

# **TEAMCENTER**

## **Structure Management on Active Workspace**

Active Workspace 6.3

**SIEMENS**

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# 1. About Structure Management

Teamcenter Structure Management provides a way to create and maintain your product structure comprising assemblies and parts. Specifically, you can import, view, and modify the structure, which is displayed as a multilevel indented list. You can also configure the structure by managing revisions, effectivity, incremental change, and structure variants.

When working with large assemblies comprising thousands of parts, such as cars, Structure Management helps you manage these volumes by performing several tasks. You can view and compare multiple structures, edit structures, configure views, track the changes, and personalize and share views.

As the complexity and variability of the product increases, the amount of data increases even more. Using Smart Discovery for Structures, your site administrator can index structures so that you can find the correct product definition required to do your work. Indexing structures makes the search faster and provides advanced structure filtering and configuration capabilities.

## Example:

To fix a design issue, an engineer wants to work with the engine block of the car. When the car structure is indexed, the engineer can search for the engine assembly within the structure without having to expand the entire structure. The engineer can further filter the search results to locate all elements that are at a proximity of 10 mm from the engine block.

The following graphic shows how different areas in Teamcenter can play a role in managing a structure:



## Where do I go from here?

 Administrator	To deploy Structure Management, see Structure Management Deployment and Administration.  To index structures by using Smart Discovery, see Administration of Smart Discovery for Structures.
 Business User	I want to perform structure management tasks in Rich Client.  I want to create a structure.
	See Structure Management on Rich Client.  You can create structures by: <ul style="list-style-type: none"><li>• <b>Duplicating a product structure.</b></li><li>• <b>Importing a structure from Excel.</b></li></ul>
I want to make changes to a structure and its properties.	You can <b>add or remove</b> content from a structure or <b>replace a structure component</b> . You can also <b>edit the properties of a part or an assembly</b> .
I want to find differences between my current structure configuration and another structure.	You can do this by <b>comparing product structures</b> .
I want to configure a structure based on the current product or project requirements.	To do this, follow the procedure to configure structures by <b>revision rules</b> , <b>variant rules</b> , and <b>effectivity</b> .  You can also configure structures by <b>selection</b> and <b>proximity</b> if your administrator has set up Smart Discovery for Structures.
I want to filter a structure so that I can work with a specific product definition.	See <b>filtering structures</b> . You can filter a structure only if the structure is indexed using Smart Discovery indexing.  You can <b>save a filtered and configured structure within a session</b> . Sessions help you to easily locate the product definition that you are currently working with.
I want to perform the weight and balance rollup analysis for a product structure.	The following tasks take you through performing a weight and balance rollup analysis in Teamcenter: <ul style="list-style-type: none"><li>• <b>Add the mass values for different weight types.</b></li></ul>

- Calculate the mass rollup for a structure and [view rollup reports](#).
- Create a payload collection for a structure.
- Generate the excursion diagram for the selected payload collection.



## 2. Structure Management terms

Term	Description
Element or occurrence	An item or an item revision within the structure of a parent.
Baseline	A copy of the currently configured structure at the time the baseline was created.  Baselining configures a structure and thereby guarantees that the structure is always the same as that when the baseline was created.
Release effectivity	A term used in manufacturing.  You configure the structure for a specified date or unit (serial) number by applying a revision rule. Active Workspace shows the revision of each item that is in effect for the specified date, unit number, or range.
Occurrence (structure) effectivity	A term used by manufacturers in the military and aerospace domains.  You configure the structure in a way similar to revision effectivity, and Active Workspace shows the actual occurrences that are in effect.  Occurrence effectivity applies to the specific element's usage and not globally. It indicates when a child item is effective in the parent assembly.
Working context	A way to set your work aside and then pick up where you left off when you return.  In Active Workspace, the saved working context captures the structure configuration with the context applied, including revision rules, effectivity, and variant rules. It also captures the current focus of navigation and any active selections.
Solution variant	A variant created to derive a buildable (100%) variant of a product that has variability.  To create a solution variant, you apply a valid variant configuration to the variable structure. The solution variant has a unique item ID and is linked to the source structure.
Workset	A collection of design components.  A workset can contain one or more structures, items, item revisions, BOM views, and BOM view revisions that represent existing parts or assemblies.



# 3. Work in the context of a change

## Set a change context to track structure updates

You can track structure updates by setting an engineering change notice as an active change context. The updates can be viewed by accessing the change notice.

To set a change context:

1. Click **No Active Change**  in the global navigation.
2. From **Active Change**, select the required change notice.

## Review active or closed changes for a structure

You can track changes (added, modified, replaced, revised, or deleted) to the assemblies using a change request or a change notice. The active changes for a structure are displayed by default. To view the closed changes, use the **Show Redlines** command.

Note:

If you do not see the changes highlighted, contact your system administrator.

1. Search for and open the structure. If the structure has active changes, they are highlighted. Expand the assembly to view the details of the change.

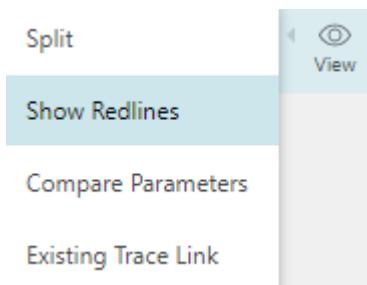
Element Name	ID	Revision
Engine	027067	<i>B</i> A
piston	027068	A
Enhanced Valve	027071 027069	A
Connecting Rod Assembly	027072	A
connecting rod	027070	A

Deleted parts are highlighted with red strikethrough.

The added parts are highlighted in green and are italicized.

For replaced or revised parts, the old and the new values are shown side by side.

2. (Optional) To disable highlighting the changes in the structure, click the **View**  icon and turn off **Show Redlines**.



3. Only active changes are shown by default. To view the closed changes, click the **View**  icon and select **Show Redlines**.

Note:

The **Show Redlines** functionality tracks changes within the **Change Summary** of a change notice, as well.

## Track BOM modifications in the change summary

Applying an active change context for BOM revisions automatically tracks the modifications in the change summary.

See [Set a change context to track structure updates](#) for more information.

With the change notice set as an active change, BOM modifications and properties are identified by redlines. For more information on the **Show Redlines** feature, refer to [Review active or closed changes for a structure](#).

The screenshot shows the Siemens Active Workspace interface for a BOM structure. The main pane displays a hierarchical tree of components: CM-1b, A-2b, D-1, B-2, and C-1. Each component has a revision number (e.g., 030054, 030047) and a revision status (e.g., B-A, A-2b). The right-hand panel provides detailed properties for the selected component (A-2b), including its ID (030047), revision (B-A), and description (A-2b A-2). The 'ACTIONS' section contains various status fields and release details. A context menu is visible on the right, offering actions like Open, Cut, Copy, Paste, New, Edit, Manage, Share, and View.

These modifications, not the full assemblies, are tracked in the change summary of the change notice.

The screenshot shows the Siemens Active Workspace interface for a Change Notice Revision titled 'CM-Test-1a'. The 'OVERVIEW' tab is selected, showing basic details like owner (CMTestUser1), date modified (27-Sep-2021), and release status (Change Notice Revision). The 'CHANGE SUMMARY' section is the focal point, displaying a table of modifications. The table includes columns for ID, Action, Revision, Name, Quantity, Unit of Measure, Sequence, Date, and Variant. Key entries include the addition of part D-1 (Revision A) and the replacement of part B-2 (Revision A) with part B-4 (Revision A). The right-hand panel contains a context menu with standard file operations like Open, Cut, Copy, Paste, New, Edit, Manage, Share, and View.

#### Note:

If an active change was not applied during the revision, you can retroactively add the object as a solution item to a change notice to track the modifications in the **Change Summary**.

## View the authoring change notice and changes made to the structure element

1. Open the required structure and select the structure element.
2. Go to the **Changes** tab. In the **CHANGES** section, you can see the authoring change notice for the selected structure element.
3. Go to the **History** tab. All the modifications or revisions made to the selected structure element with their respective change notices are listed under **CHANGE HISTORY**.

## Cancel a change notice

Based on a specific product requirement, an engineering change notice is created. The engineering BOM content is authored or updated in the context of the change notice. After authoring or updating the BOM content, the product requirements may get canceled. In such a case, you must also cancel the corresponding change notice before it is released. On canceling the change notice, the updates made to the BOM content also get canceled.

To cancel a change notice:

1. On the **Home** page, click the **Changes** tile, and select the change under which the structure is created or modified.
2. Click **Cancel Change** in the **Overview** tab.

All the **Solution Items** of the change notice get canceled and their property **Cancelled** is set as **true**.

Canceling the engineering change notice will cancel all its associated solution objects. A canceled revision can never configure. However, you can create a new revision from a canceled revision. You cannot reopen a canceled change and release its content.

If there are sequential changes in ECN2 that have been created based on ECN1, and ECN1 is canceled, ECN2 is not canceled automatically. You can choose to cancel it manually.

When you cancel a change notice which contains a workset or a session having a structure, this cancel change behavior is not supported.

Every cancellation of ECN may not inherit this behavior. For example, cancellation of ECN having workset and subset, which contains the structure.

## 4. Access structure data within partitions

A BOM architect organizes a large product into smaller, accessible sections called *partitions* and arranges structure elements logically and hierarchically within the partitions. Partitions can belong to different partition schemes such as functional, physical, or spatial.

The BOM architect can create partitions only if **Partitions for Structure** is installed in your Teamcenter set up. If it is installed, you can access the structure data and perform the various structure related tasks from within the partitions.

For information on partition schemes and partitions, see *Partition Management on Active Workspace*.



# 5. Find and navigate structures

## Finding structures and structure elements

You can search for structures or structure components using the following methods:

<b>Global Search</b>	Searches all indexed data in Teamcenter.
<b>Advanced Search</b>	Searches for data by using specific criteria based on predefined queries.
<b>In-context search</b>	<p>Searches for content within an open structure, a working context, or a session that is composed of structures.</p> <p>The structure can be indexed by using either Active Content Structure indexing or Smart Discovery Indexing.</p> <p>It may be non-indexed as well. The non-indexed search requires a Context Management User license. This is used for Quick Find searches.</p>

You can perform a simple search to find an occurrence of an object in an open structure. You can enter any attribute or text associated with the occurrence (for example, a name) and then click **Search** . Search results span the entire context.

You can use the same syntax as for full-text searches, including operators such as OR and AND. You can use the **Filter** tab to narrow the results by selecting specific filters and categories.

## Find elements within a structure

To narrow your search results to a specific branch in the structure, you can perform a keyword search within the selected subassembly from the **Find** panel.

1. Open a structure from the search results.
2. Click **Find** .
3. In the **Find** panel, enter the search parameters, and click **Search** .

If file content indexing is deployed in your Teamcenter setup, you can specify dataset filenames as the search parameter. You can also specify a text within a file as the search parameter. For example, consider that the dataset *EngineSpecification.pdf* contains the text **RPM**. If you enter **RPM** as the search parameter, the search result displays elements that have the dataset *EngineSpecification.pdf* as an attachment. The search result also displays elements that have datasets with the text **RPM** in their content.

Additionally, you can specify the name of a .prt file as the search parameter.

4. (Optional) To narrow the results:
  - a. Select the subassembly to which you want to limit your search.
  - b. Select the **Find within** check box, enter the search parameters, and click **Search**.
5. Select an element from the search results to view it in the structure.

If you have **Partitions for Structure** deployed in your Teamcenter setup and if you select an element from the search results on the **Find** panel, the element is highlighted in the work area within the partition that contains it.

However, clicking **Select All**  does not select the corresponding elements in the structure.

### Searching structured content if you do not have access to objects

If you find an element in a structure that you do not have read access to, Active Workspace does not show that occurrence and excludes it from the find-in-context results. If the occurrence exists in an assembly to which you do have access, Active Workspace shows an **Access Denied** indicator in its place.

**Note:**

Access to occurrences is set by your system administrator by using Access Manager. Access controls protect intellectual property and prevent general access to data. To view restricted content that you do not have access to, you can request the owner of the assembly to use project-level security to enable collaboration.

If you do not have access to a revision configured by the revision rule, Active Workspace looks for the last revision you have access to, and configures the access accordingly.

Automatic searching for the last accessible revision is not supported in indexed structures. However, it is supported if Smart Discovery Indexing is used.

## Navigate a structure

You can select a structure from the search results and then click **Open**  to view the structure.

### Navigate to child parts

The assemblies or subassemblies that have child parts are listed with the **Show Children**  button.

Click **Show Children**  to navigate to child parts.

## Navigate to a higher level using the breadcrumb trail

Assembly nodes are visible in the breadcrumb trail.

Use the breadcrumb trail to navigate to a higher level (such as parent parts) in a structure.

HDD-0527/A;1-Hard Drive Assembly > HDD-0507/A;1-Baseplate Assembly > HDD-0522/A;1-Motor Electronics Assembly

Note:

The back button  does not take you to the parent parts. It takes you to the previous location visited in Active Workspace.

If you use the breadcrumb trail to navigate to a different parent, Active Workspace shows the first leaf in that structure, updates the breadcrumb with the path to that leaf node, and switches back to the hierarchical display.



# 6. Import and export structures

## About importing structures from Excel

In Teamcenter, you can import a structure from a Microsoft Excel spreadsheet. This feature is useful when you need to import data from an external source, for example, from a design contractor who does not have Teamcenter. You can import relatively simple and small structures, such as structure data provided by vendors. Importing from Excel might not be suitable for very large and complicated structures.

The following scenarios explain how you can **import structures** in Teamcenter.

### Scenario 1

You want to create a new Crosskart structure with all new components. To do this, you can create an Excel spreadsheet similar to the following and then import it in Teamcenter:

	A	B	C	D	E	F
1	Product Structure					
2	Tc_Level	Tc_ObjectType	Name	ID	Revision	Description
3	0	Item	Crosskart			Test description for Crosskart
4	1	Item	Chassis	Test_001		Test description for Chassis
5	2	Item	Bumper			Test description for Bumper
6	1	Item	Engine	Test_002		Test description for Engine
7	2	Item	Engine Block			Test description for Engine Block
8	<endtag>					

After the import, the following structure is created in Teamcenter:

The screenshot shows the Teamcenter interface for a 'Crosskart' structure. The top navigation bar includes 'Teamcenter - Import...', 'Crosskart >', 'SIEMENS', and various search and filter options. The main area displays a hierarchical tree view of the structure. The structure is defined as follows:

- Crosskart**: ID 027439, Revision A, Name Crosskart, Description Test description for Crosskart.
- Chassis**: ID Test\_001, Revision A, Name Chassis, Description Test description for Chassis.
- Bumper**: ID 027440, Revision A, Name Bumper, Description Test description for Bumper.
- Engine**: ID Test\_002, Revision A, Name Engine, Description Test description for Engine.
- Engine Block**: ID 027441, Revision A, Name Engine Block, Description Test description for Engine Block.

The interface also features a left sidebar with icons for Home, Assistant, No Active Change, and User, along with a 'More...' button.

Even if you did not specify an ID for some of the elements in the input spreadsheet, Teamcenter generates the IDs for those elements automatically.

## Scenario 2

You want to create a new structure called *Test Crosskart* by reusing some of the existing elements in Teamcenter. Therefore, in the input spreadsheet, you add the name for the new structure and only the names and IDs of the existing subassemblies. Your input spreadsheet appears as follows.

	A	B	C	D	E	F
1	Product Structure					
2	Tc_Level	Tc_ObjectType	Name	ID	Revision	Description
3	0	Item	Test Crosskart			
4	1	Item	Chassis	Test_001		
5	1	Item	Engine	Test_002		
6	<endtag>					

After the import, Teamcenter creates the new *Test Crosskart* by reusing the existing elements from the sub-assemblies. You only need to specify the required properties of the subassemblies and not of the existing elements.

Element	ID	Revision	Revision Name	Description
Test Crosskart	027446	A	Test Crosskart	
Chassis	Test_001	A	Chassis	Test description for Chassis
New Bumper	027443	A	New Bumper	Test description for Bumper
Engine	Test_002	A	Engine	Test description for Engine
New Engine Block	027444	A	New Engine Block	Test description for Engine Block

## Import a structure from Excel

You can import a structure from an Excel file along with its reference properties. This includes all reference properties with an LOV, including unit of measure, owner, and group. You can also import structures with the Active Workspace global revision rule and using different ID types that use a Multi-Field Key (MFK).

To import a structure from an Excel file:

1. Navigate to the folder where you want to import the structure, and click **New > Import Structure**.
2. In the **Import Structure** panel, specify the Microsoft Excel file from which you want to import the structure. You can also create your own file. The file used for importing Excel files must be formatted a specific way.
  - The following sample Excel sheet shows the formatting to be followed for import.

	A	B	C	D	E	F
1	Primary Object					
2	Tc_Level	Tc_ObjectType	Name	ID	Revision	
3	0	Item				
4	<endtag>					
5						

- The top row must have a title, for example, **Primary Object**.
- The cells in the second row must have the headers **Tc\_Level** and **Tc\_ObjectType**. The header **Tc\_Level** must be in column A and **Tc\_ObjectType** must be in column B.
- The properties **Name**, **ID**, and **Revision** are mandatory.
- The elements that occur multiple times under a single parent in the structure are uniquely identified by the property values set in the **AWC\_Occ\_Unique\_Identifier** preference by your administrator. It is recommended that you use these properties as columns in the input spreadsheet. When you reimport the same structure, make sure that the values for these properties are correctly set. Otherwise, you might not get the expected results.
- You can import structures with the following reference properties: **Unit of Measure**, **Owner**, and **Group**. You can also import any other reference property with an LOV.

On adding the display string of the reference property to the Excel sheet, Teamcenter maps this string to the correct reference object. The following sample Excel file shows the formatting to be used for the import along with the reference properties.

	A	B	C	D	E	F	G	H	I	J
1	Primary Object									
2	Tc_Level	Tc_ObjectType	Part Number	Part Name	Part Revision	Ref Des	Quantity	Unit of Measure	Owner	Group
3	0	Item	Demo1	Top		1			ed	Demo
4	1	Item	Demo1.1	Child1		1		each	ed	Engg
5	1	Item	Demo1.2	Child2		1	D1, D2	3 each	joe	Engg
6	1	Item	Demo1.3	Child3		1	D1, D2	3 each	ed	
7	<endtag>									
8										

- You must include **<endtag>** in column A at the end.

- The following sample Excel file contains vendor-part data and shows the formatting to be followed for import. For importing this data, you must specify the secondary objects additionally. In this case, along with the mandatory fields for the primary objects, you must also fill in **Tc\_Secondary\_ObjectType**, **Tc\_Secondary\_Relation**, and **Vendor ID**. The **Vendor ID** that you specify must exist in the Teamcenter database. **Tc\_Secondary\_ObjectType** must be the first column in the **Secondary Object** section. Therefore, it needs to be in column F as shown in the following example.

	A	B	C	D	E	F	G	H	I	J	K
1	Primary Object					Secondary Object					
2	Tc_Level	Tc_ObjectType	Name	ID	Revision	Tc_Secondary_ObjectType	Tc_Secondary_Relation	Vendor	Part ID	Vendor	Part
3	0	Item									
4	1	CommercialPart									
5						ManufacturerPart	VMRepresents				Vendor_V2
6	<endtag>										

- You can import multiple parts and assemblies simultaneously.

To import multiple parts, you can add them, excluding any assemblies, to the Excel file. You must specify the **Tc\_Level** of each part as zero (0). As Teamcenter ignores occurrence properties, you need not specify them. The following sample Excel file shows the formatting to be used for importing multiple parts.

	A	B	C	D	E
1	Primary Object				
2	Tc_Level	Tc_ObjectType	Part Number	Part Revision	Part Name
3	0	Item	Demo1	1	Part Name1
4	0	Item	Demo1.1	1	Part Name2
5	0	Item	Demo1.2	1	Part Name3
6	0	Item	Demo1.3	1	Part Name4
7	<endtag>				

Note:

After you import multiple parts, Teamcenter opens only the first part.

To import multiple assemblies, you can add them to the Excel sheet. You must specify the **Tc\_Level** of each top-level part in an assembly as zero (0) and its children as 1 or 2 and so on as per the hierarchy of items. Teamcenter considers each top-level part as a new structure. The following sample Excel file shows the formatting to be used for importing multiple assemblies.

A	B	C	D	E	F	G
Primary Object						
Tc_Level	Tc_ObjectType	Part Number	Part Revision	Part Name	Ref Des	Quantity
0	Item	Demo1	1	Part Name1		
1	Item	Demo1.1	1	Part Name1.1		
1	Item	Demo1.2	1	Part Name1.2	D1, D2	3
1	Item	Demo1.3	1	Part Name1.3	D1, D2	3
0	Item	Demo2	2	Part Name2		
1	Item	Demo2.1	2	Part Name2.1	C1, C2	2
1	Item	Demo2.2	2	Part Name2.2	C3, C4	2
1	Item	Demo2.3	2	Part Name2.3		
<endtag>						

Note:

After you import multiple assemblies, Teamcenter opens only the first assembly.

- You can import multiple types of secondary objects for both an item and an item revision. While importing related objects, you can specify the object type and the relation type. If a related object already exists, Teamcenter relates the primary object to the related object. If a related object does not exist, Teamcenter creates a new related object.

If you do not specify any value in the **Tc\_Primary\_To\_Secondary\_Relation** column, Teamcenter considers the following values, by default.

- For vendor-manufacturing related parts, the value is **item-to-rev**.
- For any other parts that are not related to vendor-manufacturing, the value is **rev-to-rev**.

The following sample Excel file shows the format for importing secondary objects:

A	B	C	D	E	F	G	H	I	J	K	L	M	N
Primary Object							Secondary Object						
Tc_Level	Tc_ObjectType	Part Number	Name	Revision	Ref Des	Quantity	Tc_Secondary_ObjectType	Tc_Secondary_Relation	Tc_Primary_To_Secondary_Relation	Secondary ID	Secondary Revision	Secondary Name	Vendor ID
0	Item	Demo1	Name1	A									
1	Item	Demo1.1	Name1.1	A									
1	Item	Demo1.2	Name1.2	A	D1, D2	3							
1	Item	Demo1.3	Name1.3	A	D1, D2	3							
7				Item	IMAN_Specification	rev-to-rev						Specification ABC	
8	Commercial Part	Demo.CP1											
9				ManufacturerPart	VMPresents							Vendor Part ABC	VenID001
10	1	Item	Demo2	Name2.2	A								
11	1	Item	Demo2.1	Name2.1	A	C1, C2	2						
12	1	Item	Demo2.2	Name2.2	A	C3, C4	2						
13	1	Item	Demo2.3	Name2.3	A								
14	<endtag>												
<c>													

- Teamcenter ignores blank cells in the input spreadsheet. If you do not want to update the part or occurrence properties, leave the corresponding cells in the input spreadsheet blank.

- Map the structure properties between Teamcenter and Excel.

- Select the required mapping from the **Saved Mappings** list. The list shows the mappings created and saved by the administrator or previous users.
- Alternatively, create a new mapping by entering a name in the **Saved Mappings** field and selecting the **Mapped Attributes** for the **Excel Headers**.

**Import Structure** X Close

File: \* Choose File Test\_02.xlsx

**MAP PROPERTIES**

Saved Mappings: \* Required

Excel Header:	Mapped Attributes	▲ ▼
ID:	ID (Required)	▼
Rev:	Revision (Required)	▼
Name:	Name (Required)	▼
Description:		▼

Preview

Run in Background

**Import Structure**

- If a mapped attribute is not available:
    - a. Click **Add New** to create a new attribute.
    - b. In **ADD PROPERTIES**, select appropriate **Subtypes**, if you want to change the default one.

The reference properties **Unit of Measure**, **Owner**, and **Group** are listed in the **ADD PROPERTIES** section.

    - c. Filter and select the attribute that you want to map.
    - d. Click **Add**.
    - e. In the **Import Structure** panel, choose the newly added attribute.
4. (Optional) Click **Preview** to check the structure before import.
- a. The preview shows the structure to be imported along with the **Action** that is performed by default. **Teamcenter Information** shows additional information related to an action.

Import Preview		
Tree	Selection Mode	Select All
Name	Action	Teamcenter Information
Test_AP_14	Overwrite	
Test_AP_1	Overwrite	
Test_AP_2	Revise	
Test_AP_4	Overwrite	⚠ No write access to modify Revision properties and Structure.
Test_AP_5	Reference	⚠ No write access to modify Revision properties.
Test_AP_6	Overwrite	
Test_AP_7	New	

Action	Description
New	A new item or occurrence is created.
Revise	A new revision of the item or occurrence is created.
Overwrite	The existing revision is overwritten with the updated information.
Reference	The existing revision is used as is. For example, if the revision is released, and some changes are made to the revision in the Excel file without revising the item, the action is set as <b>Reference</b> . This indicates that the changes will not be applied.

- b. You can change the action for **Revise** and **Overwrite**. To do so, right click an action and select:
    - **Revise**

To create a new revision of the occurrence.
    - **Reference**

To reuse the existing revision in Teamcenter as is. The existing revision will not be updated with the latest information in the Excel file.
    - **Overwrite**

To update the existing revision in Teamcenter with the latest information from the source Excel file.
5. (Optional) Select the **Run in Background** check box.
  6. Click **Import Structure** to create the imported structure in Teamcenter.

The imported structure is created and added to the folder you specified previously. You are notified when the import is complete.

The structure is imported using the Active Workspace global revision rule. The same revision rule is used while opening the structure after import.

You can also import a structure with different ID types that use a multi-field key, that is, when you have two different items with the same ID. You can see the items on the **Import Preview** screen and import them successfully. The import structure functionality searches for and creates items based on the multi-field key.

## Export and import structures along with partitions

You can export and import structures along with partitions and partition schemes to and from other Teamcenter sites. For the import and export, you can use:

- Briefcase files
- Multi-Site Collaboration
- PLM XML

## Export and import structures along with worksets

You can export and import structures along with worksets to and from other Teamcenter sites.

A workset is a context collector for other structures. If your organization has very large structures with a multitude of occurrences, these occurrences can be collated within a workset to do a *what-if* analysis. But when you send the workset to another site by using a Multi-Site environment or a Briefcase, you might not want to export such a large number of occurrences along with the workset. Therefore, while exporting, the **Include entire BOM** option is not enabled by default. Consequently, the TCXML-based Multi-Site functionality works to share workset and related objects but not the product item or item revisions or their content.

Worksets also support site-consolidation activities through the TCXML-based Multi-Site functionality.

To export and import structures along with worksets, you can use:

- Briefcase files
- Multi-Site Collaboration
- PLM XML

### Export a structure to NX

You can export a structure from Active Workspace to unmanaged (standalone) NX.

In Smart Discovery, you can export a filtered assembly and open that in NX. That assembly does not contain the parts that are filtered out.

Consider the following points before you export a structure.

- **NX for Active Workspace** must be installed.
- Briefcase Browser must be installed.

#### Revision rules

Any revision rules applied to the structure are reflected in the exported structure.

#### Variant rules

- The default variant condition is reflected in the exported structure.
- Any user-applied variant rules are ignored.

## Effectivity

- Any effectivity applied as a part of a revision rule is reflected in the exported structure.
- Any user-applied effectivity other than those applied as a part of the revision rules is ignored.

To export a structure to NX:

1. Search for and open the structure that you want to export.
2. Click **Share**  > **Export NX Assembly**.

The **Export NX Assembly** command is not available if Briefcase Browser is not installed.

3. On the **Export NX Assembly** panel, choose:
  - a. **Export Non-Masters** – To export the object types specified as **Non-Master** in the access control list.
  - b. **Export Associated Files** – To export the associated files that are specified in the **AWN0NX\_export\_exclude\_file\_types** preference.
4. Click **Export**.

The export operation runs in the background. When the export is complete, a notification is displayed in the **Alerts** panel.

5. Click the **Alerts**  icon to see the notification and download the Briefcase (.BCZ) file if required.

### Note:

For additional information about exporting an assembly to NX, see *Exporting an assembly in Active Workspace* and *Setting up Active Workspace export assembly* in the *Teamcenter Integration for NX* guide.

# 7. Create structures

## About creating structures

You can create a structure by:

- **Duplicating** an existing structure.
- **Saving** an existing structure as a new structure.
- Importing a structure.

You can import a structure from **Excel**. You can also **import structures along with their partitions** from other Teamcenter sites.

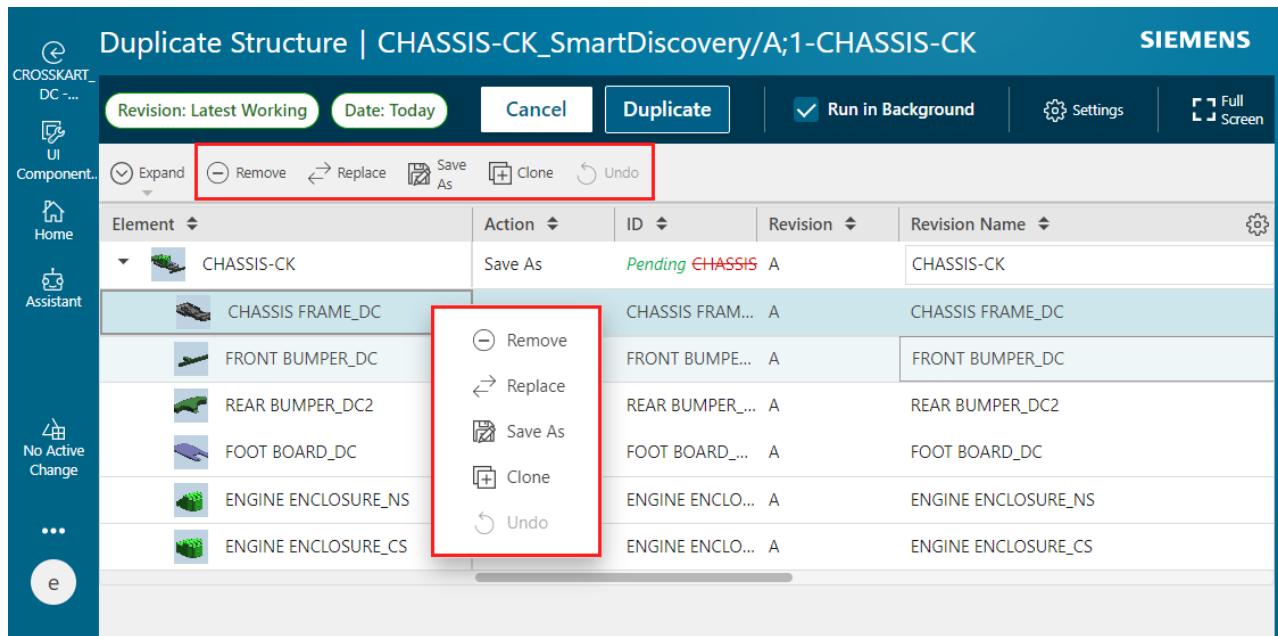
## Duplicate a structure

You can create a new structure by duplicating an existing structure. You can also duplicate structures that you do not own. When you duplicate a structure that you do not own, you become the owner of the new structure.

Your site administrator specifies whether the duplicate operation is run at the occurrence level or at the item revision level.

To duplicate a structure:

1. Open the structure that you want to duplicate.
2. Click **Duplicate** . If you are in the **Tree with Summary** view, click **More ...** to get the **Duplicate** option.
3. Right-click each element and select one of the following actions. You can also select these actions from the work area toolbar.



Action	Description
<b>Remove</b>	The element is not included in the new structure.
<b>Replace</b>	The element is replaced with the replacement element that you specified in the <b>Replace</b> panel.
<b>Save As</b>	<p>A copy of the element is added to the new structure. You own this new element.</p> <p>If the element is a structure, all its child elements are only referenced in the new structure. These are still owned by the user who created the source structure.</p> <p>You can edit the <b>Revision Name</b> and <b>Description</b> of the element.</p>
<b>Clone</b>	<p>A copy of the element is added to the new structure. You own this new element.</p> <p>If the element is a structure, copies of its child elements are used in the new structure.</p> <p>You can edit the <b>Revision Name</b> and <b>Description</b> of each element.</p>

#### Note:

If any child element is a structure, all its children are also marked with the same action. However, if you change the action of one of its child elements later, the action of the parent element changes accordingly.

For packed lines, the specified duplicate action is applied only on the selected occurrence and not on all occurrences in the line. To apply the selected duplicate option to all packed

occurrences, you must *unpack* and apply the duplicate action to each occurrence. You can select multiple occurrences and apply the action simultaneously.

If you do not select an action, and the **Action** column is blank, the element is only referenced in the new structure. The element continues to be owned by the user who created the source structure.

4. To undo an action set on an element, select the element, and click **Undo**.
5. (Optional) To define a specific naming pattern for the duplicated elements:
  - a. Click **Settings** .
  - b. In the **Settings** panel, click **ID Naming Rule** and enter the following details:

ID naming rule	Description
<b>Prefix</b>	The text is prefixed at the start of the existing IDs.
<b>Suffix</b>	The text is appended at the end of the existing IDs.
<b>Replace/With</b>	<p>The text specified in <b>Replace</b> is replaced with the text specified in <b>With</b>.</p> <p>The text specified in <b>Replace</b> must be text that is part of the existing ID, and it is case-sensitive.</p>

- c. Click **Close**.
6. To run the duplicate process in the background or foreground, select or clear the **Run in Background** check box. If you choose to run the duplicate process in the background, you receive a notification in **Alerts**  once the structure is duplicated.
7. To create the new structure, click **Duplicate**.

## Create a new structure from an existing structure

You can create a new structure from an existing structure by saving the existing structure as a new structure.

### Procedure

1. Search for a structure.
2. Click **New**  > **Save As** .
3. In the **Save As** panel, enter the required information, and click **Save**.

A new structure is created from the existing structure. If the existing structure contains any partitions, the partitions are also carried over to the new structure.

# 8. Edit structures

## Edit a structure in markup mode

You can make changes to a structure in *markup mode*. In this mode, the proposed changes to a structure are highlighted with a different color or a strikethrough, until they are committed to the database. You use mark up changes for reviews and analysis without actually modifying the structure. Any user can mark up a structure regardless of the release status or write access.

You can either reject the changes or apply them to the structure.

### Procedure

1. Search for the structure that you want to edit and then click **Open** .
2. To edit the structure in the markup mode, click **Markup**  to switch to this mode. You do not need write access to mark up the structure.
3. Edit the structure as required and then save the edits. You can make the following types of structure edits in markup mode:
  - Add a child or a sibling
  - Remove a structure element
  - Replace a structure element
  - Edit occurrence properties
  - Add or remove substitutes
4. To display or hide the markups for a structure, turn the markup mode on or off.

When you are in the markup mode, you can view a summary of the markup changes on the **Markup** tab. This tab displays a list of markup changes for the current level (all markups for an assembly) or for the current element.

5. To reject an individual markup change listed on the **Markup** tab, click **Cancel Markup** .

You can add your markups in a change context as well. In this case, the markups are related to that change, and you can see them only when you are in the change context. You can create different sets of markups for different changes.

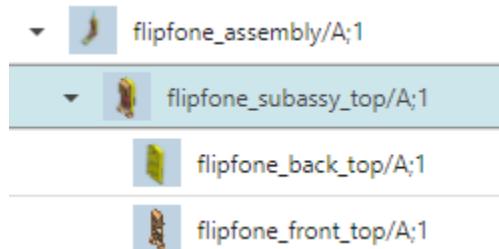
## Insert or remove levels in a structure

You must have write access to the structure to insert or remove a level. The insert action adds a level between the selected object and its parent object. The remove action removes the selected element's parent object one level above and attaches the element and all its siblings to its current grandparent object two levels above.

Search for the structure you want to edit and click **Open**.

To	Do this	Result
Insert a level	Click the element (line) above which you want to insert a level and click <b>Edit Structure</b> ➤> <b>Insert Level</b> .  Fill in the details and click <b>Insert</b> .	A new level is added above, as the new parent of the selected element.
Remove a level	Click the element (line) that you want to remove from the assembly and select <b>Edit Structure</b> ➤> <b>Remove Level</b> .	The selected element is removed from the assembly, and its child objects are attached to what was previously their grandparent object.

The following example shows how the remove-action works in the three-level assembly in the graphic:



In both cases, removing or adding levels, the element may split due to effectivity cutback.

## Add or remove structure elements

Whenever you add an element to a structure, it is always added to the open structure node, which is the right-most element in the breadcrumb.

You can add multiple occurrences of an element to a structure with a single add operation. To add multiple occurrences, the element being added must exist in the database. Multiple occurrences of a new element cannot be added.

If you are working in the markup mode, you must **apply or cancel the markups** to complete the updates.

## Add an element to a structure

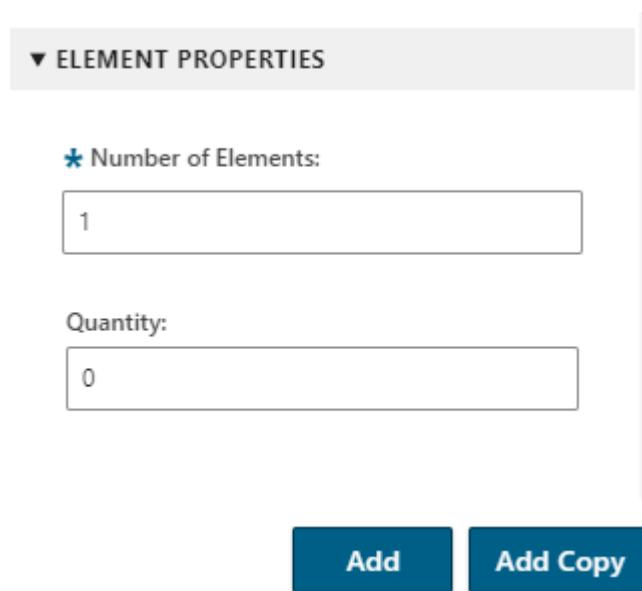
1. Search for the structure where you want to add an element and click **Open** .
2. If you want to add elements in the markup mode, click **Markup**  to switch to the markup mode.
3. Select the target node where you want to add the element in the structure, click the **Add**  icon, and select one of the following *add* options.
  - Select **Child** to add the element as a child of the target node.
  - Select **Sibling** to add the element at the same level in the structure as the target node. If the top-level node is selected as the target, the **Sibling** option is not available.
4. In the **Add Child** panel (displayed when you are adding a child) or the **Add Sibling** panel (displayed when you are adding a sibling), click one of the following tabs:
  - **New**  
Allows you to add a new element from your computer. You can browse to the required file or select it from your **Recent** list. The **Other** list allows you to filter for the relevant file type. You cannot add multiple occurrences from the **New** tab.
  - **Palette**  
Allows you to paste an element from the clipboard or to select one from your **Favorites** or **Recent** list. You can add multiple occurrences of an element from the **Palette** tab.
  - **Search**  
Allows you to search for an element to add. You can add multiple occurrences of an element from the **Search** tab.

5. Enter the ID, name, description, or unit of measure as required.
6. If you are adding a new element from the **New** tab, in **ELEMENT PROPERTIES**, specify **Number of Elements** and **Quantity**.

The **Quantity** field is available by default. If your administrator has configured to include additional element properties, those properties are also displayed in **ELEMENT PROPERTIES**.

By default, the **ELEMENT PROPERTIES** section is available for **Item** and **Part** in the **New** tab. This section appears for other business objects if your administrator has configured the create style sheets for those objects.

7. If you are adding an element from either the **Palette** or the **Search** tab, locate and select the element, and specify the **Number of Elements** and **Quantity**.



