SAP PRESS

Inventory Management with SAP S/4HANA®

- Configure and run inventory management in SAP S/4HANA
- Plan, execute, and optimize goods receipt, stock transfers, and more
- Analyze your inventory, from monitoring KPIs to creating custom queries

2nd edition, updated and revised

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Chapter 7
Production Execution

In this chapter, we'll execute our planning process using the recommended SAP Fiori apps. We'll start with reservations and continue with the entire production process, from scheduling to confirmation, step by step, and then take a look at monitoring and Kanban options.

This chapter describes all processes during production planning execution. This is one follow-up step from Chapter 4, in which we discussed planning and adjusting inventory, covering the processing of internal requirements, namely production orders.

As explained in Chapter 2, SAP S/4HANA entails role templates that help customers quickly enable the end user in effectively using the SAP Fiori apps. This chapter deals with the production supervisor/operator. As this book covers inventory management, it doesn't distinguish between production supervisor and operator. The production supervisor is in charge of the work centers where production occurs, ensuring that orders are completed on time and are of good quality. Key tasks include working with the production operator, ensuring production processes are followed correctly, and machine maintenance. When a maintenance problem occurs or even a machine breakdown, it's the production supervisor's responsibility to escalate the problem, if needed. Production operators, on the other hand, are on the shop floor. They operate machines and perform the manual labor, which may necessitate a high level of skill or may be somewhat simple, depending on the production process.

This chapter describes how to monitor the lifecycle of a production order beginning with its execution, tracking, and documenting deviations, until its final confirmation. The process goes as follows, paired with the associated SAP Fiori apps:

1. **Schedule production execution**
   - Capacity Scheduling Table (F3770)
   - Monitor Work Center Schedules (F3951)
2. **Monitor production execution**
   - Monitor Production Order/Process Order (F0266)
   - Manage Production Order (F2336)
   - Manage Production Operations (F2335)

3. **Confirm production execution**
   - Confirm Production Operation (F3069)
   - Create Goods Receipt for the Production Order (F3110)

Naturally, the chapter will also cover some supplementary processes, such as Kanban, reservation handling, and key performance indicators (KPIs) useful in production planning execution.

7.1 Working with Reservations

Reservations can be used to prepare a goods issue of a particular material at a defined point in time for a certain purpose. Reservations can be created manually or automatically, as shown in Figure 7.1. Automatically created reservations can't be edited manually, and they are based on orders, work breakdown structure (WBS) elements, networks, and stock transfers. Reservations don't decrease the unrestricted stock displayed in the various SAP Fiori apps (see Chapter 6), but they are considered during material requirements planning (MRP) (see Chapter 4).

Although it's also possible to use reservations to plan the goods receipt process, this normally isn't required because purchase orders and production orders contain all the required information anyway.

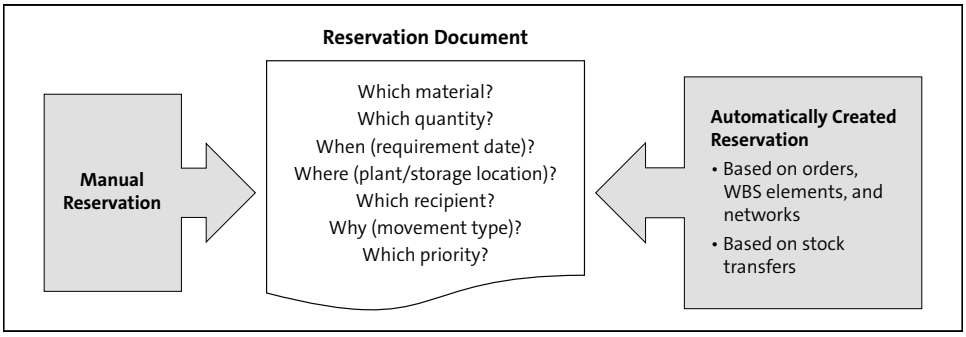


Figure 7.1 Business Processes Embedding Reservations

In this section, we'll walk through the automatic and manual creation of reservations and show how to display your reservation list.

7.1.1 Automatic Creation of Reservations

MRP runs can create stock transfer reservations at the issuing plant as part of a stock transfer process to cover open demands in a different location.

Reservations are also created/changed automatically if the leading document (order, network, WBS element) is created/changed.

7.1.2 Manual Reservation Management

The Manage Manual Reservations app (F4839) in SAP Fiori allows you to manually create a reservation. On the initial screen in Figure 7.2, you enter **Base Date**, **Movement Type**, and **Plant**, and then you proceed to the details screen by clicking the **Create** button.

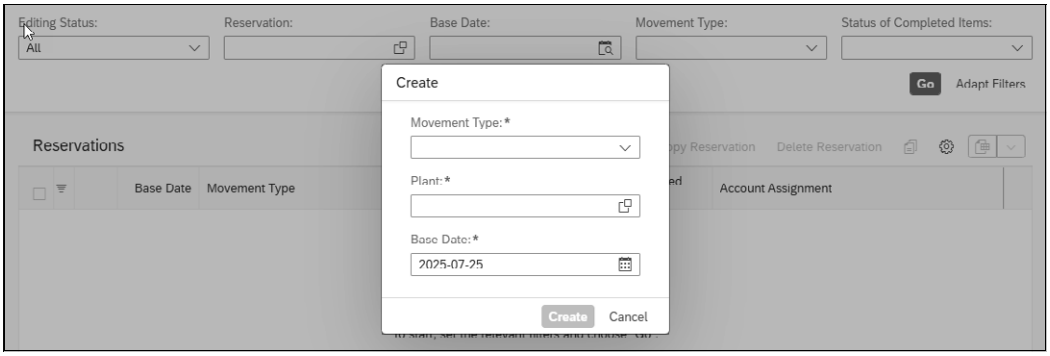


Figure 7.2 Creating a Reservation: Initial Screen

In the details page shown in Figure 7.3, you enter the reservation details, such as various account assignment fields **G/L Account**, **Goods Recipient**, **Cost Center**, **Material**, **Quantity**, and **Storage Location**. You save your input by clicking the **Post** button (not shown).

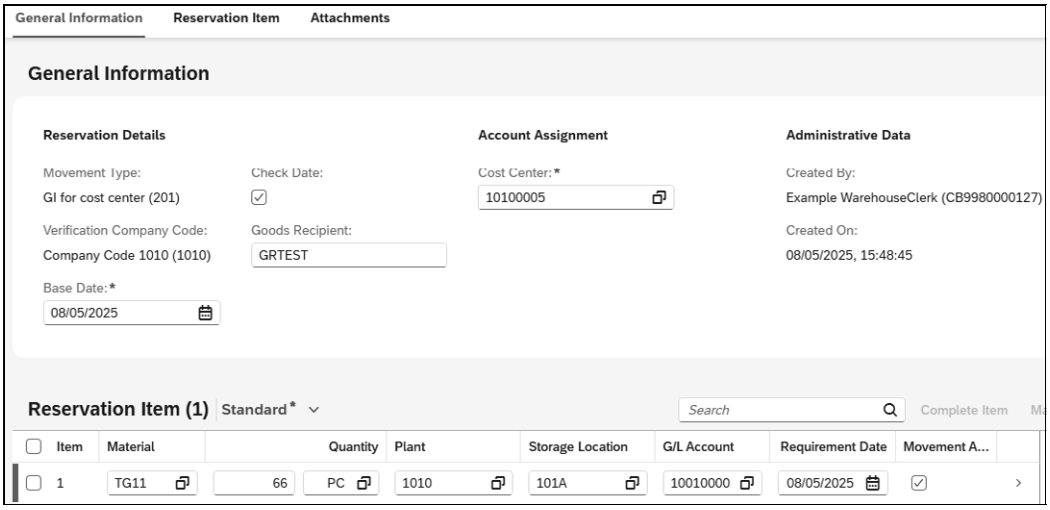


Figure 7.3 Creating a Reservation: Details

After you've created your reservation, you can view it in the Manage Manual Reservation app shown in Figure 7.4. This is a mass maintenance tool for execution changes on reservations, such as **Copy Reservation** or **Delete Reservation**.

Reservations (48) | Create Reservation | Copy Reservation | Delete Reservation

Base Date	Movement Type	Verification Company Code	Completed Items	Account Assignment
2025-07-28	GI for cost center (201)	Company Code 1010 (1010)	0 of 1	10101101
2025-07-16	GI for cost center (201)	Company Code 1010 (1010)	1 of 1	10101101
2025-07-20	GI for cost center (201)	Company Code 1010 (1010)	1 of 1	10100005

Figure 7.4 Viewing a Reservation

7.1.3 Manage Reservation Items

In addition to the Manage Manual Reservations app, the Manage Reservation Items app (F5601) is available to check and process reservation items. The app supports viewing/checking, editing, copying, or deleting reservation items through the various buttons, as shown in Figure 7.5. You can also create new reservations (similar to the Manage Manual Reservation app described in the previous section). Editing is possible for manual reservations or reservations created by MRP. Reservations that are automatically created from dependent processes can't be edited.

SAP S/4HANA Cloud | Manage Reservation Items

Standard*

Editing Status: All | Reservation: | Movement Type: | Requirement Date: | Material: TG* | Plant: Plant 1 DE

Reservation Items (83) | Create Reservation | Copy Reservation | Edit Reservation | Create Goods Moveme

Reservation	Item	Movement Type	Requirement Date	Material	Quantity in Unit of Entry		Plant
3531	1	TF trfr within plant (311)	2025-01-20	Trad.Good 21,Reorder Point,Batch-FIFO (TG21)	10	PC	Plant 1 DE (1010)
3533	1	TF trfr within plant (311)	2025-01-21	Trad.Good 21,Reorder Point,Batch-FIFO (TG21)	10	PC	Plant 1 DE (1010)
3612	1	TF trfr within plant (311)	2025-01-21	Trad.Good 21,Reorder Point,Batch-FIFO (TG21)	10	PC	Plant 1 DE (1010)
3613	1	TF trfr within plant (311)	2025-01-21	Trad.Good 21,Reorder Point,Batch-FIFO (TG21)	10	PC	Plant 1 DE (1010)
3667	1	TF trfr within plant (311)	2025-01-21	Trad.Good 21,Reorder Point,Batch-FIFO (TG21)	10	PC	Plant 1 DE (1010)
3669	1	TF trfr within plant (311)	2025-01-21	Trad.Good 21,Reorder Point,Batch-FIFO (TG21)	10	PC	Plant 1 DE (1010)
4973	1	GI for cost center (201)	2025-02-11	Water Purifier (TG11)	10	PC	Plant 1 DE (1010)
4973	2	GI for cost center (201)	2025-02-11	Water Purifier (TG20)	10	PC	Plant 1 DE (1010)

Figure 7.5 List with Reservation Items

In the Me Area, you can define the **Goods Recipient**, **Unloading Point**, and **Recipient Location** under **Reservation Settings**, as shown in Figure 7.6.

Reservation Settings

Goods Recipient: GR Test

Unloading Point: Station 1

Recipient Location: *Enter Recipient Location*

Save | Cancel

Figure 7.6 Reservation Settings

After completing the related selection, you can select the items for which you want to perform a goods movement. Only movement types **201** and **261** are supported, as demonstrated by the error message in Figure 7.7.

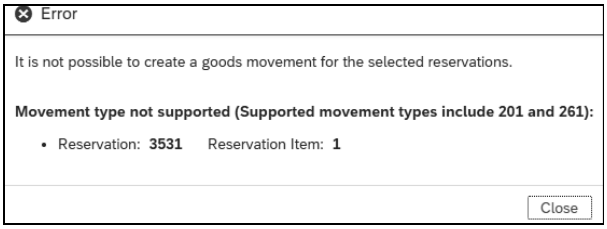


Figure 7.7 Supported Movement Types 201 and 261 Error Message

If you select a reservation item and click the **Edit** button, you'll be forwarded to the Manage Manual Reservation app in edit mode, as shown in Figure 7.8.

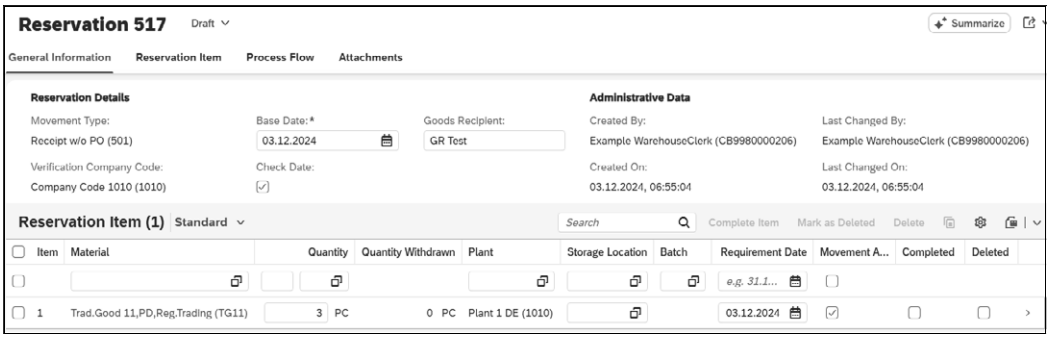


Figure 7.8 Edit Mode of Reservation

Figure 7.9 shows an example **Process Flow** for the reservation, which you can view in the **Reservation Item** tab.

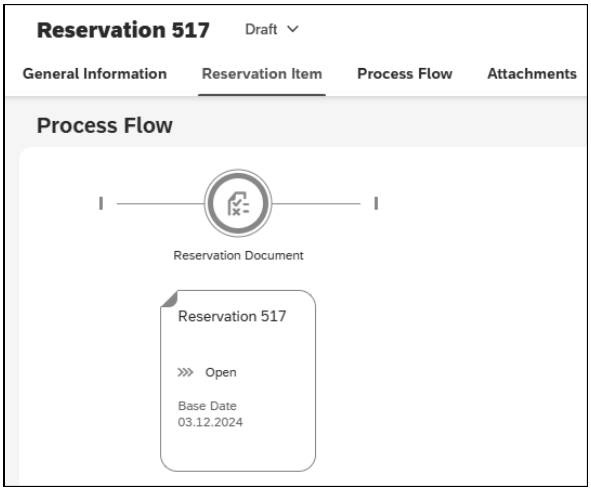


Figure 7.9 Process Flow of Reservation

By clicking the **Create Goods Movement** button (refer to Figure 7.5), you'll be navigated to the Manage Material Document for Reservation app (F7279) to create a material document with reference to the chosen reservation, as shown in Figure 7.10.

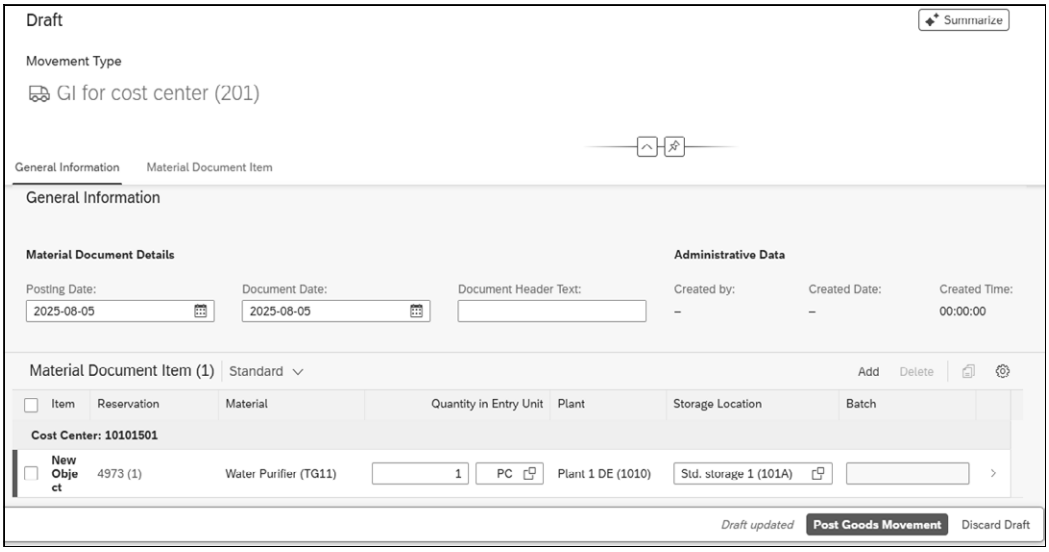


Figure 7.10 Manage Material Document for Reservation App

This app is based on the ABAP RESTful application programming model and provides a draft feature before finally posting the related material document. The material document draft can be discarded via the **Discard Draft** button in the footer bar. This app is only accessible via the Manage Reservation Items app.

7.2 Scheduling and Manufacturing Execution

In this section, we'll cover the entire manufacturing execution process, beginning with production scheduling. We'll then discuss how to monitor various execution steps, briefly introduce change management, and finally cover the confirmation step.

7.2.1 Capacity Scheduling Table

The former Schedule Production app (F3770) has been renamed to Capacity Scheduling Table and allows you to schedule orders on bottleneck or pacemaker work centers (work centers that are critical for the production scheduling) based on the production line settings in the material master record selected within one **Horizon** (mandatory).

Within the app settings, you'll need to define your **Area of Responsibility** and your **Industry Type** (**Discrete** or **Process**).

Note

You need to maintain the correct production line in the **MRP4** view of the material master record to be able to schedule a production version.

You also need to maintain finite capacity planning at the work center to see each order's capacity requirements.

You can access the list of production operations by clicking the **Go** button, as shown in Figure 7.11.

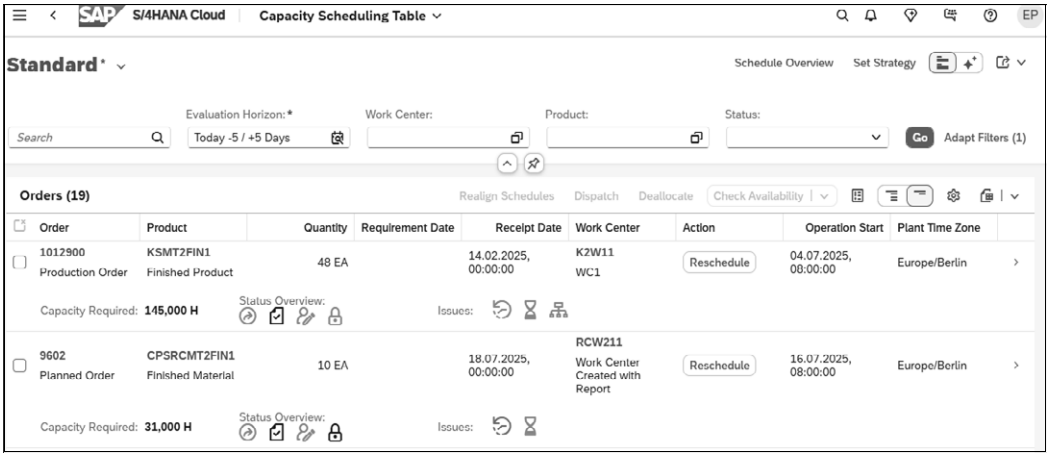


Figure 7.11 Simple List with Production Operations

The **Set Strategy** button at the top of the screen brings you to the screen shown in Figure 7.12, which enables you to personalize the planning parameters with the following options:

- **Planning Mode**: You can select the **Bucket** planning mode to display the capacity view in Figure 7.13 as a table format with one column per day. You can use the **Sequence** planning mode to display the capacity in time continuous format (not shown).
- **Scheduling Control**: You can use a **Finite** or **Infinite** scheduling strategy.
- **Direction**: **Forward** scheduling considers the start date of the order, and **Backward** considers the end date of the order.

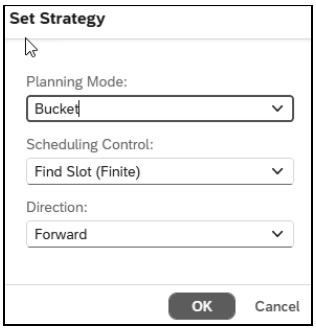


Figure 7.12 Set Strategy

The **Dispatch** and **Deallocate** buttons allow you to change all selected production operations shown in Figure 7.11.

To access the details screen shown in Figure 7.13, click the arrow icon of a selected item. Here, you can do the following:

- Switch the production version, if applicable, by choosing from the **Assign** column.
- Dispatch an operation using the **Dispatch** button.
- Deallocate an operation using the **Deallocate** button in the top right-hand corner.
- Edit operation details in the **Available Sources of Supply** table (see Figure 7.14).

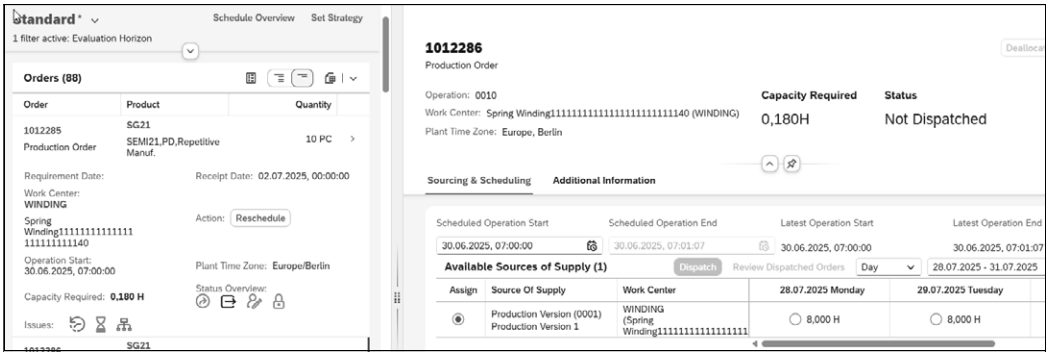


Figure 7.13 Details of Selected Production Operations in a Flexible Column Layout

In our example shown in Figure 7.14, you can select the **Scheduled Operation Start** date in order to get the related sourcing and scheduling date shown, which you can dispatch accordingly by clicking the **Dispatch** button.

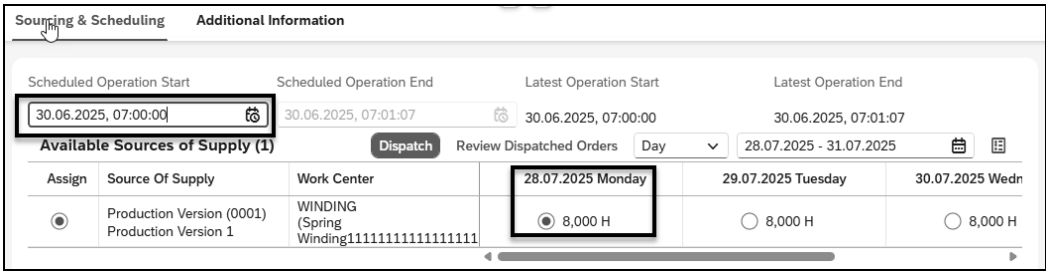


Figure 7.14 Editing Operation Details

7.2.2 Capacity Scheduling Board

The former Monitor Work Center Schedules app (F3951) was also renamed, in this case, to Capacity Scheduling Board. The app allows you to monitor the progress on operations of selected work centers in your area of responsibility. Thus, you'll be able to track the production execution. You need to fill in the mandatory **Evaluation Horizon** filter to define the time frame to look at in Figure 7.15. On the left side, you'll see either the

Pacemaker Work Centers (in our example) or **All Work Centers**. The operations per work center are delineated on a time axis (unit hours) on the right side. The legend button in the toolbar explains the different color codes of the chart.

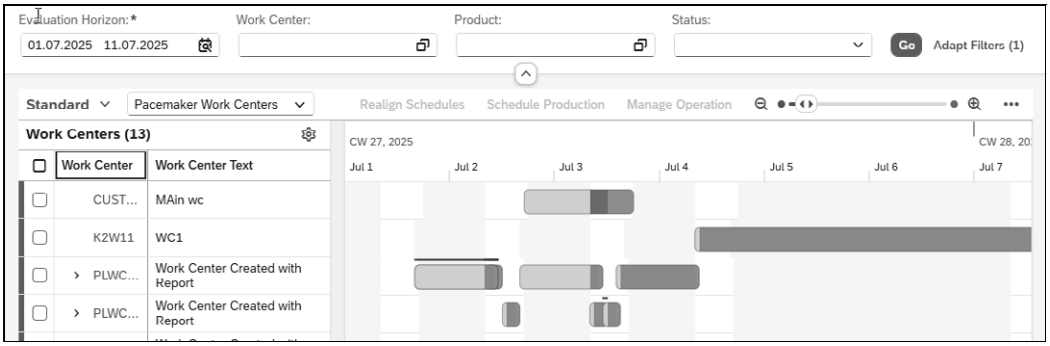


Figure 7.15 Entry Screen with Work Centers and Operations

You can select an operation in the chart and navigate via the **Schedule Production** button to the respective SAP Fiori app, as shown in Figure 7.16 (see previous section).

You can select a **Work Center** from the column on the left side of Figure 7.15 to access a quick view. Figure 7.17 shows how quick views help you retrieve additional information on the work center to navigate to context-sensitive SAP Fiori apps related to work centers.

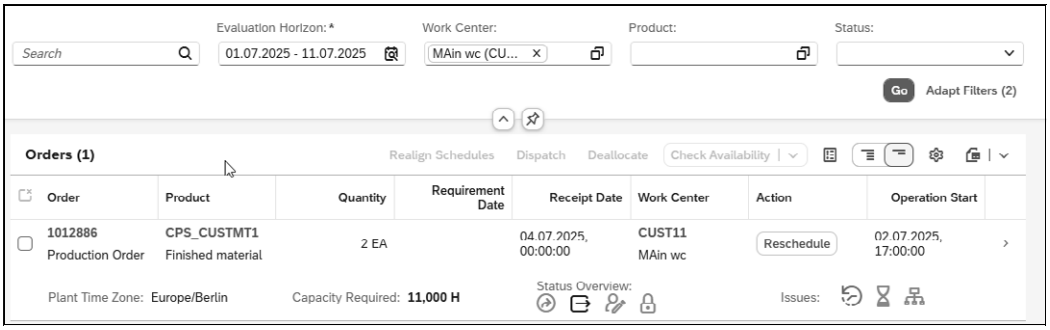


Figure 7.16 Navigation to Schedule Production

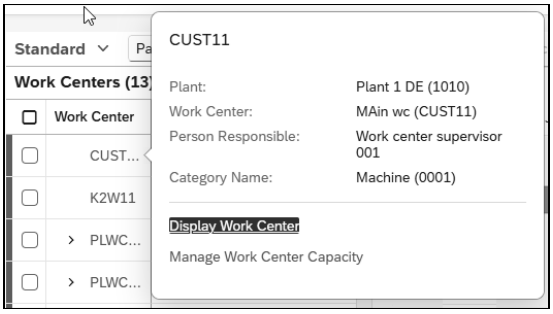


Figure 7.17 Work Center Quick View

If you have more than one operation per work center, you can expand the hierarchy on the left side, as shown in Figure 7.18. If you select an operation, you see the **Operation Details** in a side panel on the right side.

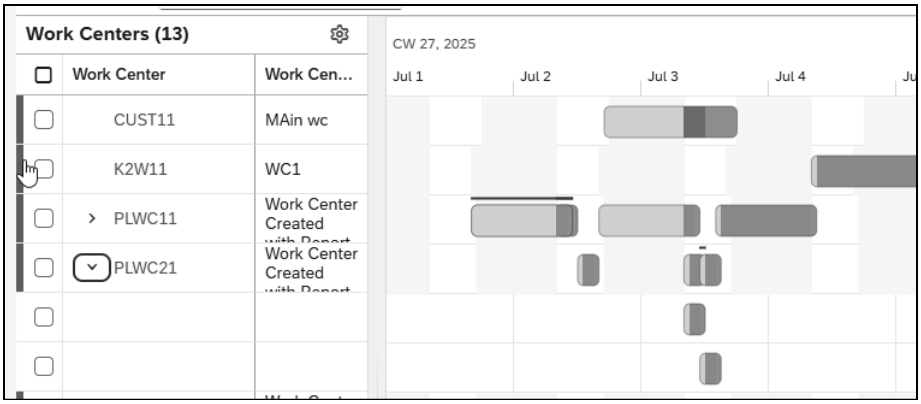


Figure 7.18 Work Center with Expanded Production Orders

If you select a production order in Figure 7.18 and click the **Order Details** button (not shown), you can see all the **Operations** of the selected production order and their assignment and schedule in the corresponding work center, as shown in Figure 7.19.

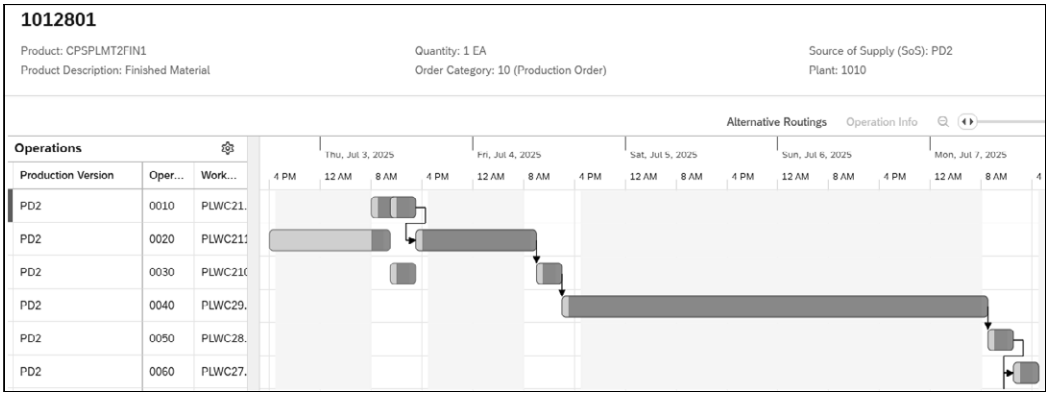


Figure 7.19 Operations per Production Order

7.2.3 Stock Requirements List

The Stock Requirements List app shows the supply and demand situation for each material on a very detailed level. After entering **Material**, **MRP Area**, and **Plant**, the data is loaded. As shown in Figure 7.20, you can see a list of key information, such as **Date**, **MRP element**, **Receipt/Reqmt**, and **Available Qty**, normally sorted after date.

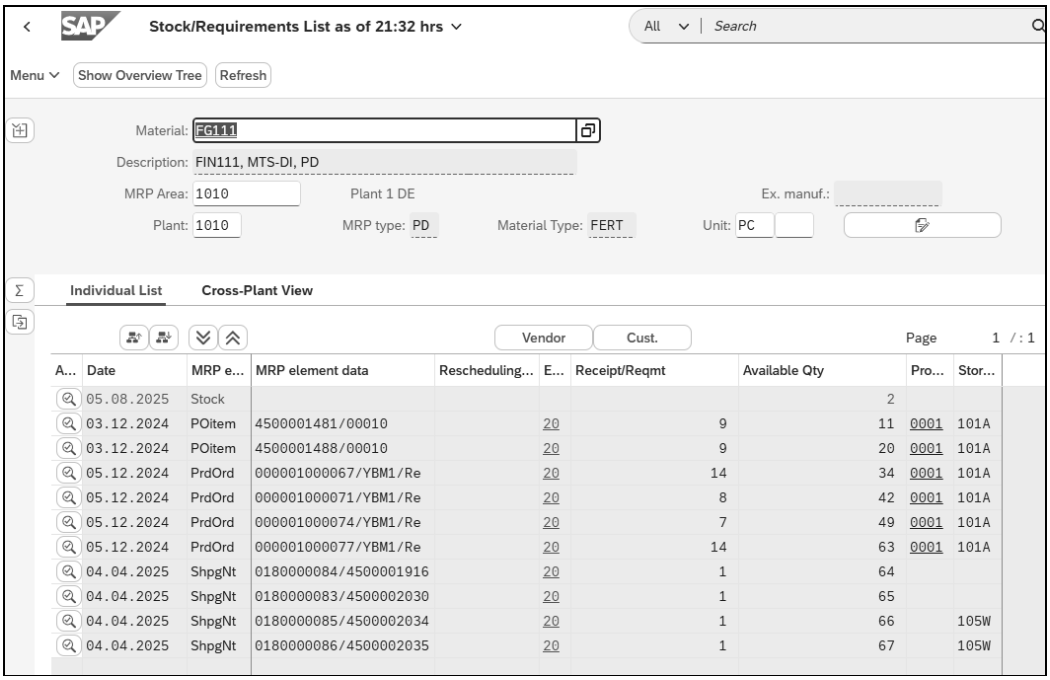


Figure 7.20 Stock Requirements List

7.2.4 Display Planned Orders, Production Orders, and Process Orders

This section will guide you through finding and displaying the transactional documents linked to manufacturing execution. We'll take a look at both the enterprise search option and the available SAP Fiori apps.

Enterprise Search

As explained in Chapter 1, Section 1.4.3, the main SAP S/4HANA business objects can be searched for and displayed with the built-in SAP Fiori launchpad enterprise search capability. This is particularly helpful if the primary intention is to do some basic information retrieval with little information to start with. Figure 7.21 shows searching with a production order number and the related actions the app offers based on the end user's role.

Other typical information used for searching includes the material number, material short text, or plant. By selecting a business object to search in, you restrict the result set to production orders, process orders, or planned orders.

If the information displayed by the enterprise search expanded view (shown in Figure 7.21) isn't sufficient, you can go directly to the object page of the production order by clicking the **Production Order** button in the header of the search result entry to see a rich set of additional data, as shown in Figure 7.22.

