# TEAMCENTER

# Problem Solving

Teamcenter 2412

SIEMENS

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# Contents

## Sharing and reusing Problem Solving processes

# 1. What is Problem Solving?

Teamcenter Problem Solving allows you to capture the issues in a central location. It provides tools to find the root cause of the issue and its resolution (corrective action) and prevent their recurrence in future (preventive action). Issues are various forms of complaints, defects, and non-conformances that inconvenience customers. They need to document, and as necessary, resolve these issues. A very common method of solving issues is through a formal problem-solving process, such as Corrective Action and Preventive Action (CAPA) and Eight Disciplines of Problem Solving (8D). This is a systematic investigation of discrepancies (complaints, defects, failures, and deviations) to permanently solve the root cause and to prevent their recurrence.

Example:

Consider a scenario where the wiper blade in a car is not working correctly. There might be multiple reasons for this issue, such as:

- The wiper blade was not fixed properly to the wiper arm.
- The width of the wiper blade is not proportionate to the wiper arm.
- The dimensions of the wiper blade and wiper arm were not considered during the design process.
- Poor quality raw material was used during the manufacturing process.

Using Problem Solving, in Teamcenter, you can record the wiper blade issue and create the containment actions to be taken to stop the production of the faulty wiper blade.

You can mark the root causes of the faulty wiper blade, such as poor-quality raw material use, and the dimensions of the wiper blade and wiper arm not being considered during the design process.

Additionally, you can specify the corrective actions to be performed, such as updating the dimensions of these parts and purchasing good quality raw material.

Finally, you can identify a preventive action to stop future issues, such as performing a Design FMEA process for the wiper assembly.

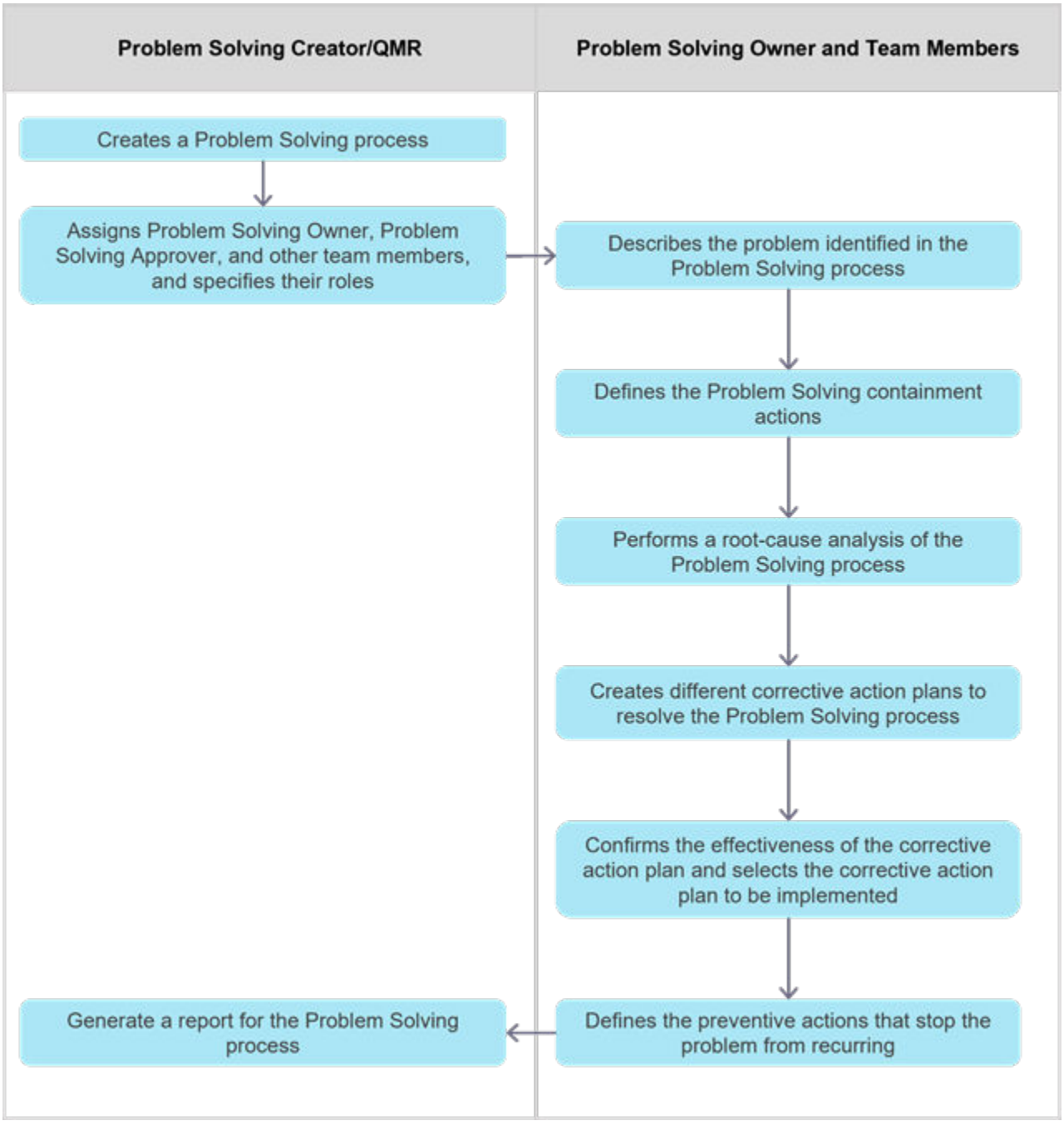

## Where do I go from here?

| | |
|---|---|
| Installer | To know which features are required to install Problem Solving, see the *Install Problem Solving and Quality Issue* section of *Teamcenter Quality —Deployment and Administration*. |
| Administrator | To configure Problem Solving according to your business requirements, see the *Configure Problem Solving and Quality Issue* section of *Teamcenter Quality —Deployment and Administration*. |
| Business User | |
| How can I get started with Problem Solving in Teamcenter? | You can start by **creating a Problem Solving process** and **adding a problem description defect.** |
| After creating the Problem Solving process, what are the next steps in Teamcenter? | You can **define the Problem Solving process containment actions** as a next step, after recording a problem. |
| What are the different methodologies supported by Teamcenter Problem Solving for performing a root cause analysis? | In Teamcenter, you can perform a root cause analysis by using any of the following:<br>• **Ishikawa methodology**<br>• **5Whys methodology** |

| | |
|---|---|
| | • **Creating and analyzing the defects that cause the problem** |
| Create a corrective action plan. | You can **create a corrective action plan** to resolve the problem. |
| Stop recurrence of the problem. | You can **define the preventive actions** that stop the recurrence of the problem identified using the Problem Solving process. |

# 2. Problem Solving business process

The following graphic shows the sequence of tasks required in the Problem Solving process:



# 3. Access the tile for your Quality application in the Quality Management workspace

The **Quality Management** workspace is a workspace dedicated to working with Teamcenter Quality applications. The tile in the **Quality Applications** section in the **Quality Management** workspace lets you work with your application.

In the **Quality Management** workspace, you can do the following:

| Section | Description |
|---|---|
| **Quality Applications** | You can navigate to the Teamcenter Quality applications through the respective tiles. You can directly access the pinned objects and saved searches here. |
| **Favorites** | You can use this section to access and work on frequently-used objects that you have added as favorites. |
| **Report Dashboard** | You can add relevant template reports in this section to view data that you want review on a regular basis. |
| **Inbox** | You can view the tasks assigned to you through workflows in this section. |

When you click the tile for a specific application, you can:

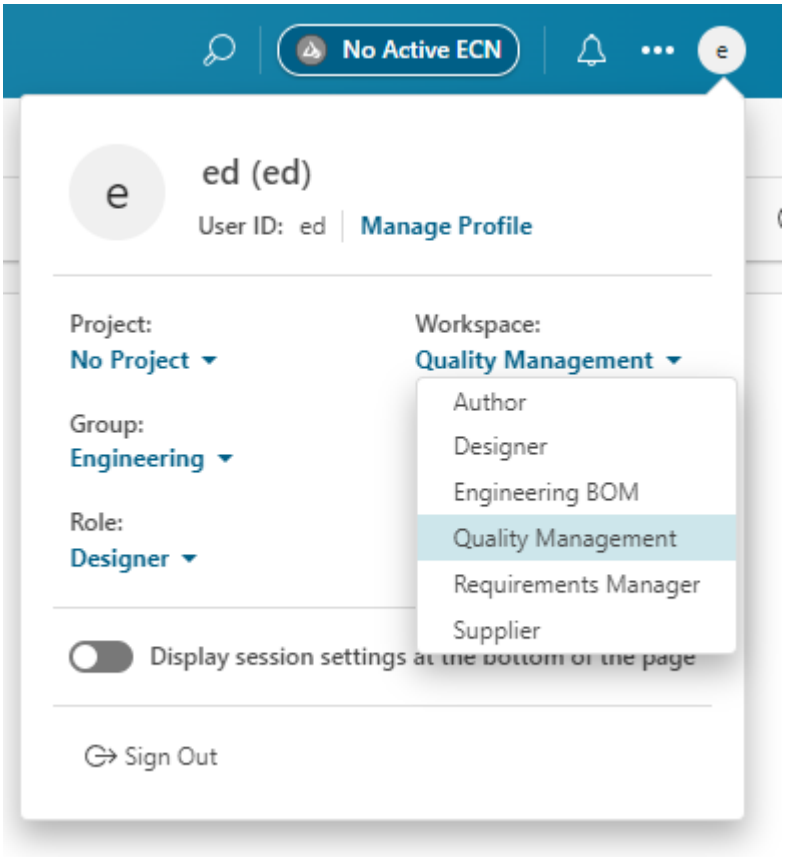
- View the dashboard for the application including the quality master data.
- Search for and filter your search results as required.
- Access other applications, such as Assistant, Discussions, Programs, and Schedules, on the global navigation toolbar.

Your administrator must make the **Quality Management** workspace available for your organization's groups and roles.

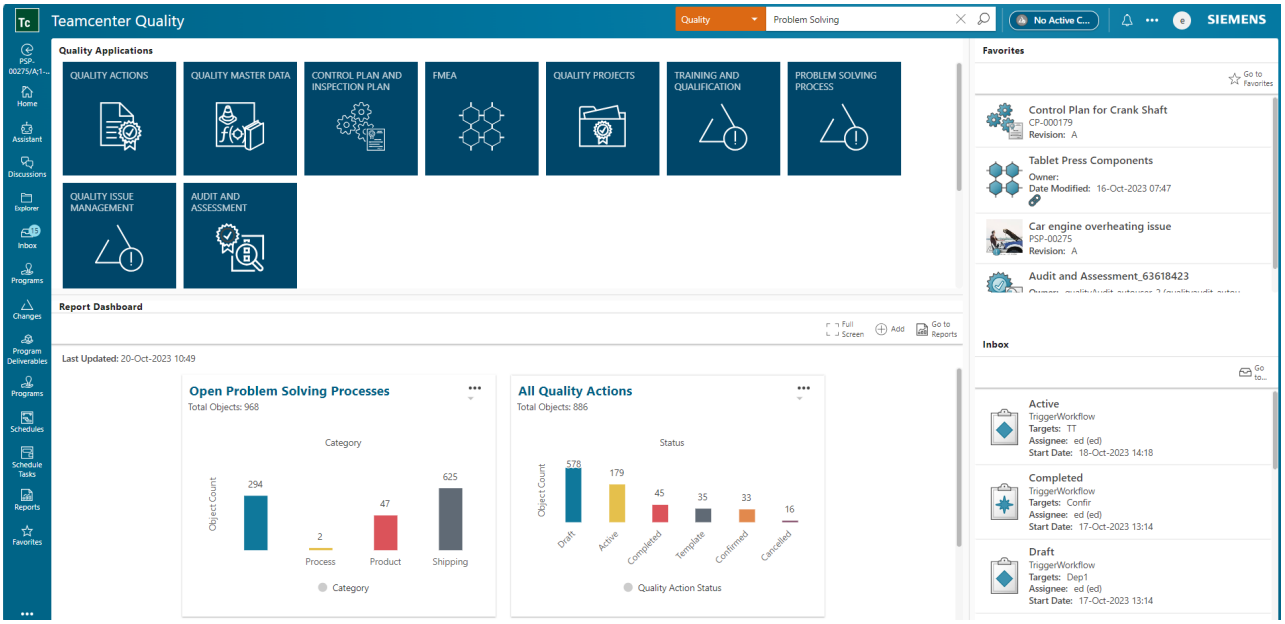
For more information about workspaces, see *Learn about workspaces* in *Active Workspace Customization* of the Teamcenter documentation.

To access the tile for your Quality application in the **Quality Management** workspace:

1. Click your profile icon.
2. From the **Workspace** list, select **Quality Management**.




3. In the **Quality Applications** section, click the tile for the required application.



# 4. Create a Problem Solving process

Once you, as a Quality Management Representative (QMR), have identified a problem as an issue and investigated it, you can derive a Problem Solving process from it to investigate potential causes and resolutions. Using this, you can create an action plan for resolving the issue and ensuring that it does not occur again. You can also create a Problem Solving process directly and bypass the issue investigation stage if you are certain that a problem must be investigated with a Problem Solving process. After you specify the Problem Solving process details, you can save it to edit it at a later stage. Alternatively, you can submit it to a workflow process that automatically routes the Problem Solving process through a company's business process to resolve the issue.

If you are a QMR and have created the Problem Solving process or you are assigned as the Problem Solving process Owner or Problem Solving process Approver, you can modify it. You cannot modify the Problem Solving process if it is closed.

You can create a Problem Solving process in one of the following methods:

- Derive a Problem Solving process from an issue or a Problem Solving process.
- Create a Problem Solving process from an existing Problem Solving process by saving the existing process as a new process, and then updating the required details.

  To investigate repetitive problems or similar problems, you can create a Problem Solving process from an existing one. You can choose which information you require from the existing Problem Solving process and use it in the new Problem Solving process.
- Create a new Problem Solving process.

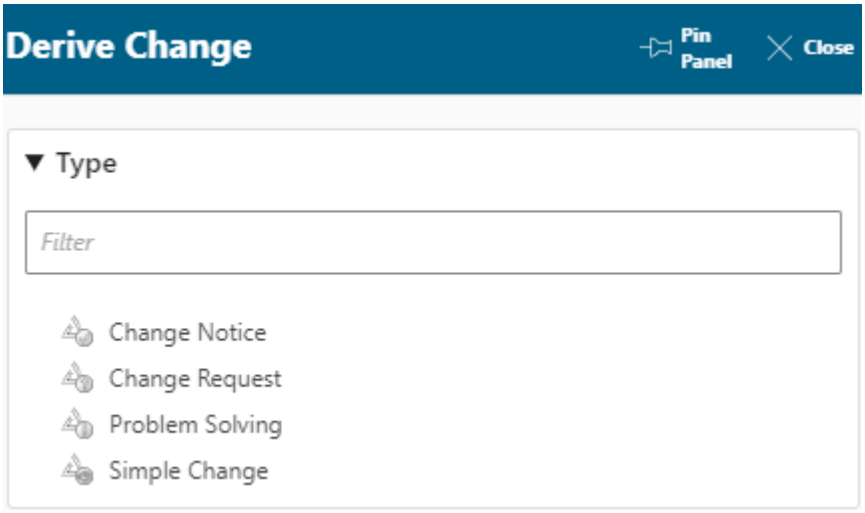
1. To derive a Problem Solving process from an issue, do the following:

   a. From the **CHANGES** folder, select and open the required issue that is the source of the Problem Solving process.

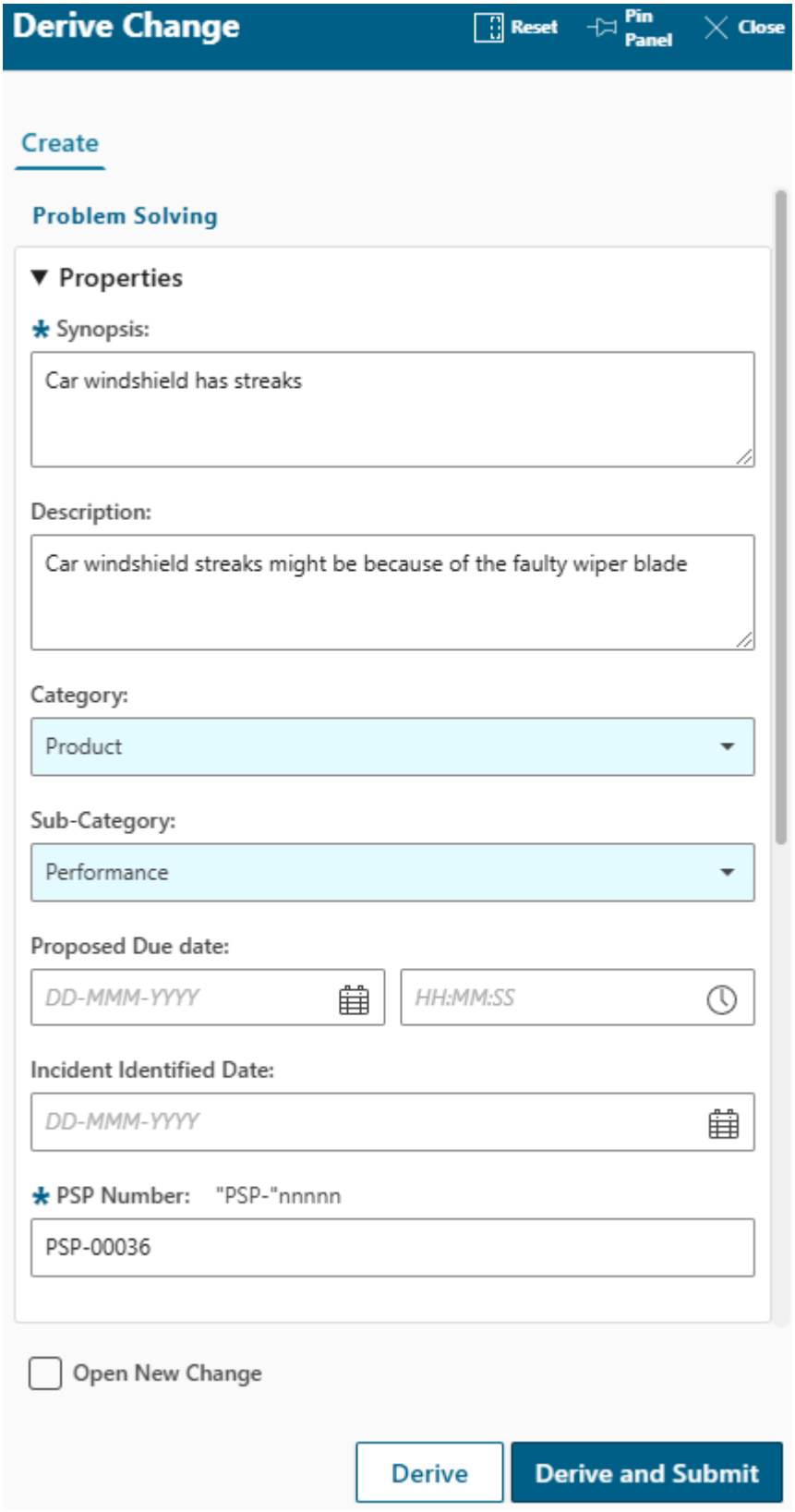
      If you are working in the **Quality Management** workspace, click the **QUALITY ISSUE MANAGEMENT** tile, and select and open the required source issue.

   b. Choose **More Commands** ••• > **New** ✳ > **Derive Change**.

   c. In the **Derive Change** panel, select **Problem Solving**.




d. By default, the **Synopsis** and **Description** fields are populated with the **Synopsis** and **Description** of the source issue. You can update these fields as per your requirements.




e. From the **Category** list, select the appropriate category.

f. From the **Sub-Category** list, select the appropriate subcategory.

g. Specify a proposed due date.

Some companies use a standard operating procedure where a Problem Solving process must be completed within a specific duration. This duration is based on the **Priority** of the Problem Solving process. When you derive a Problem Solving process from an issue, it is assigned a **Priority** of **Medium** by default. If your company has defined this standard operating procedure for you, you must specify a **Proposed Due Date** that is 45 days and earlier from the **Creation Date** of the Problem Solving process.

Depending on the **Priority** of the Problem Solving process, set the **Proposed Due Date** as follows:

| Priority | Duration assigned to Proposed Due Date |
|---|---|
| **High** | **Proposed Due Date** must be set to 30 days and earlier from the **Creation Date** |
| **Medium** | **Proposed Due Date** must be set to 45 days and earlier from the **Creation Date** |
| **Low** | **Proposed Due Date** must be set to 60 days and earlier from the **Creation Date** |

After deriving the Problem Solving process, you can edit it to update the **Priority** as required. If you change the **Priority**, ensure that you specify the appropriate **Proposed Due Date** accordingly.

Your administrator can configure the duration assigned to the **Proposed Due Date** as per the business requirements. If the **Proposed Due Date** is not automatically set to a duration based on the assigned **Priority**, the administrator has disabled this option for your company.

> Note:
>
> The **Proposed Due Date** of the Problem Solving process must not be later than the **Due Date** of the assigned chapters, questions, subquestions, and quality actions.

h. Do one of the following:

- To continue editing later, click **Derive**.

  The Problem Solving process is created and displayed in edit mode. You can send it for resolution later.

- To send it for resolution immediately, click **Derive and Submit**.

  The Problem Solving process is sent through the default workflow for resolution. Reviewers and approvers for the Problem Solving process may be automatically assigned depending on how your organization's Problem Solving process workflow is configured.

Note:

You can also derive a Problem Solving process from the symptom defect of an issue.

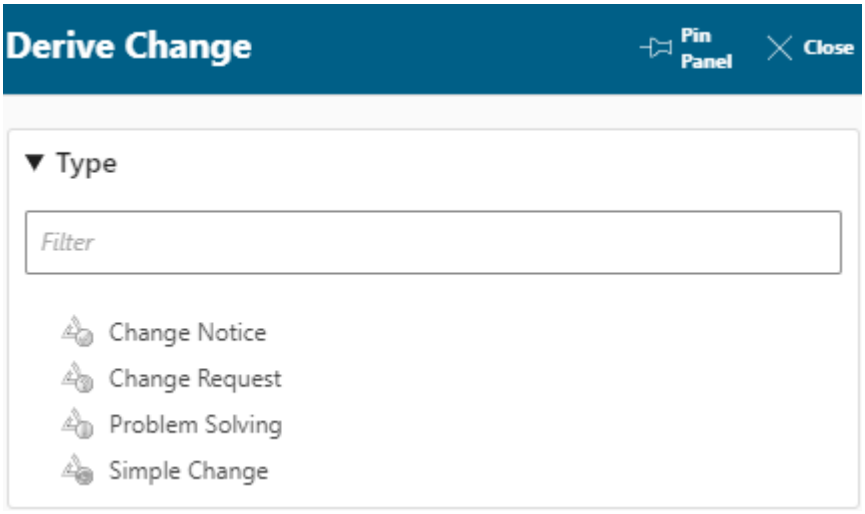
2. To derive a Problem Solving process from another Problem Solving process, do the following:

   a. From the **CHANGES** folder, select and open the source Problem Solving process.

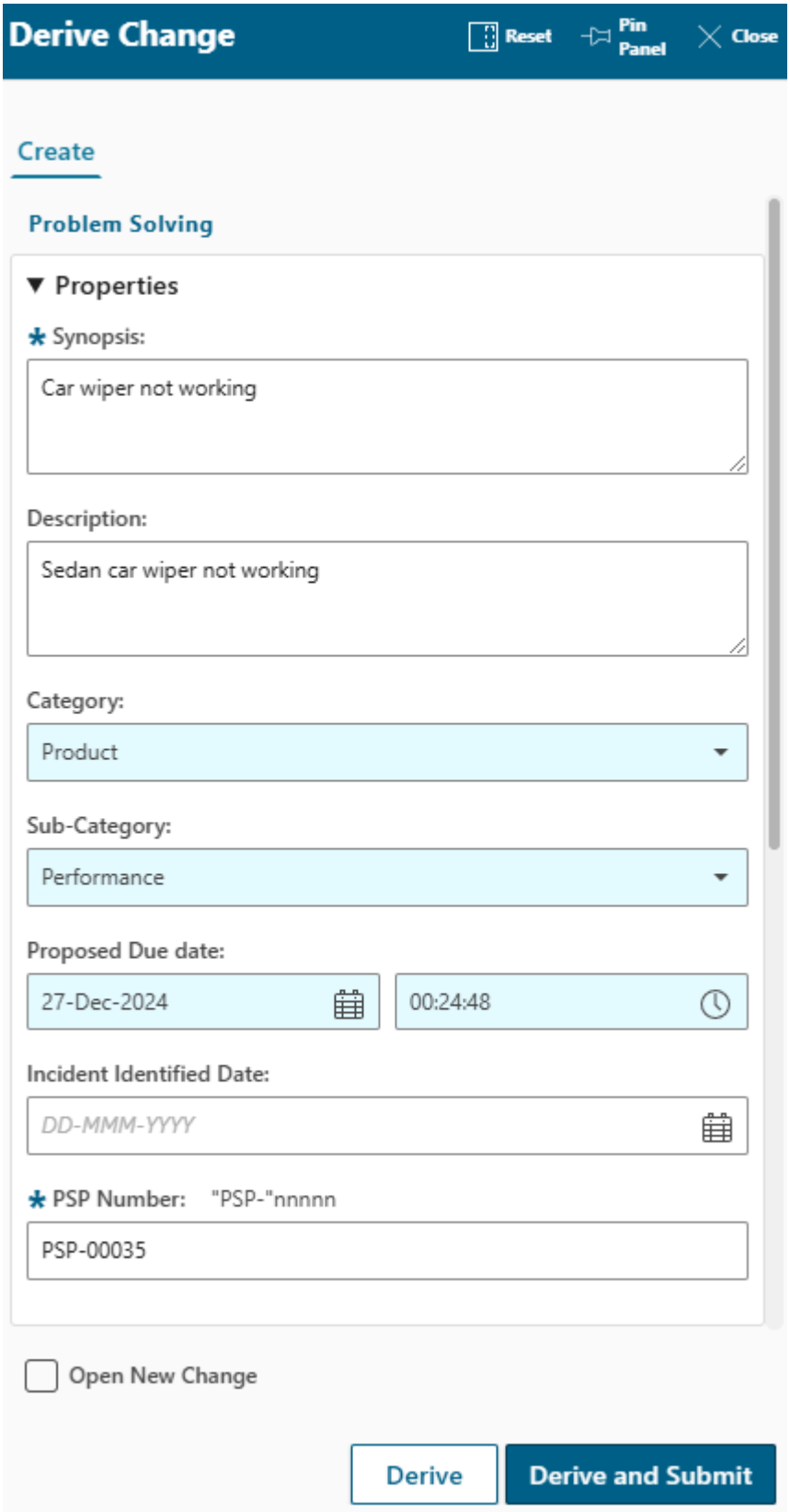
      If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the source Problem Solving process.

   b. Choose **More Commands** ••• > **New** > **Derive Change**.

   c. In the **Derive Change** panel, select **Problem Solving**.




   d. By default, the **Synopsis** and **Description** fields are populated with the **Synopsis** and **Description** of the source Problem Solving process. You can update these fields as per your requirements.




e. From the **Category** list, select the appropriate category.

f. From the **Sub-Category** list, select the appropriate subcategory.

g. Specify a proposed due date.

Some companies use a standard operating procedure where a Problem Solving process must be completed within a specific duration. This duration is based on the **Priority** of the Problem Solving process. When you derive a Problem Solving process from another Problem Solving process, it is assigned a **Priority** of **Medium** by default. If your company has defined this standard operating procedure for you, you must specify a **Proposed Due Date** that is 45 days and earlier from the **Creation Date** of the Problem Solving process.

Depending on the **Priority** of the Problem Solving process, set the Problem Solving as follows:

| Priority | Duration assigned to Proposed Due Date |
|---|---|
| **High** | **Proposed Due Date** must be set to 30 days and earlier from the **Creation Date** |
| **Medium** | **Proposed Due Date** must be set to 45 days and earlier from the **Creation Date** |
| **Low** | **Proposed Due Date** must be set to 60 days and earlier from the **Creation Date** |

After deriving the Problem Solving process, you can edit it to update the **Priority** as required. If you change the **Priority**, ensure that you specify the appropriate **Proposed Due Date** accordingly.

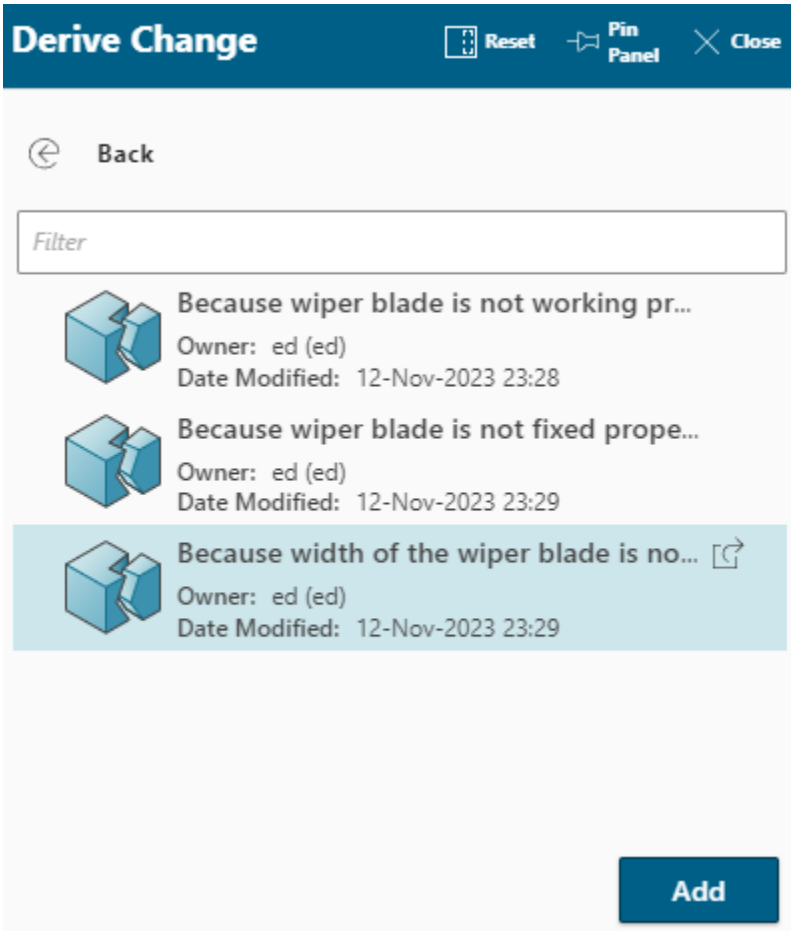
Your administrator can configure the duration assigned to the **Proposed Due Date** as per the business requirements. If the **Proposed Due Date** is not automatically set to a duration based on the assigned **Priority**, the administrator has disabled this option for your company.

> Note:
>
> The **Proposed Due Date** of the Problem Solving process must not be later than the **Due Date** of the assigned chapters, questions, subquestions, and quality actions.

h. To assign a root cause as the problem description defect of the derived Problem Solving process, do the following:

A. In the **Defect** section, click **Add Defect** ⊕.

B. In the **Add Defect** panel, select the root cause, and click **Add**.




i. Do one of the following:

- To continue editing later, click **Derive**.

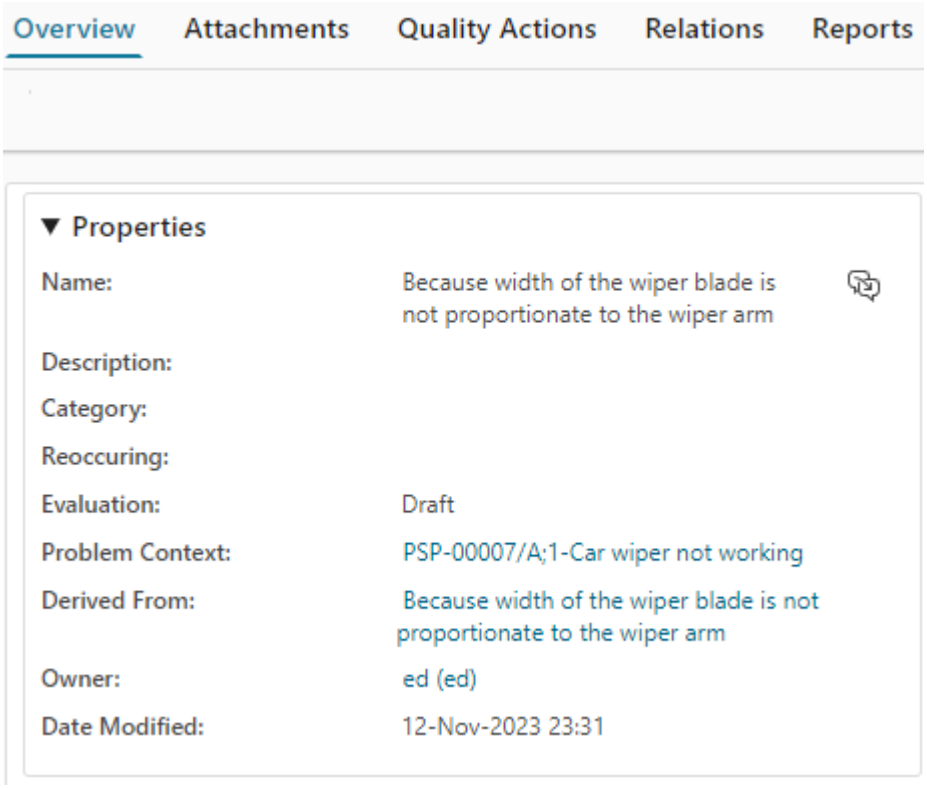
  The Problem Solving process is created and displayed in edit mode. You can send it for resolution later.

- To send it for resolution immediately, click **Derive and Submit**.

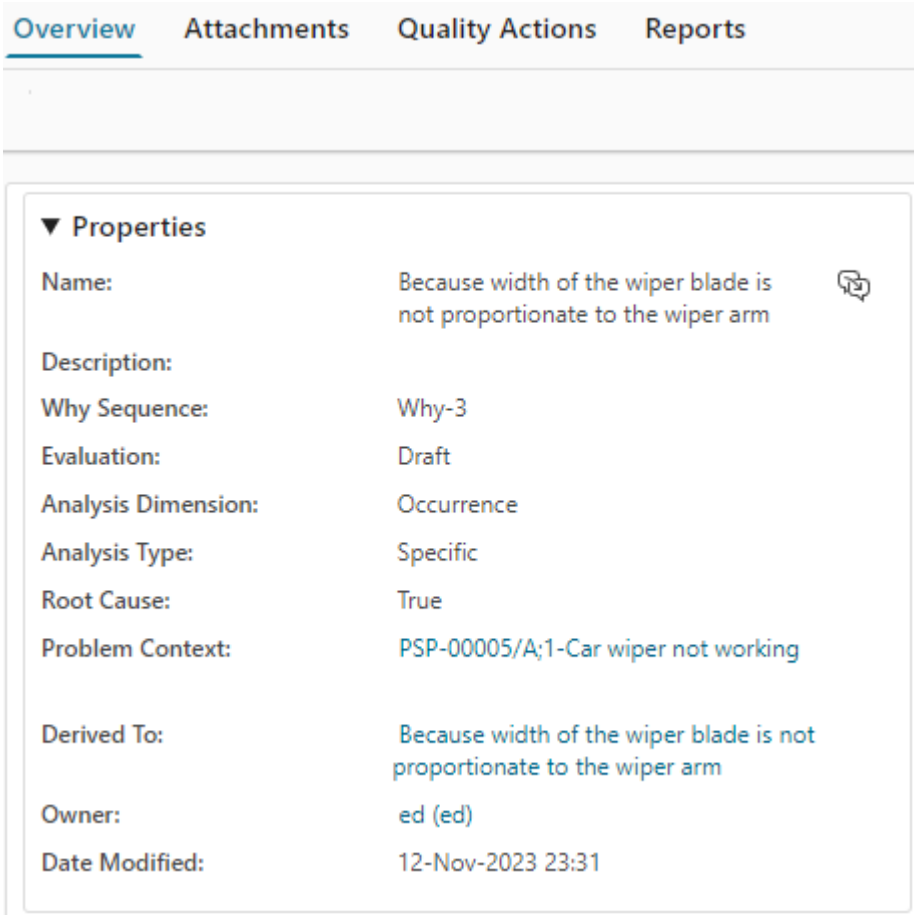
  The Problem Solving process is sent through the default workflow for resolution. Reviewers and approvers for the Problem Solving process may be automatically assigned depending on how your organization's Problem Solving process workflow is configured.

> Note:
>
> When you derive a Problem Solving process from another Problem Solving process, the root cause of the source Problem Solving process is added as the problem description defect of the derived Problem Solving process.

You can view the source defect that is the root cause defect in the **Derived From** field.




In the source Problem Solving process, if you open the root cause defect, you can view the target defect in the **Derived To** field.




3. To create a Problem Solving process from an existing Problem Solving process, do the following:

   a. From the **CHANGES** folder, select and open the Problem Solving process that you want to use as the source.

      If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the source Problem Solving process.

   b. In the **Overview** tab, choose **More Commands** ••• > **New** > **Save As**.

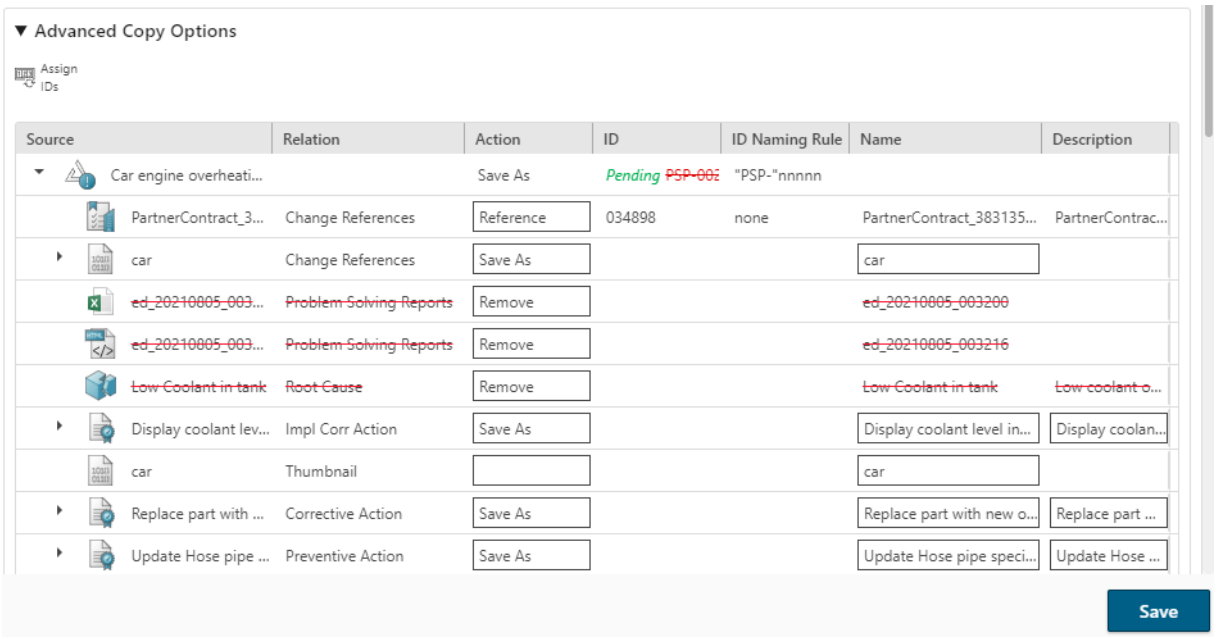
   c. In the **Synopsis** box, summarize the Problem Solving process.

   d. In the **Description** box, describe the Problem Solving process.

   e. If the **Advanced Copy Options** section, select what objects you want to keep, reference, or remove.

      You can choose from the following options:

| Option | Description |
|---|---|
| **Reference** | References the object in the new Problem Solving process. |
| **Remove** | Removes the object from the new Problem Solving process. |
| **Save As** | Saves a copy of the object in the new Problem Solving process. |




f. Click **Save**.

The Problem Solving process is created and displayed in edit mode. The following objects are copied from the source Problem Solving process using the following type of copy:

| Type of object | Copied as reference or creates a new object of the same type as the related object |
|---|---|
| Problem Items | Copy As Reference |
| Affected Items | Copy As Reference |
| Reference Items such as Item Revisions, FMEAs, Control Plans, Quality Audits, Quality Projects, Quality Programs, or Vendors | Copy As Reference |
| Dataset Reference Items | Copy As Object |
| Web Links | Copy As Object |
| Defective Items of the problem description defect | Copy As Reference |
| Quality Actions | Copy As Object for the quality action's name and description only. |

| Type of object | Copied as reference or creates a new object of the same type as the related object |
|---|---|
| | The status of the quality action is set to **Draft** in the new issue. |
| Attachments | Copy As Object |
| Problem description defect | Copy As Reference |
| Thumbnail | Copy As Object |
| Quality Checklist | Copy As Object |
| Is/Is Not Questions | Copy As Object |
| Child Causes and child Why Questions | Copy As Object |

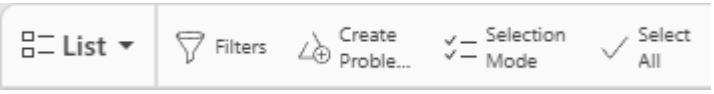
Note:

The root causes from the existing Problem Solving process are not marked as root causes in the new Problem Solving process. The associated root causes of planned permanent corrective actions and implemented corrective actions are not copied.

4. To create a new Problem Solving process, do the following:

   a. Choose **More Commands** ••• > **New** > **Create Change**.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and click **Create Problem Solving Process** from the work area toolbar.

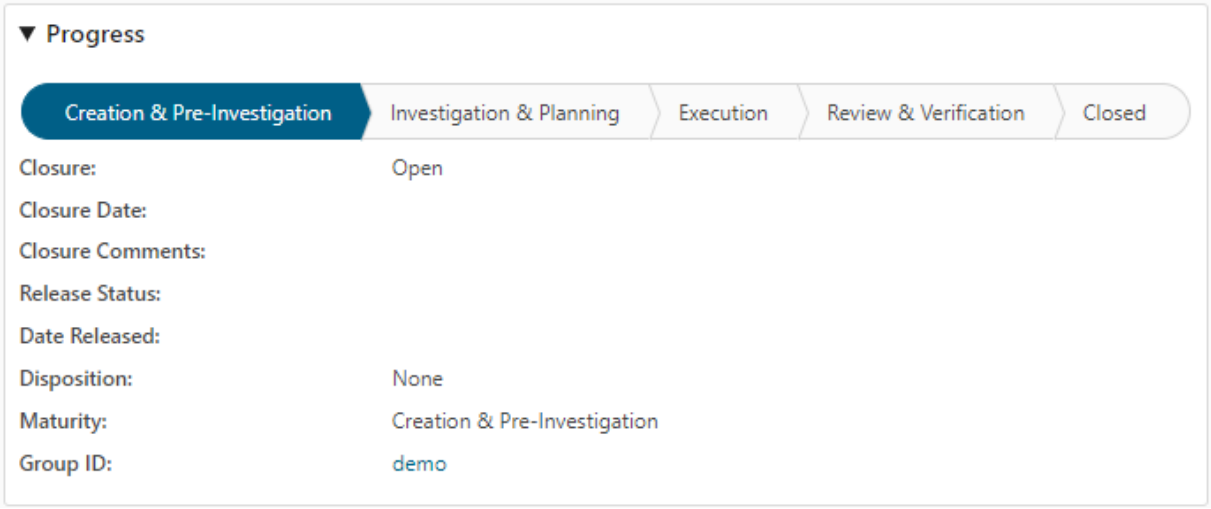



   b. In the **Create Change** panel, select **Problem Solving**.

   Select **CAPA for Life Sciences** to create a new Problem Solving process to investigate problems related to the Life Sciences industry. In these types of Problem Solving processes, you can track the progress through the **Progress** bar in the **Overview** tab.

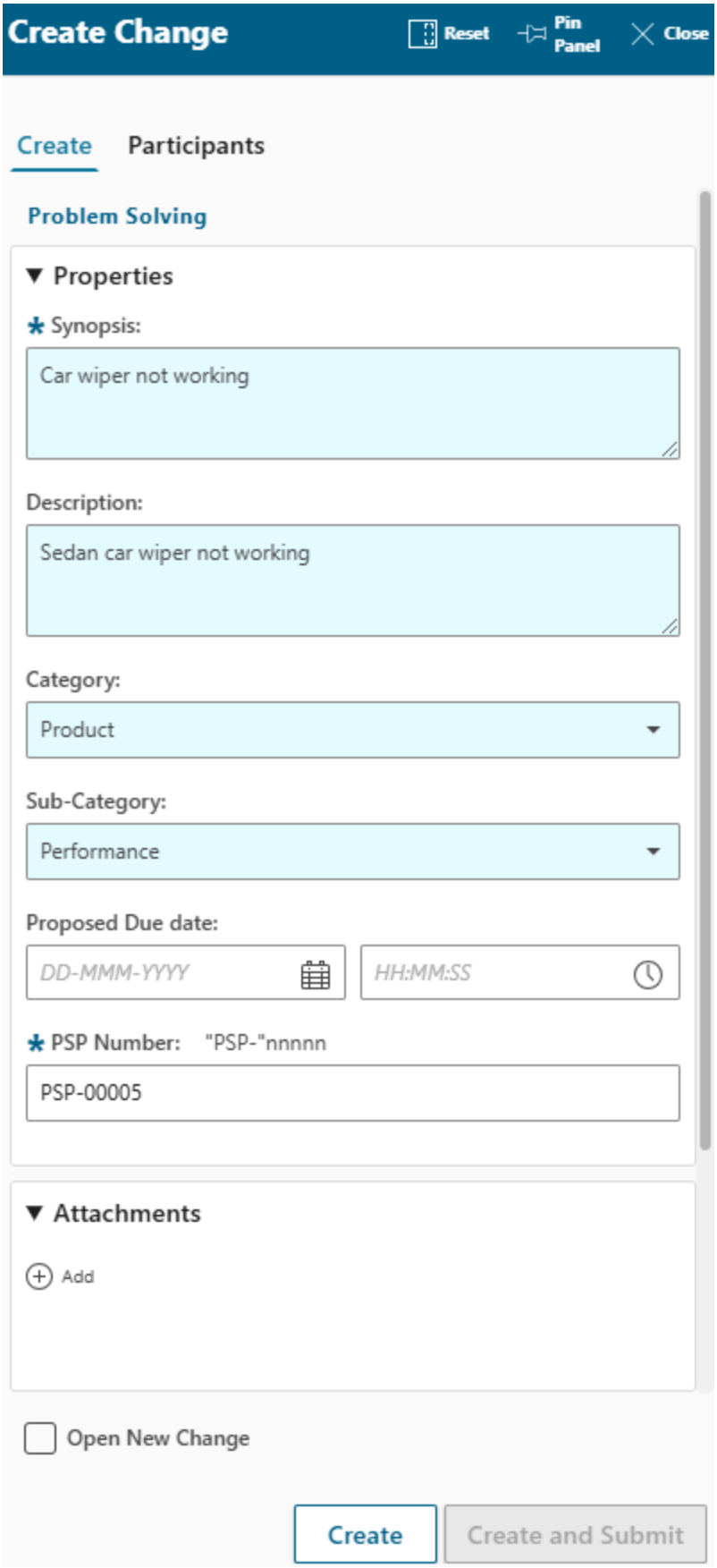
Note:

The **CAPA for Life Sciences** option is available in the **Create Change** panel when the administrator installs the **Quality Management for Life Sciences Industry** template.




c. In the **Synopsis** box, summarize the Problem Solving process.

d. In the **Description** box, describe the Problem Solving process.



e. From the **Category** list, select the appropriate category.

f. From the **Sub-Category** list, select the appropriate subcategory.

g. (Optional) Specify a proposed due date.

Some companies use a standard operating procedure where a Problem Solving process must be completed within a specific duration. This duration is based on the **Priority** of the Problem Solving process. When you create a new Problem Solving process, it is assigned a **Priority** of **Medium** by default. If your company has defined this standard operating procedure for you, you must specify a **Proposed Due Date** that is 45 days and earlier from the **Creation Date** of the Problem Solving process.

Depending on the **Priority** of the Problem Solving process, set the **Proposed Due Date** as follows:

| Priority | Duration assigned to Proposed Due Date |
|---|---|
| **High** | **Proposed Due Date** must be set to 30 days and earlier from the **Creation Date** |
| **Medium** | **Proposed Due Date** must be set to 45 days and earlier from the **Creation Date** |
| **Low** | **Proposed Due Date** must be set to 60 days and earlier from the **Creation Date** |

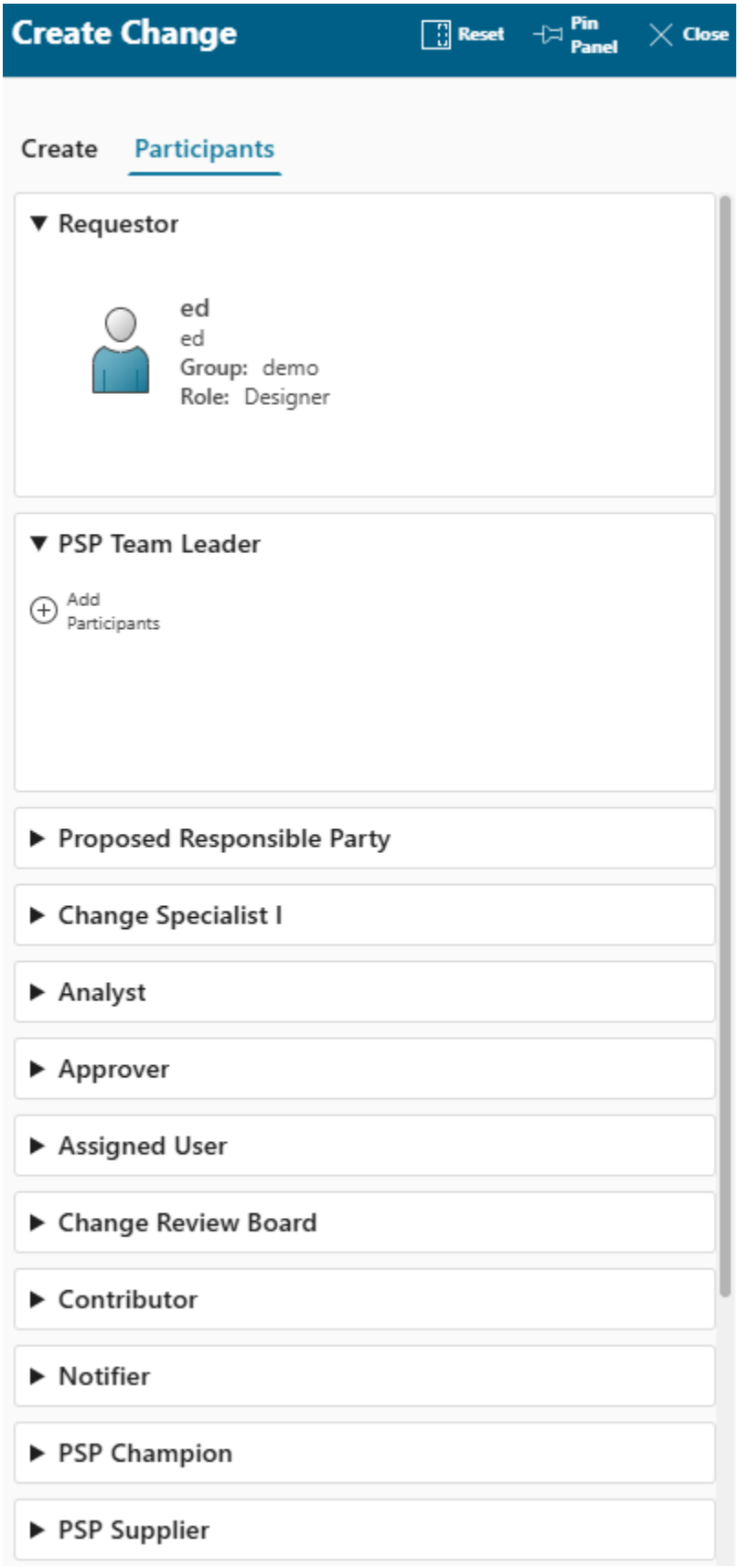
After creating the Problem Solving process, you can edit it to update the **Priority** as required. If you change the **Priority**, ensure that you specify the appropriate **Proposed Due Date** accordingly.

Your administrator can configure the duration assigned to the **Proposed Due Date** as per the business requirements. If the **Proposed Due Date** is not automatically set to a duration based on the assigned **Priority**, the administrator has disabled this option for your company.

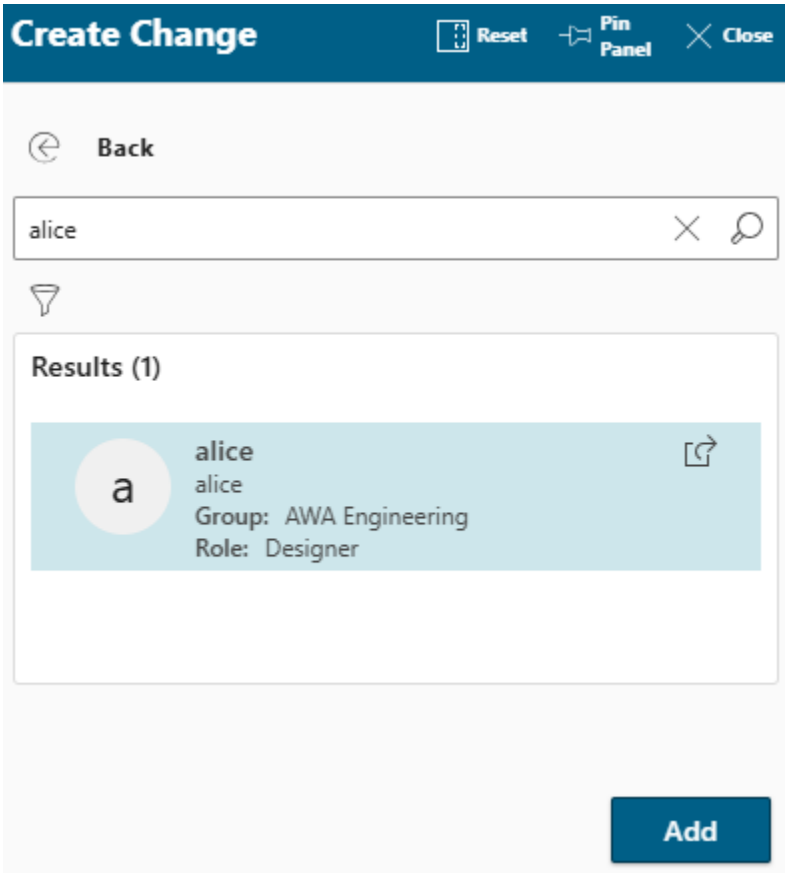
> Note:
>
> The **Proposed Due Date** of the Problem Solving process must not be later than the **Due Date** of the assigned chapters, questions, subquestions, and quality actions.

h. While creating a Problem Solving process, to assign the users who will work on the Problem Solving process, click the **Participants** tab, and do the following:

A. In the specific section, click **Add Participants** ⊕.



B. In the search panel, search for and select the user to be assigned, and click **Add**.




C. Click the **Create** tab to enter the remaining properties.

i. Do one of the following:

- To continue editing later, click **Create**.

  The Problem Solving process is created and displayed in edit mode. You can send it for resolution later.

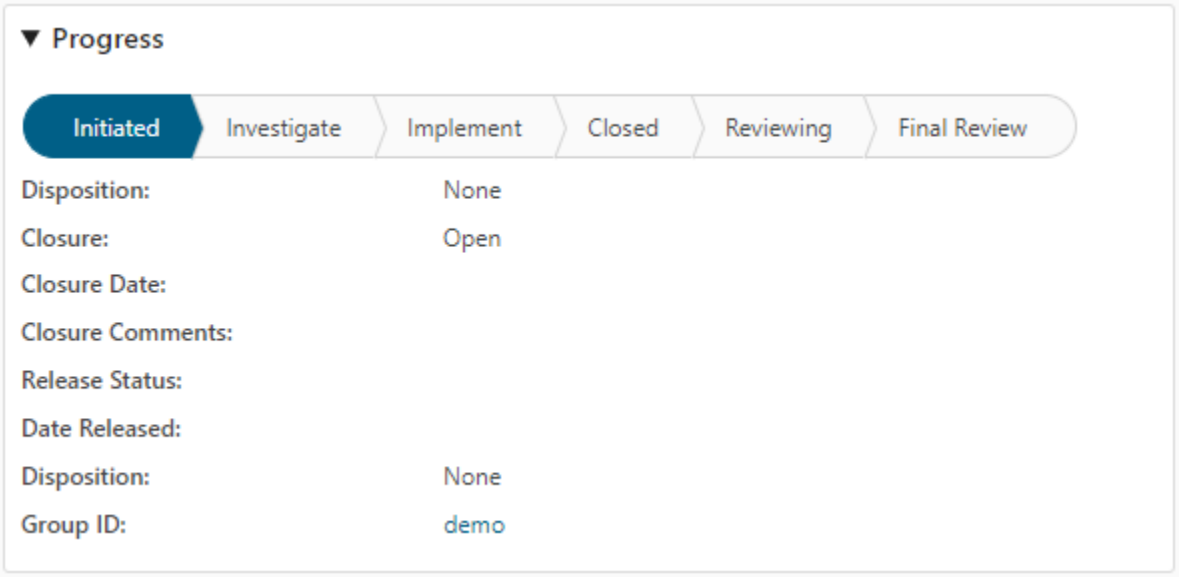
- To send it for resolution immediately, click **Create and Submit**.

  The Problem Solving process is sent through the default workflow for resolution. Reviewers and approvers for the Problem Solving process may be automatically assigned depending on how your organization's Problem Solving process workflow is configured.