8. Click **Add**.

Active Workspace creates the occurrence and refreshes the display.

### Remove an element from a structure

Click **Edit Structure** > **Remove**, and accept the confirmation message.

You can also remove multiple occurrences simultaneously by selecting multiple occurrences using either **Ctrl+click** or **Right-click**.

Note:

You cannot remove the top node of the structure, that is, the leftmost element in the breadcrumb.

### Add a copy of the existing objects to a structure

In cases where a new occurrence that is very similar to an existing occurrence is added to a structure, you can add a copy of the existing occurrence to the structure instead of creating a new occurrence. The copied occurrence is added with a new ID, and it retains the properties of the occurrence from which it is copied.

1. Click the **Add** icon and select the required option.
2. In the **Add** pane, in the **Palette** or **Search** dialog box, select the object that you want to copy.

3. Click **Add Copy** to add a copy of the existing element with a new ID.

You can also copy an occurrence from one structure to a different structure using the drag-and-drop action. This action copies the occurrence and does not remove it from the source structure.

You can use drag-and-drop between similar web browser windows to copy occurrences from a location in one Active Workspace window to another accepting object or location in another Active Workspace window.

1. Click and hold the occurrence that you want to copy.
2. Drag the occurrence to the desired location in the target structure.
3. Drop the occurrence on to a valid accepting object in the target structure.

## Replace a structure component

You can replace a part with another part.

You can also replace an existing part or a subassembly in an assembly with its copy using the **Save As And Replace** command. If the **Save As And Replace** option is not visible, you may not have the required privileges.

To replace the part or assembly in the structure:

1. Search for the element that you want to replace.
2. If you want to edit the structure in the markup mode, click **Markup**  to switch to the markup mode.
3. Select the occurrence and click **Edit Structure**  > **Replace**.
4. In the **Replace** pane, select the replacement and click **Replace**.

Active Workspace replaces the element and refreshes the display.

5. If you are working in the markup mode, you must either **apply** or **cancel** the markups to complete the updates.

## Replace a structure component with its copy

A copy is a new item with identical properties but a new ID.

You can copy a part or a subassembly, with or without children, save it with a new name, and replace the existing subassembly in the structure with its copy. If the subassembly is copied with children, the child parts are renamed based on the naming convention specified using the naming rule.

1. Select the structure from which you want to copy the element, and click **Open**.
2. Click the **New** icon and select **Save As and Replace**.

Active Workspace shows the **Save As And Replace** pane.

3. (Optional) Select the **Copy Children** check box.

If you choose the copy children option, the child elements in the assembly are replaced along with the top element.

4. Select **ID Naming Rules** to automatically assign new IDs to the copied elements. The **ID Naming Rules** option is visible only when the **Copy Children** check box is selected.

- **Prefix**

The text string provided is added to the start of the existing IDs, and new IDs are assigned.

- **Suffix**

The text string provided is added to the end of the existing IDs, and new IDs are assigned.

- **Replace/With**

The text string specified in the **Replace** field is replaced with the text string specified in the **With** field in the new IDs.

5. (Optional) Select the **Run in Background** check box.

**Note:**

For the save and replace operation to run in background, your system administrator must configure Dispatcher services.

6. Click **Save As And Replace** at the bottom of the **Save As And Replace** pane.

Active Workspace replaces the element and refreshes the display.

If you choose to run the replace operation in the background, a notification is generated once it is complete. Click the notification to view the details of the replacement.

## Split an occurrence with multiple quantity values into its individual occurrences

Many structures have multiple occurrences of the same element. For such structures, you can either add all similar occurrences individually or add only one occurrence and specify its quantity.

For example, you can either add 10 brushes individually to an alternator assembly, or add one brush and specify its quantity as 10.

Element Name	ID	Revision	Quantity
Engine	026077	A	
Alternator	026078	A	
Brush x10	026079	A	10

You can split an occurrence that has a quantity of more than one into its individual occurrences. The total number of occurrences after the separation equals the original quantity. All occurrences have the same properties but may be modified independently.

The split command does not work if:

- A unit of measure (UOM) is specified for an occurrence.
- Multiple occurrences already exist and are represented as a packed line.

To split the occurrences in a structure:

1. Search for the occurrence. The value for **Quantity** must be more than 1.
2. Select the occurrence that you want to separate, click the **Edit Structure** icon, and select **Split Quantity**.

The single occurrence is split into several individual occurrences, where the number of occurrences equal the single occurrence's quantity.

	Engine	026077	A
▼ 	Alternator	026078	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A
	Brush	026079	A

## Move an occurrence within a structure

You can drag-and-drop one or more occurrences to move it within a structure. You can drop an occurrence on to a valid accepting object only. This action moves the occurrence from the source location to the target location within the structure. It does not copy the occurrence.

You can use drag-and-drop between similar web browser windows to move occurrences from one location to another within the same structure. For example, if the same structure is open in two Active Workspace windows, you can drag an occurrence from the first window and move it to a different location within the same structure in the second window.

1. Click and hold the occurrence that you want to move.
2. Move the occurrence to the target location in the structure.
3. Drop the occurrence on to the target object.

## Control edit access to an assembly

As the owner of an assembly, you can control edit access to the assembly in your structure. For example, you can control which users can add or remove a child or modify the occurrence properties of a child in the assembly.

You can do this through a workspace object in Teamcenter called BOM View Revision (BVR). A BVR stores the single-level assembly structure of an item revision. In a structure, whenever an item is an assembly (it has children), the item revision created is a BVR. When you add a child to an item, the system creates a BVR automatically. To edit the assembly, other users must have write access. If you do not want other users to update the assembly, you can check out the BVR. Similarly, you can grant them access to edit the assembly.

### Procedure

1. Select the relevant assembly in the structure.
2. On the **Overview** tab, expand the **ASSEMBLY INFORMATION** section.

This section displays one or more BVR objects associated with your assembly. It also indicates if the assembly is released, or checked out, its last-modified date, and the owner information.

3. Select the relevant BVR.
4. To open the BVR, on the BVR tile, click **Open** . and to view and edit its properties, on the primary toolbar, click **Information** .

To check out the BVR, on the primary toolbar, select **Edit**  > **Check Out**  and to check in the checked-out BVR, select **Edit**  > **Check In** .

## Edit the properties of a part or an assembly

To update the properties of a part or an assembly, you must have write access to the parent assembly of the occurrence you want to edit. Additionally, it must not be checked out by any other user.

To edit the properties of a part or an assembly:

1. If you want to edit the properties in the markup mode, click **Markup**  to switch to the markup mode.
2. Select the part or assembly in the structure.
3. Click **Edit** .

The editable properties are in boxes. Properties that are not in boxes are *read-only* and cannot be edited.

4. Change the properties you want to edit. Edited values are highlighted until you save the edits.

To edit occurrence properties, you must have write access to the object containing the property. For example, if a property in the **Overview** tab is pulled from a form that is related to the object, you must have write access to the form to edit the property.

5. To save changes, click **Edit**  > **Save Edits**. To discard them, click **Edit**  > **Cancel Edits**.
6. If you are working in the markup mode, you must **apply or cancel the markups** to complete the updates.

### Edit the occurrence properties when a new occurrence is added as a markup

1. Search for the occurrence or assembly where you want to add an element and click **Open** .
2. If you want to add elements in the markup mode, click **Markup**  to switch to the markup mode.
3. Select the target node, where you want to add the element in the structure, click the **Add**  icon, and select **Child** or **Sibling** as required.
4. In the **Add** panel, create a **New** element or use the **Palette** or **Search** function to find an existing element.
5. Enter the ID, name, description, or unit of measure as required. The following properties can be marked up for edits:
  - Sequence
  - Quantity
  - Occurrence name
  - All Notes
  - Any other custom occurrence properties
6. Click **Add**.

### Control auto-saving of structure property edits

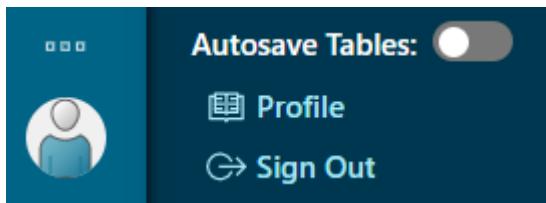
A user updates a structure occurrence's properties in the table view. Not all cells in the table are editable. It depends on the property and the user's access levels.

The user can choose to enable or disable the auto-saving of the edits made to these cells. When auto-saving is enabled, if a user updates or enters a new value into an editable property cell, the value is

automatically saved as soon as the user clicks anywhere outside that cell. The user does not need to save explicitly.

By default, Active Workspace automatically saves edits to these cells. To turn off the auto-saving:

1. From the global navigation, click your profile icon and disable **Autosave Tables** option.



2. Alternatively, to turn on the auto-saving, click your profile icon and enable **Autosave Tables** option.

## Open and update two structures side by side in the split view

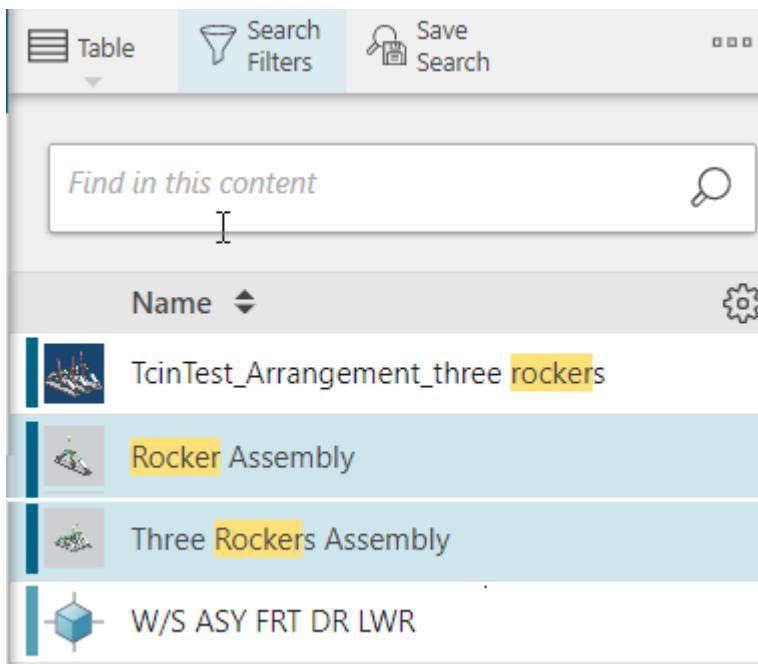
You can use the split feature to view two structures, or two configurations of a structure simultaneously. However, to select two structures for opening, both structures must be listed on the same page.

### Open two different structures

1. To open two structures simultaneously, select the first structure using either **Ctrl+click** or **Right-click**.

This activates the multiselect mode.

2. Select the second structure.



3. Click the Open  icon and select Open.

The selected structures are displayed side-by-side in two views. Structures are displayed in the **Tree** view and you can navigate to the child or parent parts as needed.

The screenshot shows the Siemens PLM Active Workspace interface with a split view. On the left, the 'Three Rockers Assembly' structure is displayed, containing three occurrences of the 'Rocker Assembly' part. Each occurrence has a different ID (028) and a different icon. The first occurrence is expanded, showing its internal components: 'Lever', 'Bolt', 'Bolt', 'Bolt', 'Bolt', 'Piston', and another 'Bolt'. On the right, the 'Rocker Assembly' structure is shown in its entirety, containing a 'Lever', three 'Bolt' parts, a 'Piston', and a 'Plate'. Both structures have standard toolbars at the top.

Element	ID
Three Rockers Assembly	028
Rocker Assembly	028
Rocker Assembly	028
Lever	028
Bolt	028
Bolt	028
Bolt	028
Piston	028
Bolt	028
Plate	028
Piston	028

4. You can drag-and-drop occurrences between the two views to copy them from one structure to another.
  - a. Click and hold the occurrence that you want to move.
  - b. Move the occurrence to the target location in the structure.
  - c. Drop the occurrence on to the target object.
5. To close the split view, click the **Split** button and select **Split**.

The view in which you clicked the **Split** button remains open, and the other view is closed.

## Open the same structure in both views and update structure configurations

1. Search for the structure.
  2. Select the structure from the search results, click the **Open**  icon and select **Open**.
  3. Click the **Tree**  icon and select **Split** .
- The selected structure is displayed side-by-side in two views. You can update the structure configuration in either view.
4. Change the structure configuration for one or both views.
    - a. Click **Configure**  and then select **Configuration** .
    - b. Change the **Revision Rule**, **Effectivity**, or **Variant Rule** as required.

The configuration is updated for the selected structure. You can work with two different configurations of the same structure simultaneously in the split view.

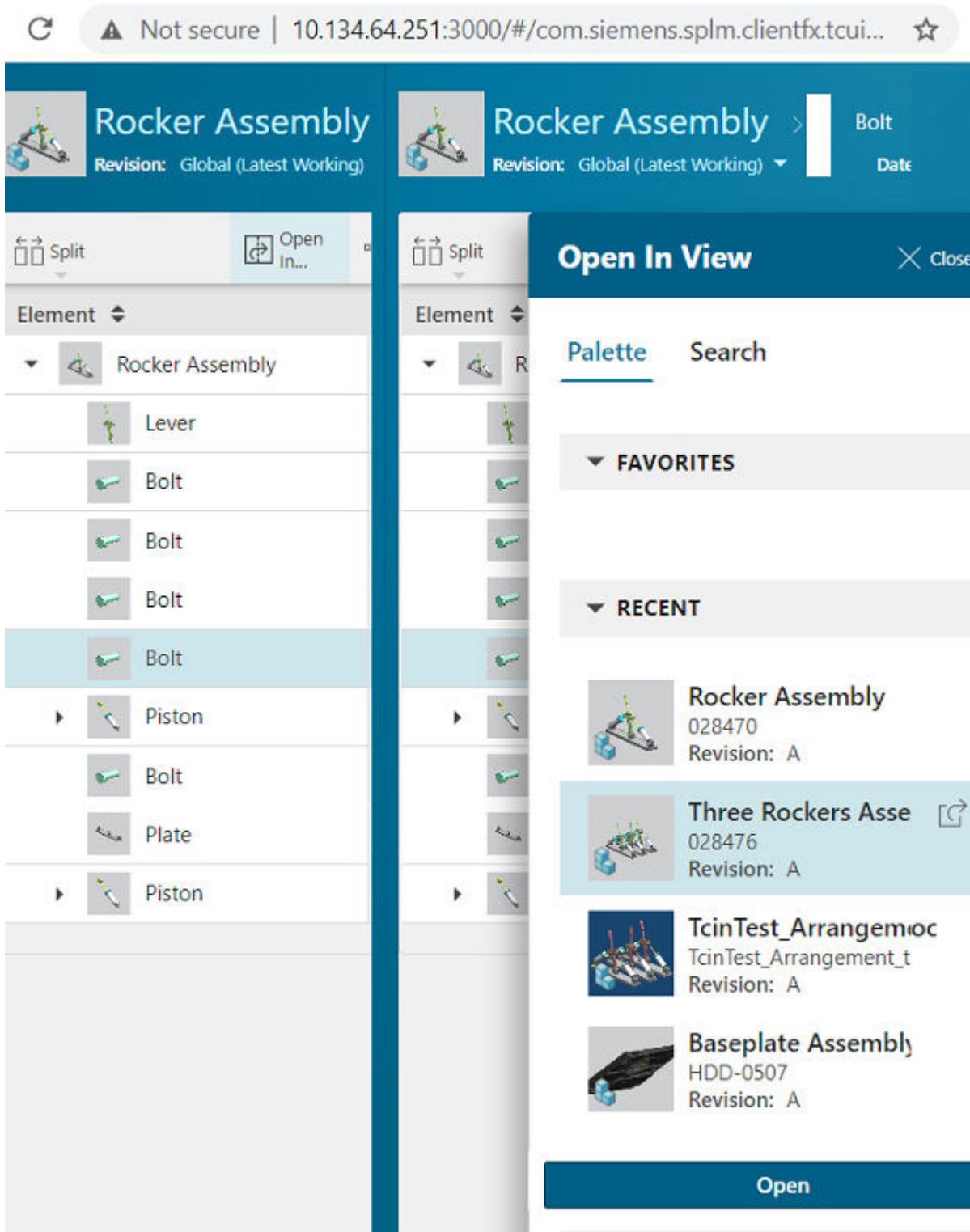
- c. You can independently control how structures are loaded in either view using the following commands:
  - **Show Excluded by Effectivity**
  - **Show Excluded by Variants**
  - **Show Suppressed**
5. To close the split view, click the **Split**  button and select **Split** .

The view in which you clicked the **Split**  button remains open, and the other view is closed.

## Open a structure in a split view

1. Search for and open the structure you want to work with.
  2. Click the **Tree**  icon and select **Split** .
- The selected structure is displayed side-by-side in two views. You can update the structure configuration in either view.
3. To open a new structure in either view, click the **Open in View**  icon in that view.

For either view, **Open in View** pane is displayed on the right side of your screen.



4. In the **Open in View** pane, click one of the following tabs:

- **Palette**

Allows you to load a structure from the clipboard or to select one from your **Favorites** or **Recent** list.

- **Search**

Allows you to search for a structure.

5. Navigate to the structure you want to open and click **Open** to load the selected structure.

## Editing occurrence properties in the context of an assembly

### Setting in-context overrides

You can edit the properties of an occurrence in the context of a selected higher level assembly. This in-context override is not defined in the context of the immediate parent but in the context of the next higher level (grandparent level) component.

When a component or subassembly is reused in another assembly, some information might have to be overridden to adapt it to fit the context of the new assembly.

Example:

Properties such as **Sequence** or **Quantity** can be different for a component when the same component is used in the context of two different assemblies.

When component **C1** is used in the context of the assembly **A1**, the quantity could be **4** and Sequence value could be **10**.

However, it is possible that when the same component **C1** is used in another assembly, namely **A2**, the quantity required could change to **6** instead of **4** and the **Sequence** value could change to **20** from **10**.

In case of such requirements, for the same component **C1**, you can use overrides to define the properties **Quantity** and **Sequence** differently in the context of assembly **A1** and **A2**.

For more information about in-context override, refer to *Structure Manager* in the Teamcenter documentation.

### Set in-context overrides

To set in-context overrides:

1. Search for and open the structure.
2. Select the grandparent assembly (two-levels above the component) to be defined as the override context.

3. Click **Edit Structure**  and select **In-Context** .

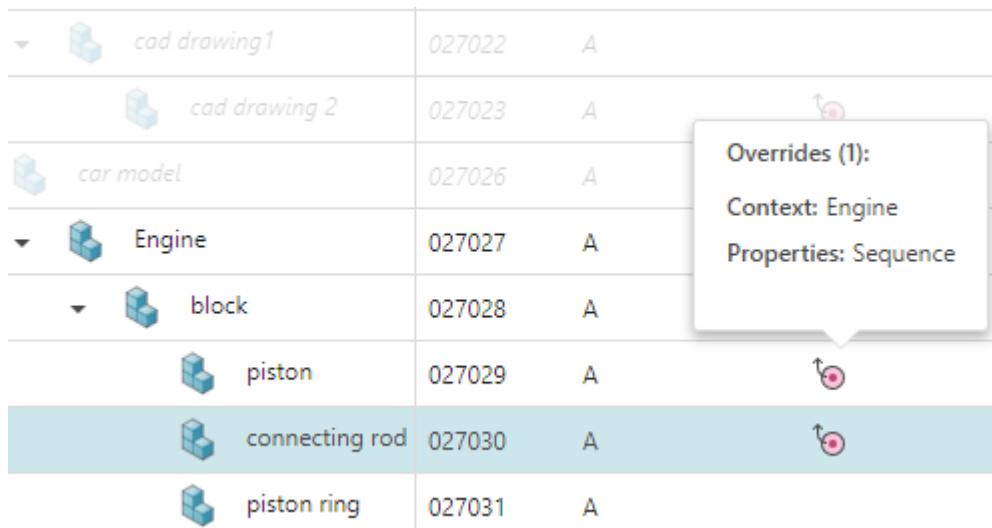
The **Override Context** in the header is updated to reflect the selected assembly. Only the selected assembly remains active. The remaining structure is made unavailable.

4. Click the **Edit** icon  at the top-right corner.

The editable cells are activated.

5. Change the properties you want to edit in the context of the selected assembly.
6. Save your changes by clicking **Save** > **Save Edits**. To cancel your edits, click **Save** > **Cancel Edits**.

The override icon appears against the selected component in the **Override** column of the table. On mouse hover, it shows information about overridden properties with the context.



The screenshot shows a table of components under the heading "cad drawing1". The columns are labeled "Component", "Number", and "Status". The rows include "cad drawing 2" (Number 027023, Status A), "car model" (Number 027026, Status A), "Engine" (Number 027027, Status A), "block" (Number 027028, Status A), "piston" (Number 027029, Status A), "connecting rod" (Number 027030, Status A), and "piston ring" (Number 027031, Status A). The "connecting rod" row is highlighted with a light blue background. A tooltip box is overlaid on the "connecting rod" row, containing the text "Overrides (1):", "Context: Engine", and "Properties: Sequence". The "override" icons are small circular arrows with a red dot, located to the right of the "Status" column for each row.

 cad drawing1	027022	A
 cad drawing 2	027023	A
 car model	027026	A
 Engine	027027	A
 block	027028	A
 piston	027029	A
 connecting rod	027030	A
 piston ring	027031	A

The override icons are also shown along with the individual overridden properties.

7. To close the **Set In-Context** view, select the same line where you set the in-context override, click **Configuration**  and select **Set In-Context**.

## Apply or cancel markups on a structure

You can apply or reject markups from the **Markup** tab or using a workflow.

### Apply or cancel markups from the Markup tab

An authorized user can apply the markup changes to a structure through the **Markup** tab.

1. Find the structure where you want to apply the markups.

2. If the marked-up assembly is released, revise the assembly.

The markups are carried forward to the new revision.

3. Open the structure in the **Tree with Summary** view.
4. Click the **Markup** tab, select the marked up assembly, and then click **Apply Markup** .

**Note:**

The **Apply Markup**  icon is not visible when the marked up part is selected. It is visible only when the parent assembly is selected.

5. To reject a markup, select the markup change to be rejected, and then click **Cancel Markup** .

### Apply markups using a workflow

For the markups made within a change context, you can apply the markup changes to a structure by initiating a workflow process. Submitting content to a workflow sends it through a series of required tasks, such as approvals (signoffs) and reviews.

1. To initiate applying the markup, select the change notice containing the markups and then click **Submit to Workflow** .

The **Submit to Workflow** panel is displayed along with a list of workflow templates.

2. From the **Workflow Template** list, select the **Review and Apply BOM Markups** template and then click **Submit**.
3. Assign the reviewers for the workflow.
4. After the workflow is approved, a new revision is created, and the changes are applied.

You can verify the updates in the new structure.

### Review active or closed changes for a structure

You can track changes (added, modified, replaced, revised, or deleted) to the assemblies using a change request or a change notice. The active changes for a structure are displayed by default. To view the closed changes, use the **Show Redlines** command.

**Note:**

If you do not see the changes highlighted, contact your system administrator.

- Search for and open the structure. If the structure has active changes, they are highlighted. Expand the assembly to view the details of the change.

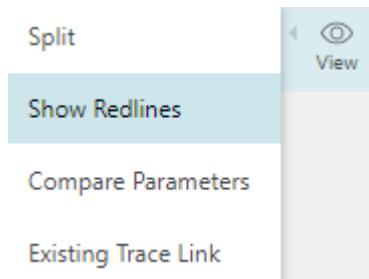
Element Name	ID	Revision
Engine	027067	B A
piston	027068	A
Enhanced Valve	027071 027069	A
Connecting Rod Assembly	027072	A
connecting rod	027070	A

Deleted parts are highlighted with red strikethrough.

The added parts are highlighted in green and are italicized.

For replaced or revised parts, the old and the new values are shown side by side.

- (Optional) To disable highlighting the changes in the structure, click the **View** icon and turn off **Show Redlines**.



- Only active changes are shown by default. To view the closed changes, click the **View** icon and select **Show Redlines**.

Note:

The **Show Redlines** functionality tracks changes within the **Change Summary** of a change notice, as well.

## Analyze where a component is used in a structure or product

A where-used analysis allows you to identify all parent assemblies in which a part is used, navigating up the structure. Your installation must have the Change Management solution set up to perform a where-used analysis.

You can perform a where-used analysis to assess the impact of engineering changes to the product structure or to check if the changes in one assembly affect other assemblies. It finds the full path up to the top-level in the structure by using the selected component or assembly as the starting point (context).

1. Search for and open the assembly or component.
2. Click the **Where Used** tab.
  - The **CONTEXTS** section shows various configurations for the selected component. You can select the configuration you want to open.
  - The **USED IN STRUCTURES** section shows the selected component across all assemblies up to the top-level. These assemblies are shown in the reverse tree format, which means that the child component is shown first and its parent is shown at the next (lower) level.
  - The **REFERENCES** section lists the parts and documents that reference the selected component.

3D   Overview   Markup   **Where Used** >

▼ USED IN STRUCTURES

Configured by Global Revision Rule : Latest Working

Object	
▶  014573/A;1-SUB10	

▼ CONTEXTS

Object	Type	Release Status	
flipfone_assembly/A;1	Item Revision		

▼ REFERENCES

Object	Type	Release Status	
014589-p15	Item		
014589/001;p15_A	4G Part		
DE011024/001;1-p15_A	Design Component		

## Making mass updates to a structure

### Making mass updates

A mass update enables users to update all occurrences of an element, referred to as **Problem Item**, in multiple assemblies simultaneously. This expedites a manual, time-intensive process.

Mass update is used to edit structures by performing any of the following actions:

- Add a new part as a sibling
- Add a substitute
- Remove an occurrence
- Remove a substitute
- Replace a part

You can work with only one **Problem Item** for each mass update action. You can perform a different action on each occurrence of the **Problem Item**. For example, you can choose to add a new part to one occurrence and add a substitute to another occurrence.

Mass updates are always initiated within an Engineering Change Notice or ECN. You can perform a mass update only on assemblies that have the status **Released**. The changes applied through the mass update are saved as markups that are attached to the impacted assemblies. You can change or reset the marked-up changes as required through the **Mass Update** panel until the changes are applied.

Once a mass update is initiated for a structure, then no other markups can be made on that structure.

You can apply the marked-up changes to assemblies by initiating the **Review and Apply BOM Markups** workflow process on an ECN for approval. The workflow process will go through the following stages:

Start → Proposed Change → Review ECN → Execute Approve Handler → Finish

The **Execute Approve Handler** step of the workflow applies markups to all assemblies.

## Make mass updates to a structure

1. On the home page, click the **Changes** tile.
2. Search for the change notice you want to work with, select the change notice, and click **Open** .
3. Click the **Mass Update** tab.

The **Mass Update** tab is not visible under following conditions:

- a. Multiple problem items are associated with the same change notice.
- b. The same problem item is associated with multiple active change notices.
- c. The change notice is in the **Cancelled** or **Closed** state.
- d. The release version is Teamcenter 12.0 or a version prior to Teamcenter 11.6.0.

4. In **IMPACTED ASSEMBLIES**, click **Add** .
  5. Select a problem item using **Search** or **Palette** and click **Add**.
- All parent assemblies of the selected problem item are listed under **IMPACTED ASSEMBLIES**.
6. In the list of impacted assemblies, select the row in which you want to make the update. Only assemblies with the status **Released** can be updated.
  7. Click in the **Action** column and select the required action from the list. Only the actions available for the selected row are displayed. The selected action for the row is highlighted.
  8. For **Add**, **Substitute**, or **Replace** actions, you can add the required item to the **Proposed Item** column using **Search** or **Palette**.
  9. Click **Save Edits**  after updating the required rows.
  10. To delete a saved markup, select the row, and select **None** from the **Action** column. The markup is deleted and the assembly is removed from the list of affected items.
  11. (Optional) Click the **Affected Items** tab to view the list of items that are marked up for update.
  12. Select the affected item that you want to verify from the list and click **Open**.
  13. Click the **Show Markup**  icon to verify the markup.
  14. Click the **Mass Update** tab. In the **Mass Update** tab, you can revert the markups before they are applied using the workflow.
  15. To initiate applying the markup, click **Submit to Workflow** . Active Workspace displays the **Submit to Workflow** panel and a list of workflow templates.
  16. Select the **Review and Apply BOM Markups** workflow template and click **Submit**.
  17. Assign the reviewers for the workflow.
  18. Once the workflow is approved, the changes are applied. To verify the changes, go to **Affected Items**, select the row, and click **Show Markup** .

## Create a revision baseline

You can create a baseline of the item revision that represents a structure at any stage. You create baselines to preserve the state of a structure at a particular checkpoint. A baseline revision is created for all the elements in the structure, irrespective of the element selected.

1. Locate the structure that you want to create a baseline for and click **Open** .

2. Click **New**  and select **Create Revision Baseline** .
3. In the **Create Revision Baseline** panel, select a template from the **Template** list.
4. (Optional) In the **Description** box, enter a description for the revision baseline.
5. To create a precise or an imprecise baseline, select or clear the **Precise Baseline** check box.
6. Do one of the following:

To create a revision baseline	Do this
Asynchronously (in the background)	Select the <b>Run in Background</b> check box.
Synchronously (in the foreground)	Clear the <b>Run in Background</b> check box.

When creating a revision baseline, the **Run in Background** check box is selected by default. If you clear the **Run in Background** check box, Teamcenter remembers your choice. The next time you log on, the check box is not selected.

**Note:**

If you want to create the revision baseline asynchronously, you must have the AsyncService translator installed, configured, and running for the baseline feature to operate properly.

7. Click **Create**.

Your saved structure baseline is available in your **Home** folder.

8. If you selected the **Run in Background** check box, a notification is displayed in the **Alerts** panel. Click **Alerts**  and click the baselined structure in the **Target Object** section.

# 9. View and visualize structures

## View a structure in other applications

You can open and view a structure in other applications, such as NX and CATIA. If the structure exists within a partition, you can open the partition itself in some other application, so that one or more structures within that partition are opened.

### Procedure

Application	Action
Teamcenter Lifecycle Visualization	Select <b>Open</b>  <b>Open in Visualization</b> .
Rich Client	Select <b>Open</b>  <b>Open in Rich Client</b> .
NX	Select <b>Open</b>  <b>Open in NX</b> .
Solid Edge	Select <b>Open</b>  <b>Open in Solid Edge</b> .
Illustrator	Select <b>Open</b>  <b>Open in Illustrator</b> .
CATIA	Select <b>Open</b>  <b>Open in CATIA</b> .

## Viewing structures in the split view

You can split the structure view into two views using the **Split** command. Initially, identical structures are loaded in both panels. Both panels provide a toolbar with commands relevant for the structure being displayed.

You can also open two different structures side-by-side in the split view by selecting two root nodes and then using the **Open**  command.

In the split view, you can modify the structures independently. Once either structure is updated to a different configuration, then the **Compare Content** functionality is enabled. You can also use the split view to copy an occurrence from one structure to another using the drag-and-drop functionality.

The **Split** panels support both **Tree** view and **Tree with Summary** view.

You can view connections (for example, welds) and item elements (for example, General Design Elements and ports) in the tree structure and the 3D viewer in Active Workspace.

The following tabs are available in the **Tree with Summary** view:

**Note:**

You cannot filter Smart Discovery Indexed structures in the **Split** view.

- **3D**
- **Overview**
- **Changes**
- **Finishes**
- **Made From**
- **Where Used**
- **Attachments**
- **History**
- **Simulation**

3D    **Overview**    Changes    Finishes    Made From    Where Used

**▼ PROPERTIES****▼ PREVIEW**

ID:	028470
Revision:	A
Revision Name:	Rocker Assembly
Description:	NX-000-0008
Occurrence Name:	
Reference Designator:	



Adding custom tabs using style sheets is not supported for the **Tree with Summary** view in the **Split** mode.

## View where an item is used

In Teamcenter, you can view where, in which products or assemblies, a item is used.

To view the top-level assemblies or products in which the selected item is used, go to the **TOP LEVEL** section on the **Where Used** tab. This is useful for *impact analysis* when you want to see which products are affected if the item is changed. It is also useful for determining the *traversal path* when you want to see the item in the context of one of its products.

Smart Discovery Indexing is used to find the top-level assemblies or products. Therefore, if your system administrator has not installed Smart Discovery, the **TOP LEVEL** section is not displayed. You only see indexed products in the results list.

### Procedure

1. Search for and select the item.
2. Click the **Where Used** tab.
3. The **USED IN STRUCTURES** section lists the immediate parents of a item. You can expand the tree to go up in the structure.

By default, the table displays the items as a single revision, using the **Global** revision rule. Choose **Off** to switch to view all revisions in the table. Choose **On** to switch back to viewing a single revision.

4. Expand the **TOP LEVEL** section if it is not already expanded.

The table shows all the top-level assemblies or products in which the selected item is used.

Choose **Off** to view all revisions of the items in the table or choose **On** to use the **Global** revision rule to view a single revision.

## Visualize structures

You visualize structures to perform visual inspection of the structure elements, and their location and orientation in the structure.

You can view connections (for example, welds) and item elements (for example, General Design Elements and ports) in the tree structure and the 3D viewer in Active Workspace.

### Procedure

1. Open a structure in the **Tree with Summary**  view.

2. Open the **3D** tab.
3. Select a structure element in the **Tree with Summary** view.

The selected element is highlighted in the **3D** tab.

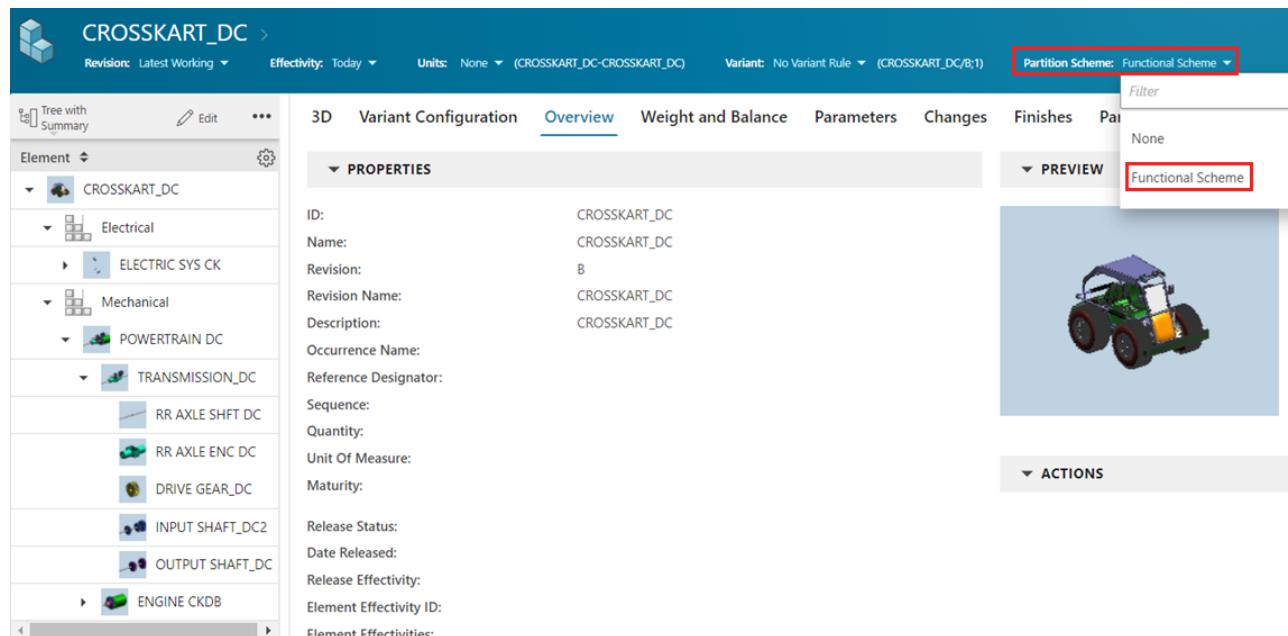
4. Select an element in the **3D** tab.

The corresponding structure element is selected in the **Tree with Summary** view. However, multiselecting in the **3D** tab does not select the corresponding elements inside the **Tree with Summary** view.

## Visualize structure elements located within partitions

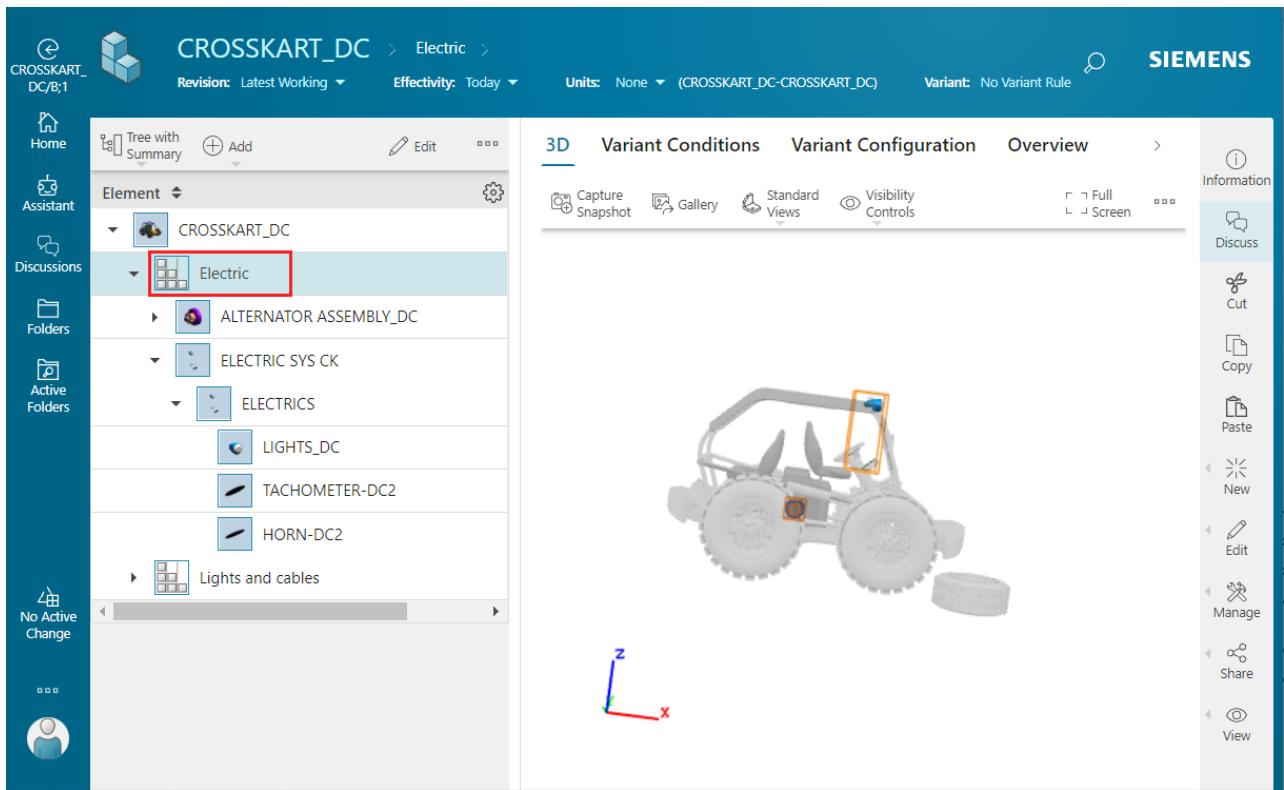
To visualize the structure elements located within a partition:

1. Open the structure that you want to visualize. By default, the structure opens in the partition scheme that is set as the primary scheme.
2. Select the required scheme from **Partition Scheme** that contains the required partitions.



