



GUIDED | KIT DAS SURGICAL

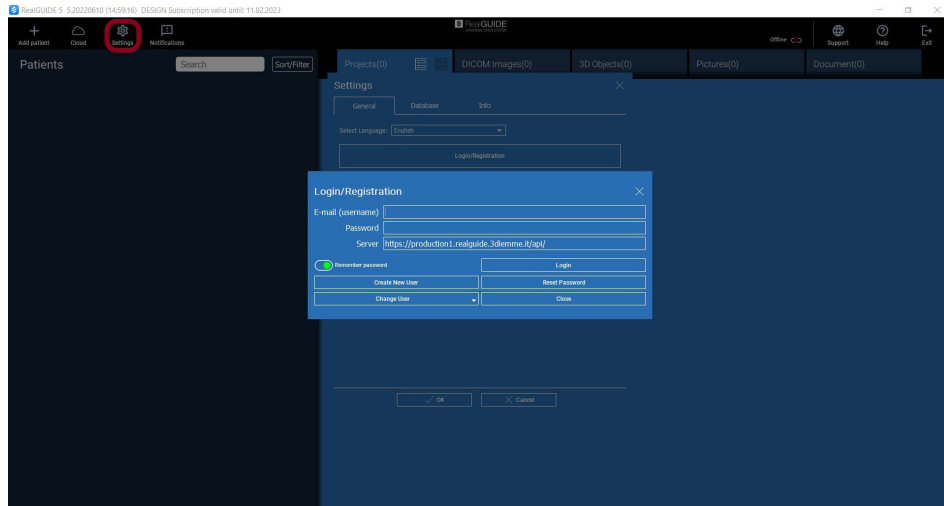


INSTRUCTIONS FOR USE
DYNAMIC ABUTMENT SOLUTIONS LIBRARY

YOUR DIGITAL DENTAL PARTNER

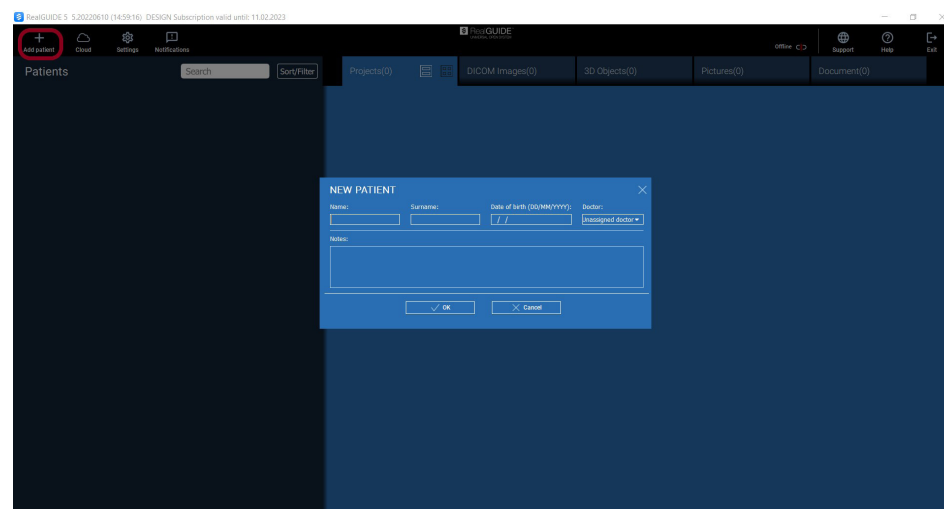
1. INTRODUCTION

Before starting to plan, you must complete the login procedure (enter your e-mail address and password if you already have an account, then click on **Login**), and if you do not have an account, you can create one by clicking on **Create new user**)



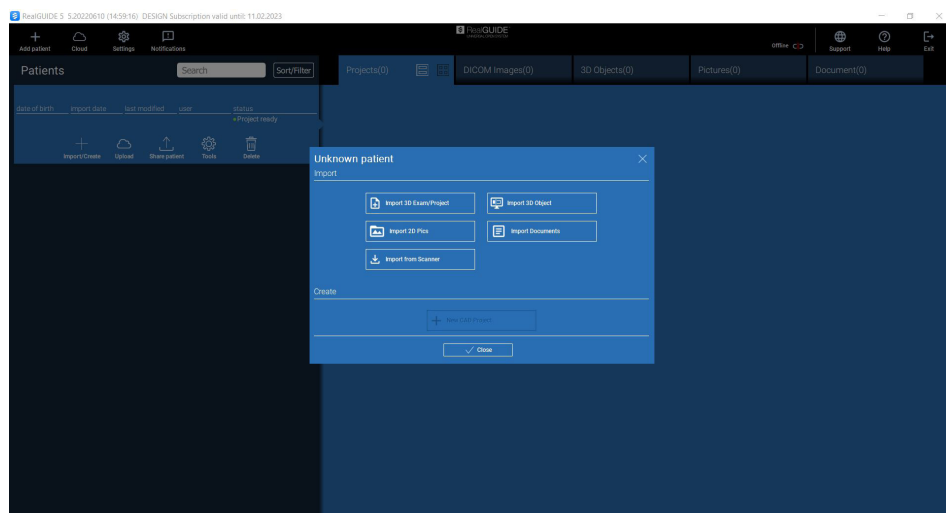
2. NEW PATIENT FOLDER

After logging in, set up the case by clicking on the **Add patient** icon, then fill in all the details in the form and press **Ok**; if the DICOM is already available, you can click on **Ok** without filling in the details as they will be added automatically from the DICOM files.



Depending on the files you want to import into the case, select one of the following options:

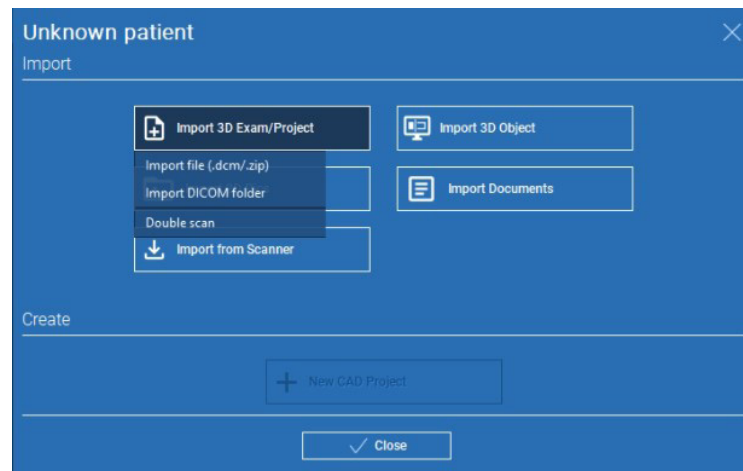
- Import 3D Exam/Project) – DICOM images or RealGuide projects
- Import 3D Object - anatomy and other STL files
- Import 2D Pics – patient pics or panorex format JPG/PNG/BMP
- Import Documents - notes, reports
- Import from Scanner



Click on **Close** to go back to the home page.

3. FILE IMPORT OPTIONS.

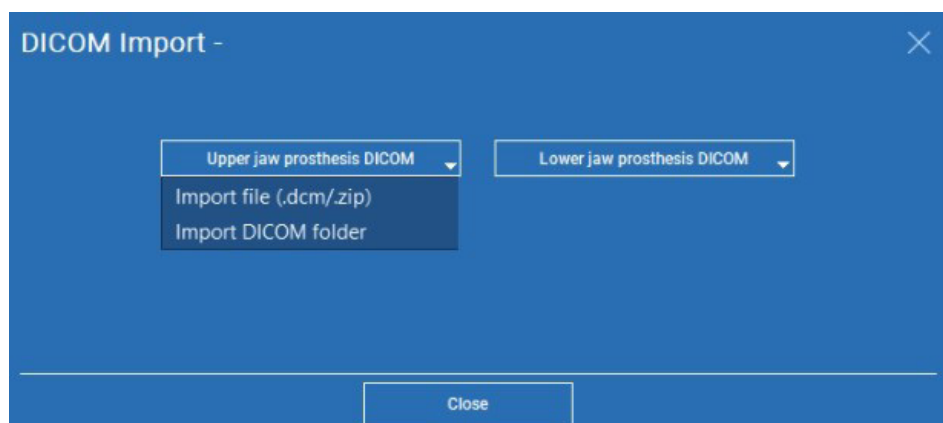
3.1 IMPORT 3D EXAM/ PROJECT



Click on -> **Import File** to import .dcm files or projects contained in a .zip file.

