Medit Design

Version 2.1 (October 2022)

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Getting Started

Medit Design Overview

Medit Design (Formerly Known as Medit Compare)

Medit Design is a multifaceted app that can analyze, align, measure (including distance, area, length, and angle), and compare 3D data. It provides various tools such as “Boolean,” “Offset,” “Smooth Surface,” “Sculpting,” “Mirroring,” and many more to help you achieve your outcomes.

Easy-to-follow explanations and guide messages accompany each step.

Medit Design can be run from both Clinic and Lab Accounts in Medit Link.

Intended Use and Disclaimer

Medit Design helps to analyze and further work on any 3D data, including scan data, and to compare different data one by one or in sets. Its intuitive user interface and various tools can help anyone – from novices to advanced users - perform measurements quickly and efficiently (including area, length, angles), transformations, and analyses. The user assumes all responsibility and risk when working with Medit Design. Users should know that the results generated by the application may not be precise or reliable, and the results should only be used for communication purposes. Medit does not take any responsibility or liability for any misunderstanding or miscommunication during and after the interpretation of the results. Medit will not be liable to the user for any decisions made or actions taken in reliance on the information given by the software or for any consequential, special, or similar damages.

System Requirements

Windows

CPU	Intel Core i5. 2.6 GHz or higher
RAM	16GB or higher
Graphic Card	NVIDIA GeForce GTX 1060 (2GB) or higher
OS	Windows 10 64-bit, Windows 11 64-bit

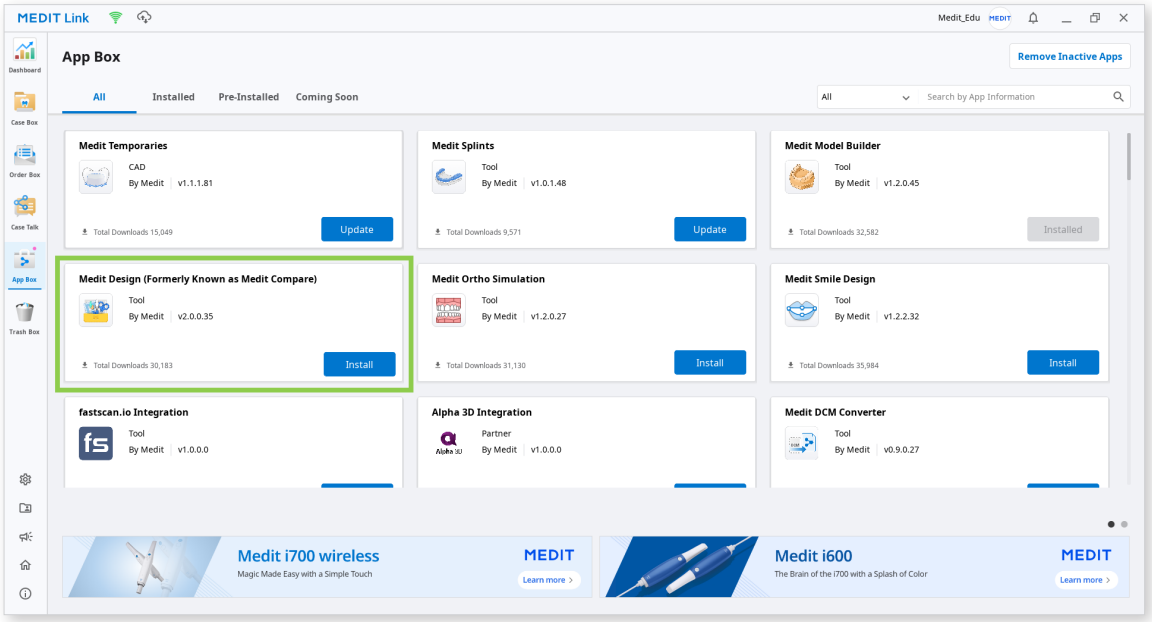
macOS

Chip	M1/M2 or higher
CPU	8-core or higher
RAM	16GB or higher
OS	Monterey 12

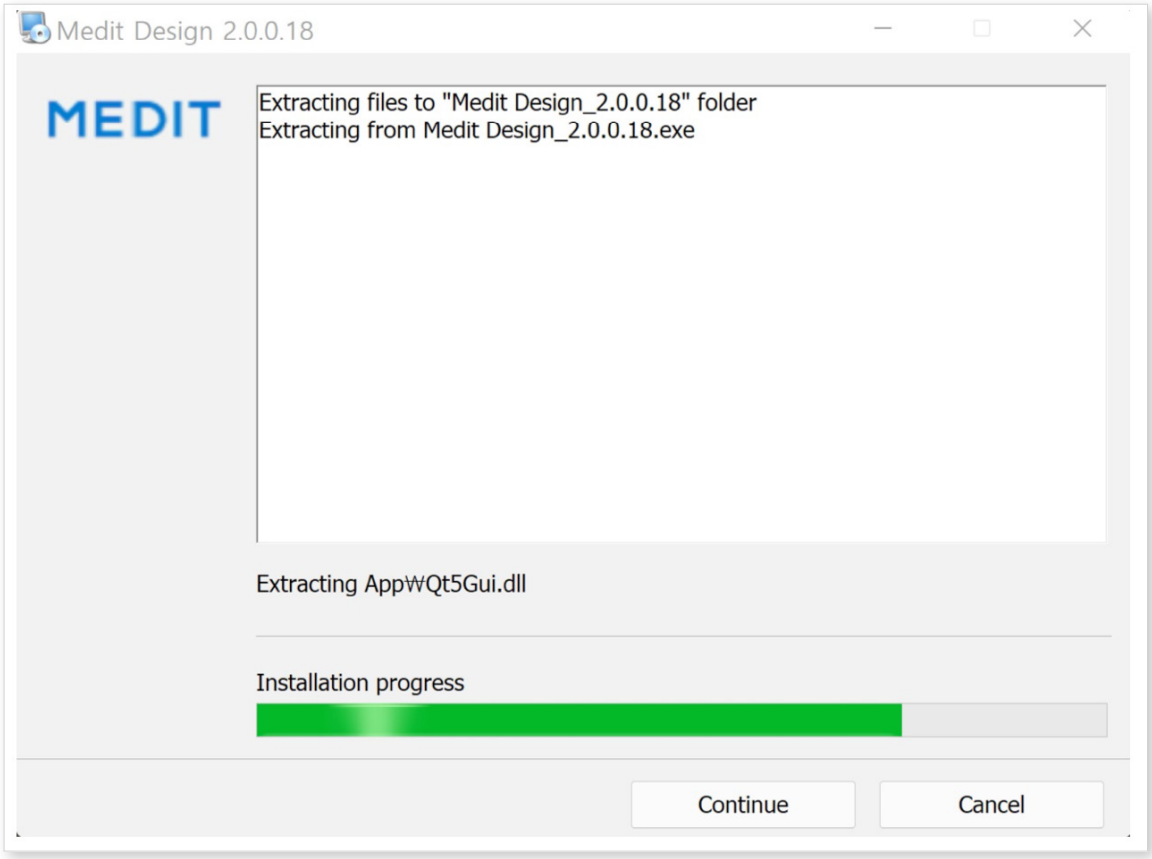
Installation Guide

1. Log in to your Medit Link Account and go to the App Box.

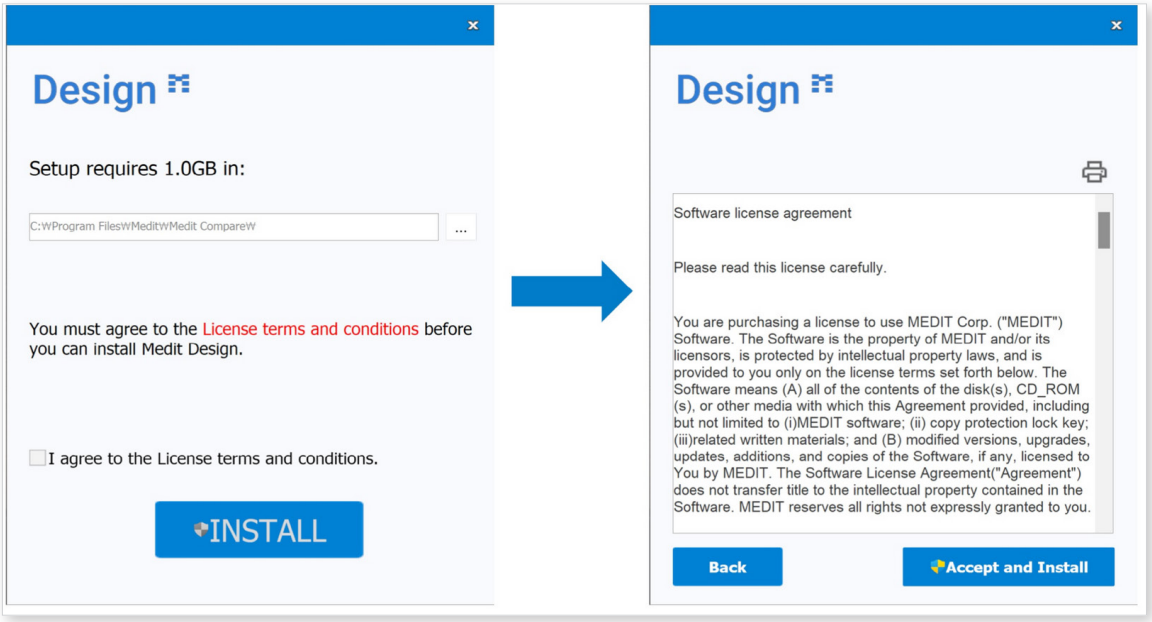
2. Find “Medit Design” and click “Install.”



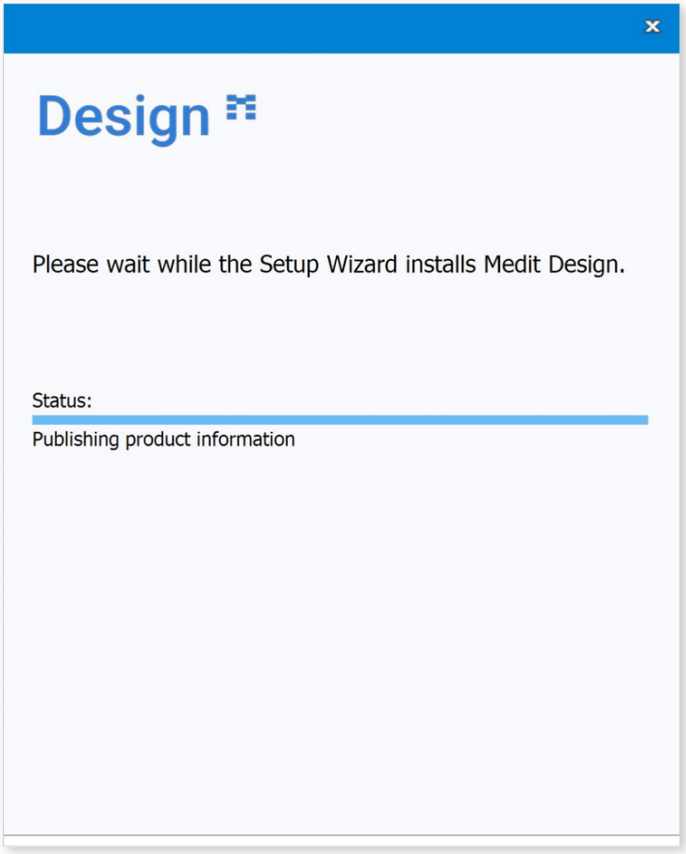
3. When the download is complete, Medit Design_2.1.X.exe will run automatically from your PC.



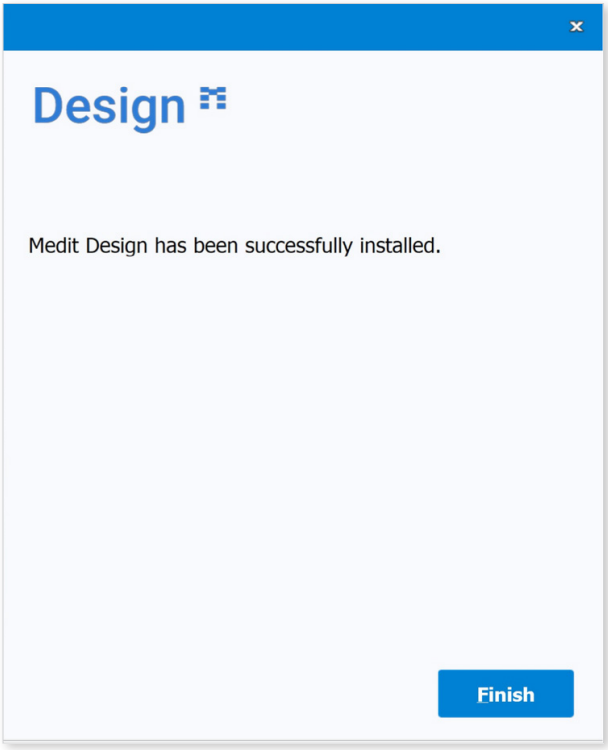
4. Read and agree to the License Terms and Conditions to continue.



5. It may take up to several minutes to finish the installation process. Do not turn off the PC until the installation is complete.



6. Click “Finish” to complete the installation.

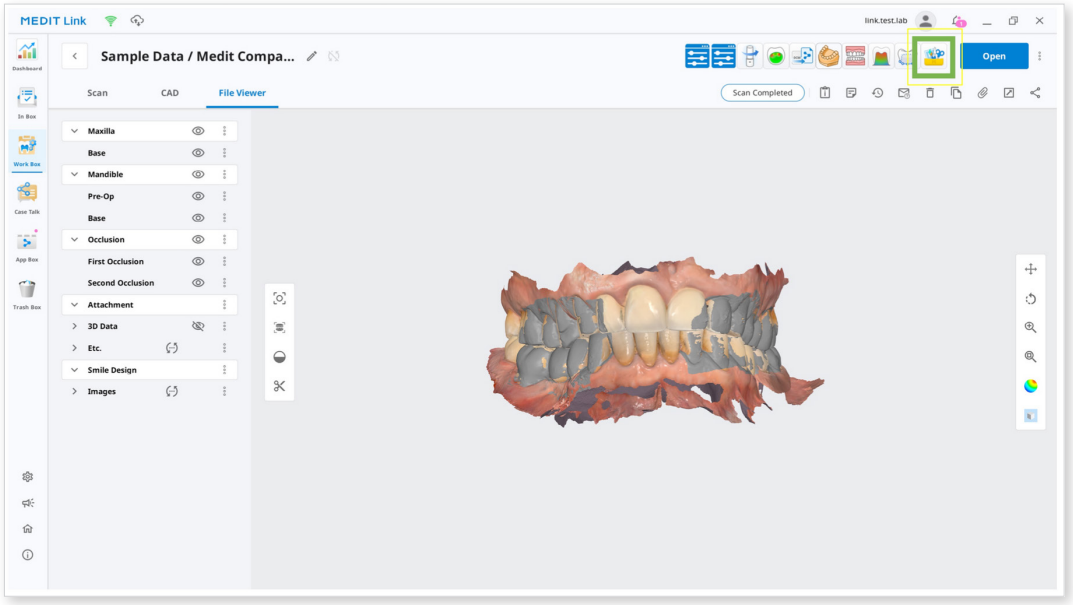


Running Medit Design from Medit Link

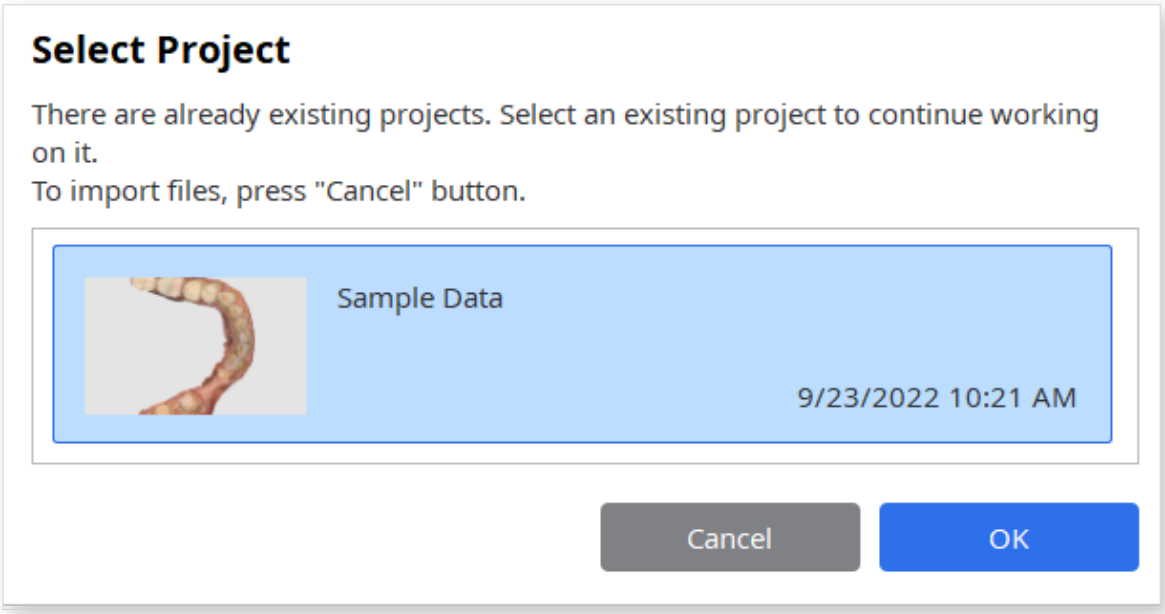
Follow these steps to run Medit Design from Medit Link.

1. Go to Case Box (Clinic Account) or Work Box (Lab Account) and select the case you would like to open in Medit Design.

2. Click the Medit Design icon on the upper right side of the Case Detail window in Medit Link. The icon will automatically appear once you have installed the app.



3. The project file will be saved to Medit Link once you close Medit Design. There are also export and overwrite options available. You can always return to this project file later to resume working.



4. When you run the program from the same case, you will be asked to choose one among the projects that have been created.

5. All measurement results, sections, and scaling will be restored.

Data Management

Acquiring 3D Data

There are three ways to gather 3D data to use in Medit Design:

1. Scan data in Medit Scan for Clinics or Labs

   After completing the necessary scans in Medit Scan for Clinics or Labs, the scan data will automatically be saved in the patient's case in Medit Link.

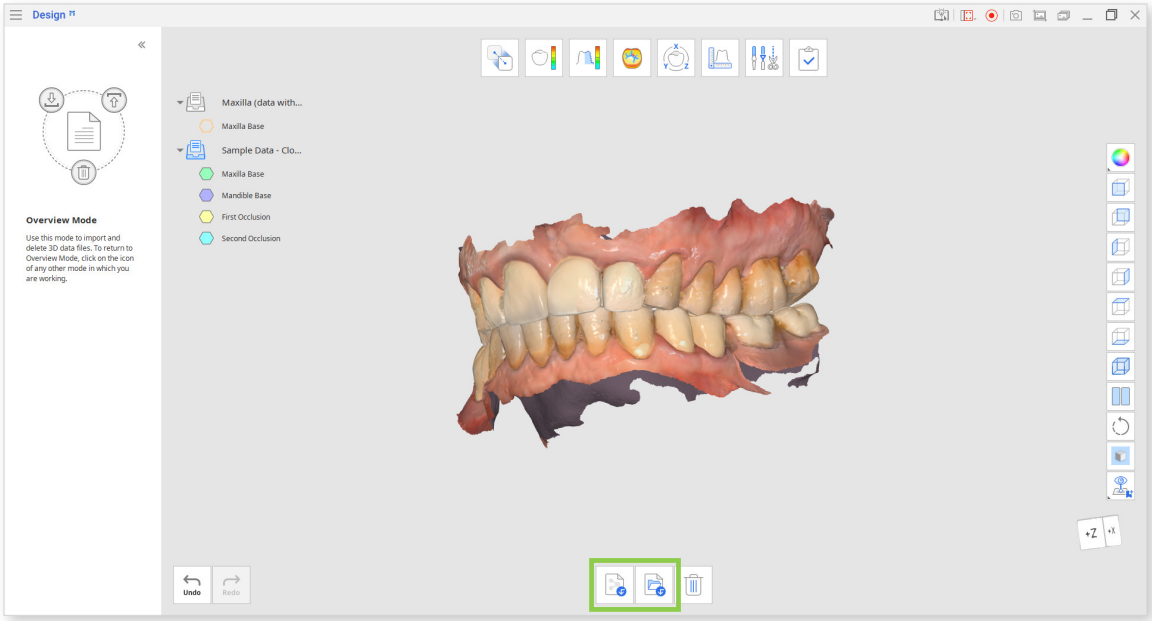
   Then, you can import the data by clicking "Import Medit Link Files."

2. Add 3D data to a Medit Link case

   To import 3D data that was not scanned using Medit Scan for Clinics or Labs, the 3D data should first be attached to a case in Medit Link, then imported to Medit Design by clicking "Import Medit Link Files."

3. Import local data

   You can directly import 3D data (meditMesh, .OBJ, .PLY, .STL) stored on your computer by clicking "Import Local Files."



3D Data Control

3D Data Control Using a Mouse:

Button	Action	Use	Image
Left	Click	Select or delete the entities in the view screen when using the polyline selection or polyline trimming tool.	
Left	Drag	Select or delete entities in the view screen when using the brush selection or brush trimming tools.	
Wheel	Drag	Move the data in the view screen.	
Wheel	Scroll	Zoom in and out the data in the view screen.	
Right	Click	Complete the selection or deletion of data in the view screen using the polyline selection or polyline trimming tool.	
Right	Drag	Rotate data in the view screen	

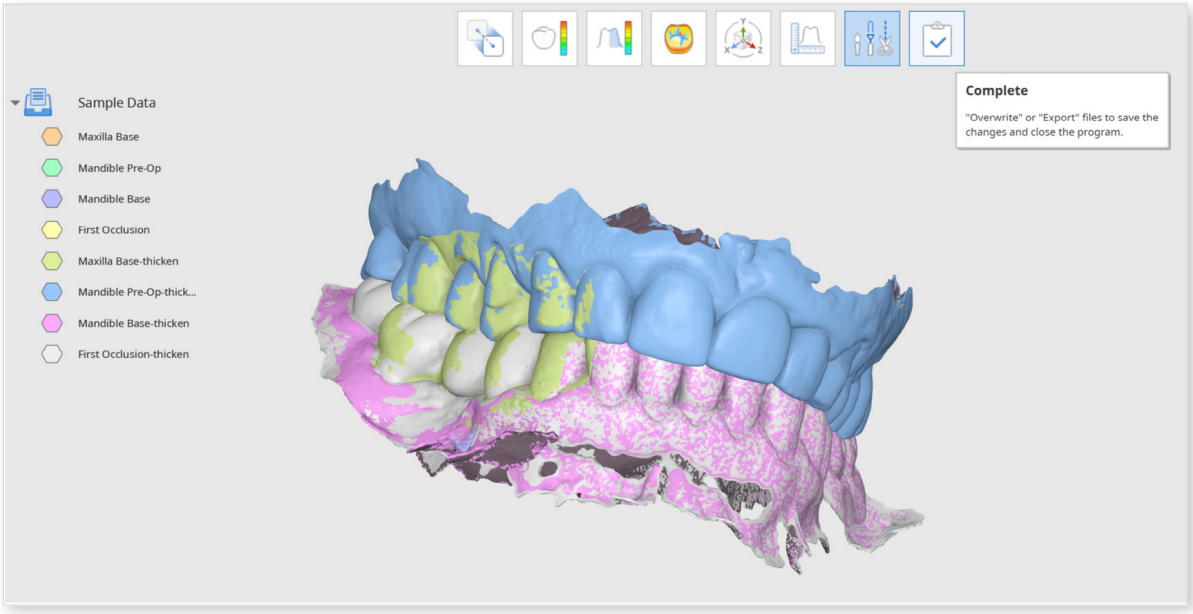
3D Data Control Using Mouse and Keyboard Buttons:

Button	Action	Use	Windows	macOS
Shift	Left-click and drag	Zoom in and out.	Shift +	⇧ +
Shift	Up and down keys	Zoom in and out.	Shift +	⇧ +
Alt/Opt	Left-click and drag	Rotate	Alt +	⌥ +
Alt/Opt	Up, down, left and right keys	Rotate	Alt +	⌥ +
Ctrl/Cmd	Left-click and drag	Move	Ctrl +	⌘ +
Ctrl/Cmd	Up, down, left and right keys	Move	Ctrl +	⌘ +

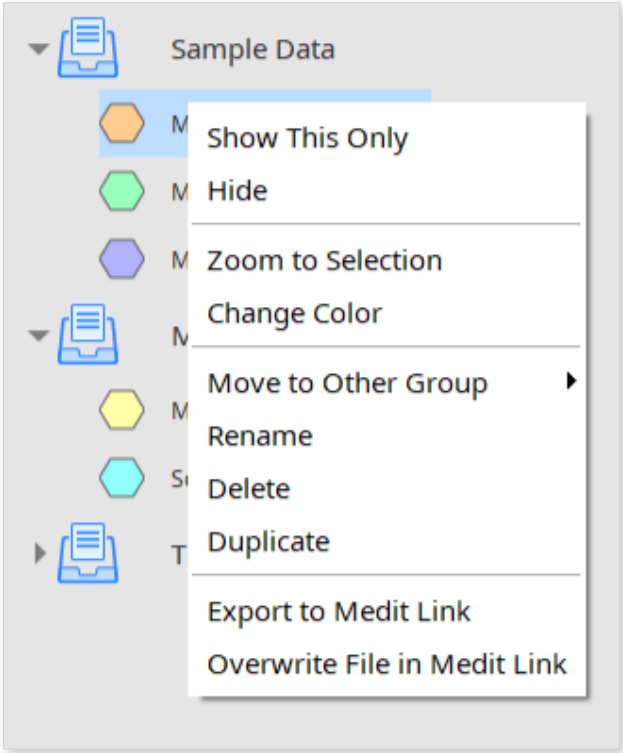
Saving 3D Data

There are several different ways to save your files.

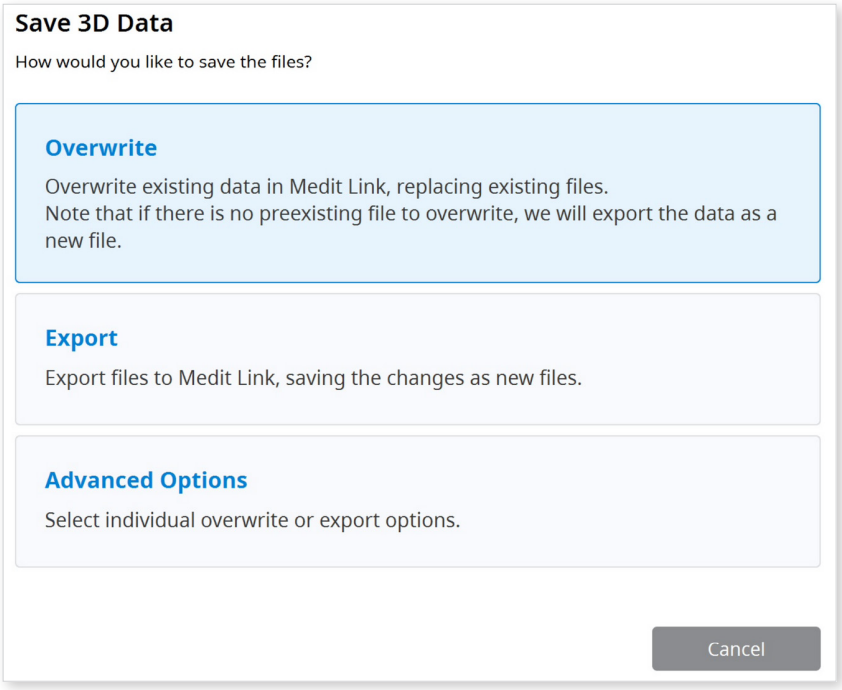
When you've made changes to the existing mesh, you will be able to complete the project by clicking "Complete."



You could also export and overwrite separate files while working using the Data Tree. Right-click on the data to “Export to Medit Link” or “Overwrite File in Medit Link”.



The “Save 3D Data” window will pop up after clicking “Complete.” You can choose to overwrite or export your files. You can also select “Advanced Options” to individually assign overwrite or export for each of your files.



Save 3D data options

Overwrite

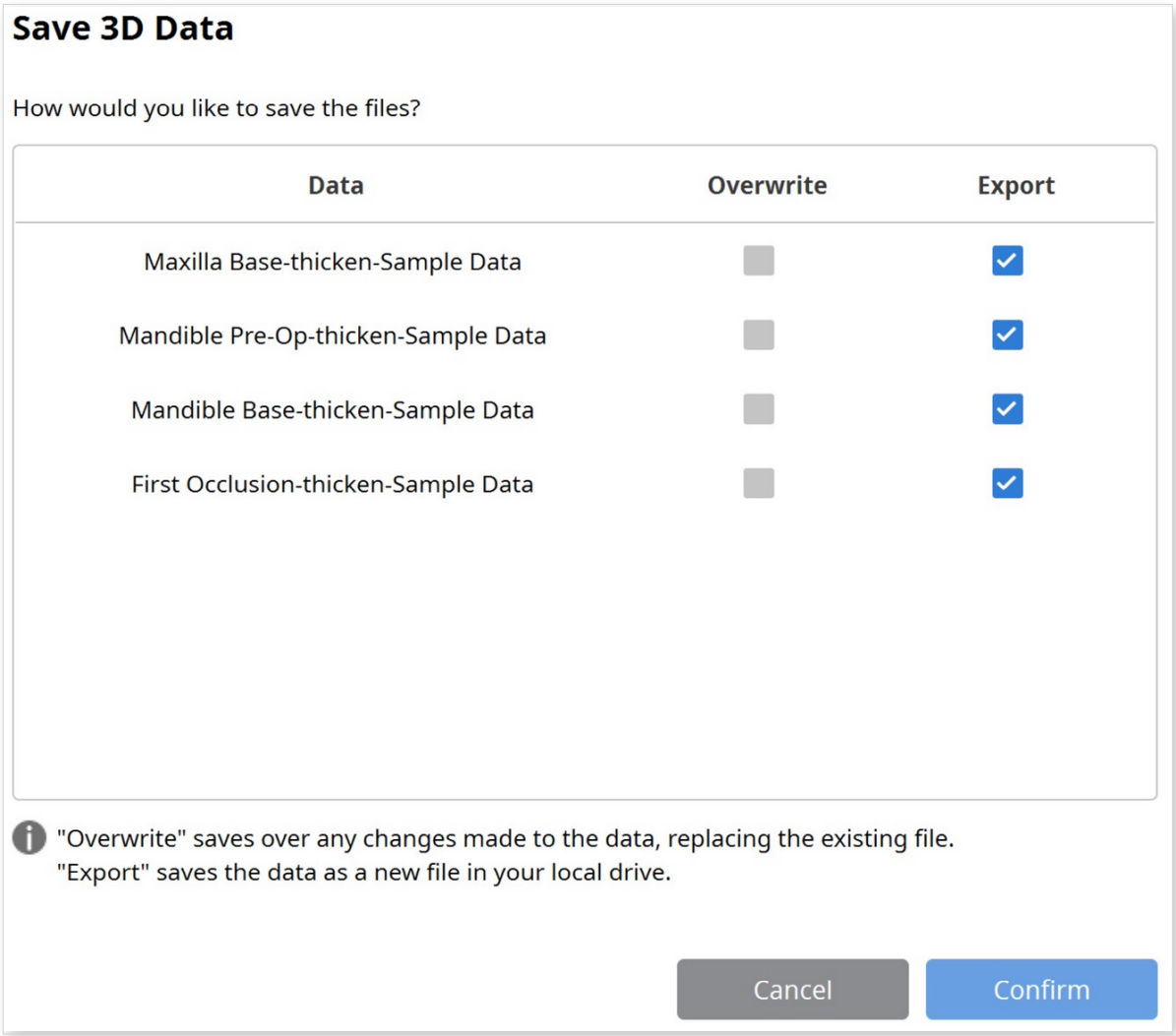
If you choose to overwrite, this will overwrite the existing data in Medit Link and replace your existing files. If you've selected to overwrite a new file that does not have a pre-existing version, Medit Design will export the data as a new file instead.

Export

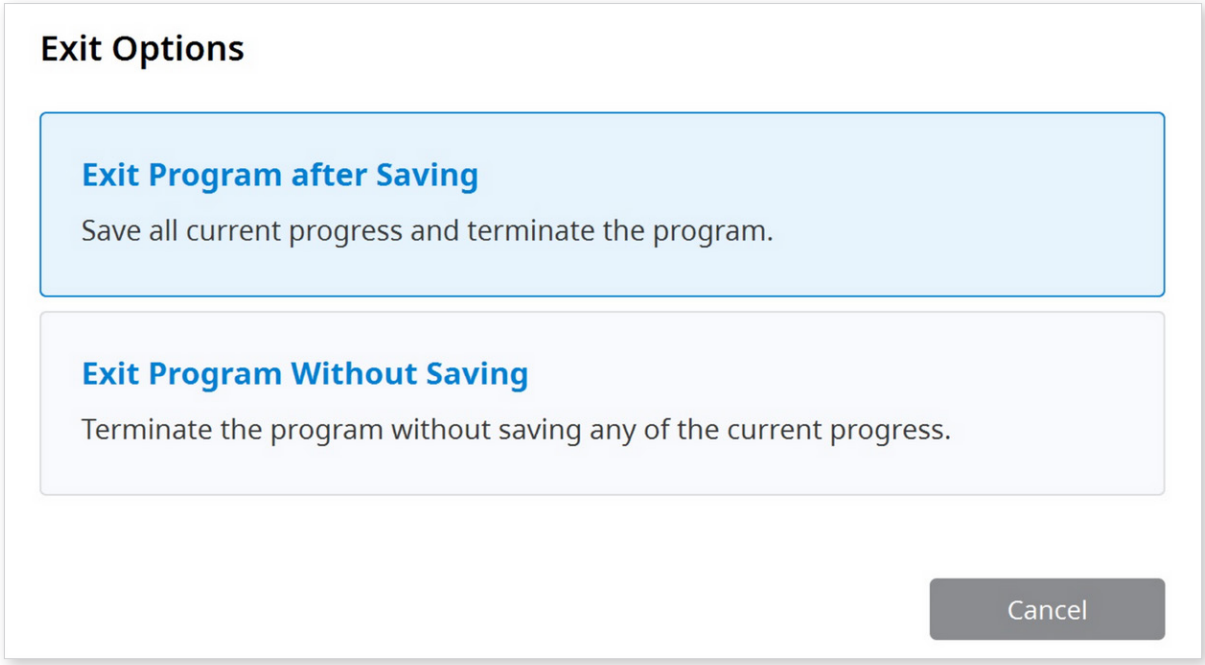
If you choose to export, this will export files to Medit Link, saving and creating the changes as new files.

Advanced Options

If you choose "Advanced Options," another window will appear, giving you overwrite and export options for each of the files.

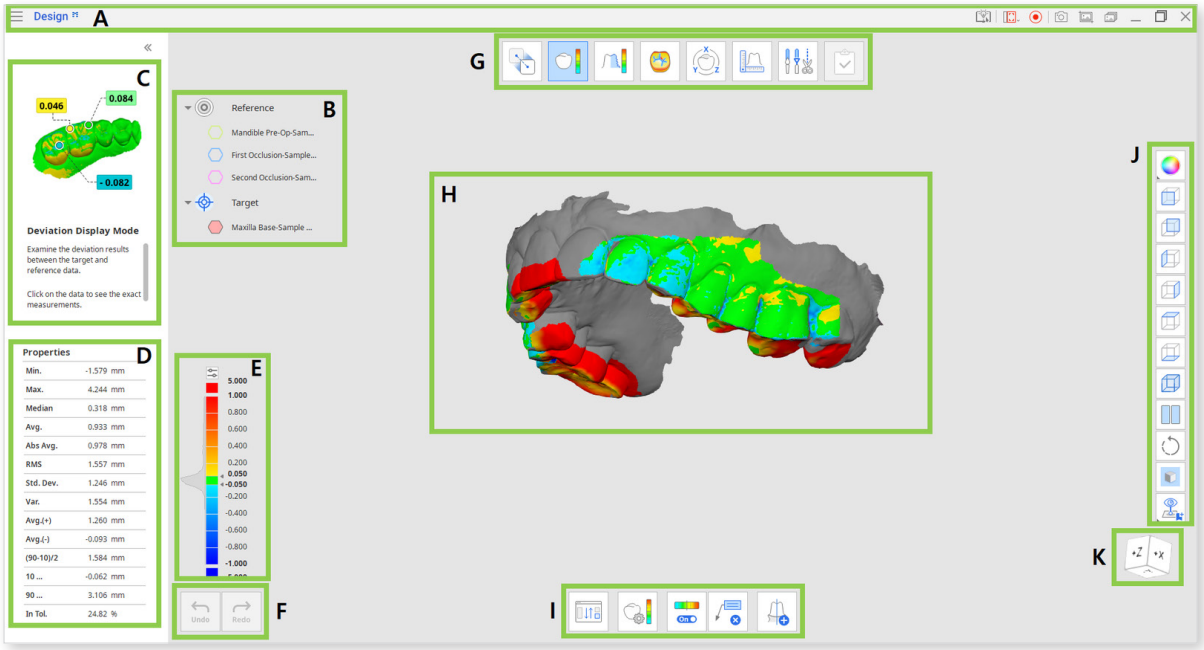


You will still get save options if you forget to click “Complete” and close the program by clicking “Exit”.



