TEAMCENTER

Design Context

Teamcenter 2412

SIEMENS

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1. Getting started with Design Context

Getting started with Design Context

Repeatable Digital Validation (RDV) allows a designer to accurately model specific product assembly configurations and use the results with analytical and visualization tools to facilitate learning and decision making.

The Design Context application allows the user to quickly focus on a particular work part in the RDV environment and any other parts affected within the context of a change to that part.

When you have identified your parts, you can view them in the embedded viewer in Structure Manager or a CAD tool or send them to Lifecycle Visualization. You can also perform clearance analysis in Structure Manager or Lifecycle Visualization. Design Context also interoperates with Platform Designer to manage changes to the design solutions in the product.

Before you begin

Prerequisites	The Design Context user must have read access to the program node and product structure.
Enable Design Context	Design Context does not need to be enabled before you use it, but during installation, the cacheless search engine option must be selected. If you have trouble accessing Design Context, see your system administrator; it may be a licensing issue. Note: You can log on to Teamcenter only once. If you try to log on to more than one workstation at a time, you see an error message.
Configure Design Context	Before using Design Context, you must: • Configure cacheless search. For details, see *Structure Indexing Using Cacheless Search*. • Set the RDV and Design Context options, as described in *Setting Design Context options*.
Start Design Context	Click **Design Context**  in the navigation pane.

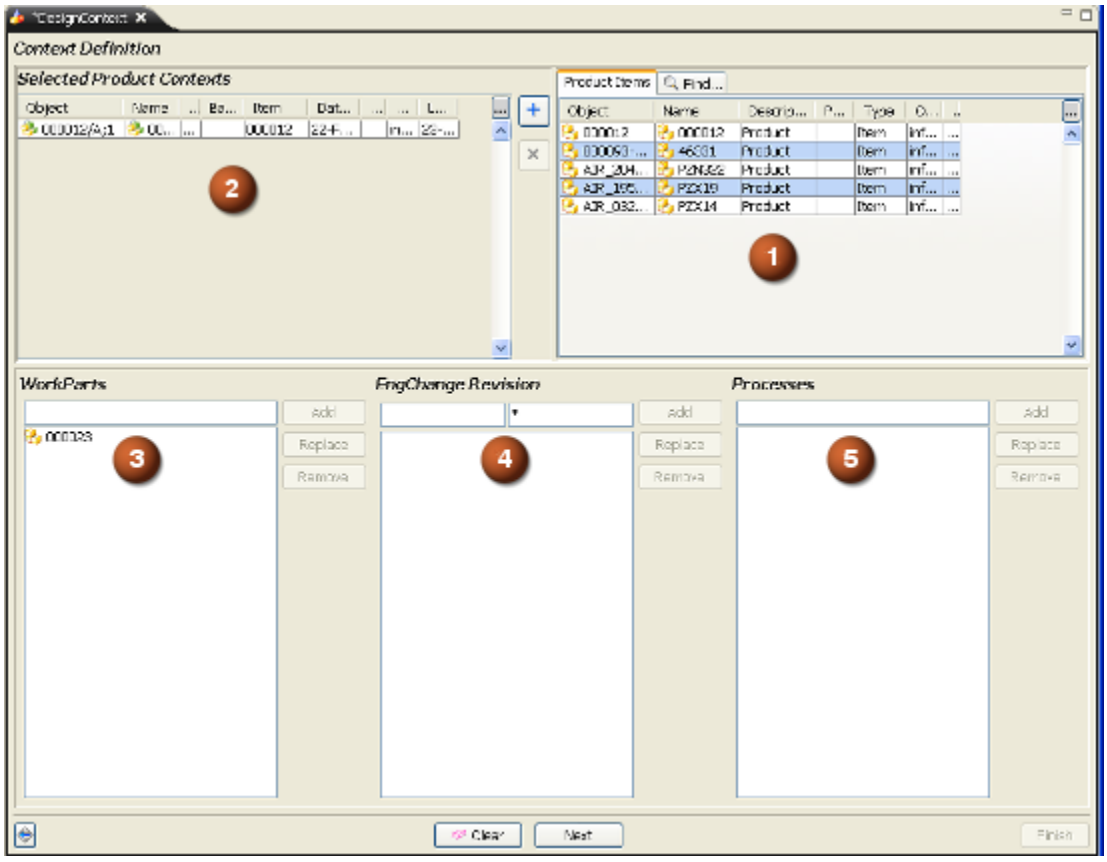
Design Context interface

Design Context interface

The Design Context interface comprises the following windows.

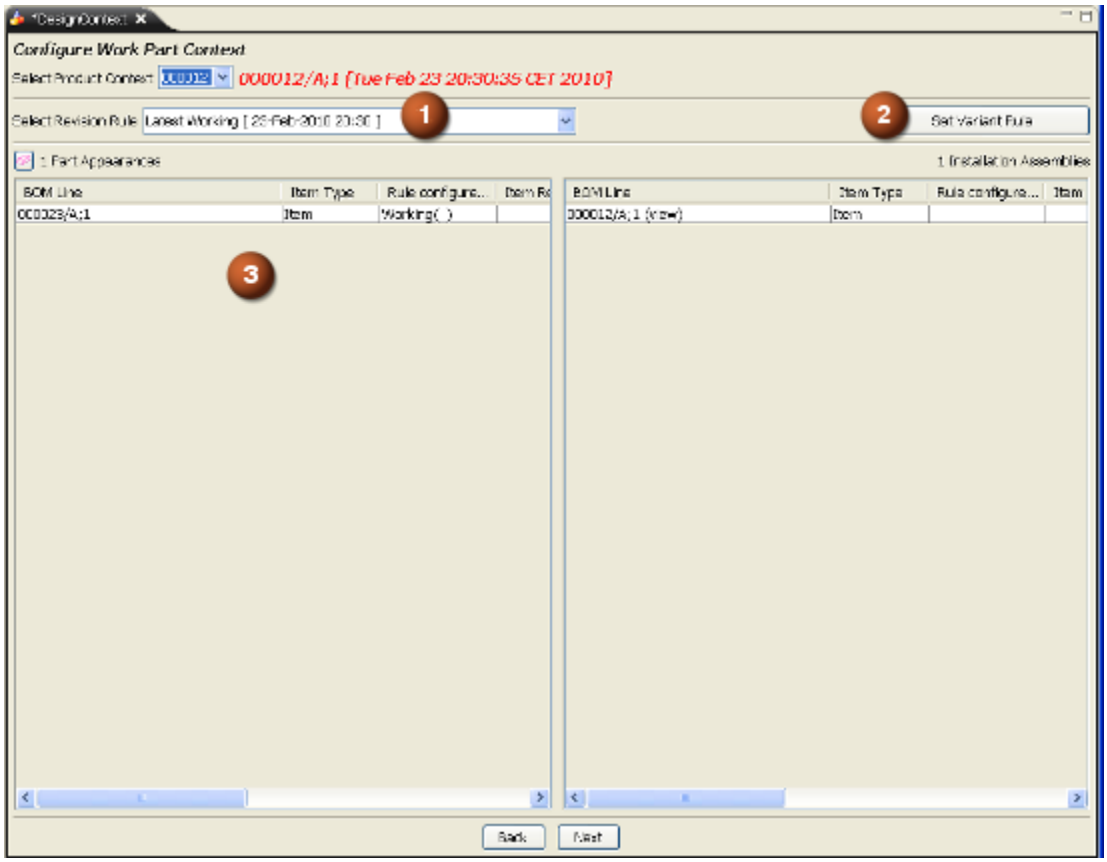
Context Definition window	Allows you to define the context for your session. For more information, see *Context Definition window*.
Configure Work Part Context window	Allows you to configure the work part context with revision rules and variant rules. For more information, see *Configure Work Part Context window*.
Configure Filter window	Allows you to search the product context using background part appearances you create by applying a combination of zone, proximity, and part attribute search filters. For more information, see *Configure Filter window*.

Context Definition window:



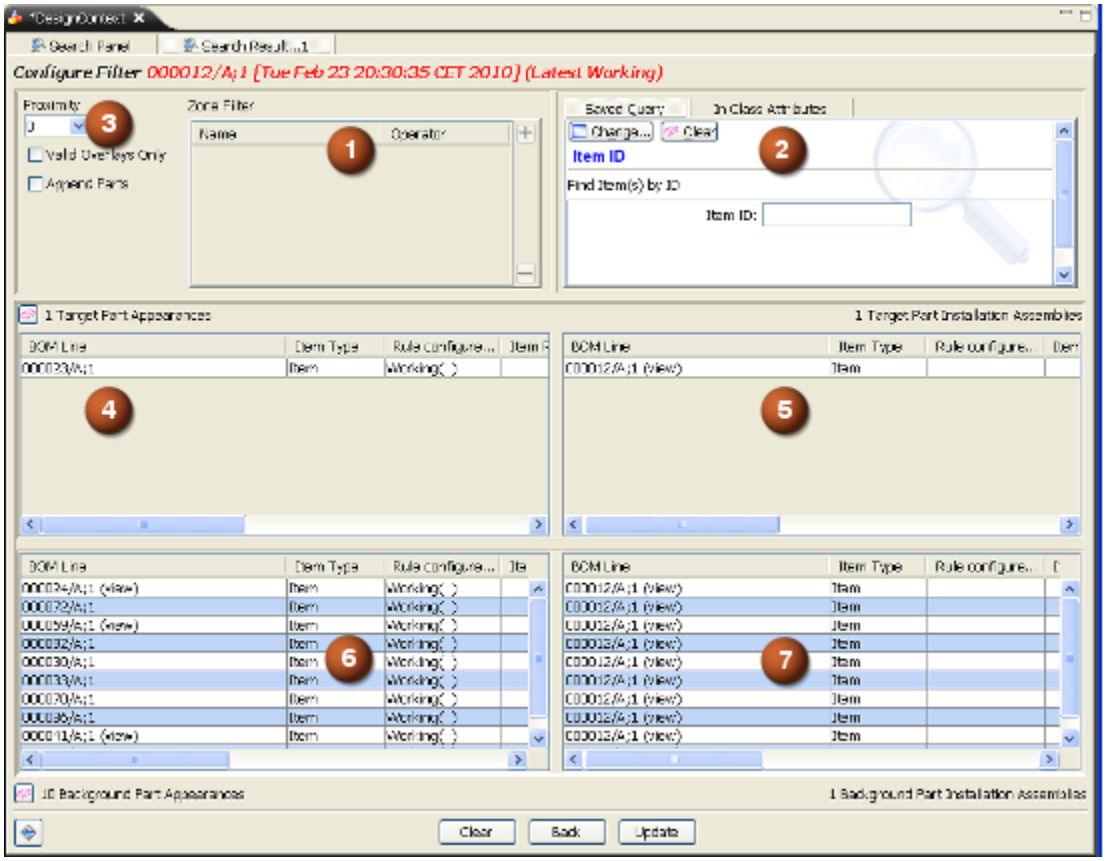
1	**Product Items** pane	Lists all product items available. These are items that represent the product, as defined by the product item properties preferences.
2	**Selected Product Contexts** pane	Shows the available product contexts for the selected product item. Product item revisions that are grouped into product contexts, as defined in the **PortalDesignContextProductContextProperties** preference.
3	**WorkParts** pane	Allows you to enter the target work parts (optional).
4	**EngChange Revision**	Allows you to enter an engineering change (EC) revision. This action automatically populates the **Work Parts** list with work parts associated with the EC revision.
5	**Processes**	Allows you enter a workflow process ID. This action automatically populates the **Work Parts** list with work parts associated with the workflow process.

Configure Work Part Context window:



1	**Select Revision Rule** box	Allows you to apply a revision rule to the product context selected in the first window.
2	**Set Variant Rule** button	Allow you to apply a variant rule to the product context. The variant rule is applied to the target and background parts. Do not apply a variant rule if you use the valid overlays only option.
3	**Part Appearances** pane	Shows the currently configured work part appearances.

Configure Filter window:



1	**Zone Filter** pane	Allows you to filter the product context by selecting a zone filter (bounding box or a plane zone).
2	Attribute filter pane	Allow you to filter the product context by selecting an attribute filter.
3	**Proximity** menu	Allows you to filter the product context by selecting a proximity filter. Target BOM lines must be displayed in the **Target Part Appearances** pane. You can refine the search by selecting **Valid overlays only**, **Append parts**, and **True shape filtering**, if appropriate.

4	**Target Part Appearances** pane	Shows the target parts.
5	**Target Part Installation Assemblies** pane	Shows the target installation assemblies.
6	**Background Part Appearances** pane	Shows the background parts.
7	**Background Part Installation Assemblies** pane	Shows the background installation assemblies.

Design Context uses the Teamcenter rich client interface. For general information about the rich client interface, refer to *Teamcenter Basics*.

Context Definition window

The **Context Definition** window displays when you first launch the Design Context application and allows you to define the context for your session. This window is sometimes called the *first window* of the Design Context application.

Element	Description
Selected Product Contexts list	Displays the product contexts available for the selected product item. Note: You can also drag a product context object from another application such as My Teamcenter or Structure Manager and drop it onto Design Context.
Product Items tab	Displays product items available in the database. Design Context searches the database according to the setting of the **PortalDesignContextProductItemProperties** preference. You can search in *all* product contexts.
Find tab	Displays a saved query form used to locate product items.
Work Parts box	Specifies an item ID for locating work parts. The matching work parts are listed below this box in the **Work Parts** list.
Work Parts list	Displays the items found by entering a work part item ID in the **Work Parts** box.
EngChange Revision box	Specifies a change ID or search string for locating engineering changes. The matching engineering change revisions are listed below this box in the **EngChange Revision** list. This action also populates the **Work Parts** list with the work parts associated with the added engineering changes.

Element	Description
EngChange Revision list	Displays the added engineering changes in addition to those associated with the added work parts or workflow process.
Processes box	Specifies a process ID or search string for locating workflow processes. The matching workflow processes are listed below this box in the **Processes** list. This action also populates the **Work Parts** list with the work parts associated with the added workflow processes.
Processes list	Displays the added workflow processes, as well as those associated with the added work parts or engineering changes.
The following buttons appear three times, once for each of the work parts, engineering change revision, and workflow processes lists.	
Add button	Appends the specified item revision, change object, or workflow process to the list.
Replace button	Replaces the selected item revision, change object, or workflow process with one specified in the text box corresponding the list.
Remove button	Removes the selected entry from the list.

Configure Work Part Context window

Use the **Configure Work Part Context** window to select and configure appearances of work parts. This window is sometimes called the *second window* of the Design Context application.

Element	Description
Select Product Context box	Displays the product contexts selected in the **Context Definition window**. If there is more than one context, choose the appropriate context from the list.
Select Revision Rule box	Displays all revision rules in the database associated with the selected product context. You can select one of these rules from the dropdown list to configure appearances of work parts for the selected product context.
Set Variant Rule button	Displays the **Variant Rule** dialog box that allows you to set a variant rule for the selected product context to configure the work part appearances.
Part Appearances list	Displays the work part appearances, configured by the combination of product context, revision rule, and variant rule.
Installation Assembly list	Displays the installation assemblies in which the work parts appear.

Configure Filter window

Use the **Configure Filter** window to configure background part appearances by applying a combination of zone, proximity, and part attribute search filters. This window is sometimes called the *third window* of the Design Context application.

Element	Description
Product Context title area	Displays the configuration selected in the **Configure Work Part Context** window, including the date and time that the corresponding cache was last updated. The selected revision and variant rules are also shown.
Append check box	If checked, the results of filtering for background part appearances in this window are added to the existing set of background appearances.
Valid Overlays Only check box	Disables loading of otherwise physically mutually exclusive background parts and target parts. Teamcenter automatically filters out those matching background parts known to never coexist in any possible variant combination with any one of the target appearances.
Proximity filter	Defines the physical distance around the work part appearance within which background part appearances are selected.
Zone filter table	Specifies the zone within the assembly to filter the background part appearances. Zones are created in the NX top-level CAD model and can be box zones or plane zones.
Attribute filter table	Specifies the NX part attributes used to filter the background part appearance queries.
Target Part Appearances	Displays the target part appearances based on the designated filters.
Target Part Installation Assemblies	Displays the installation assemblies associated with the target part appearances.
Background Part Appearances	Displays the background part appearances related to the target parts, based on the settings of the zone, proximity, attribute, and other filters.
Background Part Installation Assemblies	Displays the installation assemblies associated with the background part appearances.
Clear button	Clears the displayed search criteria, allowing you to enter new ones.
Back button	Returns to the **Configure Work Part Context** (second) window.
Update button	Initiates a search for work part appearances based on the filter settings. When the search is complete, you can send the configuration to Structure Manager

Element	Description
	for viewing or analysis in the embedded viewer, NX, or a Lifecycle Visualization application.
Remote search check box	If you work in a Multi-Site Collaboration environment, includes remote sites identified by the site administrator in the search.

What are perspectives and views?

Within the rich client user interface, application functionality is provided in *perspectives* and *views*.

View	The basic display component that displays related information in a UI window.
Perspective	A collection of one or more views and their layout.

Some applications use a perspective with multiple views to arrange how functionality is presented. Other applications use a perspective with a single view.

You can use the **HiddenPerspectives** preference to prevent the display of some Teamcenter perspectives in the rich client.

If your site has online help installed, you can access the application and view help from the rich client **Help** menu.

Design Context menus

Design Context menus

> Note:
>
> Your administrator can show or hide menu commands using Command Suppression. This guide contains information about all menu commands that are available when the system is delivered.
>
> For more information about Command Suppression, see *Teamcenter Administration*.
>
> For information about the **Window** menu, see *Teamcenter Basics*.

File menu

Menu command	Purpose
New→Zone	Creates box and plane zones that are used to define search zones. Box and plane zones are based on predefined form types shipped with Teamcenter. You can search parts that are above, below or intersecting

Menu command	Purpose
	a plane; likewise, you can search parts that are inside, outside, or interfering with a box.
Save PLMXML	Saves the currently active context (top-level item revision and configured BOM lines) to a PLM XML file.
Open in Lifecycle Visualization	Opens the configured work parts and background parts in Lifecycle Visualization.
Open in NX	Opens the configured work parts and background parts in NX.
Save Structure Context Object	If chosen from the first window, saves the current structure context (current work parts and the active product item revision) to the active context object. If chosen from the second or third window, saves the current revision rule and variant rule in the modified form to the structure context object (SCO). The SCO also contains information from the first window. If chosen from the third window, all filters used in the last search are saved to the SCO. The SCO also contains information from the first and second windows.
Save Structure Context Object As	Saves the contents of the currently loaded SCO to a new SCO, including any changes to work parts, revision rule, variant rules, and filters made in the current Design Context session.
Close	Closes Design Context and optionally saves your settings, including: • Selected product contexts, work parts, and change objects. • Revision rules and variant rules. • The last five proximity, zone, and attribute filter settings.
Exit	Exits the rich client and all applications that are running in the session. You can optionally save your Design Context settings, including: • Selected product contexts, work parts, and change objects. • Revision rules and variant rules. • The last five proximity, zone, and attribute filter settings.

