TEAMCENTER

Simulation Process and Data Management on Rich Client — Usage

Teamcenter 2412

SIEMENS

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Contents

Create structure map rules to generate model structures for specific types of analyses

Create and manage model structures

Compare product and model structures

Capture the pedigree or the configuration information of a product or a model structure

Create and manage analysis revisions

Create analysis packages for a specific type of analysis

Specify key performance indicator (KPI) values

Run simulations on local desktops by downloading or uploading data periodically

Launch preprocessors, solvers, postprocessors, and other simulation tools

Analyze results

Using the simulation dashboard

Troubleshooting

1. Introduction to Simulation Process and Data Management

About Simulation Process and Data Management

Design is an iterative process and often designs need to be modified due to manufacturing constraints or conflicting requirements. It is possible to reduce costs and minimize the time spent on verification and testing by arriving at a good design in the initial stages of product development and by continuously validating the design throughout the product lifecycle. Simulation Process and Data Management is a solution used for validating or improving a design in the early stages of the product lifecycle.

Where do I go from here?

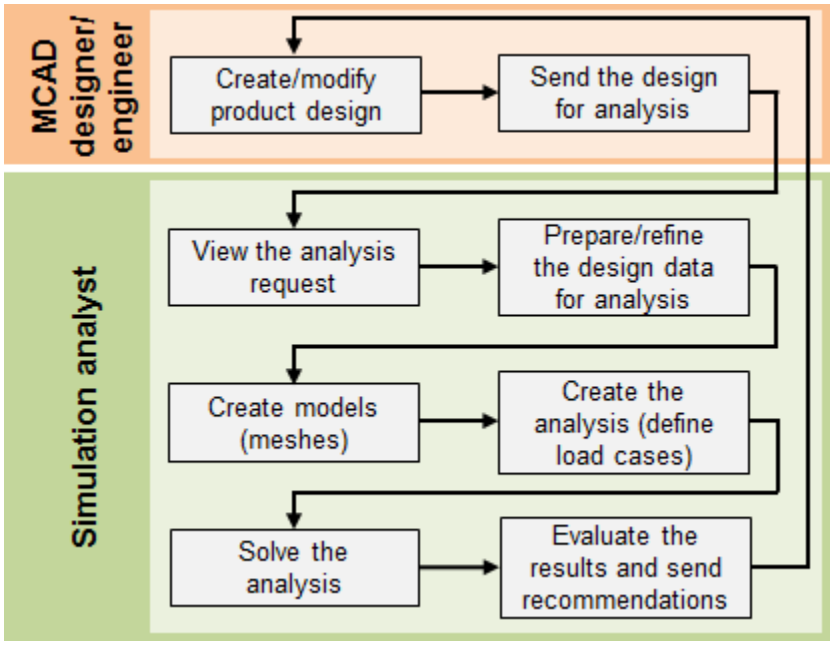
 Simulation administrator	See Simulation Process and Data Management — Deployment and Administration.
 Simulation analyst	
I want to perform simulation analysis in Active Workspace	See *Simulation Process and Data Management on Active Workspace — Usage*.
Prepare the data for analysis	You prepare the data for analysis by simplifying the CAD geometry. After simplifying the CAD geometry by using the appropriate software, you can launch a preconfigured simulation tool to export the simplified CAD geometry. See **Prepare the data for analysis**.
Create geometry revisions for the components you want to analyze	You can create geometry revisions for the components you want to analyze and upload the simplified CAD geometry to the revision. The geometry revision is often different from the product geometry. It may be a simplified or an abstracted version, or an approximation when the product geometry is not available. See **Create geometry revisions in My Teamcenter**.
Create the simulation model and define a mesh	While analyzing a large product structure with thousands of components, you can create simulation models or model structures using one of the following options: • **CAE Structure Map**: Generate a model structure for a specific type of analysis using predefined structure map rules. See **Create a model structure for a specific type of analysis using structure map rules**. The lead analyst or the designated analyst creates structure map rules.

	• **Data Map**: Some organizations prefer not to use structure map rules. They prefer to create a model structure that is an exact replica of the product structure using this option. After creating this replica model structure, they use predefined derivative rules and variant configuration rules to quickly derive one or more structures relevant to their analysis from the model structure. See **Create a model structure using data map rules**. The simulation administrator defines the data map rules.
Create the analysis model and define load cases	The analysis model represents the specific analysis such as thermal, structural, or fluid you want to perform. It includes load cases, solver parameters, and boundary conditions. After creating the analysis model or revision, you can select the specific revision and launch a preconfigured simulation to upload the load cases, solver parameters, and perform the solve. See **Create the analysis model and solve the analysis**.
Launch simulation tools	Simulation Process and Data Management provides a framework for launching simulation tools that include preprocessors, solvers, postprocessors, and other tools. You can launch simulation tools as a local launch, local detached launch, remote launch, or server launch, depending on how the administrator configures the launch parameters at your site. See **Launching simulation tools**.
Solve the analysis	You can solve the analysis by launching preconfigured simulation tools. After capturing results from different solvers and verifying results, the analysis data can be released to production. The data is released by signing off from a workflow. You can make recommendations while signing off the workflow. See **Capture results from different solvers and verify results**.
Derive structures	You can use predefined derivative rules and variant configuration rules to quickly derive one or more structures relevant to your analysis from an existing structure. The simulation administrator defines derivative rules and variant configuration rules. You can use these predefined rules to quickly derive one or more simulation variants from an existing one. See **Why derive structures?**.
Capture pedigree information	Capturing the exact configuration of the product and model structure is critical to understand what was analyzed at a later time. Pedigree information captures the exact configuration of various structures, including the revision rule, effectivity, and variant rules, and persists that information in the database. Therefore, as a simulation

	analyst, you have clear traceability of what was analyzed. See **Why capture pedigree information?**.
Use the simulation dashboard	The simulation dashboard provides a clear view of the status of all the models and analyses carried out by simulation analysts at the program, milestone, group, or individual user level. It allows decision makers to access the latest information and make correct decisions. See **Why use the simulation dashboard?**.

What is Simulation Process and Data Management?

The workflow for managing the simulation process is as follows:



Understanding Simulation Process and Data Management using an example

1. *View the analysis request*

   Let us assume that you (as a simulation analyst) are an expert in simulated automobile crash testing. The analysis request is to perform a simulated side-impact test for a design change made to the driver-side door.

2. *Prepare or refine the design data for analysis*

   Your first task is to import the product geometry and simplify it to make it *relevant* for the analysis. The driver-side door has a speaker; switches for the door lock; power window; and electric mirror; an intrusion beam; steel frames; door panels; and other parts. The speaker and switches are not relevant for the simulated side-impact analysis. You import the complete product geometry and

use a simplification tool to remove the speaker and switches. Then, you create geometry revisions for the *intrusion beam*, *steel frame*, and *door panel*, and save the simplified geometry for each component.

3. *Create models*

   The model you want to analyze includes the mesh definition, connections, and material and physical properties. In this step, you create model revisions—in the context of the geometry revisions—for the *intrusion beam*, *steel frame*, and *door panel*. Then, you select the appropriate meshing tool to generate meshes for each component.

4. *Create the analysis and solve the analysis*

   The analysis you want to perform includes load cases, solver parameters, and boundary conditions. In this step, you create analysis revisions—in the context of the model revisions—for the *intrusion beam*, *steel frame*, and *door panel*. Then, you select the appropriate solver tool to specify load cases and solver parameters.

   In this example, you create different analyses to vary the load cases, for example, a **3000** pound SUV-like barrier hits the driver side door at **30** mph. You also create another analysis model to change the barrier weight to **3200** pounds and the speed to **35** mph.

5. *Evaluate the results and send recommendations*

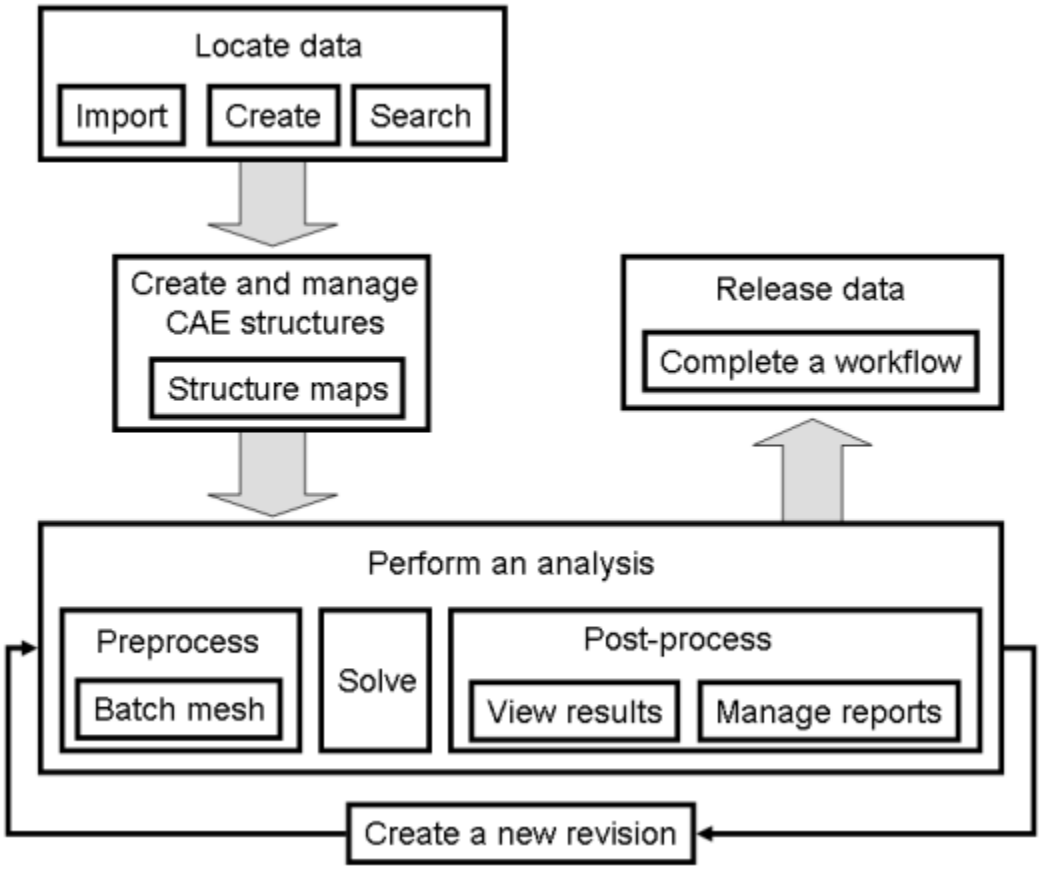
   The intrusion beam acts as an energy-absorbing material during a side impact. The results show that the intrusion beam cannot withstand forces of **3200** pounds at **35** mph. After evaluating results from various scenarios, you sign off the workflow by suggesting a design change for the intrusion beam.

Creating and managing CAE data in Teamcenter

Simulation Process and Data Management leverages Teamcenter to manage CAE/simulation data on a centralized basis.

Simulation Process and Data Management leverages Teamcenter to manage CAE/simulation data on a centralized basis. You can integrate data from a CAE system of your choice into the product lifecycle management (PLM) environment. It is built as an extension of Teamcenter and, therefore, you have access to the latest product structures and configurations. Moreover, the data model in Teamcenter has been enhanced to include CAE-specific objects to improve simulation process and data management capabilities using Simulation Process and Data Management.

You can use the CAE Manager application to create and manage CAE data in Teamcenter.



Simulation Process and Data Management is extremely flexible and depends on the procedures and policies implemented at your site.

- Locate the data.

  You can import and create data for your analysis, or you can search for data in Teamcenter to:

  - Find an existing CAD model to perform analysis.
  - Find a previous CAE analysis to reuse portions or modify the analysis.
  - Find other data that can be used as inputs or contribute to a CAE analysis.

- Create and manage CAE structures.

  You can use the **Structure Map Designer** view to define CAE structures. These structures are similar to, and are often based on, product structures.

  Your administrator can define structure maps to apply structure rules to support your analysis. For example, you can define a structure rule that automatically removes connectors such as nuts, bolts, or pins from the CAE structure. For impact analyses such as drop tests or crash tests, the structure map might add parts to the structure, such as a barrier or crash test dummy.

- Perform an analysis.

  You can use CAE Manager to:

  - Launch third-party Simulation Process and Data Management tools needed to mesh and prepare a model for analysis.
  - Import preprocessed models into Teamcenter.

- Create new item revisions.

  To work with an existing item revision that is released, frozen, or locked, you must create a new item revision. You may need to create item revisions at other times, depending on your organization's policies and procedures.

  When you create a new item revision:

  - The previous item revision is stored and managed as a separate entity.
  - Related objects and object references are copied to the new revision according to the deep copy rules configured at your site.

- Release data to production.

  You release data by completing a workflow. Your administrator implements a workflow for the CAE processes. When every member of the signoff team has signed off the workflow, the items in that workflow are released, frozen, or locked.

  - Any released, frozen, or locked item cannot be modified without a creating a new revision.
  - The datasets under a released, frozen, or locked item also cannot be modified.

Basic tasks

- Locate data to perform an analysis

  You can import and create data for your analysis, or you can search for data in Teamcenter to find:

  - An existing CAD model to perform analysis.
  - A previous CAE analysis to reuse or modify.
  - Other data to use as input or contribute to a CAE analysis.

- Create CAE items to manage CAE information

CAE items are the fundamental workspace objects in Teamcenter and you can use them to maintain the CAE representation of a product, part, or component. They also maintain the definition of the analysis performed on these items, and the results of the analysis.

You can create CAE items in My Teamcenter and CAE Manager applications using the **New CAE Item** dialog box.

- Use **Simple Search** from the main toolbar in CAE Manager to perform a simple search by specifying the search criteria.
- Send data for analysis

  1. Select the required non-CAE item or a CAE item in My Teamcenter or a product structure in Structure Manager.
  2. Right-click the non-CAE item or a CAE item and choose **Send To→CAE Manager**, or drag the non-CAE item or the CAE item on **CAE Manager** in the navigation pane of the rich client.

- Generate CAE model structures

  You can view a non-CAE item revision in the **Product** view, apply data map or structure map definitions to it, and generate corresponding CAE model structures.

- Launch simulation tools

  You can launch simulation tools from Simulation Process and Data Management to send a product structure to a preconfigured application for analysis. Analysis tools provide accurate results on design behavior. After the analysis is complete, the results are imported back to Teamcenter. You can view the results and make changes to the product structure as appropriate.

- Solve the analysis and postprocess the results

  You can launch any preconfigured solver and when the solve is complete, you can use Teamcenter to manage output files and share postprocessing displays.

- View the results and release the data when the analysis is complete

  You can view postprocessing displays, access reports and presentations associated with the results, and release the analysis data to production. You release data by signing off from a preconfigured workflow.

Objects you work with

- *Geometry revisions*

The CAD model is used to define the geometry of a part or an assembly. During the final stages of the design process, the geometry contains numerous details, such as sharp edges, bolt holes, or fillets, which are not required for the analysis. The geometry used for simulation analysis is often different from the product geometry. It may be a simplified or an abstracted version or an approximation when the product geometry is not available. **CAE 3D Geometry** revisions are workspace objects for storing the simplified geometry. Geometry revisions are created in the context of the item revisions in the product structure.

- *Model revisions*

  A mesh represents a geometric object as a set of finite elements. Finite element analysis (FEA) is a computerized method for simulating how a part reacts to conditions such as force, heat, vibration, and other physical effects in the real world. **CAE 3D Model** revisions are workspace objects for storing the mesh definition, connections, and material and physical properties. Model revisions are created in the context of geometry revisions.

- *Analysis revisions*

  An *analysis revision* represents the specific simulation you want to perform. **CAE 3D Analysis** revisions are workspace objects for including load cases, solver parameters, and boundary conditions. Analysis revisions are created in the context of model revisions.

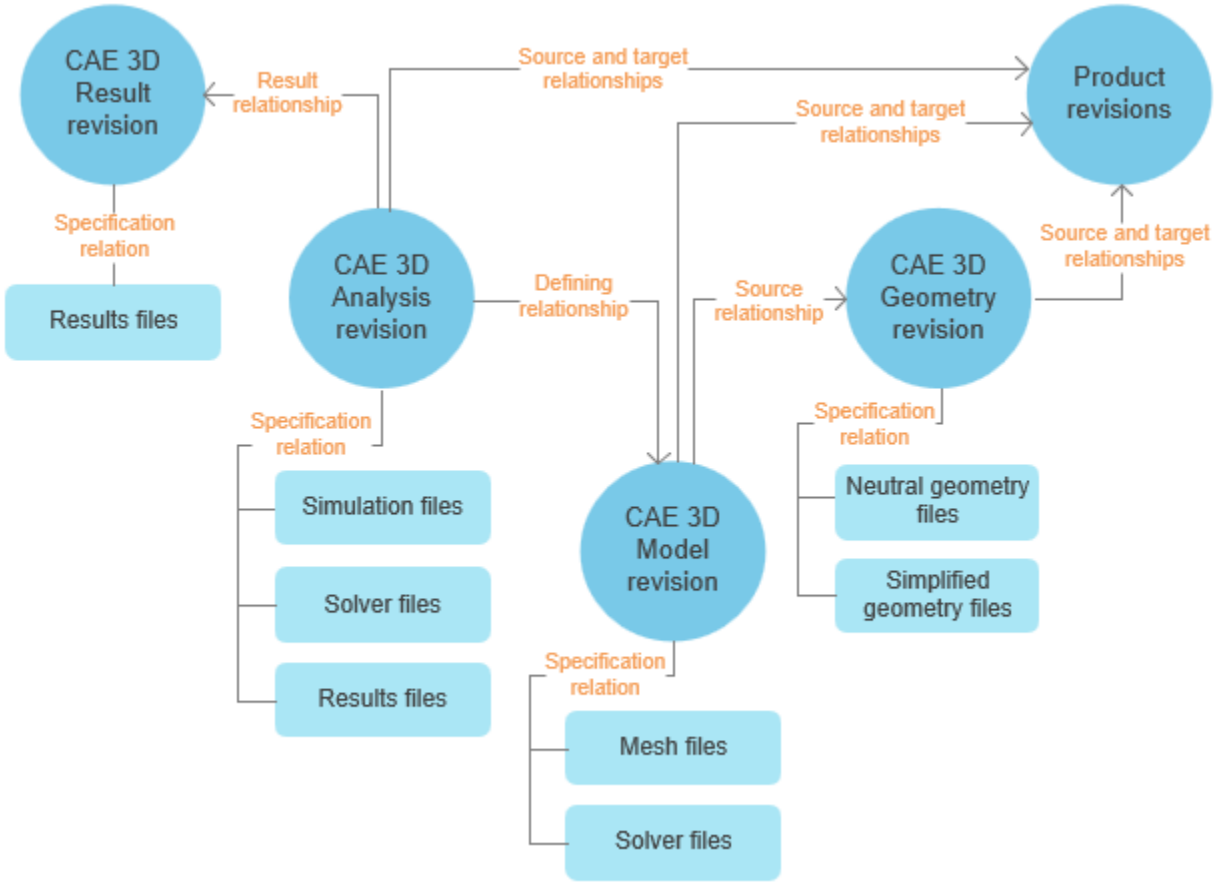
- *Result revisions*

  A *result revision* represents the results of a simulation analysis. **CAE 3D Result** revisions are workspace objects for storing the results of a solve. They may contain JT files or other visualization files that are the results of a solve. Result revisions are associated with analysis revisions.

You can create the following CAE revisions in the context of other revisions along with relationships:

Context revision	CAE revisions you can create for the context revision	Default relationships
Product structure	**CAE 3D Geometry**	**TC_CAE_SOURCE** and **TC_CAE_TARGET**
	CAE 3D Model	
	CAE 3D Analysis	
CAE 3D Geometry	**CAE 3D Model**	**TC_CAE_SOURCE**
	CAE 3D Analysis	
CAE 3D Model	**CAE 3D Analysis**	**TC_CAE_DEFINING**
CAE 3D Analysis	**CAE 3D Analysis**	**TC_CAE_INCLUDE**
	CAE 3D Result	**TC_CAE_RESULTS**

The following is an example of the default simulation data model.



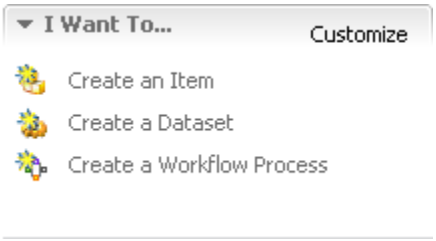
Personalize the interface

Customize your I Want To links in the rich client

The **I Want To** links, which are both user specific and application specific, can provide quick access to the tools you use to perform common tasks.

- When you create an **I Want To** action, you do so in the context of the currently active application.
- To create the same action in a different application, you must repeat the process.

The **Create an Item**, **Create a Dataset**, and **Create a Workflow Process** links are provided in your Teamcenter installation.



You can add links to other tasks, remove links to tasks, and organize the display order of tasks.

Customize CAE Manager I Want To links

1. Open CAE Manager.

2. From the **Product**, **Model**, or **Analysis** view, click **View Menu**, and choose **I Want To (View Level)** to open the **Customize I Want To** dialog box.

3. To customize the **I Want To** links, expand the available options and use the navigation buttons to add or remove the options.

Customize appearance of quick links

You can customize the appearance of **Quick Links** by adding **My Projects** to the quick links. You can do this by editing the default values of the **QuickLinksSection** user preference to add the **MyProjectsSectionComponent** value.

Set preferences to control the behavior and appearance of Teamcenter

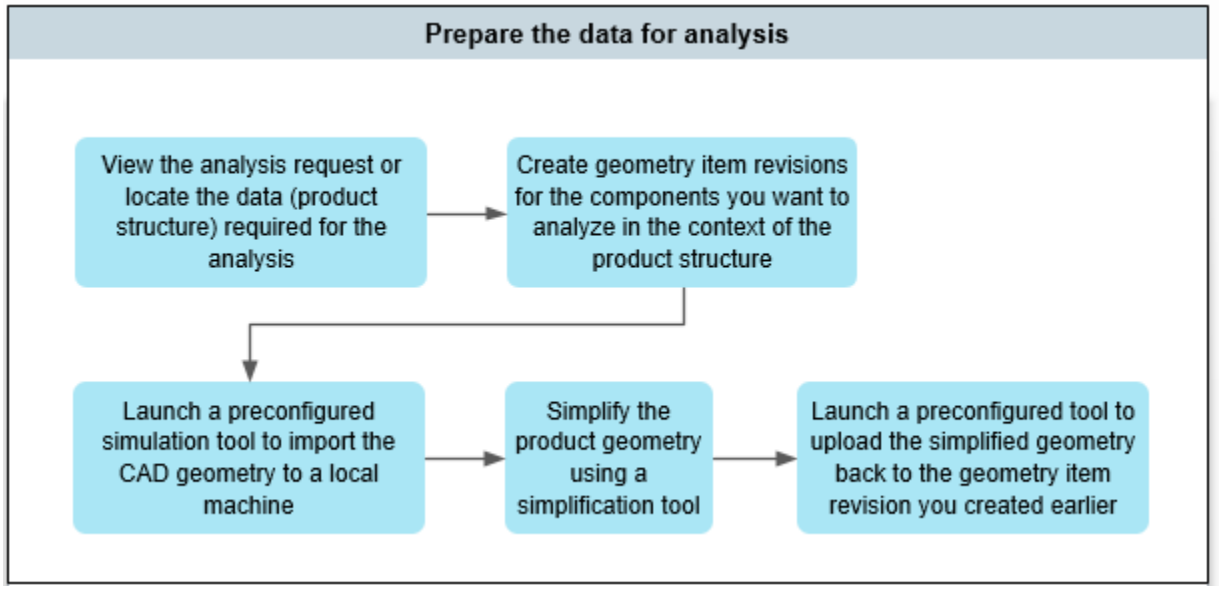
You can use preferences to control various aspects of Teamcenter's behavior and appearance.

For more information, see *Teamcenter Preferences*.

For information about retrieving a list of preferences, see *Where can I get a list of preferences?*

2. Prepare the data for analysis

Prepare the data for analysis



1. *View the analysis request*

   An engineering manager reviews design requirements and assigns design changes for validation to a simulation analyst using a workflow. The workflow contains the design requirements, configuration information, subassembly, and components required for analysis.

   To read your mail, in My Teamcenter, open your **Mailbox** folder, and click the envelope to display the contents in the **Viewer** pane.

   If your organization does not follow a workflow process, search for a target structure and select the data for the analysis.

2. *(Optional)* **Apply revision rules, variant rules, or effectivity**

   If you work in a product environment with a lot of variability, such as the automobile industry, you can apply revision rules, effectivity, or variant rules to make the product structure relevant to your analysis.

3. **Create geometry revisions for components for which you want to simplify the CAD geometry**

   Create geometry revisions for the components for which you want to simplify the CAD geometry. The geometry revision is often different from the product geometry. It may be a simplified or an abstracted version, or an approximation when the product geometry is not available.

4. **Launch a preconfigured simulation tool to export and simplify the CAD geometry**

   The CAD model is used to define the geometry of a part or an assembly. During the final stages of the design process, the geometry contains numerous details, such as sharp edges, bolt holes, or fillets, which are not required for the analysis. You can launch a preconfigured simulation tool to automatically export the CAD geometry. Then, you simplify the product geometry using a simplification tool.

5. *Upload the simplified geometry to the geometry revision you created*

   You can upload the simplified geometry to the geometry revision you created.

Performing CAE analysis

Using CAE Manager, you can define and manipulate hierarchical CAE models that can reference target CAD models and source CAD or CAE geometry item revisions. It includes functionality to define and manage CAE analysis objects that reference CAE models and solver parameters. You can use the CAE analysis objects to manage analysis results.

You can perform the following tasks in CAE Manager:

- Identify the required product data for analysis and analyze CAE data.
- Verify the analysis tasks that are complete and those that remain to be done.
- Determine the portions of the model that will be included in analysis (CAE BOM).
- Streamline analysis processes by using structure maps (if implemented).
- Launch third-party authoring tools needed to mesh and prepare a model for analysis.
- Import preprocessed models into Teamcenter.

The CAE Manager perspective allows you to identify product data for analysis and create and manage corresponding CAE data. The CAE Manager perspective consists of the following three primary views:

- **Product** enables you to interactively identify hierarchical product structures that are referenced by **CAE 3D Analysis** item revisions.
- **Model** enables you to interactively define and manipulate hierarchical CAE models that can reference target CAD models and source CAD or CAE geometry.
- **Analysis** enables you to interactively define and populate **CAE 3D Analysis** item revisions that can reference a defining **CAE 3D Analysis** item revision. It lets you manage the solver execution results, relate the results to a **CAE 3D Analysis** item, and assign solver parameters that define CAE analysis.

Additionally, you can use the **Inspector** view to evaluate the **CAE 3D Analysis** structure against the product structure. You can view inconsistencies between the **CAE 3D Analysis** and product structures based on some established criteria and select the inconsistencies that you want to correct.

Perform an advanced search to locate the data

You can import and create data for your analysis, or you can search for data in Teamcenter to find an existing CAD model to perform analysis on, to find a previous CAE analysis to reuse or modify, or to find other data that can be used as input or contribute to a CAE analysis.

1. Select **Advanced** from the search menu at the top of the navigation pane.

2. On the **Search** view toolbar, click  to select a search from the list of search types.

3. Click **More** and select one of the following:

   - **CAE 3D Analysis Revision**, **CAE 3D Analysis Revision**, or **CAE 3D Result Revision** to find analysis revisions, model revisions, or result revisions, respectively.

   - **CAE – Find Single-Level Related Model** or **CAE – Find Single-Level Related Analysis** to find all associated models or analyses of a specific product item revision.

     In the **CAD Item Revision ID** query field, you can type a question mark (**?**) to query for all the CAE models generated on the latest revision rather than all revisions.

   - **CAE – Find Multi-Level Related Models** or **CAE – Find Multi-Level Related Analysis** to find all associated models or analyses for the selected CAD at the components, subassemblies, and variant levels. You can use this query to identify all models impacted by the design change of a product item revision.

4. Enter the search criteria and click **Search** to perform the search.

Viewing the product structure

Use the **Product** view to interactively identify hierarchical non-CAE item revisions that are referenced by **CAE 3D Model** item revisions loaded in the **Model** view. The **Product** view contains read-only and BOM view attributes. You can view and manage non-CAE item revisions, but you cannot create any new items in this view.

While performing simulations on large and complex product structures, you must frequently build large model structures. With large product or model structures, it is difficult to navigate through the entire structure and find information. Similar to filtering data in spreadsheets, you can apply multiple filters to large structures and view only those structure lines that are relevant to your simulation analysis.

The **CAE BOM Compare** report is color coded. You can run this report to view and compare two different simulation variants side-by-side to understand their differences. Similarly, you can compare target references with associated product structures. The system applies color coding to highlight the differences in the product structure. Even if you apply multiple filters after performing a BOM or target-reference comparison, the system retains the color coding in the structure lines.

You can perform the following tasks in the **Product** view:

- View hierarchical non-CAE item revisions.
- View the composite structure of non-CAE item revisions in context of the derived CAE model structure.
- Apply multiple filter criteria to filter structures and view only the structure lines that are relevant to your simulation.
- View and manage configuration rules.
- Launch simulation tools.
- Create CAE packages.
- Generate consistent CAE model structures, using the data map or structure map function.
- View and manage attachments.
- Perform **Where Used** or **Where Referenced** searches.
- View an image of the selected line or structure, if the **DirectModel** dataset is available.

View the product structure in CAE Manager

1. Search for the product item revision in My Teamcenter.
2. Right-click the product item revision and choose **Send To→CAE Manager**, or drag the product item revision on **CAE Manager** in the navigation pane of the rich client.

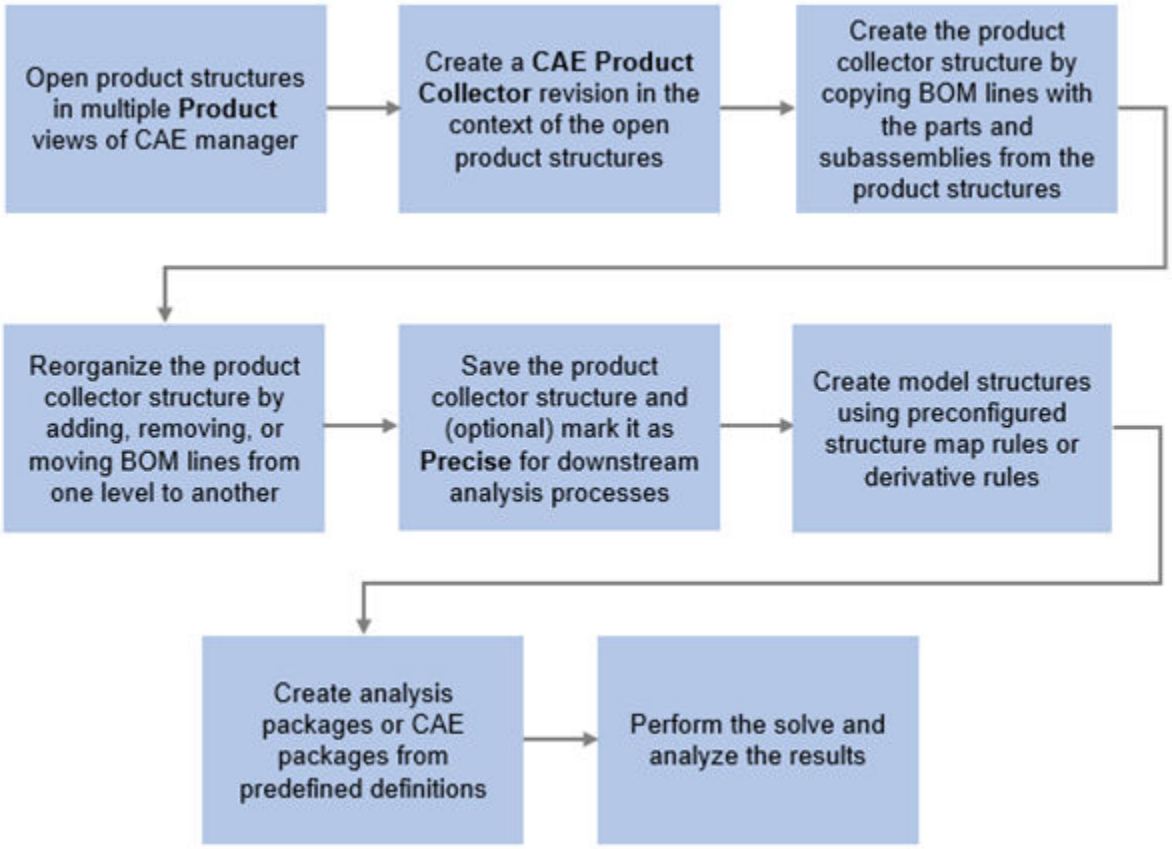
Reorganize the product structure to make it suitable for simulation analysis

As a simulation analyst, the product structure you receive may not have all the data or it may not be organized in a manner that is suitable for simulation analysis. Before you start reorganizing the structure, you require a collector item or a placeholder to store the new structure.

You can create **CAE 3D Product Collector revision objects** in Teamcenter to store the new structure. The new structure you create using this revision object is called a product collector structure. It is similar to the product structure.

You can create collector structures in different ways. For example, you can:

- Create a flat structure by copying only the leaf nodes and by ignoring all the intermediate subassembly levels created by the designers.
- Organize the components differently under different subcollectors in a manner that is more efficient for simulation analysis.
- Choose desired parts or subassemblies from more than one product structure.



1. Open one or more product structures in the **Product** view of CAE Manager.
2. Create **CAE 3D Product Collector revision objects** in the context of the open product structures.
3. Open the **CAE 3D Product Collector** revision in the **Product** view of CAE Manager.
4. Copy the required BOM lines with parts and subassemblies from the other product structures to the product collector structure.

You can then reorganize the structure by adding, removing, or moving BOM lines from one level to another.

5. Copy the positional information, if available, from the original product structures.

6. Save the structure and (optional) mark it as **Precise** for downstream analysis processes.

7. To create a model structure that is an exact replica of the product structure, click **Generate CAE Structure from Data Map** on the view toolbar and choose the **CAE** domain.

   This is the default domain. It maps the CAD assembly to the CAE model structure.

   After creating the model structure, you can use **predefined derivative rules to derive one more structures**.

8. To create a model structure that is an exact replica of the product structure with mapped JT files from the source product collector, click **Generate CAE Structure from Data Map** on the view toolbar and choose the **CFD** domain.

   This domain maps JT files from the CAD assembly to the CAE model structure.

9. Click **Generate CAE Structure from StructureMap** on the view toolbar to create model structures for specific types of analyses using predefined structure map rules.

10. **Create analysis packages or CAE packages from predefined definitions**.

11. **Perform a solve by launching a simulation tool**.

12. **Capture results from the solver and verify results**.

13. (Optional) Export the collector structure.

    a. Select the root item of the structure and click **Tools** > **Export** > **To PLMXML**.

    b. In the **Export Directory** area, click the **Browse** button select the directory to which you want to export the collector structure.

    c. Select the appropriate transfer mode, for example, **CAEConfiguredDataFilesExportDefault**.

    d. To export the collector structure, click **OK**.

Open product, model, and analysis revisions in multiple views

- You can open multiple instances of **Product** and **Model** views in CAE Manager.

- If you load the same product, model, or analysis item revisions in multiple **Product** and **Model** views and make change to item revisions, the system applies the changes to all open views.
- When you open multiple **Product** and **Model** views, the system displays them using the same column configuration. If you change the column configuration in one of the views, the system applies the changes to all open views.
- When you drag a **CAE 3D Model** or **CAE 3D Analysis** item revision in a view, the system loads the item revision to replace the existing one in the current view, and uses the current revision rule to configure the loaded item revision.
- When you open a **CAE 3D Model** item revision in an existing **Model** view, the system opens the related product revision in a new **Product** view and a related **CAE 3D Analysis** revision in a new **Analysis** view. This happens when a single unique product or a CAE analysis revision is identified by a **CAE Target** or **CAE Defining** relationship respectively.
- You can configure the **Product** or **Model** view independently based on revision rules, effectivity dates, snapshots, and variants.
- If you open a **CAE 3D Model** item revision with a **CAE Target** relationship, the system loads the corresponding product item revision in an empty **Product** view or a new **Product** view, if you have already opened an item revision in the **Product** view.
- If you open a **CAE 3D Analysis** item revision with a **CAE Defining** relationship, the system loads the corresponding analysis item revision in an empty **Analysis** view or a new **Analysis** view, if you have already opened an item revision in the **Analysis** view.

Configure the product structure

Configure the product structure

Configure the product structure

You can configure the product structure by applying revision rules, setting a configurator context, and by configuring variants or applying saved variant rules. After you configure the product structure, you can apply datamap and structure map rules to create a model structure.

You can open two or more product structures in the product view of CAE Manager. If you open two or more structures, you can:

- Allow the **Product** views to reference the same configurator context for both the structures or reference completely different configurator contexts.
- Apply variants to each of the structures using the **Configure Variants** or **Apply Saved Variant Rules** commands, respectively.

> Note:
>
> When you open multiple product structures, make sure that you do not open structures with Product Configurator variant data and classic variant data in multiple views at the same time. If you want to view both types of data, you must attach the configurator context to all the open structures and restart CAE Manager.

1. *Load an unconfigured BOM or a product structure in CAE Manager*

   The loaded product structure is already associated to the configurator context through the **Variability Scope** relationship set by the designer. If the relationship is set up, the product view header shows the associated **Configurator Context** information. If no context is associated, the header shows **Not Specified**.

2. *Set revision rules*

   Teamcenter provides some default revision rules. As an analyst, you can apply the **default revision rules or create your own revision rules** and apply them in CAE Manager to configure the product or the model structure.

3. *Set the configurator context*

   You (as a simulation analyst) can **set the default configurator context**. All the **Product** and **Model** views refer to this configurator context.

   You can set the configurator context for a specific session. Further, if needed, you may **remove the default configurator context**.

   > Note:
   >
   > If you do not set the default configurator context, the resulting model structure does not have any configuration context related to it. Further, none of the variant formula from the source product structure is mapped to the model structure.

4. *Author variant expressions for model structures*

   You can open the model structure in CAE Manager that has reference to the configurator context and then select the BOM lines for which you want to **author variant conditions**.

5. *Configure the product structure*

   You can configure the product structure by **setting option values (configuring variants)** *or* by **applying a saved variant rule**.

Specify revision rules

Teamcenter provides some default revision rules. As an analyst, you can apply the default revision rules or create your own revision rules and apply them in CAE Manager to configure the product or model structure.

You can specify *independent* revision rules for product and model structures in the **Product** and **Model** views in CAE Manager. The rules you specify in the **Product** and **Model** views are applied to all other open **Product** and **Model** views respectively. By default, the **Latest Working** revision rule is applied to all **Product** and **Model** views.

1. In CAE Manager, open a **Product**, **Model**, or **Simulation Tool Configuration** view.

2. Click the **View Menu**, and choose **Revision Rule→View/Set Current**.

3. Apply a default revision rule or create your own revision rules.

Default rule	Description
Released revisions only: **Name = Any Status, No Working**	Selects the latest released revisions; no working revisions selected.
General: **Name = Any Status; Working**	Selects the latest released revisions. If none exist, selects working revisions. Use this rule to configure a released structure and to be aware of items that are used in the structure and are not released yet.
Latest revisions: **Name = Latest by Creation Date**	Selects the latest revisions according to the date they were created, regardless of whether they are working or released.
Latest revisions: **Name = Latest by Alpha Rev Order**	Selects the latest revisions according to the revision ID, regardless of whether they are working or released.
Precise revisions: **Name = Latest Working**	Selects precise references if they exist. For imprecise assemblies, selects the latest working revisions. If none exist, selects the latest released revisions.
Precise revisions: **Name = Precise; Any Status, No Working**	Selects the precise references to specific item revisions in precise assemblies. If imprecise assemblies are present, only working revisions are selected.

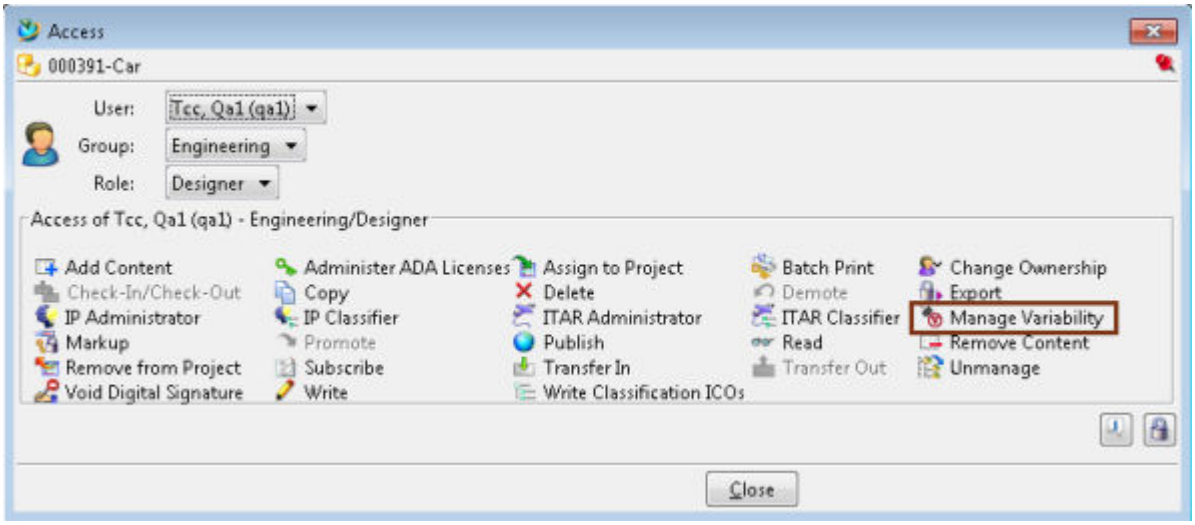
Associate a configurator context with a structure

To obtain the required variability data such as *families*, *features*, and *rules* from a configurator context, you associate the configurator with the product structure.

You can perform this association only if you have the **Manage Variability** privileges. To verify that you do:

1. In My Teamcenter, right-click the topmost item of the product structure and click **Access**.

2. In the **Access** dialog box, verify that the **Manage Variability** privilege is enabled.



Note:

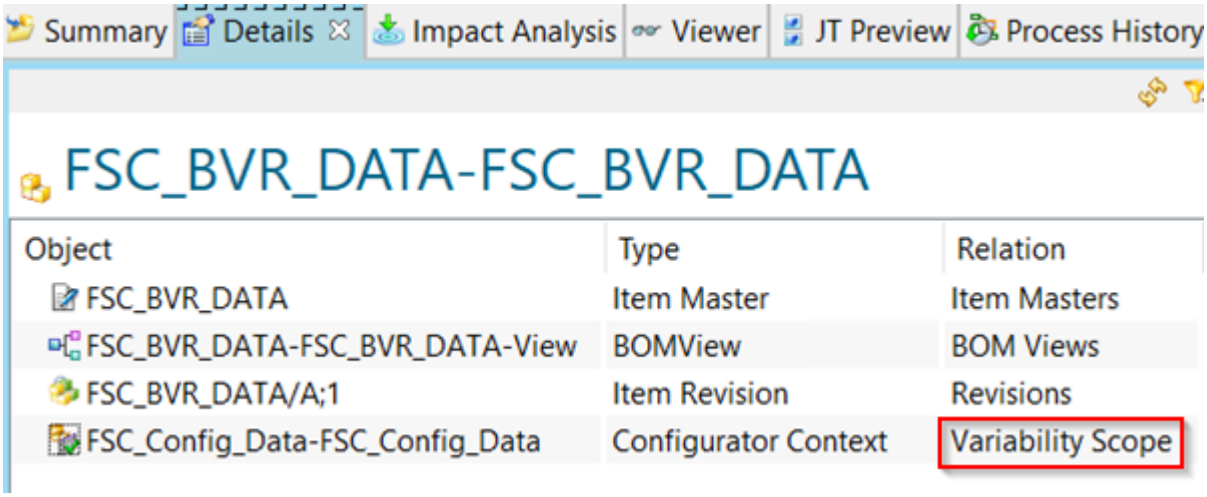
Using a mixture of legacy and product configurator variants can cause data corruption. By default, the system uses the preference **ME_EnableMixVariantModelCheck** to prevent loading structures that use a mixture of these variants. If you are using only one variant, or no workflow results in mixed variants, change the value of **ME_EnableMixVariantModelCheck** to **false**. This value enables the system to open structures without a check.

Associate a configurator context with a structure

1. In My Teamcenter, search for the structure and the configurator context.

2. Right-click the product structure and choose **Paste**. You cannot associate the configurator context with the item revision of the structure.

   To verify if the configurator context is associated with the structure, select the product structure and click the **Details** view. The **Relation** column must show **Variability Scope**.



Only the configurator context associated with the topmost line item of the structure is considered for authoring variant conditions.

> Tip:
>
> If you are likely to use this configurator context as the basis for several structures, set this as the default context.

Set the default configurator context

When you set a *specific* configurator context as the default, it acts as the effective configurator context for all structures that you open in CAE Manager.

1. In CAE Manager, choose **Edit→Set as Default Configurator Context**.

2. In the **Set Default Configurator Context** dialog box, search for the relevant configurator context and click **OK**.

   After setting the default configurator context, you must close CAE Manager and open it again from the left navigation pane.

   To verify whether the default configurator context is set, open a structure in CAE Manager. The CAE Manager view displays the configurator context currently associated with the structure.

Remove the default configurator context

Consider a case where a structure is associated with a configurator context that is not the default configurator context. On opening this structure in CAE Manager, a warning is displayed, specifying that the associated and the default configurator contexts are different. In such cases, the default configurator context is applied to the structure. For the associated configurator context to be applied to the structure, you must remove the default configurator context. To do so, in CAE Manager, choose **Edit→Unset as Default Configurator Context**.

For the associated configurator context to take effect, you must close CAE Manager and open it again from the left navigation pane.

Author variant expressions

1. Open the product structure for which you want to author variant conditions in CAE Manager.

   The product structure you open must have a reference to a configurator context.

   Ensure that the **Variant Formula** property column is displayed in the product structure tree. This property displays the variant condition and is not visible on the use interface by default.

2. Select the BOM line items for which you want to author the variant condition, for example, **Engine**. Click **Edit the variant condition** . Alternatively, from the **View** menu, choose **Edit→ Variant Condition**.

   You cannot select a root BOM line to author variant conditions.

3. In the **Variant Formula Expression Editor** view, select the required options to define a variant condition.

   The area at the bottom of the view displays the variant condition based on your selection.

   In the **Variant Formula Expression Editor** view, the first column lists the option values organized by their families. You construct a variant condition by clicking the cells. Selections are indicated by a check mark or a circle backslash symbol in a cell. The check mark indicates that the option is applicable. The circle backslash symbol indicates that the option is not applicable to the BOM line.

   You can also edit an existing variant condition by changing any of the fields. Updated rules are displayed but not saved instantly.

4. Click **Save the current content** on the main toolbar to set the variant condition. You cannot update this variant condition using classic or modular variants.

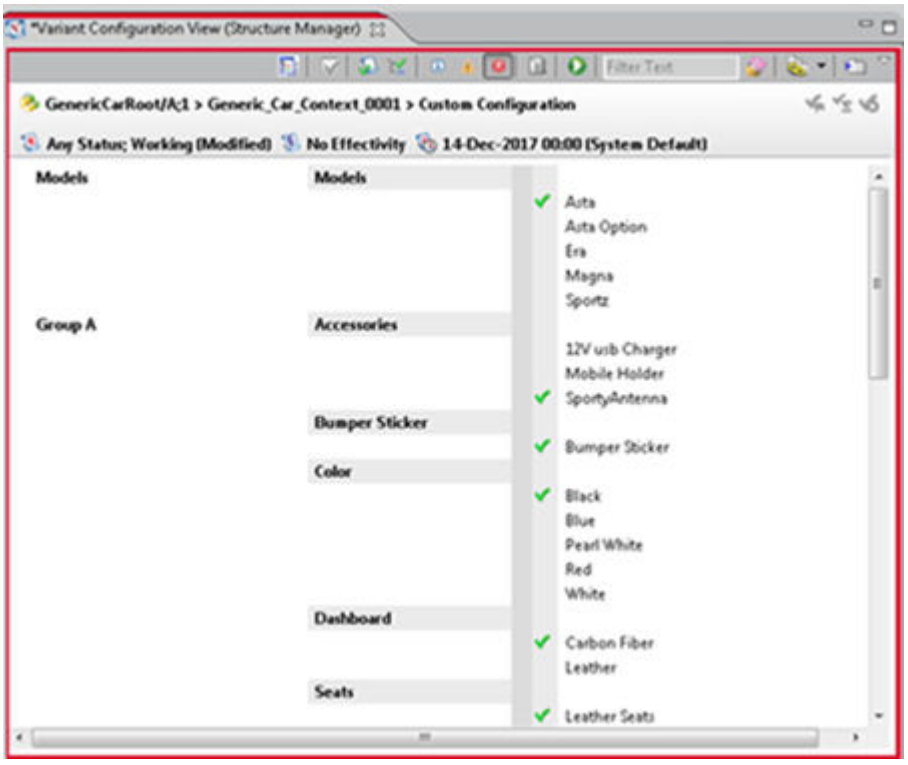
   After you author variant expressions, configure the structure by setting variant rules.

Configure a structure by setting option values

1. Open the structure that you want to configure in CAE Manager.

2. Click **Configure Variants** on the view toolbar. Alternatively, click **View Menu→Variants→Configure Variants**.

3. In the **Variant Configuration View** view, click **Applies default to the configuration** to set the variant option with their default values.



4. Select the required option values. Selections are indicated by a check mark or a circle backslash icon in a cell. The check mark indicates that the option is included in the product configuration. The circle backslash icon indicates that the option is excluded from the configuration.

5. (Optional) To clear all the selections you have made, click the **View** menu and choose **Clear Expression**.

6. (Optional) To clear the saved variant rule you have applied, click the **View** menu and choose **Clear Variant Rule**.

7. (Optional) To clear unconfigured features, click the **View** menu and choose **Clear Unconfigured Feature**.

   The expression on the unconfigured feature in the view is removed. Also, the row holding the unconfigured feature is removed.

8. Click **Validate the Current Configuration** to validate if the selected options are applicable to the structure.

To view any informational messages, while the configuration is being validated, click **Set Info level violations to be fetched while applying validations** . To view the warnings, click **Set Warning level violations to be fetched while applying validations** .

9. Click **Applies the current configuration to the associated structure** to apply the selected options to the structure.

   Applying the selected options to the structure creates a custom configuration.

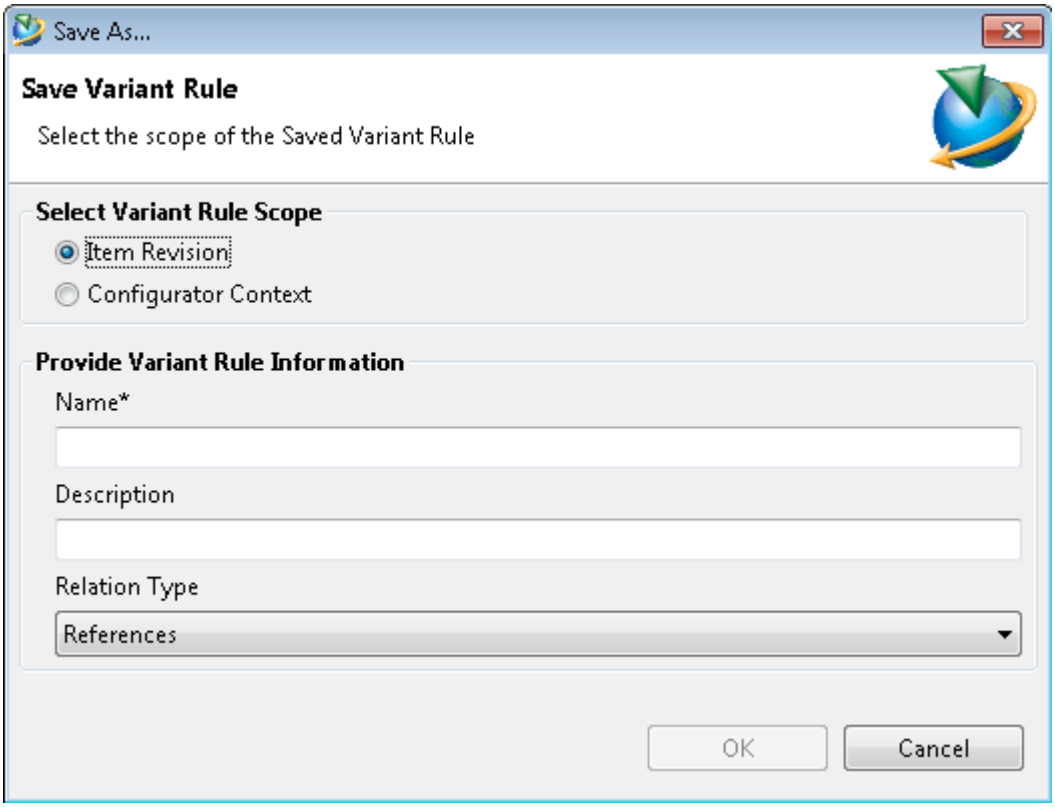
   If the **Apply Constraints** button is deselected while applying the configuration, only user selections are applied on the content. However, if the **Apply Constraints** button is selected and the **Allow Validation Rules to Expand** button is deselected, the validation rules are not considered while applying the configuration. By default, Teamcenter displays the **Variant Configuration** view with the **Apply Constraints** and **Allow Validation Rules to Expand** as selected.

   You can save the custom configuration to **create a saved variant rule**, which you can use to configure other structures.

Create saved variant rules

1. Click **Save the current contents** on the toolbar.

2. In the **Save As** dialog box, enter the required information and click **OK** to create the saved variant rule.



Field	Action to perform
Item Revision	Select this option to create the saved variant rule for the current item revision.
Configurator Context	Select this option to create the saved variant rule for all structures associated with the current configurator context.
Name	Enter the name of the saved variant rule.
Description	Enter a short description for the saved variant rule.
Relation Type	Choose a relation type if you selected **Item Revision** as the variant rule scope. The variant rules are stored in the top-level item revision of the structure.

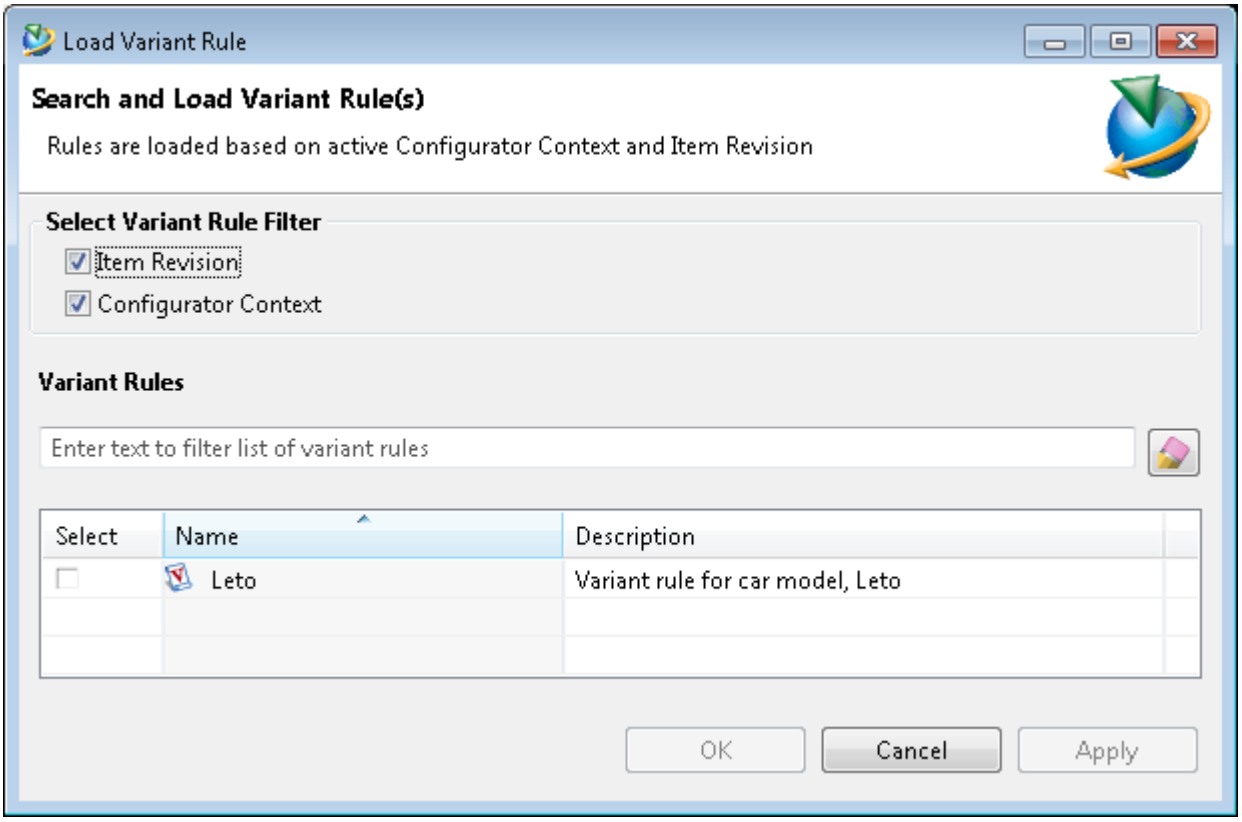
Configure a structure by loading saved variant rules

1. Open the structure that you wish to configure in CAE Manager.

2. Click **Open saved variant rules dialog** on the view toolbar.

   This command is enabled only if a product or model structure is opened in the **Product** or **Model** view, respectively.

3. In the **Load Variant Rule** dialog box, select the variant rule filter.



- Select the **Item Revision** check box to apply the saved variant rule to the current item revision.

- Select the **Configurator Context** check box to apply the saved variant rule to all the product structures associated with the current configurator context.

4. Enter the text to filter the list of variant rules in **Variant Rules**.

5. Select the saved variant rule that you wish to use to configure the structure and click **OK**.

The system applies the variant rule on the loaded product BOM and updates the BOM window to show only the BOM lines that are defined in the variant rule, that is, the 100% BOM. The BOM view header shows the applied saved variant rule name.

> Note:
>
> If the BOM lines do not get updated, ensure that you select the **Show Unconfigured Variants** option. Otherwise, the view shows all the BOM lines irrespective of the variant rule you apply.

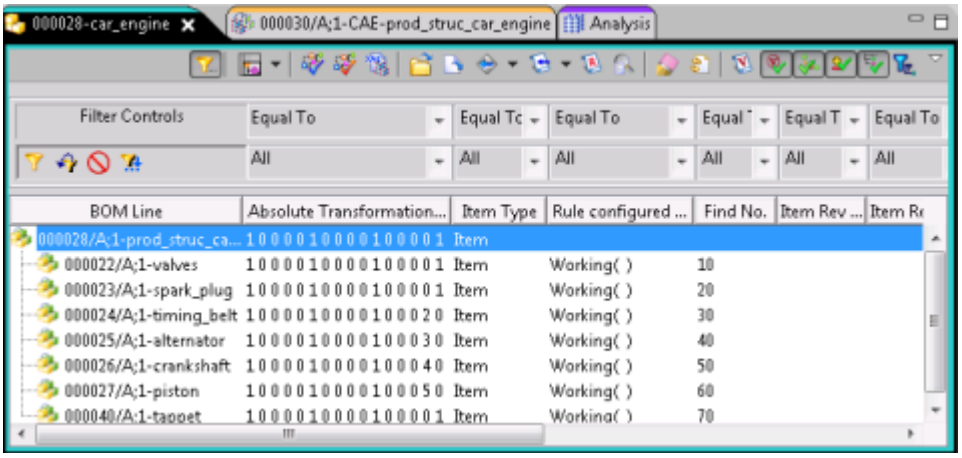
Organize the product structure

Apply filters to the product structure

1. Start CAE Manager.

2. In the **Home** view, select a product structure (non-CAE item revision), right-click, and choose **Send To→CAE Manager**.

3. To apply filters to the product structure and view only the structure lines that are relevant to your simulation, click **Show Filters** on the view toolbar.



> Note:
>
> When you enable filters, the **Pack**, **Unpack**, **Pack All**, and **Unpack All** options from the **View** menu are disabled. This is because these options can slow down your system when you filter large structures.

   a. Select a filter criteria and the filter value.

   b. (Optional) Select additional filter criteria and filter values.

   c. (Optional) Click **Unfilter the data by removing all filters** to clear filters from the structure while retaining both the filter criteria and filter values.

   d. (Optional) Click **Clear all filters** to clear all filters from the structure, including the filter criteria and filter values.

