice. The availability of purchase order and goods receipt data means that you can be informed of any differences in quantity and price.

- Payment Processing:

Run the payment program to pay vendor liabilities. The accounting department is responsible for running this program regularly.

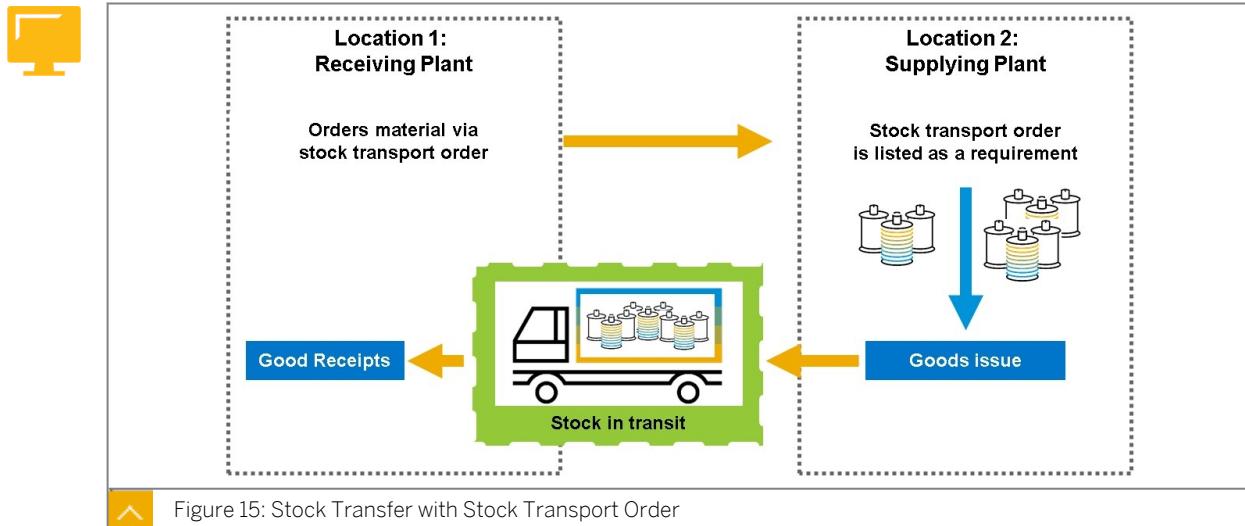
As well as the normal procurement process described previously, various other special procurement processes are also possible, for example:

- Stock transfer with stock transport order
- Subcontracting
- Vendor consignment

You control the procurement process that you want to use with a purchase order item using a special indicator known as an item category.

### **Stock Transfer with Stock Transfer Order**

With this type of procurement, goods are procured and delivered within one company. The plant that requires the materials can order from another plant of whom can supply the materials. Therefore, this stock transport process involves not only inventory management, but also purchasing in the receiving plant.



The following steps illustrate the stock transfer process:

1. Purchasing creates a stock transport order for the receiving plant.
2. The supplying plant enters a goods issue that references the stock transport order. After this posting, the quantity is managed in special stock (stock in transit) of the receiving plant.
3. The goods receipt in the receiving plant is posted with reference to the stock transport order.

The quantity is transferred from stock in transit to the storage location stock of the receiving plant.

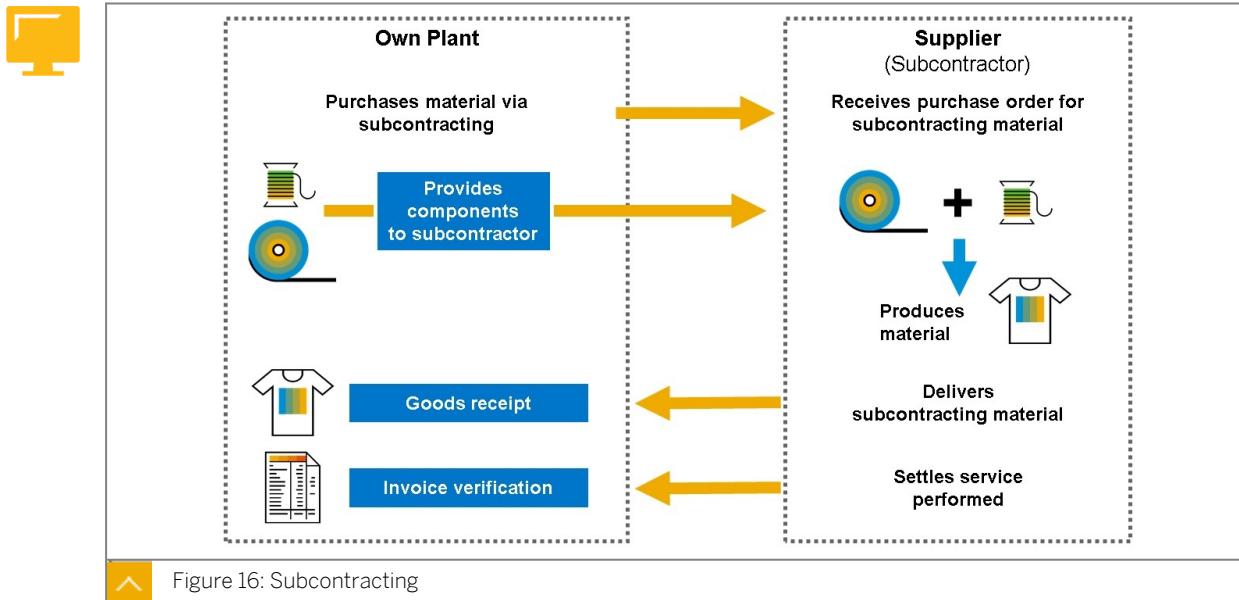


#### Note:

Stock transfers of goods between plants can also be represented without stock transport orders, that is, only with inventory management functions.

## Subcontracting

In the subcontracting process, your company orders material from an external supplier. In subcontracting, unlike a normal external procurement process, your company provides the supplier (subcontractor) with some or all the components required to manufacture the material.

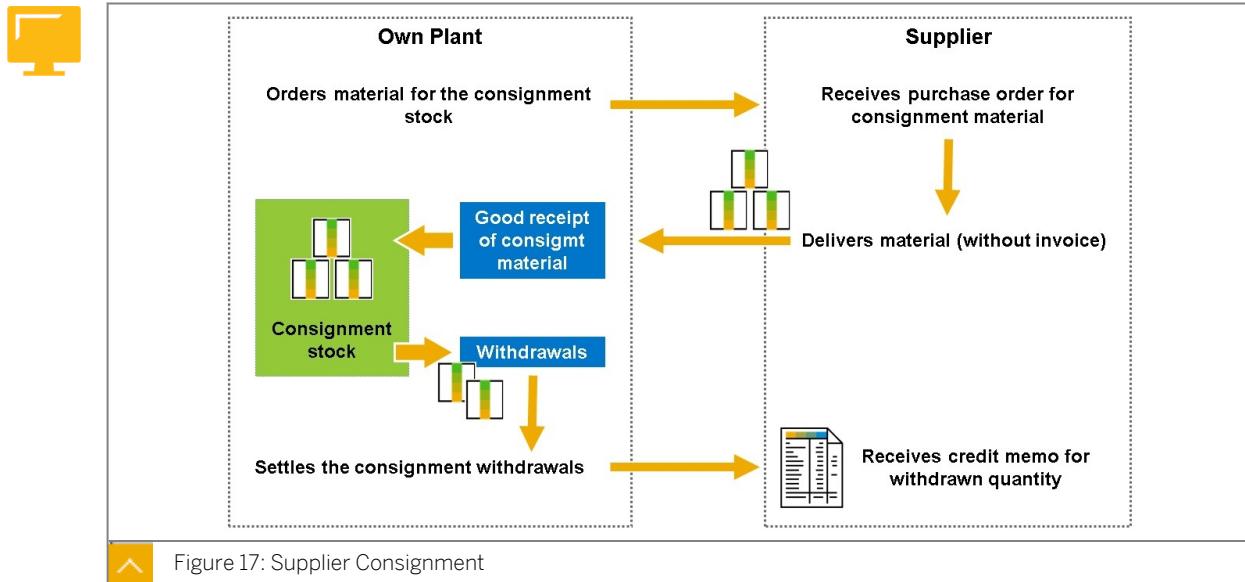


The subcontracting process consists of the following steps:

1. The end product is ordered with a subcontract purchase order that contains details about the material to be delivered and the components to be made available to the subcontractor.
2. Components are provided to the subcontractor. This provision is mapped in the system by transfer posting. Although the components that have been provided are no longer physically in your company, they are managed in your stocks because they still belong to you. The information is shown under the special stock type, Stock of material provided to vendor.
3. The subcontractor delivers the finished or refined material. The goods receipt is entered with reference to the (subcontract) order. When posting the goods receipt of the final product, the consumption of the components from the stock of material provided by the vendor is also posted.
4. Finally, the subcontractor raises an invoice for the service rendered.

### Supplier Consignment

When a supplier provides you with material that you store but are not required to pay for immediately, it is called supplier consignment. The supplier remains the owner of the material until you remove some quantity from your consignment inventory. A liability arises for the supplier when you remove any quantity of the material from the consignment inventory. These withdrawals are settled in agreed periods.



Before you procure a material from a supplier for a consignment, you and the supplier must agree on a price for the material. In the system, the price information has to be recorded in a consignment information record. Only then a supplier consignment inventory for a material can be posted in the system.

The supplier consignment process consists of the following steps:

1. Request the material from your vendor using a consignment order.
2. Post the goods receipt with reference to the consignment order when the material is delivered. The quantity of the material is managed in a special stock, known as the consignment stock. This completes the procurement process because payment is required for the material after withdrawal, not after supply.
3. When a goods issue is posted from the consignment stock, a liability arises for the supplier.
4. The SAP system provides a special function for settling consignment liabilities. The program creates a credit memo with an appropriate message for the supplier.



## LESSON SUMMARY

You should now be able to:

- Describe the whole procurement cycle
- Explain some special procurement processes



# Unit 2

## Lesson 2

### Creating a Purchase Order



#### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Create a purchase order

#### Purchase Order: Details



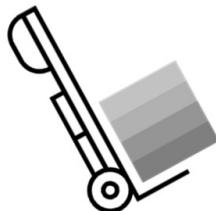
##### Purchase Order

- Fiori App Manage Purchase Orders



##### Goods Receipt

- Fiori App Post Goods Receipt for Purchasing Document



##### Invoice Receipt

- Fiori App Create Supplier Invoice

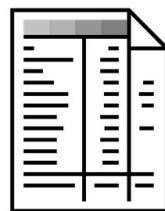
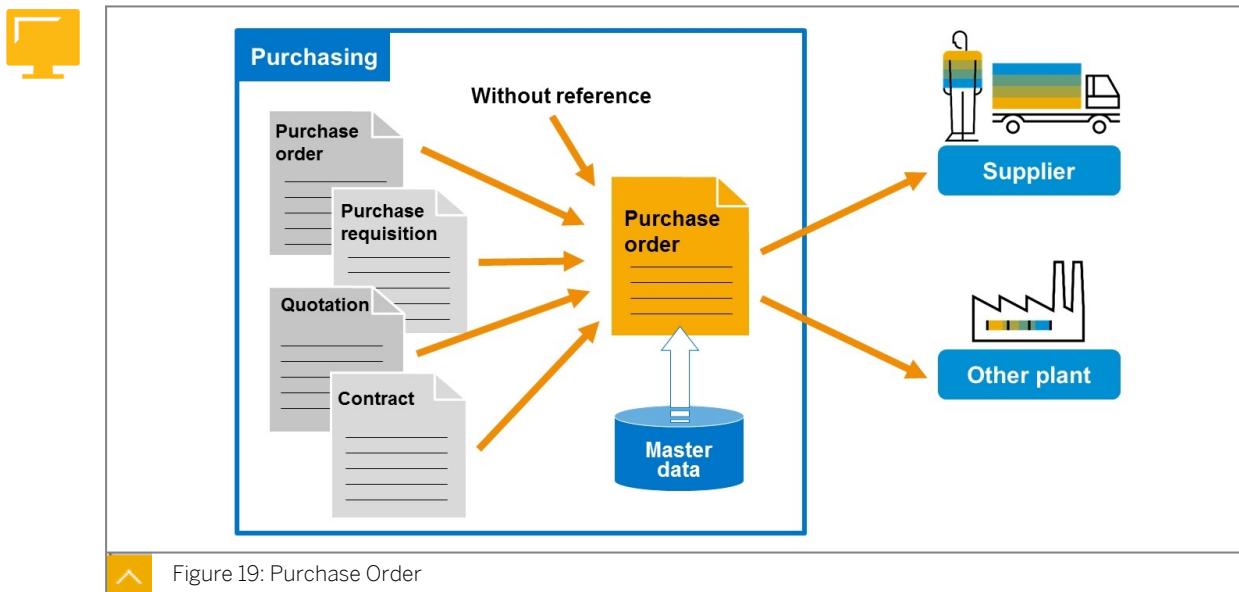


Figure 18: Basic Procurement Process: Purchase Order

The figure shows a simple procurement process. The process starts with the creation of a purchase order. In this procurement process, you assume that important data (such as supplier and material data) already exists in the system.

A purchase order is a formal request to a supplier to supply goods or services with the conditions stated in the purchase order. You specify in the purchase order whether the material is intended for stock or for direct consumption (for example, cost center, asset, or project). The goods receipt and invoice verification are usually carried out on the basis of the purchase order.

## Purchase Order

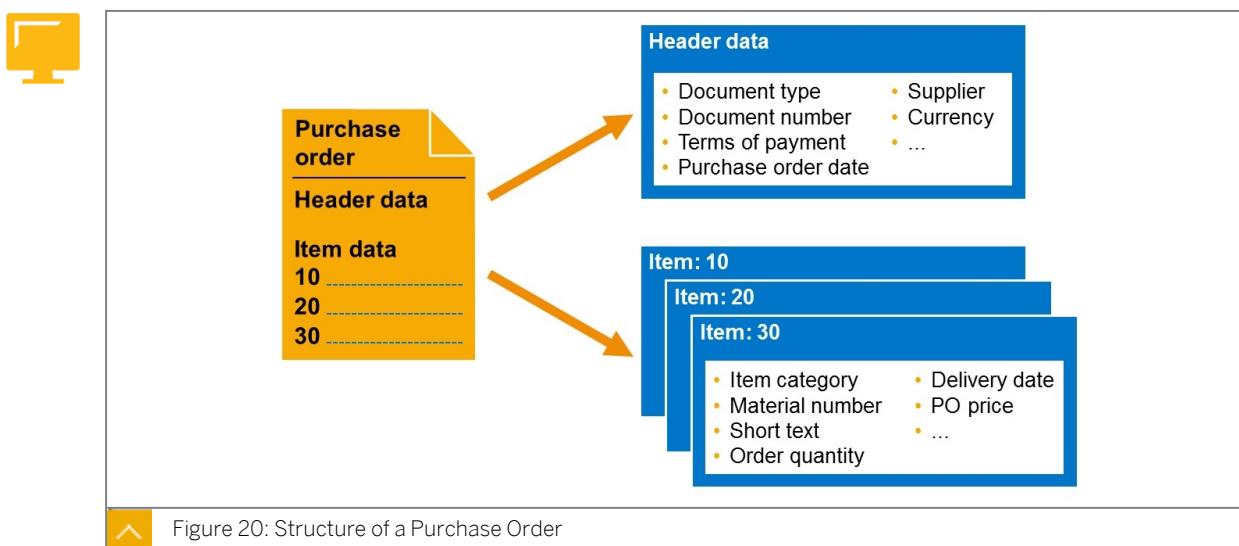


You can minimize data entry time by creating purchase order items with reference to an existing purchase order, purchase requisition, quotation, or contract.

You can also enter a purchase order without referring to existing documents in the system. When you enter the purchase order data, the system suggests default values. For example, the system suggests the ordering address and the terms of payment and freight (incoterms) from the supplier master record. If a material master record exists, the material short text, the purchase order unit of measure, and the material group are transferred automatically. If a purchasing information record already exists in the system, a price can be proposed for the purchase order.

If the source of supply is a plant belonging to your company, you carry out a stock transport order. If you order from an external supplier, you create a standard purchase order.

### Structure of a Purchase Order



Like other purchasing documents in the SAP system, the purchase order consists of a document header and one or more items:

- Document header:

The document header contains information that refers to the entire purchase order, such as document type, supplier, purchasing organization, purchasing group and company code, currency, the document date, and the terms of payment.

- Items:

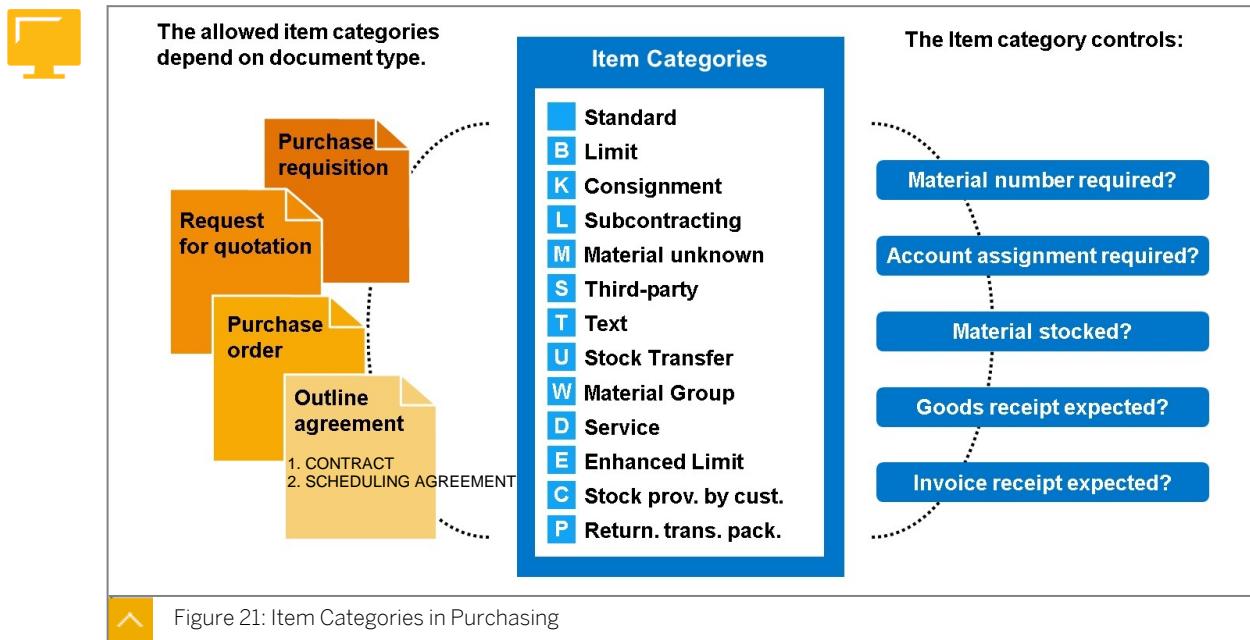
The items in a purchase order describe the materials or services ordered. Necessary data for an item are material/service, order quantity and unit of measure, delivery date, price, and plant for which the material/service is ordered. You can maintain additional information for each item (for example, tolerance for over delivery or item-based text).

In addition, you use the item category to determine the procurement process for each purchase order item. For example, you use the item category, to determine whether it is a special procurement process, like vendor consignment, subcontracting, or stock transfer.

With a single purchase order, you can procure materials or services for different plants. All plants in a purchase order must be assigned to the purchasing organization entered in the purchase order header.

### Item Categories in Purchasing

Item categories are used in purchase requisitions, requests for quotation, purchasing contracts, scheduling agreements, and purchase orders. The item category enables you to map different procurement processes. The document type determines which item categories are available for selection. You can use different item categories for the individual items of a purchasing document.



The item category specifies whether a material number, an account assignment, a goods receipt, and/or an invoice receipt are possible or required for an item.

The following are some of the predefined item categories:

- Standard: This category is used for materials that are to be procured externally (account assignment is possible; material number is mandatory if there's no account assignment; GR (good receipt) and IR (invoice receipt) are possible).
- Limit: You procure consumable materials or services with a value limit (material number is not possible; account assignment is mandatory, but account assignment category "Unknown" is possible; GR is not possible; IR is mandatory).
- Consignment: The supplier makes the material available, which you then manage as consignment stock. The material belongs to the supplier until it is withdrawn. The placement of an ordered consignment material in storage does not immediately lead to the valuation of the material or the creation of a liability in relation to the supplier. A liability only arises when the material is withdrawn from the supplier consignment stock (material number is mandatory; non-valuated GR is mandatory; account assignment and IR are not possible).
- Subcontracting: The finished product is ordered from a supplier. The components that the supplier requires to manufacture the end product are recorded as "material to be provided" items (material number and account assignment are possible; specification of the components to be provided required; GR is required; IR is possible).
- Stock transport orders: The material is transferred from one plant to another (material number is mandatory; GR is mandatory; IR is not possible).
- Third-party order: The supplier is to deliver the ordered material directly to a third party (for example, a customer). You receive the invoice for the material from the supplier (account assignment is mandatory; material number is possible; GR and IR are possible).

Item categories **Material Unknown (M)** and **Material Group (W)** are specific item categories that can only be used in contracts. Item categories M and W are intended for the entry of contract items without specification of a material number.

- Item category M is recommended for similar materials of the same price. These can be materials with different material numbers or materials without material master records. This category can be used in quantity and value contracts.
- Item category W is recommended for materials belonging to the same material group but with different prices. Item category W can only be used in value contracts.

### SAP Fiori App Manage Purchase Orders

You can use the **Manage Purchase Orders** SAP Fiori app to select and monitor purchase orders, as well as display, change, and create them. When you create a new purchase order, you can refer to a contract, an info record, or an existing purchase order. This reduces the amount of manual data entry required, because a lot of information is proposed from the reference object.

With the **Manage Purchase Orders** app, you can create purchase order items with the item categories **Standard**, **Consignment (K)**, **Subcontracting (L)**, **Third-party (S)**, and **Enhanced Limit (E)**.

In the following, the procedure for creating a purchase order with the **Manage Purchase Orders** app is described using the "Create PO for material with reference to an info record" example.

1. Start the **Manage Purchase Orders** app.
2. To create a new PO, choose *Create*.

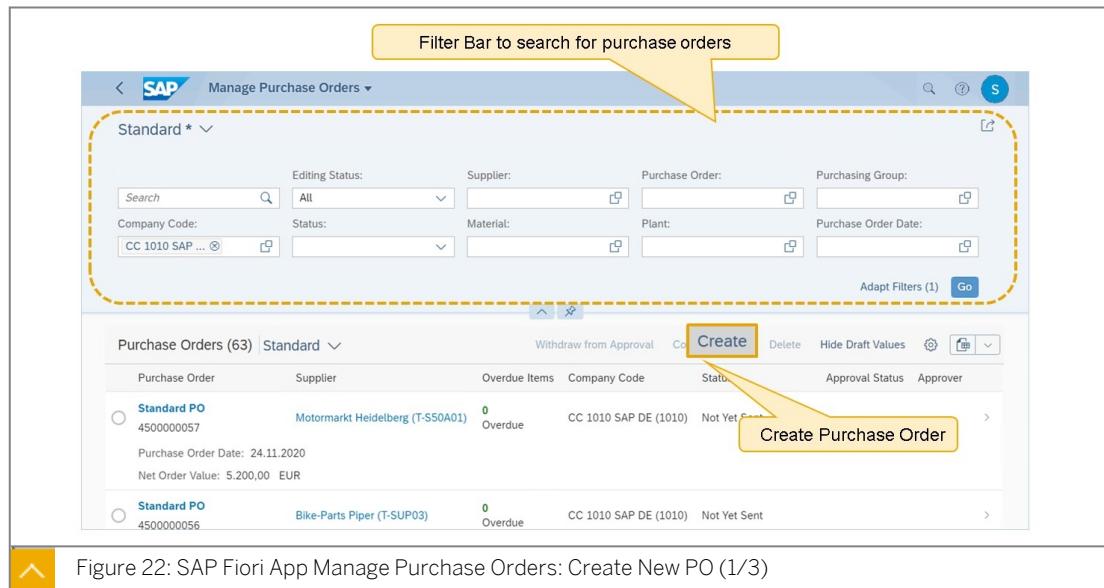


Figure 22: SAP Fiori App Manage Purchase Orders: Create New PO (1/3)

### 3. Choose Add from Document in the item area.

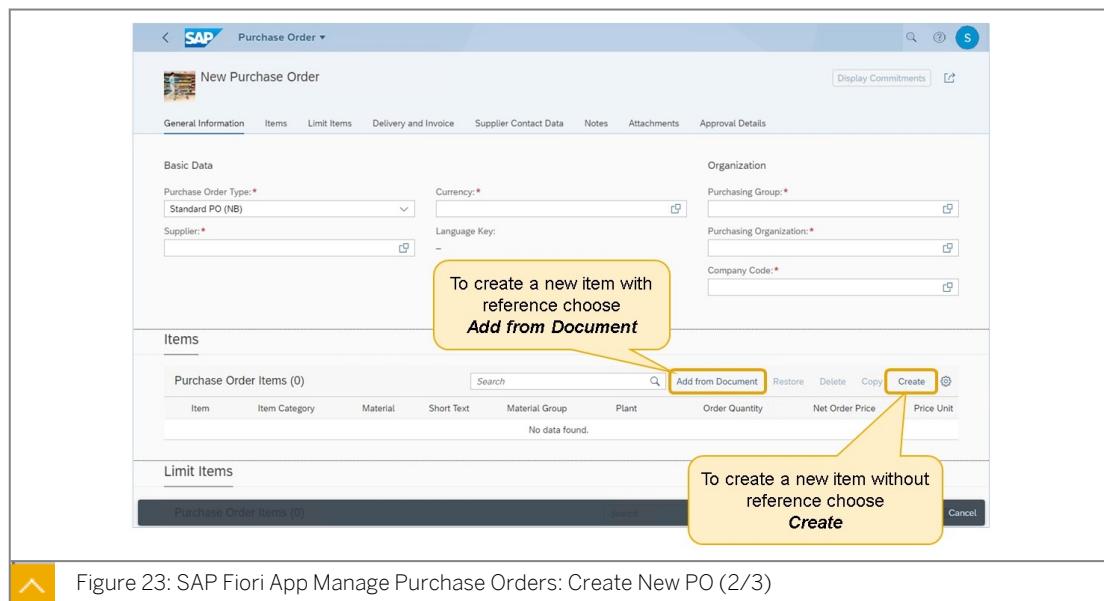


Figure 23: SAP Fiori App Manage Purchase Orders: Create New PO (2/3)

### 4. In the Add from Document dialog screen, enter the supplier and the material and choose Info Record as the purchasing document type. To start the selection, choose Go.

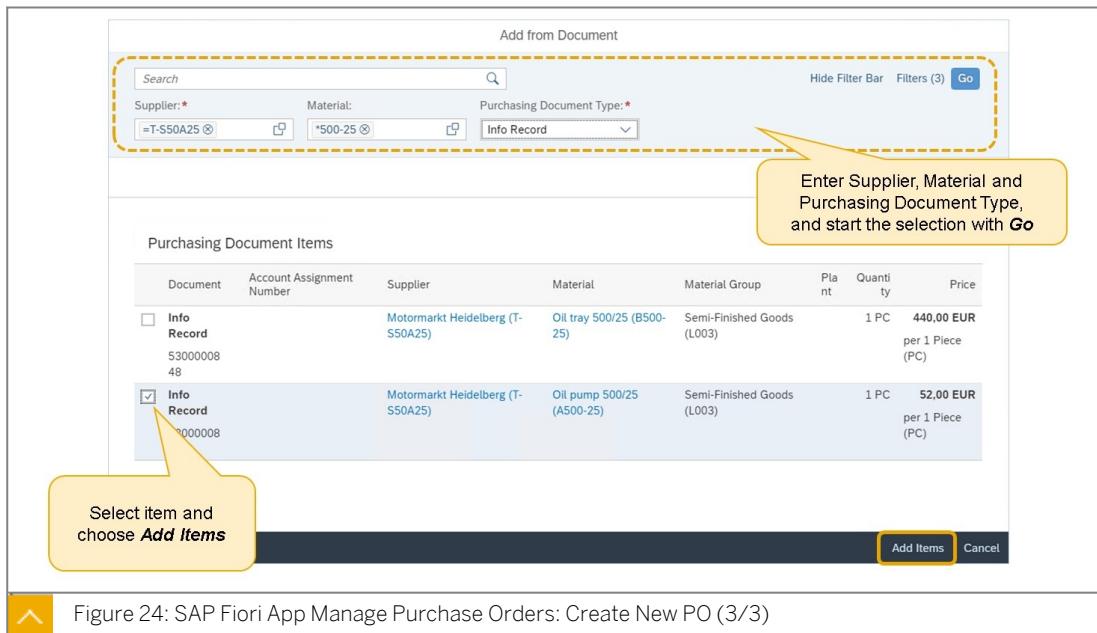


Figure 24: SAP Fiori App Manage Purchase Orders: Create New PO (3/3)

5. Select the required info record in the search result and to confirm your selection, choose *Add Items*.
6. Add missing item data such as plant and order quantity, and to create the purchase order, choose *Order*.

## Messages

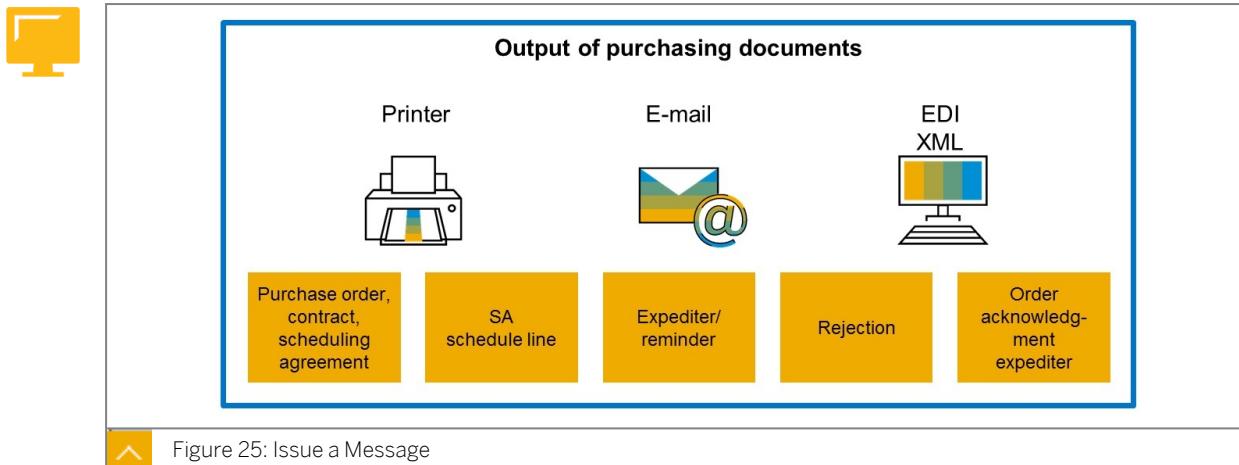


Figure 25: Issue a Message

You can issue all purchasing documents as messages. Each time you create a purchasing document, the system creates a message for the output of the document. This message is then placed in a message queue containing all messages that have not yet been transferred to the suppliers. To issue the message from the message queue, you have the following options:

- Issue Immediately:

The system issues the message directly from the queue, that is, when you save the document.

- Issue Later:

You either schedule a background job that processes the message queue at specific intervals, or you can start the output directly using the application provided for this purpose. As a rule, you issue the messages by scheduling a background job, and you start the issue manually only as an exception (such as for rush orders).

For the issued messages, you can specify the header texts and item-based texts that the system issues. The header text contains general information and is printed at the top of the purchase order. Item texts describe a purchase order item in more detail.



### LESSON SUMMARY

You should now be able to:

- Create a purchase order



## Unit 2

### Lesson 3

# Posting a Goods Receipt



#### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Post a goods receipt for a purchase order

#### Goods Receipt: Details



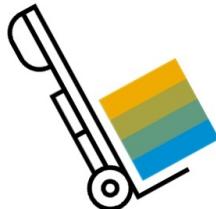
##### Purchase Order

- Fiori App Manage Purchase Orders



##### Goods Receipt

- Fiori App Post Goods Receipt for Purchasing Document



##### Invoice Receipt

- Fiori App Create Supplier Invoice

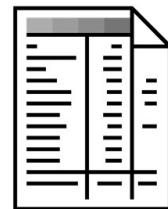
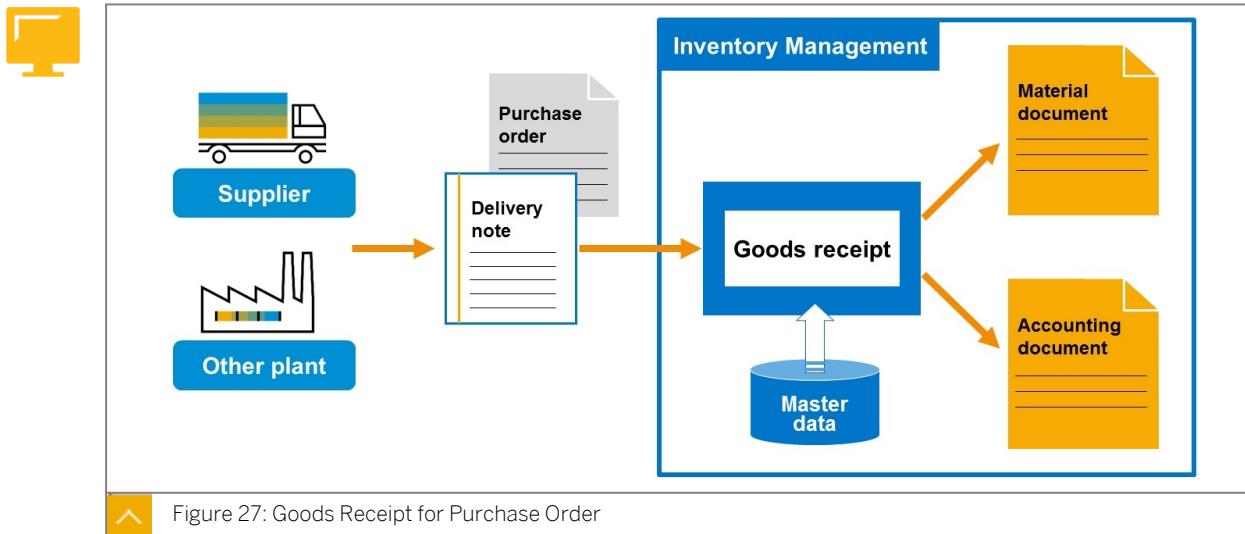


Figure 26: Basic Procurement Process: Goods Receipt

The second step of the simple external procurement process is the goods receipt. The goods delivery results from the order of the material from a supplier. Like the purchase order, the goods receipt posting is mapped in the SAP system with a document.

### Goods Receipt for Purchase Order



When goods are delivered against a purchase order, it is important that you enter this goods receipt with reference to the purchase order. When you record the receipt of goods, the system suggests all open items from the purchase order. This facilitates both the entry and checking of incoming goods. Among other things, you can check the following:

- If the right material has been delivered.
- If the right quantity has been delivered, and if there is an over or under delivery.
- If perishable goods are within their minimum shelf life (The shelf life expiration date check must be active in this case).

You can enter several goods receipt items against a purchase order item in one operation. This is advisable if the material is delivered in several batches or is distributed to several storage locations.

When you post a goods receipt with reference to a purchase order, the PO histories of the relevant purchasing document items are updated automatically. This enables the buyer to identify outstanding deliveries and urge the vendor to speed things up if necessary.

When you post the receipt of goods into the warehouse, the system generates a material document. This document contains information on the material delivered, the delivered quantity, and the plant and storage location in which the material is put away (placed in storage). If the goods receipt is valued, an accounting document is generated in addition. This contains details of the accounting effects of the material movement.

## Movement Types



When entering a goods movement, you must indicate a movement type. The movement type is a three-character key used to differentiate between the various types of goods movements. Examples of such goods movements are goods receipts for purchase order or production order, goods issues for production or cost center, and transfer postings from plant to plant.

The movement type assumes important control functions in inventory management. It plays a central role in automatic account determination in the SAP system. Together with other influencing factors, the movement type determines which stock or consumption accounts are updated in financial accounting (among other things). The movement type also affects the screen layout for document entry or the updating of the quantity information.

## SAP Fiori App Post Goods Receipt for Purchasing Document

Figure 29: SAP Fiori App Post Goods Receipt for Purchasing Document

In SAP S/4HANA, a special SAP Fiori app exists to post a goods receipt with referent to a purchasing document.

In the entry screen of this app, enter the number of the purchasing document (purchase order or scheduling agreement) you want to reference. You can also enter the name of the supplier or plant from whom you ordered the material. The system then proposes a list with all purchasing documents, which are fitting your entry.

After you select the purchasing document, all open items of the document are shown in the item list.

In the *General Information* area, you can enter the delivery note number, the bill of lading number, and the document date. If you need a goods receipt slip, choose the version you need (individual slip, individual slip with inspection text, collective slip).

Select the items that you receive. If necessary, change the proposed quantity for the items and specify a storage location and a stock type. Finally, post the goods receipt.



### LESSON SUMMARY

You should now be able to:

- Post a goods receipt for a purchase order

## Unit 2

### Lesson 4

# Entering an Invoice



#### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Execute an invoice verification

#### Invoice Verification – Details



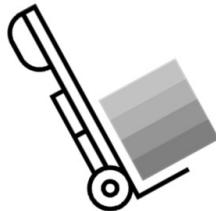
##### Purchase Order

- Fiori App Manage Purchase Orders



##### Goods Receipt

- Fiori App Post Goods Receipt for Purchasing Document



##### Invoice Receipt

- Fiori App Create Supplier Invoice

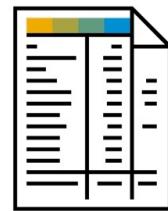


Figure 30: Basic Procurement Process: Invoice Receipt

After the order and receipt of the goods, the receipt and posting of an invoice completes the external procurement process.

## Invoice Verification

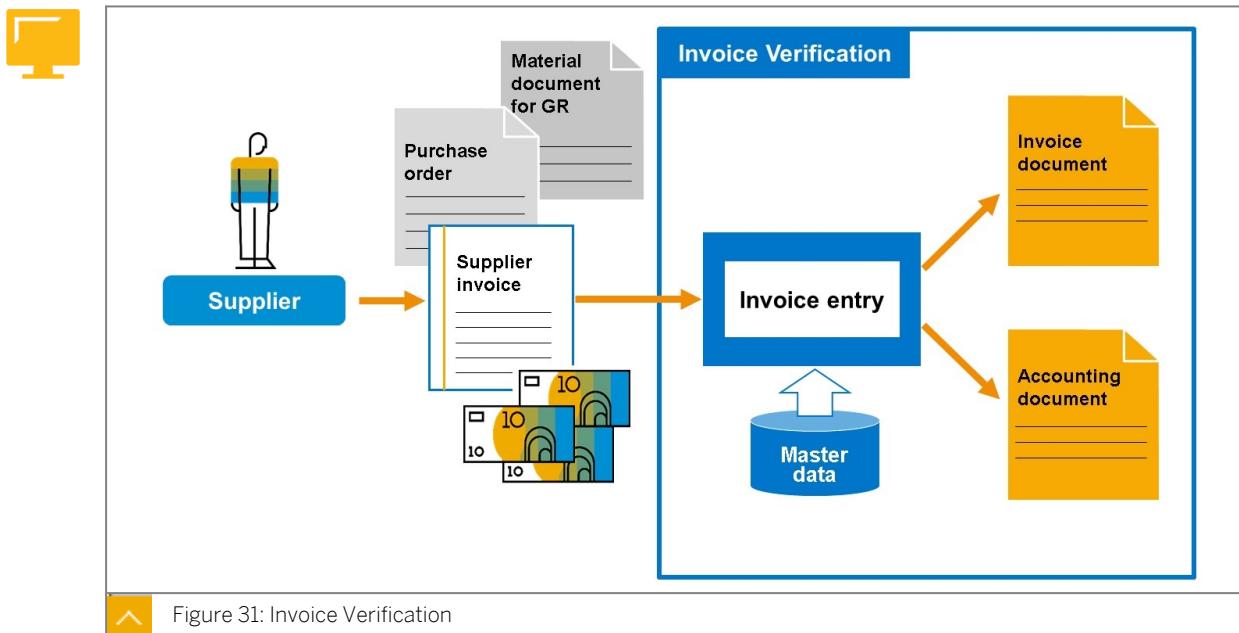


Figure 31: Invoice Verification

In the logistics invoice verification, you enter invoices and credit memos and check them for factual, price, and arithmetic correctness. When an invoice is posted, the invoice data is saved in the system and invoice and accounting documents are created. In addition, information is updated in the purchasing document and in accounting.

The functions of the logistics invoice verification do not include the payment or the evaluation of the open liabilities. These are tasks of financial accounting.

### Information in a Supplier Invoice

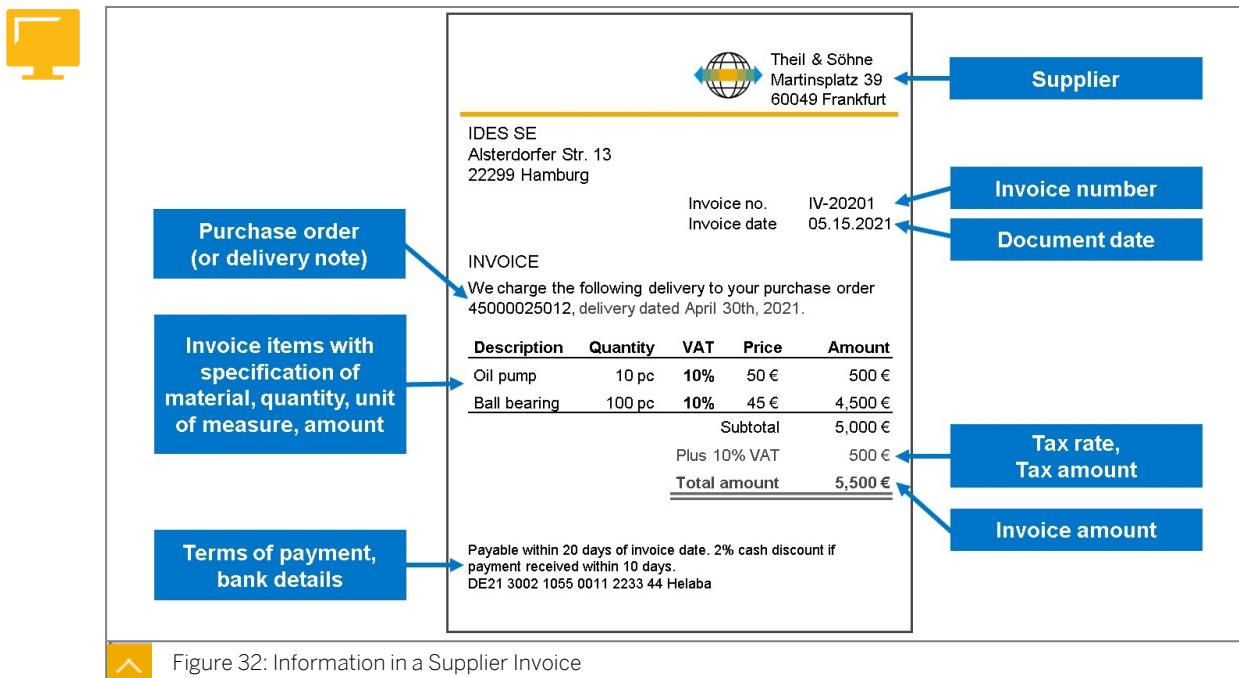
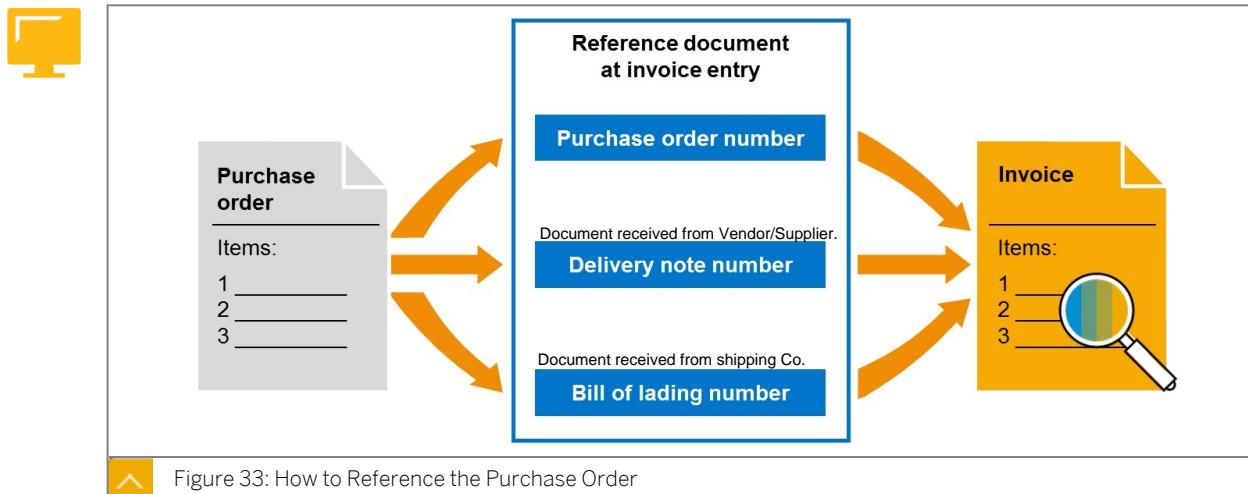


Figure 32: Information in a Supplier Invoice

In invoice verification, you initially enter all the relevant data from the supplier's (creditor's) invoice, such as gross amount, value-added tax, invoice date, and reference (supplier's

invoice number). If you enter an invoice with reference to a purchase order, the system proposes data from the purchase order and goods receipts for the purchase order (for example, invoicing party, payment terms, and per item the material, the quantity to be invoiced and the expected amount). You can overwrite these proposed values if other values are specified in the supplier's invoice.

If there are discrepancies between the purchase order or goods receipt and the invoice (price or quantity differences for instance), the system warns the user accordingly and, depending on the system settings, blocks the invoice so that it cannot be paid.



You can also assign the invoice items to a purchase order using the number of the delivery note or bill of lading, provided that these numbers were entered at the time of goods receipt.

### SAP Fiori App Create Supplier Invoice

Figure 34: SAP Fiori App Create Supplier Invoice

With the SAP Fiori app **Create Supplier Invoice**, you can create a supplier invoice or credit memo based on the received document. In the basic data, you select the correct transaction (invoice, credit memo, subsequent credit, subsequent debit) and the company code for which

the supplier sends you the document. In this area, you also enter the gross amount, invoice date, and reference number.

Then, you specify the purchase order items to which your supplier invoice or credit memo relates. As reference, you can use purchase orders, delivery notes, and bills of lading (the latter two only if the information was entered while posting the goods receipt).

In the item list, the system proposes all purchase order items that fulfill the relevant allocation criteria. Compare the suggested invoice items with the items in the vendor invoice and correct the proposed values for amount, quantity, and tax code if necessary. The items to be posted must be selected.

If you select the *Simulate* or *Post* function, the system compares the quantity and amount data of each supplier invoice item with the data of the related purchase order item. The *simulate* function allows you to display the account movements before posting the document. If the system detects a deviation, and this deviation is outside defined tolerances, the invoice is posted, but the invoice is automatically blocked for payment.



## LESSON SUMMARY

You should now be able to:

- Execute an invoice verification

# Learning Assessment

1. In the subcontracting process, a supplier provides you with material that you store, but are not required to pay for immediately.

*Determine whether this statement is true or false.*

- True
- False

2. Which of the following are SAP Fiori apps that are used for the basic procurement process?

*Choose the correct answers.*

- A Confirm Production Order
- B Manage Purchase Orders
- C Create Supplier Invoice
- D Post Goods Receipt for Purchasing Document

3. Which documents can you refer to when creating a purchase order?

*Choose the correct answers.*

- A Production order
- B Purchase order
- C Supplier invoice
- D Contract

4. Which of the following predefined item categories exist in purchasing?

*Choose the correct answers.*

- A Subcontracting
- B Standard
- C Reversal
- D Third-party

5. Which documents are created with a valued goods receipt?

*Choose the correct answers.*

- A Confirmation document
- B Material document
- C Accounting document
- D Reversal document

6. A movement type is always required for posting a goods movement.

*Determine whether this statement is true or false.*

- True
- False

7. Which documents are created with an invoice posting?

*Choose the correct answers.*

- A Invoice document
- B Confirmation document
- C Accounting document
- D Reversal document

# Learning Assessment - Answers

1. In the subcontracting process, a supplier provides you with material that you store, but are not required to pay for immediately.

*Determine whether this statement is true or false.*

- True  
 False

Correct. It is the supplier consignment process in which a supplier provides you with material that you store, but are not required to pay for immediately. For more information, see the Delineating Procurement Processes lesson in the S4500 (or TS450) training material.

2. Which of the following are SAP Fiori apps that are used for the basic procurement process?

*Choose the correct answers.*

- A Confirm Production Order  
 B Manage Purchase Orders  
 C Create Supplier Invoice  
 D Post Goods Receipt for Purchasing Document

Correct. Confirming a production order is not a task in the procurement process. However, creating and managing purchase orders, posting a goods receipt and a supplier invoice for a purchasing order are. For more information, see the Plain Procurement Process unit in the S4500 (or TS450) training material.

3. Which documents can you refer to when creating a purchase order?

*Choose the correct answers.*

- A Production order
- B Purchase order
- C Supplier invoice
- D Contract

Correct. You can create a purchase order with reference to an existing PO, a purchase requisition, a quotation, or a contract. For more information, see the Creating a Purchase Order lesson in the S4500 (or TS450) training material.

4. Which of the following predefined item categories exist in purchasing?

*Choose the correct answers.*

- A Subcontracting
- B Standard
- C Reversal
- D Third-party

Correct. Reversal is not among the predefined item categories. But if you check in the system, you will see that Subcontracting, Standard, and Third-party are valid answers. For more information, see the Creating a Purchase Order lesson in the S4500 (or TS450) training material.

5. Which documents are created with a valued goods receipt?

*Choose the correct answers.*

- A Confirmation document
- B Material document
- C Accounting document
- D Reversal document

Correct. Reversal and confirmation are not triggered by a valued goods receipt. However, both a material document and an accounting document are created. For more information, see the Posting a Goods Receipt lesson in the S4500 (or TS450) training material.

6. A movement type is always required for posting a goods movement.

*Determine whether this statement is true or false.*

True

False

Correct. The movement type is necessary to differentiate between the various types of goods movements and assumes important control functions in inventory management. For more information, see the Posting a Goods Receipt lesson in the S4500 (or TS450) training material.

7. Which documents are created with an invoice posting?

*Choose the correct answers.*

A Invoice document

B Confirmation document

C Accounting document

D Reversal document

Correct. Reversal and confirmation documents are not created with an invoice posting. However, both an invoice and an accounting document are created. For more information, see the Entering an Invoice lesson in the S4500 (or TS450) training material.



## UNIT 3

# Organizational Units in Procurement

### Lesson 1

Identifying the Organizational Units in Procurement

49

### Lesson 2

Defining and Assigning a Plant

59

### UNIT OBJECTIVES

- Explain the enterprise structure relevant for procurement processes
- Define and assign a plant



# Unit 3

## Lesson 1

# Identifying the Organizational Units in Procurement



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Explain the enterprise structure relevant for procurement processes

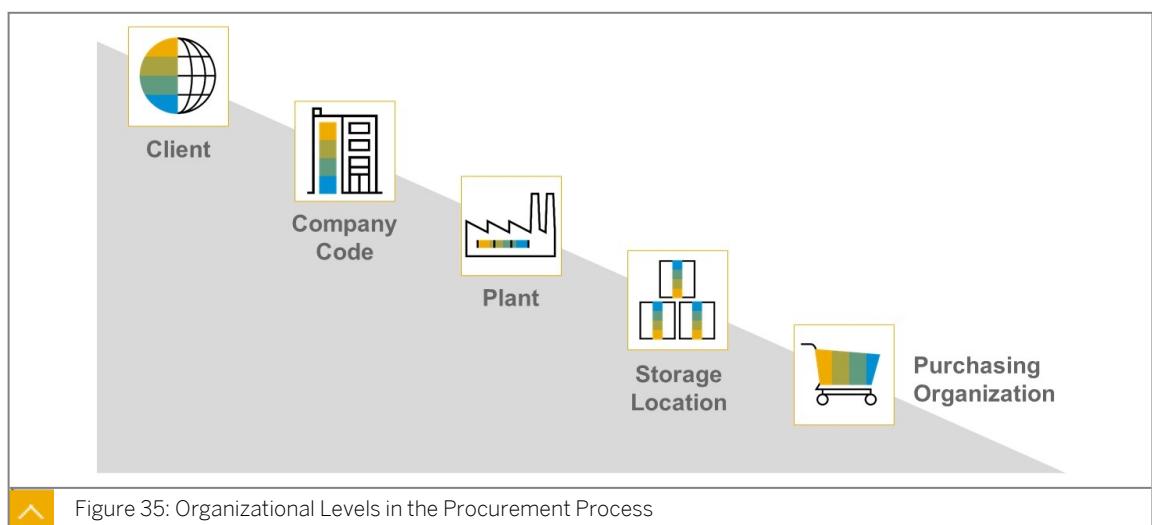
## Overview of Organizational Units in Procurement and Inventory Management

Organizational units in the SAP system represent the structure of a company. In other words, they correspond to the legal and/or organizational units of an enterprise. SAP provides organizational units for all areas of your company (such as accounting, purchasing, production, and warehousing). We will focus on the elements that are relevant for purchasing and inventory management.

The organizational unit *Purchasing Organization* is used exclusively in purchasing processes. Other organizational units, such as the *Company Code* or *Plant*, belong to other areas and are also used in additional processes, and not only in the external procurement.

The organizational levels are defined and assigned in customizing for the enterprise structure.

The organizational units relevant for external procurement are shown in the figure *Organizational Levels in the Procurement Process*.



### Client

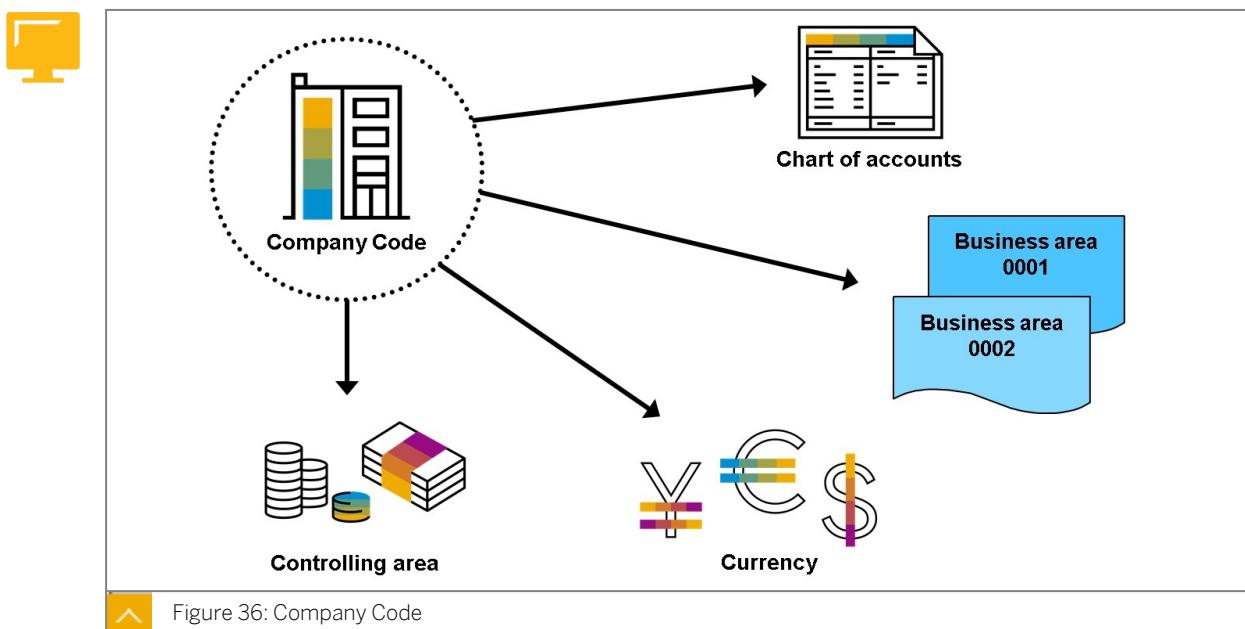
The client is a unit within an SAP system that is self-contained both in legal and organizational terms, and is represented as separate master records and an independent set of tables. For example, the client could represent a corporate group.

The client is the highest hierarchical level in the SAP system. Specifications or data that you make and enter at this level apply to all company codes and other organizational units. Therefore, you do not have to enter the specifications and data at the client level more than once in the system. This ensures a uniform data status.

Access authorization is assigned on a client-specific basis. A distinct user master record must be created between each user and the client. If the *Client* field has not been pre-populated, each user must specify a client key when logging onto the SAP system. All user input is stored, processed, and evaluated on a client-specific basis.

A client is uniquely defined in the system by a three-digit numeric key.

### Company Code and other Organizational Units in Accounting



The company code is the smallest organizational unit in external accounting for which you can replicate a complete, self-contained bookkeeping system.

A company code represents an independent unit that produces its own financial statements, such as a company within the corporate group (a client). This system includes the recording of all accounting-relevant events and the production of all legally required final statements of accounts, such as balance sheets and profit and loss (P&L) statements.

Among other things, the following options are specified for each company code:

- The company address and the country in which the company is located
- The chart of accounts (list of general ledger accounts)
- The currency in which the local books are kept
- The fiscal year variant (specification of the periods and special periods of a fiscal year)
- The credit control area
- The determination whether financial statements are to be created at the business area level

You can set up several company codes for the same client to keep separate sets of accounts.

A company code is defined in the system by means of a four-character alphanumeric key that is unique in the client. You define company codes in Customizing for *Enterprise Structure* under *Definition → Financial Accounting*.

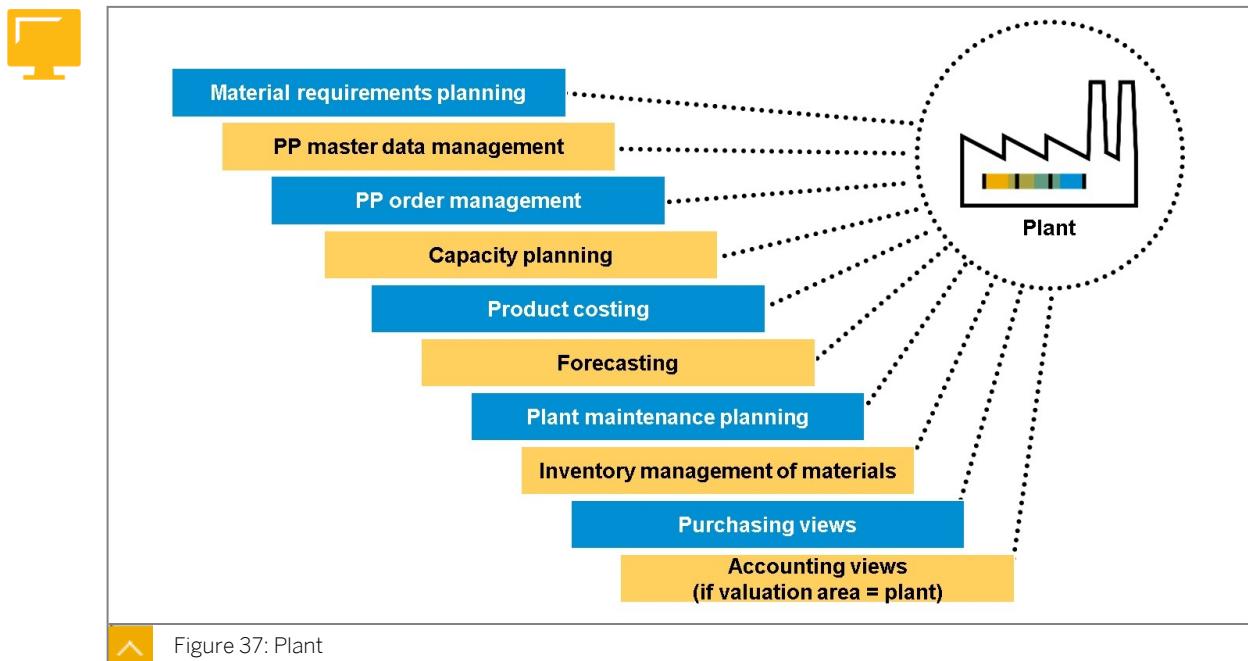
The **CHART OF ACCOUNTS** is assigned in Customizing for *Financial Accounting* under *Financial Accounting Global Settings → Global Parameters for Company Code → Enter Global Parameters*.

You can set up **BUSINESS AREAS** within your company to differentiate between various fields of activity or areas of responsibility. You define the business areas in Customizing for *Enterprise Structure* under *Definition → Financial Accounting → Define Business Area*.

The **CONTROLLING AREA** is an organizational unit within a company for which you can carry out complete, self-contained cost accounting. A controlling area can cover one or more company codes. The associated company codes must all use the same operative chart of accounts.

You assign a company code to a controlling area in Customizing for *Enterprise Structure* under *Assignment → Controlling → Assign company code to controlling area*.

## Plant



The plant is an organizational unit within logistics that subdivides an enterprise from the viewpoints of production, procurement, plant maintenance, and materials planning.

A plant may represent a variety of entities within a firm, such as:

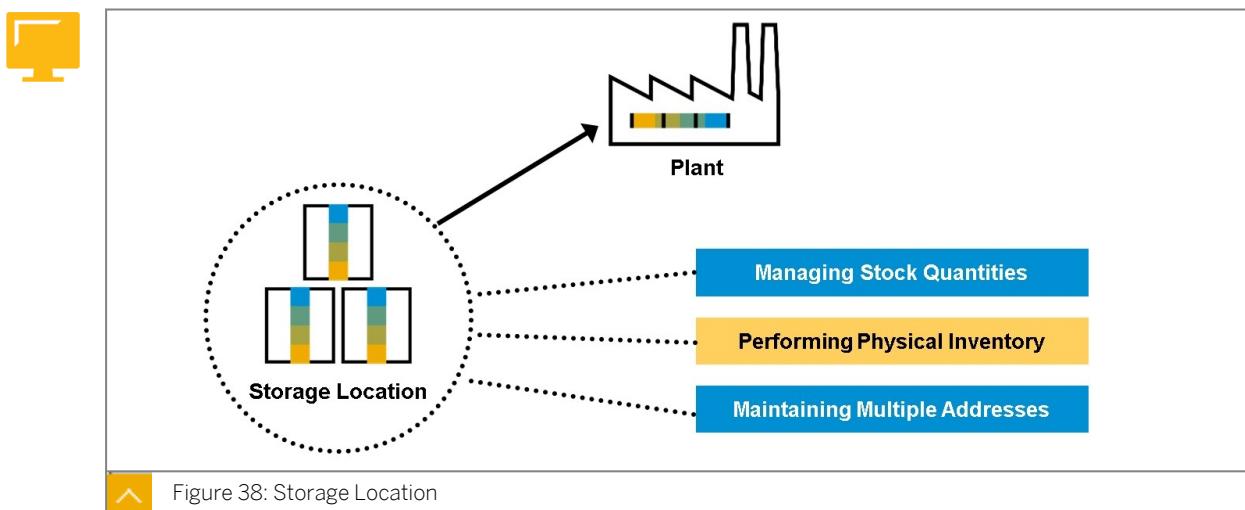
- Production facility
- Regional sales office
- Corporate headquarters
- Maintenance location

A plant is defined in the system by a four-character alphanumeric key that is unique to it in the client.

A plant is an operational unit in a company with the following characteristics:

- A plant has an address and a language and belongs to a country and a region.
- A plant has its own material master data. Data can be maintained at plant level for various views of the material master record, such as Materials Requirements Planning (MRP), Purchasing, Storage, Work Scheduling, Production Resources/Tools, Forecast, Quality Management, Sales, and Costing.
- Management of material stocks on value basis takes place at plant level if the valuation area corresponds to the plant.
- Several purchasing organizations can be assigned to a plant.
- Production planning and production are carried out on a plant-specific basis. However, certain applications can work on a cross-plant basis.
- Product costing can be carried out on a cross-plant basis.
- A plant can be defined as a maintenance planning plant. To define this, in Customizing, go to *Enterprise Structure → Definition → Plant Maintenance → Maintain Maintenance Planning Plant*.
- A plant can simultaneously be a production plant and a maintenance planning plant.

### Storage Location



The storage location is an organizational unit that facilitates the differentiation of stocks of materials within a plant.

The characteristics of a storage location are as follows:

- A storage location is the level at which you physically manage the stocks of materials.
- A storage location is the level at which the physical inventory process takes place (except when the Warehouse Management system is activated).
- The system manages the stocks at storage location level on a quantity basis only, not on a value basis.
- A storage location always belongs to a certain plant.