Edit menu

Menu command	Purpose
Copy	Allows you to copy selected objects (BOM lines) and paste them into another application such as Structure Manager or Multi-Structure Manager. For example, you can copy selected installation assemblies and paste them into Structure Manager as a private assembly. This command is disabled in the first window of the Design Context application.
Cut	Allows you to remove selected objects (BOM lines) and paste them elsewhere.
Delete	Removes selected objects (BOM lines).
Remove Design from Product	Removes a selected CAD design from an installation assembly. This command is used only when your site utilizes Platform Designer.
Replace Design in Product	Replaces a CAD design in an installation assembly attached to an architecture breakdown element with another CAD design. This command is used only when your site utilizes Platform Designer.
User Settings	Displays the **User Settings** dialog box, allowing you to view, define and change settings for a group, role, project or volume. You can also enable or disable application logging and journaling, if you have the appropriate privileges.
Options	Configures your Design Context session. You can show or hide the properties displayed for product contexts or product items. You can also set general options, including search and interoperability settings, and edit Teamcenter preferences. For more information, see *Set general options*.

View menu

Menu command	Purpose
Show Unconfigured Variants	Shows or hides variants that are not configured by the current options.
Show Unconfigured By Date	Shows or hides components that are not configured by the set date (occurrence date effectivity).

Tools menu

Menu command	Purpose
Revision Rule→View/Set Current	Allows you to view or set the revision rule for the currently displayed structure. This command is available only in the first window.
Revision Rule→Set Date/ Unit/End Item	Sets the date, unit number, or end item in the current revision rule to configure the structure.
Revision Rule→Set Override Folder	Sets an override folder to configure the structure, if the current revision rule allows.
Revision Rule→Modify Current	Modifies the current revision rule and apply the modified rule to the current structure. You can save the change if you have write access to the original rule. This command is available only in the first window.
Revision Rule→Create/ Edit	Creates or edits a revision rule. This command is available only in the first window.
Export Configured NX Assembly	Displays the **Export Configured NX Assembly** dialog box. This command allows you to export NX part files corresponding to the selected BOM lines in Design Context. It allows you to specify the name of the directory in which to place the compressed file of exported NX parts. This command is available only in the **Configure Filter** window.
Clearance Analysis	Allows you to view stored clearance analysis results for previous clearance analysis processes. To use this command, integrated clearance management (ICM) must be installed and the clearance database configured for background clearance calculations. It also allows you to request a real time clearance analysis of a selected set of parts or to view clearance analysis results for previous real time requests. To use this command, integrated clearance management (ICM) must be installed and the clearance database configured. For more details, see *Performing clearance analysis and proximity filtering*.

Design Context buttons

Button		Purpose
	**Soft abort**	If enabled, allows you to terminate the current operation without closing Design Context or losing data.
	**Copy**	Copies a workspace object reference from the Design Context application onto the clipboard.

Button		Purpose
	**Paste**	Moves a workspace object reference from the clipboard into the Design Context application.
	**Start/Open in NX**	Opens the configured work parts and background parts in NX.
	**Replace Design in Product**	Replaces the selected design in the product structure with another design. Use this button only when your site utilizes Platform Designer.
	**Start/Open in Lifecycle Visualization**	Opens the configured work parts and background parts in Lifecycle Visualization.
	Ad-Hoc Configuration	Allows you to configure a Design Context session by retrieving a PLM XML dataset sent from My Teamcenter.
	**Synchronize with Structure Manager**	Synchronize the configured work and background parts with Structure Manager. You can visualize the selected components in the embedded viewer and they are also highlighted in the Structure Manager properties view.
	**Send to NX**	Allows you to launch the PLM XML file created by the ad-hoc functionality directly in NX, rather than needing to interoperate using Lifecycle Visualization. This button is available only in the second and third windows.

Basic concepts

Design Context allows you to make fast searches for background parts within a certain proximity that is defined by filters. To obtain search results, you follow this process:

- Select a product item.
- Configure revisions of components.
- Configure variants of the assembly.
- Review the set of target components.
- Apply filters to retrieve the background components.
- Initialize the display of components in the embedded viewer in Structure Manager, CAD or Lifecycle Visualization.

- Save the current session to a structure context object (SCO) for subsequent retrieval in Design Context, NX, or a Lifecycle Visualization application.

Basic tasks

Use Design Context to perform the following basic tasks:

- Create box zones and planes. Use box and plane zones to filter and refine searches for target parts.

  For detailed information, see *Creating box and plane zones*.

- Define product context and work parts to work on in the current session. Define the context for a design or design review session by defining the list of work parts and the product context within which these parts are configured.

  For detailed information, see *Defining product context and work parts*.

- Configure work part appearances. Narrow the focus of your search by applying revision rules and variant rules to configure the appearances of the parts within the product context.

  For detailed information, see *Managing work part appearances*.

- Filter part appearances. Filter the background part appearances for the target work parts You can filter background part appearances by proximity to the work part, component attributes, filters, Classification filters, saved query filters, plane or box zone based filters or occurrence notes filters.

  For detailed information, see *Filtering part appearances*.

- Work with parts in the defined context. After you configure the context for the work parts that are the focus of your design or design review session, you can open the entire context in NX or a Lifecycle Visualization application.

  For detailed information, see *Working with parts in the defined context*.

- Manage changes to the product. Replace components in the product.

  For detailed information, see *Managing changes to the product*.

- Perform clearance analysis and proximity filtering or view results. Perform clearance analysis in the stand-alone Lifecycle Visualization application or the embedded viewer.

  For detailed information, see *Performing clearance analysis and proximity filtering*.

- Create a structure context object (SCO) containing a saved virtual product context configuration and replicate it at remote sites.

For detailed information, see *Step 4: Save product configuration as a structure context object (optional)*.

2. Setting Design Context options

Setting Design Context options

You can set Design Context options to match your company's business practices. When you choose these options from the **Edit** menu, Teamcenter displays the **Options** dialog box allowing you to modify relevant preferences.

> Note:
>
> In addition to setting these options, you must set the Design Context preferences listed in the **Administration Data Report** before starting work with Design Context.

Set general options

1. Choose **Edit→Options**.

   Teamcenter displays the **Options** dialog box.

2. In the dialog box, expand the **Design Context** folder and select the **General** item.

   Teamcenter displays the **General** options on the right of the dialog box.

Menu command	Purpose
Automatically determine Variant Rule set if a maximum of ___ Target Appearances	Specifies the maximum number of target appearances for the **Valid Overlays Only** check box in the **Filter Configuration** window. This option limits the processing time Teamcenter spends determining and evaluating the set of variant rules configuring a set of target appearances.
Automatically determine Variant Rule set if a maximum of ___ Relevant Options	Similar to the previous option, specifies the maximum number of relevant options.
Maximum Number of Matches Allowed ___ Wildcard Searches	Specifies the maximum number of items, for example, work parts, change objects, or change request jobs, that a query can match. Input provided in the **Context Definition** window can cause new objects to be loaded. If you enter wildcard characters in these boxes when performing a product item search, response times may be unacceptably long.
Maximum Number of Matches Allowed ___ Structure Manager Searches	Specifies the maximum number of assembly components that a Design Context search can match. Input provided in the **Context Configuration** window or **Filter Configuration** window can cause new objects to load.

Menu command	Purpose
	If you enter wildcard characters in these boxes, response times may be unacceptably long.
Product Structure Interoperability Options	You can set the following options separately for interoperability with CAD and Lifecycle Visualization: • **Prune Tree** Makes branches of the structure that do not contain any components invisible to the application into which the context is loaded. This is essential for extremely large structures, as it decreases load time. • **Suppress Components** Used in conjunction with **Prune Tree** to suppress the loading of potential structure lines components other than those explicitly selected. This is beneficial, because you may not know that the selected structure line is, for example, an assembly with 180,000 components. • **Hide Components** Used in conjunction with **Prune Tree** to load, but not display, the components of a selected assembly.
Show "Open in Structure Manager" Command	Shows or hides the **Interoperate with Structure Manager** button  .
Select Search Engine for Product Structure Searches	Shows the currently selected search engine (cacheless search) and should not be changed.
Refine Cacheless Search	Select the **Use True Shape** search check box to search with TruShape data as well as bounding box data.
Structure Context Object entries	You can set the following options separately to configure how Teamcenter handles structure context objects: • **Include newly added Component Instance** Select to include any newly added structure lines when a context object is reloaded. • **Automatically synchronize and prune DesignContext selections with Structure Manager**

Menu command	Purpose
	Select to enable automatic synchronization and pruning if you interoperate with Structure Manager.