User Interface

User Interface at a Glance



A. Title Bar
B. Data Tree
C. Guide Message
D. Data Properties
E. Color Bar
F. Undo / Redo
G. Modes
H. 3D Data View
I. Toolbox
J. Side Toolbar
K. View Cube

Title Bar

The Title Bar includes the following options:

Menu	The menu includes tools to manage project options and shows the details of the application.
Help Center	Go to the Medit Help Center page.
Select Video Capture Area	Select the area to be recorded for the video capture.
Start Video Recording	Start the video capture.
Screenshot	Capture the screen. You can select the area automatically or manually. The automatic select area captures either the program area or the main 3D area.
Screenshot Settings	Configure settings for taking screenshots. Set a transparent or white background and choose to hide all icons.
Screenshot Manager	Manage screen capture images.
Minimize	Minimize the application.
Maximize or Restore	Maximize or restore the application.
Exit	Close the application.

Side Toolbar

The Side Toolbar provides various Data Display Modes and set view options.

Data Display Modes

Icon	Tool	Description
	Textured	See the data with color information.
	Textured with Edges	See the data with color information and edges.
	Monochrome	See the data in a single color.
	Monochrome with Edges	See the data in a single color with edges.
	Wireframe	See the data as edges only.

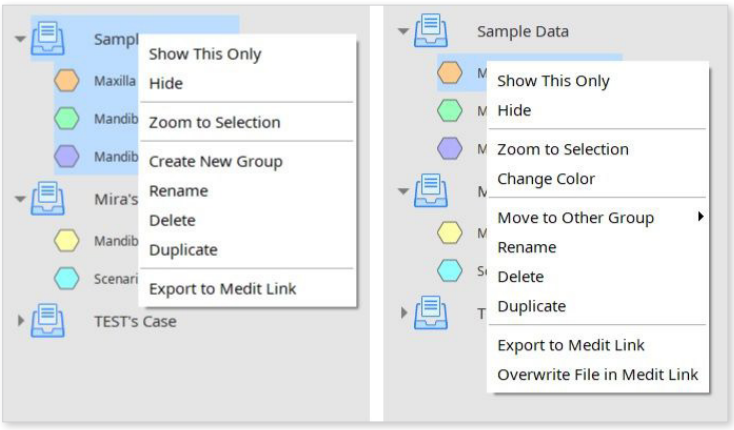
3D Data View Options

Icon	Tool	Description
	+Z Axis View	See the front view.
	-Z Axis View	See the back view.
	-X Axis View	See the left view.
	+X Axis View	See the right view.
	+Y Axis View	See the top view.
	-Y Axis View	See the bottom view.
	Isometric View	See the isometric view.
	Split View	Work on two different files simultaneously.
	Rotate	Left-click and drag to rotate the data.
	Grid Settings (mm)	Set grid display options. It shows or hides the grid and controls its position in relation to the model (overlay on/off).
	Custom View	See the custom set view. Save multiple custom views to quickly rotate the data to your preferred direction.

Data Tree

The Data Tree appears on the left side of the window. It shows the list of data grouped by target and reference data or by Medit Link case (grouping varies according to mode).

Right-click on the data group or specific data to see the context menu for each.



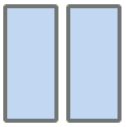
<Context menu for data group or single data in the Data Tree.>

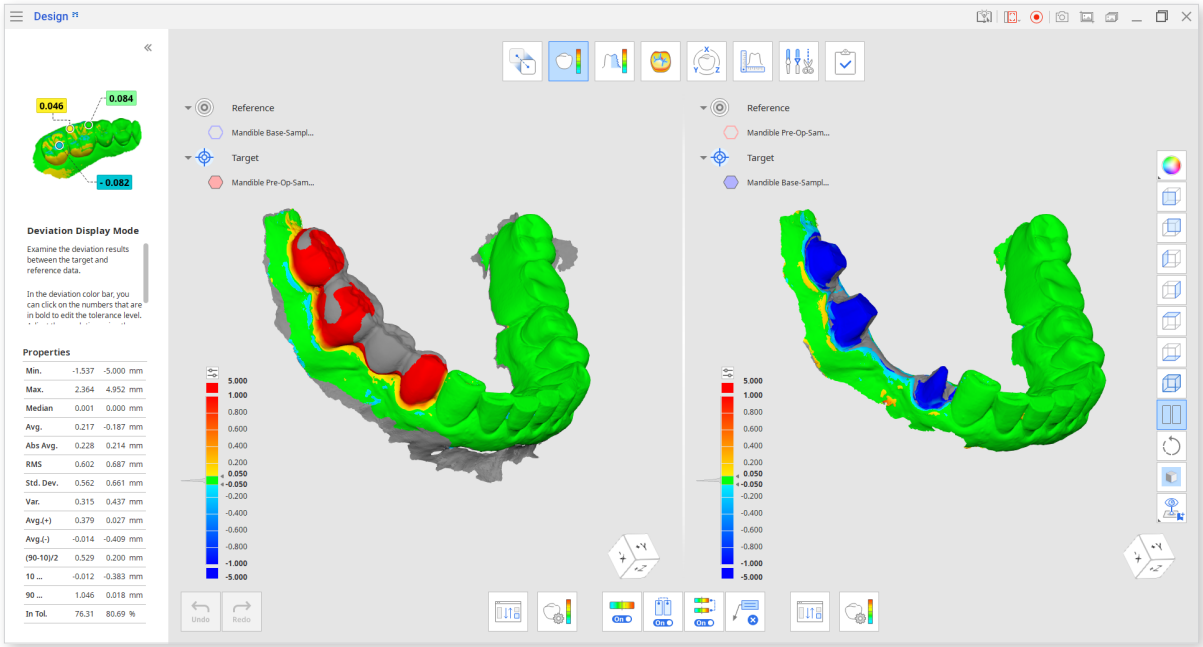
Show This Only	Show only the chosen data.
Hide / Show	Hide or show the chosen data.
Zoom to Selection	Zoom to show selected data.
Rename	Rename the data or group.
Delete	Delete the data from Medit Design.
Export to Medit Link	Export the selected data to the Medit Link case as an attachment.
Overwrite File in Medit Link	Overwrite the file in Medit Link, replacing the previous version.
Duplicate	Duplicate the file.
Create New Group	Add a new data group.
Change Color	Change the color of the selected data.
Move to Other Group	Move the selected data to another group from the list.

You can select multiple data in the Data Tree and delete or copy them all at once.

Note that all context menu commands are provided only when in Overview Mode.

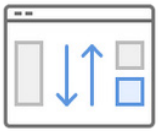
Split View

	Use the Split View option located on the Side Toolbar to work with two sets of data simultaneously.

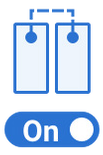


This option is available during Overview and Deviation Display Modes.

- Click the Reassign Target and Reference Data button to select the set of data you would like to compare the current one to in split view.

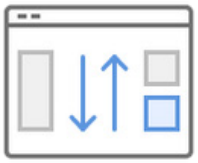
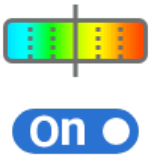
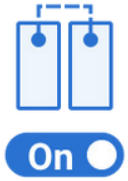
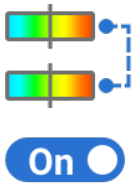


- Choose whether you would like the data manipulation to be synced on both parts of the screen.



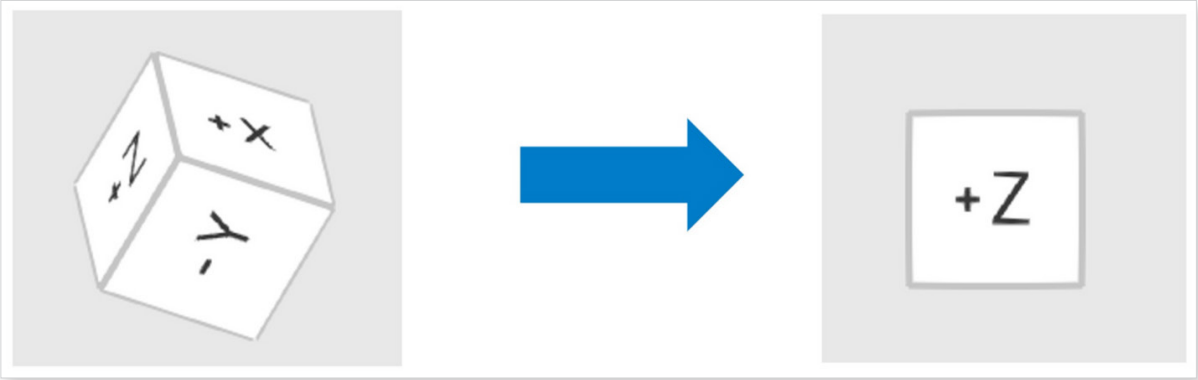
- If you sync the color bar (this option will appear while working in Deviation Mode), its values will change on both sides if you change it for one of the data sets.

Toolbox: Split View

Icon	Tool	Description
	Reassign Target and Reference Data	Reselect target and reference data for the assignment.
	Color Map On/Off	Turn on or off the color map.
	Sync View	Turn on or off to sync the split view parts.
	Sync Color Bar	Turn on or off to sync the color bar on the split view parts.
	Delete Measurement Results	Delete deviation measurement results by clicking on each of them on 3D data.

View Cube

The View Cube displays the 3D view orientation, updated in real-time as the view is being rotated. You can align the view to specific directions by clicking on the face of the cube.



Undo / Redo

The undo/redo buttons are located at the bottom left corner of the window.

Icon	Tool	Description
Undo	Undo	Undo the previous action.
Redo	Redo	Redo the previous action.

Modes

Medit Design modes are not subject to a specific sequence.

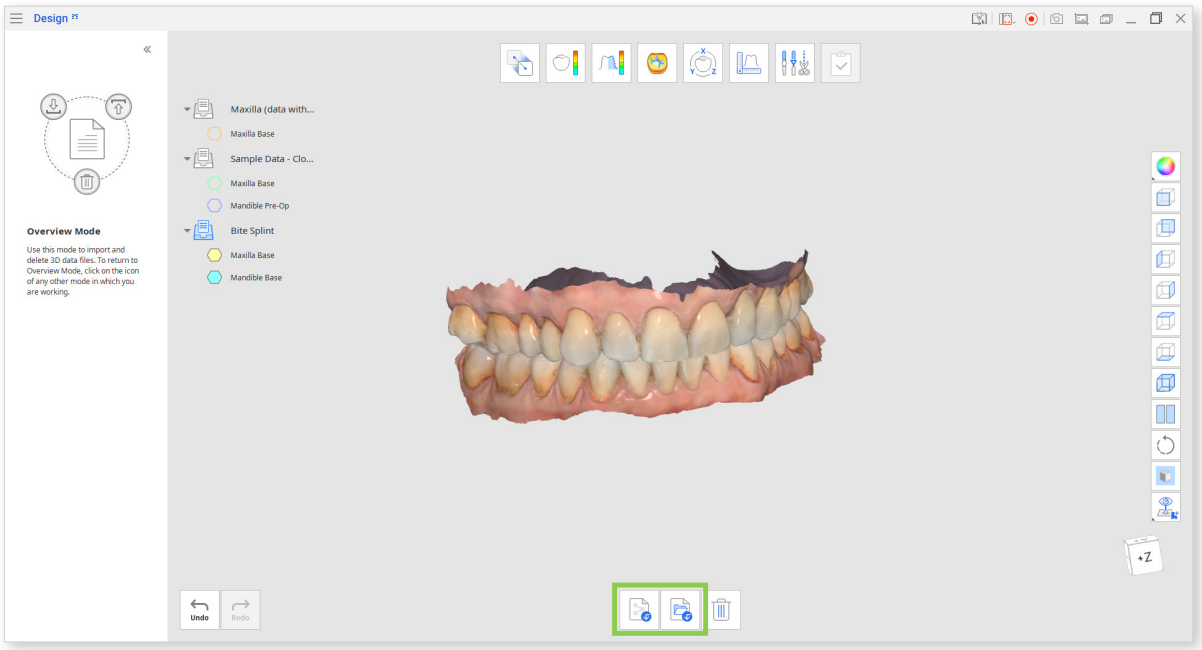
You can work on the 3D data without any prior alignment.

Icon	Tool	Description
	Overview Mode	Import, examine and delete data. Click on the icon of any other mode you are working in to exit and return to Overview Mode.
	Alignment Mode	Align target and reference data.
	Deviation Display Mode	See the deviation result on the 3D data.
	Roughness Measurement Mode	See surface roughness of the data through a color map.
	Curvature Display Mode	See the curvature of data through a color map.
	Transformation Mode	Transform 3D scan data by rotating, translating, scaling or using a transformation matrix.
	Measurement Mode	Measure the distance, angle, length and area on the 3D data or its section lines.
	Edit Mode	Edit and trim data using the wide array of functions provided.
	Complete	Edit and trim data using the wide array of functions provided. Read more about saving 3D data in “**Data Management**” chapter.

If you want to keep the measurement results ready for communication in Medit Link, take a screenshot using the “Screenshot” tool located on the Main Toolbar.

Overview Mode

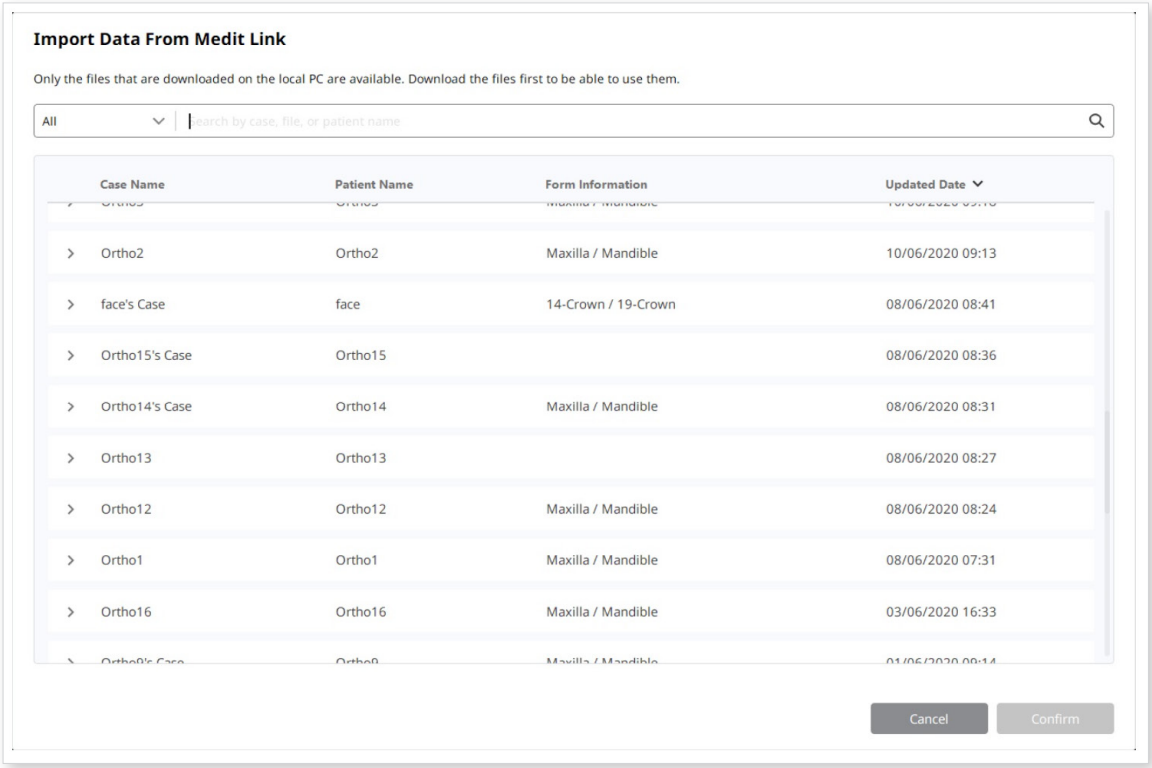
Import and delete data in Overview Mode.



Icon	Tool	Description
	Import Medit Link Files	Import files from Medit Link.
	Import Local Files	Import local 3D files saved on your computer in .OBJ, .PLY, .STL or .meditMesh formats.
	Delete Data	Select data to delete.

How to Import 3D Data from Medit Link

1. Click “Import Medit Link Files.”
2. Choose the 3D data files from your existing Medit Link cases. You can choose the files that belong to different cases and compare them together or as separate sets.



After importing the files, control view options of different sets of data using the Data Tree.

- You can choose multiple files to use in Medit Design.
- You can import additional files at any time while working with data by returning to the Overview Mode and pressing the “Import Medit Link Files” button.

How to Import 3D Files Directly from your Computer

1. Click “Import Local Files”
2. Choose a file from File Explorer in .OBJ, .PLY, .STL or . meditMesh format.
3. You can also import local files by dragging and dropping them into the window.

Alignment Mode

Align target and reference data in Alignment Mode.

First, define the target and reference data.

1. Select 3D data that you want to set as the reference and click the “Assign as Reference”

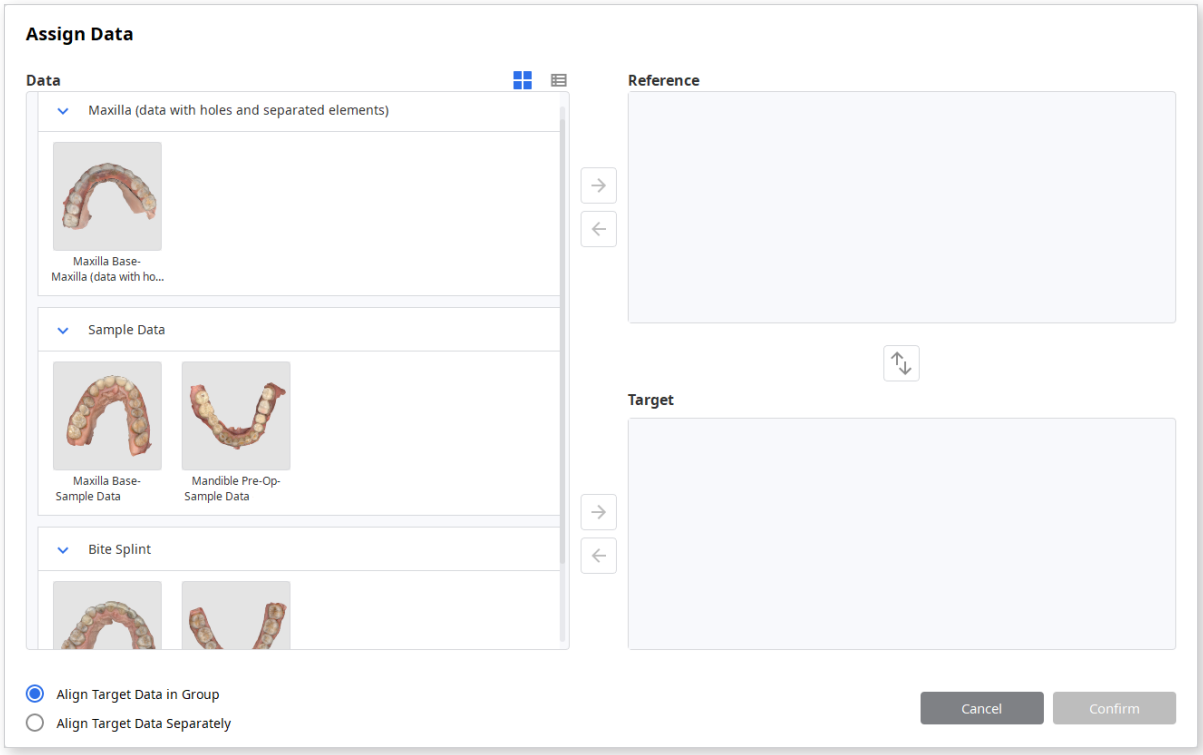
   

   button or drag it with your mouse. Alternatively, right click using your mouse to choose a data assignment option.

2. Next, assign the target data.

3. Click “Confirm”

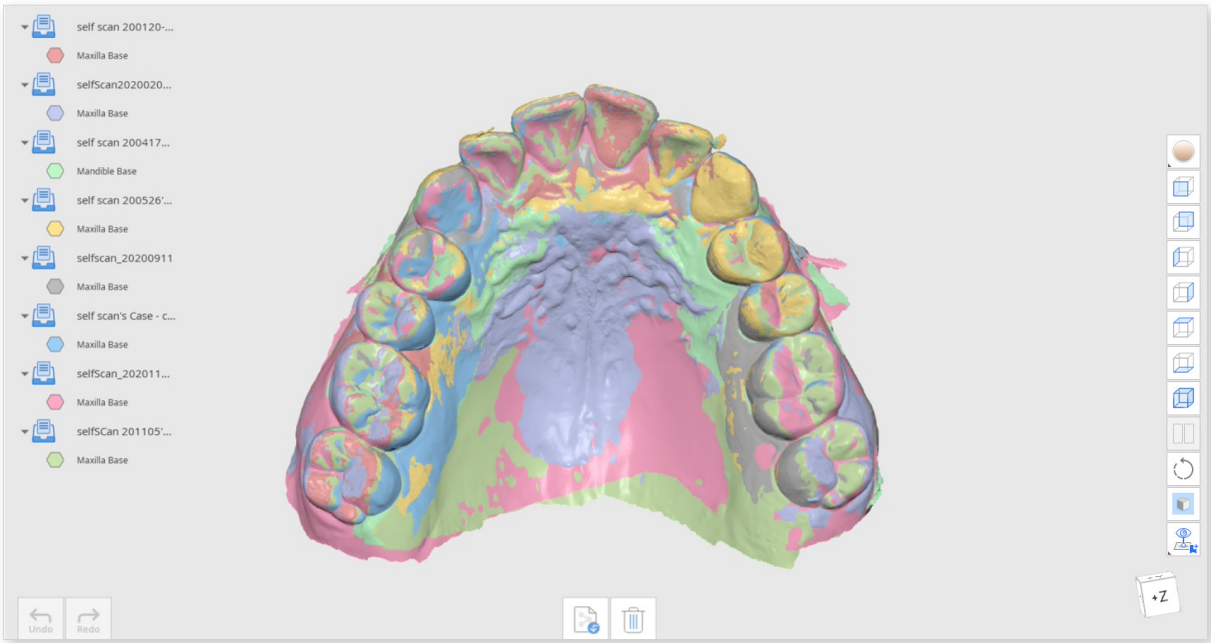
You can swap target and reference data by using the “Reassign Target and Reference Data” button at the bottom of the window. You can come back to this option during working in any mode.



If you want to align the target data separately to the reference, choose “Align Target Data Separately.” If you select “Align Target Data in Group,” the target data will be aligned as a group.

Select “Align Target Data Separately” if you want to align the target data separately from the reference data. Select “Align Target Data in Group” to align the target data as a group.

Aligning data one by one



Align data as a group

Toolbox

Icon	Tool	Description
	Reassign Data	Reassign the target and reference data for alignment.
	Automatic Alignment	Align the data automatically without any user defined points.
	Manual Alignment	Align the data manually using user defined points.
	Align with Selected Area	Align the reference and target data only within a selected area.
	Smart Teeth Selection	Click to automatically select all teeth of the arch, leaving out gingiva parts. This function is only available for the scan data gathered in Medit Scan for Clinics with the “Use GPY” option on.
	Smart Single Tooth Selection	Click to automatically select the area of a single tooth, leaving out gingiva parts. Click and drag the mouse on the tooth.
	Polyline Selection	Select all entities within a polyline shape drawn on the screen.
	Brush Selection	Select all entities on a freehand drawn path on the screen. Only the front face will be selected. The brush comes in three different sizes.
	Selection / Deselection	Select or deselect the area using various tools.
	Clear All Selection	Clear all selected areas.
	Detach Data	Detach the aligned data and bring it to the original position.

Medit Design provides three alignment options to choose from:

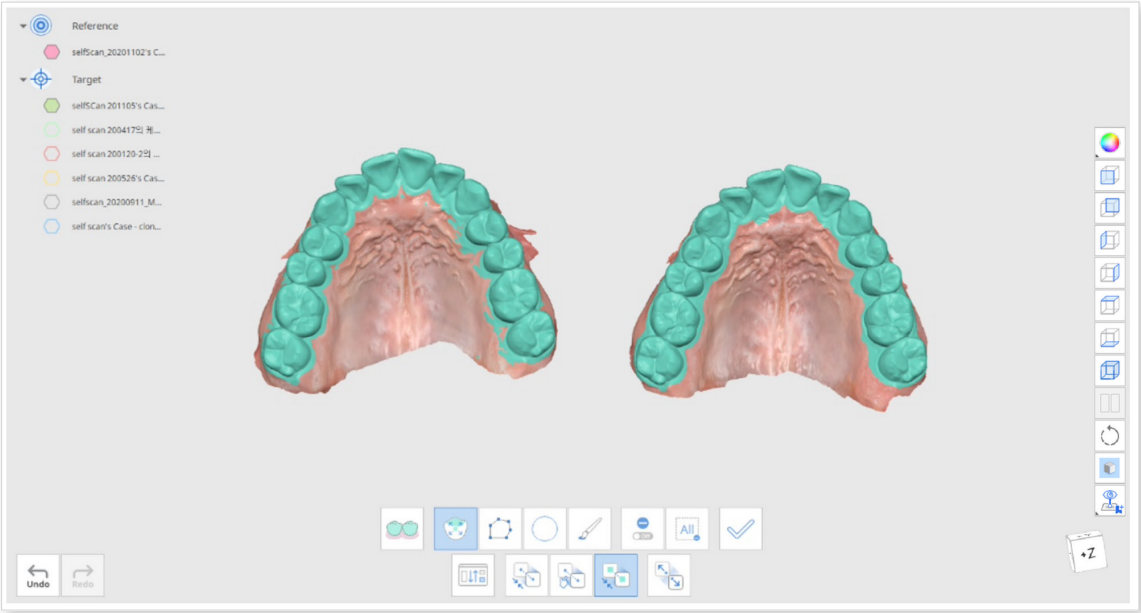
1. Automatic Alignment
2. Manual Alignment
3. Alignment with a Selected Area

Click “Manual Alignment” to align the data manually and set the matching points up to three on both target and reference data. The points can be by clicking “Delete Alignment Points”.

The “Align with Selected Area” tool allows you to select the specific part of the data you would like to align. Use the selection tools to mark the area on both target and reference data.

If you would like to select one or several teeth easily, try using the “Smart Single Tooth Selection” tool.

If the data you are working on was acquired via scanning in Medit Scan for Clinics, “Smart Teeth Selection” is a great tool to select all arch teeth, leaving out the soft tissue data.



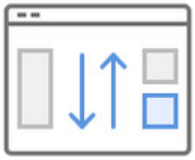
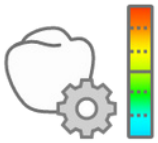
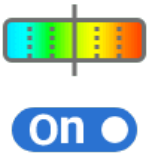
Click on “Apply” to finish the selection and align the selected data with the chosen area.

Swap target and reference data by using the “Reassign Target and Reference Data” button at the bottom of the window. You can come back to this option while working in any mode.

Deviation Display Mode

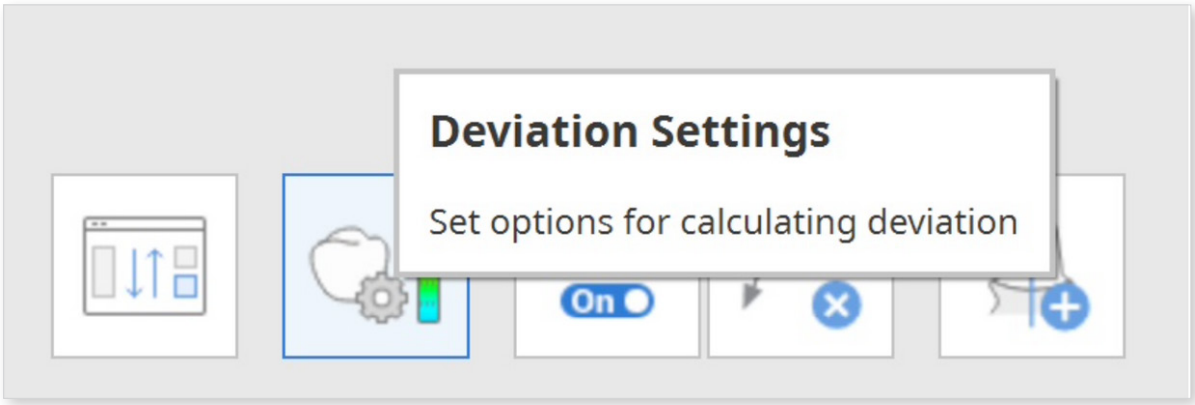
Deviation Display Mode displays the deviation results between the aligned target and reference data using the Color Map.

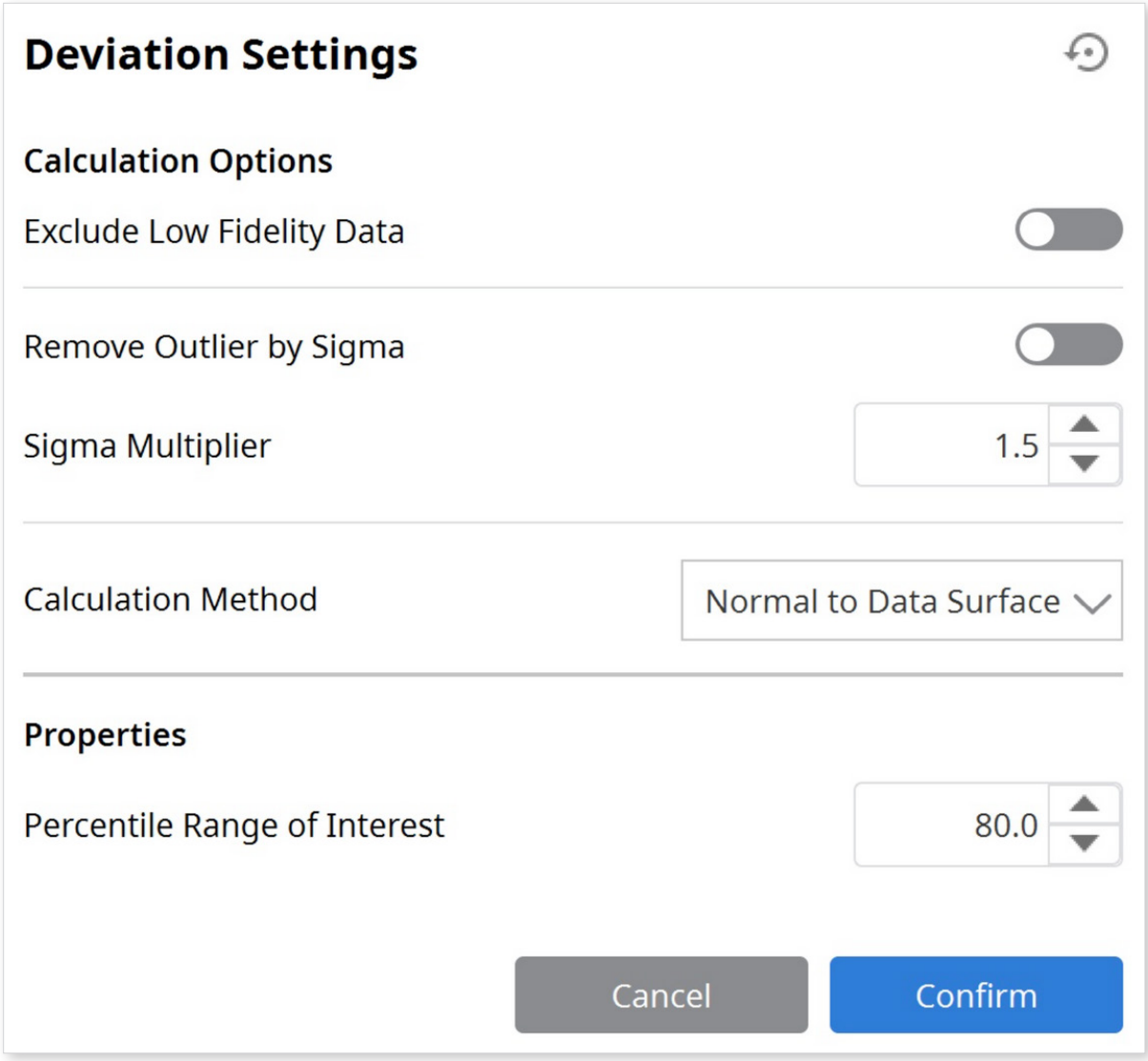
Toolbox

Icon	Tool	Description
	Reassign Target and Reference Data	Change the target and reference data assignment.
	Deviation Settings	Set options for calculating deviation.
	Color Map On/Off	Turn on or off the color map.
	Delete Measurement Results	Delete deviation measurement results by clicking on each of them on 3D data.
	Create Sections	Create Sections

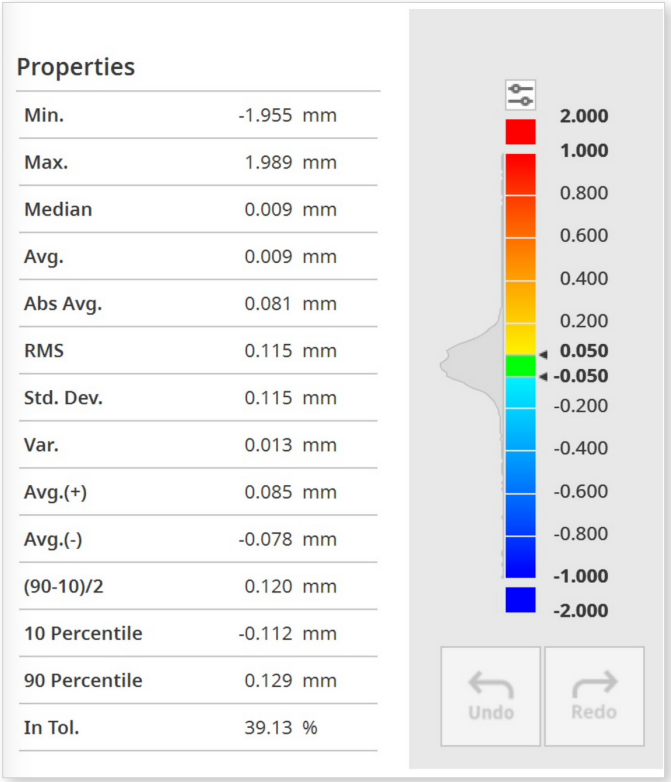
Deviation Settings

Click “Deviation Settings” to customize your settings.

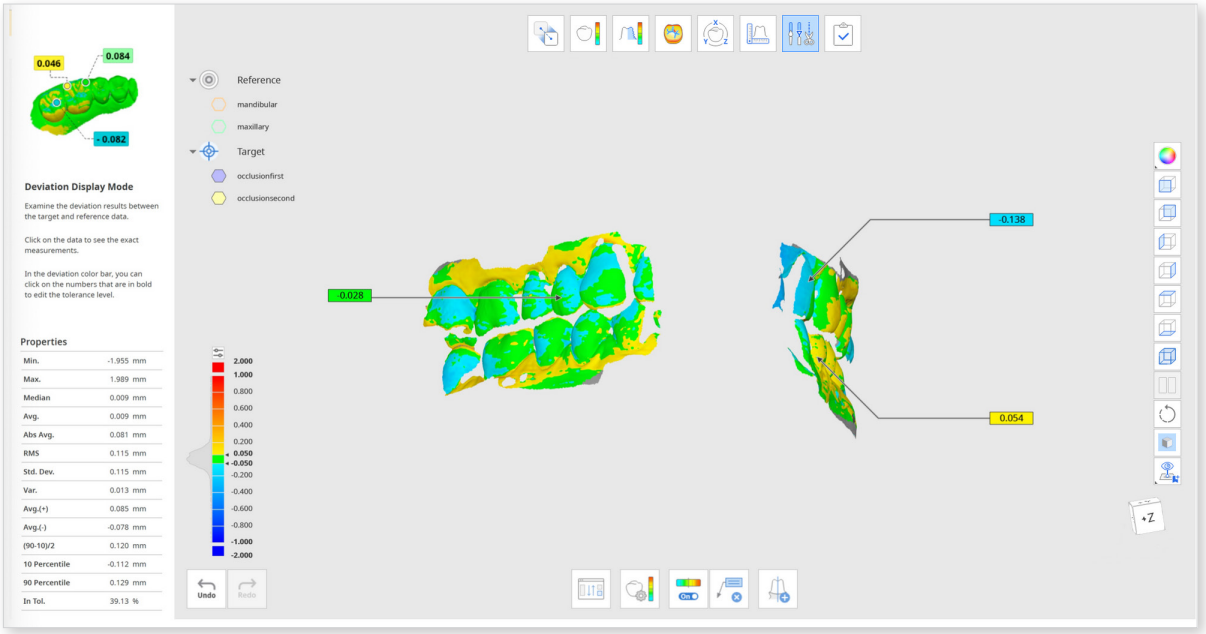




Option	Description
Exclude Low Fidelity Data	Exclude the low-fidelity boundary data when calculating data deviation.
Remove Outlier by Sigma	Input the Sigma value and use it to exclude the outliers when calculating. • In the case of 1 sigma, only data that comes within 1 sigma (standard deviation) are used for calculation based on the positive and negative deviations. • In the case of n-time sigma, only data that comes within n-time sigma (standard deviation) are used for calculation based on the positive and negative deviations.
Calculation Method	You can choose between the normal vector and the nearest position when calculating data deviation.
Percentile Range of Interest	Set the percentile range displayed in the Properties on the left side of the program window. If you enter “80,” it will show the 10th percentile and 90th percentile. • You can customize the maximum value of deviation and the acceptable tolerance by clicking on the numbers in bold. • Adjust the resolution bar located above the color bar.  The color range gets further divided when the resolution is higher.