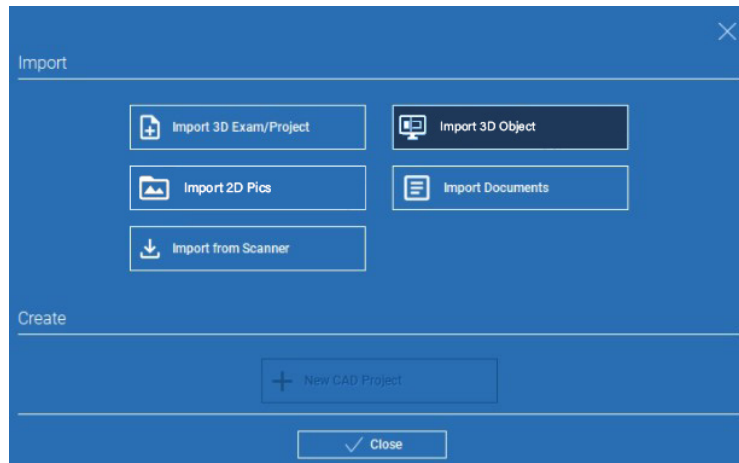
-> **Import DICOM folder** to import DICOM files or projects contained in an open, decompressed folder.

-> **Double Scan** is used in case of double scan protocol.

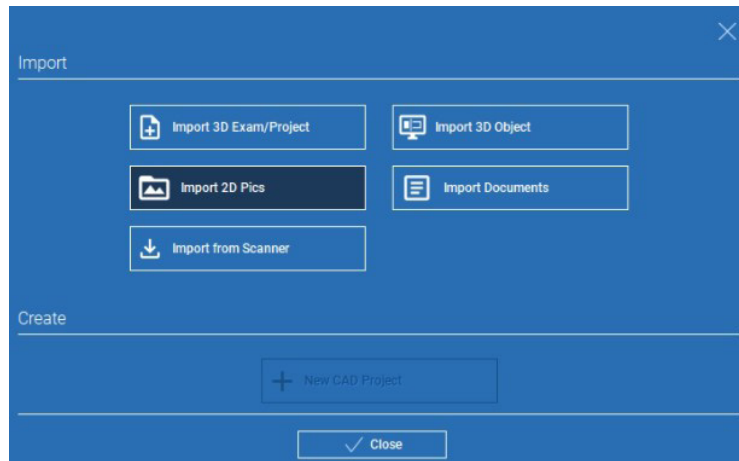


3.2 IMPORT 3D OBJECT

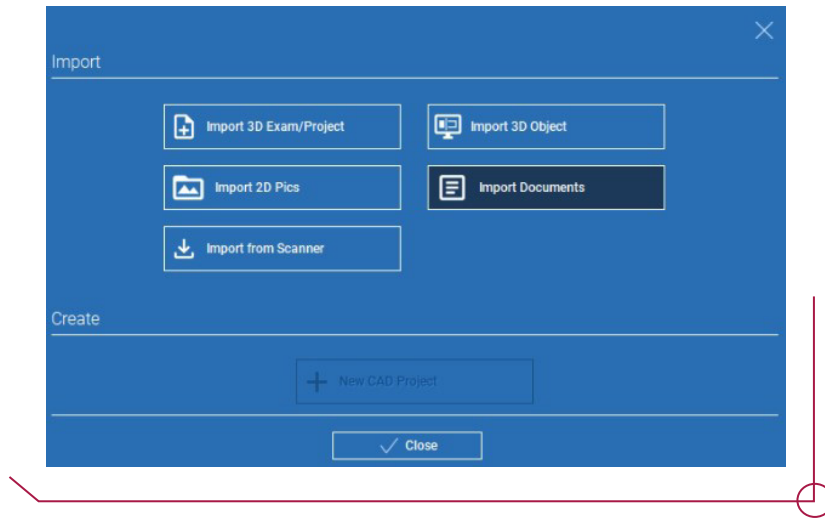
Select **Import 3D Object** and then the STL file type you want to import; next, click on **Import**.



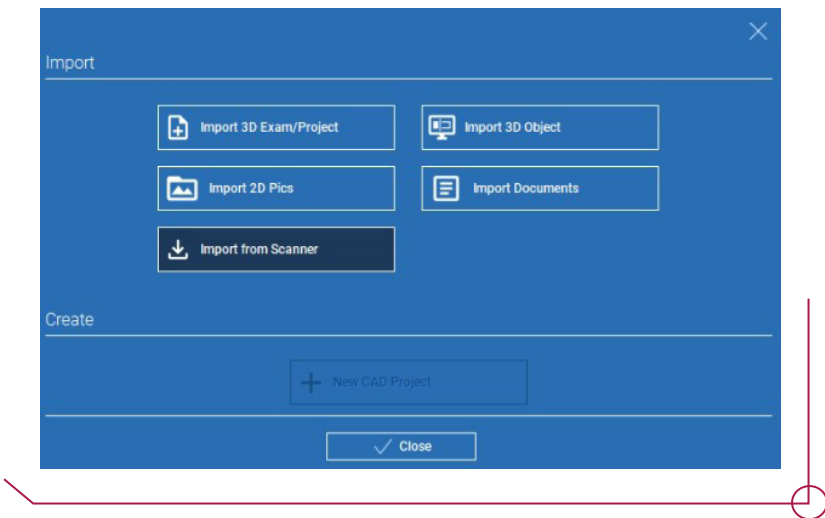
3.3 IMPORT 2D PICS



3.4 IMPORT DOCUMENTS



3.5 IMPORT FROM SCANNER

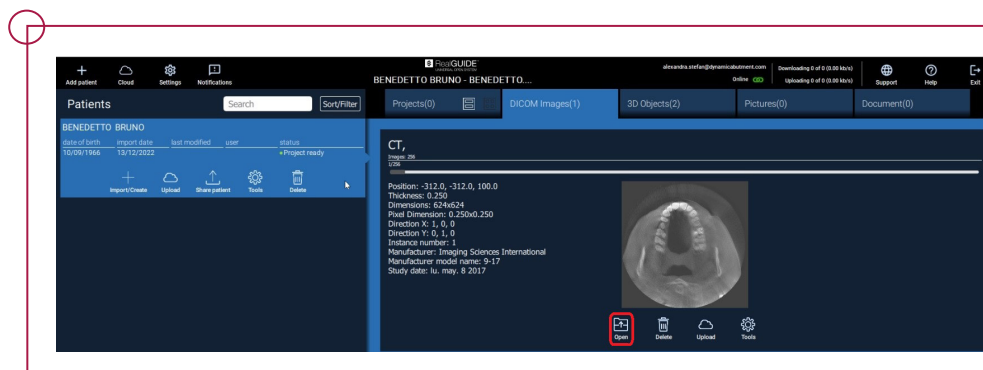


To view the files uploaded into the case, click on the patient toolbar.

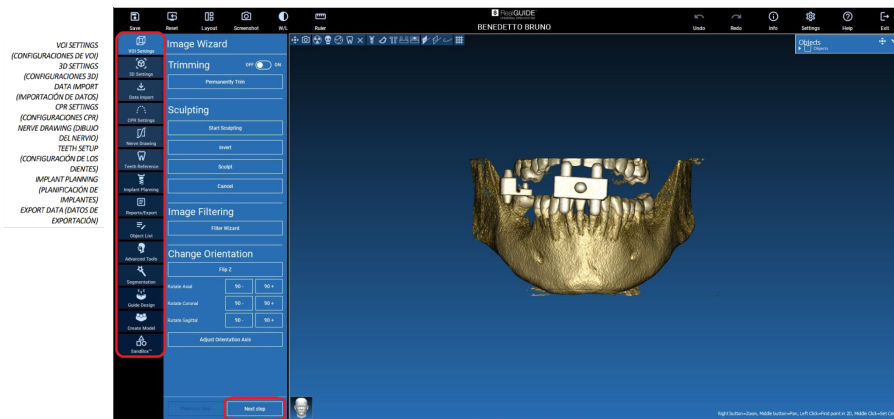


4. IMPLANT PLANNING

In order to start the implant planning, the first thing to do is select the patient from the **patient database**, then click on the DICOM tab in the **patient toolbar** and finally, select **Open** as shown in the figure below.

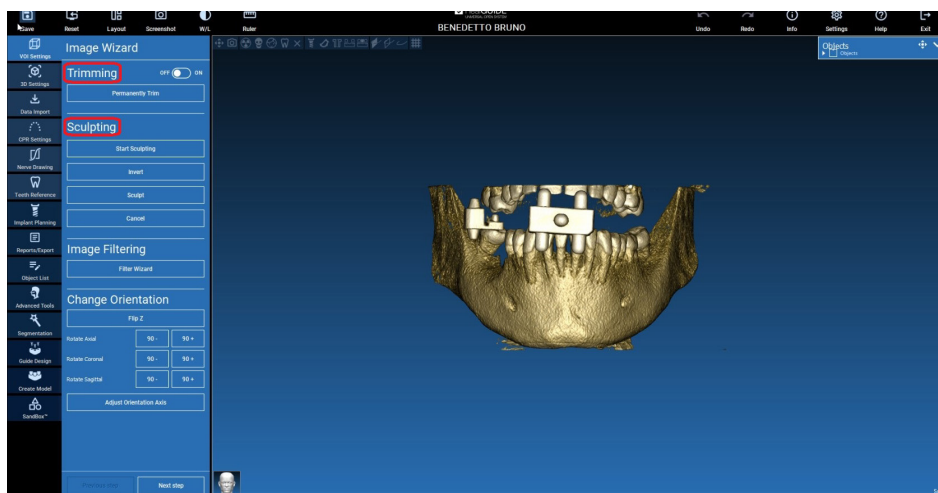


The entire planning process, from the selection of the proper 3D volume to the design of the surgical guide, is managed in a single window with a guided wizard tool. All the steps are shown to the left. It is important to follow them so that no step is left out. Click on next step to move forward or click directly on the desired step in the left-hand sidebar.



