Digital Guide Manual

Digital Guide 2019 **(Rev.1)**

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Dentium

For Dentists By Dentists

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Video Manual (English) :

http://www.clinicaldentium.com/shop_contents/myboard_read.htm?load_type=&page_idx=0&tag_on=&h_search_c=0&h_search_v=&me_popup=&myboard_code=video22&page_limit=10&idx=54542

I Overview

Dentium's Digital Guide Software allows you to check various 2D and 3D images using CBCT's dental (oral jaw) DICOM data and model (stl) data and provides deliverables with which you may produce the surge aid device (surgical guide) based on the accurate fixture placement simulation and its result.

1 Key functions

- Maximized information acquisition by displaying 2D and 3D images on one screen.
- Provides CT / model data matching function.
- With intuitive operation, you can finish the prediction of fixture implant in the fastest way.
- You can set the guide generation area through simple area designation.
- You can easily check the information necessary for surgery through the report function.

2 Specifications

	Minimal specifications	**Recommended specifications**
CPU	Intel Core i7-4770 3.4GHz or higher	Intel Core i7-4770 3.4GHz or higher
RAM	8GB	16GB
HDD	1TB	1TB
VGA	NVIDIA GeForce GTX 960 or higher	NVIDIA GeForce GTX 1070 or higher
Display	FULL HD 1920x1080 resolution	
OS	Windows 10 64bit	

*** Automatic matching supports NVIDIA graphics card only and operates smoothly with**

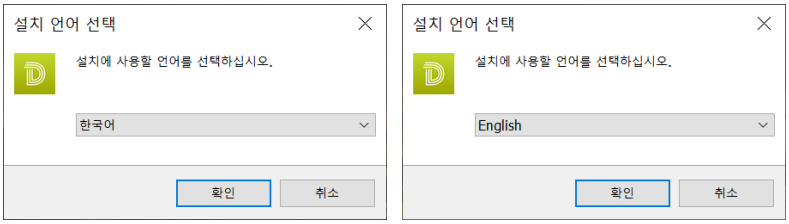
GTX1070 or higher graphic card.

*** Windows 10 64bit version is recommended for smooth program operation.**

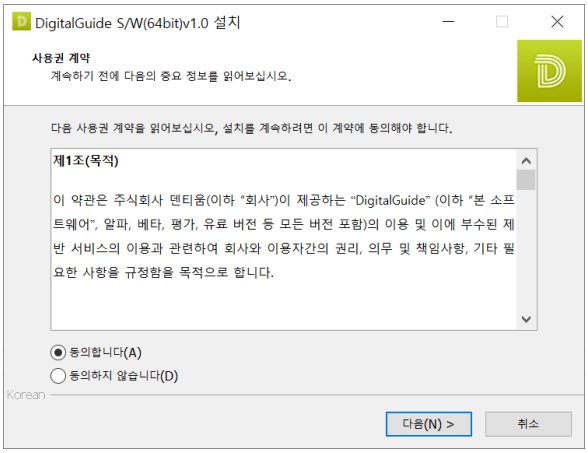
3 How to install

3.1 Execute the installation file.

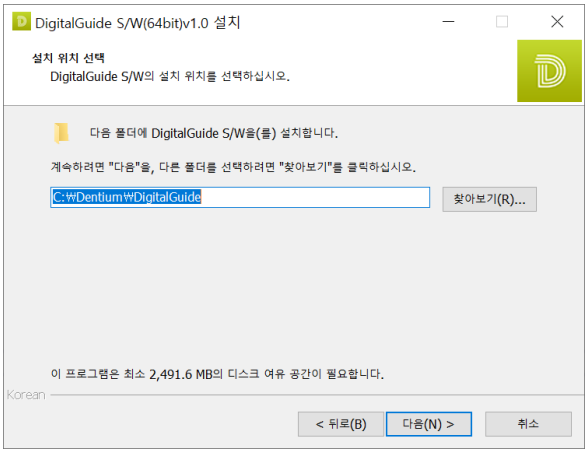
3.2 Select the language to use for installation (Korean / English)



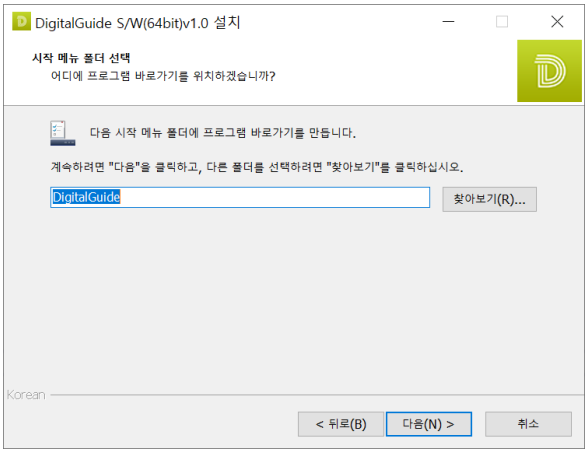
3.3 Agree on the license agreement



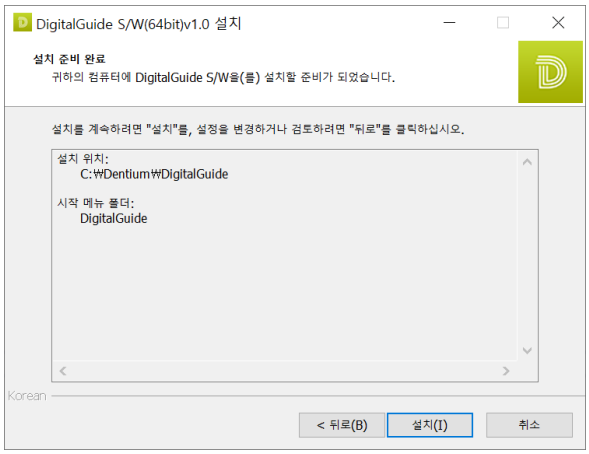
3.4 Determine the installation position



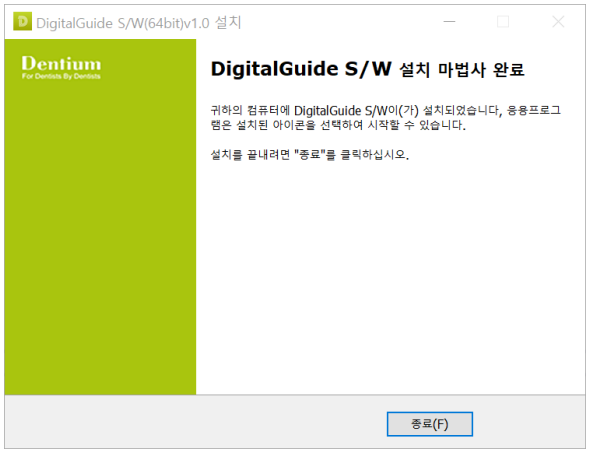
3.5 Determine the radial position



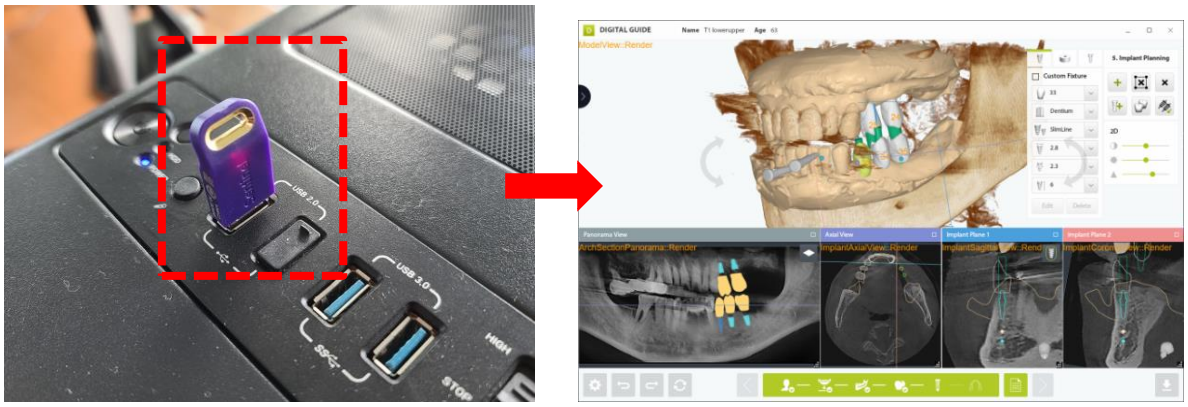
3.6 Check the installation path and start the installation.



3.7 Press “Finish” button to complete installation



3.8 Insert the USB dongle to execute the program.



USB dongle insertion : You may execute the program

USB dongle is released : Error message turns up

(Impossible to shut down and execute the program)

4 Notebook setting

Digital Guide S/W is a program that shows and edits 3D and 2D images.

