



## 3D Annotation Insight for Dashboard

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## 3D Annotation Insight for Dashboard

3D Annotation Insight for Dashboard provides all the capabilities of 3D Annotation Experience for Dashboard to ease the access to tolerances and annotations generated in 3D Tolerancing & Annotation.

In addition, the app provides the following functionality:

- A cross-highlight between annotations and geometry.
- Blank the background of the annotations to improve their readability.
- Additional functions in the 3D annotation filter panel.
- Display of all annotations related to the selected geometry using the **Show Related Annotations** command.
- Display of all annotations necessary to understand the link of the selected annotation to the geometry using the **Show Geometry Attachments** command.
- Display of user defined, 3D annotation and feature attributes.
- Print the current view using browser's standard print feature
- Start a dedicated scenario to navigate a 3D scene.
- Create a new filter or open an existing filter.

This app supports the transition mechanism. For more information, see [Switching Apps](#).

You can use the 6WTags to filter the pointed elements (product, drawing, document, diagram layout or sheet) and apply colors to them. For more information, see [Filtering with 6WTags](#).

This product might use or depict Intellectual Property (IP) protected data. It is the user's responsibility to safeguard the IP protected data when allowing others to view, export, or print the data. This includes the thumbnail representations of parts or assemblies used in markup screens. For more information on the use of IP Protection and safeguarding IP Protected data, see *Social and Collaborative | Legal & Regulatory Compliance | IP Controlled Access*.

## What's New

This page describes recent changes in Multi-Discipline Drafting.

- [R2023x FD02 \(FP.2314\)](#)

## R2023x FD02 (FP.2314)

### Widget Links

You can now explicitly link and unlink any 3D dashboard apps to any other 3D dashboard apps or to dashboard apps such as Product Explorer and Product Structure Editor. The public and private events can be exchanged between them.

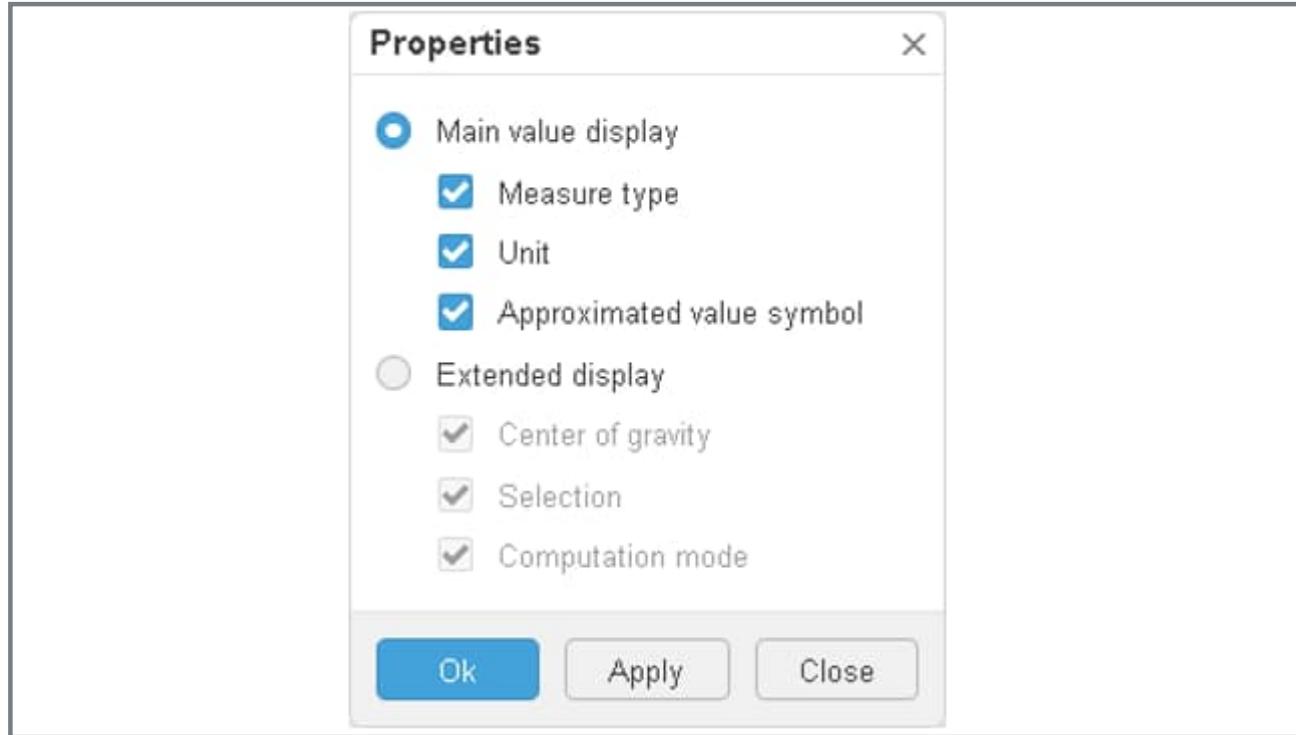
The **navigation on implement link** is the only private event that can be exchanged when more than two apps are linked.

**Benefits:** This enhancement brings more flexibility in dashboard creation and evolution.

For more information, see [About Linked Widgets](#).

## Measure Display Customization

Apart from **Main value display**, you can now customize the **Extended display** for each measure in the **Properties** dialog box. You can select **Approximated value symbol** to display ~ before the measurement value, if the result is in approximate mode.



**Benefits:** This enhancement improves the readability and relevance of the display of the measure results.

For more information, see [Customizing Measurements](#).

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- R2023x FD02 (FP.2314)

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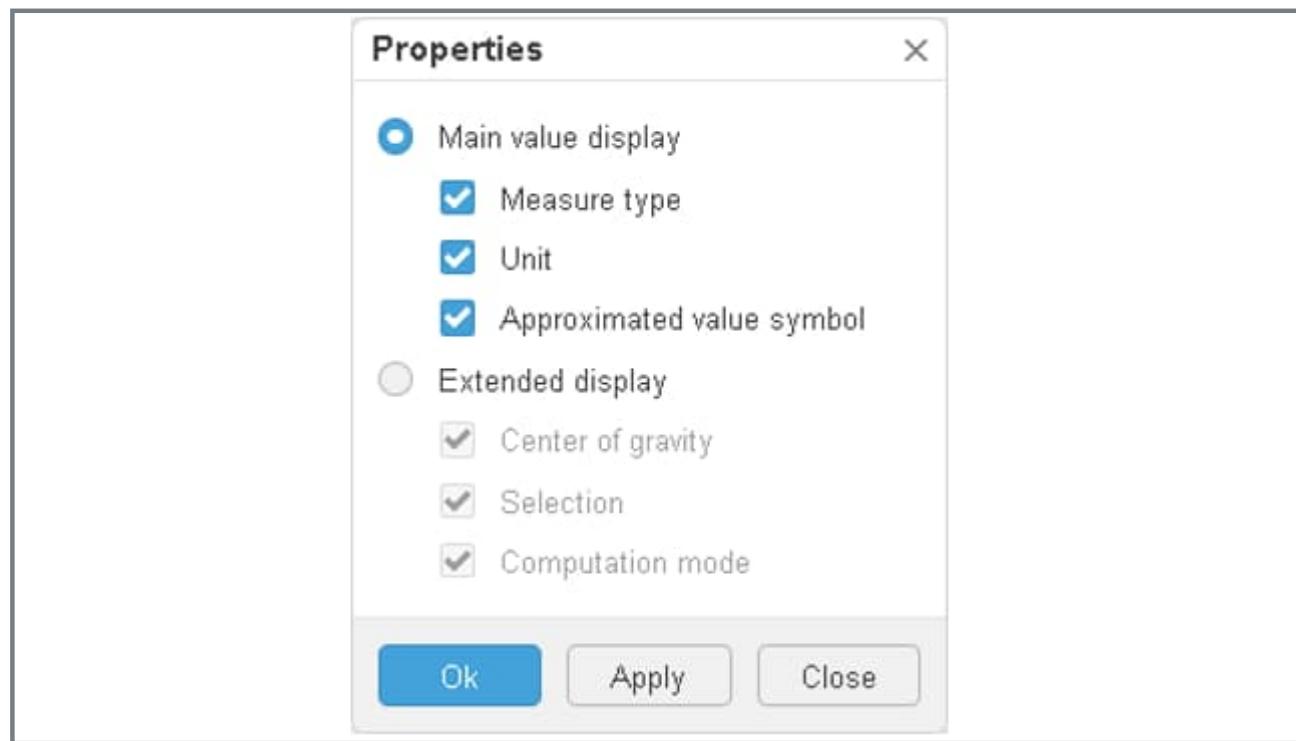
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For more information, see [About Linked Widgets](#).

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For more information, see [Customizing Measurements](#).

# 3D Annotation Insight for Dashboard Basics

Before you begin using 3D Annotation Insight for Dashboard, you need to know the key concepts and capabilities described in related guides and the user interface specific to this app.

## In this section:

- Related Guides and Resources
- 3D Annotation Insight Access to Content
- User Interface
- Basic Concepts
- Customizing 3D Annotation Insight for Dashboard

## Related Guides and Resources

Before using the app, you need to understand the basic concepts and capabilities of the **3DEXPERIENCE** platform.

Guide	Description
Getting Started	Describes the key tasks to discover the <b>3DEXPERIENCE</b> platform.
3DEXPERIENCE Platform	Describes the key concepts and capabilities of the <b>3DEXPERIENCE</b> platform, such as the <b>Compass</b> , 6WTags, 3DSearch, and 3DNotification.
3DEXPERIENCE Dashboard Apps	Describes the shared commands used by dashboard apps.
3D Tolerancing & Annotation User's Guide	Describes how to specify 3D tolerance specifications and annotations directly on 3D Shapes or between 3D Shape elements.
2D Layout for 3D Design User's Guide	Describes how to create drawings of assemblies with varying levels of

Guide	Description
	complexity.
Drafting User's Guide	Describes how to design 3D models in an advanced 2D drafting-like production environment.

If you have a **3DEXPERIENCE ID**, you can find more assistance as follows:

- The [Program Directory](#) includes the latest information about new features and known issues.
- The [Knowledge Base](#) provides question-and-answer articles for a wide range of content. You can search the Dassault Systèmes Knowledge Base for information relevant to your app.

## 3D Annotation Insight Access to Content

The **3DEXPERIENCE** platform is a collaborative environment for managing your business processes based on defined responsibilities and content lifecycles that provide secure access to content.

This page discusses:

- [Content Categories](#)
- [Responsibilities](#)
- [Content Lifecycle](#)

## Content Categories

Depending on your responsibility you can create and manage the following types of content with 3D Annotation Insight for Dashboard.

Content Type	Category
3D Shape	Evaluation

The content you can access and the tasks you can execute depend on your responsibility. For more information, see [3DEXPERIENCE Platform: Content Categories](#).

## Responsibilities

3D Annotation Insight for Dashboard uses the **3DEXPERIENCE** platform 3D Space baseline access roles that your business administrator assigns to you. The table below describes the level of access for design tasks.

Responsibility	Description
Public Reader	Has read access to any content
Reader	Has read access to any content
Contributor	Includes all the access for <b>Reader</b> .

The responsibilities provide hierarchical access. For the baseline responsibilities, Leader includes all access that an Author has (who has all access that a Reader has) plus additional specific accesses. In the above table, a responsibility has all the accesses of the roles that appear above it.

Your business administrator can configure rules that change the default access behavior.

**On premises only:** Your business administrator can change the default responsibilities that control your access to commands, content, and collaborative spaces. Companies can also implement additional customized responsibilities.

This guide describes the default behavior when describing access to content or commands.

Your access to content or commands is determined by more than your responsibility. The current collaborative space, your organization, the current lifecycle state of the content, the app you are using, and other customizations all affect whether you can access content or commands. You might have access to some content or commands only under certain conditions.

For more information, see [3DEXPERIENCE Platform: Responsibilities](#).

## Content Lifecycle

For more information, see [3DEXPERIENCE Platform: Content Maturity](#).

## User Interface

Before you begin, review the basics of the user interface components specific to this app.

### In this section:

- [Action Bar](#)
- [Context Menus](#)
- [Context Toolbars](#)

## Action Bar

The action bar is the main command bar at the bottom of your window. Commands that are specific to your app are organized in sections in this bar.

### In this section:

- Annotations Section
- View Section
- Standard Area
- Tools Section

## Annotations Section

The **Annotations** section provides commands to control the annotation display.

### Annotation Blanking

Banks the background of the annotations to improve their readability.

See [Applying Blanking on Annotations and Dimensions](#).

### Attribute Lists

Displays annotations and features exposing different types of attributes, such as manufacturing and Knowledge parameters.

Click **Attribute Lists** and select an attribute in the panel.

### Attribute Values

Displays the values of the attributes assigned to the elements selected either in the **Attribute Lists** panel or in the 3D area.

Click **Attribute Values**, and then select an attribute in the panel.

### 3D Annotation Sets Filter

Filters FTA annotations and attributes.

Click to display annotations and attributes, and then define visualization options.

See [Filtering Annotations](#).

## Favorite Context

Opens a 3D shape favorite context to access the data of interest only.

Click Favorite Context and select a 3D shape representation. Or, select a 3D shape representation and click the command.

## View Section

The **View** section of the action bar provides commands for applying rendering styles and defining the way you want to view objects.

For information about the combination of **HD Visualization**  and shading rendering modes, see [About Visualization Modes](#).

- [Flyout for Standard Views](#)

## Display Root List

Hides or shows the list of root objects.

Toggles between hiding and showing the list of root objects in the left navigation pane.

- To remove a root, click  in the root's tile.
- To highlight the root in the structure and the 3D view, select its tile in the side panel.

## Reframe

Focus the view on the entire model to fit in the viewer and simultaneously maximize the use of the viewer space.

## Pan

Moves the model's view horizontally and vertically.

Click **Pan**, then drag in any direction.

## Rotate

Turns the model around the vertical axis or around the horizontal axis.

Click Rotate, then drag horizontally or vertically.

## Zoom In or Out

Zooms in or out.

Drag up to zoom in and drag down to zoom out.

## Isometric View

See [Flyout for Standard Views](#).

## Swap Visible Space

Switches from Show space to No Show space, and vice-versa.

Visible objects are located in show space, and hidden objects are located in No Show space.

The show or the hide status will be lost when the widget or the browser is refreshed.

The show or the hide status embedded in CGRs will not be available in 3D Widget-based web apps.

## View Mode

Lets you modify the current view using Pre-defined view modes.

See [Managing the View Modes](#).

## Fly\Walk Navigation

Starts a dedicated scenario to navigate a 3D scene using a first-person view.

## Remove All

Removes all root objects from the view.

## Information

Displays information about the selected object in different tabs in the side panel. The available tabs depend on the app they are launched from, and the type of object that is selected.

For more information, see [Frequently Used Tabs](#).

## Flyout for Standard Views

### Isometric View

Applies standard isometric view.

### Bottom View

Applies standard bottom view.

### Top View

Applies standard top view.

### Right View

Applies standard right view.

### Left View

Applies standard left view.

### Back View

Applies standard back view.

### Front View

Applies standard front view.

## Standard Area

The **Standard** section of the action bar provides the app-specific command for activating the presentation mode.

## Presentation Mode

Displays all the views and captures of all displayed annotation sets in full screen mode.

See [Displaying 3D Tolerancing & Annotation Content](#).

## Tools Section

The **Tools** section of the action bar provides commands for reviewing existing models and determining whether they can be combined and reused in a new design project.

### Volume Query

Filters objects in a validated volume (box, sphere, proximity).

See [Filtering a Structure Using a Volume Query](#).

### Relations

Enables to navigate on product structure instantiation links (from child to parent) and on classification links (from classified object to folder, and from subfolder to parent folder).

### Authoring Mode

Toggles from Index mode to Authoring mode, or vice versa. If the **Use Index** check box is cleared in the **Edit Preferences**, then this command is disabled. If this check box is selected, the user can switch between Index Mode and Authoring Mode using the switch mode button available in the action bar.

In Index mode, objects are retrieved from the CloudView index. In Authoring mode, objects are retrieved from the 3DSpace database.

Switching modes has several consequences:

- The **Filter** command is only available in Index mode.
- Indexed simplified geometry is only available in Index mode.
- Response times are better when retrieving structures from the index in Index mode, than when retrieving it from the 3DSpace database in Authoring mode. The loading time of 3D objects is the same in either mode.

STEP AP242 is supported:

- When you modify the structure, the app is automatically switched to Authoring mode.  
To verify the mode, click .
- Before loading the 3D view, you can change the loading preference to the simplified geometry authoring stream.
- After loading the 3D view, you can switch elements from an indexed simplified geometry stream to a simplified geometry authoring stream. Right-click then select **Toggle Simplified Geometry**.  
You can do this representation-by-representation or by selecting multiple representations.
- The Step simplified geometry is displayed only when:
  - The app is in Index mode.
  - Simplified geometry is used instead of indexed simplified geometry.
  - The Step simplified geometry is synchronized.

## Filter

Lets you create a new filter or open an existing filter.

The filter is not reloaded after browser refresh and opens the complete product on which the filter is created.

See [Advanced Filtering](#).

## Measure

Measures different parameters of an object such as coordinates of a point, area of surface, angle between two objects and distance between selected objects.

See [Measuring Items](#).

## Activate Clipping

Activates the existing clipping, if there is one. Otherwise, creates a clipping. Clicking it again deactivates the clipping.

- After activation, the clipped object is displayed. Clipping section, slice, or box is also displayed if specified in **Preferences**.
- After deactivation, clipping section, slice, or box disappear and the whole object is displayed.

For more information, see [Social and Collaborative | Structured Collaboration & Collaborative Content](#) | [3D Markup](#) | [Working with Clipping Tool](#) | [Using the Clipping Tool](#).

## Edit Clipping

Starts the editing mode for an active clipping. If the clipping is not active, activates the clipping and then starts the editing mode.

Displays the clipping section, slice, or box. Also displays the selection filter.

For more information, see *Social and Collaborative | Structured Collaboration & Collaborative Content | 3D Markup | Working with Clipping Tool | Using the Clipping Tool*.

## Reveal Related Data

Lists data (drawings or layouts) that is related to geometrical objects in the model, and previews this data in a dedicated viewer.

Click one or more geometrical objects, and then click the marker that appears when related data exists.

See [Revealing Data Related to Geometry](#).

## 3D Views

Browses FTA annotations.

Click to display a view or a capture, and then define display options.

See [Browsing Annotations](#).

## Print

Prints the current view using your browser's standard print feature.

## Preferences

Provides options for customizing the display and retrieval of annotations.

See [Customizing App-specific Preferences](#).

## Context Menus

Context menus provide convenient access to commands. To see the menus, right-click an object or item.

This page discusses:

- [Model Display Commands](#)
- [Background Ambience Commands](#)

## Model Display Commands

HD visualization is combined with the wireframe option. For more information about the combination of **HD Visualization** and **Shading** rendering modes, see [About Visualization Modes](#).

### Focus On

Focuses on a selected object in the 3D area and simultaneously in the product structure.

### Reframe On

Center the selected object and maximize its use of the viewer space.

### Hide/Show

Hide or show an object or a set of objects.

### Information

Opens the Information widget, and displays information about the selected objects in different tabs.

### Geometry Quality

Lets you choose the geometry quality.

- **Optimized:** Toggles to optimized geometry quality, which is faster to load and to navigate.
- **High:** Toggles to high geometry quality, which is more precise and accurate.

#### Notes:

- If the selection is a representation or an assembly leading to a representation, only the possible quality is active.
- If the selection is several objects, both the commands are available. You can choose the required command to change the quality of the remaining objects.
- **High** geometry quality can impact the performances of data loading and 3D navigation FPS.
- On the cloud, this menu is active if you are granted the 3D Visualization For All role.