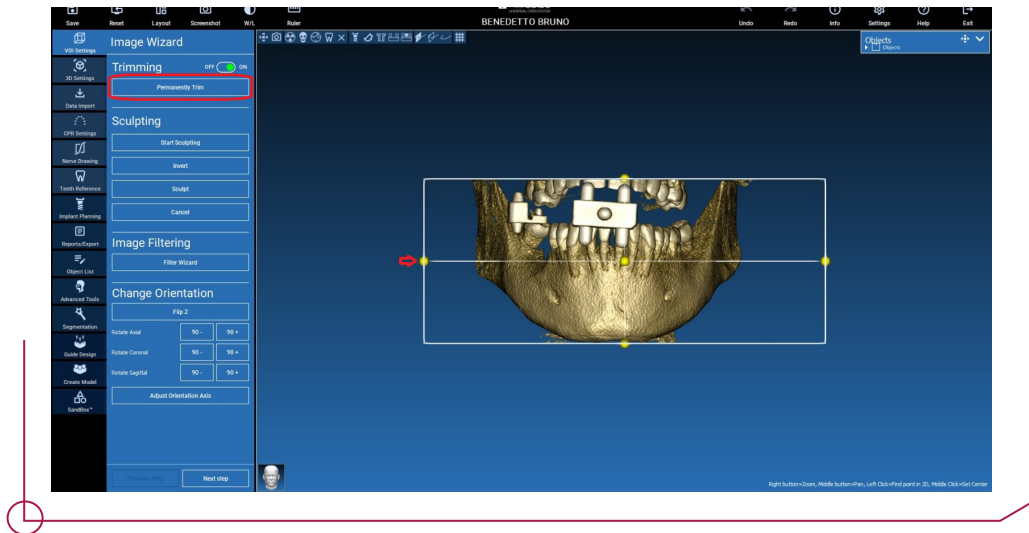
4.1 VOI SETTINGS

In the **VOI Settings** tab, you can modify the reconstructed 3D volume using two different tools: trimming and sculpting.



-> **Trimming** - reduction of the 3D volume along the three main anatomical planes.

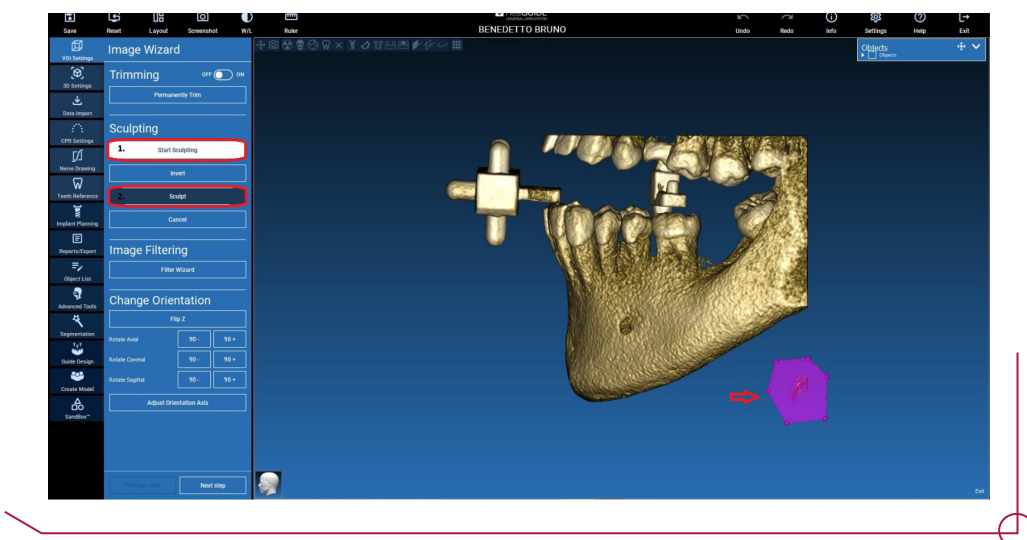
Use the ON/OFF button to enable the tool. The three anatomical planes are automatically shown around the 3D object. Click on the yellow spheres and move the mouse to restrict/expand the reconstruction volume. Click on **Permanently Trim** to confirm.



-> **Sculpting** - customised volume sculpting.

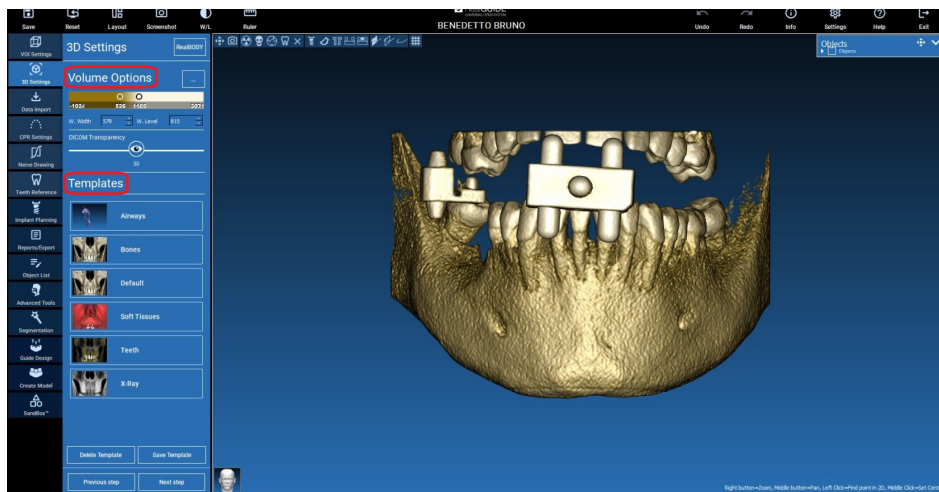
Click on **Start Sculpting** to start selecting a specific area to delete. Left-click with the mouse point by point around the region you want to trim, then select **Sculpt** to confirm the sculpted area.

Use the **Invert** option to keep the selected area and delete the rest. To discard your selection, click on **Cancel**.



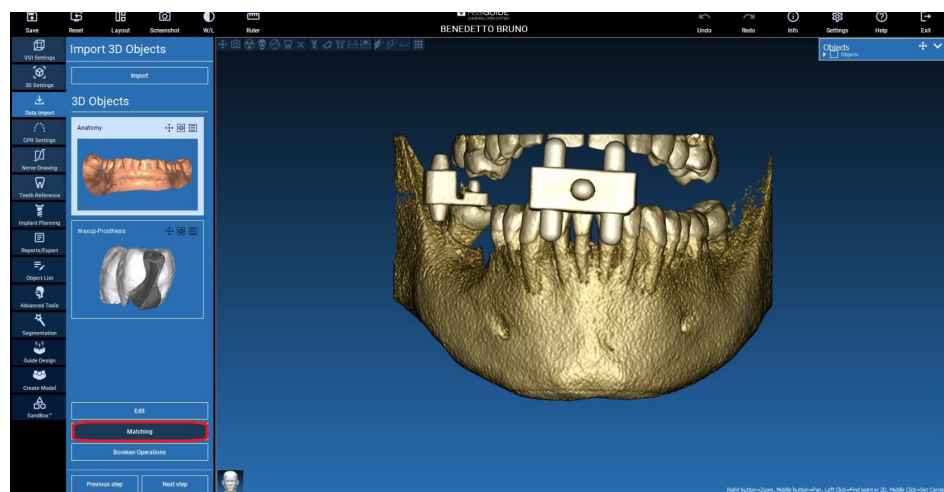
4.2 3D SETTINGS

In this second step, you can change the 3D viewing settings by selecting the desired template from the list. Each template represents a pre-defined (or user-defined) tissue according to the volume representation settings shown in **Volume Options**. When a template is selected, the volume settings are automatically updated.