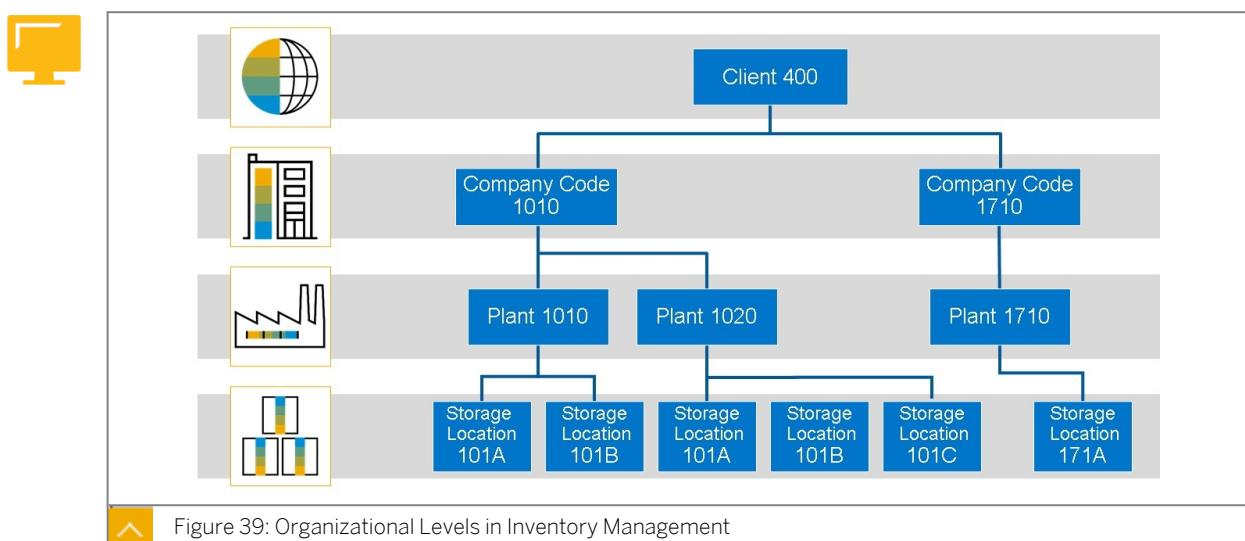
- A storage location can have different addresses (for example, one for the delivery of general cargo and another for bulk material).

A storage location is defined by a four-character alphanumeric key, which must be unique within a plant. You can use the same storage location keys in each plant. You can define the storage location keys according to the function of the storage location and set up a uniform storage location structure for all plants.

You can maintain one or more addresses for each storage location. These addresses can differ from the plant address. If you maintain a storage location address and use it in a purchase order, the system will output the associated address as the delivery address.

If you store several addresses for a storage location, the system always suggests the first address. You can change the address by selecting a different address number on the Delivery Address tab page (the system generates one address number per address).

### Enterprise Structure



The enterprise structure is created by the assignment of organizational levels to each other. Therefore, a client may contain several company codes, and a company code may contain several plants. However, a plant can only ever belong to one company code.



#### Note:

Because the key of a plant is unique in a client, and a plant can only belong to one company code, by specifying the plant, you simultaneously specify the company code.

Several storage locations may be assigned to a plant, but a specific storage location can only belong to one plant. Storage locations are defined especially for a plant and are therefore assigned to this plant. The key of a storage location need only be unique within a plant. Within a client, the same key can be used for different storage locations, since when you specify a storage location you always have to specify the plant too.

## Organizational Elements in Purchasing

### Purchasing Organization

A purchasing organization is an organizational unit within logistics that subdivides the enterprise according to the purchasing requirements. A purchasing organization procures materials or services, negotiates conditions of purchase with suppliers, and assumes responsibility for these transactions.

The organizational integration of purchasing into the company structure is done by assigning a purchasing organization to:

- One company code (optional)
- One or more plants

You can use the corresponding assignments to show whether purchasing is organized centrally or non-centrally in your company.

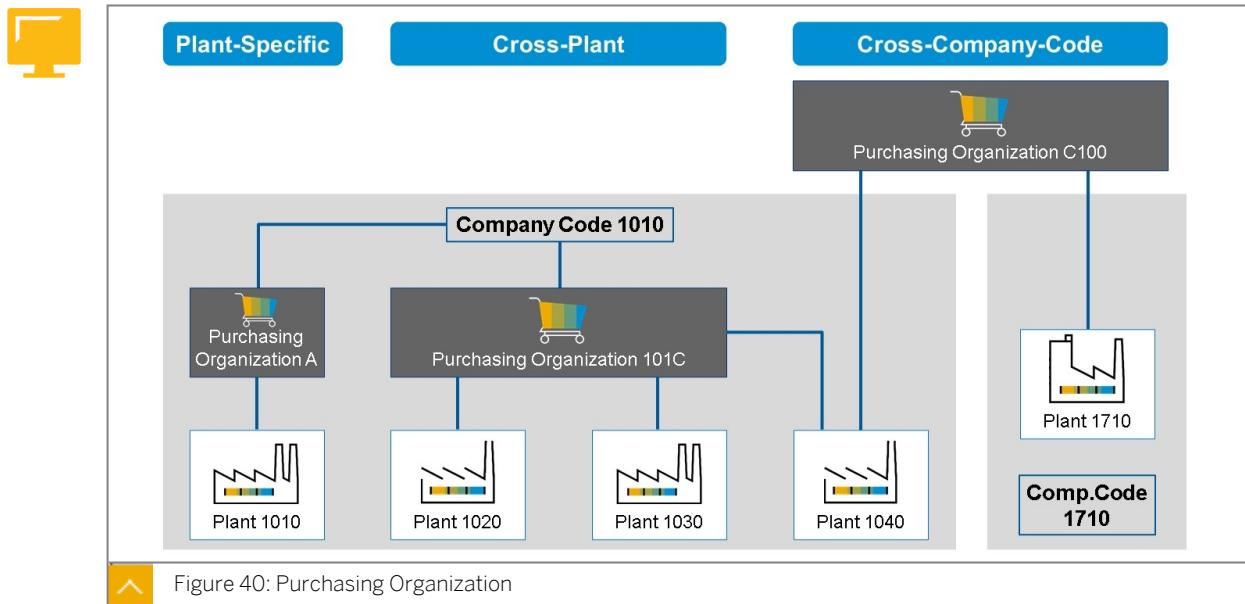
If a purchasing organization is to operate across company codes (decentralized, strategic purchasing), there is no assignment between company code and purchasing organization. In this case, plants from all company codes can be used for the "purchasing organization to plant" assignment.

However, if a purchasing organization is assigned to a company code, only plants from the selected company code can be used for the "purchasing organization to plant" assignment. Note that a purchasing organization can only belong to one company code. But if required, several purchasing organizations can be assigned to a company code.

There is a many-to-many relationship between purchasing organizations and plants. In other words, you can assign several plants to one purchasing organization, and one plant to several purchasing organizations. The plant to purchasing organization assignment is a necessary setting and cannot not be omitted.

The different assignment options between company code, plant, and purchasing organization yield the following categories of purchasing organization:

- Plant-specific purchasing organization
- Cross-plant purchasing organization
- Cross-company-code purchasing organization



**Plant-Specific Purchasing Organization:** In plant-specific procurement, a purchasing organization is responsible for procuring materials for just one plant. You make the following assignments in the enterprise structure:

- Assign the purchasing organization to a company code.
- Assign one plant to the purchasing organization.

**Cross-Plant Purchasing Organization:** If a purchasing organization has to procure materials and services for several plants belonging to a company code, you are able to set up a cross-plant purchasing organization. You make the following assignments in the enterprise structure:

- Assign the purchasing organization to a company code.
- Assign several plants (belonging to one company code) to the purchasing organization.



#### Note:

The assignment purchasing organization to plant is always necessary, even if the purchasing organization is responsible for all plants of the company code. It is not enough to make the assignment between company code and purchasing organization alone.

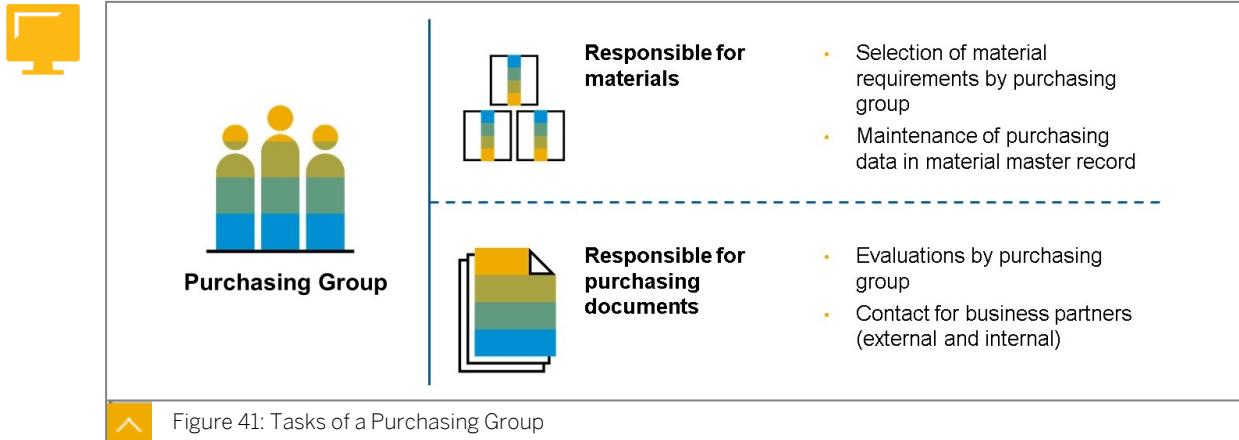
**Cross-Company-Code Purchasing Organization:** When setting up cross-company-code purchasing, the purchasing organization may not be assigned to any company code. Only the assignment of the plants is necessary.

When setting up your purchasing organizations, please consider:

- Each purchasing organization has its own info records and conditions for price determination.
- Each purchasing organization has its own purchasing data and partner roles in the business partner record.

- Each purchasing organization evaluates its vendors separately with classic *MM Supplier Evaluation*.
- The purchasing organization is the highest summation level for purchasing statistics after the organizational level *Client*.
- The purchasing organization is a selection criterion for purchasing lists.

## Purchasing Group



Another factor for internal structuring of purchasing is the purchasing group. A purchasing group is a key to representing a buyer or group of buyers responsible for certain purchasing activities. The purchasing group is internally responsible for the procurement of a material or class of materials. Externally, the purchasing group usually represents the contact person for the suppliers.

A purchasing group is not assigned to other units in the company structure. You create the required purchasing groups at client level in Customizing. A purchasing group can be used for all purchasing organizations and plants if authorization management does not stipulate any restrictions. You assign a purchasing group to a material in the purchasing data of the material master record at plant level.

## Reference Purchasing Organization

You can carry out cross-purchasing organization procurement transactions using a reference purchasing organization. This means that you can agree more advantageous conditions, use centrally agreed contracts based on larger purchase quantities, and also simplify the condition maintenance.

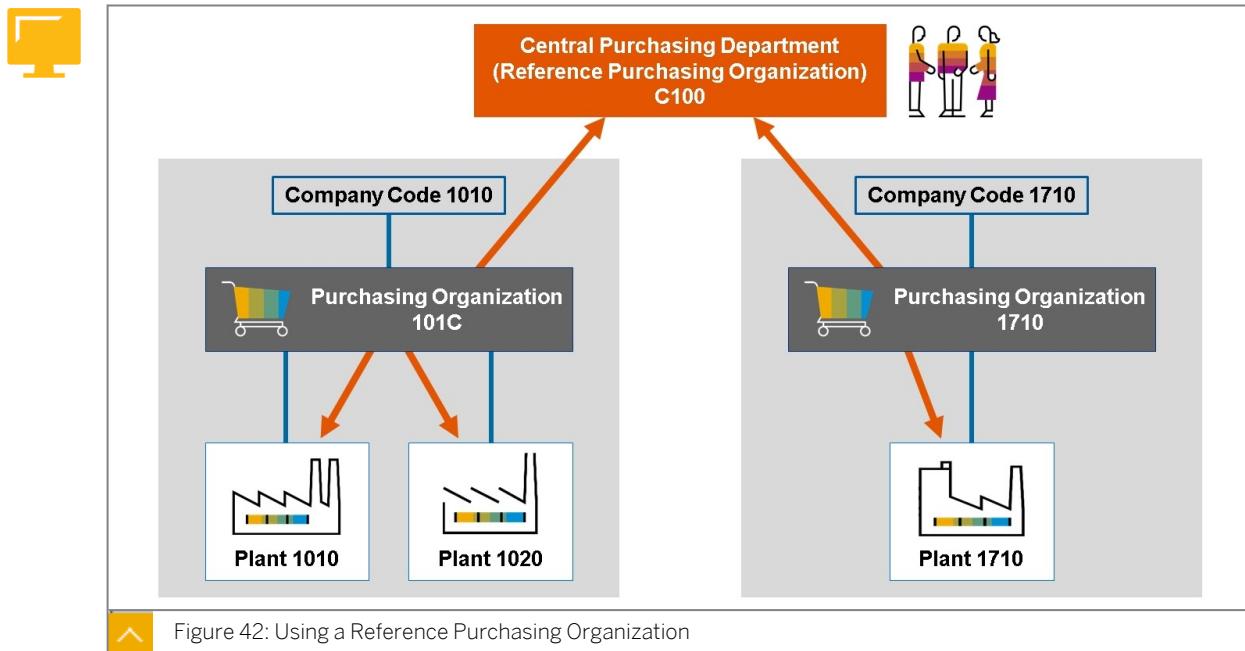


Figure 42: Using a Reference Purchasing Organization

It is possible for other purchasing organizations to use the conditions of a reference purchasing organization for price determination purposes. It is also possible for purchasing organizations to refer to contracts of reference purchasing organizations.

You assign purchasing organizations to *reference purchasing organizations* in Customizing for *Enterprise Structure* under *Assignment → Materials Management → Assign purch. organization to reference purch. organization*. The supplier data in the business partner must also be maintained for the reference purchasing organization because the reference purchasing organization is treated as a normal purchasing organization.



#### Note:

To use the conditions from info records created for the reference purchasing organization, the price determination settings must be extended.

### Standard Purchasing Organization

The standard purchasing organization is required for processes where the system has to automatically determine a purchasing organization. These processes are pipeline procurement, consignment, stock transfer and automatic creation of purchase orders when posting goods receipts.

In the source determination process for stock transfers and consignment, the system then automatically uses this standard purchasing organization. In the case of goods issues of consignment and pipeline materials, the purchasing info records of the standard purchasing organization are determined to valuate the posting.

If there is only one purchasing organization assigned to a plant, or you have none of the above mentioned processes, the assignment of a standard purchasing organization to a plant is not necessary. You define the standard purchasing organization for a plant in Customizing for *Enterprise Structure* under *Assignment → Materials Management → Assign standard purchasing organization to plant*.



## LESSON SUMMARY

You should now be able to:

- Explain the enterprise structure relevant for procurement processes

# Defining and Assigning a Plant

## LESSON OVERVIEW

This lesson covers the various options available to create a new plant.

### Business Example

You need to represent a new production location as a separate plant. For this reason, you require the following knowledge:

- An understanding of how to create plant and storage locations
- An understanding of how to use the plant copy and check function



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

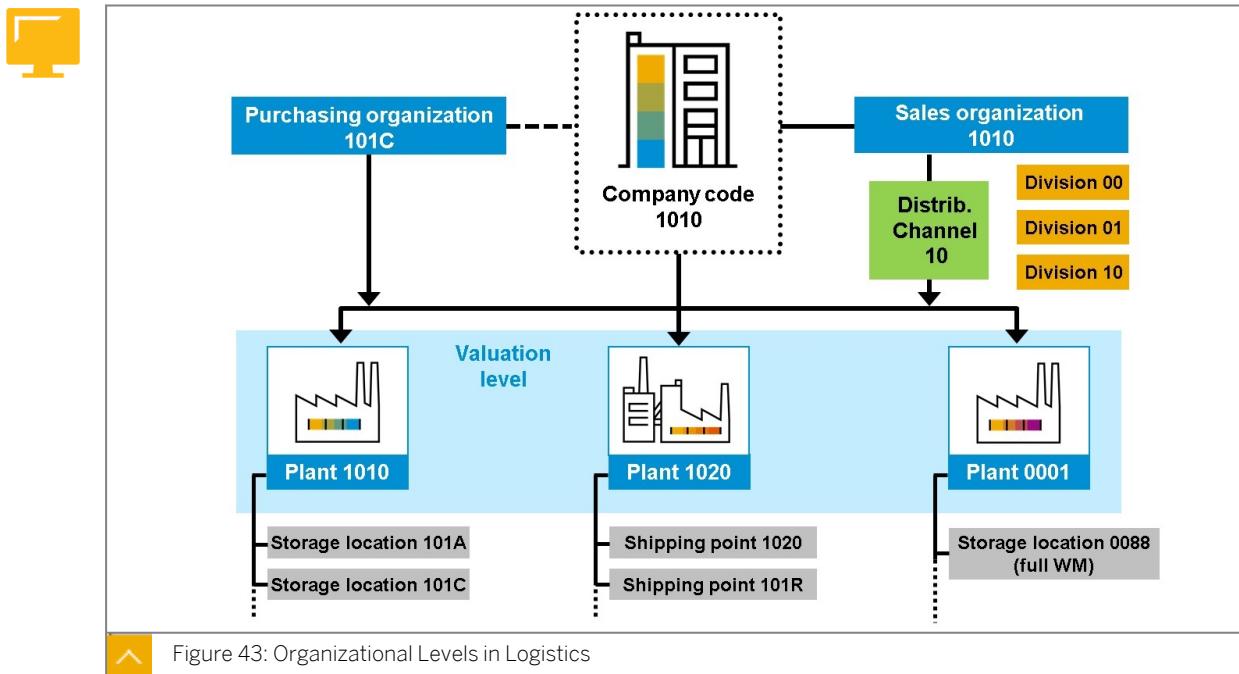
- Define and assign a plant

### Plant

As described in the previous lesson “Identifying the Organizational Units in Procurement”, the plant is an organizational unit in Logistics that subdivides the company from the point of view of production, procurement, maintenance, and materials planning. A plant can represent, for example, a permanent establishment or a branch within a company.

A plant is linked to other organizational units:

- A plant is always assigned to exactly one company code.
- A plant and a division always belong to exactly one business area.
- A plant can be assigned to multiple combinations of sales organizations and distribution channels.
- A plant can have several shipping points. A shipping point can in turn be assigned to several plants.
- Several purchasing organizations can be assigned to a plant.
- A plant can have several storage locations. A storage location always belongs to only one plant.



The figure displays the relationships between the organizational levels of materials management and sales. The following rules apply:

- For purchasing organization:

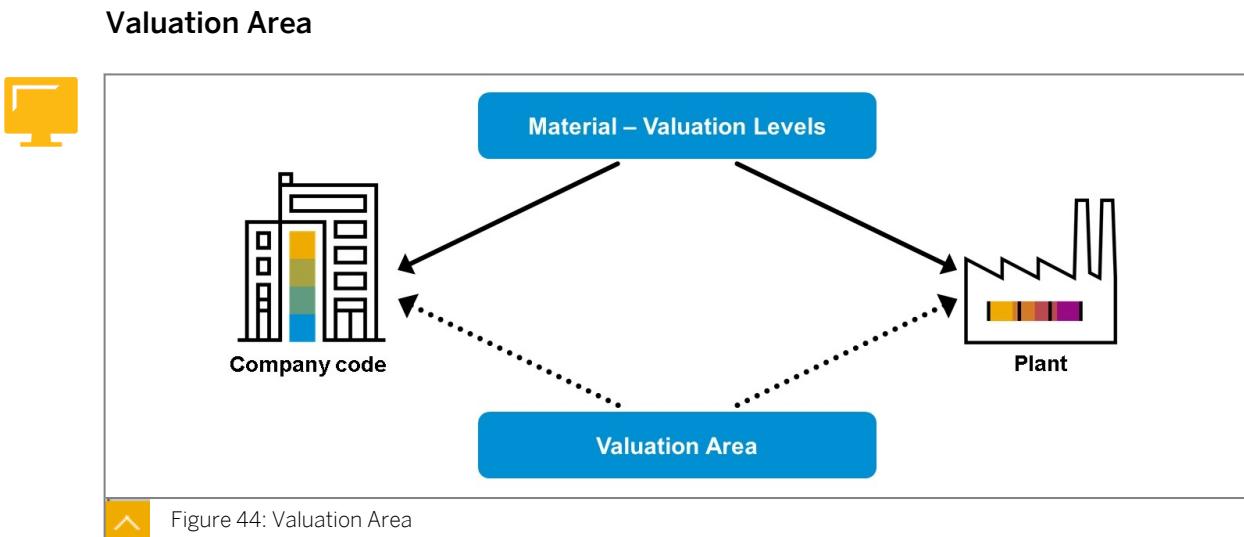
You can assign a purchasing organization to a company code. However, you can also work with purchasing organizations for which you have not assigned any company code (for example, centralized purchasing). Purchasing organizations can be responsible for one or more plants.

- For sales organization:

Sales organizations always have to be assigned to a company code. Sales organizations can be responsible for one or several plants. A sales organization, a distribution channel, and a division constitute a sales area.

- For valuation level:

The valuation level for material valuation, the so-called valuation area, can be the plant or the company code.



A valuation area is an organizational unit within Logistics that subdivides a company for the purpose of uniform and complete valuation of material stocks.

You define the valuation area by specifying the level at which the system valuates the stocks of materials. This specification applies to the entire client.

**The valuation area can be defined in the following ways:**

- Option 1: Valuation area = company code.

The valuation data of a material is created for each company code. Price control and the price of a material apply per company code. You have to, therefore, valuate the same material consistently in all plants of a company code.

- Option 2: Valuation area = plant.

The valuation data of a material is created for each plant. Price control and the price of a material apply per plant. You can, therefore, valuate the same material differently per plant.

In a production system, you cannot switch the valuation area from plant to company code or vice versa.

## Organizational Levels for Materials Management and Accounting

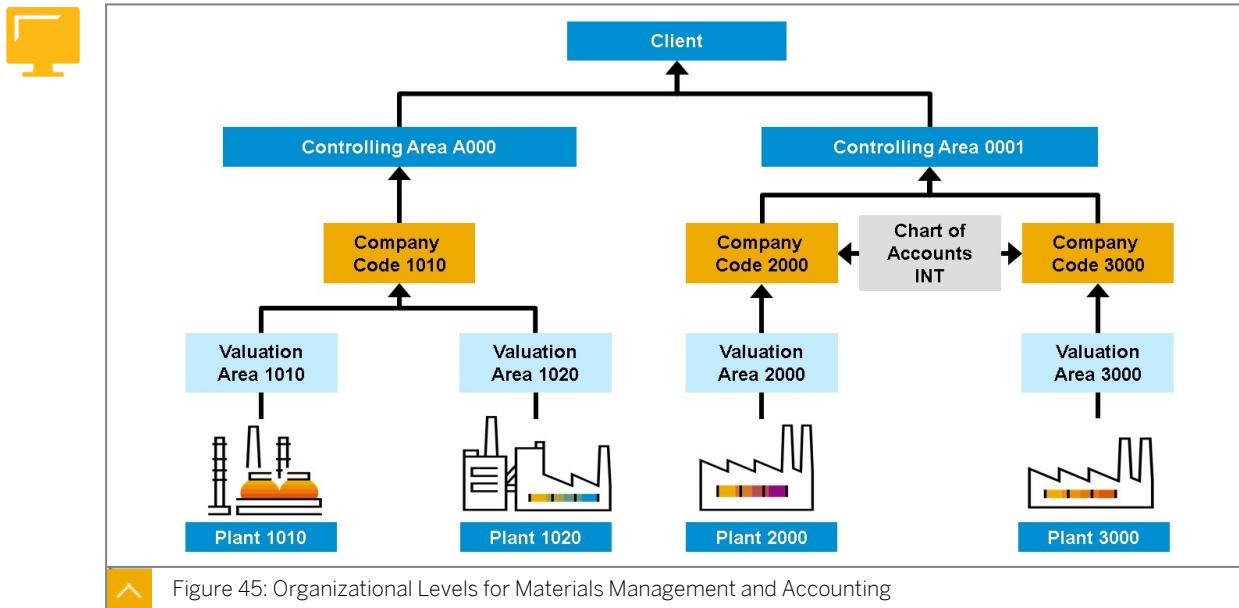


Figure 45: Organizational Levels for Materials Management and Accounting

SAP S/4HANA differentiates between various organizational units that have special significance within the relevant application.

Controlling areas are defined in Controlling. Company codes using the same chart of accounts can be assigned to a controlling area. To do this, in Customizing, go to *Enterprise Structure → Assignment → Controlling → Assign company code to controlling area*.

The system evaluates materials at plant level or company code level. The figure shows valuation at plant level as recommended by SAP. The valuation area keys thus correspond to the plant keys.

For product costing and production planning, a separate valuation area for each plant is mandatory.

The value-based inventory management of materials always takes place at the level of the valuation area.



### Hint:

In addition, partial stocks of a material can be valued separately (for example, the system can value stocks of a material produced in-house at a different price than externally procured stocks). You can do this using a valuation category and different valuation types.

## Creation of a New Plant

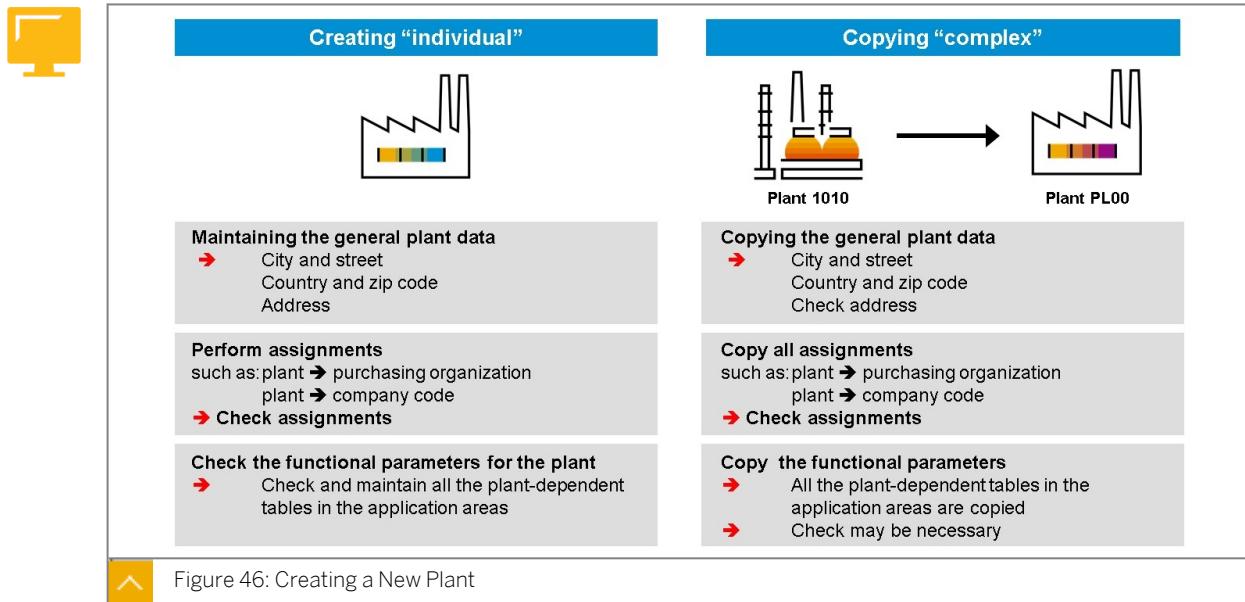


Figure 46: Creating a New Plant

The system has extended functions for setting up a (new) plant in Customizing under *Enterprise Structure* → *Definition* → *Logistics - General* → *Define, copy, delete, check plant* (EC02). The system uses these functions to process the entry in the plant table and all dependent Customizing tables and system tables in which the plant appears as a key.

The option of copying organizational objects to create complex organizational units, such as *Company Code*, *Sales Organization*, and *Plant*, reduces the work load in maintaining new objects in Customizing.

## Definition of a Plant

Plant	1400
Name 1	Stuttgart
Name 2	Stuttgart
<b>Detailed information</b>	
Language Key	EN English
Street and House No.	Sandweg 22
PO Box	
Postal Code	70199
City	Stuttgart
Country Key	DE Germany
Region	08 Baden-Wuerttemberg
County Code	
City code	
Tax Jurisdiction	
Factory Calendar	01 Germany (Standard)

Note: The address fields Name1 and Name2 are not copied from the address screen and you must maintain them separately.  
All other addr. data can only be maintained in addr. screen.  
The changes can only be seen in the overview and detail view after they have been saved.

Figure 47: Definition of a Plant

The figure, from the Implementation Guide, displays the details of the definition of a plant. You can enter or change the data in the middle block only through maintenance of the plant address.

### The Plant Address Data



Name			
Title	Company		
Name	Plant Stuttgart		
	Stuttgart		
			
Search Terms			
Search term 1/2		STUTTGART	STUTTGART
Street Address			
Street/House number	Sandweg	22	
Postal Code/City	70199	Stuttgart	
Country	DE	Germany	Region 08 Baden-Wuerttem...
Time zone	CET		
PO Box Address			
PO Box			
Postal Code			
Company Postal Code			
Communication			
Language	EN English	Other Communication...	
Telephone	4098923	Extension	1234 
Mobile Phone	040-1243		
Fax		Extension	
E-Mail	noreply@sap.com 		
Standard Method			
Comments			
 Figure 48: Plant Address Data			

The data that you can maintain with the address tool is shown in the figure from the Implementation Guide. The two fields *Search term 1/2* enable you to store suitable information for quickly accessing (any) addresses for different applications.

## Definition of Storage Locations for a Plant

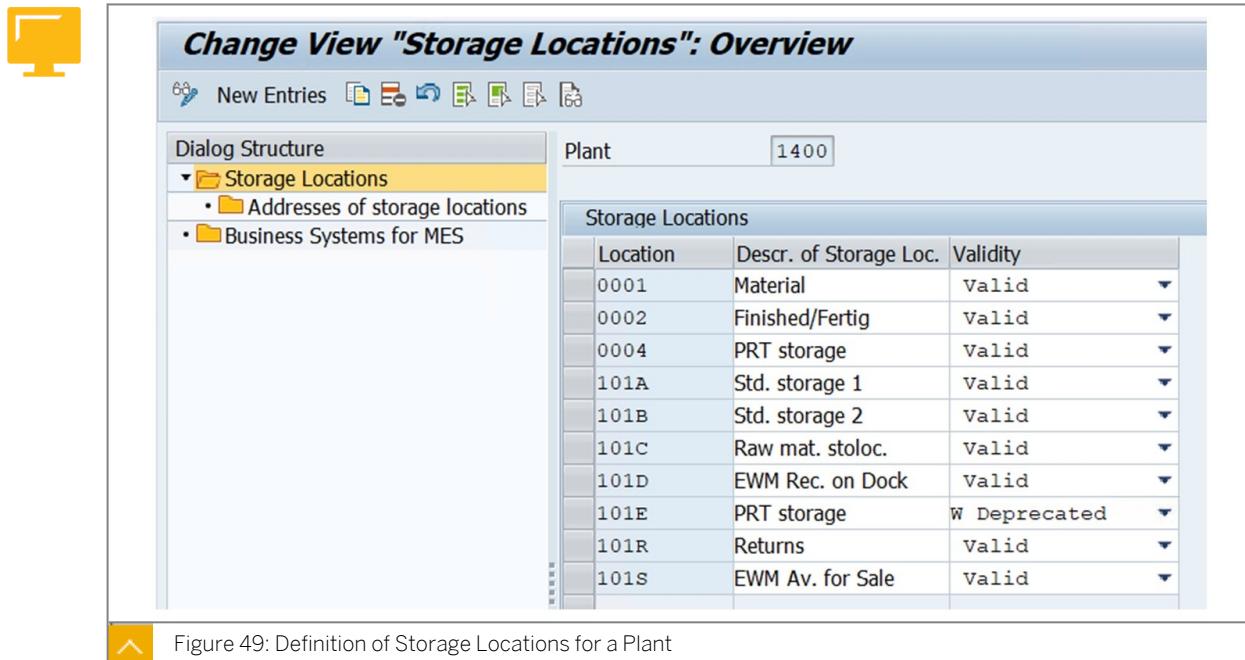


Figure 49: Definition of Storage Locations for a Plant

The figure, from the Implementation Guide, displays the definition of storage locations with the option of maintaining your own storage location addresses.

Additionally, you can specify the validity of the storage location. You have the following options:

- *Valid*: The entry is valid and is displayed in input help. The user can select this valid entry.
- *Deprecated*: The entry will no longer be used in the future but is still displayed in input help. The system displays a warning if the user selects this entry in input help.
- *No longer valid*: The entry is invalid and is no longer displayed in input help.

### Extended functions to process organizational units:

- Copy
- Delete
- Check
- Generate a view for the specific activities within a customizing project

These functions enable you to maintain plant-dependent table entries in addition to the general plant data like the plant key, description, address, country, language, and factory calendar.



#### Hint:

If you want to see the plant-dependent tables, execute transaction EC02. Choose *Extras → Associated Tables*.

## Customizing Project

When you click on the icon  within the activity *Define, copy, delete, check plant*, you can generate a new project view which you have to assign to an existing Customizing project.

This view contains all customizing activities which have plant-specific settings.

The check plant function is carried out in two steps:

1. In the first step, the system checks whether the entry exists in all tables in which the table key contains the specified organizational unit.
2. In the second step, the system checks whether the specified entry also exists in the dependent tables for which validation is carried out against the table key.

Among other things, the organizational unit plant is used as a key in the table containing the plant parameters for inventory management. This table is checked to determine whether an entry exists for the plant being checked. For each material type, you can specify per valuation area whether the material master records of this material type are to be updated on a quantity basis (stock materials) or also on a value basis (valuated materials). These details are similarly to be found in a table with the organizational unit plant as the table key. This table also contains the table key material type. The program not only checks whether this table contains entries for the plant being checked, but also whether all material types used (still) exist.

## Material Ledger

In SAP S/4HANA, usage of the *Material Ledger* is mandatory. The material ledger is a tool that collects transaction data for materials. It uses this data to calculate prices for the material valuation. It enables material inventories to be valued in multiple currencies and allows the use of different valuation approaches.

After creating a new plant you have to check if the material ledger is active for the new plant. To do this, choose *IMG → Controlling → Product Cost Controlling → Actual Costing / Material Ledger → Activate Material Ledger for Valuation Areas*.

After Activating the Material Ledger you have to set the valuation area as productive. On the SAP Easy Access screen, choose *Logistics → Materials Management → Valuation → Actual Costing / Material Ledger → Environment → Production Startup → Set Valuation Areas as Productive*.



## LESSON SUMMARY

You should now be able to:

- Define and assign a plant

## Learning Assessment

1. How are organizational levels in a company structured from the top down?

*Choose the correct answer.*

- A Company Code — Client — Plant — Storage Location
- B Client — Plant — Company Code — Storage Location
- C Client — Company Code — Plant — Storage Location
- D Plant — Client — Company Code — Storage Location

2. Which of the following options can you specify per company code?

*Choose the correct answers.*

- A Chart of accounts
- B Order currency
- C Local currency
- D Divisions

3. Which of the following assignments is mandatory for creating purchase orders?

*Choose the correct answer.*

- A Company Code - Purchasing Organization
- B Reference Purchasing Organization - Purchasing Organization
- C Plant - Purchasing Organization
- D Standard Purchasing Organization - Plant

4. A purchasing organization can be assigned only to one company code.

*Determine whether this statement is true or false.*

- True
- False

5. A purchasing organization can only be responsible for plants of one company code.

*Determine whether this statement is true or false.*

- True  
 False

6. The key of a storage location is unique within which organizational unit?

*Choose the correct answer.*

- A Client  
 B Company Code  
 C Plant  
 D Purchasing Organization

7. For which processes do you need a standard purchasing organization?

*Choose the correct answers.*

- A Subcontracting  
 B Consignment  
 C Third Party  
 D Pipeline

8. On which organizational level do you define purchasing groups?

*Choose the correct answer.*

- A Company code  
 B Plant  
 C Client  
 D Purchasing organization

9. Which of the following functions are executed at the storage location level?

*Choose the correct answer.*

- A Forecasting
- B Physical inventory
- C Capacity planning
- D Maintenance planning

10. A plant can be assigned to several company codes.

*Determine whether this statement is true or false.*

- True
- False

11. Which of the following can you define as valuation levels?

*Choose the correct answers.*

- A Client
- B Plant
- C Company code
- D Storage location

12. Which of the following functions can be executed at plant level?

*Choose the correct answers.*

- A Quantity-based inventory management
- B Value-based inventory management
- C Materials requirement planning
- D Invoice verification

## Learning Assessment - Answers

1. How are organizational levels in a company structured from the top down?

*Choose the correct answer.*

- A Company Code — Client — Plant — Storage Location
- B Client — Plant — Company Code — Storage Location
- C Client — Company Code — Plant — Storage Location
- D Plant — Client — Company Code — Storage Location

Correct. The correct sequence starts with the client at the top level. Then the company code is underneath, followed by the plant. Last comes the storage.

2. Which of the following options can you specify per company code?

*Choose the correct answers.*

- A Chart of accounts
- B Order currency
- C Local currency
- D Divisions

Correct. A company code has a chart of accounts and a local currency. The other options listed are not company code specific in SAP S/4HANA.

3. Which of the following assignments is mandatory for creating purchase orders?

*Choose the correct answer.*

- A Company Code - Purchasing Organization
- B Reference Purchasing Organization - Purchasing Organization
- C Plant - Purchasing Organization
- D Standard Purchasing Organization - Plant

Correct. It is not mandatory to assign your purchasing organizations to company codes, but they do need to be assigned to the plants for which they are responsible. Using a standard purchasing organization for a plant is possible but not mandatory for creating purchase orders. The same applies to the use of a reference purchasing organization. This is also an optional configuration option.

4. A purchasing organization can be assigned only to one company code.

*Determine whether this statement is true or false.*

- True
- False

Correct. A purchasing organization can be assigned only to one company code.

5. A purchasing organization can only be responsible for plants of one company code.

*Determine whether this statement is true or false.*

- True
- False

Correct. A purchasing organization which is not assigned to a company code can be responsible for plants of several company codes.

6. The key of a storage location is unique within which organizational unit?

*Choose the correct answer.*

- A Client
- B Company Code
- C Plant
- D Purchasing Organization

Correct. The key of a storage location is unique within plant organizational unit.

7. For which processes do you need a standard purchasing organization?

*Choose the correct answers.*

A Subcontracting

B Consignment

C Third Party

D Pipeline

Correct. Consignment and pipeline require a standard purchasing organization. Subcontracting and third party don't.

8. On which organizational level do you define purchasing groups?

*Choose the correct answer.*

A Company code

B Plant

C Client

D Purchasing organization

Correct. Purchasing groups are not assigned to any specific organizational element in the organizational structure. This means that the purchasing groups themselves are created on client level.

9. Which of the following functions are executed at the storage location level?

*Choose the correct answer.*

A Forecasting

B Physical inventory

C Capacity planning

D Maintenance planning

Correct. Physical inventory is the only function mentioned here that is executed at storage location level. Forecasting and maintenance planning are executed at plant level while capacity planning is per work center.

10. A plant can be assigned to several company codes.

*Determine whether this statement is true or false.*

True

False

This statement is false. Each plant can be assigned to only one company code.

11. Which of the following can you define as valuation levels?

*Choose the correct answers.*

A Client

B Plant

C Company code

D Storage location

Correct. Either plant or company code can be chosen as the valuation level.

12. Which of the following functions can be executed at plant level?

*Choose the correct answers.*

A Quantity-based inventory management

B Value-based inventory management

C Materials requirement planning

D Invoice verification

Correct. Quantity-based inventory management is executed at storage location level. Value-based inventory management and materials requirement planning are the correct answers because they can be executed at plant level. Invoice verification is executed at company code level.



**Lesson 1**

Maintaining Business Partner Master Data

77

**Lesson 2**

Maintaining Material Master Data

83

**Lesson 3**

Maintaining Purchasing Info Record

93

**Lesson 4**

Analyzing Material Valuation

101

**UNIT OBJECTIVES**

- Describe the concept of the business partner
- Maintain a supplier master record
- Explain the structure of the material master
- Maintain the material master record
- Work with material valuation data
- Maintain a purchasing information record
- Apply conditions in purchasing
- Explain the FI postings for a goods receipt for PO



# Maintaining Business Partner Master Data



## LESSON OBJECTIVES

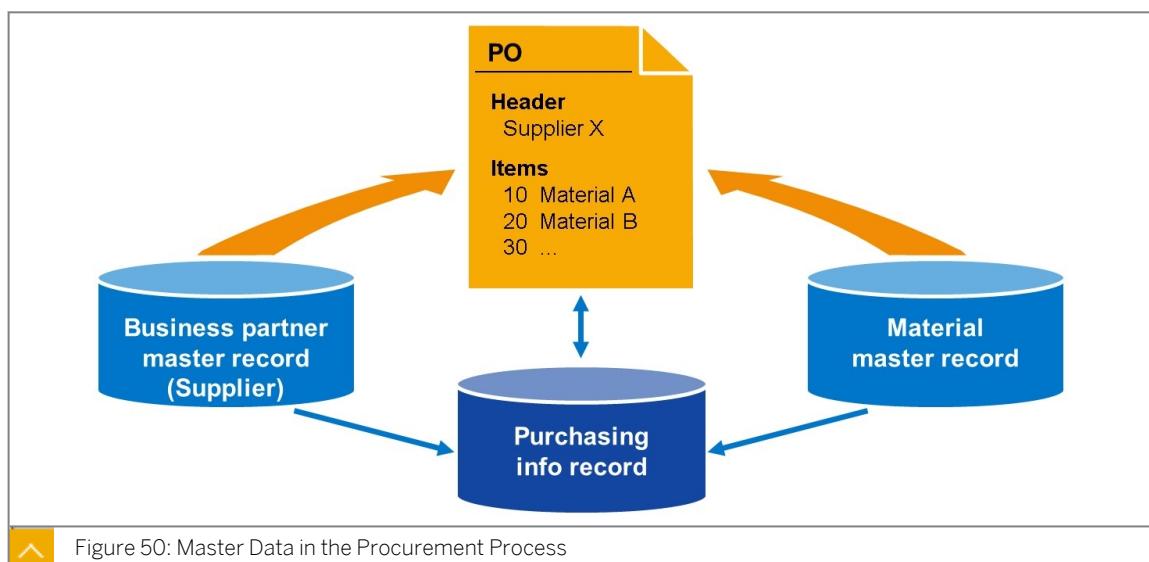
After completing this lesson, you will be able to:

- Describe the concept of the business partner
- Maintain a supplier master record

## Master Data in the Procurement Process

Master data comprises data records that are stored in the database for a long period of time. These data records are stored centrally, and are used and processed on a cross-application basis. This avoids the multiple storage (redundancy) of data.

The business partner master data (supplier), the material master data, and the purchasing info record belong to the most important master data in the procurement process.

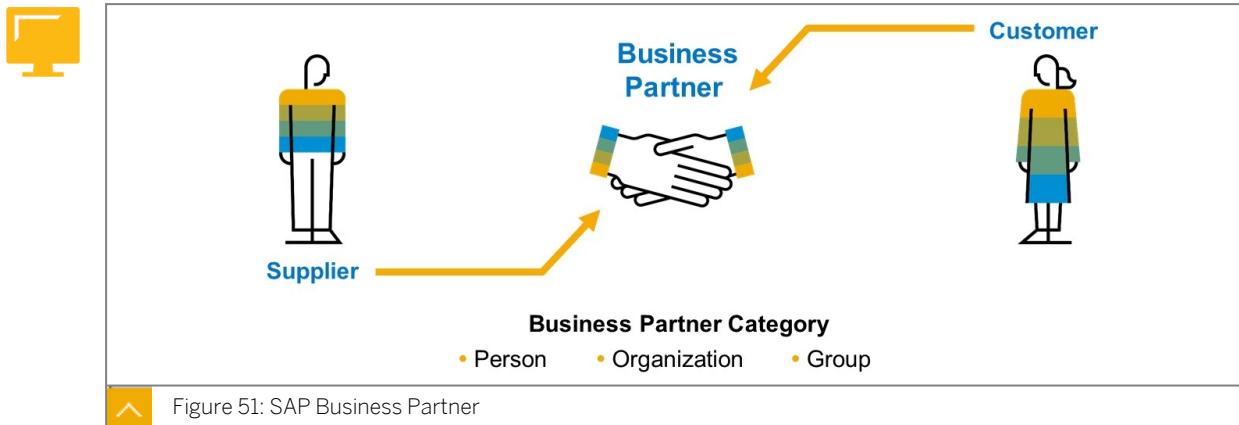


When a purchasing document is created, data is transferred by default from existing master records to the purchasing document. This reduces the effort required to enter the data. Data such as quantity unit, material short text, and purchase order text are copied from the material master into the new document. The supplier address and data for payment processing are transferred from the supplier master record. Supplier-specific data for a certain material, such as delivery time and price, can be taken from the purchasing info record.

## Concept of the Business Partner

The master data of suppliers and customers is managed in SAP S/4HANA by using business partner (BP) master data. By using this approach, it is possible to centrally maintain the master data for suppliers and customers (in SAP ERP they have been handled separately).

Business partner master data can be maintained with transaction BP or by using a corresponding app from the SAP Fiori launchpad.

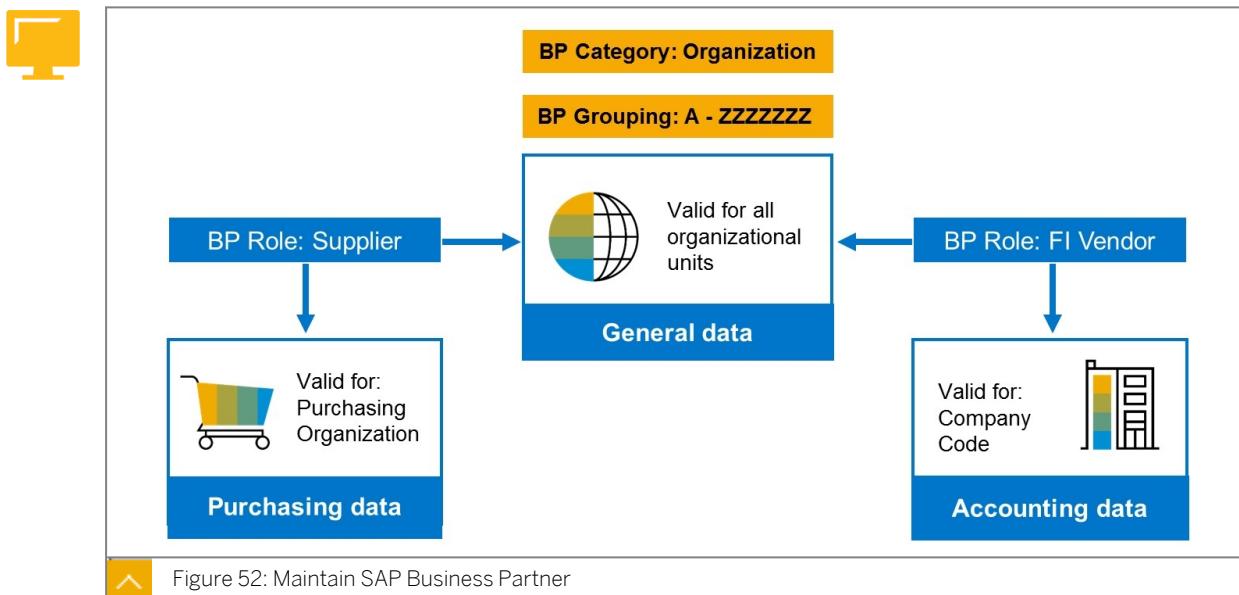


When a business partner is created, the business partner category must be selected. The business partner category is the term used to classify a business partner as one of the following:

- A natural person (for example, a private individual or an employee)
- A group (for example, a community of heirs)
- An organization (legal entity or part of a legal entity, such as a company or a department of a company)

The business partner category determines which fields are available for data entry. Assignment of the business partner category is static and cannot be changed once the business partner has been created.

### Maintain SAP Business Partner



The link between a business partner and other components is achieved by a role concept. A business partner role corresponds to a business context in which a business partner can appear. Possible roles are, for example, supplier and FI vendor (relevant for procurement processes) or customer and FI customer (relevant for sales processes). This ensures that the

relevant master data for the various processes can be recorded correspondingly, and that the business partner can be used for the relevant functions (such as procure-from party).

The business partner data that is relevant for suppliers (business partner roles supplier and FI vendor) is subdivided into the following categories:

- General data:

General data is valid for a single client. General data includes data such as the vendor's address, control data, bank details, and contact persons.

- Accounting data:

Accounting data is maintained at the company code level. This data includes the number of the reconciliation account, information for correspondence and withholding tax, and the payment methods for automatic payment transactions.

- Purchasing data:

Purchasing data is maintained for each purchasing organization. Purchasing data includes data such as the purchase order currency, Incoterms, partner roles, purchasing data, and various controls pertaining to the supplier. You can also maintain different data for specific plants or for vendor subranges.

### **Business Partner: Customer/Vendor Integration**

The accounts payable accounting department uses the SAP Business Partner to manage the supplier master records. Technically, this subledger uses its own vendor master records, which are integrated in all accounting transactions, such as creating business transactions on accounts and processing posting data. Therefore, we require business partners that are managed as vendors in Financial Accounting, and as business partners in other applications, to exist synchronously.

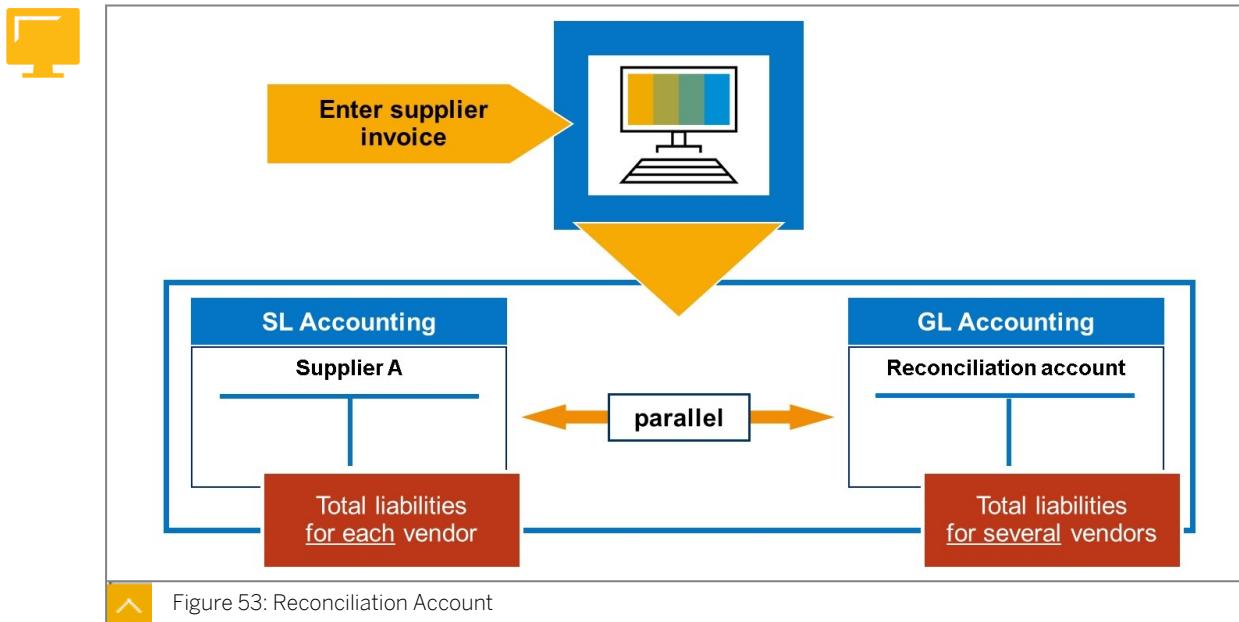
The customer/vendor integration takes place in the background while the system processes the business partner master data. When you create or change a business partner, the system creates or changes all required fields in the vendor account, according to the information in the business partner. The vendor master record is linked to the business partner according to the settings made for synchronization control and Vendor Integration in Customizing.

In Customizing, you assign account groups for the vendor master records to the business partner groupings, to ensure that the system updates the vendor at the same time as your process business partners.

### **Reconciliation Account and Partner Functions**

#### **Reconciliation Account**

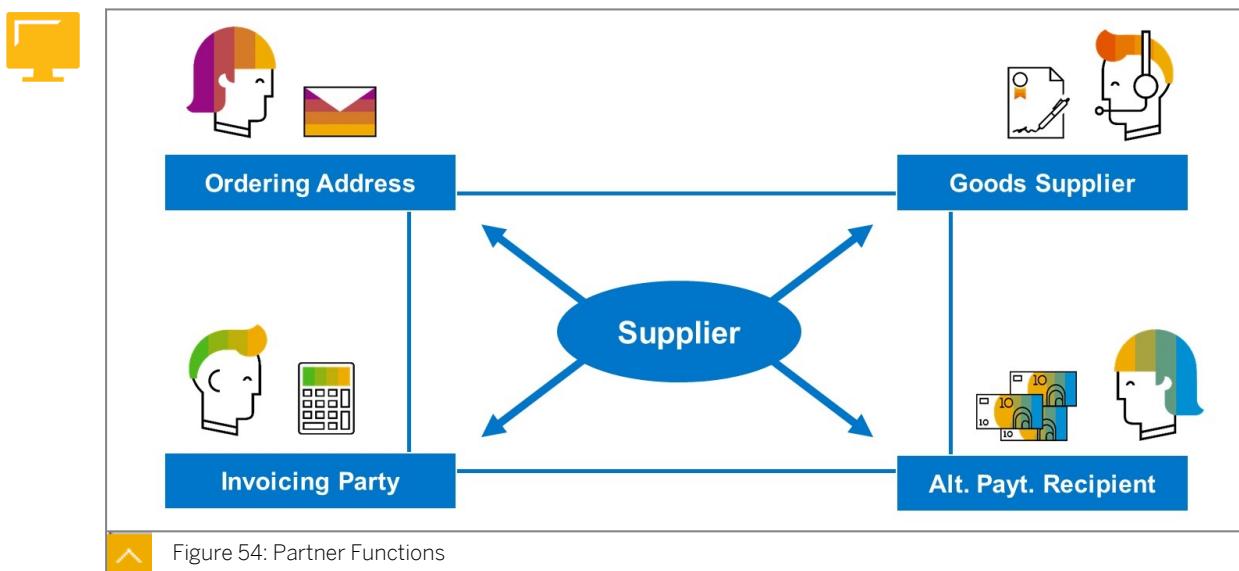
When creating a business partner master record for a supplier, a unique number is required. Depending on the business partner grouping, this is automatically assigned by the system or manually assigned by the administrator. The supplier number is also the subledger (SL) number of the financial accounting. In subledger accounting, the sum of the liabilities per supplier is updated.



You must also maintain a reconciliation account in the company code data of a business partner. This account is a G/L account in the general ledger. A reconciliation account depicts a company's liabilities to several suppliers in general ledger accounting.

When an invoice is posted, the reconciliation account for general ledger accounting is thus determined from the master record of the supplier (invoicing party).

### Partner Functions



The business partner "supplier" has various rights and responsibilities in processing a business transaction. During the procurement process, the supplier is initially the recipient of the order. Then he becomes the supplier of the goods, the invoicing party, and finally the payee.

Not all the different roles within a particular process are necessarily assumed by the same business partner. The different tasks can be performed by different business partners.

Because of this, it is possible to define appropriate partner functions for purchasing in the supplier master record. These partners can then be accepted as proposal values in purchasing documents.

Examples:

- Partner function Invoicing Party:

If you order from Supplier A, the invoice will always be created by the company headquarters C. Company headquarters C is therefore the deviating invoice party for Supplier A.

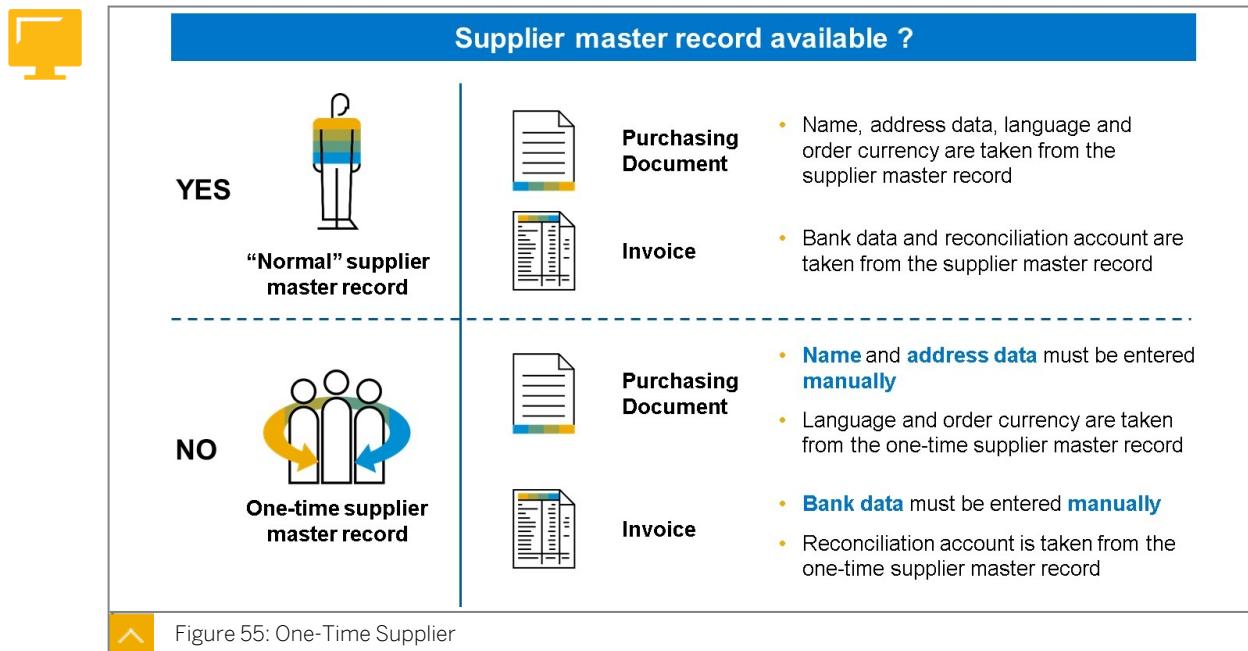
- Partner function Goods Supplier:

If you order from Supplier A, the goods will always be delivered by subsidiary S. Subsidiary S is therefore the deviating supplier of goods for Supplier A.

### Master Data for One-Time Supplier

It is not possible to create a purchasing document or an invoice in the SAP system without a business partner master record.

However, for suppliers who supply the company once or very rarely, it does not make sense to enter their own supplier master records in the system. Therefore, collective accounts are set up for such one-time suppliers. These collective accounts are called Conto per Diverse (CpD) accounts. A special business partner grouping is used to create a CpD supplier master record.



Unlike other supplier master records, no supplier-specific data is stored in the master record for a CpD account because the account is used for several suppliers. In a one-time supplier master record, you can store, for example, the language, purchase order currency, and reconciliation account. You can only enter supplier-specific data, such as the name, address, or bank details, during document entry.



### LESSON SUMMARY

You should now be able to:

- Describe the concept of the business partner

- Maintain a supplier master record

# Unit 4

## Lesson 2

# Maintaining Material Master Data



## LESSON OBJECTIVES

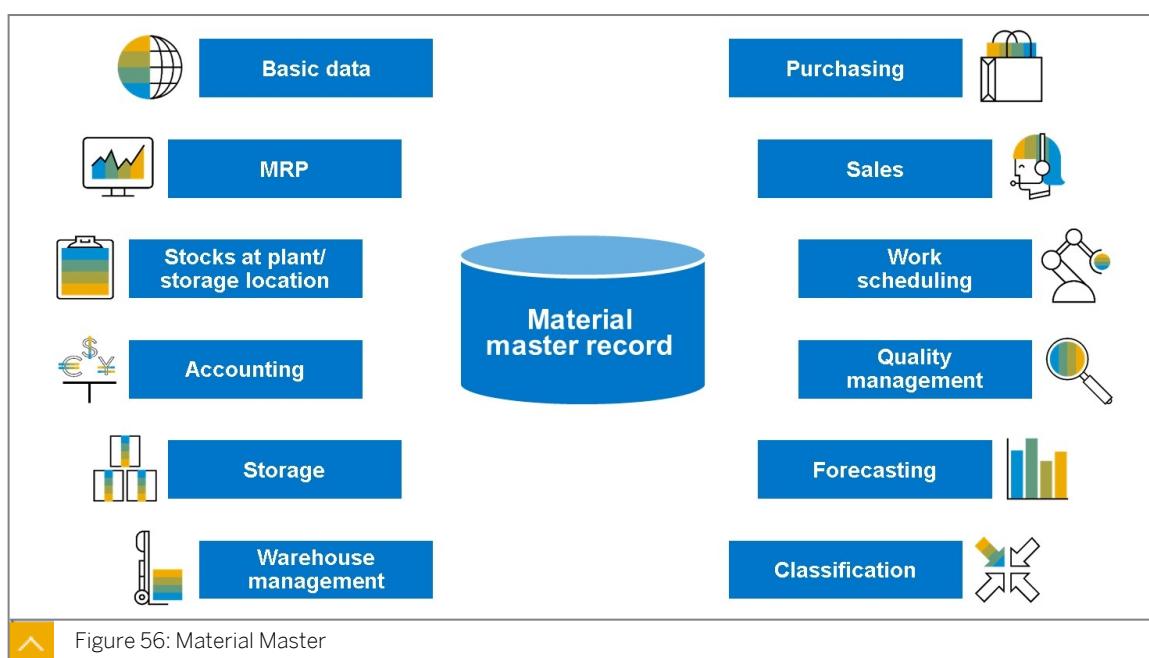
After completing this lesson, you will be able to:

- Explain the structure of the material master
- Maintain the material master record
- Work with material valuation data

## Material Master Structure

### Material Master

The material master record is a company's central source of material-specific data. It is used in all areas of logistics. The integration of all material data in a single database object eliminates the problem of data redundancy. All areas, such as purchasing, inventory management, materials planning, and invoice verification, can jointly use the stored data.



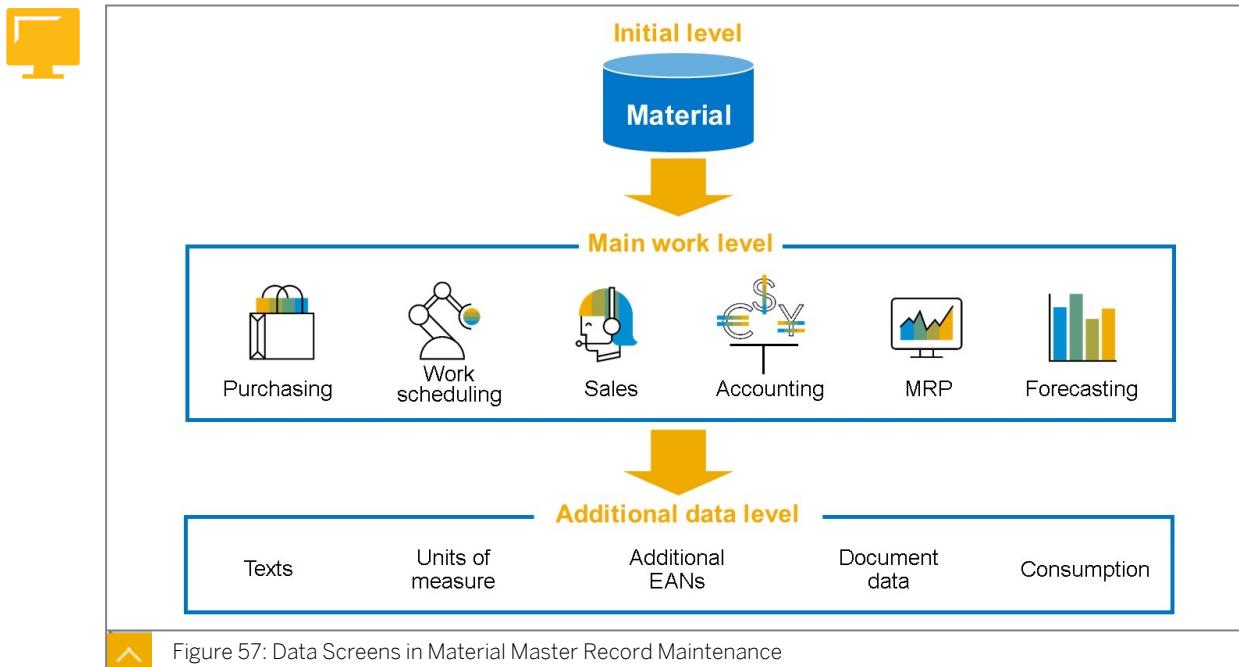
The data stored in the material master is required for many activities, including the following:

- Purchasing data for ordering purposes
- Inventory management data for posting goods movements and physical inventory management

- Accounting data for material valuation
- Material planning data for material requirements planning

Various departments within a company work with material data, and each department stores different information relating to a material. Therefore, the data in the material master record is sorted into individual views reflecting the various departments.

### Data Screens in Material Master Record Maintenance

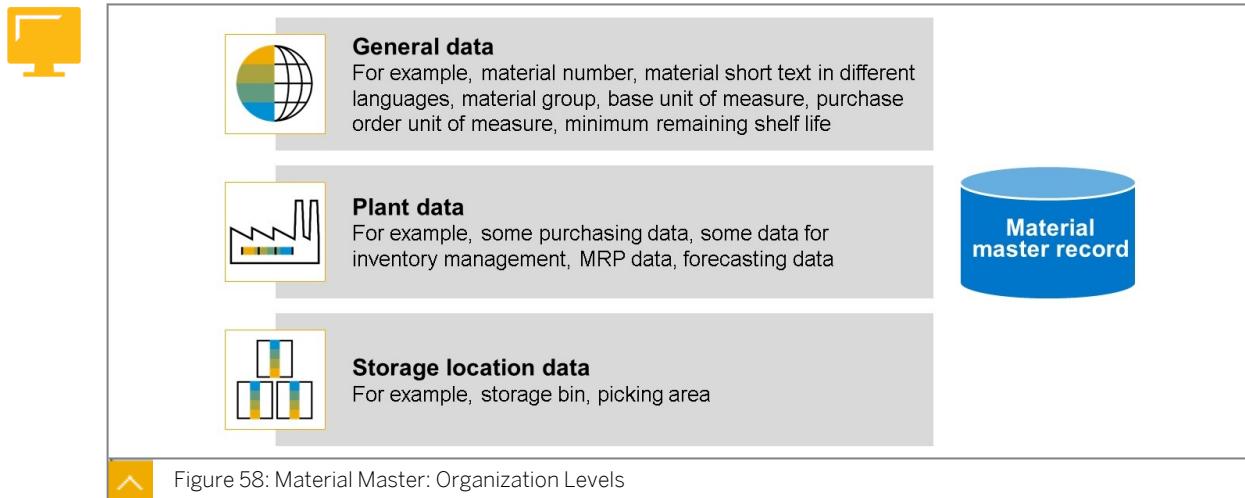


The data screens used to process material master records can be subdivided into the following types:

- **Main data:**  
These are the screens for the individual user departments, such as basic data, materials planning, and so on.
- **Additional data:**  
On these screens you find additional information, such as alternative units of measure, material short descriptions, and consumption values.