4. (Optional) To view all unique lowest lines:

   a. Select a root item or one or more subassemblies.

b. Click **View Menu**, and choose **Select Below→All Unique Lowest Lines**

5. Click **Show Data Panel** on the main toolbar to open the data view.

6. Click a tab in the data view to activate a view.

Confirmation messages for operations after applying filters on a BOM structure

Select	Command	Message after applying filters
A product structure or a model structure in the **Product** view or **Model** view, respectively	Click **Generate CAE Structure from Data Map** from the view toolbar	`The Data Map operation will be executed on the entire BOM structure and not on the filtered BOM structure. Do you want to continue?`
A product structure or a model structure in the **Product** view or **Model** view, respectively	Click **Generate CAE Structure from StructureMap** from the view toolbar	`The StructureMap operation will be executed on the entire BOM structure and not on the filtered BOM structure. Do you want to continue?`
A product structure or a model structure in the **Product** view or **Model** view, respectively	Click **Open Secondary View → Inspector** and choose **Load Inspector** from the **Inspector view**	`This operation will be executed on the entire BOM structure and not on the filtered BOM structure. Do you want to continue?`
A product structure or a model structure in the **Product** view or **Model** view, respectively	Click **Open Secondary View → Inspector** and choose **Load Inspector (unpacked)** from the **Inspector view**	`This operation will be executed on the entire BOM structure and not on the filtered BOM structure. Do you want to continue?`
A model structure in the **Model** view	Click **Derive Structures** from the view toolbar	`This operation will be executed on the entire BOM structure and not on the filtered BOM structure. Do you want to continue?`
A model structure in the **Model** view	Click **Open Secondary View → Simulation Dashboard**	`This operation will be executed on the entire BOM structure and not on the filtered BOM structure. Do you want to continue?`

Select	Command	Message after applying filters
A product structure in the **Product** view	Click **Open Secondary View** → **Target References**	`This operation will be executed on the entire BOM structure and not on the filtered BOM structure. Do you want to continue?`
A product structure or a model structure in the **Product** view or **Model** view, respectively	Click **Open Secondary View** → **Composite**	`This operation will be executed on the entire BOM structure and not on the filtered BOM structure. Do you want to continue?`
A product structure or a model structure in the **Product** view or **Model** view, respectively	Click **Simulation Tools** → *Tool_Name*	`The Input to the tool will be the entire BOM structure and not on the filtered BOM structure. Do you want to continue?`

Error messages for operations after applying filters on a BOM structure

View	Command	Error message after applying filters
Product view	Select a BOM line, click **Open Secondary View** → **Target References**. In the **Target References** view, select a line, right-click, and choose **Select Related BOM Line in...** and choose **Model**, **Product**, or **Model and Product**	`This operation cannot be performed on a filtered BOM structure. Remove the filter from BOM structure and try again.`
Product view	Select a BOM line, right-click, and choose **Select Related BOM Line in Model**	`This operation cannot be performed on a filtered BOM structure. Remove the filter from BOM structure and try again.`
Model view	Select a BOM line, right-click, and choose **Select Related BOM Line in Product**	`This operation cannot be performed on a filtered BOM structure. Remove the filter from BOM structure and try again.`
Product view	Select a BOM line, click **Tools** → **CAE BOM Compare** and click **Add**	`This operation cannot be performed on a filtered BOM structure. Remove the filter from BOM structure and try again.`

View	Command	Error message after applying filters
	Source for the **Source Structure** box	
Product view or **Model** view	Select a BOM line, click **Tools → CAE BOM Compare** and click **Add Target** for the **Target Structure** box	`This operation cannot be performed on a filtered BOM structure. Remove the filter from BOM structure and try again.`
Product view	Select a BOM line, click **Tools → CAE Attribute Compare** and click **Add Source** for the **Product** box	`This operation cannot be performed on a filtered BOM structure. Remove the filter from BOM structure and try again.`
Model view	Select a BOM line, click **Tools → CAE Attribute Compare** and click **Add Target** for the **Model** box	`This operation cannot be performed on a filtered BOM structure. Remove the filter from BOM structure and try again.`

Share your working design or save an interim version for future reference

During the development of a product's design, you may want to share your working design with other users. You may also want to save an interim version of your design for future reference. To do this, you can create a baseline of the work-in-progress (WIP) design. When you request a baseline, Teamcenter creates a new revision for each unreleased revision in the structure and releases it with a predefined status, for example, **TC_Baseline**.

1. Open the latest working revision of a product or model structure in the **Product** or **Model** view respectively.

2. Click **View Menu** in the view toolbar, and choose **Baseline**.

3. Select a baseline template, specify a baseline label, and optionally specify a job description.

4. (Optional) To create the baseline and open it automatically in a new **Product** or **Model**view, select **Open On Create**.

5. (Optional) To create a report, select **Dry Run Creation**.

6. (Optional) To create a precise baseline, select **Precise Baseline**.

> Tip:
>
> Your site may be configured to allow only precise baselines, depending on the setting of the **Baseline_precise_bvr** preference.

Replace older revisions with approved revisions

By default, an occurrence automatically references a particular item revision, depending on the revision rule currently in effect. Optionally, you can set the occurrence to unconditionally reference a precise revision of the part. You can then detect any precise occurrences that reference an out-of-date revision and manually upgrade each occurrence to an approved revision of the referenced part. This option is available only with a *precise* structure.

When you create a new item revision and it is approved, the occurrences of older revisions are not automatically updated with the new revision if the structure is precise. You must use the **Show/Hide Superseded Revisions** command to identify superseded item revisions. While updating an occurrence with an old revision to the new approved revision, you can update all the applicable occurrences in the parent assembly or just the currently selected component.

1. Open a precise product or a model structure in the **Product** or **Model** view, respectively.

   Alternatively, open a product or a model structure and apply a precise revision rule.

2. Click **View Menu** in the view toolbar, and choose **Edit→Show/Hide Superseded Revisions**.

3. To replace selected product or model revisions with new approved versions, select the BOM lines for which superseded revisions are available, right-click, and select **Update Superseded**.

   You can select multiple BOM lines and update multiple revisions to the approved revisions in the **Update** dialog box. To update multiple occurrences within the same parent, select the **Adjacent Occurrences** option.

View all related analysis data of a product structure

1. In the **Product** view, open a product item revision.

2. Click **Open Secondary Views** in the view toolbar, and choose **Composite**.

3. To view all **CAE 3D Analysis** item revisions at all levels, select the root item, right-click, and choose **Expand Below**.

4. To view related **CAE 3D Analysis** item revisions at the root level, click **View Menu** in the view toolbar, and choose **Show Related Analysis Root Only**.

5. To view all related **CAE 3D Analysis** item revisions, click **View Menu** in the view toolbar, and choose **Show Related Analysis All**.

For each **CAE 3D Analysis** item revision, the system displays the related **CAE 3D Result** item revision (if available).

View and update references in a structure

View all references in a structure using the Composite view

Use the **Composite** view to view a hybrid structure of references for all the structure lines of a non-CAE item revision, **CAE 3D Model** item revision, or a **CAE 3D Analysis** item revision at one time.

You can open the **Composite** view by choosing the **Open Secondary Views** and selecting **Composite** from the **Product**, **Model**, or **Analysis** view.

You can perform the following tasks:

- View non-CAE item revisions and the CAE item revisions that have references to the non-CAE item revisions, and filter references based on item types or relation types in the **Product-Composite** view.
- View **CAE 3D Model** item revisions, and the non-CAE item revisions and/or CAE item revisions that are referenced by the **CAE 3D Model** item revisions. You can filter references based on relation types, add or update references, and check for attachment changes, later revisions, and references for the item revisions in the **Model-Composite** view.
- View **CAE 3D Analysis** item revisions and the non-CAE item revisions and/or the CAE item revisions that are referenced by the **CAE 3D Analysis** item revisions. You can view attached datasets and filter references based on relation types or dataset types in the **Analysis-Composite** view.
- In the **Product-Composite**, **Model-Composite**, or **Analysis-Composite** views, you can:
  - Mark an item revision as up to date or mark all item revisions as up to date.
  - Show removed attachments for item revisions.
  - Show last-up-to date of an item revision.
  - Select all item revisions with later revisions.
  - Select all lines of same color.
- In the **Model-Composite** view, you can:

- Toggle **Show Only Latest Revision** to show only the latest revision related to the component in the **Composite** view. The system filters out the older revisions.
- Toggle **Show only in Product Context** to show only those products related to the component that are loaded in the associated **Product** view.

Filter references by relation, item, or dataset type

Filter references by relation type

1. Open a non-CAE item revision, **CAE 3D Model** item revision, or **CAE 3D Analysis** item revision in the **Product**, **Model**, or **Analysis** view, respectively.
2. From the appropriate view toolbar, click **Open Secondary Views**, and choose **Composite** to open the **Composite** view.
3. From the **Relation Type** list, select the required relation type.

   Note:

   The relation types that are available in a **Composite** view linked to a **Model** or **Analysis** view correspond to the significant relation types configured for that object type by the site administrator.

4. In the **Product**, **Model**, or **Analysis** view, click **Reload** in the view toolbar to display the references with the specific relation types.

Note:

You can select multiple relation types at once. If you do not select any relation type, Teamcenter displays the references with all the available relation types.

Filter item references to CAE items by item type

1. In the **Product** view, open a non-CAE item revision.
2. Click **Open Secondary Views** in the view toolbar, and choose **Composite**.
3. From the **Item Type** list, select the required item type.

   Teamcenter displays the non-CAE items that are referenced by the selected CAE items.

Note:

You can filter references by item type only in the **Product-Composite** view.

Filter references by dataset type

1. In the **Analysis** view, create or open a **CAE 3D Analysis** item revision.
2. Click **Open Secondary Views** in the view toolbar, and choose **Composite**.
3. From the **Relation Type** list, select the required type and click the **Reload** view toolbar icon.

Note:

You can filter references by dataset type only in the **Analysis-Composite** view.

Check for references and add or update latest references

- Check for references
- Add latest references
- Update latest references

Check for references

1. In the **Model** view, create or open a **CAE 3D Model** item revision.
2. Click **Open Secondary Views** in the view toolbar, and choose **Composite**.
3. Click **Check for References** in the view toolbar.

Teamcenter displays references of each line of the loaded model structure in the following color scheme:

Note:

The color scheme depends on the colors set by the simulation administrator at your site.

- *Red* indicates the nonavailability of any references for a specific line.
- *Yellow* indicates the availability of at least one reference for a specific line, but the reference is not loaded in the **Product** view.

- *Green* indicates the availability of at least one reference for a specific line and the reference is loaded in the **Product** view.

Add latest references

1. In the **Model** view, create or open a **CAE 3D Model** item revision.
2. Click **Open Secondary Views** in the view toolbar, and choose **Composite**.
3. In the **Composite** view, select one or more item revisions.

   Alternatively, right-click, and choose **Select All with Later Revisions**.
4. Click **View Menu** in the view toolbar, and choose **Add Latest References**.

   Teamcenter adds references to the loaded model structure.

Update latest references

1. In the **Model** view, create or open a **CAE 3D Model** item revision.
2. Click **Open Secondary Views** in the view toolbar, and choose **Composite**.
3. Select one or more item revisions in the **Composite** view.

   Alternatively, right-click, and choose **Select All with Later Revisions**.
4. Click **View Menu** in the view toolbar, and choose **Update Latest References**.

   Teamcenter updates references of the loaded model structure to the latest revision.

Create different types of CAE revisions to manage your data

Creating CAE revisions

CAE items are the fundamental workspace objects in Teamcenter used to manage CAE information. You can use them to:

- Maintain the CAE representation of a product, part, or component.
- Maintain the definition of the analysis performed on these items and the results of the analysis.
- Manage changes (revisions) to CAE items during the product design lifecycle.

Use the **New CAE Item** dialog box in My Teamcenter, and CAE Manager to create CAE items. Based on the application you select, the CAE items and item types in this dialog box appear differently. However, the process of creating a CAE item remains the same across these applications.

This dialog box provides a wizard-like tool that enables you to create CAE items, define item and item revision attributes, create alternate identifiers for the CAE item, assign the CAE item to a project, create datasets and attach named references, add a reference to another item, and define options to display the CAE item and alternate identifiers.

A red triangle indicates the steps that are mandatory to create a CAE item. After you perform these mandatory steps, you can then continue through the remaining steps in order, select individual steps from the list, or close the dialog box. It is not necessary to work through the steps sequentially nor is it necessary to complete all the steps. If mandatory item master or item revision master attributes are defined for the item type, you must enter the required values before Teamcenter can create the CAE item. A red asterisk (*) in the upper right corner of a box indicates the mandatory attributes in the steps.

Create geometry revisions in My Teamcenter

The geometry used for simulation analysis is often different from the product geometry. It may be a simplified or an abstracted version or an approximation when the product geometry is not available. **CAE 3D Geometry** revisions are workspace objects for storing the simplified geometry. Geometry revisions are created in the context of the item revisions in the product structure.

You can create **CAE 3D Geometry** item revisions only in My Teamcenter and not in any of the CAE Manager views.

1. Select a container for the item, such as a folder or an existing **CAE 3D Geometry** item revision.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Geometry** item revision from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. Click **Next**.

5. Specify information in the **CAE Geometry** area of the **Object Create Information** pane.

   The **Name** and **Description** boxes display default values determined by the property rules implemented at your site. You may replace such values, but you cannot specify a null value by clearing the box. If you clear the box, the initial value is reapplied to the property when you save the new **CAE 3D Model** item.

a. Type an item ID or click **Assign** to automatically assign an item ID.

b. Type a revision ID or click **Assign** to automatically assign a revision ID.

c. (Mandatory) Specify a name for the item revision.

d. (Optional) Enter a description for the item revision.

e. Click **Finish** to create the basic item revision.

(Optional) Select **Additional CAE Geometry Information** or **CAE Geometry Revision Information** to specify information (see steps that follow).

Alternatively, click **Next** to specify additional information

6. (Optional) Specify information in the **Additional CAE Geometry Information** section.

a. Specify a project ID and other information as appropriate.

b. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information

7. (Optional) Specify information in the **CAE Geometry Revision Information** section.

a. From the **Disciplines** area, click **Expand to modify**, select a discipline from the list, and click **Add**  .

b. From the **Analysis Types** area, click **Expand to modify**, select an analysis type from the list, and click **Add**  .

c. From the **Pre-Processor** menu, select a preprocessor for the analysis type you selected.

d. Specify project ID and other information as appropriate.

e. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information

8. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called named references, created by other software applications. A default tool is associated with each dataset type.

a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

b. To specify a list of datasets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Tip:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information

9. (Optional) Specify information in the **Define References** pane.

You can specify references manually by typing the object ID, revision, object, and relation type or using the **Search** dialog box.

a. To open the **Define References** pane, click **Next**.

b. Click **Add** and type an object ID, revision, object, and relation type or click **Search** to search for references.

c. (Optional) Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information

10. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

11. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Create model revisions in My Teamcenter or CAE Manager

A mesh represents a geometric object as a set of finite elements. Finite element analysis (FEA) is a computerized method for simulating how a part reacts to conditions such as force, heat, vibration, and other physical effects in the real world. Model revisions are workspace objects for storing the mesh definition, connections, and material and physical properties. They are created in the context of geometry revisions.

You can create model revisions in My Teamcenter or CAE Manager.

1. Select a container for the **CAE 3D Model** item, such as a folder or another CAE item.

Alternatively, select a model revision in the **Model** view of CAE Manager.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Model** item revision from the **Most Recently Used** or **Complete List** list.

> Note:
>
> The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. Specify information in the **CAE 3D Analysis** area of the **Object Create Information** pane.

   Note:

   The **Name** and **Description** boxes display default values determined by the property rules implemented at your site. You may replace such values, but you cannot specify a null value by clearing the box. If you clear the box, the initial value is reapplied to the property when you save the new **CAE 3D Model** item.

   a. Type an item ID or click **Assign** to automatically assign an item ID.

   b. Type a revision ID or click **Assign** to automatically assign a revision ID.

   c. (Mandatory) Specify a name for the item revision.

   d. (Optional) Enter a description for the item revision.

   e. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

5. (Optional) Specify information in the **Additional CAE Model Information** area of the **Object Create Information** pane.

   This area is available only if it is configured in Teamcenter.

   a. Specify a project ID and other information as appropriate.

   b. (Optional) Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

6. (Optional) Specify information in the **CAE Model Revision Information** area of the **Object Create Information** pane.

   a. From the **Disciplines** area, click **Expand to modify**, select a discipline from the list, and click **Add** .

   b. From the **Analysis Types** area, click **Expand to modify**, select an analysis type from the list, and click **Add** .

   c. From the **Solver** menu, select a solver for the model type you selected.

   d. Specify project ID and other information as appropriate.

e. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information

7. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

b. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create a basic item revision.

8. (Optional) Specify information in the **Define References** pane.

You can specify references manually by typing the object ID, revision, object, and relation type or using the **Search** dialog box.

a. To open the **Define References** pane, click **Next**.

b. Click **Add** and type an object ID, revision, object, and relation type or click **Search** to search for references.

c. (Optional) Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information

9. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

10. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Create analysis revisions in My Teamcenter or CAE Manager

An analysis revision represents the specific simulation you want to perform. Analysis revisions are workspace objects for including load cases, solver parameters, and boundary conditions. They are created in the context of model revisions.

You can create analysis revisions in My Teamcenter or CAE Manager.

1. Select a container for the analysis item, such as a folder or another item revision.

Alternatively, select a **CAE 3D Analysis** item revision in the **Analysis** view of CAE Manager.

You can configure the product structure to create analysis item revisions with a **CAE Target** relationship type. Then, while creating **CAE 3D Analysis** items using the **New CAE Item Wizard**

dialog box, the system automatically captures the pedigree information of the associated analysis item.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Analysis** item revision from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. (Mandatory) Specify information in the **CAE Analysis Information** area of the **Object Create Information** pane.

   > Note:
   >
   > The **Name** and **Description** boxes display default values determined by the property rules implemented at your site. You may replace such values, but you cannot specify a null value by clearing the box. If you clear the box, the initial value is reapplied to the property when you save the new **CAE 3D Model** item.

   a. Type an item ID or click **Assign** to automatically assign an item ID.

   b. Type a revision ID or click **Assign** to automatically assign a revision ID.

   c. (Mandatory) Specify a name for the item revision.

   d. (Optional) Enter a description for the item revision.

   e. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

5. Specify information in the **Additional CAE Analysis Information** area of the **Object Create Information** pane.

   a. Specify the project ID and other information as appropriate.

   b. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

6. Specify information in the **CAE Analysis Revision Information** area of the **Object Create Information** pane.

a. From the **Disciplines** area, click **Expand to modify**, select a discipline from the list, and click **Add** .

b. From the **Analysis Types** area, click **Expand to modify**, select an analysis type from the list, and click **Add** .

c. Specify the analysis type, solver name, project ID, and other information as appropriate.

d. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information

7. Specify information in the **Enter CAE Analysis and CAE Result Templates Information** pane.

a. In the **CAE 3D Analysis Template** area, click search and select an analysis template.

b. In the **CAE 3D Result Template** area, click search and select result templates.

8. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

b. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create a basic item revision.

9. (Optional) Specify information in the **Define References** pane.

You can specify references manually by typing the object ID, revision, object, and relation type or using the **Search** dialog box.

a. To open the **Define References** pane, click **Next**.

b. Click **Add** and type an object ID, revision, object, and relation type or click **Search** to search for references.

c. (Optional) Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information

10. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

11. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Create analysis templates in My Teamcenter

You can create analysis templates to specify different load cases. After creating a template, you can associate it to an analysis revision.

1. In My Teamcenter, select a container for the **CAE 3D Analysis** template, such as a folder or another item revision.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Analysis Template** revision from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. Specify information in the **CAE 3D Analysis Template** area of the **Object Create Information** pane.

   a. Type an item ID or click **Assign** to automatically assign an item ID.

   b. Type a revision or click **Assign** to automatically assign a revision.

   c. (Mandatory) Specify a name for the analysis template.

   d. (Optional) Enter a description for the item revision.

   e. (Optional) Click **Finish** to create a basic item revision.

      Alternatively, click **Next** to specify additional information.

5. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

   Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

   a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

   b. To specify a list of data sets, click **Add**, and select appropriate options.

      You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create a basic item revision.

6. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

7. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Create result revisions in My Teamcenter or CAE Manager

1. Select a container for the item, such as a folder, another result revision, an analysis revision in a folder, or an analysis revision in the **Analysis** view in CAE Manager.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Result** item revision from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. Specify information in the **CAE Result Information** area of the **Object Create Information** pane.

   a. Type an item ID or click **Assign** to automatically assign an item ID.

   b. Type a revision ID or click **Assign** to automatically assign a revision ID.

   c. (Mandatory) Specify a name for the item revision.

   d. (Optional) Enter a description for the item revision.

   e. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

5. Specify information in the **Additional CAE Result Information** area of the **Object Create Information** pane.

   a. Specify the project ID and other information as appropriate.

   b. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

6. Specify information in the **CAE Result Revision Information** area of the **Object Create Information** pane.

   a. From the **Disciplines** area, click **Expand to modify**, select a discipline from the list, and click **Add**  .

b. From the **Analysis Types** menu, select an analysis type.

c. Specify the project ID and other information as appropriate.

d. From the **Solver Name** menu, select a solver type.

e. Specify the analysis type, solver name, project ID, and other information as appropriate.

f. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information

7. Specify information in the **Enter CAE Result Template Information** pane.

a. Search for the result template by clicking **Search** and add it.

b. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information.

8. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

a. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

b. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

c. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information.

9. (Optional) Specify information in the **Define References** pane.

   You can specify references manually by typing the object ID, revision, object, and relation type or using the **Search** dialog box.

   a. To open the **Define References** pane, click **Next**.

   b. Click **Add** and type an object ID, revision, object, and relation type or click **Search** to search for references.

   c. (Optional) Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

10. (Optional) Specify information in the **Define Workflow Information** pane.

    Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

    Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

    a. To open the **Define Workflow Information** pane, click **Next**.

    b. Select a process template and apply a process template filter.

    c. Select a process assignment list.

    d. Click **Finish** to create the item revision.

       Alternatively, click **Next** to specify additional information.

11. (Optional) Specify information in the **Assign Project Page** pane.

    Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

    a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Create result templates in My Teamcenter

You can create result templates to include different types of result criteria. After creating the template, you can associate the template to a result revision.

1. In My Teamcenter, select a container for the result template, such as a folder or another item revision.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Result Template** revision from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. (Mandatory) Specify information in the **CAE 3D Result Template Information** section.

   a. Type an item ID or click **Assign** to automatically assign an item ID.

   b. Type a revision ID or click **Assign** to automatically assign a revision ID.

   c. (Mandatory) Specify a name for the result template.

   d. (Optional) Enter a description for the template.

   e. (Optional) Click **Finish** to create a basic item revision.

      Alternatively, click **Next** to specify additional information.

5. (Optional) Specify information in the **CAE 3D Result Template Revision Information** section.

   a. Click **Expand to modify**, select the appropriate value from the list, and click **Add** to add the value.

   b. (Optional) Click **Finish** to create a basic item revision.

      Alternatively, click **Next** to specify additional information.

6. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

b. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create a basic item revision.

7. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

8. (Optional) Specify information in the **Assign Project Page** pane.

   Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

   a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

   b. Click **Finish** to create the item revision.

9. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

   Datasets manage data files, called named references, created by other software applications. A default tool is associated with each dataset type.

   a. To specify a list of data sets, click **Add**, and select appropriate options.

      You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

      > Tip:
      >
      > This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

   b. To specify named references, click **Add**, and select appropriate options.

      You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files in the **Named reference** table, the system populates all the files as named references of the selected dataset.

   c. (Optional) Click **Finish** to create a basic item revision.

10. (Optional) Specify information in the **Define Workflow Information** pane.

    This pane is available only if it is configured in Teamcenter.

    Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. Select a process template and apply a process template filter.

b. Select a process assignment list.

11. (Optional) In the **Assign Project Page**, select an available project.

12. Click **Finish** to create the result template.

Create product collector revisions in My Teamcenter

As a simulation analyst, the product structure you receive may not have all the data or it may not be organized in a manner that is suitable for simulation analysis. Before you start reorganizing the structure, you require a collector item or a placeholder to store the new structure. You can create **CAE 3D Product Collector** item revisions to store the new structure.

1. Select a container for the item, such as a folder or an existing **CAE 3D Product Collector** item revision.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Product Collector** item revision from the **Most Recently Used** or **Complete List** list.

> Note:
>
> The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. Click **Next**.

5. Specify information in the **Object Create Information** pane.

> Note:
>
> The **Name** and **Description** boxes display default values determined by the property rules implemented at your site. You may replace such values, but you cannot specify a null value by clearing the box. If you clear the box, the initial value is reapplied to the property when you save the new **CAE 3D Model** item revision.

a. (Optional) Enter a description for the **CAE 3D Product Collector** item revision you want to create.

b. Type an item ID or click **Assign** to automatically assign an item ID for the **CAE 3D Product Collector** item revision you want to create.

c. (Mandatory) Specify a name for the **CAE 3D Product Collector** item revision you want to create.

d. Specify other values as appropriate.

e. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information.

6. (Optional) Specify information in the **Define business object create information** pane.

This area is available only if it is configured in Teamcenter.

a. (Optional) In the **Disciplines** list, click **Expand to modify** and select an appropriate value and click **Add**.

You can select disciplines such as **Durability**, **NVH**, or **Safety**.

b. Specify other values or select options as appropriate.

c. (Optional) Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

7. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

a. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

b. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

8. (Optional) Specify information in the **Define References** pane.

You can specify references manually by typing the object ID, revision, object, and relation type or using the **Search** dialog box.

a. Click **Add** and type an object ID, revision, object, and relation type or click **Search** to search for references.

b. (Optional) Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

9. (Optional) Specify information in the **Define Workflow Information** pane.

This pane is available only if it is configured in Teamcenter.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. Select a process template and apply a process template filter.

b. Select a process assignment list.

c. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

10. (Optional) Specify information in the **Assign Project Page** pane.

    Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

    a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

    b. Click **Finish** to create the item revision.

11. After creating the product collector revision object, **open the product collector structure in the Product view of CAE Manager**, reorganize the structure by adding BOM lines or moving BOM lines, and populate the structure with the parts and subassemblies selected from the original CAD structures.

12. (Optional) Search for product collector revisions after creating them.

    a. Select **Advanced** from the search menu at the top of the navigation pane.

    b. On the **Search** view toolbar, click  to select a search from the list of search types.

    c. Click **More** and select **CAE 3D Product Collector Revision** or **CAE 3D Product Collector** to find all product collector revisions.

    d. Enter the search criteria and click **Search**  to perform the search.

Create a CAE boundary condition in My Teamcenter

You can create a boundary condition to define the inputs for a simulation model. After creating the boundary condition, you can associate the condition to an analysis revision.

1. In My Teamcenter, select a container for the result template, such as a folder or another item revision.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select **CAE 3D Boundary Condition** from the **Most Recently Used** or **Complete List** list.

> Note:
>
> The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. Type an item ID or click **Assign** to automatically assign an item ID.

5. Type a revision or click **Assign** to automatically assign a revision.

6. (Mandatory) Specify a name for the boundary condition.

7. (Optional) Enter a description for the boundary condition.

8. Click **Finish** to create the item revision.

   Alternatively, click **Next** to specify additional information

9. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

   Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

   a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

   b. To specify a list of data sets, click **Add**, and select appropriate options.

      You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

      > Note:
      >
      > This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

   c. To specify named references, click **Add**, and select appropriate options.

      You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

   d. (Optional) Click **Finish** to create a basic item revision.

10. (Optional) Specify information in the **Define Workflow Information** pane.

    Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

11. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Create structure map revisions in My Teamcenter

1. Select a container for the **CAE Structure Map** item, such as a folder or another item revision.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE Structure Map** item revision from the **Most Recently Used** or **Complete List** list.

> Note:
>
> The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. (Mandatory) Specify information in the **StructureMap Information** area of the **Object Create Information** pane.

> Note:
>
> The **Name** and **Description** boxes display default values determined by the property rules implemented at your site. You may replace such values, but you cannot specify a null value by clearing the box. If you clear the box, the initial value is reapplied to the property when you save the new **CAE 3D Model** item revision.

a. Type an item ID or click **Assign** to automatically assign an item ID.

b. Type a revision or click **Assign** to automatically assign a revision.

c. (Mandatory) Specify a name for the item revision.

d. (Optional) Enter a description for the item revision.

e. Click **Finish** to create the item revision.

   Alternatively, click **Next** to specify additional information

5. (Optional) Specify information in the **Additional StructureMap Information** area of the **Object Create Information** pane.

   a. Specify the project ID and other details as appropriate.

   b. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

6. (Optional) Specify information in the **StructureMap Revision Information** area of the **Object Create Information** pane.

   a. Click **Expand to modify**, select a discipline from the list, and click **Add** to include the discipline.

   b. (Mandatory) Select a domain. The default domain is **CAE**.

   c. Specify other information as appropriate.

   d. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

7. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

b. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create a basic item revision.

8. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

9. (Optional) Specify information in the **Assign Project Page** pane.

   Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

   a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

   b. Click **Finish** to create the item revision.

Create new revisions based on existing revisions

Create a new revision based on an existing revision

The **Save As** dialog box provides a wizard-like tool to create items, define item and item revision attributes, create alternate identifiers for the item revision, assign the item revision to a project, and define options for displaying the item and alternate identifiers.

A red triangle indicates the steps that are mandatory to create a CAE item. After you perform the mandatory steps, you can then continue through the remaining steps in order, select individual steps from the list, or close the dialog box. It is not necessary to work through the steps sequentially nor is it necessary to complete all the steps. If mandatory item master or item revision master attributes are defined for the item type, you must enter the required values before Teamcenter can create the CAE item. A red asterisk (*) in the upper right corner of a box indicates the mandatory attributes in the steps.

You can create a new CAE item and item revision based on an existing CAE item revision and use the **Define Attached Data** option to copy objects related to the item revision as references, new objects, or not to copy them at all.

1. Create or open a **CAE 3D Model** or **CAE 3D Analysis** item revision in the **Model** or **Analysis** view in CAE Manager.

2. Select the required item revision in the **Model** or **Analysis** view to be the basis of the new CAE item and item revision.

3. Choose **File→Save As** to open the **Save As** dialog box.

   The **Enter Item Information** step appears by default.

   > Note:
   >
   > You can find initial values in the **Name** and **Description** boxes determined by the property rules implemented at your site. You can replace such values, but you cannot specify a null

value by clearing the box. If you clear the box, the initial value is reapplied to the property when you save the new CAE item.

4. Click **Assign** to automatically generate the next available item ID and revision, or manually type an item and revision ID.

   Assign is active only if naming rules and automatic generation are implemented for the selected object type.

5. (Optional) In the **Description** box, type a description for the new CAE item.

   For any CAE item revision, the **Unit of Measure** list is disabled by default.

6. At this point, you have provided all the information necessary to create the CAE item.

7. Click **Next** to create the CAE item and proceed to another step or click **Finish** to create the CAE item and return to the first step.

Enter item and item revision attributes for the new revision

1. Click the **Enter Additional Item Information** or **Enter Additional Item Revision Information** step in the left pane.

   Teamcenter displays the corresponding master form in the right pane.

2. Enter the information for the required attributes.

3. Click **Next** to create an alternate identifier, if active. Otherwise, select another step from the left pane or click **Finish**.

Create an alternate identifier for the new revision

1. Click the **Enter Identifier Basic Information** step in the left pane.

   Teamcenter displays the alternate identifier options in the right pane.

2. Select the context for the identifier.

   The **Select Context** options are derived from rules set by your administrator.

3. Select the identifier type.

4. Type an item ID, revision, and name for the alternate ID, or click **Assign** to automatically generate the item and revision identifiers.

Assign is active only if naming rules and automatic generation are implemented for the selected object type.

5. Click **Next** to proceed to the next step.

Enter additional attribute information for the new revision

1. Click the **Enter Additional ID Information** or **Enter Additional Rev Information** step in the left pane.

   Teamcenter displays the corresponding master form in the right pane.

2. Enter the required attribute information.

3. Click **Next** to move to the next step in the revision process or click **Finish** to close the **Revise** dialog box.

> Note:
>
> This feature is available only if attributes are defined for the selected alternate ID type.

Copy related objects for the new revision

1. Click the **Define Attached Data** step in the left pane.

   Teamcenter displays the **Source** tree and **Destination** tree to define attached data.

   - **Source** tree contains the objects related to the selected item revision. The symbols to the right of the objects indicate the default copy option for that object.
   - **Destination** tree contains the resulting item revision with the objects copied according to the default copy option.

   > Note:
   >
   > The default copy options are derived from site rules and can be overridden depending on site implementation.

   The following copy options can be applied to related objects:

   - **Copy as Object** allows you to create a new object of the same type and relation to the parent object. Objects created by this method are totally independent of the parent object. Therefore, any changes to the copied object are not reflected in the original object. Copied objects appear in bold in the **Destination** tree. The names of the attachments that are copied as objects are generated at the server level and may be overridden, depending on the site implementation. If

you have the permission to edit the object name, you can double-click the node and type a new name.

- **Copy as Reference** allows you to copy the existing object as a reference to the original object. All changes to the reference copy affect the original object.

  The names of attachments that are copied as references cannot be modified.

- **Don't Copy** allows you to selectively copy objects from one revision to another. Objects that have been designated as **Don't Copy** appear with a line through them in the **Destination** tree.

2. To override the copy option for an object, click the button and select a different copy option.

   If the buttons are disabled, you do not have permission to change the copy option for that object.

3. (Optional) Rename the related objects as follows:

   a. Select the object in the **Destination** tree.

   b. Press the F2 key.

   c. Type the new name.

4. Click **Next** to assign the revision to a project or click **Finish** to return to the first item creation step.

Assign an item to projects for the new revision

> Note:
>
> You can assign objects to projects only if you are a privileged project team member.

1. Click the **Assign to Projects** step in the left pane.

   Teamcenter displays the list of projects to which items can be assigned in the right pane.

2. From the **Projects for Selection** list, select one or more projects.

3. Move the projects to the **Selected Projects** list.

4. Click **Next** to define item options or click **Finish** to return to the first item creation step.

Define open and alternate ID display options for the new revision

1. Click the **Define Options** step in the left pane.

Teamcenter displays the open and display options in the right pane.

2. Select **Open on Create** to open the **CAE 3D Model** item revision in your workspace after it is created.

3. If you have created an alternate identifier for the CAE item, you can use this as the default display object by selecting **Use item identifier as default display** and **Use revision identifier as default display**.

4. Click **Finish**.

   Teamcenter displays the newly created CAE item in the **Newstuff** folder in My Teamcenter.

3. Create structure map rules to generate model structures for specific types of analyses

What are structure maps?

You (as the simulation analyst) can use the CAE Manager to generate a CAE structure from an existing product structure (bill of materials, or BOM). Typically the CAE structure is similar to, but not the same as, the product structure.

You use structure maps to automate the creation of CAE structures. Structure maps allow you to:

- Remove BOM lines based on filter criteria. For example, you can automatically filter out connectors such as bolts or pins, which will not be considered in the analysis.
- Reuse existing **CAE 3D Model** item revisions. If a part in the product structure has been previously analyzed, the structure map can automatically include the corresponding CAE 3D Analysis item in the new CAE structure.
- Add existing **CAE 3D Model** item revisions. You can include additional items in the CAE structure as needed in your analysis, such as a fluid volume mesh for flow analysis.
- Create new **CAE 3D Model** item revisions where none currently exist.

Managing structure maps

Create structure map items

You can create and manage **CAE Structure Map** items with the required structure map attributes in My Teamcenter or **CAE Structure Map Configuration** view in CAE Manager and use the **CAE Structure Map** items to generate CAE model structures.

Use the **New CAE Item** dialog box to create the **CAE Structure Map** items in My Teamcenter or **CAE Structure Map Configuration** view in CAE Manager.

If you create **CAE Structure Map** items in My Teamcenter, you can select them, and then right-click and choose **Send To→CAE Manager** to open them in the **CAE Structure Map Configuration** view.

1. Choose **File→New→CAE Item** in My Teamcenter or **CAE Structure Map Configuration** view in CAE Manager to open the **New CAE Item** dialog box.

2. Create a **CAE Structure Map** item.

You can create a **CAE Structure Map** item only after you define a structure map dataset.

Open structure map item revisions

Use the **CAE Structure Map Configuration** view to open a **CAE Structure Map** item revision in CAE Manager. You can type the required CAE Structure Map item ID and revision in the **Item Id/Rev** boxes. You can also click **Search** to search and select the **CAE Structure Map** item revision.

> Tip:
>
> If you create **CAE Structure Map** items in My Teamcenter, you can select them, and then right-click and choose **Send To→CAE Manager** to open them in the **CAE Structure Map Configuration** view.

1. In CAE Manager, click **CAE Configuration→CAE Structure Map Configuration** on the main toolbar to open the **CAE Structure Map Configuration** view.

2. Click **Open selected line in a new window** on the view toolbar to open the **Structure Map Open Item Revision** dialog box.

3. Type the required **CAE Structure Map** item and revision identifiers in the **Item Id/Rev** boxes, or click **Search** to search for the required **CAE Structure Map** item revision and populate the values in these boxes.

4. Click **Load**.

Validate structure map rules

If the selected **CAE Structure Map** item revision contains a structure map file as a named reference, and if the **CAE Structure Map** item revision appears invalid, you must first validate the structure map file.

1. Select the required **CAE Structure Map** item revision in the **Structure Map Item Revisions** tree.

   > Note:
   >
   > The **CAE Structure Map** item revision must contain a structure map file as a named reference.

2. To validate the structure map file, click the  view toolbar button.

Upload attachments to a structure map item

Use the **Attachments** pane to view and manage the named references attached to a selected **CAE Structure Map** item revision.

1. Select the required **CAE Structure Map** item revision in the **Structure Map Item Revisions** tree in the **CAE Structure Map Configuration** view.

2. To activate the **Attachments** pane, right-click the **CAE Structure Map** item revision and choose **Open with Attachments**.

3. In the **Attachments** pane, right-click the **CAEStructureMap** dataset associated with the **CAE Structure Map** item revision, and choose **Named References** to open the **Named References**dialog box.

4. Open or upload named references for the **CAEStructureMap** dataset.

   You can also export an existing named reference attached to the **CAEStructureMap** dataset to a local directory in Teamcenter.

5. Click **Close** to close the **Named References** dialog box.

6. View the named reference attached to the **CAEStructureMap** dataset in the **Attachments** pane.

   You can find the structure map file in the attached named reference.

Generate CAE model structures using structure maps

You can create a CAE model structure using the structure map rules created in the **CAE Structure Map Configuration** view.

The **CAE Structure Map** item revision that you use to generate the CAE model structure must contain a **CAEStructureMap** dataset and a valid named reference attached to it. The structure map rules are stored in the named reference.

1. In the **Product** view, click **Generate CAE Structure from CAE Structure Map** on the view toolbar.

2. In the **Select CAE Structure Map** dialog box, type the required **CAE Structure Map** item and revision identifiers in the **Item Id/Rev** boxes, or click **Search** to search for the required **CAE Structure Map** item revision and populate the values in these boxes.

3. To create the CAE model structure map, click **Execute**.

Create structure map rules to generate CAE model structures

Create structure map rules

Analysts often use the product structure to create a simulation structure based on a functional subsystem to include components relevant to their analysis. They identify such components by reorganizing, grouping, and filtering out components from the product structure. Doing this manually is time consuming. To simplify this process, the lead (or designated) analyst can use the **CAE Structure**

Map Configuration view to create structure map rules that can be used by other analysts in the group or organization. Structure map rules help generate consistent CAE model structures for better analysis.

You can use the **cae_validate_structuremap** utility to validate the input structure map usage. For more information, from a Teamcenter command prompt, type **cae_validate_structuremap -h**.

The process is as follows:

- The lead analyst:

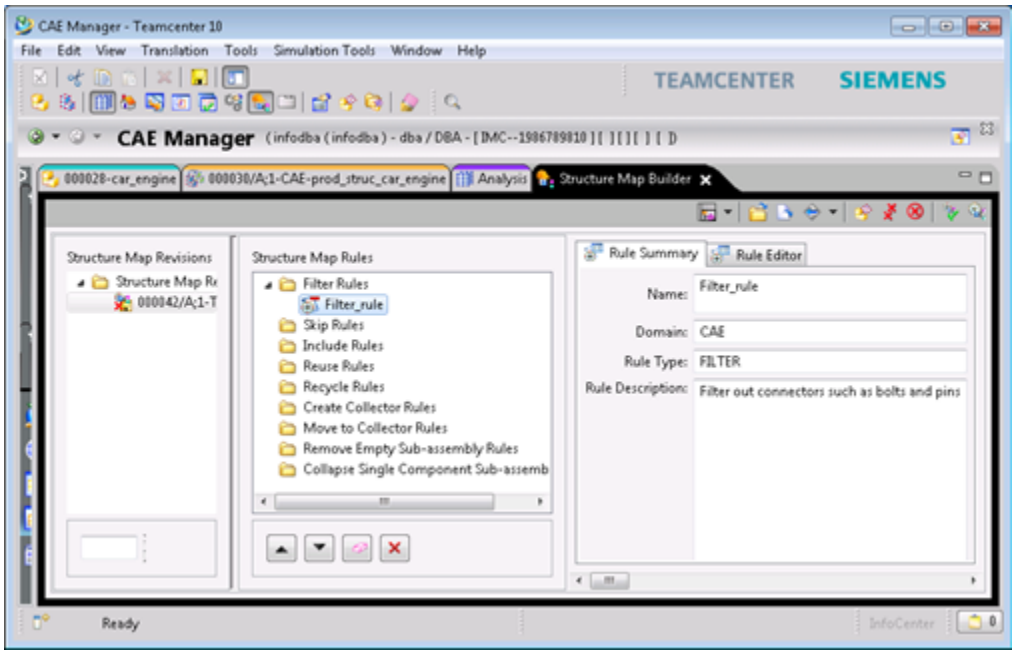
  1. Creates a **CAE Structure Map** item revision using the **New CAE Item** wizard.
  2. Creates multiple structure map rules.
  3. (Optional) Changes the sequence of the structure map rules and saves the structure.

  The analyst:

  1. Opens the product structure in the **Product** view.
  2. Creates a CAE model structure using the structure map containing the structure map rules.

     Teamcenter applies the structure map rules and loads the resulting structure in the **Model** view.

The lead analyst can create multiple rules for each rule type and specify an order of precedence when there is more than one rule in the **Structure Map Rules** pane.



When the analyst applies these structure map rules, they are executed with the following precedence:

- **Filter**
- **Skip**
- **Include** (when the **IN** option is selected in the **Criteria Focus** menu)
- **Reuse**
- **Recycle**
- **Include** (when the **OUT** option is selected in the **Criteria Focus** menu)
- **Create Collector**
- **Move to Collector**
- **Remove Empty Sub-Assembly**
- **Collapse Single Component Sub-Assembly**

In the **CAE Structure Map Configuration** view, click the **Add CAE Structure Map Rule** view toolbar button. The **CAE New Structure Map Rule** dialog box provides a wizard-like tool to create structure map rules. You can perform the following tasks in this dialog box:

- Select rule type and define rule information.
- Define detailed information for the rule type.
- View summary of the rule to be created.

A red triangle indicates the mandatory steps required to create a new rule. After you perform the mandatory steps, you can continue through the remaining steps in order, select individual steps from the list, or exit the wizard. It is not necessary to work through the steps sequentially, nor is it necessary to complete all the steps. A red asterisk (*) in the upper-right corner of the field indicates the mandatory attributes in the steps.

Create filter rules

Filter rule is a mechanism to filter or remove components from a structure.

Note:

Filter rules remove the identified component and its children from the resulting structure, if it is a subassembly root.

1. In My Teamcenter or CAE Manager, from the **Home** view, select a **CAE Structure Map** item revision, right-click and choose **Send To→CAE Manager**.

2. From the **Structure Map Item Revisions** tree, select the required **CAE Structure Map** item revision.

3. Click the **Add CAE Structure Map Rule** button.

4. In the **CAE New Structure Map Rule** dialog box, perform the following steps to select a rule type and define the rule information:

   a. From the **SM Rule Types** tree, select the **Filter** rule type.

   b. In the **Rule Name** box, type a name for the **Filter** rule.

   c. (Optional) In the **Description** box, type a description for the **Filter** rule.

5. Click **Next** or the **Create Conditional Expression** step in the left pane.

   Teamcenter displays the options to create a conditional (or Boolean) criteria to identify the lines in the input structure in the right pane.

6. Perform the following steps to create a conditional expression:

   Note:

   It is not essential to perform these steps in the order listed.

   - Select an attribute.

     - Select the **Item**, **Item Revision**, **Form**, or **BOMLine** class from the **Class** list.

     - Based on the class you select, Teamcenter automatically displays the type options in alphabetical order in the **Types** list.

       Select the required type from the **Types** list.

     - Based on the type you select, Teamcenter automatically displays the attribute options in alphabetical order in the **Attributes** list.

Select the required attribute from the **Attributes** list.

- Define a conditional expression.
  - Select the required **XSLT** function in the **XSLT Function** tree.

    Note:

    An **XSLT** function is required to create a conditional expression that has a primary return type, **Boolean**.

  - Drag the selected **XSLT** function in the pane next to the **XSLT Function** tree.
  - Provide values for the **XSLT** function in one of the following ways:
    - Type static values in the parameter box.
    - Drag the required attributes in the parameter box.
    - Select an **XSLT** function from the **XSLT Function** tree and drag it in the parameter box.

    If you leave the mandatory parameter boxes empty, Teamcenter displays the following message:

    ```
    One or More than one Required Fields empty
    ```

- Click the && button or || button to add the rule condition to the set of conditions.

You can also use the button to edit a rule condition, button to remove a rule condition, or button to clear all rule conditions.

7. Click **Next** or the **View Rule Summary** step in the left pane.

   Teamcenter displays the summary of the **Filter** rule that is to be created.

   - The **Name** and **Description** boxes display the values that you provide in the **Select Rule Type** step.

     If you want to modify the values in the **Name** and **Description** boxes, click the **Select Rule Type** step in the left pane, and modify the values in the **Rule Name** and **Description** boxes accordingly.

   - The **Rule Preview** box lets you preview the **Filter** rule that is to be created.

     If you want to modify the **Filter** rule, click **Back** or the **Create Conditional Expression** step in the left pane and modify the rule accordingly.

8. Click **Finish** to create a **Filter** rule.

   Teamcenter displays the new **Filter** rule in the **Rule Details** pane.

Create include rules

Include rule is a mechanism to add and position an existing item revision as part of the output structure that was not a part of the input structure.

1. In My Teamcenter or CAE Manager, from the **Home** view, select a **CAE Structure Map** item revision, right-click and choose **Send To→CAE Manager**.

2. Select the required **CAE Structure Map** item revision in the **Structure Map Item Revisions** tree.

3. Click the **Add CAE Structure Map Rule** button.

4. In the **CAE New Structure Map Rule** dialog box, perform the following steps to select a rule type and define the rule information:

   a. From the **SM Rule Types** tree, select the **Include** rule type.

   b. In the **Rule Name** box, type a name for the **Include** rule.

   c. (Optional) In the **Description** box, type a description for the **Include** rule.

5. Click **Next** or the **Define Criteria Focus** step in the left pane.

6. From the **Criteria Focus** menu, select one of the following options:

   - **IN** to use item, item revision, form, or BOMLine attributes in the *input* structure, if they meet specific criteria.

   - **OUT** to use item, item revision, form, or BOMLine attributes in the *output* structure, if they meet specific criteria.

7. Click **Next** or the **Create Conditional Expression** step in the left pane.

   Teamcenter displays options to create a conditional (or Boolean) criteria to identify the lines in the input structure in the right pane.

8. Perform the following steps to create a conditional expression:

   > Note:
   >
   > It is not necessary to perform these steps in the order listed.

- Select an attribute.
  - Select the **Item**, **Item Revision**, **Form**, or **BOMLine** class from the **Class** list.
  - Based on the class you select, Teamcenter automatically displays the type options in alphabetical order in the **Types** list.

    Select the required type from the **Types** list.
  - Based on the type you select, Teamcenter automatically displays the attribute options in alphabetical order in the **Attributes** list.

    Select the required attribute from the **Attributes** list.
- Define a conditional expression.
  - Select the required **XSLT** function in the **XSLT Function** tree.

    > Note:
    >
    > An **XSLT** function is required to create a conditional expression that has a primary return type, **Boolean**.
  - Drag the selected **XSLT** function in the pane next to the **XSLT Function** tree.
  - Provide values for the **XSLT** function in one of the following ways:
    - Type static values in the parameter box.
    - Drag the required attributes in the parameter box.
    - Select an **XSLT** function from the **XSLT Function** tree and drag it in the parameter box.

    If you leave the mandatory parameter boxes empty, Teamcenter displays the following message:

    ```
    One or More than one Required Fields empty
    ```
- Click the && button and/or || button to add the rule condition to the set of conditions.

You can also use the button to edit a rule condition, button to remove a rule condition, or button to clear all rule conditions.

9. Click **Next** or the **Enter Include Rule Context Information** step in the left pane.

   Teamcenter displays options to define information for the object to be included in the right pane.

10. Perform the following steps to define information for the object to be included:

    a. Select if the included item is inserted in the input or output structure from the **Include Item Focus** list.

    b. Select if the included item is a sibling or child of the structure line that meets the **Include Item Focus** list conditional criteria from the **Relation with conditional item** list.

    c. Search for the required item ID to be included in the **Item Id** box.

11. Click **Next** or the **View Rule Summary** step in the left pane.

    Teamcenter displays the summary of the **Include** rule that is to be created in the right pane.

    - The **Name** and **Description** boxes display the values that you provide in the **Select Rule Type** step.

      If you want to modify the values in the **Name** and **Description** boxes, click the **Select Rule Type** step in the left pane, and modify the values in the **Rule Name** and **Description** boxes accordingly.

    - The **Rule Preview** box lets you preview the **Include** rule that is to be created.

      If you want to modify the **Include** rule, click **Back** or the **Create Conditional Expression** step in the left pane and modify the rule accordingly.

12. Click **Finish** to create a **Include** rule.

    Teamcenter displays the new **Include** rule in the **Rule Details** pane.

Create reuse rules

Reuse rule is a mechanism to reuse item revisions that are already associated with an input item to be used in an output structure, if they meet specific criteria.

> Note:
>
> Reuse rules provide a mechanism to use an existing **CAE 3D Analysis** item in the output structure to represent a component from the input product structure rather than creating a new **CAE 3D Analysis** item to represent that component.
>
> Simulation Process and Data Management applies reuse rules at the subassembly level as well as the component level.

1. In My Teamcenter or CAE Manager, from the **Home** view, select a **CAE Structure Map** item revision, right-click and choose **Send To→CAE Manager**.

2. Select the required **CAE Structure Map** item revision in the **Structure Map Item Revisions** tree.

3. Click the **Add CAE Structure Map Rule** button.

4. In the **CAE New Structure Map Rule** dialog box, perform the following steps to select a rule type and define the rule information:

   a. From the **SM Rule Types** tree, select the **Reuse** rule type.

   b. In the **Rule Name** box, type a name for the **Reuse** rule.

   c. (Optional) In the **Description** box, type a description for the **Reuse** rule.

5. Click **Next** or the **Enter Reuse Rule Search Parameters Information** step in the left pane.

   Teamcenter displays options to search for reuse objects in the right pane.

6. Perform the following steps to define the **Reuse** rule search parameters:

   a. Select the required input class and type from the **Class** and **Types** list in the **Input Details Objects** group.

   b. Select the required relation for the reuse object from the **Reuse Relation** list.

   c. Select the required output class and type from the **Class** and **Types** list in the **Output Object Details** group.

7. Click **Next** or the **Create Conditional Expression** step in the left pane.

   Teamcenter displays options to create a conditional (or Boolean) criteria to identify the lines in the input structure in the right pane.

8. Perform the following steps to create a conditional expression:

   > Note:
   >
   > You can perform these steps in random order.

   - Select an attribute.

     - Select the **Item**, **Item Revision**, **Form**, or **BOMLine** class from the **Class** list.

     - Based on the class you select, Teamcenter automatically displays the type options in alphabetical order in the **Types** list.

       Select the required type from the **Types** list.

- Based on the type you select. Teamcenter automatically displays the attribute options in alphabetical order in the **Attributes** list.

  Select the required attribute from the **Attributes** list.

- Define a conditional expression.

  - Select the required **XSLT** function in the **XSLT Function** tree.

    > Note:
    >
    > An **XSLT** function is required to create a conditional expression that has a primary return type, **Boolean**.

  - Drag the selected **XSLT** function in the pane next to the **XSLT Function** tree.

  - Provide values for the **XSLT** function in one of the following ways:

    - Type static values in the parameter box.
    - Drag the required attributes in the parameter box.
    - Select an **XSLT** function from the **XSLT Function** tree and drag it in the parameter box.

    If you leave the mandatory parameter boxes empty, Teamcenter displays the following message:

    ```
    One or More than one Required Fields empty
    ```

- Click the + button and/or || button to add the rule condition to the set of conditions.

You can also use the button to edit a rule condition, — button to remove a rule condition, or button to clear all rule conditions.

9. Click **Next** or the **View Rule Summary** step in the left pane.

   Teamcenter displays the summary of the **Reuse** rule that is to be created in the right pane.

   - The **Name** and **Description** boxes display the values that you provide in the **Select Rule Type** step.

     If you want to modify the values in the **Name** and **Description** boxes, click the **Select Rule Type** step in the left pane, and modify the values in the **Rule Name** and **Description** boxes accordingly.

   - The **Rule Preview** box lets you preview the **Reuse** rule that is to be created.

If you want to modify the **Reuse** rule, click **Back** or the **Create Conditional Expression** step in the left pane and modify the rule accordingly.

10. Click **Finish** to create a **Reuse** rule.

    Teamcenter displays the new **Reuse** rule in the **Rule Details** pane.

Create recycle rules

Recycle rule is a mechanism to recycle a newly created item revision in the current data mapping execution rather than create a new item revision during the data mapping process. This existing item revision, associated with an item revision in the input structure and used in the generated output structure, is recycled if the item revision meets the relationship and input/output type criteria.

> Note:
>
> **Recycle** rules hold precedence over **Reuse** rules.

1. In My Teamcenter or CAE Manager, from the **Home** view, select a **CAE Structure Map** item revision, right-click and choose **Send To→CAE Manager**.

2. From the **Structure Map Item Revisions** tree, select the required **CAE Structure Map** item revision.

3. Click the **Add CAE Structure Map Rule** button.

4. In the **CAE New Structure Map Rule** dialog box, perform the following steps to select a rule type and define the rule information:

   a. From the **SM Rule Types** tree, select the **Recycle** rule type.

   b. In the **Rule Name** box, type a name for the **Recycle** rule.

   c. (Optional) In the **Description** box, type a description for the **Recycle** rule.

5. Click **Next** or the **Create Conditional Expression** step in the left pane.

   Teamcenter displays the options to create a conditional (or Boolean) criteria to identify the lines in the input structure in the right pane.

6. Perform the following steps to create a conditional expression:

   > Note:
   >
   > It is not essential to perform these steps in the order listed.

- Select an attribute.
  - Select the **Item**, **Item Revision**, **Form**, or **BOMLine** class from the **Class** list.
  - Based on the class you select, Teamcenter automatically displays the type options in alphabetical order in the **Types** list.

    Select the required type from the **Types** list.
  - Based on the type you select, Teamcenter automatically displays the attribute options in alphabetical order in the **Attributes** list.

    Select the required attribute from the **Attributes** list.
- Define a conditional expression.
  - Select the required **XSLT** function in the **XSLT Function** tree.

    > Note:
    >
    > An **XSLT** function is required to create a conditional expression that has a primary return type, **Boolean**.
  - Drag the selected **XSLT** function in the pane next to the **XSLT Function** tree.
  - Provide values for the **XSLT** function in one of the following ways:
    - Type static values in the parameter box.
    - Drag the required attributes in the parameter box.
    - Select an **XSLT** function from the **XSLT Function** tree and drag it in the parameter box.

    If you leave the mandatory parameter boxes empty, Teamcenter displays the following message:

    ```
    One or More than one Required Fields empty
    ```
- Click the && button and/or || button to add the rule condition to the set of conditions.

You can also use the button to edit a rule condition, button to remove a rule condition, or button to clear all rule conditions.

7. Click **Next** or the **View Rule Summary** step in the left pane.

   Teamcenter displays the summary of the **Filter** rule that is to be created.

- The **Name** and **Description** boxes display the values that you provide in the **Select Rule Type** step.

  If you want to modify the values in the **Name** and **Description** boxes, click the **Select Rule Type** step in the left pane, and modify the values in the **Rule Name** and **Description** boxes accordingly.

- The **Rule Preview** box lets you preview the **Recycle** rule that is to be created.

  If you want to modify the **Recycle** rule, click the **Back** button or the **Create Conditional Expression** step in the left pane and modify the rule accordingly.

8. Click **Finish** to create a **Recycle** rule.

   Teamcenter displays the new **Recycle** rule in the **Rule Details** pane.

Create skip rules

Skip rule is a mechanism to skip any level in a subassembly.

> Note:
>
> Skip rules skip one level of the product structure while continuing to process any children of the identified level of the product structure.

1. In My Teamcenter or CAE Manager, from the **Home** view, select a **CAE Structure Map** item revision, right-click and choose **Send To→CAE Manager**.

2. From the **Structure Map Item Revisions** tree, select the required **CAE Structure Map** item revision.

3. Click the **Add CAE Structure Map Rule** button.

4. In the **CAE New Structure Map Rule** dialog box, perform the following steps to select a rule type and define the rule information:

   a. From the **SM Rule Types** tree, select the **Skip** rule type.

   b. In the **Rule Name** box, type a name for the **Skip** rule.

   c. (Optional) In the **Description** box, type a description for the **Skip** rule.

5. Click **Next** or the **Create Conditional Expression** step in the left pane.

   Teamcenter displays the options to create a conditional (or Boolean) criteria to identify the lines in the input structure in the right pane.

6. Perform the following steps to create a conditional expression:

> Note:
>
> It is not essential to perform these steps in the order listed.

- Select an attribute.
  - Select the **Item**, **Item Revision**, **Form**, or **BOMLine** class from the **Class** list.
  - Based on the class you select, Teamcenter automatically displays the type options in alphabetical order in the **Types** list.

    Select the required type from the **Types** list.
  - Based on the type you select, Teamcenter automatically displays the attribute options in alphabetical order in the **Attributes** list.

    Select the required attribute from the **Attributes** list.
- Define a conditional expression.
  - Select the required **XSLT** function in the **XSLT Function** tree.

    > Note:
    >
    > An **XSLT** function is required to create a conditional expression that has a primary return type, **Boolean**.
  - Drag the selected **XSLT** function in the pane next to the **XSLT Function** tree.
  - Provide values for the **XSLT** function in one of the following ways:
    - Type static values in the parameter box.
    - Drag the required attributes in the parameter box.
    - Select an **XSLT** function from the **XSLT Function** tree and drag it in the parameter box.

    If you leave the mandatory parameter boxes empty, Teamcenter displays the following message:

    ```
    One or More than one Required Fields empty
    ```
- Click the && button and/or || button to add the rule condition to the set of conditions.

You can also use the button to edit a rule condition, button to remove a rule condition, or button to clear all rule conditions.

7. Click **Next** or the **View Rule Summary** step in the left pane.

   Teamcenter displays the summary of the **Filter** rule that is to be created.

   - The **Name** and **Description** boxes display the values that you provide in the **Select Rule Type** step.

     If you want to modify the values in the **Name** and **Description** boxes, click the **Select Rule Type** step in the left pane, and modify the values in the **Rule Name** and **Description** boxes accordingly.

   - The **Rule Preview** box lets you preview the **Skip** rule that is to be created.

     If you want to modify the **Skip** rule, click the **Back** button or the **Create Conditional Expression** step in the left pane and modify the rule accordingly.

8. Click **Finish** to create a **Skip** rule.

   Teamcenter displays the new **Skip** rule in the **Rule Details** pane.

Create collector rules

The create collector rule is a mechanism to create a predefined collector for the components (single parts or subassemblies) you want to move.

> Note:
>
> The create collector rule provides a mechanism to create a new **CAE 3D Analysis** item that is inserted as a child of the root of the resulting output structure and has no relationship to any component in the input product structure.

1. In My Teamcenter or CAE Manager, from the **Home** view, select a **CAE Structure Map** item revision, right-click and choose **Send To→CAE Manager**.

2. Select the required **CAE Structure Map** item revision in the **Structure Map Item Revisions** tree.

3. Click the **Add CAE Structure Map Rule** button.

4. In the **CAE New Structure Map Rule** dialog box, perform the following steps to select a rule type and define the rule information:

   a. From the **SM Rule Types** tree, select the **Create Collector** rule type.

b. In the **Rule Name** box, type a name for the **Create Collector** rule.

c. (Optional) In the **Description** box, type a description for the **Create Collector** rule.

5. Click **Next** or the **Enter Collector Details** step in the left pane.

   Teamcenter displays options to define basic information for the new collector item.

6. Perform the following steps to define basic information for the new collector item:

   a. From the **Collector Types** tree, select an appropriate option.

   b. In the **Collector Name** box, type a name for the **Create Collector** rule.

   c. (Optional) In the **Description** box, type a description for the **Create Collector** rule.

7. Click **Next** or the **Define Additional Item Information** step in the left pane.

   Teamcenter displays options to define additional item information.

   (Optional) Enter **Project ID**, **Previous Version ID**, and data in other boxes as appropriate.

8. Click **Next** or the **Define Additional Item Revision Information** step in the left pane.

   Teamcenter displays options to define additional item revision information.

   (Optional) Select **Solver Name**, **Analyses Types**, and enter data in other boxes as appropriate.

9. Click **Next** or the **View Rule Summary** step in the left pane.

   Teamcenter displays the summary of the **Create Collector** rule that is to be created in the right pane.

   - The **Name** and **Description** boxes display the values that you provide in the **Select Rule Type** step.

     If you want to modify the values in the **Name** and **Description** boxes, click the **Select Rule Type** step in the left pane, and modify the values in the **Rule Name** and **Description** boxes accordingly.

   - The **Rule Preview** box lets you preview the **Create Collector** rule that is to be created.

     If you want to modify the **Create Collector** rule, click the **Back** button or the steps in the left pane and modify the rule accordingly.

10. Click **Finish** to create a **Create Collector** rule.

Teamcenter displays the new **Create Collector** rule in the **Rule Details** pane.

Create move to collector rules

The move to collector rule is a mechanism to move components (single parts or subassemblies) to a predefined collector node in the output structure based on user-specified criteria (item ID, item name, attributes, and so on). It provides a mechanism to insert a **CAE 3D Analysis** item representing a component in the input product structure into the resulting output structure as a child of a collector **CAE 3D Analysis** item defined by a create collector rule.