# 5. Edit a Problem Solving process

As a Quality Management Representative (QMR), after you create the Problem Solving process, you can edit it to provide additional details. As you continue updating the Problem Solving process, the updates can be viewed at a single location in the **Overview** tab. You can track the progress of the Problem Solving process through these stages in the **Progress** bar:

1. **Initiated**
2. **Investigate**
3. **Implement**
4. **Closed**
5. **Reviewing**
6. **Final Review**

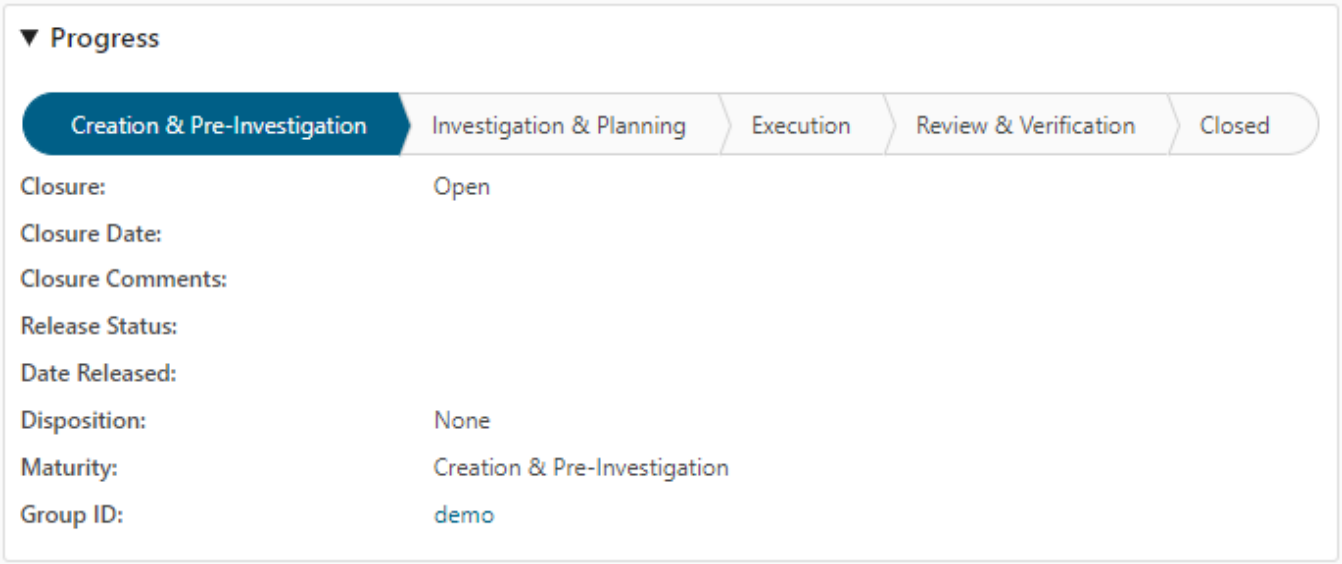



If you selected **CAPA for Life Sciences** while creating a new Problem Solving process, you can track the progress of the Problem Solving process through these stages in the **Progress** bar.

1. **Creation & Pre-Investigation**
2. **Investigation & Planning**
3. **Execution**

4. **Review & Verification**

5. **Closed**




1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

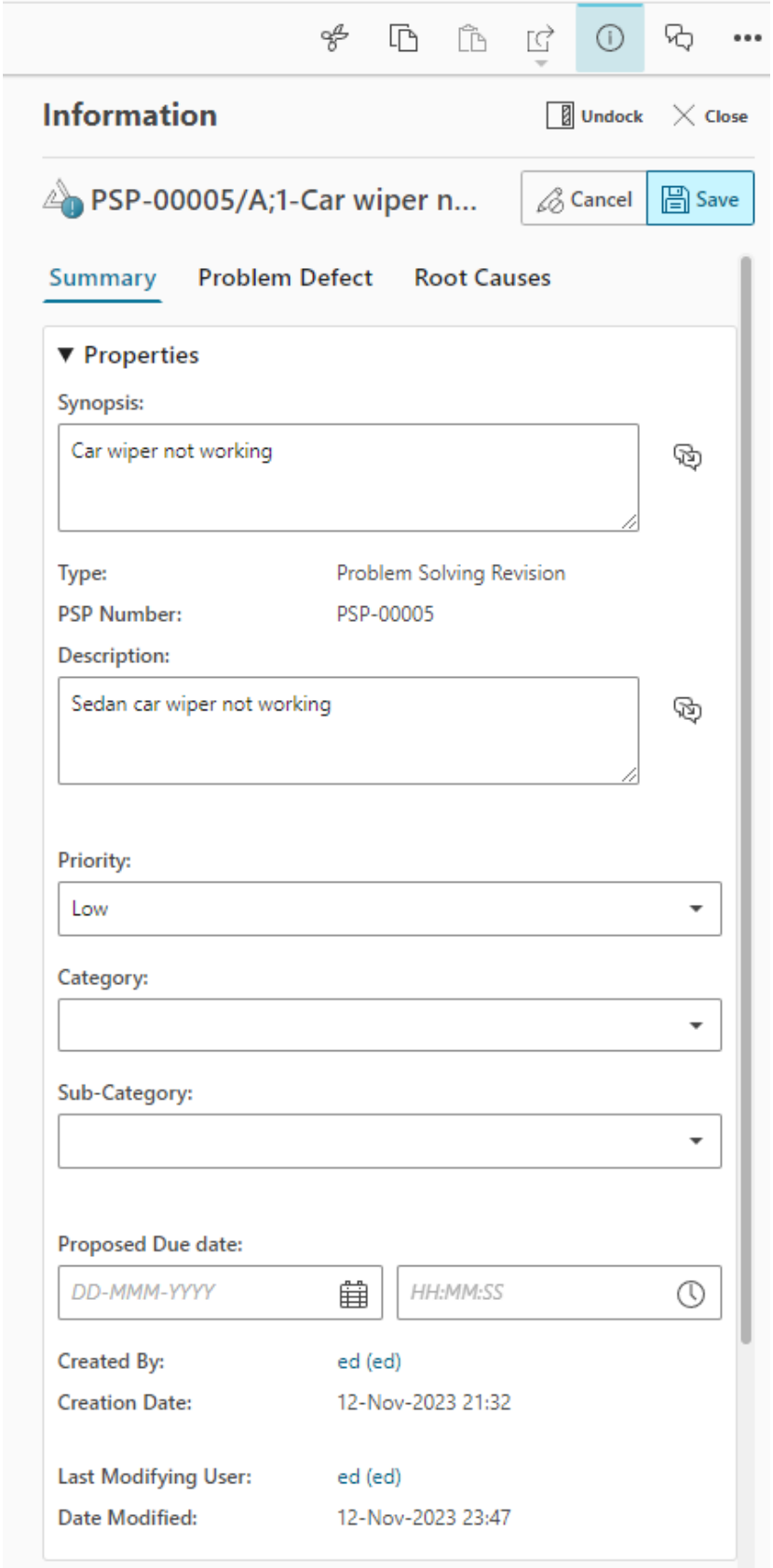
2. In the **Overview** tab, choose **More Commands** ••• > **Edit** ✎ > **Start Edit** ✎.

| Section | Actions to be performed |
|---|---|
| **Properties** | a. Edit the **Synopsis**, **Description**, **Category**, **Sub-Category**, and **Proposed Due Date** of the Problem Solving process.<br><br>Note:<br>The **Due Date** of the associated quality actions and the associated quality checklists must not be later than the **Proposed Due Date** of the Problem Solving process.<br><br>b. To make the current Problem Solving process available for searching in **Supplier Quality Hub**, select **Visible for Vendor**. |
| **Projects** | a. In the **Projects** section, you can view the projects of the Problem Solving process. To select additional projects of the Problem Solving process, click **Projects** ⊕.<br><br>b. In the **Projects** panel, search for and select the required projects or subprojects, and click **Add Project**. |

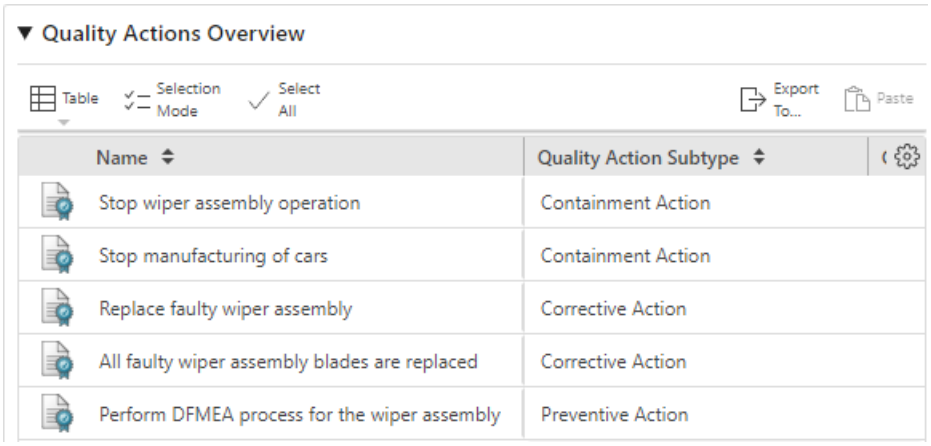
<table>
<tr><th>Section</th><th>Actions to be performed</th></tr>
<tr><td></td><td>c. To remove a project or subproject, select it, and click Remove Project ⊖.<br><br>d. After you complete adding the required projects, click Save.</td></tr>
<tr><td>Risk Evaluation</td><td>Specify the risk and the priority of the Problem Solving process. Do the following:<br><br>a. Select values for Severity, Probability, and Detectability of the Problem Solving process to calculate the risk level.<br><br>When you save the Problem Solving process, the risk level is calculated as the product of Severity, Probability, and Detectability, and this value is populated in the Risk field.<br><br>b. After reviewing the value of the Risk field, select the priority of the Problem Solving process from the Priority list.<br><br> 

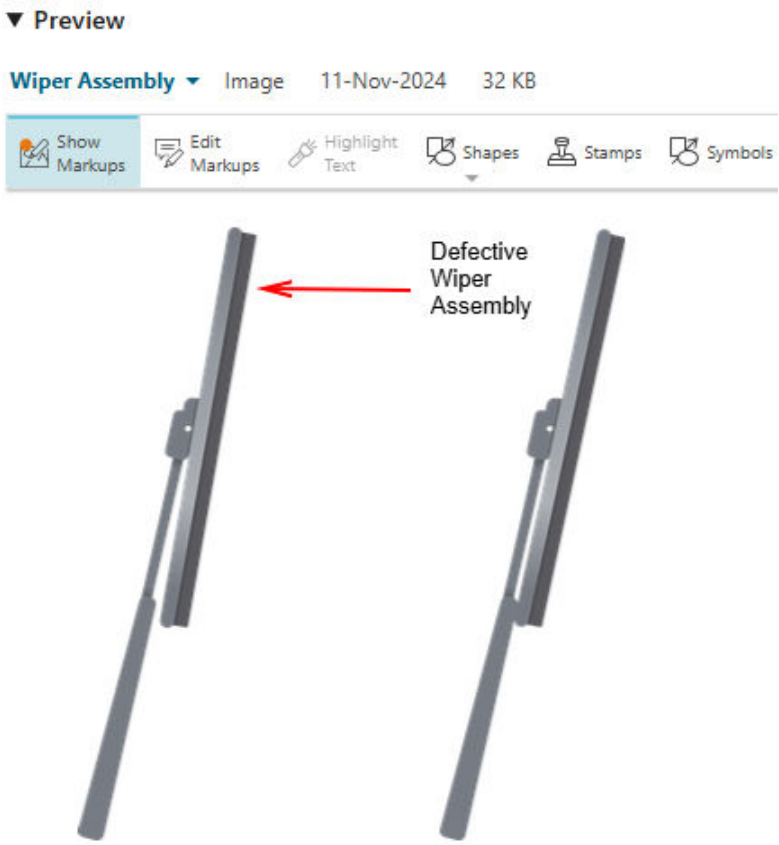
<br><br>Some companies use a standard operating procedure where a Problem Solving process must be completed within a specific duration. This duration is based on the assigned Priority. If your company has defined this for you, the Proposed Due Date must be updated when you change the Priority of the Problem Solving process. The Proposed Due Date must be set as follows:<br><br>
<table>
<tr><th>Priority</th><th>Duration assigned to Proposed Due Date</th></tr>
<tr><td>High</td><td>Proposed Due Date must be set to 30 days from the Creation Date</td></tr>
<tr><td>Medium</td><td>Proposed Due Date must be set to 45 days from the Creation Date</td></tr>
<tr><td>Low</td><td>Proposed Due Date must be set to 60 days from the Creation Date</td></tr>
</table>
<br>If you do not update the Proposed Due Date when you change the Priority, when you save the Problem Solving process, a message</td></tr>
</table>

| Section | Actions to be performed |
| --- | --- |
| | appears asking you to make the update. When you click **Update**, the **Proposed Due Date** is updated with the new date that matches the new **Priority**.<br><br>Your administrator can configure the duration assigned to the **Proposed Due Date** as per the business requirements. If the **Proposed Due Date** is not automatically set to a duration based on the assigned **Priority**, the administrator has disabled this option for your company.<br><br>Note:<br><br>You can search for a Problem Solving process by using **Risk** and **Priority** as the search criteria.<br><br>If your administrator has disabled the risk calculation, you can specify only the **Priority** for the Problem Solving process. If your administrator has enabled the risk calculation, you can select values for **Severity**, **Probability**, and **Detectability**, and the product of these fields is populated in the **Risk** field. |
| **Related issues and Problem Solvings** | Add the issues and Problem Solving processes that are either implemented by this Problem Solving process or are similar to this Problem Solving process.<br><br>Note:<br><br>If you have derived the Problem Solving process from an issue, the source issue appears in this section. If you have derived the Problem Solving process from a **Customer Complaint Issue** or **Non-Conformance Issue**, the details of these source issues appear in the **Related Quality Issues Details (Customer Complaint)** or **Related Quality Issues Details (Non-Conformance Issue)** sections, respectively. This allows you to view the source issue details in Problem Solving without having to open and view the issue details. When you generate a Problem Solving report, the source issue details are added to the report.<br><br>If you have added a Problem Solving process, you can select it, and click **Information** to view the Problem Solving process details, its problem description defect, and its root causes. Click the respective **Summary**, **Problem Defect**, or **Root Causes** tab to view the details.<br><br>To update the Problem Solving process details and its problem description defect details, click **Edit**, make the required updates, and click **Save**. |

| Section | Actions to be performed |
| --- | --- |
| |  |

| Section | Actions to be performed |
| --- | --- |
| **Problem Defect Overview** | View the problem description defect of the Problem Solving process.<br>You can directly open the problem description defect from here and work on it.<br>Note:<br>To work on the problem description defect in the **Overview** tab, select the problem description defect, and click **Information**, and make the required updates. |
| **Root Causes Overview** | View the root causes that have been identified in the **Root Cause Analysis** tab of the Problem Solving process.<br>You can directly open the root cause from here and work on it.<br>Note:<br>To work on the root cause in the **Overview** tab, select the root cause, and click **Information**, and make the required updates. |
| **Quality Actions Overview** | View all the quality actions that are added to various components of the Problem Solving process, such as containment actions, corrective actions, and preventive actions.<br>You can directly open the quality action from here and work on it.<br>Note:<br>To work on the quality action in the **Overview** tab, select the quality action, click **Information**, and make the required updates.<br>Dependent quality actions do not appear in this section. |

| Section | Actions to be performed |
| --- | --- |
| |  |
| **Preview** | View all the images and PDF files that are added to the Problem Solving process as attachments.<br><br>You can also mark up a PDF or an image file within the universal viewer. You can also specify which level of users can view the markups. For more information, see *Document Management on Active Workspace —Usage* in the Teamcenter documentation.<br><br>If you have generated a report in the HTML format, the report is displayed in the **Preview** section for the current session.<br><br>Note:<br><br>To increase the work area, you can hide the **Preview** section by choosing **More Commands** ••• > **View** ◎ > **Show/Hide Preview** ◎. The **Preview** section is hidden only for the current logged-on user. |

| Section | Actions to be performed |
| --- | --- |
| |  |

3. Choose **More Commands** ••• > **Edit** > **Save Edits**.

# 6. Create a plan for the Problem Solving process

As a Quality Management Representative (QMR), after you create the Problem Solving process, you can create a plan to track the associated projects, events, schedules, supplier information, and customer information.

> Note:
>
> - The associated objects from the **Plan** tab (except for schedules) are also added to the **REFERENCE ITEMS** section in the **Problem Description** tab.
> - The administrator can configure which sections appear in the **Plan** tab depending on the business requirements. For each section, the administrator will install the required templates, and make the required changes in the XRT Editor to display or remove the required sections.

1. From the **CHANGES** folder, select and open the Problem Solving process.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process.

2. Click the **Plan** tab.

3. Expand the **Program Information** section and do the following:

| Section | Actions to be performed |
|---|---|
| **Program/Project** | a. In the **Program/Project** section, to associate the programs, projects, or subprojects of the Problem Solving process, click **Add to** ⊕.<br>b. In the **Add** panel, search for and select the required programs, projects, or subprojects, and click **Add**.<br>c. To remove a program, project, or subproject, select it, and click **Remove** ⊖.<br>Note:<br>If you remove a project, the associated events are removed from the **EVENT** section. |
| **Event** | a. In the **Event** section, to associate the events of the Problem Solving process' programs, projects, or subprojects, click **Add to** ⊕. |

| Section | Actions to be performed |
| --- | --- |
| | b. In the **Add** panel, search for and select the required events, and click **Add**.<br><br>The search results display only the events that are a part of the programs, projects, or subprojects added in the **Program/Project** section.<br><br>c. To remove events, select the events, and click **Remove** ⊖. |

4. Expand the **Schedules** section and do the following:

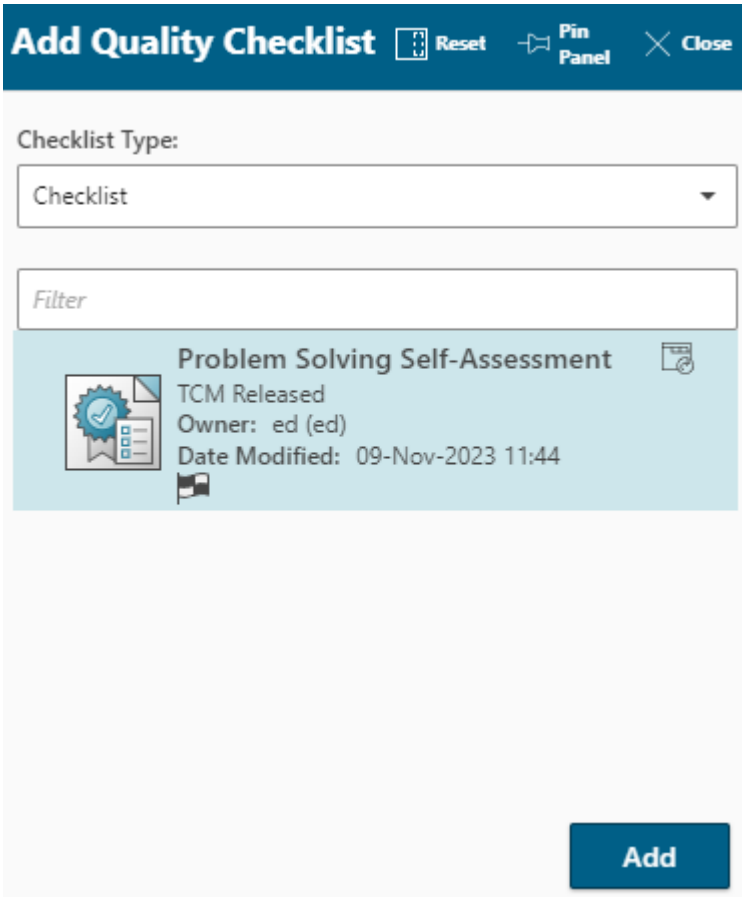
   a. In the **Schedules** section, to track your work efforts, click **Add to** ⊕.

   b. Click **Create Schedule** to create an entirely new schedule. For more information, see *Schedule Management on Active Workspace —Usage* in the Teamcenter documentation.

5. Expand the **Self-Assessment Checklist** section and add checklists to the plan as follows:

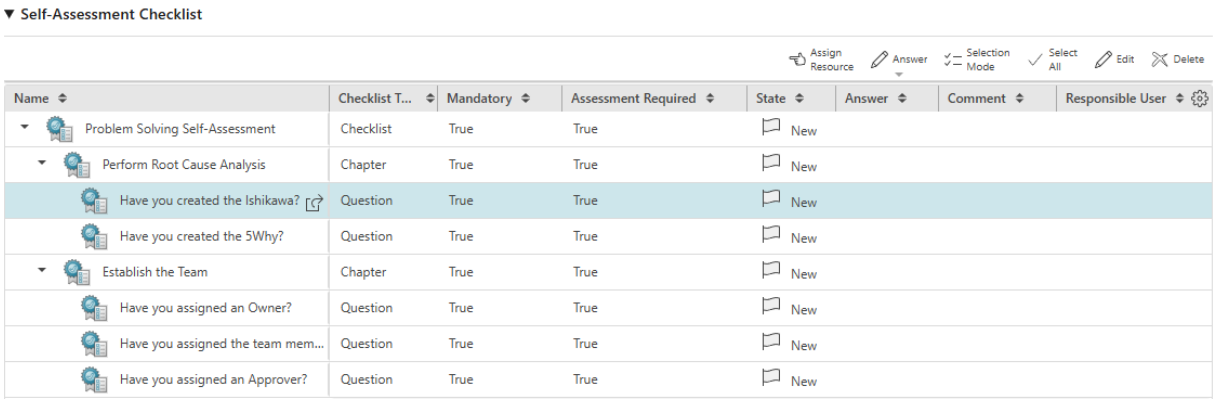
   a. Click **Add Quality Checklist** ⊕.

   b. In the **Add Quality Checklist** panel, search for and select the required checklists, and click **Add**.




You can add multiple checklists to the plan.

> Note:
>
> The Quality Manager must create and release the checklists for you in the Quality Master Data library. To create checklists, the administrator must install Quality Project Management. For more information, see *Quality Project Management* and *Teamcenter Quality — Deployment and Administration* in the Teamcenter documentation.



c. To work with the checklist in the **Self-Assessment Checklist** section, do the following:

   A. In the **Comment** column, add a comment about why you have selected a specific answer.

   B. To assign a resource to work on a question, select the question, and click **Assign Resource**.

   C. In the **Assign Resource** panel, search for and select the resource, and click **Assign**.

d. To answer the checklist questions in the **Information** panel, do the following:

   A. Select the checklist question, and click **Information** to view the question details.

   B. Click **Edit** and enter the answer.

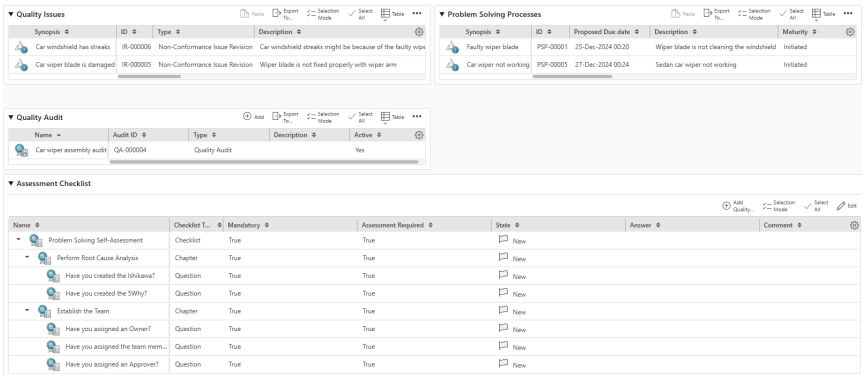
   C. Click **Save**.

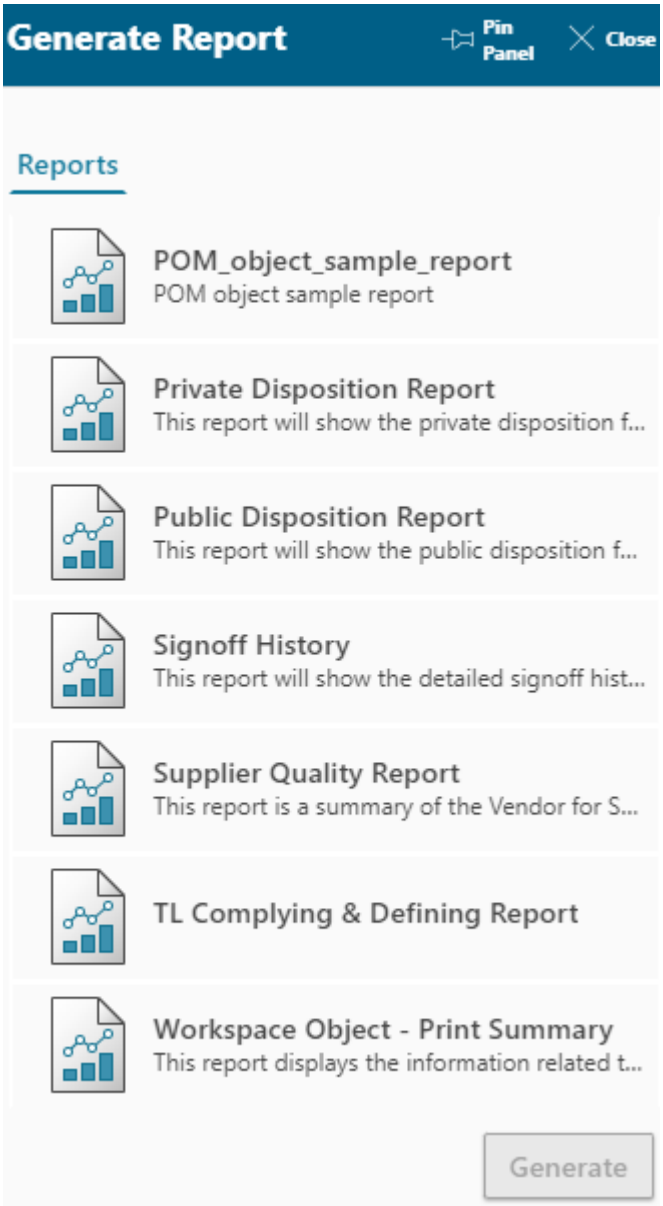
e. To delete a checklist, select it, and click **Delete** ✕.

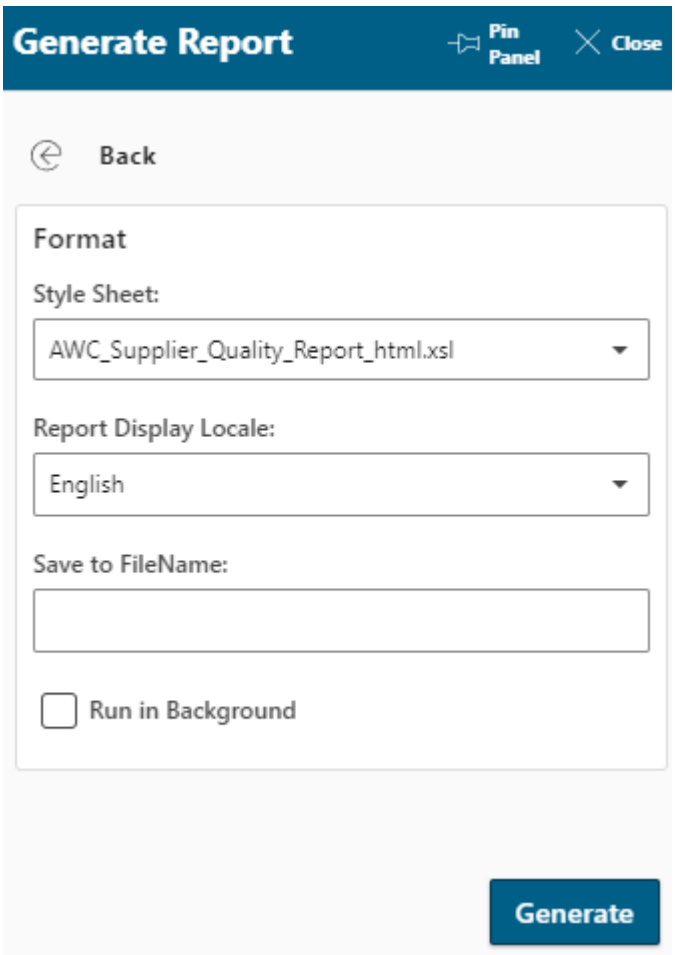
f. In the confirmation message, click **Delete**.

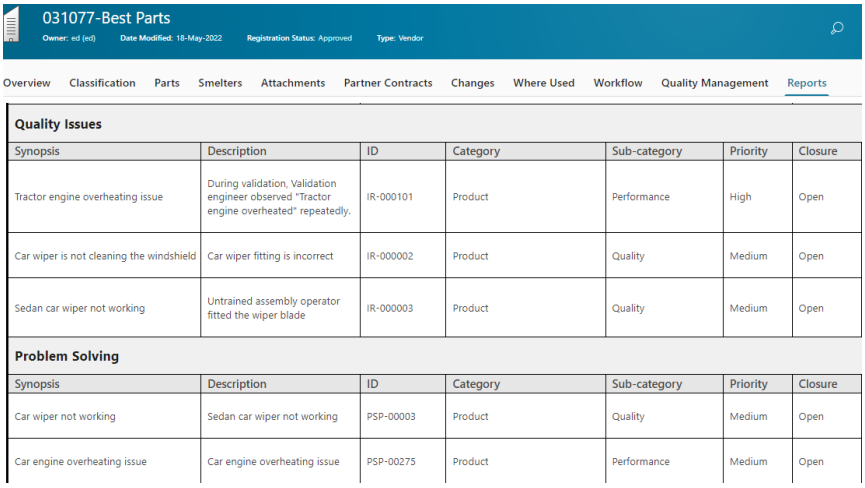
6. Expand the **Supplier Information** section and do the following:

| Section | Actions to be performed |
|---|---|
| **Vendor** | a. In the **Vendor** section, to associate the vendor for the Problem Solving process, click **Add to** ⊕.<br><br>b. In the **Add** panel, search for and select the required vendor, and click **Add**.<br><br>c. To remove the vendor, select the vendor, and click **Remove** ⊖.<br><br>Note:<br>If you remove a vendor, the associated brands, partner contracts, contacts, and locations are also removed from the below sections.<br><br>d. To view all the issues and Problem Solving processes that are assigned to this vendor, select and open the vendor and click the **Quality Management** tab.<br><br>In this tab, you can do the following: |

| Section | Actions to be performed |
| --- | --- |
| | • Create new issues and Problem Solving processes by choosing **More Commands** ••• > **New** ✳ > **Create Change**, and specifying the required information.<br><br>• Add existing issues and Problem Solving processes by choosing **More Commands** ••• > **Manage** > **Add to My Changes**, and then selecting the required objects.<br><br>• Assess the vendor by using a quality checklist as follows:<br><br>A. In the **Assessment Checklist** section, click **Add Quality Checklist** ⊕.<br><br>Note:<br><br>The Quality Manager must create the checklists for you in the Quality Master Data library. To create checklists, the administrator must install Quality Project Management. For more information, see *Quality Project Management* and *Teamcenter Quality — Deployment and Administration* in the Teamcenter documentation.<br><br>B. In the **Add Quality Checklist** panel, search for and select the required checklist, and click **Add**.<br><br>C. Specify a state, comment, and responsible user as appropriate.<br><br>D. To delete a checklist, select it, and click **Delete** ✕.<br><br>E. In the confirmation message, click **Delete**.<br><br>  |

| Section | Actions to be performed |
| --- | --- |
| | • To generate a report of all the issues, Problem Solving processes, and checklists that are assigned to this vendor, do the following:<br><br>A. Select and open the vendor and click the **Reports** tab.<br><br>B. Choose **More Commands** ••• > **New** > **Generate Report**.<br><br>C. In the **Generate Report** panel, select **Supplier Quality Report**.<br><br>  |

| Section | Actions to be performed |
| --- | --- |
| | D. In the **FORMAT** section, from the **Style Sheet** list, select the **AWC_Supplier_Quality_Report_html.xsl** style sheet.<br><br>E. From the **Report Display Locale** list, select the required locale.<br><br>  <br><br>F. (Optional) In the **Save to FileName** box, type the file name of the report.<br><br>G. Click **Generate**.<br><br>The **Supplier Quality Report** is generated in the **Reports** tab. |

| Section | Actions to be performed |
|---|---|
| |  |
| **Brand** | a. In the **Brand** section, to associate the vendor's brand with the Problem Solving process, click **Add to** ⊕.<br><br>b. In the **Add** panel, search for and select the required brand, and click **Add**.<br><br>Note:<br>The **Add** panel displays only brands that belong to the vendors added in the **Vendor** section.<br><br>c. To remove the brand, select it, and click **Remove** ⊖. |
| **Partner Contract** | a. In the **Partner Contract** section, to associate the vendor's partner contract with the Problem Solving process, click **Add to** ⊕.<br><br>b. In the **Add** panel, search for and select the required partner contract, and click **Add**.<br><br>Note:<br>The **Add** panel displays only partner contracts that belong to the vendors added in the **Vendor** section.<br><br>c. To remove the partner contract, select it, and click **Remove** ⊖. |
| **Contact** | a. In the **Contact** section, to associate the required contact with the Problem Solving process, click **Add to** ⊕.<br><br>b. In the **Add** panel, search for and select the required contact, and click **Add**. |

| Section | Actions to be performed |
| --- | --- |
| | Note:<br>The system administrator can configure the **Add** panel to display contacts from only one of the following:<br>• Vendors added in the **Vendor** section<br>• Partner contracts added in the **Partner Contract** section<br>c. To remove the contact, select the contact, and click **Remove** ⊖. |
| **Location** | a. In the **Location** section, to associate the vendor's location with the Problem Solving process, click **Add to** ⊕.<br>b. In the **Add** panel, search for and select the required location, and click **Add**.<br>Note:<br>The system administrator can configure the **Add** panel to display locations from only one of the following:<br>• Vendors added in the **Vendor** section<br>• Partner contracts added in the **Partner Contract** section<br>c. To remove the location, select it, and click **Remove** ⊖. |

7. Expand the **Customer Information** section and do the following:

| Section | Actions to be performed |
| --- | --- |
| **Customer** | a. In the **Customer** section, to associate the customer to the Problem Solving process, click **Add to** ⊕.<br>b. In the **Add** panel, search for and select the required customer, and click **Add**.<br>c. To remove the customer, select the customer, and click **Remove** ⊖. |

| Section | Actions to be performed |
|---|---|
| | Note:<br>If you remove a customer, the associated locations and contacts are removed from the below sections. |
| **Location** | a. In the **Location** section, to associate the customer's location with the Problem Solving process, click **Add to** ⊕.<br>b. In the **Add** panel, select the required location, and click **Add**.<br>Note:<br>The **Add** panel displays only locations that belong to the customers added in the **Customer** section. |
| **Contact** | a. In the **Contact** section, to associate the customer's contact with the Problem Solving process, click **Add to** ⊕.<br>b. In the **Add** panel, search for and select the required contact, and click **Add**.<br>Note:<br>The **Add** panel displays only contacts that belong to the customers added in the **Customer** section.<br>c. To remove the contact, select it, and click **Remove** ⊖. |

# 7. Answer the questions or subquestions in a checklist

A checklist consists of a list of questions that define the acceptance criteria for the various stages of a Problem Solving process. The checklist is used to evaluate the completion of a Problem Solving process. Each Problem Solving process can have one or more checklists associated with it, and each checklist can have multiple chapters, questions, and subquestions. Including multiple questions and subquestions ensures that none of the acceptance criteria is overlooked. Further, the questions are designed in such a way that they can be answered with a simple *yes* or *no*.

You, as the Quality Management Representative (QMR), assign one or more checklists to the required Problem Solving process. Depending on the selected **Area** and **Sub-area** of the checklist, the chapter and associated questions and subquestions are populated at the relevant stage in the Problem Solving process. For example, if you have selected **PSP** as the **Area** and **Containment Actions** as the **Sub-area** of a chapter, the chapter and its associated questions and subquestions are populated in **Containment Actions** of the Problem Solving process.

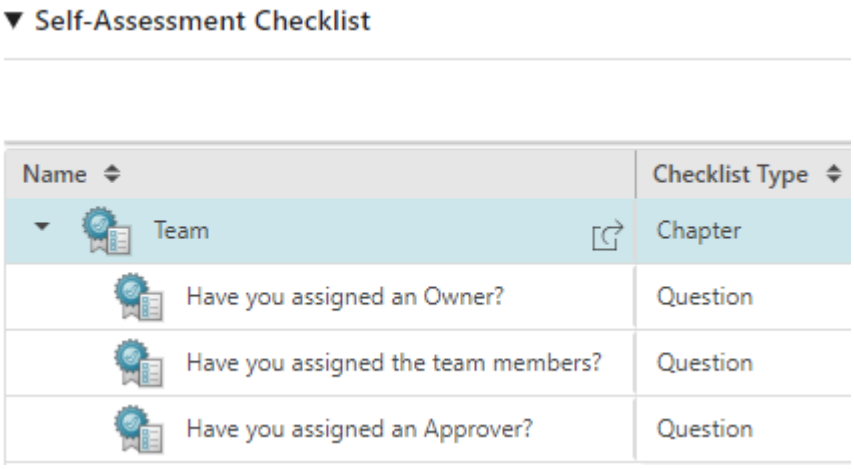
**Prerequisites**

The Quality Manager must create and release the checklists in the **Quality Master Data** library for the checklists to be available for assignment in the Problem Solving process.

1. Navigate to the required stage of the Problem Solving process and open it.

   After a checklist is assigned to a Problem Solving process, the associated chapters, questions, and subquestions are populated in **Overview**, **Team**, **Problem Description**, **Containment Actions**, **Root Cause Analysis**, **Corrective Actions**, and **Preventive Actions**.

2. Expand the chapters to view the checklist questions and subquestions.



You can view the associated quality actions and attachments of the checklist, chapters, questions, and subquestions in the **Information** panel.

3. To assign a resource to work on a question or subquestion, do the following:

   a. Select the question or subquestion and click **Assign Resource**.

      You can select multiple questions or subquestions at a time or click **Select All** ✓ to select all questions and subquestions.

   b. In **Assign Resource**, search for and select the resource, and then click **Assign**.

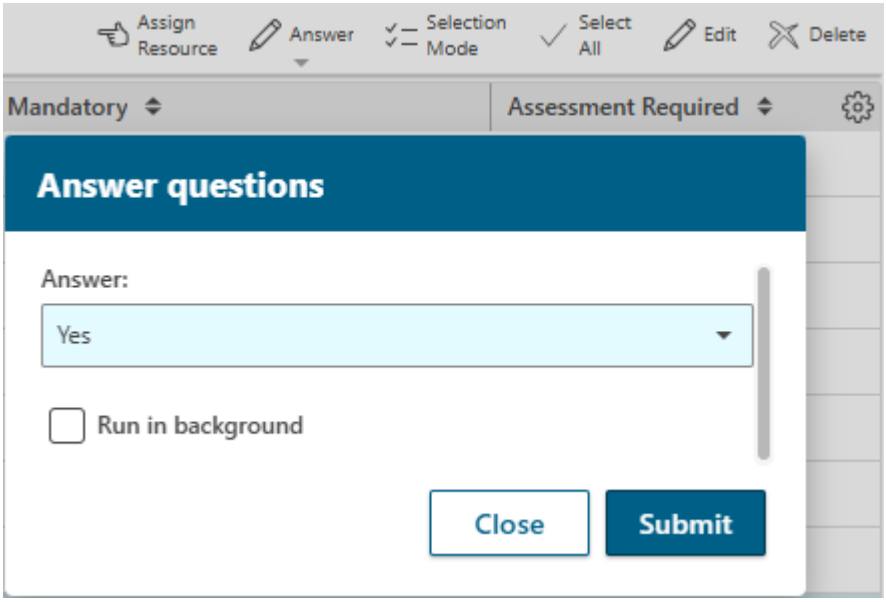
4. To answer the questions or subquestions, do the following:

   a. Select the questions or subquestions to be answered.

      You can select multiple questions or subquestions at a time, or click **Select All** ✓ to select all questions and subquestions.

   b. From the work area toolbar, click **Answer** > **Selected Questions**.

   c. In the **Answer questions** panel, select an answer from the **Answer** list.




   d. Click **Submit**.

   e. In the confirmation message, click **Submit**.

5. To edit the checklist, do the following:

a. Click **Edit** from the work area toolbar.

b. In the **Mandatory** column, click inside the column, and select the displayed check box to make the question or subquestion mandatory or optional.

c. In the **Assessment Required** column, click inside the column, and select the displayed check box to make assessment of the question or subquestion mandatory or optional.

d. From the **State** list, select an option to specify the status of the question or subquestion.

e. In the **Comment** column, enter your comments on the checklist, chapters, questions, or subquestions.

6. To delete a checklist, chapter, question, or subquestion in the checklist, do the following:

a. Select the checklist, chapter, question, or subquestion, and click **Delete** from the work area toolbar.

b. In the confirmation message, click **Delete**.

# 8. Assign the owner, team members, approvers, and External Users to the Problem Solving process

After **creating a Problem Solving process**, you must assign the users who are designated as Owner, Approver, and optionally, a Supplier and other team members. You can also assign roles to the other Problem Solving process team members, and specify the team member roles in resolving the Problem Solving process.

The Owner updates the Problem Solving process at each stage and submits the Problem Solving process for approval depending on the workflow used by your organization. For example, the Owner adds the containment actions and submits the Problem Solving process for approval.

The Approver reviews the work of the Owner and provides feedback if further changes are required. If no changes are required, the Approver approves the work at that stage of the Problem Solving process resolution. The Problem Solving process is then reassigned to the Owner to continue work on it. For example, the Approver reviews the containment actions entered by the Owner and then approves the Problem Solving process. The Problem Solving process is reassigned to the Owner to work on the next stage: adding the root cause analysis of the Problem Solving process.

If your company has signed a partner contract with one of your vendors, then you can assign the partner representatives of the vendor to work on the Problem Solving process as *External Users*. For more information about partner contracts, see *Partner Connect — Usage* in the Teamcenter documentation.

Some additional roles could be as follows:

- Team Leader: Leads the team by assigning tasks, tracking the progress, and ensuring that the team meets the proposed due dates of resolving the Problem Solving process.
- Champion: Interacts with the customers, is a point of contact for the customer, and approves and rejects a Problem Solving process.
- Supplier: Works on resolving the assigned Problem Solving process.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

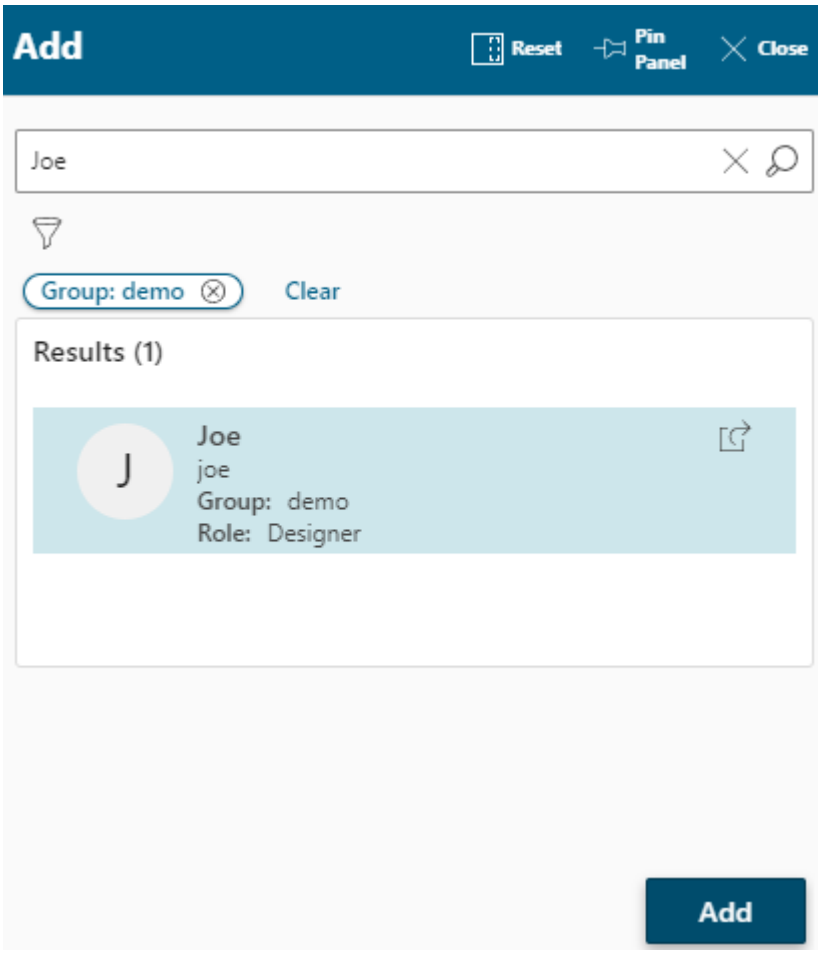
2. Click the **Team** tab.

3. To add team members, do the following:

a. In the **Establish the Team** section, click **Add** ⊕.

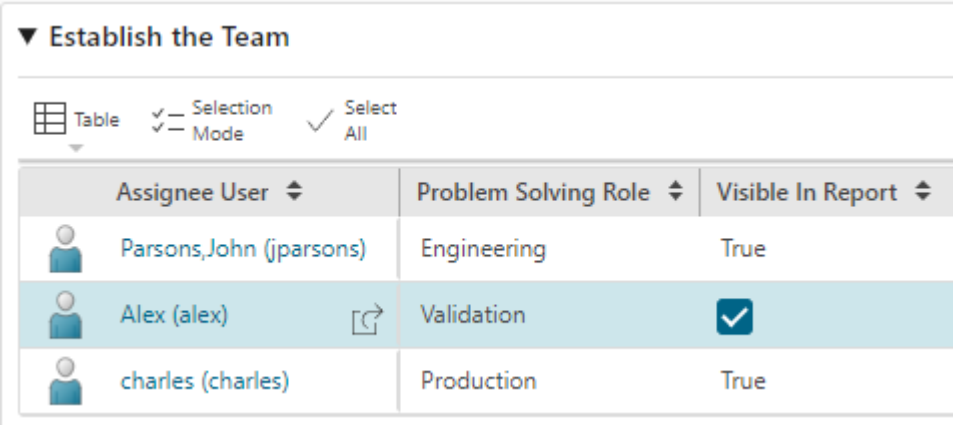
If you have copied a user to the clipboard, you can paste the same user in this section.

b. In the **Add** panel, search for and select the team members, and click **Add**.




c. To specify the role of the team member in resolving the Problem Solving process, in the **Problem Solving Role** column, type the role of the team member.

d. In the **Visible In Report** column, click inside the column, and select the displayed check box to display the user or clear the check box to hide the user in the report.




e. To remove a team member, select the team member, and click **Remove Participant** ⊖.

4. To add an Owner, do the following:

   a. In the **Team Leader (Owner)** section, click **Add** ⊕.

      If you have copied a user to the clipboard, you can paste the same user in this section.

   b. In the **Add** panel, search for and select the user to be assigned as the Owner, and click **Add**.

   c. If the team leader changes, you can replace the existing team leader:

      The Problem Solving process must always have a team leader assigned to it.

      A. Select the existing team leader in the **Team Leader (Owner)** section, and click **Replace** ⇄.

      B. In the **Replace** panel, search for and select the required user, and click **Add**.

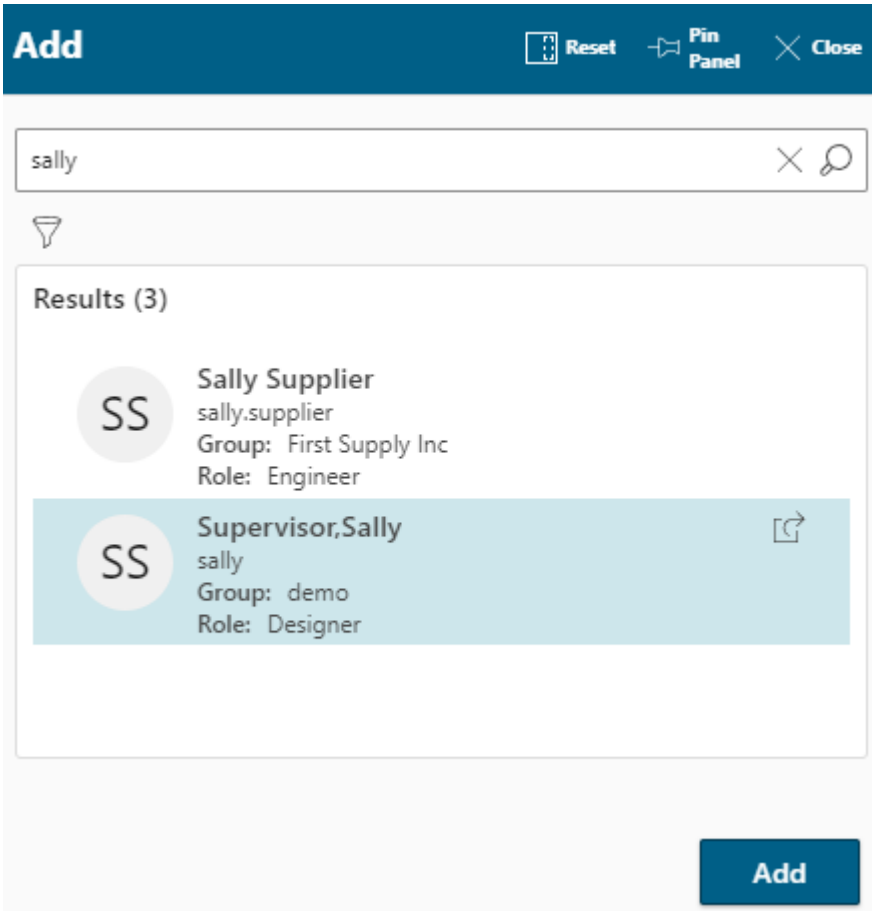
   d. To remove the team leader, select the team leader, and click **Remove Participant** ⊖.

5. To add an Approver, do the following:

   a. In the **Champion (Approver)** section, click **Add** ⊕.

      If you have copied a user to the clipboard, you can paste the same user in this section.

   b. In the **Add** panel, search for and select the user to be assigned as the Approver in the **Users** tab and click **Add**.




c. To remove an approver, select the required approvers, and click **Remove Participant** ⊖.

6. To add a Supplier, do the following:

   a. (Optional) In the **Supplier** section, click **Add** ⊕.

      If you have copied a user to the clipboard, you can paste the same user in this section.

   b. In the **Add** panel, search for and select the user to be assigned as the Supplier in the **Users** tab and click **Add**.

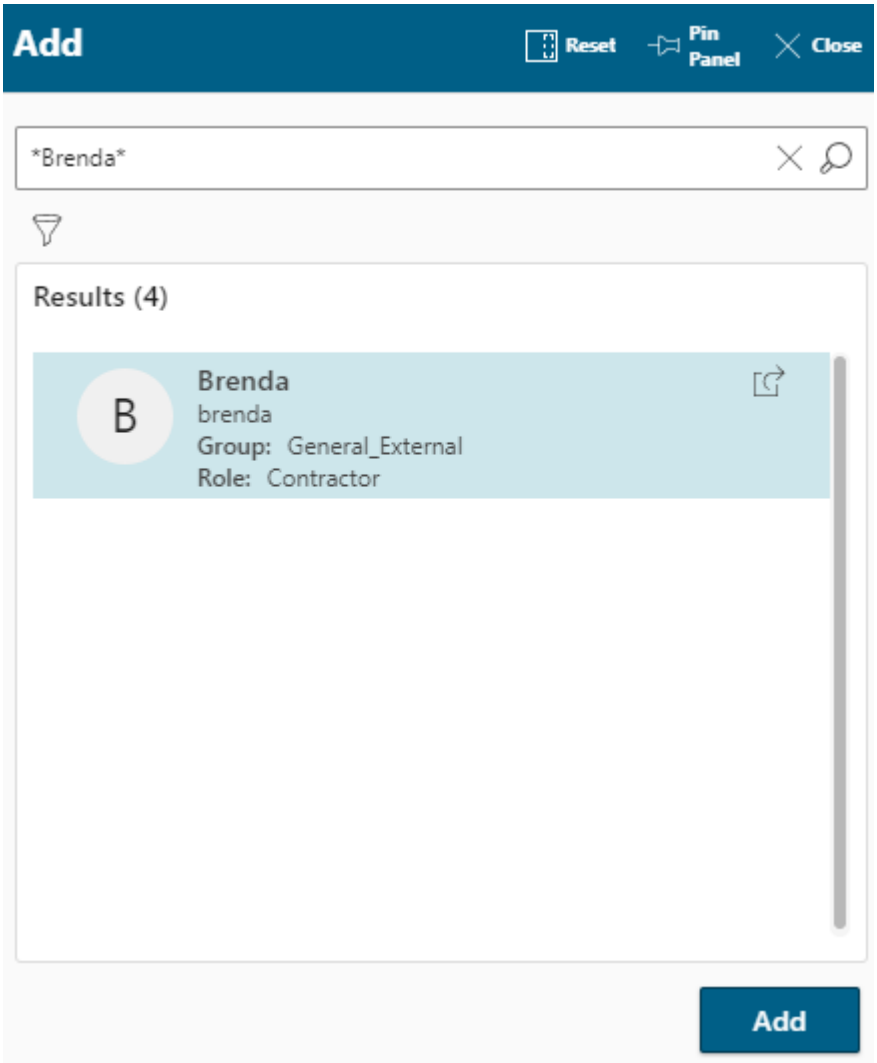
   c. To remove a supplier, select the required suppliers, and click **Remove Participant** ⊖.

7. To add an *External User*, do the following:

   a. In the **External User** section, click **Add** ⊕.

      If you have copied a user to the clipboard, you can paste the same user in this section.

b. In the **Add** panel, search for and select the users to be assigned as the *External Users* in the **Users** tab and click **Add**.




c. To remove *External Users*, select them, and click **Remove Participant** ⊖.

# 9. Describe the Problem Solving process problem in detail

After the Quality Management Representative (QMR) assigns the Owner, Approver, and optionally, a Supplier and other team members, the Owner opens the Problem Solving process and adds the following details:

- Add the defect that has resulted in the Problem Solving process.
- Add the problem items that have resulted in the Problem Solving process.
- Add the items that are affected by the Problem Solving process.
- Add the files that provide supporting information to resolve the Problem Solving process.
- Add the internal and external links that provide supporting information to resolve the Problem Solving process.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

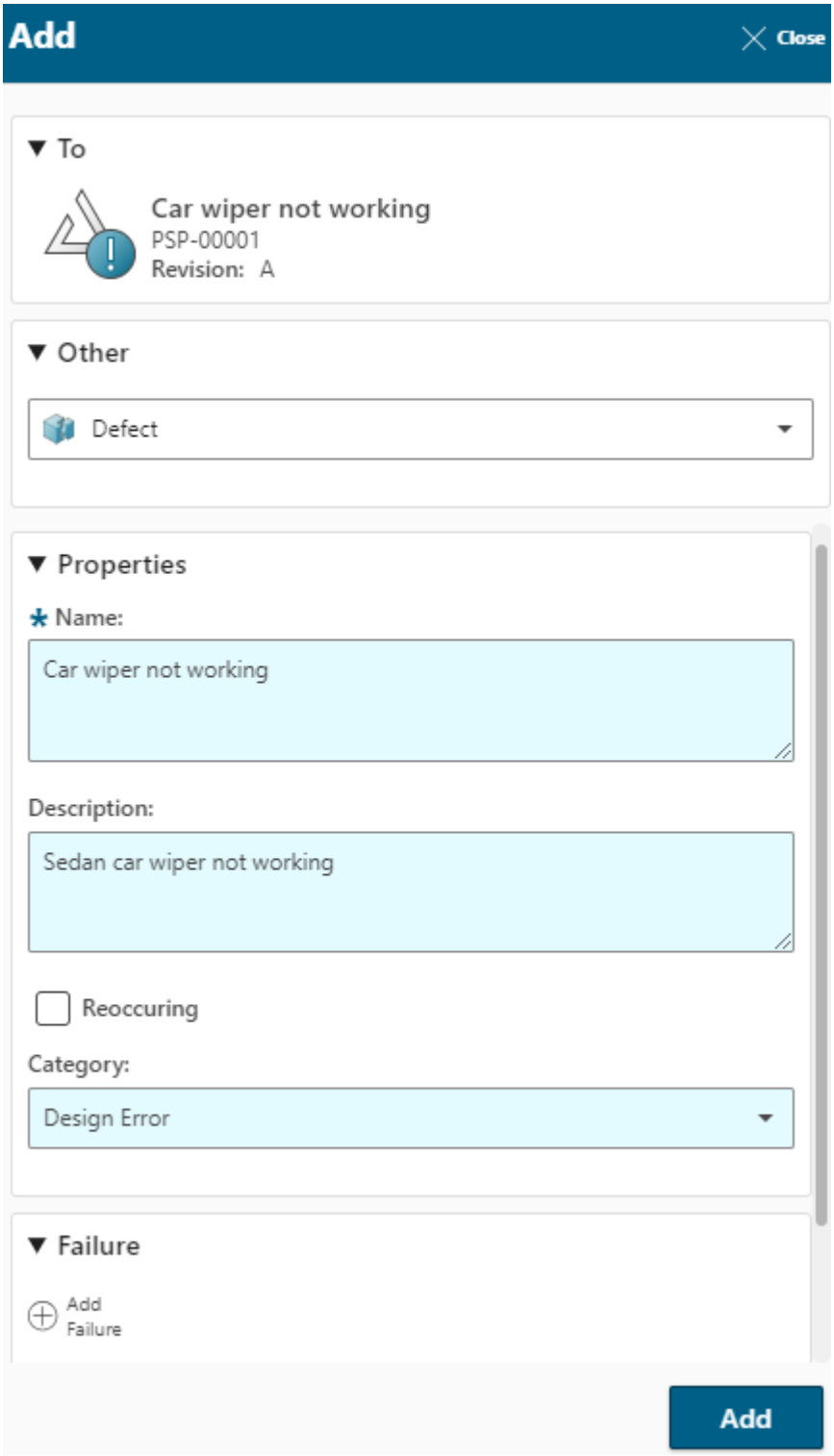
2. Click the **Problem Description** tab.

