



TEAMCENTER

Resource Manager on Rich Client

Teamcenter 2412

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1. Resource Manager topics

About Resource Manager		
About Resource Manager	Getting started	
<ul style="list-style-type: none"> • What is Resource Manager? • Basic setup 	<ul style="list-style-type: none"> • Resource Manager interface, commands, and buttons • Working with Resource Manager views • Displaying Resource Manager data • Viewing images and datasets • Searching for resources 	
Resource Manager processes		
Creating resources	Adding vendor catalogs	Creating , viewing, and editing manufacturing documentation
<ul style="list-style-type: none"> • Creating resources and adding value for downstream applications • Creating new resources based on existing ones • Enabling, creating, and opening tool setup sheets • Automatically assembling resources in Resource Manager • Leveraging MRL resources in NX CAM 	<ul style="list-style-type: none"> • Using the Manufacturing Resource Library • Using a tool vendor catalog • Import GTC Package with 3D and mapping • Import DIN Package • Import tool vendor product data • Import vendor catalog items with connection codes • Import vendor 3D models • Cloud access to the Generic Tool Catalog in Resource Manager • Understanding the linking mechanism for vendor data 	<ul style="list-style-type: none"> • About manufacturing documentation • Teamcenter Publish
Administration		
Administering Resource Manager	Administering Resource Manager continued	
	<ul style="list-style-type: none"> • Setting up and customizing setup sheets 	

- **Setting access rights**
- **Install NX templates**
- **Store the machining data library in Teamcenter**
- **Synchronize attribute values from NX to Teamcenter**
- **NX/Teamcenter attribute mapping file**
- **Enable graphics creation**
- **Enable tool retrieval from Teamcenter to NX**
- **Setting up site-specific properties to search resources by site**
- **Setting up the NX search dialogs to include new classification classes and attributes**
- **Manually extend the Classification hierarchy with a new class**
- **Structure Manager alignment**
- **Preferences required for the Manufacturing Resource Library**
- **Part Manufacturing BMIDE template**

2. About Resource Manager

What is Resource Manager?

Resource Manager lets NC programmers, process planners, and tool designers store, modify, retrieve, and manage resource data to create:

- Fixture assemblies, machine setups, and NC programs for machine tools, robots, and measuring devices.
- Tool assemblies that combine machine tools and robots with their devices.
- Setup sheets for the complete operation.

Resource data can include classification information, Teamcenter items, and additional data such as associated imported files and links to context information. You define the data using hierarchically organized class definitions. Each class defines a set of values, or attributes, that typically specify characteristics of an object.

Example:

The diameter, weight, and length of a tool.

Use class hierarchies to organize and search for your resources as a hierarchically organized collection that is independent of product structure.

- Resource Management
 - Tools
 - Assemblies
 - ◇ Turning Tools
 - ◇ Milling Tools
 - ◇ Drilling Tools

Basic concepts

Use Resource Manager to:

- View resource components and their associated attributes using a variety of *views* or *perspectives*.

- Create detailed classification structures of manufacturing data such as tools, machines, fixtures, assemblies, and components.
- Create structured resource assemblies used in your manufacturing tasks, propagate component attributes to your resource assembly, assign workflows to resources, and attach notes and graphics to resources.
- Classify and search for resource assemblies and resources using the Teamcenter quick search, **Object ID** search, or Classification Search Dialog.
- Create and edit manufacturing documentation to support rich work instructions and collaboration between departments.

Basic setup

If you want to classify your resources, your classification administrator must have already created a classification hierarchy in the Classification Admin application.

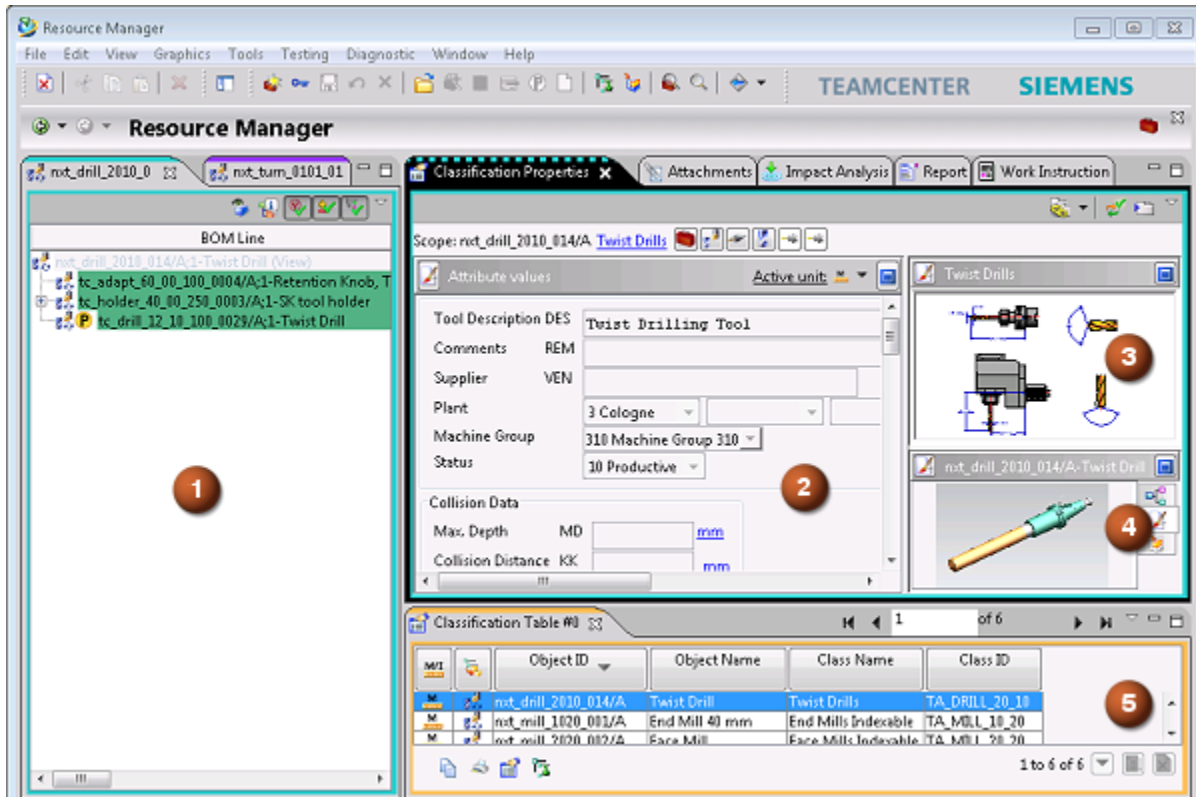
If you have trouble accessing Resource Manager, see your system administrator; it may be a licensing issue.

To view formats other than GIF and JPG in the instance viewer, you must install Lifecycle Visualization.

3. Getting started

Resource Manager interface, commands, and buttons

Resource Manager interface



- 1 **Resource view** Displays a tree hierarchy representing the logical built-up structure of the assembly. The *root node* represents the assembly itself. The *subnodes* are links to the components that make up the assembly. All node names contain the object ID and, optionally, a textual description that you can use to identify the object.
- 2 **Classification Properties view** Displays attributes and values of the component selected in the **Resource** view or the **Classification Table** view.
- 3 **Class viewer** Displays a class image of the selected object's class, if one is attached to the class.
- 4 **Instance viewer** Displays an image or other document associated with the selected instance.
- 5 **Classification Table view** Displays multiple search results in tabular form.

Resource Manager menu commands

Menu command	Purpose
File→New→Resource	Creates the root node for a new resource in the Resource view.
File→New→Dataset	Creates a new dataset and attaches it to the selected object in the resource structure. You can see the new dataset in the Attachment view.
File→New→Workflow Process	Creates a new workflow process with attachments and an associated process template and allows you to assign tasks to specific users.
File→Search→Search by Classification Dialog	Opens the Classification Search Dialog to help you find a classified resource. Results are displayed in the Table view.
File→Search→Search by ID	Runs an object ID search that searches through the entire database for the specified resource and opens the results in the Classification Table view.
File→Close	Closes the Resource Manager application.
File→Open	Opens the selected object.
File→Save As	Saves the selected item revision as a new revision with a new name and a revision ID.
File→Revise	Creates a new item revision of the selected line.
File→Revise (incl. Super-Assemblies)	Revises a component including all latest revisions of super-assemblies containing that component.
File→Unload All	Closes all structure panes and unloads them from Resource Manager.
File→Exit	Closes the Teamcenter application.
Edit→Cut	Cuts the selected lines from the resource and places them on the clipboard.
Edit→Copy	Copies the currently selected resource to the clipboard.
Edit→Paste	Pastes the contents of the clipboard underneath the currently selected resource.
Edit→Delete	Deletes the current resource from the database.
Edit→User Setting	Changes your group, role, or volume assignments, and your application logging and journaling options.
Edit→Options	Changes user interface settings that affect all applications.

Menu command	Purpose
Edit→Edit Resource	Activates edit mode so you can make changes to the current resource.
Edit→Save Resource	Saves the current resource.
Edit→Cancel Edit	Returns the display to show mode by canceling edit mode and deleting all changes made in the edit session.
Edit→Delete ICO for current resource	Deletes the classification object from the selected resource. This does not delete the item.
Edit→Add Classified Component	Opens the Classification Search Dialog so you can add a new component to the current resource.
Edit→Guided Component Search	Runs a guided component search.
Edit→Remove	Removes the current line from the resource. This does not remove the component from the database.
View→Show/Hide CSYS Lines	Displays and hides the coordinate system lines in the structure.
View→Show GCS Connection Points	Displays and hides the plug and socket symbols from which you can start a guided component search. You can choose to display all connection points or only those that are not yet connected to a component.
View→Properties	Views and edits all properties of the selected line.
View→Notes	Views and edits all notes for the selected line.
View→Pack	Packs the selected lines so that all lines with the same item revision and find number are displayed as a single line. The actual quantity of lines is appended to the node.
View→Unpack	Unpacks the selected packed lines so that they are displayed as separate lines, one for each occurrence.
View→Propagation Start Point	<p>Assigns a propagation start point to the currently selected resource. Attributes are propagated from the propagation start point up the hierarchy to the root of the structure. Only one propagation start point is allowed per structure.</p> <p>If you choose this menu command a second time, the propagation start point is removed.</p>
View→Refresh Window	Reads information from the database and updates the information displayed in the workspace area.
View→Expand Below	Expands the complete substructure below the selected lines.

Menu command	Purpose
View→Collapse Below	Collapses the complete substructure below the selected lines (hides all child lines).
Tools→Project→Assign	Assigns the selected structure to a predefined project.
Tools→Project→Remove	Removes the selected structure from a project to which it is assigned.
Tools→Revision Rule→View/Set Current	Views or sets the revision rule for the currently displayed structure.
Tools→Revision Rule→Set Date/Unit/End Item	Sets the date, unit number, or end item to configure the structure, if the current rule allows.
Tools→Revision Rule→Set Override Folder	Sets an override folder to override item revisions that would otherwise be selected by other criteria.
Tools→Revision Rule→Modify	Modifies the current revision rule and applies the modified rule to the current structure. You can save the change if you have write access to the original rule.
Tools→Revision Rule→Create/Edit	Creates or edits a revision rule.
Tools→Import	Imports objects into the database using PLM XML format.
Tools→Export	Exports the selected structure and its attachments in PLM XML format to a selected export directory. You must choose the appropriate transfer mode for the destination system.
Tools→Create Graphics	Creates graphics based on a part family template or Tcl macro.
Tools→Import catalog 3D model for current resource	Imports a STEP 3D model from a vendor tool catalog.
Tools→Create/Update NX Tool Assembly Part File	Creates or updates the NX tool assembly part file after you create a tool assembly.
Tools→Map ICO	Maps a resource from one class to another.
Tools→Create Item for ICO	Creates an item for a classification object. Choosing this menu command automatically classifies the new item.
Tools→Classify Item	Classifies the item of the selected line, if it is not already classified.
Tools→Classify Item Revision	Classifies the selected item revision, if it is not already classified.

Menu command	Purpose
<p>Note:</p> <p>The Graphics menu appears only if you open the Graphics view.</p>	
Graphics → Selection → Select All	Selects all the objects displayed in the viewer.
Graphics → Selection → Select None	Clears any objects currently selected in the viewer.
Graphics → Selection → Reverse Selection	Selects all objects not selected in the viewer, while simultaneously unselecting any objects currently selected in the viewer.
Graphics → Visibility → View Selected	Blanks and unblanks objects loaded in the viewer.
<p>Note:</p> <p>The term <i>loaded</i> refers to an object whose JT file has been loaded in the viewer. A loaded object may or may not be visible, depending on whether it is blanked or unblanked.</p>	
Graphics → Visibility → Blank Selected	Makes any objects selected in the viewer invisible.
Graphics → Visibility → Blank All	Makes all objects in the viewer invisible.
Graphics → Visibility → Unblank All	Makes all objects loaded in the viewer visible.
Graphics → Visibility → Reverse Blank All	Makes any currently visible objects invisible, while simultaneously making visible any loaded objects that are currently invisible.
Graphics → Visibility → Unload Selected	Unloads any objects selected in the viewer.
Graphics → Edit Color/Translucency	Modifies the color, transparency, and shine of selected objects in the viewer. These settings only apply to the currently loaded objects. The next time the edited object is loaded, the settings revert to the default color and translucency.
Graphics → Insert	Allows you to insert JT, stereolithography (.stl) and VRML (.wrl) files as reference graphics.
Graphics → Insert → Insert from File	Inserts a reference graphic from the operating system, using the Open by Name dialog box.
Graphics → Insert → Insert from Clipboard	Inserts a reference graphics object from the clipboard.











Menu command	Purpose
	<div style="border: 1px solid black; padding: 5px;"> <p>Note:</p> <p>Only item revisions (not items) can be displayed as reference graphics.</p> </div>
Graphics→Views→View Control	Creates, edits, and displays standard views, using the Rotate and Standard Views dialog boxes.
Graphics→Draw Children	Displays the components of a subassembly. You can also access this command if you right-click in the BOM.
Graphics→Show Subcomponents	Breaks down solids in the corresponding monolithic JT files and make the subcomponents independently controllable. This function is available only for leaf and unpacked BOM line nodes.
Graphics→Hide Subcomponents	Removes all merged subcomponents and the one-level tree from the tree. You can load or unload the monolithic JT file related to this structure line node in the normal way.
Graphics→Export 3D File	Exports the current visible objects to a STEP or VRML file.
Graphics→Replace JT File	Replaces the JT file that represents an item revision. You can choose a replacement file from one of the JT files associated with the current structure line item.
Graphics→Clearance→ Preferences	Sets clearance analysis and preferences.
Graphics→Clearance→Toggle Results Window	Shows clearance results in a separate window.
Graphics→Performance	Sets rendering, culling, and general performance preferences.
Graphics→Preferences	Sets clearance analysis and general viewer preferences.
















The following menu commands are shown in the view menu of the primary resource view.

Menu command	Purpose
Show Graphics	Opens the Graphics view that displays visualization data associated with the selected structure. The Graphics view remains associated with the primary view from which it is opened.
Show Information	Displays configuration information about the open structure.



Menu command	Purpose
View/Set Current Revision Rule	Views or sets the revision rule on the currently selected line.
Set In Context	Enables you to set the currently selected structure as the context for additional information set on child objects. For example, you can add an occurrence note to a child line in the structure that is only pertinent in the context of the currently selected structure line.
Unload	Unloads the current structure.
Show/Hide CSYS Lines	Displays and hides the coordinate system lines in the structure.
Show/Hide GCS Connection Points	Displays and hides the plug and socket symbols from which you can start a guided component search. You can choose to display all connection points or only those that are not yet connected to a component.
Show Suppressed Occurrences	Displays and hides lines that are hidden by variant settings, configuration, or explicitly setting the bl_occ_is_suppressed property.

Resource Manager buttons


Button	Description
	If enabled, allows you to terminate the current operation without closing Resource Manager or losing data.
	Cuts the selected lines from the resource and places them on the clipboard.
	Copies the currently selected resource to the clipboard.
	Pastes the contents of the clipboard underneath the currently selected resource.
	Deletes the current resource from the database.
	Creates new resource.
	Activates edit mode so you can make changes to the current resource.
	Saves the current resource.
	Returns the display to show mode by canceling edit mode and deleting all changes made in the edit session.
	Deletes the classification object from the selected resource. This does not delete the item.

Button	Description
	Classifies the item of the selected line, if it is not already classified.
	Classifies the selected item revision, if it is not already classified. Note
	Opens the selected resource in new Resource view.
	Opens the Classification Search Dialog so you can add a new component to the current resource.
	Runs a guided component search.
	Removes current line in resource. This does not remove the component from the database.
	Assigns a propagation start point to the currently selected resource. Attributes are propagated from the propagation start point up the hierarchy to the root of the structure. Only one propagation start point is allowed per structure.
	Adds notes to the currently selected resource.
	Maps a resource from one class to another.
	Creates graphics based on part family template or Tcl macro.
	Imports 3D data from a vendor catalog for the currently selected component.
	Creates or updates the NX tool assembly part file after you create a tool assembly.
	Opens the Classification Search Dialog to help you find a classified resource.
	Runs an object ID search that searches through the entire database for the specified resource and opens the results in the Classification Table view.
	Lists the most recently used resources.

The following buttons are found in each **Resource** view.

	Opens the Graphics view to display visualization data associated with the selected resource.
	Displays configuration information about the open resource.

The following buttons are found in the **Classification Table** view.

	Assists you in moving back and forth between search results in the Classification Table view. You can either move using the navigation buttons or type a value in the box.
---	---

Classification Search Dialog buttons

Button

Description



Opens the **Classified Object Type** dialog box where you can filter your search to only include classifying objects, non-classifying objects, or objects of a specific type.



Searches the hierarchy tree for the class that you enter in the adjoining box.

Active unit:

Sets the active unit of measurement. If you are paging through search results, this button indicates if the currently displayed ICO is saved in a different unit than is active. Click this button to convert the ICO attribute values between systems of measurement. This button has several states:

- 

The attributes are displayed and stored in a metric system of measurement.

- 

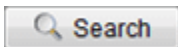
The attributes are displayed in a metric system of measurement but are stored in a nonmetric system and are converted for display.

- 

The attributes are displayed and stored in a nonmetric system of measurement.

- 

The attributes are displayed in a nonmetric system of measurement but are stored in a metric system and are converted for display.



Searches for all class members in the class selected in the hierarchy tree.



Removes all entries from the attribute boxes on the **Properties** tab.



Displays only the attributes relevant to the selected applications.














Highlights attributes relevant to the selected applications in bold and displays the application symbol beside the attribute.



Displays attributes relevant to NX CAM.



Changes the search scope to either search in the selected class and all its children in the hierarchy or in the selected class only.

Button	Description
	Specifies in which unit of measure you search. You can search in one of the following: <ul style="list-style-type: none"> • Classes containing only the currently active system of measure. • Classes containing both metric and nonmetric values.
	Maps the ICOs from one class to a different class.
	Searches for the corresponding class in a source structure. Use this button when you are filling a target (for example, customer) hierarchy with components from a source (for example, catalog) hierarchy.
	Imports 3D data from a vendor catalog for the currently selected component.
	Copies the data selected in the table to the clipboard.
	Sends the table data to the printer.
	Helps you navigate the search results through paging forward or backward or jumping to the beginning or end of the results.
	Creates graphics based on part family template or Tcl macro.
	Loads the next page of search results.
	Loads all the search results
	Stops loading the search results.

Working with Resource Manager views

Overview of views in Resource Manager

Resource Manager allows you to view a resource structure and all the attributes associated to each line in the structure. You can open multiple resources simultaneously. Teamcenter presents Resource Manager data in views, each view providing its own specific way of managing or modifying the data. Use the views to the right of the resource view to display additional information about the open resources and their components. There are *primary* views and *secondary* views.

- A primary view contains data for which details are displayed in secondary views. Resource Manager displays two types of primary views: the **Resource** view and the **Classification Table** view.
- A secondary view shows specific types of data related to the primary resource view with which it is associated. It can, depending on your needs, change its content if you select a new resource view.


In addition to primary and secondary views, you can use the **Graphics** view to display any visualization data associated with the structure. The **Graphics** view is closely associated with the primary view from which you open it.

You can open multiple structures simultaneously. You can undock views and move them to a convenient position. You can open the same structure multiple times in different views. To assist you in tracking which views are associated, primary views and secondary views are color-coded. Primary and associated secondary views have the same framed color. In addition, Teamcenter frames the active view (the one in which you are currently working) in black.

Each view has a toolbar with buttons to execute the common tasks pertaining to that particular view. The view menu contains additional menu commands pertaining to that view. More complex tasks or tasks pertaining to several views simultaneously are found on the main application toolbar. The views have some features in common, such as the ability to change the displayed columns or filtering the results. You find these features in the view menu.


Understanding selection synchronization

If you select an object in the active view, the selections in the other views change as follows:

- Primary views can change their inner selection (highlight) to suit the active selection. This does not happen if the selection does not correspond to any object in the view.
- Secondary views can change their inner selection (highlight) to suit the active section when that selection occurs in a primary view or in another secondary view that is associated to the same primary view. The following situations can cause them not to do so:
 - The selection does not correspond to any object in the view.
 - The **Disable response to selections** button  is available.

Open the Graphics view

The **Graphics** view is associated with the structure view from which you open it. You cannot change this association.

- In a structure view, click .


Teamcenter opens the **Graphics** view displaying the structure. The **Graphics** menu is displayed in the main menu bar if there is at least one **Graphics** view open.

- When you close the primary view from which you opened the **Graphics** view, the **Graphics** view also closes.
- If you unload data from the primary view, the **Graphics** view remains open, but empty.

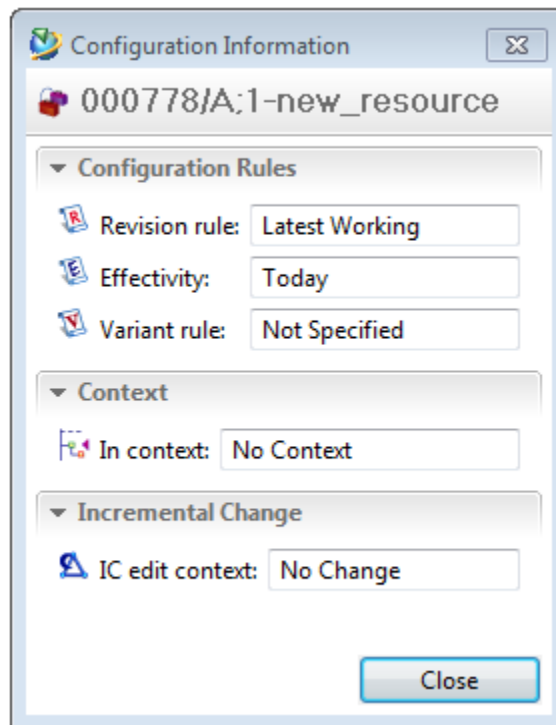
- If you load a new structure into the primary view, the **Graphics** view is available, but the structure is only loaded when you select a structure to view.

Display configuration information for the resource view

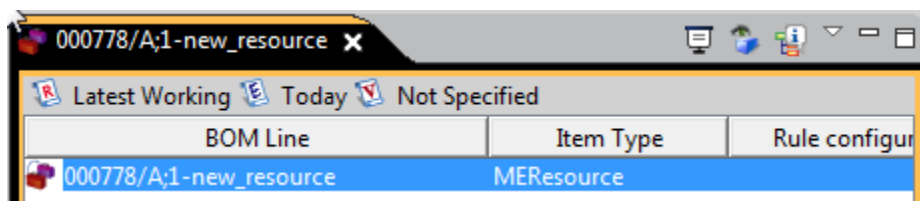
Do one of the following:

- Click  in a primary structure view to see configuration information about that structure.

The **Configuration Information** dialog box displays the following:



- Ensure that the **MEShowConfigurationHeader** preference is set to **true**. This displays the current revision rule, effectivity, and variant rule at the top of the structure view.



Working with the Classification Table view

The **Classification Table** view displays the results of the object ID search in tabular form. You can navigate through the search results and more details about each instance is displayed in other views.

- Click a line in the table or move from line to line with the arrows to view the properties in the **Classification Properties** view.
- Double-click a line to open the resource in the **Resource** view. Only classifying instances can be opened in the **Resource** view.

Resource Manager views and tabs

- The **Resource** view displays the assembly structure of the currently open resource. This is a primary view. It contains one configurable structure. You can open multiple resources in separate **Resource** views.
- The **Classification Properties** view displays:

- Textual attributes and values of the selected component.

If the selected component is the root node of the resource structure, the attributes assigned to the assembly class are displayed in this view. Any attributes that are populated to the assembly level from individual components within the structure are displayed with italic font. The values that are input into these attributes can vary depending on the location of a propagation start point within the structure.

For propagated attribute values to be available, your administrator must mark the values as **Propagated** when creating the assembly class in the Classification Admin application.

- A class image of the selected object's class, if one is attached to the class. This image is displayed in the upper-right corner of the view in the *class viewer*. It is usually a schematic drawing of the objects in the selected class.
- An image or other document associated with the selected instance. This image or document is displayed in the lower-right corner of the view in the *instance viewer*. The instance viewer displays documents attached to the classified workspace object of the selected ICO, such as BOM assemblies, monolithic JT files, Word documents, or GIF images. If the attached image is a JT file, you can manipulate the image in the instance image window using rotate, pan, zoom, and other functions.

Note:

For the viewer to work, you must have the Teamcenter Visualization for Rich Client software installed. If you have not installed this viewer, only image files (for example, JPG or GIF) are displayed in the top viewer window.

The information displayed in the **Classification Properties** view is determined by the type of object selected in the assembly structure displayed in the **Resource** view to which the **Classification Properties** view is associated.

- If you select a component, all attributes of the component are shown.

- If you select the root node, the attributes of the assembly are shown. For assemblies, these attributes can consist of:
 - Base attributes assigned to the assembly.
 - Propagated attributes that have been propagated to the assembly from components within the assembly. Propagated attributes are displayed in italic.
- The **Classification Table** view presents the results of an Object ID search or multiple results from the Classification Search Dialog in tabular format. You can page through these results, or double-click a resource to open it in a **Resource** view.
- The **Attachments** view displays any revisions or attachments of the resource object currently selected. This view contains the same revision and attachment information that is available in the My Teamcenter application.
- The **Impact Analysis** view identifies any other database objects that reference the selected resource object.

This view also displays any assemblies in which the selected object appears.

- The **Report** view allows you to create reports with Report Generator.
- The **Work Instructions** view allows you to create manufacturing documents such as work instructions or product manuals and to view and edit existing documents.


Additionally, the Classification Search Dialog contains the following tabs and panes:

- The **Hierarchy** pane displays the classification hierarchy.
- The **Graphical Browser** tab shows a hierarchy of the tree structure symbols and allows you to enlarge them easily with a slider. You can switch back and forth between the tree structure in the **Hierarchy** tab and the graphical browser.
- The **Search** tab allows you to enter search criteria to help find a required resource.
- The **Properties** tab allows you to enter search criteria to help find a required resource.


Displaying Resource Manager data

Displaying the hierarchy in the Classification Search Dialog

The classification hierarchy shows a tree structure of nested classes. It provides an overview of all classification classes contained in the database. These classes contain a compilation of attributes related to a group of objects.

1. Click **Search by Classification Dialog or ID**  to open a resource that already exists in the database.

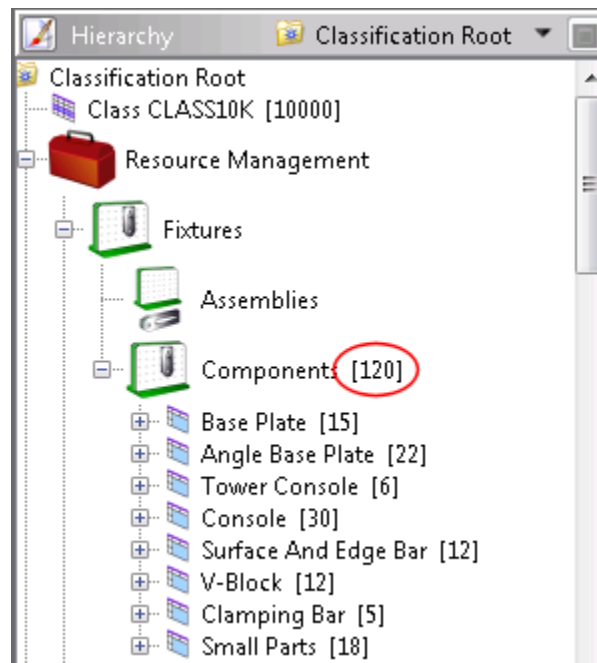
-or-

Click **Add component to the resource**  to add a component to an existing resource assembly.

2. Double-click the root node of the hierarchy.
3. Move down the hierarchy by clicking the plus sign (+) in front of the name of the class you want to open. You can right-click any class and choose **Expand All** to open all child classes.

Change the display of the hierarchy

When you first expand the classification hierarchy, the class names include a number in brackets beside them. This number represents the number of instances contained within that class and all its subclasses.



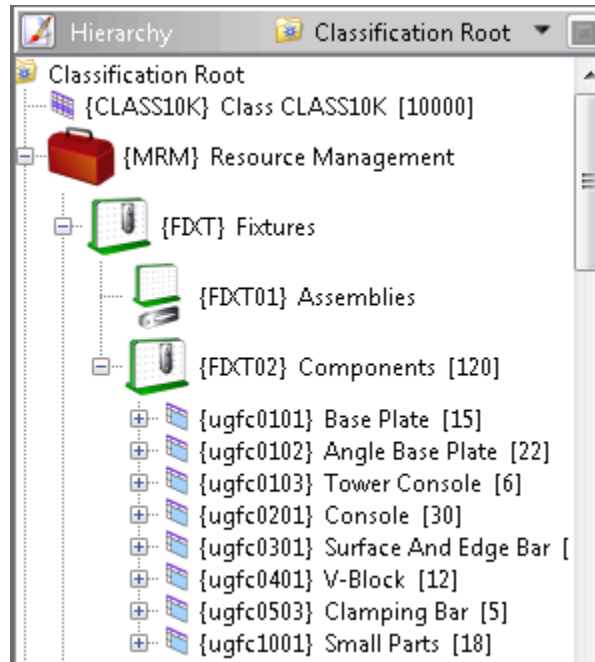
The number of instances displayed represents all instances in the database, including both metric and nonmetric ICOs, as well as ICOs to which you do not have read access.

- If you search for only metric or only nonmetric instances, the number of matches is smaller if your database contains instances in both systems of measurement.
- Teamcenter does not check for read access to ICOs until you perform a search. For this reason, a class can display 100 instances in the hierarchy, but when you search the class, you find only 80 matches. This is because you do not have read access to the other 20 ICOs.

You can specify when the ICOs are filtered for read access in the `ICS_search_filter_by_read_access` preference.

You can additionally or alternatively display the groups and classes.

- Right-click the root node of the classification hierarchy and choose **Show Node IDs**.



To turn off the display of the instance count, right-click the root node of the classification hierarchy and choose **Show Instance Count**.

Display information in the Properties pane

You only see information in the **Properties** pane once you select a class in the hierarchy.

- Double-click a storage class in the hierarchy.
- Right-click a class from the hierarchy and choose **Select**.

Display information in the Table pane

The **Table** tab is not available until you select a class in the hierarchy and search for ICOs in the **Properties** pane.

1. Double-click a storage class in the hierarchy.
2. Right-click a class from the hierarchy and choose **Select**.

3. Search for the desired ICOs.
4. Click the **Table** tab.

Teamcenter lists the first five matches in the **Table** pane.

Working with measurement units

Measurement units overview

Classification classes can contain only metric ICOs, only nonmetric ICOs, or both. If your Classification administrator specifies that a class can contain both, you can search for an object using either of the unit systems you define, and the search mechanism finds a match, regardless of the unit in which the object is stored. For example, if you search for a bolt with a width of 5/8th inches, the classification search mechanism finds a bolt that is stored with a width of 1.6 centimeters.

Teamcenter displays the unit of an attribute value as a hyperlink beside the value. You can change this unit for viewing or searching purposes. If a unit is not hyperlinked, Teamcenter cannot find the unit in the **Unit Definition** class. If the attribute is not yet used in any classes, the classification administrator can change the unit in the attribute dictionary or add the new unit definition to the **Unit Definition** class.

The unit in which you save an ICO is referred to as the *storage unit*. Teamcenter displays the storage unit in bold type in the list of available units.

When working with legacy data, Classification searches for the object ID of the unit or, if it does not find that, the display name. If it finds a match, then it displays the hyperlinked unit label. If Teamcenter does not find a match, it displays the legacy unit label that you cannot change.

Tip:

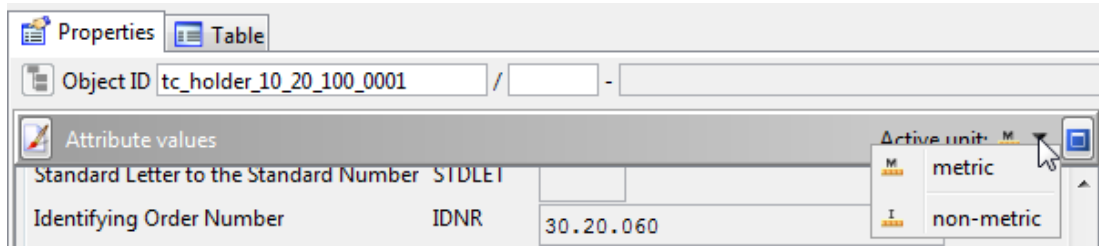
Type the unit in the attribute value box along with the value. Teamcenter changes the unit for you automatically.

If your administrator enables optimization for attribute values, these are displayed using the most readable unit with the least number of leading or trailing zeros.

Change the active measurement system

When displaying ICOs in the **Properties** pane (view mode), you can change the measurement system that is displayed.

- Click the **Active unit** button and select the measurement system.

**Note:**

You can do this only if your administrator has specified that the class can contain both metric and nonmetric values.

Change the displayed units of measure

You can change the displayed unit of measure; Teamcenter converts these values for you. Teamcenter distinguishes internally between **show mode and edit mode** during this activity. You can only change the displayed units of measure in show mode. If you are in edit mode, Teamcenter changes the value you enter.

- Click the hyperlinked measurement unit and select a new unit.

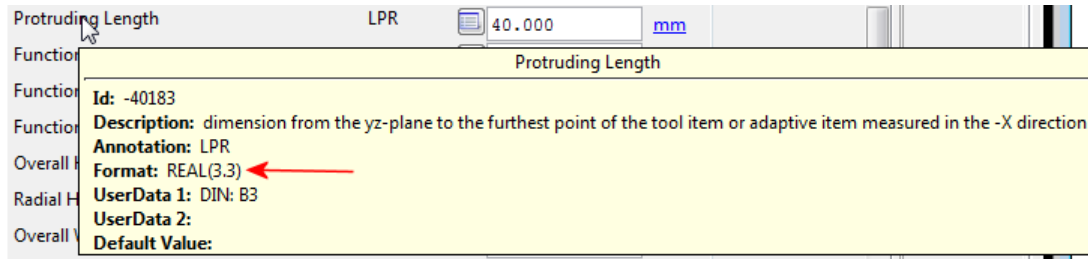
Protruding Length	LPR	40.000	mm	mm
Functional Length	LF	22.000	mm	cm
Functional Height	HF	20.000	mm	m
Functional Width	WF		mm	km

- If you are in show mode, Teamcenter immediately converts the unit for display purposes.

Protruding Length	LPR	0.040	m	
Functional Length	LF	22.000	mm	
Functional Height	HF	20.000	mm	
Functional Width	WF		mm	

- If you are in edit mode, Teamcenter assumes you want to change the attribute value. It first internally converts the value you enter to the storage unit, and then converts to the desired unit.

If the storage unit is formatted in such a way that this conversion cannot take place (for example, not enough decimal places), Teamcenter cannot continue with this conversion and an error message occurs. If, for example, you are editing the following value, and want to enter the value in **m**, not **mm**, you cannot simply change the unit from **mm** to **m** as in show mode.



If you attempt to do this, Teamcenter tries to convert 40 meters to the storage unit, which is millimeters. This results in a very large value of 40,000 millimeters. Because the **mm** storage unit specifies that this unit can only have three decimal places before and after the zero, Teamcenter cannot complete the conversion and displays the following error message:

```
The entered value 40 m (40000 mm) cannot be formatted with the REAL(3,3) format
because there are too many digits before the decimal point.
The attribute can have a value of 0 or a range between 0.001 and 999.999 mm.
Note:
The attribute's storage unit is mm. During conversion, values are first converted
to mm.
```

Instead, enter the value with the correct unit. In this case, that is **0.04m**.

Caution:

Teamcenter always converts between the metric and nonmetric formats that you specify in the attribute dictionary. If, during conversion, the converted value's number of digits is larger than the specified target format allows, Teamcenter truncates the excess digits and displays an erroneous value. For example, an attribute has a nonmetric format with **REAL(3.5)** and a metric format of **REAL(4.3)**. If you try to convert 622 inches to a metric value, the correct converted value is 15,800 millimeters. Teamcenter, however, truncates the converted value to 1580 to fit the defined format (**REAL(4.3)**).

If a class is set to **both** (metric and nonmetric), and if any of the attributes do not have a unit definition for both metric and nonmetric, Teamcenter uses the available unit for both unit systems. This behavior supports use cases where certain attributes may not have different metric and nonmetric units, such as time.

Viewing the Unit Definition class


The **Unit Definition** class contains all the units available for attribute definition in the Classification Admin application. Only an administrator should change this class.

Searching in multi-unit classes

If the active unit of measurement is metric, you can search for a nonmetric ICO using metric attribute values, and vice versa. Teamcenter converts the value to the other unit system and performs the search. When you do this, however, you must be aware of the following information.

For the search to find an ICO with a particular attribute value, the value must be an exact match. Because Teamcenter converts the value to the other unit system, be sure to enter enough digits after the decimal point to avoid rounding errors.

Make the panes larger or smaller

- Click **Maximize/Restore panel**  on the right side of the pane's title bar.

View the tree graphically

You can use a graphical browser to navigate through the classification hierarchy. This browser shows a hierarchy of the tree structure symbols and allows you to enlarge them easily with a slider. You can switch back and forth between the tree structure and the graphical browser. The class that is currently highlighted in the graphical browser is then highlighted in the tree and vice versa. If you select a class in the hierarchy tree, it is also selected in the graphical browser when you open it.

1. Turn on the graphical browser using the **ICS_enable_graphical_browser** preference.
2. In the hierarchy pane, click the **Graphical Browser** tab.
3. Navigate through the classes.

The graphical browser shows two sets of graphics. The top set, a horizontal list of graphics, is the hierarchy list. This represents the path you have taken down the classification tree from parent to child node. The second set of graphics represents all the members of the current class, that is, the last class shown in the hierarchy list. Leaf classes are displayed with a blue border around the graphic.

- To move one level down in the tree, click the graphic.
 - To move one level up the tree, click the second-to-the-last graphic in the list of graphics at the top.
 - To select a class, click the link below the graphic of the class you want to open. If the class you are selecting is a leaf node, clicking the link also selects it.
 - To move to any class in the hierarchy list, click the class.
 - To select a leaf class (a graphic with a blue border), click the class or click the link below the graphic.
4. Modify the graphic size by moving the slider at the right of the browser pane to the right to enlarge the graphics and moving it to the left to make them smaller.

Viewing attribute values

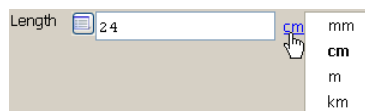
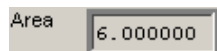
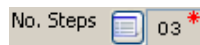
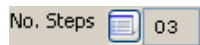
Attributes are placeholders for values that distinguish one instance of a class from another. For example, within the **Sheet Metal Screws** class, the **length**, **diameter**, and **thread** attributes are used to distinguish one sheet metal screw from another. Attributes and their values are displayed in the **Properties** pane.

In addition to the list of attributes that is displayed when you select a class, your administrator may have added custom attributes that are listed in a tool tip in the **Properties** pane.

There may be restrictions set by your administrator on what attribute values you can modify or what values you can enter. For example, an attribute value may not be modifiable because your administrator has set a default value, or you can only enter attributes between a certain range. In addition, the display of the values can be changed. For example, by modifying the **ICS_display_unformatted_numbers** preference, you can add or remove the leading zeros.

Teamcenter provides you visual aid to see the restrictions set on an attribute. If you are in edit mode, you may see the following indicators.

Symbol



Restriction

Attribute property is set to **Protected** or a default value is set to **Fixed**.

Attribute property is set to **Mandatory**.

Whether you can save an ICO without setting mandatory attribute values is controlled by the **ICS_force_mandatory_attribute_check** preference.

Attribute property is set to **Mandatory** and **Protected**.

Attribute value is set to **Auto Computed**. Note the gray frame. This value is calculated automatically based on external logic.

Attribute value is displayed in centimeters. To display the value in a different unit, click the unit and select the desired display unit. This does not change the storage unit in the database.

If the unit is not hyperlinked, it means that Teamcenter cannot find the given unit in the **Unit Definition** class.

Notice that the **cm** entry is in bold type. This indicates that the storage unit for this attribute is centimeters.

Symbol

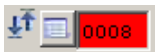
Restriction

Tip:

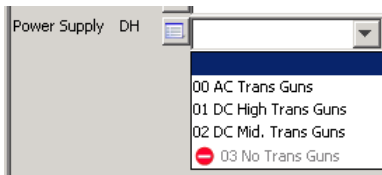
Type the unit in the attribute value box along with the value. Teamcenter changes the unit for you automatically.



Attribute value is restricted to a specific range.




Attribute value falls outside of allowable range.



Key-LOV value **03 No Trans Guns** is deprecated and should no longer be used.



Attribute value is localized. Click  to enter or view values in other supported languages.

Preview available attribute values

You can activate a filter that allows you to preview those attribute values available in the currently selected class. This is especially useful when you are searching as you can select an existing value and search for it.

Note:

The autofilter is not displayed for reference attributes.

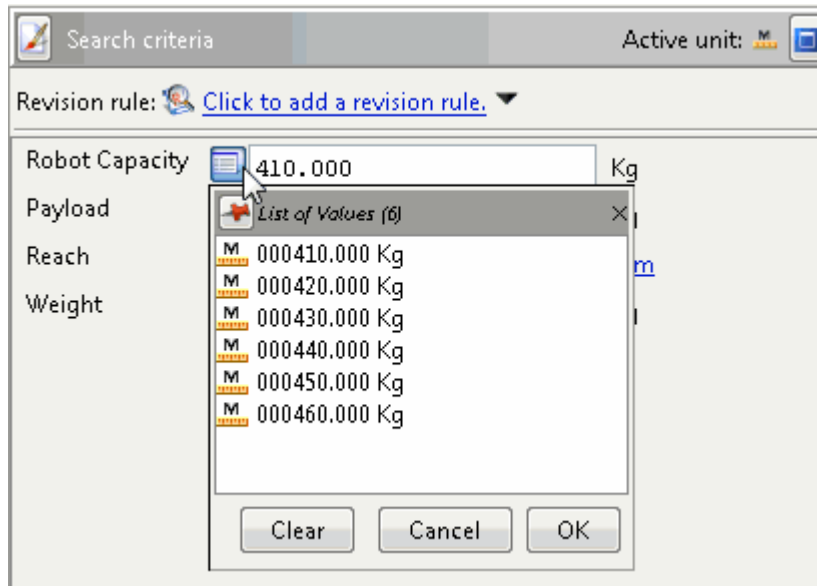
1. Select a class in the classification hierarchy.

Teamcenter displays the attributes in the **Properties** pane.

2. Click the **Autofilter** button.

Teamcenter displays the **List of Values** dialog box containing a list of attribute values stored for this attribute. When you search, all attribute values stored for this attribute are displayed, provided you have not yet set any other attribute values. As you constrain your search criteria by setting other attribute values, the **List of Values** dialog box only shows the attribute values that are valid given

the current search criteria (helping you efficiently narrow your search and choose valid values that will find classified objects).



The attribute preview indicates whether the value is stored as a metric **M** or nonmetric **I** unit.

3. Do one of the following:

a. Select a value and click **ok**.

Teamcenter closes the **List of Values** dialog box and populates the attribute value box with the selected value.

Note:

If you are in search mode and use the autofilter on string attributes, Teamcenter places the value in quotation marks. This way, you can use dashes inside the attribute values, and they are not interpreted as a range.

b. Click **clear**.

Teamcenter closes the **List of Values** dialog box and removes any value that was in the attribute value box.

c. Click **cancel**.

Teamcenter closes the **List of Values** dialog box without making any changes to the attribute value box.

Displaying a subset of the hierarchy

Set a node as root

In a complex classification hierarchy, you can select any point in the hierarchy and set that node as the root node, blending out all the node's ancestor classes and groups. You can store any number of classes in the options list to change the hierarchy root node at your convenience.

1. In the title bar of the hierarchy pane, click ▼ to display the root node selection. By default, this list contains only **Classification Root**. You can configure the entries in this list in the **ICS_default_root_selector_entries** preference.
2. Select the node that you designate as the new root node in your classification tree.

Teamcenter displays the name and symbol of the new root class in the title bar.
3. (Optional) Display the full tree again by selecting **Classification Root** from the options list.

Store nodes for subsequent selection as root

1. Select the class in the hierarchy that you want as the new hierarchy root node.
2. In the title bar of the hierarchy pane, click ▼ to display the root node selection list.
3. Choose **Add Current Class**.

- or -

1. Modify the entries in the **ICS_default_root_selector_entries** preference.

These entries are then available the next time you open the root node selection list.

Delete stored nodes from the list

1. In the title bar of the hierarchy pane, click ▼.

The root node selection list appears.

2. Right-click the class that you want to remove from the list and choose **Remove**.

Display a node as temporary root

1. Right-click the class in the hierarchy that you want as the temporary hierarchy root node and choose **Set Root Node**.

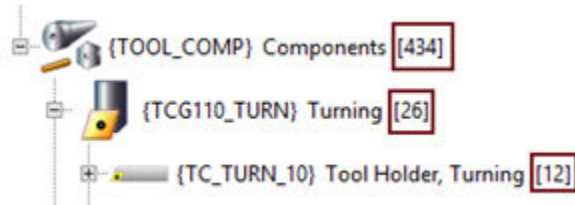
Teamcenter displays this class as the root node but does not add the class name to the root node selection list.

- (Optional) Return to viewing the complete tree by selecting **Classification Root** from the root node selection list.