3. After you set the general options, click **Apply** to apply the options to your current session and retain the **Options** dialog box. Alternatively, you can click **OK** to apply the options to your current session and close the dialog box.

Set product context property options

To arrange the product context properties in the table of selected contexts in the Context Definition window:

1. Choose **Edit→Options** and Teamcenter displays the **Options** dialog box.

2. In the dialog box, expand the **Design Context** folder and choose **Product Context**. Teamcenter displays the **Product Context** options on the right of the dialog box.

3. Define the list of displayed properties by moving them between the **Shown** and **Hidden** lists. Select a property in the list and click the left-arrow or right-arrow button to move it from one list to the other.

4. Optionally, define the display order of the properties by selecting a property and clicking the up-arrow or down-arrow. The property at the top of the **Shown** list is the furthest left in the table display.

5. Click **Apply** to apply the options to your current session and retain the **Options** dialog box.

   Click **OK** to apply the options to your current session and exit the dialog box.

Set product item property options

When you set product item property options, you select the properties to display in the table of selected product items in the **Context Definition** window and the order in which they are displayed:

1. Choose **Edit→Options** and Teamcenter displays the **Options** dialog box.

2. In the dialog box, expand the **Design Context** folder and select the **Product Item** item. Teamcenter displays the **Product Item** options on the right of the dialog box.

3. Define the list of displayed properties by moving them between the **Shown and Hidden** lists. Select a property in the list and click the left-arrow or right-arrow button to move it from one list to the other.

4. Optionally, define the display order of the properties by selecting a property and clicking the up-arrow or down-arrow. The property at the top of the **Shown** list is the furthest left in the table display.

5. Click **Apply** to apply the options to your current session and retain the **Options** dialog box.

   Click **OK** to apply the options to your current session and dismiss the dialog box.

Enable search result synchronization with Structure Manager

You can optionally synchronize search results shown in Design Context to Structure Manager and any structure lines that are selected in Design Context are also highlighted in Structure Manager. You can enable this automatic synchronization by setting the **DesignContext_PSE_Synchronization** preference to **True**. If synchronization is enabled, the status bar continuously shows the status of the synchronization process. If you enable this option, performance when working in large assemblies may be adversely affected.

By default, this is a user preference; you can modify it for the current session by changing the **Automatically synchronize and prune DesignContext selections with Structure Manager** option.

For more information, see *Set general options*.

> Note:
>
> Any siblings of the structure lines shown in Design Context are not initially shown in Structure Manager to allow quicker loading.

3. Defining product context and work parts

Defining product context and work parts

Defining product context and work parts

The first step in configuring the context of a design or design review session is to define the product context. You select the product context in which the work part appearances are configured from a predefined list of *product items*. You can select product items from the **Product Items** tab. In addition, you can optionally select particular work parts, an engineering change or a Workflow process to narrow the scope of the search.

If you use the cacheless search mechanism, you can refine the search and potentially limit the number of matches by configuring the structure with a revision rule. You can do this in one of two ways:

- Choose **Tools→Revision Rule→View/Set Current** on the first window.
- Click the **Set Revision Rule** button on the second window.

Teamcenter displays the **View/Set Current Revision Rule** dialog box, allowing you to select and apply one of the defined revision rules. The selected revision rule is shown in the status bar of the second window.

Step 1: Select product context (product items)

1. From the **Product Items** tab located in the upper-right corner of the **Context Definition** window, select one or more product items.

   The number of product items displayed in the table is determined by preferences set by your administrator. If you do not see the item you are looking for, use the **Find** tab to locate the item, as follows:

   a. Click the **Find** tab.

      Teamcenter displays a saved query form, as defined by your administrator.

   b. Type search criteria to locate the product item.

   c. Execute the query by doing one of the following:

      - Click the **Add** (**+**) button to execute the query and add the product items found to the **Selected Product Contexts** list.

- Click the **SetList** button to clear the contents of the **Product Items** list, execute the query and display the query results in the **Product Items** list.

- Click the **Append** button to execute the query and append the results to the **Product Items** list.

2. Click the **Add** (**+**) button, and Teamcenter adds the selected product items to the list of product contexts. You can also double-click individual lines to add the corresponding product items to the list.

Step 2: Select work parts

Step 2: Select work parts

You can use engineering change management and Workflow processes to help define the work parts list. You can automatically populate the work parts list with the item revisions referenced by a Change Management object such as a change order, by specifying its identifier. Similarly, you can automatically populate the work parts list with the item revisions referenced by a workflow process by specifying its name. You can also select item revisions in other Teamcenter applications and send or copy and paste them into Design Context.

Optionally, use one of the methods described next to select the specific parts to be the focus of your session.

Copy and paste objects from My Teamcenter

1. Select one or more item revisions or change objects in the My Teamcenter navigation tree or **Properties** table and choose **Edit→Copy**. Teamcenter copies the objects to the clipboard.

2. Switch to Design Context and choose **Edit→Paste**. Teamcenter pastes the item revisions into the **WorkParts** list. Changes are pasted into the **EngChange Revision** list and the item revisions associated with the changes automatically populate the **WorkParts** list.

> Tip:
>
> To copy and paste a single item revision or change object, right-click the object, and choose **Copy**.

Enter an item revision ID or search string in the WorkParts box

1. Type an item revision ID or partial ID and wildcard (*****) character in the **WorkParts** box located in the lower-left corner of the **Context Definition** window.

2. Press the Enter key or click the add (**+**) button.

If you enter an item revision ID, Teamcenter displays the item revision in the **WorkParts** list, and any changes or processes that reference the item revision in the **EngChange Revision** and **Processes** lists.

If you type a search string, Teamcenter displays all matches for the item revision ID, along with the corresponding changes and processes.

Enter a change ID or search string in the EngChange Revision box

1. Type an change ID or partial ID and wildcard (*****) character in the **EngChange Revision** box located in the bottom-center of the **Context Definition** window.

2. Press the Enter key or click the add (**+**) button.

If you enter a change ID, Teamcenter adds the change object to the **EngChange Revision** list, and any item revisions or processes referenced by the change object are displayed in the **WorkParts** and **Processes** lists.

If you type a search string, Teamcenter displays all matches for the change object, and the corresponding item revisions and processes. If the change references revisions of **Product Items**, Teamcenter automatically adds them to the **Selected Product Context** list.

Enter a Workflow process ID or search string in the processes box

1. Type the name of a workflow process or partial name and wildcard (*****) character in the **Processes** box, located in the lower-right corner of the **Context Definition** window.

2. Press the Enter key or click the add (**+**) button.

If you enter a process name, Teamcenter adds the process object to the **Processes** list, and any objects targeted by the process are displayed in the **WorkParts** and **EngChange** lists.

If the process references revisions of **Product Items**, Teamcenter automatically adds them to the **Selected Product Context** table.

Step 3: Edit the WorkParts list

Step 3: Edit the WorkParts list

- If you performed a search in step 2, it may be necessary to edit the **WorkParts** list to remove or replace entries.

Remove entries from the WorkParts, EngChange Revision or Processes list

- Select the entries and click the **Remove** button.

> Note:
>
> Because work parts, changes, and processes are related, removing an entry from one list automatically removes the corresponding entries from the other lists.

Replace an entry in the WorkParts, EngChange Revision, or Processes list

1. Type the *exact* identifier of the replacement item revision, change object, or process.
2. Select the entry in the list that is replaced by the specified object.
3. Click the **Replace** button.

Step 4: Save product configuration as a structure context object (optional)

Step 4: Save product configuration as a structure context object (optional)

Once the product context and work parts are configured, you can save it as a *structure context object* (SCO). An SCO stores the definition of a virtual product context configuration in the Teamcenter database, including the search filter criteria and results. Storing the product context configuration in this way after defining it once in Design Context avoids the need to configure the same product context each time you or another user wants access to the same session context configuration. You can share an SCO with other users at the same site or you can replicate it at remote sites.

How you save the SCO depends on the basis of the current session.

If the current session is based on an existing SCO:	**If the current session is not based on an existing SCO and *is not* in the context of an engineering change:**	**If the current session is not based on an existing SCO, but *is* in the context of a change:**
Choose the **File→Save Structure Context Object** menu command, and the existing SCO is updated with the changes you made during the session. Current work parts and the active product item revision overwrite any existing work parts and product item revisions previously stored in the SCO. Note: To save any changes to revision rules and variant rule, choose this menu command from the *second* window of the Design Context application.	Store changes in a new stand-alone SCO, as follows: 1. Choose the **File→Save Structure Context Object** menu command. Teamcenter displays the **Save Structure Context Object** dialog box. 2. In the dialog box, type a name and description for the new SCO. 3. Select the type of SCO you want to create from the **Type** list.	Store changes in a new SCO in a pseudo folder, as follows: 1. Choose the **File→Save Structure Context Object** menu command. Teamcenter displays the **Save Context Object As** dialog box. 2. Type a name and description for the new SCO and click **OK**. Teamcenter stores the changes you made during the session in a pseudo folder.