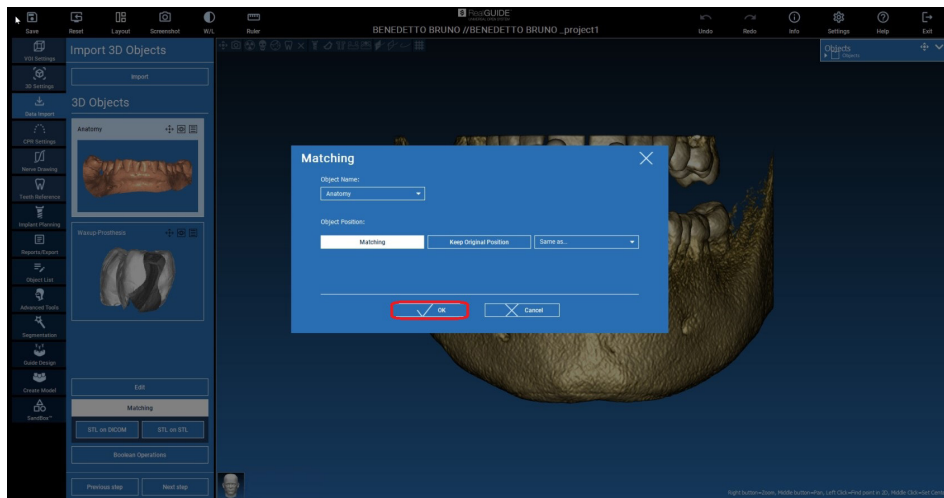


4.3 DATA IMPORT

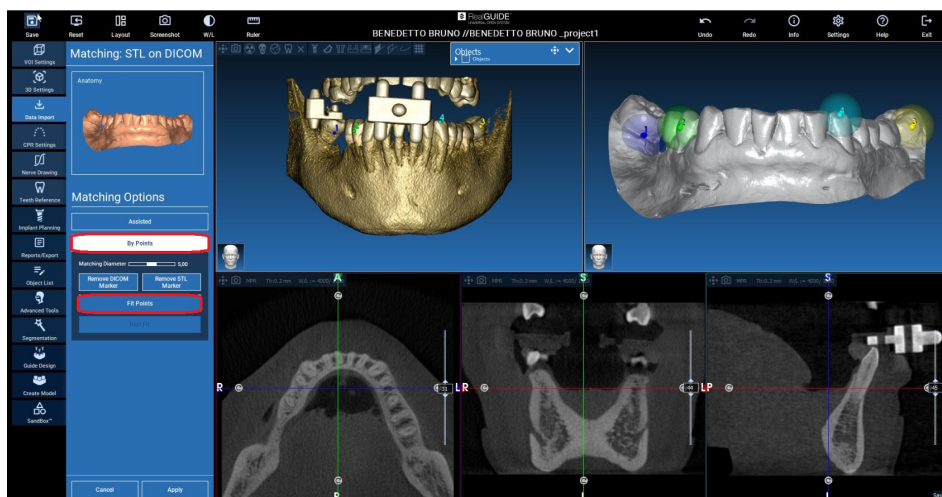
In the third step, the original, unmodified STL files imported above are aligned with the DICOM images. Select the file to be aligned, then click on **Matching**.



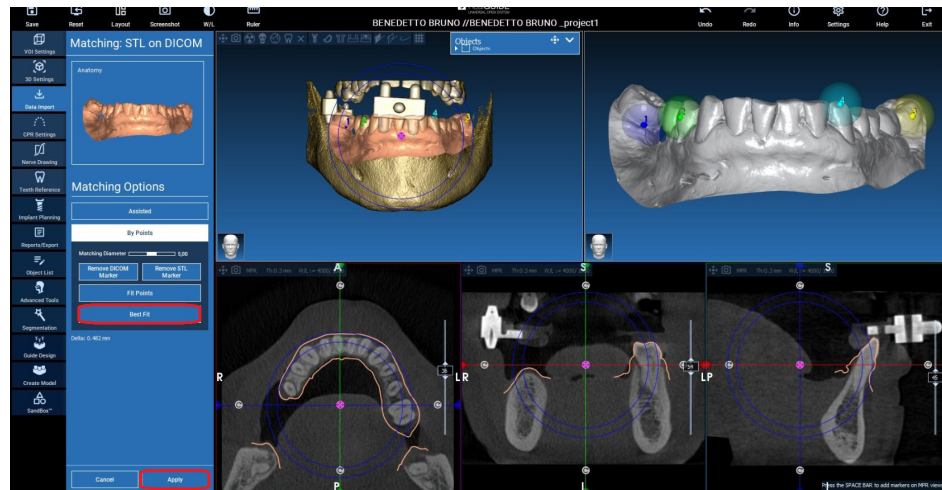
In the pop-up window (shown below), check that the **Matching** button is highlighted and set the correct object name to align it, then click on **Ok** to start the procedure.



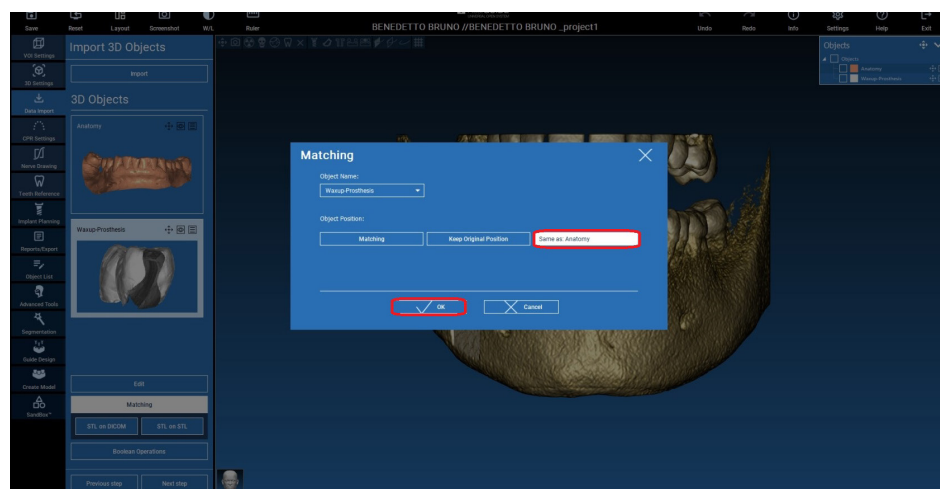
A new window will open up with two different 3D views: the DICOM reconstruction to the left and the STL file (to be aligned) to the right. These two files have different reference systems (RS): the CBCT and the scanner, respectively. Left-click on the two files to select at least three corresponding points of reference. For each selection, use the sphere of points around the selection to achieve the best fit overlap. It is very important to select areas that are easily identifiable in both 3D objects.



After selecting the reference points, click on **Fit Points**. The software does the basic positioning of the STL file based on the selected points in common. To enhance the precision of the overlap, click on **Best Fit**. The software reduces to a minimum the distance between the surfaces included in the spheres established around the reference points, thus increasing the precision between the STL and DICOM files. An average alignment error value will appear below the **Best Fit** button to indicate the average distance between the surfaces. To validate the fit, check the profiles in the different multiplanar views (MPR) of the STL files, and continue if correct.

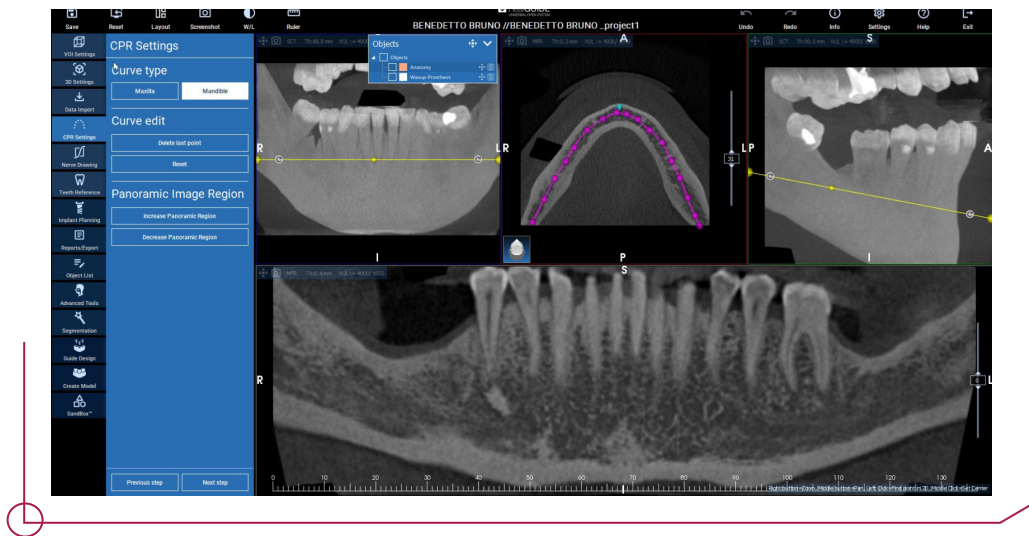


If the STL files loaded are in the same reference system, the first STL transformation is applied to all the other files. Select the STL file to be aligned then click on **Matching** as shown above. Select the option: **Same as Anatomy**, then click on **Ok**. The software will automatically move this new file to the correct position according to the previous transformation.