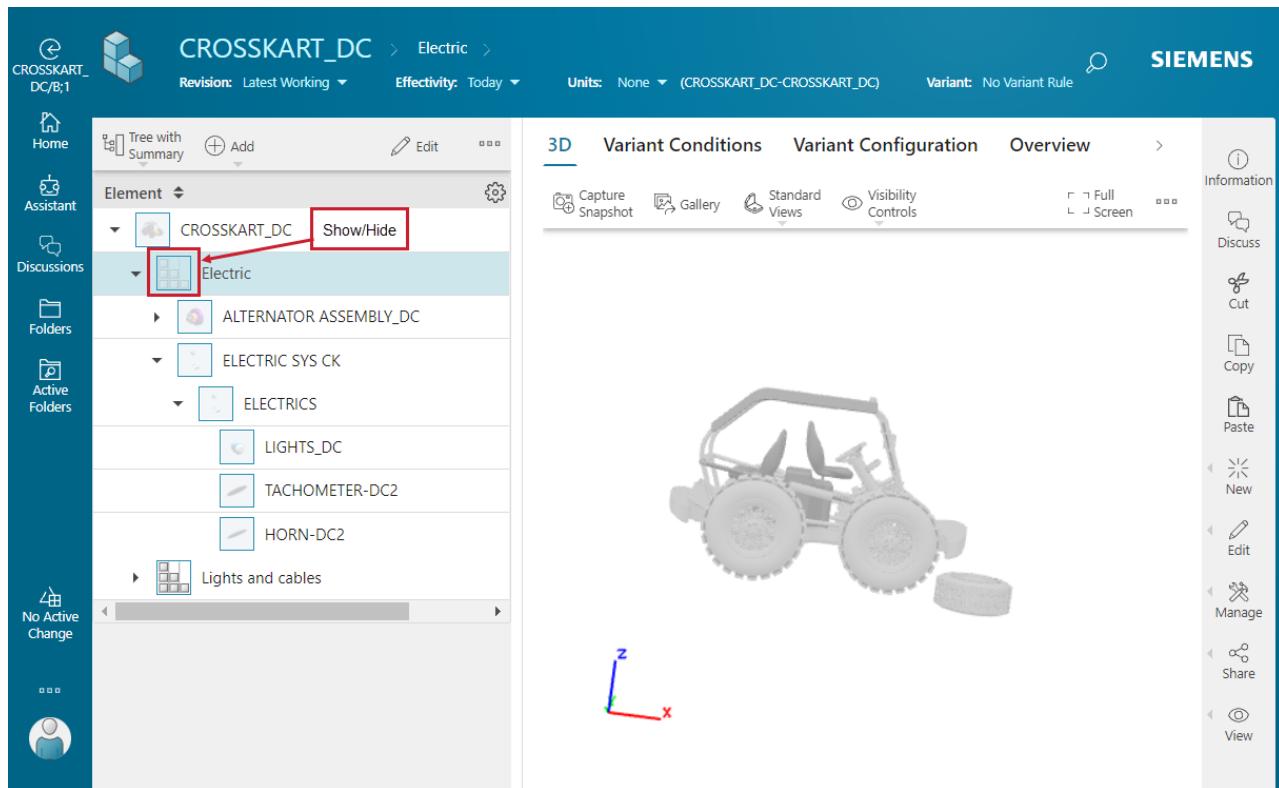
3. To visualize the structure elements located within a partition, select the partition, and go to the **3D** tab.

All the elements within the selected partition are highlighted with their bounding boxes.



If the selected partition has in turn a child partition within it, all the structure elements within the child partition are also highlighted in the **3D** tab.

You can also choose to not visualize the elements of a specific partition. For this, click the icon (**Show\hide**) next to the partition.



## Working with end-item assemblies in Active Workspace

To improve the system performance and hide information that is not relevant to the user's current task, one or more assemblies in a product structure can be set as *end-item assemblies* for that structure. When you expand a structure containing an end-item assembly, the nodes beyond the end-item assembly are not expanded.

The value of the **EndItemState** preference must be set to *true* in Active Workspace. If it is set to *false*, the end-item assembly state is ignored and the end-item assemblies are expandable just like any other assemblies.

In Active Workspace, you cannot set any occurrence as an end-item. However, you can view a structure containing end-items in Active Workspace. When a structure containing an end-item is opened in Active Workspace, the end-item is displayed as a single line in the assembly tree.

The **End Item Assembly State** column identifies the end-items in an assembly.

Element	End Item Assembly State
▼ CROSSKART_DC	
▶ ELECTRIC SYS CK	
▶ EXTERIOR CK	
▶ BRAKE & SUSP CK	
▶ STEERING SYS	<input checked="" type="checkbox"/>
▶ TIRE & WHEEL CK	

The 3D viewer displays the full assembly structure regardless of **End Item Assembly State**. To view the full structure of an end-item assembly in the tree, open the end-item as its own root node.

### What happens when you search for a child component of an end-item?

To access the components of any subassembly, you expand the relevant subassembly.

▼ STEERING SYS	
▼ STEERING MECH DC	
PINION_DC2	
RACK_DC2	

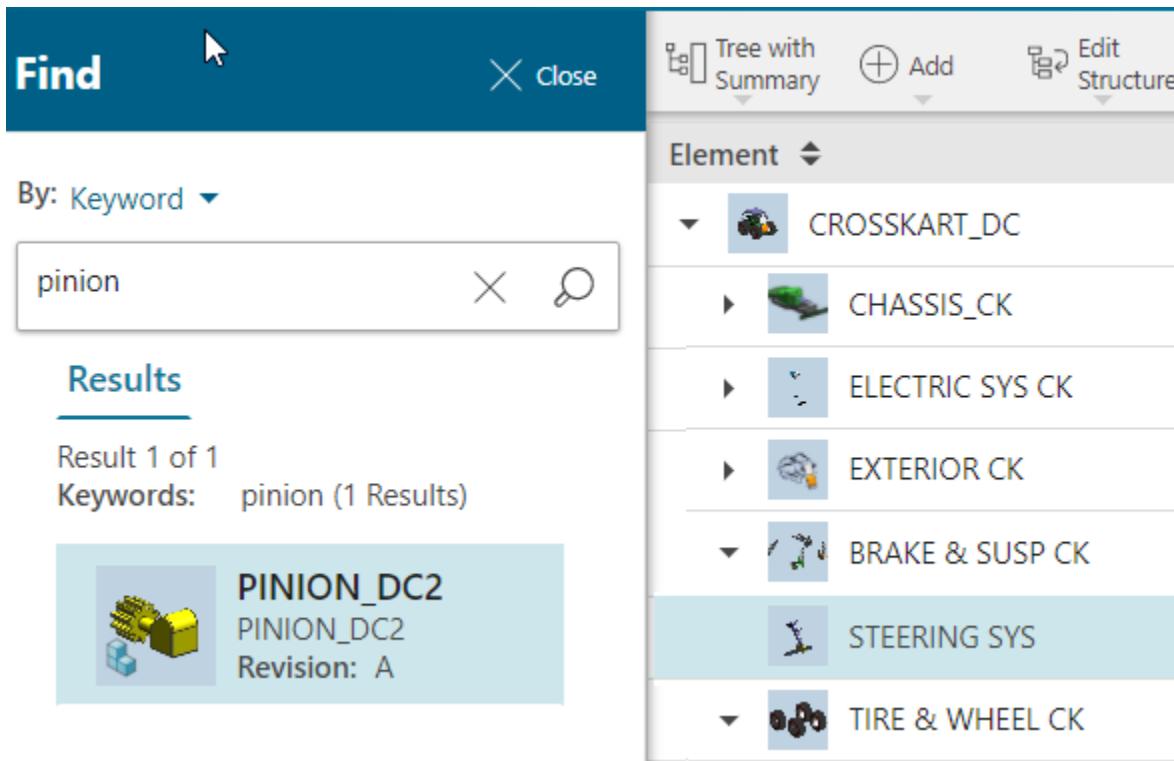
As the assemblies marked as end-items cannot be expanded within the structure, their child components are not visible when the structure is expanded.

For example, if the **steering system** assembly is marked as an end-item in a vehicle structure, its components, namely, **steering mech**, **pinion**, and **rack** are not visible in the structure.



However, when you perform an in-context search for a child component of an end-item, the search results return the child components. When you select the child component of the end-item in the search results, the parent end-item subassembly is selected in the structure.

For example, when you select the **PINION\_DC2** child component from the search results, the parent **STEERING SYS** subassembly, which is an end-item, is selected in the structure.



## Pack or unpack structure elements

You can use the *packing* action to group similar elements in an assembly. *Packing* groups identical elements in a single level of an assembly and thus results in a shorter and simpler structure display. The packed elements are represented using a single row in the structure with a numeric value appended to this row to indicate the number of packed items.

You can individually pack or unpack the selected elements in the structure that meet the packing criteria. You can also pack or unpack all elements in a selected structure simultaneously with a single click.

When you select a packed node in the tree, all the part instances packed in that node are highlighted in the 3D viewer.

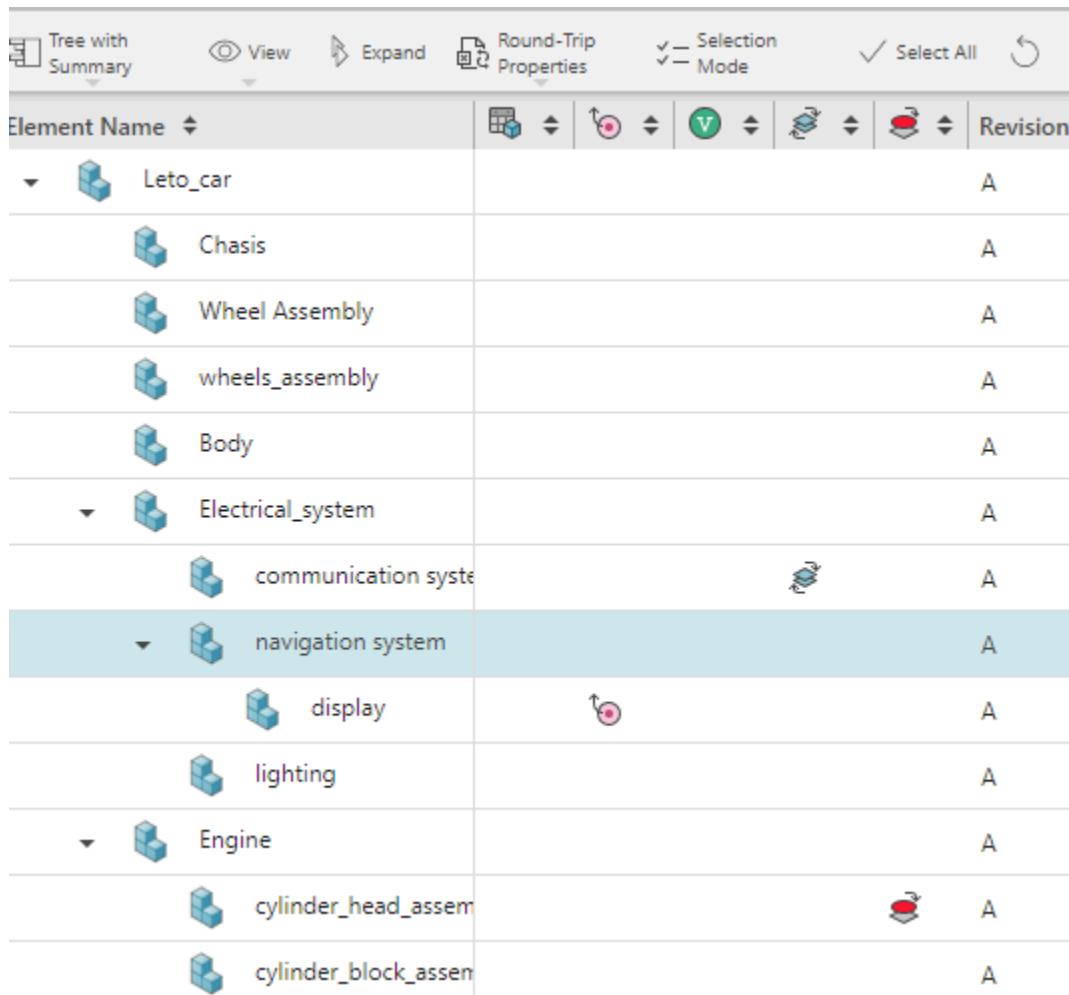
To pack elements	To unpack elements
<p>To pack the selected elements in the structure that meet the packing criteria:</p> <ol style="list-style-type: none"> <li>1. Select one of the elements.</li> <li>2. Click the <b>Expand</b>  icon.</li> </ol>	<p>To unpack the elements in a structure:</p> <ol style="list-style-type: none"> <li>1. Select the packed element.</li> <li>2. Click the <b>Expand</b>  icon.</li> <li>3. Select <b>Unpack</b>.</li> </ol>

To pack elements	To unpack elements
3. Select <b>Pack</b> .	
To pack all the elements in the structure:	To unpack all the elements in the structure:
1. Click the <b>Expand</b>  icon. 2. Select <b>Pack All</b> .	1. Click the <b>Expand</b>  icon. 2. Select <b>Unpack All</b> .

## View attribute details for a structure occurrence

The columns in the **Tree** view show the attributes for each structure occurrence. Some columns show the attribute value, while others show an icon. The icon indicates that the structure occurrence has an attribute.

For example, if the **Substitutes**  icon is shown against an occurrence, it means that substitutes are defined for that occurrence.



The screenshot shows the 'Tree with Summary' view in a software application. The interface includes a toolbar with 'View', 'Expand', 'Properties', 'Selection Mode', and 'Select All' buttons. The main area displays a tree structure with the following data:

Element Name	Value
Leto_car	A
Chasis	A
Wheel Assembly	A
wheels_assembly	A
Body	A
Electrical_system	A
communication system	
navigation system	A
display	
lighting	A
Engine	A
cylinder_head_assem	
cylinder_block_assen	A

The following attributes are represented using icons in the table columns.

Icon	Attribute shown on mouse hover
 Element Effectivity	Shows the effectivity information, including end items or dates applied to the occurrence.
 Overrides	Shows information about overridden properties and contexts in which the overrides are applied.
 Variant Condition	Shows the variant condition details.
 Substitutes	Shows the substitute information such as ID, Name, and Revision.
 Global Alternates	Shows the global alternate information such as ID, Name, and Revision.

The **Overview** tab displays the occurrence properties and the other tabs display additional information about the occurrence.

1. To add or remove a column, click  to the right of the column headings to display the **Arrange** panel and select or undo the selection of the column.
2. To view any attribute details, hover your mouse over the icon.

## Control the display of configured structures

Users who create variable content or analyze configured structures, must understand which occurrences will be configured and which are excluded. When a structure is loaded, only objects that meet the applied effectivity and variant criteria are displayed. Users can toggle to show all objects using the **Show Excluded...** commands in the **Configure** menu.

### Show or hide occurrences excluded by effectivity

When a structure is loaded, only objects that meet the applied effectivity are displayed by default. However, a user can choose to hide or show the occurrences that are not configured.

To show or hide the occurrences that are excluded by the currently applied effectivity, in the work area toolbar, click **Configure**  > **Show Excluded by Effectivity**.

### Show or hide occurrences excluded by variant

When a structure is loaded, all occurrences including those occurrences which are not configured by the variant are displayed by default. However, a user can choose to hide or show the occurrences that are not configured.

To show or hide the occurrences that are excluded by the variant configuration, in the work area toolbar, click **Configure** > **Show Excluded by Variants**.

### Show suppressed occurrences

Occurrences in a structure can be hidden by setting the suppress property to *True*. When a structure is loaded, all occurrences including the suppressed occurrences are not displayed by default.

To show or hide the suppressed occurrences, in the work area toolbar, click **Configure** > **Show Suppressed**.

## Using structure view types

The *view type* is an attribute of a BOM view revision that indicates its purpose, for example, design or manufacturing. It allows you to distinguish one BOM view revision from another in the same item revision. A structure is loaded based on its view type (for example, view, design, manufacturing, or shipping).

Filtering with Smart Discovery indexed structures does not support view types. If view types are applied, these are ignored for filtering in Smart Discovery.

Only administrators can add a new view type. In Active Workspace, you can only configure a structure with an existing view type.

The system administrator defines a set of view types for each site using Business Modeler IDE. Any number of view types can be defined, but most sites only require a single view type.

For more information about adding a new view type, see the *Add a View Type* section of *Configure your business data model in BMIDE* in the Teamcenter documentation.

For more information about setting a default view type, see the *Understanding BOM view revisions, view types, and multiple views* section of *Structure Manager* in the Teamcenter documentation.

## Configure and view structure based on view types

In Active Workspace, you can configure the structure by selecting one of the available view types, but you cannot create a new view type.

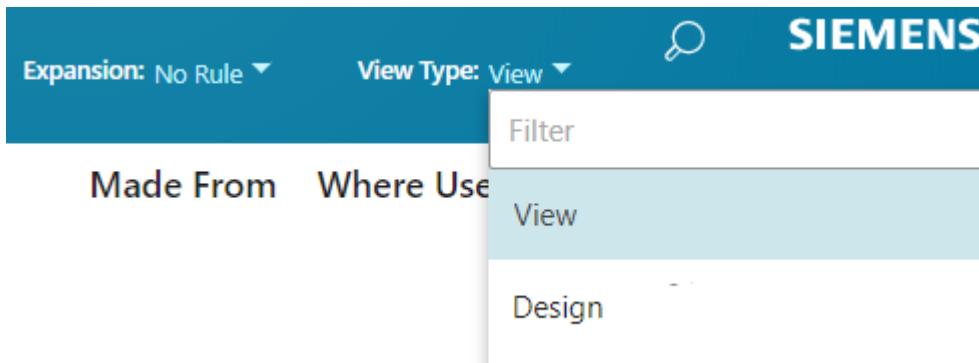
A new structure is always created with your default view type. You cannot specify the view type when you create a new structure in Active Workspace.

1. Search for and open the required structure.

**Note:**

When you open a structure with multiple view types for the first time, it opens in your default view type. To change the view type, you can select a different view type from the list. When you open the same structure again, it opens with the last saved view type in the background working context. To switch to the default view type, you can perform a reset action.

2. To configure the structure with a view type, select it from the **View Type** list in the header area. The **View Type** information is displayed only if multiple view types are defined for the user or site.



Active Workspace refreshes and displays the content based on the selected view type.

3. Edit the structure as required.

Any additions to the structure (for example adding a child or a sibling part) are associated with the selected view type. However, if a new child part is added to a leaf node (a part that does not have any child parts), this new structure branch is created with the user's default view type irrespective of the selected view type.

## Viewing structure arrangements

In NX, you can define *arrangements* to specify alternative positions for one or more components in the assembly and store those alternatives with the assembly. Alternate arrangements are created by moving or suppressing components. For example, a car door assembly may have different arrangements when the door is open or closed, and the position of certain components may be overridden accordingly. Similarly, you can suppress components in a particular arrangement, for example, to hide the hinges.

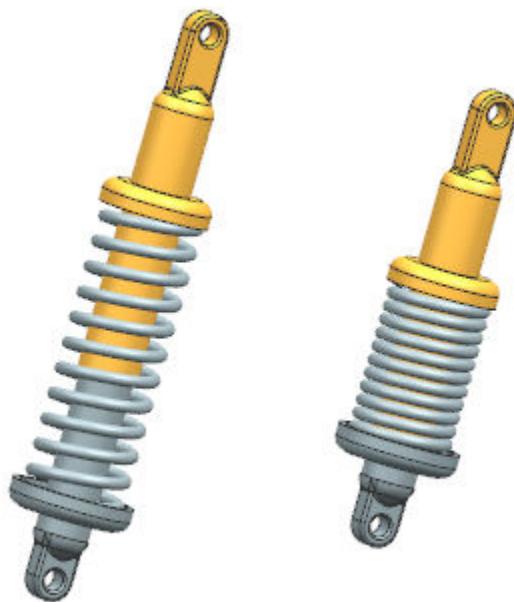
If arrangements are defined for an assembly in NX, you can set and view the arrangements in Active Workspace.

An assembly arrangement determines:

- The position and orientation of the immediate child components.

- The variable component positioning of any subcomponents.
- The used assembly arrangement for each immediate child component.
- The arrangement-specific suppression of components and subassemblies.
- The arrangement-specific assembly constraints.

The following example displays two arrangements of a shock absorber assembly. The arrangement on the left displays the shock absorber in the open position, while the arrangement on the right displays the shock absorber in the closed position.

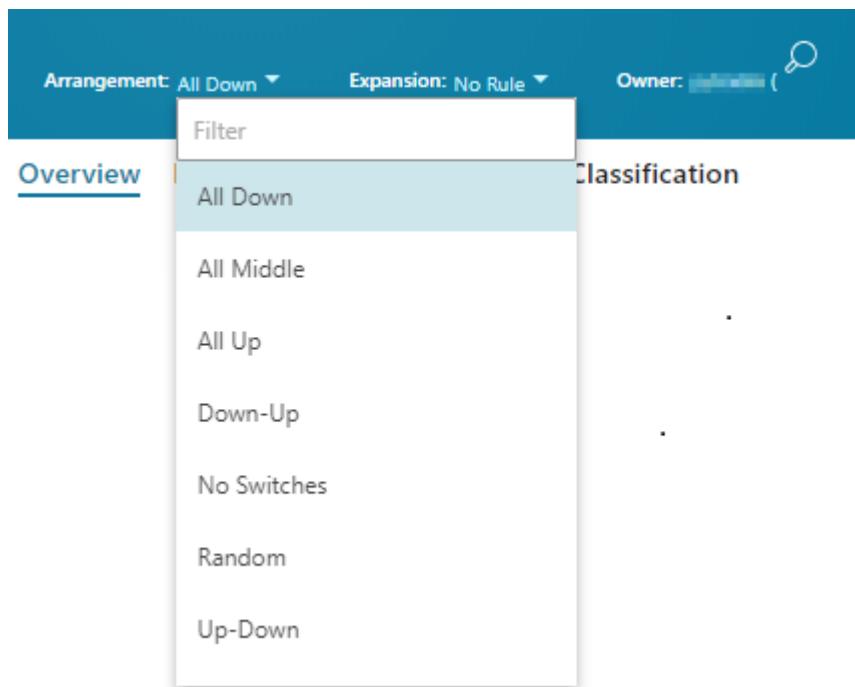


## Set the structure arrangement

The header information for an assembly shows **Arrangement** only if the arrangement is defined for the assembly.

When you open an assembly for the first time, it opens with the **Active** arrangement.

1. To set an arrangement, select it from the **Arrangement** list in the header area. This arrangement persists across user sessions unless you change it.



2. To load the **Active** arrangement for the assembly, click **Reset** .



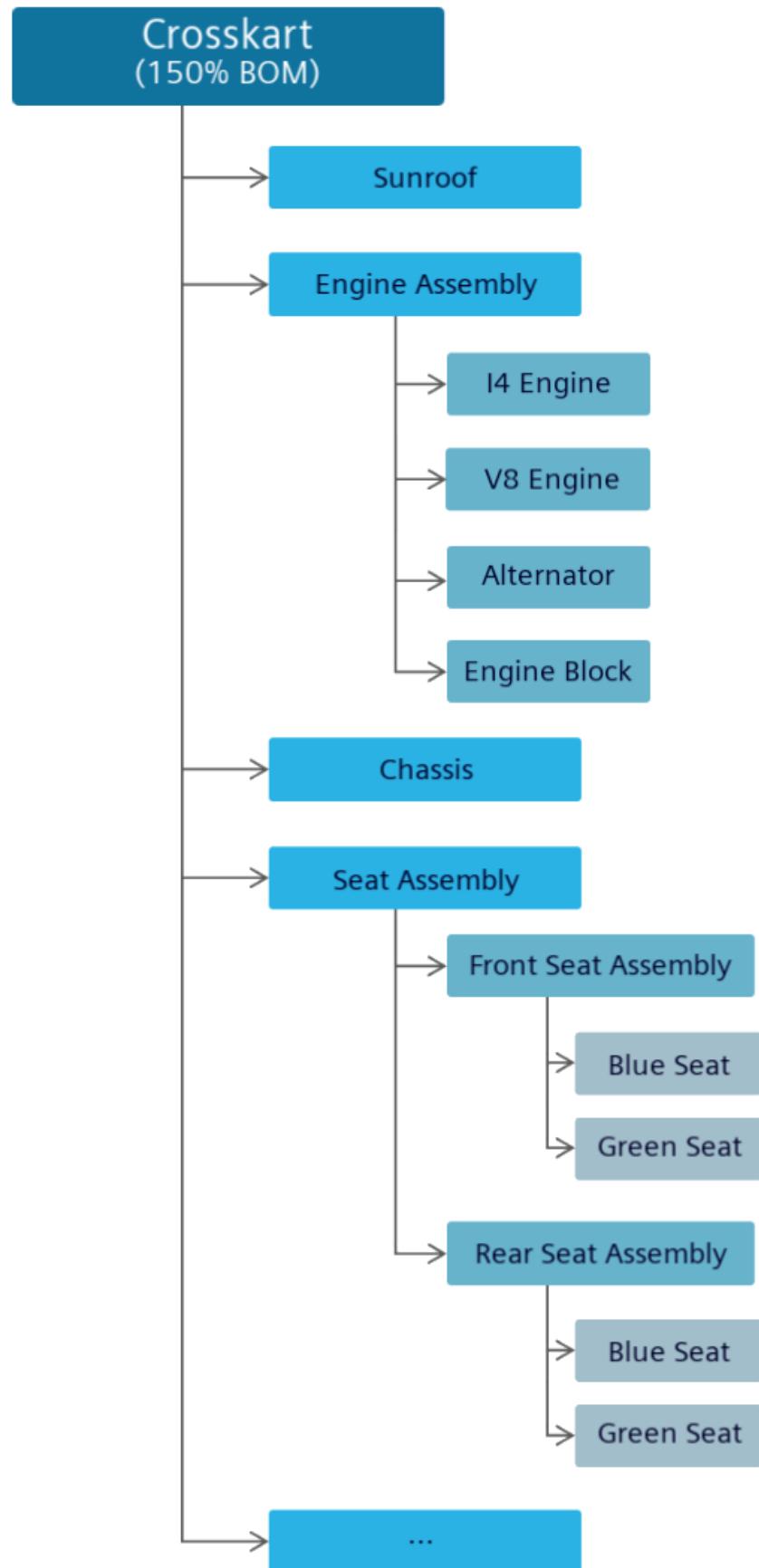
# 10. Create and maintain solution variants

## About solution variants

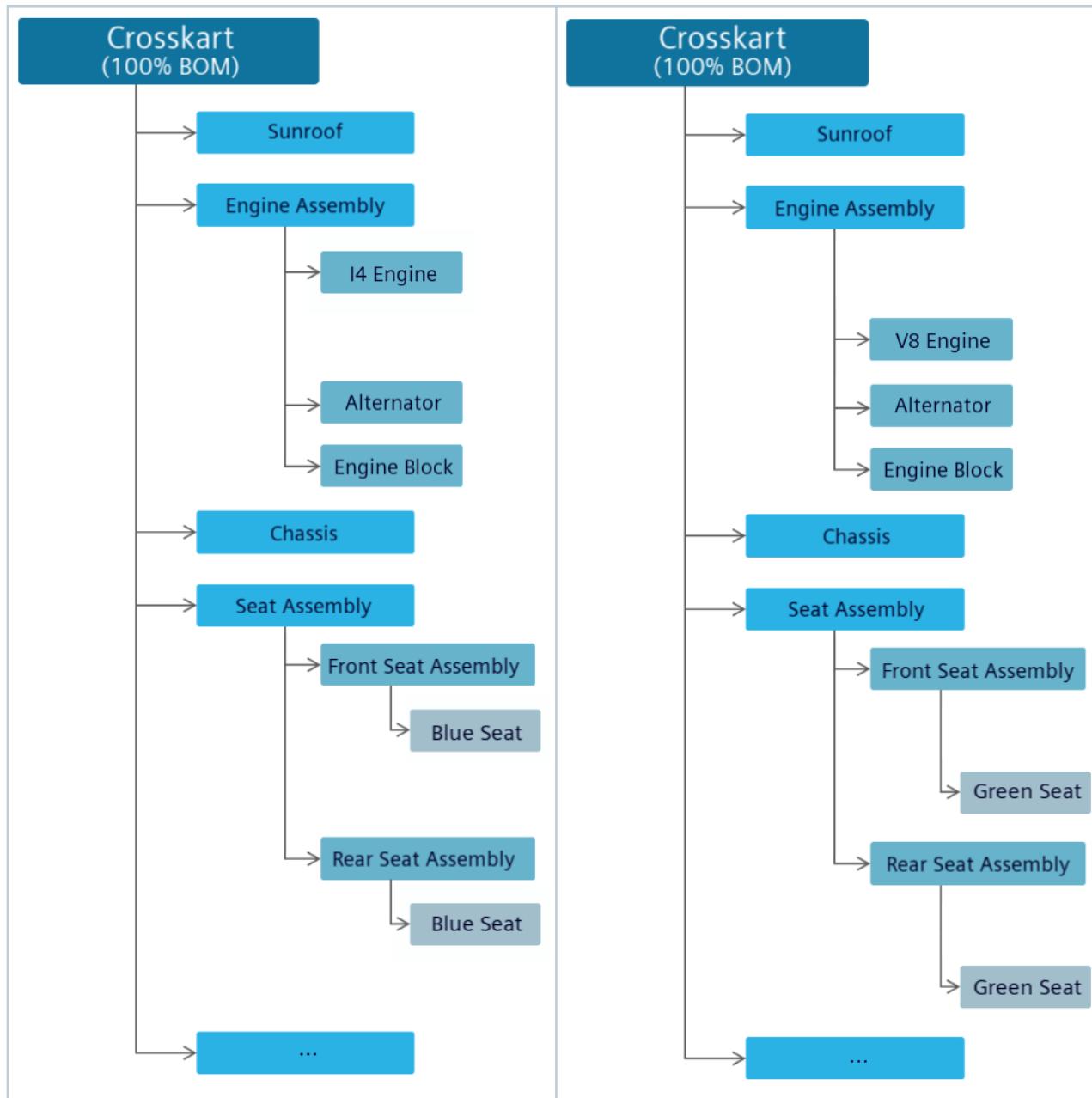
For effective product definition and management, a range of product variants are managed as a single variable structure (150% BOM) by using a configurator instead of managing them as discrete product variants. You can configure this variable structure to generate a 100% variant by applying a valid variant configuration to **create** a *solution variant*. The solution variant has a unique item ID, and it is linked to the source structure.

Multiple solution variants can be created for each valid variant configuration of the 150% variable structure. Teamcenter ensures the uniqueness of each solution variant by comparing the content with a list of existing solution variants before creating a new one. As the solution variants are linked to the source variable structure, the solution variants can be **updated** to easily incorporate the changes made to the source structure.

**Example** — Consider a product, *Crosskart*, that has two variants, *Base* and *Deluxe*. Both these variants are managed within a single variable structure.



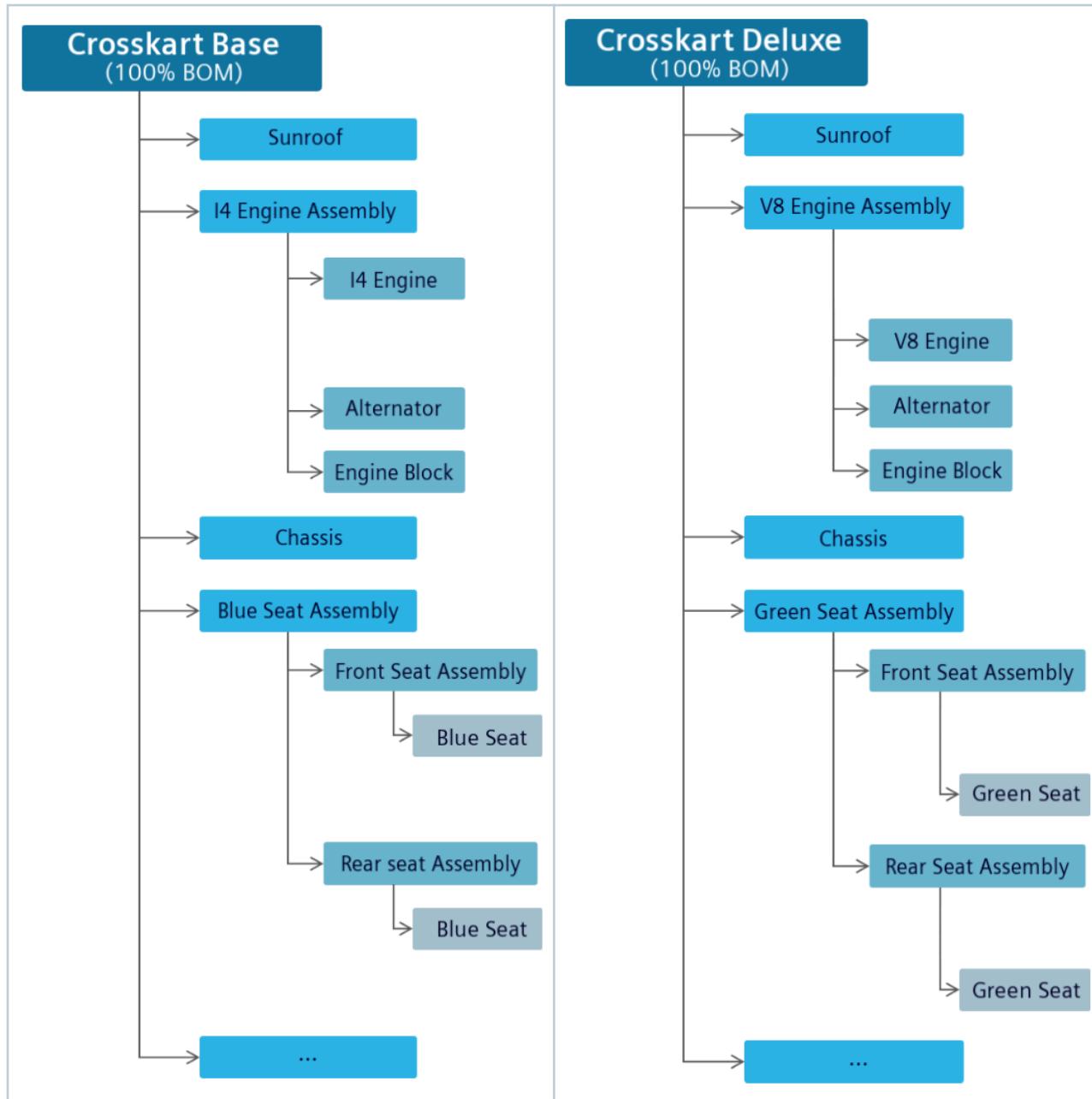
To derive the base and deluxe variants, you apply a valid configuration. This is based on the variant rules already set in Product Configurator for Crosskart. As per these rules, *I4 Engine* and *Blue Seat* must be used in the base variant, while *V8 Engine* and *Green Seat* must be used in the deluxe variant.



In these distinct base and deluxe variants, the crosskart, engine assembly, and seat assembly are not uniquely identified even though they contain different parts. Therefore, to identify and represent them statically, you create their solution variants.

When you select *Crosskart*, *Engine Assembly*, and *Seat Assembly* to create their solution variants for the base variant, three separate solution variants are created. Each solution variant has a unique identifier. They are identified as *Crosskart Base*, *I4 Engine Assembly*, and *Blue Seat Assembly*. Similarly, three

solution variants can be created for the deluxe variant, namely, *Crosskart Deluxe*, *V8 Engine Assembly*, and *Green Seat Assembly*.



The source structure, *Crosskart*, is maintained as a separate entity and is linked to each solution variant. It can continue to evolve. If you update the source structure, you must update its solution variants. When you update the source structure to correspondingly update its solution variants, solution variants that were previously created are reused. A new solution variant is created for a new part only if you choose to create a new solution variant for that part.

As solution variants are not just created at the product level but can also be created at the assembly level, this allows the reuse of variable parts. For example, consider that you want to reuse the engine

assembly in another product, *Buggy*. According to the variant rules defined in the configurator, an I4 engine is used in the standard variant of *Buggy*. When you create a solution variant of the engine assembly for the standard variant, instead of creating a new solution variant, the one (*I4 Engine Assembly*) that was already created for *Crosskart Base* is reused. This way Teamcenter ensures that each solution variant is unique by comparing it with a list of existing solution variants before creating a new one. These solution variants, generated at the product or assembly level, can be used in downstream processes.

## Create solution variants

You create a solution variant for a specific variant of a product, which has variability.

To create a solution variant:

1. Open the structure that has variability .
2. Select the topmost line of the structure and set a variability scope, if not already set:
  - a. In the **Tree with Summary** , click **Edit**  > **Summary** .
  - b. In **Variability Scope**, click , search for configuration context, select it, and click **Add**.
  - c. Click **Edit**  > **Save Edits** .

Additionally, you can set a variability scope to each variable structures at the lower levels for which solution variants are not yet created. These variability scopes must be subsets of the variability scope that you applied to the topmost line of the structure.

3. For each variable structure for which you want to create a solution variant, set **Solution Variant Category** as **Reuse**. You can set it as **Reuse** only for parent parts.

Element	ID	Solution Variant Category
CROSSKART_DC	CROSSKART_DC	Reuse
SUN ROOF ASSY	SUN ROOF	
INTERIOR CK	INTERIOR CK	Reuse
FR SEAT CK	FR SEAT CK	Reuse
GREEN SEAT_DC2	GREEN SEAT_DC2	V
BLUE SEAT_DC2	BLUE SEAT_DC2	V
RR SEAT CK	RR SEAT CK	
POWERTRAIN DC	POWERTRAIN DC	Reuse
TRANSMISSION...	TRANSMISSION...	
ENGINE CKDB	ENGINE CKDB	Reuse
I4 ENGINE_DC	I4 ENGINE_DC	V
V8 ENGINE_DC2	V8 ENGINE_DC2	V
ALTERNATOR AS...	ALTERNATOR AS...	
V6 ENGINE_DC	V6 ENGINE_DC	V
ELECTRIC ENGI...	ELECTRIC ENGIN...	V
CHASSIS CK	CHASSIS CK	

4. Configure the structure by selecting an existing saved variant rule from **Variant** that is located in the object information section of the header.

OR

Go to the **Variant Configuration** tab, select a valid and complete configuration, and click **Apply Configuration**  to apply a custom configuration.

The screenshot shows the 'Variant Configuration' page for the 'CROSSKART\_DC' project. The 'Element' tree view lists various components. Two specific components, 'BLUE SEAT\_DC2' and 'I4 ENGINE\_DC', are highlighted with red boxes and green checkmarks in their respective columns, indicating they are being configured or are pending creation.

Element	ID	Solution Variant Category
CROSSKART_DC	CROSSKART_DC	Reuse
SUN ROOF ASSY	SUN ROOF	
INTERIOR CK	INTERIOR CK	Reuse
FR SEAT CK	FR SEAT CK	Reuse
<b>BLUE SEAT_DC2</b>	<b>BLUE SEAT_DC2</b>	<b>(V)</b>
RR SEAT CK	RR SEAT CK	
POWERTRAIN DC	POWERTRAIN DC	Reuse
TRANSMISSION_...	TRANSMISSION...	
ENGINE CKDB	ENGINE CKDB	Reuse
<b>I4 ENGINE_DC</b>	<b>I4 ENGINE_DC</b>	<b>(V)</b>
ALTERNATOR ...	ALTERNATOR AS...	
CHASSIS CK	CHASSIS CK	

5. Enable or disable **Show Excluded by Effectivity** and **Show Suppressed from Configure**, as required.

6. In the work area toolbar, click **Create Solution Variant**.

Depending on the view, you may have to click **More Commands** to locate **Create Solution Variant**.