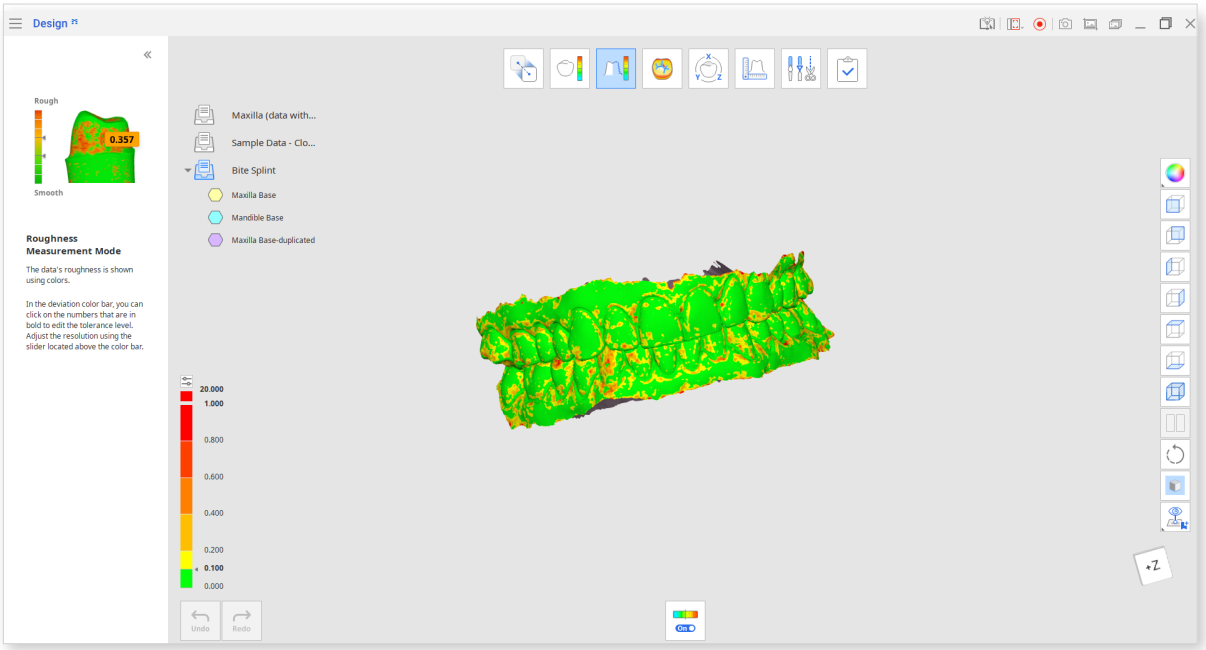


Click on the data to receive the exact measurements.



Roughness Measurement Mode

Roughness Measurement Mode displays the surface roughness of 3D data using the Color Map.

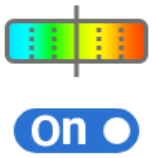


The map shows the roughness of target data and is colored according to the roughness value of a specific surface.

You can customize the maximum roughness value and the acceptable tolerance by clicking on the numbers in bold on the index.

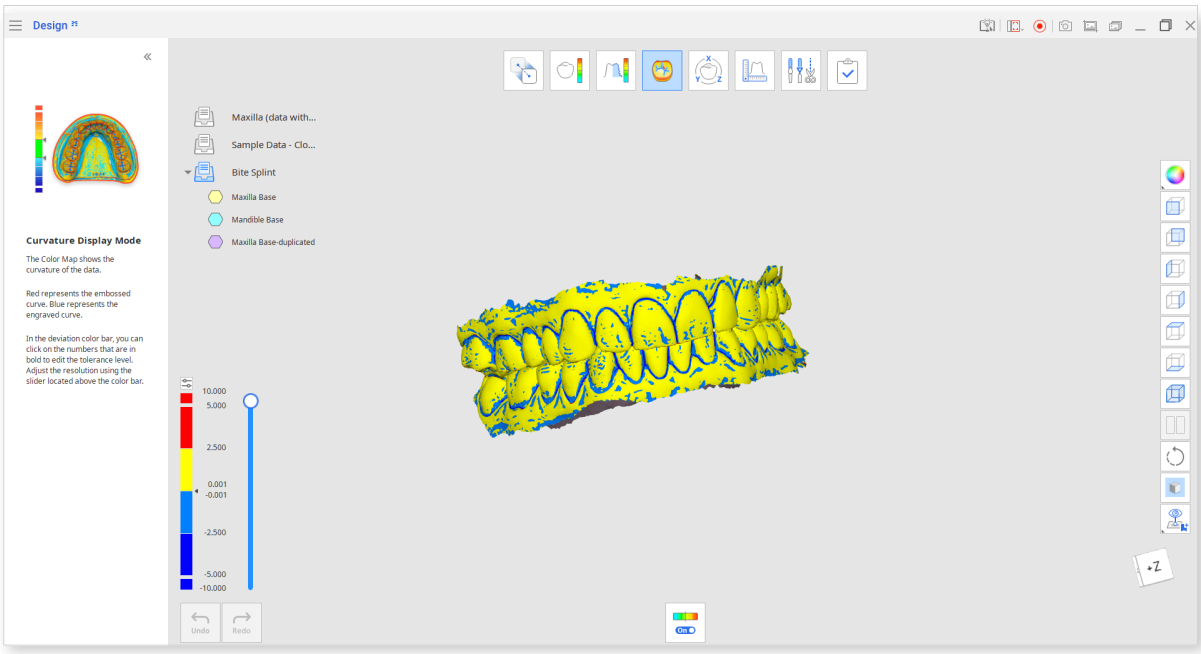
Use the “Color Map On/Off” tool to check the original texture and color of the 3D data.

Toolbox

Icon	Tool	Description
	Color Map On/Off	Turn on or off the color map.

Curvature Display Mode

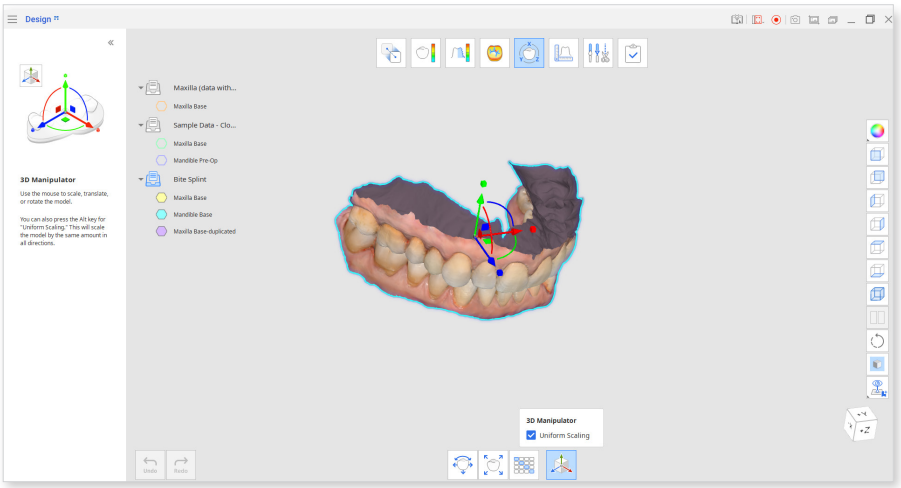
Curvature Display Mode helps you analyze the data’s curvature using colors. Red represents the embossed curve and the blue represents the engraved curve.



Control the slider located on Color Bar’s right side to adjust the resolution or click on the numbers that are in bold to edit the tolerance level.

Transformation Mode

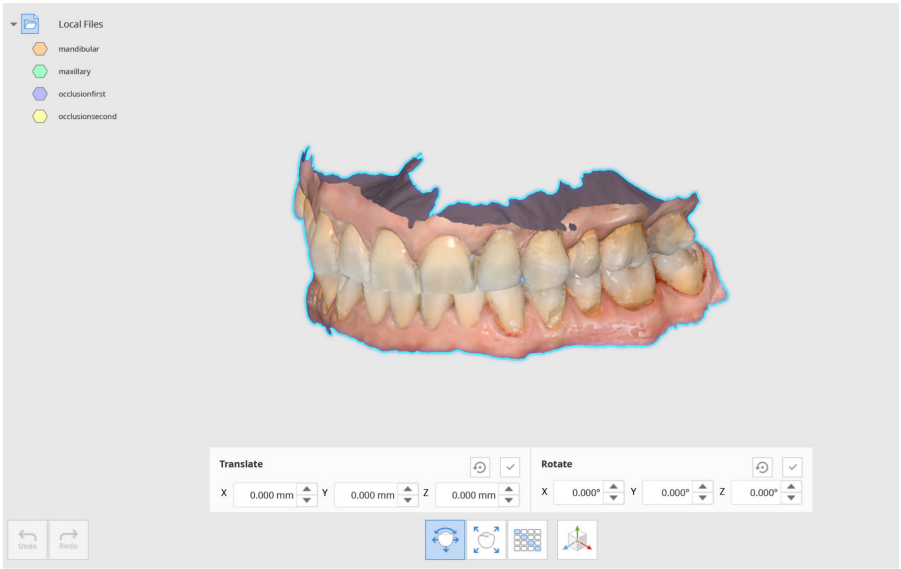
Transformation Mode provides various transformation tools so you can rotate, translate and scale your 3D data with ease.



Translate and Rotate

1. Translate or rotate data by entering the distance or angle value for the axes. Use the up and down keys on the keyboard or mouse wheel to change the values as well.

2. Click “Apply” to apply the changes to all modes in the program.

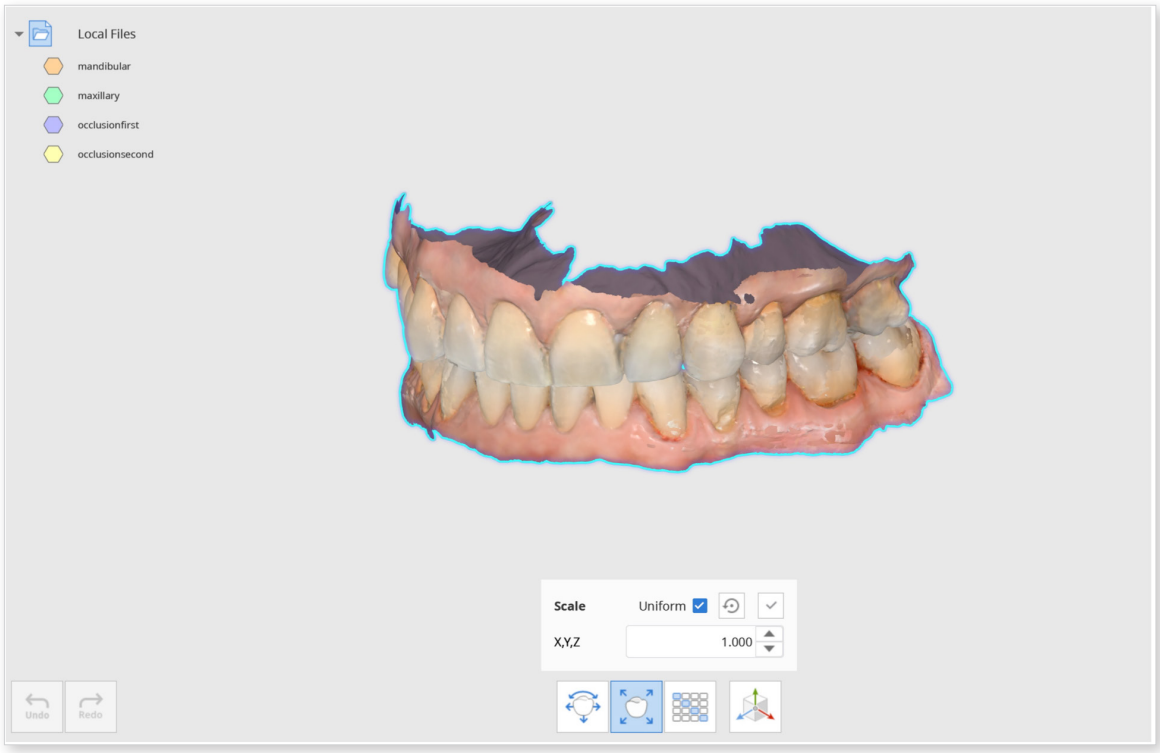


You can leverage this function to change the axes’ orientation of data. For example, if the occlusal surface is located on the +Y axis, as in 3Shape CAD files, you change it to +Z axis to match the exocad orientation.

Export the data by clicking the right mouse button on the Data Tree to export the data you are working on.

Scale

1. Scale data by entering values for the axes.
2. Check the “Uniform” box to use the same value to scale data across all axes simultaneously.
3. Click “Apply” to apply the changes to all modes in the program.

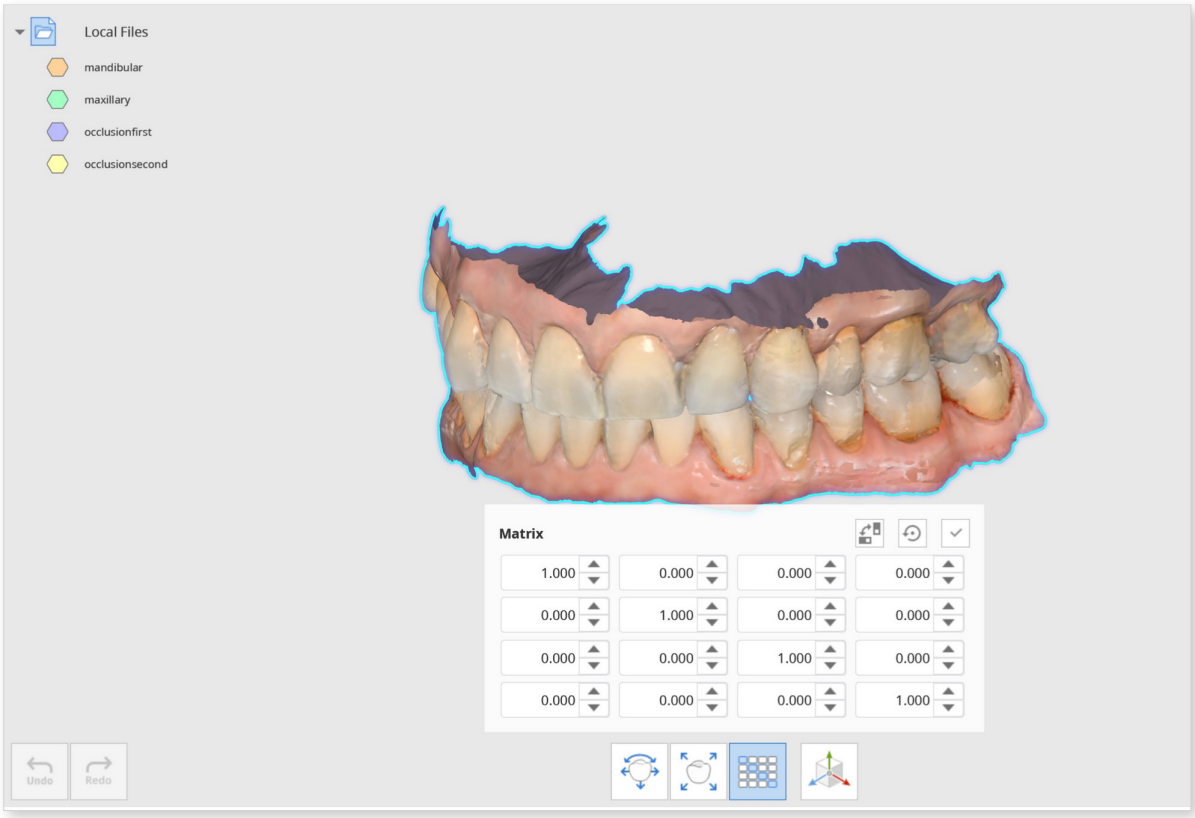


Scale the enlarged crown/bridge data before sintering down to 1:1 proportion and compare it with the original data to see if the shrinkage is constant.

Transformation Matrix

The transformation matrix transforms the data by setting the value for each element.

Click “Apply” to apply the changes to the data across all modes in the program.



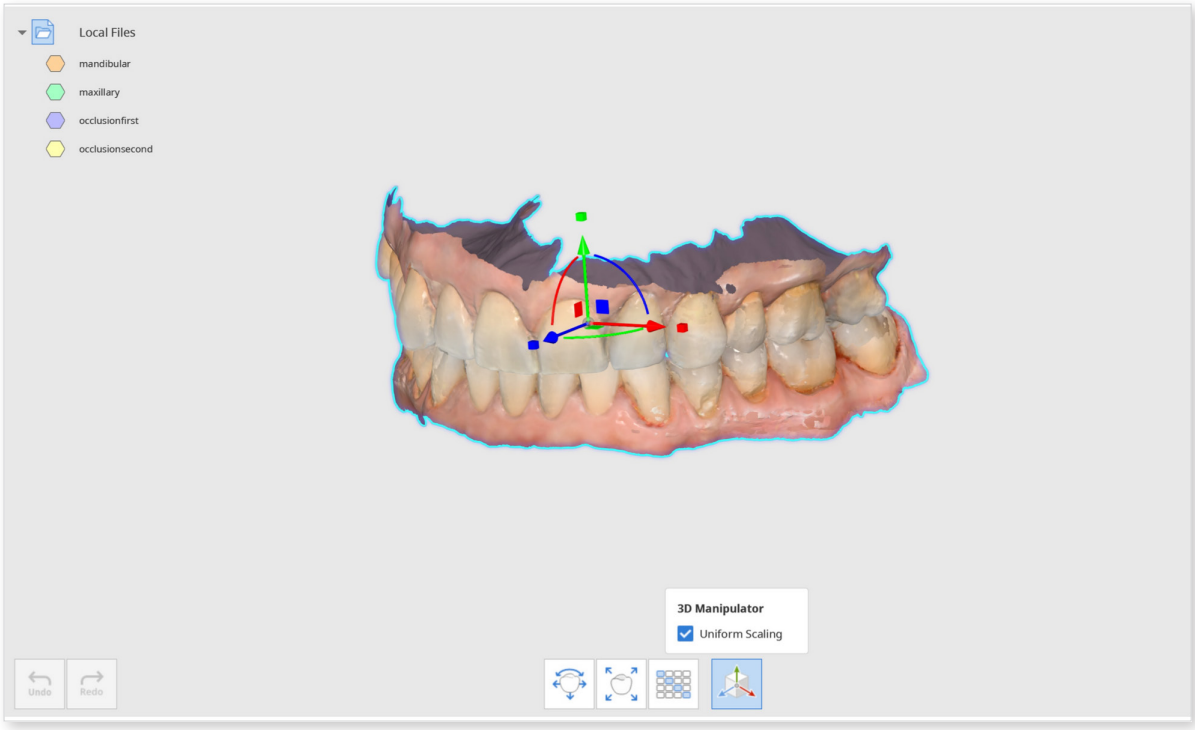
Used when you want to check if CAD implant library and scan data were aligned correctly.

Enter the value for the matrix to move to the alignment position and inspect the data.

3D Manipulator

Use the manipulator in 3D Manipulator to scale, translate or rotate the model.

Check “Uniform Scaling” to use the model by the same values in all directions.

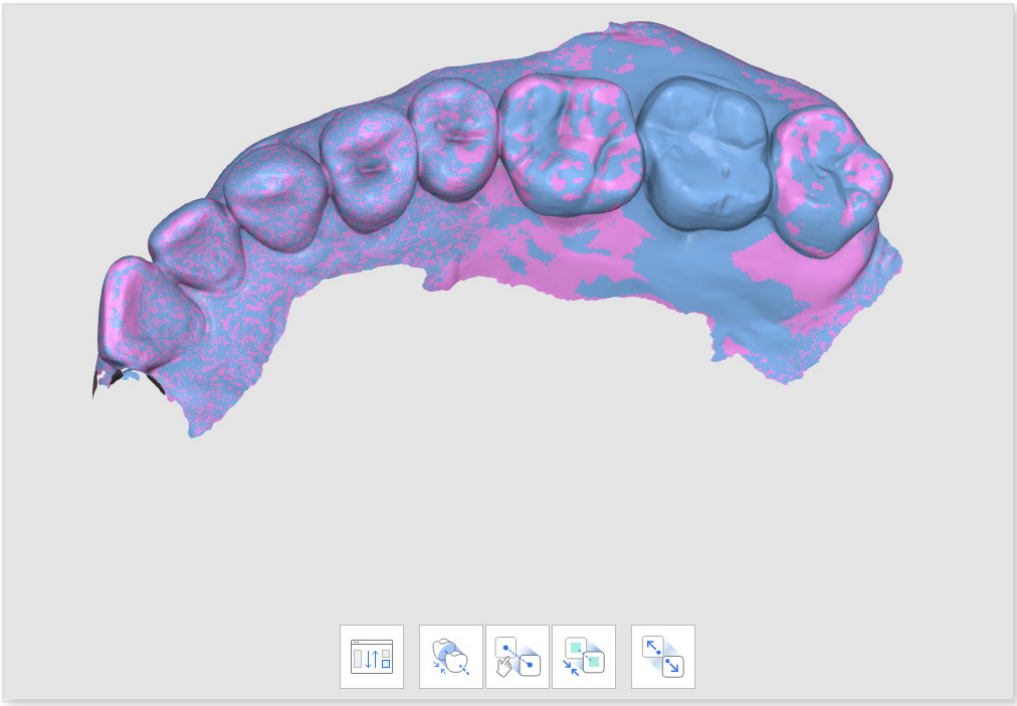


Measurement Mode

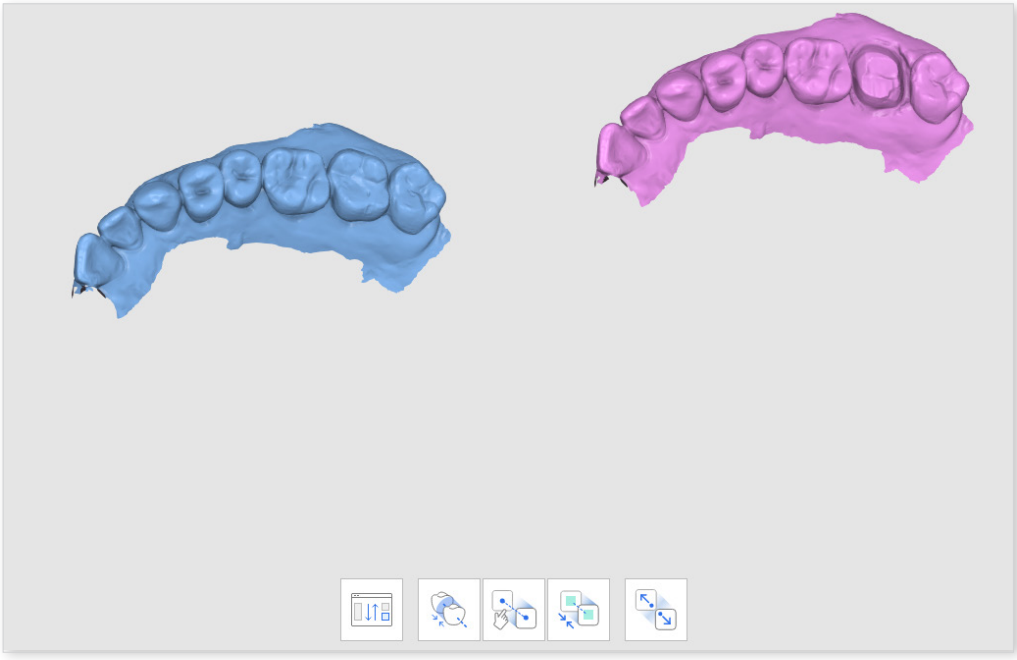
Measure distance, angle, length and area of the 3D data.

You can measure the data in its aligned or detached state. Data can be detached in the Alignment Mode by using the “Detach Data” feature.

Aligned Data



Detached Data

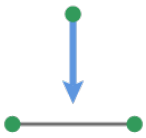


Toolbox: Measurement Tools

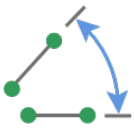
Sections

Icon	Tool	Description
	Create Sections	Create section lines.
	View Perpendicularly to Section Line	Orient the view perpendicularly to the section line.

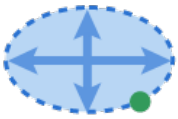
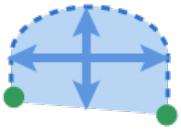
Measuring Distance

Icon	Tool	Description
	Measure Distance by One Point	Measure the shortest distance to the adjacent 3D data or line.
	Measure Distance by Two Points	Measure the distance between two points.
	Measure Distance by Three Points	Measure the distance between a point and a line defined by another two points.

Measuring Angle

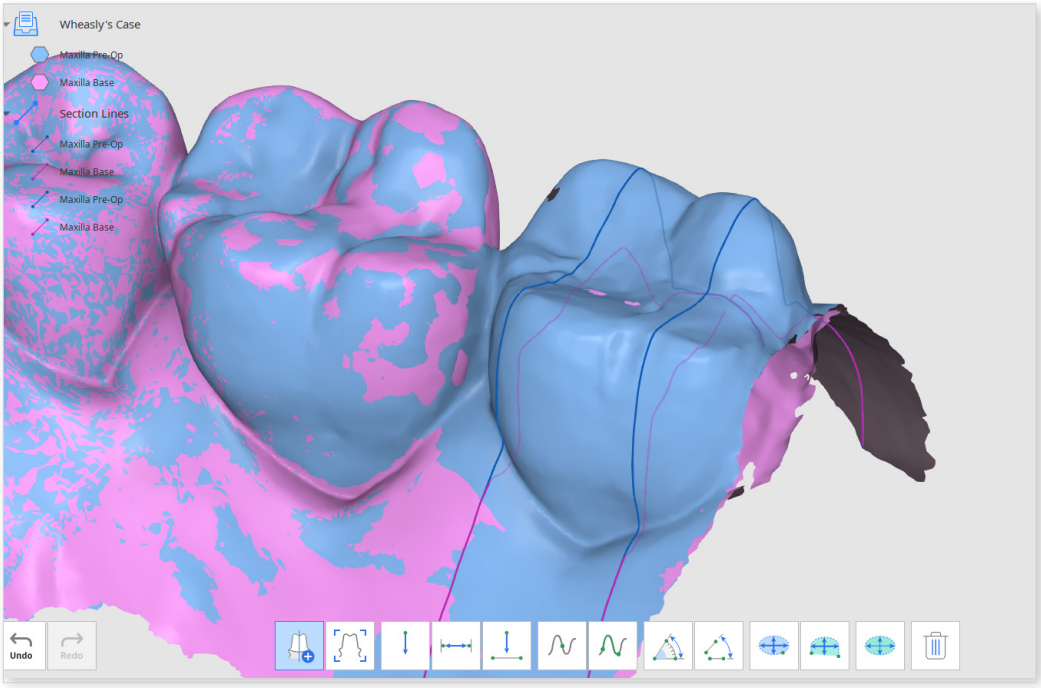
Icon	Tool	Description
	Measure Angle by Three Points	Measure the angle between the lines made with three points.
	Measure Angle by Four Points	Measure the angle between the lines made with four points.
	Measure Length by One Point	Measure the length of the section line by one point.
	Measure Length by Two Points	Measure the length of the section line by two points.

Measuring Area

Icon	Tool	Description
	Calculate Area by One Point	Calculate the area of the section line by one point.
	Calculate Area by Two Points	Calculate the area of the section line by two points.
	Calculate Area by Selection	Calculate the selected area.
	Delete Measurement Results	Delete measurement results and sections by clicking on each of them.

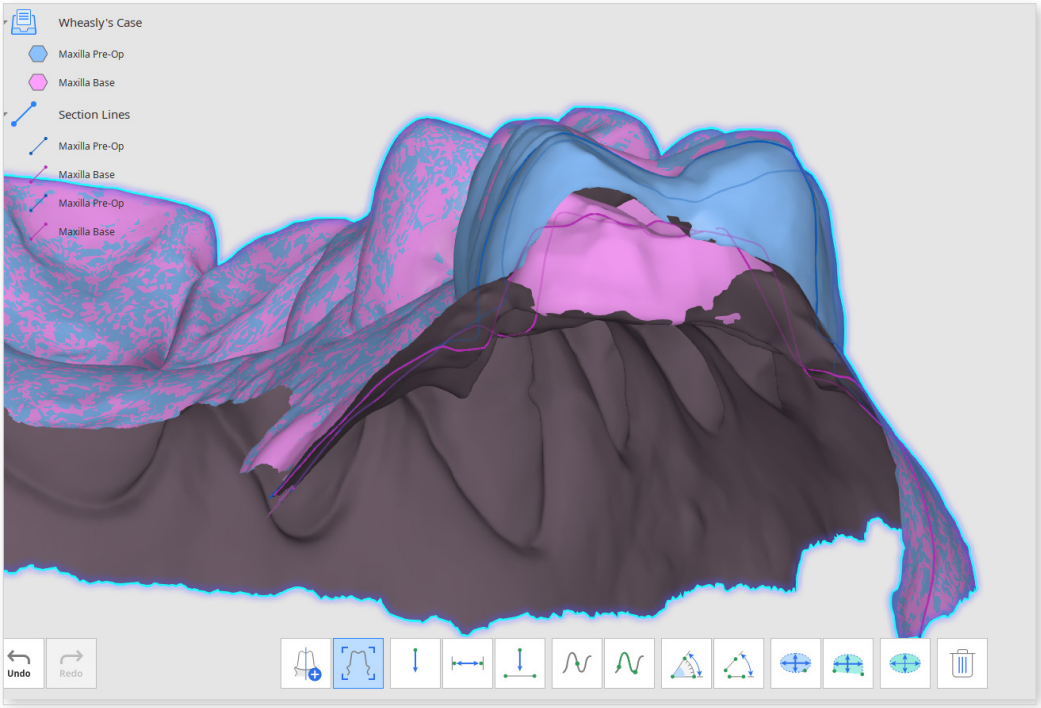
How to Use Measurement Mode

1. Click “Create Sections” to draw a line at the desired area to create a section. You can add multiple lines. The section’s visibility can be controlled in the Data Tree.

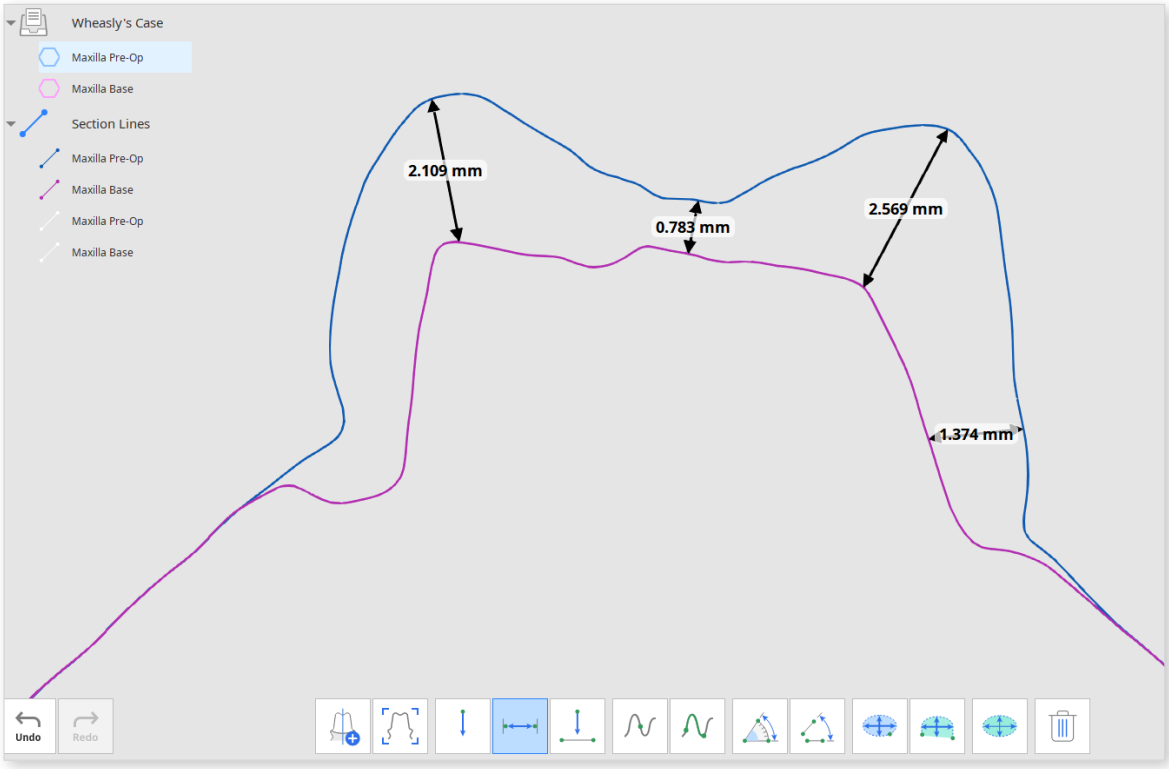


2. Use the tools at the bottom of the window to measure the distance, angle, length, and area of the data.

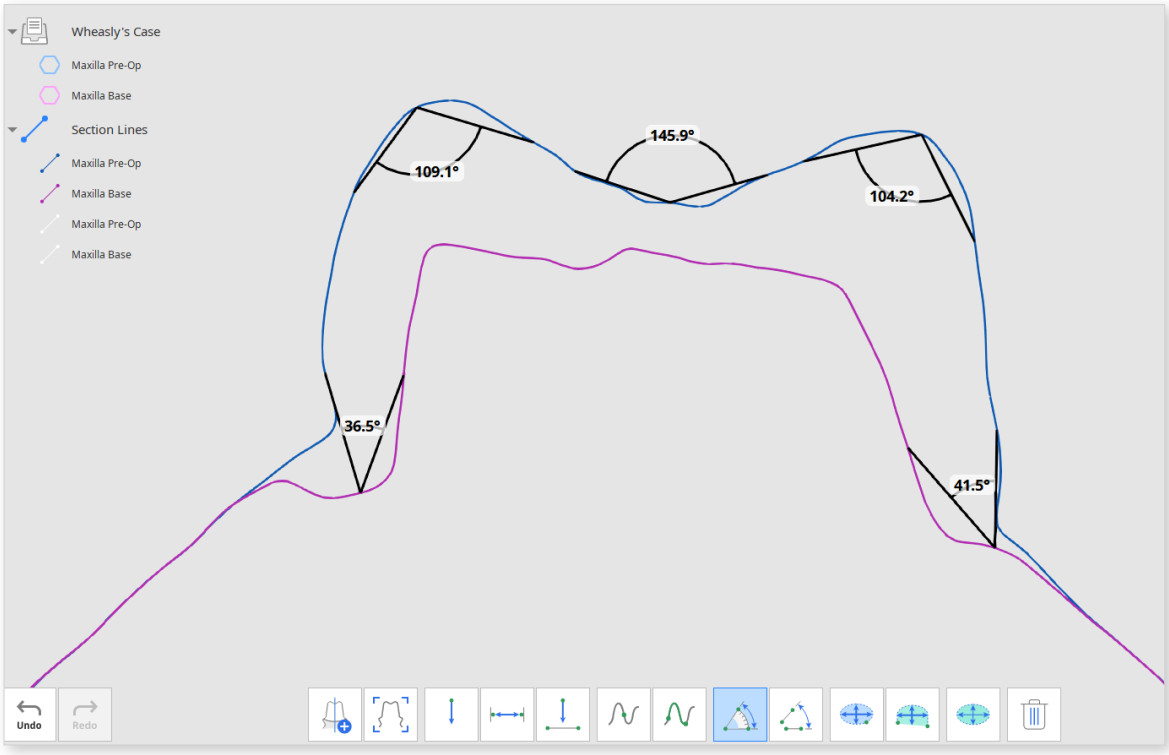
3. “View Perpendicularly to Section Line” to change the view. Click on any of the section lines to change the data view perpendicularly to them.