If the current session is based on an existing SCO:	If the current session is not based on an existing SCO and *is not* in the context of an engineering change:	If the current session is not based on an existing SCO, but *is* in the context of a change:
	Note: The list includes all SCO types defined in the system, some of which may be inappropriate for saving an RDV context object. 4. Store the SCO on the clipboard, in your **Newstuff** folder, or both by selecting the appropriate check box. 5. Click **OK** or **Apply** to store the changes in the database as a new stand-alone SCO.	Note: The name of pseudofolder is defined in the **DesignContextRDVContext ObjectAddToECObject Pseudo FolderPreference** preference. If this preference is set, the SCO is saved directly to the pseudofolder. If this preference is *not* set, you can choose to store the SCO on the clipboard, in your **Newstuff** folder or both, as before.

Note:

Saving the SCO also saves the search criteria so that the search can be replayed at a later date. The search criteria are saved regardless of whether you have previously run the search.

Open a stored structure context object

- Open the stored structure context object (SCO) that you saved, and then paste it to Design Context or use the **Send To** command from another application, for example, Multi-Structure Manager. Alternatively, you can paste a folder, mail envelope, or change object containing a stored context object. Choose **SCO Evaluation Dynamic** to update the contents of the SCO with any changes or **SCO Evaluation Static** otherwise.

  Teamcenter opens the stored SCO, launches the configured context in Design Context, applies the stored search filter criteria, and opens the structure in the first window of the application.

Note:

SCOs can be replicated by remote sites to your location, as well as being shared between users at your site. Likewise, you can replicate SCOs to remote sites.

Create a new structure context object from an existing structure context object

If the current session is not in the context of an engineering change:

1. Choose **File→Save Structure Context Object As**.

Teamcenter displays the **Save Context Object As** dialog box.

2. In the dialog box, type a name and description for the new SCO. Store the SCO on the clipboard, in your **Newstuff** folder, or both by selecting the appropriate check box, then click **OK**.

   Teamcenter stores the changes you made during the session to the database in a new standalone SCO.

If the current session is in the context of an engineering change:

1. Choose **File→Save Structure Context Object As**.

   Teamcenter displays the **Save Context Object As** dialog box.

2. Type a name and description for the new SCO and click **OK**.

   Teamcenter stores the changes you made during the session in a pseudofolder.

   > Note:
   >
   > The name of pseudofolder is defined in the **DesignContextRDVContextObjectAddToECOObjectPseudo FolderPreference** preference. If this preference is set, the SCO is saved to the named pseudofolder. If this preference is *not* set, you can choose to store the SCO on the clipboard, in your **Newstuff** folder, or both.

After you complete defining the product contexts and work parts, click **Next** to proceed to the **Configure Work Part Context** window.

Search remote sites

If you work in a Multi-Site Collaboration environment, you can optionally include products or programs that are mastered or replicated at other sites in the search.

1. In the **Search Panel** (third window), select the **Remote search** check box to include other sites in the scope of the search in addition to the other search criteria.

2. Click **Update** to run the search.

   If the search finds remote BOM lines that are not replicated at the local site, Teamcenter displays a *number* **remote bomlines found. Do you want to import?** dialog box.

3. Optionally, click **More...** in the dialog box to display a list of the remote lines found.

4. To import the remote lines, click **Yes** in the dialog box.

   Teamcenter displays an **Import Remote** dialog box that shows details of the lines to import.

5. Click **All** and then click **OK** to import all the remote lines.

   Alternative, you can click **None** and then click **OK** to not perform an import of the remote lines.

   You must have permissions to the remote site and the selected objects to successfully complete the import action.

Note:

The remote sites to search are configured in the **QS_remote_master_site** and **QS_remote_master_site_override** preferences.

4. Managing work part appearances

Managing work part appearances

After you define the product context and work parts that are the focus of your session, you can narrow the focus even further by applying revision rules and variant rules to configure the appearances of the parts within the product context.

Product configuration specialists define revision rules containing parameters that determine the revision of the product item against which the work part appearances are configured. You apply these revision rules to (for example) select working revisions. You can also select revisions by specific status (according to status precedence) or select the latest revision with any status (by date released). For detailed information about revision rules, see Structure Management on Rich Client — Usage.

Variant rules are collections of option values that configure a particular variant of the selected revision of the product context. For detailed information about variant rules, see *Structure Management on Rich Client — Usage*.

> Note:
>
> Siemens Digital Industries Software recommends that NX users who author CAD models work with an overlay of all physically mutually exclusive variants, rather than applying variant rules. This avoids unintentionally unconfiguring components relevant to the session.

Configuring work part appearances

After you define the product context and work parts that are the focus of your session, you can use revision rules and variant rules to configure the work part appearances within the product context.

Initially, the **Part Appearances** list in the **Configure Work Part Context** window displays the product structure lines corresponding to the appearances of the work parts defined in the **Context Definition** window. Additionally, the **Installation Assemblies** list displays the lines of the installation assemblies, if applicable, that correspond to the part appearances. These lists change dynamically to reflect the application of revision and variant rules, depending on how you configure work part appearances.

Configure work part appearances

1. From the **Select Product Context** list, select the product context for which you want to configure the work part appearances. This list represents the product items that you added to the **Product Contexts** list in the **Context Definition** window. Selecting a product context limits the search for work part appearances to those found in the assembly corresponding to this product context.

2. Select a revision rule that corresponds to the selected product context. Selecting a revision rule further limits the search for appearances of the previously defined work parts by searching only revisions of the product item that fit the criteria established in the revision rule.

3. Optionally, click the **Set Variant Rule** button to apply variant rules to configure the work part appearances.

   When applying variant rules, some components may no longer be valid within the product context. If a displayed component is not selected by the new variant rule, Teamcenter removes the component, and potentially other related components.

4. Click the **Next** button to proceed to the **Configure Filter** window.

5. Filtering part appearances

Filtering part appearances

After you define the product context and configured the work parts list, you can filter the background part appearances to include in your session. Filtering out unrequired part appearances improves response times and makes it easier to interpret displayed information. Locate the required part appearances by performing spatial or attribute searches for product structure occurrences within the configured product context.

Filtering the background part appearances for the target work parts, as defined in the **Configure Work Part Context** window, is the final step in configuring the context for a design or design review session. See *Managing work part appearances* for additional information on selecting target work part appearances. You can filter background part appearances by proximity to the work part, Classification attributes, occurrence notes, or form attributes.

You can display the resulting appearances in NX or Lifecycle Visualization.

Your administrator configures the available Design Context options for background part appearances. For example, zone filters may not be available at your site.

> Note:
>
> Siemens Digital Industries Software recommends applying proximity and attribute filters to limit the scope of searches within a product context or zone. If no proximity distance is set, the scope of the attribute search is the entire product as configured by the revision rule. Significant degradation in system performance may be experienced if searches are performed without proximity and attribute filtering.

Configure filtering of background part appearances

Configure filtering of background part appearances

1. (Optional) Select the **Valid Overlays Only** check box located in the upper-right side of the **Configure Filter** window.

   This option allows Teamcenter to load otherwise physically mutually exclusive parts, filtering out those known to never coexist in any possible variant combination with any one of the target appearances.

   > Note:
   >
   > The **Valid Overlays Only** option only analyzes classic variants; any defined modular variants are ignored.

> Note:
>
> When you select the **Valid Overlays Only** check box, Teamcenter determines the minimum number of variant rules that cover all product variants in which the target components can exist. However, these rules are not applied until you click the **Update** button to filter the background components.

2. (Optional) Select **Append Parts** to append the results of the search for background appearances to the existing list.

3. Apply any combination of the following filters.

> Note:
>
> There is no priority with which Teamcenter applies these filters. All the filter conditions are combined to configure the background parts.

Filter	Purpose	Action
Proximity	Specifies the physical distance from the work part appearance within which background part appearances are selected. Note: The displayed values are only approximations.	Select a predefined numeric value from the list.
Zone Filter	Specifies the zone in the assembly within which background part appearances are selected. Multiple zone filters are implicitly combined using a logical **AND**. Zones must be created in the NX top-level CAD model before you can apply zone filters.	**Adding zone filters** a. Click the add (**+**) button to add a line to the zone filter list. b. Click the cell in the left column of the new row and select from the list of known zones in the NX top-level part. c. Click the cell in the right column of the row and select from the list of valid operators for the zone. **Removing zone filters**

Filter	Purpose	Action
		Select a row and click the remove (**–**) button to remove the filter from the table.
Saved Query	Performs a predefined search with the items or item revisions by which background part appearances are selected. The search is saved as a saved query tab at the top of the window. Note: If you exceed the maximum number of possible tabs, a new search is not saved. Select the filtering items and item revisions by performing a saved query.	a. Click the **Saved Query** tab. b. Select **Item Saved Queries** or **Item Revision Saved Queries** from the list. c. Enter known data regarding the desired item or item revision in the query boxes. For more information about running saved queries, see *Teamcenter Basics*.
Mapped Attributes	Performs a search with the occurrence notes by which background part appearances are selected. The search is saved as a saved query tab at the top of the window. You define the actual attributes on the parts in Structure Manager.	a. Click the add (**+**) button to add a line to the **Mapped Attributes** filter list. b. Click the **Attribute** column, and select an attribute from the list. c. Click the **Operator** column, and select an operator to apply to the attribute value. d. Enter an attribute value in the **Value** column.
Classification Attributes	Performs a search with the Classification attributes by which background part appearances are selected. The search is saved as a saved query tab at the top of the screen.	a. Click the add (**+**) button to add a line to the **Classification Attributes** filter list. b. Click the **Search Classification Class** button to display the **Class Selection** dialog box. c. From the **Class Selection** dialog box, select classified attributes, based on Classification classes, by which to filter your search.