1. In My Teamcenter or CAE Manager, from the **Home** view, select a **CAE Structure Map** item revision, right-click and choose **Send To→CAE Manager**.

2. Select the required **CAE Structure Map** item revision in the **Structure Map Item Revisions** tree.

3. Click the **Add CAE Structure Map Rule** button.

4. In the **CAE New Structure Map Rule** dialog box, perform the following steps to select a rule type and define the rule information:

   a. From the **SM Rule Types** tree, select the **Move To Collector** rule type.

   b. In the **Rule Name** box, type a name for the **Move To Collector** rule.

   c. (Optional) In the **Description** box, type a description for the **Move To Collector** rule.

5. Click **Next** or the **Enter Collector Details** step in the left pane.

   Teamcenter displays options to select the collector to which the component will be moved.

6. From the **Available Collectors** menu, select the appropriate collector.

7. Perform the following steps to create a conditional expression:

   > Note:
   >
   > It is not necessary to perform these steps in the order listed.

   - From the **Criteria Focus** menu, select one of the following options:

     - **IN** to use item, item revision, form, or BOMLine attributes in the *input* structure, if they meet specific criteria.

     - **OUT** to use item, item revision, form, or BOMLine attributes in the *output* structure, if they meet specific criteria.

- Select an attribute.
  - Select the **Item**, **Item Revision**, **Form**, or **BOMLine** class from the **Class** list.
  - Based on the class you select, Teamcenter automatically displays the type options in alphabetical order in the **Types** list.

    Select the required type from the **Types** list.
  - Based on the type you select, Teamcenter automatically displays the attribute options in alphabetical order in the **Attributes** list.

    Select the required attribute from the **Attributes** list.
- Define a conditional expression.
  - Select the required **XSLT** function in the **XSLT Function** tree.

    > Note:
    >
    > An **XSLT** function is required to create a conditional expression that has a primary return type, **Boolean**.
  - Drag the selected **XSLT** function in the pane next to the **XSLT Function** tree.
  - Provide values for the **XSLT** function in one of the following ways:
    - Type static values in the parameter box.
    - Drag the required attributes in the parameter box.
    - Select an **XSLT** function from the **XSLT Function** tree and drag it in the parameter box.

    If you leave the mandatory parameter boxes empty, Teamcenter displays the following message:

    ```
    One or More than one Required Fields empty
    ```
- Click the && button and/or || button to add the rule condition to the set of conditions.

You can also use the button to edit a rule condition, button to remove a rule condition, or button to clear all rule conditions.

8. Click **Next** or the **View Rule Summary** step in the left pane.

Teamcenter displays the summary of the **Move To Collector** rule that is to be created in the right pane.

- The **Name** and **Description** boxes display the values that you provide in the **Select Rule Type** step.

  If you want to modify the values in the **Name** and **Description** boxes, click the **Select Rule Type** step in the left pane, and modify the values in the **Rule Name** and **Description** boxes accordingly.

- The **Rule Preview** box lets you preview the **Move To Collector** rule that is to be created.

  If you want to modify the **Move To Collector** rule, click the **Back** button or the steps in the left pane and modify the rule accordingly.

9. Click **Finish** to create a **Move To Collector** rule.

   Teamcenter displays the new **Move To Collector** rule in the **Rule Details** pane.

Create remove empty subassembly rules

Remove empty subassembly rule is a mechanism to remove empty subassemblies from the output structure after other rules are executed. It cleans up the resulting output structure by removing indicated subassemblies that have no components due to other changes that have been made to the structure through various structure map rules.

> Note:
>
> If you define a rule in the structure map to remove *all* empty subassemblies, Teamcenter ignores any remaining remove empty subassembly rules.

1. In My Teamcenter or CAE Manager, from the **Home** view, select a **CAE Structure Map** item revision, right-click and choose **Send To→CAE Manager**.

2. Select the required **CAE Structure Map** item revision in the **Structure Map Item Revisions** tree.

3. Click the **Add CAE Structure Map Rule** button.

4. In the **CAE New Structure Map Rule** dialog box, perform the following steps to select a rule type and define the rule information:

   a. From the **SM Rule Types** tree, select the **Remove Empty Sub-Assembly** rule type.

   b. In the **Rule Name** box, type a name for the **Remove Empty Sub-Assembly** rule.

c. (Optional) In the **Description** box, type a description for the **Remove Empty Sub-Assembly** rule.

5. Click **Next** or the **Remove Empty Sub-Assembly Scope Details** step in the left pane.

   Teamcenter displays options to define the empty subassembly to be removed.

6. (Optional) Select the **Apply rule to ALL empty sub-assemblies in the output structure** check box.

7. Perform the following steps to create a conditional expression:

   > Note:
   >
   > You can create a conditional expression only if you deselect the **Apply rule to ALL empty sub-assemblies in the output structure** check box.
   >
   > It is not necessary to perform these steps in the order listed.

   - From the **Criteria Focus** menu, select:

     > Note:
     >
     > This menu is available only if you deselect the **Apply rule to ALL empty sub-assemblies in the output structure** check box.

     - **IN** to use item, item revision, form, or BOMLine attributes in the *input* structure, if they meet specific criteria.
     - **OUT** to use item, item revision, form, or BOMLine attributes in the *output* structure, if they meet specific criteria.

   - Select an attribute.
     - Select the **Item**, **Item Revision**, **Form**, or **BOMLine** class from the **Class** list.
     - Based on the class you select, Teamcenter automatically displays the type options in alphabetical order in the **Types** list.

       Select the required type from the **Types** list.

     - Based on the type you select, Teamcenter automatically displays the attribute options in alphabetical order in the **Attributes** list.

       Select the required attribute from the **Attributes** list.

   - Define a conditional expression.

- Select the required **XSLT** function in the **XSLT Function** tree.

  > Note:
  >
  > An **XSLT** function is required to create a conditional expression that has a primary return type, **Boolean**.

- Drag the selected **XSLT** function in the pane next to the **XSLT Function** tree.
- Provide values for the **XSLT** function in one of the following ways:
  - Type static values in the parameter box.
  - Drag the required attributes in the parameter box.
  - Select an **XSLT** function from the **XSLT Function** tree and drag it in the parameter box.

  If you leave the mandatory parameter boxes empty, Teamcenter displays the following message:

  ```
  One or More than one Required Fields empty
  ```

- Click the && button and/or || button to add the rule condition to the set of conditions.

You can also use the button to edit a rule condition, button to remove a rule condition, or button to clear all rule conditions.

8. Click **Next** or the **View Rule Summary** step in the left pane.

   Teamcenter displays the summary of the **Remove Empty Sub-Assembly** rule that is to be created in the right pane.

   - The **Name** and **Description** boxes display the values that you provide in the **Select Rule Type** step.

     If you want to modify the values in the **Name** and **Description** boxes, click the **Select Rule Type** step in the left pane, and modify the values in the **Rule Name** and **Description** boxes accordingly.

   - The **Rule Preview** box lets you preview the **Remove Empty Sub-Assembly** rule that is to be created.

     If you want to modify the **Remove Empty Sub-Assembly** rule, click the **Back** button or the steps in the left pane and modify the rule accordingly.

9. Click **Finish** to create a **Remove Empty Sub-Assembly** rule.

Teamcenter displays the new **Remove Empty Sub-Assembly** rule in the **Rule Details** pane.

Create collapse single component subassembly rules

Collapse single component subassembly rule is a mechanism to collapse single component subassemblies in the output structure after other rules are executed. When you collapse a single component subassembly in the output structure, Teamcenter removes the root of the single component subassembly and promotes the child single component one level higher in the structure hierarchy.

> Note:
>
> If you define a rule in the structure map to collapse *all* single component subassemblies, Teamcenter ignores any remaining collapse single component subassembly rules.

1. In My Teamcenter or CAE Manager, from the **Home** view, select a **CAE Structure Map** item revision, right-click and choose **Send To→CAE Manager**.

2. Select the required **CAE Structure Map** item revision in the **Structure Map Item Revisions** tree.

3. Click the **Add CAE Structure Map Rule** button.

4. In the **CAE New Structure Map Rule** dialog box, perform the following steps to select a rule type and define the rule information:

   a. From the **SM Rule Types** tree, select the **Collapse Single Component Sub-Assembly** rule type.

   b. In the **Rule Name** box, type a name for the **Collapse Single Component Sub-Assembly** rule.

   c. (Optional) In the **Description** box, type a description for the **Collapse Single Component Sub-Assembly** rule.

5. Click **Next** or the **Collapse Single Component Sub-Assembly Scope Details** step in the left pane.

   Teamcenter displays options to define the empty subassembly to be removed.

6. Perform the following steps to define the empty subassembly to be removed:

   a. (Optional) Select the **Apply rule to ALL single component sub-assemblies in the output structure** check box.

   b. From the **Criteria Focus** menu, select:

> Note:
>
> This menu is available only if you deselect the **Apply rule to ALL single component sub-assemblies in the output structure** check box.

- **IN** to use item, item revision, form, or BOMLine attributes associated with an input item in the *input* structure, if they meet specific criteria.
- **OUT** to use item, item revision, form, or BOMLine attributes associated with an input item in the *output* structure, if they meet specific criteria.

7. Perform the following steps to create a conditional expression:

> Note:
>
> You can create a conditional expression only if you deselect the **Apply rule to ALL single component sub-assemblies in the output structure** check box.
>
> It is not necessary to perform these steps in the order listed.

- Select an attribute.
  - Select the **Item**, **Item Revision**, **Form**, or **BOMLine** class from the **Class** list.
  - Based on the class you select, Teamcenter automatically displays the type options in alphabetical order in the **Types** list.

    Select the required type from the **Types** list.
  - Based on the type you select, Teamcenter automatically displays the attribute options in alphabetical order in the **Attributes** list.

    Select the required attribute from the **Attributes** list.
- Define a conditional expression.
  - Select the required **XSLT** function in the **XSLT Function** tree.

    > Note:
    >
    > An **XSLT** function is required to create a conditional expression that has a primary return type, **Boolean**.
  - Drag the selected **XSLT** function in the pane next to the **XSLT Function** tree.
  - Provide values for the **XSLT** function in one of the following ways:

- Type static values in the parameter box.
- Drag the required attributes in the parameter box.
- Select an **XSLT** function from the **XSLT Function** tree and drag it in the parameter box.

If you leave the mandatory parameter boxes empty, Teamcenter displays the following message:

```
One or More than one Required Fields empty
```

- Click the && button and/or || button to add the rule condition to the set of conditions.

You can also use the button to edit a rule condition, button to remove a rule condition, or button to clear all rule conditions.

8. Click **Next** or the **View Rule Summary** step in the left pane.

   Teamcenter displays the summary of the **Collapse Single Component Sub-Assembly** rule that is to be created in the right pane.

   - The **Name** and **Description** boxes display the values that you provide in the **Select Rule Type** step.

     If you want to modify the values in the **Name** and **Description** boxes, click the **Select Rule Type** step in the left pane, and modify the values in the **Rule Name** and **Description** boxes accordingly.

   - The **Rule Preview** box lets you preview the **Collapse Single Component Sub-Assembly** rule that is to be created.

     If you want to modify the **Collapse Single Component Sub-Assembly** rule, click the **Back** button or the steps in the left pane and modify the rule accordingly.

9. Click **Finish** to create a **Collapse Single Component Sub-Assembly** rule.

   Teamcenter displays the new **Collapse Single Component Sub-Assembly** rule in the **Rule Details** pane.

Create inclusion and exclusion lists to filter out standard parts

Why create inclusion and exclusion lists?

While performing analysis on large product structures—for example, automotive vehicle level computational fluid dynamics (CFD) analysis—analysts have to load these structures with graphics and make interactive selections with the embedded visualization. As this is time consuming, analysts rely on

Lifecycle Visualization to efficiently load and make selections on the components and subassemblies that they want to include in the analysis.

Analysts can leverage the selections made in Lifecycle Visualization and use them in structure map rules to quickly generate model structures. To do this, they must make some customizations. First, they must create structure map rules based on the Lifecycle Visualization selections. Next, they must execute these rules to create the model structure.

At your site, you may have a standard list of parts that are typically included or excluded while performing simulations on various product structures from one or more vehicle programs. You can create such inclusion or exclusion lists and apply them while running structure map rules. By doing so, you eliminate the need for customizations. After creating them, you can associate them to structure map rules. While creating model structures by using structure map rules, the system automatically includes or excludes these standard parts.

Create an exclusion list

1. Create an exclusion list.

    a. Create a plain text file with each line item in the following format:

    "Class Name::Type Name::Attribute Name::Attribute Value"

    To filter out a part with the name, *Sunroof*, add the following lines:

    ItemRevision::ItemRevision::object_name::Sunroof

    Similarly, to use other attributes, add the following lines:

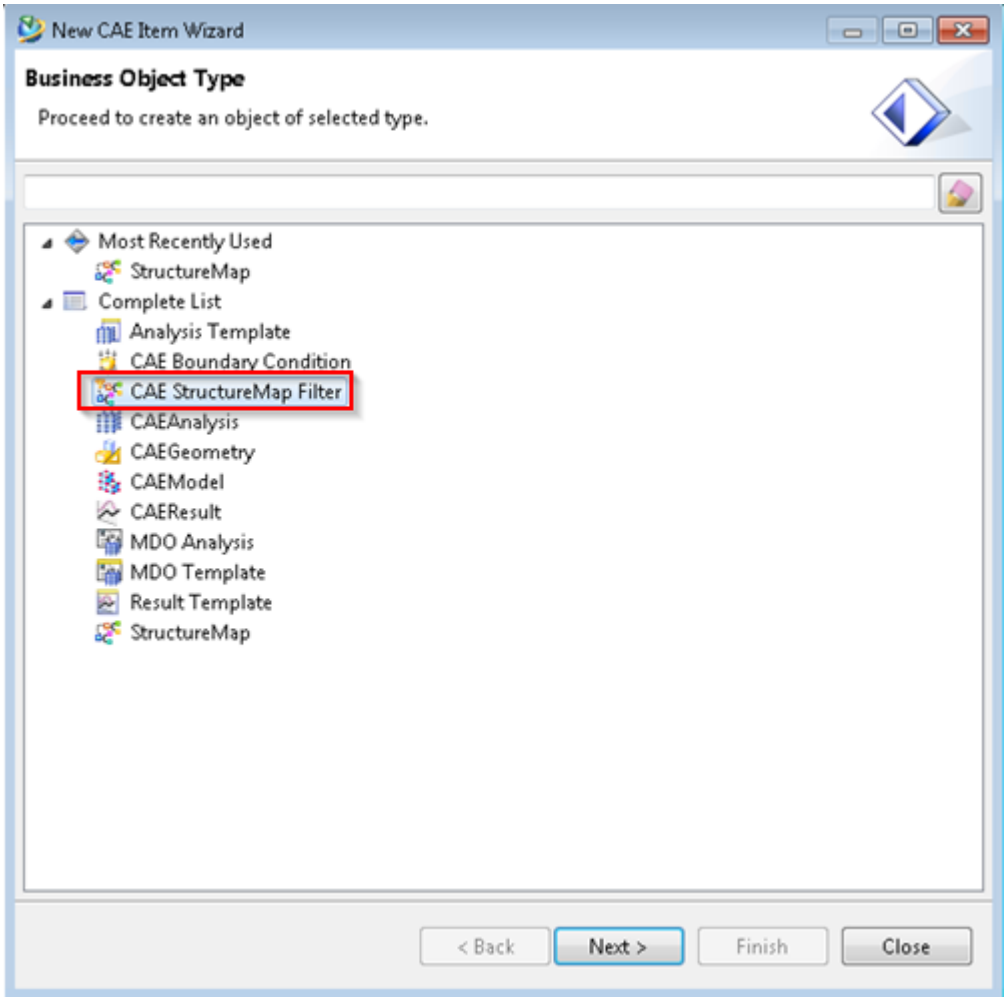
    - *ItemRevision::ItemRevision::object_name::Moonroof*
    - *ItemRevision::ItemRevision::item_id::94372773*
    - *ItemRevision::ItemRevision::custom_attr1::Yes*

    You can use wildcards. The following is the syntax for *ends with*, *begins with*, and *contains*, respectively:

    - *ItemRevision::ItemRevision::object_name::*Sunroof* (an asterisk before *Sunroof*)
    - *ItemRevision::ItemRevision::object_name::Sunroof** (an asterisk after *Sunroof*)
    - *ItemRevision::ItemRevision::object_name::*Sunroof** (an asterisk before and after *Sunroof*)

    > Note:
    >
    > **::** is used as a separator. You *cannot* use a separator in the attribute name or attribute value. Examples: *object::name* or *Sunroof::Moonroof*.

b. In CAE Manager, in the **Home** folder, click **File→New→CAE Item** and then select **CAE Structure Map Filter**.



c. Click **Assign** to automatically assign an ID and revision number.

d. Specify a name and click **Next**.

e. Click **Add** to add a dataset type and then click **Add** to add a reference type. Click **Browse** to add the text file containing the exclusion list.

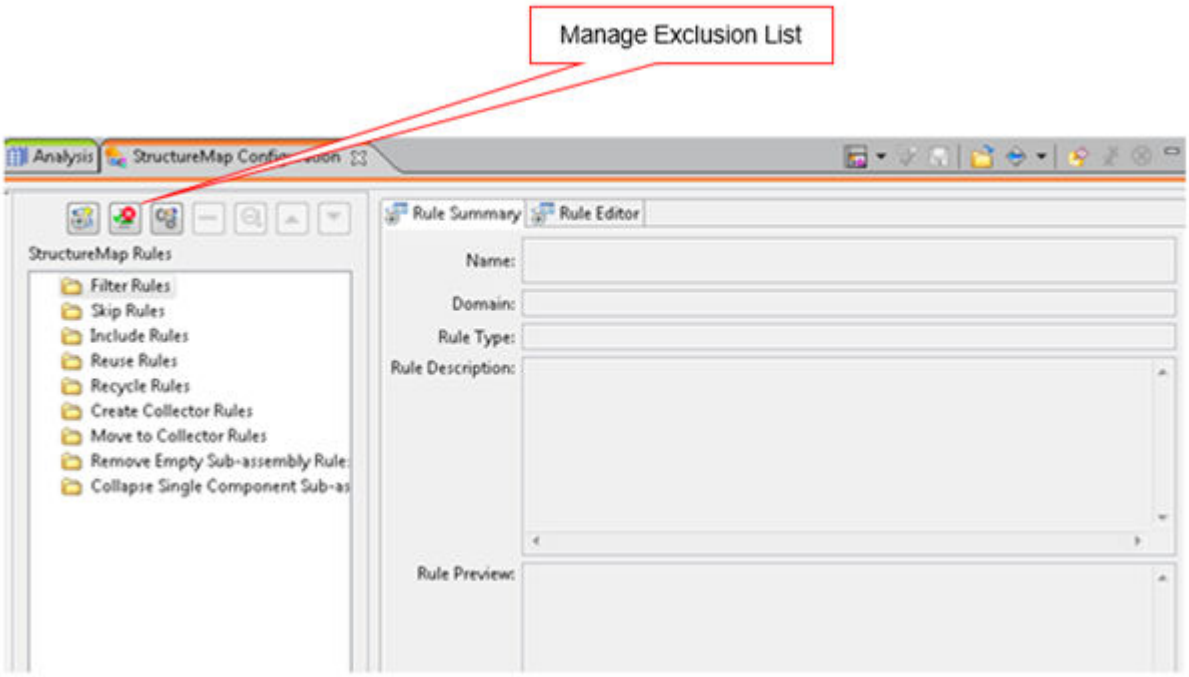
f. To create the structure map filter, click **Finish**.

2. Associate the exclusion list to a structure map item revision.

a. From the **Home** folder, select a **CAE Structure Map** item revision, right-click, and choose **Send To→CAE Manager**.

b. From the **Structure Map Item Revisions** tree, select the **CAE Structure Map** item revision.

c. To create an exclusion list, click **Manage Exclusion List**.



d. Select **CAE Structure Map Filter Item**, select **Latest Released Revision** or **Latest Working Revision**, and then click **Search**.

Alternatively, to select a *specific* revision, choose **CAE Structure Map Filter Item Revision** and click **Search**.

e. Select the structure map filter you created earlier and click **OK**.

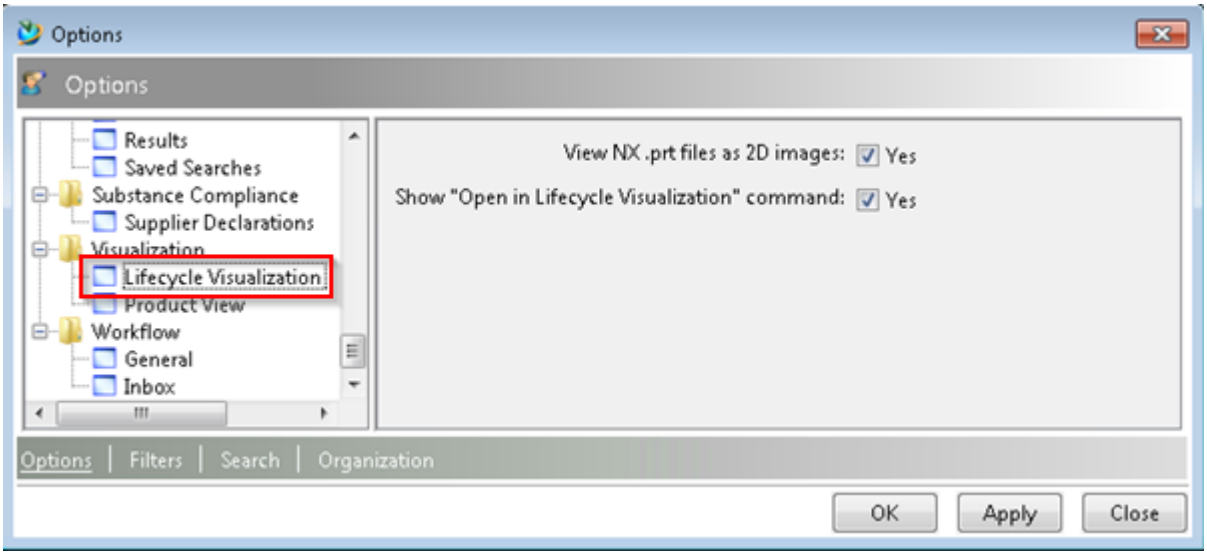
You can add multiple structure map filters to manage different exclusion lists.

Create an inclusion list

1. Search for the product item revision in My Teamcenter.
2. Right-click the product item revision and choose **Send To→CAE Manager**.
3. Specify visualization options.

   a. Click **Edit→Options** and select **Visualization**.

   b. Select **Yes** for both **View NX .prt files as 2D images** and **Show "Open in Lifecycle Visualization" command**.



4. Create the inclusion list.

   a. Select the product structure and click **Start/Open in Lifecycle Visualization**.

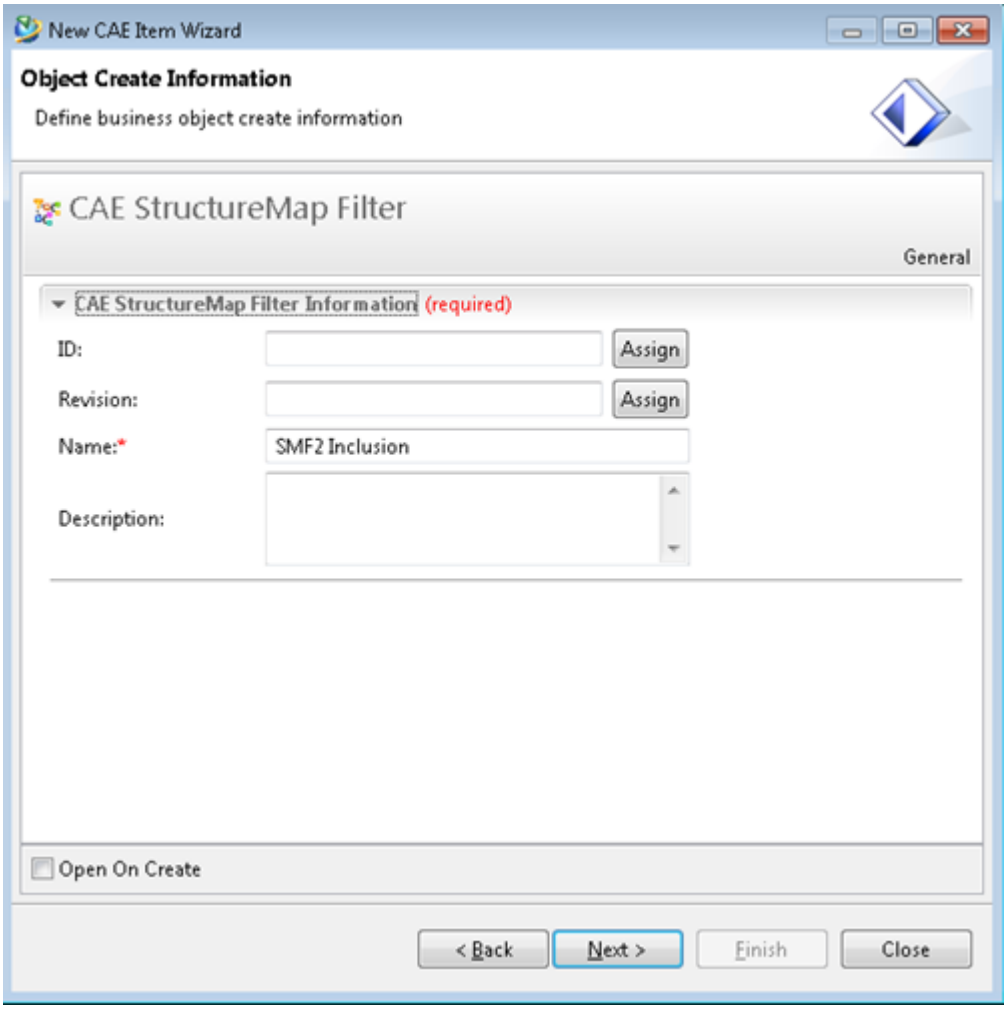
   b. Expand the product structure and select the specific BOM lines you want to include. If you select a child item, the system automatically select its immediate parent assembly and the root structure.

   c. Select **File→Export**.

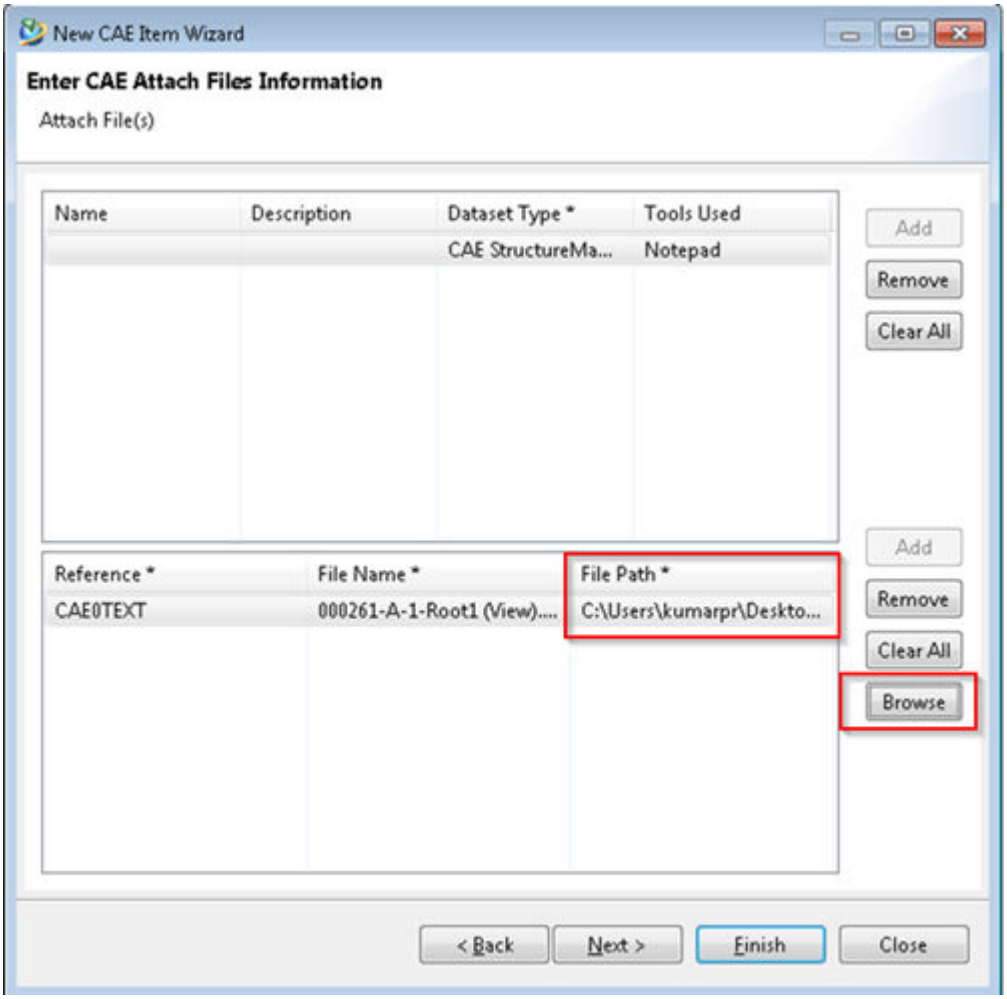
   d. In the **Export** dialog box, click **Browse** to set the location where you want to save the file, select **Product Structure (*.plmxml)** as the file format, and click **OK** to complete the export.

   e. In the **Home** folder of CAE Manager, select a folder and click **File→New→CAE Item** and then select **CAE Structure Map Filter**.

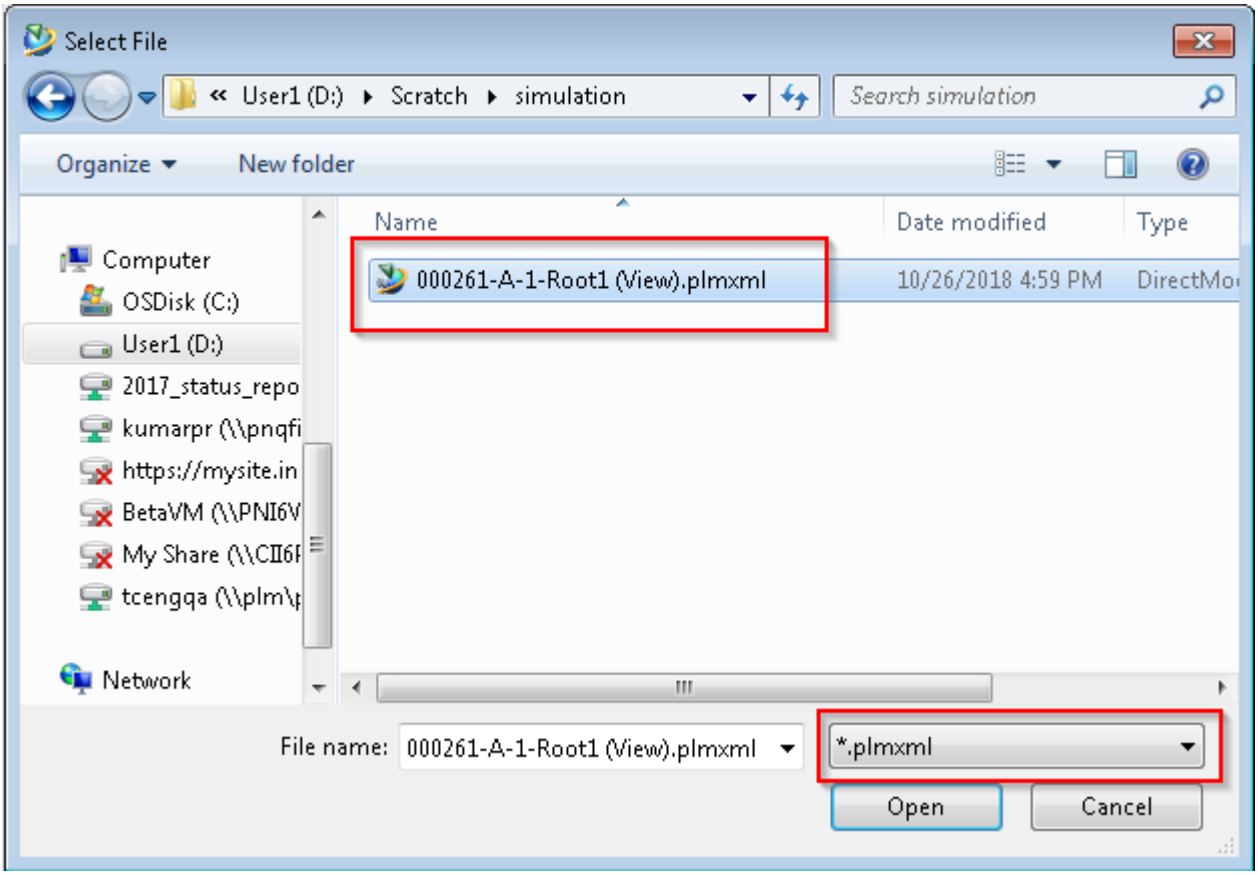
   f. In **Object Create Information**, specify a name and click **Next**.



g. In the **Enter CAE Attach Files Information**, click **Browse** and specify the location where you saved the exported file in **step d**.



You must choose ***.plmxml** while searching for the exported file.



5. Click **Finish** to create the structure map filter.

Apply the exclusion or inclusion list

1. In My Teamcenter, search for the product item revision.

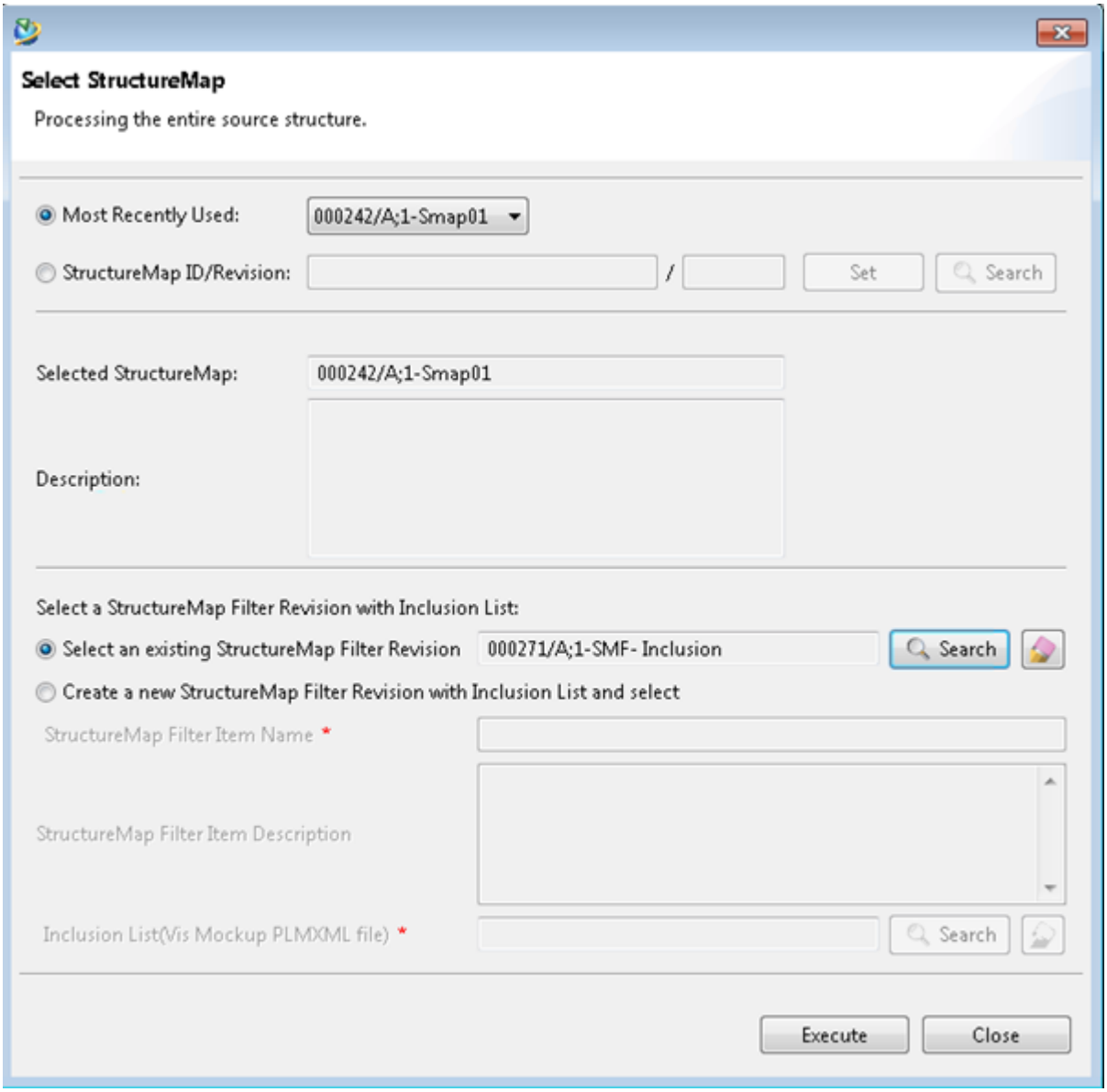
2. Right-click the product item revision and choose **Send To→CAE Manager**.

3. Click **Generate CAE Structure from CAE Structure Map** in the view toolbar.

4. Select a structure map item revision from the **Most Recently Used** list or select **CAE Structure Map ID/Revision** and search for a structure map item revision.

5. Select **Select an existing CAE Structure Map Filter Revision** and click **Search** to search for the structure map filter containing the inclusion or exclusion list.

   Alternatively, select **Create a new CAE Structure Map Filter Revision with Inclusion List and select** and click **Search** to search for the structure map filter containing the inclusion or exclusion list.



6. To create a model structure with the exclusion or inclusion list, click **Execute**.

Associate predefined simulation tools to structure map rules

After creating structure map rules, you can associate predefined simulation tools to the rules you have created by using the **Select Simulation Tool** dialog box.

When the simulation analyst runs these structure map rules, the system creates a model structure and launches the predefined simulation tools. The simulation analyst can then view the progress of the tools in the **Simulation Tool Progress Monitor** dialog box.

1. Choose **File→New→CAE Item** in My Teamcenter or the **Home** view of CAE Manager.

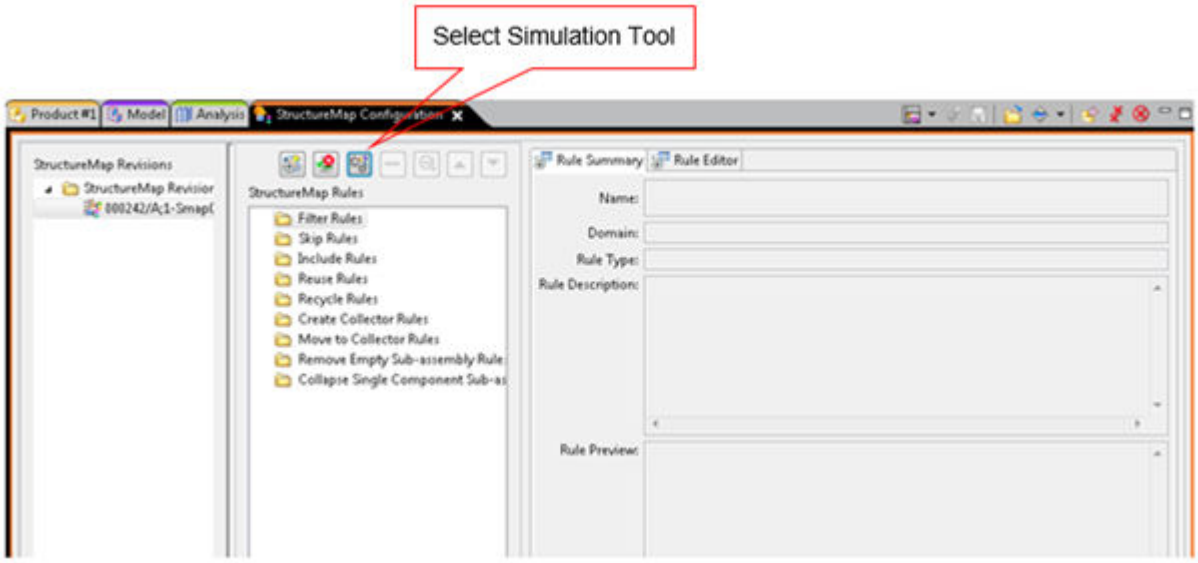
2. In the **New CAE Item** dialog box, select **CAE Structure Map** and click **Next**.

3. Specify a name and click **Finish**.

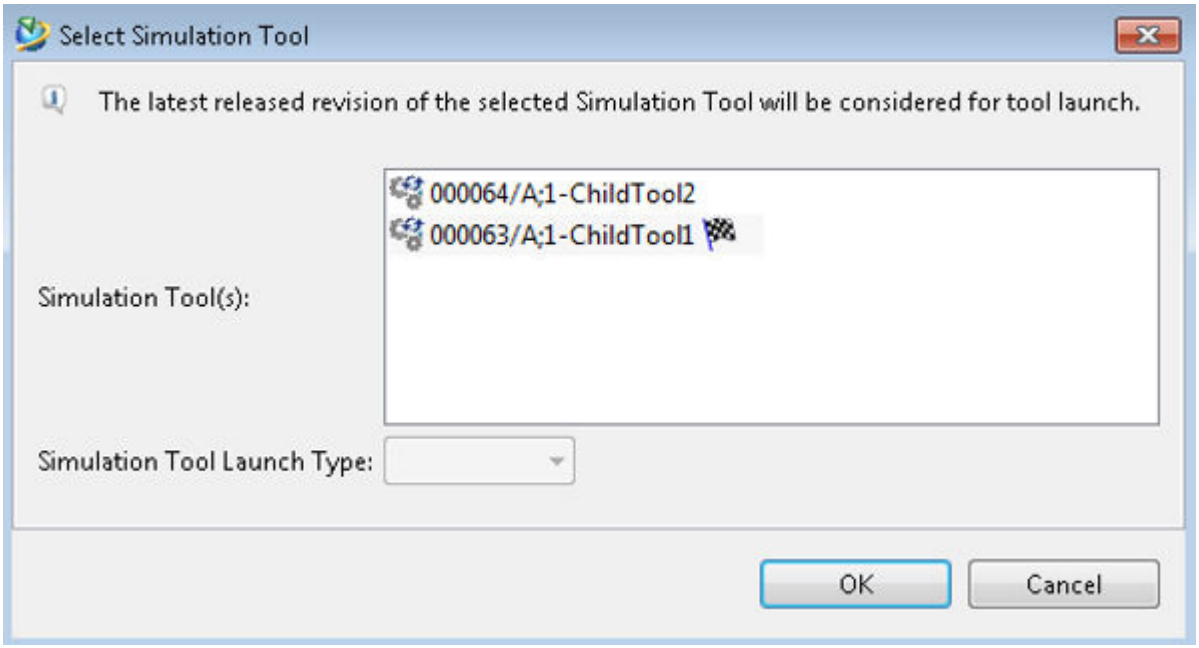
4. Select the structure map item revision you created, right-click, and choose **Send To→CAE Manager**.

5. In the **CAE Structure Map Configuration** view, select the structure map item revision and **create structure map rules** and an **exclusion list** as appropriate.

6. To configure a simulation tool after you create structure map rules, click **Select Simulation Tool**.



7. In the **Select Simulation Tool** dialog box, select simulation tools and the simulation tool launch type.



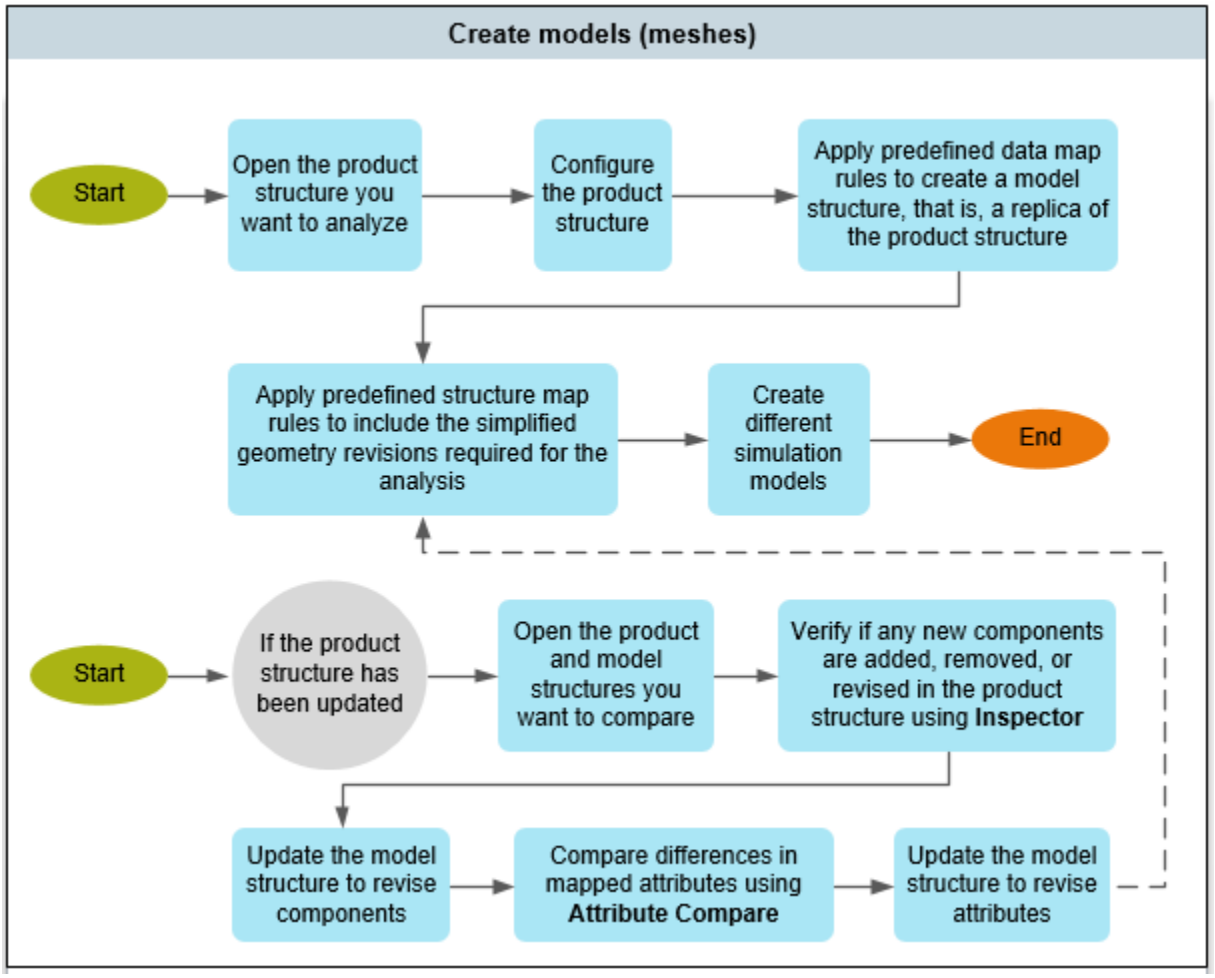
Note:

This dialog box displays only the simulation tool items for which the latest released revision is configured. Additionally, the system does not enforce the access control rules from the **Simulation Tool Configuration** view while displaying the simulation tool items.

4. Create and manage model structures

Generate CAE model structures

Create models



1. **Open the product structure you want to analyze**

   An engineering manager reviews design requirements and assigns design changes for validation to a simulation analyst using a workflow. The workflow contains the design requirements, configuration information, subassembly, and components required for analysis.

2. **Configure the product structure**

   If you work in a product environment with a lot of variability, such as the automobile industry, you can apply revision rules, effectivity, or variant rules to make the product structure relevant to your analysis.

3. **Apply predefined data map rules**

   The simulation administrator defines the data map rules.

   Based on these rules, the system creates model revisions for each generic item revision in the product structure, names the resulting model revisions with the default CAE prefix, and defines default relationships between product revisions, geometry revisions, and model revisions.

4. **Apply predefined structure map rules**

   The lead analyst or the designated analyst creates structure map rules.

   In an organization, different groups of analysts perform different types of analyses. There are specialists for NVH analysis, thermal analysis, and durability analysis. The lead analyst creates many types of structure map rules. You can use this option to create a model structure for a specific type of analysis.

   Typically, the model structure is similar to the, but not the same as the product structure. Structure map rules allow you to remove BOM lines from the product structure based on filter criteria, reuse existing model revisions for a part that has been previously analyzed, and create new model revisions for the new parts you want to analyze. In addition, these rules help define default relationships between product revisions, geometry revisions, and model revisions.

5. **Create different simulation models**

   You can apply predefined structure map rules to the product structure to create different types of models for different types analysis. You can create different models to perform NVH analysis, thermal analysis, durability analysis, and so on.

6. *Compare and update the model structure when the product structure changes*

   Let us assume a scenario where you (as a simulation analyst) receive a product structure for analysis. You apply structure map rules to the product structure and create the CAE structure. You also generate meshes with connections, define load cases, generate the deck, and perform a solve.

   Later, you are notified that there are some minor changes to the product structure. Instead of recreating the complete CAE structure, you decide to compare the existing CAE structure with the changed product structure, understand the changes, and make updates to the existing CAE structure. You use the **Inspector view in CAE Manager to find if any new components are added, removed, or revised, and update the CAE structure**.

   Then, you can use the **CAE Attribute Compare feature to compare differences in the mapped attributes** (for example, material ID or transformation), review the report and optionally save it, and finally propagate the changes on the CAE structure.

What are model structures?

Use the **Model** view to interactively define and manipulate hierarchical CAE models that can reference target CAD models and source CAD or CAE geometry. It contains BOM view attributes. You can view, create, and manage **CAE 3D Model** item revisions in this pane.

While performing simulations on large and complex product structures, you must frequently build large model structures. With large product or model structures, it is difficult to navigate through the entire structure and find information. Similar to filtering data in spreadsheets, you can apply multiple filters to large structures and view only those structure lines that are relevant to your simulation analysis.

You can perform the following tasks in the **Model** view:

You can run the CAE BOM Compare report to view two different simulation variants side-by-side, and compare them to obtain a visual understanding of their differences as they are color coded. Even if you apply multiple filters after performing a BOM comparison, the system retains the color coding for the structure lines.

- View, create, and manage **CAE 3D Model** item revisions.
- View and manage composite CAE model structures.
- Apply multiple filter criteria to filter structures and view only the structure lines that are relevant to your simulation.
- Manage **Target Product** and **Source Representation** references for a **CAE 3D Model** item revision.
- Launch simulation tools.
- Create CAE packages.
- View and manage configuration rules that deal with CAE variant options.
- View and manage attachments.
- Perform **Where Used** or **Where Referenced** searches.
- View an image of the selected line or structure, if the **DirectModel** dataset is available.

After **configuring the product structure**, you can apply **datamap and structure map rules** to create a model structure. If the **Variants** option is enabled by the simulation administrator in the **datamapping.xml** file, then the configuration context is referenced by the model structure when you apply the datamap and structure map rules. The variants are always referenced and *never* cloned irrespective of its setting in the **datamapping.xml** file for the product configurator.

After you apply datamap and structure map rules to create a model structure, the resulting model structure uses only the BOM lines that are available in the **Product** view after you have configured the product structure. The model structure has its context set to the same configuration context as that of the source product structure. If the default configuration context is set, the model structure references the same context. Moreover, all the variant formula from the source product structure is mapped to the model structure.

> Note:
>
> When you open multiple model structures, make sure that you do not open structures with Product Configurator variant data and classic variant data in multiple views at the same time. If you want to view both types of data, you must attach the configurator context to all the open structures and restart CAE Manager.

Configure the model structure before generating it

After **configuring the product structure**, you can apply **datamap and structure map rules** to create a model structure. If the **Variants** option is enabled by the simulation administrator in the **datamapping.xml** file, then the configuration context is referenced by the model structure when you apply the datamap and structure map rules. The variants are always referenced and *never* cloned irrespective of its setting in the **datamapping.xml** file for the product configurator.

After you apply datamap and structure map rules to create a model structure, the resulting model structure uses only the BOM lines that are available in the **Product** view after you have configured the product structure. The model structure has its context set to the same configuration context as that of the source product structure. If the default configuration context is set, the model structure references the same context. Moreover, all the variant formula from the source product structure is mapped to the model structure.

> Note:
>
> When you open multiple model structures, make sure that you do not open structures with Product Configurator variant data and classic variant data in multiple views at the same time. If you want to view both types of data, you must attach the configurator context to all the open structures and restart CAE Manager.

Generate the CAE model structure

After **configuring the product structure**, you can apply **datamap and structure map rules** to create a model structure. If the **Variants** option is enabled by the simulation administrator in the **datamapping.xml** file, then the configuration context is referenced by the model structure when you apply the datamap and structure map rules. The variants are always referenced and *never* cloned irrespective of its setting in the **datamapping.xml** file for the product configurator.

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> Note:
>
> When you open multiple model structures, make sure that you do not open structures with Product Configurator variant data and classic variant data in multiple views at the same time. If you want to view both types of data, you must attach the configurator context to all the open structures and restart CAE Manager.

You can view a product structure in the **Product** view, apply data map and structure map definitions to it, and generate a CAE model structure in the **Model** view.

Using the data map and structure map functions in the **Product** view in Teamcenter, you can generate CAE model structures based on input product structures and a defined set of structure rules.

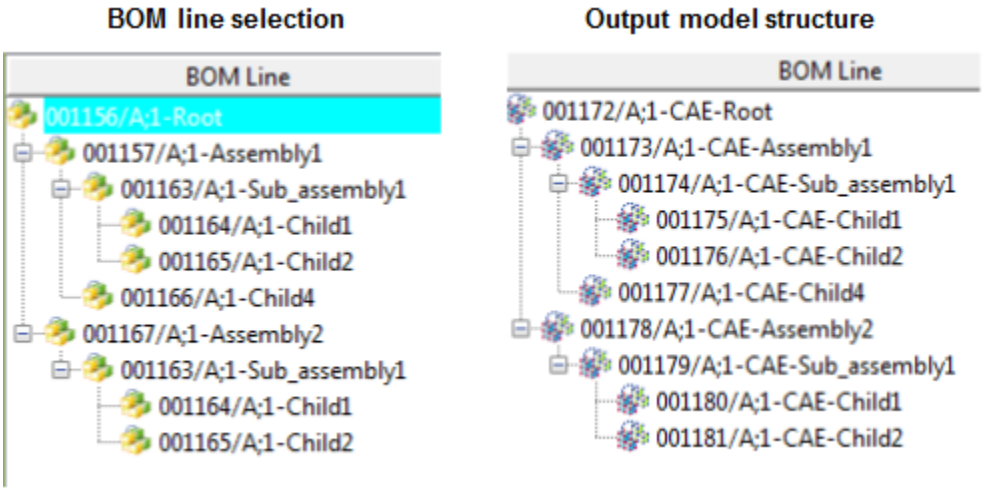
Simulation analysts often use the product structure to create a simulation structure based on a functional subsystem to include components relevant to their analysis. They identify such components by reorganizing, grouping, and filtering out components from the product structure. Doing this manually is time consuming. To simplify this process, the lead (or the designated) simulation analyst creates structure map rules that consist of filter, skip, include, and other rules. The structure map rules can then be used by other simulation analysts to create consistent CAE model structures for better analysis.

> Note:
>
> When you generate a model structure for a subassembly using a workflow process, the output model structure does not include the equivalent of the root of the original structure. However, when you select specific BOM lines of a product structure and apply structure map rules, the structure map output includes the equivalent of the root of the original structure.

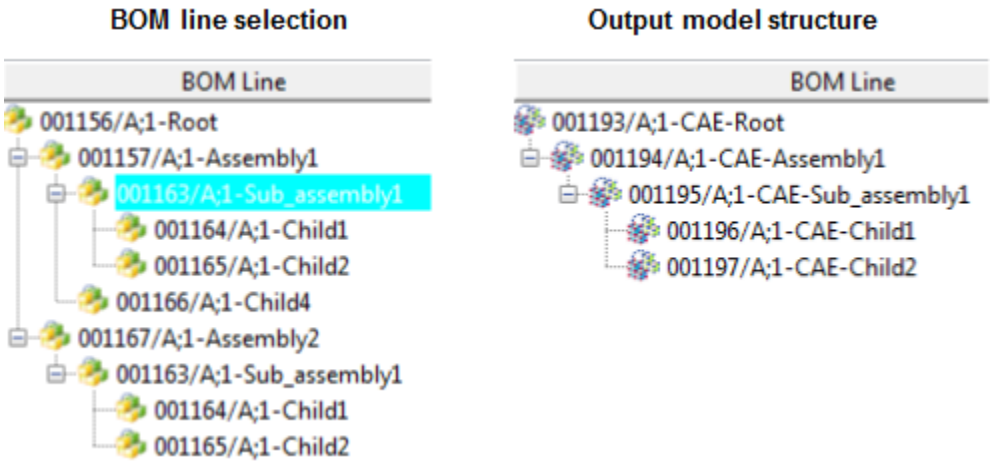
You can select the root BOM line of a product structure and create a model structure for the entire product structure or select specific BOM lines of a product structure and create a model structure of the selected BOM lines and its children. You can interactively select specific BOM lines especially when filter or skip rules are not available but all other rules are available in the structure map rule.

> Example:
>
> Let us assume that there is a skip rule, for example, to ignore all bolts in a structure. While interactively selecting BOM lines, even if you select a BOM line that has the bolt as its part by mistake, the system does not process this BOM line while creating the model structure.

Example 1: If you select the root level structure, the system processes all the subassemblies and their children at their levels.

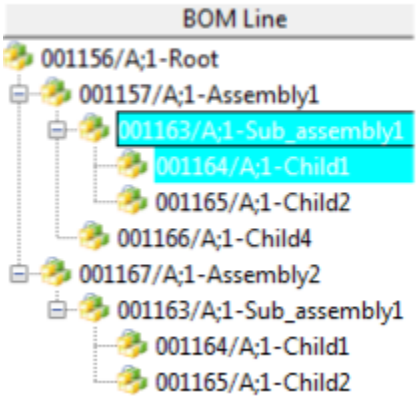


Example 2: If you select a subassembly, the system processes all its children at all levels.

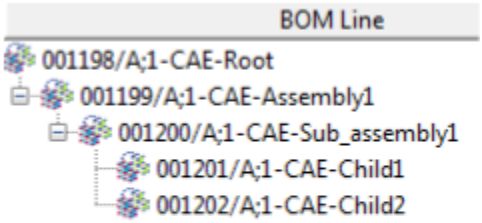


Example 3: If you select a subassembly and select some children, the system processes the selected children and all other children in the same subassembly. It ignores all other children of other subassemblies.

BOM line selection

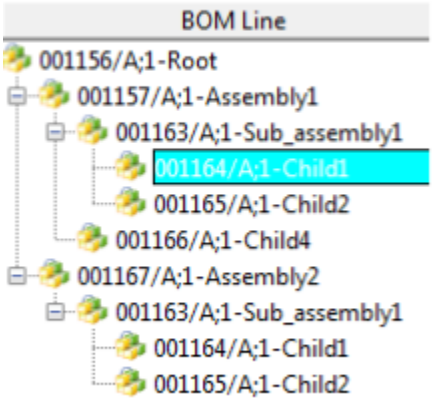


Output model structure

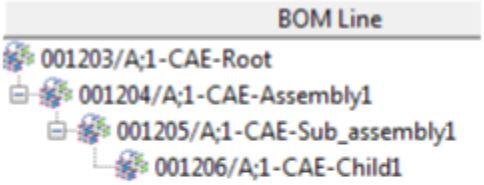


Example 4: If you select *Child1* from *subassembly1*, even though the same child and subassembly occurs in another assembly, the system filters out the other assembly.

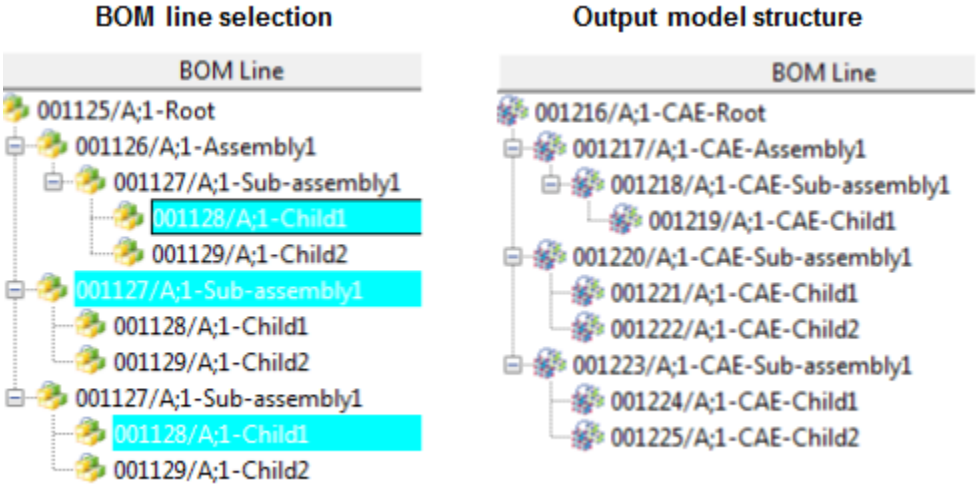
BOM line selection



Output model structure



Example 5: For the first BOM line selection, the system filters out *Child2* and for the second selection, generates both the child occurrences as expected. However, for the third selection, the system generates both the child occurrences though you have selected only one. This is because the same subassembly, containing similar child occurrences, is nested at the same level below the root.



Clone or reference variant information

You, as a simulation analyst, can use predefined data map rules and structure map rules to create a model structure from the product structure. Also, you can use predefined derivative rules to derive one or more structures from an existing model structure. Derivative rules use both the data map and structure map rules to derive structures.

The source structure contains variant information such as variant conditions, variant options, saved variant rules (SVRs), option defaults, and rule checks. By default, the system *clones* the variant options and SVRs to the target structure and maps the rest of the variant information to the target structure.