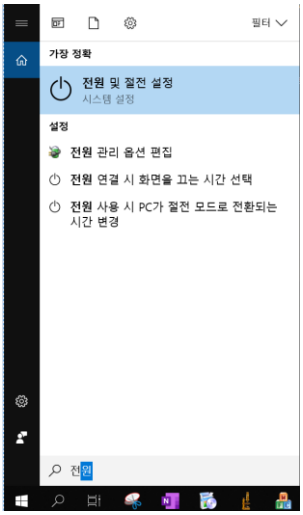
Due to the nature of the program, notebook users must make separate settings for smooth use of the program.

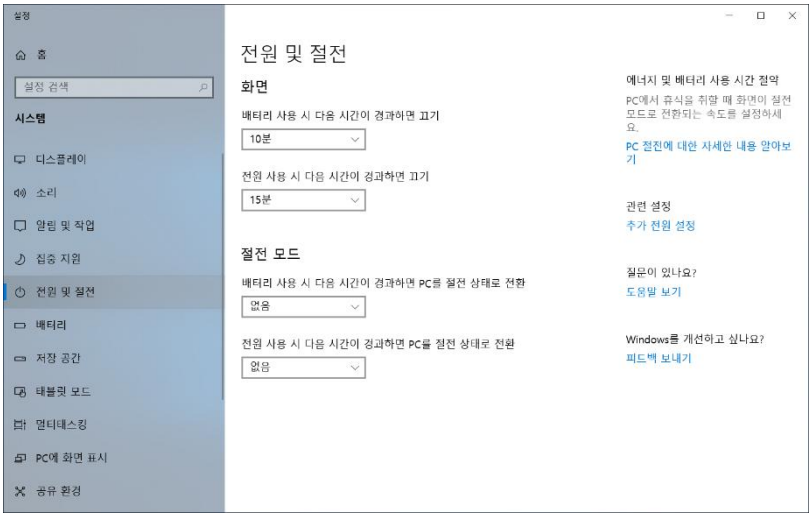
4.1 Power setting

a Connect the notebook power cord and use the notebook.

b Press the Search button of the window, write "power" and click "Set Power and Power Saving".

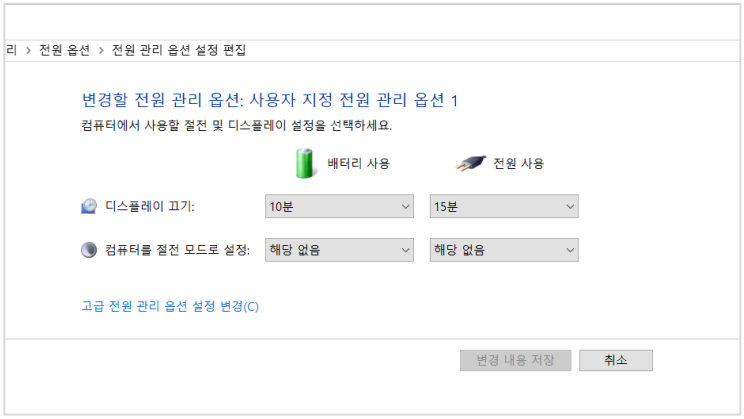
c Click "Set Additional Power"





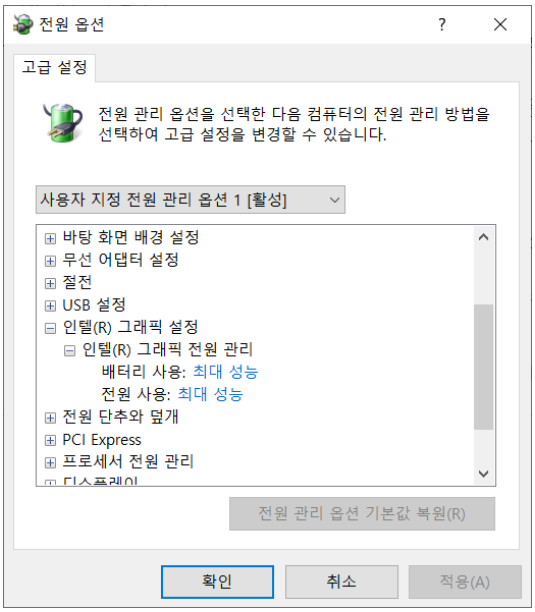
d Select "User Designated Power Management Option" and click "Change Select"

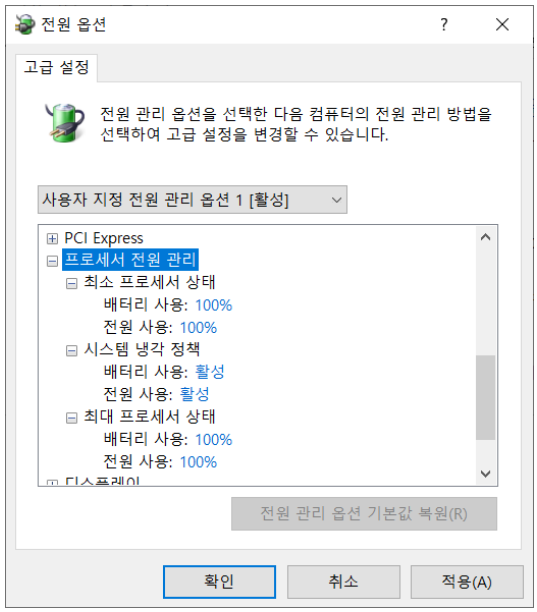
e Click “Change Advanced Power Management Option Setting”



f Click “Intel(R) graphic setting” ▶ “Intel(R) graphic power management” ▶ “Battery usage: Maximum performance” ▶ “Power Usage: Maximum Performance”

g Set “Processor power management” ▶ “Minimum processor state: 100%” ▶ “System cooling policy: Active” ▶ “Maximum processor state: 100%”

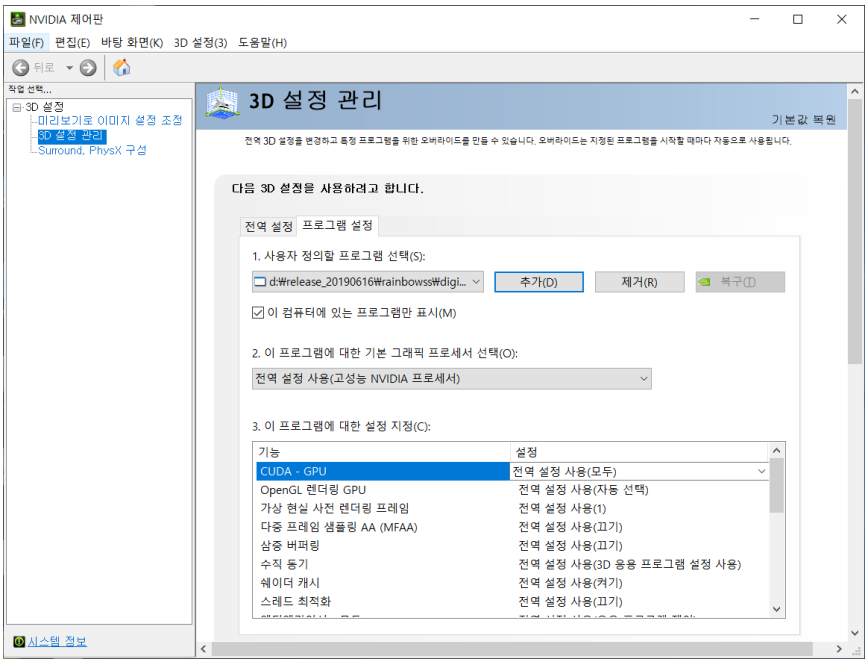




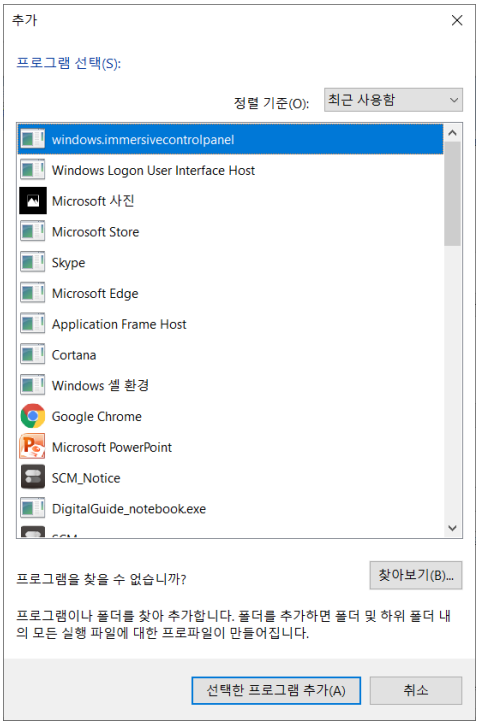
4.2 Graphic Card Settings (Based on NVidia Graphics Card)

a Click Mouse Right Button in the main screen, and click ▶ NVIDIA control board

b Click "3D Setting Management" ▶ "Program Setting" ▶ "Add"



c Select "Search" and select "DigitalGuide.exe" in the path where Digital Guide S/W has been installed.



