



Aras Quality Management System 14 User Guide

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Document Conventions

The following table highlights the document conventions used in the document:

Table 1: Document Conventions

Convention	Description
Bold	This shows the names of menu items, dialog boxes, dialog box elements, and commands. Example: Click OK .
Code	Code examples appear in <code>courier</code> text. It may represent text you type or data you read.
<code>Yellow highlight</code>	Code with yellow highlight is used to draw attention to the code that is being indicated in the content.
<code>Yellow highlight with red text</code>	Red color text with yellow highlight is used to indicate the code parameter that needs to be changed or replaced.
<i>Italics</i>	Reference to other documents.
Note:	Notes contain additional useful information.
Warning	Warning contains important information. Pay special attention to information highlighted this way.
Successive menu choices	Successive menu choices may appear with a greater than sign (-->) between the items that you will select consecutively. Example: Navigate to File --> Save --> OK .

1 Quality Management System (QMS)

The **Quality Management System (QMS)** is the name of the overarching application encompassing two Quality-related capabilities: Quality Planning and Quality Systems. **Quality Planning** will cover the *proactive* side of Quality; areas that involve design/process planning, risk analysis and risk mitigation. **Quality Systems** will cover the *reactive* side of Quality; areas that involve Issue Identification/Containment/Analysis and Corrective/Preventive Actions (CAPA).

Quality Management is an essential function in the set of functionality provided by a Product Lifecycle Management (PLM) system. In order for Quality-related information to be effective and relevant, it must be integrated with other PLM-managed data with information linked such that there's direct traceability between a product's requirements, design evolution, manufacturing, and its end use. The data authored and managed by the Quality Management System (QMS) should span all the applicable domains and be integral to the product planning, manufacturing process planning, and risk mitigation processes. To this end, the design of the QMS application strives to achieve the following:

- *Ease of Use*

The user interface and its associated functions should be intuitive to the broadest set of users that the system is intended to interact with.
- *Content linking*

The content managed by the system should allow direct reference to the relevant products (Parts), Processes (Manufacturing Operations), Users, Equipment, etc. that are managed by others parts of the PLM. When any these components change, the system should be able to alert the authors as to impact on the quality-related information.
- *Consistency and Reuse*

The information collected in various parts of Quality documents is rarely unique. Many times common descriptions are used and authors should be able to access managed repositories of quality data and reuse this information to ensure consistency and improve the efficiency with which the documents are created and maintained.

1.1 Glossary

The following Terms are used throughout this document:

Term	Definition
QMS	Quality Management System
QP	Quality Planning. The QP capability was introduced in the QMS 11.0R1 release
QS	Quality Systems. The QS capability was introduced in the QMS 11.0R2 release
PE	Product Engineering
APQP	Advanced Product Quality Planning
Business Object	Refers to any Item in Innovator that contains information, which may be referred to in a Quality Document
Context Menus	Pop-up menus, used mostly by Document Elements, that contain menu items used to invoke various functions on the Document Element instance. The term 'context' is used because the specific menu items displayed in the menu may be different depending on the specific Document Element instance selected.
Document Element	Refers to the components that make up a Quality Document. Each Document Element can have one or more Properties, the values of which are displayed in the Quality Document Table.
Candidate Document Element	A placeholder for a Document Element in a Structure Mapped Quality Document (Section 4.11) that represents a specific Business Object in the mapped and bound Business Object hierarchy but has not yet been created in the Quality Document.
Flagged Document Element	A Document Element in a Structure Mapped Quality Document (Section 4.11) that does not have an equivalent referenced Business Object in the mapped and bound Business Object hierarchy.
Quality Document	Any Document Item that can be produced using the Quality Document Editor and supporting data model configuration framework. When capitalized, Quality Document refers to the Quality Document Types provided by the Quality Planning application: Design Quality Document (DQD) and Process Quality Document (PQD) . When not capitalized, the term 'quality document' is used more generally; referring to any type of document produced in the Quality domain.
Quality Document Administrator	Describes the type of user responsible for the definition and management of Quality Document Types.

Term	Definition
Quality Document Author	Describes the type of user responsible for creating and managing Quality Documents
Quality Document Type	Either Design Quality Document or Process Quality Document
Structured Content	Refers to the general use of an underlying schema to define the content of a document. Structured Content is contrasted with unstructured (or freeform) content in which case there are no rules that define and control the content.
Structure Mapping	A configured binding between a hierarchy of Document Element Types in a Quality Document Type configuration and an equivalent hierarchy of Business Objects.
CAPA	Corrective Action Preventive Action
NCR	Non-Conformance Report – Used to report a problem with a part that does not meet the part specification.
RCA	Root Cause Analysis – Methodology used to investigate the root cause of a problem.

2 User Interface

This section describes the main User Interface (UI) forms and dialogs used by the Quality Management System application.

2.1 TOC Items

Aras QMS Items can be accessed from the Folder named **Quality Management** from the Innovator Table of Contents (TOC).

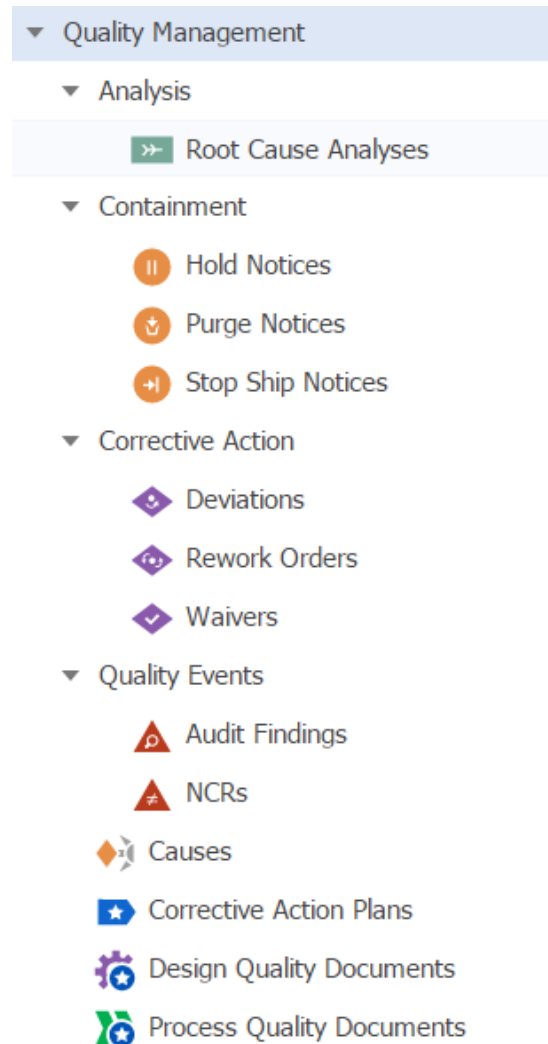


Figure 1.

Creating the above Items is similar to creating any other Item in Innovator. Right-click on the Item in TOC and select **“New...”** from the popup menu.

Optionally, a new Item can also be created by selecting the Item in TOC and then clicking **“Create a New Item”** button in the top toolbar.

2.2 Quality Document Editor

2.2.1 Process Quality Document Form

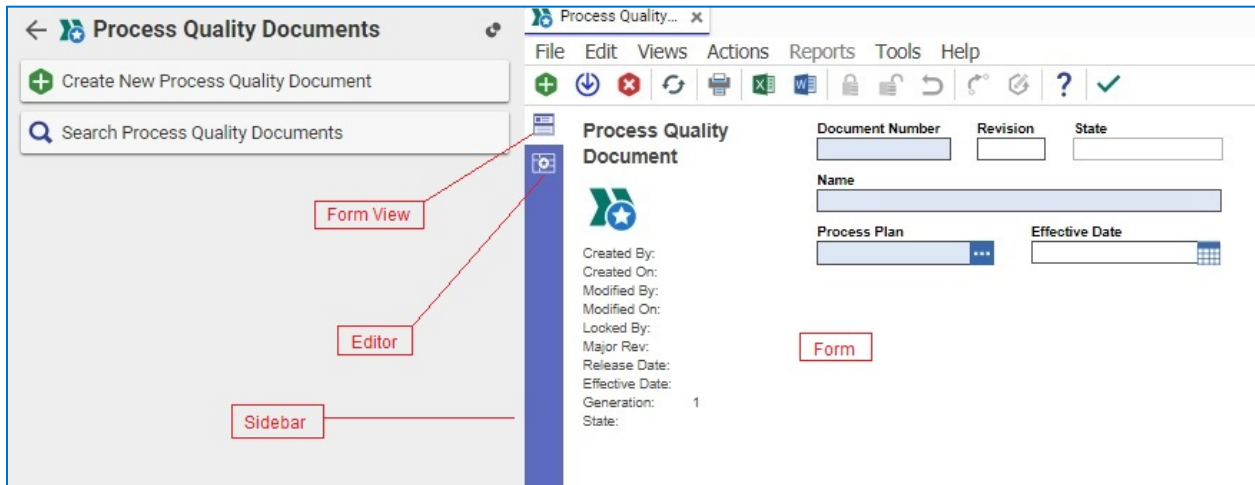


Figure 2.

The Quality Management System introduces a new Folder on the main Table of Contents (TOC) named **Quality Management**. Within this folder are two Quality Document types: **Design Quality Document** and **Process Quality Document**. The above Figure shows an example of the Process Quality Document Tear off Window. Note that the Tear Off Window for the Design Quality Document is similar.

Note: Aras Innovator v10 introduced the User Interface element in the Tear Off Window – Sidebar. This is used to select between multiple views associated with the Item. Quality Planning extends the use of the sidebar for both the Design Quality Document and Process Quality Document.

The left portion of the Tear Off window contains the sidebar; with buttons to display the Form and the Document Editor. By default, the Form will be displayed whenever a Design or Process Quality Document is created / opened. If there are any related Items, a Tabbed section will be displayed on the bottom of the form as is typical for Item Forms.

There are two required fields for both the Design and Process Quality Documents: Document Number and Name. The Name value is used as text for the root node in the Document Editor Navigation Pane. The Document Editor is accessed by selecting the Editor button in the sidebar of the Quality Document Tear Off window.

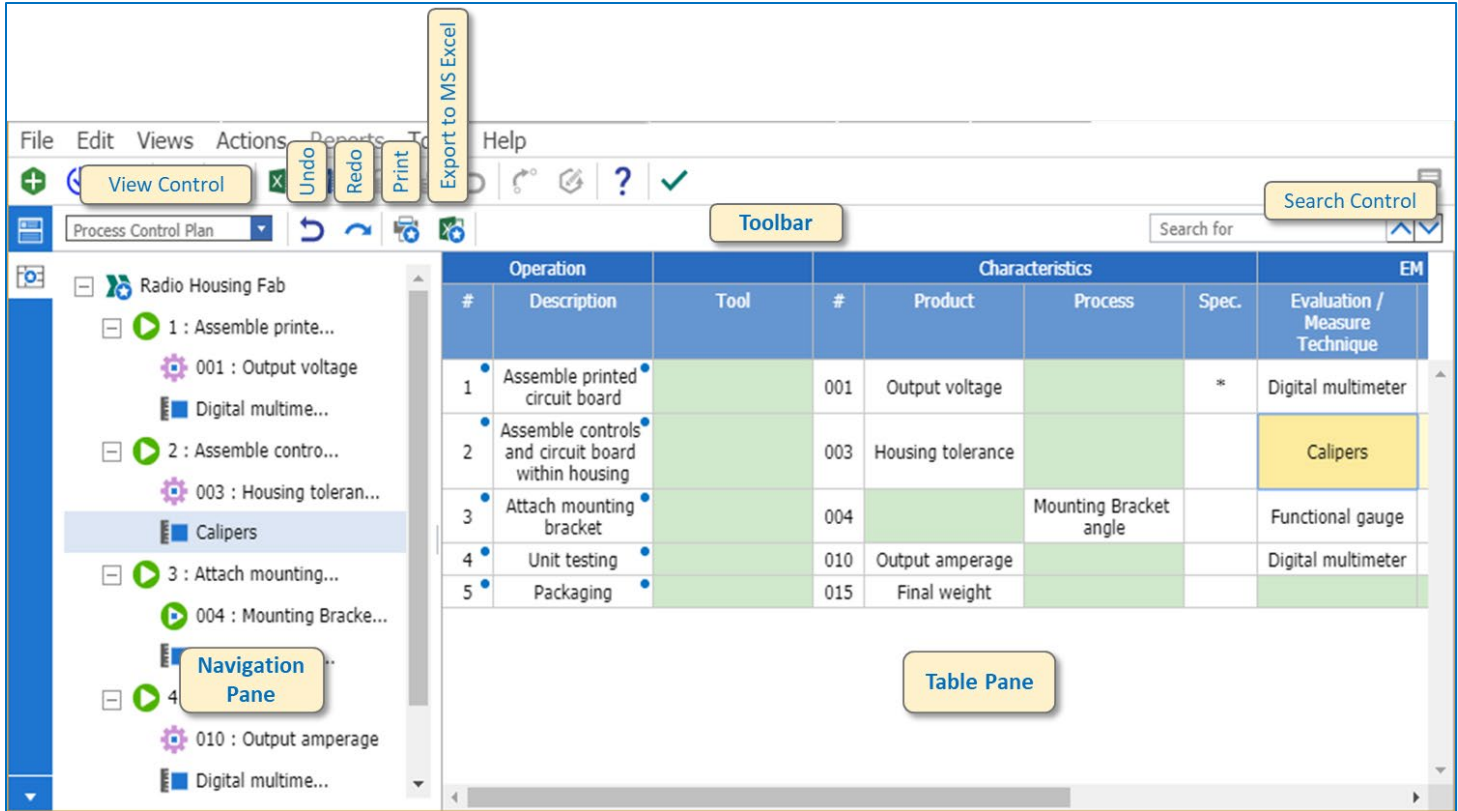


Figure 3.

The Document Editor contains three sections: **Toolbar**, **Navigation Pane**, and **Table Pane**.