### Visual Quality

Lets you customize the render quality settings.

#### Notes:

- This option is not available on mobiles.
- If you load the FTA annotations, the current antialiasing is saved and automatically changed to the multisampling antialiasing (MSAA). After 3D annotations are unloaded, the previous antialiasing is restored.

For more information, see [Managing the Visualization Quality](#).

## Background Ambience Commands

### White Review

Applies a white review ambience.

### Pure White

Applies a pure white ambience.

### Blue Design

Applies a blue design ambience that provides a grid, a ground, a sky, a skyline and no shadow.

### Dark Review

Applies a dark review ambience that provides a ground but no mirror effect.

### Dark Mirror

Applies a dark mirror ambience that provides a ground, a shadow and a mirror effect.

### Basic

Applies the default visualization environment. No ambience is defined.

## Context Toolbars

Context toolbars are smart toolbars that contain only those commands that can be applied to the current selection.

This page discusses:

- [Context Toolbar](#)
- [Context Toolbar \(when root selected\)](#)

## Context Toolbar

### Level Selector

Lets you navigate throughout the model and select a level to work on (each graduation mark corresponds to a level within the model's structure).

A filtered structure can be navigated from the 3D using the **Level Selector**. If the structure has been filtered using 6WTags and you have applied colors, then the **Level Selector** indicates the different structure levels using the defined colors.

For more information, see [Selecting a Structure Level](#).

## Hide All Annotations

Hides all the annotations. For more information, see [Filtering Annotations from the 3D Area](#).

## Show All Annotations

Shows the hidden annotations. For more information, see [Filtering Annotations from the 3D Area](#).

## Context Toolbar (when root selected)

### Clean Root

Lets you remove the representation associated to a component's root selected with the level selector.

## Basic Concepts

This section provides background information about the visibility of annotations.

This page discusses:

- [Cross-highlight Between Annotations and Geometry](#)
- [Loading Annotations](#)
- [Browsing Annotations](#)
- [Filtering Annotations](#)
- [Clipping of Geometry](#)
- [Tooltips](#)

## Cross-highlight Between Annotations and Geometry

When one or more annotations are selected, pointed geometries are highlighted. Conversely, when one or more geometries are selected, annotations pointing to them are highlighted.

It is possible to benefit from the cross-highlight function within a part.

Specifications are retrieved from the FTA data model as in 3D Tolerancing & Annotation.

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## Loading Annotations

The app gradually loads the annotations of a part containing annotations.

- When the loading is done, the annotation set corresponding to the new root appears:
  - Its views and captures are added to the 3D view browser panel.
  - All visible views, captures, and annotations are displayed, while the other ones stay hidden.
- The geometry of the new root is visualized as defined in the model without any filtering.
- In case no annotation was found inside a specific root, the latter is removed from the section of the 3D annotation filter panel.

### Notes:

- The display of the annotations is based on their creation level:

Annotations Creation Level	Is a tessellated representation of the text generated?	Remarks
Version 5 V5-6 Release 2015, 3DEXPERIENCE R2017x, and later	Yes	These tessellated representations are reused while displaying the annotations, on all devices.
Versions earlier than Version 5 V5-6 Release 2015 and 3DEXPERIENCE R2017x	No	If the fonts used for the original annotations are not available on the device used to display them, annotations might be displayed differently from the original ones.

- For STEP files stored in the 3DDrive, tessellated representations are generated for the Product and Manufacturing Information (PMI) text representations and reused while displaying them.
- 

## Browsing Annotations

Thumbnails appear in the left-hand panel when you load a part containing annotations. For each annotation set, a collapsible section with a section header is created. If there is only one annotation set, no section header is displayed.

Inside each section:

- All views are listed as thumbnails in the same default order as in the 3D Tolerancing & Annotation tree. Sub-views of offset and aligned sections are not listed.
- All captures associated with sub-views of an offset or an aligned section are considered as associated with this offset or aligned section. At the end of the section, all captures that do not point a view are listed as thumbnails in the same default order as in 3D Tolerancing & Annotation tree.
- If a view is pointed by several captures, a thumbnail is added for each additional capture pointing to this view.

The panel is composed of:

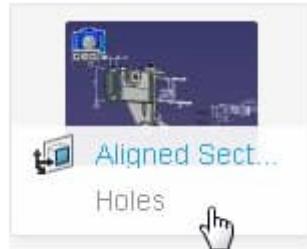
- A title header with the total number of thumbnails.

**Tip:** You can define the width of the panel to display one or more columns. Double-click the title header to toggle between the defined width and the default width.

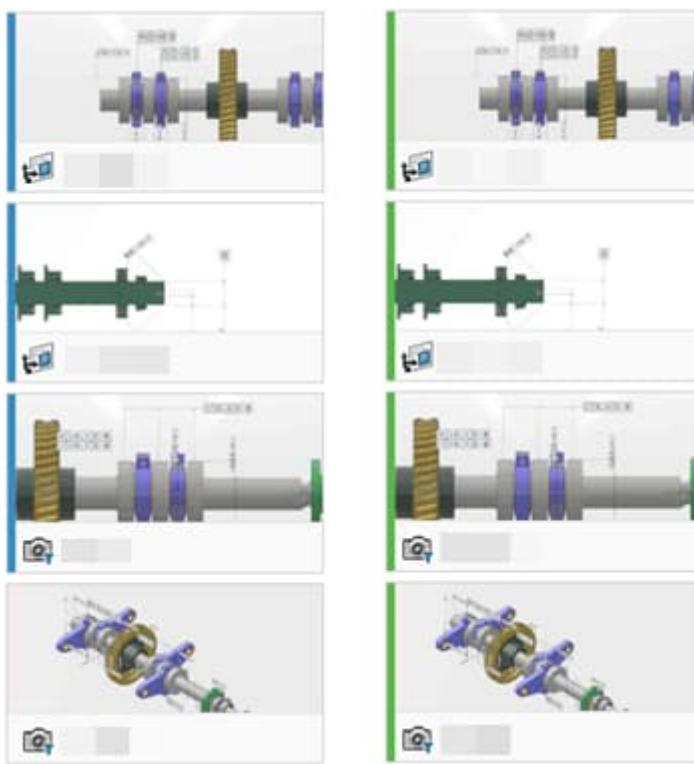
- A list of thumbnails divided into several sections.

Each thumbnail contains:

- A section header, with the name of the part and the name of the annotation set containing it
- A graphic preview of the view or capture
- An icon type
- The name of the view or capture of a view, the name of the capture associated to the view appears when you hover over the footer.



- A blue border on the left when it has been clicked or tapped, indicating that the corresponding view or capture has already been displayed. When all thumbnails of a given annotation set have been clicked or tapped, all their borders turn to green.



## Filtering Annotations

A dedicated panel helps you filter annotations contained in any products or any parts of a product, whatever the level of the structure at which they were instantiated.

This panel is divided into three sections:

- **Annotation Sets:** Shows or hides the annotations contained in 3D annotation sets available in any parts of any roots. An annotation set is available if it is displayed in the 3D area.
- **3D Annotations:** Shows or hides all annotations of visible annotation sets and all annotations contained in views and captures of visible annotation sets.
- **Attributes:** Shows or hides all attributes assigned to annotations and features.

In addition, you can filter annotations directly from the 3D area. A set of commands let you hide or show the annotations you need.

## Clipping of Geometry

When you click a thumbnail to display a section, a clipping of geometry is performed.

When the part is multi-instantiated, the clipping is based on the instance used to enable the annotation set containing the section.

If the geometry is clipped or partly hidden, a filter label appears at the top right corner of the 3D area.

## Toolips

Hovering over features displays tooltips that provide additional information such as hyperlinks, comments related to annotations, failure modes, attributes, and tolerances.

The tooltips display only the first five lines of the whole list of parameters available for the selected elements.

Click **Read more** to display the **Attribute Values** panel that shows all required attributes. For more information, see, [Browsing Attributes](#).

## Customizing 3D Annotation Insight for Dashboard

You can customize preferences while using 3D Annotation Insight for Dashboard.

### In this section:

- [Customizing App-specific Preferences](#)
- [Measure Preferences](#)
- [Clipping Preferences](#)
- [Choosing Widget Preferences](#)
- [About Mouse Profiles](#)

## Customizing App-specific Preferences

You can customize the app-specific preferences for 3D Annotation Insight for Dashboard.

1. From the **Tools** section of the action bar, click **Preferences** .

2. In the **Preferences** panel, specify your preferences:

Section	Description
<b>Annotation Set</b>	<ul style="list-style-type: none"><li>◦ <b>Convert white to black when retrieving annotation representations:</b> Converts white annotations to black ones. For more information, see <a href="#">Refreshing Data</a>.</li><li>◦ <b>Automatically retrieve ARM annotations:</b> Automatically retrieves ARM annotation sets located in CATParts instantiated under root products.</li></ul>

Section	Description
	<p>When a CATPart is added as a root, its annotation set (an ARM or regular one) is always retrieved, even if <b>Automatically retrieve ARM annotations</b> is cleared.</p> <ul style="list-style-type: none"> <li>○ <b>Display only captures:</b> Displays captures in the 3D view browser panel.</li> <li>○ <b>Automatically update view and capture thumbnails :</b> Automatically updates the visualization of view and capture thumbnails. The update operation affects the background color defined by the chosen ambience. It also takes the current color of the 3D annotations into account. For more information, see <a href="#">Browsing Annotations</a>.</li> <li>○ <b>Keep selected features at capture display:</b> Keeps the selected technological features, visible after a capture display.</li> </ul> <p><b>Note:</b> If the selected technological features are highlighted or displayed, depends on which row selection mode (<b>Highlight selected features</b> or <b>Display only selected features</b>), is selected.</p> <p>By default, this option is selected.</p> <p>For more information, see <a href="#">Opening a 3DShape in a Favorite Context</a>.</p>
<b>Favorite Context</b>	<p>Specifies if and how you want to open 3DShapes in favorite contexts, select one of these options:</p> <ul style="list-style-type: none"> <li>○ <b>Always open in favorite context:</b> The system checks whether a favorite context is attached to the 3DShape. If a favorite context is retrieved, the root product of the favorite context is added, instead of the representation.</li> <li>○ <b>Check for favorite context:</b> You must confirm if you want to open the favorite context or not. If confirmed, the system checks whether a favorite context is attached to the 3DShape.</li> <li>○ <b>Ignore favorite context:</b> No favorite contexts are loaded, only 3D shape</li> </ul> <p>By default, this option is selected.</p>

Section	Description
	representations are available.
<b>Attributes</b>	<p>Specifies the types of attributes to be displayed in the <b>Annotation and Attribute Filter</b> panel.</p> <ul style="list-style-type: none"> <li>◦ <b>User Defined</b></li> <li>◦ <b>Tolerances</b></li> <li>◦ <b>Hyperlinks and Comments</b></li> <li>◦ <b>Failure Modes</b></li> <li>◦ <b>Requirements</b></li> <li>◦ <b>Geometrical</b></li> <li>◦ <b>Mechanical</b></li> <li>◦ <b>Electrical</b></li> <li>◦ <b>System 3D Architecture</b></li> <li>◦ <b>Structure</b></li> <li>◦ <b>Composites</b></li> <li>◦ <b>Layered Product</b></li> </ul>
<b>Measure</b>	For specifying measure preferences, see <a href="#">Measure Preferences</a>
<b>Clipping</b>	For specifying clipping preferences, see <a href="#">Customizing Clipping</a>
<b>Units</b>	<p>Lets you specify the units for mass, length, angle, volume, and area values.</p> <p>Select the <b>Display trailing zeros</b> check box to display the trailing zeros in the work area.</p> <p><b>Note:</b> For the interference result list and the exported interference result file, trailing zeros preference is not considered.</p> <p>► By default, this check box is cleared.</p>
<b>Move</b>	<ul style="list-style-type: none"> <li>◦ <b>First assembly level:</b> If this option is selected, the first assembly level is moved by default.</li> <li>◦ <b>Leaf part:</b> If this option is selected, the leaf part is moved by default.</li> </ul> <p>► By default, this option is selected.</p>

Section	Description
<b>Display</b>	<p>The preferences to display the content in the dashboard.</p> <ul style="list-style-type: none"> <li>○ <b>Gravitational effects during navigation:</b> This check box lets you consider the gravitational effects while manipulating the viewpoint.           <ul style="list-style-type: none"> <li>● By default, this check box is cleared.</li> </ul> </li> <li>○ <b>Projection Type:</b> Under this area, you can specify the projection type to display the object. You can select the <b>Parallel</b> or the <b>Perspective</b> check box to specify the projection type.           <ul style="list-style-type: none"> <li>● By default, the <b>Perspective</b> check box is selected.</li> </ul> </li> </ul>
<b>Selection</b>	<p><b>Select 3D geometry inside the part, when available:</b> Lets you select the 3D geometries instead of 3D Parts or 3D Representations.</p>

3. Click **Save** to implement your preferences.

## Measure Preferences

This topic lists the measure preferences that you can edit from the **Tools** section of the action bar.

This page discusses:

- [Value](#)
- [Creation](#)

### Value

You can customize the preferences for the measure values that you want to display. The corresponding properties can be modified using the **Properties**  command available in the shortcut menu.

#### Main Value Display

Select this option to display only the actual measured value. You can select the following check boxes:

Option	Description
<b>Measure type</b>	Displays measure type.
<b>Unit</b>	Displays the unit of the measurement. By default, it is displayed for all the measurement types.
<b>Approximated value symbol</b>	Displays ~ before the measurement value for measures in approximate mode.

Measure	Measure type displayed
Coordinates	No
Length (Line)	No
Length (Curve)	Yes
Length (Arc)	Yes
Length (Cylinder)	No
Length (Cone)	No
Distance	No
Minimum Distance	No
Maximum Distance	Yes
Angle (Between 2 selections)	No
Angle (By 3 points)	No
Angle (Cone)	No
Half angle (Cone)	No
Radius	No
Radius (Cylinder)	No
Radius (Sphere)	No

Measure	Measure type displayed
Minimum radius (Cone)	No
Maximum radius (Cone)	No
Radius (By 3 points)	No
Diameter	No
Diameter (Cylinder)	No
Diameter (Sphere)	No
Minimum Diameter (Cone)	No
Maximum Diameter (Cone)	No
Diameter (By 3 points)	No
Area (Surface)	Yes
Area (Planar surface)	Yes
Area (Product)	Yes
Volume	Yes
Thickness	No

**Note:** Preference for local minimum and local maximum distances types is the same as minimum and maximum distances types.

---

## Creation

Option	Description
<b>Remove previous non-persistent measure</b>	Removes the previously created nonpersistent measurements whenever the next measure is created. By default, this check box is cleared.

## Clipping Preferences

This topic lists the clipping **Preferences** that you can edit from the **Tools** section of the action bar.

This page discusses:

- Capping
- Contour
- Representation
- Normal Direction
- Manipulation

## Capping

This section lets you specify the default color of capping.

Option	Description
<b>Custom color</b>	<p>Select this option to keep the capping color same as that of the clipped parts. Click the color box to choose a color.</p> <p> By default,  is selected.</p>
<b>Color from geometry</b>	<p>Select this option to keep the capping color same as that of the clipped geometry.</p>

## Contour

Option	Description
<b>Compute contour</b>	<p>Computes and displays contour.</p>
<b>Custom color</b>	<p>Select this option to keep the contour color same as that of the clipped parts. Click the color box to choose a color.</p> <p> By default,  is selected.</p>
<b>Color from geometry</b>	<p>Select this option to keep the contour color same as that of the clipped</p>

Option	Description
	geometry.
<b>Thickness</b>	Specifies contour thickness.  By default, 1 is selected.

---

## Representation

Option	Description
<b>Display permanently</b>	Select this option to display clipping section, slice, or box, even when clipping is not in edit mode.  By default, this check box is not selected.
<b>Color</b>	Click the color box to choose the clipping representation color.  By default,  is selected.
<b>Transparency</b>	Modifies the transparency.  By default, transparency is specified as 50%.

---

## Normal Direction

Lets you specify the direction of the normal of a clipping plane during the clipping creation. You can select **X**, **Y**, or **Z** axis, or **Automatic**.

 By default, **Automatic** is selected. This option chooses the x, y, or z axis automatically as the normal direction depending on your viewing direction.

---

## Manipulation

Option	Description
<b>Display section manipulation tool</b>	Displays section manipulation tool.  By default, this check box is selected.

Option	Description
<b>Detailed view</b>	Lets you enter a precise position of the clipping plane.
<b>Explore view</b>	Lets you use the slider to specify a position of the clipping plane. By default, this option is selected.
<b>Increment</b>	Lets you specify the increment value. By default, it is taken as 1mm.

## Choosing Widget Preferences

You can customize your user experience.

- From the menu  at the upper right corner of the widget, select  **Preferences**.
- Set the **Preferences** according to your needs.

Preferences	Description
<b>3DEXPERIENCE platform</b>	<p>Platform currently used inside the widget to manage stored content. Enables to choose among platforms available for your user.</p> <p>On premises, the only available platform is "onPremises".</p> <p>On the cloud, all available platforms for the connected user will be proposed in the list.</p> <p>Important: If there is only one available platform (you are either working on-premise or on the cloud with a single platform available to you), then this setting will not be displayed.</p> <p>For details about content management when switching platforms in a multi-platform cloud environment, see <a href="#">Switching Between Cloud Platforms</a>.</p>

Preferences	Description
Use Index	<p>Gets the information about the content directly from the index.</p> <p><b>Note:</b> If content is modified, the widget switches to database mode to get the last modifications.</p> <p>Clear this option to have the widget content fully based on the database.</p> <p>The index enables better response times, but recent updates may not yet have been indexed. In that case, accessing the content directly in the database enables you to have the most up-to-date information.</p> <p>▶ By default, this option is activated.</p>
Display confirmation for detach operation	<p>Displays a confirmation when you detach an object.</p> <p>▶ By default, this option is activated.</p>
Geometry Quality	<p>Defines the default geometry quality:</p> <ul style="list-style-type: none"> <li>◦ Optimized</li> <li>◦ High</li> </ul> <p><b>Note:</b> The <b>High</b> quality setting can impact all data already loaded, the loading performances, and the 3D navigation FPS.</p> <p>▶ By default, the <b>Optimized</b> option is selected.</p>
Display Work Under	<p>Displays the Change Action bubble to allow the selection of the change action under which you want to work.</p> <p>▶ By default, this option is activated.</p>
Work Under Position	<p>When the <b>Display Work Under</b> option is active, lets you choose the position in the widget of the Change Action bubble:</p> <ul style="list-style-type: none"> <li>◦ Lower-right corner</li> <li>◦ Lower-left corner</li> </ul>

Preferences	Description
	<ul style="list-style-type: none"> <li>◦ Upper-right corner</li> <li>◦ Upper Left Corner</li> </ul>
<p>Use Simplified Geometry as default geometry stream</p>	<p>Defines the simplified geometry (HD, precise, and accurate) as the default geometry stream to load.</p> <p>► By default, this option is deactivated. The default geometry stream loads as indexed simplified geometry (non-HD, simplified).</p>
<p>Units</p> <p>Length Units</p> <p>Angle Units</p> <p>Volume Units</p> <p>Area Units</p>	<p>From the available lists, select the required measuring units.</p> <p>► By default,</p> <ul style="list-style-type: none"> <li>◦ Millimeter (mm)</li> <li>◦ Degree (deg)</li> <li>◦ Cubic millimeter (mm<sup>3</sup>)</li> <li>◦ Square millimeter (mm<sup>2</sup>)</li> </ul>

3. Click **Save**.

## About Mouse Profiles

A mouse profile is a collection of mouse controls. You can select a mouse profile of your choice to customize your widget experience.