5 Project Sharing

This is a function that allows you to use the same project on multiple client PCs by saving patient information and projects on a server PC that is commonly used.

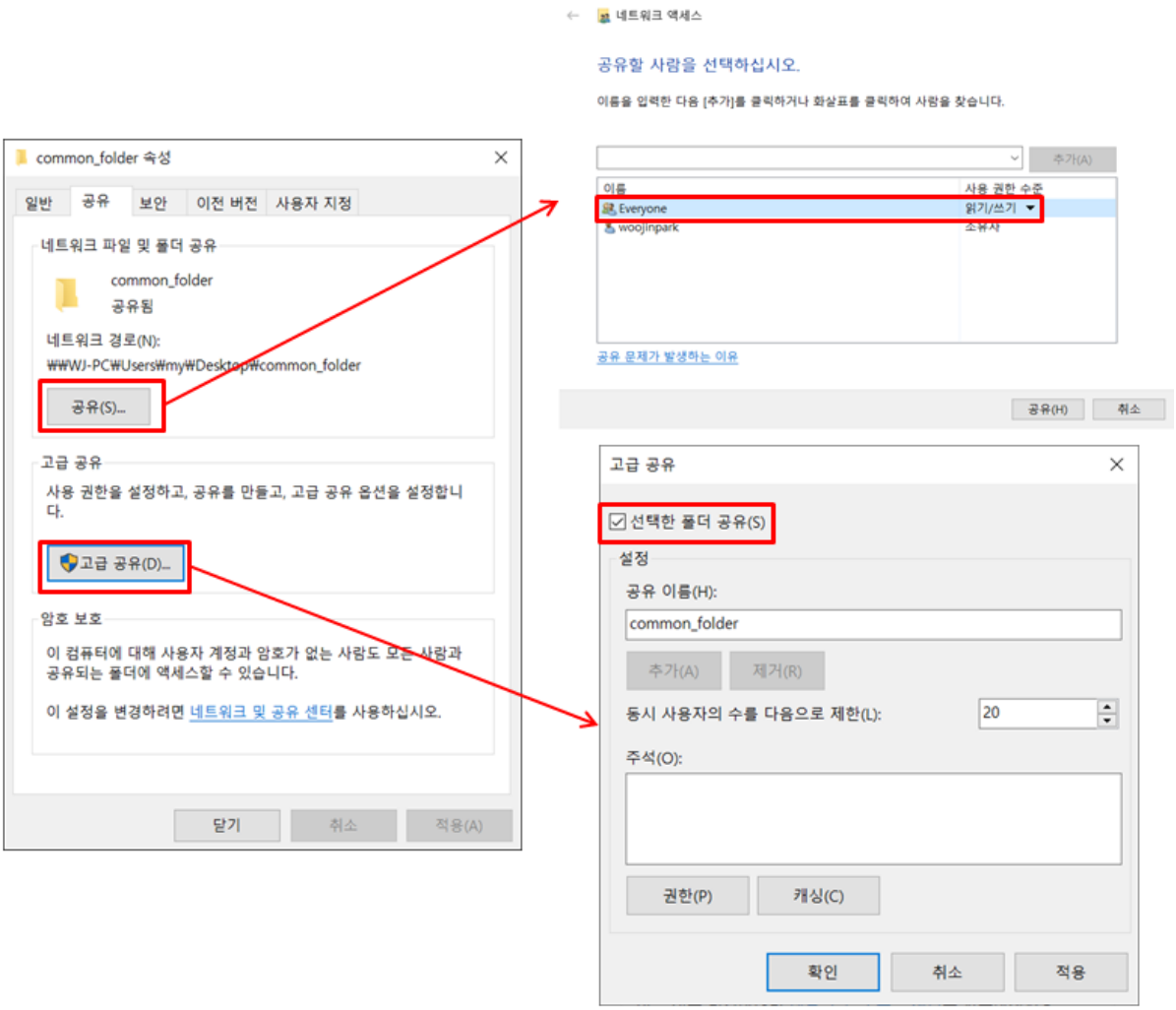
This creates a sharing folder on the server PC and sets the path of the sharing folder on the Digital Guide of the client PC.

Projects processed on Client 1 PC can be loaded from Client 2 PC for additional work.

※ Patient image data (DICOM, STL, etc.) can also be saved in the corresponding sharing folder.

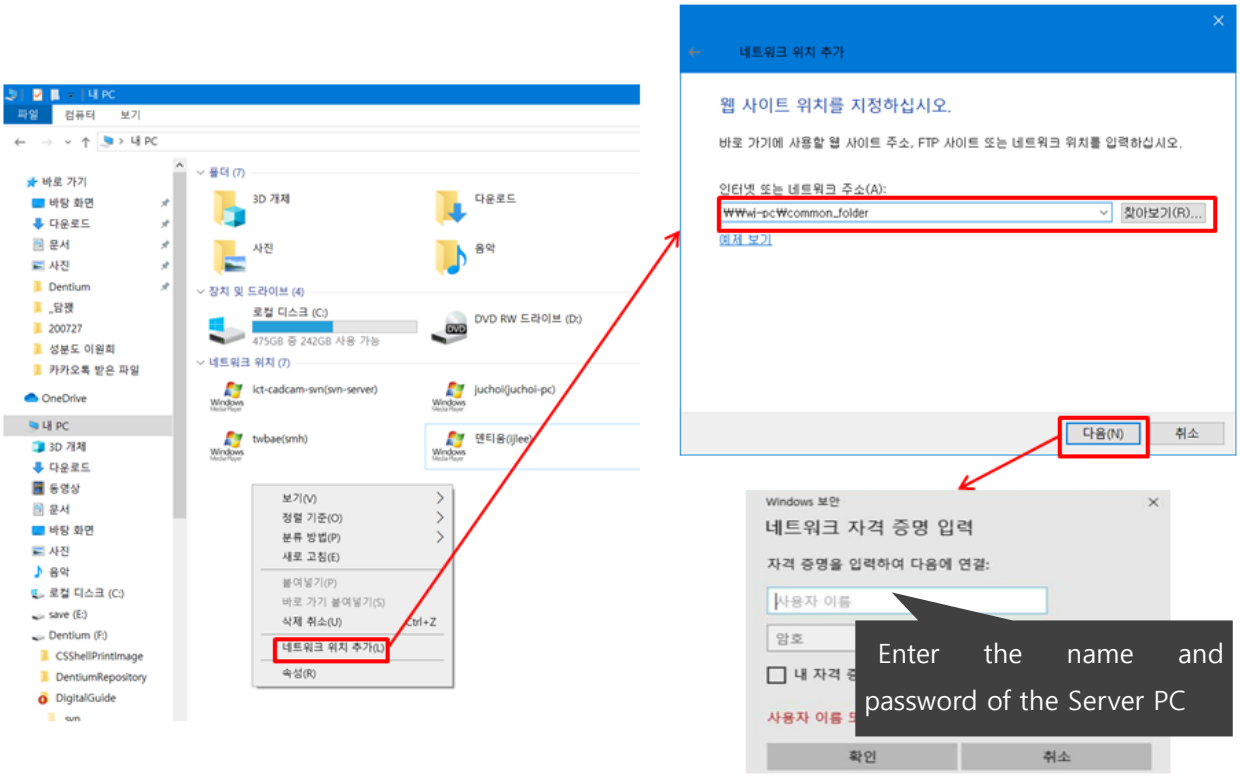
5.1 Creating a sharing folder on the Server PC

Create the folder, click the folder and click Mouse right button.