Some companies may have business practices that prevent the cloning of variant information. In such cases, the simulation administrator at your site configures the **datamapping.xml** file to *reference* the variant information instead of cloning it.

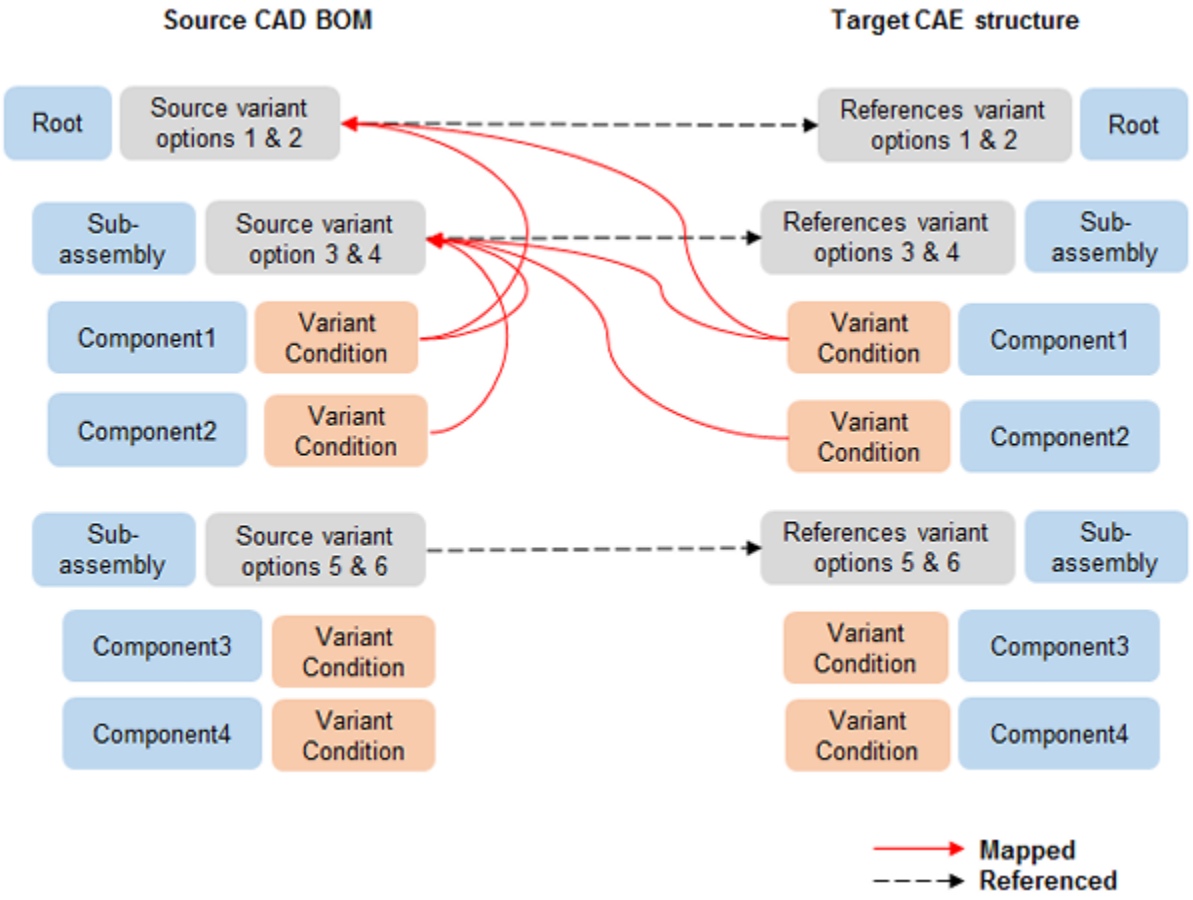
Variant information (source structure)	Variant information (target structure)
Variant options	Cloned or referenced
Saved variant rules (SVRs)	Cloned or referenced
Variant conditions	Mapped
Option defaults	Mapped
Rule checks	Mapped

Note:

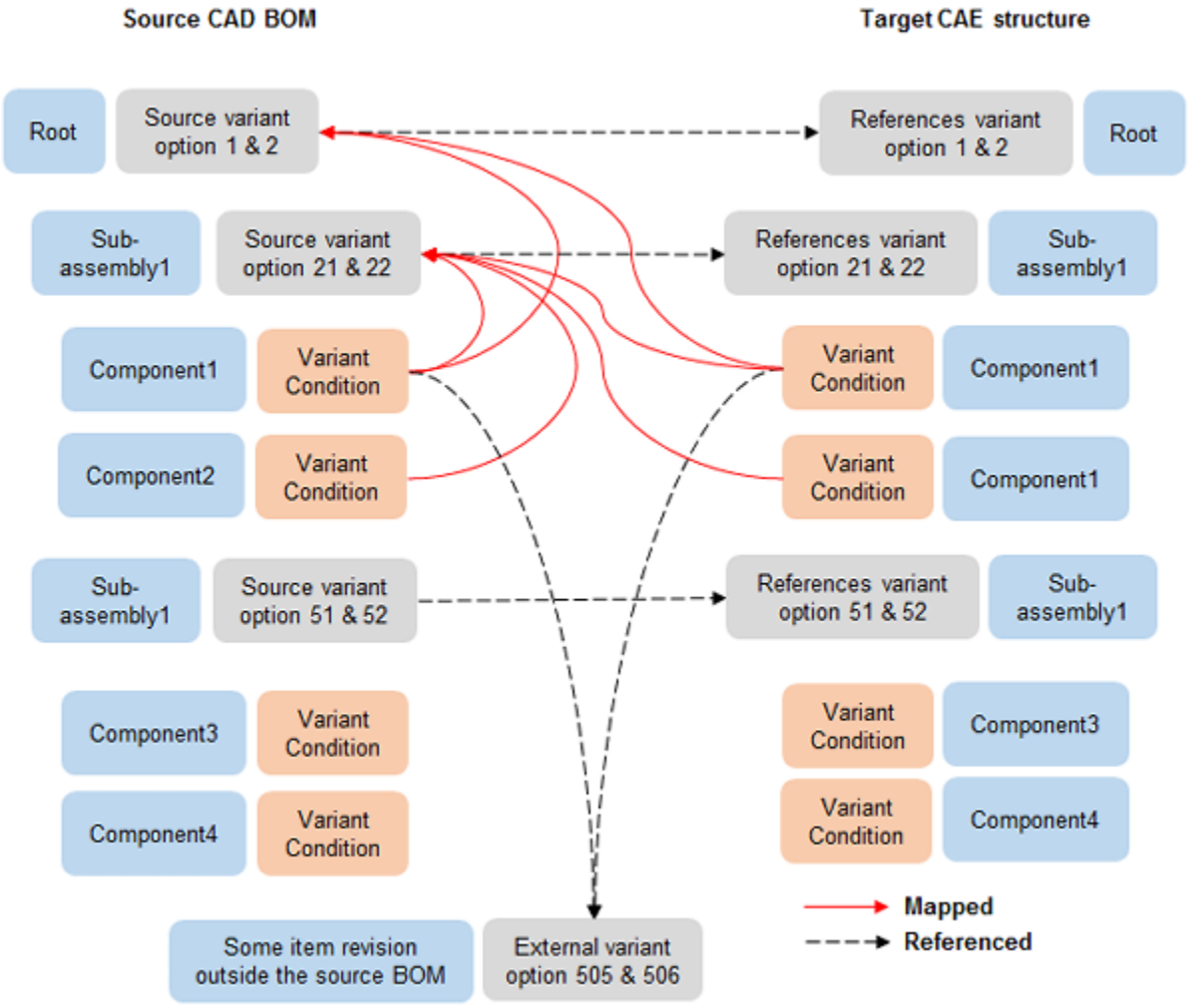
For derivative rules, the behavior is the same except that the source is a CAE structure and not a CAD BOM.

While the reference method retains the same IDs for the source product BOM lines, the clone method creates new IDs.

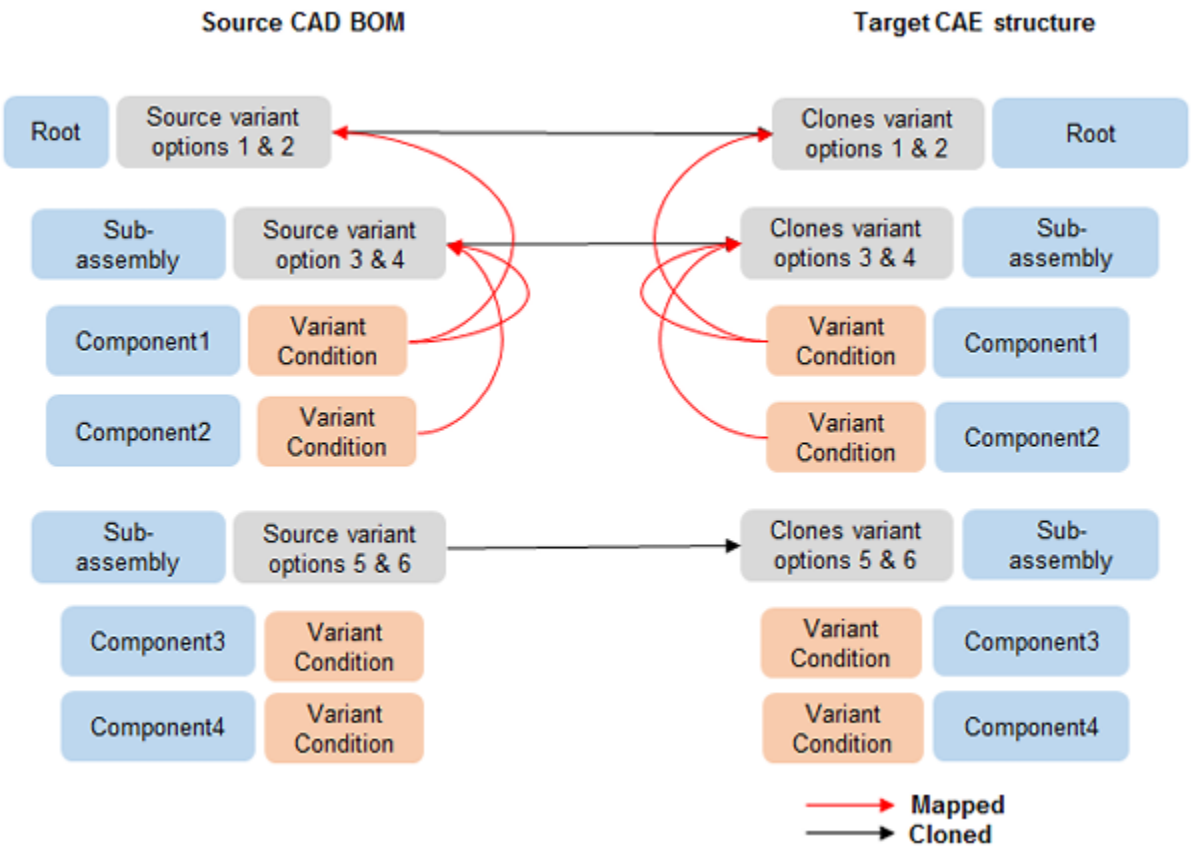
Example 1 (reference method): All the variant information is available on the opened source structure.



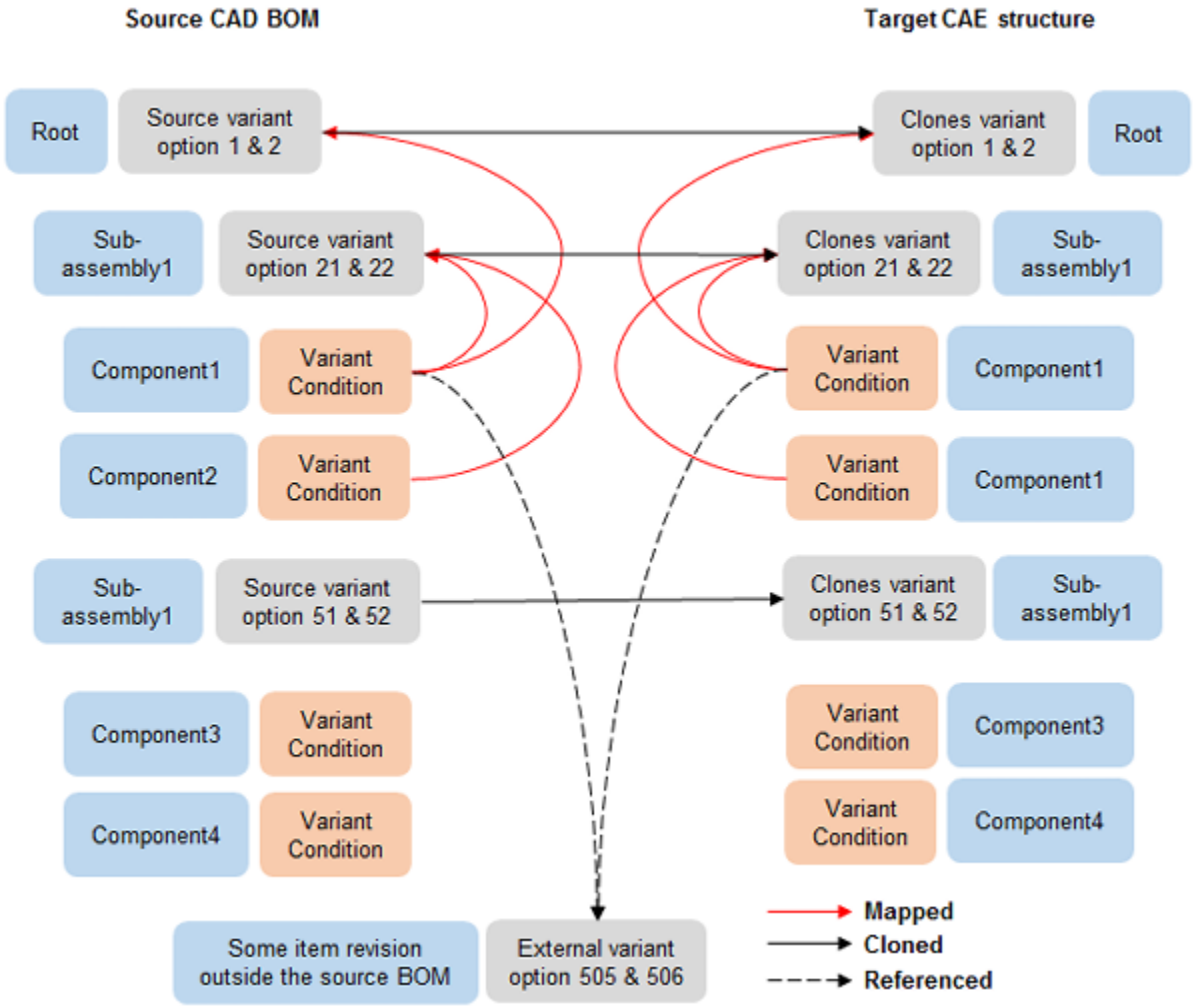
Example 2 (reference method): All the variant information is *not* available on the opened source structure.



Example 3 (clone method): All the variant information is available on the opened source structure.



Example 4 (clone method): All the variant information is *not* available on the opened source structure.



Create a model structure using data map rules

You can create a model structure that is an exact replica of the product structure using data map rules.

1. In the **Product** view, open a product structure (non-CAE item revision).

2. (Optional) Select a structure line.

3. To view the available attributes and/or values of the selected line, click **Generate Node XML** in the main toolbar.

   You can selecting one of the following options in the **Node XML Information** dialog box:

   - **List All Attributes** to list all attributes available of the context BOM line item. This is the default option.

   - **List Configure Attributes Only** to list only configured attributes of the context BOM line item.

If you select this option, the system persists this selection when you open the **Node XML Information** dialog box the next time.

You can view these attributes separately for each of the domains configured in the **NodeXMLConfig.xml** file.

4. Click **Generate CAE Structure from Data Map** in the  view toolbar and select one of the following options:

   - **CAE**

     This is the default domain.

     Select this domain to generate a model structure from an existing product structure or product collector structure.

     The system creates a **CAE-***source_product_structure_name* structure. This structure contains a corresponding **CAE-***BOM_Line_Name* item revision for each generic item in the product structure.

   - **CFD**

     Select this domain to generate a model structure from an existing product structure or product collector structure with mapping of **DirectModel** datasets (or JT files) from the source structure to the output structure.

     This domain option is similar to the default **CAE** option. It additionally maps the JT files.

     The system creates a **CFD-***source_product_structure_name* structure. This structure contains a corresponding **CFD-***BOM_Line_Name* item revision for each generic item in the product structure with the JT mapping if the item revisions in the product structure contain the JT files.

   The simulation administrator creates domains. Your company might have different CAE disciplines for safety, durability, and so on. The company wants data mapping to be different for each discipline, but there is only one data map XML file for the whole site. Domains are created to handle data mapping differently in such situations.

5. (Optional) To export the model structure along with the associated JT files, select the root item you want to export, click **Tools** → **Export** → **ToPLMXML**, and select the **CAEConfiguredDataFilesExportJTOnly** transfer mode.

> Note:
>
> If the **Variants** option is disabled by the simulation administrator in the **datamapping.xml** file, then the configuration context is not referenced by model structures during the datamap

operation if the product structure you have opened is already associated to the configurator context through the **Variability Scope** relationship.

Teamcenter displays a diagnostic log of the data mapping rules applied to the product structure to generate a CAE model structure. It displays the generated CAE model structure in an empty **Model** view or a new **Model**, if you have already opened a model structure in this view.

Note:

Alternatively, you can use the **cae_execute_datamap** utility to apply data mapping rules to an input structure. To view the command line help for this utility, type **cae_execute_datamap -h** on the Teamcenter command prompt.

Create a model structure for a specific type of analysis using structure map rules

1. Open a product structure in the **Product** view.

2. (Optional) To make the product structure relevant to your analysis, configure the product structure.

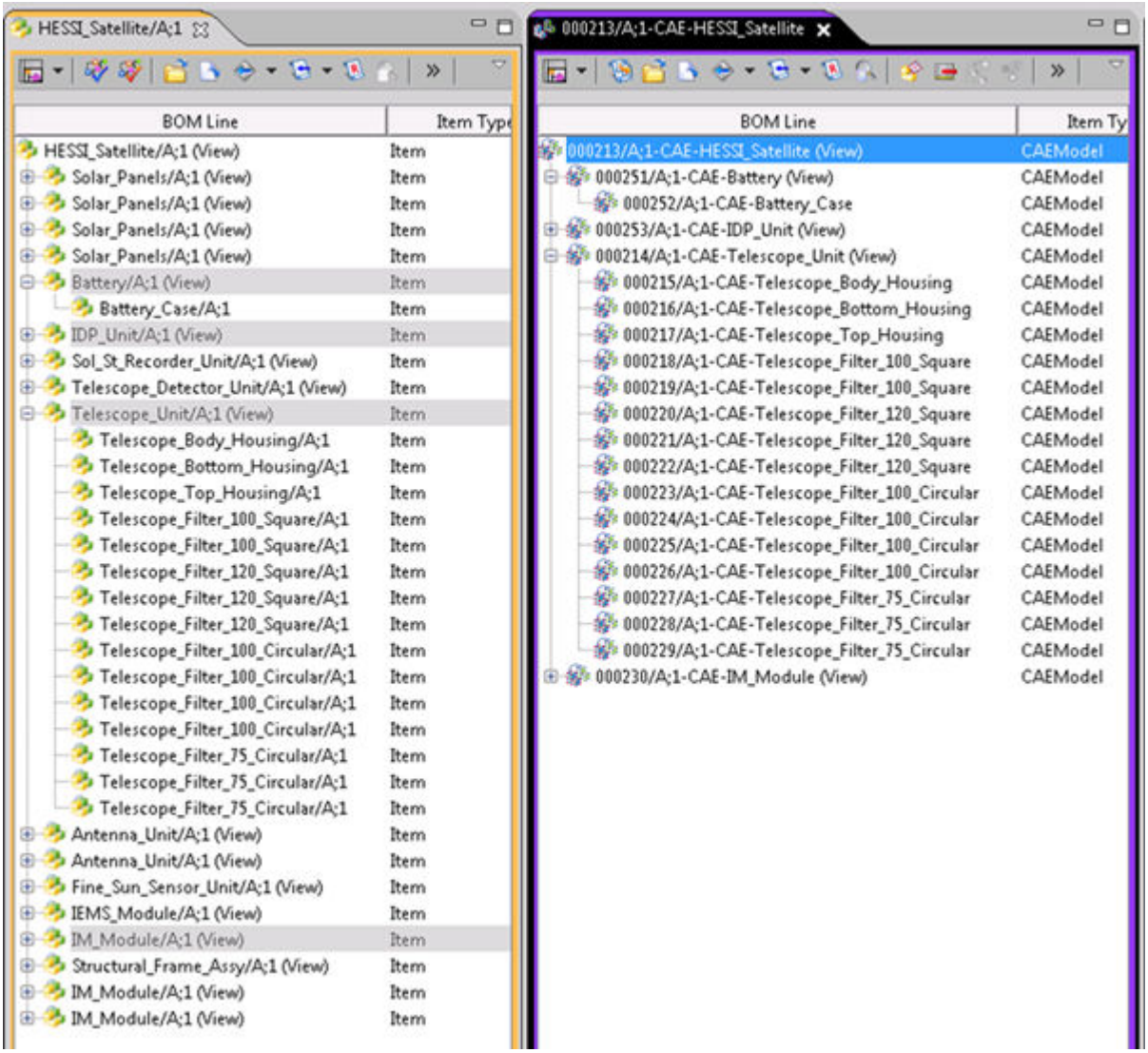
   If you work in a product environment with a lot of variability, such as the automobile industry, you can apply revision rules, effectivity, and variant rules to make the product structure relevant to your analysis.

3. (Optional) To allow the system to process only specific subassemblies, select one or more BOM lines corresponding to individual components.

   The system processes only the corresponding components based on the BOM lines you select.

4. (Optional) To allow the system to process multiple subassemblies, select multiple BOM lines corresponding to the subassemblies you want.

   The system processes all the subassemblies and their children at all levels based on the BOM lines you select.



5. (Optional) To view the available attributes and/or values of the selected line, select a structure line and click **Generate Node XML** in the view toolbar.

   You can selecting one of the following options in the **Node XML Information** dialog box:

   - **List All Attributes** to list all attributes available of the context BOM line item. This is the default option.

   - **List Configure Attributes Only** to list only configured attributes of the context BOM line item.

     If you select this option, the system persists this selection when you open the **Node XML Information** dialog box the next time.

   You can view these attributes separately for each of the domains configured in the **NodeXMLConfig.xml** file.

6. Expand the product structure and select the desired components and sub-assemblies you want to include in the analysis.

7. Apply structure map rules.

   a. Click **Generate CAE Structure from StructureMap**  in the view toolbar.

   b. Type the required **CAE Structure Map** item ID and revision in the **Item Id / Rev** boxes, or click **Search** to search for the required identifiers.

   c. Click **Execute**.

      Alternatively, drag a **CAEStructureMap** item revision from the **Home** view to the **Product** view, and click **Execute**.

   If the lead simulation analyst has configured predefined simulation tools while creating structure map rules, the system creates the model structure and executes the simulation tools defined as part of the rules. The tool launch details are logged in the structure map log file. Additionally, the **Simulation Tool Progress Monitor** dialog box displays the status of the tool launch.

> Note:
>
> Alternatively, you can use the **cae_execute_structuremap** utility to apply structure map rules to an input structure. To view the command line help for this utility, type **cae_execute_structuremap -h** on the Teamcenter command prompt.
>
> If the **Variants** option is disabled by the simulation administrator in the **datamapping.xml** file, the configuration context is not referenced by model structures during the structure map operation.

Generate a model structure using a preconfigured material revision mapping

You (as a simulation analyst) can use a preconfigured workflow process to create a model structure. This workflow process uses a predefined **structure map rule** to create the model structure.

1. Open a product structure in the **Product** view.

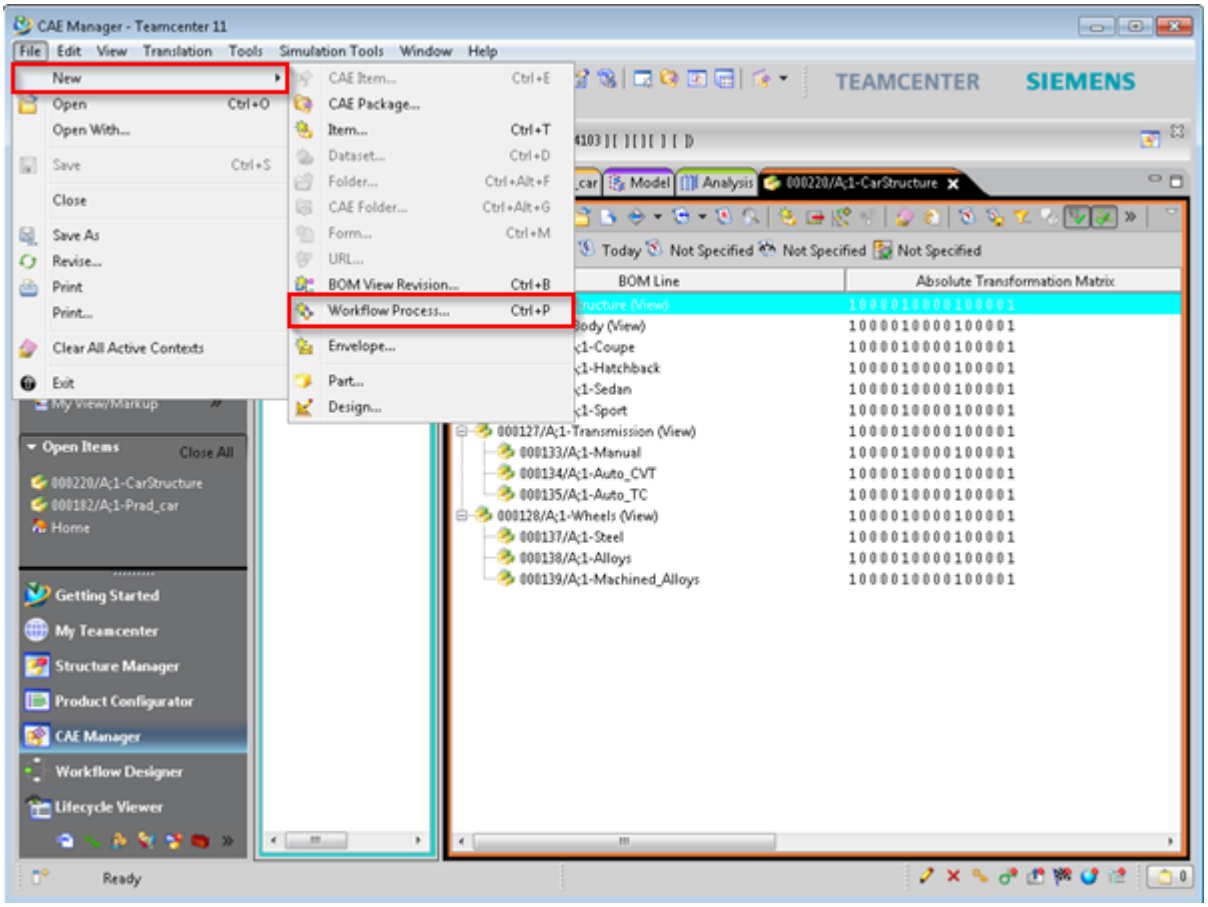
2. (Optional) To make the product structure relevant to your analysis, **configure the product structure**.

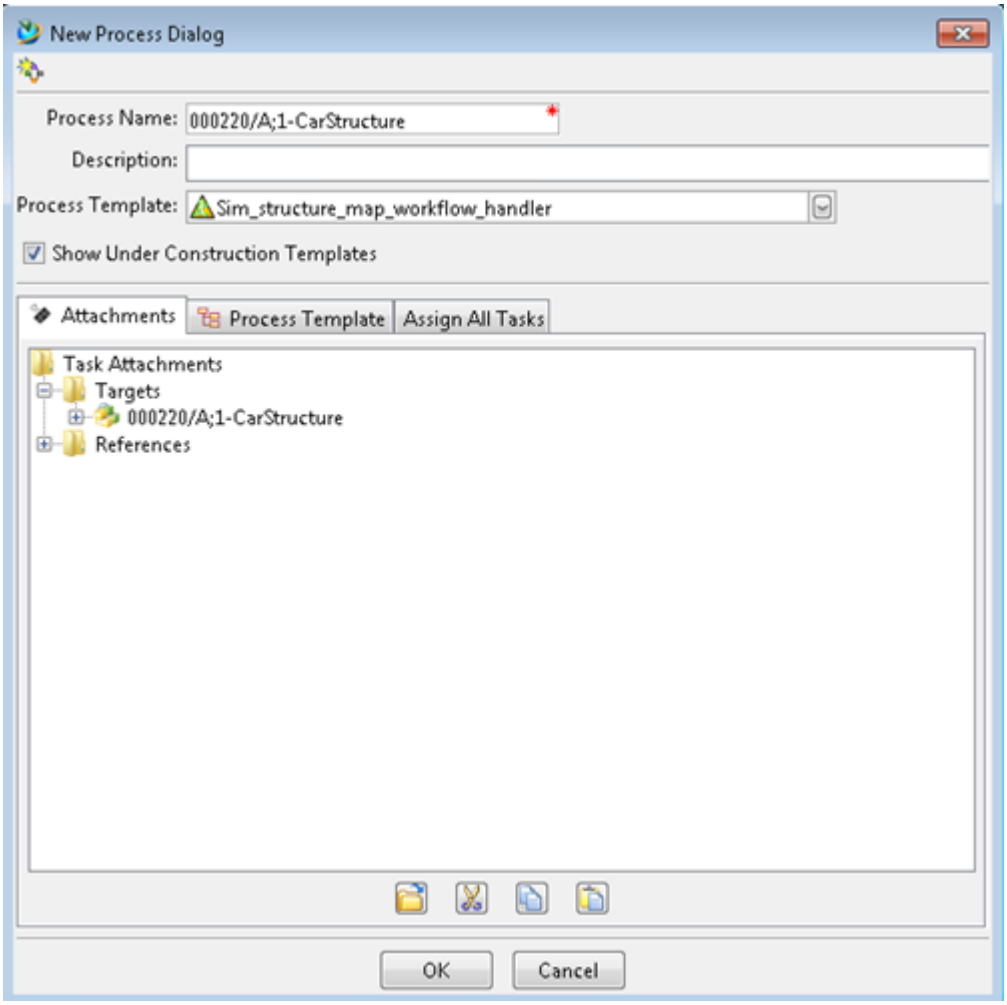
   If you work in a product environment with a lot of variability, such as in the automobile industry, you can apply revision rules, effectivity, and variant rules to make the product structure relevant to your analysis.

3. Select the complete product structure or expand it, and select the desired components and sub-assemblies you want to include.

4. Click **File→New→Workflow Process** and specify the process name.

   At your site, a user with DBA privileges may create multiple workflow process for different structure map rules. Check with the administrator at your site for the workflow processes to use.





5. After the workflow is initiated successfully, refresh the **Newstuff** and **Mailbox** folders.

   The system creates the model structure in the **Newstuff** folder. Additionally, check your mail for the execution summary notification.

6. (Optional) Verify whether structure map rules have been applied.

   Open the model structure in the **Model** view. Verify if BOM lines have been removed based on the filter criteria or item revisions reused, added, or created as per the predefined structure map rules.

7. (Optional) To verify if the owner of the model structure is as per the values specified in the workflow action handler, select the root model item revision, right-click and choose **Open With→Summary**. Verify the owner properties in the **Overview** tab.

8. (Optional) Verify pedigree information.

   Select the root model item revision, right-click and choose **Model Pedigree→View Pedigree Details**. Verify if the pedigree information from the product structure is captured.

9. (Optional) Verify the structure map log details

    a. In the **Mailbox** folder, right-click and select **Open With→Summary**.

    b. In the **Overview** tab, select **More Properties**.

    c. In the **Properties** dialog box, double-click **Execution Summary** to view the structure map log details.

Generate a model structure and export the material information

As a simulation analyst, you can generate a model structure from a product structure that contains material revisions, export the material information, and use the exported material information to perform a simulation analysis.

As a prerequisite, Teamcenter Materials Management must be installed and ready to use for exporting material details.

The process flow for exporting material information is as follows:

Simulation administrator	1. Maps material revisions from the product structure to the model structure by modifying the **datamapping.xml** file. 2. Defines a simulation tool to export the material information. This tool is configured for a specific solver type, for example, Simcenter STAR-CCM+.
Simulation analyst	1. **Generates the model structure from a product structure** by using data map or structure map rules. The generated model structure references the material revisions from the product structure. 2. Selects the generated model structure and **runs the preconfigured simulation tool**. The material information is exported. 3. Performs the analysis by **running a preconfigured analysis tool**, for example, Simcenter STAR-CCM+. The analysis tool uses the exported material information for running the analysis. 4. Captures the **results from the solver, verifies the results**, and sends recommendations.

Generate a model structure using preconfigured material revision mapping

1. Open a product structure that contains material revisions in the **Product** view.

2. (Optional) To make the product structure relevant to your analysis, **configure the product structure**.

If you work in a product environment with a lot of variability, such as in the automobile industry, you can apply revision rules, effectivity, and variant rules to make the product structure relevant to your analysis.

3. To create a model structure by using data mapping rules, click **Generate CAE Structure from Data Map** in the  view toolbar

   OR

   Create a model structure by using structure map rules, using the following procedure:

   a. Click **Generate CAE Structure from StructureMap**  in the view toolbar.

   b. Type the required **CAE Structure Map** item ID and revision in the **Item Id / Rev** boxes, or click **Search** to search for the required identifiers.

   c. Click **Execute**.

      Alternatively, drag a **CAEStructureMap** item revision from the **Home** view to the **Product** view, and click **Execute**.

      The system creates the model structure.

   d. Open the model structure and verify if the structure is created as per the data map rules.

   e. (Optional) Open the model structure and verify if the system has created a reference between the output model structure and the material revisions attached to the source product structure.

   f. Copy the material revision attached to the source product structure and paste it to the model or geometry revision that has a **Materials** relation.

      In the **Enter the values for Properties on Relation** dialog box, specify the mass and the unit of measure, for example, grams.

4. (Optional) **Revise** or perform a **Save As** action on the model or the geometry revision that has the **Materials** relation. The system references the material revision on the revised or cloned model or geometry revision.

5. (Optional) To export the model structure along with the related material IDs and material definitions, select the root item you want to export, click **Tools** → **Export** → **ToPLMXML**, and select the **CAEMaterialInfoExportDefault** transfer mode.

Run a preconfigured simulation tool to export the material information

1. In the **Model** view, select the **model revision you generated with material revisions**.

2. **Launch a preconfigured simulation tool** for exporting material information.

3. After the tool is launched, the material file is exported to the same directory as the input files. The log file of the material export is located in the **logs** directory of the scratch location.

4. Perform the analysis by **running a preconfigured analysis tool**, for example, Simcenter STAR-CCM+. The analysis tool uses the exported material information for running the analysis.

5. Capture the **results from the solver, verify the results**, and send recommendations.

Generate a model structure containing CAE geometry and relationships

Generate a model structure containing CAE geometry as secondary objects

While creating the model structure from a product structure, you must often simplify the CAD geometry you receive prior to meshing. The CAD geometry might contain numerous details, such as sharp edges, bolt holes, or fillets, which are not required for meshing. Simplifying CAD geometry manually is tedious and time consuming. You can use data map rules to automate the creation of CAE geometry items with the necessary relationships.

The simulation administrator defines the data mapping rules at your site. In CAE Manager, you can use these rules to create a CAE model structure from an existing product structure. The rules determine the creation and naming pattern of model items and item revisions from the product structure, the mapping of the product items to the model items, and the relations between the product item revisions and model item revisions. Depending on predefined rules, you can create a model structure with a primary output object and a secondary output object with all the correct relationships. The secondary objects contain the CAE geometry with the correct relationships.

Before creating a model structure for analysis, to enable traceability between the mesh or load case revisions you have used and the model structure, you must apply the **Precise** revision rule. By default, the **Latest Working** revision rule is applied to all **Product** and **Model** views. In some cases, you might skip applying the **Precise** revision rule when you create a model structure for analysis. To avoid this, instead of applying the revision rule, you can set the **TC_BOM_Precision_Preference** user preference to **Precise** to always create a precise structure.

After you create a model structure, you can apply the structure map rules. You can create structure maps to remove BOM lines based on filter criteria, reuse existing model item revisions, or add existing model item revisions. For example, you can automatically filter out connectors, such as bolts or pins in a structure, that are not needed in an analysis or include additional items needed for analysis, such as a mesh for thermal analysis.

Generate the model structure containing the CAE geometry

1. In CAE Manager, open the required product structure in the **Product** view.

2. To always create a precise structure, set the **TC_BOM_Precision_Preference** user preference to **Precise**. By default, this preference is set to **Imprecise**.

   Alternatively, from the **View** menu, choose **Revision Rule→View/Set Current** and then select the **Precise Only** revision rule.

   You might skip applying a revision rule each time you create a model structure. To avoid this, you can set the user preference to always create a precise structure.

   a. Choose **Edit→Options**, and then click **Search**.

   b. In the **Search on Keywords** box, type the first few letters of the preference name, such as *tc_bom*, select the preference, and then click **Edit**.

   c. In the **Value**, type **Precise**, and then click **Save**.

3. Create a model structure containing secondary objects.

   a. In the **Model** view, click the **Generate CAE Structure from Data Map** view toolbar button.

   b. Select a domain, and then click **Continue**.

4. Apply structure map rules after the system creates the model structure.

   a. In the **Model** view, click the **CAE 3D Analysis from Structure Map** view toolbar button.

   b. Type the required **CAE Structure Map** item ID and revision in the **Item Id / Rev** boxes, or click **Search** to search for the required identifiers.

   c. Click **Execute**.

Manage model structures

Open a model structure, apply filters, and view attachments

1. Start CAE Manager.

2. In the **Home** view, select a **CAE 3D Model** item revision, right-click, and choose **Send To→CAE Manager**.

3. To apply filters to the model structure and view only the structure lines that are relevant to your simulation, click **Show Filters** on the view toolbar.

> Tip:
>
> When you enable filters, the **Pack**, **Unpack**, **Pack All**, and **Unpack All** options from the **View** menu are disabled. This is because these options can slow down your system when you filter large structures.

a. Select a filter criteria and the filter value.

b. (Optional) Select additional filter criteria and filter values.

c. (Optional) Click **Unfilter the data by removing all filters** to clear filters from the structure while retaining both the filter criteria and filter values.

d. (Optional) Click **Clear all filters** to clear all filters from the structure, including the filter criteria and filter values.

4. (Optional) To view all unique lowest lines:

   a. Select a root item or one or more subassemblies.

   b. Click **View Menu**, and choose **Select Below→All Unique Lowest Lines**

5. (Optional) To copy the property values from a BOM line to another BOM line:

   a. Place the cursor on the property column of a BOM line, right-click, and choose **Copy**.

   b. Move the cursor to a similar property column of a different BOM line, right-click, and choose **Paste**.

6. Click **Show Data Panel** on the main toolbar to open the data view.

7. Click a tab in the data pane to activate a view.

   For example, click the **Attachments** view in the data pane to activate the **Attachments** view.

Open a model revision related to the current product revision in context

You can use the **Association to Product** option to view all the models, analysis, and results associated with multiple product item revisions (across revisions).

1. In the **Product** view, open a product item revision.

2. In the **Model** view, click **Open Model** on the view toolbar.

3. In the **Open CAE Model** dialog, select the **Association to Product** option.

4. Choose the referenced **CAE 3D Analysis** item revision from the tree view, and click **Load**.

5. (Optional) In the **Model** view, revise the **CAE 3D Analysis** item revision and reference it to the latest product item revision.

Replace a model revision with another model revision

You can replace an existing **CAE 3D Model** item revision in the **Model** view with another item revision. You can search and type the name, item ID, or revision ID (for precise structures) of the item revision you want to replace with.

During the analysis process, you (as an analyst) might want to make changes to a mesh assembly (CAE structure) by swapping one mesh (**CAE 3D Model** item revision) with another, for example, replace a coarse-mesh model with a fine-mesh model or replace an existing mesh of poor quality with a better quality mesh. In such scenarios, you can use the **Edit→Replace...** command to search and view all other related **CAE 3D Model** item revisions to the corresponding product item revision with a target relationship and choose a model item revision to replace the one in the existing CAE structure.

You have the option to replace a single selected model item revision or all instances of that model item revision in the immediate parent subassembly or all instances of the model item revision in the entire CAE structure.

1. Start CAE Manager.

2. In the **Home** view, select a **CAE 3D Analysis** item revision, right-click, and choose **Send To→CAE Manager**.

3. In the **Model** view, select a model line you want to replace, click **View Menu**, and choose **Edit→Replace...** to open the **Replace** dialog box.

   > Note:
   >
   > You cannot perform a replace of the item revision on the top line in the **Model** view.

4. Click **Search** and type the name or the ID of the item revision you want to replace with.

5. (Optional) Type a description for the item revision you want to replace the existing one with.

6. Select one of the following options:

   - **All in root assembly** to replace all model lines in the root assembly referencing the same item revision.

- **All in parent assembly** to replace all model lines in the immediate parent assembly referencing the same item revision.

- **Single Component** to replace the selected line.

Replace multiple model revisions with other matching model revisions

You can replace multiple existing **CAE 3D Model** item revisions in the **Model** view with other matching item revisions by searching for them in a single dialog box.

1. In the **Model** view, select multiple model lines you want to replace, click **View Menu**, and choose **Edit→Replace...** to open the **Multiple-Replace Item Revision** dialog box.

   Do not select the top line in the **Model** view.

   If you select only *one* **CAE 3D Analysis** item revision, the system opens the **Replace** dialog box.

2. To find matching item revisions, click **Search** and enter the search criteria in the **Search new Item Revisions** section. If there is more than one matching item revision, the system prompts you to select one in the **Matching Item Revisions** column.

3. For the replace method, select one of the following options:

   - **All in root assembly** to replace all model lines in the root assembly referencing the same item revision.

   - **All in parent assembly** to replace all model lines in the immediate parent assembly referencing the same item revision.

   - **Single Component** to replace the selected line.

Manage references for model revisions

Use the **Manage CAE References** dialog box to manage CAE references for a **CAE 3D Model** item revision. The dialog box consists of the following options:

- **CAE Reference Type** displays a list of CAE reference types. You can select the required reference type from the list.

- **CAE References Item ID / References** lets you type the required CAE references item ID and revision in the **CAE References Item ID / References** boxes, respectively. You can also click **Search** to search and select the required information.

- **List of CAE Item Revision References** lets you add and/or manage the reference type and the reference item revision.

1. In the **Model** view, create or open a **CAE 3D Model** item revision.

2. In the **Model** view, click **Open Secondary Views** in the view toolbar, and choose **Attachments**.

   Alternatively, click **Show Data Panel** on the main toolbar.

3. In the **Attachments** view, select the **CAE 3D Model** item revision.

4. To open the **Manage CAE References** dialog box, click **Edit References** in the view toolbar.

5. From the **CAE Reference Type** list, select the required reference type.

6. Type the required CAE references item ID and revision in the **CAE References Item ID / References** boxes, or click **Search** to search and select the required information.

7. In the **List of CAE Item Revision References** table, add and/or manage references to the **CAE 3D Model** item revision.

   Click + to add a row. If you click this without any information in the **CAE References Item ID / References** boxes, Teamcenter displays the following message:

   ```
   Item ID of CAE Reference is null. Enter a valid Item ID.
   ```

   You can use ▲ to move a selected row upward, ▼ to move a selected row downward, — to remove a selected row, or to clear all the rows.

8. Click **OK**.

Associate a product as the source or as the target for a model revision

You can use these options to create a target and/or source relationship between the product item revision in the **Product** view and the **CAE 3D Model** revision item in the **Model** view.

1. In the **Product** view, open a product item revision.

2. In the **Model** view, create or open a **CAE 3D Model** revision item.

3. Right-click the **CAE 3D Model** revision item, and choose **Associate Product as Source** and/or **Associate Product as Target**.

   If you have more than one **Product** view open, the system prompts you to select the source item revision in the **Associate as Source** or **Associate as Target** dialog box respectively.

Simulation Process and Data Management creates a target and/or source relationship between the product item revision in the **Product** view and the **CAE 3D Model** revision item in the **Model** view.

4. In the **Model** view, click **Open Secondary Views** in the view toolbar, and choose **Attachments**.

   Alternatively, click **Show Data Panel** on the main toolbar.

5. In the **Attachments** view, select the **CAE 3D Model** item revision.

6. Select the desired item revision you want to paste from the **Home** view and paste it in the **Attachments** view linked to the desired **Model** view.

Import the model data

Use the **Import Model Data Deck** dialog box to create and manage **CAESolver** dataset and import solver deck files for a **CAE 3D Model** item revision. This dialog box consists of the following options:

- **CAESolver Dataset Name** lets you type a new name for the **CAESolver** dataset.

  By default, Teamcenter displays the **CAE 3D Model** item and revision identifiers in this box.

- **Description** lets you type a description for the **CAESolver** dataset.

- **Tool Used** lets you select the required tool from the list.

- **Named References** lets you add a reference, file name, file path, and include path. It consists of the following options:

  - **Reference** lets you select the required reference from the list.

  - **File Name** and **File Path** let you type the solver deck file name and path in the relevant boxes or import the required solver deck files.

  - **Include Path** lets you type the include path associated to each value in the corresponding **File Name** and **File Path** boxes. It is a path by which the currently imported file is added to a top-level solver deck file.

1. In the **Model** view of CAE Manager, create or open a **CAE 3D Model** item revision.

2. In the **Model** view, click **Open Secondary Views** in the view toolbar, and choose **Attachments**.

3. In the **Attachments** view, select the **CAE 3D Model** item revision.

4. Click **View Menu** in the view toolbar, and choose **Import Model Data Deck**.

5. (Optional) In the **CAESolver Dataset Name** box, type a new dataset name.

6. (Optional) In the **Description** box, type a description for the dataset.

7. Select the required tool from the **Tools Used** list.

8. In the **Named References** table, add a reference, file name, file path, and include path.

   You can place the cursor in the **File Name**, **File Path**, or **Include Path** and click **Import** to import the required data.

   You can use + to add a new row, − to remove a selected row, or to clear all the rows.

9. Click **OK**.

Mark model revisions as up-to-date

In a complex product development environment, different analysts perform different tasks of the overall analysis. For example, abstractions are delivered by one group, models built by another group, load cases defined by another group, and solver ready decks are built by another group. In such scenarios, it becomes critical to know when analysis data, possibly with multiple dependencies, is out of date. The analyst can then act on it and ensure that the analysis is built with the correct set of data to deliver accurate results.

In CAE Manager, analysts can check for later revisions of item revisions attached to **CAE 3D Analysis** item revisions. They can also check for changes to any attachments of **CAE 3D Analysis** item revisions.

> Note:
>
> Only secondary attachments attached to the **CAE 3D Analysis** item revision with the relations defined by the simulation administrator in the **CAE_significant_relation_types_for_CAEModel** preference are considered while evaluating the out of date and up to date status.

Check for attachment changes

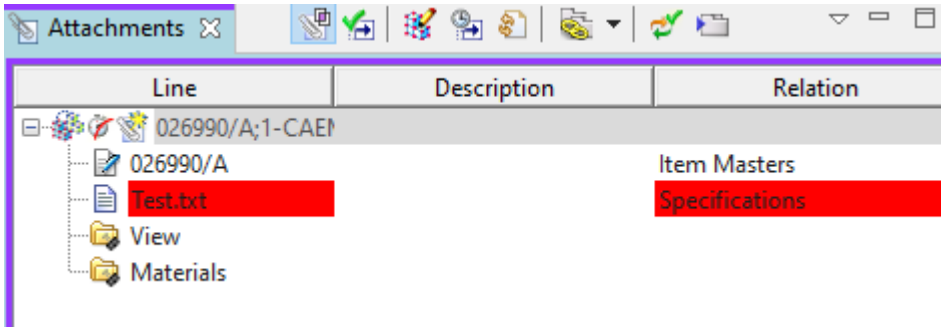
1. In the **Model** view, open a **CAE 3D Model** item revision.

2. Click **Open Secondary Views** in the view toolbar, and choose **Attachments**.

3. In the **Attachments** view, click **Check for Attachment Changes** in the view toolbar.

   Out of date attachments are considered as follows.

- *Newly added attachments*

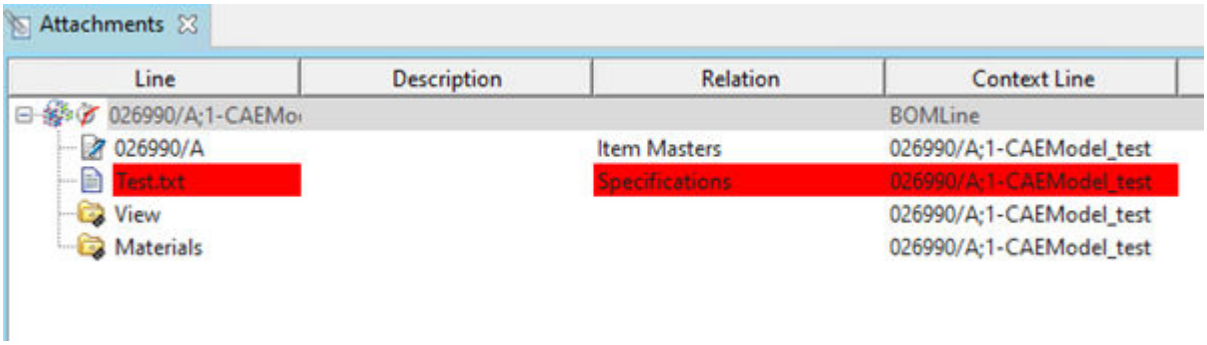


If there is a new attachment in the **CAE 3D Model** item revision, then the attachment is highlighted in red color. The item revision also displays the **Out of Date** icon and the **New Attachments** icon.

This is the default color for the **Action** box in the **Edit** → **Options** → **CAE** → **General** → **Out-of-date Highlights** tab in CAE Manager.

The RGB value specified in the **CAE_action_highlight_color** user preference determines the default color used by the **Action** box.

- *Existing modified attachments*

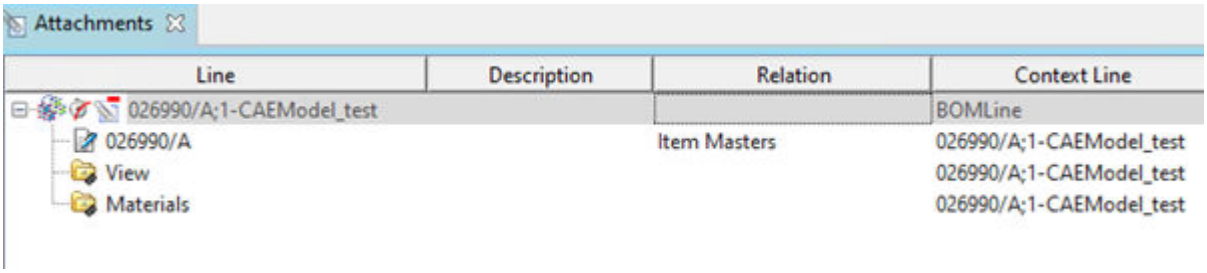


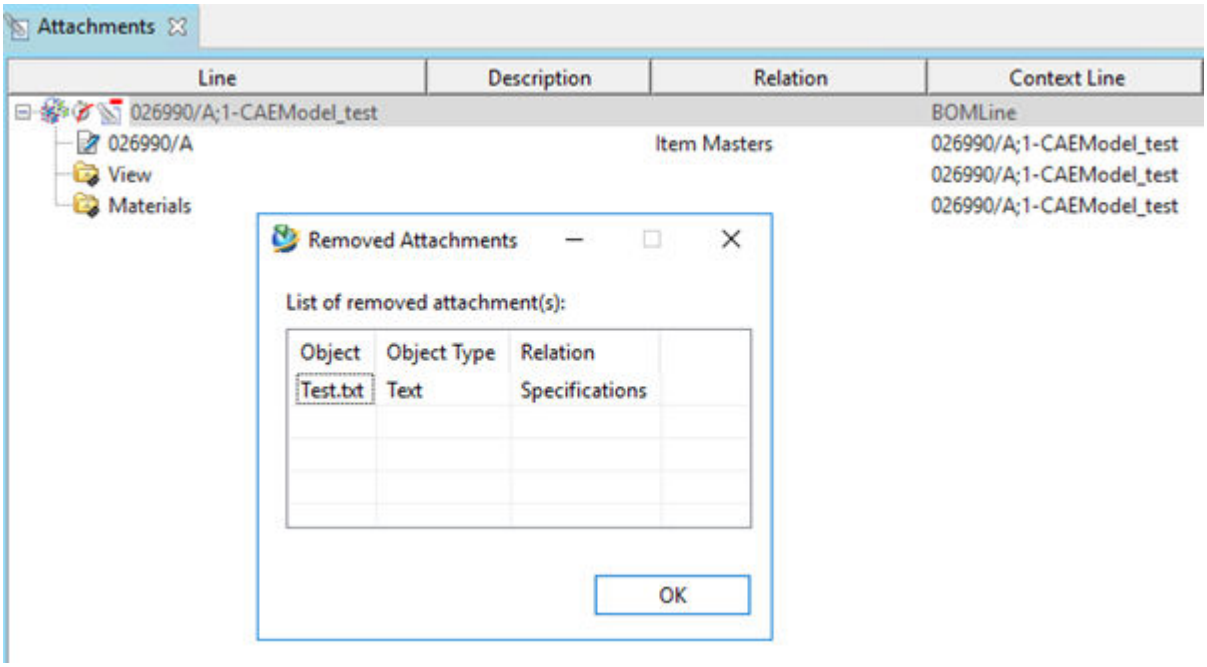
If an existing attachment is modified in the **CAE 3D Model** item revision, then the attachment is highlighted in red color. The item revision also displays the **Out of Date** icon.

This is the default color for the **Action** box in the **Edit** → **Options** → **CAE** → **General** → **Out-of-date Highlights** tab in CAE Manager.

The RGB value specified in the **CAE_action_highlight_color** user preference determines the default color used by the **Action** box.

- *Removed attachments*

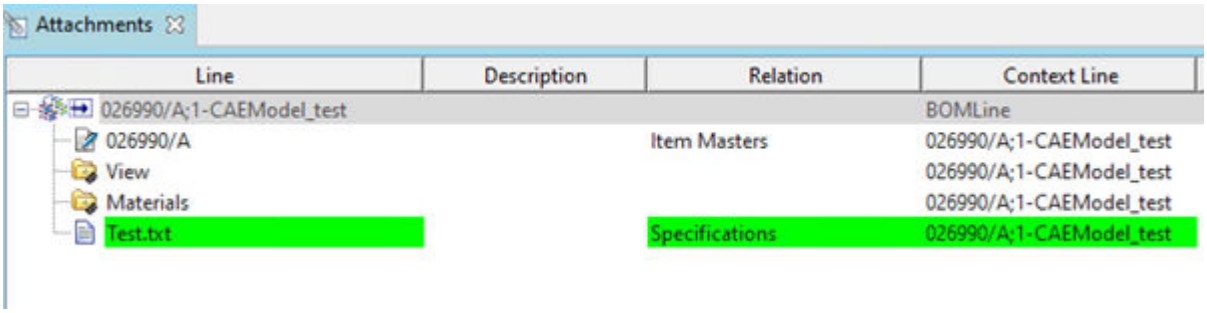




If an attachment is removed from the **CAE 3D Model** item revision, then select the **CAE 3D Model** item revision, right-click, and choose **Show Removed Attachments**. All the removed attachments are shown in the **Removed Attachments** dialog box. The item revision displays the displays the **Out of Date** icon icon and the **Removed Attachment** icon .

Up to date attachments are considered as follows.

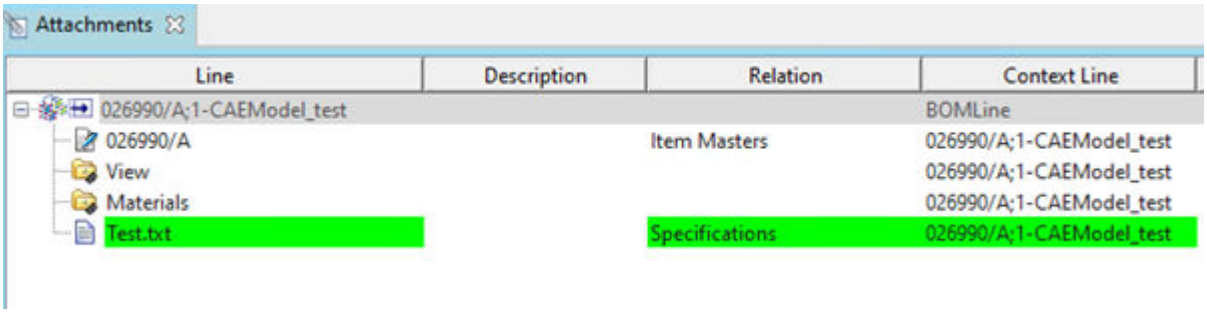
If an attachment is up to date, then it is highlighted in green color. The item revision also displays the **Up To Date** icon .



This is the default color for the **No Action** box in the **Edit → Options → CAE → General → Out-of-date Highlights** tab in CAE Manager.

The RGB value specified in the **CAE_no_action_highlight_color** user preference determines the default color used by the **No Action** box.

4. To mark a model revision as up to date, in the **Attachments** view select the **CAE 3D Analysis** item revision and click **Mark Up-To-Date** in the view toolbar.



All the attachments under the **CAE 3D Analysis** item revision are marked as up to date.

> Tip:
>
> By default, the first time you create a model item revision, it is marked as up-to-date.

5. After marking all attachments as up to date, in the **Attachments** view, select the **CAE 3D Analysis** item revision and click **Check for Attachment Changes** in the view toolbar.

   All the attachments are highlighted in green color.

   This is the default color for the **No Action** box in the **Edit → Options → CAE → General → Out-of-date Highlights** tab in CAE Manager.

   The RGB value specified in the **CAE_no_action_highlight_color** user preference determines the default color used by the **No Action** box.

6. To show last up to date attachments, in the **Attachments** view, select the **CAE 3D Analysis** item revision and click **Show Last Up-To-Date** in the view toolbar.

   The system displays the last up-to-date information.

7. To show removed attachments, in the **Attachments** view, select the **CAE 3D Analysis** item revision and click **Show Removed Attachments** in the view toolbar.

   The system displays a message box with a list of removed attachments.

8. (Optional) Select a BOM line, right-click, and choose **Select all lines of same color**.

Check for later revisions

1. In the **Model** view, open a **CAE 3D Model** item revision.

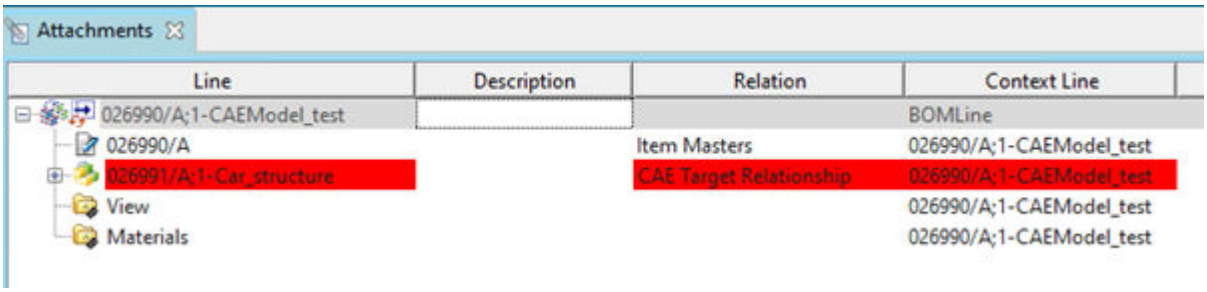
2. Click **Open Secondary Views** in the view toolbar, and choose **Attachments**.

3. In the **Attachments** view, click **Check for Later Revisions** in the view toolbar.

> Note:
>
> While checking for later revisions, the system does not consider baselined revisions.

- *Attachment with later revision available*

  If the **CAE 3D Model** item revision has an attachment for which a later revision is available, then the attachment is highlighted in red color. The item revision also displays the **Later Revision** icon .

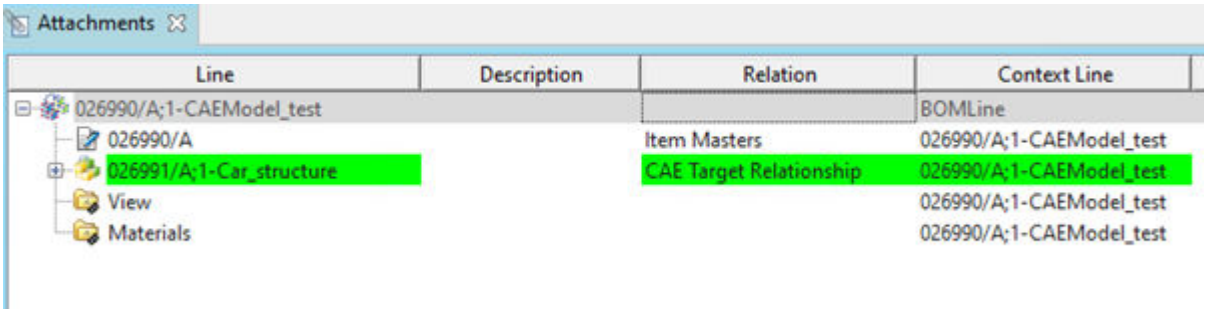


  This is the default color for the **Action** box in the **Edit → Options → CAE → General → Out-of-date Highlights** tab in CAE Manager.

  The RGB value specified in the **CAE_action_highlight_color** user preference determines the default color used by the **Action** box.