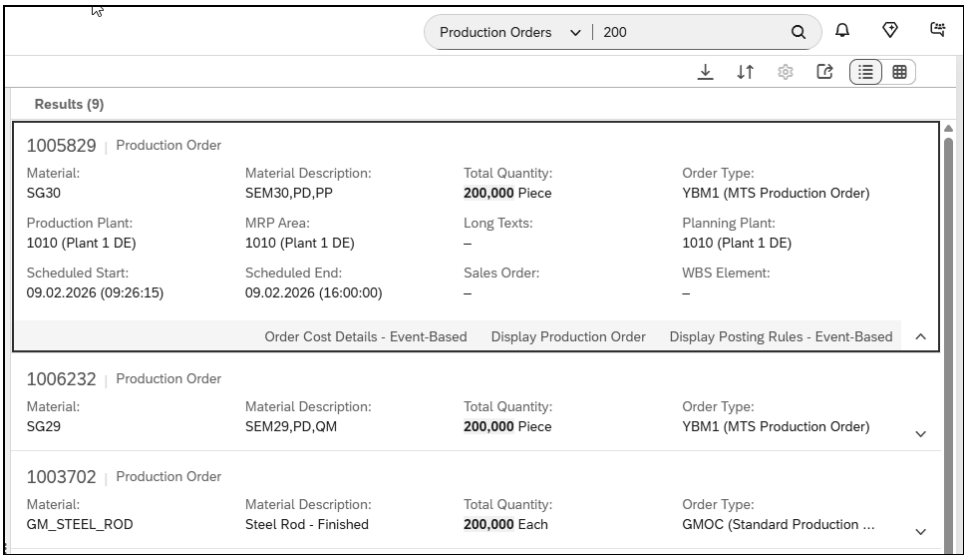


Figure 7.21 Searching for Production Order

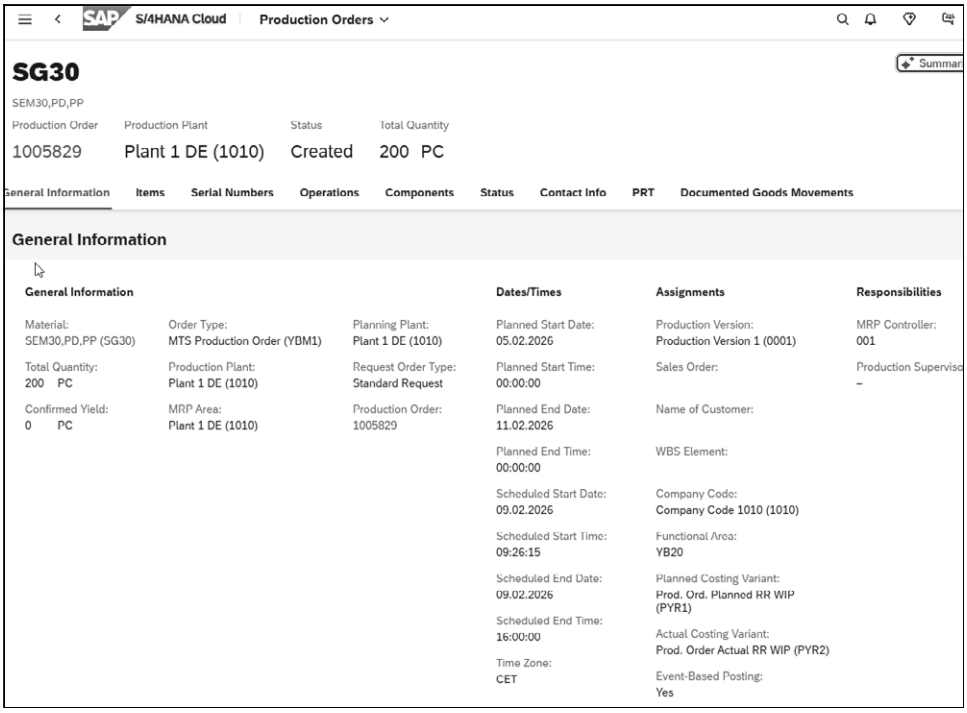


Figure 7.22 Object Page Header: Production Order

The object page header allows direct navigation to the section of interest via multiple tabs. For example, you can view the **Operations** and **Components** details, as shown in Figure 7.23.

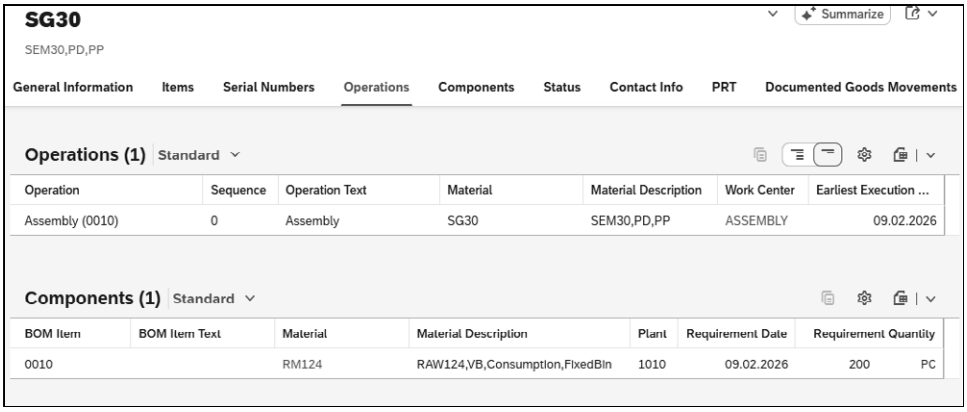


Figure 7.23 Object Page Details: Production Order

SAP Fiori Applications

If enterprise search and object pages don't contain the applicable information, the Display Production Order app (shown in Figure 7.24) or the Display Process Order app (shown Figure 7.25) can be used to retrieve all data related to the business object in depth.

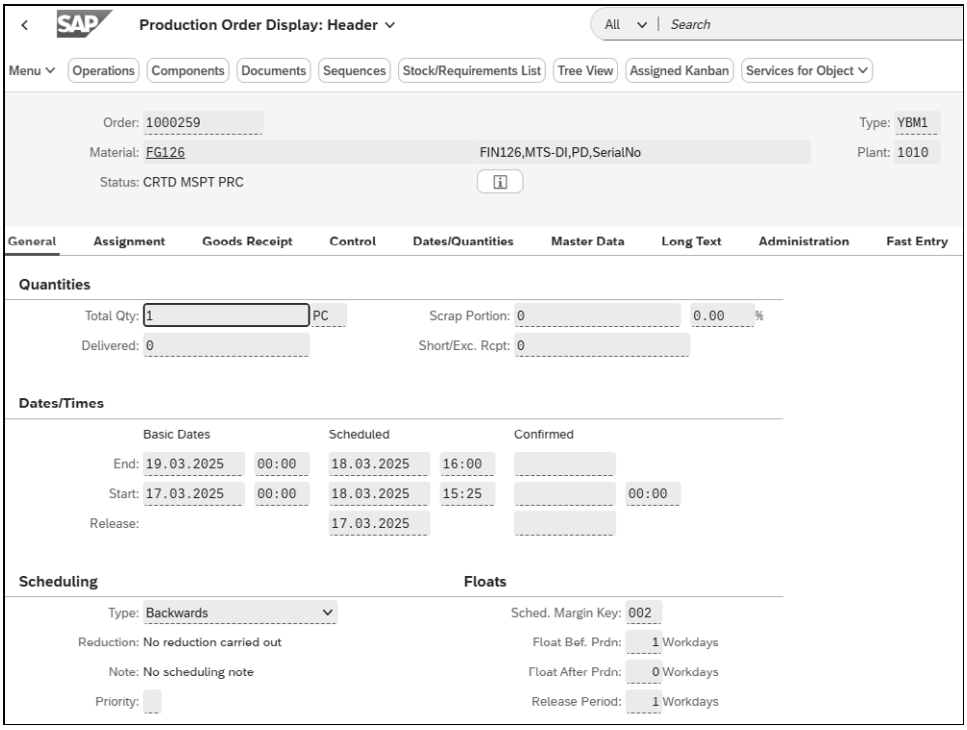


Figure 7.24 SAP Fiori App: Display Production Order

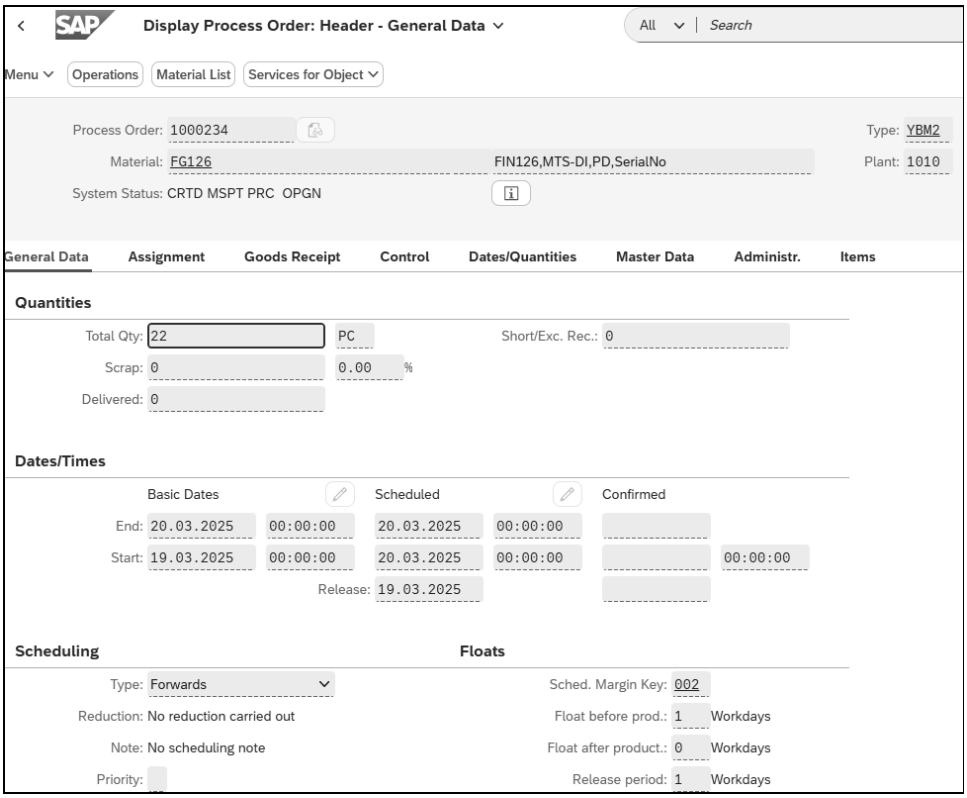


Figure 7.25 SAP Fiori App: Display Process Order

7.2.5 Manage Change Requests

If you've selected to use **Change Requests** (see Figure 7.26) in your personal settings, changes to external requirements are managed by a change order process involving the vendor. A change request can have the statuses **New**, **Requested**, and **Answered**. The Manage Change Requests app (F0670) is used to handle this process.

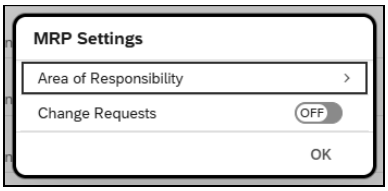


Figure 7.26 Personalization: Activating Change Requests

Four SAP Fiori apps are available to manage change requests. Three are used exclusively for each of the aforementioned states, and a fourth one is used to handle all states.

Figure 7.27 shows a change request. If you select **Set to Requested**, the change request is created with status **Requested**.

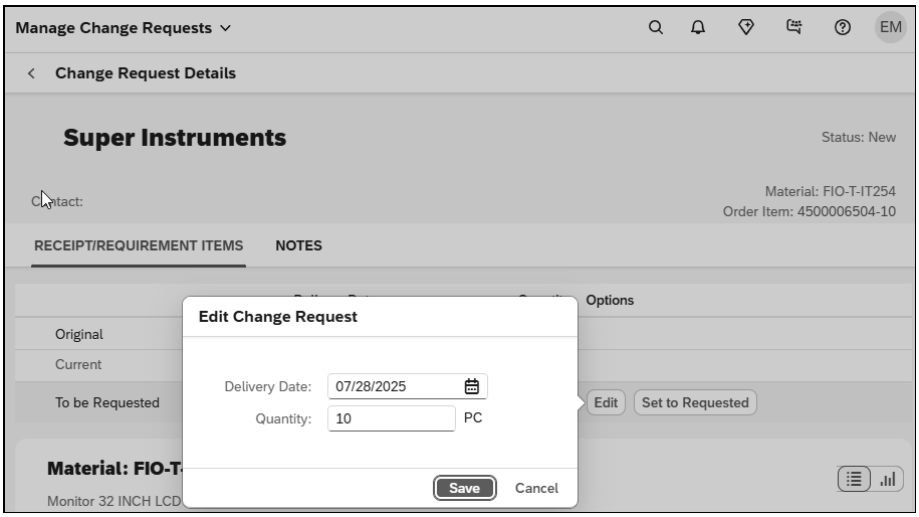


Figure 7.27 Initiating a Change Request for a Purchase Order: Edit Mode

You can enter a note and change the desired attribute. Click the **OK** button to enact the change. To manage this change, you could use either the Manage Change Requests – New app or the Manage Change Requests – All app (F0670 and F3406, respectively).

Figure 7.28 shows the Manage Change Request – All app. The worklist contains the vendors on the right side and all change requests of the selected vendor on the left side. You can navigate to the details of all open change requests.

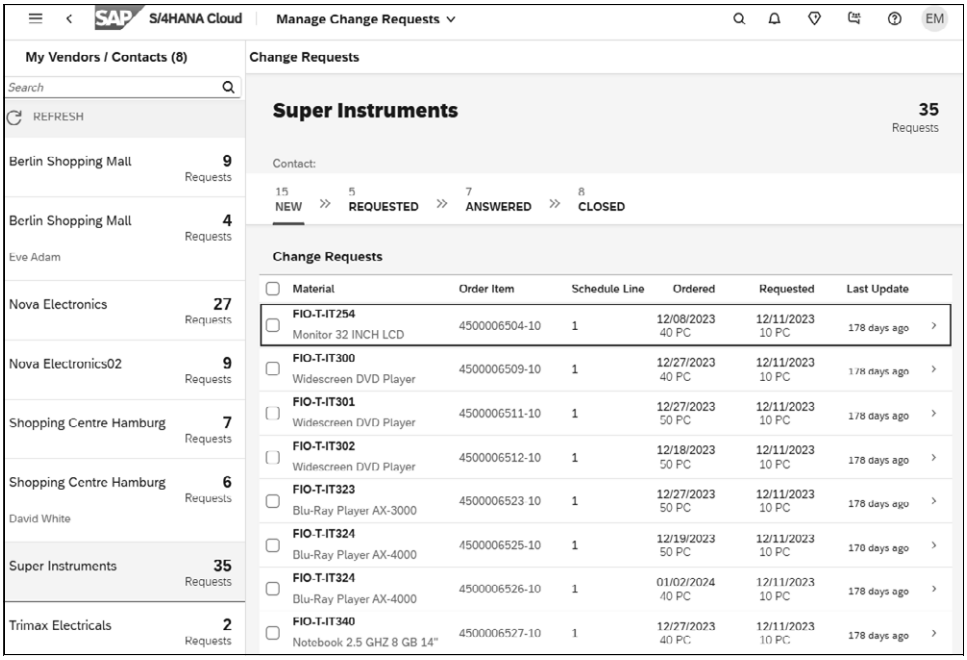


Figure 7.28 Worklist of All Change Requests

Figure 7.29 shows a change request with status **New**. To create automatic emails to the selected vendor of a change request with the status **New**, select the change request and click the **Compose Email** button. The changed attributes are shown and can be edited by clicking the **Edit** button. You can also click the **Set to Requested** option, which changes the status to **Requested**. The lower section shows all MRP elements of the **Material** as a table or graphic. All actions can be documented in the **Notes** section.

Figure 7.30 shows a change request of status **Requested**. You can record the vendor's response with one of the **Pending**, **Accepted**, **Rejected**, or **New Proposal** buttons.

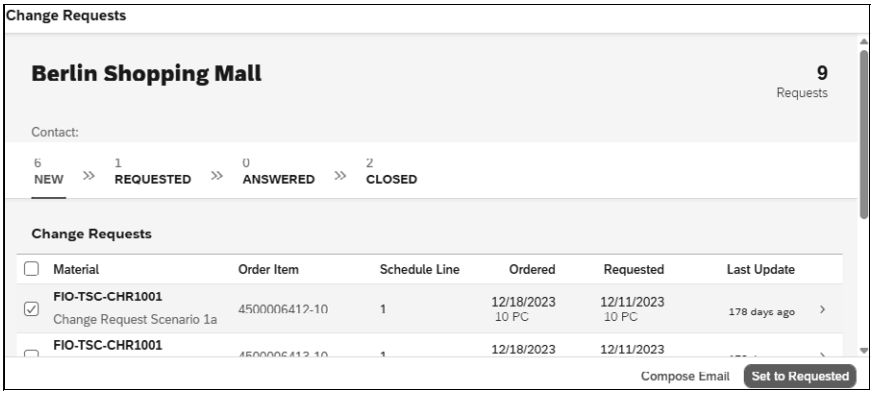


Figure 7.29 Change Request with Status New

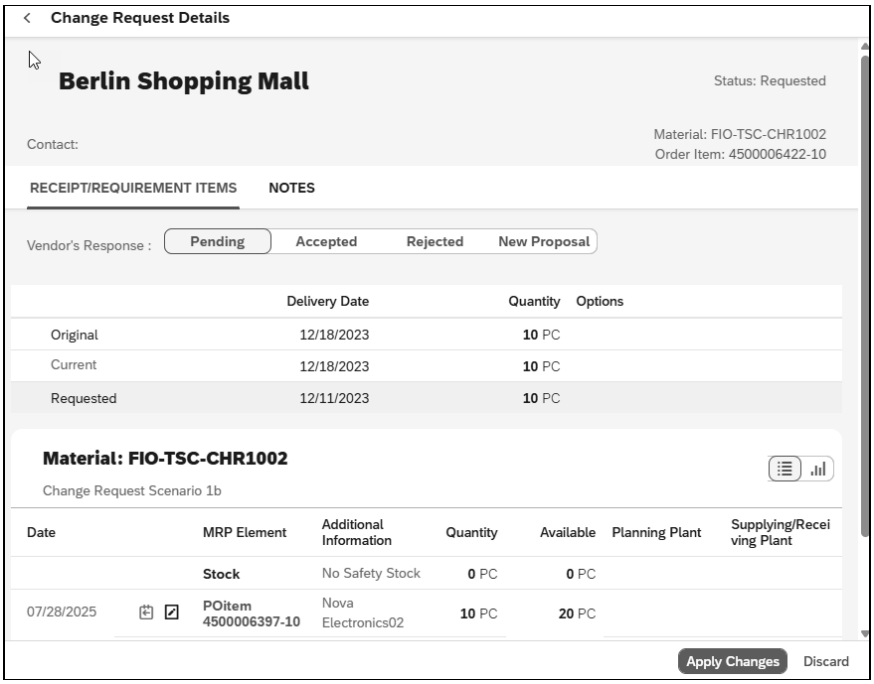


Figure 7.30 Change Request with Status Requested

Click the **Apply Changes** button to automatically update the order if the vendor doesn't reject the changes. With the **Discard** button, you can close the change request if the vendor rejects any changes. Both actions will close the change request.

7.2.6 Check Material Coverage

The Check Material Coverage app (F0251) allows you to directly check the material coverage of a certain material. When starting the SAP Fiori app, a popup window requires you to enter **Material** and **Plant** supported by value help, as shown in Figure 7.31.

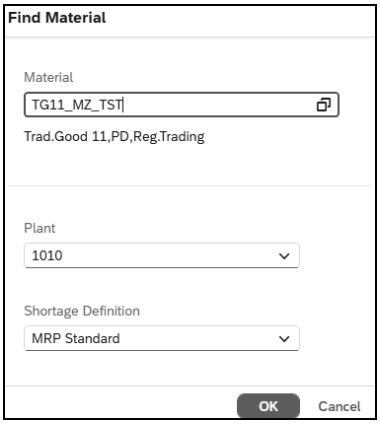


Figure 7.31 Starting the SAP Fiori App

Subsequently, the Material Coverage app described in Chapter 4, Section 4.7.1 is started.

7.2.7 Monitor Production Orders and Process Orders

The Monitor Production Orders or Process Orders app (new version, F0266B) helps you to track all the production or process orders in your area of responsibility, detect critical situations, and react to them. Many objects offer quick views for rapid inspections. Starting with a simple requirements list, you can navigate to a worklist for selected items.

Figure 7.32 shows the list with status information per material, such as start and end time, delays in operations or missing components, and open quantities. The **Status** column contains an aggregated overview. The calculations are based on the selected **Shortage Definition**:

- **MRP Standard**
  Represents standard MRP logic to compare supplies and demands.
- **Stock Days' Supply**
  Calculates stock days' supply to compare available stock with planned demands.
- **Ordered Requirements**
  Calculates whether the planned receipts will cover the ordered demands.

- **Ordered Receipts**
  Calculates whether the ordered receipts will cover the planned demands.

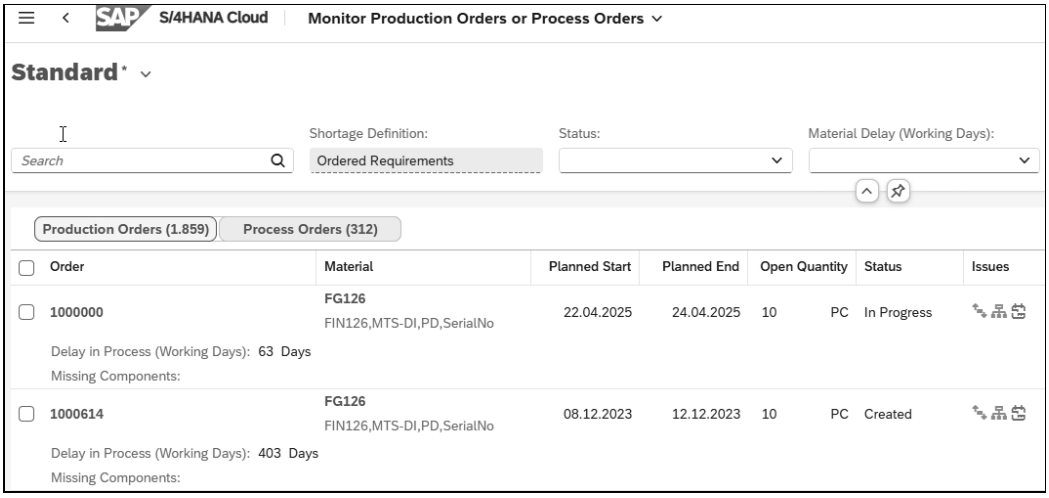


Figure 7.32 Simple List: Monitor Production Orders

After selecting one or more item, click the **Manage Orders** button in the footer bar (not shown) to navigate to the Manage Production Orders (FO273) worklist, as shown in Figure 7.33.

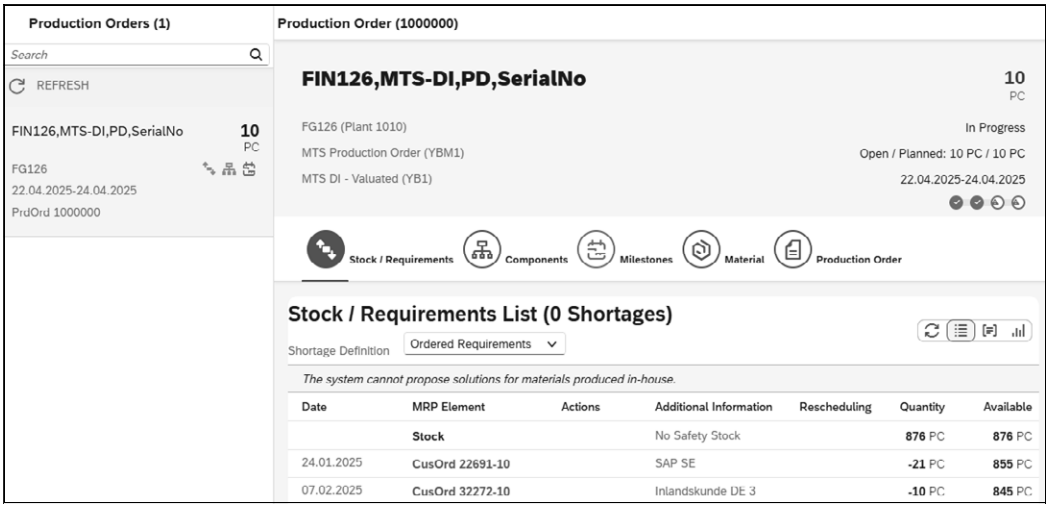


Figure 7.33 Worklist: Selected Production Orders with Five Sections per Object Details

Within this worklist, you work on the production orders. The following five sections provide additional information to identify and solve any issue:

- **Stock/Requirements List**
  You can solve the issue quickly by starting an MRP run from this section (see Figure 7.33). Another option to solve an issue is to delete the **MRP Element**. If the MRP run can't solve the issue, and the material is externally procured, click a row with an icon to navigate to the **Material Shortage** screen (see Chapter 4, Section 4.7.1). This section offers a graphical display too (not shown).
- **Components**
  You can identify any missing quantity you want to solve, as shown in Figure 7.34. Click the **Manage Components** button in the footer bar (not shown) to navigate to the Monitor Internal Requirements app described in Chapter 4, Section 4.7.8.

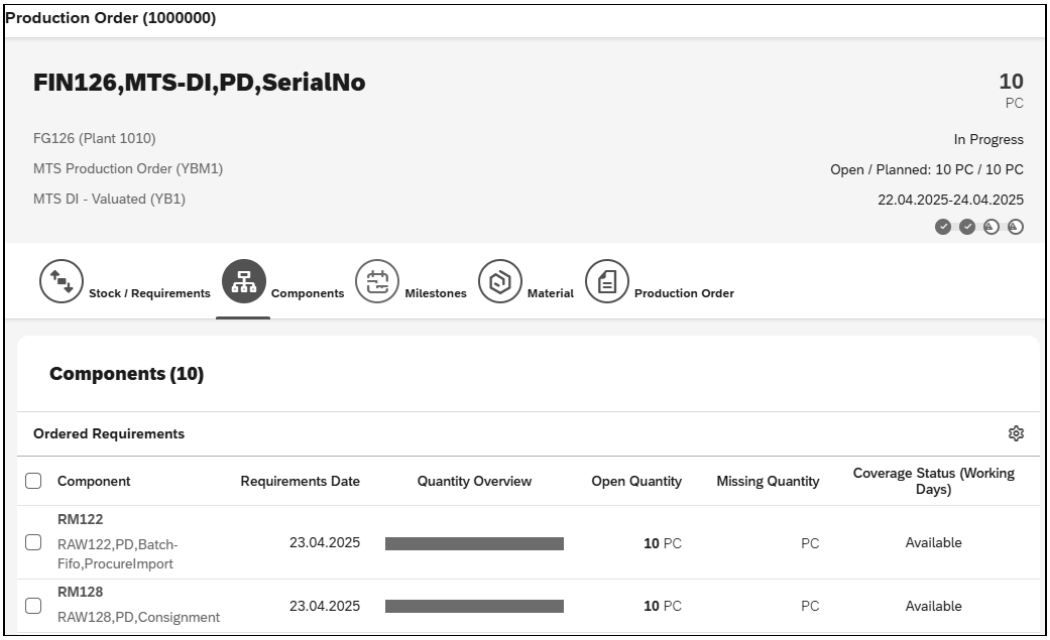


Figure 7.34 Components Section with the Manage Components Capability

- **Milestones**
  You get an overview of all operations, including their timeline and status, as shown in Figure 7.35.
- **Material**
  You can view material-related information, such as **Stock Availability**, **Material**, and **MRP Data,** as shown in Figure 7.36.

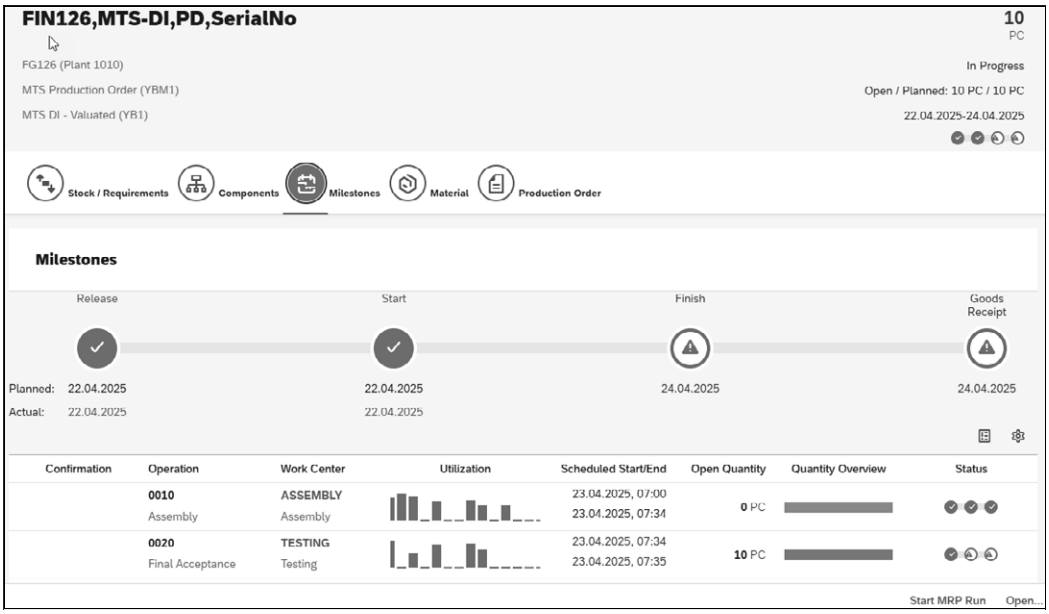


Figure 7.35 Milestones Section

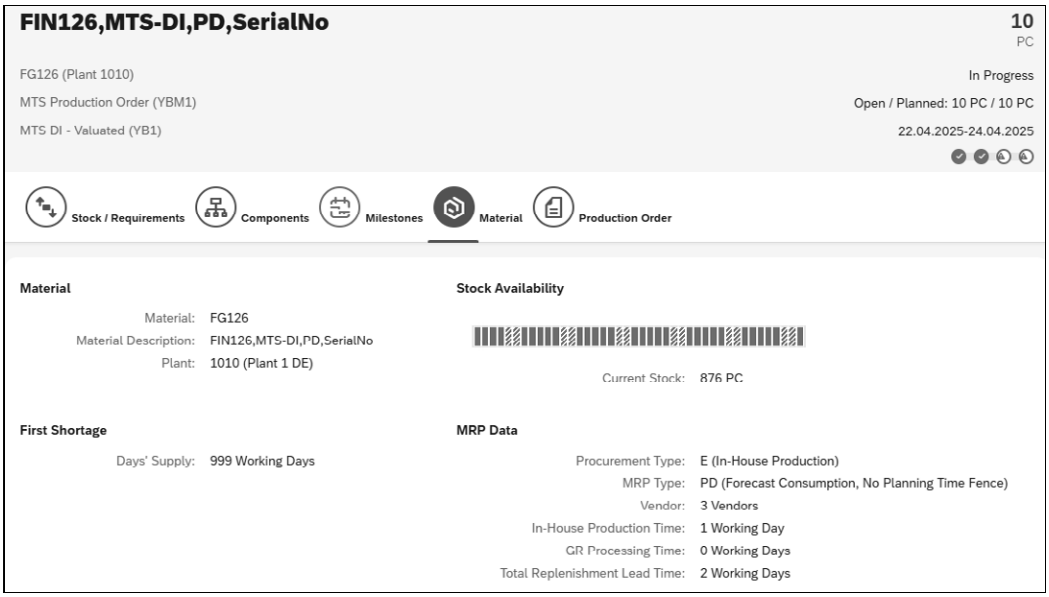


Figure 7.36 Material Section with Master Data

- **Production Order**
  You can see the details of the production order, such **Order Type**, **Order Status**, various date fields, and **Order Quantity** (see Figure 7.37).

The Monitor Process Orders app offers the same capabilities as the Monitor Production Orders app.

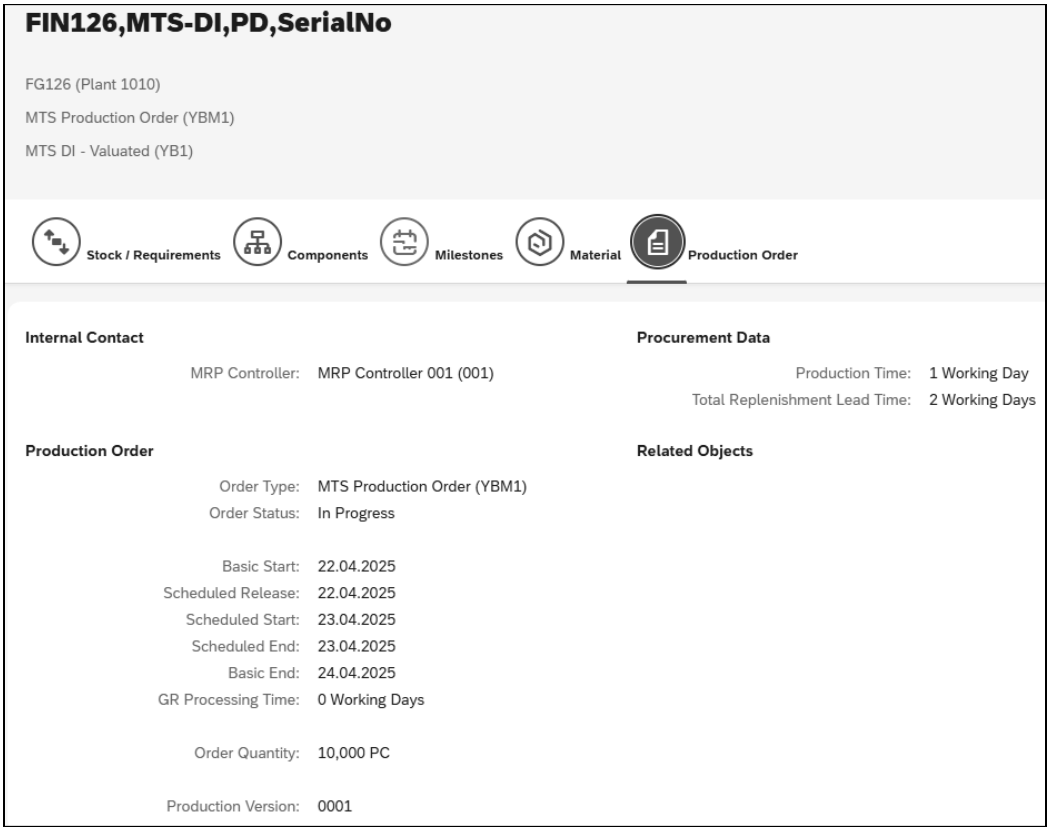


Figure 7.37 Production Order Section

7.2.8 Manage Production Orders

The Manage Production Orders app (F0273) helps you supervise the progress of production by monitoring production order operations and can be reached (as described in the previous section) from the Monitor Production Orders app (F0266B). This will enable managing production orders from a planning perspective. In case the app should be started from a supervisor point of view, the Manage Production Orders app (F2336) should be used.

Note

Planners have a more technical view, focusing on creating production orders and ensuring material availability. Supervisors have a more strategic point of view and focus on corporate goals like material quality and more operational aspects of production as balancing of teams. The app that you choose should reflect your particular focus.

If you detect any issues, you can drill down to identify the root cause and take immediate action to resolve the issue and keep your production process running as smoothly as possible. The usage is supported by personalization via **Area of Responsibility**, as shown in Figure 7.38. These settings can be reached via the Me Area (see Chapter 1, Section 1.4.3).

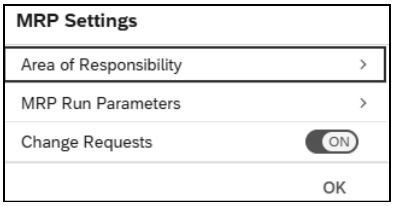


Figure 7.38 Personalization by Area of Responsibility

The initial list in Figure 7.39 visualizes the progress of each production order operation, including any issues if applicable. Quick views on material, production order, operation, work center, and previous statuses offer additional information. After marking one entry, you can directly **Change Dates and Quantities**, **Edit**, or **Release** a production operation, if applicable.