3. In the **Describe the Problem - Defect** section, click **Add** ⊕ to add the appropriate defect that resulted in the Problem Solving process.

   You can add only one defect in this section because this defect is the reason for creating the Problem Solving process.

   > Note:
   >
   > If you have derived a Problem Solving process from the symptom defect of an issue, the symptom defect is listed here. If you have derived a Problem Solving process from another Problem Solving process, the root cause of the source Problem Solving process is listed here.

4. In the **New** tab, you can create a new defect by specifying a name and description.



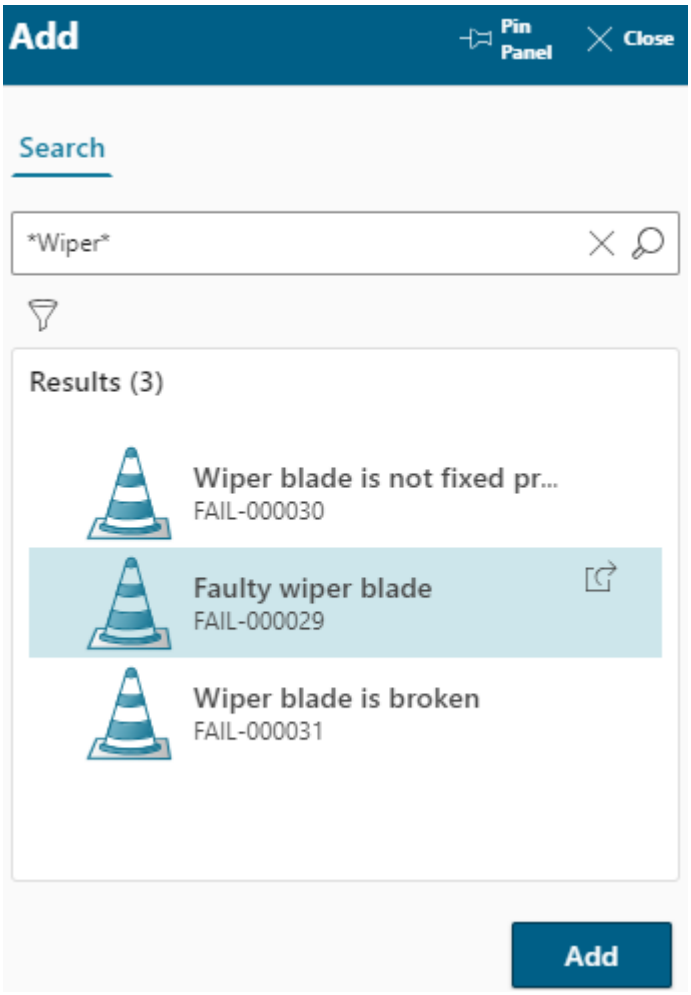

5. (Optional) Select the **Reoccurring** check box if the defect is a reoccurring defect.

6. (Optional) Specify the **Category** of the defect.

7. To add the required failure, do the following:

   a. In the **Failure** section, click **Add Failure** ⊕.

   b. In the **Add** panel, search for and select the required failure.




   c. (Optional) To remove the failure and add another one, select it and click **Remove Failure** ⊖.

   d. To add the selected failure, click **Add**.

8. Click **Add**.

   This defect automatically appears in the **Root Cause Analysis** tab. To this defect, you can add the following:

   - Failure code from the failure catalog
   - Defective item

- **Is/Is Not questions**
- **Document and image attachments**
- Quality actions
- **Is/Is Not questions**

9. To delete the problem description defect, do the following:

   a. Select it, and click **Delete** ✕.

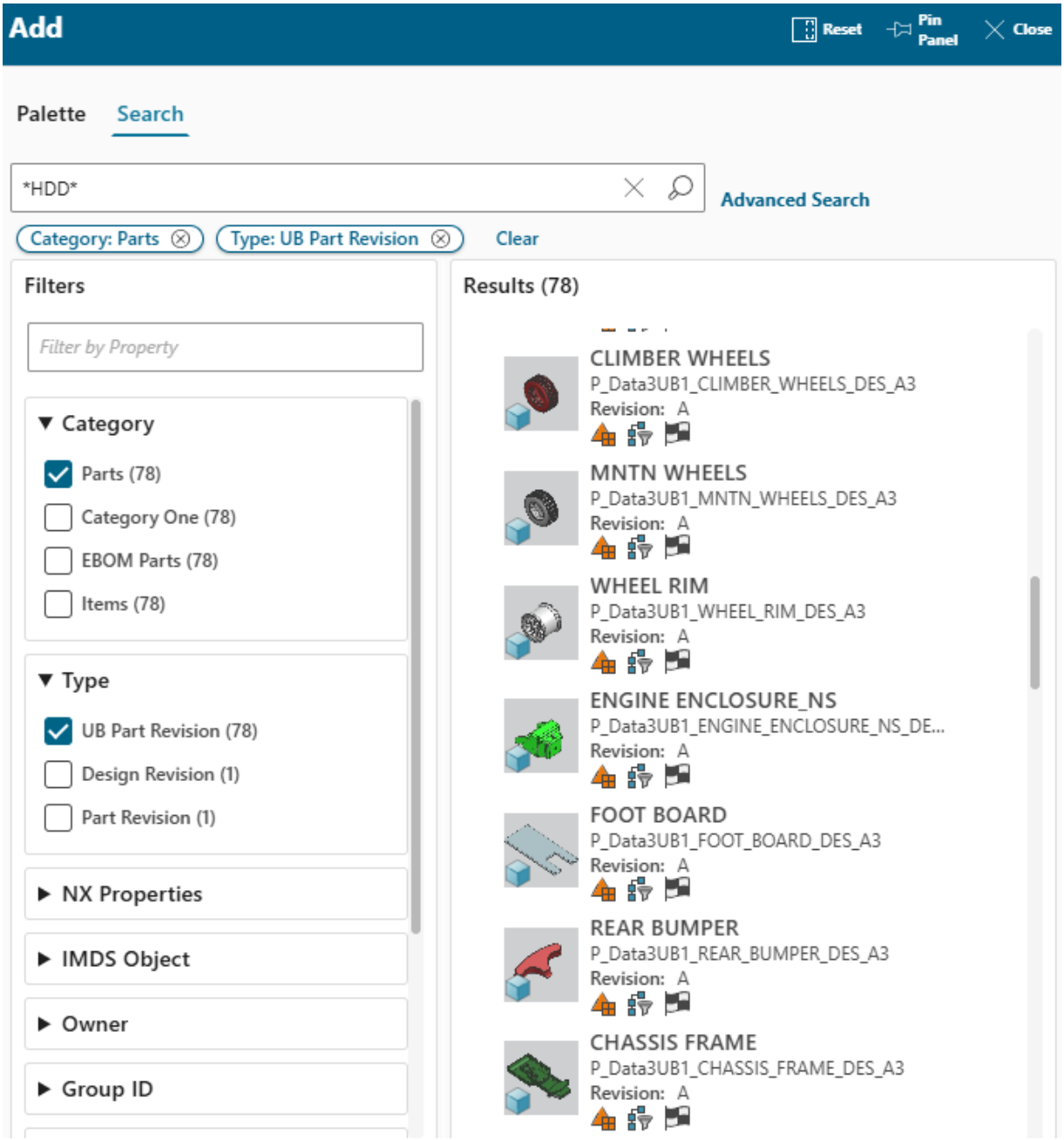
   b. In the confirmation message, click **Delete**.

   > Note:
   >
   > You can delete the problem description defect only if you have not added a 5Why, Ishikawa, or defect in the **Root Cause Analysis** tab.

10. To add the required defective item, open the problem description defect, and do the following:

    a. In the **Defective Item** section, click **Add** ⊕.

    b. In the **Add** panel, search for and select the required defective item. Click **Add**.




c. To replace a defective item, select it and click **Replace** ⇄.

d. In the **Replace** panel, search for and select the required defective item, and click **Add**.

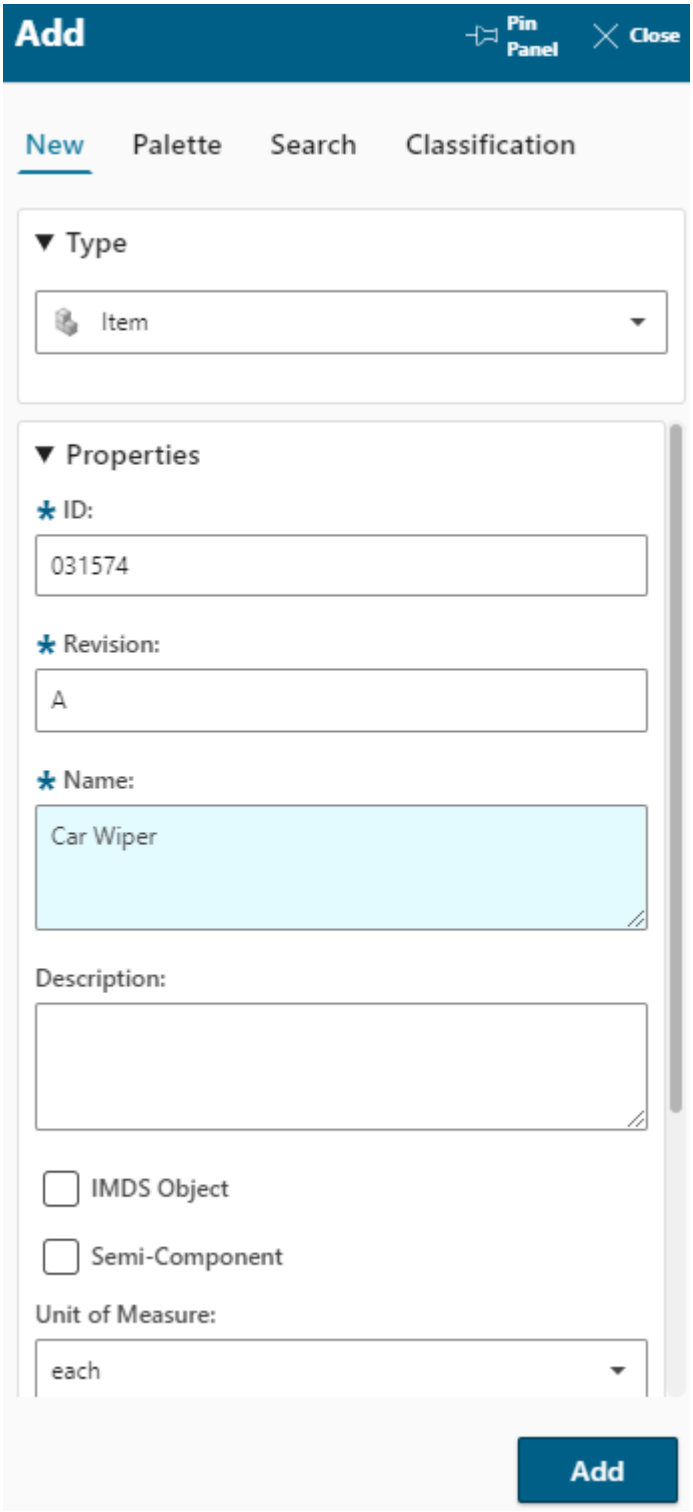
e. To remove a defective item, select it and click **Remove** ⊖.

11. To add the problem items that are causing the Problem Solving process, do the following:

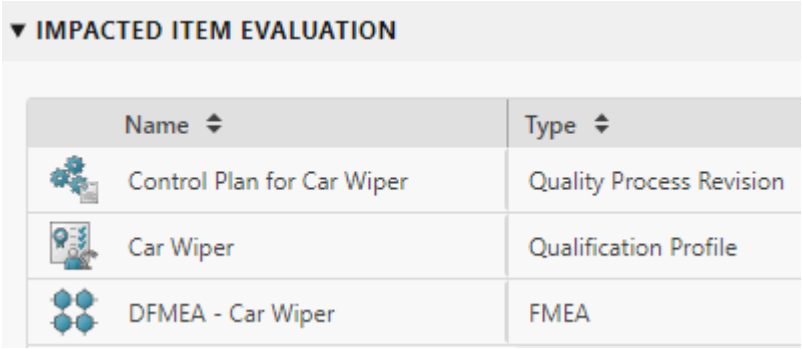
a. In the **Problem Items** section, click **Add to** ⊕.

b. In the **Add** panel, select the type of item and specify the required information to create the problem item.

You can also use the **Palette** tab or the **Search** tab to locate the required problem items.

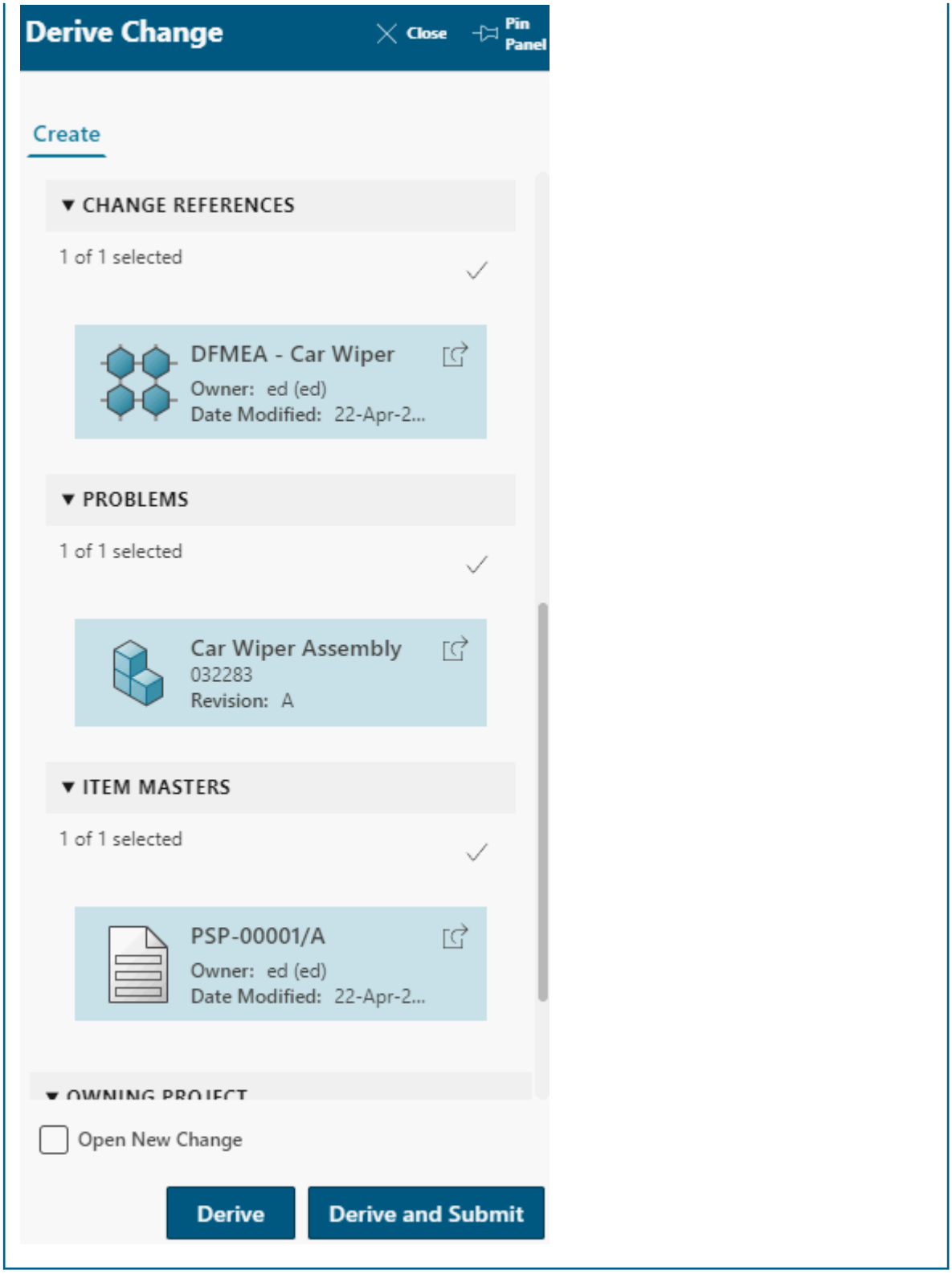


When you add a problem item, its associated objects are populated in the **Impacted Item Evaluation** section. This provides an overview of the other areas that are impacted by the problem item, such as the control plans, qualification profiles, Failure Mode and Effects Analysis (FMEA), or projects that are impacted by this item. Quality audits appear in this section if they have a common vendor with the problem item. You can open the associated objects, review them, and then decide the next step.



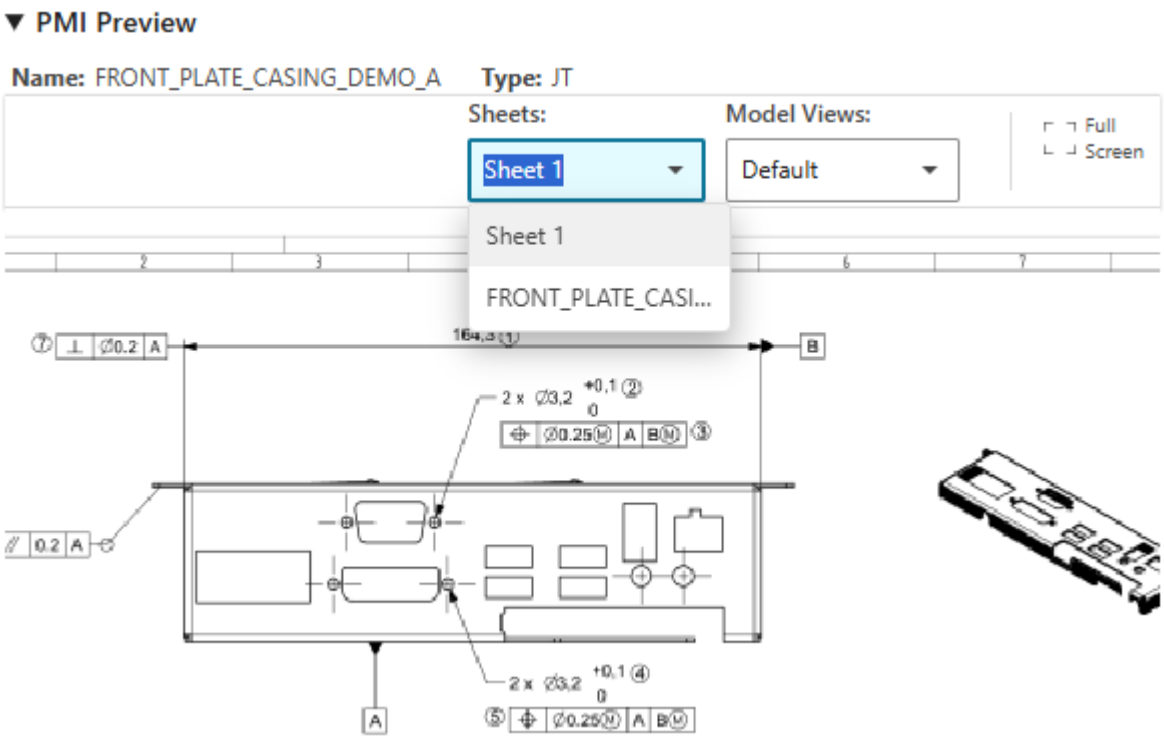

Example:

When you add the **Car Wiper Assembly** as a problem item, its associated design FMEA is populated in the **Impacted Item Evaluation**. After opening the design FMEA and reviewing it, you decide to revise the design FMEA. To do this, drag the design FMEA to the **Reference Items** section, and derive a change request. In the **Derive Change** panel, the design FMEA is populated in the **Change Reference** section. When you open the derived change request, the design FMEA is added as a **Reference Item**, and the source Problem Solving process is added in **Problem Reports**.




In the **PMI Preview** section, you can view associated part drawings of the Inspection Definitions added to the Problem Solving process as problem items. To work with the part drawings in the **PMI Preview** section, you can use the following options:

- If the part has multiple sheets, you can select the required sheet from the list of sheets.




- From the **Model Views** list, select the type of view for the part. The view of the part is positioned to the selected view. The different views allow you to easily identify which section of the part is associated with a specific balloon. This is especially helpful when the part has multiple balloons that cover the geometry of the part, and you need to view only a specific section.


- Use the roller on your mouse to zoom in and out of the part drawing. Hold the **Ctrl** key and drag with the left mouse button to move the drawing in the work area.

> Note:
>
> To do this, the administrator must install Control Plan. For more information, see *Control Plan* and *Teamcenter Quality — Deployment and Administration* in the Teamcenter documentation.

12. To add the items that are affected by the Problem Solving process, do the following:

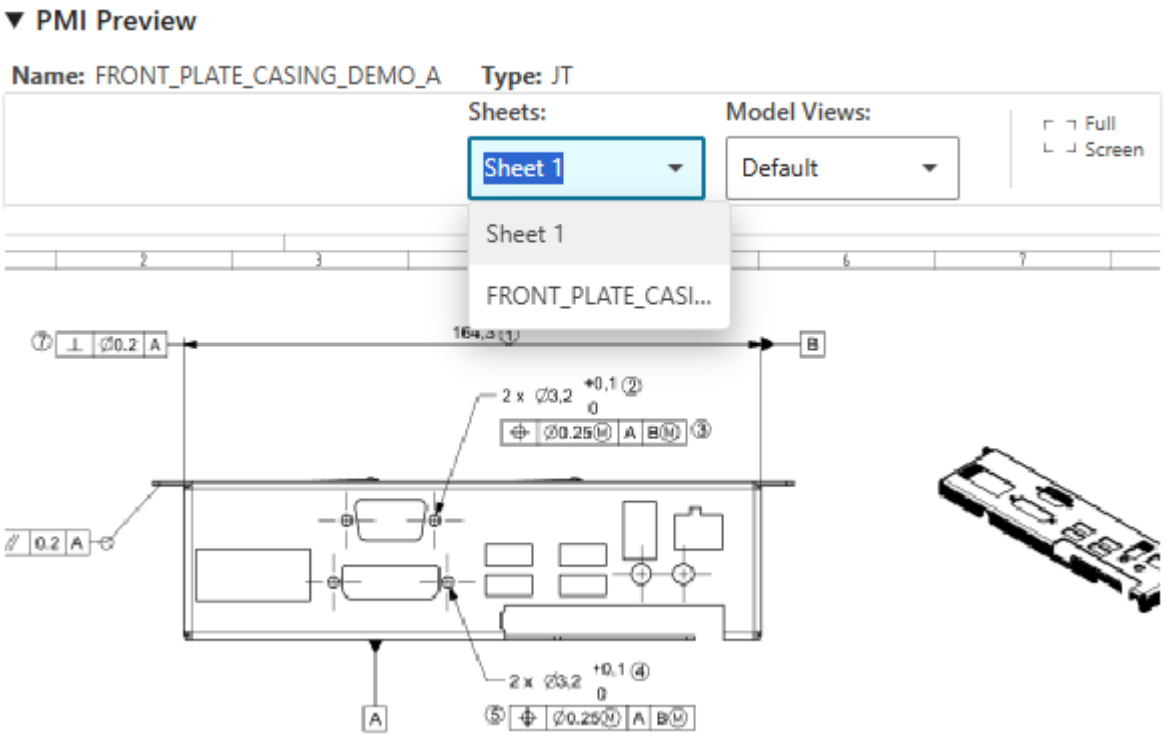
    a. In the **Affected Items** section, click **Add to** ⊕.

    b. In the **Add** panel, select the type of item and specify the required information to create the affected item.

    You can also use the **Palette** tab or the **Search** tab to locate the required affected items.

    In the **PMI Preview** section, you can view associated part drawings of the Inspection Definitions added to the Problem Solving process as affected items. To work with the part drawings in the **PMI Preview** section, you can use the following options:

    - If the part has multiple sheets, you can select the required sheet from the list of sheets.




- From the **Model Views** list, select the type of view for the part. The view of the part is positioned to the selected view. The different views allow you to easily identify which section of the part is associated with a specific balloon. This is especially helpful when the part has multiple balloons that cover the geometry of the part, and you need to view only a specific section.

- Use the roller on your mouse to zoom in and out of the part drawing. Hold the **Ctrl** key and drag with the left mouse button to move the drawing in the work area.

> Note:
>
> To do this, the administrator must install Control Plan. For more information, see *Control Plan* and *Teamcenter Quality — Deployment and Administration* in the Teamcenter documentation.

13. To add the reference items that provide more information about the problem to the Owner, do the following:

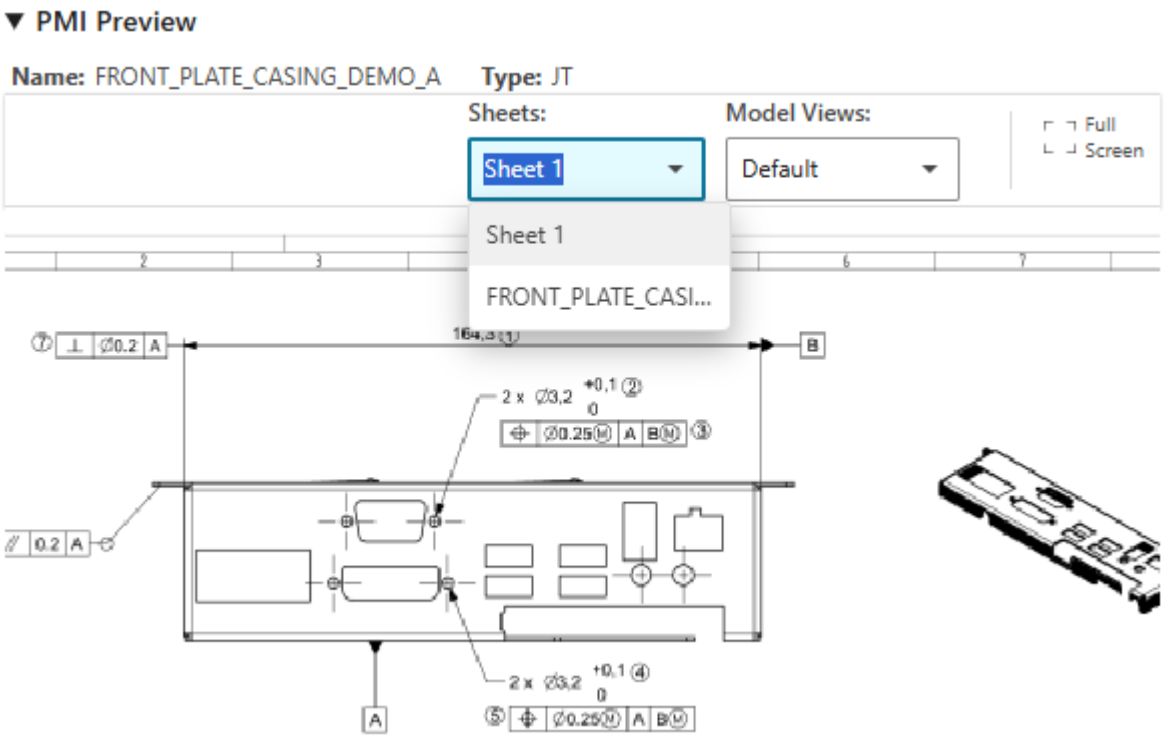
    a. In the **Reference Items** section, click **Add to** ⊕.

    b. In the **Add** panel, select the type of item and specify the required information to create the reference item.

    You can also use the **Palette** tab or the **Search** tab to locate the required reference items.

    In the **PMI Preview** section, you can view associated part drawings of the Inspection Definitions added to the Problem Solving process as reference items. To work with the part drawings in the **PMI Preview** section, you can use the following options:

    - If the part has multiple sheets, you can select the required sheet from the list of sheets.



- From the **Model Views** list, select the type of view for the part. The view of the part is positioned to the selected view. The different views allow you to easily identify which section of the part is associated with a specific balloon. This is especially helpful when the part has multiple balloons that cover the geometry of the part, and you need to view only a specific section.

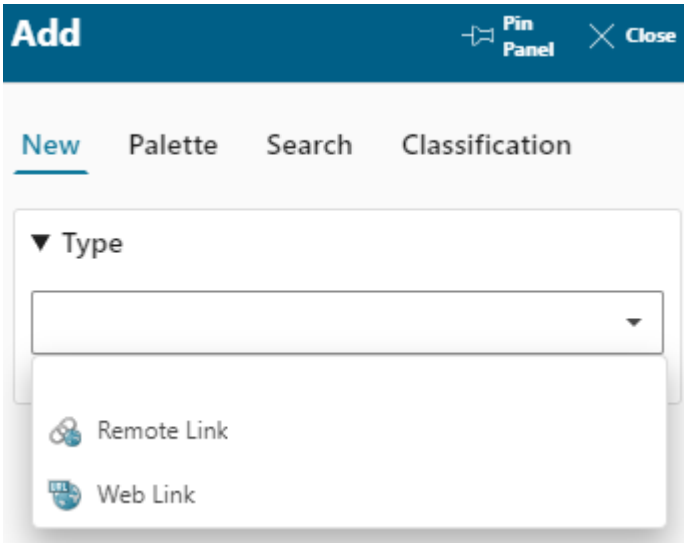

- Use the roller on your mouse to zoom in and out of the part drawing. Hold the **Ctrl** key and drag with the left mouse button to move the drawing in the work area.

> Note:
>
> To do this, the administrator must install Control Plan. For more information, see *Control Plan* and *Teamcenter Quality — Deployment and Administration* in the Teamcenter documentation.

14. To add links to information available on an external site, do the following:

    a. In the **Web Links** section, click **Add to** ⊕.

    b. In the **Add** panel, select the type of link you want to add.




You can create a remote link to view the external element within Teamcenter. For example, you can create a link from a Problem Solving process in Teamcenter to a software defect in the external application. Once this is done, you can view the software defect from Teamcenter.

> Caution:
>
> The administrator must install Linked Data Framework in the Teamcenter environment for you to be able to create a remote link. If Linked Data Framework is not installed, you can create only Web links.

You can create a Web link to provide quick access to information available on an external site.

c. If you chose to add a **Remote Link**, update the properties as follows:

   A. Select the project from the **Project** list.

   B. Click the **Existing** option.

   C. To select a resource in the external application, click **Add** ⊕ next to the **Remote Reference** label.

      Log on to the external application if prompted and select an existing resource in that application. This action takes you back to the **Add** panel.

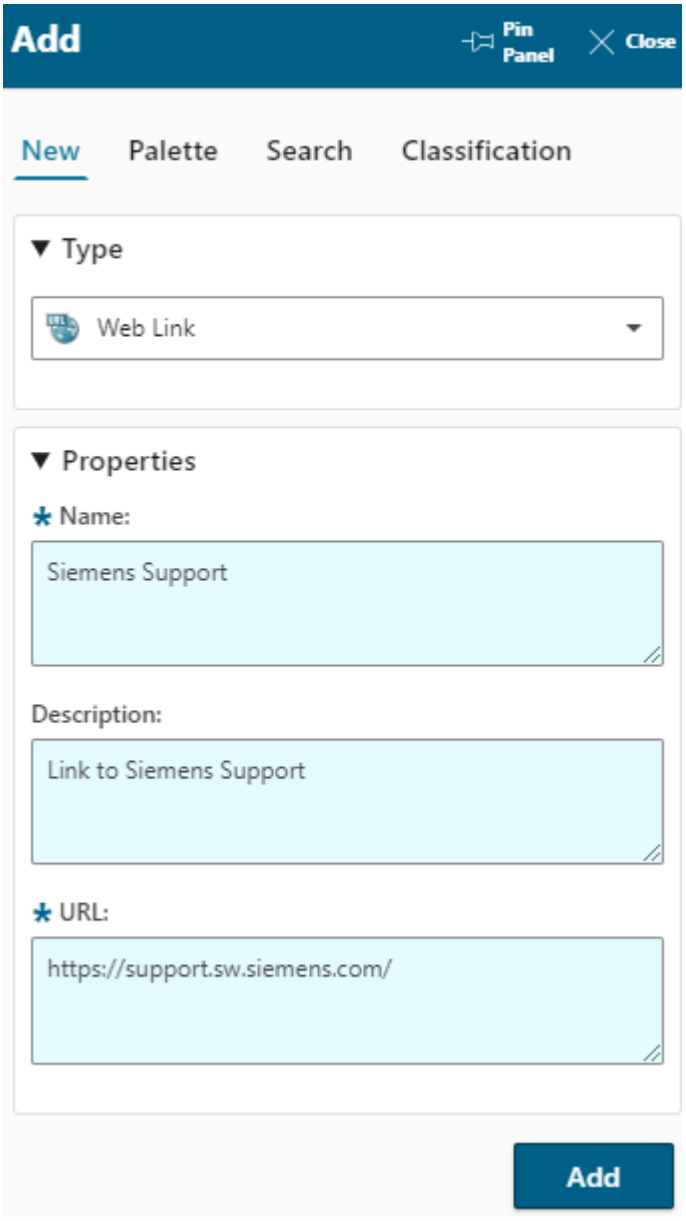
   D. From the **Relation** list, select the relation you want to create between Teamcenter and the external element.

Note:

If only one relation is applicable, this relation is used automatically. Manual selection is not required.

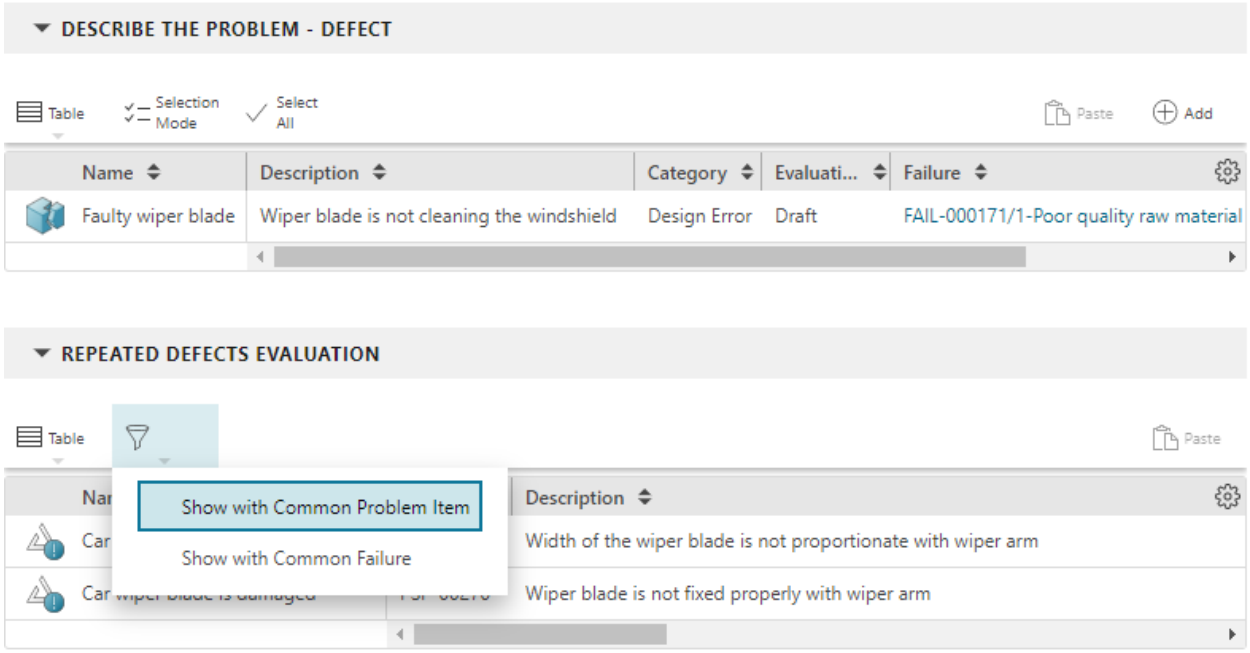
E. Click **Add** to create the link.

d. If you chose to add a **Web Link**, specify the name of the link in the **Name** box and the required URL in the **URL** box, and then click the **Add** button.

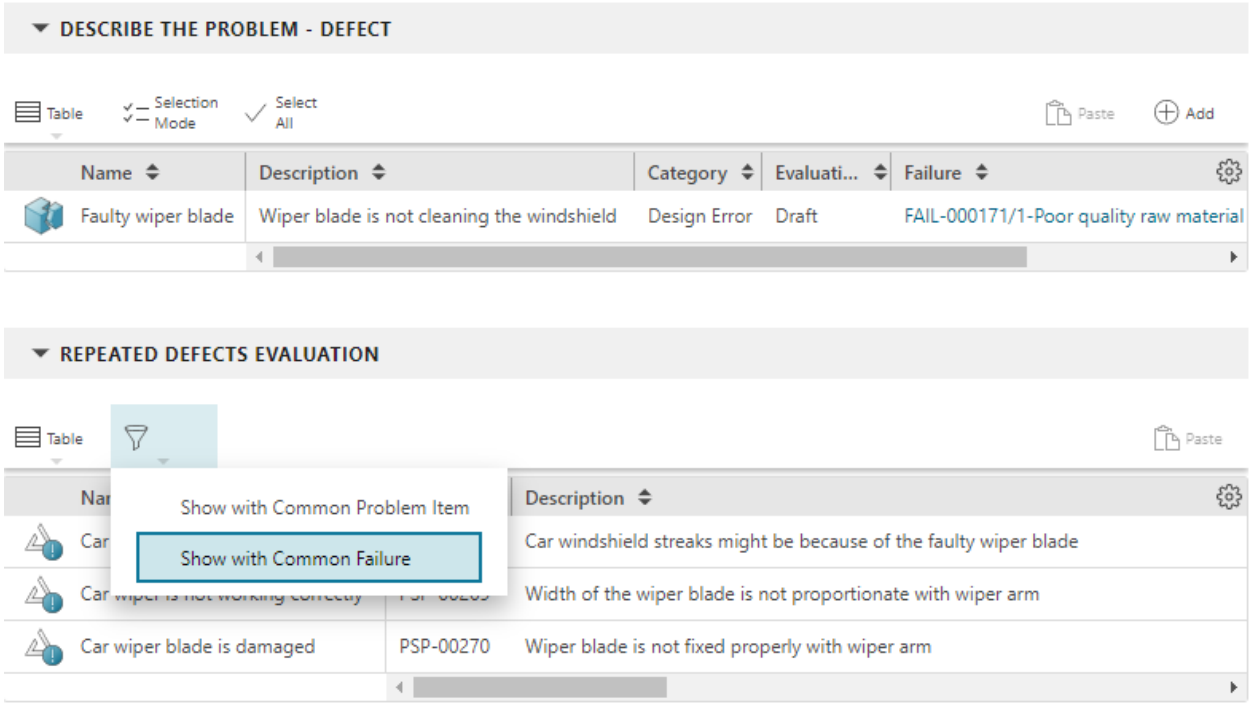



15. In the **Repeated Defects Evaluation** section, you can view the related Problem Solving processes by filtering them with the following criteria:

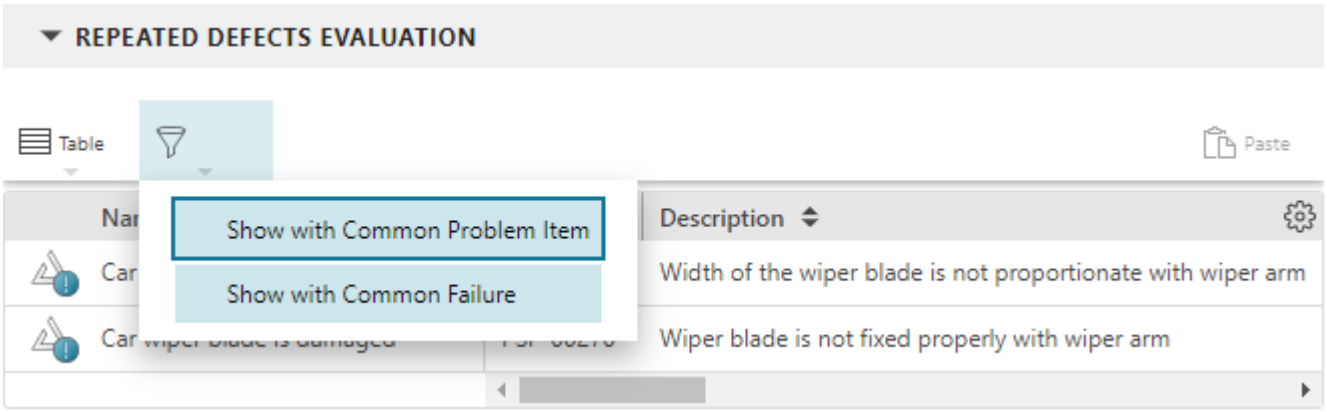
- **Common problem items:** Click the **Filter** icon and select **Show with Common Problem Item** to view all existing Problem Solving processes that have the same problem item.




- **Common failures:** Click the **Filter** icon and select **Show with Common Failure** to view all existing Problem Solving processes that have the same failure attached to the problem description defect.



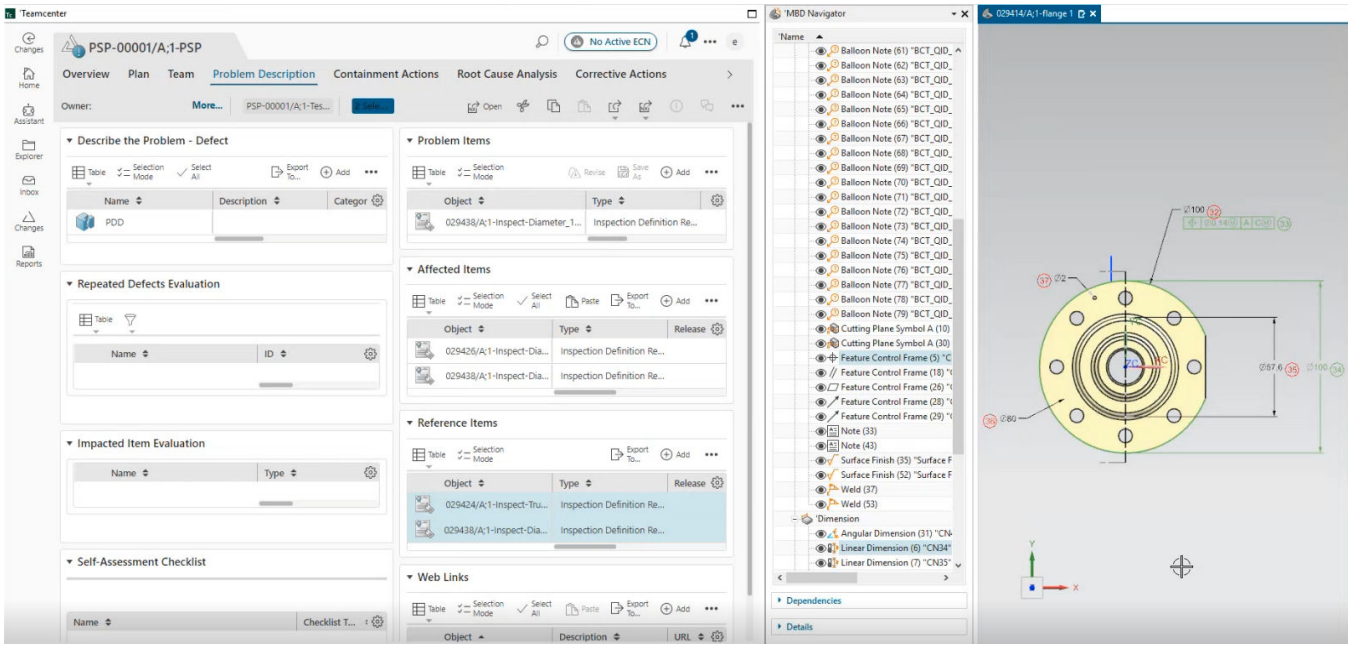
If you select both filter criteria, you can view all existing Problem Solving processes that have the same problem items and failures attached to the respective problem description defects. If you do not select any filter criteria, this section displays all existing Problem Solving processes with common problem items attached to Problem Solving processes and failures attached to the respective problem description defects.



# 10. Cross-probing of Problem Solving PMI in Active Workspace embedded in NX

When working on a Problem Solving process in **Active Workspace** embedded in NX, you can cross-probe between the PMI in the graphics window in NX, the **Model-Based Definition (MBD) Navigator** in NX, and the Inspection Definitions added as problem items, affected items, and reference items in the **Problem Description** tab of a Problem Solving process. With cross-probing, you can select an object in one application, resulting in the corresponding object being selected in other applications. When you select an Inspection Definition, its corresponding dimension is highlighted in the graphics window, which allows you to identify the dimension related to the Inspection Definition.

If you select a single or multiple Inspection Definitions in the Problem Solving process, the corresponding PMI objects are highlighted in the graphics window and the **MBD Navigator**. Also, if you select a single or multiple PMI objects in the graphics window or **MBD Navigator**, the corresponding Inspection Definitions are highlighted in the Problem Solving process. If you clear any selections, the corresponding selections are also cleared.



# 11. Define the Problem Solving process containment actions

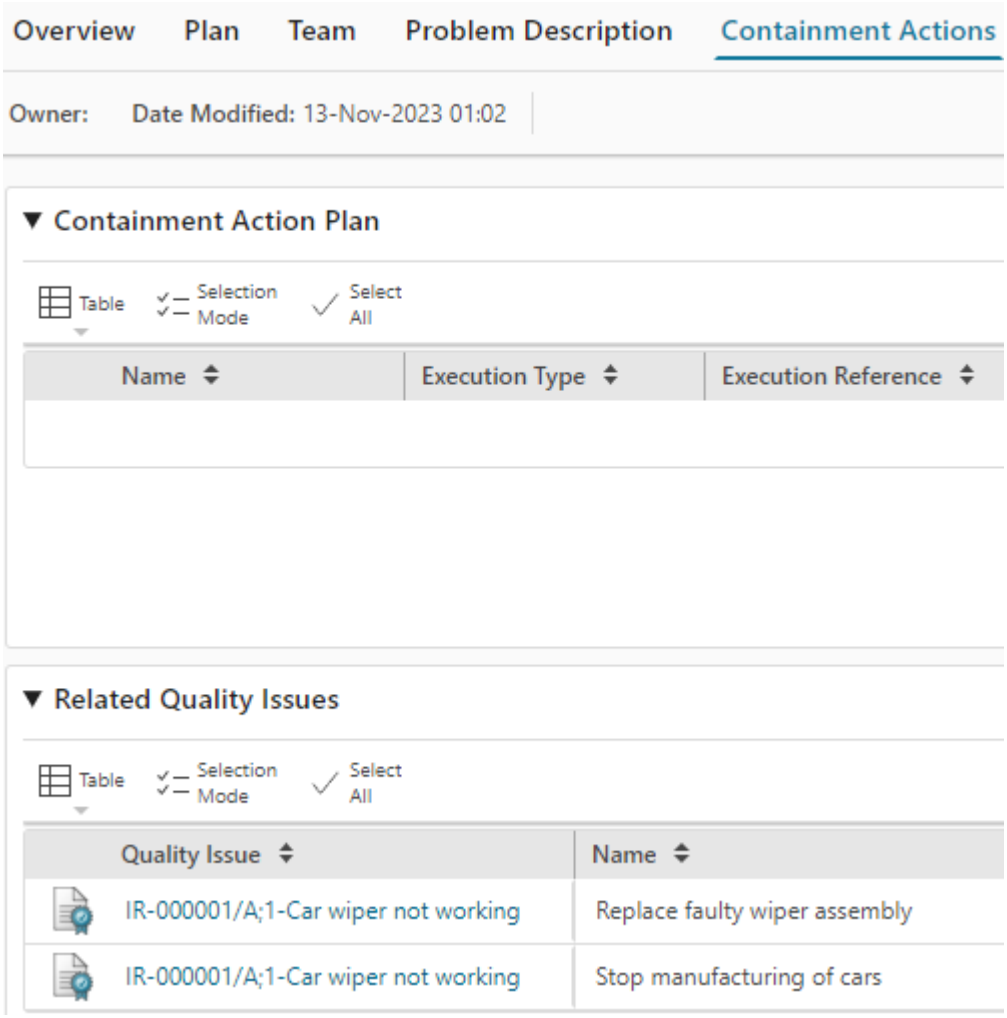
After defining the Problem Solving process problem in detail, the Owner must define the interim containment actions that must be performed to stop the current problems. A combination of these containment actions comprises the containment action plan of the Problem Solving process. For example, consider the following problem: The car wiper is not working. The containment actions to stop this problem are to stop all wiper assembly operations and to stop the production of cars.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Containment Actions** tab.

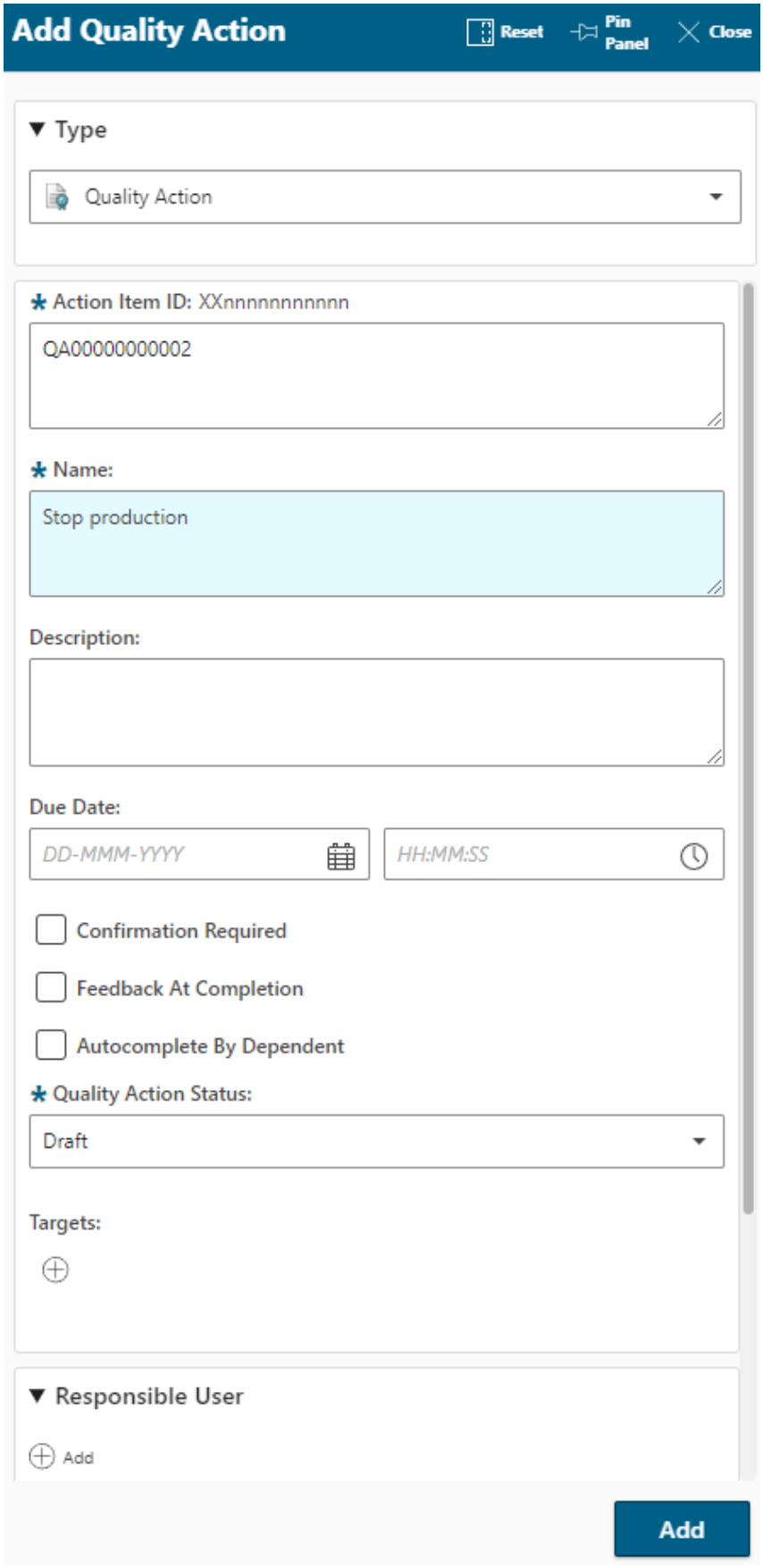
   When you derive a Problem Solving process from an issue, the issue's containment actions are populated in the **RELATED QUALITY ISSUES** section. You can use this information as input while creating containment actions for the Problem Solving process.




3. In the **Containment Action Plan** section, click **Add to** ⊕ and click one of the following:

   - Click **Add Quality Action** to create a new quality action as follows:

     a. In the **Add Quality Action** panel, specify a name for the quality action and optionally enter a description.



b. (Optional) Specify a due date and select other options as appropriate.

c. From the **Quality Action Status** menu, select a status. By default, it is **Draft**.

d. In the **Responsible User** section, click **Add Responsible User** and do the following.

   A. In the **Add Responsible User** panel, type a name or title to filter the list of users.

   B. Select the required team member and click **Add**.

e. In the **Targets** box, click **Add** ⊕ to add targets to the quality action.

f. (Optional) Select **Confirmation Required** to make the responsible user confirm the action.

g. (Optional) Select **Feedback At Completion** to collate feedback from the responsible user after implementing the quality action.

h. Select the **Autocomplete By Dependent** check box if dependent quality actions can close the parent quality action.

   Selecting this check box allows you to avoid performing the manual step of closing the parent quality action.

i. In the **Projects** section, click **Add Project** and do the following.

   A. In the **Add Project** panel, type the name of a project to filter the list of projects.

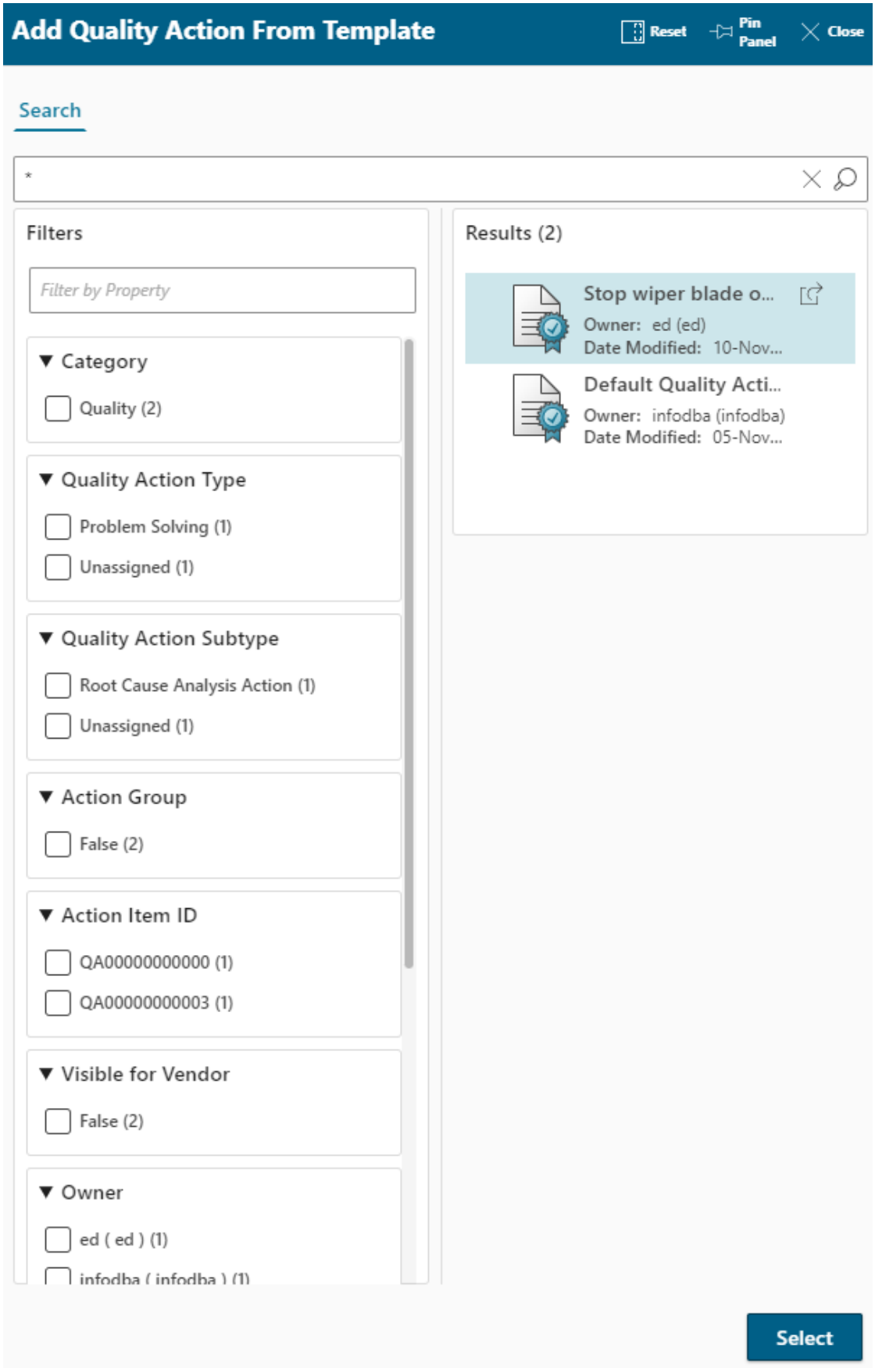
   B. Select the required projects, and click **Assign**.

      The quality action is assigned to the selected projects.

j. To create the quality action, click **Add**.

- Click **Add Quality Action from Template** to create a new quality action from a template as follows.

  a. In the **Add Quality Action From Template** panel, specify the filter criteria in the **Filters** box.