4. Measure Distance: You can measure the distance by using one, two, or three points.

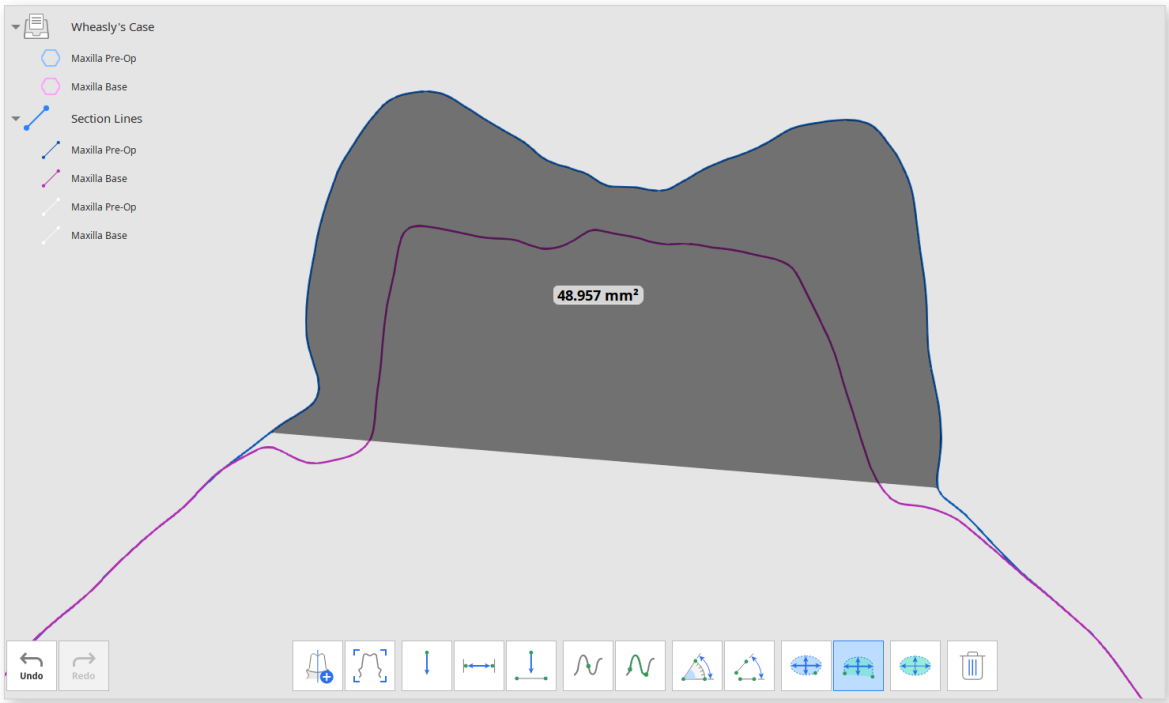


5. Measure Angle: You can measure the angle by using three or four points.



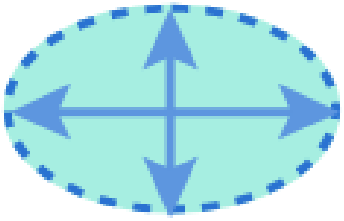
6. Measure Length: You can measure the length by using one or two points.

7. Measure Section Area: You can measure the section area by using one or two points.

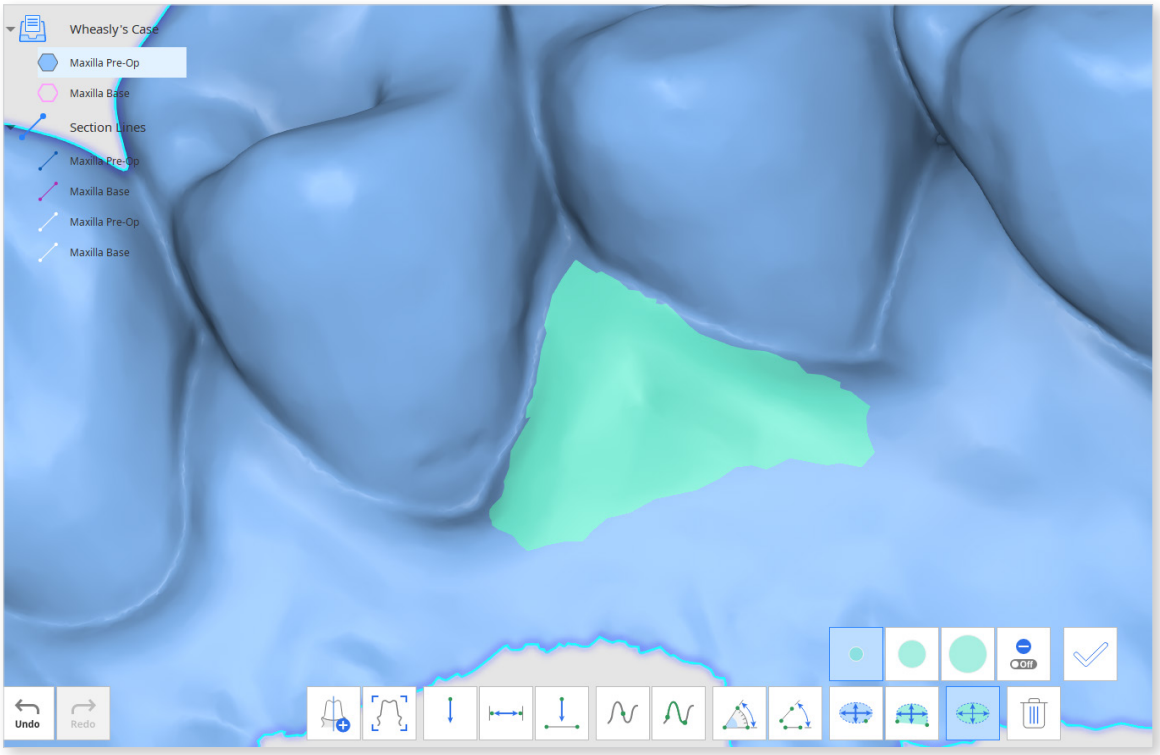


The Measure Distance and Measure Length tools can also be used without creating sections.

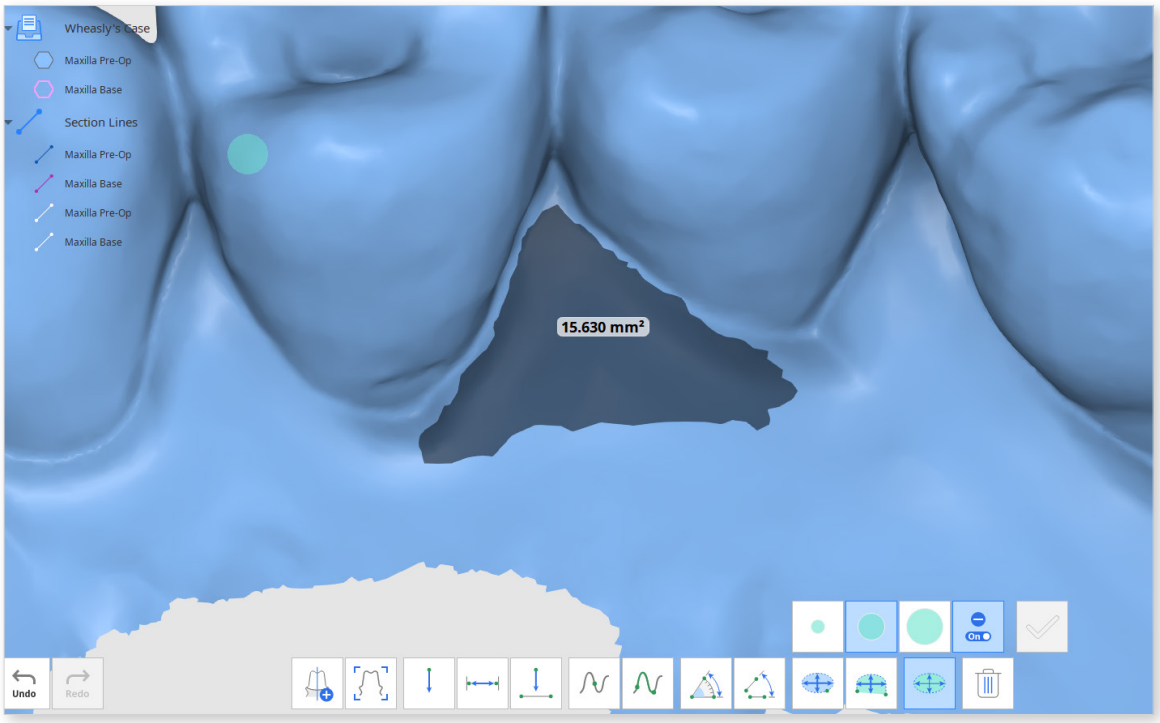
The “Measure Area” tool allows you to measure the area by selecting the desired portion of the data.



1. Select the area of the 3D data to calculate.



2. Click “Apply” to measure the selected area.



To remove measurements, click “Delete Measurement Results” and select any result on the data. You can also click and drag the mouse across all the measurement results to delete them.

Modes - Edit Mode

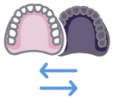
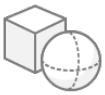
Edit Mode provides various tools to view and edit data.

The selected 3D data can be edited using different tools located at the bottom of the window.

Control the data to be displayed and its transparency using the Data Tree on the left.

Right-click on the data to export it as an attachment to Medit Link.

Editing Tools

Icon	Tool	Description
	Reverse Data	Reverse data surface inside out.
	Trimming Tool	Use the various selection tools to select and remove unnecessary data.
	Bridge	Connect parts of the mesh data by creating a mesh bridge.
	Fill Holes	Fill empty spaces in the 3D mesh data.
	Sculpting	Make changes to data by sculpting it; add, remove, smooth or morph it.
	Offset	Set the offset distance from the existing data to create a new mesh.
	Thicken	Increase the thickness and direction of the selected mesh.
	Boolean	Perform the following boolean operations: Union, Cut and Intersection.
	Duplicate	Create a new mesh by duplicating the selected area.
	Blockout Undercut	Fill and remove the unwanted undercuts. Adjust the undercuts angle and set the insertion direction.

	Smooth Surface	Use the selection tools to select the surface you want to smooth. Adjust the level of smoothness
	Mirroring	Create a symmetrical copy of the data.
	Combine	Combine two meshes into one without transforming the originals.
	Mesh Resolution	Change the mesh resolution by controlling the number of triangles that constitute the mesh.

Toolboxes in Editing Tools

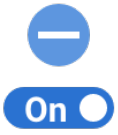
Selection Tools

Icon	Tool	Description
	Smart Teeth Selection	Automatically select only the teeth in the arch, leaving out the gingiva area.  This function is only available for the scan data acquired by Medit Scan for Clinics with the “Use GPU” option on.
	Smart Single Tooth Selection	Automatically select the area of a single tooth, leaving out the gingiva area. Click and drag the mouse on the tooth.
	Flood Fill Selection	Select the connected area based on the mouse movements.
	Polyline Selection	Select all areas within a polyline shape drawn on the screen.
	Brush Selection	Select all areas on a freehand-drawn path on the screen. Only the front-facing side will be selected. The brush is available in three different sizes.

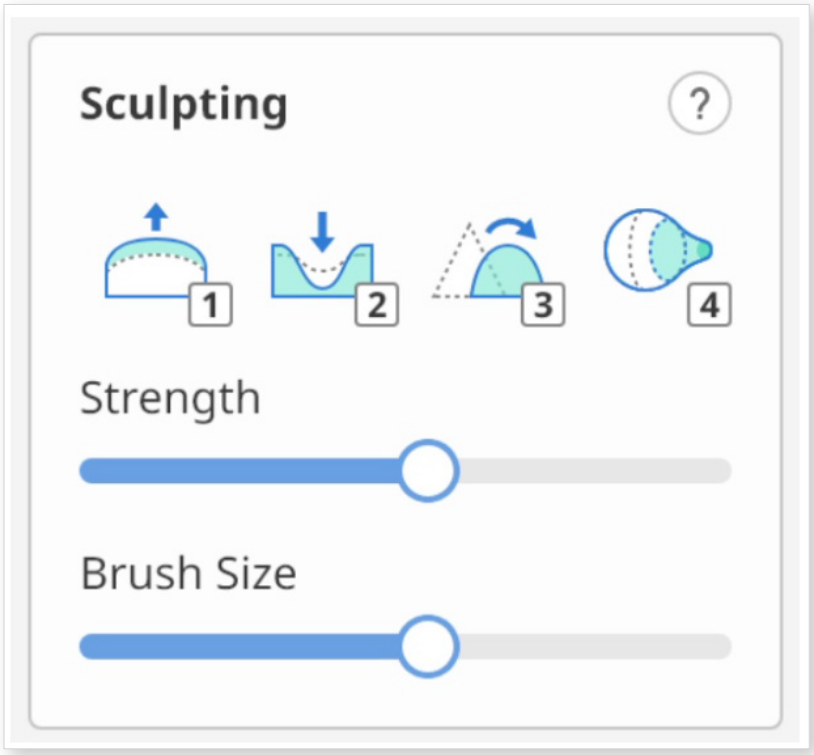
Post-Area Selection Tools

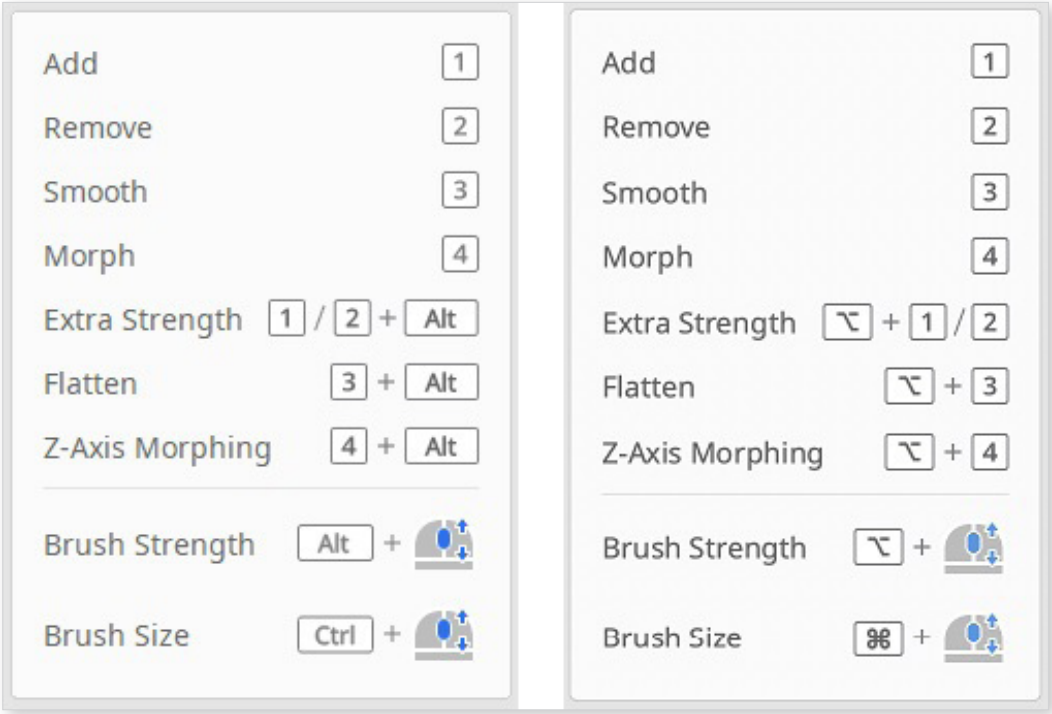
Icon	Tool	Description
	Autofill Selected Area	Turn on to automatically fill the selected area. This function can be turned on and off.
	Shrink Selected Area	Reduce the selected area each time you click the button.
	Expand Selected Area	Expand the selected area each time you click the button.
	Invert Selected Area	Invert the selection.

Deselection Tools

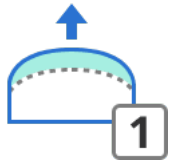
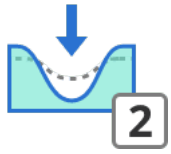
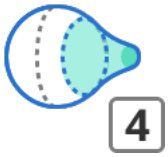
Icon	Tool	Description
	Selection / Deselection	When on, this function deselects the area using various tools.
	Clear All Selection	Clear all selected areas
	Delete Selected Area	Delete the data from the selected area.

Sculpting Toolbox





<Sculpting shortcuts for Windows and macOS.>

Icon	Tool	Description
	Add	Use the mouse to add on parts of the data. Hotkey: 1
	Remove	Use the mouse to remove parts of the data Hotkey: 2
	Smooth	Use the mouse to smooth parts of the data. Hotkey: 3
	Morph	Use the mouse to morph parts of the data. Hotkey: 4

Press “Tab” to switch to the right side tool.
Press “Shift + Tab” to switch to the left side tool.

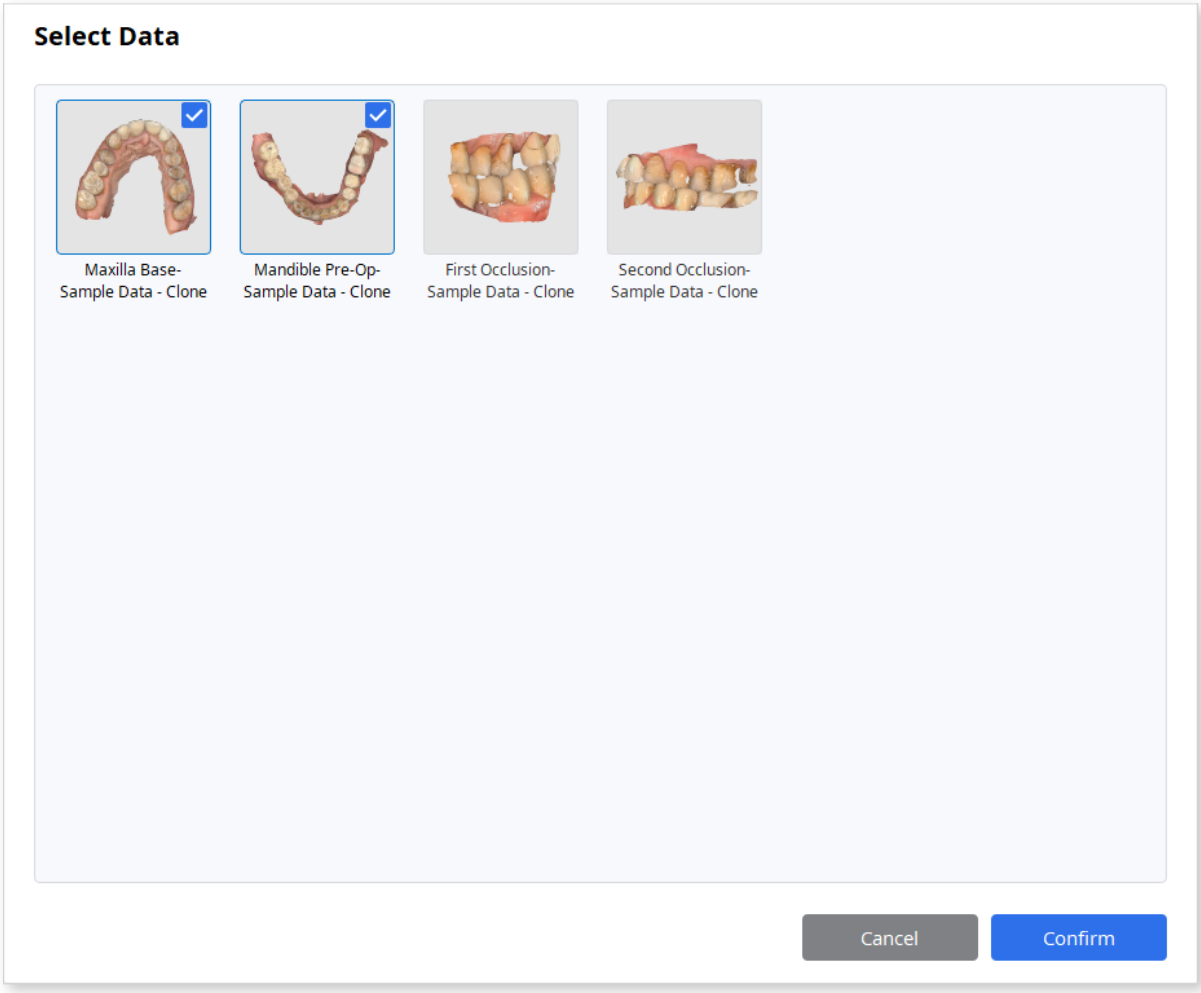
Icon	Tool	Description
	Strength	Adjust the strength for each of the tools. Hotkey: Alt/Opt + Mouse Wheel
	Brush Size	Adjust the brush size for each of the tools. Hotkey: Ctrl/Cmd + Mouse Wheel

Reverse Data

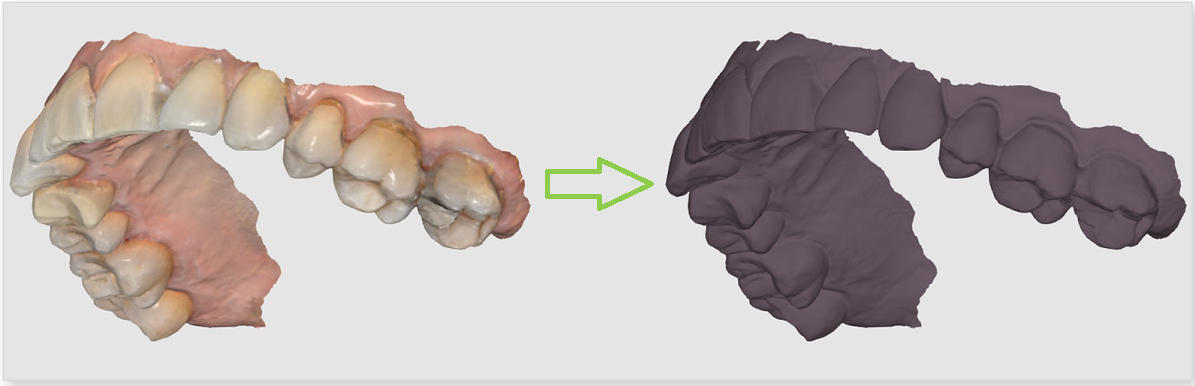
How to Reverse Data

You can reverse data inside-out using the “Reverse Data” feature.

Click on the “Reverse Data” icon at the bottom of the screen, and in the new dialog window, select your target data. You can choose more than one data for reversing.



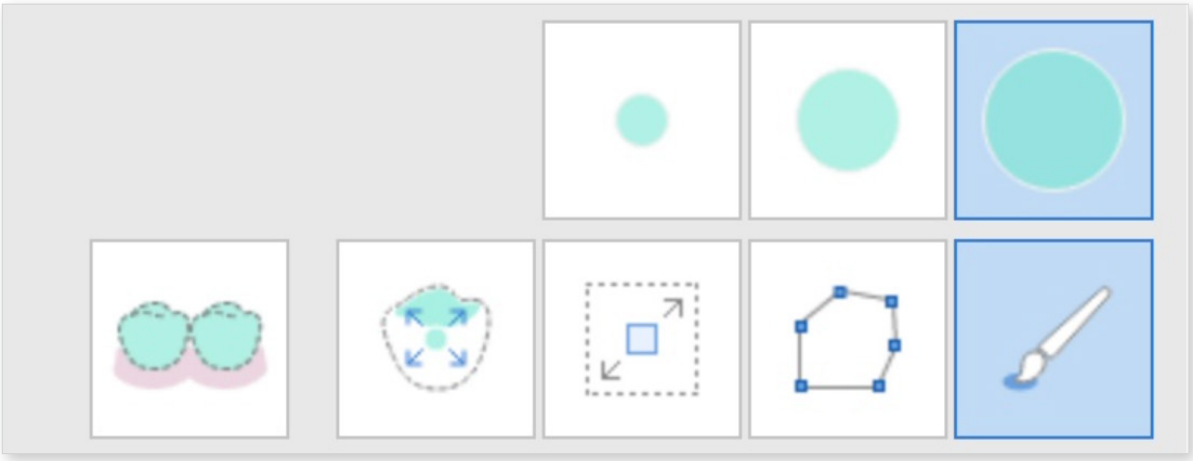
Once selected, click “Confirm” to see the result.



Select and Trim Data

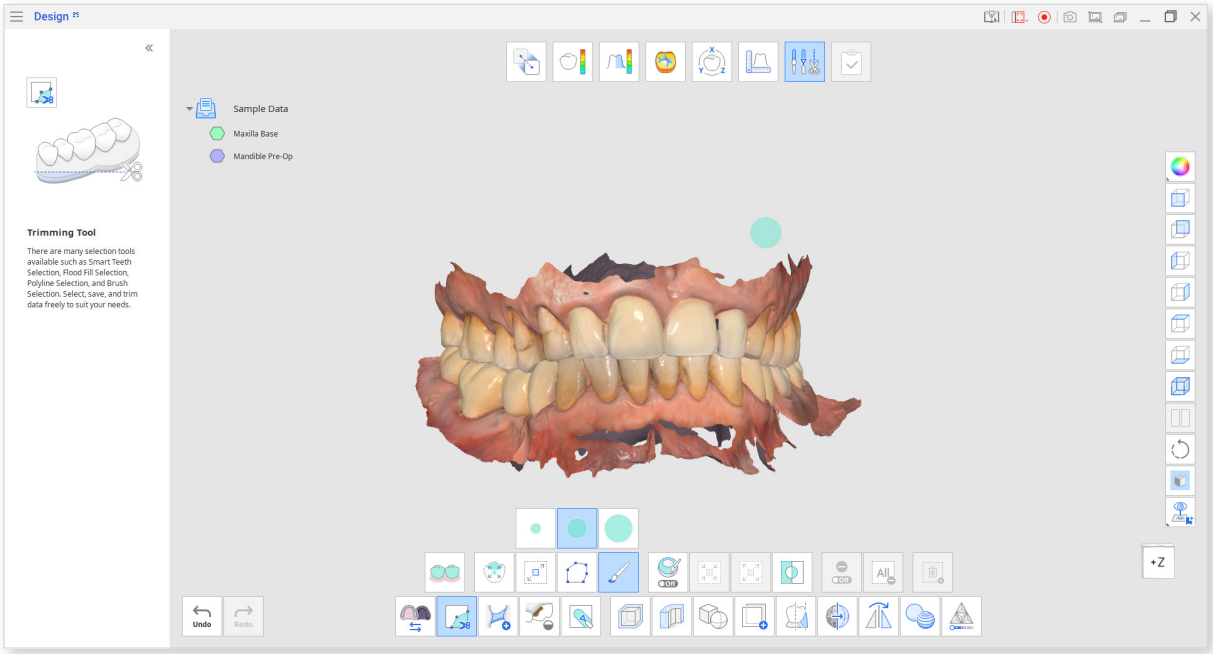
How to Use Trimming Tool

You can use various tools to select the area you would like to trim.



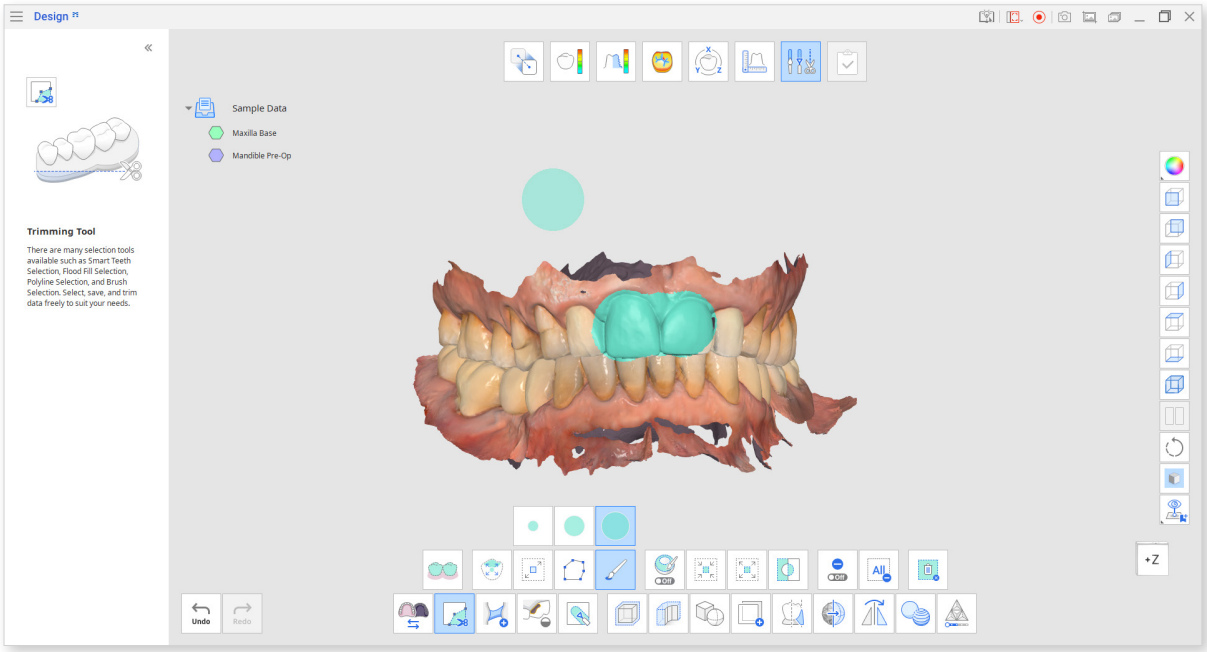
There are many selection tools available (from left to right): Smart Teeth Selection, Smart Single Tooth Selection, Flood Fill Selection, Polyline Selection, and Brush Selection.

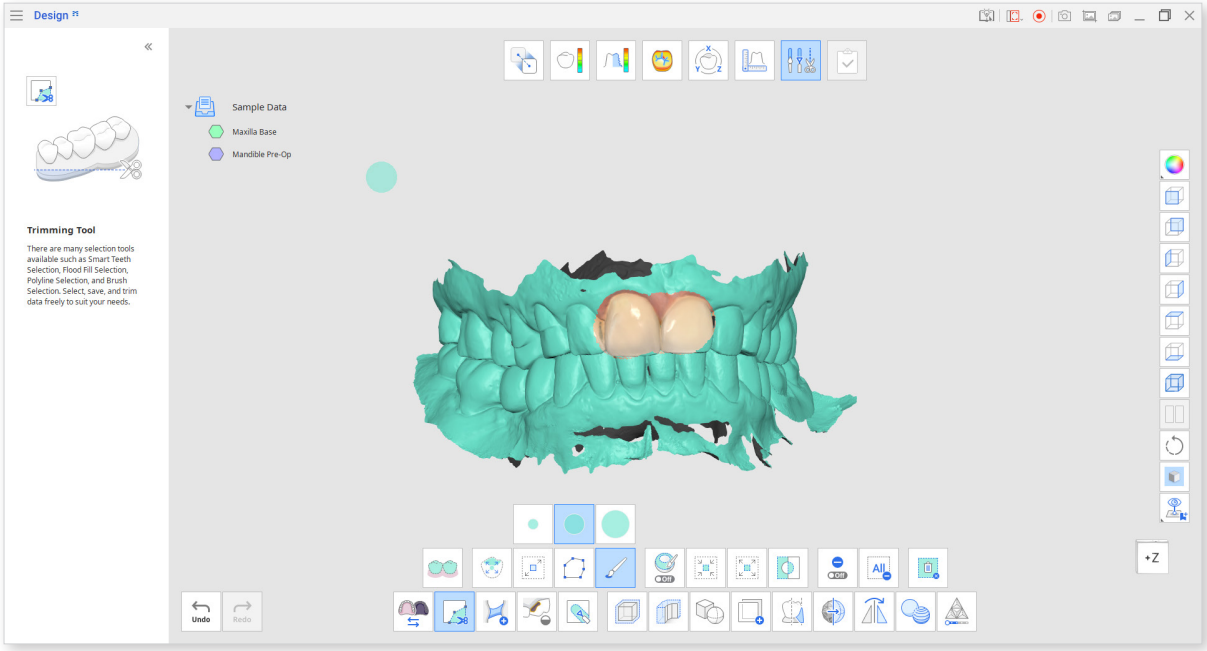
Smart Teeth Selection	Automatically selects all teeth in the arch, leaving out the gingiva. This selection tool is useful when you want to quickly select all teeth.
Smart Single Tooth Selection	Makes selecting individual teeth easier. Click and drag over the area you want to select and it will only select the tooth area, leaving out the gingiva.
Flood Fill Selection	Like the name suggests, fills and selects the area that is clicked and dragged over. Move the mouse to expand the selection.
Polyline Selection	Selects areas within the polyline shape drawn on the screen. Left click to draw the polyline shape and right click to close the shape and finish the selection.
Brush Selection	Offers three different brush sizes so you can freely select the data.



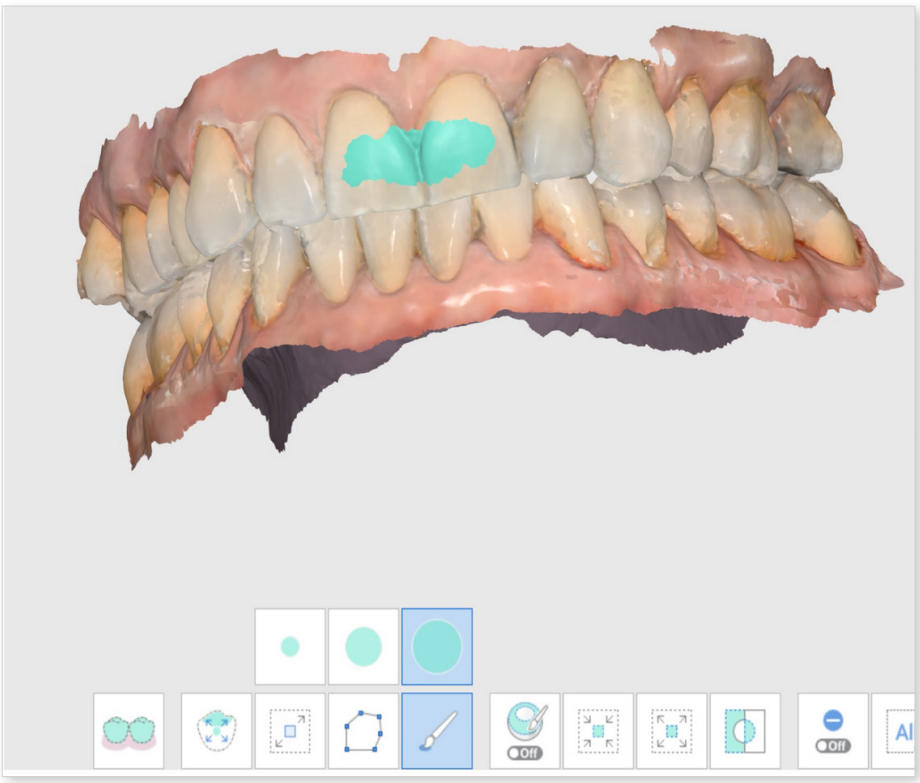
”Polyline Selection” selects all areas within the polyline shape drawn on the screen, while “Brush” selects only the front- facing data.

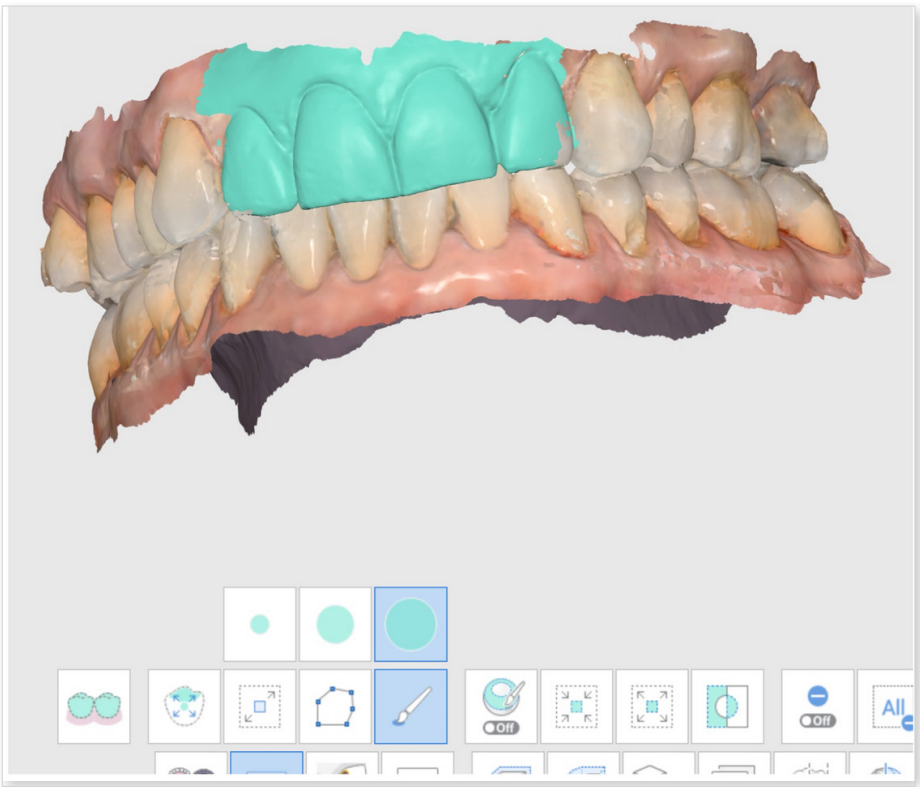
Revert the selection by clicking “Invert Selected Area.”





Reduce or expand the selected areas using the “Shrink Selected Area” or “Expand Selected Area” tools.





