

Romexis

Viewer

user's manual

EN

The manufacturer, assembler and importer are responsible for the safety, reliability and performance of the unit only if:

- installation, calibration, modification and repairs are carried out by qualified authorised personnel
- electrical installations are carried out according to the appropriate requirements such as IEC 60364
- equipment is used according to the operating instructions.

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1 Introduction

Romexis Viewer is a freely distributable viewer software for viewing:

- 2D images in DICOM or DICOMDIR format
- 3D images in DICOM or DICOMDIR format
- 3D photos in .obj and .ply formats
- Surface models in .stl format

It is designed to view images that are exported from Romexis desktop software's 2D or 3D module. Images from other sources are not supported.

Romexis Viewer is not intended for diagnostic use.

Romexis Viewer can be downloaded from http://www.planmeca.com or exported with the images from Romexis desktop software.

The Romexis Viewer is available both Mac and Windows operating systems.

This manual provides instructions for using the Romexis Viewer.

Manufacturer

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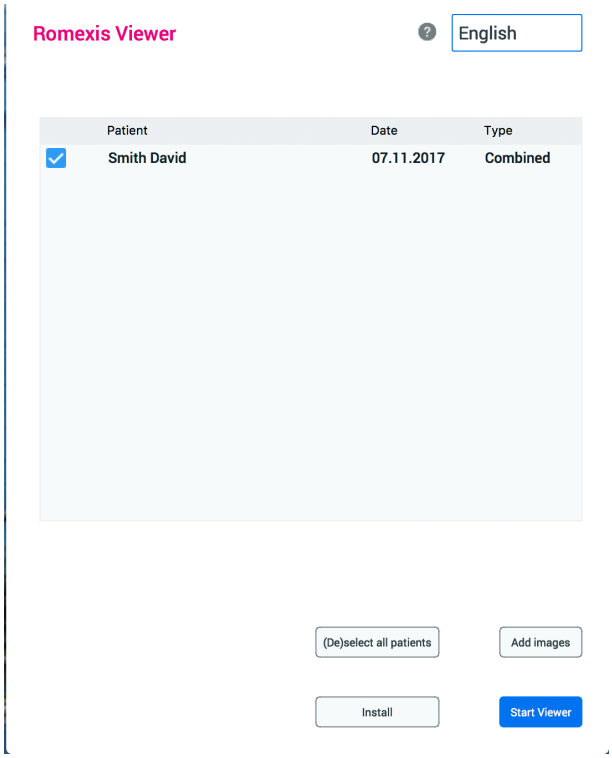
Manufacturer (Standard ISO 15223-1).

2 Starting Romexis Viewer

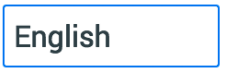
Steps

1. Browse to *Romexis Viewer* media folder.
2. Launch the application by double-clicking the **Romexis_Viewer_Win.exe** file (for Windows OS) or the **Romexis_Viewer_OS_X.app** file (for Mac OS).

   Viewer Launcher opens.



3. Make the necessary selections.



3.a. Select the interface language from the language drop-down menu.



User manual can be viewed from this icon.

In case the Viewer is exported from Romexis desktop application together with the image, that patient will be shown in the Viewer Launcher list.

3.b. To add an images click the **Add images** button and browse to the DICOM file (.dcm), DICOMDIR file, .obj file or .ply file taken with Planmeca manufactured X-ray device and click **Open**.

An alternative way to add image is to drag the image file to the list area.

NOTE

Only DICOM images captured using Planmeca manufactured imaging devices or exported from the Romexis desktop software can be opened.

3.c. If you are running Romexis from the DVD or USB stick, it is recommended to click the Install button, which copies the viewer to your desktop for better performance.

4. Select the patient and click **Start Viewer**.

NOTE

It is recommended to select only one patient at the time.

To switch patient, close Viewer and select another patient from the Viewer Launcher.

Results

Depending on the image type, Romexis Viewer opens to 2D module or 3D module:

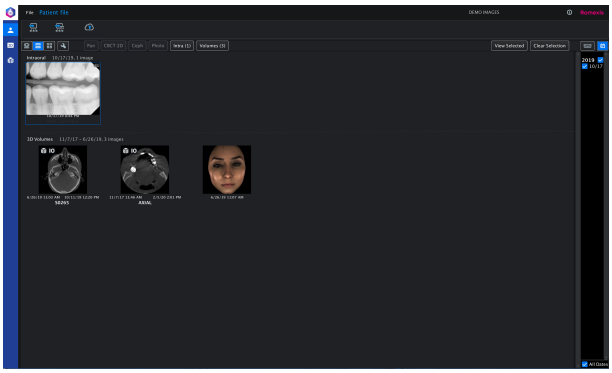


- Patient file module: image browser for 2D and 3D images
- 2D imaging module: viewing and adjusting 2D images
- 3D imaging module: viewing and adjusting 3D images

In case Viewer is started without patient selection, Viewer opens automatically to *Open DICOMDIR* dialog.

3 Patient file module

File module shows all of the patient's 2D and 3D images.

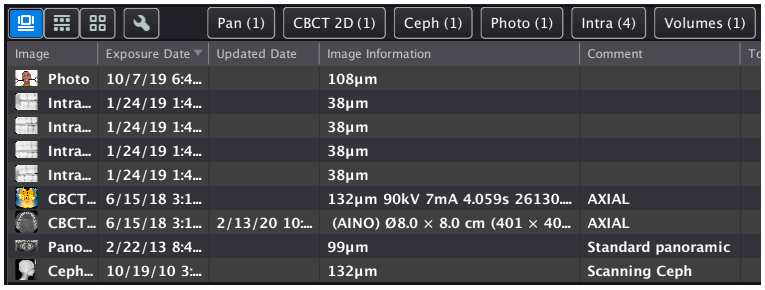


3.1 Image browser viewing modes

Click these buttons to select thumbnail viewing options.

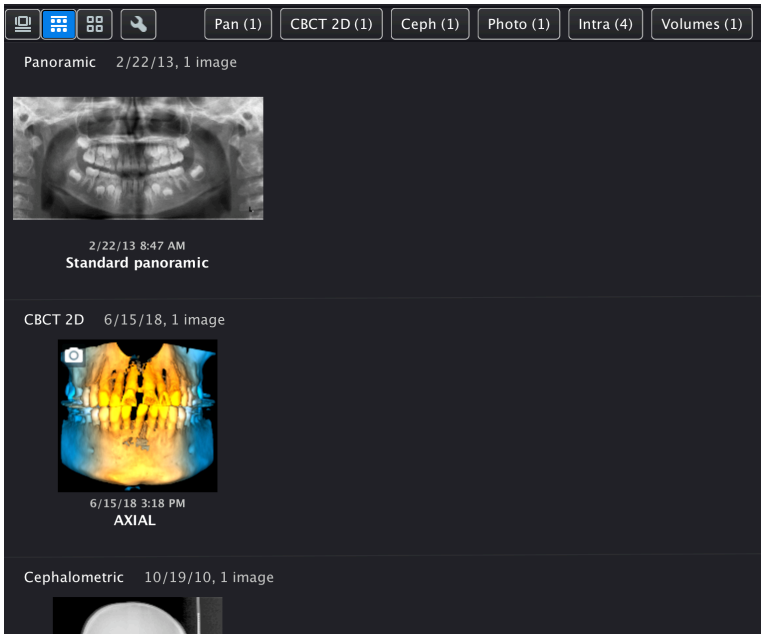
- All images in table format





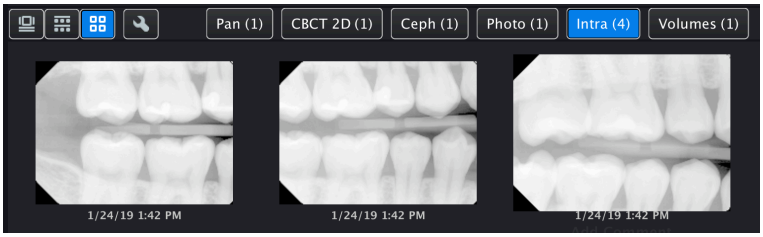
- All images





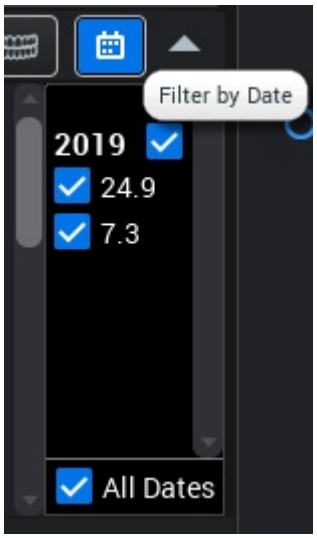
- Category Images grid





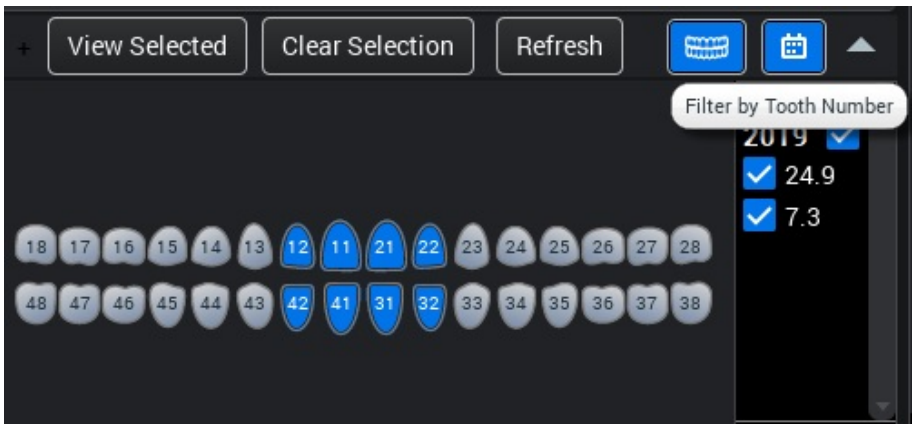
3.2 Filtering images by date

Click the calendar icon and select the date(s). Images captured on the selected date show in the image browser.

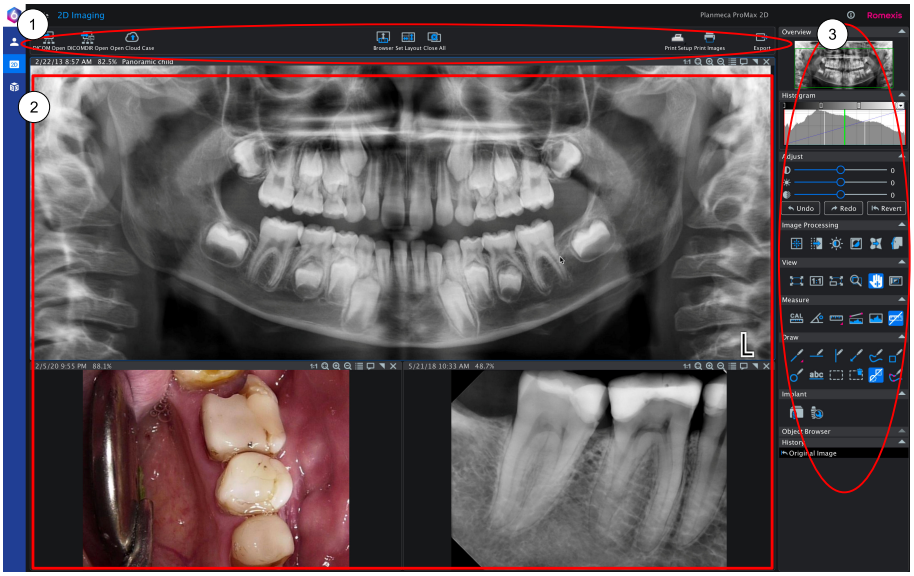


3.3 Filtering images by tooth number

Click the tooth chart icon and select the tooth number(s) from the tooth chart. Images containing the selected teeth show in the image browser.



4 2D module



1 2D top toolbar (import, browser, printing, export)
2 Opened images
3 Adjustment, image processing, viewing, annotation tools and object browser

4.1 Adjusting image



These tools are located on the top bar of each open image. They affect the currently selected image only.





Scale the image 1:1.



Zoom to fit



Zoom in



Zoom out

Show image properties

Opens the *General* tab under *Image properties* window where tooth numbers (for intraoral images) can be defined, the image can be rotated/ flipped and the image file info and exposure parameters can be viewed.

Show image diagnosis

Opens the image diagnosis for editing. The maximum number of characters is 5000.

Maximize

Maximizes image when more than one image is open.

Close image

4.1.1 Adjust

Adjust contrast, brightness and softness by moving the sliders.

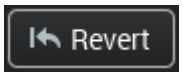




Click to undo the latest adjustment.

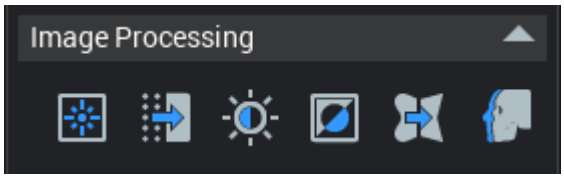


Click to redo the latest adjustment.



Click to revert image to original state (right after exposure).

4.1.2 Image prosessing



CLARIFY filter

Use the filter to adjust image contrast locally. The filter improves depth and clarity of all 2D radiographs.

Local contrast is applied to the image on top.

Despecle (noise removal)

Use the despecle tool to remove small defects due to dust or scratches as well as moiré effects on images.

Select the area where to apply the filter to avoid unwanted overall changes. The filter replaces each pixel with the median pixel value within the specified area.



Optimize contrast

Use this tool to optimize contrast in a specific region of interest in a radiograph.

Select the reference point within the brightest area of a radiograph, NOT in a filling. The ideal reference point is in the sound enamel of the brightest tooth. If there is a brighter area in the radiograph than the enamel, e.g. the compact bone, select the reference point in that area.

NOTE

Other areas than the region of interest may be destroyed with respect to image quality as no radiograph can be optimized simultaneously in all regions and for overall brightness.



Invert image

Use this tool to invert the colours of the image.



Adjust sharpness

Adjust sharpness by using the sliders or moving the mouse on top of the image



Apply Ceph filter

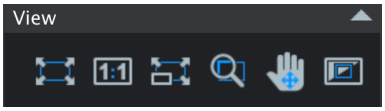
Use the filter to show more facial soft tissue.

To specify the affected area, adjust the green vertical lines.

To adjust the strength of the filter adjust the *Gain* value: with higher values more tissue is shown.

To apply filter on the left edge of the image enable the *Left* option.

4.1.3 Viewing tools





Zoom to fit

Click to fit images to viewing window.



Actual pizels

Click to view images in their actual size.



Uniform scaling for all images

Scales images to same size.



Magnifier

Magnifies the image twice its size.

1. Check that the **Pan** tool is inactive.
2. Move the mouse over thea area on the image you want to magnify.
3. Select the suitable filter by right-clicking on top of the image.

   The available filters from left to right are:

   - Magnify
   - Invert
   - Equalize
   - Sharpen

     and
   - Emboss





Pan tool

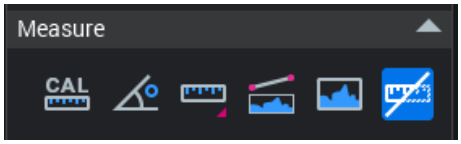
Allows to move image



Adjust region of interest

Allows adjustment in the region of interest

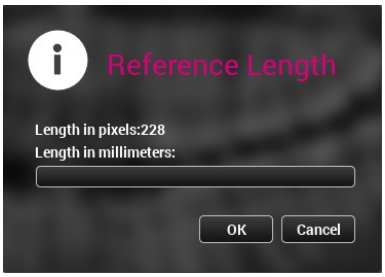
4.1.4 Measuring tools



Calibrate for measurement



1. Click this button.
2. Draw the calibration line by dragging with the left mouse button.
3. Finish the line by releasing the mouse.
4. Enter the length and click **OK**.