Teamcenter compares the content of the configured structure currently displayed on the **Tree with Summary** view with solution variants already available in the database.

- If a matching solution variant is not found, a new solution variant is created.
- If a matching solution variant is found, a message is displayed, asking if you want to open it. If a matching solution variant is not found, the **Preview Solution Variant** page is displayed.

7. On the **Preview Solution Variant** page, **Solution Variant Structure** is set as follows:

- **Pending** (in italics) indicating that solution variants will be created for these. New part numbers are generated for these parts.

- Part numbers (in italics) for existing solution variants.
- Part numbers (not in italics) for parts that are fixed assemblies.

Preview Solution Variant for CROSSKART\_DC/B;1

SIEMENS

Source Structure:	CROSSKART_D C/B;1	Revision Rule:	Latest Working	Variant:	Custom Configuration	Cancel	Create	Full Screen
<span style="font-size: 1.5em;">Tree</span> <span style="font-size: 1.5em;">Find</span> <span style="font-size: 1.5em;">Expand</span>								
Source Structure		Solution Variant Structure			Solution Variant Category			Q
<span style="color: #808080;">▼</span> CROSSKART_DC		CROSSKART_DC2/A;1-CROSSKART_DC			Reuse			Q
<span style="color: #808080;">▼</span> SUN ROOF ASSY		SUN ROOF/A;1-SUN ROOF ASSY						Q
<span style="color: #808080;">▼</span> INTERIOR CK		INTERIOR CK/A;1			Reuse			Q
<span style="color: #808080;">▼</span> FR SEAT CK		Pending			Reuse			Q
<span style="color: #808080;">▼</span> BLUE SEAT_DC2		BLUE SEAT_DC2/A;1						Q
<span style="color: #808080;">▼</span> RR SEAT CK		RR SEAT CK/A;1						Q
<span style="color: #808080;">▼</span> POWERTRAIN DC		POWERTRAIN DC/A;1			Reuse			Q
<span style="color: #808080;">▼</span> TRANSMISSION_DC		TRANSMISSION_DC/A;1						Q
<span style="color: #808080;">▼</span> ENGINE CKDB		Pending			Reuse			Q
<span style="color: #808080;">▼</span> ALTERNATOR ASSEMBLY_DC		ALTERNATOR ASSEMBLY_DC/A;1						Q
<span style="color: #808080;">▼</span> V6 ENGINE_DC		V6 ENGINE_DC/A;1						Q
<span style="color: #808080;">▼</span> CHASSIS_CK		CHASSIS_CK/A;1-CHASSIS_CK						Q

8. Click **Create**.

In the message box that is displayed, you can choose to create solution variants either in the background or in the foreground by selecting or clearing the **Run in Background** check box, respectively. Click **Create** to create the solution variant.

If you choose to create the solution variant in the foreground, the solution variant is created and displayed on the user interface. If you choose to create it in the background, go to **Alerts** to open the solution variant.

The solution variant is created with the name and ID format set by your administrator.

To verify if the solution variant is created:

1. Open the structure for which you created the solution variant.
2. Go to the **Overview** tab.

The solution variant is listed under the **SOLUTION VARIANTS** section. This sections also shows the solution variants that were created for the other revisions of the selected part.

## Update solution variants

When a design or part structure is updated, you must also update the corresponding solution variants.

To update the solution variants through a workflow:

1. Open the updated source structure.
2. Click **Manage** > **Submit to Workflow** .

For a newly added element in the structure, Teamcenter checks if the **Solution Variant Category** of the element is marked as **Reuse**. If yes, Teamcenter first checks if a solution variant is already created for the element and reuses this solution variant in the updated solution variant structure. If a solution variant is not available, Teamcenter creates a new solution variant for the element and reuses this new variant in the updated structure.

3. In the **Submit to Workflow** panel, select **Update Solution Variants in Template**, and click **Submit**.

Currently, only changes to **Quantity**, **All Notes** (occurrence notes), **Absolute Transform Matrix**, and **Occurrence Effectivity** in a structure are updated in the corresponding solution variants.

The solution variants listed in the **SOLUTION VARIANTS** section of the **Overview** tab are updated. This section also shows the solution variants that were created for the other revisions of the selected part.

## View solution variants

1. Open the structure for which you created solution variants.
2. Go to the **Overview** tab.

The solution variant is listed under the **SOLUTION VARIANTS** section. This sections also shows the solution variants that were created for the other revisions of the selected part.



# 11. Specify alternates and substitutes for parts

## About global alternates and substitutes

Parts are the different components that make up a product. In certain cases, one part can be interchanged with another part. There are two types of interchangeable parts, namely, global alternates (also known as alternates) and substitute components (also known as substitutes).

### Alternates

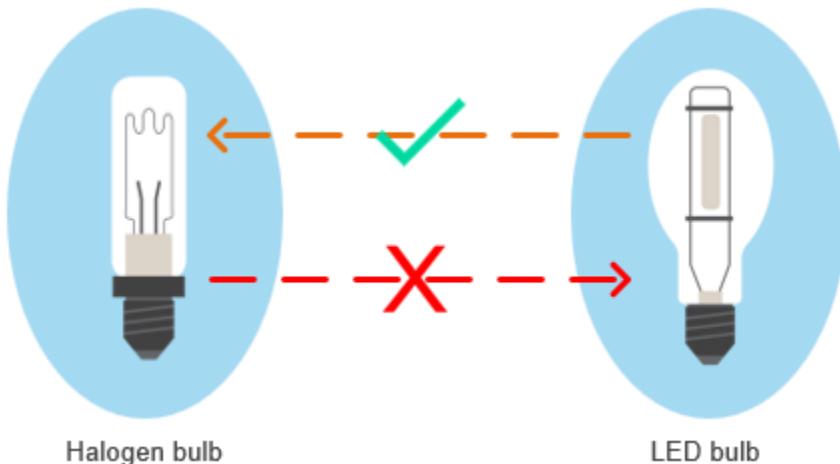
An alternate is a part that can be interchanged with another part in all circumstances, irrespective of where the other part is used in a product structure. Alternates are not specific to a variant or a product. You use alternates to specify that a part is interchangeable in any assembly.

Example:

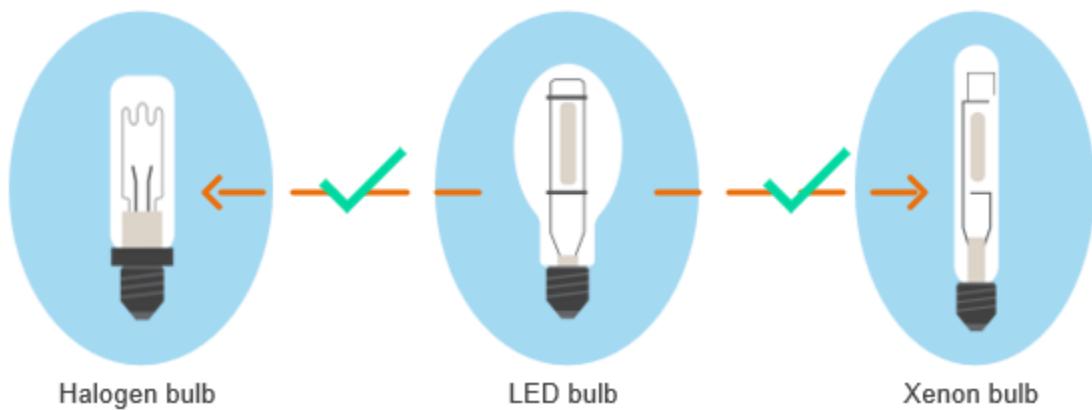
Consider a Halogen bulb that is used in several assemblies across products. You can specify an LED bulb as an alternate for the Halogen bulb. This means that in all assemblies and products, in place of the Halogen bulb, the LED bulb can be used.

Note the following important points about alternates:

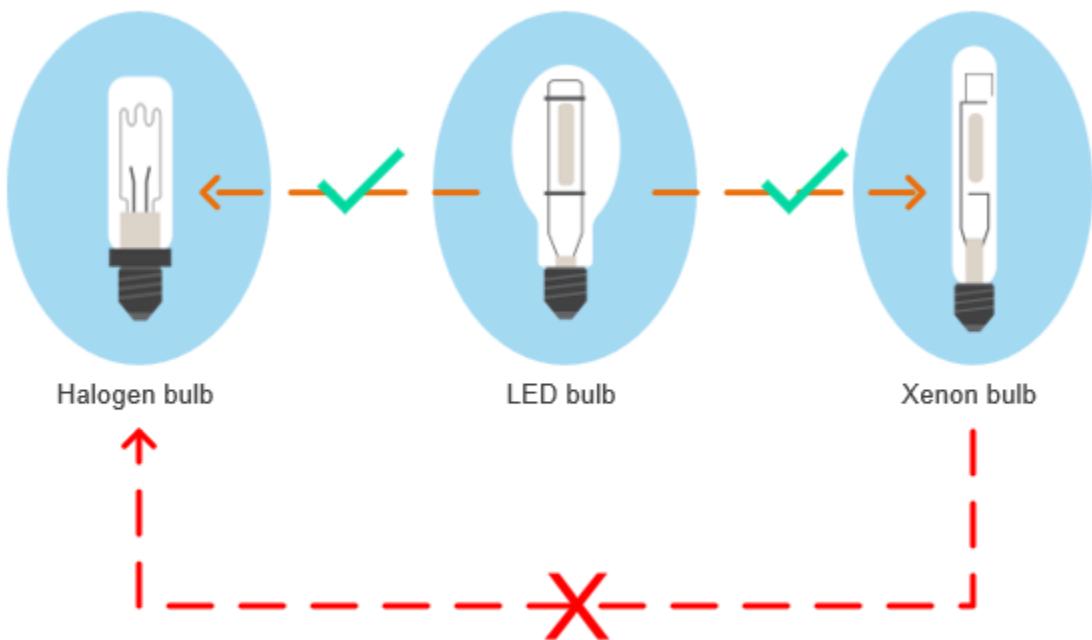
- If you reuse a part in some other assembly, the alternates of the part are carried over.
- Parts and their alternates are related in one way only. For example, the LED bulb is an alternate of the Halogen bulb. However, the Halogen bulb is not an alternate of the LED bulb.



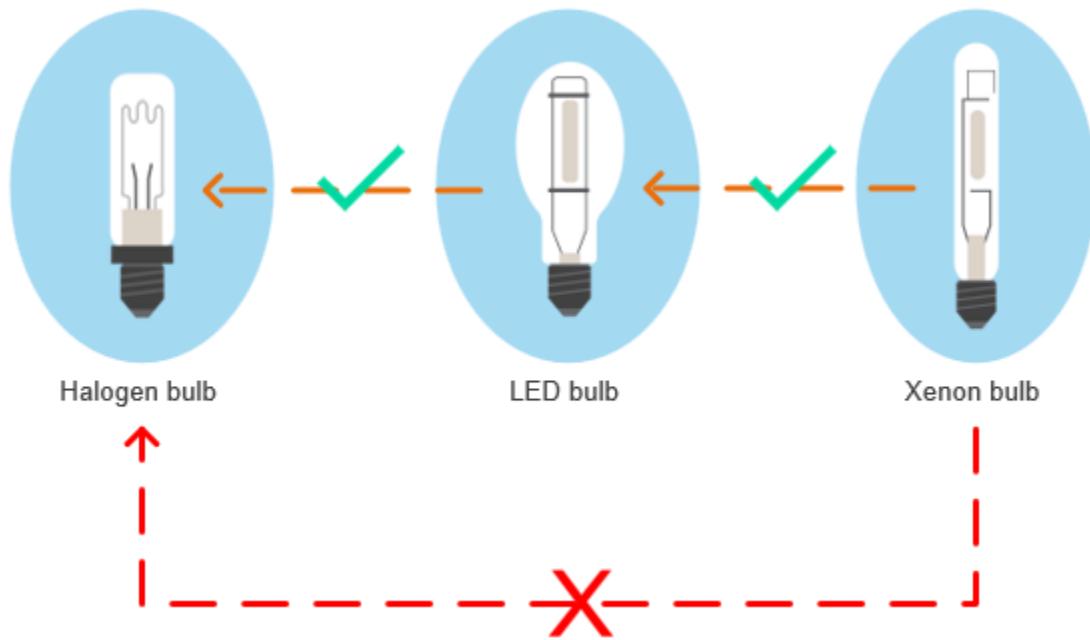
- One part can be an alternate of multiple other parts. For example, the LED bulb is an alternate of the Halogen bulb and of the Xenon bulb.



- Alternate relationships are not shared. For example, the Xenon bulb is not an alternate of the Halogen bulb, even though the LED bulb is an alternate of both bulbs.



- Alternate relationships are not chained. For example, the LED bulb is an alternate of the Halogen bulb. And the Xenon bulb is an alternate of the LED bulb. However, the Xenon bulb is not an alternate of the Halogen bulb.



## Substitutes

Substitutes are parts that can be interchanged only with a particular occurrence of a component within a single assembly. You define a substitute for a single occurrence in an assembly and not for an item. You use substitutes to specify that a part is interchangeable only in a specific assembly.

### Example:

Consider that Crosskart has a lighting assembly that uses the Halogen bulb, by default. You set the Xenon bulb as a substitute for the Halogen bulb within the lighting assembly. A substitute can be used in place of another part but only in a specific assembly. So, you cannot use the Xenon bulb in place of the Halogen bulb in another assembly.

Note the following important points about substitutes:

- You define a substitute for a single occurrence in an assembly and not for an item.
- You can add multiple substitutes for an occurrence of a part.
- You can replace a part in an assembly with a substitute.
- All substitutes of one occurrence share the same occurrence attributes. The occurrence attributes can be a find number, quantity, and notes.

## Set global alternates for a part

An *alternate part* is a part that can be used in place of another part in any product.

To set global alternates:

1. Select the part for which you want to set a global alternate.
  2. If you want to set alternates in the markup mode, click **Markup**  to switch to the markup mode.
- Caution:**

If you are working in the markup mode, you must **apply or cancel the markups** to complete the updates.
3. Click the **Overview** tab.

The alternates available for a part are listed under the **GLOBAL ALTERNATES** section.

### Add an alternate

1. In the **GLOBAL ALTERNATES** section, click **Add Alternate** .
2. In the **Add** panel, click one of the following tabs:

Tab	Description
<b>New</b>	On this tab, you can add a new occurrence.
<b>Palette</b>	On this tab, you can paste an occurrence from the clipboard or select one from your <b>Favorites</b> or <b>Recent</b> list.
<b>Search</b>	On this tab, you can search for an occurrence to add.

3. In the **Add** panel, select the part that you want to add as a global alternate. You can select multiple parts.
4. Click **Add**.

The selected parts are added to the **GLOBAL ALTERNATES** list.

### Remove an alternate

1. From the **GLOBAL ALTERNATES** list, select the alternate that you want to remove. You can select multiple alternates.
2. Click **Cut Alternate** .

The selected parts are removed from the **GLOBAL ALTERNATES** list.

## Set substitutes for a part in a structure

A *substitute part* is a part that can be used in place of another part in a specific product configuration.

In a structure, you can add a substitute for a part, remove a substitute, and replace an element with a substitute.

You can set a substitute for only those parts that have **Assembly Indicator** set as **Fixed Assembly** or **Component**.

To set substitutes:

1. Select the part for which you want to set a substitute.
2. If you want to set substitutes in the markup mode, click **Markup**  to switch to the markup mode.

**Caution:**

If you are working in the markup mode, you must **apply or cancel the markups** to complete the updates.

3. Click the **Overview** tab.

The substitutes available for a part are listed under the **SUBSTITUTES** section.

### Add a substitute

1. In the **SUBSTITUTES** section, click **Add Substitute** .
2. In the **Add Substitute** panel, click one of the following tabs:

Tab	Description
<b>New</b>	On this tab, you can add a new occurrence.
<b>Palette</b>	On this tab, you can paste an occurrence from the clipboard or select one from your <b>Favorites</b> or <b>Recent</b> list.
<b>Search</b>	On this tab, you can search for an occurrence to add.

3. In the **Add** panel, select the part that you want to add as a substitute. You can select multiple parts.
4. Click **Add**.

The selected parts are added to the **SUBSTITUTES** list.

## Remove a substitute

1. From the **SUBSTITUTES** list, select the substitute that you want to remove. You can select multiple substitutes.
2. Click **Cut Substitute** .

The selected parts are removed from the **SUBSTITUTES** list.

## Replace an element with a substitute

1. From the **SUBSTITUTES** list, select the substitute that you want to use in place of an element.
2. Click **Use** .

In the structure, the element is replaced with the selected part. The element that is replaced in the structure is added to the **SUBSTITUTES** list.

# 12. Manage structure effectiveness

## About structure effectiveness

A product structure goes through many changes during the evolution of its product definition. Using structure effectiveness, you can capture how the product structure has evolved over a period.

An effectivity can be of the following types:

<b>Element effectiveness</b>	It denotes from which date or for which unit (and end item) an element is effective.
<b>Release effectiveness</b>	It denotes from which date or for which unit (and end item) an element revision is effective. It is necessary to have a release status associated with an element to author release effectivity on it.

Release effectivity helps in configuring different revisions of the same element, wherein with the help of element effectivity you can decide if to show the element itself or not inside the structure.

For example, in an engine cooling block, revision A has 5 cooling fins and in revision B it is changed to 6, now to decide which revision to use, release effectivity is used. Now suppose we decide to use another engine block itself which is liquid-cooled, to decide between the air-cooled or liquid-cooled engine block element effectivity is used.

An effectivity can be expressed as a date range or a range of units or both. When you edit the effectivity range for one occurrence, the change is applied to all occurrences.

If an element does not have an associated effectivity object, it is assumed to be always effective. It is not constrained by any effectivity.

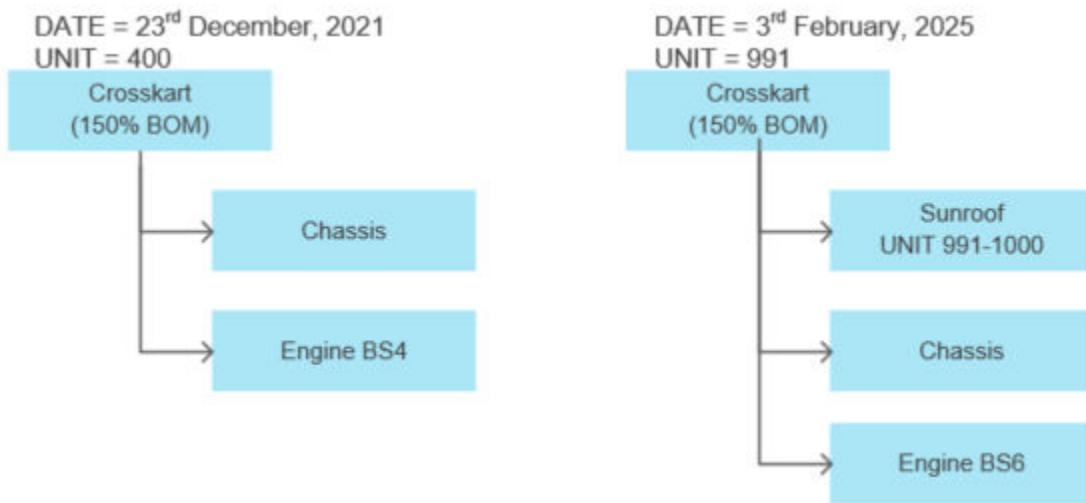
Effectivity can be used for the following purposes:

You can use **group effectivity** to combine multiple end items and range of units for each end item or multiple date ranges to configure multiple occurrences at the same time which have different effectivities on them.

- To reflect changes to the structure over time when new parts replace old ones.

For example, due to an engineering change, from 1st January 2025 onwards, Engine BS6 must be used instead of Engine BS4. For this, you specify date effectivity on both the engines.

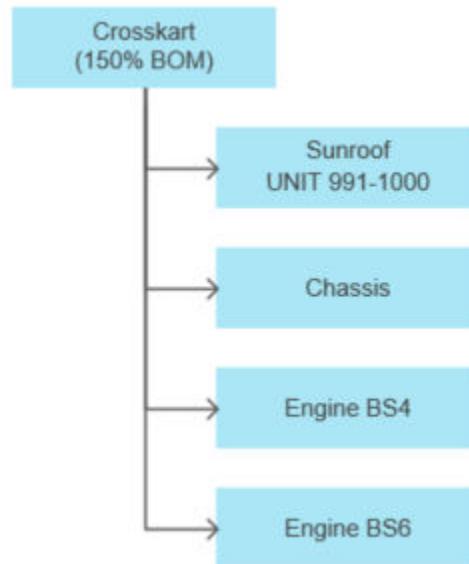
When you configure Crosskart on 23rd December 2021, Engine BS4 is used. However, when you configure Crosskart on 3rd February 2025, Engine BS6 is used.



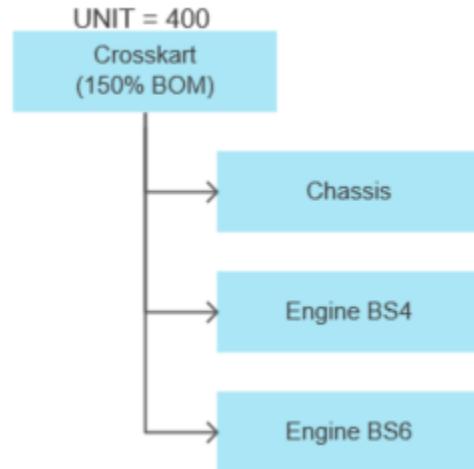
- To state the content of a unit or range of units as a means of managing the variability of the product.

For example, consider that your company manufactures a product, Crosskart. As per the company's business requirement, a total of 1000 units of Crosskart must be manufactured.

However, 10 customers want Crosskart with Sunroof. Due to such special customer requests, there is a slight deviation from the standard configuration of the product. It is inconvenient to maintain unique identifiers for several such small deviations. But with occurrence effectivity, it is easier to accommodate such deviations as the existing structure can be modified to accommodate the changes.



If you specify a unit between 1 and 990, or a range of units between 1 and 990, Sunroof is not included in the configured structure. If you specify a value between 991 and 1000, Sunroof is included.

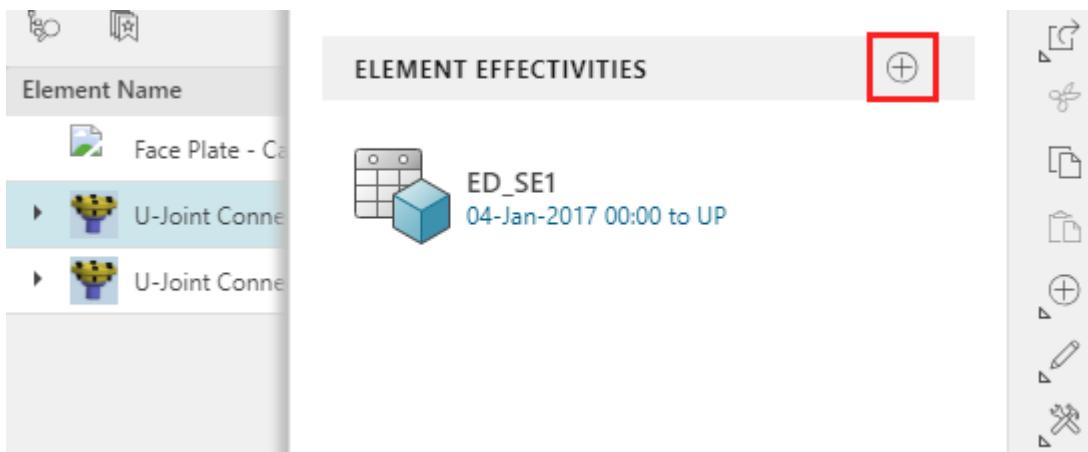


## Add or modify an element effectivity

You can **create** an element effectivity using a range of dates, a unit number or a range of units. You can also **update** an existing element effectivity.

### Add an element effectivity

1. Select one or more elements and click **Add > Element Effectivity**.
2. In the **Element Effectivities** panel, click **Add Effectivities** .



3. You can add multiple effectivities to the selected element.

**Note:**

Add a new effectivity or locate existing effectivities from the **Search tab**.

To author a new date effectivity:

- a. In the **New** tab, select **Date**.
- b. (Optional) Select the **Share** check box to create a shared effectivity.

The **Name** field is displayed only for shared effectivities, so that users can search for the effectivity by name.
- c. Select the **Start** date from the calendar.
- d. Select the **End** date from the calendar. If applicable, you can select **UP (all future dates)** or **SO (stock out)**.
- e. (Optional) Select the **Protect** check box if you do not want the effectivity to be edited.
- f. Click **Add** to create the effectivity.

The element effectivity is applied to the selected element. If the applied **Revision Rule** or **Date** effectivity is not applicable to this element, then it is excluded from the structure. Select the **Show Excluded By Effectivity** toggle to show this element.

Note:

You cannot author multiple date ranges inside a single date effectivity on a single occurrence from Active Workspace.

A **Date** effectivity does not have an **End Item** associated with it. For this reason, it is displayed as *date followed by (NONE)* by default. Your administrator can choose to display only the date.

OR

To author a new unit effectivity:

- a. In the **New** tab, select **Unit**.
- b. (Optional) Select the **Share** check box to create a shared effectivity.

The **Name** field is displayed only for shared effectivities, so that users can search for the effectivity by name.
- c. Specify the desired unit or a range of units in the **Unit** field.
- d. Click **Replace ↩** to add a new **End Item**, or search for an existing **End Item**.
- e. (Optional) Select the **Protect** check box if you do not want the effectivity to be edited

- f. Click **Add** to create the effectivity.

The element effectivity is applied to the selected element. If the applied **Revision Rule** or **Unit** effectivity is not applicable to this element, then it is excluded from the structure. Select the **Show Excluded By Effectivity** toggle to show this element.

Note:

You cannot edit multiple date ranges inside a single date effectivity on a single occurrence from Active Workspace.

## Edit or remove an element effectivity

- To update an element effectivity, select it and click **Edit** .
- To remove an element effectivity, select it and click **Remove** .

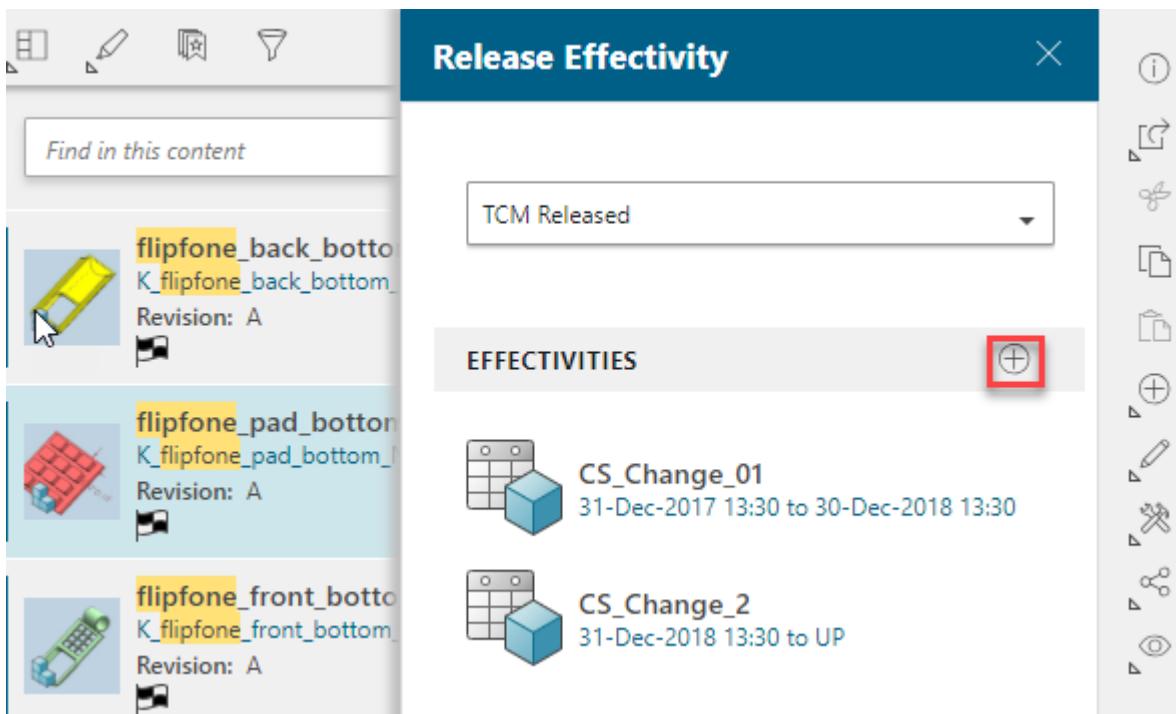
After the element effectivity is updated for an element, if the applied **Revision Rule** or **effectivity criteria** is not applicable to this element, then it is excluded from the structure. Select the **Show Excluded By Effectivity** toggle to show this element.

## Add or modify release effectivity

You can **create** a release effectivity using a range of dates, a unit number or a range of units. You can also **update** existing release effectivity.

### Add release effectivity

1. Select the element (having some release status associated with it) from the structure and click **Add  > Release Effectivity**.
2. You can also search the element (having some release status associated with it) and click **Manage  > Release Effectivity**.
3. In the **Release Effectivity** panel, select the appropriate release status.
4. In the **Release Effectivity** panel, click **Add Effectivities **.



5. Add a new effectivity or from the **Search** tab locate existing effectivities. You can add multiple effectivities to the selected element.

To specify the dates for release effectivity:

- In the **New** tab, select **Date**.
- Select the **Share** check box to create a shared effectivity. Specify the effectivity **Name**.

The **Name** field is displayed only for shared effectivities. You can search for the effectivity by name.

- Select the **Start** date from the calendar.
- Select the **End** date from the calendar. If applicable, you can select **UP (all future dates)** or **SO (stock out)**.
- Select the **Protect** check box if you do not want the effectivity to be edited.
- Click **Add** to create the effectivity.

After release effectivity is added, the occurrence is configured based on the current revision rules.

OR

To specify units for release effectivity:

- a. In the **New** tab, select **Unit**.
- b. Select the **Share** check box to create a shared effectivity. Specify the effectivity **Name**.  
The **Name** field is displayed only for shared effectivities. You can search for the effectivity by name.
- c. Specify the desired unit or a range of units in the **Unit** field.
- d. Click the **Replace**  icon to add a new **End Item** or search for an existing **End Item**.
- e. Select the **Protect** check box if you do not want the effectivity to be edited
- f. Click **Add** to create the effectivity.

After the release effectivity is added, the element is configured based on the current revision rules.

### Edit or remove the release effectivity

To update the newly added release effectivity, select it and click **Edit** .

To remove the release effectivity, select it and click **Remove** .

After release effectivity is updated, the part revision is configured based on the current revision rules.

## Configure structure using group effectivity

A group effectivity is a combination of multiple end items and range of units for each end item or multiple date ranges. When you want to configure multiple occurrences at the same time which have different effectivities on them, you can configure using group effectivity.

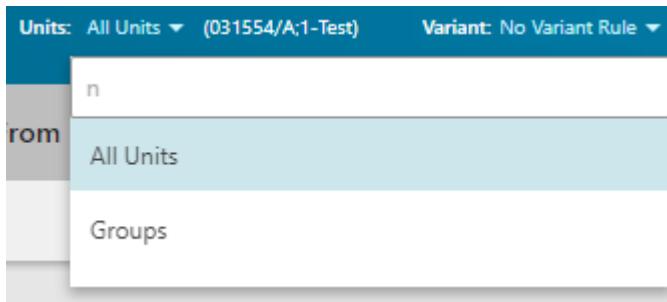
To enable the creation of group effectivities, the administrator must set the **Fnd0EnableMultiUnitConfiguration** global constant to **true** at each site with the Business Modeler IDE.

Group effectivity is used to configure product structure occurrences of an assembly by:

- Specifying multiple end items
- Specifying the unit effectivity ranges for each of those end items
- Specifying multiple date ranges

## Configure a structure using a group of unit effectivities and end items

1. Search and open the structure that you want to configure with group effectivity.
2. Select the structure and click **Units > Groups**.



3. In the **Group Effectivity** pane, click the **Add Group Effectivity**  $\oplus$  icon.
4. Click **New**.

The screenshot shows the 'Group Effectivity' dialog box. The title bar says 'Group Effectivity' with a close button 'X'. Below it, there's a 'ADD GROUP EFFECTIVITY' button with a left arrow icon. The main area has tabs 'New' (which is underlined and active) and 'Search'. A 'Name:' label is followed by a text input field containing 'Effectivity group u002'. Below this is a table with two columns: 'Units' and 'End Item'. The 'Units' column contains '1-8'. The 'End Item' column has an empty row with an ' $\oplus$ ' icon. At the bottom right is a large blue 'Add' button.

5. Specify the effectivity **Name**.
6. Specify the desired unit or a range of units in the **Unit** field.
7. In the **End Item** field, click **Add**  $\oplus$  to add a new **End Item** or search for an existing **End Item**.

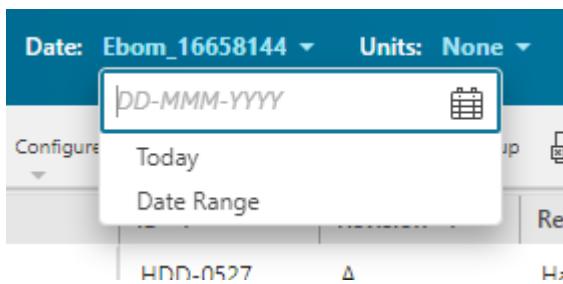
Once the unit and end item information is entered, a new row is added to the table.

8. Add more units and unique end items as required.
9. Click **Add**.

A group effectivity is created and applied to the currently displayed structure. As the effectivity criteria set in the header, and in the revision rule are in sync, you may lose any earlier **configuration done using the revision rule**.

## Configure a structure using a range of date effectivities

1. Search and open the structure that you want to configure with group effectivity.
2. Select the structure and click **Date > Date Range**.



3. In the **Date Range Effectivity** pane, create a new date range or search for existing range and click the **Apply** button.

## Edit or remove group effectivity of units and end items

1. Select the structure which is configured with group effectivity and click **Units > Groups**.
2. In the **Group Effectivity** pane, select the effectivity that you want to edit or remove.

The **Remove Group Effectivity**  and **Edit**  icons are displayed.

- a. To remove the group effectivity, click the **Remove Group Effectivity**  icon to remove the effectivity.
- b. To modify the group effectivity, click **Edit**  and then change the properties you want to edit.
3. Click **Save**.

## Edit or remove range of dates

- Select the structure which is configured with group effectivity and click **Date > Date Range**.

- In the **Date Range Effectivity** pane, select the date range from the **Search** tab.
- To edit the date range, click **Edit**  and modify the dates and click **Apply**.
- To remove the applied date range, select **Today** from the header.

# 13. Configure structures

## About configuring structures

To view a specific configuration of the structures, you can configure a structure using:

- **Selection.**
- **Proximity.**
- **Effectivities.**
- **A closure rule for expansion.**
- **Revision rules.**
- **Variant rules.**
- **A custom configuration.**

## Configure a structure by selection

You can configure a structure based on the Product Configurator-authored variants used in a structure element. This method of configuring a structure is called *configure by selection*. Based on the variability of the selected elements, other elements are configured in or out of the structure, which enables you to validate all possible and valid variant combinations according to your product configurator-authored variant definitions.

### Restrictions and limitations

You can configure a structure by selection only if the structure is indexed by using Smart Discovery Indexing and your Teamcenter setup has the Context Management User license.

### Procedure

1. Search for a product structure on which variability is set by using Product Configurator variants. You can also search for the workset that contains the structure.
2. Open the structure or workset.
3. Locate a structure element on which variability is set. You cannot configure the structure by selecting its root element or the workset. Additionally, you can configure only one structure at a time within a workset.

4. Click **Configure** > **Configure by selection**.

## Configure a structure by proximity

You can configure a structure based on the legacy classic variants used in a structure element. This method of configuring a structure is called *configure by proximity*. Based on the variability of the selected elements, other elements are configured in or out of the structure.

### Restrictions and limitations

You can configure a structure by proximity only if the structure is indexed by using Smart Discovery Indexing and your Teamcenter setup has the Context Management User license.

### Procedure

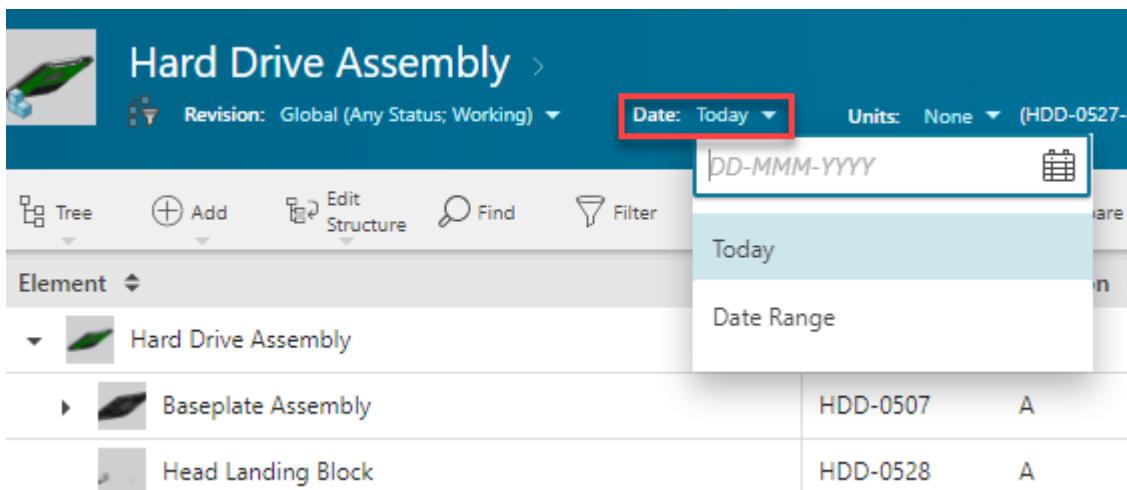
1. Search for a structure on which variability is set by using legacy variants.
2. Click **Open** to open the structure.
3. Click **Filter** .
4. Select a structure element from the work area. You cannot configure the structure by selecting its root element.
5. In the **Filter** panel, select the **Proximity** check box.
6. Enter the proximity in **Distance** and click **Add**.
7. Click **Configure** > **Configure by proximity**.

## Configure a structure by effectivity

You can configure a structure by **date** as well as by **unit** effectivity.

### To configure by date effectivity:

1. Search for and open the product to be configured.
2. Select **Date** in the header. You can select **Today** or a specific date from the calendar. You can also add a range of dates.