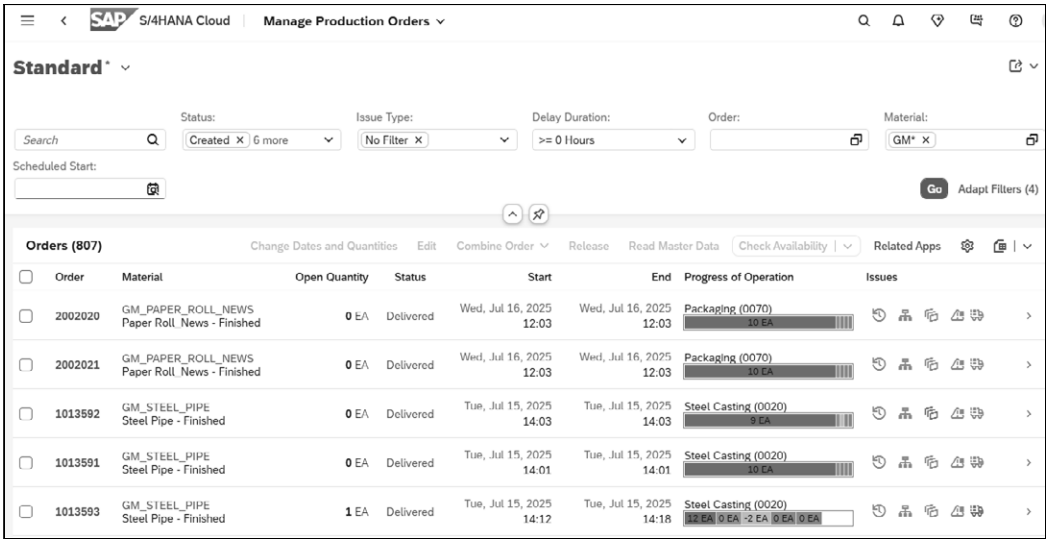


Figure 7.39 Simple List: Manage Production Orders

Based on the **Progress of Operation** and the symbols indicating **Issues**, you can navigate to the details of each production order operation by clicking the arrow icon next to a selected item, as shown in Figure 7.40, which provides sections for **Issues**, **Order Information**, **Components**, **Order Schedule**, **Confirmation**, and **Inspection**. Any issues are directly listed as the first section for closer investigation.

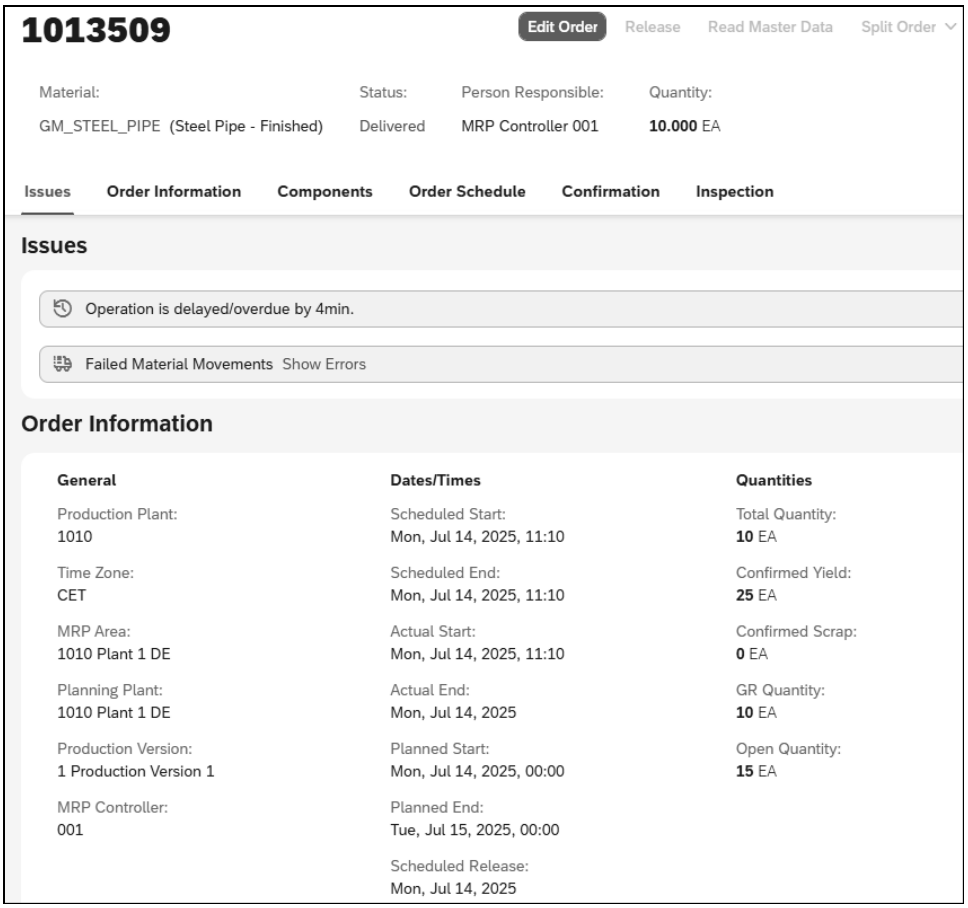


Figure 7.40 Object Page of Production Displaying Issues

The **Components** section shows the status of the assigned components (see Figure 7.41), indicating, for example, coverage, scrap, and storage location.

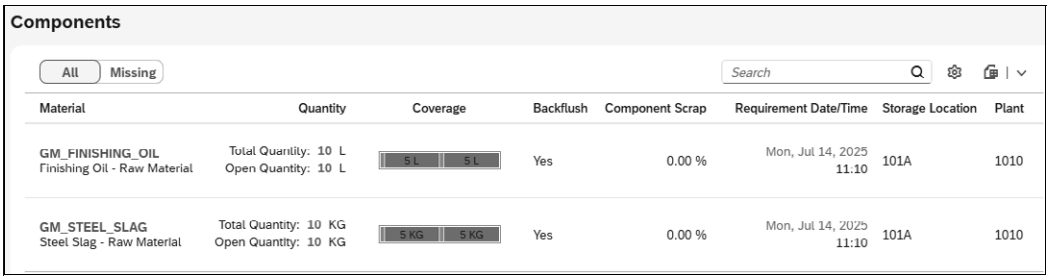


Figure 7.41 Details Page with Section Components

Operations shows the progress on the operations with the selected operation marked and indicating key figures, such as **Work Center** and **Actual Start**/**Actual End** versus **Scheduled Start**/**Scheduled End**, as shown in Figure 7.42.

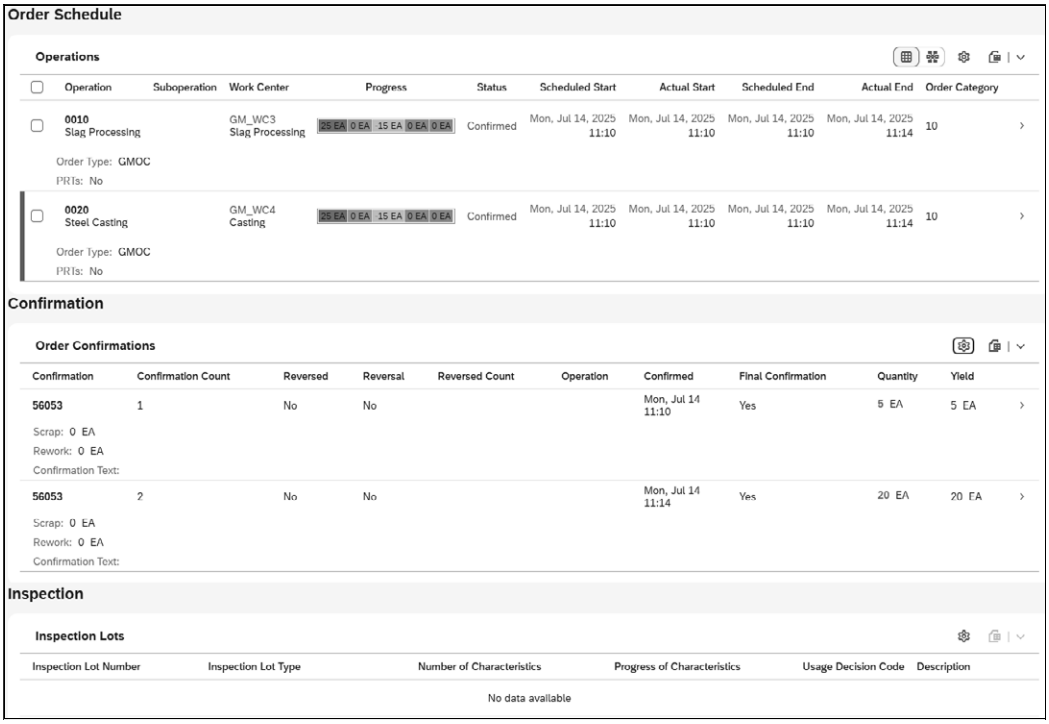


Figure 7.42 Details Page with the Operation, Confirmation, and Inspection Sections

You can access additional data by clicking an item of interest to open quick views (shown in Figure 7.43), or you can navigate to the details of the production operations by clicking the arrow icon of the selected item (shown in Figure 7.44).

The production operation details in Figure 7.44 list the **Operation Issues**, **Components** (assigned), **Order Schedule**, **Work Center Schedule**, **Confirmation**, and **Inspection** (quality).

The **Order Schedule** section displays the selected operation as marked. The **Work Center Schedule** section shown in Figure 7.45 lists the **Operations in Progress** as well as **Operations not Started**.

Figure 7.46 shows the last two sections of the production operation details: **Confirmation** and **Inspection**. **Confirmation** lists the production order **Confirmations**, including the confirmed **Quantity**. **Inspection** lists the quality **Inspection Lots** linked to the production order.

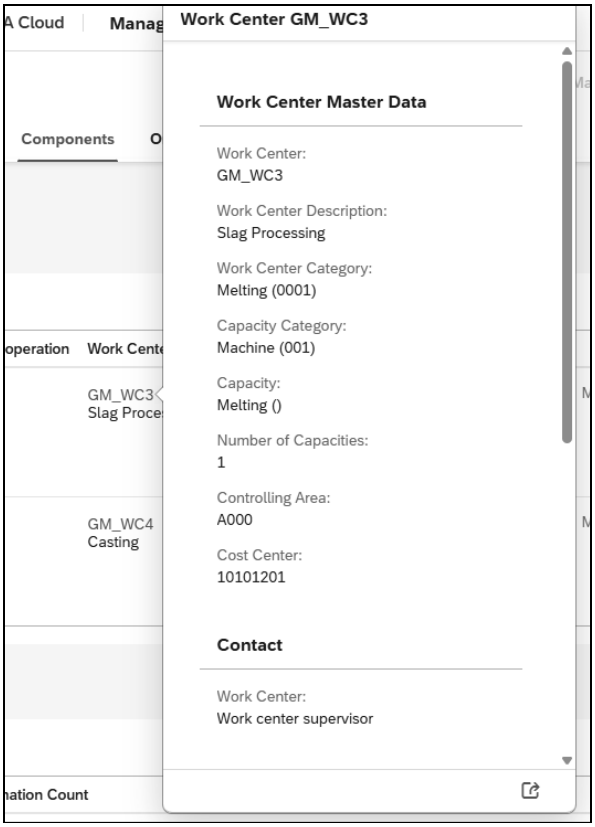


Figure 7.43 Quick View on Work Center

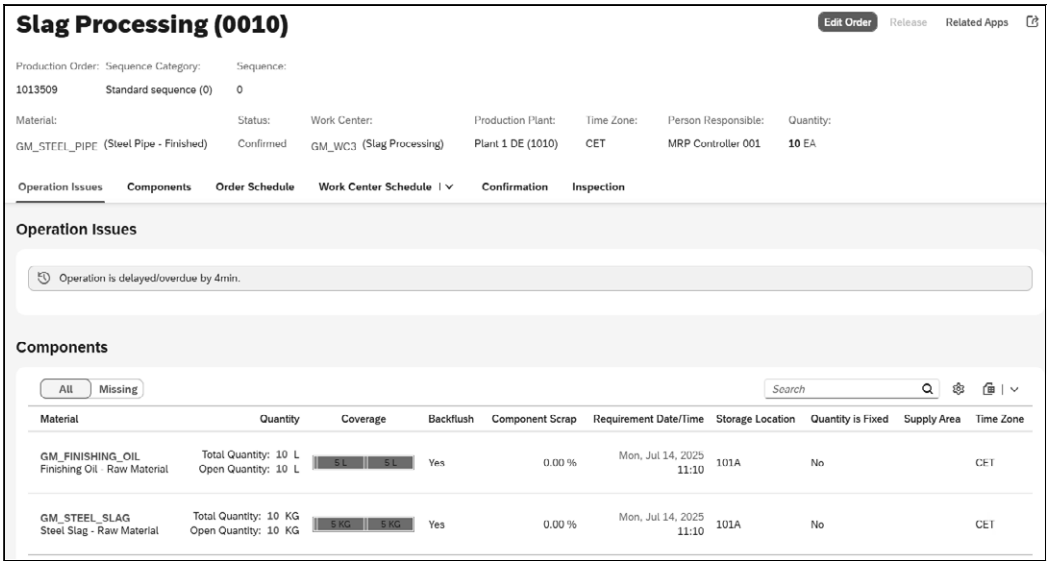


Figure 7.44 Details Page of One Selected Operation Displaying Operation Issues

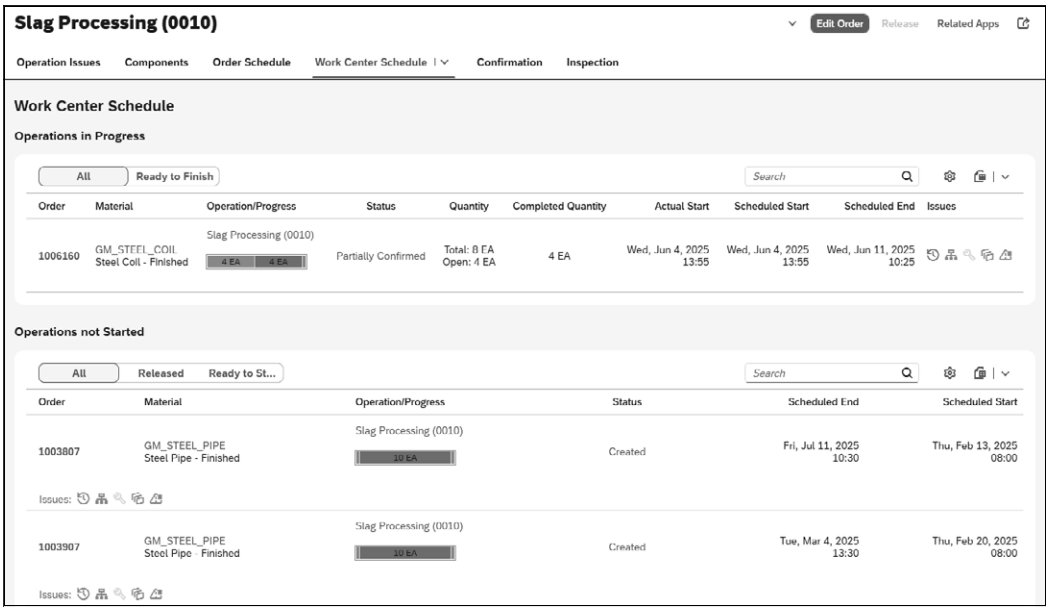


Figure 7.45 Details Page of One Selected Operation with the Work Center Schedule Section

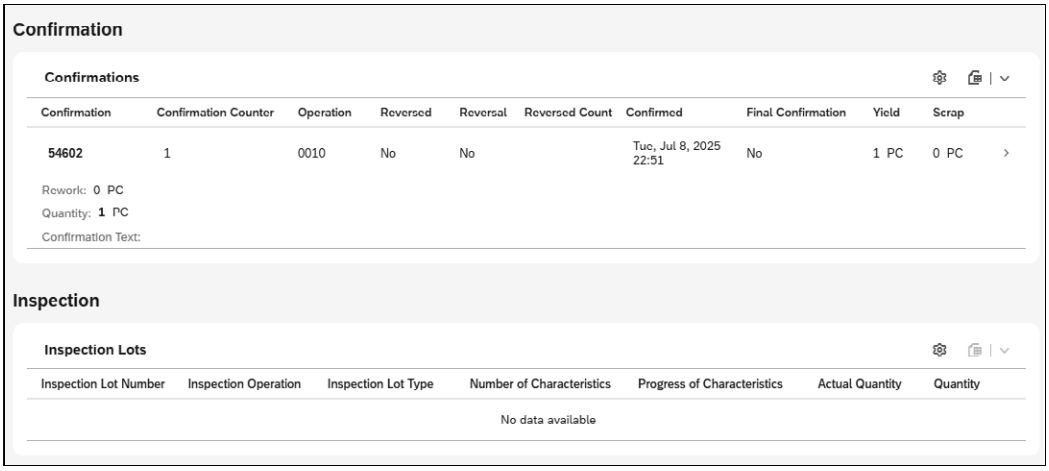


Figure 7.46 Details Page of One Selected Operation with the Confirmation and Inspection Sections

If required, you can directly navigate to the Change Production Order app via the related actions button in the header (not shown) to access the app **Header** screen shown in Figure 7.47.

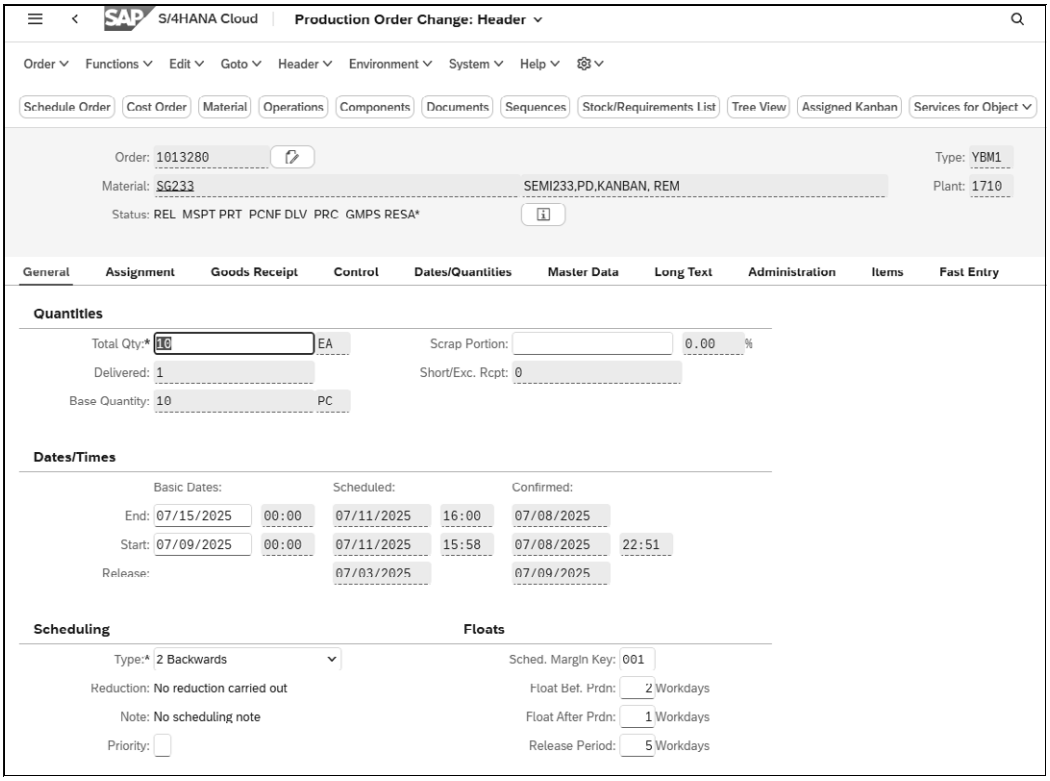


Figure 7.47 Change Production Order App

7.2.9 Confirm Production Operations

The Confirm Production Operations app (F3069) supports the confirmation process of production operations. In Figure 7.48, you start the SAP Fiori app by entering the production **Order** and **Operation**.

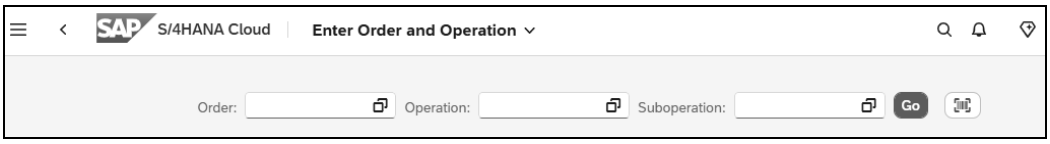


Figure 7.48 Confirmation Entry Screen

On the following screen shown in Figure 7.49, enter the following confirmation details:

- **Yield**
  Produced quantity to be confirmed.
- **Scrap**
  Scrapped quantity.

- **Rework**
  Quantity needs rework.
- **Reason for Variance**
  Reason code for deviations.

You can completely or partially confirm the production operation.

After you've entered the confirmation details, you can click the **Post** or **Post and Complete** buttons in the footer bar (not shown) to post the production operation.

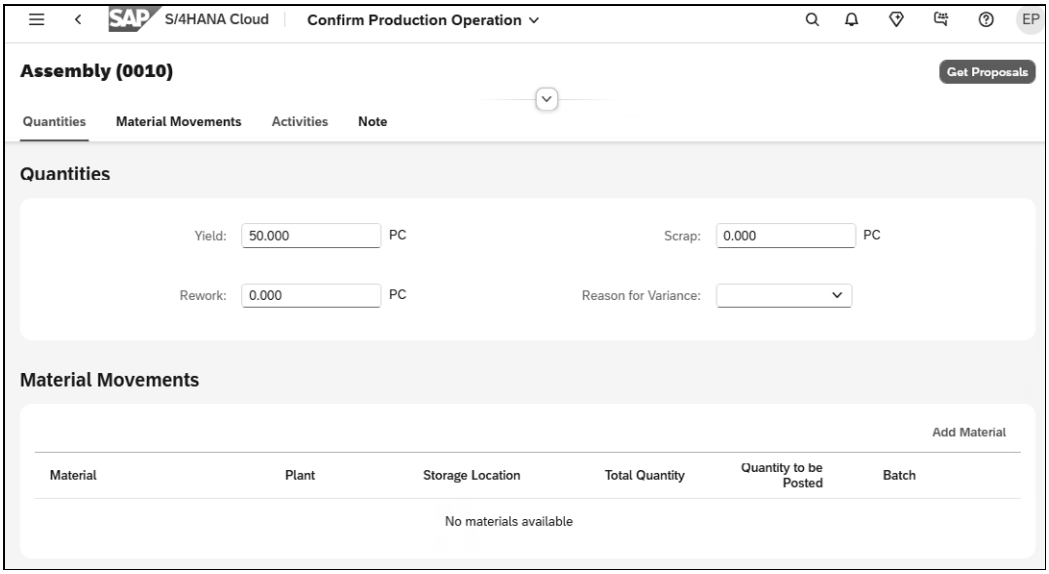


Figure 7.49 Confirmation Details

7.2.10 Create Goods Receipt for Production Order

You can directly create a goods receipt for a production order by using the Post Goods Receipt for Production Order app presented in Chapter 5, Section 5.3.

7.3 Production Performance Monitoring

This chapter provides step-by-step instructions for inventory management as part of production planning and monitoring in SAP S/4HANA using the recommended SAP Fiori apps. You can create your own visual alerts on KPI tiles for a specific time period and other related features.

7.3.1 Material Scrap

The Material Scrap app (F2035) allows you to monitor expected scrapping defined in the material master versus actual scrapping after confirmation. You can choose between several layout options in the **Material Scrap** entry screen, as shown in Figure 7.50, by choosing from the dropdown. We've selected a bubble chart in our example. You can drill down by clicking a bubble and then clicking the down arrow icon to identify the root cause of an issue.

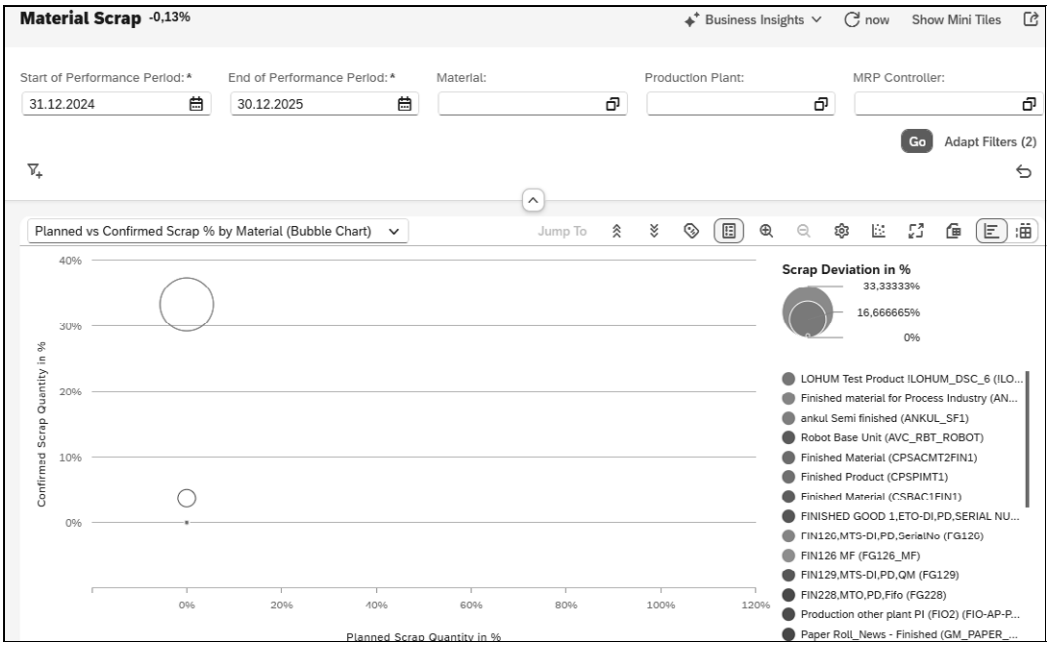


Figure 7.50 Material Scrap Displayed as a Bubble Chart

The following KPIs can be calculated, which you select from the dropdown:

- **Material's Expected Scrap Percentage**
- **Material's Actual Scrap Percentage**
- **Material's Actual Yield Percentage**
- **Material's Actual Rework Percentage**

7.3.2 Operation Scrap

The Operation Scrap app (F2034) allows you to monitor expected scrapping defined in the routing operation versus actual scrapping after confirmation. You can choose between several layout options in the dropdown on the **Operation Scrap** entry screen shown in Figure 7.51. If required, you can drill down here as well by selecting a dot and clicking the down arrow icon to zoom in to the root cause of an issue.

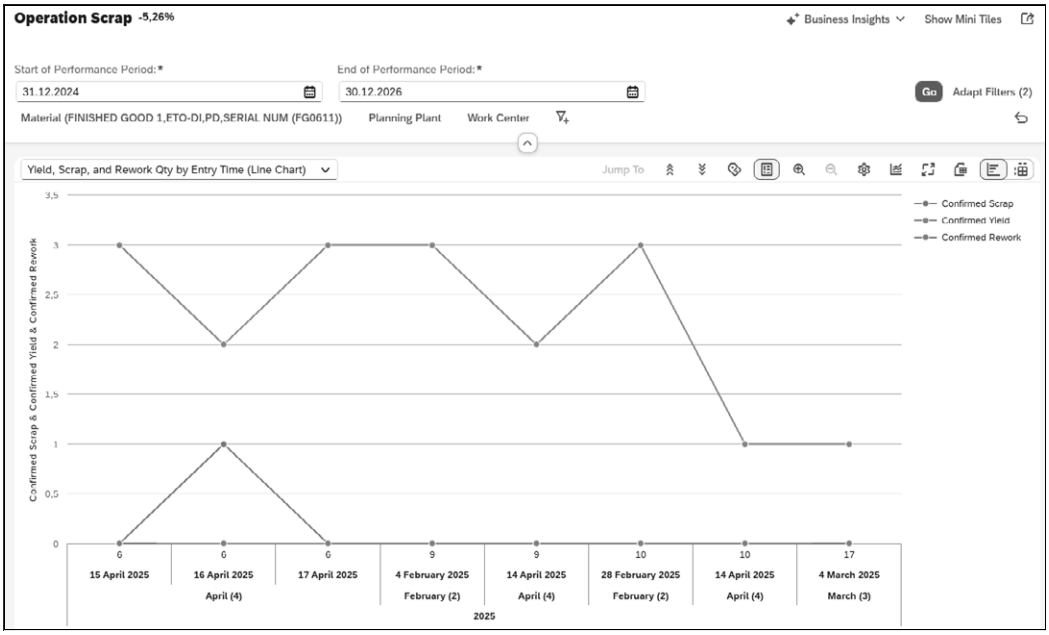


Figure 7.51 Operation Scrap: Line Chart Diagram

The following KPIs can be calculated, which you select from the dropdown:

- **Operation's Expected Scrap Percentage**
- **Operation's Actual Scrap Percentage**
- **Operation's Actual Yield Percentage**
- **Operation's Actual Rework Percentage**

7.3.3 Scrap Reason

The Scrap Reason app (F2216) provides you with a step-by-step analysis to identify the root cause for scrap in your production process. You can choose between several layout options and drill down from different perspectives. Hence, you can analyze the distribution of actual scrap recorded in production confirmations in the dimensions of time, work center, material, plant, and reason for variance. Drilling down to the reasons or root causes of the greatest loss of production will help prevent problems in the future.

Begin on the **Scrap Reason** entry screen, shown in Figure 7.52. In our example, we've started with a stacked column chart per work center (x-axis), but you can change your layout using the dropdown.

Select a column to open the popup shown in Figure 7.53. You can choose between several drilldown options. In our example, we've selected a **Donut Chart**.

Figure 7.52 Scrap and Rework per Work Center

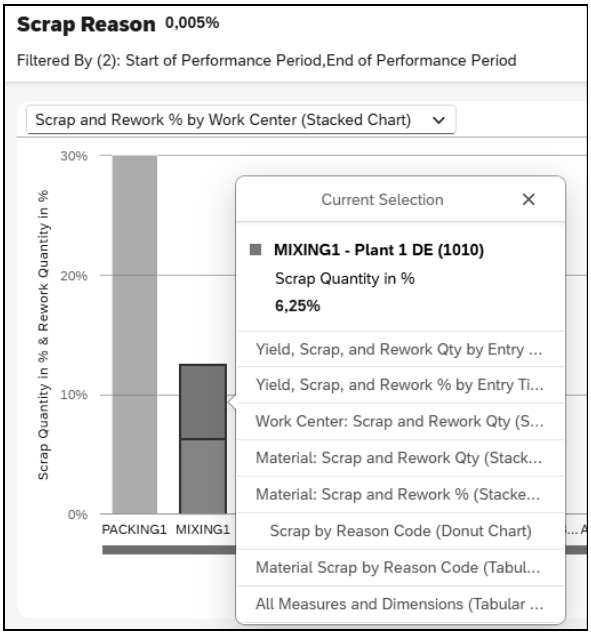


Figure 7.53 Drilldown Options after Selecting Values

The preselected filters are automatically passed, and the drilldown to the reason code is executed, as shown in Figure 7.54.

The following KPIs can be calculated (time frame: last 24 hours), which you select from the dropdown:

- **Actual Scrap Percentage**
- **Actual Yield Percentage**
- **Actual Rework Percentage**

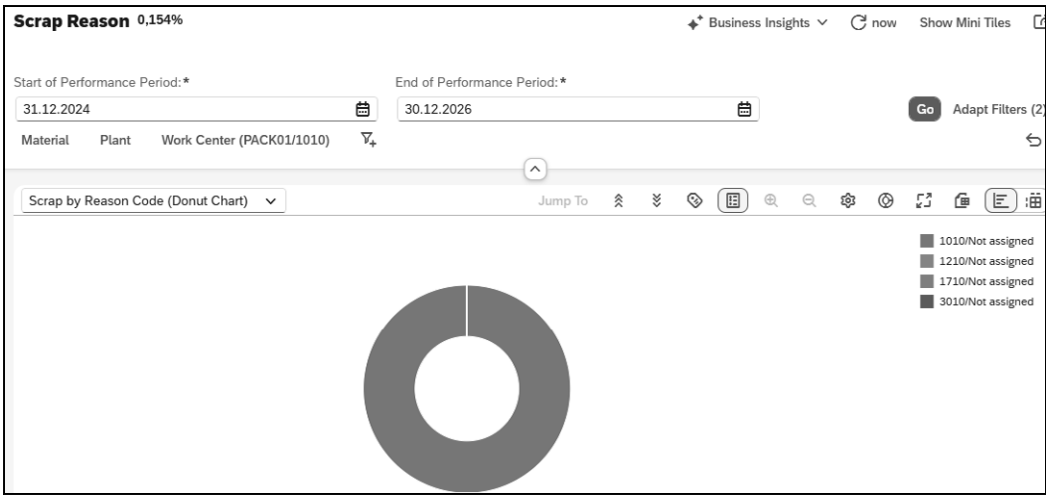


Figure 7.54 Drilldown to Scrap Reasons for the Selected Work Center

7.3.4 Excess Component Consumption

The Excess Component Consumption app (F2171) allows you to monitor expected scrapping defined in the bill of materials (BOM) component versus actual scrapping after confirmation. You can choose between several layout options in the dropdown shown in Figure 7.55.

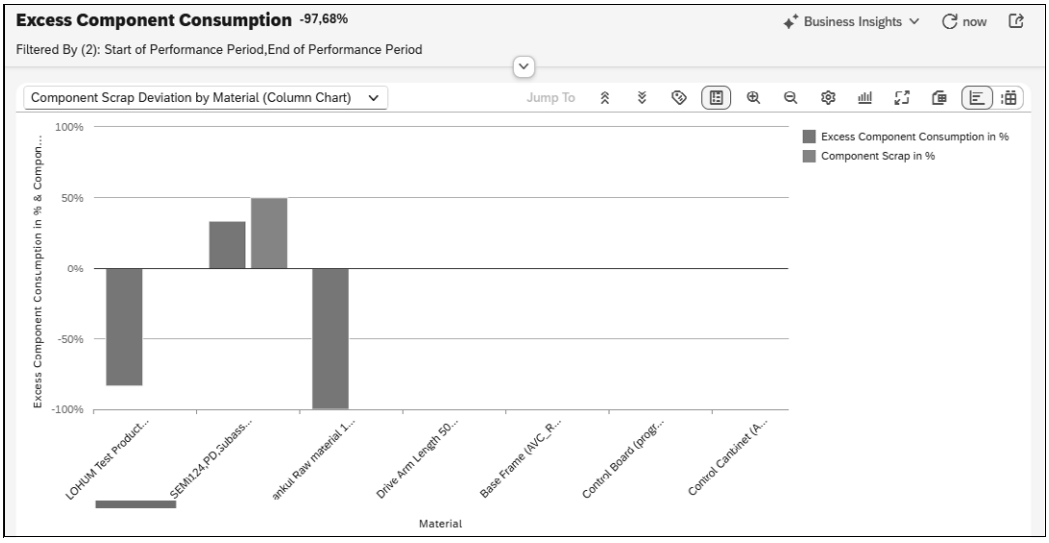


Figure 7.55 Component Scrap Deviation in Percentage

If required, the drilldown capabilities allow you to zoom in to the root cause of an issue by clicking a column. Hence, you can trace the problems that create the largest excess

component consumption in the past and search for a means to prevent these problems in the future. Starting from the top three materials with maximum component scrap deviation, you can perform a step-by-step analysis for a specific time frame.