The following three mouse profiles are available for selection:

- **3DEXPERIENCE**
- CATIA
- SOLIDWORKS

The default mouse profile is **3DEXPERIENCE**.

To select the required mouse profile, see [Selecting a Mouse Profile for Dashboard Apps](#).

If a widget is already loaded before changing the mouse profile, the new mouse profile preference is not applied to the widget. Refresh the widget to apply the change in the preference.

On opening the widget, the **Select Preference** dialog box appears. You can select the required mouse profile in this dialog box.

### Notes:

- This preference is only available on the cloud.

- For marker creation commands, the **CATIA** mouse profile is automatically selected, even if the selected profile is **3D EXPERIENCE**. This ensures the creation of markers using mouse drag gestures, without performing any viewpoint modification at the same time.

## About the Home Page

When you open 3D Annotation Insight for Dashboard a home page is displayed.

This page discusses:

- Home Page Actions
- Toolbar

## Home Page Actions

When you click **Home** , you go back to the home page.

### No Recent Objects

When you first open , the home page is empty. You can load content from the **Search for Content** or you can drag an object and drop it in the panel.

When you drag and drop and object in the home page, you can:

- Add object in context.
- Add object.
- Add and Filter content.

The appearance of the selected area changes when you hover over it with the dragged object. If the area does not change, then the view is not added.

### Recent Objects

If you have already opened an object, it appears on the home page as a recent object.

**Note:** A recent object is a content which you previously opened before a refresh. It does not refer to the most recent version of the object, but an object recently opened in the app.

You can open the following objects:

- Products 
- Filters 
- Annotation sets 

To remove an object from the Recent Objects list, click .

## Search

You can search objects with the following commands:

- Search for Content
- Products
- Filters

**Important:** Pin the app to the dashboard before searching for content.

Otherwise, the app closes.

## Customize your app

You can customize the preferences for your widget. For more information, see [Customizing App-specific Preferences](#).

## Toolbar

The toolbar contains the following commands:

Command	Description
<b>Toggle repository content chooser view</b> 	Collapses or expands the content repository area. <b>Note:</b> The icon changes direction between collapse and expand.
<b>Open</b> 	Opens the selected recent root path or filter inside the view. <b>Note:</b> The command is available if at least one of the selected objects is not loaded. Otherwise, the command is disabled.
<b>Open with filter</b> 	Opens the selected product and opens the Filter command. <b>Note:</b> The command is available if only one product that is not open yet is selected. The behavior is the same as the current drop on the Filter area of the drop invite.
<b>Remove from view</b> 	Removes the selected object from the session.
<b>Manage Selection</b> 	Manages the selection of the recent objects.

Command	Description
 Remove 	Removes the selected objects from the Recent Objects list. <b>Note:</b> Removing the object from the Recent Objects list also removes it from the view if it was previously loaded.
 View	Changes the view of the Recent Objects list.
 Close 	Closes the home page and shows the app content.

## About Linked Widgets

This topic contains the information about the linked widgets and how they communicate.

You can explicitly link the 3D Markup, Design Review for Dashboard, Design Validation, 3D Compose, 3D Annotation Insight for Dashboard, Interference Check for Dashboard, Interference Simulation for Dashboard widgets to any other 3D dashboard apps widgets. You can also explicitly link widgets of these apps to the Product Explorer and Product Structure Editor widgets. You can remove such links afterward.

Event	Communicated between
<b>Public</b> <ul style="list-style-type: none"> <li>○ Select a product structure element</li> <li>○ Focus on a product structure element</li> </ul>	All the linked apps
<b>Private</b> <ul style="list-style-type: none"> <li>○ Hide/show of a product structure element</li> <li>○ Filter a root product</li> <li>○ Author operations on a product structure element</li> <li>○ Open content</li> <li>○ Remove content</li> </ul>	Linked widgets of <ul style="list-style-type: none"> <li>○ 3D Markup or,</li> <li>○ Design Review for Dashboard or,</li> <li>○ Design Validation or,</li> <li>○ 3D Compose or,</li> </ul>

<ul style="list-style-type: none"> <li>◦ Search</li> </ul>	<ul style="list-style-type: none"> <li>◦ 3D Annotation Insight for Dashboard or,</li> <li>◦ Interference Check for Dashboard or,</li> <li>◦ Interference Simulation for Dashboard</li> </ul> <p>and</p> <ul style="list-style-type: none"> <li>◦ Product Explorer or,</li> <li>◦ Product Structure Editor</li> </ul>
<p><b>Private</b></p> <ul style="list-style-type: none"> <li>◦ 3D Enrichments</li> <li>◦ Viewpoint synchronization</li> <li>◦ Screenshot</li> <li>◦ Navigation on implement links</li> </ul> <p><b>Note:</b> Navigation on implement links is the only private event that supports the communication between more than two linked widgets.</p>	<p><b>Linked widgets of</b></p> <ul style="list-style-type: none"> <li>◦ 3D Markup or,</li> <li>◦ Design Review for Dashboard or,</li> <li>◦ Design Validation or,</li> <li>◦ 3D Compose or,</li> <li>◦ 3D Annotation Insight for Dashboard or,</li> <li>◦ Interference Check for Dashboard or,</li> <li>◦ Interference Simulation for Dashboard</li> </ul> <p>and other 3D dashboard apps</p>

## About Advanced Dynamic Loading in 3D Dashboard Apps

For content loaded from 3DSpace, the scene is dynamically displayed according to what is visualized, and to the memory limits of your device.

If you are assigned the 3D Visualization For All role, an additional behavior applies when loading large assemblies: the product structure is also loaded dynamically (in addition to geometry being loaded dynamically). Every time the view changes, only visible nodes of the product structure are loaded in memory. When they are no longer visible, they are unloaded from the memory. This topic explains the impact of this loading and unloading of large assemblies in the dashboard apps.

This page discusses:

- Advanced Dynamic Loading for Authoring Dashboard Apps
- Position and Graphic Properties Overloads
- Measurements
- Sections

**Environment:** Cloud only

## Advanced Dynamic Loading for Authoring Dashboard Apps

Advanced dynamic loading does not support few authoring dashboard apps.

Therefore you cannot switch to such authoring dashboard app from a dashboard app that supports the advanced dynamic loading.

Also, if you switch to a dashboard app from such authoring dashboard app, the dashboard app does not support large assembly visualization.

---

## Position and Graphic Properties Overloads

The behavior for position and graphic properties overloads explained in this section is only applicable to large assemblies.

### Position Overloads

- When you change the position of any object, the new position of that object is considered for determining whether the object is visible according to the current viewpoint.
- The loading and unloading of objects work in the same way, irrespective of the change in position.
- When changing the position of a sub-element by dragging the **Robot**, other sub-elements which might be visible after position change are loaded when the dragging is over.

### Graphic Properties Overloads

- If you change the color or opacity of an object, the new color or opacity value is applied to the object irrespective of the object representation type (simplified, indexed simplified, or bounding box representation).
  - The changed color and opacity are also applied to the object if a new representation type of the object is loaded after changing the properties. These new graphic properties are applied even if the object is unloaded and then reloaded in a same or different representation type.
- 

## Measurements

The behavior for measuring objects explained in this section is only applicable to large assemblies.

### Product Measurement

When products and their sub-elements are selected for measurements, the loading and unloading behavior is as follows:

- If all sub-elements under the selected product are already loaded in the widget, the measurement is created for the currently loaded representations of the selected object (the simplified geometry representation is not loaded automatically.)

- If all sub-elements under the selected product are not already loaded in the widget, or if some geometry cannot be loaded, the measurement is not created. You can either change the level or select a different object.

## Distance Between Two Products

- When leaf elements, either products or geometries are selected, the minimum distance measurement is created.
- If one of the two selections is a product but not a leaf product, the following actions are taken:
  1. The parts with minimum distance are recognized.
  2. The simplified geometry representations for the recognized parts at the minimum distance are loaded.
  3. The minimum distance between the simplified geometry representations of these parts is computed.

**Note:** If the simplified geometry representation of any of these elements cannot be loaded, an error message is displayed and the measurement is not created. Any previous measurements created on this selection are removed.

---

## Sections

Sections contours are computed in a specific manner for large assemblies.

If the **Compute Contour** check box is selected for a section, the contours are computed in the following steps:

1. The geometries of all the elements intersecting with the section plane and visible in the current viewpoint are loaded in the session.
2. The contours are computed and displayed for all the loaded elements.

**Important:** If the loading of the elements takes too long or if they are not loaded at all, a warning is displayed. In this case, the contours are not computed unless the section is edited again.

3. If the viewpoint is changed or if another operation is performed that leads to loading and unloading of some elements, the elements visible in the new viewpoint are loaded. The contours are computed and displayed for the newly loaded elements. For the unloaded elements, the contours are still visible.

**Note:** If the **Compute contour** check box is cleared, the loading and unloading behavior is restored to the default behavior.

If the section plane is edited:

- The loading and unloading behavior for the elements that do not intersect the new boundaries of the section plane is restored to the default behavior.
- The contours are computed and displayed at the end of the editing of the section plane.

In the section 2D viewer, changing the viewpoint does not affect the loading management in the 3D viewer. Therefore the contours are not updated.

## About Visualization Modes

Visualization modes enable you to view objects as high quality (precise and accurate), or as optimized quality (faster to load, and faster to navigate).

### High Quality

High quality is used for representations. It is more precise and accurate.

Material (internal to the representation), edges, wireframe, and linear elements rendering modes are available.

**Important:** The **High Quality** mode must be turned on to enable the cross-highlight mechanism and the filtering of geometric bodies.

### Optimized Quality

Optimized quality is used for representations. It is faster to load, and faster to navigate.

Only the **Shading** option is available. Material, edges, wireframe, and linear elements rendering modes can be selected but have no effect on the visualization.

**Important:**

- On premises, if the **Optimized Quality** mode is enabled but has not been generated, the command is grayed out and **High Quality** mode is used as a fallback since it is always available.
- On the cloud, the **Optimized Quality** mode is available only if you have acquired tokens for the multiscale HD navigation.

### Default Visualization Mode

By default, the **Optimized Quality** mode is activated.

The visualization mode is not persistent. Therefore, reloading the view changes the visualization mode to optimized quality and applies the **Shading** rendering mode.

### STEP AP242 Support

- Step high quality will be displayed when:

- The app is in Indexed mode.
- High quality is used, not optimized quality.
- The Step high quality is synchronized and valid.
- Before the loading of the 3D, you can define the default geometry stream to high quality. Then for all objects to be loaded for which a Step high quality exists and is both synchronized and valid, the Step high quality will be loaded. See **Editing Preferences**.
- If the 3D was loaded with the default geometry stream is defined to optimized quality, you can switch elements manually to high quality. Right-click and select **Toggle High Quality**. You can do this representation by representation or by selecting multiple representations.
- When you modify the structure, the app is automatically switched to Authoring mode. In this case, the high quality is displayed.

## Revealing Data Related to Geometry

In a given assembly, some geometrical objects may have data related to them, such as drawings or layouts originated from CATIA V5 (in SVG format). These layouts are directly associated to the selected geometry. You can reveal this data, and then preview it in a dedicated viewer.

1. From the **Tools** section of the action bar, click **Reveal Related Data** .

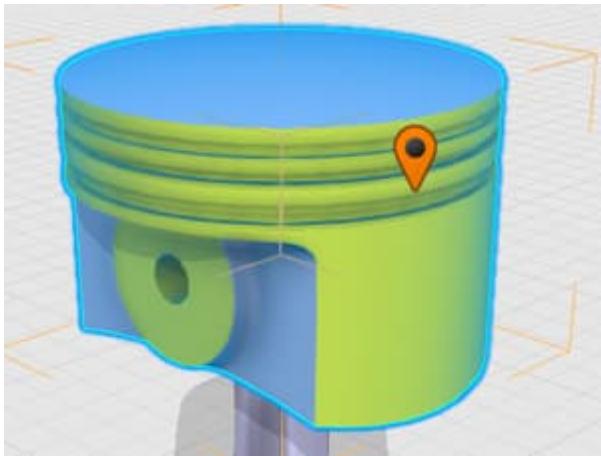
As long as this command remains selected, data related to objects you select is revealed.

**Note:** You can use other commands while keeping **Reveal Related Data** selected.

2. Click one or more geometrical objects.

**Note:** You can select several objects using **Ctrl**. You can also use the level selector to select an object at a specific level.

While the query is running, a shadow  appears, blinking. If the selected objects have data related to them, a marker  then appears.



**Note:** You can **Reveal Related Data** in the invisible space just as you would in the visible space. When the object has related data, the marker appears only in the area in which the query takes

place, independent of the **Show / No Show** selection. When you swap between the visible and invisible areas by clicking , the marker is not kept anymore.

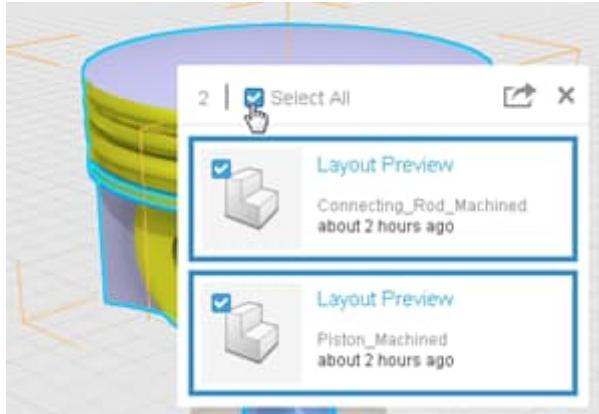
### 3. Click the marker .

A panel appears, listing all data related to the selected objects, and indicating their type (layout, drawing, etc.). You can scroll this panel if it contains many items.

**Tip:** To avoid seeing this panel, and to preview all related data immediately, you can also double-click the marker .

### 4. To choose the data to preview, do one of the following:

Data to preview	Action
Only one piece of data	Click it.
Several pieces of data	<b>Ctrl + select them.</b> <b>Note:</b> You can also select the check boxes available for each one.
Specific pieces of data	In the menu, select either <b>Select All</b> (previews all data), <b>Layout Preview</b> (previews all layouts), or <b>Drawing Preview</b> (previews all drawings).



**Tip:** You can also double-click a layout to preview all layouts, or a drawing to preview all drawings.

A preview of the data opens in the 3DPlay for Desktop widget. If you selected several previews, each one opens in a different viewer.

**Note:** Adding the 3DPlay for Desktop widget to your dashboard adds all currently open previews to your dashboard.

### 5. In the 3DPlay for Desktop widget, choose from the following commands in the action bar.

Option	Description
 <b>Pan</b>	Moves the camera. Click <b>Pan</b> then drag in any direction.
 <b>Zoom In/Out</b>	Zooms in or out.
 <b>Fit All In</b>	Fits the entire content in the viewer.
 <b>Real Size</b>	Displays the real-size view of the data.
 <b>Previous</b>	Switches to the previous sheet.
 <b>Next</b>	Switches to the next sheet.

6. Close the widget when done.

## Browsing Annotations

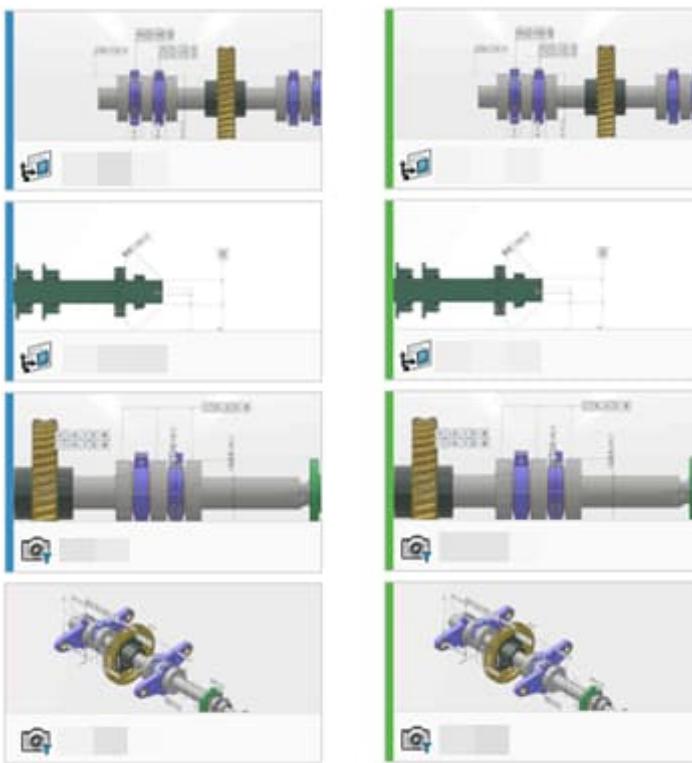
You can browse annotations through thumbnails.

1. From the **Annotations** section of the action bar, click **3D Annotations** .
- A panel displays the number of views and captures as thumbnails.

2. To display a view or capture, click a thumbnail.  
A blue border appears on the left-side of the thumbnail.

**Notes:**

- When all thumbnails of a given annotation set have been selected, all borders turn to green to show that all views and captures have been fully reviewed.



- The uncut elements (excluding geometrical bodies) are displayed when displaying single-plane section captures except the aligned and offset section views.
- When displaying captures associated to 2D clipping profile, the 2D-clip profile is displayed in the 3D area.

When a section is displayed (with or without uncut information) or any view with a 2D clipping profile is displayed, the button with a section view name appears at the upper right of the widget. When you click this button, it removes both the sectioning and the 2D clipping profile representation, if any.

- When the widget width is smaller than 550 pixels, the panel is automatically hidden after displaying a capture or a view.

3. In the panel, click and select one of the following options: .

- **Delete display history:** removes the display history of views and captures and the border on the left-side of thumbnails
- **Display only captures:** filters the panel to display only captures

4. Browse the views and captures.

If several annotation sets are displayed at the same time, a type icon is added in the corresponding collapsible section.

- Product for annotation sets contained in a CATProduct and ARM annotation sets contained in CATParts.
- Product reference for annotation sets contained in 3DShape instantiated under a product reference or a 3DPart.
- Part for regular annotation sets contained in CATParts.
- 3D shape for annotation sets contained in a 3D shape loaded as a root.

**Note:** For an assembly data opened with the large data visualization technology, objects containing FTA annotations located directly under sub-assemblies or 3D shapes might not be loaded.

5. Click  next to the annotation set name to display the semantic standard information of the annotations within that annotation set.

The icon appears only if an annotation set has semantic standard information.

The **Semantic Standards** panel appears displaying the name of the annotation set and the details of the standard used (code, year, and its title).

6. **Optional:** Manage the display of information of semantic standards displayed in the **Semantic Standards** panel.

- a. Group the semantic standard information according to the name, standard, or the code.
- b. Right-click on any of the row, except column headers, to expand or collapse all the information within annotation sets.
- c. Right-click the required column and select **Autofit Column Width** to automatically adjust the column width.
- d. Click **Show All** to display the information for all the annotation sets loaded. Once clicked, the **Show All** button disappears from the panel.

**Notes:**

- The **Show All** button is not displayed when there is only one annotation set containing the semantic information to display.
- When you open the data with annotations created in CATIA V5, the annotations might appear with incorrect text visualization.

7. **Optional:** hover over the annotation and click on the link to access the hyperlinks attached to the annotation.

The hyperlink may contain a link to following data:

Data	Opens in
Web page	Web browser
Requirement	<b>Edit Properties</b> panel
3D shape or a product	3DPlay Web App
Document	3DPlay Web App (only if 3DPlay Web App supports the contents of the document.)

**Notes:**

- An annotation can have more than one hyperlinks.
- The hyperlinks of respective annotations are displayed in the **Attributes** panel as well.