2.2.2 Document Editor Toolbar

The Toolbar contains the following controls:

- **View Control:** Displays the list of Views configured for the Quality Document. Note that this control is only displayed in the Process Quality Document since the Design Quality Document only contains a single view. The Process Quality Document contains three views: Process Control Plan (the default), Process Flow Diagram, and Process FMEA.
- **Undo:** Returns the document to the state before the previous editing operation
- **Redo:** Reapplies an operation that the user previously undone. That is, this function will return the document before the Undo operation was performed.
- **Print:** Creates an XPS version of the currently saved Quality Document (see Section 2.5).

Note: The Print and Export to Excel button work on data stored on the server. It is therefore important to save the Quality Document before these commands are used if the user wants to print or export the data as it's displayed in the Document editor.

- **Export to Excel:** Creates an MS Excel version of the currently saved Quality Document (see Section 2.4).
- **Search:** Find interface for word/phrase search within an open Quality Document (see Section 2.3).

2.2.3 Navigation Pane

A Navigation Pane contains a single Tree control showing a parent/child hierarchy of *nodes* representing each Document Element instance in the document. Each node is displayed with an icon and some text. If a Document Element has children, the indented list of child Document Elements can be exposed by selecting the '+' next to the icon. The icon is meant to provide a symbolic representation of the corresponding Document Element with the Text providing a brief summary of the Document Element's content so that a visual association can be made between the Tree and Table Panes in the Editor. Note that the text for each node may need to be truncated to display in a single line in the Tree.

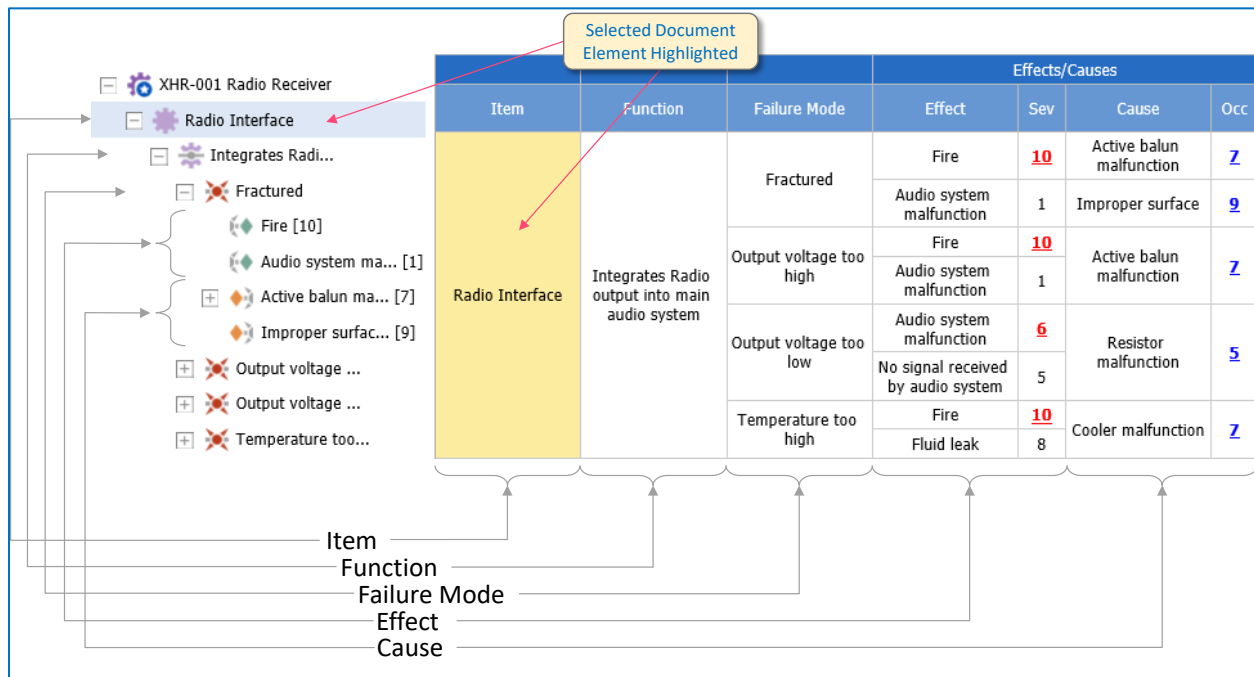


Figure 4.

2.2.4 Table Pane

The Table Pane contains the tabular view and editing canvas for the quality document content. The following sections describe some of the main features.

2.2.4.1 Document Element / Cell Mapping

Every cell in the table shows a property of a Document Element in the document. Thus, there is a direct mapping between a cell in the table and the associated Document Element to which it belongs. This mapping is always shown explicitly in the Document Editor by synchronizing the highlighting of the Document Element in the Tree and the associated cell (or cells) in the table view when the Document Element or Property is made Active. A Document Element or Cell is made active by selecting with a mouse click or scrolling/traversing using the arrow or tab keys.

2.2.4.2 Cell Placeholders

The table will always display a full row of cells, regardless of whether there is data to fill them. Cells with no corresponding Document Element are designated as 'empty'. Empty cells become *placeholders* for the next level of Document Element types to be added. For example, [Figure 3](#) shows a Process Quality Document with the Process Control Plan View displayed. In this example, an Operation is selected (note the highlighted node in the Navigation Pane and the selected cell in the Table Pane). The cell to the right (under the 'Tool' header) would contain the name of a Tool Document Element if one were added as a child to the selected Operation.

Note: Document Elements can only be added to a Quality Document if the Parent Document Element (or root node) exists. All cells in the Table Pane with a green background depict the level in the Document Element hierarchy where a Document Element can be placed. Once a Document Element is added, all cells related to all child Document Elements will be shown with a green background. Cells shown with a grey background represent a level in the Document Element hierarchy where no Document Element can be added (because a parent Document Element does not exist). See Sections 4.2 and 4.6 for more information).

2.2.4.3 Cell merging

APQP Tables use cell merging to show relationships among neighboring cells. These relationships could either mean 'encapsulation'; where the data in one merged cell is a parent to all associated unmerged cells, or 'applicability'; where the data in one merged cell is applicable in some way to unmerged cells. For example, [Figure 4](#) shows merged cells within a Design Quality Document. In this figure, there is a hierarchy of Document Elements starting with the top-most Item (Radio Interface), which has a single Function, which has 4 Failure Modes. Each Failure Mode Document Element has one or two Effects and Causes. Note how the height of Item Cell matches the height of its Function and the height of the Function matches the height of all its Failure Modes and so on. This row merging is automatically applied by the Document Editor when Document Elements are added and removed.

2.2.4.4 Column Grouping

The Table Pane contains two header rows that are always displayed at the top of the pane; scrolling affects the rows below the header. The upper header row shows groupings of one or more columns. Column Groups were established specifically to enable the ability to collapse multiple columns in a single operation. Quality Documents, such as the ones supported by this application, typically require a lot of screen real estate; especially horizontally. Many times, in the process of authoring quality documents, not all columns need to be displayed either because the content of specific Document Elements is not going to be added/modified or because the document is being viewed to focus on a subset of the entire document content.

The function to collapse/expand a column, or group of columns is accessible via a context menu in the cell within the top header row. Collapsing columns reduces the width of each column in the group to a set width and hides the cell's content. For example, the following columns of the Characteristic Document Elements have been collapsed:

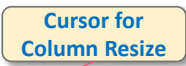
Operation			Characteristics				Evaluation / Measure Technique
#	Operation	Tool	#	Product	Process	Spec.	
001	Assembly printed circuit board		001	Output voltage		*	Digital multimeter
002	Assemble controls and circuit board within housing		003	Housing tolerance			
003	Attach mounting bracket		004		Mounting Bracket angle		
004	Unit testing		010	Output amperage			
005	Packaging		015	Final weight			

Figure 5.

In order to provide context, cells within collapsed columns will still retain their background style and the content can be displayed by placing the mouse cursor over the cell. Doing so will display a tooltip showing the Document Element Type and value.

2.2.4.5 Column Resizing

The width of any column in the Table Pane can be resized by placing the cursor over the border between header cells in the second header row.



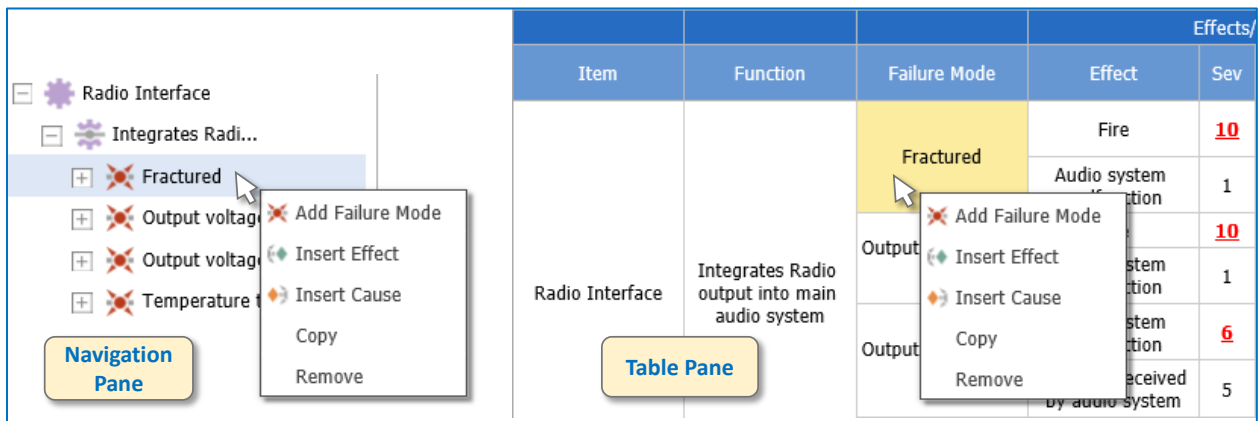
Operation			Characteristics		
#	Operation	Tool	#	Product	Process
001	Assembly printed circuit board		001	Output voltage	
002	Assemble controls and circuit board within housing		003	Housing tolerance	

Figure 6.

The cursor will change as shown in [Figure 6](#). Click and hold down the left mouse button and drag either left or right to resize the column to the left. The columns to the right will move accordingly. Note that when a column is resized, the width of the column will be saved persistently such that the view will be restored when *any* Quality Document of the same Type is subsequently opened.

2.2.4.6 Context Menus

All functions for editing content within a Quality Document are accessible from context menus within the Navigation Pane and Table Pane. A Context Menu is a list of one or more menu items displayed by right-clicking a cell within the Table Pane or Tree node within the Navigation Pane. These are called *Context* Menus because the list of menu items is dependent on the specific cell/Document Element selected; thus providing a context for the menu items and their respective functions to operate on. Context Menus will display next to the mouse cursor. Once displayed a menu item can be selected with the left mouse button.



The screenshot shows two panes: the Navigation Pane on the left and the Table Pane on the right. The Navigation Pane contains a tree view with items like 'Radio Interface', 'Integrates Radi...', 'Fractured', 'Output voltage', and 'Temperature'. The Table Pane contains a table with columns: Item, Function, Failure Mode, Effect, and Sev. A context menu is open over the 'Fractured' failure mode in the Table Pane, listing options: Add Failure Mode, Insert Effect, Insert Cause, Copy, and Remove. Another context menu is open over the 'Fractured' item in the Navigation Pane, listing options: Add Failure Mode, Insert Effect, Insert Cause, Copy, and Remove.

Figure 7.

Context Menus will only include menu items for functions that are relevant to the Document Element that is selected and the state of the document (locked vs unlocked). When adding new Document Elements the to-be-created Document Element can either be 'Added' or 'Inserted'.

Note: The term 'Add' in this context refers to Document Elements that are added as *peers* to the currently selected Document Element. The term 'Insert' in this context refers to Document Elements that are added as *children* to the currently selected Document Element.

Using [Figure 7](#) as an example, the currently selected Document Element – named ‘Fractured’ and of Type - Failure Mode (Section 4.7.1) has the Context Menu displayed. Document Elements that can be added as peers are always displayed at the top of the Context Menu with the Document Element Type preceded with the word ‘Add’. Document Elements that can be added as children are displayed after with the Document Element Type preceded with the word ‘Insert’. In this case, because the currently selected Document Element Type is a Failure Mode, the user can ‘Add’ another Failure Mode or ‘Insert’ either an Effect or a Cause Document Element.

2.3 Quality Document - Search/Find

The Quality Document Editor includes the ability to find Document Elements within an open Quality Document containing text provided by the user. The Search Control at the right part of the Toolbar contains a simple interface for typing a search phrase, initiating the search, and traversing the search ‘hits’.

Item	Function	Failure Mode	Effects/Causes			
			Effect	Sev	Cause	Occ
Radio Interface	Integrates Radio output into main audio system	Fractured	Fire	10	Active balun malfunction	2
			Audio system malfunction	1	Improper surface	9
		Output voltage too high	Fire	10	Active balun malfunction	2
			Audio system malfunction	1		
		Output voltage too low	Audio system malfunction	6	Resistor malfunction	5
			No signal received by audio system	5		

Figure 8.

To search for content within a Quality Document:

1. Select to view the Document Editor if it is not currently displayed (Section [2.1](#))
2. Type the search text in the Search Text Field
3. Type Enter. The system will search the document for direct matches of the text string provided. Once complete, the Search Results label will display the number of matches found. Note that the first number in the label represents the index into the search results once they are traversed using the Previous and Next Found String buttons. All Search ‘hits’ (the text found) will be highlighted with a yellow background.

Note: Boolean logic for search text is not supported

4. Select the Previous Found String button. The Quality Document Editor will scroll to the first found string and select (make active) the associated Document Element. The text within the corresponding Property will be highlighted with a green background. The Search Results label will update to show the index of the current 'found' text string.

Note: The Next / Previous Found buttons will loop to the beginning / end of found strings when the end / beginning of the search results are traversed.

5. Select the 'X' in the Search Text Field to cancel the search and remove search highlighting.

2.4 Quality Document - Export to MS Excel

The Quality Planning application can convert the contents of a Quality Document to Microsoft Excel format (.xlsx) so that a local version of the document can be saved to the user's system.

Note: The ability to export Quality Document content to Excel requires a subscription license.

Once converted, the user will be prompted for a file location to save the generated Excel document. The contents of the Excel document will be styled similar to the styling used in the Document Editor and will include all Document Element data as is currently saved.