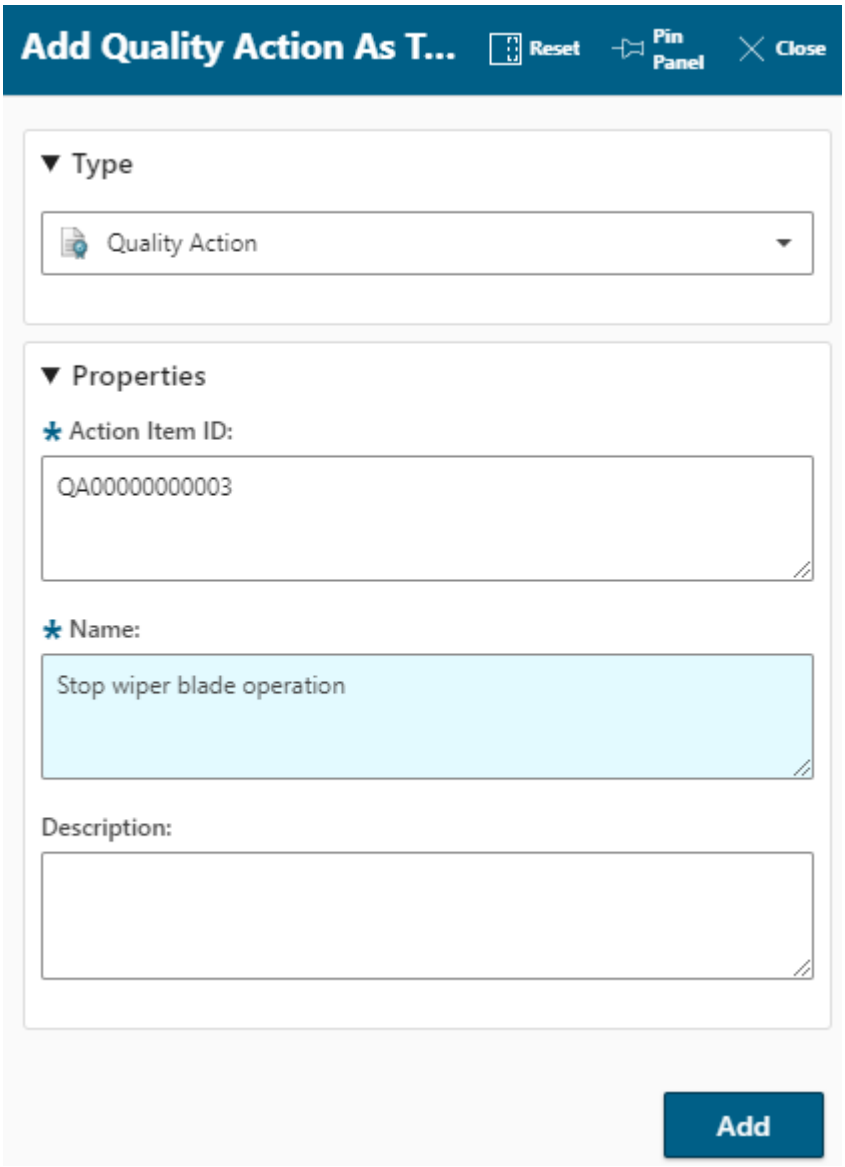


b. Select the required template in the **Results** section, and click **Select** to specify the details.

c. In the **Add Quality Action From Template** panel, specify the required information to create the quality action.

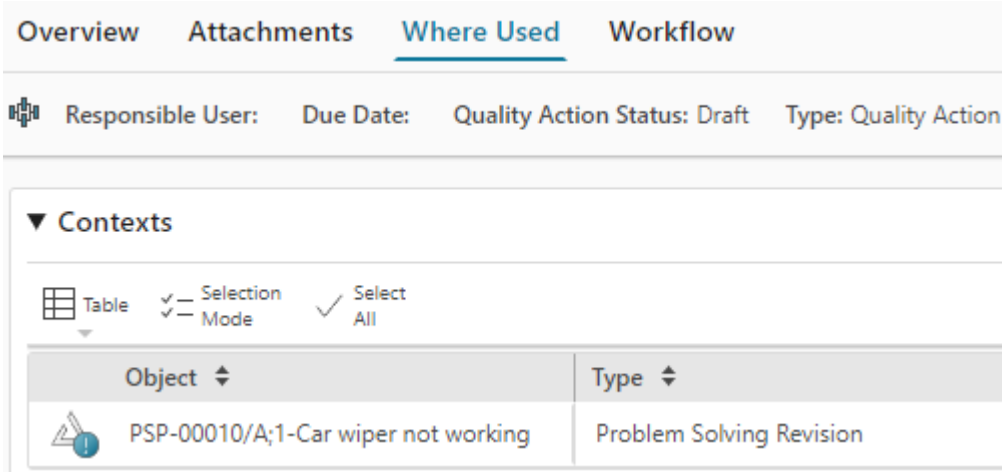
- Click **Add Quality Action as a Template** to create a new quality action and set it as a template as follows:

a. In the **Add Quality Action As A Template** panel, specify a name for the quality action and optionally enter a description.




b. Click **Add**.

When you open the quality action, you can view the parent Problem Solving process in the **Where Used** tab.



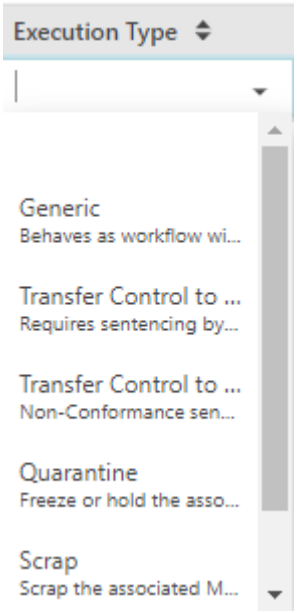

4. After adding the required quality actions, you can assign responsible users as follows:

   a. Select the required quality actions and click **Assign Responsible User**.

   b. In the **Assign Responsible User** panel, type a name or title to filter the list of users.

   c. Select the required user and click **Add**.

5. To specify the **Execution Type** of the quality action, click in the **Execution Type** column, and select the required value from the list.



In this column, you can specify the type of action to be performed. For example, you can choose to hold back the part that is causing the issue.

6. To specify the **Execution Reference** of the quality action, do the following:

   a. Select the quality action and choose **More Commands** ••• > **Manage** > **Assign Execution Reference**.

   b. To specify the part that is impacted by the quality action, either create the part or search for and select the part.

      For example, if you are facing an issue with the car wiper blade, you can assign the car wiper blade as the **Execution Reference** of the quality action.

   c. Click **Assign**.

7. To display the containment action in the Problem Solving report, do the following:

   a. Choose **More Commands** ••• > **Edit** > **Start Edit**.

   b. In the **Visible In Report** column, click inside the column, and select the displayed check box to display the containment action or clear the check box to hide the containment action in the report.

   c. Choose **More Commands** ••• > **Edit** > **Save Edits**.

   For more information, see *Quality Actions* in the Teamcenter documentation.

8. After you create the containment action, your manager might review it and give feedback that the action is a planned corrective action or a preventive action rather than a containment action. In this case, you can convert the containment action to a planned corrective action or preventive action by changing its subtype as follows:

   a. In the **Containment Actions** tab, select the required containment action, and choose **More Commands** ••• > **Manage** > **Move Quality Action**.

   b. Do one of the following:

      - To convert a containment action to a planned corrective action, from the **Quality Action Subtypes** list, select **Corrective Action**.

      - To convert a containment action to a preventive action, from the **Quality Action Subtypes** list, select **Preventive Action**.

   c. Click **Change**.

Depending on your selection, the containment action is either moved to the **Corrective Actions** tab or the **Preventive Actions** tab as a planned corrective action or a preventive action, respectively.

# 12. Perform a root cause analysis

## How to perform a root cause analysis of a Problem Solving process

After defining the containment actions to be performed, the Owner can use the **Is/Is Not methodology** to define the problem statement, and then perform a root cause analysis to find the source of the problem. This analysis can be done in any of the following methods:

- **5Why**
- **Ishikawa**
- **Defects**
- **Checklists**

## Define the problem statement by using the Is/Is Not methodology

### How to use the Is/Is Not methodology to define the problem statement

The Is/Is Not methodology is a problem-solving technique used to define the problem statement. It involves asking a series of questions to determine what the problem is and what is not. It is used to define and clarify the scope of a problem.

The Is questions help to define the problem by identifying its characteristics, symptoms, and effects. These questions focus on what the problem is. The Is Not questions help to eliminate potential causes by identifying what is not a problem. These questions focus on ruling out possible causes that may seem related to the problem but are unrelated. By systematically asking Is and Is Not questions, the problem statement can be defined, leading to effective problem resolution.

> Note:
>
> It is important to ask open-ended questions and gather as much information as possible during the Is/Is Not analysis. It is also important to regularly review and update the Is/Is Not questions as the problem evolves to ensure that they remain accurate and relevant.

You can use the following template to define the Is and Is Not questions:

| Question | Is | Is Not |
|---|---|---|
| What | | |
| Where | | |
| When | | |

| Question | Is | Is Not |
|---|---|---|
| Who | | |
| How | | |
| How many | | |
| How often | | |

After using the Is/Is Not methodology, you can create a well-defined problem statement.

Example:

Consider a scenario where you work for an automotive manufacturing company, and you have received customer complaints about the windshield wipers not functioning properly on a specific model of cars. To address this issue, you can apply the Is/Is Not methodology to define the exact problem of the windshield wiper.

1. Start by clearly defining the problem statement: The problem is that the windshield wipers on a specific model of cars are not functioning properly.

2. Ask "What is the problem?" to identify the characteristics and attributes of the problem. For example, you might ask:

   - Are all cars of the specific model affected or only a subset?
   - Are the windshield wipers not moving at all or are they moving erratically?
   - Are there any specific weather conditions or driving situations in which the problem occurs?
   - Are the windshield wipers on a specific car model leaving streaks and not effectively clearing the windshield?
   - Are the windshield wipers worn-out?
   - Are the windshield wipers not moving due to insufficient pressure applied by the wiper arms?
   - Are the windshield wipers not moving due to electrical issues in the wiper motor?
   - Are the windshield wipers not moving due to a malfunctioning wiper control switch?
   - Are the windshield wipers not moving due to a misalignment or improper installation of the wiper blades?

3. Ask "What is not the problem?" to eliminate any irrelevant or unrelated factors. For example, you might ask:

   - Are the windshield wiper problems caused by electrical issues in the car's wiring system?
   - Are the problems related to the windshield wiper blades themselves, such as wear and tear or improper installation?
   - Are the problems caused by external factors such as debris or ice obstructing the movement of the wipers?
   - Are the windshield wiper problems caused by a faulty windshield washer fluid pump?
   - Are the windshield wiper problems caused by a damaged windshield?
   - Are the windshield wiper problems due to improper use or maintenance of the wiper blades?
   - Are the windshield wiper problems caused by a manufacturing defect in the wiper blades?
   - Are the windshield wiper problems caused by a design flaw in the wiper system?

4. Continue asking "What is the problem?" and "What is not the problem?" to further refine the understanding of the problem. This iterative process helps you narrow down the possible causes and focus on the root issue.

5. Document the findings and use them as a basis for problem-solving and decision-making. This documentation can include a clear description of the problem, the identified characteristics, and the factors that have been ruled out as not being the problem.

6. By using the Is/Is Not methodology, you can gain a deeper understanding of the windshield wiper problems. It helps you identify the specific areas to investigate, eliminates irrelevant factors, and facilitates effective communication and collaboration with the quality team and other stakeholders. This analysis can then be used to implement appropriate corrective actions, such as component replacements, design modifications, or manufacturing process improvements, to address the windshield wiper problems and enhance the overall quality of the cars.

## Add the Is/Is Not questions that define the Is/Is Not analysis

Add the Is/Is Not questions by asking "What is the problem?" and "What is not the problem?" to further refine the understanding of the problem. This iterative process helps you narrow down the possible causes and come up with a problem statement. A well-defined problem statement helps you to identify the root cause of the Problem Solving process.

## Procedure

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

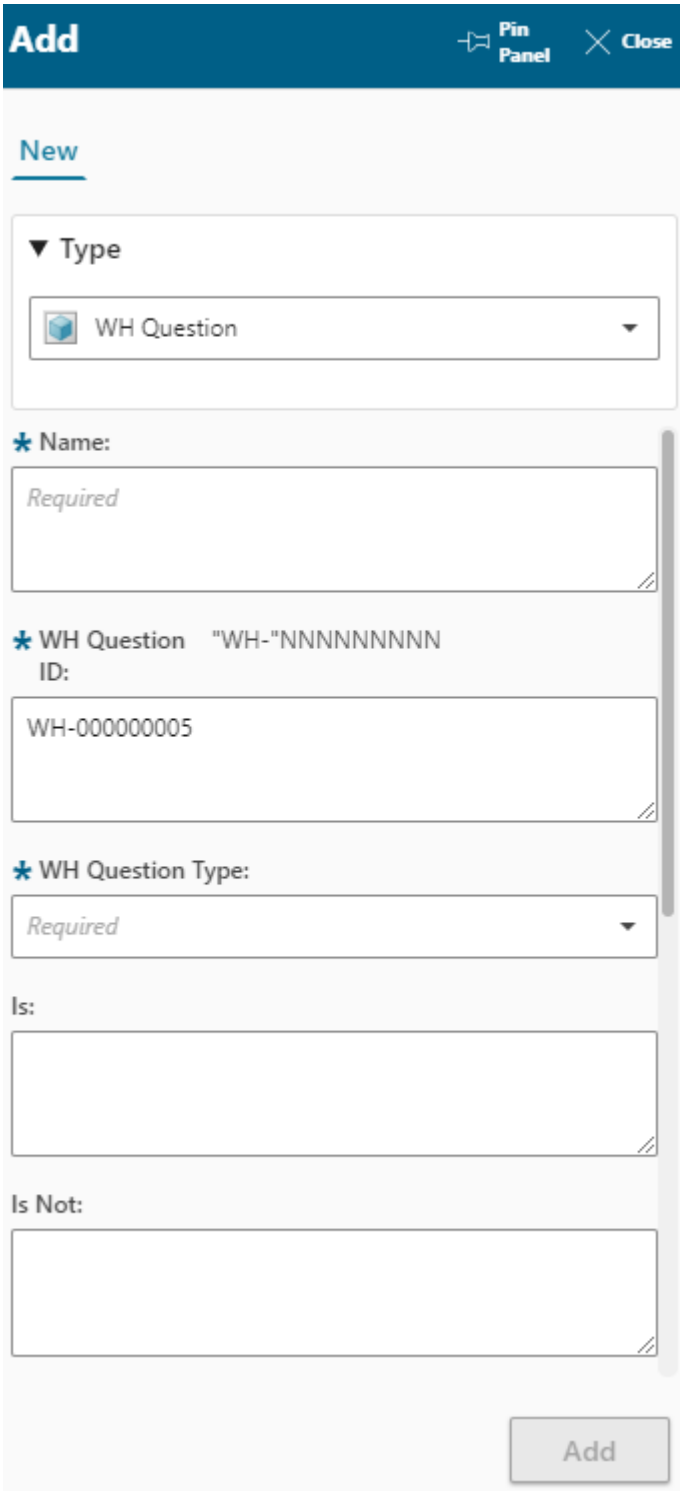
   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select the problem description defect.

4. In the right pane, click the **Is/Is Not Analysis** tab.

5. Click **Add**.




6. In the **Name** box, type a name for the Is/Is Not question.

7. From the **WH Question Type** list, select the type of the Is/Is Not question.

8. In the **Is** box, type what is the problem?

9. In the **Is Not** box, type what is not the problem?

10. In the **Is/Is Not Difference** box, type the difference between what is and what is not the problem?

11. If any parameters change during the analysis, specify the date of the change in the **Parameter Change Date**.

12. Describe the parameter change in the **Parameter Change Description** box.

13. Type any open points to be clarified in the **Proceeding Open Points** box.

14. Specify the due date of the open points in the **Proceeding Due Date**.

15. Click **Add**.

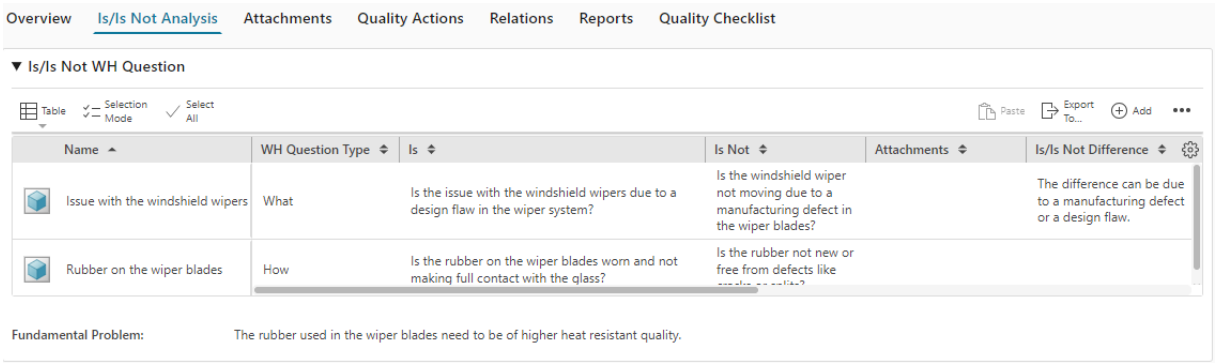
16. To define the **Fundamental Problem**, do the following:

    a. From the work area toolbar, click **Edit**.

    b. Based on the analysis of the Is/Is Not questions, you can enter the fundamental problem in the **Fundamental Problem** box.

    When you define the fundamental problem, you can focus on it, and perform your investigation.

    c. Click **Save**.




17. To add attachments to an Is/Is Not question, do the following:

    a. Select and open the Is/Is Not question.

    b. Click the **Attachments** tab.

    c. In the **Files** section, click **Add** ⊕.

d. In the **Add** panel, click **Select File** to browse to and select the required file, and click the **Add** button.

- After adding the attachments, you can view them in the **Information** panel for a selected Is/Is Not question. This provides a summary of the associated attachments.
- If you have added images and PDF files as attachments, they appear in **Preview** for a selected Is/Is Not question.

  You can mark up a PDF or an image file within the universal viewer. You can also specify which level of users can view the markups. For more information, see *Document Management on Active Workspace —Usage* in the Teamcenter documentation.

18. To assign responsible users to an Is/Is Not question, do the following:

    a. Select the required Is/Is Not question and click **Assign Responsible User**.

    b. In the **Assign Responsible User** panel, type a name or title to filter the list of users.

    c. Select the required user and click **Assign**.

19. To delete an Is/Is Not question, do the following:

    a. Select the required Is/Is Not question and click **Delete**.

    b. In the confirmation message, click **Delete**.

# Perform a root cause analysis by using the 5Whys methodology

## How to use the 5Whys methodology to perform a root cause analysis

For the problem description defect and each defect, you can use the methodology of *5Whys* to perform a root cause analysis of the specific defect. Using this, you can identify the root cause of the problem, and you can develop the corrective actions and preventive actions.

The 5Whys methodology consists of continuously asking why a problem occurred until you find the root cause of the problem. In some cases, you can find the root cause before reaching the fifth (Why) question. In other cases, you might have to ask more than five Why questions to find the root cause. When you identify the root cause, you can find a solution for it to ensure that it does not occur again.

You can add the following types of 5Whys:

- **Specific:** In this type of Why, you can add the questions that define why the problem occurred.
- **Detection:** In this type of Why, you can add the questions that define why the problem was not detected earlier.

- **Systemic:** In this type of Why, you can add the questions that define why the system allowed the problem to occur.

After performing the root cause analysis, you can mark which defect is the root cause.

## Add 5Whys and the Why questions to a defect

For the problem description defect and each defect, you can implement the 5Whys by adding the required 5Whys and the Why questions to determine which defect is the root cause of the Problem Solving process.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

   > Note:
   >
   > You must have already **created the problem description defect** before creating the 5Why.

3. In the left pane of the **Root Cause Analysis** tab, select the defect where you want to add the 5Why, and do the following:

   a. To add an existing 5Why to the defect, do the following:

      A. Drag the existing 5Why to the defect in the left pane.

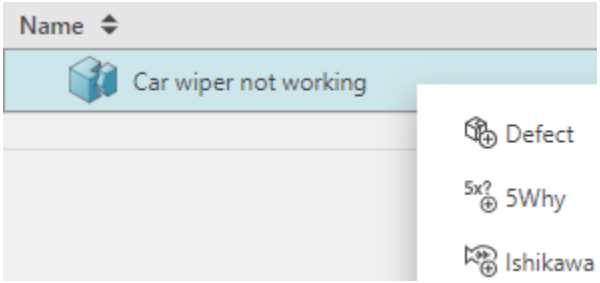
      B. In the confirmation message, click **Update**.

         The **Analysis Dimension** value of the 5Why is updated with the value of the defect.

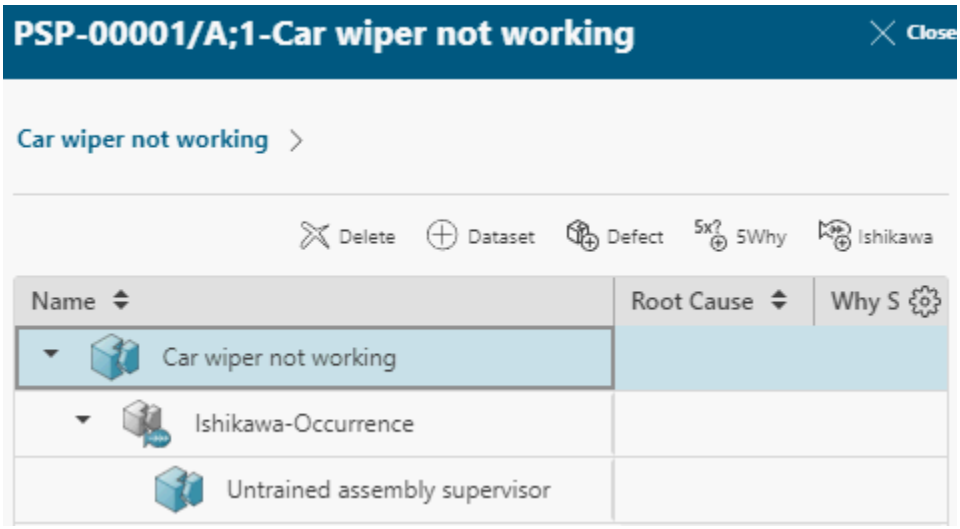
   b. To add a new 5Why to the defect, do the following:

      A. Choose **More Commands** ••• > **New** ✳ > **5Why**.

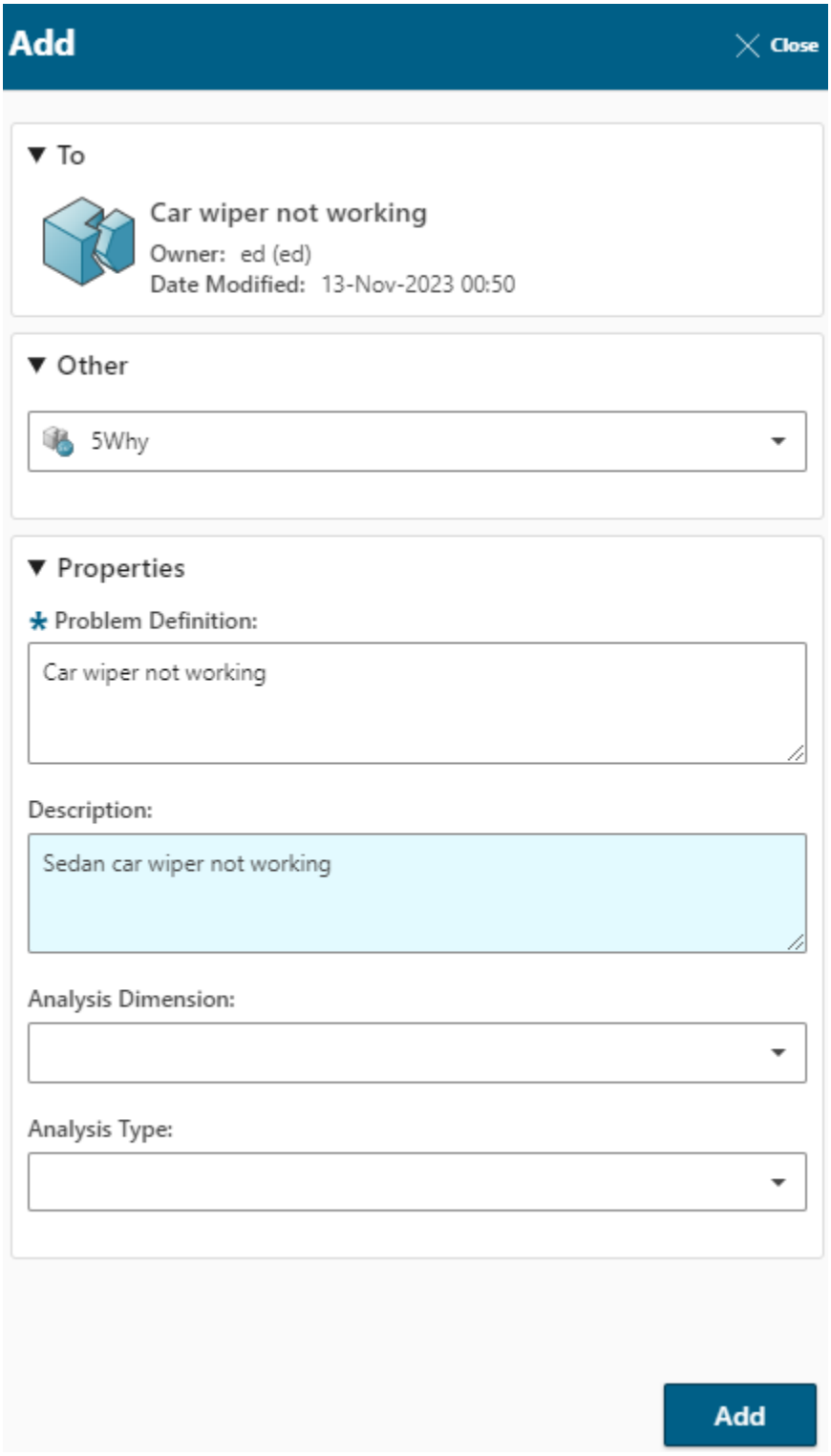
         You can also right-click the defect, and choose **5Why**.




In the **Root Cause Analysis Tree** panel, select the defect and click **5Why** in the work area toolbar. You can open this panel by choosing **More Commands** ••• > **View** > **Show RCA Tree**. This panel can be opened from all Problem Solving tabs, except the **Root Cause Analysis** tab. The panel displays the entire Root Cause Analysis tree structure containing the problem description defect and its child defects, 5Whys, and Ishikawas that you have added. You can also open the linked failures and defective items from the **Related Failure** and **Defective Item** columns, respectively. The panel allows you to retain the context of root cause analysis while navigating to different locations in Teamcenter.




B. Specify a description for the 5Why.




By default, **Problem Definition** is populated with the value of the **Problem Definition** defect. You can edit this value or retain the existing value.

Siemens Industry Software Inc. recommends that you do not use the following characters to avoid errors:

- Single quotation mark (**'**)
- Double quotation mark (**"**)
- Slash (**/**)
- Backslash (****)
- Colon (**:**)
- Less than (**<**)
- Greater than (**>**)
- Vertical bar (**|**)
- Tilde (**~**)
- Back tic (**`**)

C. From the **Analysis Dimension** list, select the dimension of the analysis being done in the 5Why:

- **Occurrence**: Select this option to identify why the problem occurred.
- **Non-Detection**: Select this option to identify why the problem was not detected earlier.

The selected option is appended to the name of the 5Why. This allows you to easily identify the dimension of the analysis being done in the 5Why.

D. From the **Analysis Type** list, select the type of analysis that you want to perform:

- **Specific**: Select this option to identify why the specific problem occurred.
- **Detection**: Select this option to identify why the problem was not detected earlier.
- **Systemic**: Select this option to identify why the system allowed the problem to occur.

The selected option is appended to the name and the selected **Analysis Dimension** of the 5Why. This allows you to easily identify the dimension and the type for the analysis being done in the 5Why.

E. Click **Add**.

The 5Why appears under the defect.

The **Add** panel opens automatically after you add the 5Why. This is for you to add the Why questions. This panel is pinned so that you can continue adding the required Why questions. If you click the **Methodology** tab and add Why questions, you can view the Why structure being created while adding Why questions.

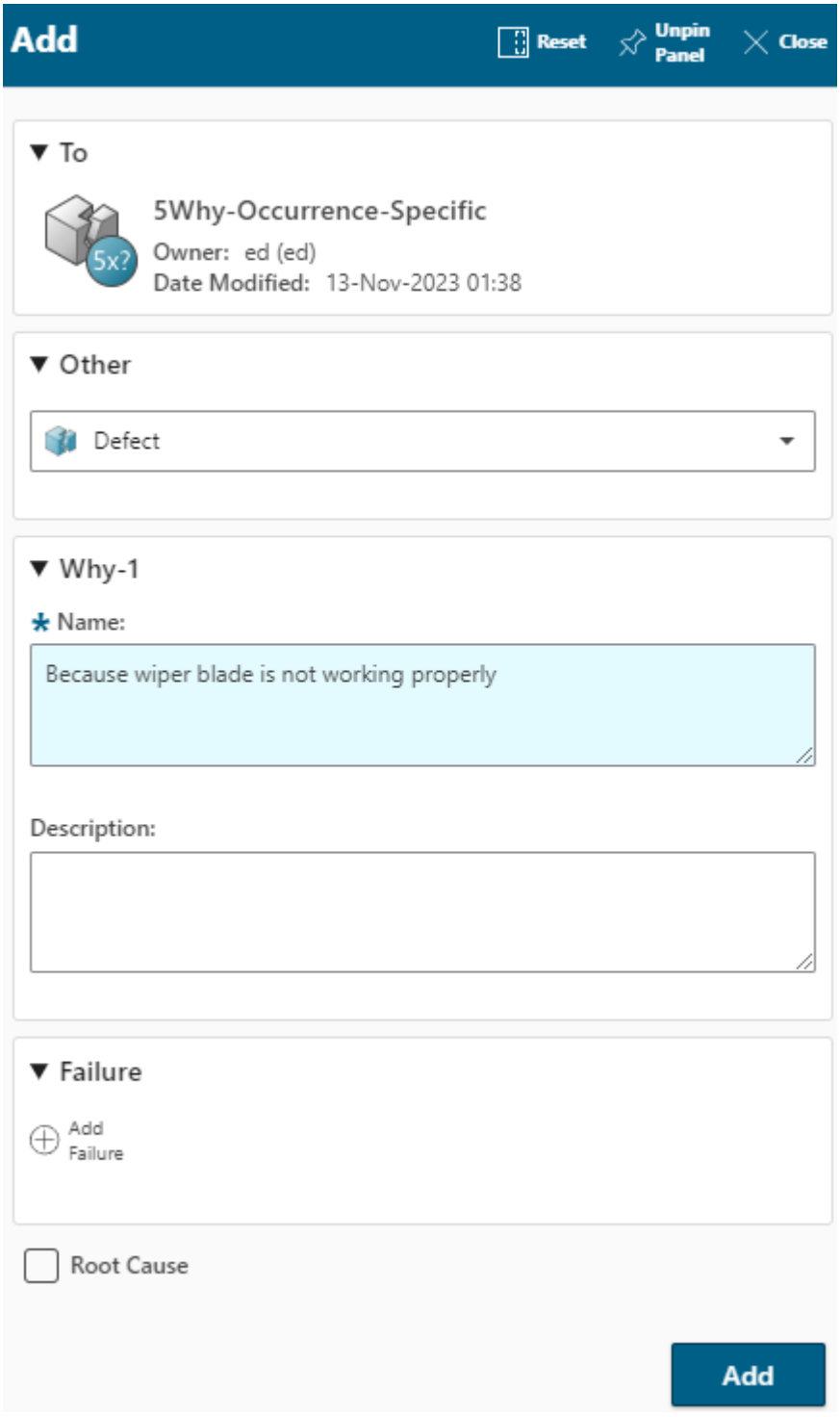
4. To add a Why question to the 5Why in the **Methodology** tab in the right pane, select the 5Why and do the following:

   a. Click the **Methodology** tab in the right pane.

   b. Choose **More Commands** ••• > **New** > **Why**.

      You can also click **Why** in the work area toolbar to add a Why question.

   c. Specify a name and a description.

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- Double quotation mark (")
- Slash (/)

- Backslash (****)
- Colon (**:**)
- Less than (**<**)
- Greater than (**>**)
- Vertical bar (**|**)
- Tilde (**~**)
- Back tic (**`**)

d. **Add the required failure**.

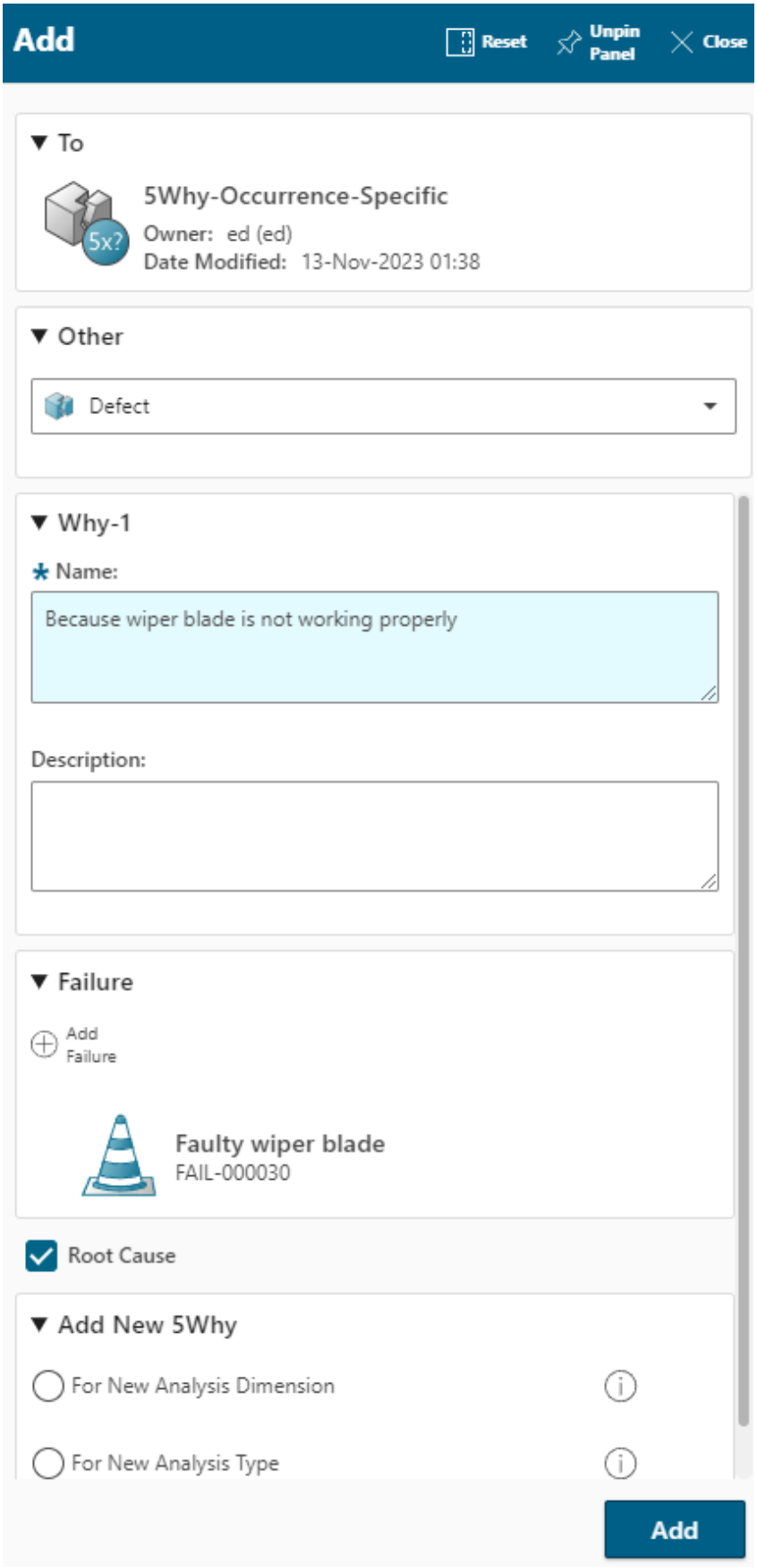
e. To mark the current Why question as one of the root causes of the Problem Solving process, select the **Root Cause** check box.

Problem Solving displays the options to create a 5Why for a new analysis dimension or a new type of analysis.

f. To create the required new 5Why, select one of the following:

- **For New Analysis Dimension**: Select this option to **create a 5Why with a new analysis dimension and analysis type**. The new 5Why is added as a sibling of the parent 5Why.

- **For New Analysis Type**: Select this option to **create a 5Why with the same analysis dimension but with a new analysis type**. The new 5Why is added as a child of the parent 5Why. It inherits the analysis dimension of the parent 5Why.



g. Click **Add**.

The Why question is automatically added as the last Why. Depending on the option you have selected in the **Add New 5Why** section, the relevant panel opens where you can create a new **5Why**.

h. **Add the required defective item**.

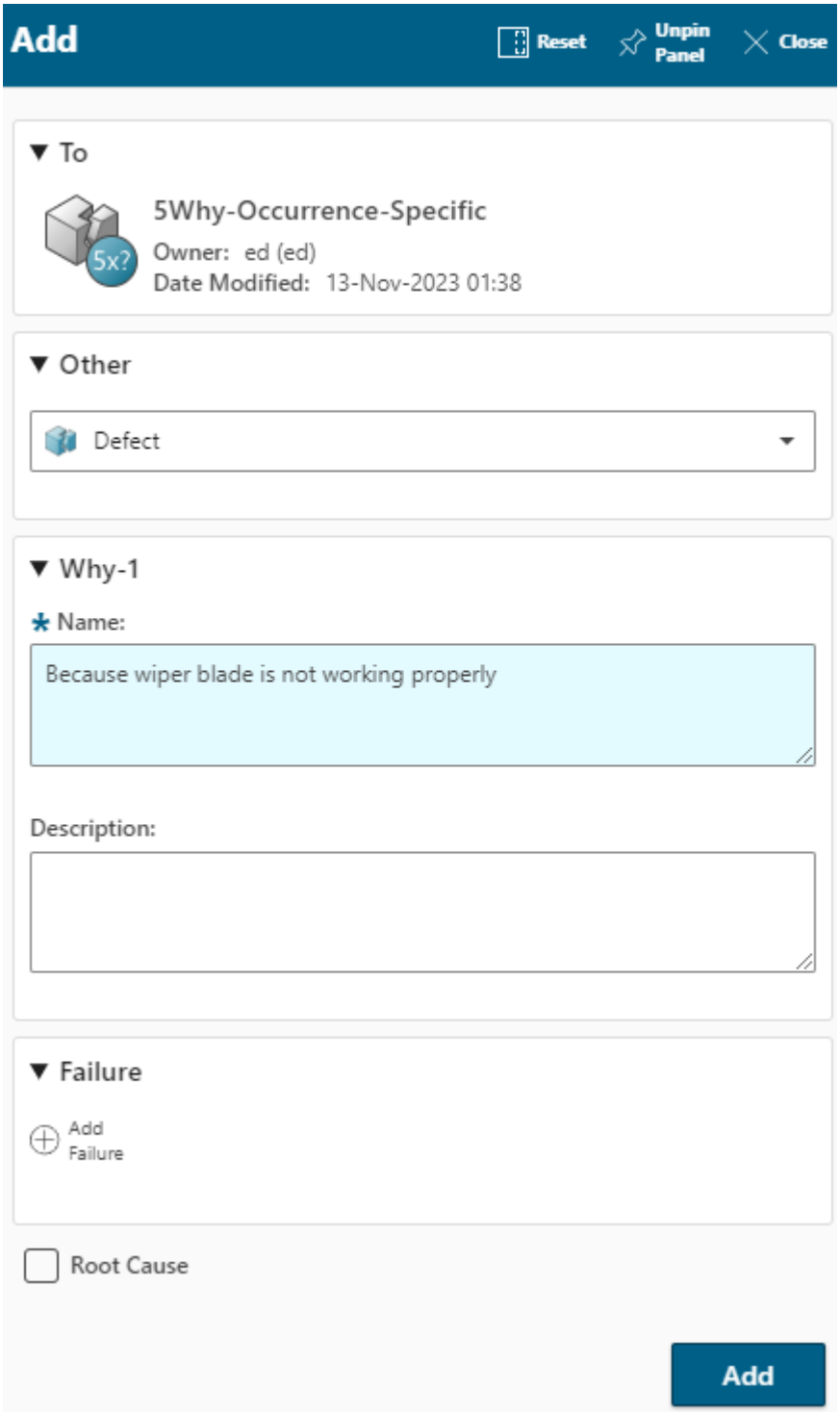
i. Repeat the steps until you have added all the required Why questions.

5. To add a Why question to the 5Why in the **Overview** tab in the right pane, select the 5Why and do the following:

a. Choose **More Commands** ••• > **New** > **Why**.

In the **Root Cause Analysis Tree** panel, select the 5Why and click **Why** in the work area toolbar. You can open this panel by choosing **More Commands** ••• > **View** > **Show RCA Tree**. This panel can be opened from all Problem Solving tabs, except the **Root Cause Analysis** tab. The panel displays the entire Root Cause Analysis tree structure containing the problem description defect and its child defects, 5Whys, and Ishikawas that you have added. You can also open the linked failures and defective items from the **Related Failure** and **Defective Item** columns, respectively. The panel allows you to retain the context of root cause analysis while navigating to different locations in Teamcenter.

b. Specify a name and a description.




Siemens Industry Software Inc. recommends that you do not use the following characters to avoid errors:

- Single quotation mark (')
- Double quotation mark (")
- Slash (/)

- Backslash (\)
- Colon (:)
- Less than (<)
- Greater than (>)
- Vertical bar (|)
- Tilde (~)
- Back tic (`)

c. **Add the required failure**.

d. To mark the current Why question as one of the root causes of the Problem Solving process, select the **Root Cause** check box.

Problem Solving displays the options to create a 5Why for a new analysis dimension or a new type of analysis in the **Add New 5Why** section.

e. To create the required new 5Why, select one of the following:

- **For New Analysis Dimension**: Select this option to **create a 5Why with a new analysis dimension and analysis type**. The new 5Why is added as a sibling of the parent 5Why.

- **For New Analysis Type**: Select this option to **create a 5Why with the same analysis dimension but with a new analysis type**. The new 5Why is added as a child of the parent 5Why. It inherits the analysis dimension of the parent 5Why.

f. Click **Add**.

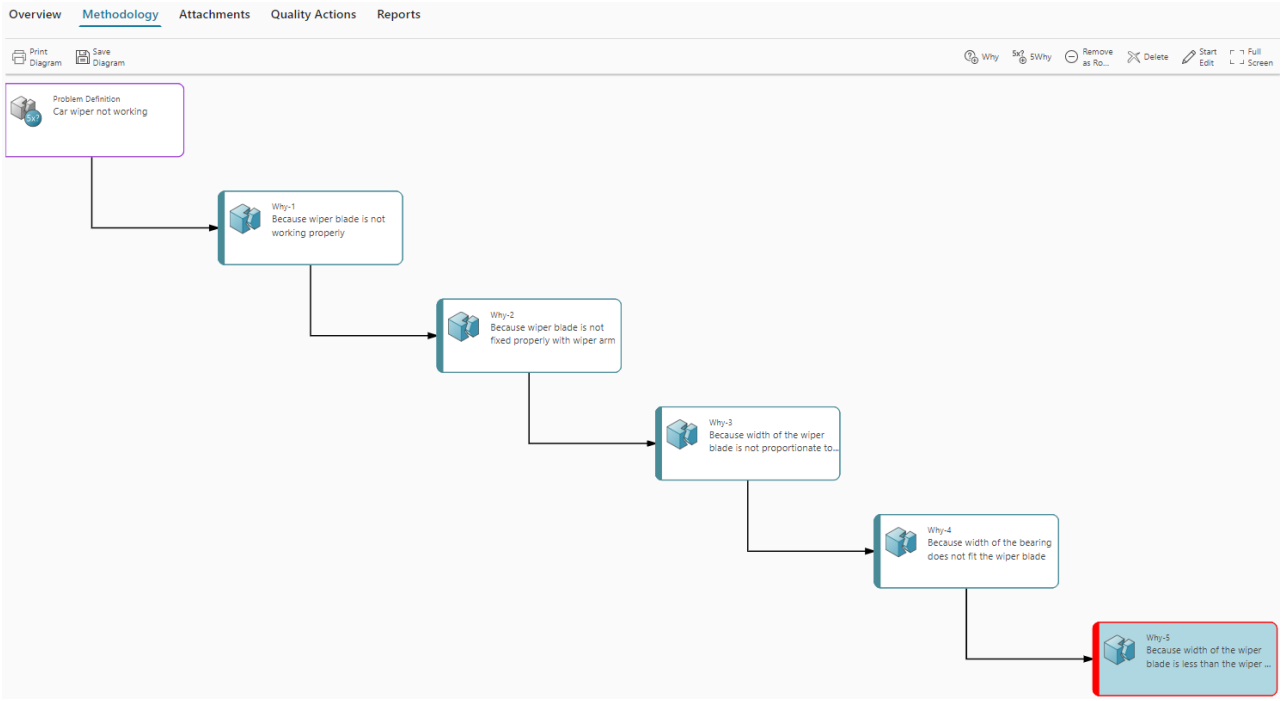
The Why question is automatically added as the last Why. Depending on the option you have selected in the **Add New 5Why** section, the relevant panel opens where you can create a new **5Why**.

g. **Add the required defective item**.

h. Repeat the steps until you have added all the required Why questions.

6. Repeat the steps until you have added all the required 5Whys and their Why questions.

7. To view a hierarchical view of the Why questions that you added to the 5Why, select a 5Why in the left pane, and click the **Methodology** tab in the right pane.




8. To capture the current view of the 5Why, click **Save Diagram**.

   The snapshot is added as an attachment in the **Attachments** tab of the 5Why. You can view the snapshot in the **Preview** section of the **Overview** tab.

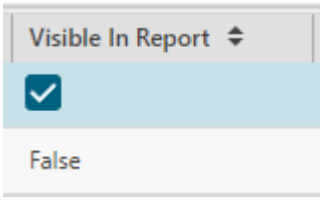
   If you have used any of the following characters in the name of a 5Why or Why question, an error occurs when you click **Save Diagram**:

   - Single quotation mark (**'**)
   - Double quotation mark (**"**)
   - Slash (**/**)
   - Backslash (****)
   - Colon ( **:**)
   - Less than (**<**)
   - Greater than (**>**)
   - Vertical bar (**|**)
   - Tilde (**~**)
   - Back tic (**`**)

9. To display a snapshot of the 5Why when you print it, do the following:

   a. In the **Attachments** tab, for the snapshot, click inside the **Visible In Report** column to display the check box that defines this property.

   b. Set the value of this column to **True**.




10. To print the current view of the 5Why, do the following:

    a. Click **Print Diagram**.

       The 5Why opens in a new browser tab.

    b. Print the 5Why from your browser.

11. Click **Full Screen** in the **Methodology** tab to maximize the view, and click **Exit Full Screen** to return to the default view.

## Add 5Whys and Why questions to an existing Why question

While investigating the root cause, you implement the 5Whys by adding the required 5Whys and the Why questions to determine which defect is the root cause of the Problem Solving process. For an existing why question, you might need to perform a detailed investigation to examine the various options that might result in identifying the root cause. In such a case, you can select the existing Why question and add a 5Why or add only Why questions to the existing Why question.

This allows you to create multiple branches of 5Why and Why questions that help you to perform the *Three Legged 5 Why* analysis. In this type of analysis, you create a branch of a 5Why and Why questions for the following types of analysis:

- **Specific**: This analysis identifies why the specific problem occurred.
- **Detection**: This analysis identifies why the problem was not detected earlier.
- **Systemic**: This analysis identifies why the system allowed the problem to occur.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

Note:

You must have already **created the problem description defect** before creating the 5Why.

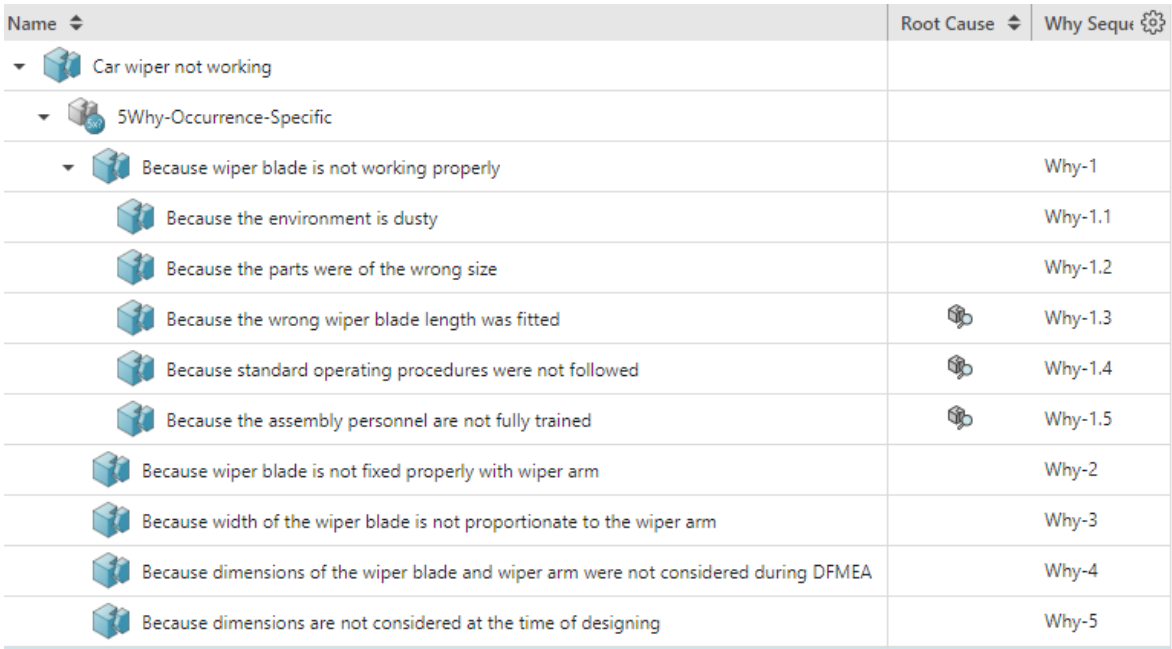
3. In the left pane of the **Root Cause Analysis** tab, expand the defect and select the existing Why question where you want to add a new 5Why or Why question, and do the following:

   - Drag an existing 5Why to the Why question in the left pane.

     In the confirmation message, click **Update**. The **Analysis Dimension** value of the 5Why is updated with the value of the Why question.

   - **To add a new Why question** to the existing Why question, choose **More Commands** ••• > **New** ✳ > **Why**.

     Example:



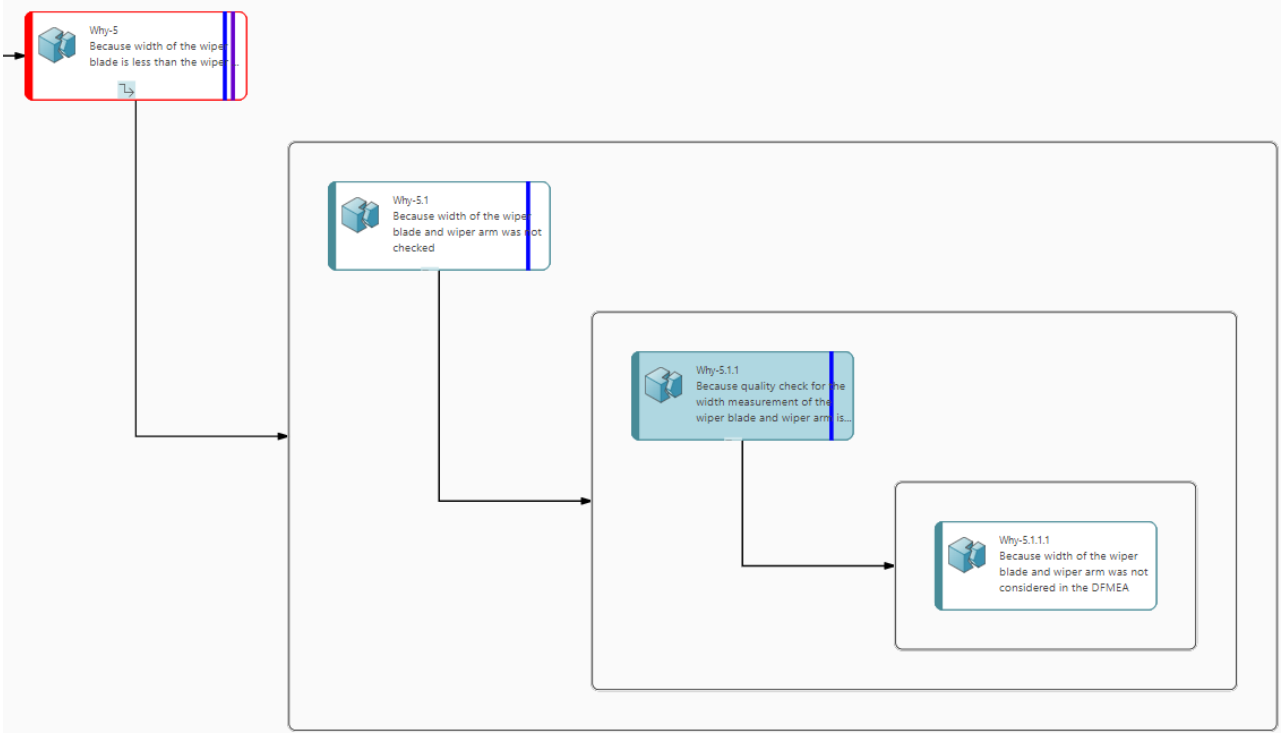

   - **To add a new 5Why** to the existing Why question, choose **More Commands** ••• > **New** ✳ > **5Why**.

Example:

| Name | Root Cause | Why Sequence |
|---|---|---|
| Car wiper not working | | |
| 5Why-Occurrence-Specific | | |
| Because wiper blade is not working properly | | Why-1 |
| Because the environment is dusty | | Why-1.1 |
| Because the parts were of the wrong size | | Why-1.2 |
| Because the wrong wiper blade length was fitted | | Why-1.3 |
| Because standard operating procedures were not followed | | Why-1.4 |
| Because the assembly personnel are not fully trained | | Why-1.5 |
| 5Why-Occurrence-Detection | | |
| Because wiper blade is not fixed properly with wiper arm | | Why-1 |
| Because standard operating procedures were not followed | | Why-1.1 |
| Because the assembly personnel are not fully trained | | Why-1.2 |
| Because documentation for the standard operating procedures is not available | | Why-1.3 |
| Because width of the wiper blade is not proportionate to the wiper arm | | Why-2 |
| Because dimensions of the wiper blade and wiper arm were not considered during ... | | Why-3 |
| Because dimensions are not considered at the time of designing | | Why-4 |

4. Repeat the steps until you have added all the required 5Whys and Why questions to the existing Why question.

   If you add a Why question to an existing Why question, a blue bar appears in the parent Why question to indicate that it has child Why questions. Each child Why question is created in a separate box with an arrow from the parent to the child. If you add a 5Why to a Why question, a purple bar appears in the parent Why question to indicate that it has a child 5Why.




## Generate a 5Why Root Cause Analysis report

To view a summary of the 5Why, Why questions, and the root causes identified by using 5Why, generate the **5Why Root Cause Analysis** report.

1. From the **CHANGES** folder, select and open the required Problem Solving process

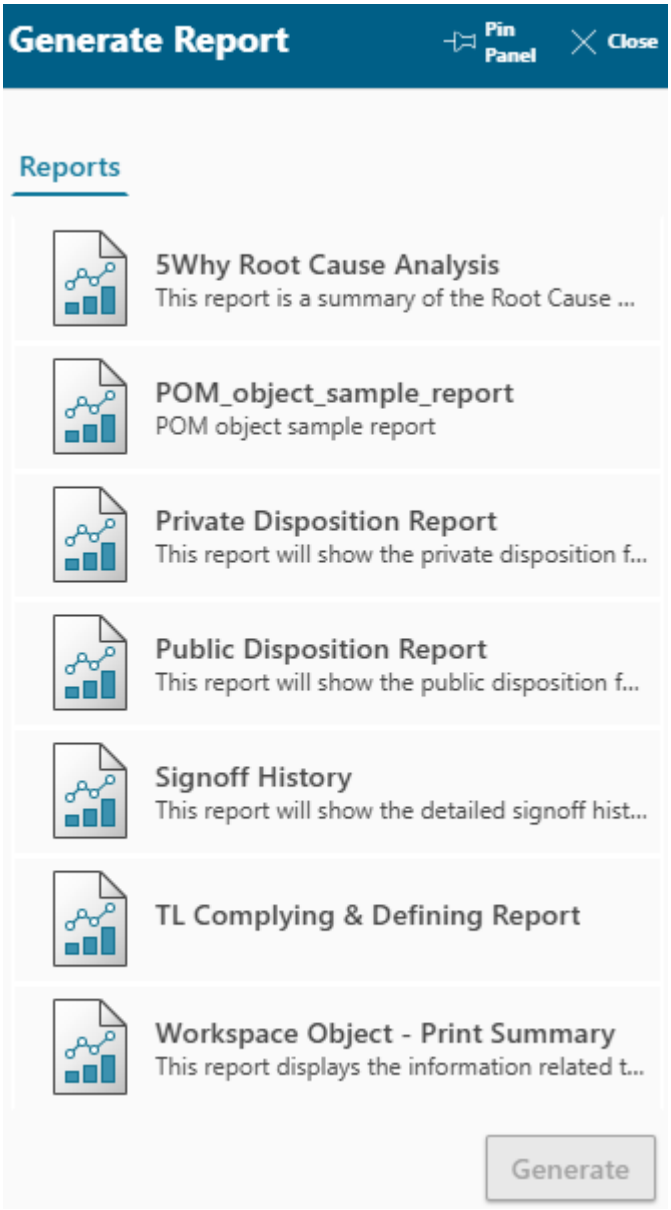
   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the required Problem Solving process.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select and expand the required defect that contains the 5Why to be used as the source of the report.