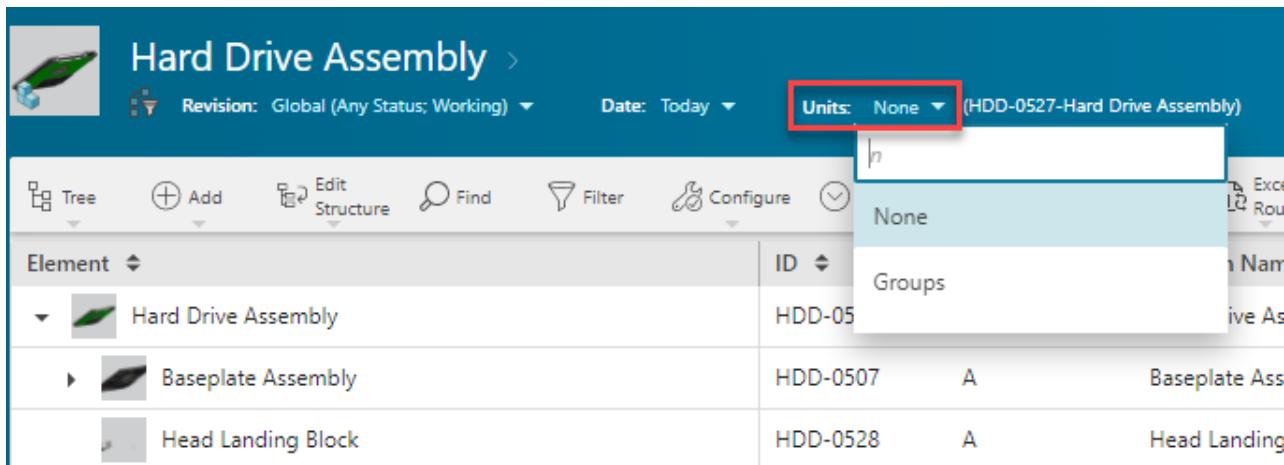


To add a new range of dates:

- a. Select **Date Range**.
- b. In the **Date Range Effectivity** panel, you can add a new range of dates or locate the existing date effectivities from the **Search** tab.
- c. To author a new range of dates inside the **New** tab:
  - A. Give a suitable name to the new date range.
  - B. Select the **Start** date from the calendar.
  - C. Select the **End** date from the calendar. If applicable, you can select **UP** (all future dates) or **SO** (stock out).
  - D. Click **Apply**.

#### To configure by unit effectivity:

1. Search for and open the product to be configured.
2. Select **Unit** in the header.



You can enter a specific integer or select the following options in unit effectivity:

- None** To display all the elements without effectivity.
- Groups** To **author new group effectivity** and apply it.

## Configure a structure with a closure rule for expansion

A closure rule holds subsidiary rules that define the objects of interest in a given structure. The rules determine if an object is included in a given structure based on their types, classes, and the relationship between them.

Typically, a Teamcenter administrator creates and adds closure rules.

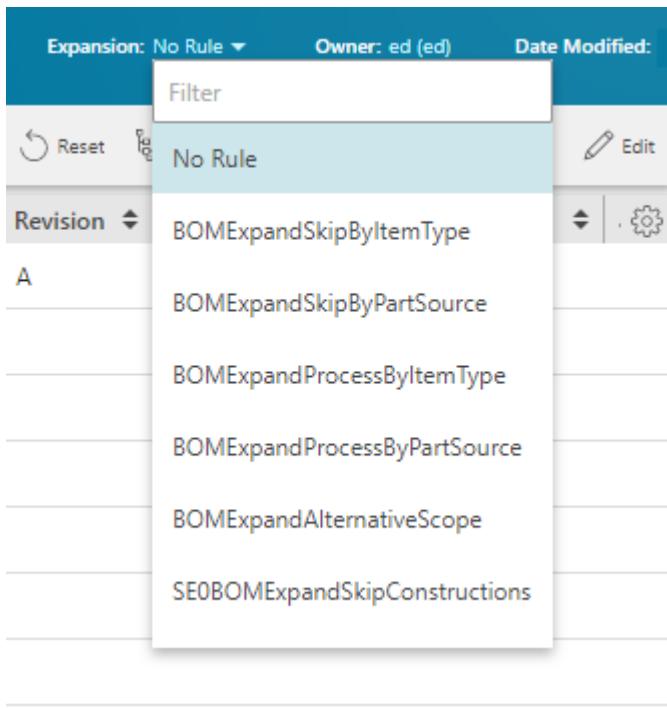
For more information about closure rules, see *Managing closure rules in PLM XML/TC XML Export Import Administration* in the Teamcenter documentation.

In Active Workspace:

- You can configure a non-indexed structure with a closure rule to apply an expansion or filtering logic to the structure.
- You cannot create or edit closure rules.
- You can use only static closure rules listed in the **ClosureRulesForBomExpansion** preference.

To configure a structure by using a closure rule:

1. Search for and open the structure (only non-indexed structures) to be configured.
2. To apply a closure rule, select the rule from the **Expansion** list in the header.



Active Workspace refreshes and displays the configured content based on the applied closure rule.

## Configure a structure with revision rules

### Understanding revision rules

You can create and apply revision rules that select the appropriate revision of parts and assemblies in a product structure. A revision rule:

- Selects the working revisions and (optionally) specifies the owning user or group.
- Selects revisions by status (according to status precedence) or the latest revision with any based on the using release date.
- Optionally specifies the effectivity against which the revisions are configured. Effectivity may be specified by date or by unit number.
- Selects revisions in a specified override folder.
- Selects the latest revisions according to the revision ID in the following order: alphanumeric, numeric, or creation date. This selection does not depend on whether the revisions are in the working or released state.

You define each of these criteria with a revision rule entry. A revision rule may contain any number of rule entries, each of which attempts to select a revision according to the specified criteria, for example, the status that the revision should have or the user or group that owns the revision.

Teamcenter evaluates rule entries in the order of precedence until a revision is successfully configured. You can include some entries more than once to define the order of precedence. You can modify the order of the rule entries to change the precedence Teamcenter uses when evaluating the revision rule. Certain rule entries can also be grouped so that they are evaluated with equal precedence.

## Viewing and updating a revision rule in Active Workspace

In Active Workspace, you can configure a structure with a revision rule. You can also view or update revision rule clauses in the context of a structure.

The following revision rule clauses are supported for viewing and updating in Active Workspace:

Revision	Description
Date	Loads item revision with a specific date.
End item	Configures a structure by effectivity with respect to a product, system, or module. For example, you can configure the structure of unit number <b>110</b> in product <b>X400</b> , where <b>X400</b> is the end item.
Latest	Loads item revisions regardless of whether they are released or not.
Override	Overrides all item revisions available in an override folder. The revision rule is not evaluated for these item revisions.
Precise	Loads item revisions in a precise product structure.
Status	Loads item revisions that are released with a specific status.
Unit Number	Loads item revisions with a unit number as specified by the user. It is used in combination with the status rule entry with unit number effectivity.  Typically, a unit number is a property of the end product or a major module of a product. As Teamcenter may manage many units, you typically qualify a unit number entry with an end item entry.
Working	Loads the working item revision that does not have a release status.

The **Branch** clause is not supported on Active Workspace, while the **Nested Effectivity** clause is read only.

### Updating a revision rule

You can view and modify the revision rule clauses, but you cannot save the modified rule as a new revision rule. It is saved as a modified version of the existing revision rule.

The modified revision rule is available only to the user who modified it.

For one user session, you can have multiple modified versions of the revision rule. However, once you log off, only the modified versions applied to the product are saved. Other versions are not saved.

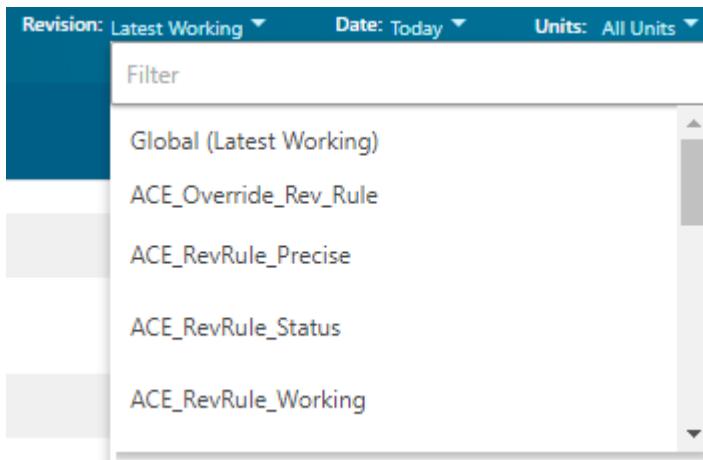
The modifications do not impact the original revision rule.

If the nested effectivity clause is applied on the original revision rule, it can be viewed and used in the modified revision rule, but it cannot be updated.

## Configure structures with a revision rule

To configure a structure by an existing revision rule:

1. Search for and open the product to be configured.
2. To apply a revision rule, select the rule from the **Revision** list in the header.



Active Workspace refreshes and displays the configured content based on the new configuration.

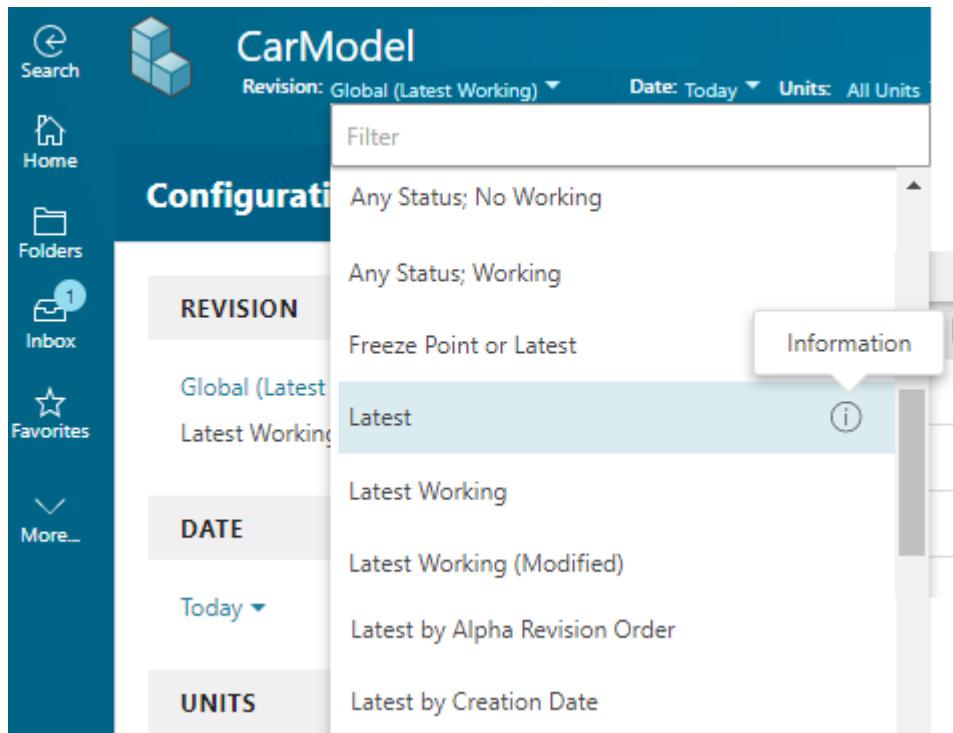
Alternatively, you can perform the following steps to apply a revision rule using the **Configuration** panel.

1. Search for and open the product to be configured.
2. Click **Configure** and then select **Configuration** to display the Configuration panel.
3. Select the rule from the list in the **REVISION** section in the Configuration panel.

Active Workspace refreshes and displays the configured content based on the new configuration. As the effectivity criteria set in revision rule, and in the header are in sync, you may lose any earlier configuration done using the **effectivity group configuration**.

## Configure a structure with a modified revision rule

- To create a modified revision rule, in the revision rule list, go to the rule that you want to modify and click the **Information** icon.



The revision rule details are displayed with all the clauses.

- To view all existing clauses for the selected rule, scroll up or down.
- To modify the rule, you can add a new clause, delete a clause, or change the order of precedence by moving a clause up or down.

**CLAUSES**

Move clause up    Move clause down    Delete clause

Add clause

- Unit No.( 50 )
- End Item( NONE )
- Has Item Type ( Item ) {  
Has Status( Any Release Status, Configured  
Using Released Date ) }**
- Has Item Type ( ACE Custom Item ) { Has  
Status( Any Release Status, Configured Using  
Released Date ) }

- To edit a clause, select the clause.

The editable attributes for the clause are displayed. For example, if the **Date** clause is selected, the date-related fields are displayed.

**Date()**

End Item( ACE\_RevisionRule-ACE\_RevisionRule )

**Has Status( TCM Released, Configured Using  
Effective Date )**

---

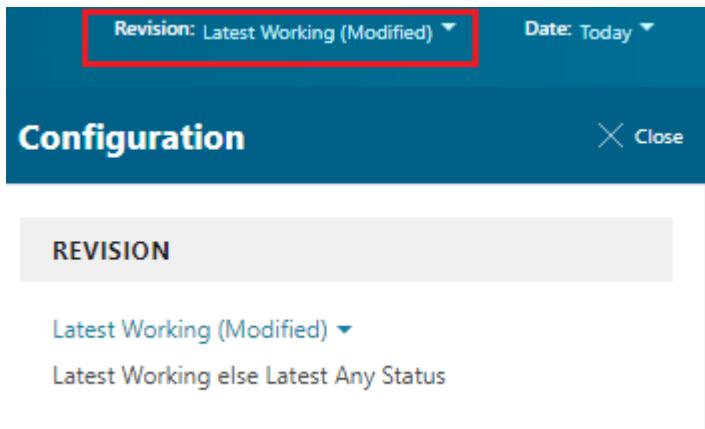
**DATE**

Today:  Date:

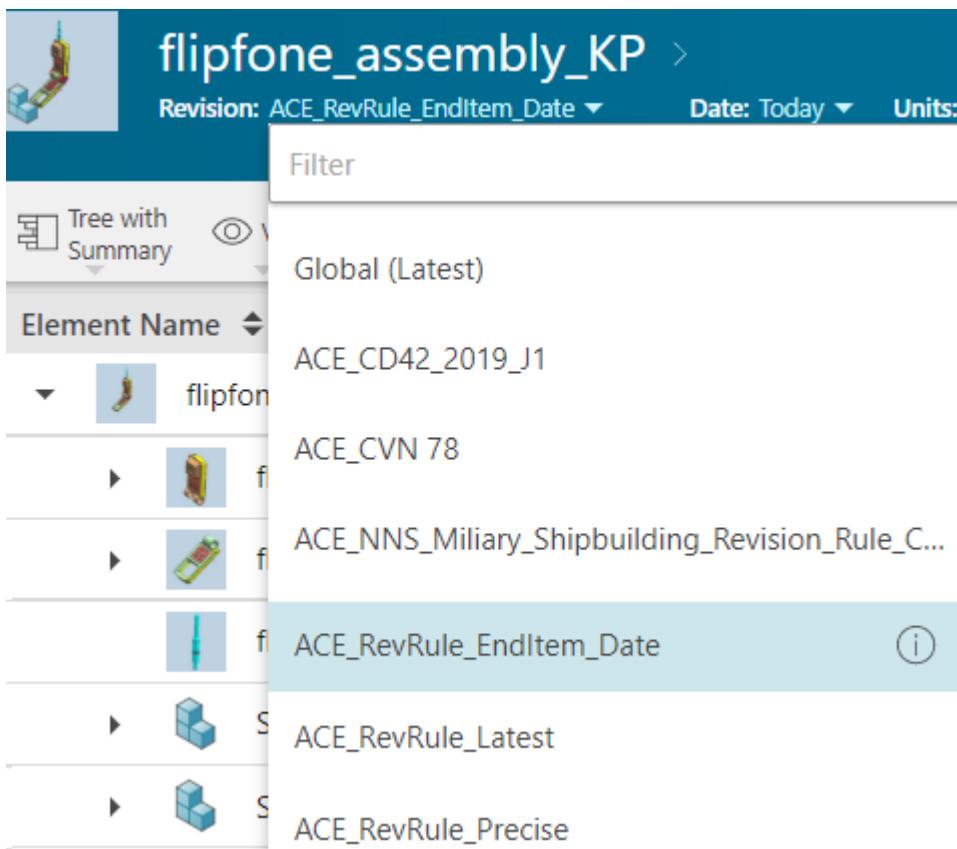
DD-MMM-YYYY

- To apply the modified revision rule, click **Modify and Configure**.

Active Workspace refreshes and displays the content configured by the modified revision rule. The **Revision** in the header area shows the modified revision rule.



6. Alternatively, you can modify the revision rule clauses and update the **Date** and **Unit** values from the configuration panel header. To modify the revision rule clauses, select the revision rule you want to update from the list.



The modified rule is available to you only if you modified the rule.

As the effectivity criteria set in revision rule, and in the header are in sync, you may lose any earlier configuration done using the **effectivity group configuration**.

# Configure a structure with variant rules

## Configuring structures with variant rules

Manufacturers often want to develop a range of products based on the same generic platform, offering their customers choice, but at the least engineering cost. One approach is to create a single generic product structure that can be configured for each variant of the product offered.

Using Teamcenter, you can define options and the corresponding allowed values and attach them to an item, typically the top-level item in the structure. For example, you can define a Gearbox option with the allowed values of Manual and Automatic. You then attach a logical expression, referred to as a variant condition, to any occurrences of the components that are configurable, for example, the automatic and manual gearboxes. The expression refers to the defined options and can be as complex as necessary.

You choose the desired option values for a configuration and set them in a variant rule. Teamcenter evaluates the variant conditions on the occurrences in the structure against the set option values, and components are configured accordingly. Unconfigured components can be hidden.

A designer can preset the option values in the variant rule. The preset value may be a default option or a derived default option.

- **Default option**

A default value is a value that you preset for an option. For example, the option **aerial** may have a default value set to **standard**.

- **Derived default option**

A derived default is a value that is set to a value that depends on a condition. For example, the option **radio** may have a value **stereo** if **car type = GLX**.

For more information about default and derived default options, see the *Working with option defaults* section of *Structure Manager* in the Teamcenter documentation.

Designers can define combinations of option values that are not allowed using the variant rule checks. A variant rule check consists of a condition (for example, **engine = 1200 AND gearbox = automatic**) and an error message (for example, **Incompatible engine and gearbox**). An error message containing the condition and message is displayed if the rule check fails when you configure a structure with the variant rule.

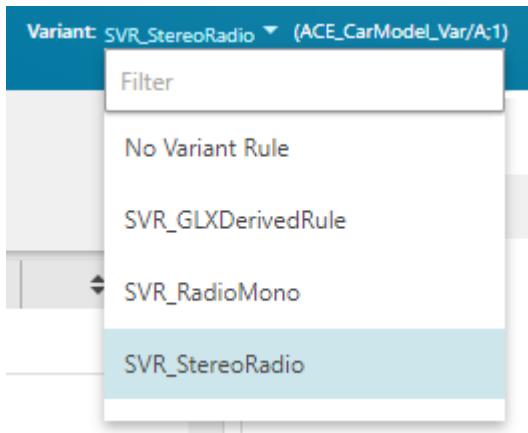
In Active Workspace, you can view existing variant rules and variant configuration data. You can change the configuration data and save the updated rule as a new variant rule. You can apply any existing or updated variant rule configuration to your structure.

To view or update saved variant rules in Active Workspace, ensure that the **PSEVariantsMode** preference is set to **legacy**.

## Configure a structure with a variant rule

To configure a structure by using a saved variant rule:

1. Search for and open the product to be configured.
2. To apply a variant rule, select the rule from the **Variant** list in the header.



Active Workspace refreshes and displays the configured content based on the new configuration.

Alternatively, you can perform the following steps to apply a variant rule using the **Configuration** panel.

1. Click **Configure** and then select **Configuration** to display the **Configuration** panel.
2. To apply a variant rule, select the rule from the list in the **VARIANT** section in the **Configuration** panel.

**VARIANT**

Saved Variant:

 CarModel  
CarModel  
Revision: A

**Adhoc\_Rule ▾**

- Filter
- Custom
- No Variant Rule
- SVR\_GLXDerivedRule
- SVR\_RadioMono

Active Workspace refreshes and displays the configured content based on the new configuration.

## View variant rule details

1. Search for and open the structure to be configured.
2. Click **Configure**  and then select **Configuration**  to display the **Configuration** panel.
3. In the **VARIANT** section, select the rule you want to view.

The screenshot shows a software interface for managing variants. At the top, a header reads "VARIANT". Below it, a section titled "Saved Variant:" displays a blue cube icon and the text "CarModel" repeated twice, with "Revision: A" underneath. To the right, a dropdown menu is open, showing the title "Adhoc\_Rule ▾" followed by a list of options: "Filter", "Custom", "No Variant Rule", "SVR\_GLXDerivedRule", and "SVR\_RadioMono".

Active Workspace refreshes and displays the configured content based on the new configuration.

4. To view the details of the applied variant rule, select **Custom** from the variant rule list.

The **Configuration** panel shows the options and values defined in the variant rule.

For the options in the variant rule that do not have a defined value, the default values and derived default values are shown.

**Configuration**

 Close

SVR\_GLXDERIVEDRULE

Aerial:

Std

Car Type:

GLX

Engine:

1600

Gearbox:

Manual

Radio:

Stereo

**Configure**



5. Change a default value and click the **Configure** button to view the derived default values for the selected default value.

**Note:**

Unless the **Configure** button is clicked, the derived default value is not updated even after the default value is changed.

Similarly, the rule checks for the variant rule are executed only after the **Configure** button is clicked.

## Update a variant rule

Only users with the requisite access privileges can modify a variant rule. To modify a saved variant rule:

1. Click **Configure**  and then select **Configuration**  to display the **Configuration** panel.
2. Select the variant rule you want to modify from the list in the **VARIANT** section in the **Configuration** panel.

The screenshot shows a software interface for managing variants. At the top, a header reads "VARIANT". Below it, a section titled "Saved Variant:" lists "CarModel" twice, with "Revision: A" underneath. To the left of the list is a blue icon representing a variant. Below this is a dropdown menu labeled "Adhoc\_Rule ▾" which is currently set to "Custom". A "Filter" input field is also present. The main body of the interface contains a list of variant rules: "Custom", "No Variant Rule", "SVR\_GLXDerivedRule", and "SVR\_RadioMono".

3. To update the variant rule, select **Custom** from the list.

The **Configuration** panel shows the options and values defined in the variant rule.

For the options in the variant rule that do not have a defined value, the default values and derived default values are shown.

The screenshot shows a configuration dialog box titled "Configuration". At the top right is a "Close" button. Below the title, the variant rule name "SVR\_GLXDERIVEDRULE" is displayed next to a back arrow icon. The dialog contains five dropdown menus labeled "Aerial", "Car Type", "Engine", "Gearbox", and "Radio", each with a selected value ("Std", "GLX", "1600", "Manual", "Stereo" respectively). At the bottom is a blue "Configure" button.

4. Make the changes to the option values as required and click the **Save** icon.

The variant rule is saved with the updates. You can use it to configure structures.

## Save a modified variant rule as new

1. After **updating a variant rule**, to save it as a new rule, click the **Save As** icon.
2. Enter a **Name** and **Description** and click the **Save** button.
3. To attach this variant rule to the current structure or the configurator context, select the appropriate option.

A new variant rule is created that you can use to configure structures.

## Associate a variability scope to a structure

To associate a variability scope to a structure:

1. Search for the required structure element such as item, part, or product design, and open it.

Alternatively, from the item revision, part revision, or design revision, navigate to the respective item, part, or product design using the **Relations** tab.

2. In the **Overview** tab, click **Edit**  > **Start Edit**.
3. In the **Variability Scope** section, click **Add** .
4. Select the required configurator context using **Search** or **Palette** and click **Add**.
5. Click **Edit**  > **Save Edits**.

## Create variant conditions for a part

To add a variant condition to a part:

1. Search for the product structure that contains the part for which you want to add a variant condition.
2. **Associate a configurator context with the product structure**, if this is not already done.
3. Select the product design and click **Open** .
4. Select the relevant part and click the **Variant Conditions** tab.
5. Click **Show Families**  to view all options.
6. To expand each option family, click **Show Children** .
7. Click **Start Edit** .
8. Click a cell in the grid next to a variant option to set the variant condition for the part:
  - Click once to display a check mark  to include the variant option as a variant condition.
  - Click twice to display a circle backslash  to exclude the variant option as a variant condition.
  - Click three times to display a blank cell to indicate that the variant option is not used as a variant condition.
9. Click **Save Edits**  to update the variant conditions.

Multiple variant conditions are connected using a logical **AND** operation to create the final variant condition.

## Configure using a custom configuration

### Choose guided mode or manual mode

You can work with product configurations in two modes, as follows:

- **Guided** mode

In this mode, only valid features are displayed.

This mode is intended for a user who wants to quickly arrive at a 100% BOM. The 100% BOM is used to create a prototype, perform simulations, compute the price, calculate the weight of the product, or visualize the structure.

Guided mode allows you to navigate only valid selections and configurations. If no configuration is applied, a model opens in guided mode, and the system guides you to select a valid group of features in which to configure a product. Every time a selection is made, the system reevaluates the rules and refreshes the list of features.

Guided mode supports both complete and partial configurations.

- **Manual** mode

This mode does not expect you to specify the complete configuration. It is intended for developing a product or making changes to a product.

In this mode, you see all available features, including variants that are not valid in the current context.

An engineer may want to use manual mode to view an invalid configuration for analysis purposes. Also, a user who is very familiar with a particular configuration may work in manual mode for system performance reasons. Because the rules are not reevaluated after each click, the system responds more quickly in manual mode.

In manual mode, you can look at entire variability, choose variety of features, and assess if those selections are valid based on the configurator rules. You can validate your selections and save your configuration. If there are any conflicting constraints, the system reports violations as error messages and specifies the conflicting selections.

To switch between modes, click  in the work area toolbar of the **Variant Configuration** tab.

While radio buttons are displayed for making selections in **Guided** mode, check boxes are displayed for **Manual** mode.

If you switch from guided mode to manual mode, Active Workspace displays all features and retains the selections.

**Note:**

If you have an invalid configuration, the system does not allow you to switch from manual to guided mode.

## Set validation mode

Your administrator sets the default validation mode by creating the **PCA\_Default\_Solve\_Mode** preference. This preference can be set to **Order**, **Order (Apply Constraints)**, **Overlay**, or a custom solve profile, if one exists. By default, it is set to **Order** mode.

The individual settings that make up each mode definition are defined by your administrator and are read-only. If you change from one mode to the other, the settings change to reflect the selected mode.

When applied, all user selections are retained, but the system selections and violations are cleared.

Choosing the validation mode sets the severity for reporting and expansion in order to control how the solver behaves and how violations are reported. When a mode is selected, the definition of that mode is shown, including its validation severity, expansion severity, and its selection behavior. These settings determine how strictly you want to evaluate the constraints in the system.

- The **Validation Severity** applies when the configuration is validated and is always higher than the expansion severity.
- The **Expansion Severity** is relevant when an order is expanded by clicking **Apply System Selections**, and the user wants to communicate the severity level to the solver.
- The **Selection Behavior** consists of a check box which determines whether multiple selections for a single select family will be considered valid or not (in manual mode, where single select families are represented with check boxes for each feature).
- The **Apply Constraints** check box, if selected, determines if all constraints should be considered while applying the variant expression on the content. If deselected, only user selections are applied.

By default, this check box is selected.

- The **Allow Validation Rules to Expand** check box, if selected, determines if validation rules should participate during criteria expansion. If deselected, only violations, if present, are reported. The system selection, based on validation rules, does not occur in the expanded criteria.

By default, this check box is selected.

**Example:**

When the validation severity is set to **Error** (as it is for both **Order** and **Overlay** modes), the configuration is considered invalid only when the **Error** severity rules are in conflict. When there are conflicts between **Warning** and **Information** constraints, the configuration is considered valid.

To update the validation mode for the current session:

1. In the work area toolbar of the **Variant Configuration** tab, click .

Active Workspace displays the **Settings** panel.

2. In the **VALIDATION MODE** section of the **Settings** panel, choose a mode from the drop-down list.
  - **Order (Apply Constraints)**

Use this profile for initial order generation.

Constraints of any severity are considered, including error, warning, and default constraints. Further, the system enforces (and not selects) the constraints for optional families.

The system expands the order again when the configuration is applied to the content. This means that even if you have only selected features in the manual mode without expanding them, the expansion is enforced while applying the configuration to the content.

- **Order (default profile)**

Use this profile to reevaluate the content for an order at a later point in time.

The system uses only user selections or the previously expanded order when the configuration is applied to the content. It is your responsibility to select either the guided configuration or the manual configuration and expand the order features.

- **Overlay**

Use this profile for performing an engineering analysis after you receive all the parts that are compatible with a partial configuration or an overlay configuration, for example, right-hand drive or left-hand drive.

The system allows you to overlay multiple product configurations and multiple variations of the same product.

The validation severity, expansion severity, and selection behavior settings are updated based on the selected mode. These settings are defined by your administrator and are therefore, unavailable and read-only.

**Note:**

The **Selection Behavior** setting is ignored in guided mode.

3. Click **Apply**.

All user selections are retained, but the system selections and violations are cleared.

**Tip:**

Once you change tabs or otherwise start a new session, the validation mode settings will return to the defaults. A **saved variant** stores this setting information, however, so loading the appropriate SVR is a quick way to return to your desired settings.

## Filter configurator data by revision rule, effectivity, and rule date

You can filter configurator data by **revision rule**, **effectivity**, and **rule date**. To do so:

1. Find and open the product to be configured and click the **Variant Configuration** tab.**Note:**

If your configuration analyst has not associated a configurator context with the product, the **Variant Configuration** tab is not displayed.

2. In the work area toolbar, click .

Active Workspace displays the **Settings** panel.

## 3. Filter configurator data by revision rule.

Content changes can be managed by revising product data. Changes that may necessitate a new revision include addition or removal of components, relationships to other products or assemblies, and changes to properties. You can then apply a revision rule to view the correct revisions of the product data.

Similarly, you can apply revision rules to configure the families and features for a particular configuration. The revision rule (as well as effectivity and rule date) in the **Settings** panel of the **Variant Configuration** tab *only* applies to the configurator families and features. For example, a feature may have a specific rule date, and the **Settings** panel will control whether or not that feature is available for selection in a configuration.

**Note:**

The revision rule and effectivity for configuration is separate and independent of the revision rule and effectivity for product data. Rule date is unique to configuration.

You cannot view multiple configurations at the same time; if you want to see another configuration, you must apply a different revision rule.

Revision rules are predefined by your system administrator, and you select a rule from the list of available rules.

To override the default revision rule for the current session:

- a. In the **FILTER CRITERIA** section of the **Settings** panel, click the current revision and select a revision rule from the resulting **Revision Rule** list.

**Note:**

An invalid revision rule is a rule that contains a clause that is not valid for a particular type of object. While both valid and invalid revision rules appear in this list, the system will not let you apply an invalid revision rule.

- b. Click **Apply**.

Active Workspace refreshes the displayed content to show only content configured in by the selected revision rule.

4. Filter configurator data by effectivity.

You can configure configurator data with effectivity. When you apply the effectivity, the features are configured according to the unit range or the date range you specify. Active Workspace then shows the features that are in effect for the specified date, unit number or range.

**Note:**

Your administrator configures the effectivity scheme used by your business by setting the **PCA\_effectivity\_shown\_columns** preference. This preference can be set to show **Effectivity Date, Unit, or Both**.

If your site supports date and unit effectivity, both selections are displayed in the **Settings** panel.

To override the default or change the existing dates:

- a. In the **FILTER CRITERIA** section of the **Settings** panel, click **All Dates** or the displayed date under **Effectivity**.

- Use the calendar to select the desired start date.

To set a date range, use the calendar to select the desired end date.

Using the pull-down menu, you can select **UP** (any date after the one specified) or **SO** (stock out), rather than a specific date.

- Click **Set**.

- Click **Apply**.

Active Workspace reconfigures the content to match the new date.

- Filter configurator data by rule date.

BOM engineers who develop new products typically prefer to use the **Latest** rule date. That is because the configurator engineer is continuously improving configurator rules or adding new ones, and, therefore, the BOM engineer wants to validate the product against the **Latest** rule date.

Order engineers need to validate the variant rules or variant criteria against the rules that were valid at the time of the order. If the order is already in production, they might not want to apply the **Latest** rule date. In such cases, **Date** that is set on the order is used to validate variant rules or variant criteria.

The **Cfg0DefaultRuleDateForContent** user preference specifies the default rule date mode value for the configurator views. By default, it is set to **Latest**.

- Select a rule date as appropriate and click **Set**.

Rule date	Description
<b>Date</b>	Sets the rule date selected from the widget.
<b>Latest</b>	Sets the rule date as the current time on the clock.
<b>System Default</b>	Sets the rule date as the system default.
<b>No Rule Date</b>	Sets the rule date as null.

- To apply the settings, click **Apply**.

## Configure variants in guided mode

- Find and open the product to be configured and click the **Variant Configuration** tab.

**Tip:**

Click  to maximize the display area.

Active Workspace displays a list of available product lines, product models, and groups. If the product has a variant configuration defined, the selections in the configuration are shown with the variability in the context.

**Note:**

Your administrator can deploy the system with the **Cfg0PrimaryBusinessRelevantAttribute** global constant that allows you to use either **Name** or **ID** as the primary business-relevant attribute. When the system is configured with the global constant that points to **Name** as a primary business property, all Product Configurator views display **Name** instead of **ID** in the corresponding areas.

2. To begin creating a customized variant configuration, do one of the following:

- Select the product line containing the product model with which you would like to work.

The model families in the selected product line are selected by the system.

- Select a product model with which you would like to work.

The system automatically selects the product line containing the selected product model.

When you make some selection changes and revert them, the system continues to display the **Save** icon.

**Note:**

Product lines are only listed if they are defined in the configurator model.

3. After you have selected the appropriate product model in the work area, select each group from the list in the left panel and make the necessary feature selections in the work area.

**Tip:**

Use  in each section header to expand and collapse the families as necessary when making feature selections.

- If there are more than fifteen features in a family, the **Filter** box displays to help locate the appropriate feature. The text filter is not case-sensitive and is based on the family and feature properties shown (**Name** and **Description**, for example).

**Example:**

You type **mfv** into the **Filter** box.

- The filtered list shows the families containing **mfv** in the family name, along with all the features in that family.
- The filtered list shows the features containing **mfv** in the feature name, along with its parent family.

- An **\*** indicator displays next to any required family that does not have a selection. Once a selection is made, the indicator disappears.
- An  indicator displays next to system selected features.

It indicates that the displayed features are enforced in the current configuration. Typically, features configured due to include, exclude, and availability rules created in Product Configurator are shown as system-assigned.

- An  option button displays when a single-select feature is selected. Click the feature again to deselect.
- In multiselect and Boolean families, you can cycle between three states:
  -  indicates include.
  -  indicates exclude.
  -  indicates unselected.

#### 4. Select one feature in a single-select family or one or more features in a multiselect family.

As you select and deselect features, Active Workspace exposes or hides other features based on configurator rules and displays the  indicator to designate the system selections. The system also calculates completeness upon every selection made by the user and displays the **\*** indicator next to incomplete families.

The completeness indicator displays at the top of the **Summary** panel and shows one of three states: **Valid and Complete**, **Valid and Incomplete**, and **Invalid**.

- **Valid and Complete** (applicable for both guided mode and manual mode)

Valid and complete means that the BOM is targeting a complete structure, that is, a 100% BOM.

When a configuration is valid and complete, you could take this configuration input and perform a cost or a weight rollup, compute the center of gravity, or perform a digital analysis of that product.

On the contrary, if you do not see this completeness indicator, you should not typically perform any of the above actions. It means that you have less content or more content.

When a configuration is valid and complete, it assigns a value to every family. This is irrespective of whether the family is mandatory or discretionary.

- **Valid and Incomplete** (applicable for both guided mode and manual mode)

In guided mode, you can select the **Next Required** or the **Previous Required** option to navigate to the next or the previous family or feature that requires a value to be assigned to complete the configuration.

- **Invalid** (applicable for manual mode only)

It means that the input criteria is invalid based on the configurator rules set in the current configurator context.

It may also refresh features displayed for other families as it applies the relevant rules by hiding invalid features. If none of the features in a family is still valid, the family itself is hidden.

Default features are selected by the system if they do not already have a value and designated with the  indicator. Constraints are applied, validating the expression and adding any additional expression terms.

5. Select a family or feature that has a specified revision rule, effectivity, or rule date. Apply a different revision rule, effectivity, or rule date. This becomes an unconfigured family or feature.

Such families and features are displayed with a different icon and have a question mark and an indicator that shows it as *configured out*. In such cases, the system switches to the manual mode. To proceed in guided mode, you can clear your selection of the unconfigured family or feature and select another family or feature. The system switches to the guided mode and you can continue to configure the structure.



- If a family is unconfigured and you select a feature within it, then both the family and feature are shown as unconfigured.
- If you deselect an unconfigured feature or family and navigate to a different group, both the family and feature are not displayed by the system. Similarly, if you deselect an unconfigured

feature or family, save it, and reopen it, neither the family nor the feature are displayed by the system.

You can optionally save the content with an unconfigured family or feature as an SVR.

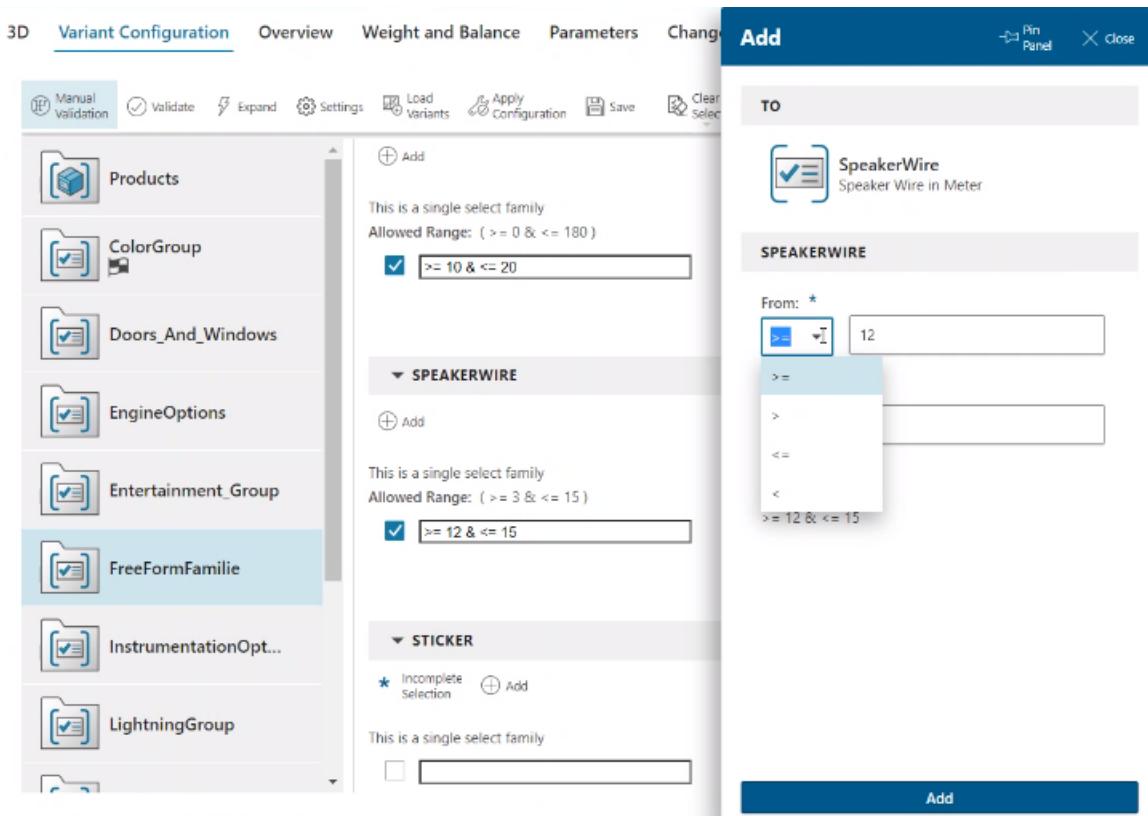
6. An optional feature family contains product configurations where users are not required to select a feature for the family. For example, you may have a family with features for optional equipment.