To create an Excel version of the currently opened Quality Document:

1. Select to view the Document Editor if it is not currently displayed (Section [2.1](#))
2. Select the Export to MS Excel button in the toolbar. The system will display a status dialog with messages based on the current export action. When complete the user will be prompted to either open or save the generated file. Note that this prompt is an interface included as part of the browser.

The Design Quality Document will contain a single worksheet with the title 'Design FMEA'. The Process Quality Document will contain three worksheets; one for each view and titled based on the name of the view (Section [2.2.2](#)). Note that the Quality Document should be saved prior to exporting in order for the latest changes to be included in the generated file.

2.5 Quality Document - Printing / Export to XPS

The Quality Planning application can convert the contents of a Quality Document to XPS; a format suitable for sending directly to a printer.

Note: The ability to print content to Excel requires a subscription license.

The contents of the XPS document will be styled similar to the styling used in the Document Editor and will include all Document Element data as is currently saved.

To create an XPS version of the currently opened Quality Document:

1. Select to view the Document Editor if it is not currently displayed (Section [2.1](#))
2. Select the Print button in the Document Editor Toolbar (Section [2.2.2](#)). The system will display the following Dialog:

Figure 9. Print to XPS Settings

Width / Height:	Size of each page of the converted document based on the Display Units
Display Units:	Inches or Pixels
Paddings:	The size (in Display Units) of the top, bottom, left, and right margins
View:	Quality Document View to Print. There'll be a separate list entry for each configured view
Headers:	'Single' or 'For each page'. Select Single to only display the header once. Select For each page to repeat the header row on each page
Outer Borders:	Number of pixels (width) of the surrounding border of the generated table
Inner Borders:	Number of pixels (width) of all internal borders of the generated table

Conversion Result:

'Window' or 'File'. Select **Window** to display the generated XPS content in a separate browser window. Select **File** to save the generated content to a file.

3. Select the **Print** button.

The system will generate the content and either display the results in a separate window or prompt the user for a file location depending on the selection of the **Conversion Result** setting.

Note: The Quality Document should be saved prior to printing/exporting in order for the latest changes to be included in the generated content.

3 Overview of Quality Systems

The set of functions called Quality Systems (QS) deals with the reactive side of Quality. The application provides the below listed capabilities –

- Manage closed-loop CAPA data and processes in PLM
- Identify, contain, and analyze issues
- Perform corrective and preventive actions
- Manage Quality data with Product and Manufacturing data
- Track Quality affected Items
- Leverage PLM core capabilities – Workflow, Document Management, Search, Change, Reporting, Security etc.

Manufacturing related change ItemTypes are packaged in Product Engineering. There are 3 ItemTypes – Deviation, Rework Order and Waiver that represent the “Corrective Action” in the QS capability. This document refers to those Items as well.

3.1 Key Quality Systems Items

The Quality Systems capability in the QMS application is based on the new **Corrective Action Plan** ItemType which has five PolyItems related to it. Each PolyItem has its own Polysource Items as shown in the figure.

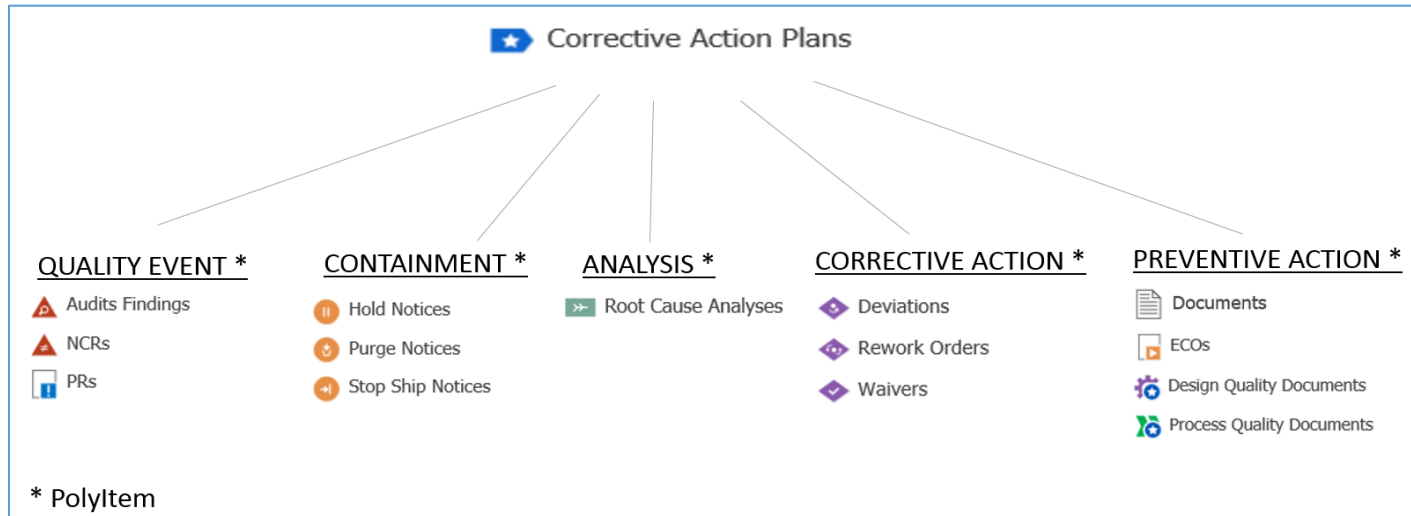


Figure 10.

The following sections provide a description of the various Items.

3.2 Corrective Action Plan

The Corrective Action Plan (CAP) ItemType represents the overall summary of the quality issue that was identified and all the subsequent actions that were taken to correct the problem.

The CAP can be originated for a customer complaint, a supplier complaint or an internal issue.

- From the CAP Item, you can create new related Items for Quality Event, Containment, Analysis, Corrective Action and Preventive Action by selecting “**Create Related**” → then from the dialog selecting the Poly Source type you wish to create.
- For example from the CAP to create a new NCR the steps are – in the Quality Event tab of the CAP from the drop-down select “Create Related” → then select the “New Relationship” button. This will open a dialog listing the Poly Source Type (NCR, Audit Finding, or PR). Select NCR → OK to create a new NCR that is attached to the CAP.
- From the CAP Item, you can also pick existing related Items for Quality Event, Containment, Analysis, Corrective Action and Preventive Action by selecting “**Pick Related**” → then select the “New Relationship” button, and select the Item you wish to attach to the CAP.

The Corrective Action Plan has a Lifecycle associated to it. Promoting a CAP to its lifecycle states must be done manually from the UI by a member of the Quality identity.

3.3 Quality Event

Quality Event represents Items to document a problem that was identified with a part.

After a problem is documented, the problem will be reviewed, generally by a person in the quality department and this might result a formal CAPA process.

The user can add one or more Quality Event Items to a CAP.

Not all Quality Events need to go through a CAPA process. That is a Quality Event Item can exist without being attached to a CAP.

The Quality Event Items are described in the following sections.

3.3.1 Problem Report (PR)

The PR Item allows the user to document a quality problem.

PR has a Lifecycle and Workflow associated with it.

Note: The PR Item is available in the “Change Management” folder of the TOC.

3.3.2 Non Conformance Report (NCR)

The NCR Item allows the user to document a quality problem found specifically with a part/product. The objective of the NCR Item is to clearly identify the problem, the location where the problem was identified, number of parts rejected so that it can be addressed by the quality team.

The NCR has a Lifecycle and Workflow associated to it. The workflow controls the automatic promotion of the Lifecycle states for a NCR Item.

3.3.3 Audit Finding

The Audit Finding Item allows the user to document the results of an examination/audit performed on a part/product. The Audit can be performed by an internal or an external auditor.

The Audit Finding has a Lifecycle associated to it. Promoting an Audit Finding to its lifecycle states must be done manually from the UI.

3.3.4 Using Action to add Quality Events to a CAP

The Quality Event Items **PR, NCR and Audit Finding** have an Innovator Action associated to it in order to **automatically attach Quality Event Items to a CAP**.

The Action – “**Add Item(s) to Corrective Action Plan**” is available from the **Item grid** and from the **Tear-off window** of the Items PR, NCR and Audit Finding.

1. From the TOC select PR, NCR or Audit Finding Item. The Items are displayed in the Item grid.

Note: Alternatively, the Action can also be accessed by opening the tear-off of a PR, NCR or Audit Finding.

2. Right click the Item and select “**Add Item(s) to Corrective Action Plan**” from the context menu as shown below for a NCR Item.

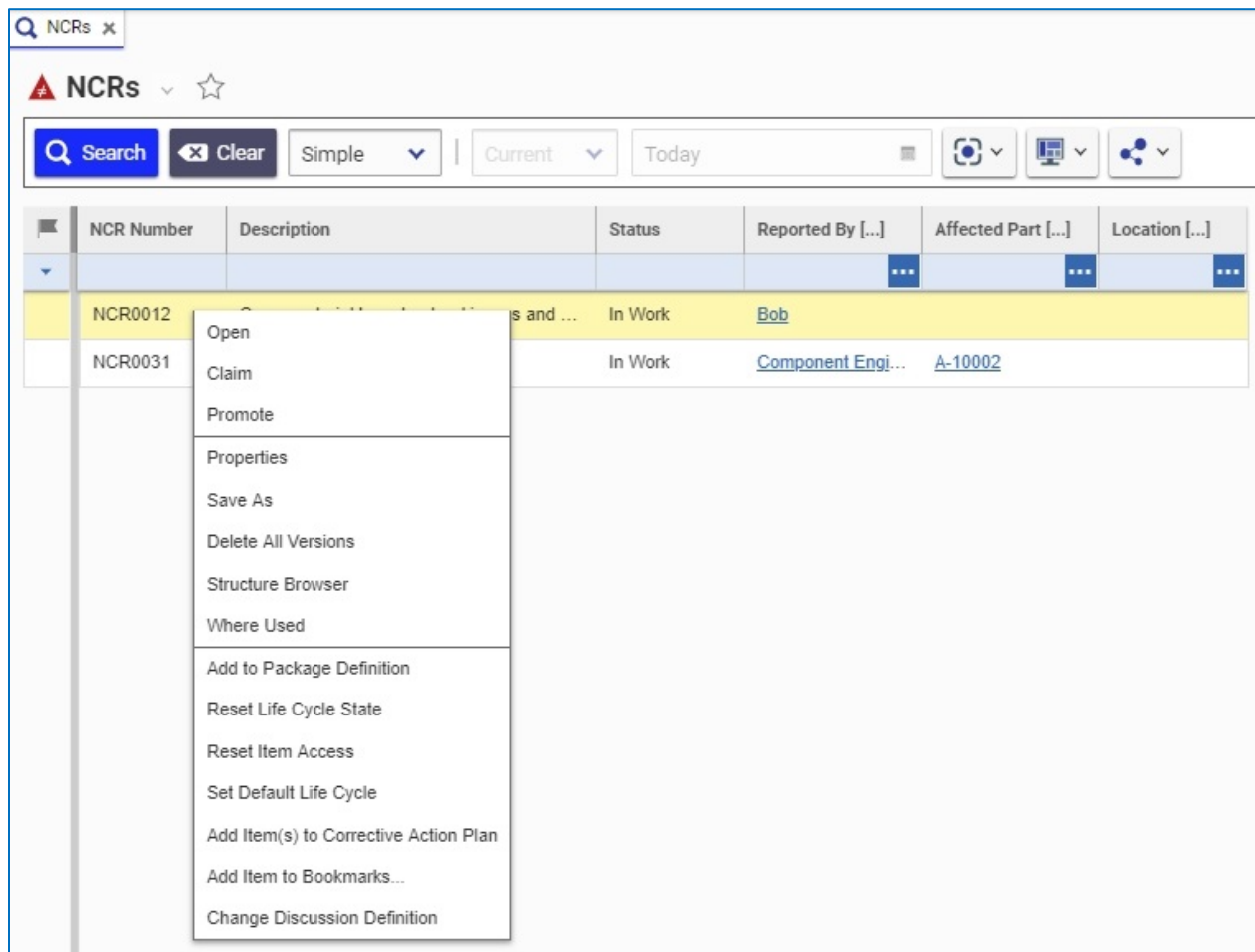


Figure 11.

Note: Users can also multi-select Items from the Item grid to add to a CAP Item.

3. This will bring up the “**Choose Corrective Action Plan**” Dialog as shown below.

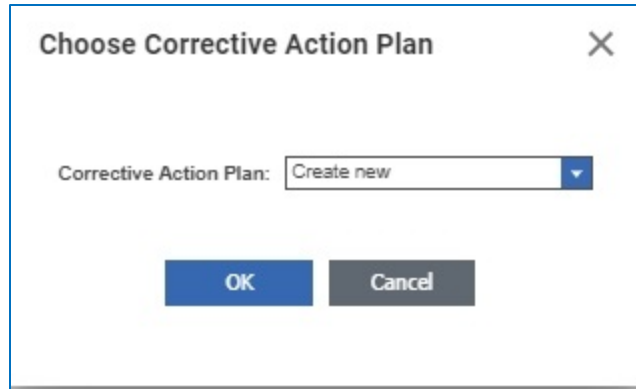


Figure 12.

4. Select either “Create new” or “Attach to existing” from the drop-down box.
 - Selecting “Create new” → OK will open a new CAP form with the Quality Event Item attached to it.
 - Selecting “Attach to existing” → OK will open the Search Dialog listing all the CAPs. Selecting a CAP will result in the Quality Event Item to be attached to an existing CAP.

Note: A Quality Event Item (PR, NCR or Audit Finding) can be added to multiple CAPs.

3.4 Containment

Containment represents Items to document the possible immediate actions that have to be taken to contain or limit the problem in the short term until the root cause is determined, and subsequent corrective actions are implemented. The user can add one or more Containment Items to a CAP. The Containment Items are mentioned below.

3.4.1 Hold Notice

The Hold Notice ItemType documents the reason to issue a hold on the part from being manufactured, purchased, or received.

The Hold Notice Item has a Lifecycle and Workflow associated to it. The workflow controls the automatic promotion of the Lifecycle states for a Hold Notice Item. Promoting a Hold Notice to the last lifecycle state - that is from Active to Expired state must be done manually from the UI by a member of the Quality identity.