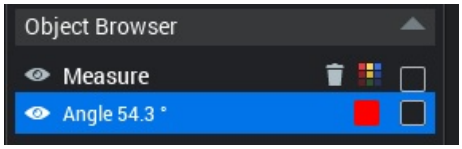


Measure angle



1. Click **Measure angle**.
2. Draw a line on the image.
3. Release the mouse and draw a second line starting from the end of the second line.

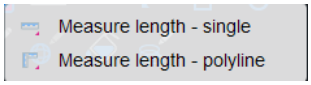
The lines are combined and the measurement appears on the image and in the object browser.



Measure length



1. Click the **Measure length** button.
2. Select ***Single measurement*** to measure length between 2 points (default) or ***Polyline measurement*** over multiple points.



3. Draw the line by dragging with the left mouse button and release to finish.

TIP

The measurements are stored as saved views, click Open Saved View to view the saved measurements.

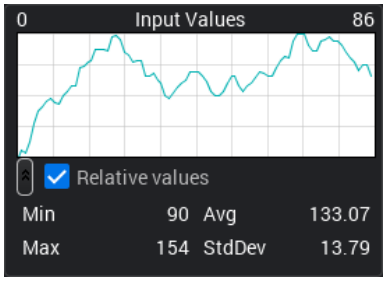
The measurement label can be dragged freely on the view (unless disabled in the default settings). Fix the label in place by clicking.

Line profile



1. Select the tool to draw a line on 2D image and view the gray scale profile of the line.
2. Select Minimum, Maximum, Average or StdDev (standard deviation) profile.

   By checking the Relative values option the approximate gray scale values are emphasized.



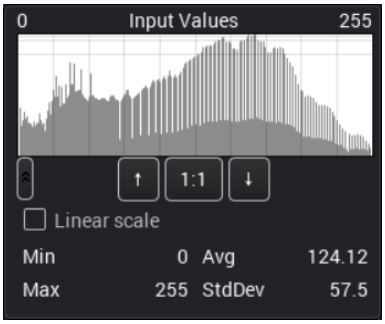
Show histogram



1. Select the tool to open the histogram of the open image/selected region of interest.

   A histogram displays a gray scale distribution in the image/area and is by default drawn in square root scale.

2. To enable linear scale, check the Linear scale checkbox. Select Minimum, Maximum, Average or StdDev (standard deviation) profile.

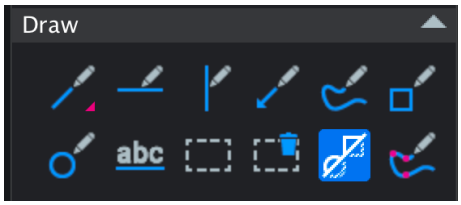


Show / hide measurements



Select to show/hide measurements

4.1.5 Drawing tools



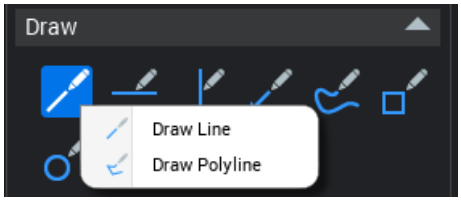


Draw line

Click to select single or polyline.

Draw Line - draw line by dragging with the mouse and release.

Draw Polyline - draw line by dragging with the mouse and draw another line starting from the end of the firs line and release.





Draw horizontal line



Draw vertical line



Add arrow



Draw curve

NOTE

Sketched lines are not saved or stored and are lost when image is closed.

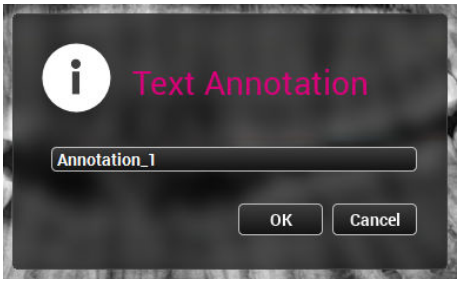
Draw rectangle

Draw ellipse

Add text

Click this button and click on the image where to add annotation.

Enter the annotation and click **OK**.



Select annotation

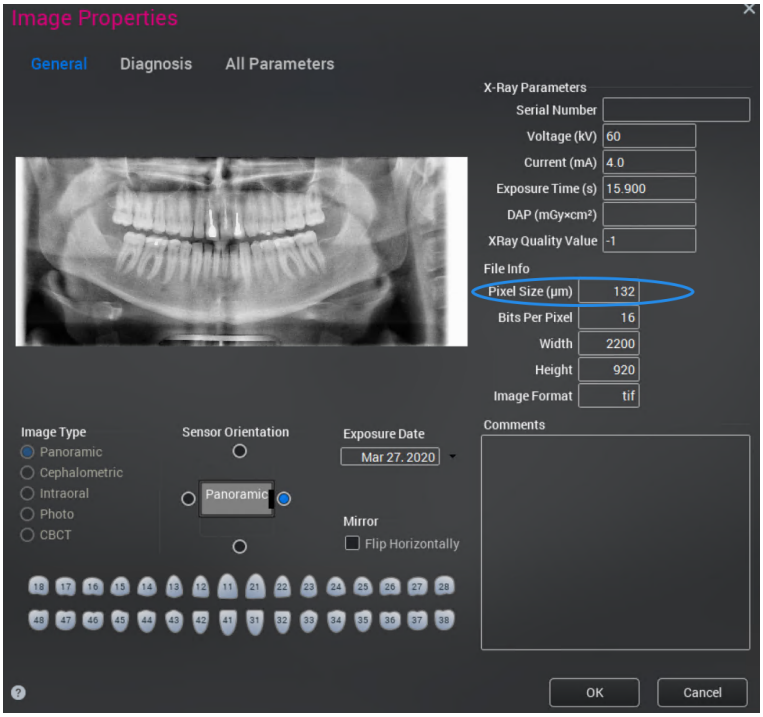
To edit annotation, click **Select annotations** and double-click the annotation.

Delete selected

Select the annotation/measurement to delete and click this button.

4.1.6 2D image dimensional accuracy

For dimension accuracy check the pixel size from image properties. The dimensional accuracy is the pixel size rounded off to the nearest 0.1 mm.



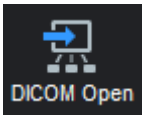
4.2 Opening DICOM files

About this task

To open images directly to 2D imaging module:

Steps

1. Click the **DICOM Open** button



2. Browse the .dcm file and click **OK**.

4.3 Opening DICOMDIR image directory

About this task

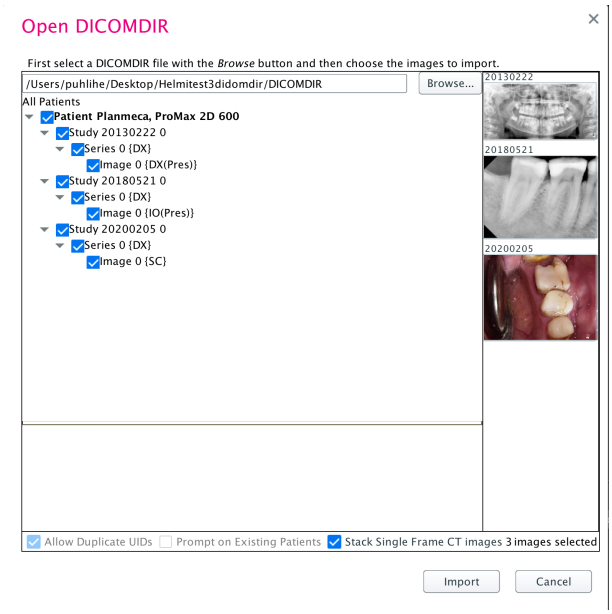
To open DICOMDIR images directly to 2D imaging module:

Steps

1. Click the **DICOMDIR Open** button



2. Browse to the DICOMDIR file.
3. Select desired image
4. Click **Import**.



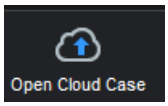
4.4 Open cloud case

About this task

To open images that are transferred using Romexis Cloud transfer service:

Steps

1. click the **Open cloud case** button.



2. Browse to the case file.

4.5 Image browser



Image browser shows all patient 2D images in categories.

You can choose from three different viewing options.

For more information on image browser viewing modes, see "Image browser viewing modes" on page 4.

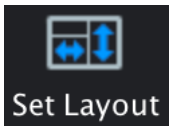
For more information on filtering images by date, see "Filtering images by date" on page 5.

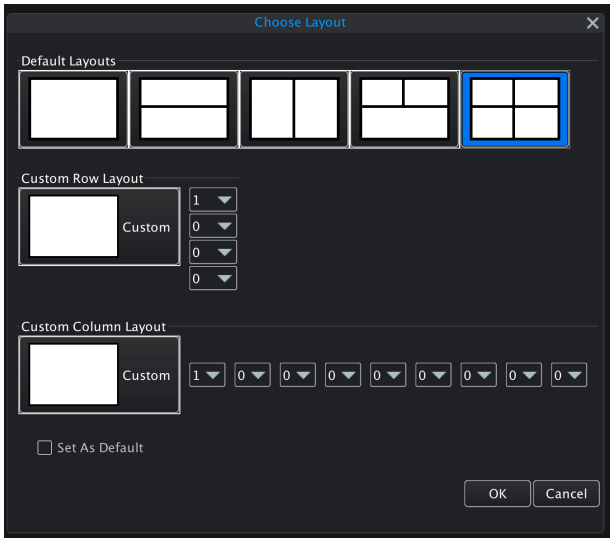
For information on filtering images by number, see "Filtering images by tooth number" on page 5.

4.6 Setting layout

Steps

1. Click the **Set Layout** button to select the display order for open images.

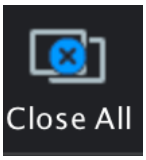




4.7 Closing all images

Steps

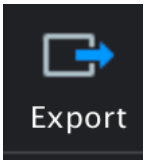
1. Click **Close all** button to close all currently open images.



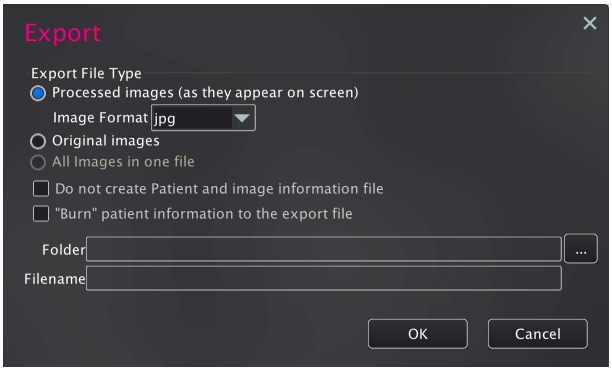
4.8 Exporting images

Steps

1. Open images you wish to export.
2. Click the **Export** button.



3. Select the appropriate options, define the export folder and type a file name.



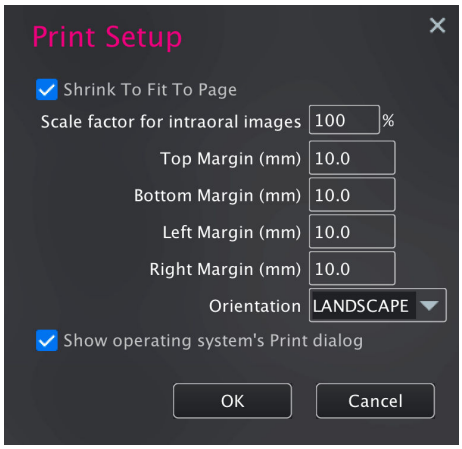
4. Click **OK**.

4.9 Printing images

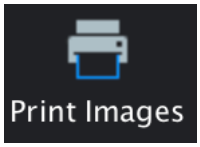
Steps

1. To set the window scale for intraoral images, the page margins and page orientation, click the **Print Setup** button.





2. To print currently open image(s), click the **Print Images** button. The images will be printed as displayed in the layout.

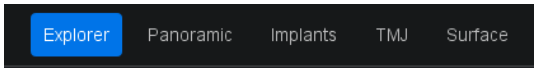


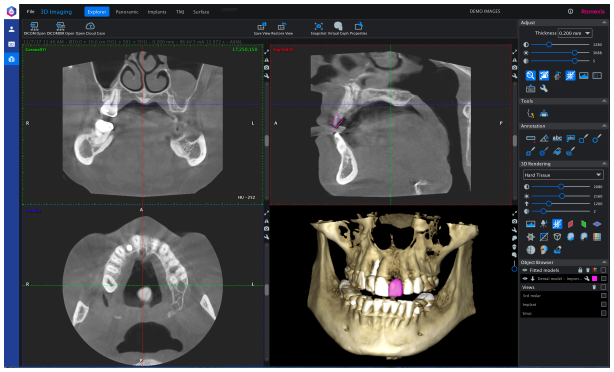
5 3D module

The images can be viewed and adjusted in the following tabs:

- Explorer
- Panoramic
- Implants
- TMJ
- Surface

To move between views, click these buttons on top of the screen.

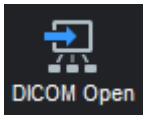




5.1 3D module top toolbar

5.1.1 Opening DICOM files

For detailed description see section "Opening DICOM files" on page 13.



5.1.2 Opening DICOMDIR files

For detailed description see section "Opening DICOMDIR image directory" on page 13.



5.1.3 Save 2D snapshots

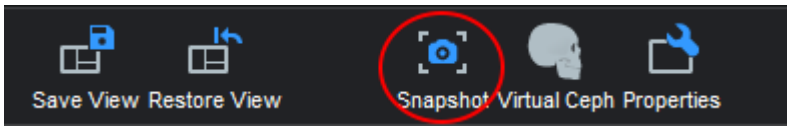
About this task

This tool can be used to generate 2D snapshots of 3D volumes.

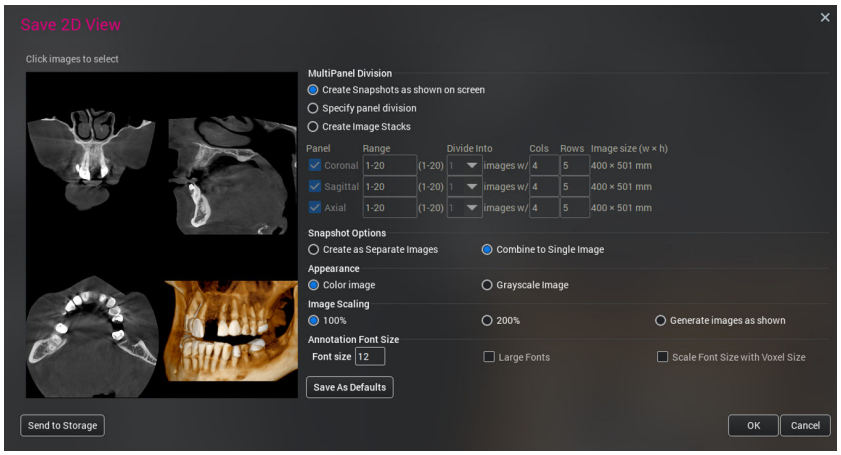
The snapshots will appear in the 2D module in CBCT group where they can be processed, exported and printed using the tools described section "2D module" on page 6.

Steps

1. Click the **Snapshot** button on the top toolbar.



2. In the appearing dialog, specify the image(s) or ranges of images to be included in the snapshots, snapshot options and panel division.



- **Create Snapshots as shown on screen**

  By default, this option is selected. To exclude a view click it in the preview image.

- **Snapshot Options**

  - Select **Combine to single image** to create a single image (default). Select **Create as Separate Images** to create single images from different views.
  - Larger fonts

    Generates larger font size for annotations.

- **Appearance**

  Select **Color image** to create an 8-bit colour image (default). Select **Grayscale image** to create a 12-bit grey scale image.