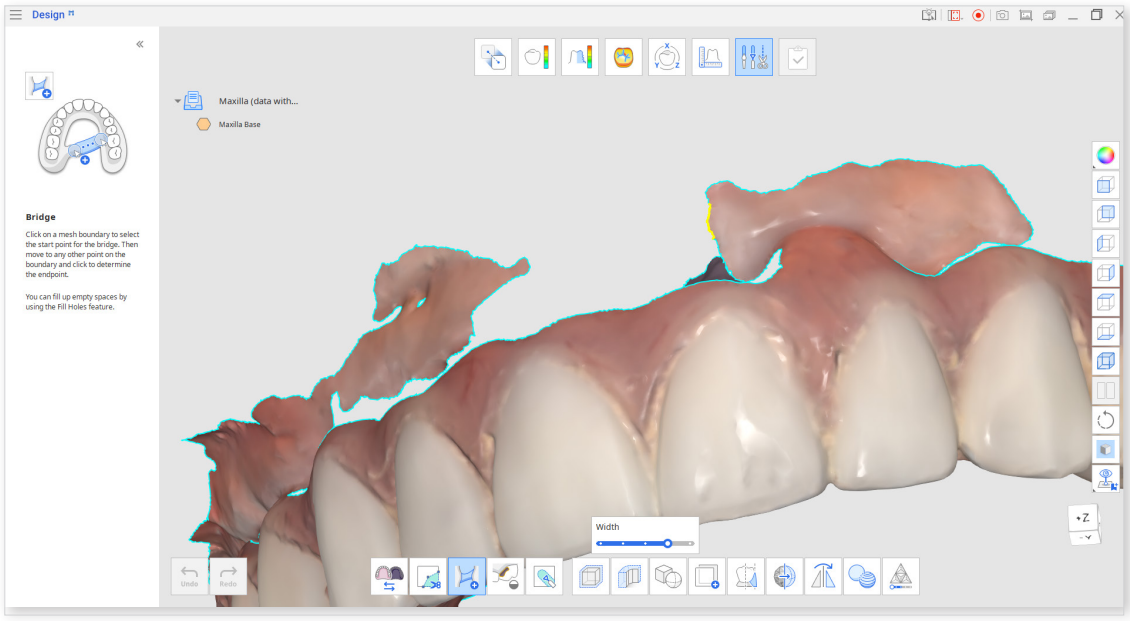
Click “Delete Selected Area” to delete the entire selected area.

Create Bridge Data

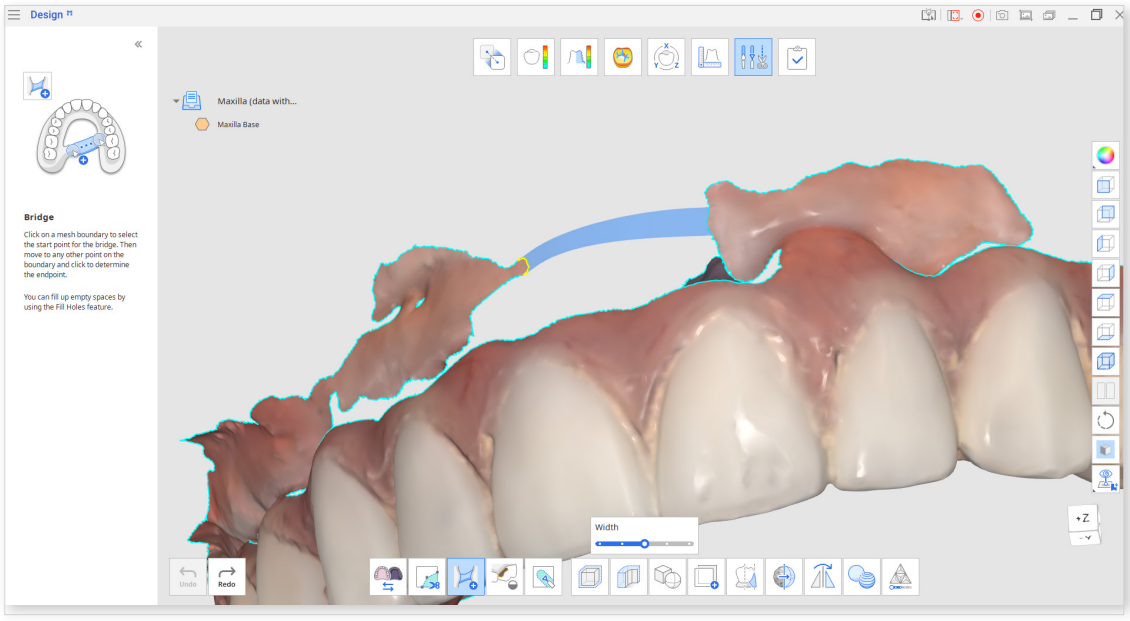
How to Create Mesh Bridges

“Bridge” creates a stripe of new mesh that restores the connection between the separated parts of the data.

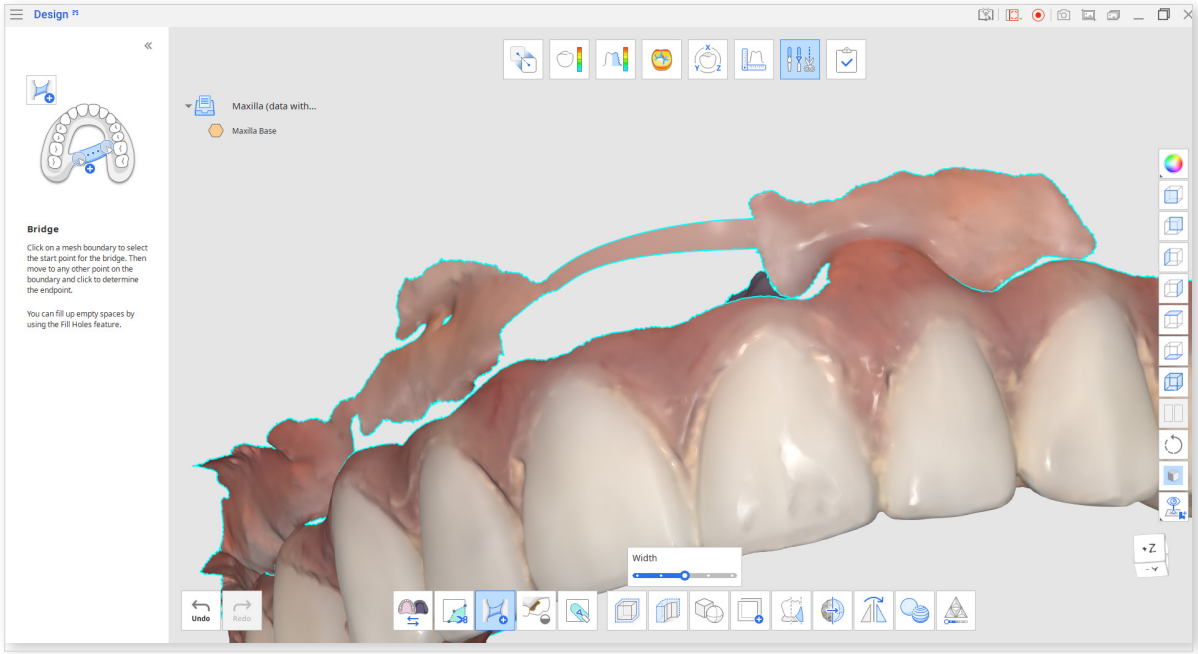
Select the “Bridge” tool at the bottom of the screen and zoom in on the separated data element. Adjust the “Width” slider to determine how broad the created mesh stripe will be.



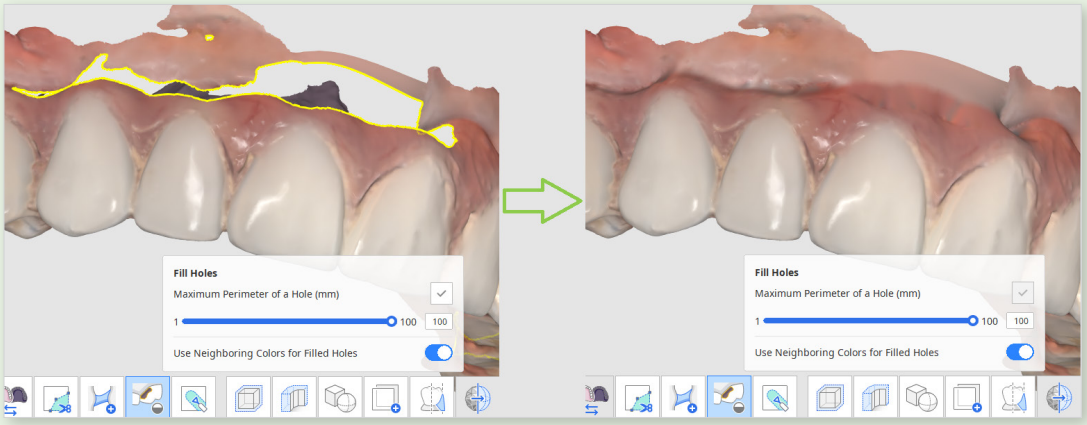
Hover the mouse over the boundary of the mesh to find the start point for the bridge; it will be displayed in yellow. Click on the boundary to select the start point, and then move the mouse to where you want the bridge to end.



Click again to create the mesh bridge.



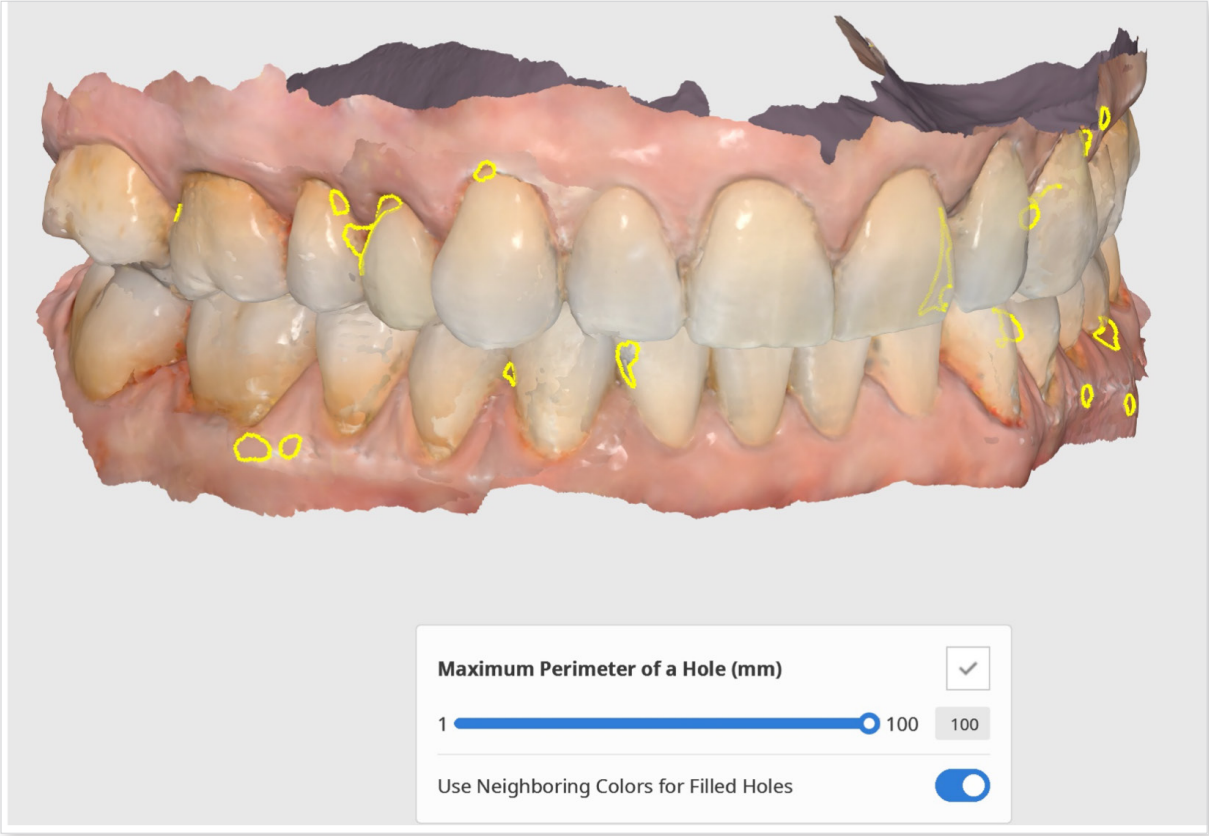
Once you have an enclosed boundary, you can use the “Fill Holes” feature to fill gaps.



Fill Holes in Data

How to Fill Holes in Data

You can use “Fill Holes” to fill in the data holes left from scanning or any sparse areas.



Maximum Perimeter of a Hole (mm): Set the maximum size of holes (mm) to fill. Note that any holes exceeding the size you set will not be filled.

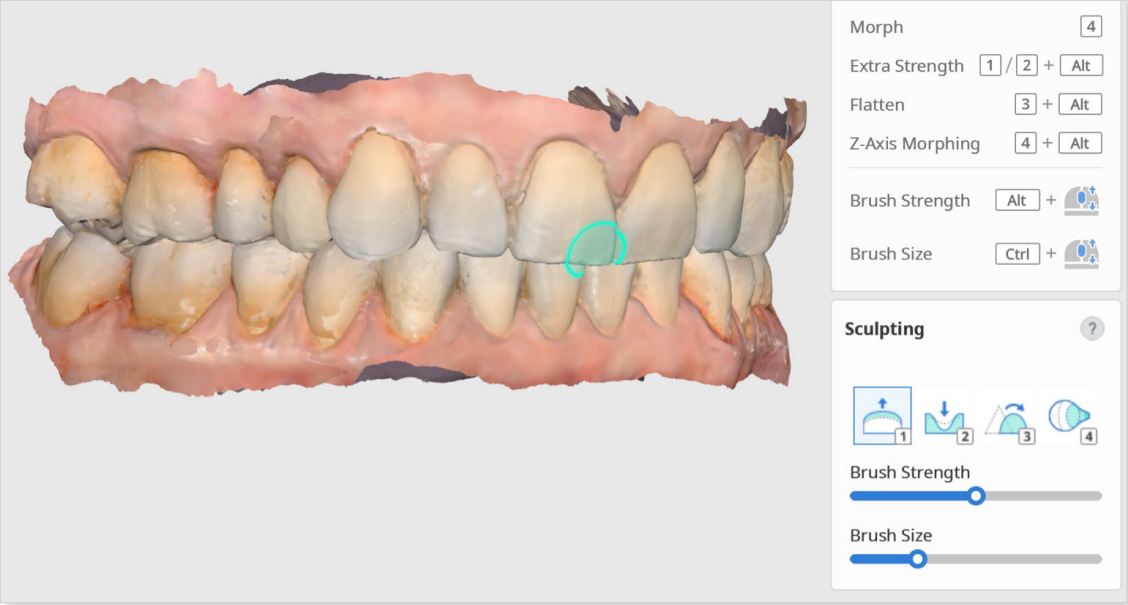
Use Neighboring Colors for Filled Holes: When the “Use Neighboring Colors for Filled Holes” box is checked, the program will use the colors around the holes for filling. Otherwise, the filled areas will be grey.

Click “Apply” to apply the changes and see the result.

Sculpt Data

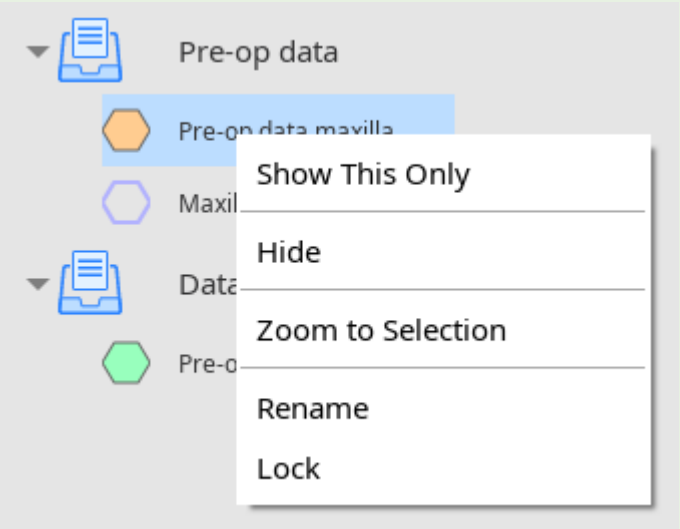
How to Sculpt Data

Sculpt data using tools such as “Add,” “Remove,” “Smooth,” and “Morph.”



There are shortcut keys available so you can easily switch back and forth the tools. Control the brush strength and brush size using the sliders.

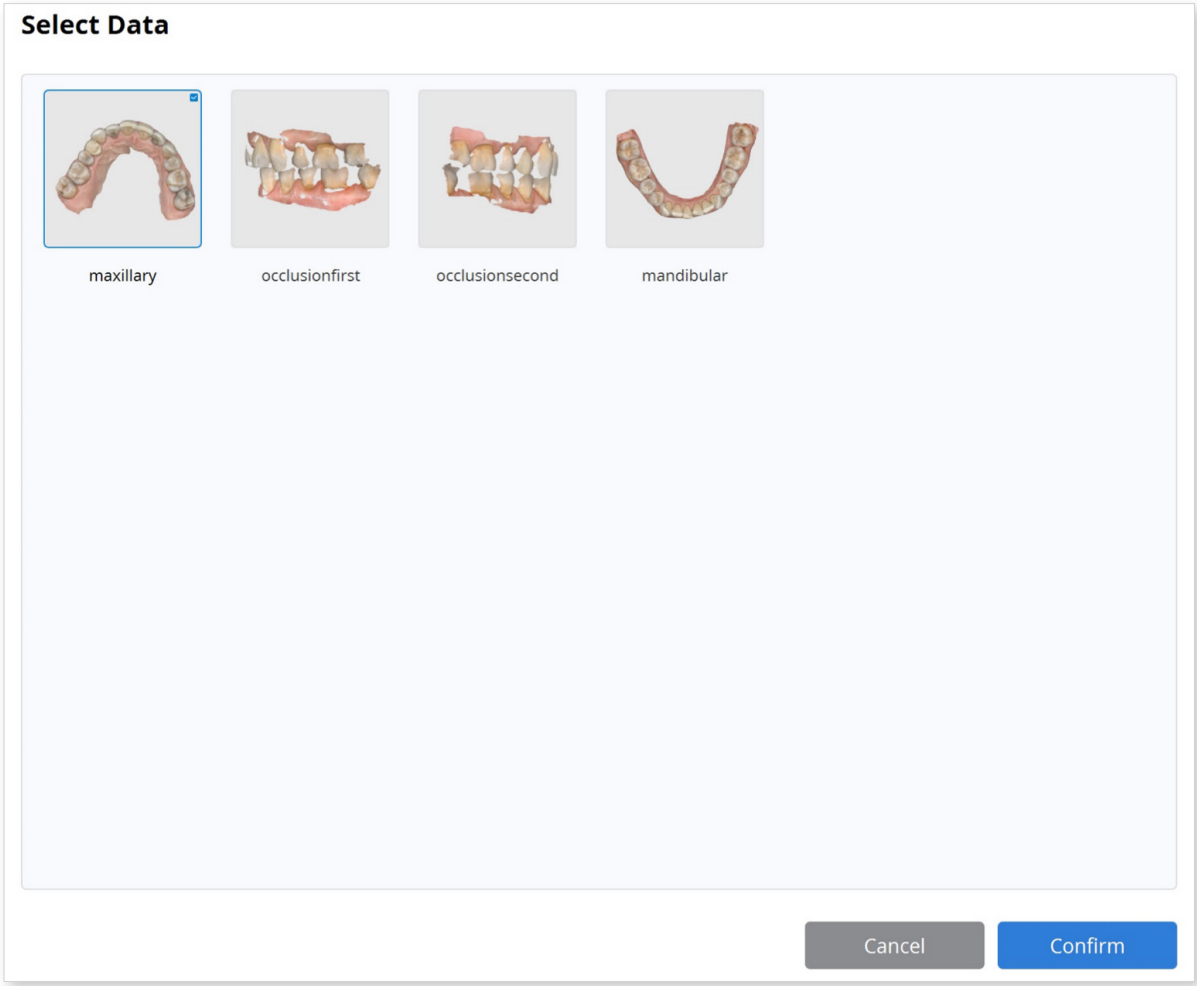
When working with multiple data, you can lock desired data to preserve it from changes during sculpting (without hiding or moving it). Right-click the data or data group in the Data Tree and select the “Lock (Unlock)” command in the context menu. When locked, a lock icon will be displayed near data name.



Offset

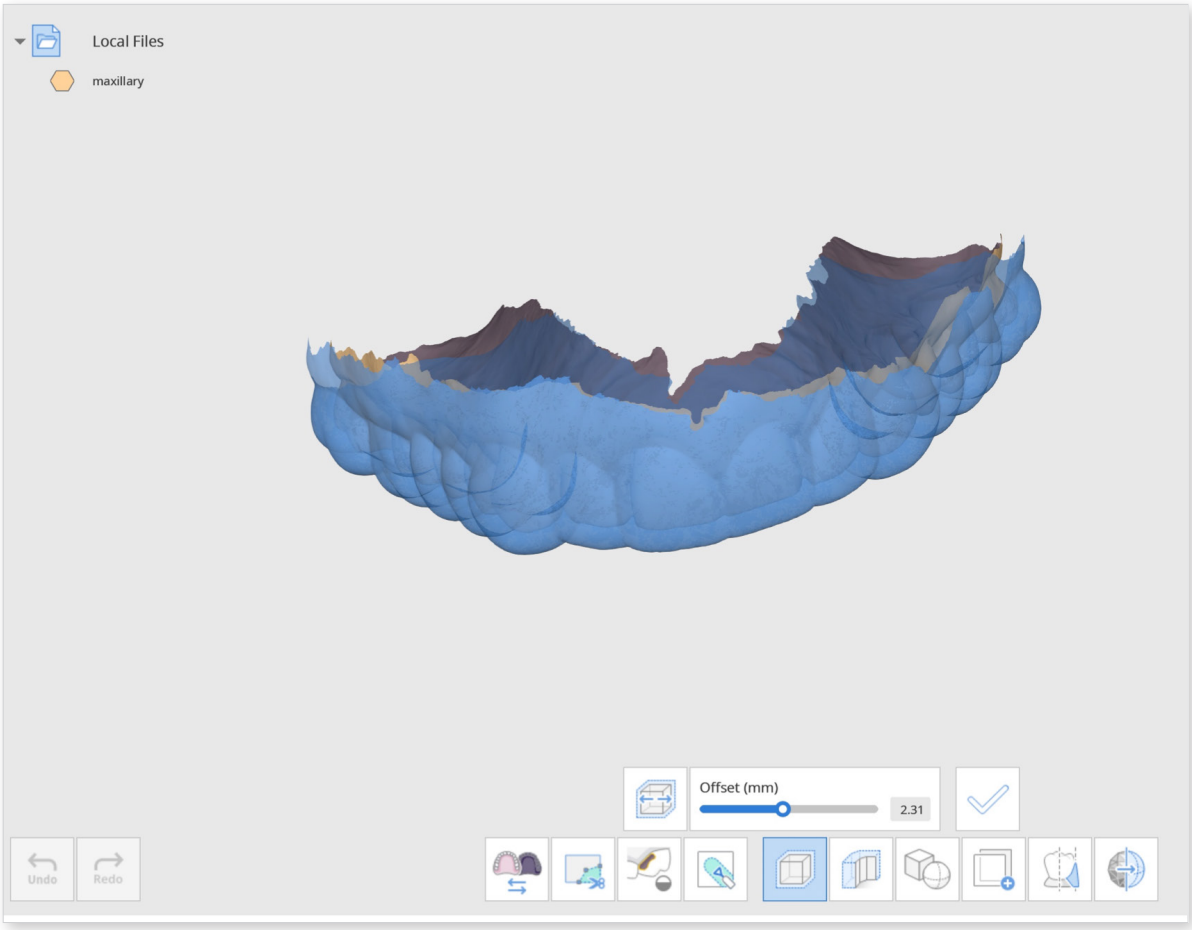
How to Use Offset

Click on the “Offset” icon to open the dialogue window.

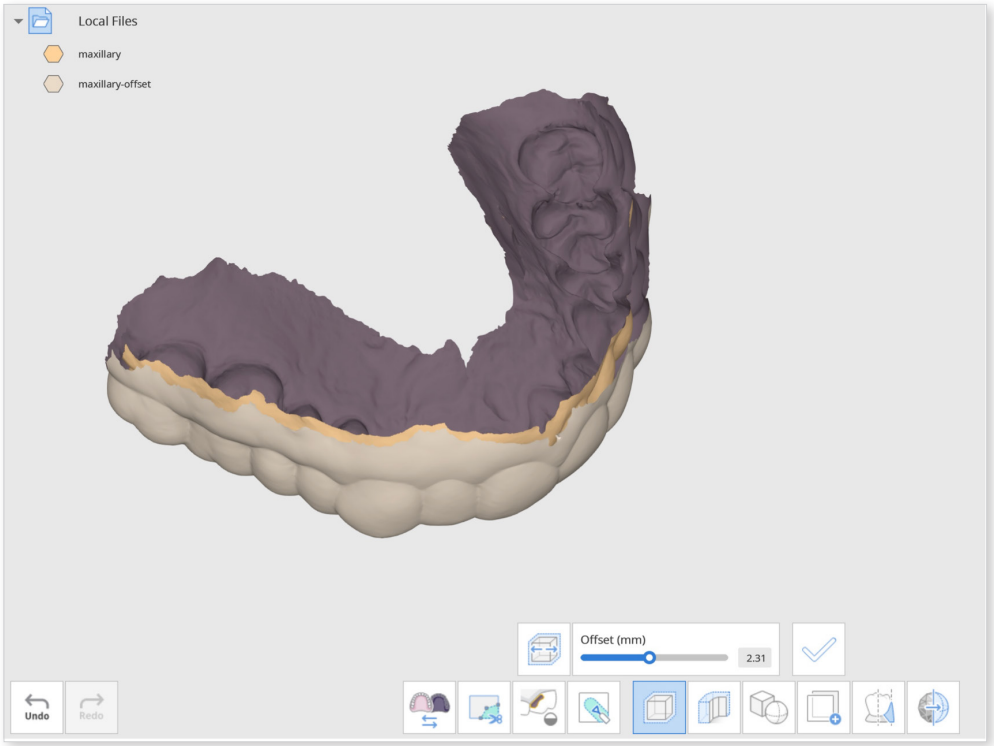


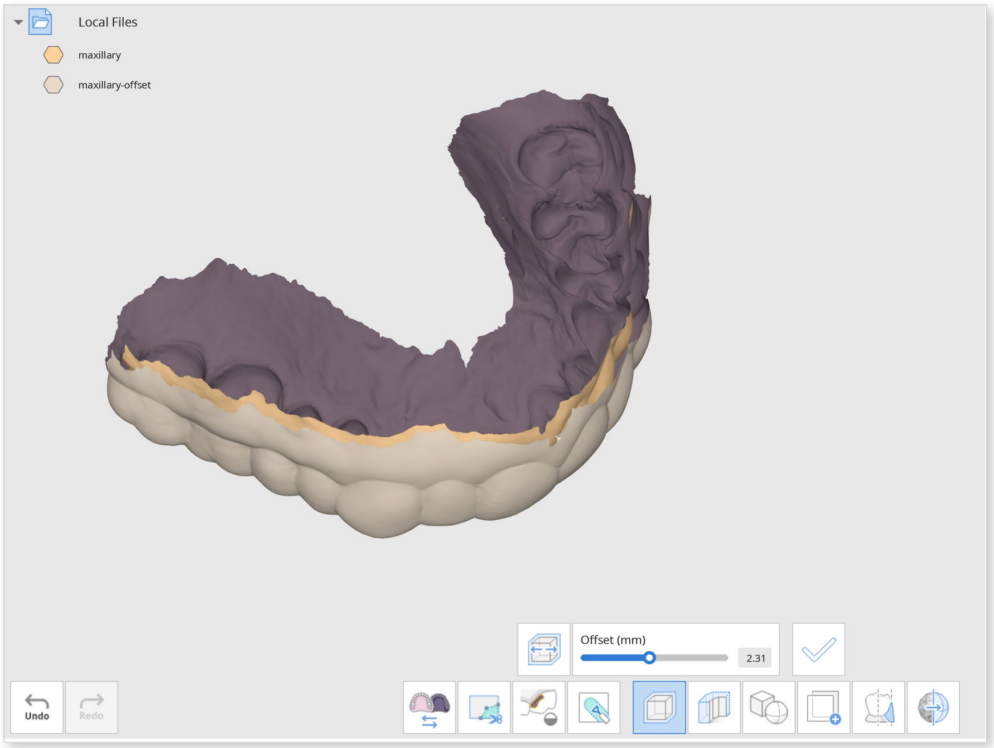
Set the offset distance from the existing data using the slider. You can also input a specific number (mm).

You can also change the offset direction to either inside or outside by clicking on “Inside/Outside” located next to the slider.



Click “Apply” to apply the changes made. This will create a new offset mesh.





New offset mesh created.

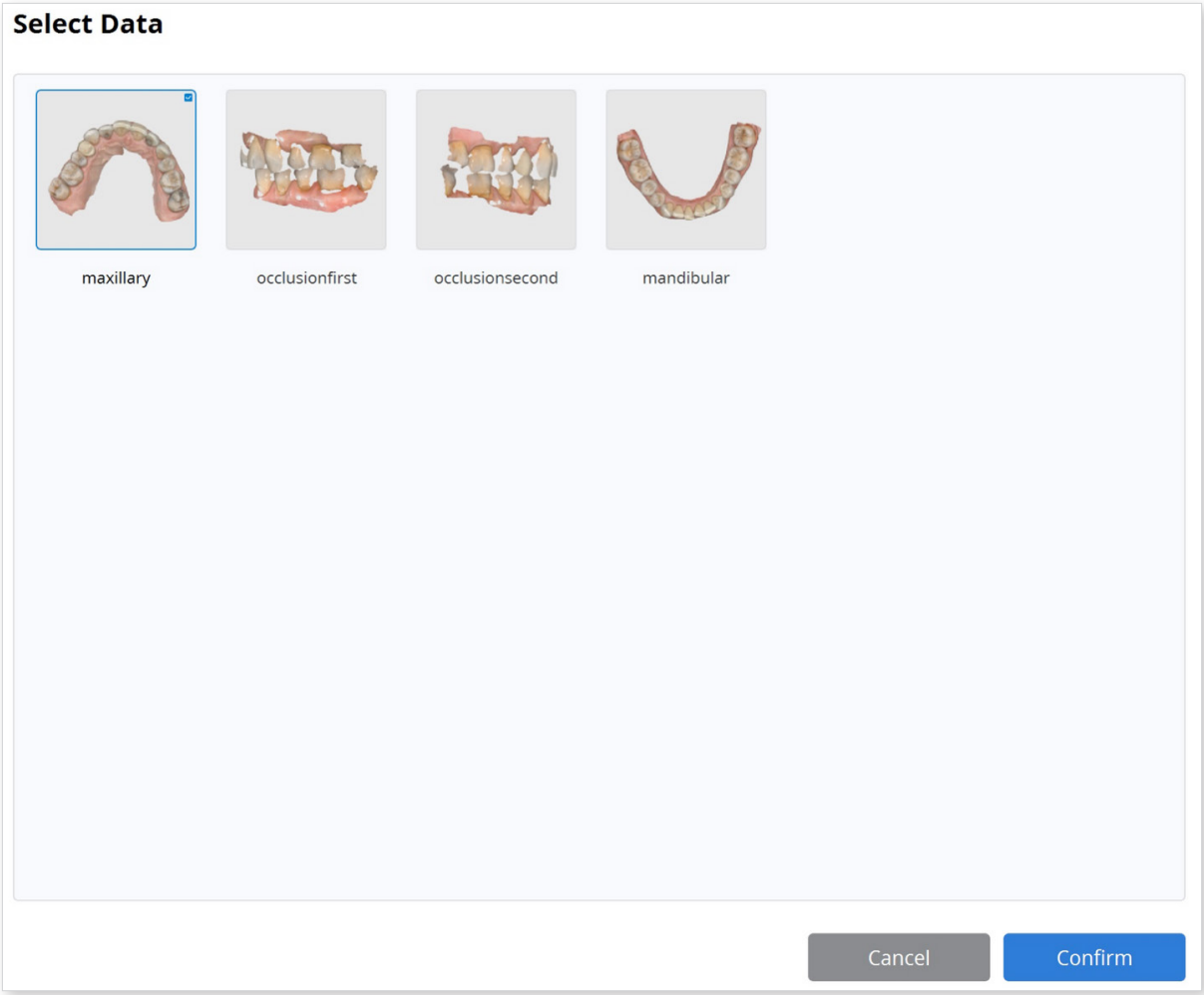
Change “Data Display Mode” on the right side to “Monochrome” to easily spot the changes made.

Thicken

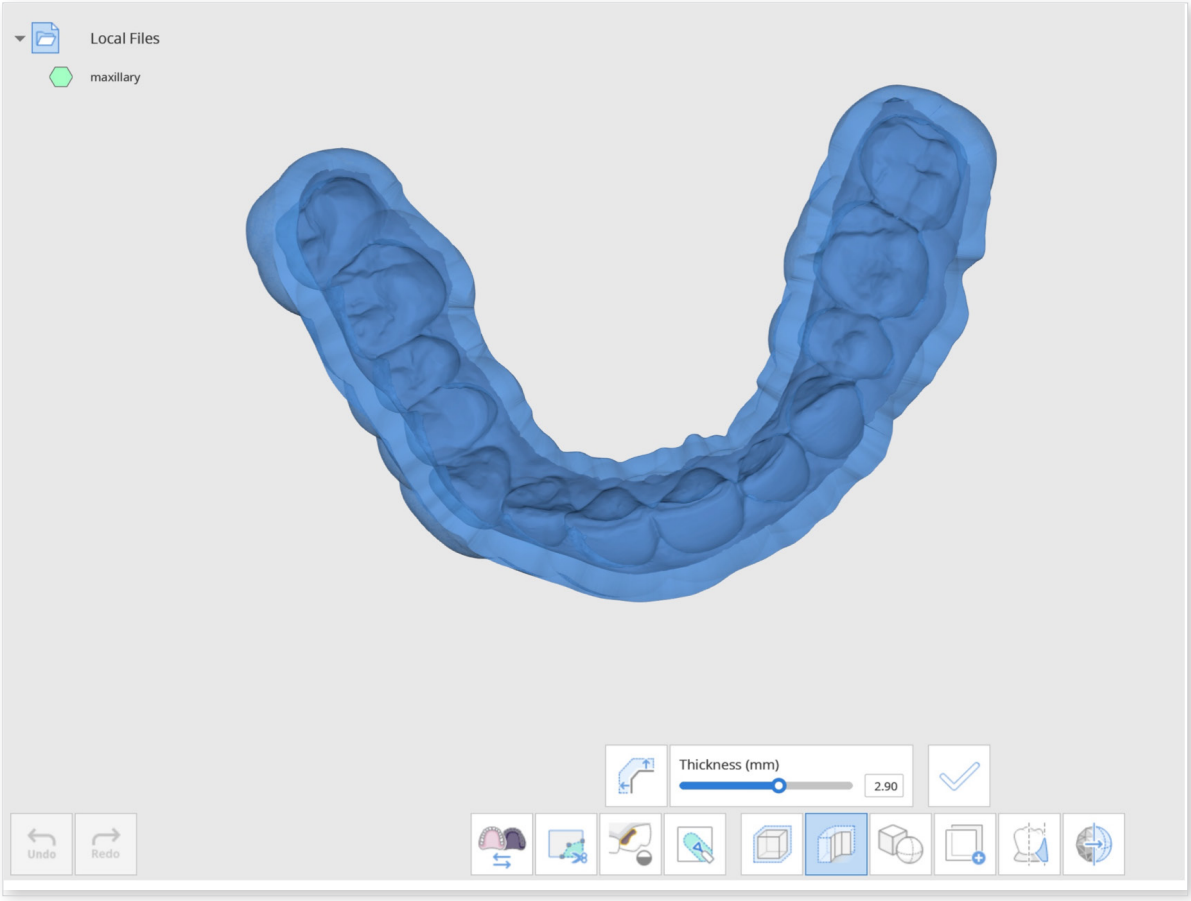
How to Thicken

Click on the “Thicken” icon to select the data. You can click to select individual data or drag to quickly select multiple data at once in the dialogue window.

Trim the data with “Trimming Tools” before thickening for neater edges.



Click “Confirm” to finish your data selection.