The data maintained within a view may be valid for different organizational levels.

## Material Master: Organization Levels



Some material data is valid for all organizational levels, while some is valid for certain levels only. For example, a distinction is made for the following levels:

- Client level:

This level contains the data applicable to all individual group companies, plants, and warehouses or stores belonging to an enterprise (corporate group). Examples of material data that are valid client-wide are the goods group, the short text of a material, and the base unit of measure.

Some of the data for purchasing or inventory management is also maintained at client level. This data includes, for example, the purchase order text, the purchase order unit, the purchasing value key, and specifications for the shelf life expiration date check.

- Plant level:

This level contains the data that you can define for each plant. This includes, for example, some data for purchasing and inventory management, but also data for material valuation or material requirements planning. Examples of plant-specific material data are the purchasing group, the goods receipt processing time, the valuation class, the price control, the MRP type, and the MRP controller.

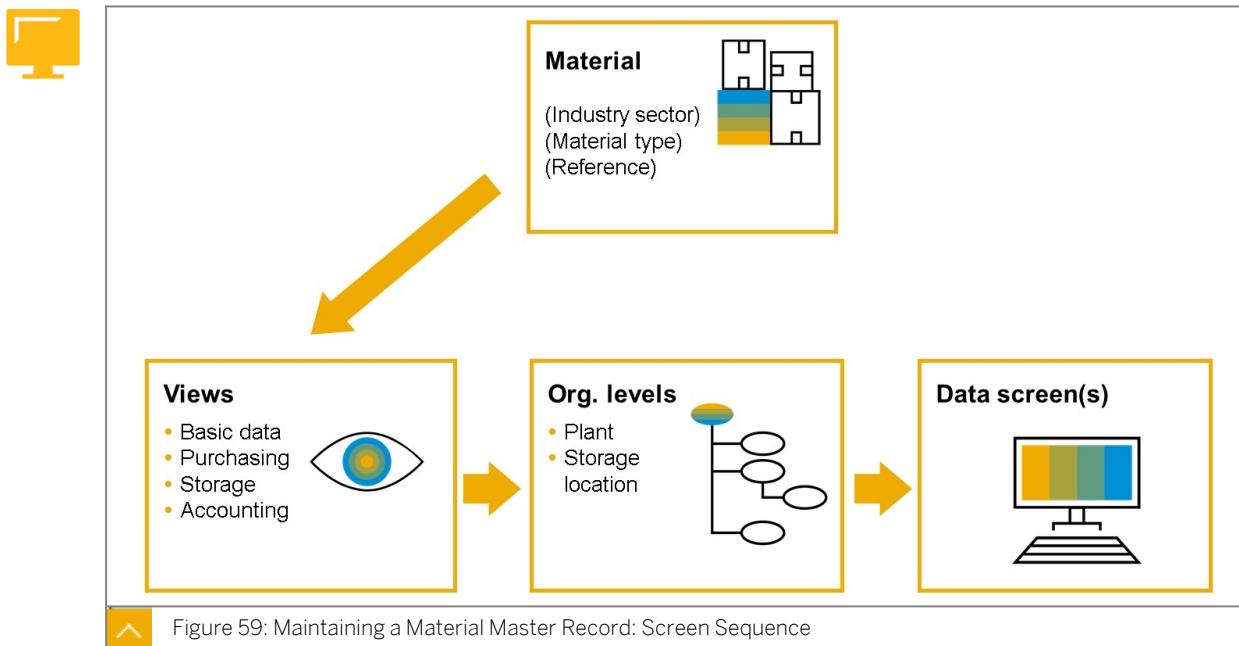
- Storage location level:

All data that is valid for a particular storage location is stored at this level, for example, the storage bin.

The organizational levels mentioned previously are relevant for the external procurement process. Client, plant, and storage location play a role when you enter data for purchasing, inventory management, and accounting. Other organizational levels can be relevant for other departments. For example, the sales and distribution data is entered depending on the sales organization and the distribution channel, and you must specify a warehouse number and storage type for the warehouse management data.

The structuring of material data by user departments and organizational levels is also apparent in material master record maintenance. When processing material master records, you have to pass through several dialog screens before you start to add, change, or display data.

### Maintaining a Material Master Record: Screen Sequence

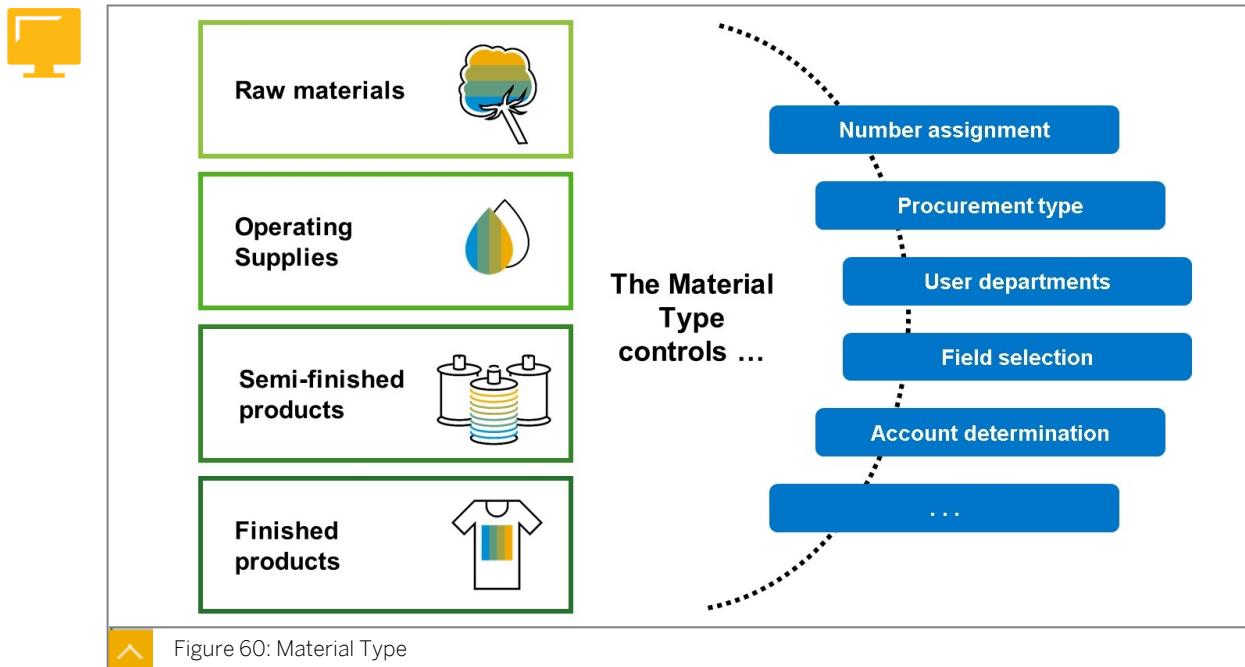


On the initial screen, you see two successive dialog boxes. In the first dialog box, specify the views that you want to process. In the second dialog box, specify the relevant organization levels. Next, you see the data screens. You can influence the default screen sequence by configuring the presettings.

### Creation of a Material Master Record

#### Material Type

When creating a new material master record, you must choose a material type and an industry sector to which to assign the material. Materials with the same properties are assigned to the same material type. Examples of material types are raw materials, semifinished products, and finished products.



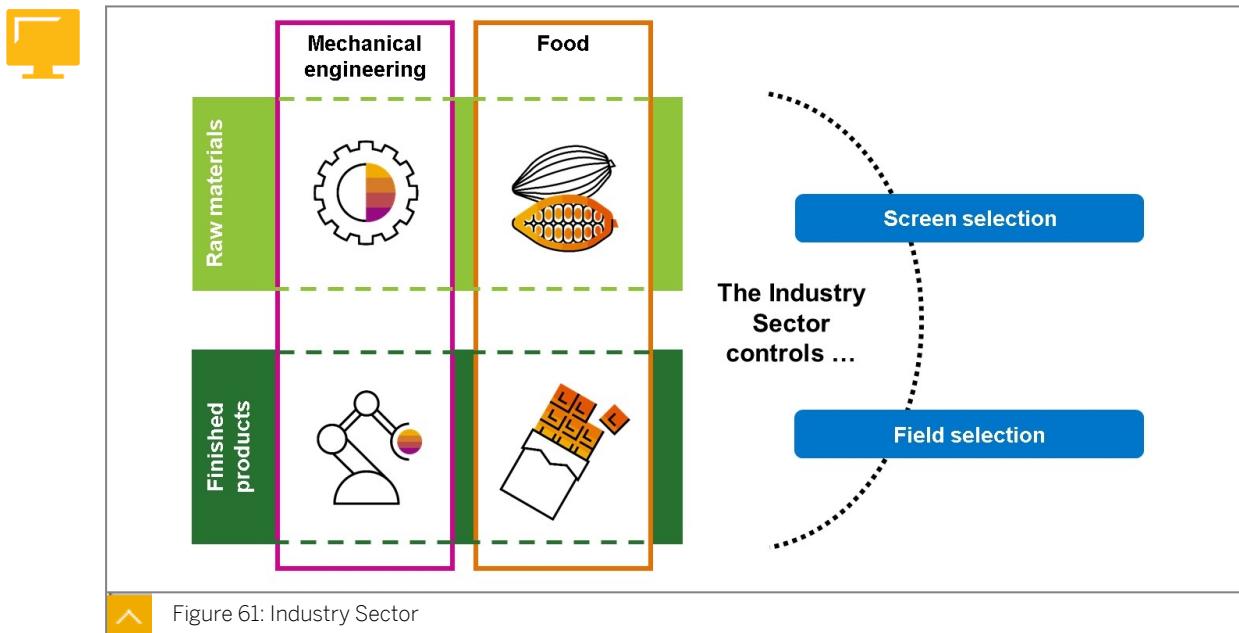
Among other things, the material type controls:

- The type of number assignment (internal or external)
- The permissible number range intervals
- Which user-department-specific is proposed for entry (in views)
- Which procurement type is allowed for a material (that is, whether the material is produced in-house, procured externally, or both)

Along with the plant, the material type controls whether the stock is to be managed on a quantity and/or value basis.

Various types of material are available for use in the standard SAP system. If your company needs more material types, you can define these according to your requirements in Customizing.

## Industry Sector



Like the material type, the industry sector also has a control function. The industry sector you assigned when creating a material master record cannot be changed later.

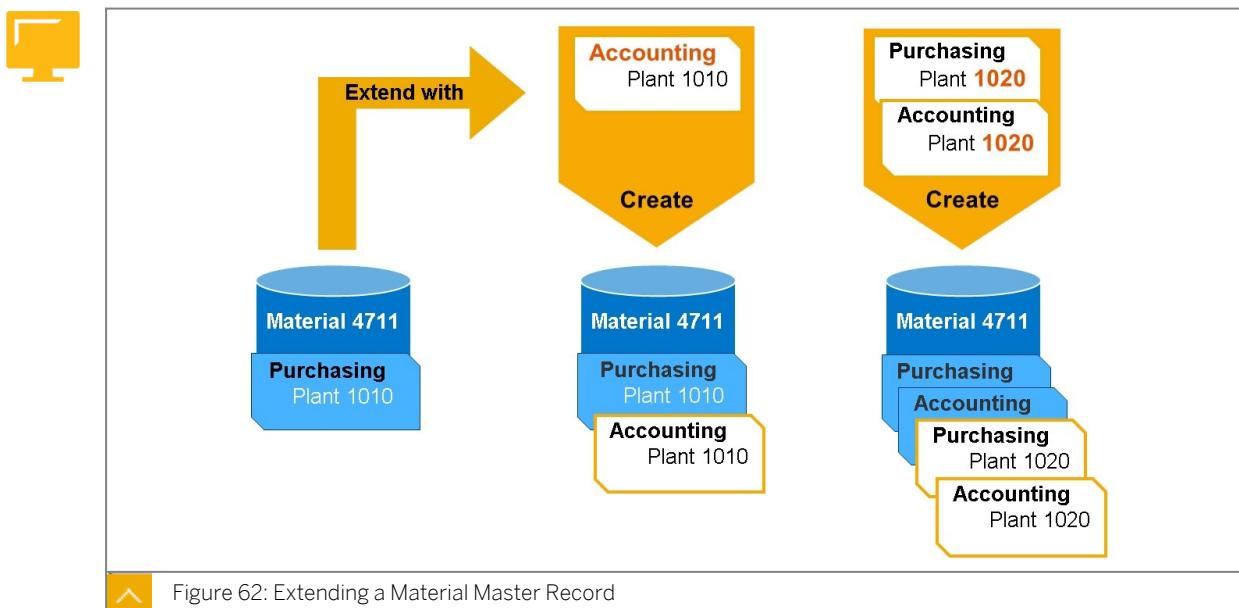
When you create a material master record, the industry sector determines the following:

- Which screens are displayed and in which sequence.
- Which industry-specific fields are displayed on each screen.

In Customizing, you can define new industry sectors to modify screen and field selections according to your company-specific requirements.

## Extension of a Material Master Record

Extending an existing material master record means that data for a further department or a further organizational level is created.



You use the *Create Material Master* transaction to extend a material master record by adding missing views or organizational levels. With the *Change Material* transaction, you can only change the data of views and organizational levels that are already maintained.

Any changes you make to data in a material master record, such as creating or changing, are logged in a change document. This means that you can trace the change history at any time.

## Material Valuation

### Valuation Data in Material Master

Material valuation determines or records the stock value of a material. The following relationship applies to the valuation price, the stock quantity, and the stock value in the material master record:

Stock value = stock quantity x material valuation price

From this formula it follows that the stock value changes when the stock quantity or valuation price changes.

During the valuation of a goods movement, not only the total value (and if necessary, the valuation price) are updated in the material master record, but also the accounts in Financial Accounting. Material Valuation represents a link between Materials Management (MM) and Financial Accounting (FI), since it updates the G/L accounts in Financial Accounting.

Two factors control material valuation:

- System setting (Customizing)
- Material master record

In the material master record, you enter the necessary valuation data for a material in the accounting data. Depending on the valuation area, you must specify either the company code or plant when maintaining the accounting data.



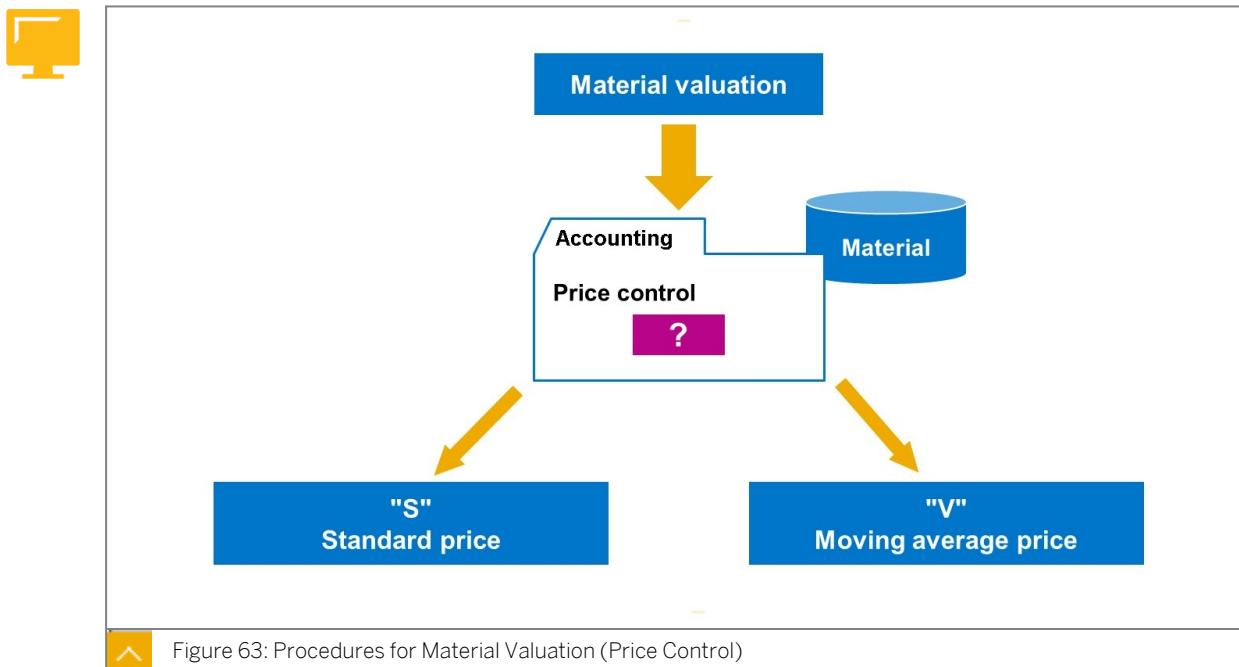
Note:

The valuation area is the organizational level at which material is valued. In Customizing, you can decide whether the valuation area is determined at company code or plant level. Defining the valuation level in Customizing is a fundamental setting, and is difficult to reverse.

When entering the accounting data, you must answer the following questions:

- Is the stock of a material to be valued at a constant price, or should the price be adjusted to match the fluctuations of the cost price?
- In which G/L account should the stock value of this material be managed?

### Procedures for Material Valuation (Price Control)



The price control procedure set in the material master record determines the value used to valuate the goods receipt of a material, and how price variances resulting from goods receipt or invoice receipt are handled. Material valuation can be carried out according to the standard price (S price) or the moving average price (V price).

- Standard price (price control S):

When you valuate with the standard price (price control S), all inventory posting is carried out at the standard price defined in the material master record. If a goods receipt or invoice receipt contains a price that differs from the standard price, this difference is posted to a price difference account. The variance is not considered in stock valuation.

- Moving average price (price control V):

When you valuate with the moving average price (MAP), all goods receipts for PO are valued with the purchase order price (Other goods movements are posted with the current moving average price). A difference between the purchase order price and the invoice price is posted directly to the relevant stock account if there is sufficient stock coverage. This changes the value of the stock and the moving average price of the material. The price in the material master is adjusted to the purchase price.

The system automatically calculates the moving average price as follows: Total stock value / total stock quantity = moving average price.

#### Valuation of Goods Receipt

The Valuation of Goods Receipt figure clarifies both valuation procedures in a simple example.

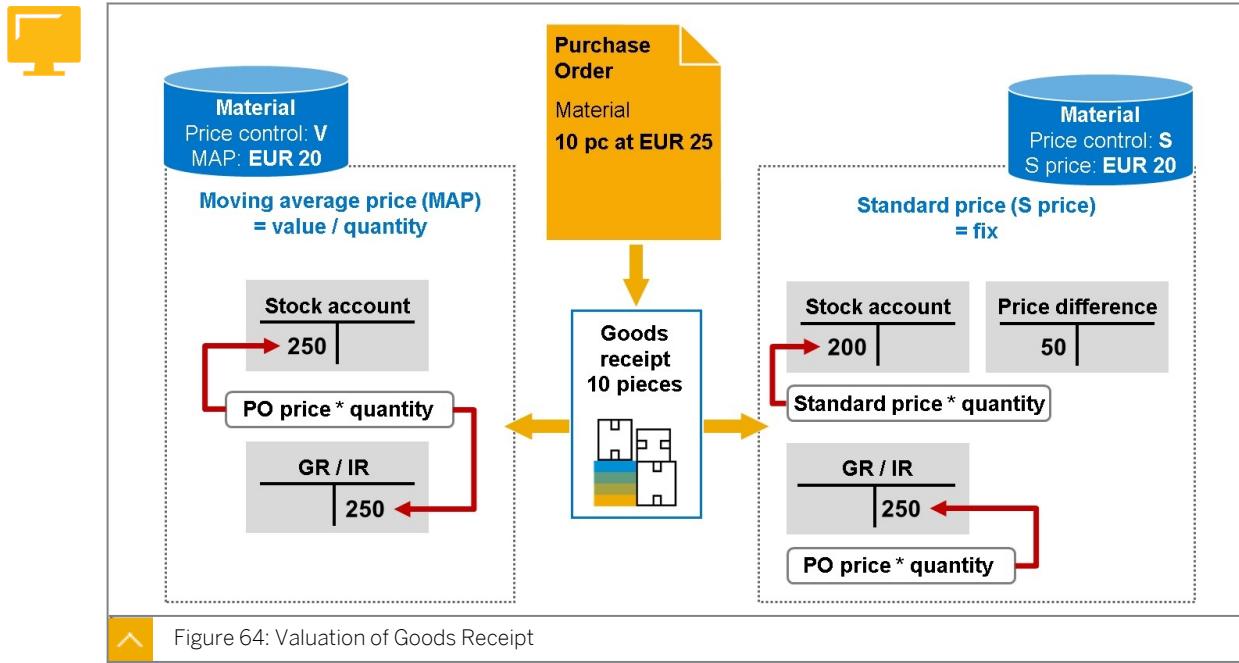


Figure 64: Valuation of Goods Receipt

### Material: Moving average price EUR 20

The goods receipt for a purchase order of 10 pieces at EUR 25 is valued with a procurement price of EUR 25. An amount of 10 at EUR 25 = EUR 250 is posted to the stock account. The offsetting entry for the same amount is posted to the GR/IR clearing account.

### Material: Standard price EUR 20

The goods receipt quantity must be valued with the standard price. The result of the goods receipt for the purchase order of 10 pieces is an amount of 10 at EUR 20 = EUR 200. This amount is posted to the stock account. The difference of EUR 50 from the actual procurement value (10 at EUR 25 = EUR 250) is posted to a price differences expense account. The offsetting entry with an amount of 10 at EUR 25 = EUR 250 is posted to the GR/IR clearing account.

### Valuation Class

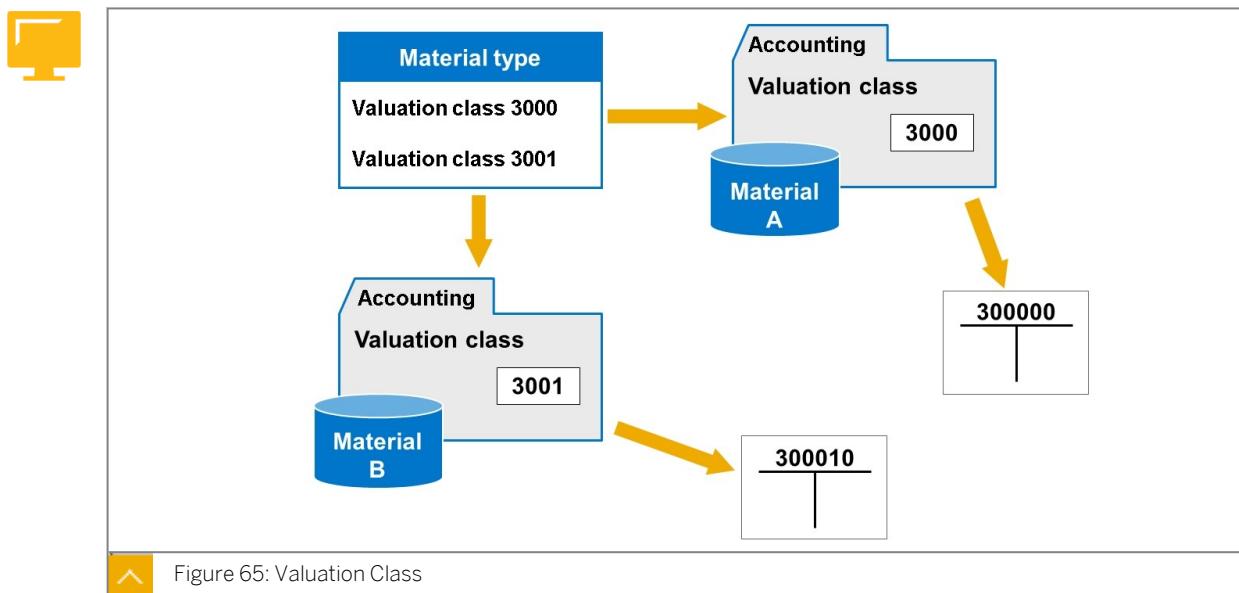


Figure 65: Valuation Class

In automatic account determination, the SAP system works with valuation classes. The valuation class is used to determine which stock account is to be updated during the goods movements of a material.

You can use the valuation class to combine materials for assigning G/L accounts so that you do not have to manage a separate stock account for each material. You maintain the valuation class in the *Accounting* view of the material master record. The valuation classes allowed for a material depends on the material type and can be configured in Customizing. A valuation class can also be assigned to several material types.



### LESSON SUMMARY

You should now be able to:

- Explain the structure of the material master
- Maintain the material master record
- Work with material valuation data

# Unit 4

## Lesson 3

# Maintaining Purchasing Info Record



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Maintain a purchasing information record
- Apply conditions in purchasing

## Info Record Structure

### Purchasing Information Record

The purchasing information record (or info record for short) is part of the master data of the purchasing department. It contains information on a specific material (or material group) and a vendor supplying the material (or products from the material group).

The data stored in the info record is used as default values in documents such as purchase orders.

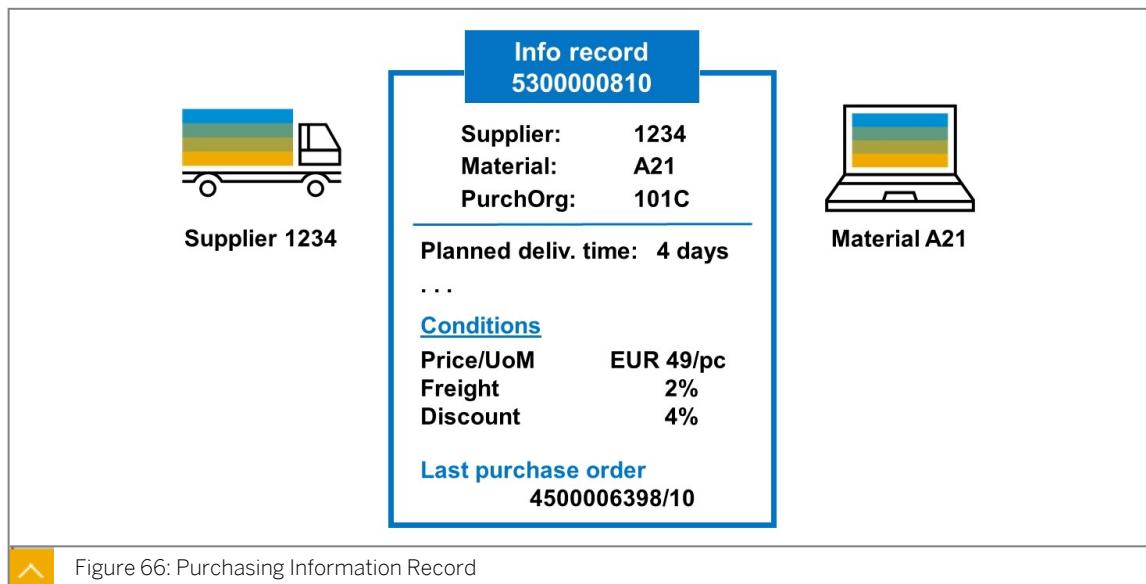


Figure 66: Purchasing Information Record

You can define the following information in the info records:

- Current and future prices and conditions, for example, gross price, freight and discounts.
- Delivery data, for example, planned delivery time or overdelivery and underdelivery tolerances.
- Supplier-specific data about the material such as the supplier subrange to which the material belongs and the supplier's description of the material.

- Number of the last purchase order
- Texts

The following text types are stored in the purchasing info record:

- Info record memo: This is an internal comment that is transferred to the purchase order item. This text is not printed.
- Purchase order text: This text is used to describe the purchase order item. It is transferred to the purchase order item and printed.

The purchasing info record is an important source of information for the buyer.

Info records are relevant for the standard procurement process, but also for the specific procurement processes. The info type of an info record decides for which process the data is used. When you create an info record, you can select one of the following info types:

- Standard
- Subcontracting
- Consignment
- Pipeline

### Purchasing Info Record: Organization Levels



The data for a purchasing info record is divided into general data on client level and purchasing organization-specific data. If necessary, the purchasing-organization-specific data can be maintained at plant level too.

### Info Record Maintenance

#### Options for Maintain Info Record

You have various options for creating a purchasing info record.

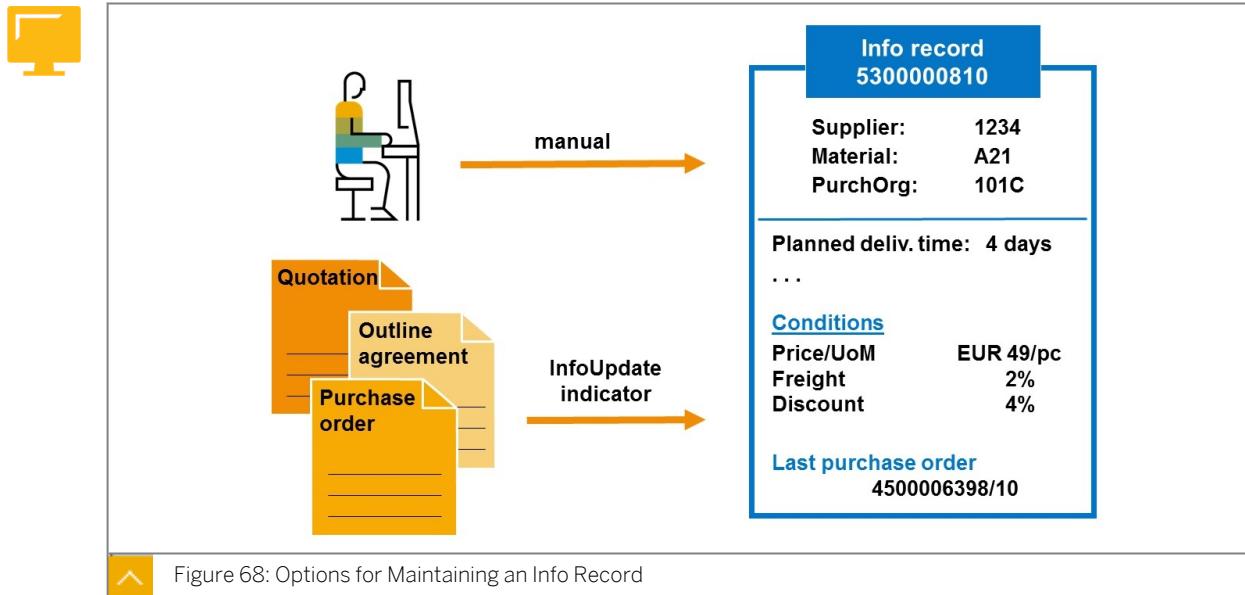


Figure 68: Options for Maintaining an Info Record

You can manually create or change an info record. On the initial screen, you enter a vendor, a material, and the organizational levels you require (purchasing organization or purchasing organization plus plant). On the following data screens, enter the necessary data manually, such as planned delivery time, gross price, and conditions.

Purchasing info records can also be created or updated automatically by selecting the *Info update* indicator when maintaining a purchasing document (purchase order, outline agreement, or quotation).

### Info Record: Automatic Update

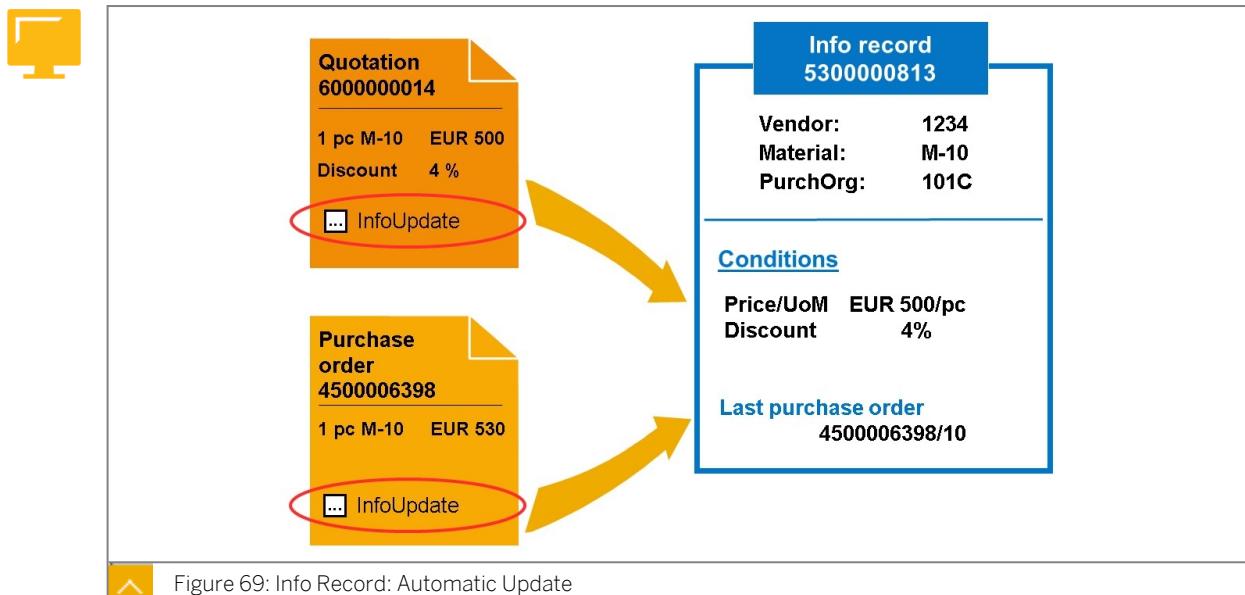


Figure 69: Info Record: Automatic Update

The type of purchasing document determines which updates are triggered by the *Info update* indicator.

From a quotation, the conditions, document number, and item number are transferred to the info record.

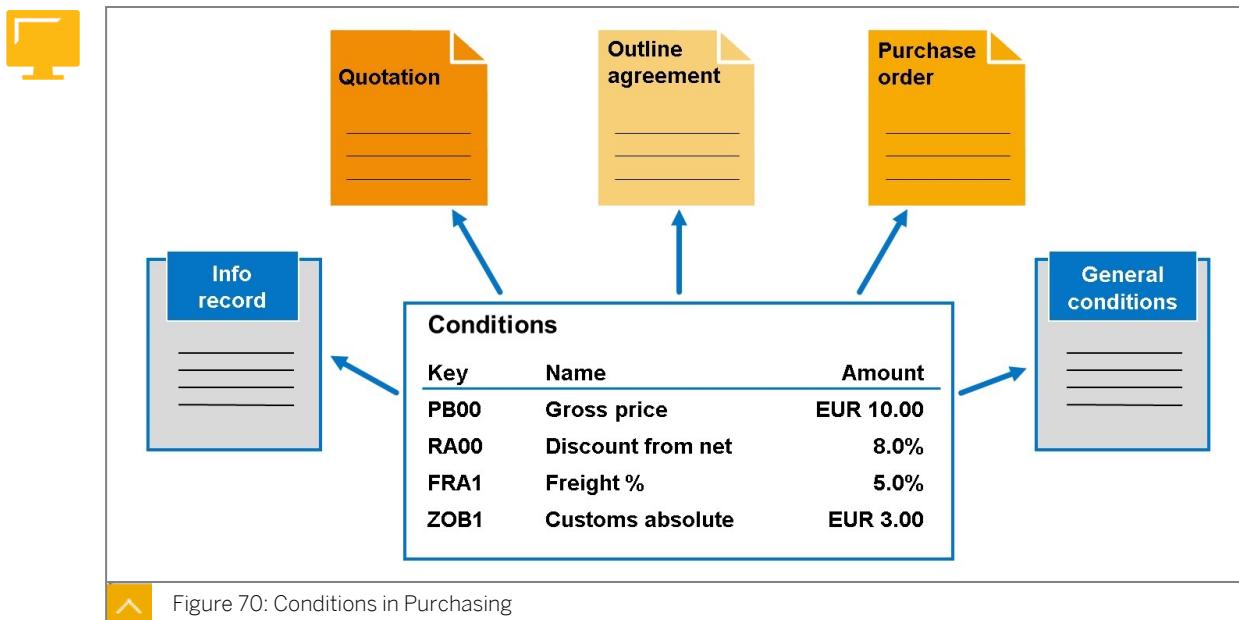
From a purchase order, a contract release order, or a scheduling agreement, the document and item numbers are updated as the last document.

For the contract, it is important to know whether an info record already exists for the vendor-material combination. When you create or change a contract, if no info record exists for the combination of vendor, material, and organizational level, the system creates an info record with the conditions from the contract. If an info record already exists, there are no updates in the info record.

## Purchasing Conditions

### Conditions in Purchasing

Conditions are agreements with suppliers about prices, surcharges and discounts or freight costs.



Conditions can be maintained when entering quotations, info records, outline agreements (contracts, scheduling agreements), and purchase orders. You can also store general conditions at vendor level, for example. The system then uses these conditions for price determination.

Based on the conditions, the net or effective price is calculated in a purchasing document. The following definitions apply:

- **Gross price:** Price without taking any possible discounts and surcharges into account.
- **Net price:** Price taking any applicable discounts and surcharges into account.
- **Effective price:** Net price minus cash discount, and plus neutral provisions, delivery costs and non-deductible taxes.

### Conditions: Time Dependency

There are conditions that are valid for a certain period, and conditions for which no definite validity period can be specified. In the latter case, the validity of the conditions corresponds to that of the purchasing document in question.

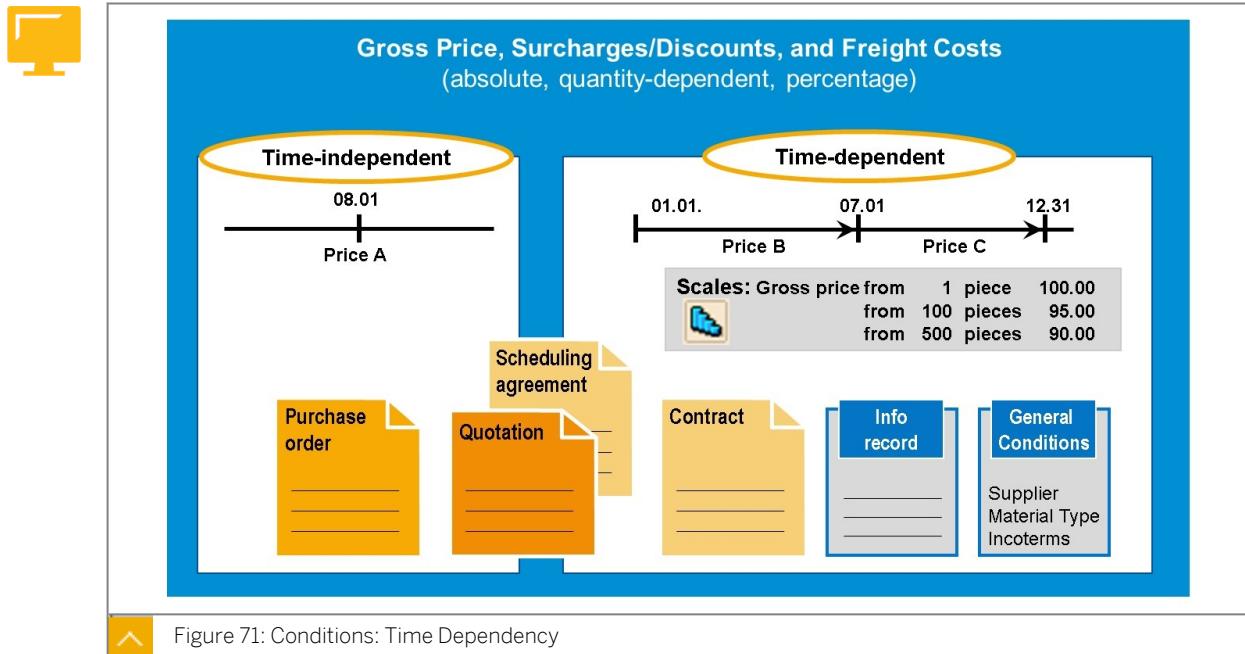


Figure 71: Conditions: Time Dependency

For time-dependent conditions, you can create price scales and map the dependency of the price on the quantity, for example.

Conditions in info records, contracts, and general conditions are time-dependent conditions. However, conditions in purchase orders are always time-independent conditions.

You use the document type to control whether time-dependent conditions are available for quotations and scheduling agreements. In Customizing, you must have set the *Time-dependent conditions* indicator for the particular document type.

You can define both time-dependent and time-independent conditions at header and item levels. Header conditions apply to all items in the document. However, item conditions apply only to the respective item.

### Condition Type and Calculation Schema

The different price factors such as gross price, discounts, freight costs, customs, and taxes are mapped using condition types. The condition type determines how the price factor is calculated. You can choose between absolute, percentage, or quantity-dependent. The condition type is also used to define the reference magnitude for scales. The scale can refer to the quantity, the item value, or the weight.

An access sequence can be assigned to a condition type. The access sequence is a search strategy used to define the sequence in which condition records for a condition type are read.



Step	Counter	Condition type	Description	From	...
1	1	PB00	Gross price		
10	1	RB00	Absolute discount		
...	...	...			...
10	9	ZA01	Surcharge % of gross	1	
...	...	...			...
20	0		Net value including discounts		
...	...	...			...
31	1	FRA1	Freight %	20	
...	...	...			...
35	1	SKTO	Cash discount	20	
40	0		Effective price		

Figure 72: Calculation Schema

The condition types that play a role in price determination are grouped together in a calculation schema. The calculation schema provides a framework for price determination. It determines the sequence in which the condition types are considered and are therefore included in the net or effective price calculation.

Furthermore, the calculation schema determines the following:

- The subtotals



Note:

For time-dependent conditions, no subtotals are formed (net price, effective price).

- The extent to which manual processing of price determination is possible.
- The basis (reference level) on which the system calculates surcharges and discounts in percentages.
- The prerequisites that must be filled so that a condition type is considered.

You can define different calculation schemes (for example, for the individual purchasing organizations or suppliers).

### Price Determination in Purchasing

If you create a purchasing document, the system attempts to find a price for the material to be procured. The system always starts with specific searches and progresses to general searches.

When you create a purchase order, the system searches for an info record for the vendor/material combination at purchasing organization level/plant level. If there is no specific data for the purchasing organization/plant combination, it searches at purchasing organization level. If there is no data at this level either, you must enter the price manually.



Note:

In the purchase order, the valuation price from the material master record is not proposed as the purchase order price.

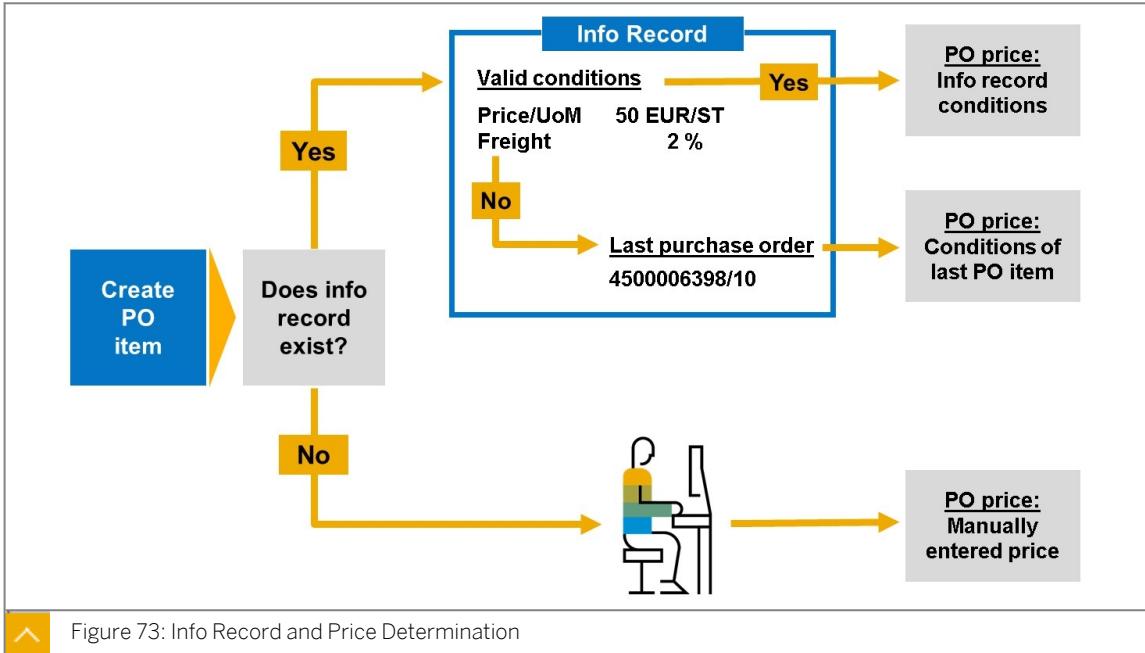


Figure 73: Info Record and Price Determination

If a purchasing info record exists, then valid conditions have priority during price determination. If an info record does not contain any conditions, or only contains invalid conditions, the system reads the number of the last purchasing document in the info record and then proposes the price from this document. The prices determined in this way are default values that can be changed by the buyer, if necessary.



## LESSON SUMMARY

You should now be able to:

- Maintain a purchasing information record
- Apply conditions in purchasing



## Unit 4

### Lesson 4

# Analyzing Material Valuation



#### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Explain the FI postings for a goods receipt for PO

#### Material and Accounting Documents

The purchase order is stored in the SAP system as a document. This document principle is also relevant for inventory management and invoice verification.

#### Documents in Inventory Management

When you post a goods movement (goods receipts, goods issues, or transfer postings) in the SAP system, a material document is created. This material document is generated as proof of a process that has caused a change in stock.

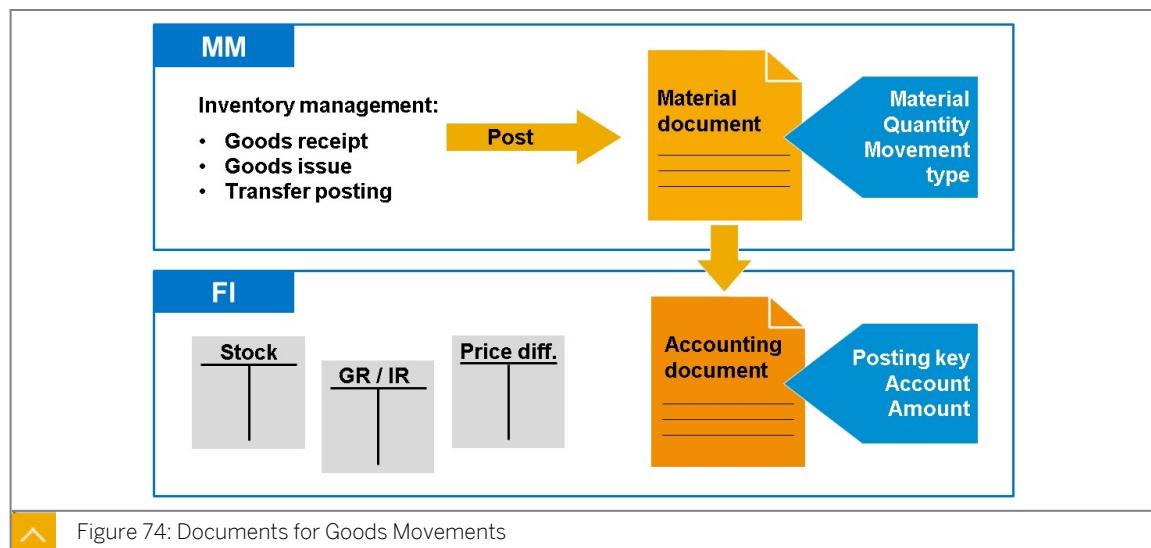


Figure 74: Documents for Goods Movements

If the goods movement is relevant to valuation, the system creates at least one accounting document in addition to the material document.

Goods movements are relevant to valuation if the Financial Accounting is affected by them. For example, the posting of a goods receipt to stock for a raw material usually results in an increase in the stock value of your current assets. If the raw material instead is only transferred within one plant, no postings are made in Financial Accounting.

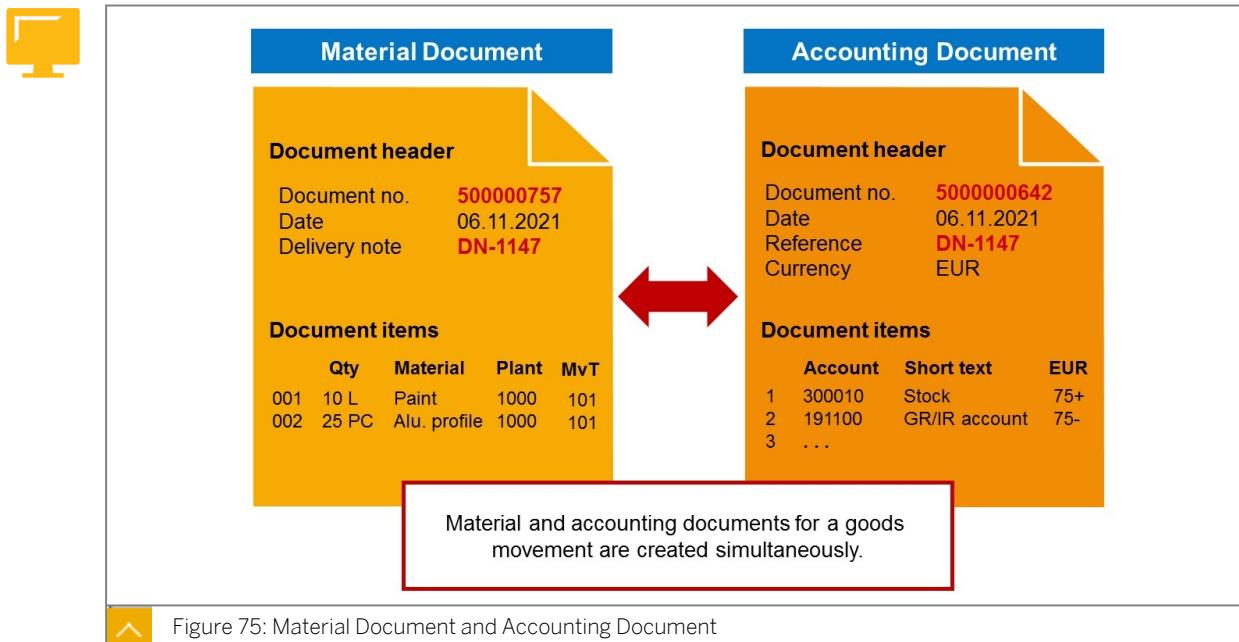


Figure 75: Material Document and Accounting Document

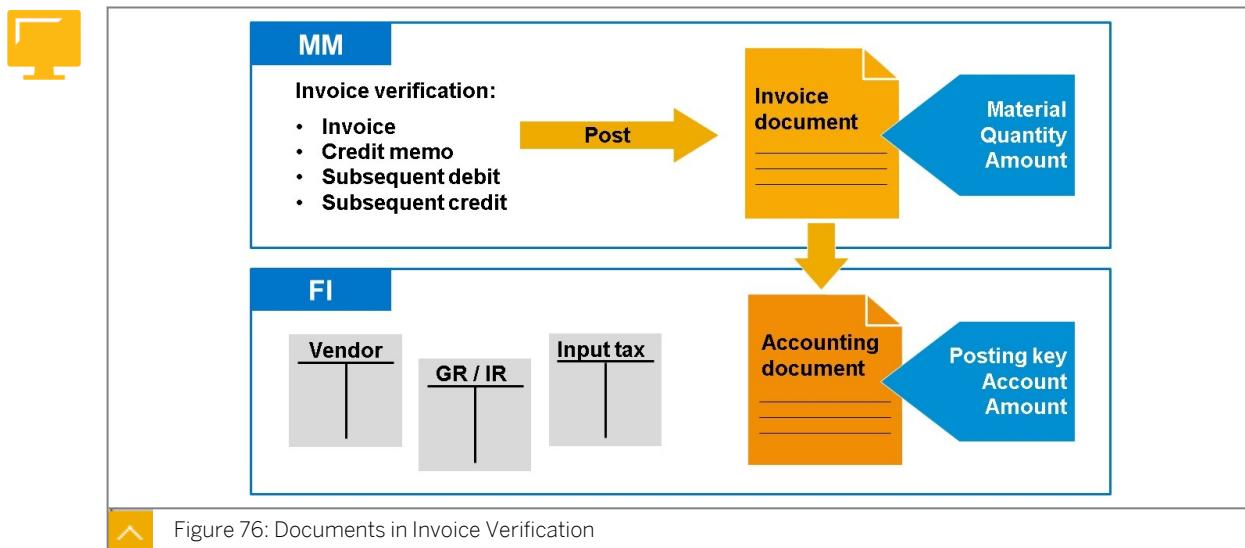
The material document consists of a document header and at least one item. The header information includes the posting date and the name of the creator. The information at item level includes, among other things, the material number, the posted quantity, the movement type, and the plant and storage location. As soon as a goods movement is posted, you cannot change these values in the document. To correct errors, you must first cancel the incorrect document items and then post them again with the correct values.

The accounting document records the effects of material movements on the accounts. The document header contains generally applicable data, such as the document date, posting date, posting period, and document currency. The G/L account numbers and the associated amount posted are recorded at item level.

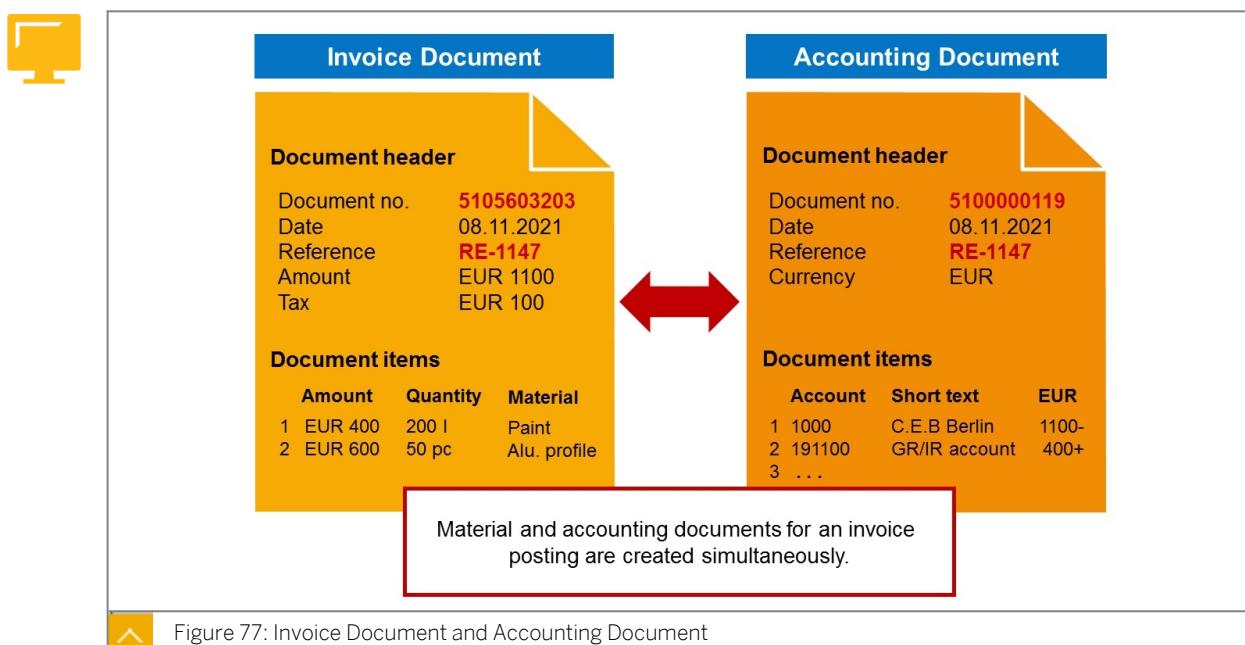
The material document and accounting document are separate but linked documents. You can identify the material document by the material document number and the material document year. The accounting document can be uniquely identified by the company code, the accounting document number, and the fiscal year. The company code in which the accounting document is posted is automatically taken from the plant in which the goods movement takes place.

### Documents in Invoice Verification

When you enter an invoice using Logistics Invoice Verification, a separate accounting document (FI document) is generated in addition to the invoice document (MM document).



In this way, when the invoice is posted, payment information is forwarded to financial accounting and various accounts are updated. The system automatically determines which amounts have to be posted to which accounts.



The MM invoice document consists of a document header and at least one item. The header data includes the vendor (invoicing party), the posting date, and the name of the person who created the document. The item data indicates which amount is charged for which quantity of a material.

The accounting document shows the bookkeeping effects of the entry of the invoice. The document header contains generally applicable data, such as the document date, the posting date, the posting period, and the document currency. The G/L account numbers and the associated amounts posted are recorded at item level.

The invoice document and accounting document are separate but linked documents. You can identify the invoice document by the document number and the document year. The accounting document can be uniquely identified by the company code, the accounting document number, and the fiscal year.

## Material Valuation Scenario for Standard Price

The figures in this section describe the postings in Financial Accounting and the updates in the material master record for a simple procurement process for a material with a price control standard price.

### Standard Price: Starting Situation



Material Master Record: Valuation Data				
	Transaction	Stock	Total value	Standard price
(1)	Opening balance	100	200.00	2.00

Financial Accounting: Account Movements				
Stock account	GR/IR clearing account	Vendor		
(1) 200				
Income from price differences	Expenses from price differences			

Figure 78: Standard Price: Starting Situation

The opening balance for stock quantity and total value are displayed in the first row.

The following steps are:

- Goods receipt (GR) for a purchase order of 100 pieces at 2.40 (second line)
- Invoice receipt (IR) of 100 pieces at 2.20 (third line)

### Standard Price: Goods Receipt



Material Master Record: Valuation Data				
	Transaction	Stock	Total value	Standard price
(1)	Opening balance	100	200.00	2.00
(2)	GR for purchase order: 100 at 2.40	200	400.00	2.00

Financial Accounting: Account Movements				
Stock account	GR/IR clearing account	Vendor		
(1) 200				
(2) 200	240 (2)			
Income from price differences	Expenses from price differences			
	(2) 40			

Figure 79: Standard Price: Goods Receipt

At goods receipt, the stock quantity and stock value are updated in the material master record. The stock account, and thus the stock value, are updated by the amount "goods receipt quantity x standard price." To the GR/IR clearing account, the "goods receipt quantity x purchase order price" amount is posted. The difference between the purchase order price and the standard price is posted to the price difference account.

### Standard Price: Invoice Receipt



Material Master Record: Valuation Data				
	Transaction	Stock	Total value	Standard price
(1)	Opening balance	100	200.00	2.00
(2)	GR for purchase order: 100 at 2.40	200	400.00	2.00
(3)	IR for purchase order: 100 at 2.20	200	400.00	2.00

Financial Accounting: Account Movements				
Stock account	GR/IR clearing account	Vendor		
(1) 200	(3) 240   240 (2)			220 (3)
Income from price differences	Expenses from price differences			
	(2) 40			
	20 (3)			

Figure 80: Standard Price: Invoice Receipt

When the incoming invoice is posted, the GR/IR clearing account is cleared at the order price. The vendor account is updated at the invoice price. The difference between the purchase order price and the invoice price is posted to the "Income from price differences" account. It does not change the total stock value.

### Material Valuation Scenario for Moving Average Price

The figures in this section describe the postings in Financial Accounting and the updates in the material master record, for a simple procurement process for a material with price control moving average price/periodic unit price.

#### Moving Average Price – Starting Situation



Material Master Record: Valuation Data				
	Transaction	Stock	Total value	Periodic unit price
(1)	Opening balance	100	200.00	2.00

Financial Accounting: Account Movements				
Stock account	GR/IR clearing account	Vendor		
(1) 200				

Figure 81: Moving Average Price – Starting Situation

The opening balance for stock quantity and total value are displayed in the first row.

The following steps are:

- Goods receipt (GR) for a purchase order of 100 PC at 2.40 (second line)
- Invoice receipt (IR) of 100 PC at 2.20 (third line)

### Moving Average Price – Goods Receipt



Material Master Record: Valuation Data				
	Transaction	Stock	Total value	Periodic unit price
(1)	Opening balance	100	200.00	2.00
(2)	GR for purchase order: 100 at 2.40	200	440.00	2.20

Financial Accounting: Account Movements				
	Stock account	GR/IR clearing account	Vendor	
(1)	200		240	(2)
(2)	240			

Figure 82: Moving Average Price – Goods Receipt

During goods receipt the system updates the stock value, stock account, and GR/IR clearing account at the purchase order price. The moving average price is recalculated based on the new stock value as follows: moving average price (for each base unit of measure) = total value / total stock.

### Moving Average Price – Invoice Receipt



Material Master Record: Valuation Data				
	Transaction	Stock	Total value	Periodic unit price
(1)	Opening balance	100	200.00	2.00
(2)	GR for purchase order: 100 at 2.40	200	440.00	2.20
(3)	IR for purchase order: 100 at 2.20	200	420.00	2.10

Financial Accounting: Account Movements				
	Stock account	GR/IR clearing account	Vendor	
(1)	200	20	(3)	
(2)	240	240	(2)	

Figure 83: Moving Average Price – Invoice Receipt

When the incoming invoice is posted, the GR/IR clearing account is cleared at the order price. The vendor (creditor) account is updated at the invoice price. The system posts the difference between the purchase order price and the invoice price to the stock account. It recalculates the stock value based on the invoice price. For this, the moving average price is also recalculated based on the new stock value.

If the stock quantity at the time of invoice entry is less than the invoice quantity, the system posts part of the difference to the “Expenditure/income from price differences” account instead of the stock account.



## LESSON SUMMARY

You should now be able to:

- Explain the FI postings for a goods receipt for PO



# Learning Assessment

1. Which of the following objects are represented by business partner master data?

*Choose the correct answers.*

- A MRP area
- B Supplier
- C Storage location
- D Customer

2. Which organizational levels are relevant in the maintenance of a business partner with the supplier and FI vendor roles?

*Choose the correct answers.*

- A Purchasing organization
- B Storage location
- C Purchasing group
- D Company code

3. Which of the following views can be created in a material master record?

*Choose the correct answers.*

- A Purchasing organization data
- B Accounting
- C Sales
- D Sources of Supply
- E Forecasting

4. When creating a material master record, you have to specify a material type. What does the material type control?

*Choose the correct answers.*

- A The type of number assignment
- B The permissible length of the material short text
- C Whether a material may be ordered
- D Which views can be maintained
- E Whether a material may only be purchased from certain suppliers

5. If you want to add a view to a material master record, you must change the material master record.

*Determine whether this statement is true or false.*

- True
- False

6. What kind of data is a purchasing info record?

*Choose the correct answer.*

- A Transaction data
- B Customizing setting
- C Master data
- D Reporting data

7. Which of the following organizational levels are relevant for purchasing info records?

*Choose the correct answers.*

- A Client
- B Company code
- C Plant
- D Storage location
- E Purchasing organization

8. Which of the following statements about the valuation class are correct?

*Choose the correct answers.*

- A The valuation class is used to determine which stock account is updated during the goods movements of a material.
- B The valuation class is a grouping key that controls the procedure used to valuate a material.
- C Your choice of valuation class determines if purchasing conditions at plant level are allowed for a material.
- D The valuation class enables you to manage the stocks of several materials in one stock account.

9. If a raw material is transferred within one plant, what kind of posting is done in Financial Accounting?

*Choose the correct answer.*

- A Price difference posting is made
- B No posting is made
- C Only accounting documents are updated
- D A new account is created

10. You have ordered a material for the warehouse that is valued at the standard price (price control S). If you now post the goods receipt for this purchase order, which of the following things happen?

*Choose the correct answers.*

- A If the purchase order (PO) price differs from the standard price, this difference is directly posted to the stock account.
- B The inventory posting is carried out at the standard price defined in the material master record.
- C The standard price in the material master record is adjusted to the purchase order price.
- D The total stock in the material master record is increased by the goods receipt quantity.

11. You have ordered a material for the warehouse that is valued at the moving average price (price control V). If you now post the goods receipt for this purchase order, which of the following things happen?

*Choose the correct answers.*

- A The inventory posting is carried out at the purchase order price.
- B The total stock in the material master record is increased by the goods receipt quantity.
- C The moving average price in the material master record is recalculated based on the new stock value and the new total stock.
- D The moving average price is calculated according to the formula: total stock / total value.

# Learning Assessment - Answers

1. Which of the following objects are represented by business partner master data?

*Choose the correct answers.*

- A MRP area
- B Supplier
- C Storage location
- D Customer

Correct. MRP areas and storage locations are organizational levels and are created in Customizing. They are not part of the business partner approach. But customer and vendor master data are created as business partners. For more information, see the Maintaining Business Partner Master Data lesson in the S4500 (or TS450) training material.

2. Which organizational levels are relevant in the maintenance of a business partner with the supplier and FI vendor roles?

*Choose the correct answers.*

- A Purchasing organization
- B Storage location
- C Purchasing group
- D Company code

Correct. The purchasing organization is the organizational level that is relevant in the maintenance of a business partner with the supplier role. The company code is the organizational level that is relevant in the maintenance of a business partner with the FI vendor role. For more information, see the Maintaining Business Partner Master Data lesson in the S4500 (or TS450) training material.

3. Which of the following views can be created in a material master record?

*Choose the correct answers.*

- A Purchasing organization data
- B Accounting
- C Sales
- D Sources of Supply
- E Forecasting

Correct. Sources of supply and purchasing organization data are not views that would be part of the material master. However, it is possible to create purchasing, accounting, sales, and forecasting data. For more information, see the Maintaining Material Master Data lesson in the S4500 (or TS450) training material.