Refresh the hierarchy tree

The classification hierarchy does not always update automatically. In certain situations, such as the following, you must update the tree manually:

- A class is moved to a new group or to see a change to the hierarchy.
- Objects are classified. The ICO count does not update automatically.



To manually refresh the classification hierarchy:

- Right-click the root node or affected branch, and choose **Refresh**.


Teamcenter refreshes all branches beneath the selection, as well as the selection itself.

If you add attributes in Classification Admin to a class that you are currently viewing in Classification, you must refresh the class in Classification using the **Refresh** button or by selecting another class and returning to the viewed class to see the newly added attributes.

Note:

The **Refresh** menu command is not available if you are in edit mode.

View object properties

- In the **Table** pane, select an ICO that classifies a workspace object.
- Click the **Properties** button .

Teamcenter opens the **Properties** form displaying the properties of the selected workspace object.

- (Optional) Check the form out of the database to modify it.

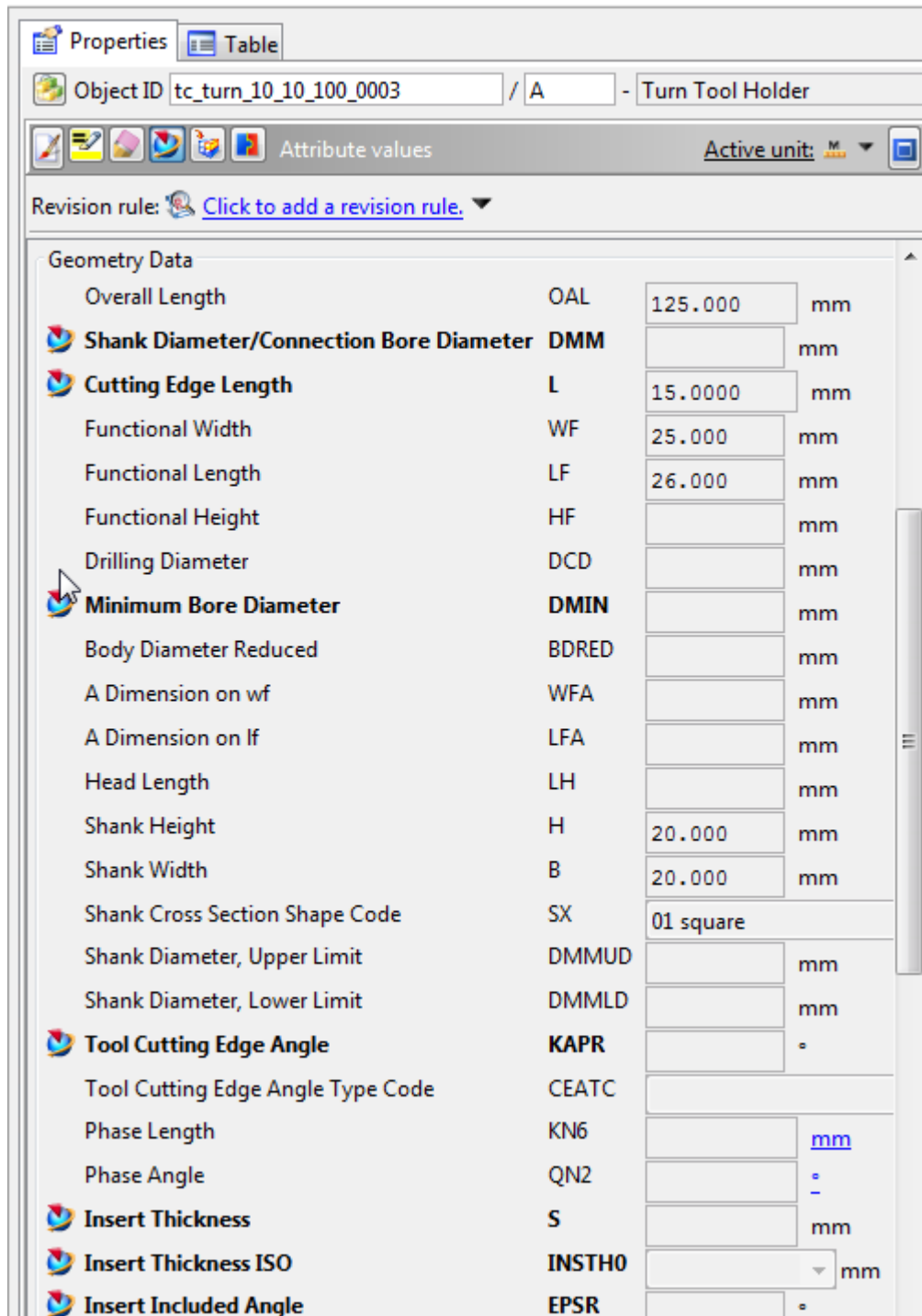
View attributes applicable to a specific application

In some cases, you may want to highlight a specific set of attributes that are relevant to a particular application. If a class contains a long list of attributes, it is often not easy to spot these attributes in the **Classification Properties** view or the **Search** pane of the Classification Search Dialog. You can view which attributes are relevant to a particular application if this feature is enabled in the Classification Admin application. You can choose to mark all relevant attributes or, additionally, you can hide attributes that are not relevant. Alternately to highlighting attributes, you can filter the display of the attributes so that only the applicable attributes are visible.

Your administrator enables applicable attributes in the Classification Admin application.

1. In the **Classification Properties** view or the **Search** or **Properties** pane, click the button representing the application for which you want to see the relevant attributes.

Teamcenter displays the application symbol beside each of the relevant attributes and highlights the attributes in bold.



You can click more than one application button.

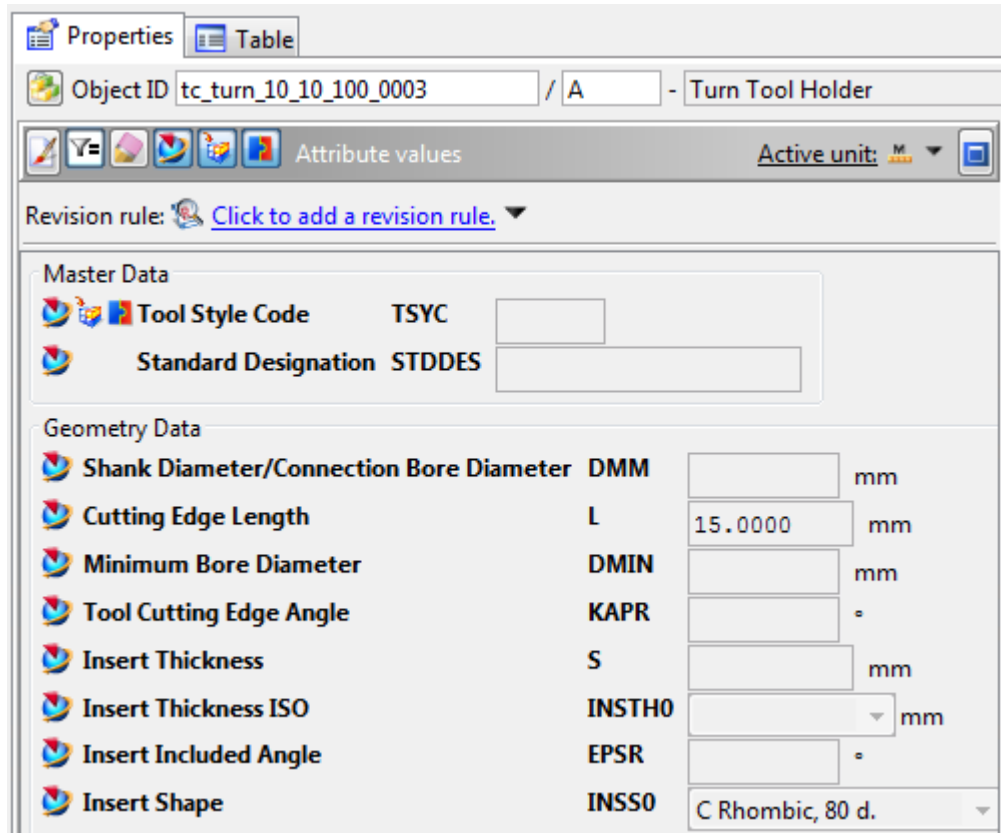
2. Switch between highlighted and filtered attributes.

-

The attributes that are pertinent to the selected applications are highlighted in bold and the application symbol is shown beside them.

- 

The attributes are filtered so that only the attributes relevant to the selected applications are visible.



Understanding show versus edit modes

Classification distinguishes between show mode and edit mode when working in Classification.

Show mode You cannot edit the object. The **Save** button is unavailable.



Edit mode You can make changes to the object's attributes. The **Save** button is available to save these changes.



Teamcenter sometimes behaves differently, depending on whether you are in save mode or edit mode. For example, when working with measurement units, you can change the displayed unit in show mode, but if you make the same changes in edit mode, you change the attribute value.

Viewing images and datasets

Viewing images and datasets associated with the workspace object

Resource Manager allows you to view images and other types of file-based data associated with a specific class or ICO. There are two viewers in the **Classification Properties** view that allow you to see this data.

- Class viewer

Shows an image associated with a class.

- Instance viewer

Shows documents or images associated with the classified workspace object (for example, item or item revision) of the ICO. This includes a multitude of data types, such as GIF or JPEG images, JT image files, HTML files, Microsoft Office documents, or NX part files.

Note:

For the viewer to work, you must have the Teamcenter Visualization for Rich Client software installed. You must purchase this software separately. If you have not installed this viewer, only image files (for example, JPG or GIF) are displayed in the top viewer window.

To enlarge the viewers to full-tab size, click the **Maximize/Restore Panel** button . Clicking this button again restores the pane to its original size.

Viewing class images

Class images show an overview of the currently selected class. These are shown in the class viewer that appears in the upper right corner of the **Classification Properties** view. You associate these images with the class from within the Classification Admin application.

The **g4mClassViewer.VIEWERCONFIGTOLOAD** preference specifies which type of viewer is used to display different types of attachments. By default, this preference points to the **g4mViewerConfig.VIEWERCONFIG** preference that contains a list of viewers and attachment types.






Viewing documents associated with an ICO

The instance viewer, located at the bottom right of the **Classification Properties** view, allows you to see documents attached to the classified workspace object of the selected ICO, such as BOM assemblies,

monolithic JT files, Word documents, or GIF images. These documents are attached to the workspace object as a named reference in a dataset.

The documents available for viewing display as tabs at the side of the viewer. Only those documents that the viewer is able to display appear as tabs.

The following table lists some of the tabs the viewer displays.

Tab	Description
	Opens a GIF image.
	Opens an NX part file.
	Opens a JT file.
	Opens a Microsoft Word document.
	Opens an assembly.

Move the cursor over the tab; the tool tip tells you what document is available.

Note:

The instance viewer is functional only if you have installed Teamcenter Visualization for Rich Client.

You can alter the behavior of the instance viewer using the following preferences:

- **ICS_presented_instance_documents** contains a list of those named references you want to have available for the viewer to display. The system searches through all datasets of the workspace object for these named references and presents a tab for each one.
- **ICS_default_instance_document** controls which of the available documents is displayed by default when you view an ICO. Using this preference, you can, for example, specify that assembly JT files are not shown by default but must be expressly selected to appear. This can save time when paging through ICOs of large assemblies. If none of the document types listed in this preference are associated with the ICO, the viewer displays no attachment. It can still, however, contain tabs for other available documents.
- **ICS_max_number_of_components** controls the number of assembly components to be shown without warning.
- **g4mInstanceViewer.VIEWERCONFIGTOLOAD** specifies which type of viewer is used to display different types of attachments. By default, this preference points to the **g4mViewerConfig.VIEWERCONFIG** preference that contains a list of viewers and attachment types.

To view NX parts in the instance viewer, add the following values to the **g4mViewerConfig.VIEWERCONFIG** preference:

UGMASTER.DirectModelViewer=UGPART

UGPART.DirectModelViewer=UGPART

Tip:

To ensure that the instance viewer displays the same attachments as the Teamcenter viewer, you can set the value of the **g4mInstanceViewer.VIEWERCONFIGTOLOAD** preference to **defaultViewerConfig.VIEWERCONFIG**. If, however, you have added any special attachment types to the instance viewer **g4mViewerConfig.VIEWERCONFIG** preference, you must also add these types to the **defaultViewerConfig.VIEWERCONFIG** preference.

Note:

The symbols used for these tabs are found in **com\teamcenter\rac\classification\commonimages**. You can customize the symbols in the **com\teamcenter\rac\classification\common\common.properties** file.

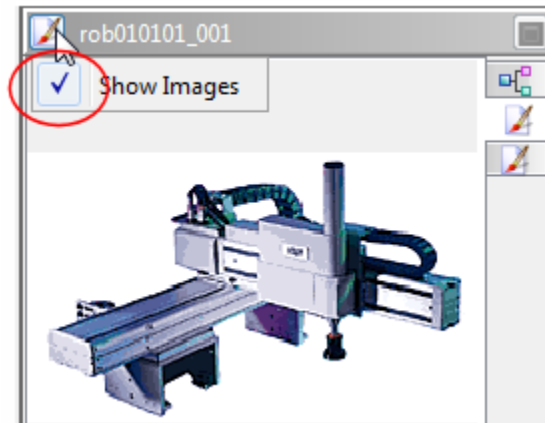
Attaching documents and images

If documents or image datasets are attached to a workspace object with a rendering relation, and that object is classified, you can view the documents or images in the viewer. Teamcenter searches only for datasets attached to a revision object or, in the case of classified items, to the latest revision.

To see which documents are added as named references, right-click the dataset in the **Attachment** pane and choose **Named References**. The **Named References** dialog box displays the list of named references for the dataset.

Suppress images in viewers

- Clear the **Show Image** option to suppress the display of images.



This option is on by default. However, suppressing the display of images, particularly in the instance viewer, can improve performance when viewing search results.

Searching for resources

Searching for resources overview

There are many ways to find a resource in Resource Manager.

- You can use the Teamcenter quick search.

With the Teamcenter quick search in the navigation pane you can search the database for a resource based on various criteria. If you receive multiple matches, Teamcenter displays these in a table. It opens the desired resource in a new resource view.

- You can search for resources using the **Object ID** search.
- You can search for resources using the Classification Search Dialog.

Find a resource using the Object ID search

If you know at least a portion of the object ID of a resource, you can use the object ID search feature. An object ID search encompasses the entire classification hierarchy and is not limited to the contents of a particular class or subclass.

1. Click **Search by ID** .

Teamcenter displays the **Search by ID** dialog box.

2. Type the exact object ID or partial object ID and wildcard characters and click **OK** to close the dialog box or **Apply** to keep the dialog box open.

- If there is only a single match, Teamcenter opens a new resource view displaying this match.
- If there are multiple matches, Teamcenter displays them in the **Classification Table** view where you can double-click the desired resource and it opens in a new resource view.

Note:

If you want to additionally narrow down the search by type, use the object ID search in the Classification Search Dialog.

Searching for resources using the Classification Search Dialog


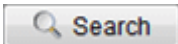
It is often necessary to search for resources stored in the database. Searching the classification hierarchy to locate a specific resource, class, or group can be a time-consuming task. The Classification search features save you time by enabling you to focus your search using familiar criteria, such as name or ID.

You search for resources using the Classification Search Dialog.

- You know all or part of the object ID. In this case, you can use the object ID search feature. You can narrow this search using the search by type function. This allows you to search, for example, only for ICOs that classify something, or only for ICOs that do not classify anything.
- You want to search within a specific group or class. For this, you must know how to select a class. From within this class, you can either search all resources in the class or search for objects matching specific criteria.
- You know that the resource should possess specific attribute values. Use the attribute value search to perform this search. You can narrow this search by first selecting a class or specifying all or part of an object ID.
- You want to search all assemblies for one containing a specific component. Use the search assembly by component search for this. You can combine this type of search with the attribute value search, meaning that you can look for a component containing specific criteria.

Note:

There are two search buttons in the **Properties** pane:

- The **Search** button  to the right of the **Object ID** box searches the entire classification hierarchy. You can narrow down this search by entering a component ID or component class ID, or entering a search type.
- The **Search** button  at the bottom of the **Search** pane searches within a selected class.


This type of search can include any search refining features, such as object ID, attribute value, or search by type.

In addition, there is another search button below the hierarchy tree. This is the quick search button.

- When searching the hierarchy, you can:
 - Search for a specific ID or part of an ID.
 - Search for groups or classes.
 - Search for objects possessing specific criteria.
- Navigate through the search results.
- Select the resource you want.


Search by object ID

If you know at least a portion of the object ID of a resource, you can use the object ID search feature. An object ID search encompasses the entire classification hierarchy and cannot be limited to the contents of a particular class or subclass.

1. Click the **Search** pane located to the right of the hierarchy tree.
2. Type the exact object ID or partial object ID in the **Object ID** box, located at the top of the **Search** pane.
3. (Optional) Type a component ID or component class ID.
4. (Optional) Narrow your search using the search by type feature.
5. (Optional) Click the revision rule hyperlink on the title bar to apply a revision rule for the search. If you enter a specific revision in the **Object ID** box, the search ignores the revision rule. If a revision rule is already set, it is displayed in the revision rule link.
6. Press Enter or click the **Search** button  to the right of the **Object ID** box.

The object ID search returns the ICOs found in alphabetical/numeric order by object ID. The first resource found is displayed in the **Properties** pane. When navigating through the resources, the class and subclass to which the resource belongs are highlighted in the classification tree. The total number of resources found is displayed in the **Search Results** box.

7. Navigate through the search results.


8. Select the desired resource and transfer it to Resource Manager.
9. (Optional) Perform subsequent searches by clicking the **Search** tab, clicking  and proceeding from step 1.










Search by type








You can search the classification hierarchy for resources classifying specific workspace object types.

1. In the classification tree, expand the desired class and select it by either:
 - Double-clicking if it is a leaf node.
 - Right-clicking and choosing **Select** if it is not a leaf node.

The class names are highlighted in the tree.


2. Type an ID, a class ID, or attribute values.
3. Click the **Classified Object Type** button . A list of workspace object types follows.

Click	To
	Search among all classification instances. This is the default search method.
	Search among all classification instances that classify a workspace object.
	Search among all classification instances that do not classify a workspace object.
Generic and Needs → 	Search among all classification instances that are classified as generic.
Generic and Needs → 	Search among all classification instances that are classified as need.
Generic and Needs → 	Search among all classification instances that are classified as generic and need.
	Search among all classification instances that classify an item.
	Search among all classification instances that classify an item revision.
	Search among all classification instances that classify a process.

Click	To
	Search among all classification instances that classify a process revision.
	Search among all classification instances that classify a resource.
	Search among all classification instances that classify a resource revision.
	Search among all classification instances that classify a NC Tool.
	Search among all classification instances that classify a NC Tool Revision.
	Search among all classification instances that classify a NC Machine.
	Search among all classification instances that classify a NC Machine Revision.

Note:

The types available in this list are configurable.

4. Click the **Resource Type** button  and select a type of workspace object to narrow your search. Only resources classifying this type of workspace object are found in the search.
5. Select a type of workspace object to narrow your search. Only resources classifying this type of workspace object are found in the search.
6. (Optional) Click the revision rule hyperlink on the title bar to apply a revision rule to the search. If you search by a type that excludes revisions (for example, item or process), the search ignores the revision rule. If a revision rule is already set, it is displayed in the revision rule link.
7. Click **Search** at the bottom of the **Search** pane to list all matching instances within the class.

The total number of instances that match the search criteria is displayed at the bottom of the **Search** pane.

Note:



The **Search** pane displays no values upon completion of the search. You must switch to the **Properties** or **Table** pane to navigate through the results and display the values for a specific instance.

8. View the search results using one of the following methods:
 - In the **Table** pane, double-click the instance to be viewed.

Its attributes are displayed in the **Properties** pane. The classification tree is updated to show the class of the selected object.

- In the **Properties** pane, use the navigation arrows at the bottom of the pane to browse forward and back through the list of items that matched your search criteria. As different objects are selected, the classification hierarchy is updated to show the class of the selected object.

Two modes are used for updating the classification hierarchy when displaying the search results:

- a. Click the **View in class stored** button  to display the class in which the item is stored.
- b. Click the **View in class searched** button  to display the class that you selected as a basis for the search.

By default, **View in class stored** is active.

As you view your search results, also use the **Viewer** pane to display any image associated with the current item. If you select multiple objects in the table and switch to the **Viewer** pane, only these objects are available in the viewer.

Selecting a class

The first step in searching the classification hierarchy is to find a class in which to search. There are three methods to select a group or class:

- Navigate through the classification hierarchy manually, clicking the groups and classes until you find your desired class.
- Use the quick search feature.
- Use the **Search Class** dialog box.

You can search for a class using any of the alias names shown in the class tool tip.

Use the quick search feature to select a class

1. In the search box located beneath the hierarchy tree in the Classification Search Dialog, type text corresponding to the name of the group or class that you want to locate. You can also search by ID by typing **id=xxx** in the box, where xxx is the class ID.

The search text can be the exact name or ID of the group or class you are looking for, a class alias name, or you can use character strings combined with **wildcard characters**.

2. Press Enter to start the search.

The hierarchy tree expands to display the first object in the hierarchy that matches the search criteria. The path of the group, class, or subclass is indicated in bold text. If multiple objects are found, the arrow buttons at the bottom of the hierarchy tree are enabled.

3. Click the left-arrow and right-arrow buttons  to display the matching objects, one at a time. This highlights the classes found in the hierarchy tree. The right-arrow button moves down the hierarchy tree, and the left-arrow key moves up the tree.

Note:

If you prefer to view a list of the results, you can display the **Search Class** dialog box by clicking the magnifying glass button located beneath the hierarchy tree.

4. Right-click the class in the hierarchy tree within which you want to search.
5. Choose **Select**.

The **Search** pane displays the attributes associated with the selected class, and the images appear in the class image window.

Note:

If the class or subclass you select is a leaf node (lowest level node) in the hierarchy, you can double-click the node to display it in the **Search** pane, rather than use the right mouse button.

Use the Search Class dialog box to select a class

1. Click the **Find Class** button  located beneath the hierarchy tree.

The **Search Class** dialog box is displayed at the bottom of your window. To move the dialog box, double-click the title bar and drag it to another location on your desktop.

2. Define the search criteria by performing the following steps:
 - a. Select a property from the list at the upper-left corner of the dialog box. The available properties are **Class ID**, **Name**, **Alias Names**, **Attribute ID**, **Attribute Name**, **User data 1**, and **User data 2**.

Note:

You can use the **Name** and **Class ID** properties to search for groups and classes. When searching by attribute, the results include the class in which the attribute is defined and any subclasses in which the attribute is used. Classes that inherit the attribute are not included in the results.

- b. Type search text corresponding to the selected property.

The search text can be the exact name or ID you are looking for, or you can use character strings combined with wildcard characters. Using a wildcard is restricted to string attribute fields only.

Note:


The search box is case sensitive.

3. (Optional) If localization is enabled, select the language in which you want to search.
4. To start the search, either click the magnifying glass button located in the upper-right corner of the dialog box or press Enter.

Teamcenter displays the results of the search in the message area of the dialog box, sorted in the same order as the hierarchy tree display.

5. To display an object in the tree, double-click the entry in the results list.

The hierarchy tree expands to display the selected group, class, or subclass. The path to the object is indicated in bold text.

6. Click the left and right arrow keys beneath the class hierarchy tree  to move through the search results to locate the desired class or group.
7. Right-click the class in the hierarchy tree within which you want to search.
8. Choose **Select**.



The **Search** pane displays the attributes associated with the selected class, and the images appear in the graphics window.

Note:

If the class or subclass you select is a leaf node (lowest level node) in the hierarchy, you can double-click the node to display it in the **Search** pane, rather than use the right mouse button.

Search all resources in a selected class




1. Select the class in the hierarchy tree within which you want to search for resources.
2. (Optional) Click the revision rule hyperlink on the title bar to apply a revision rule to the search. If you search by a type that excludes revisions (for example, item or process), the search ignores the revision rule. If a revision rule is already set, it is displayed in the revision rule link.

3. Determine the scope of the search by clicking the **Search Scope** button. By default, the scope is set to **Hierarchy**.
 - a. Choose **Hierarchy**  to search within the selected class and all related child classes.
 - b. Choose **Class**  to search only within the selected class.
4. If you work in a multilanguage environment, select the language in which to search.

Caution:

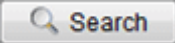
Changing the language also changes the value of the **TC_language_search** preference interactively, which affects all Teamcenter localization.

5. Click one of the following at the bottom of the pane to narrow the search.

Click	To
	Search only for metric ICOs.
	Search only for nonmetric ICOs.
	Search for both metric and nonmetric ICOs.

Caution:

If you are searching in a different unit of measurement than the one that you use to enter the attribute value, be sure to enter enough digits after the decimal point to avoid rounding errors.


6. Click **Search**  at the bottom of the **Search** pane to list all search matches within the class.

The total number of resources that match the search criteria is displayed at the bottom of the **Search** and **Properties** pane.

Note:

The **Search** pane displays no values upon completion of the search. You must switch to the **Properties** or **Table** pane to navigate through the results and display the values for a specific instance.

7. Navigate through the search results.
8. Select the desired resource and transfer it to Resource Manager.

9. Select the desired resource and transfer it to your application.
10. (Optional) Perform subsequent searches within the same class or subclass by clicking the **Search** tab  and repeating the process.

Search for resources by attribute value

1. Select the class in the hierarchy tree within which you want to search for resources.
2. Type values, including relational operators and **wildcard characters** where applicable, in the boxes corresponding to the attributes by which you want to search.

You can:



- Narrow your search by specifying search criteria for multiple attributes.
- Change the displayed unit of the value by clicking it or typing the unit in the dialog box along with the value.

Teamcenter changes the unit for you automatically.

Note:

If the attribute or attribute value by which you want to search is not available for searching, one of the following reasons may apply:




- It is a reference attribute.
- It may already have a default value assigned in Classification Admin.
- It may be encrypted in the database.
- One or more of the key-LOV's values may be deprecated.

3. (Optional) Click the revision rule hyperlink on the title bar to apply a revision rule to the search. If you search by a type that excludes revisions (for example, item or process), the search ignores the revision rule. If a revision rule is already set, it is displayed in the revision rule link.
4. Determine the scope of the search by clicking the **Search Scope** button. By default, the scope is set to **Hierarchy**.
 - a. Click **Hierarchy**  to search within the selected class and all related child classes.
 - b. Click **Class**  to search only within the selected class.
5. If you work in a multilanguage environment, select the language in which to search.

Caution:


Changing the language also changes the value of the **TC_language_search** preference interactively, which affects all Teamcenter localization.

- Click one of the following to narrow the search.

Click	To
	Search only in metric classes.
	Search only in nonmetric classes.
	Search in both metric or nonmetric classes.

Caution:


If you are searching in a different unit of measurement than the one that you use to enter the attribute value, be sure to enter enough digits after the decimal point to avoid rounding errors.

- Click **Search**  at the bottom of the **Search** pane to list all search matches within the class.

The total number of ICOs that match the search criteria is displayed at the bottom of the **Search** and **Properties** pane.

Note:

The **Search** pane displays no values upon completion of the search. You must switch to the **Properties** or **Table** pane to navigate through the results and display the values for a specific instance.

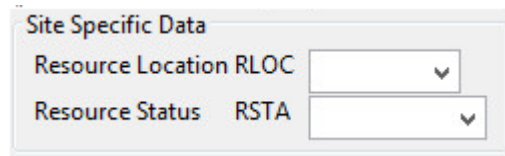
- Navigate through the search results.
- Select the desired resource and transfer it to Resource Manager.
- Select the desired resource and transfer it to your application.
- (Optional) Perform subsequent searches within the same class or subclass by clicking the **Search** tab  and repeating the process.

Search for resources based on site-specific properties

Resources can be filtered based on site-specific data in all places where you can query for classification properties. The following are typical places to search for resources with site properties:

- Classification
 - In the Classification Search Dialog in Resource Manager
 - NX CAM to retrieve tools using the NX Library dialogs
1. Find the **Site Specific Data** section of the search pane.

By default, you can search for the **Resource Location** and **Resource Status** site-specific properties for the **Tool (Assemblies and Components)** and **Machine (Devices and Machine Tools)** classes.



To search for other site-specific properties, you must first **set them up**.

2. Select the desired search criteria and click **Search**.

Note:

If there are multiple site-specific data entries, when you display the search results in **Show** mode or in the table, Teamcenter displays one of the data entries. It may not be the entry for which you searched.

Search assemblies by component

Perform the following steps to search for all assemblies containing a specific component or component class:

1. Select the assembly class in the hierarchy tree within which you want to search for resources containing specific components.
2. On the **Search** pane, you can search assemblies using the component ID or component class ID.
 - To search for a specific component ID:
 - a. Type the ID in the **Component ID** box.
 - b. If you are unsure of the ID of the component, click the **+** button beside the box.

A new Classification Search Dialog opens where you can search for the name of the component. Use wildcard characters, if necessary.

- To search for a specific class ID:

- a. Click the **Component ID** button.

The text on the button changes to **Component Class ID**. The plus button beside the entry box changes to a classification tree button .

- b. Type the component class ID for which you are searching.
- c. If you do not know the name of a class for which you want to search:

- A. Click the classification tree button .



The **Classification Information** dialog box is displayed.

- B. Navigate through this hierarchy until you reach the class for which you want to search.
- C. Select the class.




Caution:

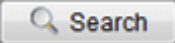
You cannot use the **AND** or **OR** operator multiple times in the assembly search.

3. Determine the scope of the search by clicking the **Search Scope** button. By default, the scope is set to **Hierarchy**.

- Choose **Hierarchy**  to search within the selected class and all related child classes.
- Choose **Class**  to search only within the selected class.

4. Click one of the following to narrow down the search:


Click	To
	Search only in metric classes.
	Search only in nonmetric classes.
	Search in both metric or nonmetric classes.

5. Click **Search**  at the bottom of the **Search** pane to list all search matches within the class.

The total number of ICOs that match the search criteria is displayed at the bottom of the **Search** and **Properties** pane.

Note:

The **Search** pane displays no values upon completion of the search. You must switch to the **Properties** or **Table** pane to navigate through the results and display the values for a specific instance.

6. Navigate through the search results.
7. Select the desired ICO and transfer it to Resource Manager.
8. (Optional) Perform subsequent searches within the same class or subclass by clicking the **Search** tab  and repeat the process.

Find a resource in the source class

If you map classes from one branch of the hierarchy to another, and use the source classes to populate the target classes, you can search for a corresponding resource in the source structure if you are currently in the target structure. If you then want to create a new resource based on an existing one, **map the resource from the source structure to the target structure**.

If you do not find an appropriate component in the target hierarchy:

1. Click the **Map ICO** button .

Teamcenter opens the corresponding source hierarchy to those classes that match your current search criteria.

2. Select the appropriate resource.

Apply a revision rule

You can apply revision rules to searches. This narrows down the number of search results so that Teamcenter returns only the revisions you require. You can control the default behavior of the revision rules with the following preferences:

- **ICS_search_default_revision_rule_<application_name>**

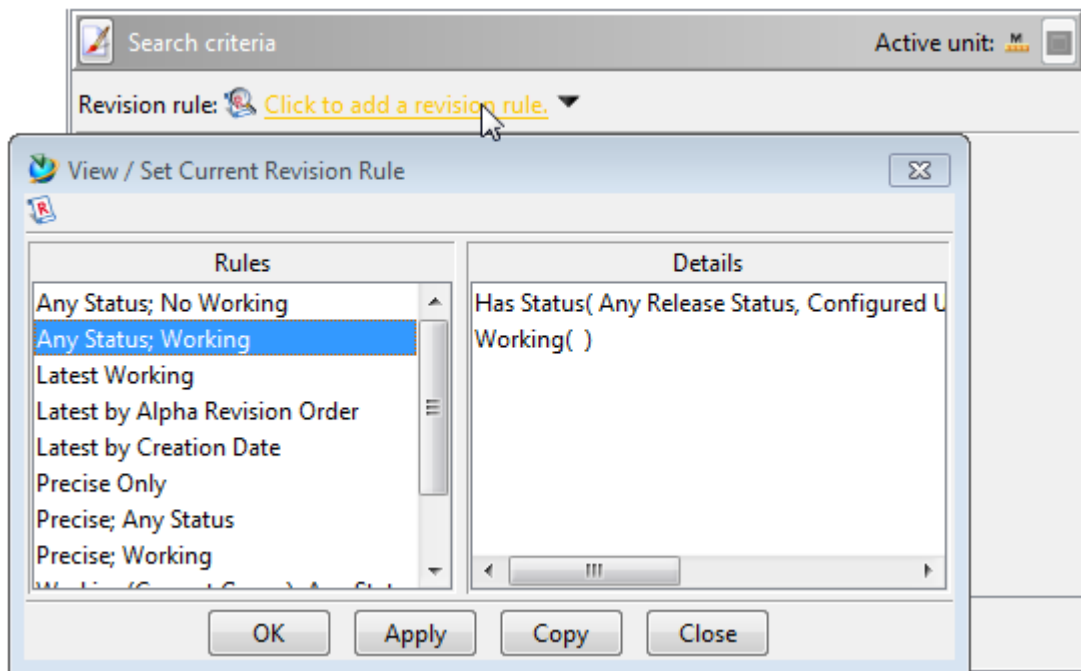
Sets the default revision rule for the specified application.

- **ICS_search_use_revision_rule**

Enables or filters out revision rules for classification searches.

1. In the **Search** pane, click the **Revision Rule** hyperlink. This link shows the name of a revision rule, if one is set, or simply states **Click to add a revision rule**.

The **View/Set Current Revision Rule** dialog box is displayed containing all existing revision rules.



2. Select the appropriate revision rule and click **OK**.
3. Click ▼ beside the revision rule hyperlink.

A list with configuration options appears.

4. Select one of the following:

Configuration options	Description
Use revision rule	Enables or filters out the currently selected revision rule for the search.
Save as default	Saves the currently selected revision rule as the default rule for this application. Teamcenter saves it in the ICS_search_default_revision_rule_<ResourceManager> preference. The default revision rule is directly selected and enabled for the search the next time you launch the application.
Restore default	Selects and enables the saved default revision rule. The Use Revision Rule menu command is also automatically selected.

Using relational operators

Use the following relational operators to perform Classification attribute searches:

Relational operator	Definition	For example, if you type
=	Equal to	= 3.0 in the Corner Radius attribute box of the Taper Shank End Cutter subclass, all resources within the subclass with a corner radius equal to 3.0 are found. You can achieve the same behavior by typing a number. If no value is given after the equal sign, the system searches for all instances where no value is set for the attribute.
<p>Note:</p> <p>If you want to find an entry that contains the character that Teamcenter uses as the wildcard character (for example, *), enter = and the string containing the character for which you are searching, such as = shaft*01. This search finds shaft*01, not shafts01, or shaft101, or shaft201.</p>		
>	Greater than	> 3.0 in the Corner Radius attribute box of the Taper Shank End Cutter subclass, all resources within the subclass with a corner radius greater than 3.0 are found.
<	Less than	< 3.0 in the Corner Radius attribute box of the Taper Shank End Cutter subclass, all resources within the subclass with a corner radius less than 3.0 are found.
>=	Greater than or equal to	>= 3.0 in the Corner Radius attribute box of the Taper Shank End Cutter subclass, all resources within the subclass with a corner radius greater than or equal to 3.0 are found.
<=	Less than or equal to	<= 3.0 in the Corner Radius attribute box of the Taper Shank End Cutter subclass, all resources within the subclass with a corner radius less than or equal to 3.0 are found.
!=	Not equal to	!= 15.00 in the Diameter attribute box, all resources with a diameter not equal to 15.00 are found. If no value is given after the equal sign, the system searches for all instances where any value is set for the attribute.
~	Like	~ Walt* in the Vendor attribute box of a class, all resources within that class beginning with Walt , such as Walter, Waltmann, or Walthouse are found.
!~	Not like	!~ Walt* in the Vendor attribute box of a class, all resources within that class except for those beginning with Walt are found.

Relational operator	Definition	For example, if you type
-	Range	10.00 – 20.00 in the Diameter attribute box, all resources with a diameter within the range of 10.00 to 20.00 (including the values 10.00 and 20.00) are found. A blank space must precede and follow the hyphen.
	OR	Walter Kennametal in the Vendor attribute box of the Taper Shank End Cutter class, all resources within the class with a vendor of Walter or Kennametal are found. You can use the wildcard character (*) in this type of statement.
""	Exact string	"blue or green" , Teamcenter searches for the string blue or green . If you type "4 – 10" , Teamcenter searches for the string 4 – 10 , not the range 4–10.
&	AND	blue & green , Teamcenter searches for strings that contain at least one instance of both the string blue and the string green .

Note:

You cannot use exact string relational operators in combination with other relational operators.

Note:

- You cannot use relational operators when searching for attributes with multiple values. You can only use the equal and wildcard operators.
- Wildcard characters are permissible for string attributes only.

Using wildcard characters

Resource Manager employs the standard wildcard characters defined for your site. You can use these for any string attribute. Wildcard characters are not permissible for integer or real attributes.

By default, you can use the * character.

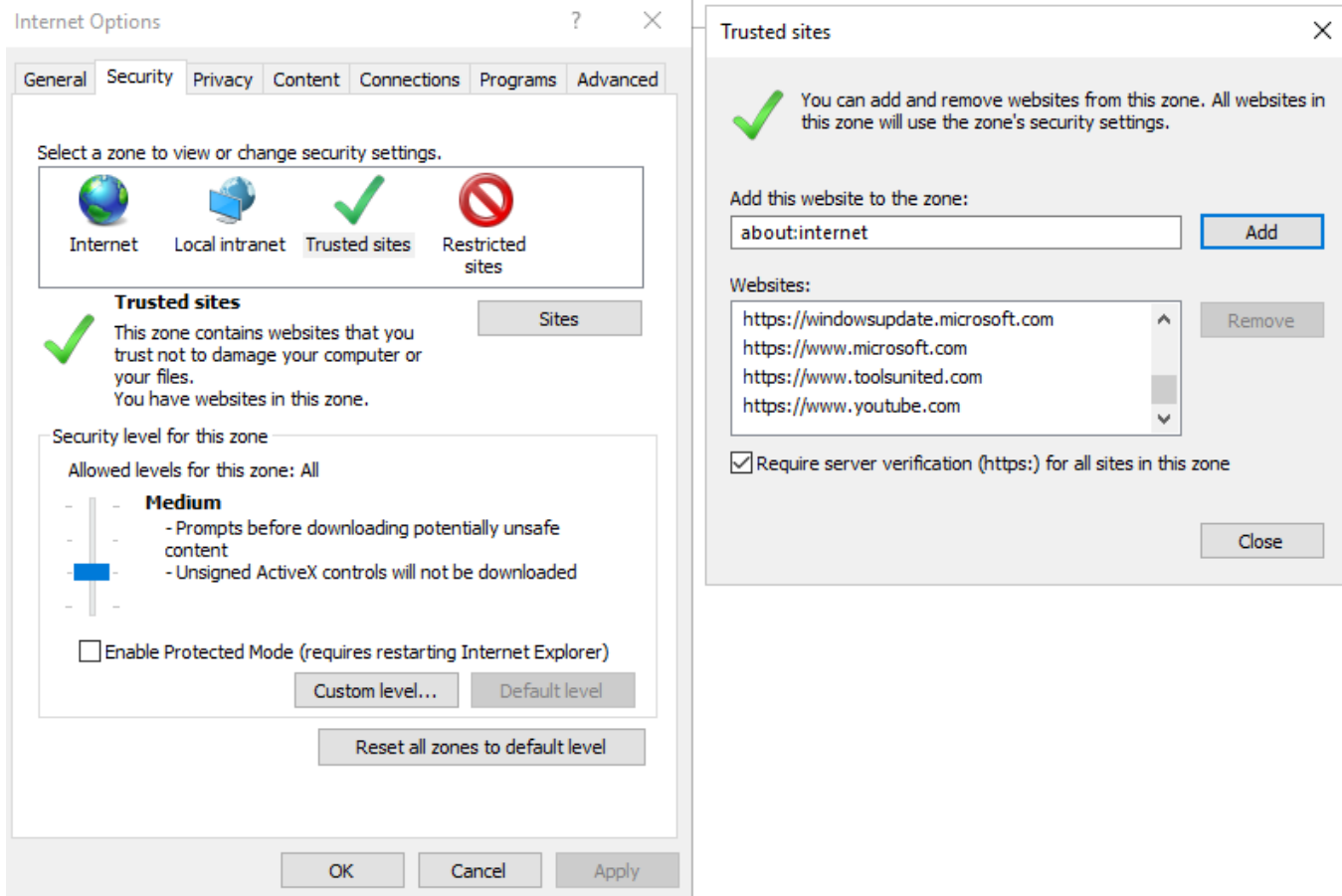
Search and download ToolsUnited GTC package

If you do not find a suitable tool component in the database, you can search for it in an external vendor catalog. Teamcenter has a seamless integration of search capabilities with the ToolsUnited database from CIMSOURCE GmbH containing over 550,000 components from a variety of tool vendors that you can import into the vendor hierarchy.

You can browse the ToolsUnited catalog content using a guest account. To download tool components, an account is required. This is not free of charge. Contact Cimsources (at <http://www.cimsources.de/en/home>) for more information (<http://www.toolsunited.com>).

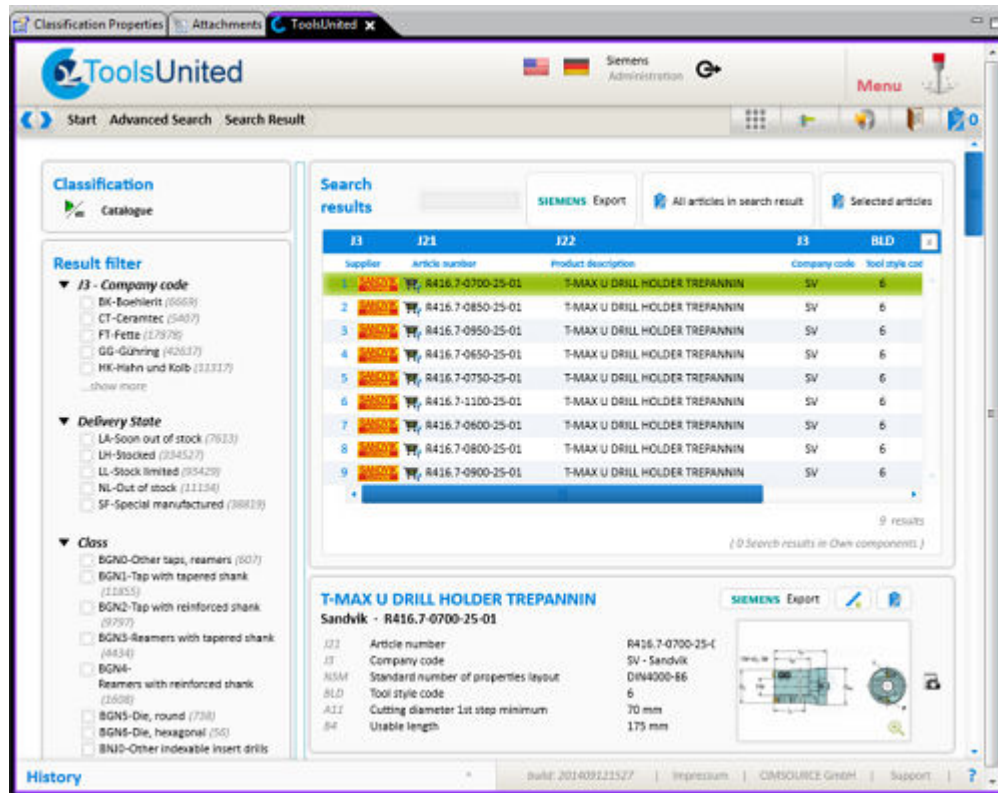
Note:

Be sure to include <https://www.toolsunited.com> in your list of trusted sites for Internet Explorer.



1. In Resource Manager you can search and build your tool assembly by adding components using the Classification search dialog. See [Working with resource structures](#) for more information.
2. If this is your first time using the ToolsUnited search in the current Teamcenter session, enter your login information.

The **ToolsUnited** view opens displaying the search results.

**Tip:**

When performing a ToolsUnited search, select a leaf class or storage class to perform the search on. The ToolsUnited search does not work on super or parent classes.

3. Select the tool components that you want to use in Resource Manager and do one of the following:

- a. If you select one tool component only, click the **Siemens Export** button above the tool graphic.






















You can directly choose the directory on your operating system to which you export the tool component.

- b. If you select multiple components from the list:
 - A. Click the **Siemens Export** button above the table.

- B. Click **Export Overview**  .

ToolsUnited displays a list of packages that you have exported so far.

Export overview

	Name of export	User	Date of export	Progress	
✓	Export - Export - Siemens - d347ae62-846c-48e8-8be5-55547b795cf9	Siemens	10/27/2014 2:57 PM	<div style="width: 100%;"></div>	  
✓	Export - Export - Siemens - b377c8de-61cc-4165-b590-4b9f9851ce17	Siemens	10/27/2014 2:43 PM	<div style="width: 100%;"></div>	  
✓	Export - Export - Siemens - 7b098b10-a117-48f5-9d39-8edf604aae2e	Siemens	10/21/2014 3:56 PM	<div style="width: 100%;"></div>	  
✓	Export - Export - Siemens - d751e247-47ca-4bc4-9581-43bbd6da2f5a	Siemens	10/21/2014 11:19 AM	<div style="width: 100%;"></div>	  
✓	Export - Export - Siemens - 4f881fc5-cde7-48af-9d72-64d2c5c17818	Siemens	10/21/2014 10:52 AM	<div style="width: 100%;"></div>	  
✓	Export - samplePackage	Siemens	9/26/2014 6:33 PM	<div style="width: 100%;"></div>	  
✓	Export - Export - Siemens - c24b617d-b292-4db9-9fe7-1f4643f13095	Siemens	9/22/2014 4:50 PM	<div style="width: 100%;"></div>	  

C. Select the package that you want to download and click **Download export file** .

D. Save the export package to your local directory.

4. Import GTC Package with 3D and mapping



Warning:

Before a **ToolsUnited** GTC Package can be imported, your administrator must first import the **ToolsUnited** GTC class hierarchy. The ToolsUnited GTC class hierarchy package can be found on the Siemens Digital Industries Software page of the **ToolsUnited** website.



Navigating the matches



Viewing search results in the Properties pane

When you view a resource in the **Properties** pane, the class it belongs to is highlighted in the hierarchy. Two modes are used for updating the classification hierarchy when displaying the search results:


- Click the **View in class stored** button  to display the class in which the item is stored.
- Click the **View in class searched** button  to display the class that you selected as a basis for the search.