3.4.2 Purge Notice

The Purge Notice ItemType documents the reason to dispose parts that don't meet conformance standards and product requirements. The disposition of parts can be done by – Rework, Repair, Use as-is, Send to supplier or Scrap.

The Purge Notice Item has a Lifecycle and Workflow associated to it. The workflow controls the automatic promotion of the Lifecycle states for a Purge Notice Item. Promoting a Purge Notice to the last lifecycle state - that is from Active to Expired state must be done manually from the UI by a member of the Quality identity.

3.4.3 Stop Ship Notice

The Stop Ship Notice ItemType documents the reason to issue a notice to a supplier whose parts do not meet conformance standards and product requirements.

The Stop Ship Notice Item has a Lifecycle and Workflow associated to it. The workflow controls the automatic promotion of the Lifecycle states for a Stop Ship Notice Item. Promoting a Stop Ship Notice to the last lifecycle state - that is from Active to Expired state must be done manually from the UI by a member of the Quality identity.

3.5 Analysis

Analysis represents Items to document the investigation done to identify the root cause of the quality problem. The user can add one or more Root Cause Analysis Items to a CAP.

3.5.1 Root Cause Analysis (RCA)

The Root Cause Analysis Item allows customers to document the detailed analysis performed to arrive at the Root Cause of the problem.

There are various approaches that customers use to perform the root cause analysis of a quality problem. Classification on the RCA item represent 3 main approaches, these are listed below -

- **Fault Tree Analysis (FTA)** - A top down analysis technique to find the root cause.
- **Fishbone** - Technique used to determine the root cause of a quality problem by doing a cause and effect analysis.
- **Five Whys** - Technique used to determine the root cause of a quality problem by asking 5 iterative questions to explore the cause and effect of the problem.

The Root Cause Analysis Item has a Lifecycle and Workflow associated to it. The workflow controls the automatic promotion of the Lifecycle states for a Root Cause Analysis Item.

3.5.2 Office Connector for RCA

Office Connector is available for the Root Cause Analysis Item. This enables customers to directly save their Office Documents (Excel, Word and PowerPoint) to Innovator from the Microsoft Office itself. This way customers can attach the files that documents the detailed analysis performed to arrive at the Root Cause of the problem to the RCA Item.

Note: Office Connector enabled with the RCA Item is an **optional installation** for customers.

If Aras Office Connector and the Optional Office Connector Settings for QMS are installed, then an Aras ribbon will be available in the Office Documents (Excel, Word and PowerPoint) as shown below.

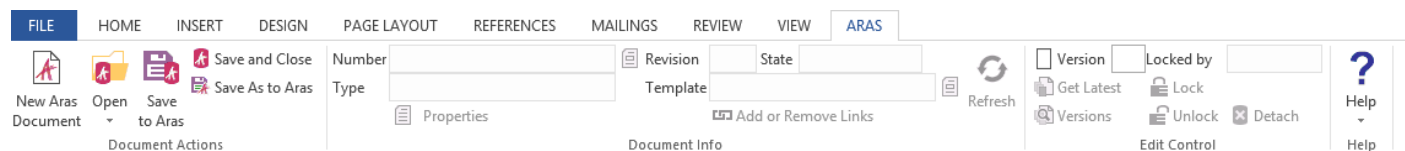


Figure 13.

1. From the Aras ribbon, when the user saves the Office File using Office Connector then the following “**Save to Aras**” dialog will appear.

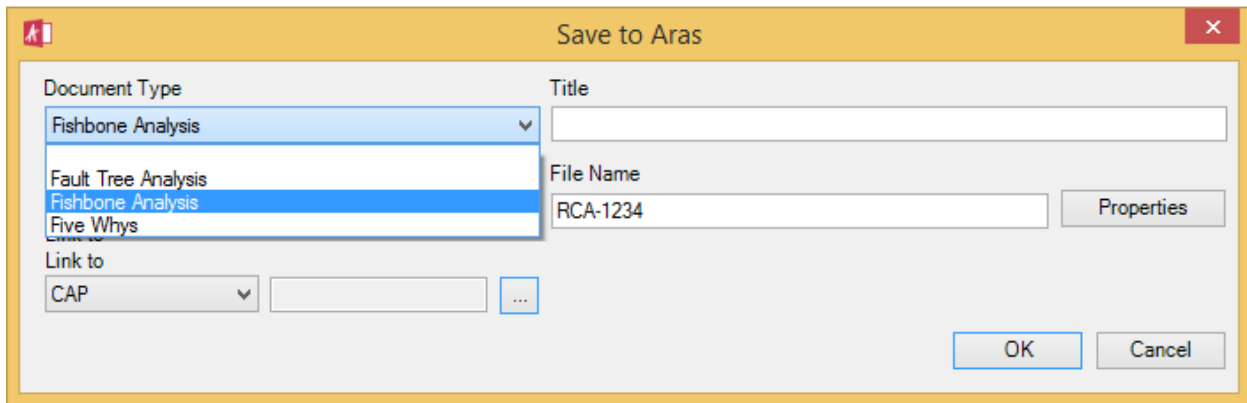


Figure 14.

2. From the dialog, select Document Type from the dropdown list – Fault Tree Analysis, Fishbone Analysis or Five Whys
3. Select Link to CAP.
4. Select the “...” (Browse) button to browse the available CAPs and select a specific CAP Item to attach the Root Cause Analysis Item to.
5. Selecting OK will result in a RCA Item to be created and attached to the CAP Item that was selected in the above step.

This will result in the Office File being attached to the “Native File” property of the RCA Item, and the PDF to be generated and attached to the “Viewable File” property of the RCA Item.

The Viewable file is also now available to view from the sidebar of the RCA Item and the CAP Item that the RCA is attached to.

Note: For more information on how to use Office Connector refer to the Office Connector User Guide.

3.5.2.1 Office Connector Property Mapping

The 3 RCA Office Document Types - Fault Tree Analysis, Fishbone Analysis and Five Whys have property mapping defined as described below -

- RCA "description" value set by the "Title" field displayed to the user in the “New Aras Document” from Office Connector
- The mapping of “description” to “Title on Update to allow Innovator to have control over the value after initial creation
- The “Owner” property in Innovator set based on the user saving from the Office File.

3.5.3 Cause

The Cause Item allows users to document the Cause of a problem that is identified by the Root Cause Analysis. Multiple Causes can be related to a Root Cause Analysis Item.

Cause Item is available in the TOC under “Quality Management”.

Users can document a library of Causes that can be related to the RCA Item and share the Cause with the DQD/PQD Items.

The Cause Item has a Lifecycle associated to it. Promoting a Cause to its lifecycle states must be done manually from the UI by a member of the Quality identity.

3.5.3.1 Root Cause Analysis and Cause

The Cause Item can be attached to the Root Cause Analysis Item. From the RCA Item users can pick **existing Cause Items or create new Cause Items**.

3.5.3.2 Cause Item and DQD/PQD Binding

This capability enables linking the proactive and reactive aspects of Quality. The Cause information can be shared between the DQD/PQD and the CAPA.

This is available via the Structure Mapping/Binding capability.

Binding is configured between the **Description** property of the **Cause** Item and the **DQD Cause Description** property of the **DQD Cause** Document Element.

Also, binding is configured between the **Description** property of the **Cause** Item and the **PQD Cause description** property of the **PQD Cause** Document Element.

Note: For more information on the Binding/Structure Mapping capability refer to Section [4.7.1](#)

3.6 Corrective Action

The Corrective Action Items are packaged in the **Product Engineering (PE)** application.

If PE is installed, the following Items will be available – Deviation, Rework Order and Waiver.

Corrective Action represents Items to document how the root cause of the problem will be corrected or eliminated. These Items are typically **manufacturing changes** that need to be performed on the **non-conformance part for a limited amount of time**. A user can add one or more Corrective Action Items to a CAP.

3.6.1 Deviation

The Deviation Item documents an authorization/request to depart from a requirement of a part before the part is manufactured.

The Deviation Item has a Lifecycle and Workflow associated to it. The workflow controls the automatic promotion of the Lifecycle states for a Deviation Item. Promoting a Deviation to the last lifecycle state - that is from Approved to Expired state must be done manually from the UI by a member of the Manufacturing identity.

3.6.2 Rework Order

The Rework Order Item documents the instructions and approval to perform rework on a non-conformance part so that the part meets the part specification.

The Rework Order Item has a Lifecycle and Workflow associated to it. The workflow controls the automatic promotion of the Lifecycle states for a Rework Order Item. Promoting a Rework Order to the last lifecycle state - that is from Approved to Expired state must be done manually from the UI by a member of the Manufacturing identity.

3.6.3 Waiver

The Waiver Item documents an authorization/request to depart from a requirement of a part after it is manufactured. In such cases the part with the non-conformance is already built, but it is important to get an approval to use the part as-is.

The Waiver Item has a Lifecycle and Workflow associated to it. The workflow controls the automatic promotion of the Lifecycle states for a Waiver Item. Promoting a Waiver to the last lifecycle state - that is from Approved to Expired state must be done manually from the UI by a member of the Manufacturing identity.

3.7 Preventive Action

Preventive Action represents Items to document how the root cause will be prevented from recurring in the future. These items document the proactive actions or lessons learned from the CAPA process. A user can add one or more Preventive Action Items to a CAP. The Preventive Action are mentioned below.

3.7.1 Document

Users can create and attach a document to the CAP.

3.7.2 Express ECO

Integrating Engineering Change with Quality is important. As part of the preventive action, customers can create an ECO to process a design change.

3.7.3 Design Quality Document (DQD)

Document used to collect information from an analysis performed on a product. These documents are used to identify failure modes of a design, and their causes and effects. This helps to mitigate risks early on in the design process.

The DQD has a Lifecycle associated to it. Promoting a DQD to its lifecycle states must be done manually from the UI by a member of the Quality Document Author identity.

3.7.4 Process Quality Document (PQD)

Document used to collect information from an analysis performed on a manufacturing process. These documents are used to identify failure modes of a process, and their causes and effects. This helps to mitigate risks early on in the design process.

The PQD has a Lifecycle associated to it. Promoting a PQD to its lifecycle states must be done manually from the UI by a member of the Quality Document Author identity.

Note: The Document Item is available in the “Documents” folder of the TOC. ECO Item is available in the “Change Management” folder of the TOC.

4 Overview of Quality Planning

4.1 APQP Documents

The Advanced Product Quality Planning (APQP) documents that can be created using the QMS - Quality Planning application include Design Failure Modes and Effects Analysis (FMEA), Process FMEA, Control Plan, and Process Flow Diagram. Each organization is expected to have variations in the underlying data model and potentially unique representations of these documents but they should all be based on the documents as specified by the AIAG FMEA Reference Manual and the AIAG APQP Reference Manual. As such, this document will refer to the data model and representation of APQP documents as described and illustrated in the AIAG specifications.

4.2 Structured Data

Each APQP Document will be composed of a self-contained hierarchy of distinct data elements (Document Elements), with individual properties that are displayed as a table. Instances of a Document's Elements exist solely for a single APQP Document; they are not shared across APQP Documents and the Document content evolves as a single entity. Each Document Element may have one or more *child* Document Elements resulting in a lineage, or tree-like, structure. Each parent/child relationship can be represented in the table whereby higher-level elements start at the left columns in the table and descend down the hierarchy towards the right of the table. The table cells containing properties of parent Documents Elements are extended to match each member of their direct child Document Elements.

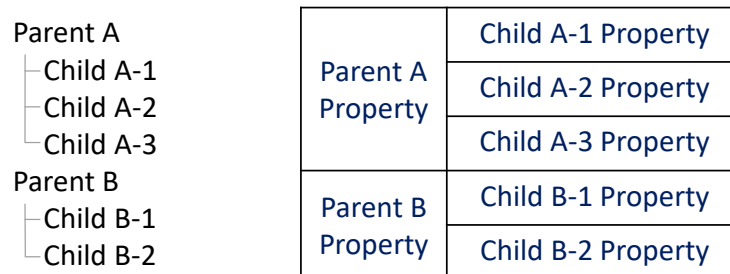


Figure 15. Tree / Grid Display Comparison

4.3 Enhanced User Interface

	Item	Function	Failure Mode	Effects/Causes			Controls							
				Effect	Sev	Cause	Occ	Prevention	Detection	Det	RPN	Acti		
Shaft Housing	Shaft Housing	Angular rotation	Premature wear	Premature wear		Bad design				Visual inspection for problems				
Shaft housing brace	Shaft housing brace	Shaft support	Premature wear	Inoperative		Bad design		Inspection						
Radio Housing	Radio Housing	Houses radio electronics	Too much stress on the housing	Housing cracks		Mounting bracket malfunction		Inspect mounting bracket		Inspect upon assembly				
Radio interface	Integrate Radio Output into main audio system		Fractured	Fire										
				Audio system malfunction										
				Output voltage too high										
				Output voltage too low										
				Audio system malfunction										
				Fire										
				Audio system malfunction										
				No signal received by audio system										

Figure 16.

The Quality Management System will include an enhanced APQP document editing user interface (UI) – called the **Quality Document Editor** - that incorporates a Tree UI control and an updated table/grid UI that uses pop-up displays for cell / property editing. The Tree and Grid displays provide an orthogonal view of the same underlying structured data model. The Tree view shows the explicit hierarchy of Document Elements whereas the tabular view shows Document Element properties arranged in grouped rows and columns. Document Elements are added by the explicit selection of menu items either within the Tree or the table/grid. Once a Document Element is added, its properties can be edited using pop-up displays that are configured based on the data type of the property and/or the context in which the cell/property is edited. Using pop-up interfaces for cell editing provides the following advantages:

1. The table/grid is only used to display the data model, thus reducing complexity in the software
2. Pop-up displays contain editing widgets appropriate to the type of the underlying property (e.g., calendars for dates, combo-boxes for list selection, check-boxes for Booleans, etc.)
3. Pop-up displays are rendered at the location of the cell without the need to launch a separate dialog, which is intended to improve input efficiency

Other enhancements include a multi-level header and the ability to collapse groups of related columns to restrict the content that needs to be rendered and allow the author to focus on certain sections of the overall document.