4. When creating a material master record, you have to specify a material type. What does the material type control?

*Choose the correct answers.*

- A The type of number assignment
- B The permissible length of the material short text
- C Whether a material may be ordered
- D Which views can be maintained
- E Whether a material may only be purchased from certain suppliers

Correct. Among other things, the material type controls the type of number assignment, whether a material may be ordered, and which views can be maintained. The permissible length of the short text is fixed and is not dependent on the material type, and to limit the possible suppliers the source list is used. For more information, see the Maintaining Material Master Data lesson in the S4500 (or TS450) training material.

5. If you want to add a view to a material master record, you must change the material master record.

*Determine whether this statement is true or false.*

- True
- False

Correct. You use the *Create Material Master* transaction (MM01) to extend a material master record by adding missing views or organizational levels. For more information, see the Maintaining Material Master Data lesson in the S4500 (or TS450) training material.

6. What kind of data is a purchasing info record?

*Choose the correct answer.*

- A Transaction data
- B Customizing setting
- C Master data
- D Reporting data

Correct. The purchasing information record (or info record for short) is part of the master data of the purchasing department. For more information, see the Maintaining Purchasing Info Record lesson in the S4500 (or TS450) training material.

7. Which of the following organizational levels are relevant for purchasing info records?

*Choose the correct answers.*

- A Client
- B Company code
- C Plant
- D Storage location
- E Purchasing organization

Correct. The data for a purchasing info record is divided into general data on client level and purchasing organization-specific data. If necessary, the purchasing-organization-specific data can be maintained at plant level too. For more information, see the Maintaining Purchasing Info Record lesson in the S4500 (or TS450) training material.

8. Which of the following statements about the valuation class are correct?

*Choose the correct answers.*

- A** The valuation class is used to determine which stock account is updated during the goods movements of a material.
- B** The valuation class is a grouping key that controls the procedure used to valuate a material.
- C** Your choice of valuation class determines if purchasing conditions at plant level are allowed for a material.
- D** The valuation class enables you to manage the stocks of several materials in one stock account.

Correct. The valuation class has no influence on the control of purchasing conditions or the possible material valuation procedures. The valuation class is used to determine which stock account is to be updated during the goods movements of a material. You can use the valuation class to combine materials for assigning G/L accounts so that you do not have to manage a separate stock account for each material. For more information, see the Analyzing Material Valuation lesson in the S4500 (or TS450) training material.

9. If a raw material is transferred within one plant, what kind of posting is done in Financial Accounting?

*Choose the correct answer.*

- A** Price difference posting is made
- B** No posting is made
- C** Only accounting documents are updated
- D** A new account is created

Correct. Transferring a material within one plant does not impact Financial Accounting, therefore no posting is made. For more information, see the Analyzing Material Valuation lesson in the S4500 (or TS450) training material.

10. You have ordered a material for the warehouse that is valued at the standard price (price control S). If you now post the goods receipt for this purchase order, which of the following things happen?

*Choose the correct answers.*

- A If the purchase order (PO) price differs from the standard price, this difference is directly posted to the stock account.
- B The inventory posting is carried out at the standard price defined in the material master record.
- C The standard price in the material master record is adjusted to the purchase order price.
- D The total stock in the material master record is increased by the goods receipt quantity.

Correct. When you value with the standard price (price control S), all inventory posting is carried out at the standard price defined in the material master record. A price difference between PO price and standard price is directly posted to a price differences account. Therefore, the standard price in the material master remains unchanged. The total stock in the material master record is increased by the goods receipt quantity. For more information, see the Analyzing Material Valuation lesson in the S4500 (or TS450) training material.

11. You have ordered a material for the warehouse that is valued at the moving average price (price control V). If you now post the goods receipt for this purchase order, which of the following things happen?

*Choose the correct answers.*

- A The inventory posting is carried out at the purchase order price.
- B The total stock in the material master record is increased by the goods receipt quantity.
- C The moving average price in the material master record is recalculated based on the new stock value and the new total stock.
- D The moving average price is calculated according to the formula: total stock / total value.

Correct. If a material is valued at moving average price (price control V), the stock value and the stock account are updated at the purchase order price when you post a GR for PO. The total stock in the material master record is increased by the goods receipt quantity. The moving average price is recalculated based on the new values as follows: moving average price = total value / total stock. For more information, see the Analyzing Material Valuation lesson in the S4500 (or TS450) training material.



## UNIT 5

# Stock Material Compared with Consumable Material

### Lesson 1

Comparing Procurement Processes for Stock and Consumption

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### Lesson 2

Creating a Purchase Requisition

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### Lesson 3

Creating a Purchase Order with Reference to a Purchase Requisition

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### Lesson 4

Entering Valuated and Non-Valuated Goods Receipts

135

### UNIT OBJECTIVES

- Describe the differences between procurement of stock material and procurement of consumable material
- Create a purchase requisition
- Assign a source of supply and create a purchase order
- Enter a valuated goods receipt and analyze the results
- Enter a non-valuated goods receipt and analyze the results



## Unit 5

### Lesson 1

# Comparing Procurement Processes for Stock and Consumption



#### LESSON OBJECTIVES

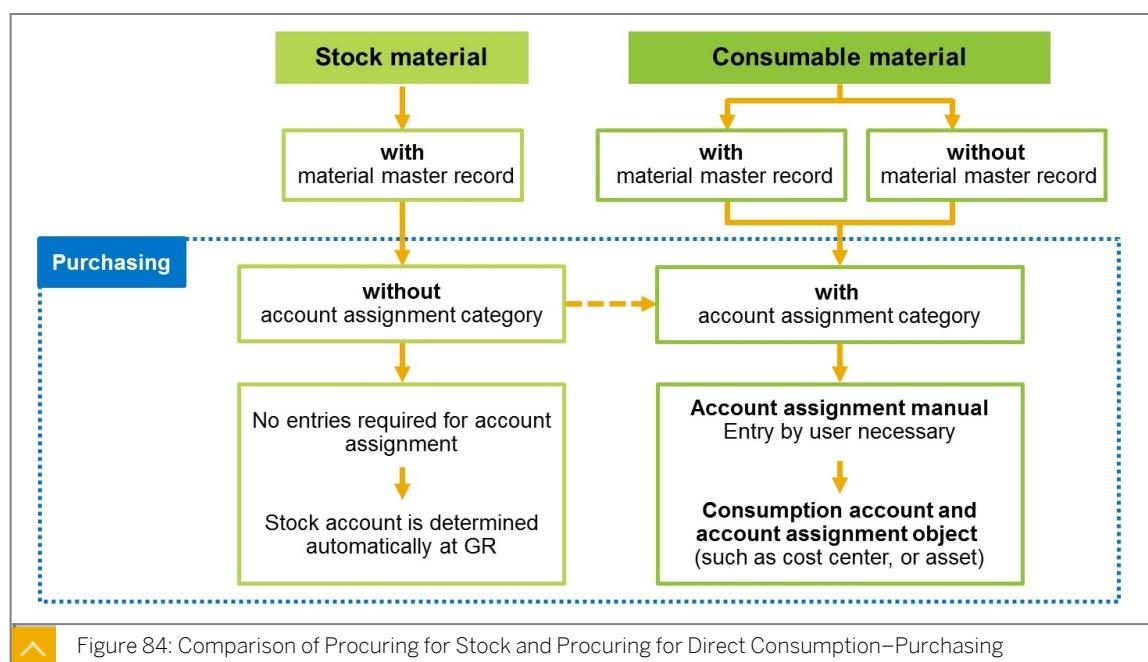
After completing this lesson, you will be able to:

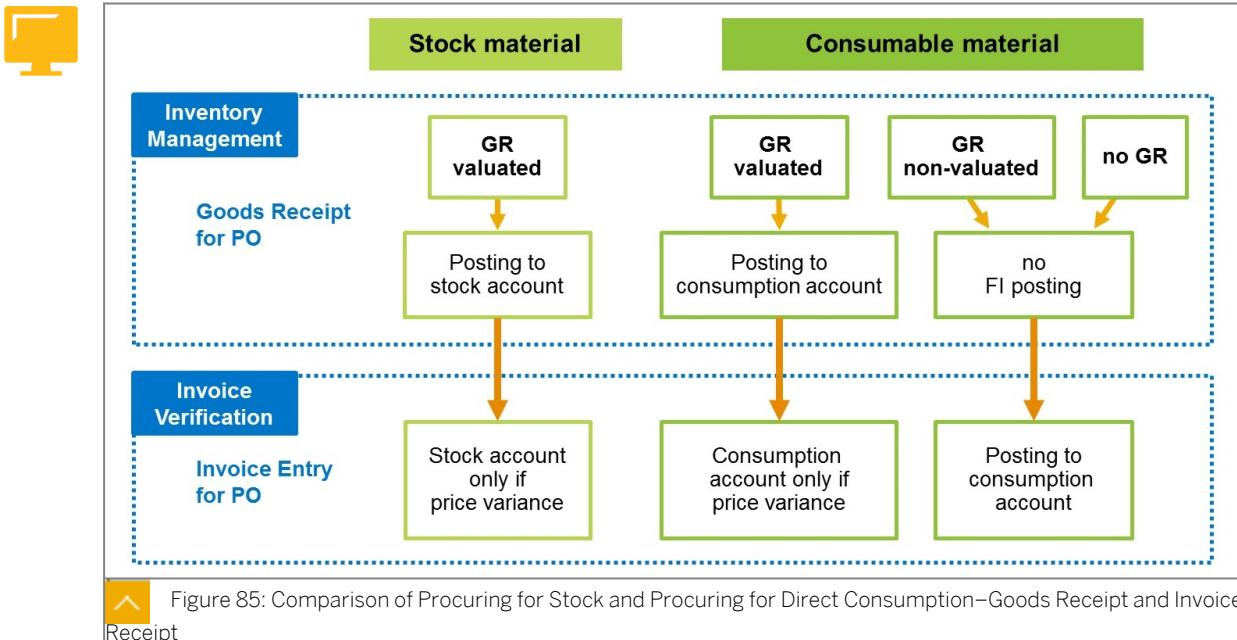
- Describe the differences between procurement of stock material and procurement of consumable material

#### Comparison of Procurement Processes for Stock and Consumable Material

If you buy material, you procure it either for stock or for direct consumption.

This section describes the differences between procuring for stock and procuring for direct consumption in the system. In the two comparison figures, you can see the procurement processes for stock and consumable material, consisting of purchasing, goods receipt, and invoice receipt. The figures show the most important differences between the processes.





### Procurement for Stock

A stock material is a material that is kept in stock. Such materials are placed in storage following a goods receipt. When such materials are received by, or issued from stores, the stock on hand is increased or reduced by the amount of the quantity received or issued.

To order a material for stock, the material must have a master record.

When you order a material for stock, the system does not require a manual account assignment. For each goods movement (for example, goods receipt or goods issue), the necessary postings to the corresponding stock and consumption accounts are made automatically. The value and the quantity of the stocked material are updated in the material master record.

### Procurement for Direct Consumption

In procurement for direct consumption, you specify the consumption purpose in the purchase order by entering account assignment data (consumption account, account assignment object) manually. During goods receipt and/or invoice receipt, the consumption account specified in the purchase order is debited with the procurement value. In addition, data for the account assignment object is updated.

This has no effect on the total value and usually does not affect the total quantity of the stock.

If material is procured directly for consumption, a material master record is not mandatory. The possible options for consumable material are:

- Consumable material without a material master record.
- Consumable material with a material master record that is not subject to inventory management (on either a quantity or value basis).
- Consumable material with a material master record that is subject to inventory management (on a quantity, but not value, basis).

When procuring a consumable material without a material master record, you must manually enter a short description, a material group, and a purchase order unit in the purchasing document because this data cannot be taken from a master record. This is different from a material with a master record.

In the case of materials with a master record, the material type controls whether inventory management for a material is to take place on a value or quantity basis. The following material types exist by default for consumable materials:

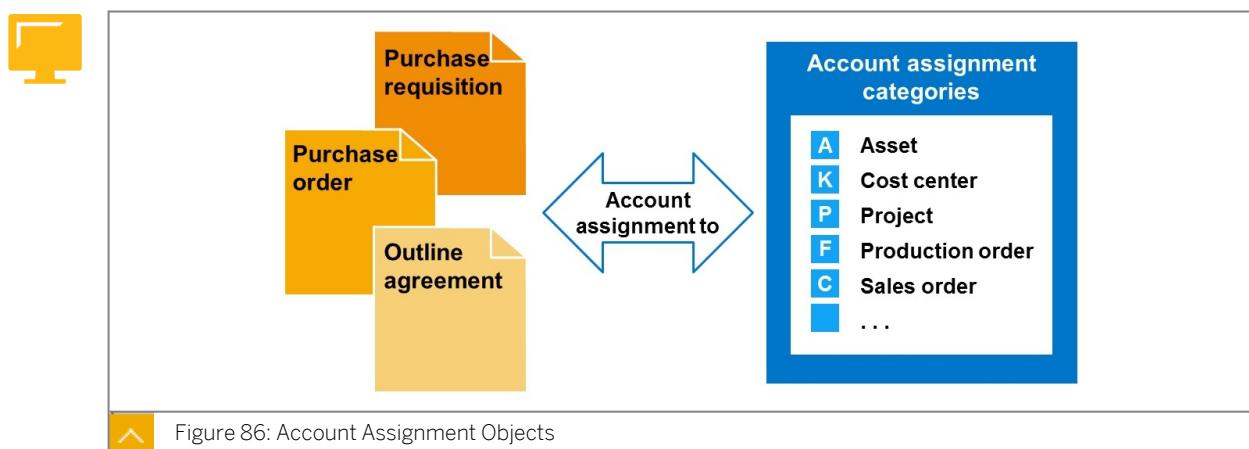
- Non-stock material (Material Type NLAG): Inventory management is not possible for these materials either on a quantity or a value basis. For frequently required consumables, the use of this material type enables you to store the information required to create purchasing documents (such as texts and units of measure).
- Non-valuated material (Material Type UNBW): This type of material is subject to inventory management on a quantity basis, but not on a value basis. This makes sense for low-value materials that have stocks, which must still be monitored.

You can procure stock material for stock and also directly for consumption. You can purchase trading goods for a customer (sales order), for example.

## Account Assignment Category and Multiple Account Assignment

### Account Assignment Objects

If you want to procure a material as a consumable, you must specify an account assignment category and more account assignment data in the document item of the purchase requisition or purchasing document.



The account assignment category determines the account assignment object category that is to be charged, and which account assignment data you must provide.

#### Example: Account assignment object cost center (account assignment category K)

When you make an account assignment to a cost center, you must enter the G/L account number of the consumption account and the cost center for which the material is to be procured. You enter this data on the account assignment data screen. You can specify in Customizing that the system automatically proposes the number of the G/L account to be charged.

#### Example: Account assignment object asset (account assignment category A)

If you use account assignment category A, you must enter the asset number on the account assignment data screen. The system automatically determines the G/L account to be charged from the asset number. You cannot enter it manually.

## Account Assignment–Multiple Accounting

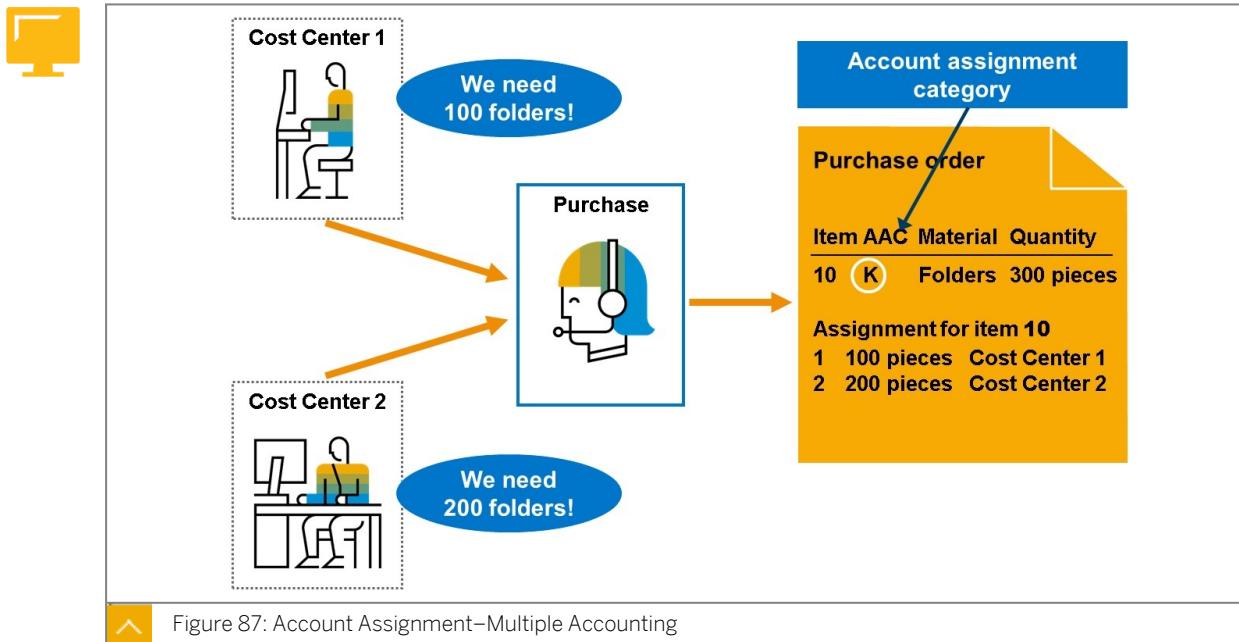


Figure 87: Account Assignment–Multiple Accounting

If necessary, you can also define more account assignments in one item. If you specify a multiple account assignment, you must also specify how the value of the item is distributed among the individual account assignment objects. You can select from the following options:

- Distribution on a quantity basis
- Distribution by percentage
- Distribution by amount

In addition, you must specify in the item how the costs are to be distributed if only part of the ordered quantity is initially delivered and invoiced.

- The partial invoice amount can be distributed among the account assignment items of a purchase order item proportionally (in accordance with the distribution ratio).
- The partial invoice amount can be distributed among the account assignment items of a purchase order item on a progressive fill-up basis (in sequence). In this procedure, account assignment item 1 is completed first, then account assignment item 2 and so on, until the invoice value is reached.

If a partial invoice indicator is specified in Customizing for the account assignment category, the partial invoice indicator can also be derived automatically from the account assignment category.



### LESSON SUMMARY

You should now be able to:

- Describe the differences between procurement of stock material and procurement of consumable material

# Creating a Purchase Requisition



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Create a purchase requisition

## Purchase Requisition

In procurement, the internal requisition for materials or services triggers a procurement process. Purchase requisitions are internal documents that are used to ask your purchasing department to procure a particular quantity of a material or service for a particular date.

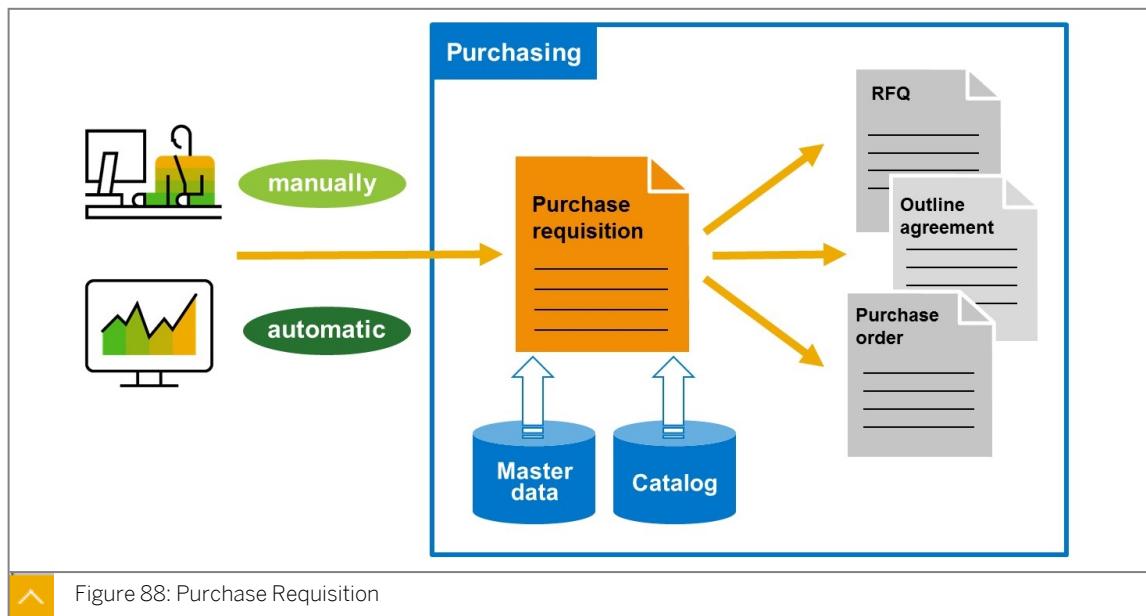


Figure 88: Purchase Requisition

A purchase requisition can be created directly or indirectly.

“Direct” means that a purchase requisition is created manually in the department that has the need. Whoever creates the purchase requisition determines which material or service in which quantity, and for which date, has to be ordered.

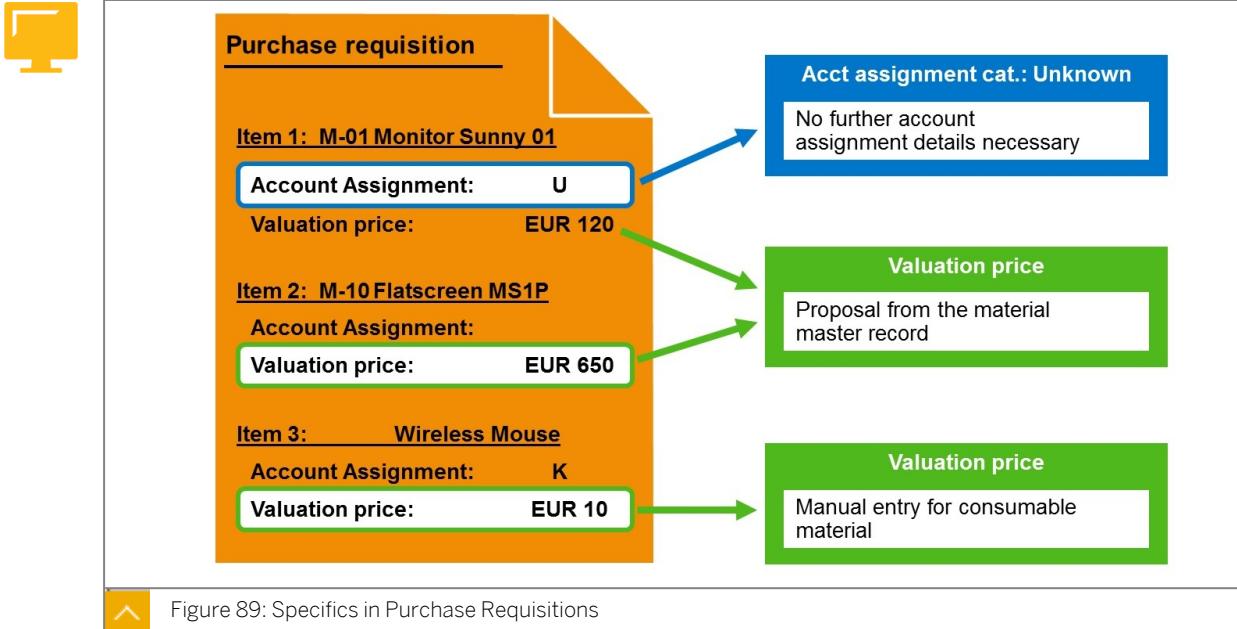
“Indirectly” means that the purchase requisition from another component is created automatically. Purchase requisitions can be created automatically in the following ways:

- In material requirements planning (MRP.)
- With maintenance orders
- With production orders
- With networks

When you manually create a purchase requisition for a material with a material master record, the system supports you during data entry by copying data from the material master record to the purchase requisition. You also have the option of selecting items from a web-based catalog.

You can convert purchase requisitions into RFQs, purchase orders, or outline agreements.

### Specifics in Purchase Requisitions



### Account Assignment Category: Unknown

If you do not know the account assignment object for which the material is being procured when you create the purchase requisition, you can use the account assignment category U (unknown) in the purchase requisition item. Then you do not need to enter any more account assignment details. If you create a purchase order item with reference to this purchase requisition item, you must specify precise account assignment information, because the account assignment category Unknown (U) is not allowed in the purchase orders.



#### Note:

Account assignment category U is allowed in purchase orders for external services and blanket purchase orders.

### Valuation Price

When you create a purchase requisition item for valued material, the valuation price is pulled from the material master record. For nonvaluated material, or material without a master record, the creator must manually enter the valuation price. This valuation price can be used for a value-related release procedure. The release can refer to the value of the individual item or to the total value of the requisition. If a previously defined release strategy becomes effective, you can create a request or a purchase order regarding a purchase requisition only after the purchase requisition has been released.

## Special Features for Converting Purchase Requisitions

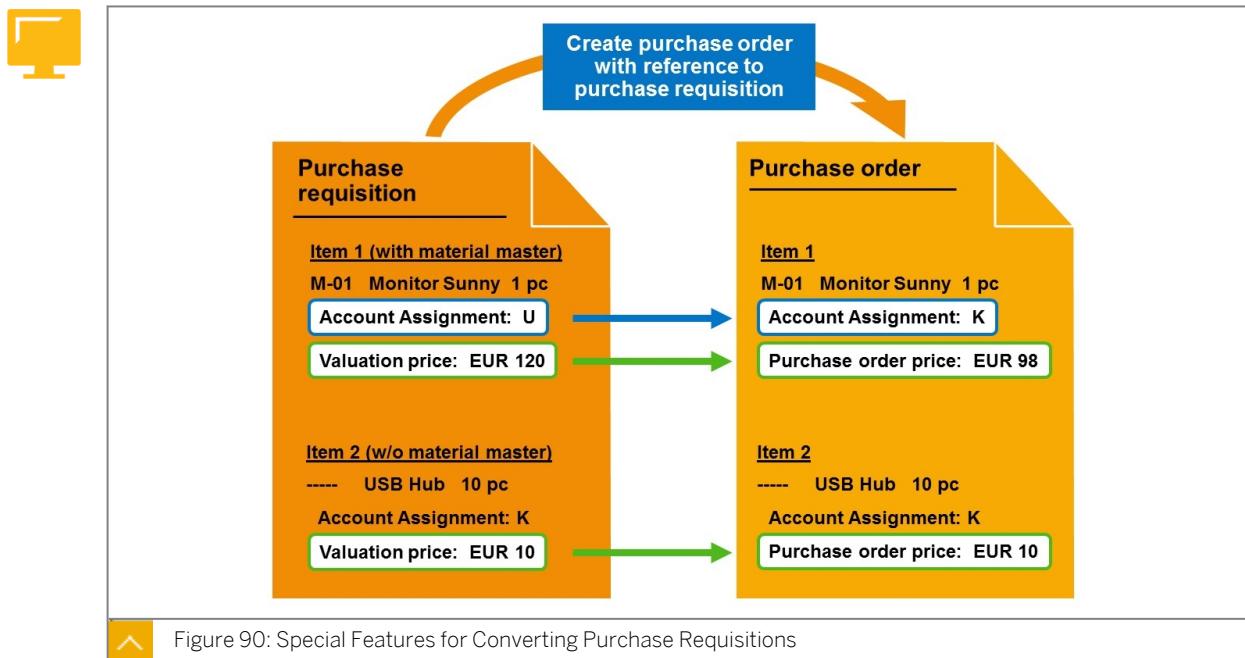


Figure 90: Special Features for Converting Purchase Requisitions

### Purchase requisition items with the account assignment category Unknown:

In contrast to the purchase requisition, the account assignment category Unknown (U) is only allowed in the purchase order in connection with the Service and Limit item types. In all other situations, you must select a valid account assignment object and maintain the corresponding account assignment details when creating the purchase order.

### Purchase Requisition Items with Material Master Record:

If an info record exists for the supplier and the material, the system proposes the purchase price from the info record when you create a purchase order with reference to a purchase requisition (without source of supply). If no info record exists, you must enter the price manually. The valuation price from the purchase requisition item is not transferred to the purchase order.

### Purchase Requisition Items Without Material Master Record:

If the system transfers a purchase requisition item to the purchase order without a material master and without a source of supply, the system proposes the valuation price from the purchase requisition as the purchase price. The buyer can change this default price.



## LESSON SUMMARY

You should now be able to:

- Create a purchase requisition



# Creating a Purchase Order with Reference to a Purchase Requisition



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Assign a source of supply and create a purchase order

## Sources of Supply

### Follow-on Step for Purchase Requisition

As a buyer, you must convert purchase requisition items created by the user department into purchase orders.

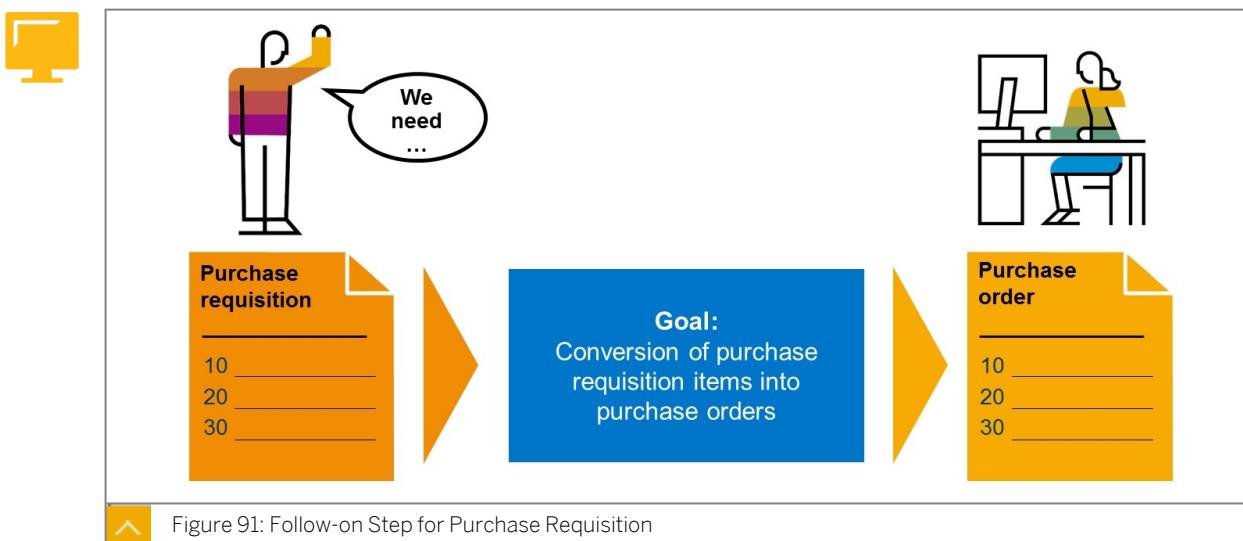
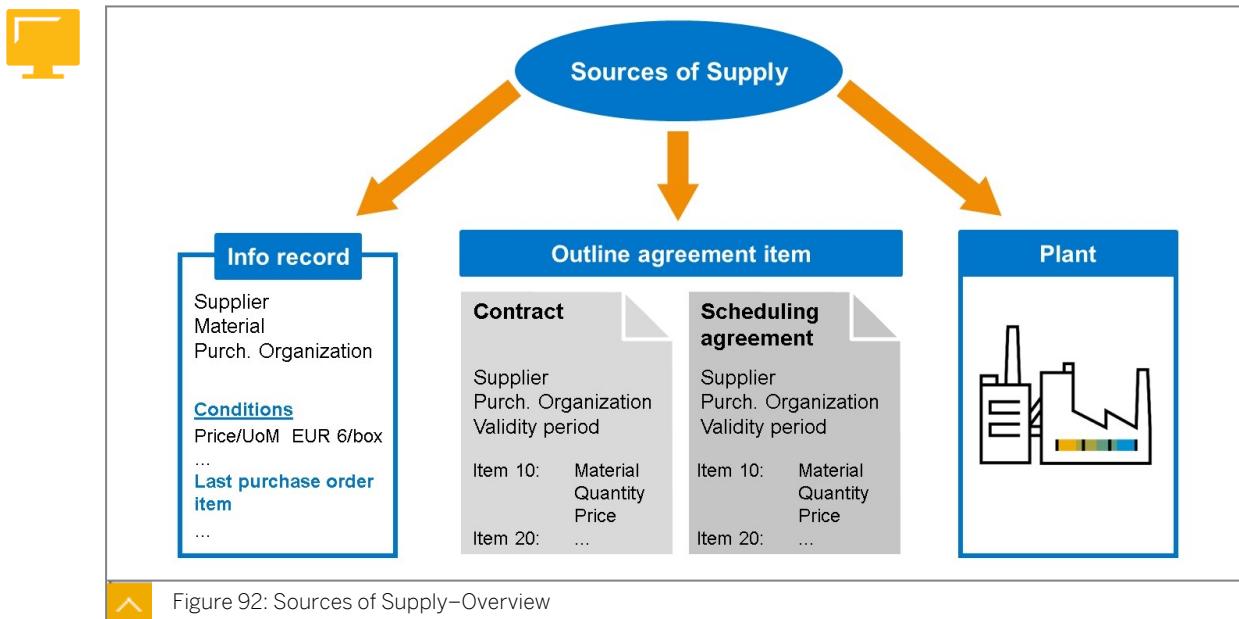


Figure 91: Follow-on Step for Purchase Requisition

Before you can convert the purchase requisition into a purchase order, you must identify the supplier from whom the material must be purchased. Furthermore, you must determine the price for the material. In other words, you have to determine the source of supply for the purchase requisition item.

A source of supply can be both an external supplier and one of your enterprise's own plants. External sources are represented by purchasing info records and outline agreement items. For these sources of supply, the supplier and the price of the material can be taken from the relevant record or document.

## Sources of Supply—Overview



### Info Record:

A purchasing info record is a repository of information for purchasing. It contains data on a certain material and a supplier of that material. The information may include the current supplier price, the supplier's planned delivery time, and the name by which the supplier refers to the material.

### Outline Agreement Item:

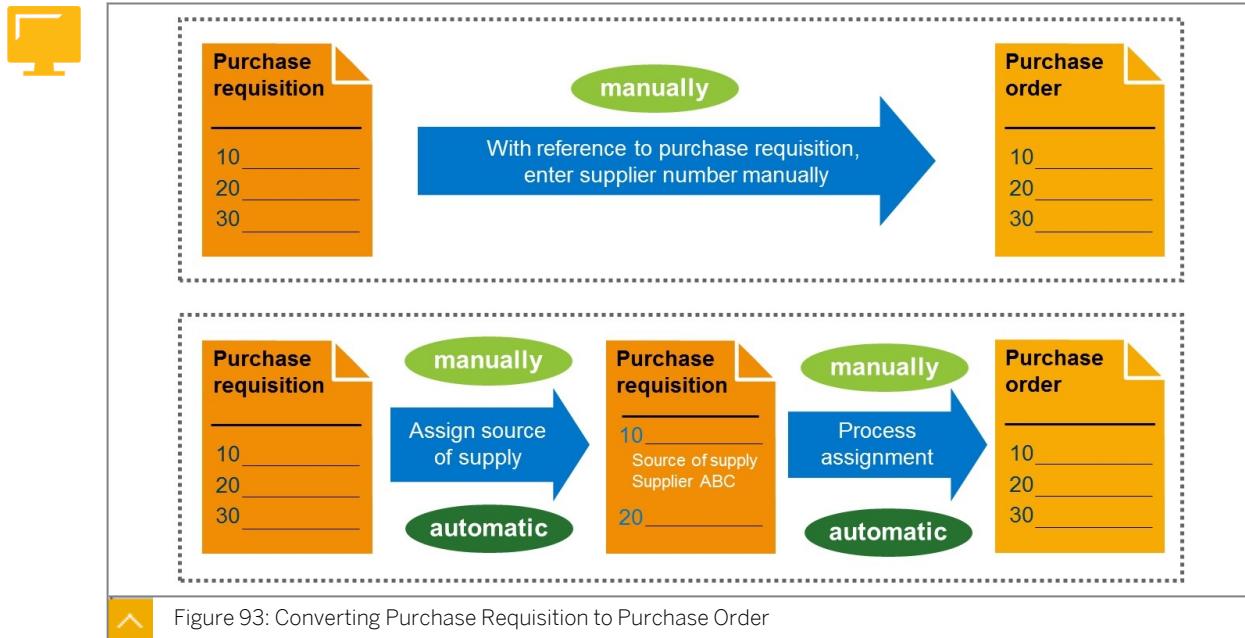
An outline agreement is a longer-term arrangement with a supplier for the supply of materials or provision of services, based on predefined terms and conditions. This arrangement is valid for a certain period and for a predetermined total purchase quantity or value. There are two types of outline purchase agreement:

- Contract
- Scheduling agreement

An outline agreement does not contain specific delivery dates or quantities of individual deliveries. You specify these later, in either a contract release order or a scheduling agreement delivery schedule, depending on the type of agreement.

### Conversion of Purchase Requisition to Purchase Order

You can assign a source of supply to a purchase requisition item in different ways. For example, you can directly enter a source of supply when creating or changing a purchase requisition item. Also, you can use the function source determination to let the system automatically determine the source of supply.



You can manually or automatically convert a purchase requisition item with a source of supply into a purchase order. The system copies the supplier from the source of supply for the purchase requisition.

If a source of supply has not yet been assigned in the purchase requisition item, you can still create a purchase order with reference to this purchase requisition item. In this case, you must manually enter the vendor in the purchase order.

### SAP Fiori App Process Purchase Requisitions (V2)

In SAP S/4HANA, you can choose between different functions to convert a purchase requisition item to a purchase order. One of these functions is the *Process Purchase Requisitions (V2)* SAP Fiori app.

In the first step, you select the purchase requisition items that you want to convert. To do so, enter the relevant values in the filter bar and start the selection. You can use the *Adapt Filters* function to add further filters for the selection. For example, you can use the *Assigned Source of Supply* filter to specify that only purchase requisition items without an assigned source of supply are selected.

The screenshot shows the SAP Process Purchase Requisitions (V2) application. At the top, there is a filter bar with fields for Purchase Requisition Number, Plant, Purchasing Group, Purchasing Organization, Material Group, Processing status, Start Date, End Date, Requisition Date, Delivery Date, Assigned Source of Supply (with dropdown options Yes or No), and Release Date (set to Today). Below the filter bar is a table titled "Purchase Requisitions (4)" showing four rows of data:

Purchase Requisition Number	Item Number of Purchase Requisition	Material ID	Quantity	Total Value
10000465	10	Oil pump 500/02 (A500-02)	10 PC	465,00 EUR >
10000466	10	Oil tray 500/02 (B500-02)	20 PC	9.000,00 EUR >
10000466	20	Oil tray 500/03 (B500-03)	30 PC	3.500,00 EUR >
10000467	10	Oil pump 500/03 (A500-03)	35 PC	1.627,50 EUR >

At the bottom right of the table, there is a button labeled "Show More per Row / Show Less per Row". To the right of the table, there are several icons for creating purchase orders, contracts, and filters.

Figure 94: Process Purchase Requisitions (V2) App - Select Purchase Requisitions

In the search result, the system displays, for example, the document and item number, the material, and the requested quantity for the purchase requisition item. You can use the "Show More per Row" function to display extra fields such as *Processing Status* or *Assigned Supplier*.

If no source is assigned to a purchase requisition item, you can display the available sources of supply and select and assign one.

The screenshot shows the SAP Process Purchase Requisitions (V2) application with two filters active: Requisition Date and Purchasing Group. The table "Purchase Requisitions (4)" displays two items:

- Row 1:** Purchase Requisition Number 10000465, Item Number 10, Material ID Oil pump 500/02 (A500-02), Quantity 10 PC, Total Value 465,00 EUR. It shows "Plant: Hamburg (1010)", "Processing status: Not edited (N)", "Delivery Date: 10.05.2024", and "Fixed Supplier: Motormarkt Heidelberg (T-S50A02) T-S50A02". Buttons for "Change SOS" and "Remove SOS" are visible. A callout bubble says "Source of supply (SOS) assigned to item."
- Row 2:** Purchase Requisition Number 10000466, Item Number 10, Material ID Oil tray 500/02 (B500-02), Quantity 20 PC, Total Value 9.000,00 EUR. It shows "Plant: Hamburg (1010)", "Processing status: Not edited (N)", "Delivery Date: 10.05.2024", and "Fixed Supplier: ". A button for "Assign Source of Supply" is visible. A callout bubble says "No source of supply (SOS) assigned to item. To start assignment, choose Assign Source of Supply."

At the top right of the table, there are buttons for "Create RFQ", "Create Purchase Order" (which is highlighted with a yellow box), and "Create Contract".

Figure 95: Process Purchase Requisitions (V2) App - Assign and Convert Purchase Requisitions

After assigning a source of supply, select the purchase requisition item and choose *Create Purchase Order*. It is possible to convert multiple items into one purchase order in one step if they have the same assigned supplier and the same purchasing group.

If no source of supply is available, you can manually assign a supplier or start a request for quotation.



### LESSON SUMMARY

You should now be able to:

- Assign a source of supply and create a purchase order



## Unit 5

### Lesson 4

# Entering Valuated and Non-Valuated Goods Receipts



#### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Enter a valued goods receipt and analyze the results
- Enter a non-valuated goods receipt and analyze the results

#### Valuated GR for Stock Material

A purchase order item for stock material must fulfill the following requirements:

- A material number must be entered, which means that a material master record must exist for the material to be procured.
- No account assignment category is allowed to be entered.
- The *Goods Receipt* indicator must be set.



Purchase order	
Material M-05 100 pc EUR 130 for stock	
<input checked="" type="checkbox"/> Goods Receipt <input type="checkbox"/> Non-valuated GR <input checked="" type="checkbox"/> Invoice Receipt	



Invoice	
Material M-05 100 pc EUR 130	

#### Valuated GR (mandatory)

Stock account
GR 130

GR/IR account
IR 130

Vendor account
IR 130

Figure 96: Valuated GR and IR for Stock Material

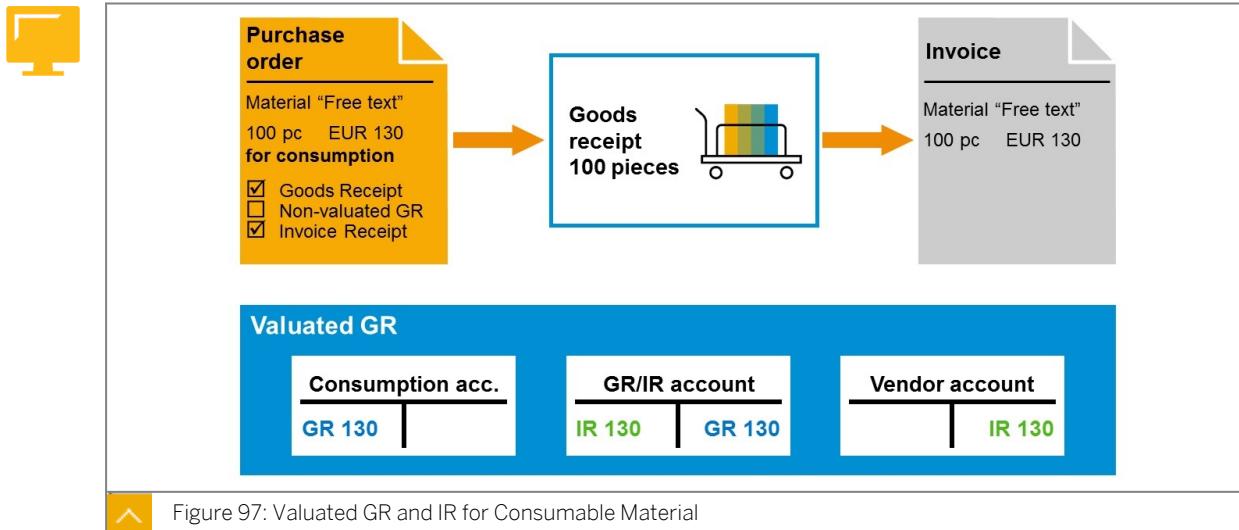
If you post the goods receipt for the purchase order (PO) item, a stock account is posted on the debit side. If you expect an invoice for the PO item, the offsetting entry is posted on the GR/IR account. The GR/IR account is cleared in full when the invoice is entered. The offsetting entry is posted to the vendor account.

#### Valuated GR for Consumable Material

A purchase order item for consumable material must fulfill the following requirements:

- A material number can, but need not be entered.

- An account assignment category, an account assignment object, and a G/L account must be entered.
- The *Goods Receipt* indicator can be set, but is not mandatory, and the goods receipt can be valued or non-valuated. The *Non-valuated GR* indicator controls whether the goods receipt is valued or non-valuated.

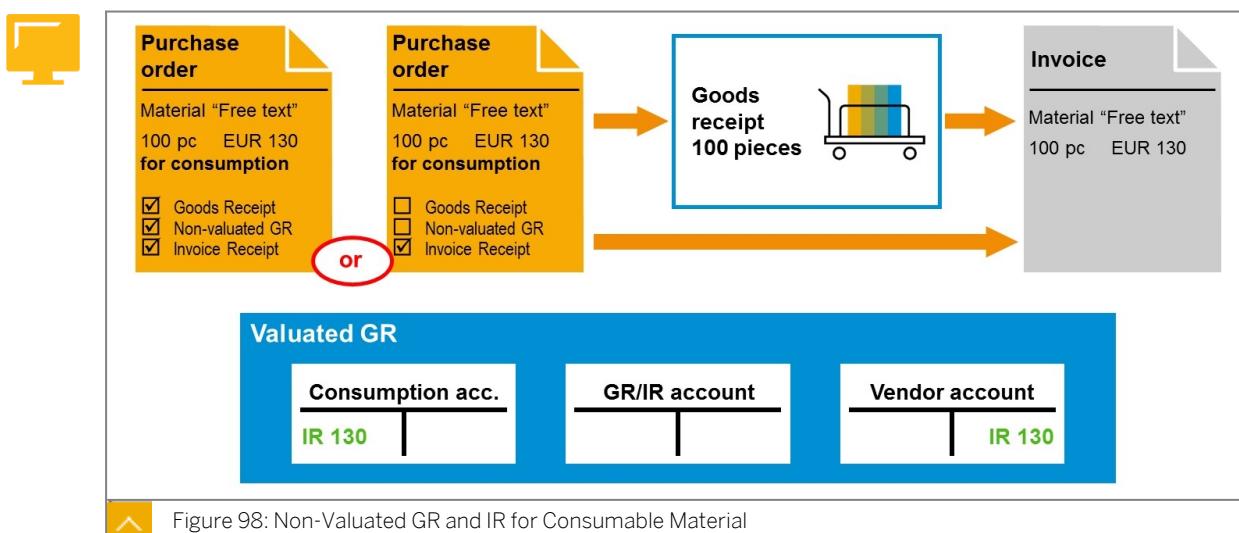


The figure, Valuated GR and IR for Consumable Material, shows a PO item for consumable material for which a valued goods receipt and an invoice receipt are expected.

At the time of the goods receipt, the consumption account that was specified in the purchase order item is debited with the procurement price. The offsetting entry is posted to the GR/IR clearing account.

During invoice receipt, the GR/IR clearing account is cleared in full. The offsetting entry is posted to the vendor account. If the invoice price varies from the order price, the corresponding difference is posted to the consumption account.

### Non-Valuated GR or No GR for Consumable Material



The figure, Non-Valuated GR and IR for Consumable Material, shows a PO item for consumable material. No goods receipt (or only a non-valuated goods receipt) and invoice receipt are expected.

At the time of the goods receipt, there are no postings to the consumption account. Therefore, posting to the GR/IR clearing account is not applicable.

During invoice receipt, the consumption account is debited with the invoice amount. The offsetting entry is posted to the vendor account.



### LESSON SUMMARY

You should now be able to:

- Enter a valued goods receipt and analyze the results
- Enter a non-valuated goods receipt and analyze the results



## Learning Assessment

1. Which of the following data is necessary in a purchase order item if you want to purchase material directly for consumption?

*Choose the correct answers.*

- A Account assignment category
- B Material number
- C G/L account
- D Material short text
- E Storage location

2. Which factor in a material master record controls whether an account assignment category must be specified in a purchase order for this material?

*Choose the correct answer.*

- A Material group
- B Industry sector
- C Material type
- D Field selection

3. How can purchase requisitions be created automatically?

*Choose the correct answers.*

- A During material master data maintenance
- B When canceling a sales order
- C When saving production orders
- D By the material requirements planning run

4. When you create a purchase requisition item, you must always enter the valuation price manually.

*Determine whether this statement is true or false.*

True

False

5. Which source of supply is an outline agreement?

*Choose the correct answers.*

A Purchasing info record

B Scheduling agreement

C Production version

D Contract

6. You want to purchase material to replenish the warehouse stock. Which entries are required for this in a purchase order item?

*Choose the correct answers.*

A Account Assignment Category

B Material number

C Goods Receipt Indicator

D Invoice Receipt Indicator

7. In a purchase order item for consumable material, the *Goods receipt* and *Invoice receipt* checkboxes are selected. Now you post the goods receipt for this PO item. Which G/L accounts are posted to at goods receipt?

*Choose the correct answers.*

A GR/IR account

B Vendor account

C Stock account

D Consumption account

8. In a purchase order item for consumable material, only the *Invoice receipt* checkbox is selected. Now you post the supplier invoice for this PO item. Which G/L accounts are posted to at invoice receipt?

*Choose the correct answers.*

- A GR/IR account
- B Vendor account
- C Stock account
- D Consumption account

## Learning Assessment - Answers

1. Which of the following data is necessary in a purchase order item if you want to purchase material directly for consumption?

*Choose the correct answers.*

- A Account assignment category
- B Material number
- C G/L account
- D Material short text
- E Storage location

Correct. Account assignment category, G/L account, and material short text are necessary in a purchase order item if you want to purchase material directly for consumption. A material master record is not required for consumable material. And the specification of a storage location in a purchase order item is generally not required. For more information, see the Comparing Procurement Processes for Stock and Consumption lesson in the S4500 (or TS450) training material.

2. Which factor in a material master record controls whether an account assignment category must be specified in a purchase order for this material?

*Choose the correct answer.*

- A Material group
- B Industry sector
- C Material type
- D Field selection

Correct. The material type controls that no value-based inventory management takes place for a material. In this case, the material must always be procured with an account assignment, such as an account assignment category must be specified for this material in a purchase order. For more information, see the Comparing Procurement Processes for Stock and Consumption lesson in the S4500 (or TS450) training material.

3. How can purchase requisitions be created automatically?

*Choose the correct answers.*

- A During material master data maintenance
- B When canceling a sales order
- C When saving production orders
- D By the material requirements planning run

Correct. Canceling a sales order does not create purchase requisitions, nor does material master data maintenance. But saving a corresponding production order can trigger procurement activities, and of course MRP (material requirements planning) creates purchase requisitions for external procurement. For more information, see the Creating a Purchase Requisition lesson in the S4500 (or TS450) course material.

4. When you create a purchase requisition item, you must always enter the valuation price manually.

*Determine whether this statement is true or false.*

- True
- False

Correct. When you create a purchase requisition item for valued material, the valuation price is pulled from the material master record. For more information, see the Creating a Purchase Requisition lesson in the S4500 (or TS450) course material.

5. Which source of supply is an outline agreement?

*Choose the correct answers.*

- A Purchasing info record
- B Scheduling agreement
- C Production version
- D Contract

Correct. Purchasing info records do not belong to the outline agreements. And neither do production versions, which belong to manufacturing. However, scheduling agreements and contracts both belong to this category. For more information, see the Creating Purchase Order with Reference to Purchase Requisition lesson in the S4500 (or TS450) training material.

6. You want to purchase material to replenish the warehouse stock. Which entries are required for this in a purchase order item?

*Choose the correct answers.*

- A Account Assignment Category
- B Material number
- C Goods Receipt Indicator
- D Invoice Receipt Indicator

Correct. If you specify an account assignment category in a purchase order item, then you are procuring the material for consumption and not for the warehouse. The warehouse stock is updated on a quantity basis at the time of goods receipt in the material master record. Therefore, the material number and the goods receipt indicator are mandatory in the purchase order item. However, an invoice is not absolutely necessary in this procurement process. For more information, see the Entering Valuated and Non-Valuated Goods Receipts lesson in the S4500 (or TS450) training material.

7. In a purchase order item for consumable material, the *Goods receipt* and *Invoice receipt* checkboxes are selected. Now you post the goods receipt for this PO item. Which G/L accounts are posted to at goods receipt?

*Choose the correct answers.*

- A GR/IR account
- B Vendor account
- C Stock account
- D Consumption account

Correct. The *Goods receipt* and *Invoice receipt* indicators set in the purchase order item control that a valuated goods receipt and an invoice are expected for the purchase order item. Note that it is not said that the *Goods receipt non-valuated* indicator is set. Therefore, when goods are received, the GR/IR account and the consumption account are posted to. For more information, see the Entering Valuated and Non-Valuated Goods Receipts lesson in the S4500 (or TS450) training material.

8. In a purchase order item for consumable material, only the *Invoice receipt* checkbox is selected. Now you post the supplier invoice for this PO item. Which G/L accounts are posted to at invoice receipt?

*Choose the correct answers.*

- A GR/IR account
- B Vendor account
- C Stock account
- D Consumption account

Correct. Without a goods receipt posting, there is no posting to the GR/IR clearing account. When the invoice is received, the consumption account is debited with the invoice amount. The offsetting entry is made to the vendor account. For more information, see the Entering Valuated and Non-Valuated Goods Receipts lesson in the S4500 (or TS450) training material.



# UNIT 6

# Advanced Transactions in Procurement

## Lesson 1

Maintaining a Purchasing Contract

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## Lesson 2

Creating a Purchase Requisition with Source Determination

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## Lesson 3

Using Advanced Transaction for Purchase Order Creation

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## Lesson 4

Using the Advanced Transaction for Goods Receipt

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## Lesson 5

Using the Advanced Transaction for Invoice Verification

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## UNIT OBJECTIVES

- Create a purchasing contract
- Maintain the source list for automatic source determination
- Create a purchase requisition with the advanced transaction
- Create a purchase order with reference to a purchase requisition using the advanced transaction ME21N
- Create a purchase order automatically using the advanced transaction ME59N
- Post a goods receipt with the transaction for goods movements
- Enter an invoice with the advanced transaction



# Maintaining a Purchasing Contract



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

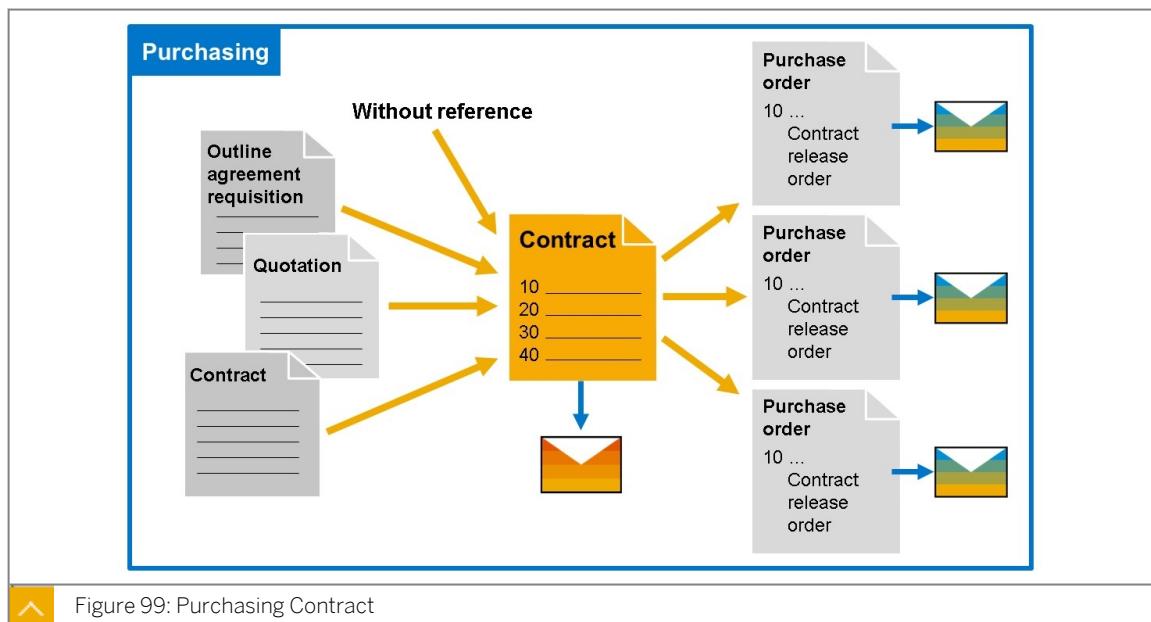
- Create a purchasing contract

## Purchasing Contract

An outline agreement is a longer-term arrangement with a supplier for the supply of materials or provision of services based on predefined terms and conditions. This arrangement is valid for a certain period and for a predetermined total purchase quantity or value. You can distinguish between two types of outline purchase agreement:

- Contract
- Scheduling agreement

In the next section, we take a closer look at the contract.



The structure of a contract (or of an outline agreement in general) corresponds to that of other purchasing documents. A distinction is made between the document header and the document items.

- The document header contains information relating to the entire agreement (such as vendor data, agreement validity period, agreement type, and header conditions).

- A document item contains specific data to the goods or services to be procured (such as material, agreed total purchase quantity, price, and texts). However, there is no specification of the quantity to be delivered on a specific delivery date.

Contract items can relate to an individual plant or to all the plants of a purchasing organization. A contract without plant information on the item level is called an (ERP) central contract.

You can create a contract item manually without referencing another document, or by referencing a quotation or purchase requisition item. You can also reference an existing contract.

## Contract Types



There are two contract types:

- Quantity contract: You choose this contract type if the total quantity to be ordered over the duration of the agreement has already been agreed. The contract counts as fulfilled once the agreed quantity has been reached through the issue of contract release orders. In a quantity contract, you define the target quantity and conditions of ordering for each item (among other things).
- Value contract: You choose this contract type if the total value of all contract release orders is not to exceed a certain amount. The contract counts as fulfilled once the agreed value has been reached through the issue of contract release orders.

To inform the vendor which quantities you need on which dates, you enter purchase orders referencing the contract. Such POs are known as contract release orders or contract releases. These contract release orders are recorded in the release documentation for the relevant contract item.

You can enter a contract item as a source of supply in a purchase requisition item. This ensures that the outline agreement is referenced when the purchase requisition item is converted into a purchase order item. The resulting PO is a contract release order.

## Contract Release Documentation

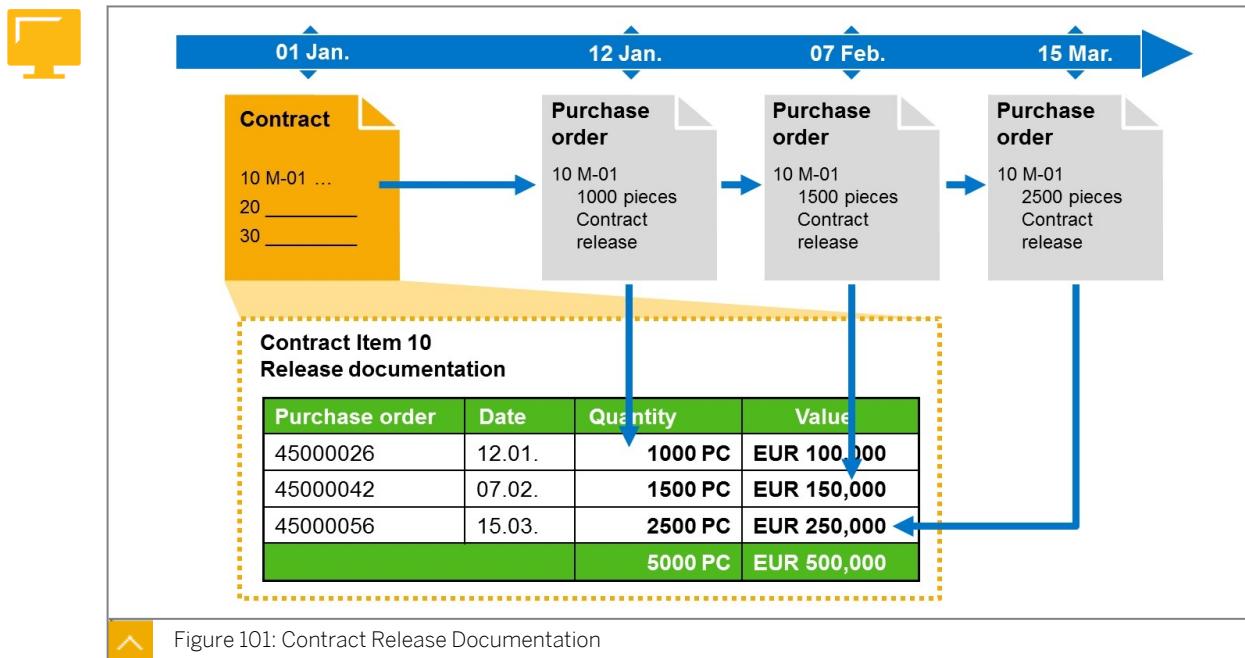


Figure 101: Contract Release Documentation

The release (order) documentation lists the ordering activities for a contract item. The release documentation is automatically updated when a release order is created. It contains information including the number of the release order, the PO date, the order quantity, and the order value for all release orders issued against the contract. It is the basis for monitoring the contract.

The release documentation belongs to the statistical data on a contract item. To display the release documentation, select the desired contract item and choose *Item → Statistics → Release Documentation*.



### LESSON SUMMARY

You should now be able to:

- Create a purchasing contract



# Creating a Purchase Requisition with Source Determination



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Maintain the source list for automatic source determination
- Create a purchase requisition with the advanced transaction

### Source List

The source list is used to manage sources of supply for a material at plant level. In the source list, you can time-dependently define which sources of supply are allowed or blocked for a material. Source list entries are considered in automatic sourcing, both in purchasing and in the requirements planning run.



Validy	Source of supply	Fix.	Blk	MRP
01.01.2021 – 06.30.2026	Contract 4711	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
01.01.2021 – 06.30.2026	Contract 4712	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1
01.01.2021 – 12.31.2025	Vendor ABC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
04.01.2021 – 30.09.2025	Vendor XYZ	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

Figure 102: Source List

You can decide that a source is preferable over a certain period (*Fixed* indicator). If no procurement is to be allowed from a source of supply (or vendor) during a certain period, you select the *Blocked* indicator for the relevant source list entry.

The *Use in materials planning (MRP)* field is only relevant for sourcing in the MRP run.



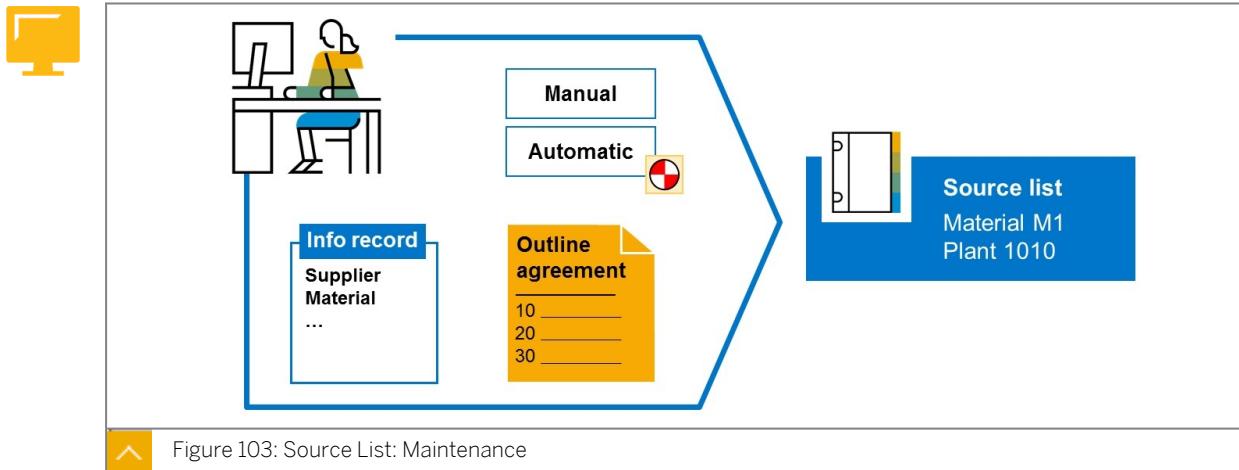
### Note:

For more information on sourcing during MRP, see S4500, Unit 8, Lesson 1.

You can stipulate a source list requirement for a material. This means that this material may only be procured from sources that have been entered as valid in the source list. You will find the necessary indicator in the purchasing data of the material master record.

You can also specify the source list requirement for a plant in Customizing. However, this means that you must maintain the source list for all the externally procured materials of this plant.

### Source List: Maintenance



You can choose between various procedures to maintain the source list.

- You can maintain the source list manually for each material and plant.
- When you create or change an outline agreement, you can adopt an outline agreement item in the source list for the material. To do so, select the outline agreement item and choose *Item → Maintain Source List*. This is also possible when you create or change a purchasing info record.
- You can also have a source list created automatically by the system. The system provides the option to quickly enter or update all sources of a material in a source list.

With this procedure, a source list record is created for each info record or outline agreement item. You can create the source list for several materials (collective procedure) or for an individual material (individual procedure). There is a preview function for the automatic generation of source lists. This allows you to simulate the effects of the source list generation run.