You can drill down to the cost of a specific material by selecting one column and clicking the down arrow icon. The results are displayed in a bar chart (see Figure 7.56).

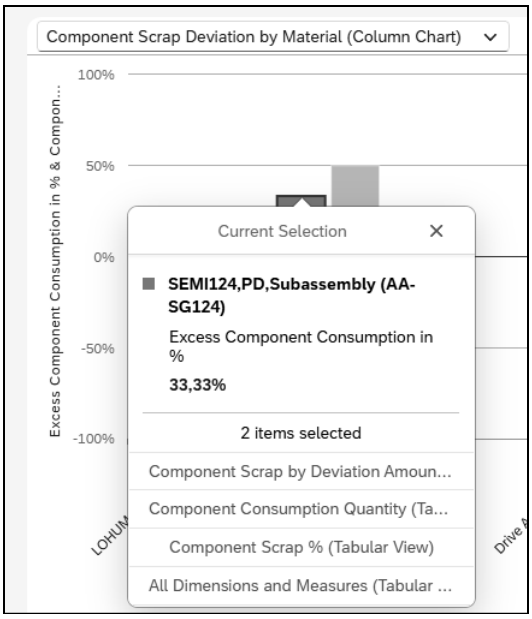


Figure 7.56 Drill Down to One Material

The following KPIs can be calculated, which you select from the dropdown:

- **Original Component Demand Quantity**
- **Excess Component Consumption Quantity**
- **Excess Component Consumption Quantity in Percent**
- **BOM Item Scrap in Percent**
- **BOM Item Scrap in Percent Deviation**

7.3.5 Monitor Production Execution Duration

The Monitor Production Execution Duration app (F2172) allows you to compare actual versus planned operation execution duration. The actual operation duration is calculated based on the production order confirmation. The planned operation duration is defined in the production order and calculated based on the routing/master recipe.

You can choose between several layout options via the dropdown, as shown in Figure 7.57.

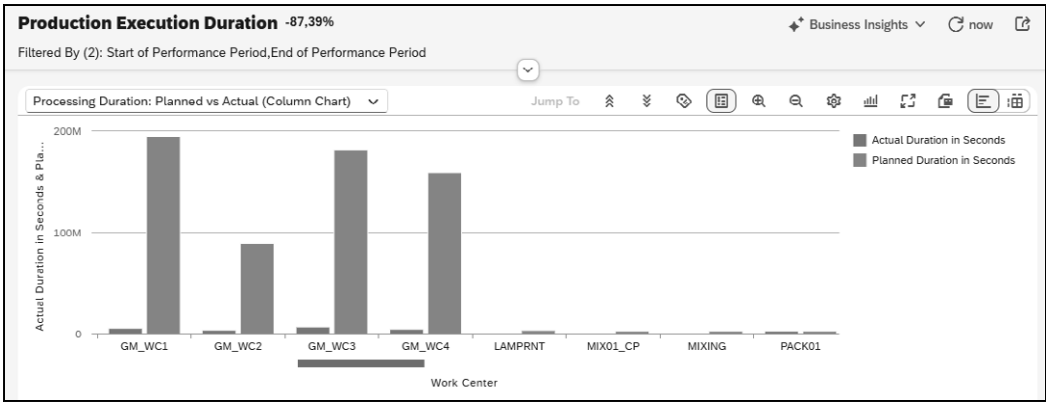


Figure 7.57 Processing Execution: Line Chart Comparing Actual versus Planned

If required, the drilldown capabilities allow you to zoom in to perform a root cause analysis of deviations by clicking a column and clicking the down arrow icon. The **Reporting Period** filter allows you to select a predefined time frame. You can enter different units of measure for time calculation.

The following KPIs can be calculated, which you select from the dropdown:

- **Planned Operation Duration**
- **Actual Operation Duration**
- **Operation Duration Deviation**
- **Operation Duration Deviation Percent**

7.4 Working with Kanban

Kanban as a means of production planning was introduced in Chapter 4. Here we'll cover the production execution part and explain how to monitor the demand and the supply view of a Kanban control cycle.

7.4.1 Display Kanban (Demand View)

The Display Kanban (Demand View) app (Transaction PK13N)—sometimes also known as the Kanban board by the production operator—allows you to track Kanban containers from a demand perspective.

When entering the app, you need to enter the mandatory **Plant** field, as shown in Figure 7.58. The other attributes are optional criteria to select the Kanban container of interest. Because we don't have additional criteria, we've selected **No Area Selection** in our example and left the **Material** field blank.

Click the **Continue** button to view the selected Kanban container displayed as a list, as shown in Figure 7.59. This view offers generic list capabilities such as sorting, filtering, exporting to Excel, and printing, as well as Kanban container-specific functions. You can change the Kanban status of the selected row by clicking **Set to Empty** or **Set to Full**.

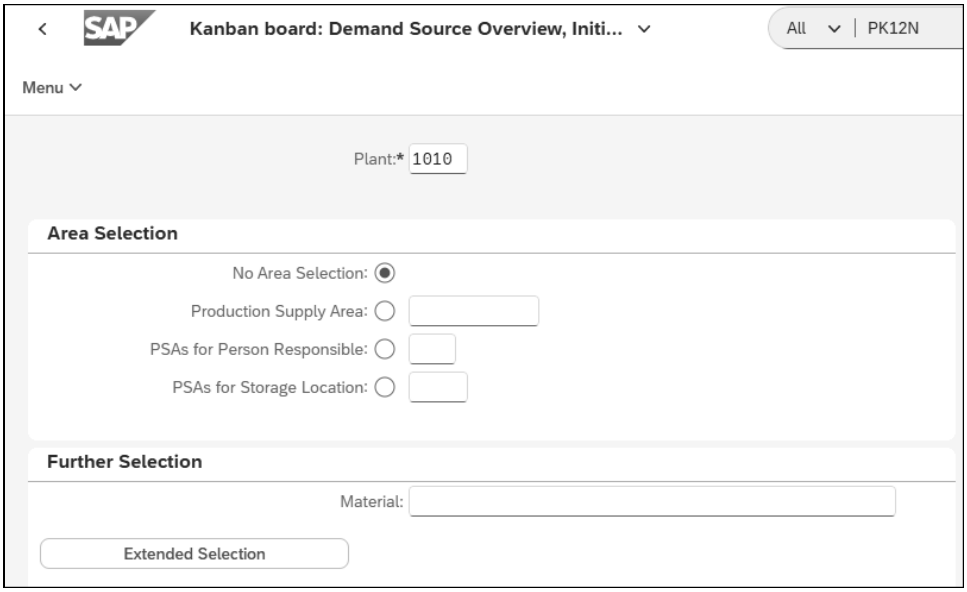


Figure 7.58 Entering the Kanban Demand View with the Plant Mandatory Field

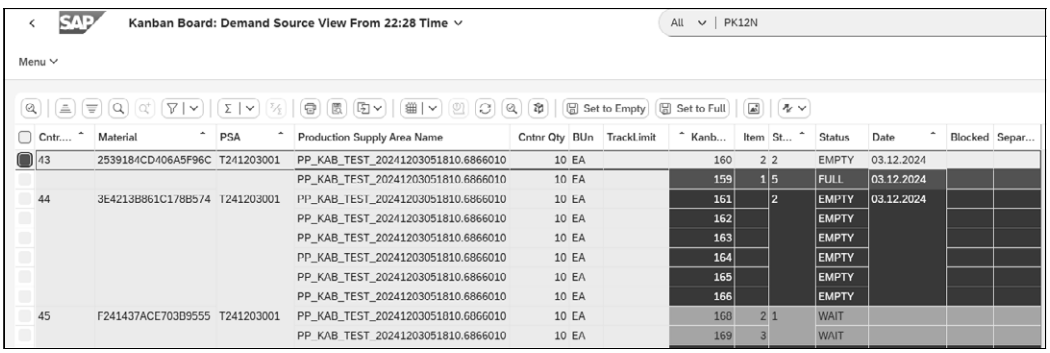


Figure 7.59 Demand View of Selected Kanbans with Time Stamp

To access a legend for the list, click the **Display Legend** icon in Figure 7.59 (to the left of **Set to Empty**). To see a status summary of all selected Kanban containers, click the overview icon in Figure 7.59 (to the right of **Set to Full**). Both screens are shown in Figure 7.60.

If you display the details of one Kanban container by clicking the details icon in Figure 7.59 (magnifying glass), you can navigate in **Display** mode (checkmark icon) or in **Change** mode (pencil icon) to the **Replenishment** element (e.g., a planned order **128**), as shown in Figure 7.61.

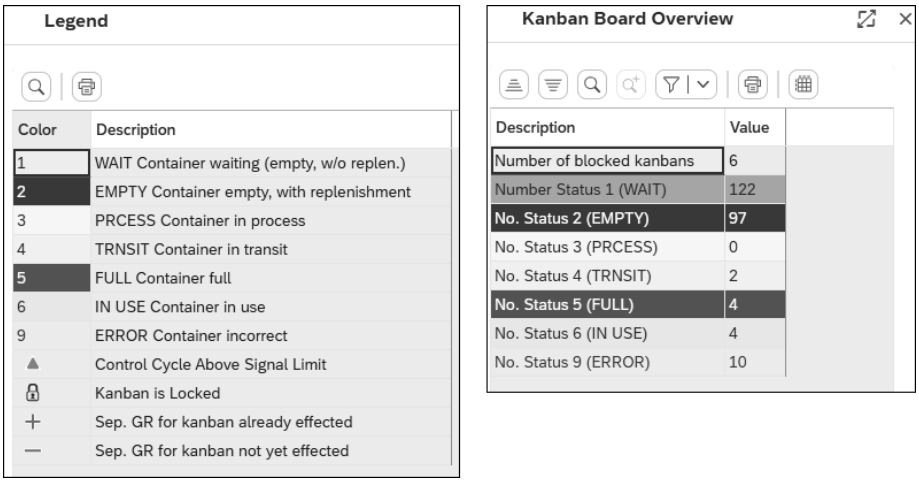


Figure 7.60 Legend of Kanban Status (Left) and Kanban Board Overview (Right)

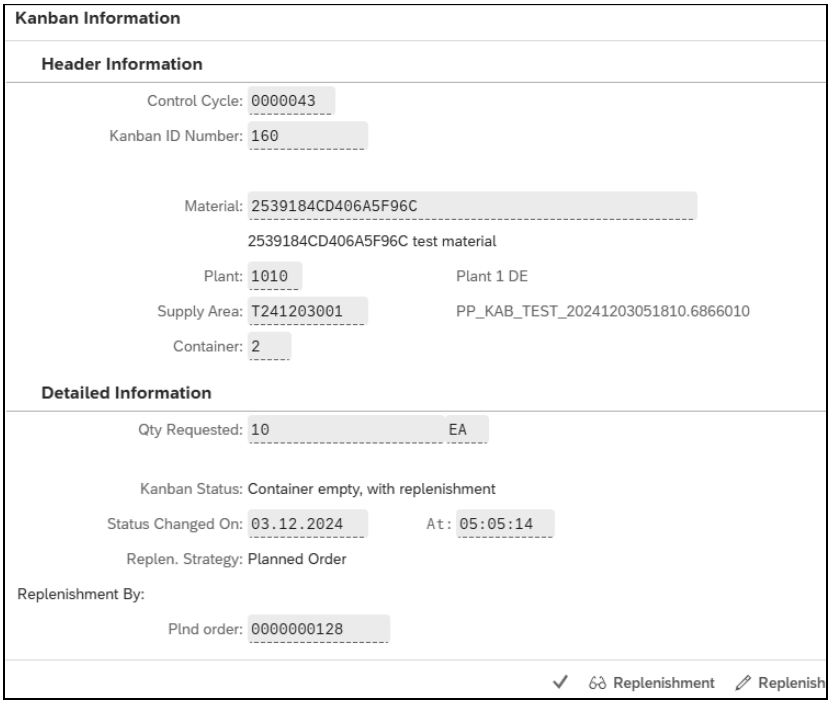


Figure 7.61 Kanban Details with Replenishment Element (Planned Order)

7.4.2 Display Kanban (Supply View)

The Display Kanban (Supply View) app (Transaction PK12N) allows you to track Kanban containers from a supply perspective. When entering the app, you need to fill in the mandatory fields depending on the context of the supply. Usually, you provide one of

the **Plant** fields and a **Person Responsible**, **Supplier**, **Issuing Plant**, or **Storage Location**. In our example of in-house production in Figure 7.62, we've entered the **Plant** and **Person Responsible**.

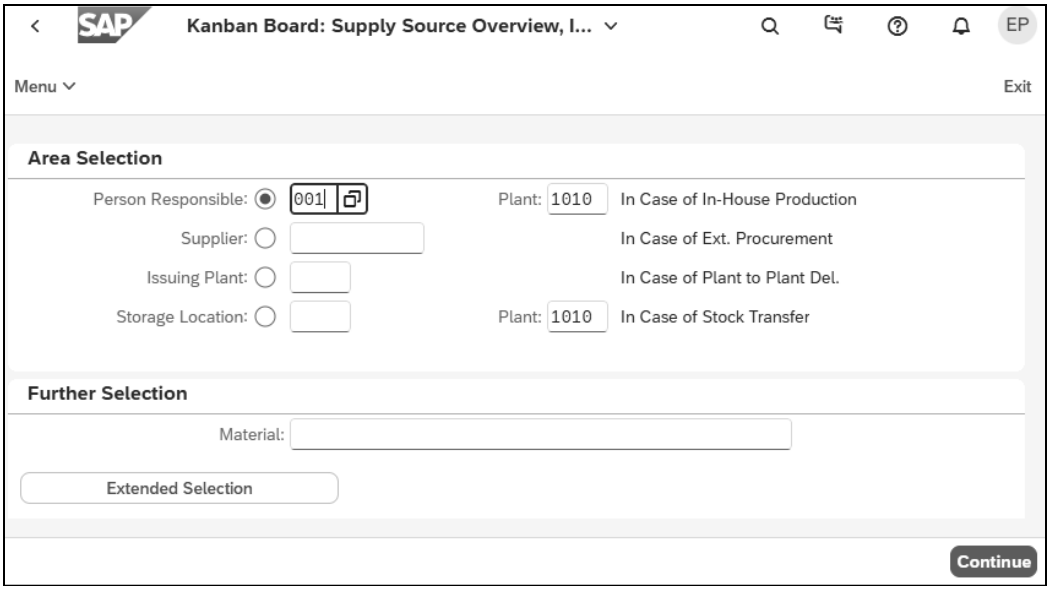


Figure 7.62 Entering the Kanban Supply View

Click the **Continue** button to view the selected Kanban container displayed as a list, as shown in Figure 7.63. This view offers generic list capabilities such as sorting, filtering, exporting to Excel, and printing, as well as Kanban container-specific functions. You can change the Kanban status of the selected row by clicking **Replenishment, Status in Process**, or **Status in Transit**. The legend and the Kanban overview shown earlier in Figure 7.60 are also available (not shown).

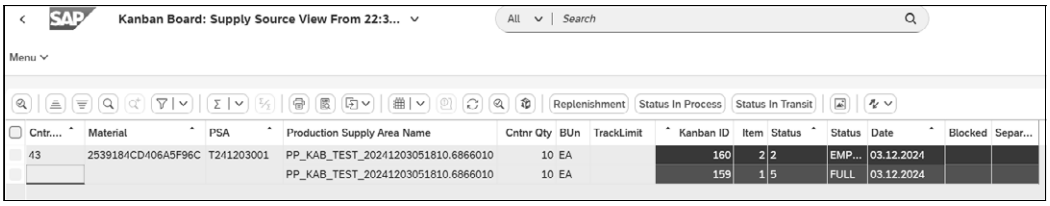


Figure 7.63 Supply View of Selected Kanbans with Time Stamp

7.4.3 Due Replenishment Elements

The Due Replenishment Elements app (Transaction PKAL) helps you select existing and overdue Kanban replenishment elements in the system. Figure 7.64 and Figure 7.66 show the selection screen when entering the app.

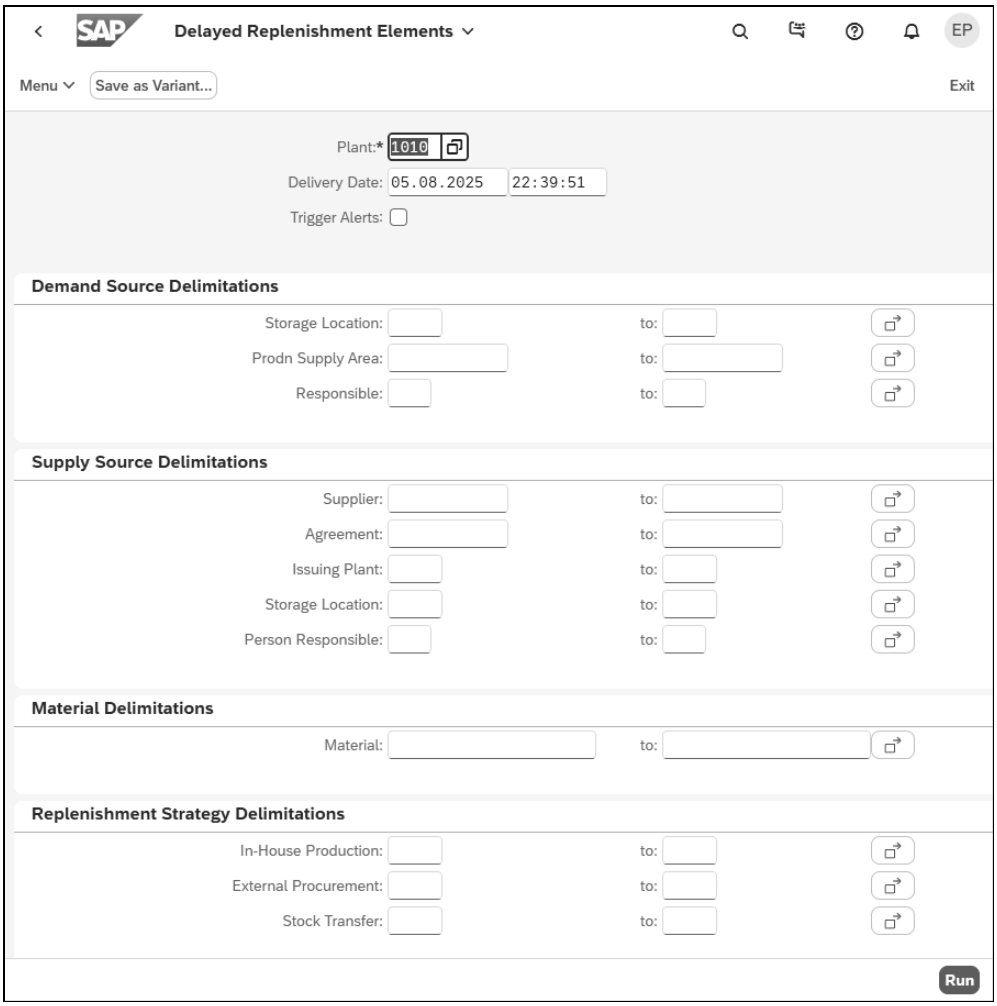


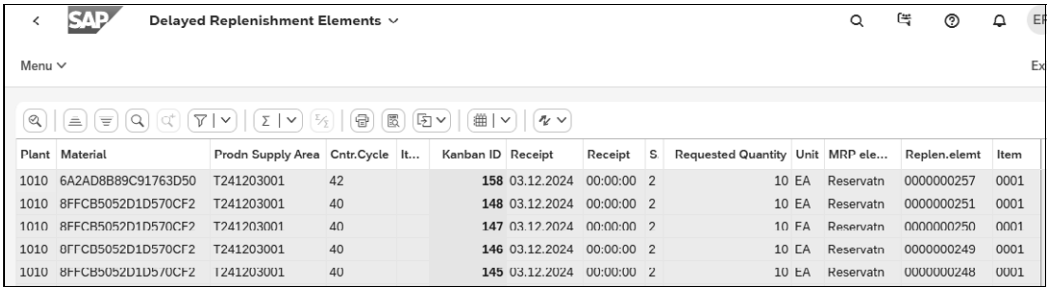
Figure 7.64 Kanban Replenishment Elements

You start your selection with the mandatory **Plant** field. The optional selection parameters allow you to restrict the result set further.

Click the **Execute** button to get to the result set. The results list in Figure 7.65 contains the list of replenishment elements with their most important information:

- **Material**
  Material number.
- **Prodn Supply Area**
  Supply areas required for Kanban (See Chapter 4, Section 4.4).
- **Kanban ID**
  Key to identify the Kanban container within the control cycle.

- **MRP element**
  MRP element to fill the Kanban container.
- **Replen.elemt**
  Key of the MRP element.



Plant	Material	Prodn Supply Area	Cntr.Cycle	It...	Kanban ID	Receipt	Receipt	S	Requested Quantity	Unit	MRP ele...	Replen.elemt	Item
1010	6A2AD8B89C91763D50	T241203001	42		158	03.12.2024	00:00:00	2	10	EA	Reservatn	0000000257	0001
1010	8FFCB5052D1D570CF2	T241203001	40		148	03.12.2024	00:00:00	2	10	EA	Reservatn	0000000251	0001
1010	8FFCB5052D1D570CF2	T241203001	40		147	03.12.2024	00:00:00	2	10	EA	Reservatn	0000000250	0001
1010	8FFCB5052D1D570CF2	T241203001	40		146	03.12.2024	00:00:00	2	10	EA	Reservatn	0000000249	0001
1010	8FFCB5052D1D570CF2	T241203001	40		145	03.12.2024	00:00:00	2	10	EA	Reservatn	0000000248	0001

Figure 7.65 Selected Kanban Replenishment Elements

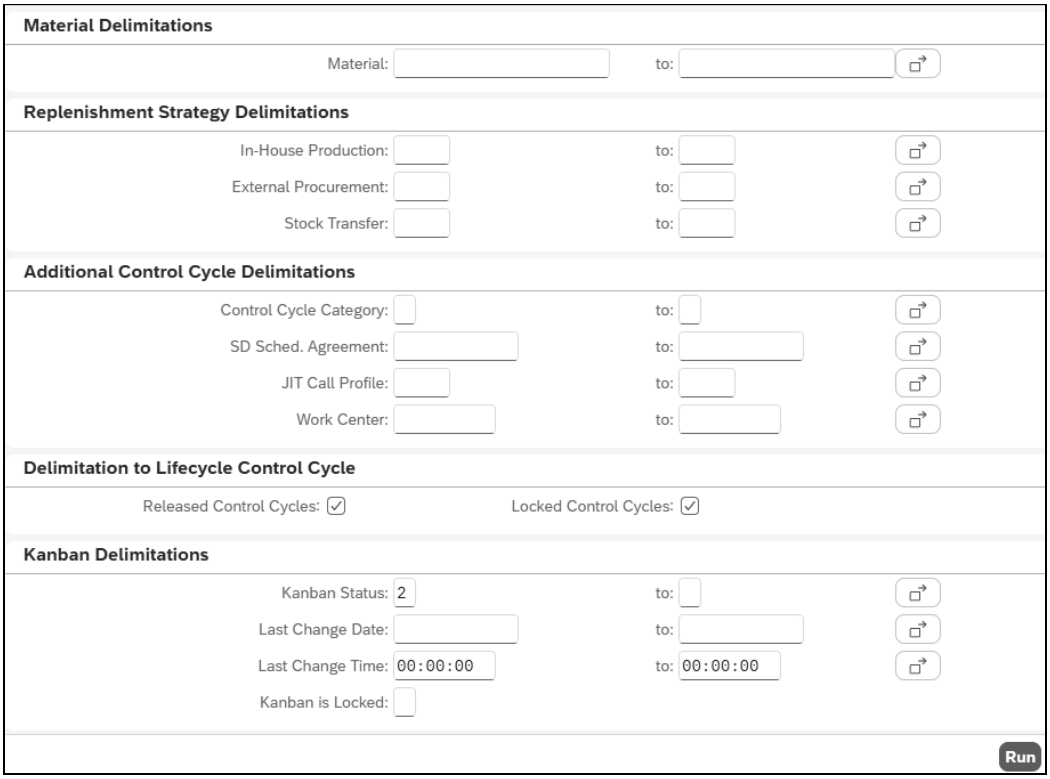


Figure 7.66 Kanban Replenishment Elements: Selection Screen

7.4.4 Correct Kanban

The Correct Kanban app (Transaction PK31) supports you in changing existing containers in a Kanban control cycle. Figure 7.67 shows the screen to enter a Kanban container correction. Mandatory input fields are **Material**, **Plant**, and **Supply area** to identify a dedicated Kanban control cycle.

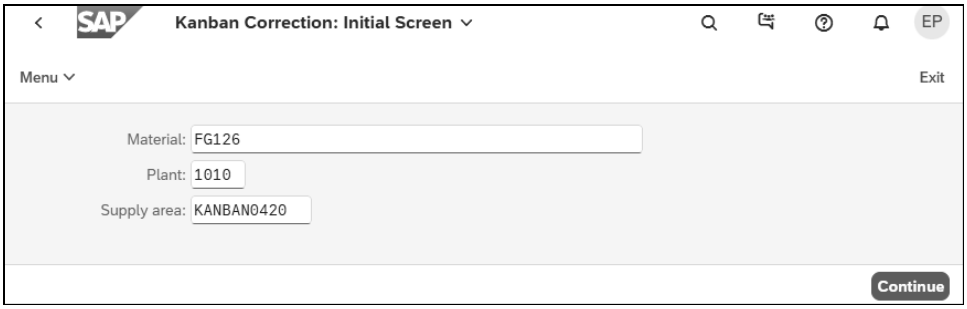


Figure 7.67 Entry Screen of Kanban Corrections: Keys of the Kanban Control Cycle

Click the **Continue** button to access the selected Kanban control cycle, as shown in Figure 7.68. The **Status/Quantity**, **Replenishment**, **Quantity/Batch**, **Reverse**, and **Cancel** buttons allow you to execute the desired actions on the Kanban control cycle.

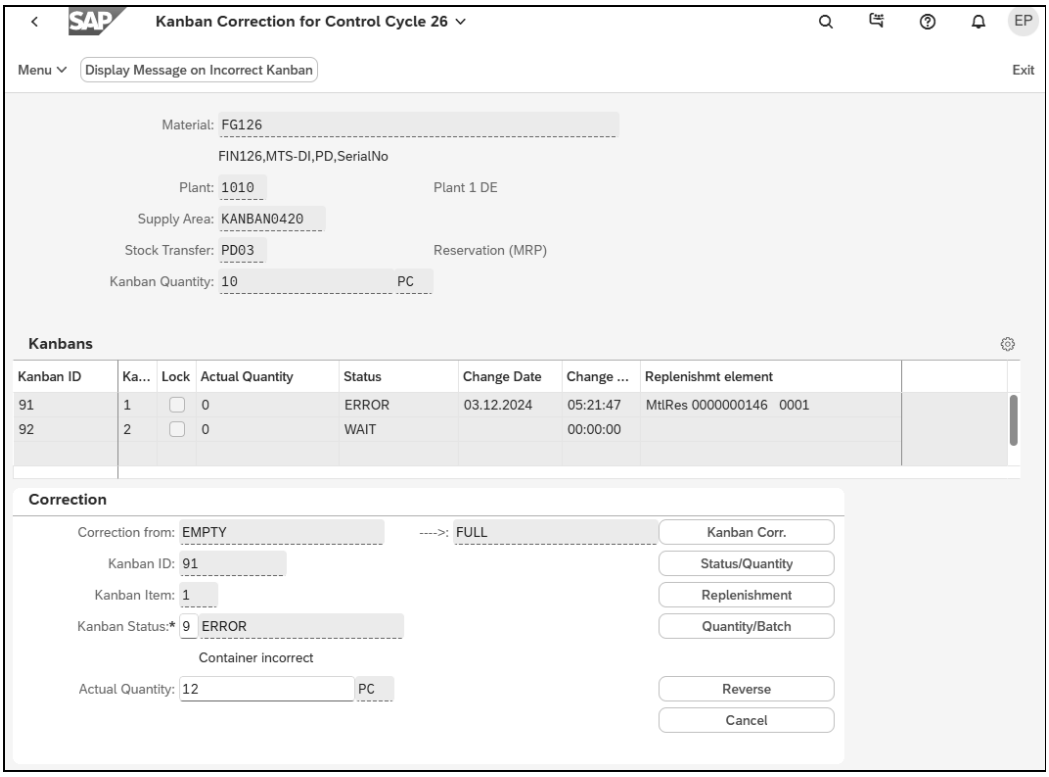


Figure 7.68 Selected Kanban Control Cycle

7.4.5 Unlock Kanban Container

The Unlock Kanban Container app (Transaction PK09) supports you in locking and unlocking selected Kanban containers. You can use this app to onboard and offboard an entire Kanban control cycle.

7.4.6 Set Kanban Container Status

The Set Kanban Container Status app (F3717) allows you to set the Kanban container status of selected containers from **Full** to **Empty** if the container's content was consumed at the production supply side so that a refill is initiated.

Figure 7.69 shows a worklist of Kanban containers on the left side, either manually entered or automatically entered by bar code scanning, in the **Entered** tab. Accidently entered containers can be removed from the worklist (**Remove** button). In the detail area, on the right side, you can set the container status and the batch, if applicable. After clicking the **Save** button, the container shows up in the **Saved** tab.

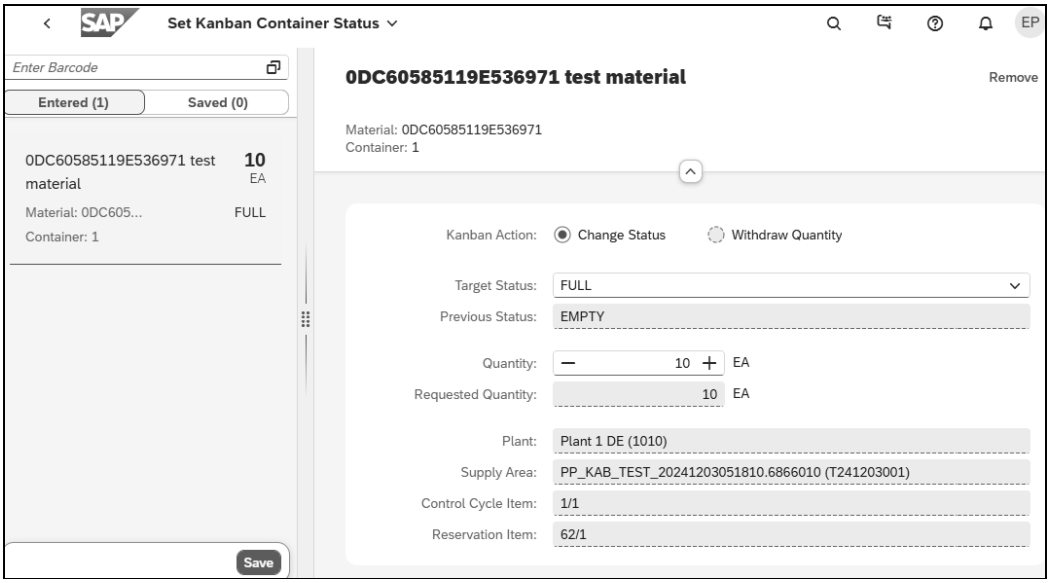


Figure 7.69 Worklist: Setting Selected Kanban Container Status

When using a bar code reader in "keyboard wedge" mode (i.e., the bar code reader's output is translated into the keyboard input), you can input the Kanban container and the container status via a single scanning operation. You can repeat this operation multiple times as the cursor focus is automatically positioned in the next empty input field. Make sure that the bar code contains the following data:

<container ID><next status code><enter>.

Allowed values of *<next status code>* are listed in Table 7.1.

Status Code	Description
0	Next status will be determined automatically from the status sequence
1	Waiting
2	Empty
3	In process
4	In transit
5	Full
6	In use

Table 7.1 Possible Status Codes as Part of the Bar Code

Note

You can also set the status manually by appending a status code to the container ID in the input field.

7.5 What's Ahead for Production Execution?

Now that we've walked through the flow of production execution tasks and the SAP Fiori apps that support them, let's move on to new and upcoming features.

As we have seen throughout this chapter, a lot of app redesign and renaming was performed to streamline the app setup in production planning. The Schedule Production app has been renamed to Capacity Scheduling Table (F3770), and the Monitor Work Center Schedule app has been renamed to Capacity Scheduling Board (F3951). The Monitor Production Orders or Process Orders app (new version, F0266B) serves as entry point for management of related orders.

With these recent developments, additional app setting and capabilities were introduced, which make the app usage more convenient and individual to the end user's needs. For example, starting with SAP S/4HANA Cloud Public Edition 2508, the Capacity Scheduling Board app (F3951) can be customized to differentiate activities within an operation by usage of activity coloring. The app settings need to be set to **Discrete** for the **Industry Type** (see Figure 7.70).

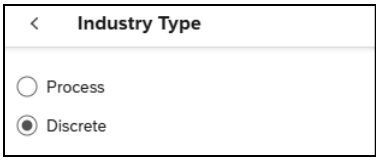


Figure 7.70 App Setting: Industry Type Discrete

In addition, **Activity Coloring** also needs to be toggled on in the **App Settings** to activate that feature, as shown in Figure 7.71. Figure 7.72 shows the activities in different colors related to your settings.

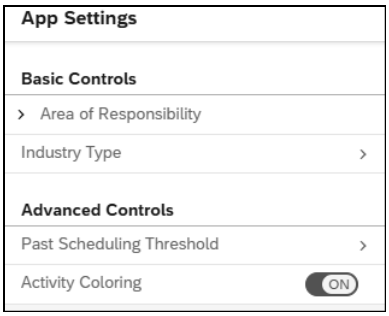


Figure 7.71 App Setting Activity Coloring

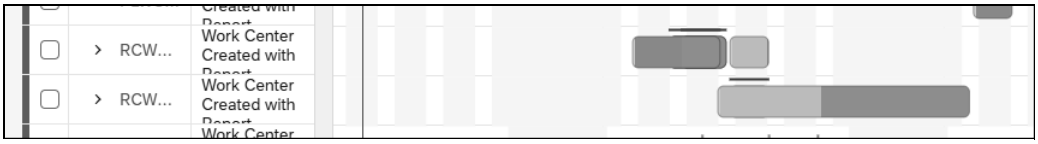


Figure 7.72 Colored Activities in Operation

7.6 Summary

This chapter explained how SAP S/4HANA supports the end user in production execution. It highlighted the SAP Fiori apps that can be used to schedule, monitor, and confirm production operations. The embedded change management capabilities, such as change request handling and note-taking, support exception handling during execution. Furthermore, working with reservations and Kanbans as a means to control inventory and material flow within your business processes was described. Analytical SAP Fiori apps support the end user in monitoring production execution KPIs.