- *Attachment with no later revision available*

  If the **CAE 3D Model** item revision has an attachment for which no later revision is available, then the attachment is highlighted in green color.



This is the default color for the **No Action** box in the **Edit** → **Options** → **CAE** → **General** → **Out-of-date Highlights** tab in CAE Manager.

The RGB value specified in the **CAE_no_action_highlight_color** user preference determines the default color used by the **No Action** box.

4. (Optional) Select the **CAE 3D Model** item revision, right-click, and choose **Select All with Later Revisions**.

5. (Optional) Click **View Menu** in the view toolbar, and choose **Add Latest References** or **Update Latest References**.

Find represented product from the Model view

In the **Model** view, you can quickly identify the objects in the **Product** view that correspond to a selection in the **Model** view, using the **Select corresponding in Product** option.

When you select this option, the system checks whether the **CAE 3D Analysis** item revision has a **CAE Target Occurrence** relationship. If the relationship exists and if a product line is available on the loaded model structure, the system selects the product line.

If the system does not find the **CAE Target Occurrence** relationship, it finds the related product line for the **CAE 3D Analysis** item revision of the selected model using the **CAE Target** relationship, and selects the product line.

1. In the **Model** view, select an item revision or multiple item revisions.

2. Right-click and choose **Select corresponding in Product**.

Share your working design or save an interim version for future reference

During the development of a product's design, you may want to share your working design with other users. You may also want to save an interim version of your design for future reference. To do this, you can create a baseline of the work-in-progress (WIP) design. When you request a baseline, Teamcenter creates a new revision for each unreleased revision in the structure and releases it with a predefined status, for example, **TC_Baseline**.

1. Open the latest working revision of a product or model structure in the **Product** or **Model** view respectively.

2. Click **View Menu** in the view toolbar, and choose **Baseline**.

3. Select a baseline template, specify a baseline label, and optionally specify a job description.

4. (Optional) To create the baseline and open it automatically in a new **Product** or **Model**view, select **Open On Create**.

5. (Optional) To create a report, select **Dry Run Creation**.

6. (Optional) To create a precise baseline, select **Precise Baseline**.

   Tip:

   Your site may be configured to allow only precise baselines, depending on the setting of the **Baseline_precise_bvr** preference.

Replace older revisions with approved revisions

By default, an occurrence automatically references a particular item revision, depending on the revision rule currently in effect. Optionally, you can set the occurrence to unconditionally reference a precise revision of the part. You can then detect any precise occurrences that reference an out-of-date revision and manually upgrade each occurrence to an approved revision of the referenced part. This option is available only with a *precise* structure.

When you create a new item revision and it is approved, the occurrences of older revisions are not automatically updated with the new revision if the structure is precise. You must use the **Show/Hide Superseded Revisions** command to identify superseded item revisions. While updating an occurrence with an old revision to the new approved revision, you can update all the applicable occurrences in the parent assembly or just the currently selected component.

1. Open a precise product or a model structure in the **Product** or **Model** view, respectively.

   Alternatively, open a product or a model structure and apply a precise revision rule.

2. Click **View Menu** in the view toolbar, and choose **Edit→Show/Hide Superseded Revisions**.

3. To replace selected product or model revisions with new approved versions, select the BOM lines for which superseded revisions are available, right-click, and select **Update Superseded**.

   You can select multiple BOM lines and update multiple revisions to the approved revisions in the **Update** dialog box. To update multiple occurrences within the same parent, select the **Adjacent Occurrences** option.

Viewing product structures represented by model structures

View model revisions related to product revisions

Viewing target references

Use the **Target References** view to view a structure of the non-CAE item revisions represented by the CAE model structures loaded in the **Model** view.

The **CAE Target** relation type defines the relationship between the item revisions in the structure lines of the **Target References** view and the item revisions in the lines of the CAE model structures.

You must have the following before you work in the **Target References** view:

- A **CAE 3D Model** item revision loaded in the **Model** view.
- A non-CAE item revision loaded in the **Product** view.
- A **CAE Target** relation type between the root item revision of the non-CAE item and the root item revisions of the loaded CAE model structure.

> Note:
>
> If you open multiple **CAE 3D Analysis** item revisions not related to product revisions with the **CAE Target** relationship in multiple **Model** views, the system displays the following error message:
>
> *No model view loaded with related CAE Model item revision in CAE Manager*

Activate the Target References view

1. In the **Product** view, choose **Open Secondary Views→Target References** to open the **Target References** view.
2. If you open multiple **CAE 3D Analysis** item revisions related to the product revision with the **CAE Target** relationship in multiple **Model** views, the system prompts you to select the appropriate model structure.
3. In the **Select Model view to be Associated** dialog box, select the appropriate model structure.
4. (Optional) To change the associated model structure, in the **Target References** view, click **Change Associated Model View** in the view toolbar.
5. (Optional) To open a different product structure in the **Target References** view, choose **Associate this Secondary view to a different Primary view** and select another **Product** view.

Check for later revisions of a represented item in the target references structure

You can use the **Check for Later Revisions** option to check whether any later revisions are available for the represented item in the target references structure.

1. In the **Product** view, click **Open Secondary Views** in the view toolbar, and choose **Composite**.

2. Select a structure line in the **Composite** view.

3. Click **Check for Later Revisions** in the view toolbar.

   The **Check for Later Revision** option checks each line of the target references structure to determine whether a later revision of the represented item is available or not. Teamcenter displays the results in green (used for no action), red (action required), and yellow (for caution) colors.

4. Select a BOM line, right-click, and choose **Select all lines of same color**.

Compare target references with the product structure at the leaf level

In some analysis processes, you might want to flatten CAE structures to reduce complexity by representing only the leaf nodes (holding geometry) from the product structure and skip all the intermediate subassembly nodes. Subsequently, when you want to compare the CAE structure with product structure for changes, you are interested in comparing only the leaf nodes.

You can use the **Compare Target References with Product at leaf level** option to compare the differences between the product structure and the model structure at the leaf level. When you perform a comparison, the system highlights leaf nodes in the corresponding structure.

Leaf nodes are ...	All related leaf BOM lines ...
Not present in the target references structure	In the **Product** view are highlighted in red (action required) color.
Present in the target references structure	In the **Product** view are highlighted in green (no action) color.
Present in the target references structure, but not in the product structure	In the **Target References** view are highlighted in red (action required) color.
Present in the target references structure, which are of a different revision	In the **Target References** view are highlighted in yellow (caution) color.

1. In the **Product** view, click **Open Secondary Views** in the view toolbar, and choose **Target References**.

2. In the **Target References** view, click **View Menu** in the view toolbar, and choose **Compare Target References with Product at leaf level**.

   Teamcenter displays the results in green (used for no action), red (action required), and yellow (for caution) colors.

3. Select a BOM line, right-click, and choose **Select all lines of same color**.

4. Select a BOM line, right-click, and choose **Select related BOM line in Model**.

Find related components in product and model structures

You can find out which BOM lines in the product and model structures are represented by selected lines in the **Target References** view using the **Select corresponding in** option. The **CAE Target** relationship determines the item revisions you can find in the **Target References** view.

1. In the **Product** view, click **Open Secondary Views** in the view toolbar, and choose **Target References**.

2. Select one item revision node or multiple item revision nodes

3. (Optional) Right-click and choose **Select corresponding in→Product**.

   If the systems finds any matching BOM lines in the **Product** view, it selects the matching BOM lines.

   If the system does not find any matching BOM lines in the **Product** view, it displays the following warning message:`No component is represented in the Product view`.

4. (Optional) Right-click and choose **Select corresponding in→Model**.

   If the systems finds any matching BOM lines in the **Model** view, it selects the matching BOM lines.

   If the system does not find any matching BOM lines in the **Model** view, it displays the following warning message:`No component is represented in the Model view`.

5. (Optional) Right-click and choose **Select corresponding in→Product and Model**.

   If the systems finds any matching BOM lines in the **Product** or **Model** view, it selects the matching BOM lines.

If the system does not find any matching BOM lines in the **Product** or **Model** view, it displays the following warning message: `No component is represented in the Product or Model view`.

Find represented model from the Product view

In the **Product** view, you can quickly identify the objects in the **Model** view that correspond to a selection in the **Product** view using the **Select corresponding in Model** option.

When you select this option, the system checks whether the BOM line has a **CAE Target Occurrence** relationship. If the relationship exists and if a **CAE 3D Analysis** item revision is available on the loaded model structure, the system selects the **CAE 3D Analysis** item revision.

If the system does not find the **CAE Target Occurrence** relationship, it finds the related **CAE 3D Analysis** item revision for the product revision of the selected product line using the **CAE Target** relationship, and selects the **CAE 3D Analysis** item revision.

1. In the **Product** view, select a BOM line or multiple BOM lines.

2. Right-click and choose **Select corresponding in Model**.

Compare target references with associated product structures

You can use the **Compare Target References with Product** option to compare the target references with the associated product structures.

> Note:
>
> - The associated product structure is the BOM view related to the target non-CAE item revision for the root **CAE 3D Model** item revision.
>
> - Target references are the view of non-CAE item revisions that are related to the CAE model structure lines through the target relationship.

1. In the **Product** view, click **Open Secondary Views** in the view toolbar, and choose **Target References**.

2. Select a structure line, click **View Menu** in the view toolbar, and choose **Compare Target References with Product**.

   The **Compare with Product** option compares the structure lines in the **Target References** view with the active product structure. Teamcenter displays the results in green (used for no action), red (action required), and yellow (for caution) colors.

3. (Optional) Select a BOM line, right-click, select **Select related BOM line in**, and choose **Model**, **Product**, or **Model and Product**.

4. (Optional) Select a BOM line, right-click, and choose **Select all lines of same color**.

View associated references

You can view non-CAE item revisions that are associated with the structure lines of the CAE model structure through the **CAE Target** relation type, and the related **CAE 3D Model** item revisions under each line of the **Target References** view.

1. In the **Product** view, click **Open Secondary Views** in the view toolbar, and choose **Target References**.

2. Select a structure line, click **View Menu** in the view toolbar, and choose **Show Target**.

   Show Target is a toggle. When it is checked, Simulation Process and Data Management displays not only the structure of target references but also the **CAE 3D Analysis** item revisions for which they are targets.

Derive model structures to validate different simulation scenarios

Why derive structures?

You (as a simulation analyst) can use predefined derivative rules and variant configuration rules to quickly derive one or more structures relevant to your analysis from an existing structure.

During the virtual validation of a vehicle, you may create hundreds of different deck structures or simulation variants to understand the effects of different materials or to optimize the weight of the vehicle. This is done by varying the load cases, materials, thickness, meshes, and geometry and then generating results to validate the vehicle against these different load cases. Many variants are created for this purpose, with each variant representing a load case.

The simulation administrator defines derivative rules and variant configuration rules. You can use these predefined rules to quickly derive one or more simulation variants from an existing one. You can then make modifications to the structure by varying load cases, meshes, or materials to evaluate different options and can view the complete traceability between the different variants.

> Note:
>
> Derivative rules and variant configuration rules are defined at the site level by the simulation administrator, at the group level by the group administrator, and at the user level by the analyst.

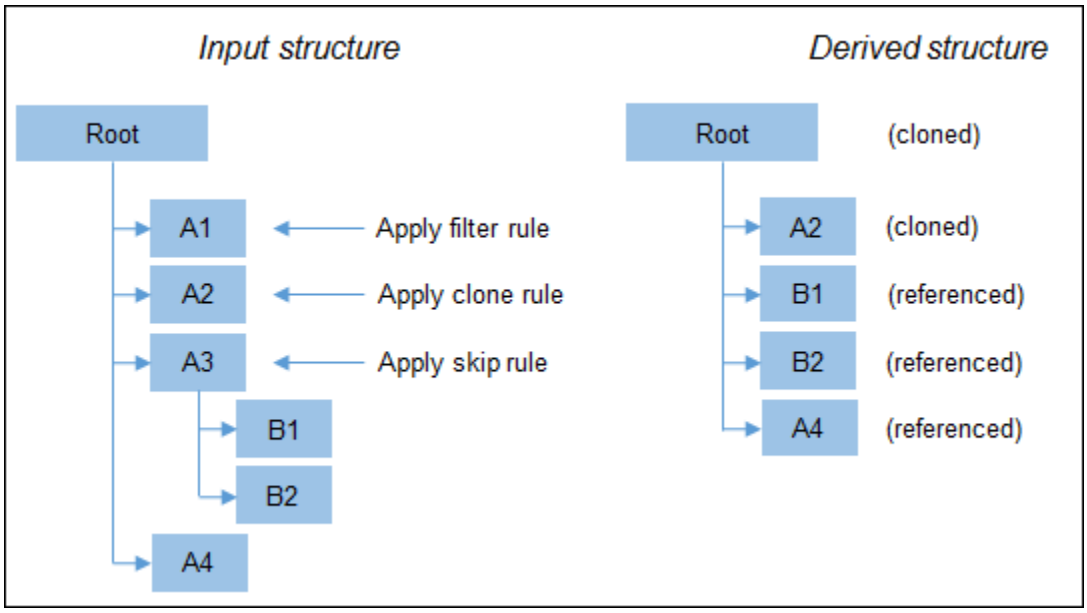
You apply derivative rules after **configuring the product structure**. After you load a model structure that has a reference to a configurator context and derive one or more structures, the derived structures have the context set to the same configuration context as that of the source model structure. Further, all the variant formula from the source model structure is mapped to the derived structures.

Derivative rules

A derivative rule contains filter, skip, and clone rules to indicate which components of the source CAE structure are used to create a derived CAE structure. Each rule may contain a conditional clause limiting the rule to a specific item or item revision types. The conditional clauses may contain expressions based on items, item revisions, or form attribute values. You can define any number of conditional clauses for each derivative rule. Each conditional clause is evaluated against each component in the source CAE structure. If components:

- Satisfy the conditional clauses, the system *filters*, *skips*, or *clones* the components in the derived CAE structure.

- Do not satisfy the conditional clauses, the system directly *references* the components, along with their children (if any), in the derived CAE structure.



Variant configuration rules

A variant configuration rule contains variant options and values to indicate which components of the source structure are used to create a derived structure.

Consider the source structure as an unconfigured product structure (150% BOM) with a V8 or V6 engine, an automatic or a manual gearbox, and 2 door or 4 door options. The simulation administrator can create a variant configuration rule to derive two specific structures using the same rule: one for the V8 engine, automatic gearbox, and 4 door combination and another for the V6 engine, manual gearbox, and 2 door combination.

Each variant option in the configuration details contains a value limiting the rule to derive a structure containing only those values. You can override these values or add additional values before deriving a structure.

Prerequisites for deriving structures

You can derive structures by using Product Configurator variants if the **Product Configurator for Simulation Process Management** template is installed at your site. This allows you to configure the structure by using families, features, and configurator rules.

If this template is not installed, you can configure the structure by using classic variants, that is, options and values.

The **PSM_enable_Product_Configurator** user preference enables the use of Teamcenter Product Configurator variants to configure the variability of a structure. By default, this preference is set to **true**.

The following is the command availability if Simulation Process and Data Management and Product Configurator applications are installed at your site:

PSM_enable_Product_Configurator user preference is set to:	Product Configurator for Simulation Process Management template installed?	Is the configurator context selected?	Type of structure	Derive Structures command availability
true	No	No	Product Configurator	Not available.
true	No	Yes	Product Configurator	Not available.
true	Yes	No	Product Configurator	Not available. You must set a default configurator context.
true	Yes	Yes	Product Configurator	Available with Product Configurator dialog.
true	Yes	Yes	Legacy	Command is available but derive execution fails with an error. Caution: Do not use a default

PSM_enable_Product_Configurator user preference is set to:	Product Configurator for Simulation Process Management template installed?	Is the configurator context selected?	Type of structure	Derive Structures command availability
				configurator context with legacy structures.
false	No	No	Legacy	Available with legacy dialog
false	Yes	No	Legacy	Available with legacy dialog

Derive a structure using a predefined derivative rule

When you derive a CAE structure, you can specify the number of cloned CAE structures and components you want to create and persist them in the Teamcenter database with all the specifications as configured in the derivative rule defined by the simulation administrator. The root CAE structure item and the **CAE 3D Analysis** item revision are pasted in the user's **Newstuff** folder (default option) in Teamcenter and to the clipboard if the number of derived structures is only one. In addition, a CAE structure cloning log, if enabled by the simulation administrator, is imported into a dataset and the dataset is attached to the root item revision of the CAE structure.

If you derive a master structure that has pedigree information, the system clones the pedigree information to each of the derived structures. Additionally, if you derive *deck_001* from the master deck and revise it, the system considers revision B of *deck_001* as a deck structure of the same master. However, if you derive revision B of *deck_001*, the system renames it as *deck_002*.

You can also derive structures using the **cae_execute_derive_structures** command line utility. This utility applies the derivative rule to an input structure when you provide the root item revision and the configuration information of the input structure and pastes the output structures in the Teamcenter **NewStuff** folder. To view the command line help for this utility, type **cae_execute_derive_structures -h** on the Teamcenter command prompt.

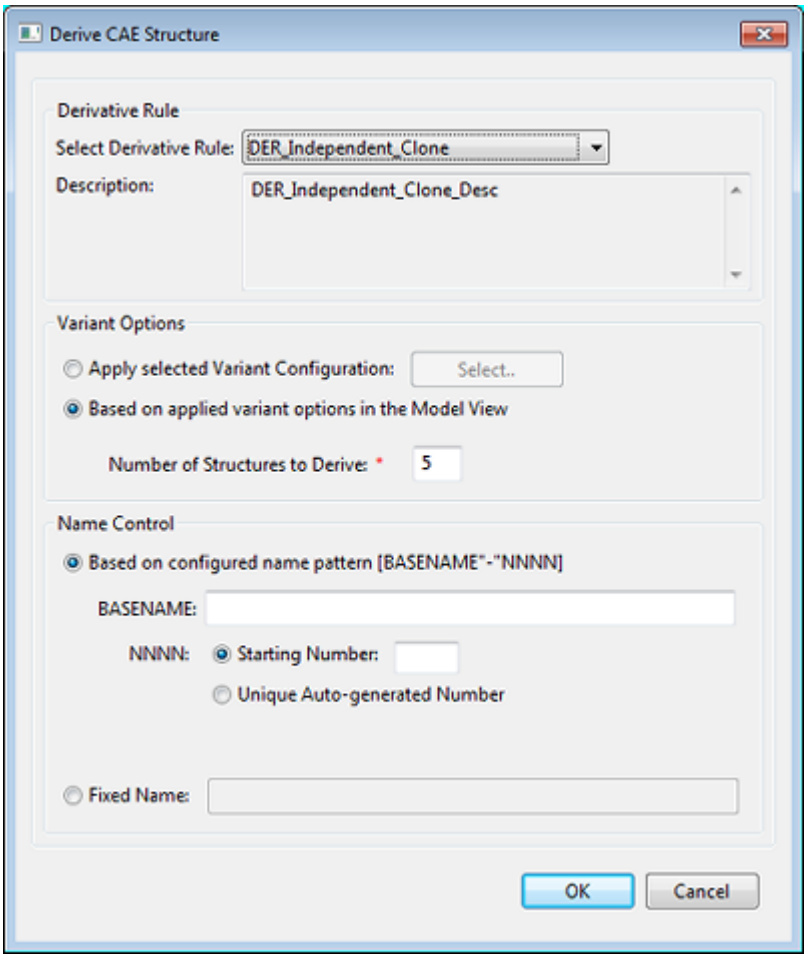
> Note:
>
> If you set the **PSEVariantsMode** preference to the **legacy** mode, the system does *not* capture the default or the derived variant option values during the pedigree operation. The system captures only the variant conditions set by you. By default, this preference is set to **hybrid** mode.

1. In CAE Manager, choose the **Model** view.

2. Select the root item revision and click **Derive Structures** in the view toolbar.

   Alternatively, select the root item revision, click **View Menu**, and click **Derive Structures**.

3. In the **Derive CAE Structure** dialog box, select a derivative rule.



Derive a structure based on variant options

1. In the **Variant Options** area, select **Apply selected Variant Configuration** or **Based on applied variant options in the Model view** option.

2. Using selected variant configuration.

   a. Select **Apply selected Variant Configuration** and click **Select**.

   b. In the **Select Variant Configurations** dialog box, select a variant configuration item.

      This dialog box displays all the available variant options from the model structure you wish to derive.

c. (Optional) To interchange rows and columns before loading any variant configuration items, click **Transpose**  .

This option is disabled if you select any variant configuration item.

d. (Optional) Create a new derivative configuration.

A. Click **Create Derivative Variant Configuration**  .

B. Select the scope (site or user).

C. (Optional) Assign an ID and revision.

D. (Mandatory) Specify a name.

E. (Optional) Type a description.

e. (Optional) To modify the description of a variant option, select an option from the list and type a new description.

f. (Optional) To change a variant option value, select an option from the list and choose a different value.

g. (Optional) To add a new row, click **Add** and select variant options.

h. (Optional) To remove an existing row of variant options, select a row and click **Remove**.

i. (Optional) To autofit columns, select the **Auto-fit All Columns** command available from the title row or column of the table.

j. To clone a deck, select a row or column, right-click, and select **Clone Deck** command.

The system clones the current deck, that is, the same variant information, and appends the table with the new deck.

This command is available only if the **Select Variant Configurations** dialog box is populated with deck information.

k. To derive a new structure, click **OK**.

3. Using applied variant options.

a. Select **Based on applied variant options in the Model view**.

b. Specify the number of structures to derive.

c. To derive a new structure, click **OK**.

Derive a structure based on name control

1. In the **Name Control** area, select **Based on configured name pattern** or **Fixed Name** option.

2. Using configured name pattern.

   a. Select **Based on configured name pattern**.

   b. Specify a base name.

      You can specify a *basename* based on the configured name pattern specified by a user with DBA privileges or specify a *fixed name*.

      A user with DBA privileges configures a pattern for generating the name of a derived deck with a unique number within the context of a master structure at the site level. This pattern is specified as a combination of fixed strings, a base name keyword and the number of digits keyword.

      For example, if you specify the **BASENAME** as **SV01** and select the unique auto-generated option, the system generates the next unique number, **0001**, and computes the name based on the specified base name, for example, **SV01-Deck0001**.

      If the user generates 5 decks, the next 4 decks are named automatically as **SV01-Deck0002**, **SV01-Deck0003**, **SV01-Deck0004**, and **SV01-Deck0005**.

      If there are existing decks, the counter starts from the next available number. For example, if you derive 5 more decks, the next 5 decks are named from **SV01-Deck0006** to **SV01-Deck0011**.

   c. (Optional) To overwrite the name of the derived structure in the derivative rule, type a new name in the **Base Name** box.

   d. Type a **Starting Number** or select **Unique Auto-generated Number**

      > Tip:
      >
      > The **Starting Number** box is disabled if you specify the number of structures to derive as **1** in variant options.

   e. To derive a new structure, click **OK**.

3. Using fixed name.

   a. Select **Fixed Name**.

b. If you do not want to use the preconfigured name pattern, specify a name in the **Fixed Name** box.

c. To derive a new structure, click **OK**.

Derive a structure using preconfigured material revision mapping

If Teamcenter materials management is installed and an administrator (a user with DBA privileges) has mapped material revisions from the product revision (source) to the derived structure (output), you (as a simulation analyst) can derive model structures containing material revision mapping by using data mapping and structure map rules. The system creates a reference between the derived structure (output) and the material revisions attached to the product structure (source).

1. In CAE Manager, choose the **Model** view.

2. Select the root item revision and click **Derive Structures** in the view toolbar.

   Alternatively, select the root item revision, click **View Menu**, and click **Derive Structures**.

3. In the **Derive CAE Structure** dialog box, select a derivative rule.

4. Derive a structure based on **variant options** or **name control**.

5. Open the output deck structure and verify if the system has referenced the material revisions from the product revision (source) to the derived structure (output).

5. Compare product and model structures

Compare model and product structures and update the model structure

Why compare the CAE model structure and the product structure?

Use the **Inspector** view in CAE Manager to update a CAE model that comprises a structure of CAE model components to reflect changes to the related product structure. Using this view, you can:

- Add or remove CAE model components if components are added to or removed from the product structure.
- Revise a CAE model component and replace the BOM line with a later revision if components of the product structure are revised.
  - You can choose whether to make the necessary changes in the current revision of the CAE model or in a future revision.
  - Compare a CAE model structure and a product structure, and also update the CAE model structure if necessary.

Compare and update the model structure

1. Select a **CAE 3D Model** item in a My Teamcenter folder or a collaboration context. Right-click, and choose **Send To→CAE Manager**. CAE Manager displays it in the **Model** view.
2. Select a product item in a My Teamcenter folder or a collaboration context. Right-click, and choose **Send To→CAE Manager**. CAE Manager displays it in the **Product** view.
3. Click **Inspector**  in the main toolbar.
4. In the **Inspector** view, click **Load Inspector**.

   If you have more than one product or model revision open in multiple **Product** or **Model** views respectively, the system prompts you to select the appropriate product and model structure in the **Load Inspector - Select Model and Product Structures** dialog box.

   CAE Manager loads the product and model structures in the **Product** and **Model** views, respectively.
5. Choose the BOM lines you want to compare in the **Product** and **Model** views.

Alternatively, select the **Select All** check boxes in the **Product** and **Model** views to compare all BOM lines of the product or the model structure.

You can compare either the product structure against the model structure or vice versa by choosing the **Product** or **Model** options respectively and clicking **Compare Structure**.

The BOM structures for both the product and model are evaluated and the results of the comparison are displayed in the **Decision** tree. Each BOM line in the decision tree is marked as **Passed** or **Failed** depending on the evaluation criteria. Each **Failed** BOM line displays the default action and the available actions for that particular criteria.

The differences are displayed using color coding. Color coding is done only for the BOM structure that is in focus. Color code specifications for the **Decision** tree branch are as follows:

- *Green*—the branch passed all criteria.
- *Yellow*—the branch failed a criteria and the default action is to do nothing.
- *Red*—the branch failed a criteria and the default action has an impact on the **CAE 3D Model** revision and/or its structure.

> Note:
>
> Color coding in yellow and red depends on the settings your administrator has selected in the **CAE Tools — Inspector** configuration options. If **Do Nothing** is selected as the default action for product structure and simulation structure options, the branch with failed criteria is displayed in yellow. If some other action is selected, the branch with failed criteria is displayed in red.

You can choose the **Show Only Red** or **Show Only Yellow** option as appropriate. By default, it is set to **Show All**. You can select the desired actions for each of the failed lines and execute the changes.

6. Select the **Product** option and click **Compare Structure**.

   The **Execute Comparison** dialog box opens.

7. Select one of the following options to start the comparison:

   - **Product With No Model** to determine whether the product BOM line is not linked to any **CAE 3D Model** BOM line in the model structure.
   - **Missing Model Components** to determine whether the number of BOM lines for a **CAE 3D Model** item revision is less than the number of BOM lines for the linked product item revision.

8. Select the branch with the failed criteria and select one of the following options:

The following table describes actions and inputs required for failed criteria.

Actions	Description	Input required in the Item ID column
Do Nothing	No action possible.	No action possible.
Use new Model	The corresponding component is replaced with a revision of a new **CAE 3D Model** item. Simulation Process and Data Management creates a **CAE 3D Model** item revision and adds a relationship between the product item revision in the BOM line and the newly created item revision. If the simulation administrator has created data mapping rules for secondary objects, the system creates the secondary objects (**CAE 3D Geometry**, **CAE 3D Analysis**, or **CAEMesh** item revision) and adds the necessary relationships between the product item revision in the BOM line and the newly created item revision.	No input required. Simulation Process and Data Management displays the item ID/Rev of the **CAE 3D Model** item to be created.
Use Model Related to Product Item	The corresponding component is replaced with an existing **CAE 3D Model** item revision. Simulation Process and Data Management creates a relationship if the selected **CAE 3D Model** item revision does not have a relationship to the product item revision in the BOM line.	Select the appropriate item revision from the list. Simulation Process and Data Management populates the list with all **CAE 3D Model** item revisions for which there is a **CAE Target** relationship with any item revision of the product item represented in the BOM line.
Use Model Related to Product Revision	The corresponding component is replaced with an existing item revision. **CAE 3D Model**	Select the appropriate item revision from the list. Simulation Process and Data Management populates the list with all **CAE 3D Model** item revisions for which there is a **CAE Target** relationship with the product item revision in the BOM line.
Use Revised Model	The corresponding component is replaced with a new revision of an existing **CAE 3D Model** item. Simulation Process and Data Management creates a new revision of the selected **CAE 3D Model** item and adds a relationship between the product item revision in the BOM line and the newly created **CAE 3D Model** item revision.	Select the appropriate item revision from the list. Simulation Process and Data Management populates the list with the latest revision of all **CAE 3D Model** items that have an item revision for which there is a **CAE Target** relationship with any

Actions	Description	Input required in the Item ID column
		item revision of the product item represented in the BOM line.

9. (Optional) From the **Domain** menu, select the domain to apply data mapping rules specific to the selected domain.

   The simulation administrator creates various structure map domains in BMIDE and configures data mapping rules for various domains. For example, your company might have different CAE disciplines for safety, durability, and so on, and your company might want data mapping to be different for each discipline. Domains help provide the flexibility to include different data mapping methods for each discipline while revising the CAE model structure.

   > Note:
   >
   > Deselect the **Apply Data Mapping** check box to avoid applying data mapping rules.

10. Click **Execute**.

    The CAE Manager updates the simulation structure and displays it in the CAE Manager — **Model** view.

Compare model and product structures and update the attributes of the model structure

How to compare and update the model structure

You can use the **CAE Attribute Compare** feature in CAE Manager to compare attribute values between related instances of a model structure and a product structure and propagate these changes.

> Note:
>
> You can also run this feature as a command utility. This utility is called **cae_execute_cae_accountability_check**.

Let us assume a scenario where you (as analyst) receive a product structure for analysis. You apply structure map rules to the product structure and create the CAE structure. You also generate meshes with connections, define load cases, generate the deck, and perform a solve.

Later, you are notified that there are some minor changes to the product structure. Instead of recreating the complete CAE structure, you decide to compare the existing CAE structure with the changed product structure, understand the changes, and make updates to the existing CAE structure. You use the

Inspector view in CAE Manager to find if any new components are added, removed, or revised, and update the CAE structure.

Then, you can use the **CAE Attribute Compare** feature to compare differences in the mapped attributes (for example, material ID or transformation), review the report and optionally save it, and finally propagate the changes on the CAE structure.

In CAE Manager, you can generate a CAE structure from an existing product structure. The data map, configured by the simulation administrator, determines the default mapping of product items to CAE items. By default, the data map creates a **CAE 3D Analysis** item for each generic item in the product structure.

The simulation administrator defines one or more custom item types to handle the product structure data as part of your company's business model. For each custom product item type in your company's business model, the simulation administrator creates a mapping rule that determines the corresponding CAE item type in the CAE structure. These rules are defined in a data map file.

In the data map file, the simulation administrator creates domains to define different rules. For example, your company might have different CAE disciplines for safety, durability, and so on. Domains provide the flexibility to include different data mapping methods for each discipline while running a CAE attribute compare.

When you run a CAE attribute compare, you can choose only preconfigured items, item revisions, forms, or BOM line attributes. The simulation administrator controls the required items, item revisions, forms, or BOM line attributes using a configuration file. If the structures are very large, they impact the performance and memory usage of the system. Therefore, the simulation administrator preconfigures needed attributes that are required for processing and you can choose only those attributes.

In order to accurately compare a CAE structure against the product structure for changes, the **CAE Target** relationship is not sufficient. In some cases, you use a flattened and reorganized **CAE 3D Analysis** model structure or reorganize the **CAE 3D Analysis** instances differently compared to the corresponding product instances. To handle such scenarios, the **CAE Target Occurrence** relation type is used to define the relationship between an absolute occurrence of a **CAE 3D Model** item revision and an absolute occurrence of an item revision in a BOM window. An absolute occurrence is a specific instance of a component or assembly in a structure. It may be independent of the top-level assembly and only meaningful in the context of a lower level assembly. For example, you may have four occurrences of a wheel in the design of a vehicle; you can label one of those occurrences as **left rear wheel**, which is an absolute occurrence of the wheel.

You can create the **CAE Target Occurrence** relation type property either:

- Automatically while creating a data map or a structure map.

  You can compare some or all mapped attributes in a model structure to current values in the product structure if the simulation administrator sets the **MAPPED** attribute to **true** in the **NodeXMLConfig.xml** file.

- **Manually in CAE Manager using trace links**.

Create the CAE Target Occurrence relationship manually

You can use a trace link to create the **CAE Target Occurrence** relation type manually.

A trace link establishes a path in which one object takes precedence over another. The trace link creates a directional relationship between the two objects, a relationship conveyed by the terms *defining* and *complying*. The predecessor, the defining object, is the trace link source. The successor, the complying object, is the target.

1. Enable trace links.

   a. In My Teamcenter or CAE Manager, click **Edit→Options**.

   b. Choose **Systems Engineering** and check the **Trace Link Mode** check box.

      The trace link icons are enabled on the toolbar.

2. Open the product structure in the **Product** view.

3. Create a new **CAE 3D Analysis** item revision in the **Model** view.

4. Populate the **CAE 3D Analysis** item revision manually.

   You can use the **Composite** and **Summary** views to see existing model details and copy and paste them to the **CAE 3D Analysis** item revision.

5. Set the top-level product in context. In the **Product** view, right-click and choose **Set In Context**.

6. Set the top-level or the relevant **CAE 3D Analysis** item revision in context. In the **Model** view, choose the appropriate item revision, right-click and choose **Set In Context**.

7. To start the trace link, in the **Model** view, choose the appropriate item revision and click the **Start Trace Link Creation** icon on the toolbar.

8. To end the trace link:

   a. In the **Product** view, choose the corresponding product item revision and click the **End Trace Link Creation with Subtype** icon on the toolbar.

   b. Choose the **CAE Target Occurrence** relation type.

9. To see trace links, in the **Product** or **Model** view, enable **Trace Link** and **Trace Links** columns.

   You can right-click a column, and choose **Insert column(s)** to enable relevant columns. When you enable columns in one view, the system automatically enables these columns in the other view.

10. To see the product item revisions to which the model item revisions are pointing, select the **CAE 3D Analysis** item revision, right-click, and choose **Trace Link→Traceability Report→Complying**.

Compare and update attributes

1. Open the product structure in the **Product** view and model structure in the **Model** view.

2. Select the root level item revisions for both the views, and choose **Tools→CAE Attribute Compare**.

   > Note:
   >
   > CAE Manager uses a common interface for CAE attribute compare and CAE BOM compare. Some of the options in the **Equivalence**, **Reporting**, and **Partial Match** tabs in the **CAE Attribute Compare** and **CAE BOM Compare** dialog boxes vary depending on the type of compare you perform.

   If you open more than one product and model structures in the respective views, you can do one of the following:

   - Select the root product revision in the appropriate **Product** view, click **Add Target** in the **Model** box, and then select the root model revision from one of the open **Model** views.

   - Select the root model revision in the appropriate **Model** view, click **Add Source** in the **Product** box, and then select the root product revision from one of the open **Product** views.

3. To automatically propagate changes from the product structure to the model structure, check the **Automatically Propagate the Model Structure** check box in the **Reporting** tab.

   You can check the propagate results stored as an HTML dataset for details. By default, the name of the HTML dataset starts with *Attribute Propagate Summary*. This depends on the **Attribute Propagate Summary Dataset Name** preference value specified by the simulation administrator at your site.

   a. In the **Model** view, right-click the top level item revision, and choose **Open with→Attachments**.

   b. In the **Attachments** view, double-click the HTML dataset to open the CAE attribute propagate results in a browser.

   The CAE attribute propagate results is also available under the top level **CAE 3D Analysis** item revision if you have write privileges or is available from the **Newstuff** folder in My Teamcenter. You can double-click the HTML dataset to open the results in a browser.

4. To specify a report name, check the **Printable Report Name** check box in the **Reporting** tab and type a name. The default report name is **CAE Attribute Compare Report**.

After you run a CAE attribute compare, this report is captured automatically as a spreadsheet (Microsoft Excel format) in the database.

The report is available under the top level **CAE 3D Analysis** item revision if you have write privileges or is available from the **Newstuff** folder in My Teamcenter. You can double-click the report name to open the report in Microsoft Excel.

5. Select display options. You can choose the **Full match** check box or **Partial match** check box, or both. You can also choose color options for the CAE attribute compare results using **Browse** next to these display options.

   - **Full match** means that there are no differences in mapped attribute values. The default color is green.

   - **Partial match** means that one or more mapped attribute values are different. The default color is yellow.

6. Select the data mapping domain for attribute comparison.

   a. Click the **Partial match** tab.

   b. From the **Domain** menu, select a domain.

      The domains available from this menu depend on the domains configured by the simulation administrator.

      > Note:
      >
      > You cannot change the domain if the CAE structure is generated by executing a structure map and is associated with the **CAE Generated By** relationship. In such cases, the domain value in the CAE attribute compare is automatically set to the domain of the corresponding structure map.

7. Select a list of mapped properties for attribute comparison.

   The simulation administrator controls the required items, item revisions, forms, or BOM line attributes using the **NodeXMLConfig.xml** configuration file. If the structures are very large, they impact the performance and memory usage of the system. Therefore, the simulation administrator preconfigures needed properties that are required for processing, and you can choose only those properties.

   > Note:
   >
   > You get the **No Mapped Attributes Found** error message if the simulation administrator has not properly configured data mapping. The simulation administrator must define the

NodeXMLConfig.xml file such that the appropriate types are set as **STATUS="ACTIVE"** and the appropriate attributes are defined as **MAPPED="true"**.

8. After you select properties, click **OK** to run the CAE attribute compare.

   The system displays the results in both views in CAE Manager and also displays a **CAE Attribute Compare** view with the partial match results.

   In the **Product** and **Model** views in CAE Manager:

   - BOM lines with green color (default color for full match) indicate that there are no differences to attribute values.
   - BOM lines with yellow color (default color for partial match) indicate that there are differences to attributes values.

Compare structures using a BOM compare report

Compare structures

During the virtual validation of a vehicle, to understand the effects of different materials or to optimize the weight of the vehicle, you may create hundreds of different deck structures (simulation variants). This is done by varying the load cases, materials, thickness, or meshes and geometry, and then generating results to validate the vehicle against these different load cases. Many variants are created for this purpose with each variant representing a load case.

To understand the effects of different simulation variants, you can select and compare them to understand differences in input data or load cases and examine their corresponding results to determine whether the simulation variants can be used in the next stage of the analysis process.

You can use Simulation Process and Data Management to quickly create one or more simulation variants from an existing simulation variant, make modifications to the structure, and view the differences between simulation variants. Typically, these simulation variants are complex and it is not possible to compare more than two simulation variants at a time and understand their differences.

You can use CAE Manager to view two different simulation variants side-by-side and compare them, get a visual understanding of their differences as they are color coded, and you can further investigate differences in attributes such as thickness, associated files or load cases, and file content.

Run a CAE BOM compare report

You can compare two product or model structures loaded in separate **Product** or **Model** views or two subassemblies loaded in separate **Product** or **Model** views. The *source* structure is the product or model structure you select in the **Product** or **Model** view and the *target* structure is the product or model structure in the other respective view. If you open two product and model structures in separate **Product**

or **Model** views, the **CAE BOM Compare** dialog box automatically selects the source structure and target structure. If you open more than two product or model structures in separate **Product** or **Model** views, you must specifically select the target structure in the **CAE BOM Compare** dialog box. You can also switch between the source structure and the target structure in the **CAE BOM Compare** dialog box. The comparison results are displayed in the **Product** or **Model** view of the source structure.

> Note:
>
> CAE Manager uses a common interface for CAE attribute compare and CAE BOM compare. Some of the options in the **Equivalence**, **Reporting**, and **Partial Match** tabs in the **CAE Attribute Compare** and **CAE BOM Compare** dialog boxes vary depending on the type of compare you perform.

1. In CAE Manager, open two product or model structures in **Product** or **Model** views.

2. Select the root structure or a child item in the product or model structure.

3. Choose **Tools→CAE BOM Compare**.

   If you open more than two product or model structures in separate **Product** or **Model** views, you must specifically select the target structure in the **CAE BOM Compare** dialog box. You specify a target structure by selecting an open **Product** or **Model** view, and then choose the **Add Target** icon in the **CAE BOM Compare** dialog box.

4. Specify equivalence criteria for comparing structures.

   a. Click the **Equivalence** tab.

   b. Choose one of the following equivalence options:

      - **Common Item** uses the underlying item to establish equivalence for comparison between the two lines.

      - **Find Number** uses the find number of the product structure (BOM line) to establish equivalence for comparison between the two lines.

        A find number is a unique number assigned to each line in the product structure. When users add an item to the product structure, the line receives the next available find number in the defined sequence. Users can rearrange the structure in find numbers by clicking the **Find Number** column header.

   c. Choose a compare mode.

Mode	Description
All Levels	Compares the source and target structure at all levels.
All Visible Levels	Compares the source and target structure at expanded levels.
First Level Only	Compares the source and target structure only at first levels.
Leaf Level Only	Compares the source and target structure at the leaf levels. This mode is not applicable for the **Find Number** equivalence option.
Lowest Visible Level Only	Compares the expanded source and target structure only at the leaf levels.

5. Specify reporting and display options.

   a. Click the **Reporting** tab.

   b. To specify a report name, check the **Printable comparison report name** check box and type a name. The default report name is **CAE BOM Compare Report**.

   After you run a CAE BOM compare, this report is captured automatically as a spreadsheet (Microsoft Excel format) in the database.

   The report is available under the top level **CAE 3D Analysis** item revision if you have write privileges or is available from the **Newstuff** folder in My Teamcenter. You can double-click the report name to open the report in Microsoft Excel.

   c. To select display options, select one of the following options:

Option	Description
Full match	Means that the item ID and revision ID are the same. If the object (occurrence) in the source structure has one and only one equivalent at the same level in the target structure, both objects are set to the same background color. The default color is green.
Partial match	Means that the item ID is the same, but the revision ID is different. For **Find Number**, if you select the **Apply configured attribute values for partial match** check box and if the item ID is different:

Option	Description
	• If all the CAE BOM comparison properties selected by the simulation administrator match, then the lines are marked as partial match. • If any one of the CAE BOM comparison properties selected by the simulation administrator do not match, the line is displayed as missing in source structure or missing in target structure in the CAE BOM comparison report. The default color is yellow.
Missing in source structure	If the equivalent objects of the target structure are not found in the source structure, the target objects are set to this color. The default color is light blue.
Missing in target structure	If the equivalent objects of the source structure are not found in the target structure, the source objects are set to this color. The default color is red.

6. To clear structure comparison results, choose **Tools→Clear Compare Display**.

6. Capture the pedigree or the configuration information of a product or a model structure

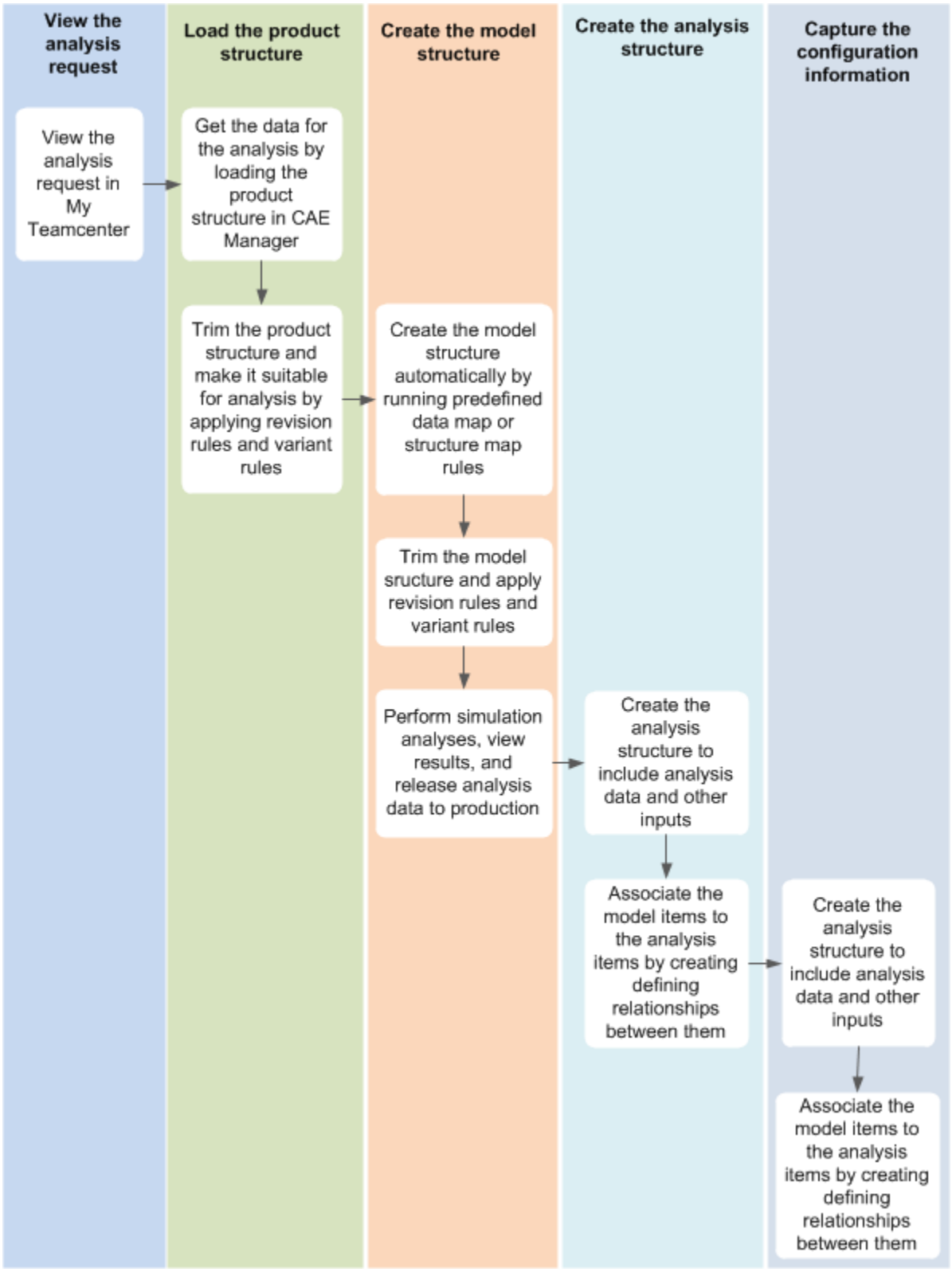
Why capture pedigree information?

During the virtual validation of a vehicle, analyst groups perform different types of analyses on multiple variants of the product at different levels of maturity, using varied load cases. They perform these analyses multiple times, for example, based on different levels of maturity, different load cases, or different input geometry variations.

In such cases, capturing the exact configuration of the product and model structure is critical to understand what was analyzed at a later time. Pedigree information captures the exact configuration of various structures, including the revision rule, effectivity, and variant rules, and persists that information in the database. Therefore, as a simulation analyst, you have clear traceability of what was analyzed. The following is an example of how you can use the **Pedigree Information** option to track the exact configuration of a *product* structure. You may specify **Revision Rule=Released for CAE**, **Effectivity=Aug 31, 2015**, **variant=vxi** (model type), **type=sedan**, **safety=airbags**, **transmission=automatic**, and **fuelType=petrol**. Similarly, you may specify the exact configuration of the *model* structure: **Revision Rule=Released for Analysis**, **Effectivity=Aug 31, 2015**, **loadcase=frontal crash**, and **speed=40kmph**.

You can apply the captured pedigree information anytime, for example, during design reviews, and visualize the structures based on the captured configuration instead of manually setting up the structures through multiple steps.

As the product and model structures evolve, this pedigree information helps you determine whether to create or modify existing simulation models, and create or modify load cases to perform analyses again for the changed product or model structures.



View and apply pedigree information

The simulation administrator enables or disables pedigree related commands using the **CAE_enable_pedigree_operations** preference. By default, this preference is enabled.

When you open a model item revision in an existing **Model** view, the system opens the related product item revision in a new **Product** view and a related analysis item revision in a new **Analysis** view. This happens when a single unique product or an analysis revision is identified by a **CAE Target** or a **CAE Defining** relationship respectively. You can use pedigree-related commands only after all the related views are open. Right-click the top-level item revision to capture pedigree, apply pedigree, or view pedigree details as appropriate.

- When you create a model structure based on a product structure using data map or structure map rules, the system automatically captures the pedigree information of the product structure as the model pedigree.

  After you capture the model pedigree, whenever you open the model structure, the system automatically opens the associated product structure, applies the pedigree information and configures the product structure.

  > Tip:
  >
  > You can overwrite captured pedigree information by manually capturing the pedigree information again.

- When you create an analysis structure based on the model structure, you must manually capture the analysis pedigree information.

  After you capture the analysis pedigree, whenever you open the analysis structure, the system automatically opens the associated model structure, applies the pedigree information and configures the model structure.

- If you open more than one **Model** or **Analysis** view, the system prompts you to select the model or analysis structure for which you want to apply pedigree.

- If a model or analysis item is created through a simulation tool launch, the system automatically captures the pedigree information.

Apply pedigree information on a product structure

1. Open the product structure in the **Product** view.

2. Depending on the type of analysis you want to perform, **configure the product structure**.

3. (Optional) To apply the product configuration to the product structure, select the root item of the product structure, right-click, and choose **Apply Pedigree**.

4. (Optional) Apply the pedigree of a model structure to a product structure.

   Let us assume that you are performing a simulation analysis for a 2-door car model. You open an unconfigured product structure that may have both 2-door and 4-door options. You configure the product structure for the 2-door option and generate a model structure based on it.

   Later, when you open the 2-door model structure, the product structure associated with it is an unconfigured structure. You can apply the pedigree information from the model structure to the product structure to see how the product was originally configured before the model structure was created.

   a. Open the model structure and the associated product structure.

   b. To apply the pedigree of the model structure, select the root item of the product structure, right-click, and choose **Apply Pedigree**.

      If open more than one model structure, the system prompts you to select the appropriate model structure.

Apply or override pedigree information on the model structure

1. Open the related model structure or create the model structure automatically by running **predefined data map rules** or **structure map rules**.

2. Depending on the type of analysis you want to perform, **configure the product structure**.

3. To view pedigree information, select the root item in the structure, right-click, and choose **View Pedigree Details**.

4. (Optional) To apply pedigree information from the product structure, select the root item in the structure, right-click, and choose **Apply Pedigree**.

5. To override the existing pedigree information, select the root item in the structure, right-click, and choose **Capture Pedigree**.

   If Product Configurator is enabled, the model structure captures the pedigree information. It captures the variant rules, configured variant options, and other product structure-related information. If the model structure already has the pedigree information, the pedigree information is updated to the current configuration of the product.

6. (Optional) Apply the pedigree of an analysis structure to the model structure.

   Let us assume that you are performing a simulation analysis for a car door. You open an unconfigured product structure that may have both 2-door and 4-door options. You configure the model structure separately for the 2-door and 4-door options. You then create separate analysis structures for both the 2-door and 4-door options.

Later, when you open the 2-door analysis structure, the model structure related to it is unconfigured. You can apply the pedigree information from the analysis structure to the model structure to see how the model structure was originally configured before the analysis structure was created.

a. Open the analysis structure and the related model structure.

b. To apply the pedigree of the analysis structure, select the root item of the model structure, right-click, and choose **Apply Pedigree**.

   If you open more than one analysis structure, the system prompts you to select the appropriate analysis structure.

View or override pedigree information for the analysis structure

1. Open the related analysis structure or create an analysis structure based on the configured model structure.

2. To view pedigree information, right-click and choose **View Pedigree Details**.

3. To override the existing pedigree information, select the root item in the structure, right-click, and choose **Capture Pedigree**.

   If Product Configurator is enabled, the analysis structure captures the pedigree information. It captures the variant rules, configured variant options, and other model and BOM related information. If the analysis structure already has the pedigree information, the pedigree is updated to the current configuration of the model structure.

View pedigree information for derived structures

The pedigree of the derived structure is automatically captured during the derive operation. Both the summary and detailed derive logs capture the configuration context, configuration option values, and the variant rule applied on the source model structure. The detailed log captures the derive rules applied for each BOM line.

When you derive a secondary-level structure from an existing first-level structure, then the pedigree object available on the second-level structure is a cloned version of the pedigree object available on the first-level structure. Moreover, both the pedigree objects point to the master pedigree object, that is, the source model pedigree object.

> Note:
>
> The pedigree operation looks for the **Based On** relationship from the current or open model structure to the secondary structure. The system does not capture the pedigree information if both the **Based On** and **Target** relationships exist on the derived structure.

1. Open the related model structure or create the model structure automatically by running **predefined data map rules** or **structure map rules**.

2. Depending on the type of analysis you want to perform, **configure the product structure**.

3. Select the root of the model structure and **choose Derive Structures**.

4. Select the root of the derived model structure, right-click and then choose **Model Pedigree→View Pedigree Details**.

5. To apply pedigree information, open a second-level structure *without* opening the first-level structure, select the root item in the structure, right-click, and choose **Apply Pedigree**.

   You can use this option to configure the master structure based on the pedigree information available on the second-level structure.

View pedigree information on the simulation dashboard

1. Open a product structure and **configure the product structure**.

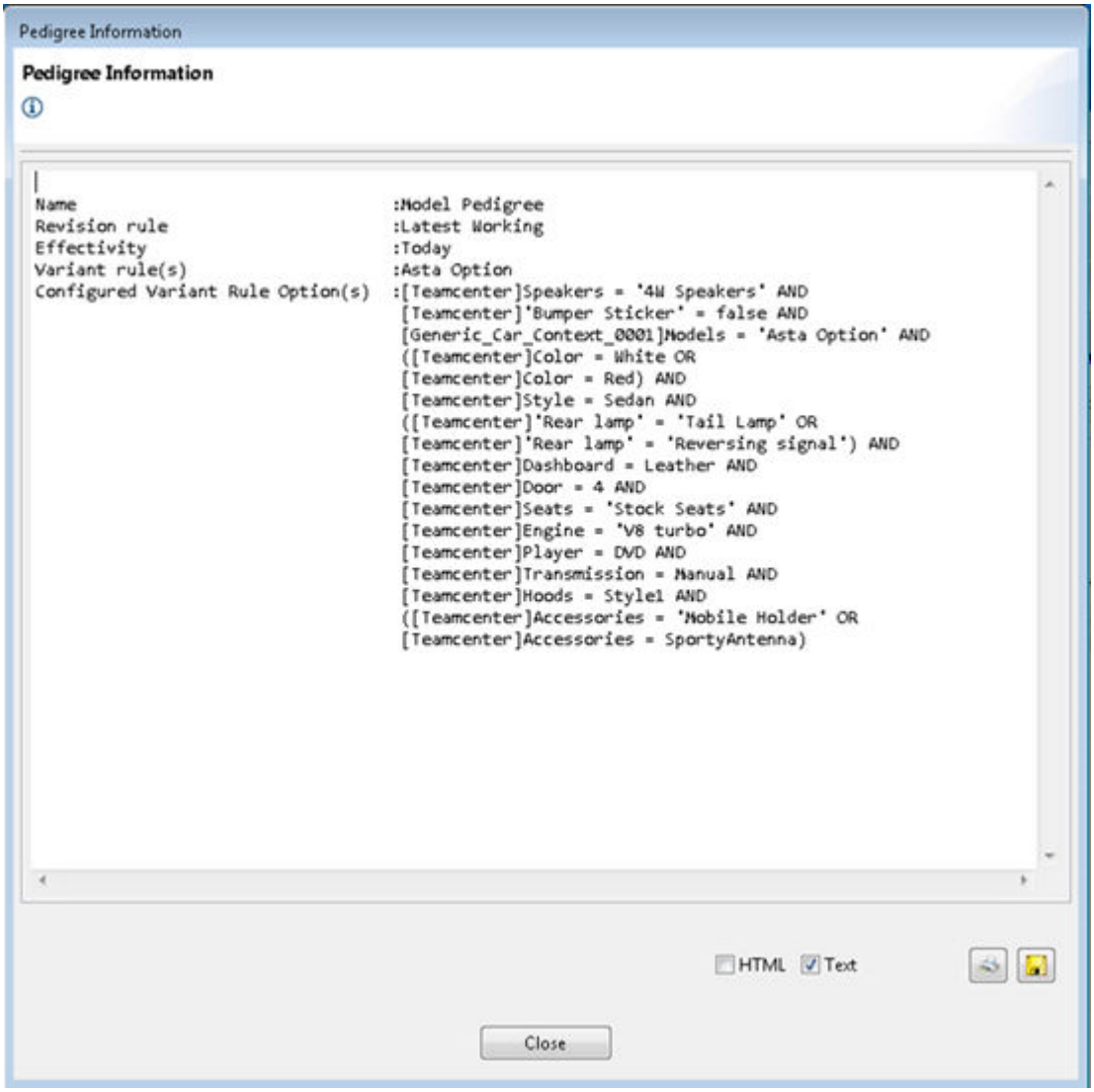
2. Create a model structure automatically by running **predefined data map rules** or **structure map rules**.

   The model structure captures the pedigree information from the product structure.

3. Select the root item of the model structure and select **Simulation Dashboard**.

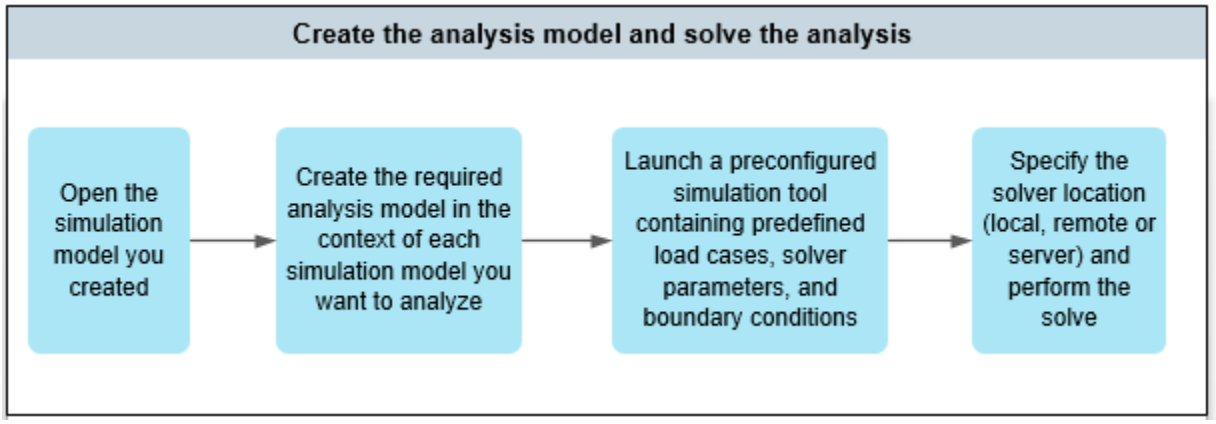
4. **Execute the dashboard** using a predefined dashboard configuration.

5. In the dashboard, double-click an option value to open the **Pedigree Information** dialog box.



7. Create and manage analysis revisions

Create the analysis model and solve the analysis



1. **Open the simulation model**

   Open the simulation model you created earlier.

2. **Create the analysis**

   The analysis model represents the specific analysis such as thermal, structural, or fluid you want to perform. It includes load cases, solver parameters, and boundary conditions. You create analysis revisions mostly in the context of model revisions.

3. **Perform the solve using a preconfigured simulation tool**

   After creating the analysis revision, you can select the specific revision and launch a preconfigured simulation to upload the load cases and solver parameters. You can also specify the solver location (local, remote, or server) and perform the solve.

What are analysis revisions?

An analysis revision represents the specific simulation you want to perform. **CAE 3D Analysis** item revisions are workspace objects for including load cases, solver parameters, and boundary conditions. Analysis revisions are created in the context of model revisions.

Use the **Analysis** view to interactively define and populate **CAE 3D Analysis** item revisions that can reference a defining **CAE 3D Model** item revision. You can view, create, and manage **CAE 3D Analysis** item revisions and their corresponding data in this pane.

You can perform the following tasks in the **Analysis** view:

- View, create, and manage **CAE 3D Analysis** item revisions.
- View and manage composite CAE analysis structures.
- Manage **Model reference**, **Result reference**, **Include reference**, and **Target Product** references for a **CAE 3D Analysis** item revision.
- View **CAE 3D Analysis** item revisions and their correlated CAE item revisions.
- Assign and manage solver parameters that define CAE analysis.
- Manage solver execution results and relate the results to a **CAE 3D Analysis** item revision.
- Launch simulation tools.
- Create CAE packages.
- View and manage attachments.
- Perform **Where Used** or **Where Referenced** searches.
- Displays data about a selected object or image files attached to a selected object.

> Tip:
>
> You cannot attach objects to CAE item revisions or detach associated objects with relations from CAE item revisions without appropriate access privileges.

Create analysis revisions in My Teamcenter or CAE Manager

An analysis revision represents the specific simulation you want to perform. Analysis revisions are workspace objects for including load cases, solver parameters, and boundary conditions. They are created in the context of model revisions.

You can create analysis revisions in My Teamcenter or CAE Manager.

1. Select a container for the analysis item, such as a folder or another item revision.

   Alternatively, select a **CAE 3D Analysis** item revision in the **Analysis** view of CAE Manager.

   You can configure the product structure to create analysis item revisions with a **CAE Target** relationship type. Then, while creating **CAE 3D Analysis** items using the **New CAE Item Wizard** dialog box, the system automatically captures the pedigree information of the associated analysis item.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Analysis** item revision from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. (Mandatory) Specify information in the **CAE Analysis Information** area of the **Object Create Information** pane.