## Advanced Transaction ME51N for Purchase Requisition

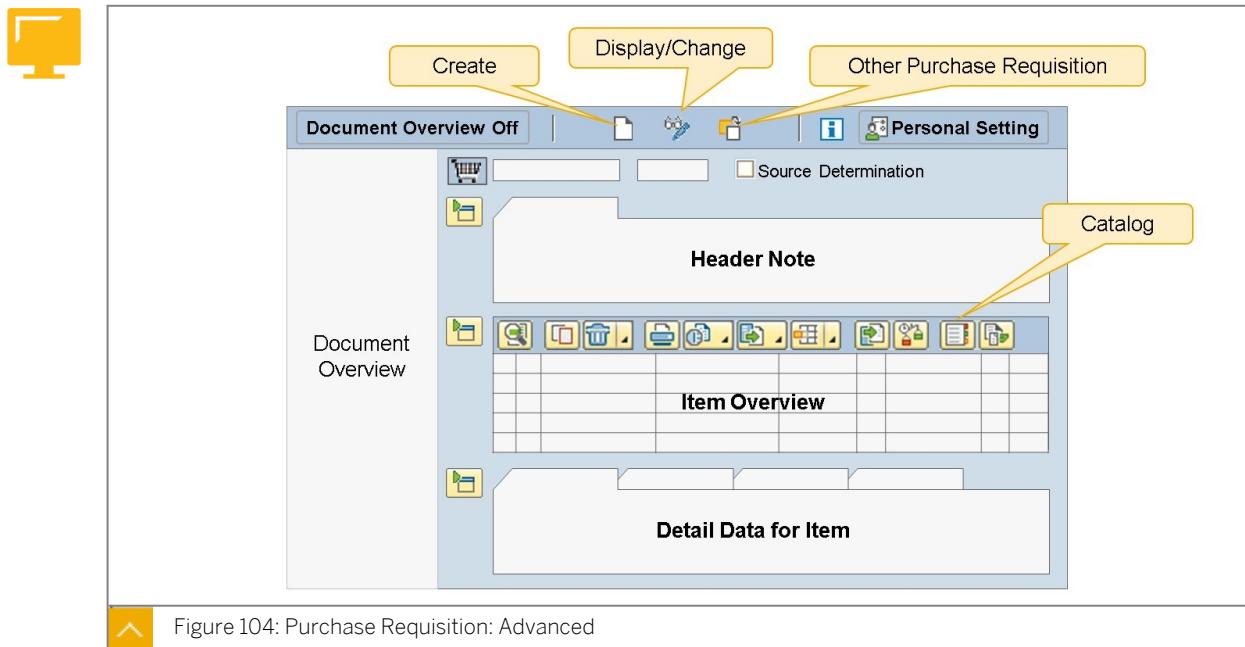


Figure 104: Purchase Requisition: Advanced

The transactions for creating, changing, and displaying a purchase requisition (ME51N, ME52N, and ME53N) are single-screen transactions. This means that you can enter all the relevant data on a central screen. The division into different screen areas (header data, item overview, item details, document overview) and the operation corresponds to the purchase order transaction.

- Header:

This is where you enter all data relevant for the whole document. For example, in the purchase requisition, the header data consists only of an internal header memo, and in the case of an overall release for the purchase requisition, information on the release procedure.

In the header of a purchase order, you can find data like the supplier and the supplier address or the organizational levels.

- Item overview:

In this list, you can enter the items with the most important data, such as material, quantity, delivery date, and plant.



**Note:**

It is also possible to integrate web-based catalogs in purchasing. This means the item data can also be copied from a catalog. If you want to connect a catalog, the catalog must comply with the Open Catalog Interface (OCI) standard.

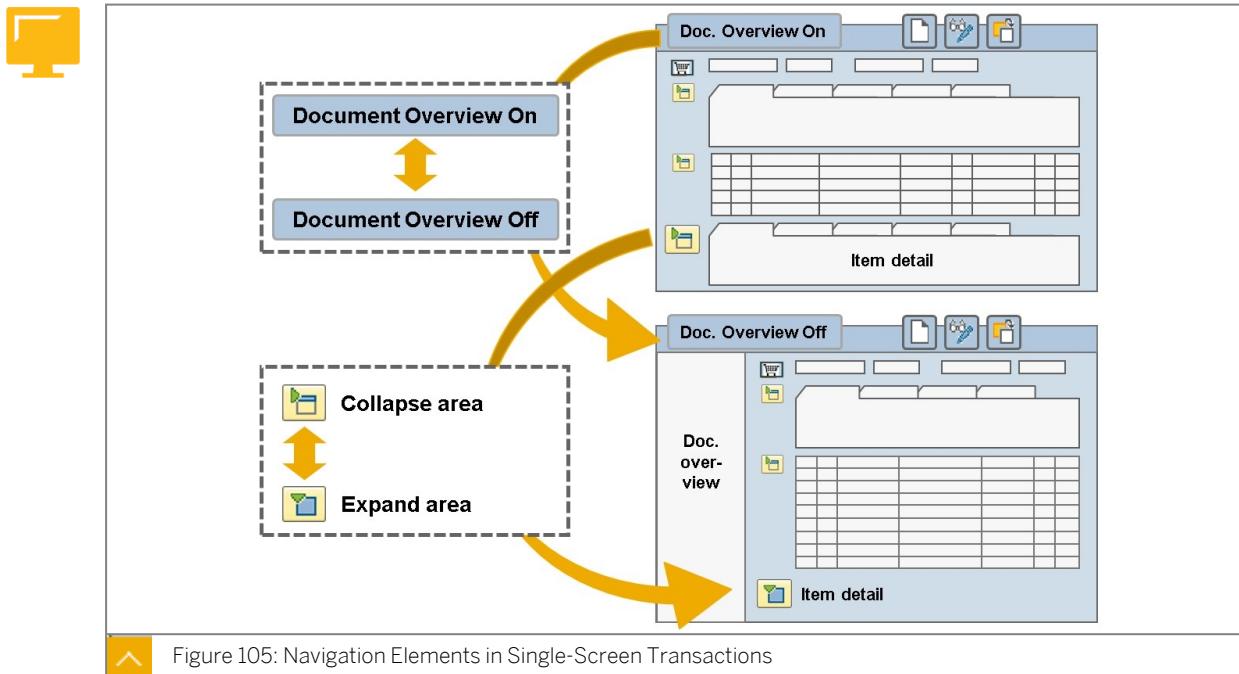
- Item detail:

Here you enter more data (if desired or necessary) for a particular item, such extra texts or account assignment specifications.

- Document overview:

In the document overview, you can display different documents, such as purchase requisitions, purchase orders, and purchasing contracts.

### Navigation Elements in Single-Screen Transactions



In the purchase requisition transaction (and also in the purchase order transaction), you can open and close all screen areas individually.

If you close and then reenter a single-screen transaction, the screen is in the same format as it was when you left it. If the document overview and the header were closed and the item overview and item detail were open, this same screen format is displayed.

It does not matter which function you use to access the purchase requisition (create, change, display). You can switch between functions by choosing *Create* or *Display/Change*. By choosing the *Other Purchase Requisition* icon, you can also branch directly to another purchase requisition or purchase order.

### Account Assignment

If you want to request a material or service directly for an account assignment object, you specify an account assignment category for the item in the item overview. The other necessary account assignment data that you can enter in the item detail is on the *Account assignment* tab page.

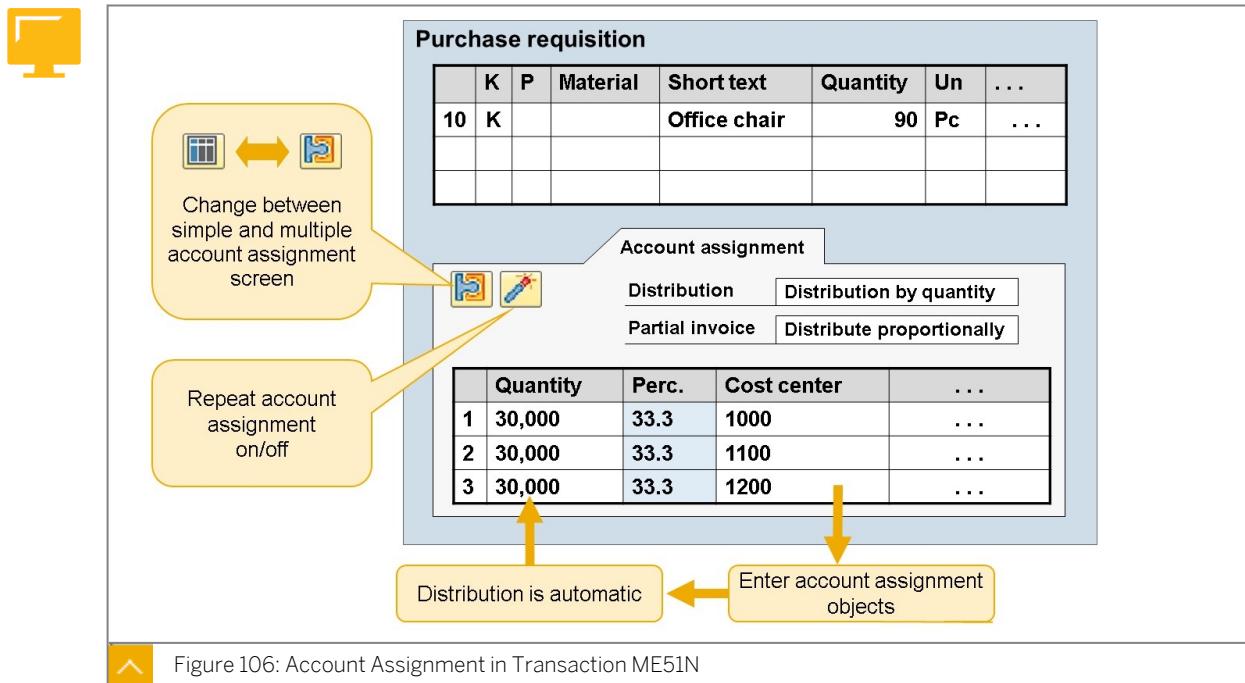


Figure 106: Account Assignment in Transaction ME51N

If you have the single account assignment screen displayed on the **Account Assignment** tab, you can use (*Multiple account assignment*) to switch to the multiple account assignment screen. On the multiple account assignment screen, choose (*Single account assignment*) to switch to the single account assignment screen. The system makes a note of your last setting. On the multiple account assignment screen, you can also create single account assignments.

With multiple account assignment you can, for example, distribute the costs for one purchase order item among several cost centers. In this case, the created account assignment data represents individual account assignment items. With multiple account assignment for an item, you must decide whether the value of the item is to be distributed on a quantity or value basis, or as a percentage.

If you want to distribute the quantity of a purchase requisition item in equal parts, you just need to enter the account assignments. The system automatically distributes the requested quantity in equal parts to the existing account assignment items. If you change the requested total quantity in the item overview, the quantity is adjusted in the relevant account assignment items.

An example of automatic account assignment distribution: You have requested 90 office chairs and assigned them equally to three cost centers. However, because you require 120 office chairs, you change the requested quantity in the item overview. The system then automatically changes the distribution so that 40 office chairs are assigned to each cost center.

Note:

The icons (*Multiple account assignment*) and (*Single account assignment*) mentioned earlier are also used in the purchase order transaction ME21N. But in a purchase order item with a multiple account assignment, the system cannot automatically distribute the ordered quantity in equal parts to the existing account assignment items.

## Processing Status and Creation Indicator

The screenshot shows the SAP Fiori interface for 'Display Purchase requisition – Item details'. The 'Status' tab is active, showing the following information:

- Processing Status:** PO created
- Block ID:** Not Blocked
- Document History:**

Doc.cat.LT	Purch.Doc.	Item Short Descript.	Quantity	OUn
Purchase ord...	4500000050	10 Sch. Line	1	PC
		Goods receipt		1 PC
- Creation by:** S4500 Employee 19
- Creation Indicator:** Realtime (manual)
- Requisitioner:** [Empty]
- Purch. Group:** Z19 Purch. Group Z19 Telephone
- MRP Controller:** [Empty] Telephone

Figure 107: Processing Status and Creation Indicator

If you want to trace whether your purchase requisition item has been processed, evaluate the processing status of the purchase requisition item. You can see the processing status on the *Status* tab in the item detail area. The processing status provides information about whether the item has been ordered, not ordered or requested, or whether the item has been converted into an outline agreement. The *Status* tab lists the purchase order history of referenced purchasing documents (created with reference to this purchase requisition item). You can obtain information about previously posted goods receipts and invoices.

For you as a buyer, it might be interesting to see how the purchase requisition was created in the system, either manually or automatically (for example, through materials planning). In the item detail on the *Contact Person* tab, the *Creation Indicator* can provide information.

### Templates for Purchase Requisition (and Purchase Order)

For frequently requested materials you can create templates. Using a template reduces the effort involved in data entry when you create a new document.

Templates can be used for the following documents:

- Purchase requisition
- Purchase order

You can create user-specific templates or public templates. Public templates are available to all users.

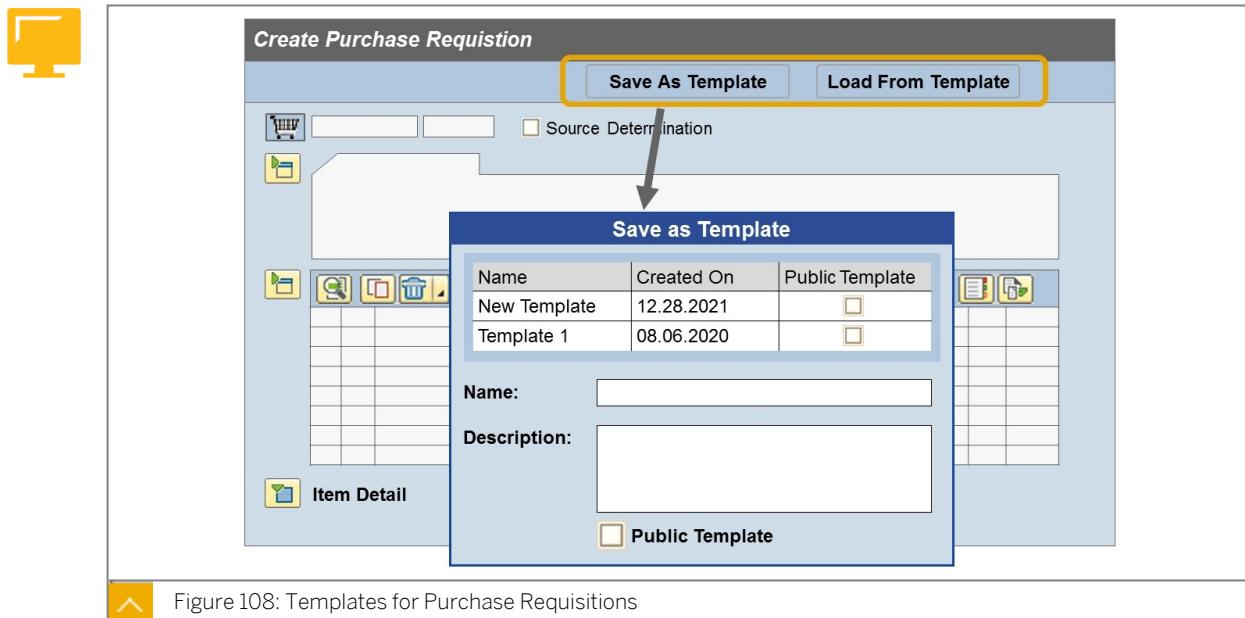


Figure 108: Templates for Purchase Requisitions

In these transactions, choose the *Save As Template* or *Load from Template* buttons. You see a dialog box in which you can save, load, or delete templates. When you save a template, you can define the template as a public template. When you load a template, you can decide whether you want to copy the header and item data to the new purchasing document, or only the item data.

To save and delete public templates that are available to all users, you need the appropriate authorizations (authorization object Create/Change/Delete Public Templates M\_TEMPLATE).



## LESSON SUMMARY

You should now be able to:

- Maintain the source list for automatic source determination
- Create a purchase requisition with the advanced transaction



# Using Advanced Transaction for Purchase Order Creation



#### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Create a purchase order with reference to a purchase requisition using the advanced transaction ME21N
- Create a purchase order automatically using the advanced transaction ME59N

#### Advanced Transaction ME21N for Purchase Orders

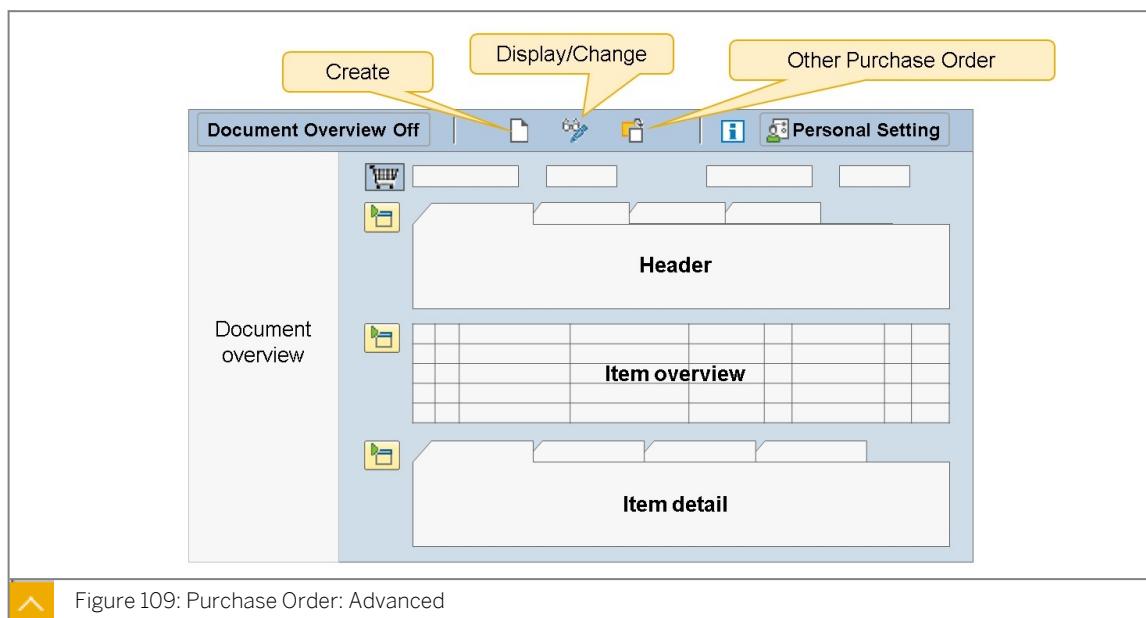


Figure 109: Purchase Order: Advanced

The purchase order transaction (ME21N) is a single-screen transaction, just like the purchase requisition transaction (ME51N). The screen of the transaction is divided into the following screen areas:

- Header
- Item overview
- Item detail
- Document overview

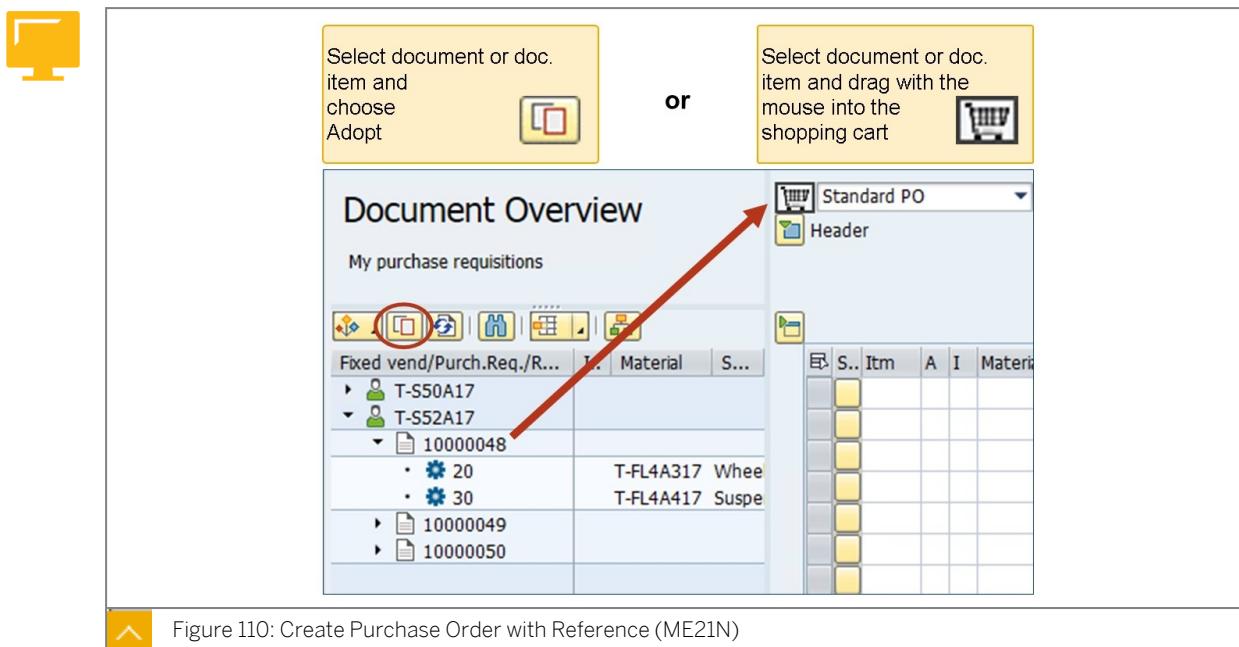
User-specific requirements can be considered with  *Personal Settings*. This way, each user can set their own default settings and specify that the document overview is set automatically when the transaction is started.

In addition, a help function can be displayed like the document overview. You can display or hide this help area by choosing  *(Help)*. If the help area is open, you can work in the transaction at the same time.

## Document Overview in the Advanced Transaction for Purchase Order

### Create Purchase Order with Reference (ME21N)

If you have a procurement process with preceding documents for the purchase order, you must create the purchase order with reference to one of these preceding documents. If reference is made to a purchase requisition, an RFQ, or a contract, then the item data and any existing header data is copied from the preceding document to the purchase order. This reduces the required entry effort and therefore reduces possible entry errors. You can change most of the copied data in the purchase order, if necessary.



In the transaction ME21N, the document overview makes it easy to create a purchase order with reference.

If you have selected the preceding documents in the document overview, then select the document or the document items and choose  *(Adopt)*. You can also move the selected documents into the shopping cart by dragging and dropping them.



**Hint:**

If you double-click the purchase order or purchase requisition, the respective document is displayed (not copied).

For each item, the system updates the document and item number of the template item in the purchase order. You can therefore see whether the PO item was created with reference to another document item. You can find the exact number of the referenced document item for each PO item in the item overview.

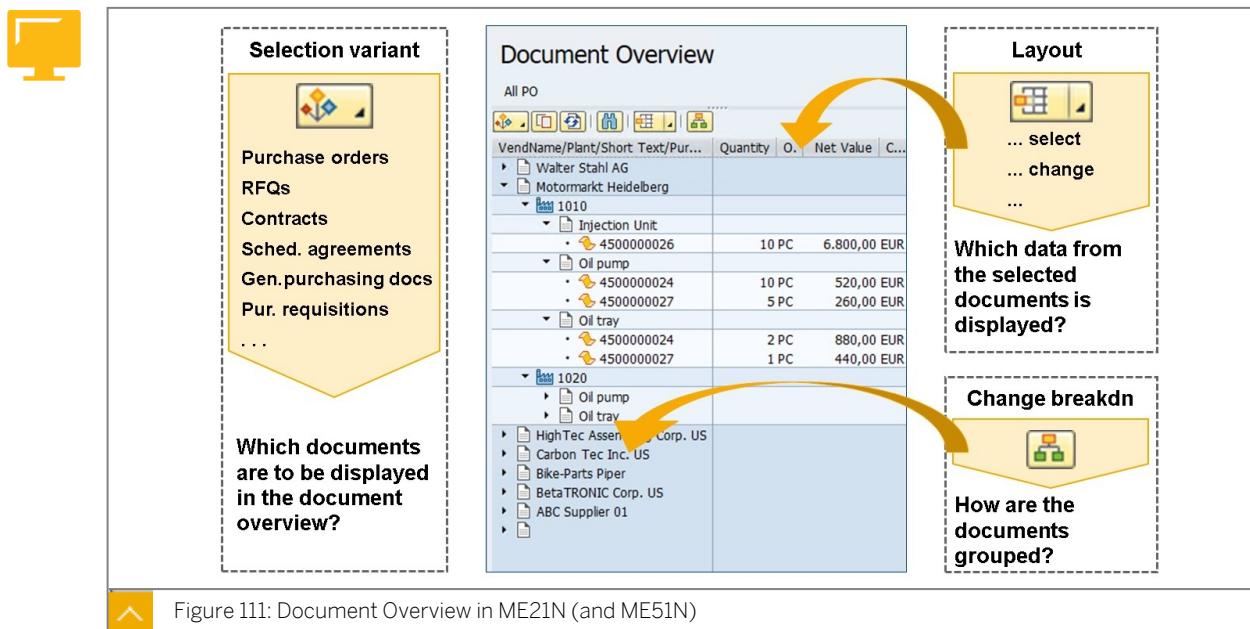
To create a purchase order with reference to another document, you can also enter the number of the document and the number of the item directly in the corresponding fields in the item overview.

### Settings for the Document Overview

In the document overview, you can display the different purchasing documents that you require for your daily work (purchase orders, purchase requisitions, RFQs, and contracts). At the same time, you can process a purchase order or purchase requisition in the right screen area.

To display a purchase order or purchase requisition from the document overview, double-click the relevant item. For the other purchasing documents (an RFQ, scheduling agreement, or contract) it is not possible to call the display transaction by the way of double-clicking the document number in the document overview.

### Document Overview in ME21N (and ME51N)



You use the selection variant to decide which documents to select. For example, on the selection screen you can restrict the vendor, material, and period of the document creation. If you want to select only the purchase orders or the purchase requisitions that you created yourself, you can use the selection variants *My purchase orders* and *My purchase requisitions*. You do not need to enter any further selection values here. Specify the selection period for these two variants in your personal settings.

In the breakdown, specify the criteria to be used for sorting the selected documents.

Then you can use the layout to determine the data to be displayed for the documents. This is described in the following section in more detail.

## Layout in the Document Overview

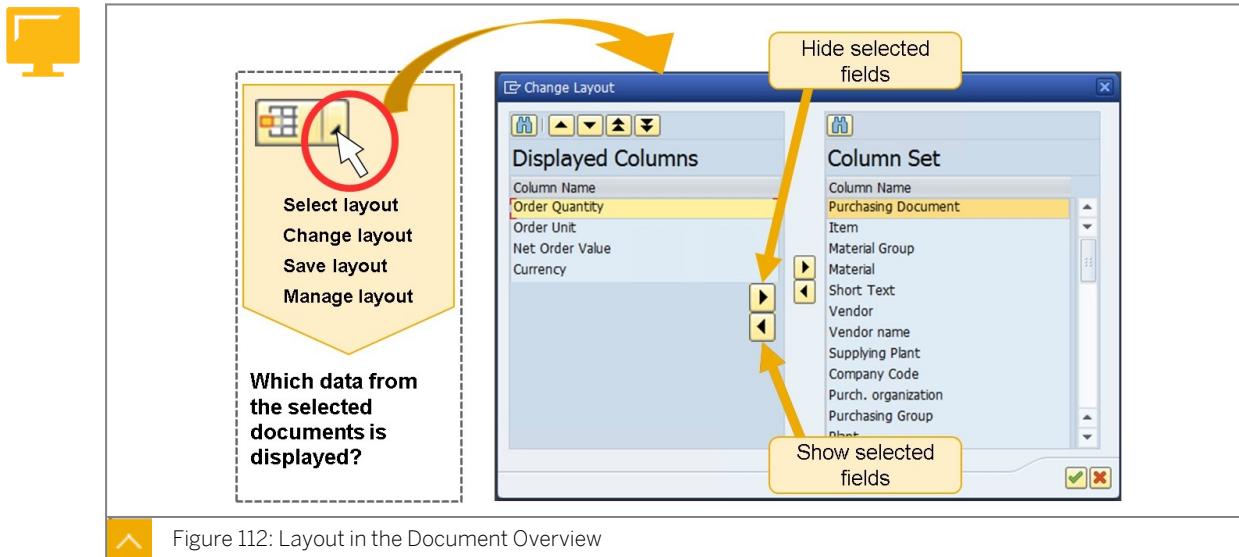


Figure 112: Layout in the Document Overview

Use the layout to change the document overview display. You can then display more fields from the column set, or hide unwanted fields from the column selection. You can also put the fields in any order you choose.

You have the option of saving these changes as your own layout. You can create your own cross-user or user-specific layouts. With the *Manage Layout* function, you can define one layout as a default setting. This layout is automatically used when you open the document overview.



### Hint:

The layouts differ according to whether they are layouts for purchasing documents (purchase orders, requests for quotations, contracts, and scheduling agreements) or for purchase requisitions.

## Automatic Generation of Purchase Orders

You can convert a purchase requisition item that is assigned to a source of supply into a purchase order with automatic generation of purchase orders. A purchase requisition item with an assigned source of supply should contain all information (such as supplier and price) that the system requires to convert the purchase order. How the purchase requisition item is created and how the source of supply is assigned are not important for conversion into a purchase order.

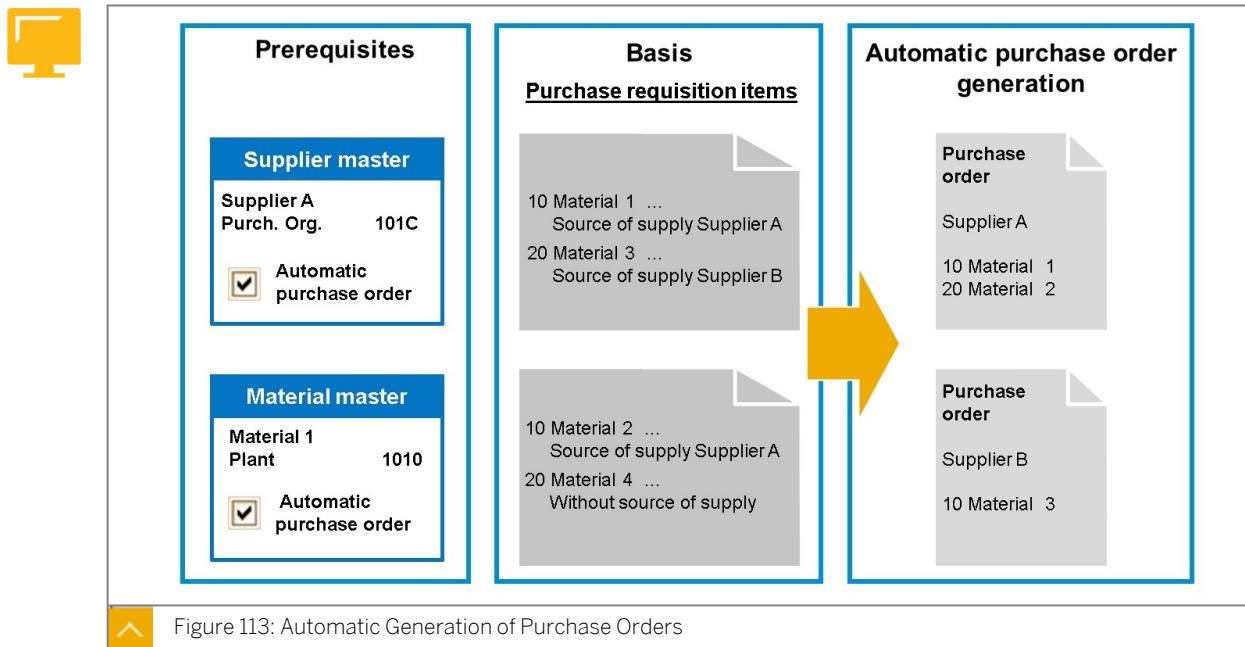


Figure 113: Automatic Generation of Purchase Orders

For the automatic conversion of purchase requisitions into purchase orders, the following prerequisites must be fulfilled:

- In the material master record, the *Automatic PO* indicator must be selected (Purchasing data).
- In the vendor master record, the *Automatic PO* indicator must be selected (Purchase organization data).
- The purchase requisition item must have a valid source of supply assigned to it.

You can select the purchase requisition items to be converted according to several criteria, such as the purchasing group, the purchasing organization, the MRP controller, and the vendor. You can also decide that the system is to create release orders for contracts. During selection, purchase requisition items with assigned contracts are also considered.

Decide how the system groups the purchase requisition items into purchase orders. You can specify, for example, that a new purchase order is created for each purchasing group, plant, or delivery date.

### Items with Errors

If an item in a purchase requisition contains errors, it cannot be converted into a purchase order. An item has errors if the master data is wrong or incomplete (for example, if the vendor is blocked for purchasing). Input data could also be missing (for example, the account assignment from the account assignment category *Unknown* field, or the tax code for the evaluated receipt settlement).

Before you execute the automatic generation of a purchase order, determine whether or not incorrect items have been left out during conversion.

- Exclude items with errors:

The system creates purchase orders from all correct purchase requisition items, according to your requirements. You can see the errors in a log and process the incorrect items again.

- Do not exclude items with errors:

The system creates all purchase orders that can be created by grouping together correct purchase requisition items only, according to your requirements. All other purchase requisition items are not converted.

If, for example, the system has to group together ten purchase requisition items into one purchase order and one of these items has an error, the purchase order could not be created. None of the ten items are then ordered. This is useful if the contents of the purchase requisition items should also be in the purchase order.



### LESSON SUMMARY

You should now be able to:

- Create a purchase order with reference to a purchase requisition using the advanced transaction ME21N
- Create a purchase order automatically using the advanced transaction ME59N

# Using the Advanced Transaction for Goods Receipt



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Post a goods receipt with the transaction for goods movements

## Transaction MIGO for Goods Movements

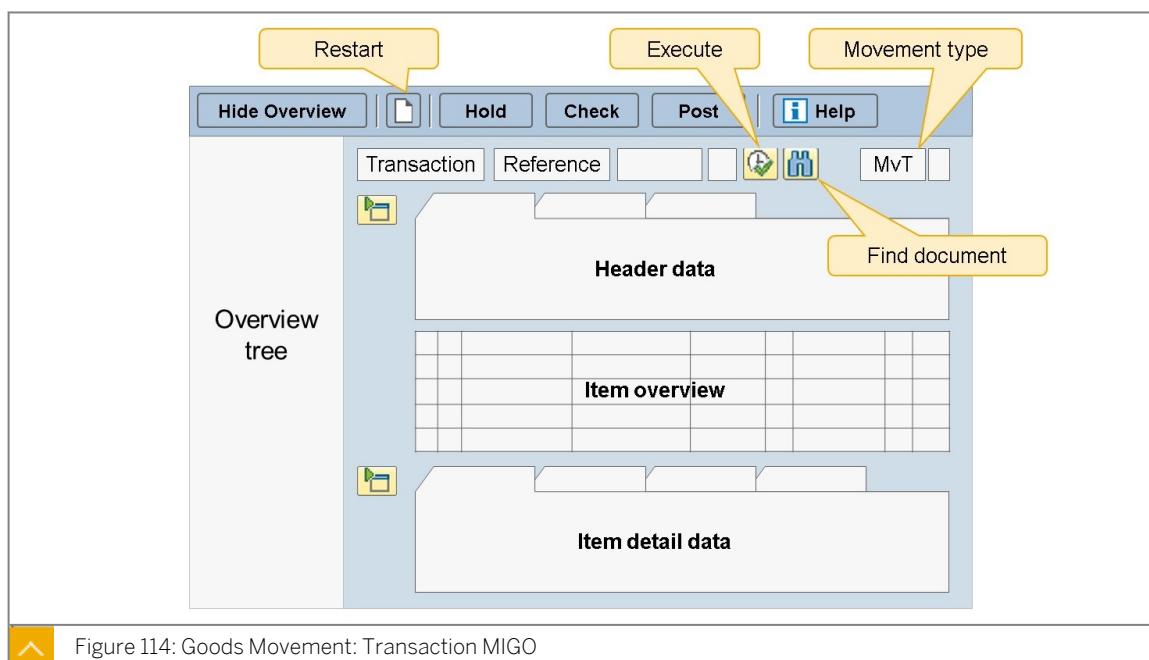


Figure 114: Goods Movement: Transaction MIGO

The transaction for entering goods movements (MIGO) is a single-screen transaction. It is subdivided into the following screen areas: overview tree, header data, item overview, and item detail data. In the header and detail areas, the information is grouped on individual tab pages.

- Overview tree:

Your last ten documents for purchase orders, orders, reservations, material documents, and held data are displayed in this area. The system automatically inserts these documents into the overview tree. These are documents (purchase orders, orders, reservations, material documents) that you referenced when posting a goods movement and the material documents generated in the process. You always have an overview of the activities that you executed most recently. When working with the document overview, you must note that it cannot be influenced by the user.



## Note:

The document overview is not intended for document searches. You can use  (*Search for Document*) for this purpose.

From the document overview, you can choose only material documents to be displayed.

- Header data:

The header data contains information that refers to the complete material document, such as the document and posting date, the document header text, the person who created it, and the entry date. You also access the accounting document from the header data.

- Item overview and item details:

The document items are listed in the item overview. By clicking on the number of an item in the overview, you open up the detail data for the item. The details include information on reference documents and the account assignment.

Except for the item overview, you can open and close the screen areas individually. You can show or hide the overview tree using the *Show/Hide Overview* button. For the header data and item details, use the  button to open the screen areas and the  button to close them.



## Hint:

- Once you have opened the detail data for an item, you can only change this item in the detail data, not in the item overview.
- Each time you invoke the transaction, the screen appears in the setting you chose in the last session before exiting the transaction.
- To terminate processing in the transaction MIGO, you do not have to leave the transaction. Simply choose  (*Restart*) and you can start again.

You can also maintain personal default values for the entry of goods movements by choosing *Settings* → *Default values*. A separate dialog box is opened, in which you specify your personal default values (for the plant and the storage location, for example).

When you use transaction MIGO, first specify which action you wish to perform (*Transaction* field). If you are entering a goods movement, specify whether it is a goods receipt, a goods issue, a return delivery, or a transfer posting. If you wish to display or cancel the material document from a posting you have already made, you can also do this with transaction MIGO by choosing the transactions with the same name.

Which documents you can reference, or whether a reference is unnecessary, depends on the transaction chosen. The following steps describe the entry of a simple goods receipt against a purchase order.

## Enter a Goods Receipt for a Purchase Order

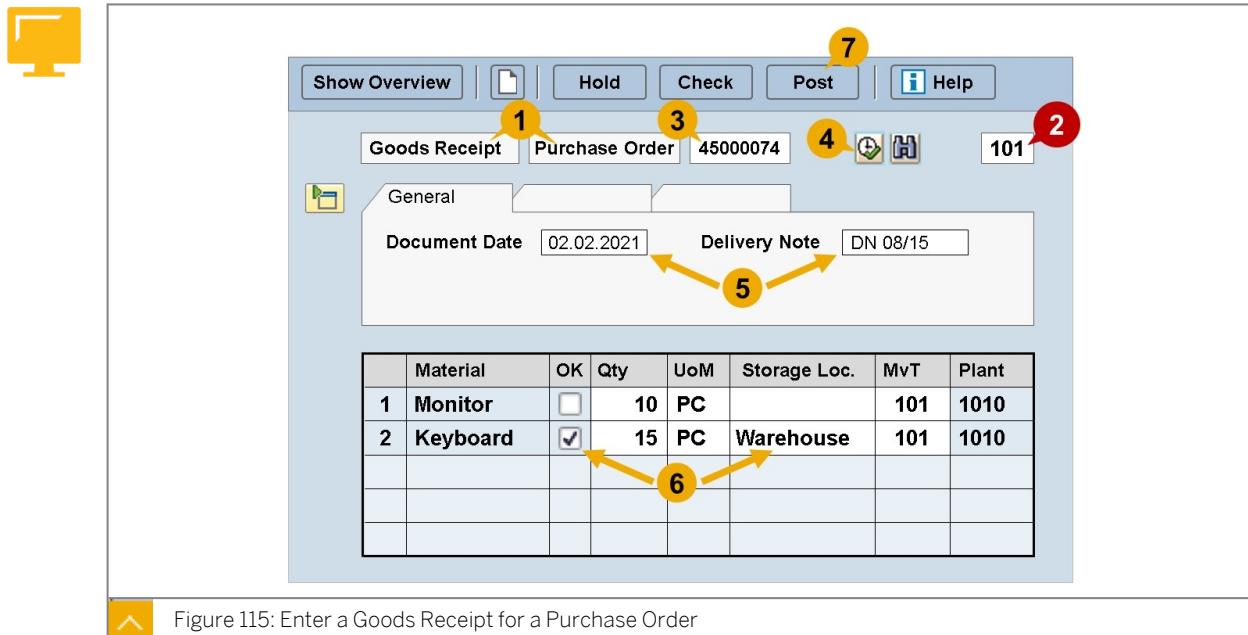


Figure 115: Enter a Goods Receipt for a Purchase Order

From the SAP Easy Access menu, choose *Logistics → Materials Management → Inventory Management → Goods Movement → GR for Purchase Order*.

1. Choose the *Goods Receipt* transaction and *Purchase Order* as reference.
2. Check the default value for the movement type and, if necessary, change it to **101**.
3. Enter the purchase order number.



**Hint:**

You can also search for the purchase order. To do so, choose **H** (Find Purch. Order).

4. Choose **Execute** (Execute) to copy the items from the purchase order.
5. Enter the document date and the vendor's delivery note number on the *General* tab page in the header data.
6. Select the items that were delivered using the *OK* checkbox. If necessary, change the default quantity for the items and specify a storage location.



**Caution:**

Once you have opened the detail data for an item, you can only change this item in the detail data, not in the item overview.

7. Post the goods receipt.

## Stock Types and Stock Overview

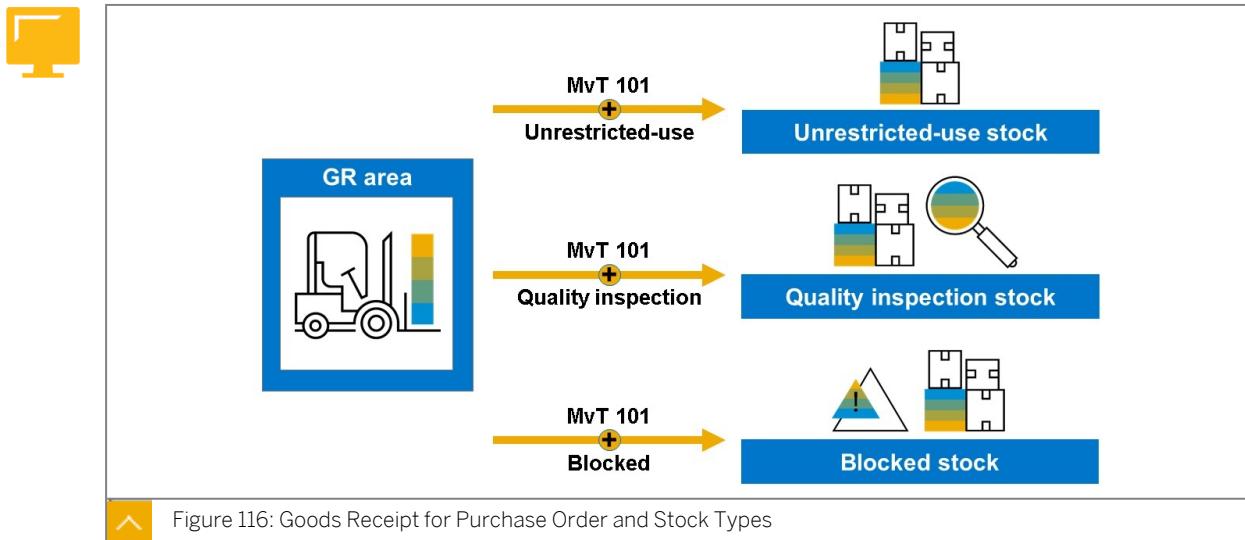
### Stock Types

For goods receipts, you decide which stock type a quantity is posted to. The stock type is relevant for determining the stock available in materials planning, and decides which type of withdrawals are possible from the stock.

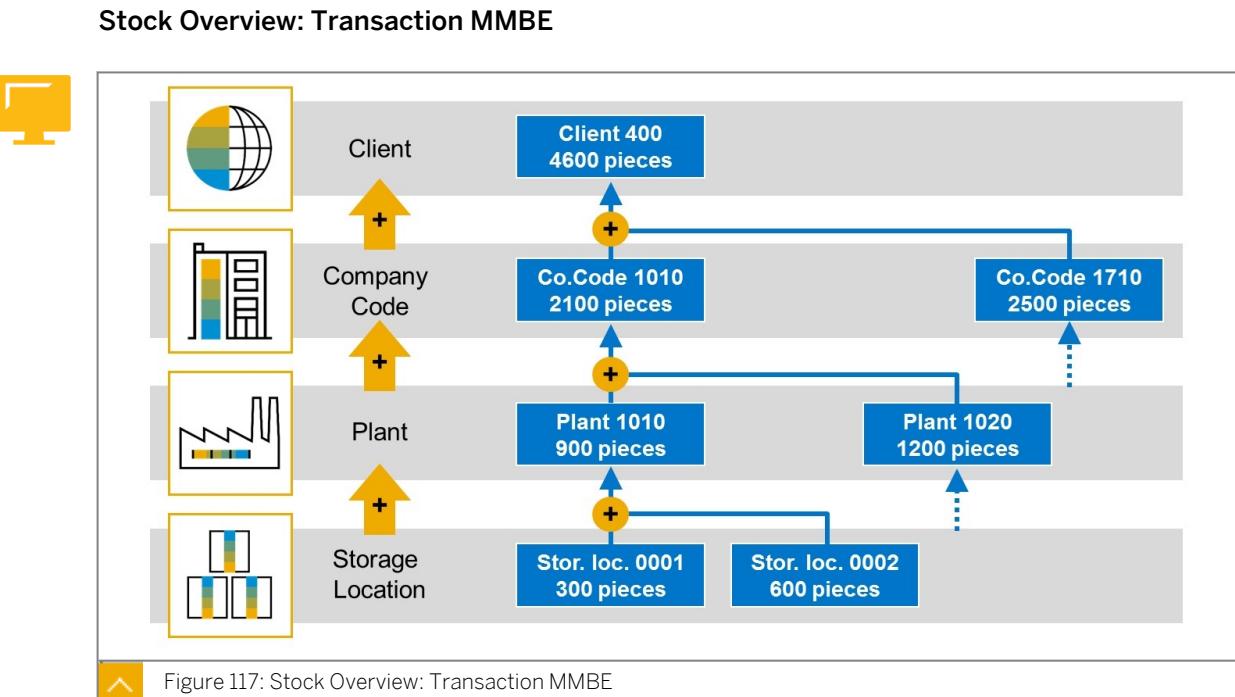
The following three stock types can be distinguished:

- Unrestricted-use stock (no usage restrictions)
- Quality inspection stock (available from an MRP perspective, but no withdrawals are possible for consumption)
- Blocked stock (not usually available from an MRP perspective, and no withdrawals are possible for consumption)

You can post withdrawals for consumption only from unrestricted-use stock. From all stock types, you can post a goods issue for sampling, scrapping, or correcting inventory differences.



You always use movement type 101 to post goods receipts for a purchase order to valued stock. Additionally, you enter a stock type indicator at item level, which enables you to differentiate between different stock types.



The stock overview is an analysis that delivers information about the stock situation of a single material. The material stocks are displayed in the stock overview for each individual organizational level. Quantities posted for a particular stock type are totaled for each organizational unit.

You can display the stock overview for batches or valuation type and special stocks (for example, consignment stock), as well as for organizational units clients, company codes, plants, and storage locations.

To display the stock overview, choose between different display versions. These display versions differ in the listing and sequence of the individual stock types. In Customizing for Inventory Management, the system administrator defines which stocks are displayed in each column and the order in which they are displayed.



## LESSON SUMMARY

You should now be able to:

- Post a goods receipt with the transaction for goods movements



# Using the Advanced Transaction for Invoice Verification



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Enter an invoice with the advanced transaction

### Advanced Transaction for Supplier Invoice

#### Invoice Entry: Transaction MIRO

Transaction MIRO, used for entering invoices and credit memos in Logistics Invoice Verification, is a single-screen transaction. In the case of this transaction, data is divided into header and item data. The figure, Invoice Entry: Transaction MIRO, shows the individual screen areas.

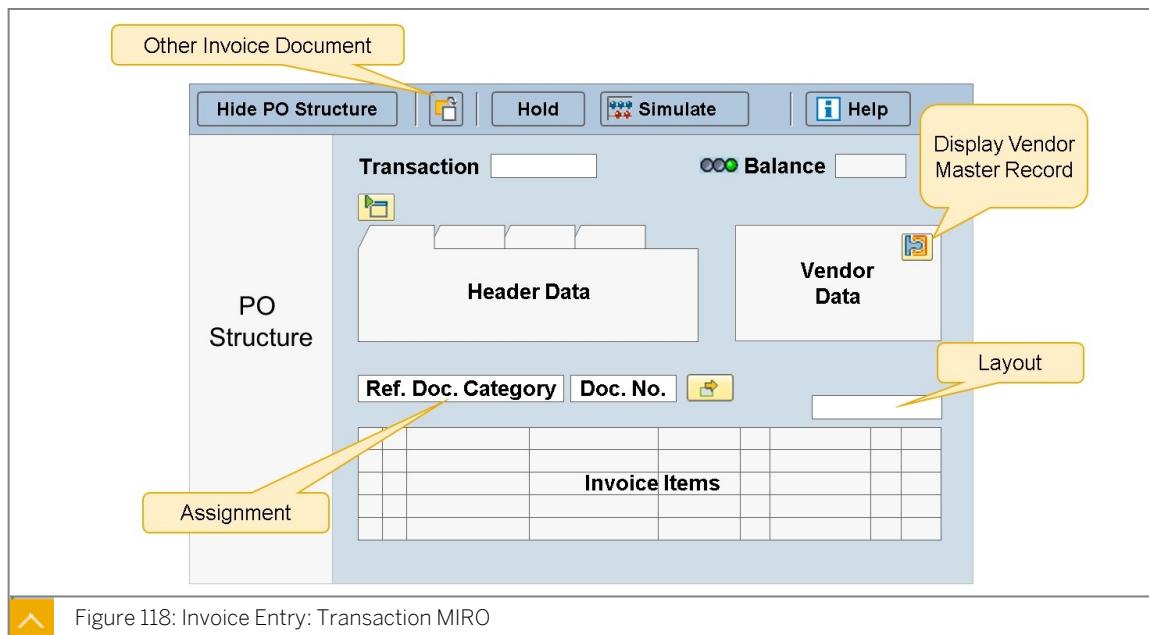


Figure 118: Invoice Entry: Transaction MIRO

The screen areas in transaction MIRO are as follows:

- Transaction: In this field, you indicate whether you are entering an invoice, a credit memo, or a subsequent debit or a subsequent credit.
- Header data: In this area, you enter the header data of an invoice. For example, the invoice number and date, the gross invoice amount and tax amount, the invoicing party, and the terms of payment.

- Assignment: Here you assign an ordering transaction to the invoice so that the system proposes the invoice items to be processed.
- Invoice items: In this list, you can check the proposed invoice items, and change them in line with the actual invoice. You can use different layouts to change the display of the columns and their sequence.
- Vendor data: The detail data pertaining to the invoicing party derived from the vendor master record is shown here. Choose (Display vendor) to branch directly to the vendor master record.

**Hint:**

Vendor data is displayed only if you have entered an invoicing party or referenced to a purchase order.

- Balance: The balance and the invoice status are displayed here. For example, whether an invoice can be posted (green traffic light), or whether the invoice was blocked for payment during posting (yellow traffic light).
- PO structure: In this area, the person entering the invoice can see the purchase order histories for the PO items from the item overview.

### Invoice Entry

Figure 119: Entering an Invoice Against the Purchase Order

From the SAP Easy Access menu, choose *Logistics* → *Materials Management* → *Logistics Invoice Verification* → *Document Entry* → *Enter Invoice (MIRO)*.

If you start transaction **MIRO** for the first time, you must specify a company code in a dialog box.

1. Choose the transaction *Invoice*.

2. In the document header on the *Basic data* tab, enter the invoice date, the number of the vendor invoice (reference), and the gross invoice amount, as well as the tax amount with a tax code.
3. Determine the assignment to a procurement transaction. You can refer to purchase orders, but also to delivery notes of the goods receipts (as long as this information was entered during goods receipt).
4. Enter the number of the document to which the invoice refers.

**Note:**

You can also reference several documents. To do so, choose  (*More Allocation Criteria*). A dialog box appears, in which you can enter several document numbers.

5. In the item list, the system proposes all purchase order items that fulfill the relevant allocation criteria.

Compare the suggested invoice items with the items in the vendor invoice, and correct the proposed values for quantity and value if necessary. The items to be posted must be selected (highlighted in yellow).

**Caution:**

The *Booking OK* indicator in the invoice (transaction MIRO) must not be confused with the *OK* indicator of the goods movement (transaction MIGO). With the *Booking OK* indicator, you can select already checked and processed items.

This indicator has no effect on whether or not the item is considered when the invoice is posted.

6. Check whether the invoice is arithmetically correct. This is the case if the balance is zero.
7. Finally, post the invoice.

**LESSON SUMMARY**

You should now be able to:

- Enter an invoice with the advanced transaction



## Learning Assessment

1. Which of the following data must you specify when creating a quantity contract?

*Choose the correct answers.*

- A Supplier
- B Total value
- C Agreement type MK
- D Delivery date
- E Plant
- F Purchasing organization
- G Release documentation

2. Which indicators can you find in the source list?

*Choose the correct answers.*

- A Automatic purchase order allowed
- B Fixed Supply Source
- C Source list requirement
- D Used in materials planning (MRP)

3. How can you maintain a source list?

*Choose the correct answers.*

- A Manually, per material and plant
- B When creating or changing a purchase order item
- C Automatically by the system

4. Which screen areas are differentiated in the single-screen transaction *Create Purchase Requisition (ME51N)*?

*Choose the correct answers.*

- A Initial data
- B Header
- C Footer
- D Document overview
- E Item overview

5. The single-screen transaction *Create Purchase Order (ME21N)* is divided into the same screen areas as the transaction *Create Purchase Requisition (ME51N)*.

*Determine whether this statement is true or false.*

- True
- False

6. Which documents can you display in the document overview in transaction *ME21N*?

*Choose the correct answers.*

- A Purchase orders
- B Contracts
- C Accounting documents
- D Material documents
- E Purchase requisitions

7. What do you specify using the breakdown in the document overview of transaction *ME21N*?

*Choose the correct answer.*

- A The values for selecting the documents
- B The criteria to be used for sorting the selected documents.
- C The data to be displayed for a selected document.

8. Which prerequisites must be fulfilled for the automatic conversion of purchase requisitions into purchase orders?

*Choose the correct answers.*

- A The purchase requisition header must have a valid source of supply assigned to it.
- B In the material master record, the *Automatic PO* indicator must be selected.
- C The purchase requisition item must have a valid source of supply assigned to it.
- D In the supplier master record, the *Automatic PO* indicator must be selected.

9. As in the document overview of transaction ME21N (*Create Purchase Order*), you can use a selection in the overview tree of transaction MIGO (*Goods Movements*) to decide which documents are displayed.

*Determine whether this statement is true or false.*

- True
- False

10. You want to post a goods receipt for a purchase order with the single-screen transaction for goods movements (MIGO). Which values have to be specified before you enter the purchase order number?

*Choose the correct answers.*

- A Transaction
- B Plant and storage location
- C Movement type
- D Type of reference document
- E Default values for your user

11. Which different stock types exist?

*Choose the correct answers.*

- A Unrestricted-use stock
- B Restricted-use stock
- C Blocked stock
- D Quality inspection stock

12. Which transactions can be entered with the single-screen transaction *Enter Invoice* (MIRO)?

*Choose the correct answers.*

- A Subsequent delivery
- B Invoice
- C Subsequent adjustment
- D Subsequent debit
- E Credit memo

13. What do you indicate and imply when you select the *Booking OK* indicator for an item in the invoice?

*Choose the correct answers.*

- A The item has been checked.
- B The item is selected for the invoice posting.
- C The item has been processed.
- D The item requires a manual booking confirmation when posting.

## Learning Assessment - Answers

1. Which of the following data must you specify when creating a quantity contract?

*Choose the correct answers.*

- A Supplier
- B Total value
- C Agreement type MK
- D Delivery date
- E Plant
- F Purchasing organization
- G Release documentation

Correct. When creating a quantity contract, the following items are required: supplier, agreement type MK, and purchasing organization. The total value must be entered in a value contract. The delivery date and the plant must be specified in a contract release order. The release documentation is automatically updated by a contract release order. For more information, see the Maintaining a Purchasing Contract lesson in the S4500 (or TS450) training material.

2. Which indicators can you find in the source list?

*Choose the correct answers.*

- A Automatic purchase order allowed
- B Fixed Supply Source
- C Source list requirement
- D Used in materials planning (MRP)

Correct. In the source list, you find two indicators, *Fixed Supply Source* and *MRP*. The *Fixed Supply Source* indicator is relevant for sourcing in purchasing. The *MRP* indicator is relevant for sourcing in the MRP run. For more information, see the Creating a Purchase Requisition with Source Determination lesson in the S4500 (or TS450) training material.

3. How can you maintain a source list?

*Choose the correct answers.*

- A Manually, per material and plant  
 B When creating or changing a purchase order item  
 C Automatically by the system

Correct. You can maintain the source list manually for each material and plant or you can also have a source list created automatically by the system. You can also maintain a source list when creating or changing an outline agreement, but not when creating or changing a purchase order. For more information, see the Creating a Purchase Requisition with Source Determination lesson in the S4500 (or TS450) training material.

4. Which screen areas are differentiated in the single-screen transaction *Create Purchase Requisition (ME51N)*?

*Choose the correct answers.*

- A Initial data  
 B Header  
 C Footer  
 D Document overview  
 E Item overview

Correct. The screen areas that are differentiated in the single-screen transaction *Create Purchase Requisition (ME51N)* are header data, item overview, item details, and document overview. For more information, see the Creating a Purchase Requisition with Source Determination lesson in the S4500 (or TS450) training material.

5. The single-screen transaction Create Purchase Order (*ME21N*) is divided into the same screen areas as the transaction Create Purchase Requisition (*ME51N*).

*Determine whether this statement is true or false.*

- True  
 False

Correct. The single-screen transaction Create Purchase Order (*ME21N*) is divided into the same screen areas (header, item overview, item details, document overview) as the transaction Create Purchase Requisition (*ME51N*). For more information, see the Using Advanced Transactions for Purchase Order Creation lesson in the S4500 (or TS450) training material.

6. Which documents can you display in the document overview in transaction ME21N?

*Choose the correct answers.*

- A Purchase orders
- B Contracts
- C Accounting documents
- D Material documents
- E Purchase requisitions

Correct. In the document overview, you can display the different purchasing documents that you require for your daily work like purchase orders, purchase requisitions, RFQs, and contracts. For more information, see the Using Advanced Transactions for Purchase Order Creation lesson in the S4500 (or TS450) training material.

7. What do you specify using the breakdown in the document overview of transaction ME21N?

*Choose the correct answer.*

- A The values for selecting the documents
- B The criteria to be used for sorting the selected documents.
- C The data to be displayed for a selected document.

Correct. In the breakdown, specify the criteria to be used for sorting the selected documents. For more information, see the Using Advanced Transactions for Purchase Order Creation lesson in the S4500 (or TS450) training material.

8. Which prerequisites must be fulfilled for the automatic conversion of purchase requisitions into purchase orders?

*Choose the correct answers.*

- A The purchase requisition header must have a valid source of supply assigned to it.
- B In the material master record, the *Automatic PO* indicator must be selected.
- C The purchase requisition item must have a valid source of supply assigned to it.
- D In the supplier master record, the *Automatic PO* indicator must be selected.

Correct. It is the purchase requisition item that must have a valid supply source assigned, not the header. Apart from that, the *Automatic PO* indicator must be selected in both the material master record and the supplier master record. For more information, see the Using Advanced Transactions for Purchase Order Creation lesson in the S4500 (or TS450) training material.

9. As in the document overview of transaction ME21N (*Create Purchase Order*), you can use a selection in the overview tree of transaction MIGO (*Goods Movements*) to decide which documents are displayed.

*Determine whether this statement is true or false.*

- True  
 False

Correct. The document overview of transaction MIGO (*Goods Movements*) is not intended for document searches. You can use the *Search for Document* function for this purpose. In the documents overview, the system automatically inserts documents that you referenced when posting a goods movement and the material documents generated in the process. For more information, see the *Using the Advanced Transaction for Goods Receipt* lesson in the S4500 (or TS450) training material.

10. You want to post a goods receipt for a purchase order with the single-screen transaction for goods movements (MIGO). Which values have to be specified before you enter the purchase order number?

*Choose the correct answers.*

- A Transaction  
 B Plant and storage location  
 C Movement type  
 D Type of reference document  
 E Default values for your user

Correct. To post a goods receipt for a purchase order with the single-screen transaction for goods movements (MIGO), you have to specify the transaction, type of reference document and movement type before entering the purchase order number. For more information, see the *Using the Advanced Transaction for Goods Receipt* lesson in the S4500 (or TS450) training material.

11. Which different stock types exist?

*Choose the correct answers.*

- A Unrestricted-use stock
- B Restricted-use stock
- C Blocked stock
- D Quality inspection stock

Correct. There is no category called restricted-use stock. However, you can find stock types unrestricted-use stock, quality inspection stock, and blocked stock. For more information, see the Using the Advanced Transaction for Goods Receipt lesson in the S4500 (or TS450) training material.

12. Which transactions can be entered with the single-screen transaction *Enter Invoice* (MIRO)?

*Choose the correct answers.*

- A Subsequent delivery
- B Invoice
- C Subsequent adjustment
- D Subsequent debit
- E Credit memo

Correct. In transaction MIRO, you indicate whether you are entering an invoice, a credit memo, or a subsequent debit or a subsequent credit. For more information, see the Using Advanced Transaction for Invoice Verification lesson in the S4500 (or TS450) training material.

13. What do you indicate and imply when you select the *Booking OK* indicator for an item in the invoice?

*Choose the correct answers.*

- A The item has been checked.
- B The item is selected for the invoice posting.
- C The item has been processed.
- D The item requires a manual booking confirmation when posting.

Correct. This indicator has no effect on whether or not the item is considered when the invoice is posted. This is also not a selection criterion to request for manual booking confirmation. It only indicates that an item has been checked and processed by you. For more information, see the Using Advanced Transaction for Invoice Verification lesson in the S4500 (or TS450) training material.



## UNIT 7

# Introduction to Consumption-Based Planning

### Lesson 1

Introducing Material Requirements Planning (MRP) Process

189

### Lesson 2

Outlining MRP Procedures

193

### UNIT OBJECTIVES

- Explain the function and results of MRP and define the prerequisites
- Outline the different MRP procedures



# Introducing Material Requirements Planning (MRP) Process



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Explain the function and results of MRP and define the prerequisites

## Function and Results of Material Requirements Planning (MRP)

### Function of MRP

The central task of Material Requirements Planning (MRP) is to monitor stocks and, in particular, to automatically generate procurement proposals for purchasing and production. This goal is achieved through the use of various MRP methods, which cover different procedures.

### Results of an MRP Run

Automated material requirements planning concentrates on shortages and automatically creates procurement proposals for purchasing and production. Exception messages are generated for shortages that the MRP run cannot resolve.

The possible procurement proposals that can be created by the automatic planning run are:

- Planned orders
- Purchase requisitions
- Scheduling agreement delivery schedule lines

Planned orders and purchase requisitions are internal planning elements that can be changed, rescheduled, or deleted at almost any time. In contrast, scheduling agreement delivery schedule lines are fixed elements with a binding character: they are transmitted to the supplier either unchanged or in the form of forecast or JIT delivery schedules.

Two factors determine which procurement proposals are generated by the system:

- The procurement type of the planned material:

For each plant, you can specify whether a material is produced in-house, procured externally, or whether both types of procurement are possible. You determine this via an indicator in the material master record called **Procurement Type**. The value *E* stands for in-house production, *F* for external procurement, and *X* if both procurement types are permitted. The procurement type of a material influences which procurement proposals are created by MRP.

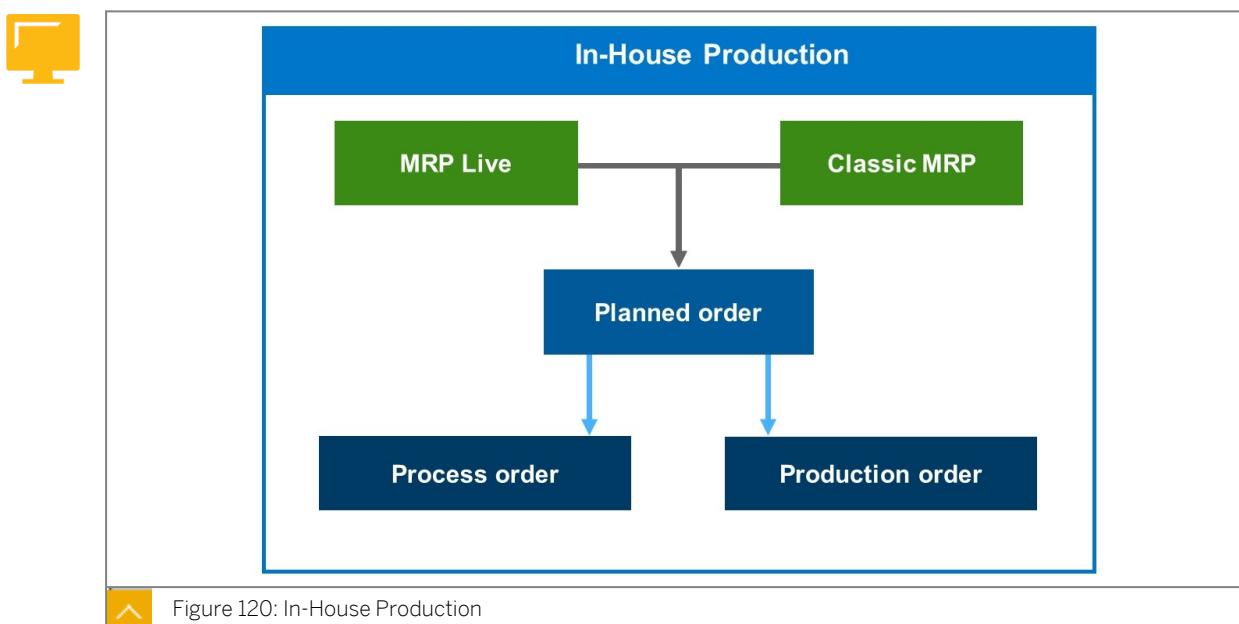
- The planning run method:

SAP S/4HANA offers two ways to start the MRP run. In addition to **MRP Live** (a new MRP run optimized for SAP HANA), there is also the **classic MRP** (which was already available in SAP ERP). In Unit 3, we will come back to the special features, limitations, and essential differences of these two methods.