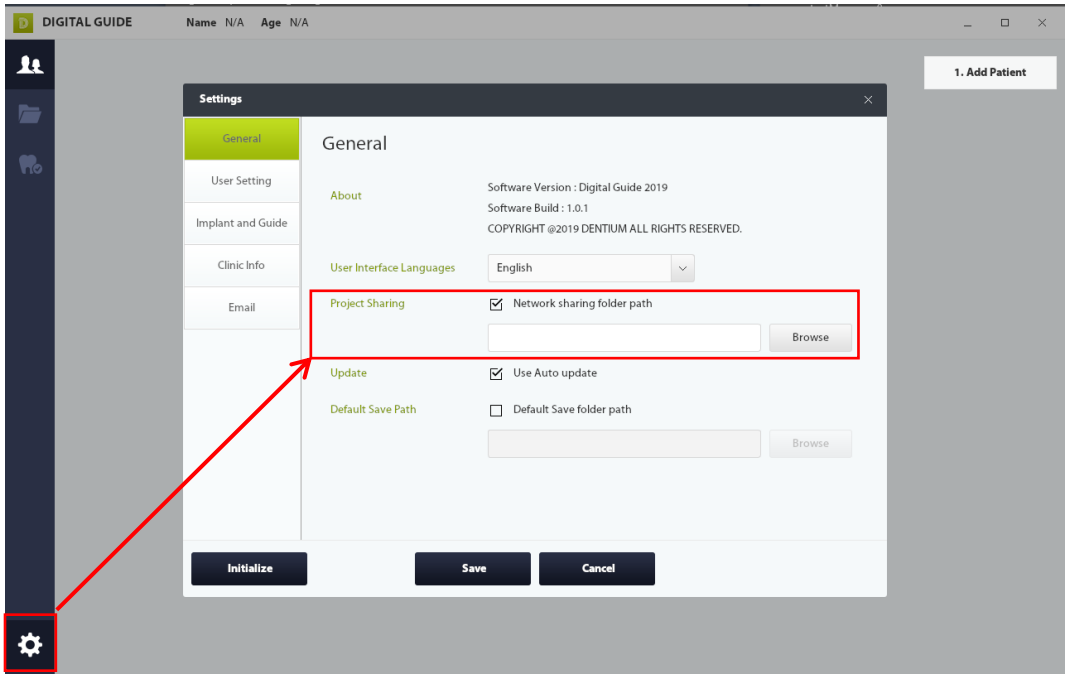


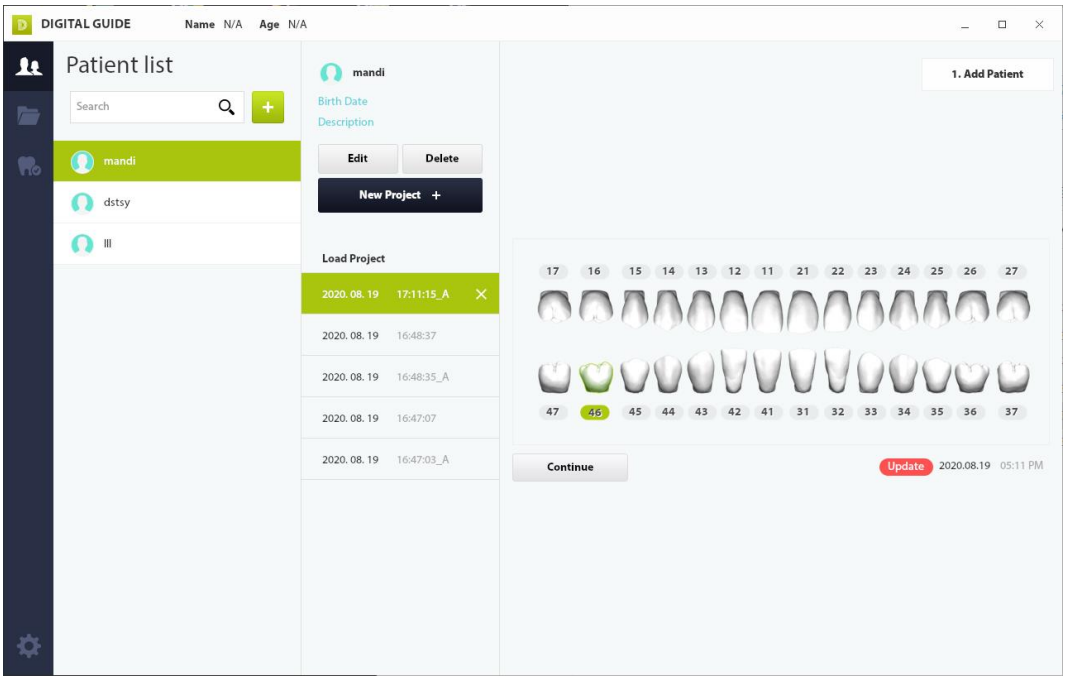
How to set the sharing folder on the Serve PC