Filter	Purpose	Action
		Selecting a class populates the **Property Name** box of the **Classification Attributes** filter list. d. Click the **Operator** column, and select an operator to apply to the attribute value. e. Enter a search value in the **Searching Value** column.

> Note:
>
> The **Saved Query**, **Mapped Attributes**, and **Classification Attributes** tabs are enabled only when applicable. For example, if your site is using a QPL search engine, only attribute searches are supported. In such a situation, the **Attribute Filter** box displays, rather than the three tabs mentioned previously.

To modify any of the attribute filters, do any of the following:

- Click the add (**+**) button to add a line to the attribute filter list.
- Click the **Attribute** column, and select an attribute from the list.
- Click the **Operator** column, and select an operator to apply to the attribute value, for example, **LIKE**, **Begins with**, or **Contains**.

  The **LIKE** operator is used in conjunction with a wildcard character. For example, a search for the name attribute using the **=** operator combined with a wildcard character, *****, yields any objects with a one-character long name of *****. Using the **LIKE** operator combined with a wildcard character, *****, yields all objects with any value for the name attribute.
- Enter an attribute value in the **Value** column.

> Note:
>
> The **Saved Query**, **Mapped Attributes**, and **Classification Attributes** tabs are enabled only when applicable.

4. Click the **Update** button.

   This action overwrites the existing background part appearance list unless you selected the **Append Parts** option located in the upper-left section of the window.

Teamcenter searches the product structure for background part appearances that match the selected filter criteria within the defined product context. The background part appearances and their corresponding installation assembly appearances are displayed in the lists in the bottom section of the window. There may be an appreciable delay before the search completes if you are working with large assemblies.

You can now send these appearances to NX as the basis of a design session or to Lifecycle Visualization for clearance or proximity analysis, as described in *Defining product context and work parts*.

If the number of matches exceeds the limit set by the **PortalDesignContextMaxMatchingBOMLines** preference, Teamcenter displays a warning but you can choose to continue.

Understanding the Valid Overlays Only option

The **Valid Overlays Only** option allows users to work in the context of product structure lines that truly coexist when variants are configured. Using static variant rules may not allow the configuring of a valid engineering context for the following reasons; this is especially true in complex structures that are configured by several variant rules:

- Some options may be left unset. This may cause unwanted components to load even though they are mutually exclusive with the engineering context.
- All options are set. This may cause components to be configured out even though they can coexist with the components in the engineering context.
- Creating a variant rule requires expertise in the variant model of the product. In many cases, this variant model changes over time and users may not have sufficient knowledge to set a variant rule that correctly configures the engineering context. (*Correctly* implies that no required component is configured out and no unrequired component is configured in.)

You can optionally use Platform Designer to assist in populating the variant conditions. However, you can also apply them directly.

The **Valid Overlays Only** option dynamically generates variant rules and applies them to the loaded context so that unnecessary lines are omitted from the context.

For example, if you have three lines (**A**, **B**, and **C**) in a product assembly, they may have the following variant conditions:

```
load A if ENG=V8 || V6
load B if ENG=V6
load C if ENG=V6
load D if ENG=Diesel
```

The **OR** variant condition means that it is not possible to find a single variant rule that configures the context for all its background part appearances. Any variant rule is forced to choose **V6** or **V8** but never both. The **Valid Overlays Only** option, however, calculates *two* variant rules, one with **V8** and one with **V6**. This issue is described in the second bullet previously.

In the example, **ENG** is a variant family with three possible values, **V6**, **V8**, and **Diesel**. It is not valid to simply leave **ENG** unset. If **ENG** is left unset, the background of A would include **D**, even though **D** is not available for any product variant in which **A** can occur. This issue is described in the first bullet previously.

To summarize:

Target	Background
A	**B; C**
B	**A**
C	**A**
D	—

When you select a saved variant rule in the Design Context second window and also select the **Valid Overlays Only** option, Teamcenter applies the selections in a cumulative manner, similar to other search criteria. As a result, it is possible to select a contradictory combination of zone filters. Design Context does not check the validity of the selected filters.

> Caution:
>
> If you use this option, do not set any variant rules in the Design Context second window unless you have detailed knowledge of the product variant model. Any manually set variant value is superimposed on the calculated variant rules. Consequently, the **Valid Overlays Only** option may return fewer variant rules because those not compatible with the manually set variant values are not returned. Components compatible with your engineering context may then be inadvertently discarded, possibly causing changes that are not buildable to be made or overlooked.
>
> In the same window, ensure you clear the **Show Unconfigured Variants** check box.

The following examples illustrate situations where you may choose the Design Context valid overlays only option:

- Example 1

  You are working on a project to design a fuel filter system for gasoline engines. Therefore, you may want to load an overlay of the 3.1 liter V6 and the 3.3 liter V6, which are mutually exclusive, but not the diesel engines. By selecting the **Valid Overlays Only** option in the Design Context configuration filtering window, the system filters out diesel engines because their variant conditions specify that they cannot coexist with the gasoline fuel filter system in any possible variant.

- Example 2

  While working on a 16-gallon fuel tank, you want to load nearby parts and to see an overlay of all floor panel and rear axle variants; however, you do not want to load the 20-gallon fuel tank. By selecting the **Valid Overlays Only** option, you can filter out the 20-gallon tank but load all valid variants of floor panels and rear axles.

  Note:

  The **Valid Overlays Only** option only analyzes classic variants; any defined modular variants are ignored.

  It also takes into account rule checks but ignores any derived default values.

6. Creating box and plane zones

Creating box and plane zones

You can create box and plane zones within Teamcenter to filter searches. Box and plane zones are specified in the **RDVBoxZoneFilter** and **RDVPlaneZoneFilter** forms delivered with Teamcenter. Create zones by using the forms to define the dimensions, location, and orientation of the zone.

Zones appear as lines in the product structure. Save zone forms in Structure Manager, after which you can view these zones in the **Configure Filter** window in Design Context, using them to further filter appearance set searches.

> Note:
>
> You can search for components by zone, and then select the installation assemblies of all components in that zone. If you choose **Edit→Copy**, you can copy the selected installation assemblies and paste them into Structure Manager as a private assembly.

When creating zones, you define the coordinates of the boxes and planes, if applicable, as described in *Define zone dimensions*.

Create box and plane zones

Zones are created in the context of a product context. To create box or plane zones in Teamcenter, complete steps 1 and 2 in *Configure work part appearances*, then do the following:

1. In the **Configure Work Part Context** window, choose **File→New→Zones**, and Teamcenter displays the **New Zone** dialog box.

2. Click the **RDVBoxZoneFilter** or **RDVPlaneZoneFilter** icon in the left column of the **New Zone** dialog box to create a new box zone or plane zone, respectively.

   If the desired zone option is not displaying in the left column, click **More...**.

3. Type a name and description in the **Name** and **Description** boxes, then click **OK**. Teamcenter creates a new zone form whose coordinates have not yet been defined; it is not yet saved to the database.

4. In Structure Manager, select the zone you just created. The zone displays at the bottom of the assembly whose product context you selected in step 1 of *Configure work part appearances*.

5. Click the **Properties** button in the toolbar and Teamcenter displays the **GDE Line Properties** dialog box.

6. In the **GDE Line Properties** dialog box, click the link next to the **Item/Revision/GDE Object:** entry. Teamcenter displays the **Properties** dialog box containing the zone's properties.

7. Use the **Properties** dialog box to define the coordinates of the box or plane zone, using the mathematical formulas explained in *Define zone dimensions*.

   You must enter data in every box. If necessary, overwrite the default **0.00000000** with **0.0**.

8. In the **Properties** dialog box, click **OK** and Teamcenter closes the dialog box. The zone coordinates are now defined and the zone is saved to the database.

9. In the **GDE Line Properties** dialog box, click **OK** and Teamcenter closes the dialog box.

10. Click **OK** and Teamcenter closes the zone's **Properties** dialog box.

11. Click **Save** on the Structure Manager toolbar and Teamcenter saves the zone form to the database.

Once the form data is saved to the database, you can use the zone data in Design Context to filter searches. See step 3 of *Configure work part appearances*.

Define zone dimensions

Define zone dimensions

Define zone dimensions

Box and plane zones filter appearance set searches.

1. Define the dimensions, location, and orientation of a zone. Enter the dimensions in the same unit of measure (metric or imperial) as used in the NX design to allow NX to synchronize the assembly units to Teamcenter; do not mix units.

   > Tip:
   >
   > The factor to scale assembly units to meters is available from the **assy_units** property of BOM view revisions. If you create an assembly from the metric seed part, the unit scaling factor in the **assy_units** property of BOM view revisions is 0.001. In this case, a value of **1** means 0.001 meters.

   > Note:
   >
   > Older NX assemblies or CAD data from other CAD systems determine the unit scaling factor from the **PS_assume_legacy_transform_units** preference. If **PS_assume_legacy_transform_units** is set to **INCHES**, a value of **1** means 0.0254 meters. If **PS_assume_legacy_transform_units** is set to any other value, **1** means 0.001 meters.

For example, if you want to create a plane zone that is parallel to the XY plane (the *floor* plane) and is 2 feet above the ground, you must first convert **2 feet** into assembly coordinates. If the assembly coordinates are **MILLIMETERS**, the distance above ground is therefore **2 * 25.4 mm = 50.8mm** or simply **50.8**.