A box displaying the hyperlink and a description for the hyperlink appears.

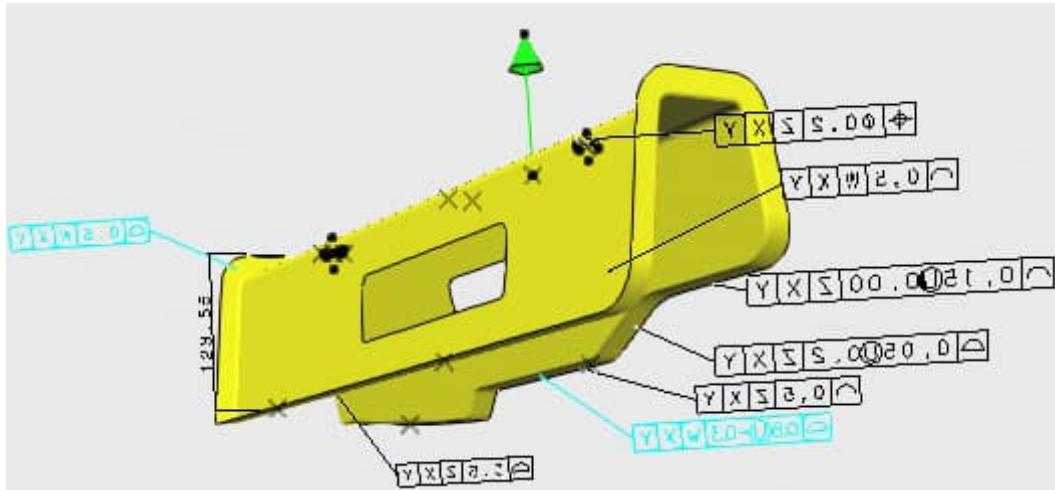
8. To update the display of thumbnails, click the thumbnails if you are using Firefox or Internet Explorer. In Chrome, updates are automatically performed.

The update operation is based on the current 3D visualization in the app. It modifies the background color of the thumbnails and the anti-aliasing effects defined by the chosen ambience. It also takes the current color of the 3D annotations into account.

## Filtering Annotations

You can filter annotations using different filters.

1. From the **Annotation** section of the action bar, click **3D Annotation Sets Filter**  Annotations appear in the 3D area.



A panel displays the following sections:

- **Annotation Sets:** Specifies which available annotation sets of the assembly to visualize.
- **3D Annotations:** Specifies which annotations of visible annotation sets to visualize.

**Note:** When the widget width is smaller than 550 pixels, the panel is automatically hidden when you choose to display **all** the annotations.

2. From the **Annotation Sets** section, select one the following options:

Option	Description
<b>All</b>	<p>Displays all the annotation sets of a given root.</p> <p>This mode may have an impact on the performance, in which case a warning message is issued.</p> <p>If several roots are loaded, a section for each annotation set appears.</p>

Option	Description
	<p><b>Note:</b> When the data is loaded with large data visualization technology, this option is not available.</p>
<b>Assembly Root</b>	<p>Displays all assembly annotations of a given root loaded in the widget. Each root is represented by a type icon:</p> <ul style="list-style-type: none"> <li>◦  : CATProduct</li> <li>◦  : Product reference or a 3DPart</li> <li>◦  : CATPart</li> <li>◦  : 3DShape</li> </ul> <p>Selecting an item modifies the visualization of the model accordingly.</p>
<b>Custom</b>	<p>Displays a list of all annotation sets available in the assembly.</p> <p>Select the annotation sets to display.</p> <p>If several roots are loaded, a section for each annotation set appears.</p>
<b>None</b>	Displays no annotation sets.

3. From the **3D Annotations** section, select one of the following options:

Option	Description
<b>All</b>	Displays all the types of attributes, as defined in the preferences.
<b>Custom</b>	<p>Displays a list of all annotations.</p> <p>Select the annotations to display.</p>
<b>Type</b>	Filters the annotations by tolerance type, as defined in the FTA model (datum, non-semantic, size, etc.).
<b>Value</b>	<p>Filters the annotations by tolerance values as defined in the FTA model.</p> <p>Select the signs in the list, enter the tolerance values and click <b>Apply</b>.</p>

Option Only Default Annotations	Description Filters the default annotations.
------------------------------------	---

4. From the **Attributes** section, select one of the following options:

Option	Description
<b>All</b>	Displays all types of attributes, as defined in the preferences.
<b>Type</b>	Defines which types of attributes should be displayed among those defined by the related preferences.
<b>None</b>	Displays no attributes.

The failure mode icon is displayed based on the severity specified.

- : Least Important
- : Low
- : Medium
- : High
- : Very High

The annotations are displayed under the **Attributes** in the panel, which is by-default docked on the left-hand side of the work area when the type, **Failure Modes** , in the annotation set filter panel is selected.

## Applying Blanking on Annotations and Dimensions

You can blank the background of the annotations dimensions to improve readability.

Before you begin: Open a 3D shape containing annotations.

1. From the **Annotations** section of the action bar, click **Annotation Blanking** .

The blanking is applied to all the annotations as specified in the native app, with area fill or area fill and geometry. For more information, see *3D Modeling | Mechanical Systems | 3D Tolerancing & Annotation | Working with 3D Tolerancing & Annotation Display | Annotation Display | Applying Blanking on Annotations and Dimensions*.

2. Click **Annotation Blanking**  again.

The blank background of the annotations is removed.

## Filtering Annotations from the 3D Area

You can filter annotations from the 3D area.

This task shows you how to:

- Show or Hide Annotations
- Show Related Annotations
- Show Geometry Attachments
- Navigate Annotations and the Product Structure

### Show or Hide Annotations

You can use **Show annotations** and **Hide annotations** to manage the display of one or multiple annotations.

1. Select an FTA element or a geometrical object.
2. From the context toolbar, do either of the following:

- Click **Show annotations** .

Annotation sets are loaded and enabled in both **3D View Browser** and **3D Annotation Filter** panels. The element is displayed in the 3D area.

- Click **Hide annotations** .

Annotation sets are disabled in both **3D View Browser** and **3D Annotation Filter** panels. The element is hidden in the 3D area.

The selected items are shown or hidden as follows:

Selected Item	Shown or Hidden Item
Annotation	View and all related annotations
View	Annotation
Capture	Capture and all related annotations
Geometrical object and annotation set	Annotation set of the geometry

### Show Related Annotations

1. Select a geometrical element.

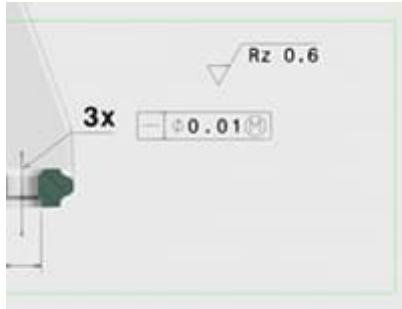
## 2. Click **Show Related Annotations** .

The annotations linked to these geometries are displayed. All the other annotations are hidden.

## Show Geometry Attachments

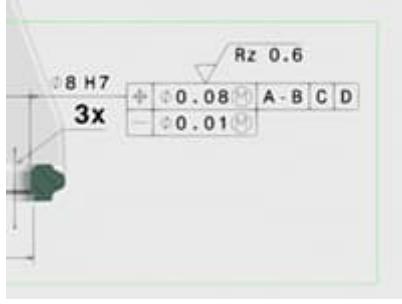
**Show Geometry Attachments** is available when the display of selected annotations is missing to visually understand their link to the geometry, and at least a linked annotation is hidden.

### 1. Select an annotation.



### 2. Click **Show Geometry Attachments** .

The annotations showing which geometries are linked to these annotations are displayed.



## Navigate Annotations and the Product Structure

You can move along the graduation of the level selector to navigate the annotation set structure, explore the structure of the model and select an object at a specific level.

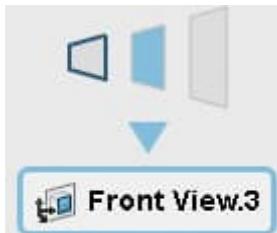
**Note:** When you hover over a graduation mark, the active structure level is highlighted and the name of the element is displayed in a label.

### 1. Select a single element in the model.

### 2. From the context toolbar, click **Level Selector** .

### 3. Depending on the selected element, you can then select the following:

Selected Element	Possible Selection
<b>View</b>	<ul style="list-style-type: none"> <li><input type="radio"/> View</li> </ul>

Selected Element	Possible Selection
	<ul style="list-style-type: none"> <li>◦ Annotation set</li> </ul>
Capture	<ul style="list-style-type: none"> <li>◦ Capture</li> <li>◦ Annotation set</li> </ul>
Annotation	<ul style="list-style-type: none"> <li>◦ Annotation</li> <li>◦ Views</li> </ul>  <ul style="list-style-type: none"> <li>◦ Annotation sets</li> </ul>
Geometrical Object	<ul style="list-style-type: none"> <li>◦ This geometrical object</li> <li>◦ The part that contains it</li> <li>◦ Its parent product</li> </ul>

## Browsing Attributes

You can browse annotations and features exposing different types of attributes, such as geometrical attributes, manufacturing and knowledge parameters, failure modes, composite attributes, layered products, manufacturing requirements, etc.

- From the **Annotation** section of the action bar, click **Attributes** .

The attributes of the features appear in the 3D area and in a panel with the tabs of disciplines docked together. Under the tabs, the attributes are listed under the nodes of the 3D shapes on which they are created.

**Note:** You can undock the discipline to display the attributes in a separate panel.

The following disciplines can appear as tabs:

Icon	Type of Attribute
	User Defined
	3D Annotations
	Mechanical
	Electrical
	Structure

Icon	Type of Attribute
	<p>Composite</p> <p>By default, the <b>Row selection</b> mode for this discipline is <b>Display</b> and the <b>Attribute display</b> mode is <b>In rows</b>.</p>
	<p>Layered Product</p> <p>By default, the representation mode while saving the data is displayed while displaying the layered products. The representation mode can be between the following:</p> <ul style="list-style-type: none"> <li>◦ <b>Flat</b> </li> <li>◦ <b>Elevated</b> </li> <li>◦ <b>Elevated no bonding</b> </li> </ul> <p>By default, the <b>Row selection</b> mode for this discipline is <b>Display</b> and the <b>Attribute display</b> mode is <b>In rows</b>.</p>
	<p>Geometrical</p> <p>You can filter the disciplines of the attribute panel using <b>3D Annotation Sets Filter Filtering Annotations</b> </p>
	System 3D Architecture

By default, the **Row selection** mode is **Highlight selected features** and the **Attribute display** mode is **In columns**. These default conditions are valid for all the attribute types except for composite and layered product attributes.

You can filter the disciplines of the attribute panel using **3D Annotation Sets Filter Filtering Annotations** .

**Note:** When the widget width is smaller than 550 pixels, the attributes panel is automatically hidden after selecting any row or the **Reframe On**

2. Right-click on any of the columns to customize the display of the panel and attributes in it.

Context Menus	Description
<b>Filter Column</b>	Opens the filter dialog box.
<b>Pin column</b>	<p>Lets you pin the selected column.</p> <ul style="list-style-type: none"> <li>◦ <b>Pin Left:</b> to attach the selected column on the left of the list</li> <li>◦ <b>Pin Right:</b> to attach the selected column on the right of the list</li> </ul>

Context Menus	Description
	<ul style="list-style-type: none"> <li>◦ <b>No Pin:</b> to reset the default position of the column</li> </ul>
<b>Size Column to Fit</b>	Resizes the width of the selected column on the current displayed parameter values.
<b>Size All columns to Fit</b>	Resizes the width of all columns on the current displayed parameter values.
<b>Custom Views</b>	Opens the <b>Custom Views</b> dialog box that lets you create and store the customized views of the panel.
<b>Expand All Rows</b>	Expands all the rows.
<b>Collapse All Rows</b>	Collapses all the expanded rows.
<b>Hide column</b>	Hides the selected column.
<b>Row Selection</b>	<p>Lets you choose how selected features are visualized in the 3D.</p> <ul style="list-style-type: none"> <li>◦ <b>Highlight selected features:</b> highlights the selected feature in the 3D area For layered products, the geometries are highlighted based on the selected representation mode. For example when the <b>Flat</b> mode is selected, only flat geometries are highlighted when a row is selected even if the elevated geometries linked to the same selected feature are displayed.</li> <li>◦ <b>Display only selected features:</b> displays only the selected features hiding all other features in the 3D area. For layered products, the geometries are displayed based on the selected representation mode. For example, when the <b>Flat</b> mode is selected, only flat geometries are displayed in 3D when a row is selected.</li> </ul> <p>By default, the <b>Highlight selected features</b> is selected for all the disciplines except for composites and layered products.</p> <p>Each discipline keeps its row selection saved in the local storage of the navigator.</p> <p>For composite features, if a feature pointing a rosette is selected, the rosette feature is highlighted or displayed. Also, if a composite or a layered product core sample feature is selected, the pointed plies or layers are displayed.</p>

Context Menus	Description
	For the layers of the layered products, instead of simply showing the 3D representation, the overall parent structure might be displayed and the selected layer is highlight in the 3D area.
<b>Attribute Display</b>	<p>Lets you specify whether to display the attributes in rows or columns.</p> <p>Each discipline keeps its attribute list display saved in the local storage of the navigator.</p> <p>By default, the <b>In columns</b> is selected for all the disciplines except for composites and layered products.</p>
<b>Delete Display History</b>	Removes the display history information of each row of the panel.

3. Select an attribute to highlight or display the corresponding 3D representations in the 3D area.

4. Right-click the attribute and select one of the following:

- **Reframe On** : reframes on the selected attribute.
- **Expand All** : expands all children elements of the selected attribute. This contextual command is available only if the selected line has at least one child.
- **Collapse All** : collapses all children elements of the selected attribute. This contextual command is available only if the selected line has at least one child.
- **Export to CSV > All Visible Lines**: exports all the visible technological features of the selected discipline into a CSV file.
- **Export to CSV > Selected Lines**: exports all the selected attributes of the selected discipline into a CSV file.
- **Enable Sorting**: Enables the sorting option ( or ) for each column of the attributes tables. These sorting options sort all the attributes in the alphanumeric order.
- The CSV file is automatically downloaded in the **Download** folder of your computer. The title of the CSV file is the name of the current data in the session followed by an underscore and the associated discipline name.
- The content of the CSV file takes into account the sort, reorder, and filter criteria during export. The current attribute display mode is also considered at export:
  - If the attributes are displayed in rows when the discipline is exported, the CSV file is made of:
    - A first line representing the visible columns (by default, title, name, value and type)
    - A list of lines representing the attributes of the technological features
  - If the attributes are displayed in columns, the exported attribute table is made of:
    - A first line representing all visible columns: title, type (if not filtered) and all visible attribute columns, if any

- A list of lines representing all technological features

**5. Optional:** For a composite data, select the core sample in the 3D area and then the **Show feature additional information**  on the Shortcut Toolbar.

The panel entitled with the name of the selected core sample appears which displays the following information:

- Graphical representation of the plies of the core sample
- The direction cell of all the plies colored with the color of the direction definition provided by the rosette associated to the ply
- Total thickness of the core sample (following the unit specified in the app-specific preferences)
- Number of plies
- List of all the plies and cores of the selected composite core sample under **List of Entities**

When you select another core sample, its information is displayed in the panel.

When one or several entities are selected, the name, direction, and thickness of the selected plies are displayed instead of the general information of the core sample.

When you select an entity from the list, the associated ply geometry is highlighted in the 3D viewer and vice versa.

When a cut piece or ply feature is selected from the attributes table, its draping direction is displayed in the 3D area.

## Opening a 3DShape in a Favorite Context

Optionally, when dropping a 3DShape in the widget, you can automatically open the favorite context attached to it, if any.

Working in a favorite context improves productivity by immediately showing you the required geometry. You do not need to manually open the relevant product.

### Before you begin:

- A favorite context must have been defined in a native app. For example, in 3D Tolerancing & Annotation.
- By default, after dropping a 3DShape, you can decide if you want to open it in a favorite context or not. If you prefer to systematically open favorite contexts, from the **Tools** section of the action bar, select **Always open in favorite context** in the **Favorite section**.

- To open a 3DShape context, do either of the following:
  - Select the 3DShape representation (containing 3D annotations or not), and from the **View** section of the action bar, click **Favorite Context** .

- From the **View** section of the action bar, click **Favorite Context** , and select the 3DShape representation (containing 3D annotations or not).

**Tips:** You can select several representations.

The root product of the favorite context is added, and replaces the representation. 3D annotations stored in the representations are automatically loaded. If a favorite occurrence is defined in the favorite context, annotations are loaded from it. Otherwise, annotations are loaded from the first occurrence to this representation retrieved in the product loaded in the widget.

## Focusing on Selected Objects

This command enables you to focus on objects simultaneously in the 3D and in the product structure.

1. Select an object in the 3D, right-click, and select **Focus On** .

The command reframes on and centers the object in the 2D. You can multiselect objects, in which case a selection navigator will appear at the top of the 2D viewer that enables you to navigate from one selected object to another. It reframes the 2D based on the selected object.

2. Select an object in the 2D, right-click, and select **Focus On** .

The command reframes on and center the object in the 3D. You can multiselect objects, in which case a selection navigator appears at the top of the 3D viewer that enables you to navigate from one selected object to another. It reframes the 3D based on the selected object.

3. **Optional:** In the pager, you can use the following options:

Option	Description
 <b>Previous</b>	Selects the previous object matching the criteria.
 <b>Next</b>	Selects the next object matching the criteria.
 <b>Select all matching items</b>	Selects all the objects matching the criteria.

**Notes:** The **Focus On** command works across all instances of the product structure.

- You can select objects in one application instance and navigate with focus in other application instances where they also appear.
- Because selection sets can be different across application instances, each application instance has independent navigation controls.
- While the command is active, the software does not broadcast selection changes.

## Displaying 3D Tolerancing & Annotation Content

You can view the tolerances, annotations, views, and captures created in 3D Tolerancing & Annotation and xDrawing.

This task shows you how to:

- [Display the 3D Tolerancing & Annotation Content from a Panel](#)
- [Display the 3D Tolerancing & Annotation Content in a Presentation Mode](#)

### Display the 3D Tolerancing & Annotation Content from a Panel

You can check 3D annotations from the **3D Annotations** panel available on the left-hand side of the work area.

1. Open an object with 3D Tolerancing & Annotation or xDrawing content.
  - The **3D Annotations** panel with views and captures is displayed on the left-hand side of the work area.
  - The annotations of the root level appear automatically.
2. **Optional:** Click the thumbnail of the view or capture to display the view with 3D Tolerancing & Annotation content in it.

A blue bar appears on the left-hand side of the thumbnail, to indicate the last displayed view or capture.

**Note:** When the widget width is smaller than 550 pixels, the panel is automatically hidden after displaying a capture or a view.

If several annotation sets are displayed at the same time, a type icon is added in the corresponding collapsible section.

- Product for annotation sets contained in a CATProduct and ARM annotation sets contained in CATParts.
- Product reference for annotation sets contained in 3DShape instantiated under a product reference or a 3DPart.
- Part for regular annotation sets contained in CATParts.
- 3D shape for annotation sets contained in a 3D shape loaded as a root.
- For captures that are not associated with a camera or a reframe area, the viewpoint is reframed on the filtered annotations and on the filtered geometry while displaying these captures. For large structures, some of the parts might not be visible.