- **Image scaling**

  Select **100%** to generate a snapshot that is true to size of the original image. Select **200%** to make the snapshot double the size of the original. Select **Generated images as shown** to generate a snapshot with the same zoom level that is applied in the underlying module.

- **Annotation font size**

  In **Font size** you can modify font size of the measurement annotations. Select **Large fonts** to enlarge all annotations to a set large font size. Select **Scale Font Size with Voxel Size** to make annotations the same size regardless of the voxel size of the images.

- **Save As Defaults**

  The current selection of snapshot options can be set as default by clicking the **Set As Defaults** button.

- **Specify panel division**

  This option can be used to create slice snapshots in freely configurable numbers and layouts from all available projections in

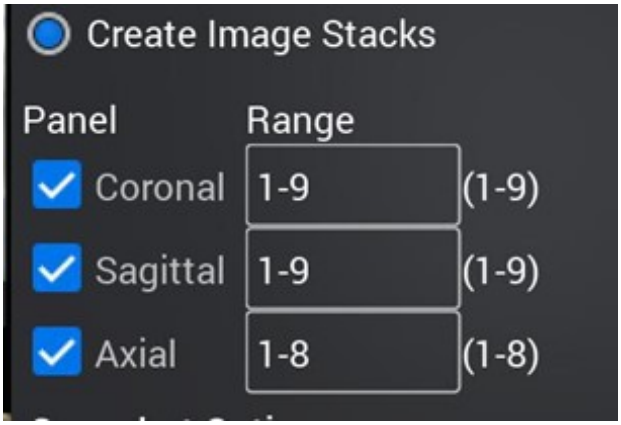
the underlying 3D module. For example, it can be used to generate multiple images that include cross-sectional slices from the full dental arch with 1 mm spacing. The slice distance, thickness and width are defined in the slice settings in underlying module. See more in section "Slice views" on page 24.

- Select Coronal, Sagittal and/or Axial panels.
- Specify the range of slices. The maximum number depends on the slice settings in underlaying module.
- Choose the desired number of images and define the columns and rows.

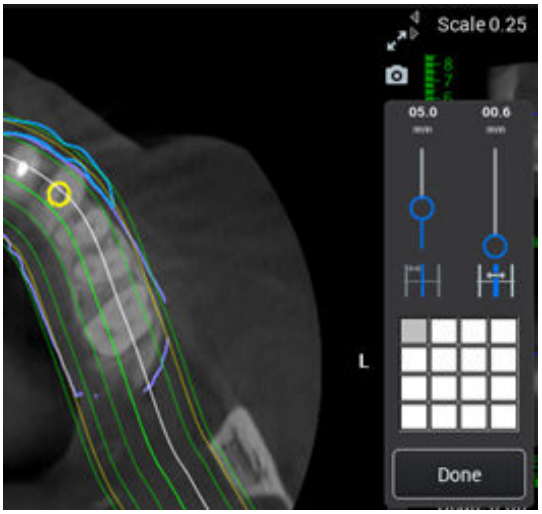


- **Create Image Stacks**

  The **Create Image Stacks** option is a quick and easy way to send the full stacks from all of the current views to PACS. By default all of the images are sent, but you can also specify a sub-range of the images to be sent.

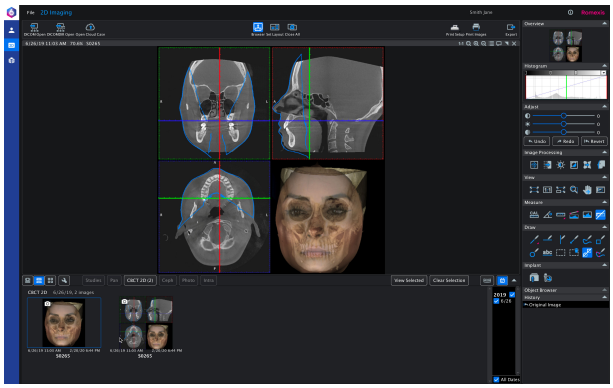


To adjust how many images are generated for each view stack, adjust the Slice distance from the pop-up that opens from the wrench icon:



You can also set these distances to any desired default values in the 3D module *Default Settings* dialog so that they are automatically applied to all new volumes.

3. Click **OK** and the 2D snapshots are saved to 2D module under CBCT 2D category

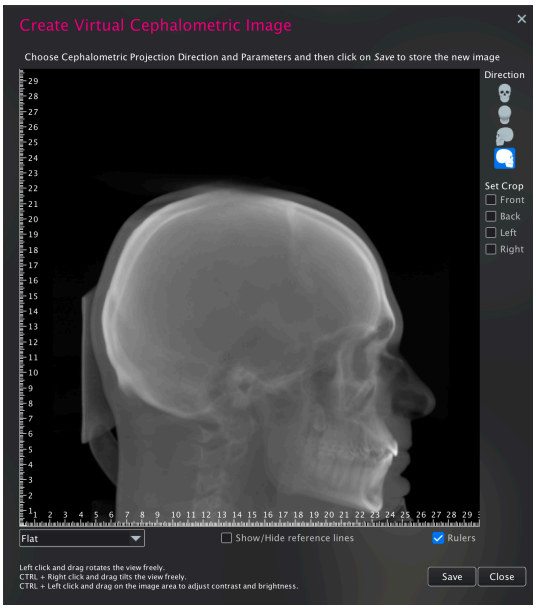


5.1.4 Virtual ceph

About this task



Virtual Cephalometric tool can be used to generate 2D cephalometric images from 3D volumes and save them to patient's 2D images.



Steps

1. Open CBCT image.
2. Click **Virtual Ceph** button.
3. Select desired options:
   - To *rotate* and *align* the volume use left mouse button.

     Note that the projection is perspective free so the close and far anatomy can be aligned perfectly.
   - To *rotate* the volume *sagittally* (nodding) use the **Ctrl** + right mouse button.

- To adjust *contrast* and *brightness* use **Ctrl** + left mouse button.

  Use the direction buttons to set the direction of which the cephalometric image should be generated. These can be used together with crop options so that the far side of anatomy is removed from the cephalometric image creating an image where duplicate anatomy does not need to be considered.

  The following options can be selected from the drop-down menu:

  - *Default*: Produces the most film like quality in the image.
  - *Flat*: Flattens the image by reducing differences in contrast between areas.
  - *Log*: Adds contrast
- To show/hide ruler check/uncheck the **Rulers** check box.
- To turn on/off the *ProFace profile* overlay check/uncheck the **ProFace profile** check box.

  Use the scroll bar to adjust the left/right positioning of the ProFace profile line.

4. Click **Save**.

   Virtual Cephalometric image is save to 2D module and where it can be edited, printed and exported. You can save several images are the same session with different setting.
5. Click **Close** to finish.

5.1.5 Save view

About this task

To save the current view:

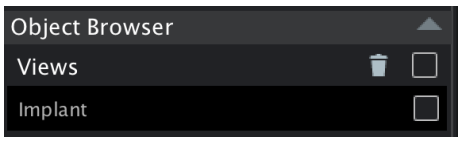
Steps



1. Click **Save view**.
2. Enter a name for the view and click **OK**.

Results

Saved view is visible in Object browser



5.1.6 Reset view

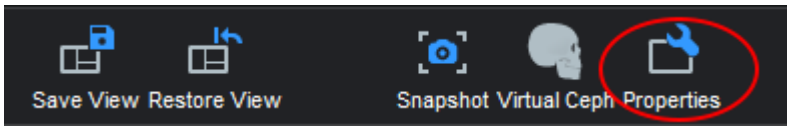


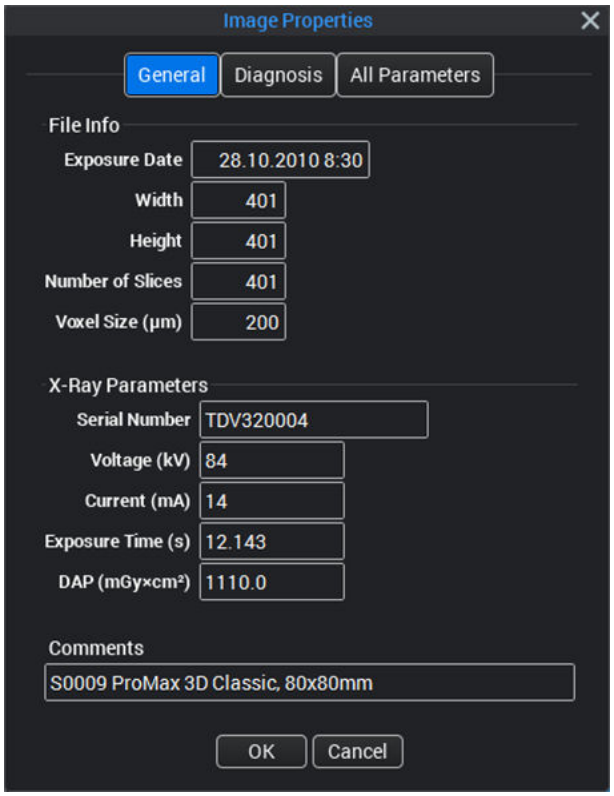
Restores the original orientation and settings of the views.

5.1.7 Image properties

Steps

1. To view *Image properties* or add an image comment click the **Image Properties** button.

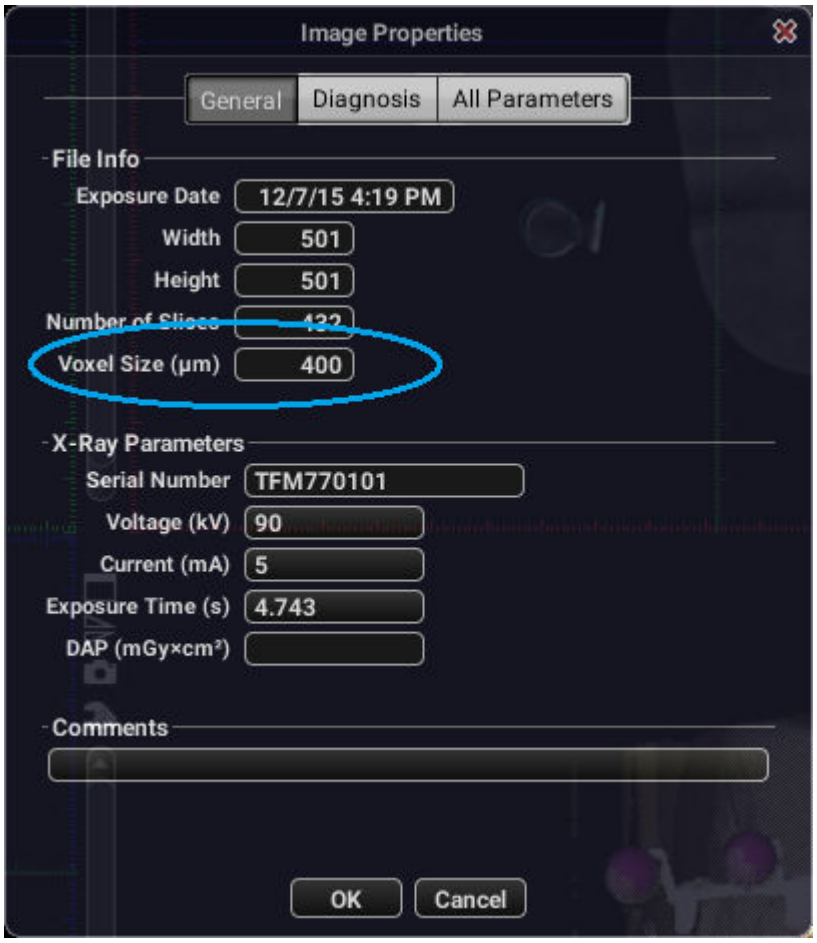




2. When finished click **OK**.

5.1.7.1 3D image dimensional accuracy

For dimension accuracy check the voxel size from image properties. The dimensional accuracy is the voxel size rounded off to the nearest 0.1 mm.



5.2 Explorer tab

In the *Explorer* tab the 3D volume is displayed simultaneously in four different views:

- Sagittal (red)
- Coronal (green)
- Axial (blue)
- 3D rendered

The red, blue and green lines across the views indicate the slicing planes.

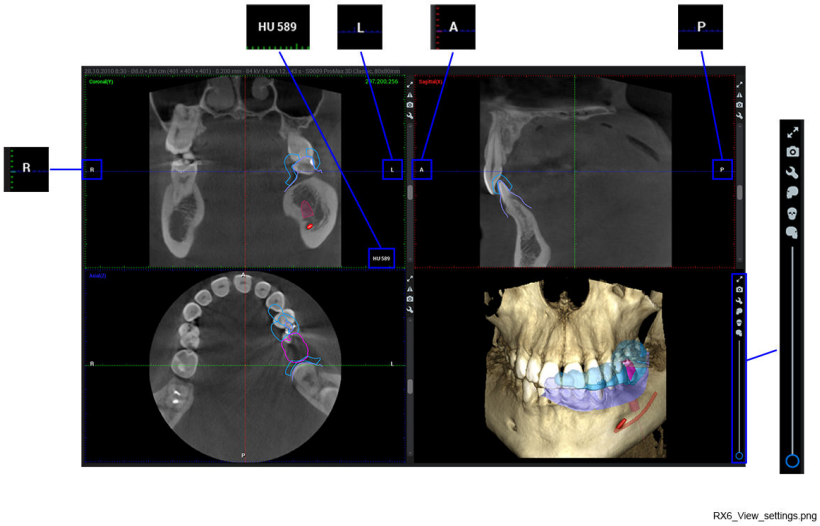
To adjust the position of the volume hold down the left mouse button and move the mouse in the view.

NOTE

These adjustments affect all the other views except for the rendered view and are automatically adjusted correspondingly.

To rotate the viewing angle hold down the right mouse button while moving the mouse.

5.2.1 Slice views



RX6_View_settings.png

A/P, L/R (anterior/posterior, left/right) orientation indicators

The anterior, posterior, left, and right anatomies are indicated by the letters *A/P/L/R*. These are automatically updated to denote the nearest anatomy to the edge.

HU (Hounsfield unit)

When moving the mouse cursor on top of an image, a Hounsfield Unit (HU) value shows at its bottom right corner.

The value is an average of 3 x 3 pixel area under the mouse cursor.

Maximize

Click **Maximize** to maximize the selected view. Re-click to open the view in full size.

Click **Decrease** to return to default size.

Mirror

Reorients volume in the view as follows:

- Coronal: Anterior vs. Posterior
- Sagittal: Lateral vs. Contra-lateral
- Axial: Upper vs. Exterior
- Axial view: From above / below
- Coronal view: From front / back
- Sagittal view: From left / right

Slice view scroll bar

Adjust the slice view by scrolling the bars at the right side of the of the axial, coronal and sagittal slice views.

For example, scrolling the bar in coronal view moves the coronal plane in anterior/posterior direction when the volume is in its default orientation.

The orientation lines in the other views and the orthogonal plane in the 3D rendered view are adjusted accordingly.

TIP

To browse the layers by scrolling the mouse wheel after deactivating the zoom mode, see "Toggle zoom" on page 26.

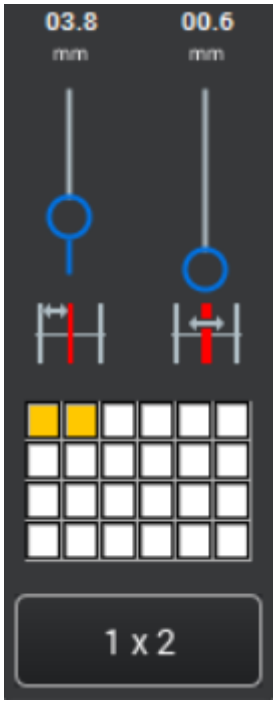
Quick shot

Take a 2D snapshot of the slice view by clicking the quick shot icon. The snapshot is saved as a 2D CBCT image in 2D module, see section "Save 2D snapshots" on page 17 for more information.