4. To generate a report, choose **More Commands** ••• > **New** ✳ > **Generate Report**.

5. In the **Generate Report** panel, select **5Why Root Cause Analysis**.




6. In the **Format** section, do the following:

   a. From the **Style Sheet** list, select from the following style sheets:

      - **AWC_5Why_RCA_Report_html.xsl**: Select this style sheet to generate the report as an HTML file.
      - **AWC_5Why_RCA_Report_pdf.xsl**: Select this style sheet to generate the report as a PDF file.

   b. From the **Report Display Locale** list, select the required locale.

   c. (Optional) In the **Save to FileName** box, type the file name of the report.

d. Click **Generate**.

7. If you select the **AWC_5Why_RCA_Report_html.xsl** style sheet, an HTML report is generated and is displayed in the **Reports** tab.

   The HTML report is available in the **Reports** tab for the current session only. This report contains detailed information about the 5Why root cause analysis.

8. If you select the **AWC_5Why_RCA_Report_pdf.xsl** style sheet, browse to the **Downloads** folder of your browser, and open the PDF version of the report.

   This report contains the same detailed information as in the HTML report, including the images that are attached to the 5Why and Why questions.

## Edit the 5Whys and their Why questions

After adding the required 5Whys and their Why questions, you can edit them and attach the required documents.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select and expand the required defect that contains the 5Whys and their Why questions to be edited.

4. To edit a 5Why in the **Overview** tab, select it and do the following:

   a. Choose **More Commands** ••• > **Edit** > **Summary** .

   b. In the **Overview** tab in the right pane, make the required updates.

   c. In the **More Information** section, click the **Details** box, and add detailed content such as text, tables, or graphics in the rich text editor.

      Use the **Full Screen** view to view all information entered in the **Details** box.

   d. From the **Analysis Dimension** list, update the dimension of the analysis being done in the 5Why:

      - **Occurrence**: Select this option to identify why the problem occurred.

      - **Non-Detection**: Select this option to identify why the problem was not detected earlier.

> Note:
>
> You can edit the **Analysis Dimension** of a 5Why only if the 5Why is a child of the problem description defect.

e. From the **Analysis Type** list, update the type of analysis that you want to perform:

- **Specific**: Select this option to identify why the specific problem occurred.
- **Detection**: Select this option to identify why the problem was not detected earlier.
- **Systemic**: Select this option to identify why the system allowed the problem to occur.

f. Choose **More Commands** ••• > **Edit** > **Save Edits**.

5. To edit a Why in the **Overview** tab in the right pane, do the following:

a. Choose **More Commands** ••• > **Edit** > **Summary**.

b. In the **Overview** tab in the right pane, make the required updates.

c. From the **Evaluation** list, select the current status of the Why. Select one of the following:

- **Draft**: Indicates that the Why is created.
- **Investigating**: Indicates that the investigation is in progress to evaluate if the Why is valid.
- **Confirmed**: Confirms that the Why is valid.
- **Invalidated**: Confirms that the investigation has proven that the Why is invalid.

After the analysis is done, you can use this property to indicate whether the Why is valid or not.

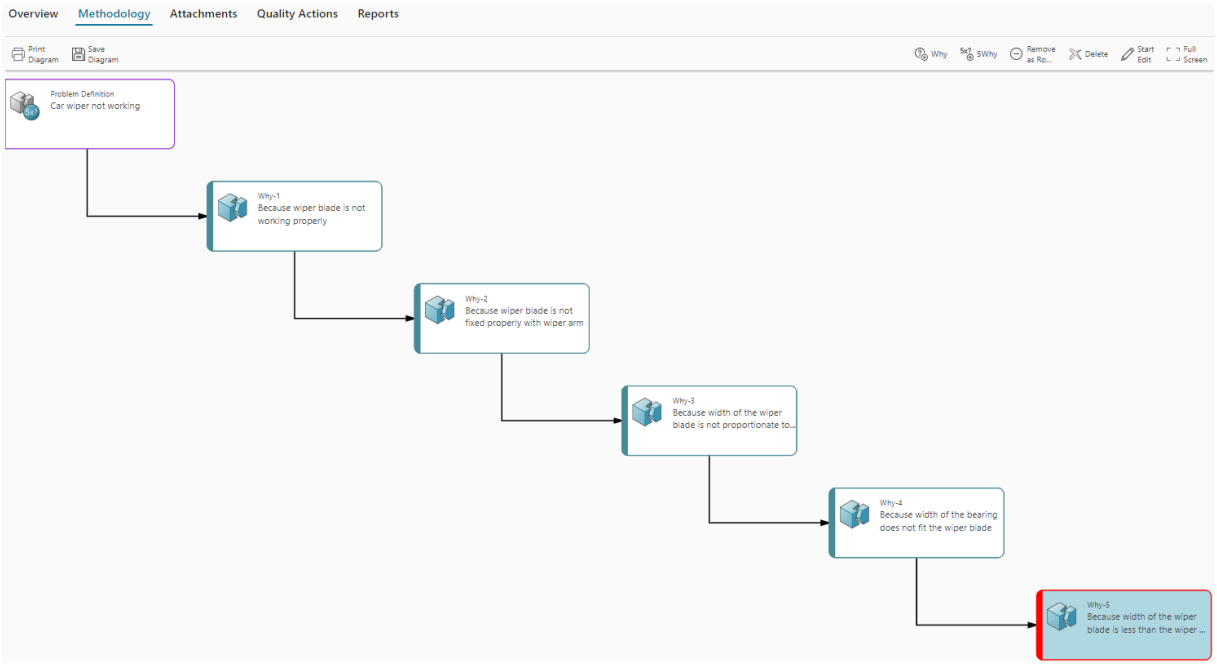
d. In the **More Information** section, click the **Details** box, and add detailed content such as text, tables, or graphics in the rich text editor.

Use the **Full Screen** view to view all information entered in the **Details** box.

e. Choose **More Commands** ••• > **Edit** > **Save Edits**.

6. To edit a 5Why or its Why questions in the **Methodology** tab, select it and do the following:

a. Click **Start Edit** in the work area toolbar.




b. Select the 5Why or a Why, click the text to be updated, and make the required updates.

c. Click **Save Edits** in the work area toolbar.

7. Repeat the steps until you complete editing the required 5Whys and their Why questions.

## Delete a 5Why or a Why question

While performing your analysis, you might find a 5Why or a Why question that is not relevant to the Problem Solving process. In such a case, you can delete the 5Why or Why question from the Problem Solving process.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select and expand the required defect that contains the 5Why and Why questions to be deleted.

4. To delete a Why question in the **Methodology** tab in the right pane, do the following:

   a. Select the parent 5Why and click the **Methodology** tab in the right pane.

   b. Select the Why question, and click **Delete** in the work area toolbar.

c. In the confirmation message, click **Delete**.

The existing Why questions are automatically rearranged. For example, if you have four Why questions and you delete the third Why question, the existing fourth Why question becomes the third Why question.

> Note:
>
> The associated quality actions and attachments are also deleted. If you have linked a failure code from the failure catalog, the link is deleted.

5. To delete a Why question in the **Overview** tab in the right pane, select the Why question, and do the following:

a. Choose **More Commands** ••• > **Edit** > **Delete** .

b. In the confirmation message, click **Delete**.

The existing Why questions are automatically rearranged. For example, if you have four Why questions and you delete the third Why question, the existing fourth Why question becomes the third Why question.

> Note:
>
> The associated quality actions and attachments are also deleted. If you have linked a failure code from the failure catalog, the link is deleted.

6. To delete a 5Why, select the 5Why, and do the following:

a. Choose **More Commands** ••• > **Edit** > **Delete** .

If you are in the **Methodology** tab in the right pane, click **Delete** in the work area toolbar.

> Note:
>
> You cannot delete a 5Why if it has associated Why questions.

b. In the confirmation message, click **Delete**.

7. Repeat the steps until you complete deleting the required 5Whys and their Why questions.

# Perform a root cause analysis by using the Ishikawa methodology

## How to use Ishikawa methodology to perform a root cause analysis

The *Ishikawa* methodology uses an Ishikawa diagram as a graphical tool to help your team to brainstorm and identify the causes and the categories of causes that result in the problem. The categories help the team to ensure that all causes in a particular category are recorded. If a category has few causes, the team can focus their brainstorming on that category to capture any missing causes. If the team analyzes a cause and finds that it requires additional investigation, they can create child causes for that specific cause. After identifying all the causes and listing them in the correct categories, you can analyze the diagram to mark the root cause of the problem.

An Ishikawa diagram is also called a *cause-and-effect diagram* or a *fishbone diagram* because it represents the causes and their effect in the form of a fishbone.

You can organize the causes in groups depending on the requirements of your industry. You can use some of the following categories to group your causes:

- **Man**: In this category, you can list the causes related to the people involved in the problem.
- **Machine**: In this category, you can list the causes related to the equipment involved in the problem.
- **Method**: In this category, you can list the causes related to the methods and procedures involved in the problem.
- **Material**: In this category, you can list the causes related to the raw materials and parts involved in the problem.
- **Measurement**: In this category, you can list the causes resulting from measurement-related problems.
- **Mother Earth**: In this category, you can list the causes resulting from environment-related problems.
- **Product**: In this category, you can list the causes resulting from problems with the product.
- **Price**: In this category, you can list the causes resulting from problems with the price of the product.
- **Promotions**: In this category, you can list the causes resulting from problems with the promotions used for the product.
- **Place**: In this category, you can list the causes resulting from locations where the product is sold.

## Create an Ishikawa to record the various causes of the problem

For the problem description defect and each defect, you can create an Ishikawa to determine which defect is the root cause of the Problem Solving process.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

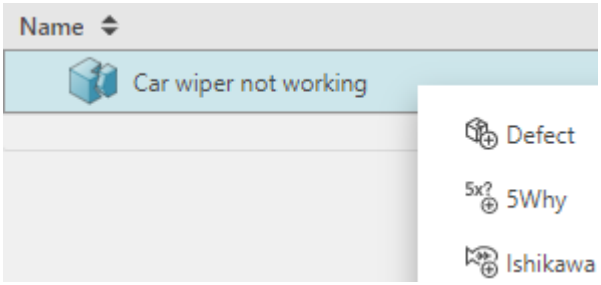
2. Click the **Root Cause Analysis** tab.

   > Note:
   >
   > You must have already **created the problem description defect** before creating the Ishikawa.

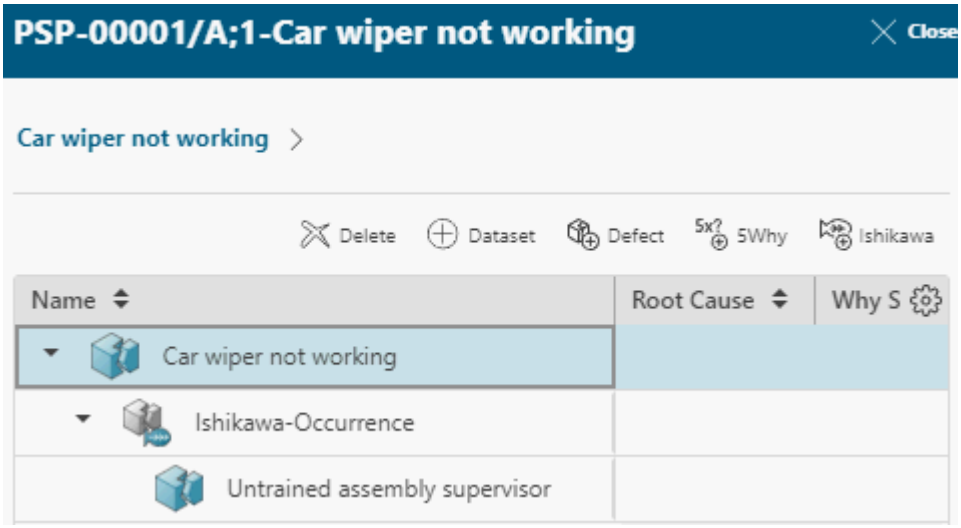
3. In the left pane of the **Root Cause Analysis** tab, select the defect where you want to add the Ishikawa, and do the following:

   a. Choose **More Commands** ••• > **New** > **Ishikawa**.

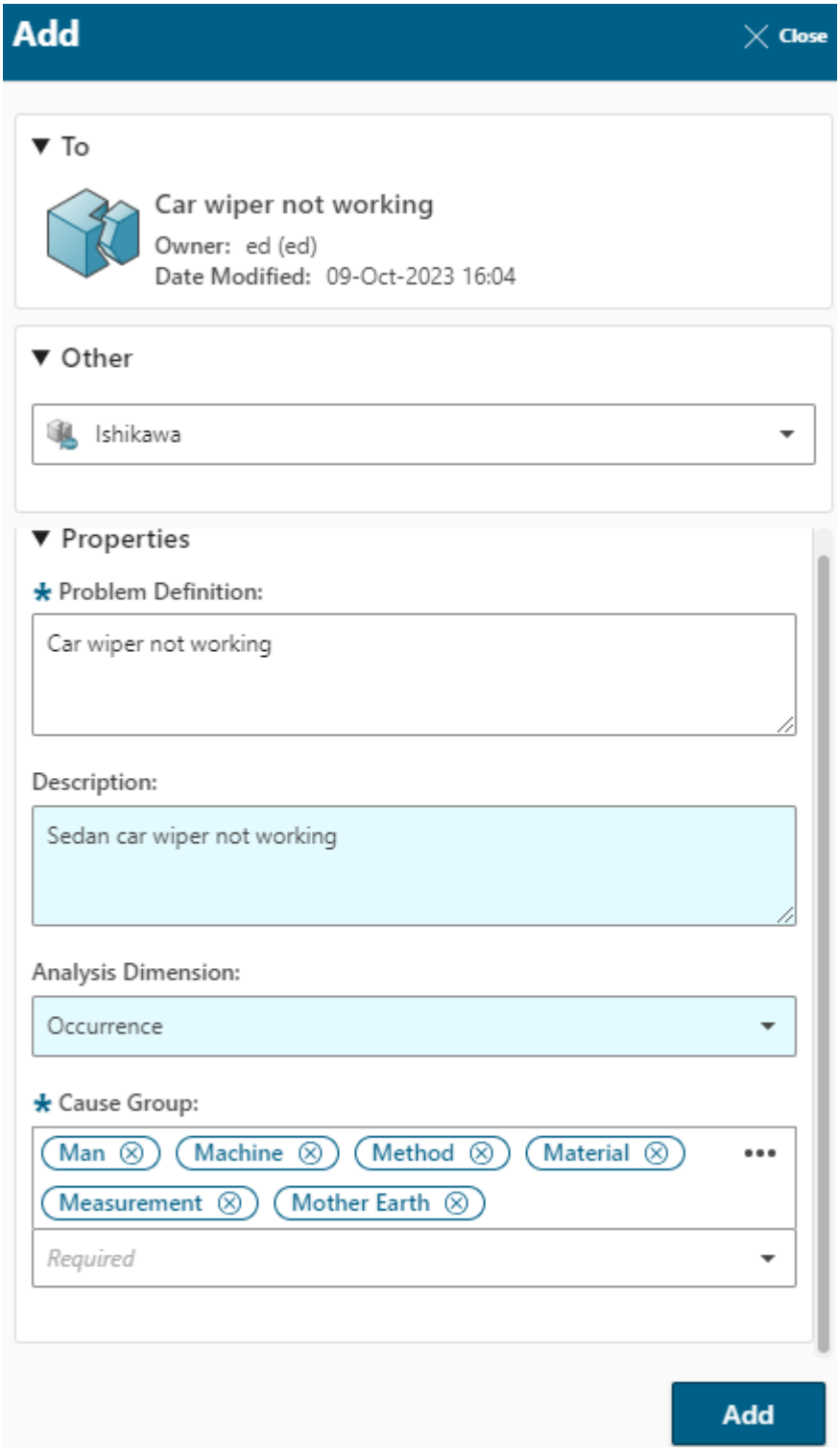
   You can also right-click the defect, and choose **Ishikawa**.




   In the **Root Cause Analysis Tree** panel, select the defect and click **Ishikawa** in the work area toolbar. You can open this panel by choosing **More Commands** ••• > **View** > **Show RCA Tree**. This panel can be opened from all Problem Solving tabs, except the **Root Cause Analysis** tab. The panel displays the entire Root Cause Analysis tree structure containing the problem description defect and its child defects, 5Whys, and Ishikawas that you have added. You can also open the linked failures and defective items from the **Related Failure** and **Defective Item** columns, respectively. The panel allows you to retain the context of root cause analysis while navigating to different locations in Teamcenter.




b. Specify a description for the Ishikawa.




By default, **Problem Definition** is populated with the value of the **Problem Definition** defect. You can edit this value or retain the existing value.

Siemens Industry Software Inc. recommends that you do not use the following characters to avoid errors:

- Single quotation mark (**'**)
- Double quotation mark (**"**)
- Slash (**/**)
- Backslash (****)
- Colon (**:**)
- Less than (**<**)
- Greater than (**>**)
- Vertical bar (**|**)
- Tilde (**~**)
- Back tic (**`**)

c. From the **Analysis Dimension** list, select the dimension of the analysis being done in the Ishikawa:

- **Occurrence**: Select this option to identify why the problem occurred.
- **Non-Detection**: Select this option to identify why the problem was not detected earlier.

The selected option is appended to the name of the Ishikawa. This allows you to easily identify the dimension of the analysis being done in the Ishikawa.

d. In the **Cause Group** box, type the name of the new cause groups you want to add in addition to the existing cause groups.

e. To rearrange the cause groups, do the following:

A. Choose **More** ••• > **Reorder**.

B. Select a cause group and click **Move Up** or **Move Down**.

C. Click **Remove** ⊗ to remove a selected cause group.

D. After you complete rearranging the cause groups, click **Done**.

f. Click **Add**.

The **Add** panel opens automatically after you add the Ishikawa. This is for you to add causes. This panel is pinned so that you can continue adding the required causes.

g. From the **Ishikawa Cause Group** list, select the cause group where you want to add the cause.

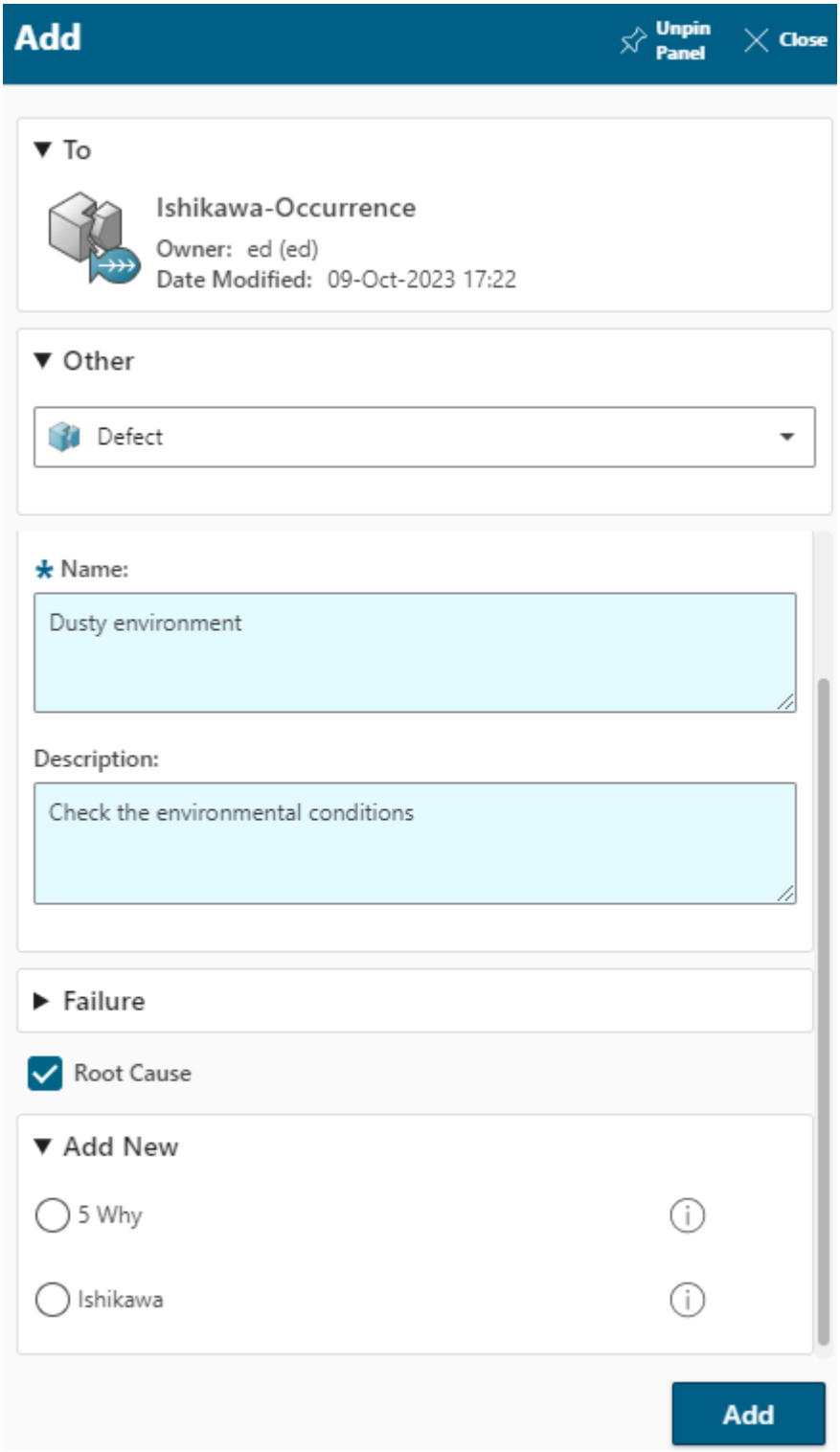
h. Specify a name for the cause and optionally, enter a description.

Siemens Industry Software Inc. recommends that you do not use the following characters to avoid errors:

- Single quotation mark (**'**)
- Double quotation mark (**"**)
- Slash (**/**)
- Backslash (****)
- Colon (**:**)
- Less than (**<**)
- Greater than (**>**)
- Vertical bar (**|**)
- Tilde (**~**)
- Back tic (**`**)

i. **Add the required failure**.

j. To mark the current cause as one of the root causes of the Problem Solving process, select the **Root Cause** check box.




Problem Solving displays the options to create a new 5Why or Ishikawa. This helps you to perform a further analysis in a new **Analysis Dimension** to determine additional root causes, if required.

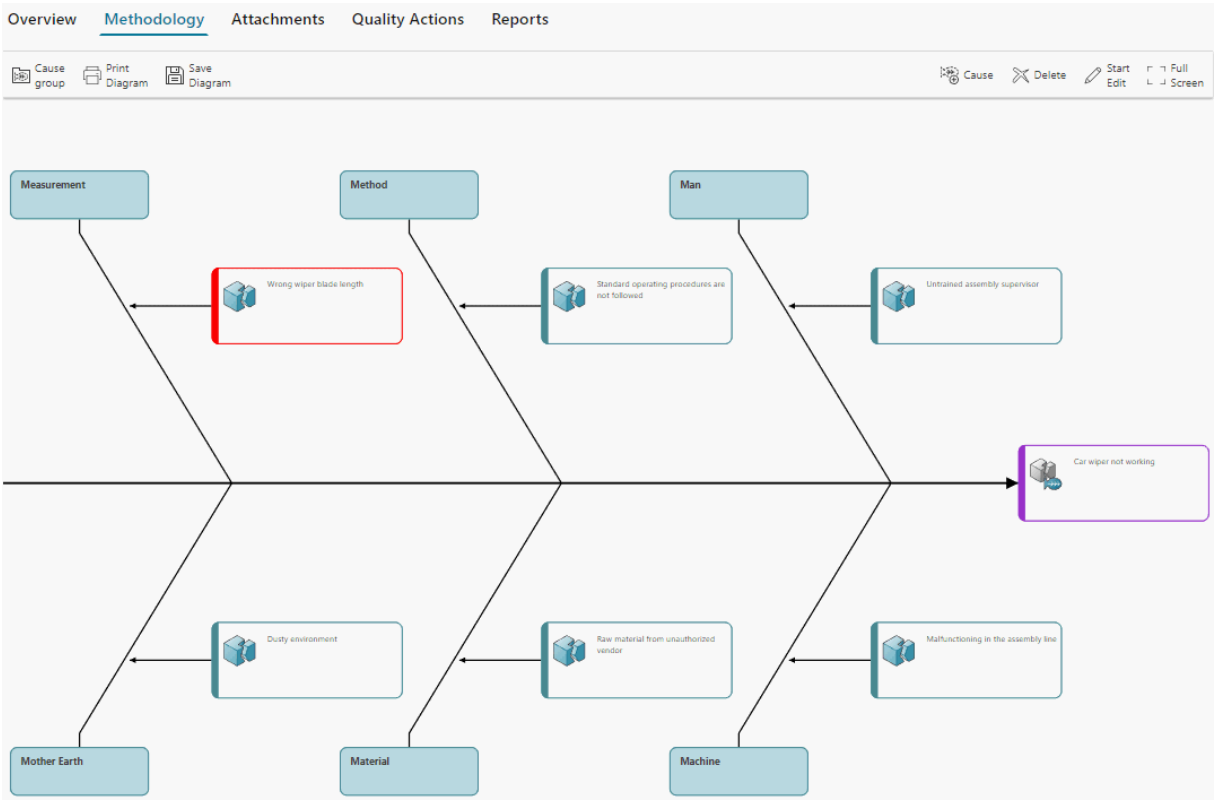
k. To create a new 5Why or Ishikawa, select **5Why** or **Ishikawa**, respectively.

l. Click **Add**.

The cause is added to the Ishikawa. Depending on the option you have selected in the **Add New** section, the relevant panel opens where you can create a new **5Why** or **Ishikawa**, if required.

m. Repeat the steps until you have added all the required causes in their associated cause groups.

n. Click the **Methodology** tab in the right pane to view all the causes you have added to the Ishikawa.




o. To capture the current view of the Ishikawa diagram, click **Save Diagram**.

The snapshot is added as an attachment in the **Attachments** tab of the Ishikawa. You can view the snapshot in the **Preview** section of the **Overview** tab. The same attachment is also added in the **Overall Files** section of the **Attachments** tab of the Problem Solving process.

If you have used any of the following characters in the name of an Ishikawa, cause group, causes, and child causes, an error occurs when you click **Save Diagram**:

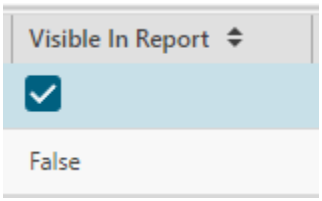
- Single quotation mark (')
- Double quotation mark (")
- Slash (/)
- Backslash (\)

- Colon ( **:**)
- Less than (**<**)
- Greater than (**>**)
- Vertical bar (**|**)
- Tilde (**~**)
- Back tic (**`**)

p. To display a snapshot of the Ishikawa when you print it, do the following:

A. In the **Attachments** tab, for the snapshot, click inside the **Visible In Report** column to display the check box that defines this property.

B. Set the value of this column to **True**.




q. To print the current view of the Ishikawa diagram, do the following:

A. Click **Print Diagram**.

The Ishikawa diagram opens in a new browser tab.

B. Print the Ishikawa diagram from your browser.

r. Click **Full Screen** in the **Methodology** tab to maximize the view, and click **Exit Full Screen** to return to the default view.

## Add the cause groups to organize the potential causes

In the **Overview** tab and the **Methodology** tab of an Ishikawa, you can add existing unused cause groups or create new cause groups.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

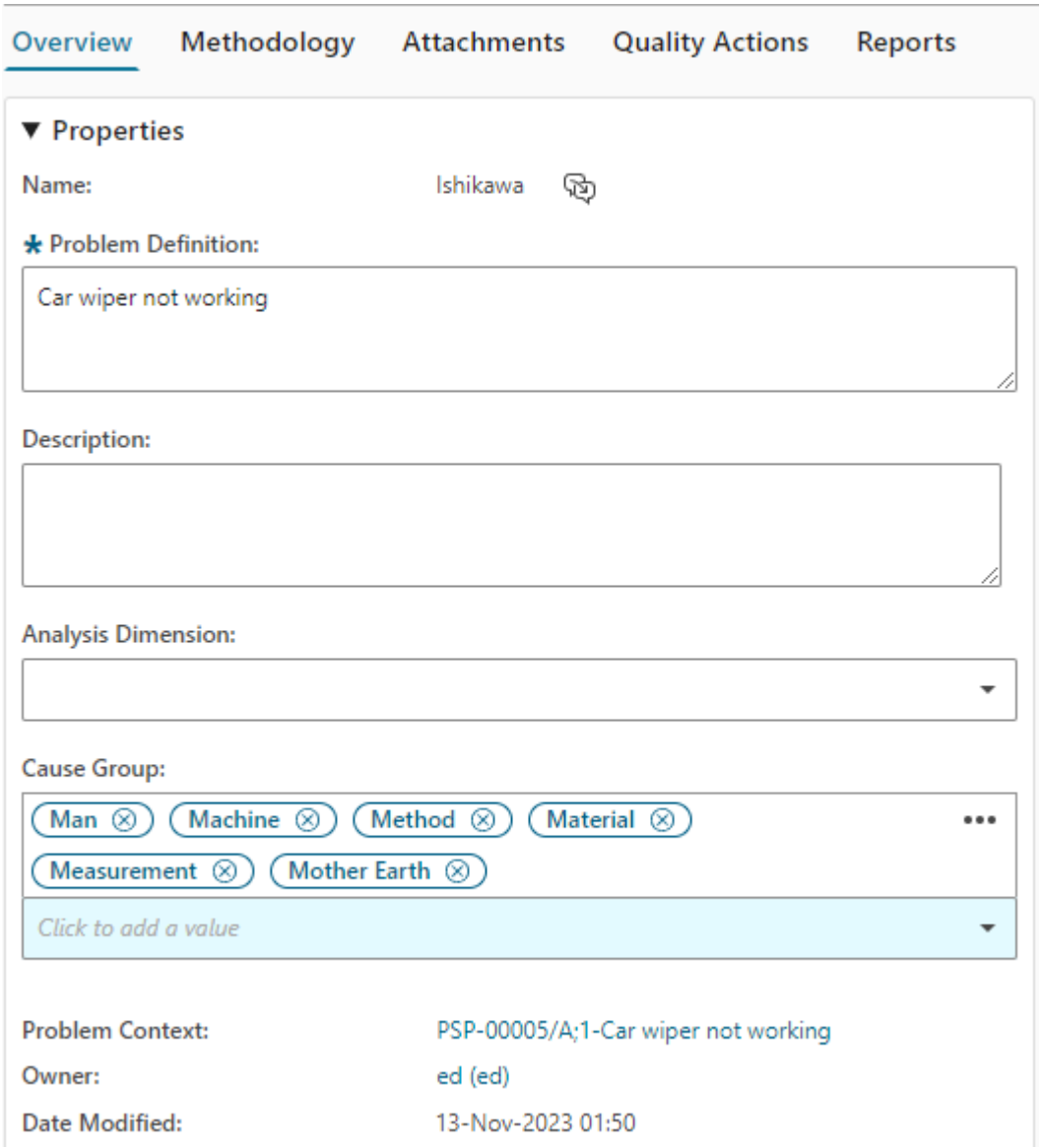
3. In the left pane of the **Root Cause Analysis** tab, select the Ishikawa where you want to add the cause groups.

4. To add cause groups from the **Overview** tab in the right pane, do the following:

   a. Choose **More Commands** ••• > **Edit** ✎ > **Summary** ✎.

   b. In the **Cause Group** box, select the required cause groups from the existing cause groups that have not been used.

   c. To add a new cause group, type its name in the **Cause Group** box.




   Siemens Industry Software Inc. recommends that you do not use the following characters to avoid errors:

   - Single quotation mark (')
   - Double quotation mark (")

- Slash (**/**)
- Backslash (****)
- Colon (**:**)
- Less than (**<**)
- Greater than (**>**)
- Vertical bar (**|**)
- Tilde (**~**)
- Back tic (**`**)

d. To rearrange the cause groups, do the following:

A. Choose **More** ••• > **Reorder**.

B. Select a cause group and click **Move Up** or **Move Down**.

C. Click **Remove** ⊗ to remove a selected cause group.

D. After you complete rearranging the cause groups, click **Done**.

e. Choose **More Commands** ••• > **Edit** > **Save Edits**.

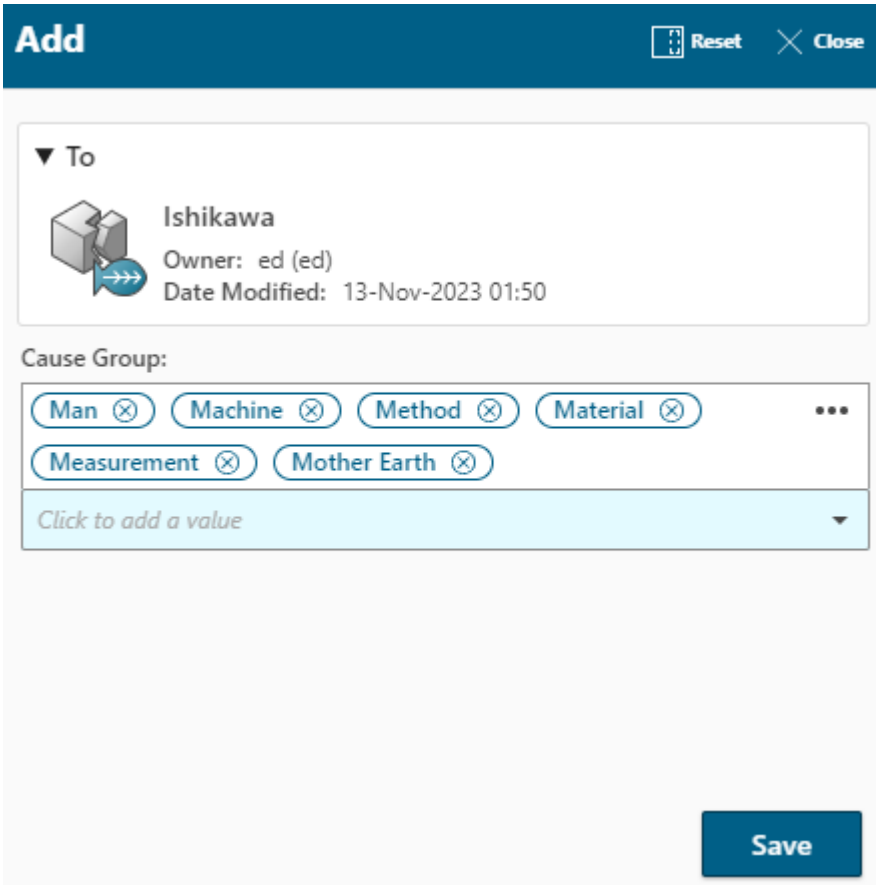
5. To add cause groups from the **Methodology** tab, do the following:

a. Select the Ishikawa in the left pane, and click the **Methodology** tab in the right pane.

b. Click **Cause group** in the work area toolbar.

c. In the **Cause Group** box, select the required existing unused cause groups.

d. To add a new cause group, type its name in the **Cause Group** box.

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- Vertical bar (**|**)
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e. To rearrange the cause groups, do the following:

A. Choose **More** ••• > **Reorder**.

B. Select a cause group and click **Move Up** or **Move Down**.

C. Click **Remove** ⊗ to remove a selected cause group.

D. After you complete rearranging the cause groups, click **Done**.

f. Click **Save**.

## Add the various causes and child causes of the problem to an Ishikawa

In the Ishikawa, add the various causes and child causes that might have caused the problem. While analyzing a cause, the team might find that it requires additional investigation, they can create child causes for that specific cause. The child cause inherits the cause group of the parent cause.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, to add causes to the Ishikawa or a cause in the **Overview** tab in the right pane, select it, and do the following:

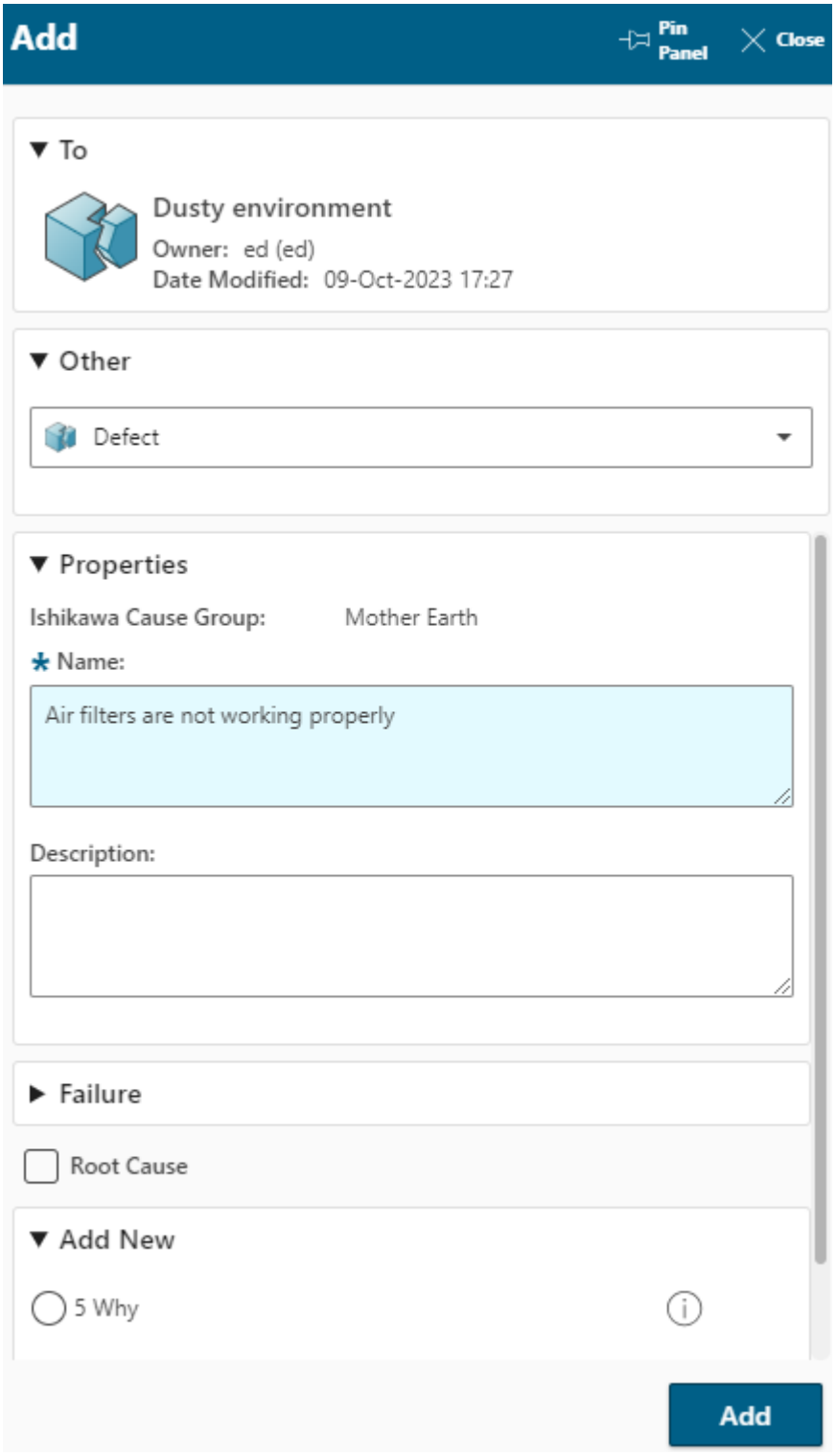
   a. Choose **More Commands** ••• > **New** > **Cause**.

   You can also right-click the Ishikawa or the existing cause, and choose **Cause**.

   In the **Root Cause Analysis Tree** panel, select the Ishikawa or the existing cause and click **Cause** in the work area toolbar. You can open this panel by choosing **More Commands** ••• > **View** > **Show RCA Tree**. This panel can be opened from all Problem Solving tabs, except the **Root Cause Analysis** tab. The panel displays the entire Root Cause Analysis tree structure containing the problem description defect and its child defects, 5Whys, and Ishikawas that you have added. You can also open the linked failures and defective items from the **Related Failure** and **Defective Item** columns, respectively. The panel allows you to retain the context of root cause analysis while navigating to different locations in Teamcenter.

   b. From the **Ishikawa Cause Group** list, select the cause group where you want to add the cause.

   If you are adding a child cause to an existing cause, the child cause inherits the cause group of the parent cause.



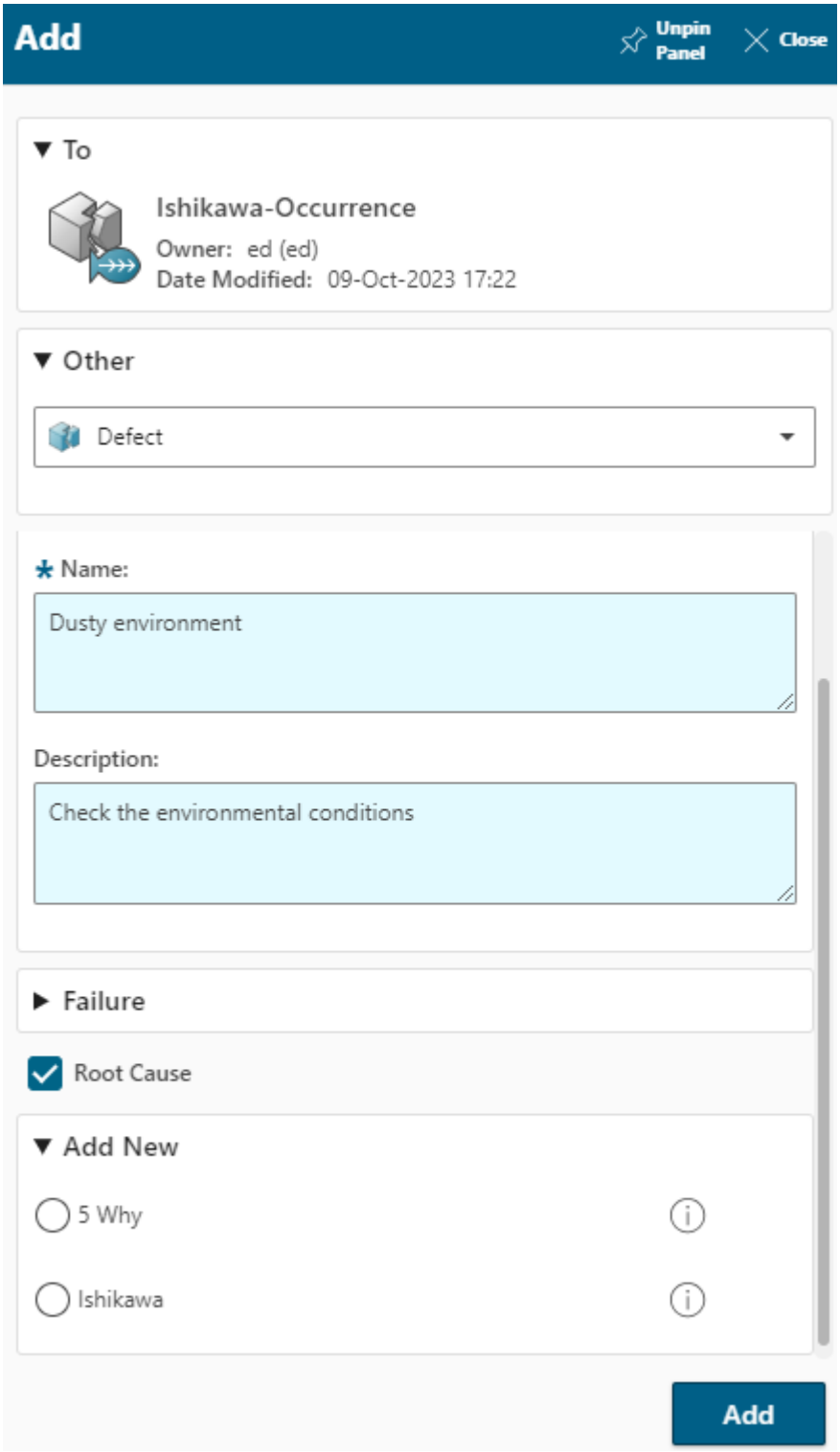

c. Specify a name for the cause and optionally, enter a description.

Siemens Industry Software Inc. recommends that you do not use the following characters to avoid errors:

- Single quotation mark (**'**)
- Double quotation mark (**"**)
- Slash (**/**)
- Backslash (****)
- Colon (**:**)
- Less than (**<**)
- Greater than (**>**)
- Vertical bar (**|**)
- Tilde (**~**)
- Back tic (**`**)

d. **Add the required failure**.

e. To mark the current cause as one of the root causes of the Problem Solving process, select the **Root Cause** check box.

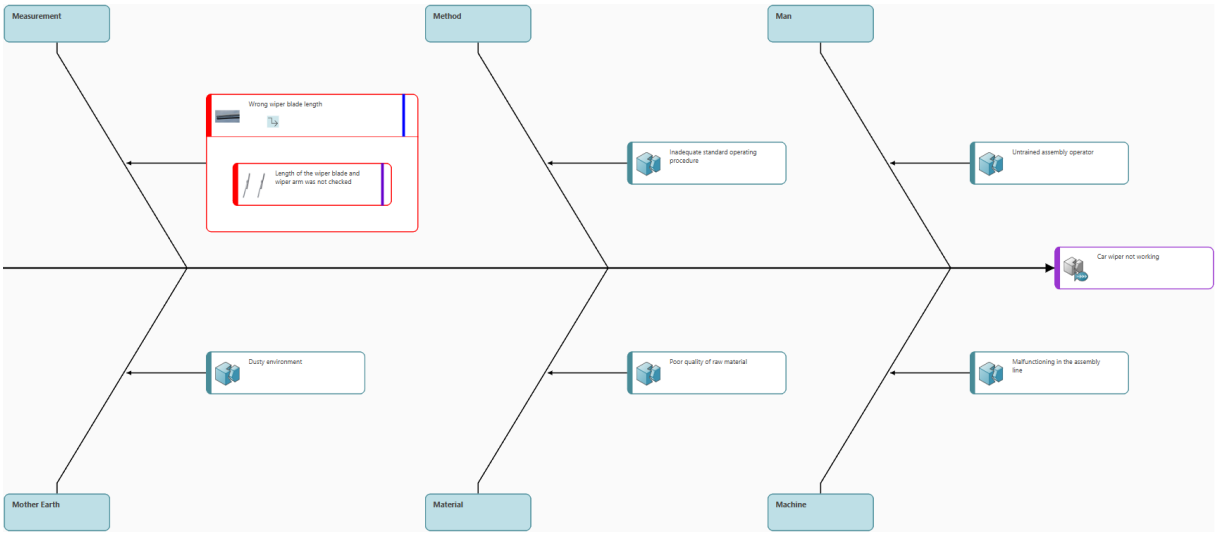



Problem Solving displays the options to create a new 5Why or Ishikawa. This helps you to perform a further analysis in a new **Analysis Dimension** to determine additional root causes, if required.

f. To create a new 5Why or Ishikawa, select **5Why** or **Ishikawa**, respectively.

g. Click **Add**.

The cause is added to the Ishikawa or the existing cause. If you add a child cause to an existing cause, a blue bar appears in the parent cause to indicate that it has one or more child causes. If you add a 5Why to a cause, a purple bar appears in the parent cause to indicate that it has a child 5Why. If you add a 5Why to a child cause, a purple bar appears in the child cause to indicate that it has a child 5Why.




Depending on the option you have selected in the **Add New** section, the relevant panel opens where you can create a new **5Why** or **Ishikawa**.

h. Select **5Why** or **Ishikawa** and click **Add**.

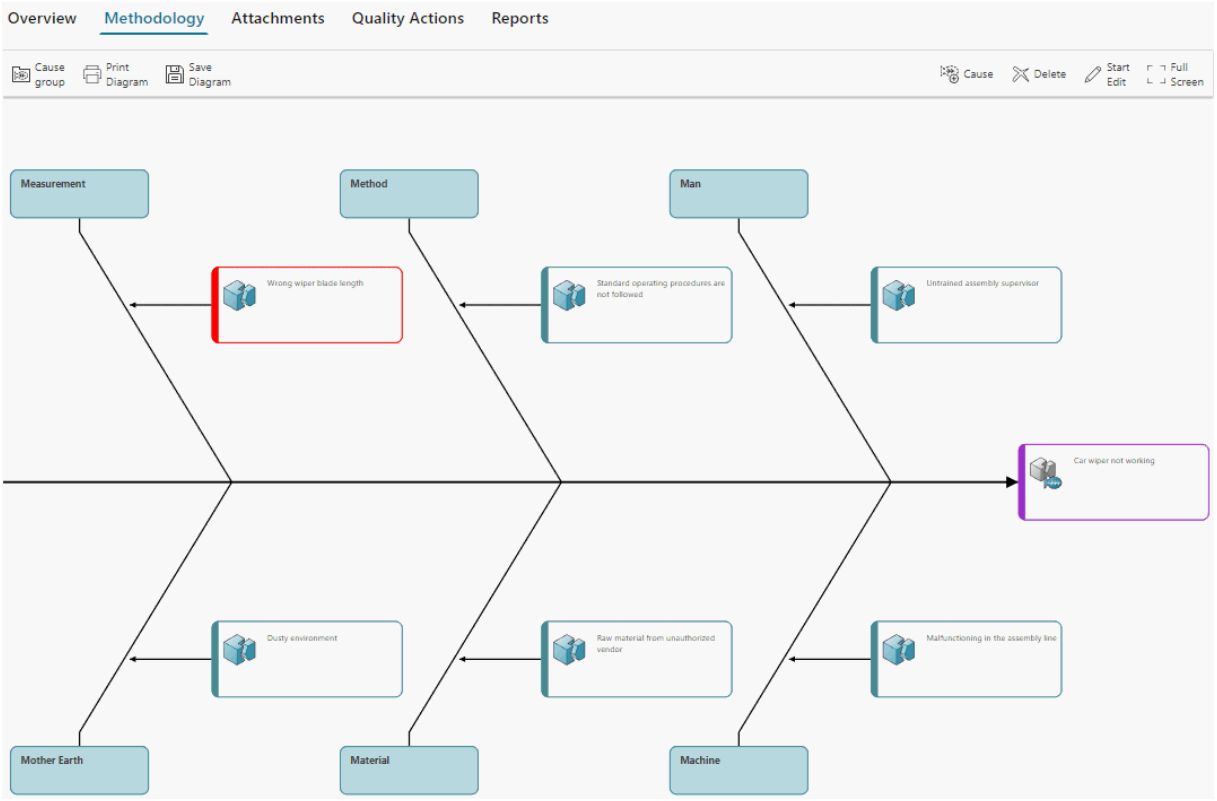
Depending on the option you have selected, the relevant panel opens where you can create a new **5Why** or **Ishikawa**.

i. **Add the required defective item**.

j. Repeat the steps until you have added all the required causes in their associated cause groups or the existing causes.

4. In the left pane of the **Root Cause Analysis** tab, to add causes to the Ishikawa or a cause in the **Methodology** tab, select it, and do the following:

a. Click the **Methodology** tab in the right pane.




b. To add a cause to a cause group or a cause, select it and click **Cause** in the work area toolbar.

You can also select the cause group or cause, click **Add** ⊕, and click **Cause**.

c. Specify a name for the cause and optionally, enter a description.

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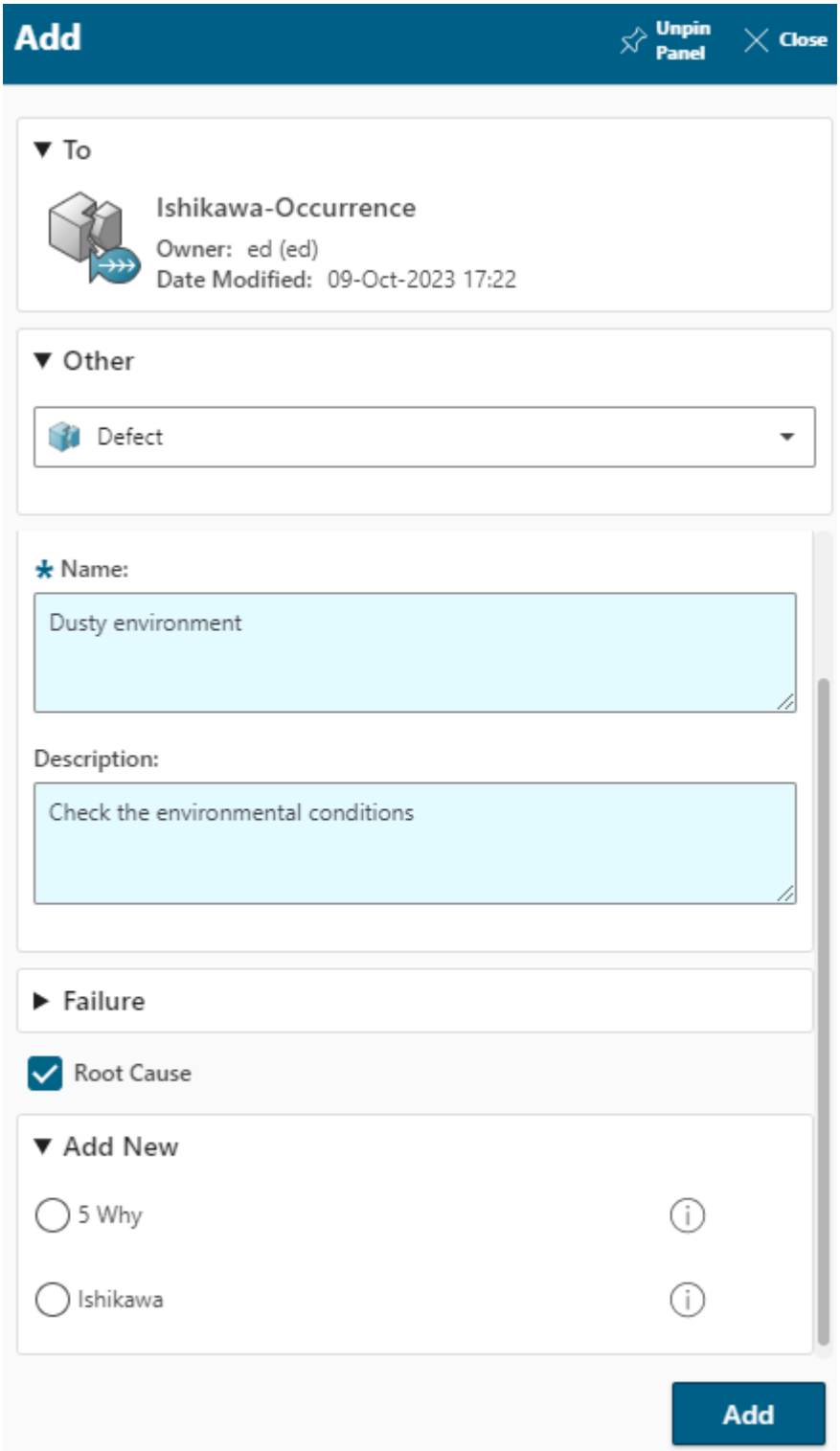
- Slash (**/**)
- Backslash (****)
- Colon (**:**)
- Less than (**<**)
- Greater than (**>**)
- Vertical bar (**|**)
- Tilde (**~**)
- Back tic (**`**)

d. **Add the required failure**.

e. To mark the current cause as one of the root causes of the Problem Solving process, select the **Root Cause** check box.

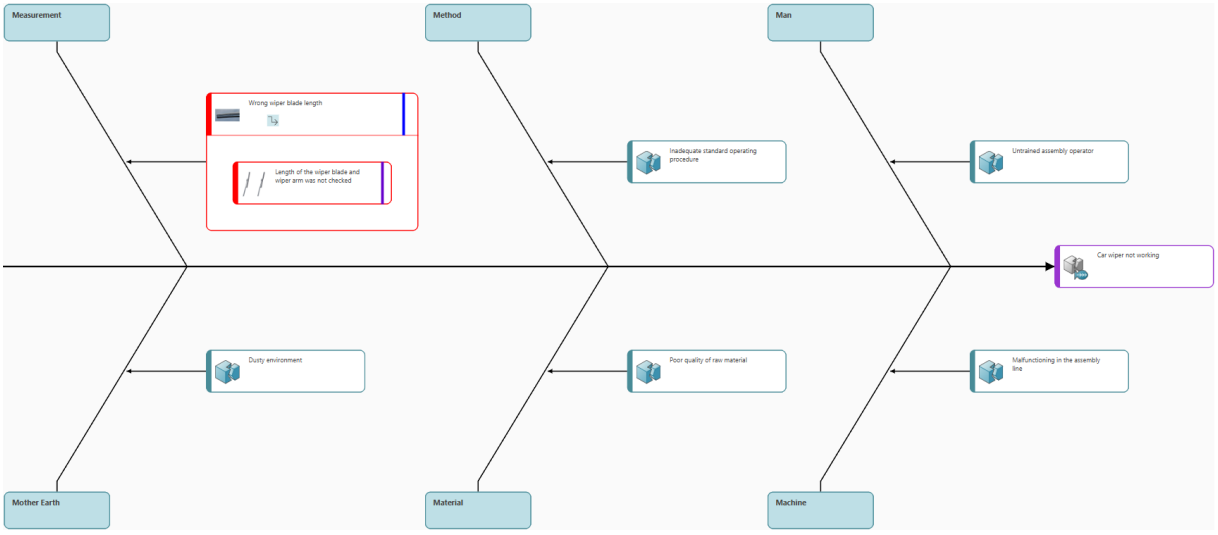


Problem Solving displays the options to create a new 5Why or Ishikawa. This helps you to perform a further analysis in a new **Analysis Dimension** to determine additional root causes, if required.

f. To create a new 5Why or Ishikawa, select **5Why** or **Ishikawa**, respectively.

g. Click **Add**.