The next chapter covers the analytical SAP Fiori apps in inventory management in detail to complete our inventory optimization cycle.

Chapter 8
Inventory Analysis

Inventory analysis with SAP S/4HANA allows you to control and optimize your inventory management processes based on SAP Fiori apps. It provides an idea of which scenario you might make use of with the different tools to steer your inventory business in the right way.

So far, we've looked at basic information about SAP S/4HANA and how inventory processes are reflected in SAP S/4HANA. To gain more insight into your inventory management processes, this chapter outlines the analytical capabilities of inventory management in SAP S/4HANA.

Inventory analytics in SAP S/4HANA are mainly based on the data created during inventory processing, which is stored in the new data model for material documents. Due to this new performance-optimized data model, new analytical functionalities are available with inventory management. The predelivered business role SAP_BR_INVENTORY_ANALYST can be used with these analytical features. Some basic analytical capabilities are also included in the predelivered SAP_BR_INVENTORY_MANAGER and SAP_BR_WAREHOUSE_CLERK business roles. These two business roles include at least the related overview pages. For more details, check Chapter 3, Section 3.6.2, where the business roles are described.

Referring to the optimization cycle of inventory management, which we introduced in Chapter 2, Section 2.4, this chapter is about the controlling and analytical tools available within inventory management. The following sections touch on different aspects of analytical views. We'll start with analysis of the current and past stock information. Afterwards, we'll discuss monitoring of relevant key performance indicators (KPIs) with inventory management in SAP S/4HANA. Based on this, we'll introduce analytical SAP Fiori apps that can be used for analysis and optimization of process flows. Then, you'll see how you might adopt analytical queries according to your needs. We'll finish the chapter by discussing the future of analytics.

8.1 Inventory Analytics in SAP S/4HANA

Analytical capabilities are often used to gain business benefits by analyzing the available business data in the SAP system. This also holds true for inventory-based processes.

Knowledge about slow-moving materials or dead stock situations can be worthwhile information to optimize the stock level and, in the end, the bounded capital of your company.

In this section, we'll start out with a look at what advances SAP S/4HANA has brought to analytics for your inventory management processes, before discussing the available tools.

8.1.1 Advances in Analytics

SAP S/4HANA provides several advances to analytics:

- **Real-time data**
  Based on the new data model to store the main business-relevant data in inventory management in SAP S/4HANA, the material document is kept in a column store-oriented database (SAP HANA). This column store provides the basis for real-time analytics on up-to-date transactional business data.
- **Integrated data**
  In addition, a state-of-the-art and browser-based user interface (UI) (SAP Fiori) gives the right presentation capability for process and stock monitoring and optimization. The SAP Fiori pattern was also used to combine analytical with transactional features (in-app analytics). For instance, the transactional SAP Fiori app Manage Stock (see Chapter 6, Section 6.4.1) contains the inventory KPI range of coverage.
- **Insight to action**
  Beside the in-app analytics, the SAP Fiori pattern of insight to action brings a powerful capability into the analytics world. Based on the semantic object and the related navigation targets, the analytical results can be drilled down, for example, to the material level, and transactional actions (e.g., transfer postings or scrapping) can be performed directly, or a team of warehouse staff can be contacted by adding the relevant business object into a chat.
- **Value-based analytics**
  Most of the analytical SAP Fiori apps offer the result set in regard to the stock value. This offers the chance to compare different materials even if they have different units of measure; however, financial aspects also can be judged directly. It's important to note that the stock value calculation in inventory management is performed based on the current material price multiplied by the stock figures. This holds true for all stock value determinations in the SAP Fiori apps of inventory management, even if a different reporting date than today is selected. In this case, historical stock values are multiplied with the current price of the material. Only in the Stock – Multiple Materials app is the reporting date also used to determine the price information from that date as a basis for multiplication with the historical stock figures.

8.1.2 Choosing the Right Analytics Tool

The inventory management optimization cycle was introduced in Chapter 2, Section 2.4. Now we'll outline which tools and applications are available in SAP S/4HANA that support the analyze step of the inventory management optimization cycle. Related to Chapter 2, Section 2.4.4, these applications are built upon different application templates or patterns.

The available tools and applications for analytics, which we'll see in action throughout the chapter, are as follows (many of which you'll remember from our in-depth discussion of SAP Fiori apps in Chapter 1, Section 1.4.2):

- **Object pages**
  SAP Fiori app pattern outlining important details for business objects such as material document.
- **Overview pages**
  SAP Fiori app pattern combining different KPIs and relevant data at one glance.
- **Analytical list pages (ALPs)**
  SAP Fiori app pattern providing a standardized look and feel with graphical and tabular result representations.
- **SAP Smart Business**
  Application pattern that makes use of core data services (CDS)-based queries.
- **Custom queries and CDS views**
  SAP Fiori app to adapt CDS queries to your needs (extensibility).

8.2 Posted Stock Change Analysis

During warehouse business, many material movements take place that change the stock situation frequently. To make the right decisions in daily business and meet the demand and service level of the related goods, a comprehensive and most current view on the stock level has to be provided by the system.

In the following sections, we'll describe related SAP Fiori apps that support checking the stock situation of your warehouse. A more detailed and granular analysis (similar to SAP Business Warehouse [SAP BW] reporting but based on the most current system data) will then be discussed for the material document and the physical inventory document.

8.2.1 Stock Single Material and Stock Multiple Materials

The basic analytical functions of inventory management were introduced in Chapter 6 regarding stock analysis.

Simple stock checks can be performed with the SAP Fiori app Stock – Single Material by entering the material and plant combination. Refer to Chapter 6, Section 6.2.1, for more details.

More complex filter criteria are available in SAP Fiori app Stock – Multiple Materials (i.e., special stock), and the selection of more than one material is possible. Refer to Chapter 6, Section 6.2.2, for more details.

8.2.2 Analyze Stock in Date Range

In many cases you may want to understand the root cause of certain inventory stock situations, which means you would like to relate the stock information to the material document postings. In this case, using the Analyze Stock in Date Range app (F6185) is the most suitable approach. The app follows an ALP pattern (see Chapter 1, Section 1.4), where the main page displays the stock quantity/value changes within a selected time frame (minimum one day). The absolute stock quantity/value and all relative changes are displayed per item in an analytical table. All measures are aggregated according to the selected dimensions of the analytical table. The maximum granularity are all stock identifying fields (**Stock Type**, **Special Stock Type**, **Plant**, **Storage Location**), as shown in Figure 8.1.

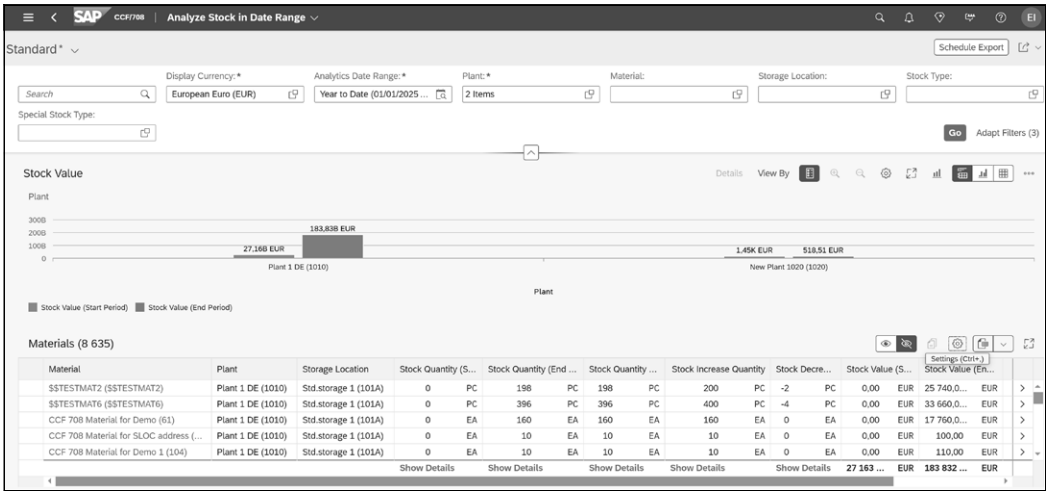


Figure 8.1 Entry Screen with Two Plants Selected and Stock Drilldown to All Stock Identifying Fields

Consequently, if you remove all dimensions except **Plant**, you'll see a higher aggregation, as shown in Figure 8.2.

Materials (2)

Plant	Stock Value (Start Period)		Stock Value (End Period)		Stock Value Difference	
Plant 1 DE (1010)	27 163 343 888,78	EUR	183 832 693 341,24	EUR	156 669 349 452,46	EUR
New Plant 1020 (1020)	1 450,00	EUR	518,51	EUR	-931,49	EUR
	27 163 345 338,78	**EUR**	**183 832 693 859,75**	**EUR**	**156 669 348 520,97**	**EUR**

Figure 8.2 Stock Values on Plant Level

The ALP supports a split column layout. Choosing one item displays all associated material documents and accounting documents that resulted in the stock quantity/value changes shown in the selected item. Figure 8.3 shows an example, where you can see that essential information is summarized on the header and all material documents and their accounting documents are listed below under **Material Postings**.

Note

Not all material documents have a corresponding accounting document and vice versa.

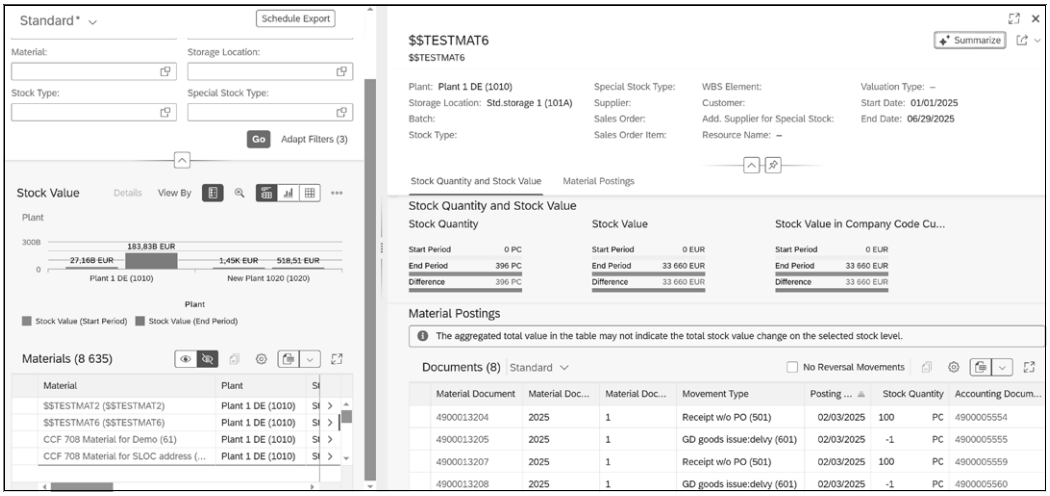


Figure 8.3 Associated Material Document and Accounting Document Postings on Detail Screen of Second Entry on Left-Hand Side

The Analyze Stock in Date Range app is very flexible when analyzing stock quantity/value changes in a certain time frame. However, not all drilldown options make sense due to the underlying transactional data. The app will inform you if the selected combination may lead to rounding differences because of different granularities of stock quantities and stock values. Similarly, if the filter criteria lead to a large amount of items either on the first or on the detail screen, the **Schedule Export** feature is strongly recommended to avoid time-outs during online usage. With **Schedule Export,** you can create your analysis offline by a job and receive the result as downloadable Excel file(s).

When creating the job, you need to enter a **Job Name** and then can optionally fill in additional parameters, as shown in Figure 8.4. You can choose whether direct reversals or stock without postings shall be excluded by selecting the **Exclude Reversal Postings** and **Exclude Postings without Stock** options, respectively, or whether the result shall contain stock *and* postings. All filter criteria are taken over automatically. Sorting, grouping, or column selections aren't taken into account when compiling the Excel file(s). Depending on your parameters, you may receive one or many Excel files for download.

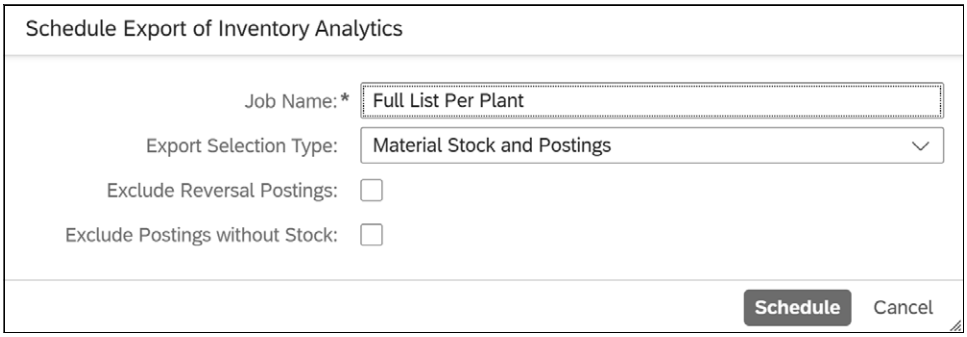


Figure 8.4 Scheduling the Desired Analysis as Background Job

After successful job schedule, the confirmation popup directly links you the job details or the job results, as shown in Figure 8.5.

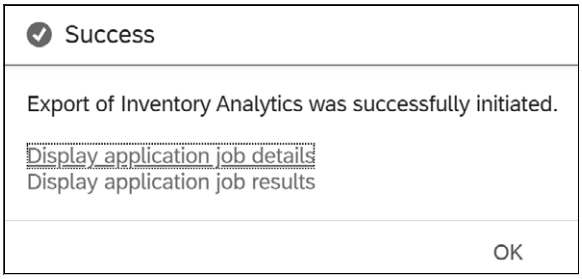


Figure 8.5 Schedule Confirmation

You can monitor and display the job execution using the Display Inventory Analytics Jobs app (Section 8.2.3). Once the job is finished, the results are attached as Excel files to the job results, as shown in Figure 8.6. In case of issues, the job log contains the details.

Note

In order to download the job results, you must have been granted the same authorization you need for online execution.

Because the job result may (very likely) contain many material stock line items linked to many material document/accounting document postings (as we saw previously), the

Excel files contain an artificial key (**Line ID**) to link the records in all files and support further offline analysis, as shown in Figure 8.7.

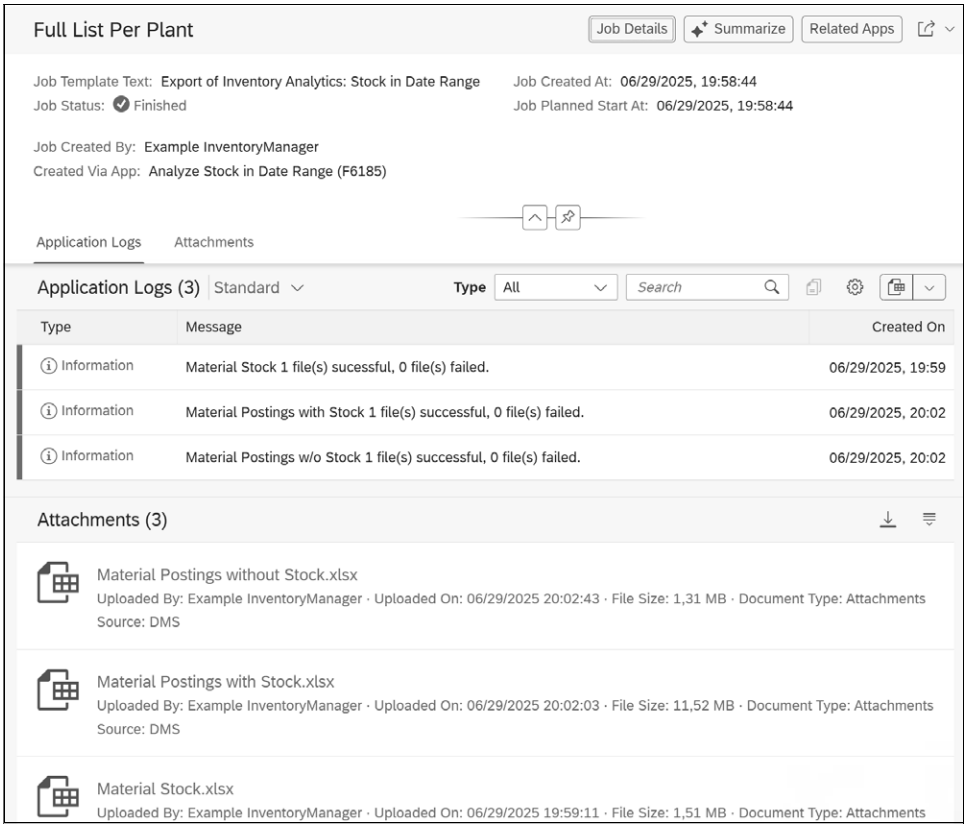
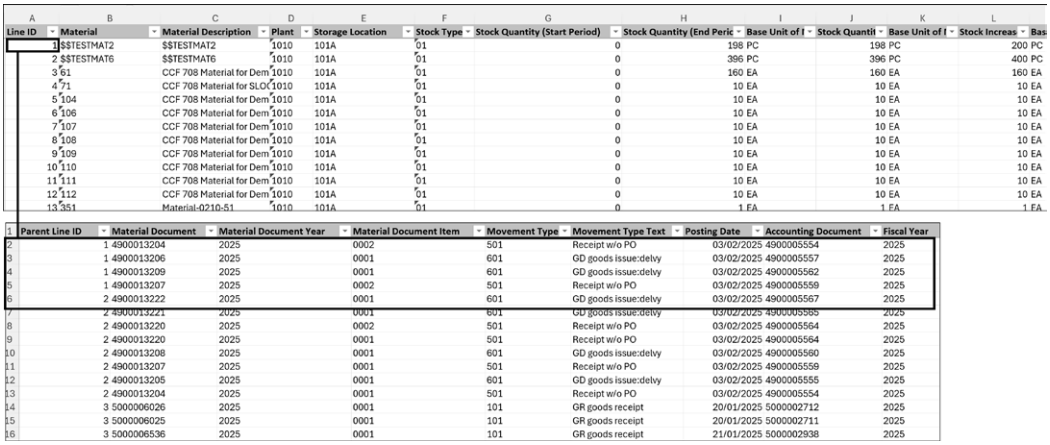


Figure 8.6 Offline Analysis Ready for Download (Job Finished)



Line ID	Material	Material Description	Plant	Storage Location	Stock Type	Stock Quantity (Start Period)	Stock Quantity (End Peric	Base Unit of I	Stock Quantit	Base Unit of I	Stock Increas	Bas
1	$$TESTMAT2	$$TESTMAT2	1010	101A	01	0	198	PC	198	PC	200	PC
2	$$TESTMAT6	$$TESTMAT6	1010	101A	01	0	396	PC	396	PC	400	PC
3	61	CCF 708 Material for Dem	1010	101A	01	0	160	EA	160	EA	160	EA
4	71	CCF 708 Material for SLOC	1010	101A	01	0	10	EA	10	EA	10	EA
5	104	CCF 708 Material for Dem	1010	101A	01	0	10	EA	10	EA	10	EA
6	106	CCF 708 Material for Dem	1010	101A	01	0	10	EA	10	EA	10	EA
7	107	CCF 708 Material for Dem	1010	101A	01	0	10	EA	10	EA	10	EA
8	108	CCF 708 Material for Dem	1010	101A	01	0	10	EA	10	EA	10	EA
9	109	CCF 708 Material for Dem	1010	101A	01	0	10	EA	10	EA	10	EA
10	110	CCF 708 Material for Dem	1010	101A	01	0	10	EA	10	EA	10	EA
11	111	CCF 708 Material for Dem	1010	101A	01	0	10	EA	10	EA	10	EA
12	112	CCF 708 Material for Dem	1010	101A	01	0	10	EA	10	EA	10	EA
13	351	Material-0210-51	1010	101A	01	0	1	EA	1	EA	1	EA

1	Parent Line ID	Material Document	Material Document Year	Material Document Item	Movement Type	Movement Type Text	Posting Date	Accounting Document	Fiscal Year
2		1 4900013204	2025	0002	501	Receipt w/o PO	03/02/2025	4900005554	2025
3		1 4900013206	2025	0001	601	GD goods issue:delvy	03/02/2025	4900005557	2025
4		1 4900013209	2025	0001	601	GD goods issue:delvy	03/02/2025	4900005562	2025
5		1 4900013207	2025	0002	501	Receipt w/o PO	03/02/2025	4900005559	2025
6		2 4900013222	2025	0001	601	GD goods issue:delvy	03/02/2025	4900005567	2025
7		2 4900013221	2025	0001	601	GD goods issue:delvy	03/02/2025	4900005565	2025
8		2 4900013220	2025	0002	501	Receipt w/o PO	03/02/2025	4900005564	2025
9		2 4900013220	2025	0001	501	Receipt w/o PO	03/02/2025	4900005564	2025
10		2 4900013208	2025	0001	601	GD goods issue:delvy	03/02/2025	4900005560	2025
11		2 4900013207	2025	0001	501	Receipt w/o PO	03/02/2025	4900005559	2025
12		2 4900013205	2025	0001	601	GD goods issue:delvy	03/02/2025	4900005555	2025
13		2 4900013204	2025	0001	501	Receipt w/o PO	03/02/2025	4900005554	2025
14		3 5000006026	2025	0001	101	GR goods receipt	20/01/2025	5000002712	2025
15		3 5000006025	2025	0001	101	GR goods receipt	20/01/2025	5000002711	2025
16		3 5000006536	2025	0001	101	GR goods receipt	21/01/2025	5000002938	2025

Figure 8.7 Material Stock (Top) Linked to the Material Postings (Bottom) by Line ID

8.2.3 Schedule Export of Inventory Analytics and Display Inventory Analytics Jobs

You can manage inventory analytics jobs using two key SAP Fiori apps: Schedule Export of Inventory Analytics and Display Inventory Analytics Jobs. You can (regularly) schedule, monitor the execution, download the result, or delete the job entry. Section 8.2.2 already introduced you to the advantages of scheduling analytic jobs instead of online execution. Basically, you can prepare your analytic query in advance and have it ready exactly when you need it, independent of online execution times. The list in Figure 8.8 displays the jobs already scheduled for the export of inventory analytics. You can navigate to the job details with the input parameters, scheduling options, run details, and parameters (not shown). If your job has created the desired analytics result, you can use it within this app and copy it for regular execution. The **Job Template** indicates which analytical app triggered the job.

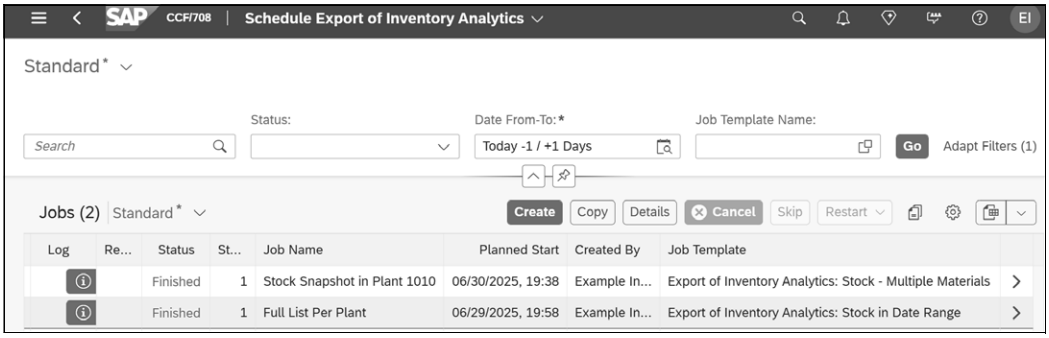


Figure 8.8 List of Analytics Jobs in Scheduling Export of Inventory Analytics

Select an existing job and click the **Copy** button to complete step 1 (**Template Selection**), as shown in Figure 8.9.

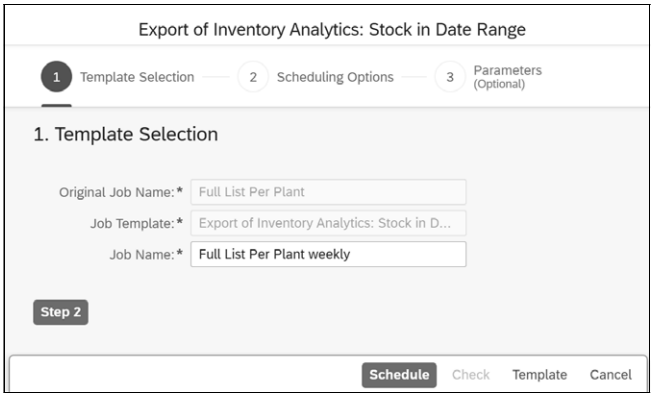


Figure 8.9 Providing a Template Name

Next, as shown in Figure 8.10, you define the job scheduling options and the recurrence pattern.

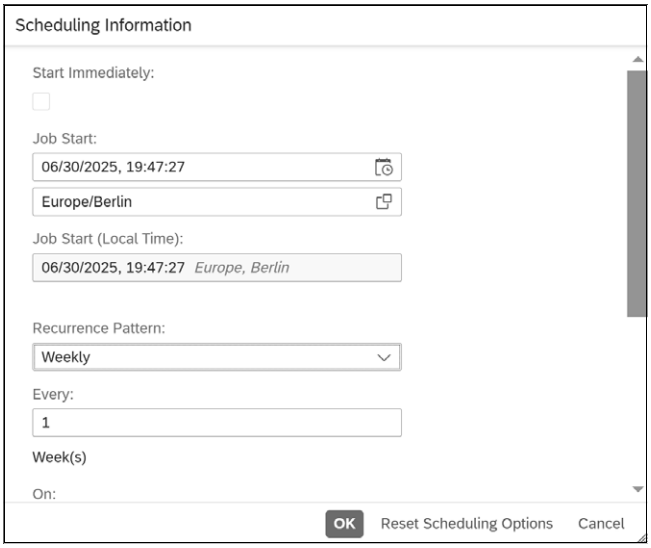


Figure 8.10 Defining the Scheduling Information or the Recurrence Pattern

As shown in Figure 8.11, you can modify the filter parameters or display attributes taken over from the original job. You can enter the same filter parameters as if you were working in online mode (Section 8.2.2). Then, click the **Schedule** button to schedule your newly defined job and monitor its execution.

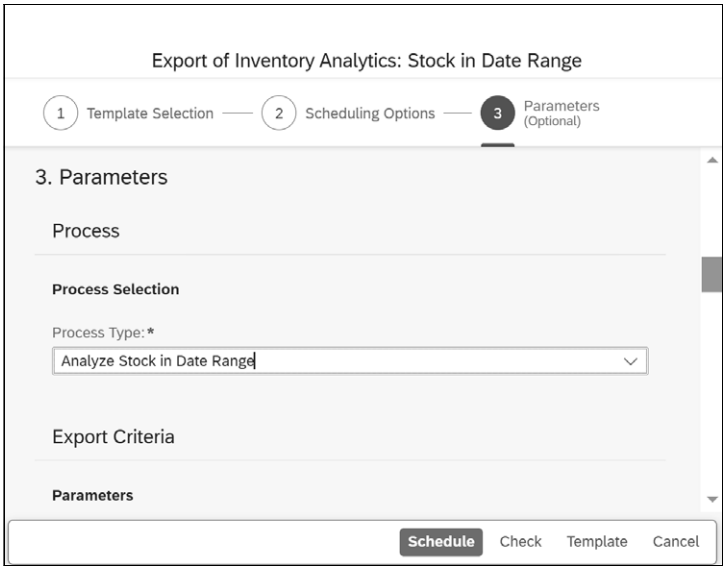


Figure 8.11 Modifying the Original Parameters

Refreshing the list will show the newly created job, (**Full List Per Plant weekly**, in our example), as shown in Figure 8.12, and its execution status.

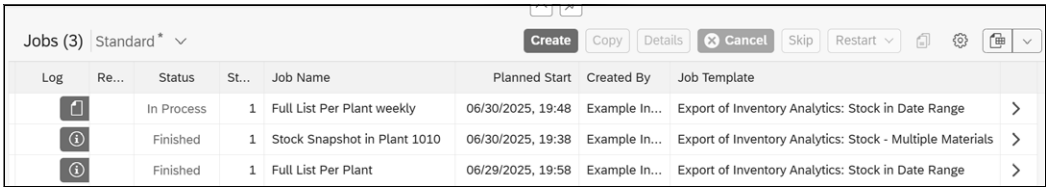


Figure 8.12 The Newly Created Job Is Executed the First Time

Figure 8.13 shows how to monitor the created analytical jobs via the Display Inventory Analytics Jobs app. The **Job Name** entered previously in Figure 8.9 helps you to identify the desired job. The **Job Status** column tells you when the job is finished, and the results are ready for download.

The detail screen (already shown in Figure 8.6) allows downloading the job results and evaluating the job log.

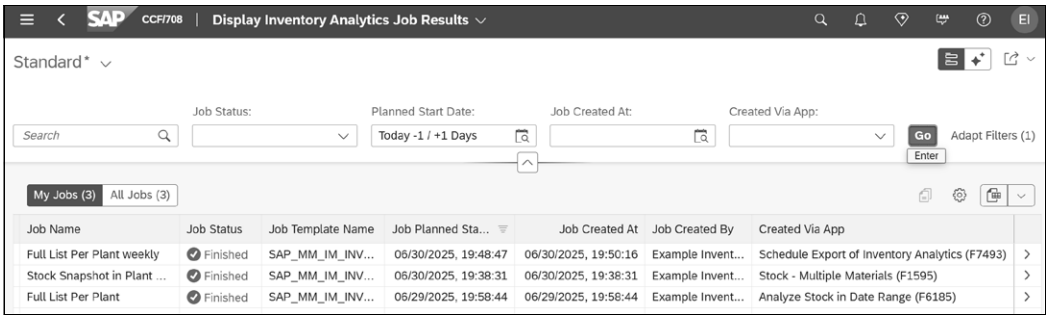


Figure 8.13 Monitoring Analytic Jobs

8.2.4 Goods Movement Analysis

From an analytical perspective, inventory management offers more detailed and complex features for better process analysis in SAP S/4HANA. Regarding goods movements, the Goods Movement Analysis app (F2912) is a comprehensive tool for detailed analysis of goods movement (see Chapter 1, Section 1.4).

The SAP Fiori app is based on two CDS views:

- `C_GoodsMovementQuery`
- `I_GoodsMovementCube`

Note

The application design might be comparable to SAP BW applications out of the past. The difference is that SAP BW reports required an extraction, transformation, and loading (ETL) cycle that sometimes was time consuming so that the final report wasn't based on current business data. The new reporting makes use of the current data in the same system where the transactions (i.e., material movements) take place.

To begin, open the **Goods Movement Analysis** tile out of the SAP Fiori launchpad, click the **Go** button, and open the **Navigation Panel** shown in Figure 8.14. The selection and output concept is based on dimensions and measures to be selected. Click any measures' **+** icon that you'd like to include in your analysis, and selected symbol will appear next to them.

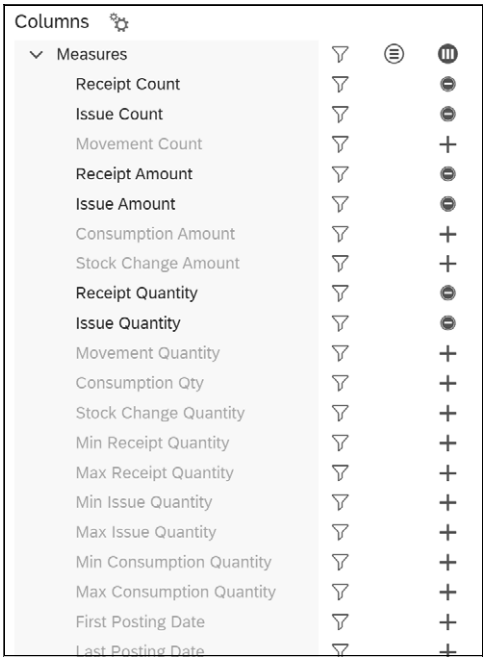


Figure 8.14 Dimensions of Goods Movements

After the selection is done, click the **Go** button again (upper-right corner, not shown), and the result set is displayed in a table view, as shown in Figure 8.15, or in graphical view, as shown in Figure 8.16.

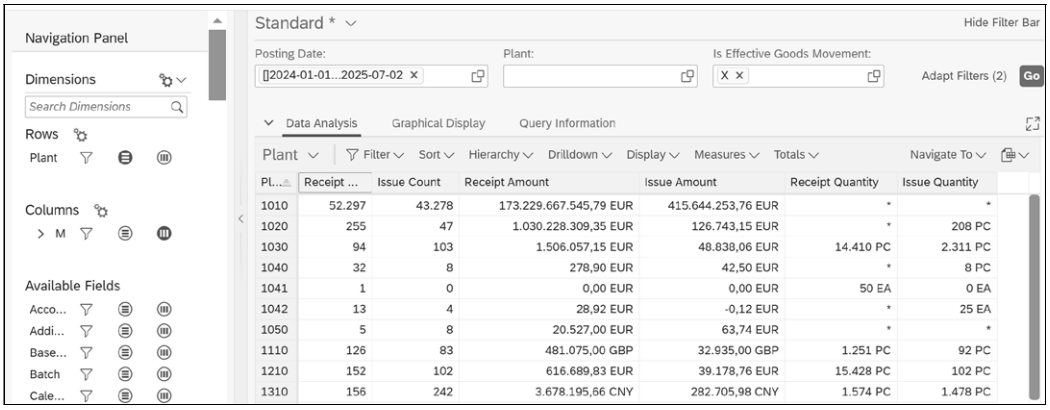


Figure 8.15 Goods Movement Analysis Result in Tabular Display

Note

The **Is Effective Goods Movement** option allows you to distinguish between exclude reversed/reversal posting pairs from the selection.