4.4 Catalogs / Libraries – Content Reuse

Commonly used quality content can be collected and stored independent of the corpus of Quality documents within one or more catalogs/libraries. Easy access to these repositories will be provided to the Quality Document Authors to promote content reuse. Queries to catalog data will be configured with the data model and associated directly with specific Document Elements. As a result, context-sensitive searches can provide only the appropriate entries based on where the information is used.

4.5 Document Elements as a proxy to PLM Business Objects

Quality Documents often contain information that relates to content that may be managed separately in the PLM System. For example, Parts, Requirements, Manufacturing Processes. As a result, ensuring that quality documents are synchronized with this information can become problematic. The configuration of a quality data model in the new QMS Application can establish linkage between elements in the document and other ItemTypes and as a result, alert Quality Authors to discrepancies when the information becomes stale or out of synch.

4.6 Data Model Configuration

The data model for a Quality Document can be somewhat complex, consisting of a deep hierarchy of elements; each with a number of individual properties. Although the QMS will include a default set of document data model configurations (i.e., Design FMEA, Process FMEA, Process Control Plan, and Process Flow Diagram), end-users will likely need to tailor them or create entirely new document types. The effort to improve usability is extended to the administration functions as well as the authoring functions. As a result, a *framework* for configuring/modifying a document's data model will be provided to abstract most of the necessary details and ensure consistency in the resulting architecture. In addition, migration of existing documents to updated data model schemas will be handled automatically.

4.7 APQP Data Model

The Document Elements that comprise the Design and Process Quality Documents are shown in the following diagram. The solid lines/arrows connecting the Document Elements represent a one-to-many relationship.

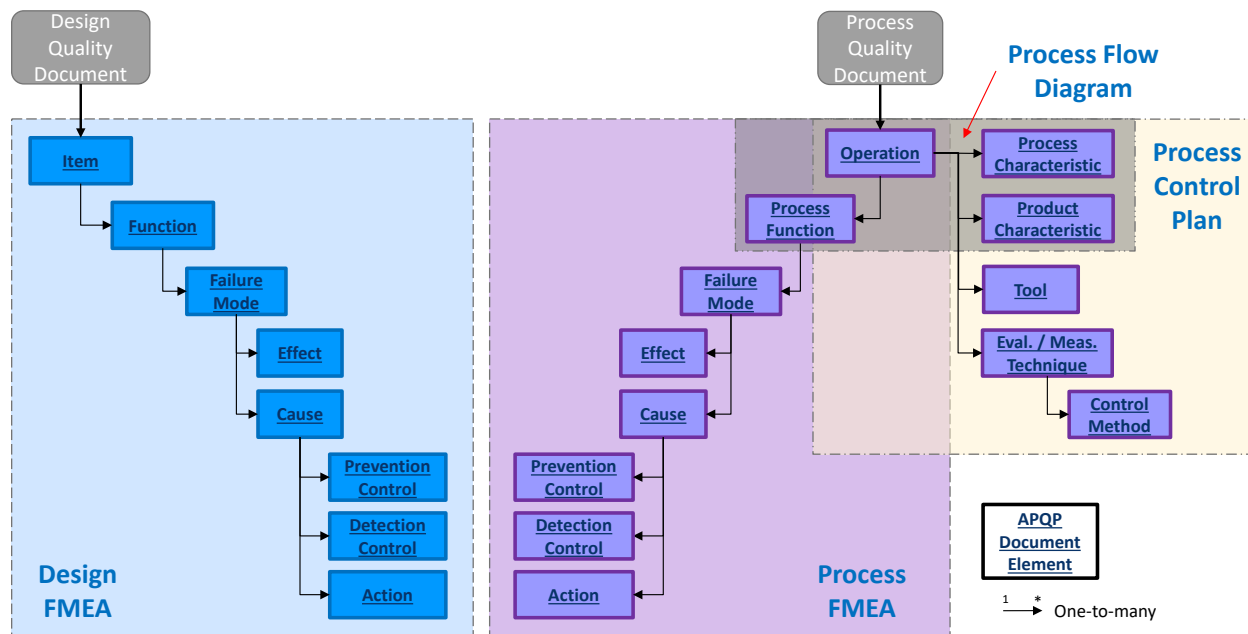


Figure 17. APQP Data Model

The Design Quality Document will contain a single view – Design FMEA. The Process Quality Document will contain three views: Process FMEA, Process Control Plan, and Process Flow Diagram. Any instances of Document Elements that are contained in multiple views will be shared. For example an Operation added in a Process FMEA view, will show up in the Process Flow Diagram and Process Control Plan of the same Process Quality Document. The above figure identifies the Document Elements for each view.

4.7.1 Design Quality Document

The Design Quality Document contains a single View for a Design FMEA (DFMEA). The term ‘Design Quality Document’ and DFMEA are used interchangeably in this document. The DFMEA collects information from an analysis process performed on a product, identifies and quantifies any associated risk, and identifies various mitigation procedures that are in place or that need to be put in place. Each Design Quality Document is maintained as a separate Design Quality Document Item instance. A Design Quality Document ItemType is the overarching container for each DFMEA.

The AIAG FMEA Reference Manual describes each of the Document Elements for the DFMEA in depth.

Table 2: Design Quality Document Elements

Name	Description
Item	Represents a Part, Assembly, or component of a Part
Function	Describes a particular function of the Item
Failure Mode	Describes a manner in which the Item could fail to meet its associated function / requirement
Effect	Identifies the consequence of the Failure. Effects have an associated <i>severity ranking</i> value, which provides an indication of the severity of the Effect.
Cause	Identifies the potential causes of the Failure. Causes have an associated <i>occurrence ranking</i> value, which provides an indication of the likelihood of the Cause.
Prevention Control	Identifies existing mechanisms / processes in place to prevent the Cause from occurring
Detection Control	Identifies existing mechanisms / processes in place to detect the existence of the Cause. Detection Controls have an associated <i>detection ranking</i> value, which provides an indication of the likelihood of the associated Detection Control of discovering the Cause.
Action	Describes a recommended action / task that should be executed to address one or more shortcomings in current processes for prevention and/or detection.

4.7.2 Process Quality Document

Similar to the DFMEA, the Process Quality Document collects information from an analysis process performed on a *process*, identifies and quantifies any associated risk, and describes various mitigation procedures in place or that need to be put in place. In addition, the Process Quality Document includes the sequence of Operations, the associated manufacturing equipment, and the controls in place to ensure each Operation performs the necessary tasks for producing an associated part or assembly component as dictated by the design and/or governing standards or procedures. Each Document is maintained as a separate Process Quality Document Item instance. A Process Quality Document ItemType is the overarching container for each Process Plan.

In the Process Quality Document, the document Elements on the right (in the light purple, dotted box) show the hierarchy of Document Elements for a PFMEA, the light brown box for the Process Control Plan, and the light grey box for the Process Flow Diagram. The AIAG FMEA Reference Manual and the AIAG APQP and Control Plan Reference Manual describes each of these elements in depth.

Table 3: Process Quality Document Elements

Name	Description
Operation	Represents a task or operation within a manufacturing process
Product Characteristic	Aspects or features about the design of a Part that require special attention including, but not limited to, its color, size, surface finish, strength, etc.
Process Characteristic	Aspects or features about a Process/Operation that require special attention including, but not limited to, size/dimension, surface finish, strength, etc.
Function	Describes the purpose of the Operation
Failure Mode	Describes a manner in which a process could fail to meet its associated function / requirement
Effect	Identifies the consequence of the Failure. Effects have an associated <i>severity ranking</i> value, which provides an indication of the severity of the Effect.
Cause	Identifies the potential causes of the Failure. Causes have an associated <i>occurrence ranking</i> value, which provides an indication of the likelihood of the Cause.
Prevention Control	Identifies existing mechanisms / processes in place to prevent the Cause from occurring
Detection Control	Identifies existing mechanisms / processes in place to detect the existence of the Cause. Detection Controls have an associated <i>detection ranking</i> value, which provides an indication of the likelihood of the associated Detection Control of discovering the Cause.
Action	Describes a recommended action / task that should be executed to address one or more shortcomings in current processes for prevention and/or detection
Tool	Equipment used in the process

Name	Description
Evaluation / Measurement Technique	Identifies the method to be used to measure or evaluate the results of a process in its output
Control Method	Identifies the method, procedure, specification, that governs the process(s) used

4.8 Creating a Quality Document

The Quality Planning application adds a “Quality Management” folder to the main Table of Contents (TOC). Within it is the **Design Quality Document** and **Process Quality Document** menu items. The process for creating a new Process Quality Document is the same for the Design Quality Document. For example, to create a new **Design Quality Document**:

1. In the TOC, select **Quality Management>Design Quality Documents**.

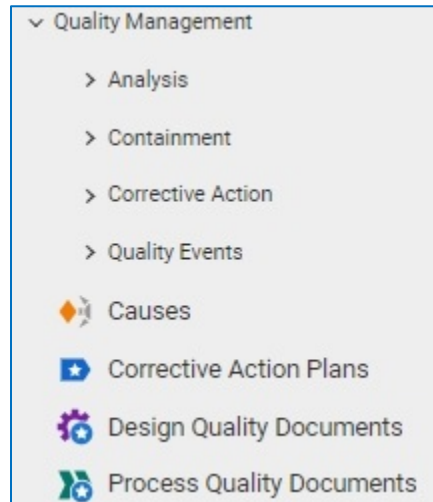


Figure 18.

2. Optionally, right click Design Quality Documents:

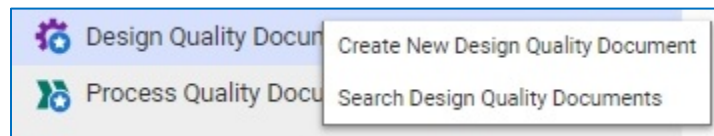


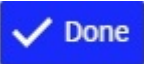
Figure 19.

3. Select **Create New Design Quality Document**.

The Design Quality Document Form appears. The **Document Number** and **Name** fields are required.

4. Enter a value for the **Document Number** and **Name** fields

Optionally, an **Effective Date** can be entered. The **Revision** and **State** are auto-populated.

5. Click  to save and unclaim the item. A Quality document is not created until it is saved.

Note: The Name property is used in the Document Editor Navigation pane for the text portion of the root node.

4.9 Creating Quality Document Content

Quality Documents consist of a hierarchy of Document Elements. Design Quality Documents have the set of Document Elements defined in Section 4.7.1; Process Quality Document have the set of Document Elements defined in Section 4.7.2. Each Document Element contains one or more Properties and the Property values are displayed in one or more Views in the Quality Document. For example the following diagram shows an example of a Design Quality Document with a Cause Document Element selected.

Item	Function	Failure Mode	Effects/Causes				Controls					
			Effect	Sev	Cause	Occ	Prevention	Detection	Det	RPN	Acti	
Shaft Housing	Angular rotation	Premature wear	Premature wear		Bad design			Visual inspection for problems				
Shaft housing brace	Shaft support	Premature wear	Inoperative		Bad design		Inspection					
Radio Housing	Houses radio electronics	Too much stress on the housing	Housing cracks		Mounting bracket malfunction		Inspect mounting bracket	Inspect upon assembly				
Radio interface	Integrate Radio Output into main audio system	Fractured	Fire		Improper surface							
			Audio system malfunction									
		Output voltage too high	Audio system malfunction									
		Output voltage too low	Fire									
			Audio system malfunction									
			No signal received by audio system									

Figure 20.

The Cause Document Element contains three properties that display in the Table Pane: **Description**, **Occurrence Rank**, and **Risk Priority Number (RPN)**. The Description Property is displayed in the column labeled 'Cause'. The Occurrence Rank Property is displayed in the column labeled 'Occ', and the RPN value is displayed in the column labeled 'RPN'. The Cause Document Element with the Description 'Resistor malfunction' is selected in the diagram.

Note: When a cell within the Table Pane is selected, the node representing the corresponding Document Element is also selected in the Navigation Pane. The 'Active Cell' is highlighted with a darker yellow background color. All other Properties of the selected Document are also highlighted, but with a lighter yellow background.

4.9.1 Adding a Document Element

The process for creating a new Document Element and adding it to the selected Quality Document Element is as follows:

1. Make sure that the current Quality Document is claimed and claim it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section 2.2.4.6).

When adding the first Document Element to a Quality Document, the root node (top-most node) needs to be selected in Navigation Pane.

(Optional): Right-click a Cell in the Table Pane with a green background (Section 2.2.4.2).

(Optional): Type **Alt-Enter** key combination within an Active cell in the Table Pane.

3. Left-click the menu item in the Context Menu for the Type of related Document Element to add (Section 2.2.4.6).

A new Document Element of the selected Type will be added to the Document and placed in the appropriate location within the Table Pane and Navigation Pane Tree. This new Document Element will be selected and the first (left-most) cell will be made 'Active'. The Cell Editor for that Property will be displayed and the edit field ready to accept input from the author.

4. Enter the cell's (Document Element Property's) value or select the value from the displayed list.

Note: Every Property for a Document Element has a Cell Editor ([Figure 20](#)) used for editing a Property Value. Cell Editors display in a tooltip (pop-up) dialog with an edit control based on the type of Property: For example, Text-based cells will have a text-entry control. Date properties will have a Date control. Boolean Properties will have a check box. Properties that can or are required to have values from a predetermined list will have either a combo-box list or static list control.

5. Press the **Enter** key to apply the new value to the Active cell and store it in the associated Property.

(Optional): Click anywhere outside the Cell Editor. Clicking outside the Cell editor will accept and apply the current value and close the Cell Editor. The Active Cell remains active.

(Optional): Type **Tab** key. The Tab key will accept the current and apply the current value, close the Cell Editor, and select the cell to the right of the Active Cell. Typing the **Escape** key will close the Cell Editor and NOT apply the value to the Property.

4.9.2 Removing a Document Element

Removing a Document Element from a Quality Document will remove the Document Element and all of its child Document Elements. To remove a Document Element:

1. Make sure that the current Quality Document is locked and lock it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed ([Section 2.2.4.6](#)).
3. Left-click the **Remove** menu item in the Context Menu.