Show viewport settings

Click **Show viewport settings** on the top right corner of the slice view.

Select the number of images, layer thickness and layer distance for each view (coronal, sagittal, axial).

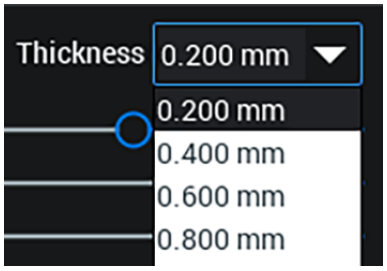


5.2.2 Adjusting volumes

5.2.2.1 Thickness

Defines the displayed slice thickness of the slice views.

The re-sampling/thickness can be adjusted from the drop-down menu. The option *Bilinear* applies a bilinear interpolation filter on the thinnest slice data, resulting in a smoother but less detailed image.

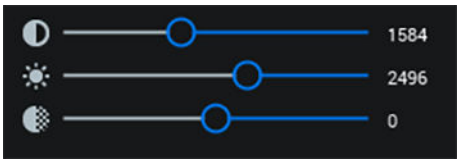


NOTE

This setting will override view specific layer thickness settings.

5.2.2.2 Contrast, brightness and sharpness

To adjust the contrast, brightness and sharpness of the coronal, sagittal and axial view use these sliders.



5.2.2.3 Toggle zoom



When the **Toggle zoom** button is activated the sliced views can be scaled up and down. Move the mouse pointer over the desired view and turn the mouse wheel into the appropriate direction (up to zoom in, down to zoom out).

NOTE

When the Zoom Mode button is deactivated, turning the mouse wheel over a view will scroll through the image layers as does the layer scroll bars next to the images.

NOTE

The rendered volume can be zoomed with and without the Zoom Mode button activated.

5.2.2.4 Moving and rotating volumes



Move / rotate volume toggles between the Volume navigation and Plane navigation modes. When enabled, Volume navigation mode is active.

NOTE

The annotations and measurements can only be selected and modified in the Plane navigation mode, e.g. when this button is inactive. For more information see section "Slice views" on page 24.

Volume navigation

You can move and rotate volumes so that the orthogonal planes remain at right angles while moving/rotating the volume. This way the volume can be positioned so that the point of interest shows in other MPR views.

- To move the volume use the left mouse button.
- To rotate the volume use the right mouse button.

Plane navigation

With plane navigation the volume remains static while the orthogonal planes are moved and rotated inside the volume. This can be used for arbitrary oblique slicing without moving the actual anatomy.

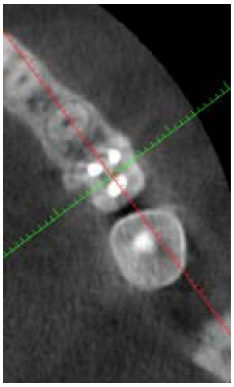
The orthogonal planes can be reoriented as follows:

- To move the intersection of planes click and drag on a MPR slice using the left mouse button. This way the intersection of the orthogonal planes

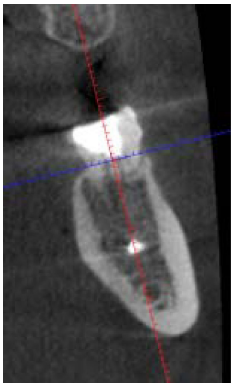
can be positioned so that the point of interest shows in the other MPR views.

- To rotate around their intersection the 2 planes perpendicular to the current slice click and drag the planes on a MPR slice using the right mouse button. (In the example below the 2 planes are shown on the current slice.)

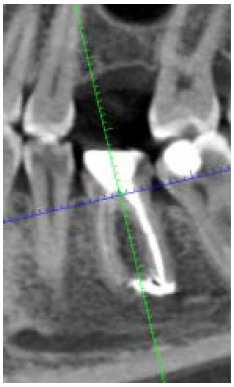
This tool can be used for placing the planar intersection along the axis of a tooth and to rotate the planes in the Axial view while observing the tooth's anatomy in Coronal and Sagittal views.



Axial view



Coronal view



Sagittal view

5.2.2.5 Resetting orientation



Resets orientation of orthogonal planes to default without affecting other settings.

5.2.2.6 Show/hide annotation overlay



Shows/hides orientation lines and measurements in the coronal, sagittal and axial views.

5.2.2.7 Adjust levels (adjusting contrast and brightness manually)

About this task

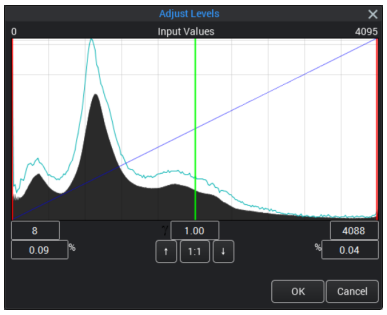
If the automatic adjustments are not satisfactory, the adjustments can be done manually as shown below.

Steps



1. Click this button.

   The *Input values* window opens and shows a graphic representation of the intensity distribution in the volume.



2. To adjust the gamma curve move the green line in the histogram.

   The value is displayed under the histogram in the middle field.

3. To adjust contrast and brightness cut the histogram from both ends by moving the red lines.



4. To scale histogram up and down to bring out the details click the arrows.

   To restore the original scale of the histogram click the **1:1** button.

5.2.2.8 Cropping volumes for 3D rendering



The cropping applied over the sliced views affects only the 3D rendered volume view.

Press the **Crop** button and move the mouse pointer over one of the sliced view. Press the left mouse button. A white framed rectangle appears.

By dragging the mouse on the view the cropped area can be defined. The rectangle also appears in the two other sliced views, as reference to define an exact area for cropping. If the volume has not been rotated a preview of the cropped volume is shown.

To finish cropping right-click with the mouse. The cropped rendering is automatically centred.

To adjust the cropping turn on the cropping and move the crop box or adjust the cropping limit by dragging its corner points.

5.2.2.9 Exporting volume orientation to other views



To export the currently displayed volume orientation to *Panoramic* and *Cross Sections* views click this tool. The volume can then be processed in the other views as in the *Explorer* main view.

Use this tool for example to align the volume coronally before generating a panoramic view.

5.2.2.10 Default settings



Click **Default settings** to adjust the default values and to show / hide elements on images.

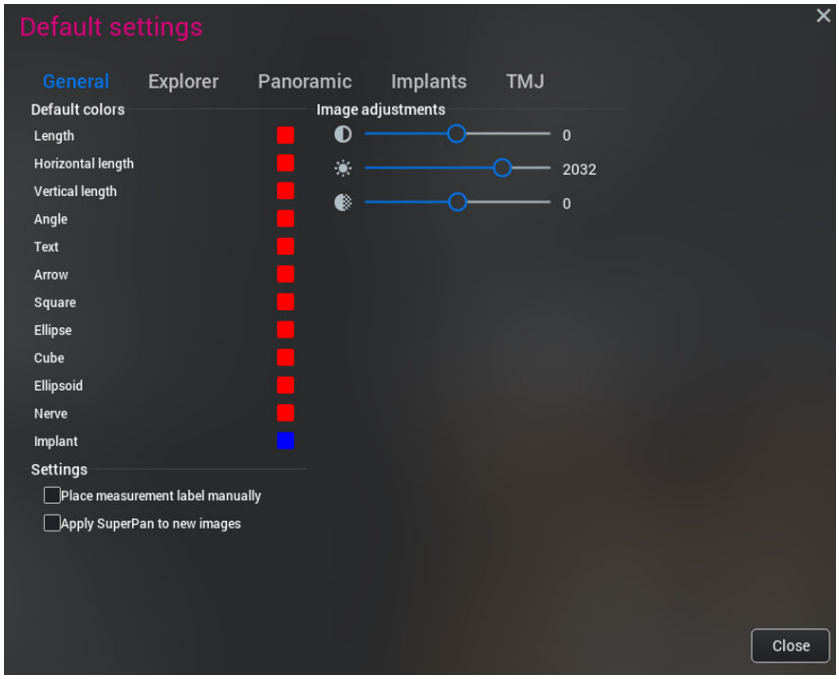
General

In the *General* tab the default colours, contrast, brightness and sharpness can be adjusted.

The changes of colours are applied only for new but not for currently selected annotations, nerves and cylinder implants.

The changes of contrast, brightness and sharpness are applied for both currently open and for new and reset images.

To apply SuperPan function by default, select option **Apply SuperPan to new images**.



Explorer (overlay, rotation and slice settings)

In the *Explorer* tab overlay preferences and slice settings can be adjusted.



Overlay preferences

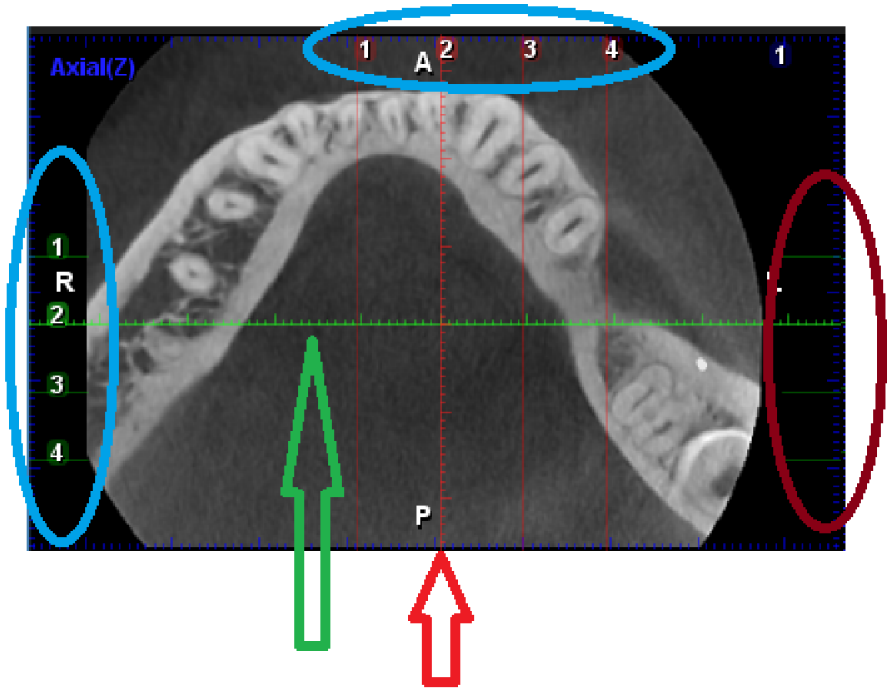
In this field the following elements can be set visible or hidden:

- Rulers (millimetre scale)
- Values - when view contains multiple images, they are balanced with values in other views.
- Axial Line - focus line
- Secondary axial lines
- Sagittal line - focus line
- Secondary sagittal lines
- Coronal line - focus line
- Secondary coronal lines

  The secondary lines are reference lines of possible multiple images of other views.

In the axial view image below:

- The focus lines in the sagittal and coronal views are set visible (green and red arrow).
- Both sagittal and coronal views have four images each of which secondary lines of sagittal view is visible.
- As the secondary lines in the coronal view are hidden only the green sections of the line are visible (circled in brown).
- The image values are set to be shown (blue circles).



Slice settings

The thickness, distance and grid size for each view can be adjusted. These settings are applied for currently open, new and reset images.

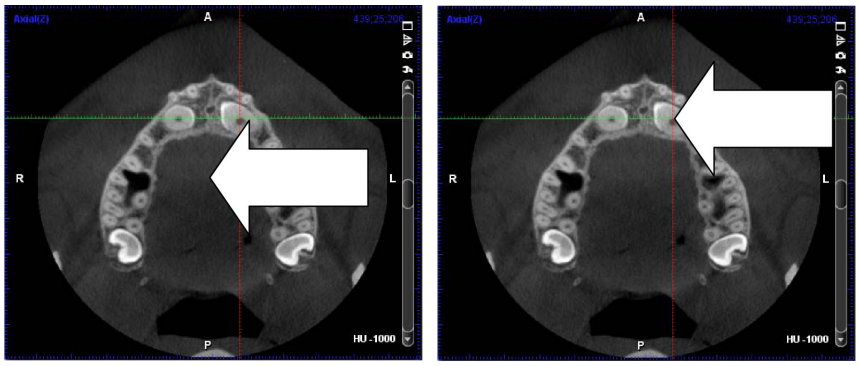
Rotate volume around cross

To apply this option use plane navigation mode by enabling Move/Rotate volume button.

When disabled the volume rotates around the centre of the slice view (left in the image below).

When enabled, the volume rotates around the intersection of planes (right in the image below).

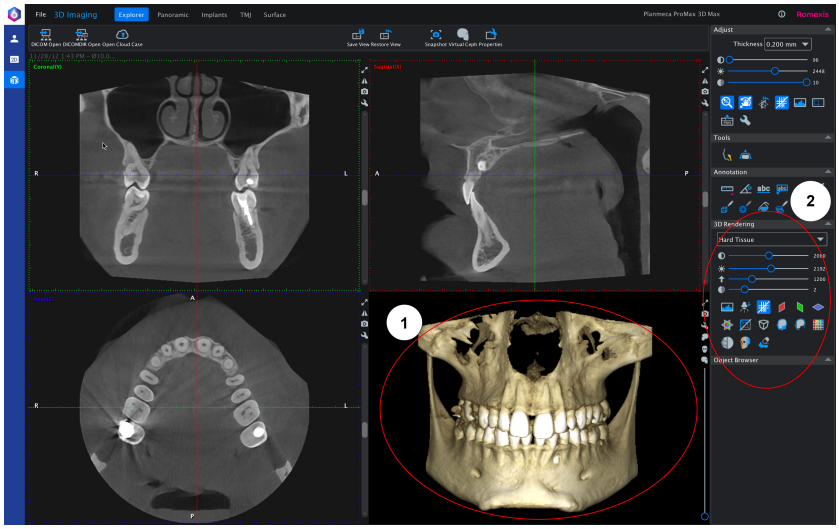
The arrow points the centre of rotation.



5.2.3 3D rendering

About this task

The 3D Rendering tools can be used to adjust the rendered volume.



1 Rendered volume

2 3D rendering tools

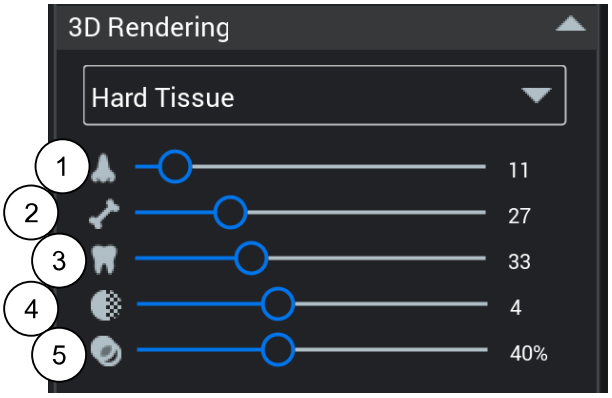
Steps

1. To rotate volume use left-click drag.
2. To move the rendered volume press the mouse wheel *or* hold down the left and right mouse buttons while dragging the image.
3. To re-centre the rendering right-click on the new centre point.

5.2.3.1 3D rendering adjustments

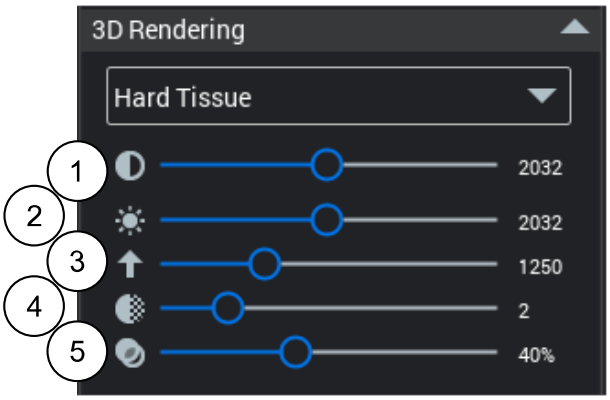
The available 3D rendering adjustment sliders depend on the selected rendering style.