You can see the active unit of measurement in the attribute values title bar in the **Properties** pane using the following symbols.

Symbol	Description
	The ICO is currently displayed and stored in a metric system of measurement.
	The ICO is currently displayed and stored in a nonmetric system of measurement.

Symbol	Description
	The ICO is currently displayed in metric, but was originally stored in a nonmetric measurement system.
	The ICO is currently displayed in a nonmetric measurement system, but was originally stored in a metric system.

View search results in the Table pane


You can view the data of the resources found in the search collectively using the **Table** pane. If the measurement unit symbol at the beginning of each row contains an exclamation mark, the resource is displayed in a unit system other than the one in which it was stored. For example, if the symbol  is displayed, the resource was stored in a nonmetric unit system but is currently displayed in a metric unit.

1. Perform one of the following actions:
 - a. Click  to load the next page of found resources into the table.



The resources are appended to those currently displayed.

Note:



By default, the number of resources displayed on a page is set to 5. Your administrator can change the default display by modifying the `ICS_table_pagesize` preference.

- b. Click  to load all matches into the table.
2. (Optional) Sort the table data; double-click the column header corresponding to the property to switch between ascending, descending, and natural sort order.

Teamcenter can display different units of measurement in the same column. The displayed unit depends on the optimized unit for each of the attribute values. Teamcenter sorts these columns based on the attribute values in the storage unit. The table header always shows the unit (if available), but for optimized values, the header shows the unit in italic and the cell contains the unit as well (as the unit can change). For nonoptimized values, the unit is not attached to the value and shown only in the header (nonitalic).

3. (Optional) Select one or multiple lines in the **Table** pane and click  to copy the contents of the selected line to the clipboard. You can paste these contents in an external application.
4. (Optional) Select one or multiple lines in the **Table** pane and click .

Teamcenter opens the **Print** dialog box where you can choose to open the data in a Web browser, print it, or save it.

5. (Optional) Select a line in the **Table** pane and click  to view the properties of the associated workspace object.
6. (Optional) Select one or multiple lines in the **Table** pane and click  to map from one class to another.
7. Double-click a resource in the table to view it.

The system opens the resource in the **Properties** pane and highlights its class in the tree.

Viewing the results in the Viewer pane

You can view all search results in the **Viewer** pane. You can move backward and forward in the match list using the navigation buttons.

Note:

If the ICO does not have an item attached, or if the item does not contain a graphic, no image appears in the **Viewer** pane.

Select the desired resources

After you navigate through the search matches, you can select one or several resources to return to Resource Manager.

1. Click the **Properties**, **Table**, or **Viewer** tabs.

Note:

The **Viewer** pane is only active for an ICO that has an item attached.

2. Navigate to the desired resource.
 - In the **Properties** or **Viewer** pane, use the navigation arrows. The system shows all attributes and values for each resource.
 - In the **Table** pane, do one of the following:
 - a. Select the resource by clicking it.
 - b. Double-click the resource.
 - c. Select multiple resources.

Teamcenter switches to the **Properties** pane and shows all attributes and values for the selected resource.

3. Click **OK** to close the dialog box or **Apply** to keep it open.

The item or item revision classified by the ICO is displayed in Resource Manager. If an ICO has no item or item revision attached, the system creates one so that it can open that item in Resource Manager.

If you open multiple resources at once by selecting several ICOs in the Classification Search Dialog, they are all transferred to the **Resource** view. The selected resources are displayed in the resource structure in the order in which they appear in the Classification Search Dialog table.

View results in the Classification Table view


If an object ID search or a search in the Classification Search Dialog returns multiple matches, Teamcenter displays these in the **Classification Table** view. In this view, you can:


- Use the arrows to step through the found resources. The properties of each match are displayed in the **Classification Properties** view.
- Perform one of the following actions:
 - Click ▼ to load the next page of found resources into the table.

The resources are appended to those currently displayed.

Note:

By default, the number of resources displayed on a page is set to 5. Your administrator can change the default display by modifying the **ICS_table_pagesize** preference.

- Click  to load all matches into the table.
- (Optional) Sort the table data; double-click the column header corresponding to the property to switch between ascending, descending, and natural sort order.
- View whether the resource is displayed in a unit system other than the one in which it is stored.



If the measurement unit symbol at the beginning of each row contains an exclamation mark, the resource is displayed in a unit system other than the one in which it was stored. For example, if the symbol  is displayed, the resource is stored in a nonmetric unit system but is currently displayed in a metric unit.

- Click a resource in the table or navigate through the resources using the arrow buttons.



Teamcenter displays the properties of each resource in the **Classification Properties** view.

- Double-click a resource in the table.

Teamcenter opens the resource in a new **Resource** view and displays its properties in the **Classification Properties** view. You can only open classifying instances in a **Resource** view.

- (Optional) Select one or multiple lines in the **Table** pane and click  to copy the contents of the selected line to the clipboard. You can paste these contents in an external application.
- (Optional) Select one or multiple lines in the **Table** pane and click .

Teamcenter opens the **Print** dialog box where you can choose to open the data in a Web browser, print it, or save it.

- (Optional) Select a line in the **Table** pane and click  to view the properties of the associated workspace object.
- (Optional) Select one or multiple lines in the **Table** pane and click  to map from one class to another.

4. Creating resources

Creating resources and adding value for downstream applications

Creating resources

Create new resources

1. Choose **File**→**New**→**Resource**, or click the **Create a new Resource** button  on the toolbar.

The **New Resource** dialog box opens.

2. Fill in the **Item Details** information for the new resource.

Item ID	This information is required. Type the ID number to be assigned to this new resource. To let Resource Manager automatically assign a unique ID, click Assign .
Revision	<ul style="list-style-type: none">• If this is a new resource, type A.• If this is a revision of an existing resource, type the next consecutive revision number.• To let Resource Manager automatically assign a unique revision number, click Assign.
Name	Type the name of the new resource or resource revision. Make it unique so it is easier to search the database using this term.
Description	(Optional) Type a description of the new resource.
Item Type	Select the item type of the new resource. The following four types are generally used to create new resource: <ul style="list-style-type: none">• Resource – for resources• NC Tool – for tools• NC Machine – for machines (do not confuse with NC Machining Operation)• Equipment – for use with Tecnomatix applications

Teamcenter stores the default value of this entry in the **MRMItemTypes** preference.

3. Click **OK**.


Teamcenter automatically classifies the resource in the class that was previously selected. This is listed in the top line of the **Classification Properties** view. If no class was previously selected, the resource is classified in the **New Resource** class.

Note:

- If you are not using the resource kit and have no **New Resource** class, your Classification administrator can change the default class by adding the following entry to the **mrmm_user.properties** file:

```
defaultClass=your_class_ID
```

- It is recommended you use the MRL template parts, **mrl_step_template_metric** and **mrl_step_template_inch**, for the GTC 3D model import. The templates are installed when you run the **Configure TCL Graphic Macros"/"Configure Graphics Builder** option in the MRL installer. The templates have the correct item type **NC Tool**
- If you want another item type you can create custom template parts using these file names, **custom_step_template_metric** and **custom_step_template_inch**.

4. (Optional) If the resource was incorrectly classified in the previous step, classify it in the appropriate class.
5. If this resource is the root node upon which a resource structure is to be built, add components to this root to build the resource structure.
6. Click **Save**  on the toolbar to save the new resource.

Create new tool component resource

This option streamlines the process of creating a new tool resource by automatically classifying it as a tool.

1. Choose **File→New→Tool Assembly**, or click **Create new Tool Component**  on the toolbar.

The **Classification Information** dialog box opens to the Components branch of the **Hierarchy Tree**.

Note:

This option is only available if the preference **MRMCreateToolAssemblyAndComponent** is set to **True**.

2. Navigate through the classes and double-click the classification to which the new item is being assigned.

The **New Tool Component** dialog box appears.

3. Enter **Item Details** information for the new resource.

Item ID	<p>This information is required.</p> <p>If the preference MRMToolAssemblyAndComponentIDAUTOGENERATED is set to True, the ID number is automatically generated according to site-specific settings.</p> <p>If the preference MRMToolAssemblyAndComponentIDAUTOGENERATED is set to False, the ID number can be assigned by the user, or you can let Resource Manager automatically assign a unique ID, by clicking Assign.</p>
Revision	<ul style="list-style-type: none"> • If the resource is new, type A. • If it is a revision of an existing resource, type the next consecutive revision number. • To let Resource Manager automatically assign a unique revision number, click Assign.
Name	Type the name of the new resource or resource revision. Make it unique so you can easily search for it.
Description	(Optional) Type a description of the new resource.
Item Type	The Item Type MENCTool is automatically selected.


4. Click **OK**.
5. (Optional) If the resource is incorrectly classified in the previous step, classify it in the appropriate class.

Note:

If you change the **Item Type** for a resource that has an ID that was automatically generated, the ID remains the same.

6. Click **Save**  on the toolbar to save the new resource.


How to build a resource assembly

1. Create a new item that represents the root of the new assembly structure by choosing **File→New→Resource** or clicking .
2. Specify the item type for the new resource.

The following four types are generally used to create a new resource.

- **NC Tool** — for tools
- **NC Machine** — for machines (do not confuse with **NC Machining Operation**)
- **Resource** — for resources
- **Equipment** — for use with Tecnomatix applications

Teamcenter stores the default value of this entry in the **MRMItemTypes** preference.


3. Search for components to build the tool structure. You must start with the machine-side component—that is, a machine adapter or tool holder—and work toward the cutter or workpiece side.
 - a. Select the parent component below which you want to add the next component.
 - b. Search for the next component using the **Classification Search Dialog**  and click **OK**.

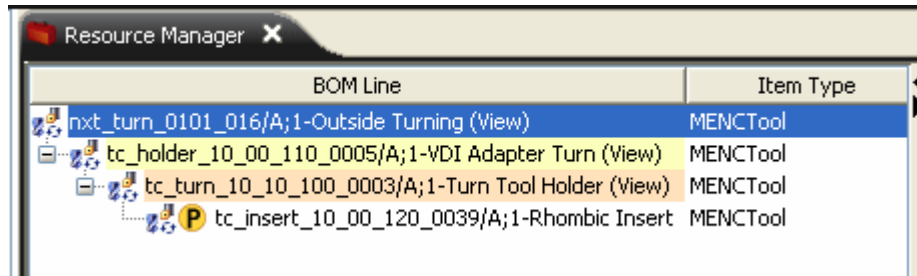
Note:


Turn on the graphical browser for a more visual search experience.

Teamcenter displays the new component as a child of the selected component.

Each component added to an assembly gets a unique **find number**. It is recommended that users do not manually change the **find number**. Doing so can negatively impact the display of the resource structure.

4. (Optional) If you put a component in the wrong position in the hierarchy, or prefer to search in a different order from the assembly structure (for example, search for the cutter first), cut and paste components to the correct position in the tool assembly.
5. Attach the propagation start point (PSP) to the cutter by selecting the cutter and clicking .



6. Click **Save** .

Teamcenter saves the assembly and propagates the defined attribute values from all components, starting at the propagation start point (in this case, the cutter), to the assembly root node. The following figure shows the propagated attributes in italic font.

Attribute values Active unit: **M**

Tool Description	DES	OD Turning Left 80°				
Comments	COM					
Company Code	VEN	PT				
Supplier	SUP					
Plant		3 Cologne				
Machine Group		120 Maschine Group 120				
Status		20 Test				

NX Tool Type	NX	03;01 NX Turning Tool Standard	Collision Distance KK	KK	
Orientation Angle	OA		Collision Distance KE	KE	
Insert Position	IP		Collision Distance KF	KF	

Trackingpoints

Rad. ID	Tracking Point TR	Nomin. Setup X	Nomin. Setup Y	Adjust A	Cutcom C
		-054.172 mm	-084.172 mm		
		mm	mm		
		mm	mm		

Holder Orientation		90 Angled 90°	Toolnumber	
Machine Adapter	MA0	120 Parallel ZYV40	# of Tool Pockets	NRP
Insert Shape	IS	C Rhombic' 80 d.	Max. Depth	MD
Inscribed Circle Diameter	IC	12.700 mm	Coolant	
Corner Radius	IR	0.800 mm	Cooling Pressure	
			Weight of Item	WGT

Cutting Edge Length	IL	12.900 mm
Insert Included Angle	A1	80.000 °
Insert Thickness ISO	IT	4.76 (4) mm
Clearance Angle Major	A3	0.000 °

Warning Time	WTO	min
Default Tool Life	TL0	min
Tool Material ID	MAT0	

Note:

This procedure works correctly for all existing tool assembly classes in the Manufacturing Resource Library. If, however, your administrator adds new classes to the classification hierarchy, the class in which you classify the resource assembly must be specified as an assembly class in the Classification Admin application. In addition, the attributes that you want to propagate to the root node must have the **Propagated Property** option selected in the resource assembly class in Classification Admin.

Creating resource assemblies

In addition to individual components, Resource Manager manages the resource assemblies that are used by manufacturing tasks. Classified resource components are used to build these resource assemblies.

Generally, tool components cannot be used in a manufacturing process by themselves, so they are assembled using Resource Manager into resource assemblies. These assemblies are then used in the manufacturing production process. For example, parts are added to a resource assembly by a tool designer and then used in a manufacturing process created by a process planner.

There are three main features of a resource assembly:

- Assembly structure

The assembly structure is displayed in a tree hierarchy on the left side of the Resource Manager application window in the resource view. The tree hierarchy shows the logical structure of how the different components are assembled to make up the structure. The root node represents the assembly. Additional components are added to the root node to build the structure.

You can use cut, copy, paste, or drag-and-drop functions to organize components within the structure hierarchy.

- Assembly attributes

If its root node is selected in the assembly structure, its attributes are shown on the **Classification Properties** view. If subassembly or component nodes are chosen, the attribute list in the **Classification Properties** view changes and the attributes of the selected object are displayed.

- Graphical representation

The **Classification Properties** view has two viewing windows on its right-hand side. The upper window displays an image associated with its class, while the lower window shows an image associated to the instance, if available.

Create new tool assembly resources

1. Choose **File** → **New** → **Resource**, or click **Create a new Tool Assembly**  on the toolbar.

The **Classification Information** dialog box opens to the Assemblies branch of the **Hierarchy Tree**.

Note:

This option is available only if the preference **MRMCreateToolAssemblyAndComponent** is set to **True**.

2. Navigate through the classes and double-click the classification to which the new item is being assigned.

The **New Tool Assembly** dialog box appears.


3. Enter the **Item Details** information for the new resource.

Item ID	<p>This information is required.</p> <p>If the preference MRMToolAssemblyAndComponentIDAutoGenerated is set to True, the ID number is automatically generated according to site-specific settings.</p> <p>If the preference MRMToolAssemblyAndComponentIDAutoGenerated is set to False, the ID number can be assigned by the user, or you can click Assign to let Resource Manager automatically assign a unique ID.</p>
Revision	<ul style="list-style-type: none"> • If the resource is new, type A. • If it is a revision of an existing resource, type the next consecutive revision number. • To let Resource Manager automatically assign a unique revision number, click Assign.
Name	Type the name of the new resource or resource revision. Make it unique so you can easily search for it.
Description	(Optional) Type a description of the new resource.
Item Type	The Item Type MENCTool is automatically selected.

4. Click **OK**.
5. (Optional) If the resource is incorrectly classified in the previous step, classify it in the appropriate class.

Note:

If you change the **Item Type** for a resource that has an ID that was automatically generated, the ID remains the same.

- If this resource is the root node upon which a resource structure is to be built, add components to this root to build the resource structure.
- Click **Save**  on the toolbar to save the new resource.

Auto-generate new resource Item ID

Set preferences to auto-generate Item ID

If your company has specific conventions for assigning **Item IDs** in Resource Manager, you can use an option to have the **Item ID** auto-generated for the **Create new Tool Assembly** and **Create new Tool Component** commands. Set your preferences to determine whether and how the **Item ID** is auto-generated.

- Set the preference for **MRMToolAssemblyAndComponentIDAutoGenerated**.

Note:

If this preference is set to True, the **Item ID** is automatically provided in the **New Tool Component** or the **New Tool Assembly** dialog box. If this preference is set to False, you can enter the Item ID manually or select **Assign**.

- Set the preference for **MRMToolAssemblyAndComponentIDCounterFormat** to control the number of digits in the **Item ID** when auto-generated.

Note:

The auto-generated numbers and format in the **Item ID** are associated with the specific class. See the examples below.

Resource Class	New Tool Component Class	New Tool Assembly Class
Initial Item ID auto-generated	TUR0001 TUR = site-specific prefix 0001 = 4-digit auto-generated number	TRNA001 TRNA= site-specific prefix 001 = 3-digit auto-generated number
Next Item ID auto-generated	TUR0002 0002 = next number in this class	TRNA002 002 = next number in this class

- Set the preference for **ICS_available_languages**.

Note:

When this preference is defined with the value **Resource_ID_Prefix**, you can define a specific prefix in Classification Admin.

Add a site-specific prefix

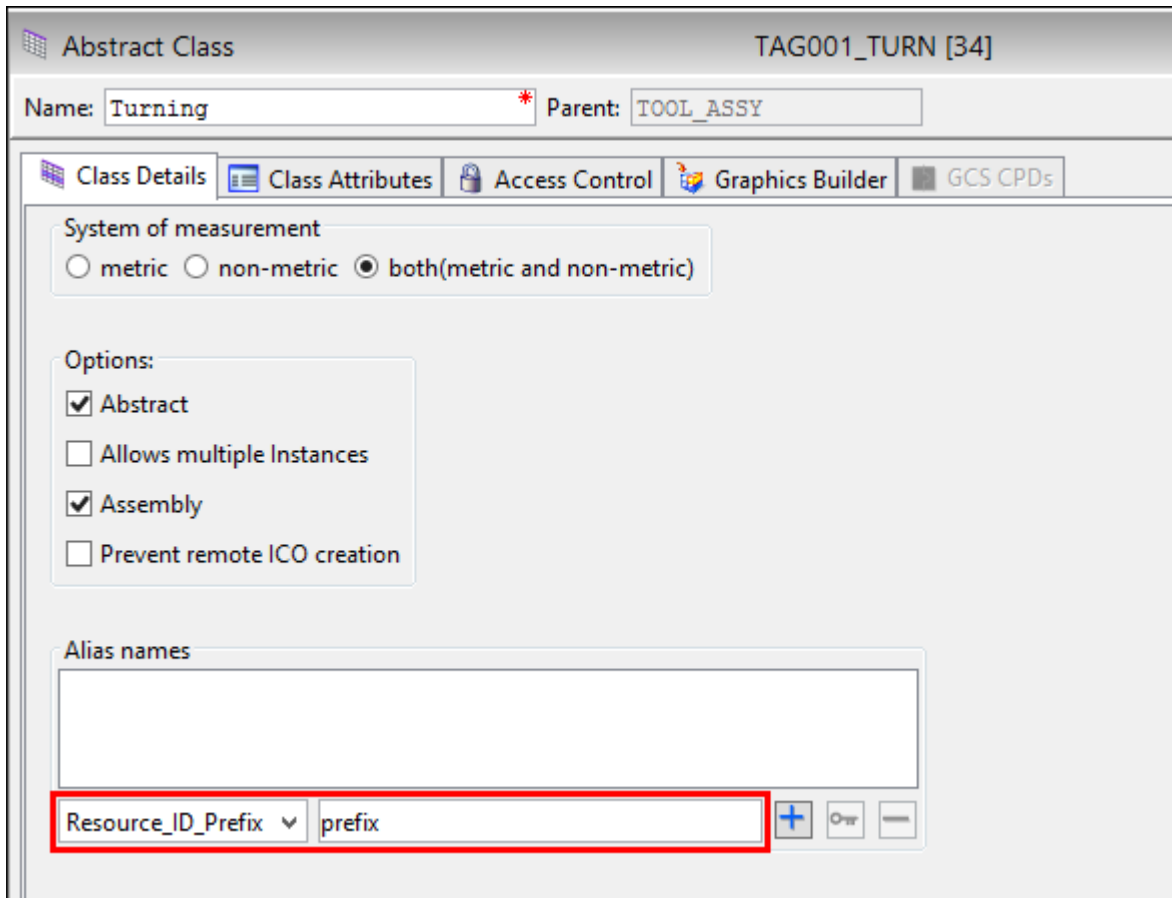
1. While in Classification Admin, select the class to which you want to add a specific prefix.

Note:

You can add a specific prefix for a class at any level of the hierarchy. When Resource Manager checks for a specific prefix, it searches the current class level first. If it can't find the prefix, it will search in the next level up in the class hierarchy.

2. Click **Edit current Instance** .



The **Abstract Class** dialog appears.



The screenshot shows the 'Abstract Class' dialog box for instance 'TAG001_TURN [34]'. The 'Name' field is 'Turning' and the 'Parent' is 'TOOL_ASSY'. The 'Class Details' tab is selected, showing the following settings:

- System of measurement:** metric, non-metric, both(metric and non-metric)
- Options:**
 - Abstract
 - Allows multiple Instances
 - Assembly
 - Prevent remote ICO creation
- Alias names:** (empty text area)
- Resource_ID_Prefix:** A dropdown menu is open, showing 'Resource_ID_Prefix' selected. The text 'prefix' is entered in the adjacent text field.

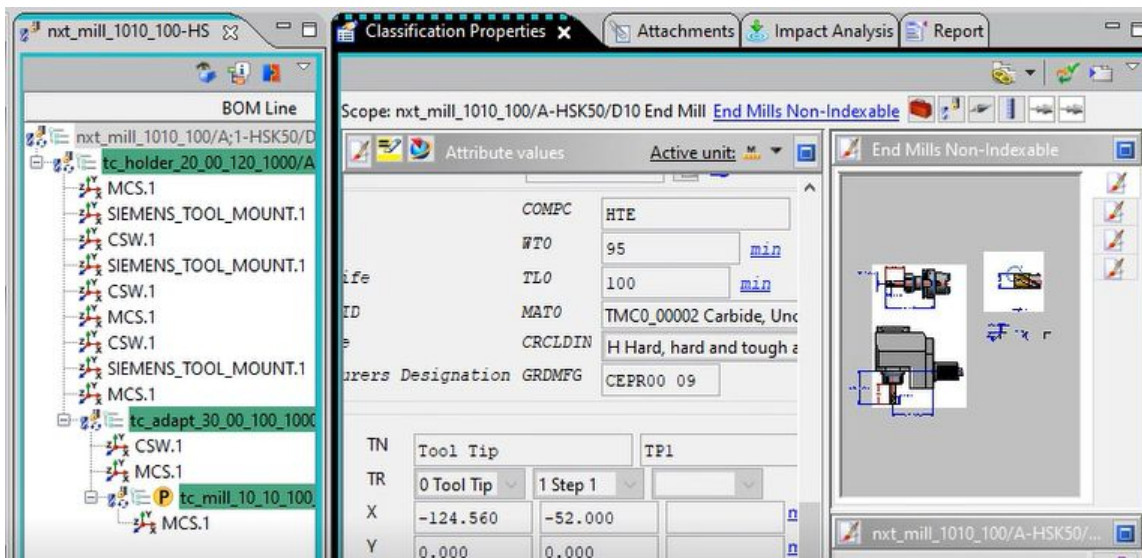
3. Be sure **Resource_ID_Prefix** is selected and enter the site-specific prefix.

4. Click **Add** .
5. Click **Save** .

Using tracking points for milling and drilling tools

A tracking point is the internal reference point on the tool that NX uses to calculate tool paths. When you choose a tracking point, the milling and drilling processors use the associated data to determine cut regions, collision detection, tool paths, in process workpiece, and to position to avoidance geometry.

To ensure tracking points are transferred properly to NX, it is important to define the **Tool Tip** and **Step 1**.




- To define one mill or drill tracking point for NX CAM, define a tracking point with *0 Tool Tip* that specifies the tool tip position. Then define a second tracking point with *1 Step 1* which defines the real tracking point.
- To define two or more tracking points in NX CAM, you can add more tracking points and enter *1 Step 1* for each new tracking point.




Creating and maintaining resource structures

Create resource structures

1. Create a new or open an existing component that represents the root of the new structure.



Note:

If you are working on an existing resource structure, you must click the **Edit** button  on the toolbar first.

2. Add additional components to build up the structure hierarchy. If you add a subassembly as an assembly component, it appears with a different background color to differentiate it from other components. If you loaded the Manufacturing Resource Library:
 - a. Begin your search for new components in the customer hierarchy.
 - b. If you do not find a required component in the customer hierarchy, search for it in the catalog hierarchy and map the desired ICO to a customer class.
3. (Optional) Click **Propagation**  to populate the top-level assembly class with specific attributes of individual components within the resource structure.
4. If you are modifying an existing resource, save your changes with **Save**  or discard the changes with **Cancel Edit** .

Add components to a structure

After a root component is specified in the assembly structure, add components to the root to build up the resource structure.

1. Select the root component in the **Resource** view.
2. Click the **Edit** button  on the toolbar to enter edit mode.
3. Choose **Edit→Add Classified Component**, or click the **Add Classified Component** button  on the toolbar.

The Classification Search Dialog opens.

4. Search for a resource to add to your structure.

If you use the Manufacturing Resource Library:

- a. Begin your search for new components in the customer hierarchy.
 - b. If you do not find a required component in the customer hierarchy, search for it in the catalog hierarchy and map the desired ICO to a customer class.
5. After you select the object, click **OK** in the Classification Search Dialog.

The Classification Search Dialog closes and the object is added as a child component of the root in the assembly structure.

Note:

You can select more than one item simultaneously to add multiple components to the resource structure at one time.


6. Click **Save** .


You can select assemblies as components to add in a resource structure. If you do, each subassembly is shown with a different background color.

Repeat these steps to add additional components to the structure.

Open existing resources

Resource Manager provides you with several ways to open existing resources. You can:

1. Use the Classification Search Dialog.
 - a. Click the **Classification Search Dialog** button  in the toolbar.

The Classification Search Dialog appears.
2. Use the object ID.
 - a. Click the **Object ID** button  in the toolbar.
 - b. Type the object ID of a resource in the dialog box. You can use wildcard characters, if necessary.
 - c. Press the Enter key.

If your search returns more than one result, Teamcenter displays the result in the **Classification Table** view.
3. Use the quick search.
 - a. Type a string in the search box at the top of the Teamcenter navigation pane.
4. Open from another application.
 - a. Open the item from another application.

- b. Use the shortcut menu or a drag-and-drop function to send it to Resource Manager on Active Workspace.

Working with revisions

A resource structure is a hierarchy of item revisions. Item revisions allow you to capture the state of a component or the entire assembly at a specific point in time.

Resource Manager always saves resources using the **Precise** revision rule. When you open an assembly, you see exactly those revisions of components that were used at the time it was saved. For best results, you should always view resource assemblies using the **Precise** revision rule.

When creating a new resource revision, Resource Manager can automatically revise all resource assemblies containing this revision.

Revising resources

In Resource Manager you can revise and save individual resource components with several options.

Note:

Resource Manager always saves resources using the **Precise** revision rule. When you open an assembly, you see exactly those revisions of components that were used at the time it was saved. For best results, you should always view resource assemblies using the **Precise** revision rule.

Revise individual resource components

1. Open the individual resource component as the root component.
2. Follow standard revision procedures.

Revise individual resource components, including all assemblies in which this resource is contained

The **Revise (incl. Super-Assemblies)** option in Resource Manager allows you to revise a component, in addition to all latest revisions of super-assemblies containing that component. Consider an example where you have three resource assemblies, Assembly 1/C, Assembly 2/A and Assembly 3/F. Each of these three assemblies contains multiple components, but all assemblies contain Component 3/A. If you revise Component 3/A using the **Revise (incl. Super-Assemblies)**, the resulting assemblies are as follows:

Before revisioning

Assembly 1/C
Component 1/A

After revisioning

Assembly 1/D
Component 1/A

Before revisioning	After revisioning
Component 2/A Component 3/A	Component 2/A Component 3/B
Assembly 2/A Component 1/A Component 3/A Component 4/D	Assembly 2/B Component 1/A Component 3/B Component 4/D
Assembly 3/F Component 3/A	Assembly 3/G Component 3/B

All original items in the database remain unchanged. Resource Manager creates three new assembly item revisions containing the revised components.

Revise individual resource components including super-assemblies

1. Open the resource that you want to revise as the root node. This resource can be a resource assembly.
2. Choose **File→Revise (incl. Super-Assemblies)**.

If the resource that you are revising is contained in the latest revision of other assemblies, Resource Manager lists these and asks if you want to continue to revise all super-assemblies.

- When you click **Yes**, the resource is revised. Resource Manager also saves all super-assemblies as new revisions that you can find using the Classification Search Dialog. The new assembly revisions contain the revised component.
- When you click **No**, Resource Manager only saves the selected resource. The new item revision is not contained in any super-assembly.

Assign workflows to resources

You can initiate a workflow for your resources to have them, for example, reviewed, approved, or released, depending on the needs of your company. For sample purposes, **TCM Release Process** adds a status of **TCM Released** to your resource. Your system administrator can use this process as a basis to help configure a workflow that suits your needs and associate access permissions based on the status.

To assign a **TCM Released** status to a resource:

1. Select the resource for which you want to initiate the workflow.
2. Choose **File→New→Workflow Process**.
3. Select **TCM Release Process** from the **Process Template** list.

4. Click **OK**.
5. Select the resource and choose **Refresh** from the shortcut menu.

A flag beside the resource indicates that it has a status, in this case, **TCM Released**.

Display connection point information in the hierarchy tree

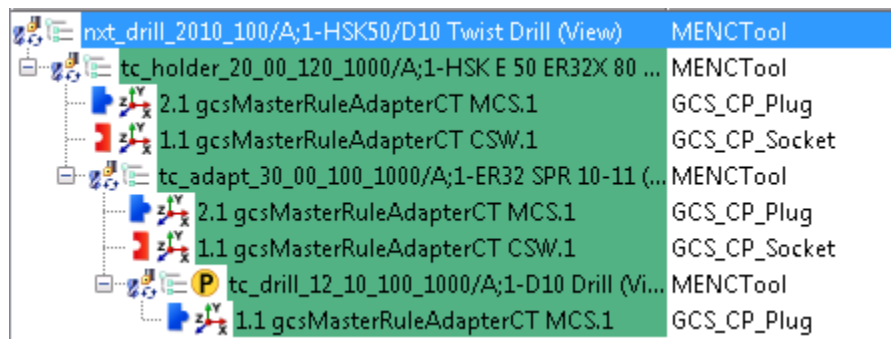
To display or hide the connection point information, in the **View** menu, choose **Show/Hide GCS Connection Points**.

Hide the display of coordinate systems

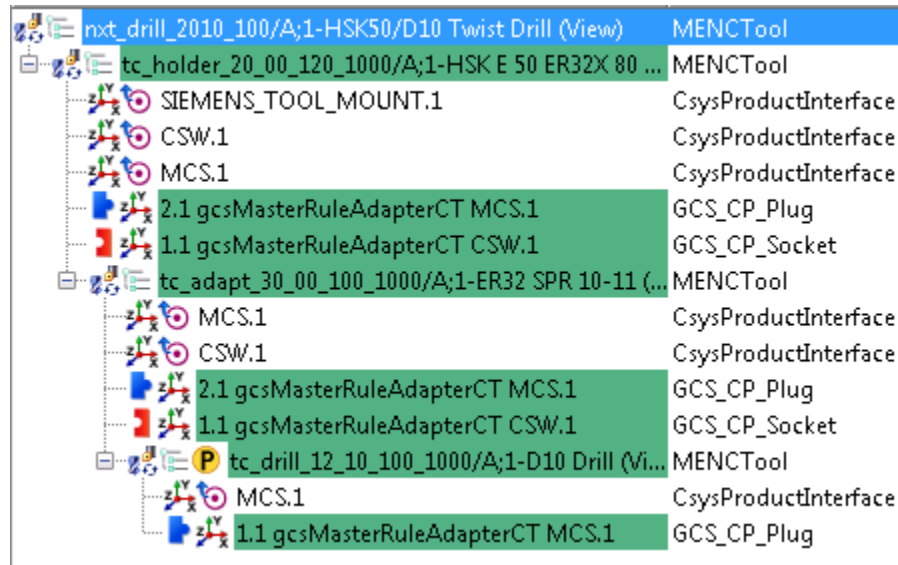
A single resource can contain multiple coordinate systems that are all displayed as a line in the tree structure. You can hide these lines.

- Choose **View**→**Show/Hide CSYS Lines** or choose **Show/Hide CSYS Lines** from the view menu in the resource view.



The following shows a resource with coordinate system lines hidden.




The following shows a resource with coordinate system lines displayed.



Remove components from a structure

1. If you are not already in edit mode, click the **Edit** button  on the toolbar.
2. Click the **Remove a Line** button  to remove the component from the current resource structure.



Warning:

If you click the **Delete** button  instead of the **Remove a Line** button, the resource is deleted from the database.

3. Click **Save** .


When you remove a component that satisfies one more multiple guided component search connection points from a resource assembly using the **Cut** or **Remove a line** command, Teamcenter updates the previously satisfied connection points and removes the connection information from the connection points.

Attach notes to a component



1. From the assembly structure, select the component to which notes are being added.
2. Click **Edit**  on the toolbar.
3. Click the **Notes** button  on the toolbar.

The **Notes** dialog box appears.


4. In the **Create** list, select the type of note.

5. Type a note description in the description entry area.
6. Click **OK**. The note is added to the selected resource.
7. Click **Save** .



Edit notes attached to a component

1. From the assembly structure, select the component for which notes are to be edited.
2. If you are not already in edit mode, click the **Edit** button  on the toolbar.
3. Click the **Notes** button  on the toolbar.

The **Notes** dialog box appears. The existing notes are displayed.

4. In the **Existing Notes** list, select the note to be edited.
5. Modify the note as necessary.
6. Click **OK**. The note is edited.
7. Click **Save** .

Delete notes attached to a component

1. From the assembly structure, select the component for which the notes are being deleted.
2. If you are not already in edit mode, click the **Edit** button  on the toolbar.
3. Click the **Notes** button  on the toolbar.

The **Notes** dialog box appears. The existing notes are displayed.

4. In the **Existing Notes** list, select the note to be deleted.
5. Click **Remove**.


The note is deleted.

6. Click **Save** .

Create graphics for a resource

When an object is classified under a storage class that is associated with an NX part family template or template part, you can create a part family member and related graphics corresponding to the ICO.

Perform the following steps to create a new part family member and/or graphic for a resource:

1. Click the **Create/Update graphic from ICO** button .

Teamcenter displays the **Create/Update Graphic** dialog box.

2. Click the **Part family template** or **Template part** tab, depending on the type of template you are using.
3. Select the template from the **Template** list.

Caution:

Teamcenter lists any mapped attributes that have not been assigned a value. You must assign values to the listed attributes to create graphics from them.

4. Select **Create part file** to create a PRT file.
5. Select **Create JT file** to create a JT file.

Note:

If you do not choose to create the part or JT files at this time, Teamcenter creates a new part family member and adds it to the template. You can create the files in a subsequent session using Teamcenter Integration for NX.


6. Click **Create/Update**.

The system creates a new item and an item revision that contains the part files. The name of this new item is the same as the object ID of the newly created ICO. The newly created ICO classifies the item revision.

If you create graphics based on part family templates and you revise the item that contains the part file, you must revise all part family members so that the members all have the same revision as the top item.

There are several considerations when you are **updating template parts**.

Update a graphic based on a template part

1. Open the ICO that you want to update, make any necessary changes to the attribute values, and save the ICO.
2. Click the **Create/Update graphic from ICO** button .

The **Create/Update Graphic** dialog box is displayed.

3. Select one of the following:

- **Refresh member part**

Updates the geometry of an existing member part with the modified attribute values from the ICO.

Refreshing a member part retains changes made manually to the member part in NX.

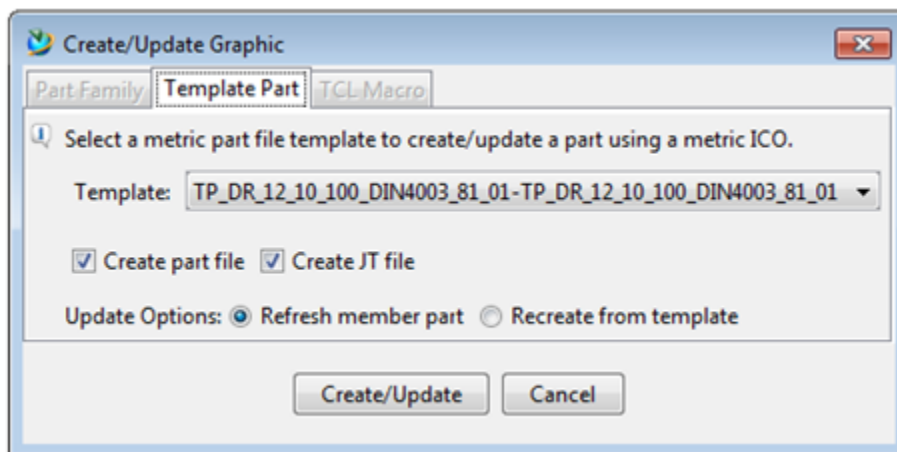
- **Recreate from template**

Discards the member part geometry and uses the geometry from the template part to re-create the member part geometry.

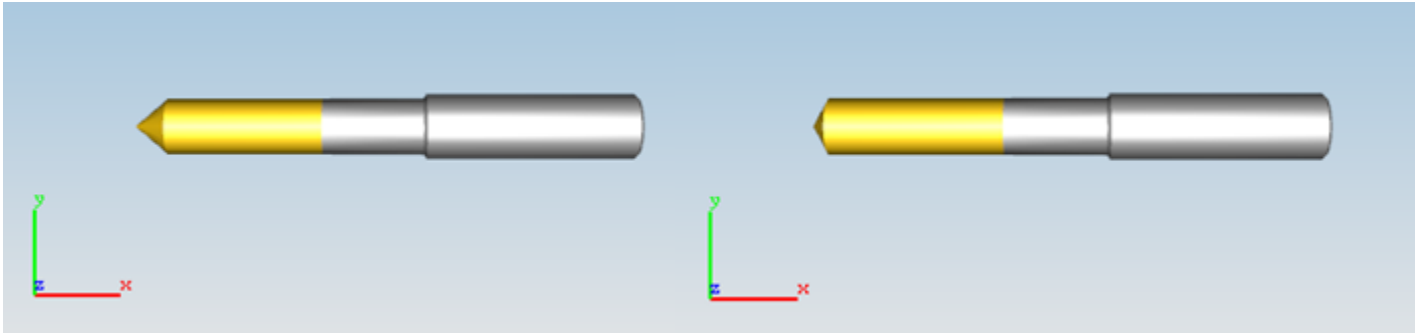
Any manual changes made to the member part are lost.

Refreshing versus re-creating a template part

When you update graphics using the **Create/update graphic from ICO** command, it is important to understand the difference between the **Refresh member part** and the **Recreate from template** options to allow you to make the correct decision when creating graphics.



In this example, a part for a flute drill is used as a template part. In Teamcenter, the tip angle is modified and a member part is generated.

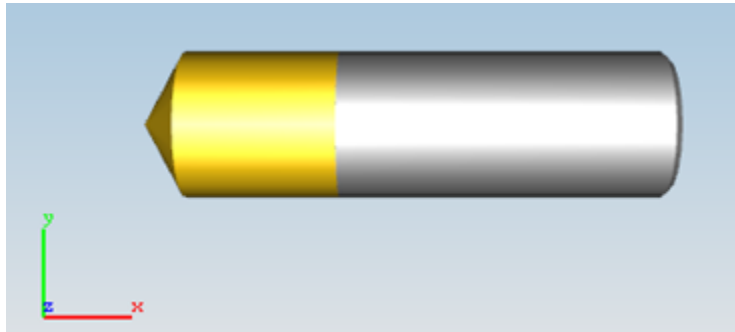


These two steps represent the most common workflow. At this point, if you modify any parameters in Teamcenter, it makes no difference whether you select **Refresh member part** or **Recreate from template**. The result is the same.


If, however, you modify the member part in NX, there is a difference between the two options. For example, if the member part is modified in NX so that the tool holder is green and the tool width is changed in Teamcenter, when the **Refresh member part** option is chosen, the graphics are created taking both the changes to the member part in NX and the modified attribute values in Teamcenter into consideration.



Selecting **Recreate from template**, however, discards any changes you made to the member part in NX and creates the graphics based on the template part and the values in Teamcenter. Because the template part in this example still has a gray holder, when you select **Recreate from template**, the drill holder is now gray again.



Create graphics for multiple resources

1. With search results displayed in the **Table** view, select all instances in the table for which you want to create graphics.
2. Click  at the bottom of the **Table** view.

Teamcenter displays the **Create Graphics for Selected ICOs** dialog box. If no part family template (PFT) is defined for one of the instances listed, that line is highlighted in red.

If there are multiple PFTs assigned to a class, the background color is yellow. The default PFT is selected. If you want to use a different PFT for the selected ICOs listed in the dialog box, click the down arrow beside the name of the PFT and select a different PFT.

Note:

This PFT is used to generate graphics for all instances listed in the **Create Graphics for Selected ICOs** dialog box. If you want to use different PFTs to generate graphics for ICOs in the same class, you must select the ICOs accordingly in the **Table** view.

3. (Optional) Select **Create part file** and **Create JT file**.

Check box states

Action

Create Part File Create JT File

Teamcenter adds the ICO values to the PFT spreadsheet and creates a part file.

Create Part File Create JT File

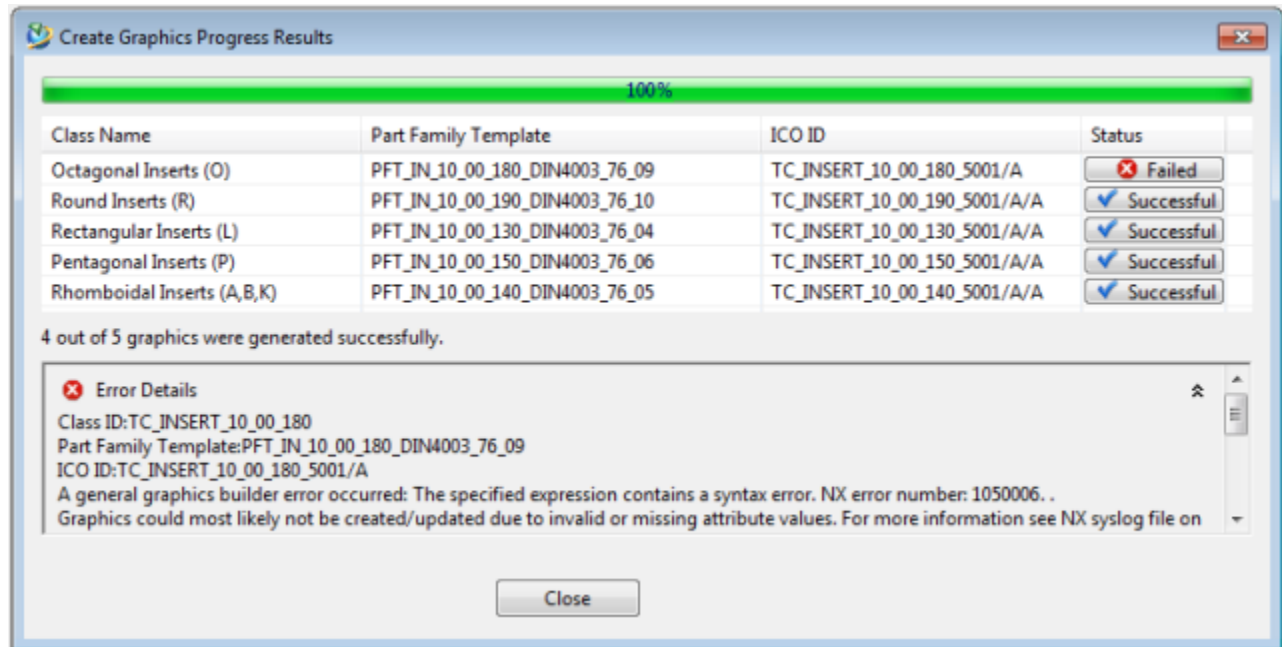
Teamcenter adds the ICO values to the PFT spreadsheet and no graphics are created. In this case, the **JT** check box is unavailable.

Create Part File Create JT File

Teamcenter adds the ICO values to the PFT spreadsheet and creates a part file and a JT file. You can create JTs only if the **Create part file** check box is enabled (default state).

4. Click **Create/Update**.

Teamcenter opens the **Create Graphics Progress Results** dialog box listing each ICO and the status of the graphics creation. At the bottom of the dialog box, Teamcenter provides an explanation for each failed generation attempt.

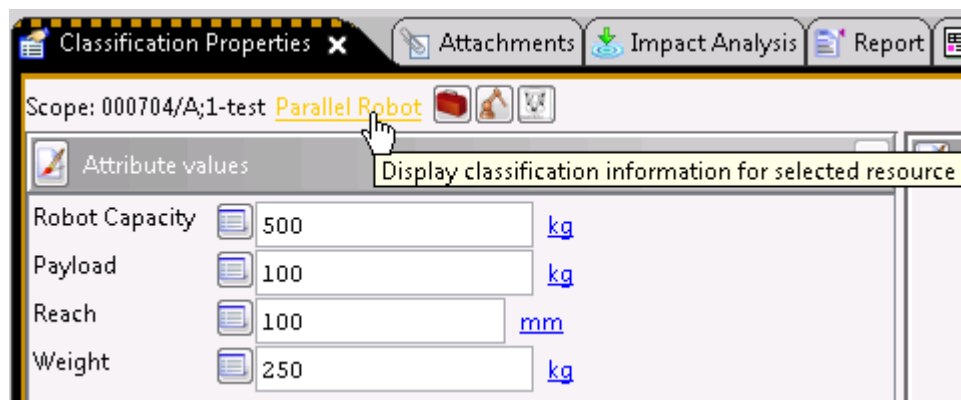


Classifying resources

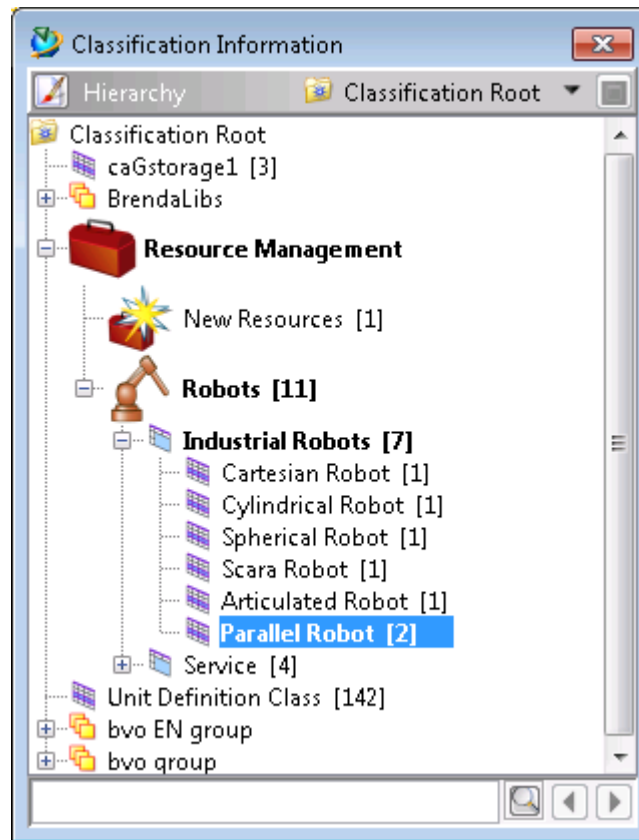
Classify resources

Classifying a resource allows you to associate it with a class and assign to it the attributes of that class.