The Document Element (and all children Document Elements) will be removed from the Document and the Navigation and Table Panes updated accordingly.

Note: A Quality Document must be saved to apply the latest edits to the data maintained within Innovator.

4.9.3 Editing a Document Element Property (Cell) Value

The cells in the Table Pane display the values of all Document Element Properties for the respective View. Editing Property values is done exclusively with type-specific User Interface controls called **Cell Editors**. A Cell Editor is displayed in a Tooltip (pop-up) dialog in the vicinity of the Document Element / Property containing the value to edit.

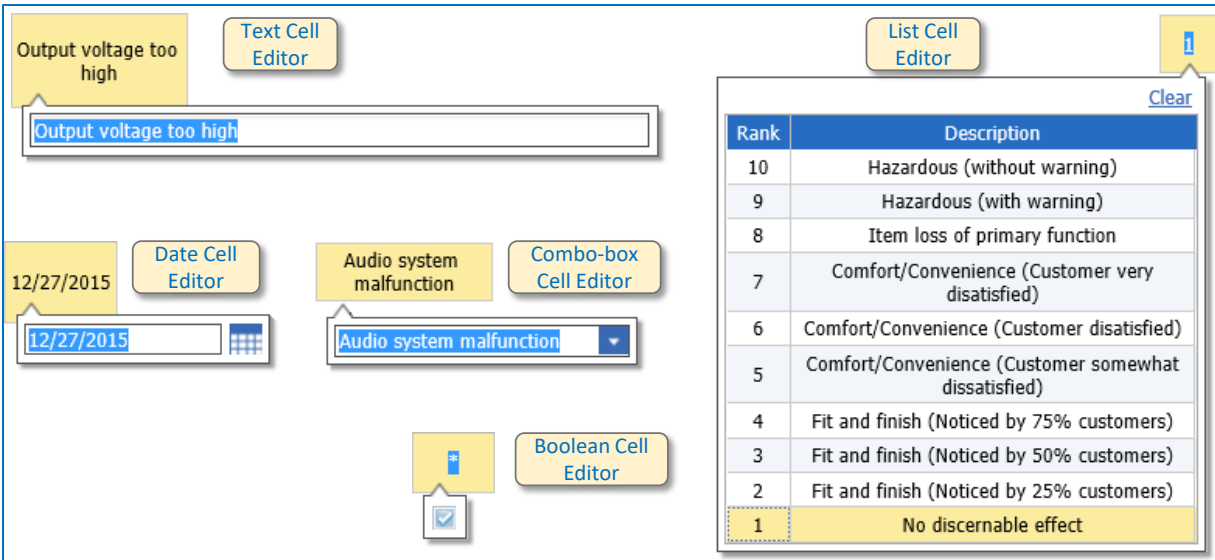


Figure 21.

To Edit a Property (Cell) Value:

1. Make sure that the current Quality Document is locked and lock it if it isn't.
2. Double-click a cell in the Table Pane. A Cell Editor will be displayed based on the type of selected Property/Cell

(Optional): Press the **Enter** key in an Active Cell

The current value of the Property / Cell will be displayed in the Cell editor and highlighted

3. For Text-based Cells, with the content highlighted begin typing to change the value. The highlighted text will be removed and replaced by the typed text

(Optional): For Text-based cells that display a Combo-box Cell Editor, begin typing to change the value. As the characters are entered, existing values contained in the List will be displayed as *suggestions* to the user. Continue typing to narrow the list or type in a unique value. To select one of the entries in the list, left-click the menu item to select the corresponding value. The value displayed in the list will update accordingly.

(Optional): Left-click the down arrow to the right of the Combo-box to display a scrollable list of values. To select one of the entries in the list, left-click the menu item to select the corresponding value. The value displayed in the list will update accordingly.

For List-based Cells, Left-click the list entry to use as the value. Scrolling may be required.

(Optional): Use the arrow up/down keys to traverse through list values. Type **Enter** key to select the value on the currently selected list item

For Boolean-based Cells, left-click the check box (on) or (off) for the appropriate value
For Date-based Cells, left-click the date icon to the right of the editor. Select or type the appropriate date.

4. Press the **Enter** key to use the currently entered/selected value

(Optional): Click anywhere outside the Cell Editor. Clicking outside the Cell editor will accept and apply the current value and close the Cell Editor. The Active Cell remains active.

(Optional): Type **Tab** key. The Tab key will accept the current and apply the current value, close the Cell Editor, and select the cell to the right of the Active Cell.

Note: A Quality Document must be saved to apply the latest edits to the data maintained within Innovator.

The Table Pane and node in the Navigation Pane (if applicable) will be updated based on the value chosen for the Property/Cell.

4.9.4 Copy and Paste Document Elements

To further support the reuse of existing data, Document Elements can be copied and used within the same Quality Document or within other Quality Documents. Once a Document Element is copied it can be pasted multiple times.

4.9.4.1 Copying Document Elements

To copy a single Document Element:

1. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#)).
2. Left-click the **Copy** menu item in the Context Menu.

To copy multiple Document Elements:

1. Left-click on a Document Element in the Navigation Pane.
2. While holding down the **Shift** Key continue selecting Document Elements of the same Type.
3. Only Document Elements of the same Type can be copied a once.
4. Right-click one of the selected Document Elements in the Navigation Pane. A Context Menu will be displayed (Section [2.2.4.6](#)).
5. Left-click the **Copy** menu item in the Context Menu.

4.9.4.2 Pasting Document Elements

Once a Document Element has been copied, it is added to the copy buffer for use in Quality Documents of the same Type only. That is Document Elements copied from a Design Quality Document can only be used in the same or another Design Quality Document. The same is true for Document Elements copied from a Process Quality Document. In addition, there can only be one or more Document Elements of any given Type in the copy buffer. When copied Documents Elements are pasted within a Quality Document, the paradigm for adding the copied Document Elements is similar to adding a new Document Element. That is they are either *added* (as a peer) or *inserted* (as a child) to some existing Document Element. In addition, when pasting one or more Document Elements, the user has the choice to paste only the copied Document Element (**Copy**) or include the entire hierarchy of descendent Document Elements as well (**Copy Special**).

To paste one or more Document Elements of the same Type:

1. Make sure that the current Quality Document is locked. Lock it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#)). Note that the Document Element selected must either be the same Type as the Document Element(s) that exist in the copy buffer or a parent type.
3. Left-click the **Add/Insert Type** menu item to display the sub-menu.
4. Select '**From Copy**'

The copied Document Element(s) will be added as a peer or child to the selected Document Element.

To paste one or more Document Elements of the same Type and include the descendent hierarchy:

1. Make sure that the current Quality Document is claimed. Claim it if it isn't.

2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section 2.2.4.6). Note that the Document Element selected must either be the same Type as the Document Element(s) that exist in the copy buffer or a parent Type.
3. Left-click the **Add/Insert Type** menu item to display the sub-menu.
4. Select **'From Copy Special'**

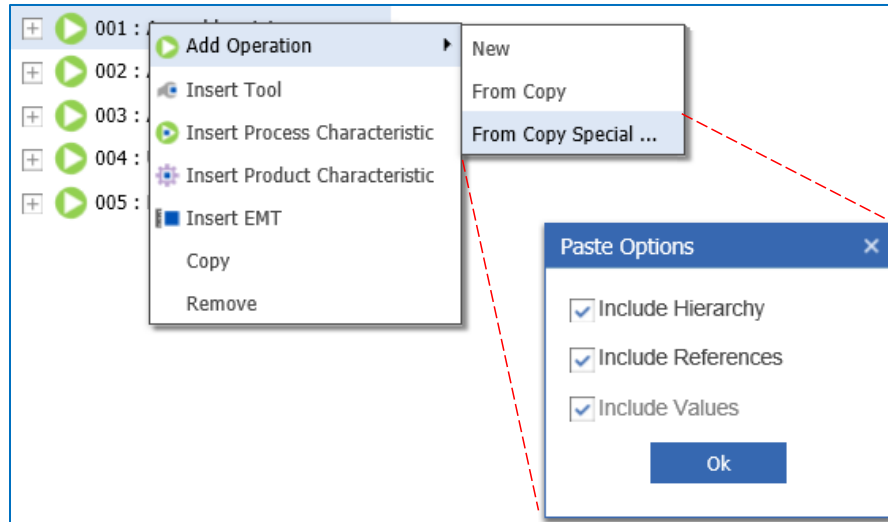


Figure 22.

Note: In the figure above an Operation Document Element from a Process Quality Document was copied. As a result, the Add Operation menu item includes a sub-menu with the sub-menu options 'New', 'From Copy' and 'From Copy Special...'. This sub-menu will only exist when the copied content is relevant to the Type in the Context Menu.

The **Paste Options Dialog** will be displayed with the following options:

- **Include Hierarchy:** Include the entire hierarchy of descendent Document Elements
- **Include References:** Include references to Business Objects from copied Document Elements
- **Include Values:** Include the values from the copied Document Element Properties

5. Select the Options from the **Paste Options Dialog**.
6. Select **OK**.

The copied Document Element(s) will added as a peer or child to the selected Document Element.

4.10 Referencing Business Objects

In the Quality domain, information within quality documents can refer to other objects/entities managed by the PLM system. For example, a Process FMEA document refers to *Operations*, a Process Control Plan refers to *Tools*, and Design FMEA documents refer to *Items* and *Requirements*. These types of objects/entities are referred to herein as 'Business Objects'. Although it is not necessary for Business Objects like the ones mentioned above to exist outside of the Quality Planning application, an environment may choose to use Aras Innovator to manage this type of information independent of Quality Management and perhaps include a more comprehensive set of properties and related Items for each.

The Quality Planning application provides a mechanism to *bind* Document Elements and Document Element Properties to other Items (Business Objects) and their Properties in Innovator. In general a collection of Business Objects can act as a Catalog, to promote reuse and consistency across quality documentation, or represent the actual targeted information that Quality Documents refer to.

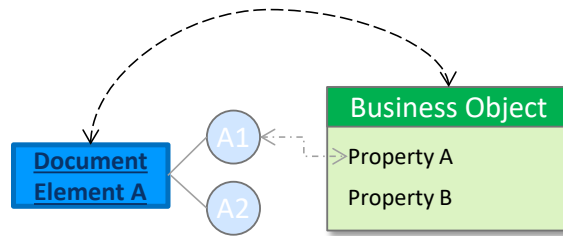


Figure 23.

When the Document Element configuration is defined for a Quality Document Type, the Quality Administrator can identify a Business Object Type (ItemType) that a particular Document Element can refer to. At least one Document Element Property will be bound to a Property of the Business Object. In addition, the Administrator can determine whether a reference to a Business Object is required. Adding a Document Element using a reference to a selected Business Object establishes a *Soft Relationship* between the Quality Document and the selected Business Object Item.

Note: The term ‘Soft Relationship’ is used in this document as compared to ‘Hard Relationship’; which refers to RelationshipType instances that relate source and related Items in Innovator. Unlike the Items with Hard Relationships the Business Object referenced by Document Elements in the Quality Planning application can be removed and there is no *physical* Relationship Item that exists in the Innovator database.

Also, when a Document Element is added to a Quality Document, the values of all bound Document Element Properties are automatically populated with the values from the referenced Business Object. Note that these values are copies; not actual references. Because a copy is used, the Document Element and the referenced Business Object can evolve and thus have differences in bound properties. The Quality Planning application will track differences between all bound properties and the referenced Business Objects. The state of the two values is communicated to the Quality Document Author by means of a **Cell Reference Indicator**.

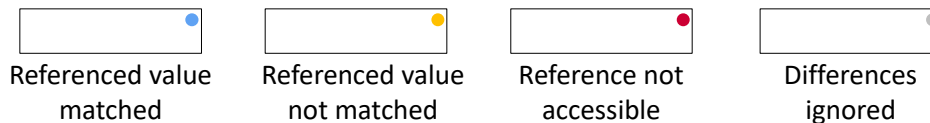


Figure 24.

A Cell Reference Indicator is a small image/glyph rendered in the upper right corner of all cells that have corresponding Properties that are bound to a Business Object Property. The existence of the Cell Reference Indicator informs the Quality Document Author that the corresponding Document Element is bound to a Business Object. Note that not all of a Document Element’s Properties may be bound. However, if a Property is bound the Cell Reference Indicator will be displayed. The following identifies the meaning in the color of the Cell Reference Indicator:

- **Blue:** Indicates that the current value of the Document Element Property (Cell) matches the property value of the bound Business Object
- **Orange:** Indicates that the current value of the Document Element Property (Cell) does NOT match the property value of the bound Business Object
- **Red:** Indicates that the referenced Business Object is not accessible, either because of permission constraints or because the Business Object no longer exists.

- **Grey:** Differences between the two values are not being tracked

The following diagram shows an example of an Operation in a Process Quality Document that references an Operation Business Object. Note that the Operation Number and Name have been bound.