   > Note:
   >
   > The **Name** and **Description** boxes display default values determined by the property rules implemented at your site. You may replace such values, but you cannot specify a null value by clearing the box. If you clear the box, the initial value is reapplied to the property when you save the new **CAE 3D Model** item.

   a. Type an item ID or click **Assign** to automatically assign an item ID.

   b. Type a revision ID or click **Assign** to automatically assign a revision ID.

   c. (Mandatory) Specify a name for the item revision.

   d. (Optional) Enter a description for the item revision.

   e. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

5. Specify information in the **Additional CAE Analysis Information** area of the **Object Create Information** pane.

   a. Specify the project ID and other information as appropriate.

   b. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

6. Specify information in the **CAE Analysis Revision Information** area of the **Object Create Information** pane.

   a. From the **Disciplines** area, click **Expand to modify**, select a discipline from the list, and click **Add**  .

b. From the **Analysis Types** area, click **Expand to modify**, select an analysis type from the list, and click **Add** .

c. Specify the analysis type, solver name, project ID, and other information as appropriate.

d. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information

7. Specify information in the **Enter CAE Analysis and CAE Result Templates Information** pane.

a. In the **CAE 3D Analysis Template** area, click search and select an analysis template.

b. In the **CAE 3D Result Template** area, click search and select result templates.

8. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

b. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create a basic item revision.

9. (Optional) Specify information in the **Define References** pane.

You can specify references manually by typing the object ID, revision, object, and relation type or using the **Search** dialog box.

a. To open the **Define References** pane, click **Next**.

b. Click **Add** and type an object ID, revision, object, and relation type or click **Search** to search for references.

c. (Optional) Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information

10. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

11. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Create analysis templates in My Teamcenter

You can create analysis templates to specify different load cases. After creating a template, you can associate it to an analysis revision.

1. In My Teamcenter, select a container for the **CAE 3D Analysis** template, such as a folder or another item revision.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Analysis Template** revision from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. Specify information in the **CAE 3D Analysis Template** area of the **Object Create Information** pane.

   a. Type an item ID or click **Assign** to automatically assign an item ID.

   b. Type a revision or click **Assign** to automatically assign a revision.

   c. (Mandatory) Specify a name for the analysis template.

   d. (Optional) Enter a description for the item revision.

   e. (Optional) Click **Finish** to create a basic item revision.

      Alternatively, click **Next** to specify additional information.

5. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

   Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

   a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

   b. To specify a list of data sets, click **Add**, and select appropriate options.

      You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create a basic item revision.

6. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

7. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Create a CAE boundary condition in My Teamcenter

You can create a boundary condition to define the inputs for a simulation model. After creating the boundary condition, you can associate the condition to an analysis revision.

1. In My Teamcenter, select a container for the result template, such as a folder or another item revision.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select **CAE 3D Boundary Condition** from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. Type an item ID or click **Assign** to automatically assign an item ID.

5. Type a revision or click **Assign** to automatically assign a revision.

6. (Mandatory) Specify a name for the boundary condition.

7. (Optional) Enter a description for the boundary condition.

8. Click **Finish** to create the item revision.

   Alternatively, click **Next** to specify additional information

9. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

   Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

   a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

   b. To specify a list of data sets, click **Add**, and select appropriate options.

      You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create a basic item revision.

10. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

11. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Associate boundary conditions with an analysis revision

You can associate multiple boundary condition revisions with an analysis revision. Subsequently, when you revise the analysis revision or save it as a different revision, the boundary condition revisions are not copied across. However, you can import or export the analysis revision with boundary conditions attached to it by using the **CAEConfiguredDataFilesExportDefault** or **CAEConfiguredDataFilesExportJTOnly** transfer mode.

1. Open an analysis revision in the **Analysis** view of CAE Manager.

2. In the view toolbar, click **Open Secondary Views** → **Attachments**.

3. In the view toolbar, click **Edit References** and from the **CAE Reference Type** menu, select **Extract Reference**.

4. Search for the boundary condition.

   a. Click **Search** and select the boundary condition.

   b. In the **Selected CAE Boundary Condition Revision** list, click **Add** to add the boundary condition, and click **OK**.

   > Note:
   >
   > You cannot add a boundary condition revision to an analysis revision with the **CAE Extract** relation if the boundary condition revision is already attached to a **CAE 3D Result** or a **CAE 3D Analysis** item revision with the same relation.

5. To add the boundary condition as a reference type, in the **Manage CAE References** dialog box, click **Add**.

   The dialog box displays the **Extract Reference** reference type and the associated object, that is, the boundary condition.

6. To create the reference, click **OK**.

7. To associate another boundary condition to the analysis revision, repeat steps 2 to 6.

Associate a boundary condition to a result revision

1. From the **Home** folder in CAE Manager or from an analysis revision in the **Analysis** view, copy a boundary condition.

2. Select a result revision in the **Home** folder or in a related view and select **Edit→Paste Special**.

> Note:
>
> You can copy a boundary condition revision to a result revision even if the result revision is released or owned by a different group.

3. In the **Paste Special** dialog box, select **Extract Reference**.

   The system pastes the boundary condition with the **Extract Reference** relation.

Associate result revisions to analysis revisions

1. From the **Home** folder in CAE Manager, copy one or more result revisions.

2. Select an analysis revision in the **Home** folder or in the **Analysis** view and select **Edit→Paste Special**.

3. In the **Paste Special** dialog box, select the **CAE Results** relationship.

   The system pastes the result revisions with the **CAE Results** relationship.

View analysis revisions

1. Start CAE Manager.

2. In the **Home** view, select a **CAE 3D Analysis** item revision, right-click, and choose **Send To→CAE Manager**.

3. (Optional) To edit common properties of multiple objects:

   a. Select multiple **CAE 3D Analysis** item revisions and click **Edit → Properties**.

   b. Check out the objects and edit the values as appropriate.

   c. To save and check in your changes, click **Save and Check-In**.

4. (Optional) Attach files to the analysis revision.

   a. Drag the file from the operating system (for example, Windows Explorer) to the appropriate analysis revision.

   b. To attach the file, click **OK** in the **New Datasets for Multiple Files** dialog box.

5. To open a file attachment, expand the analysis revision, and double-click the dataset to open the corresponding file.

6. Click **Show Data Panel** on the main toolbar to open the data view.

7. Click a tab in the data pane to activate a view.

   For example, click the **Attachments** view in the data pane to activate the **Attachments** view.

Create a defining relationship between an analysis revision and a model revision

You can use this option to create a **CAE Defining** relationship between the **CAE 3D Analysis** revision item in the **Analysis** view and the **CAE 3D Model** revision item in the **Model** view.

1. In the **Model** view, create or open a **CAE 3D Model** revision item.

2. In the **Analysis** view, create or open a **CAE 3D Analysis** revision item.

3. Right-click the **CAE 3D Analysis** revision item, and choose **Associate Model as Defining**.

   If you open more than one **Model** view, the system prompts you to select a CAE model revision in the **Associate Model as Defining** dialog box.

   Simulation Process and Data Management creates a CAE defining relationship between the **CAE 3D Analysis** revision item and the **CAE 3D Model** revision item and displays the relationship below the **CAE 3D Analysis** revision item in the **Attachments** view associated with the **Analysis** view.

Manage references for analysis revisions

Use the **Manage CAE References** dialog box to manage CAE references for a **CAE 3D Analysis** item revision. The dialog box consists of the following options:

- **CAE Reference Type** displays a list of CAE reference types. You can select the required reference type from the list.

- **CAE References Item ID / References** lets you type the required CAE references item ID or revision in the **CAE References Item ID / References** boxes. You can also click **Search** to search and select the required information.

- **List of CAE Item Revision References** lets you add and/or manage the reference type and the reference item revision.

1. In the **Analysis** view of CAE Manager, create or open a **CAE 3D Analysis** item revision.

If the **Analysis** view is not open by default, click **Analysis View** in the view toolbar.

2. From the **CAE 3D Analysis Item Revisions** tree, select a **CAE 3D Analysis** item revision.

3. In the **Analysis** view, click **Open Secondary Views** in the view toolbar, and choose **Attachments**.

   Alternatively, click **Show Data Panel** on the main toolbar.

4. In the **Attachments** view, select the **CAE 3D Analysis** item revision.

5. To open the **Manage CAE References** dialog box, click **Edit References** in the view toolbar.

6. Select the required reference type from the **CAE Reference Type** list.

7. Type the required CAE references item ID and revision in the **CAE References Item ID / References** boxes, or click **Search** to search and select the required information.

   Select the required reference type from the **CAE Reference Type** list and type or search for the corresponding CAE references item and revision identifiers in the **CAE References Item ID / References** boxes. For example, select the **Model reference** reference type from the **CAE Reference Type** list and type or search for a valid **CAE 3D Model** item and revision identifiers in the **CAE References Item ID / References** boxes. If you type an item ID and revision of a different item type, Teamcenter displays the following message:

   ```
   Invalid Item Revision. Enter Valid Item ID and Revision.
   ```

8. Add and/or manage references to the **CAE 3D Analysis** item revision in the **List of CAE Item Revision References** table.

   Click + to add a row. If you click this option without the required information in the **CAE References Item ID / References** boxes, Teamcenter displays the following message:

   ```
   Item ID of CAE Reference is null. Enter a valid Item ID.
   ```

   You can use the ▲ to move a selected row upward, ▼ to move a selected row downwards, — to remove a selected row, or ◇ to clear all the rows.

9. Click **OK**.

Import a solver deck to an analysis revision

Use the **Import Solver Deck** dialog box to create and manage the **CAESolver** dataset and import solver deck files for a **CAE 3D Analysis** item revision. Optionally, you can also create and manage the **CAE**

Result dataset and import result files for the **CAE 3D Analysis** item revision. The **Import Solver Deck** dialog box is divided into two panes:

- The top pane lets you create and manage the **CAESolver** dataset and attach solver deck files as named references.
- The bottom pane lets you create and manage the **CAE Result** dataset and attach result files as named references.

1. In the **Analysis** view of CAE Manager, create or open a **CAE 3D Analysis** item revision and select the **CAE 3D Analysis** item revision.
2. Click **Open Secondary Views** in the view toolbar, and choose **Attachments**.
3. Select the **CAE 3D Analysis** item revision.
4. Click **View Menu** in the view toolbar, and choose **Import Solver Deck**.
5. (Optional) In the **CAESolver Dataset Name** box, type the new name for the **CAESolver** dataset.
6. (Optional) Type a description for the **CAESolver** dataset.
7. Select the required tool from the **Tools Used** list.

   > Note:
   >
   > If you have a **CAESolution** dataset with more than one solver input file, the system recognizes that there are multiple matching inputs and displays the **Primary Input File Conflict** dialog box with a list of valid named references. In such cases, you must select a valid option.

8. Add a reference, file name, file path, and include path in the **Named References** table.

   You can place the cursor in the **File Name**, **File Path**, or **Include Path** box and click **Import** to import the required data.

   You can use + to add a new row, − to remove a selected row, or to clear all the rows.

9. (Optional) Create a **CAE Result** dataset and upload result files as named references for the selected **CAE 3D Analysis** item revision.
10. Click **OK**.

Teamcenter does the following:

- Creates and attaches a **CAESolver** dataset to the selected **CAE 3D Analysis** item revision.

- Creates an XML file based on the values in the **File Name** and **Include Path** boxes. This is applicable only if you specify an include path.
- Imports solver deck files to the dataset and the generated XML file as the named reference.
- (Optional) Creates and attaches a **CAE Result** dataset to the selected **CAE 3D Analysis** item revision, and imports result files.

Mark analysis revisions as up-to-date

In CAE Manager, analysts can check for later revisions of item revisions attached to **CAE 3D Analysis** item revisions. They can also check for changes to any attachments of **CAE 3D Analysis** item revisions.

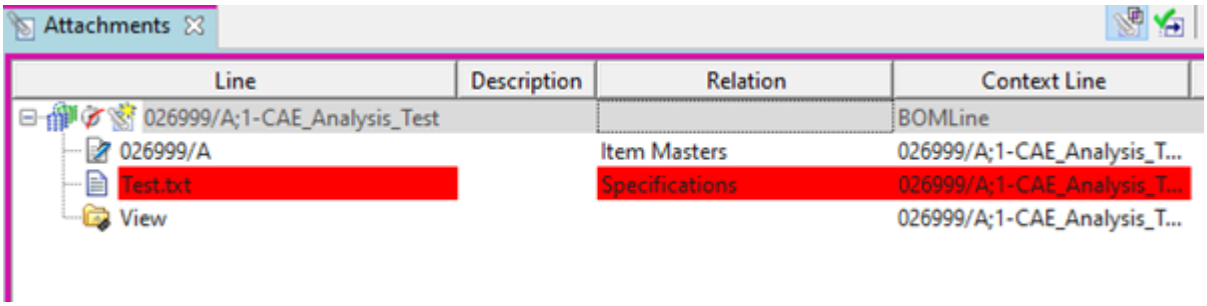
> Note:
>
> Only secondary attachments attached to the **CAE 3D Analysis** item revision with the relations defined by the simulation administrator in the **CAE_significant_relation_types_for_CAEAnalysis** preference are considered while evaluating the out of date and up to date status.

Check for attachment changes

1. In the **Analysis** view, open a **CAE 3D Analysis** item revision.
2. Click **Open Secondary Views** in the view toolbar and choose **Attachments**.
3. In the **Attachments** view, click **Check for Attachment Changes** in the view toolbar.

   Out of date attachments are considered as follows.

   - *Newly added attachments*

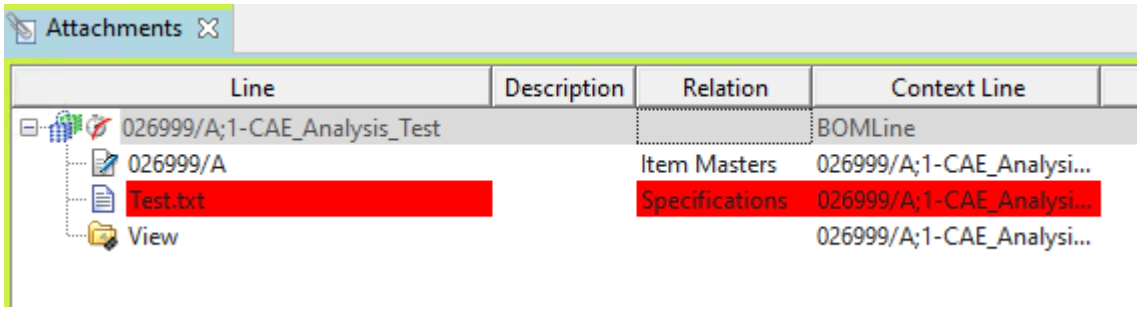


   If there is a new attachment in the **CAE 3D Analysis** item revision, then the attachment is highlighted in red color. The item revision also displays the **Out of Date** icon and the **New Attachments** icon.

This is the default color for the **Action** box in the **Edit** → **Options** → **CAE** → **General** → **Out-of-date Highlights** tab in CAE Manager.

The RGB value specified in the **CAE_action_highlight_color** user preference determines the default color used by the **Action** box.

- *Existing modified attachments*

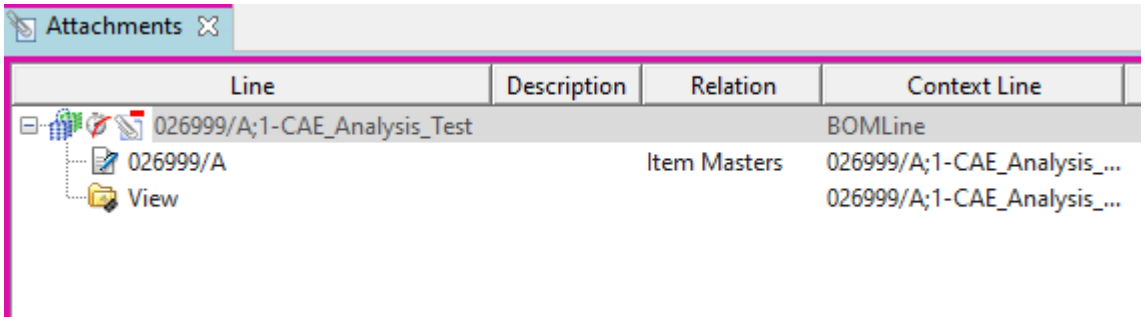


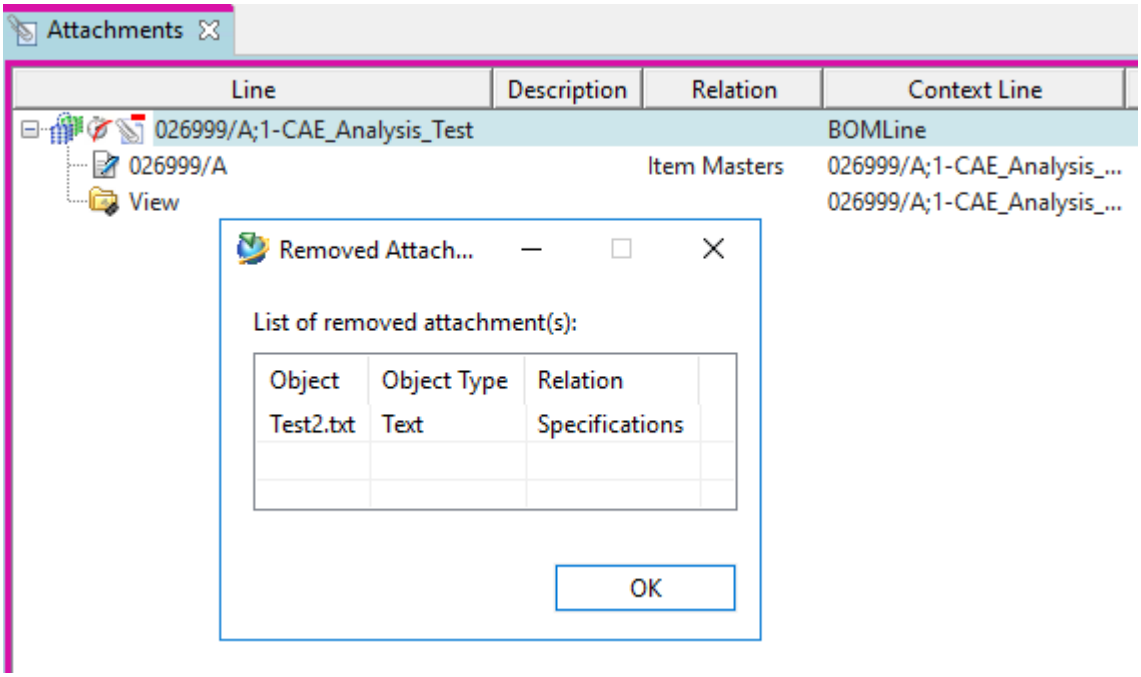
If an existing attachment is modified in the **CAE 3D Analysis** item revision, then the attachment is highlighted in red color. The item revision also displays the **Out of Date** icon .

This is the default color for the **Action** box in the **Edit** → **Options** → **CAE** → **General** → **Out-of-date Highlights** tab in CAE Manager.

The RGB value specified in the **CAE_action_highlight_color** user preference determines the default color used by the **Action** box.

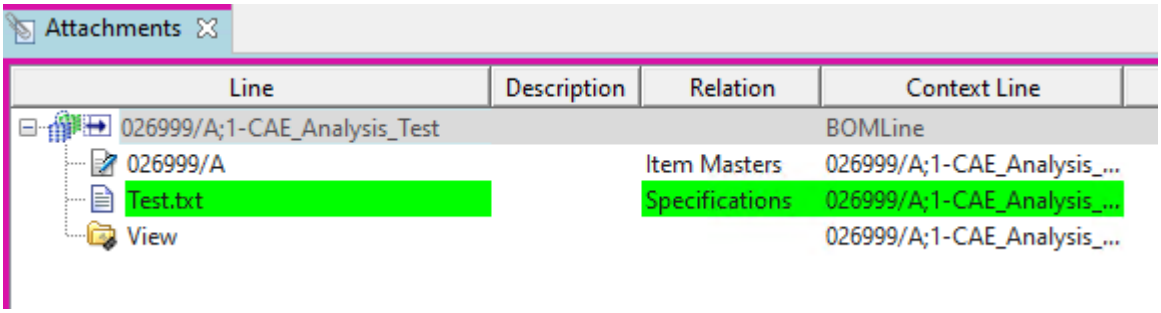
- *Removed attachments*





If an attachment is removed from the **CAE 3D Analysis** item revision, then select the **CAE 3D Analysis** item revision, right-click, and choose **Show Removed Attachments**. All the removed attachments are shown in the dialog. The item revision displays the displays the **Out of Date** icon icon and the **Removed Attachment** icon .

Up to date attachments are considered as follows.

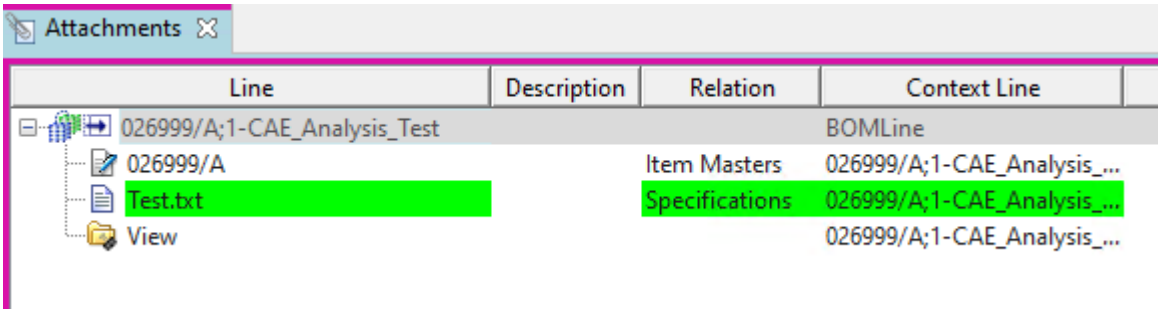


If the attachment is up to date, then it is highlighted in green color. The item revision also displays the **Up To Date** icon .

This is the default color for the **No Action** box in the **Edit** → **Options** → **CAE** → **General** → **Out-of-date Highlights** tab in CAE Manager.

The RGB value specified in the **CAE_no_action_highlight_color** user preference determines the default color used by the **No Action** box.

4. To mark the analysis revision as up to date, in the **Attachments** view select the **CAE 3D Analysis** item revision and click **Mark Up-To-Date** in the view toolbar.



All the attachments under the **CAE 3D Analysis** item revision are marked as up to date.

> Tip:
>
> By default, the first time you create a analysis item revision, it is marked as up-to-date.

5. After marking all attachments as up to date, in the **Attachments** view, select the **CAE 3D Analysis** item revision and click **Check for Attachment Changes** in the view toolbar.

   All the attachments are highlighted in green color.

   This is the default color for the **No Action** box in the **Edit** → **Options** → **CAE** → **General** → **Out-of-date Highlights** tab in CAE Manager.

   The RGB value specified in the **CAE_no_action_highlight_color** user preference determines the default color used by the **No Action** box.

6. To show last up to date attachments, in the **Attachments** view, select the **CAE 3D Analysis** item revision and click **Show Last Up-To-Date** in the view toolbar.

   The system displays the last up-to-date information.

7. To show removed attachments, in the **Attachments** view, select the **CAE 3D Analysis** item revision and click **Show Removed Attachments** in the view toolbar.

   The system displays a message box with a list of removed attachments.

8. (Optional) Select a BOM line, right-click, and choose **Select all lines of same color**.

Check for later revisions

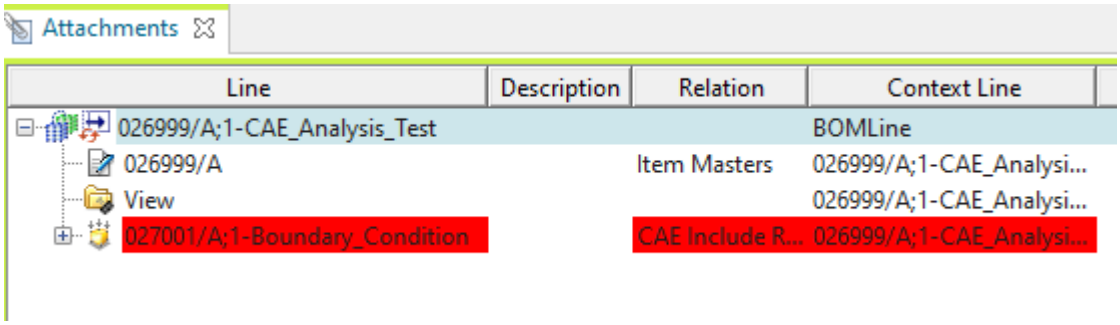
1. In the **Analysis** view, open a **CAE 3D Analysis** item revision.

2. Click **Open Secondary Views** in the view toolbar and choose **Attachments**.

3. In the **Attachments** view, click **Check for Later Revisions** in the view toolbar.

> Note:
>
> While checking for later revisions, the system does not consider baselined revisions.

- *Attachment with later revision available*

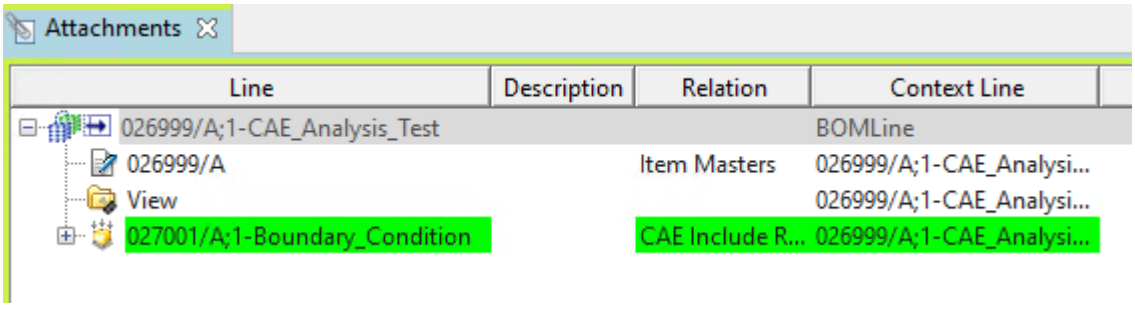


If the **CAE 3D Analysis** item revision has an attachment for which a later revision is available, then the attachment is highlighted in red color. The item revision also displays the **Later Revision** icon .

This is the default color for the **Action** box in the **Edit** → **Options** → **CAE** → **General** → **Out-of-date Highlights** tab in CAE Manager.

The RGB value specified in the **CAE_action_highlight_color** user preference determines the default color used by the **Action** box.

- *Attachment with no later revision available*



If the **CAE 3D Analysis** item revision has an attachment for which no later revision is available, then the attachment is highlighted in green color.

This is the default color for the **No Action** box in the **Edit** → **Options** → **CAE** → **General** → **Out-of-date Highlights** tab in CAE Manager.

The RGB value specified in the **CAE_no_action_highlight_color** user preference determines the default color used by the **No Action** box.

4. (Optional) Select the **CAE 3D Analysis** item revision, right-click, and choose **Select All with Later Revisions**.

5. (Optional) Click **View Menu** in the view toolbar, and choose **Add Latest References** or **Update Latest References**.

8. Create analysis packages for a specific type of analysis

Why configure analysis packages or CAE packages?

Analyst groups in companies typically perform multiple types of analyses based on a product definition or a set of requirements and validate them, for example, strength analysis, durability analysis, fluid analysis, or crash analysis. They also perform analyses multiple times, for example, based on different load cases or different input geometry variations. The processes and tools used and the input and output may vary across analyses.

To create an analysis package for a specific type of analysis, the analysts must know which items, datasets, and relationships to create and then create multiple CAE item revisions one at a time and establish relationships between different item revisions. The simulation administrator or a user with DBA privileges creates site-level package definitions, the group administrator creates group-level package definitions, and individual users create user-level package definitions based on a common template and save them to the database to make this process easier and more efficient.

Analysts can then use the package definitions created by the simulation administrator or the group administrator to create their own CAE item revisions. They can use these packages to define input parts (item revisions), output items, the relationships between the output item revision to their input parts, and the output datasets within one or more output item revisions.

At a site, there can be different categories of analysis packages:

- Site-level package definitions.

  These are standardized and approved package definitions created by the simulation administrator or a user with DBA privileges and used by multiple analysts across the enterprise to create a set of CAE item revisions for a specific analysis.

- Group-level package definitions.

  These are standardized and approved package definitions created by the group administrator and used by multiple analysts across the enterprise to create a set of CAE item revisions for a specific analysis. Access to these are limited to members of that group.

- User-level package definitions.

  These are created by an analyst and used only by this analyst.

Check with your site administrator for information about predefined packages that you can use to create CAE packages.

Analysts can use the **Create CAE Packages** wizard to create CAE packages. They can choose a package definition from the available list that is preconfigured by the simulation administrator or the group administrator and proceed to create the CAE package. The wizard guides the analyst through the process of creating CAE packages in multiple steps.

Configure CAE packages

After configuring CAE packages, you can create **CAE package definitions and execute them**.

1. In CAE Manager, click the **CAE Configuration** toolbar menu, and choose **CAE Package Configuration**.

2. Select the **USER** option and click the **Create CAE Package** icon.

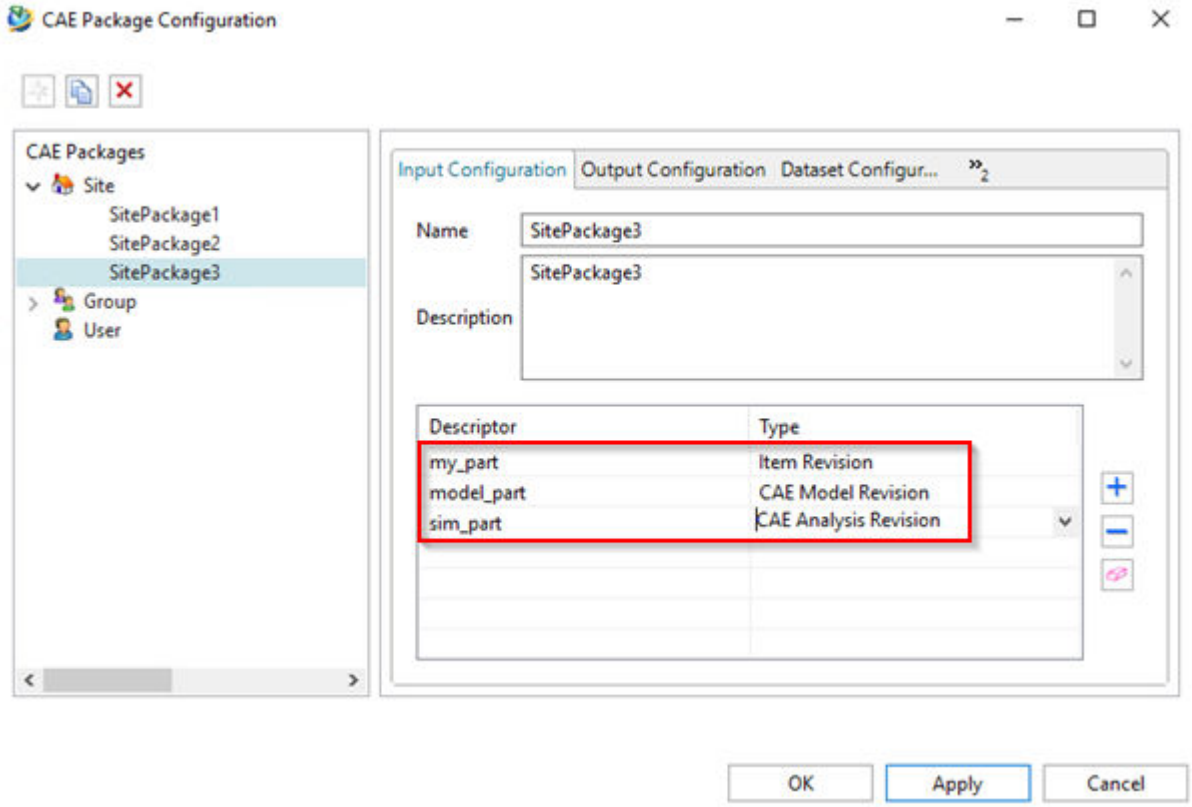
3. (Optional) In the **Create CAE Package** dialog box, to assign an ID, click **Assign** in the **ID** box.

4. (Optional) To assign a revision number, click **Assign** in the **Revision** box.

5. (Mandatory) To specify a derivative rule name, type a unique name in the **Name** box.

6. (Optional) Type a description in the **Description** box.

7. Configure input parameters.



a. Click the **Input Configuration** tab.

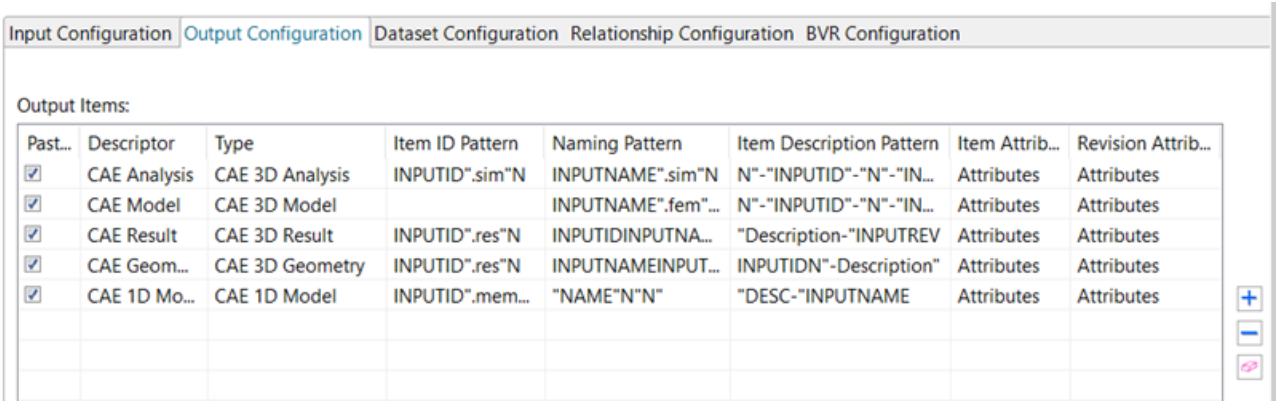
b. (Optional) Enter a description for the CAE package in the **Description** box.

c. Click the **Add** button to add parameters.

d. In the **Descriptor** column, choose the default value or overwrite it with a unique value, and from the **Type** column, select an appropriate item revision.

e. Click the **Apply** button.

8. Configure output parameters.



You can configure a CAE package containing a standalone output item (with or without datasets) and multiple output items (with or without datasets) where one or more items are connected or not connected to other items.

a. Click the **Output Configuration** tab, and click the **Add** button to add parameters.

b. (Optional) Clear the check boxes in the **Paste in Output Folder** column if you do not want to paste the output items and item revisions to the default output folder.

> Note:
>
> For all migrated packages from previous releases, the check boxes remain selected, that is, the system pastes the output items and item revisions to the default output folder.

c. In the **Descriptor** column, choose the default value or overwrite it with a unique value, and from the **Type** column, select an appropriate option.

d. Specify appropriate values in the **Item ID Pattern**, **Naming Pattern**, and **Item Description Pattern** columns.

- The item ID pattern must have the **N** keyword to generate an output item ID with a unique value and with the next available number for the **N** keyword.
- If the output item is not associated to any input item by any relation, then the configured pattern keywords are replaced with an empty value.
- If the output item ID pattern is not configured but **N** is configured on the other properties, then the **N** keyword is not replaced with any counter value and is kept unchanged.

You can use these keywords individually or as a combination. When you specify a combination, you must not repeat the keywords. You can use the following keywords as a combination by including text in quotes (see examples that follow).

- The **INPUTNAME** pattern keyword is replaced with input item's name.
- The **INPUTID** pattern keyword is replaced with input item's ID.

- The **INPUTREV** pattern keyword is replaced with the input item's revision value.
- The **N** pattern keyword represents the next available number for the output item ID. It is calculated at runtime when it is configured with the item ID pattern for the output item. If the **N** pattern keyword is configured across the other properties for the output item or for the item revision, the value is not recalculated. The value is repeated from the first usage, which is calculated from the output item ID.

Example 1:

Item ID pattern configuration for CAE package	After the package is executed with the input item ID as 000387	After the package is executed the second time with the same input item ID	After the package is executed with a different input item ID as 000341
CAE Analysis is configured as **INPUTID".sim"N**	Item ID for **CAE Analysis** is **000387.sim1**	Item ID for **CAE Analysis** is **000387.sim2**	Item ID for **CAE Analysis** is **000341.sim1**
CAE Model is configured as **INPUTID".fem"N**	Item ID for **CAE Model** item ID is **000387.fem1**	Item ID for **CAE Model** is **000387.fem2**	Item ID for **CAE Model** is **000341.fem1**
CAE Result is configured as **INPUTID".res"N**	Item ID for **CAE Result** is **000387.res1**	Item ID for **CAE Result** is **000387.res2**	Item ID for **CAE Result** is **000341.res1**
CAE Geometry is configured as **INPUTID".i"N**	Item ID for **CAE Geometry** is **000387.i1**	Item ID for **CAE Geometry** is **000387.i2**	Item ID for **CAE Geometry** is **000341.i1**

Example 2:

CAE package configuration for CAE Analysis	After the package is executed with input ID as 000387 and input item name as NX_Numbers for CAE Analysis
The item ID pattern is configured as **INPUTID".sim"N**.	The item ID is **000387.sim1**
The name pattern is configured as **INPUTNAME".sim"N**.	The item name is **NX_Numers.sim1**
The item description pattern is configured as **"Test Package for .sim - "N**.	The item description is **Test Package for .sim - 1**

Example 3:

CAE package configuration for CAE Analysis	After the package is executed with input ID as 000387 and input item name as NX_Numbers for CAE Analysis
The item ID is not configured, that is, the item ID pattern is empty.	The item ID is automatically generated by the system.
The item name pattern is configured as **INPUTNAME".sim"N**.	The item name is **NX_Numers.simN**
The item description pattern is configured as **"Test Package for .sim - "N**.	The item name description is **Test Package for .sim - N**

Example 4:

Item ID pattern configuration for CAE Geometry	Existing numbers in the database for the pattern N	Missing numbers in the database for the pattern N	Allocated numbering for the pattern N after the package is executed
INPUTID".i"N	1, 2, 3, 4, 5, 7, 9	6, 8	6, 8, 10, 11, and so on

e. In the **Item Attributes** column, click the icon to the right of the column to open the **Define Attribute** dialog box. Click the **Add** button to add parameters. In the **Attribute Name** column, select an attribute name (for example, **Name**) and enter the value in the **Value** column.

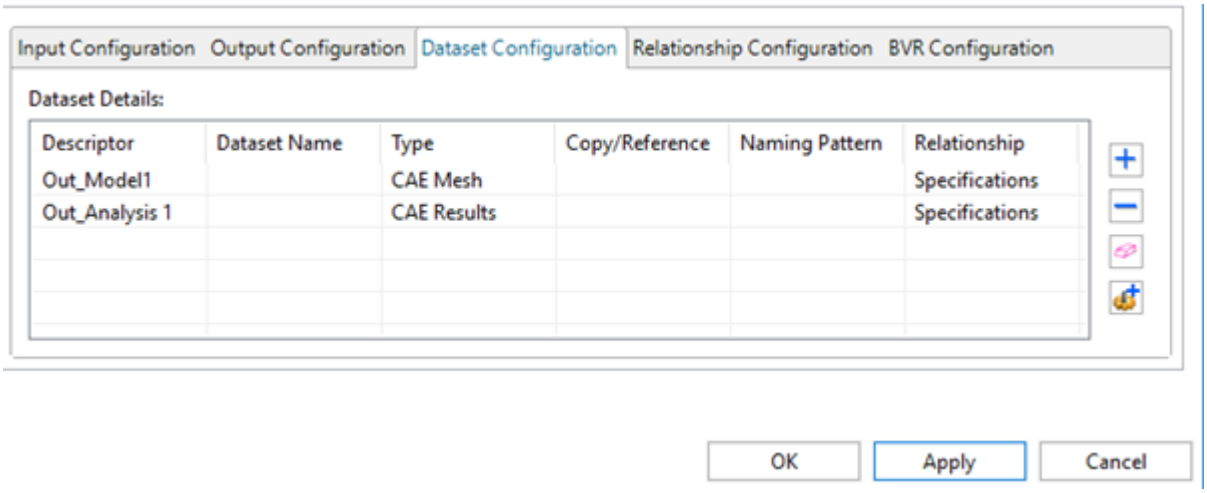
   (Optional) You can use keywords described in **step d**, for example, specify **Attribute Name** as **Project ID** and **Value** as **N"Proj001"N**.

f. In the **Revision Attributes** column, click the icon to the right of the column to open the **Define Attribute** dialog box. Click the **Add** button to add parameters. In the **Attribute Name** column, select an attribute name, for example, **Revision** and enter the value in the **Value** column.

   (Optional) You can use keywords described in **step d**, for example, specify **Attribute Name** as **Solver Name** and **Value** as **INPUTID"Name"N**.

g. Click the **Apply** button.

9. Define dataset parameters.



a. Click the **Dataset Configuration** tab, and click the **Add** button to add parameters.

b. In the **Descriptor** column, choose a default value.

   This list contains all output items defined in the **Output Configuration** pane.

c. To add a dataset, click the **Dataset Name** column. Select a dataset from the **Home** view and click the **Add Dataset** option. Alternatively, click the **Search** icon in the column and search for a dataset.

d. In the **Type** column, select a dataset type, for example, **CAEMesh**.

e. In the **Copy/Reference** column, select **Copy** or **Reference** to allow analysts to copy or reference existing datasets as part of output objects, respectively.

f. In the **Naming Pattern** column, enter a naming pattern.

> Tip:
>
> You can create multiple dataset naming patterns.

   The naming pattern supports one of these or any combination of these:

   - Constant string enclosed in double quotes
   - **ITEMREVID** keyword

     The item revision ID applied here is the item revision ID of the object to which the dataset is going to be attached.

g. From the **Relationship** column, select the relevant option.

h. Click the **Apply** button.

Example:

Descriptor	Dataset Name	Type	Copy/ Reference	Naming pattern	Relationship
model_output	*dataset_-name1*	**CAEMesh**	**Copy**	**"CAE-"-ITEMREVID**	**IMAN_based_on** or **NX Simulations**
sim_output	*dataset_-name2*	**CAE-AnalysisDS**	**Reference**	**"CAE-"-ITEMREVID**	**CAE Target**

10. (Optional) Define relationship parameters.

You can specify Generic Relationship Management (GRM) rules to apply constraints on the relationship between two business objects. A GRM rule applies constraints on the relationship between two business objects. When you create a GRM rule, you select the primary and secondary business objects for the relationship, the relationship they have to one another, and the constraints to be applied.

a. Click the **Relationship Configuration** tab, and click the **Add** button to add parameters.

b. From the **Primary Object**, **Relationship** and **Secondary Object** columns, select appropriate options.

All the descriptors you created are available for selection in the **Primary Object** and **Secondary Object** columns.

The column provides a list of values and displays the available relationships for the primary object.

Example:

Primary object	Relationship	Secondary object
model_output	**CAE Target**	*my_part* (**ItemRevision** type)
sim_output	**CAE Defining**	*model_output*

> Note:
>
> You can have relationships between output and input, output and output, or input and output. However, you cannot have a relationship between input and input or the same descriptor as primary object and secondary object.

c. Click the **Apply** button to apply your data.

11. (Optional) Configure BOM view revisions.

    A BVR is a workspace object that stores the single-level assembly structure of an item revision. When you add a component to an assembly, you create an occurrence of that item or item revision in the assembly, which is stored on the BVR. This occurrence is displayed as a BOM line. A BVR is a single-level structure that contains occurrences of its immediate children. A multilevel structure is constructed from several single-line BVRs. Any modification to the product structure (including changing any of the occurrence attributes or adding a substitute) changes the BVR of the parent assembly.

    a. Click the **BVR Configuration** tab.

    b. In the **Parent Descriptor Table** area, click the **Add** button to add parent descriptors.

    c. From the **Parent Descriptor** and **Relation** columns, select appropriate options.

       The **Parent Descriptor** list contains all input and output descriptors you have defined in the **Input Configuration** and **Output Configuration** panes.

    d. In the **Child Descriptor Table** area, click the **Add** button to add child descriptors.

12. To create a duplicate of an existing package configuration, click **Clone CAE Package** and specify a name for the duplicate.

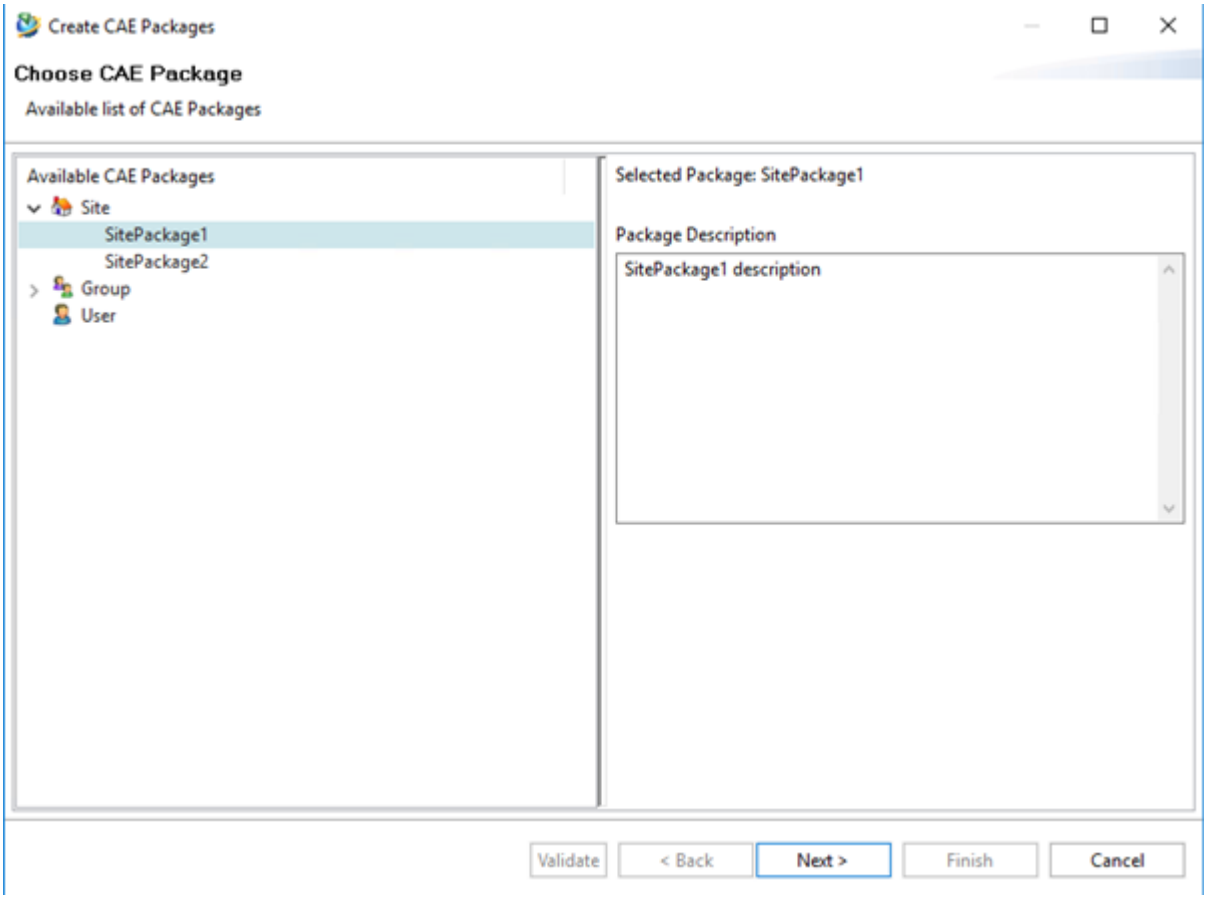
13. Click **OK** to save and exit the **CAE Package Configuration** dialog box.

Create CAE package definitions and execute them

After **configuring CAE packages**, you can create CAE package definitions and execute them **using the CAE package creation wizard** or **from the summary page of the item revision**.

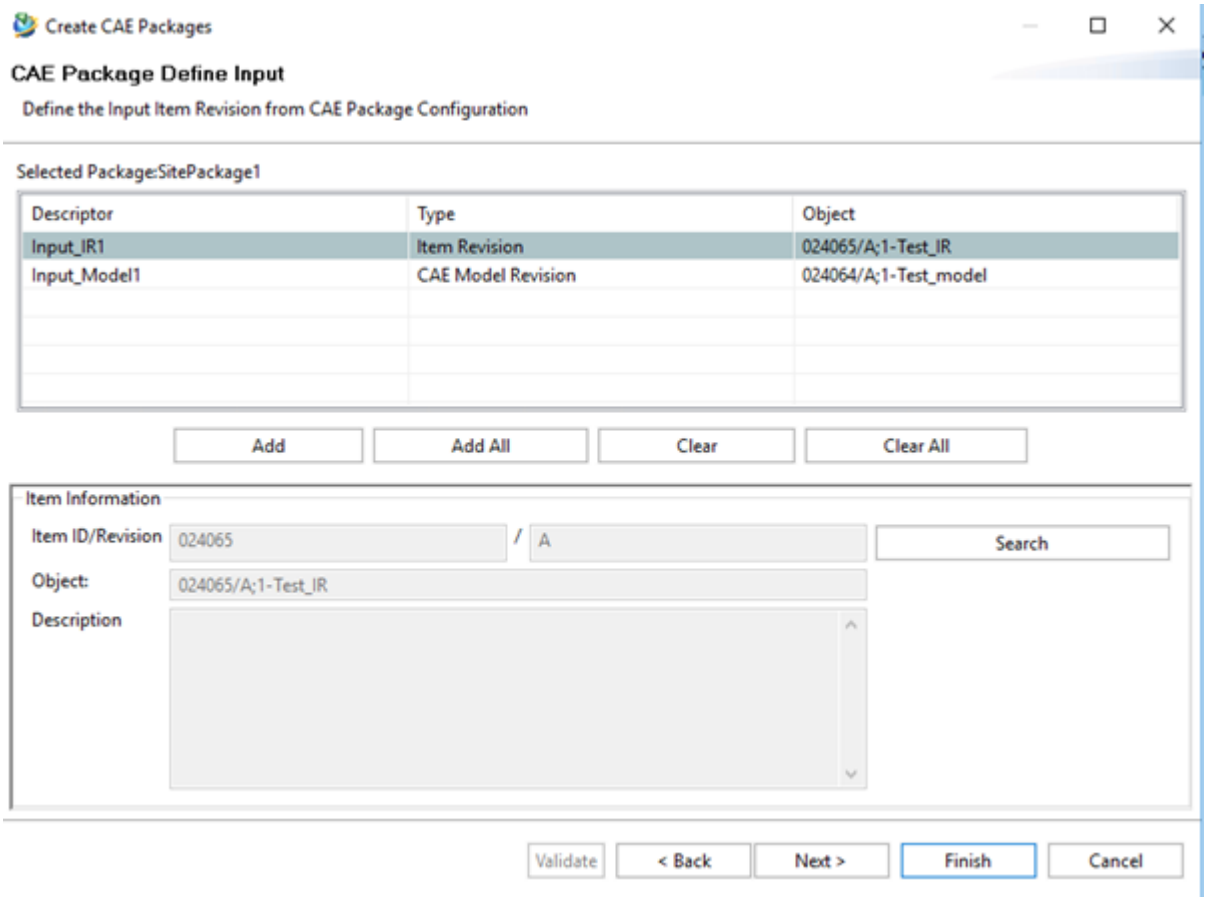
Using the CAE package creation Wizard

1. In CAE Manager, click the **Open the CAE Package creation wizard**  icon on the main toolbar. Alternatively, click **File→New→CAE Package**.



2. Choose the package and click **Next**.

3. Define the input item revision.



Note:

If the user preselects the exact number and type of objects expected for the input, the inputs are populated on opening the dialog box.

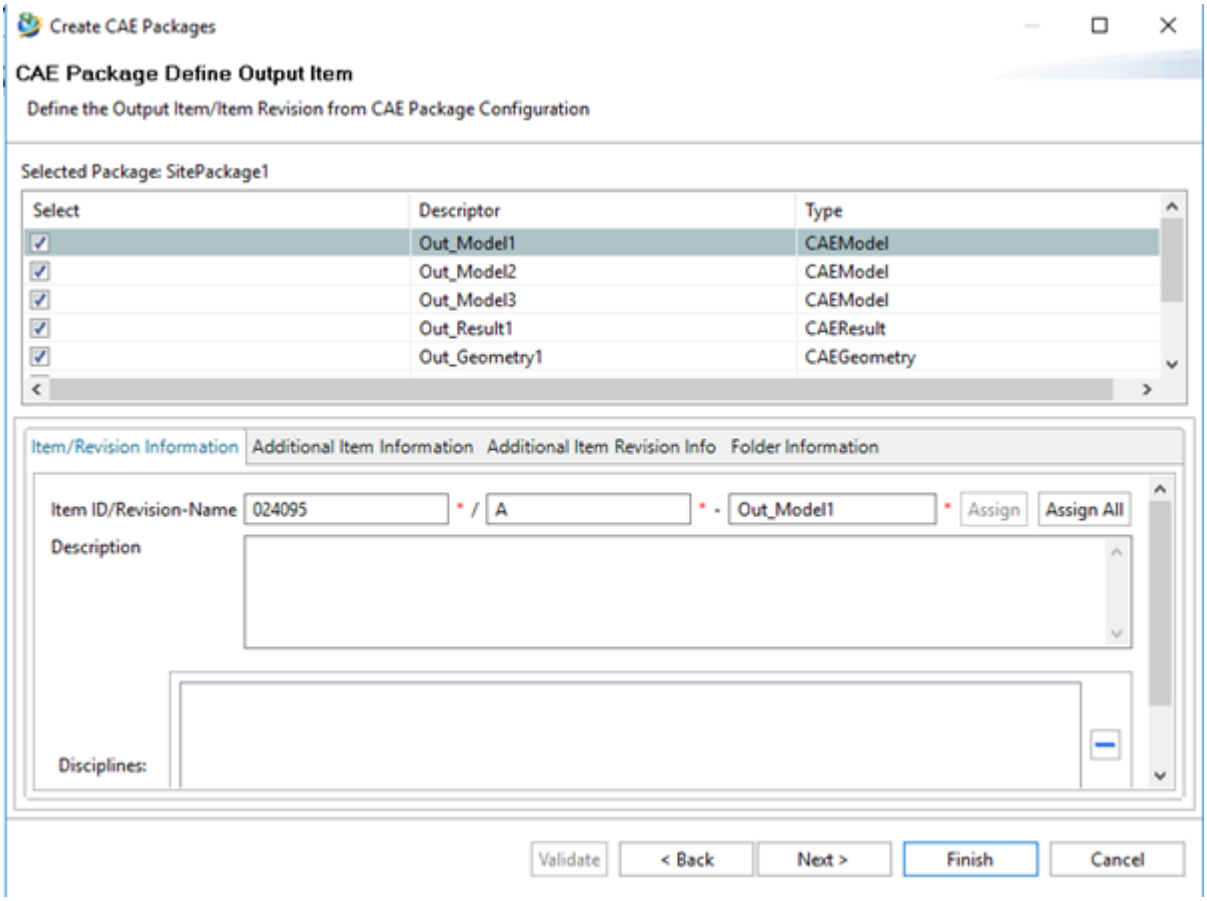
a. Select the desired input row.

b. Search for the specific input item revision by searching for the item ID and revision.

c. Select the required item revision, click **Adds a new row to the table**, and click **OK**.

d. Click **Next**.

4. Define the output item revision.



a. (Optional) Clear the check boxes next to the descriptors to disable them. You can optionally click **Finish** to create the CAE package.

   Alternatively, you can override the name if a naming pattern is not defined as part of the package definition. To override the name, perform the steps that follow.

b. In the **Item/Rev Information** tab, use one of the following options:

   - **Assign** to automatically generate an item ID and a revision, or manually enter an item and a revision ID.
   - **Assign All** to automatically generate an item ID, a revision ID, and a name for each selected output object definition.

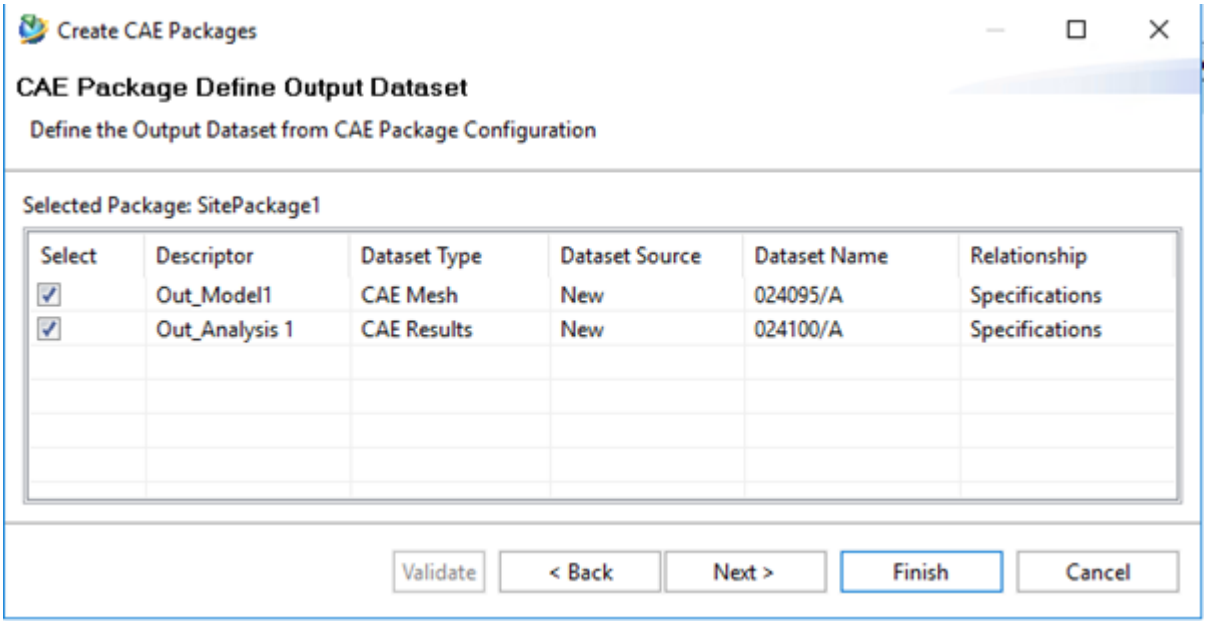
   > Note:
   >
   > Some of the attributes displayed here are configured in the create style sheet of the business object type. You can leave these fields as they are or change them.

c. In the **Additional Item Information** or **Additional Item Revision Info** tabs, type the required attributes and enter other information as appropriate.

> Note:
>
> Some of the attributes displayed here are configured in the create style sheet of the business object type. You can leave these fields as they are or change them.

d. Click **Next**.

5. Define the output dataset.



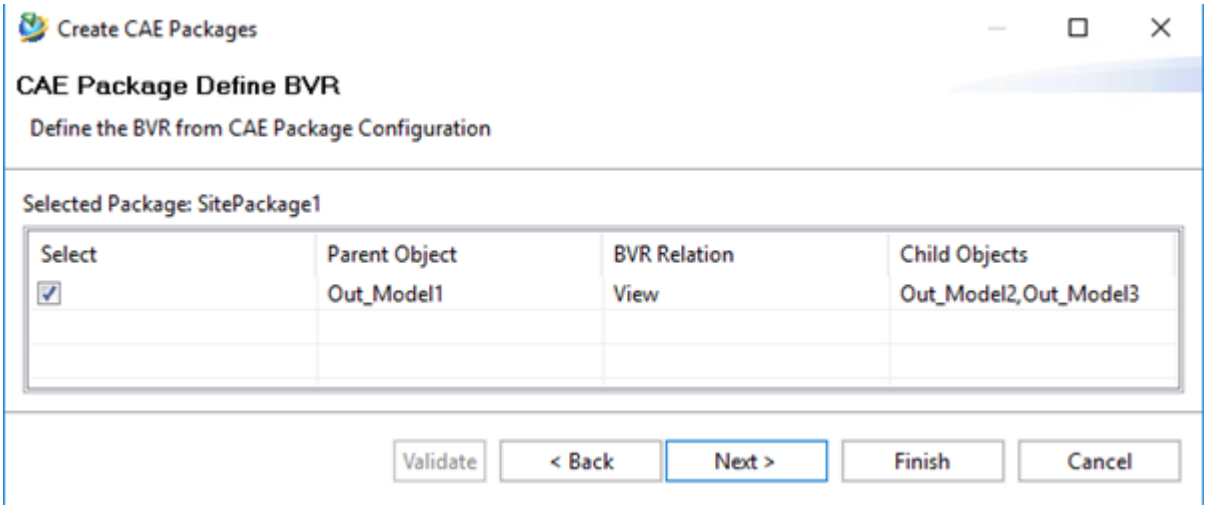
a. (Optional) Enable or disable check boxes corresponding to the dataset types you want to create.

By default, these check boxes are enabled.

The dataset types and relationship type are prepopulated if the simulation administrator has configured CAE packages at your site.

b. Click **Next**.