1. Select the root node of the assembly structure in the **Resource** view.
2. Click the **Edit** button in the toolbar, if you are not already in edit mode.
3. Click the hyperlink that displays the class name in the **Classification Properties** view.



The **Classification Information** dialog box appears.




If this is the first time that you are classifying a resource in a session, the classification tree opens the **New Resource** directory. If you already classified resources in a session, the system displays the classification of the last item classified or loaded.

4. Expand the classification root to navigate through the classes and double-click the classification to which the new item is being assigned.

There are two ways to assign an item to a classification class:

- a. Double-click the desired class.
- b. Right-click the desired class and choose **Select**.

When you select the classification class, attributes of the selected class are displayed in the **Classification Properties** view.

5. Enter the attribute values of the new resource in the **Classification Properties** view.
6. Click **Save** .

The resource is saved as a classified item.

If you specify that the root node of the resource structure is an assembly class, it can inherit propagated attributes from the components within the structure.

Classifying resource assemblies

Resource assemblies that you create can be stored in the database as classified assemblies. If stored in an assembly class, propagated attributes of the components in the resource hierarchy are also stored in the assembly objects.

Your system administrator must create an assembly class through the Classification Admin application.

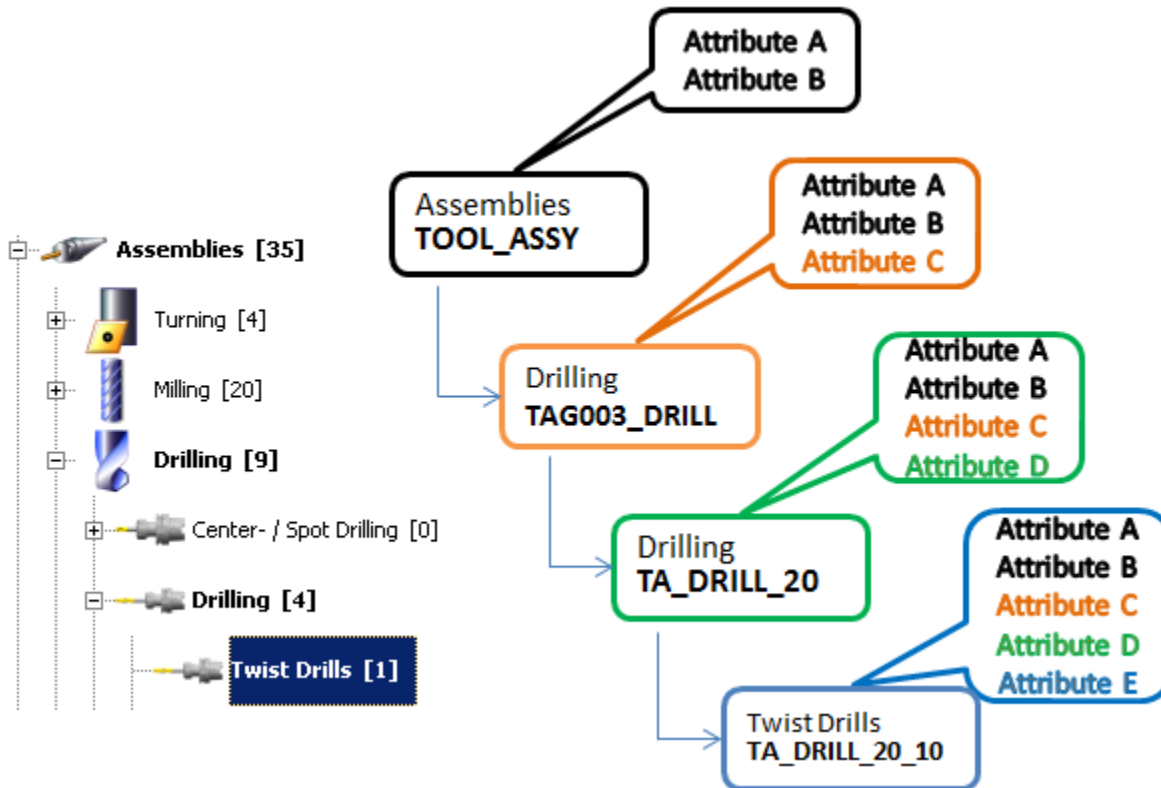
Resource Manager stores the resource data with classification information as objects in the database. The classification information is managed in the Classification application and is displayed in a tree-type hierarchy, called the *classification hierarchy*, consisting of nested classes. Each class contains a set of attributes. The attributes are the characteristics of the resource class. This attribute information typically contains the specification of characteristics of an object. For example, it may include values for physical characteristics such as diameter, weight, or length. This classification information is stored in a classification object referred to as an *ICO*. Each ICO is unique. When you classify a resource or resource assembly, an ICO is attached to it.

You define the class hierarchy that categorizes your resources in the Classification Admin application. This classification information enables you to search in both a hierarchical and product-independent structure for resources.



Applying and inheriting attributes

About attribute inheritance

When creating a classification structure, administrators assign attributes to the different classes in the hierarchy. These attributes describe each class and all subclasses of that class. Each subclass inherits all the attributes that are contained in the parent class. Setting up the attributes in this way makes searching more effective. You can select a top class and search for a tool within that class using a particular value knowing that that attribute is also contained in all the child classes of the class. In the figure below, you can see that only **Attribute E** is assigned to the **Twist Drills** class. All other attributes are inherited from the parent classes.





Edit assembly attributes

1. Select the root node in the assembly structure.
2. Click the **Edit** button  on the toolbar.
3. In the **Classification Properties** view, edit the attribute values for the resource.
4. Click **Save** .

Edit the attributes of individual components

When you edit individual components, the component is modified in every assembly in which it occurs. Because any edits made to component attributes are propagated throughout every assembly in which the component appears, a security check is added to the application to make you reconsider your decision to modify a component before you actually make the change. This security check requires that you open the component in the BOM by itself so it displays as the root-level component.

1. Right-click the component to be edited in the assembly structure.
2. Do one of the following:
 - a. Choose **Send to→Classification**.

- b. In the Classification application, click **Edit** .
- c. Modify the values as necessary.
- d. Click **Save** .
- e. Return to the Resource Manager application.
- f. If necessary, refresh the component to see the changes.



-or-

- a. Choose **Send to** → **Resource Manager**.

Note:

You must save the assembly before you do this.

Teamcenter opens the component in a new **Resource** view where it becomes the root node.

- b. Click the **Edit** button  on the toolbar.
- c. Edit the attribute values displayed in the **Classification Properties** view.
- d. Click **Save** .

Teamcenter propagates the values of the modified component to all assemblies that use the component.

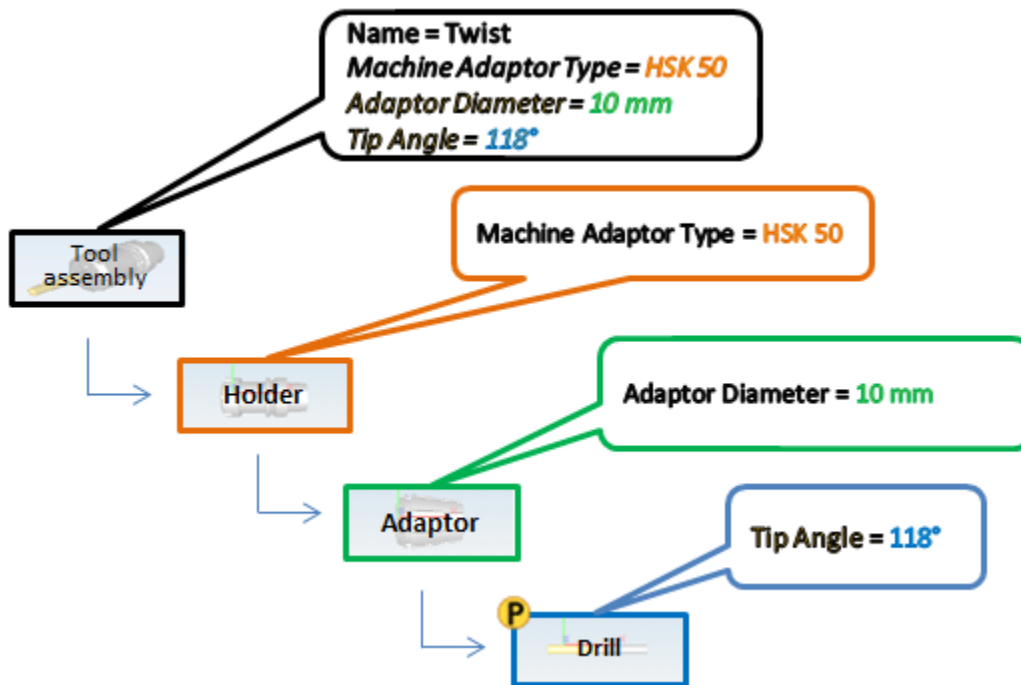
- e. Return to the assembly by displaying its **Resource** view.

Propagating component attributes to the resource assembly

About attribute propagation

Attribute propagation allows you to automatically populate the values for an assembly from the structure, instead of manually re-entering component attribute values in each new assembly.

Teamcenter copies attribute values from individual components, which you specify as *propagation start points (PSP)*, to the root node of the assembly. In the example below, the **Tip Angle** attribute associated with the **Drill** is propagated to the **Tool assembly**, because it is identified as the PSP.




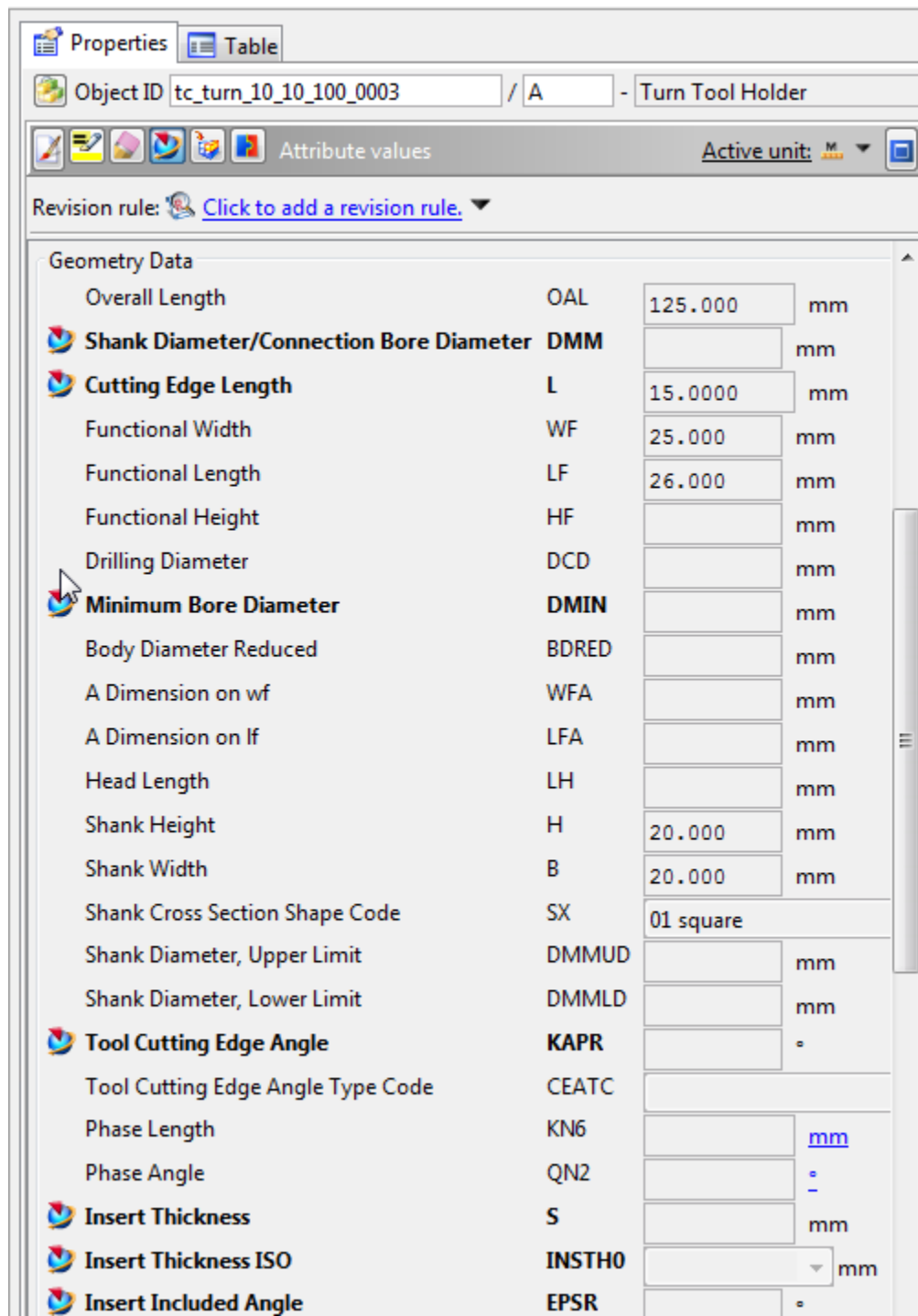
You can then focus your Classification searches on the assembly class and more quickly find the resource data you need to manufacture a particular process or operation. Because selected component attributes are stored in the assembly class, you do not need to search the entire component list to find the attribute information you need.

PSPs define at which component in the resource structure attribute propagation begins. Only one PSP is allowed per structure unless you are working with a multitool assembly. See Working with multitool assemblies. You can set a PSP at any level in the resource assembly structure. When the assembly is saved, Resource Manager identifies the PSP in the structure and looks to that component for the attribute value to propagate. If the attribute is not found in that component, the application moves up the structure hierarchy toward the root node one component at a time, until it finds the attribute. After the attribute is found, its value is added to the root node and saved with the assembly.

Any attributes that are shown in the **Properties** view in *italic* are propagated attributes. This means that Teamcenter searches for the component in the structure that is marked as the PSP **P** and displays that value. In the above example, when determining which value to display for **Adaptor Diameter** in the tool assembly, Teamcenter looks down the structure until it finds the component marked as the PSP, in this case, the drill. It then searches first for the **Adaptor Diameter** attribute in the drill. The attribute is not in the drill, so Teamcenter moves up the hierarchy and looks for the attribute in the adaptor. Teamcenter finds the attribute, so it displays its value (10 mm) in the **Adaptor Diameter** box in the tool assembly.

Tip:

Click the **NX CAM** button  in the **Properties** view to see all the attributes that are applicable to NX CAM. These are also the propagated attributes.



The **MRMPropagationAlternateAttributes** preference allows you to specify alternate attributes for propagation.

Reverse attribute propagation

In some cases, the highest component in the structure contains the attribute that should be propagated to other components in the structure. You can use a particular preference to identify specific attributes that should propagate downward rather than upward. See **About reverse attribute propagation**.

Understanding propagated attributes

The following table demonstrates attribute propagation. In this example, the user, while in Classification Admin, specifies the **Test Assembly 1** class as an assembly class. Furthermore, in the assembly class, **Attributes 1–5** have the **Propagated Property** option selected.

Note:

For specific cases that include attributes at the upper levels of a structure that need to be propagated downward, see **About reverse attribute propagation**.

		Attributes				
		1	2	3	4	5
	Test Assembly 1			✓		
	Component 1	✓	✓			
	Component 2	✓	✓	✓	✓	✓
	Component 3	✓		✓		
	P Component 4				✓	
	Propagation Start Point	C3	C1	C3	C4	
	Component 5					
	Component 6					
	P Component 7					

When Teamcenter propagates attributes, it begins at the propagation start point (PSP), and then travels upward through the parent levels looking for attributes to propagate. In the example, the first component it looks at is **Component 4**. The component contains **Attribute 4**, which is a propagated attribute, so Teamcenter propagates **Attribute 4** to the resource assembly, **Test Assembly 1**. Teamcenter then looks at the parent of **Component 4**, which is **Component 3**, and finds two attributes to propagate. It then looks at the parent of **Component 3**, which is **Component 1**, and finds **Attribute 2** to propagate. **Component 1** also contains **Attribute 1**, but this value has already been populated by **Component 3**. When Teamcenter is finished with propagating attributes, the top-level resource assembly, **Test Assembly 1**, shows the following attribute values:

Attribute	Propagated from
Attribute 1	Component 3
Attribute 2	Component 1

Attribute	Propagated from
Attribute 3	Component 3
Attribute 4	Component 4

Attribute 5 contains no value. Although there is a value assigned to this attribute in **Component 2**, **Component 2** does not lie within the propagation path as it is not a parent or grandparent of **Component 4**, the PSP. Similarly, **Components 6** and **7** do not lie within the propagation path.



A gray PSP indicates that this PSP is defined in the context of a subassembly. It is not taken into consideration in the current tool assembly. Subassemblies are highlighted with a colored background in Resource Manager.



Creating an assembly class that contains propagated attribute values


Before attribute values can be propagated from individual resource structure components to the top-level resource assembly, the class in which the assembly is stored must be classified as an assembly class within the Classification Admin application.

The assembly class defines which attributes can be propagated from the resource structure components. As you create the assembly class with the Classification Admin application, choose the **Assembly** option on the **Class Details** tab. As you create the class attributes on the **Class Attributes** tab, choose the **Propagated Property** option for every attribute of the class that has its value propagated from within the resource structure.


Add a propagation start point


1. Select the component in the hierarchy to which you are adding a propagation start point.
2. Click the **Edit** button  on the toolbar.
3. Choose **View** → **Propagation Start Point**, or click the **Propagation Start Point** button  on the toolbar.

The propagation start point is added to the resource structure. The  symbol displays next to the selected component of the active propagation start point. Any propagation points defined in subassemblies are inactive and display the  symbol.

4. Click **Save** .

Remove a propagation start point

1. Select the component in the hierarchy from which you are removing a propagation start point.
2. Click the **Edit** button  on the toolbar.

3. Choose **View→Propagation Start Point**, or click the **Propagation Start Point** button  on the toolbar.


The propagation start point is removed from the resource structure.

Note:

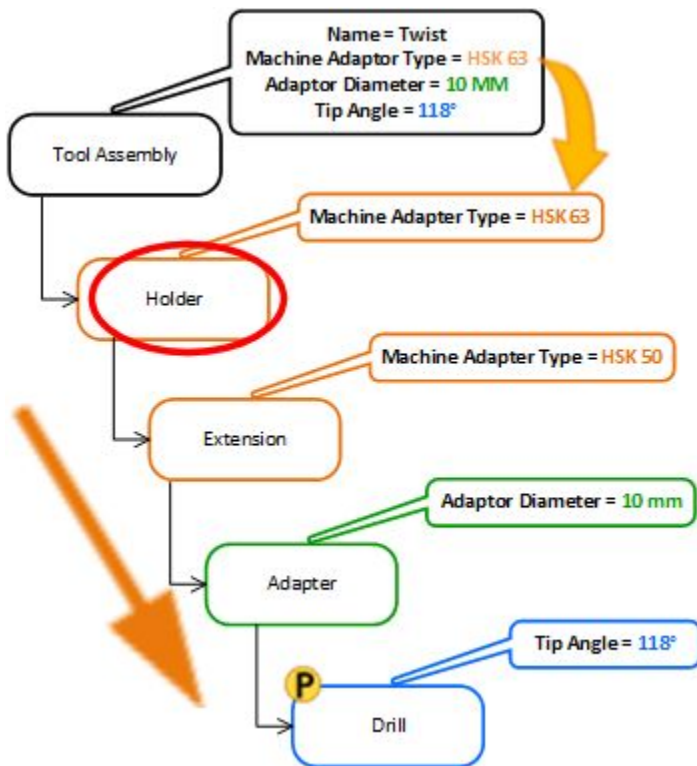
When you remove a propagation start point, the propagated values are not deleted. The values remain visible in the attribute fields, and you can modify them if necessary. If you do not want the values, you must remove them manually from each field.

4. Click **Save** .

About reverse attribute propagation

By default, assembly attributes are propagated bottom-up. Starting from the propagation start point (PSP) , the components are checked up to the root component to find specific attribute values. The first component closest to the PSP provides the value applied to each component above it in the structure. Reverse propagation works in a similar way, but the attributes are propagated downward from the first component after the PSP.

You can control which attributes are propagated downward by adding the attribute title to the preference **MRMPropagationReverseAttributes**. All attributes listed in the preference propagate in the opposite order: For these attributes, the system checks from the component closest to the root component down the structure to the component with the PSP. In this case, the value of the component closest to the root are propagated downward.



Editing propagated attributes

If any component in a resource assembly contains a propagation start point, you cannot edit the propagated attribute. If, however, attributes in the class are marked as **Propagated**, but no propagation start point is assigned, you can enter a value for the propagated attribute values. If, subsequently, you assign a propagation start point, the propagated values overwrite any values you manually entered at a higher level.

When you remove a propagation start point, the propagated values are not deleted. The values remain visible in the attribute fields, and you can modify them if necessary. If you do not want the values, you must remove them manually from each field.

Assigning site-specific properties to resources

About site-specific properties

Some organizations maintain statuses for tools in their databases such as:

- Trial
- Phased in
- Operational

- **Phased out**
- **Obsolete**

These statuses can also be dependent on location. For example, a tool assembly may be operational in the American plants but already be phased out in the Chinese plants.

You can manage these such statuses using site-specific properties. The general procedure for doing this is as follows:

Note:

Your administrator must set up the site-specific properties

1. **Assign site-specific properties to a resource.**

You do not need to edit a resource to add site-specific properties to it. This has the advantage that you can add site-specific data to a resource to which you do not have write access.

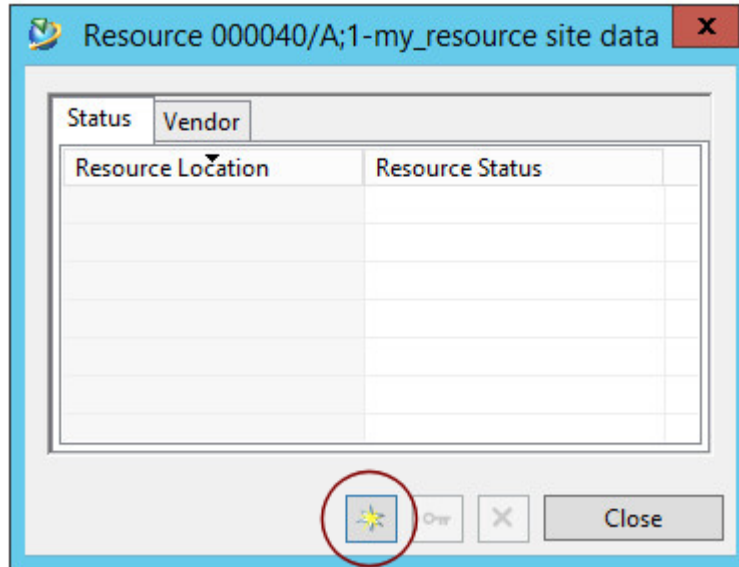
2. **Search for a resource by site.**

Assign site-specific properties to a resource

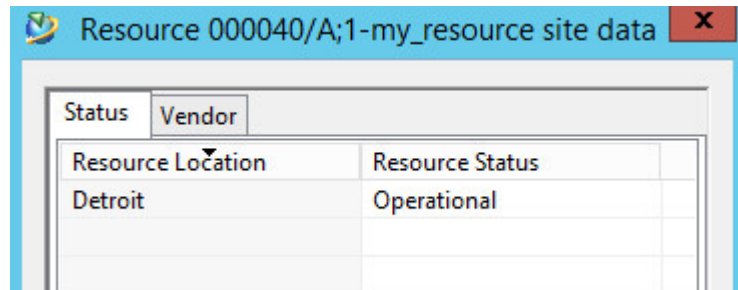
1. Open a resource in the **Resource** view.
2. Click the **Create/update site specific data for resources** button at the top of the **Resource** view.



3. In the resource site data dialog, click the **Create site data** ⚡ button.



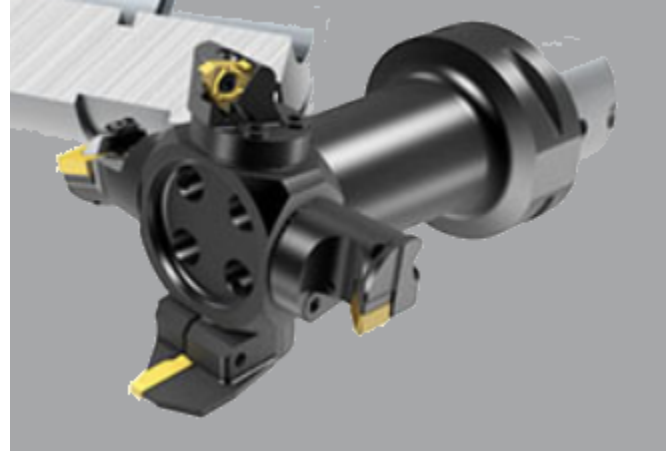
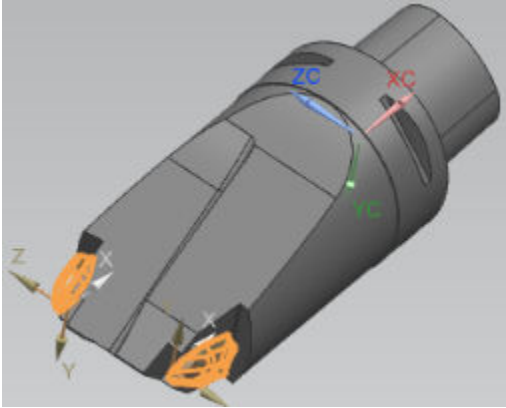
4. Select the appropriate attribute values. If there are multiple visible tabs, select the correct tab before creating the data.



Working with multitool assemblies

Overview of multitool assemblies

Multitools are tool assemblies that have more than one cutter.



Multitools save costs by reducing the need for extra tool components, and save setup time between operations that use different cutters. Using Resource Manager, you can create multitools in a way similar to the methods for creating other tools. Resource Manager displays the multiple cutters in one assembly. Each cutter is assigned its own tool type and is able to have its own attribute propagation start point (PSP) in the resource BOM structure.

You can also search specifically for multitools in NX CAM and retrieve them from the MRL tool library. The required tool parameters are passed from Teamcenter to each cutter in the multitool assembly. The multitool is then used to create and simulate the tool path.

Multitool classification

Multitools are stored in the existing tool assembly classes. In support of multitools, the following multitool attributes are available in the assembly classes:

- **Multitool MT:** Identifies a multitool
- **Cutter ID CID:** Unique cutter identifier used for multitools
- **Cutter Name CNA:** Description for a cutter typically used in a multitool
- **Index Notch INN:** Rotation angle around tool axis to position tool cutter
- **Turret Rotation TUR:** Incremental turret rotation angle to position tool cutter

Note:

The attributes **Multitool** and **Cutter ID** are set to read-only. These attributes are automatically updated by the system.

How Resource Manager handles cutter IDs for multitools

Resource Manager manages multiple cutters by assigning unique cutter IDs for each cutter in the multitool assembly.

Example:

The multitool with the item revision ID `nxt_multi_04_00815/B` has three cutters assigned:

- ID classification object (ICO) is `nxt_multi_04_00815/B#1`
- ICO is `nxt_multi_04_00815/B#2`
- ICO is `nxt_multi_04_00815/B#3`

When you create multitools, the system first checks if the existing tool has multitool classification objects attached, and determines the appropriate cutter ID. The default cutter ID is **2**, unless more than one cutter is already in the assembly. If more than one cutter is present, the next cutter added is assigned the next available cutter ID number. The assigned cutter ID is stored in the attribute **Cutter ID**.

ICO assignment for multitools

When you create a multitool assembly, a new ICO is created and attached to the same classified tool item or revision as the original tool assembly.

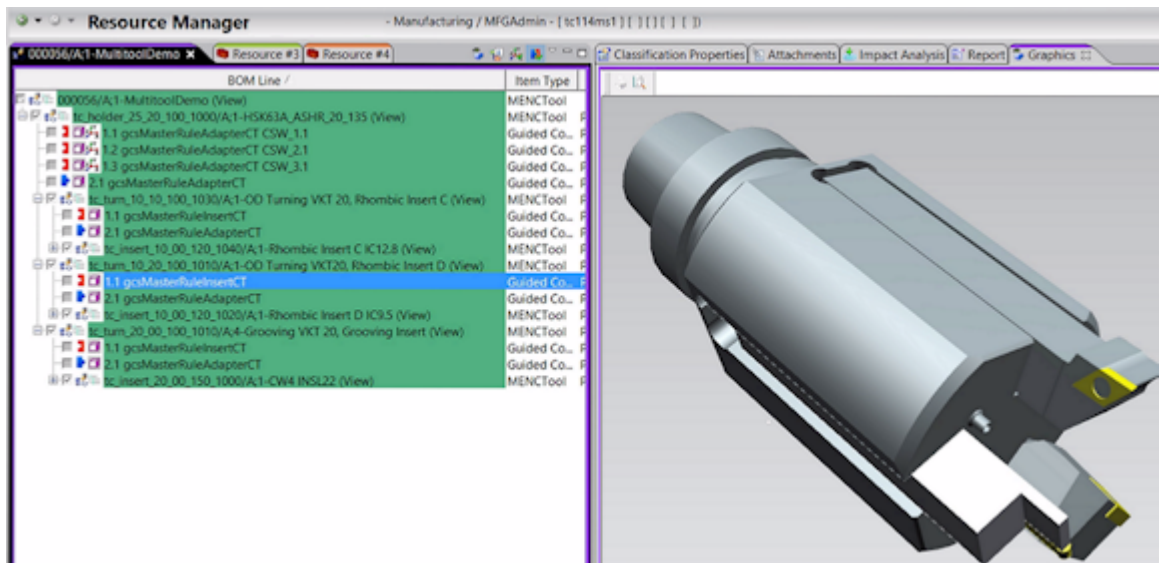
By default, the new ICO resides in the same class as the original tool assembly. All shared values are copied into the new cutter ICO, while all other fields remain initially empty. One exception is the **NX-Tool-Type**, which is initialized according to the default value for this class.

Note:

The above condition results in tools having multiple classifications defined to attach cutter ICOs. We do not recommend that you use *multiple classification* with tool assemblies in other scenarios.


Create a multitool assembly

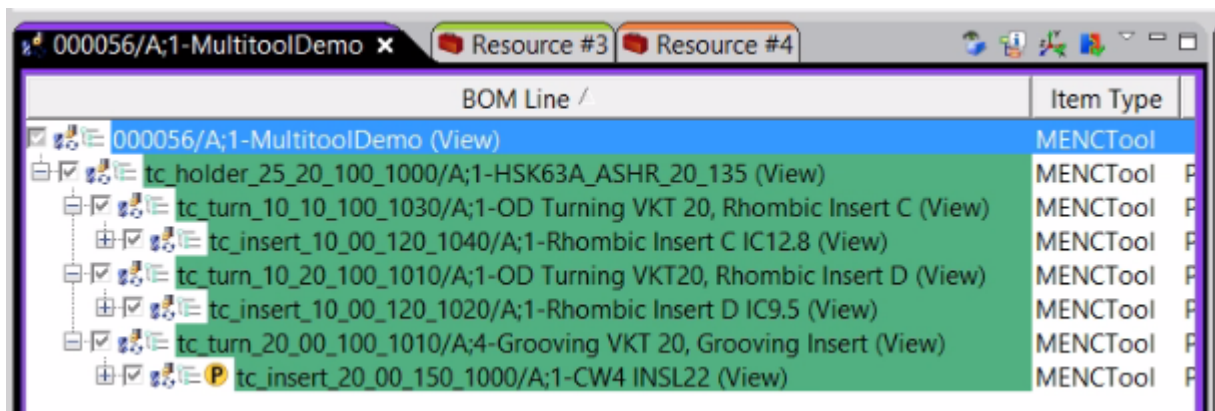
1. Assemble a new tool assembly, or open an existing tool assembly that contains multiple cutters.



- In **Cutter Name**, type a name for each cutter.

Multitool	MT	<input type="text"/>
Cutter ID	CID	<input type="text"/>
Cutter Name	CNA	<input type="text" value="Grooving Cutter"/>
Index Notch	INN	<input type="text"/>
Turret Rotation	TUR	<input type="text"/>

- (Optional) Change or assign other cutter attributes as needed, for example **Index Notch** or **Turret Rotation**.
- Set the Propagation Start Point (PSP)  for the first cutter.



- (Optional) Change the classification for each cutter as needed by selecting the corresponding tool tab, and edit the classification.

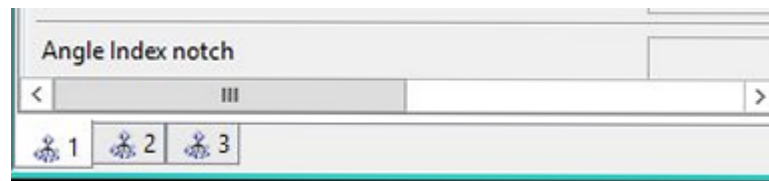



The attributes for the new classifications are loaded.

6. Click **Save** .

The attributes are propagated from the components to the tool assembly.

Since multitools contain multiple cutters, you can define tool-specific attribute values for each cutter. This is possible because Resource Manager adds a tab for each tool at the bottom of the **Classification Properties** tab.



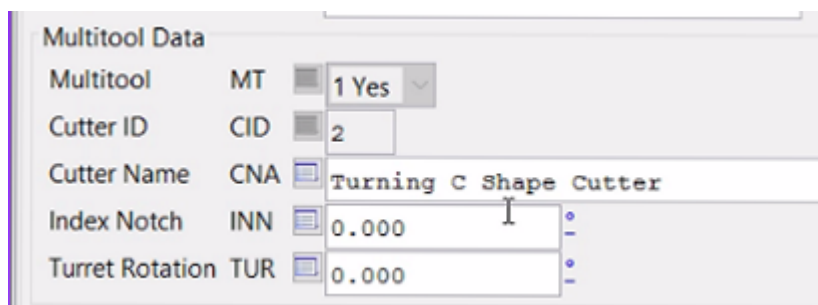
7. Select the assembly and choose **File** → **New** → **Multitool Cutter**, or click the **Add Multitool Cutter**  on the toolbar.

Note:

The option to create multitools is available only if a resource is loaded in Resource Manager.

Note:

The **Multitool MT** attribute is automatically set to **Yes**.



8. You can now add a PSP for each cutter.

BOM Line /	Item Type
000056/A;1-MultitoolDemo (View)	MENCTool
tc_holder_25_20_100_1000/A;1-HSK63A_ASHR_20_135 (View)	MENCTool F
tc_turn_10_10_100_1030/A;1-OD Turning VKT 20, Rhombic Insert C (View)	MENCTool F
tc_insert_10_00_120_1040/A;1-Rhombic Insert C IC12.8 (View)	MENCTool F
tc_turn_10_20_100_1010/A;1-OD Turning VKT20, Rhombic Insert D (View)	MENCTool F
tc_insert_10_00_120_1020/A;1-Rhombic Insert D IC9.5 (View)	MENCTool F
tc_turn_20_00_100_1010/A;4-Grooving VKT 20, Grooving Insert (View)	MENCTool F
tc_insert_20_00_150_1000/A;1-CW4 INSL22 (View)	MENCTool F

Note:

When you define the multitool, the PSP indicator text changes from black to red **P**. This indicates the tool is part of a multitool. Additionally, only the PSP indicator of the active tool continues to have a yellow background. The PSP indicators for other tools that are not active have a gray background **P**.

Deleting multitool cutters

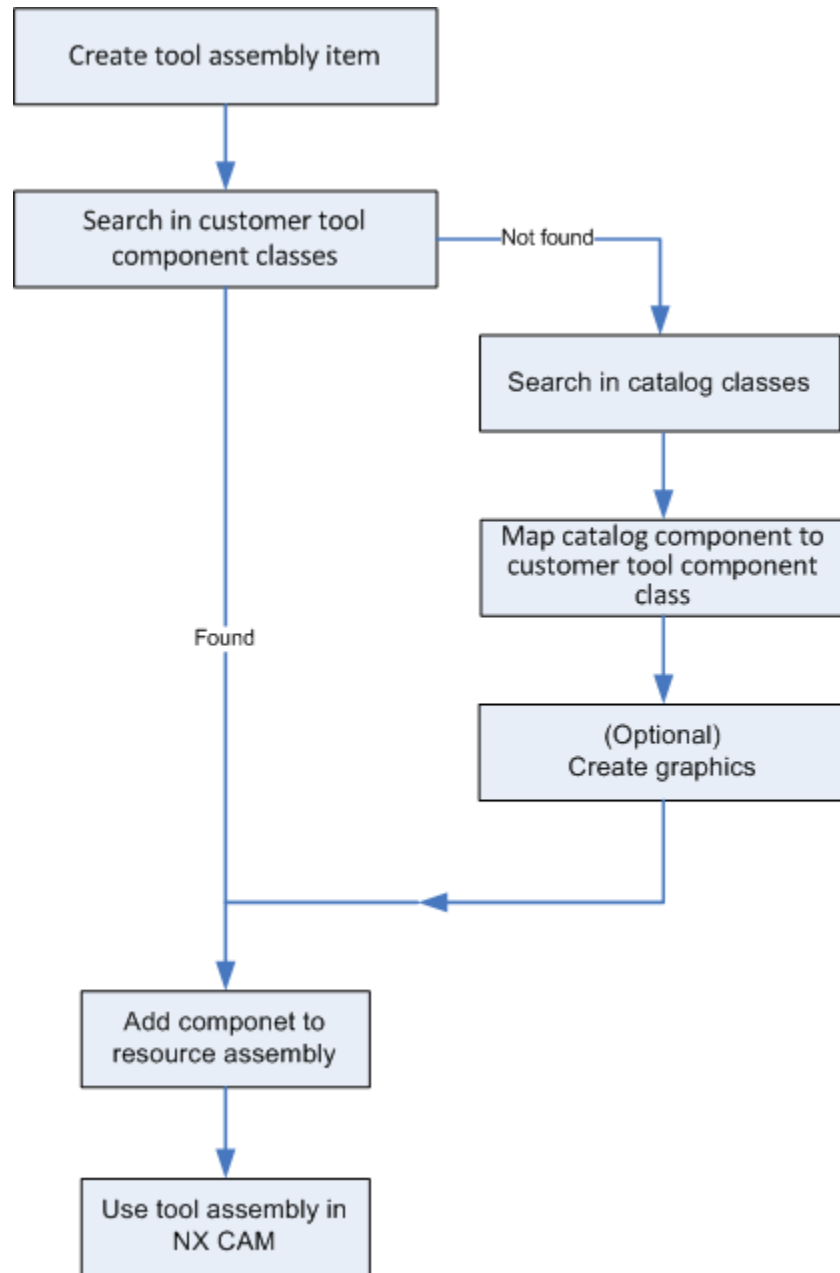
When you delete a multitool classification object (ICO) using **X**, Resource Manager deletes only the currently selected cutter ICO. If the cutter you delete is the second to last cutter, the system automatically cleans up the multitool status information.

The attribute **Multitool** is set to **O:No** and only one ICO remains with the tool assembly. Once a multitool cutter ICO is deleted, the system removes the related PSP.

Building tool assemblies overview

When building new tool assemblies in Resource Manager, search first in your customer hierarchy to find existing components that you can reuse. If you do not find any, continue to search in the vendor catalog, and then map that component to the customer hierarchy.

The following chart shows the approach that enables the maximum amount of reuse of existing material.



Creating new resources based on existing ones


Map ICOs from one class to another

If you want to create a new classification object based on an existing one, you can copy the attribute values to the target class using the map feature. For example, if your classification structure contains both a vendor and a customer hierarchy, you may want to map ICOs from a vendor class to a customer class.

Your classification administrator must set up mapping definitions in the Classification Admin application before you can perform mapping procedures.

Caution:

You cannot map a metric ICO to a nonmetric ICO and vice versa.

1. In the **Classification Search Dialog**, select the source class in the hierarchy that you want to map to another (target) class.
2. Select the appropriate ICO from the source class.
3. Click .

The **New Item** dialog box is displayed.

4. Type a unique identifier for the new item in the **Item ID** box or let Teamcenter automatically create a name for you by clicking **Assign**.
5. Type a name in the **Name** box.
6. Select the item type of the new resource.

The following four types are generally used to create a new resource:

- **Resource** – for resources
- **NC Tool** – for tools
- **NC Machine** – for machines (do not confuse with **NC Machining Operation**)
- **Equipment** – for use with Tecnomatix applications

Teamcenter selects the default value of this entry based on the definition in the **MRMItemTypes** preference.

7. Select the **Copy datasets from source item** option to copy attachments such as 3D models from the source item, for example, a vendor tool class, to the target item such as a customer class.
8. Select the **Import Model to Target Item** option if you are mapping from a vendor catalog to a customer class and want to import the 3D models directly from the vendor catalog.
9. Click **OK**.

If there are multiple possible target classes specified in the mapping definition, the **Target Class Selection** dialog box is displayed:

- a. Choose the desired target class from the list.
- b. Click **OK**.


The **New Item** dialog box is displayed.

- c. Enter the required information and click **OK**.

Teamcenter creates a new ICO and item in the target class and maps attributes from the source class to attributes in the target class as specified by the mapping definition in Classification Admin. The new ICO is displayed in the target class, and its attributes are shown in the **Classification Properties** view.

Map multiple ICOs

You can only map multiple ICOs when all the selected ICOs in the search results belong to the same class.

1. Search for the desired ICOs.
2. Display the search results in the classification table.
3. Select all desired ICOs and click .

If there are multiple possible target classes specified in the mapping definition, the **Target Class Selection** dialog box is displayed:

- a. Choose the desired target class from the list.
- b. Click **OK**.

The **New Item** dialog box is displayed.

- c. Enter the required information and click **OK**.

Teamcenter creates new ICOs and items in the target class and maps attributes from the source class to attributes in the target class as specified by the mapping definition in Classification Admin. It assigns IDs automatically.

Enabling, creating, and opening tool setup sheets

Create tool setup sheets


A tool engineer creates tool setup sheets to communicate to the tool room personnel what components to assemble and how to set up the tool assemblies required for each manufacturing job. Tool engineers create setup sheets for a number of different purposes:

- To define the shape and properties of tool assemblies that are required for specific manufacturing jobs.
- To describe the shape and properties of tool components that make up such assemblies.
- To convey the shape of a tool through one or more parametric drawings. The tool properties provide the parameter values for such drawings.
- To list the tool components required to create the tool assembly for a manufacturing job.

You can use several different procedures to create tool setup sheets.


Create tool setup sheets with Resource Manager on Active Workspace

You can create tool setup sheets in Resource Manager

1. Select the root node of an assembly resource.
2. Click **Create setup sheets** .
3. Click **OK**.


Create tool setup sheets with NX Tool Assembly Part File

You can create tool setup sheets in the **NX Tool Assembly Part File** dialog box.

1. Select a tool assembly part file.
2. On the Resource Manager toolbar, click **Create/update NX tool assembly part file** .
3. Select the **Create Setup Sheets** check box.
4. Click **OK**.

Create tool setup sheets in Classification Table view

You can create tool setup sheets in the **Classification Table** view.

1. In the **Classification Table** view, select the rows containing the tools that you will create tool setup sheets for.
2. Click **Create setup sheets**  .
3. Click **Yes** in the **Create Setup Sheets** dialog box.

Tool setup sheet files

The setup sheets function creates a PDF file, NX drawing file, and a CMG file.

Note:


- The create setup sheets function uses the graphics builder. If the graphics builder is not yet running, you may experience a short delay while the graphics builder starts in the background before the function is complete.
- The tool attribute values are always transferred in the ICO's unit.
 - If the tool assembly is an inch assembly, the inch values are entered in the setup sheet.
 - If the tool assembly is a metric assembly, the metric values are entered in the setup sheet.

Open an assembly tool setup sheet

You can open a tool setup sheet from either of these views.

Open from the Classification Properties view

1. Load a tool in Resource Manager.
2. Click the **Classification Properties** view.

In the **instance** viewer, the setup sheet is shown as a tab. Click  .

Open from the Attachments view

1. Load a tool in Resource Manager.
2. Click the **Attachments** view.

3. Double-click a tool setup sheet dataset.

The tool setup sheet opens in the viewer associated with the dataset type.

Automatically assembling resources in Resource Manager

Automatic resource assembly overview

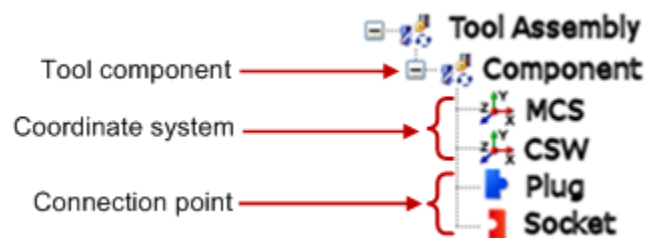
Resource Manager uses coordinate systems to position components at the correct location when creating tool assemblies. These coordinate systems are defined in the part family templates in the Manufacturing Resource Library or imported from NX. When you create graphics for the part family template components, these coordinate systems are created and then saved to Teamcenter when you save the part file. When you add a component to an existing one, either manually or using the guided component search (GCS), Teamcenter checks the coordinate systems and aligns them according to preset rules.

You can see the correctly assembled tools in the **Graphics** view.

By default, Teamcenter uses two types of coordinate systems as specified in the DIN4003 tooling standard: the machine-side coordinate system (MCS) and the coordinate system workpiece-side (CSW). Each component has one MCS and any number of CSWs. If the component has multiple CSWs, they follow a naming scheme.

When Teamcenter builds the assembly, it always moves the component containing the CSW to the part containing the MCS. The transformation matrix of the component BOM line containing the CSW is updated whereby that of the component containing the MCS remains unchanged.