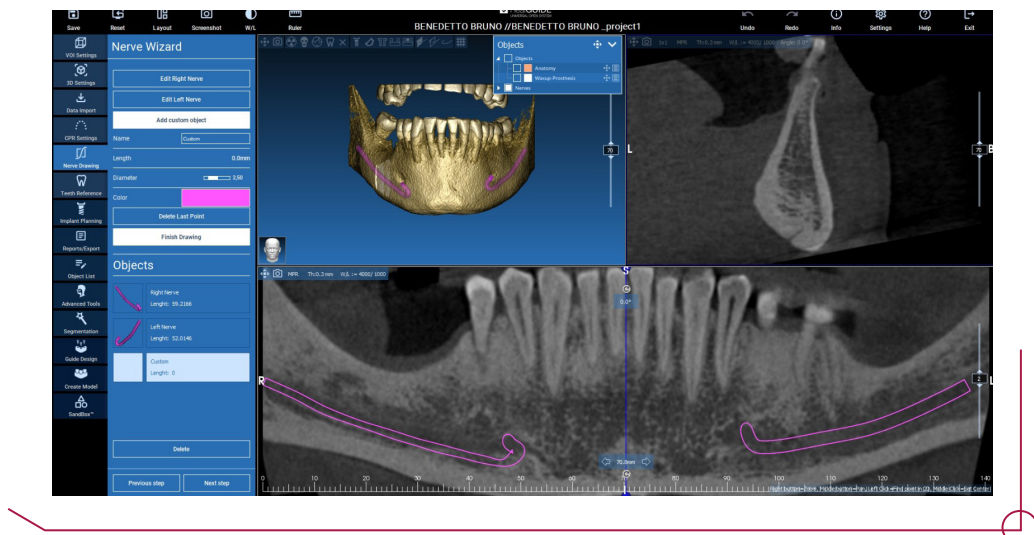
4.4 CPR SETTINGS

Before starting to draw the curve, select the arch you want to work on. Select the axial image where the curve is drawn and, if necessary, modify the angle of the plane according to the acquisition plane and the patient anatomy. To modify the plane angle, click on the rotation arrows at the end of the yellow line in the exploration view, hold and drag the mouse in the desired direction.



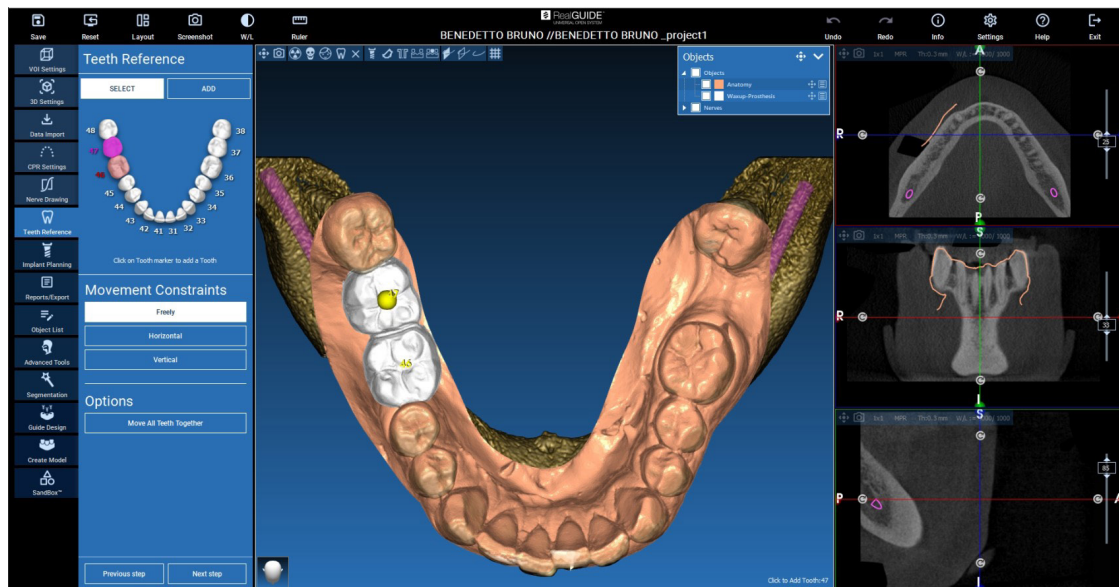
4.5 NERVE DRAWING

It is possible to trace the right and left nerves along the new curve of the mandibular arch. Start drawing the right nerve in the view by left-clicking on the points. These points can also be adjusted in the cross-section view. Use the mouse scroll wheel to change the panoramic image and follow the nerve position in different planes. Click on **Finish drawing** to complete the object. Then click on **Add left nerve** to start with the left side of the jaw.



4.6 TEETH REFERENCE

Before placing the implants, the elements to be restored must be identified. Click on the desired element, then select the corresponding area in the 3D reconstruction. After performing all the operations, click on **Next step** to continue.

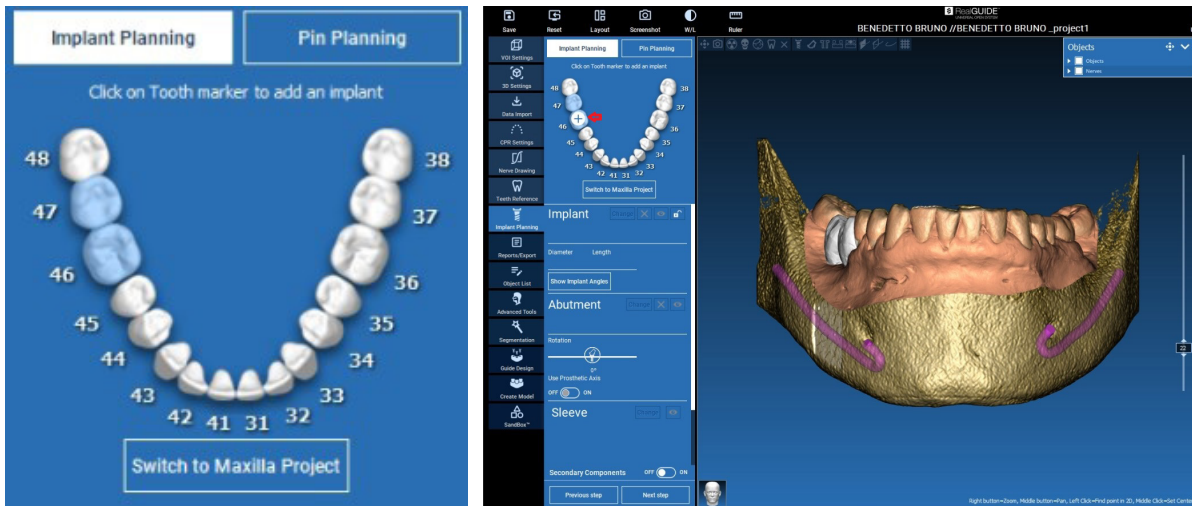


4.7 IMPLANT PLANNING

The elements selected in the previous step are highlighted in light blue. Click on them to open the Implant Library window.

If, after placing the implant, you want to modify its length, select the tooth and click on **Change** in the lower window in **Implant**.

Bear in mind that, with each modification made, you need to once again select the prosthetic component, sleeve and other components that were selected previously.

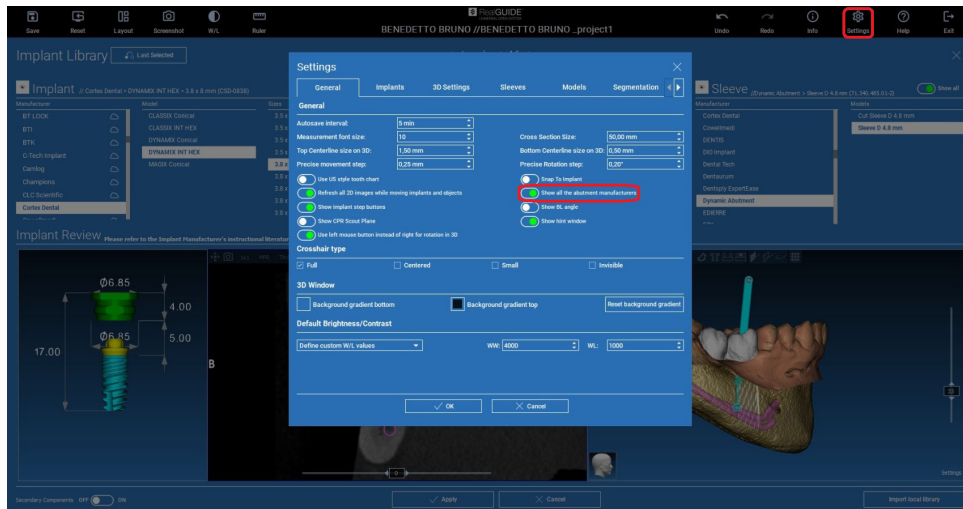


4.7.1 IMPLANT LIBRARIES

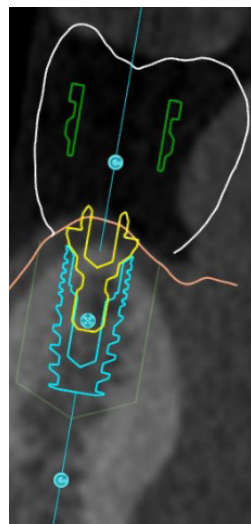
In the new window, all the implant brands available at 3Diemme will be displayed. Before working with them, the desired implant library must be downloaded from the **Cloud** to enable you to choose the most appropriate prosthetic component. Click on **Apply** to confirm and go back to the implant planning window.