Depending on the procurement type and the planning method, the following results are obtained:

#### **Materials produced in-house**

The system always generates planned orders for materials produced in-house (procurement type E). When planning is complete, the planned orders can be converted into production orders.



#### **Materials procured externally**

For externally-procured materials (procurement type F), you must distinguish between MRP Live and classic MRP:

- **MRP live**

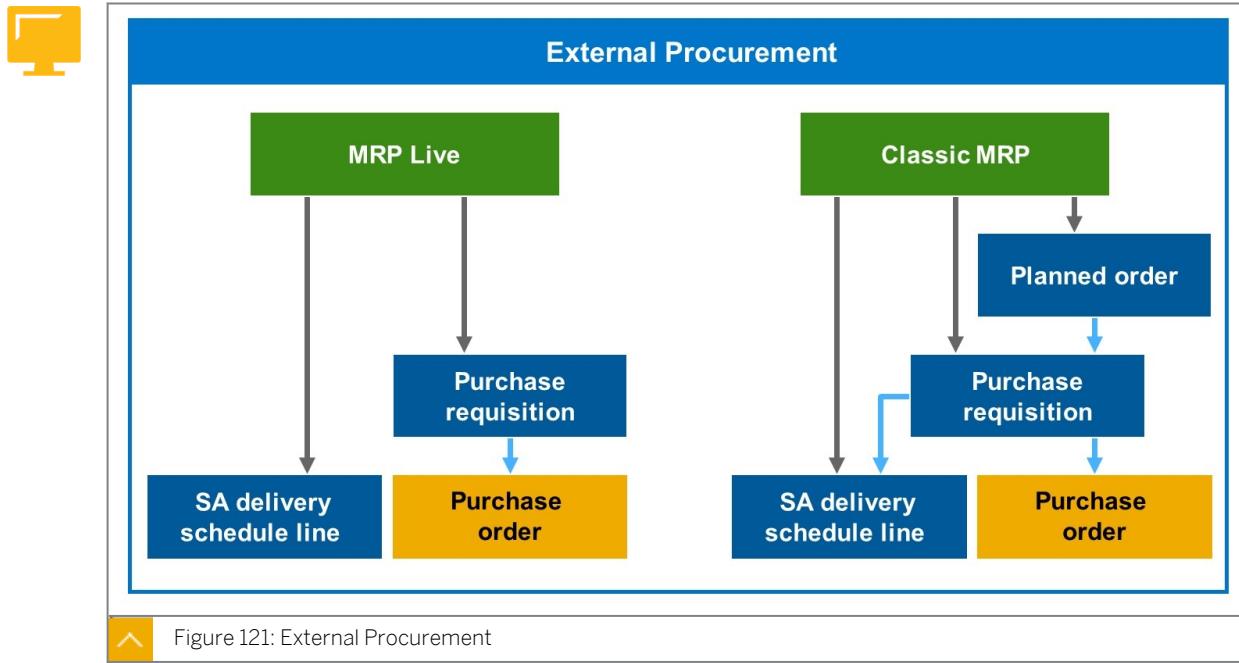
MRP live creates delivery schedule lines for externally procured material with a valid scheduling agreement and it creates purchase requisitions for all other externally procured material.

- **Classic MRP**

With classic MRP, you decide whether the system creates a planned order or a purchase requisition using the creation indicator for purchase requisitions on the initial screen of the planning run.

When a planned order is created, it must be converted into a purchase requisition before a purchase order can be created.

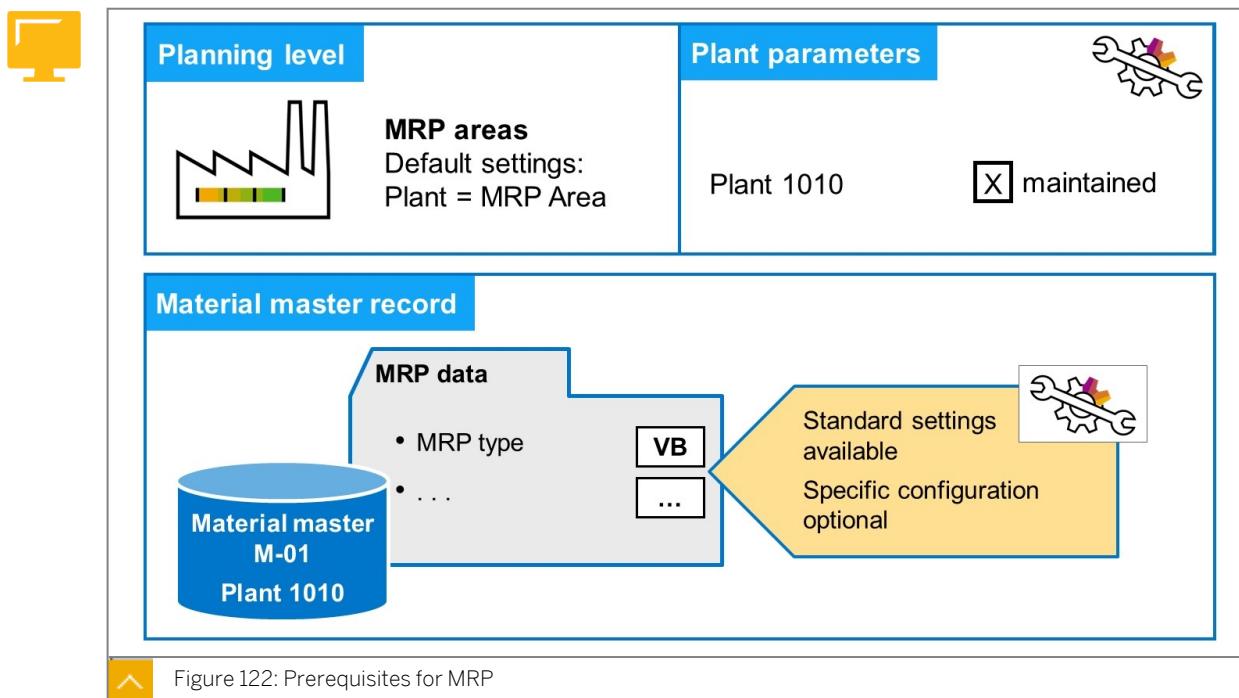
If a scheduling agreement exists for a material you can generate delivery schedule lines in MRP. You control this using the creation indicator for scheduling agreement delivery schedule lines on the initial screen of the planning run.



### Prerequisites for Consumption-Based Planning

Before you can perform demand planning, you must complete the following prerequisites:

- The organizational unit relevant for materials planning in SAP S/4HANA, the MRP areas, must be defined in Customizing. The MRP area corresponds to a plant or part of a plant.
- The plant parameters for the corresponding plant must be maintained in Customizing. These are some plant-specific parameters such as number ranges, processing time, and stocks to be taken into account.
- In the material master record, you must maintain the MRP data for materials that are subject to automatic planning. MRP relevant material data is maintained at plant level. If required, specific data can also be maintained at MRP area level.





Note:

- In SAP ERP you must activate material requirements planning for each plant in Customizing. In SAP S/4 HANA all plants are relevant for MRP by default. There is no activation required.
- SAP S/4HANA does not require the use of MRP areas to be activated. This is active by default. The MRP area is the organizational unit where material requirements planning is performed.

#### Specific Prerequisites

- After a **system conversion** to SAP S/4HANA, the report PPH\_SETUP\_MRPRECORDS is run to populate the new planning file table with operative MRP records.
- Because of the good performance the SAP HANA database offers, it is not necessary to calculate and write sums each time a single dependent requirement is changed. Therefore, neither MRP Live nor the classic MRP support the total dependent requirements in SAP S/4HANA. After a **system conversion** to SAP S/4HANA, ensure that you do not have total requirements in your system before carrying out the planning run. Proceed as described in the “Prerequisite: Clean Up Total Requirements” document on <http://help.sap.com>.



#### LESSON SUMMARY

You should now be able to:

- Explain the function and results of MRP and define the prerequisites

# Outlining MRP Procedures



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Outline the different MRP procedures

## MRP Procedures

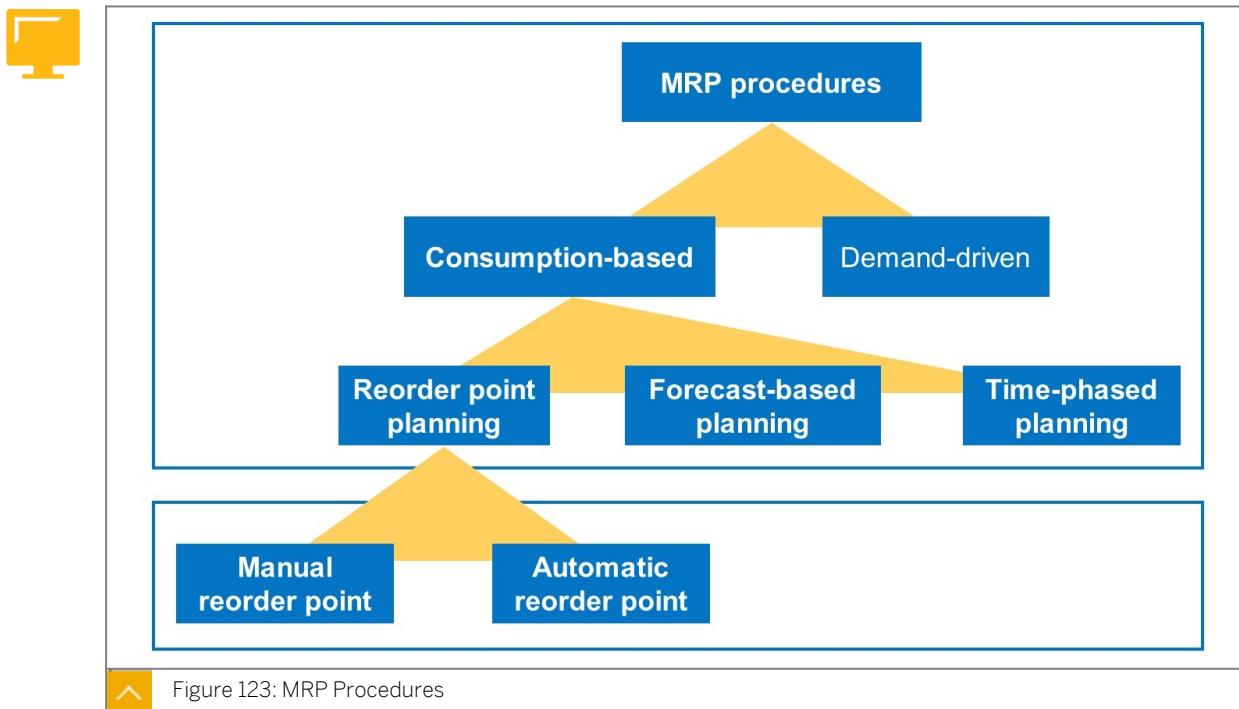
### Introduction

The MRP procedure is defined for each material per plant or MRP area using the *MRP type* field in the material master record. A material can be planned using the following basic procedures:

- **Demand-based:** In demand-based planning, the availability of the individual materials is checked in the planning run in a net requirements calculation. The net requirements calculation includes the available stock, and the planned goods receipts and issues. Demand-oriented planning is based on current and future requirements and is carried out for the entire bill of material structure (multilevel). This procedure is particularly suitable for high-quality A-parts. Requirements that trigger material requirements planning are:
  - Sales orders
  - Dependent requirements
  - Material reservations
  - Stock transfer requirements
  - Planned independent requirements
  - Safety stock
- **Consumption-based:** As the name suggests, consumption-based MRP procedures use past consumption data (historical data) to calculate future requirements using the material forecast or static MRP procedures. Consumption-based MRP procedures have no reference to the master plan. Therefore, the net requirements calculation is not triggered by an independent or dependent requirement. Instead, the net requirements calculation is triggered when a stock level falls below a reorder point or by forecast requirements calculated from consumption data from the past. Consumption-based planning procedures are easy-to-use planning methods that can be implemented with little effort. The use of these procedures is recommended for B and C materials, that is, for comparatively low-value materials with little fluctuating consumption.

In the following section, we describe the available consumption-based planning methods in detail.

## Overview of MRP Procedures



The figure above illustrates the hierarchy of the MRP procedures.

**The following MRP procedures are available in consumption-based planning:**

### Reorder point planning

In reorder point planning, the system checks whether the stock available for MRP (sum of plant stock and fixed receipts) falls below the reorder point which is defined in the plant data of the material master record. If this happens, procurement is triggered by the MRP run and a procurement proposal is created. The reorder level should cover the expected average material requirements during the Replenishment Lead Time (RLT). You can differentiate between **manual reorder point planning**, when the MRP controller determines the reorder point manually, and **automatic reorder point planning**, when the system calculates the reorder point using the forecast.

### Forecast-based planning

In forecast-based planning the MRP creates planned orders or purchase requisitions if total forecast demand, up to a certain point of time, exceeds the total firmed receipt quantity, up to the same point of time. The total firmed receipt quantity includes inventory, production orders, purchase orders, fixed planned orders, and fixed purchase requisitions. Forecast-based planning is a simple planning procedure, which does not require managing planned independent requirements.

### Time-phased planning

Time-phased planning is a variant of the forecast-based planning procedure. Historical consumption values are also used to estimate future requirements. In this procedure, however, the planning run is executed according to predefined intervals.

The MRP procedure is assigned in the material master record for each material and plant (or MRP area). Therefore, the same material can be planned in different plants using different MRP procedures.

## Differences Between Demand-Based and Consumption-Based Planning

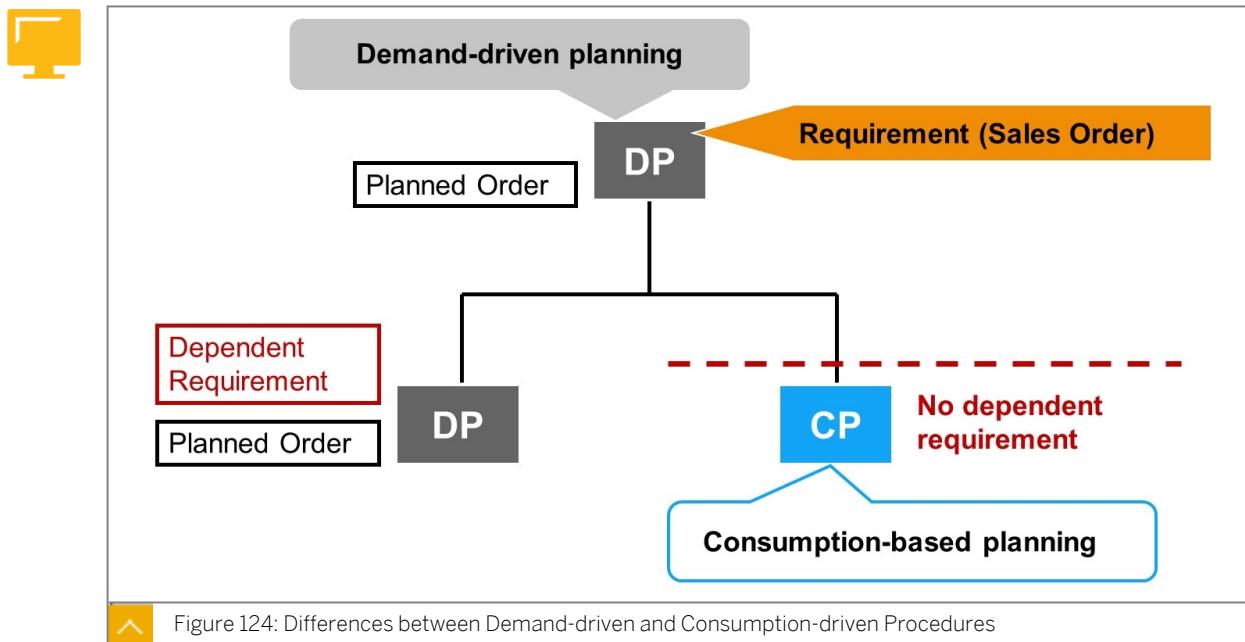


Figure 124: Differences between Demand-driven and Consumption-driven Procedures

The figure above illustrates the difference between demand-driven planning and consumption-based planning using the example of an assembly:

- We assume that this assembly:
  - is produced in-house
  - is planned on the basis of demand
  - consists of two components
- One component is also planned demand-driven while the other is planned consumption-driven.
- We assume that a multilevel MRP run is started. The system plans from top to bottom:
  - First, the assembly is planned and the system creates a planned order to cover the requirements of the sales order.
  - The bill of material (BOM) is exploded and the system generates dependent requirements from the planned order, but only for the component that is subject to demand-based planning. The system does not create dependent requirements for the component subject to consumption-based planning.
  - Then components are also planned.

Note:

If components from the assembly have bills of material as well, these are also exploded and the system performs the planning run for the components of the components. The system repeats this process until all BOM levels have been planned.

In our example, when planning the component level, the system creates a planned order (or a purchase requisition, depending on the procurement type of the component) for the demand-based component to cover the dependent requirements.

For the other component, which is subject to consumption-based planning, the system checks, in the case of reorder point planning, for example, whether the available stock falls below a reorder point in order to generate a procurement proposal.

When choosing the MRP procedure, it can be helpful to consider the material value and the consumption/requirement fluctuations of a material. The higher the material value and requirements fluctuation, the more suitable is the demand-driven process.

The table in the figure below can be used as a decision support for the planning process.



Consumption/ Requirement	Value	High	Medium	Low
Constant				
Slight fluctuation				
Considerable fluctuation				

 Figure 125: Selection of Appropriate MRP Procedure



## LESSON SUMMARY

You should now be able to:

- Outline the different MRP procedures

## Learning Assessment

1. Which of the following MRP elements can be created for a material procured externally by a requirements planning run?

*Choose the correct answers.*

- A Production order
- B Scheduling agreement schedule lines
- C Sales order
- D Purchase requisition
- E Purchase order
- F Outline agreement

2. Which of the following factors influence the type of procurement proposals that are created by the MRP run?

*Choose the correct answers.*

- A The procurement type of a material
- B The MRP procedure of a material
- C The plant parameters
- D The method to run MRP

3. In demand driven planning, planned requirement quantities trigger requirements calculation.

*Determine whether this statement is true or false.*

- True
- False

4. Consumption-based planning methods are usually based only on past material usage.

*Determine whether this statement is true or false.*

True

False

5. In forecast-based planning, you can consider external requirements.

*Determine whether this statement is true or false.*

True

False

## Learning Assessment - Answers

1. Which of the following MRP elements can be created for a material procured externally by a requirements planning run?

*Choose the correct answers.*

- A Production order
- B Scheduling agreement schedule lines
- C Sales order
- D Purchase requisition
- E Purchase order
- F Outline agreement

Correct. For a material with procurement type F for external procurement, purchase requisitions or scheduling agreement schedule lines can be created during a planning run. Only the classic planning run (classic MRP) can optionally create planned orders. You must then convert these into purchase requisitions or schedule lines. A purchase order cannot be created directly by a planning run. You must convert the created purchase requisition into a purchase order in a second step.

2. Which of the following factors influence the type of procurement proposals that are created by the MRP run?

*Choose the correct answers.*

- A The procurement type of a material
- B The MRP procedure of a material
- C The plant parameters
- D The method to run MRP

Correct. The procurement type determines whether a material is procured externally or produced in-house and influences which procurement proposals MRP generates. Also the method how MRP is run (classic MRP or MRP Live) has an influence.

3. In demand driven planning, planned requirement quantities trigger requirements calculation.

*Determine whether this statement is true or false.*

True

False

Correct. Planned requirement quantities trigger requirements calculation in demand driven planning.

4. Consumption-based planning methods are usually based only on past material usage.

*Determine whether this statement is true or false.*

True

False

Correct. As opposed to demand driven planning, consumption-based planning procedures are based only on past material consumption. External requirements, such as sales orders, planned independent requirements, and reservations, are generally not relevant to planning.

5. In forecast-based planning, you can consider external requirements.

*Determine whether this statement is true or false.*

True

False

Correct. In consumption-based planning, you can only consider external requirements during reorder point and time-phased planning.

## Lesson 1

Defining Planning Levels

203

## Lesson 2

Maintaining and Configuring Material Master Data

211

## UNIT OBJECTIVES

- Define MRP areas
- Get an overview of material master data for consumption-based planning
- Get to know MRP type and related fields
- Understand lot-sizing settings
- Understand and control scheduling



# Defining Planning Levels



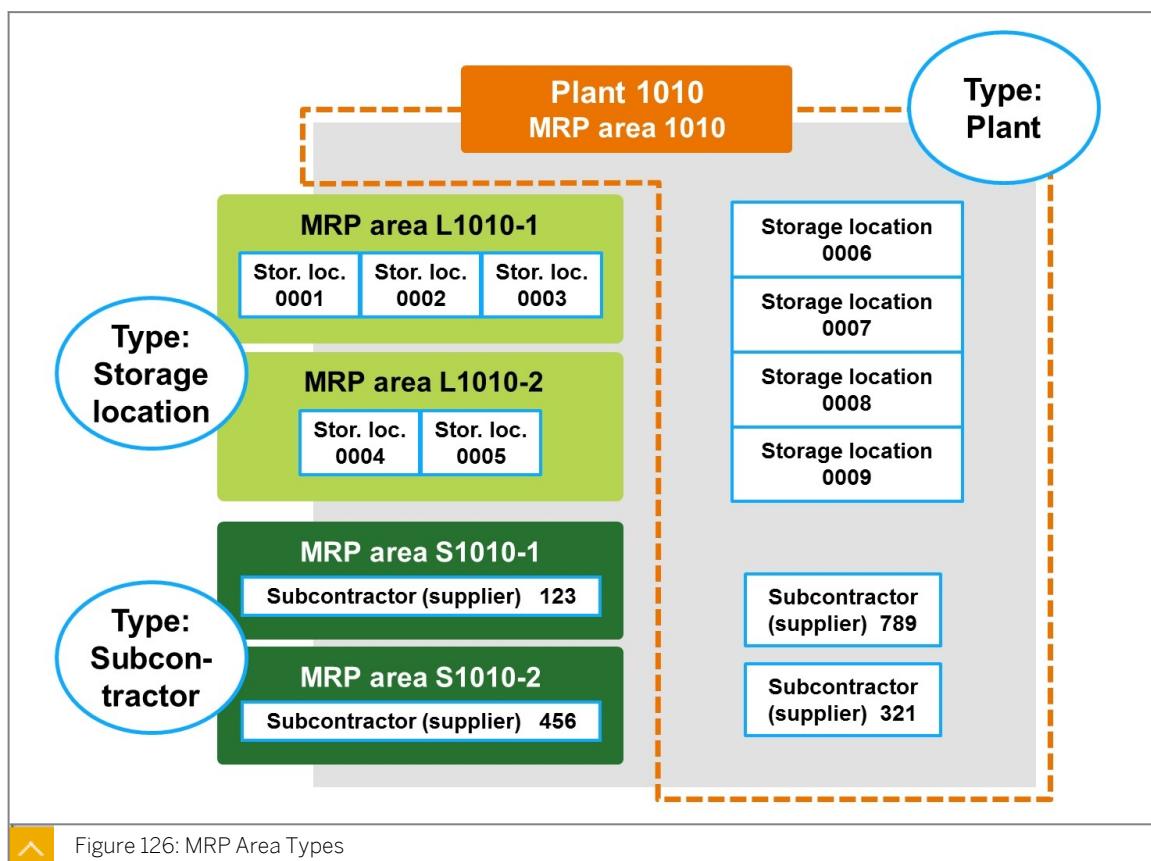
## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Define MRP areas

## Planning Levels

### MRP Area



The **organizational level** relevant for MRP in SAP S/4HANA is the **MRP area**. MRP areas can only be defined within a plant, not across plants. Basically there are three types of MRP area:

- Plant (type 01):** The system automatically creates a plant MRP area for each plant. The number of a plant MRP area is the same as the number of the corresponding plant. If no other MRP areas exist, the plant MRP area covers the entire plant with all storage locations and subcontracting stocks. If you wish to carry out MRP at plant level, you do not need any further configuration.

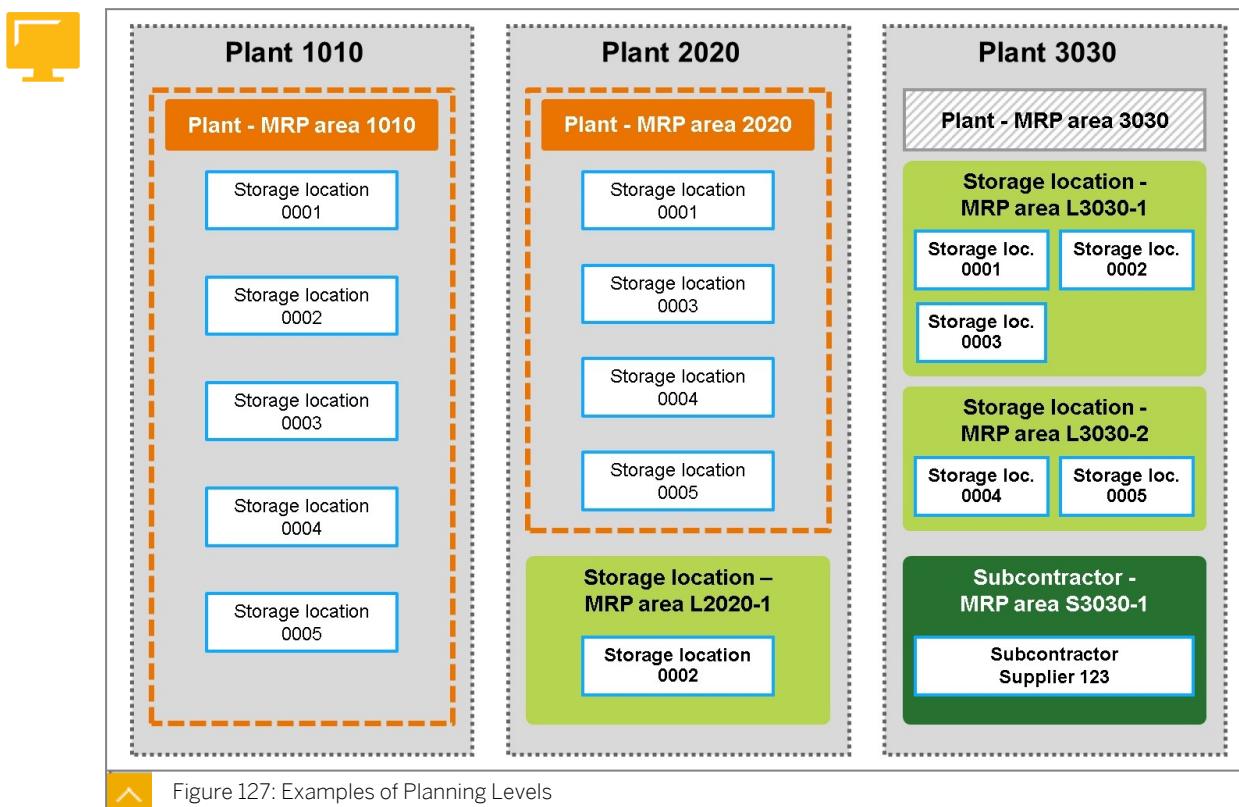
- **Storage location (type 02):** MRP areas for storage locations consist of one or more storage locations within a plant. If you want to plan storage locations separately within a plant, you must configure the MRP areas according to your requirements.

You define an MRP area for a particular storage location by creating an MRP area and then assigning this storage location to it. This storage location is planned separately from the rest of the plant in requirements planning. If you assign several storage locations to one MRP area, these storage locations are then planned together. A storage location can only be assigned to a single MRP area.

- **Subcontractor (type 03):** Subcontractor MRP areas are used to plan the provision requirement for a subcontractor separately and are defined by the assignment of this subcontractor.

Storage location MRP areas and subcontractor MRP areas make it possible to plan materials differently within a plant. The plant MRP area initially includes the entire plant with all storage locations and subcontractor stocks. If you then define MRP areas for storage locations and for subcontractors, the plant MRP area is reduced by exactly the stocks of these storage locations and subcontractors, as these are now planned independently.

### Examples of MRP areas



The figure above shows three examples of how you can define planning levels within a plant.

- Example of plant 1010:

The plant automatically corresponds to a MRP area and this represents the standard configuration. No specific settings are required: when you create a plant, the system automatically creates a corresponding MRP area with the same number.

For materials in this plant, the entire plant stock is taken into account during planning and every material that is maintained in this plant is planned uniformly within the plant. This scenario is suitable if you want to carry out material requirements planning at plant level; then you do not need any further configuration.

- Example of plant 2020:

Storage location 0002 is planned separately from the rest of the plant. To fulfill this requirement, you must create an MRP area for storage location and assign it to storage location 0002. The plant MRP area is reduced then by exactly this storage location. Since the remaining storage locations are planned together, they can remain assigned to the plant MRP area. No further settings are required for this.

- Example of plant 3030:

This plant is divided into three MRP areas: two groups of storage locations, each group corresponding to a storage location MRP area, and an additional MRP area for a subcontractor.



Note:

In SAP ERP, you need to activate the MRP areas in Customizing. Accordingly, you can work in SAP ERP with or without MRP areas. If you have not activated MRP areas in SAP ERP, you run MRP at plant level (even storage location MRP is also possible in SAP ERP).

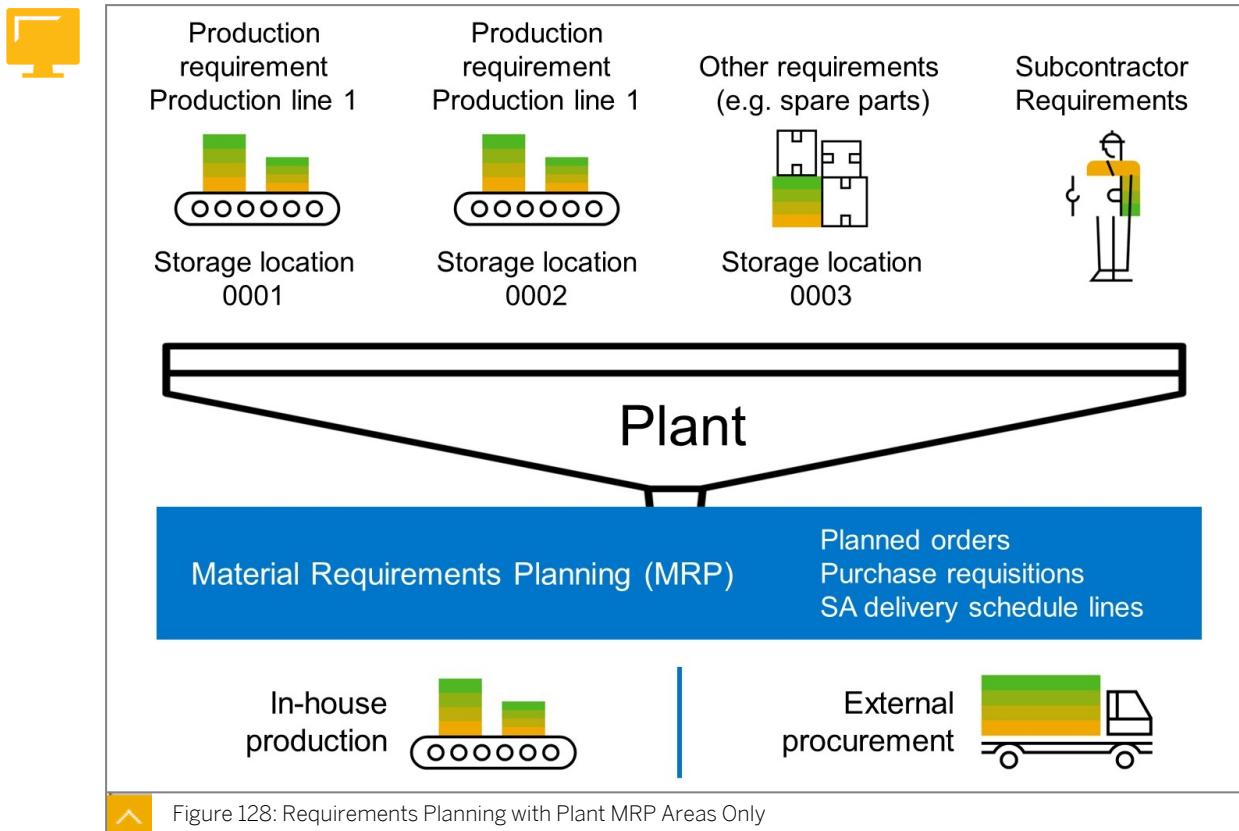
In SAP S/4HANA, the MRP area is active by default and cannot be deactivated. The MRP area is therefore the only planning level in SAP S/4HANA.

You must create storage location MRP areas and subcontractor MRP areas in Customizing. Choose *Materials Management* → *Consumption-Based Planning* → *Master Data* → *MRP Areas*. Their number must be assigned manually and must contain at least five alphanumeric digits.

Plant MRP areas are generated automatically and their number corresponds exactly to the plant number.

## Material Requirements Planning with Plant MRP Areas Only

### Requirements Planning with Plant MRP Areas Only



If only plant MRP areas exist, the requirements planning takes place at plant level. Therefore, all material requirements for all storage locations are summarized at plant level.

Depending on the procurement type for a material, the system triggers either in-house production or external procurement to cover the requirements.

Settings defined in the MRP views of the material master are valid for the entire plant.

## Material Requirements Planning with MRP Areas for Storage Locations and Subcontractors

### Features of MRP Areas for Storage Locations and Subcontractors

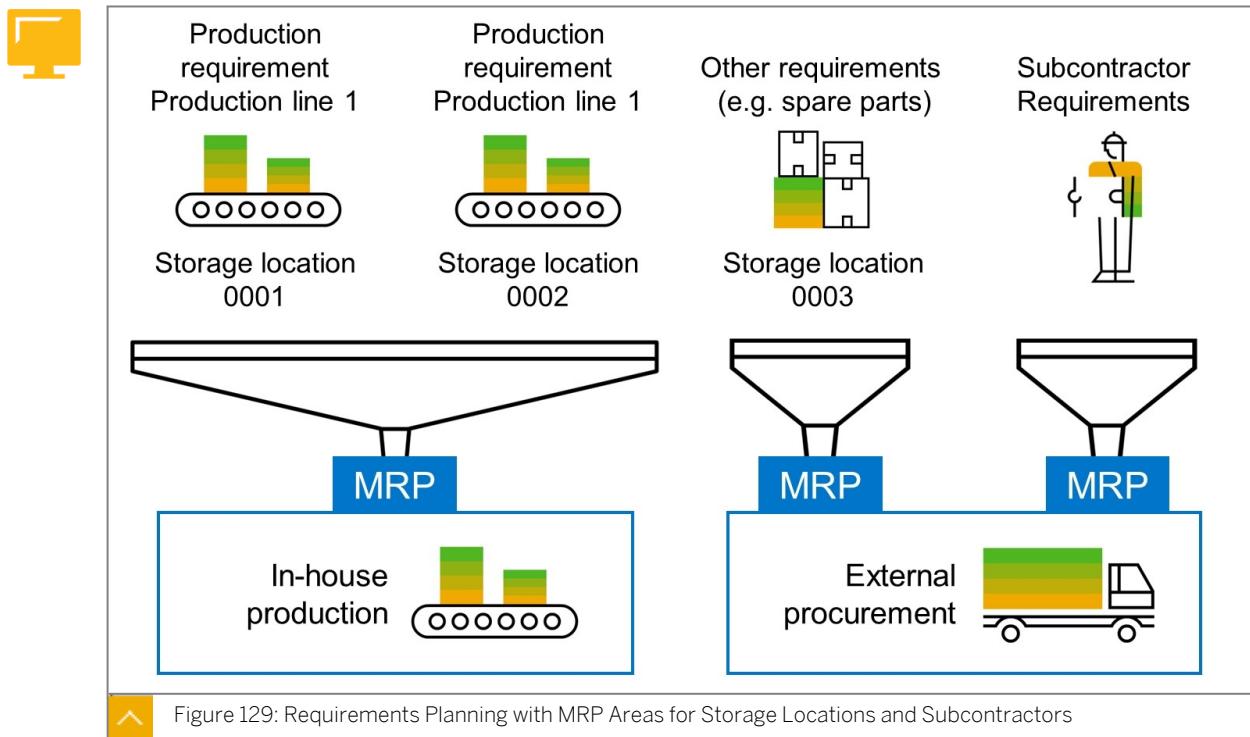


Figure 129: Requirements Planning with MRP Areas for Storage Locations and Subcontractors

The use of MRP areas for storage locations and subcontractors enables greater differentiation in planning. Planning can take place separately for each MRP area. By defining specific MRP areas, you can perform precise requirements planning for these areas. Using MRP areas enables better-timed material staging in appropriate quantities, for example, for a particular production line, a storage location for spare parts, or subcontractor stock.

In storage location MRP areas, one or more storage locations are grouped together into one organizational unit. This unit is planned separately from the rest of the plant and MRP areas. You can assign a receipt element (procurement) or issue element (requirement) to a storage location MRP area using the storage location. You can assign a storage location to one MRP area only.

You can also use an MRP area to plan the provision of components for individual subcontractors separately. An MRP area can be defined for a subcontractor (supplier), and the corresponding components to be provided are assigned to this MRP area.

In each MRP area, separate evaluation of planning results takes place with its own MRP lists and stock/requirements lists. In the collective display, materials can be selected both specifically for one MRP area and for all MRP areas of a plant.



#### Hint:

You can activate the *Cross-Plant* view for the stock/requirements list (MD04).

This view displays the MRP elements for all plants and MRP areas together. Activate the cross-plant view in Customizing under *Production → Material Requirements Planning → Evaluation → Display Material Groupings*.

You can assign different planning parameters to a material for each MRP area in order to adjust requirements planning for these individual MRP areas. You can also carry out a material forecast with separate parameters for each MRP area.

Material consumption is updated separately in each MRP area.

### Preparation of Planning with MRP Areas

You define MRP areas in Customizing including the type and plant assignment. In storage location MRP areas, define a receiving storage location. To complete the process of defining the storage location MRP area, assign one or more storage locations. When defining subcontractor MRP areas, assign only one subcontractor.

You create MRP areas for storage locations in Customizing under *Materials Management → Consumption-Based Planning → Master Data → MRP Areas → Define MRP Areas for Plant/Storage Locations*.

You create MRP areas for subcontractors in Customizing under *Materials Management → Consumption-Based Planning → Master Data → MRP Areas → Define MRP Areas for Subcontractors*.



Hint:

The number of an MRP area must consist of a minimum of five digits to avoid overlaps with the plant MRP area.

After you have created storage location MRP areas, you assign materials to these MRP areas. You do this by creating MRP area-specific material master data.



Note:

If you work with subcontractor MRP areas, it is not mandatory to create MRP area-specific material master data for each component to be provided to the subcontractor, but it is of course possible if you want to override the suggested planning parameters from the plant data.

### Assignment of MRP Elements to a Storage Location MRP Area

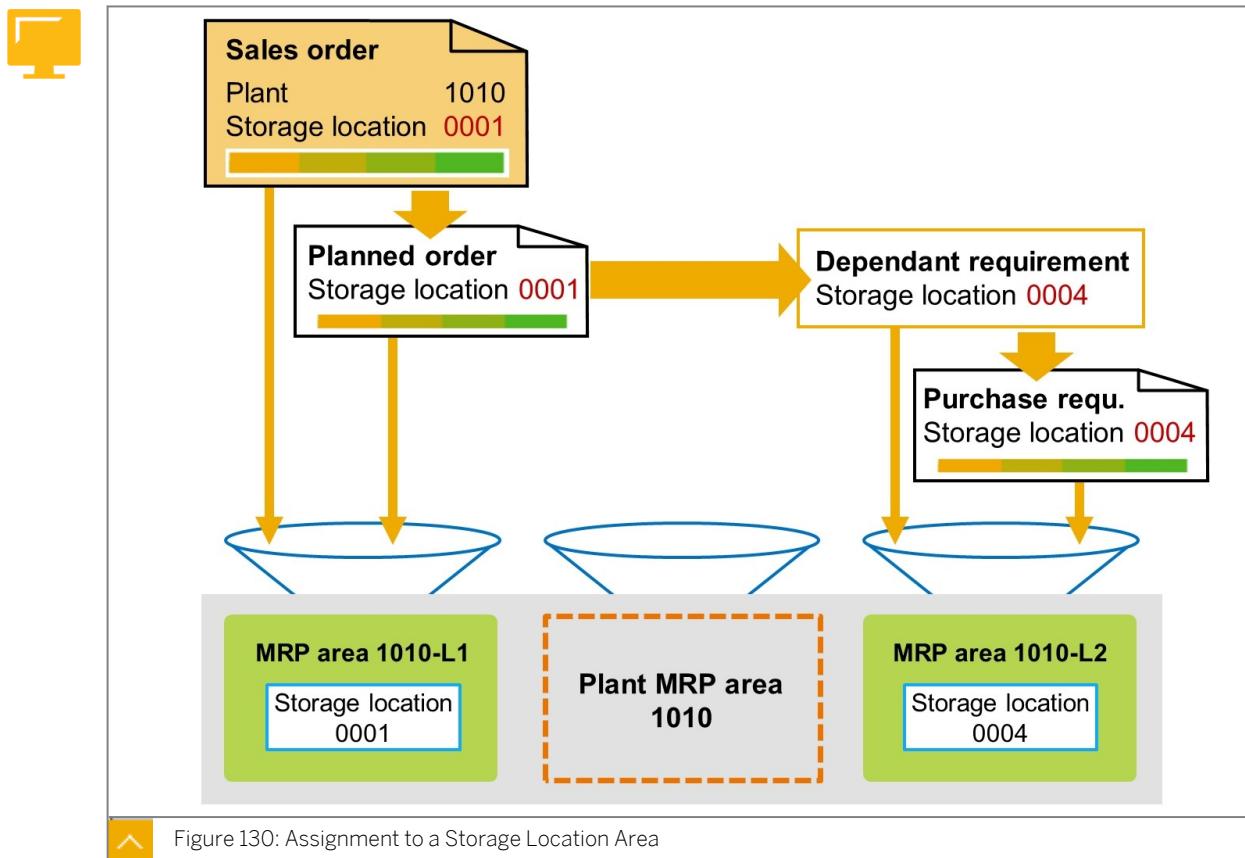
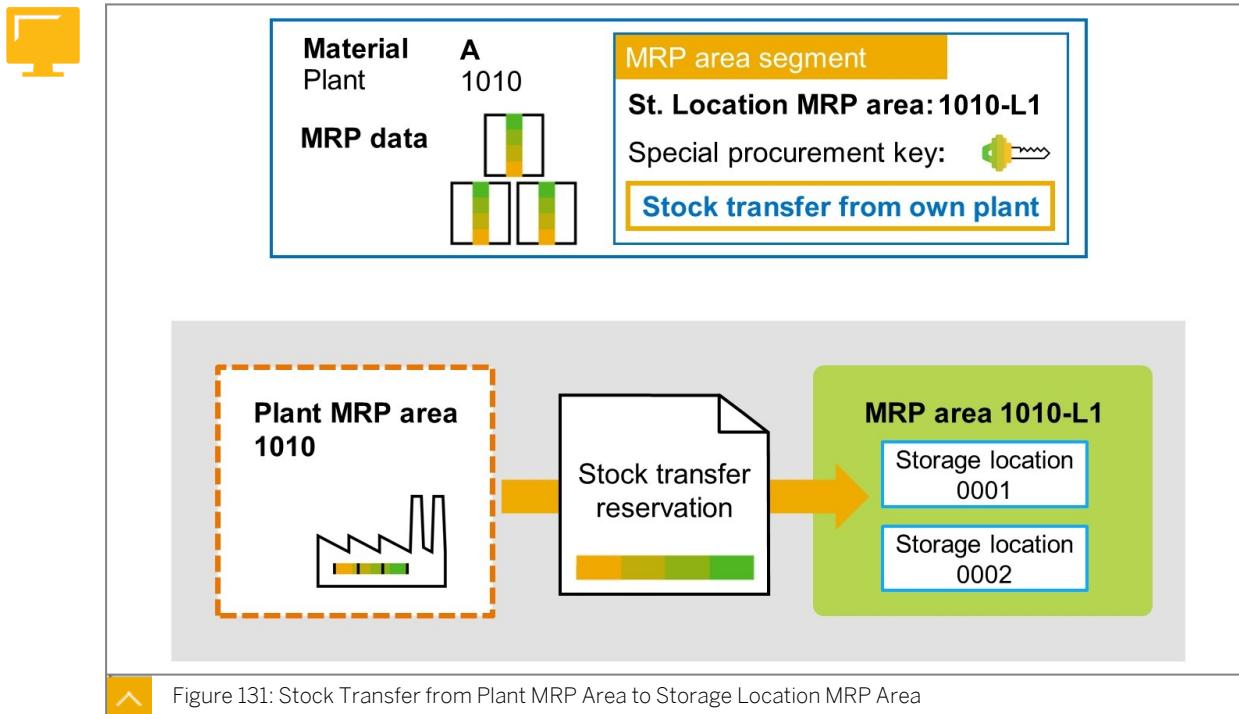


Figure 130: Assignment to a Storage Location Area

Receipt elements (planned orders and purchase requisitions) are assigned to the receiving storage location during the planning run. The system checks whether the receiving storage location belongs to the MRP area. If it does, the receipt element is assigned to the MRP area. The receiving storage location displays in the MRP list or in the current stock/requirements list in the storage location column or the procurement element itself.

Issue elements (planned primary requirements, sales orders, secondary requirements, and reservations) are assigned to the issuing storage location determined by the system during the planning run. The issuing storage location displays in the MRP list, the current stock/requirements list in the storage location column, or in the component list of the planned order. If the storage location allows the assignment of the material to an MRP area, the requirement is planned in this MRP area. If no assignment is possible, planning takes place in the plant MRP area.

### Special Procurement: Stock Transfer from Plant MRP Area to Storage Location MRP Area



You can procure materials planned in a storage location MRP area by using the special procurement type *Stock transfer from plant to MRP area*.

To transfer stock from the plant to the MRP area, the MRP area segment must have been created in the material master and assigned the corresponding special procurement key *Stock transfer from plant to MRP area*.

During material requirements planning, the system creates a stock transfer reservation in the storage location MRP area, and a material reservation in the plant MRP area.

The external procurement storage location entered in the MRP area segment of the material master acts as the receiving storage location. If the external procurement storage location has not been defined, the receiving storage location entered in Customizing for the MRP area is used.

The actual procurement is carried out by the plant. When posting the stock transfer to the MRP area, the material is transferred with reference to the reservation.



**Hint:**  
Planning stock transfers between storage location MRP areas is not supported.



### LESSON SUMMARY

You should now be able to:

- Define MRP areas

## Maintaining and Configuring Material Master Data



### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Get an overview of material master data for consumption-based planning
- Get to know MRP type and related fields
- Understand lot-sizing settings
- Understand and control scheduling

### Material Master Record

#### MRP Data in the Material Master Record

The material master contains information about all materials that a company procures, produces, stores, or sells. The material master is the central source for material-specific data, which is stored in individual material master records.

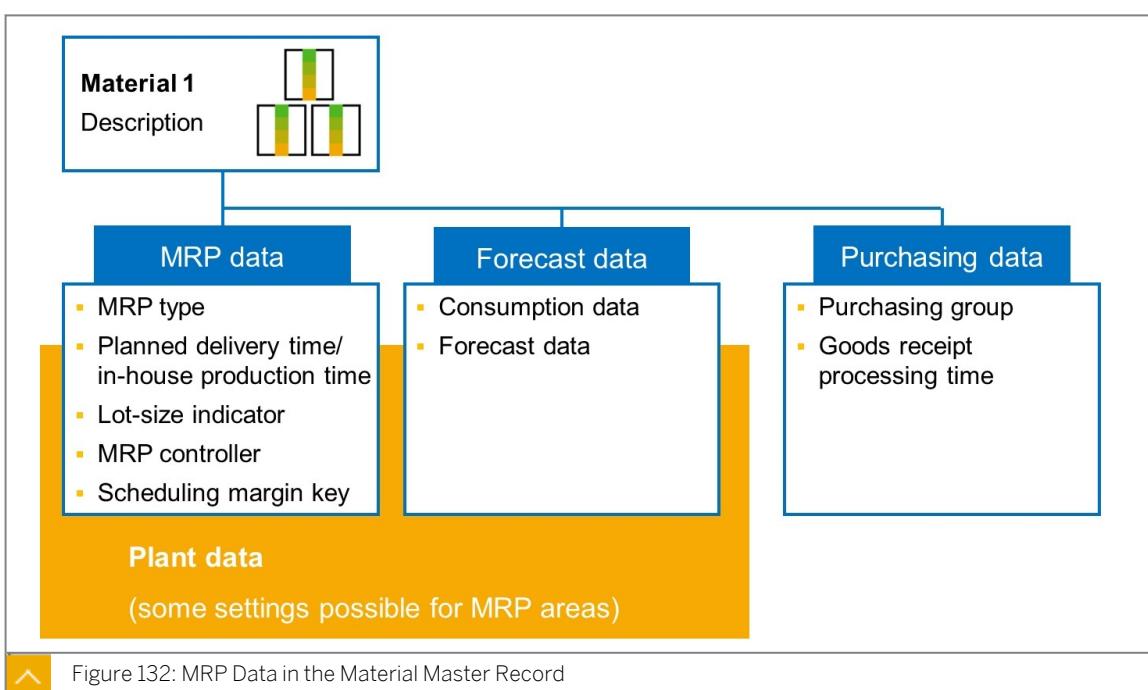


Figure 132: MRP Data in the Material Master Record

In a company, different departments work with material data, and each department requires different information about a material. Therefore, the data in the material master record is sorted into individual views that reflect the different departments.

You can find MRP-relevant material data in the MRP views (MRP 1, MRP 2, MRP 3, MRP 4). The forecast view allows you to maintain forecast data. The purchasing view also contains data that may be relevant for MRP. In addition to being structured by views, material master data is also structured by organizational units.

A material can only be planned automatically if the MRP relevant data has been created in the respective plant and, if necessary, MRP area.

### Categories of MRP Data

MRP data in the material master record can be subdivided into the following categories:

- General data that can or must be defined (for example, the MRP controller, the procurement type, the safety stock)
- Data that controls the MRP procedure (like the MRP type, the reorder point in case of reorder point planning)
- Data that is required for scheduling (like the planned delivery time or the goods receipt processing time)
- Data that is required for calculating the lot-size (like the lot size procedure and its related data like the fixed lot size or the maximum stock level)

On the SAP Easy Access screen, choose *Logistics → Materials Management → Material Master → Material → Create (General) → Immediately* (MM01) to create MRP views in the material master record.

On the SAP Fiori launchpad, you can use the *Create Material* app, which is identical to the back-end transaction MM01, or the *Manage Product Master Data* app, which has reduced scope.

### Organizational Level of Material Data Relevant for MRP

MRP relevant data is stored in the material master record at **plant** level. You can also maintain specific data for **MRP areas** on the MRP 1 view.

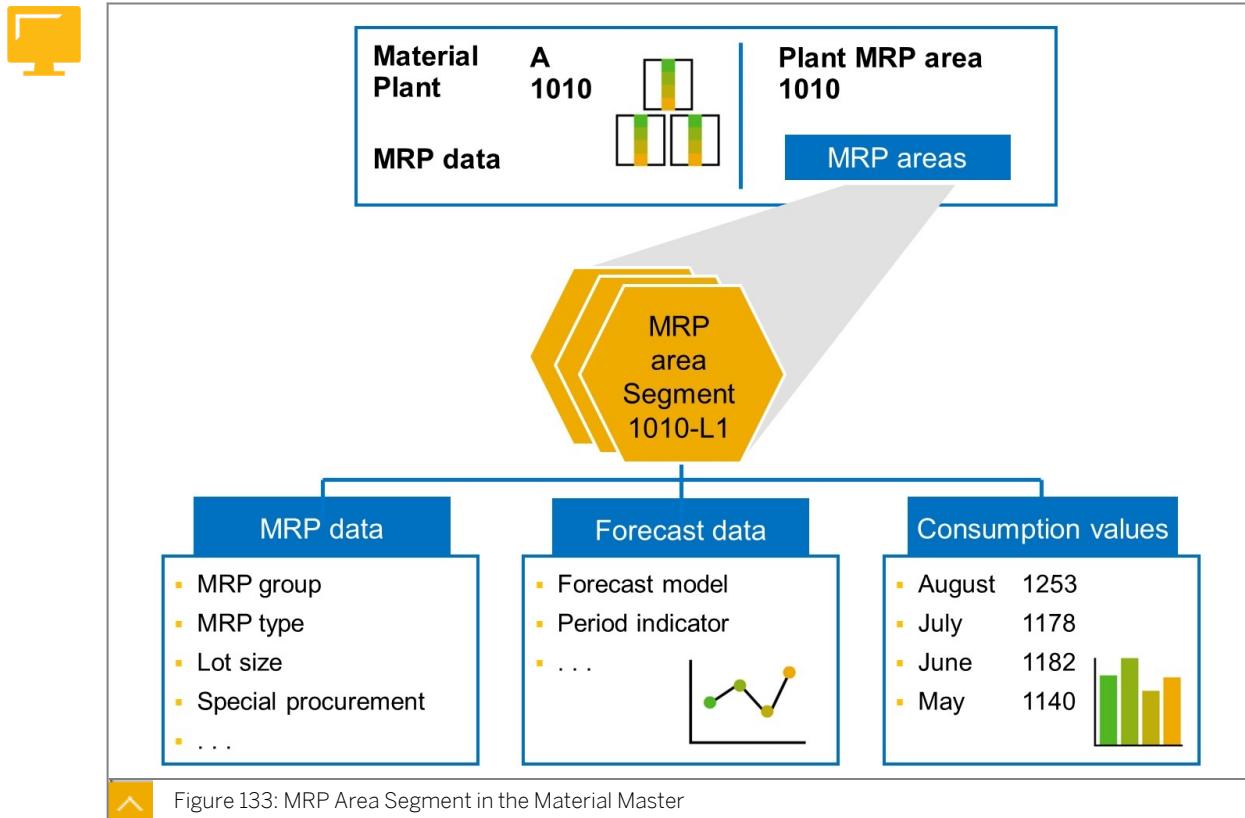
To plan a material separately for each MRP area, you must create specific MRP area segments in the *MRP 1* view of the material master record. In each MRP area segment, you can maintain specific MRP parameters, such as the lot size or the MRP type. This ensures that the planning of the material in this MRP area is separated from the planning in the plant MRP area.



#### Note:

If you do not create specific storage location MRP area data for a material, the material is planned in the plant MRP area only. If MRP area data exists, the material can be planned both in the plant MRP area and in the MRP area.

In contrast, in SAP S/4HANA, separate planning of every subcontractor is possible **without having to create MRP area-specific** material master data. The SAP S/4HANA MRP uses default planning parameters if MRP area-specific material master data do not exist.



One material may have several MRP area segments.

You can execute an independent material forecast with separate parameters for MRP areas. This forecast cannot be made interactively. Only individual or overall forecasts may be made. The historical values are updated separately for each MRP area.

You can delete MRP area segments. To delete MRP area segments, call the MRP 1 view in the material master record and branch to the MRP area segments. In the *Overview: MRP Areas* dialog box, set the *Flag for Deletion* indicator for the MRP area segment to be deleted. Any dependent requirements or reservations planned in this MRP area are then transferred to the plant MRP area.



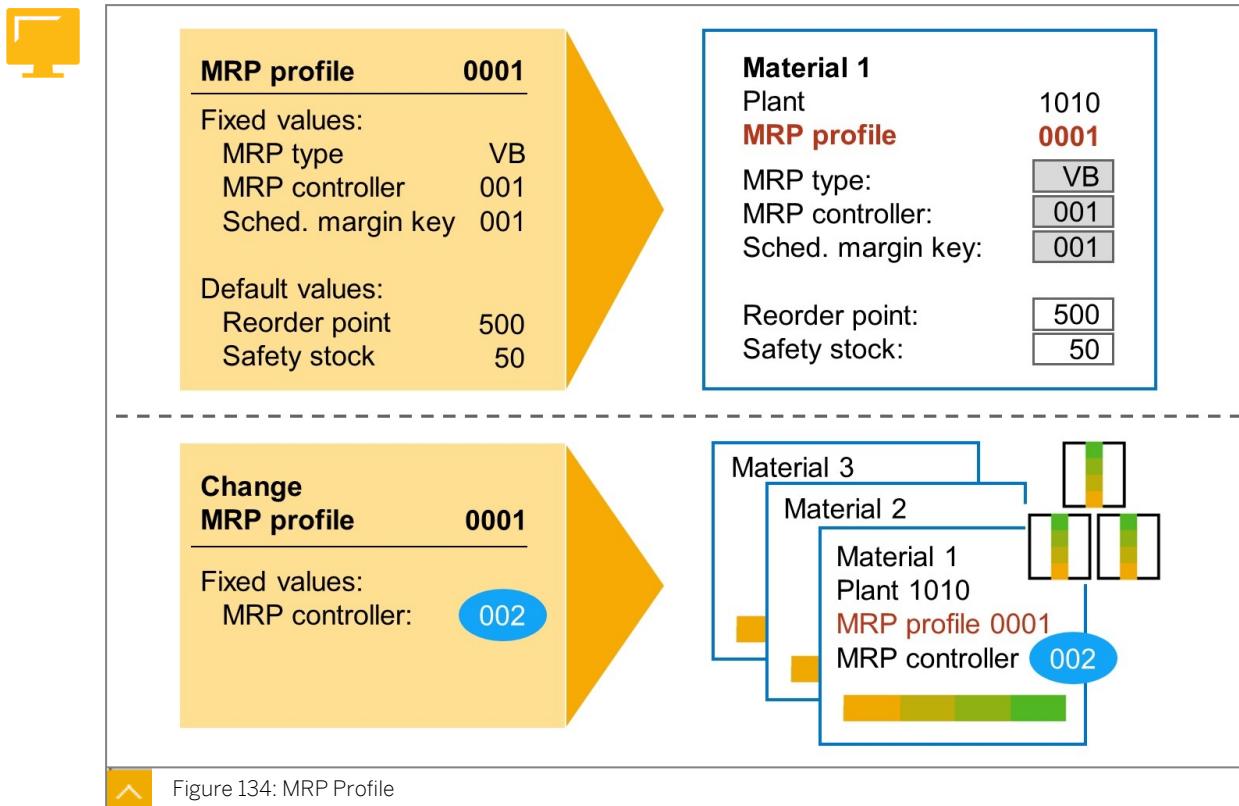
#### Hint:

With the RMMDDIBE report, you can create, change, or delete material master records for MRP areas in a mass processing job.

In Customizing, you can display a list of all materials that are assigned to an MRP area. Choose *Materials Management* → *Consumption-Based Planning* → *Master Data* → *MRP Areas* → *Define MRP Areas Plant/Storage Locations*. Double-click to call an MRP area and choose *Material Overview for MRP Area*.

## MRP Profile

### Introduction to MRP Profiles



You can maintain MRP parameters with MRP profiles. The MRP profile is a key in which you can store MRP parameters that do not depend on the material master record. A profile is a collection of fields for the configuration of material master records. The information determined in the profile is standard information that is repeatedly required in a similar combination while maintaining different materials. A profile simplifies the maintenance and administration of MRP data.

**You need to specify the following information in an MRP profile:**

- Fields that are populated automatically when creating MRP data in the material master record
- The values that are entered into these fields
- Which of those values can be overwritten (default values), and which cannot be overwritten (fixed values)

On the SAP Easy Access screen, choose *Logistics → Materials Management → Material Master → Profile → MRP Profile → Create (MMD1)* to create an MRP profile.



**Hint:**

If you subsequently assign a profile to a material master record, only the fixed values are copied from the profile into the master record.

## Working with Profiles

When creating material master records, enter a profile to make an assignment between the material master record and the profile. This assignment means that the fixed values copied from the profile in the data screen cannot be changed in the material master records. However, you can overwrite the copied proposal values. When you save the material master records, the values are written to the material master record.

When changing a profile, the system creates a background job (PROFILE) that updates all material master records allocated, in addition to updating the changed values in the profile. A change document is automatically created for all materials with changes. The time at which the PROFILE batch job is started is defined by the system administration in Customizing under *Logistics - General → Material Master → Tools → Define Start Time of Background Jobs*.

For immediate start, use the *RMMM0001* program from the menu by choosing *System → Services → Reporting (SA38)*.



### Hint:

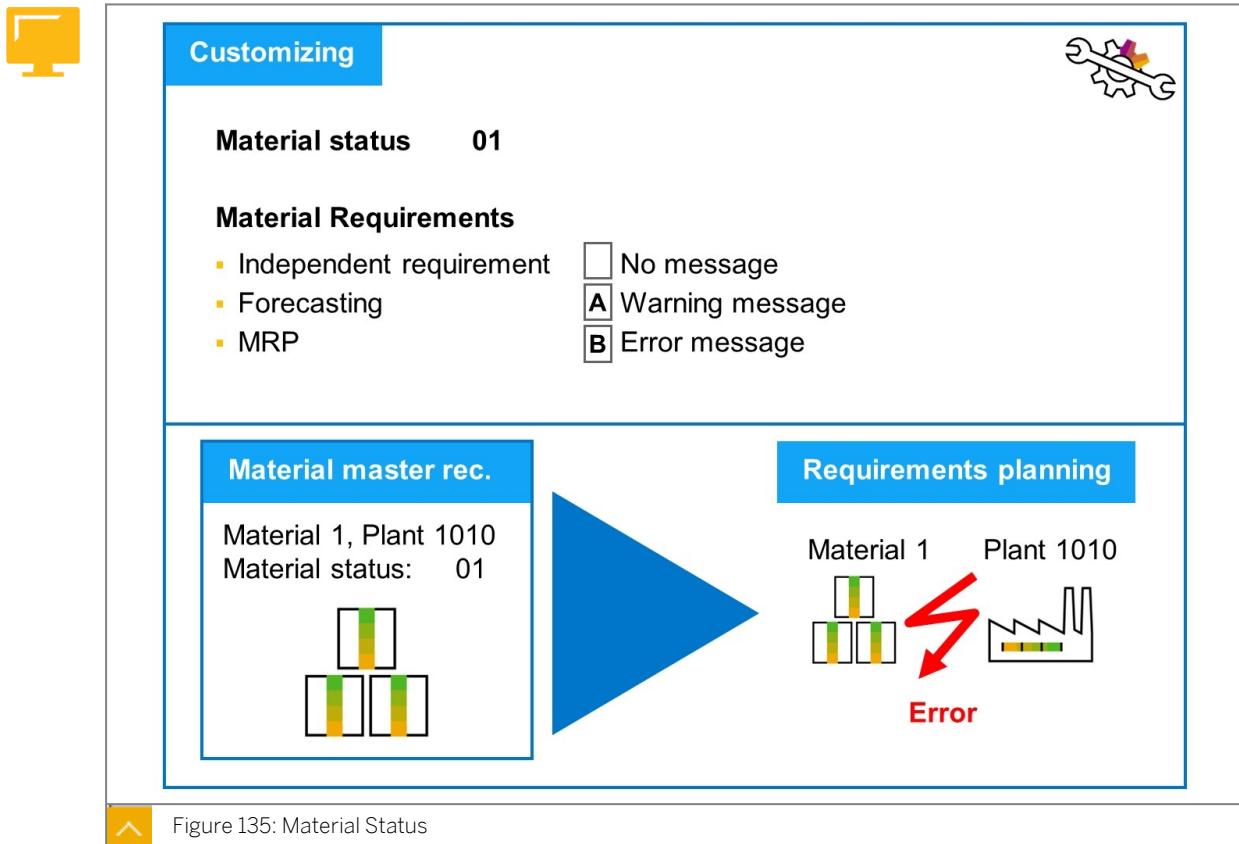
When updating values in the material master record by changing a profile, the system only considers changes that affect the fixed values in the profile.

The Fiori app *Manage Product Master Data* doesn't support MRP profiles.

You can list the material master records that use the same MRP profile. To do this, on the SAP Easy Access screen, choose *Logistics → Materials Management → Material Master → Profile → MRP Profile → Usage (MMD7)*.

In addition to using MRP profiles, you can also use forecast profiles to manage forecast data. The processing of forecast profiles follows the same principle as that for MRP profiles.

## Material Status



The material status limits the use of a material. It determines the functions in materials management and production planning, for which a warning or error message is generated.

This assignment is frequently done for a limited period of time, for example, in the construction or change phase of a material.

You define the material status and its controlling characteristics in Customizing under *Logistics - General → Material Master → Settings for Key Fields → Define Material Statuses*. You can assign a material status to a material in the material master record either at plant level (*MRP 1 view*) or cross-plant (*Basic data 1 view*). In the Customizing settings for material types, you can default a cross-plant material status.

## MRP Type

### Introduction

MRP type is a field in the material master. One of the most important functions of the MRP type is to define the MRP procedure for a material.