**Note:** This functionality is not available for captures created on older versions.

#### Notes:

- The display of the annotations in views and captures is based on their creation level:

<b>Annotations Creation Level</b>	<b>Is a tessellated representation of the text generated?</b>	<b>Remarks</b>
Version 5 V5-6 Release 2015, <b>3DEXPERIENCE R2017x</b> , and later	Yes	These tessellated representations are reused while displaying the annotations, on all devices.
Versions earlier than Version 5 V5-6 Release 2015 and <b>3DEXPERIENCE R2017x</b>	No	If the fonts used for the original annotations are not available on the device used to display them, annotations might be displayed differently from the original ones.

- The uncut elements (excluding geometrical bodies) are displayed when displaying single-plane section captures except the aligned and offset section views.
- When displaying captures associated to 2D clipping profile, the 2D-clip profile is displayed in the 3D area.

When a section is displayed (with or without uncut information) or any view with a 2D clipping profile is displayed, the button with a section view name appears at the upper right of the widget. When you click this button, it removes both the sectioning and the 2D clipping profile representation, if any.

3. Click  next to the annotation set name to display the semantic standard information of the annotations within that annotation set.

The icon appears only if an annotation set has semantic standard information.

The **Semantic Standards** panel appears displaying the name of the annotation set and the details of the standard used (code, year, and its title).

4. **Optional:** Manage the display of information of semantic standards displayed in the **Semantic Standards** panel.

- a. Group the semantic standard information according to the name, standard, or the code.
- b. Right-click on any of the row, except column headers, to expand or collapse all the information within annotation sets.
- c. Right-click the required column and select **Autofit Column Width** to automatically adjust the column width.

d. Click **Show All** to display the information for all the annotation sets loaded. Once clicked, the **Show All** button disappears from the panel.

**Note:** The **Show All** button is not displayed when there is only one annotation set containing the semantic information to display.

##### 5. **Optional:** Change the viewpoint.

**Note:** Changing the viewpoint in this mode does not modify the viewpoint of the view or capture.

##### 6. **Optional:** Select the 3d geometry and, on the shortcut toolbar, select **Show\Hide Annotation Set** to manage the visibility of the annotation set.

You can also select the annotation and, on the shortcut toolbar, select **Show** or **Hide** to manage the visibility of selected annotation.

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## Display the 3D Tolerancing & Annotation Content in a Presentation Mode

You can browse the 3D Tolerancing & Annotation content in views and captures in a presentation mode.

In the presentation mode, you can zoom in/zoom out, or pan in/ pan out on the slide's content but you cannot rotate it.

##### 1. Open an object with views and captures.

- The **3D Annotations** panel with views and captures appears on the left-hand side of the work area.
- A blue bar appears on the left-hand side of the thumbnail to indicate the currently displayed view or capture.

##### 2. From the **Standard** Section of the action bar, click **Presentation Mode** .

##### 3. To display the next view, click > button on the right-hand side of the work area.

You can also use the right or down arrow keys, or right-click in the work area and select **Display Next Item** .

##### 4. to display the previous view, click < button on the left-hand side of the work area.

You can also use the left or up arrow keys, or right-click in the work area and select **Display Previous Item** .

##### 5. To exit the presentation mode, press **Esc** or click on the upper-right corner of the work area.

You can also right-click in the work area and select **Exit** .

## Navigating a 3D Scene

You can start a dedicated scenario to navigate a 3D scene using a first-person view. This provides an immersive experience when navigating models of large proportions such as shops, buildings, parks, or cities.

This task shows you how to:

- Navigate a 3D Scene on Non-Touch Devices with the Mouse
- Navigate a 3D Scene on Touch Devices
- Navigate a 3D Scene with the Context Toolbar
- Navigate a 3D Scene with the Keyboard

### Navigate a 3D Scene on Non-Touch Devices with the Mouse

On nontouch devices, you can use the mouse to navigate the scene.

1. From the [context toolbar](#), click the appropriate navigation command to switch between the Walk and Fly modes, and to adjust some parameters.
2. On the cloud only: Click **Activate/Deactivate Collision**  to activate the Collision mode.
3. Proceed as explained below to navigate the scene.

Task	Action	Available In
Look around	Hold middle-click  + drag the mouse in the direction where you want to go.	Both Walk and Fly modes
Move forward and look in another direction	Hold left-click  + drag the mouse in the direction where you want to look.	Both Walk and Fly Modes
Move backward and look in another direction	Hold right-click  + drag the mouse in the direction where you want to look.	Both Walk and Fly Modes
Rotate	Left-click  + drag the mouse in the direction where you want to look.	Both Walk and Fly Modes
Pan	Middle-click  + drag the mouse in the direction where	Both Walk and Fly Modes

Task	Action	Available In
	you want to go.	
Zoom in or out	Right-click  + drag the mouse up or down.	Both Walk and Fly Modes
Teleport	Double-click.  You teleport to the intersection point.	Both Walk and Fly modes.  You teleport to the intersection point.
Select objects	Click left  .	Both Walk and Fly modes
Eventual contextual action	Click right  .	Both Walk and Fly modes
Change the distance between the avatar and the camera in third-person mode	Middle-click  forward or backward.	Both Walk and Fly modes

## Navigate a 3D Scene on Touch Devices

On touch devices, joysticks are available to navigate the scene.

By default, on a touch device, the touch mode is active and a virtual joystick appears.

1. Tap the appropriate navigation command on the [context toolbar](#) to switch between the Walk and Fly modes, and to adjust some parameters.
2. On the cloud only: Tap **Activate/Deactivate Collision** .
3. Proceed as explained below using the joysticks and the touch gestures to navigate the scene.

Task	Action	Available In
Look around	Move the right joystick left and right.	Both Walk and Fly Modes
Move forward, backward, right, and left	Move the left joystick up, down, left, and right.	Both Walk and Fly modes
Look up and down	Move the right joystick up and down.	Fly Mode only

Task	Action	Available In
Rotate	Move one finger in the direction where you want to rotate.	Both Walk and Fly modes
Pan	Spread (move two fingers farther apart) in the direction where you want to pan.	Both Walk and Fly modes
Zoom in or out	Spread (move two fingers farther apart) to zoom in, or pinch (move two fingers closer together) to zoom out.	Both Walk and Fly Modes
Teleport	Double quick-tap the place where you want to go.  You teleport to the intersection point.	Both Walk and Fly modes.  You teleport to the intersection point.
Select objects	Tap the object that you want to select.	Both Walk and Fly modes
Eventual contextual action	Long hold.	Both Walk and Fly modes
Adjust the eye height	Two-finger drag.  (Move two fingers to the left or right).	Walk mode only

## Navigate a 3D Scene with the Context Toolbar

You can use the shortcut toolbar to navigate the scene.

1. Use the appropriate command.

Task	Action	Available In
Activate or deactivate the touch mode	Tap <b>Activate/Deactivate Touch Mode Controls</b> 	Both Walk and Fly Modes
Activate the Fly mode	Click or tap <b>Fly Through</b> 	N/A
Activate the Walk mode	Click or tap <b>Walk Through</b> 	N/A

Task	Action	Available In
Align the camera's viewpoint parallel to the ground	Click or tap <b>Align Viewpoint Parallel to Ground</b>  .	Fly Mode only
Adjust the speed	Click or tap <b>Adjust Navigation Speed</b>  , and then use the slider to modify the speed.	Both Walk and Fly modes
Change the camera's height relatively to the bounding box of the scene	Use the slider on the left of the shortcut toolbar.	Walk mode only
Switch between a crouching and standing position for the avatar	Tap <b>Crouch Avatar</b>  .	Both Walk and Fly modes
Restore the previous valid position for the avatar	Tap <b>Step Back</b>  .	Both Walk and Fly modes
Activate the collision mode <b>Note:</b> On the cloud only.	Click or tap <b>Activate/Deactivate Collision</b>  .	Walk mode only
Define preferences for the avatar and the navigation <b>Note:</b> Collision options are available on the cloud only.	Click or tap <b>Fly/Walk Options</b>  .	Both Walk and Fly modes

2. Click or tap **Exit Fly/Walk Navigation**  to exit the command.

## Navigate a 3D Scene with the Keyboard

You can use the keyboard to navigate the scene.

1. Proceed as explained below.

Action	Arrow Key	QWERTY	AZERTY
Move forward	<b>Up Arrow</b>	<b>W</b>	<b>Z</b>

Action	Arrow Key	QWERTY	AZERTY
Move backward	<b>Down Arrow</b>	<b>S</b>	<b>S</b>
Move left	<b>Left Arrow</b>	<b>A</b>	<b>Q</b>
Move right	<b>Right Arrow</b>	<b>D</b>	<b>D</b>
Turn head to the left	N/A	<b>K</b>	<b>L</b>
Turn head to the right	N/A	<b>M</b>	<b>J</b>
Look up	N/A	<b>O</b>	<b>I</b>
Look down	N/A	<b>J</b>	<b>K</b>
Increase speed	N/A	<b>+</b>	<b>+</b>
Decrease speed	N/A	<b>-</b>	<b>-</b>
Switch between the first and third-person mode	N/A	<b>T</b>	<b>T</b>
Switch between a crouching and standing position for the avatar	N/A	<b>C</b>	<b>C</b>
Restore the previous valid position for the avatar	N/A	<b>R</b>	<b>R</b>

2. Press **Esc** to exit the command.

## Selecting a Structure Level

This command enables you to dynamically select any parent level of a selected object.

1. Select an object and, from the context bar, select **Level Selector** .
2. Hover over a gradation mark.

The corresponding structure level is highlighted in both the 3D and the tree/graph view.

### 3. Move along the gradation marks and then click a gradation to select a specific level.

The selected level is highlighted in both the 3D and the tree/graph view.

#### Tips:

A filtered structure can be navigated from the 3D using the **Level Selector**. If the structure has been filtered using 6WTags and you have applied colors, then the **Level Selector** indicates the different structure levels using the defined colors. For more information about 6WTags, see [Filtering with 6WTags](#).

When you select the **Colorize** option in the 6WTags:

- The non colored parts are displayed in transparency so you can see the objects that may be hidden behind.
- In case of stand-alone 3D shapes, the parent of the selected 3D shape does not appear in ghost mode to let you select the other child object of this branch.
- You can select the objects that remain in transparency.
- In the **Layers** panel, you can apply the color layer to either:
  - **Leaves**, to colorize only the model's representation, according to the 6WTags color value
  - **Tree expansion**, to colorize the model according to the 2D structure expand state.

#### Notes:

The **Tree expansion** option is available only if both the 2D and 3D widgets are opened.

When you select the **Tree expansion** option , and then close the 2D widget, the layers panel remains open, and the colorization is applied to the last expand state of the structure in the 2D widget.

When you deactivate the colorization, the objects in the 3D widget remain colorized according to the last expand state of the structure in the 2D widget.

## Displaying and Editing the 3D Grid

You can display a 3D grid to help you locate assembly components with precision. By default, the planes of the grid are always located behind the geometry, whatever the viewpoint chosen.

This task shows you how to:

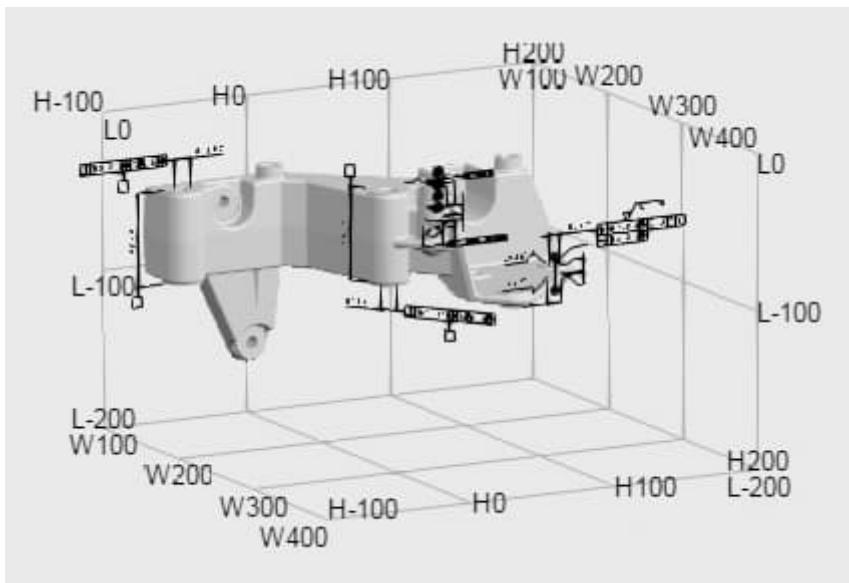
- [Display the 3D Grid](#)
- [Edit the 3D Grid Size Manually](#)
- [Edit the 3D Grid Origin Manually](#)

## Display the 3D Grid

You can display a grid whose main axes are collinear with the root axes.

- From the **Tools** section of the action bar, click **3D Grid** .

A grid appears on three planes that correspond to the global axis of the root.



The grid step is 100 mm.

The labels are composed of a letter followed by the distance to the origin:

- L for labels aligned with the root X axis.
- W for labels aligned with the root Y axis.
- H for labels aligned with the root Z axis

**Tip:** To hide the grid, turn on **3D Grid** .

**Note:** To swap between the visible and invisible spaces, click **Visible/Invisible space** .

You obtain the following result:

- in automatic grid size mode: the 3D grid updates in the invisible space according to the visible geometry of the current space. If no geometry is displayed in the current space, no grid appears.
- in manual grid size mode: the 3D grid appears in the visible and invisible spaces and its size is as defined by the user.

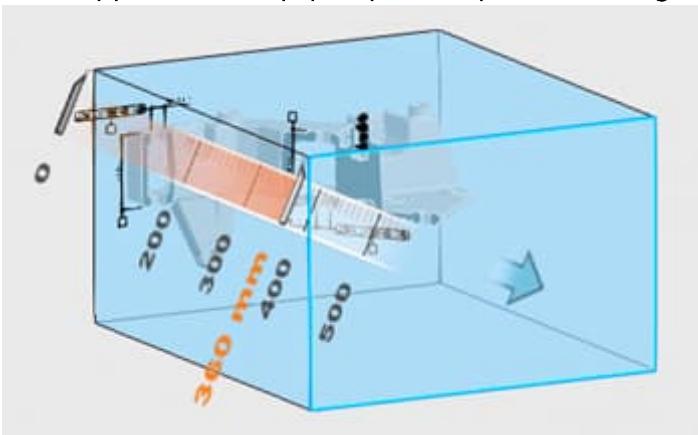
## Edit the 3D Grid Size Manually

By default, the grid fits in the bounding box of the root. To resize the grid manually, you can use a ruler.

1. Click a label.

2. On the context toolbar, click **Edit Grid** .

3. Click and drag a face of the blue bounding box representing the current limits of the grid. A ruler appears to help you precisely define the grid size.



4. To validate, click anywhere in the 3D area.

**Tip:** To revert to a grid that always fits in the bounding box, repeat steps 1 and 2, and then turn off **Automatic Grid Size** .

## Edit the 3D Grid Origin Manually

The grid origin, is displayed at the corner defining the common point of the three planes. You can edit it manually. The planes of the grid may then be displayed in front of the geometry.

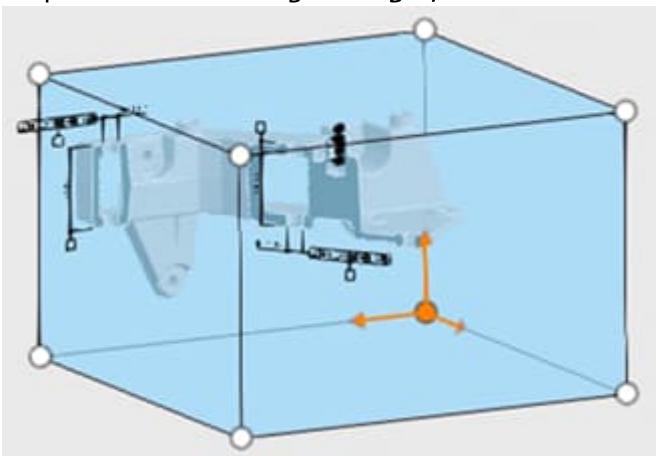
1. Click a label.

2. On the context toolbar, turn off **Edit Grid** .

3. Select the grid origin represented by the orange disk.

4. On the context toolbar, click **Automatic Grid Origin** .

5. To position the new grid origin, select a white corner on the bounding box.



6. To validate, click anywhere in the 3D area.

**Tip:** To revert to an automatic position of the grid origin and therefore ensure that the grid is always displayed behind the geometry, select the

new grid origin and turn on **Automatic Grid Orientation** .

## Refreshing Data

You can refresh the roots contained in the part.

- Click **Refresh** .

**Tip:** You can also refresh data by pressing **F5**.

All roots are removed from the current session and added again with the latest modifications from the **3DEXPERIENCE** platform.

You can also observe the following:

Refreshed Object	Behavior
Annotation set	Annotation sets are loaded automatically. They are activated or deactivated depending of their previous status. Visible views, captures and annotations are displayed, while the other ones stay hidden.
Annotation	If you selected or cleared <b>Convert white to black when retrieving annotation representations</b> after loading the annotations, they turn white or black, depending on the option chosen.
3D grid	<ul style="list-style-type: none"><li>In automatic mode, the grid is resized according to the bounding box of the root after it has been reloaded.</li><li>In manual mode, the grid size remains the same, regardless of any modification of the bounding box of the root after the refresh.</li></ul>

# Work Under a Change Action

Working under a selected change action allows you to track and log most activity, ensuring the traceability of changes made to content.

## In this section:

- About Working Under a Change Action
- Starting Work Under a Change Action
- Stopping Work Under a Change Action
- Suspending Work Under a Change Action
- Resuming Work Under a Change Action
- Working Under Unified Change Control
- Change

## About Working Under a Change Action

You can track and log most activity in your session by working under a change action in the In Work state. This ensures traceability for changes to content. When you choose to work under a change action, changes are tracked and logged in that change action.

You must have one of the following roles to start, suspend, resume, or stop working under a change action:

- Leader role, or an equivalent app-specific role, and a license for Configuration Engineer or Change Manager
- Collaborative Industry Innovator role and assignment as the owner or a contributor to the change action

Objects that are created while working under a change action are change-controlled by default. They are under *strict change control*. All of the child objects created below them are also change-controlled by default. You must make all changes to objects under strict change control using the change action listed in the **Change** tab of the object's properties.

Objects that are created when you are not working under a change action can be enabled for change control by any user with the Leader role or an equivalent app-specific role, and who is also licensed for Change Manager or Configuration Engineer. Once you enable change control for these objects, they are under *unified change control*. You can make changes to an object under unified change control by selecting any change action in the In Work state to work under. After you make the first change to an object that is under unified change control, all subsequent changes to that object must be made under that same change action until the change action is Released.

After you select a change action in the In Work state to work under, most actions that you perform are logged in the **Realized Changes** tab of the change action. The change action under which changes are being logged is displayed in the **Change** tab when you view the object's properties. You can see

under which change action changes to an object are currently being logged by clicking  in the object's properties.

Some actions, such as adding a document to another object as a specification or removing it, are not tracked in the **Realized Changes** tab of the change action.

When you modify or create an unconfigured object as a realized change during a work under session, the strict change-required mode is turned on and all change are managed using the work under CA. If the object is configured, the generic change-required mode is turned on.

When you perform work under:

- For unconfigured objects, strict 'Change Required' is set with the CA that you select.
- For configured objects, generic 'Change Required' is set.

With strict unified change-required applied, only one CA can be applied as a work under change to change an object. Once a CA is assigned to an object, only that CA can be used to change the object

until the object is Released.

You can also activate Change Required on individual instances only for a configured object. The change action under which changes are being logged for instances is visible in the **Change (Instance)** tab when you view the object's properties.