Very important: in order to use our libraries, the **Show all the abutment manufacturers** option must be enabled in **Settings**.



4.7.2 IMPLANT POSITION SETTINGS



A list of buttons allow you to modify the implant position in all the 2D views:

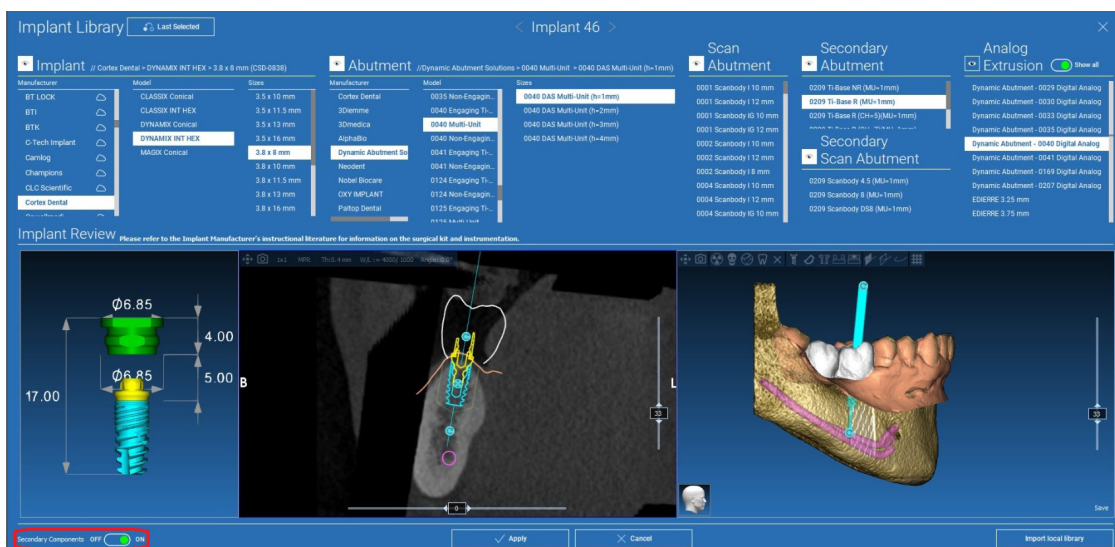
-  Implant angle change: rotate the implant top keeping the apex fixed.
-  Increase/Decrease the implant dimension
-  Implant pan (0.5 mm for each left mouse click in the selected direction). It is possible also to move the implant along its axis using the arrow keys (UP and DOWN)
-  Implant tilt change: rotate the implant apex keeping the top fixed.
-  You can pan the implant by clicking on the button positioned in the center of the object.

4.7.3 SELECTION OF PROSTHETIC ABUTMENTS

Once the implant has been placed in the desired position, it is possible to select/modify the Ti-base and adjust the prosthetic axis.

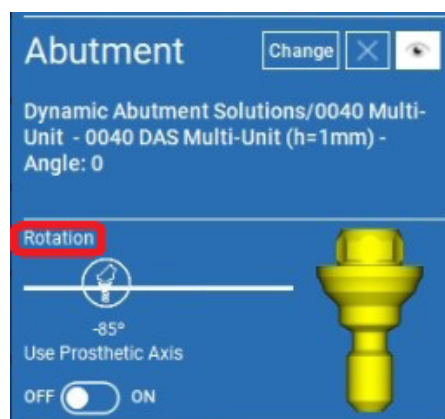
Select **Dynamic Abutment Solutions**, and all compatible models available at 3Diemme will appear in the **Model** section. See the PDF file **Library Codes** to determine which models are compatible with the selected implant.

To view and select secondary components, you must enable the button located in the lower left corner, as shown in the image below.



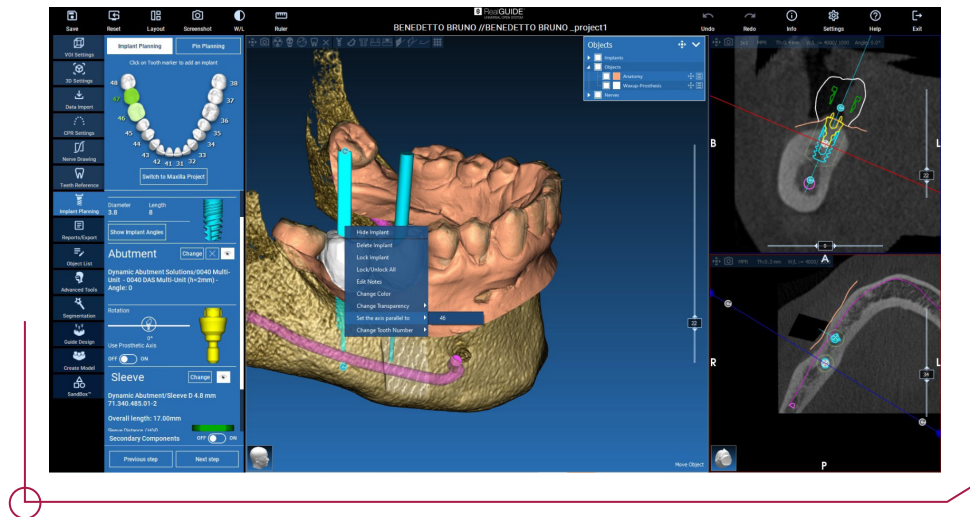
4.7.4 AXIS ROTATION

You can change the orientation of the abutment axis (keeping the implant axis fixed) by dragging the sliding icon highlighted in the figure below. To be more precise, also check the occlusal 3D view.



Steps for checking that the prosthetic axis is parallel:

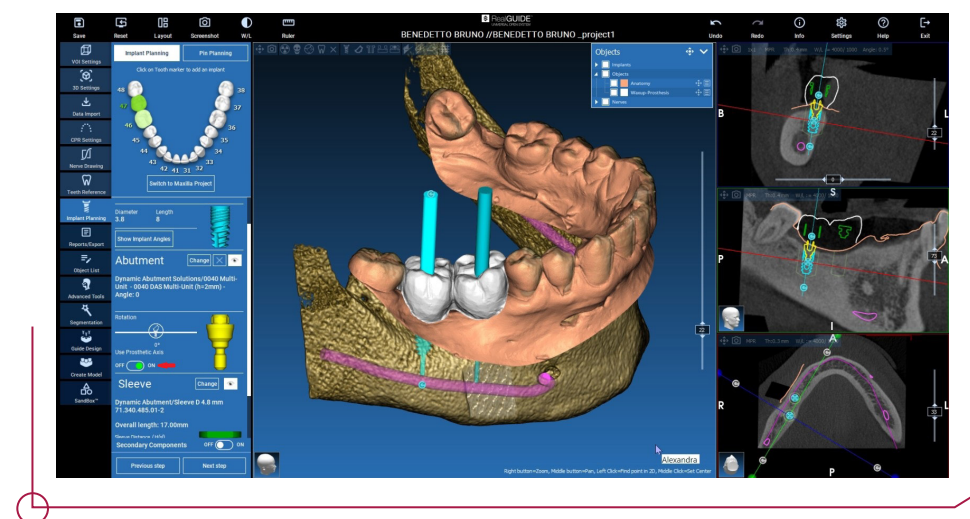
-> right-click on the prosthetic axis you want to modify, then select the **Set the axis parallel to** option and choose the element to align it with.



The prosthetic axis will automatically be updated and set parallel to the reference implant.

Now that the prosthetic axes are parallel, ensure that all the implants are still in a safe position.

If you want to make adjustments, enable the **Use prosthetic axis** option as shown in the figure. This is the only way to change the implant axis by rotating the implant around the prosthetic axis, keeping the prosthetic fixed in the correct position.



4.7.5 SLEEVE SELECTION

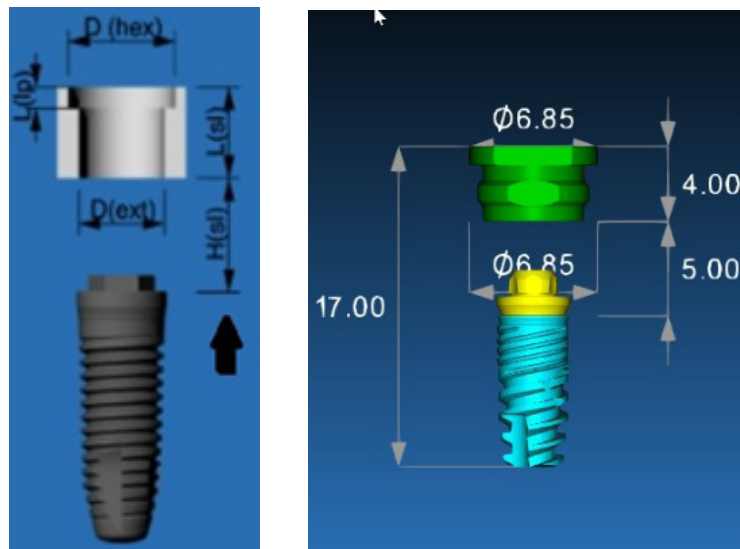
Once all implants have been positioned, the sleeves must be defined. In the **Sleeve** tab, enable the **Show all** option to view all the sleeve brands.