If **Xfer**, **Transparent** or **Endo** style is selected, you are able to adjust soft tissue opacity, bone opacity, teeth opacity and transparency by moving the 3D rendering sliders:



1 Soft tissue opacity
2 Bone opacity
3 Teeth opacity
4 Transparency of rendering
5 Transparency of STL or PLY in the rendering

If any of the other rendering styles is selected, you are able to adjust 3D rendering contrast, brightness, cut-off threshold and transparency by moving the 3D rendering sliders. Hard tissue must be selected from the drop-down menu to change the values for 3D rendering.



1 Contrast
2 Brightness
3 Cut-off threshold
4 Transparency of rendering
5 Transparency of STL or PLY in the rendering

5.2.3.2 Adjusting levels



If the automatic adjustment of the 3D volume rendering is not satisfactory, the adjustments can be done manually.

NOTE

The following settings are only applicable to 3D rendering. For the other levels adjustments see section "Adjust levels (adjusting contrast and brightness manually)" on page 27.

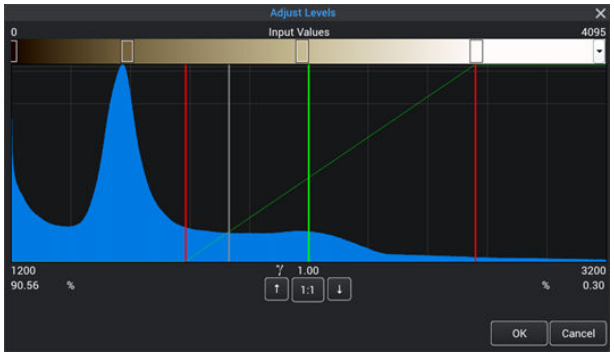
Adjusting threshold

The black line increases or decreases the threshold and consequently has the same function than the slider *Set 3D rendering cut-off threshold*.

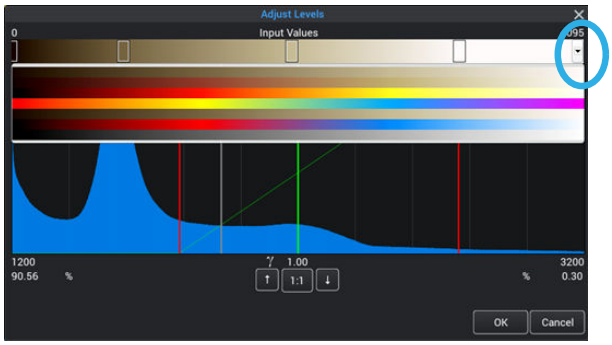
Adjusting pseudo colour

To manually adjust the position and range of a specific pseudo colour drag the handles above the histogram to left or right.

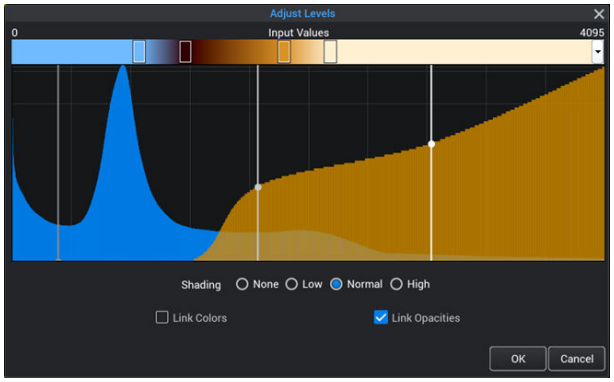
To change the colour of a specific range, double click on its handle to show the colour picker.



To select ready made colour maps for 3D rendering click the arrow button.



If you have selected **Xfer**, **Transparent** or **Endo** rendering style, the histogram has additional options.



Rendering Shading can be set to: **None**, **Low**, **Normal** or **Hide**.

If **Link Opacities** is selected, vertical line positions and opacity points define a spline curve to be used as the transform function for the rendering.

If **Link Opacities** is unselected separate independent areas around each vertical line position define transform function for the rendering.

If **Link Colors** is selected colour boxes move along when moving the vertical lines to keep colours linked.

Show/hide orientation lines



Shows/hides orientation lines and measurements in rendered view only.

Show/hide planes



Sagittal plane (red)



Coronal plane (green)



Axial plane (blue)



All planes

The following options are also available:



Show/hide volume boundaries



Show linear perspective in 3D Rendering



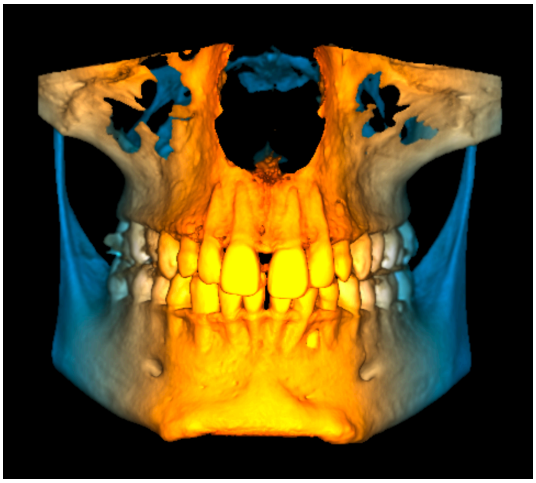
Smoothing

Applies a smoothing filter on the 3D rendering



Enhanced depth

Applies a depth perception enhancing filter on the 3D rendering view.



5.2.3.3 Setting 3D rendering style

Steps

1. To select 3D rendering style click this button on the right side of the rendering view.



The following styles are available:

- Xfer (default)
- Transparent
- Endo
- MIP (Maximum Intensity Projection)
- X-ray
- X-ray shaded
- Shaded
- Shiny
- Surface
- Black & White X-ray
- Soft tissue

The currently selected style's thumbnail is circled in white. The default style is circled in light blue.

2. To set the current rendering style as default setting click **Add**.
3. To delete the current custom preset click the **Del** button.
4. To set a new default rendering style, right-click on the desired style and select **Set as default preset**.

5.2.4 Using object browser

The object browser shows all elements added to the image including annotations, nerves, implants, fitted models, segmented teeth, views and ProFace.

The object browser can be scrolled up and down with mouse wheel or using the arrow buttons. All the subgroups can be collapsed by double-clicking the group title.

Annotations and views shown depend on the current module/view, other objects are the same for each module/view.

The elements in the object browser can be controlled separately by checking the box next to the desired element. To select all elements in the group (for example all annotations) check the box on the *Annotations* title row.

The element activated on the volume shows in bold in object browser.

Selecting an annotation, a nerve, implant or fitted model in object browser activates it in all the views as well.

When an annotation or view is selected from object browser the orientation of the volume is restored to the view where the annotation was added or the view saved. When an implant or segmented tooth is selected from object browser the 2D views are centred to that object.

5.2.4.1 Object browser tools

Shows or hides the items of the selected group on the images.

When the eye button is dimmed all elements in the current group are hidden. In the ProFace group elements can be shown or hidden separately.

Deletes selected items.

Changes colour of selected items. To change colour of a single object click the colour box.

Check the box to select items.

Opens properties dialog.

Locks fitted models.

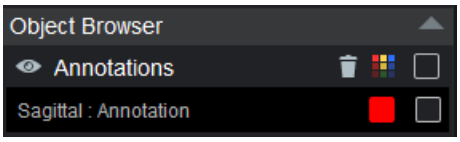
By clicking this button the scans cannot be activated or moved in the image.

Aligns implants

5.2.4.2 Object browser groups

Annotations

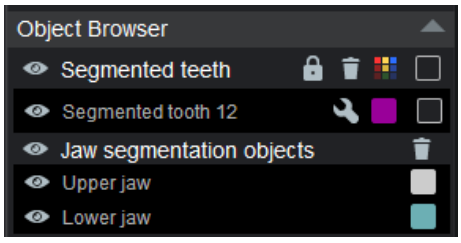
Shows length and angle measurements, added texts, arrows, 2D and 3D ROIs, regions and free regions of selected module sorted by the views. When an annotation line is clicked in the object browser the corresponding annotation is set visible by restoring the 2D slice views to the view where the annotation was created.



Segmented tooth

Shows segmented teeth added in Implants sub-module in all modules.

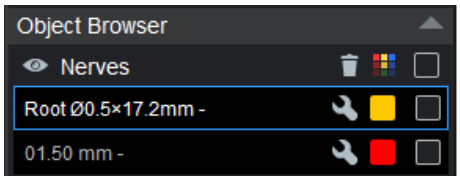
The segmented teeth are automatically divided into Upper teeth or lower teeth groups in Object Browser



In *Explorer* sub-module when clicking on implants or segmented teeth in 2D views or Object Browser, the 2D views are automatically focused on the clicked object.

Nerves

Shows nerves and tooth nerves added in *Implants* sub-module in all modules. The value shown is the diameter of the nerve.



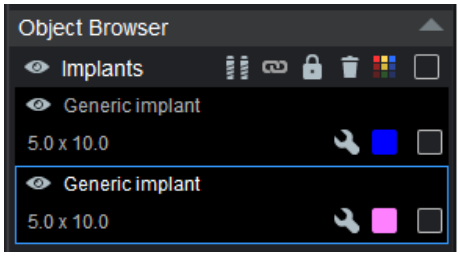
Implants

Shows implants and crowns added in the Implants sub-module in all modules. The attached abutment is shown below implant. The values in the first row are *product line* and model and in the second row *catalog diameter, catalog length* and *comment* . When an element is clicked the corresponding implant/crown is activated.

In *Explorer* sub-module when clicking on implants or segmented teeth in 2D views or Object Browser, the 2D views are automatically focused on the clicked object.

To group an implant with a generic crown, select both items in the Object Browser by checking the boxes, then click on the chain icon in the upper bar of the group. Grouped implant and crown can be moved together.

To hide a single implant click on the eye icon of the implant you want to hide.

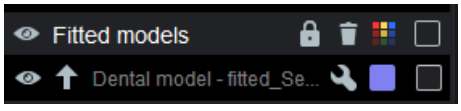


Fitted models

Shows the imported crowns and dental models in all the modules.

When an element is clicked the corresponding fitted model is activated.

The arrow next to the scan file indicates whether the scan belongs to the upper or lower jaw. Click on the arrow to change the indication.



Views

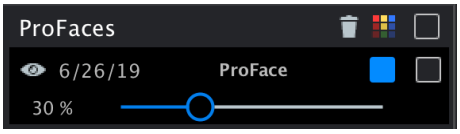
Shows the saved views. Clicking on a view element restores the 2D slice views to where the view was saved in.



ProFace

The ProFace overlays are shown in the Object browser's ProFace group. The overlays are listed according to date and a thumbnail of the ProFace image is shown.

Select colour for ProFace profile line in 2D Slice views.



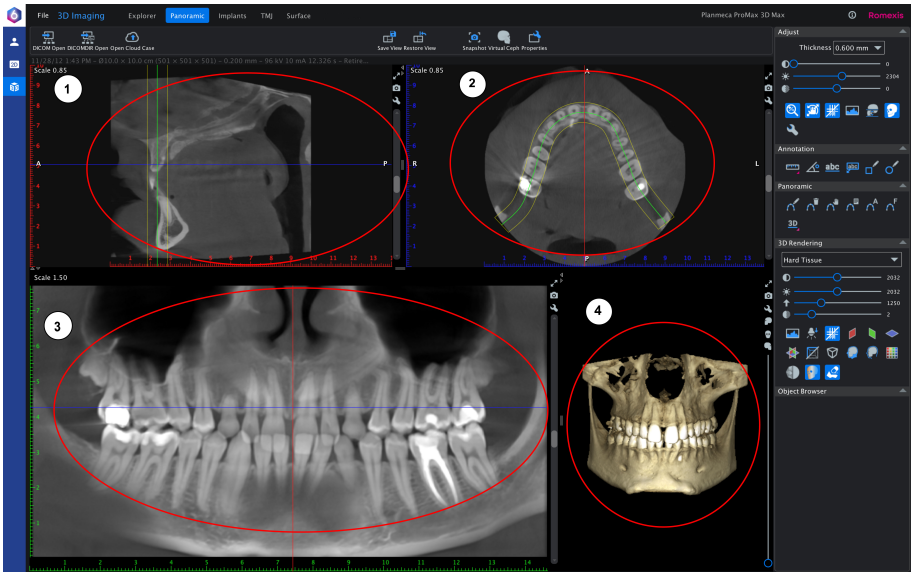
5.3 Panoramic tab

In the *Panoramic* tab panoramic images can be generated from the 3D volume data and adjusted and processed in multiple ways.

The image range, thickness and panoramic curve can be defined.

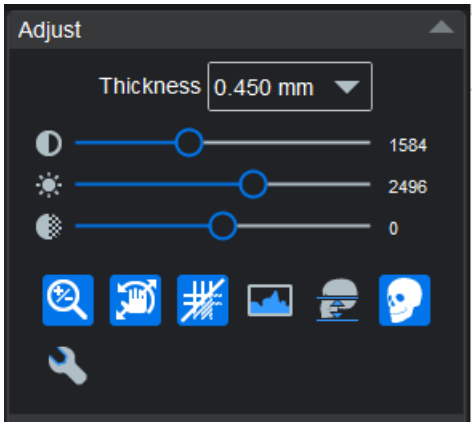
The displayed view can be exported, see section "Save 2D snapshots" on page 17. The images can also be printed.

The *Panoramic* main view displays four sub-views:



1. In *Sagittal* view the volume can be rotated sagittally
2. In *Axial* view the volume can be rotated axially and the panoramic curve is created.
3. In *Panoramic* view panoramic images (including 3D rendered views) are shown.
4. *3D Rendered* view

5.3.1 Panoramic adjustment tools



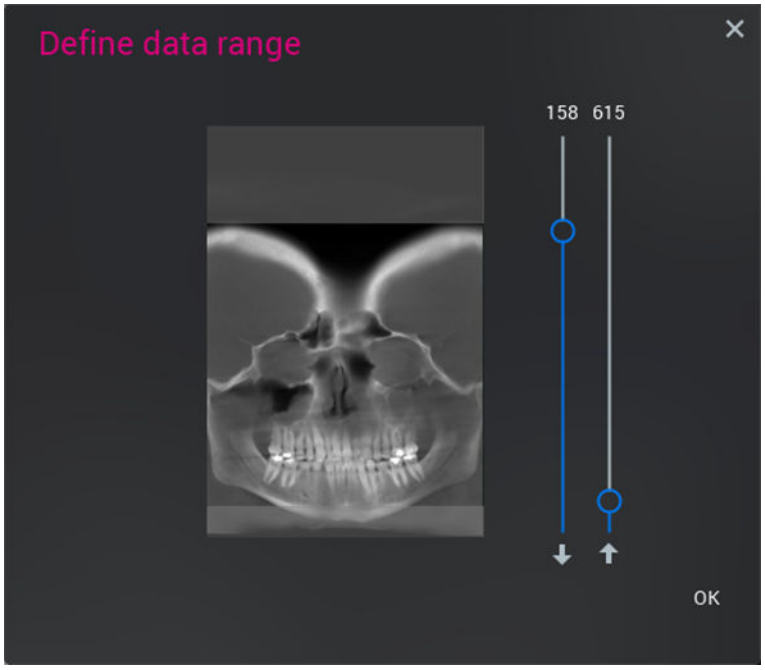
5.3.1.1 Define data range



Click **Define Data Range**

Define the area of interest using the sliders.

Use the left slider to adjust the area from above and the right slider to adjust from below.



5.3.2 Panoramic tools



5.3.2.1 SuperPan

About this task

The **SuperPan** function fits a standard panoramic curve to the patient image by detecting the dental area and the dental arc and using a special image processing to present a better pseudo panoramic view.