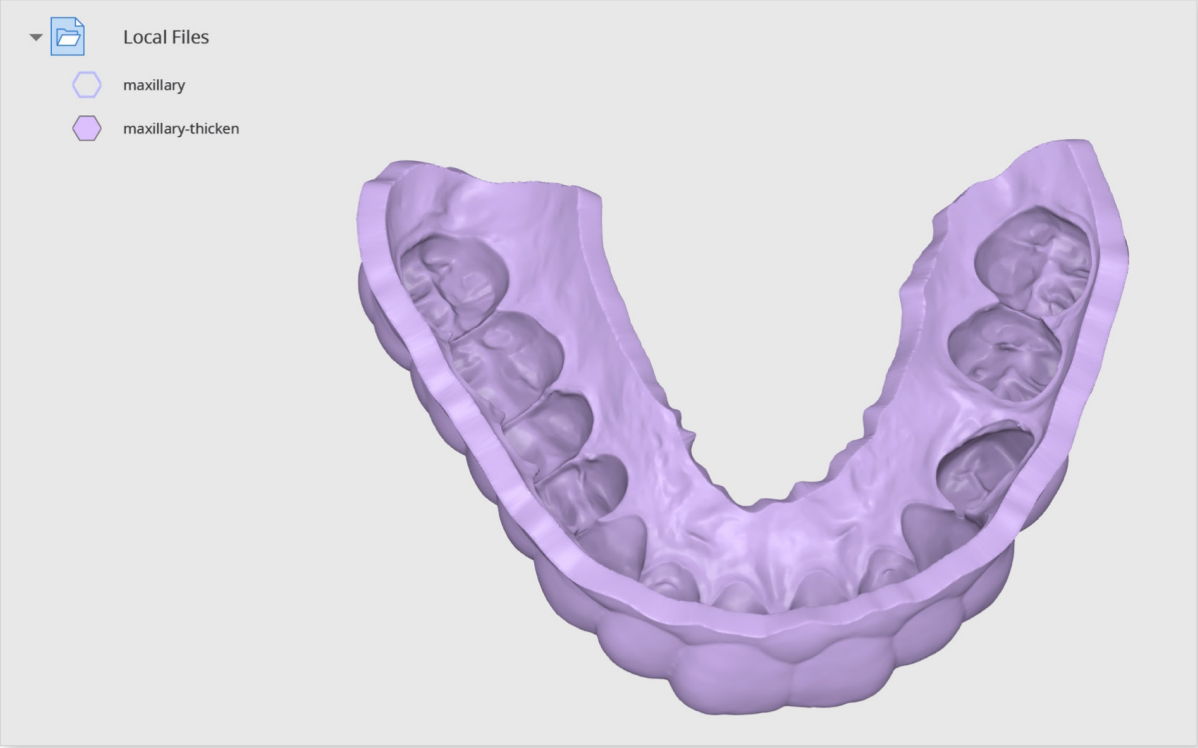


You can control the thickness (mm) of the mesh using the slider below. The thickness can range from 0.00 to 5.00 mm.

You can also change the thickness direction by clicking on the “Change Thickness Direction” next to the thickness slider.

Clicking on the icon will change the thickness direction of the mesh to either outside, inside, or both sides; each click will change the direction.

When you are finished and satisfied with the mesh’s thickness, click “Apply” to apply the changes made.



Change “Data Display Mode” on the right side to “Monochrome” to see easily spot the changes made.

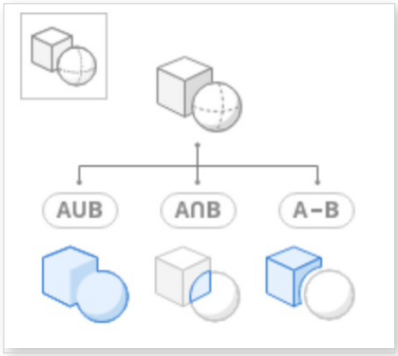
Boolean

How to Perform Boolean Operations

There are 3 boolean operations provided: Union, Cut and Intersection.

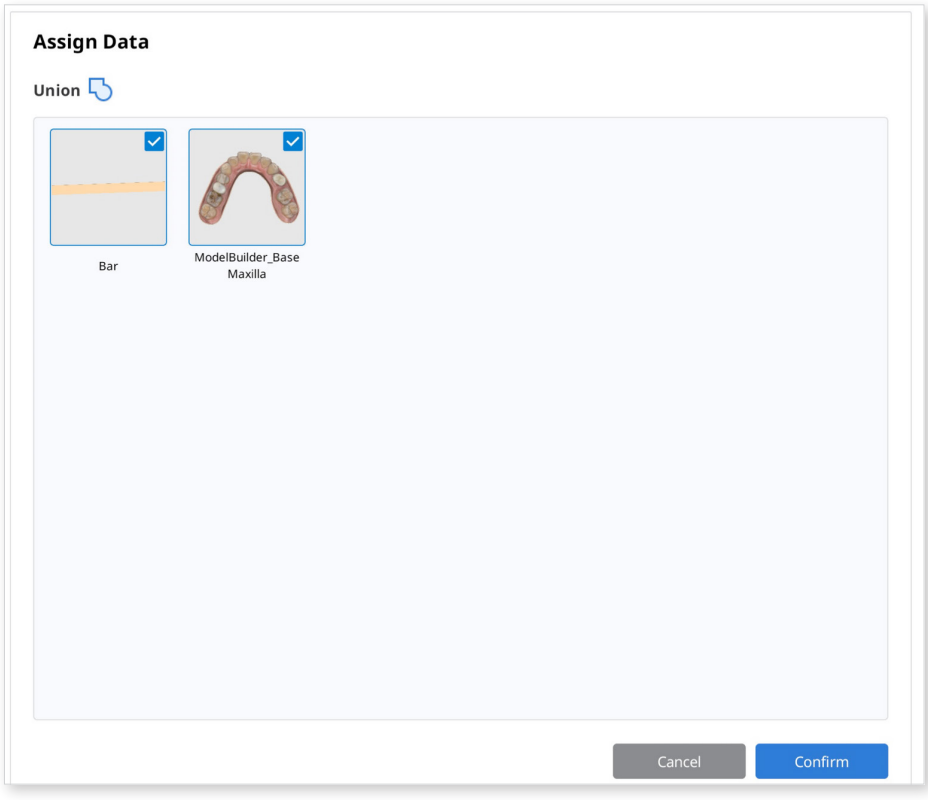
Before performing boolean operations, you can move and rotate the data using your mouse.

- Click and hold the mouse wheel to move the data around.
- Right-click to rotate the data.

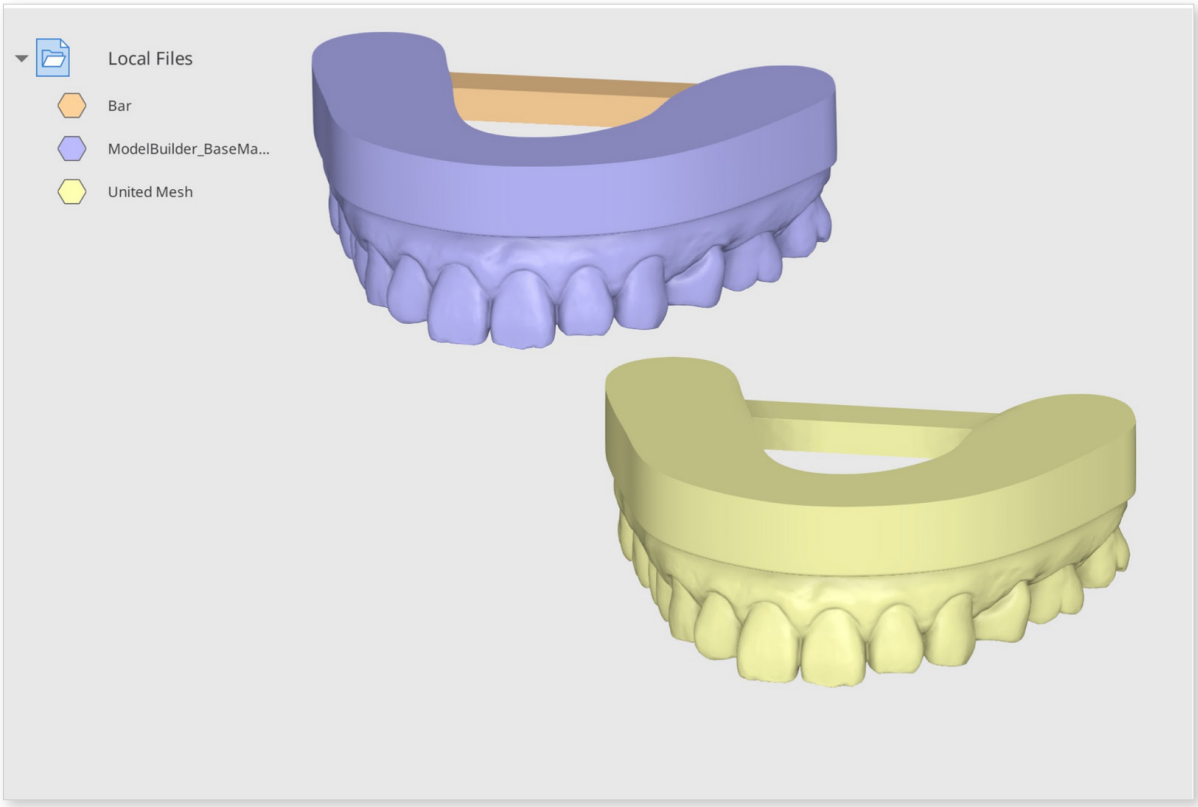


Union

	Combine two or more meshes into one. Click on the “Union” icon to open the dialogue window.



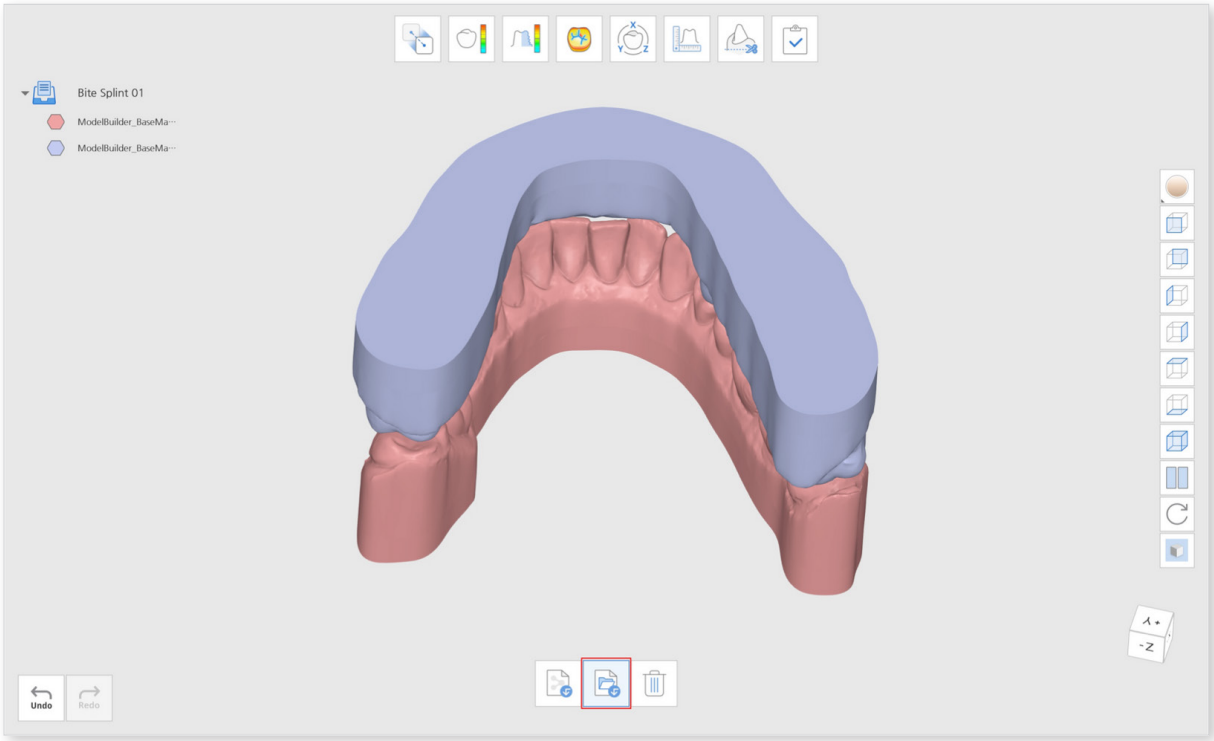
The “Assign Data” dialogue window will pop up. Select two or more data to combine together.

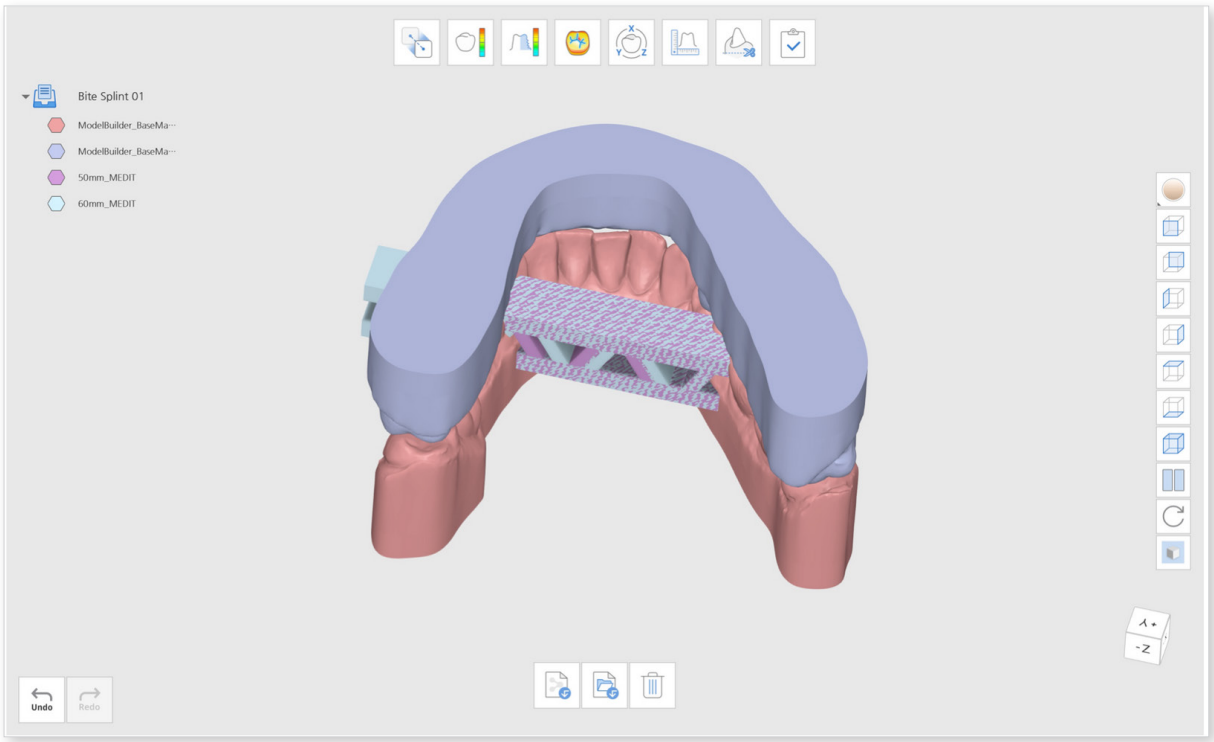


Click “Confirm” to combine the data. Once the data is successfully combined, you will see a new mesh file, “United Mesh” created in the Data Tree. Use the Data Tree to easily view and hide data.

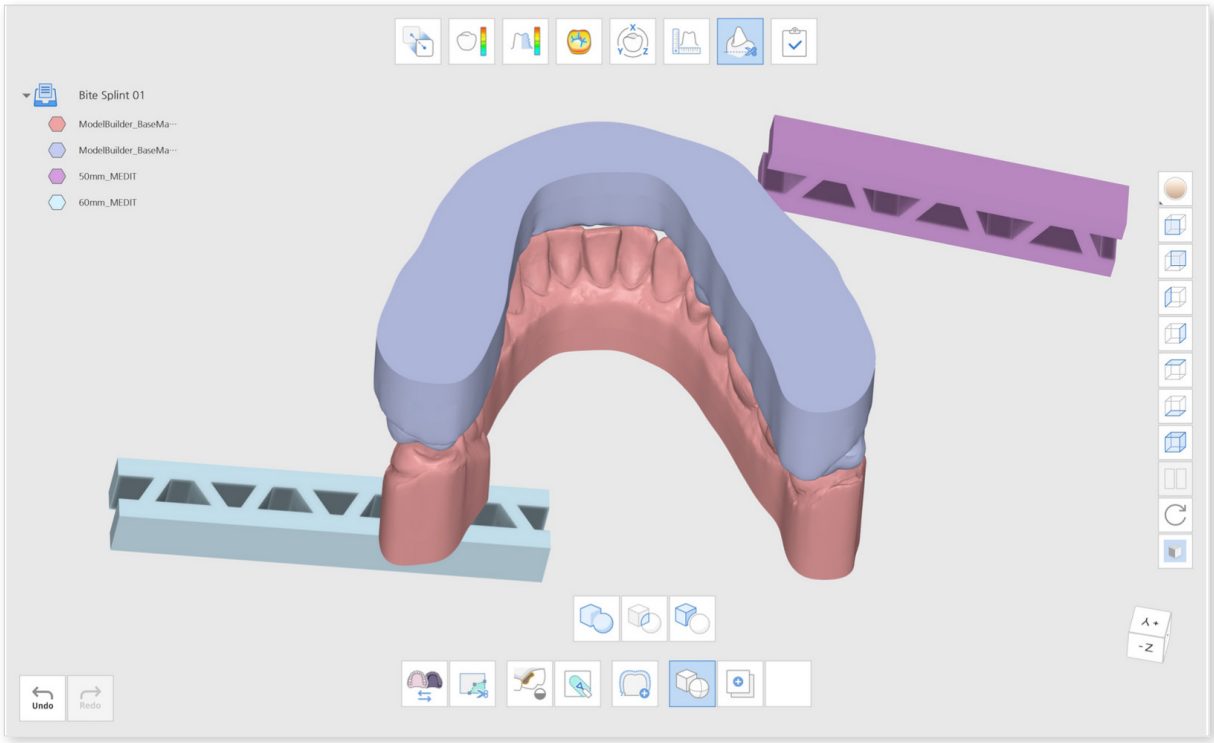
Union Example

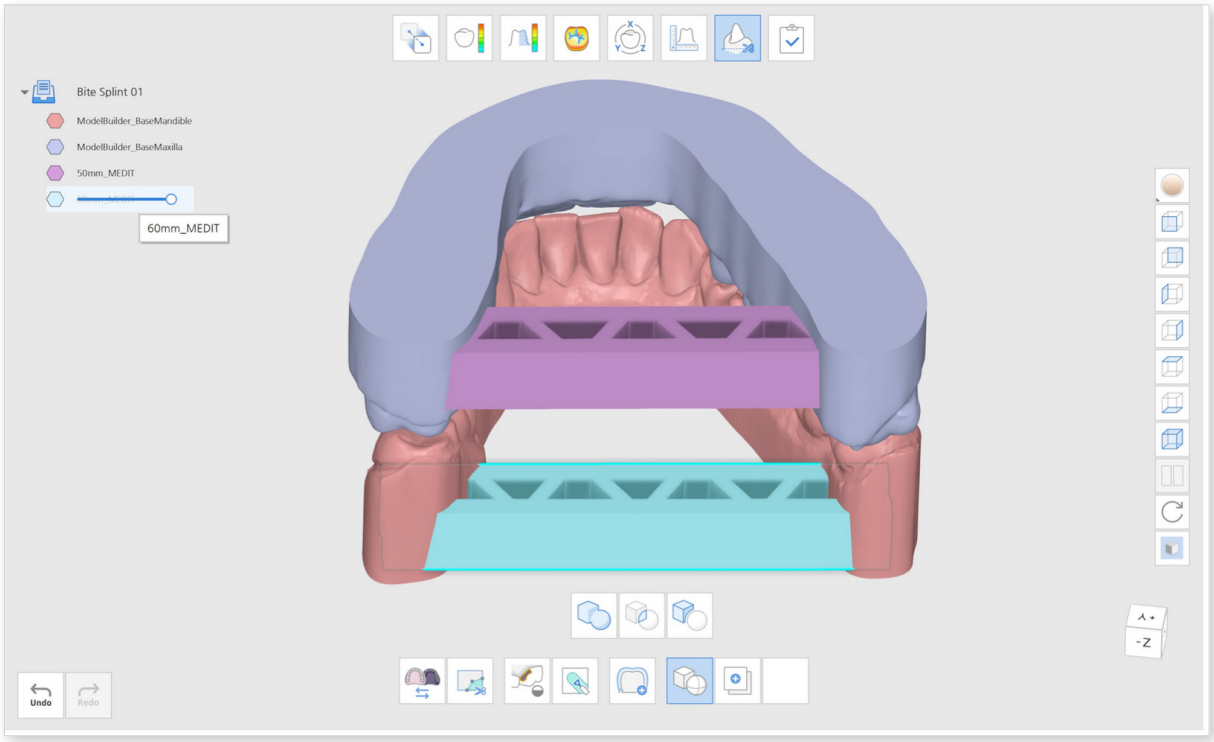
You can use the “Union” feature to attach support bars to the model. The model below was designed using Medit Model Builder. Import this data from Medit Link, then open in Medit Design. Import the support bar from your PC by clicking “Import Local Files.”



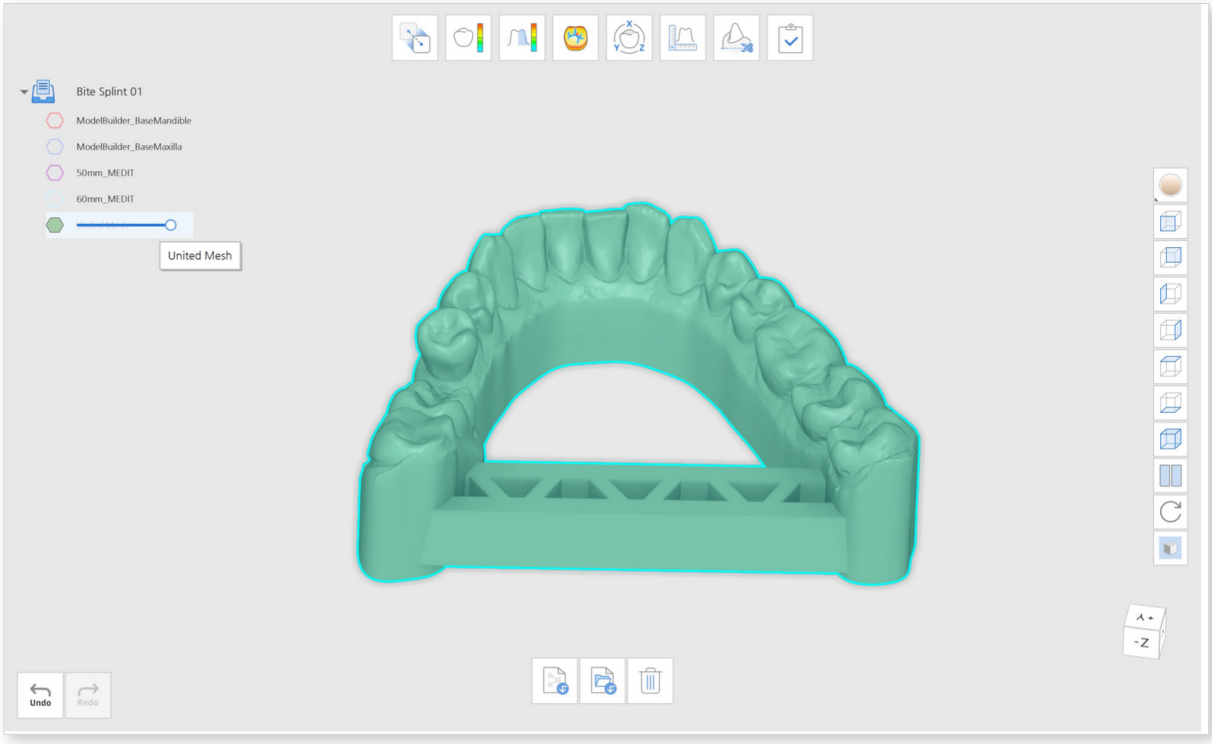


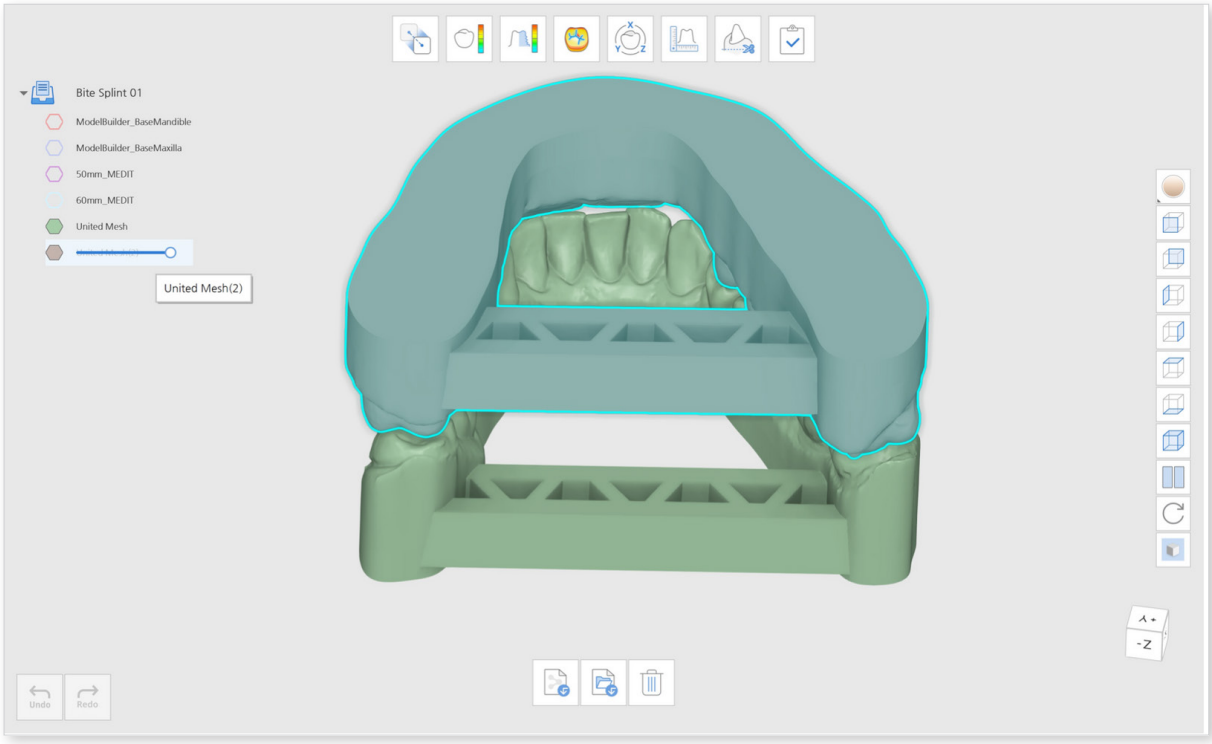
Go to Edit Mode and click “Boolean.” Arrange the support bars accordingly.



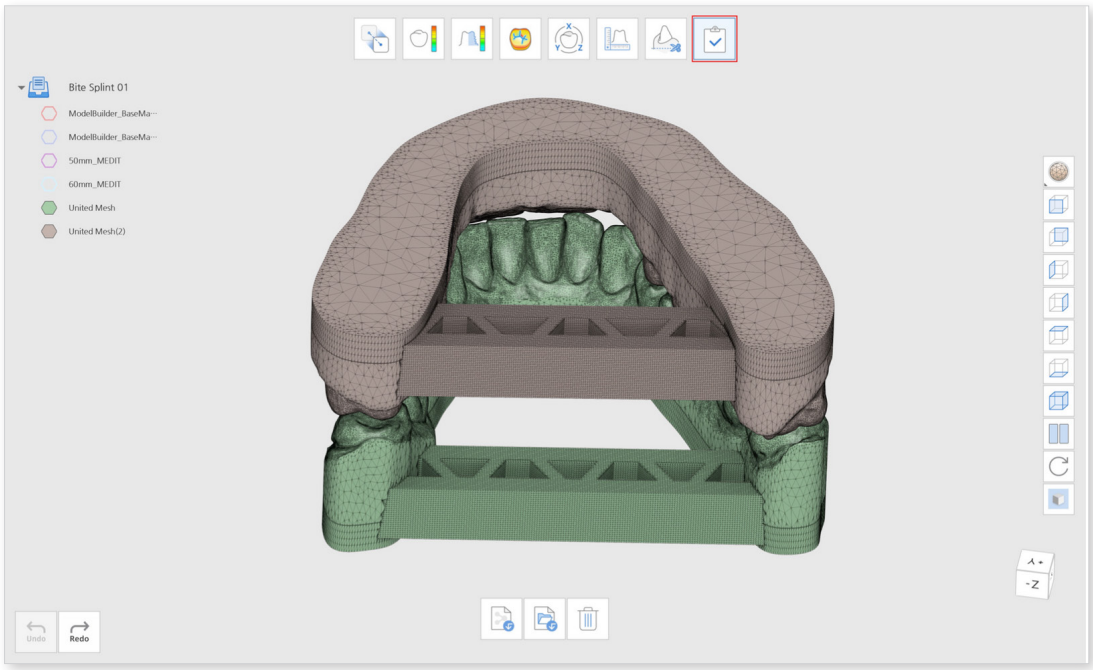


Then, click “Union” to combine the models together. Combine the maxilla data with the support data to create a new, united mesh model. Repeat the same for the mandible.



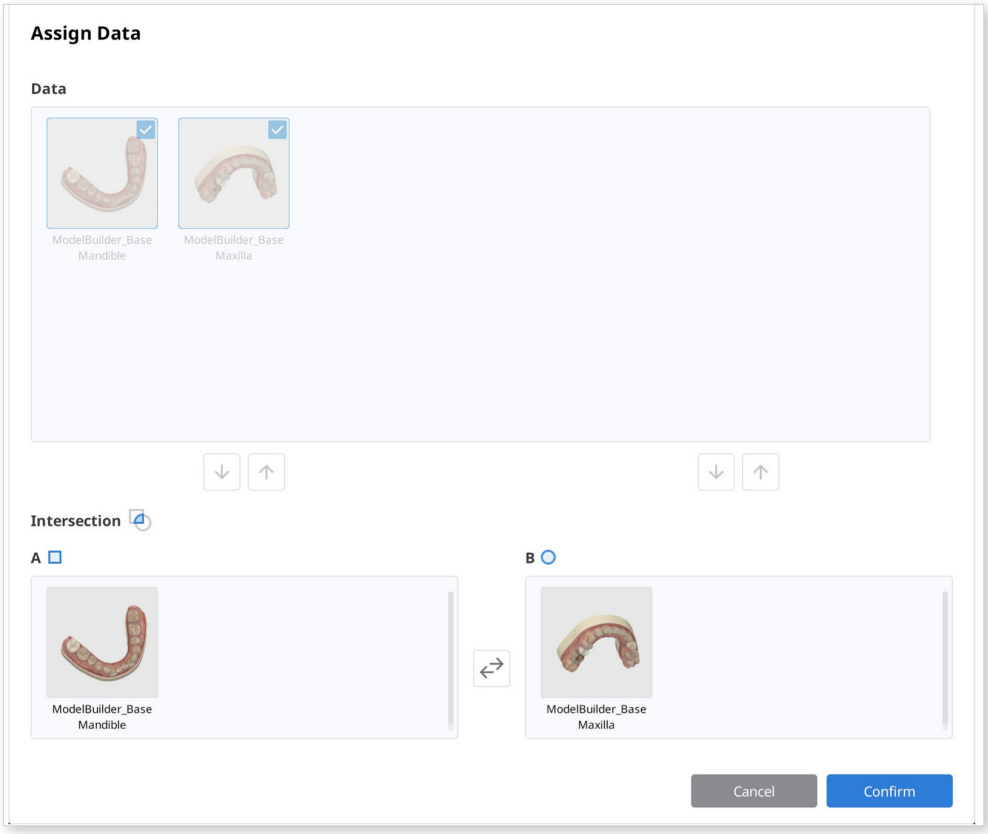


Click “Complete” to finish and select how you’d like to save your data.



Intersection

	Extract the intersecting mesh data. Click on the “Intersection” icon to open the dialogue window.

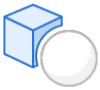


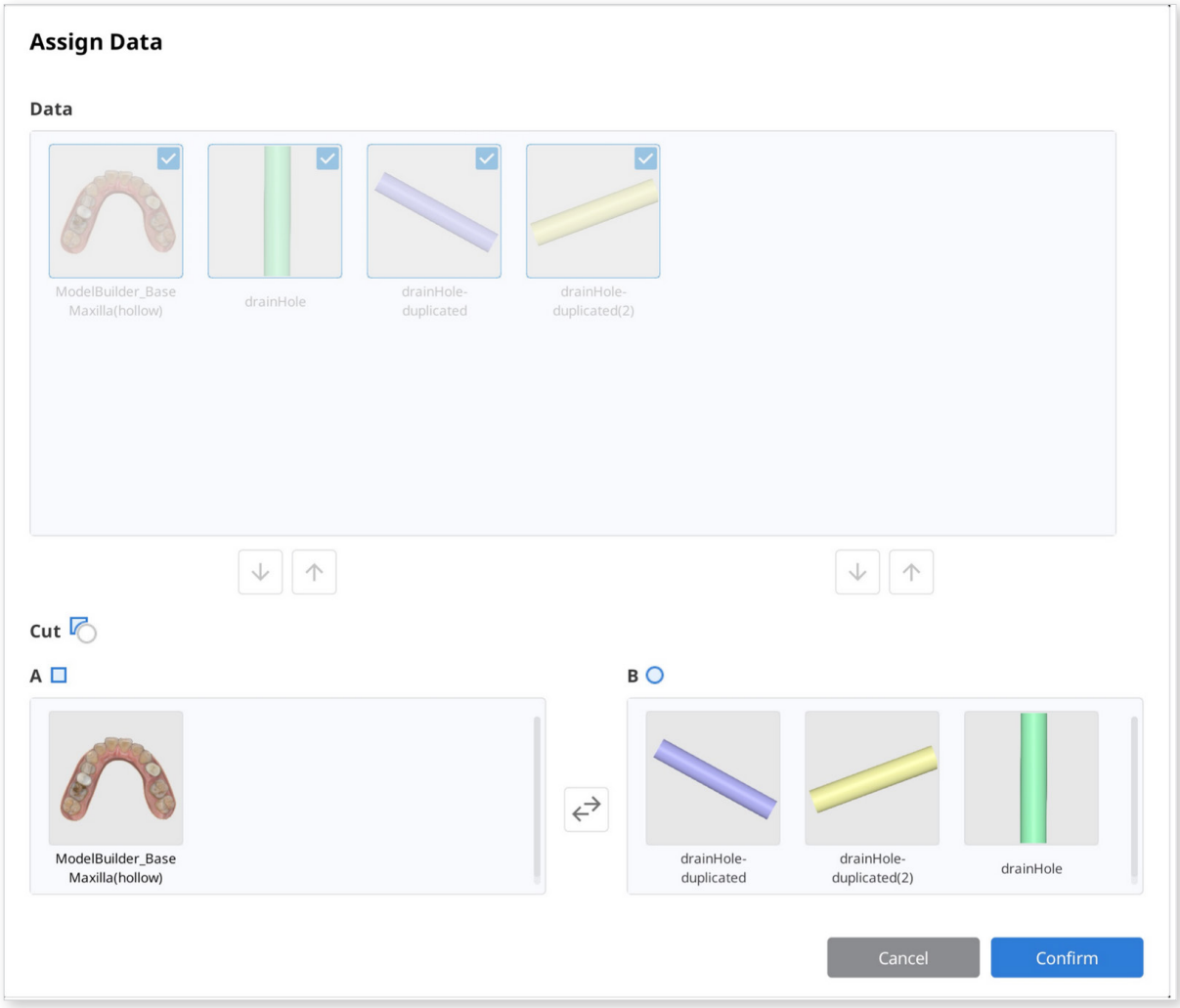
The “Assign Data” dialogue window will pop up. Assign the data to A and B using the arrows. You can also drag and drop the data to A and B.

If you have assigned them incorrectly, you can simply swap the data by clicking “Swap A and B.”

Click “Confirm” and wait for the creation of a new data file. You can see that the intersecting mesh data has been extracted.

Cut

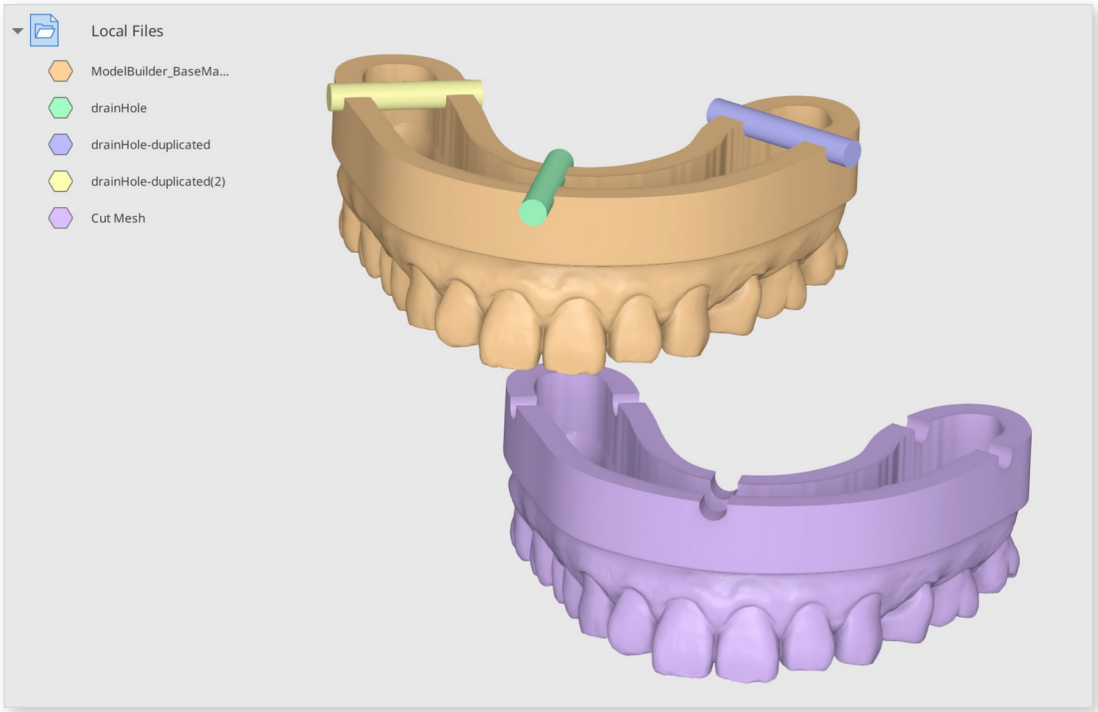
	Remove mesh from A that overlaps with B. Click on the “Cut” icon to open the dialogue window.