The cause is added to the Ishikawa or the existing cause. If you add a child cause to a cause, a blue bar appears in the parent cause to indicate that it has child causes. If you add a 5Why to a cause, a purple bar appears in the parent cause to indicate that it has a child 5Why. If you add a 5Why to a child cause, a purple bar appears in the child cause to indicate that it has a child 5Why.




Depending on the option you have selected in the **Add New** section, the relevant panel opens where you can create a new **5Why** or **Ishikawa**.

h. Select **5Why** or **Ishikawa** and click **Add**.

Depending on the option you have selected, the relevant panel opens where you can create a new **5Why** or **Ishikawa**.

In the **Methodology** tab in the right pane, you can view the additions to a cause group as you add them.

## Add 5Whys and the Why questions to a cause or child cause in an Ishikawa

For a cause or child cause of an Ishikawa, you can implement the 5Whys methodology by **adding the required 5Whys and the Why questions**. This allows you to identify the different types of investigation, such as **Specific**, **Detection**, or **Systemic**.

The 5Why inherits **Problem Definition** from the parent cause and the value of **Analysis Dimension** from the parent Ishikawa. The **Analysis Dimension** value is appended to the name of the 5Why. You cannot edit the value of **Analysis Dimension** in the 5Why created in an Ishikawa cause or child cause. To change this value, edit **Analysis Dimension** in the parent Ishikawa.

## Generate an Ishikawa Root Cause Analysis report

To view a summary of the Ishikawa, Ishikawa causes, and the root causes identified by using Ishikawa, generate the **Ishikawa Root Cause Analysis** report.

1. From the **CHANGES** folder, select and open the required Problem Solving process

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the required Problem Solving process.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select and expand the required defect that contains the Ishikawa to be used as the source of the report.

4. To generate a report, choose **More Commands** ••• > **New** > **Generate Report**.

5. In the **Generate Report** panel, select **Ishikawa Root Cause Analysis**.


6. In the **Format** section, do the following:

   a. From the **Style Sheet** list, select from the following style sheets:

      - **AWC_Ishikawa_RCA_Report_html.xsl**: Select this style sheet to generate the report as an HTML file.

      - **AWC_Ishikawa_RCA_Report_pdf.xsl**: Select this style sheet to generate the report as a PDF file.

   b. From the **Report Display Locale** list, select the required locale.

c. (Optional) In the **Save to FileName** box, type the file name of the report.

d. Click **Generate**.

7. If you select the **AWC_Ishikawa_RCA_Report_html.xsl** style sheet, an HTML report is generated and is displayed in the **Reports** tab.

   The HTML report is available in the **Reports** tab for the current session only. This report contains detailed information about the Ishikawa root cause analysis.

8. If you select the **AWC_Ishikawa_RCA_Report_pdf.xsl** style sheet, browse to the **Downloads** folder of your browser, and open the PDF version of the report.

   This report contains the same detailed information as in the HTML report, including the images that are attached to the Ishikawa and Ishikawa causes.

## Edit an Ishikawa and its cause groups, causes or child causes

After adding an Ishikawa, its causes, and child causes, you can edit it. In an Ishikawa, you can update its values, add new cause groups, remove existing cause groups, and rearrange the order of the cause groups. In a cause, you can update its values and assign it to a different cause group.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select and expand the defect that contains the Ishikawa.

4. To edit the Ishikawa in the **Overview** tab in the right pane, select it, and do the following:

   a. Choose **More Commands** ••• > **Edit** ✎ > **Summary** ✎.

   b. In the **Overview** tab in the right pane, make the required updates.

   c. In the **More Information** section, click the **Details** box, and add detailed content such as text, tables, or graphics in the rich text editor.

      Use the **Full Screen** view to view all information entered in the **Details** box.

   d. From the **Analysis Dimension** list, change the dimension of the analysis to one of the following:

- **Occurrence**: Select this option to identify why the problem occurred.
- **Non-Detection**: Select this option to identify why the problem was not detected earlier.

The newly selected option replaces the earlier option that was appended to the name of the Ishikawa. This new option is also updated in the associated child objects of the Ishikawa.

> Note:
>
> You can edit the **Analysis Dimension** of an Ishikawa only if the Ishikawa is a child of the problem description defect.

e. In the **Cause Group** box, type the name of the new cause groups you want to add in addition to the existing cause groups.

f. To rearrange the cause groups, do the following:

A. Choose **More** ••• > **Reorder**.

B. Select a cause group and click **Move Up** or **Move Down**.

C. Click **Remove** to remove a selected cause group.

D. After you complete rearranging the cause groups, click **Done**.

g. Choose **More Commands** ••• > **Edit** > **Save Edits**.

5. To edit a cause or a child cause in the **Overview** tab in the right pane, select it in the Ishikawa, and do the following:

a. Choose **More Commands** ••• > **Edit** > **Summary**.

b. In the **Overview** tab in the right pane, make the required updates.

c. In the **Ishikawa Cause Group** list, select a cause group to which you want to assign the cause.

> Note:
>
> You cannot change the cause group of a child cause because the child cause inherits the cause group of the parent cause.

d. From the **Evaluation** list, select the current status of the cause. Select one of the following:

- **Draft**: Indicates that the cause is created.
- **Investigating**: Indicates that the investigation is in progress to evaluate if the cause is valid.

- **Confirmed**: Confirms that the cause is valid.
- **Invalidated**: Specifies that the investigation has proven that the cause is invalid.

After the analysis, you can use this property to indicate whether the cause or child cause is valid or not by selecting either **Confirmed** or **Invalidated**.

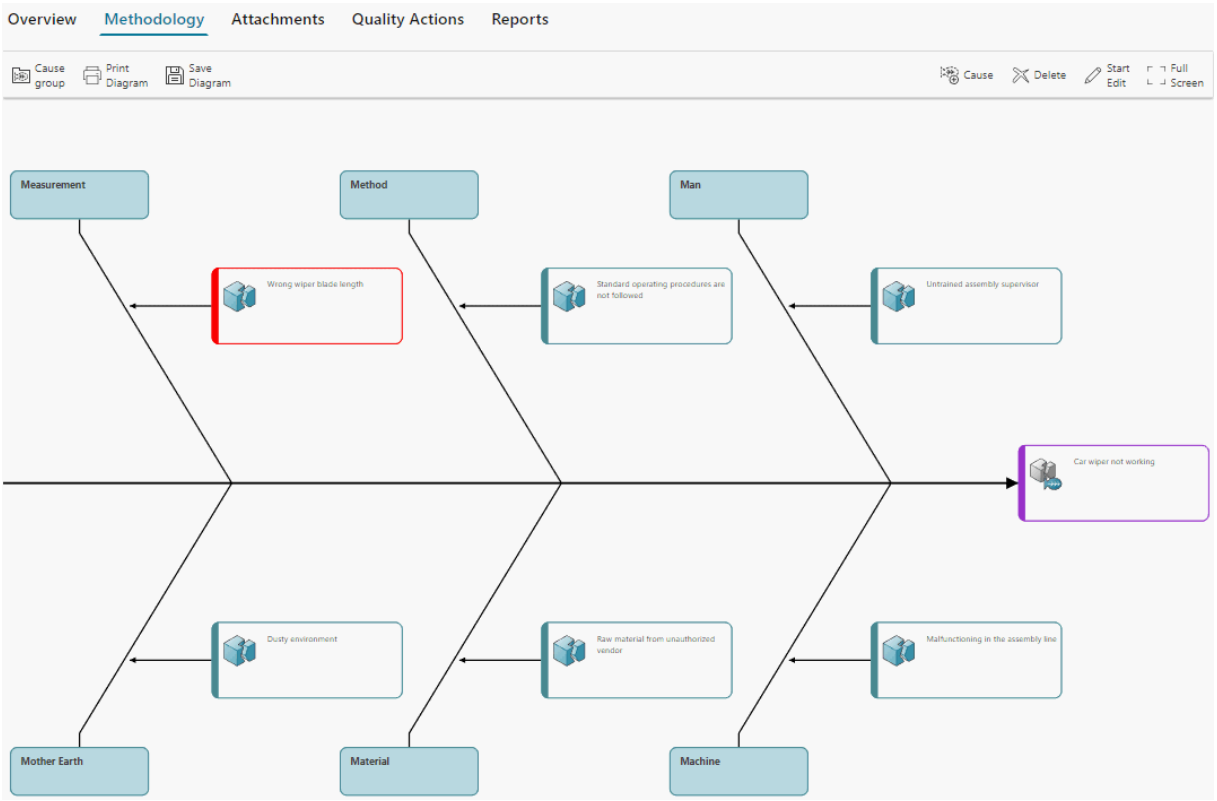
e. In the **More Information** section, click the **Details** box, and add detailed content such as text, tables, or graphics in the rich text editor.

Use the **Full Screen** view to view all information entered in the **Details** box.

f. Choose **More Commands** ••• > **Edit** > **Save Edits**.

6. To edit an Ishikawa or its cause in the **Methodology** tab in the right pane, select the Ishikawa, click the **Methodology** tab in the right pane, and do the following:

a. Click **Start Edit** in the work area toolbar.




b. Click the problem description defect, cause, or child cause; click the text to be updated; and make the required updates.

c. Click **Save Edits** in the work area toolbar.

7. Repeat the steps until you complete editing the required Ishikawa, its causes, or child causes.

## Delete an Ishikawa and its cause groups, causes or child causes

While performing your analysis, you might find that an Ishikawa, cause group, cause, or child cause is not relevant to the Problem Solving process. In such a case, you can delete it.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select and expand the defect that contains the Ishikawa, cause group, cause, or child cause to be deleted.

4. To delete a cause or child cause in the Ishikawa, select it in the left pane, and do the following:

   a. Choose **More Commands** ••• > **Edit** > **Delete**.

      If you are in the **Methodology** tab in the right pane, click **Delete** in the work area toolbar.

   b. In the confirmation message, click **Delete**.

      The existing causes and child causes are automatically rearranged in the Ishikawa.

      > Note:
      >
      > The associated quality actions and attachments are also deleted. If you have linked a failure code from the failure catalog, the link is deleted.

5. To delete a cause group in the Ishikawa, select the Ishikawa in the left pane and click the **Methodology** tab in the right pane. Do the following:

   a. In the **Methodology** tab, select the problem description defect.

   b. Choose **More Commands** ••• > **Manage** > **Cause group**.

   c. In the **Cause Group** box, select the required cause group and click **Remove**.

      > Caution:
      >
      > You cannot delete a cause group if it has associated causes.

d. Click **Save**.

6. To delete an Ishikawa, select the Ishikawa, and do the following:

   a. Choose **More Commands** ••• > **Edit** > **Delete**.

      If you are in the **Methodology** tab in the right pane, click **Delete** in the work area toolbar.

   b. In the confirmation message, click **Delete**.

      The Ishikawa and its associated cause groups are deleted.

      Caution:

      You cannot delete an Ishikawa if it has associated causes.

# Perform a root cause analysis by creating and analyzing the defects that cause the problem

## How to use the methodology of defects to perform a root cause analysis

The Owner can add the *defects* that define the *caused-by analysis* of the defect that you, as an Owner, have added in the **Problem Description** tab. This analysis defines the defects that have caused the problem in relation to its source.

The defect from the **Problem Description** tab automatically appears in this tab as a starting point for the analysis. To this defect, you must add the various defects that in turn caused this defect. Then, you can analyze the defects and mark which defect is the root cause of the problem. When you know the root cause, you can develop the relevant corrective actions and preventive actions.

## Add the probable causes by creating the defects that cause the problem

You must add the defects that define why the problem occurred. For each defect, you can create a chain of defects that describes why the earlier defect occurred. You add the primary defects for each reason. Then, you must add secondary and tertiary defects that describe what caused the primary defects.

For example, if the Problem Solving process is created to resolve the problem of the car wiper not working, you must add the defects that describe why the car wiper is not working. The following might be possible reasons:

- The wiper blade is not working properly
- The wiper blade is not fixed properly on the wiper arm
- The width of the wiper blade is not proportionate to the wiper arm

- The dimensions of wiper blade and wiper arm are not considered during Design Failure Modes and Effects Analysis (D-FMEA).

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

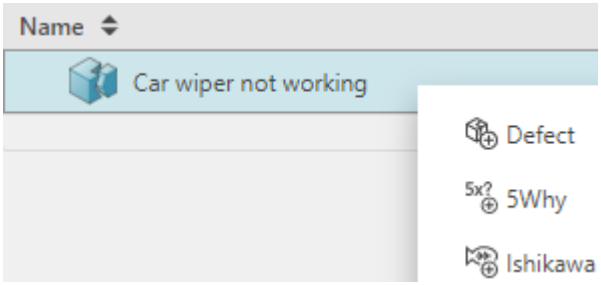
2. Click the **Root Cause Analysis** tab.

   > Note:
   >
   > You must have already **created the problem description defect** before creating the defect.

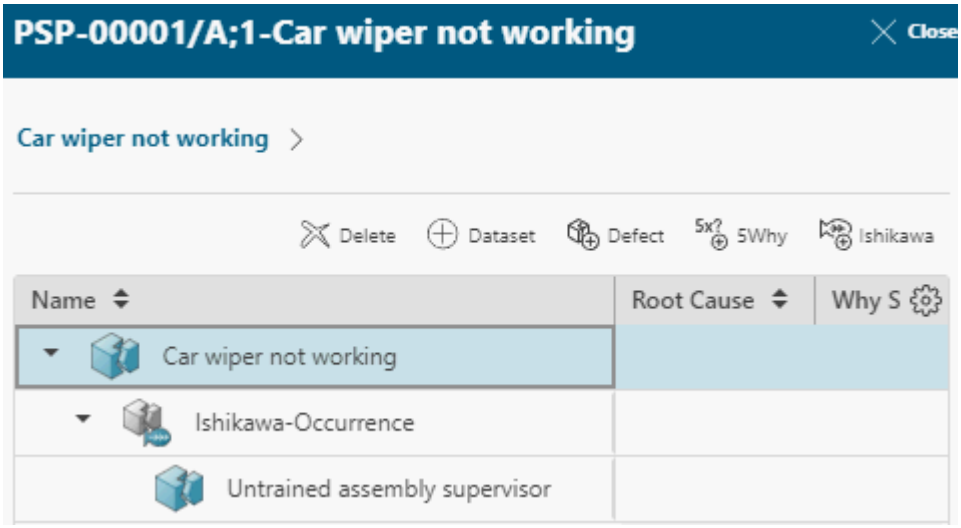
3. In the left pane of the **Root Cause Analysis** tab, select the defect where you want to add the new defect, and do the following:

   a. Choose **More Commands** ••• > **New** > **Defect**.

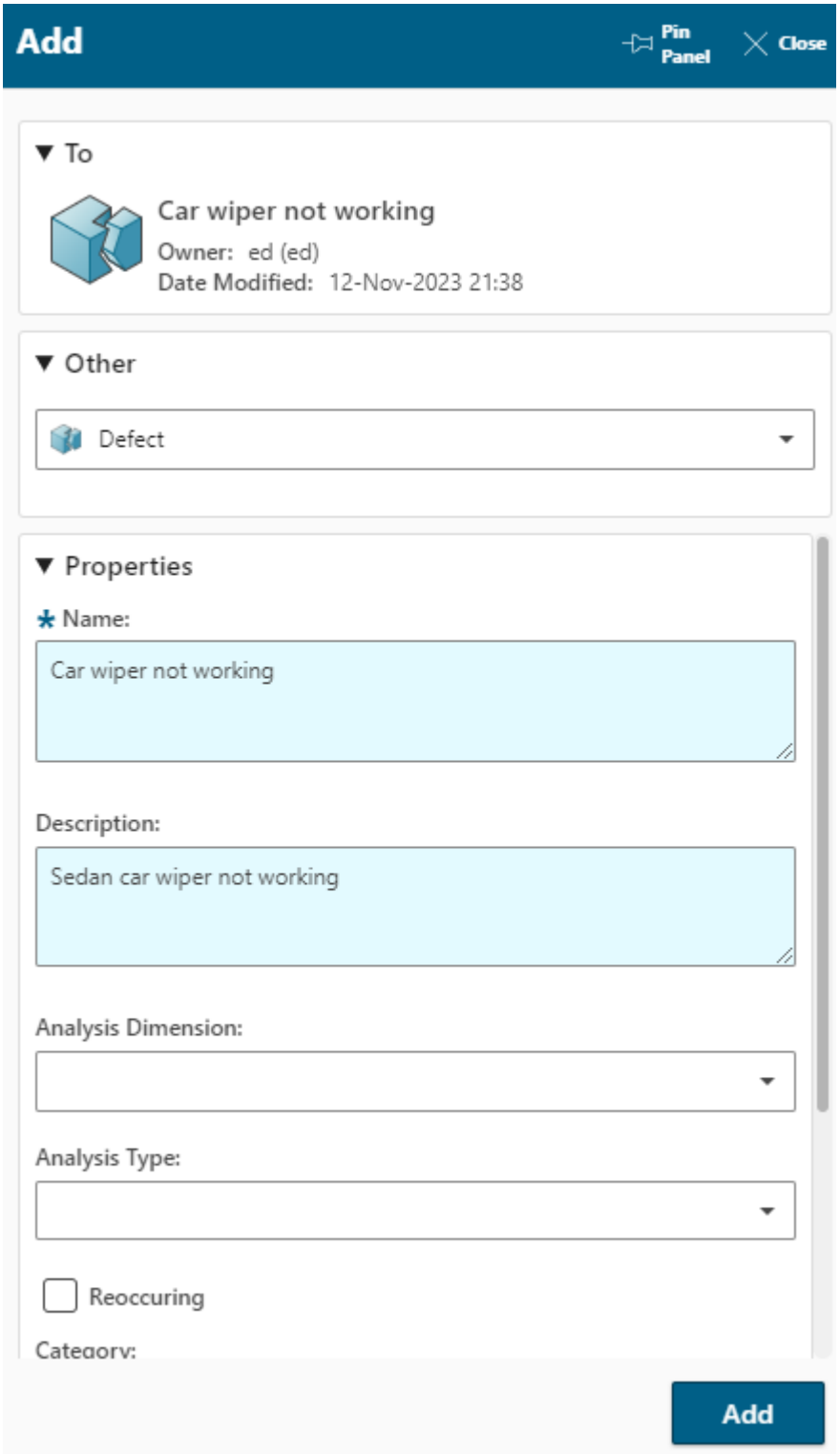
   You can also right-click the defect, and choose **Defect**.




   In the **Root Cause Analysis Tree** panel, select the defect and click **Defect** in the work area toolbar. You can open this panel by choosing **More Commands** ••• > **View** > **Show RCA Tree**. This panel can be opened from all Problem Solving tabs, except the **Root Cause Analysis** tab. The panel displays the entire Root Cause Analysis tree structure containing the problem description defect and its child defects, 5Whys, and Ishikawas that you have added. You can also open the linked failures and defective items from the **Related Failure** and **Defective Item** columns, respectively. The panel allows you to retain the context of root cause analysis while navigating to different locations in Teamcenter.




b. Specify a name for the defect and optionally, enter a description.




Siemens Industry Software Inc. recommends that you do not use the following characters to avoid errors:

- Single quotation mark (')

- Double quotation mark (**"**)
- Slash (**/**)
- Backslash (****)
- Colon (**:**)
- Less than (**<**)
- Greater than (**>**)
- Vertical bar (**|**)
- Tilde (**~**)
- Back tic (**`**)

c. From the **Analysis Dimension** list, select the dimension of the analysis being done in the defect:

- **Occurrence**: Select this option to identify why the problem occurred.
- **Non-Detection**: Select this option to identify why the problem was not detected earlier.

d. From the **Analysis Type** list, select the type of analysis that you want to perform:

- **Specific**: Select this option to identify why the specific problem occurred.
- **Detection**: Select this option to identify why the problem was not detected earlier.
- **Systemic**: Select this option to identify why the system allowed the problem to occur.

e. (Optional) Select the **Reoccurring** check box if the defect is a reoccurring defect.

f. (Optional) Specify the **Category** of the defect.

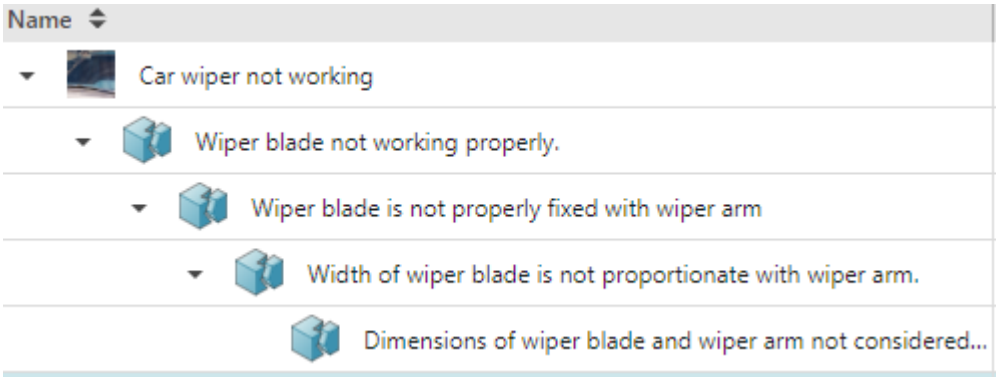
g. **Add the required failure**.

h. Click **Add**.

The defect is added under the defect selected in the left pane.

i. **Add the required defective item**.

j. Repeat the steps until you have added all the required defects.




## Add probable causes by creating them from markups on attachments

In the **Root Cause Analysis** tab, you add attachments to the problem description defect to describe the problem in detail. For these attachments, in the **Preview** section, you can add markups on supporting information such as images, PDFs, or videos to provide specific information about the defect. You can create defects from these markups by submitting the problem description defect to the **PSP__Create_Markups_for_Defect** workflow.

You can create defects for markups added to images, videos, or PDF attachments.

### Procedure

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

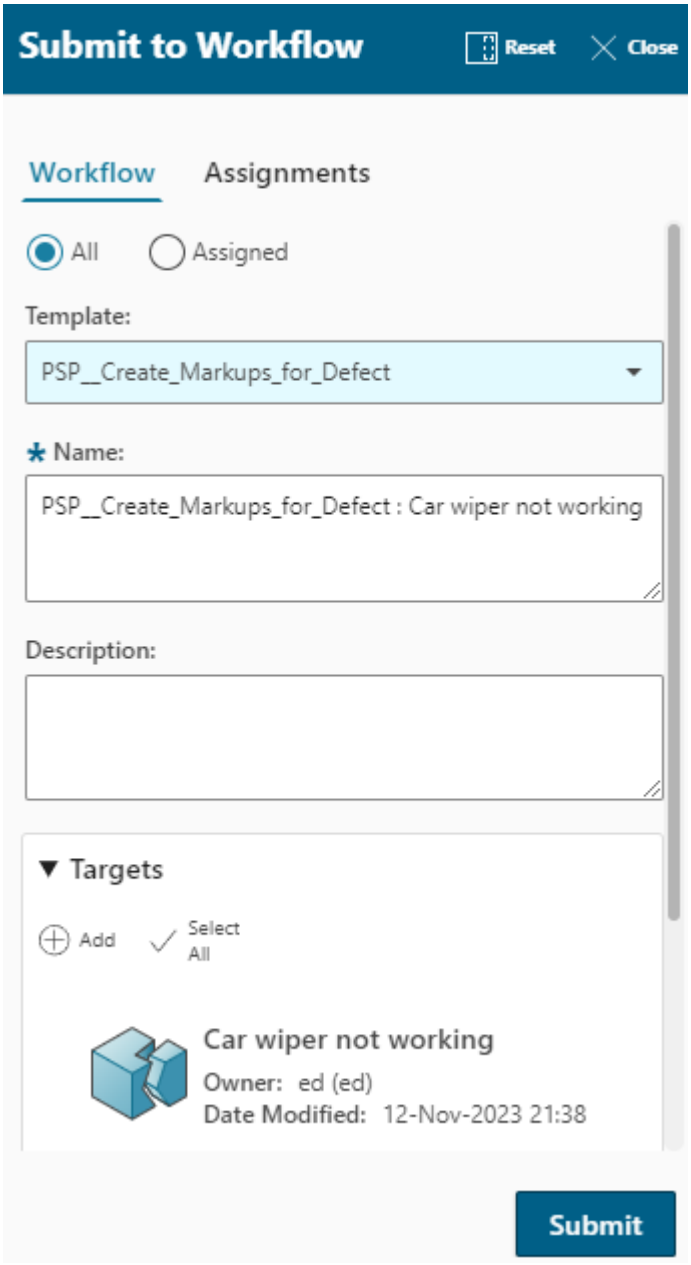
3. In the left pane of the **Root Cause Analysis** tab, select the problem description defect where you have added markups for the attachments.

4. Submit the Problem Solving process to the **PSP__Create_Markups_for_Defect** workflow as follows:

   a. Choose **More Commands** ••• > **Manage** > **Submit to Workflow**.

   b. In the **Submit to Workflow** panel, select **Assigned** to view the available Problem Solving workflows.

   c. From the **Template** list, select **PSP__Create_Markups_for_Defect**.

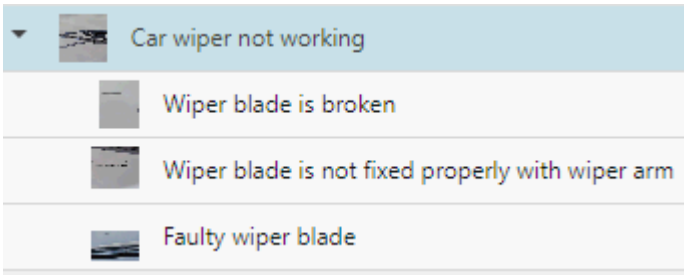



d. Specify a **Name** or accept the default.

e. (Optional) Enter the **Description**.

f. Click **Submit**.

The workflow creates defects from these markups with the name of the markup as the defect name. Additionally, the markup image is attached to the defect.




## Generate a Defect Root Cause Analysis report

To view a summary of the defects and the root causes identified by using defects, generate the **Defect Root Cause Analysis** report.

1. From the **CHANGES** folder, select and open the required Problem Solving process

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the required Problem Solving process.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select the required defect to be used as the source of the report.

4. To generate a report, choose **More Commands** ••• > **New** ✳ > **Generate Report**.

5. In the **Generate Report** panel, select **Defect Root Cause Analysis**.


6. From the **Style Sheet** list, select from the following style sheets:

   - **AWC_Defect_RCA_Report_html.xsl**: Select this style sheet to generate the report as an HTML file.
   - **AWC_Defect_RCA_Report_pdf.xsl**: Select this style sheet to generate the report as a PDF file.

7. From the **Report Display Locale** list, select the required locale.

8. (Optional) In the **Save to FileName** box, type the file name of the report.

9. Click **Generate**.

10. If you select the **AWC_Defect_RCA_Report_html.xsl** style sheet, an HTML report is generated and is displayed in the **Reports** tab.

    The HTML report is available in the **Reports** tab for the current session only. This report contains detailed information about the root cause analysis done on all the defects.

11. If you select the **AWC_Defect_RCA_Report_pdf.xsl** style sheet, browse to the **Downloads** folder of your browser, and open the PDF version of the report.

    This report contains the same detailed information as in the HTML report, including the images that are attached to all the defects.

## Edit a defect

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select and expand the problem description defect or the child defect that contains the defect to be edited.

4. Select the defect, and choose **More Commands** ••• > **Edit** > **Summary** .

5. In the **Overview** tab in the right pane, make the required updates.

6. In the **More Information** section, click the **Details** box, and add detailed content such as text, tables, or graphics in the rich text editor.

   Use the **Full Screen** view to view all information entered in the **Details** box.

7. From the **Evaluation** list, select the current status of the defect. Select one of the following:

   - **Draft**: Indicates that the defect is created.
   - **Investigating**: Indicates that the investigation is in progress to evaluate if the defect is valid.
   - **Confirmed**: Confirms that the defect is valid.
   - **Invalidated**: Confirms that the investigation has proven that the defect is invalid.

   After the analysis is done, you can use this property to indicate whether the defect is valid or not.

8. From the **Analysis Dimension** list, update the dimension of the analysis being done in the defect:

- **Occurrence**: Select this option to identify why the problem occurred.
- **Non-Detection**: Select this option to identify why the problem was not detected earlier.

> Note:
>
> You can edit the **Analysis Dimension** of a defect only if the defect is a child of the problem description defect.

9. From the **Analysis Type** list, update the type of analysis that you want to perform:
   - **Specific**: Select this option to identify why the specific problem occurred.
   - **Detection**: Select this option to identify why the problem was not detected earlier.
   - **Systemic**: Select this option to identify why the system allowed the problem to occur.
10. Choose **More Commands** ••• > **Edit** > **Save Edits**.

## Delete a defect

While performing your analysis, you might find that a defect is not relevant to the Problem Solving process. In such a case, you can delete the defect.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.
2. Click the **Root Cause Analysis** tab.
3. In the left pane of the **Root Cause Analysis** tab, select and expand the problem description defect or the child defect that contains the defect to be deleted.
4. Select the defect, choose **More Commands** ••• > **Edit** > **Delete**.

   > Note:
   >
   > You cannot delete a defect if the defect has associated child defects.
5. In the confirmation message, click **Delete**.

Note:

The associated quality actions and attachments are also deleted. If you have linked a failure code from the failure catalog, the link is deleted.

## Perform a root cause analysis by answering the questions in checklists

A checklist consists of a list of questions that define the possible root causes for a defect. You can answer the questions in checklists to identify the root cause of a defect. As you complete answering the questions in the checklists, you can provide comments about why you have provided a specific answer. Additionally, you can assign a resource to work on a question after you provide your answer. When you know the root cause, you can develop the relevant corrective actions and preventive actions.

Note:

Before using checklists to perform a root cause analysis, the Quality manager must create the checklists for you in the Quality Master Data library, and add chapters, questions, and sub-questions to it.

### Procedure

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

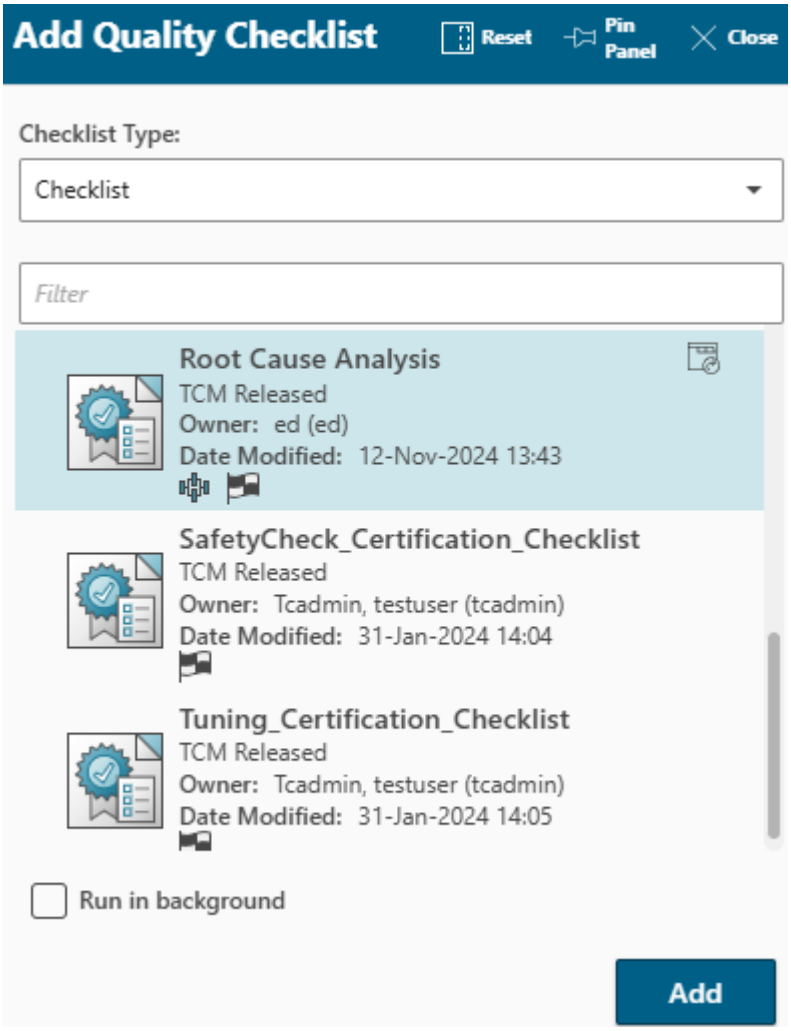
   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. In the left pane of the **Root Cause Analysis** tab, select the defect where you want to add a checklist.

4. In the right pane, click the **Quality Checklist** tab.

5. Click **Add Quality Checklist** and search for and select the required checklists. Click **Add**.




6. To work with the checklist, do the following:

   a. To assign a resource to work on a question or subquestion, do the following:

      A. Select the question or subquestion and click **Assign Resource**.

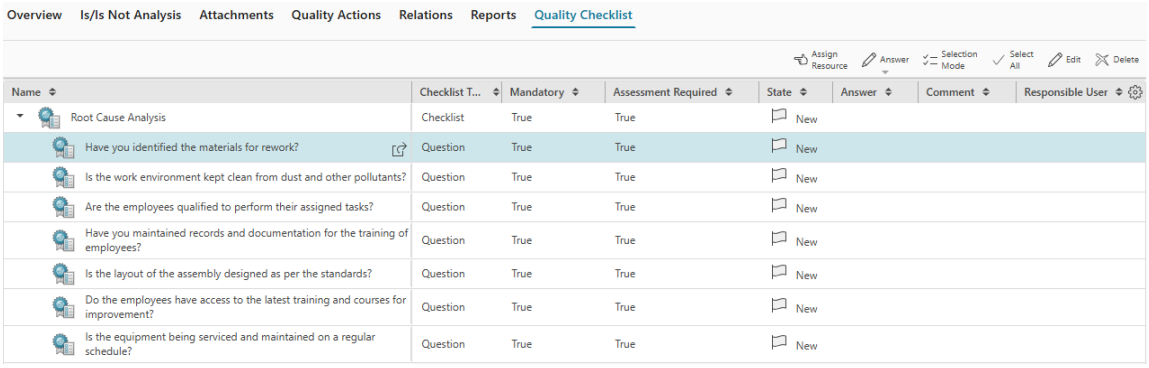
         You can select multiple questions or subquestions at a time or click **Select All** ✓ to select all questions and subquestions.

      B. In **Assign Resource**, search for and select the resource, and then click **Assign**.

   b. To answer the questions or subquestions, do the following:

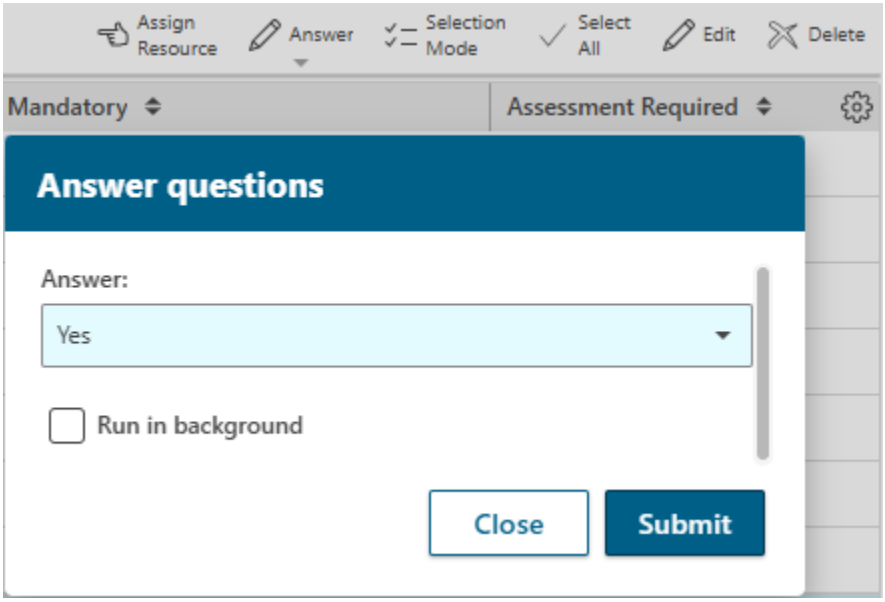
      A. Select the questions or subquestions to be answered.

         You can select multiple questions or subquestions at a time, or click **Select All** ✓ to select all questions and subquestions.




B. From the work area toolbar, click **Answer** > **Selected Questions**.

C. In the **Answer questions** panel, select an answer from the **Answer** list.




D. Click **Submit**.

E. In the confirmation message, click **Submit**.

c. To edit the checklist, do the following:

A. Click **Edit** from the work area toolbar.

B. In the **Mandatory** column, click inside the column, and select the displayed check box to make the question or subquestion mandatory or optional.

C. In the **Assessment Required** column, click inside the column, and select the displayed check box to make assessment of the question or subquestion mandatory or optional.

D. From the **State** list, select an option to specify the status of the question or subquestion.

E. In the **Comment** column, enter your comments on the checklist, chapters, questions, or subquestions.

d. To delete a checklist, chapter, question, or subquestion in the checklist, do the following:

A. Select the checklist, chapter, question, or subquestion, and click **Delete** from the work area toolbar.

B. In the confirmation message, click **Delete**.

7. To answer the checklist questions in the **Information** panel, do the following:

a. Select the checklist question, and click **Information** to view the question details.

b. Click **Edit** and enter the answer.

c. Click **Save**.

## Add quality actions and attachments to defects, 5Whys, Whys, Ishikawas, or Ishikawa causes

You can add the quality actions and attachments required to investigate a defect, a 5Why, a Why, an Ishikawa, or an Ishikawa cause.

After adding the quality actions and attachments, you can view them in the **Information** panel for a selected object. This provides a summary of the associated quality actions and attachments.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. To add multiple attachments to a defect, 5Why, Why, Ishikawa, or Ishikawa cause, do the following:

a. In the **Overview** tab, click **View** > **Show RCA Tree** to display the **Root Cause Analysis Tree** panel. The panel displays the entire Root Cause Analysis tree structure containing the problem description defect and its child defects, 5Whys, and Ishikawas that you have added. You can also open the linked failures and defective items from the **Related Failure** and **Defective Item** columns, respectively. The panel allows you to retain the context of root cause analysis while navigating to different locations in Teamcenter.

b. Navigate to the folder containing the attachments.

c. Select the required attachment, and drag it to the defect, 5Why, Why, Ishikawa, or Ishikawa cause.

You can also select the required attachment, and click **Dataset** ⊕ in the **Root Cause Analysis Tree** panel. The attachment is added to the defect, 5Why, Why, Ishikawa, or Ishikawa cause that is selected in the **Root Cause Analysis Tree** panel.

d. Repeat the steps until you have added all the required attachments.

3. To add a single attachment or quality action to a defect, 5Why, Why, Ishikawa, or Ishikawa cause, do the following:

a. Click the **Root Cause Analysis** tab.

b. In the left pane of the **Root Cause Analysis** tab, expand the required defects, 5Whys, or Ishikawa where you want to add attachments and quality actions.

c. Select the required defect, 5Why, Why, Ishikawa, or Ishikawa cause where you want to add attachments and quality actions.

d. To add attachments, do the following:

A. In the right pane, click the **Attachments** tab.

B. In the **Files** section, click **Add to** ⊕.

C. In the **Add** panel, click **Choose File** to select the required file and click the **Add** button.

When you add an image as an attachment to a defect, a preview of the image appears in the **Preview** section of the **Overview** tab. Additionally, a thumbnail of the image appears next to the object in the following locations:

- Left pane of the **Root Cause Analysis** tab
- **Attachments** tab in the right pane
- Tile in the **Methodology** tab in the right pane

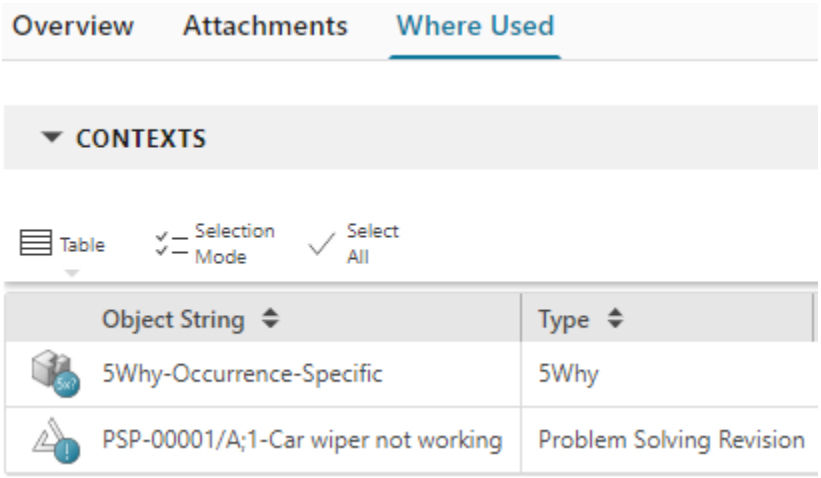
e. To add quality actions, in the right pane, click the **Quality Action** tab and do the following:

A. Click **Add to** ⊕ and click one of the following:

- **Add Quality Action to create a new quality action.**
- **Add Quality Action from Template to create a new quality action from a template.**

- **Add Quality Action as a Template to create a new quality action and set it as a template.**

When you open the quality action, you can view the source defect, a 5Why, a Why, an Ishikawa, or an Ishikawa cause and the parent Problem Solving process in the **Where Used** tab.




B. After adding the required quality actions, you can assign responsible users as follows:

   i. Select the required quality actions and click **Assign Responsible User**.

   ii. In the **Assign Responsible User** panel, type a name or title to filter the list of users.

   iii. Select the required user and click **Add**.

## Link a defect, Why, or Ishikawa cause to a failure code from the failure catalog

If a failure is related to a defect, Why, or Ishikawa cause, you can attach it from the failure catalog. You can link only one failure to a defect, Why, or Ishikawa cause.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. To link multiple failures to defects, Whys, or Ishikawa causes, do the following:

   a. In the **Overview** tab, click **View** > **Show RCA Tree** to display the **Root Cause Analysis Tree** panel. The panel displays the entire Root Cause Analysis tree structure containing the problem description defect and its child defects, 5Whys, and Ishikawas that you have added.

You can also open the linked failures and defective items from the **Related Failure** and **Defective Item** columns, respectively. The panel allows you to retain the context of root cause analysis while navigating to different locations in Teamcenter.

b. Navigate to the **Quality Master Data** library, and click the **Failure Specifications** tab.

c. Select the required failure, and drag it to the target defects, Whys, or Ishikawa causes.

You can also select the required failure, and click **Add Failure** ⊕ in the **Root Cause Analysis Tree** panel. The failure is added to the defects, Whys, or Ishikawa causes selected in the **Root Cause Analysis Tree** panel.

d. In the confirmation message, click **Failure** to indicate that you are adding a failure to the target defects, Whys, or Ishikawa causes.

e. Repeat the steps until you have added all the required failures.

3. To link a single failure code to a defect, Why, or Ishikawa cause, do the following:

a. Click the **Root Cause Analysis** tab.

b. In the left pane of the **Root Cause Analysis** tab, expand the required defects, 5Whys, or Ishikawa.

c. Select the required defect, Why, or Ishikawa cause that you want to link to a failure code.

d. In the **Failure Code from Catalog** section in the **Overview** tab of the right pane, click **Add Failure** ⊕ to **add the required failure**.

## Link a defect, Why, or Ishikawa cause to a defective item

If a defective item is related to a defect, Why, or Ishikawa, you can attach it to help in the analysis of the root cause. You can add only one defective item to a defect, Why, or Ishikawa cause.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. To link multiple defective items to defects, Whys, or Ishikawa causes, do the following:

a. In the **Overview** tab, click **View** 👁 > **Show RCA Tree** 👁 to display the **Root Cause Analysis Tree** panel. The panel displays the entire Root Cause Analysis tree structure containing the problem description defect and its child defects, 5Whys, and Ishikawas that you have added. You can also open the linked failures and defective items from the **Related Failure** and

**Defective Item** columns, respectively. The panel allows you to retain the context of root cause analysis while navigating to different locations in Teamcenter.

b. Navigate to the folder that contains the defective items.

Defective items can be quality actions, item revisions, documents, or Failure Mode and Effects Analysis (FMEA).

c. Select the required defective item, and drag it to the defects, Whys, or Ishikawa causes.

You can also select the required defective item, and click **Add Defective Item** ⊕ in the **Root Cause Analysis Tree** panel. The defective item is added to the defects, Whys, or Ishikawa causes that is selected in the **Root Cause Analysis Tree** panel.

d. In the confirmation message, click **Defective Item** to indicate that you are adding a defective item to the target defects, Whys, or Ishikawa causes.

e. Repeat the steps until you have added all the required defective items.

3. To link a single defective item to a defect, Why, or Ishikawa cause, do the following:

a. Click the **Root Cause Analysis** tab.

b. In the left pane of the **Root Cause Analysis** tab, expand the required defects, 5Whys, or Ishikawa.

c. Select the required defect, Why, or Ishikawa cause where you want to add a defective item.

d. In the **Defective Item** section, click **Add** ⊕ to add the required defective item.

## Mark the root causes of the Problem Solving process

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. After you complete the root cause analysis, select the defect, Why, or Ishikawa cause that is the root cause of the Problem Solving process, and do one of the following:

- Choose **More Commands** ••• > **Manage** > **Mark as Root Cause**.

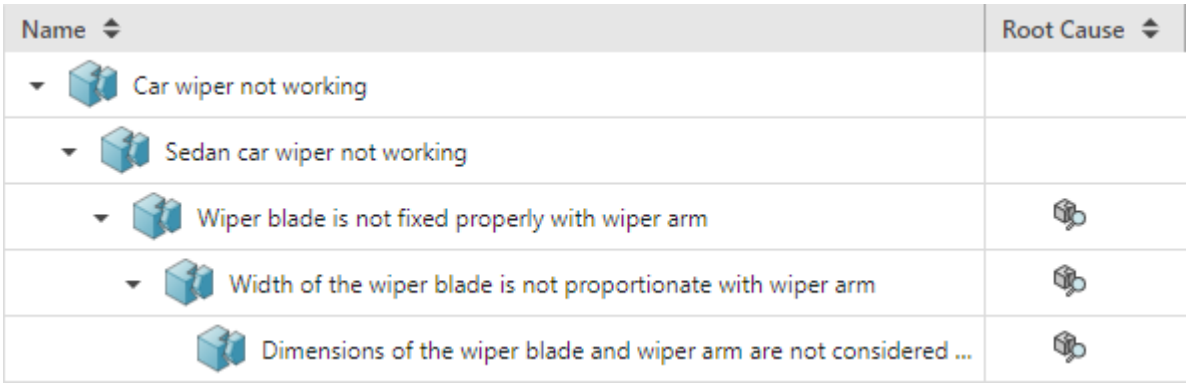
- In the left pane, right-click a defect, Why, or Ishikawa cause, and choose **Mark as Root Cause**.

- In the **Methodology** tab in the right pane, select the Why or Ishikawa cause, choose **More Commands** ••• > **Manage** > **Mark as Root Cause**. If you have marked a Why or an Ishikawa cause as the root cause of the Problem Solving process, it is indicated with a red border on the containing box.

- In the **Relations** tab in the right pane, select the defect, choose **More Commands** ••• > **Manage** > **Mark as Root Cause**.

You can mark multiple defects, Whys, or Ishikawa causes as the root cause. When you do this, the values of the parent object's **Analysis Dimension** and **Analysis Type** are populated in the defect, Why, or Ishikawa cause. If you remove the root cause mark, these values are removed too.

In the left pane, when you mark a defect, Why, or Ishikawa cause as the root cause, the icon is populated in the **Root Cause** column.




> Note:
>
> The root causes appear in the Problem Solving report.

4. To remove the root cause mark on an object, and do one of the following:

- Choose **More Commands** ••• > **Manage** > **Remove as Root Cause**.

- In the left pane, right-click a defect, Why, or Ishikawa cause, and choose **Remove as Root Cause**.

- In the **Methodology** tab in the right pane, select the Why or Ishikawa cause, choose **More Commands** ••• > **Manage** > **Remove as Root Cause**.

- In the **Relations** tab in the right pane, select the object, choose **More Commands** ••• > **Manage** > **Remove as Root Cause**.

# View the relations between the Problem Definition defect and its defects, 5Whys, and Ishikawa

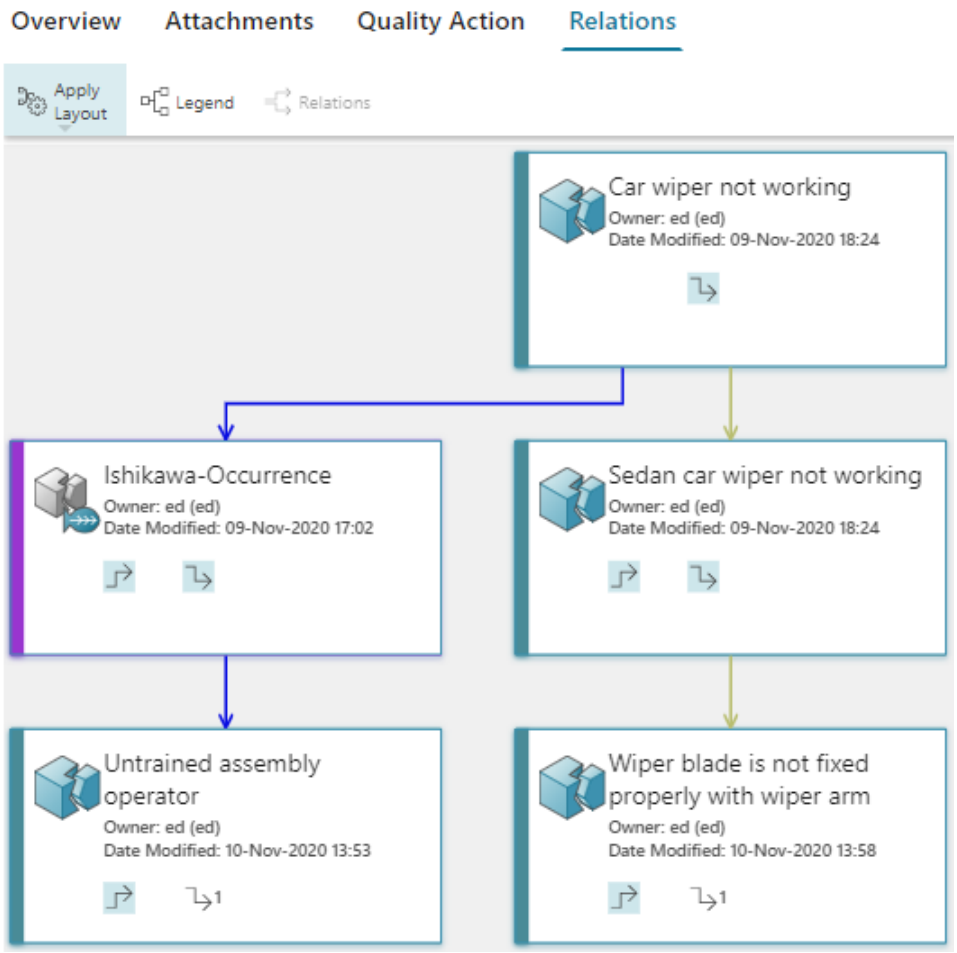
1. From the **CHANGES** folder, select and open the required Problem Solving process.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Root Cause Analysis** tab.

3. Select the **Problem Definition** defect and click the **Relations** tab in the right pane.

   In this tab, you can view all the defects, 5Whys, and Ishikawa causes you have added to the **Problem Definition** defect. If you have marked a defect, Why, or Ishikawa cause as the root cause of the Problem Solving process, it is indicated with a red border on the containing box.




4. In the **Relations** tab, you can do the following:

   - See or hide incoming and outgoing relations.

- Choose which objects or relations appear in the work area. You can do this by using the **Legend** panel or by applying filters based on object properties.
- Use an overview map to navigate large structures.
- Change the layout of the display

For more information, see *View related data* in *Active Workspace Fundamentals* in the Teamcenter documentation.

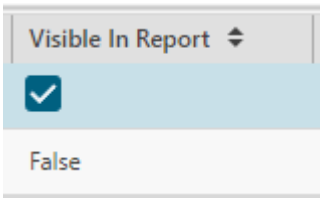
5. To capture the current view of all the relations, click **Save Diagram**.

   The snapshot is added as an attachment in the **Attachments** tab of the **Root Cause Analysis** tab.

6. To display a snapshot of the relations when you generate the **Root Cause Analysis** report, do the following:

   a. In the **Attachments** tab, for the snapshot, click inside the **Visible In Report** column to display the check box that defines this property.

   b. Set the value of this column to **True**.




7. To print the current view of all the relations, do the following:

   a. Click **Print Diagram**.

      The relations diagram opens in a new browser tab.

   b. Print the relations from your browser.

# 13. Create a corrective action plan

After performing a root cause analysis of the Problem Solving process, as the Owner, you must add the different corrective actions that can be performed to resolve the Problem Solving process, implement these corrective actions to confirm their effectiveness, and then specify the best corrective action to be implemented. The corrective action to be implemented might be a combination of the effective corrective actions that will completely resolve the Problem Solving process.

> Note:
>
> When you select a corrective action in the **Plan Permanent Corrective Action** section, its associated quality actions appear in the **Confirmation of Effectiveness** section. To add a new quality action in the **Confirmation of Effectiveness** section, first, select a corrective action in the **Plan Permanent Corrective Action** section, and then add the quality action.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Corrective Actions** tab.

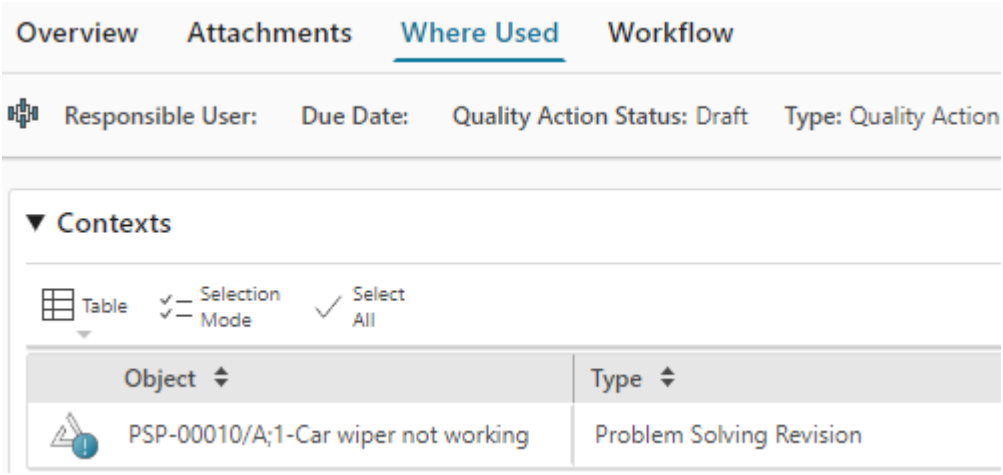
3. To plan the corrective actions for the Problem Solving process, do the following:

   a. (Optional) Select a root cause in the **ROOT CAUSES** section to create a planned corrective action for a specific root cause.

   b. In the **Plan Permanent Corrective Action** section, click **Add to** ⊕ and click one of the following:

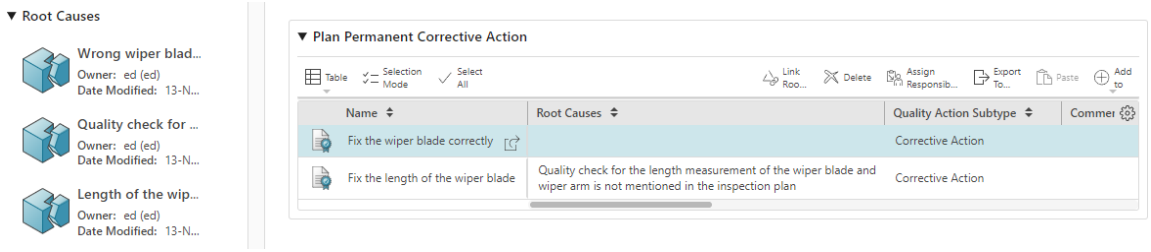
      - **Add Quality Action to create a new quality action.**
      - **Add Quality Action from Template to create a new quality action from a template.**
      - **Add Quality Action as a Template to create a new quality action and set it as a template.**

      When you open the quality action, you can view the parent Problem Solving process and the linked root causes in the **Where Used** tab.