When you create a tool assembly, there are different methods to add components to build the assembly. You can use the **Add Classified Component** command, paste a component from the clipboard, or use the guided component search. The method available for you to use to add components depends on the object in the existing hierarchy that you select. The figure illustrates the different options available.







When you select one of these	Use these commands to add a component
Tool component	Add Classified Component or Paste
Coordinate system	
Connection point	Guided Component Search

Where in the tool assembly hierarchy the component is added is also affected by:

- Which object you select to add a component.
- Which method you use to add the component.

When adding a new component, Teamcenter determines where in the hierarchy to add the component.

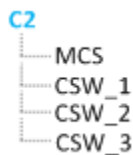
Connection point	Coordinate system	Direction	Direction in the hierarchy
 Plug	MCS	Machine-side	 Up
 Socket	CSW	Workpiece-side	 Down

When joining the two components, Teamcenter joins a CSW to the MCS. If there are multiple possible CSWs, the user must determine which coordinate system to use.

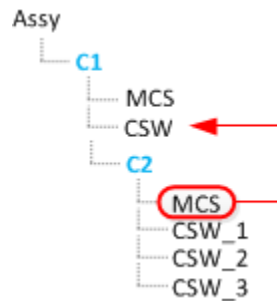
If, for example, you have this assembly:



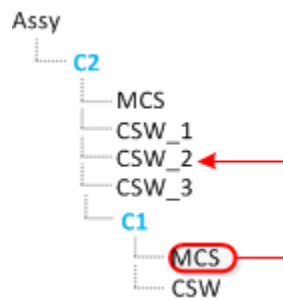
You want to add this new component:



If you select the CSW in the assembly and use the **Add Classified Component** command, Teamcenter searches for the MCS in the component to be added and adds it below the selected CSW in the hierarchy (the *down* direction).




If, however, you select the MCS in the assembly, Teamcenter finds three CSWs in the component to be added. You must select the correct coordinate system to use, and then Teamcenter adds the component above the component with the selected MCS (the *up* direction) in the assembly. In this example, the new component, C2 is added above C1.



If your company uses custom names for coordinate systems, your administrator can modify the coordinate system names in the following preferences:

- MRMPlugCSYSPrefixes
- MRMSocketCSYSPrefixes
- MRMNeutralCSYSPrefixes

Add a component by selecting a connection point

1. In the resource you are modifying, select a connection point (plug or socket) and choose **Edit**→**Guided Component Search** or click . You can select one or multiple connection points of the same type (either only plugs or only sockets). If you select multiple connection points, these must:
 - Have the same shape.

- Have the same connection type.
- Belong to the same connection point definition.
- Belong to the same component.


Teamcenter displays the Classification Search Dialog with a limited number of matching results.

2. Search for a suitable component in the Classification Search Dialog and add it to the existing hierarchy.

Teamcenter adds this component to the assembly. The new component is added above or below the component with the selected connection point, depending on whether you initially selected a plug or a socket. The component containing the CSW (representing the socket connection point) is moved to the component with the MCS.

If you select multiple connection points, an occurrence of the new component is added to each of these connection points.

Add a component by selecting a coordinate system

1. In the resource you are modifying, select a coordinate system (MCS or CSW) and choose **Add a Classified Component** or click .
2. Search for a suitable component in the Classification Search Dialog and add it to the existing hierarchy.


Teamcenter checks for matching coordinate systems. If you select an MCS and there are multiple CSWs in the component being added, Teamcenter requests that you select the correct coordinate system to align.

Teamcenter adds this component to the assembly. The new component is added above or below the component with the selected coordinate system, depending on whether an MCS or CSW was initially selected. The component containing the CSW is moved to the component with the MCS.

Note:

If you have a suitable component in the clipboard, you can also use **Paste** to add a component.

Add a component by selecting a component in the assembly

1. In the resource you are modifying, select a component and choose **Add a Classified Component** or click .
2. Search for a suitable component in the Classification Search Dialog and add it to the existing hierarchy.

Teamcenter checks for matching coordinate systems. If there are multiple CSWs in the component being added, Teamcenter requests that you select the correct coordinate system to align.

If you configured the guided component search, Teamcenter performs some of the decision-making for you. It searches for components that fit the given criteria. If you begin by loading a holder, and then work toward the tooltip using the **Add Classified Component** or **Paste** commands, Teamcenter uses the guided component search (GCS) information to determine which coordinate system to use to position the new component. If the component you want to add does not contain GCS data, Teamcenter asks you which coordinate system to use to position the component. If you select a coordinate system or a connection point to add a component, Teamcenter positions the part automatically.

Teamcenter adds this component to the assembly. The new component is always added below the selected component when using this method. The component containing the CSW is moved to the component with the MCS.


Note:

If you have a suitable component in the clipboard, you can also use the **Paste** command to add a component.

Assemble and prepare a part file for NX CAM

After you create a tool assembly, Teamcenter assists you in creating or updating the NX tool assembly part file. This procedure sets CAM-related tool information required by the machine tool builder in NX so this tool can later be used for tool path simulation.

This feature uses the graphics builder to communicate with NX and it is, therefore, important that the graphics builder is correctly installed and configured on your system.

1. Select the root node of the tool assembly.
2. Choose **Tools** → **Create/Update NX Tool Assembly Part File** or click .

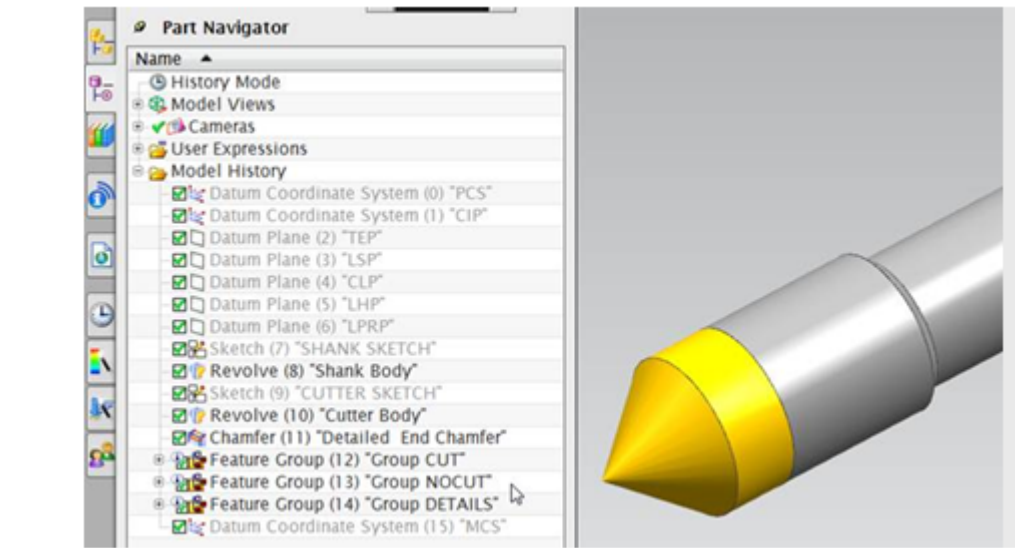
Teamcenter displays the **NX Automatic Tool Assembly** dialog box.

3. Select the desired options.

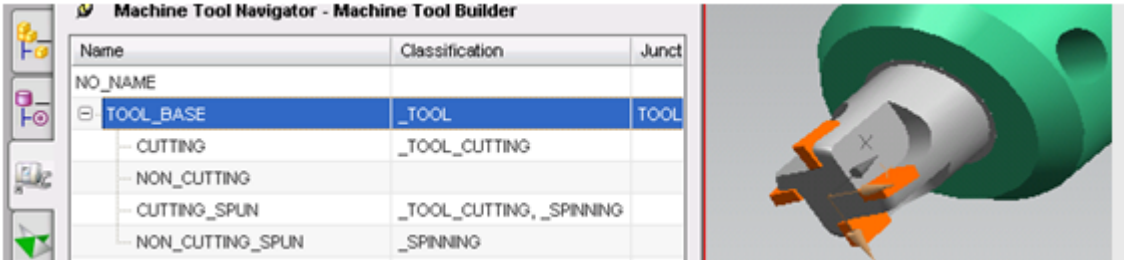
Option	Description
Set tool junctions	The tooltip and tool mount junctions are added to the assembly part file.
Identify cutting and non-	The solids in the tool components are added to the CUTTING or NON_CUTTING groups in NX.

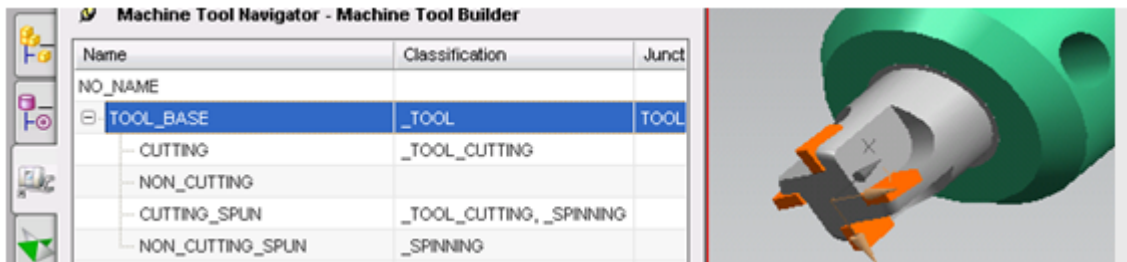
Option	Description
--------	-------------

cutting geometry	
	<p>These are displayed in the machine tool builder and saved in the assembly part file in NX.</p>

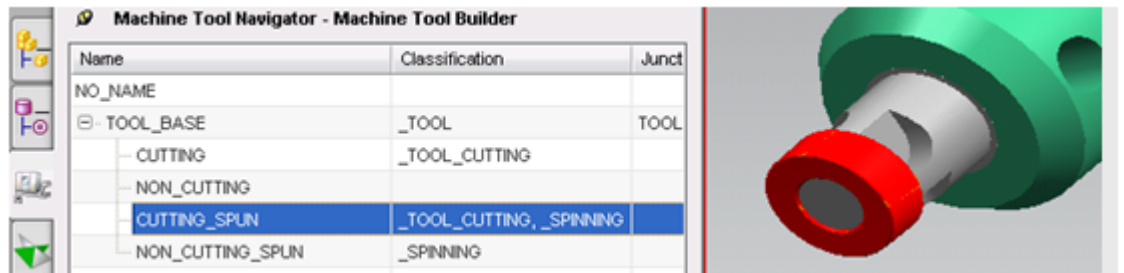


These are displayed in the machine tool builder and saved in the assembly part file in NX.

Generate spinning geometry	
	<p>The CUTTING_SPUN and NON_CUTTING_SPUN geometry are saved with the tool assembly for milling and drilling tools. The information for this geometry comes from the CUT and NOCUT information of the tool components that are used in the tool assembly.</p>



The **CUTTING_SPUN** and **NON_CUTTING_SPUN** geometry are saved with the tool assembly for milling and drilling tools. The information for this geometry comes from the **CUT** and **NOCUT** information of the tool components that are used in the tool assembly.



This option is not available for turning tools.

Option	Description
Write NX part attributes for tracking points	<p>If the tool mount and tooltip junctions are defined in the assembly part file, NX calculates the setup offsets based on these two junctions and writes them into the part properties in the part file, setting the CAM_TOOL_ATT_X, CAM_TOOL_ATT_Y, and CAM_TOOL_ATT_Z properties.</p> <p>Additionally, NX system tracking points are imported into the resource for milling and drilling tool assembly classes.</p>
Create Setup Sheets	Setup sheets are generated based on templates that are saved with the class.
Extract Holder Data	Tool holder parameters that are required by NX to calculate collision avoidance are automatically imported into Teamcenter.

4. Click **OK**.

An NX assembly part file is created in which all tool components are correctly positioned and includes the additional tooling information. The part properties are mapped to Teamcenter as follows:

CAM_TOOL_ATT_X is mapped to the resource library attribute **-45002 Nomin. Setup X**.

CAM_TOOL_ATT_Y is mapped to the resource library attribute **-45003 Nomin. Setup Y**.

CAM_TOOL_ATT_Z is mapped to the resource library attribute **-45002 Nomin. Setup X** (for turning tools).

Note:

The NX part attribute to Classification mapping must be configured.

Your tooling administrator must enable the **synchronization of Setup X, Setup Y, and Setup Z attribute values** to use this feature.

About NX system tracking points

In resource assembly classes, there are two blocks of attributes pertaining to tracking points:

- Tool tracking points that you manually enter.

Trackingpoints				
Name	TN			
Tracking Point	TR	0 Tool Tip	1 Step 1	2 Step 2
Nomin. Setup	X	-100.800	-100.800	-80.000
Nomin. Setup	Y	0.000	12.000	12.000
Nomin. Setup	Z			
Adjust	A			
Cutcom	C			

- System tracking points that you import from NX using the **Create/Update NX Tool Assembly Part File** feature and that you should not modify manually.

System Trackingpoints					
Name	SYS_TN	SYS_CL_BOTTOM	SYS_CL_TOP	SYS_OD_BOTTOM	SYS_OD_TOP
Sequence	SYS_SEQ	1	2	3	4
Nominal Setup	SYS_X	-45.000	-31.000	-45.000	-31.000
Nominal Setup	SYS_Y	0.000	0.000	16.000	16.000
Z Offset	SYS_Z				
Adjust	SYS_A		1	2	
Cutcom	SYS_C		1	2	

The following values are imported from NX to Teamcenter when you select the **Write NX part attributes for tracking points** option:

Name
Sequence
Nominal Setup X
Nominal Setup Y

You can modify the **Sequence** number to change the order in which the system tracking points are displayed in NX.

You must add the following values manually:

Nominal Setup Z
Adjust
Cutcom

The following values are passed back from Teamcenter to NX:

Sequence
Nominal Setup Z
Adjust
Cutcom

System tracking points are available in the following classes:

- The **Drilling** root class, **TAG003_DRILL**, where it is inherited by all drilling views. The array size for step drills (**TA_DRILL_20_30**) is 8.
- The **Milling** root class, **TAG002_MILL**, where it is added to the following assembly milling views:

TA_MILL_40: slotting cutters
TA_MILL_50: angle mills
TA_MILL_60: round profile cutter
TA_MILL_70: thread mills
TA_MILL_90_90: special mills

For this mechanism to function properly, there are several prerequisites:

- Version 4.0 of the Manufacturing Resource Library (MRL) must be installed.
- The CAM setup must be loaded using the MRL installer (**Populate database**→**Import MRL NX Seed Parts**→**Template parts for temporary tool retrieval**)
- The **NX attribute mapping** must be in place.
- The tool must be properly defined so that the tool retrieval in NX functions correctly.

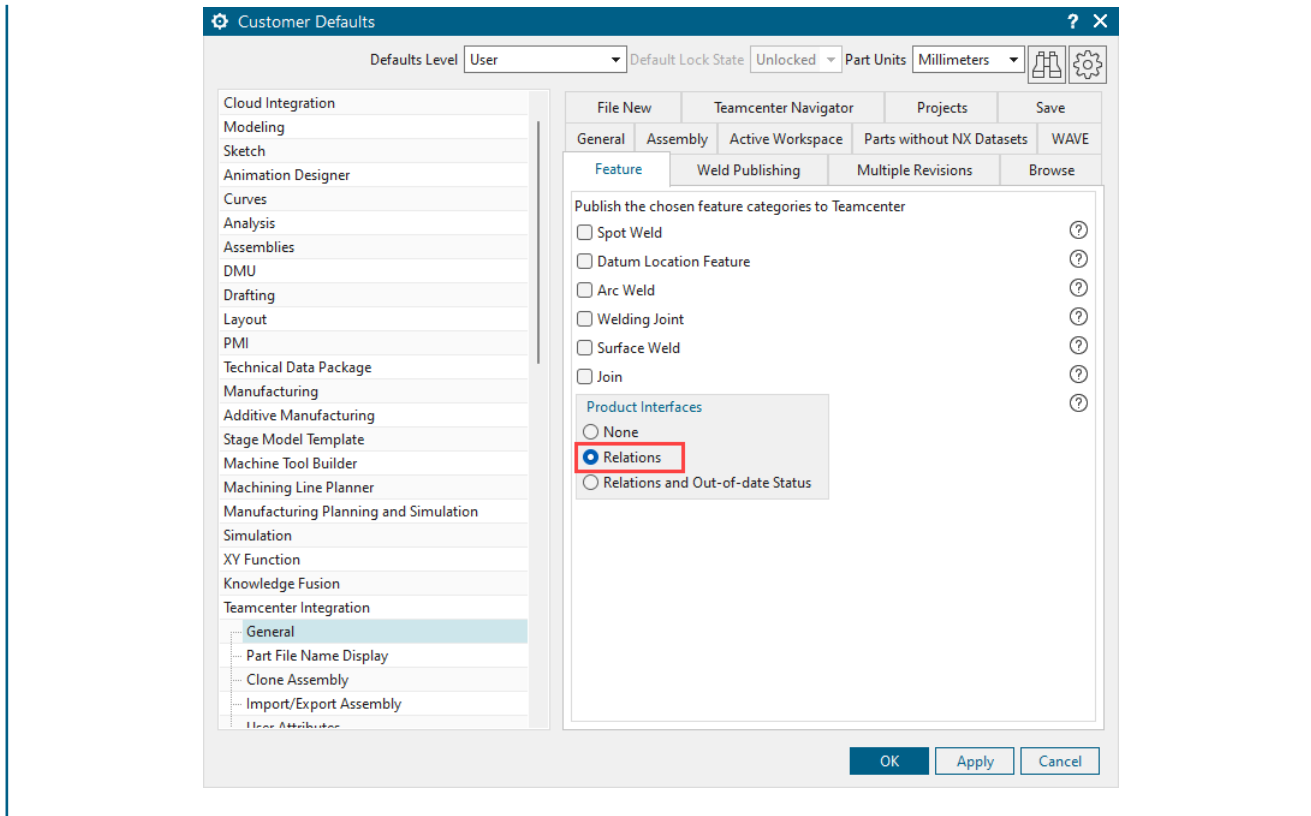
Create and publish a coordinate system in NX

If you use the Manufacturing Resource Library, the coordinate systems for each component are defined in the part family templates. In a manual configuration, you must perform the following steps to publish the coordinate systems from NX to Teamcenter:

1. In NX, create a coordinate system of the **Datum CSYS** type and give it a name that conforms to the DIN4003 naming standard.
2. Add the coordinate system to the product interfaces by choosing **Tools**→**Product Interface**.
3. Choose **File**→**Options**→**Save Options** and select **Save JT Data**.

Tip:

Confirm the auto-position setting in NX: **File**→**Utilities**→**Customer Defaults**→**Teamcenter Integration**→**General**→**Feature**→**Product Interfaces** is set to **Relations**.



DIN4003 coordinate system naming scheme

The DIN4003 standard defines how 3D graphic models for different tool component classes must be designed. This standard also defines the coordinate systems in the tool components using the following naming scheme:

MCS

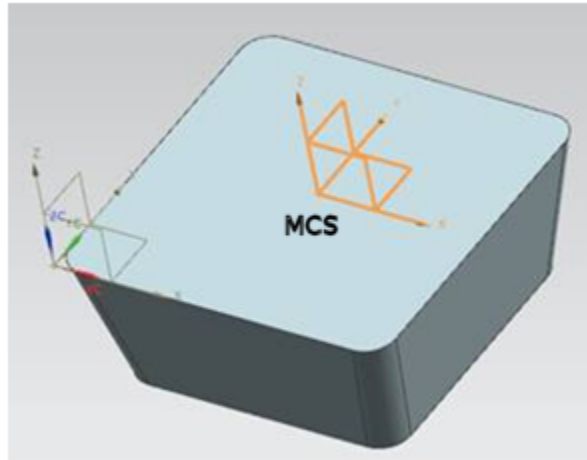
Machine-side coordinate system

CSW

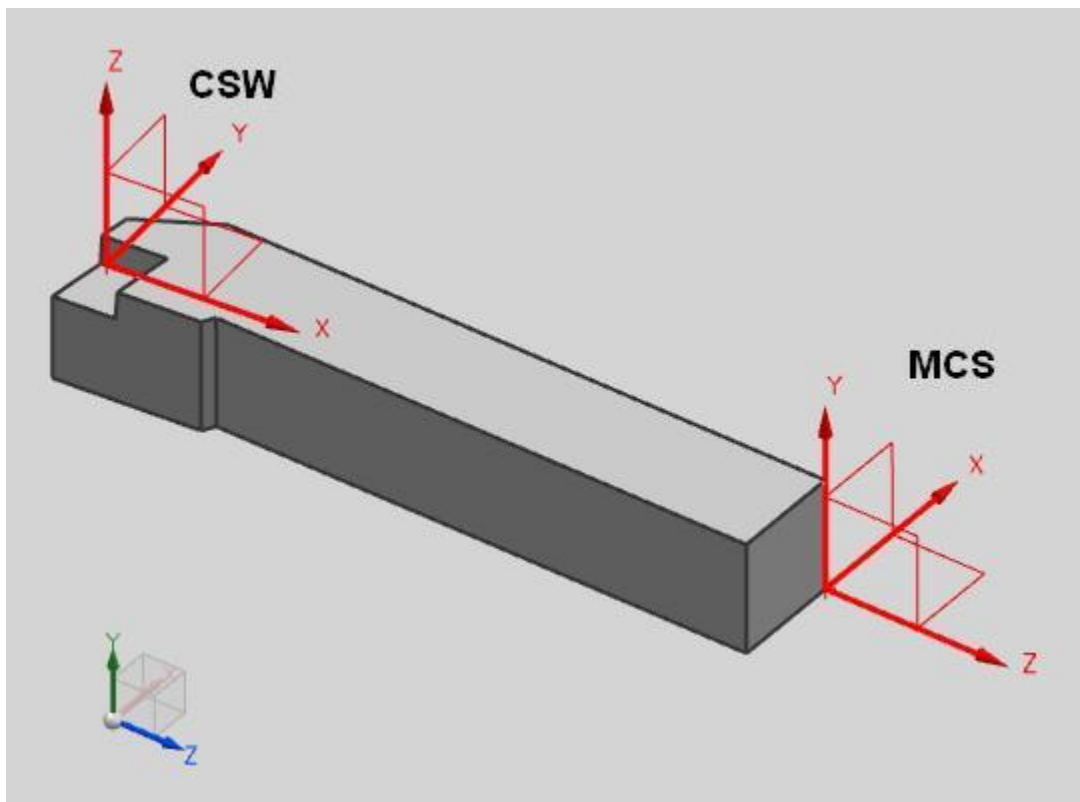
Coordinate system workpiece-side

A tool component always has one MCS and any number of CSWs, depending on its design. If it has a single CSW, the coordinate system is called **CSW**. If it has multiple CSWs and dedicated steps (see example), the coordinate systems are additionally numbered in ascending order, using a system that is dependent on the shape of the component. The examples provide an introduction to the naming convention.

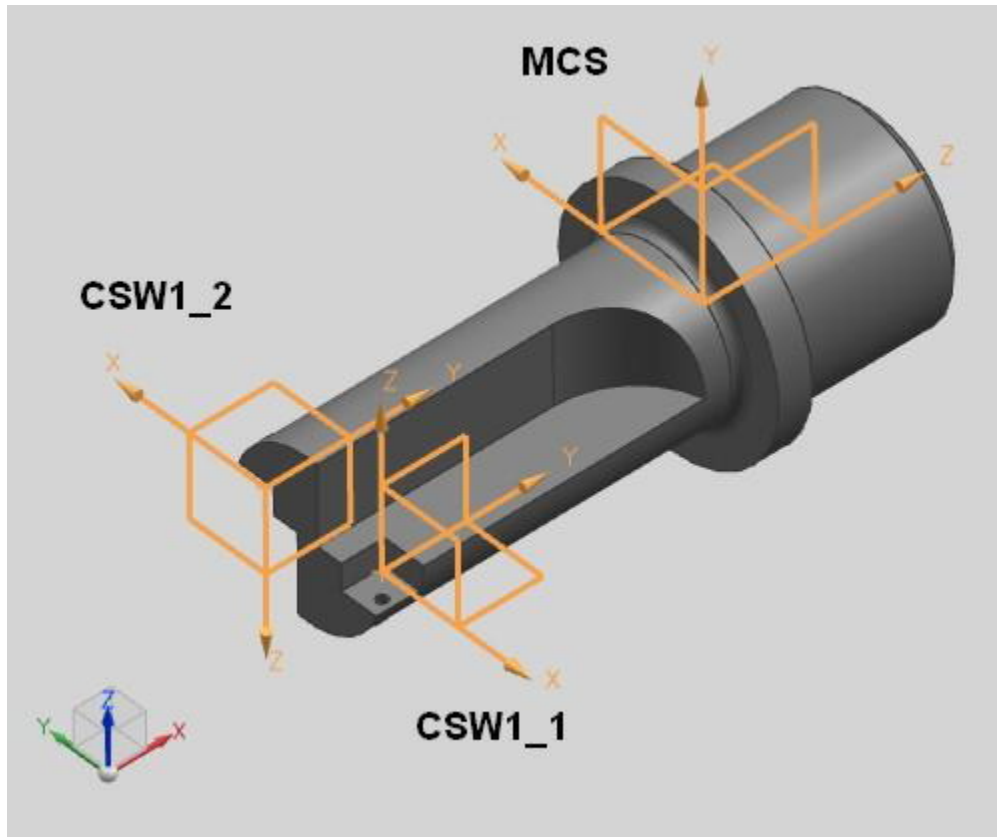
Tool component	MCS	CSW
Insert: DIN4003_76_01 [TC_INSERT_10_00_100]	Pointing toward the holder	None



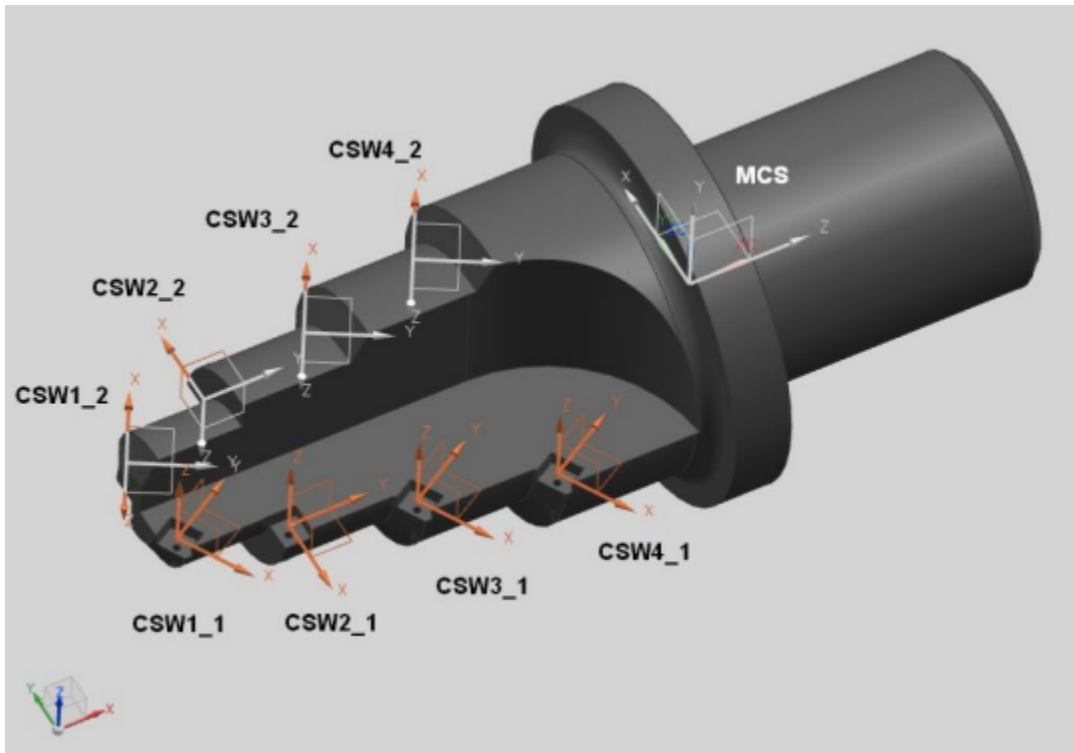
Tool component	MCS	CSW
Holder: DIN4003_90_02 [TC_TURN_40_00_100]	Pointing toward the machine adapter	CSW pointing toward the insert



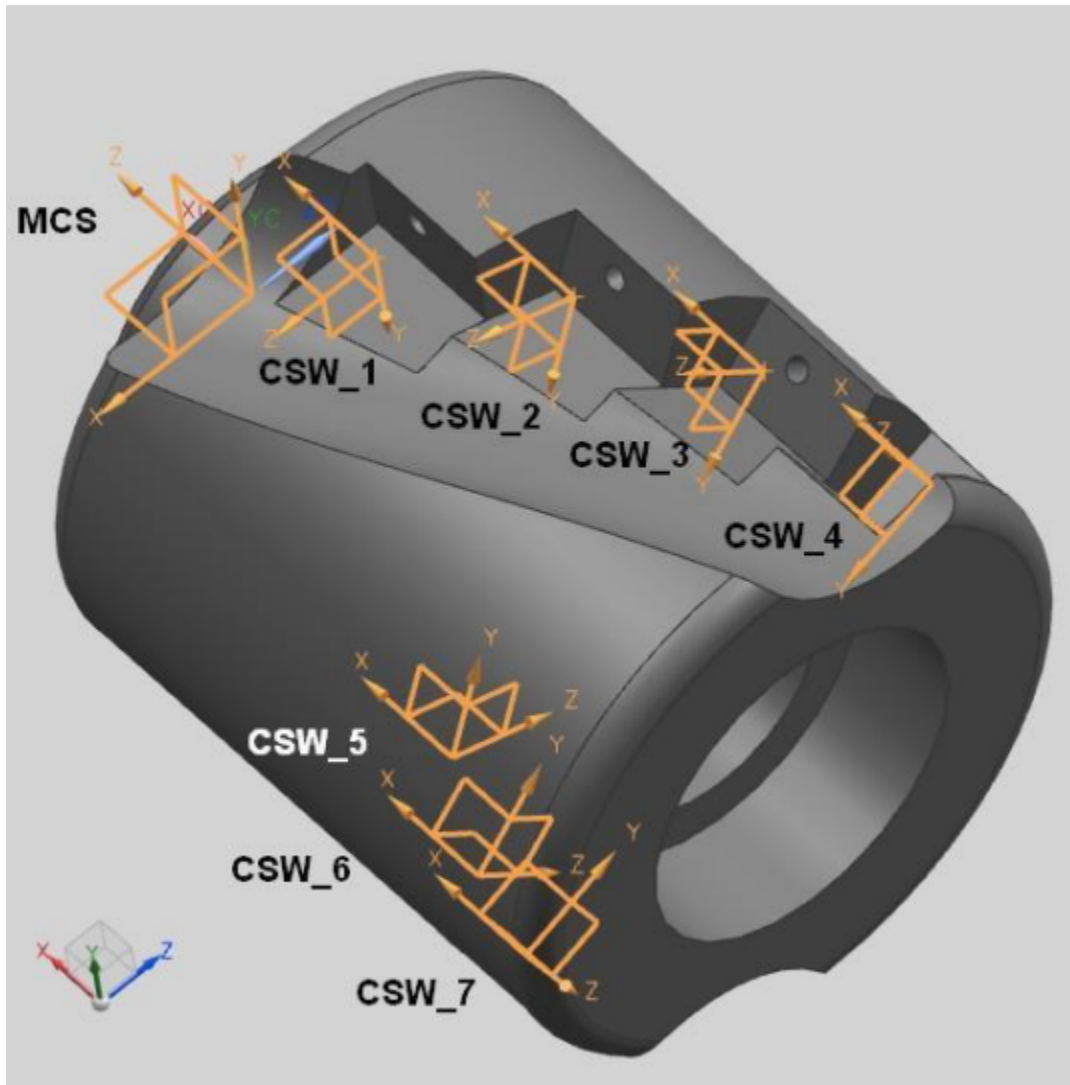
Tool component	MCS	CSW
Drill: DIN4003_86_04 [TC_DRILL_20_20_100]	Pointing toward the machine adapter	CSW_1 pointing toward the insert CSW_2 pointing toward the insert



Tool component	MCS	CSW
Step drill: DIN4003_86_05 [TC_DRILL_20_20_110]	Pointing toward the machine adapter	First step: CSW1_1, CSW1_2 (pointing toward the inserts) Second step: CSW2_1, CSW2_2 (pointing toward the inserts) Third step: CSW3_1, CSW3_2 (pointing toward the inserts) Fourth step: CSW4_1, CSW4_2 (pointing toward the inserts)

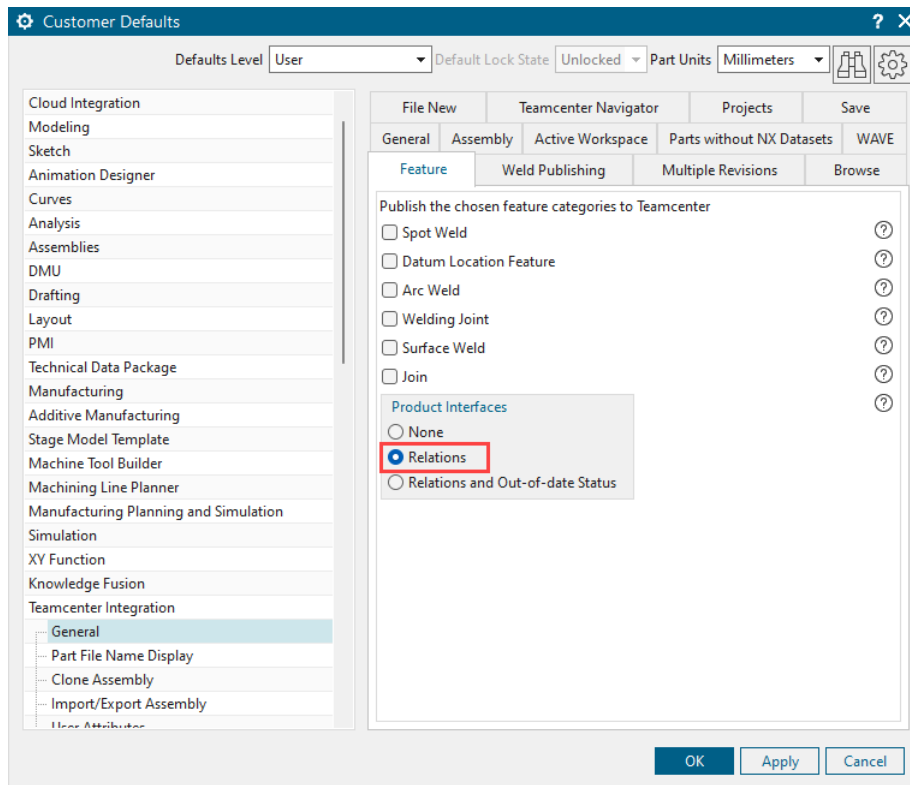


Tool component	MCS	CSW
Shell end mill: [TC_MILL_20_20_120]	Pointing toward the machine adapter	CSW_1, CSW_2, CSW_3, CSW_4, CSW_5, CSW_6, CSW_7, CSW_8 (all pointing toward the inserts)



Tip:

Confirm the auto-position setting in NX: **File**→**Utilities**→**Customer Defaults**→**Teamcenter Integration**→**General**→**Feature**→**Product Interfaces** is set to **Relations**.



Configure the graphics builder for NX automatic tool assembly

Before you assemble a part file for NX, you must ensure that the graphics builder is correctly configured.

1. Install and configure the graphics builder as explained in *Basic Classification — Deployment and Administration*.

Note:

Do not use the method described in *Using Tcl scripts* to install the graphic macros. Proceed to the next step instead.

2. Install the graphic macros required by NX as explained in *Getting started with administering Manufacturing Process Planning — Deployment and Administration*.

Note:

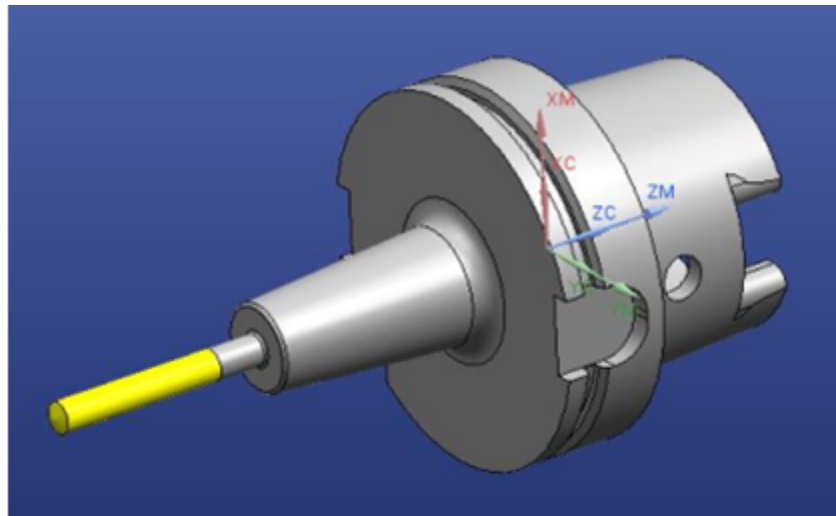
The name of the option in the manufacturing installation has changed from **Configure Fixture TCL Graphic Macros** to **Configure TCL Graphics Macros**.

3. Install and configure the MRM seed parts from MRL setup.exe

Extract tool holder data

In NX CAM, the tool path calculation can take the shape of the tool holder into consideration. A larger tool holder results in a bigger tool offset to the part being machined. For this calculation, NX uses tool holder attribute values. However, NX does not use holder values from the 3D geometry for tool path generation. It uses attributes that it imports from Teamcenter. If these values do not exist in Teamcenter, the NX CAM user must measure the holder manually, which can be very time-consuming.

You can automatically import the tool holder attribute values from the 3D geometry into Teamcenter, saving you the time required to fill out the holder attribute array manually, ensuring a more accurate holder definition, and reducing the chance of holder collisions when running the tool path on the machine.



Shank			
Taper Length STL	Length SL	Diameter SD	
<input type="text" value="2.000"/> mm	<input type="text" value="2.000"/> mm	<input type="text" value="10.000"/> mm	
<input type="text"/>	<input type="text"/>	<input type="text"/>	
<input type="text"/>	<input type="text"/>	<input type="text"/>	

Holder			
Lower Diameter HLD	Length HL	Upper Diameter HUD	Tap
<input type="text" value="24.000"/> mm	<input type="text" value="61.000"/> mm	<input type="text" value="32.600"/> mm	<input type="text"/>
<input type="text" value="100.000"/> mm	<input type="text" value="29.000"/> mm	<input type="text" value="100.000"/> mm	<input type="text"/>
<input type="text" value="76.000"/> mm	<input type="text" value="50.000"/> mm	<input type="text" value="71.000"/> mm	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

The tool holder parameters are measured only up to the tool mount junction.

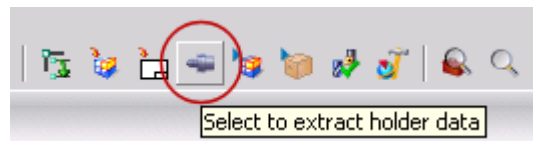
Teamcenter supports holders with up to 23 steps. If the holder has more than 23 steps, the 23rd step is set to a cylinder with the widest diameter of the remaining steps and a length up to the tool mount junction.

For this mechanism to function properly, there are several prerequisites:

- Version 4.0 of the Manufacturing Resource Library (MRL) must be installed.
- The CAM setup must be loaded using the MRL installer (**Populate database**→**Import MRL NX Seed Parts**→**Template parts for temporary tool retrieval**).
- The **NX attribute mapping** must be in place.
- The tool must be properly defined so that the tool retrieval in NX functions correctly.
- The **MRMHolderData** preference must be set to **true**.

To extract tool holder parameters:

1. Create or open a tool assembly containing 3D components.
2. Select the tool's root node and do one of the following:
 - a. Click the tool holder data extraction button on the menu bar.



Or

- a. Click .

Teamcenter displays the **NX Automatic Tool Assembly** dialog box.

- b. Select the **Extract Holder Data** option and click **OK**.

The tool holder parameters are imported into the resource.

To calculate the holder start value, the Teamcenter adds the cutting component's protruding length (**LPR/-40183**) to the negative tool tip's nominal setup X value (**X/-45002**), unless the provided protruding length is greater than the overall length of the cutting component. In this case, Teamcenter computes the overall length of the cutting tool component by adding up the NX cutter's tool height (**PARAM_TL_HEIGHT_INDEX**), shank length (**PARAM_TL_TAPERED_SHANK_LENGTH_INDEX**), and up

to two shank segments (**SL/-45262:2**, **-45262:3**) that can be defined in Teamcenter, which are then added to the negative tool tip's nominal setup X value.

When NX CAM retrieves the tool assembly, it can sometimes calculate a positive holder offset value (**OS**) to correct the display position of the parametric holder by the length that the cutting component is embedded into the tool holder. This is usually the difference between the overall length of the cutting component and its protruding length. If the calculated holder offset is null, the parametric holder is displayed right above the cutting component and does not overlap with it.

Occasionally, due to a manual adjustment of the offset value or unavailability of attribute values, the holder is displayed in the incorrect position. If this occurs, manually adjust the holder offset value.

Leveraging MRL resources in NX CAM

Using resources in NX CAM

If you run NX CAM in native mode, but want to use tools that are managed in Resource Manager, you need access to DEF and DAT files that contain the most up-to-date classification and resource information. You can export the classification hierarchy and the information about classified resources using the **mrm_export_resources** utility. Optionally, you can also export attached documents.

To run the NX CAM Integration (managed mode), your environment must first be configured.

Fixture and machine modules

Prior to Teamcenter 13.2, the module **{MACH} Machines and Devices** contained a simple class structure of eight and four classes.

Beginning in Teamcenter 13.2, machine classes are in the **{MAC} Machines** module and the devices are in the **{FIX} Fixtures and Devices** module. These modules are robust and are based on industry standards.

Machines module setup

The **{MAC} Machines** module released in Teamcenter 13.2 is a replacement for the existing **{MACH} Machines and Devices** machine classification.

It is possible to use both machine class structures in the same database.

There are three ways you can set up your system:

- New customers use the new machine classes.
- Existing customers use the old machine classes.
- Use both machine classes to facilitate a migration from old to new.

There are three machine definition files for the NX library machine search included in the 6.2 Manufacturing Resource Library (MRL). These definition files are copied to the folder `%UGII_BASE_DIR%\MACH\resource\library\machine\inclass` when you select the *Configure NX-CAM* option when you use the MRL setup.

You can decide which libraries are included in the NX machine search:

By default the `dbc_inclass_mach_en.def` definition file is used.

- To show only the new machine classes, choose the `dbc_inclass_mach_en_MRL6.2.def` definition file. Then rename the file `dbc_inclass_mach_en_MRL6.2.def` to `dbc_inclass_mach_en.def`.
- To show only the old machine classes, choose the `dbc_inclass_mach_en_MRL6.0.def` definition file. Then rename the `dbc_inclass_mach_en_MRL6.0.def` to `dbc_inclass_mach_en.def`
- To show both the old and the new classes, choose the `dbc_inclass_mach_en.def` definition file.

Devices module setup

The **{FIX} Fixtures and Devices** module released in Teamcenter 13.2 is a replacement for the existing **{MACH} Machines and Devices** device classification.

It is possible to use both device class structures in the same database.

There are three ways you can set up your system:

- New customers use the new device classes.
- Existing customers use the old device classes.
- Use both device classes to facilitate a migration from old to new.

There are three device definition files for the NX library device search included in the 6.2 Manufacturing Resource Library (MRL). These definition files are copied to the folder `%UGII_BASE_DIR%\MACH\resource\library\device\inclass` when you select the *Configure NX-CAM* option when you use the MRL setup.

You can decide which libraries are included in the NX device search:

By default the `dbc_inclass_device_en.def` definition file is used.

- To show only the new device classes, choose the `dbc_inclass_device_en_MRL6.2.def` definition file. Then rename the file `dbc_inclass_device_en_MRL6.2.def` to `dbc_inclass_device_en.def`.
- To show only the old device classes, choose the `dbc_inclass_device_en_MRL6.0.def` definition file. Then rename the `dbc_inclass_device_en_MRL6.0.def` to `dbc_inclass_device_en.def`

- To show both the old and the new classes, choose the **dbc_inclass_device_en.def** definition file.

Setting options for checking tool attribute values for NX CAM

Tools and tool components can contain many attributes, depending on the tool class. Not all of these attributes are mandatory for using these tools in NX CAM. Teamcenter automatically checks that all required attributes are filled in when you save an assembly. Additionally, you can manually initiate a check to ascertain that all values required for successfully using resources in NX CAM are filled in.

Note:

The tool attribute check only works for MRL tool assemblies.

- A check is run automatically whenever a resource assembly is saved unless the **No checking** option is selected in the **Set Default Criteria** dialog box.
- You can initiate a manual check at any time.

Two settings affect the contents of the report:

- **Display errors**

Displays a list of mandatory attributes that are not filled in.

- **Display errors and information**

Displays a list of mandatory attributes that are not filled in, and lists the optional attributes that do not have values assigned and for which default values are being used.

Two types of checks are available. You can choose one or both options.

- **Check NX CAM tool retrieve** verifies that the tool created by the tooling engineer in Teamcenter is retrieved in NX CAM properly.

Note:

The Configure the graphics builder for MRL and NX 12.0.2 MP3, or newer must be installed and configured to use this option.

- **Check NX CAM tool parameters** verifies that the parameters specified with the tool contain associated non-zero values.

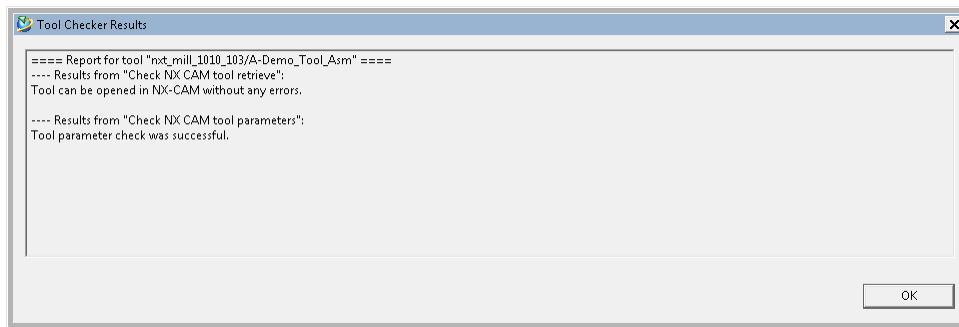
Note:

This option does not require NX or the Graphics Builder.