The “Assign Data” dialogue window will pop up. Assign the data to A and B using the arrows. You can also drag and drop the data to A and B.

If you have assigned them incorrectly, you can simply swap the data by clicking “Swap A and B.”

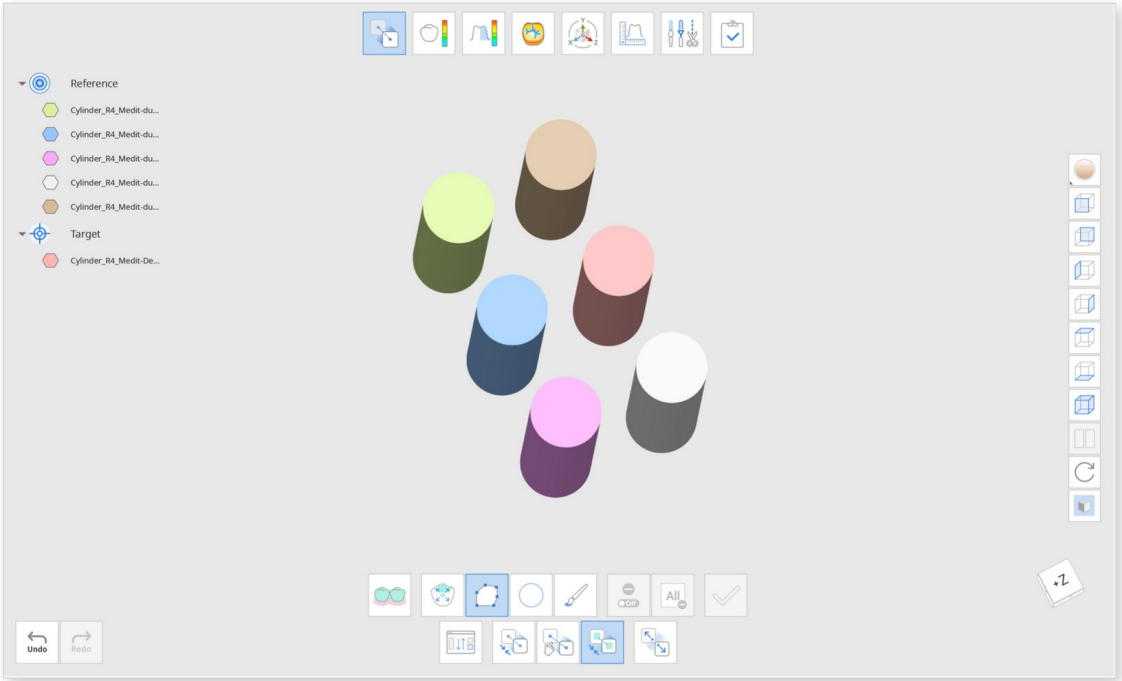
Click “Confirm” and wait for the creation of a new data file. You can see the mesh from A that overlaps with B has been removed, removing the occlusion data.



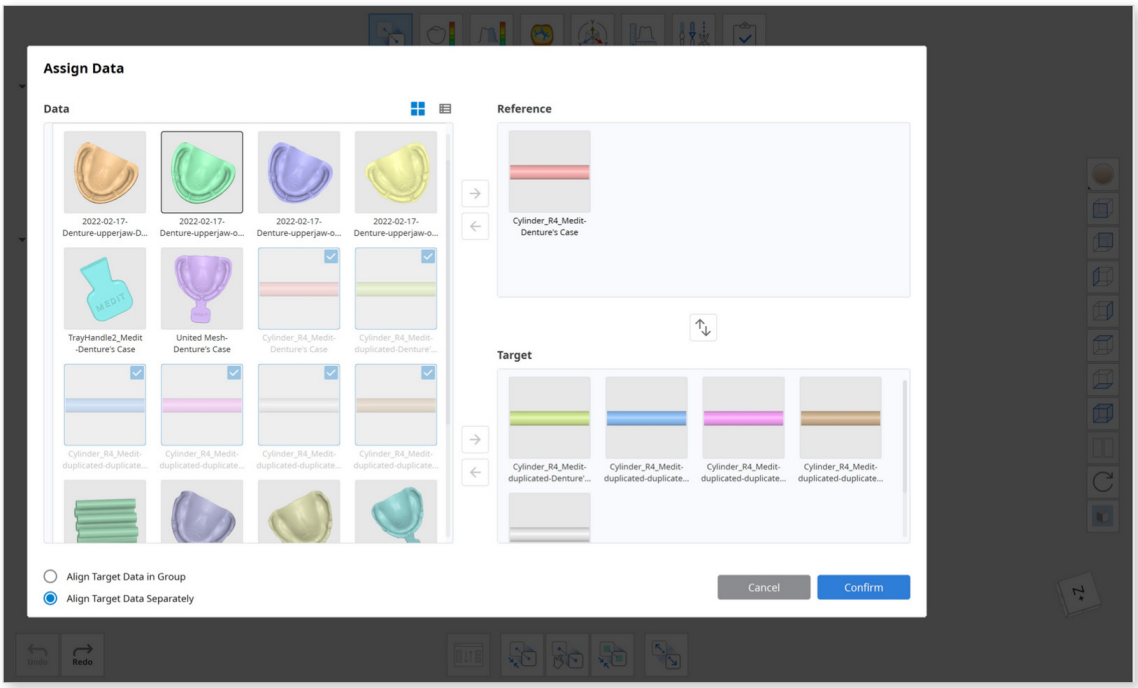
Cut Example

You can use the “Cut” feature to create holes in a custom tray. The model below was designed using Medit Model Builder. Import this data from Medit Link, then open in Medit Design. Import the support bar from your PC by clicking “Import Local Files.”

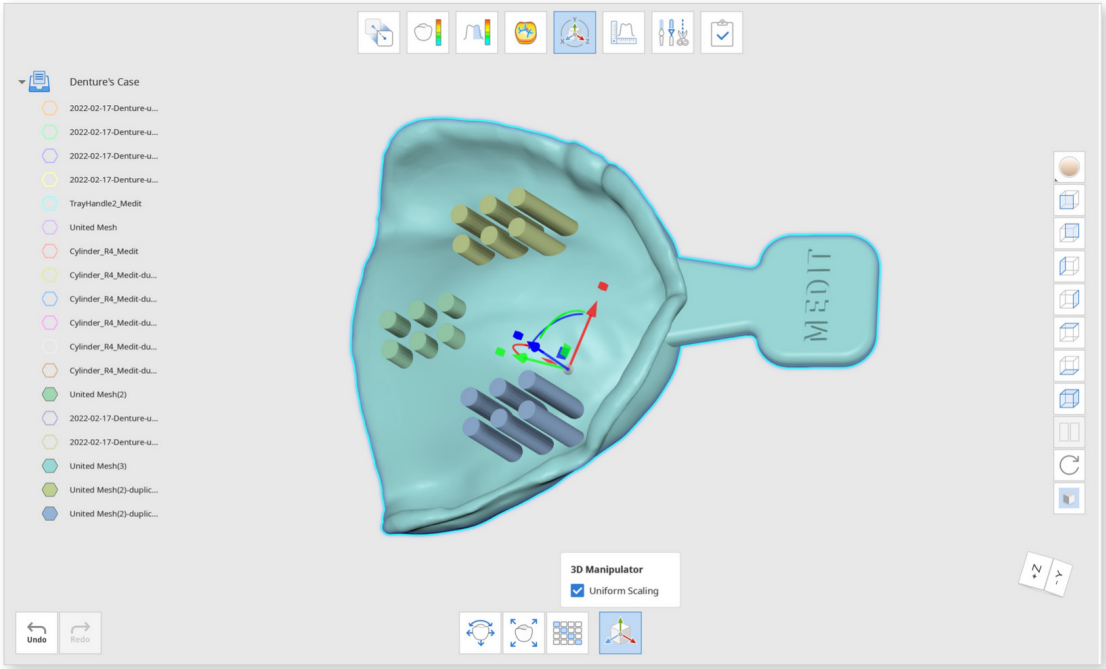
Import cylinder files and duplicate them to suit your needs.



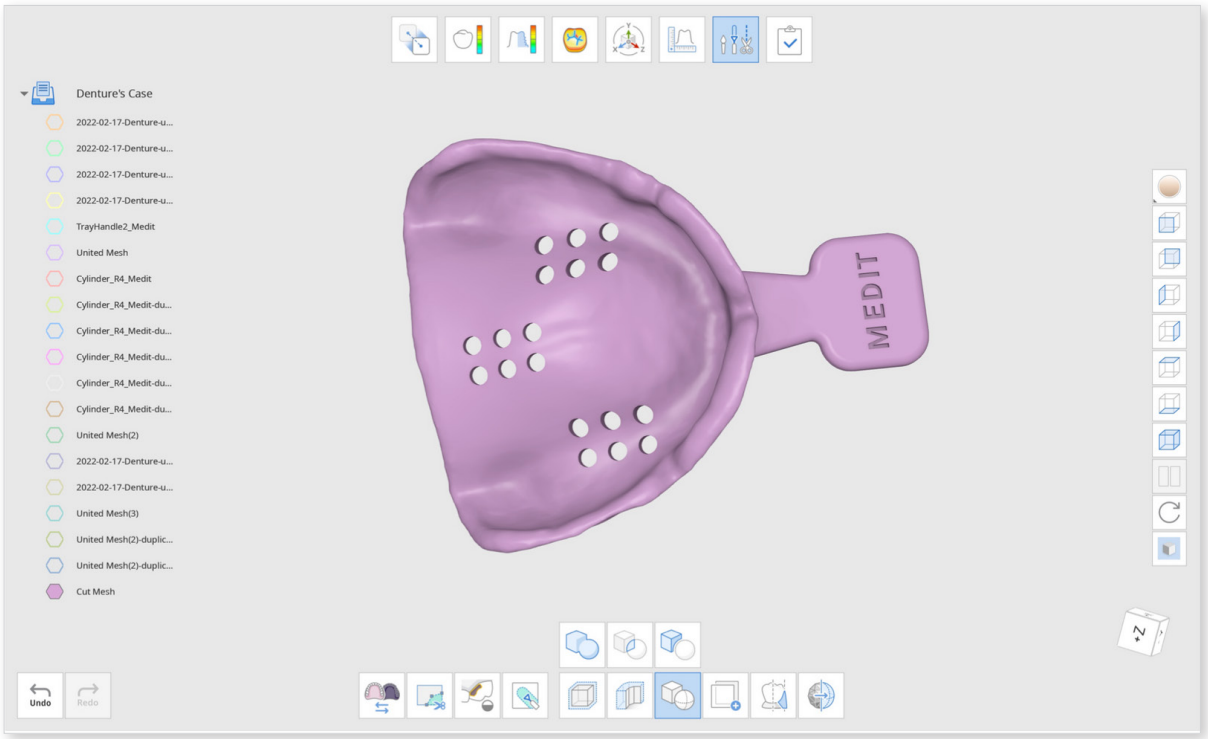
You can use the “Detach” function in “Align” to place them evenly. In “Align,” place one of the cylinder data in the reference and the rest in the target. Then, select the “Align Target Data Separately” option. When you click the “Detach” button afterward, the target data will be aligned evenly.

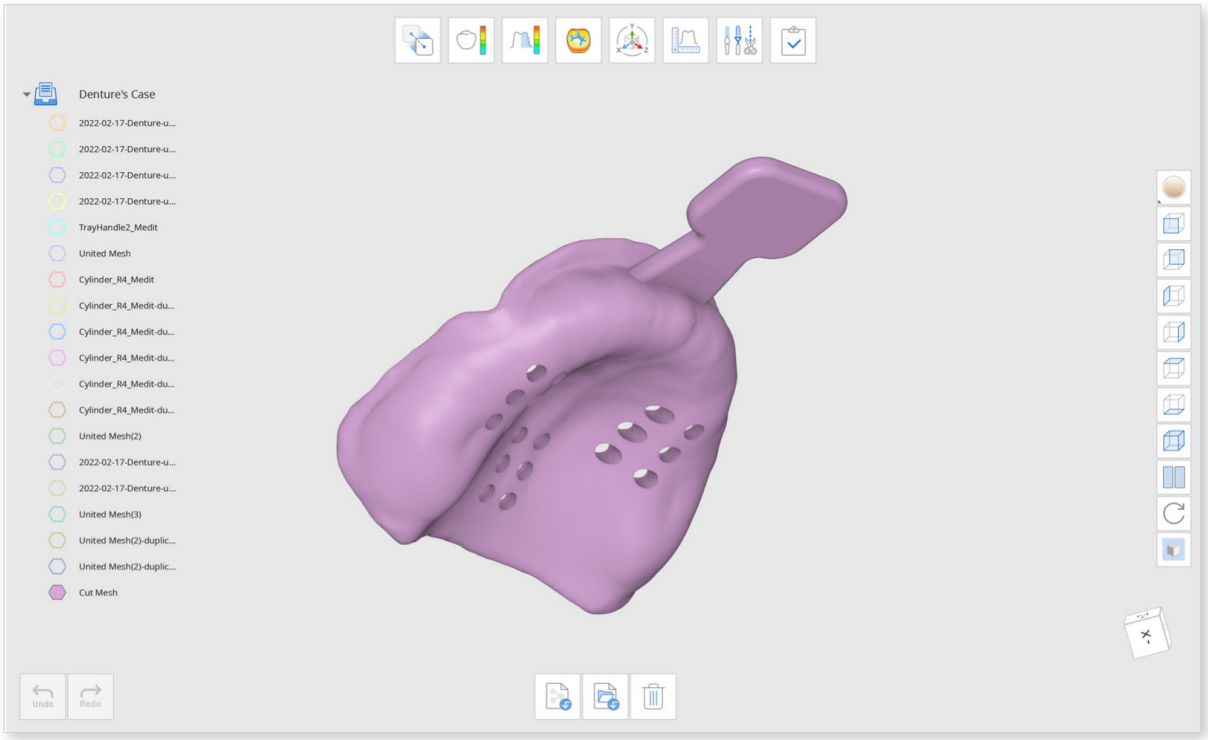


Combine the six cylinders to one set using “Union.” Duplicate the sets three times to create three sets of six cylinders. Place the cylinder sets are as follows and use the “Cut” function to create holes. Assign the cylinder sets to B so they can be removed from A (A-B).



Click “Confirm” to see the final result.

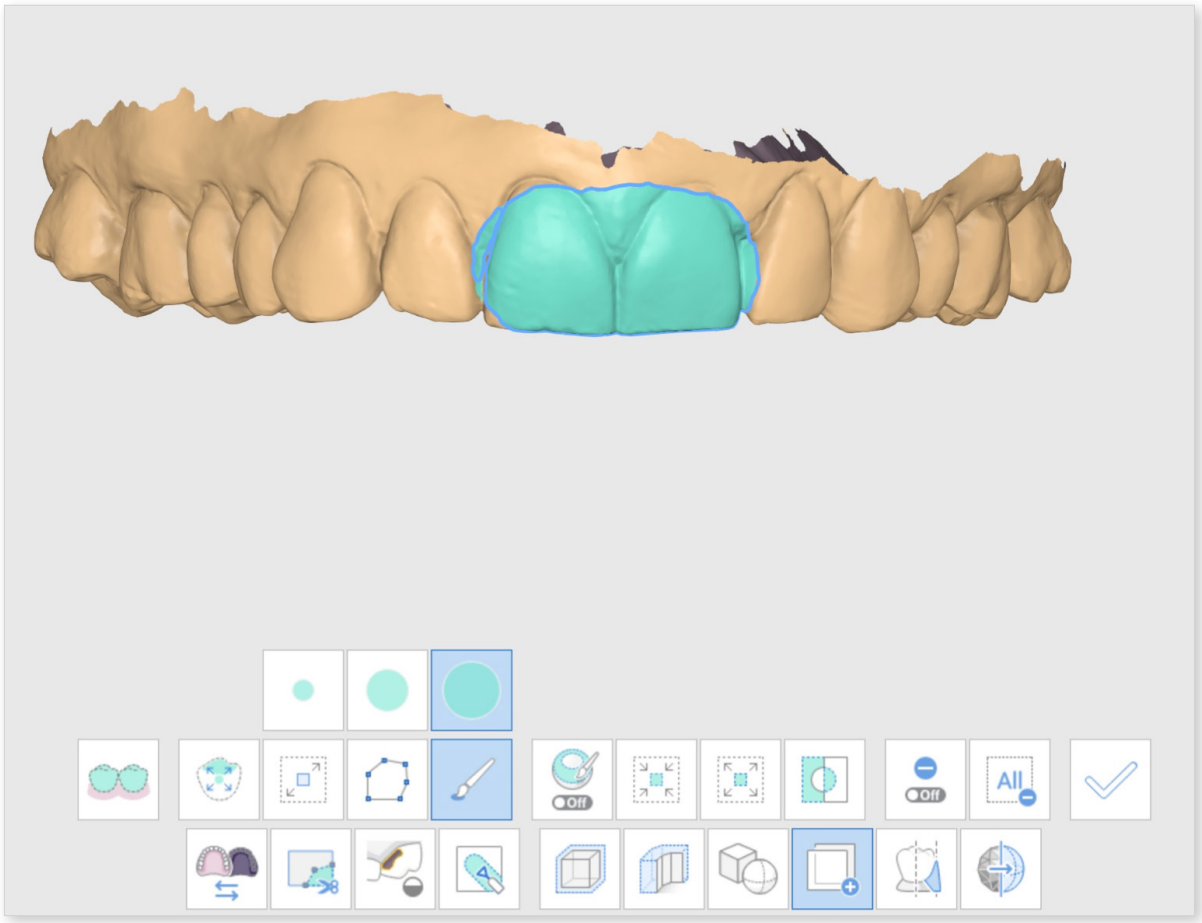




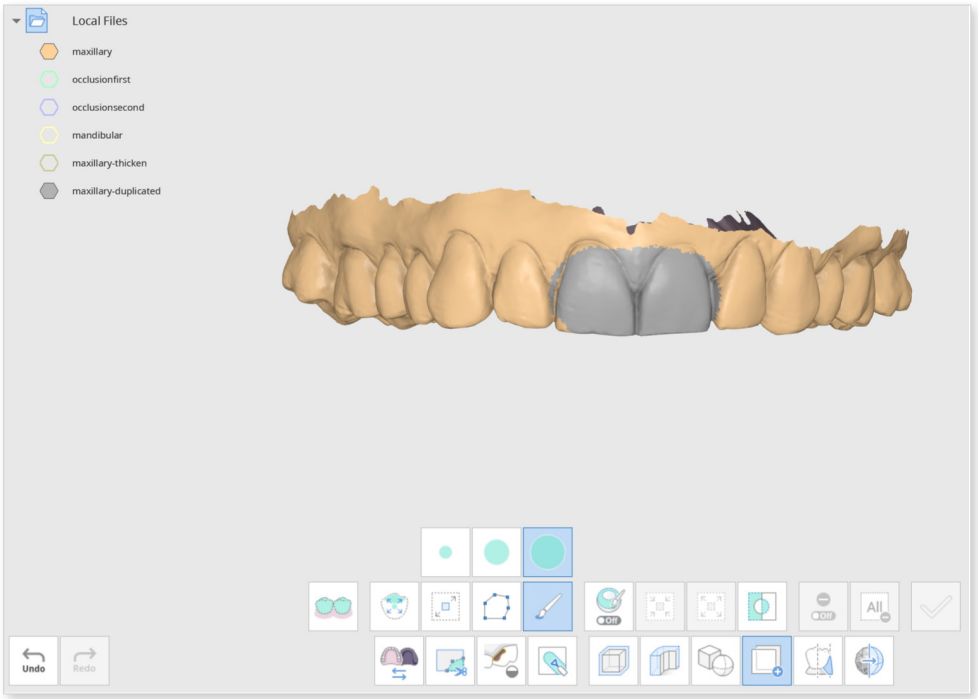
Duplicate

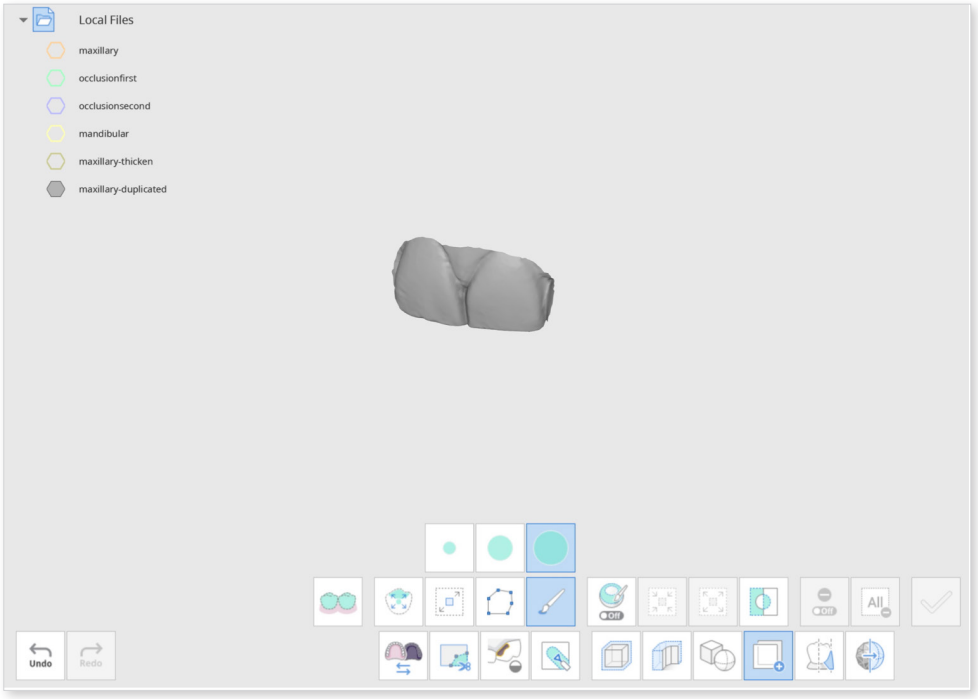
How to Duplicate Data

Use the selection tools provided to select the area you want to duplicate.



Click “Apply”, the duplicated meshes will be created. Go to the Data Tree and unselect the other data to examine only the duplicated mesh data.





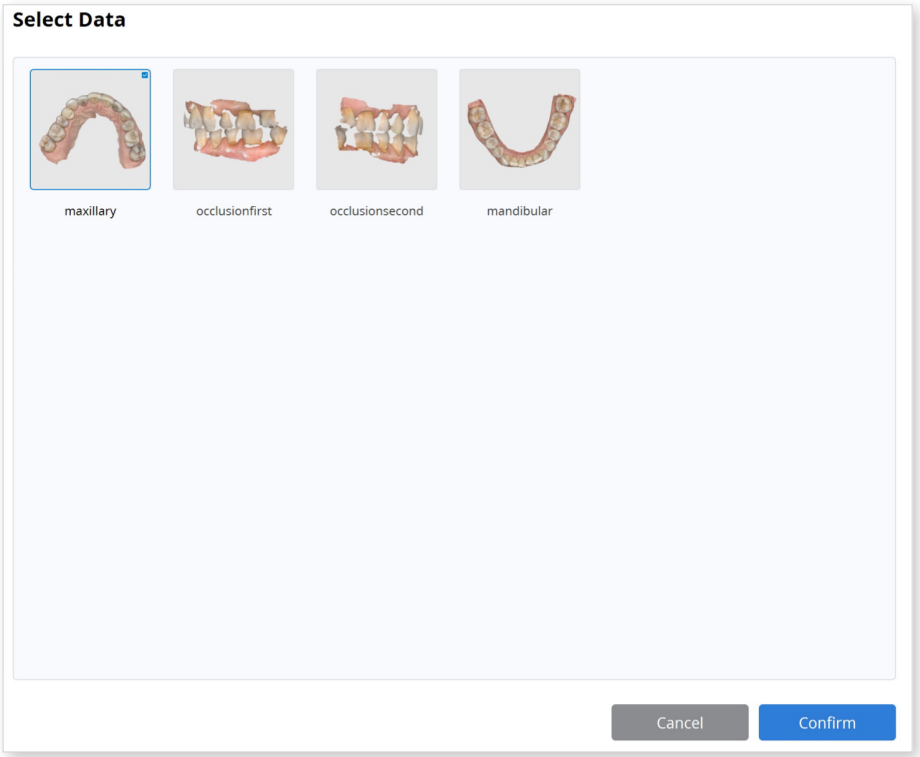
You can see that the area duplicated is a new data file titles “maxillary-duplicated” in the Data Tree.

Change “Data Display Mode” on the right side to “Monochrome” to see easily spot the changes made.

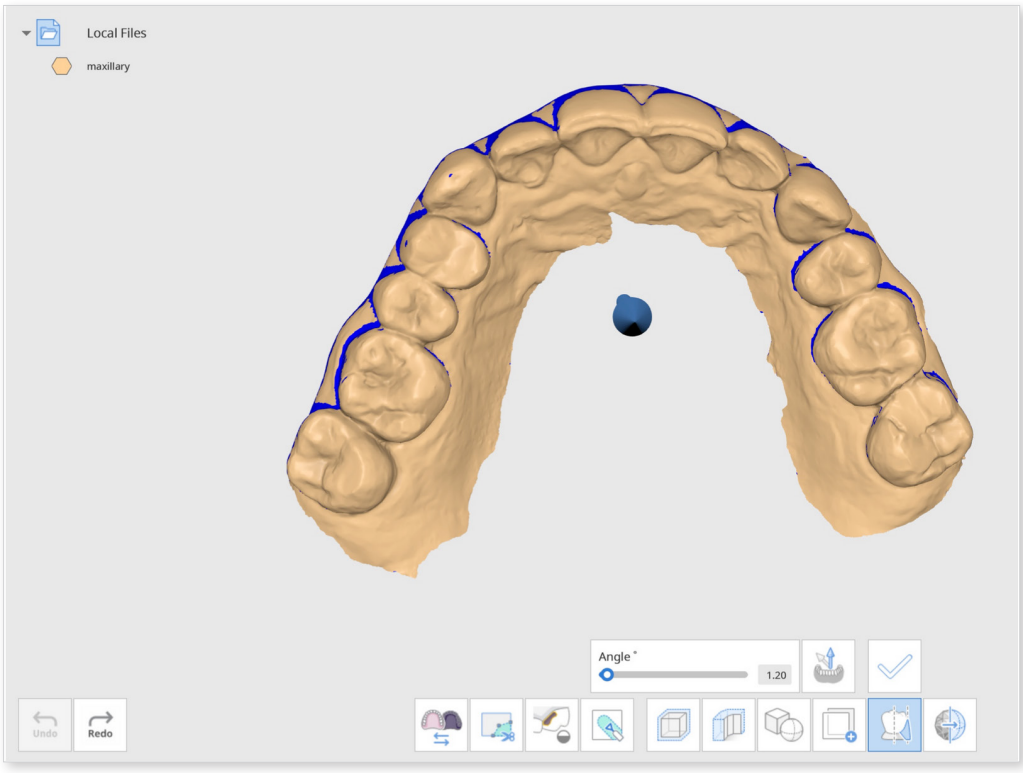
Blockout Undercut

How to Use Blockout Undercut

Click on the “Blockout Undercut” icon to open the dialogue window.



Select the data you want to fill the undercut for and click “Confirm”.



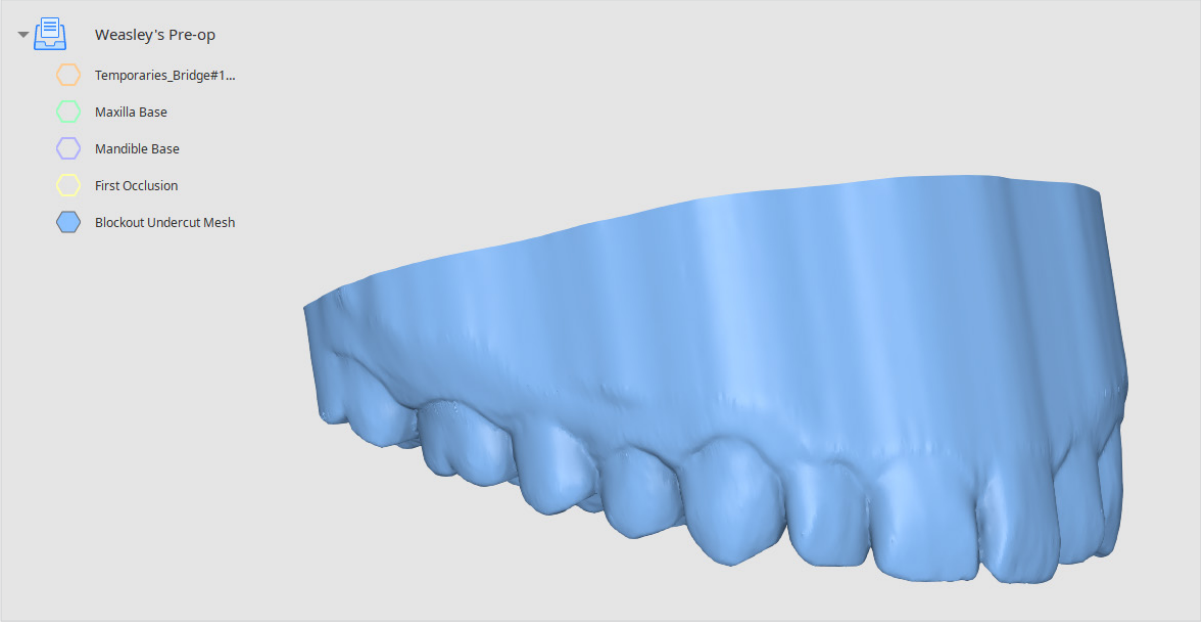
We highly recommend adjusting the data to a palatal view so you can see all the teeth. Once you've adjusted the position, you can use "Set Arrow to Your Viewpoint" so the blue arrow directly faces you.

Adjust and move the arrow so all undercuts can be filled as evenly as possible.

For a successful blockout undercut, adjust the arrow to make sure all teeth are properly covered by the blue.

Set the angle using the slider or enter a specific number manually. Click "Apply" to apply the changes made.

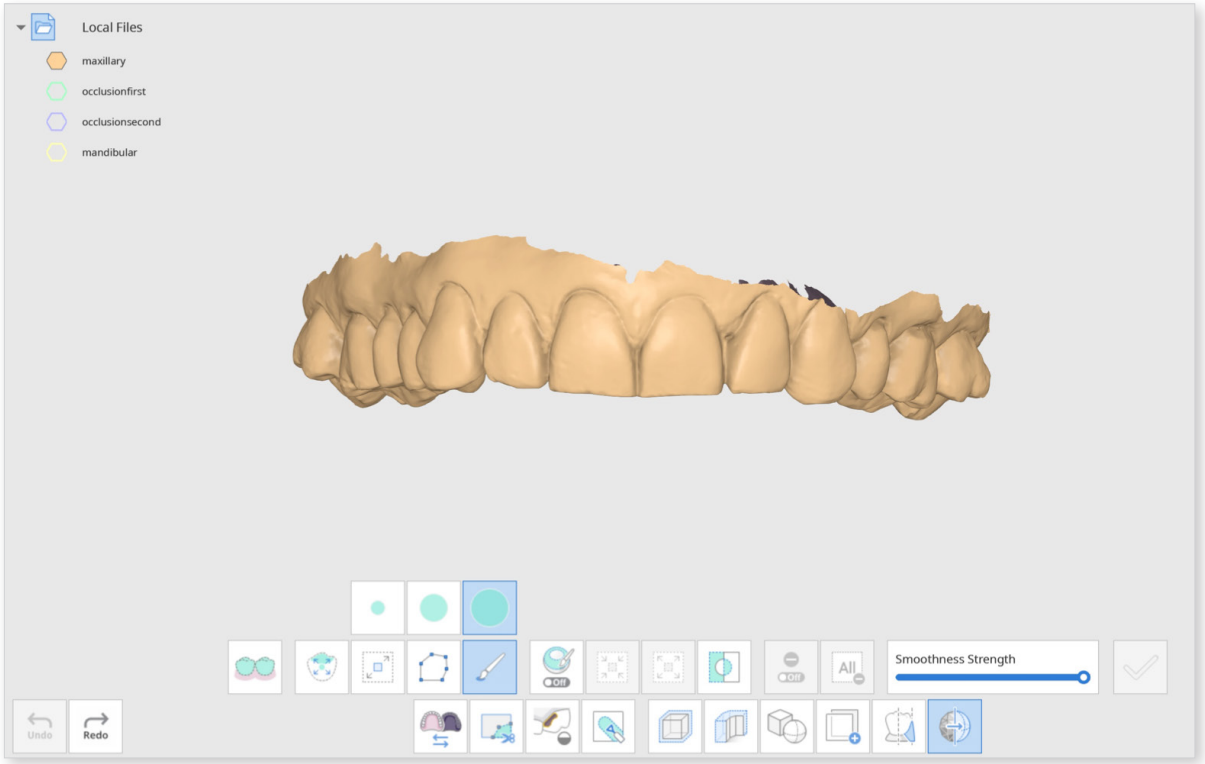
Blockout undercut mesh created

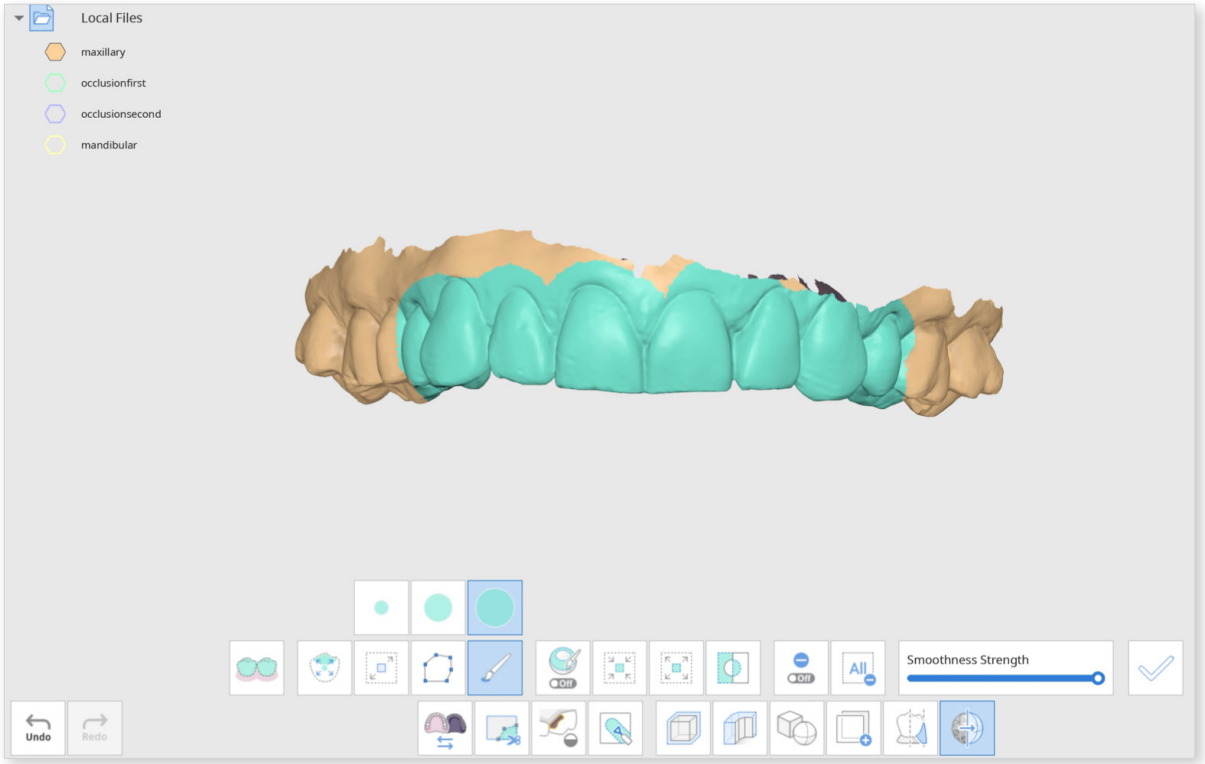


Smooth Surface

How to Smooth Surface

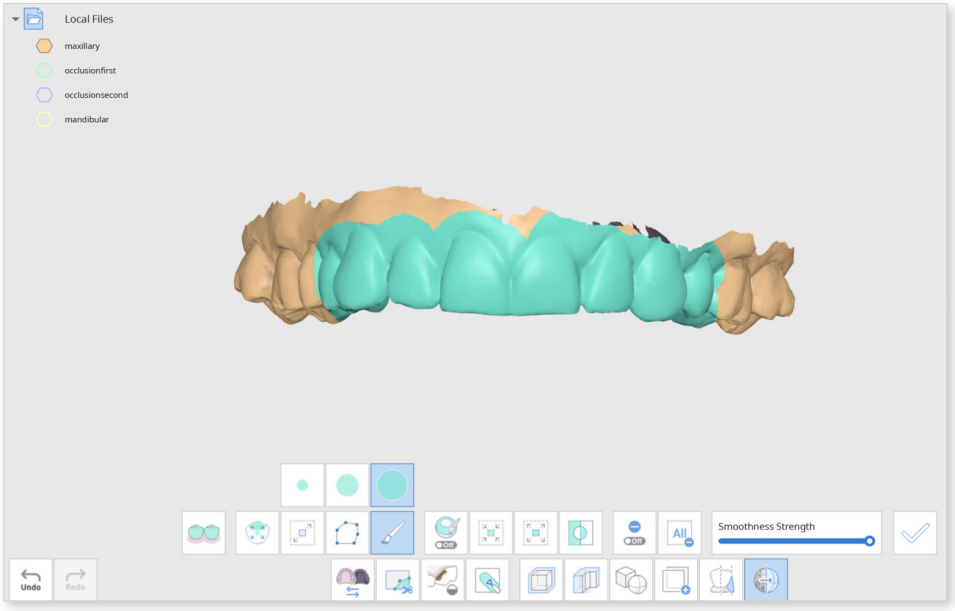
Use the selection tools to select the surface you want to smooth.