When you activate Change Required on Instance for a configured object:

- An instance is under strict change control by the authoring change action, if you perform the Create, Edit Variant, Extend, Modify, Move, Replace, Evolve Instance, Configured Replace, Configured Move, or Configured Variant Evolution operation.

Parent of the instance is under no change control.

- If you perform the Delete, Cut, or Configured Delete operation on an instance, it does not affect the change control setting.

#### Note:

When you perform Extend Evolution Effectivity operation on an instance of a configured object, the instance is under no change control.

When you activate Change Required on Instance for an unconfigured object:

- An instance is under strict change control by the authoring change action, if you perform the Create, Edit Variant, Extend, Modify, Move, Replace, or Evolve Instance operation.

Parent of the instance is under strict change control.

- If you perform the Delete or Cut operation on an instance, the parent of the instance is under strict change control.

## Starting Work Under a Change Action

You can select a specific change action to work under so that all actions are tracked and logged in the **Realized Changes** tab of that change action.

This task shows you how to:

- Start Working Under a Change Action With the Leader or Equivalent App-Specific Role
- Start Working Under a Change Action With the Collaborative Industry Innovator Role

---

Before you begin: The change action to work under must already exist and be in the In Work state.

## Start Working Under a Change Action With the Leader or Equivalent App-Specific Role

You can use the Work Under bubble to start working under a change action.

Required Access Roles: Leader role, or an equivalent app-specific role, and a license for Configuration Engineer or Change Manager

1. Click .

2. Click **Change Action**.

3. Select a change action to work under.

**Note:** Only change actions that are in the In Work state and that you have access to are listed in the **Select Change Action** dialog box.

4. Click **OK**.

The change action is now listed in the **Work Under** dialog box.

5. Click  to close the **Work Under** dialog box

After an object is created under strict change control, all future changes made to it are logged in the **Realized Changes** tab of the change action being worked under when it is first changed. That change action is listed in the **Change Required** field in the **Change** tab of the object's properties.

In the **Work Under** dialog box, click  **Applicability Expression** to view the applicability expression.

---

## Start Working Under a Change Action With the Collaborative Industry Innovator Role

You can drag and drop a change action from another app to start working under it.

1. Select a change action that you are the owner or are a contributor to in another app.
2. Drag the change action into your app.

3. Drop it in the **Add object in context** area.

4. Click **Yes**.

**Tip:** Click **Do not show this warning again** so that you do not have to click **Yes** each time that you start working under a change action during this session.

After an object is created under strict change control, all future changes made to it are logged in the **Realized Changes** tab of the change action being worked under when it is first changed. That change action is listed in the **Change Required** field in the **Change** tab of the object's properties.

In the **Work Under** dialog box, click  **Applicability Expression** to view the applicability expression.

## Stopping Work Under a Change Action

You can choose to stop working under a specific change action so that actions are no longer tracked and logged.

Required Access Roles: Leader role, or an equivalent app-specific role, and a license for Configuration Engineer or Change Manager, or the Collaborative Industry Innovator role and assignment as the owner or a contributor to the change action



1. Click **CA**.

2. In the **Work Under** dialog box, click **Remove**  in the change action tile.

3. Click  to close the **Work Under** dialog box.

No further actions are logged in that change action.

## Suspending Work Under a Change Action

You can temporarily stop working under a specific change action so that actions are not tracked and logged.

Required Access Roles: Leader role, or an equivalent app-specific role, and a license for Configuration Engineer or Change Manager, or the Collaborative Industry Innovator role and assignment as the owner or a contributor to the change action

1. Click .

2. Click the slider at the bottom of the **Work Under** dialog box so that it slides to the left and is grayed out.

3. Click  to close the **Work Under** dialog box

The change action is still listed in the **Work Under** dialog box, but the grayed out slider indicates that you are not actively working under the change action.

All actions performed are not logged in the **Realized Changes** tab of the selected change action. To restore logging actions, you must resume working under the change action. For more information, see [Resuming Work Under a Change Action](#).

## Resuming Work Under a Change Action

If working under a change action has been suspended, you can resume working under it so that actions are again tracked and logged.

Required Access Roles: Leader role, or an equivalent app-specific role, and a license for Configuration Engineer or Change Manager, or the Collaborative Industry Innovator role and assignment as the owner or a contributor to the change action

1. Click .
2. Click the slider at the bottom of the **Work Under** dialog box so that it slides to the right and is blue.  

3. Click  to close the **Work Under** dialog box.

All actions performed from now on are logged in the **Realized Changes** tab of the selected change

action. You can see under which change action changes to an object are being logged by clicking  in the object's properties.

## Working Under Unified Change Control

You can configure an object not created while working under a change action to make it change controlled so that changes made to it are tracked and logged.

Required Access Roles: Leader role, or an equivalent app-specific role, and a license for Configuration Engineer or Change Manager, or the Collaborative Industry Innovator role and assignment as the owner or a contributor to the change action

Before you begin: The object must have been created while not working under a change action so that it is not automatically change controlled. The change action to work under must already exist and be in the In Work state.

1. Select the object that is not currently under strict change control.
2. Open the information panel of the object.
3. Select the **Change** tab.
4. Click **Change Required** to toggle it to active.

**Note:** Users with the Leader role can toggle the **Change Required** field to deactivate unified change control up until the first change is made to the object while working under a change action.

After the object is enabled for unified change control, all future changes made to it are logged in the **Realized Changes** tab of the change action being worked under when it is first changed. That change action is listed in the **Change Required** field in the **Change** tab of the object's properties.

## Change

The **Changes** tab displays the change control status of the object and any release authorization information resulting from the completion of the associated change action.

Field	Description
<b>Change Required:</b>	If the object was created when you were not working under a change action, it is not under change control. Toggle the slider to the right to enable unified change control, which requires that the object be released using a change action. After you make a change to an object that is under unified change control, all subsequent changes to that object must be made under that same change action, until the change action is Released. If the object was created while you were working under a change action, it is under strict change control by default. It must be released using the change action in effect when it was created. The tile for the change action that controls its release is displayed.
<b>Release Authorization:</b>	If the object has a configuration context, the following message is displayed:  Not Applicable. Data is configured.

Field	Description														
	<p>If the change action controlling the release of the object is not yet Released, the following message is displayed:  Object not released through Change Action</p> <p>If the change action controlling the release of the object is Released, thereby releasing the object, a table showing the change action approval actions is displayed:</p> <table border="1" data-bbox="430 487 1530 1178"> <thead> <tr> <th data-bbox="430 487 698 559">Header</th><th data-bbox="698 487 1530 559">Description</th></tr> </thead> <tbody> <tr> <td data-bbox="430 559 698 692"><b>Order</b></td><td data-bbox="698 559 1530 692">The sequential order of the change action approval tasks.</td></tr> <tr> <td data-bbox="430 692 698 764"><b>Title</b></td><td data-bbox="698 692 1530 764">The title of the change action approval task.</td></tr> <tr> <td data-bbox="430 764 698 836"><b>Approver</b></td><td data-bbox="698 764 1530 836">The name of the change action task approver.</td></tr> <tr> <td data-bbox="430 836 698 908"><b>Status</b></td><td data-bbox="698 836 1530 908">The status of the change action approval task.</td></tr> <tr> <td data-bbox="430 908 698 1041"><b>Comments</b></td><td data-bbox="698 908 1530 1041">The comments regarding the change action approval task.</td></tr> <tr> <td data-bbox="430 1041 698 1178"><b>Approval Date</b></td><td data-bbox="698 1041 1530 1178">The date on which the change action approval task was completed.</td></tr> </tbody> </table>	Header	Description	<b>Order</b>	The sequential order of the change action approval tasks.	<b>Title</b>	The title of the change action approval task.	<b>Approver</b>	The name of the change action task approver.	<b>Status</b>	The status of the change action approval task.	<b>Comments</b>	The comments regarding the change action approval task.	<b>Approval Date</b>	The date on which the change action approval task was completed.
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## Measuring Items

Measuring items or the distance between items is usually part of the review process.

### In this section:

- About Measurements
- About Pre-Selection and Selection Behavior
- About Measuring Angles
- Measuring Items
- Measuring 2D Elements
- Customizing Measurements

## About Measurements

Measuring (items, between items, or thicknesses) is usually part of the review process. There are a few things you need to know about measurements.

This page discusses:

- [General Information](#)
- [About Measurement Accuracy](#)
- [The Specific Case of Measurements Based on Section Curves](#)

### General Information

Measurements, independently of their type, have a few things in common.

- You can choose units for measuring various physical quantities in the **Preferences** dialog box.
- You can create several measurements, and save them in a markup.
- You can create the non-persistent measure without removing the existing non-persistent measures.

To remove the existing measure while creating new measures, you can select the **Remove previous non-persistent measure** check box available in the app specific preferences. For more information, see [Customizing App-specific Preferences](#).

- Measurements are not associative. They are not recomputed if the geometry changes.
- Whenever you click , apply a filter or load a material, the widget is refreshed. In such cases, a measure points to some parts that are no longer present after the refresh.
- For measures, Shortcut Menu is not available.
- For the physics simulation data, you can measure only the distance between two selected points.
- A default measurement type is provided based on the selected objects. The alternative measurement types and representations are available for selection in the Shortcut Toolbar during the creation of the measurement. After the measurement is created, only the representation can be changed.

For more information on measurements that can be created for various combinations of geometries selected, see [Reference Information: Multiselection for Measurements](#).

### About Measurement Accuracy

The accuracy of a measurement depends on the accuracy of the underlying geometry (that is, the geometry upon which the measurement is based).

#### Understanding How Accuracy Works

##### 3D Accuracy (Sag)

The value used to tessellate geometrical data is known 3D accuracy, or sag.

3D accuracy influences the quality of the 3D geometry, and may therefore also influence the accuracy of a measurement.

## Exact Geometry vs. Approximate Geometry

Exact geometry contains canonical information (line, circle, plane, cylinder, cone, and sphere), whereas approximate geometry does not contain any canonical information.

## Measurement Accuracy

The accuracy of a measurement depends on the 3D accuracy, or on the sag, of the underlying geometry.

If the result is exact, the accuracy value is 0.001mm. If the result is approximate, the accuracy value is twice the sag value.

## What You Should Remember

- A measurement is exact only when all selected geometries are exact. If at least one of the selected geometries is approximate, then the measurement is approximate.
- Once the measurement is created, you can display the accuracy mode by selecting the measurement and clicking **Display More**  in the Shortcut Toolbar.

---

## The Specific Case of Measurements Based on Section Curves

When you cut through objects using a section plane, section curves are displayed. When creating measurements based on section curves, you need to keep a few things in mind.

- Section curves are considered as approximate geometries. Therefore, measurements based on section curves are approximate.
- Measurement based on section curves are not associative. If you move the section plane, section curves are modified, but measurements are not modified accordingly.
- You can only create measurements on section curves, not on the cut area enclosed by the section curve.

## About Pre-Selection and Selection Behavior

This page contains the information required for measuring geometries in an assembly with large number of sub-elements.

This page discusses:

- Pre-Selection Behavior
- Selection Behavior

- Object-Action mode

A leaf element is a sub-element that does not have any further sub-elements.

While measuring the geometries of a leaf element, irrespective of the selected filter, the behavior of the measure commands before and at the time of selection of the feature is as follows:

## Pre-Selection Behavior

If the simplified geometry of an element is not loaded, when you hover over the element for some time, the respective simplified geometry is loaded. You can highlight or select the required geometry based on the selected filter. Once the simplified geometry representation of an element is loaded, it is kept while the measure command is active.

After the measurement is created, the simplified geometry representation can be unloaded and replaced by the 3D thumbnail, if required.

---

## Selection Behavior

Whenever a selection is done with pre-selection not lasting for enough time or no pre-selection at all (in the case of touch interfaces), the respective simplified geometry is loaded.

After the simplified geometry representation is loaded:

- If the selected geometry does not correspond to the selected filter:
  - If the Point filter is selected, the measure is created for the selected point.
  - If any other filter is selected, the measurement is not created and you must select a geometry corresponding to the selected filter.
- After the selected geometry is loaded, the simplified geometry representation is kept until the measure operation is in process.

If the simplified geometry representation of the selected element cannot be loaded:

- If the selected element is loaded but its simplified geometry representation is not loaded, the 3D thumbnail representation is considered and the measurement is created.
- If the selected geometry corresponds to the selected filter, a measurement is created.
- If the selected geometry does not correspond to the selected filter:
  - If the Point filter is selected, the measure is created for the selected point.
  - If any other filter is selected, the selected element is ignored and a warning is displayed.

When the product filter is selected and the measurement is computed, a level selector highlighting the selected product level is displayed. If the selected product is fully loaded, the measurement is

updated according to the new level.

If the selected product is not fully loaded, the measurement is not updated and is displayed with less opacity.

The level selector is updated according to the new selected element.

---

## Object-Action mode

This section explains how to create measures by selecting the elements before selecting the command.

- If you select the elements to measure before the command, the selected elements determine the measurement type. The measure selection filters are not available.
- The simplified geometry representation of the selected elements must be loaded. Only the elements for which the simplified geometry representation is loaded are taken into account when creating measurements for pre-selected elements. If the simplified geometry representation is not loaded, such elements are deselected.
- If just one element is selected, the measurement is created accordingly.
- The following applies for multi-selected elements:
  - If two elements are selected, the measure between result is created.
  - If three points are selected, the angle by three points measure is created.
  - If more than three elements (say N elements) are selected, N-1 chained measure between results are created.  
**Note:** In this case, if an arc or circle, or the cylinder or cone geometries are selected, then the center points or axes are taken into account for the measure.
- You can control whether or not the 3D geometries inside a 3D part or a 3D representation and the 2D geometries from a view can be selected.

## About Measuring Angles

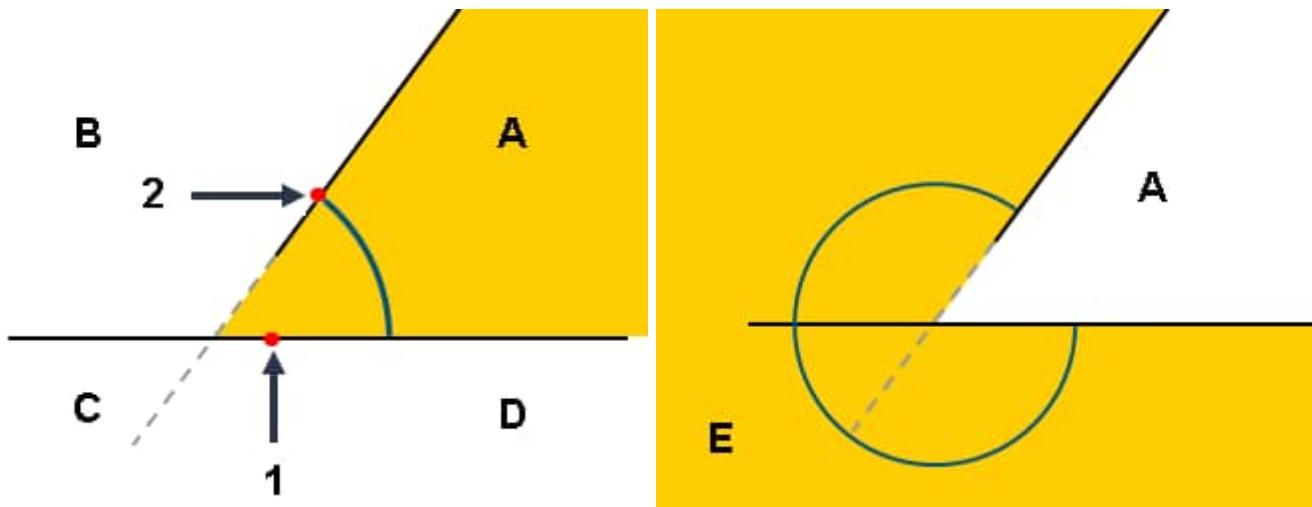
This page contains the information required for measuring angles and managing their representations.

This page discusses:

- [About Sectors](#)
- [About Measure Angle Representation](#)

## About Sectors

Sectors are defined in the counterclockwise direction.



The following table explains the sectors shown in the above figures.

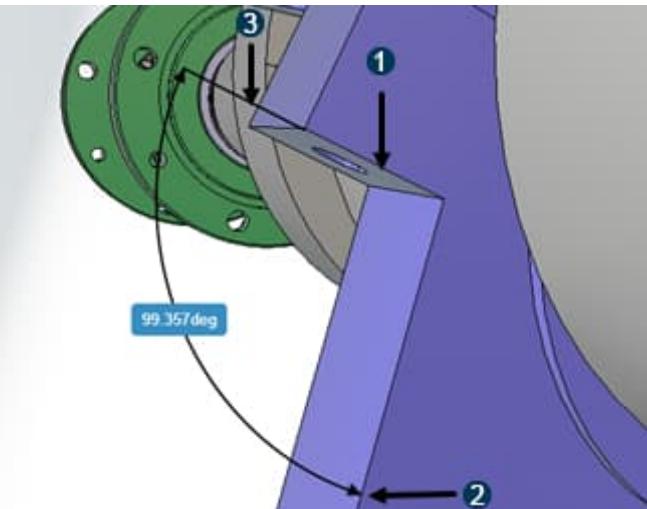
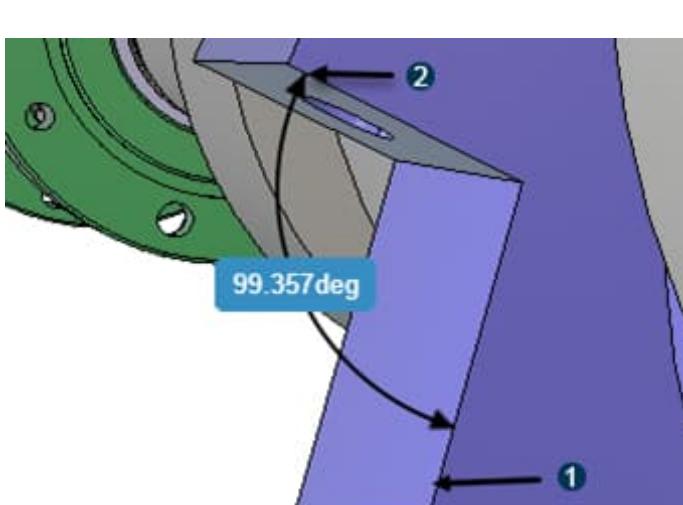
1	First selection
2	Second selection
A	Sector 1: It is the minimum angle between two selected geometries. For angle by 3 points, it is the minimum angle defined by the three selected points.
B	Sector 2: It is the next sector in the counterclockwise direction after sector 1.
C	Sector 3: It is the next sector in the counterclockwise direction after sector 2.
D	Sector 4: It is the next sector in the counterclockwise direction after sector 3.
E	Complementary sector: It is the sector defined by the complementary angle for a given sector.

At the time creating an angle measurement, you can choose the angle sector you want to measure and display. However, once you validate a measurement, you can change your selection only to the opposite sector by moving the measure label.