Steps



1. Click **SuperPan**.
2. Wait until Romexis processes the image.

   Below the same image before and after using **SuperPan**.

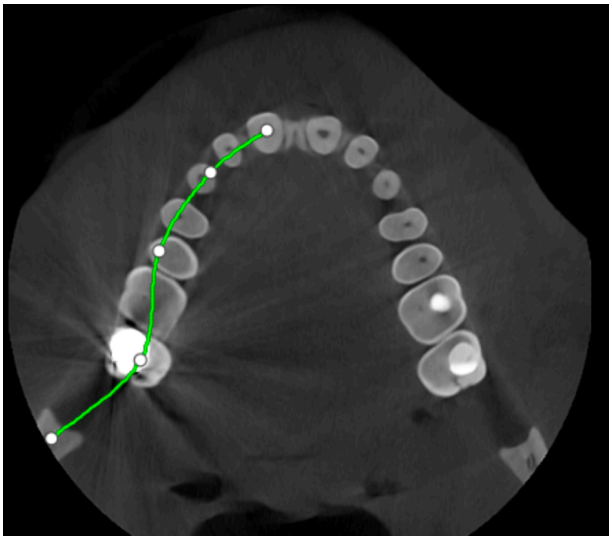
Before



After



5.3.2.2 Drawing panoramic curve





To define a new curve, click this button. To draw the curve use the left mouse button. When finished click the right mouse button. The new panoramic view will be automatically calculated.



To *delete* currently displayed panoramic curve click this button. The standard curves are not deleted.



To *edit* the curve, click this button. To move single points in the curve or the whole curve grab the green line of the curve with left mouse button. When finished re-click the button.



To *display* a list of all *saved panoramic curves* click this button. All draws curves are saved and named according to the date and time of creation. To recall and apply a curve click the desired entry in the list.

5.3.2.3 Panoramic autofocus tool

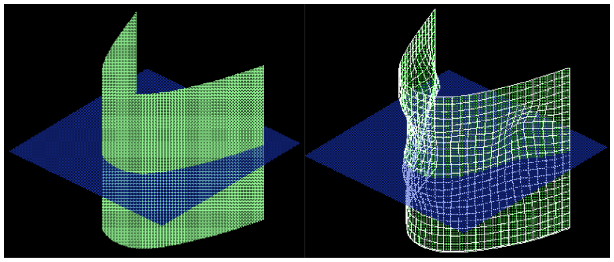


This tool automatically identifies anatomy in CBCT image and shapes the panoramic layer so that it follows anatomy in all three dimensions. This results in a clear overview of the whole denture. When used in combination with the Panoramic autofit tool, a detailed panoramic view can be easily generated.

NOTE

When using panoramic autofocus tool the neighbouring panoramic slices may seem identical.

The view on the left shows the image without, and the view on the right with autofocus.



5.3.2.4 Panoramic autofit tool



Click on the **Panoramic Autofit** button.

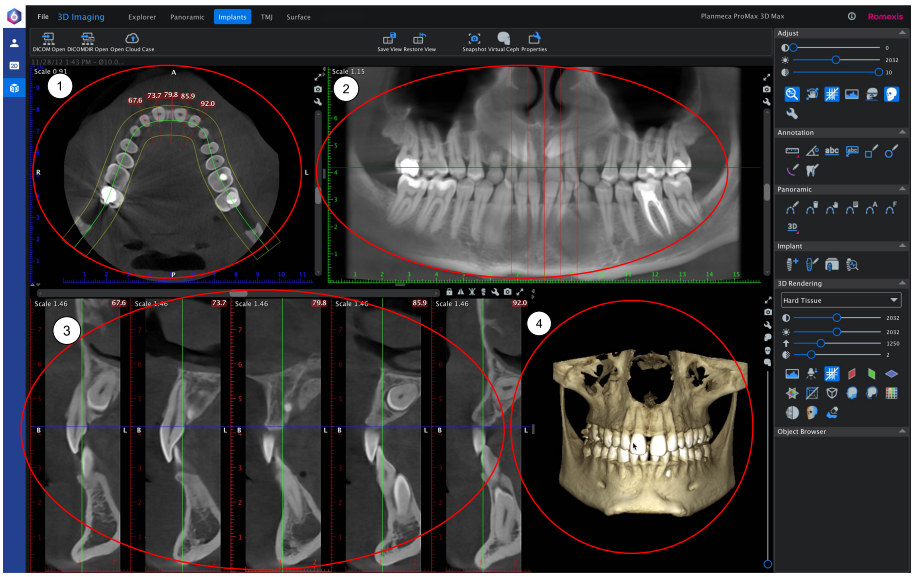
A panoramic curve (focal layer) is automatically placed on the volume.The occlusal level in the volume is automatically identified and the panoramic curve (focal layer) is placed on the dental arch. This tool works best with volumes where dental arch is present.

The Panoramic Autofit tool also adjusts the maxillary and mandibular ranges of the panoramic view so that they resemble typical panoramic image dimensions. (For manual adjustment see section "Define data range" on page 39).

5.4 Implant / cross sections tab

In the Implant / Cross Sections / cross sectional slices, axial slices and panoramic images can be created from the 3D data.

The Cross Sections / Implant tab contains four views:



1 Axial view
2 Panoramic view
3 Cross sectional slices view
4 3D rendered view

The views can be expanded by clicking the small dual arrows in the ends of the view dividers or maximized by clicking the **Maximize** button.

5.4.1 Adjusting cross sectional slices

NOTE

Adjustment in Cross sections view will also affect the settings in Panoramic view and vice versa and sagittal or axial rotation of the volume in the *Panoramic* view shows in the *Cross sections* view.

Full arc mode

In the full arc mode the entire dental arch can be specified by the panoramic curve to be processed as single cross sections. It can be used to create a printout of cross sections covering the entire jaw.

The differences in editing between the normal and full arc mode are listed in the following table.

	Normal mode	Full arc mode
Moving cross sections	Free	Limited to intra slice increments
Printing and 2D snapshots	Maximum number of cross section reference lines shown in Axial and Panoramic view is what is currently shown in the Cross Section browser.	All cross sections reference lines can be shown. Maximum number is defined by length of panoramic curve and distance between slices.
Cross section numbering	Previous setting is remembered	Ordinal numbering is used by default
Typical use case	3D image diagnostics done in Romexis only	Complex printouts where measurements must be available on all or most cross sections.

Workflow in normal mode

1 Browse and rotate volume freely to detect findings.
2 Use views and measurements to indicate findings.
3 Use saved views to return to findings and measurements when necessary.

Workflow in full arc mode

1 Align volume optimally for best compromise between Panoramic coverage and Cross Sectional alignment. No volume re-alignment should be done after this point to prevent existing measurements from not being shown on Cross Sections.
2 Turn on full arc mode to limit cross sections movement. This ensures cross section measurements remain visible.
3 Use the Save View to restore the selected volume alignment in case volume needs to be re-aligned between measurements.
4 All cross sections are processed and measurements added on them where required.
5 When finished, print them out in multi-page printout.



To mirror the cross sections click this button.



To mirror the cross-sections at the apex of the panoramic curve click this button.

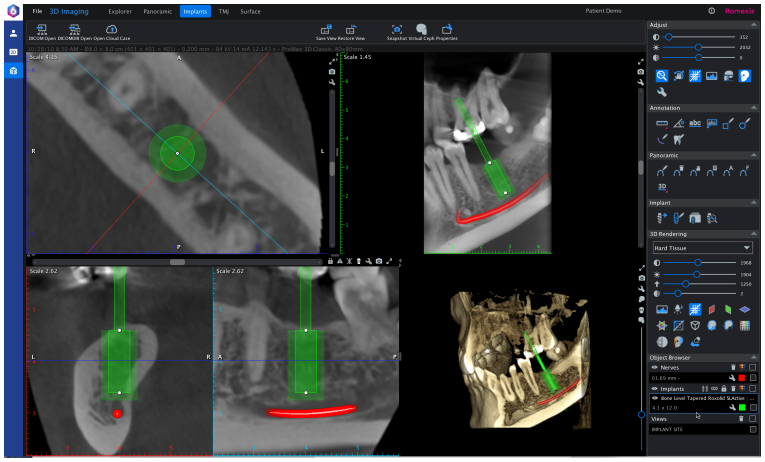


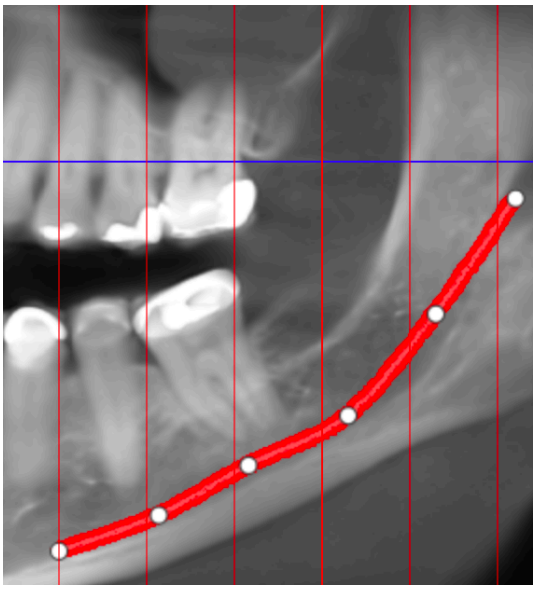
To create two perpendicular slices of the implant or segmented tooth (instead of the normal cross sections view) click the **Implant centric view** button.

NOTE

Implant centric view is available in *Implants* view only.

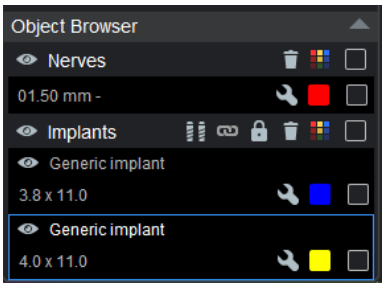
The slice on the left side is perpendicular to the panoramic curve (if defined) and the right side is parallel to the panoramic curve (if defined).





To view the areas around the implant rotate the views with the slider. When moving an implant in any of the slices the implant centric view adjusts automatically to the new position.

To use implant centric view for another implant or segmented tooth added to the image click on the implant or tooth in 2D views or in the *Object Browser*.

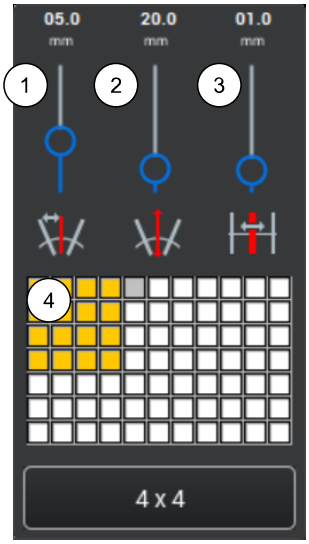


To rotate the slices use the slider on top of them.



To adjust the spacing (1), width (2) and thickness (3) of the slices move the slider up or down.

To define the number of slices move the mouse cursor over the slices to select the number of slices (4).



1 Spacing
2 Width
3 Thickness
4 Number of slices

Using the cross sectional scroll bar

To move the cross sections move the scroll bar to the right or left.



Moving the scroll bar shifts the visible slices along with the panoramic curve to the same direction.

If the *Cross section lines* option is activated the visible slices will also shift to the axial and panoramic views.

The middle section is indicated by a bright red line and ruler in the cross sections view.

To **move** in cross sections **voxel by voxel** click on the arrows on both ends of the scroll bar.

To **move freely** around cross sections drag the scroll cursor.

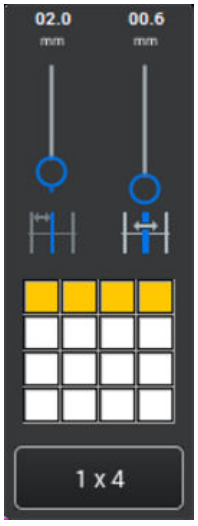
To **move** in cross sections **in increments** of the distance between the slices, click between the scroll box and end arrows.

5.4.2 Adjusting axial / panoramic slices (view port settings)



Click this button on the upper right corner of the axial / panoramic view.

In the opening dialog the number and thickness of the slices and the distance between them can be adjusted.



5.4.3 Drawing nerve

About this task

Follow these steps to draw a new nerve channel.

Steps



1. Click the **Draw nerve** button.

2. Use the left mouse button to place points either on the panoramic or on the cross sectional view for a curve depicting the nerve channel of the patient.
3. When finished click the right mouse button.

Results

The nerve channel will be displayed as a coloured line in the panoramic view and as dots of the same colour in the cross sectional views.

5.4.4 Drawing root canal

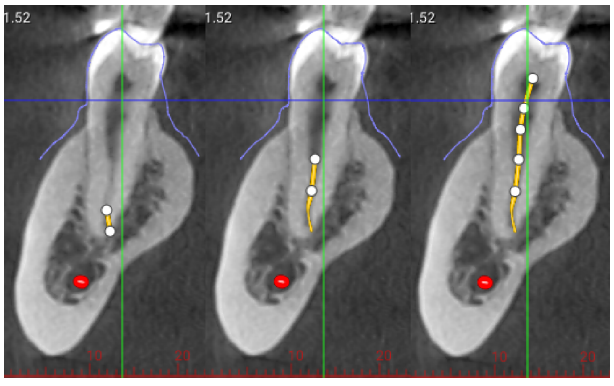
Steps

1. Adjust the view so that the root canal is clearly visible.



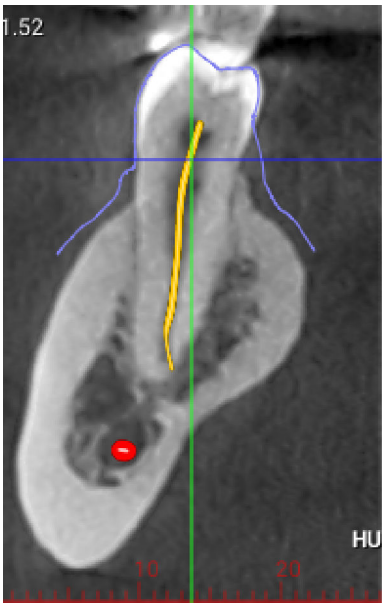


2. Select **Draw root canal** tool on the *Annotation* tool group.
3. Start drawing a line by clicking along the middle of the root canal.

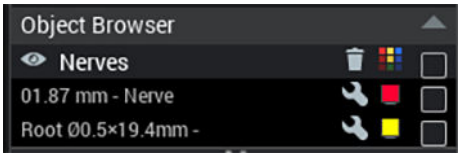


If necessary you can adjust the view while drawing to find the optimum view to the canal.

4. Finish drawing by right-clicking on the image.



The root nerve with diameter and length information appears in the object browser.



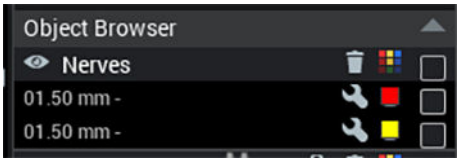
5.4.5 Nerve properties

About this task

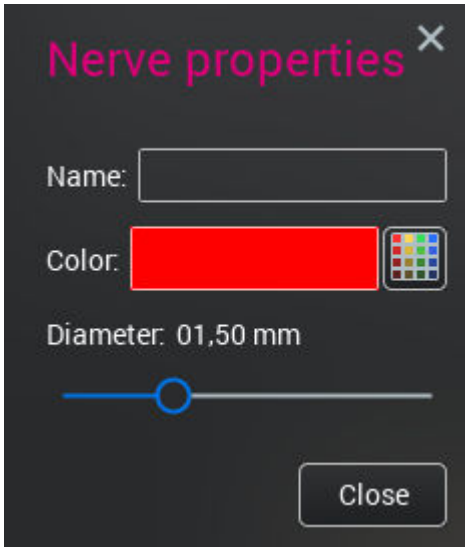
Follow these instructions to name the nerve, adjust its colour or diameter.