5.2 Setting the sharing folder path on the Client PC



How to add the folder path shared on the Client PC

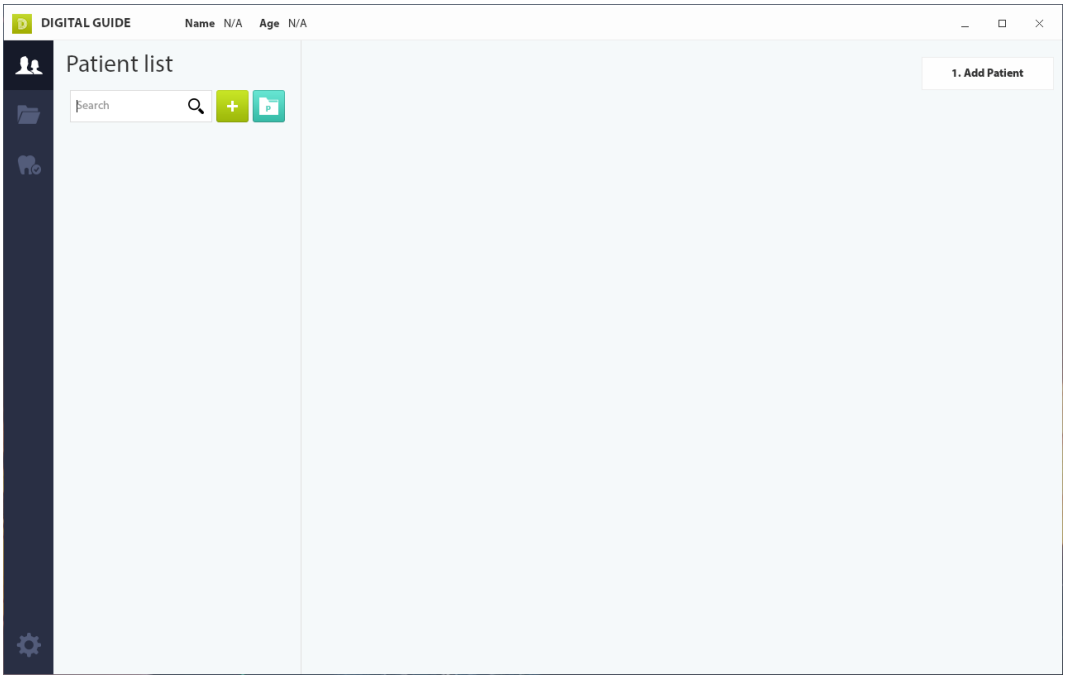




Set the sharing path on the Client PC and check the shared project

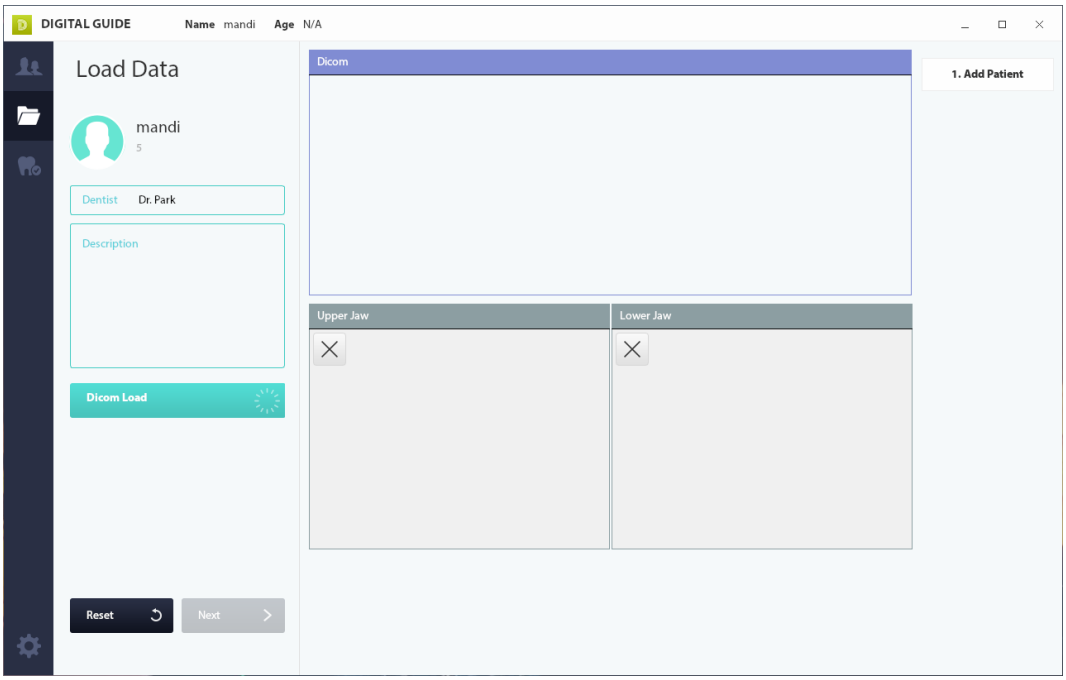
6 Function Execution Procedure

6.1 Initial execution screen



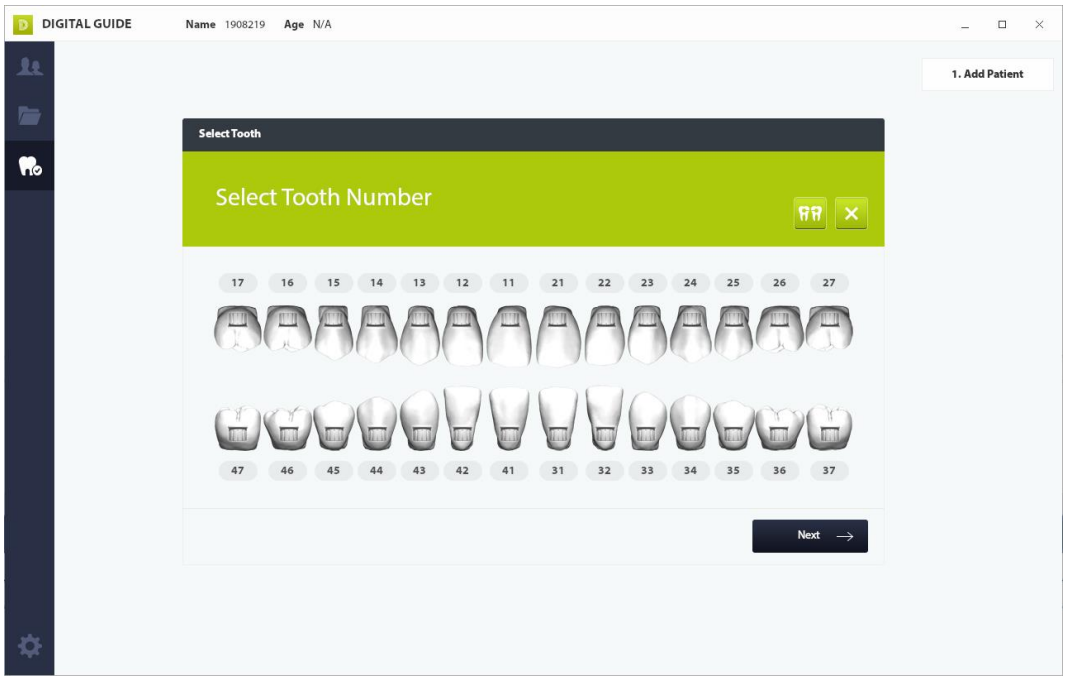
Initial Execution Screen of Digital Guide S/W

6.2 Data Opening (DICOM, STL)



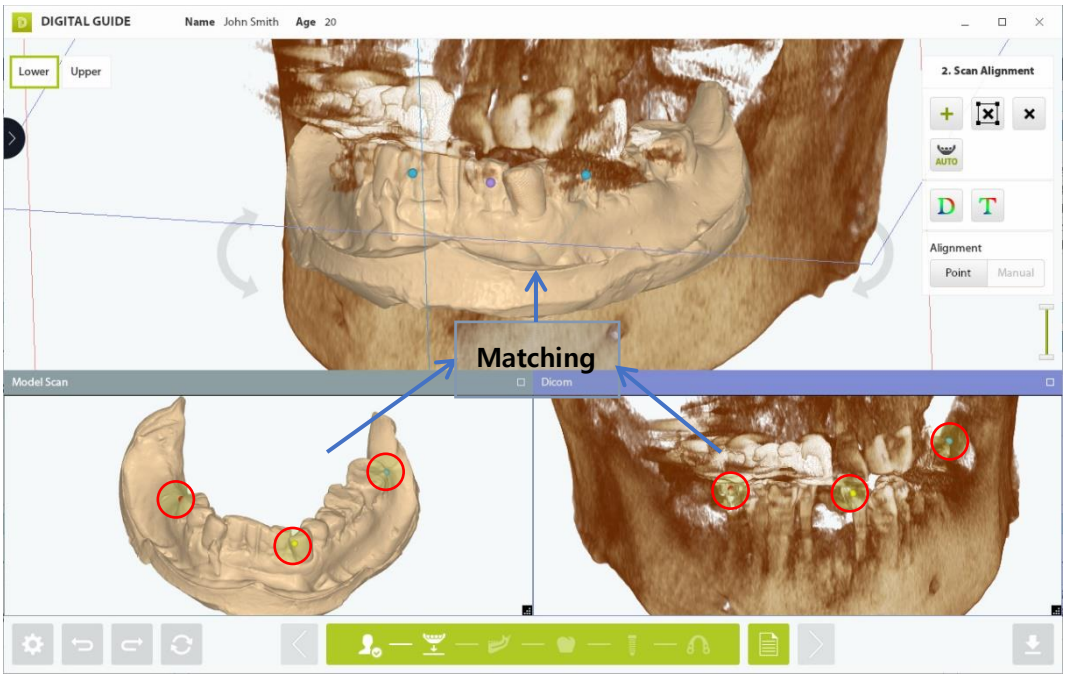
Select Data for producing the Surgical Guide