Select **Dynamic Abutment** and the desired sleeve type. Currently, there are 2 sleeves available: **Sleeve D 4.8 mm** and **Cut Sleeve D 4.8 mm**.

The sleeves have several different offsets depending on the implant selected. The selected offset will establish which drills and which implant mounts to choose when performing the surgery; see the PDF file **work offsets by compatibility** to determine which drill corresponds to each offset.

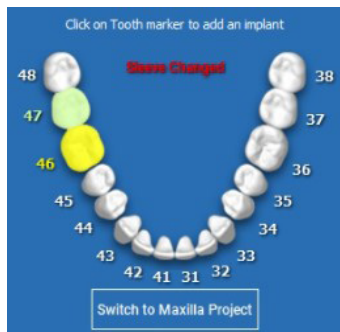
Important! To calculate the offset value using 3Diemme software, add the **Sleeve Distance / H(sl)** parameter to the total length of the sleeve, which is 4 mm in this case (see image).

The default offset in 3Diemme software is always 9 mm [$H(sl)=5\text{mm}$ and the sleeve height $L(sl)=4\text{ mm}$]; please bear in mind that some implant brands do not have this offset, so it is **very important** to check the PDF file **work offsets by compatibility** when planning the surgery.



The sleeve rotation can only be changed in conjunction with the implant and the prosthetic component (see step 4.7.4 **Axis Rotation**).

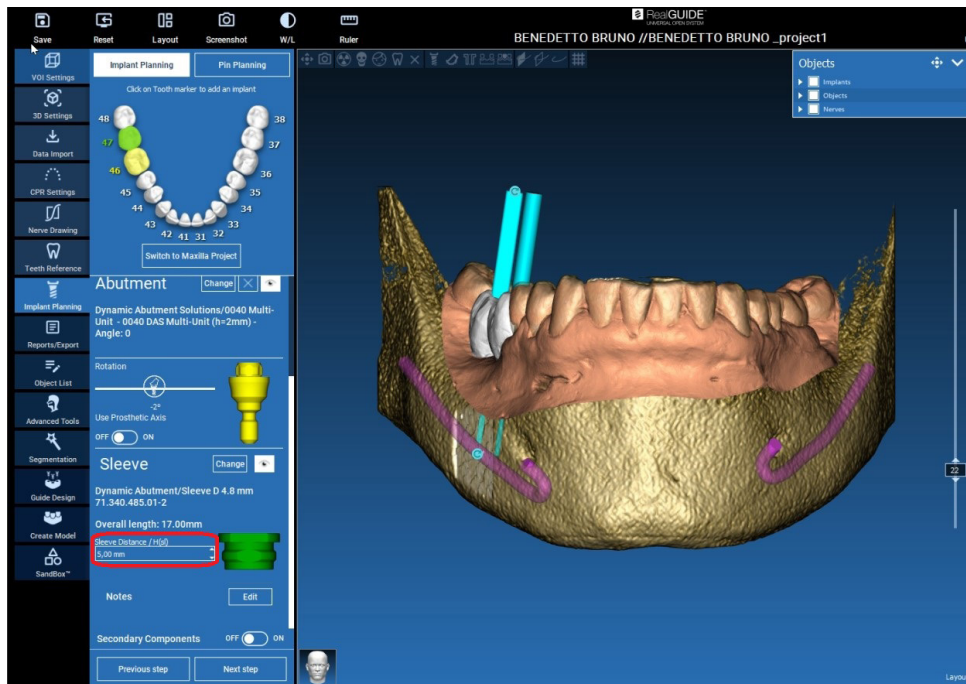
Every time the attachment, the implant length or a secondary component must be modified, bear in mind that the sleeve offset will go back to the default value (9 mm) and the desired offset must be selected once again.



The sleeve colour varies depending on the offset:

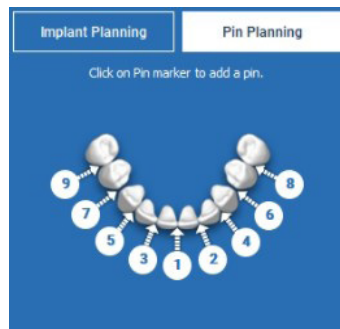
- > green – default offset
- > yellow – changed offset

The selected offset will establish which drills and implant mount to choose when performing the surgery; **see the PDF file work offsets by compatibility to determine which drill corresponds to each offset.**

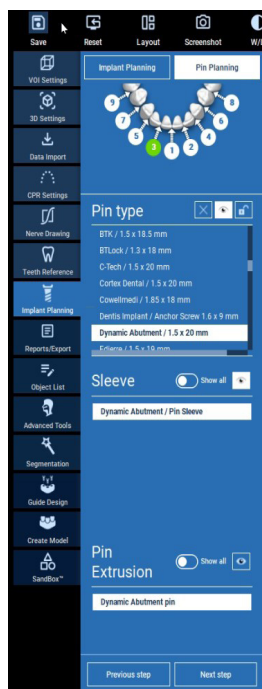


In the image above you can see the default value of 5mm, added to the 4mm of the sleeve, this makes an offset of 9mm. If you want to change for example to an offset of 10mm modify this parameter to 6mm (4+6=10).

4.7.6 ANCHOR PIN SELECTION



For edentulous cases or cases where teeth fail to provide sufficient anchorage, the anchor pins shown next to the **Implant Planning** tab are used.

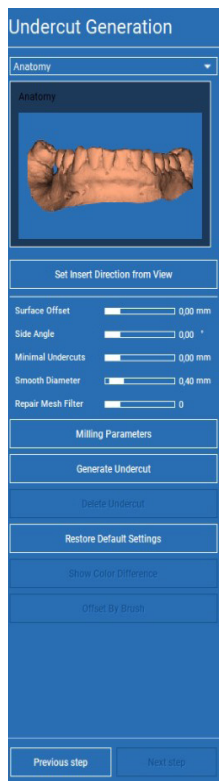


Select where you want to position the pin, then go to **Pin type** and select Dynamic Abutment / 1.5 x 20 mm; the corresponding sleeve will be added automatically.

5. SURGICAL GUIDE DESIGN



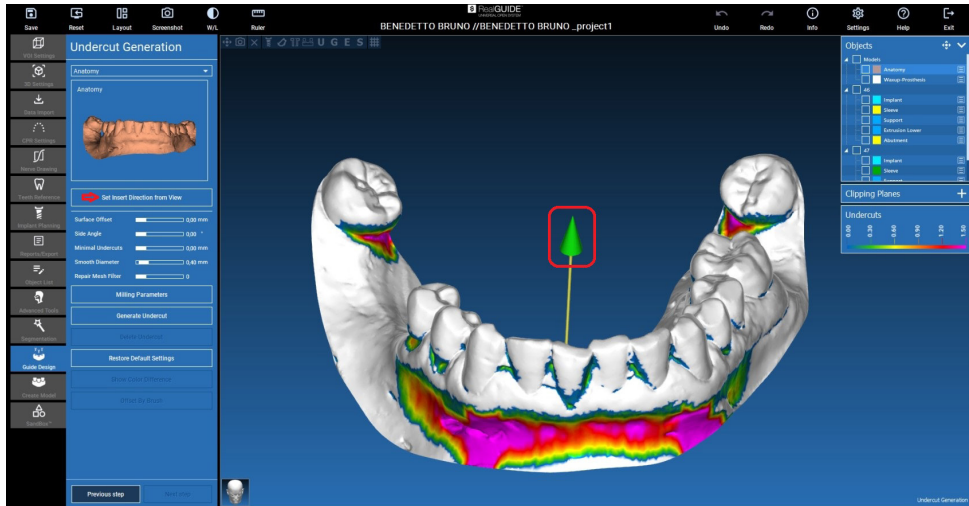
After completing the implant planning, it is possible to continue with the surgical guide design by clicking on the **Guide Design** tab in the left-hand sidebar. This opens up a wizard that guides the user through the process of setting the construction parameters.