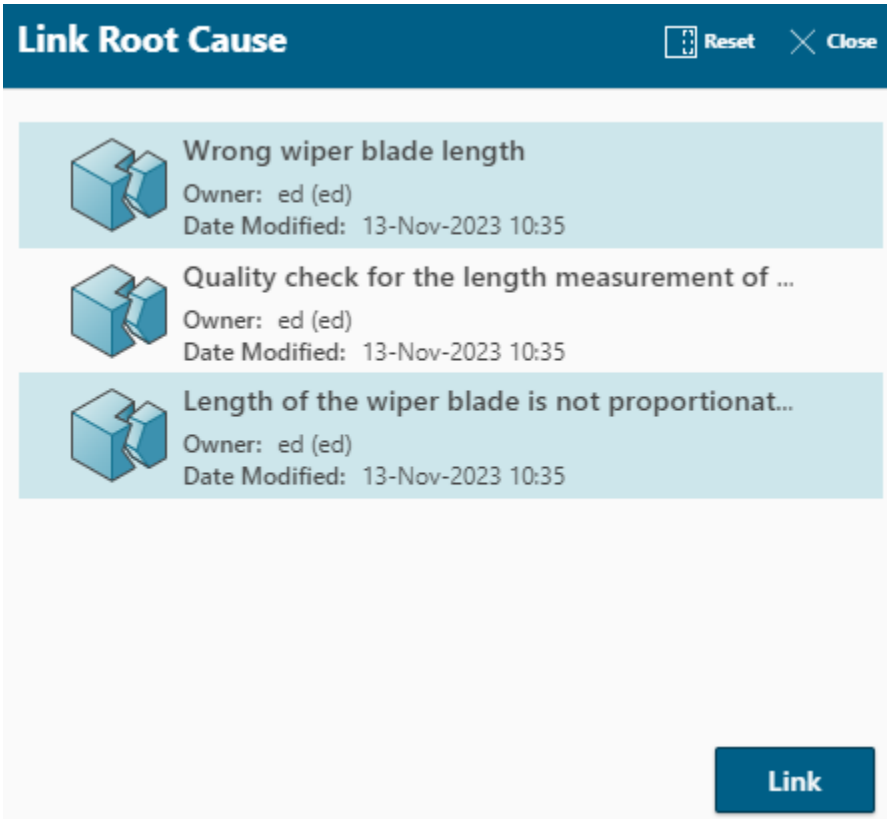



c. To link the root causes to a planned corrective action, select the corrective action, and do the following:

A. Click **Link Root Cause** in the **Plan Permanent Corrective Action** section.

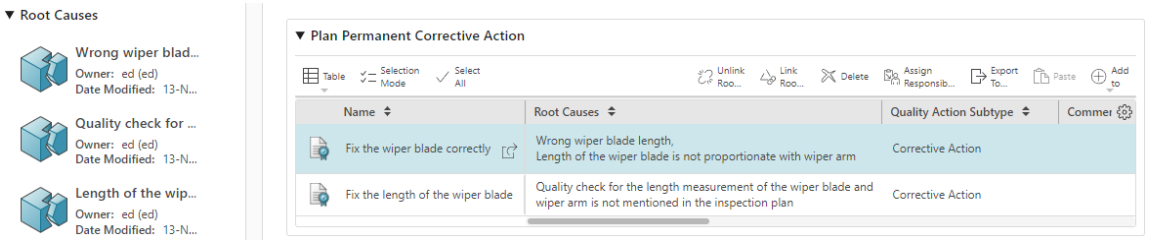



B. In the **Link Root Cause** panel, select the required root causes, and click **Link**.

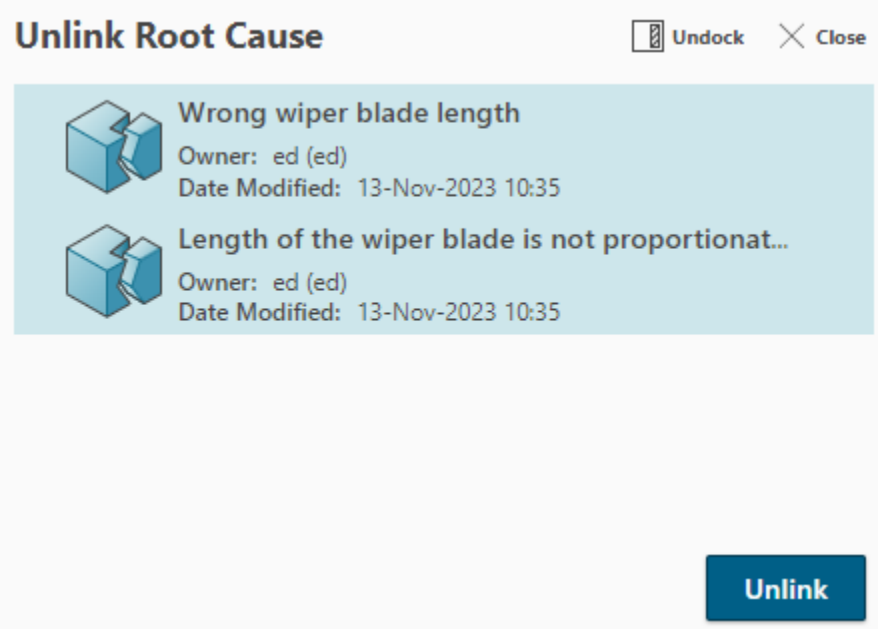



d. To delink the required root causes from a planned corrective action, select the corrective action, and do the following:

A. Click **Unlink Root Cause** in the **Plan Permanent Corrective Action** section.




B. In the **Unlink Root Cause** panel, select the required root causes, and click **Unlink**.




e. After you create the planned corrective action, your manager might review it and give feedback that the action is a containment action or preventive action rather than a planned corrective action. In this case, you can convert the planned corrective action to a containment action or preventive action by changing its subtype as follows:

   A. In the **Plan Permanent Corrective Action** tab, select the required planned corrective action, and choose **More Commands** ••• > **Manage** > **Move Quality Action**.

   B. Do one of the following:

   - To convert a planned corrective action to a containment action, from the **Quality Action Subtypes** list, select **Containment Action**.
   - To convert a planned corrective action to a preventive action, from the **Quality Action Subtypes** list, select **Preventive Action**.

   C. Click **Change**.

4. To define the quality actions that confirm the effectiveness of the corrective action, select a planned corrective action in the **Plan Permanent Corrective Action** section, click **Add to** ⊕ in the **Confirmation of Effectiveness** section, and click one of the following:

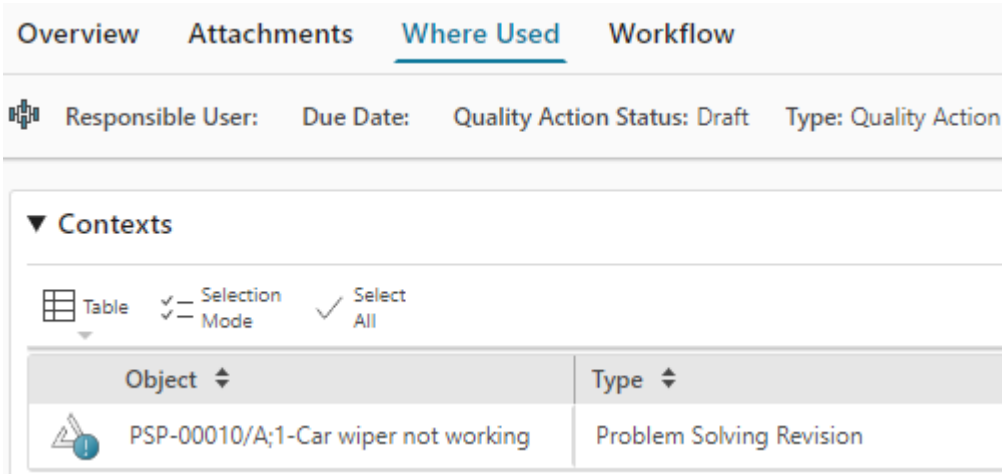
- **Add Quality Action to create a new quality action.**
- **Add Quality Action from Template to create a new quality action from a template.**
- **Add Quality Action as a Template to create a new quality action and set it as a template.**

When you open the quality action, you can view the parent Problem Solving process in the **Where Used** tab.

5. To specify the best corrective action to be implemented, in the **Implement Corrective Actions** section, click **Add to** ⊕, and click one of the following:

   - **Add Quality Action to create a new quality action.**
   - **Add Quality Action from Template to create a new quality action from a template.**
   - **Add Quality Action as a Template to create a new quality action and set it as a template.**

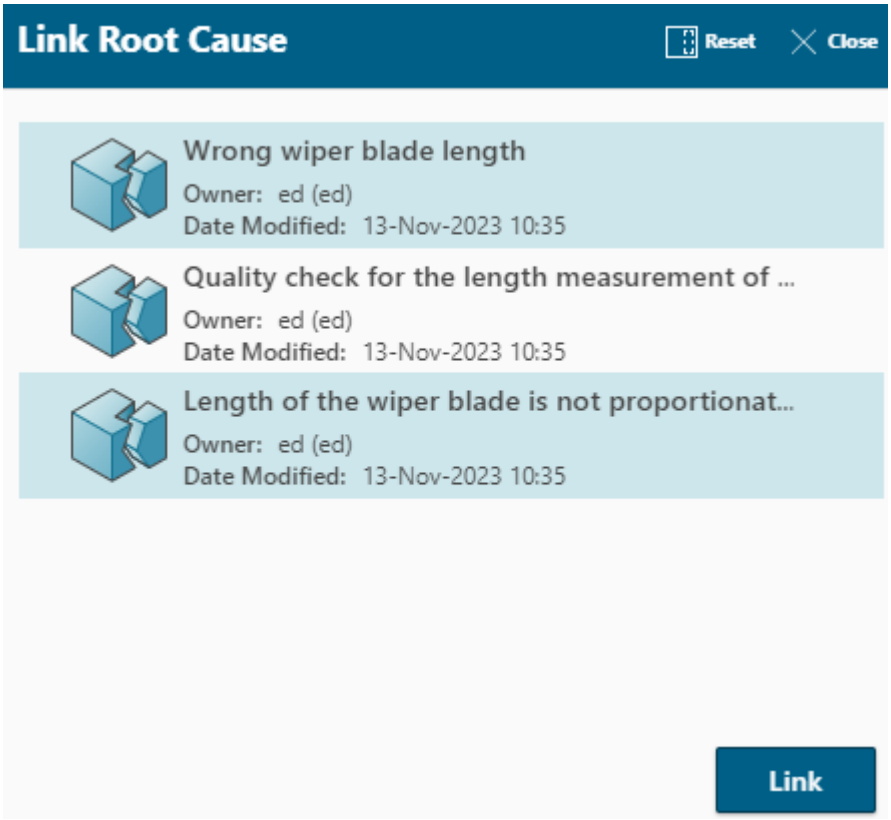
   When you open the quality action, you can view the parent Problem Solving process in the **Where Used** tab.



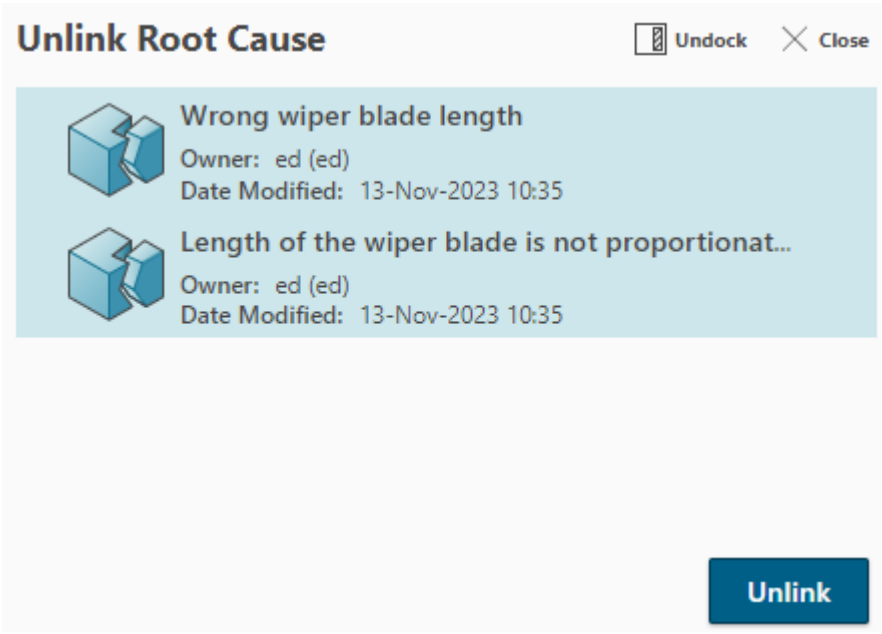

6. To link the root causes to a corrective action to be implemented, select the corrective action, and do the following:

   a. Click **Link Root Cause** in the **Implement Corrective Actions** section.

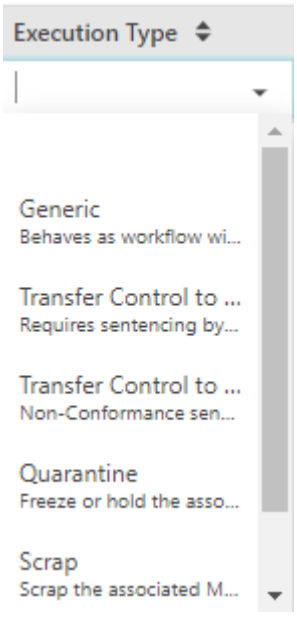
   b. In the **Link Root Cause** panel, select the required root causes, and click **Link**.




7. To delink the root causes from a corrective action to be implemented, select the corrective action, and click **Unlink Root Cause** in the **Implement Corrective Actions** section.



8. To specify the **Execution Type** of the quality action, click in the **Execution Type** column, and select the required value from the list.




In this column, you can specify the type of action to be performed. For example, you can choose to quarantine the part that is causing the issue.

9. To specify the **Execution Reference** of the quality action, do the following:

   a. Select the quality action and choose **More Commands** ••• > **Manage** > **Assign Execution Reference**.

   b. To specify the part that is impacted by the quality action, either create the part or search for and select the part.

      For example, if you are facing an issue with the car wiper blade, you can assign the car wiper blade as the **Execution Reference** of the quality action.

   c. Click **Assign**.

10. After adding the required quality actions, you can assign responsible users as follows:

    a. Select the required quality actions and click **Assign Responsible User**.

    b. In the **Assign Responsible User** panel, type a name or title to filter the list of users.

    c. Select the required user and click **Add**.

# 14. Define the preventive actions that stop the recurrence of the Problem Solving process problem

After the Owner creates the Problem Solving process's corrective actions, the Owner must define the Problem Solving process's preventive actions. These actions are performed to prevent a future occurrence of the issue.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

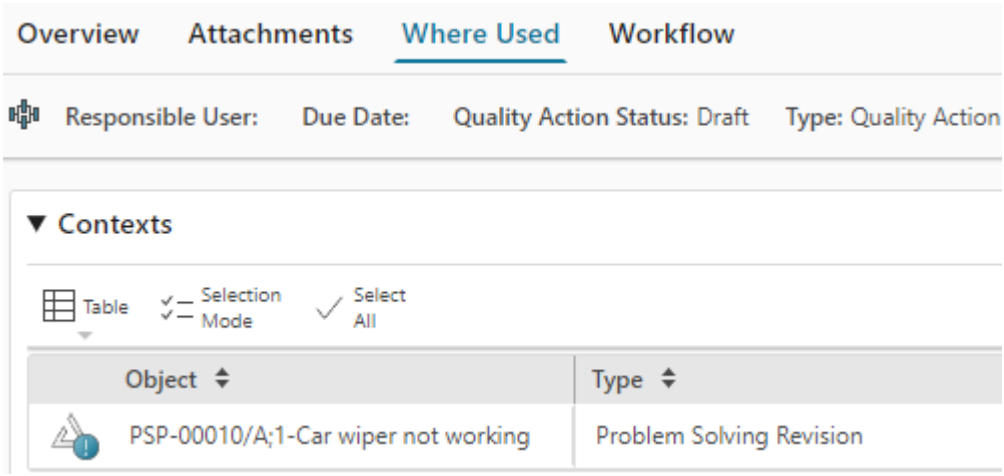
2. Click the **Preventive Actions** tab.

3. In the **Prevent recurrence** section, click **Add to** ⊕ and click one of the following:

   - **Add Quality Action to create a new quality action.**
   - **Add Quality Action from Template to create a new quality action from a template.**
   - **Add Quality Action as a Template to create a new quality action and set it as a template.**

   For more information, see *Quality Actions* in the Teamcenter documentation.

   When you open the quality action, you can view the parent Problem Solving process in the **Where Used** tab.




4. After adding the required quality actions, you can assign responsible users as follows:

a. Select the required quality actions and click **Assign Responsible User**.

b. In the **Assign Responsible User** panel, type a name or title to filter the list of users.

c. Select the required user and click **Add**.

5. To display the preventive action in the Problem Solving report, do the following:

a. Choose **More Commands** ••• > **Edit** > **Start Edit**.

b. In the **Visible In Report** column, click inside the column, and select the displayed check box to display the preventive action or clear the check box to hide the preventive action in the report.

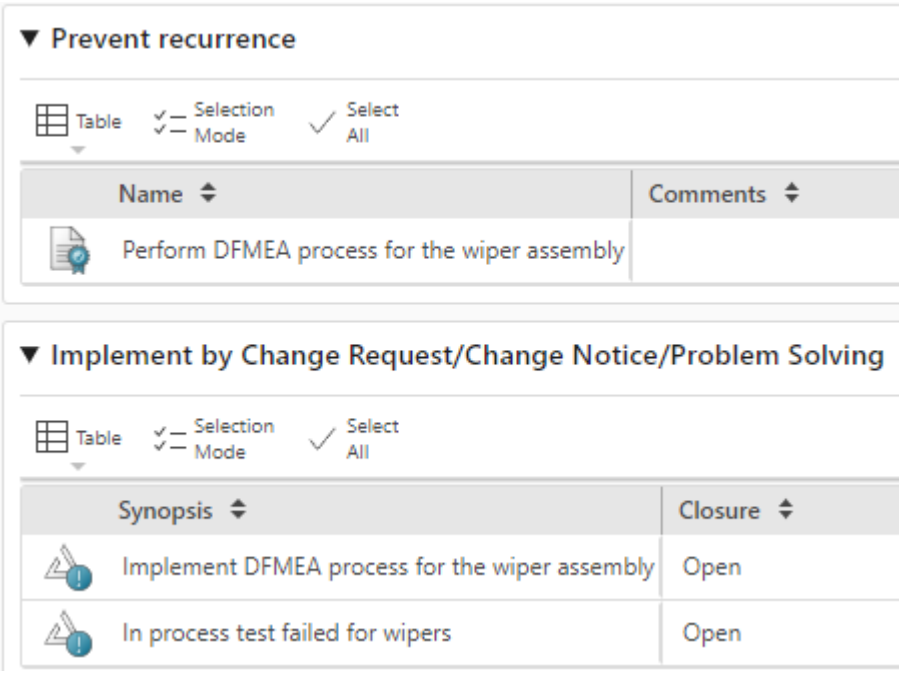
c. Choose **More Commands** ••• > **Edit** > **Save Edits**.

6. If you have derived an engineering change request (ECR), engineering change notice (ECN), Problem Solving process, or a Simple Change from the Problem Solving process, the details of the respective ECR, ECN, Problem Solving process, or Simple Change are listed in the **Implement by Change Request/Change Notice/Problem Solving** section. To add the additional ECRs, ECNs, Problem Solving processes, or Simple Changes that implement the preventive action, do the following:

a. Click **Add to** ⊕.

b. In the **Add** panel, select the ECN, ECR, Problem Solving process, or Simple Change from the **Palette** tab or **Search** tabs.

c. Click **Add**.




7. After you create the preventive action, your manager might review it and give feedback that the action is a containment action or planned corrective action rather than a preventive action. In this case, you can convert the preventive action to a containment action or planned corrective action by changing its subtype as follows:

   a. In the **Preventive Actions** tab, select the required preventive action, and choose **More Commands** ••• > **Manage** > **Move Quality Action**.

   b. Do one of the following:

      - To convert a preventive action to a containment action, from the **Quality Action Subtypes** list, select **Containment Action**.

      - To convert a preventive action to a planned corrective action, from the **Quality Action Subtypes** list, select **Corrective Action**.

   c. Click **Change**.

      Depending on your selection, the preventive action is either moved to the **Containment Actions** tab or the **Corrective Actions** tab as a containment or a planned corrective action, respectively.

# 15. Derive a change from a Problem Solving process

In addition to deriving a Problem Solving process from an existing one, you can also derive the following types of changes:

- Change Notice
- Change Request
- Simple Change

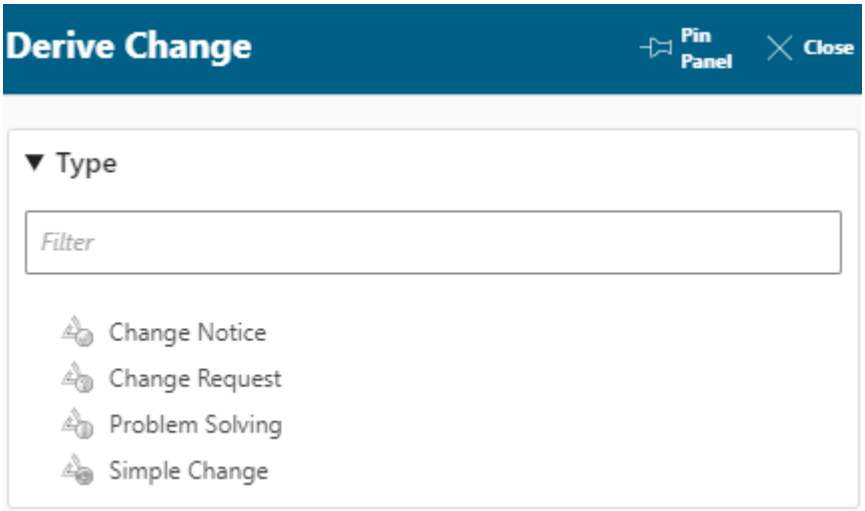
For more information about changes, see *Change Management on Active Workspace — Usage* in the Teamcenter documentation.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to use as the source of the change.

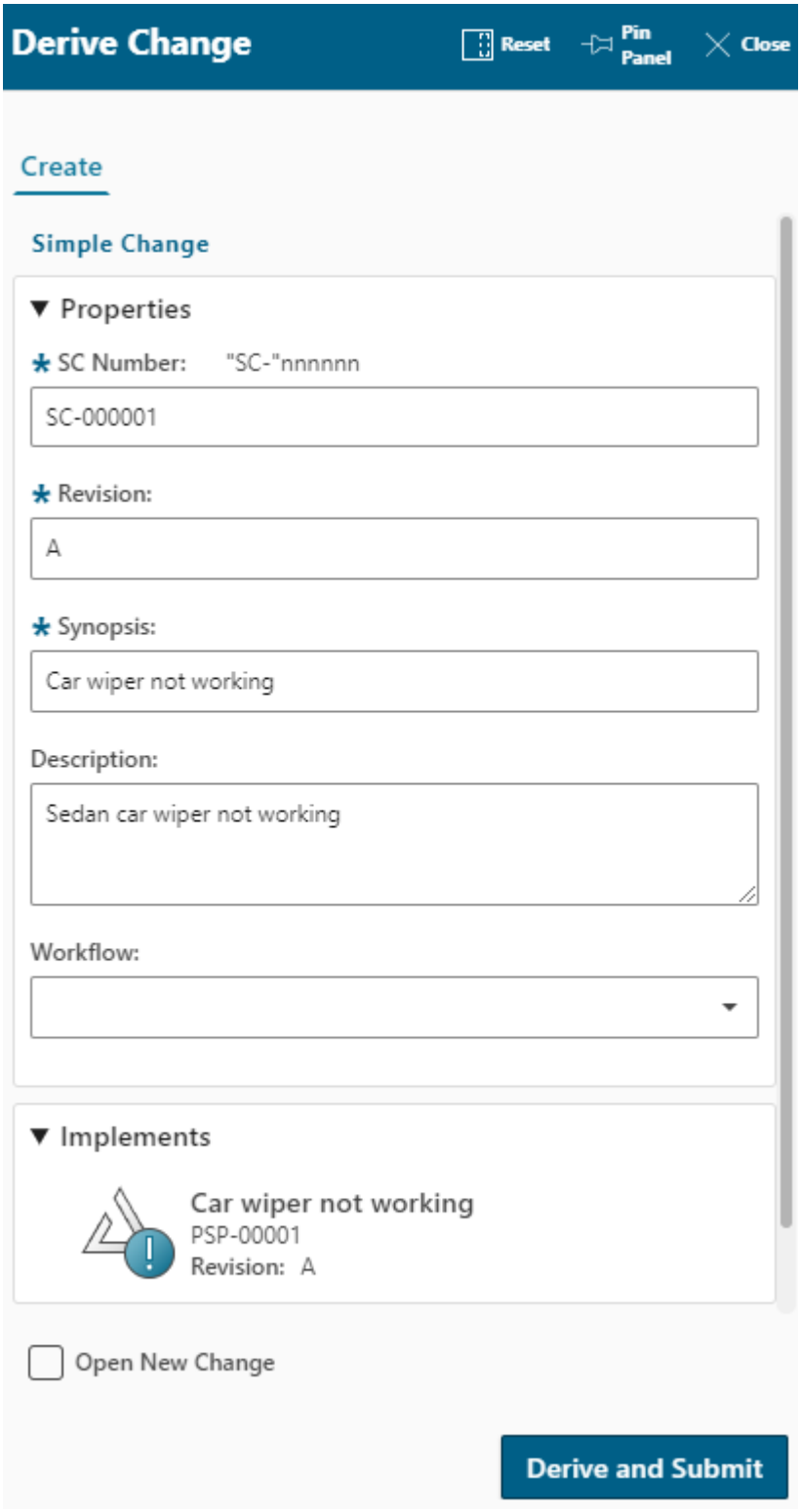
   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to use as the source of the change.

2. Choose **More Commands** ••• > **New** ✳ > **Derive Change**.

3. In the **Derive Change** panel, select the type of change.




4. By default, the **Synopsis** and **Description** fields are populated with the **Synopsis** and **Description** of the source Problem Solving process. You can update these fields as per your requirements.




5. In the **Copy Options** section, select the objects to be copied to the derived change.

6. Click **Derive and Submit**.

The derived change is created and displayed in edit mode.

The details of the derived change are listed in the **Implement by Change Request/Change Notice/ Problem Solving** section of the Problem Solving process.

# 16. Review the overall progress of the Problem Solving process

In the **Relations** tab, you can use the graphical view of the Problem Solving process and its relations with its components to track the progress.

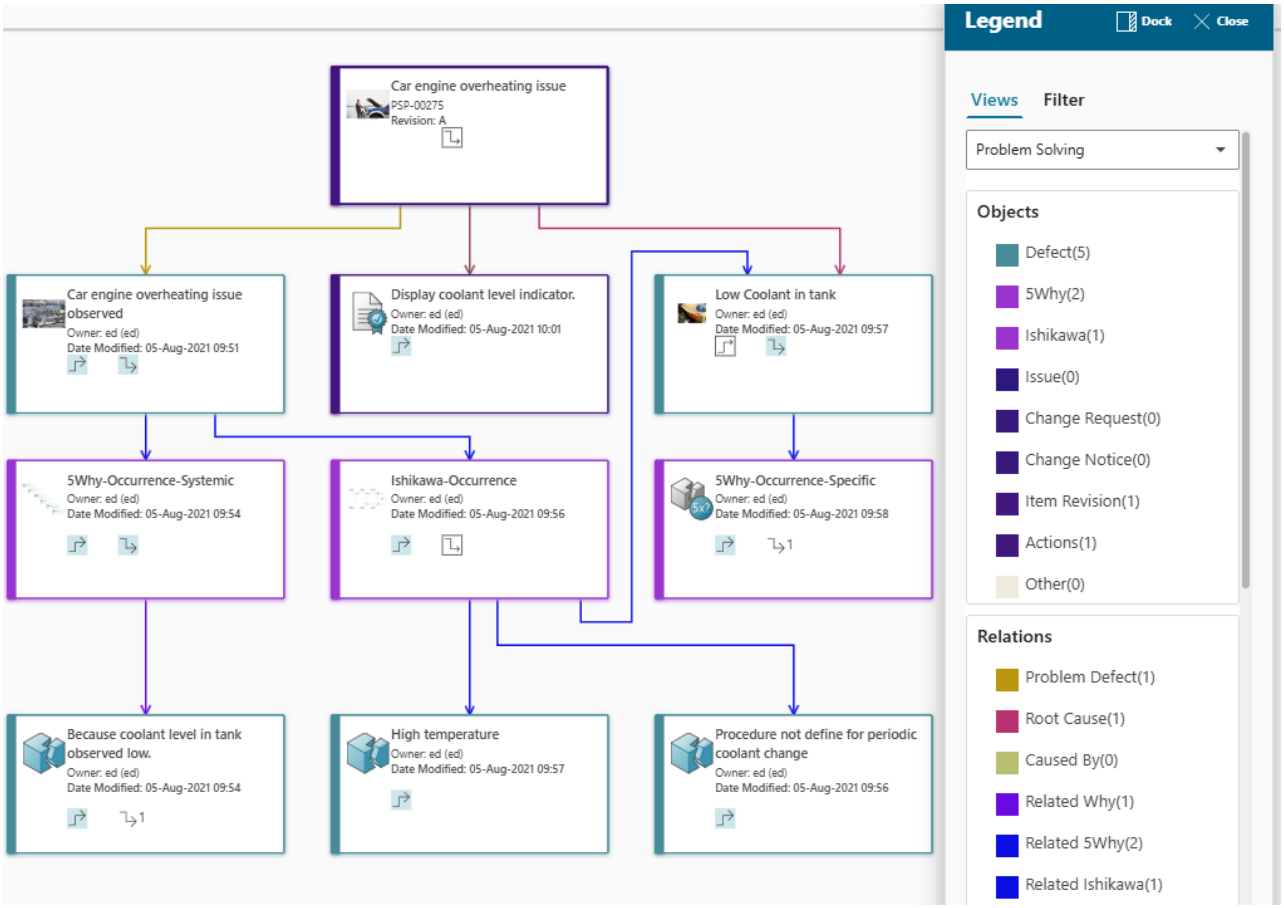
1. From the **CHANGES** folder, select and open the required Problem Solving process.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the required Problem Solving process.

2. Click the **Relations** tab.

3. In the **Relations** tab, you can do the following:

   - See or hide incoming and outgoing relations.
   - Choose what objects or relations appear in the work area. You can do this by using the **Legend** panel or by applying filters based on object properties.
   - Use an overview map to navigate large structures.
   - Change the layout of the display.
   - View the associated failure codes, defects, quality actions, and attachments of a selected object in the **Information** panel. This allows you to view this data here without having to open the **Root Cause Analysis** tab, and navigating to the specific object to view the data.




For more information, see *View related data* in *Active Workspace Fundamentals* in the Teamcenter documentation.

# 17. Add a thumbnail image and attachments to a Problem Solving process

You can attach many types of files to an issue or Problem Solving process to aid in its investigation. You can also attach any type of Teamcenter object that is in the Teamcenter database. For example, you can attach an item revision of a part or a drawing. You can choose how to relate it, including adding it as the item that contains the problem being investigated or as the solution.

Additionally, you can also add a thumbnail image to display a preview of the Problem Solving process. This image appears next to the name of the Problem Solving process in the list of Problem Solving processes displayed in the **Changes** tab. It replaces the default Problem Solving process icon displayed next to Problem Solving processes that do not have a thumbnail image . You can add only one thumbnail image to a Problem Solving process.

> Note:
>
> In the **Overall Files** section, you can view all files that are attached to the Problem Solving process's Ishikawas, Ishikawa causes, 5Whys, Why questions, defects, and quality actions of the containment actions, corrective actions, implemented corrective actions, and preventive actions.

1. From the **CHANGES** folder, select and open the Problem Solving process that you want to edit.

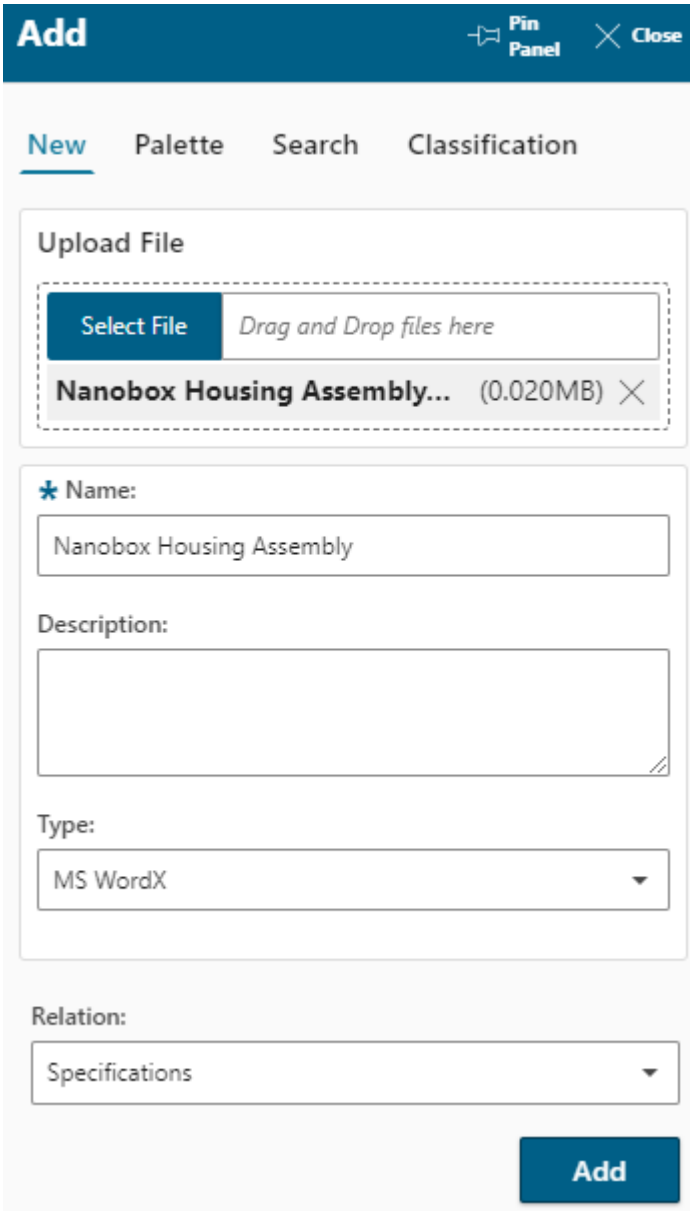
   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the Problem Solving process that you want to edit.

2. Click the **Attachments** tab.

3. To add an attachment to the Problem Solving process, do the following:

   a. In the **Files** section, click **Add to** ⊕.

   b. In the **Add** panel, click **Select File** to browse to and select the required file, and click **Add**.




4. To replace an attachment, do the following:

   a. In the **Files** section, select the file to be replaced.

   b. Choose **More Commands** ••• > **Edit** > **Replace File**.

   c. In the **Replace** panel, click **Select File** to browse to and select the required file, and click **Replace**.

5. To download attachments, do the following:

   a. In the **Files** section, select the files to be downloaded, and click **Download**.

The download begins and you receive an alert when the download is complete.

b. Click the alert to view the download report.

The **Properties** section of the report includes details about the download such as the type of export, export completion status, and transfer mode used. You can view the names of the downloaded files in the **Related Objects** section. A ZIP file of the selected files is displayed in the **Target Object** section.

> Note:
>
> You can access all recent alerts from the **Subscription** tile.

c. In the **Target Object** section, click **Download File** to download the ZIP file of the selected files.

Based on your browser settings, the ZIP file may open immediately, or you may be prompted to download or save the file.

6. To delete an attachment, do the following:

a. In the **Files** section, select the files to be deleted.

b. Choose **More Commands** ••• > **Edit** > **Delete**.

c. In the confirmation message, click **Delete**.

7. To add a thumbnail image to the Problem Solving process, do the following:

a. You can copy and paste or drag-and-drop an image from the **Files** section or the **Overall Files** section.

b. To add a new image as a thumbnail, do the following:

A. In the **Thumbnail** section, click **Add to**.

B. In the **Add** panel, click **Select File** to browse to and select the required file, and click **Add**.

8. To replace a thumbnail, do the following:

a. In the **Thumbnail** section, select the file to be replaced.

b. Choose **More Commands** ••• > **Edit** > **Replace File**.

c. In the **Replace** panel, click **Select File** to browse to and select the required file, and click **Replace**.

9. To delete a thumbnail, do the following:

a. In the **Thumbnail** section, select the thumbnail.

b. Choose **More Commands** ••• > **Edit** > **Delete**.

c. In the confirmation message, click **Delete**.

# 18. Manage a Problem Solving process through a workflow

Your company's business processes might require that you complete certain tasks at each stage of a Problem Solving process. After completion, the tasks must be reviewed and approved before the assignees can proceed to the next stage. Reviewers can either approve the tasks or reject the tasks and ask for more information or additional work to be done before approval.

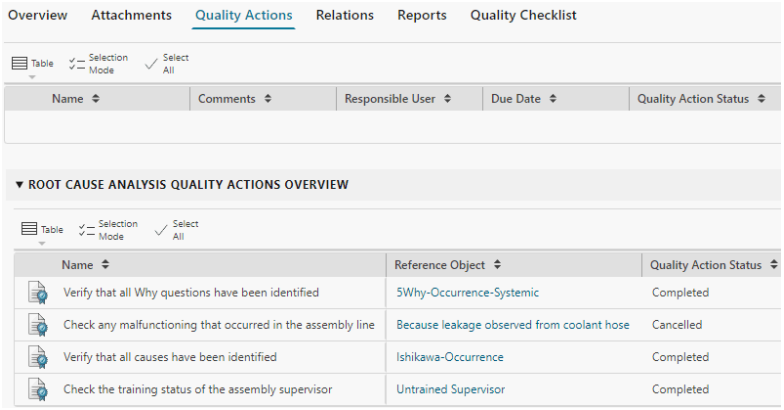
Problem Solving provides workflows to ensure that the business processes are implemented correctly with the appropriate tasks and approvals at each stage. Workflows guide a Problem Solving process through the different phases of the process: authoring, review and approval, execution, and closure.

> Note:
>
> For more information about workflows, see *Workflow Designer for Active Workspace* in the Teamcenter documentation.

Problem Solving provides the following workflows:

| Workflow | Description |
|---|---|
| **Problem Solving Process** | Verifies that the Problem Solving process is completed successfully through all the stages from creation to closure. When you complete a stage and receive approval, the next child workflow is automatically triggered to ensure that the Problem Solving process moves to the next stage. This is an end-to-end workflow that uses the following child workflows:<br>• **Establish The Team for PS**<br>• **Define Problem Description Defect**<br>• **Perform Root Cause Analysis for PS**<br>• **Perform Closure of Problem Solving** |
| **Establish The Team for PS** | Verifies that the Problem Solving process creator assigns a Team Leader to the Problem Solving process.<br>If a creator assigns themself as the Team Leader, their acceptance is automatically assumed, and they do not receive any notification to work on the Problem Solving process. If a creator assigns another user as the Team Leader, the Team Leader receives a notification to review the Problem Solving process and to accept the task. |

| Workflow | Description |
| --- | --- |
| | If the Team Leader accepts the assignment, the Team Leader assigns team members and Champions to the Problem Solving process. After the assignment, the Team Leader marks the assigned task as **Complete**.<br><br>Subsequently, the workflow sends notifications to the assigned team members and Champions. The team members can review and accept or reject the assignment. If a team member rejects the assignment, the Problem Solving process returns to the Team Leader to assign another team member. The process of assigning new team members continues until the required number of team members accept the assignment.<br><br>Champions must mandatorily review the Problem Solving process. |
| **Define Problem Description Defect** | Verifies that the Team Leader creates a problem description defect and then sends a notification to the assigned team members to view the defect. The workflow also sends a notification to the assigned Champions to review and approve this defect.<br><br>If you have multiple Champions, and even one of them approves the problem description defect of the Problem Solving process, the process moves to the next stage. If even one Champion rejects the problem description defect, the process returns to the Team Leader for rework.<br><br>Optionally, the Team Leader can also add problem items, affected items, reference items, and internal and external links that provide supporting information to resolve the Problem Solving process. |
| **Perform Root Cause Analysis for PS** | Verifies that the Team Leader or team members perform the root cause analysis and identify the root causes. The workflow also verifies that the Team Leader or team members complete or cancel the quality actions assigned to a defect, a 5Why, a Why, an Ishikawa, or an Ishikawa cause.<br><br>The Team Leader or team members can review the status of all the quality actions in one location in the **ROOT CAUSE ANALYSIS QUALITY ACTIONS OVERVIEW** section. To view this section, select the problem description defect in the **Root Cause Analysis** tab, and click the **Quality Actions** tab. This section helps the Team Leader or team members to avoid navigating to each defect, 5Why, Why, Ishikawa, or Ishikawa cause, and reviewing the status of the associated quality actions. |

| Workflow | Description |
| --- | --- |
| |  <br>In the **Root Cause Analysis** tab, after the root cause analysis is done and the root causes are identified, the Team Leader sets the **Evaluation** status to **Valid** or **Invalid** for the problem description defect to proceed to the next stage in the workflow.<br>When the Team Leader marks the task as **Complete**, the workflow sends a notification to the assigned team members to review and approve the root causes. After the assigned team members approve the root causes, the workflow sends a notification to the assigned Champions to review and approve the root causes.<br>If you have multiple Champions, and even one of them approves the root causes of the Problem Solving process, the Problem Solving process moves to the next stage. If even one Champion rejects the root causes, the Problem Solving process returns to the Team Leader for rework.<br>Reviewers can either approve the root causes or reject the root causes. They can also ask for more information or additional work to be done before approval. |
| **Perform Closure of Problem Solving** | Verifies that the Team Leader completes or cancels the assigned containment actions, planned corrective actions, confirmation-of-effectiveness corrective actions, implemented corrective actions, and preventive actions before closing the Problem Solving process.<br>The workflow sends notifications to the assigned team members and Champions to review and approve the closure of the Problem Solving process. The Problem Solving process is closed only when all the assigned team members and Champions approve the closure. |

| Workflow | Description |
| --- | --- |
| | Note:<br>After the Problem Solving process is closed, you cannot add, edit, or delete any objects in the Problem Solving process. You can generate a report of the Problem Solving process or reopen it by submitting it to the **Problem Solving Reopen Request** workflow. You can also create a new Problem Solving process from the closed Problem Solving process by choosing **More Commands** ••• > **New** > **Save As**. |
| **Problem Solving Reopen Request** | Sends a notification to the assigned Champions to reopen a closed Problem Solving process when the Team Leader submits a closed Problem Solving process to this workflow. If a Champion approves the reopening, the workflow sends a notification to the Problem Solving process creator that the Problem Solving process is reopened for updates.<br>Note:<br>If a Champion submits a closed Problem Solving process to this workflow, the workflow automatically reopens the Problem Solving process for updates. |

At each stage of the Problem Solving process, the workflow updates the **Closure**, **Disposition**, and **Maturity** properties of the Problem Solving process to indicate the progress. You cannot edit these properties. These properties are updated only by the workflow.

| Stage | Closure | Maturity | Disposition |
| --- | --- | --- | --- |
| Create a Problem Solving process. | **Open** | **Initiated** | **None** |
| Establish the team. | **Open** | **Elaborating** | **None** |
| Define the problem description defect. | **Open** | **Reviewing** | **Investigate** |
| Create the containment actions. | **Open** | **Reviewing** | **Investigate** |
| Perform the root cause analysis. | **Open** | **Reviewing** | **Investigate** |
| Create the corrective actions. | **Open** | **Implement** | **Implement** |
| Implement the corrective actions. | **Open** | **Implement** | **Implement** |
| Create the preventive actions. | **Open** | **Implement** | **Implement** |

| Stage | Closure | Maturity | Disposition |
|---|---|---|---|
| Close the Problem Solving process. | **Closed** | **Closed** | **Approved** |
| Cancel the Problem Solving process. | **Cancelled** | **Rejected** | **Disapproved** |
| Put the Problem Solving process on hold. | **Hold** | **Reviewing** | **Deferred** |

You can choose to use the individual workflows to complete a specific stage in a Problem Solving process. You can also use the **Problem Solving Process** workflow as an end-to-end workflow to complete all the stages of a Problem Solving process as follows:

### Procedure

1. As a Problem Solving process creator, **create a Problem Solving process**.

2. In the **Team** tab of the Problem Solving process, **assign a Team Leader**.

   > Example:
   >
   > The creator assigns **ed** as the Team Leader.

3. As a Team Leader, open the Problem Solving process, and **assign the team members and Champions**.

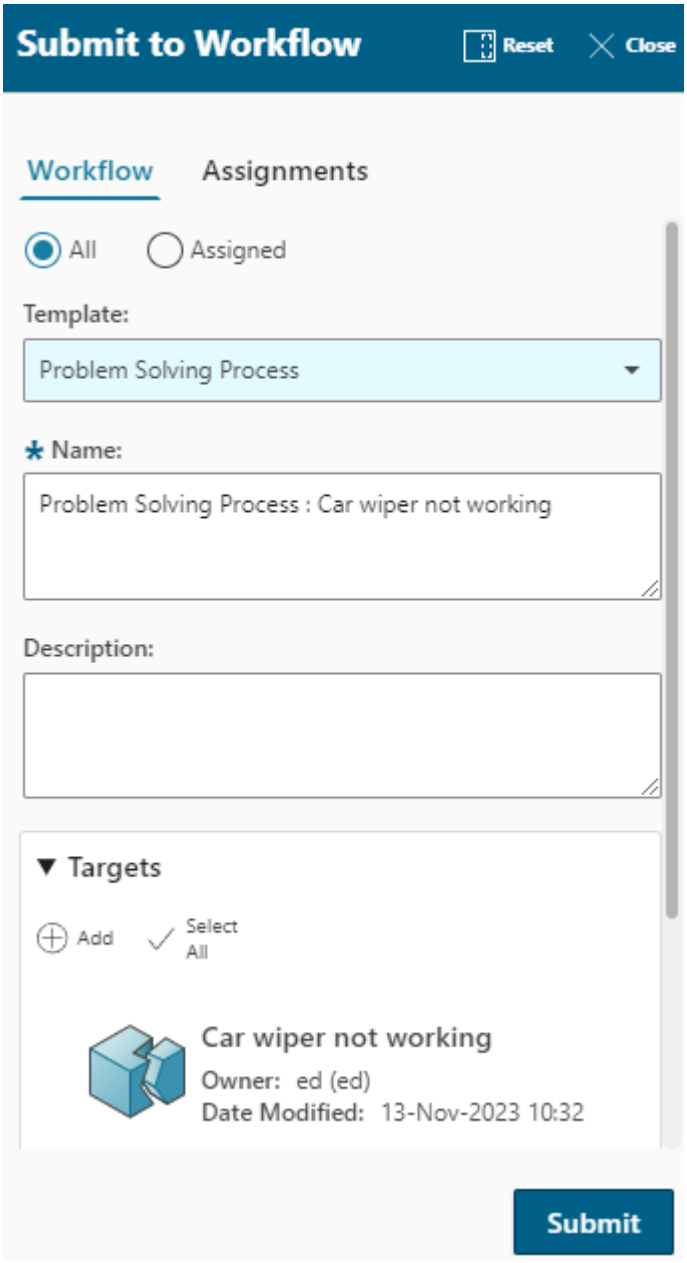
   > Example:
   >
   > The Team Leader, **ed**, assigns the **bob** as a team member and **alice** as a Champion.

4. Submit the Problem Solving process to the **Problem Solving Process** workflow as follows:

   a. Choose **More Commands** ••• > **Manage** > **Submit to Workflow**.

   b. In the **Submit to Workflow** panel, select **Assigned** to view the available Problem Solving workflows.

   c. From the **Template** list, select **Problem Solving Process**.




d. Specify a **Name** or accept the default.

e. (Optional) Enter the **Description**.

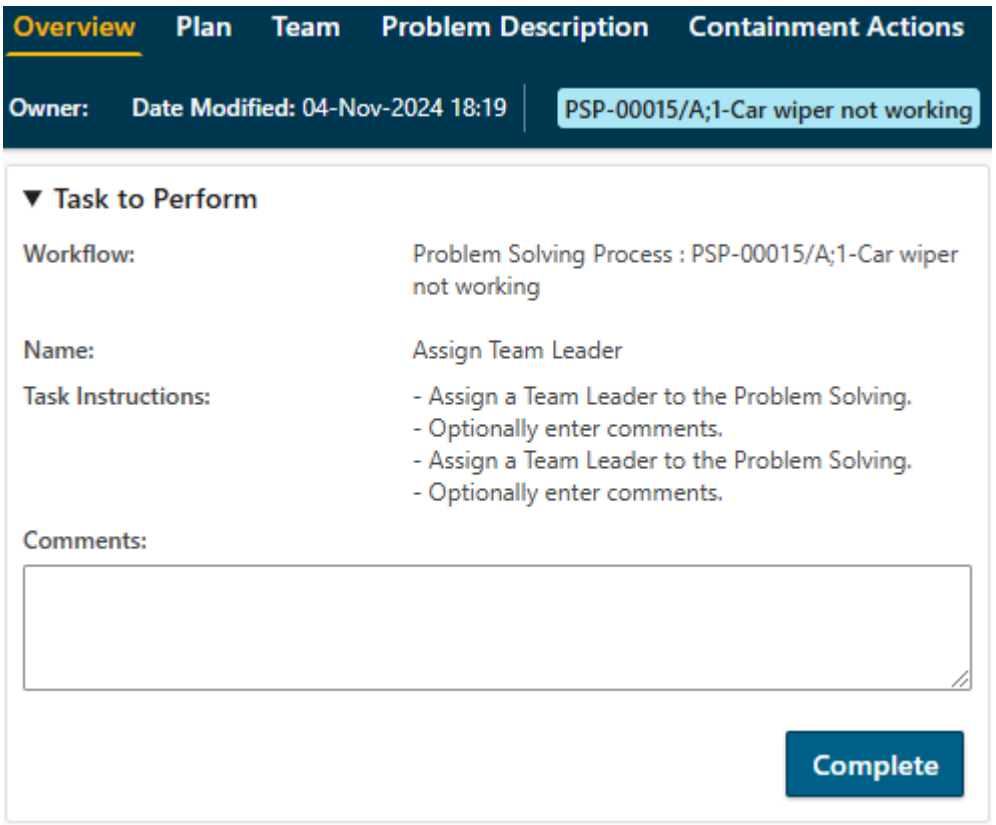
f. Click **Submit**.

The workflow sends a notification to the team member to accept the task of working on the Problem Solving process.

Example:

The workflow sends a notification to the team member, **bob**.

The workflow also adds the **Task to Perform** section in the **Overview** tab to track the progress of completing the tasks in the workflow. This section displays information about the next task to be performed in the workflow. As you progress through the various workflow tasks, this section displays information about the upcoming task.




5. The team member reviews the Problem Solving process and accepts the task of working on it as follows:

   a. In the **INBOX** tile, select the **Perform Signoffs** task for the required Problem Solving process.

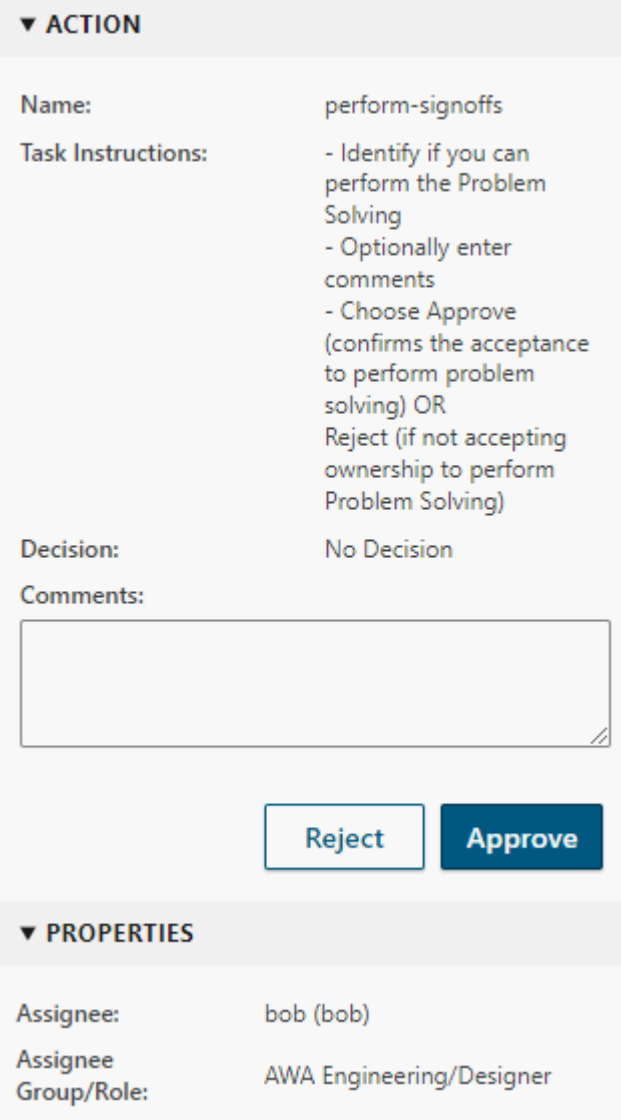
   b. In the **Overview** tab, under **Targets**, view the Problem Solving process for review.

   c. Under **Action**, provide your **Comments** related to the review task.

   d. Click **Approve** or **Reject**.

Example:

The team member, **bob**, reviews the Problem Solving process, and accepts the task of working on it.




After the team member accepts the task of working on the Problem Solving process, the workflow sends a notification to the Champion to review the Problem Solving process.

6. As a Team Leader, open the Problem Solving process in the notification, **create a problem description defect**, and set the **Evaluation** status to **Investigating**.

Note:

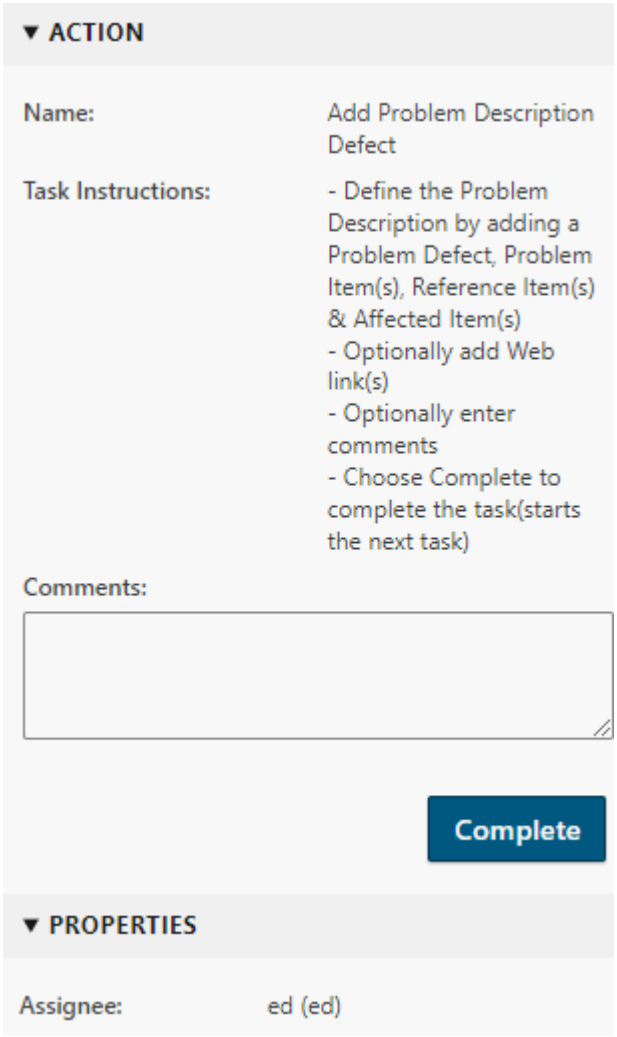
If you have derived the Problem Solving process from an issue, the problem description defect is already created from the issue's symptom defect.

Example:

The Team Leader, **ed**, opens the Problem Solving process in the notification, creates a problem description defect, and sets its **Evaluation** status to **Investigating**.

7. After creating the problem description defect and setting its **Evaluation** status to **Investigating**, mark the task as **Complete**.

   You can mark the task as **Complete** in the **INBOX** tile or in the **Workflow** tab of the Problem Solving process.




   The workflow sends a notification to the Champion to review the problem description defect.

Example:

The workflow sends a notification to the Champion, **alice**.

8. The Champion reviews the problem description defect as follows:

   a. In the **INBOX** tile, select the **Perform Signoffs** task for the required Problem Solving process.

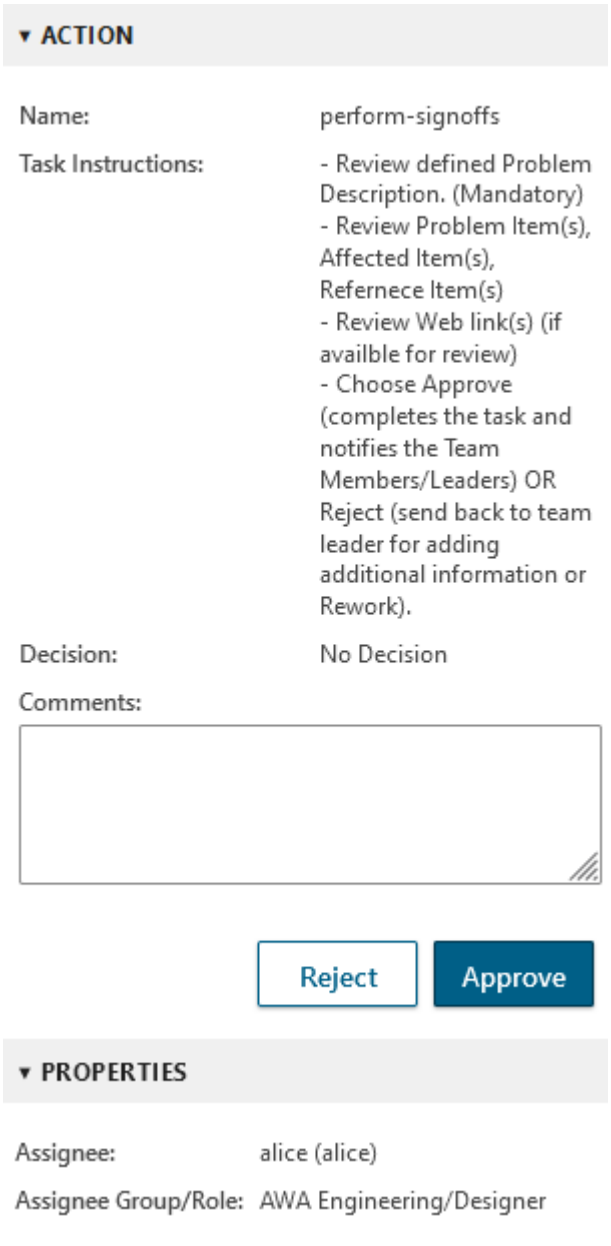
   b. In the **Overview** tab, under **Targets**, view the Problem Solving process for review.

   c. Under **Action**, provide your **Comments** related to the review task.

   d. Click **Approve** or **Reject**.

Example:

The Champion, **alice**, reviews and approves or rejects the problem description defect.




If the Champion approves the problem description defect, the workflow creates a task for the Team Leader to create the required containment actions and perform a root cause analysis. If the Champion rejects the problem description defect, the workflow the workflow creates a task for the Team Leader to close the Problem Solving process by either canceling, reworking, or putting it on hold.