6.3 Tooth number selection



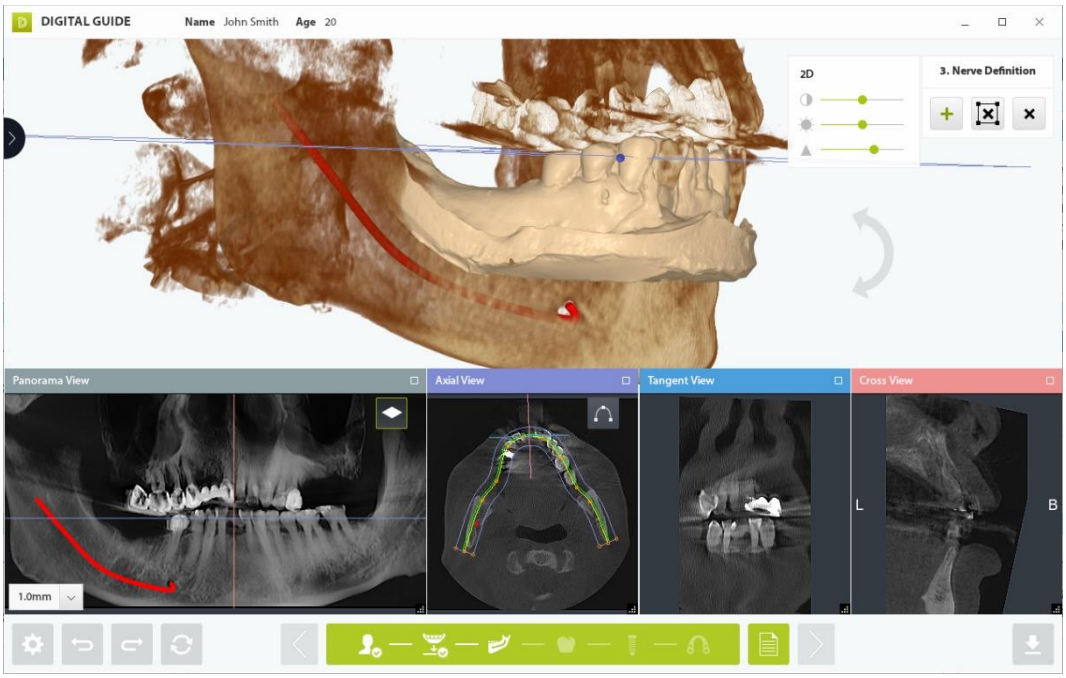
Select Tooth Number

6.4 Data Matching



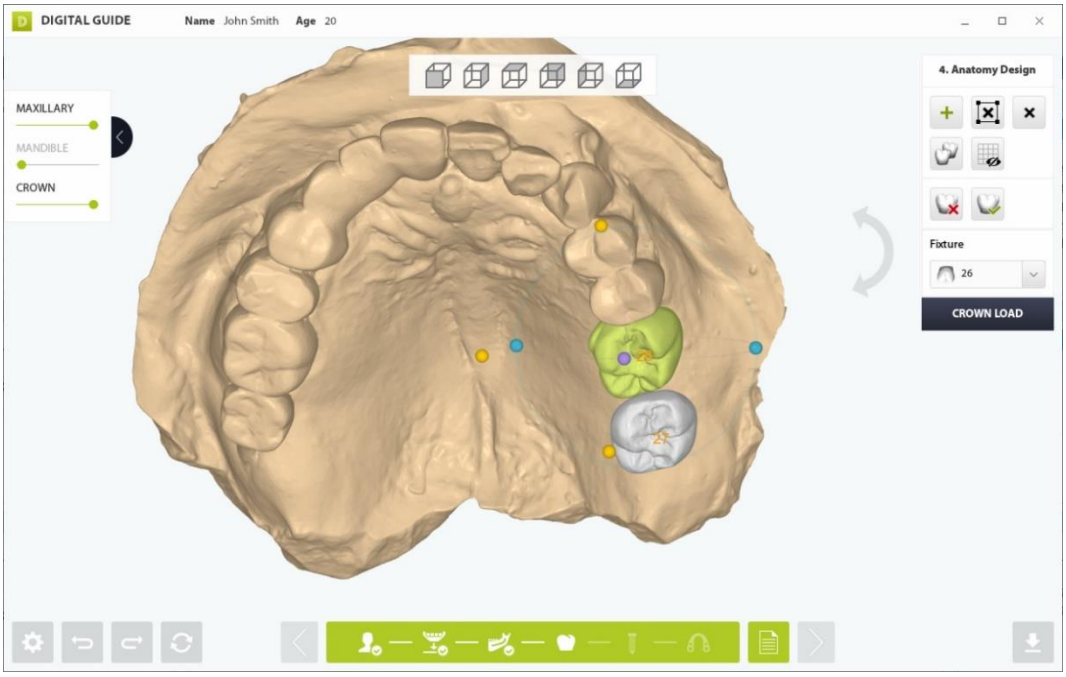
3 Data matching using points

6.5 Drawing the neural tube (inferior alveolar nerve)



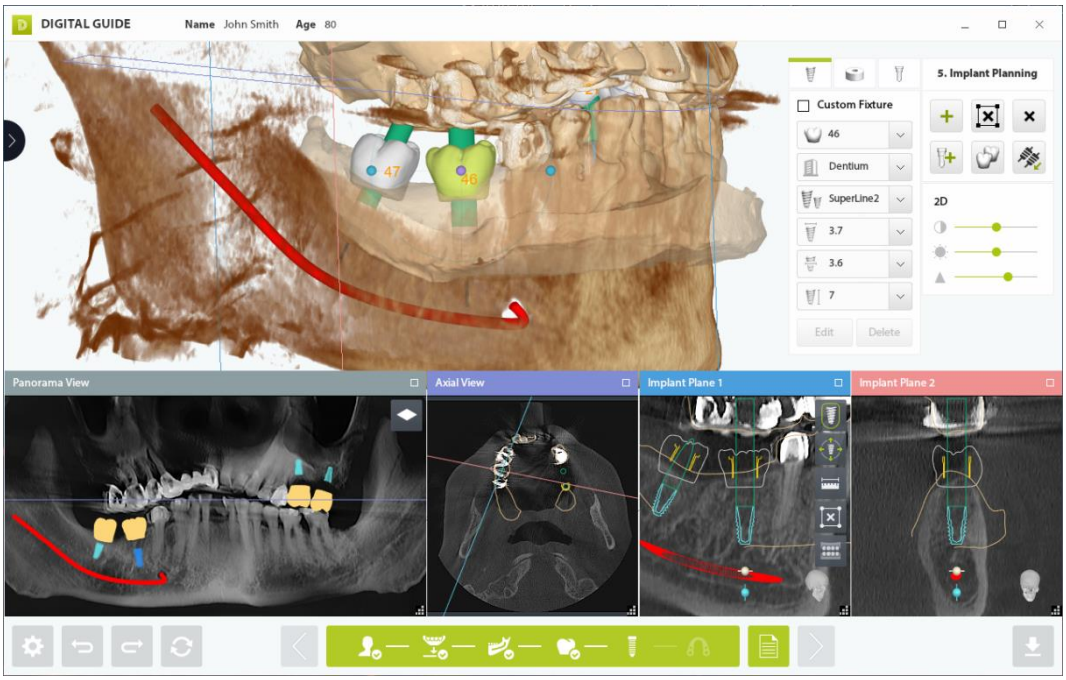
Drawing the neural tube

6.6 Crown simulation



Crown movement and rotation

6.7 Fixture simulation

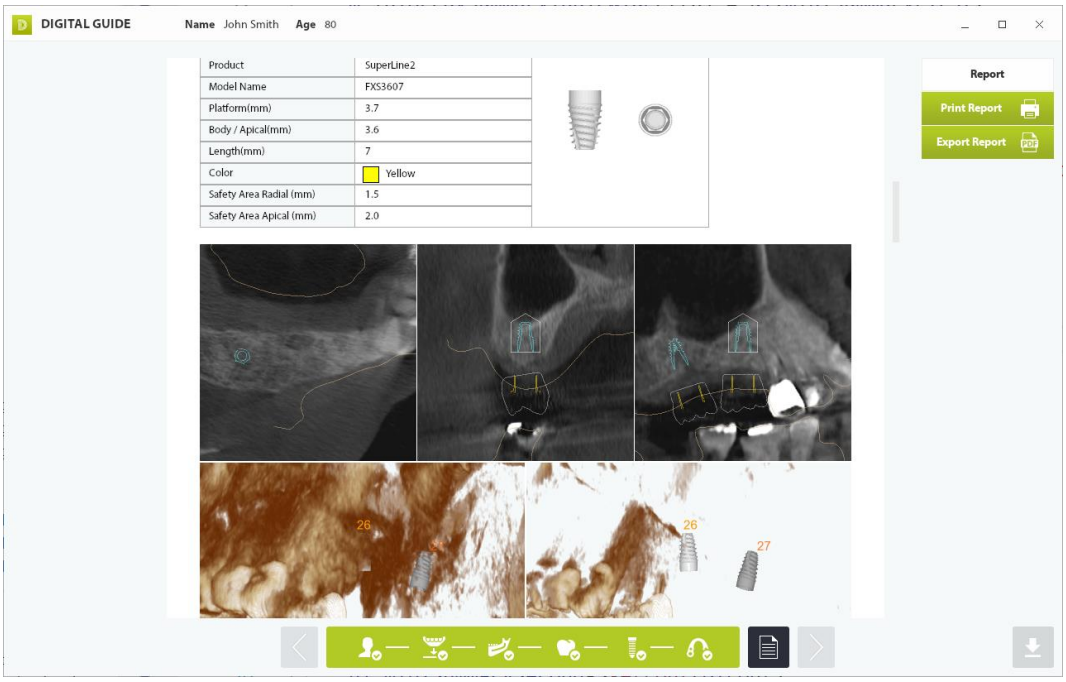


Fixture movement and rotation

6.8 Creating Surgical Guide

Set the surgical guide area and create deliverables

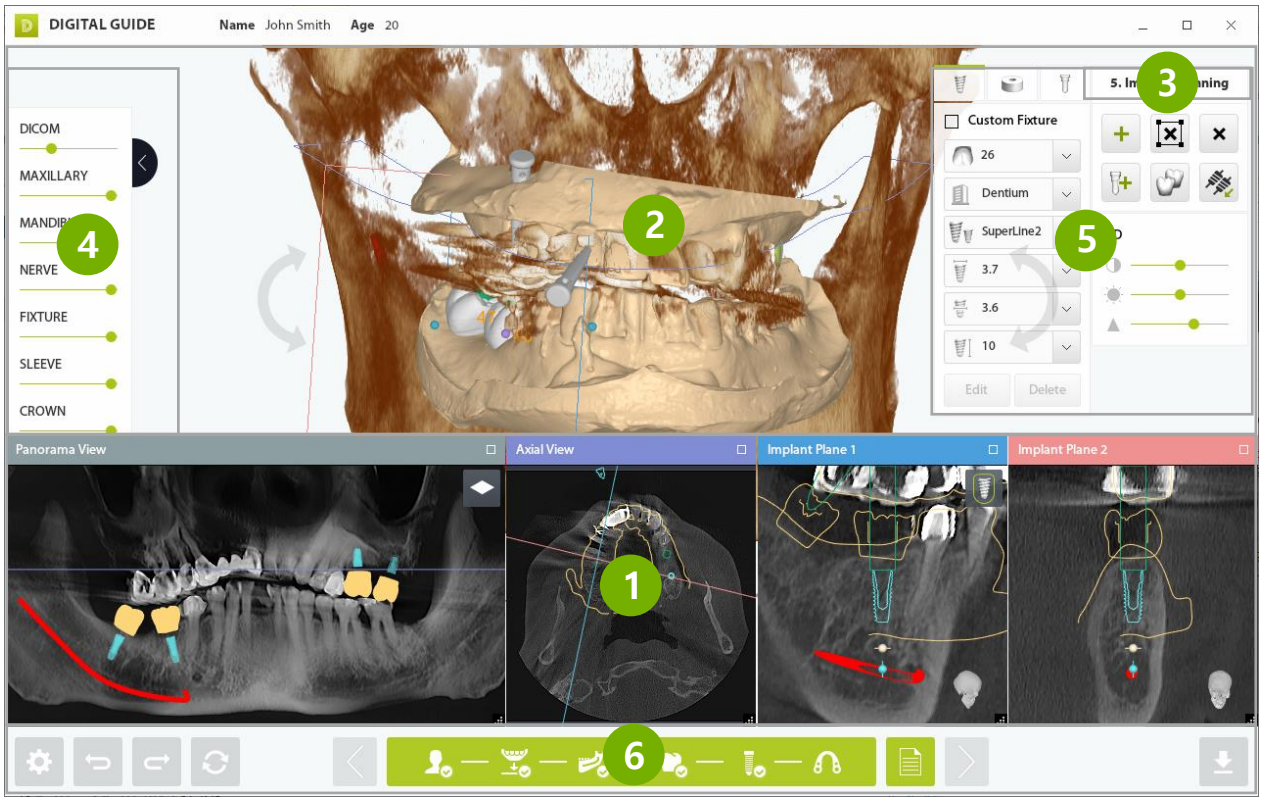
6.9 Report



Report form – Provide information necessary for surgery such as fixture

II Screen Structure

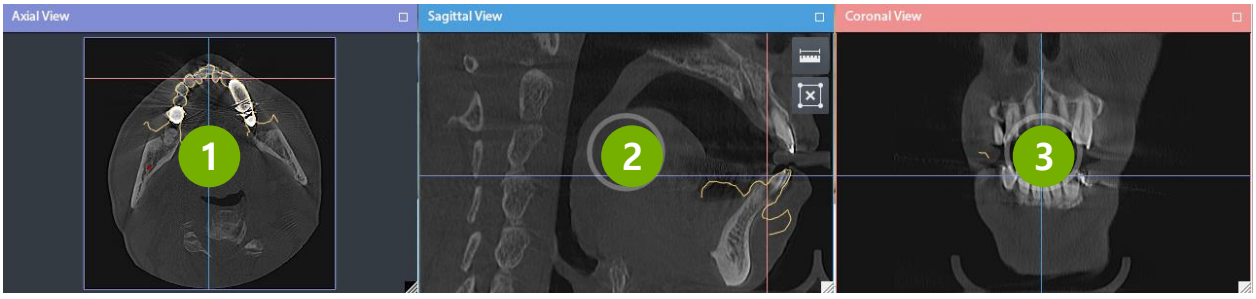
Digital Guide consists of ① 2D image, ② 3D image, ③ Work stage, ④ Video tool collection, ⑤ Toolbar, and ⑥ Step bar, and provides an optimal and intuitive user environment.



Entire screen configuration

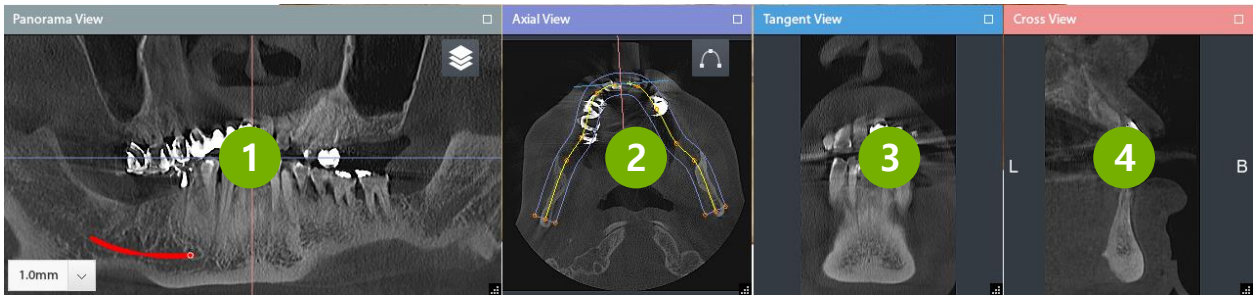
The screen configuration depends on the operation steps.

The cross-sectional image of the data registration stage consists of ① Axial, ② Sagittal, and ③ Coronal.



Configuration of matching Step Cross-Section

The cross-sectional image of the neural tube drawing stage is composed of ① Panorama, ② Axial, ③ Tangent, and ④ Cross.