6. Define the BVR relations.



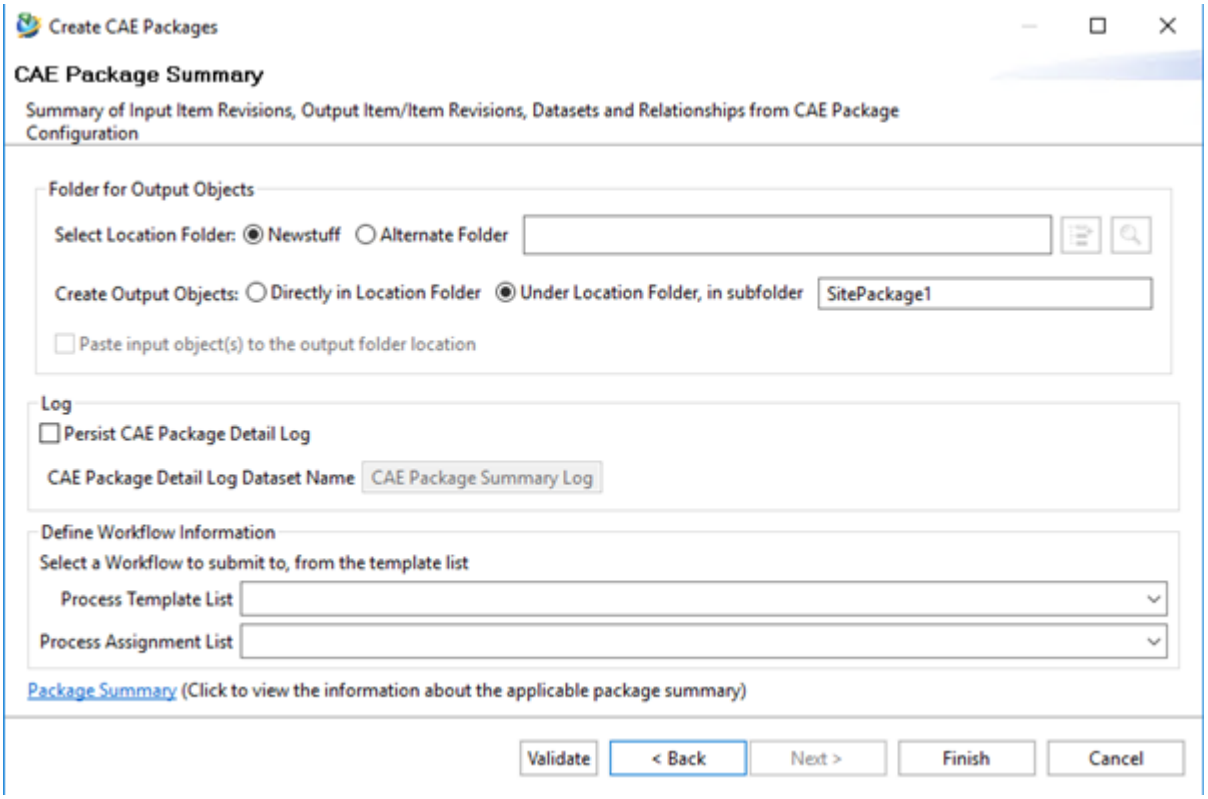
a. (Optional) Enable or disable check boxes corresponding to the BVR relations you want to create.

   By default, these check boxes are enabled.

   The BVR relations are prepopulated if the simulation administrator has configured CAE packages at your site.

b. Click **Next**.

7. Specify folder options for output objects.



a. In the **Folder Information** tab, select the **Newstuff** folder. Alternatively, select **Alternate Folder** and click **Search** to locate the relevant folder in My Teamcenter.

   Select appropriate options for creating output objects directly in the location folder or in a subfolder under the location folder.

   The system creates the subfolder with the same name as the package you execute. This subfolder is created under the location folder you choose.

b. (Optional) To enable the creation of logs, select the **Persist CAE Package Log** option.

   The **CAE_package_log_dataset_name** preference defines the default name for the CAE packages detail log dataset name. The default value is **CAE Package Summary Log**.

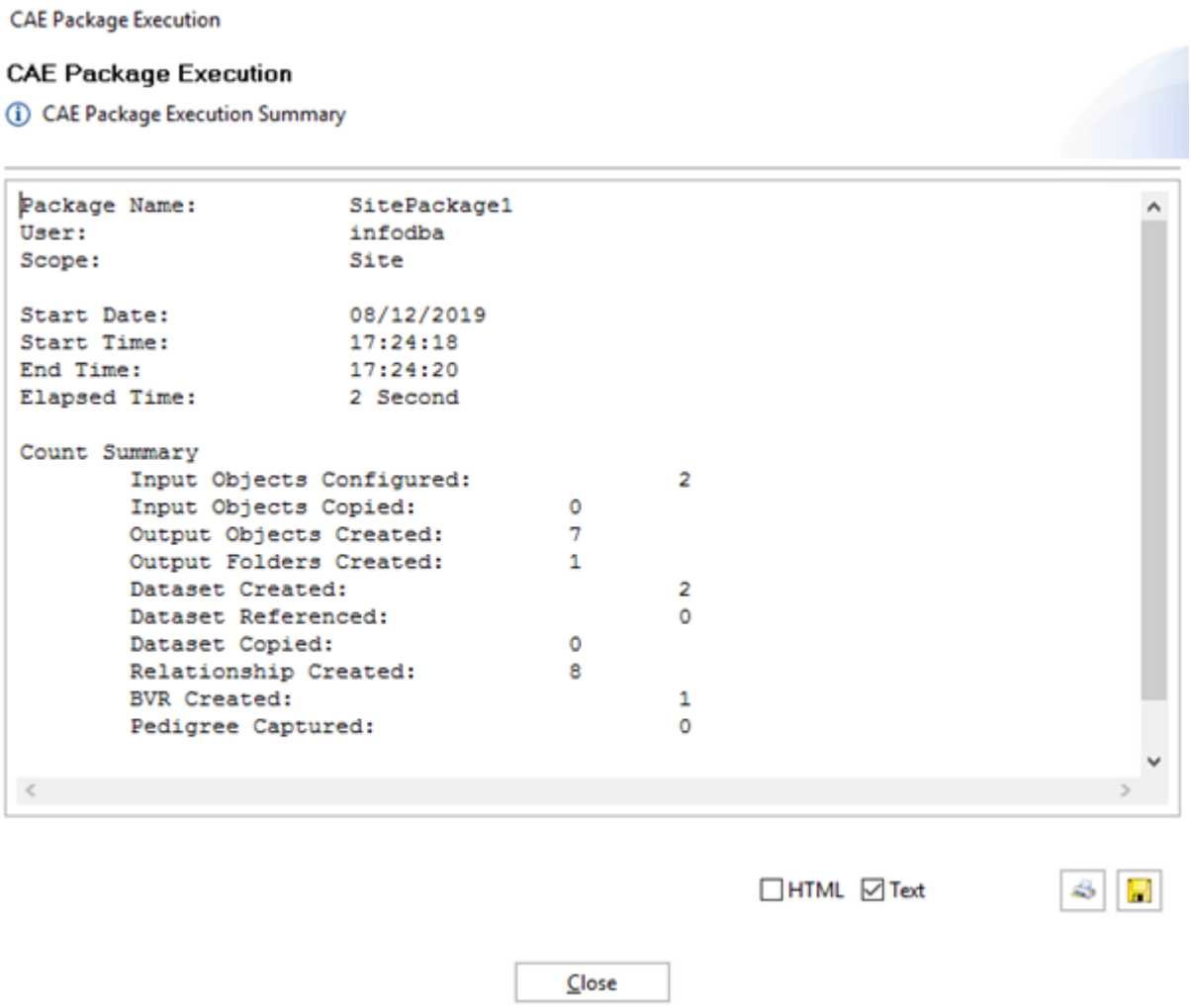
c. (Optional) To select a signoff team for the workflow, select appropriate values from the **Process Template List** and **Process Assignment List**.

   By default these lists are left blank, which is consistent with the behavior of the **Item Creation** wizard.

d. (Optional) To view summary information about the input item revisions, output item revisions, and datasets and relationships applicable to the package summary, click the **Package Summary** link.

e. Click **Finish**.

8. View the CAE package execution summary.



a. View the input, output, dataset, and relationship summary.

b. (Optional) Click **Back** to change any information in the appropriate tabs.

c. Click **Finish** to create the CAE package.

From the summary page of the item revision

1. From the **Summary** page of the item revision.

a. In CAE Manager, choose the **Home** icon to open the **Home** folder.

b. Select an item revision with the CAE package execution link.

Consult your simulation administrator to find out which item revisions have CAE package executions links. A user with DBA privileges at your site configures style sheets containing CAE package execution links for frequently used item revisions.

c. In the **Summary** tab of the item revision, click the link to launch the **Create CAE Packages** wizard.

The system automatically selects the package and displays the next panel.

2. Repeat **step 3** to **step 8**.

9. Specify key performance indicator (KPI) values

Why specify KPI values?

You can specify key performance indicator (KPI) values such as maximum stress, minimum temperature, or maximum displacement *manually* in an analysis revision or an analysis template. If you specify the values in an analysis template, you can associate the template to an analysis revision.

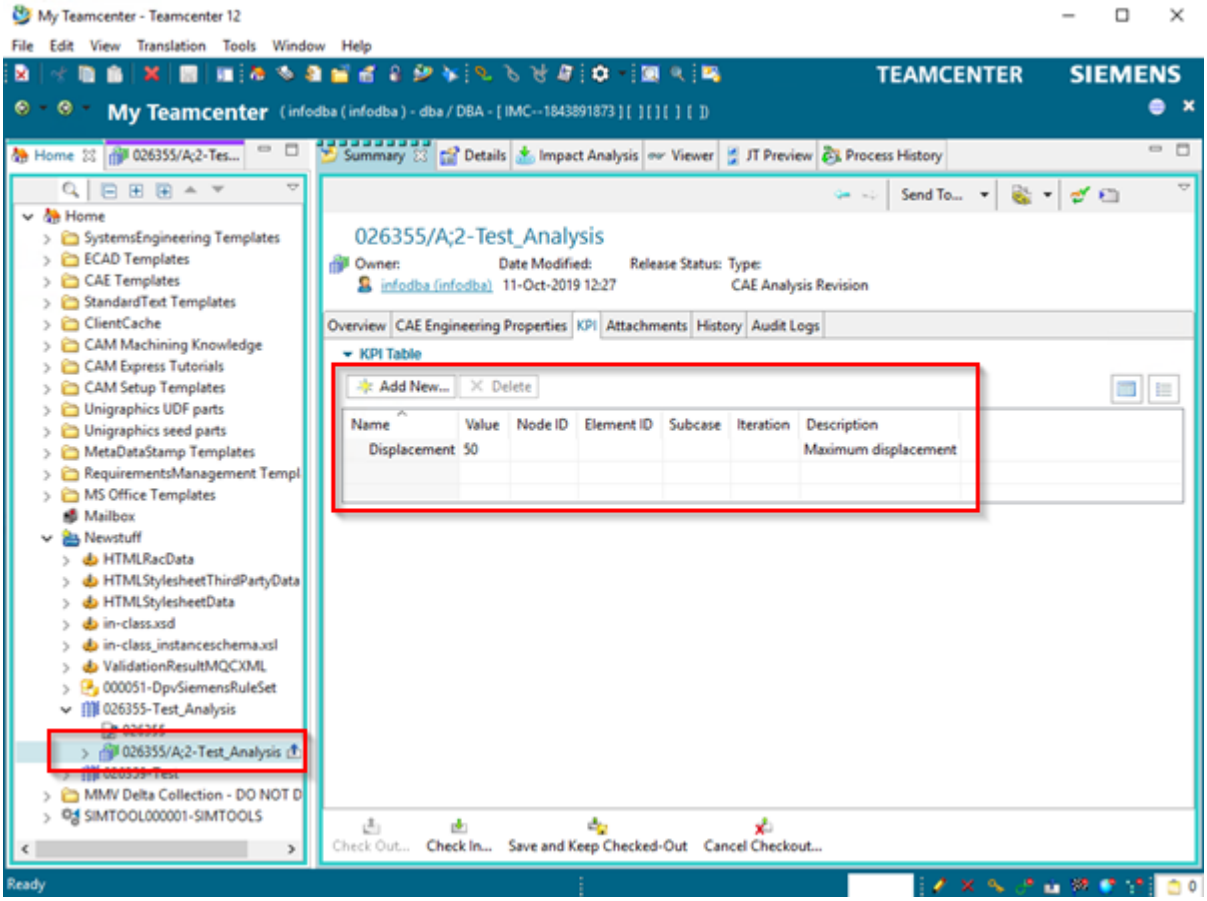
You can also update KPI values *automatically* using a preconfigured simulation tool.

After specifying the KPI values, you can monitor these values on the simulation dashboard by configuring the attributes to monitor.

- **Specify KPI values manually**
- **Specify KPI values automatically using a preconfigured simulation tool**

Specify KPI values manually

1. In My Teamcenter, select and check out an analysis revision or an analysis template.
2. Right-click the analysis revision or the analysis template and select **Open with→Summary** and click the **KPI** tab.
3. To add a KPI value, click **Add New** and specify a name (mandatory).



4. Specify other values as appropriate and click **Finish**.

5. To store the KPI values, check in the analysis revision or the analysis template.

Specify KPI values automatically using a preconfigured simulation tool

The following procedure assumes that the simulation administrator has set up the sample configurations by running the **tcsim_quick_setup.pl** script and that the default **Extract KPI from Result** tool is available.

After you launch the preconfigured simulation tool, the system exports the results files, an attribute XML file containing the KPI table attributes, the launch script, and the **NX Open** utility to the staging directory. The system creates the **KPITemplateFile** subdirectory to which it exports the template XML file. It then calls the launch script, which internally calls the **NX Open** utility with the path to the results file, the path to the template XML file and the path to the output directory path as arguments. The **NX Open** utility extracts the required KPI values from the results file based on the template XML file and generates the output KPI text file. The system updates the KPI table in the attribute XML file and populates the KPI table of the analysis revision.

The preconfigured simulation tool is supported on **launch methods** such as local, remote, server, and workflow process.

1. Open CAE Manager and from the **Home** view or from the **Analysis** view, select an analysis revision containing results files.

2. From the main toolbar, choose **Simulation Tools** → **Utilities** → **Extract KPI from Result**.

3. (Optional) Click **Browse** to change the **Default Scratch Location** path.

4. (Optional) Choose a template by searching for the item revision that contains the template.

   By default, the system displays the **KPI/A;1-Thermal-Template** item revision. This contains a sample thermal template XML file dataset. This template file provides the names of the KPI values that are associated with the results files.

5. (Optional) Choose one of the following options in **Create Items** and **Create Datasets**:

   - **As Needed** to create items or file associations as needed when you execute the launch tool.
   - **Always** to always create items or file associations when you execute the launch tool.
   - **Never** to never create items or file associations when you execute the launch tool.

   You can optionally override any of the options specified by the administrator while configuring simulation tools.

6. To specify file upload options, select one of the following options:

   - **Prompt User** to open the **File Upload Conflicts** dialog if the same output file exists in the database. In such cases, you can select the **Upload**, **Rename and Upload**, or **Skip** option.
   - **Upload** for the system to upload output files and create new versions of existing files with the same name.

     This is the default option.

   - **Rename and Upload** for the system to automatically rename the output files with a suffix, if similar filenames exist, and upload them to the database.
   - **Skip** to avoid uploading the output files, if similar files exist in the database.

7. (Optional) Select the **Display Progress Monitor on Launch** option to monitor the progress of the tool launch.

8. (Optional) Browse to the **KPITemplateFile** directory created by the system in the **Default Scratch Location** path. The system exports the template XML file to this directory.

9. (Optional) Browse to the **Default Scratch Location** path and open the output KPI text file. The name of the output text file is based on the name of the result file attached to the analysis revision. For example, if the name of the result file is **result.op2**, the output text file is named as **result.op2.txt**.

   This directory also contains the **Extract_KPI_from_Results.pl** launch script and the **TC4SIM_KPI_EXTRACTOR.zip** compressed file that contains the **NX Open** utility. The compressed file contains a **Help** folder that includes tutorials, examples and a PDF document explaining the functionality of **NX Open** utility and instructions on how to add new or edit existing KPI quantities. These are the default files that are available with the preconfigured KPI extraction tool.

10. Right-click the analysis revision and choose **Open with** → **Summary**. Click the **KPI** table and verify if the values have been automatically populated.

10. Run simulations on local desktops by downloading or uploading data periodically

Run simulations locally

At some sites, not all simulation tools are integrated with Teamcenter. In such cases, you (as a simulation analyst) can run the simulation tools on your local desktop and periodically upload or download the data to or from Teamcenter.

You can use the **File Explorer** view in CAE Manager to upload or download analysis files to or from Teamcenter based on the predefined file upload rules configured by the simulation administrator.

You can use the **File Explorer** view to:

- View and manage files in Teamcenter belonging to one or more item revisions (as analysis data typically involves a large number of files).
- Upload or download multiple files from the desktop to or from multiple item revisions in Teamcenter, using configuration rules that are consistent with the simulation tool launch process.

Download files from Teamcenter to the desktop using preconfigured rules

1. In the **Product**, **Model**, or **Analysis** view in CAE Manager, click **Open Secondary Views**  in the view toolbar, and select **File Explorer**.
2. (Optional) In the **File Explorer** view, you can:
   - Click **Filter** in the view toolbar to open the **Auto-filter** dialog box and specify filter conditions.
   - Click **Check-Out History** in the view toolbar to view the check out history of an item revision.
   - Click **Delete Files** in the view toolbar to delete item revisions.

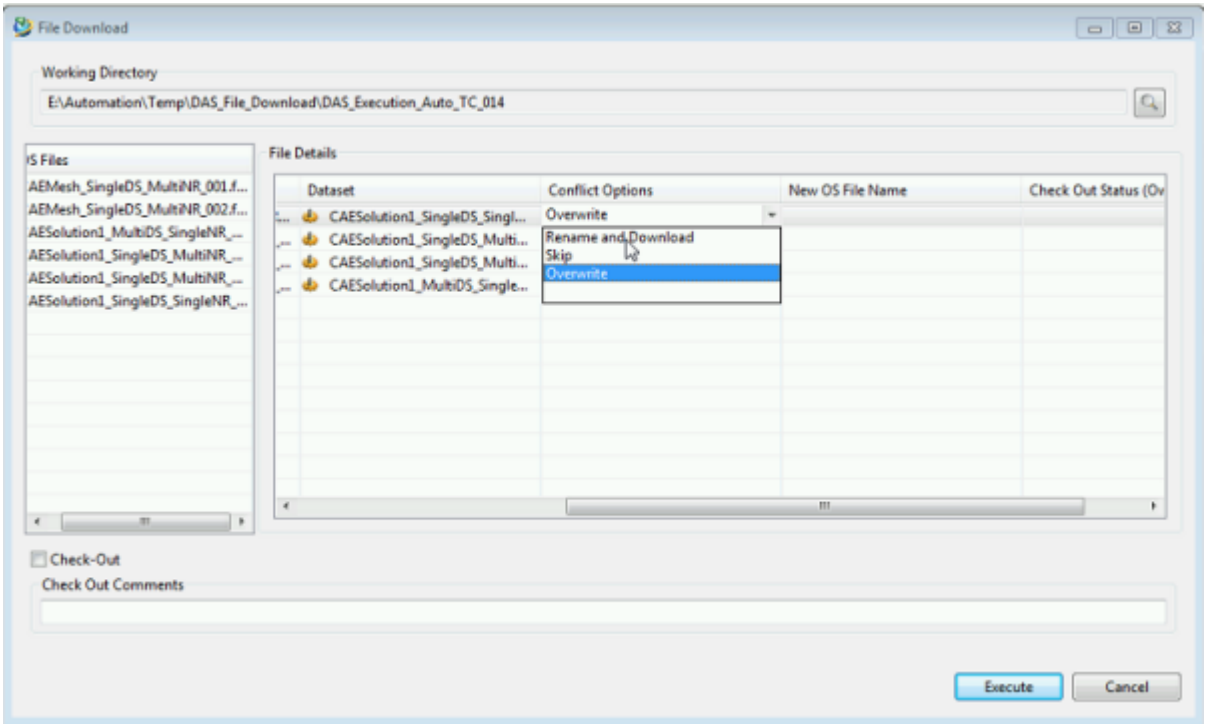
     You can delete files only if you have write privileges to them.
   - Click **Associate this 'Secondary' view to a different 'Primary' view** in the view toolbar to associate the **File Explorer** view to another view, for example, the **Home** or **Analysis** view.
   - Click **View Menu** and select **Columns Management** to manage columns in the **File Explorer** view.

3. Click **Download File** in the view toolbar to open the **File Download** dialog box.

4. (Optional) In the **Working Directory** area, click **Browse** ••• to open a window displaying the folder location of your files.

   By default, this directory is populated based on the **CAE_file_configuration_windows_default_working_dir** (Windows example) preference or based on the last selected folder.

5. From **Conflict Options**, select one of the following options for each file you want to download:



   - **Rename and Download** to rename the file, if the file is already available on your desktop. You can specify a new name in the **New OS File Name** box corresponding to the file you want to download.

   - **Skip** to skip downloading this file.

   - **Overwrite** to overwrite if the file is already available on your desktop.

6. To download files, click **Execute**.

7. (Optional) To check out the files you have downloaded, select **Check-Out** and enter a comment in the **Check Out Comments** box.

   You can view the comments later in the check out history.

Upload files from the desktop to Teamcenter using preconfigured rules

1. In the **Product**, **Model**, or **Analysis** view in CAE Manager, click **Open Secondary Views** in the view toolbar, and select **File Explorer**.

2. (Optional) In the **File Explorer** view, you can:

   - Click **Filter** in the view toolbar to open the **Auto-filter** dialog box and specify filter conditions.
   - Click **Check-Out History** in the view toolbar to view the checkout history of an item revision.
   - Click **Delete Files** in the view toolbar to delete item revisions.

     You can delete files only if you have write privileges to them.
   - Click **Associate this 'Secondary' view to a different 'Primary' view** in the view toolbar to associate the **File Explorer** view to another view, for example, the **Home** or the **Analysis** view.
   - Click **View Menu** and select **Columns Management** to manage columns in the **File Explorer** view.

3. Click **Upload File** in the view toolbar to open the **File Upload** dialog box.

4. From the **File Upload Rule Set** list, select the appropriate rule.

5. In the **Dataset Creation Options** area, select one of the following options:

   - **As Needed** to create datasets as needed while uploading files.

     This is the default option.
   - **Always** to create datasets each time while uploading files.
   - **Never** to specify that datasets should not be created, but use existing ones that match the configuration while uploading files.

6. (Optional) In the **Working Directory** area, click **Browse** ••• to open a window displaying the folder location of your files.

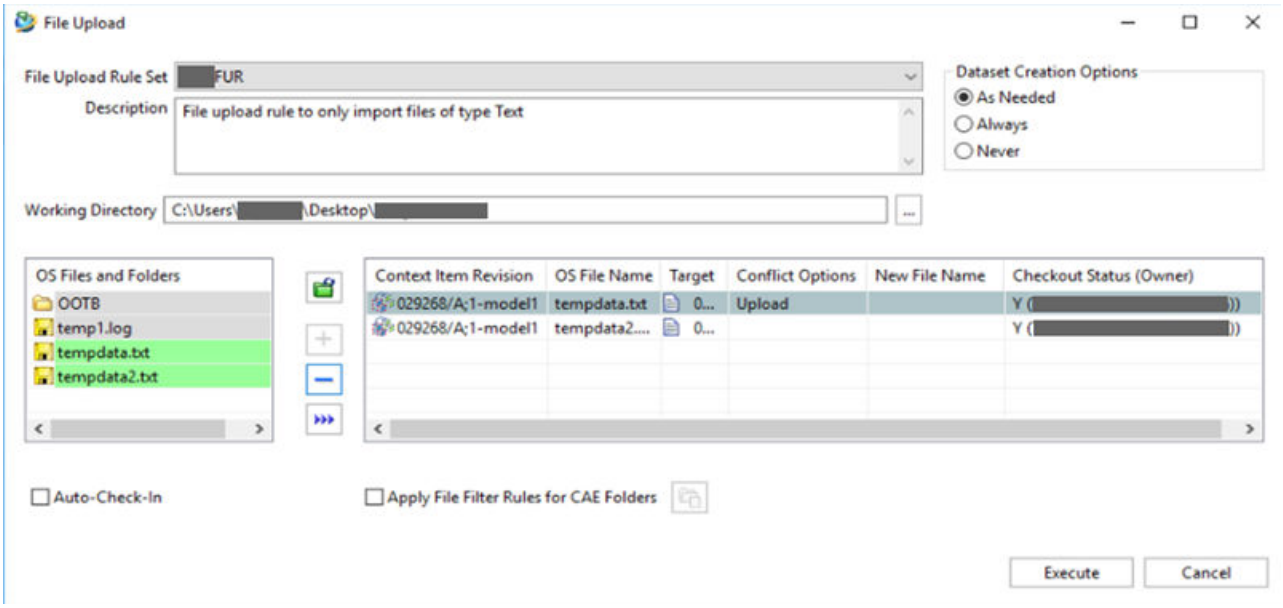
   By default, this directory is populated based on the **CAE_file_configuration_windows_default_working_dir** (Windows example) preference or based on the last selected folder.

All the files in the selected directory are automatically evaluated as per the selected File Upload Rule (FUR).

The system color codes the files to give the user visual feedback:

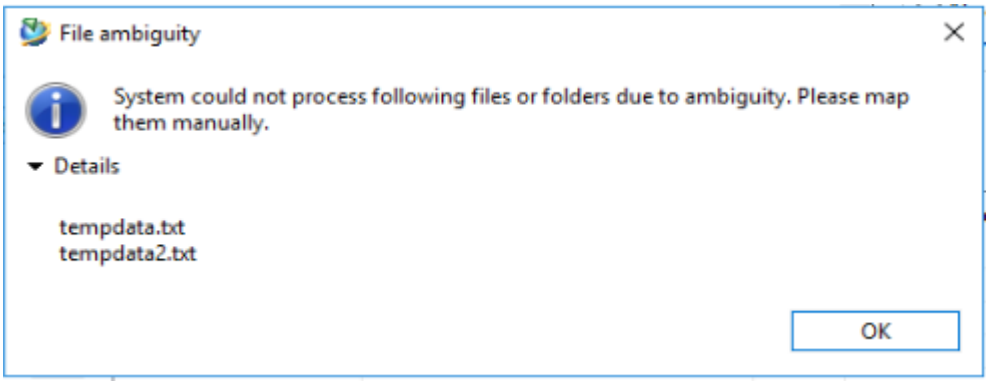
- Files with a gray background are not eligible to be uploaded as per the selected FUR.
- Files with no background or white color are eligible to be uploaded without any ambiguity.
- Files with a green background are staged to be uploaded.
- Files with a red background are eligible to be uploaded to more than one selected BOM line.

For example, if you have a rule set to upload **.txt** files, only **.txt** files are selected. The system ignores all other file types.

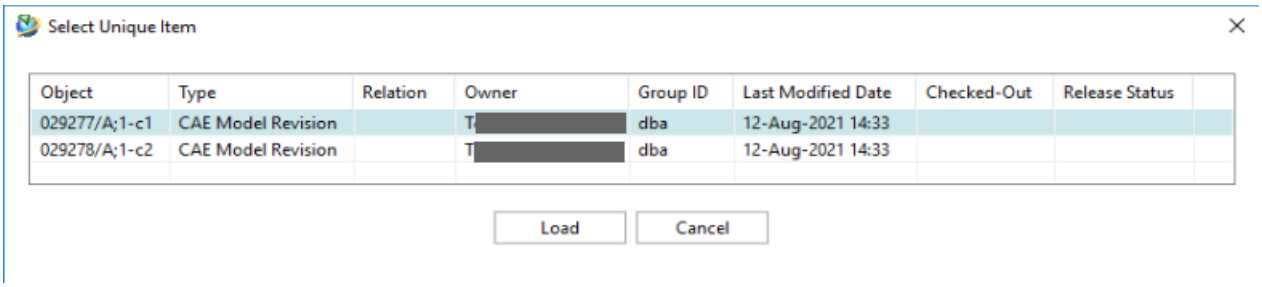


7. Click **Auto-process** to automatically process all the listed operating system files by verifying them with the predefined file upload rules.

   If there is no ambiguity, the system adds the files to the respective item revisions. In the case of ambiguity, the system displays an alert message to map the listed files manually.



When you select individual files with ambiguities and click on the **Add** button, the system displays the following dialog box to select the destination item revision:



For the files you want to upload, you can view the details of the context item revision and the target dataset.

If there are conflicts, you can select:

- **Upload** to upload the file and overwrite the file with the same file name.
- **Rename and Upload** to rename the file and upload it to the defined dataset.
- **Skip** to skip the upload of the file to Teamcenter.

8. (Optional) Check the **Auto Check-in** check box to automatically check in the dataset after uploading the file.

9. (Optional) Check the **Apply File Filter Rules for CAE Folders** check box to apply filter rules while uploading CAE folders.

   This is applicable for CAE folders only.

10. To upload the files, click **Execute**.

Import a folder structure into Teamcenter using predefined rules

You can use predefined file upload rules to import a folder structure into Teamcenter. In the **Home** view of CAE Manager, you can create a **CAE Folder** under a CAE item revision and use a predefined file upload rule to populate this folder.

The system creates a **CAE Folder** in an item revision or another **CAE Folder** using the **Has CAE Folders** relationship.

Create and manage folders

1. In CAE Manager, select an item revision in the **Home** view.

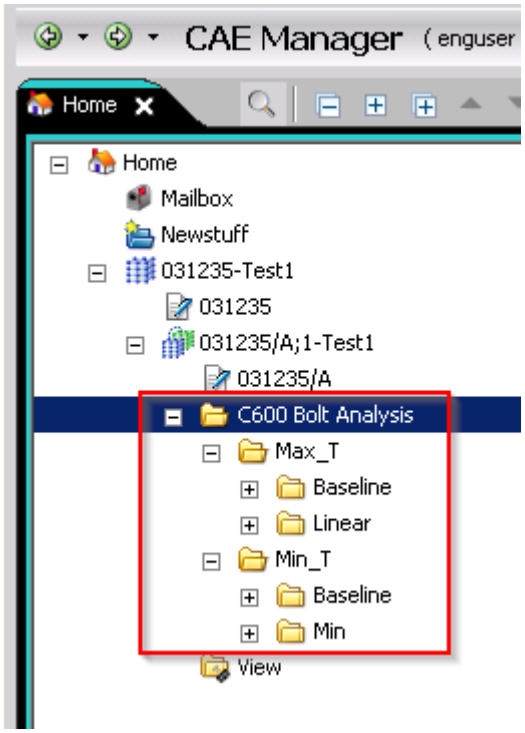
   > Note:
   >
   > You cannot create a **CAE Folder** *only* in an item revision and not in regular folders such as **Newstuff**.

2. To create a folder, click **File→New→CAE Folder**.

3. To create a subfolder in the parent folder, click **File→New→CAE Folder**.

   You can create as many **CAE Folder** objects as you want at different levels of hierarchy and rename them.

   CAE folder names must be unique at the same level. However, CAE folders with the same name can exist at different hierarchical levels.

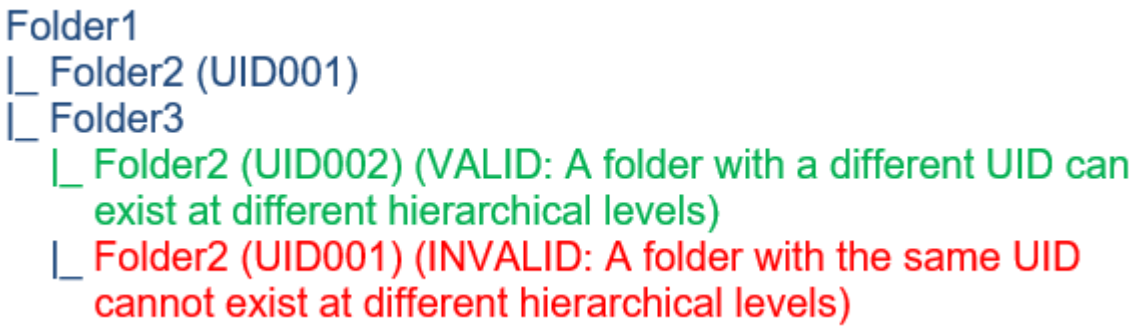


Example 1:

Folder1
|_ Folder2
|_ Folder2 (VALID: A folder with the same name can exist at a different hierarchical level)
|_ Folder2 (INVALID: A folder with the same name cannot exist at the same hierarchical level)

A CAE folder with the same UID and the same object ID *cannot* exist at multiple levels of a CAE folder structure. However, a CAE folder with the same name, but a different UID and object ID can exist at multiple levels of a CAE folder structure.

Example 2:



4. To delete a **CAE Folder**, right-click the folder and choose the **Delete Folder** command or select the folder and click **Delete the selected object permanently** ✕ on the main toolbar.

   When you delete a folder, the system removes the current folder, subfolders, and other files in the folder. However, if the folder is referenced by other item revisions or other CAE folders, the system displays a warning and does not delete the folder.

5. To save the **CAE Folder** as a new folder, click **File→Save As** and specify a name for the folder and other options as appropriate.

6. To move a **CAE Folder** to another folder, right-click the folder you want to move, choose **Cut**, and paste in another folder using the **Paste** command.

   Similarly, you can use the **Copy** command to copy a folder to another item revision or folder. The system copies and pastes (as a reference) the selected folder under the destination item revision or CAE folder only if there is no conflict.

7. To check out or check in a folder, select the folder, right-click and choose **Check-In/Out**.

   You can select multiple folders to check out or check in their contents.

8. To attach a **CAE Folder** to a workflow handler, use the **CAE-attach-related-cae-folder-objects** action handler.

   This action handler identifies any **CAE Folder** objects attached to the context target objects and then identifies all the folders below it. It then attaches them as a target or a reference based on the **-attachment** argument.

   The **-attachment** argument is optional, and the default value is set to **target** if no argument is specified on this handler.

Upload files to the CAE Folder

1. To set the default working directory, in My Teamcenter or CAE Manager, click **Edit→Options→CAE→File Explorer** and specify a default working directory for the Windows or Linux platform as appropriate.

2. In **CAE Manager**, click **Open Secondary Views→File Explorer** in the view toolbar.

3. In the **File Explorer** view, click **Upload Files**.

4. Select a predefined file upload rule set in the **File Upload** dialog box.

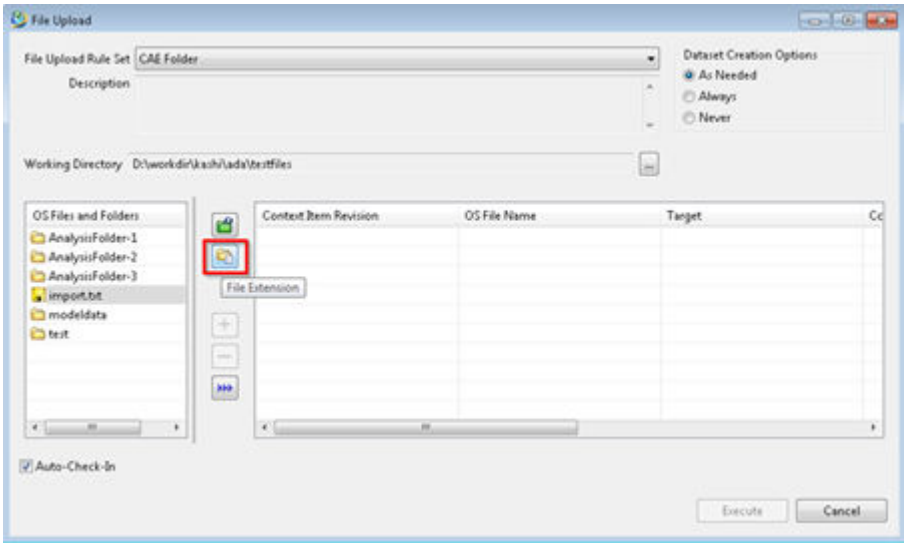
5. Select files and folders from the operating system directory.

   If files or folders are not mapped to file upload rules, they are *not* available for selection. Moreover, if there are no conflicts for the files or folder names, the system automatically marks them in green color for import. If there are conflicts, the system displays the available resolution options. A new file name is auto assigned by the system with a unique suffix and you can modify it, if needed. You can then choose the **Rename and Upload** conflict option to upload the file with a new name, the **Skip** option to skip the upload, or the **Upload** option to upload the file to the database as a new version.

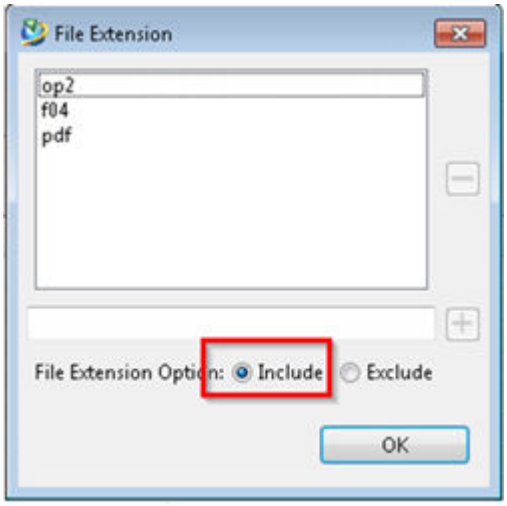
   When the file upload is performed from a parent folder that has more than one single target object, the **File Upload** dialog highlights the operating system files and folders in orange color. This color indicates that the target objects to which the files or folders you want to upload are ambiguous. In such cases, the system displays the **Select Unique Item** dialog box for you to select the unique target object for uploading the files or folders.

6. (Applicable to **CAE Folder** only) Include or exclude files based on a user specified list.

   a. Click **File Extension**.



b. In the **File Extension** dialog box, select **Include** and create an inclusion list, that is, the file extension such as **op2**, **f04**, **pdf**.



c. Select **Exclude** and create an exclusion list of file extensions.

The file extension options and file extensions list are determined by the **CAE_folder_upload_include_or_exclude_option** and **CAE_folder_upload_inclusion_or_exclusion_list** user preferences.

7. To import files and folders, click **Execute**.

Upload files asynchronously using Data Share Manager

The Data Share Manager allows users to asynchronously upload and download files. It is a separate executable with its own user interface and allows users to view large file uploads and downloads and to manage them by pausing, resuming, or canceling the processes.

Contact your Teamcenter administrator for installing Data Share Manager on your client machine. The administrator must also set the **Use_DataShare_Manager** site preference to **true** on the server. Doing so activates Data Share Manager for file uploading and downloading.

The procedure for uploading folders or files using Data Share Manager is the same as **Upload files to the CAE Folder**.

Attach the CAE Folder to a workflow handler

You can attach a **CAE Folder** to a workflow handler, using the **CAE-attach-related-cae-folder-objects** action handler.

This action handler identifies any **CAE Folder** objects attached to the context target objects and then identifies all the folders below it. It then attaches them as a target or a reference based on the **-attachment** argument.

The **-attachment** argument is optional and the default value is set to **target** if no argument is specified on this handler.

11. Launch preprocessors, solvers, postprocessors, and other simulation tools

Launching simulation tools

Simulation helps you design better products without having to build costly physical prototypes. You can launch simulation tools from Simulation Process and Data Management to send a product structure to a preconfigured application for analysis. Analysis tools provide accurate results on design behavior. After the analysis is complete, the results are imported back to Teamcenter. You can view the results and make changes to the product structure as appropriate.

Simulation Process and Data Management provides a framework for configuring and launching simulation tools that can include preprocessors, solvers, postprocessors, and other tools. You can launch simulation tools as a local launch, local detached launch, remote launch, or server launch, depending on how the administrator configures the launch parameters at your site.

> Note:
>
> The local detached launch option has been deprecated and will be removed in a future version of Teamcenter.

Remote launch is used for compute-intensive operations, such as meshing, solve execution, and postprocessing. Such operations do not require interactive user input and can be executed as a batch process on remote machines with load balancing capability and the ability to monitor and administer request queues.

The simulation launch process is as follows:

- Select an item revision from the **Product**, **Model**, or **Analysis** view in CAE Manager and launch the simulation tool. The process can be a local launch, local detached launch, remote launch, or server launch depending on how the administrator configures it.

  > Note:
  >
  > If you open a product or model structure that has Product Configurator variant data, then you cannot open the **Simulation Tool Configuration** view. You must restart CAE Manager or attach the configuration context to the root of the simulation tool configuration to open this view.

- Enter runtime parameter values, if applicable.

- Teamcenter exports primary input files and additional input files to the temporary folder for local launch and the configured staging directory for the local detached, remote, and server launches.

If the launch script is managed in a dataset attached to an item revision, Teamcenter exports all the files of that dataset to the temporary folder at the time of launch.

- Simulation Process and Data Management displays a launch progress monitor dialog box if the simulation administrator has configured the **Display Progress Monitor on Launch** option. You can view the status of the tool launch from the **Simulation Tool Progress Monitor** dialog box.

  This dialog box provides an option to open the associated temporary directory to gauge the progress of the tool execution, or to examine the intermediate results. There is also an option to terminate the process associated with the launch.

- When you import a file through the simulation tool launch, Teamcenter automatically checks out and checks in the dataset in the file and adds the name of the tool in the checkout comment.

  If you create a new dataset through simulation tool launch, Teamcenter sets the description of the dataset to the name of the tool.

- For a remote launch, Teamcenter writes a launch tool file containing information about the tool configuration details, environment values, and runtime input parameter values and sends this file as input to create a translation request object.

- Teamcenter calls the startup script on the local, remote, or server machine.

- It uploads the result files as named references after the batch process is completed successfully.

- Teamcenter creates a summary report.

- It removes the temporary data for the local launch, if configured. For local detached, remote, or server launches, temporary files are removed from the staging directory, if the Dispatcher Server is configured to remove them.

- If the simulation administrator configures simulation tools for feedback options and selects the option to notify the invoking user of the simulation tool, Teamcenter sends an email notification, including the summary report.

- If you (as a simulation analyst) **configure the product structure** and the simulation administrator enables the **CAE_enable_pedigree_operations** preference, the system captures the pedigree information during a simulation tool launch.

- During the tool launch, if the input configuration has file-based additional inputs, then all the named references related to the additional inputs are exported to the **ESP** folder. The **ESP_additional_inputs_list.txt** file is created in the **ESP_*nn*_LOGS** directory. It contains the names of all the files exported using additional inputs.

- During the tool launch, if the input configuration has PLM XML-based additional inputs, then all the named references related to the additional inputs and the top level PLM XML file are exported to the **ESP** folder. The **ESP_additional_inputs_list.txt** file is created in the **ESP_*nn*_LOGS** directory. It

contains the names of all the files exported using additional inputs and the name of the top level PLM XML file.

The system also creates various other log files in the same **ESP_*nn*_LOGS** directory.

Set favorite simulation tools

Analysts can add their favorite simulation tools to the **Simulation Tools→Favorite Tools** menu.

1. In Teamcenter or CAE Manager, choose **Edit→Options** to open the **Options** dialog box.

2. To specify favorite simulation tools, choose **CAE Tools→Simulation Tools**.

3. To add your favorite simulation tools to the **Simulation Tools→Favorite Tools** menu in CAE Manager, select the configured tools from the **My Favorite Simulation Tools** area and click **Add**.

Validate simulation tools and provide feedback to the simulation administrator

As a simulation analyst without DBA or simulation administrator privileges, you can test and validate the in-progress simulation tools created by the simulation administrator and provide feedback regarding the tool configuration. The simulation administrator can make changes based on your feedback and release the tool to all users.

1. Choose **Edit→Options** to open the **Options** dialog box.

2. Choose **CAE→Simulation Tools**.

3. Select the appropriate revision rule to apply to tools in the **Simulation Tools** menu in CAE Manager.

   The default revision rule is **Any Status; No Working**. The default value is determined by the **CAE_tool_menu_rev_rule** user preference.

4. Launch the simulation process you want to test and provide feedback on the configuration.

Launch simulation tools

In some cases, instead of storing large result files in the database, organizations prefer storing the generated result files on shared network folders. In such cases, the simulation administrator configures output rules to create web link definitions to shared network folders and input rules to read the web link definitions. As a simulation analyst, you can run predefined simulation tools with web link definitions, and the system creates the web links for file extensions that match the configured input and output rules. The web link definitions are supported on local, remote, server, and workflow launch processes. For intermediate and final import, web links are supported only for the local launch.

The simulation administrator specifies the maximum file size for a simulation tool. When you launch this tool, the system imports the file as an URL if the file size is bigger than the maximum file size specified by the simulation administrator.

1. In **CAE Manager**, select an item revision from the **Product**, **Model**, or **Analysis** view.

   > Note:
   >
   > If you open a product or model structure that has Product Configurator variant data, then you cannot open the **Simulation Tool Configuration** view. You must restart CAE Manager or attach the configuration context to the root of the simulation tool configuration to open this view.

2. Click **Simulation Tools→Favorite Tools→***Tool_Name*. The **Launch Simulation Tool** dialog box opens.

   Alternatively, click **Simulation Tools→***Tool_Name*.

   The name of the tool depends on the name specified by the administrator while configuring the simulation tools.

   The tool launch can be a local launch, local detached launch, remote launch, or server launch.

   > Note:
   >
   > The local detached launch option has been deprecated and will be removed in a future version of Teamcenter.
   >
   > The availability of simulation tools depends on access control and context menu options set by the administrator at your site.
   >
   > The steps that follow assume the default simulation tool launch dialog box. These steps may be different if a different dialog is configured by the simulation administrator for a particular tool.

3. (Optional) Click **Browse** to change the **Default Scratch Location** path.

   The default scratch location is the output directory for the launch tool. The path you specify is the root directory for all of the process files, and named references of datasets, datasets associated with item revisions, or item revisions created by Teamcenter.

   The tool launch framework uses the default scratch location as the location to store all the input and output files. However, if the staging location is configured, the tool launch uses the staging location as the location for all the input and output files for the **Local Launch** and **Server Launch** options.

> Note:
>
> This is applicable for server launch only.
>
> Shared paths can be used for the default scratch location and the user staging location.
>
> The OS user who is running the Teamcenter server should have the full control to share access for the shared path.
>
> Windows services do not support mapped drives. You must use a UNC path or a path that is local to the machine for the shared staging location.

4. (Optional) Click **Browse** to override the **User Staging Location** path.

   The user staging location is the output directory for the launch tool for a specific user. The path you specify is the root directory for all of the process files, and named references of datasets, datasets associated with item revisions, or item revisions created by Teamcenter.

   The **User Staging Location** box is not available in the **Launch Simulation Tool** dialog box if the simulation administrator has configured the launch type as **Multiple Launch**. In such a case, the system uses the default location value that is configured.

   The **User Staging Directory** box is a read-only field. It is a combination of the user staging location folder and the folder naming pattern specified by you in the **Options** dialog box in Teamcenter or CAE Manager.

   You can use a shared staging location to avoid exporting the same result files across simulation tools by multiple users. These result files can also be shared across multiple users.

   > Note:
   >
   > This is applicable for server launch only.
   >
   > Do not use the shared path for the default scratch location and the user staging location. Instead, use the local path.
   >
   > Windows services do not support mapped drives. You must use a UNC path or a path that is local to the machine for the shared staging location.

5. (Optional) You can override the file names in the **PLMXML Export File** option.

   > Note:
   >
   > This option is shown only if the simulation tool is configured to have such a file.

6. Enter runtime parameters as appropriate.

Parameters can be dynamic or static depending on how the administrator configures it. Dynamic parameters are extracted from object attributes. The static parameters you enter at run time are passed to the launch script.

- You can enter runtime parameters only if the administrator has selected the **Runtime Parameter** check box in the **Input Parameter** pane while configuring the launch tools. The administrator might choose to predefine runtime parameters for frequently used launch tools. In such cases, you cannot overwrite runtime parameter values.

- You can use **Edit** in this field to enter the allowable values for both **List of Values** and **Boolean** types. For **Boolean** types, only the first two entered values are considered.

  In the default launch dialog box, the **List of Values** fields are presented as a list and the **Boolean** fields are presented as a check box. The selected state corresponds to the first value in the **Boolean** definition.

7. Specify optional inputs.

   While configuring simulation tools, the simulation administrator cannot practically link all the optional inputs to the primary input item revision and predefine the traversal path for all those inputs that you (as simulation analyst) want to export in the tool configuration. For example, in addition to the result files (primary input), you may want to select result templates (optional inputs) and send them to a postprocessor. The result templates are not linked to the analysis item revision that holds the result files. In such cases, the simulation administrator configures optional inputs for you to select additional inputs such as result templates.

   During the tool launch process, you can select the desired item revision for each available optional inputs and use these templates, for example, to export only specific types of results.

8. (Optional) Choose one of the following options in **Create Items** and **Create Datasets**:

   > Note:
   >
   > You can optionally override any of the options specified by the administrator while configuring simulation tools.

   - **As Needed** to create items or file associations as needed when you execute the launch tool.

   - **Always** to always create items or file associations when you execute the launch tool.

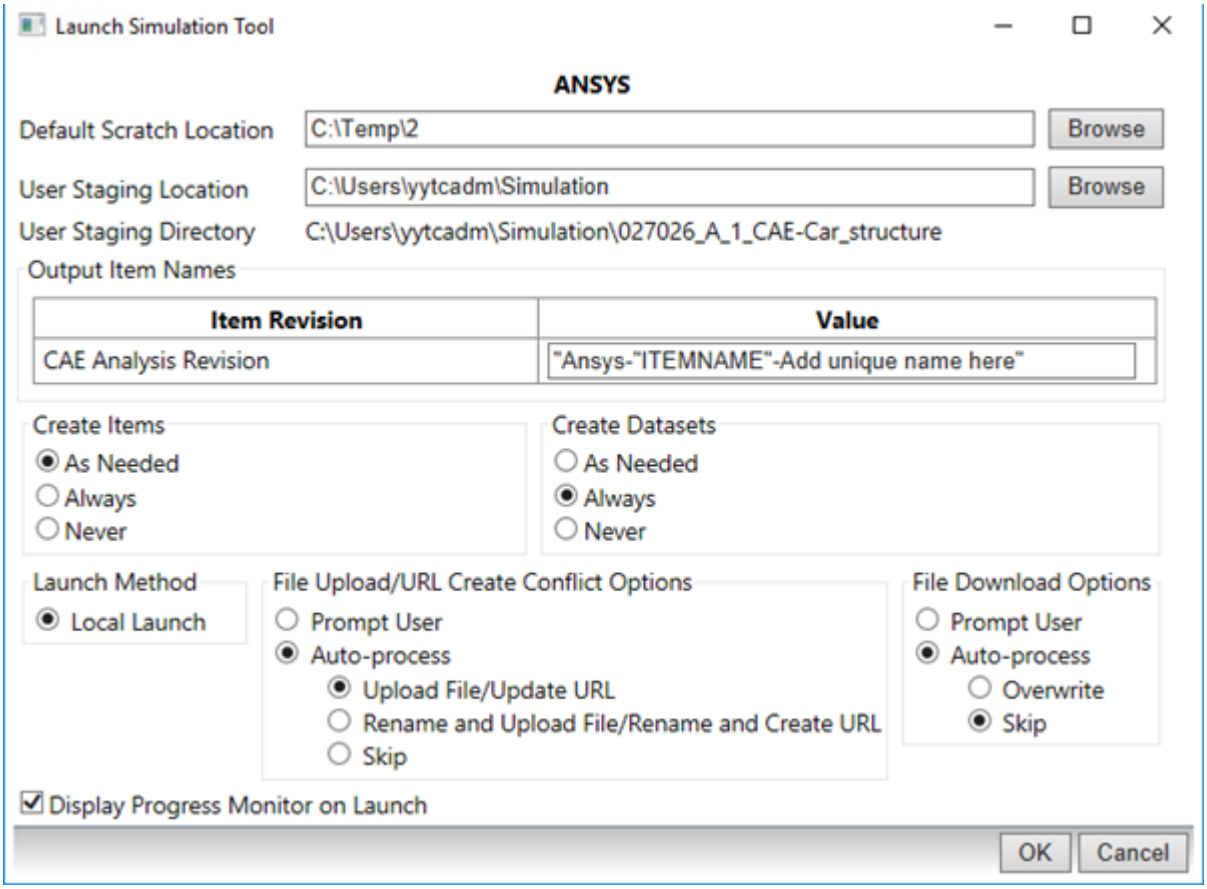
   - **Never** to never create items or file associations when you execute the launch tool.

9. (Optional) Select one of the following options:

Option	Allows you to
Local Launch	Launch simulation tools on the Teamcenter client. You must keep the Teamcenter client running till the simulation process is completed.
Local Detached Launch	Launch simulation tools on the Teamcenter client. You can exit the Teamcenter client after launching the simulation process. The results are stored in Teamcenter. Note: This option has been deprecated and will be removed in a future version of Teamcenter.
Remote Launch	Launch simulation tools on a different machine or module. This machine does not have the Teamcenter server installed on it, but has simulation tools and Dispatcher components installed and configured to allow a remote launch of simulation tools from Teamcenter clients. Remote launch is ideal for compute-intensive operations, such as meshing, solve execution, and post processing. Such operations do not require interactive user input. You can execute them as a batch process on remote machines with load-balancing capabilities and can monitor and administer request queues. When you launch simulation tools, the system exports the data (primary input and additional input files) to the Dispatcher staging directory. After launching simulation tools on a different module, you can exit the Teamcenter client or even shut down the Teamcenter client. The results are stored in Teamcenter.
Server Launch	Launch simulation tools on the Teamcenter server. After launching simulation tools on the server, you can exit the Teamcenter client or even shut down the Teamcenter client. The results are stored in Teamcenter.

Note:

Only valid options are shown in the dialog box by default. These options are available only if the administrator has selected the relevant options while configuring the simulation tools.



10. To specify the file upload and URL create conflict options, select **Prompt User** or **Auto-process**.

    If you select **Auto-process**, choose one of the following options:

    - **Upload File/Update URL** for the system to upload output files or update URLs. In the case of files, the system creates new versions of existing files with the same name. This is the default option.

    - **Rename and Upload File/Rename and Create URL** for the system to rename and upload the file or rename and create URLs. In the case of files, the system renames the output files with a name provided by the user if similar filenames exist. It then uploads them to the database. The system generates a new name for the URL and it is not editable.

    - **Skip** to avoid uploading the output files or creating new URLs, if similar files or URLs with the same name exist in the database.

    If you select **Prompt User**, the system provides options to control each file or URL that is uploaded or updated. If there are conflicts, the system displays the **File Upload Conflict** dialog box. The options in the **Action** column are similar to the ones available for **Auto Process**. If you choose the **Rename and Upload File/Rename and Create URL** option, you can provide a new name for the URL.

11. To specify the file download options, select **Prompt User** or **Auto-process**.

    If you select **Auto Process**, choose one of the following options:

    - **Skip** to avoid uploading the output files to the **User Staging Directory**, if similar files with the same names exist in the directory.
    - **Overwrite** to overwrite to overwrite the existing files in the **User Staging Directory**.

    If you select **Prompt User**, the system displays the **Select Potential File Conflict Resolution** dialog box to control each file that is exported based on input rules. The options in the **Action** column of this dialog box are the same as those in **Auto Process**.

12. (Optional) Select the **Display Progress Monitor on Launch** option to monitor the progress of the tool launch.

    > Note:
    >
    > In the progress monitor, the final status of the process is based on the status of the final import. This is irrespective of the status of intermediate imports.

Status of jobs in Simulation Tool Progress Monitor

After the simulation tool launch, the **Simulation Tool Progress Monitor** opens by default if you have selected the **Display Progress Monitor on Launch** check box while launching tools. Alternatively, you can click **Simulation Tool Progress Monitor** on the main toolbar.

Status	Description
Complete	The job is complete and successful.
Disconnected	A job is marked as disconnected if the job was in progress while the user closes the rich client. Note: Disconnected is not supported if the simulation administrator has selected the **Multiple Launch** option while configuring simulation tools.
Duplicate	Another tool launch has been started on the same input object while an existing job is still in progress.
Failed	The job has failed.
In Progress	The job is being executed.
Initializing	The job is being initialized.

Status	Description
Intermediate Uploading	The system is importing the intermediate results.
Terminated	The job is terminated by the user from the **Simulation Tool Progress Monitor**.
Uploading	The system is importing the final outputs after exiting the launch script successfully.
User Aborted Import	The user aborted the import because of file upload conflicts.
No output files found	(If output rules are defined) After the simulation tool execution is complete, the system checks for any matching output files. However, no output files are found.
No files uploaded or Web Links created	(If output rules are defined) After the simulation tool execution is complete, the system finds matching output files. However, they are not imported. This could be due to the following reasons: • **Selective Data Import** is enabled and the import process is canceled. • For resolving file upload and URL create conflict options, the **Prompt User** option is selected and the import is skipped. • For resolving file upload and URL create conflict options, the **Auto-Process** and the **Skip** option is selected. • **Import only Modified files** is selected but no output files are modified. This information is also displayed in the **simulation_process_launch.log** file.
Processing	After files are imported into the database, the system performs a final verification and clean up before moving the status to its final status.

Launch simulation tools using a preconfigured style sheet

The simulation administrator configures style sheets to launch various simulation tools. Consult your simulation administrator for information about launching various simulation tools. When you launch a simulation tools using a preconfigured style sheet, the latest released revision of the corresponding simulation tool is launched.

1. In **CAE Manager**, select a model or an analysis revision from the **Model** or the **Analysis** view, respectively.

2. From the view toolbar, click **Open Secondary Views** → **Summary**.

3. In the **Overview** tab, click **More Actions** and select the preconfigured simulation tool you want to launch.

4. In the **Launch Simulation Tool** dialog box, select options as appropriate.

   The name of the tool depends on the name specified by the administrator while configuring the style sheet.

5. (Optional) Click **Browse** to change the **Temporary OS Location** path.

   The temporary operating system (OS) location is the output directory for the launch tool. The temporary path you specify is the root directory for all of the process files, and named references of datasets, datasets associated with item revisions, or item revisions created by Teamcenter.

6. (Optional) Choose one of the following options in **Create Items** and **Create Datasets**:

   > Note:
   >
   > You can optionally override any of the options specified by the administrator while configuring simulation tools.

   - **As Needed** to create items or file associations as needed when you execute the launch tool.
   - **Always** to always create items or file associations when you execute the launch tool.
   - **Never** to never create items or file associations when you execute the launch tool.

7. (Optional) Select one of the following options:

Option	Allows you to
Local Launch	Launch simulation tools on the Teamcenter client. You must keep the Teamcenter client running till the simulation process is completed.
Remote Launch	Launch simulation tools on a different machine or module. This machine does not have the Teamcenter server installed on it, but has simulation tools and Dispatcher components installed and configured to allow remote launch of simulation tools from Teamcenter clients. Remote launch is ideal for compute-intensive operations, such as meshing, solve execution, and post processing. Such operations do not

Option	Allows you to
	require interactive user input and you can execute them as a batch process on remote machines with load-balancing capabilities and the ability to monitor and administer request queues. When you launch simulation tools, the system exports the data (primary input and additional input files) to the Dispatcher staging directory. After launching simulation tools on a different module, you can exit the Teamcenter client or even shut down the Teamcenter client. The results are stored in Teamcenter.
Server Launch	Launch simulation tools on the Teamcenter server. After launching simulation tools on the server, you can exit the Teamcenter client or even shut down the Teamcenter client. The results are stored in Teamcenter.

8. To specify file upload options, select one of the following options:

   - **Prompt User** to open the **File Upload Conflicts** dialog if the same output file exists in the database. In such cases, you can select the **Upload**, **Rename and Upload**, or **Skip** option.
   - **Upload** for the system to upload output files and create new versions of existing files with the same name.

     This is the default option.
   - **Rename and Upload** for the system to automatically rename the output files with a suffix, if similar filenames exist, and upload them to the database.
   - **Skip** to avoid uploading the output files, if similar files exist in the database.

9. (Optional) Select the **Display Progress Monitor on Launch** option to monitor the progress of the tool launch.

   > Note:
   >
   > In the progress monitor, the final status of the process is based on the status of the final import. This is irrespective of the status of intermediate imports.

10. Click **OK** to launch the simulation tool.

Launch simulation tools using a workflow process

Your site administrator creates process templates from workflow templates to launch various simulation tools. Consult your site administrator for information about the process templates to launch various simulation tools.

- The simulation tools specified by the administrator are launched when you use the process template.
- If the administrator at your site has not specified the **–noref** option while configuring the workflow action handler, the workflow handler adds output objects as reference attachments in the **Reference** folder in the CAE Manager view.

1. In **CAE Manager**, select one or more item revisions from the **Product**, **Model**, or **Analysis** view.

   If you select a product, model, or analysis structure in any of the **CAE Manager** views, all the child items within the structure are automatically selected for the workflow process launch.

2. Choose **File→New→Workflow Process**. The **New Process Dialog** box opens.

3. (Optional) In the **Description** box, type a description for the simulation tool you want to launch.

4. From the **Process Template** menu, choose the appropriate process template.

   > Note:
   >
   > (Optional) In the **Attachments** pane, you can select an item revision from the available targets and click the **Cut** icon to delete the item revision.

5. Click **OK** to launch the workflow process.

Automatically clear simulation jobs using preferences

You can set the following user preferences to automatically clear simulation jobs when a simulation analyst uses simulation tools:

- **CAE_Jobs_Clear_After_Size**
- **CAE_Jobs_Clear_Batch_Size**

These user preferences work together and you must set both of them. The default values are **500** and **100**, respectively.