Teamcenter runs the check and reports the errors or information in the **Tool Checker Results** dialog box. You can use this information to add values to the required attributes. If you select the **Errors and information** level of checking, Teamcenter informs you of instances where it uses a default value or uses one of several alternate attribute values.

These report examples are based on both checks being performed:

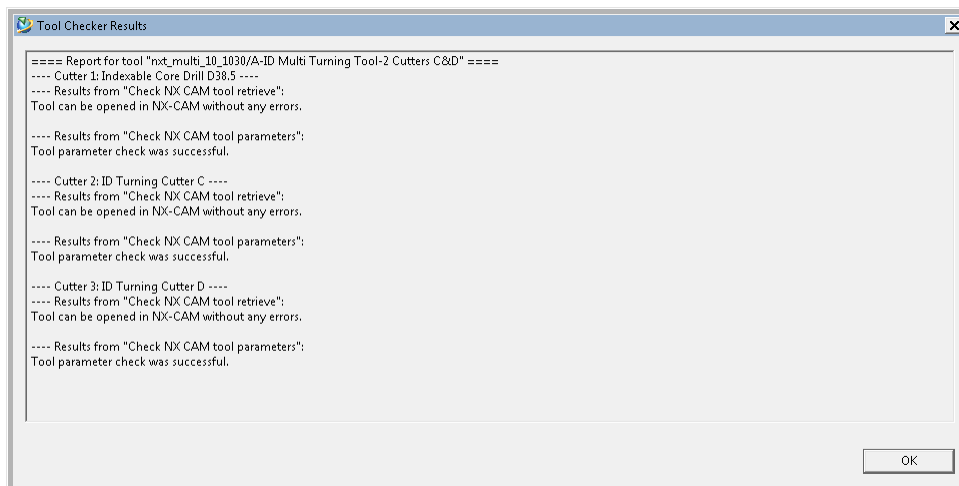
- No issues with either check



- Parameter check is successful, but the retrieve check is not




- Multitool check with both options is successful



Manually check tool attribute values for NX CAM

Initiate a manual tool check.

1. With a tool assembly in view mode selected, click  or choose **Tools**→**Tool Checker**→**Check Tool Attributes**.
2. In the **Check Tool Attributes** dialog box, select the level of reporting.
 - **Display errors**
 - **Display errors and information**
3. Select one or both types of check.
 - **Check NX CAM tool retrieve**
 - **Check NX CAM tool parameters**
4. Click **OK**.
5. Review the report and correct any data issues found.

Automatically check tool attribute values for NX CAM

Set the criteria for checking tool attribute values.

Note:

With the criteria set, Teamcenter runs the automatic check when you save a tool resource assembly.

1. Choose **Tools**→**Tool Checker**→**Set Default Criteria**.
2. Select the desired reporting level.

Tip:

Select **No checking** if you do not want Teamcenter to perform an automatic check.

- **Display errors**
 - **Display errors and information**
3. Select the type of check.

- **Check NX CAM tool retrieve**
 - **Check NX CAM tool parameters**
4. Click **OK**.
 5. After you save a tool resource assembly, review the report and correct any data issues found.

5. Adding vendor catalogs

Using the Manufacturing Resource Library

To assist you in filling the classification hierarchy with data, you can use the Manufacturing Resource Library. When you install this library, the data is organized in a detailed classification structure of manufacturing data such as tools, machines, fixtures, assemblies, and components, including tool graphics.

The tooling classification tree contains two hierarchies:

- An initially empty catalog hierarchy (**Vendor Catalogs**) that can contain tool components found in major tool vendor catalogs
- A customer hierarchy (**Tools**) that contains the components and assemblies used at your site

You can copy relevant components from the catalog into the customer hierarchy using the mapping definitions that are delivered with the vendor catalog tooling library. After installing the Manufacturing Resource Library, you can install vendor catalogs from various tool vendors to fill the catalog hierarchy.

Note:

Vendor catalogs are provided separately and are not part of the Manufacturing Resource Library installation kit. Contact your Siemens Digital Industries Software representative for more details.

Warning:

Do not modify the catalog data as these changes are lost when the vendor catalogs are updated. Save all your customer-specific components and assemblies in the customer hierarchy.

Part family templates that you can use to quickly create graphics are included in some component classes. To find the classes to which part family templates are assigned, search the class hierarchy for the **DIN4003** alias name using the quick search feature.

The Manufacturing Resource Library is provided with the Teamcenter installation image. It is updated regularly.

Using a tool vendor catalog

You can import tool vendor catalogs directly into Teamcenter. These catalogs use the Generic Tool Catalog (GTC) format based on ISO 13399 tooling standards. When tool vendors deliver their tool catalogs in this format, you can import them into a vendor tooling hierarchy in the Manufacturing Resource Library. You can then select tool components in the vendor catalogs and map them to a customer branch of the hierarchy. The tool components you choose are automatically mapped to existing Manufacturing Resource Library tool classes. If there are any attachments (for example, 3D

models) with the vendor components, you can import these as well. You can build a tool assembly based on these components, create graphics for it, send it to NX, and use it to machine parts in NX. A variety of tooling vendors provide data in the generic tool catalog format that can be used with Resource Manager. Contact your Siemens Digital Industries Software representative for more information.

Perform the following tasks to begin using a vendor catalog.

Role	Task	Application
Tooling/classification administrator	Imports the vendor catalog hierarchy into the database.	Classification Admin
Tooling/classification administrator/ Resource author/Tooling engineer	Imports vendor product data (part of or complete vendor catalog).	Classification Admin, Classification, Resource Manager, or using the import_step_part21_files utility.
Resource author/Tooling engineer	Imports vendor 3D models.	Classification or Resource Manager
Resource author/Tooling engineer	Creates tool assemblies using the components in the customer hierarchy.	Resource Manager
Part planner	Assigns resources to the manufacturing process.	Part Planner
NC programmer	Uses resources in the CAM area.	NX

Import GTC Package with 3D and mapping


Note:

The preference **MRMGTCProductIDVendorAcronymSeparator** controls the separator for the GTC (generic tool catalog) product id and vendor acronym, if a specific character or string does not allow using **Naming rules** then you can use any other separator.

You can import a GTC (generic tool catalog) package along with 3D data (STEP files) and map imported data to the vendor component all within one function. If you choose not to perform one of the options (import 3D models or mapping) you can use the manual process for each.

1. Obtain a copy of the tool vendor catalog from the tool vendor (website download, email, etc.) and save the file to a location that you will use to retrieve the file.

In the **Resource Manager** view initiate the import function by using one of the following methods:

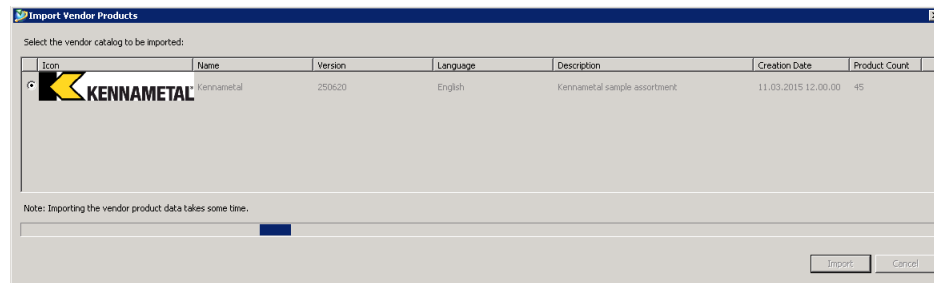
- In the toolbar, click 
- In the menu bar select **Tools**→**Import GTC package**

2. In the **Import GTC Package** dialog box, select the package to import.

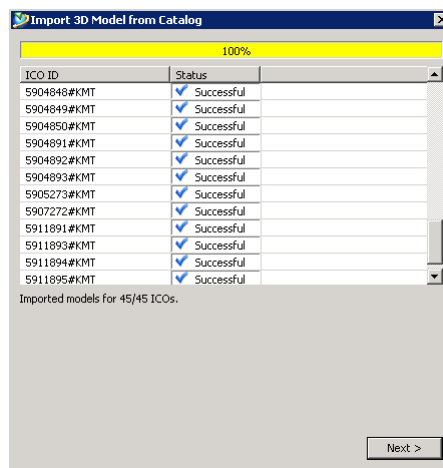
You can select a file on the client or the server. If you select a client file, the file is copied to the server and unpacked on the server. Selecting a file on the server saves this step.

If you enter values in the **MRMGTCPackageClientDir** and **MRMGTCPackageServerDir** preferences, these locations are displayed automatically in the **Client** and **Server** boxes.

- In the **Import Vendor Products** dialog box, the GTC package(s) are displayed. You can hover over the package to view additional information, select **Import** to continue.



- Once the import is complete, the importing of 3D model data will begin if the action was selected. Once completed, click **Next**.



- If **Map products to MRL classes** action was selected, the **Map Selected ICOs** dialog box will display. Click **Map ICOs** to map generic tool catalog (GTC) products to manufacturing resource library (MRL) tool components.
- The **Mapping ICOs Progress Results** dialog box will display the progress of the mapping, once complete click **Next** to display a import summary.

In the **Classification Table** view you can view a table of the imported and mapped products.

MPI	Object ID	Object Name	Identifying	Weight [kg]	Vendor Reference	Cutting Dir	Insert Interface	Vendor Reference Class ID	Class ID	Class Name
metric	000099/A	3744942#KMT	3744942		3744942#KMT		CC09T3083N	KMT#INSI_MISOFC	TC_INSERT_10_00_120	Rhombic/Rhombical Inserts (C,D,E,F,G,H)
metric	000100/A	5904847#KMT	5904847	3.638	5904847#KMT	L left		KMT#ADPNR_MCCS_WKXH	TC_HOLDER_35_10_140	Cassette Tool Holder 0 Degree
metric	000101/A	5904809#KMT	5904809		5904809#KMT	L left	KH23568110	KMT#TRNPEI_WKMT\$STN_MCCS	TC_TURN_20_00_120	Capto Tool Holder, external
metric	000102/A	5904834#KMT	5904834		5904834#KMT	L left	KH90060_3N	KMT#TRNPEI_WKMT\$STN_MCCS	TC_TURN_20_00_120	Capto Tool Holder, external
metric	000103/A	5904836#KMT	5904836		5904836#KMT	L left	KH90050_3N	KMT#TRNPEI_WKMT\$STN_MCCS	TC_TURN_20_00_120	Capto Tool Holder, external
metric	000104/A	5904837#KMT	5904837		5904837#KMT	L left	KH90060_3N	KMT#TRNPEI_WKMT\$STN_MCCS	TC_TURN_20_00_120	Capto Tool Holder, external
metric	000105/A	5904839#KMT	5904839		5904839#KMT	R right	KH90060_3N	KMT#TRNPEI_WKMT\$STN_MCCS	TC_TURN_20_00_120	Capto Tool Holder, external

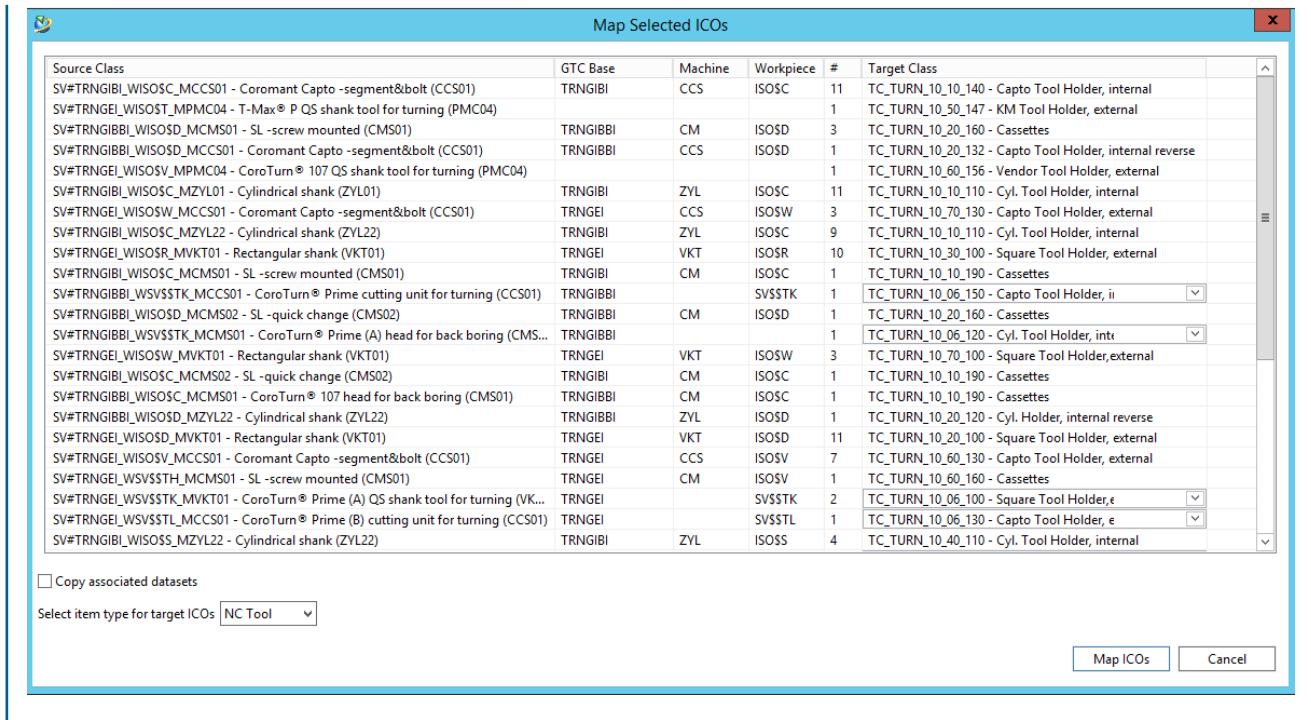
Note:

When you import a library that has tools that do not map directly to existing classes, the discrepancies are highlighted in a summary report.

Source Class	Number of ICOs	Target Class
SV#TRNPIS_MZYL01 - CoroTurn® XS solid carbide tool for grooving (ZYL01)	2	TC_TURN_20_00_110 - Cyl. Tool Holder, internal
SV#ADPCL_MSZD02_WZYL01 - Cylindrical clamping (ZYL01)	2	TC_ADAPT_30_00_100 - Double Angle Collet
SV#TRNPII_WSVSSCB_MCMS01 - SL -screw mounted (CMS01)	1	TC_TURN_20_00_170 - Cassettes
SV#TRNGEL_WISOSC_MVKT01 - Rectangular shank (VKT01)	4	TC_TURN_10_10_100 - Square Tool Holder, external
SV#INSCPRFG_MSVSSCC - CoroCut 1-2	3	TC_INSERT_20_00_100 - Cutting Insert for Grooving/I
SV#INSCPRFG_MSVSSCE - CoroCut XS	1	TC_INSERT_20_00_100 - Cutting Insert for Grooving/I
SV#TRNGEL_WISOSD_MVKT01 - Rectangular shank (VKT01)	1	TC_TURN_10_20_100 - Square Tool Holder, external
SV#INSCPRFG_MSVSSCD - CoroCut 3	2	TC_INSERT_20_00_100 - Cutting Insert for Grooving/I
SV#ADPRS_MSKG37_WCCS03 - CAT-V to Coromant Capto® adaptor (CCS03)	1	TC_ADAPT_10_00_130 - Capto Adapters
SV#ADPRS_MHSK01_WFDA22 - Arbor -type A (FDA22)	1	TC_HOLDER_20_00_190 - Cutter Arbor with Slot
SV#MILFI_WSVSSME_WFDA12 - Arbor -type B (FDA12)	1	TC_MILL_20_20_100 - (O) - Face Milling Cutter
SV#TRNTHII_WSVSSTC_MCCS01 - Coromant Capto -segment&bolt (CCS01)	1	TC_TURN_40_00_130 - Capto Tool Holder, internal
SV#MILFI_WSVSSMA_MCCS01 - Coromant Capto -segment&bolt (CCS01)	1	TC_MILL_20_20_100 - (O) - Face Milling Cutter
SV#TRNGIBI_WISOSW_MZYL01 - Cylindrical shank (ZYL01)	1	TC_TURN_10_70_110 - Cyl. Tool Holder, internal
SV#INSTRN_MSVSSTD - CoroTurn TR, 55° rhombic (D)	1	No mapping target class defined for this class
SV#TRNPEI_WSVSSCC_MVKT01 - Rectangular shank (VKT01)	6	TC_TURN_20_00_100 - Square Tool Holder, external
SV#MILSQI_WSVSSMH_MZYL01 - Cylindrical shank (ZYL01)	1	TC_MILL_20_10_100 - End Mill, single row
SV#TRNTHIF_MZYL01 - CoroTurn® XS solid carbide tool for thread turning...	1	No mapping target class defined for this class
SV#TRNGIBI_WISOSC_MCMS01 - SL -screw mounted (CMS01)	1	TC_TURN_10_10_190 - Cassettes
SV#INSCPRT_MSVSSCD - CoroCut 3	1	TC_INSERT_20_00_120 - Cutting Insert for Grooving/I
SV#INSCPRT_MSVSSCC - CoroCut 1-2	2	TC_INSERT_20_00_120 - Cutting Insert for Grooving/I
SV#ADPCL_MSZC02_WZYL01 - Cylindrical clamping (ZYL01)	1	TC_ADAPT_30_00_100 - Double Angle Collet
SV#INSI_MISOST - Triangular Insert (T)	9	TC_INSERT_10_00_100 - Triangular Inserts (T)
SV#MILBNSS_MZYL01 - CoroMill® Plura Ball nose (ZYL01)	4	TC_MILL_10_60_100 - Ball Nose Milling Cutter
SV#ADPRS_MSKG37_WZYL10 - CAT-V to Weldon adaptor (ZYL10)	1	TC_HOLDER_40_00_100 - NC-Drill Chuck
SV#INSI_MISOVL - 35° rhombic insert (D)	2	TC_INSERT_10_00_120 - Rhombic/Rhombical Inserts

- If the **Source Class** maps directly to a single **Target Class**, the row will be white.
- If no **Target Class** is found to match the **Source Class**, the row will be red.
- If there are multiple **Target Classes** the **Source Class** can map to, the row is yellow and there is a menu to choose the desired **Target Class**.

Once complete, you can review the mapping of the ICOs.



Import DIN Package

You can import a **DIN** package along with 3D data (STEP files) and map imported data to the vendor component all within one function.

Note:

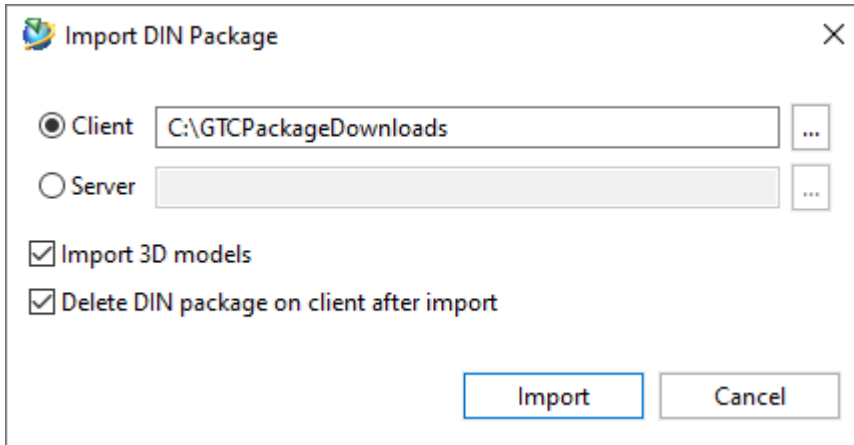
- The preference **MRMGTCProductIDVendorAcronymSeparator** controls which separator is used for the **GTC** and **DIN** product ID and vendor acronym, if a specific character or string does not allow using **Naming rules** then you can use any other separator.
- The **DIN** formats supported for tool vendor catalog packages are **DIN 26100:2017-11** and **DIN 26100:2021-05**.

1. Obtain a copy of the **DIN** package from a tool vendor and save the file to a location that you will use to retrieve the file, for example, **C:\GTCPackageDownloads**.

In the **Resource Manager** view, initiate the import function by using one of the following methods:

- In the toolbar, click 
- In the menu bar select **Tools**→**Import DIN package**

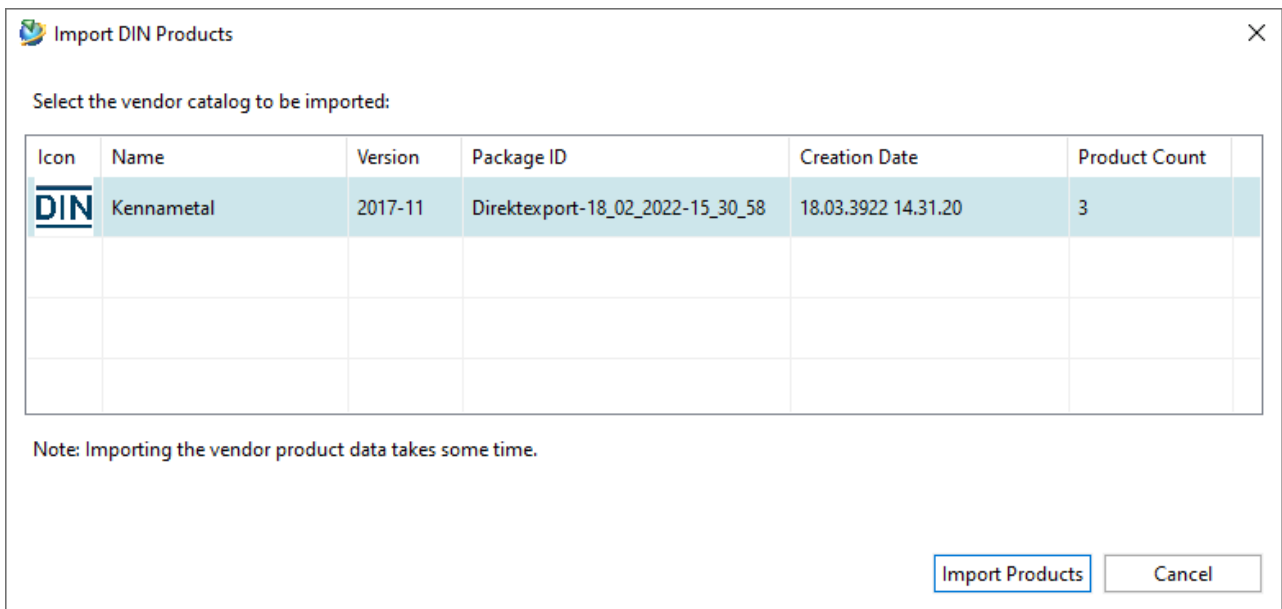
- In the **Import DIN Package** dialog box, select the package to import. You can select a file on the client or the server.



If you select a client file, the file is copied to the server and unpacked on the server. Selecting a file on the server saves this step.

If you enter location values in the **MRMGTCPackageClientDir** and **MRMGTCPackageServerDir** preferences, these locations are displayed automatically in the **Client** and **Server** boxes.

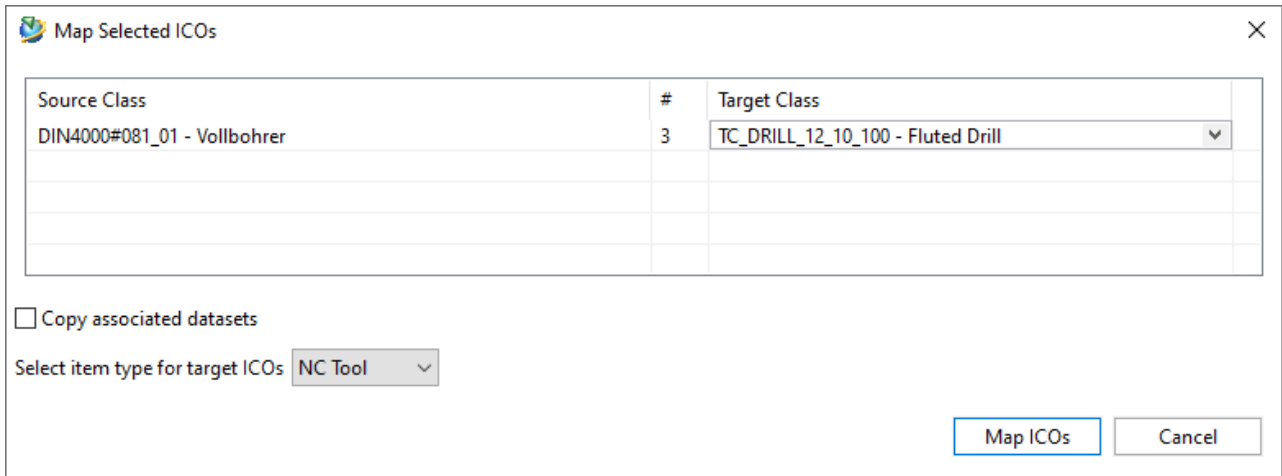
- In the **Import DIN Products** dialog box, the **DIN** packages are displayed. You can hover over the package to view additional information, or select **Import Products** to continue.



When the import is complete, the importing of 3D model data begins if the **Import 3D Models** option is selected.

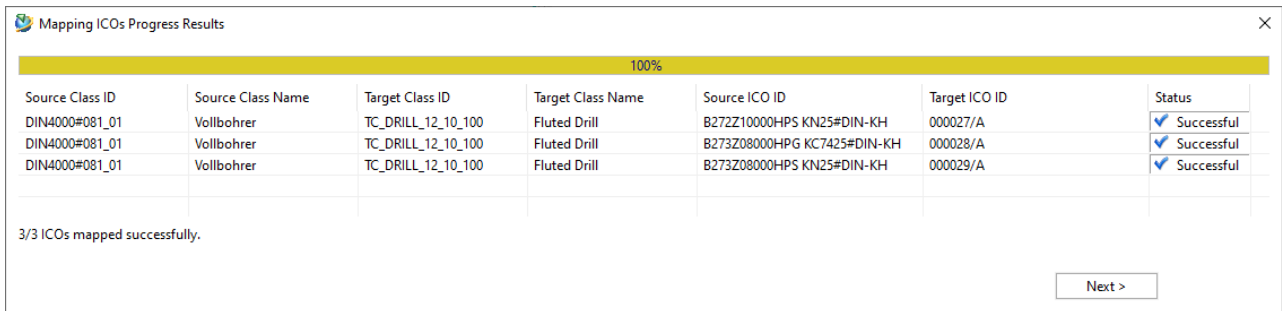
- Click **Next**.

The **Map Selected ICOs** dialog box displays.

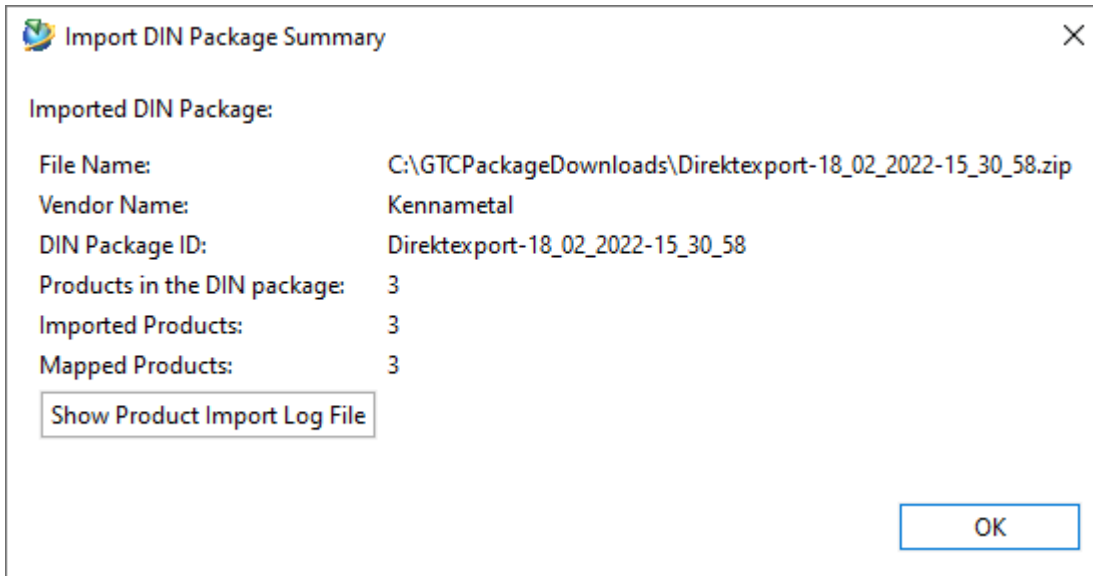


- Click **Map ICOs** to map the products to the Manufacturing Resource Library (MRL) tool components.

The **Mapping ICOs Progress Results** dialog box displays the progress of the mapping.



- Click **Next** to display a import summary.



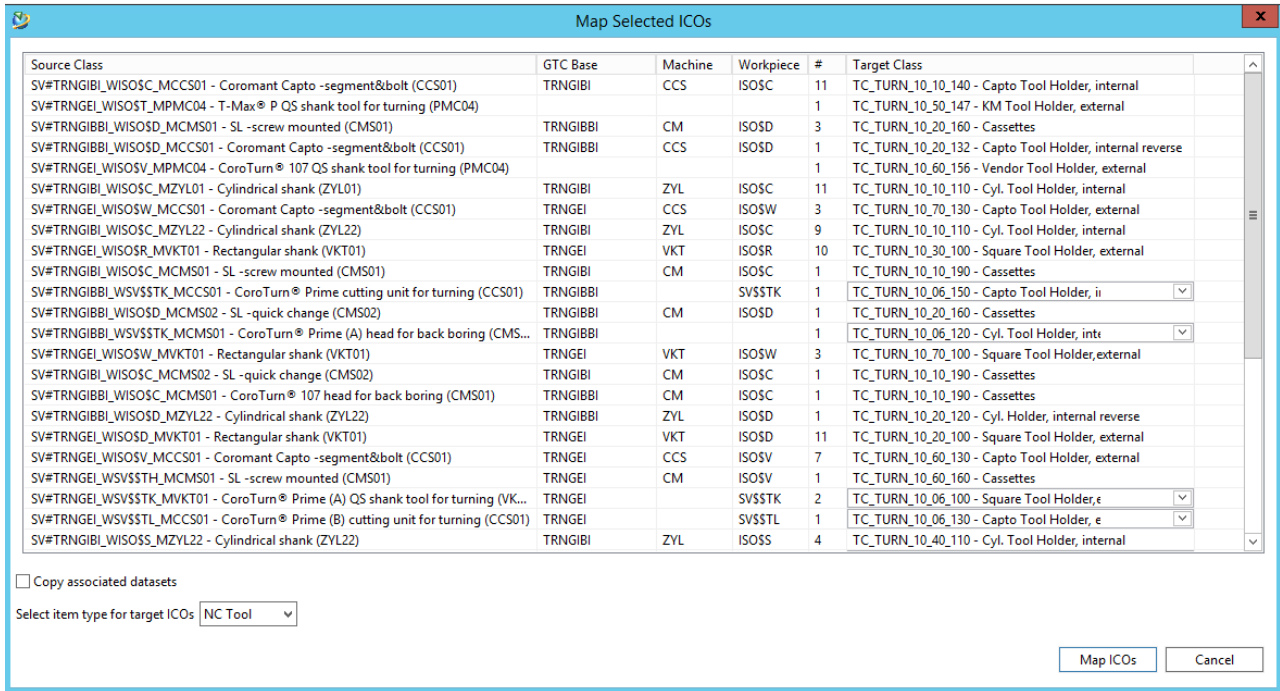
- Click **OK**.

In the **Classification Table**, the imported and mapped products are displayed.

M/I	Object ID	Object Name	Tool Descripti	Comments	Tool Style Coc	ISO Tolerance	Standard Nun	Standard Nun	Company Cot
metric	000027/A	B272Z10000HPS KN25#DIN-KH							KH
metric	000028/A	B273Z08000HPG KC7425#DIN-KH							KH
metric	000029/A	B273Z08000HPS KN25#DIN-KH							KH

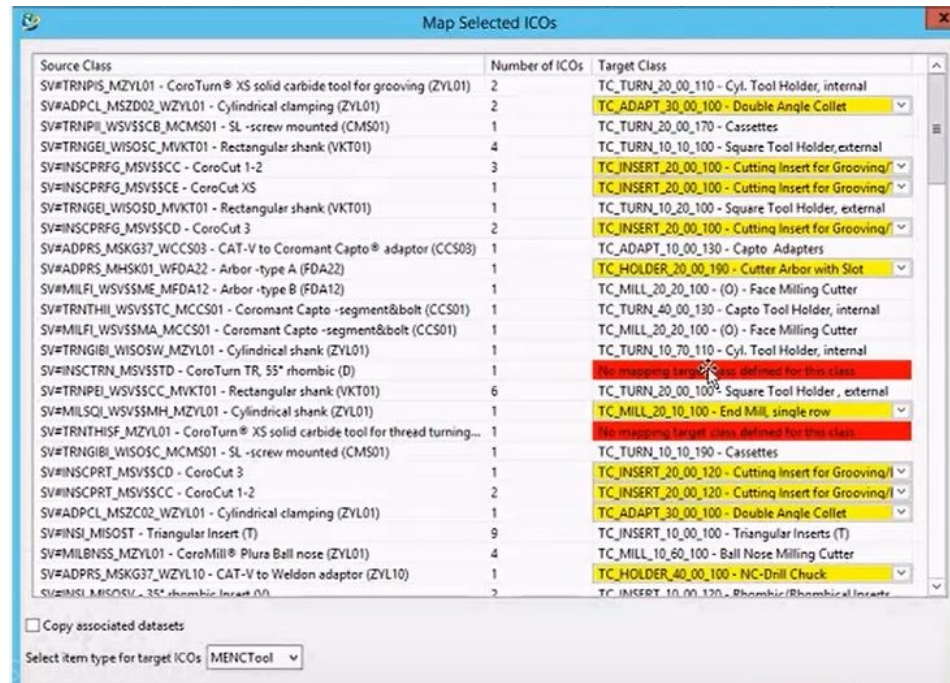
1 to 3 of 3

- When the import is complete, you can review the mapping of the ICOs.



Note:

When you import a library that has tools that do not map directly to existing classes, the discrepancies are highlighted in a summary report.



- If the **Source Class** maps directly to a single **Target Class**, the row is white.
- If no **Target Class** is found to match the **Source Class**, the row is red.
- If there are multiple **Target Classes** the **Source Class** can map to, the row is yellow and there is a menu to choose the desired **Target Class**.

Import tool vendor product data

Vendor product data consists of tool components such as drills, holders, inserts, and adapters. You can import vendor product data using two methods:

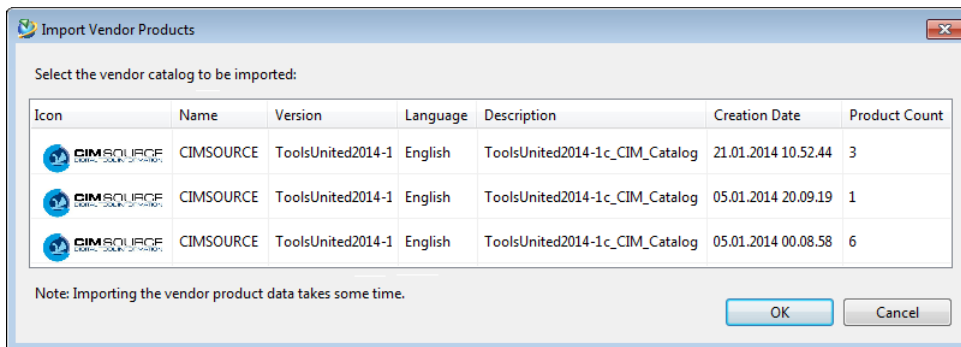
- Import the data from the rich client using the Classification, Classification Admin, or Resource Manager applications.
- Import the data using the `import_step_part21_files` utility.

To import using the rich client:

1. In the Classification Search Dialog, right-click a class at any level in the vendor hierarchy and choose **Import Vendor Product Data**.

The class you select determines what packages are imported. Teamcenter imports all product data from the selected class downwards.

2. In the **Import Vendor Products** dialog box, select the package that you want to import from the list of available Generic Tool Catalog packages.



Teamcenter imports the product data to the selected classes.


3. Click **Import**.
4. (Optional) Open the resulting log file to view the import state of individual components.

Caution:

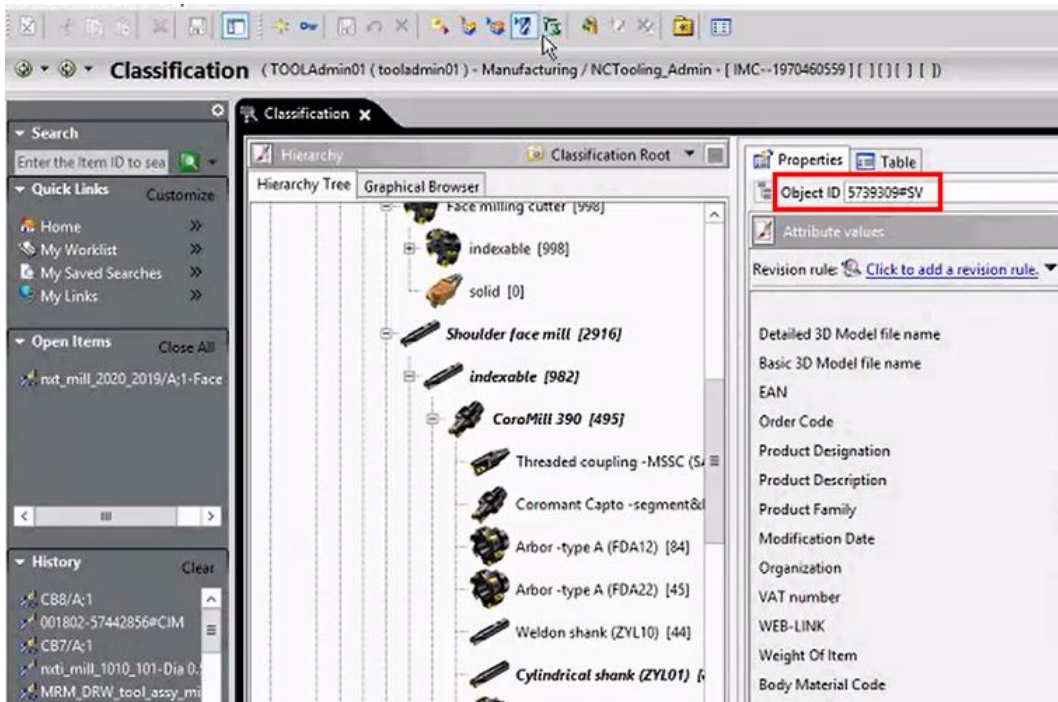
Depending on the size of the package you select, this action can take several hours to complete.

Import vendor catalog items with connection codes

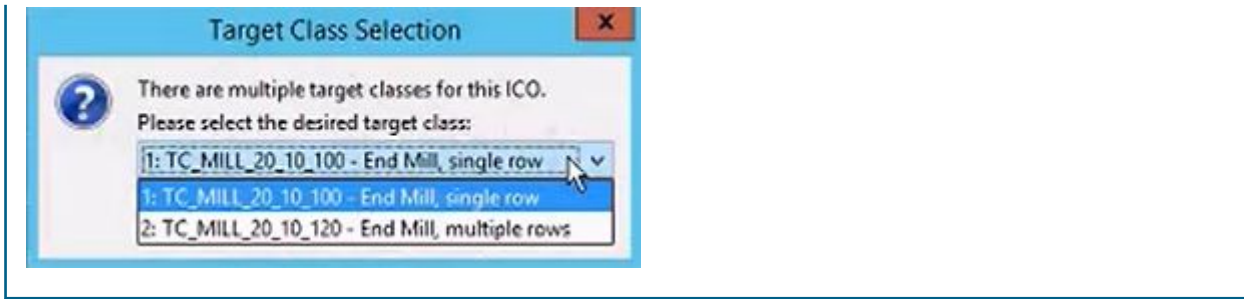
You can import a vendor catalog item to the correct MRL class in the Generic Tool Catalog (GTC) and include the vendor connection code data.

1. Select a tool from the vendor catalog and select  **Map ICO**.

Notice the **Object ID** of the tool selected from the vendor library is based on the tool vendor convention.

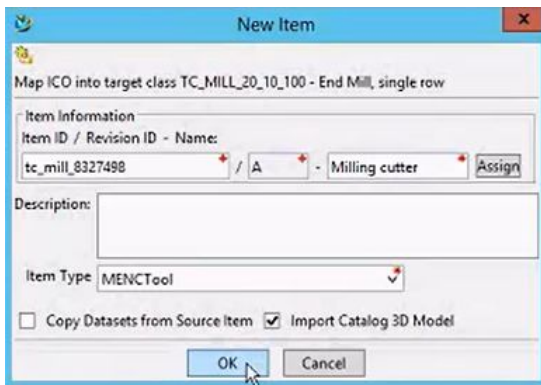
**Note:**

Sometimes the vendor tool can be mapped to more than one class, for example, in both a single row end mill and a multiple row end mill. In that case, the following dialog box appears and you must select the class into which you import the tool.



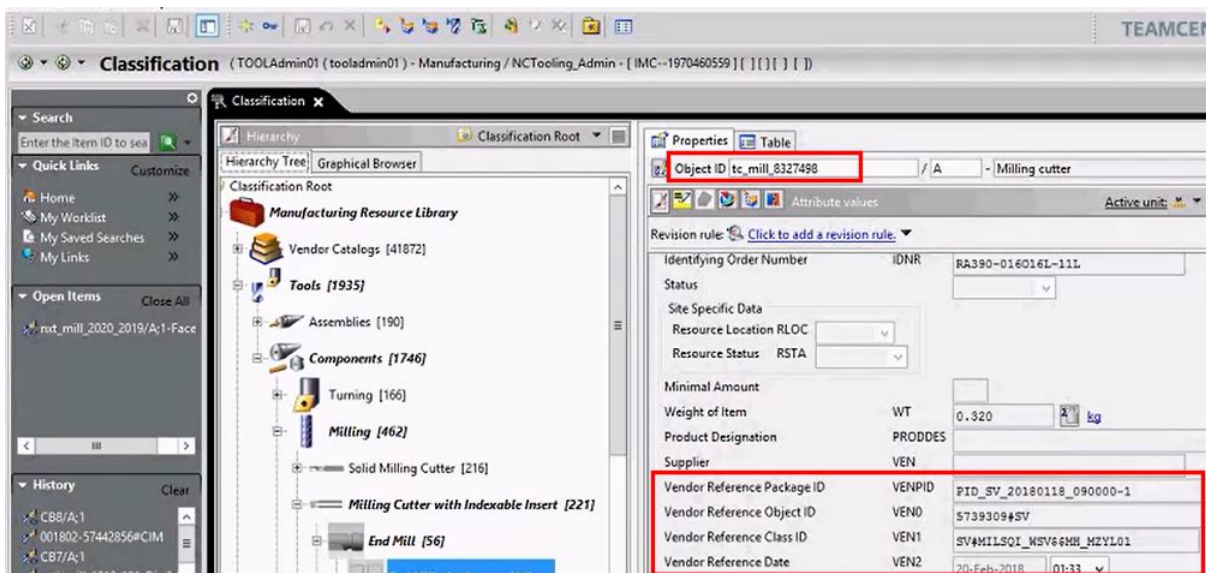
2. Type the **Item ID**, **Revision ID**, and a **Name**.

Optionally, you can select the **Import Catalog 3D Model** check box to also import the 3D model.



3. Click **OK**.

Notice the **Object ID** is updated to reflect your company convention. The vendor information is also maintained for future reference. The tool is now part of the correct class in the **GTC**.






Import vendor 3D models

Tool vendors deliver 3D models with their product data in the STEP file format. You can import this data in Classification and Resource Manager when performing any of these tasks:

- Importing to the vendor catalog product.
- Importing while mapping from the catalog to the customer class. If a 3D model was already imported into the vendor catalog product, you can simply copy the existing 3D model.
- Importing to a previously mapped component in a customer class.

When you import 3D models, the STEP files are converted to PRT and JT files internally. Therefore, NX and the graphics builder must be installed on the Teamcenter server to proceed with this activity.

You import a 3D model by performing one of the following steps:

- Open a tool component in a vendor or customer class and click  in the toolbar.
- Select one or more lines in the classification table and click  at the bottom of the table.
- Click  at the bottom of the **Properties** or **Table** tab in the **Classification Search** dialog box.
- Right-click a resource in the Resource Manager resource view and choose **Import catalog 3D model for current resource**.

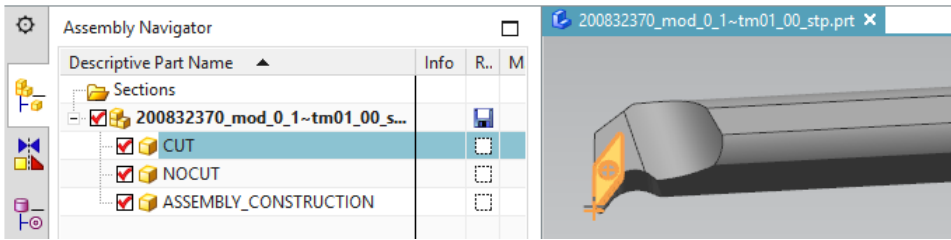
Teamcenter imports the 3D models. If the tool component to which the 3D model belongs is a standalone ICO, Teamcenter creates an item for the ICO and attaches the datasets to the item. If you are importing for a single resource or ICO, the JT file is displayed in the viewer.

STEP format excludes indexable cutting tools

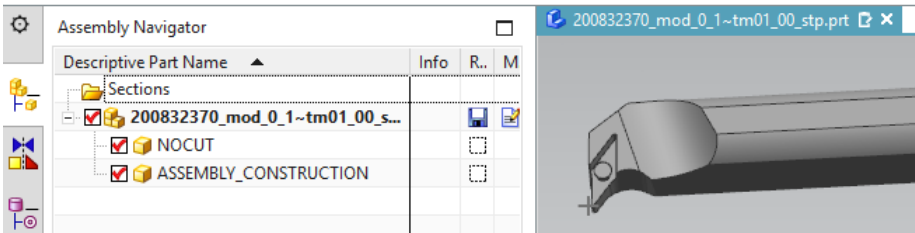
The STEP file format supports the definition of various individual tooling components. The components consist of the assembly construction, NOCUT component, and Cut component. Resource Manager manages tool assemblies and assembly construction by combining specific NOCUT and CUT geometry.