## About Measure Angle Representation

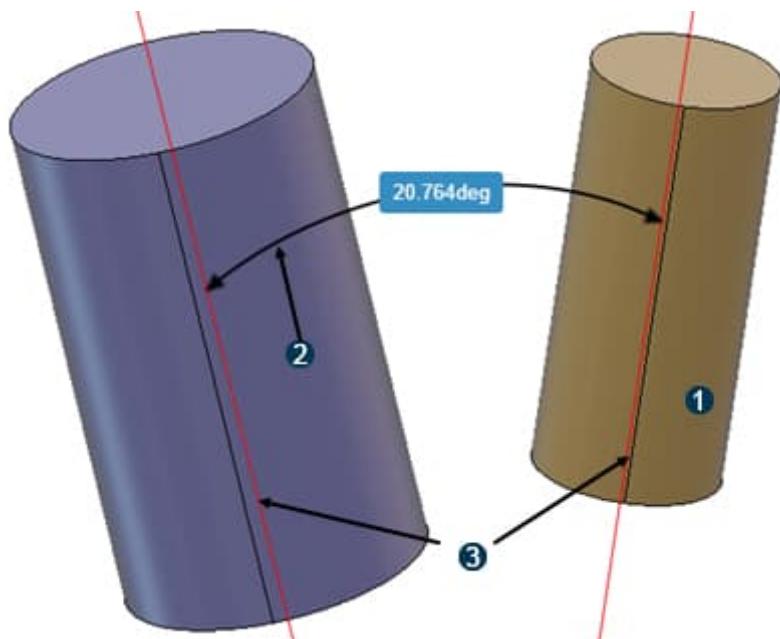
### About the Arc Representation

An arc represents the measure of an angle between two selected elements. The arc has arrow heads at its extremities. The arc center is at the vertex of the measured angle. The radius of the arc is equal to the distance between the vertex of the angle and the point on the second element selected by you. You can later change the arc radius by dragging it. When the extremities of this arc are outside the limits of the selected geometries, extension lines are added in the prolongation.



<b>①</b>	First selection
<b>②</b>	Second selection
<b>③</b>	Extension line

If you are measuring angles between cylinders or cones, the angle is measured with respect to their axis. In such cases, the arc is calculated as follows: A point on the second geometry selected by you is projected in the sight direction on the plane defined by the axes of the two elements. This projected point is used to define the radius of the arc that represents the measure.



<b>①</b>	First selection
<b>②</b>	Second selection
<b>③</b>	Axes of the cylinders

## About the Measure Label

The measure label is displayed at the midpoint of the arc, when you create the measure. You can also change the arc radius by dragging it. When you drag the measure label:

- till the middle of the adjacent sector, the arc is extended to the label but the arrow heads remain inside the chosen sector.
- beyond the middle of the adjacent sector, the arc is displayed in the sector opposite to the selected sector with the arrow heads at its extremities. It is extended to the label in the adjacent sector.

## About Measure Angle between Items

You can measure angles between two lines, two surfaces, two axes, between a line and a surface or by selecting 3 points. In such cases, the measure is represented as follows:

Measure between	Description
Two lines	For coplaner lines, the measure is represented in the plane defined by the selected lines. For non-coplaner lines, the measure is represented in the plane containing the second selection and which is in the direction of the first selection.
Two surfaces	The measure is represented in the plane normal to both the selected surfaces, and which includes the point selected on the second selection.
A surface and a line	The measure is represented in the plane orthogonal to the selected plane containing the selected line.
Three points	The measure is represented in the plane defined by the 3 selected points.

**Note:** Extension lines and dotted lines are used to join the selected elements and the measure representation, if necessary.

## Measuring Items

You can measure items such as the position of a point, the length of a curve or a line, the radius of a circle, or the volume of a part. You can also measure the distance between items such as the minimum distance between two surfaces, or the angle between a line and a plane.

This task shows you how to:

- Measure Items
- Measure between Items

## Measure Items

You can measure various things such as the position, length, area, or volume of an item.

1. From the section of the action bar, click **Measure** .
- A filter bar appears.
2. **Optional:** To customize your measure, choose from the options available in the filter bar.

Filters let you filter the geometry to select. For example, if you select the  **Line/Curve** filter, you can select only lines.

Option	Description
 <b>Point</b>	Displays the X, Y, and Z coordinates of the selected point. You can select only points (either an existing point on the model, or any point on the model you click ).
 <b>Center/Point</b>	Displays the coordinates of the center point of a circle or a sphere. You can select only center points.
 <b>Canonic geometries</b>	Displays the measurements for all canonical geometries such as point, line, circle, arc, plane, cone, cylinder, and sphere.
 <b>Product</b>	Displays the volume of the selected product or part (as if contained in a bounding box). You can select only whole products or whole parts. A level selector is available to select subparts or subproducts at a specific level of the root product.

### Notes:

- **Point** and **Product** are exclusive options that cannot be combined (only cumulative options can be combined.) All other options are cumulative options that can be combined.
- The options you select are preserved for next time you start the **Measure** command.

- When you select an exclusive option, the previously selected cumulative options remain highlighted but are not active. If you then deactivate the exclusive option, the previously selected cumulative options are active again.
- Curves and surfaces can be selected without selecting any of the filter options.

### 3. Click the item you want to measure.

Click-able items are highlighted when you hover over them, based on the options selected in the filter bar.



### 4. To measure another item, click **Repeat** , and select the item. This removes the previous measurement.

### 5. Click **OK** to validate the measurement.

The last-created measurement remains displayed. You can drag it to another position. You can also customize its appearance using the Shortcut Toolbar that appears when you select the measurement.

---

## Measure between Items

You can measure the distance or the angle between two items, and, optionally, you can make special measurements, such as multiple measures, chain measures, or stack measures. You can also measure angle by three points, and circle by three points.

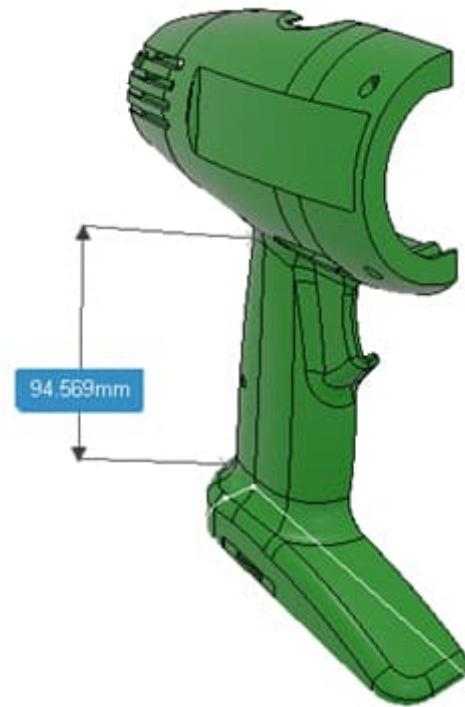
### 1. From the section of the action bar, click **Measure** .

### 2. **Optional:** To customize your measure, choose from the options available in the filter bar.

For more on these options, see [Measure Items](#).

3. Click the first, and then the second item between which you want to measure.

The measurement is created and further options appear.



4. **Optional:** Choose from the options available (this depends on the options you chose in the filter bar, and on the number and type of items you clicked in the previous step.)

Option	Description
<span data-bbox="176 1151 225 1172">+++</span> <b>Multiple measures</b>	Displays the distance or angle between A and B, then C and D, etc. Each measurement is independent of the preceding one.
<span data-bbox="176 1362 225 1383">+++</span> <b>Chain measures</b>	Displays the distance or angle between A B, then between B and C, then between C and D, etc.
<span data-bbox="176 1552 225 1573">→</span> <b>Stack measures</b>	Displays the distance or angle between A and B, and between A and C, and between A and D, etc.
<span data-bbox="176 1742 225 1763">&lt;</span> <b>Measure 3 Points</b>	Displays the value of the angle made by three selected points, or the radius/diameter of the circle passing through the selected points. <b>Note:</b> This option is available only if three points are selected.

Option	Description

5. **Optional:** If you have chosen any of the options in the previous step, click the third item (C) to continue the measurement.

6. **Optional:** If you chose **Multiple measures**, **Chain measures** or **Stack measures**, click C, then D, then E, etc. as required.

**Note:** The behavior of previously created measures depends on the state of **Keep previous measures**.

By default, **Keep previous measures** is active, and previous measures are kept when creating a new one.

To remove the previous measure (that is, the last-created one) every time that you create a measure, switch **Keep previous measures** off. This only impacts the measures created after switching the option off (that is, all existing measures are kept).

You can turn **Keep previous measures** on or off when the icon appears. Once you modify the state of **Keep previous measures**, it is kept for the length of the session.

The **Keep previous measures** option must be off to measure the angle and arc using three points selection.

7. **Optional:** If you are measuring an angle, do the following to change the sector:

a. Right-click the measure or the geometry.

The current sector is highlighted with a blue bar on the left in the shortcut menu.

b. From the shortcut menu, select the required sector.

c. Alternatively, you can move the measure label to change the sector.

**Note:** This option is only available before validating the measure.

8. Click **OK**  to validate the measurement.

The last-created measurement remains displayed. You can drag it to another position. You can also customize its appearance using the Shortcut Toolbar that appears when you select the measurement.

## Measuring 2D Elements

You can measure lines, curves, arcs, or circles in drawings, and in DXF or DWG files.

1. From the section of the action bar, click **Measure** .

2. Select the elements to measure.

The elements can be of the following types: lines, curves, arcs, or circles.

**Notes:**

- The scale applied to a view in the drawing is considered for measurements. You can create measurements in different views but you cannot create measurements between geometries from different views.
- If the elements are selected before selecting the command, and if the selected elements are from different views, the pre-selection is canceled.

3. **Optional:** Click **Multiple measures**  or **Chain measures**  or **Stack measures**  to create multiple measures in series or parallel combination.

**Notes:**

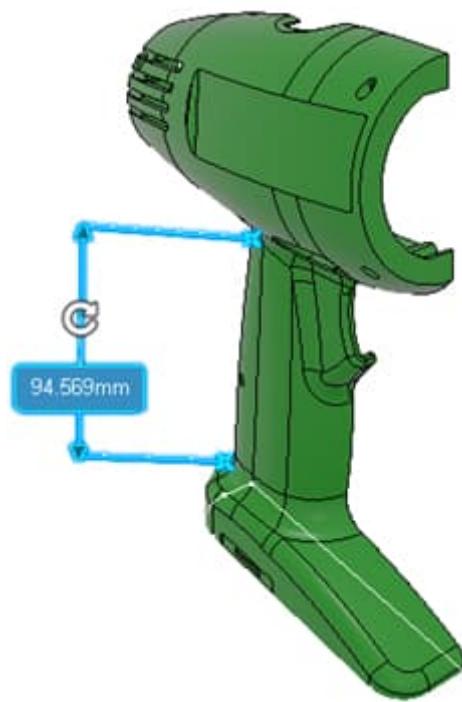
- These options are available if more than one element is selected.
- If the elements are selected before selecting the command, by default, chain measures are created.
- If the command is selected first, you can select the option of your choice.

## Customizing Measurements

After you have created a measurement, you can reposition it, and you can customize the appearance of its label.

**Note:** Customization choices are not persistent. Therefore, every time you create a measurement, the default appearance is used.

1. Select the measurement.



2. To position the measurement, move its label, its extension lines, or its dimension lines.

**Important:** For the following cases, the selected elements define the direction of the extension lines and you cannot change this direction:

- If you measure the distance between two parallel axes, the extension lines are aligned to the axes of the selected elements.
- If you measure the distance between two nonparallel axes or finite lines, the extension lines' direction is defined by the first selected element.
- If you measure the distance between two elements and the dimension line is perpendicular to a normal to the selected element or the selected lines or axes, the direction of the extension line is defined by a normal and the viewing direction.

For different geometries, the following normals are considered:

- For a point on a surface, the normal to the surface at the selected point is considered.
- For an arc or circle's center point, the normal to the plane of the arc/circle at the center point is considered.
- For an arc or a circle, the normal to the plane defined on the arc or the circle at the point from where the minimum distance is found, is considered.
- In the above case if the extensions lines are close to the viewing direction, the extension lines are perpendicular to the axes or the normal.
- If you are measuring the distance between two parallel planes and if the dimension line is orthogonal to both the planes, the direction of the extension lines is defined by the dimension line and the viewing direction.

### 3. Choose from the options available in the Shortcut Toolbar.

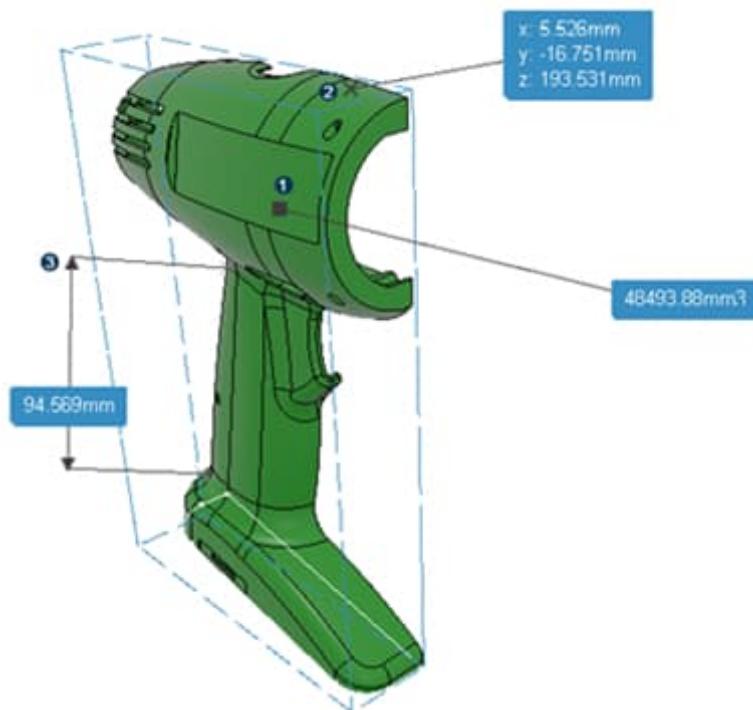
Option	Description
	<p>Switches between the radius display and the diameter display.</p> <p>The selection is saved for the future measurements.</p>
	<p>Applies the selected style to measurement.</p> <p>You can select one of the following styles:</p> <ul style="list-style-type: none"> <li>◦  : default</li> <li>◦  : light</li> <li>◦  : measure</li> <li>◦  : note</li> </ul>

Option	Description
	<ul style="list-style-type: none"> <li>○  : validate</li> <li>○  : warning</li> <li>○  : danger</li> </ul>
	Increases the font size in the label.
	Decreases the font size in the label.
	Lets you customize the graphical properties. This option is only available after the measure is created.
	Lets you remove the created measurements.

4. Right-click the measurement and select the following options:

- **Leader End Type:** select one of the leader end types.
- **Point Type:** select one of the point types. These options changes the appearance of the point that is being measured.
- **Extremity Type:** select one of the extremity types.

The following image shows examples of a leader end, a point, and an extremity:



Where,

Icon	Type
①	Leader end
②	Point
③	Extremity

These options are available depending on the type of measurement.

5. Right-click the measurement and select **Properties** . In the **Properties**, customize the appearance of the measurement result representation using the following options:
  - **Main value display:** Select this option if you want to display only with the actual measured value. You can also select the required options from **Measure type** and **Unit** to customize the measurement result display.  
**Note:** If the result is in approximate mode, you can select **Approximated value symbol** to display ~ before the measurement value.
  - **Extended display:** Select this option to display more information about the measurement. Measure type and units are always displayed in this mode, irrespective of the selection made in the **Main value display**. Select the available check boxes to customize the additional results you want to display.

When you are editing the **Properties**  of multiple measures together, only the check boxes that are common for all the selected measures are displayed. In this case, the check boxes are displayed as undefined, if you already have selected them. **Approximated value symbol** is also displayed as undefined when you select multiple measure if all the selected measures are not approximate.

## Working with Clipping Tool

This section provides the information required for clipping objects within a defined region of interest.

### In this section:

- [About Clipping Tool](#)
- [Using the Clipping Tool](#)
- [Customizing Clipping](#)

## About Clipping Tool

This topic describes how to use the clipping tool.

This page discusses:

- Terminology
- Clipping Modes
- Clipping in Slides

## Terminology

This section explains the important terms used in the clipping operation.

### Clipping

The method that enables or disables the visibility of the objects outside of the defined Region of Interest (ROI). The ROI is defined with the help of planes called clipping planes.

### Contours

The intersection curves of the objects and the clipping planes.

### Capping

The filled areas between the closed loop contours.

### Bounding Box

The smallest box that encloses all the objects in a product. It is oriented according to the main axes of the product.

### Clipping Box

The box made of six planes and used to define the ROI for clipping.

### Front Plane

The position of this plane remains unchanged when switching from one clipping mode to another. For section mode, it is the clipping plane itself.

### Near Plane

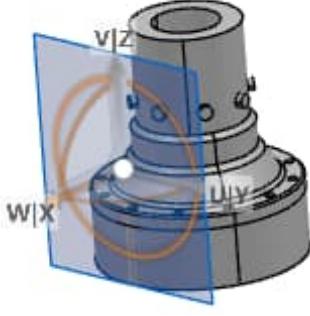
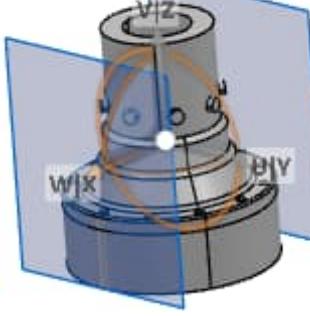
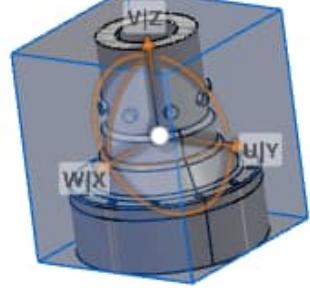
The plane parallel to a clipping plane and tangent to the assembly bounding sphere, which is the nearest to the viewing position.

### Far Plane

The plane parallel to a clipping plane and tangent to the assembly bounding sphere, which is the farthest to the viewing position.

## Clipping Modes

You can choose between three clipping modes: clipping section, clipping slice, and clipping box.

Attribute	Clipping Section	Clipping Slice	Clipping Box
Definition	The clipping is limited by one plane. Only the elements located on one side of this plane are displayed.  	The clipping is limited by two parallel planes. Only the elements located between these two planes are displayed.  	The clipping is limited by a box. Only the elements located inside this box are displayed.  
Clipping center	At the intersection of the diagonals of the clipping plane.	At the point located at the middle of the line going through the centers of both planes.	At the intersection of all the lines going through the center of all opposite planes.
Clipping direction	Defined by the W-axis (normal) of the front clipping plane. All the elements located on the side of the plane defined by the clipping direction are rendered.	Defined by the W-axis (normal) of the front clipping plane. All the elements located on the side of the plane in the opposite direction of this axis are rendered (in the limit of the other planes).	Defined by the W-axis (normal) of the front clipping plane. All the elements located on the side of the plane in the opposite direction of this axis are rendered (in the limit of the other planes).

Attribute	Clipping Section	Clipping Slice	Clipping Box
Clipping representation	<p>One plane represents the clipping.</p> <p>The size of this plane is defined by the intersection of the clipping plane with the bounding box of the whole geometry. Its size can be extended depending on the plane center position, so that the plane covers the whole geometry.</p>	<p>Two parallel planes represent the clipping.</p> <p>Both planes are equal in size. The size is defined by the intersection of one of the clipping planes with the bounding box so that both planes cover the whole geometry.</p>	<p>The bounding box represents the clipping.</p> <p>The size of the bounding box does not change but its direction follows 3D robot axis directions.</p>
If you select one or more geometric elements before creating a clipping	<p>They are used to define the clipping plane. Based on the type of preselected geometry, more geometry selections might be required. Otherwise, the clipping plane goes through the center of the whole geometry. The default direction of the normal of the clipping plane is as specified in the <b>Preferences</b>.</p>	<p>The parts corresponding to them define the bounding box. The slice planes are the two planes of this bounding box.</p> <p>Otherwise, the bounding box is the one from the whole assembly.</p>	<p>The clipping box is defined according to the same definition of the bounding box as for slice mode.</p>

You can switch from one clipping mode to any other mode. When you switch the modes, the front clipping plane position and size remain unchanged. Previous offset or depth for slice and box representation are restored if corresponding modes were previously activated. If not, the default offset or depth of the box is defined as below:

- From section mode to slice: the back clipping plane of the slice is positioned tangent to the bounding sphere of the model, ensuring all geometry behind the front clipping plane is still displayed by default.
- From section mode to box: depth is defined similarly as the offset for slice. Width and height are defined from the size of the front clipping plane.