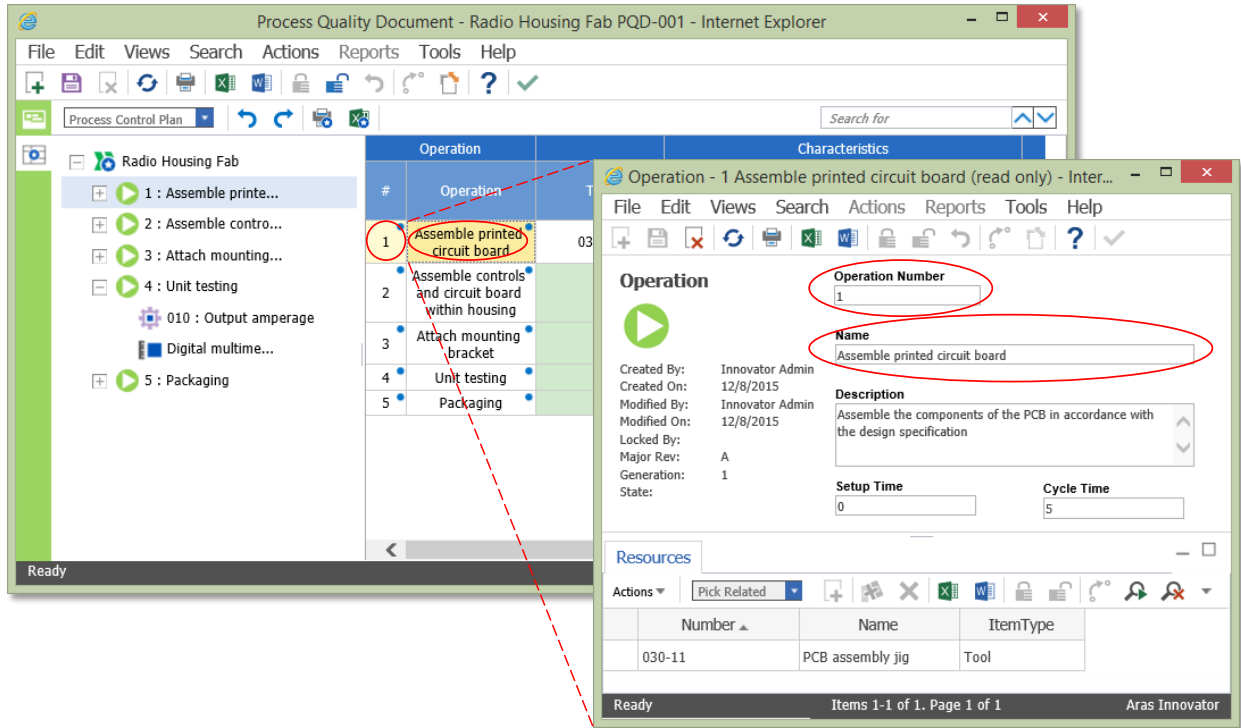


Figure 25.

Depending on the configuration of the Document Element Reference, when a Document Element is created, either a new or an existing Business Object can be bound.

4.10.1 Adding a Document Element with a Reference to an Existing Business Object

To add a Document Element using a reference to an existing Business Object:

1. Make sure that the current Quality Document is locked. Lock it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#))
3. Left-click the **Add/Insert Type** menu item to display the sub-menu. For Document Elements that can be bound to a Business Object, a sub-menu – **From Reference** – will exist.
4. Select the **'From Reference'** sub-menu.

Note: If the Document Element Type configuration allows a user to create a new Business Object before it is bound, a **Create** menu option will exist. If the Document Element configuration allows a user to select a new Business Object a **Select** menu option will exist.

5. Select the **Select** menu Item. The system will display a Search Grid based on the type of referenced Business Object.

6. Search for and select the Item instance to use for the referenced Business Object and select **Accept** button (green checkmark icon in the main toolbar).

The system will create a new Document Element and set the value for any bound properties in the Document Element based on the value of the selected Business Object. Reference Indicators will be added to all Cells that are bound to Business Object properties.

Tool	#	Product	Process
030-11	001	Output voltage	
	003	Housing tolera	
	004		Mounting Bracket angle
	010	Output amperage	
	015	Final weight	

Figure 26.

4.10.2 Adding a Document Element with a Reference to a New Business Object

To add a Document Element using a reference to a *new* Business Object:

1. Make sure that the current Quality Document is locked. Lock it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#))
3. Left-click the **Add/Insert Type** menu item to display the sub-menu. For Document Elements that can be bound to a Business Object, a sub-menu – **From Reference** – will exist.
4. Select the **'From Reference'** sub-menu.

Note: If the Document Element configuration allows a user to create a new Business Object before it is bound, a **Create** menu option will exist. If the Document Element configuration allows a user to select a new Business Object a **Select** menu option will exist.

5. Select the **Create** menu Item. The system will display the Form for the type of referenced Business Object.
6. Add the necessary property values for the new Item.
7. Save and close the Form. A reference to a Business Object (along with the new Document Element) can only be created when the Business Object exists, i.e., it has been saved.

Warning Cancelling the creation of the Business Object (by deleting the temporary Item) will cancel the creation of the Document Element.

The system will create a new Document Element and set the value for any bound properties in the Document Element based on the value of the newly-created Business Object. Reference Indicators will be added to all Cells that are bound to Business Object properties.

4.10.3 Updating a Document Element to Match Referenced Properties

Quality Document Authors can update a Quality Document to synchronize a *stale* (unmatched) Property (or Properties in the case where multiple Properties are mapped) with the current value(s) from the referenced Business Object. Doing so will restore the indicator to its 'matching' state (Figure 23). Note that a Quality Document may contain multiple Documents Elements of a certain Type with references to the same Business Object. In this case, the author can also update all matching referenced Document Elements.

The **Update Document** function will update the selected Document Element so that all mapped Properties have the same values of their mapped Business Object. The **Update Document (All)** function will update all Document Elements of the same type and that reference the same Business Object instance.

To update a single Document Element so that all bound Properties have the same value as the referenced Business Object:

1. Make sure that the current Quality Document is locked. Lock it if isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section 2.2.4.6)
3. Left-click the **Reference** menu item to display the sub-menu. For Document Elements that are bound to a Business Object, a sub-menu – **Reference** – will exist.
4. Select the **Update Document** menu item.

The system will update all bound Properties replacing the current value with the value from the referenced Business Object.

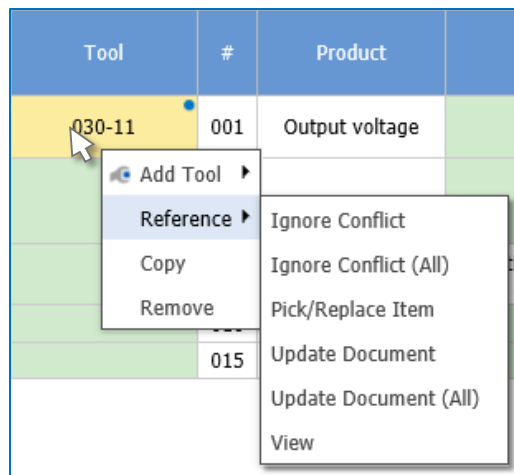


Figure 27.

To update all Document Elements that reference the same Business Object so that all bound Properties have the same value as the referenced Business Object:

1. Make sure that the current Quality Document is locked. Lock it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#))
3. Left-click the **Reference** menu item to display the sub-menu. For Document Elements that are bound to a Business Object, a sub-menu – **Reference** – will exist.
4. Select the **Update Document (All)** menu item.

The system will update all bound Properties replacing the current value with the value from the referenced Business Object.

4.10.4 Viewing Referenced Business Objects

A Quality Document Author can view the referenced Business Object instance for a selected Document Element. Doing so will display the default Form of the referenced Item. Note that there is no expectation that any mapped property is displayed on the Form. Note also that a user may edit the referenced Business Object as well if applicable. In this case, any changes to mapped properties would be reflected in the Quality Document when the Business Object is saved and the Quality Document is refreshed.

To view a referenced Business Object:

1. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#))
2. Left-click the **Reference** menu item to display the sub-menu. For Document Elements that are bound to a Business Object, a sub-menu – **Reference** – will exist.
3. Select the **View** menu item.

The system will display the referenced Business Object in its associated Form.

4.10.5 Choosing / Replacing a Referenced Business Object

A Quality Document Author can add a reference to an existing Business Object from a Document Element that had previously not been linked or replace an existing reference with a new Business Object. In either case, the referenced Business Object should exist.

To add or replace a referenced Business Object:

1. Make sure that the current Quality Document is claimed. Claim it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#))
3. Left-click the **Reference** menu item to display the sub-menu. For Document Elements that are bound to a Business Object, a sub-menu – **Reference** – will exist.
4. Select the **Pick/Replace Item** sub-menu.
5. Select the **Select** menu item. The system will display a Search Grid based on the type of referenced Business Object.
6. Search for and select the Item instance to use for referenced Business Object and select **Accept** button (green checkmark in the main toolbar).

The system will replace the referenced Business Object. Note that the Property values of the selected Document Element will NOT be replaced/updated after this function. To update the Document Element so that all Properties match the newly-referenced Business Object see the steps in Section [4.10.3](#).

4.10.6 Removing a Reference to a Business Object

Quality Document Authors can release (remove) a reference between a selected Document Element Property at its currently referenced Business Object. Doing so removes the reference and the visual indicators in the associated Table cells. The value of the Document Object Property will remain at its current value. Note that this is only possible for Document Elements that don't have a required reference to a Business Object.

To remove a reference to a Business Object:

1. Make sure that the current Quality Document is locked. Lock it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#))
3. Left-click the **Reference** menu item to display the sub-menu. For Document Elements that are bound to a Business Object, a sub-menu – **Reference** – will exist.
4. Select the **Release Reference** menu item.

4.10.7 Ignoring Differences to Bound Document Elements

Quality Document Authors can ignore differences between a selected Document Element at its currently referenced Business Object. The reference will remain but the system will not track any difference in value. Also, the visual indicator in the associated Table cells will change to the ignore state ([Figure 23](#)). The value of the Document Object Property will remain at its current value.

To ignore differences in value with a bound/referenced Business Object:

1. Make sure that the current Quality Document is locked. Lock it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#))
3. Left-click the **Reference** menu item to display the sub-menu. For Document Elements that are bound to a Business Object, a sub-menu – **Reference** – will exist.
4. Select the **Ignore Conflict** menu item.

Note: The **Ignore Conflict (All)** function will perform the same function for all Document Elements in the current Quality Document that reference the same Business Object.

The Cell Reference Indicator for all bound Properties of the selected Document Element will be updated.

To resume tracking differences between a Document Element and it's referenced Business Object:

1. Make sure that the current Quality Document is locked. Lock it if it isn't.
2. Right-click an existing Document Element within the document either by selecting a node in the Navigation Pane or a cell in the Table Pane. A Context Menu will be displayed (Section [2.2.4.6](#))
3. Left-click the **Reference** menu item to display the sub-menu. For Document Elements that are bound to a Business Object, a sub-menu – **Reference** – will exist.
4. Select the **Resume Tracking** menu item. Note that this menu item will only exist if the currently selected Document Element is not tracking differences.

4.11 Referencing Business Object Structures

Business Object Referencing (Section 4.10) provides the means of linking individual Document Elements to individual Business Objects and tracking the differences between the two. The Quality Planning application also provides a mechanism to map a *hierarchy* of Document Elements to a *hierarchy* of referenced Business Objects. The hierarchy of Document Elements is defined by parent/child relationships established in the Quality Document Type configuration (Section 4.2). The hierarchy of Business Objects is most likely defined by Relationships, but can be defined by other custom logic as well. Creating relationships between hierarchies of Document Elements and Business Objects is referred to herein as 'Structure Mapping'.

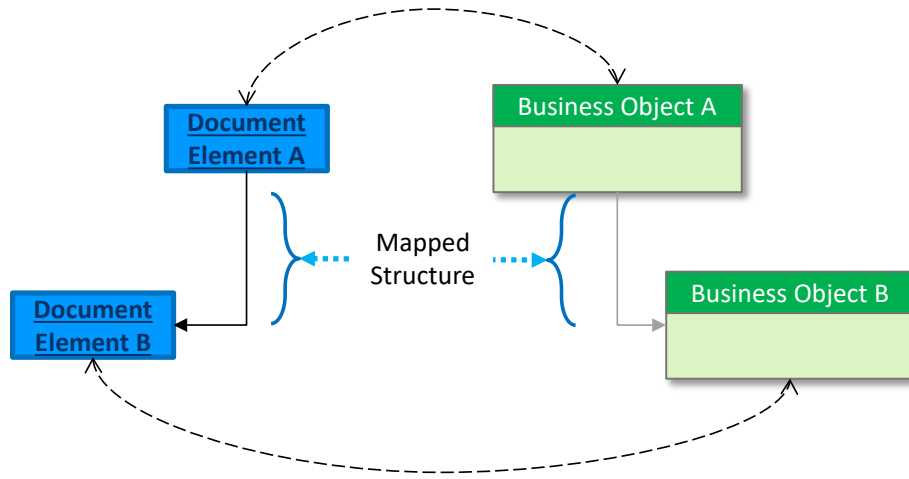


Figure 28.

Whereas Business Object Referencing maps Properties, Structure Mapping maps relationships. These relationships must exist between referenced Business Objects at both levels. Using Figure 27 as an example, a reference is established between Document Element A and Business Object A. Likewise, a reference is established between Document Element B and Business Object B. Also Document Element A has a direct child relationship with Document Element B. Similarly, Business Object A has *some* relationship with Business Object B. When such a mapping exists, the Quality Planning application will keep track of the following scenarios:

1. The existence of a Business Object instance or Document Element instance without the equivalent Document Element/Business Object respectively
 - a. This includes the removal of either
2. Optionally, a difference in the order of Document Elements as compared to the mapped Business Objects

The Structure Mapping functionality essentially ensures that whenever an instance hierarchy exists between two Types of Document Elements (with a parent/child relationship between them) an equivalent hierarchy must exist between bound Business Object instances. Note that not all Document Elements with configured Business Object referencing participate in mapped structures.

4.11.1 Process Quality Document / Manufacturing Process Planning Mapping

The Quality Planning application includes two optional packages:

- Manufacturing Process Planning (MPP)
- Process Quality Binding

The Manufacturing Process Planning application is used to define and manage manufacturing processes by means of **Process Plans**. Each Process Plan defines unique manufacturing **Operations**, which in turn identify associated manufacturing **Tools**.

The Process Quality Binding package modifies the definition of the Process Quality Document Type definition to set up a Structure Mapping configuration between Document Element Types in the Process Quality Document to Items in the Manufacturing Process Planning (MPP) application.