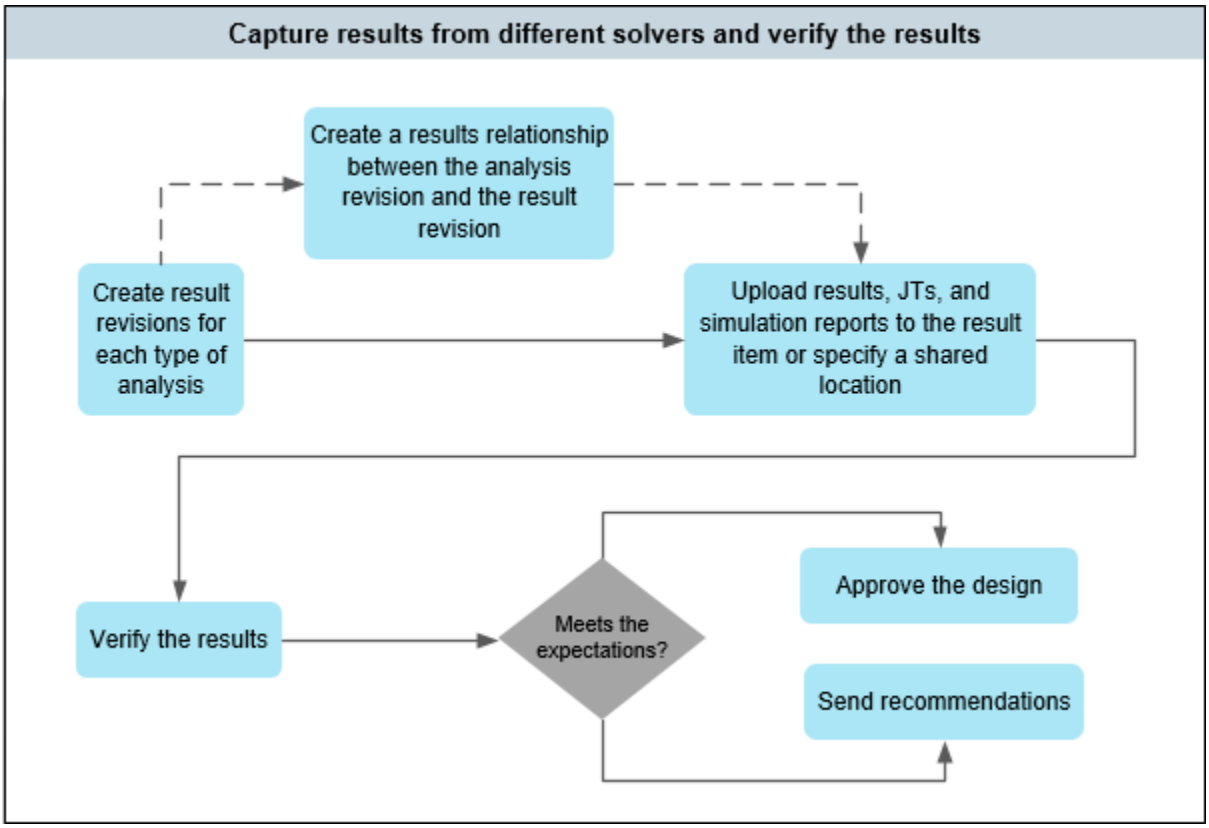
Example:

Set the **CAE_Jobs_Clear_After_Size** and the **CAE_Jobs_Clear_Batch_Size** preference value as **50** and **10**, respectively. After you set these preferences, the number of simulation jobs does not exceed the sum of these preference values. Therefore, when you launch the 61st job, the system clears the first 10 jobs in chronological order and they remain at 51 after the tool launch is complete.

The **Simulation Tool Progress Monitor** displays the status of all tools. To view fewer jobs in the **Simulation Tool Progress Monitor**, set lower values for these preferences. However, this impacts the tool launch performance as the system has to clear jobs based on the values you have specified.

12. Analyze results

Capture results from different solvers and verify results



1. **Create result revisions**

   You must create result revisions to manage analysis results from different solvers. The result revision is associated with an analysis revision.

2. *Upload results*

   When the solve is complete, you import the results to the result revision. You can also launch a postprocessor and generate JT files or other visualization files and import them to the result revision.

3. **Verify results and send recommendations**

   After verifying the results, you can release the analysis data to production. You release the data by signing off from a workflow. You can make recommendations while signing off the workflow.

What are result revisions?

A *result revision* represents the results of a simulation analysis. **CAE 3D Result** item revisions are workspace objects for storing the results of a solve. They may contain JT files or other visualization files that are the results of a solve. Result revisions are associated with analysis revisions.

For more information, see **Objects you work with**.

Create result revisions in My Teamcenter or CAE Manager

1. Select a container for the item, such as a folder, another result revision, an analysis revision in a folder, or an analysis revision in the **Analysis** view in CAE Manager.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Result** item revision from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. Specify information in the **CAE Result Information** area of the **Object Create Information** pane.

   a. Type an item ID or click **Assign** to automatically assign an item ID.

   b. Type a revision ID or click **Assign** to automatically assign a revision ID.

   c. (Mandatory) Specify a name for the item revision.

   d. (Optional) Enter a description for the item revision.

   e. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

5. Specify information in the **Additional CAE Result Information** area of the **Object Create Information** pane.

   a. Specify the project ID and other information as appropriate.

   b. Click **Finish** to create the item revision.

      Alternatively, click **Next** to specify additional information

6. Specify information in the **CAE Result Revision Information** area of the **Object Create Information** pane.

   a. From the **Disciplines** area, click **Expand to modify**, select a discipline from the list, and click **Add** .

   b. From the **Analysis Types** menu, select an analysis type.

   c. Specify the project ID and other information as appropriate.

   d. From the **Solver Name** menu, select a solver type.

   e. Specify the analysis type, solver name, project ID, and other information as appropriate.

   f. (Optional) Click **Finish** to create a basic item revision.

      Alternatively, click **Next** to specify additional information

7. Specify information in the **Enter CAE Result Template Information** pane.

   a. Search for the result template by clicking **Search** and add it.

   b. (Optional) Click **Finish** to create a basic item revision.

      Alternatively, click **Next** to specify additional information.

8. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

   Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

   a. To specify a list of data sets, click **Add**, and select appropriate options.

      You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

      > Note:
      >
      > This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

   b. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

c. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information.

9. (Optional) Specify information in the **Define References** pane.

You can specify references manually by typing the object ID, revision, object, and relation type or using the **Search** dialog box.

a. To open the **Define References** pane, click **Next**.

b. Click **Add** and type an object ID, revision, object, and relation type or click **Search** to search for references.

c. (Optional) Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information

10. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

11. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

Create result templates in My Teamcenter

You can create result templates to include different types of result criteria. After creating the template, you can associate the template to a result revision.

1. In My Teamcenter, select a container for the result template, such as a folder or another item revision.

2. Choose **File→New→CAE Item** or press Ctrl+E.

3. In **New CAE Item Wizard**, select the **CAE 3D Result Template** revision from the **Most Recently Used** or **Complete List** list.

   > Note:
   >
   > The administrator controls the item or item type and their attributes that analysts can view in the **New CAE Item** dialog box.

4. (Mandatory) Specify information in the **CAE 3D Result Template Information** section.

   a. Type an item ID or click **Assign** to automatically assign an item ID.

   b. Type a revision ID or click **Assign** to automatically assign a revision ID.

   c. (Mandatory) Specify a name for the result template.

   d. (Optional) Enter a description for the template.

   e. (Optional) Click **Finish** to create a basic item revision.

      Alternatively, click **Next** to specify additional information.

5. (Optional) Specify information in the **CAE 3D Result Template Revision Information** section.

   a. Click **Expand to modify**, select the appropriate value from the list, and click **Add** to add the value.

b. (Optional) Click **Finish** to create a basic item revision.

Alternatively, click **Next** to specify additional information.

6. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called *named references*, created by other software applications. A default tool is associated with each dataset type.

a. To open the **Enter CAE Attach Files Information** pane, click **Next**.

b. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Note:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

c. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files into the **Named reference** table, the system populates all the files as named references of the selected dataset.

d. (Optional) Click **Finish** to create a basic item revision.

7. (Optional) Specify information in the **Define Workflow Information** pane.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. To open the **Define Workflow Information** pane, click **Next**.

b. Select a process template and apply a process template filter.

c. Select a process assignment list.

d. Click **Finish** to create the item revision.

Alternatively, click **Next** to specify additional information.

8. (Optional) Specify information in the **Assign Project Page** pane.

Projects represent and control access to a particular piece of work that may be accessible to multiple organizations, such as project teams, development teams, suppliers, and customers. Objects, such as items, item revisions, and datasets can be assigned to projects.

a. Select the project or projects from the **Available Project** list and move them to the **Selected Projects** list using the right-arrow button. To select all projects in the list, click the double-arrow button.

b. Click **Finish** to create the item revision.

9. (Optional) Specify information in the **Enter CAE Attach Files Information** pane.

Datasets manage data files, called named references, created by other software applications. A default tool is associated with each dataset type.

a. To specify a list of data sets, click **Add**, and select appropriate options.

You can also drag files into the **Dataset configuration** table. Each file you drag is considered as a single dataset, and each file is associated as a named reference.

> Tip:
>
> This association with a particular file depends on the **DRAG_AND_DROP_default_dataset_type** preference set at your site, and this preference is applicable only when you drag files.

b. To specify named references, click **Add**, and select appropriate options.

You can also drag files into the named reference table. When you select a dataset in the **Dataset configuration** table and drag files in the **Named reference** table, the system populates all the files as named references of the selected dataset.

c. (Optional) Click **Finish** to create a basic item revision.

10. (Optional) Specify information in the **Define Workflow Information** pane.

This pane is available only if it is configured in Teamcenter.

Workflow process templates define the process flow, business rules, and signoff profiles of your business processes. When an analyst initiates a workflow process, it is based on a selected process template that contains a framework of tasks and signoff team profiles. This framework is used to define the order of tasks and assign the responsibility of signing off tasks to other users. The selected process template may include workflow handlers that automate some or all of the assignments.

Process assignment lists are distribution lists associated with workflow process templates. These lists assign resources to all tasks in a workflow process.

a. Select a process template and apply a process template filter.

b. Select a process assignment list.

11. (Optional) In the **Assign Project Page**, select an available project.

12. Click **Finish** to create the result template.

Solve, postprocess, view results, and release the analysis data

- **Solve the analysis**

  When you are ready to solve your model, Teamcenter can launch the solver of your choice.

  Your administrator configures the solvers at your site.

- **Postprocess the results**

  - Import results to Teamcenter.
  - Launch the postprocessor of your choice from Teamcenter.
  - Generate JT files or other visualization files by using your postprocessor, and import them to Teamcenter.
  - Create reports and presentations, and import them to Teamcenter.

- **View the results**

  You can view postprocessing displays, and access reports and presentations associated with the results, provided that they are in a supported data format:

  - You can view JT files and other common graphic formats (**.gif**, **.jpg**) directly in Teamcenter using the embedded viewer.
  - You can launch and view imported reports and presentations created in Word, Excel, or PowerPoint.

- **Release the analysis data to production**

  When an analysis is complete, you can release the analysis data to production. You release the data by signing off from a workflow. Your administrator can implement a workflow for CAE processes.

  Releasing analysis results is accomplished by applying a status on the items (**CAE 3D Model**, **CAE 3D Analysis**, **CAE 3D Result**) used in the analysis.

  - Any released, frozen, or locked item cannot be modified without creating a new revision.
  - Datasets that are released, frozen, or locked cannot be modified.

Manage results in the database

You can manage results in the database. Alternatively, you can leave them where they are generated such as shared network folders and create a symbolic URL link to the location in the database.

When results are managed in the database, they can take up significant space and volumes have to be managed actively. You can periodically prune results from the database that are not modified, for example, for the last six months. Even after the results are pruned, simulation analysts can use model and input decks to regenerate the results again or they may have stored light weight results in JT formats or reports.

To prune results with extensions such as ***.op2**, ***.fil**, and ***.rst**, you can use the **Prune** command in My Teamcenter or use the **prune_named_references** command line utility if you are an administrative user.

13. Using the simulation dashboard

Why use the simulation dashboard?

The simulation dashboard provides a clear view of the status of all the models and analyses carried out by simulation analysts at the program, milestone, group, or individual user level. It allows decision makers to access the latest information and make correct decisions.

The simulation dashboard:

- Displays the list and status of all models and analyses based on a query.
- Displays the status of models and analyses based on variants of the vehicle or master structure based on the pedigree information.
- Presents the status of the results corresponding to the models and analyses.
- Monitors key performance indicator (KPI) values such as maximum stress, minimum temperature, or maximum displacement from analysis revisions or analysis templates.

Display the results in the dashboard

1. Launch the simulation dashboard.

   You can launch the simulation dashboard in multiple ways. Depending on the context, the system opens the **Model Dashboard** or **Analysis Dashboard**.

   Select one of the following options to launch the dashboard:

   - Right-click a model revision in the **Model** view or analysis revision in the **Analysis** view and select **Simulation Dashboard**. Select a predefined dashboard and click **Continue**.

     The system displays the **Model Dashboard** or the **Analysis Dashboard** depending on the item revision type you selected.

   - Right-click a model revision or analysis revision from a folder in the **Home** view and select **Simulation Dashboard**. Select a predefined dashboard and click **Continue**.

     The system displays the **Model Dashboard** or **Analysis Dashboard** depending on your selection.

   - Select a model revision or analysis revision from a folder in the **Home** view or from the **Model** or **Analysis** view and click the **Simulation Dashboard** icon on the main toolbar. Select a predefined dashboard and click **Continue**.

The system displays the **Model Dashboard** or **Analysis Dashboard** depending on your selection.

2. From the **Input Method** list, choose one of the following options:

   - **Model View** or **Analysis View** to select all the valid item revisions in the respective view and display them in the simulation dashboard.
   - **Folder** to select the folder containing all the valid item revisions and display them in the simulation dashboard.
   - **As Selected** to select multiple item revisions from the **Home** folder, **Analysis**, or **Model** view and display them in the simulation dashboard.
   - **Query** and click **Select** to specify the query criteria. You can select one of the following options:
     - **CAE – Find Single-Level Related Model** or **CAE – Find Single-Level Related Analysis** to find all associated models or analyses of a specific product item revision.

       In the **CAD Item Revision ID** query field, you can type a question mark (**?**) to query for all the CAE models or analyses generated on the latest revision rather than all revisions.
     - **CAE – Find Multi-Level Related Models** or **CAE – Find Multi-Level Related Analysis** to find all associated models or analyses for the selected CAD at the components, subassemblies, and variant levels. You can use this query to identify all models or analyses impacted by the design change of a product item revision.
     - (Specific to **Model View**) Select the **CAE - Find Decks from Master** query type to find all deck structures associated to a master structure. You can then populate the model dashboard with all the decks derived directly and indirectly from the master structure.

3. To display the results in the simulation dashboard, click **Execute**.

   The system displays the file name or a green check. You can double-click the file name or the green check to open the file with the preconfigured tool.

4. (Optional) To edit any displayed properties after executing the dashboard, click **Edit Properties** on the view toolbar.

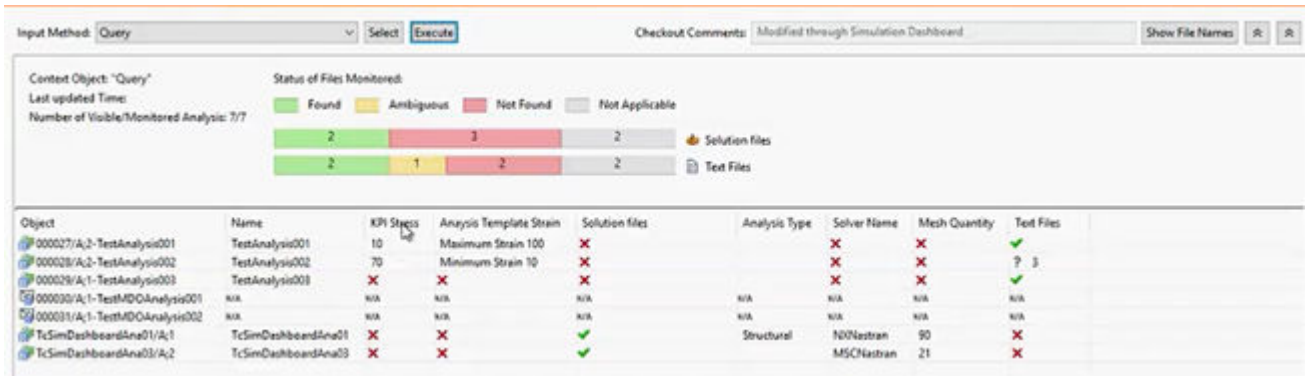
   You can edit properties only in the green colored cells. After clicking a cell, you can change its properties and press the **Enter** key or click on another cell to apply the changes. To discard changes, press the **Esc** key.

   When you check in the changes, the default checkout comment is **Modified through Simulation Dashboard**. You can enter your own comment as needed.

   After you modify multiple properties, click **Save and Check-In** on the view toolbar to save the changes.

If there are any ambiguous files, the dashboard highlights them in the **Status of Files Monitored** area. They are also shown in the respective column with a question mark. Hover over this question mark to view the list of file names as a tool tip. Double-click this column to open the files in the **Open File** dialog box.

In the following example, there are three ambiguous text files in the **Text Files** column.



5. (Optional) To open the **Summary** or the **Details** view, click **Open Secondary Views** in the view toolbar, and select the appropriate option.

   In the **Summary** view, you can view the properties of a selected object and edit attributes such as the name or description.

   In the **Details** view, you can view the child properties of an object selected in the primary view in a tabular format.

6. (Optional) To refresh the simulation dashboard, click **Refresh** in the view toolbar.

   If you select two analysis or model item revisions and then click **Refresh**, the system refreshes only the selected item revisions.

   An asterisk (*****) is displayed after the **Last updated Time** value if the system has not refreshed all item revisions.

7. (Optional) To filter the objects in the simulation dashboard, click **Filter Management** in the view toolbar and specify the filter conditions.

   The filters you define are specific to each dashboard configuration and are persisted across sessions.

   You can create filter conditions with two or more clauses based on:

   - The same column and joined with **AND**/**OR** operators, for example, **(body style = 4-door OR status = failed)**.

- Different columns joined with **AND**/**OR**, for example, **(body style = 4-door AND status = Failed OR status = In-progress)**.

8. To generate a report of the dashboard, click **Generate Simulation Dashboard Report** in the view toolbar. The system displays the dashboard report in a spreadsheet format such as Microsoft Excel.

   You can optionally select the **Create dataset** option in the **Export to Excel** dialog box to specify a dataset name. The system creates a dataset with the name you specify in the **Newstuff** folder. You can double-click the dataset to open the simulation dashboard report in a spreadsheet format.

View pedigree information on the simulation dashboard

1. Open a product structure and configure the product structure.

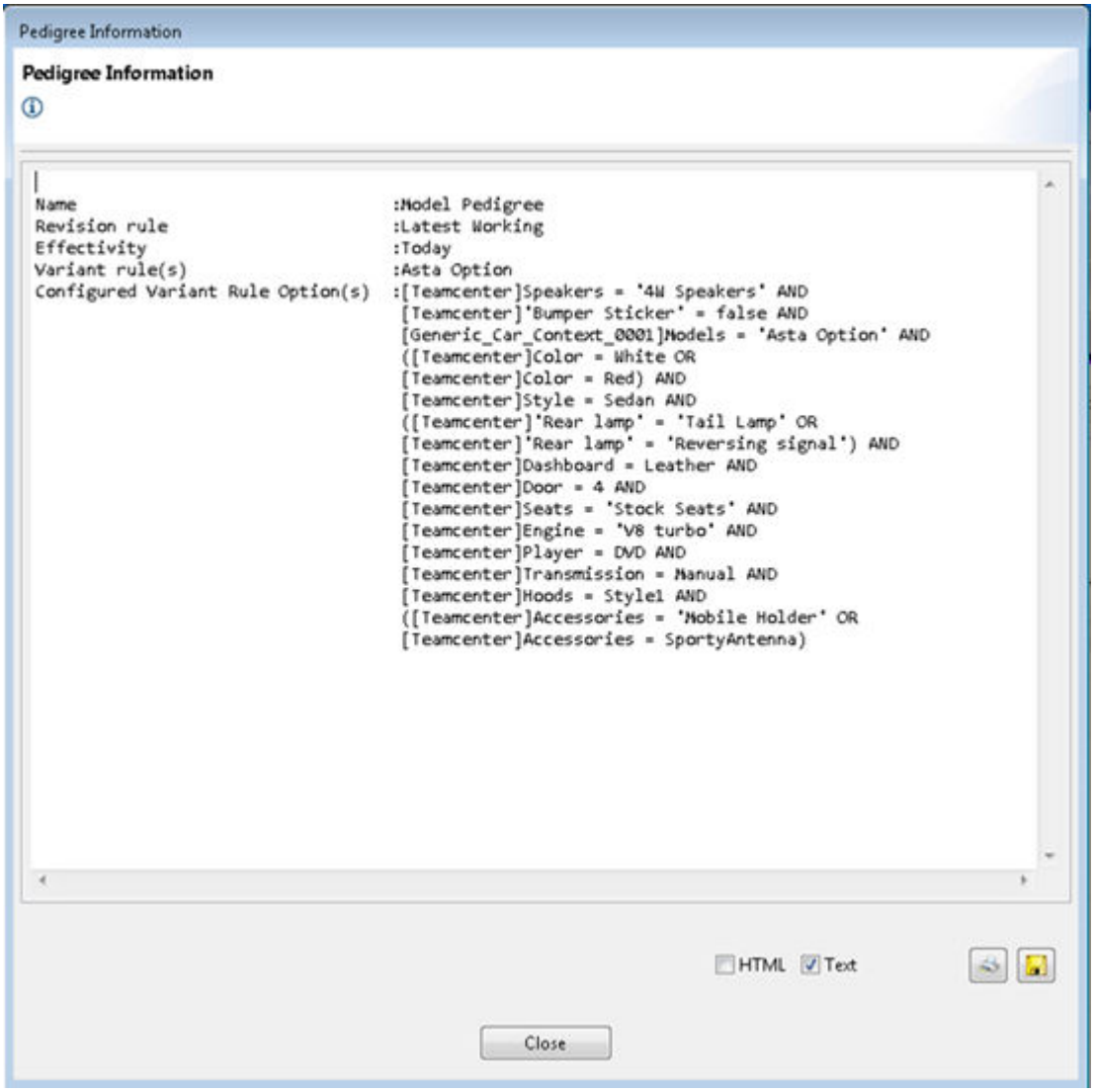
2. Create a model structure automatically by running predefined data map rules or structure map rules.

   The model structure captures the pedigree information from the product structure.

3. Select the root item of the model structure and select **Simulation Dashboard**.

4. Execute the dashboard using a predefined dashboard configuration.

5. In the dashboard, double-click an option value to open the **Pedigree Information** dialog box.



14. Troubleshooting

Simulation tools are not getting launched through TTLC due to the wrong association of the .tcsimxml file

Issue

Simulation tools are not getting launched through Teamcenter Tool Launcher Client (TTLC) due to the wrong association of the **.tcsimxml** file.

Issue details

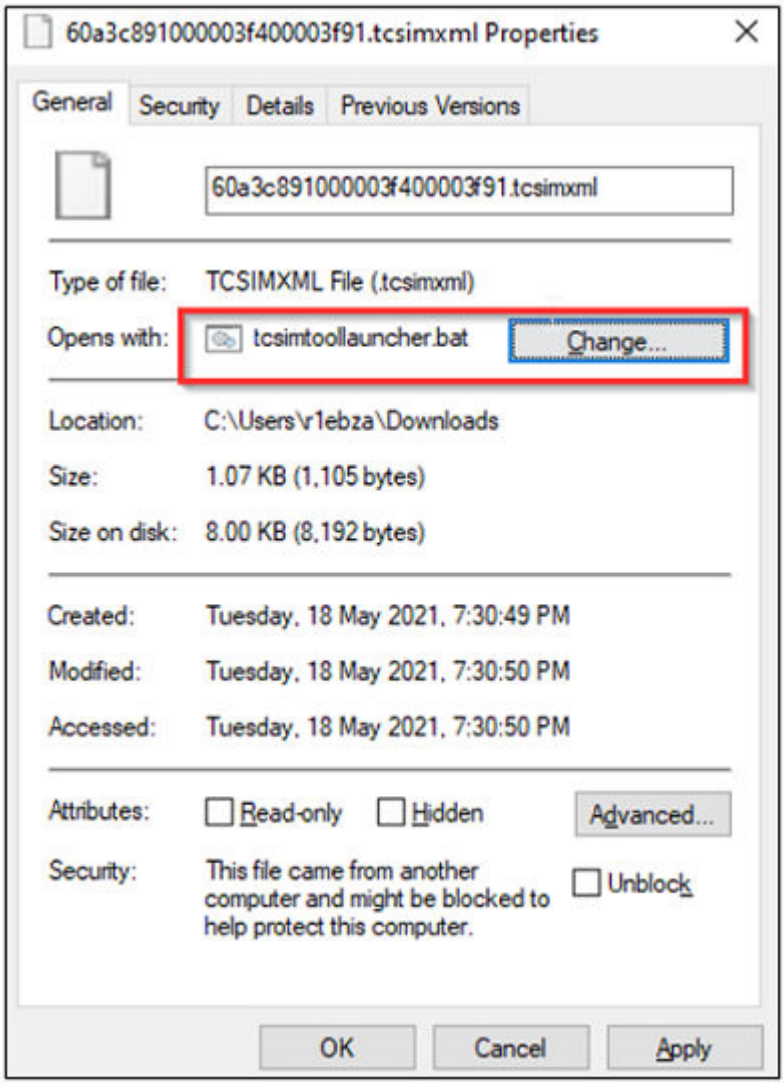
Initially, the customer had an error related to the incompatibility of the TTLC version with the Teamcenter server in the TTLC log. The correct TTLC version was reinstalled and then the tool launch was attempted through TTLC. The **.tcsimxml** file opened with the Notepad application instead of the **tcsimtoollauncher.bat** file. The **tcsimtoollauncher.bat** file calls TTLC and therefore the **.tcsimxml** file has to be associated with this bat file. This association gets created in the registry when TTLC is installed.

Solution or Workaround

If the association of **.tcsimxml** file is wrongly created with another application instead of **tcsimtoollauncher.bat**, then perform following steps to create the correct association:

1. Right click on any **.tcsimxml** file and go to properties.

2. Click the **Change...** button and select the **tcsimtoollauncher.bat** file from TTLC installation.



Perl issue while executing the Extract KPI from Result tool

Issue

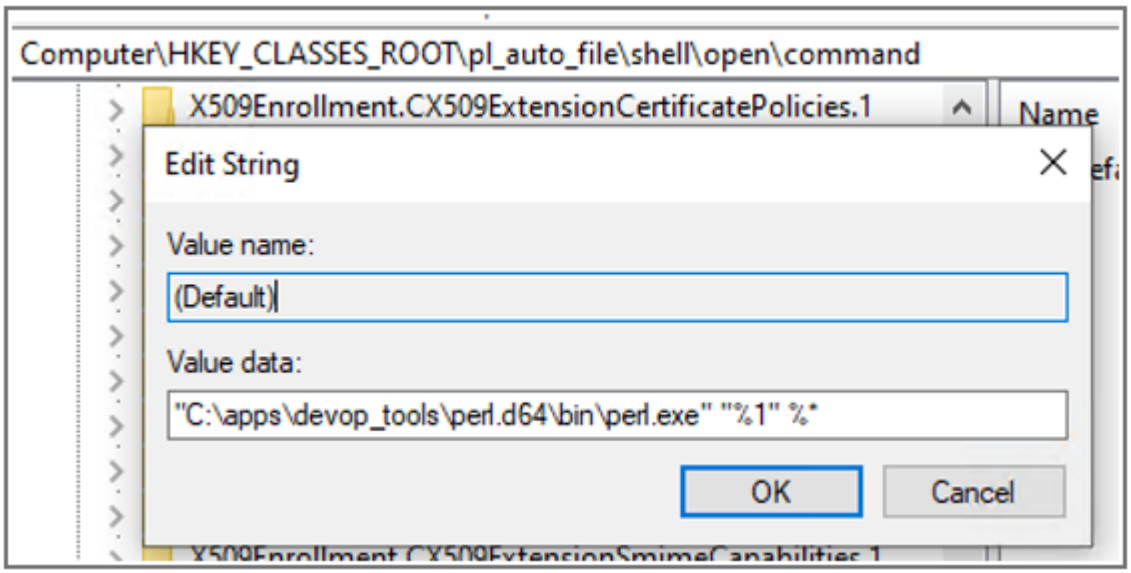
Perl issue while executing the **Extract KPI from Result** tool.

Issue details

A customer launched the **Extract KPI from Result** simulation tool from Active Workspace on **CAEResult** object through TTLC. The **sim_process_launch.log** file showed that the tool launch failed. The launch script output log showed the empty input arguments. The files were exported during tool launch, but the launch script execution failed and status of tool was failed.

Solution or Workaround

1. The launch script in this tool requires Perl installation. For Perl file to run, there is an entry in registry as follows: **HKEY_CLASSES_ROOT\pl_auto_file\shell\open\command**.



   The value of this entry should consist **%*** at the end. Otherwise, the input argument values are shown as empty. Adding **%*** at the end of the value resolves the issue of the empty input parameters.

2. If the above solution does not work, execute the following steps and verify if it resolves the issue:

   a. Open a **Command Prompt** and select **Run as Administrator**.

   b. To set up the correct registry values, type the following commands:

```
assoc .pl=PerlScript
ftype PerlScript=<path of the perl.exe> %1 %*
```

The **Perl.exe** path should be present inside the **PATH** system variable. The Perl installation should contain **XML::Simple** and **Archive::Zip folders**.

For the customer mentioned above, this value was correct and executing the association steps also did not work. The customer had multiple Perl installations on the machine. The Strawberry Perl installation that was used to execute the launch script was not correct as mentioned in the **executable path**.

The customer was asked to remove the Strawberry Perl from his machine and install the correct Perl. After installing ActiveState Perl and setting up the correct registry values as mentioned in **step b** and the **PATH** system variable value, the customer was able to launch the tool successfully.

For more information about setting up Perl to execute the **Extract KPI from Result** tool, see *Extract KPI from Result Tool Integration* PDF in the Teamcenter data (*TC_DATA*) directory.

Teamcenter does not recognize that the script has ended and the process remains "in progress"

Issue

Teamcenter does not recognize that the script has ended and the process remains **In Progress**.

Issue details

Teamcenter does not recognize that the script has ended and the process remains **In Progress** and is not switched to **Completed**.

The customer is using ANSYS Speos as an NX Plugin.

The requirement is that the tool launch must be offline, and Teamcenter should not wait for the simulation to be finished. Getting the results back is a different process.

Approaches to writing scripts:

- Script 1: ANSYS SPEOS (as NX Plugin) Tool Launch:

```
REM ENTZIPPEN
echo %TIME%: ENTZIPPEN >> %2\script_output.log
call C:\Teamcenter\Tc12\bin\7za.exe x %input_file% -oC:\Temp\sim\
     staging\%item_id%_%rev_id% -r -y -bd
REM NX ASYNCHRON STARTEN
cd C:\Temp\sim\staging\%item_id%_%rev_id%\files
echo %TIME%: START NX ASYNCHRON>> %2\script_output.log
start "" "%arg2%\ugraf.exe" -retrieve:"SPEOS_for_NX.prt"
REM Bath beenden
echo %TIME%: EXIT BATCH >> %2\script_output.log
EXIT 0
```

- Script 2a:

```
echo %TIME%: Launching Word without input file >> %2\script_output.log
start "" "C:\Program Files (x86)\Microsoft Office\OFFICE15\Winword.exe"
echo %TIME%: end batch >> %2\script_output.log
EXIT 0
```

- Script 2b:

```
echo %TIME%: Launching Word with input file >> %2\script_output.log
start "C:\Program Files (x86)\Microsoft
Office\OFFICE15\Winword.exe"%input_file%
```

```
echo %TIME%: end batch >> %2\script_output.log
EXIT 0
```

Solution or Workaround

Do not **start** command in the script file. Instead, use **call** to open the tool.

In addition, there were some issues reading the argument for the tool to be launched.

A sample working script can be as follows:

```
set input_file=%1
echo %TIME%: Launching notepad with input file : %input_file% >>
script_output.log
call "C:\Windows\notepad.exe" %input_file%
echo %TIME%: end batch with input file %input_file% >> script_output.log
EXIT 0
```

For more details to write a script, refer the sample script files provided in the **CAE_ESP_Sample_Files.zip** file in *TC_DATA* directory.

Simulation tool visibility in Active Workspace

Issue

Simulation tool visibility in **Open in Simulation Tool** panel in Active Workspace.

Issue details

If a user runs the simulation tool on an object and another user wants to run the same simulation tool on the same object while the tool is running, the simulation tool does not appear in the **Open in Simulation Tool** panel.

Solution or Workaround

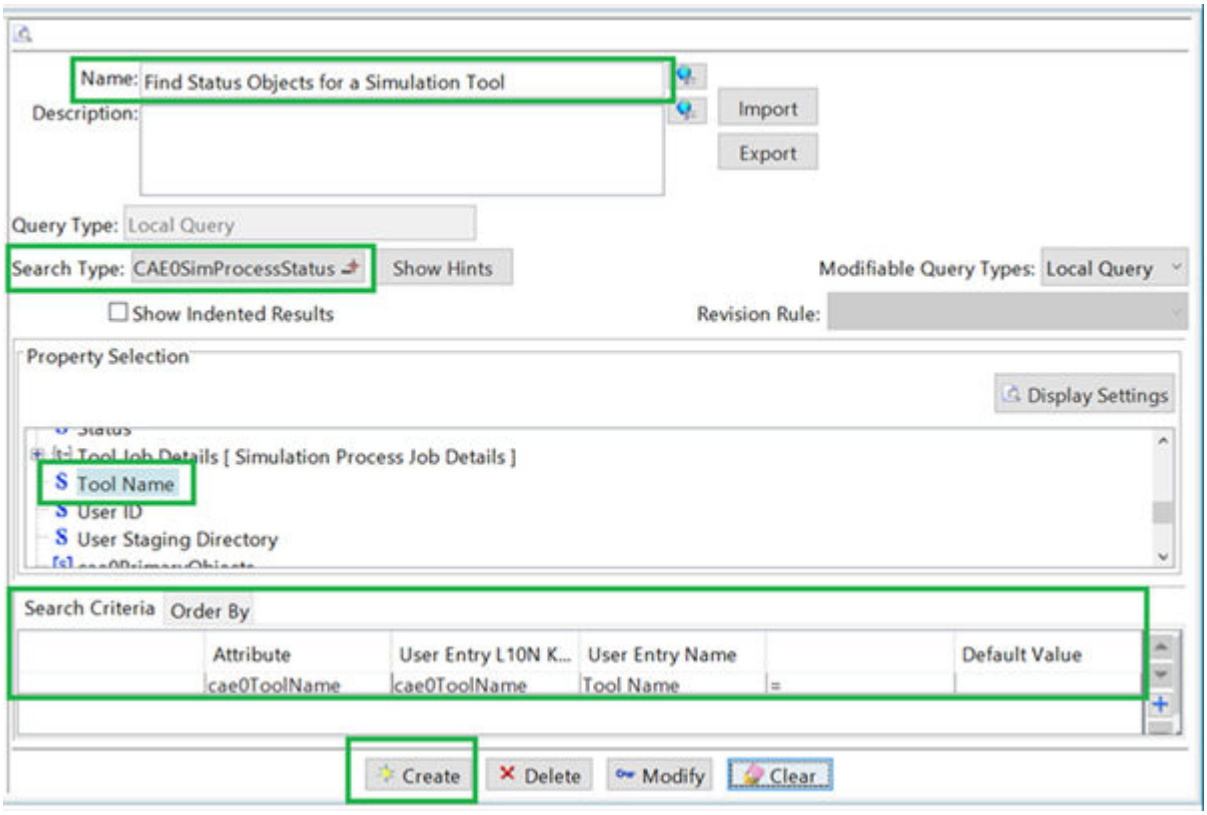
The workaround can be applied by a DBA user. If analyst or designer users face this issue, they should contact the DBA user.

> Note:
>
> Only a DBA user can perform the following procedure.

1. Opens Query Builder application and creates the **Find Status Objects for a Simulation Tool** query.

2. Selects the search type as **CAE0SimProessStatus** for the query.

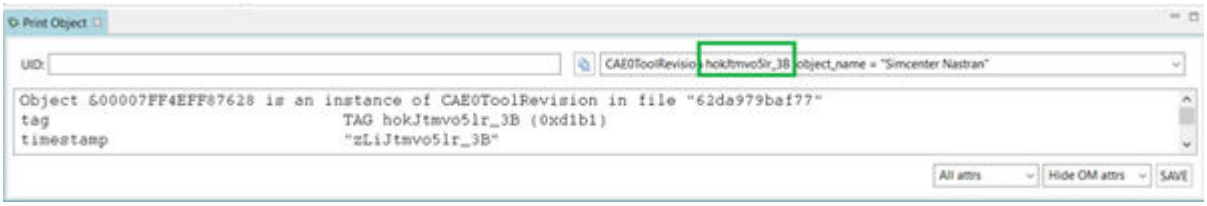
3. Adds the **Tool Name** search criteria for the query and clicks the **Create** button.

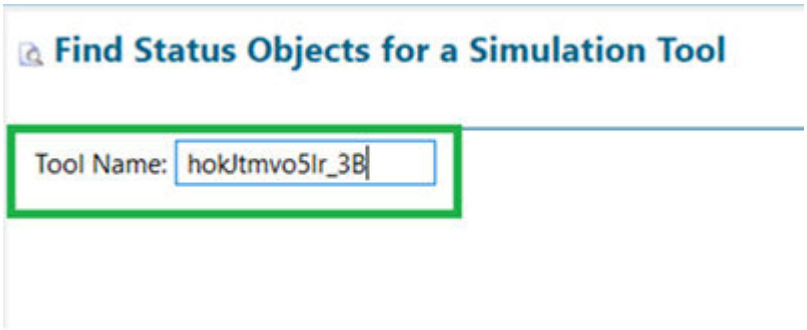


4. Opens CAE Manager application and opens **Simulation Tool Configuration** view.

5. Opens **Print Object** view and selects the simulation tool which needs to be searched.

6. Copies the UID of the simulation tool and pastes it in the query.





7. Searches and deletes the status objects or asks the owning user to complete the job.

   The simulation tool is now visible in the **Open in Simulation Tool** panel.

Simulation tool launch failure due to TTLC not finding the valid certification path

Issue

Simulation tool launch failure due to TTLC not finding the valid certification path to the requested target.

Issue details

When trying to launch a simulation tool from Active Workspace, it results in an error and the tool is not started.

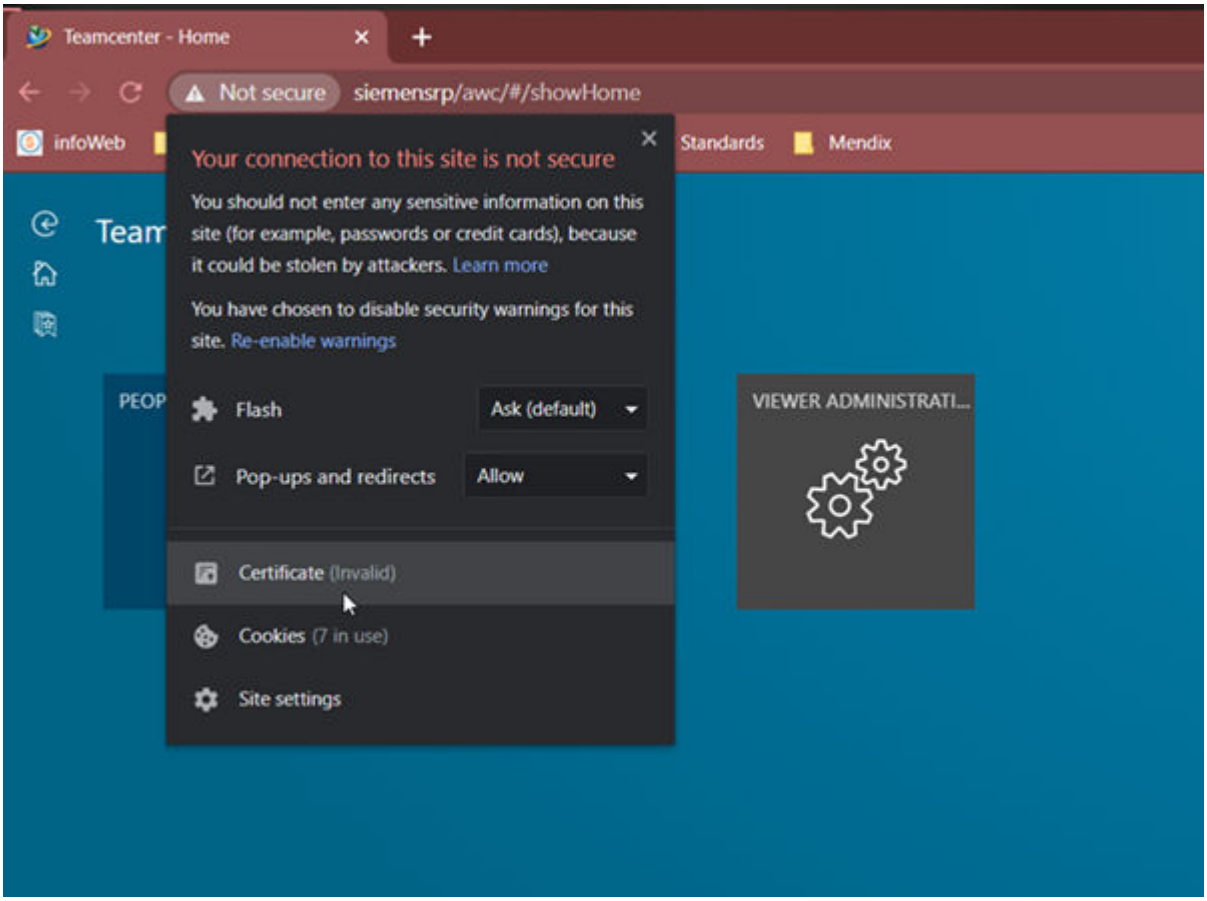
To check this error, in File Explorer, navigate to *%TEMP%/TcToolLaunchClientLog_<user>* and open the **tctoolloaunchclient.log** file. It displays the following error:

```
[main] [INFO] 2020-06-19 10:04:55,135 - Starting simulation tool launch
operation.
log4j:WARN No appenders could be found for logger
(com.teamcenter.soa.client.Connection).
log4j:WARN Please initialize the log4j system properly.
The server returned an internal server error.
Failed to send the service request, encountered an HTTP I/O error.
sun.security.validator.ValidatorException: PKIX path building failed:
sun.security.provider.
     certpath.SunCertPathBuilderException: unable to find valid
certification path to
     requested target
The application will terminate.
```

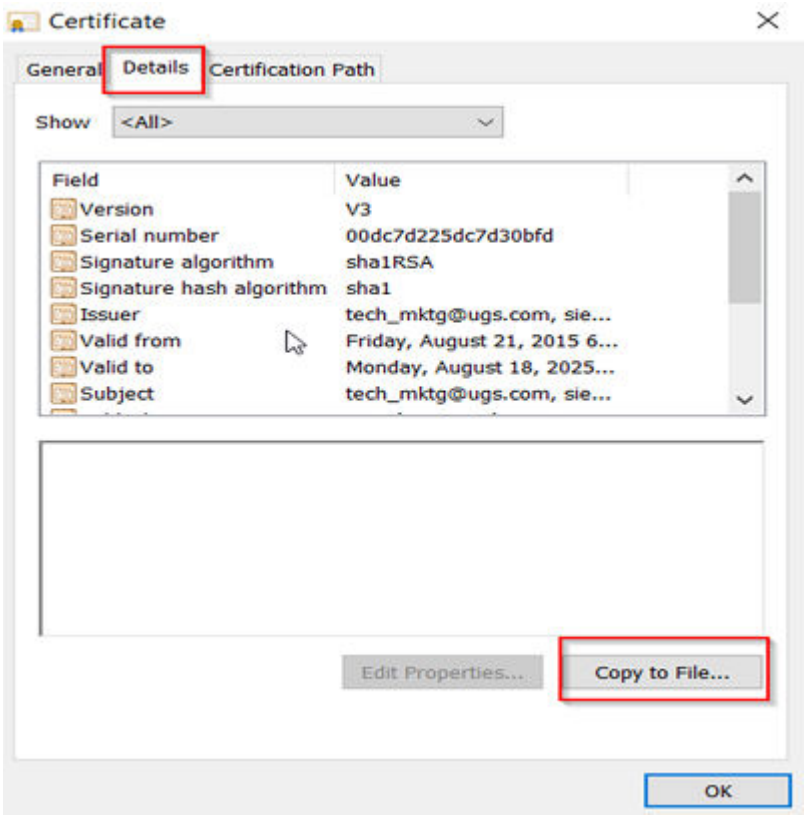
Solution or Workaround

Users who have TTLC installed based on Teamcenter 14.1 installed on their machine and are facing the simulation tool launch failure due to TTLC not finding the valid certification path can apply this solution or workaround.

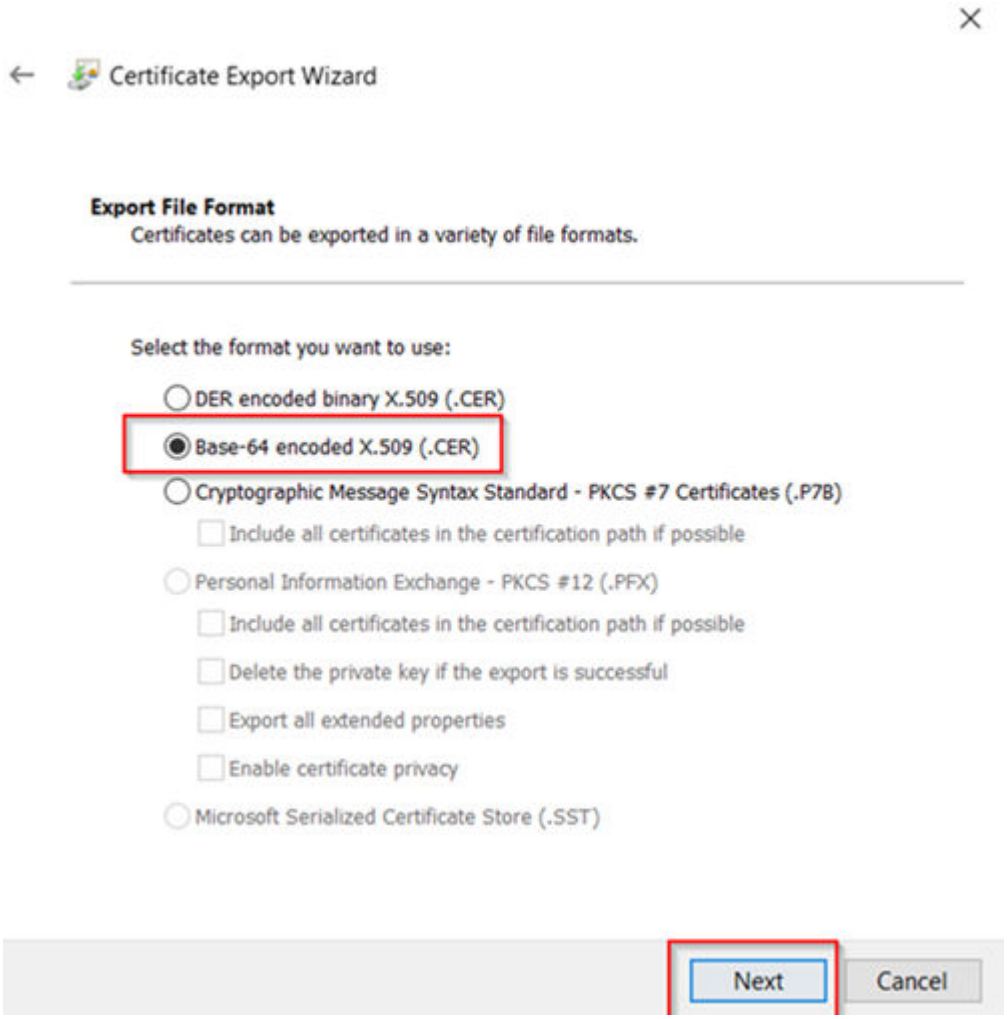
1. Open Active Workspace in Google Chrome browser and click **Not secure** section.



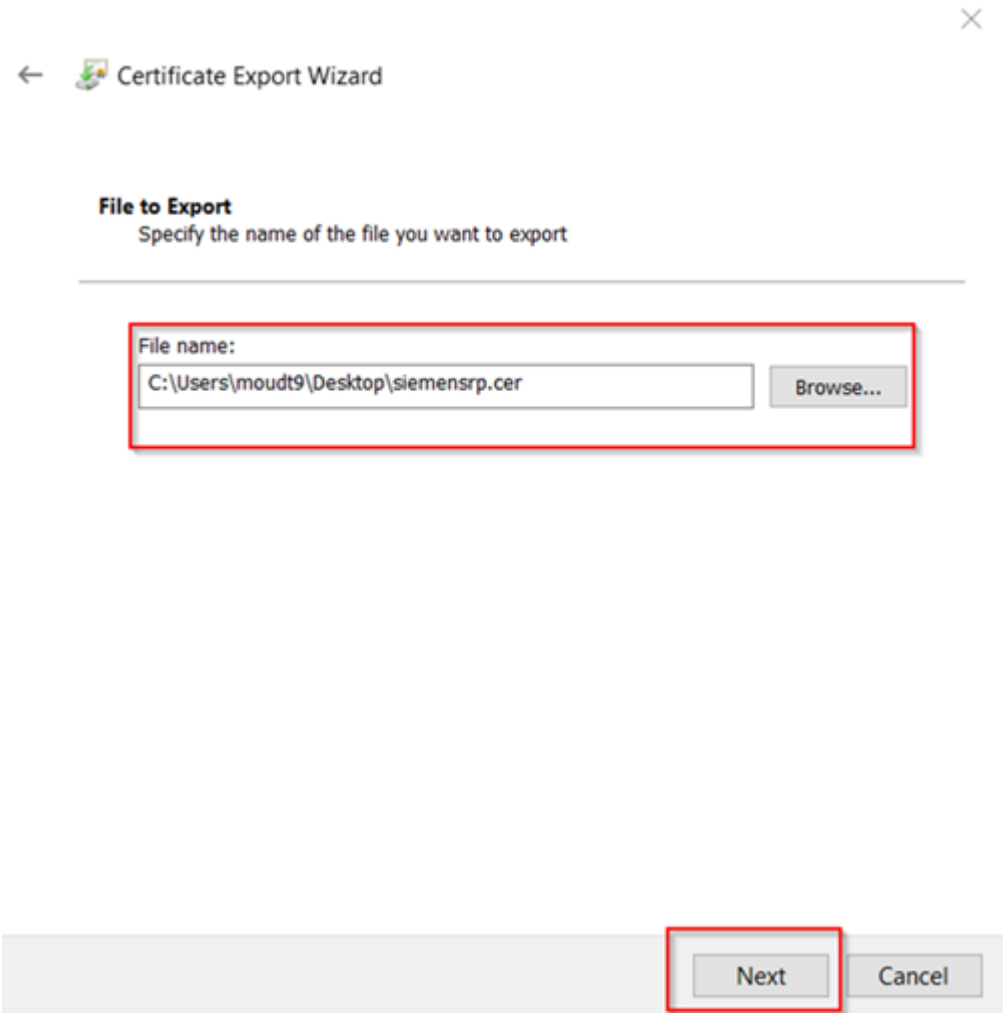
2. In the **Certificate** dialog, click the **Details** tab, choose **Copy to File**, and click **OK**.



3. Select the **Base-64 encoded** format and click **Next**.

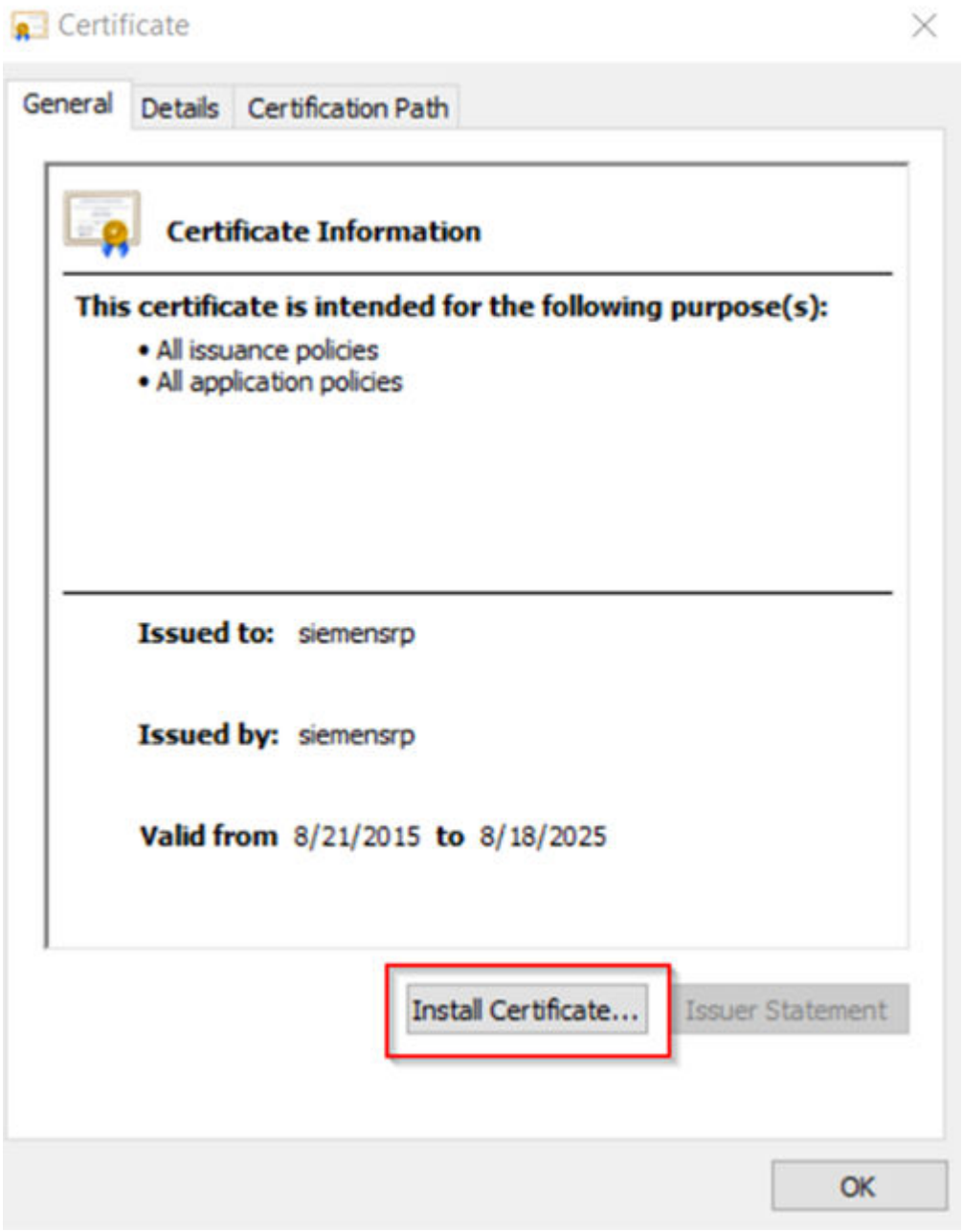


4. Specify a file path to export the certificate, click **Next**, proceed through the remaining steps, and click **Finish**. The system displays a message saying that the export was successful.

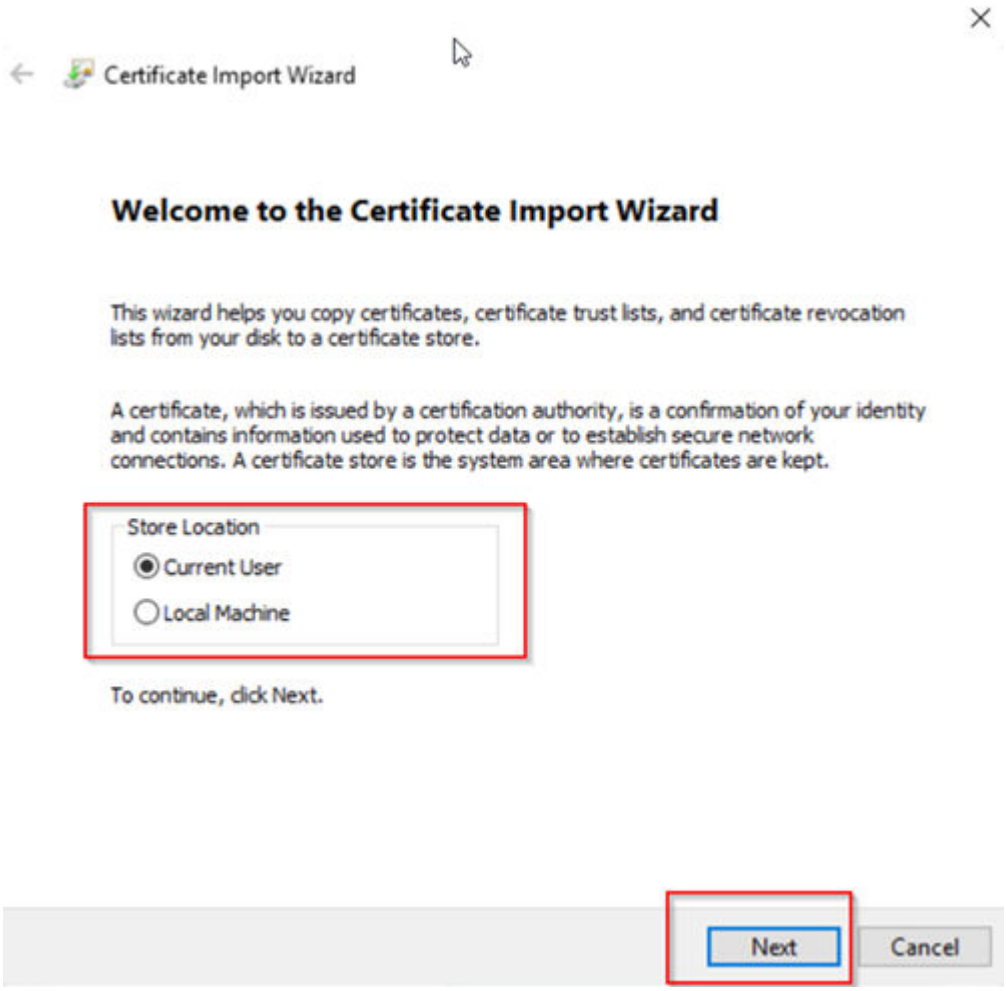


5. Navigate to the certificate and double click to install it.

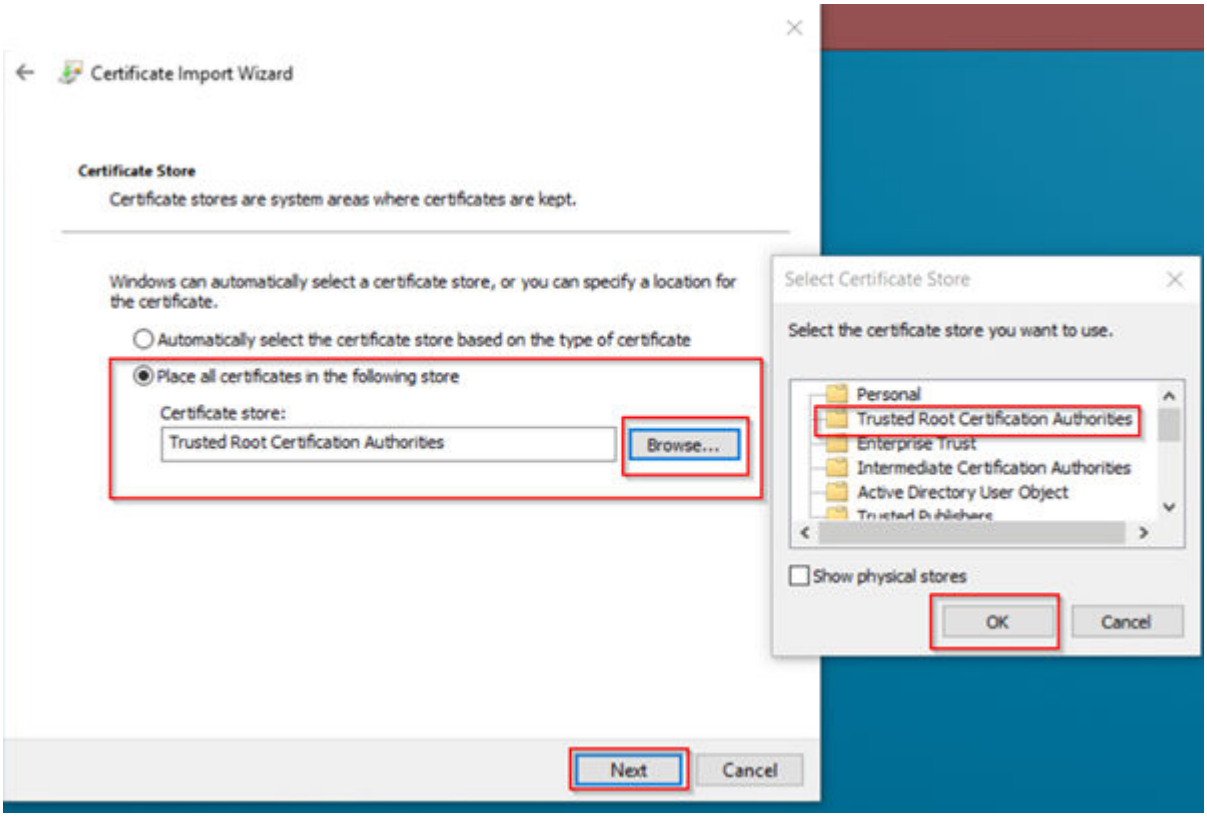
6. Click **Install Certificate**.



7. Specify the store location.



8. Specify a location for the certificate and click **Finish**.



9. Select **Yes** for the next few dialogs.

10. Change the file extension for the created certificate from **.cer** to **.crt**.

11. Start a command prompt as an administrator and navigate to the *JAVA_HOME***jre\bin** directory.

12. Run the following command:

    keytool.exe -import -keystore cacerts -file*path to the generated certificate file* **-alias siemensrp -storepass***password*

13. Ensure that the new certificate is added at *JAVA_HOME* Certificate Keystore by running the command in the previously used command prompt:

    keytool.exe -list -keystore *JAVA_HOME***lib\security\cacerts >** *Location_to_Generate_File***cacerts_listing.txt" -storepass***password*

14. Check the generated **cacerts_listing.txt** file to verify if the **siemensrp** certificate has been added.