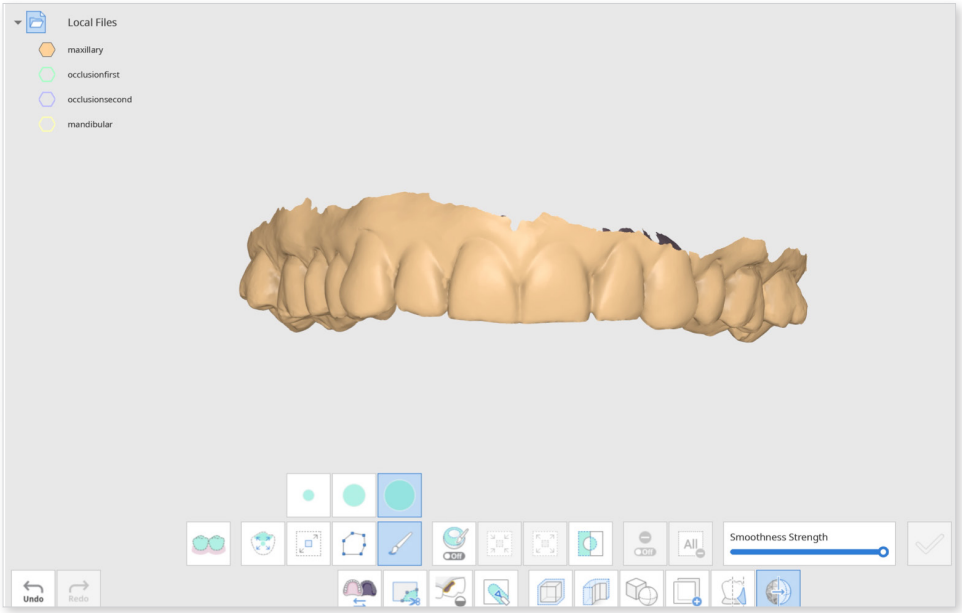


After you've selected the area, adjust the smoothness strength using the slider below.

Once you are ready to see your results, click "Apply."



You can click on "Apply" as many times as you want to reach the smoothness level you desire.



You can see that the selected area is now smoother. Click "Clear All Selection" to get rid of the blue selection marks.

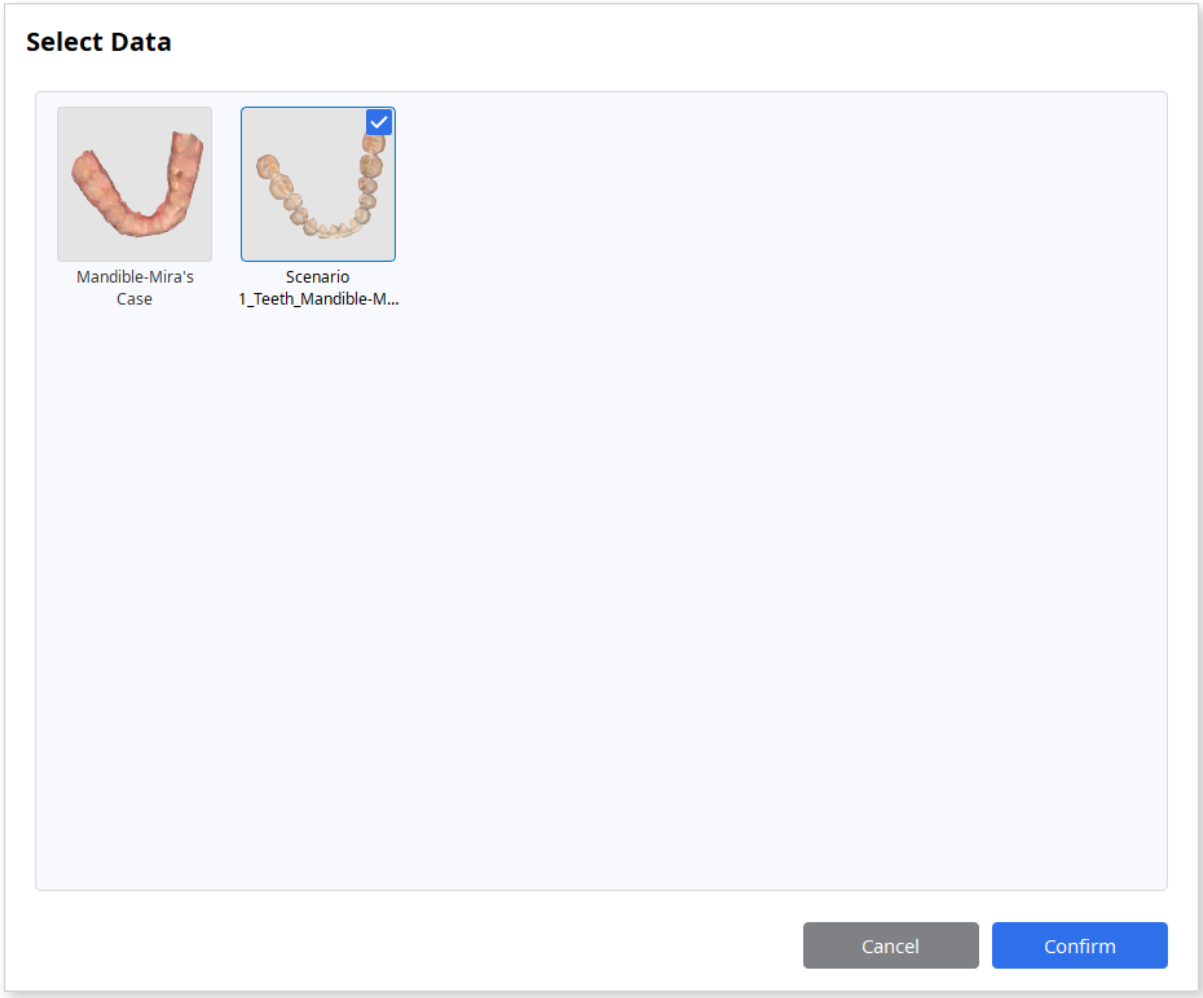
Change "Data Display Mode" on the right side to "Monochrome" to easily spot the changes made.

Mirroring

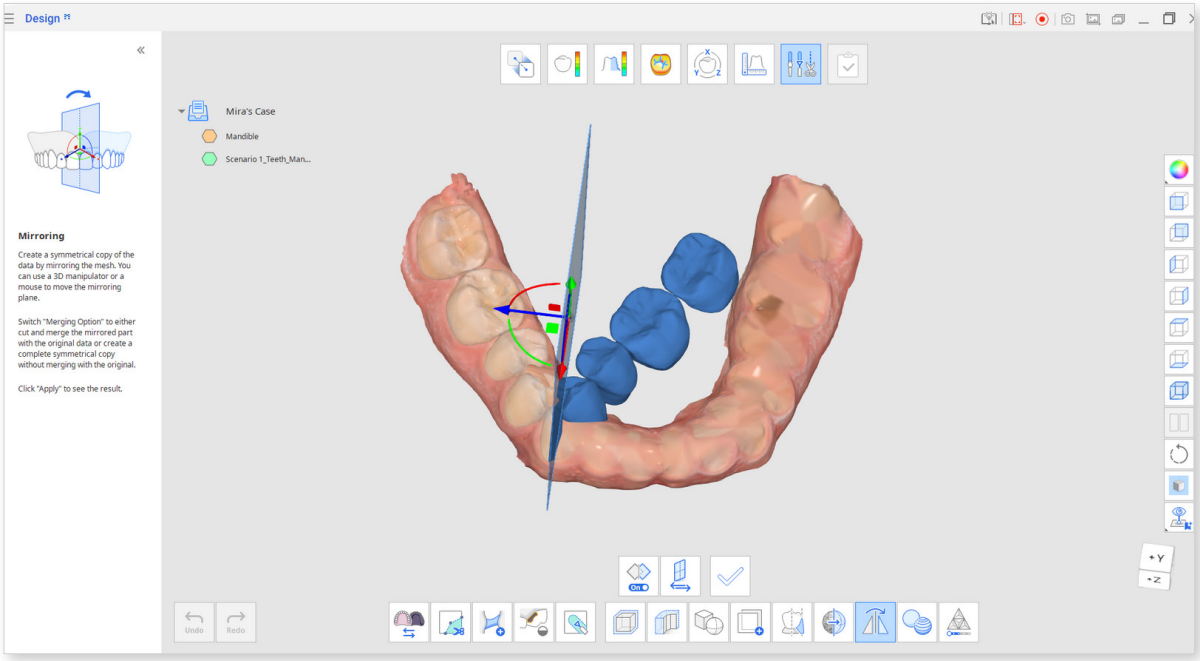
How to Mirror Data

This feature creates a symmetrical copy of your data by mirroring the mesh across the plane.

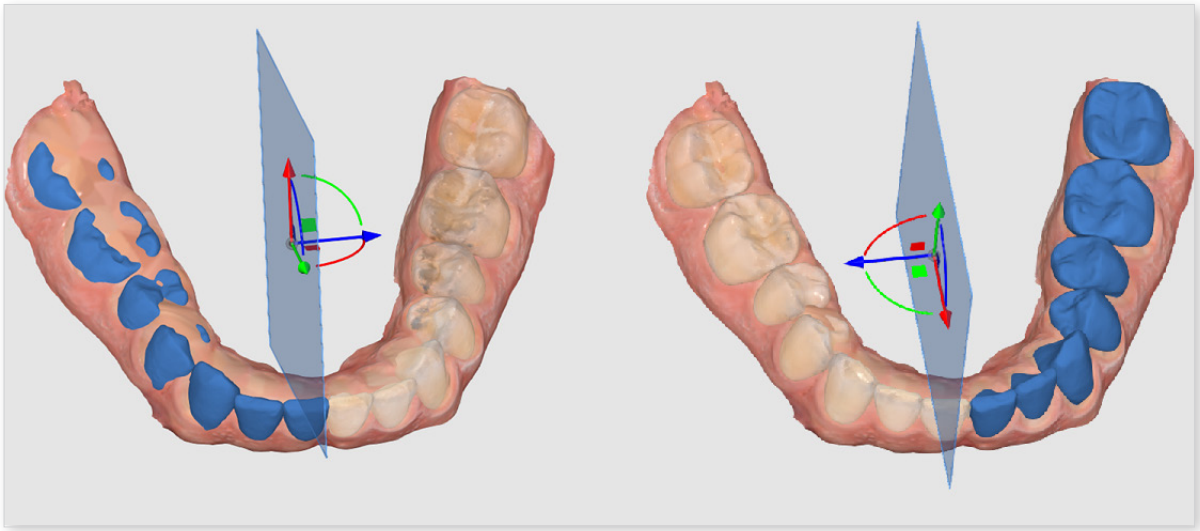
Click on the “Mirroring” icon and select your target data in the “Select Data” window. You can choose more than one data.



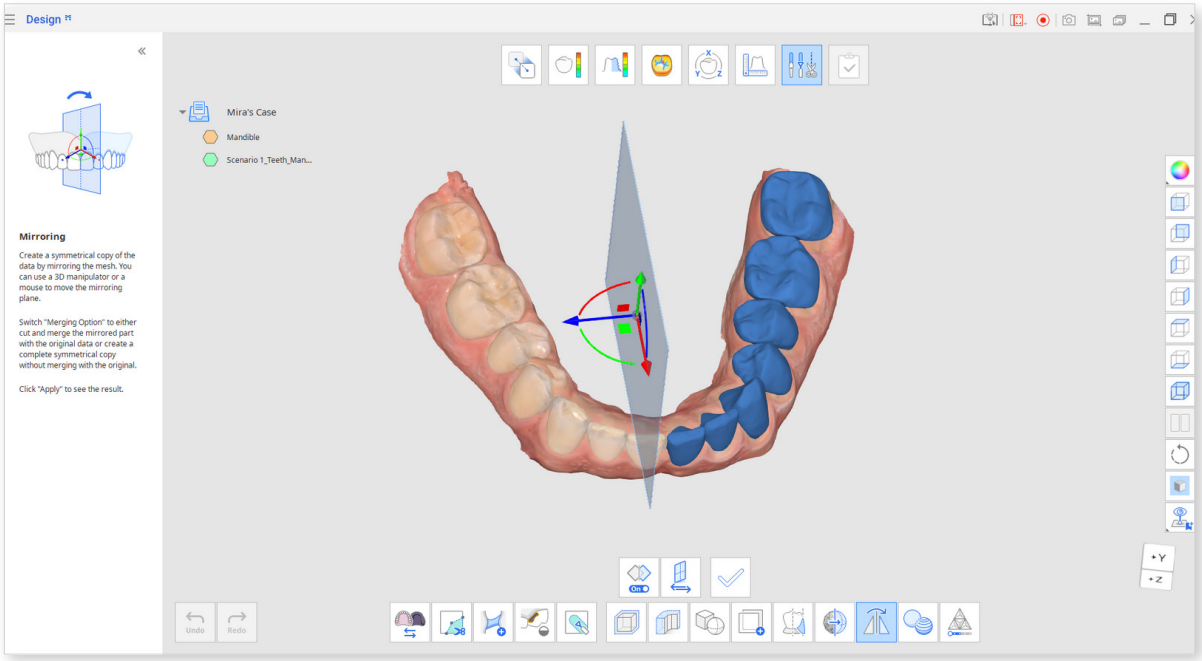
Selected data will appear on the screen together with the mirroring plane. The mirrored part of the data is displayed in blue.



Click “Change Direction” to change the mirroring direction from right to left.

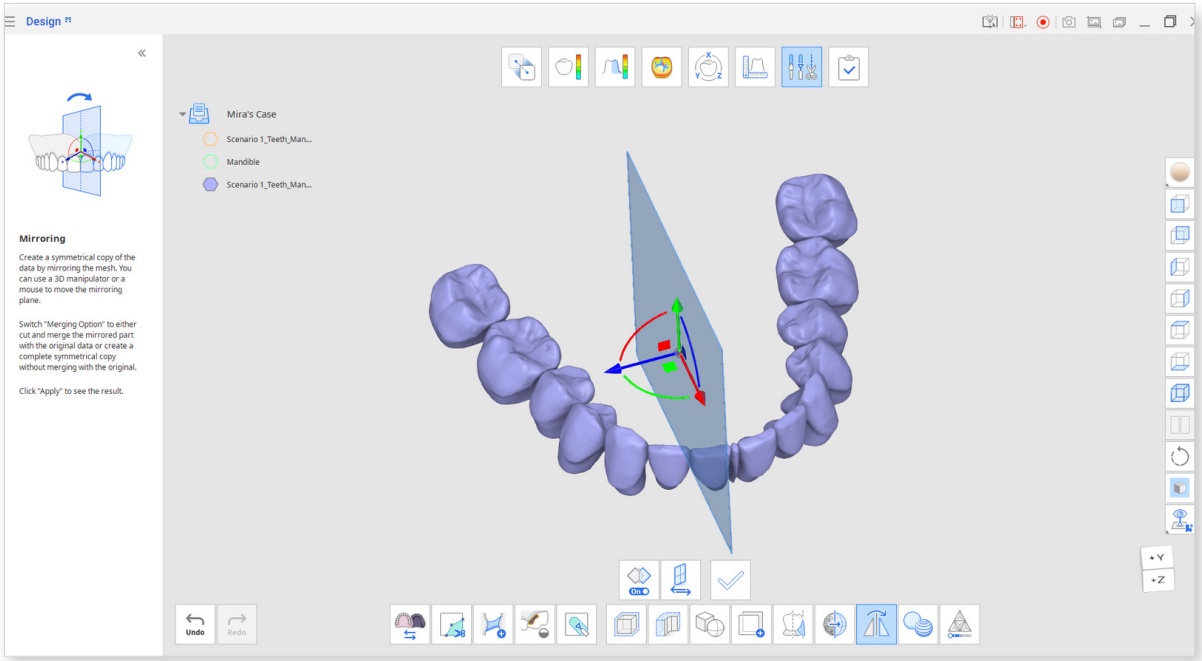


Use the 3D Manipulator or your mouse to move the mirroring plane and control what data part is mirrored and how it is positioned on the reference data (if the latter is used).



After adjusting the mirroring plane, click “Apply.” The original data will be cut and merged with the mirrored part to create a new mesh in the Data Tree. The new data will have ‘mirrored’ added to its original name.

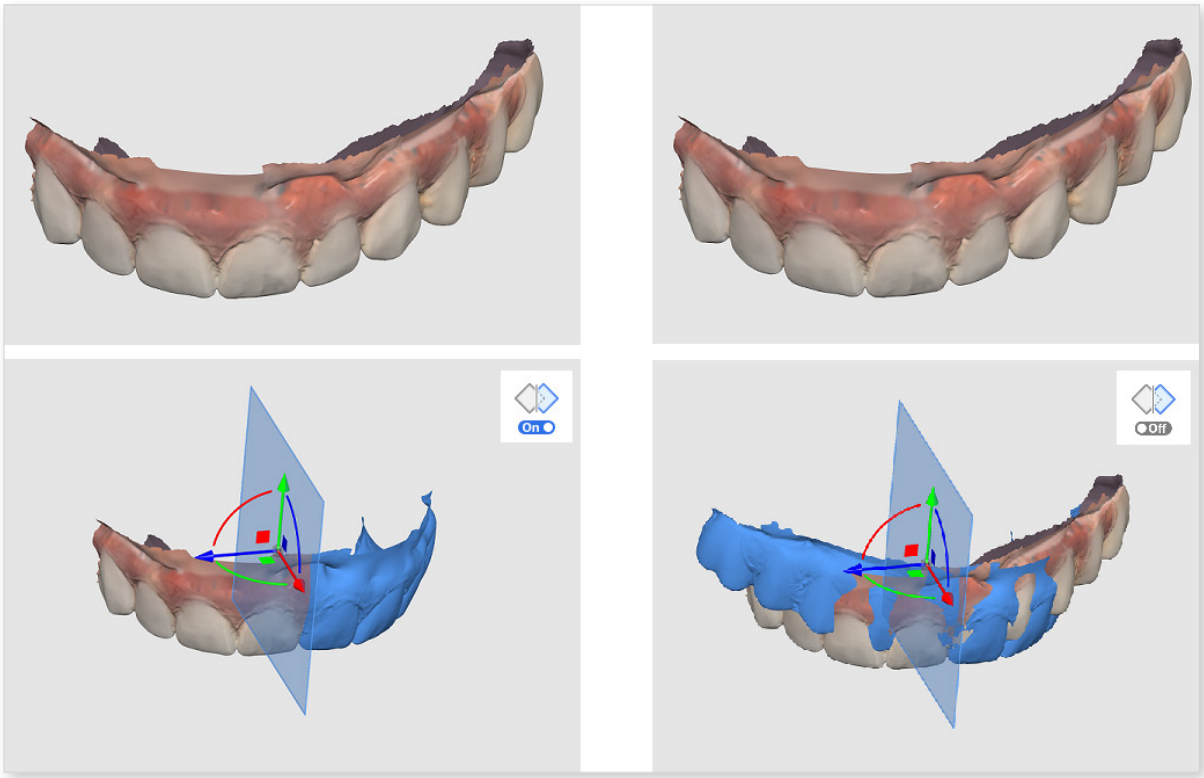
Go to Data Tree and hide the other mesh to examine only the new mirrored data.



By default, the merging option is activated when you enter mirroring. If you don’t want to merge mirrored data with the original, click on the “Merging Option” icon once to turn it off.

With the “Merging Option” off, there will be no cutting or merging. Instead, a full symmetrical copy will be created as the new mesh.

To see the difference between the “Merging Option” on and off, compare the blue mirrored parts with the source data in the picture below.



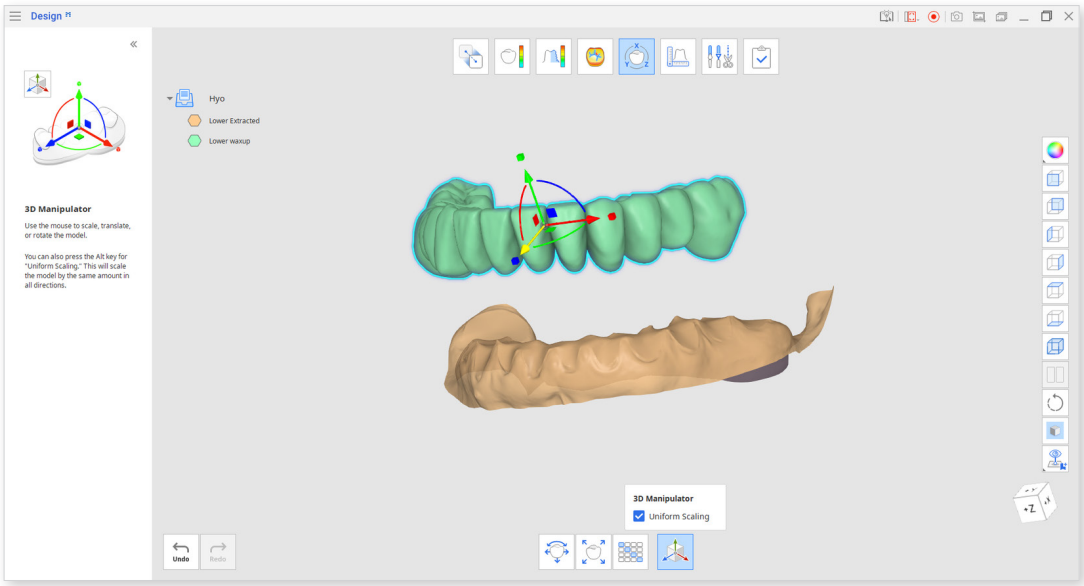
<Mirroring example with the “Merging Option” on and off before changes are applied.>

Combine

How to Combine Data

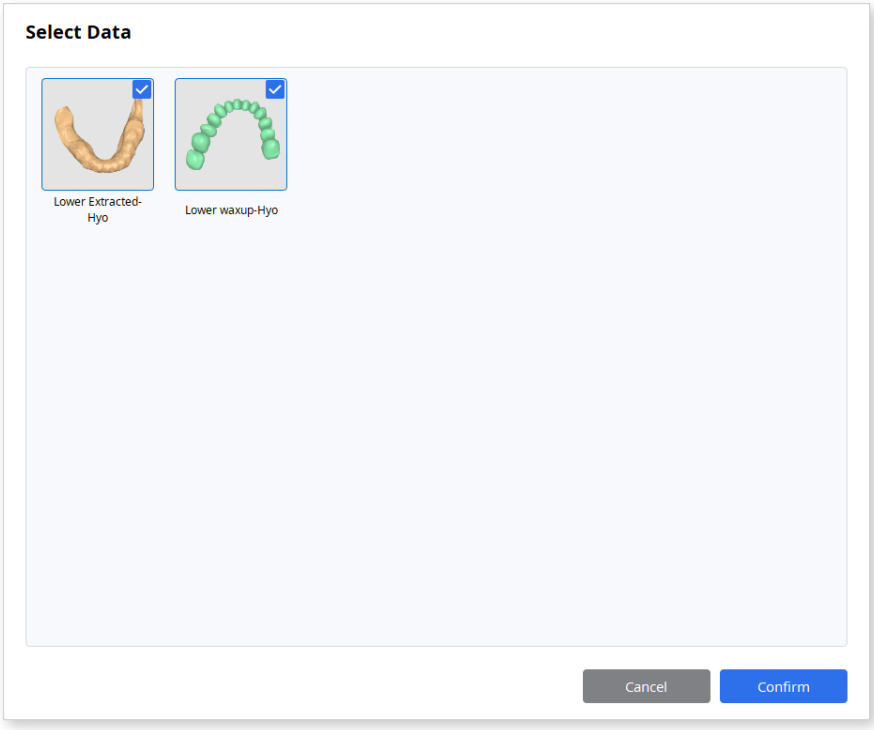
Use the “Combine” feature to join two meshes into one without making any structural changes to the original data.

Go to Transformation Mode and position your data using the 3D Manipulator. Move and rotate data to place it in the desired position before combining.

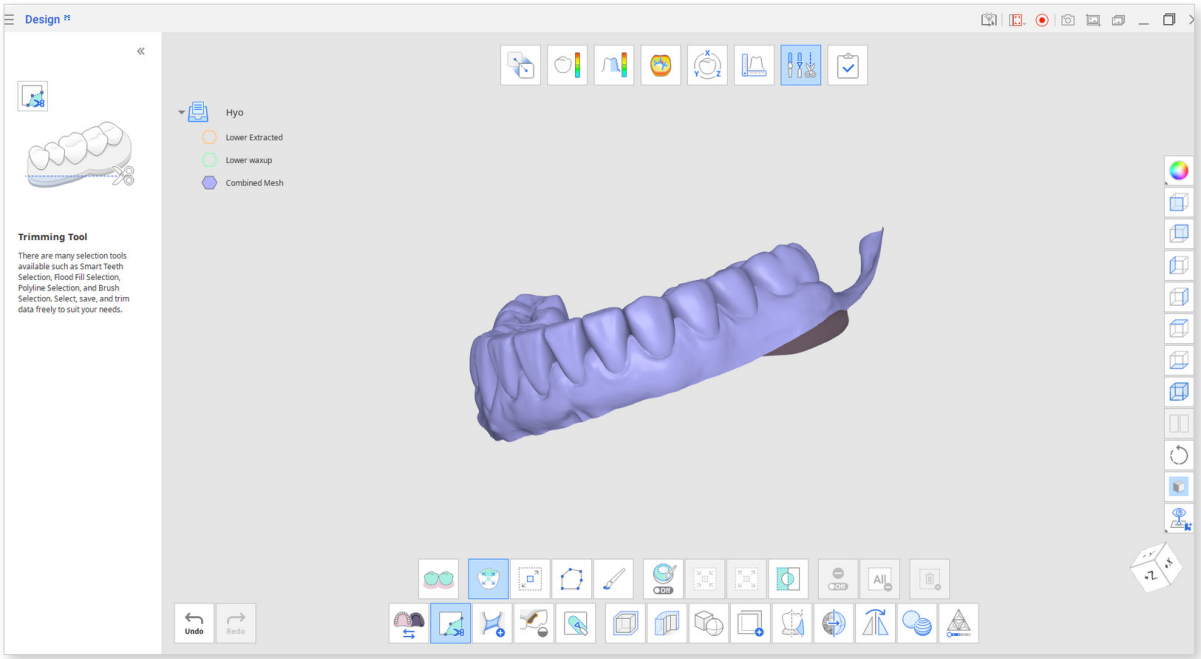


When done, return to Edit Mode and click on the “Combine” icon.

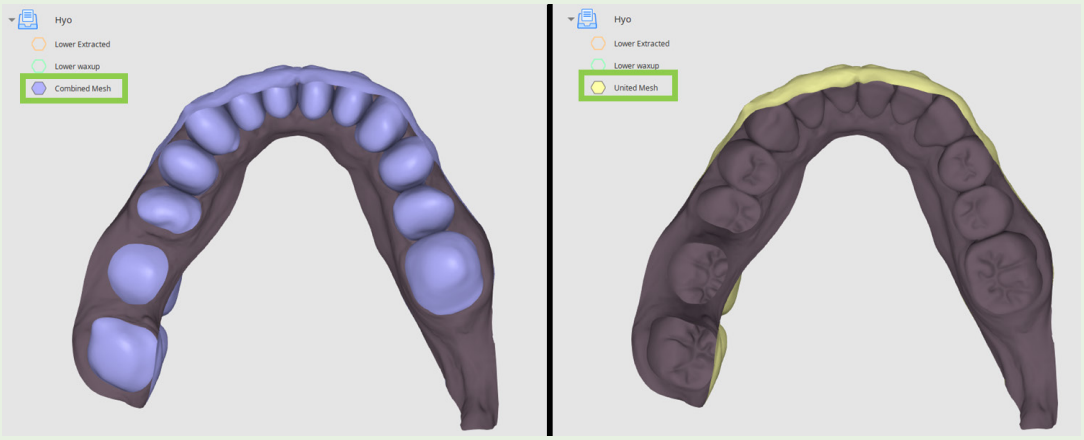
In the opened dialog window, select what data will be combined and click “Confirm.”



The data is combined automatically, considering its current positioning, and a new mesh is created in the Data Tree. Hide the original data in the tree to examine only the combined mesh.



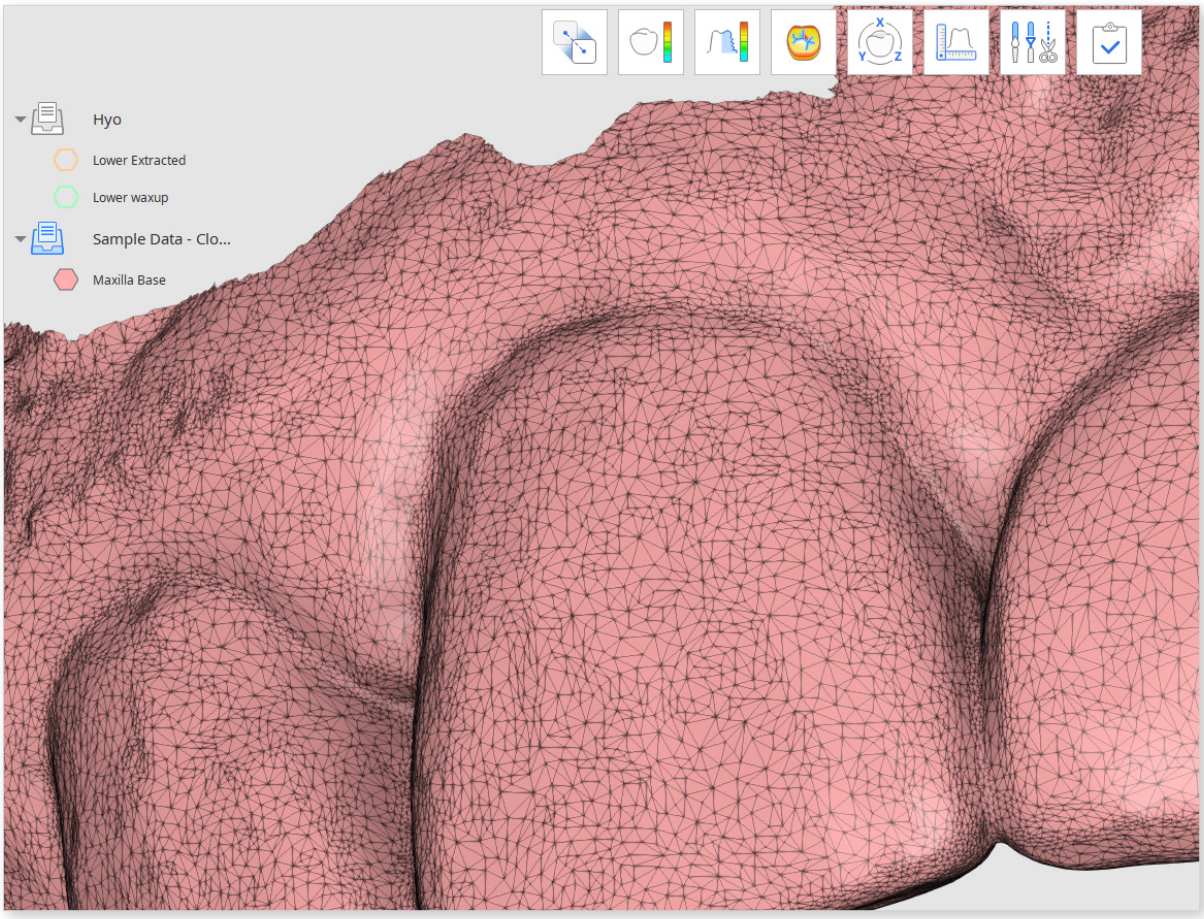
Compared to the union option of the “Boolean” feature, combining doesn’t remove the intersecting parts of the mesh. “Combine” preserves the shape and form of the original mesh, allowing further separation of the combined files without losing mesh.



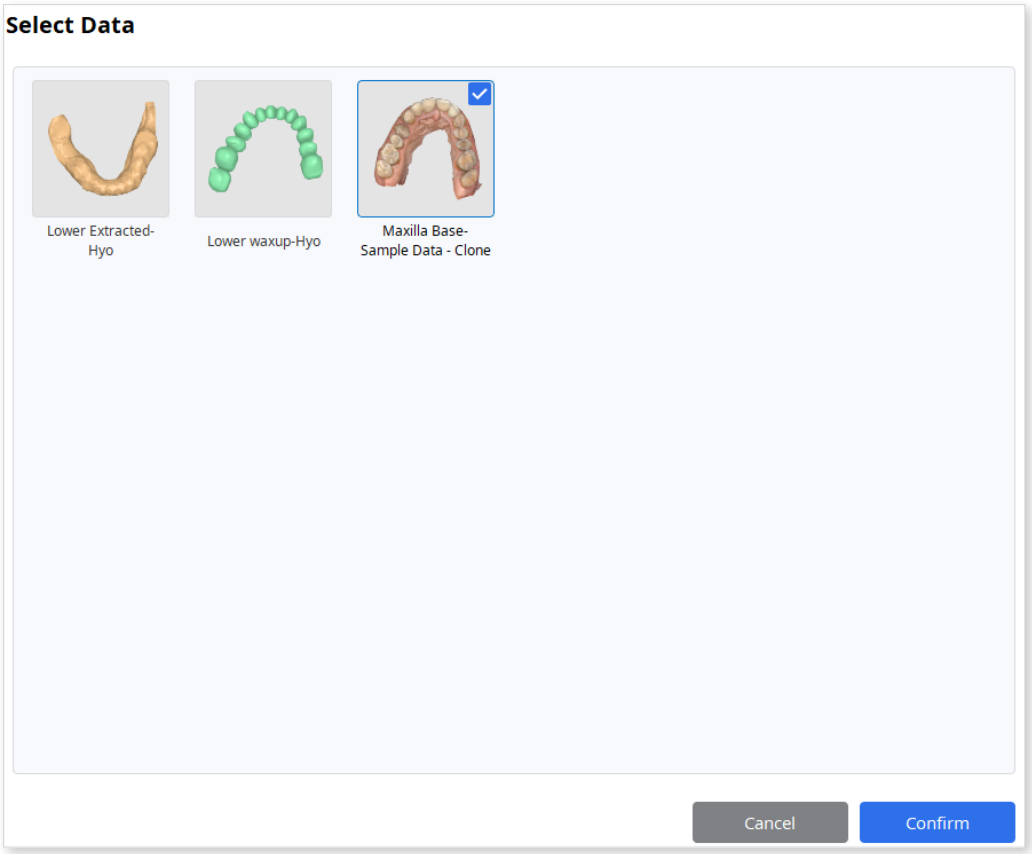
Mesh Resolution

How to Use Mesh Resolution

Each of your meshes consists of triangles. In the Edit Mode, using the “Mesh Resolution” feature, you can control the number of these triangles.



Click on the “Mesh Resolution” icon at the bottom of the screen, and select your target data in the pop-up window.



It is recommended to change “Data Display Mode” on the right side to “Textured with Edges,” “Monochrome with Edges” or “Wire-Frame” to easily spot the changes made.

Use the “Mesh Resolution” slider to control the number of triangles that constitute the mesh.

You can increase the resolution to have more sharp details in your data or lower it to have a lighter file for further rendering and converting. Click “Apply” to save changes and see the result.