- From slice to box mode and vice versa: depth and offset have the same value. Box width and height are defined from the size of the front clipping plane.

## Clipping in Slides

Clipping parameters are stored inside slides of a markup. There can be only one clipping object per slide or format. When you create a new slide, it is created without any clipping object. The exceptions are:

- You create a slide from a format, which already has a clipping.
- A slide is created when you are creating a markup and a nonpersistent clipping is active. Then, the slide includes a persistent clipping object with the same properties.

You can delete, copy, and paste clippings from slides.

- When you delete a persistent clipping, it is removed from the slide or format.
- You can also copy and paste it on a slide or format.
  - You can paste a clipping on a slide or a format that already contains a clipping object. In such case, you need to confirm that you want to overwrite it with the new clipping or to cancel the operation.
  - If you use **Paste Special**, the definition of the copied clipping object is directly applied.

Slide thumbnail is saved and updated automatically, when you create a clipping and stop editing it. It is not saved and updated, when you are editing a clipping, unless you save manually.

When you apply a slide that contains a clipping object, it automatically activates the clipping, even if **Activate Clipping** was not turned on before.

## Using the Clipping Tool

You can cut through objects using a section plane. This lets you see details inside the object, and access items to measure them.

This task shows you how to:

- Create Clippings
- Activate and Edit Clippings
- Position Clippings

Before you begin:

- Open a 3D part or an assembly.

- Specify the clipping **Preferences**. For more information, see [Clipping Preferences](#).

## Create Clippings

1. From the **Markup** section of the action bar, click **Activate Clipping** .

**Note:** You can also select the objects to clip before clicking the command.

2. From the Shortcut Toolbar, select one of the following clipping modes.

- **Clip by a section** 
- **Clip by a slice** 
- **Clip by a box** 

By default, **Clip by a section** mode is selected. The clipping mode that you select in this session is used as a default clipping mode in the next session.

The clipping planes mark the clipping boundaries depending on the selected mode.

3. To edit the clipping properties, right-click the 3D object, clipping section, slice, or box and select **Properties** .

For more information, see [Customizing Clipping](#).

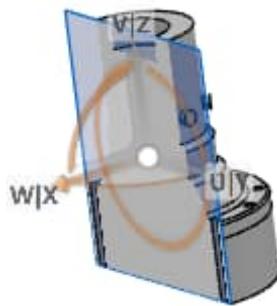
4. To validate the clipping, do one of the following:

- Click anywhere in the 3D area.
- Press **Esc**.
- Right-click anywhere in the 3D area and select **Exit Clipping Edition**.
- Click again **Activate Clipping**  or **Edit Clipping** .

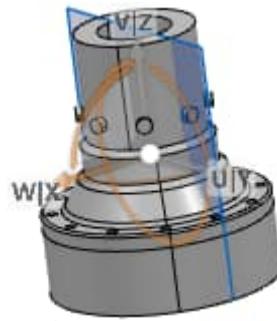
## Activate and Edit Clippings

You can edit an existing clipping after activating it.

1. To activate an existing clipping, click **Activate Clipping**  on the action bar, and click it again to deactivate it.
  - After activation, the clipped object is displayed. The clipping section, slice, or box is also displayed if you specified it in **Preferences**. For more information, see [Clipping Preferences](#).



- After deactivation, clipping section, slice, or box disappear and the whole object is displayed.



**Important:** The clipping parameters do not change when you activate or deactivate clipping.

**Tip:** You can also directly click **Edit Clipping**  to activate it.

2. To edit the clipping definition, do one of the following:

- Click **Edit Clipping**  on the action bar.
- Right-click anywhere in the 3D area, and select **Edit Clipping**  from the shortcut menu.
- Right-click on the clipping section, slice, or box if they are displayed. Select **Edit Clipping**  on the shortcut toolbar.
- If the contour is computed, select the contour and click **Edit Clipping**  on the shortcut toolbar.

The clipping section, slice, or box and the selection filter are displayed.

3. Edit the clipping definition as required. For more information, see [Position Clippings](#).

4. Validate the clipping.

## Position Clippings

This section describes how to position the clipping following its creation.

Before you begin: Activate the clipping and start the editing mode.

1. To position your section plane, choose from the options available in the filter bar.

Filters let you position the section by snapping the **Robot** on the respective geometry type.

Option	Description
<b>Point</b> 	The <b>Robot</b> is snapped on a point and the axes of the <b>Robot</b> are mapped to the reference axes of the root product.
<b>Center</b> 	The <b>Robot</b> is snapped on a center of a circle and the axes of the <b>Robot</b> are mapped to the reference axes of the root product.
<b>Axis System</b> 	The <b>Robot</b> is snapped on an axis system.
<b>Line</b> 	The <b>Robot</b> is snapped on a line. The origin is the point on the line where it is snapped and the w-axis lies on the line.
<b>Plane</b> 	The <b>Robot</b> is snapped on a planar surface. The origin is the point where it is snapped and the w-axis is normal to the planar surface.
<b>Cylinder/Cone</b> 	The <b>Robot</b> is snapped on a cylindrical or conical surface. The origin is the intersection point between the axis of the cylinder or cone and the line normal to this axis, passing through the point where the <b>Robot</b> is snapped.
<b>Surface</b> 	The <b>Robot</b> is snapped on any surface. The origin is the point where it is snapped and the w-axis is the line normal to the surface.
<b>Product</b> 	The <b>Robot</b> is snapped on the plane formed by the two of the main axes, closest to the viewer plane. The <b>Robot</b> is positioned at the center of the product bounding box.

**Note:** For all the filters except the surface and product filter, the high-quality representation of the selected geometry is loaded in the session.

For line, surface, cylinder, cone, plane, and product, a temporary representation is displayed while snapping the **Robot**.

2. To precisely position the plane on a specific surface of the object, use the **Robot** and the ruler.

- You can manually position the origin of the ruler on a surface.
- To rotate the plane, move the arc handle of the **Robot**.
- You can enter the required value on the ruler to position the section plane precisely.  
**Note:** You can use . or , as a decimal separator based on your browser language.
- In 3DPlay Web App, the ruler is displayed with less opacity.

Areas that you can manipulate are highlighted, when you hover your mouse over them.

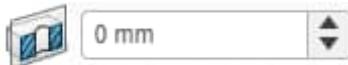
3. To translate the section plane, do one of the following:

- Drag its surface.
- Drag the **Robot** handles and enter the required value on the rule.
- Drag the slider to translate the section plane by the specified increment value. For more information about specifying the increment value, see [Clipping Preferences](#).



**Note:** The possible number of translations is calculated by dividing the distance between the near and far plane by the increment value. You can specify any value as the increment value.

- If the number of possible translations is smaller than or equals<= 1, only the near and far plane positions are possible.
- If the possible number of translations is between 1 and 2, you can move the section plane to the near plane, far plane, or to a plane which is located between the near and far planes.
- You can select the **Detailed View** option to enter the precise position of the section plane. Enter the precise position within the range defined by the distance between the near and far plane. Otherwise, the closest limit value is considered.



**Notes:** When the W-axis of the section plane is aligned with one of the axes of the global axis system, the origin is the same as that of the global axis system. If after manipulation, the W-axis of the section plane is not aligned with one of the axes of the global axis system, the origin is the same as that of the origin of the **Robot**. In this case, the origin is reset every time you start editing the section plane.

4. Click **Section Secondary Viewer**  in the Shortcut Toolbar and use the options available on the left side of the viewer to:

- Print the content of the viewer.
- Reframe the content of the viewer.
- Rotate the content of the viewer by 90° clockwise.
- Rotate the content of the viewer by 90° counterclockwise.
- Flip the content horizontally.

- Flip the content vertically.
- Switch the background color to gray.

You can also resize the viewer, as well as zoom and pan the content.

**Important:** This command is only available for persistent clipping in section plane mode and when the contour computation is enabled.

The computed contour is displayed.

5. To change the viewpoint to display the section parallel to the screen, click **Align Viewpoint** in the shortcut menu.
6. Select one of the following options from the Shortcut Toolbar to control the clipping:

<b>Option</b>	<b>Description</b>
<b>Position clipping along X axis</b> 	Aligns the front plane normal to x-axis without changing the clipping center.
<b>Position clipping along Y axis</b> 	Aligns the front plane normal to y-axis without changing the clipping center.
<b>Position clipping along Z axis</b> 	Aligns the front plane normal to z-axis without changing the clipping center.
<b>Position the Clipping by Selecting Geometries</b> 	Positions the plane based on the selected geometries. The plane is positioned such that its normal is aligned to the normal of the plane defined by the selected geometries that is closest to the opposite viewing direction. The section plane is resized to fit inside the bounding box of the root product. For more information, see <a href="#">Geometry Selection for Plane Positioning</a> .
<b>Invert clipping</b> 	Inverts the normal direction of the clipping.

7. From the Shortcut Toolbar, select one of the following clipping definition options:

Option	Description
<b>Resize from selected objects</b> (  ,  ,  )	<p>Lets you edit the clipping as if it is newly created.</p> <p>a. Select an object. Instead of the bounding box of the complete 3D part or assembly, only the bounding box of the selected object is considered for clipping.</p> <div style="border: 1px solid #ccc; padding: 5px;"> <p><b>Tip:</b> You can select an object from another widget such as Product Structure Editor.</p> </div> <p>b. To validate the selection, click <b>OK</b> in the validation panel. This modifies the clipping position and dimensions considering the selected parts and products.</p>
<b>Reset Clipping</b> (  ,  ,  )	<p>Lets you reset the clipping to the default size and position, covering all objects in the session. The position stays the same as if the command is launched without selecting any objects, depending on the selected clipping mode.</p>

## Customizing Clipping

You can customize the display of a clipping by modifying its properties.

Before you begin: Activate a created clipping.

1. Right-click the 3D object, clipping section, slice, or box and select **Properties** .

2. In the **Capping** area, specify the following properties:

Option	Description
<b>Custom color</b>	Uses the color of the clipped parts as the capping color. Click the color box to choose a color.
<b>Color from geometry</b>	Uses the color of the clipped geometry as the capping color.

3. In the **Contour** area, specify the following properties:

Option	Description
<b>Compute contour</b>	Computes and displays the contour.
<b>Custom color</b>	Uses the color of the clipped parts as the contour color. Click the color box to choose a color.
<b>Color from geometry</b>	Uses the color of the clipped geometry as the contour color.
<b>Thickness</b>	Specifies the contour thickness.

4. In the **Representation** area, specify the following properties:

Option	Description
<b>Display permanently</b>	Displays the clipping section, slice, or box, even when the clipping is not in edit mode.
<b>Color</b>	Defines the color of the clipping representation.
<b>Transparency</b>	Modifies the transparency of clipping.

## Working with Real World Survey Data

You can load a real-world survey data and create reviews or markups on it.

Before you begin: Drag a real-world location data from Real World Location Management or from search result.

- For the real-world survey data, the following commands are not available:
  - **3D Compare**
  - **Measure Thickness**

#### Notes:

- For sections, the points cloud, contour is not calculated. But the **Properties** dialog box, showing the **Compute contour** check box is still displayed. You can preset this option before also loading any other type of data.
- For a section or measure filters, you can either select the **Point**  filter or not select any filter option to create a section at a point from the points cloud.
- The **Robot** cannot be dropped on a point from the points cloud. But you can drop the origin of one of the rulers of the **Robot** on these points from the points cloud.
- You cannot drag-and-drop a point from the points cloud to move it but you can move a part from one point to another point of the points cloud, to move the part.

## Reference Information

This section provides reference information specific to certain functionalities.

#### In this section:

- Reference Information: Multiselection for Measurements
- Geometry Selection for Plane Positioning.

## Reference Information: Multiselection for Measurements

If you select multiple object for measurement, depending on the selected geometries, a default measurement is displayed. Also, you can choose to display some alternate measures. This topic lists different combinations of geometries and possible measurements that can be displayed.

Selected Geometry types	Default Measurement Type	Alternate Measurement Types
Point	Coordinates	-

<b>Selected Geometry types</b>	<b>Default Measurement Type</b>	<b>Alternate Measurement Types</b>
Curve	Length	
Arc	Radius	Diameter, Length
Circle	Diameter	Radius, Length, Area
Plane	Area	-
Cylinder	Diameter	Radius, Length, Area
Cone	Half-Angle	Angle, Length, Maximum Diameter, MaximumRadius, Minimum Diameter, Minimum Radius (if not null), Area
Sphere	Diameter	Radius, Area
Surface	Area	-
Product (Solid)	Volume	Area
Product (Surface)	Area	-
Point, Point	Distance	-
Point, Line/Curve	Minimum distance	Maximum distance
Point, Arc	Minimum distance	Distance (point to arc center), Maximum distance
Point, Circle	Distance (point to circle center)	Minimum distance, Maximum distance
Point, Plane	Distance (point – plane orthogonal distance)	Minimum distance, Maximum distance
Point, Cylinder/Cone	Distance (point – axis orthogonal distance)	Minimum distance, Maximum distance
Point, Sphere	Distance (point to sphere center)	Minimum distance, Maximum distance
Point, Surface/Product	Minimum distance	Maximum distance

<b>Selected Geometry types</b>	<b>Default Measurement Type</b>	<b>Alternate Measurement Types</b>
Line, Line (nonparallel)	Angle	Minimum distance, Maximum distance
Line, Line (Parallel)	Distance (in the orthogonal direction)	Minimum distance, Maximum distance
Line, Curve	Minimum distance	Maximum distance
Line, Arc	Minimum distance	Distance (line to arc center), Maximum distance
Line, Circle	Distance (line to circle center)	Minimum distance, Maximum distance
Line, Plane (perpendicular to line)	Distance (in the orthogonal direction)	Minimum distance, Maximum distance
Line, Plane	Angle (between a line and its projection on the plane)	Minimum distance, Maximum distance
Line, Cylinder/Cone (axis nonparallel)	Angle (between line and axis)	Minimum distance, Maximum distance
Line, Cylinder/Cone (axis parallel)	Distance (line to axis)	Minimum distance, Maximum distance
Line, Sphere	Distance (line to sphere center)	Minimum distance, Maximum distance
Line, Surface/Product	Minimum distance	Maximum distance
Curve, Curve	Minimum distance	Maximum distance
Curve, Arc	Minimum distance	Distance (curve to arc center), Maximum distance
Curve, Circle	Distance (curve to circle center)	Minimum distance, Maximum distance
Curve, Plane	Minimum distance	Maximum distance
Curve, Cylinder/Cone	Distance(between curve and axis)	Minimum distance, Maximum distance

<b>Selected Geometry types</b>	<b>Default Measurement Type</b>	<b>Alternate Measurement Types</b>
Curve, Sphere	Distance (curve to sphere center)	Minimum distance, Maximum distance
Curve, Surface/Product	Minimum distance	Maximum distance
Arc, Arc	Minimum distance	Distance (center to center), Maximum distance
Arc, Circle	Minimum distance	Distance (center to center), Maximum distance
Arc, Plane	Minimum distance	Distance (to arc center), Maximum distance
Arc, Cylinder/Cone	Minimum distance	Distance (center to axis), Maximum distance
Arc, Sphere	Minimum distance	Distance (center to center), Maximum distance
Arc, Surface/Product	Minimum distance	Distance (to arc center), Maximum distance
Circle, Circle	Distance (center to center)	Minimum distance, Maximum distance
Circle, Plane	Distance (to center)	Minimum distance, Maximum distance
Circle, Cylinder/Cone	Distance (center to axis)	Minimum distance, Maximum distance
Circle, Sphere	Distance (center to center)	Minimum distance, Maximum distance
Circle, Surface/Product	Distance (to center)	Minimum distance, Maximum distance
Plane, Plane (parallel)	Distance (in the orthogonal direction)	Minimum distance, Maximum distance
Plane, Plane (nonparallel)	Angle	Minimum distance,

<b>Selected Geometry types</b>	<b>Default Measurement Type</b>	<b>Alternate Measurement Types</b>
		Maximum distance
Plane, Cylinder/Cone (axis parallel to plane)	Distance (in the orthogonal direction)	Minimum distance, Maximum distance
Plane, Cylinder/Cone (axis nonparallel to plane)	Angle (between plane and axis)	Minimum distance, Maximum distance
Plane, Sphere	Minimum distance	Distance (plane to center), Maximum distance
Plane, Surface/Product	Minimum distance	Maximum distance
Cylinder, Cylinder/Cone (axes parallel)	Distance (in the orthogonal direction)	Minimum distance, Maximum distance
Cylinder, Cylinder/Cone (axes nonparallel)	Angle (between axes)	Minimum distance, Maximum distance
Cylinder, Sphere	Distance (axis to center)	Minimum distance, Maximum distance
Cylinder, Surface/Product	Distance (axis to surface)	Minimum distance, Maximum distance
Cone, Cone (axes parallel)	Distance (in the orthogonal direction)	Minimum distance, Maximum distance
Cone, Cone (axes nonparallel)	Angle (between axes)	Minimum distance, Maximum distance
Cone, Sphere	Distance (axis to center)	Minimum distance, Maximum distance
Cone, Surface/Product	Distance (axis to surface)	Minimum distance, Maximum distance
Sphere, Sphere	Distance (center to center)	Minimum distance, Maximum distance
Sphere, Surface/Product	Distance (center to surface)	Minimum distance, Maximum distance

Selected Geometry types	Default Measurement Type	Alternate Measurement Types
Surface, Surface/Product	Minimum distance	Maximum distance
Product, Product	Minimum distance	Maximum distance
Point, Point, Point	Angle by 3 points	Diameter, Radius of the Circle by 3 points

## Geometry Selection for Plane Positioning.

This topic lists various possible combinations of geometries that can be used to position a sectioning plane.

If you select **Position from geometry** in the shortcut toolbar, the selection filters are not available. If you select a geometry as the first selection, OKis available in the message box at the top of the 3D area. If you select a plane surface as the first selection, the section plane is automatically repositioned. If required, you can select a second and third geometry element to define the plane.

First Selection	Second Selection	Third Selection
Point or sphere	Point or sphere	Point or sphere
Point or sphere	Point or sphere	Line or edge coplanar to the first and second selection but does not contain them
Point or sphere	Point or sphere	Circle,cylinder, or cone such that the axis of circle,cylinder, or cone should be coplanar to the first and second selection but does not contain them
Point or sphere	Line or edge	Not applicable

<b>First Selection</b>	<b>Second Selection</b>	<b>Third Selection</b>
Point or sphere	Circle, cylinder, or cone (The axis is used to create the plane.)	Not applicable
Point or sphere	Plane or planar surface (The normal direction is used to create the plane.)	Not applicable
Line or edge	Point or sphere (The first selection should not contain it.)	Not applicable
Line or edge	Line or edge (Coplanar to the first selection and the first selection should not contain it)	Not applicable
Line or edge	Circle,cylinder, cone (The axis of the circle,cylinder, or cone should be coplanar to the first selection and the first selection should not contain it.)	Not applicable
Circle, cylinder, or Cone (The axis is used to create the plane.)	Point or sphere (The first selection should not contain it.)	Not applicable
Circle, cylinder, or Cone (The axis is used to create the plane.)	Line or edge (Coplanar to the first selection and the first selection should not contain it)	Not applicable
Circle, cylinder, or Cone (The axis is used to create the plane.)	Circle,cylinder, or cone (The axis of the circle,cylinder, or cone should be coplanar to the first selection and the first selection should not contain it.)	Not applicable