The vendor catalog assembly contains a master insert that is not likely to be what you need. For that reason, the STEP import does not include the master insert, the CUT geometry. You can add the specific insert you need to the assembly. This is also true for multitool assemblies, when a master insert is provided with the vendor assembly.

This is a vendor assembly example:

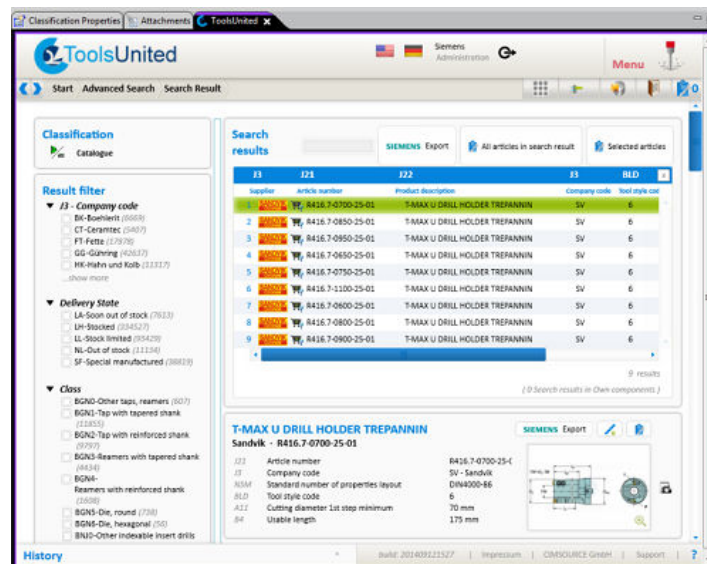


This is the same assembly with the master insert removed:



Cloud access to the Generic Tool Catalog in Resource Manager

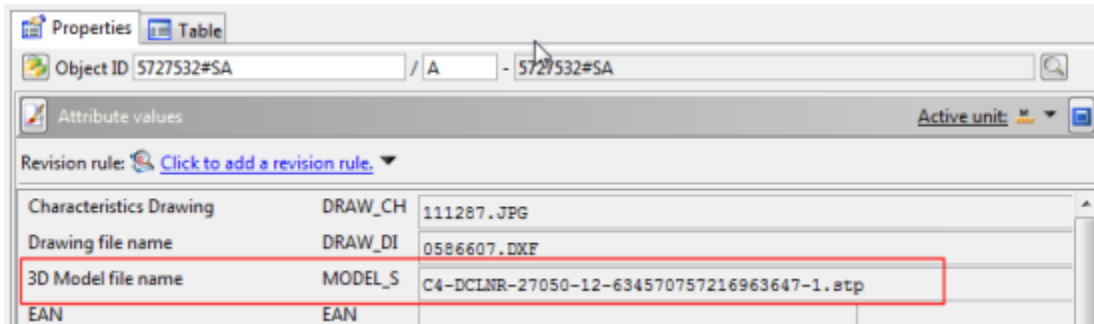
When working in Resource Manager, if you do not find a suitable tool component in the database, you can search for it in external vendor catalogs in a cloud. Teamcenter has a seamless integration of search capabilities with the ToolsUnited database from CIMSOURCE GmbH containing over 500,000 components from a variety of tool vendors that you can import into the vendor hierarchy. The ToolsUnited web page is displayed as a view within Resource Manager. You can enter search criteria in the Classification Search Dialog, then choose to pass this search query along to ToolsUnited. When you find the desired component in the ToolsUnited database, you can then import it back into Teamcenter, map the component to your customer hierarchy, and use this component to build tool assemblies to work in NX.



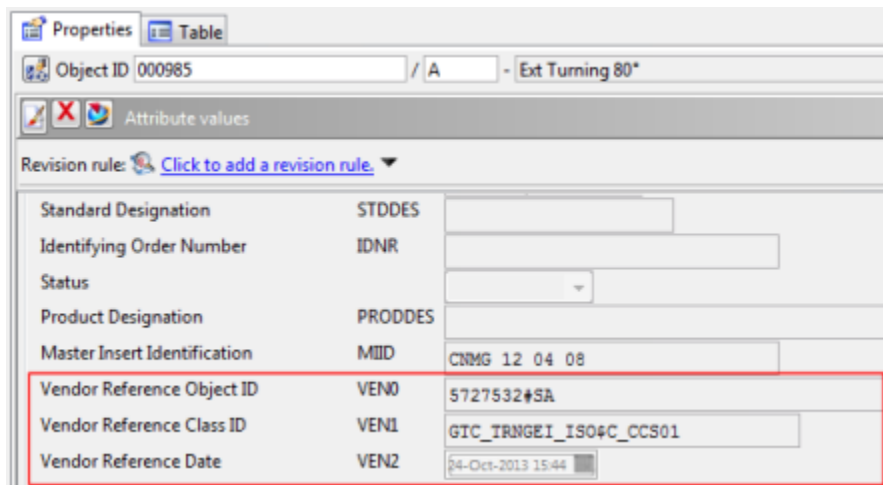
For more information, see *Search and download ToolsUnited GTC package*.

Understanding the linking mechanism for vendor data

When you import vendor catalog data, each component has an attribute, **3D Model file name** (attribute ID -159003), that stores a reference to the STEP file containing the 3D data.



In turn, when you map a catalog component to a customer component, the customer component contains attributes that refer back to the vendor component.



When you open a mapped customer component and initiate the 3D model import, Teamcenter uses this reference to locate the original catalog component. Teamcenter stores the ICO modification date from the vendor tool component in the **Vendor Reference Date** attribute during the mapping.

6. Creating, viewing, and editing manufacturing documentation

About manufacturing documentation

Teamcenter manufacturing documentation provides rich work instructions and collaboration between departments, integrated with the planning environment, leveraging Teamcenter data management capabilities.

There are two ways to create manufacturing documentation:

- Teamcenter Publish

Provides an environment for creating work instructions for manufacturing operations. Teamcenter Publish enables you to author, distribute, and visualize the most current product and process data. Its main features include:

- Technical illustrations including text, 2D images, 3D graphics, table, text, and hyperlinks (for example, a link to a movie file) to improve clarity and enhanced quality on the shopfloor.
- Easy update based on the most current planning data in Teamcenter, reducing rework and update times.
- Batch processing and scheduling of reports.
- Familiar Microsoft Visio authoring environment allowing WYSIWYG editing.

- **Report** tab

You can generate HTML reports in the **Report** view in Resource Manager. You can view the generated reports using a Web browser. Because the reports are displayed in a Web browser, you can share them for viewing with others in your organization who may not have access to the Resource Manager application. A default report is available in the **Report** view. You can use this as a basis to create a custom report. Use the style sheets provided with the software as examples for creating your own customized reports to better meet your business objectives.

The features available to you in the **Report** view mirror those available in the Report Generator application.

Teamcenter Publish

Using Teamcenter Publish

To create or view manufacturing documentation using Teamcenter Publish, install Microsoft Visio. Both Visio Standard and Visio Professional are certified. You can install Visio before or after the Teamcenter installation.

The **Save as PDF** feature is included with Visio and does not require installing the separate PDF add-in.

The administrator creates an alias file that determines the permissible contents of the documentation. For example, if the administrator uses the default alias file, you can create work instructions and product manuals, and a view for each of these is available.

When you first select a documentation view, Teamcenter loads the Visualization Illustration and Visio components. Depending on your workstation, this process may take several seconds to complete and Teamcenter displays a progress dialog box until it is complete.

Working with publishing tools

You can create publishing pages in the embedded viewer and collect them into portfolios. A typical publishing page is a work instruction document, and a portfolio may contain all the work instructions needed at a particular assembly station. By default after installation, Teamcenter provides you with sample files. To use publishing tools in your environment, you must configure it to suit your needs.

Publishing pages are Visio files that are saved as datasets with the selected BOM line.

Visio documents are constructed using shapes that can appear as text and graphics. A rich library of shapes are provided in the Visio installation.

The Teamcenter publishing tools extend the shape library to include shapes called *assets* that you can link to data in Teamcenter. Assets can display text, tables, images, or a link to a Microsoft Word file or master form. For example, in Teamcenter you can configure a product assembly, view it, add markups, and capture the graphics in a product view (snapshot) that you can then display in a 3D asset. If the data in Teamcenter is subsequently updated, you can update the publishing page to show the changes.

You can organize collections of publishing pages into portfolios, which you can view, publish to HTML for a Web server or publish to PDF, or print in My Teamcenter using the options that appear in the viewer tab after you select the portfolio object. A portfolio can contain multiple work instructions, generic pages, header and footer information, a table of contents, and cover and trailer pages.

Publishing page roles

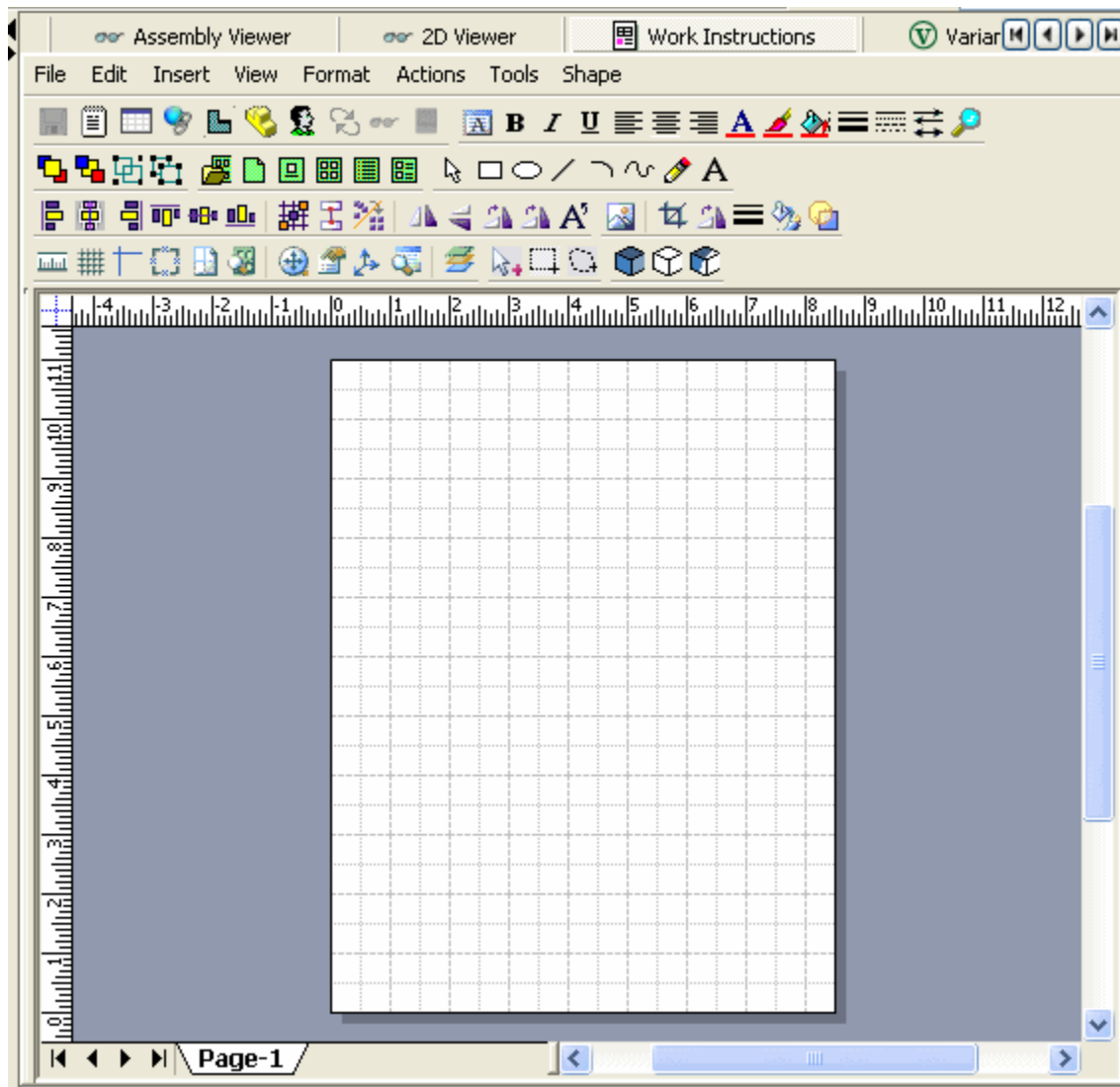
Publishing page documents can be used for any number of purposes. By default, two roles are provided, **Work Instructions** and, when a product structure is selected, **Product Manual**. Your database may be

configured to support any number of roles. This documentation refers to the **Work Instructions** role, but the behavior of the pane is the same for each role.

Creating and editing publishing pages

Creating and editing publishing pages overview

When you first open the **Work Instructions** pane, you see a blank page.



You can immediately begin to create a work instruction on this page or you can load a template and work from there.

The following is an overview of the process for creating a publishing page.

1. Add any static Visio shapes, text or graphics you need to the page.

2. Associate the page with an alias file.

Alias files tell Teamcenter what data to display in different assets on the page and how to find that data. This step is optional; a default file is loaded.

3. Place the required assets on the page. These are placeholders. You can place the following objects in a work instruction page, each embedded in an asset of the same name:

- Text that is bound to a property of an object in Teamcenter.
- Tables whose cells map to object properties in Teamcenter.
- 2D images (for example, BMP, GIF or JPEG files)
- 3D geometry assets

These are objects that you create or view in the embedded viewer, such as a factory view or the desired state of the product at a certain assembly station.

- 2D snapshots

These are dynamic objects that represent a 2D scene (a view of the base image and markups) that are associated with a BOM line in your product structure.

- Links

You can create a link to a Microsoft Word file or text file.

4. Associate the asset with a transfer mode and an alias name.

The transfer mode and the alias tell Teamcenter how to find the data in the database that is displayed in the asset.


5. (Optional) Save this page as a template for reuse.

6. Select one or more assets and an object in Teamcenter to populate the assets.

This step traverses the structure to find the desired data or files and places them in the selected assets.

The objects used to populate assets depend on which structure line is selected.

Note:


Be careful when selecting new structures for populating assets. You must first click the **Disable response to selections** button  and then select a different structure. If you do not, the scope of the **Work Instruction** view changes and Teamcenter attaches the newly created work instruction dataset to the newly selected structure.

Create a publishing page

1. Right-click the BOM line with which you want to associate the work instructions, for example, the item revision of an assembly or operation, and choose **Open with → Work Instructions**.

The selected line is the scope for the work instruction that you create. The new work instruction is attached to the line that you select here.

Note:

Be careful when selecting new structures. You must first click the **Disable response to selections** button  then select a different structure. If you do not, the scope of the **Work Instruction** view changes and Teamcenter attaches the newly created work instruction dataset to the newly selected structure.






2. From the menu commands in the **Work Instructions** view, choose **File → New TI Dataset**.

Teamcenter displays the **New Dataset** dialog box.

3. Type a name and description in the boxes at the bottom of the dialog box and click **OK**.

Teamcenter creates the new publishing page dataset.

4. To add data placeholders (assets) to the template:

Click	To add
	Data found in a text file attached to a structure line.
	A collection of data found in various properties in tabular form.
	A link to a Microsoft Word file or a text file.
	A 2D image or a 2D snapshot attached to a structure line.
	A 3D image attached to a structure line.

5. Drag these placeholders to the desired spot on the page, resizing if necessary.

- Right-click the asset and choose **Bind**.

Teamcenter displays the **Bind Table Placeholder** dialog box.

- Select the transfer mode and alias to use for the data to populate this asset and click **OK**.

Note:

The work instructions are attached to the BOM line with a **IMAN_MEWorkInstruction** relation.

Binding data

Binding assets overview

There are several different types of placeholders (assets) that you can place on a publishing page. Each of these must be bound with data from a structure. When you bind the asset, the **Bind** dialog box contains a list of transfer modes and a number of choices, called aliases, from which you can select. The choice you make for each asset defines how Teamcenter finds the data that is displayed in the asset when you populate it.

Bind textual information

You can bind information found in the text field of an object's properties. You can enter free-form text within the asset to complement the bound information. For example:

Operator must tighten **&&SUM(<alias_1>&&** bolts with torque **&&MAX(<alias_2>&&** and any other **&&alias_3&&**.

- In the **Work Instructions** view, click .

Teamcenter creates a placeholder for the text on the work instruction page.

- Save the work instruction.

You must always save a work instruction once to create the dataset before you can populate an asset.

- Click the **Text Tool** button **A** to add free-form text to the asset.

- Right-click the placeholder and select **Bind**.

Teamcenter displays the **Bind Text Placeholder** dialog box.

- From the **Transfer Modes** list, select **tcm_export** transfer mode.


You can select only one transfer mode per text alias.


- In the **Aliases** list, open the **ObjectProperties** entry and select the piece of textual information that you want to embed. You can choose to manipulate the asset data using the list of simple formula.

Each piece of bound data is added to the end of the text asset. You may have to rearrange the information after binding the data.

- Click **Add**.

Tip:

- You can also type the binding directly into the text asset if you know the format.
- You can bind multiple times to create free-form text plus embedded text in one asset. Switch back and forth between binding and typing free-form text by doing the following:
 - Click the **Arrow Tool**  button and right-click the text asset to access the bind dialog.
 - Click the **Text Tool** button **A** and select the text asset to type free-form text.

- Select the object in the structure view containing the text that you want to embed in the Teamcenter window. For example, if you want to embed the description of a particular item revision, select that item revision in the structure view.
- In the **Work Instruction** view, with the text placeholder still selected, click the **Populate Asset** button .

Teamcenter displays the specified text on the work instructions page.

Bind data to display in a table format

Use the table asset to embed multiple pieces of information about a selected object.

- In the **Work Instructions** view, click .

Teamcenter creates a placeholder for the table on the work instruction page.

- Save the work instruction.


You must always save a work instruction once to create the dataset before you can populate an asset.

- Right-click the placeholder and select **Bind**.

Teamcenter displays the **Bind Table Placeholder** dialog box.

4. From the **Transfer Modes** list, select **tcm_export** transfer mode.
5. In the **Aliases** list, open the appropriate alias, and select the type of information you want in the list and click the plus sign.

If you select multiple entries, the selected objects appear as columns of the table in the same order as in the **Aliases** pane.

6. Click **OK**.
7. Select the revision in the structure view containing the objects that you want to embed in the Teamcenter window. For example, if you want to embed the ID, name, and description of all members of an assembly, select the assembly root structure in the structure view.
8. In the **Work Instruction** view, with the table placeholder still selected, click the **Populate Asset** button .

Teamcenter displays the specified information on the work instructions page.

Bind linked data

To bind linked data, a dataset with a **.txt** file imported into it must exist. In addition, you must be able to open this **.txt** file in an associated text editor.

1. In the **Work Instructions** view, click .

Teamcenter creates a placeholder for the link on the work instruction page.

2. Save the work instruction.

You must always save a work instruction once to create the dataset before you can populate an asset.

3. Right-click the placeholder and choose **Bind**.

Teamcenter displays the **Bind Link Placeholder** dialog box.

4. From the **Transfer Modes** list, select the **ExportGraphic** transfer mode.
5. From the **Aliases** list, select **LinkedDataset**.
6. In the **Attachment** view, select the text dataset and click **Populate** in the **Work Instructions** view.

Teamcenter displays the link on the work instructions page.

Bind a 2D image

You can bind a 2D image that is attached to a revision.

1. In the **Work Instructions** view, click .

Teamcenter creates a placeholder for the image on the work instruction page.

2. Save the work instruction.

You must always save a work instruction once to create the dataset before you can populate an asset.

3. Right-click the placeholder and select **Bind**.


Teamcenter displays the **Bind Image Placeholder** dialog box.

4. From the **Transfer Modes** list, select **ExportGraphic** transfer mode.

5. In the **Aliases** list, open the **2DGraphic** entry and select **file**.

6. Open the **Attachments** view.

7. Select the image that you want to embed.

8. In the **Work Instruction** view, with the image placeholder still selected, click the **Populate Asset** button .

Teamcenter displays the selected image on the work instructions page.

Bind a 2D snapshot

If you embed a 2D snapshot, a 2D geometry asset must exist for it.

1. In the **Work Instructions** view, click .


Teamcenter creates a placeholder for the image on the work instruction page.

2. Save the work instruction.

You must always save a work instruction once to create the dataset before you can populate an asset.

3. Right-click the placeholder and select **Bind**.

Teamcenter displays the **Bind Image Placeholder** dialog box.

4. From the **Transfer Modes** list, select **ExportGraphic** transfer mode.
5. In the **Aliases** list, open the **2DSnapshot** entry and select **file**.
6. Do one of the following to specify which 2D snapshot should be populated:
 - In the **Attachments** view, select the snapshot.
 - In the **2D Viewer** view, open the **2D Snapshots Gallery** dialog window and select an existing snapshot.
 - In the **2D Viewer** view, arrange the snapshot. When you populate the asset, Teamcenter automatically creates the snapshot for you.
7. In the **Work Instruction** view, with the image placeholder still selected, click the **Populate Asset** button .


Teamcenter displays the 2D snapshot on the work instructions page.

Note:

If you receive an error saying **Failed to load Error document (2DSnapshot & file)** when populating a 2D asset, the 2D snapshot does not contain a 2D geometry asset.

Recapture the 2D snapshot with the option to capture 2D geometry asset data turned on.

Bind a 3D asset

1. Open a structure to which you want to attach a work instruction.
2. In the **Work Instructions** view, click the **3D Graphic** button .

Teamcenter creates a placeholder on the work instruction page.

3. In the **Work Instructions** view, select **File** → **Save TI Illustration**.

You must save the work instruction once to create the dataset. If you do not save first, you receive an error when populating the asset. Once the dataset exists, this step is no longer required, unless you want to save changes to the work instruction page.

4. Right-click the placeholder and select **Bind**.


Teamcenter displays the **Bind Geometry Asset Placeholder** dialog box.

5. From the **Transfer Modes** list, select **ExportGraphic** transfer mode.

6. In the **Aliases** list, open the **3DGeometryAsset** entry and select **file**.
7. Do one of the following to specify which 3D geometry should be populated:
 - In the **Graphics** view, open the **3D Product View Gallery** dialog box, create a snapshot, then select it.

Caution:


You must ensure that the **Add or Update 3D Geometry Asset** option is selected before you create a snapshot.

- In the **Attachments** view, select the 3D snapshot.
 - In the **Graphics** view, arrange the snapshot. When you populate the asset, Teamcenter automatically creates the snapshot for you.
8. In the **Work Instruction** view, with the placeholder still selected, click the **Populate Asset** button .


Teamcenter displays the 3D geometry asset on the work instructions page.

Populate an empty asset

When you populate an asset, you associate Teamcenter data with it.

1. Select the asset.
2. Select the object in Teamcenter to which you want to link the asset.
3. Disable response to selections by clicking .

When selecting structures to populate assets, it is important to understand the role of the **Disable response to selections** button. Clicking this button locks the view so that when you select a line in a different structure, the scope of the view does not change and the work instruction dataset, when created, is attached to the originally selected structure line. If the view is not locked (it responds to selection), when you select a line in a different structure to populate an asset, the work instruction dataset is attached to the newly selected structure line.

4. Click the **Populate Asset** button  or menu command.

Working with templates

Creating a publishing page template

Your site may provide publishing page templates whose content can be used as the starting point for the creation of a new publishing page. A publishing page template is a publishing page dataset that is not populated with actual data.

A page template may contain standard data such as a company logo, pictures, and required text. It may also contain empty placeholders, whose content you must fill for each instance of a publishing page you create from the template.

You can classify templates in the Classification application for easy retrieval.


Classify a template

1. Add the **TCPublishingPage** business object type to the **ics_classifiable_types** preference.
2. Create a publishing page template.
3. In the **Attachments** view, select the template and choose **Send to→Classification**.
4. In Classification, classify the template.


The template is now available when you create a new publishing page from a template.

Create a publishing page from a template

1. If you know the name of the required template, type it in the **Template name** box.

If you do not know the name of the template, you can search the database for it. In the **Templates** pane at the top of the dialog box, click the **Find a Template by name** button  next to the **Template name** box.

Teamcenter displays the **Find by Name** dialog box, and you can search by part of the name and with wildcard (*) characters.

If templates are classified, you can click Classification Search Dialog  to find the template you require.

2. When you identify the publishing page you want to use as a template, double-click the name to select it and return to the **New Dataset** dialog box.
3. (Optional) Click the **Add To Favorites** button to add the selected template to the list in the **Templates** pane above it.

4. (Optional) Click the **Use as Default** button to use the specified dataset as the default template if no TI dataset is loaded.
5. In the **File** section, select **Use Template**.
6. Type a name and description in the relevant boxes.
7. Click **OK**.

Teamcenter creates the new publishing page dataset.

Using default templates

All of the default templates contain 3D geometry assets. You can add the following details to specific page templates.

Template	Purpose
TCPartList	Specifies the part list table. When populated, it lists all the parts under the selected BOM line. It includes the item identifier, item name, revision identifier, description, and find number of each part in the list.
TCAssemblyOperation	Use this template at the operation level in a manufacturing structure. It briefly describes the operation, its activities, the consumed parts, and tools required to perform the operation. The Activities table lists all the activities under the selected operation, their descriptions and durations. The consumed parts table lists the parts consumed by the selected operation, their identifiers, names, revision identifiers, descriptions, and logical identifiers. The Tools table lists the set of tools required by the operation, their identifiers, names, and descriptions.
TCOperationRouting	This template lists manufacturing process details, including the operations under it, the consumed parts of those operations and the list of tools used in those operations. Use this template at the process level. The Operations List table lists all the operations under the selected process. The consumed parts table lists all the consumed parts under all the operations below the process. The Resource List table lists all the resources under all the operations below the process.
TCActivityDetails	This template describes the activities under an operation. Use this template at the operation level of a structure. For each activity, the name, description, start time, duration, calculated start time, and calculated duration are listed.

Template	Purpose
TCActivityRouting	This template lists manufacturing activity details, including the operations under it. Use this template at the operation level.
TCActivityToolList	<p>This template contains detailed description of the activities in the structure. It may also be used at the operation level. It lists the following activity details:</p> <ul style="list-style-type: none"> • The Activities Consumed Parts table lists all the activities, their descriptions, and the parts consumed in each of these activities. • The Activities Used Resources table lists all the activities, their descriptions, and resources used in each of the activities.

Updating publishing pages

When an asset is populated, a reference to the selected Teamcenter populating object is stored in the asset. If the data in Teamcenter changes, you can update the asset to show the changes. Updating is not automatic; you must explicitly perform an update.

Take, for example, the **TcPartList** template's table. Long after you create the publishing page and populate the table asset, the product structure can be modified. Item names can change or BOM lines can be added or removed from the line that was used to populate the table. After this happens, you can update the publishing page to show the changes.

Update an asset

1. Open the page dataset in a publishing page viewer anywhere in Teamcenter.
2. Select the asset and choose **Edit** → **Update Asset** from the page viewer menu.

The new contents of the asset are displayed, along with a triangle indicating that the display shows new (and so far unaccepted) data.

3. Switch between displaying the old and the new data by choosing **Show Original Data** and **Show New Data** from the asset's shortcut menu. The asset is in an uncommitted state. You cannot update the asset again or repopulate it while it is in this state.
4. Accept or reject the change by choosing **Accept New Data** or **Accept Original Data** from the asset's shortcut menu. All of the assets on a page can be updated at once using the publishing page **Edit** → **Update Technical Illustration** menu. Other **Edit** menus let you toggle the display and accept or reject the changes for all of the assets on the page at once.

Note:

You cannot update data in the database (other than the publishing page itself) by updating an asset. Assets can only display what is already in the database. To update a 3D asset, you must first update the snapshot dataset in the assembly viewer.

Repopulate an asset

An asset that has been populated can be repopulated with a different Teamcenter component.

1. Select the asset in the publishing page view.
2. Select the component in another view, and choose **Edit** → **Populate Asset** in the publishing page view.
3. Switch between displaying the old and the new data by choosing **Show Original Data** and **Show New Data** from the asset's shortcut menu. The asset is in an uncommitted state. You cannot update the asset again or repopulate it while it is in this state.
4. Accept or reject the change by choosing **Accept New Data** or **Accept Original Data** from the asset's shortcut menu. All of the assets on a page can be updated at once using the publishing page **Edit** → **Update Technical Illustration** menu command. Other **Edit** menus let you toggle the display and accept or reject the changes for all of the assets on the page at once.

Note:

You cannot update data in the database (other than the publishing page itself) by updating an asset. Assets only can display what is already in the database. To update a 3D asset, you must first update the snapshot dataset in the **Graphics** view.

View populating and end objects

The populating object is the one that was selected when the asset was populated. The end object is the object that is actually displayed in the asset after it is populated. These can be the same object, or different ones, depending on your alias definition.

You can view these objects.

1. Select the asset in the **Work Instructions** view.
2. Do one of the following:
 - To show the populating object in My Teamcenter, choose **Edit** → **Asset Components** → **Send to My Teamcenter** → **Populating Components**.

- To show the end object in My Teamcenter, choose **Edit → Asset Components → Send to My Teamcenter → End Object**.
- To view the populating object in the default viewer without switching applications, choose **Edit → Asset Components → View Populating Components**.
- To view the end object in the default viewer without switching applications, choose **Edit → Asset Components → View End Object**.

Note:

These menu commands may not work depending on how the alias file is implemented. For more information, contact your administrator.

Create a new work instruction

1. Select the BOM line with which you want to associate the work instructions, for example, the item revision of an assembly or operation.
2. Open the **Work Instructions** view.
3. In the **Work Instructions** view, choose **File → New TI Dataset**.

Teamcenter displays the **New Document** dialog box.

4. If your site uses templates, select the name of a template, enter a dataset name, and click **OK**.

Note:

The work instructions are attached to the BOM line with a **IMAN_MEWorkInstruction** relation.

Add new pages to the work instructions or product manual

- Choose **Insert → New Page**.

Teamcenter adds a new, blank page to the active work instructions or product manual. You can also search for an existing page by name or use a Classification search to find a classified page.

Delete pages from the work instructions or product manual

1. Choose **Edit → Delete Pages**.

Teamcenter displays the **Delete Pages** dialog box containing a list of available pages.

2. Select the page to delete and click **OK**.

Teamcenter deletes the page from the work instructions or product manual.

Save changes to the work instructions or product manual

- Choose **File** → **Save**.

Teamcenter saves any changes that you made.

Reserve space for headers and footers

You reserve space for headers and footers on a publishing page. When you print or export the work instructions or product manual, any shapes on the publishing page are clipped to the defined margins.

1. Open the work instructions.
2. Choose **View** → **Page Margins**.

Teamcenter adds a gray-shaded background at the top, bottom, left, and right of the page.

Add export tags

You can add export tags to a page that are replaced with actual information when you print or export it. For example, if you select **page**, the actual page number appears. Additional export tags include date, long date, document file name, portfolio file name and total number of pages.

1. Open the work instructions or product manual.
2. Choose **Insert** → **Portfolio Export Tag** and select a tag from the displayed list. The tag you select appears on the work instructions or product manual.
3. (Optional) Move or resize the export tag on the work instructions or product manual.

Navigate to another publishing page

Use one of the following methods to navigate to another publishing page:

1. Choose **View** → **Page** → **Go to**.

Teamcenter displays the **Select Page** dialog box.

2. Select the page to you want to navigate.

- or -

Use the navigation arrow buttons to browse through the available pages.

Export publishing pages to HTML

1. Choose **File** → **Save as Web Page**.

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

2. Type a name for the exported file and click **Save**.

Teamcenter displays the **Save as Web Page** dialog box.

3. Change settings for the following options:

Tab	Options	Description
General tab	Pages to Publish	Choose Select All to print all pages or Select Pages from and then type the page span.
	Publishing options	Select any of the publishing options, which appear in the finished Web page to aid navigation and searching.
	Additional options	Choose any of the following: <ul style="list-style-type: none"> • Automatically open Web page in browser • Organize supporting files in a folder • Type text in the Page title box to name the exported HTML output.
Advanced tab	Output formats	Select a format for the HTML output.
	Provide alternate format for older browsers	Choose a format from the list.
	Target monitor	Choose the monitor size.
	Host in Web page	Select a Web page from the list or browse to a file.
	Style sheet	Select a style sheet from the list or browse to a file.

4. Click **OK**.

Teamcenter displays the publishing pages as a Web page in your default browser.

Export publishing pages to PDF

You can print a portfolio to PDF in My Teamcenter. Before you do this, you must install third party software capable of creating PDF output.

1. Create a portfolio.
2. Open My Teamcenter.
3. In the **File** menu on the viewer tab, choose **Publish PDF to Database**.

Creating a portfolio

About portfolios

Portfolios act as a container for work instructions or product manuals and supporting documents, such as a table of contents, cover or trailer pages, and header and footer information. Portfolios may contain a reference to a publishing page or generic page or to an embedded generic page. You can use portfolios to store document structure information, print multiple publishing pages, and export portfolio contents to HTML or PDF.

You generate portfolios in Manufacturing Process Planner, Part Planner, Multi-Structure Manager, Service Planner, or Plant Designer. You manage portfolios in My Teamcenter only.

When managing a portfolio:

- Use container nodes to add an organizational hierarchy to the portfolio. Think of container nodes as chapters in a book, in which you can separate and group documents. Container nodes are useful for multiple levels in the table of contents.
- During printing operations, Teamcenter creates the table of contents information in a dynamic page.
- Create generic pages for any information page to add to the portfolio, such as cover or trailer pages. Generic pages are not considered publishing pages and Teamcenter does not apply headers and footers to them.
- Add header and footer information to portfolios by creating a special page. Teamcenter copies the shapes in this page to the published pages during printing and export operations. The same header and footer appears on every page.
- When adding supporting documents to portfolios, choose from the following options:
 - **Insert Reference**

Select a supporting document for the portfolio to reference.

- **Create**

Add a new supporting document that Teamcenter embeds in the portfolio. You can only create and embed generic pages.

- **Embed**

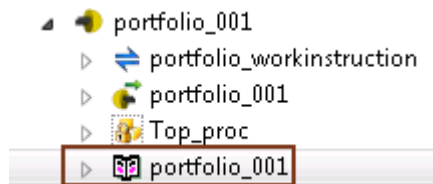
Copy a supporting document into the portfolio.

You cannot create portfolios in Resource Manager.

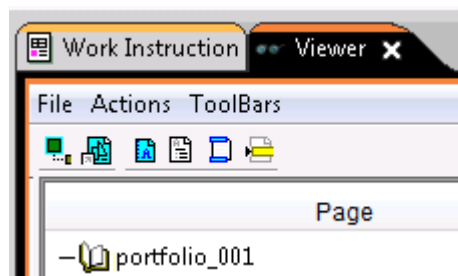
Add a new page in My Teamcenter

When you edit a portfolio in My Teamcenter, you can insert pages by choosing the **Insert Reference**→**Technical Illustration** or **Generic Technical Illustration** menu commands. In the resulting dialog box, the Classification search button is not available. To use the Classification search, you must send the portfolio to Manufacturing Process Planner.

- If you created the portfolio using the **Generate Portfolio** menu command:
 1. Select the portfolio in My Teamcenter and send it to Manufacturing Process Planner.



2. Open the **Collaboration Context** view and expand the portfolio intermediate data capture.
3. Right-click the portfolio and choose **Open With**→**Viewer**.




4. Choose **Actions**→**Insert Reference**→**Technical Illustration** or **Generic Technical Illustration**.

The Classification search is available.

- If you do not generate the portfolio from the menu command, you can view the portfolio in Manufacturing Process Planner as follows:
 1. Create an item.
 2. Copy the portfolio dataset and paste it to the item revision.
 3. Send the item revision to the Manufacturing Process Planner application.
 4. Open the **Collaboration Context** view and proceed as above. You can copy the dataset from the Classification Search Dialog to the clipboard and paste it into the portfolio dataset in My Teamcenter.

Modify header and footer information

1. Select the portfolio  in the **Newstuff** folder in My Teamcenter.
Teamcenter opens the viewer.
2. Right-click the header and footer page in the portfolio tree and choose **Open**.
3. Make any necessary changes.
4. Choose **File** → **Post to Technical Portfolio**.
5. Click **Close**.
6. In the viewer, click **File** → **Save**.

Creating manufacturing documentation in batch mode overview

You can create and update Teamcenter work instructions and portfolios in batch mode, processing multiple documents using the **Teamcenter Publish Batch** dialog box. You do not need to process individual documents manually. You can schedule these tasks to take place immediately or at a later date.

Batch processing uses the Dispatcher infrastructure for scheduling create and update features. Additionally, Dispatcher has built-in status, logging, and error reporting features.

You must set up the batch processing in the Manufacturing Process Planner or Multi-Structure Manager applications. You can use My Teamcenter to modify the scheduling of the batch process.

7. Administering Resource Manager

Setting access rights

When setting up resource management, Siemens Digital Industries Software recommends you create one group, for example, a manufacturing group, for all users involved with resource management. Using this group, you can set up custom read and write privileges for the group, as well as defining group-specific workflows and business rules. You should import the Manufacturing Resource Library (with tools and machines) using this group.

Install NX templates

If you have an empty database with no NX templates installed, you must install these templates before you can work in the manufacturing environment.

Warning:

Do *not* perform this procedure if you already have templates stored in the database. They will be overwritten.

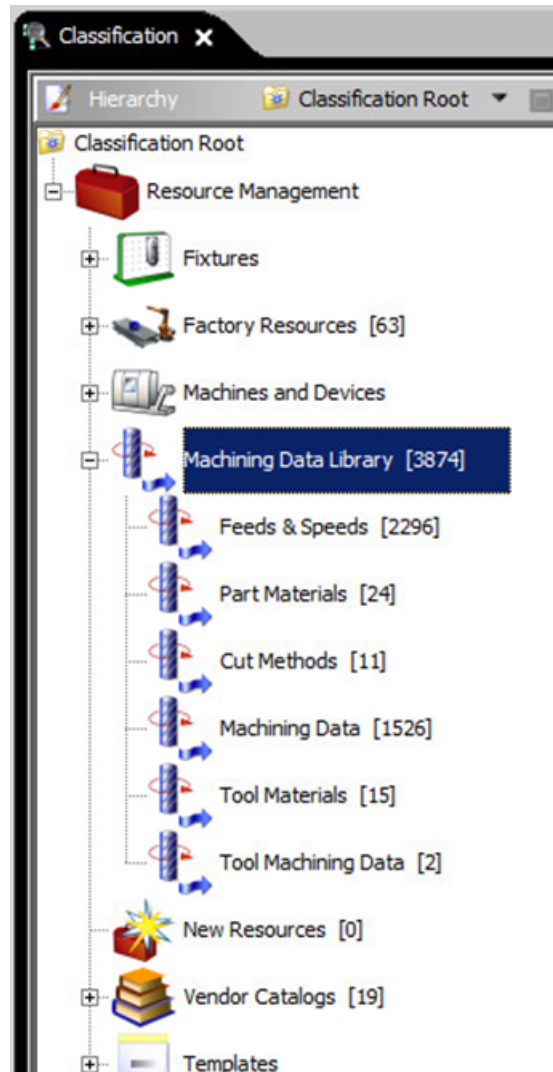
Before you perform this step, ensure that the **UGSTRUCTURES** feature is installed in your NX installation. When you complete this procedure, the NX templates are available the first time you enter NX.

1. Open a Teamcenter command prompt window.
2. Type:

```
cd /d "%UGII_ROOT_DIR%\templates\sample"  
  
tcin_template_setup -u=user -p=password
```

Store the machining data library in Teamcenter

You can store feeds and speeds data in the database in Teamcenter where it is managed instead of in the ASCII library in NX. The data is retrievable from the classification hierarchy.



1. Install the required classes using the manufacturing resource library installer.
2. Convert the NX ASCII files into SML files using the **mrm_migrate_machining_data** utility.

For example:

```
mrm_migrate_machining_data -u=user-id -p=password -g=group-
root_dir=d:\NX9.0\MACH\resource\library\feeds_speeds\ascii\
```

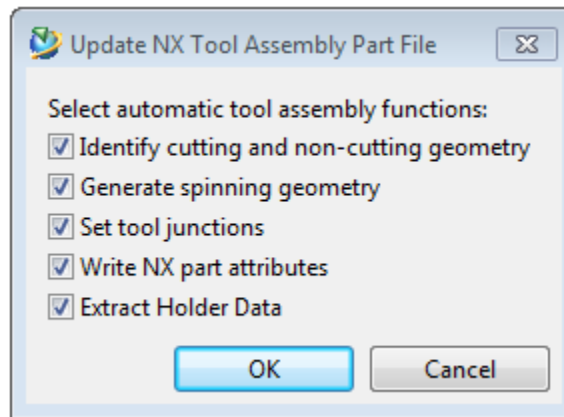
3. Import the SML files using the **smlutility** utility.

For example:

```
smlutility -import -u=user-id -p=password -g=group
-file=migrated_machining_data.sml -update
```

Synchronize attribute values from NX to Teamcenter

When you execute NX Integration functions in Teamcenter, by default, part attributes are not written into the part file. Using the **Update NX Tool Assembly Part File** menu command, you can choose to synchronize various part attributes.



To synchronize attribute values from NX to Teamcenter, you must map attributes using the following steps:

1. Export the attribute mapping definition from the database:

```
export_attr_mappings -file=attr_mappings.txt -u=admin-user-name
-p=password -g=dba
```

2. Find the following block:

```
{ Dataset type="UGMASTER"
  # (hard-wired) DB_PART_NAME : "Part Name"
  # (hard-wired) DB_PART_DESC : "Part Description"
}
```

3. Add **this block of information** under **"Part Description"** in the **Dataset type="UGMASTER"** block as follows:

```
{ Dataset type="UGMASTER"
  # (hard-wired) DB_PART_NAME : "Part Name"
  # (hard-wired) DB_PART_DESC : "Part Description"

  { Item type="MfgOMENCTool"
    ...
  }
}
```

The following section maps **Setup X**, **Setup Y**, and **Setup Z** attribute values (required for the **Write part attributes** option):

```
"CAM_TOOL_ATT_X(1)" : ItemRevision.ICS(-45002:1) /master=both
"CAM_TOOL_ATT_Y(1)" : ItemRevision.ICS(-45003:1) /master=both
"CAM_TOOL_ATT_Z(1)" : ItemRevision.ICS(-45004:1) /master=both
```

The following section maps **System Tracking Points** (required for the **Write part attributes** option). You can map nine sets in total:

```
"CAM_TOOL_ATT_SYSTP_NAME(1)" : ItemRevision.ICS(-45021:1) /
master=both
"CAM_TOOL_ATT_SYSTP_SEQ(1)" : ItemRevision.ICS(-45022:1) /
master=both
"CAM_TOOL_ATT_SYSTP_X(1)" : ItemRevision.ICS(-45023:1) /
master=both
"CAM_TOOL_ATT_SYSTP_Y(1)" : ItemRevision.ICS(-45024:1) /
master=both
"CAM_TOOL_ATT_SYSTP_Z(1)" : ItemRevision.ICS(-45025:1) /
master=both
...
"CAM_TOOL_ATT_SYSTP_NAME(9)" : ItemRevision.ICS(-45021:9) /
master=both
"CAM_TOOL_ATT_SYSTP_SEQ(9)" : ItemRevision.ICS(-45022:9) /
master=both
"CAM_TOOL_ATT_SYSTP_X(9)" : ItemRevision.ICS(-45023:9) /
master=both
"CAM_TOOL_ATT_SYSTP_Y(9)" : ItemRevision.ICS(-45024:9) /
master=both
"CAM_TOOL_ATT_SYSTP_Z(9)" : ItemRevision.ICS(-45025:9) /
master=both
```

The following section maps the **Tool Holder** definition (required for the **Extract Holder Data** option). You can map 23 sets of curves in total:

```
"CAM_TOOL_ATT_HLDR_DIA(1)" : ItemRevision.ICS(-45230:1) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(1)" : ItemRevision.ICS(-45231:1) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(1)" : ItemRevision.ICS(-45234:1) /
master=both
"CAM_TOOL_ATT_HLDR_TAPA(1)" : ItemRevision.ICS(-45232:1) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(1)" : ItemRevision.ICS(-45233:1) /
master=both
...
```

```

        "CAM_TOOL_ATT_HLDR_DIA(23)" : ItemRevision.ICS(-45230:23) /
master=both
        "CAM_TOOL_ATT_HLDR_LEN(23)" : ItemRevision.ICS(-45231:23) /
master=both
        "CAM_TOOL_ATT_HLDR_UDIA(23)" : ItemRevision.ICS(-45234:23) /
master=both
        "CAM_TOOL_ATT_HLDR_TAPA(23)" : ItemRevision.ICS(-45232:23) /
master=both
        "CAM_TOOL_ATT_HLDR_CORR(23)" : ItemRevision.ICS(-45233:23) /
master=both

```

Caution:

Replace only the mapping for the tool type (**Mfg0MENCTool**) to prevent overwriting any other mapping information that may exist in the file.

4. Save the text file and import it back into the database to define the attribute synchronization:

```

import_attr_mappings -file=attr_mappings.txt -u=admin-user-name
-p=password -g=dba

```

When you now execute the NX Integration functions in Teamcenter, the part attributes are written into the part file. When you save the part file in NX, the attribute values are transferred to Teamcenter. When you reload the resource in Teamcenter, the new values are displayed.