If optional feature families are defined in a product model, an additional option is displayed in the family section header. Click  if you want *none* of the optional family features to appear in the structure.

7. Typically, features are predefined for each family, but free-form families allow you to enter a value for a feature at any time. If a family is specified as free-form, you can enter numbers, strings, or dates, depending on the data type defined.

Select an assembly that contains free-form families in the **Variant Conditions** tab, and click the **Add Feature** option. You can use operators such as **>=**, **>**, **<=**, and **<**. If you select **<=** or **<** in the **From** field, the **To** field is disabled.

If you have a **SpeakerWire** free form family in your configuration context, then you can enter the free form value as a discreet value or a range in the text box or use the **Add** panel to author the range. According to the range or the discreet value you specified, the configuration context displays only the correct BOM lines. For combining the values, you can use the **AND (&)** operator. The **OR (|)** operator is not supported.



When you apply the configuration to the structure, the system filters the structure to show only the items that meet the condition for the feature.

- As you make selections for the custom configuration, inspect the entries in the **Summary** panel on the right.

This panel includes an indicator showing the **completeness** of the configuration and lists the currently loaded variant configuration, the selected product, and the user selections.

**Note:**

The completeness indicator in the **Summary** panel is global for all groups, so each group needs to be checked to see if any family needs to be completed. Once they are, the indicator shows the configuration to be valid and complete.

The completeness, product selections, and user selections are automatically updated as the feature selections are made.

- At any time, click to clear all user and system selections as well as any reported violations across all groups.

This provides a blank configuration from which to start.

10. Optionally, **save the custom configuration**.
11. Click  to apply the selected variant configuration to the current content.

Active Workspace applies the variant configuration and refreshes the content in the product.

## Configure variants in manual mode

You can view all the product lines and product models in a configurator context. Product lines are sometimes referred to as *series* and provide a high-level organization of product models.

1. Find and open the product to be configured and click the **Variant Configuration** tab.

Tip:

Click  to maximize the display area.

Active Workspace displays a list of available product lines, product models, and groups. If the product has a variant configuration defined, the selections in the configuration show with the variability in the context.

Note:

Your administrator can deploy the system with the **Cfg0PrimaryBusinessRelevantAttribute** global constant that allows you to use either **Name** or **ID** as the primary business-relevant attribute. When the system is configured with the global constant that points to **Name** as a primary business property, all Product Configurator views display **Name** instead of **ID** in the corresponding areas.

2. Click .

You are now in manual mode.

- Summary models are listed below the models in a particular product group and act as a dependency chain to other places in the model. For example, one particular car model requires gasoline, while another requires diesel. Choosing one of these fuel categories triggers changes in other parts of the model, such as the engine itself, the need for spark plugs, the need for a fuel receptacle, and so on.
- You see all available features, including features that are not valid in the current context.
- Single select groups are designated as such to show the intent of the groups. However, when you select a feature, other features in the same family remain displayed, allowing you to select additional features.

- Configurator rules and defaults are *not* automatically applied. You must manually apply configurations by clicking .
  - Automatic selection, filtering, and indications of invalid selections are *not* automatically provided. You must manually validate  and apply system selections .
3. Select the appropriate model and the summary model.

When you make some selection changes and revert them, the system continues to display the **Save** icon.

4. Select the desired group to see the features.

You can only view one group at a time.

- If there are more than fifteen features in a group, the **Filter** box displays to help locate the appropriate feature. The text filter is not case-sensitive and is based on both the family and the feature names.

**Example:**

You type **mfv** into the **Filter** box.

- The filtered list shows the families containing **mfv** in the family name, along with all the features in that family.
- The filtered list shows the features containing **mfv** in the feature name, along with its parent family.

- An **\*** indicator displays next to any required family that does not have a selection. Once a selection is made, the indicator disappears.
- Because manual mode allows multiple selections for single select families, you can cycle between three states:
  -  indicates include.
  -  indicates exclude.
  -  indicates unselected.

You can cycle between these same three states in multiselect and Boolean families as well.

**Note:**

The currently applied variant configuration is listed in the **Variant** section of the **Summary** panel.

5. Select the appropriate features for this custom variant configuration.

**Tip:**

Use ► in each section header to expand and collapse the families as necessary when making feature selections.

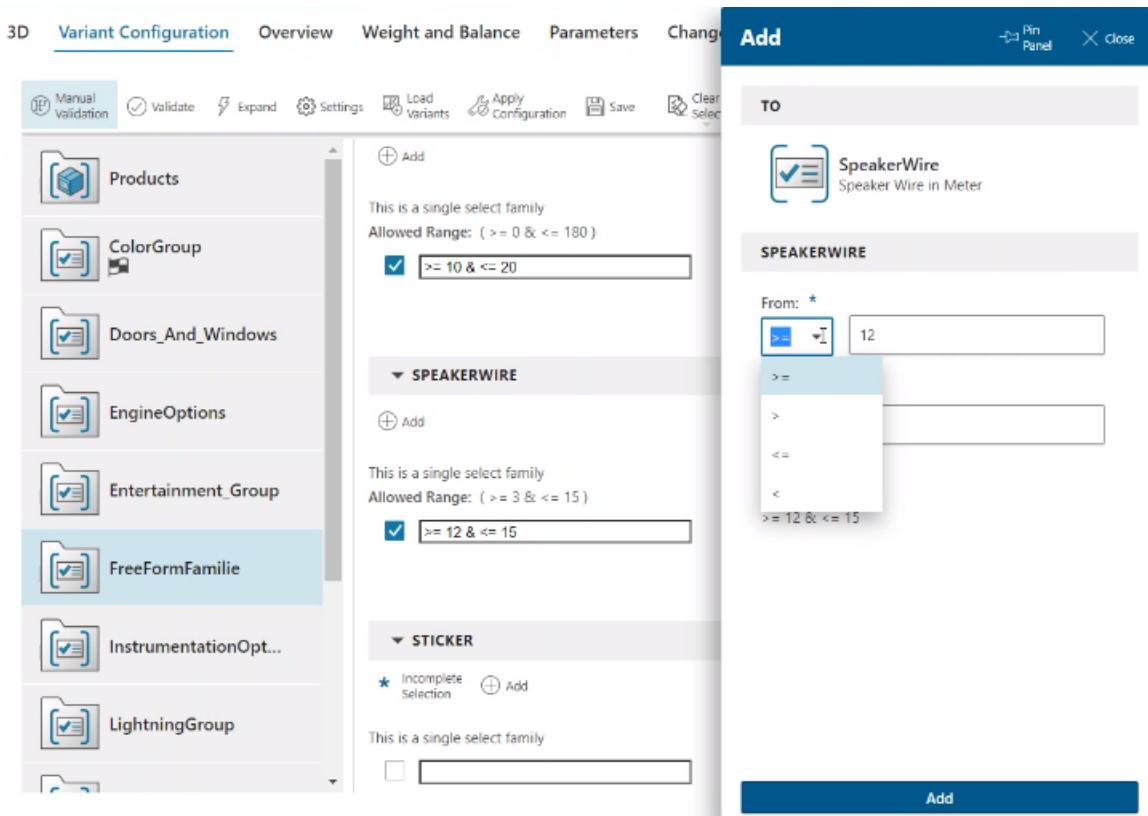
6. An optional feature family contains product configurations where users are not required to select a feature for the family. For example, you may have a family with features for optional equipment.

If optional feature families are defined in a product model, two options display in the family section header. Click  to allow *any* of the optional family features to appear in the structure. Click  if you want *none* of the optional family features to appear in the structure.

7. Typically, features are predefined for each family, but free-form families allow you to enter a value for a feature at any time. If a family is specified as free-form, you can enter numbers, strings, or dates, depending on the data type defined.

Select an assembly that contains free-form families in the **Variant Conditions** tab, and click the **Add Feature** option. You can use operators such as **>=**, **>**, **<=**, and **<**. If you select **<=** or **<** in the **From** field, the **To** field is disabled.

If you have a **SpeakerWire** free form family in your configuration context, then you can enter the free form value as a discreet value or a range in the text box or use the **Add** panel to author the range. According to the range or the discreet value you specified, the configuration context displays only the correct BOM lines. For combining the values, you can use the **AND (&)** operator. The **OR (|)** operator is not supported.



When you apply the configuration to the structure, the system filters the structure to show only the items that meet the condition for the feature.

- At any time, click to validate the configuration.

Active Workspace indicates if the configuration is **valid or invalid** in the **Summary** panel, and if invalid, shows the number of errors. Each violation is identified using the error indicator.

**Note:**

The type of violation assigned to a feature or feature group is based on the severity assigned by your configuration analyst. You cannot change the severity level in the current Active Workspace release. The severity is currently set to **error** by default.

Hover over the indicator icon next to a feature to view the reason for the violation.

- At any time, click to apply system selections.

Active Workspace makes selections based on configurator rules or constraints and displays the indicator to designate the system selections. The system also updates the completeness indicator in the **Summary** panel and identifies each violation in the configuration. Once again, hover over the indicator icon to receive more specific information about each violation.

The completeness indicator displays at the top of the **Summary** panel and shows one of three states: **Valid and Complete**, **Valid and Incomplete**, and **Invalid**.

- **Valid and Complete** (applicable for both guided mode and manual mode)

Valid and complete means that the BOM is targeting a complete structure, that is, a 100% BOM.

When a configuration is valid and complete, you could take this configuration input and perform a cost or a weight rollup, compute the center of gravity, or perform a digital analysis of that product.

On the contrary, if you do not see this completeness indicator, you should not typically perform any of the above actions. It means that you have less content or more content.

When a configuration is valid and complete, it assigns a value to every family. This is irrespective of whether the family is mandatory or discretionary.

- **Valid and Incomplete** (applicable for both guided mode and manual mode)

In guided mode, you can select the **Next Required** or the **Previous Required** option to navigate to the next or the previous family or feature that requires a value to be assigned to complete the configuration.

- **Invalid** (applicable for manual mode only)

It means that the input criteria is invalid based on the configurator rules set in the current configurator context.

10. At any time, click  and then choose  to clear any system selections that may have been previously calculated, while preserving your user selections. Alternatively, click  and then choose  to clear all user and system selections, as well as any reported violations across all groups.
11. Optionally, **save the custom configuration**.
12. Click  to apply the selected variant configuration to the current content.

Active Workspace updates the variant and refreshes the content.

**Note:**

If you save the current context (for example, the subset definition or workset), the variant configuration displays in the list of saved variants.

## Configure by saved variant or variant criteria

Variants allow you to select and apply feature families (for example, color) and allow features of those families (for example, red and blue) to configure a part or assembly.

To configure a particular variant of a product, apply the appropriate variant (a group of families and features such as **color = red, material = cotton**) or variant criteria (a revisable version of a saved variant). These items are predefined by the configuration analyst and are stored in Teamcenter for users to retrieve later.

To configure content by a saved variant or variant criteria (VC):

1. Find and open the product to be configured and click the **Variant Configuration** tab.

**Note:**

If your configuration analyst has not associated a configurator context with the product, the **Variant Configuration** tab is not displayed.

2. Click  in the work area toolbar.

Active Workspace displays the **Load Saved Variants** panel.

3. Search for the appropriate configuration by typing the name (or part of the name) of the SVR or VC to be loaded.

The available SVRs and VCs is obtained from the configurator context associated with the product or from the product itself. Only SVRs and VCs directly associated with the product can be loaded. A variant that is created for a product is not available for other products, even if the products share a configurator context.

The SVRs and VCs matching the search criteria are listed.

4. Select an SVR or VC and click **Load**. Then click  in the work area toolbar.

Active Workspace loads the selected configuration.

**Note:**

In this example, a single variant configuration is applied. Multiple variants can be applied to *4G structures* from the **Variant** section of the **Configuration** panel. Access the **Configuration** panel by clicking  in the results panel toolbar.

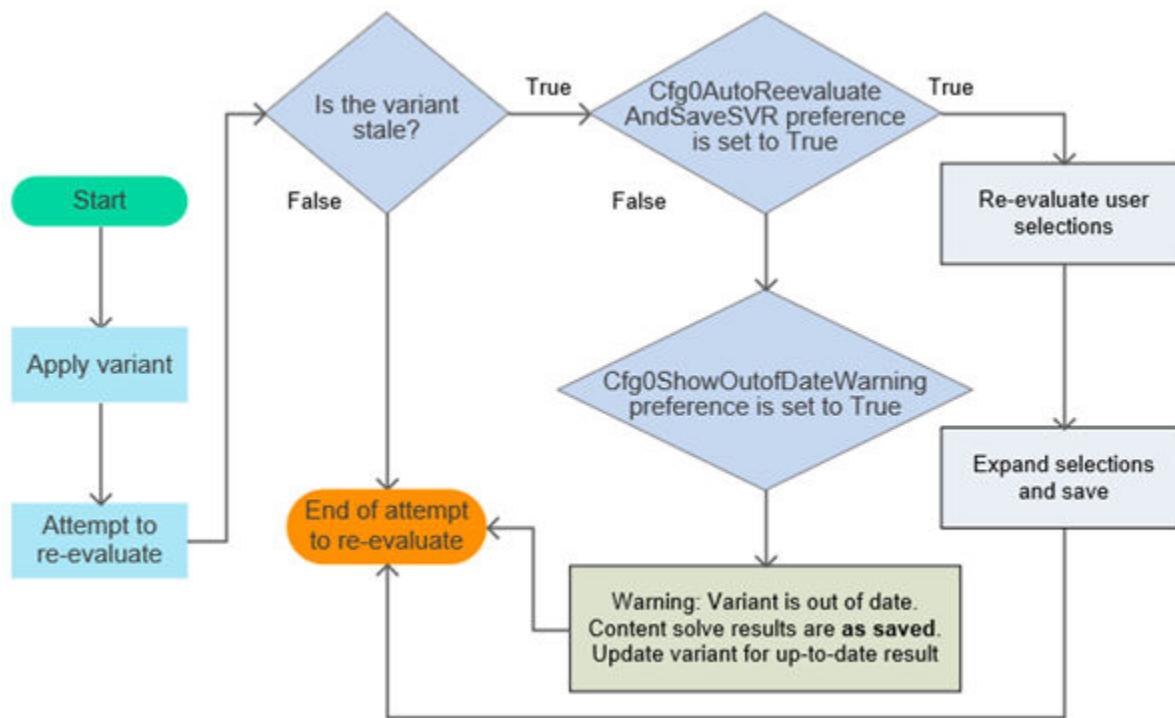
- If no variant is applied to the structure, the model opens in guided mode.
- If a configuration is applied, the model displays in manual mode.

- To unload the variant configuration, in the **Variant** section of the **Summary** panel, hover over the name of the loaded configuration and click  when it appears.

The middle work area is refreshed with all available feature selections.

## Apply a valid and complete SVR for a faster BOM solve

You must create a valid and complete SVR to improve system performance while performing a BOM solve. You can do so by making the desired selections and by using the **Expand** command in the **Variant Configuration** view. Then, you can save it as an SVR.



The previously created SVRs become outdated if the configurator data such as family, features, and rules are modified or newly created. If a stale SVR is applied on a structure, then the system displays a warning saying that the applied SVR is stale and should be refreshed. To view this warning, you must set the **Cfg0ShowOutOfDateVariantWarning** user preference to **True**. By default, it is set to **False**.

Manual revalidation can be done by executing the **Expand** command on an SVR after opening it in the **Variant Configuration** view. If you want the system to revalidate stale SVRs, set the **Cfg0IsAutoReEvaluateAndSaveVariant** user preference to **True**. By default, it is set to **False**.

## Validate your selections in manual mode

You can validate your selections in manual mode as follows:

1. From the **Variant Configuration** tab, select the appropriate features for your custom variant configuration.
2. Click  to validate the configuration.

In the current release, Active Workspace identifies violations in the configuration using the  error indicator.

In addition to the  indicator next to the invalid selection, the system also reports an **invalid configuration** and the number of errors in the **Summary** panel.

**Note:**

Active Workspace identifies only one error at a time. You must fix the error and validate again to identify the next error.

3. Hover over an  indicator to see the details of the error.
4. Resolve the conflict by changing your selections. Then click  to validate once again.
5. Repeat this process until there are no violations.

## Save changes in a configuration

You can save changes in your existing variant or save your custom configuration as a new variant. Also, depending on how your administrator has the **Cfg0CreateVariantRuleType** preference set, you may have the option to save variant criteria (VC) as well.

When an SVR or VC is saved, the user and system selections are saved, along with everything in the **Settings** panel, including the validation severity, expansion severity, and selection behavior settings, as well as the filter criteria information (revision rule, effectivity, and rule date).

In earlier versions, the system only saved the user selections when saving an SVR. If you load an SVR that was saved in a previous version, it loads the saved user selections but keeps the current settings in the **Settings** panel.

To save changes in your configuration,

1. Click  in the work area toolbar.

Active Workspace displays the **Save** panel.

2. Enter a name.
3. (Optional) Type a description.

4. Select one of the following options in **Attach to**:

- **Current Structure** to save your changes to the structure you have opened. These changes are available only for the specific structure.
- **Configurator Context** to save your changes to the configurator context. These changes are available to all the structures to which this configurator context is associated.

5. Click **Save**.

The name of the new SVR or VC displays in the **Variant** section of the **Summary** panel. If you made changes to an existing rule, the changes are saved in the existing SVR or VC.

# 14. Filter structures

## About filtering structures

You **filter a structure** so that you can work with a specific product definition, which is comparatively smaller in size than the entire structure.

You can filter structures if your Teamcenter setup has the Context Management User license. Additionally, you can filter only those structures that are indexed using Smart Discovery Indexing. Such structures can be identified by the *Indexed* indicator . Hovering over the indicator shows the start time of the last successful index update indicating whether the modified structure is available for filter.

The different ways to filter a product structure are as follows:

- **Filter by spatial proximity**

Filter a structure by locating parts that are at a certain proximity from a specific part.

- **Filter by volume**

Filter a structure by locating parts that are inside or outside a certain spatial zone. The spatial zone is represented by a bounding box. You can also choose to locate parts that are on the edges of the bounding box.

- **Filter by properties**

Filter a structure by specifying certain properties such as *owner*, *type*, and *occurrence notes*.

You cannot filter by specifying the properties of a structure element.

- **Filter by partitions**

Filter a structure by selecting partitions.

You can filter by partitions only if your Teamcenter setup has the Smart Discovery license.

## Filter a structure

You **filter a structure** so that you can work with a specific product definition, which is smaller in size than the entire structure.

## Restrictions and limitations

You can filter structures if your Teamcenter setup has the Context Management User license. Additionally, you can filter only those structures that are indexed using Smart Discovery Indexing. Such structures can be identified by the *Indexed* indicator . Hovering over the indicator shows the start time of the last successful index update indicating whether the modified structure is available for filter.

## Procedure

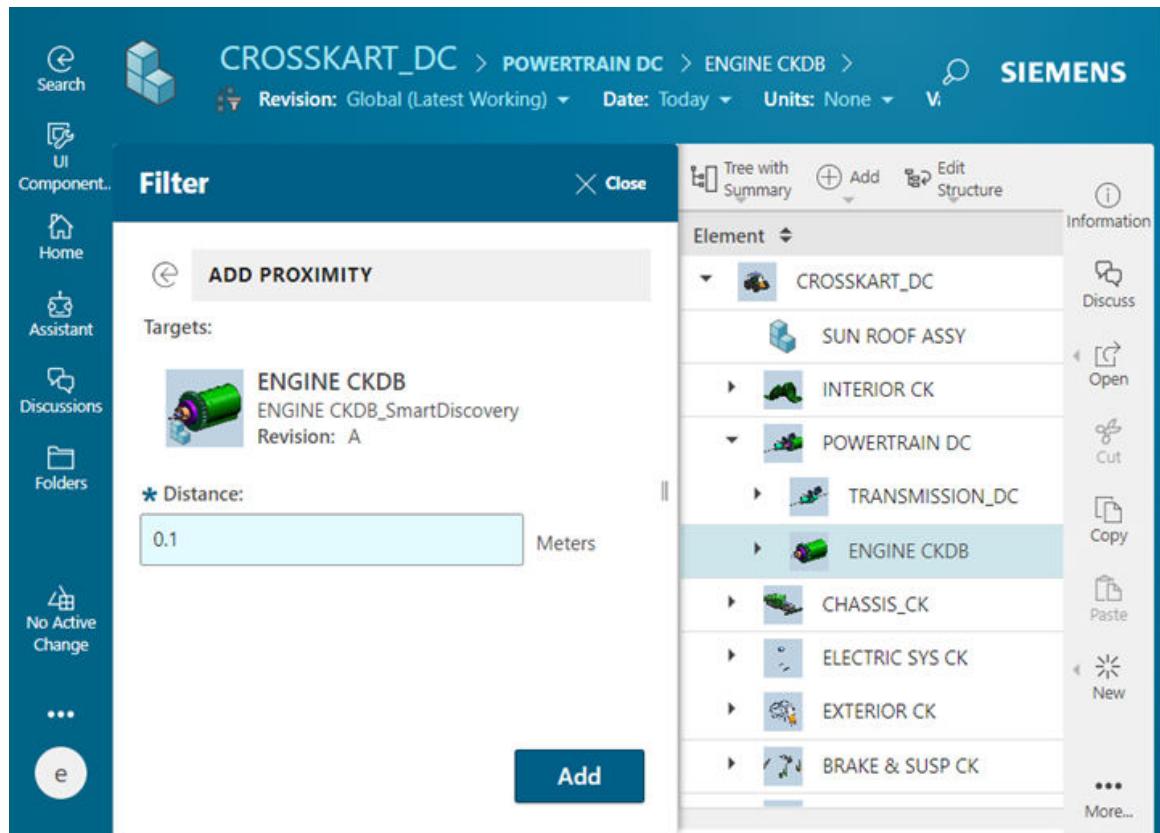
1. Search for a structure, and click **Open**  to open it.
2. Click **Filter** .
3. In the **Filter** panel, choose to enable or disable the autoupdate option. By default, this option is enabled, and the structure is filtered in real-time as you apply each filter. When autoupdate is disabled, you select all filters first and then apply them on the product BOM.

To enable or disable autoupdate:

- a. Click **Settings** .
  - b. Toggle **Auto-update filters** to enable or disable it, and click **Apply**.
4. Apply filters, as required:

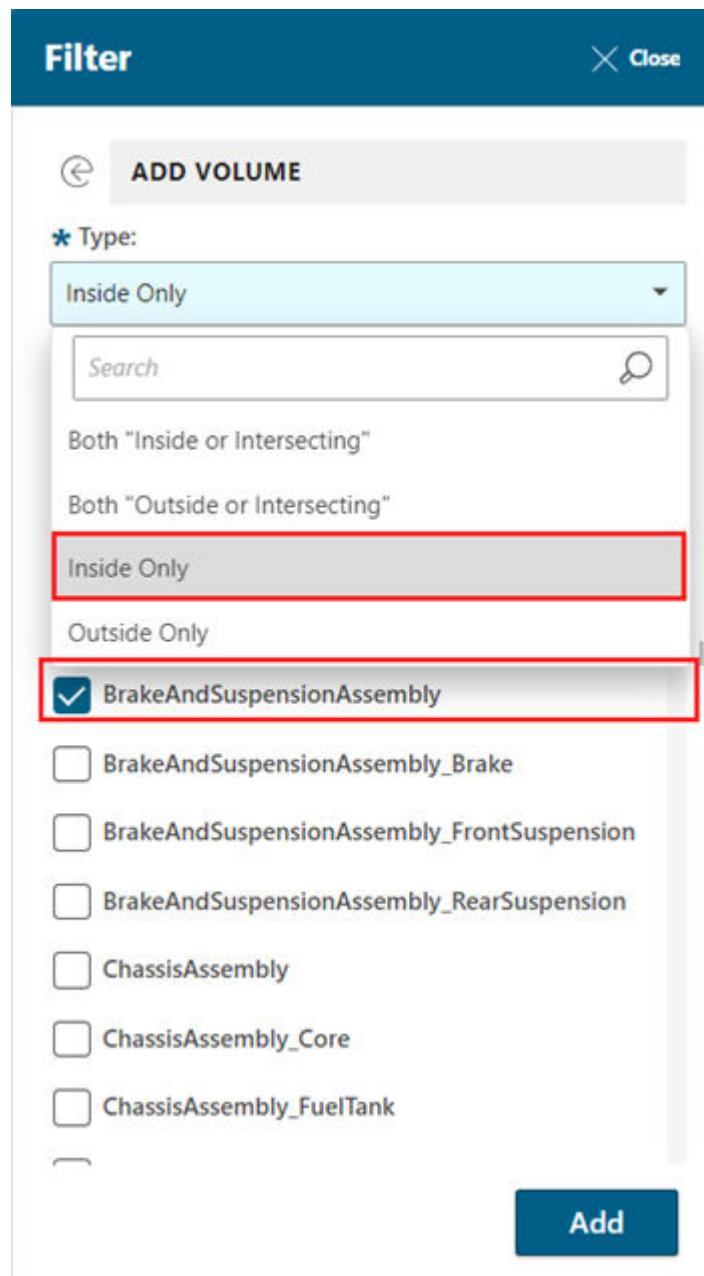
**To filter by spatial proximity:**

- a. From the work area, select a structure element to locate other structure elements that are at a certain proximity from it.
- b. In the **Filter** panel, select **Proximity** from the **SPATIAL** section.
- c. Enter the proximity in **Distance** and click **Add**.



### To filter by spatial volume:

- In the **Filter** panel, select **Volume** from the **SPATIAL** section.
- Select the volume for which you want to perform the search. For example, you can choose to locate parts that are inside the brake and suspension assembly.



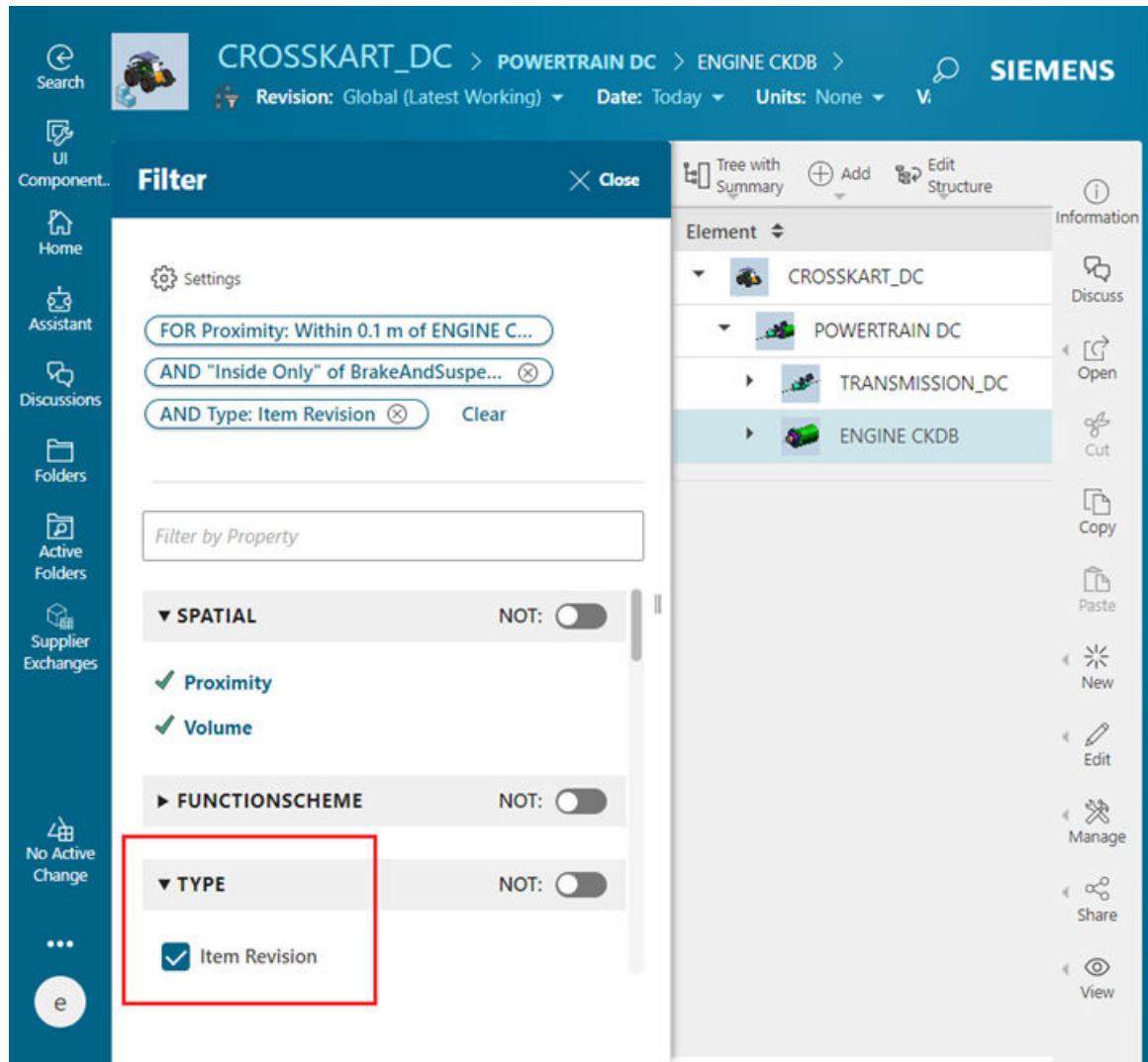
c. Click Add.

To filter the structure by properties:

Note:

The top element in a structure or BOM is not considered for the **Find** or **Filter** actions. Therefore, the properties of the top element are not available while you perform these actions.

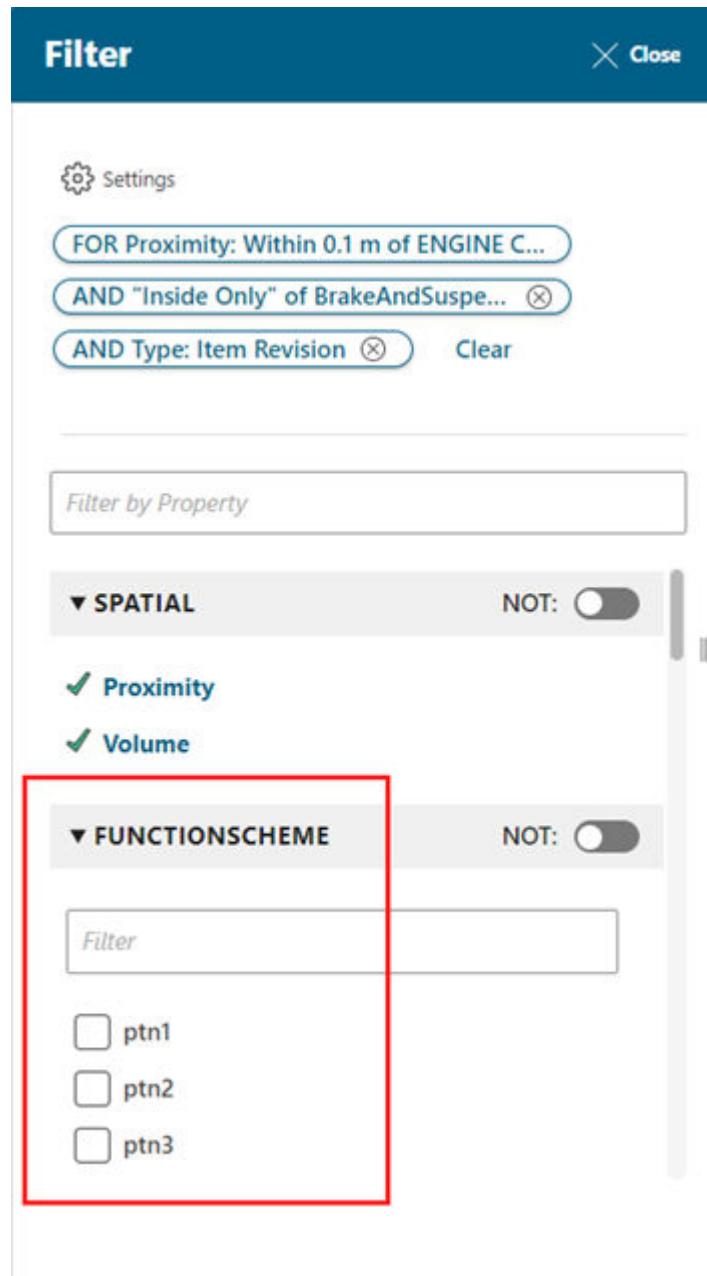
- Select the attributes, such as **ID**, **Occurrent Type**, and **Date Modified**, by which you want to further filter the structure In the **Filter** panel. For example, include all elements that are of the type, **Item Revision**.



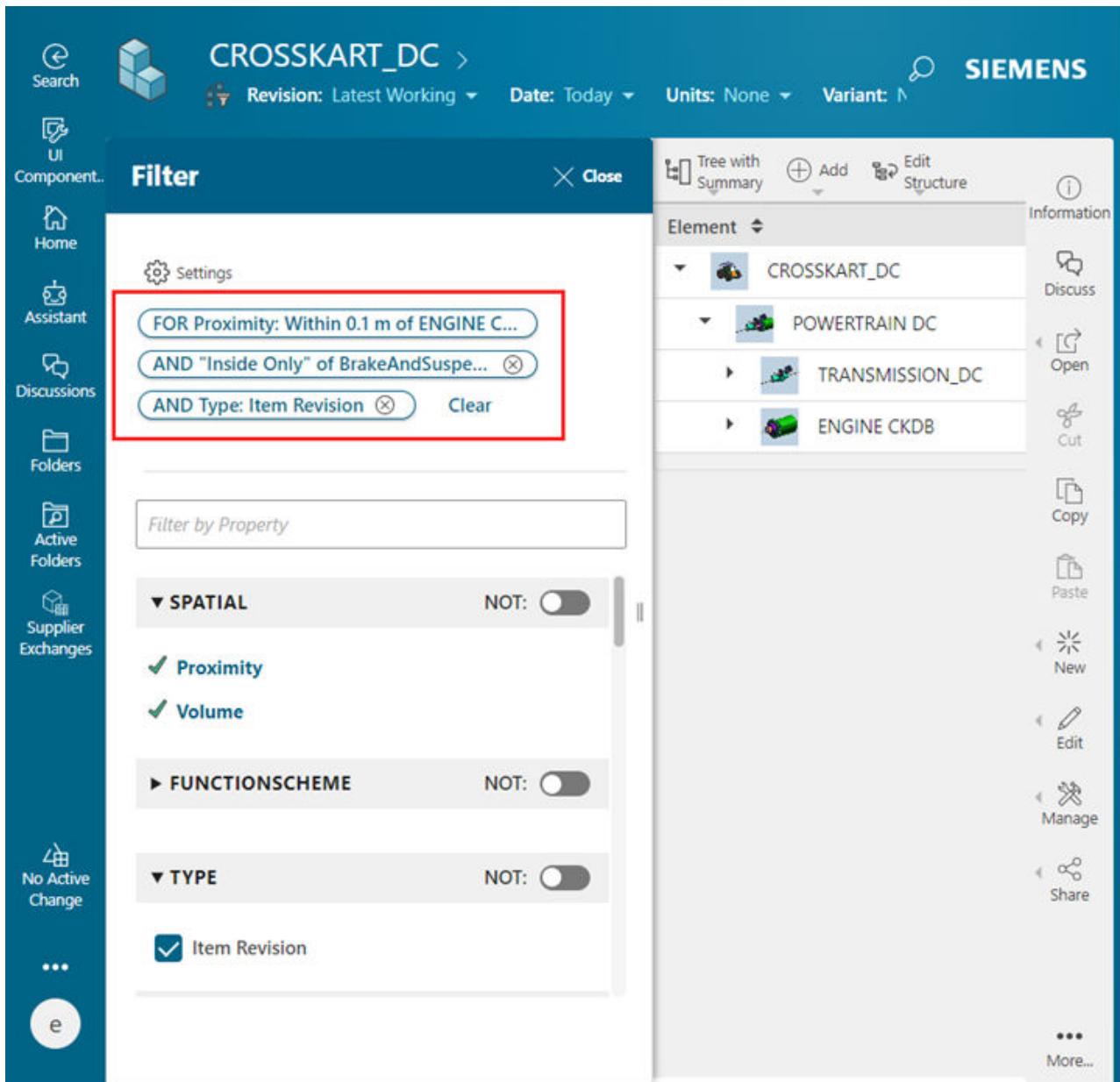
#### To filter by partitions:

- In the **Filter** panel, expand a partition scheme.
- Select the partitions that contain the required structure elements.

If a selection partition, in turn, has child partitions, the elements of the child partitions are also considered.



As you select different filters in the **Filter** panel, an expression is built at the top by using the **AND** operator.