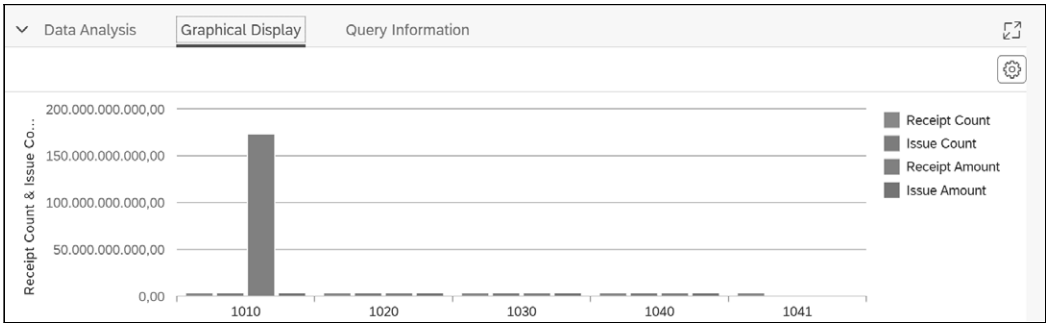


Figure 8.16 Goods Movement Analysis Result in Graphical Display

Based on the given result, a data point in the result set can be selected, and, via the **Navigate To** feature (upper-left corner, see Figure 8.17), further navigation into all SAP Fiori apps that share the same semantic object can be used for more detailed analysis. The list of available navigation targets depends on your authorizations.

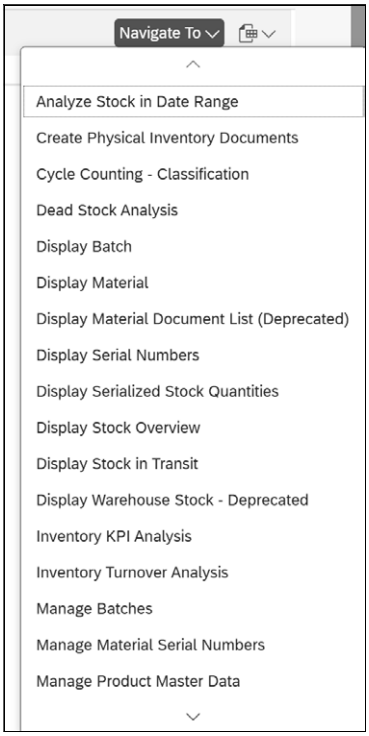


Figure 8.17 Navigation Targets

As in SAP BW applications, a drilldown of the results is available to dig down into finer granular details regarding a dimension of interest. For example, you can drill down into the dimension of material document after initially selecting the **Plant** dimension as the entry point (refer to Figure 8.15).

Select **Drilldown • Add Drilldown** in the table toolbar. Next, select the new dimension you want to see in the result set from the **Available Fields** list. In our example, as shown in Figure 8.18, **Material Document**, **Material Document Item** and **Material Document Year** are selected.

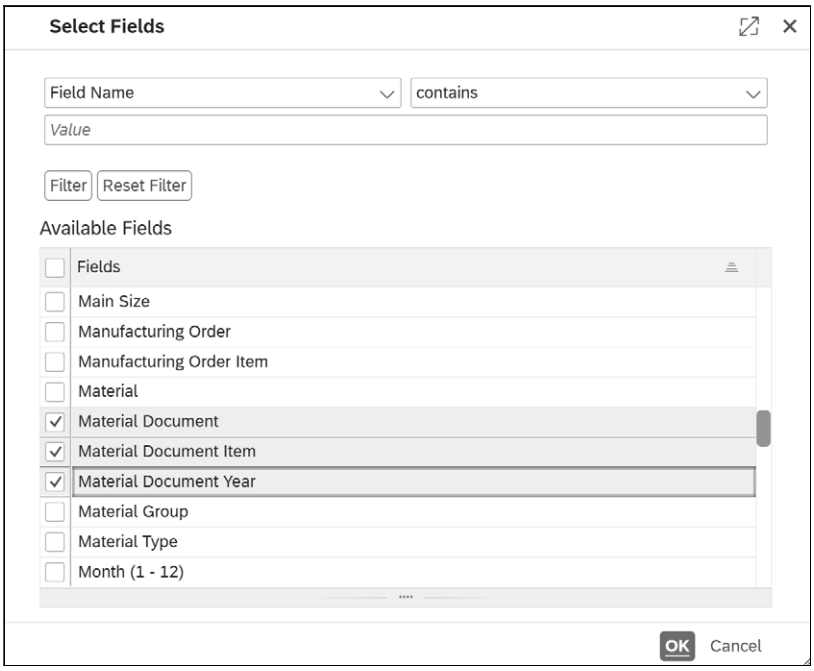


Figure 8.18 Selection of Material Document Key Fields for Drilldown

Click the **OK** button to access the result set. Now the result set gets drilled down into the next level of the selected dimension, as shown in Figure 8.19.

Further Resources

A wide set of measures and dimensions can be taken into account in the Goods Movement Analysis app, which couldn't all be listed in this book. For more details, check the SAP online help (*http://help.sap.com*) to get familiar with all the available measures and dimensions.

Note

The Goods Movement Analysis app is only available on desktop devices.

Pl...	Material Do...	Materi...	Materi...	Receipt Count	Issue Count	Receipt Amount	Issue Amount
1010	4900007260	1	2024	1	0	5.001.000,00 EUR	0,00 EUR
	4900007261	1	2024	1	0	166.726,88 EUR	0,00 EUR
	4900007262	1	2024	0	1	0,00 EUR	166,75 EUR
	4900007263	1	2024	1	0	166.804,99 EUR	0,00 EUR
	4900007270	1	2024	1	0	166.700,00 EUR	0,00 EUR
	4900007271	1	2024	0	1	0,00 EUR	166,80 EUR
	4900007280	1	2024	0	1	0,00 EUR	166,78 EUR
	4900007290	3	2024	1	0	13.500,00 EUR	0,00 EUR
	4900007295	1	2024	0	1	0,00 EUR	3.413,33 EUR
	4900007310	1	2024	1	0	341.333.500,00 EUR	0,00 EUR
	4900007312	1	2025	1	0	68.266,70 EUR	0,00 EUR
	4900007313	1	2025	0	1	0,00 EUR	682,67 EUR
		2	2025	0	1	0,00 EUR	682,67 EUR
	4900007314	1	2025	0	1	0,00 EUR	0,00 EUR
		2	2025	1	0	0,00 EUR	0,00 EUR
		1	2025	1	0	159.300,00 EUR	0,00 EUR
		2	2025	1	0	159.300,00 EUR	0,00 EUR
		3	2025	1	0	159.300,00 EUR	0,00 EUR

Figure 8.19 Drilldown Result Set by the Material Document Key Fields as Dimension

8.2.5 Physical Inventory Document Analysis

Similar to the Goods Movement Analysis app (F2912), the analysis of physical inventory can be performed via the Physical Inventory Analysis app (F2913).

After starting the SAP Fiori app, two required parameters must be filled (or can be prefilled)—**Fiscal Year** and **Is Difference Posted**—as shown in Figure 8.20. The **Is Difference Posted** parameter breaks down the result set already by only considering physical inventory documents that led to stock corrections after counting.

Figure 8.20 Entry Filter Values of Physical Inventory Analysis

The result set shown in Figure 8.21 can be displayed in the same variants as described in the previous section for the Goods Movement Analysis app. After you click the **Go** button (upper-right corner, not shown), the result set is displayed.

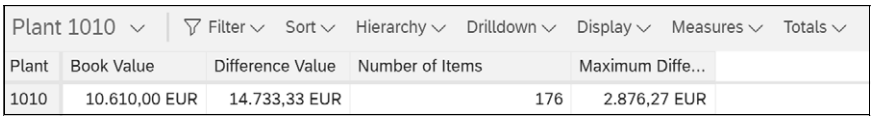


Figure 8.21 Result Table of Physical Inventory Analysis

In the Physical Inventory Analysis app, the **Physical Inventory Document** dimension is drilled down into in the result set by following the steps described in the previous section, creating the result set shown in Figure 8.22. A rather detailed analysis is possible,

and analytical questions such as "Which items had the most book value impact in the last year?" can be answered.

Plant 1010 * | Filter | Sort | Hierarchy | Drilldown | Display | Measures | Totals

Plant	Physical Inv...	Book Value	Difference Value	Number of Items	Maximum Diffe...
	100000000	40,00 EUR	-20,00 EUR	1	20,00 EUR
	100000020	0,00 EUR	100,00 EUR	1	100,00 EUR
	100000021	0,00 EUR	100,00 EUR	1	100,00 EUR
	100000022	0,00 EUR	100,00 EUR	1	100,00 EUR
	100000023	0,00 EUR	100,00 EUR	1	100,00 EUR

Figure 8.22 Drill Down into Physical Inventory Analysis Dimension

Further Resources

The whole list of dimensions and measures that can be taken into account can be accessed via the SAP online help (*http://help.sap.com*).

8.3 KPI Monitoring and Analysis

Besides gaining knowledge of the stock level, which we described in Chapter 7, it's also important to monitor your most important KPIs to steer your business in the best way. In this section, we'll introduce the tools available for this purpose in inventory management in SAP S/4HANA.

Note

There is one related SAP Fiori app that we won't dive into in this section. The Stock Champion app (F2133) is available as part of business role SAP_BR_INVENTORY_ANALYST, which provides monitoring of expiration dates and shortage information about batches by using graphical illustrations. This SAP Fiori app was delivered in SAP S/4HANA Cloud only and isn't available in on-premise SAP S/4HANA.

8.3.1 Overview Pages

To reflect the role-centric approach of the SAP Fiori launchpad, the SAP Fiori app pattern of overview pages was used to combine analytical applications in a kind of a dashboard to provide a single point of entry for end users (see Chapter 1, Section 1.4).

In general, inventory management provides three overview pages:

- Overview Inventory Management (F2769)
- Overview Inventory Processing (F2416)
- Inventory Analysis Overview (F3366)

We'll discuss these pages in the following sections.

Overview Inventory Management

The Overview Inventory Management (F2769) overview page contains the following cards:

- **Stock Value by Stock Type**
- **Warehouse Throughput History**
- **Monitor Purchase Order Items**
- **Overdue Materials – GR Blocked Stock**
- **Recent Material Documents**
- **Stock Value by Special Stock Type**
- **Overdue Materials – Stock in Transit**

The **Stock Value by Special Stock Type** card is shown in Figure 8.23 as an example. The card includes navigation capabilities by clicking the header or pie chart. The navigation target is the Stock – Multiple Materials app. The navigation includes the selected parameters of the card. In our example, by clicking the **623K** part of the pie chart, the Stock – Multiple Materials app makes it so that only the special stock **Orders on Hand** is taken into account for selection.

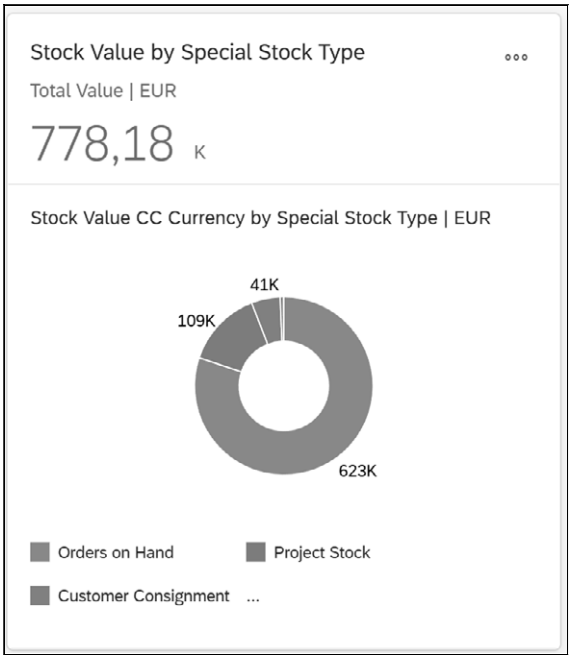


Figure 8.23 Card Example Taken from Overview Inventory Management

It's also important to mention that the underlying SAP Fiori apps often provide implicitly displayed application variants. For instance, if the Stock – Multiple Materials app is navigated to from the **Stock Value by Special Stock Type** card, the filter and columns

that you select are automatically loaded with the Stock – Multiple Materials app so that the relevant information is displayed directly.

You can check the available standard variants directly in the related Stock – Multiple Materials app by clicking the down arrow icon to open the list of available variants, as shown in Figure 8.24.

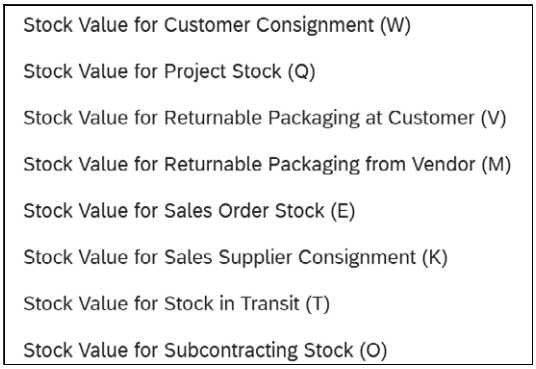


Figure 8.24 Predefined Variants Also Used as Navigation Parameters

The cards that should be shown after the overview page is started can be influenced via the **Manage Cards** settings, which you access by opening the user settings in the SAP Fiori launchpad, as shown in Figure 8.25.

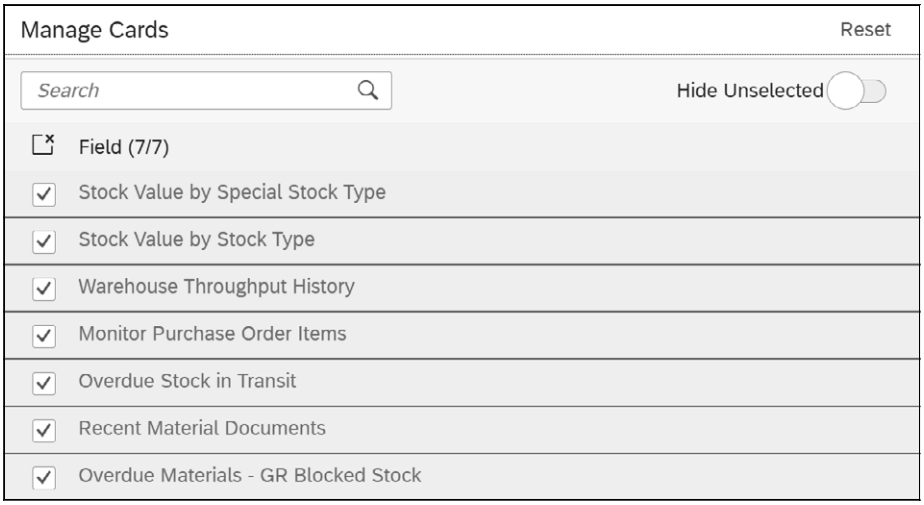


Figure 8.25 Manage Cards

The Overview Inventory Management overview page has a mandatory **Plant** filter that needs to be filled out before a data selection can take place due to the value-based evaluation provided in the **Stock Value by Stock Type** and **Stock Value by Special Stock Type**

cards. These cards summarize the stock values accordingly, but this can only be performed for stock values in the same currency. Based on the relationship that each plant belongs to one company code (see Chapter 3), and each company code has one company code currency, the selection by one plant leads to one currency of the stock values in the same plant.

Overview Inventory Processing

The Overview Inventory Processing (F2416) overview page is part of the warehouse clerk business role and offers the following cards:

- **Recent Inventory Counts**
- **Monitor Purchase Order Items**
- **Warehouse Throughput History**
- **Recent Material Documents**
- **Overdue Materials – Stock in Transit**
- **Overdue Materials – GR Blocked Stock**
- **Outbound Delivery List**
- **Inbound Delivery List**

In comparison to the Overview Inventory Management overview page, this overview page doesn't include stock values and is more focused on the daily warehouse business and logistical aspects that are relevant for a warehouse clerk.

Inventory Analysis Overview

A more analytical focus is given in the third overview page: Inventory Analysis Overview (F3366).

This overview page is especially designed for analytical purposes and provides analytical cards in a KPI-based manner. As of the time of writing (summer 2025), the overview page contains four cards:

- **Stock Value Increase despite Consumption**
- **More than 100 Days without Consumption**
- **Monitor Batches by Longest Time in Storage**
- **Monitor Batches by Shortest Expiration Date**

Figure 8.26 shows an example of the **Stock Value Increase despite Consumption** analytical card, and Figure 8.27 displays an example of the **More than 100 Days without Consumption** analytical card.

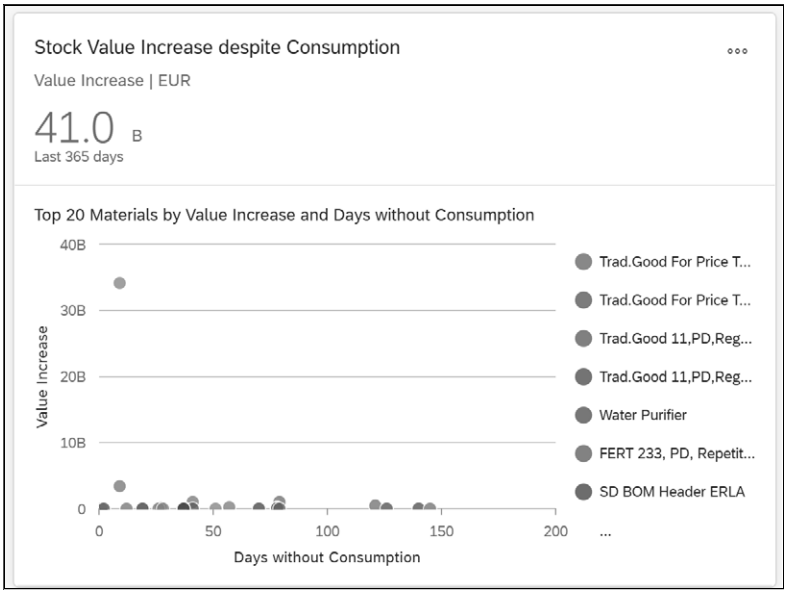


Figure 8.26 Stock Value Increase Despite Consumption

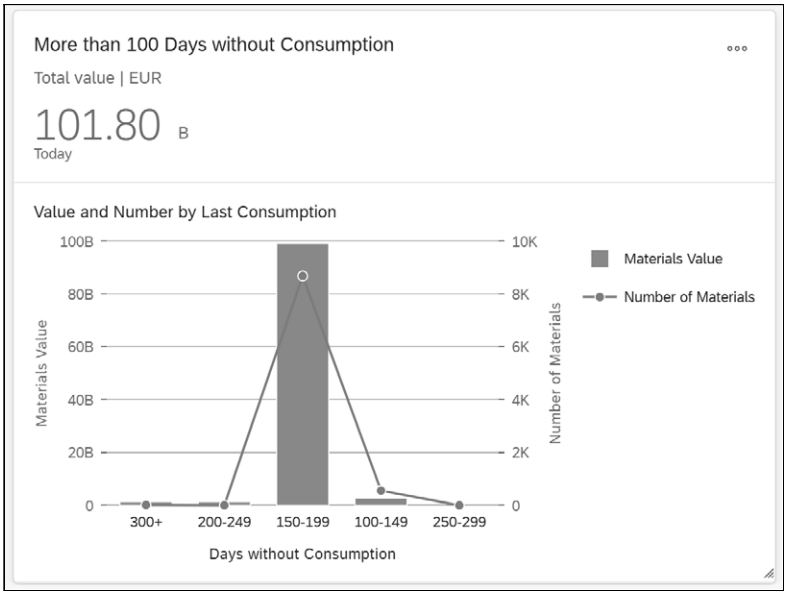


Figure 8.27 Chart with More Than 100 Days Without Consumption

8.3.2 Inventory Turnover Analysis

The Inventory Turnover Analysis app (F1956) allows you to analyze the inventory turnover in relationship to average inventory value. In general, the inventory turnover is determined by taking into account the goods issues in relationship to the average stock

in a given time frame. If a material movement is a goods issue, the classification is taken from the related setting of the movement type (table T156, field KZVBU → consumption posting; see also Chapter 3, Section 3.1.3). The average inventory value is calculated based on the current price.

Like most of the SAP Fiori apps based on smart templates, the Inventory Turnover Analysis app begins with a filter bar that allows you to specify the result set regarding the given filter criteria, as shown in Figure 8.28.

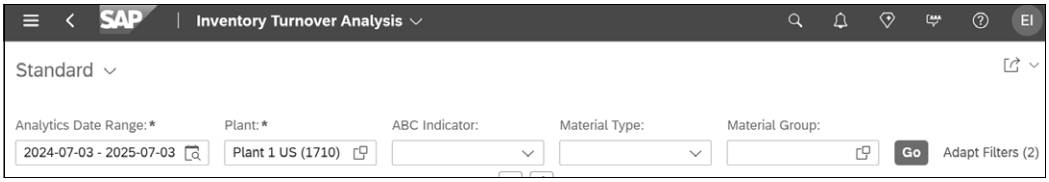


Figure 8.28 Filter Bar of the Inventory Turnover Analysis App

The following parameters can be used for filtering:

- **Mandatory filter values**
  - **Analytics Date Range**
  - **Plant**
- **Optional filter values**
  - **ABC Indicator**
  - **Material Type**
  - **Material Group**

The only field that requires a bit of explanation is the **ABC Indicator** field, which is taken from the material master record of the material.

> **Note**
>
> This app doesn't consider special stocks like Transaction MC44 and intracompany-related goods issues do.

The result is displayed in a scatter chart or bubble chart after you click the **Go** button. The scatter chart is shown in Figure 8.29 and the legend is shown in Figure 8.30.

The same result set can also be displayed as a bubble chart (shown in Figure 8.31 and followed by the legend in Figure 8.32) by using the toggle button (upper-right corner of the chart, not shown).

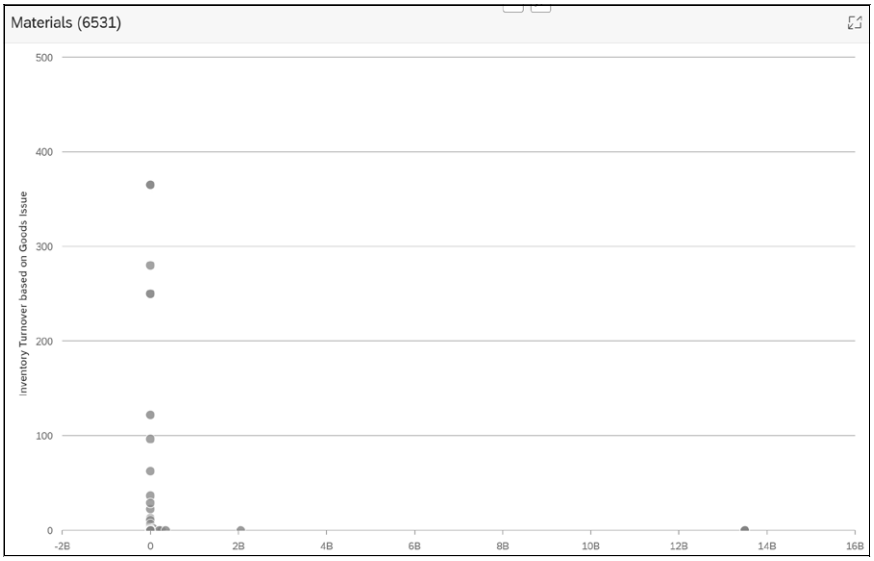


Figure 8.29 Scatter Chart of the Result Set

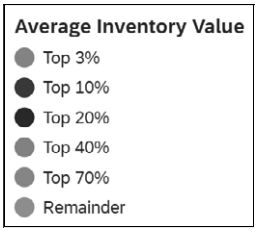


Figure 8.30 Legend for the Scatter Chart

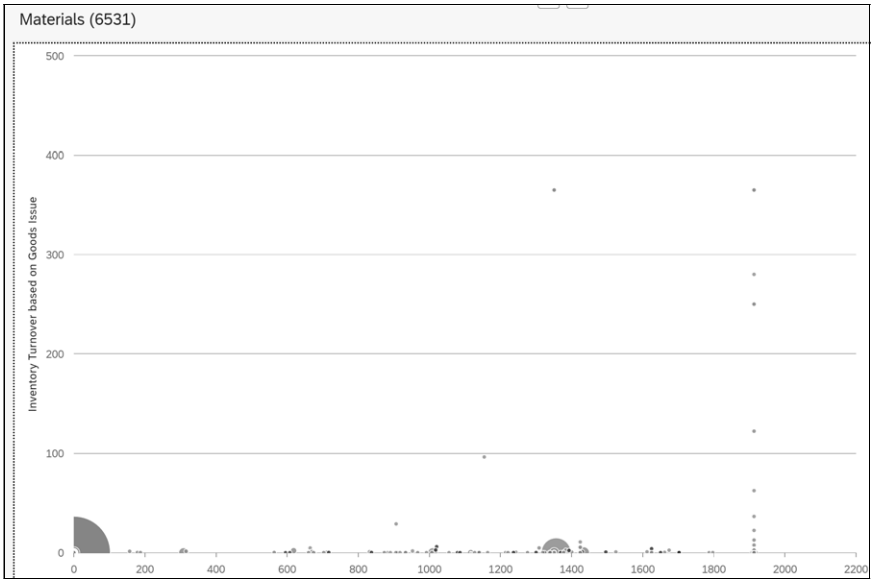


Figure 8.31 Result Set as a Bubble Chart

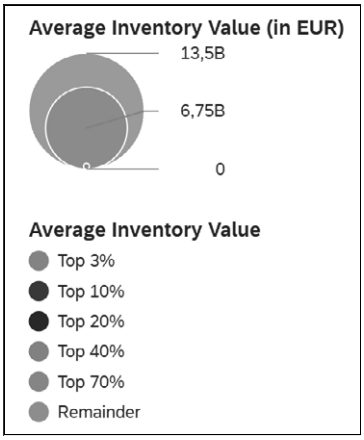


Figure 8.32 Legend of a Bubble Chart

You can select one data point in the bubble chart in the SAP Fiori app to drill down and gain more insight into selected data, as shown in Figure 8.33.

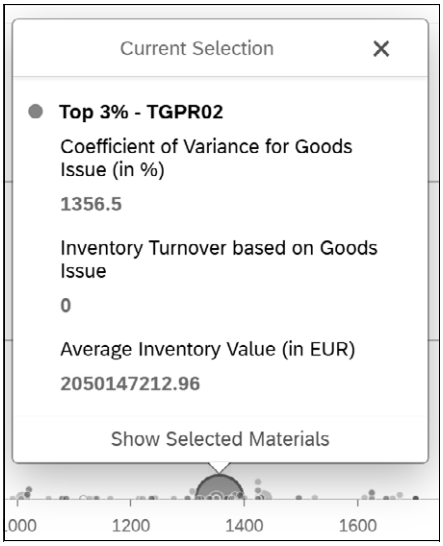


Figure 8.33 Selection in a Bubble Chart

The outline graphical result can be analyzed so that if the inventory turnover is high, the material isn't kept very long in storage, meaning the time between goods receipt and goods issue is rather short.

On the one hand, the bubble chart makes use of a coefficient of variance for goods issues (see the y-axis of the bubble chart). The coefficient is calculated based on standard deviation of goods issues quantity per day divided by the average goods issue quantity in the selected time frame multiplied by 100. A low coefficient reflects a steady goods issue.

On the other hand, the scatter charts make use of an average inventory value (see the y-axis of the scatter chart). The average inventory value is calculated by multiplying the average stock quantity of the selected time frame with the current price of the material. In addition, the app automatically groups the result set into top categories such as **Top 10%** (see Figure 8.30).

By selecting a data point in the chart, the app offers a detail page for the selected materials that outlines more detailed inventory turnover data.

8.3.3 Inventory (Multiple) KPI Analysis

The Inventory KPI Analysis app (F3749) offers a multiple KPI analysis tool that enables you to compare different KPIs for different time series. The following KPIs are supported:

- **Stock Changes**
- **Consumption Changes**
- **Inventory Aging Changes**
- **Inventory Turnover Changes**
- **Range of Coverage Changes**

When you open the app, you're met with three mandatory filter values that must be entered up front during data selection because they are essential for the result set determination and processing, as shown in Figure 8.34:

- **Display Currency**
- **Inventory Consumption Group**
- **Comparison of**
- **Reference Date**

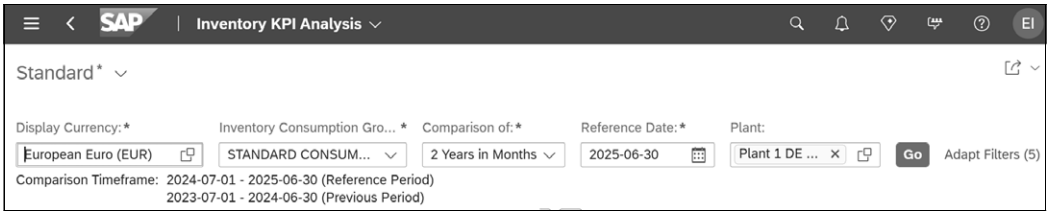


Figure 8.34 Filter Bar of the Inventory KPI Analysis App

Display Currency is mandatory due to normalization of the inventory values to one currency. Different plants in different company codes could have different currencies, which would make summing up the stock values impossible. Therefore, the inventory values are all converted to the same display currency.

Inventory Consumption Group allows you to define which material movements are to be considered as stock consumption for your particular analysis. Its configuration is explained in Chapter 3, Section 3.1.3.

> **Note**
> In a central distribution center, all material movements related to stock transports may be considered as consumption, whereas in a local warehouse all material movements related to goods issue process may be considered as consumption.

Both time frames to compare are displayed below the filter bar calculated on the input of the **Reference Date** and the **Comparison of** attribute. The reference period and previous period will be visualized by different colors in the graphical display (see Figure 8.35).

Besides the mandatory filters, many additional filters related to stock identifiers (e.g., material or stock type) and some others (e.g., material type or material group) are available for filtering.

After the data set is received, a table view outlines the result either in a stacked bar chart or as a table. The view can be toggled between the chart and table by clicking the toggle button (upper-right corner of chart, not shown). We'll go with the bar chart, as shown in Figure 8.35. If you'd like to export your analysis at any point in time, simply switch to the tabular display and choose the generic **Export to Excel** feature of SAP Fiori.

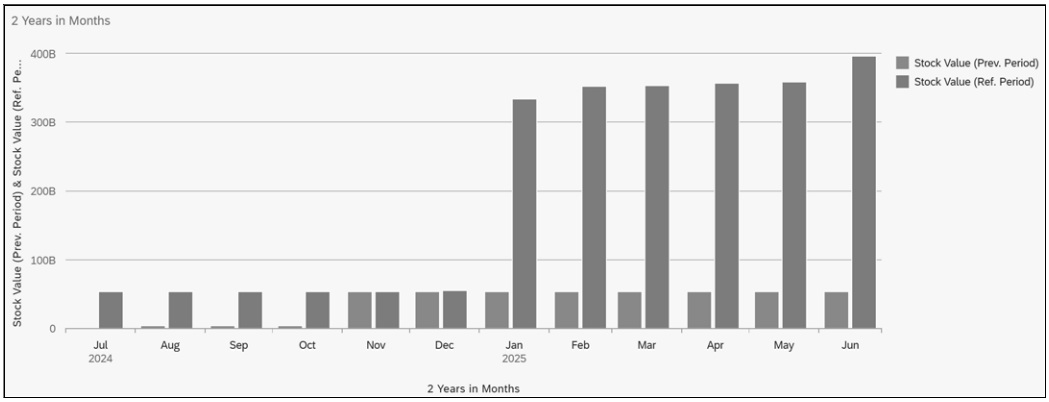


Figure 8.35 Column Bar Chart of the Inventory KPI Analysis App with KPI Stock Value as Column Chart

To configure the layout (chart type, dimensions, measures, and drilldown level) you can use the following options (see Figure 8.36):

- Dimensions for drilldown (left-hand side)
- Going to **View Settings**, and selecting **Measures** under the **Chart** tab (middle)
- Chart type configuration (right-hand side)

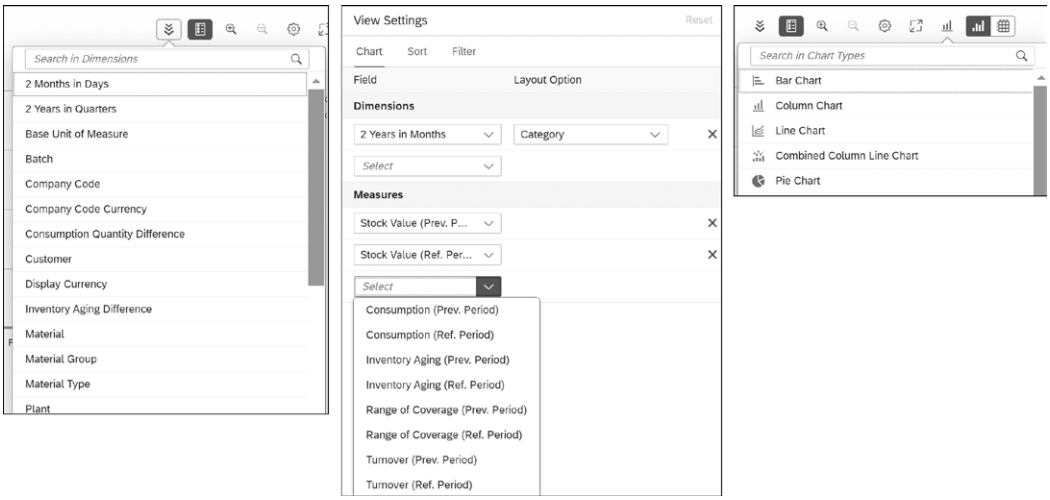


Figure 8.36 Chart Configuration Options

The configuration contains a powerful way to adapt the outlined KPIs and groups (refer to Figure 8.35) and provides the option to outline up to four measures as different axes. In addition, you switch the chart type and display more than one KPI in the chart.

To narrow down the filtered result set in respect to the five different KPIs supported by this app, a KPI filter is available, as shown in Figure 8.37. For a respective KPI, all data pairs (previous period/reference period) are distributed according to their relative change in % along the x-axis in 11 groups (25 % steps, ranging from <-100% to >+100%). You can optimize and influence the selection in the main chart by using the blue bars on the left- and right-hand side of the KPI graph shown in Figure 8.37, which uses the example of the **Stock Changes** and **Consumption Changes** KPIs.

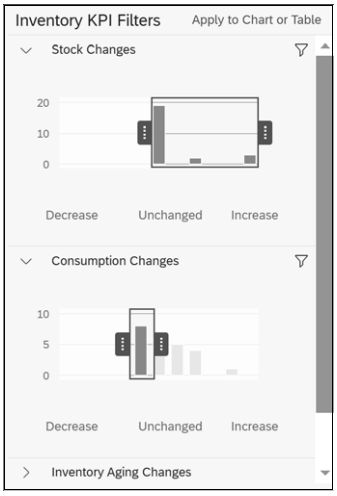


Figure 8.37 KPI Filter

The example in Figure 8.37 eventually selects materials with a small decrease to large increase in stock value, and a significant decrease in consumption comparing the previous with the reference period.