NX/Teamcenter attribute mapping file

The original entry in the attribute mapping file is as follows:

```

{ Dataset type="UGMASTER"
  # (hard-wired) DB_PART_NAME : "Part Name"
  # (hard-wired) DB_PART_DESC : "Part Description"
}

```

Modify this block to the following:

```

{ Dataset type="UGMASTER"
  # (hard-wired) DB_PART_NAME : "Part Name"
  # (hard-wired) DB_PART_DESC : "Part Description"

  { Item type="Mfg0MENCTool"
    "CAM_TOOL_ATT_X(1)" : ItemRevision.ICS(-45002:1) /master=both
    "CAM_TOOL_ATT_Y(1)" : ItemRevision.ICS(-45003:1) /master=both
    "CAM_TOOL_ATT_Z(1)" : ItemRevision.ICS(-45004:1) /master=both

    "CAM_TOOL_ATT_SYSTP_NAME(1)" : ItemRevision.ICS(-45021:1) /
master=both
  }
}

```

```

    "CAM_TOOL_ATT_SYSTP_SEQ(1)" : ItemRevision.ICS(-45022:1) /
master=both
    "CAM_TOOL_ATT_SYSTP_X(1)" : ItemRevision.ICS(-45023:1) /
master=both
    "CAM_TOOL_ATT_SYSTP_Y(1)" : ItemRevision.ICS(-45024:1) /
master=both
    "CAM_TOOL_ATT_SYSTP_Z(1)" : ItemRevision.ICS(-45025:1) /
master=both

    "CAM_TOOL_ATT_SYSTP_NAME(2)" : ItemRevision.ICS(-45021:2) /
master=both
    "CAM_TOOL_ATT_SYSTP_SEQ(2)" : ItemRevision.ICS(-45022:2) /
master=both
    "CAM_TOOL_ATT_SYSTP_X(2)" : ItemRevision.ICS(-45023:2) /
master=both
    "CAM_TOOL_ATT_SYSTP_Y(2)" : ItemRevision.ICS(-45024:2) /
master=both
    "CAM_TOOL_ATT_SYSTP_Z(2)" : ItemRevision.ICS(-45025:2) /
master=both

    "CAM_TOOL_ATT_SYSTP_NAME(3)" : ItemRevision.ICS(-45021:3) /
master=both
    "CAM_TOOL_ATT_SYSTP_SEQ(3)" : ItemRevision.ICS(-45022:3) /
master=both
    "CAM_TOOL_ATT_SYSTP_X(3)" : ItemRevision.ICS(-45023:3) /
master=both
    "CAM_TOOL_ATT_SYSTP_Y(3)" : ItemRevision.ICS(-45024:3) /
master=both
    "CAM_TOOL_ATT_SYSTP_Z(3)" : ItemRevision.ICS(-45025:3) /
master=both

    "CAM_TOOL_ATT_SYSTP_NAME(4)" : ItemRevision.ICS(-45021:4) /
master=both
    "CAM_TOOL_ATT_SYSTP_SEQ(4)" : ItemRevision.ICS(-45022:4) /
master=both
    "CAM_TOOL_ATT_SYSTP_X(4)" : ItemRevision.ICS(-45023:4) /
master=both
    "CAM_TOOL_ATT_SYSTP_Y(4)" : ItemRevision.ICS(-45024:4) /
master=both
    "CAM_TOOL_ATT_SYSTP_Z(4)" : ItemRevision.ICS(-45025:4) /
master=both

    "CAM_TOOL_ATT_SYSTP_NAME(5)" : ItemRevision.ICS(-45021:5) /
master=both
    "CAM_TOOL_ATT_SYSTP_SEQ(5)" : ItemRevision.ICS(-45022:5) /
master=both
    "CAM_TOOL_ATT_SYSTP_X(5)" : ItemRevision.ICS(-45023:5) /
master=both
    "CAM_TOOL_ATT_SYSTP_Y(5)" : ItemRevision.ICS(-45024:5) /

```

```

master=both
    "CAM_TOOL_ATT_SYSTP_Z(5)" : ItemRevision.ICS(-45025:5) /
master=both
    "CAM_TOOL_ATT_SYSTP_NAME(6)" : ItemRevision.ICS(-45021:6) /
master=both
    "CAM_TOOL_ATT_SYSTP_SEQ(6)" : ItemRevision.ICS(-45022:6) /
master=both
    "CAM_TOOL_ATT_SYSTP_X(6)" : ItemRevision.ICS(-45023:6) /
master=both
    "CAM_TOOL_ATT_SYSTP_Y(6)" : ItemRevision.ICS(-45024:6) /
master=both
    "CAM_TOOL_ATT_SYSTP_Z(6)" : ItemRevision.ICS(-45025:6) /
master=both
    "CAM_TOOL_ATT_SYSTP_NAME(7)" : ItemRevision.ICS(-45021:7) /
master=both
    "CAM_TOOL_ATT_SYSTP_SEQ(7)" : ItemRevision.ICS(-45022:7) /
master=both
    "CAM_TOOL_ATT_SYSTP_X(7)" : ItemRevision.ICS(-45023:7) /
master=both
    "CAM_TOOL_ATT_SYSTP_Y(7)" : ItemRevision.ICS(-45024:7) /
master=both
    "CAM_TOOL_ATT_SYSTP_Z(7)" : ItemRevision.ICS(-45025:7) /
master=both
    "CAM_TOOL_ATT_SYSTP_NAME(8)" : ItemRevision.ICS(-45021:8) /
master=both
    "CAM_TOOL_ATT_SYSTP_SEQ(8)" : ItemRevision.ICS(-45022:8) /
master=both
    "CAM_TOOL_ATT_SYSTP_X(8)" : ItemRevision.ICS(-45023:8) /
master=both
    "CAM_TOOL_ATT_SYSTP_Y(8)" : ItemRevision.ICS(-45024:8) /
master=both
    "CAM_TOOL_ATT_SYSTP_Z(8)" : ItemRevision.ICS(-45025:8) /
master=both
    "CAM_TOOL_ATT_SYSTP_NAME(9)" : ItemRevision.ICS(-45021:9) /
master=both
    "CAM_TOOL_ATT_SYSTP_SEQ(9)" : ItemRevision.ICS(-45022:9) /
master=both
    "CAM_TOOL_ATT_SYSTP_X(9)" : ItemRevision.ICS(-45023:9) /
master=both
    "CAM_TOOL_ATT_SYSTP_Y(9)" : ItemRevision.ICS(-45024:9) /
master=both
    "CAM_TOOL_ATT_SYSTP_Z(9)" : ItemRevision.ICS(-45025:9) /
master=both
    "CAM_TOOL_ATT_HLDR_DIA(1)" : ItemRevision.ICS(-45230:1) /

```

```
master=both
    "CAM_TOOL_ATT_HLDR_LEN(1)" : ItemRevision.ICS(-45231:1) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(1)" : ItemRevision.ICS(-45234:1) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(1)" : ItemRevision.ICS(-45232:1) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(1)" : ItemRevision.ICS(-45233:1) /
master=both

    "CAM_TOOL_ATT_HLDR_DIA(2)" : ItemRevision.ICS(-45230:2) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(2)" : ItemRevision.ICS(-45231:2) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(2)" : ItemRevision.ICS(-45234:2) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(2)" : ItemRevision.ICS(-45232:2) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(2)" : ItemRevision.ICS(-45233:2) /
master=both

    "CAM_TOOL_ATT_HLDR_DIA(3)" : ItemRevision.ICS(-45230:3) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(3)" : ItemRevision.ICS(-45231:3) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(3)" : ItemRevision.ICS(-45234:3) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(3)" : ItemRevision.ICS(-45232:3) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(3)" : ItemRevision.ICS(-45233:3) /
master=both

    "CAM_TOOL_ATT_HLDR_DIA(4)" : ItemRevision.ICS(-45230:4) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(4)" : ItemRevision.ICS(-45231:4) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(4)" : ItemRevision.ICS(-45234:4) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(4)" : ItemRevision.ICS(-45232:4) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(4)" : ItemRevision.ICS(-45233:4) /
master=both

    "CAM_TOOL_ATT_HLDR_DIA(5)" : ItemRevision.ICS(-45230:5) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(5)" : ItemRevision.ICS(-45231:5) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(5)" : ItemRevision.ICS(-45234:5) /
master=both
```

```
"CAM_TOOL_ATT_HLDR_TAPA(5)" : ItemRevision.ICS(-45232:5) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(5)" : ItemRevision.ICS(-45233:5) /
master=both

"CAM_TOOL_ATT_HLDR_DIA(6)" : ItemRevision.ICS(-45230:6) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(6)" : ItemRevision.ICS(-45231:6) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(6)" : ItemRevision.ICS(-45234:6) /
master=both
"CAM_TOOL_ATT_HLDR_TAPA(6)" : ItemRevision.ICS(-45232:6) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(6)" : ItemRevision.ICS(-45233:6) /
master=both

"CAM_TOOL_ATT_HLDR_DIA(7)" : ItemRevision.ICS(-45230:7) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(7)" : ItemRevision.ICS(-45231:7) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(7)" : ItemRevision.ICS(-45234:7) /
master=both
"CAM_TOOL_ATT_HLDR_TAPA(7)" : ItemRevision.ICS(-45232:7) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(7)" : ItemRevision.ICS(-45233:7) /
master=both

"CAM_TOOL_ATT_HLDR_DIA(8)" : ItemRevision.ICS(-45230:8) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(8)" : ItemRevision.ICS(-45231:8) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(8)" : ItemRevision.ICS(-45234:8) /
master=both
"CAM_TOOL_ATT_HLDR_TAPA(8)" : ItemRevision.ICS(-45232:8) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(8)" : ItemRevision.ICS(-45233:8) /
master=both

"CAM_TOOL_ATT_HLDR_DIA(9)" : ItemRevision.ICS(-45230:9) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(9)" : ItemRevision.ICS(-45231:9) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(9)" : ItemRevision.ICS(-45234:9) /
master=both
"CAM_TOOL_ATT_HLDR_TAPA(9)" : ItemRevision.ICS(-45232:9) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(9)" : ItemRevision.ICS(-45233:9) /
master=both
```

```
"CAM_TOOL_ATT_HLDR_DIA(10)" : ItemRevision.ICS(-45230:10) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(10)" : ItemRevision.ICS(-45231:10) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(10)" : ItemRevision.ICS(-45234:10) /
master=both
"CAM_TOOL_ATT_HLDR_TAPA(10)" : ItemRevision.ICS(-45232:10) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(10)" : ItemRevision.ICS(-45233:10) /
master=both

"CAM_TOOL_ATT_HLDR_DIA(11)" : ItemRevision.ICS(-45230:11) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(11)" : ItemRevision.ICS(-45231:11) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(11)" : ItemRevision.ICS(-45234:11) /
master=both
"CAM_TOOL_ATT_HLDR_TAPA(11)" : ItemRevision.ICS(-45232:11) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(11)" : ItemRevision.ICS(-45233:11) /
master=both

"CAM_TOOL_ATT_HLDR_DIA(12)" : ItemRevision.ICS(-45230:12) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(12)" : ItemRevision.ICS(-45231:12) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(12)" : ItemRevision.ICS(-45234:12) /
master=both
"CAM_TOOL_ATT_HLDR_TAPA(12)" : ItemRevision.ICS(-45232:12) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(12)" : ItemRevision.ICS(-45233:12) /
master=both

"CAM_TOOL_ATT_HLDR_DIA(13)" : ItemRevision.ICS(-45230:13) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(13)" : ItemRevision.ICS(-45231:13) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(13)" : ItemRevision.ICS(-45234:13) /
master=both
"CAM_TOOL_ATT_HLDR_TAPA(13)" : ItemRevision.ICS(-45232:13) /
master=both
"CAM_TOOL_ATT_HLDR_CORR(13)" : ItemRevision.ICS(-45233:13) /
master=both

"CAM_TOOL_ATT_HLDR_DIA(14)" : ItemRevision.ICS(-45230:14) /
master=both
"CAM_TOOL_ATT_HLDR_LEN(14)" : ItemRevision.ICS(-45231:14) /
master=both
"CAM_TOOL_ATT_HLDR_UDIA(14)" : ItemRevision.ICS(-45234:14) /
```

```

master=both
    "CAM_TOOL_ATT_HLDR_TAPA(14)" : ItemRevision.ICS(-45232:14) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(14)" : ItemRevision.ICS(-45233:14) /
master=both
    "CAM_TOOL_ATT_HLDR_DIA(15)" : ItemRevision.ICS(-45230:15) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(15)" : ItemRevision.ICS(-45231:15) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(15)" : ItemRevision.ICS(-45234:15) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(15)" : ItemRevision.ICS(-45232:15) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(15)" : ItemRevision.ICS(-45233:15) /
master=both
    "CAM_TOOL_ATT_HLDR_DIA(16)" : ItemRevision.ICS(-45230:16) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(16)" : ItemRevision.ICS(-45231:16) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(16)" : ItemRevision.ICS(-45234:16) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(16)" : ItemRevision.ICS(-45232:16) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(16)" : ItemRevision.ICS(-45233:16) /
master=both
    "CAM_TOOL_ATT_HLDR_DIA(17)" : ItemRevision.ICS(-45230:17) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(17)" : ItemRevision.ICS(-45231:17) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(17)" : ItemRevision.ICS(-45234:17) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(17)" : ItemRevision.ICS(-45232:17) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(17)" : ItemRevision.ICS(-45233:17) /
master=both
    "CAM_TOOL_ATT_HLDR_DIA(18)" : ItemRevision.ICS(-45230:18) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(18)" : ItemRevision.ICS(-45231:18) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(18)" : ItemRevision.ICS(-45234:18) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(18)" : ItemRevision.ICS(-45232:18) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(18)" : ItemRevision.ICS(-45233:18) /
master=both

```

```

    "CAM_TOOL_ATT_HLDR_DIA(19)" : ItemRevision.ICS(-45230:19) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(19)" : ItemRevision.ICS(-45231:19) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(19)" : ItemRevision.ICS(-45234:19) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(19)" : ItemRevision.ICS(-45232:19) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(19)" : ItemRevision.ICS(-45233:19) /
master=both

    "CAM_TOOL_ATT_HLDR_DIA(20)" : ItemRevision.ICS(-45230:20) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(20)" : ItemRevision.ICS(-45231:20) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(20)" : ItemRevision.ICS(-45234:20) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(20)" : ItemRevision.ICS(-45232:20) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(20)" : ItemRevision.ICS(-45233:20) /
master=both

    "CAM_TOOL_ATT_HLDR_DIA(21)" : ItemRevision.ICS(-45230:21) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(21)" : ItemRevision.ICS(-45231:21) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(21)" : ItemRevision.ICS(-45234:21) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(21)" : ItemRevision.ICS(-45232:21) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(21)" : ItemRevision.ICS(-45233:21) /
master=both

    "CAM_TOOL_ATT_HLDR_DIA(22)" : ItemRevision.ICS(-45230:22) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(22)" : ItemRevision.ICS(-45231:22) /
master=both
    "CAM_TOOL_ATT_HLDR_UDIA(22)" : ItemRevision.ICS(-45234:22) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(22)" : ItemRevision.ICS(-45232:22) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(22)" : ItemRevision.ICS(-45233:22) /
master=both

    "CAM_TOOL_ATT_HLDR_DIA(23)" : ItemRevision.ICS(-45230:23) /
master=both
    "CAM_TOOL_ATT_HLDR_LEN(23)" : ItemRevision.ICS(-45231:23) /
master=both

```

```

    "CAM_TOOL_ATT_HLDR_UDIA(23)" : ItemRevision.ICS(-45234:23) /
master=both
    "CAM_TOOL_ATT_HLDR_TAPA(23)" : ItemRevision.ICS(-45232:23) /
master=both
    "CAM_TOOL_ATT_HLDR_CORR(23)" : ItemRevision.ICS(-45233:23) /
master=both

    "M_Cut_Dia_Min"      : ItemRevision.ICS(-40245) /master=both
    "M_Cut_Dia_Max"     : ItemRevision.ICS(-40244) /master=both
    "M_Cut_Dia_Adj"     : ItemRevision.ICS(-45270) /master=both
    "M_TOOL_CAL_VAL"    : ItemRevision.ICS(-40404) /master=cad
    "M_TCV_CALLBACK"    : ItemRevision.ICS(-40404) /master=iman
}
}

```

Caution:

Do not overwrite any other modifications contained within the file.

Enable graphics creation

An administrator typically performs this step.

1. In the Teamcenter Environment Manager (TEM), install the Teamcenter Integration for NX.
2. Restart TEM and install the graphics builder by selecting the **NX Graphics Builder** option in the **NX Integration** section.
3. If you use the Manufacturing Resource Library:
 - a. Run setup program in the **advanced_installations\resource_management\server** directory of the installation image.
 - b. Select the **Manufacturing Resources — Database Population** option and provide the appropriate input to import tools until you reach the **Support GRAPHICS BUILDER** step.
 - c. Select **Tools**.

This step installs the part family templates required to create graphics for the tool components found in the Manufacturing Resource Library.

- d. Complete the installation.

Note:

When you create graphics using the graphics builder, all part family members are created with the same item type as the part family template. Therefore, ensure that your part family templates are of the same item type as the one you specified during the Manufacturing Resource Library import.

Enable tool retrieval from Teamcenter to NX

An administrator typically performs this step.

1. In the Teamcenter Environment Manager, install the Teamcenter Integration for NX.
2. Run the Manufacturing Resource Library setup program in the **advanced_installations\resource_management\server** directory of the installation image, selecting the **Configure NX Library** option.

This step copies the **cam_part_planner_mrl.dat** configuration file to the **MACH\resource\configuration** directory in your NX installation.

Setting up and customizing setup sheets

Enable setup sheet generation for resources

1. Ensure that the graphics builder is installed and configured.
2. Set the **MRMSetupSheets** preference to true.
3. Add the item revisions of the NX part files containing the drawing templates to the **MRMSetupSheetTemplatesMetric** or the **MRMSetupSheetTemplatesInch** preference depending on your needs.
4. Add the setup sheet templates to the **nxdm_ugs_drawing_templates.pax** template PAX file in the **UGII\templates** directory in NX. Do this by adding **these entries**.
5. Set the output format by setting the **SETUP_SHEET_OUTPUT_FORMAT** NX part attribute to one or more (separated by commas) of the following formats:

PDF
CGM
PNG
JPEG
JPG
TIFF
TIF

If you do not specify this attribute, PDF, CGM, and PNG files are generated by default.

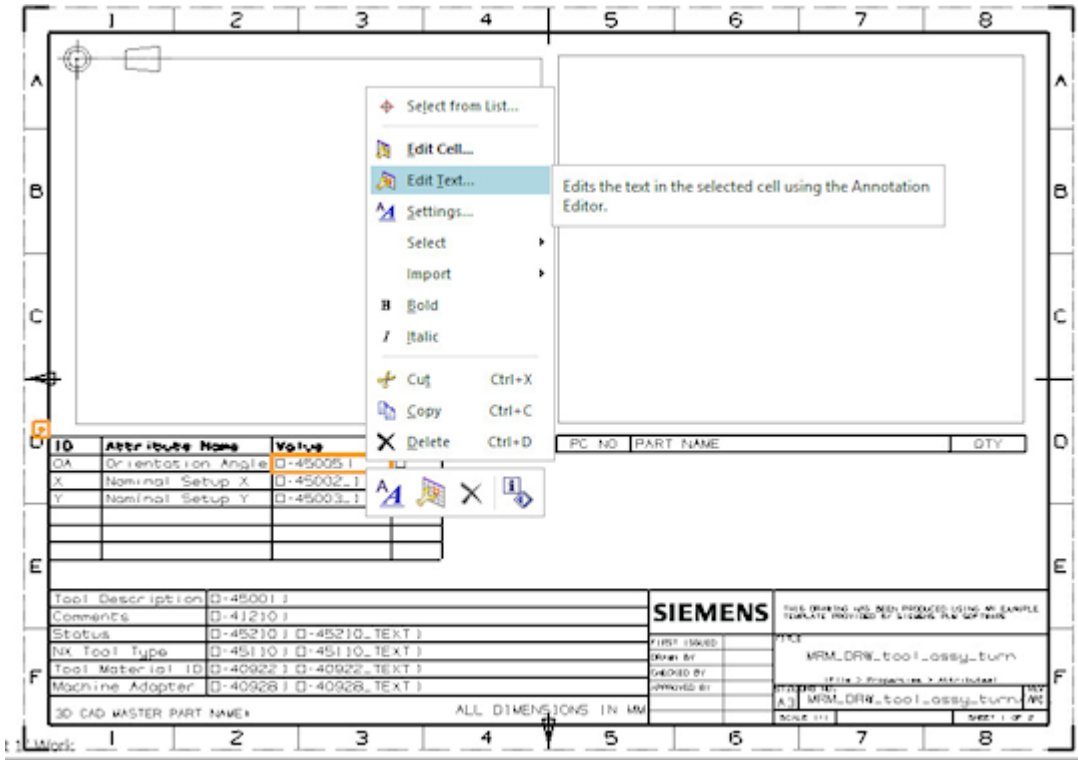
Create custom setup sheets

Setup sheets are configured as drawing templates in NX. They hold placeholders for the class attributes that are replaced with values when you generate a setup sheet for a resource. The attribute placeholders must be configured in NX following a specific format.

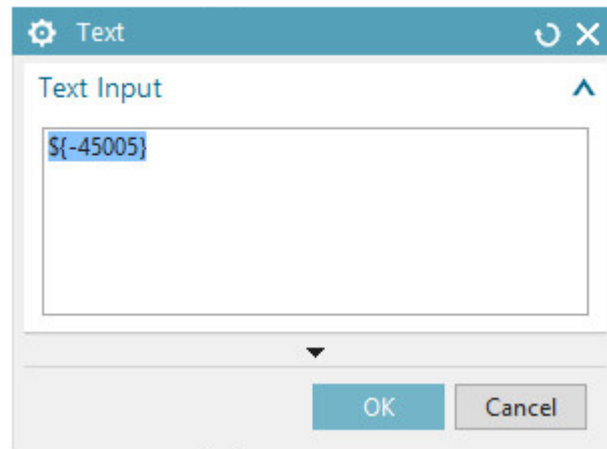
- 1. Set up the drawing template as specified in the *Drawing templates* section of the *CAD Drafting* Help in the NX Help Collection.

Consider when creating a drawing template that the unit is hard-coded in the template. The unit delivered with the default setup sheet is metric. If you use inch tool assemblies, you must modify the hard-coded unit. The tool attribute values are always transferred in the tool assembly ICO unit.

- 2. In the drawing template in NX, right-click the placeholder for the attribute value and choose **Edit text**.



- 3. In the **Text** dialog box, edit the placeholder text.



The entry always begins with `${` and ends with `}`.

- Attributes are entered using their attribute ID.
- Key-LOV entries display the attribute key followed by the key value. For example, the key-LOV -45213 contains the following:

1	Roughing
2	Finishing
3	Hard Machining

The placeholder for such a key-LOV has the following format:

`${-45213} ${-45213_TEXT}`

The first entry, `${-45213}` displays the key and the second entry, `${-45213_TEXT}`, displays its value. You can create a placeholder for the value only:

`${-45213_TEXT}`

- Array placeholders must contain an index indicating the array position. For example:

`${-45002_1}`

4. Add the new template revision to the **MRMSetupSheetTemplatesMetric** or the **MRMSetupSheetTemplatesInch** preference depending on your needs, and to the template PAX file as explained in *Enable setup sheet generation for resources* .

PAX file entries for setup sheets

The NX drawing template part files must be registered in the related NX PAX files, located in the *DRAFTING\templates* directory.

Add the following entries to the *nxdm_ugs_drawing_templates.pax* file, between the last `</PaletteEntry>` and `</Palette>` tags.

```

376     <Units>English</Units>
377     <ItemType>Item</ItemType>
378     <RelationType>master</RelationType>
379     </ObjectData>
380     </PaletteEntry>
381
382 </Palette>
383
384

```

```

<PaletteEntry id="id_mrl_mm_1">
  <References/>
  <Presentation description="MRM General Resource Setup Sheet Template
Metric"
  name="MRM DRW Resources General Metric">
    <PreviewImage location="@DB/MRM_DRW_resources_general_metric/A"
type="UGPART" />
  </Presentation>
  <ObjectData class="DrawingTemplate">
    <TemplateFileType>none</TemplateFileType>
    <Filename>@DB/MRM_DRW_resources_general_metric/A</Filename>
    <Units>Metric</Units>
    <UsesMasterModel>Yes</UsesMasterModel>
    <ItemType>Any</ItemType>
    <RelationType>specification</RelationType>
  </ObjectData>
</PaletteEntry>

<PaletteEntry id="id_mrl_mm_2">
  <References/>
  <Presentation description="MRM Drilling Tool Setup Sheet Template
Metric"
  name="MRM DRW Tool Assy Drill Metric">
    <PreviewImage location="@DB/MRM_DRW_tool_assy_drill_metric/A"
type="UGPART" />
  </Presentation>
  <ObjectData class="DrawingTemplate">
    <TemplateFileType>none</TemplateFileType>
    <Filename>@DB/MRM_DRW_tool_assy_drill_metric/A</Filename>
    <Units>Metric</Units>
    <UsesMasterModel>Yes</UsesMasterModel>

```

```

<ItemType>Any</ItemType>
<RelationType>specification</RelationType>
</ObjectData>
</PaletteEntry>

<PaletteEntry id="id_mrl_mm_3">
  <References/>
  <Presentation description="MRM Milling Tool Setup Sheet Template
Metric"
  name="MRM DRW Tool Assy Mill Metric">
    <PreviewImage location="@DB/MRM_DRW_tool_assy_mill_metric/A"
type="UGPART" />
  </Presentation>
  <ObjectData class="DrawingTemplate">
  <TemplateFileType>none</TemplateFileType>
  <Filename>@DB/MRM_DRW_tool_assy_mill_metric/A</Filename>
  <Units>Metric</Units>
  <UsesMasterModel>Yes</UsesMasterModel>
  <ItemType>Any</ItemType>
  <RelationType>specification</RelationType>
  </ObjectData>
</PaletteEntry>

<PaletteEntry id="id_mrl_mm_4">
  <References/>
  <Presentation description="MRM Turning Tool Setup Sheet Template
Metric"
  name="MRM DRW Tool Assy Turn Metric">
    <PreviewImage location="@DB/MRM_DRW_tool_assy_turn_metric/A"
type="UGPART" />
  </Presentation>
  <ObjectData class="DrawingTemplate">
  <TemplateFileType>none</TemplateFileType>
  <Filename>@DB/MRM_DRW_tool_assy_turn_metric/A</Filename>
  <Units>Metric</Units>
  <UsesMasterModel>Yes</UsesMasterModel>
  <ItemType>Any</ItemType>
  <RelationType>specification</RelationType>
  </ObjectData>
</PaletteEntry>

<PaletteEntry id="id_mrl_mm_5">
  <References/>
  <Presentation description="MRM General Tool Setup Sheet Template
Metric"
  name="MRM DRW Tool General Metric">
    <PreviewImage location="@DB/MRM_DRW_tool_general_metric/A"
type="UGPART" />
  </Presentation>

```

```

<ObjectData class="DrawingTemplate">
<TemplateFileType>none</TemplateFileType>
<Filename>@DB/MRM_DRW_tool_general_metric/A</Filename>
<Units>Metric</Units>
<UsesMasterModel>Yes</UsesMasterModel>
<ItemType>Any</ItemType>
<RelationType>specification</RelationType>
</ObjectData>
</PaletteEntry>

<PaletteEntry id="id_mrl_in_1">
  <References/>
  <Presentation description="MRM General Resource Setup Sheet Template
Inch"
  name="MRM DRW Resources General Inch">
    <PreviewImage location="@DB/MRM_DRW_resources_general_inch/A"
type="UGPART" />
  </Presentation>
  <ObjectData class="DrawingTemplate">
  <TemplateFileType>none</TemplateFileType>
  <Filename>@DB/MRM_DRW_resources_general_inch/A</Filename>
  <Units>English</Units>
  <UsesMasterModel>Yes</UsesMasterModel>
  <ItemType>Any</ItemType>
  <RelationType>specification</RelationType>
  </ObjectData>
</PaletteEntry>

<PaletteEntry id="id_mrl_in_2">
  <References/>
  <Presentation description="MRM Drilling Tool Setup Sheet Template
Inch"
  name="MRM DRW Tool Assy Drill Inch">
    <PreviewImage location="@DB/MRM_DRW_tool_assy_drill_inch/A"
type="UGPART" />
  </Presentation>
  <ObjectData class="DrawingTemplate">
  <TemplateFileType>none</TemplateFileType>
  <Filename>@DB/MRM_DRW_tool_assy_drill_inch/A</Filename>
  <Units>English</Units>
  <UsesMasterModel>Yes</UsesMasterModel>
  <ItemType>Any</ItemType>
  <RelationType>specification</RelationType>
  </ObjectData>
</PaletteEntry>

<PaletteEntry id="id_mrl_in_3">
  <References/>
  <Presentation description="MRM Milling Tool Setup Sheet Template

```

```

Inch"
  name="MRM DRW Tool Assy Mill Inch">
    <PreviewImage location="@DB/MRM_DRW_tool_assy_mill_inch/A"
type="UGPART" />
  </Presentation>
  <ObjectData class="DrawingTemplate">
  <TemplateFileType>none</TemplateFileType>
  <Filename>@DB/MRM_DRW_tool_assy_mill_inch/A</Filename>
  <Units>English</Units>
  <UsesMasterModel>Yes</UsesMasterModel>
  <ItemType>Any</ItemType>
  <RelationType>specification</RelationType>
  </ObjectData>
</PaletteEntry>

<PaletteEntry id="id_mrl_in_4">
  <References/>
  <Presentation description="MRM Turning Tool Setup Sheet Template
Inch"
  name="MRM DRW Tool Assy Turn Inch">
    <PreviewImage location="@DB/MRM_DRW_tool_assy_turn_inch/A"
type="UGPART" />
  </Presentation>
  <ObjectData class="DrawingTemplate">
  <TemplateFileType>none</TemplateFileType>
  <Filename>@DB/MRM_DRW_tool_assy_turn_inch/A</Filename>
  <Units>English</Units>
  <UsesMasterModel>Yes</UsesMasterModel>
  <ItemType>Any</ItemType>
  <RelationType>specification</RelationType>
  </ObjectData>
</PaletteEntry>

<PaletteEntry id="id_mrl_in_5">
  <References/>
  <Presentation description="MRM General Tool Setup Sheet Template
Inch"
  name="MRM DRW Tool General Inch">
    <PreviewImage location="@DB/MRM_DRW_tool_general_inch/A"
type="UGPART" />
  </Presentation>
  <ObjectData class="DrawingTemplate">
  <TemplateFileType>none</TemplateFileType>
  <Filename>@DB/MRM_DRW_tool_general_inch/A</Filename>
  <Units>English</Units>
  <UsesMasterModel>Yes</UsesMasterModel>
  <ItemType>Any</ItemType>
  <RelationType>specification</RelationType>
  </ObjectData>

```

```
</PaletteEntry>
```

Setting up site-specific properties to search resources by site

Step 1: set up site-specific properties

1. Ensure that the **MRMSiteDataEnabled** preference is set to **true**.

This displays the **Create/update site specific data for resources** button in the Resource Manager on Rich Client application.

2. In Resource Manager on Rich Client, open a resource from the tooling library and click **Create/update site specific data for resources**.



The first time you click the **Create/update resource site data** button, Teamcenter creates the following new classes under the **SAM** node in the hierarchy along with four new attributes.

Class name	ID	With these attributes
Resource Site Specific Data	MRM_SITE_DATA	-46003 Resource Location -46004 Resource Status -46005 Resource Vendor -46006 Resource Machine
Status	MRM_SITE_DATA_01	Inherits: -46003 Resource Location -46004 Resource Status
Vendor	MRM_SITE_DATA_02	Inherits: -46003 Resource Location -46005 Resource Vendor
Machine	MRM_SITE_DATA_03	Inherits: -46006 Resource Machine

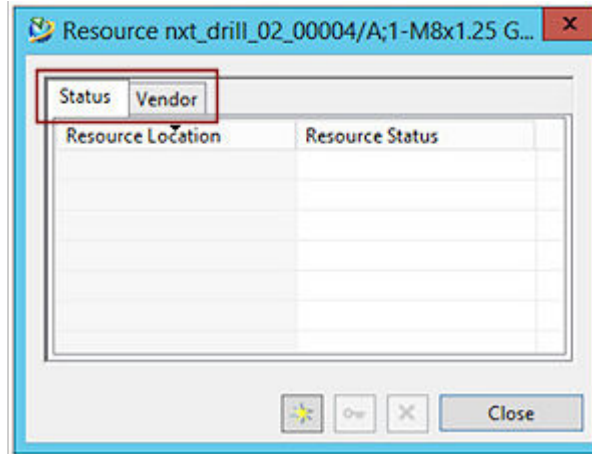
3. Add the class IDs for which you want to create the site-specific properties to the **MRMSiteData** preference.

This preference defines the classes used to store the site-specific data for resources. For each class listed in this preference, a tab is displayed in the **Resource Site Data** dialog. For example, if the value of this preference is:

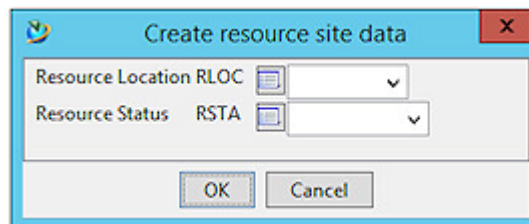
MRM_SITE_DATA_01 (class name: **Status**)

MRM_SITE_DATA_02 (class name: **Vendor**)

The dialog box in Resource Manager on Rich Client displays two tabs called **Status** and **Vendor**.

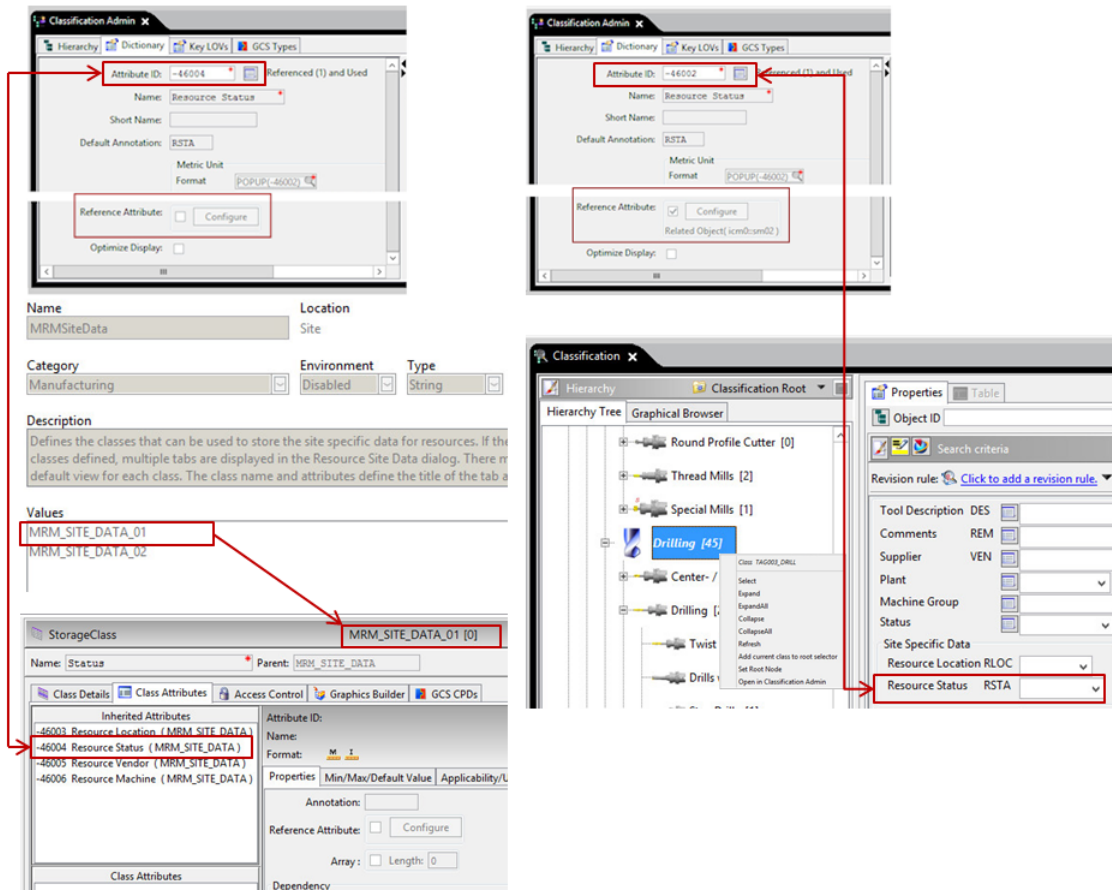


The class name and attributes define the title of the tab and the attributes that are displayed in the tab. You can extend the **MRM_SITE_DATA** class structure to include any class that suits your needs. The attributes contained in the classes listed in this preference are the attributes that are displayed when you create new site-specific properties. For example, the **Status** class contains two attributes, and these are displayed when you create new site-specific data on the **Status** tab.



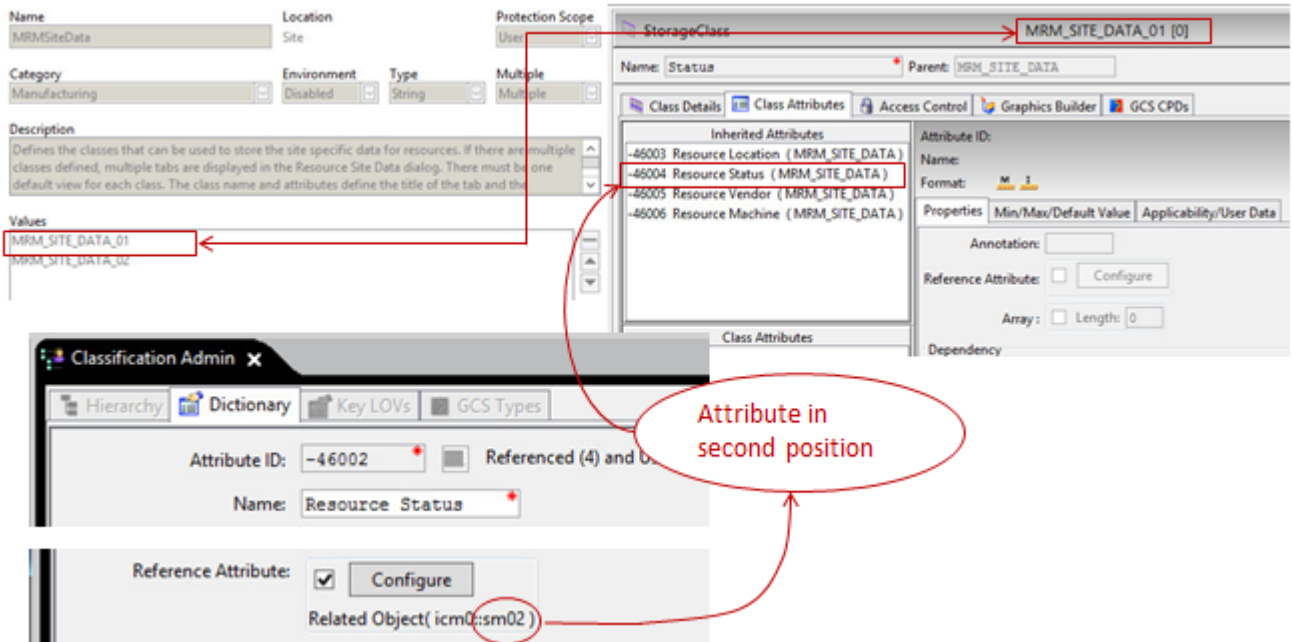
Step 2: set up the search for the site-specific properties

To set up the search for a specific property, you must create two attributes. The first attribute is added to the class listed in the **MRMSiteData** preference. The second attribute is a reference attribute that is added to the class. For example, for the **Resource Status** site-specific property, there are two attributes: a reference attribute (**-46002**) and a regular attribute (**-46004**). The regular attribute, **-46004**, is the one listed in the **MRMSiteData** preference. The reference attribute, **-46002**, is the one added to the class and for which you can search in the user interface.



1. Create reference attribute for each attribute for which you want to search.
 - a. Create an attribute and select **Reference Attribute** during creation.
 - b. Click **Configure**.
 - c. In the **Configure Reference Attribute** dialog box, select **Related Object**.
 - d. Select the **icm0** class in the **POM Attribute** tree.
 - e. Select the correct attribute from the **POM Attribute** list.

This list contains an internal ID for every attribute. The reference attributes are hard-coded to refer to a specific position of the attributes in the classes named in the **MRMSiteData** preference. For example, if the reference attribute refers to the **icm0::sm02** attribute, Teamcenter searches for the value contained in the attribute that is in the second position of the attributes contained in the classes listed in the **MRMSiteData** preference.

**Caution:**

To avoid unexpected search results, when extending the site-specific data framework, create subclasses of the **MRM_SITE_DATA** class and add any new attributes to the parent **MRM_SITE_DATA** class allowing them to be inherited to the new subclasses. When you create a reference attribute referring to the new attribute, Teamcenter then searches for the new attribute value in the correct position.

- f. Select the **Mfg0ResourceSiteDataRel** relation in the **Relations** list.
2. Add the reference attribute to each class in which you want to search.
3. Set the **ICS_reference_attribute_use_format_for_display** to **true**.

This preference specifies that the format of the reference attribute is used to determine the type of text field when searching in Resource Manager on Rich Client.

Setting up the NX search dialogs to include new classification classes and attributes

The search dialogs that are displayed when you search for tools or machines in NX are referred to as the *NX search dialogs*. They consist of three dialog boxes, the **Library Class Selection**, the **Search Criteria**, and **Search Results** dialog boxes. When you search in NX, these dialogs provide you with information about the tools and machines saved in the Teamcenter database. If you modify classes or attributes in the Teamcenter database, you must update the NX search dialogs to be able to search for the changed objects.

The content of the NX search dialogs is specified by *definition* (DEF) files. This mechanism is thoroughly explained in the *CAM libraries→Library definition files* section of the *Manufacturing General* documentation in NX.

You can export the classification hierarchy, its classes and attributes, as well as class and hierarchy images to such a DEF file using the **mrm_export_resources** utility.

By default, when you export the classification hierarchy and use the resulting DEF file in NX, all Teamcenter attributes are shown in the **Search Criteria** and **Search Results** dialog boxes. You can limit the number of attributes shown in these dialog boxes by creating mapping views of your tool assembly classes in Classification Admin that only contain the attributes that you need in the NX dialog boxes. To assist you, two mapping view types are delivered in Classification Admin that are used by the **mrm_export_resources** utility to create the appropriate DEF files.

View type	Description
NXLIB_SearchCriteria	Specifies which attributes are displayed in the Search Criteria dialog box in NX.
NXLIB_SearchResult	Specifies which attributes are displayed in the Search Result dialog box in NX.

Teamcenter lists the attributes that you specify in the **NXLIB_SearchCriteria** view as parameters of the **DIALOG** statement in the DEF file. It writes the attributes that you specify in the **NXLIB_SearchResult** view as parameters of the **RSET** statement. If you do not create an **NXLIB_SearchResult** view, Teamcenter automatically uses the same attributes for the **Search Result** dialog box as it does for the **Search Criteria** dialog box. If you do not specify either of these views, all Teamcenter attributes are displayed in both dialog boxes.

Any time you make changes to the classification hierarchy, you must run the **mrm_export_resources** utility to ascertain that these changes are reflected in the NX search dialogs.

Tip:

Use the **mrm_export_resources** utility to export hierarchy images for use in the NX dialog boxes.

In the Manufacturing Resource Library, the **NXLIB_SearchCriteria** and **NXLIB_SearchResult** mapping views are delivered by default. The **NX Search Result** dialog does not include **site-specific properties**.

By default in NX, you cannot search for attributes when searching for machines. To turn on the display of the **NX Search Criteria** dialog box where you can search for site-specific properties for the machines, you must add the following two lines to the **ugii_env.dat** file:

```
UGII_CAM_MACHINE_QUERY_DIALOG=yes
UGII_CAM_DEVICE_QUERY_DIALOG=yes
```

Manually extend the Classification hierarchy with a new class

If you extend your Teamcenter Classification hierarchy with new tool assembly classes, these must be reflected in the NX Library dialogs so that you can search in the new classes from within NX. Because NX supports only a limited number of tool types, you must map every new tool assembly in Teamcenter to a tool type in NX.

You can extend the hierarchy manually, or you can use the **mrm_export_resources** utility to perform these steps automatically.

The following steps show how to manually create a new class, **Custom_Mill_Tool**, to hold 5-parameter milling tools. The new class ID is **TA_MILL_10_75**.

1. Create a new class in the Classification Admin application. Keep in mind that the NX Library mechanism only reflects tool assemblies found in the **Resource Management→Tools→Assemblies** branch of the classification hierarchy. For the example, you must create the **Custom_Mill_Tool** class within **Resource Management→Tools→Assemblies→Milling**.
2. Add all necessary class attributes. Every tool type within NX requires its own minimum set of attributes. These are based on the attributes that appear in the tool dialogs within NX CAM.

For more information about the mandatory parameters necessary for a five parameter milling tool, see *CAM Library→Cutter, tool holder, and device libraries→Creating new classes and subclasses→Attributes for new tool classes and subclasses* in the *Manufacturing General Help* in the *NX Help* collection.

Note:

Negative attribute numbers are reserved for Siemens Digital Industries Software attributes. If you add custom attributes, use positive attribute IDs.

3. Open the **MACH\resource\library\tool\inclass\dbc_mrl_tooling_library_tlas_en.def** file in an editor. You can find this file in the directory where NX is installed.
4. Add the new class to the class hierarchy section of this file as explained in *Library class hierarchies* in the *NX Library Help*.
5. If you assigned customer-specific attributes that are required by the NX CAM tools, adjust the event handler file to map to these attributes in the DBC retrieve procedure in the **dbc_mrl_tooling_library_tlas_en.tcl** file.
6. Restart NX and Teamcenter.

The new class now appears in the NX Library dialog boxes when you search for a tool in NX.

Structure Manager alignment

The preference **BOMExcludeFromPackCheck** can affect the autopack functionality controlled by preference **PSEAutoPackPref** if the value is set to **seqno**. It is recommended that the value is set to **none** to ensure all components of the assembly are consistently displayed.

Preferences required for the Manufacturing Resource Library

The following preferences are required to install and run the Manufacturing Resource Library:

- **ICS_hierarchy_sort_option**
- **MRMPropagationAlternateAttributes**
- **ICS_root_selector_entries**
- **ICS_user_defined_button_class**

Part Manufacturing BMIDE template

Teamcenter Manufacturing has interfaces to NX CAM, NX CMM, NX Additive Manufacturing, and Shop Floor Integrate (SFI) RM. The Part Manufacturing Business Modeler IDE (BMIDE) template, *pm0partmanufacturing_template.xml*, contains Teamcenter business objects used for those integrations.

With the presetter business objects, you can store measurement programs for tools and define presetter groups.

Note:

You create a new measuring program dataset by selecting *File*→*New*→*Other*.

See Create a dataset business object for the procedure to add the new measuring dataset to the dataset list.

In Teamcenter, the Part Management template includes the business objects needed to store the definition of presetter groups and measuring programs. Future releases of this template will include all of the business objects needed for Manufacturing Resource Library, so you only need one template for general Teamcenter integrated Part Manufacturing tasks.

Note:

This template is installed in the same way as other templates, using the Teamcenter Environment Manager (TEM).

Follow this path in TEM, *Configuration Manager*→*Perform maintenance on an existing configuration*→*Add/Remove Features*→*Extensions*→*Part Manufacturing*→*Part Manufacturing Shopfloor integration, e.g., Presetter and Activity User Data*.

If you are installing a new database, choose *Add new configuration* instead of *Perform maintenance on an existing configuration*.