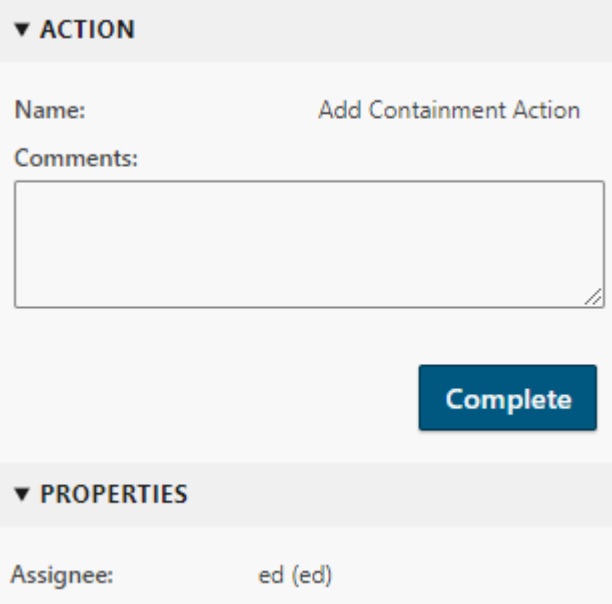
9. If the Champion approves the problem description defect, do the following:

    a. As a Team Leader, open the Problem Solving process in the notification, and **create the required containment actions**.

> Example:
>
> The Team Leader, **ed**, opens the Problem Solving process in the notification, and creates the required containment actions.

b. After creating the containment actions, mark the task as **Complete**.

You can mark the task as **Complete** in the **INBOX** tile or in the **Workflow** tab of the Problem Solving process.




When you create the containment actions, the default Quality Action workflow is triggered for the containment actions.

c. As a Team Leader, open the Problem Solving process in the notification, **perform a root cause analysis**, and **mark the root causes**.

> Example:
>
> The Team Leader, **ed**, opens the Problem Solving process in the notification, performs a root cause analysis, and marks the root causes.

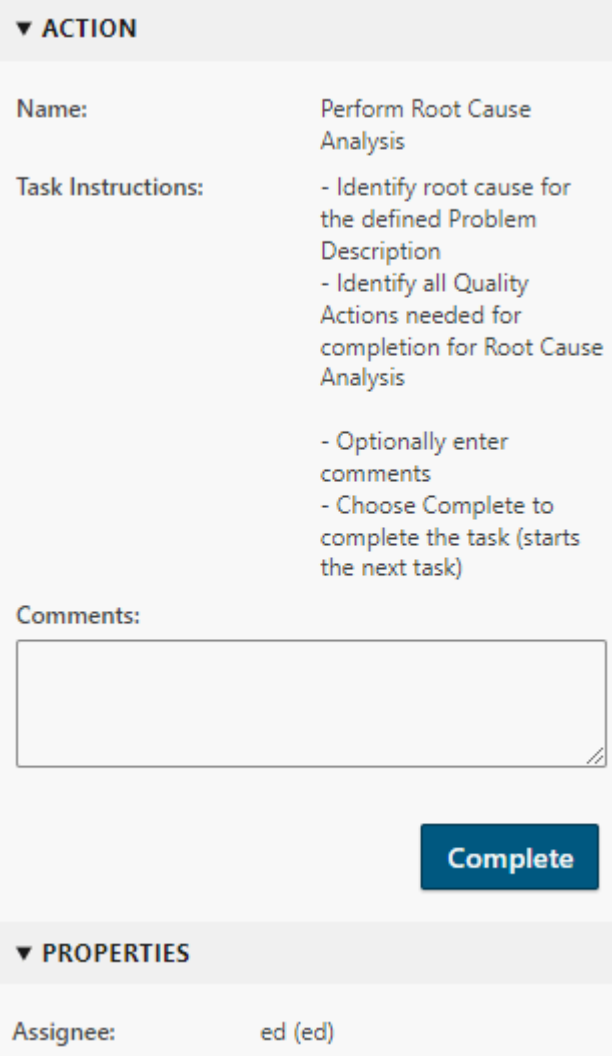
d. After marking the root causes, the Team Leader sets the **Evaluation** status to **Confirmed** or **Invalidated** for the problem description defect in the Problem Solving process to proceed to the next stage in the workflow.

e. The Team Leader opens the task and marks it as **Complete**.

Note:

Before you mark the task as **Complete**, ensure that all quality actions assigned to a defect, a 5Why, a Why, an Ishikawa, or an Ishikawa cause are either completed or canceled.

You can mark the task as **Complete** in the **INBOX** tile or in the **Workflow** tab of the Problem Solving process.




The workflow sends a notification to the team members to review the root causes.

f. The team member reviews the root causes and approves them as follows:

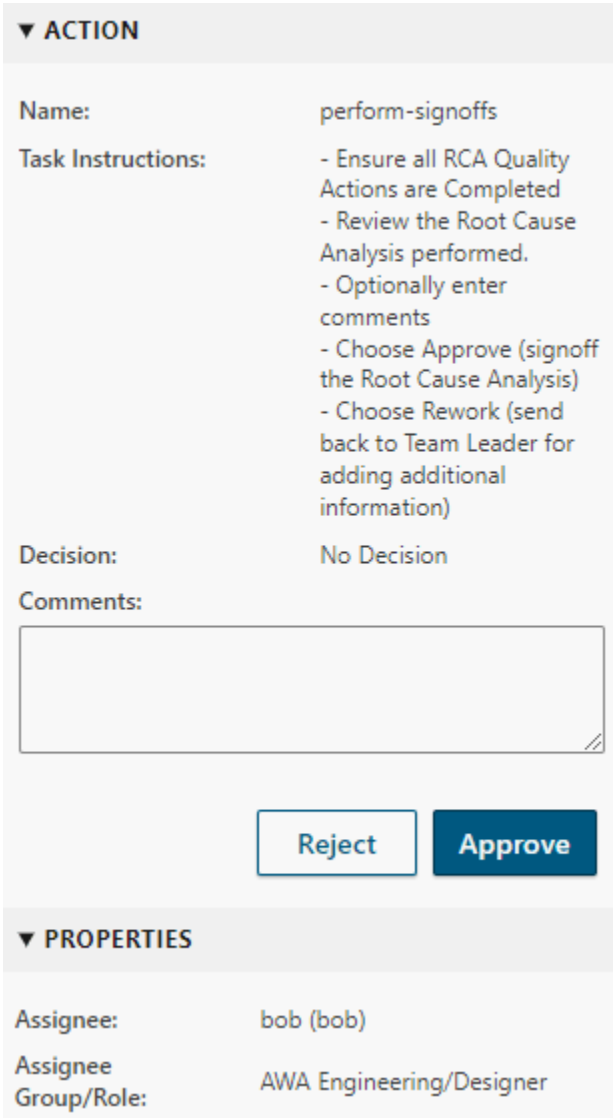
A. In the **INBOX** tile, select the **Perform Signoffs** task for the required Problem Solving process.

B. In the **Overview** tab, under **Targets**, view the Problem Solving process for review.

C. Under **Action**, provide your **Comments** related to the review task.

D. Click **Approve** or **Reject**.

> Example:
>
> The team member, **bob**, reviews and approves the root causes.




The workflow sends a notification to the Champion to review the root causes.

Example:

The workflow sends a notification to the Champion, **alice**.

g. The Champion reviews the root causes and approves it as follows:

A. In the **INBOX** tile, select the **Perform Signoffs** task for the required Problem Solving process.

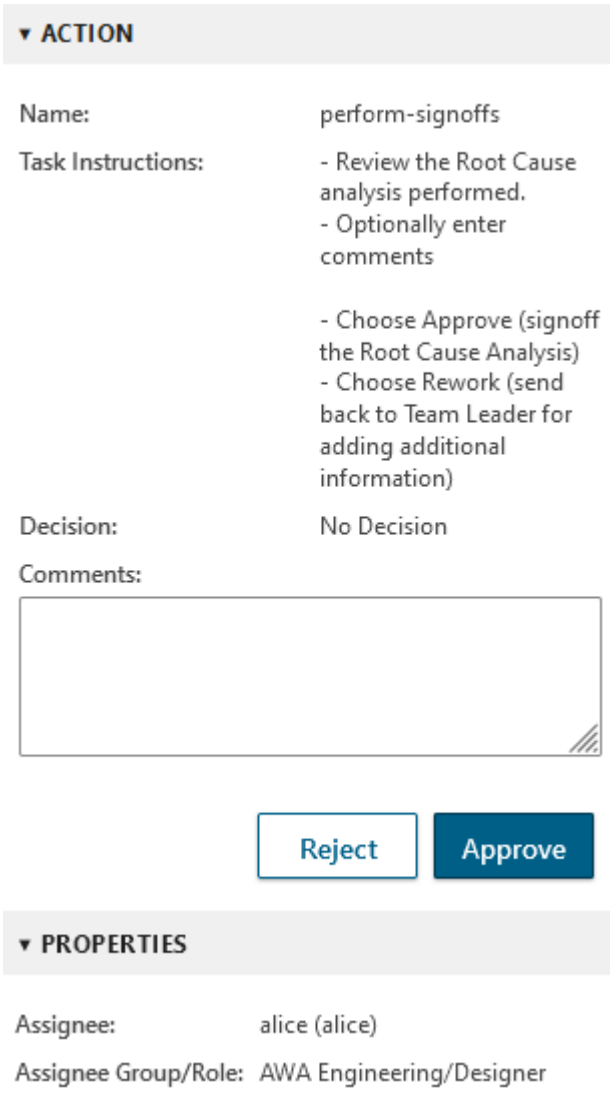
B. In the **Overview** tab, under **Targets**, view the Problem Solving process for review.

C. Under **Action**, provide your **Comments** related to the review task.

D. Click **Approve** or **Reject**.

Example:

The Champion, **alice**, reviews and approves the root causes.



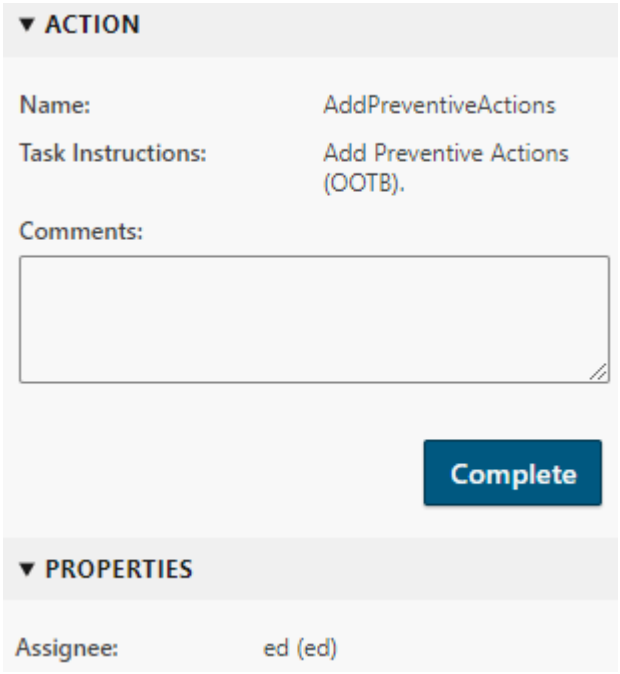

The workflow creates a task for the Team Leader to create the required corrective and preventive actions.

h. As a Team Leader, open the Problem Solving process in the notification, create the required **planned corrective actions, confirmation-of-effectiveness corrective actions, implemented corrective actions,** and **preventive actions**.

> Example:
>
> The Team Leader, **ed**, opens the Problem Solving process in the notification, and creates the required planned corrective actions, confirmation-of-effectiveness corrective actions, implemented corrective actions, and preventive actions.

i. After creating the required corrective and preventive actions, mark their respective tasks as **Complete**.

You can mark the task as **Complete** in the **INBOX** tile or in the **Workflow** tab of the Problem Solving process.




The workflow sends a notification to the Team Leader to close the quality actions of the Problem Solving process.

j. As a Team Leader, ensure that all the quality actions of the Problem Solving process are either completed or canceled, and mark the task as **Complete**.

> Note:
>
> Ensure that all quality actions assigned to the containment actions, planned corrective actions, confirmation-of-effectiveness corrective actions, implemented corrective actions, and preventive actions are either completed or canceled. You can close the Problem Solving process only after all quality actions are either completed or canceled.

The workflow sends a notification to the team members to review the Problem Solving process and approve its closure.

k. The team member reviews the Problem Solving process and approves its closure as follows:

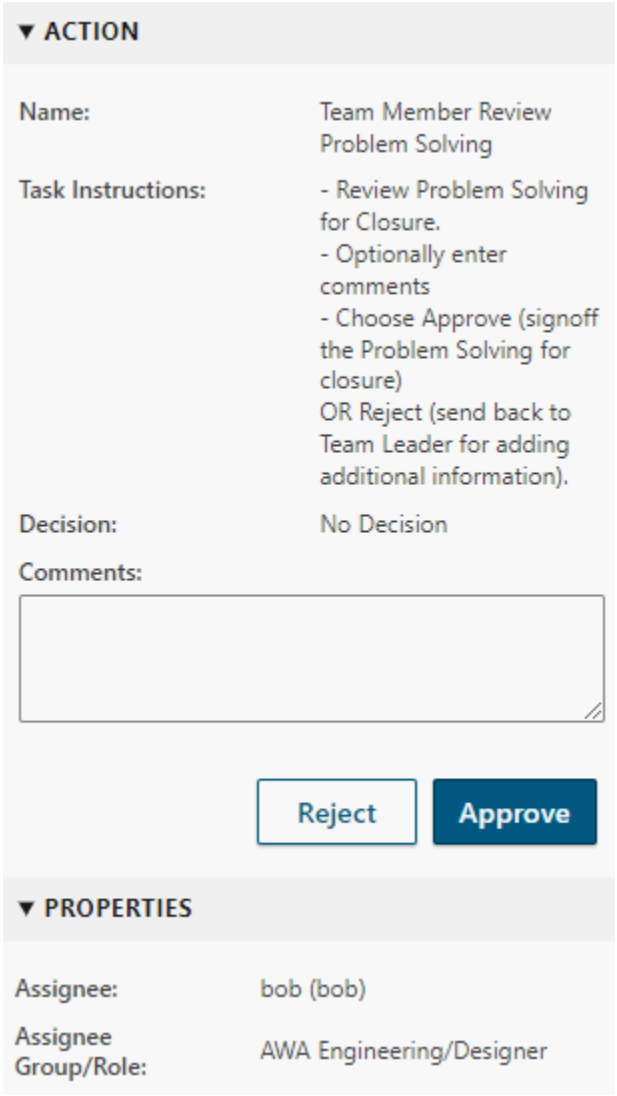
A. In the **INBOX** tile, select the **Perform Signoffs** task for the required Problem Solving process.

B. In the **Overview** tab, under **Targets**, view the Problem Solving process for review.

C. Under **Action**, provide your **Comments** related to the review task.

D. Click **Approve** or **Reject**.

> Example:
>
> The team member, **bob** reviews the Problem Solving process and approves its closure.




The workflow sends a notification to the Champion to review the Problem Solving process and approve its closure.

I. After the team member approves the closure of the Problem Solving process, the Champion reviews the Problem Solving process and approves its closure as follows:

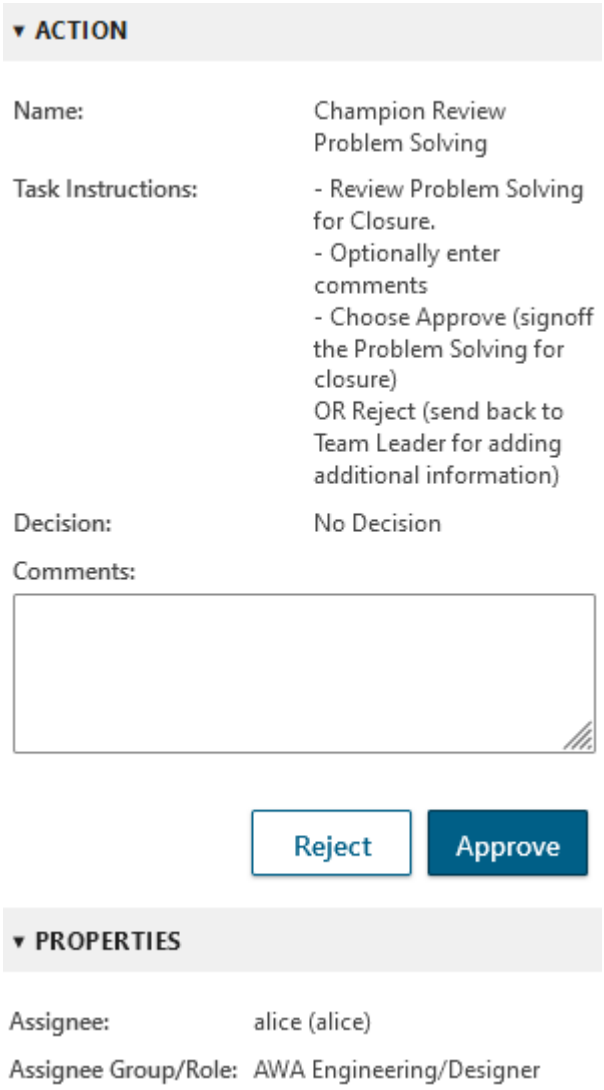
A. In the **INBOX** tile, select the **Perform Signoffs** task for the required Problem Solving process.

B. In the **Overview** tab, under **Targets**, view the Problem Solving process for review.

C. Under **Action**, provide your **Comments** related to the review task.

D. Click **Approve** or **Reject**.

> Example:
>
> The Champion, **alice**, reviews the Problem Solving process, and approves its closure.




The Problem Solving process is closed. You cannot add, edit, or delete any objects in the Problem Solving process. You can generate a report of the Problem Solving process or reopen it by submitting it to the **Problem Solving Reopen Request** workflow. You can also create a new Problem Solving process from the closed Problem Solving process by choosing **More Commands** ••• > **New** ✳ > **Save As**.

10. If the Champion rejects the problem description defect, do the following:

    a. As a Team Leader, in the **INBOX** tile, select the **Decision: Team Leader** task for the required Problem Solving process.

    b. To either cancel, rework, or put the Problem Solving process on hold, do one of the following:

    - Click **Cancelled** to pause work on the Problem Solving process.

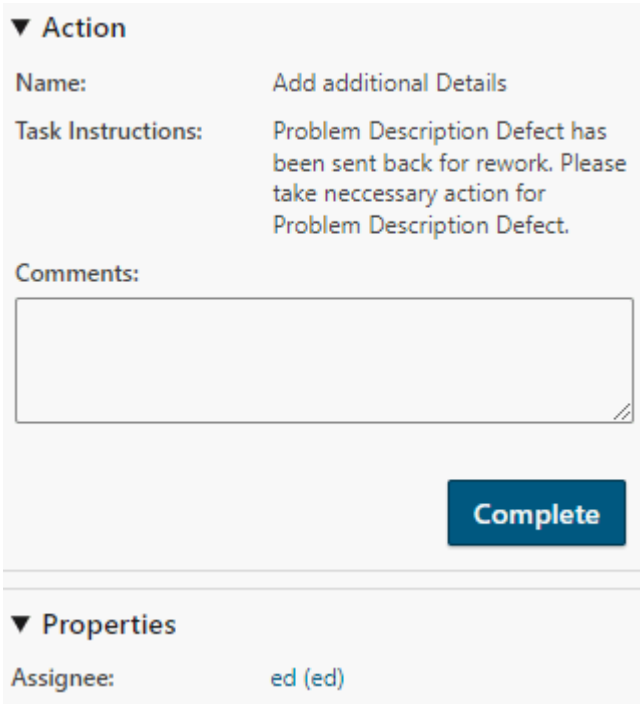
      The workflow also updates the **Disposition** as **Disapproved** and **Closure** as **Canceled** in the Problem Solving process.

    - Click **On Hold** to pause work on the issue.

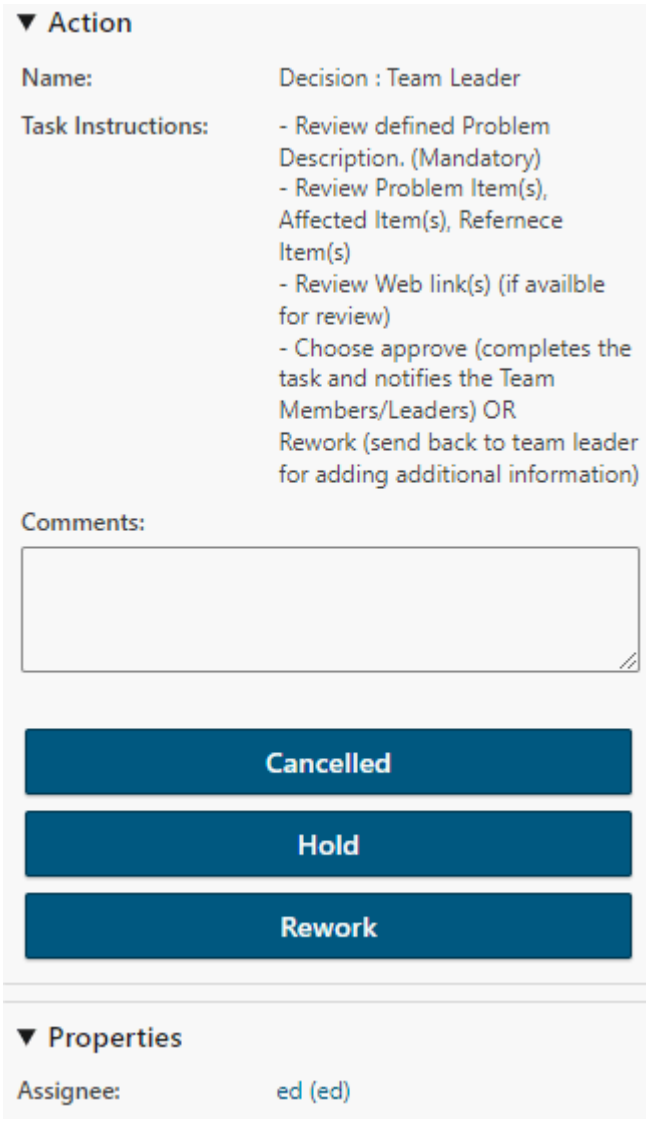
      The workflow also updates the **Disposition** as **Deferred** and **Closure** as **On Hold** in the Problem Solving process.

    - Click **Rework** to ask the Team Leader to provide additional details and perform the required rework on the problem description defect of the Problem Solving process.

      The workflow sends a notification to the Team Leader to rework the problem description defect of the Problem Solving process. After the Team Leader completes the required rework, the Team Leader marks the task as **Complete**.




      After the Team Leader marks the task as **Complete**, the workflow sends a notification to the Champion to review the updated problem description defect.



# 19. Working with Problem Solving reports

## Generate a Problem Solving report

When you generate a report for a Problem Solving process, you can view detailed information about the individual process.

1. From the **CHANGES** folder, select and open the required Problem Solving process

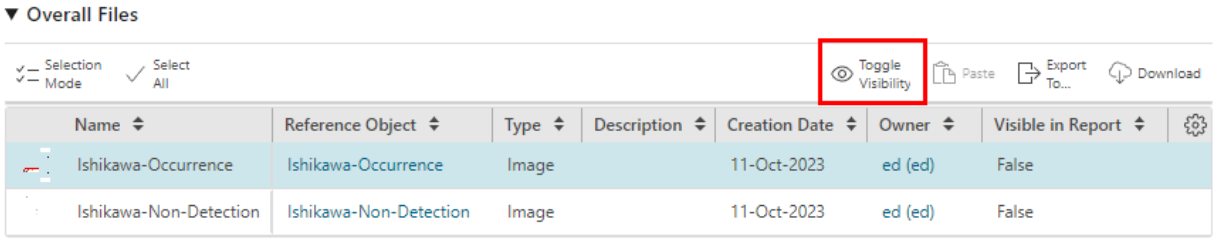
   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the required Problem Solving process.

2. (Optional) To display an attachment in the **Problem Solving** report, do the following:

   a. Click the **Attachments** tab.

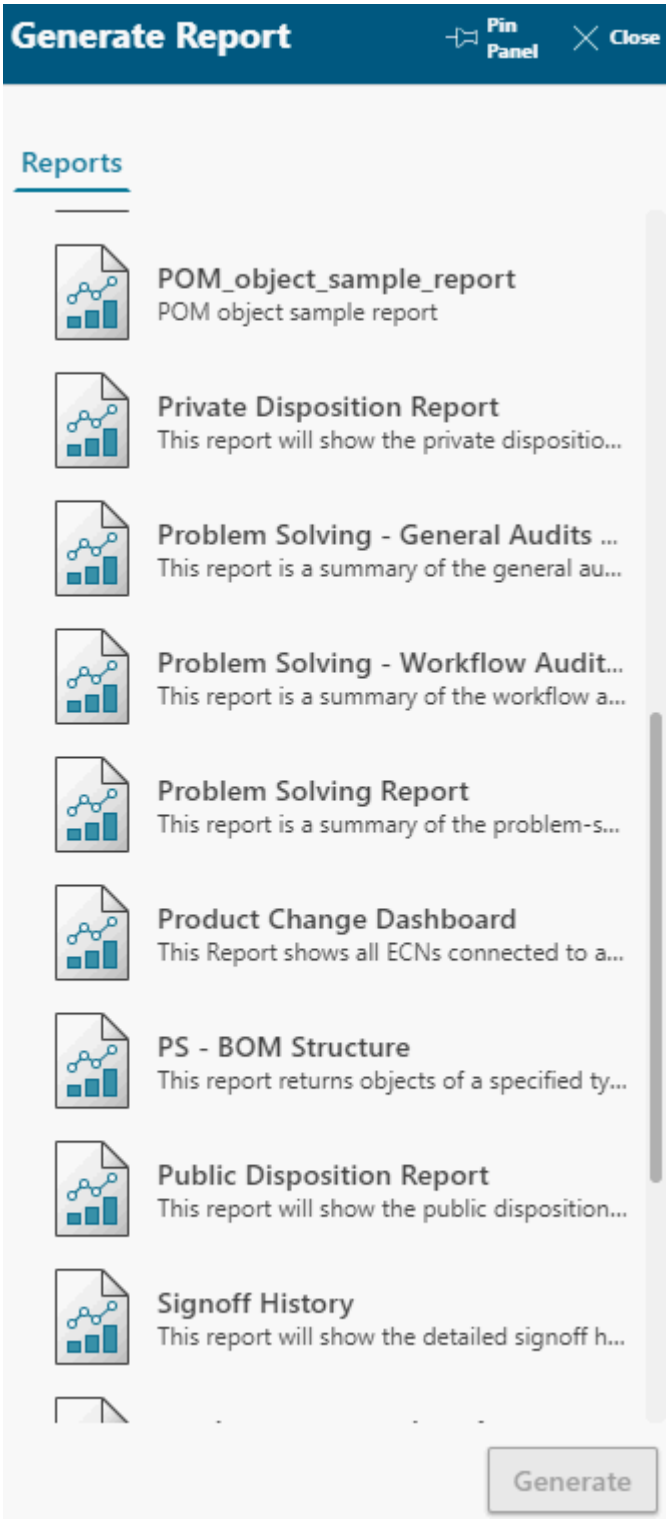
   b. In the **Overall Files** section, select the attachment to be displayed in the report.

   c. Click **Toggle Visibility** in the work area toolbar to display or hide the attachment in the report.




3. To generate a report, choose **More Commands** ••• > **New** > **Generate Report**.

4. In the **Generate Report** panel, select **Problem Solving Report**.

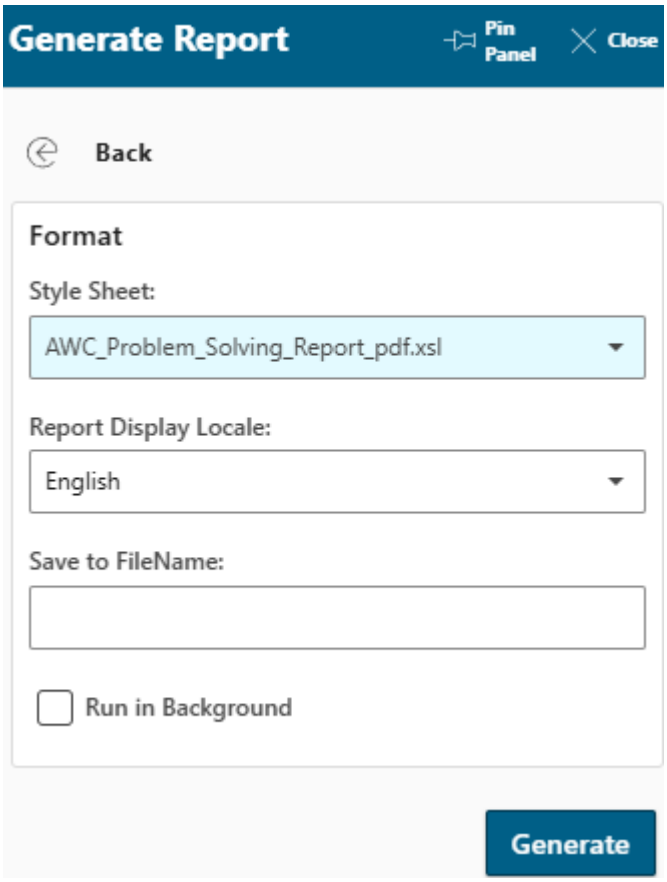



5. In the **Format** section, do the following:

   a. From the **Style Sheet** list, select from the following style sheets:

- **AWC_Problem_Solving_Report_excel_OOXML.xsl**: Select this style sheet to generate the report as a Microsoft Excel file.
- **AWC_Problem_Solving_Report_html.xsl**: Select this style sheet to generate the report as an HTML file.
- **AWC_Problem_Solving_Report_pdf.xsl**: Select this style sheet to generate the report as a PDF file.

b. From the **Report Display Locale** list, select the required locale.




c. (Optional) In the **Save to FileName** box, type the file name of the report.

d. Click **Generate**.

The generated report is attached to the **Files** section of the **Attachments** tab.

6. If you select the **AWC_Problem_Solving_Report_html.xsl** style sheet, an HTML report is generated and is displayed in the **Reports** tab.

The HTML report is available in the **Reports** tab for the current session only. This report contains detailed information about the Problem Solving process. Some examples of the details include:

- Is/Is Not analysis performed on the Problem Solving process, including the Is and Is Not questions.
- Details of the related Problem Solving processes and issues.
- Text, tables, or graphics in the rich text editor from the **More Information** section of a 5Why, Ishikawa, or defect used in root cause analysis.
- Images that are attached to the problem description defect.

  You can preview each image and use the **Zoom In** or **Zoom Out** buttons to increase or decrease the image magnification.
- Complete Ishikawa diagrams from the **Methodology** tab of the respective Ishikawa.

  You can view the causes and child causes in a cause group and the images that are attached to each cause and child causes. You can preview each image attached to the cause and child causes, and use the **Zoom In** and **Zoom Out** buttons to increase and decrease the image magnification, respectively.
- Hierarchical view of the Why questions that you added to each 5Why and details of each Why question.

> Note:
>
> If you add an image with the default relation, such as **5Why Attachment**, **Ishikawa Attachment**, or **Defect Attachment**, to the respective objects of the Problem Solving process, the image appears in the report only after you set the **Visible In Report** property to **True**. If you attach an image without using any of the **5Why Attachment**, **Ishikawa Attachment**, or **Defect Attachment** relations, these images appear in the report automatically.
>
> The following types of images are supported:
>
> - GIF
> - JPEG
> - JPG
> - PNG

7. If you select the **AWC_Problem_Solving_Report_excel_OOXML.xsl** style sheet, browse to the **Downloads** folder of your browser, and open the Microsoft Excel version of the report.

   This report contains the same detailed information as in the HTML report, except for the images that are attached to the Problem Solving process.

> Note:
>
> To view the contents of a Microsoft Excel report, your administrator must set the **Crf_Report_Excel_Use_OOXML** preference to **True**.

8. If you select the **AWC_Problem_Solving_Report_pdf.xsl** style sheet, browse to the **Downloads** folder of your browser, and open the PDF version of the report.

   This report contains the same detailed information as in the HTML report, including the images that are attached to the Problem Solving process.

## Generate an Audit Trail report for a Problem Solving process

Generate a **Problem Solving Audit Trail** report to obtain a comprehensive, chronological record of all Problem Solving activities, decisions, and actions taken to address issues within a project or process. This report includes detailed events such as attach, detach, modify, save as a copy, and Problem Solving-specific actions such as marking an issue as the root cause.

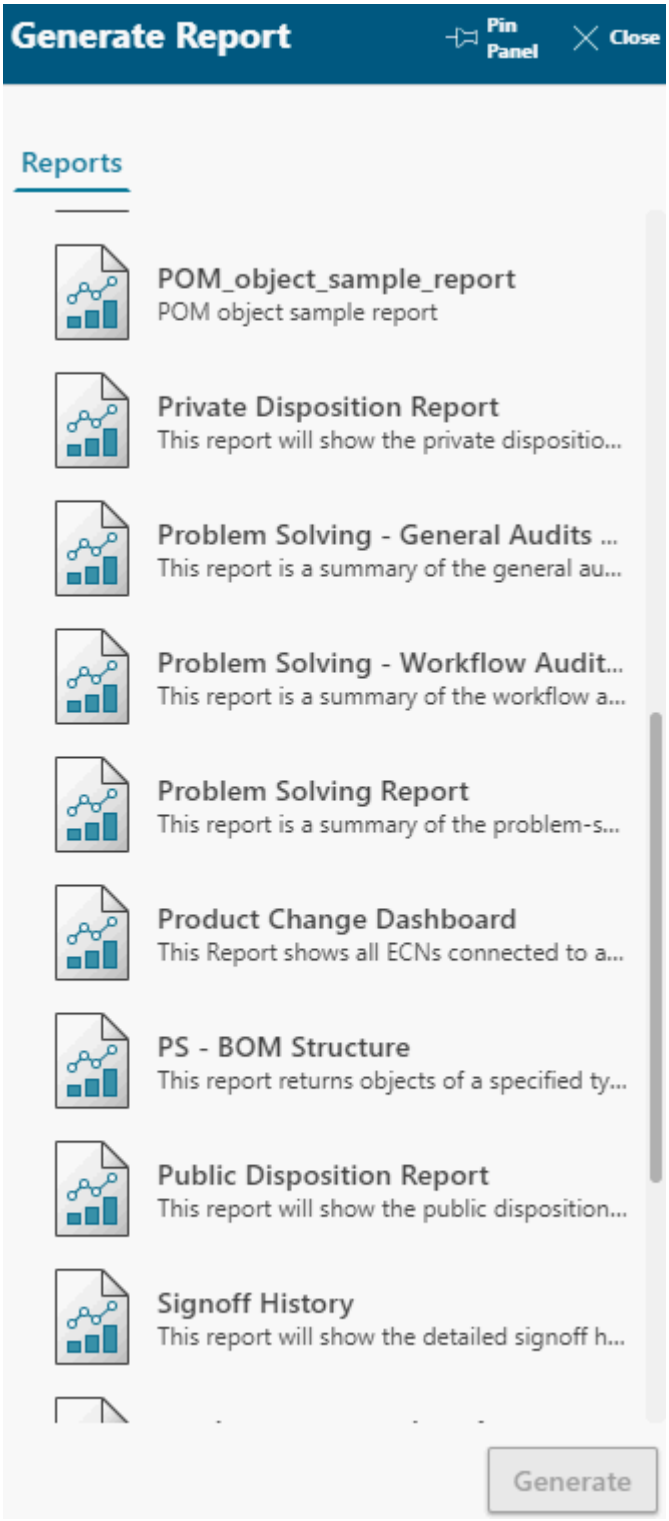
### Procedure

1. From the **CHANGES** folder, select and open the required Problem Solving process.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the required Problem Solving process.

2. To generate a report, choose **More Commands** ••• > **New** ✳ > **Generate Report**.

3. In the **Generate Report** panel, select **Problem Solving - General Audits Report**.




4. In the **Format** section, do the following:

   a. From the **Style Sheet** list, select from the **AWC_CAPA_AUD_RPT.xsl** style sheet.

b. From the **Report Display Locale** list, select the required locale.

c. (Optional) In the **Save to FileName** box, type the file name of the report.

d. Click **Generate**.

An HTML report is generated and is displayed in the **Reports** tab. The generated HTML report is also attached to the **Files** section of the **Attachments** tab.

## Generate a Workflow Audit report for a Problem Solving process

Generate a **Workflow Audit** report to view the workflow steps performed on a Problem Solving process and the events and remarks captured in the workflow steps.

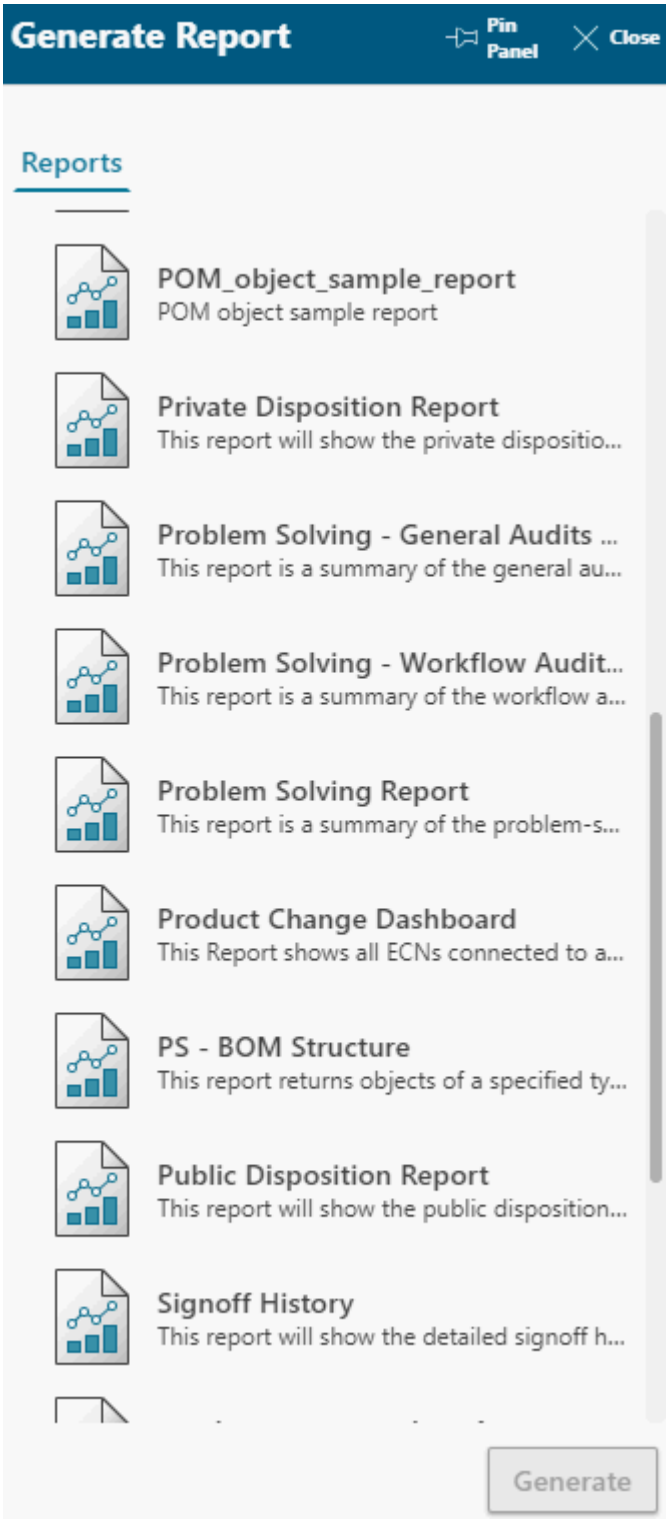
### Procedure

1. From the **CHANGES** folder, select and open the required Problem Solving process.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the required Problem Solving process.

2. To generate a report, choose **More Commands** ••• > **New** > **Generate Report**.

3. In the **Generate Report** panel, select **Problem Solving - Workflow Audits Report**.




4. In the **Format** section, do the following:

   a. From the **Style Sheet** list, select from the **AWC_CAPA_WF_AUD_RPT.xsl** style sheet.

b. From the **Report Display Locale** list, select the required locale.

c. (Optional) In the **Save to FileName** box, type the file name of the report.

d. Click **Generate**.

An HTML report is generated and is displayed in the **Reports** tab. The generated HTML report is also attached to the **Files** section of the **Attachments** tab.

## Analyze the Problem Solving performance

You can analyze the Problem Solving performance based on the default active summary reports available. These reports collate and summarize similar information, for example, information about the open and closed Problem Solving processes, and the identification of the Problem Solving processes that were closed on time or after the due date.

You can add these reports to your dashboard.

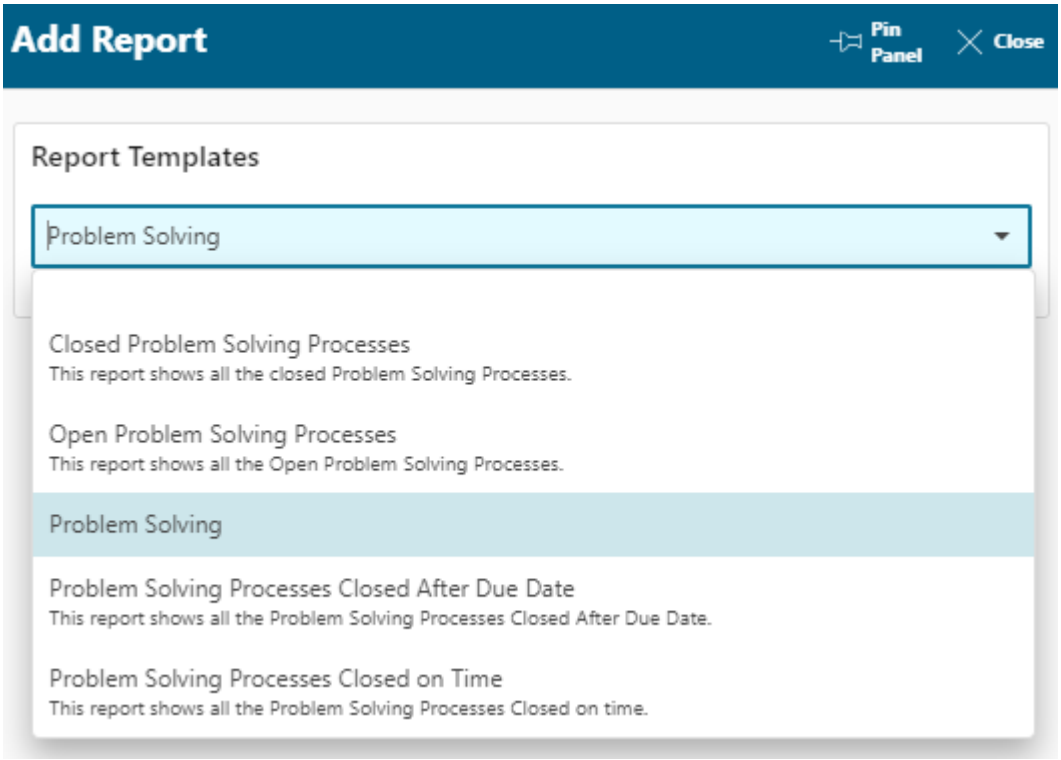
### Procedure

1. On the **Home** page, click the **Reports** tile.

   By default, the available reports are displayed as thumbnails in **My Dashboard**.

2. To add a report from **Templates**, click **Add** ⊕.

3. Search for the default Problem Solving reports in the **Add Report** panel by specifying **Problem Solving** as the search criteria.




4. Select the required report, and click **Add**.

5. (Optional) Open the report, and if the report contains data in a tabular format at the bottom, click the table header of the column you want to sort and choose the appropriate option. You can also select an operator for further filtering. The valid operators are **Contains**, **Does not contain**, **Begins with**, **Ends with**, **Equals**, and **Does not equal**. For example, for an open Problem Solving report, you can select **Category** and type **Product** to find the Problem Solving processes created for products.

6. To export the report as a Microsoft Excel file, click **Export to Excel**.

   The **Export To Excel** panel is displayed with a list of properties available for export.

7. To change the order of the properties, select a property, and in the **Selected Properties** section, click **Move Up** or **Move Down**.

8. To add more or remove properties to be exported, do the following:

   a. In the **Selected Properties** section, click **Add Properties**.

   b. Select the check boxes for the properties that you want to export.

   c. In the **Add Properties** pane, clear the check boxes for the properties that you do not want to export.

d. Click **Add**.

9. Click **Export**.

   A dialog box is displayed to download the Excel file to your computer.

# 20. Sharing and reusing Problem Solving processes

## Share a Problem Solving process with other sites in a Multi-Site Collaboration network

When addressing a Problem Solving process in a Multi-Site Collaboration network, you may identify valuable lessons learned that must be shared with other sites. In such cases, you can share this information with the relevant sites for them to implement the same, and avoid similar Problem Solving processes in their site. Additionally, if you determine that a reported Problem Solving process impacts or is owned by another site (for example, when the same product or part is manufactured at multiple locations), you can transfer the Problem Solving process to the appropriate site for them to perform the necessary actions.

To share a Problem Solving process with other sites, you must first publish it to the required sites. Then, specify additional sharing details, such as the destination sites and several transfer options, and share the Problem Solving process.

### Prerequisites

The administrator has installed and configured Multi-Site Collaboration for all sites in your network.

### Procedure

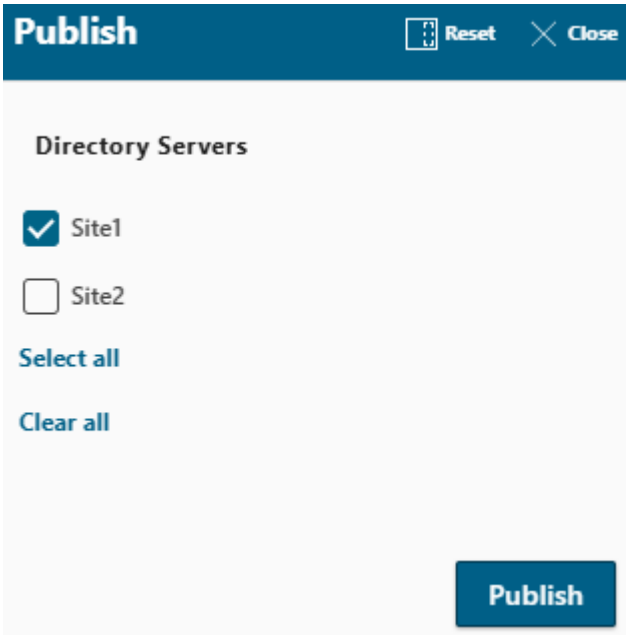
1. From the **CHANGES** folder, select and open the required Problem Solving process.

   If you are working in the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile, and select and open the required Problem Solving process.

2. To publish the Problem Solving process, do the following:

   a. Choose **More Commands** ••• > **Share** > **Publish** .

   b. In the **Publish** panel, select the required sites, and click **Publish**.




When you publish a Problem Solving process, the symbol appears next to the name of the process.

3. To cancel publishing a Problem Solving process, do the following:

   a. Choose **More Commands** ••• > **Share** > **Unpublish**.

   b. In the **Unpublish** panel, select the required sites, and click **Unpublish**.

      When you cancel publishing a Problem Solving process, the symbol is removed from the name of the process.

4. To share the Problem Solving process, do the following:

   a. Click **More commands** ••• > **Share** > **Share with Sites**.

      The **Share with Sites** panel is displayed listing target sites and several transfer options.

   b. From the **Destinations** list, select one or more remote sites to be used as target destinations.

      The **Destinations** list filters as you type; type the first few characters of the site's name to display the site you want.

   c. From the **Option Set** list, select the transfer option set to use when sharing objects.

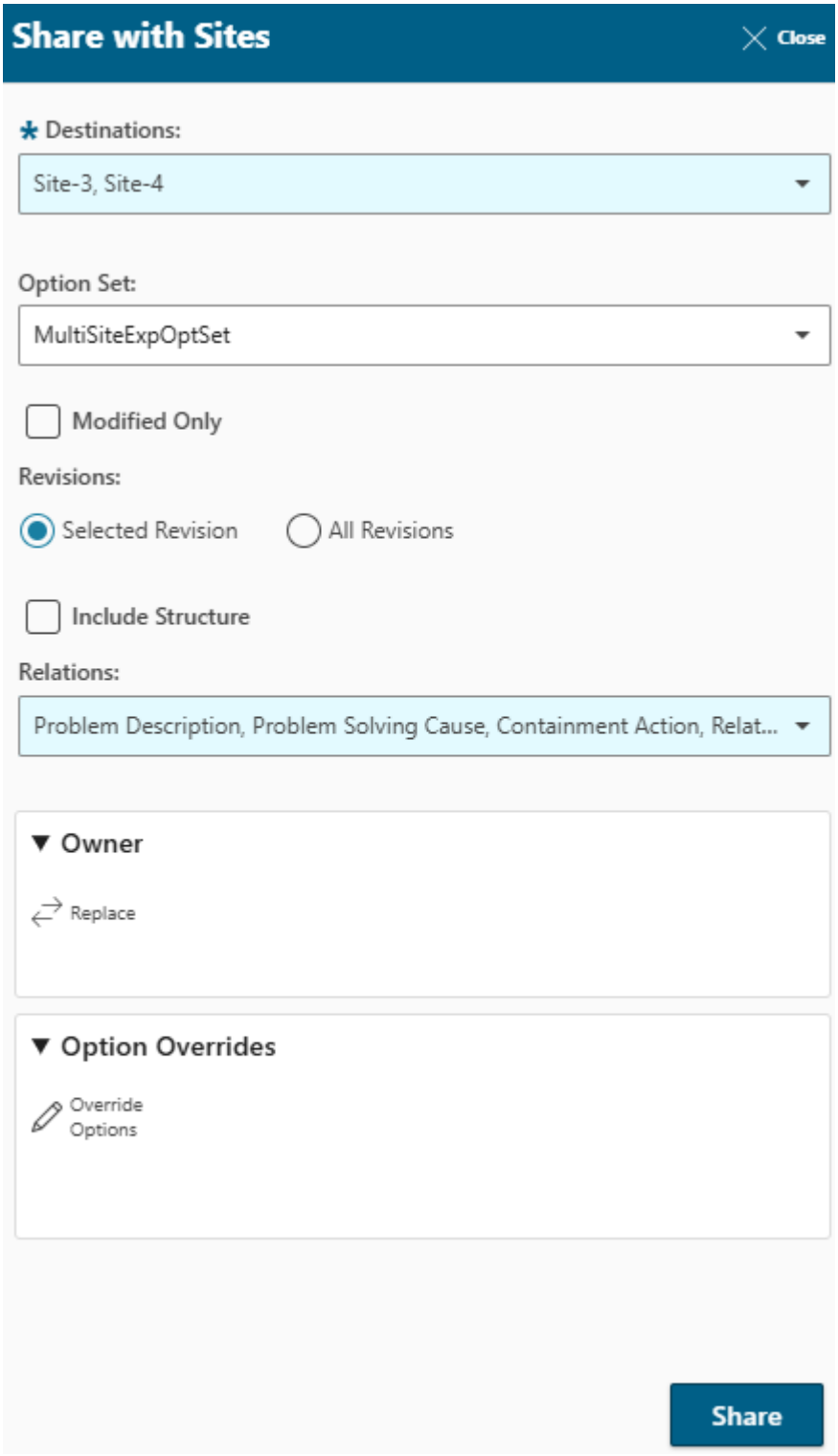
      The transfer option set defines the configuration rules when transferring data between sites. The available option sets vary depending on your site's configuration.

d. To transfer site ownership of the Problem Solving process to the destination site, select **Transfer Site Ownership**.

   When you transfer site ownership, all revisions of the Problem Solving process will be shared.

e. To share a Problem Solving process only when it has been modified since the last time it was exported to the destination site, select **Modified Only**.

f. To share related data, from the **Relations** list, select each object relation to share with the destination sites.



> Example:
>
> You can share the problem description defect, containment actions, defects, 5Whys, Why questions, Ishikawas, Ishikawa causes, corrective actions, and preventive actions used to create the Problem Solving process.

g. (Optional) Change the owner of the transferred Problem Solving process after it is transferred to the remote site. In the **Owner** section, click **Replace**, select the new owner, and click **Replace**.

> Note:
>
> Only one site can own the Problem Solving process at a time. The site with ownership can modify the Problem Solving process. The other sites contain a replica of the Problem Solving process.

h. Review and adjust the transfer options by clicking **Override Options** to open the **Override Options** panel, where you can choose the options to override, and click **Override**.

The available options vary depending on the configuration of the selected transfer option set. You can modify the options available to override by editing the transfer option sets as described in *PLM XML/TC XML Export Import Administration*.

i. Click **Share** to share the Problem Solving process with the destination sites.

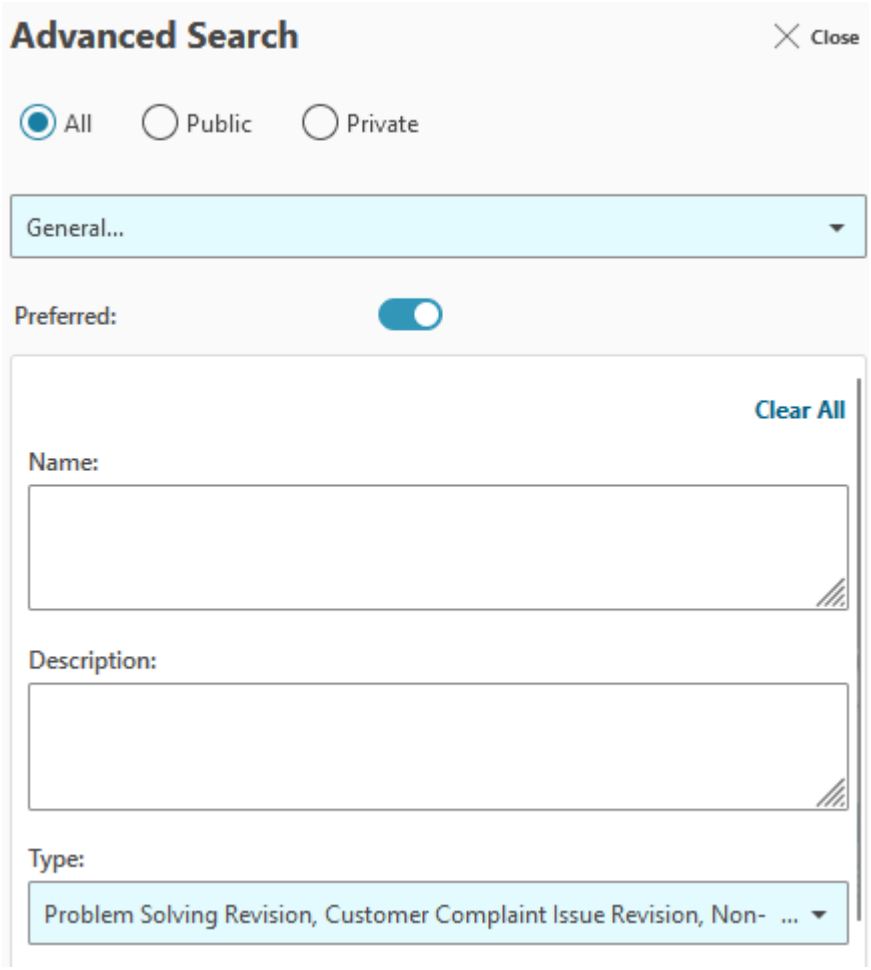
You receive a notification when the transfer completes. Send an email or notification message to the team members of the destination sites so that they can search for it and begin working on it in their site.

j. If you make updates to the Problem Solving process, you can share the updates with the destination site by repeating steps **a** through **i**.

Ensure that you select **Modified Only** to share the updates since the last time it was exported to the destination site.

5. After you receive an email or notification message about the shared Problem Solving process, in the destination site, to access the Problem Solving process, do the following:

a. In **Advanced Search**, select **General**, select **Problem Solving Revision** as the type of search, and click **Search**.




b. In the search results, select the shared Problem Solving process, and open it to work on it.

## Export a Problem Solving process for review or sharing

You can export a Problem Solving process externally for review or sharing purposes through a ZIP file.

1. Select the Problem Solving process to be exported, and choose **More Commands** ••• > **Import/ Export** > **Export PLM XML** to display the **Export PLM XML** panel.

2. Accept the default file name or update it as necessary.

3. From the **Transfer Mode** list, select the **AWC_Capa_Report_TransferMode** transfer mode to export the Problem Solving data in the associated closure rule and property set.

   To export additional data, update the closure rule and property set of this transfer mode.

> Note:
>
> If you are using a custom object for Problem Solving, you must update the existing transfer mode to use the custom object. Contact your system administrator to perform this update.

4. (Optional) Specify export languages to export as appropriate.

5. Click **Export** to create the exported PLM XML file. The export begins and you receive an alert when the export is complete.

### Review the export report

You receive a report alert when your export completes. Click the alert to view the export report. Access all recent alerts from the **Subscription** tile.

The **Properties** section of the report includes details about the export such as the type of export, export completion status, and transfer mode used. Under **Related Objects**, click on the export log entry to view a detailed list of actions and results from the export.

## Create a Problem Solving process by importing an existing Problem Solving process

You can create a Problem Solving process from an existing one by importing the Problem Solving process.

1. In the **Quality Management** workspace, click the **PROBLEM SOLVING PROCESS** tile.

2. Choose **More Commands** ••• > **Import/Export** > **Import PLM XML** to display the **Import PLM XML** panel.

3. Use **Choose File** to locate the *.zip* Problem Solving process file on your local system.

4. From the **Transfer Mode** list, select the **incremental import** transfer mode to determine what Problem Solving process data is imported.

5. Click **Import** to import the objects in the *.zip* file. The import begins and you receive an alert when the import is complete.

### Review the import report and objects

You receive a report alert when your import is complete. Click on the alert to view the report. (Access all recent alerts from the **Subscription** tile.)

**Related Objects** shows the folder in which the objects were imported, In **Target Object**, view a detailed list of actions and results during the import.

Open the folder in which the objects were imported and review the imported structure.