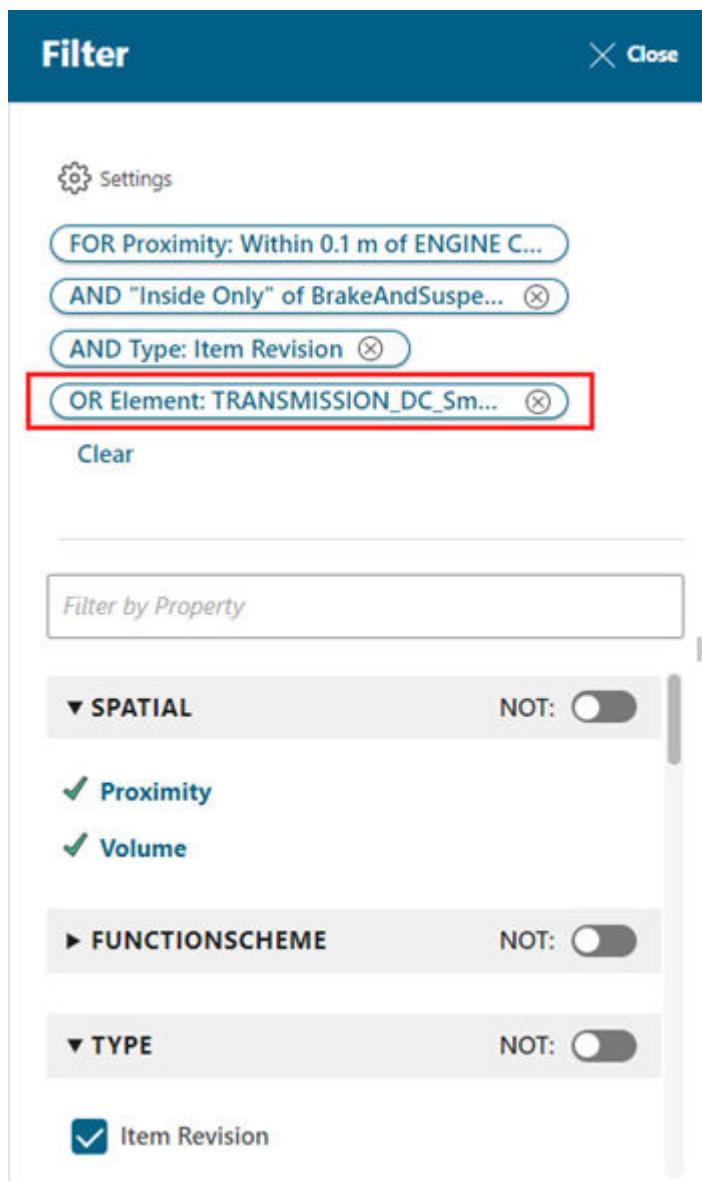


You can also apply a filter by right-clicking a structure element and selecting:

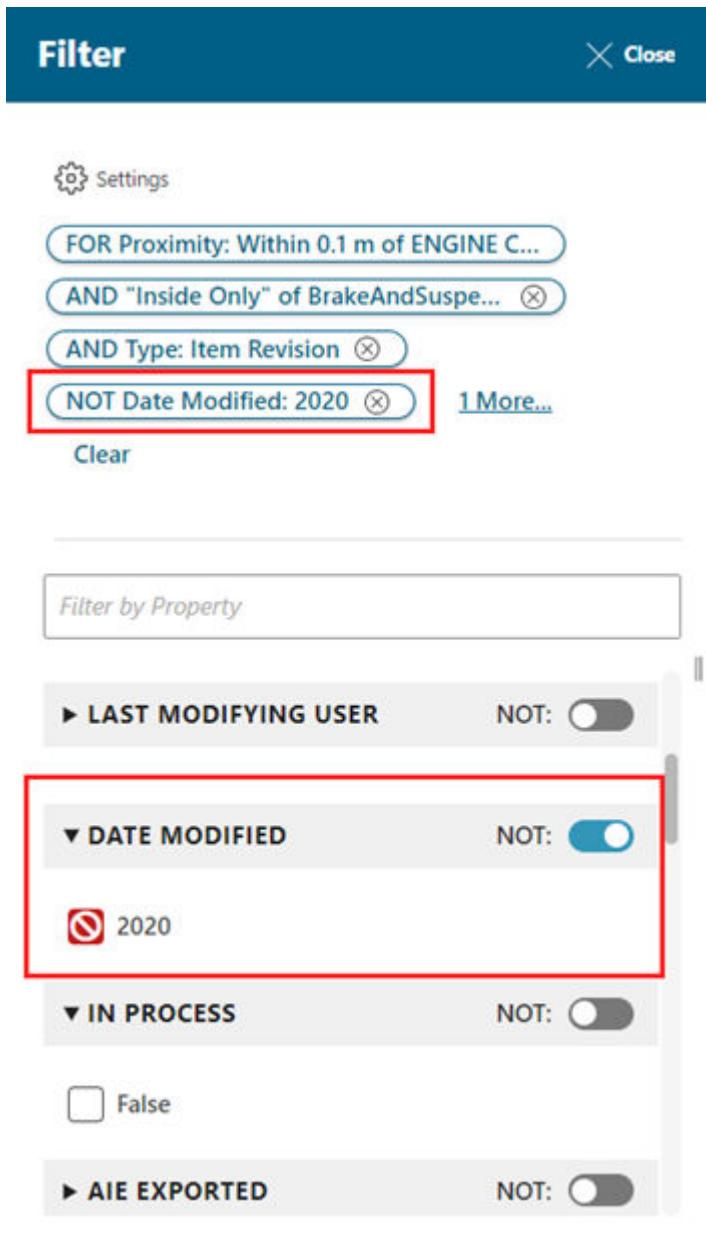
- **Include In Filter Criteria** to also include the children of the selected element as filters.
- **Include in Filter Criteria (without children)** to include only the selected element and not its children as filters.
- **Exclude from Filter Criteria** to exclude the structure element from the filtered structure.

On including elements as filters, the filters are appended to the filter expression by using the **OR** operator. The filters appended using the **OR** operator are always listed after the filters appended

using the **AND** operator. On excluding elements as filters, the filters are appended using the **NOT** operator.



5. To exclude a property as a filter, select the property and turn on the **NOT** toggle. For example, to exclude all elements that were not modified in 2020, select **2020** and turn on the **NOT** toggle in the **DATE MODIFIED** section.



6. To remove any filter from the expression, click  $\otimes$  next to it.

To remove all filters, click **Clear**.

7. If you disabled auto-update, click **Filter** to filter the structure.

To view all the structure elements including the ones that are not displayed due to the applied filters, click **Configure** and apply the **Show Excluded by Filtering** toggle.

You can save the filtered structure in a **workset** or **session** for easy retrieval.

## Reset a filtered structure

Reset removes all filters and sets the configuration criteria to its default settings. To reset a structure:

1. Search for the structure.
2. Click **Open**  to open the structure.
3. Select **Configure**  > **Reset View**  to remove the filters applied to the structure.

# 15. Save filtered and configured structures within a session

## About sessions

To easily retrieve a structure that you are currently working with, you save it within a **session**. You can further apply filters to the structure or configure it to derive a smaller structure that is more relevant to you. The session retains the filters and configurations applied to the structure.

When you open a session, you view the structure as it was previously saved retaining its applied filtering and configuration criteria. Depending on how your application administrator has configured the system, the session displays:

- Static data already stored in the session.

OR

- Dynamic data where the stored data is re-evaluated against the current data and the latest data is loaded.

You can override the value of this preference by creating a new instance of the preference at a higher-precedence location.

You can make **changes** to the session by applying new filters and configuration, and can also **save it as a new session**. Additionally, you can capture a snapshot of the product within the session to include the 3D measurement data applied on the structure. You can also **share a session** with other users.

Depending on how structures are indexed, you can perform the following tasks:

Scenarios		Tasks
Structures are indexed using Active Content Structure Indexing.	Structures are filtered.	Create a session. But the session will not retain the filters that are applied. Cannot visualize structures and capture snapshots.
	Structures are not filtered.	Create a session. Visualize large structures and massive structures, and capture snapshots.
Structures are indexed using Smart Discovery Indexing.	Structures are filtered.	Create a session.

Scenarios	Tasks
	Visualize large structures and capture snapshots.
Structures are not filtered.	Create a session. Visualize large structures and capture snapshots.

When a structure is indexed by using both types of indexing, select an appropriate revision rule to view the structure. To view the structure as indexed by Active Content Structure Indexing, select a revision rule above the rule separator. To view as indexed by Smart Discovery Indexing, select a revision rule below the rule separator.

## Create a session

You can create a session for a regular structure and also for a structure within a workset with a partition scheme applied. You can save this session and share it with other applications.

To create a session:

1. Search for and **Open** the desired structure.
2. Filter the structure as per your requirement.
3. On the primary toolbar, click **New** and select **Create Session**.
4. In the **Create Session** panel, specify the access level for other users:
  - a. Select the **Allow others to view** check box to provide *read* access to other users. Clear the check box to deny *read* access.
  - b. Select the **Allow others to edit** check box to provide *write* access to other users. Clear the check box to deny *write* access.

Note:

The **Allow others to edit** check box is displayed only when the **Allow others to view** check box is selected.

5. Click **Create** to create the session.

## Search for a session

You can search for a session based on the properties associated with the top-structure node in that session. To quickly search for a session, you can further filter sessions by their properties such as **Name**, **ID**, and **Type**.

1. Search for sessions by performing a global search.

You can search with a keyword or the wildcards characters \* or ?.

The **Filters** panel is displayed.

2. In the **Filter** search box under the **Type** list, select the **Session** check box.

The session that you are searching for should be displayed in the panel to the right of the **Filters** panel.

You can further refine your search by applying more filters, such as **ID Contained in**, **Name Contained in**, and **Type Contained in** and many other filters.

## Save a session as a new session

1. Search for a session.
2. Click **Open**  to open the session.
3. Click **Filter**  or select **Configure**  > **Configuration**  to modify the filters or the configurations applied on the session.
4. Click the session and then select **Session**  > **Save As** .
5. In the **Save As Session** panel, enter the required details and click **Save**.

## View and update a session

1. Search for a session.
2. Click **Open**  to open the session. Your site administrator sets whether to load a session with the static data stored in the session or with the latest data.

Sometimes, when a session is opened, you get a message asking you to choose to restore the session. Due to some issues, such as getting logged out while making updates to a session, results in this message. Click **Restore** if you want to autorecover the updates that you earlier made to the session. If you do not want to restore, you can ignore the displayed message, and continue with your updates to the session.

Session information that gets restored includes snapshots, quick measurements, part orientation, queries, sections, and workspace settings such as floor options and material.

3. To view the latest filters and configurations applied on the structure within the session, on the results panel toolbar, click **Replay**.
4. Click **Filter**  or select **Configure**  > **Configuration**  to modify the filters or the configurations applied on the session.
5. Click **Save Session** .

If the session is opened by another user at the same time and the other user made some changes to the session, you can choose to overwrite the session or save the session as a new one. You can overwrite the session only if your administrator has allowed overwriting of the session.

If another user removes some structure elements from the session, you receive a message with the list of the structure elements that are no longer available in the session.

6. To save a session as a new one:
  - Click **Session**  > **Save As** .
  - In the **Save As Session** panel, enter the required details and click **Save**.
7. To undo the updates to the session, click **Session**  > **Reset View** .

On resetting, the session goes back to its previously saved state.

## Configure a session

Sessions are used to save the filtering and configuration criteria applied to a structure. When you open a session, you view the structure as it was previously saved retaining its applied filtering and configuration criteria.

When a new session is created for a structure, objects in the structure are displayed based on the configurations applied prior to creating the session. The status of the following **Show...** sets a preference. The value of the preference is not saved when the session is saved.

- Show Excluded by Effectivity
- Show Excluded by Variants
- Show Suppressed

You can use these **Show...** toggles in the **Configure** menu to control the display of the structure elements. You can apply any filters on the configured structures as required. The configuration is retained with the filters applied.

When the session is saved, the applied configuration (variant, effectivity, filtering, etc.) is also saved. However, the status of the **Show...** commands is not saved.

### **Show or hide occurrences excluded by effectivity**

When a structure is loaded, all objects including those which are not effective for the specified revision rule are displayed by default. However, you can choose to display only those occurrences that are effective for a specified date, unit, range of dates, or unit numbers.

To show or hide the occurrences that are excluded by the currently applied effectivity, in the work area toolbar, click **Configure**  > **Show Excluded By Effectivity**.

### **Show or hide occurrences excluded by variant**

When a structure is loaded, all occurrences including those occurrences which are not configured by the variant are displayed by default. However, a user can choose to hide or show the that are not configured.

To show or hide the occurrences that are excluded by the variant configuration, in the work area toolbar, click **Configure**  > **Show Excluded By Variants**.

### **Show suppressed occurrences**

Occurrences in a structure can be hidden by setting the suppress property to *True*. When a structure is loaded, all occurrences including the suppressed occurrences are displayed by default.

To show or hide the suppressed occurrences, in the work area toolbar, click **Configure**  > **Show Suppressed**.

## **Share a session with other users**

You can share a session with other users. As a prerequisite, the system administrator must set the **Has Class( Fnd0AppSession )** Access Manager rule. To share the session, you must be the creator of the session. After you share the session, other users can view or edit the session that is shared by you.

### **Make a session shareable while saving the session**

1. Search for and open the structure.
2. Configure the structure as required.
3. Select **New**  > **Create Session** .

4. In the **Create Session** pane, specify the access level for other users:
  - a. Select the **Allow others to view** check box to grant *read* access to other users. Clear the check box to deny *read* access.
  - b. Select the **Allow others to edit** check box to grant *write* access to other users. Clear the check box to deny *write* access.

Note:

The **Allow others to edit** check box is displayed only when **Allow others to view** check box is selected.

5. To create the session, click **Create**.

## Initiate a workflow to share a session

When you share a session, you must inform the person you have shared the session with. You can communicate using any method such as emailing the session URL. You can also use a workflow to share sessions and assign tasks to other users.

1. Search for the session that you want to share.
2. Click **Open**  to open the session.
3. Select **Session**  > **Replay**.
4. Click **Manage**  > **Submit to Workflow**.

Active Workspace displays the **Submit to Workflow** panel and a list of workflow templates.

5. Select the **Session Collaboration Workflow** template.
6. Enter a description for the workflow participants, and select the appropriate workflow template.

A default workflow is defined for sharing the session. It is automatically selected as the workflow template.

7. Click **Assignments** to assign users and resource pools to the workflow.
8. Click **Submit**.

## Release a session

To set a *release* maturity on a session:

1. Search for the session you want to release.
2. Click **Open**  to open the session.
3. Click **Manage**  > **Submit to Workflow**.

Active Workspace displays the **Submit to Workflow** panel and a list of workflow templates.

4. Select the **Session Release Workflow** template.
5. Enter the required details and click **Submit**.

## Find an element within a session

You may want to search for a structure element within a session. Searching for an element is not limited to the filtered structure displayed in the session. The element is searched for across the unfiltered structure.

1. Open a session.
2. In the work area toolbar, click **Find** .
3. Enter the search keyword.
4. (Optional) To narrow your search, select **Find within** to find the element within a certain assembly.

## Capture a snapshot of a session

You can capture a snapshot of a session.

Snapshots capture the 3D data associated with your product. When you load the product in the 3D viewer and take a snapshot, you capture the current 3D view, including camera, visibility, selection, view port (pan, zoom, and rotate modes), orientation, sections, measurements, queries, and markups. You also capture the configuration and filtering criteria.

You can capture a snapshot of the current view of an assembly as an in-session snapshot. In-session snapshots are contained within the session. You cannot share these snapshots independently with other users.

## View a session in other applications

To easily retrieve a structure that you are currently working with, you save it within a *session*. The session also retains any filters and configurations applied to the structure. You can view a saved session and update the structure in applications such as Teamcenter lifecycle visualization, NX, or CATIA.

When you make changes to a session, and then open the unsaved session in other applications such as Lifecycle Visualization, NX, or CATIA, the changes must be saved or discarded before opening the structure in the other application. You can save or discard the unsaved changes.

1. Search for a session that you want to view.
2. Click **Open**  to open the session.
3. To work with the 3D data associated with the structure, open the session in Teamcenter lifecycle visualization by clicking **Open**  > **Open in Visualization**.

Before opening the session in Teamcenter lifecycle visualization, you must first replay and save the session in Active Workspace.

4. To make design modifications to the structure, open the session in CATIA or NX by clicking **Open**  > **Open in CATIA** or **Open in NX**.

# 16. Save filtered and configured structures within a workset

## About worksets

A workset is your personal working context. You can save your product definition in a workset. It is a container that holds one or more structures together. These structures can be the different views of the same structure or two entirely different structures. You can perform all BOM operations for a structure within a workset even when a partition scheme is applied to the structure.

You can create and use worksets only if your Teamcenter setup has the Smart Discovery license.

## Create a workset

A workset is your personal working context in which you can save your product definition. You can create a workset to bring separate structures together. A workset can be created for all structures, including those on which a partition scheme is applied.

### Procedure

1. Open the structure.
2. Select **Add**  > **Workset** .
3. In the **Add Workset** panel, do the following:
  - a. In the **Type** list, select either **Workset** or **Workset Custom** depending on whether you want to create a workset or a custom workset.
  - b. In the **ID** box, enter an ID for the new workset.
  - c. In the **Revision** box, enter a revision for the new workset.
  - d. In the **Name** box, enter a name for the new workset.
  - e. (Optional) In the **Description** box, enter a description for the new workset.
  - f. (Optional) Click **Add Project** to assign a project to the new workset.
4. Click **Add**.

A workset is created for your structure.

## Update a workset

When you change the filter parameters of a configuration in a workset, the updates you made to the workset and the structures within it are saved automatically. You can also update a structure (within the workset) for which a partition scheme is applied. However, the tree structure does not reflect the change. Therefore, you must perform a recalculation. Subsequently, the partition scheme displays the configured BOM lines under a partition, and this is based on the applied configuration settings and filter criteria.

### Procedure

1. Search for a workset using the global search or **Quick Access**.
2. Click **Open**  to open the workset.

The workset is always loaded with static data.

3. To update the workset with the latest applied filters and configurations, select the workset and then click **Replay** on the Results panel toolbar. All modified structures within the workset are updated.

OR

To update just a structure within the workset, select the structure and then click **Replay** on the Results panel toolbar.

4. Select a product within a workset and then click **Filter**  or select **Configure**  > **Configuration**  to apply filters or configurations to the workset.
5. On the Results panel toolbar, click **Replay** to update the workset.

## Save a workset as a new workset

When you change the filtering aspects of a configuration in a workset, the updates you made to the workset and the structures within it are saved automatically. When you save a workset as a new workset, the name of the workset is changed, but its configurations are retained. You can also save a structure (within the workset) for which a partition scheme is applied as a new structure.

### Procedure

1. Search for a workset using the global search or **Quick Access**.
2. Click **Open**  to open the workset.

3. Select a product within a workset and then click **Filter**  or select **Configure**  > **Configuration**  to modify the filters or the configurations applied on the workset.
4. Click the workset and then select **New**  > **Save As** .
5. In the **Save As** panel, enter a name for the new workset.
6. (Optional) In the **Description** box, enter a description for the new workset.
7. (Optional) Click **Add Project**  to assign a project to the new workset.
8. Click **Save**.

## Revise a workset

When you change the filter parameters of a configuration in a workset, the updates you made to the workset and the structures within it are saved automatically. When you update or revise a workset, the revision of the workset is changed, but its configurations are retained. You can also revise a structure (within the workset) for which a partition scheme is applied.

### Procedure

1. Search for a workset using the global search or **Quick Access**.
2. Click **Open**  to open the workset.

The workset is always loaded with static data.

3. To update the workset with the latest applied filters and configurations, select the workset and then click **Replay** on the Results panel toolbar. All modified structures within the workset are updated.

OR

To update just a structure within the workset, select the structure and then click **Replay** on the Results panel toolbar.

4. Select a product within a workset and then click **Filter**  or select **Configure**  > **Configuration**  to modify the filters or the configurations applied on the workset.
5. Click the workset and then select **New**  > **Revise** .
6. On the **Revise** panel, do the following:
  - a. In the **Revision** box, enter a revision for the workset.

- b. In the **Name** box, enter a name for the workset.
- c. (Optional) Enter a description for the workset in the **Description** box.
- d. (Optional) Click **Add Project**  to assign a project to the new workset.
- e. Click **Save**.

## Find an element in a product within a workset

You can find an element in a single product within a workset. This search ignores any filters applied. When you select a product and find an element within it, only that product is used to perform a keyword search and search with saved queries, such as Item Revision. You can also find an element in a single structure (within the workset) for which a partition scheme is applied.

### Procedure

1. Open a workset from the search results.
2. Select a product within the workset.
3. Click **Find** .
4. In the **Find** panel, enter the search keywords.
5. Select the **Find within <Product Name>** check box.
6. Click **Search** .

The search results that match the search keywords and are within the scope of the product are displayed in the **Find** panel.

## Create a snapshot of a workset

You can create a snapshot of all worksets, irrespective of whether a partition scheme applied to the structures within the worksets.

Snapshots capture the 3D data associated with your product. When you load the product in the 3D viewer and take a snapshot, you capture the current 3D view, including camera, visibility, selection, view port (pan, zoom, and rotate modes), orientation, sections, measurements, queries, and markups. You also capture the configuration and filtering criteria.

When working with worksets, you can capture snapshots of a workset to preserve the working context and save it for later use.

## Working with Product Configurator data in a workset

A workset is a container that holds two or more structures together. Therefore, to view configuration information, select the relevant structure within the workset.

You can perform Product Configurator-related tasks, such as authoring variant conditions and loading a Saved Variant Rule (SVR), from within the workset and from the structures included in the workset. Classic variants are not supported in a workset.

### Modifying the data in a workset

After you open a workset, it is always loaded with static data. You can modify the data in a workset, for example, you can add a structure element, remove an element, and edit the properties of an element. When you do this, you must replay the workset or a structure within the workset for the changes to take effect.

When you insert an element in a structure within a workset, the element is immediately displayed in the tree structure. However, when you reopen the workset or refresh the browser page, the element is not displayed. Now, when you replay the workset or a structure within the workset, the element might be displayed in the tree structure based on the applied filter criteria.

When you delete an element from a structure within a workset, the element is removed from the tree structure.

When you edit the properties of an element or edit a variant condition or author occurrence effectiveness, the updates are immediately done. However, to display the changes, you must replay the workset or the structure within the workset. Now, when you reopen the workset or refresh the browser page, the updates are maintained even though the changed property does not satisfy the filtering or configuration criteria.

### Export and import structures along with worksets

You can export and import structures along with worksets to and from other Teamcenter sites.

A workset is a context collector for other structures. If your organization has very large structures with a multitude of occurrences, these occurrences can be collated within a workset to do a *what-if* analysis. But when you send the workset to another site by using a Multi-Site environment or a Briefcase, you might not want to export such a large number of occurrences along with the workset. Therefore, while exporting, the **Include entire BOM** option is not enabled by default. Consequently, the TCXML-based Multi-Site functionality works to share workset and related objects but not the product item or item revisions or their content.

Worksets also support site-consolidation activities through the TCXML-based Multi-Site functionality.

To export and import structures along with worksets, you can use:

- Briefcase files
- Multi-Site Collaboration
- PLM XML

## View a workset in other applications

You can open a workset in other applications, such as NX or CATIA. You can use Smart Discovery filtering in combination with a workset to update your CATIA drawings. In CATIA, you can open the workset with its individual structures. Also, you can open the selected elements from the workset in CATIA.

To make design modifications to the structure, open the workset in CATIA or NX by clicking **Open**  > **Open in CATIA** or **Open in NX**.

# 17. Compare structures

## Compare the content in structures

You can compare two structures, to view their differences by using rules. You can compare different configurations of a structure as well. For this, you must set the revision rule and variant rule separately for each structure. Your administrator sets up the properties that can be compared.

To compare structure content:

1. Perform the action listed in the following table depending on your task:

Task	Action
To compare two structure elements	Select two structure elements. On the results panel toolbar, click <b>Compare</b> > <b>Compare Structures</b> OR Select two structure elements. On the primary toolbar, click <b>View</b> > <b>Compare Structures</b> .
To compare two structures	Select two structures from one of the following, and on the Primary toolbar, click <b>View</b> > <b>Compare Structures</b> <ul style="list-style-type: none"><li>• Search results</li><li>• <b>CHANGE SUMMARY</b> table on the <b>History</b> tab</li><li>• Favorites</li></ul>
To compare two revisions of an element on the <b>History</b> tab	In the <b>REVISION HISTORY</b> section on the <b>History</b> tab, select two revisions of an element from the table. Click <b>Compare Structures</b> displayed above the table. OR In the <b>REVISION HISTORY</b> section on the <b>History</b> tab, select two revisions of an element from the table. On the Primary toolbar, click <b>View</b> > <b>Compare Structures</b> .

In the **Compare** panel, the elements that are unique to both structures are displayed with color bars under **Results**. This comparison is performed with the default comparison options.

2. (Optional) Change the comparison level:
  - a. Specify the comparison level by selecting one of the following from **Options**:

Comparison level	Description
All Levels	Compares the elements at every levels in the two structures. If this option is selected for very large structures, performance may be adversely affected.
Components Only	Compares only the elements that are at the lowest level (components).
Current Level	Compares only the elements that are currently displayed in the two structures. This is the default level of comparison.
Linked Assemblies or Components	Compares two structures by using accountability check. This comparison level is displayed only if Multi-Structure Foundation is available in your Teamcenter environment. Accountability check is a verification mechanism to check if all the elements in one structure have equivalent elements in the other structure. You can define your own properties for equivalence. You can also specify a set of properties for comparison.

- b. Specify what you want to display in the comparison results by selecting one or more of the following options from **OPTIONS > Display**:

Comparison option	Description
Matched	Displays the elements that are a match in both structures.
Different	Displays the elements that differ across the two structures.
Unique in Left View	Displays the elements that are only listed in the structure displayed on the left.
Unique in Right View	Displays the elements that are only listed in the structure displayed on the right.

- c. For **Linked Assemblies or Components**, select the **Dynamic Equivalence** check box.

In some cases, the occurrences that are slightly different in the two structures might not be reported as equivalent. The dynamic equivalence check reports such occurrences.

This check box is displayed only if Multi-Structure Foundation is available in your Teamcenter environment.

- d. (Optional) Select the **Run in Background** check box to perform the comparison in the background. This is recommended when you compare all levels or only the components in large structures. You can view the results later by selecting the relevant notification from **Alerts**.

**Note:**

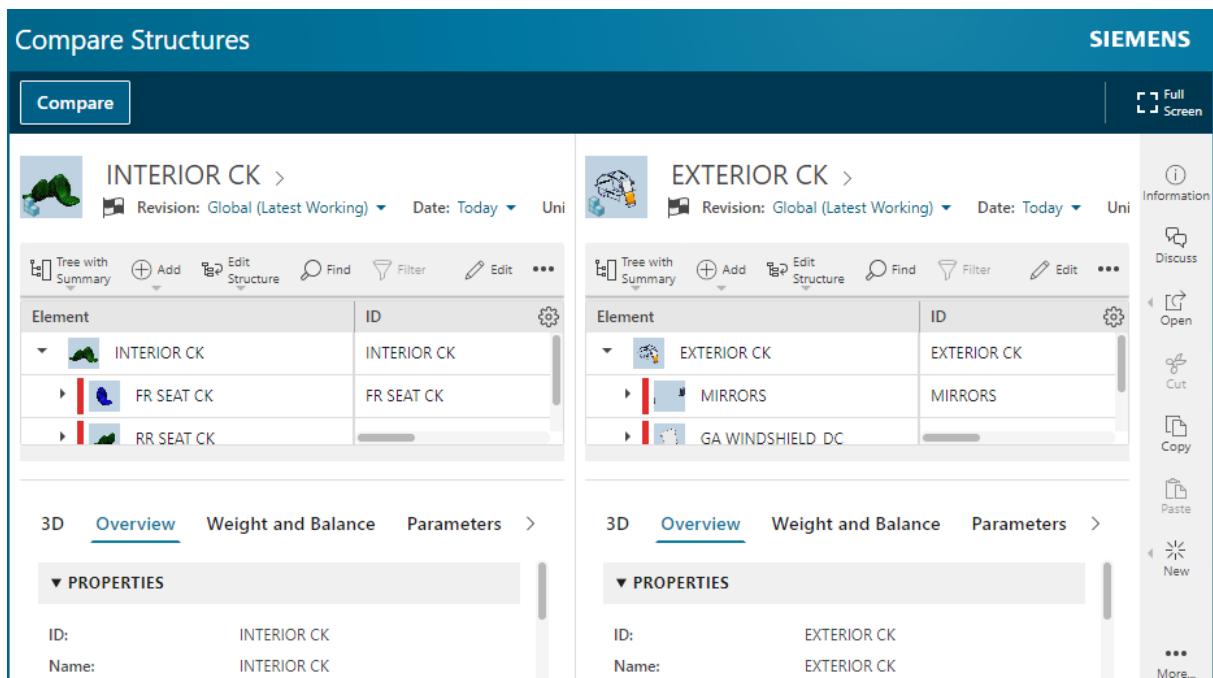
The **Run in Background** check box is not displayed when you select the comparison level as **Current Level**.

- e. Click **Compare**.

The comparison results are listed under **Results**. Clicking an element in the list highlights that element in the structure.

Comparison results are retained for a specific period. If a comparison result is older than the retention period or if a more recent result exists, the old result is automatically deleted by the system.

- f. In case you closed the **Compare** panel and want to perform any further comparison, click **Compare** on the task bar (as shown in the following image) to view the **Compare** panel.



You can select some other elements either from the same structure or one each from the two structures displayed side-by-side for further comparison.

To reconcile the differences found in the structure, you can drag an element from one structure to another and compare them again.

## Compare the content in partitions

You can compare the content that is in two partitions when two different configurations are available for comparison, for example, when the content in each partition has a different revision, date, units, variants, and partition schemes. You can compare a single structure in cases where two different partition schemes are applied and where only one structure has a partition scheme applied. You can compare the content in partitions that are present in two different structures as well.

### Restrictions and limitations

You cannot compare the partition content at the root level in a structure. You must select either a partition or a BOM line for comparison. Further, you must select the same element on both sides in a split view. For example, if you select a partition on one side, you must select a partition on the other side as well. You cannot select a BOM line on the other side.

The content is compared only at the **Current Level**. Therefore, child partitions are not considered. The selected BOM lines are compared and child BOM lines are not considered.

### Procedure

1. Open a structure.
  2. Select **Tree**  > **Split** .
- The structure is displayed side by side in two views.
3. Change the structure configuration, as required. You can do this in both views.
  4. Click **Compare** on the task bar.
  5. In the **Compare** panel, from **OPTIONS > Display**, select one or more of the following options to specify what you want to view in the comparison results:

Comparison option	Description
<b>Matched</b>	Displays the elements that are a match in both views.
<b>Different</b>	Displays the elements that differ across the two views.
<b>Unique in Left View</b>	Displays the elements that are only listed in the view displayed on the left.
<b>Unique in Right View</b>	Displays the elements that are only listed in the view displayed on the right.

6. Click **Compare**.

The comparison results are listed under **Results**. Clicking an element in the list highlights that element in the structure. Clicking an element in the structure highlights that element in the list.

Note:

If you close and relaunch the **Compare** panel by clicking **Compare** on the task bar, the panel is reset and it does not display the previous results.

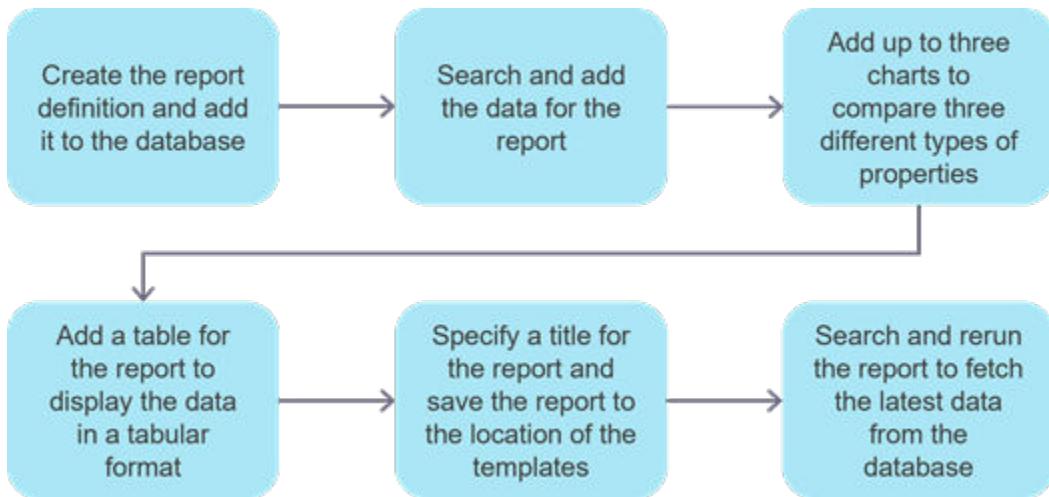


# 18. Create dashboard reports for structures

## Create dashboard reports for structures and related content

Active item reports are generated in the context of a specific object, for example, reports that show all BOM lines or attachments for a selected product structure (**Item Revision**).

You can create report definitions for active item reports dynamically and add them to the database. The report definition identifies the content you want to include in the report. You can select a layout for the report and add charts, and a table.

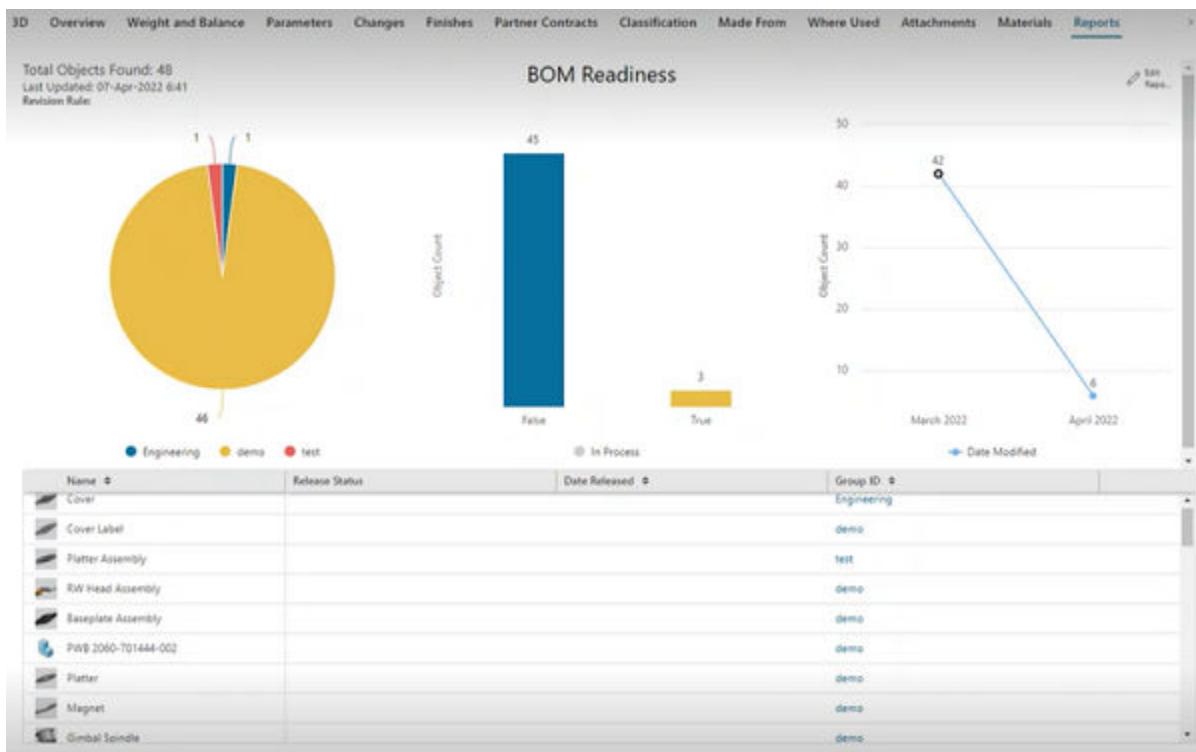


- [Create a dashboard report for structure readiness \(example\)](#)
- [Create a dashboard report for problem reports associated with a product structure \(example\)](#)

### Create a dashboard report for structure readiness (example)

You can create a dashboard report for structure readiness to gather data about the components of the selected structure.

The following is an example of how to create a structure readiness report. After creating the report definition, you can search and select a product structure, and generate a report. This report traverses the selected structure to display information about its components, such as, their release status, how many of them are in process, the date released, and the date modified.



## Procedure

1. Create the report definition and add the data for the report.
  - a. On the **HOME** page, click the **REPORTS** tile.
  - b. In **My Dashboard** or **Templates**, from the primary toolbar, click **New** > **Create Report**.
  - c. From **Type**, select **Active item report**.
2. Search for the data you want to include in the report.  
In the **Search Item** panel, for example, type *hard drive* to search for an item revision such as **Hard Drive Assembly**, select it, and click **Save**.
3. Click **Add Relations**, select the **Expand structure? (only one per report)** check box, and click **Add**.
4. Select a layout for the report and add charts

You must first create the report definition and add the data for the report before you can select a layout and add charts and a table.

- a. Specify a report title.

- b. Specify the number of charts you want to add for this report by selecting the appropriate option.
- c. Select **Bar Chart**, **Pie Chart**, or **Line Chart** for the type of chart you want to create.
- d. To create a layout for the report, click **Edit**.
- e. To add a property for the chart, from the **Chart On** list, select a value, for example, **Owner**.

You can specify a title for the chart type or accept the default title.

- f. To add the second and third charts, repeat **step c** through **step e**. You can choose other properties such as **Date modified** and **Release Status** in the **Chart On** panel for the second and the third chart.

To use additional **Chart On** properties, use the **REPORT\_AW\_ItemReport\_Objects\_FilterProperties** preference.

You can work with all Teamcenter preferences from within the Active Workspace client by using the **Preferences** page.

For information about retrieving a list of preferences, see *Where can I get a list of preferences?* in *Active Workspace Administration* on Support Center.

- g. After creating more than one chart, to move the chart, click ... **More Commands** and select the appropriate option.
5. To display the data in a tabular format, add a table for the report.
    - a. In the **TABLE** area, click **Table Settings > Arrange**.
    - b. From **Available Columns**, select column name properties such as **Name** and **ID**, and click **>** to move them to **Displayed Columns**.

Be sure to add the **Type** column.

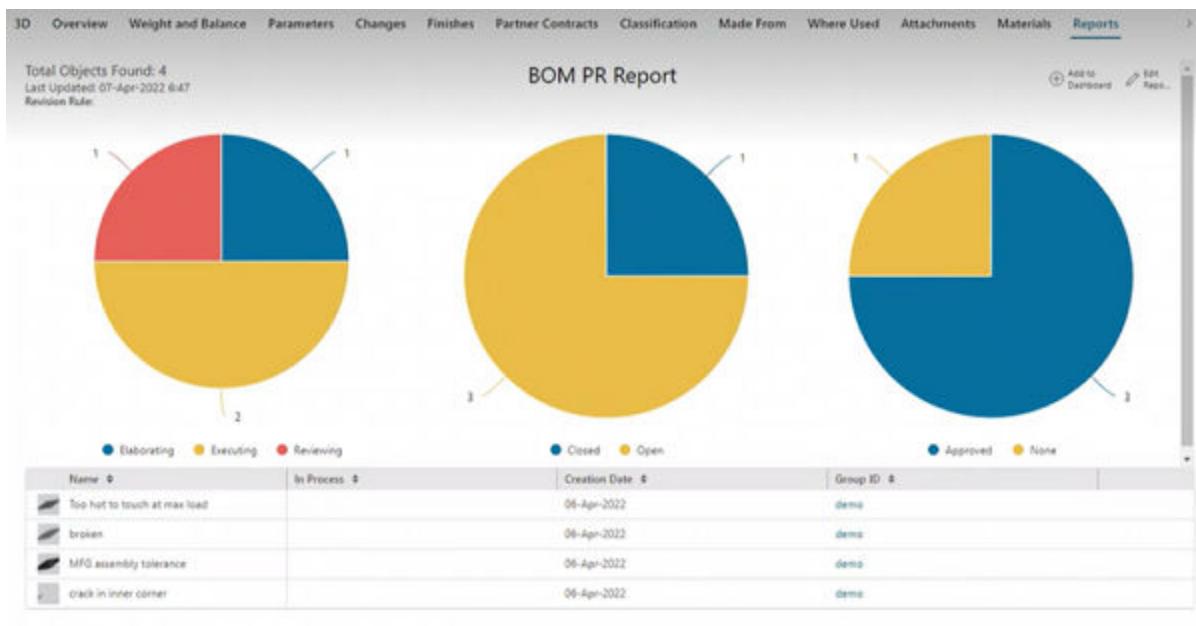
    - c. (Optional) To rearrange the columns in the table, in the **Column Name** area, select a column name, click the column widget, and move the column up or down.
    - d. To save the column arrangement, click **Arrange**.
    - e. (Optional) To add additional columns to the table, use the **REPORT\_AW\_ObjectType\_Properties** preference.
  6. Save the report as a template.

- a. To save the report as a template, click **Save as Template**.
  - b. (Mandatory) Specify a name for the report.
  - c. (Optional) Include a description.
  - d. Select the appropriate thumbnail option.
  - e. Click **Save**.
7. Edit the report from **Templates**.
- a. Navigate to the **Templates** location.
  - b. Search for the report definition you want to edit, select it, and click **Edit**  > **Edit Report**.
  - c. Make the necessary changes and save the report.
8. Generate the report.
- a. Search for the item revision for which you want to generate the report, for example, **Hard Drive Assembly**.
  - b. Select the item revision and from the primary toolbar, click **New**  > **Generate Report**.
  - c. Select the report definition you created and click **Generate**.
- The report is generated by fetching the latest data from the database.
- d. To apply a different revision rule, click **Edit Report Criteria** in the **Reports** tab in the secondary work area, and select a revision rule. The report is updated based on your selection.
- By default, the system displays the **Latest Working** revision rule.