Steps

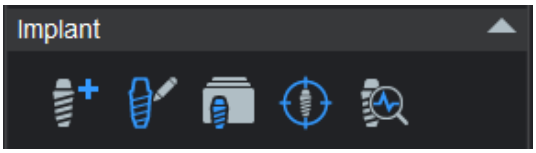
1. Click the adjustment button in the Object browser's *Nerves* group.



2. The Nerve properties dialogue can also be opened by double-clicking on the nerve in 2D slice views.



5.4.6 Implant tools



NOTE

Romexis Viewer supports only generic cylinder format implants. No libraries are included.



To place a pre-selected default implant into the plan click this button. The default implant can be defined in the *Implant library*.



To draw an approximation of the implant's width and height, using the patient's anatomy as a reference for sizing click this button.

Next, search the nearest matching real implant from the Implant library.



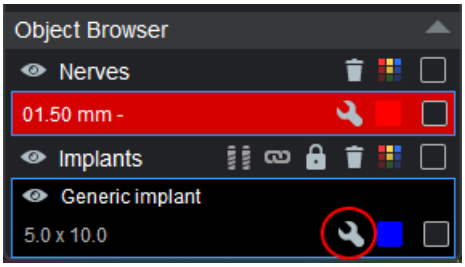
To place an implant directly from the Implant Library click this button.

Select the appropriate implant and press *Add* to add it into the plan.



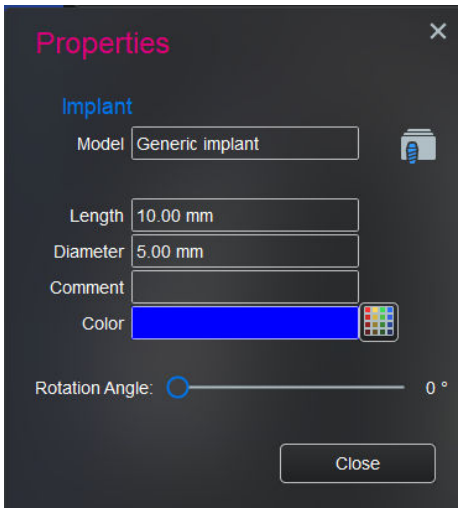
Opens the implant verification tool, see section "3D implant verification tool" on page 49.

To display the properties of a selected implant double-click the implant in the 2D slice views, or click this button in the *Object Browser*.



To set the length, diameter, and colour for the selected implant enter the appropriate value on the corresponding field or select the desired colour by clicking the colour map.

To adjust the rotation angle of the selected implant drag the *Rotation Angle* slider.

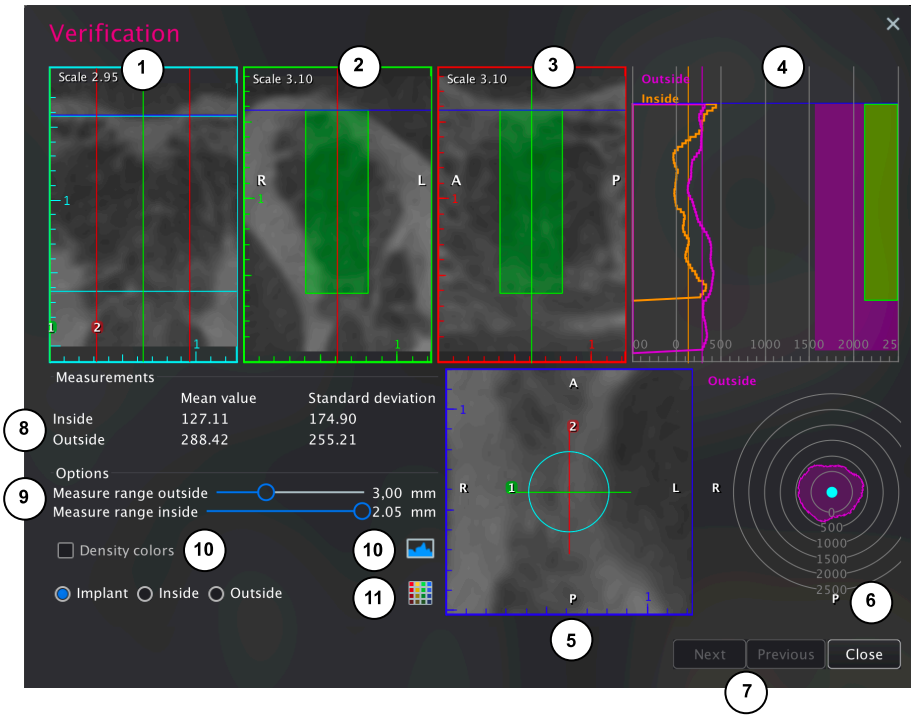


5.4.6.1 3D implant verification tool

The 3D implant verification tool can be used to evaluate the placement of implants or segmented teeth. To estimate the fit between implant and anatomy at the site the slice views and average HU-values in the proximity of an implant can be used.

Unlike other 3D views the Implant Verification views are always centred on the current implant whereas the 3D volume revolves around the vertical axis of the implant. This makes it easy to focus on the implant and it's relation to the surrounding anatomy.

When the 3D Implant Verification dialogue is opened the currently selected implant is automatically shown. The implant can be selected and reoriented in *Implant* view while the Implant Verification dialogue is open. The slice orientations and measurement margins can be easily adjusted as described in the following illustration.



1 Around implant slice
2 Green cross section
3 Red cross section
4 HU mean values outside and inside the implant
5 Axial slice
6 HU mean values around implant
7 Select previous or next implant
8 Total mean value and standard deviation inside and outside implant
9 Adjust thickness of measured layer both inside and outside implant
10 Colours corresponding to HU values and adjustment dialogue
11 Adjust implant colour or HU measurement layers

Visual implant site evaluation

Axial, cross section and envelope slice views

To rotate the cross section views around the implant's vertical axis by clicking and dragging with mouse in the axial slice. This allows you to inspect the anatomy by viewing the green and red cross sections (lines 1 and 2 respectively in the axial view) and compare them with the overview on the implant Envelope view.

The implant envelope ring and the anatomical orientation of the data (anterior, posterior, left, right) are also shown on the Axial slice.

To move the axial slice plane (blue line) up and down on the vertical axis of the implant use the mouse wheel. This allows you to view the axial slice at any level on the implant's height.

Cross section views

The green and red cross sections (number 1. and 2. on the axial slice) are slices perpendicular to each other and parallel to the axis of the implant. They can be used to verify the anatomy around the implant when rotated

using the axial view. The cross sections also show the silhouette of the implant, axial slice position and orientation (A, P, L, R).

To zoom in and out use mouse wheel on the cross section and envelope slice views.

Implant envelope view

The Implant Envelope view is a flattened cylinder view of the anatomy on the implant's outer perimeter. It allows you to see if any of the implant's outer wall would fall on a weaker bone for example instead of having to do with 360 degree rotation of the cross section views. Also the implant apex and insertion depths (cyan lines) and intersections with the green and red cross section slices are shown.

Density colours

To enable pseudo-colouring of the data to differentiate different anatomy densities use this option. With pseudo-colours each gray scale value is mapped to different colour making the subtle differences between different values easier to perceive. The colours and their distribution over the gray scale histogram can be adjusted in the histogram.

Statistical implant site evaluation

The HU mean values display the mean value of voxels inside or outside of the implant in the margin. The margin is specified using the Options - Measure range outside / inside sliders. The values are shown in a line graph from top of the implant towards the apex with implant silhouette and margin thickness references on the right and HU value scale reference at the bottom.

Under *Measurements* are shown the mean value totals corresponding to the vertical lines as well as the corresponding standard deviation values. By default the outside values are marked in violet and the inside values in orange. To adjust the colours use the colour chart icon at the bottom of the *Options* section.

The bulls-eye chart at the bottom right indicates the distribution of mean HU values in the outside margin around the implant in the posterior/anterior and left/right directions.

5.5 TMJ tab

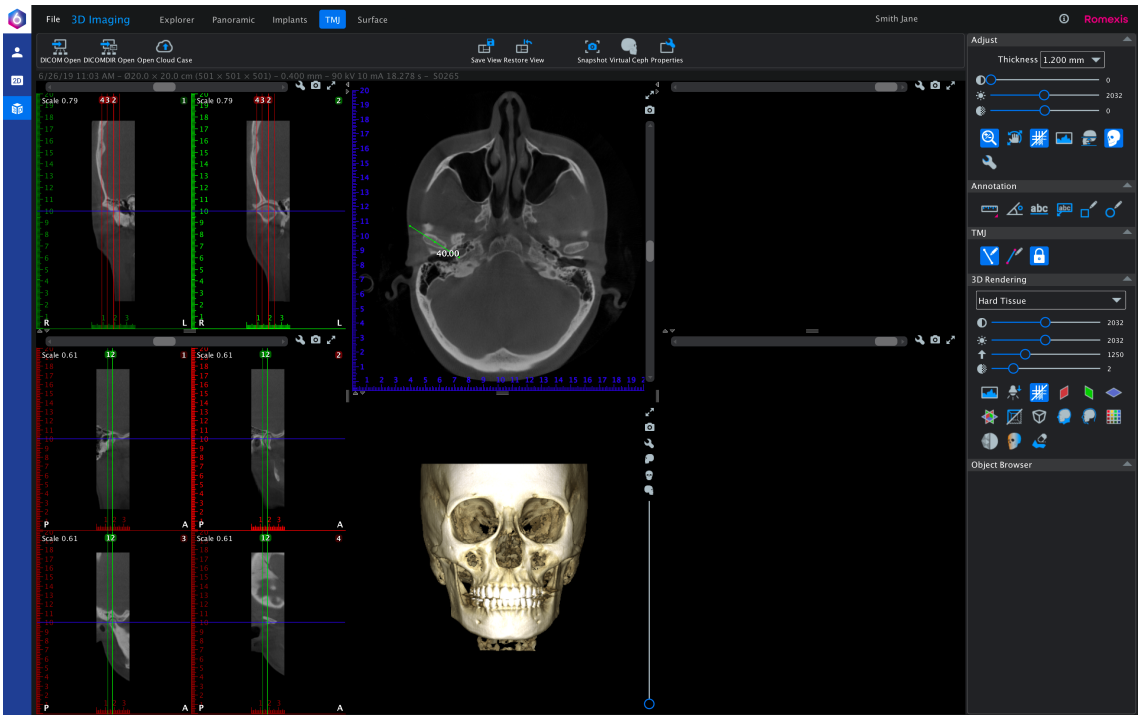
About this task

The *TMJ* sub-module is intended for viewing and diagnosis of temporo-mandibular joint regions.

Steps

1. Open the 3D image you want to view and click **TMJ** tab on top of the screen.

2. Find the condyles from the axial view and rotate the volume if needed.

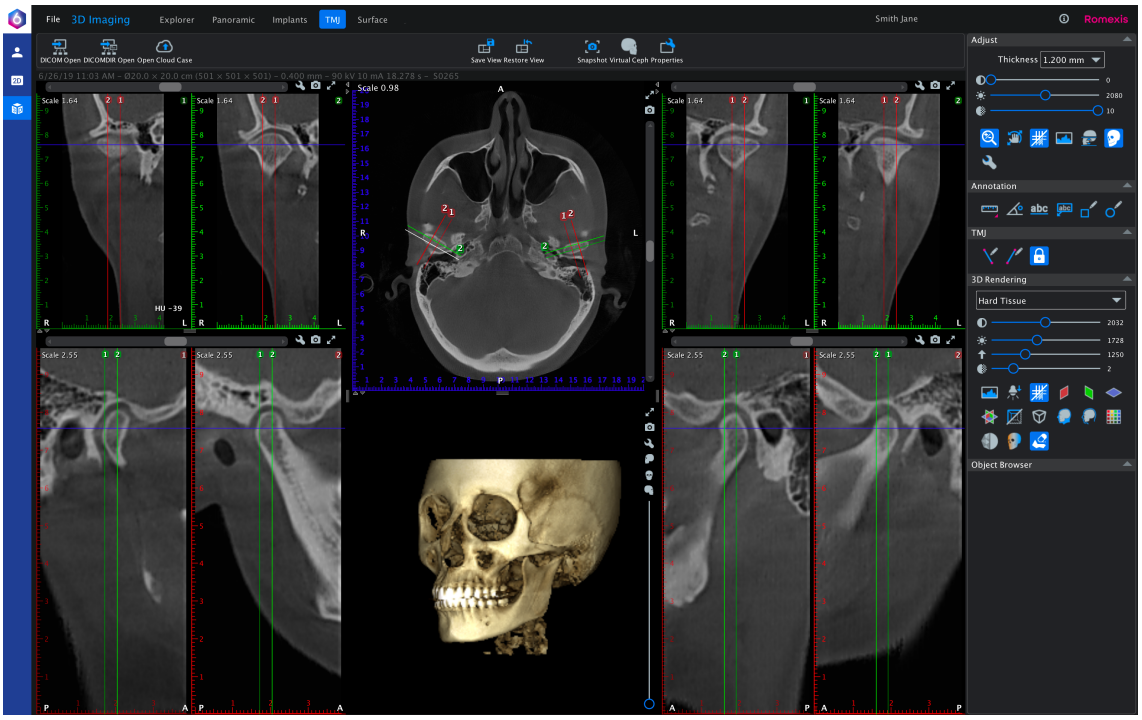


3. Draw the left and right PA line to axial view.





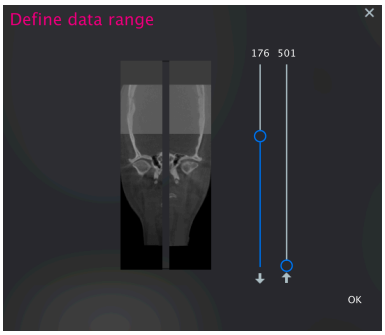
Click on the center point of the condyle and drag downwards



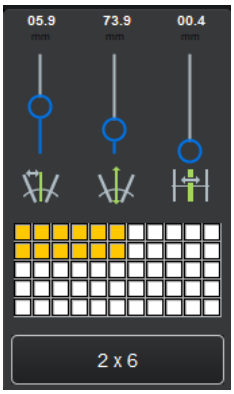
4. Click Define data range in *Adjust* tools.



5. Adjust the range by dragging the sliders and click **OK**.



6. Click the **Viewport settings** icon and adjust the slices.



7. Synchronise sides.

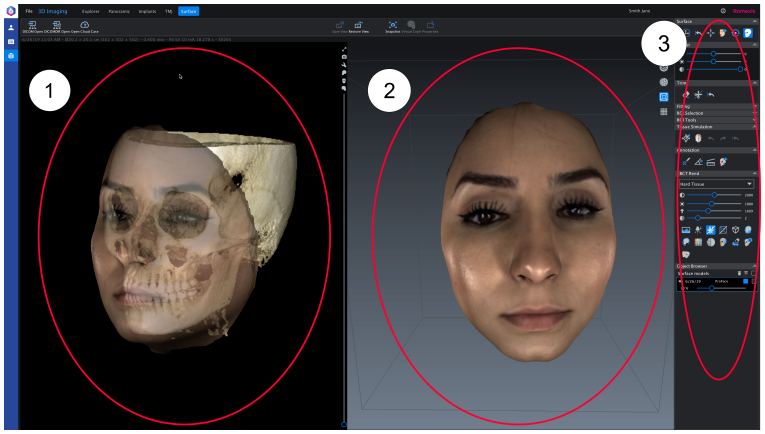
Click on this icon to enable / disable synchronisation of left PA line with right PA line.

When enabled the length of the line is automatically restricted to the length of the existing lines. To adjust both PA lines simultaneously, go to *View* settings.