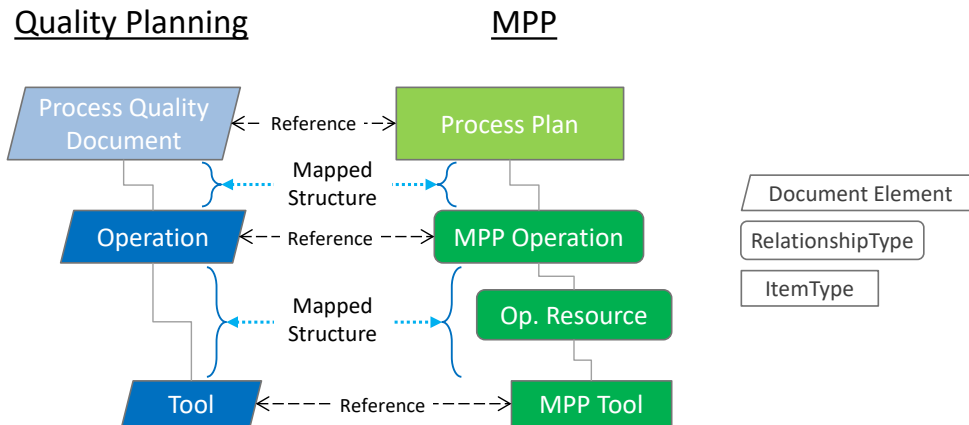


Figure 29.

For the Process Quality Document Type, the Document Elements **Operation** and **Tool** are equivalent to the **Operation** and **Tool** Items (Business Objects) defined in the MPP application. In addition, the Process Quality Document is comparable to the MPP Process Plan. To establish a Structure Mapping between the Process Quality Document and Items in the MPP, the Process Quality Binding package will:

1. Add a required Item property to the Process Quality Document Item that is used to associate an instance of a Process Quality Document to a specific instance of a Process Plan
2. Create a Business Object reference (Section 4.10) between the Operation Document Element and the Operation Item in MPP with Property mappings between the Operation Number and Name
3. Create a Business Object reference (Section 4.10) between the Tool Document Element and the Tool Item in MPP with Property mappings between the Document Element Tool Description and MPP tool Item Number
4. Map the relationship between the Process Quality Document and Operation Document Element to the relationship between the MPP Process Plan and MPP Operation
5. Map the relationship between the Operation Document Element and Tool Document Element to the relationship between the MPP Operation and MPP Tool

The result is a tighter binding between Process Quality Document and MPP Process Plans. This binding will mandate that all Process Quality Documents have an associated Process Plan with a direct mapping between Operations and Tools in both applications. The following sections describe the process of creating a Process Quality Document using the Process Quality Binding package. Note that these procedures replace the standard Quality Document and Document Element procedures defined in sections 4.8 and 4.9 respectively.

When a new Process Quality Document is created, the MPP Operations and Tools within the associated MPP Process Plan will influence the Document Element content. For all referenced Business Objects that exist in the mapped structure, but not in the Quality Document, a **Candidate Document Element** will be added to the Quality Document in the Editor only.

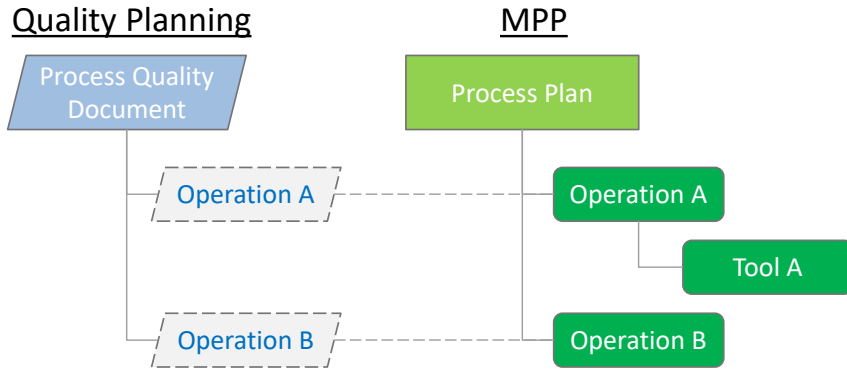


Figure 30.

For example, if a new Process Quality Document is created and linked to a Process Plan with two MPP Operations, two *Candidate* Document Elements will be created in the Process Quality Document. Candidate Document Elements only exist within the Quality Document Editor and must be *accepted* by the Author to become actual Document Elements with references to the corresponding Business Objects. Once the actual Document Element is created, if there are any related Business Objects to the referenced Business Objects, new Candidate Document Elements will be created for each. To continue the example, once the 'Operation A' Document Element is created, a Candidate Document Element will be created for the MPP 'Tool A'.

For Process Quality Documents with Structure Mapping configured, the Form for the Process Quality Document will be updated with an additional property used to link the Process Quality Document with an instance of a Process Plan.

Document Number	Revision	State
PQD-001	A	In Work

Name
Radio Housing Fab

Process Plan	Effective Date
MPP-10001 Assemble PX	

Created By:	Innovator Admin
Created On:	3/19/2019
Modified By:	Innovator Admin
Modified On:	3/19/2019
Locked By:	Super User
Major Rev:	A
Release Date:	
Effective Date:	
Generation:	1
State:	In Work

Figure 31.

4.11.1.1 Create a Process Quality Document

To create a new Process Quality Document with a Process Plan:

1. Right-click the **Process Quality Document Folder** within the **Quality Management** Folder
2. Select **New Process Quality Document**

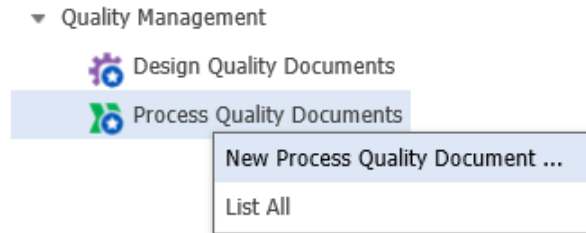


Figure 32.

Optionally, select the **Process Quality Document** Folder and Left-click on the **New Item** button on the main toolbar.

The Process Quality Document Form will be displayed (Figure 30). The **Document Number**, **Name** and **Process Plan** fields are required.

3. Enter a value for the **Document Number** and **Name** fields
4. Optionally, an **Effective Date** can be entered. The **Revision** and **State** are auto-populated.
5. Select an existing MPP **Process Plan** instance.
6. Save the Item

A Quality Document is not created until it is first saved.

Note: Note that the Name property is used in the Document Editor Navigation pane for the text portion of the root node.

4.11.1.2 Accepting Candidate Document Elements

Once a mapped Process Quality Document is created, any MPP Operations associated with the mapped MPP Process Plan will result in the equivalent Candidate Document Elements for each. These will be displayed in the Quality Document Editor.

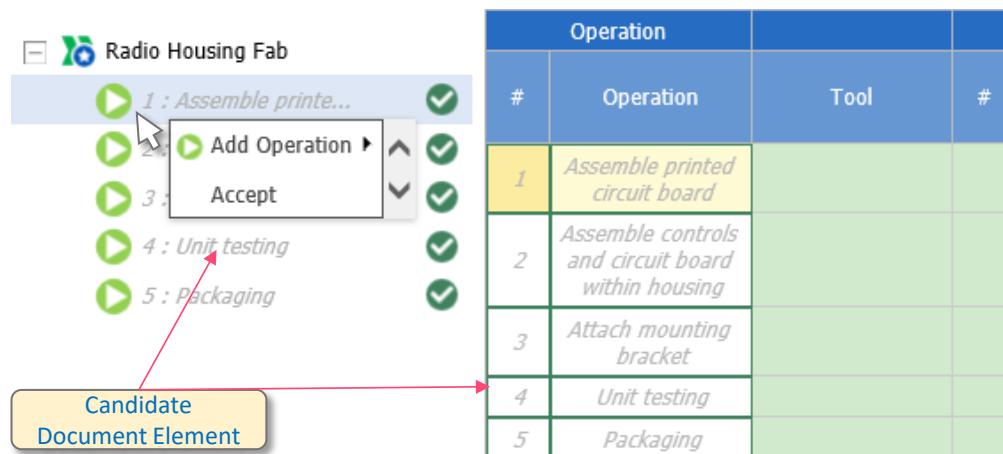


Figure 33.

Candidate Document Elements are displayed in the Quality Document Editor and distinguished from other Document Elements with light grey, italic text. In addition, there's a green *check* icon displayed to the right of each corresponding node in the Navigation Pane.

Note: Candidate Document Elements exist in the Document Editor only; they don't become part of the Quality Document until they are *accepted* and the Quality Document is saved. Also, Candidate Document Elements cannot be removed nor can any formatting or changes be applied to them.

Candidate Document Elements have an additional menu item in their Content Menu – **Accept**. Applying the Accept function (by selecting the Accept Menu Item) will result in a Document Element being created. The result is similar to creating a Document Element using a Business Object Reference (Section 4.10.1). The system will create a new Document Element and set the value for any bound properties in the Document Element based on the value of the referenced Business Object. Reference Indicators will be added to all Cells that are bound to Business Object properties.

To accept *All* Candidate Document Elements:

1. Right-click the root node in the Navigation Pane. The Context Menu will be displayed, which will include an Accept All menu item
2. Select **Accept All**

The Quality Document Editor will accept all Candidate Document Elements recursively. That is, all Candidate Document Elements will be accepted at each level.

4.11.1.3 Handling Flagged Document Elements

Once a Quality Document has been mapped to a Business Object hierarchy, the Document Elements that are part of the Structure Mapping configuration may be *flagged*. The existence of a flag for a Document Element identifies some issue. Mapped and bound Document Elements can be flagged if:

- There is no reference to a Business Object
- The Business Object that is referenced does not exist in the hierarchy of Business Objects of the Business Object referenced by the parent Document Element.
- The Document Element is not placed in the Quality Document in the same order/position of its referenced Business Object with respect to the parent Business Object.

Note: Order may not apply to all mapped Business Objects. For example, for the Process Quality Document the order of MPP Operations is tracked but the order of MPP Tools is not.

Operation			Characteristics				
#	Operation	Tool	#	Product	Process	Spec.	Evaluation / Measure Technique
1	Assemble printed circuit board	030-11					
2	Assemble controls and circuit board within housing						
3	Attach mounting bracket						
4	Unit testing						
5	Packaging						

Figure 34.

Flagged Document Elements are displayed in the Quality Document Editor and distinguished from other Document Elements with red, italic text. In addition, there's a red *Exclamation* icon displayed to the right of each corresponding node in the Navigation Pane. To identify the issue with the Flagged Document Element a tooltip message is applied to each. To display it, place the mouse cursor over any associated Cell in the Table Pane. A tooltip message will be shown for as long as the cursor is over the cell.

Addressing the issue associated with a Flagged Document Element depends on the nature of the specific issue. For example, if there is no corresponding Business Object for a Document Element (e.g., because it was removed) either a new Business Object needs to be created and the reference set or the Flagged Document Element needs to be removed. Also, it's possible that addressing an issue with one Document Element causes an issue with one or more other Document Elements as is sometimes the case with sorting issues. Conversely, it's also possible that addressing an issue with one Document Element will *fix* issues with other flagged Document Elements.

Depending on the issue, a Flagged Document Element may have an additional menu item – **Resolve the Issue (...)** – that when selected will attempt to automatically resolve the particular issue with the Document Element. There will be an additional text string in the menu item text (within the parenthesis) explaining the means to address the issue. For example, for issues related to sorting, the menu item will display '**Resolve the issue (re-sort)**'. Selecting this menu item will change the sort order of the selected Document Element in an attempt to place it in the correct location. Note that when resorting, other *resorting actions* may be required.

4.11.1.4 Creating a Document Element in a Structure Mapped Quality Document

Creating a Document Element in a Quality Document that has a mapped structure is similar to the default process (Section [4.9.1](#)) but the referenced Business Object may be required. That means that adding a new Document Element will require the creation of a new Business Object (Section [4.10.2](#)). Recall that if the Business Object did exist in the mapped Business Object hierarchy, it will have been included as a Candidate (Section [4.11.1.2](#)).

5 Identity

5.1.1 Quality Management System (QMS)

The QMS application introduces an Identity called “**Quality**”.

The “Quality” Identity has “Can Add” access for the Items – Corrective Action Plan, Audit Finding, NCR, Root Cause Analysis, Hold Notice, Purge Notice, Stop Ship Notice, Design Quality Document, Process Quality Document and Cause.

The “Quality” identity is also assigned to the Workflows and Lifecycles in the QMS application.

The “**Quality Document Author**” identity is a member of the “**Quality**” identity.

5.1.2 Product Engineering (PE)

The PE application introduces an Identity called “**Manufacturing**”.

The “Manufacturing” Identity has “Can Add” access for the Items – Deviation, Rework Order and Waiver.

The “Manufacturing” identity is assigned to the Workflows and Lifecycles in the PE application.

6 Visual Collaboration

Visual Collaboration is enabled for all QMS (except for Cause) Items. . That is Visual Collaboration is available for the following **Items** – CAP, Audit Finding, NCR, Hold Notice, Purge Notice, Stop Ship Notice, Root Cause Analysis, Hold Notice, Purge Notice, Stop Ship Notice, Design Quality Document, and Process Quality Document.

The Visual Collaboration feature enables: -

- Threaded discussion
- Comments
- File view and markup

Messages and Files from the related items are aggregated to the CAP Item. Also, when the user saves an Office file using Office Connector to the RCA Item then the viewable (PDF) file is available via the sidebar of the RCA Item. The Viewable is also viewable via the sidebar of the CAP that the RCA is attached to.

7 Reports

With QMS two reports are available. Users can execute the Reports by selecting –

1. The context menu of a CAP Item in the main grid
2. The **Reports menu** in the top toolbar **of a CAP Item window**
3. The **Reports menu** in the top toolbar of the **Innovator window**

7.1 8D Report

The 8D report is a summary report that displays information from all the Items related to the CAP. The report contains:

- CAP general information
- Problem Description
- Quality Event
- Containment
- Analysis
- Corrective Action
- Preventive Action
- CAPA Effectiveness

7.2 CAP Closed/Due Report

This is a summary report to show the number of CAPs in the various lifecycle states.

The Report lists:

- Total Number of CAP = Total number of CAP Items in the system
- Number of CAP closed = Number of CAP in **Complete** Lifecycle state
- Number of CAP Due = Number of CAP in **New + In Work + In Review** Lifecycle states
- Number of CAP Cancelled = Number of CAP in **Cancelled** Lifecycle state

8 Location Item

A location is a manufacturing site where a product/assembly is manufactured and/or a quality issue is identified.

Location Item is available in the TOC under “Portfolio”.

Note: If Aras Manufacturing Process Planning application is installed then the Location Item is also available in the TOC under “Process”

The Location Item is referenced by the QMS Items as a property.