## Create a dashboard report for problem reports associated with a product structure (example)

You can create a dashboard report for problem reports associated with a product structure.

The following is an example of how to create a dashboard report for problem reports associated with a product structure. This report is used to traverse a configured structure and locate problem report objects attached to every node of the structure. After creating the report definition, you can search and select a product structure, and generate a report. The report displays how many problem reports are open, closed, in process, in review, and approved for the selected structure.



## Procedure

1. (Optional) Create the sample data for this report.

The following procedures to create problem reports are optional. At your site, you can search for the appropriate object to add as the sample source to validate the related data.

- a. Open a product structure such as **Hard Drive Assembly**.
  - b. Select a node level BOM line and choose the **Changes** tab in the secondary work area.
  - c. Choose **Create Change**, type **Problem Report**, select it, specify a synopsis (mandatory), and click **Create**.
  - d. Select a leaf level BOM line, choose the **Changes** tab in the secondary work area, and create a problem report (see **step c**).
2. Create the report definition and add the data for the report.
    - a. On the **HOME** page, click the **REPORTS** tile.
    - b. In **My Dashboard** or **Templates**, from the primary toolbar, click **New** > **Create Report**.
    - c. Select **Active item report**.
  3. Search for the data you want to include in the report.

- a. In the **Search Item** panel, for example, type *hard drive* to search for an item revision such as **Hard Drive Assembly**, select it, and click **Save**.
- b. Click **Add Relations**, select the **Expand structure? (only one per report)** check box, and click **Add**.
- c. Click **Add Relations** and specify information as appropriate.

Example:

- Traversal direction: **Backward**
  - **Business Object: ProblemReportRevision**
  - **Relation or Reference: CMHasProblemItem**
- d. To add the relations, click **Add**.

#### 4. Select a layout for the report and add charts

You must first create the report definition and add the data for the report before you can select a layout and add charts and a table.

- a. Specify a report title.
- b. Specify the number of charts you want to add for this report by selecting the appropriate option.
- c. Select **Bar Chart**, **Pie Chart**, or **Line Chart** for the type of chart you want to create.
- d. To create a layout for the report, click **Edit**.
- e. To add a property for the chart, from the **Chart On** list, select a value, for example, **Closure**.

You can specify a title for the chart type or accept the default title.

- f. To add the second and third charts, repeat **step c** through **step e**. You can choose other properties such as **Disposition** and **Maturity** in the **Chart On** panel for the second and the third chart.

To use additional **Chart On** properties, use the **REPORT\_AW\_Report\_Objects\_FilterProperties** preference.

You can work with all Teamcenter preferences from within the Active Workspace client by using the **Preferences** page.

For information about retrieving a list of preferences, see Where can I get a list of preferences? in *Active Workspace Administration* on Support Center.

- g. After creating more than one chart, to move the chart, click ... **More Commands** and select the appropriate option.
5. To display the data in a tabular format, add a table for the report.
  - a. In the **TABLE** area, click **Table Settings > Arrange**.
  - b. From **Available Columns**, select column name properties such as **Name** and **ID**, and click **>** to move them to **Displayed Columns**.

Be sure to add the **Type** column.
  - c. (Optional) To rearrange the columns in the table, in the **Column Name** area, select a column name, click the column widget, and move the column up or down.
  - d. To save the column arrangement, click **Arrange**.
  - e. (Optional) To add additional columns to the table, use the **REPORT\_AW\_ObjectType\_Properties** preference.
6. Save the report as a template.
  - a. To save the report as a template, click **Save as Template**.
  - b. (Mandatory) Specify a name for the report.
  - c. (Optional) Include a description.
  - d. Select the appropriate thumbnail option.
  - e. Click **Save**.
7. Edit the report from **Templates**.
  - a. Navigate to the **Templates** location.
  - b. Search for the report definition you want to edit, select it, and click **Edit**  **> Edit Report**.
  - c. Make the necessary changes and save the report.
8. Generate the report.

- a. Search for the item revision for which you want to generate the report, for example, **Hard Drive Assembly**.
- b. Select the item revision and from the primary toolbar, click **New** > **Generate Report**.
- c. Select the report definition you created and click **Generate**.

The report is generated by fetching the latest data from the database. It displays the problem reports associated with the structure.

- d. To apply a different revision rule, click **Edit Report Criteria** in the **Reports** tab in the secondary work area, and select a revision rule. The report is updated based on your selection.

By default, the system displays the **Latest Working** revision rule.

# 19. Manage weight and balance rollup data

## Set column arrangement for BOM view

To set the column arrangement for the BOM view for your mass and balance rollup data:

1. In the **Tree** view, click the table settings icon  and then click **Arrange**.
2. In the **Arrange** panel, click **Column Arrangements** and then from the list, select **Mass and Balance**.
3. Click **Arrange**.
4. For more information about adding or removing a column and saving the order of columns, see [Arrange, wrap text, and save the order of columns](#).

## Add or update the mass values for different weight types

In Active Workspace, you can enter the mass for a part or an assembly occurrence for all weight types except for the **From Design** weight type, which is reserved for mass from the CAD geometry. The **From Design** mass value is automatically updated as the design is modeled and saved from the CAD application.

Your access privileges decide if you can enter or edit the mass values for a particular weight type. Typically, **Budgeted** values are accessible only to users with specific privileges.

1. Search for and open the structure.
2. Click the **Edit**  icon at the top-right corner.  
The editable cells are activated.
3. Enter or update the mass values as required.
4. Save your changes by clicking **Save > Save Edits**. To cancel your edits, click **Save > Cancel Edits**.

## Adding minimum or maximum values for weight or Center of Mass

You can specify the minimum or maximum weight for structures. This may be required to account for limitations due to manufacturing tolerance or other such considerations.

When rollup is calculated with minimum and maximum values, the report shows the rolled up value for minimum and maximum weights for the structure.

When the calculated rollup values are outside the specified minimum and maximum ranges, the values are highlighted in the rollup report. If the minimum or maximum value is not defined, the budgeted values are used for comparing the upper limit. The comparison with the minimum and maximum values is performed only for mass values and not for balance values.

To specify the minimum and maximum values for an occurrence:

1. Click the **Edit**  icon at the top-right corner.

The editable cells are activated.

2. Enter or update the mass values as required in the **Min Weight**, **Max Weight**, and **Budgeted Mass** columns.
3. Save your changes by clicking **Save > Save Edits**. To cancel your edits, click **Save > Cancel Edits**.

Similarly you can set the minimum and maximum values for Center of Mass (CoM) for the top-level assembly or a subassembly to ensure the rolled-up CoM is within the desired limits required by the product design considerations.

The minimum and maximum CoM values are entered in the **Overview** tab.

1. Select the structure element and click the **Overview** tab.
2. Enter or update the following CoM values as required:
  - **Min CoM X (m)**
  - **Min CoM Y (m)**
  - **Min CoM Z (m)**
  - **Max CoM X (m)**
  - **Max CoM Y (m)**
  - **Max CoM Z (m)**

## Adding weight or Center of Mass values for miscellaneous items

For some structures, a realistic weight and balance analysis requires the inclusion of the parts that may not be a part of CAD and for which the mass values cannot be sourced from the **From Design** weight type. You must manually enter the mass and Center of Mass (CoM) values for these miscellaneous items such as passengers, cargo, or fluids to ensure that the weight and the CoM of these are included in the rollup.

Similarly, you must also enter the Moment of Inertia (Mol) and Product of Inertia (Pol) values for miscellaneous items.

The precedence of manually added values is governed by the same preference as that for other mass values.

If the user-entered values have a higher precedence over the CAD values for rollup, the rollup calculation considers the user-entered values for CoM, Mol, and Pol.

For partly entered data, where some values may be missing, the value is assumed as **Zero**.

## Revise or replace a parameter value

### Revise and replace

You can revise a selected parameter and replace the existing revision in the product with the new revision by clicking . This action does not affect other occurrences of the existing revision. However, you can click  to display the **Replace Revision** dialog box where you can select other revisions to replace with the latest revision.

You can also revise multiple (selected) parameters in the same way. For this, you must confirm the action by clicking **Revise and Replace** in the confirmation dialog box.

### Save a new revision of a parameter

1. Select the structure element and click the **Parameters** tab.
2. Select the mass parameter from the **PARAMETERS** list in the secondary work area, and click **Open** in the **Name** column.
3. Click **New**  > **Save As** .

Active Workspace displays the **Save As** panel.

4. (Optional) Select **Open New Revision** to display it in the location once created. If you do not select this check box, the new revision is added to the parameters table where you can edit the values as appropriate.
5. Click **Save**.

The system creates a new revision of the selected parameter and displays its **Overview** panel.

6. Click  → **Edit** to save the new revision.

The system associates the new revision of the parameter with the project, replacing the previous revision.

7. Edit the values of the new parameter revision as appropriate.

## Generating rollup reports with a coating's mass data

If you have Teamcenter Integrated Material Management, you can specify the weights of coating materials such as primers and paints. If the weight values for these coatings are specified for the structure components, these are taken into account for rollup and are displayed in the rollup reports.

Specifically, these values are displayed in the **Coatings Mass [kg]** column in the rollup report. If the Integrated Material Management Software is not installed, this column is not displayed.

## Specify asserted values for center of mass, moment of inertia, and product of inertia

The weight and balance engineering user specifies the center of gravity or CoM limits at the product level or assembly level. This is required to ensure that the rolled-up CoM is within the specified CoM limits.

To set or modify the values for CoM:

- You must have a valid weight and balance solution license.
- You must have write access to the product structure you are trying to update.

To specify asserted values:

1. Search for and open the structure.
2. Click the **Edit**  icon at the top-right corner.

The editable cells are activated.

3. Enter or update the values in the following columns as required.
  - **Asserted CoM X (m)**
  - **Asserted CoM Y (m)**
  - **Asserted CoM Z (m)**
  - **Asserted MOI XX (kg m<sup>2</sup>)**
  - **Asserted MOI YY (kg m<sup>2</sup>)**
  - **Asserted MOI ZZ (kg m<sup>2</sup>)**

- Asserted POI XY (kg m<sup>2</sup>)
- Asserted POI XZ (kg m<sup>2</sup>)
- Asserted POI YZ (kg m<sup>2</sup>)

Element	Asserted CoM X [m]	Asserted CoM Y [m]	Asserted CoM Z [m]
PL_lever_rocker_assembly			
PL_bolt_lever_rocker			
PL_bolt_lever_rocker			
PL_piston_rocker_assy			
PL_piston_rocker_assy			
PL_handle_lever_rock...			
PL_bolt_lever_rocker			
PL_bolt_lever_rocker			
PL_bolt_lever_rocker			
PL_plate_lever_rocker			

4. Click **Save > Save Edits** to save your changes. To cancel your edits, click **Save > Cancel Edits**.

## Using Excel to edit weight and balance rollup data

You can export the weight and balance rollup data to Excel. You can then modify the data in Excel and import it back into Teamcenter. The weight properties sourced from the CAD integration are read-only and cannot be modified. Similarly, all balance properties are read-only, and you cannot import any modified values from Excel.

You can export the weight and balance data for any configuration.

A template for exporting the data to Excel is available this. It has nine columns for asserted type values for balance properties.

The administrators can create custom balance properties. The `wnb0_cg_inertia_source` preference controls the custom properties. These custom properties must be a subset of `att0source`. The

precedence for these properties is controlled by the **WNB0\_MassMaturitySequence** preference, which also controls the precedence for mass properties.

If the values for the CAD-driven properties in the **wnb0\_cg\_inertia\_source** preference are changed, these changes are not reflected in the template. The template shows the **Asserted** column with its internal name and no data. For such cases, the user or the site administrator must create (or update) an Excel export template with the required properties.

To export or import any structure data to or from Excel, use the **Excel Round-trip**  feature.

## Create a payload and add its mass and CG values

1. From the **Home** page, navigate to your **Home** folder.
2. Click **New**  > **Add** .
3. In the **Add** panel, in the **Filter** box, scroll and select **Payload**.
4. Enter a name and description for the payload and click **Add**.
5. Select the payload in the **Home** folder, and click **Edit**  > **Start Edit** .
6. In **PAYOUT**, click **Add** .
7. In the table, enter the **Name**, **Description**, **Mass (kg)**, and **CoM (m)** values.
8. (Optional) click **Add**  to add more rows as required.
9. (Optional) select a row and click **Duplicate**  to create a new row with the same values (a duplicate row). The duplicate function is useful when you want to create many payloads with similar specifications, for example, 12 passenger seats.
10. To save the changes, click **Edit**  > **Save Edits**. To discard them, click **Edit**  > **Cancel Edits**.

## Create a CG Envelope object

1. From the **Home** page, navigate to your **Home** folder.
2. Click **New**  > **Add** .
3. In the **Add** panel, in the **Filter** box, scroll and select **CG Envelope**.
4. Enter a name and description for the CG Envelope and click **Add**.
5. Select the CG Envelope object in the **Home** folder, and click **Edit**  > **Start Edit** .

6. In **CG ENVELOPE**, click **Add** .
7. In the table, enter the **Name**, **X-Axis (%MAC)**, and **Y-Axis (Mass)**.
8. (Optional) click **Add**  to add more rows as required.
9. (Optional) select a row and click **Duplicate**  to create a new row with the same values (a duplicate row).
10. To save the changes, click **Edit**  > **Save Edits**. To discard them, click **Edit**  > **Cancel Edits**.

## Create a payload collection for a structure

1. Search for and open the structure for which you want to create the payload collection.
2. Click the **Weight and Balance** tab.
3. In **PAYOUTLOAD COLLECTION**, click  **Create**.
4. Enter a name and description for the payload collection.
5. In **NON-VARIABLE PAYLOAD**, click **Add** .

The list shows the available payloads.

6. Select the payloads from the list and click **Add**. If you do not see the payloads you need, you can **create a payload**.
7. In **VARIABLE PAYLOAD**, click **Add** .

The list shows the available payloads.

8. Select the payloads from the list and click **Add**. If you do not see the payloads you need, you can **create a payload**.
9. In **CG ENVELOPE**, click **Add** .

The list shows the available CG envelopes.

10. Select a CG envelope from the list and click **Add**. If you do not see the CG envelope you need, you can **create a CG envelope**.
11. In the **Create Payload Collection** pane, click **Create**.

The payload collection is created and added to the **PAYOUTLOAD COLLECTION** in the **Weight and Balance** tab.

## Calculating weight rollup

Rollup calculations are used to find the total mass based on the individual masses of all the parts in the structure (or the selected assembly). However, you can perform these calculations only when the weight and balance solution is set up in your Teamcenter environment.

In Active Workspace, you can use the following templates to perform rollup calculations:

- **Mass Properties** – Rolls up the mass of the components in the structure.
- **Mass and Balance Properties** – Rolls up the mass as well as the balance values of the structure components such as Center of Mass, Moment of Inertia, or Product of Inertia.

Your administrator uses certain out of the box preferences to manage the column configurations for the rollup reports. However, if you have the required admin privileges, you can override these preferences to add or remove columns and change their order. Thus, when you generate the report, you see the columns that you configured.

In Active Workspace, you cannot create any additional templates.

Your administrator specifies the rollup unit of measure (UOM) for your site. The rollup action always generates the rolled up value in this specified UOM. The rolled up value is listed in the **Computed** column in the rollup report.

You can use the following weight types for rollup calculations:

- **Actual**
- **Asserted**
- **Evaluated**
- **External**
- **Budgeted**
- **From Design**

Your administrator can add custom weight types for your site. As an authorized user, you can add values for the **Actual**, **Asserted**, and **Evaluated** weight types. However, you can enter or edit the value for the **Budgeted** weight type only if you are a privileged user. Your site administrator assigns the user privileges using Access Control in Active Workspace.

The value for the **From Design** weight type is retrieved from the CAD tool, and it cannot be edited in Active Workspace.

Each weight type can have a different value. This implies that structure components can have multiple mass values. In such cases, the mass value for a rollup calculation is selected based on the maturity assigned to the associated weight types.

## Calculate mass and balance rollup for a structure

You can calculate and view the mass and balance rollup for structures to manage your mass and balance targets. For the structure in which you have created partitions, you can manage your mass and balance targets at the partition level.

1. To calculate the rollup value for a structure, open the structure.

To calculate the rollup value for a partition, from **Partition Scheme**, select the required scheme.

Note:

By default, the structure opens in the partition scheme that is set as the primary scheme.

2. Click **Rollup**  > **Create Report** .
3. In the **Rollup** panel, edit the name of the rollup report if required.
4. Select the **Template**.
  - a. Select the **Mass Properties** template to calculate the mass rollup.
  - b. Select the **Mass and Balance Properties** template to calculate the rollup with mass and balance properties such as Center of Mass (CoM), Moment of Inertia (MoI), or Product of Inertia (PoI).

Note:

If you select the **Mass and Balance Properties** template, the rollup report shows the rollup charts for the visual analysis of CoM.

5. Perform the action listed in the following table depending on your intended task:

Task	Action
To create the report synchronously	<ol style="list-style-type: none"> <li>a. Clear the <b>Run in Background</b> check box. (By default, the <b>Run in Background</b> check box is selected.)</li> <li>b. Click <b>Create Report</b>.</li> </ol>

Task	Action
To create the report in the background	<p>When the calculation is complete, the report opens in a new browser tab.</p> <p>a. Click <b>Create Report</b>.</p> <p>When the calculation is complete and the rollup report is generated, a notification appears in the <b>Alerts</b> panel.</p> <p>b. Click the <b>Alerts</b>  icon. The rollup report is available with its timestamp.</p> <p>c. Click the rollup report to view it.</p> <p>The report opens in a new browser tab.</p>

**Note:**

The root BOM line of the structure shows the rollup calculation for the entire product, that is, it considers the structure elements in partitions as well as the unassigned structure elements (the elements that are not assigned to any partition). However, an individual partition shows the rollup calculation considering the structure elements only from that partition.

## How rollup is calculated for subassemblies

Your site administrator sets the following two preferences to control how mass rollup is calculated for subassemblies:

- The **WNBO\_MassMaturitySequence** preference defines the maturity for different weight types. It decides which weight type is considered for rollup calculation when multiple weight types are available.
- The **WNBO\_AssemblyMaturedMassTypes** preference specifies the weight types for which the mass of the parent subassembly is considered and the masses of its child parts are ignored.

For example, if the preference defines **Actual** and **Asserted** as *matured* weight types, then these values of the parent subassembly are considered (if available) and the values of the child parts are ignored for rollup calculations.

The rollup mass for a subassembly is the sum of the masses of all its components. If the mass of a sub-assembly and the masses of its individual components are both available, then only one is counted.

However, some business cases require that both the assembly mass and the sum of the components' masses be included in the rollup calculation. You can set preferences to achieve the required behavior.

**Example:**

Consider the following values for the preferences:

The **WNBO\_AssemblyMaturedMassTypes** preference specifies **Actual** and **Asserted** as *matured* weight types.

The **WNBO\_MassMaturitySequence** preference defines the maturity for different weight types in the following order:

1. **Actual** (maturity 1)
2. **Asserted** (maturity 2)
3. **External or From Design** (maturity 3)
4. **Estimated** (maturity 4)
5. **Budgeted** (maturity 5)

Based on the given preference values, the rollup for different scenarios is calculated as follows:

If the **From Design** assembly mass has the highest maturity among the available masses, or if the **From Design** assembly mass is available and a lower precedence mass (**Estimated** or **Budgeted**) is available as well, then both the assembly mass and its component masses are included in the calculation. Component mass is selected based on the assigned precedence.

If the **From Design** assembly mass is available but the other higher precedence masses (**Actual** or **Asserted**) are also available, then the higher precedence mass (between **Actual** or **Asserted**) is considered and the components mass values are ignored.

If the available subassembly mass has a lower precedence (**Estimated** or **Budgeted**), then the rollup of the components is considered, and the mass of the parent subassembly is ignored.

If the subassembly mass is not available, then the sum of the components is considered.

## View existing rollup reports

Whenever a rollup calculation is completed and the report is generated, a notification is displayed in the **Alerts** panel. From this panel, you can access all the latest reports created by you. All rollup reports for a structure are available for viewing, unless you delete them. To view an existing rollup report for a structure:

1. Search for and open the structure for which you want to view the rollup reports.
2. Click **Rollup**  > **View Reports** .

The **Rollup Report** panel appears with the list of existing rollup reports. These are sorted from new to old with the newest on the top.

3. Select the report you want to view and click **View Rollup Report**.

The report opens in a new browser tab.

Rollup reports always show packed lines, whereas downloaded reports are always in the unpacked form. The mass of a packed line is the rolled up mass of all the lines that are packed. The mass is calculated as follows:

Mass of a packed line = No of packed lines \* mass per line \* quantity

4. Rollup charts are available for **Mass and Balance Properties** reports. If the charts are not displayed, click **Tree** > **Rollup Charts** at the top-left corner.

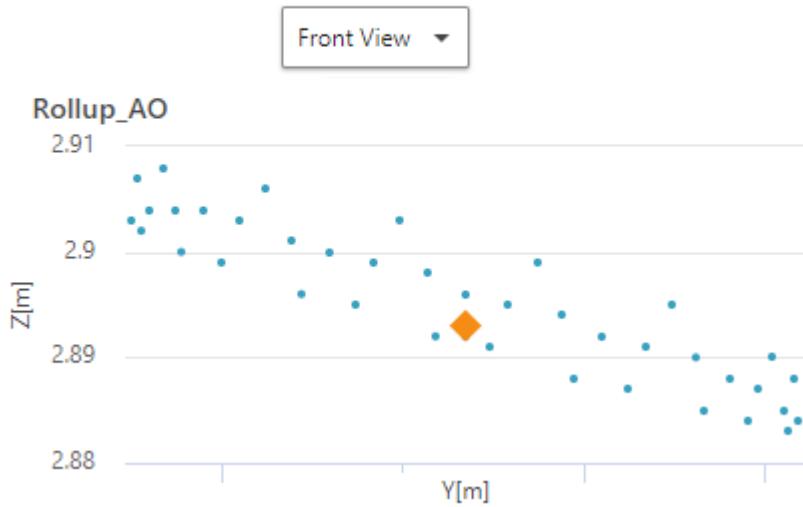
	Sequ...	Q..	Mass [KG]
Three Rockers Assembly	10	0	0.054
028476/A;1-Rocker Assembly			

5. On the Center of Mass (CoM) scatter plot, you can select one of the following views:

- **Lateral View**
- **Front View**
- **Top View**

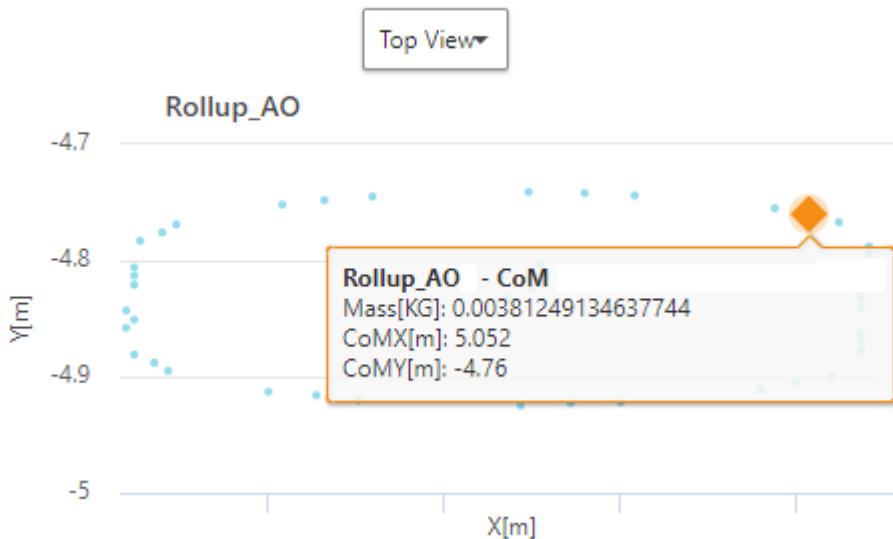
The scatter plot shows the CoM distribution for the structure occurrences. When you select an occurrence in the structure, the corresponding point is highlighted in the scatter plot.

## Center of Mass



- To view the CoM, X, and Y values for any occurrence in the scatter plot, select that occurrence in the rollup report and hover over the corresponding highlighted point in the scatter plot.

## Center of Mass



## Delete a rollup report

The rollup reports for a structure can be accessed in the **Rollup Reports** panel. You can also search for them.

- To view the rollup reports for a structure, search and open the structure.

2. Click **Rollup**  > **View Reports** .

The **Rollup Report** panel appears with the list of existing rollup reports. These are sorted from new to old with the newest on the top.

3. Select the report you want to delete, and click **Delete** .

## Generate the excursion diagram for the selected payload collection

1. Open the structure for which you want to generate the excursion diagram.
2. Click **Rollup**  > **Create Report** .
3. In the **Rollup** panel, edit the name of the rollup report if required.
4. Select the **Mass and Balance Properties**.
5. Select the **Generate Excursion Plot** check box.
6. Select the **PAYLOAD COLLECTION** for which you want to generate the excursion plot.
7. Click **Rollup**.

The rollup value is calculated. When the calculation is complete and the rollup report is generated, a notification is displayed in the **Alerts** panel.

Teamcenter Dispatcher Server must be installed to run the rollup calculation process in the background. Your system administrator can find information about configuring asynchronous services in *Installing and Configuring Dispatcher* in the Teamcenter help.

8. Click the **Alerts**  button. The rollup report is available with its timestamp.
9. Select the report you want to view and click **View Rollup Report**.

The report opens in a new browser tab.

10. Rollup charts are available for **Mass and Balance Properties** reports. If the charts are not displayed, click **Tree**  > **Rollup Charts**  at the top-left corner.

	Sequ...	Q..	Mass [KG]
Tree	Three Rockers Assembly		0.054
028476/A;1-Rocker Assembly	10		0

11. In **Rollup Charts**, select **Excursion Plots**.

The excursion plot for the selected payload collection is displayed.

## Download rollup reports

1. Click **View** > **Rollup Report**.

The **Rollup Report** panel appears with the list of existing rollup reports. The reports are sorted from new to old with the newest on the top.

2. Select the report you want to view, and click **View Rollup Report**.

The report opens in a new browser tab.

3. Click **Download File** at the top-right corner.

The report is downloaded as a CSV file.

## Troubleshooting the Excel errors in a localized report

If the report is generated in Japanese (language), it may show garbled characters when it is opened in Excel. To open the CSV correctly in Excel, you must perform the following steps:

1. Open a blank workbook in Excel.
2. Select the **Data** tab.
3. Select the **From Text/CSV** option.

4. Navigate to the <filename>.CSV file on your computer and click **Import**.

A new dialog box with header <filename>.CSV is displayed.

5. In the **File Origin** list, select **65001 unicode (utf-8)**.

massrollup\_report.csv

File Origin	Delimiter	
65001: Unicode (UTF-8)	Comma	
<b>Column1</b> <b>Column2</b> <b>Column3</b>		
Level	Category	Message
Deprecated	Deprecated	defaultResolution is deprecated.
Deprecated	Deprecated	fileGranularity is deprecated.
Information	Broken References	Cannot resolve href: D:\perforce\workdocs\lmdcontent...
Information	Broken References	Cannot resolve href: D:\perforce\workdocs\lmdcontent...
Information	Broken References	Cannot resolve href: D:\perforce\workdocs\lmdcontent...
Information	linkURL	<a href="#">./resources/tdoc/en_US/pdf/whats_new.pdf</a>
Information	linkURL	<a href="#">./resources/tdoc/en_US/pdf/managing_xpedition_or_p...</a>
Information	linkURL	<a href="#">./resources/tdoc/en_US/pdf/managing_xpedition_or_P...</a>
Information	linkURL	<a href="#">./resources/tdoc/en_US/pdf/managing_altium_cadenc...</a>

6. Click **Load or Transform Data**.

7. Save the file.

# 20. Work in a context

## What is a context?

When you select a product or subassembly in Active Workspace, the selected structure with revision rules, variant rules, and effectivity form your *working context*. Active Workspace provides two types of working contexts, a *background working context* and a *saved working context*.

The background working context is your current environment in Active Workspace. It is not necessary to save your current background working context before you exit. This is because Active Workspace always returns to your previous background context when you open the same content the next time.

When you perform a find-in-context search, the search results are obtained in the context of the product or subassembly and do not extend to other products or subassemblies.

If you want to preserve your current environment for later retrieval or sharing, you must specifically save the context. Teamcenter preserves your environment for future retrieval in a saved working context. This allows you to return to the product or subassembly at a later time without having to re-establish the same context. You can also share a saved working context with other users.

Active Workspace captures the following information for a saved working context:

- Structure configuration with context applied, including revision rules, effectivity, and variant rules
- Current focus of navigation and any active selections

## Working in a context

A working context provides a way to set your work aside and then pick up where you left off when you return. Your working context can be retrieved from any device, allowing you to, for example, work on a desktop machine during office hours and then review your work on a tablet in a meeting or on the shop floor later in the day.

You can also save a working context to share it with other users, stakeholders, and collaborators. You can save multiple working contexts, up to limits defined by the system administrator.

As a user, you can:

- Open a saved working context that you saved or was shared with you by other users.
- Open a saved working context object from search results as a referenced item on a change object (for example, a problem report) or any other reference.
- View all the saved working contexts that are associated with a part that you are viewing.

- Open a saved session that you saved or was shared with you by other users.
- Open a saved session object from search results as a referenced item on a change object (for example, a problem report) or any other reference.
- View all the saved sessions that are associated with a part that you are viewing.

## Save a working context

You can save your current working context for later recall. For example, you may save a context to create a study or to capture an issue.

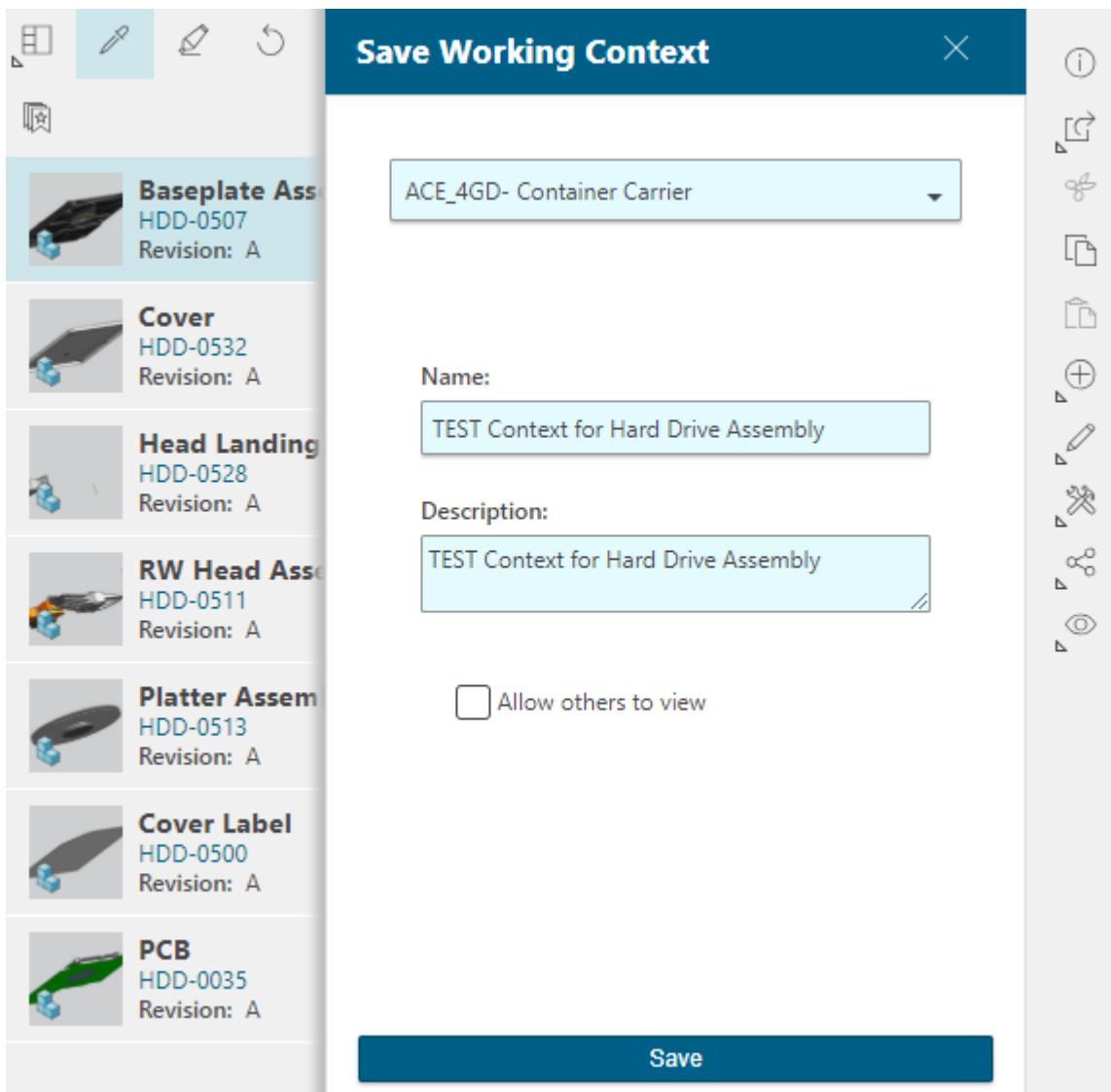
You can share a working context with others informally or formally by using change management and issue reporting features.

Your background session is saved automatically during your current session. It is not necessary to manually save before exiting if you only wish to resume where you left off later. However, saving the context with a name allows you to create multiple contexts and recall any of them later.

1. To save a working context, click the **New**  icon and select **Working Context**.

Active Workspace shows the **Save Working Context** pane.

2. In the **Save Working Context** pane, enter a name and a description.



This action creates a saved context that you can optionally recall or share with others.

- Active Workspace assigns a default name when you save a context based on the content. You can assign your own name if you prefer to.
- If you are working in a previously saved context and want to save changes to the existing context, click **Save**.
- If you are working in a previously saved context and want to save the changes as a new context and not overwrite the existing context, click **Save As**.
- The properties that are required when you save a context are configured by the system administrator. For example, your administrator can create the working context types using Business Modeler IDE. Subsequently, you can specify the working context type when you save a working context.

Active Workspace deletes background working contexts to free up disk space, based on when they were created last and the permitted maximum number of contexts allowed for each user. For example, if the administrator specifies that the maximum number of days a working context must be retained for is 30 (days), when a user opens a structure, all working contexts older than 30 days are deleted. Similarly, if the administrator permits each user to retain a maximum of 50 working contexts, when a user opens a structure, the oldest working contexts from the set of that user's contexts above the limit (of 50) are deleted.

### **Exclude default secondary tabs when a background working context is saved**

When a saved working context is opened, some tabs, such as the **3D** tab, take more time to load. This results in a performance drop. This can be fixed by controlling which tabs must be saved while saving a background working context. You can set the **AWC\_ExcludeTabsFromBackgroundWorkingContext** preference to make Active Workspace ignore the specified default secondary tabs when a background working context is saved. This preference is set by the administrator, and it applies to all users.

### **Delete a saved working context**

Users with appropriate privileges can delete a saved working context. If you have pinned a saved working context to the home page or added it to your favorites, the working contexts are visible either on the home page or in the favorites list. You can also search for the saved working context.

1. Search for the saved working context you want to delete.
2. Select the working context.
3. Click **Edit** > **Delete** and confirm that you want to delete the working context.

### **Reset the background working context**

The background working context is your current environment in Active Workspace. It is automatically saved. When you open the same structure again in a different login session, Active Workspace gives you the option of returning to the previous background working context.

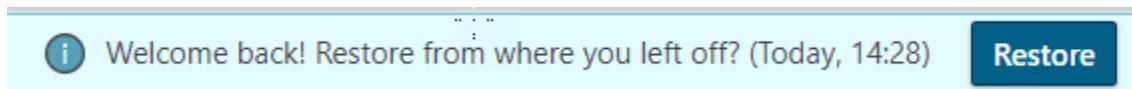
If you do not wish to continue working with the saved working context, you can reset it. The following message is displayed when you open the content again in the same login session:

Restored "HDD-0527/A:1-Hard Drive Assembly" from "Tue May 10 00:36:29 GMT+530 2016". Select Reset to discard automatically saved changes.

- To reset the working context and to discard automatically saved changes, select **Reset**.
- To continue with the same working context, ignore the message. It disappears automatically.

## Restore your working context

The background working context is your current environment in Active Workspace. Active Workspace provides you the option of returning to your previous working context when you login and to open the structure you were previously working on. The following message is displayed:



- To go back to the previous working context, click **Restore**.
- To continue with the default working context, ignore the message and start working. The message disappears.

If you do not restore your previous working context, the structure is loaded with the following default configuration:

- Default configuration (global revision rule) is applied.
- No variant rules, effectivity, expansion, or filters are restored from the previous session.
- The structure is expanded to one level only.
- The structure opens with the default tab. The previous tab is not restored.

## View where an element is used in a context

Select an element and click the **Where Used** tab to view where the element is used in a context.

- The result shows where an element is used in parent assemblies or in end items (products).
- The results show the context if a configuration contains the element, allowing you to open the specific configuration.
- You can find a part using a global full text search to find an element by name or part of a name and then use the *where used* capability to find where it is used. Wildcard characters may be included in the search string.
- Use the **References** section to find what parts and documents reference the object.

When you open a context from your search results, Teamcenter takes you to the occurrence that was the subject of the *where used* query.

## Opening an element in context

When you open a context for which the seed part appears multiple times, the navigation pane displays all the occurrences. This allows you to navigate to each occurrence of the element in context.

Note:

The same navigation pane allows you to find other parts in context.

## Recalling a working context

You can open a working context that you saved or was shared with you. You can find the working context object by using search, from a reference item on a change object (for example, a problem report), or from any other reference.

To open a working context shared by another user, click the URL (link) provided or search for it. The sharing user's complete working context opens for you.

## Share a working context with other users

You can share a working context with others. As a prerequisite, the system administrator must enable this by adding the **Has Class( Awb0SavedBookmark )** rule to the Access Manager (AM) rule tree. To share the working context, you must be the owning user of a saved working context. On sharing, other users can view your working context or edit your saved working context.

To share the working context with other users:

1. Search for the saved working context you want to update.
2. Select the working context.
3. Click the **New**  icon and select **Working Context**.
4. In the **Save Working Context** pane, specify the access level for other users:
  - a. Select the **Allow others to view** check box to grant read access to other users. Clear the check box to deny read access.
  - b. Select the **Allow others to edit** check box to grant write access to other users. Clear the check box to deny write access.

**Note:**

The **Allow others to edit** check box is displayed only when **Allow others to view** check box is selected.

5. To save changes to the context, click **Save**.

## Including multiple structures in a working context

To include multiple structures in the working context, click the **Add**  icon in the context and browse to the required structure. By default, Active Workspace applies the global revision rule but you can change to another configuration rule if necessary. You can configure each structure in a working context independently.

By default, when you open a working context and nothing is selected, the first structure in the working context is the context of the configuration. The parent of the selected structure becomes the context and remains the context even if you drill down into the structure.

You can identify if a working context contains multiple structures by selecting the context in the breadcrumb and verifying if more than one structure is shown in the **Content** pane.

When opening a working context that has multiple structures, each of the included structures is configured as it was when the working context was saved.