The KPI filter offers an easy graphical way of showing figures of the given KPIs statistically by representing outliers in a frequency distribution chart. The selection can be changed by dragging and dropping the related blue frame (see Figure 8.37). Afterwards, this adjustment narrows down the result set of the main chart by clicking **Apply to Chart or Table**.

You can further analyze the given result by drilling down in the chart and selecting one or multiple data points in the chart (refer to Figure 8.36).

For example, select your chosen dimension (**Company Code** in our example), which results in the chart shown in Figure 8.38.

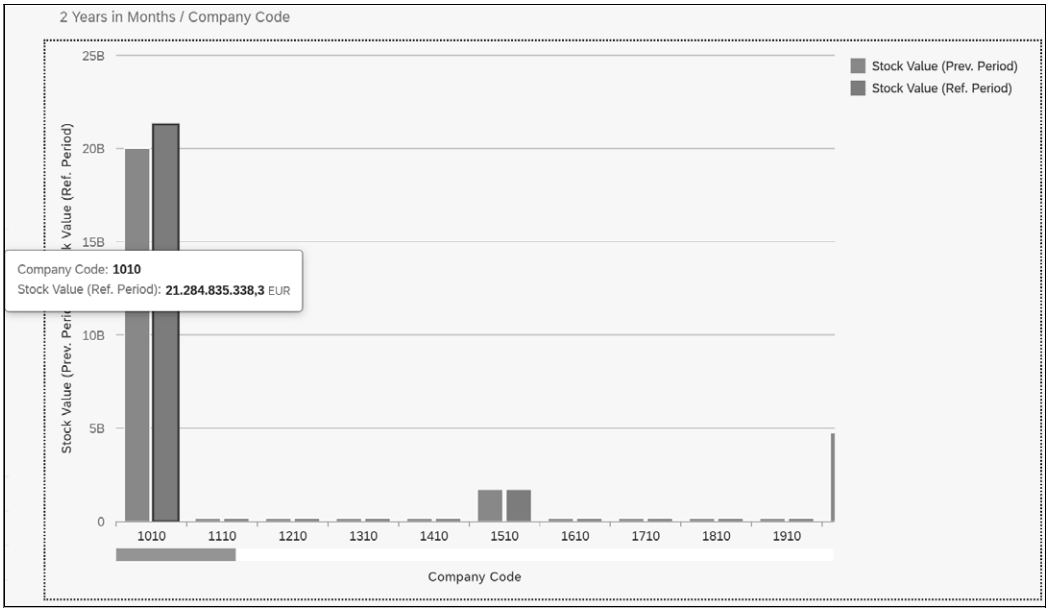


Figure 8.38 Drilling Down by Company Code (Details per Tooltip)

Now you can see that which company codes owns the majority of the stock value in the reference period.

The second step is to drill down by material to gain insight to determine which materials own this stock value, as shown in Figure 8.39. To do so, perform the same steps as for **Company Code,** but this time, choose **Material** from the dropdown list.

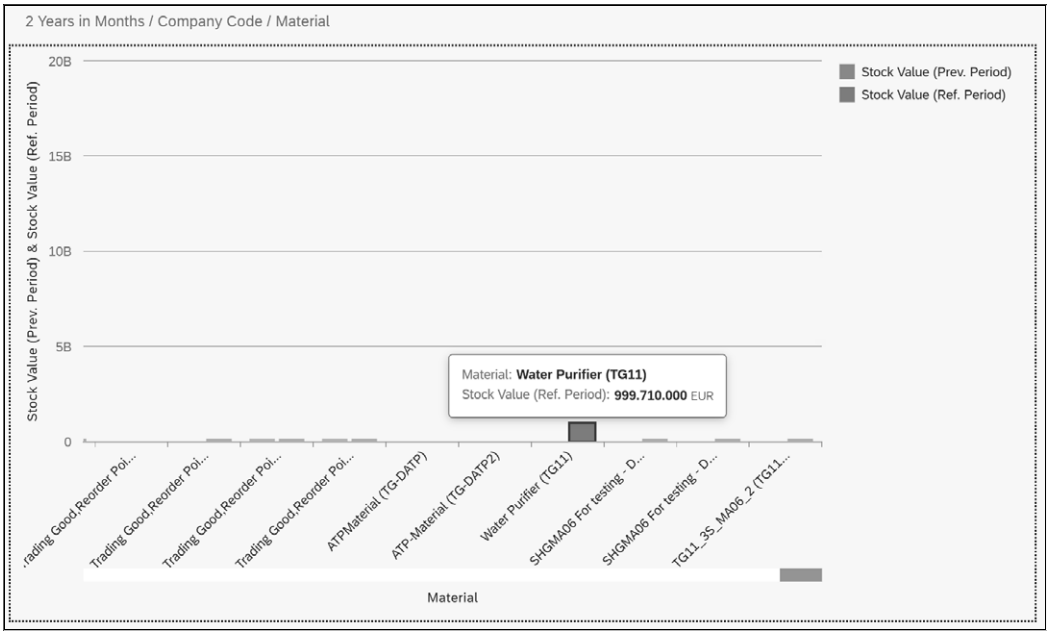


Figure 8.39 Drill Down per Material (Details in Tooltip)

Based on the second drilldown, you hit the ground and can figure out that only a few materials are responsible for the high stock values in the given company code, allowing inventory managers to now act accordingly. Of course, you can use the other KPIs if they are more convenient for your use case either as filter criteria in the frequency distribution chart (refer to Figure 8.37) or as measure of the chart (refer to Figure 8.36).

Note

If the result set after the drilldown contains too many entries that flood the chart with different materials, for instance, use the magnifying glass icons (refer to Figure 8.26) to zoom in or out to get a more convenient graphical display.

8.3.4 Material Valuation

We've talked a lot about inventory management analytics in SAP S/4HANA with a strong focus on stock figures. We also mentioned that the stock figures are just half the truth and that the stock itself might not be enough to steer a company's business processes. In the end, the financial impact is the important factor for steering business processes (even logistic ones). Therefore, inventory management analytical features also contain price and inventory value information. The price considered is always the current price. The inventory values are calculated by multiplying the stock figures (current

or historical) with the current price, which means the inventory values are derived from the current price.

The price itself isn't directly related to inventory management. Its home ground is in the area of material valuation in the material ledger.

Material valuation also provides some applications for analytical features related to price and inventory value. These apps are part of the SAP_BR_INVENTORY_ACCOUNTANT business role; the following are two examples of such apps:

- **Material Inventory Values-Balance Summary (F1422)**
  Provides the capability of analyzing stock quantity information together with inventory values for a certain reporting date.
- **Material Inventory Values-Line Items (F1423A)**
  Provides the capability of drilling down stock and inventory value information to a single line item.
- **Display Material Value Chain – Actual Costs (F4905)**
  Provides the capability of tracking the progression of material quantities and values along the product value chain (procurement, production, transfers, and sales).

Further Resources

For more detailed information, go to the SAP Fiori apps reference library and search for one of the preceding apps. In addition, look at the rest of the apps that are part of the SAP_BR_INVENTORY_ACCOUNTANT business role. To do so, open the SAP Fiori apps reference library, and select **All Apps**. Enter your SAP Fiori ID (e.g., "F1422A"), and check the **Other Apps in Cost Accountant – Inventory** section.

8.4 Process Analysis Tools

In Chapter 6, we introduced the core inventory management features that cover the standard inventory management processes. In addition to these standard features, some more process-specific SAP Fiori apps are available in SAP S/4HANA. With the tools that we'll discuss in this section, you can analyze and optimize your process performance. Therefore, these tools are an essential part of the inventory management cycle (see Chapter 2, Section 2.4).

8.4.1 Dead Stock Analysis

During usual warehouse and stock keeping processes, sometimes goods are no longer moved or consumed. In addition, an increase of stock values despite consumption might occur for many reasons (e.g., less demand, decreasing usage in bill of materials

[BOM], etc.). However, the heaviest impact comes from no stock usage in a certain time frame, which would mean that these goods are *dead stock*, which is tied up capital.

In combination with the inventory value, dead stock becomes a relevant business insight if there are high values or increasing values in a certain time frame.

The smart template pattern ALP (see Chapter 1, Section 1.4) was used for the Dead Stock Analysis app (F2899) to gain insight into such a trend of dead stock. Because a sum of stock values is required, and a certain time frame for analysis has to be selected, the app contains a standard filter bar with three mandatory filter values to fill out, as shown in Figure 8.40:

- **Analytics Start Date**
- **Analytics End Date**
- **Display Currency**

Figure 8.40 Filter of Dead Stock Analysis with Semantic Date Control

The result set becomes available after you click the **Go** button, and a graphical filter is displayed that you can use to narrow down the results, as shown in Figure 8.41.

To configure the graphical filter, click the gear icon. Up to four different axes and two categories/series can be selected to adapt the graphical filter according to your needs. Below the graphical result filter, you can find the results table with one line in the result set per stock identifier.

Figure 8.41 Graphical Filter and Table with Items

8.4.2 Slow or Non-Moving Materials

Besides dead stock, slow or nonmoving materials might be of interest for the inventory manager or analyst. With the Slow or Non-Moving Materials app (F2137), you can search for these kinds of stock issues and get an overview of the affected materials. As in the Dead Stock Analysis app, this app is based on the smart template pattern ALP (see Chapter 1, Section 1.4) and includes the elements filter, graphical filter, and result table. You'll start with the filter bar, as shown in Figure 8.42.

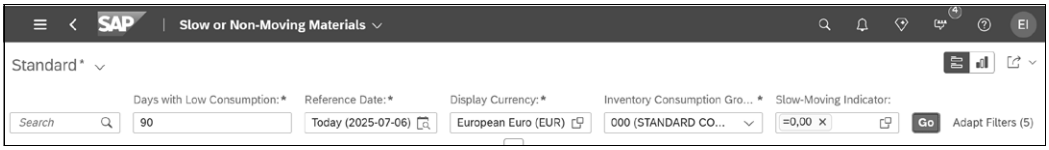


Figure 8.42 Filter Bar of the Slow or Non-Moving Materials App (Semantic Date Control)

This SAP Fiori app is special because it contains more powerful filter options related to Customizing, as follows:

- **Days with Low Consumption**
  Starting with the mandatory filter **Days with Low Consumption**, you can specify the time frame in which you would expect and analyze low consumption of this inventory.
- **Reference Date**
  The endpoint of the time frame to be analyzed is the second mandatory filter, **Reference Date**. This means if you enter the reference date with 7/6/2025 and 90 days for **Days with Low Consumption**, the system will analyze the past 90 days beginning with July 6, 2025.
- **Display Currency**
  The **Display Currency** acts the same as in the rest of the SAP Fiori apps and serves as a common factor for calculating the stock value across different plants.
- **Inventory Consumption Group**
  Consumption postings can be threaded in a very differentiating way in this SAP Fiori app via this filter value. Inventory consumption groups are defined in a separate IMG activity as described in Chapter 3, Section 3.1.3, and not only by the setting per movement type. You can also define different groups of consumption postings so that analysis can be performed for a certain group of consumption-related movements as mentioned in Section 8.3.3.
- **Slow-Moving Indicator**
  The last mandatory filter is the **Slow-Moving Indicator** supplementary option. This indicator is based on the formula consumption of the time frame divided by stock quantity in relation to the reference date multiplied by the days of the reporting time frame. The result reflects the consumption-to-stock ratio. Different reporting periods can be compared using this filter.

Note

By choosing a convenient range of the slow-moving indicator, you can identify nonmovers, slow movers, medium movers, or fast movers.

The list of materials shown in Figure 8.43 is displayed after you click the **Go** button and drill down to plant **1010** by selecting the respective column in the column chart.

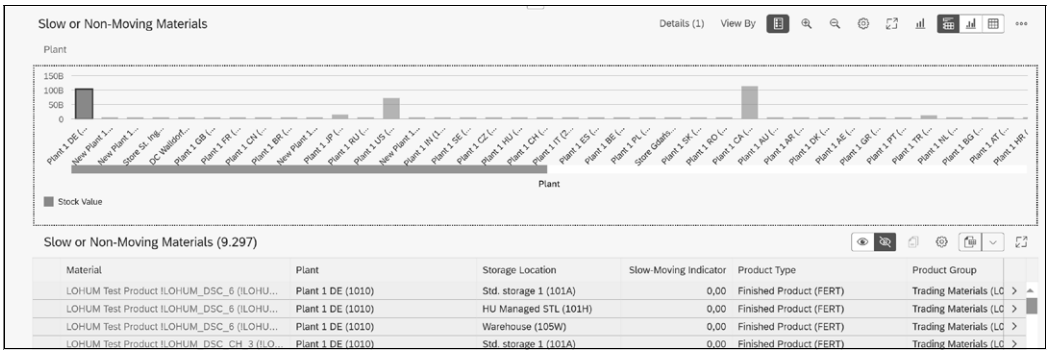


Figure 8.43 Graphical and Table Data in the Slow or Non-Moving Materials App after Drilldown

The Slow or Non-Moving Materials app also offers a detail screen for each result entry, which you can access by clicking the right-facing arrow icon on the right-hand side. The KPIs shown on the detail screen support you in decision making and eventually help you to take the best measure for each selected entry in the main list.

The details screen contains a header and multiple charts with KPIs. Basic data around the slow or nonmoving item is given in the header section as outlined in Figure 8.44 by displaying the most important information, such as **Slow Moving Indicator** and **Stock Value**.

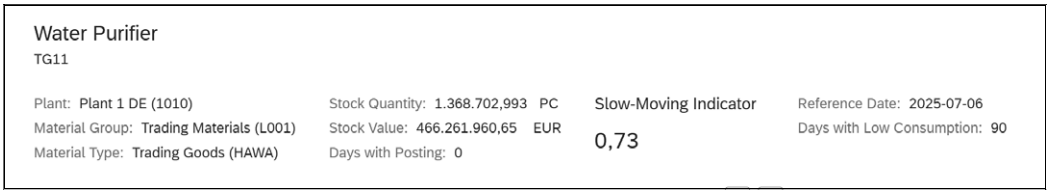


Figure 8.44 Detail Screen Header Information

Slow-moving indicator data is displayed as a time series-based bar chart in the chart section of the detail page, as shown in Figure 8.45. To access the detail page, you have to click a result item. The given historical data of the **Slow-Moving Indicator** (bar) is outlined for 12 months into the past, starting with the selected reference date.

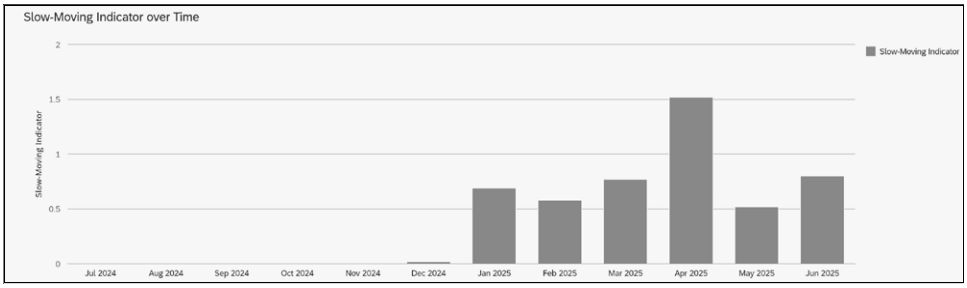
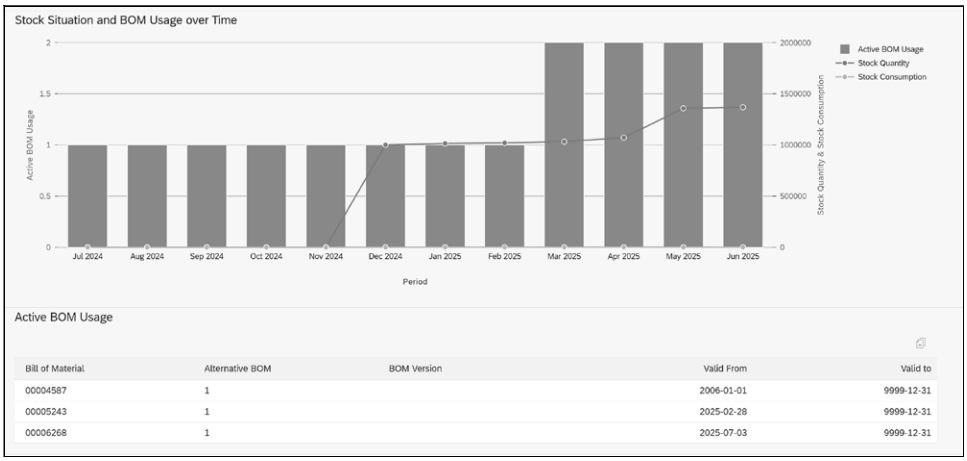


Figure 8.45 Chart Slow-Moving Indicator Over Time

To further facilitate the analysis, Figure 8.46 shows a time series of **Stock Quantity**, **Stock Consumption**, and **Active BOM Usage** over time. Any BOMs referencing the potential slow mover are listed, too.



Bill of Material	Alternative BOM	BOM Version	Valid From	Valid to
00004587	1		2006-01-01	9999-12-31
00005243	1		2025-02-28	9999-12-31
00006268	1		2025-07-03	9999-12-31

Figure 8.46 Active BOM Usage, Stock Quantity, and Stock Consumption on Detail Screen

To overcome a slow-moving state, redistribution of the respective material to other plants may be a solution. Figure 8.47 shows **the Slow Moving Indicator/Stock Quantity** for each material/plant combination. The quick view allows you to initiate stock transfers by navigating to the **Transfer Stock – Cross-Plant** app (see Chapter 6, Section 6.3.2).

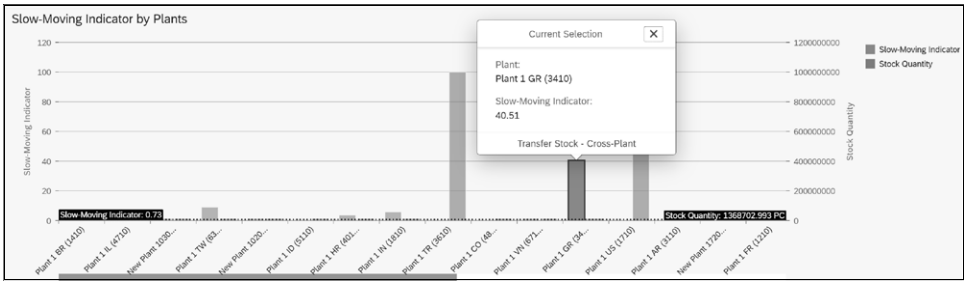


Figure 8.47 Slow-Moving Indicator/Stock Quantity in Different Plants

8.4.3 Overdue Stock in Transit

Along with the KPI-based analytical SAP Fiori apps we introduced in Section 8.3, inventory management in SAP S/4HANA also provides apps that are more focused on certain inventory processes and allow for inventory process optimization to meet inventory process service KPIs.

For example, the Overdue Materials – Stock in Transit app (F2139) provides insight into the processing of stock transport orders as related to the creation of the stock transport order and the goods receipt. Figure 8.48 shows the filter options. Because you can have multiple deliveries, goods issues, and goods receipt per stock transport order item, the mandatory parameter **GI/GR Document Selection** is very important to reduce the result set. Normally you're only interested in the latest combination. The history of all documents can be displayed on the detail screen.

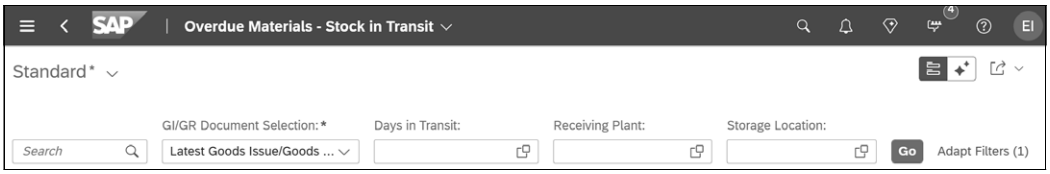


Figure 8.48 Filtering Options

The result chart of Overdue Materials – Stock in Transit outlines the shipping duration (see micro chart) and is shown after you click the **Go** button. The micro chart starts with the **Posting Date (PO)** of the stock transport order (i.e., **2025-06-26**) and determines the delivery date based on the date given in the stock transport order. On July 06, 2025, for example, there is no overdue stock transport order because the **Forecast Delivery Date** was **2025-07-07** (Line 1 in Figure 8.49). Therefore, the stock has been in transit for **10** days already, as show in column **Days in Transit**. Line 4 displays an item where the forecast delivery date was set to the past (**2025-02-07**) when creating the stock transport order (**2026-06-26**) to illustrate the overdue case.

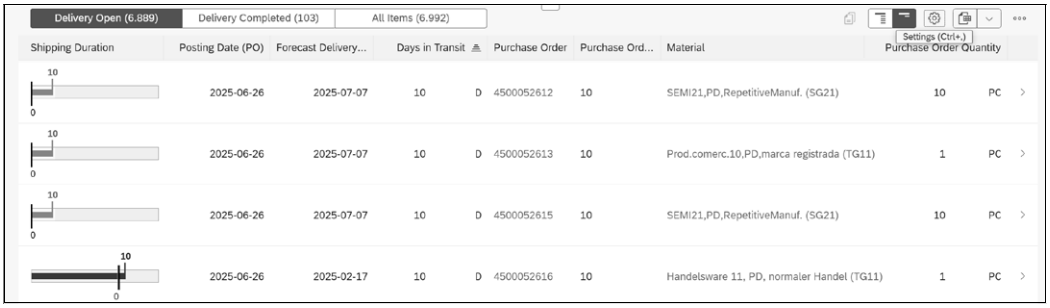


Figure 8.49 Overdue Stock Transport Orders

Similar to other analytical apps with complex use cases, the Overdue – Stock in Transit app offers a detail page per item to support decision making. Figure 8.50 depicts the

header of the detail screen with status information and key attributes. Below you see the process flow as time series (left to right) of the selected item. If there are more documents (previous or later) per stock transport order item, clicking **All** would display them.

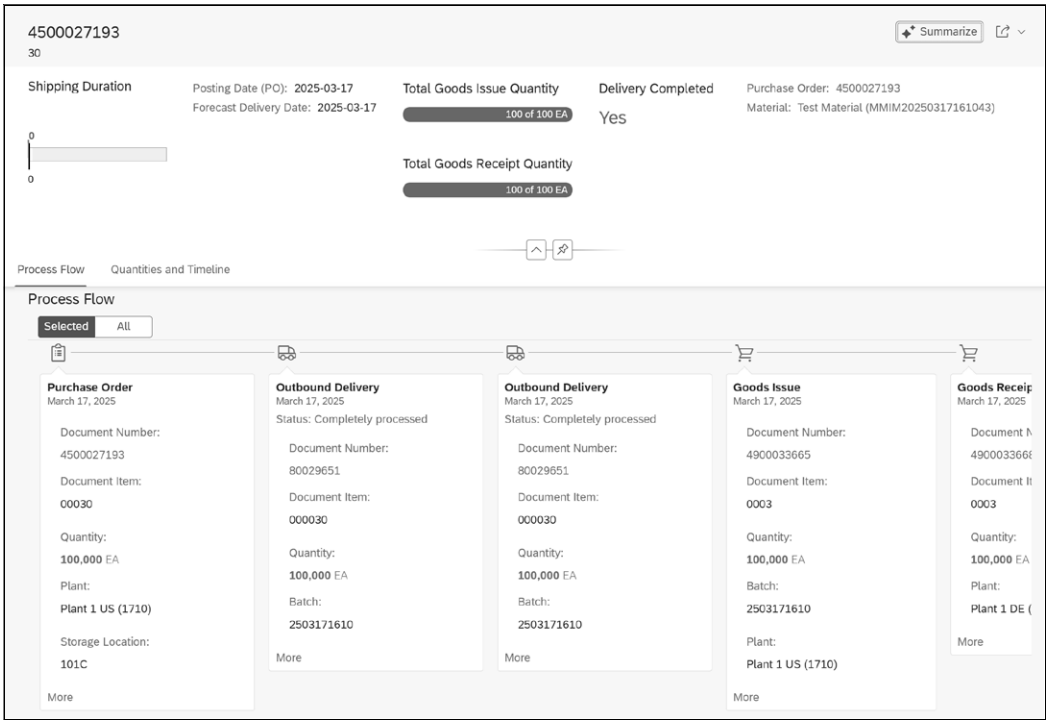


Figure 8.50 Detail Screen with Header and Process Flow (Less Information)

Figure 8.51 illustrates figures on quantities, duration, and dates of the selected item.

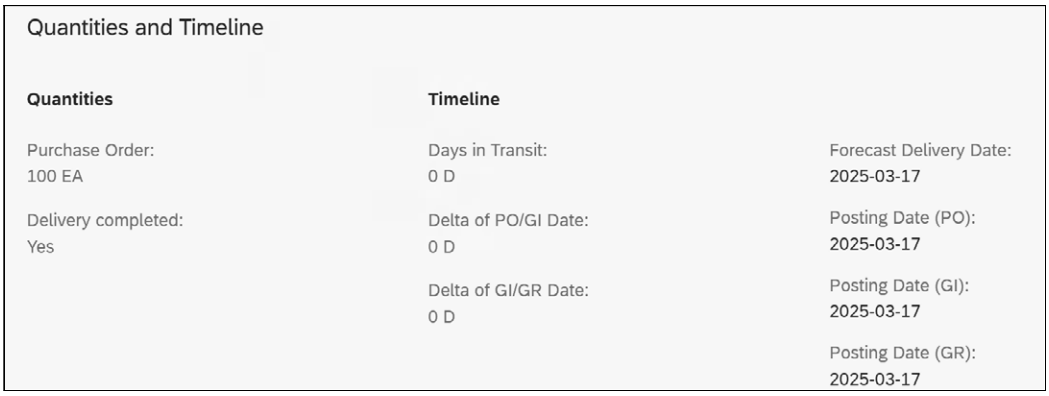


Figure 8.51 Detail Screen with Figures

By using the semantic links of the list or the detail header, you can trigger follow-up actions on the stock transport order, delivery, or material document.

8.4.4 Overdue Goods Receipt Blocked Stock

Regarding overdue stock, the Overdue Materials – Goods Receipt Blocked Stock app is available (F2347).

The foundation for this process monitoring app is the daily inventory management business when goods receipts are posted into the nonvaluated goods receipt blocked stock (movement type 103). Goods are received conditionally, aren't valuated, and aren't free for use. For this kind of stock, companies often have internal service levels. For instance, goods shouldn't be kept for longer than three days in goods receipt blocked stock. They must be reverted to the supplier or posted into the unrestricted use stock (movement type 105). This SAP Fiori app offers a list (see Chapter 1, Section 1.4) for analysis of overdue stock. By using the **Days since Posting Date** filter, you can select only goods receipt postings that exceed the company's service level, for instance, greater than five days as a filter value. After you click the **Go** button, the result is shown (see Figure 8.52).

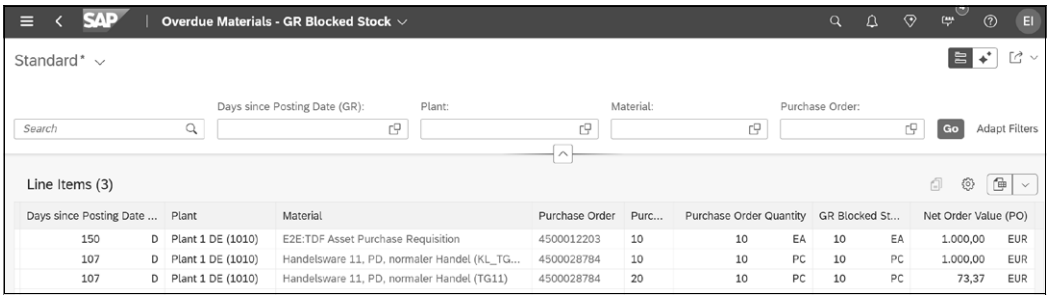


Figure 8.52 Overdue Goods Receipt Blocked Stock

8.5 Custom Queries

In SAP S/4HANA, analytical functions are built on CDS views to ensure a consistent view of the new data model in the SAP HANA database. CDS views in inventory management are especially implemented in a way that ensures the most consistent and performant access to the required analytical data. These predefined and predelivered CDS views might not be enough to serve your analytical reporting requirements comprehensively. For example, the required data might be shared across database tables that aren't part of inventory management, such as material master data.

To meet this need for custom queries, the Custom CDS Views app (F1866) is available, which allows you to create custom CDS views and queries to implement analytical queries for special requirements that aren't part of the SAP S/4HANA standard delivery.

Further Resources

Check out the SAP S/4HANA online help (*http://help.sap.com*) concerning **Applications for General Functions for Key Users** to gain more insight about available key user tools.

Custom CDS view queries have to be built on CDS views that are predelivered by SAP and must be released in a way that they can be consumed in the Custom CDS Views app (see Chapter 9, Section 9.1). To find available CDS views that can be reused in custom CDS views, you have to open the Custom CDS Views app and create a new custom CDS view, as shown in Figure 8.53. We'll provide a **Label** and **Name** to identify our custom CDS view, and select **Analytical Cube** from the **Scenario** dropdown to choose the right business context for your customer query. The **Analytical Cube** must contain the superset of all measures and dimensions you would like to include in your custom query.

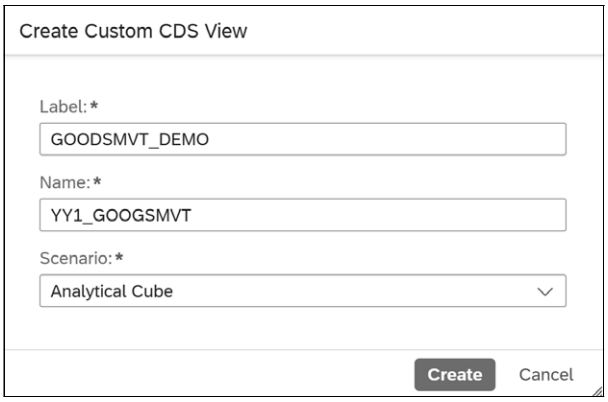


Figure 8.53 Creating a New Custom CDS View

We'll create an analytical CDS view on table `MATDOC` with an association to the product master. Click the **Create** button to open the wizard, which will guide you in the next steps. First you select your primary data source in Figure 8.54, which is **I_GoodsMovementCube** in our example.

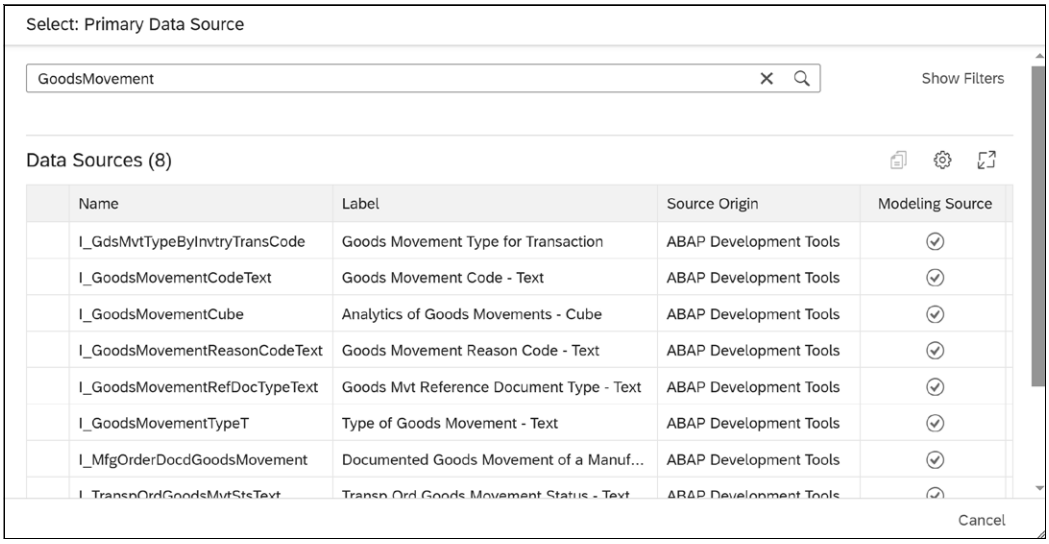


Figure 8.54 Select Your Primary Data Source

After you select the primary data source, you can choose the associate data source by clicking on the **Add** button, as shown in Figure 8.55.

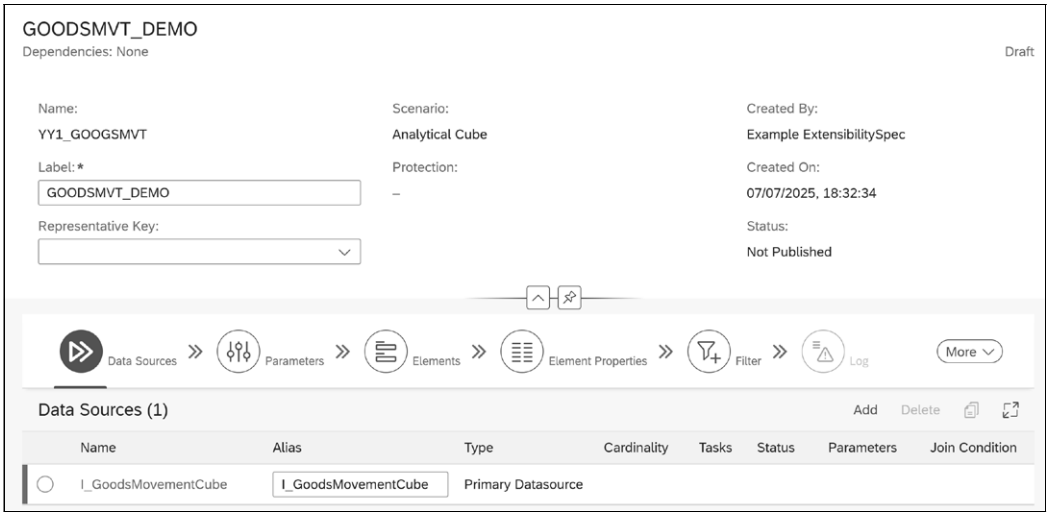


Figure 8.55 Choose Associated Data Sources via the Add Button

After adding **I_Product**, you should see both data sources on the **Data Sources** tab, as shown in Figure 8.56.