2. Specify the direction that is perpendicular to the desired plane—in the previous example, the XY or floor plane. You have two options:

```
{ 0.0, 0.0, 1.0 }
```

or

```
{ 0.0, 0.0, -1.0 }
```

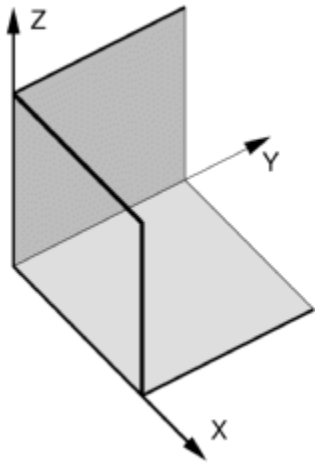
Choose the appropriate option depending on whether you want to search for components above or below the plane. In the example, *above* means *on the side of the plane to which the normal vector points*. If *above* means towards the sky, you specify the normal vector as **{ 0.0, 0.0, 1.0 }**.

Defining box zones

You define box zones with the following parameters:

- Coordinates of a base point (x, y, z coordinates). This defines a corner of the box in 3D.
- Each length as a 3D vector with x, y, and z coordinates. Each 3D vector must have at least one coordinate not equal to 0.0. None of the three vectors may be parallel to any of the other vectors (*linear independence*) For example, you may have a box that is aligned with the X, Y, and Z directions of the coordinate system. If the box is X units wide, Y units deep, and Z units high, it has the following edge vectors: **(X, 0.0, 0.0) (0.0, Y, 0.0) (0.0, 0.0, Z)**.

The *right-hand* rule is a simple method to determine the sequence of axes in a Cartesian coordinate system. If the thumb, index finger, and middle finger of the right hand are held so that they form three right angles, the thumb indicates the X-axis, the index finger the Y-axis, and the middle finger the Z-axis.



If you are using cacheless search, the results obtained differ according to whether you enable TruShape data analysis, as follows.

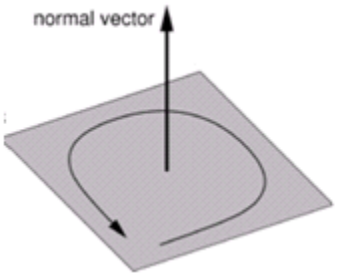
Search type	Result with TruShape analysis not enabled	Result with TruShape analysis enabled
Within box	Objects within *and* interfering with the box	Objects within the box
Interferes with box	Objects within *and* interfering with the box	Objects within *and* interfering with the box
Outside box	Objects outside *and* interfering with the box	Objects outside the box

Defining plane zones

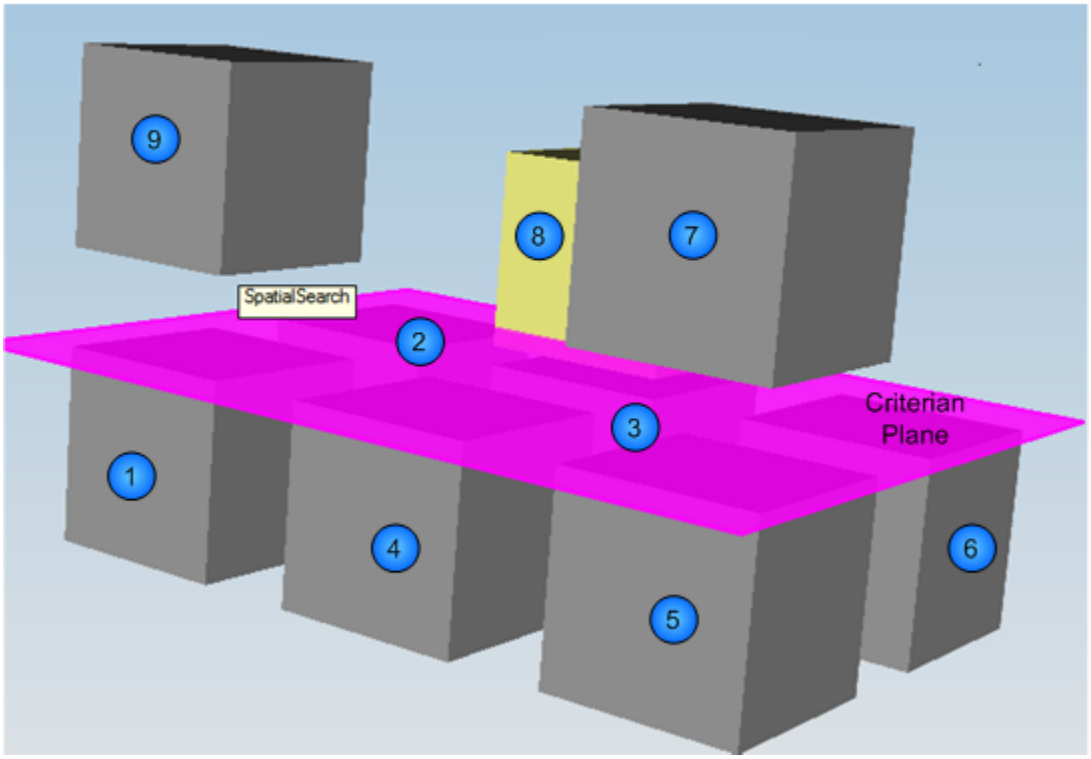
Typically, you search one or more planes zones to identify BOM lines that satisfy the search criteria. You can optionally combine a plane zone search with other search types, for example, a box zone search.

You define plane zones with the following parameters:

- Coordinates of a base point (x, y, z coordinates). This defines a point that is part of the plane. You can specify any point you want on the plane.
- Parameters of a normal vector that is perpendicular to the plane (lengths in x, y, z directions).



You can search for BOM lines that are above, below or intersect with the defined plane zone. The results in each case are shown in the following diagram.



Each search type returns the following results.

Search type	Objects found
Below plane	1, 2, 3, 4, 5, 6
Above plane	7, 9
Intersects plane	8

Note:

You can optionally perform plane zone searches with TruShape data analysis enabled. If you do not select this option, Teamcenter uses bounding box computations to perform the search. If you are using cacheless search, the results obtained differ according to whether you enable TruShape data analysis, as follows.

Search type	Result with TruShape analysis not enabled	Result with TruShape analysis enabled
Below plane	Objects below *and* intersecting the plane	Objects below the plane
Above plane	Objects above *and* intersecting the plane	Objects above the plane
Intersects plane	Objects below *and* intersecting the plane	Objects intersecting the plane

7. Working with parts in the defined context

Working with parts in the defined context

After you configure the context for the work parts that are the focus of your design or design review session, you can open the entire context in:

- NX
- The embedded viewer in Structure Manager or other rich client application
- Stand-alone Lifecycle Visualization

Alternatively, you can select certain parts in the third window and send them in the same way.

Load work parts and configure background parts

- Click the appropriate button in the Design Context toolbar to launch the application (for example, **Send to NX** or **Start/Open in Lifecycle Visualization**) and Teamcenter displays the context.

> Note:
>
> The applications to which you can send your Design Context data are determined by your administrator and are defined by Design Context interoperability preferences.

Export a context configuration to NX

You can export a fully configured assembly context to NX to use in a design session. To do this, choose the **Tools→Export Configured NX Assembly** menu command and Teamcenter displays the **Export Configured NX Assembly** dialog box.

1. Type the item or item revision name of the assembly to export in the **Item ID/Revision - Name** box.
2. Type the desired revision rule in the **Revision Rule** box.
3. Enter the name of the directory to which Teamcenter exports the assembly, or use the **Browse** button to locate the directory.
4. Optionally, select the **Checkout the target part datasets** check box to check out the target work part datasets. Regardless of whether this box is checked, the BOM view revision is also checked

out if the target part contains a **UGMASTER** or **UGPART** dataset. However if the target part is **UGALTREP** dataset, it does not check out the BOM view revision.

5. Optionally, select a naming convention for the exported file. Type a prefix in the **Add Prefix** box, which is added to the exported part names, or select **Auto Translate** to automatically translate the names of exported parts from database format to native format.

When all entries are correct, click **OK** and Teamcenter exports the assembly. You are notified if the export process is successful. If load errors of NX parts are encountered, the cloning utility ignores the problem parts and continues to the next part.

> Note:
>
> System administrators should not cancel checkouts resulting from this export. Doing so prevents modified parts from being imported back into the Teamcenter database.

> Note:
>
> Parts exported in this manner may be imported back into the Teamcenter database using the NX Integration **nxmgr_selective_export** utility.

8. Managing changes to the product

Managing changes to the product

You must keep your Design Context data valid if changes are made to the product design. Changes that require an update of the Design Context data are the addition of a new component and the replacement of a design.

Add a new component in the installation assembly

If a new component is added to an installation assembly and the absolute occurrence identifier matches the architecture element, Teamcenter creates a new occurrence in the structure, then registers named variant expressions (NVEs) and sets the variant condition on the occurrence.

When the product structure contains the installation assembly with the new occurrence, you can configure the product for the new component by applying an appropriate variant rule to the top level node.