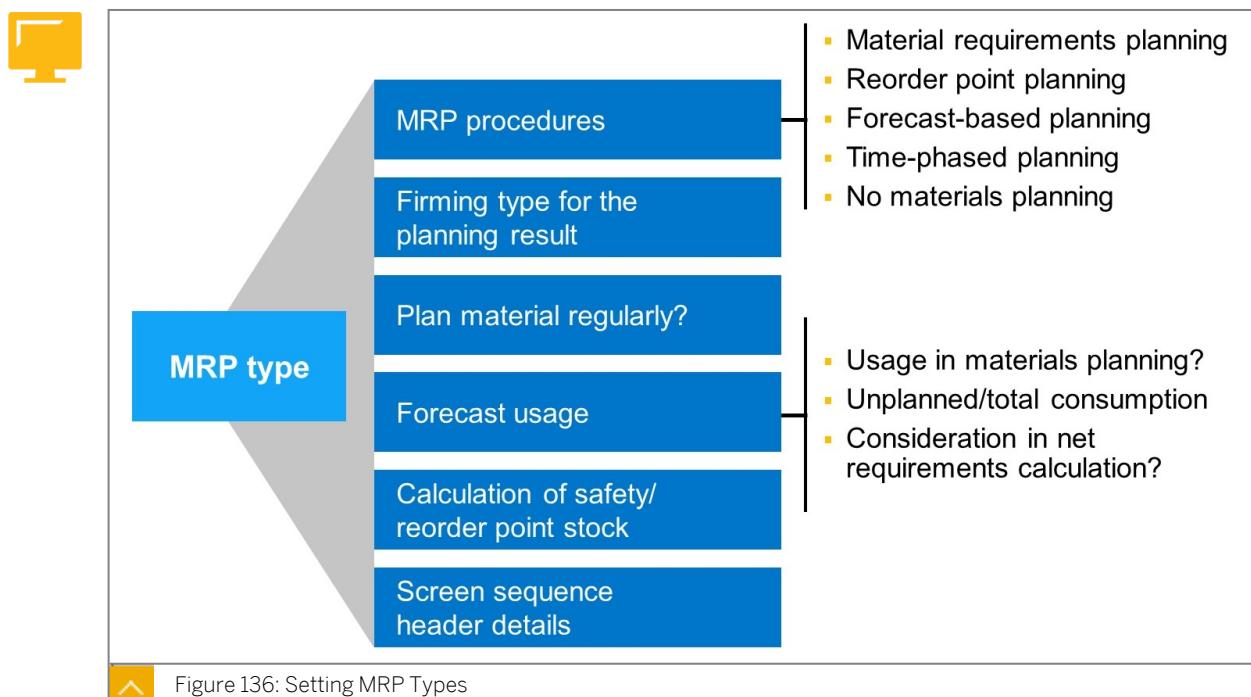
The MRP type is part of the plant data or the MRP area data of a material. You enter it in the material master record.

The MRP type possible values are defined in Customizing. You can adjust the parameters for the MRP types delivered in the SAP standard system to meet your requirements. You can also create new MRP types.

You define MRP types in Customizing under *Materials Management → Consumption-Based Planning → Master Data → Check MRP Types (OMDQ)*.

SAP S/4HANA standard provides MRP types *VB* for the manual reorder point procedure and *VM* for the automatic reorder point procedure. The only difference between the two procedures is that in the manual reorder point procedure, the reorder level is entered manually in the material master record. In the automatic reorder point procedure, the reorder level is calculated automatically by the system using the forecast.

In addition to the planning procedure, the MRP type also contains further control parameters.

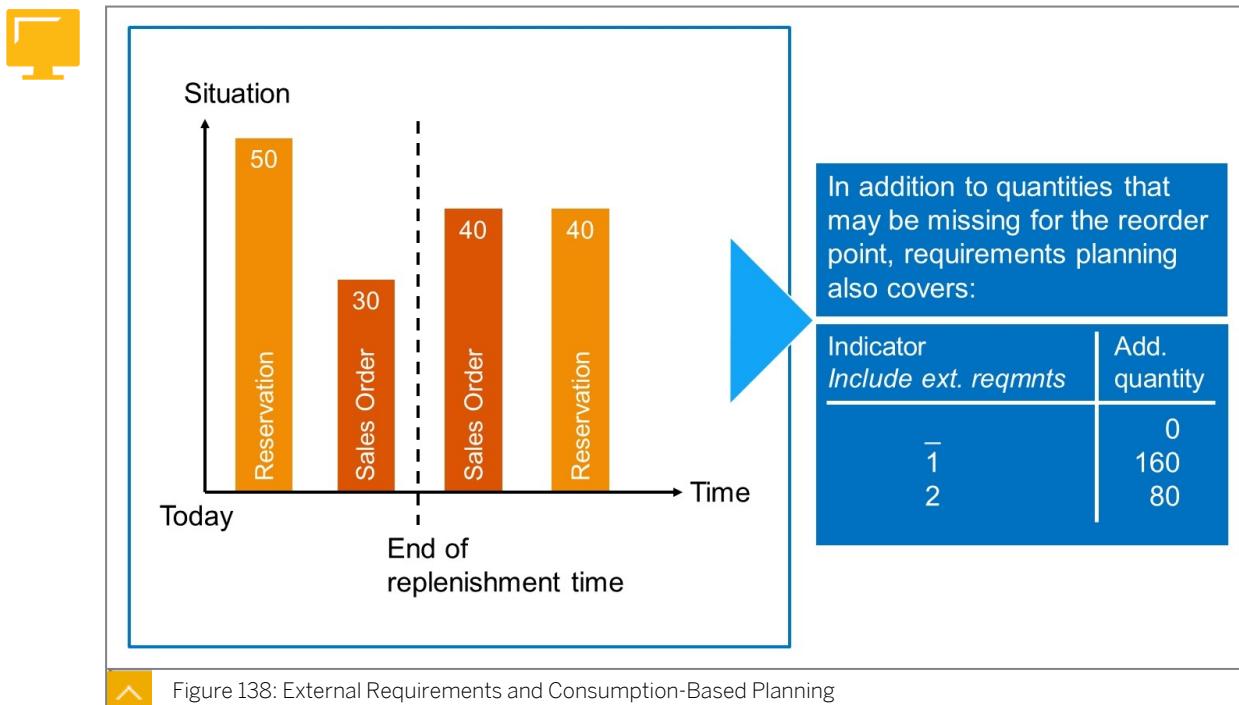


In addition to controlling the MRP procedure, the MRP type has a number of control functions, including the following:

- With the forecast indicator (*Forecast ind.*), you can determine whether the forecast results are to be used in planning.
- The consumption indicator for the forecast (*Cons. Ind. Forecast*) determines the historical values that are to be used for the forecast (unplanned consumption or total consumption). The MRP indicator for the forecast determines whether the forecast values in the net requirements calculation are to be considered, and, if so, whether as total requirements or as unplanned requirements.
- You can also specify whether the reorder point and safety stock level are to be automatically calculated.

Figure 137: Customizing MRP Type - Example of VM

### External Requirements and Consumption-Based Planning



Consumption-based planning procedures do not usually include any requirement elements. The net requirements calculation is triggered either by the available stock falling below the reorder point or by forecast requirements calculated from historical data.

To avoid over-planning, sales orders, dependent requirements, reservations, and so on, are not included in the net requirements calculation. This is because these future requirements are, in principle, already covered either by the reorder point or by the forecast values.

Under certain circumstances, however, it can be useful to include certain external requirements in the net requirements calculation in reorder point planning.

In Customizing, choose *Materials Management* → *Consumption-Based Planning* → *Master Data* → *Check MRP Types* (OMDQ), and use the *Include ext. reqmnts* indicator for the MRP type in reorder point planning to determine whether external requirements are considered.

The indicator has the following values:

- **Blank:** No external requirements are taken into consideration.
- **1:** External requirements like sales orders and manual reservations are taken into account in the entire horizon.
- **2:** External requirements like sales orders and manual reservations are taken into account within the replenishment lead time only.

In addition to sales orders and manual reservations, you can also select other requirements such as purchase order reservations and stock transfer requisitions to include them in the net requirements calculation.



Hint:

This course deals with the procedure without external requirements (MRP type VB or VM). For a procedure that includes external requirements, you can choose MRP type V1 for manual reorder point planning and V2 for automatic reorder point planning.

## Lot-Sizing Procedures

### Overview

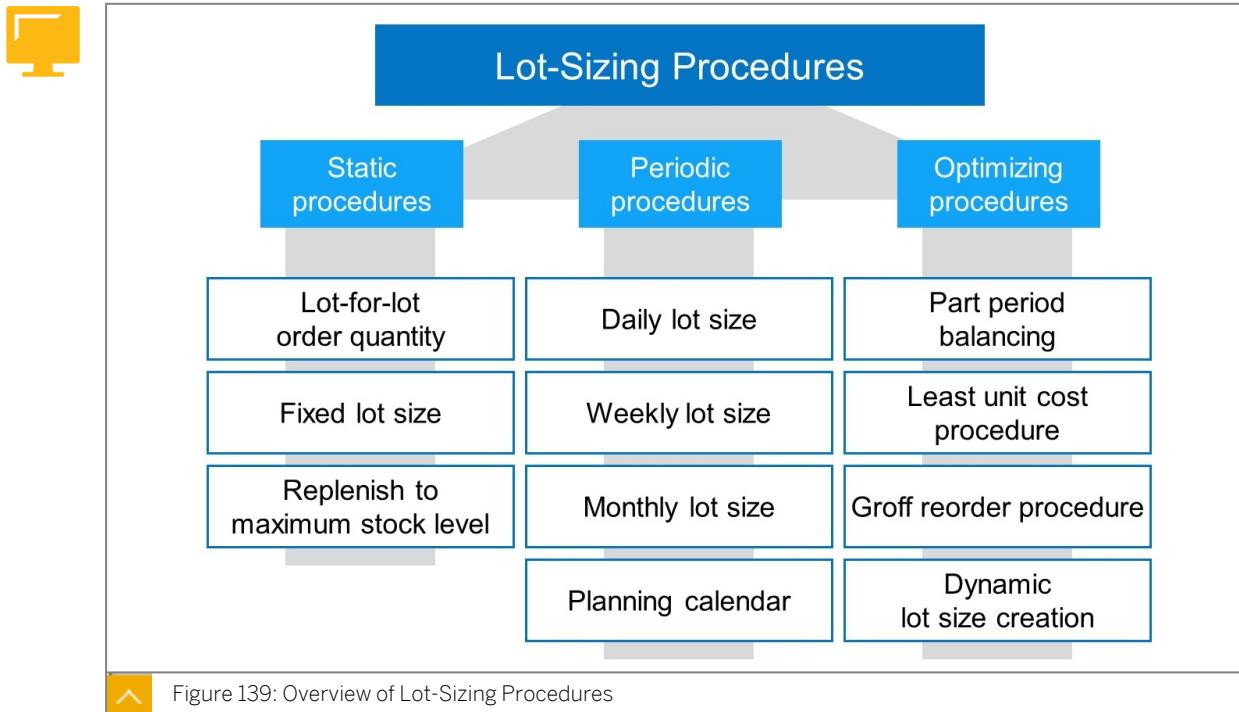


Figure 139: Overview of Lot-Sizing Procedures

In the net requirements calculation, the system determines material shortages for requirement dates. These shortage quantities must be covered by receipts. The system calculates the receipt quantity in the lot-sizing calculation, which is carried out during a planning run. You specify how the system determines the lot sizes by selecting one of the lot-sizing procedures in material master record maintenance.

**The procedures for calculating the lot size are as follows:**

- Static lot-sizing procedures
- Period lot-sizing procedures
- Optimizing lot-sizing procedures

The result of the lot-sizing calculation is the amount of a material for production or procurement.

You can define lot-sizing procedures in Customizing under *Materials Management* → *Consumption-Based Planning* → *Planning* → *Lot-Size Calculation* → *Define Lot-Sizing Procedure* (OMI4).

### Static Lot-Sizing Procedure

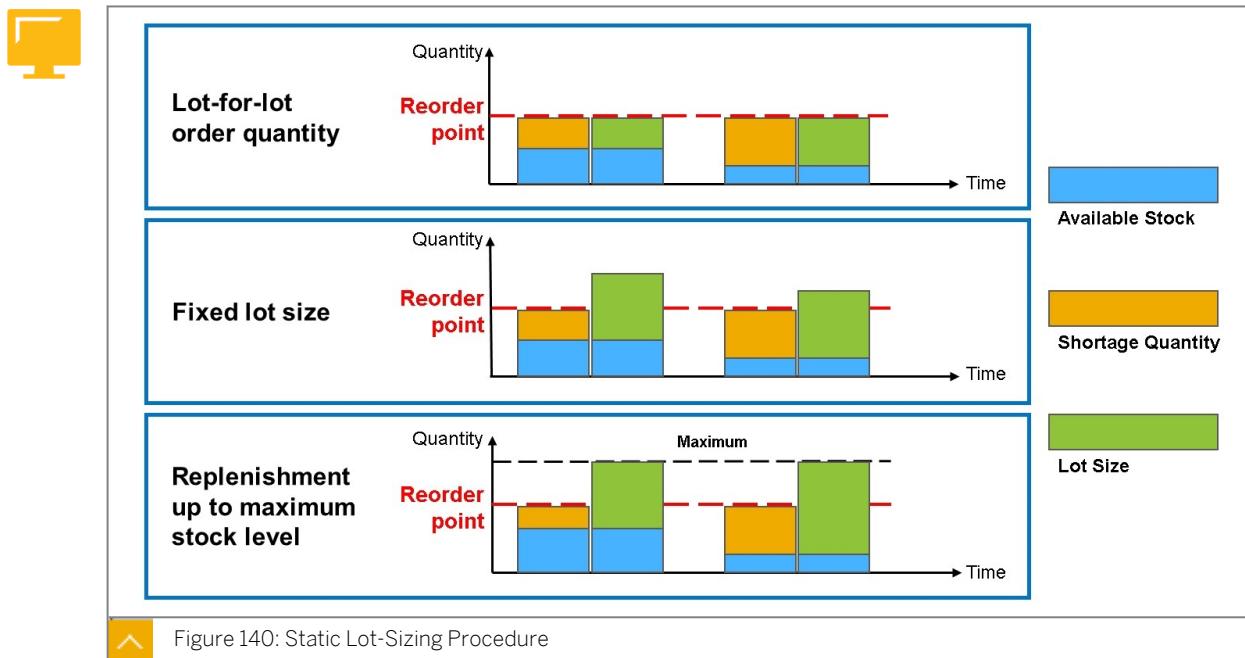


Figure 140: Static Lot-Sizing Procedure

In the static lot-sizing procedure, the procurement quantity is calculated using the quantities entered in the material master record.

**The most commonly used static lot-sizing procedures are as follows:**

- **Lot-For-Lot Order Quantity:**

If you select the lot-for-lot (or exact) order quantity, an order proposal is created for the shortage quantity. If there are several issues on one day that cannot be covered, the system creates an order proposal covering the total shortage quantity on this day. Exact lot size means that the difference to the reorder point is proposed for reorder point planning. For this reason, lot-for-lot order quantity is suitable only for certain cases, such as for spare parts.

In time-phased materials planning, lot-for-lot order quantity is the only suitable lot-sizing procedure.

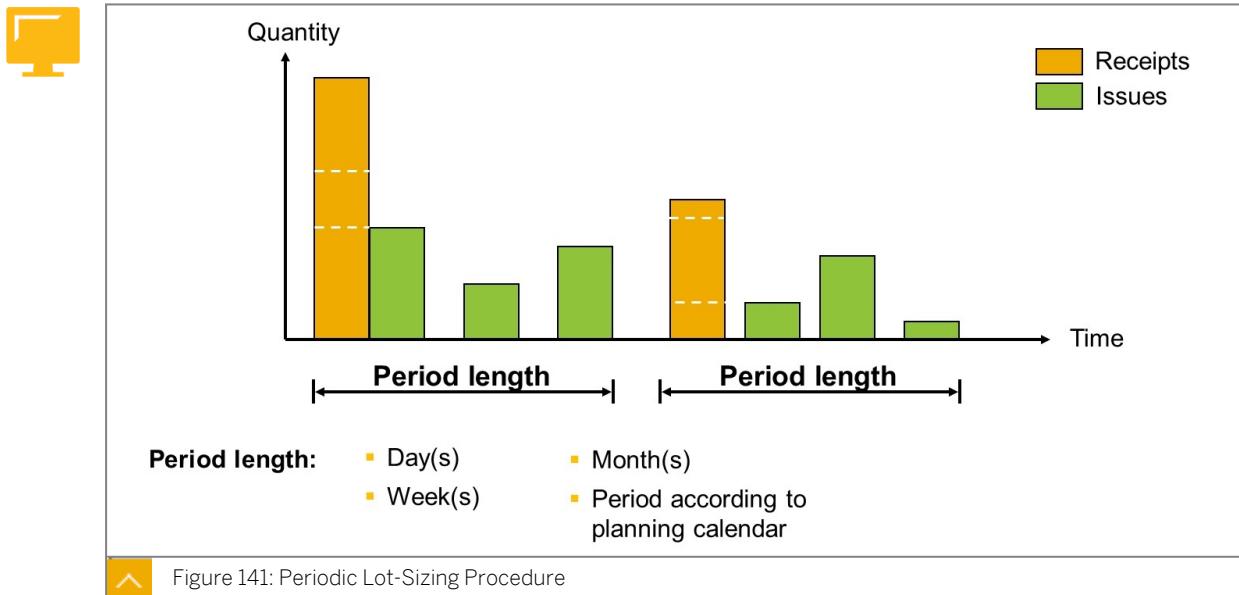
- **Fixed Order Quantity:**

If you select fixed order quantity, the system creates an order proposal for the fixed lot size in the case of a material shortage. If the proposal is not sufficient to cover the shortage quantity, the system creates several order proposals for the same date until the shortage is covered.

- **Replenish to Maximum Stock Level:**

With replenish to maximum stock level, an order proposal is made in case of a material shortage that is equal to the difference of the available stock to the specified maximum stock level.

### Periodic Lot-Sizing Procedure



In periodic lot-sizing procedures, the system forms a lot by grouping several requirement quantities within a time interval.

The time period lengths can be classified as days, weeks, months, or a period of flexible length equal to posting periods, as well as freely definable periods according to a planning calendar.

#### Time Period Lengths

The time period lengths can be as described as follows:

Table 1: Time Period Lengths, Descriptions

Period Length	Description
Daily lot size	All requirement quantities that fall within a day or within a specified number of days are grouped together to form a lot.
Weekly lot size	All requirement quantities that fall within a week or within a specified number of weeks are grouped together to form a lot.
Monthly lot size	All requirement quantities that fall within a month or within a specified number of months are grouped together to form a lot.
Lot size with flexible period length	All requirement quantities that fall within one or several flexible definable periods are grouped together to form a lot. You define the period lengths according to the accounting periods. This lot size is also called period lot size.

Periodic procedures are suitable in consumption-based MRP for forecast-based planning only.

The system default is to create the availability date for the periodic lot-sizing procedure on the first requirements date of the period. You can also define whether the availability date is to be at the start or end of the period.

Alternatively, you can use a planning calendar to define certain delivery dates. In the standard SAP system, lot-sizing procedure PK enables you to do this. The planning calendar is maintained on the MRP 2 view in the material master.

### Optimizing Lot-Sizing Procedure

The optimizing lot-sizing procedure groups requirements from several periods together to form a lot, whereby an optimum cost ratio is determined between lot-size independent costs and storage costs.

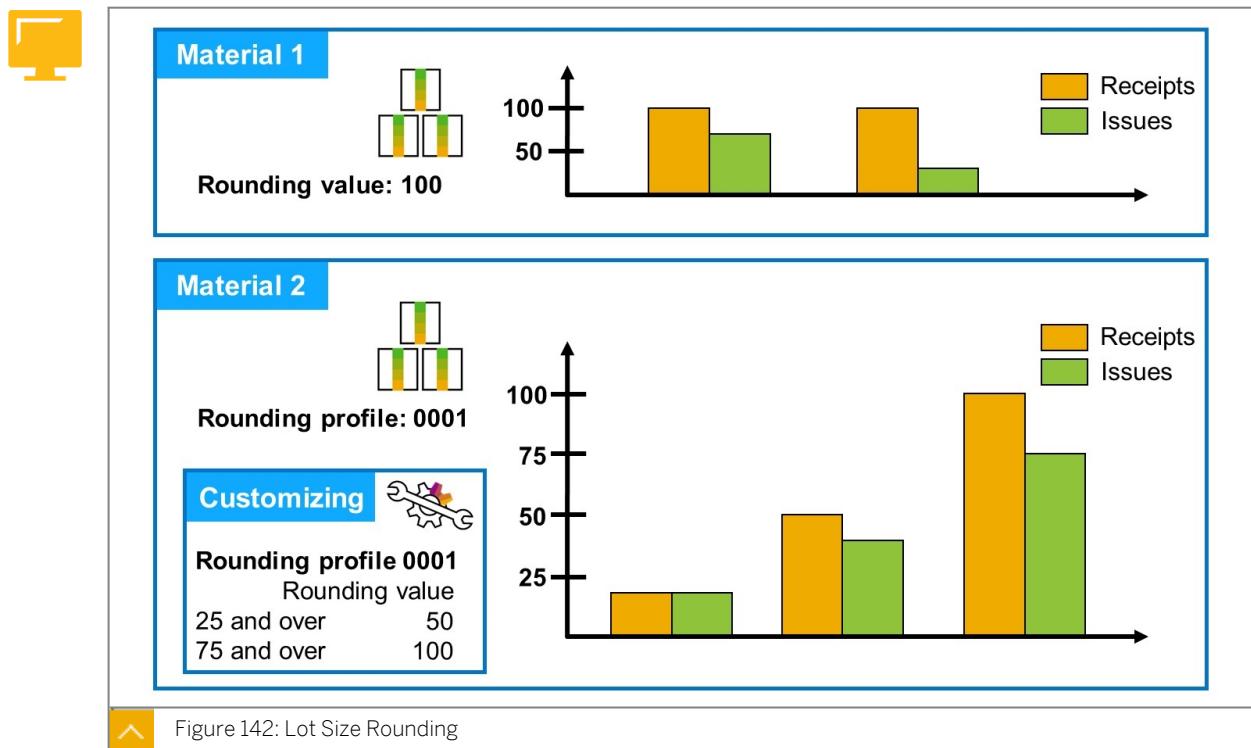
Price per quantity scales are not taken into account in the optimizing lot-sizing procedure. You can find more information about optimizing procedures in the SAP library in the Requirements Planning (PP-MRP) section.

### Additional Restrictions for Lot-Sizing Calculation

When maintaining the material master record, you can specify additional restrictions to be taken into account during lot-sizing calculation. This includes lot-size rounding and the minimum and maximum lot size.

#### Lot Size Rounding

With lot-size rounding, you can adjust the procurement quantities to the delivery, packing, and transport units. This may be useful, for example, if purchase orders are only delivered in containers of a particular number of pieces, and if produced quantities can only be packed and transported in entire pallets.



The following rounding options are available:

Table 2: Rounding Options

Rounding Options	Description
Rounding value	During lot-sizing calculation, the system determines that the lot size quantity is a multiple of an order unit. For example, an order unit can be pallet size if the material is only delivered in entire pallets.
Rounding profile or scaled rounding	You can define rounding in a way that takes full advantage of price per quantity scales.

You can define several combinations of threshold and rounding values for a rounding profile.

#### Rounding Profiles in Combination with Scale Prices

Example: The vendor of a particular material offers you scale prices as listed in the following table:

Table 3: Example: Scale Prices

Quantity	Price per Piece
1	EUR 100
100	EUR 80
1000	EUR 68

On the basis of these prices, you can determine that with a quantity in excess of 80 pieces, it is worthwhile rounding up to 100 pieces ( $80 \times 100 / 100$ ), and in excess of 850 pieces it makes sense to round up to 1000 ( $68 \times 1000 / 80$ ).

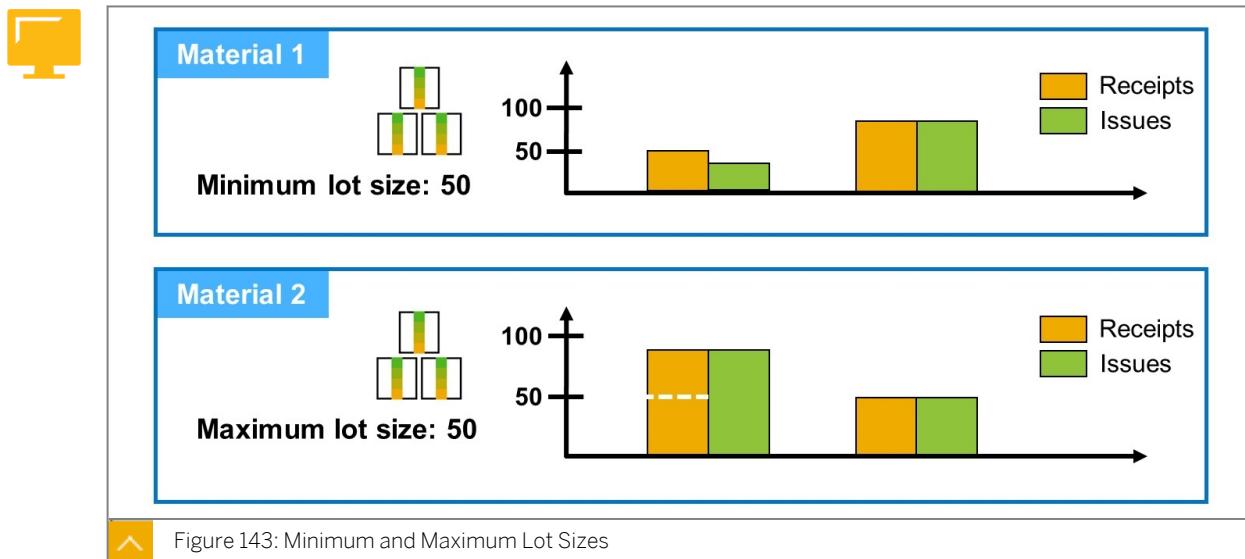
Rounding profiles are defined in Customizing under *Materials Management → Consumption-Based Planning → Planning → Lot-Size Calculation → Maintain Rounding Profile (OWD1)*.

Rounding profiles consist of a threshold value and a rounding value. The threshold value is the value from which the system rounds up to the next deliverable unit. The rounding value is the value to which the system rounds up to as soon as the threshold value is exceeded.

You enter the rounding profile in the material master record. It is then included in MRP.

You can also enter the rounding profile in the purchasing info record. In this case, rounding is first taken into account when you convert a purchase requisition or create a purchase order (PO) manually.

## Minimum and Maximum Lot Sizes

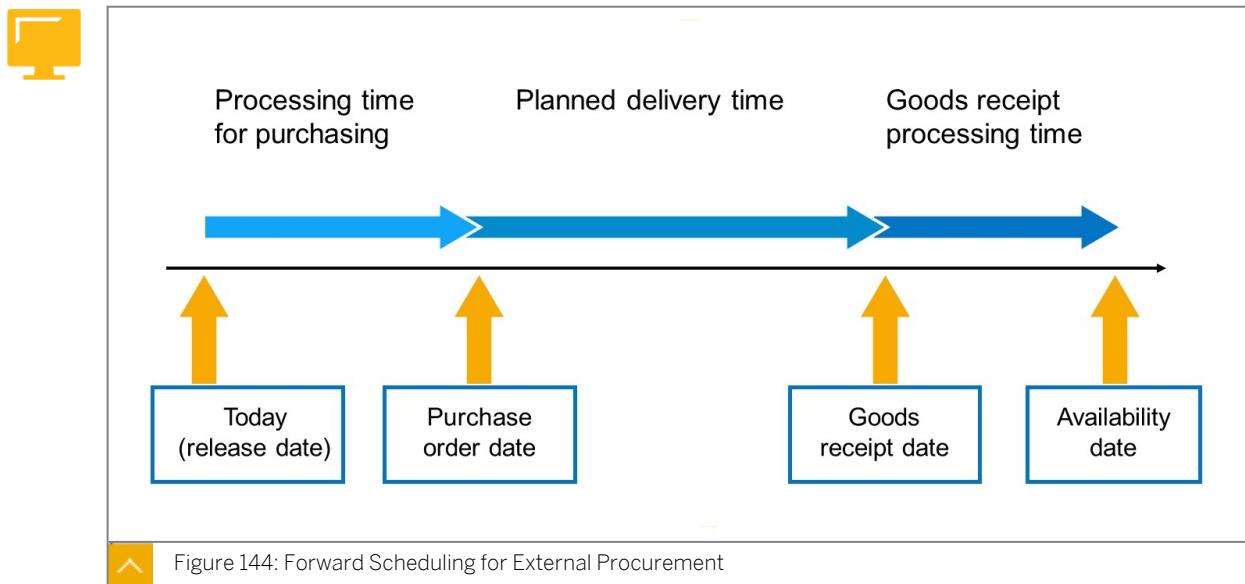


You can enter a minimum and maximum lot size in the material master record. These limit values are taken into consideration during lot-sizing calculation. The minimum lot size defines the minimum quantity, and the maximum lot size defines the maximum quantity for the procurement proposal. The system rounds up to the minimum lot size, thus preventing a round up over the maximum lot size.

## Elements of Scheduling

### Replenishment Lead Time (RLT)

After the net requirements calculation and the lot size calculation, the system schedules the procurement proposal during the planning run. For example, it calculates the date on which the purchase order must be created and sent, the date on which the vendor must deliver the ordered quantity and the date on which the material will be available.



This scheduling uses the elements which make up the replenishment lead time:

- The purchasing department processing time
- The planned delivery time
- The goods receipt processing time

The purchasing department processing time is the time available in working days for a buyer to convert a purchase requisition into a purchase order. You define this processing time in Customizing under *Materials Management* → *Consumption-Based Planning* → *Plant Parameters* → *Carry Out Overall Maintenance of Plant Parameters* (OMI8).

The planned delivery time is the number of calendar days required to procure the material through external procurement. The planned delivery time is stored in the material master record. You can also store the planned delivery time in outline agreements or purchasing info records.

The goods receipt processing time is the time in working days between receiving the material and receipt in the warehouse. It is required for unpacking, checking, and storing material, for example. The goods receipt processing time is stored in the material master record or in outline agreements.



**Hint:**

If the system can determine a source of supply (info record or outline agreement), the planned delivery time and goods receipt processing time that may exist in this source of supply are given priority for scheduling.



## LESSON SUMMARY

You should now be able to:

- Get an overview of material master data for consumption-based planning
- Get to know MRP type and related fields
- Understand lot-sizing settings
- Understand and control scheduling

## Learning Assessment

1. MRP areas can only be specified within a plant.

*Determine whether this statement is true or false.*

- True  
 False

2. How many subcontractors can be included in a subcontractor type MRP area?

*Choose the correct answer.*

- A 0  
 B 1  
 C 2  
 D Unlimited

3. Receipt elements (planned orders, purchase requisitions) containing a storage location that belongs to an MRP area are assigned to this MRP area automatically.

*Determine whether this statement is true or false.*

- True  
 False

4. Select the possible types of MRP area for planning.

*Choose the correct answers.*

- A Company code  
 B Plant  
 C Warehouse  
 D Storage location  
 E Subcontractor

5. Which field in the material master record controls whether a material is planned consumption-based or demand-based?

*Choose the correct answer.*

- A The MRP profile
- B The MRP type
- C The MRP group
- D The MRP controller

6. On which organizational levels can MRP relevant fields like lot-sizing procedure or MRP type be maintained in a material master record?

*Choose the correct answers.*

- A Plant
- B Storage location
- C MRP area
- D Client

7. Which of the following statements apply to the MRP type?

*Choose the correct answers.*

- A The MRP type is assigned to a material and controls the MRP procedure.
- B A material can have different MRP types per plant and even per MRP area.
- C The MRP types are delivered by SAP and cannot be changed.
- D Allowed MRP types are defined per material type.

8. What are the lot sizing procedure categories?

*Choose the correct answers.*

- A Static
- B Periodic
- C Exact
- D Optimizing
- E Dynamic

9. The replenishment lead time of a material is the sum of the purchasing department processing time, planned delivery time, and goods receipt processing time. These three elements can be maintained in the material master record.

*Determine whether this statement is true or false.*

True

False

## Learning Assessment - Answers

1. MRP areas can only be specified within a plant.

*Determine whether this statement is true or false.*

True

False

Correct. MRP areas can only be specified within a plant.

2. How many subcontractors can be included in a subcontractor type MRP area?

*Choose the correct answer.*

A 0

B 1

C 2

D Unlimited

Correct. You can only include 1 subcontractor per subcontractor MRP area.

3. Receipt elements (planned orders, purchase requisitions) containing a storage location that belongs to an MRP area are assigned to this MRP area automatically.

*Determine whether this statement is true or false.*

True

False

Correct. Receipt elements containing a storage location that belongs to an MRP area are assigned to this MRP area automatically.

4. Select the possible types of MRP area for planning.

*Choose the correct answers.*

- A Company code
- B Plant
- C Warehouse
- D Storage location
- E Subcontractor

Correct. There are three types of MRP area: plant MRP area, MRP area for storage locations, and MRP area for supplier (subcontractor).

5. Which field in the material master record controls whether a material is planned consumption-based or demand-based?

*Choose the correct answer.*

- A The MRP profile
- B The MRP type
- C The MRP group
- D The MRP controller

Correct. The MRP type controls among other things whether a material is planned consumption-based or demand-based.

6. On which organizational levels can MRP relevant fields like lot-sizing procedure or MRP type be maintained in a material master record?

*Choose the correct answers.*

- A Plant
- B Storage location
- C MRP area
- D Client

Correct. You can maintain material master record fields relevant for MRP at plant level and, if applicable, at the MRP area level.

7. Which of the following statements apply to the MRP type?

*Choose the correct answers.*

- A The MRP type is assigned to a material and controls the MRP procedure.
- B A material can have different MRP types per plant and even per MRP area.
- C The MRP types are delivered by SAP and cannot be changed.
- D Allowed MRP types are defined per material type.

Correct. The MRP type controls the MRP procedure and is assigned to a material per plant, and if applicable, per MRP area. MRP types can be customized.

8. What are the lot sizing procedure categories?

*Choose the correct answers.*

- A Static
- B Periodic
- C Exact
- D Optimizing
- E Dynamic

Correct. Static, periodic, and optimizing are the lot-sizing procedure categories. Exact lot size is a procedure belonging to the static category, dynamic lot size calculation belongs to the optimizing category.

9. The replenishment lead time of a material is the sum of the purchasing department processing time, planned delivery time, and goods receipt processing time. These three elements can be maintained in the material master record.

*Determine whether this statement is true or false.*

- True
- False

Correct. The replenishment lead time of a material is the sum of the purchasing department processing time, planned delivery time, and goods receipt processing time. Planned delivery time and goods receipt processing time can be maintained in the material master record, but the purchasing department processing time is maintained in Customizing.

## Lesson 1

Describing the Planning Run

235

## Lesson 2

Executing a Planning Run Using Classic MRP

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## Lesson 3

Executing a Planning Run Using MRP Live

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## Lesson 4

Converting Planned Orders and Evaluating MRP Lists

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## Lesson 5

Evaluating the Planning Results

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## UNIT OBJECTIVES

- Describe planning run options and their characteristics
- Parameterize a planning run
- Carry out a planning run using MRP Live
- Use the MRP list to verify the planning results and convert planned orders
- Use the most common planning evaluation tools
- Use the collective access to lists
- Use the material tree
- Use the navigation profile
- Explore exception messages



# Describing the Planning Run



## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Describe planning run options and their characteristics

## Planning File Entry

### Introduction

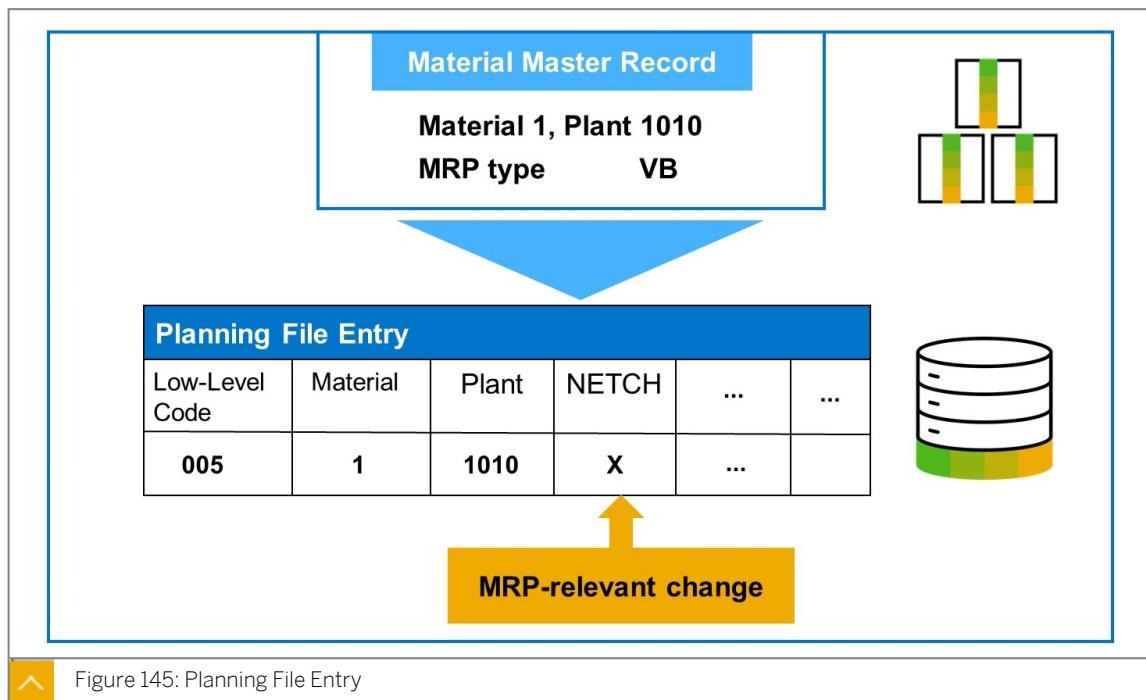


Figure 145: Planning File Entry

The system executes different process steps during a planning run. The first process in MRP is the checking of the planning file.

The planning file contains all relevant materials for a planning run. As soon as you create a material master with MRP views and valid MRP types (everything except ND for No MRP), this material is automatically included in the planning file.

The planning file controls the planning run and scope of planning, that is, the planning file determines the materials that are to be taken into account in the different types of planning runs.

The system automatically flags materials that have been subject to an activity relevant to MRP, such as the creation of a purchase order or the posting of a goods movement, with a corresponding planning file entry (NETCH indicator).

## Changes Relevant to Planning

Changes or activities relevant to planning are:



- Changes in stocks if they alter the stock/requirements situation of a material.
- The creation of receipt or issue elements, such as purchase requisitions, purchase orders, planned orders, sales requirements, forecast requirements, dependent requirements, and reservations.
- Changes to receipt or issue elements or to the materials master records, if they are relevant for planning.
- The deletion of receipt or issue elements.

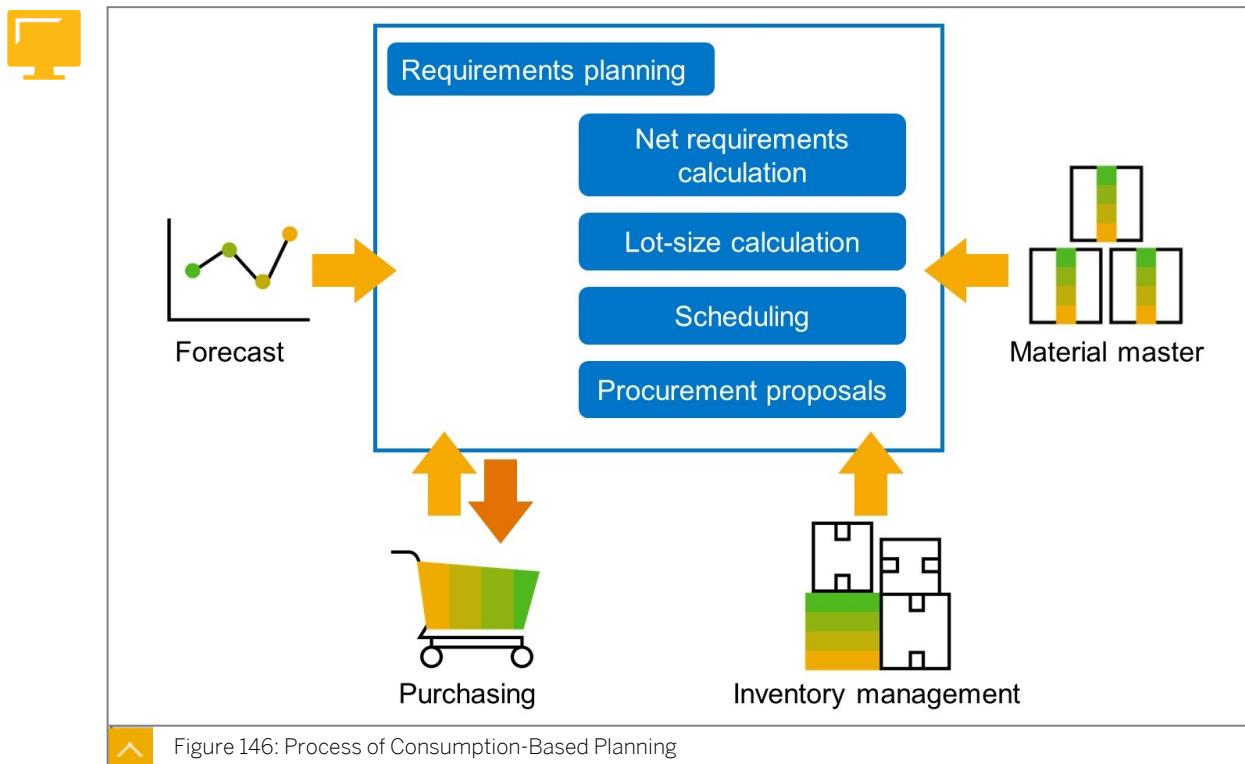
MRP calculations are complex, and therefore an MRP run can be lengthy. An important means to improve MRP performance is net change planning. An MRP running in net change planning mode only plans materials that have experienced a relevant change since the previous MRP run. A material must be planned in the next MRP run if, for example, a quantity of this material has been received or issued, a material requirement, such as a sales order, has been changed, or if master data, such as the bill of material or the material master record, has been changed. In the planning file, the materials that have to be planned in the next MRP run are automatically flagged with the *NETCH* indicator.

The entries in the planning file are permanent. Therefore, you should regularly check their relevance.

For example, if materials are subsequently assigned MRP type *ND* (*No MRP*) meaning that they are now excluded from MRP, they are still included in the planning file. In this case, you must remove these entries from the planning file. Therefore, you should perform a consistency check at regular intervals in Customizing under *Materials Management* → *Consumption-Based Planning* → *Planning* → *Set Up the Planning File for MRP(PPH\_MDAB)*. Alternatively, on the SAP Easy Access screen, choose *Logistics* → *Materials Management* → *Material Requirements Planning (MRP)* → *MRP* → *Planning* → *Planning File Entry* → *Create and Correct Planning File Entries (PPH\_MDAB)*.

## Process of Consumption-Based Planning

### Planning Steps



An automatic planning run for MRP determines shortage situations and generates the corresponding procurement elements.

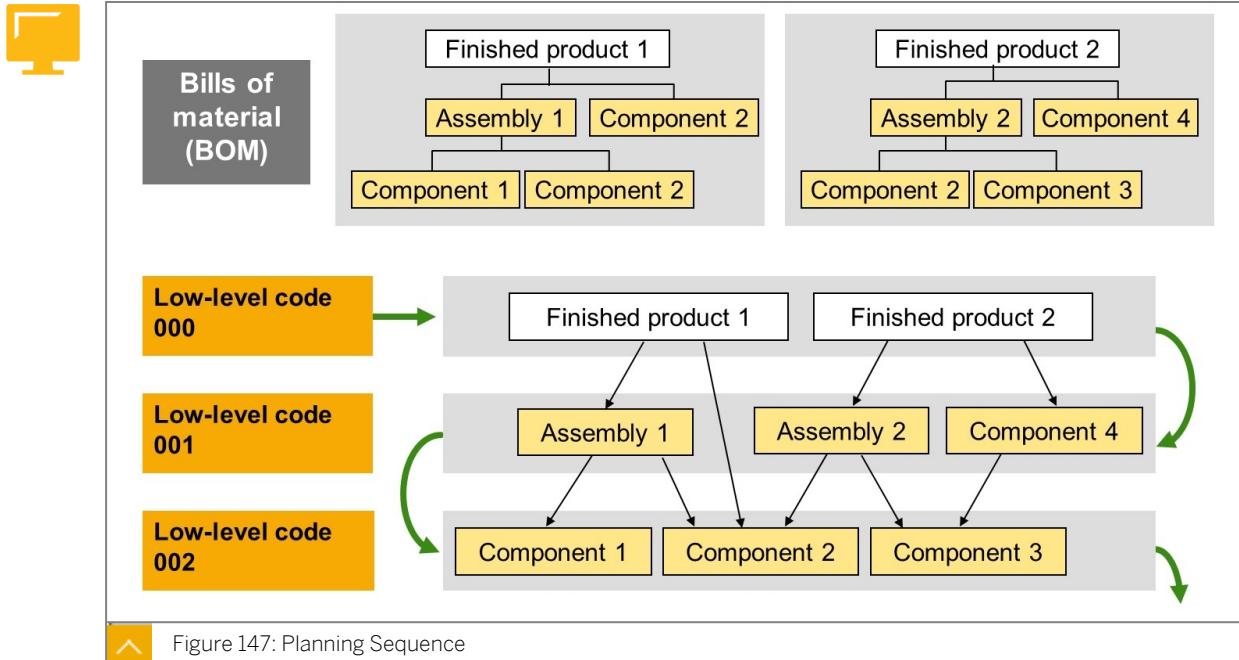
A **planning run** consists of the following sub processes:

1. The system checks the **planning file** entries to determine whether a material has been subject to activities or changes relevant to MRP and must be included in the planning run.
2. The system carries out a **net requirements calculation** for every material to be included in the planning run. The system checks whether a requirement quantity is covered by available warehouse stock and fixed receipts from purchasing or production. If a requirement quantity is not covered, the system creates a procurement proposal.
3. The system subsequently carries out a **lot-size calculation**. The calculation considers lot-sizing procedures and any further restrictions, such as rounding, defined in the material master records.
4. The system calculates the release and delivery dates for purchase requisitions and the start and end dates for planned orders. When **scheduling** externally procured materials, replenishment lead time (RLT) is used as a basis to determine dates for delivery/replenishment. During forecast-based planning, the delivery/replenishment dates are determined using backward scheduling. During reorder point planning, delivery/replenishment dates are determined using forward scheduling.
5. The system determines the **types of the procurement proposals**. The system checks the procurement type in the material master record, that is, it checks whether goods receipts are to be made by in-house production or by external procurement. If the procurement type is in-house production (procurement type E), the system creates planned orders. If

the procurement type is external procurement (procurement type F), the system creates planned orders, purchase requisitions, or delivery schedule lines in the classic MRP depending on your settings. With MRP Live, only purchase requisitions or delivery schedule lines are created. The system then attempts to determine a **source of supply** and assign it to the procurement proposal.

After a planning run, the MRP controllers can check and edit the new procurement elements.

### Planning Sequence



BOMs are created for the materials that are to be produced and planned. A material can appear in several products and on several manufacturing levels of a product. The low-level code is the lowest level at which a material appears in any BOM.

The low-level code determines the sequence in which materials are planned. The system first plans all materials with level 0, then materials with level 1, and so on.

During BOM maintenance, the low-level code is automatically determined and updated in the material master record (additional data) as well as in the planning file.



#### Note:

If a material is not included in a BOM, the highest level (999 or blank) is set automatically.

## Reorder Point Planning

### Main Features

The basis of reorder point planning is the comparison of the available MRP stock (total from plant stock and the fixed receipts) with the reorder point. If the available stock is less than the reorder point, then procurement is triggered.

The reorder point should cover the expected average material requirements during the replenishment lead time (RLT).

The safety stock should cover any excess material consumption that may occur during the RLT as well as the normal requirements when deliveries are delayed. The safety stock is, therefore, part of the reorder point.

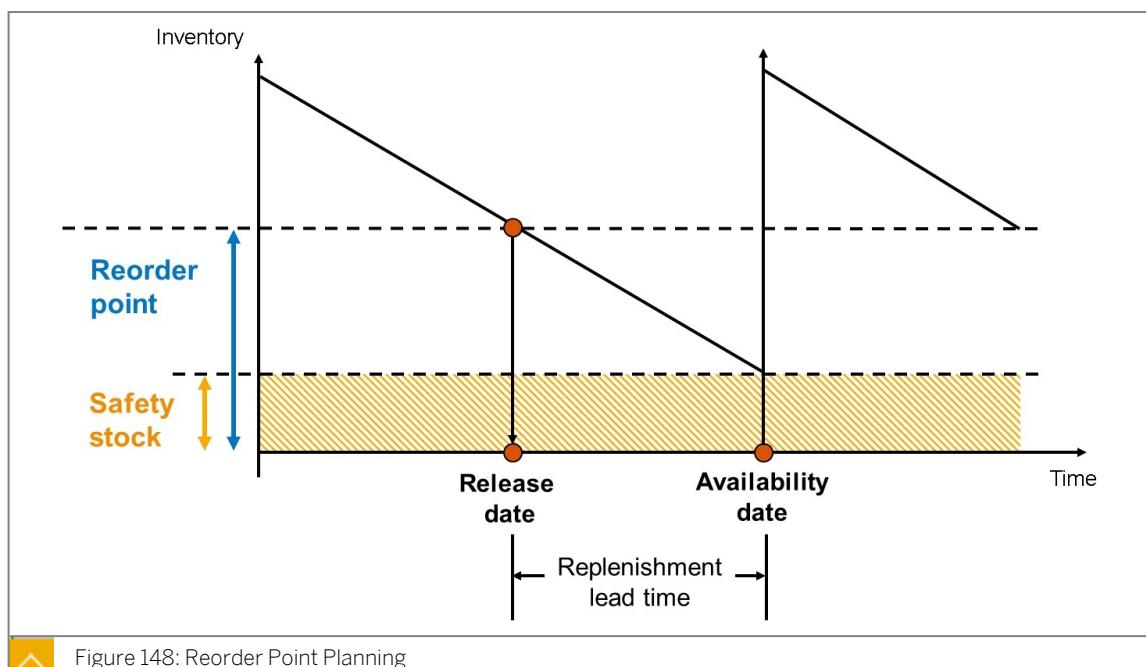
The reorder point is composed of the expected material requirements during the RLT and the safety stock.

Therefore, you must consider the following points when defining the reorder point:

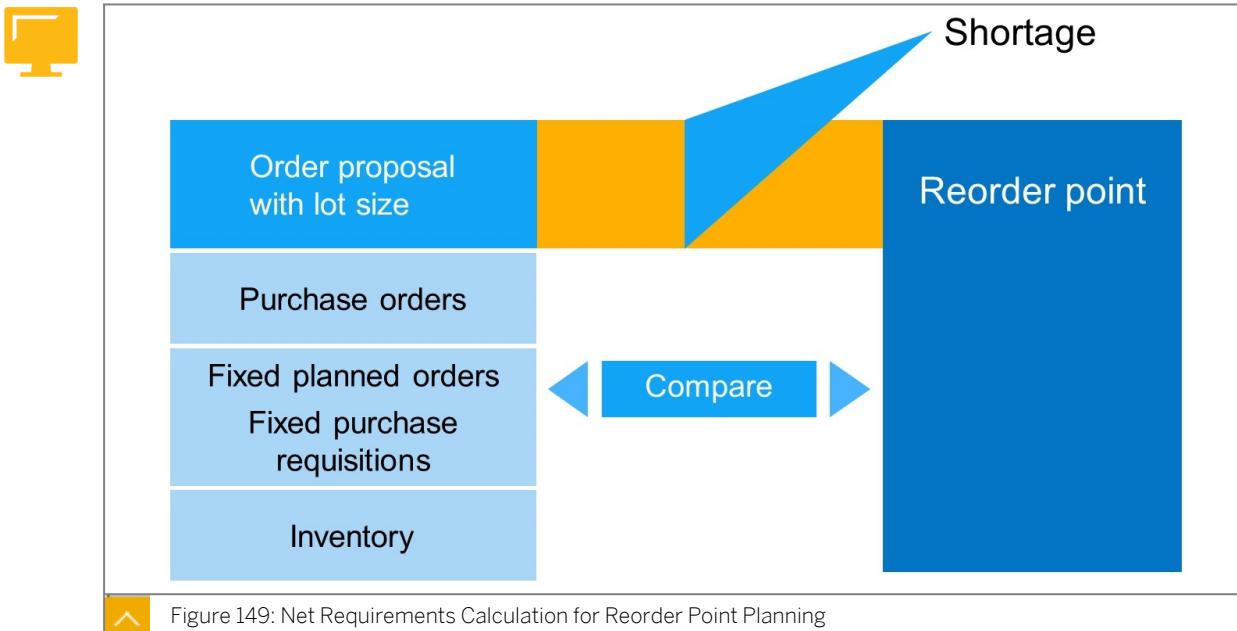
- Safety stock
- Previous consumption or future requirements
- RLT

$\text{Reorder point} = \text{Safety stock} + \text{Daily requirement} * \text{Replenishment lead time}$

We differentiate between **manual reorder point planning**, in which the MRP controller manually enters the reorder point in the material master record, and **automatic reorder point planning**, in which the system calculates and updates the reorder point using the forecast program.



### Net Requirements Calculation for Reorder Point Planning



The system calculates net requirements during the planning run:

- The stock available for Material Requirements Planning is the sum of the warehouse stock and the on-order stock.
- The on-order stock is composed of fixed receipt elements and firm receipt elements, such as purchase orders, firm planned orders, and firm purchase requisitions. The warehouse stock also includes the safety stock.
- If the available warehouse stock level is lower than the reorder point, there will be a material shortage.
- The shortage quantity is the difference between the reorder point and the available warehouse stock.
- The quantity in the order proposal is calculated using the lot-sizing procedure in the material master record.
- After the net requirements calculation and the lot-sizing calculation, the system schedules the procurement proposal during the planning run. It calculates the date on which the purchase order has to be sent and the date on which the vendor must deliver the corresponding quantity.

### Forward Scheduling for External Procurement

The material shortage date for materials planned using reorder points is the date of the planning run. If the quantity has fallen short of the reorder point, then procurement is carried out. During scheduling, the system defines the date on which the material will be available, starting from the date of the planning run. This procedure is called forward scheduling.

Forward scheduling starts on the MRP date.

The MRP date specifies the order start date for planned orders and the release date for purchase requisitions. Release in this context means the release of the purchase requisition for conversion into a purchase order in purchasing.

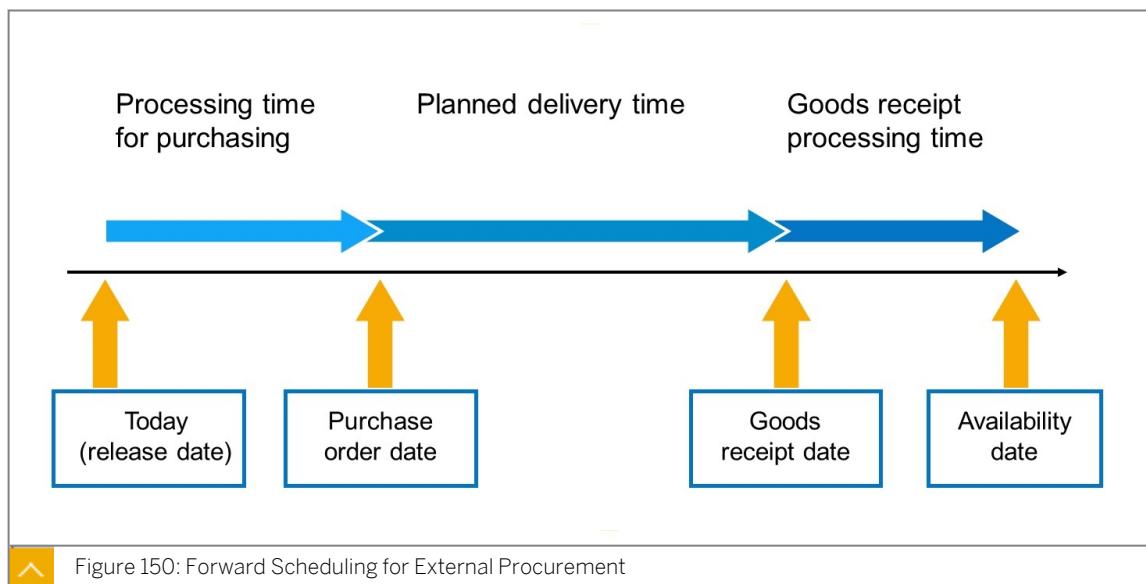


Figure 150: Forward Scheduling for External Procurement

The purchasing department processing time is calculated in workdays and the planned delivery time in calendar days.

The delivery date or goods receipt date is therefore calculated. For planned orders, this date is the basic finish date.

Finally, the goods receipt processing time (calculated in workdays) is added to the delivery date, and the availability date is known.



### LESSON SUMMARY

You should now be able to:

- Describe planning run options and their characteristics



## Executing a Planning Run Using Classic MRP



### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Parameterize a planning run

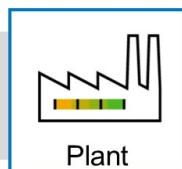
### Classic MRP Execution



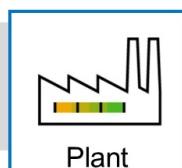
The scope of planning enables material requirements planning across plants or for each MRP area



MRP for a plant – background processing  
(total planning)



MRP for a plant – online (total planning)



MRP for material – online (single-item planning)

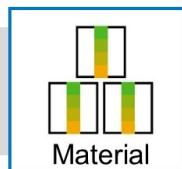


Figure 151: Classic MRP Run

To determine situations in which there can be shortages of individual materials, start a planning run in the SAP system.

A planning run can be carried out in the following ways:



- Total planning
- Single-item planning

#### Total Planning

You can carry out a planning run as a total planning run for one specific plant or MRP area. This procedure involves the planning of all the materials that are relevant for planning within a particular plant and includes an explosion of bill of material (BOM) materials.

To execute total planning, on the SAP Easy Access screen, choose *Logistics → Materials Management → Material Requirements Planning (MRP) → MRP → Planning → Total Planning* (MD01) to execute total planning.

You can carry out a total planning run either online or in background processing mode. You can schedule a total planning run either once on a particular date by selecting the *Schedule once* checkbox or at regular intervals by selecting the *Schedule periodically* checkbox.

On completion of the planning run, you receive statistics with information about the scope of planning, exceptional situations, and terminations.

You can also see how much time was needed for the planning run in total, and for planning the individual materials. If you choose to have the total planning run running in the background, you can print the log and the results.

You can use the scope of planning function when you execute total planning for several plants and/or MRP areas, one after another.

You can define as many scopes of planning as you like in Customizing under *Materials Management → Consumption-Based Planning → Planning → Define Scope of Planning for Total Planning*. For each planning scope, enter a counter to specify the sequence of individual MRP levels (plants or MRP areas). This counter determines the sequence for planning. In a planning scope, you can indicate the plants or one or more MRP areas and thus restrict the overall planning run to these levels.



**Note:**

Planning by using a scope of planning requires parallel processing. For more information, see the documentation in Customizing under *Materials Management → Consumption-Based Planning → Define Parallel Processing in MRP*.

### Single-Item Planning

You can carry out a requirements planning run as a single-item planning run for an individual material.

Either a single-level or multilevel planning run is carried out for one particular material. In single-level, single-item planning, the system only plans the BOM level for the selected material. In multilevel, single-item planning, the system plans the level of the selected material plus all the lower BOM levels.

To perform single-item, single-level planning on the SAP Easy Access screen, choose *Logistics → Materials Management → Material Requirements Planning (MRP) → MRP → Planning → Single-Item, Single-Level* (MD03).

You can also use interactive single-item planning. Interactive planning, a single-level simulative planning, allows you to check the planning results in great detail. Therefore, this planning is suitable for materials that urgently require a check, especially master schedule items. Interactive planning enables the careful check of the planning results and incorporates fine adjustments.

During interactive planning, the system initially displays the current stock/requirements list, but no planning directly occurs. You can use this stock/requirements list to manually trigger the planning and simulation functions. To execute interactive planning, on the SAP Easy Access screen, choose *Logistics → Production → MRP → Planning → Single-Item Planning, Interactive* (MD43).

**Hint:**

You can perform a planning run for each vendor as well. On the SAP Easy Access screen, call the area menu for MRP by running transaction code **WDIS** and then choose *Requirements Planning → Plan by Vendor (MDW1)*. To use this function, you must activate User Exit WPOPO001. For more information, read SAP Note 920066.

### Types of Planning Run in Classic MRP

Planning run transactions MD01, MD02, MD03, MD40, MD41, MD42, MD43, MD50, and MD51 are still available in SAP S/4HANA, at least as long as MRP Live does not have all features of the classic planning run. For evaluations, transactions MD05, MD06, MD45, and MD46 are also still available in SAP S/4HANA.



#### NEUPL – Regenerative Planning

##### Planning File Entry

Low-level code	Material	Plant	...
005	1	1010	



#### NETCH – Net Change Planning in the Total Horizon

##### Planning File Entry

Low-level code	Material	Plant	NETCH	...
005	1	1010	X	



Figure 152: Planning Run Types

The planning run type defines the scope of the materials to be planned, that is, which materials must be taken into account during a planning run. You define the planning run type using the *Processing* key field on the initial screen.

**The types of planning runs in classic MRP are as follows:**

Table 4: Types of Planning Runs

Planning Run Type	Processing Key
Regenerative planning	NEUPL
Net change planning in the total horizon	NETCH

### Regenerative Planning

The *NEUPL* processing key is used for regenerative planning. With this processing key, the system plans all materials included in the planning file, irrespective of the indicators.

If you change settings in Customizing for requirements planning, such as the settings for an MRP type, a lot-sizing procedure, or the purchasing processing time, none of the materials in the planning file are flagged with the *NETCH* indicator. After such changes, if you start a planning run with the *NEUPL* processing key, the changes made in Customizing take effect in requirements planning.

In regenerative planning, the *NETCH* indicator is removed from the planning file if it was set before planning.

Regenerative planning places a rather high load on the system, since all materials from the planning file are planned for the plant concerned, regardless of whether anything relevant for planning has occurred for them since the last planning run or not.

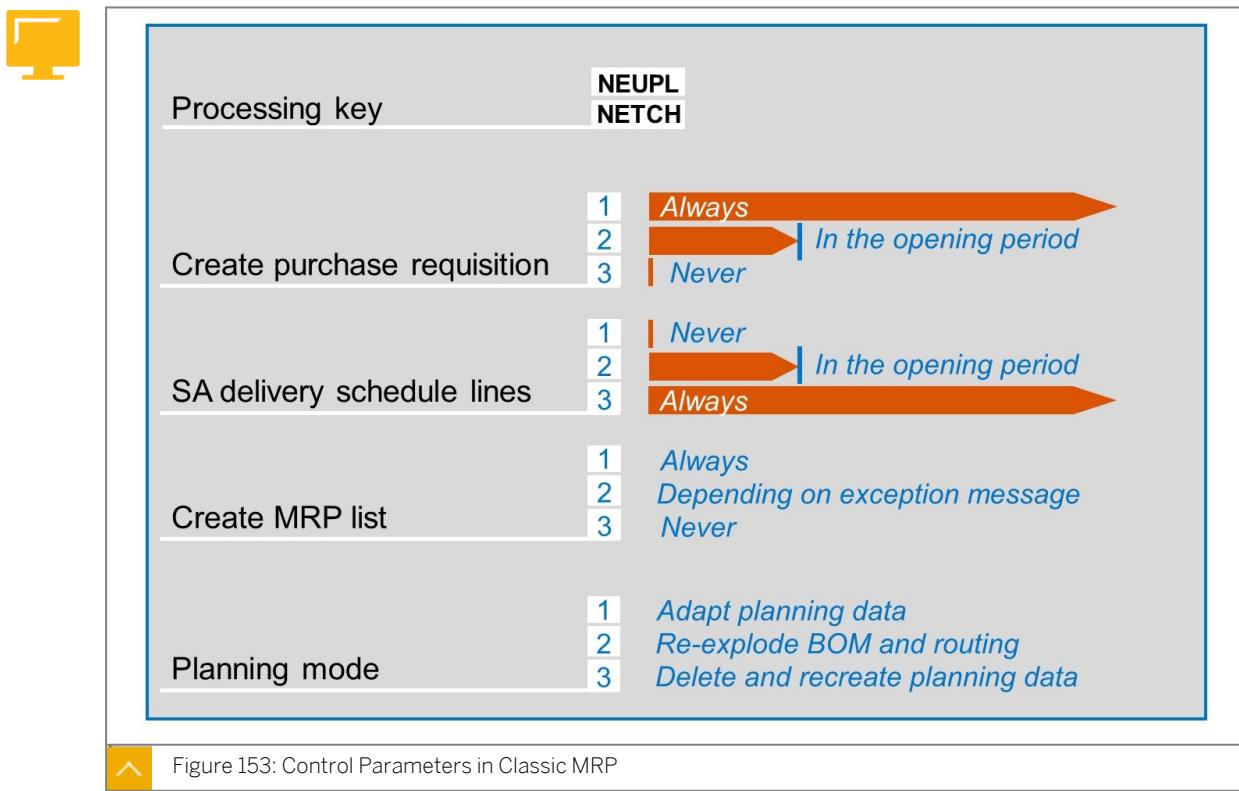
### Net Change Planning

With the *NETCH* processing key, only those materials for which the *NETCH* indicator has been set in the planning file are planned.

In net change planning, the *NETCH* indicator is removed from the planning file after the material is planned.

## Control Parameters in Classic MRP

### Introduction



For requirements planning, you can set control parameters on the initial screen of the planning run. You can use these parameters to determine how the planning run is executed and its results.