Configuration of Neural Drawing Step Cross-Section

The fixture simulation step cross-sectional image consists of ① Panorama, ② Axial, ③ Fixture center cross and ④ tangent.

Configuration of Fixture Simulation Step Cross-Section

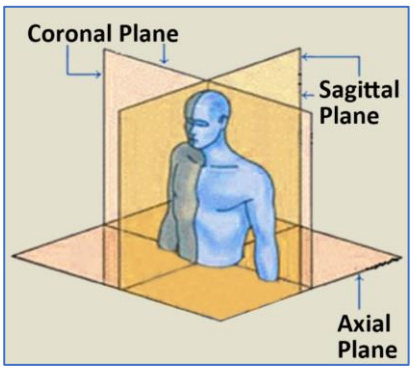


Fig. 13 Description of Axis

The operation step consists of total 6 steps, and the completed operation is marked with a check mark, and the current progress step is displayed as shown in the figure below. In connection with the operation step, ① the tool window is changed, and functions suitable for each step are displayed.

Operation step and corresponding tool bar

III How to Operate

Mouse: provides a consistent environment that allows you to quickly finish the operation in the 2D / 3D image area with the mouse operation only.

	Left button			Wheel		Right button	
	Click	Double click	Drag	Scroll	Drag	Click	Drag

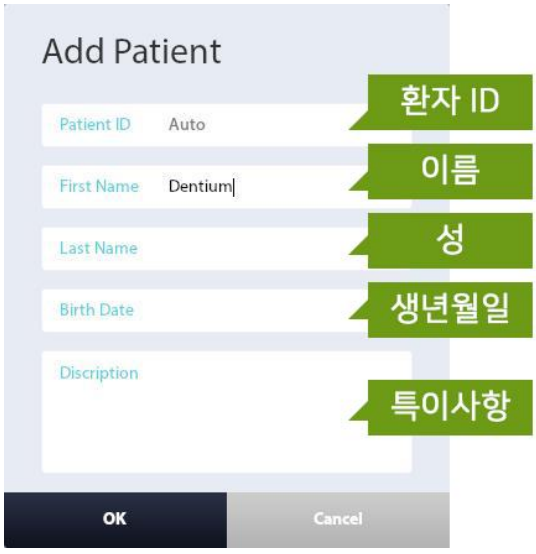
2D image	measurement/Notes Start/Finish	Function finish (Neural tube/Arch line)	Movement of fixture/neural tube/measurement	Cross-section move	Image move	None	Image Zoom-out/ Zoom-in
3D image		None	None	Image Zoom-out/ Zoom-in			Image turn

Table 1. How to operate the mouse, apply to all areas

IV Description of detailed functions

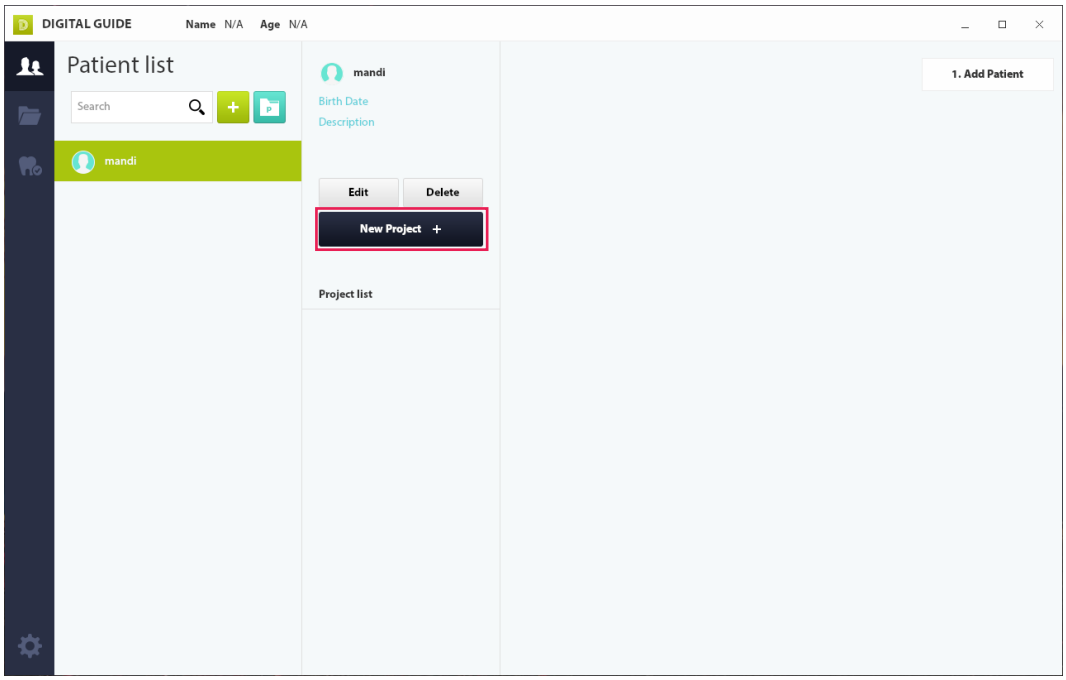
1 Patient registration and project creation