Replace a design in a product

If you are using Platform Designer to help you manage the variability of your product, you can replace your CAD-designed solution in the product structure with another design using the Replace Design in Product wizard. This wizard assists you in finding the correct design based on the variability associated with the architecture breakdown element. The resulting design solution carries design usage properties such as shape, position, effectivity, or variant expressions.

1. Select the top-level architecture object under which you want to insert the component.

2. Click **Replace Design in Product**  .

   The **Replace Design in Product** dialog box appears.

3. Locate the product item revision by defining your search criteria in the search fields and clicking  .

4. Select the product item to which you want to add the component and click **Next**.

5. Select the product context to which you want to add the component from within the **Product Context** table and click **Next**.

6. Select the design item you want to add. Locate the item by entering either the name or component ID and clicking  . Alternatively, you can paste an item from the clipboard. If an item has many revisions, you can narrow the choice using **Revision display filter**.

7. Click **Next**.

8. Select the top-level architecture you want associated with the product context from the **Architecture** list. The system presents the architecture breakdown elements belonging to the architecture breakdown that you selected.

9. Select the architecture element for which the selected item revision is a solution. Locate the architecture element by entering its ID in the **Architecture Element ID** box and clicking  . Select the architecture element from within the search results in the bottom panel. Wildcards can be used in this search.

   The list associated with the **Architecture** field includes all architecture breakdowns that contain an architecture element matching the absolute occurrence identifier of the occurrence you want to replace . If the occurrence does not have an absolute occurrence identifier, the list includes all architecture breakdowns for the selected product context. If the absolute occurrence identifier was edited manually, Teamcenter matches the solution occurrence to replace to the architecture element containing an absolute occurrence with the appropriate absolute occurrence identifier.

   The list next to the **Architecture Element** box contains the absolute occurrence identifier of the occurrence to replace , if Teamcenter can find the corresponding architecture breakdown element. If you change the architecture element identifier to correspond to an architecture element that is not its parent of the pre-populated value, Teamcenter displays a warning message when you click **Next**. No error message is displayed if the **Architecture Element** box is blank.

   This field may be pre-populated if your site administrator has defined the *ArchitectureType* **_generic_id_mapping** preference.

10. Click **Next**.

11. In the top part of the panel, select a named variant expression (NVE) to define the variant condition for the component.

12. (Optional) In the bottom part of the panel, further define the conditions under which this solution is valid by selecting additional *splitting* NVEs. These are added to the existing NVEs to further qualify the design that you select.

13. Click **Finish** and the component data is added to the architecture breakdown.

    Your design solution is also added to the product structure and can be viewed in Design Context and Structure Manager.

9. Performing clearance analysis and proximity filtering

Performing clearance analysis and proximity filtering

You can use the product structure data in Design Context to perform clearance analysis in conjunction with the **ClearanceDB** feature in the stand-alone Lifecycle Visualization application or the embedded viewer in the rich client. To do this, you must install the integrated clearance management (ICM) system and configure the clearance database. To use this capability, you must have JT files in Teamcenter to represent all the applicable parts (the ICM can accept any pruned or full product structure provided it is represented by a JT file). Any parts for which JT data is not available are not included in the clearance analysis.

For information about ICM and the configuration of the clearance database, see ClearanceDB Administration.

You can perform clearance analysis in two modes:

- Real-time mode

  In this mode, you manually select target and background BOM lines in Design Context, then manually invoke a clearance analysis that Teamcenter performs in real time. Typically, you choose this option to make on-the-fly clearance calculations after design changes or prior to releasing a part. Teamcenter runs these calculations in the background, allowing you to continue with other work while you are waiting for the results. The results are stored in a structure context, allowing you to retrieve them in future sessions.

- Database query mode

  Your administrator configures a **cron** job that performs clearance analysis periodically as a background task, typically every night. The **cron** job invokes the **Clearance.exe** executable that performs the actual analysis. Clearance issues identified by the database query task are stored in the database and you can view them from Design Context. As there is a significant delay before you can view the results of a database query analysis, it is not suitable for real-time analysis of changes.

You can also reopen results that you have previously saved in a structure context object (SCO).

If you do not select particular BOM lines, Teamcenter considers *all* BOM lines in the target appearances in Design Context as target parts.

Perform clearance analysis

The general process for analyzing clearances is as follows:

1. Specify target parts, which are typically parts you own. You initially configure the structure by specifying variant rules and revision rules in Structure Manager. You can then use filters and selections in Design Context to identify target parts.

2. Find the applicable background, which are all parts within a selected proximity of the target parts.

3. Check target and background parts for clashes.

4. Perform real-time analysis or query the clearance database for issues.

5. Send violating part pairs to Structure Manager or Teamcenter lifecycle visualization mockup for further clearance analysis.

> Note:
>
> For more information about how to examine clearance issues in the viewer, see Performing Clearance analysis in *Working With 3D Models* in the Teamcenter lifecycle visualization help.

Perform database query mode analysis

Your administrator configures the scope of a database query analysis; you can only view the results. However, because Teamcenter runs a database query analysis against the entire product, you can identify clearance issues that a particular part may have with *any* other part in the product.

1. Choose **Tools→Clearance Analysis**.

   Teamcenter displays the **Clearance Analysis** dialog box.

2. Select **Query the database for existing results** and click **Start Analysis**.

   After a delay that depends on the quantity of stored data, Teamcenter displays the retrieved clearance issues in one of the **Issues** panes, as described in *Reviewing clearance issues*.

Request a real-time clearance analysis of selected lines

1. Optionally, select the product structure lines of interest in the third Design Context window. If you do not select any lines, Teamcenter includes all appearances in the third Design Context window in the analysis.

2. Choose **Tools→Clearance Analysis**.

   Teamcenter displays the **Clearance Analysis** dialog box.

3. Select **Perform Real-Time Clearance Analysis** and click **Start Analysis**.

A progress bar shows the percentage completion of the calculation and you can click **Cancel** above the progress bar to terminate the process if necessary. After a delay that depends on the scope of the query, Teamcenter displays the clearance issues in one of the **Issues** panes, as described in *Reviewing clearance issues*.

4. Click **OK** on the form.

   Optionally, Teamcenter may create an structure context object (SCO) in your **Newstuff** folder containing information about the session. You can open the SCO in a subsequent session to retrieve the selected product structure lines and analysis results. For details of how to retrieve data from an SCO, see *Open clearance results in an SCO*.

   > Note:
   >
   > Creation of an SCO is optional and occurs only if the **RDVCreateSCOForClearance** preference is set to **true**.

Open clearance results in an SCO

1. In your **Newstuff** folder, right-click the SCO containing the results required and choose **Send To→Design Context**.

   Teamcenter opens the results in the first Design Context window.

2. Click **Finish**.

   Teamcenter opens the third Design Context window.

   > Note:
   >
   > Click **Yes** on any confirmation dialog boxes that are displayed.

3. Choose **Tools→Clearance Analysis**.

   Teamcenter displays the **Clearance Analysis** dialog box.

4. Select **Display Cached Results from SCO** and click **Start Analysis**.

   After a delay that depends on the quantity of stored data, Teamcenter displays the retrieved clearance issues in one of the **Issues** panes, as described in *Reviewing clearance issues*.

Reviewing clearance issues

You can obtain clearance issue data in three ways:

- View the issues resulting from the most recent database query clearance analysis, as described in *Perform database query mode analysis*.
- Run a real-time clearance calculation manually, as described in *Request a real-time clearance analysis of selected lines*.
- Open stored clearance issue data from a SCO, as described in *Open clearance results in an SCO*.

In each case, Design Context presents the issues in the following panes:

- **Target-Target Issues**

  Shows clearance issues among all the appearances in the Design Context target appearances table in the third window. The specific issue between each pair of parts is listed.

- **Target-Background Issues**

  Shows clearance issues among target parts against all the appearances in the Design Context background appearances table in the third window. The specific issue between each pair of parts is listed.

- **Target-Other Issues**

In the **Issues** panes, Teamcenter displays each pair of parts that violate one of the defined clearance rules. All violations are shown in the context of the selected target part appearance or appearances. For each violation, the following information is listed:

- The full description of each part.
- **Result**

  The calculated violation with respect to the requirement.

- **Requirement**

  The required clearance.

- **Location**

  The x,y,z coordinates of the violation.

Communicating to Design Context

To view the associated parts in the embedded viewer, select one or more issues and click the **Communicate to Design Context** button.

Teamcenter highlights the relevant BOM lines in Design Context, allowing you to perform further analysis, as follows:

- View the parts associated with the selected issues in the embedded viewer.
- View the parts associated with the selected issues in stand-alone Teamcenter lifecycle visualization mockup by clicking the **Launch in Lifecycle Visualization** button  .
- Synchronize the BOM lines with Structure Manager by clicking the **Synchronize with Structure Manager** button  .

Send an issue to Workflow

You can send an issue to a predefined Workflow process to ensure the problem is resolved.

- Select a row in one of the **Issues** panes and click the **Start Workflow** button.

  Teamcenter creates an engineering change item for the selected issue and submits it to the Workflow process. The engineering change item includes the following information:

  - The rule that was violated.
  - The parts that violated the rule. (They are added to the **Problem Items** folder.)
  - The product where the violation occurs.
  - The configuration of the product where the violation occurs.
  - The lowest common ancestor of the two parts. (They are added to the **Affected Items** folder.)
  - The top-level revision item of the product and configuration context object. (They are added to the **Reference** folder.)