As well as the processing key (planning process type), the control parameters include a creation indicator for procurement proposals for externally procured materials, a creation indicator for MRP lists, the planning mode, and the scheduling.

### Available Control Parameters

The following control parameters are available:

Table 5: Available Control Parameters

Parameter	Description
Processing key	This indicator defines the planning type as regenerative planning (NEUPL), or net change planning (NETCH).
Creation indicator for purchase requisitions	<p>You use this creation indicator to control whether purchase requisitions rather than planned orders are to be created for materials that are procured externally. The following options are available:</p> <ul style="list-style-type: none"> <li>Planned orders only</li> <li>Purchase requisitions only</li> <li>Purchase requisitions within the opening period and planned orders outside of the opening period.</li> </ul> <p>When you select this indicator, the system creates purchase requisitions instead of planned orders when it determines an opening date that is before the date of the planning run.</p> <p>The opening period for the planned order represents the number of workdays that are subtracted from the order start date in order to determine the order opening date. This period serves as a time float, which is available for the MRP controller when converting a planned order into a purchase requisition.</p> <p>You define the opening period in Customizing under <i>Materials Management → Consumption-Based Planning → Planning → Define floats (Scheduling Margin Key)</i> and assign it to the material in the Scheduling margin key field (MRP 2 view) in the material master.</p>
Creation indicator for scheduling agreement schedule lines	<p>This indicator determines whether scheduling agreement schedule lines are created directly for an externally procured material if a scheduling agreement exists for this material.</p> <p>The following options are available:</p> <ul style="list-style-type: none"> <li>No schedule lines</li> <li>Only schedule lines</li> <li>Schedule lines within the opening period and purchase requisitions outside of the opening period</li> </ul>

Parameter	Description
Creation indicator for MRP lists	<p>This indicator determines whether the planning run creates MRP lists.</p> <p>The following options are available:</p> <ul style="list-style-type: none"> <li>• No MRP lists</li> <li>• Always MRP lists</li> <li>• MRP lists only in certain exceptional situations that are documented in exception messages</li> </ul> <p>The exception messages that lead to the creation of an MRP list can be defined in Customizing under <i>Materials Management</i> → <i>Consumption-Based Planning</i> → <i>Evaluation</i> → <i>Exception Messages</i> → <i>Define and Group Exception Messages</i> (OMD3).</p>
Planning mode	<p>This indicator specifies how non-fixed procurement proposals from the last planning run are handled in the next planning run. Fixed procurement proposals remain unchanged.</p> <p>The planning mode is set automatically in the planning file. However, you can overwrite it in the initial screen of each planning run.</p> <p><b>The following options are available:</b></p> <ul style="list-style-type: none"> <li>• Adjust existing planning data (planning mode 1).</li> <li>• New BOM explosion after BOM changes (planning mode 2).</li> <li>• Delete all planning data and re-create procurement proposals (planning mode 3).</li> </ul> <p>The planning mode set in the planning file for a material can be overruled by the planning mode in the initial screen of the planning run.</p> <p>The following rule applies to this: For planning a particular material the planning mode that has the highest numerical value takes priority. This means:</p> <ul style="list-style-type: none"> <li>• Planning mode 2 (re-explode BOM) takes priority over planning mode 1 (adapt planning data)</li> <li>• Planning mode 3 (delete and recreate planning data) takes priority over planning mode 1 (adapt planning data) and planning mode 2 (re-explode BOM)</li> </ul> <p>It is usually sufficient to set planning mode 1 on the initial screen of a planning run. If a material has to be planned with another planning mode, a corresponding planning file entry is automatically set in the planning file and evaluated in the planning run.</p>

Creation indicators were originally intended to separate the responsibilities of production planners and purchasers. Production planners were responsible for planned orders and purchasers were responsible for purchase requisitions. Today the roles of production planners and purchasers have changed. Purchasers very often focus on negotiating contracts with suppliers while the operative creation of purchase requisitions and purchase order handling is left to material planners and MRP. Therefore, MRP live always creates delivery schedule lines for externally procured material with valid delivery schedules and it creates purchase requisitions for all other externally procured material. The sourcing BAdI `PPH_MRP_SOURCING_BADI => SOS_DET_ADJUST` allows you to change the MRP element type of a material receipt to be created by MRP. Implement this BAdI if you want MRP live to create planned orders rather than purchase requisitions for externally procured materials.



#### Note:

You can also define the creation indicator for scheduling agreement schedule lines in Customizing in the plant parameters. The creation indicators for purchase requisitions, schedule lines, and MRP lists can also be set in Customizing in the MRP groups. The materials assigned to an MRP group are planned accordingly in the total planning run.



#### Hint:

You can save the parameters in the planning run in transactions MD01 and MD03. To save the parameters, from the menu bar choose *Settings → Save*.

## Plant Parameters and MRP Groups

### Introduction

Plant parameters are control parameters for requirements planning. You can maintain plant parameters for each plant in Customizing under *Materials Management → Consumption-Based Planning → Plant Parameters → Plant Parameters → Carry Out Overall Maintenance of Plant Parameters* (OMI8).

The MRP group is an organizational object used to allocate certain control parameters for MRP to a group of materials. You can maintain MRP groups and the corresponding parameters in Customizing under *Materials Management → Consumption-Based Planning → MRP Groups → Carry Out Overall Maintenance of MRP Groups* (OPPZ) if you want to refine the planning by material.

### Creation Indicators

Classic MRP uses creation indicators to instruct the MRP run to create either purchase requisitions or planned orders for externally procured materials. Similarly, creation indicators instruct classic MRP to create delivery schedules, purchase requisitions, or planned orders for externally procured materials with valid delivery schedules.

Creation indicators are defined on the initial screen of the MRP run, or in MRP groups.



#### Note:

MRP Live always creates delivery schedule lines for externally procured material with valid delivery schedules and it creates purchase requisitions for all other externally procured material.

## Plant Parameters and MRP Group Parameters

**Plant Parameters**

- SA delivery schedule line indicator
- Purchasing processing time
- Rescheduling horizon
- Available stock
- Number ranges and item numbers
- Opening period

**MRP Group Parameters**

- Creation indicator
- Rescheduling horizon

Figure 154: Examples: Plant Parameters and MRP Group Parameters

On the plant level, you maintain parameters such as the creation indicator for scheduling agreement schedule lines and the purchasing processing time.

On the MRP group level, you maintain parameters such as the creation indicator for purchase requisitions, schedule lines, MRP lists, and the maximum MRP interval.

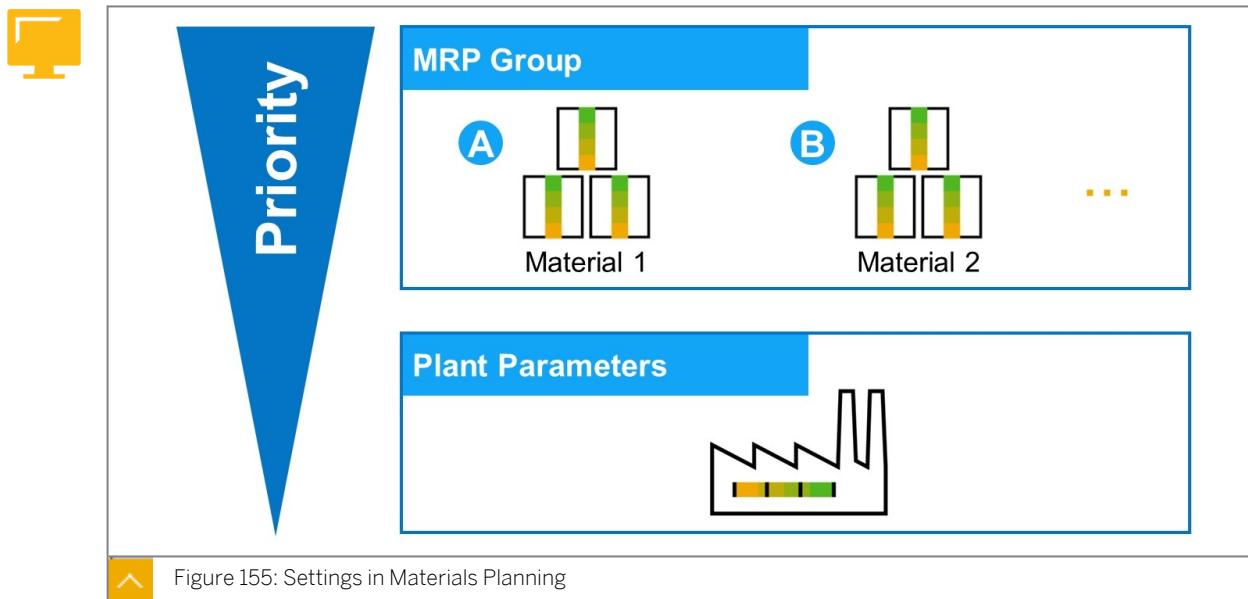
When creating or changing a material master record, you can assign the MRP group by material.

In material master records, an MRP group can be defaulted depending on the setting in Customizing under *Materials Management → Consumption-Based Planning → MRP Groups → Define MRP Group for Each Material Type (OMIG)*.

In total planning, the system checks each material to determine whether the material has been allocated an MRP group. If no MRP group is allocated for the material, the material is planned using plant parameters.

In single-item planning, parameters entered on the initial screen are always used for planning.

### Settings in Materials Planning



If settings are made on both levels, the MRP group settings have priority over the plant parameter settings.



### LESSON SUMMARY

You should now be able to:

- Parameterize a planning run



## Executing a Planning Run Using MRP Live



### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Carry out a planning run using MRP Live

### MRP Live Execution

SAP S/4HANA features MRP Live on HANA, an MRP run optimized for SAP HANA.

Using MRP Live on HANA, you can benefit from improved performance and execute the planning run in much shorter cycles. This means that you can execute several planning runs daily and plan one or several plants online interactively or in the background.

MRP Live on HANA also enables a flexible planning scope: you can preselect the materials that you want to plan in an MRP Live run.

However, MRP Live on HANA still bears some restrictions. MRP Live on HANA is supposed to be faster, but does not yet support all the existing business processes for a variety of industries that are supported by the classic MRP. For example, some lot-sizing procedures such as optimum lot-sizing procedures are not supported. Also, MRP Live on HANA does not support either forecast-based planning nor time-phased planning.

Current restrictions of MRP Live on HANA are detailed in the SAP note [1914010](#).

If you want to take advantage of MRP Live on HANA wherever possible, you can start it with the MRP run. The system automatically checks whether a particular material can be planned with MRP Live on HANA or whether it has to be planned in the classic way.

During the planning run, the system plans the materials according to the sequence determined by the low-level codes. That is, for the first low-level code (0), the system determines which materials can be included in MRP Live and plans these first. In a second step, the system determines the materials with the same low-level code that cannot be planned in MRP Live on HANA and then automatically plans these materials using classic MRP. Included in this second step are also the materials that were planned in MRP Live on HANA but for which an error occurred. Both the planning in MRP Live on HANA and classic MRP has to be completed for one low-level code before the system commences the planning of the next low-level code (1).

That is, during the planning process, the system divides the materials into groups:

- Materials that can be planned using MRP Live on HANA
- Materials that still have to be planned in classic MRP because:
  - They require a planning feature that is not yet supported by MRP Live.

- You have set the *Plan in Classic MRP indicator* for these materials in transaction *md\_mrp\_force\_classic*. This transaction allows you to manually define that the planning run is to be executed using classic MRP for individual materials.
- Materials that cannot be planned in either MRP Live on HANA or in classic MRP because of inconsistent master data, for example. The system creates exception MRP lists for such materials that cannot be planned.

To carry out MRP Live on HANA, choose the transaction **MD01N** in your back-end system on the SAP Easy Access screen or open the app *Schedule MRP Runs* on the SAP Fiori launchpad.

### MRP Live on HANA: Planning Scope

MRP Live on HANA allows you to define a flexible planning scope. This means that you can select the materials you want to include in an MRP run.

You can enhance this selection using the following indicators:

- *Changed BOM Components*: With this indicator, you can plan the BOM components in addition to the materials selected in the *Planning Scope* section. The system plans the BOM components if the current planning run has changed their dependent requirements. Unchanged BOM components are ignored.
- *All Order BOM Components*: With this indicator, you plan all order BOM components in addition to the materials selected in the section *Planning Scope*, even if the component requirements have not changed.
- *Stock Transfer Material*: This indicator affects pre-selected materials that have a special procurement type for stock transfer and allows you to plan these materials not only in the plants specified in the *Planning Scope* section, but also in their supplying plants.

### MRP Live: Control Parameters

 **MRP Live: Control Parameters**

Regenerative Planning <input type="checkbox"/>	▶ Plan all materials pre-selected by the planning scope, regardless of the NETCH indicator in the planning file
Scheduling <input type="checkbox"/>	▶ <b>1</b> = Determination of Basic Dates for Planned Orders ▶ <b>2</b> = Lead Time Scheduling and Capacity Planning
Planning Mode <input type="checkbox"/>	▶ <b>1</b> = Re-use all unfirmed procurement proposals from the last planning run if they fit exactly ▶ <b>3</b> = Delete all unfirmed procurement proposals from the last planning run
Name for Performance Log <input type="text"/>	▶ Specifies the name of the file under which you can find the performance results of the MRP Live run in the MRP Live Performance Log report.

 Figure 156: MRP Live: Control Parameters

The figure, *MRP Live: Control Parameters*, illustrates the available control parameters for MRP Live.

Using the MRP Live control parameters, you define how the preselected materials should be planned.

By selecting the *Regenerative Planning* parameter, you force the system to plan all preselected materials even if there were no changes since the last planning run.

The *Planning Mode* specifies how non-fixed procurement proposals from the last planning run are handled in the next planning run. Fixed procurement proposals remain unchanged.



Note:

The *Scheduling* indicator only affects planned orders.



## LESSON SUMMARY

You should now be able to:

- Carry out a planning run using MRP Live



## Converting Planned Orders and Evaluating MRP Lists



### LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Use the MRP list to verify the planning results and convert planned orders

### MRP List



#### Note:

This lesson is only relevant for classic MRP. MRP Live on HANA has neither planned orders nor MRP lists.

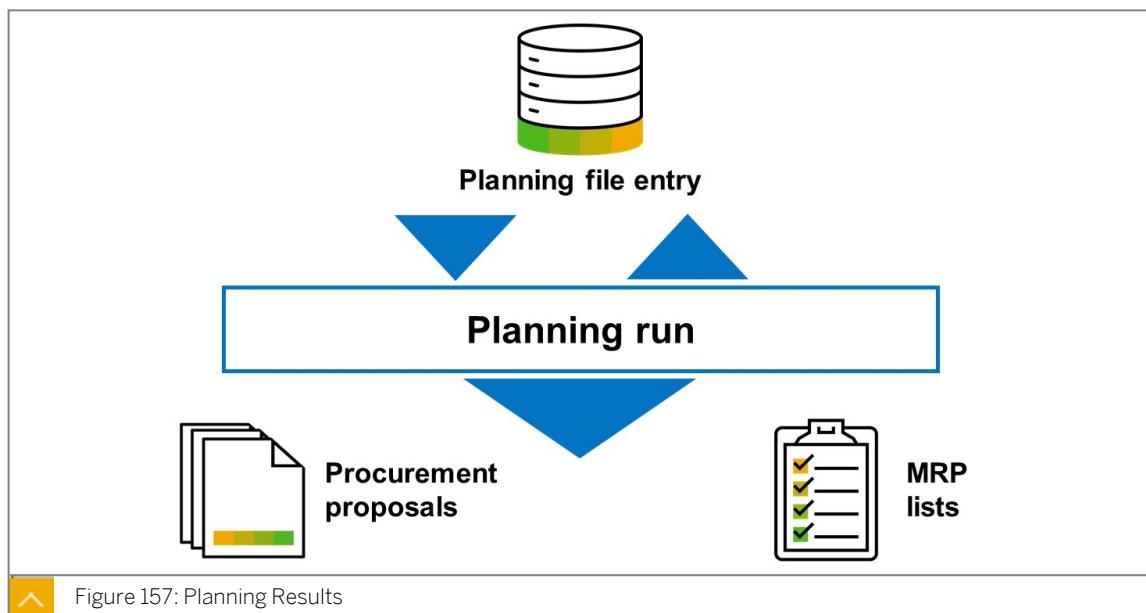


Figure 157: Planning Results

You can execute requirements planning as individual or overall planning. The type of planning run determines the scope of the materials to be planned. You can specify the type of planning run in the *Processing Key* field on the initial screen. Depending on the selected processing key, the system determines the materials to be planned from the planning file and deletes the corresponding indicator (*NETCH*).

The results of the planning run are both procurement elements (planned orders, purchase requisitions, and schedule lines) and optional MRP lists.

### MRP Lists

An MRP list is static and contains the planning results for a material. The MRP list always displays the stock/requirements situation at the time of the last planning run and provides a work basis for the MRP controller. Any changes made after the planning date are not considered.

The MRP list is stored in the system until it is either manually deleted or replaced by a new list from a subsequent planning run.

**Each MRP list is divided into the following sections:**



Table 6: Sections of the MRP List

Section	Description
Header	Contains the recorded material data, for example, the material number, plant, and MRP parameters.
Items	Contains information on the individual MRP elements, for example, planned orders, purchase orders, reservations, and sales orders.
Material tree	Contains information about materials, orders, or product groups you are using in your session.



**Hint:**

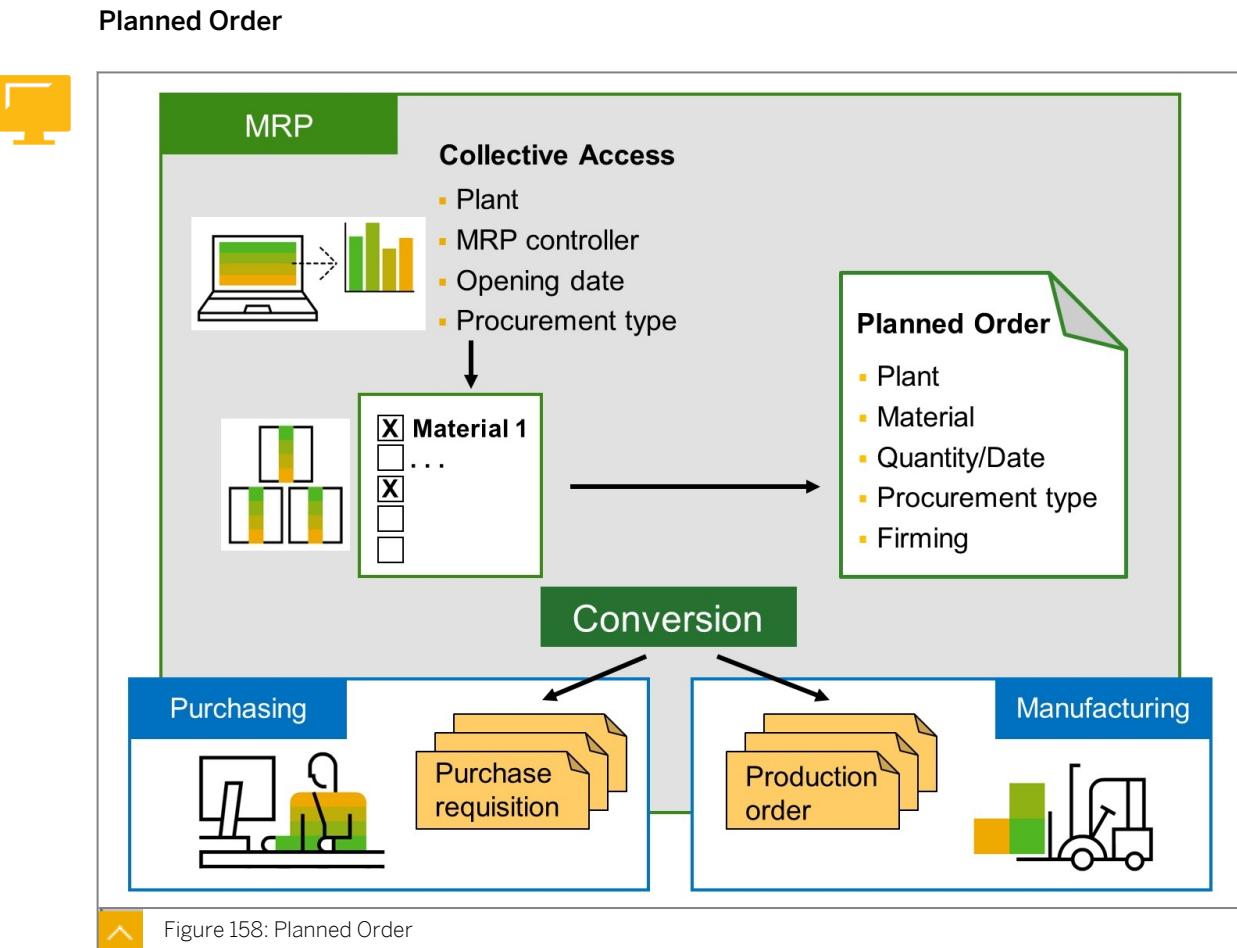
You can change the names of the MRP elements in Customizing under *Materials Management* → *Consumption-Based Planning* → *Evaluation* → *Check Texts for the MRP Elements*.

## Planned Order Conversion

A planned order is an internal document that specifies how much of a material is needed and when. A planned order is used only within a company, and it is not binding. Planned orders can be created manually but are usually generated automatically with a requirements planning run.

**A planned order has the following characteristics:**

- It is a procurement proposal in material requirements planning (MRP) for requirement coverage. As it is an internal planning element that helps with planning, a planned order is not binding and therefore does not trigger procurement directly.
- It can be changed or deleted.
- It doesn't indicate whether the material is later procured via in-house production or external procurement.
- For materials produced in-house, a planned order is the requirements object for a dependent requirement and can be used in capacity calculation.
- For materials produced in-house, a planned order determines the basic dates for production.



For in-house production, a planned order can be converted into a production order. For external procurement, a planned order can be converted into a purchase requisition.

All purchase requisitions that were created by converting a planned order are fixed automatically. They are not changed by planning runs that occur later.

#### Conversion of a Planned Order into a Purchase Requisition

You can convert a planned order into a purchase requisition using Individual Conversion or Collective Conversion.

##### Individual Conversion

You can convert the planned order quantity in total or in part. Partial conversion is advantageous when a demand situation changes or when you want to use in-house production for part of the planned order.

On the SAP Easy Access screen, choose *Logistics → Materials Management → Material Requirements Planning → MRP → Planned Order → Convert to Pur. Req. → Individual Conversion (MD14)* to convert a planned order individually.

You can also convert a planned order directly from the MRP list or current stock/requirements list.

##### Collective Conversion

You can select specific planned orders that have start dates within the opening horizon. The opening horizon is the time available for the MRP controller to convert a planned order into a

purchase requisition or a production order. The horizon key in the material master record controls the opening horizon.

Along with the conversion, you can carry out source determination if you set the corresponding indicator.

On the SAP Easy Access screen, choose *Logistics* → *Materials Management* → *Material Requirements Planning* → *MRP* → *Planned Order* → *Convert to Pur. Req.* → *Collective Conversion* (MD15) to convert planned orders into purchase requisitions collectively. Or use the *Convert Planned Orders To Purchase Requisitions* SAP Fiori app.

Collective conversion is also possible in the background.



## LESSON SUMMARY

You should now be able to:

- Use the MRP list to verify the planning results and convert planned orders

# Evaluating the Planning Results

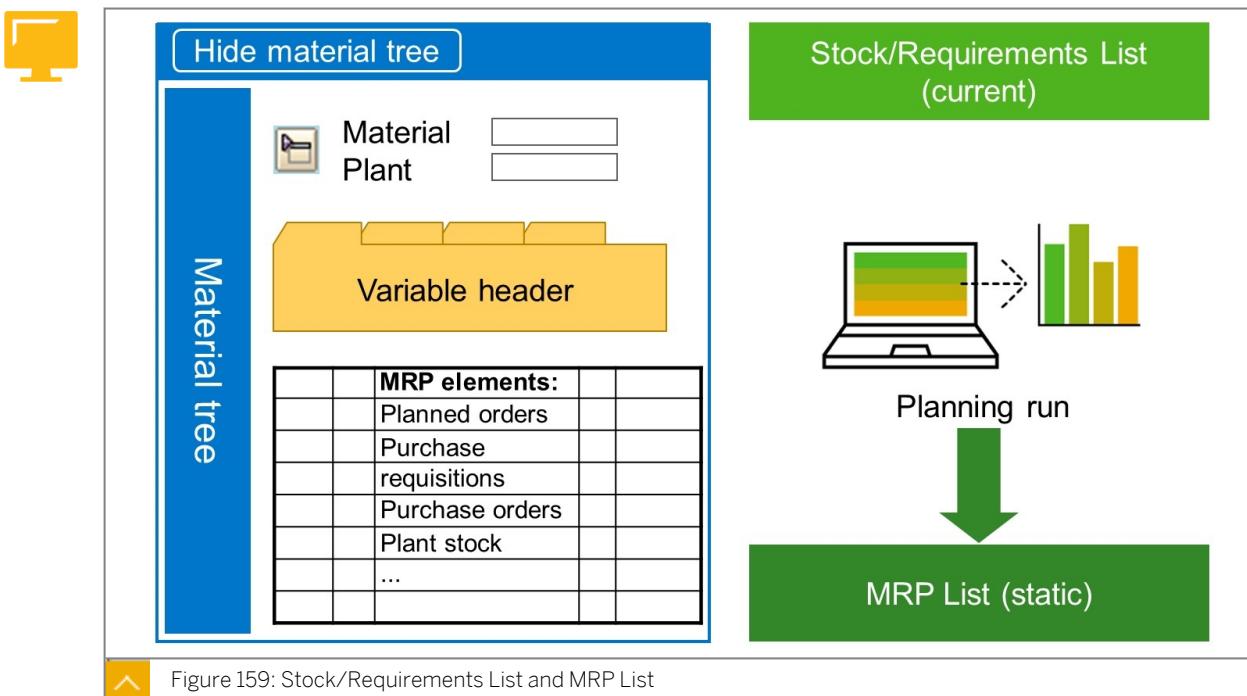


## LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Use the most common planning evaluation tools
- Use the collective access to lists
- Use the material tree
- Use the navigation profile
- Explore exception messages

## Differences Between Current Stock/Requirements List and MRP List



After the requirements planning run, MRP controllers check the stock/requirements situation of the planned materials, execute any necessary changes, and ensure the availability of the materials. The MRP list (only in classic MRP) and the current stock/requirements list are available for the evaluation of planning results.

Individual access allows you to display the stock/requirements situation for a single material in a list whereas collective access allows you to display the stock/requirements situation for a range of materials.

## Characteristics of the MRP and Current Stock/Requirements Lists

The characteristics of the MRP list are as follows:



- Depending on the creation indicator of the MRP list, the system creates the MRP list during the planning run. This list contains the planning results for a material.
- The MRP list always displays the stock/requirements situation from the time of the last planning run.
- The MRP list provides a work basis for the MRP controller.
- Changes made after the planning date are not considered. The list is static.
- The MRP list is stored in the system until it is either deleted manually or replaced by a new list from a subsequent planning run.

The characteristics of the current stock/requirements list are as follows:



- The current stock/requirements list displays the actual stock and requirements.
- Each time the stock/requirements list is called, it determines the various MRP elements again and displays the most up-to-date information for a material. Therefore, the stock/requirements list provides the most recent availability situation for a material.
- Changes made after the planning date display directly. The list is dynamic.
- The current stock/requirements list is available in classic MRP and in MRP Live.



Note:

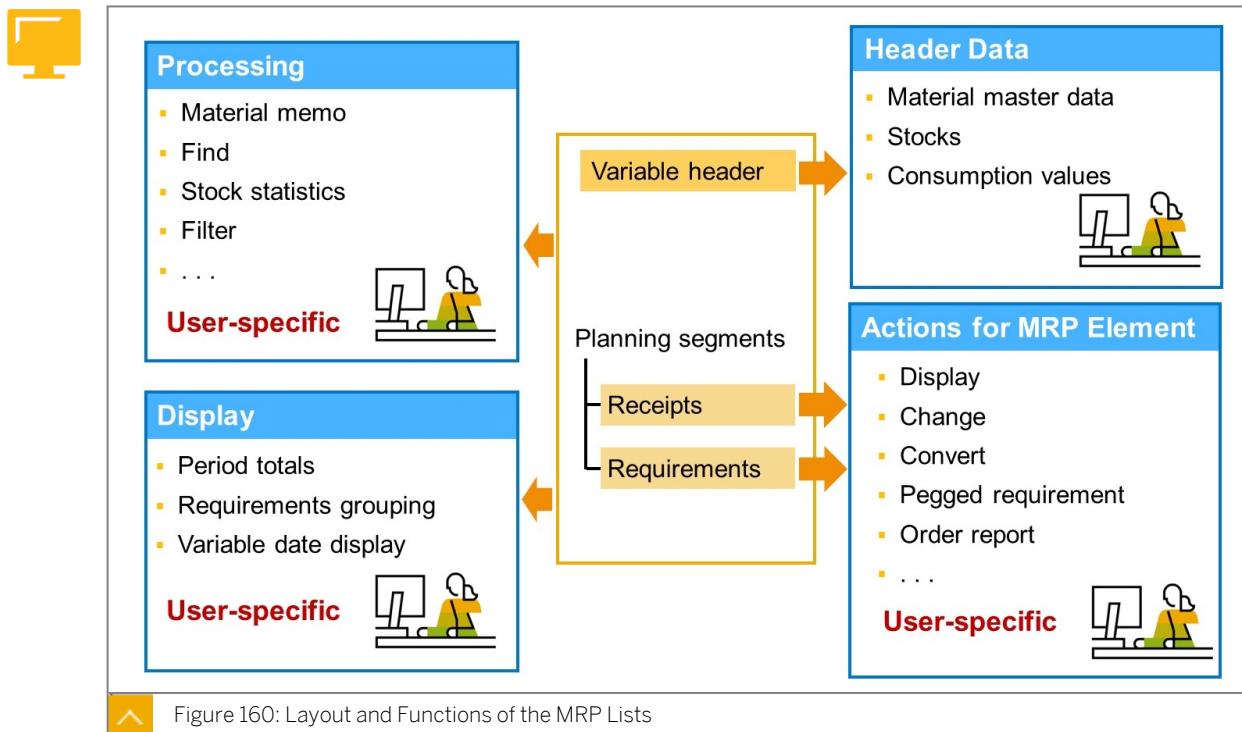
After a planning run, both lists contain exactly the same information. As soon as an MRP-relevant change is made, the information is only updated in the stock/requirements list.

The structure of both lists is as follows:



- On the left-hand side of the screen, you can open the overview tree, which can be used as worklist.
- On top of every list you find the header with the material number. The header details provide more information.
- The lists contain the individual MRP elements and the corresponding available quantities.

## MRP List Layout and Functions



The figure, Layout and Functions of the MRP Lists, illustrates the possibilities in the layout and functions of MRP lists.

### The individual lists have a large number of display options:

- You can display different dates (availability date or goods receipt date).
- You can use filters. With filters, you select the MRP elements and MRP segments that are displayed. In this way, you can reduce the information displayed in the list.
- You can display selection rules. With selection rules, you select the MRP elements and stocks that are included in the quantity and stock calculations.
- You can display the end of the replenishment lead time as an additional line.
- You can display vendors and customers for the elements.
- You can display period totals. The period totals are a display variant in which the planning results are periodically summarized. Different tab pages display the individual periodicity of the period totals. This form of display provides a quick overview of material availability over time.
- To compare the MRP list and the stock/requirements list, use the compare function. You can compare the situation at the time of the last planning run with the current stock/requirements situation.
- You can expand the header details. The header details show an overview of master and movement data for each material. This data is grouped together by topic on individual screens. The MRP type controls the screens displayed in the requirements planning evaluations. To control screen display, screen sequences have a key that is assigned to the

MRP type. It is therefore possible to display different master data for the evaluation of consumption-based planned materials and for MRP-planned materials.



Hint:

**For consumption-based planning, the following selection rules are helpful:**

- SAP VB with dependent requirements also displays dependent requirements for materials planned using consumption-based planning. These are otherwise invisible with MRP type VB (*Manual reorder point planning*). The dependent requirements nevertheless have no influence on MRP.
- SAP SA releases instead of delivery schedules are useful for scheduling agreements with release documentation. You can use them to see whether releases were created and sent to the vendor.

The items contain information concerning the individual MRP elements, such as planned orders, purchase orders, reservations, and sales orders. You can process individual MRP elements from the list.

You can use user-specific settings to adjust the lists to your personal requirements. These settings apply to both lists.

### User-Specific Configurations

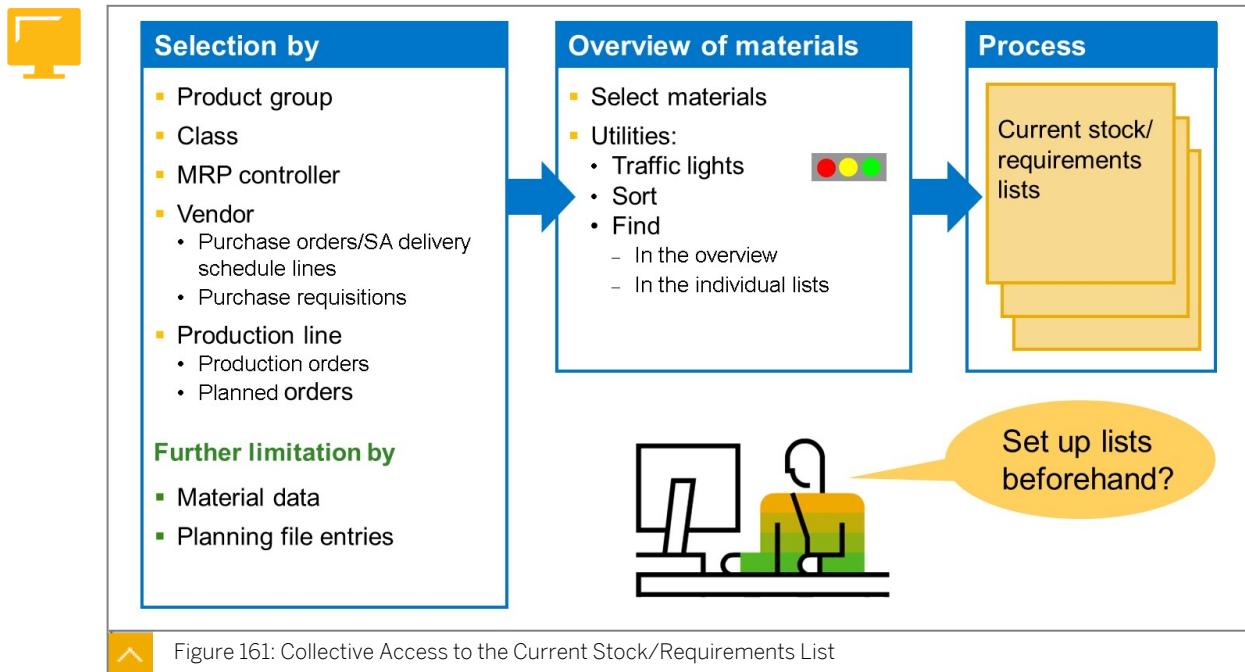
The user-specific configurations include the following settings:

- Definition of list display settings
- Definition of user-specific transaction calls
- Configuration of columns in the lists
- Navigation between materials within the material tree
- Definition of the traffic light values
- Saving the selection parameters for collective access into the MRP list

On the SAP Easy Access screen, choose *Logistics* → *Materials Management* → *Material Requirements Planning (MRP)* → *MRP* → *Evaluations* → *MRP List - Material* (*MD05*) to display the MRP list for a particular material.

On the SAP Easy Access screen, choose *Logistics* → *Materials Management* → *Material Requirements Planning (MRP)* → *MRP* → *Evaluations* → *Stock/Reqmts List* (*MD04*) to show the current stock/requirements list for a particular material.

## Collective Lists



Collective access is possible with a large number of selection criteria. The criteria for accessing the current stock/requirements list are different from those for accessing the MRP list.

**Characteristics of collective access are as follows:**

- With collective access, a material overview displays all selected materials. From the overview of all selected materials, you can go to the individual lists and process these materials. If, for example, you have selected several lists for processing, you can go from one list directly to the next selected list.
- If you access the collective list with the *Set up lists beforehand* indicator, you have orientation help.
- Traffic light values display the urgency of the material processing. The criteria for the display are user-specific. The ranges of coverage and exception groups control the traffic light display. If there is a difference between the traffic lights for range of coverage and exception groups, red in any of these lists has higher priority than yellow and yellow has higher priority than green.
- There are various sort and search functions available in the overview and in the individual lists. **You can use the following functions:**
  - The search function helps you select materials according to particular exception messages.
  - The sort function enables you to sort the materials in the collective access list according to certain criteria.
  - The graphical display can show you ranges of coverage or stock values for a material over time.

## Setting the Traffic Lights for the Stock/Requirements and MRP Lists

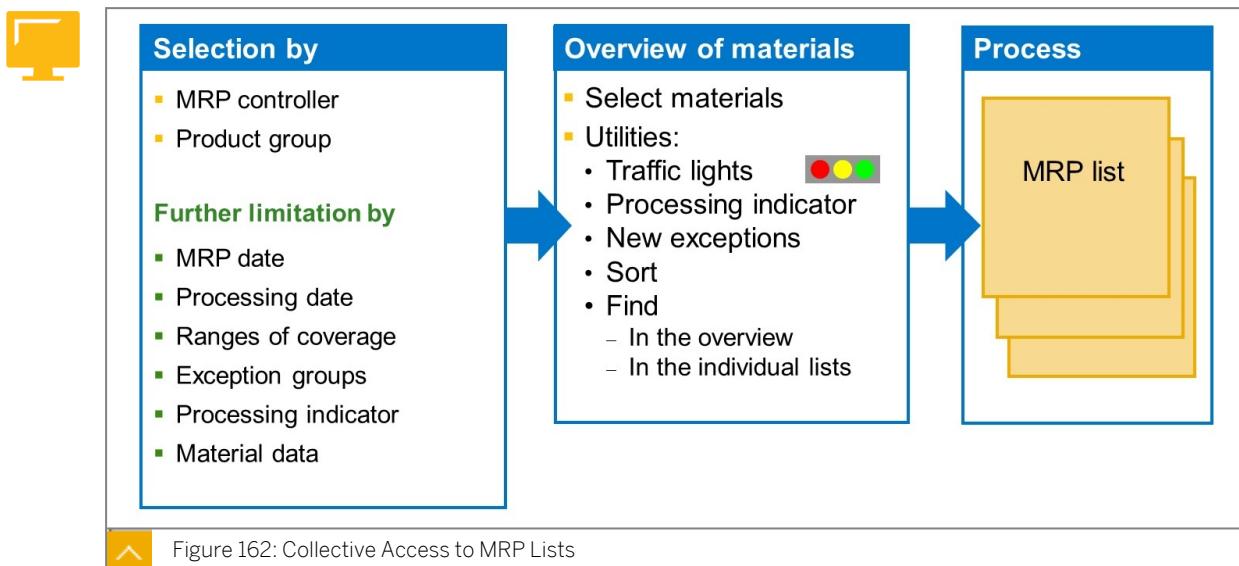
You can alternatively set the traffic lights for the stock/requirements list and the MRP list to be material-specific.

To do this, you perform the following steps:

- Define evaluation profiles in Customizing under *Materials Management* → *Consumption-Based Planning* → *Evaluation* → *Define Evaluation Profile for Range-of-Coverage Data*.
- Assign these profiles to the MRP groups that can be entered in the material master record in the *MRP 1* view. You can do this in Customizing under *Production* → *Material Requirements Planning* → *MRP Groups* → *Carry Out Overall Maintenance of MRP Groups* (OPPR). Assign evaluation profiles depending on the plant and MRP group combination.

On the SAP Easy Access screen, choose *Logistics* → *Materials Management* → *Material Requirements Planning (MRP)* → *MRP* → *Evaluations* → *Stock/Requirements: Collective Display* (MD07) to call the current stock/requirements list for collective access.

## Collective Access to MRP Lists

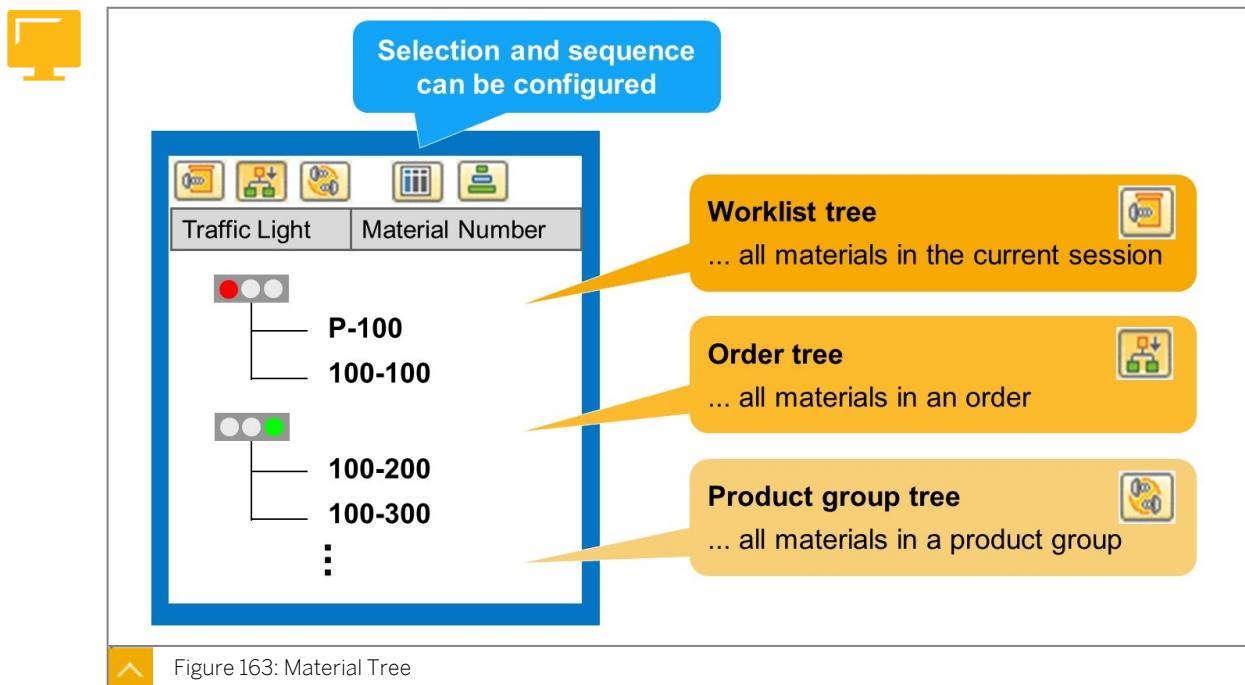


The selection criteria for collective access in the MRP lists are not the same as those in the current stock/requirements lists. For example, you can use the MRP date, the processing date, or the processing indicator for selection.

The orientation guides in the material overview correspond to the current stock/requirements list. You can also search for processing indicators or new exceptions.

On the SAP Easy Access screen, choose *Logistics* → *Materials Management* → *Material Requirements Planning (MRP)* → *MRP* → *Evaluations* → *MRP List - Coll. Displ.* (MD06) to call the MRP list for collective access.

## Material Tree



The material tree is a structure tree that can be shown in the MRP list and in the current stock/requirements list. You can specify in the user settings whether you want to display the material tree.

**The following materials are automatically included in the material tree:**

- All materials that you have selected during collective access to the MRP list or current stock/requirements list
- All materials for which you have called up the MRP list or current stock/requirements list during a session



**Note:**

If you exit the transaction, the material selection is lost.

You can change the layout of the tree and display the following structure trees:

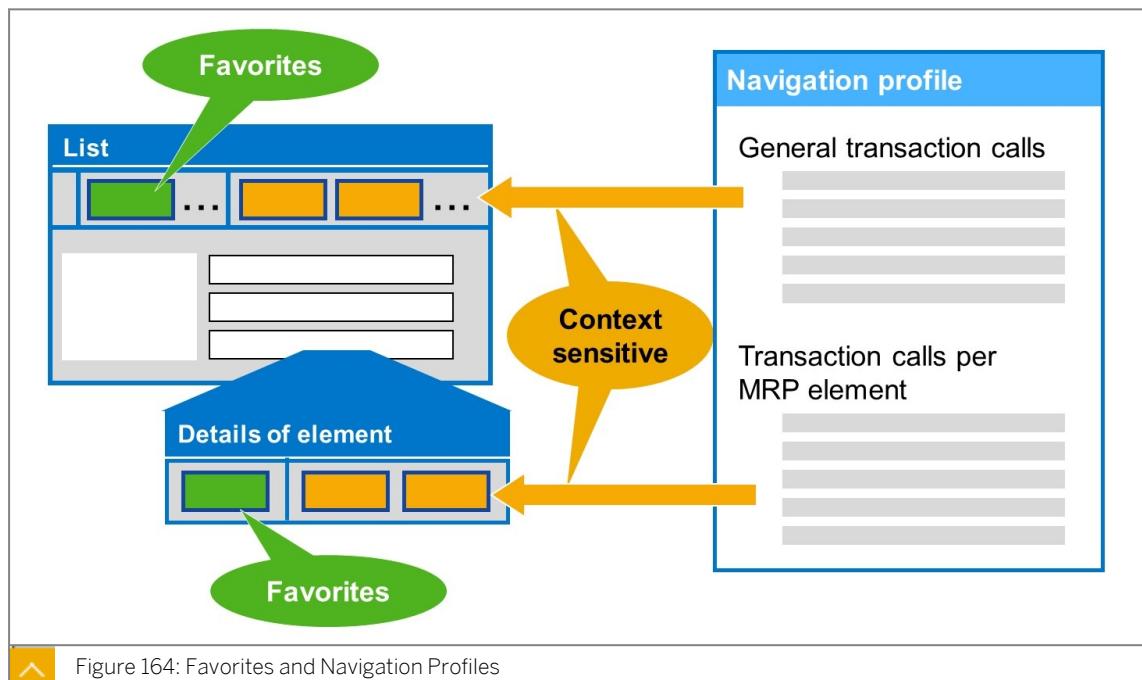
- Worklist tree:  
In the worklist tree, all materials in the current session are displayed.
- Order tree:  
All components and assemblies of a selected MRP element are displayed according to the order report.
- Product group tree:  
All materials of a product group are displayed (only if you use collective access through a product group).



Hint:

To view a material number in the overview, double-click the material number in the material tree. For the worklist tree and order tree, you can set the fields to be displayed and the sequence by choosing (Define Fields and Sequence).

## Favorites and Navigation Profiles



Navigation profiles and user-specific transaction calls (Own Favorites) enable you to easily work with MRP lists and current stock/requirements lists.

A navigation profile contains transaction calls for transactions that can be called directly from the current stock/requirements list or the MRP list. The transactions are either general, such as actions on a material level, or refer to a particular MRP element. You can access these transactions without having to leave the displayed list by using buttons with icons or text.

You can define navigation profiles in Customizing under *Materials Management* → *Consumption-Based Planning* → *Evaluation* → *Define Navigation Profiles* (OM0K).

Users can assign themselves a profile in the settings of the evaluation lists.

**To assign a profile, perform the following steps:**

1. From the menu bar, select *Environment* → *Navigation Profile* → *Assign*.
2. Enter or select the required navigation profile.
3. Save your entry.

### Functions in a Navigation Profile

You can specify the following functions in a navigation profile:

- Define any number of transaction calls. The list display is limited to five general transaction calls and two transaction calls for each MRP element. However, only the first five or the first two transaction calls relevant for a particular context are displayed.
- Prepopulate three parameters for each transaction call for the initial screen of this transaction.
- Link or restrict the display of a transaction call to certain parameters from the material master record. The possible linking parameters are as follows:
  - Procurement type
  - Material type
  - MRP group
  - MRP type

User-specific transaction calls (*Own Favorites*) complete the general navigation profiles. Using favorites, you can define transaction calls for the transactions you want to branch to from the lists. As with navigation profiles, you can have both general and specific transaction calls for each MRP element.

In *Environment* → *Own Favorites* → *Maintain*, you can activate up to five general user-specific transaction calls.

## Exception Messages



### Exceptions indicate the following:

- **New** order proposals created by MRP
- Dates in the **past** (start date, finish date, or opening date)
- Problems during **BOM explosion**
- Problems during **scheduling**
- Rescheduling

### In Customizing you can change the following settings:

- The priority in which exception messages are to be displayed. This allows you to define which exception message is displayed in the MRP list if several exceptions are generated for an MRP element during the planning run.
- Depending on which exception messages MRP lists are created.
- How exception messages are grouped to exception groups.

Exception messages depend on the procedure and indicate exceptional situations to consider, for example, a start date in the past or the stock level falling below safety stock.

Exception messages are created during the planning run for situations that need to be checked by the MRP controller. These exception messages can therefore be used to monitor the planning results. In this way, the MRP controller is able to filter materials that require immediate processing out of the planning results.

An exception message refers to an individual MRP element.

The number of exception messages displayed in both lists is almost the same, the only difference being that in the stock/requirements list, exception messages for newly scheduled MRP elements cannot be issued.

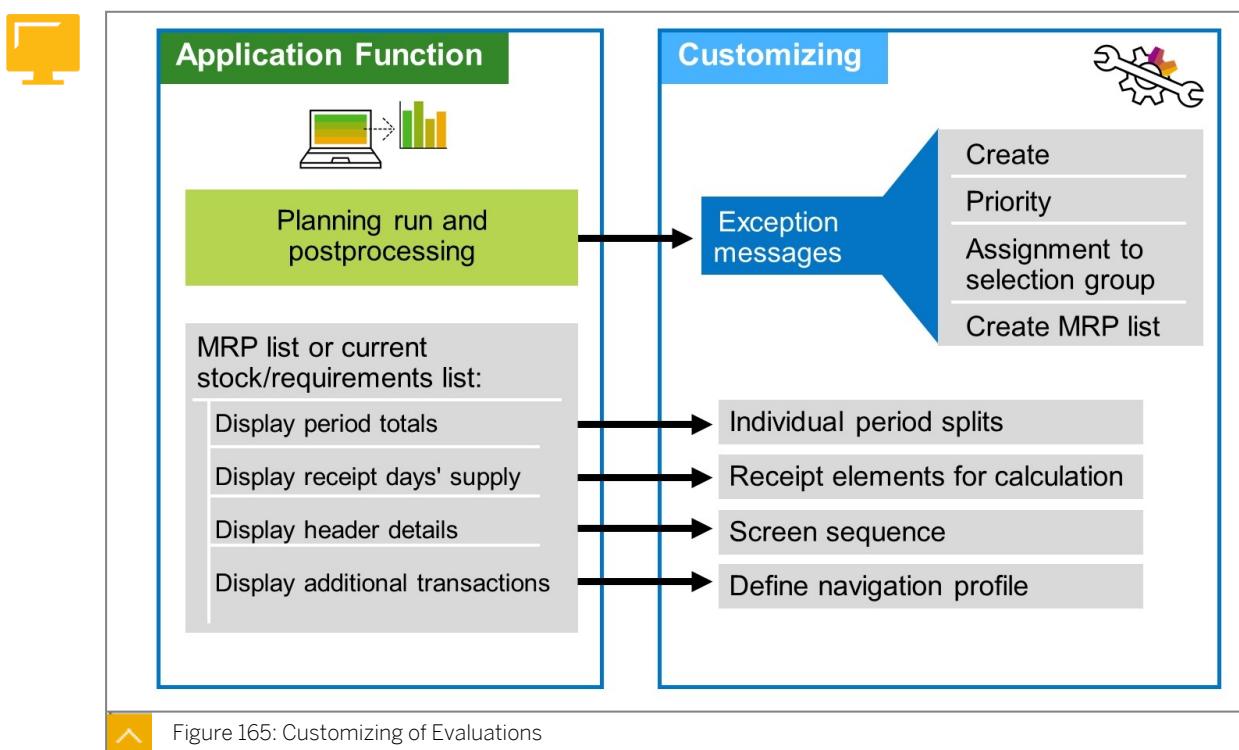
### Definition and Grouping of Exception Messages

You define and group exception messages in Customizing under *Materials Management → Consumption-Based Planning → Evaluation → Exception Messages → Define and Group Exception Messages* (OMD3).

**Regarding exception messages, you determine the following system behavior:**

- Whether an exception message should be created
- The priority of the exception messages (if multiple exception messages are created during the planning run for an MRP element)
- The exception messages that are to be grouped together into an exception group
- The exception messages that lead to the creation of an MRP list (if creation indicator *Create MRP list depending on exception messages* has been set)

### Customizing of Evaluations



The figure, Customizing of Evaluations, gives an overview of the possibilities in customizing for setting up evaluations.

**In the SAP system, the following Customizing options are available for evaluations:**

- Period totals:

You can define new period splits (displayed with the period totals and represented on a daily, weekly, and monthly basis) in Customizing under *Materials Management → Consumption-Based Planning → Evaluation → Period Totals → Define Individual Period Split for Period Totals* (OMDA).

- Receipt days' supply:

You can set which receipt elements are to be taken into account for receipt days' supply in Customizing under *Materials Management* → *Consumption-Based Planning* → *Evaluation* → *Define Receipt Elements for Receipt Days' Supply* (OMIL). You can define supplies for up to two receipt days.

- Header details:

You can define screen sequences to be assigned to the MRP type in Customizing under *Materials Management* → *Consumption-Based Planning* → *Evaluation* → *Define Screen Sequence for Header Details* (OMIO).

## Fiori Apps for Evaluations

The following evaluations apps are available on the Fiori launchpad in the *Demand Forecasting and Material Data Planning* tile group:

### 1. Monitor Material Coverage Net Segments:

With this app, you can monitor all the make-to-stock and collective requirements materials in a selected area of responsibility. You are provided with a list of all materials with net requirements segments that might have coverage issues according to a specified shortage definition. The shortage definitions contain a set of rules that the system uses for calculating the material shortages. These rules define the scope of the shortage calculation meaning the supply and demand elements to be considered and the conditions that have to be met to be a relevant shortage.

You can use the default filter *Time till Shortage* to check the coverage of materials. This app provides you with the information that you need to be able to react to the shortage situation on time, meaning that you can avoid disruptions to production or to the fulfillment of customer demands. From this app, you can directly navigate to the *Manage Material Coverage* app to view details of the selected materials and check different solutions.

### 2. Monitor Material Coverage Net and Individual Segments:

With this app, you can monitor all the materials in a selected area of responsibility. This includes make-to-stock and collective requirements materials, make-to-order and engineer-to-order materials, as well as materials for direct production and direct procurement. You are provided with a list of all materials with a net requirement segment or individual segments. These materials might have coverage issues according to a specified shortage definition. The shortage definition you choose contains a set of rules that the system uses for calculating the material shortages. These rules define the scope of the shortage calculation. This means that the supply and demand elements are considered and conditions are met to be a relevant shortage. You can use the default filters *Time till Shortage*, *Material*, and *Individual Segment* to narrow down the scope of your list.

This app provides you with the information that you need to be able to react to the shortage situation on time, meaning that you can avoid disruptions to production or to the fulfillment of customer demands. From this app, you can directly navigate to the *Manage Material Coverage* app to view details of the selected materials and check different solutions.

### 3. Check Material Coverage:

With this app, you can solve any coverage issues for your materials based on the settings you made in the *Monitor Material Coverage* app. This app shows you any net requirements segments, individual customer and project segments, as well as direct production and direct procurement segments that exist for each material. To help you solve your shortages, the system proposes different solutions. You can simulate the solution to preview its effects and you can apply the solution that best solves your issue.

**4. Monitor External Requirements:**

With this app, you can monitor the uncovered requirements originating from sales orders and stock transport orders in a selected area of responsibility. You can use the default filter *Time till Requirement Date* to determine the period in which you want to check uncovered external requirements. Only one shortage definition is available for calculating uncovered requirements and is displayed for information purposes.

This app provides you with the information that you need to be able to react to the shortage situation meaning that you can fulfill your customers' demands on time. From this app, you can directly navigate to the *Manage External Requirements* app to view details of the selected delayed items and check different solutions.

**5. Monitor Internal Requirements:**

With this app, you can ensure that components are available in the right quantity and in time so that internal requirements originating from production orders, process orders, maintenance orders, and network orders can be fulfilled. To determine which receipts and requirements are included in the coverage calculation, a shortage definition is available and displayed in the app. You can use filters to limit the scope of your selection.

The app provides you with all the necessary information to be able to react quickly to critical situations. This enables you to avoid delays in production. From this app, you can directly navigate to the *Manage Internal Requirements* app to view details of the selected materials and check different solutions for the shortages.

**6. Display MRP Master Data Issues:**

With this app you can see all issues concerning master data that were detected during an MRP Live planning run. The system displays all the issues and restrictions as well as success messages that were created in the last MRP Live run. You can restrict the issues that are displayed in the list by accepting certain issues and then using filters. However, the content of this list is refreshed every time MRP Live is carried out and an accepted issue will reappear in the list after the next planning run if it has not been solved. You can use the information available in this app to find and analyze materials for which problems occurred in the planning run or which could not be planned at all. You have the information you need to solve these issues so that the materials can be planned correctly in future planning runs.

**7. Display MRP Key Figures:**

With this app, you can view detailed information on each MRP run. This information is available if the MRP run has been completed, is still running, or was terminated. In the overview screen, the system lists all the individual MRP runs that have been carried out. You can access the details screen by clicking on an individual row. In the following screen, you can check all available key figure information such as the settings used to perform the planning run, the number of materials processed, and the various durations. A graphic is also available showing the run history. At a glance, you can see the progress of the planning run and analyze the runtime information. Sections are also available showing

detailed information per low-level code or per the individual steps performed in the planning run.



Note:

In consumption-based planning, material coverage only works for forecast-based planning (MRP type VV).

When you start the *Monitor Material Coverage* apps for the first time, you might be asked for an *area of responsibility*. You can enter this area, which is the combination of plant and MRP controller, directly from the message. Within the app, you can maintain the area of responsibility by clicking on the user icon and selecting *App Settings*.

If you are missing a material or get the error message *Material ### requires a feature that is not supported by the MRP apps*, check the relevance of this material for the MRP apps. To do this, call transaction `MD_MRP_FORCE_CLASSIC`. Enter your material and start the transaction. Switch to change mode and change the entry in the *MRP Apps* column to **Y**.



## LESSON SUMMARY

You should now be able to:

- Use the most common planning evaluation tools
- Use the collective access to lists
- Use the material tree
- Use the navigation profile
- Explore exception messages



## Learning Assessment

1. The following describes the individual sub-processes of a planning run: Check the planning file, net requirements calculation, lot-size calculation, scheduling, and type of procurement proposal determination. With the corresponding settings, the system determines a source of supply during a planning run for externally procured materials, and assigns them directly to the procurement proposal.

*Determine whether this statement is true or false.*

- True  
 False

2. The low-level code is the lowest level at which a material appears within a bill of material (BOM).

*Determine whether this statement is true or false.*

- True  
 False

3. The low-level code that is used during the MRP run is automatically determined and is displayed in the planning file.

*Determine whether this statement is true or false.*

- True  
 False

4. In the reorder point planning MRP procedures, procurement is triggered when the sum of plant stock and fixed receipts falls short of the reorder point. The reorder point should include the expected average material requirements during the replenishment lead time, plus a safety stock to safeguard against uncertainties.

*Determine whether this statement is true or false.*

- True  
 False

5. During net requirements calculation of a material planned with reorder point planning, the warehouse stock available for MRP includes the plant stock and the on-order stock. Which of the following elements belong to on-order stock?

*Choose the correct answers.*

- A Purchase requisitions
- B Purchase orders
- C Sales orders
- D Firm planned orders
- E Fixed purchase requisitions
- F Planned orders

6. During backward scheduling for a material planned with reorder point planning, the system defines the date on which the material will be available, starting from the date of the planning run. Starting with today's date, the availability date is calculated by adding the purchasing department processing time (in working days), the planned delivery time (in calendar days), and the GR processing time (in working days).

*Determine whether this statement is true or false.*

- True
- False

7. The MRP group is assigned to the relevant master record according to the material type.

*Determine whether this statement is true or false.*

- True
- False

8. How many processing keys for the planning run are available?

*Choose the correct answer.*

- A One
- B Two
- C Three
- D Four

9. The creation indicator for MRP lists determines if and when the planning run should create MRP lists.

*Determine whether this statement is true or false.*

- True
- False

10. What is the correct processing key to use if you want to trigger regenerative planning?

*Choose the correct answer.*

- A NETCH
- B NEUPL

11. Plant parameters have higher priority than MRP group parameters.

*Determine whether this statement is true or false.*

- True
- False

12. With MRP Live you can flexibly define the scope of planning; for example, you can decide to plan a range of materials that are the responsibility of certain MRP controllers in selected plants.

*Determine whether this statement is true or false.*

- True
- False

13. What are the options for converting a planned order into a purchase requisition?

*Choose the correct answers.*

- A Individual conversion
- B Collective conversion
- C Conversion by storage location
- D Conversion by purchasing group

14. The MRP list always displays the stock/requirements situation at the time of the last planning run, and also provides a work basis for the MRP controller.

*Determine whether this statement is true or false.*

True

False

15. Any number of transaction calls can be defined in a navigation profile.

*Determine whether this statement is true or false.*

True

False

16. Exception messages are created during the planning run for situations that need to be checked by the MRP controller.

*Determine whether this statement is true or false.*

True

False

## Learning Assessment - Answers

1. The following describes the individual sub-processes of a planning run: Check the planning file, net requirements calculation, lot-size calculation, scheduling, and type of procurement proposal determination. With the corresponding settings, the system determines a source of supply during a planning run for externally procured materials, and assigns them directly to the procurement proposal.

*Determine whether this statement is true or false.*

True

False

Correct. The steps are described in the correct way and sequence.

2. The low-level code is the lowest level at which a material appears within a bill of material (BOM).

*Determine whether this statement is true or false.*

True

False

Correct. The low-level code is the lowest level at which a material appears within a bill of material (BOM).

3. The low-level code that is used during the MRP run is automatically determined and is displayed in the planning file.

*Determine whether this statement is true or false.*

True

False

Correct. The low-level code that is used during the MRP run is automatically determined and displayed in the planning file.

4. In the reorder point planning MRP procedures, procurement is triggered when the sum of plant stock and fixed receipts falls short of the reorder point. The reorder point should include the expected average material requirements during the replenishment lead time, plus a safety stock to safeguard against uncertainties.

*Determine whether this statement is true or false.*

True

False

Correct. With the reorder point procedure, procurement is triggered when the sum of plant stock and firmed receipts falls below the reorder point. The reorder point should include the expected average material demand during the replenishment lead time plus the safety stock.

5. During net requirements calculation of a material planned with reorder point planning, the warehouse stock available for MRP includes the plant stock and the on-order stock. Which of the following elements belong to on-order stock?

*Choose the correct answers.*

A Purchase requisitions

B Purchase orders

C Sales orders

D Firm planned orders

E Fixed purchase requisitions

F Planned orders

Correct. During reorder point planning, the available stock at plant level (including the safety stock) with the scheduled fixed and firm receipts is compared with the reorder point. The fixed and firm receipt elements are also called on-order stock. Procurement is always triggered when the sum of plant stock and fixed receipts falls short of the reorder point.

6. During backward scheduling for a material planned with reorder point planning, the system defines the date on which the material will be available, starting from the date of the planning run. Starting with today's date, the availability date is calculated by adding the purchasing department processing time (in working days), the planned delivery time (in calendar days), and the GR processing time (in working days).

*Determine whether this statement is true or false.*

True

False

Correct. The sentence describes the process of forward scheduling instead of backward scheduling. Reorder point planning uses forward scheduling.

7. The MRP group is assigned to the relevant master record according to the material type.

*Determine whether this statement is true or false.*

A True

B False

Correct. The MRP group is assigned to the relevant master record according to the material type.

8. How many processing keys for the planning run are available?

*Choose the correct answer.*

A One

B Two

C Three

D Four

Correct. The two available processing keys to choose from when starting the MRP run are *NEUPL* and *NETCH*.

9. The creation indicator for MRP lists determines if and when the planning run should create MRP lists.

*Determine whether this statement is true or false.*

A True

B False

Correct. The creation indicator for MRP lists determines if and when the planning run should create MRP lists.

10. What is the correct processing key to use if you want to trigger regenerative planning?

*Choose the correct answer.*

A NETCH

B NEUPL

Correct. The *NEUPL* processing key is used to trigger regenerative planning.

11. Plant parameters have higher priority than MRP group parameters.

*Determine whether this statement is true or false.*

True

False

Correct. The MRP group is more specific and precise than the plant level and so it has priority over the parameters set at plant level.

12. With MRP Live you can flexibly define the scope of planning; for example, you can decide to plan a range of materials that are the responsibility of certain MRP controllers in selected plants.

*Determine whether this statement is true or false.*

True

False

Correct. With MRP Live you can select one or more materials, in one or more plants, to one or more MRP controllers (and so on) for planning.

13. What are the options for converting a planned order into a purchase requisition?

*Choose the correct answers.*

A Individual conversion

B Collective conversion

C Conversion by storage location

D Conversion by purchasing group

Correct. You either convert one planned order (individual conversion) or you convert many of them (collective conversion).

14. The MRP list always displays the stock/requirements situation at the time of the last planning run, and also provides a work basis for the MRP controller.

*Determine whether this statement is true or false.*

True

False

Correct. In contrast to the stock/requirements list (transaction MD04) in SAP, the MRP list always displays the result of the last MRP run.

15. Any number of transaction calls can be defined in a navigation profile.

*Determine whether this statement is true or false.*

True

False

Correct. It is possible to define more than one transaction call in a navigation profile.

16. Exception messages are created during the planning run for situations that need to be checked by the MRP controller.

*Determine whether this statement is true or false.*

True

False

Correct. The purpose of MRP exception messages is to alert the planner to situations that require their attention.