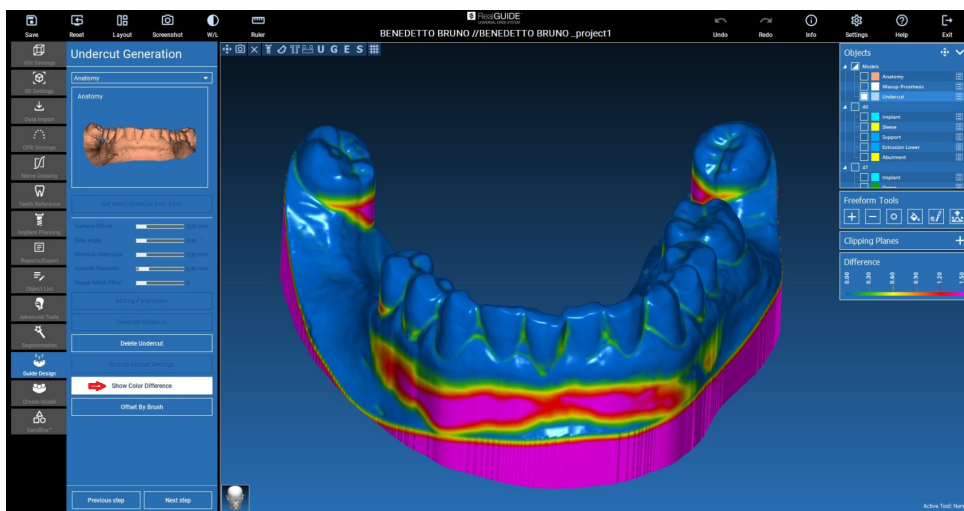
The sidebar in this step contains commands that regulate model undercut blocking, such as preliminary waxing. Here it is possible to define the thickness, blocking angle, grip degree and the smoothness of the virtual waxing.

The arrow displayed at the centre of the model establishes an insert axis direction calculated automatically in relation to the shape of the model. To modify this insert direction, drag the tip of the arrow in the desired direction.

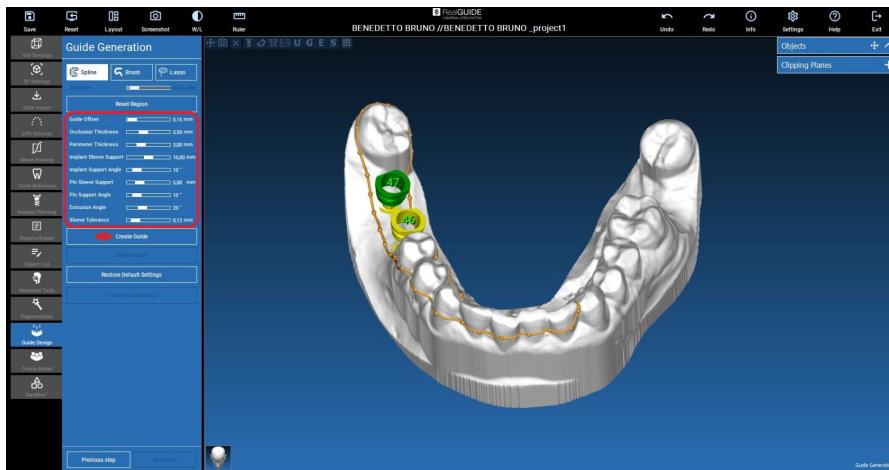
The insert axis direction can also be defined by moving the model to the desired position in the view. By clicking on **Set Insert Direction from View** the arrow axis direction will be placed perpendicular to the surface of the screen.



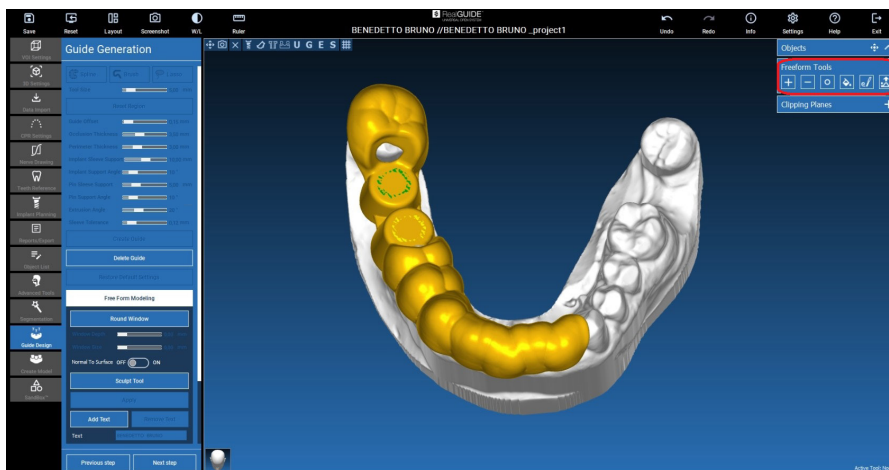
Once you have defined the insert axis direction, click on **Generate undercut** to generate the waxed surface. In the **Show Colour Difference** option, the software calculates the alignment and displays the precision between the two models using colour ranges. If it is deemed inadequate, the insert axis can be adjusted until the most accurate result is achieved. Click on the **Next step** button in the menu to start the final part of guide construction.



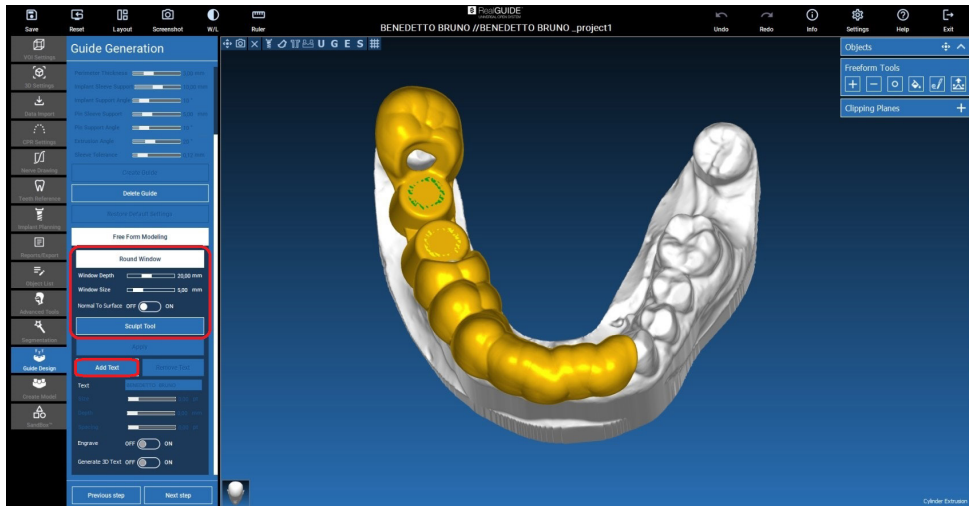
Trace the outer edge from the guide by encircling an area of the model point by point: this command is enabled by default. It is not necessary to close the area loop; merely placing the last point near the first one is enough. Next, verify and define the fit tolerance and the occlusal and lateral thickness values. If the defined edge needs to be modified, click and drag any of the points to the desired position, then click on **Create Guide** to confirm and continue with the construction of the volume.



Once the guide volume has been created, the modelling options are enabled to the right, as shown in the image below. These can be used to add/remove material, smooth and fill the surface.



Below the **Free Form Modelling** option you will find the tools to generate round windows with their depth and size parameters. By clicking on the desired position of the guide surface, the selected shape will be generated with its axis oriented the direction of the user's point of view. Below this, in the same step, there is an option for adding text to the surgical guide.



By clicking on the **Next step** button, the guide generation process will be completed with all the selected parameters.

The **Reports/Export Data** tab will appear in the sidebar to enable the STL files to be exported.

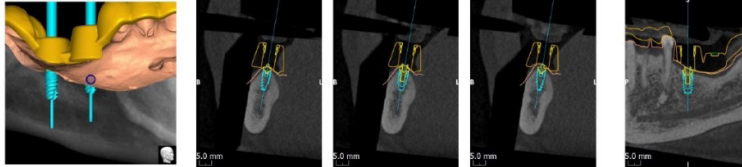
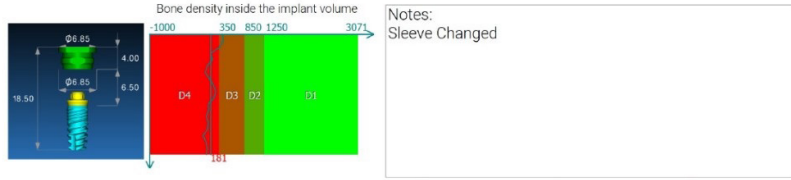


When the case is completed, 3Diemme generates an implant report showing the prosthetic options, sleeve and chosen offset for each implant, as shown in the images below.

46

Patient: _____
Date of birth: _____
Project: _____

Position	Manufacturer	Model	Size	Abutment	Abutment size	Sleeve	Sleeve top height
46	Cortex Dental	DYNAMIX INT HEX	3.8 x 8 mm [CSD-0838]	0040 Multi-Unit	0040 DAS Multi-Unit (h=1mm)	DYNAMIX Abutment_Sleeve D 4.8 mm [71 240 485 01 2]	6.50 mm



47

Patient: _____
Date of birth: _____
Project: _____

Position	Manufacturer	Model	Size	Abutment	Abutment size	Sleeve	Sleeve top height
47	Cortex Dental	DYNAMIX INT HEX	3.8 x 8 mm [CSD-0838]	0040 Multi-Unit	0040 DAS Multi-Unit (h=2mm)	DYNAMIX Abutment_Sleeve D 4.8 mm [71 240 485 01 2]	5.00 mm