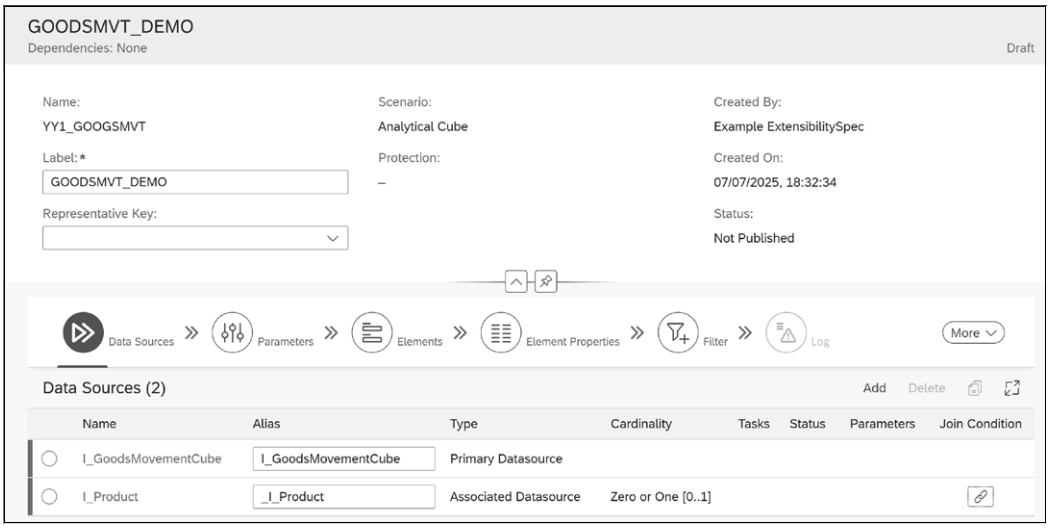


Figure 8.56 Added I_Product Data Source

To connect these two data sources, you must maintain the association properties by clicking on the paper clip icon in the **Join Condition** column in Figure 8.56 to access the screen shown in Figure 8.57. In our example, both data sources are connected via their **Product** field.

Define Join Conditions

Name: I_Product

Type: Associated Datasource

Alias: _I_Product

Cardinality: Zero or One [0..1]

Join Conditions (1) AND (All conditions fulfilled) Add Delete

Data Source Field	Type	Operator	Value Type	Value
Product	CHAR (40)	Equal	Field	I...

Figure 8.57 Define Join Condition

Now you must maintain the field list that the custom CDS view should return in the **Elements** tab. In our example, as shown in Figure 8.58, among other fields the product group has been added from the **I_Product** data source to the result. All added fields are marked in column **Used**.

Select: Elements

Search

Show Used: Yes

Items

Alias	Key	Type	Label	Status	Used
SourceOfSupply		CHAR (1)	Source of supply		
WeightUnit		UNIT (3)	Unit of Weight		✓
CountryOfOrigin		CHAR (3)	Cntry/Reg of Ori...		
CompetitorID		CHAR (10)	Competitor		
ProductGroup		CHAR (9)	Product Group		✓
BaseUnit		UNIT (3)	Base Unit of Me...		✓
ItemCategoryGroup		CHAR (4)	Gen. item cat. grp		
NetWeight		QUAN (13,3)	Net Weight		✓

No Items Selected

OK Cancel

Figure 8.58 Select Additional Elements to Display

In the same step, you can define each element's **Label** and **Alias**, as shown in Figure 8.59. To configure other semantic properties (aggregation, unit of measure, value helps, text associations, etc.), you switch to the **Element Properties** tab (details not shown). You can always use the **Check** function to validate your custom CDS view.

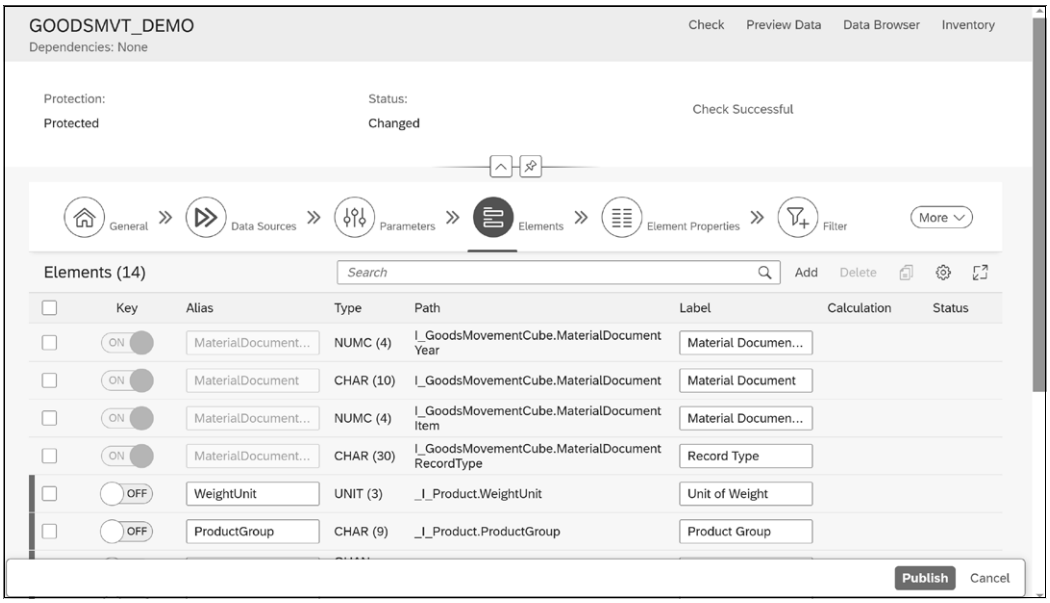
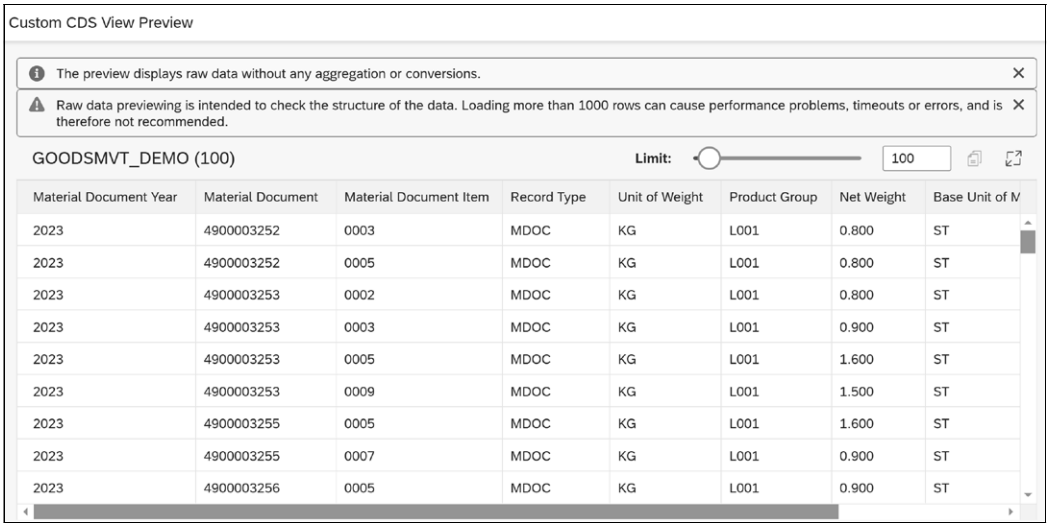


Figure 8.59 Define Elements and Element Properties

You can check your configuration or publish (by clicking the **Publish** button) your new custom CDS view so that it can be used in analytical queries afterward. Before the custom CDS view is published, you can also use the **Preview Data** function to see the result of the newly created custom CDS view directly in the Custom CDS Views app, as shown in Figure 8.60.



Material Document Year	Material Document	Material Document Item	Record Type	Unit of Weight	Product Group	Net Weight	Base Unit of M
2023	4900003252	0003	MDOC	KG	L001	0.800	ST
2023	4900003252	0005	MDOC	KG	L001	0.800	ST
2023	4900003253	0002	MDOC	KG	L001	0.800	ST
2023	4900003253	0003	MDOC	KG	L001	0.900	ST
2023	4900003253	0005	MDOC	KG	L001	1.600	ST
2023	4900003253	0009	MDOC	KG	L001	1.500	ST
2023	4900003255	0005	MDOC	KG	L001	1.600	ST
2023	4900003255	0007	MDOC	KG	L001	0.900	ST
2023	4900003256	0005	MDOC	KG	L001	0.900	ST

Figure 8.60 Data Preview

Note

A successful data preview requires that your end user has the authorization to display the data in addition to the authorization to create custom CDS views. To find out about the authorization, consult the documentation of the analytical cube selected as primary data source.

After publishing your custom CDS view, the **Next Steps** option in Figure 8.61 suggests follow-up actions, such as creating a custom analytical query.

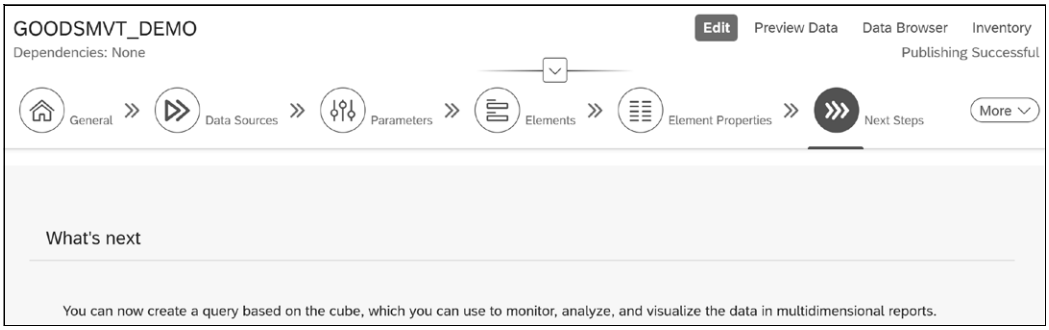


Figure 8.61 Successfully Published CDS View and Next Steps to Guide to Follow-Up Actions

8.6 Real-World Scenarios and Best Practices

When analyzing inventory in the real world, you may encounter particular scenarios or cases that require special practices or considerations. The following examples were compiled based on discussions with customers during recent years.

8.6.1 Analyzing Your Serialized Stock

When working with serialized materials as explained in Chapter 6, Section 6.7.2, you may face the challenge that there's a mismatch between the inventory stock of serialized materials and the number of serial numbers in the system. Often the root cause is that the serial number profile(s) (discussed in Chapter 3, Section 3.2.2) doesn't fully embrace the logistics processes to allow the serialized stock movements to be posted without entering the serial numbers. Therefore, it's often the case that you want to know the current state and the history of a serialized material item. The Serial Number History app (F7368) helps you answer the following questions:

- In what material stock is the serial number xx-xxx-xxx?
- What serial number has the material stock abc?

Figure 8.62 shows how to search for a specific serial number in stock. The result list shows all materials with stock with this particular **Serial Number**, the **Stock Type**, **Storage Location**, and the **System Status** of the stock.

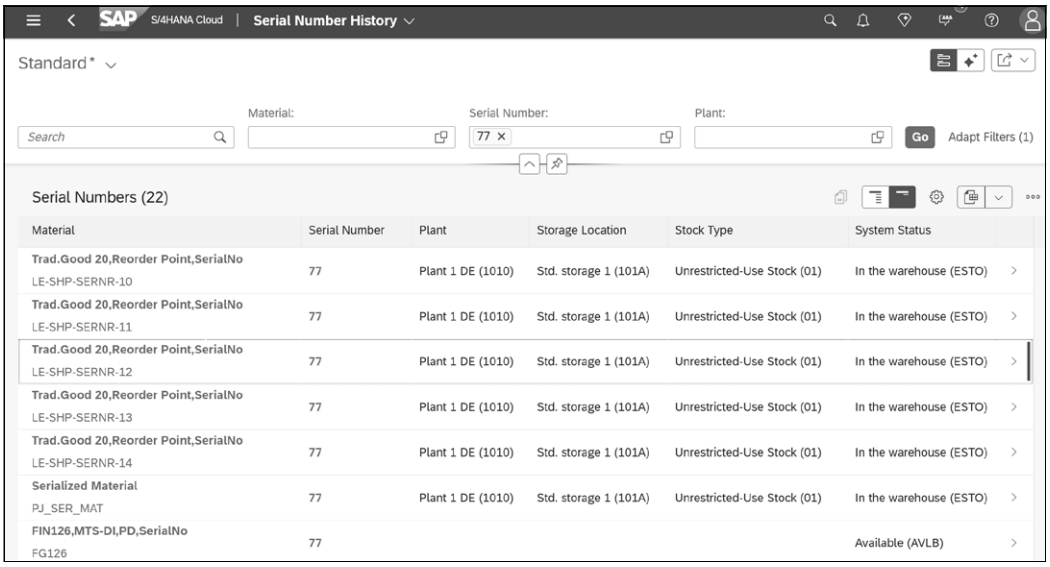


Figure 8.62 Searching for a Specific Serial Number in Stock (Detail Page Not Shown)

Figure 8.63 displays how to search for the serial numbers of a selected material. In addition, the detail page of a list item is shown in a split column layout (on the right-hand side). You can see **Stock Information** and the posting **History** as a list of business documents involving this serialized material item. With this data, you can track the movement of the serialized material item within your company.

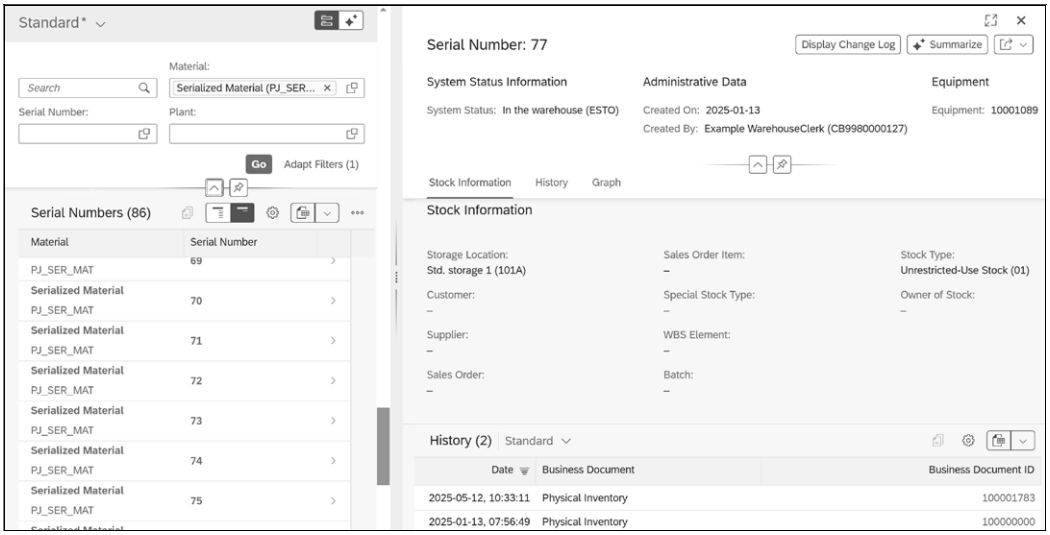


Figure 8.63 Searching for All Serial Numbers for a Dedicated Material

As an additional feature, the posting **History** is also shown in a time-dependent **Graph** (see Figure 8.64).

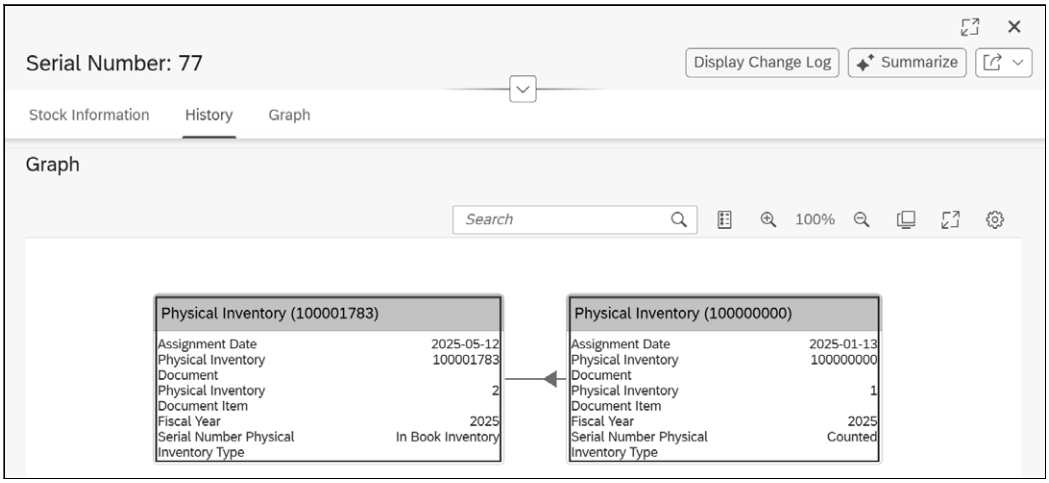
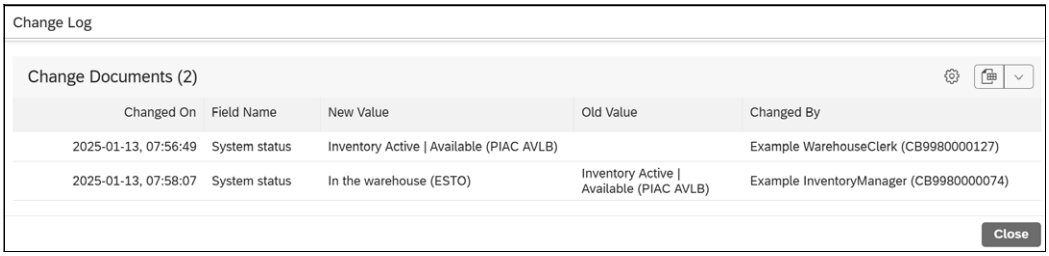


Figure 8.64 Serial Number History as Graphical Display

You can click the **Display Change Log** button in the header to display any changes to the serialized material item in a modal window, as shown in Figure 8.65.



Changed On	Field Name	New Value	Old Value	Changed By
2025-01-13, 07:56:49	System status	Inventory Active | Available (PIAC AVLB)		Example WarehouseClerk (CB9980000127)
2025-01-13, 07:58:07	System status	In the warehouse (ESTO)	Inventory Active | Available (PIAC AVLB)	Example InventoryManager (CB9980000074)

Figure 8.65 Associated Change Documents

8.6.2 Controlling Inventory

There is often an overlap between the role of an inventory accountant and of an inventory manager. It's important to understand that the granularity of the inventory values in comparison to inventory quantities is different (see Chapter 1). If, for example, the Stock – Multiple Materials app displays the (historic) inventory value for unrestricted use stock, blocked stock, and stock in quality inspection in one line item, the quantities are calculated by summing up the respective material document postings, but the (historic) inventory value is calculated by the rule of three (proportionally distributing the total value of the line item according to the stock quantities to calculate the inventory value of unrestricted use stock, blocked stock, and stock in quality inspection). This calculation is done on the lowest possible level and therefore aggregation/disaggregation may lead to rounding differences. That's why the inventory accounting view (Section 8.3.4) and the inventory manager view may differ.

Nevertheless, it's a good practice in some companies to take an inventory snapshot at the end of each fiscal period/month. This can be easily achieved by defining a recuring job with the template **Export of Inventory Analytics: Stock Multiple Materials** in Figure 8.66 shipped with the Schedule Export of Inventory Analytics app (Section 8.2.3). Consequently, the snapshot is saved as an Excel attachment to the job.

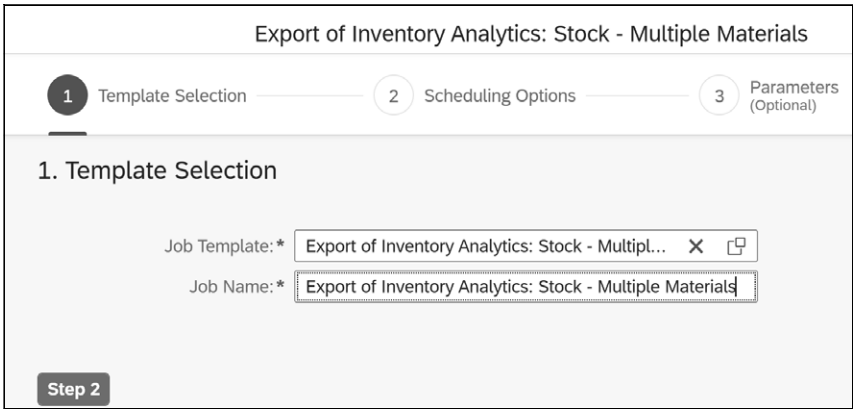


Figure 8.66 Creating an Inventory Snapshot via Export to Excel

8.6.3 Monitoring Shelf Life

One crucial task in inventory management is to monitor batch-managed inventory, which has a shelf-life expiration date (see our example in Figure 8.67 taken from the object page of the Batch Master Data app). In general, service-level agreements (SLAs) are linked to these batches, and the closer the shelf-life expiration date of a batch, the more difficult it is to use in the next process step. In many cases, this may finally lead to a complete loss of the inventory batch, because the stock needs to be scrapped.

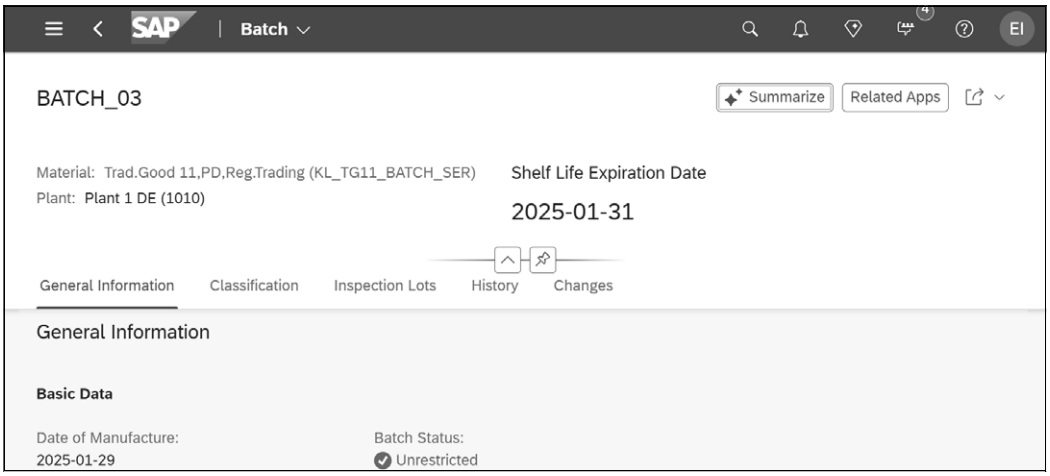


Figure 8.67 Batch with Shelf-Life Expiration Date

Figure 8.68 shows a variant created for the Stock – Multiple Materials app, setting the **Shelf Life Expiration Date** filter to be before to monitored best before date (July 7, 2025) and **Unrestricted Stock** number equal to 0. Furthermore, the **Shelf Life Expiration Date** column is sorted by oldest to newest for convenience.

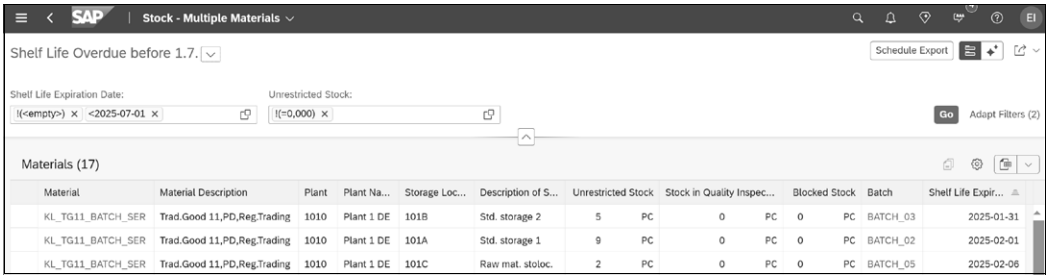


Figure 8.68 Stock – Multiple Materials with Variant Monitoring Shelf Life with Best Before Date

You can use the **Save as Tile** feature of the SAP Fiori launchpad (see Chapter 1, Section 1.4) to create a monitoring tile on your home screen or an insight card.

Note

If you would like to monitor shelf life with other inventory analytic applications that don't cover the shelf-life expiration date attribute by default, you can use data source extensibility (see Chapter 3) via the association to `I_BATCH` to add the **Shelf Life Expiration Date** field to the respective SAP Fiori app.

8.7 What's Ahead for Analytics?

We can dream of quantum leaps in the IT world if predictive analytics/machine learning can be combined with process automation. A first step into this new area is part of the Overdue Materials – Stock in Transit app via automated information about stock transport orders that might be of interest for setting the **Delivery Completed** indicator (see Figure 8.69). Based on the new situation handling framework in SAP S/4HANA, you get notified if there are stock transport orders that you're responsible for that aren't completely delivered but already have a goods receipt.

In this regard, the My Situations app (F4154) has to be mentioned. This SAP Fiori app provides access to all open situations and easy navigation into the single situations for the end user to gain insight and act accordingly.

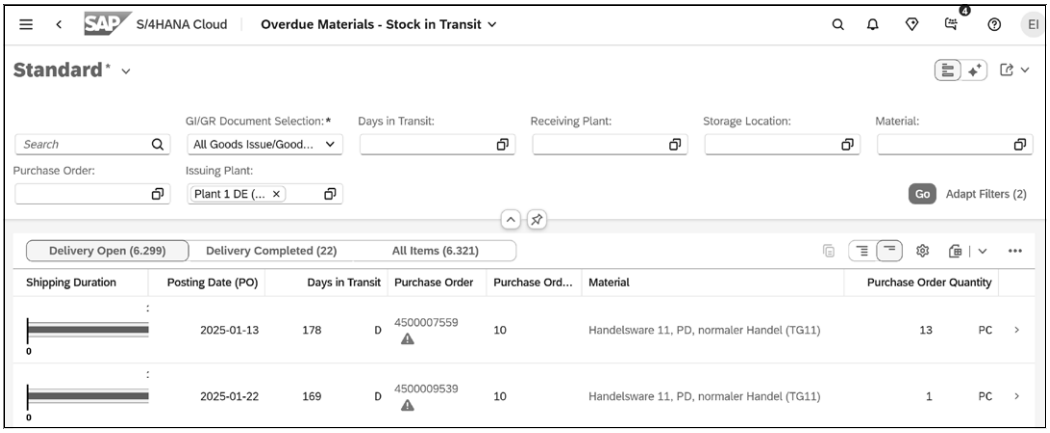


Figure 8.69 Warning Triangle for Possible Delivery Completed Purchase Orders

In the detail page of the Overdue Materials – Stock in Transit app (click on one item of the result to enter the detail screen, as shown in Figure 8.70), an action button is added to the header so you can choose the **Close Situation** option. This button is only visible if the following are true:

- The currently displayed purchase order item isn't already completely delivered.
- Sufficient authorizations are assigned to the end user.
- A goods receipt was posted already, and the total goods receipt quantity equals the total goods issue quantity.

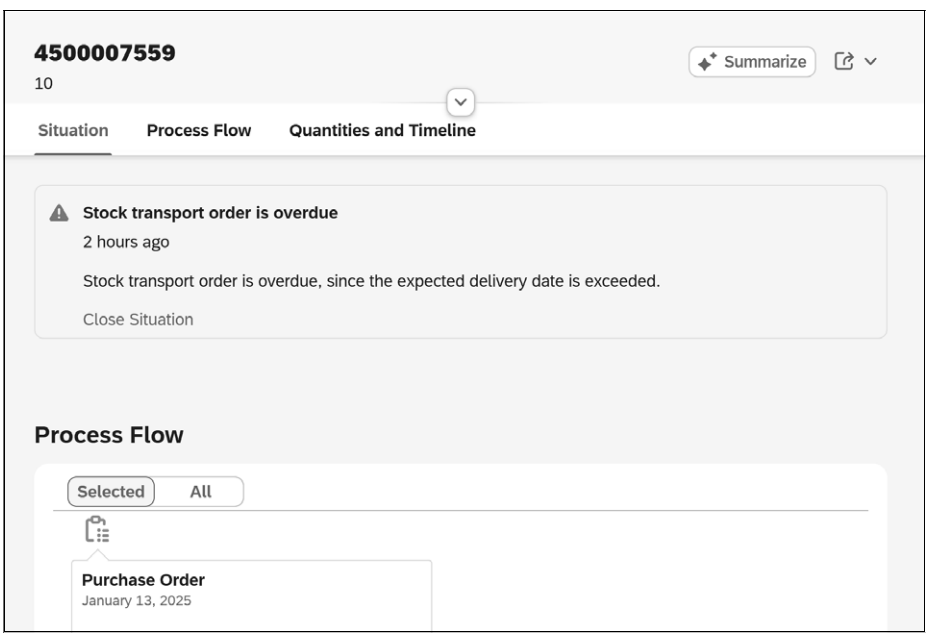


Figure 8.70 Situation in Detail Page

Before the situation functionality can be used in the Overdue Materials – Stock in Transit app, two administrative steps have to be performed:

- Set up a team
- Set up a situation

The setup of a new situation team can be done with the Manage Teams and Responsibilities app (F2412), which is part of the SAP_BR_BUSINESS_PROCESS_SPEC business role. In Chapter 3, Section 3.3.3, the setup of situation handling was described in general.

Follow these steps to set up a team:

1. Create a new team.
2. Enter the team name (e.g., "Overdue SiT Monitoring").
3. Enter the type.
4. Add your team member with the function "SMMIM_IM".
5. If you have multiple end users for the same team, assign another function for the next end user.
6. Save your team.

Next is to set up the situation itself, which is done by using the Manage Situation Types app (F2947), as shown in Figure 8.71.

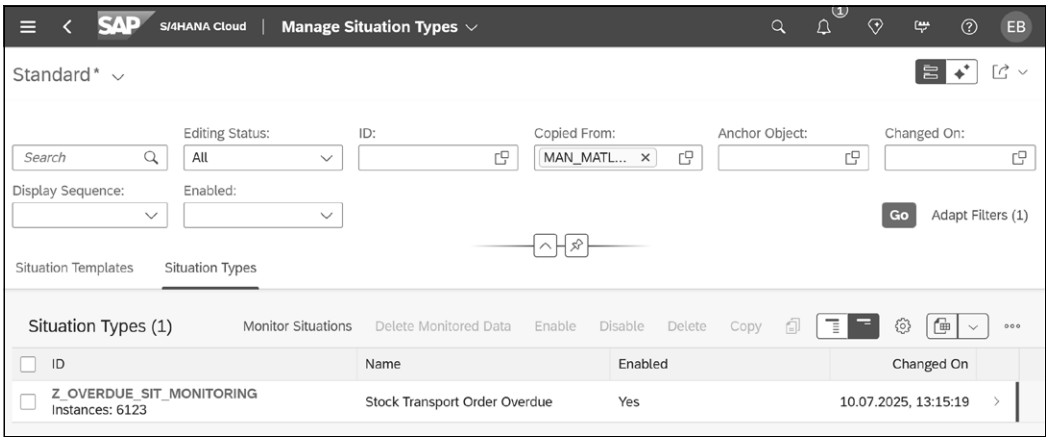


Figure 8.71 Search for Situation Template

Follow these steps to set up the situation (see Figure 8.72):

1. Select the standard template **MAN_MATLOVERDUESITSITN** on the **Situation Templates** tab, and click the **Copy** button.
2. Enter an **ID** (e.g., **Stock Transport Order Overdue**; see Figure 8.72).
3. Enter the right conditions to identify the stock transport orders you would like to be notified of.

4. Maintain the batch job scheduling time.
5. Remove all responsibility definitions under **Responsibility by Teams**, and add the **Member Function** you defined in the team setup. Only the team functions assigned here will retrieve the related notifications (see Figure 8.73).
6. Click the **Save** button to enable your new situation type.

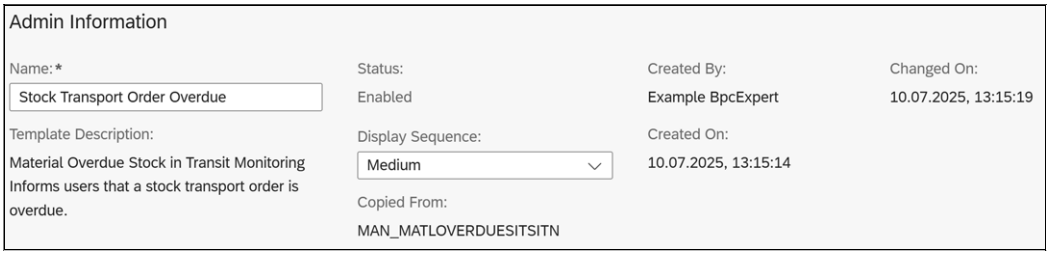


Figure 8.72 Admin Information of the Situation

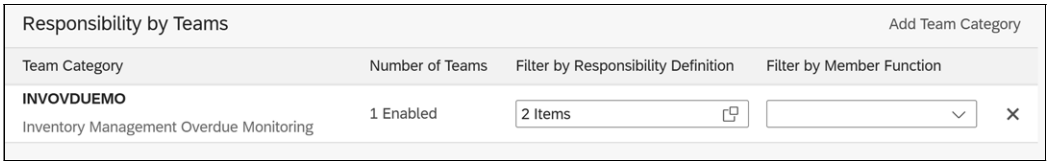


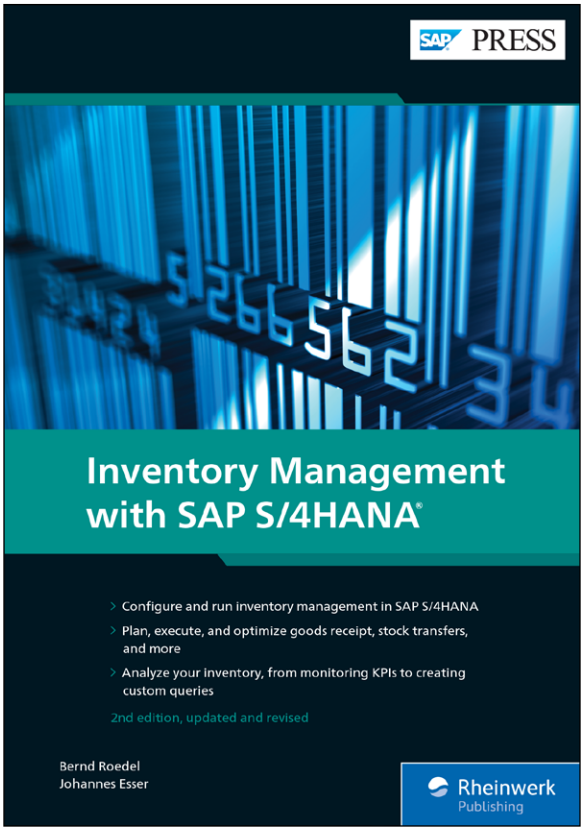
Figure 8.73 Assignment of Responsibilities

After saving and enabling your situation type, you be notified when the job detects any instances that match the filter criteria defined in the situation template.

8.8 Summary

The analytical tool kits available within SAP S/4HANA cover a wide range of analytical capabilities. With new SAP Fiori patterns and a modernized data model of the material document in inventory management, real-time analytics are feasible. As outlined in this chapter, analytical features were introduced in transactional applications, and more process-oriented analytical tools are available, such as detection of overdue stock or monitoring of process KPIs.

In the next and final chapter of this book, we'll highlight some aspects of inventory management in cloud deployments and explain how cross-system analytics and strategic planning and optimization are possible.



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