When disabled each PA line can be defined separately.

5.6 Surface tab

ProFace 3D photos (.obj format) and surface models (.stl and .ply format) can viewed and processed in the *Surface tab*. A CBCT volume with mapped ProFace 3D photo can also be viewed in the *Surface tab*.



1 CBCT volume rendering view, visible only if CBCT volume is opened

2 Surface Rendering view

3 Image adjustment tools

5.6.1 Manipulating image in Surface view

Rotate an image with left-click drag.

Zoom with mouse wheel.

Set the rotation center right-click.

5.6.2 Surface view tools



Snapshot

Takes a snapshot of the Surface view. The snapshot will be saved in 2D imaging module under photo category.



Wireframe

Wireframe rendering can be used to analyse the triangulation in scanned images. To set wireframe rendering style for all images click this button.



Surface

Surface rendering can be used to analyse the topography of a measured surface. To set surface (i.e. no texture) rendering style for all images click this button.



Parallel projection

Use this mode to turn on and off linear perspective that provides a more natural view of the face.



Show grid

To show a symmetric grid on top of ProFace image click this button. By selecting parallel projection also measurement values are shown in the grid.

5.6.3 CBCT 3D rendering view

The CBCT volume rendering view is identical with the 3D module's *Explorer* view.

In case Planmeca ProFace image was captured simultaneously with CBCT image the CBCT data will be displayed in the CBCT rendering view.

5.6.4 Image tools

This tool bar contains the main tools for adjusting and measuring Surface images.

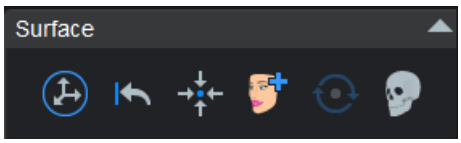
Based on their functions, the tools are divided in the following groups:

- **Surface** – for managing the data and their orientation
- **Adjust** – for adjusting the qualities of the ProFace image
- **Trim** – for removing areas
- **Tissue Simulation** – for modifying ProFace surfaces
- **Annotation** – for making measurements
- **CBCT Rend** – for adjusting the CBCT rendering view (only visible when CBCT rendering is visible)
- **Object Browser** – for managing the properties and visibility of the objects in the views

NOTE

For detailed description of these functions see the following sections.

5.6.4.1 Surface tools

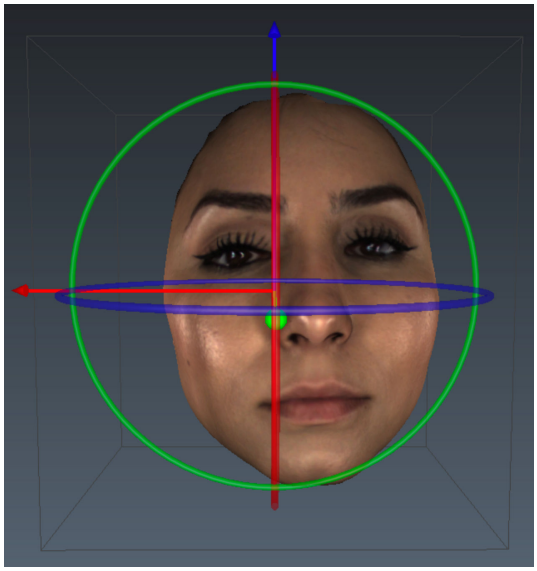




Set move mode

By clicking this button the image can be moved, rotated and zoomed in and out. To drag the image on the screen to the **left** or **right**, click the **blue arrow** with the **left** mouse button and hold it down while dragging the image to the desired direction. To drag the image on the screen **up** or **down**, click the **red arrow** with the left mouse button and hold it down while dragging the image to the desired direction.

To **rotate** the image **horizontally** (around its Y-axis) click the **green arc** using the left mouse button and hold it down while rotating the image to the desired direction. When the move mode is switched on, the other modes are switched off. For example, if the Measurement Mode was active before switching on the move mode the measurements are no longer displayed once the move mode is activated. To rotate and pan the rendered view press and hold down the **Alt** key on your keyboard while moving the image.





Reset offset

To reset all images to the state in which they were after import click this button. This tool can be used to detect variations in patient positioning.



Centre all

To centre models click this button.

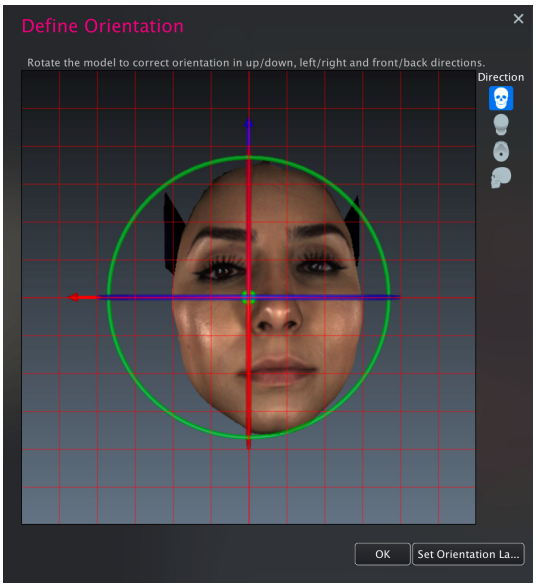


Add Planmeca ProFace image

To select and open another image from the same patient click this button. The added image will be saved and opened the next time the original image is opened from the *Volumes* tab. The position and orientation of added images will also be saved. The added images can be used for measurements and image comparisons.



Define orientation



To define the orientation use an orientation widget and a grid. Verify by examining the position from different directions.

When a new surface model is imported the orientation tool opens automatically. The orientation can also be defined later by clicking the tool.



Show/hide renderer

Shows or hides the CBCT rendering view in the image area.

5.6.4.2 Adjustment tools

NOTE

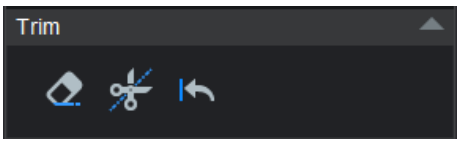
These adjustment affect only the Surface images selected in the object browser.

By dragging the sliders contrast, brightness and softness of the ProFace images (before, after, CBCT rendering view) can be adjusted.

When the image is closed the settings are saved automatically.

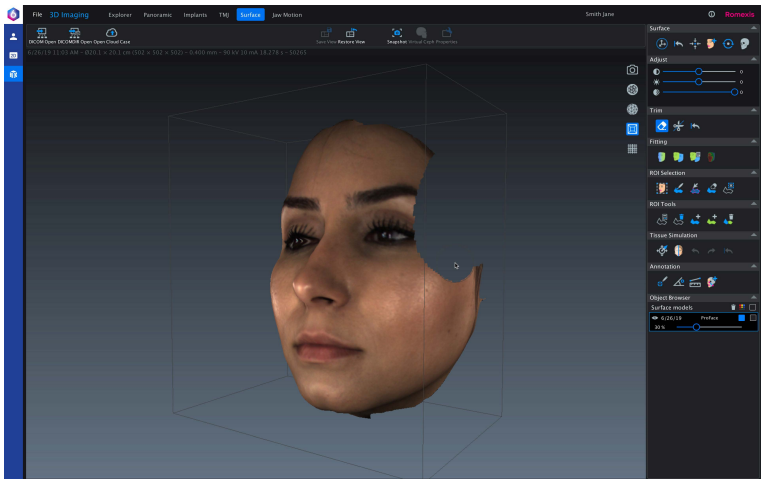


5.6.4.3 Trimming tools



Paint ROI to trim

To remove any unwanted areas from the selected surface paint the areas using this tool. The surface behind the painted area(s) will be automatically removed.



To increase/decrease the size of the paint tool press and hold down the **Alt** key while scrolling the mouse wheel.

To rotate the image while the tool is selected press and hold down the **Alt** key while pressing the left mouse button.

NOTE

With this tool it is recommended to use Wireframe rendering mode.

Precision cut

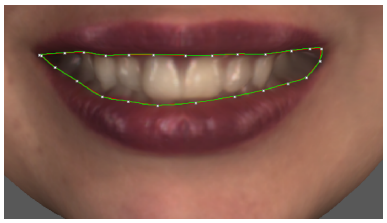
NOTE

Before using this tool adjust and orientate the image as necessary as you cannot zoom or pan the image while this tool is activated.

The precision cut tool can be used to remove an area from an image by drawing a precise cutting line on it.

Define area to be cut by clicking on the image.

As the software automatically combines the starting and ending point by drawing a line between them it is not necessary to finish the line by clicking on the starting point.



To cut out the defined area right-click or double-click on the image.

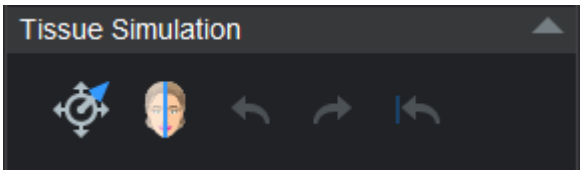


Reset trim



This tool restores all trimmed areas of the original surface. The effect of reset will be stored within image data.

5.6.4.4 Using tissue simulation



Tissue simulation tools can be used to manipulate ProFce image surface in two ways:

- pull/push the surface along a direction perpendicular to the surface

  or

- slide the surface along the current viewing plane.

The shaping tool has a spherical radius of effect (for example, 3 cm). This means the effect of modification is strongest at the centre of the sphere and falls off to zero towards the edges of the sphere.

Using shaping tool

Steps

1. Open the ProFace image to work on.
2. Click on the Shaping tool button.



3. Specify the area you want to modify by clicking anywhere on the ProFace surface.

   An indicator displays the range, centre point and the surface normal at the centre point.

   You can adjust the effective area of the shaping tool by holding down the **Alt** key while scrolling the mouse wheel.

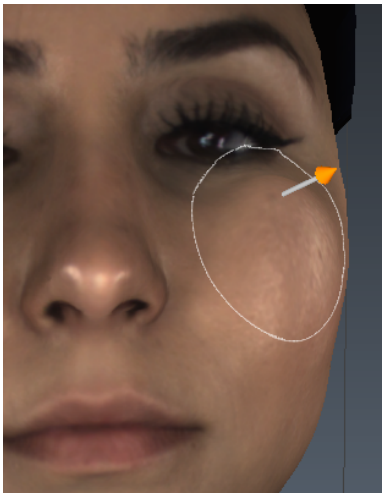
   To specify a radius for the tool, scroll the mouse wheel to increase or decrease it. The range is drawn with a thin white line.
4. Drag the surface area you want to modify using the mouse.
   - To pull/push the surface at a given position, drag the arrow in or out with the mouse (2).
   - To slide the surface along the viewing plane, drag any point inside the tool area. When sliding the surface, it moves perpendicular to the viewing direction (3).
   - The following images show the original (1), pulled (2) and slid (3) surface.



1 Original surface



2 Pulled surface



3 Slid surface

- To specify a new centre point inside the selected area, hold down the **Ctrl** key while clicking on the new point with the mouse. If you do not hold down **Ctrl** key and click inside the tool's area, it is interpreted as a slide operation.
- To remove the tool indicator, hold down the Ctrl while clicking with the mouse anywhere outside the surface.

- To zoom the surface in/out while the tool is active, hold down the Ctrl while scrolling the mouse wheel.
- To rotate the model while the tool is active, drag outside the model surface. Otherwise you will end up selecting a new centre point for the tool.
- To zoom in/out the model scroll the mouse wheel.

Before/after tool



To compare the modified ProFace surface image to the original one click the**Before / After** button. The tool can be used whether or not the Shaping tool is activated.

Undo / Redo





All surface modifications are stored so that the original surface is left untouched. The modifications of the current editing session are stored into undo history.

To undo/redo modifications use the **Undo / Redo** buttons. The modifications are stored into the database when the patient is closed.

Note that when opening a modified patient file you can only undo modifications of the latest editing session.

Revert to original



To discard and remove all modifications and to go back to the original surface click the **Revert to original tool**.

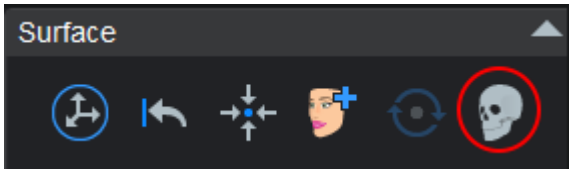


As long as no new modifications are made and patient is not closed the reverted modifications can be restored by clicking the **Redo** button.

Viewing modified ProFace surface overlaid with CBCT volume

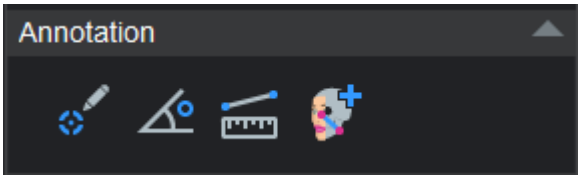


Open both the CBCT and ProFace image and click the **Show/Hide renderer** button in the Surface tools.



To toggle between modified and original surface click the **Before/After** button in *Tissue Simulation* tools. If you use the shaping tool in CBCT image the modifications also show in the rendering view.

5.6.4.5 Annotation tools



Point of interest



You can add a point of interest on the surface and use it as a facial soft tissue landmark for analysing the symmetry of the face.

The names of the points added can be changed in the Object Browser.

Angle measurement



Use this tool to measure angles on a surface model or between two surface models.

Polyline measurement



The measurements are poly lines that display the distance of every line segment and the overall length of the measurement.

To make a new measurement select the this tool.

Using the left mouse button click on the image where you want to start the measurement. Next click on the image where you want the measurement to finish.

To save the measurement double-left-click in the area where you want the measurement to end or single click with the right mouse button.

NOTE

The rendering view can be rotated and panned by holding down ALT-key while adding measurements.

5.6.4.6 CBCT rendering tools

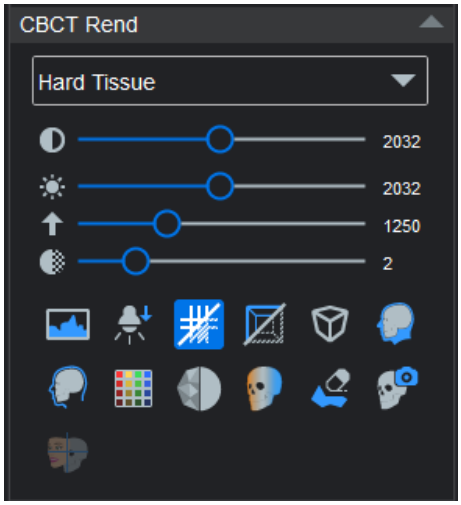
NOTE

For detailed description of the other rendering tools see section "3D rendering" on page 31.

In this section only the ProFace specific tools, the rendering snapshot and the save overlay offset, is described.

NOTE

The CBCT rendering tools are hidden if no CBCT images are open.



NOTE

The rendering snapshot and save overlay offset tools are active only if ProFace image has been added.

5.6.4.7 Object browser

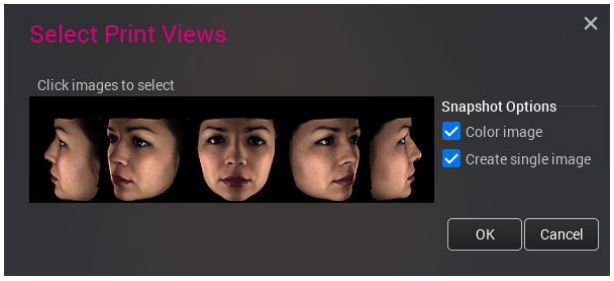
For detailed description see section "Using object browser" on page 35.

5.6.5 Creating a set of Surface image snapshots

Steps



1. Click **Save View**.
2. In the following window click on the images you would like to appear in the snapshot set.
3. Select the suitable snapshot options.



4. Click **OK**

   The 2D snaphot is saved to 2D module under photo -category







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