1.1 Patient Registration and Creation



Patient registration

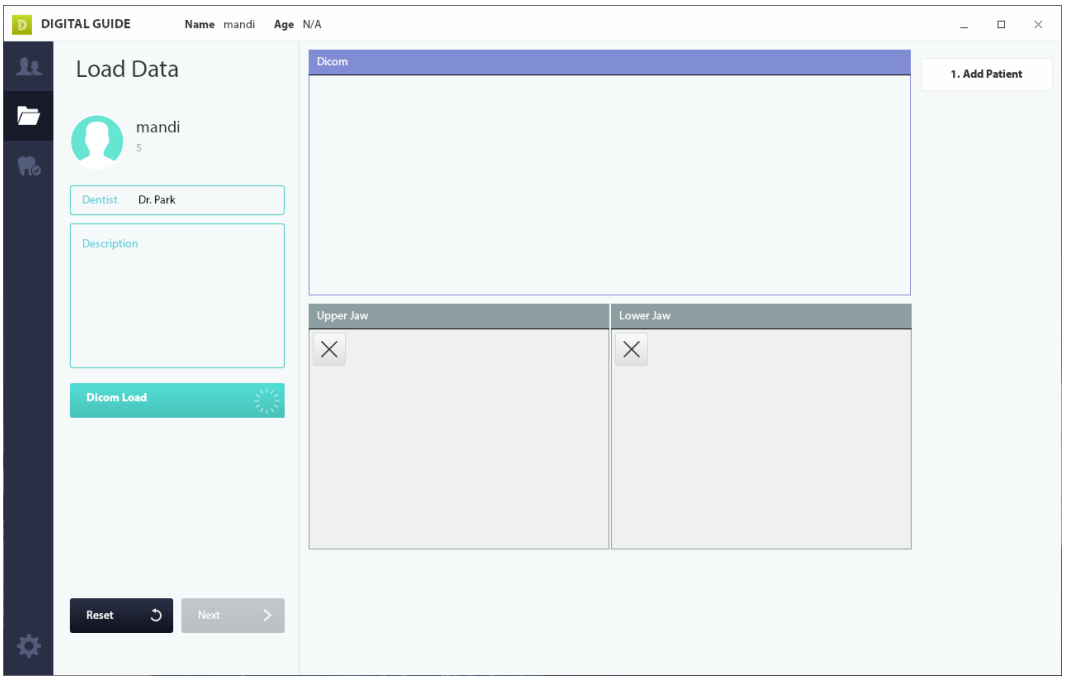
1.2 Project creation



Project creation

1.3 File opening (DICOM / STL)

Import DICOM (oral jaw) and model (upper jaw, lower jaw) files.



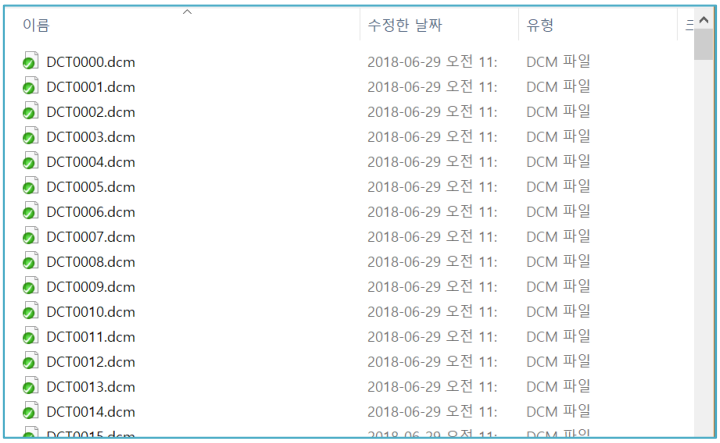
File opening

Click

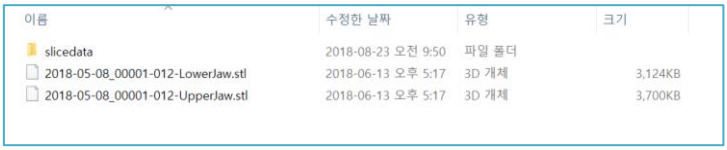
button to pop up the window that selects the files and you can select the desired file.

Due to the nature of DICOM data, there are several *.dcm files in one folder. Regardless of the file name and order, clicking one dcm file performs the open function.

Selecting the upper jaw or lower jaw (.stl, .obj) loads the model data.

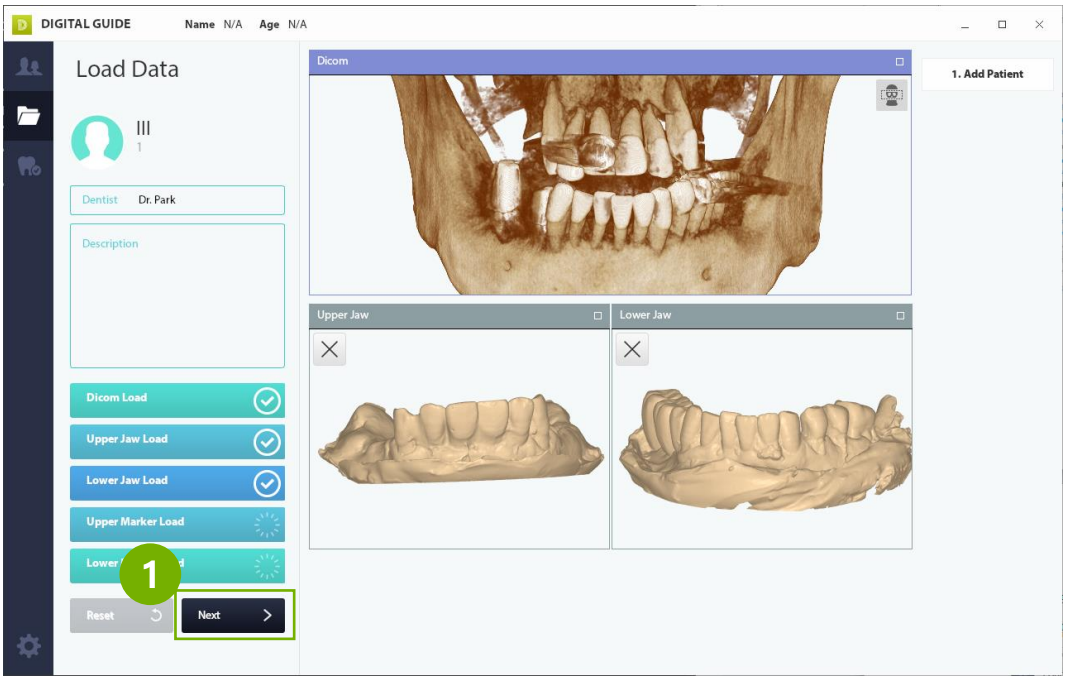


Select a random file regardless of *.dcm file selection and order



Select *.stl(or *.obj) file

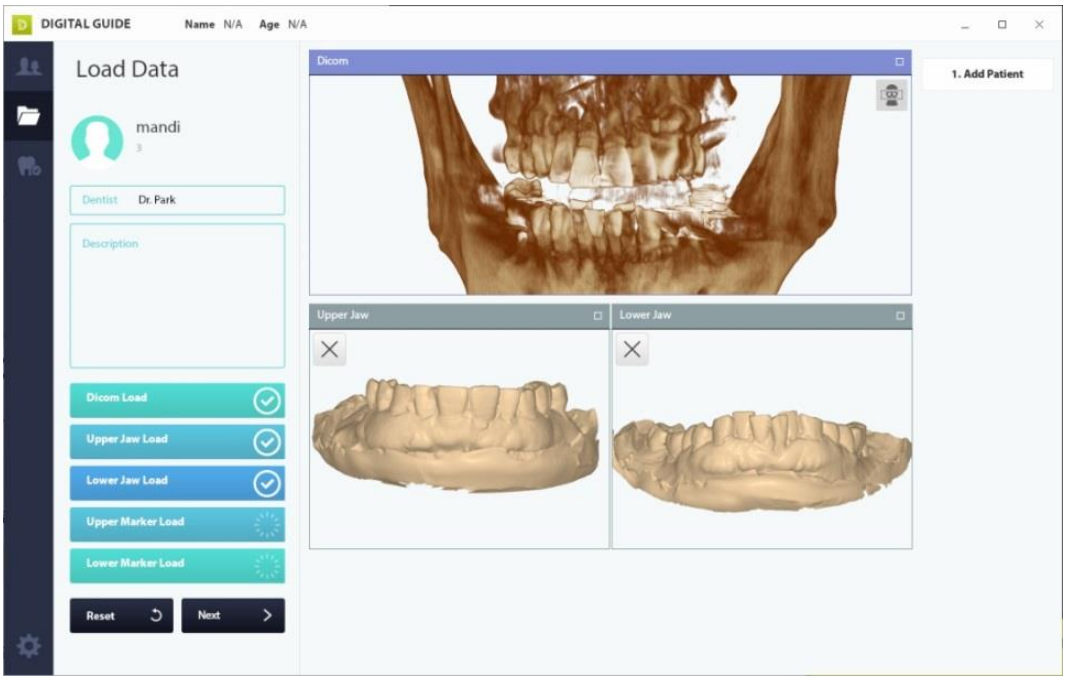
When both data are loaded successfully, Next button ① is enabled. Press this button to go to the next step.



Data loaded successfully. Next button is enabled.

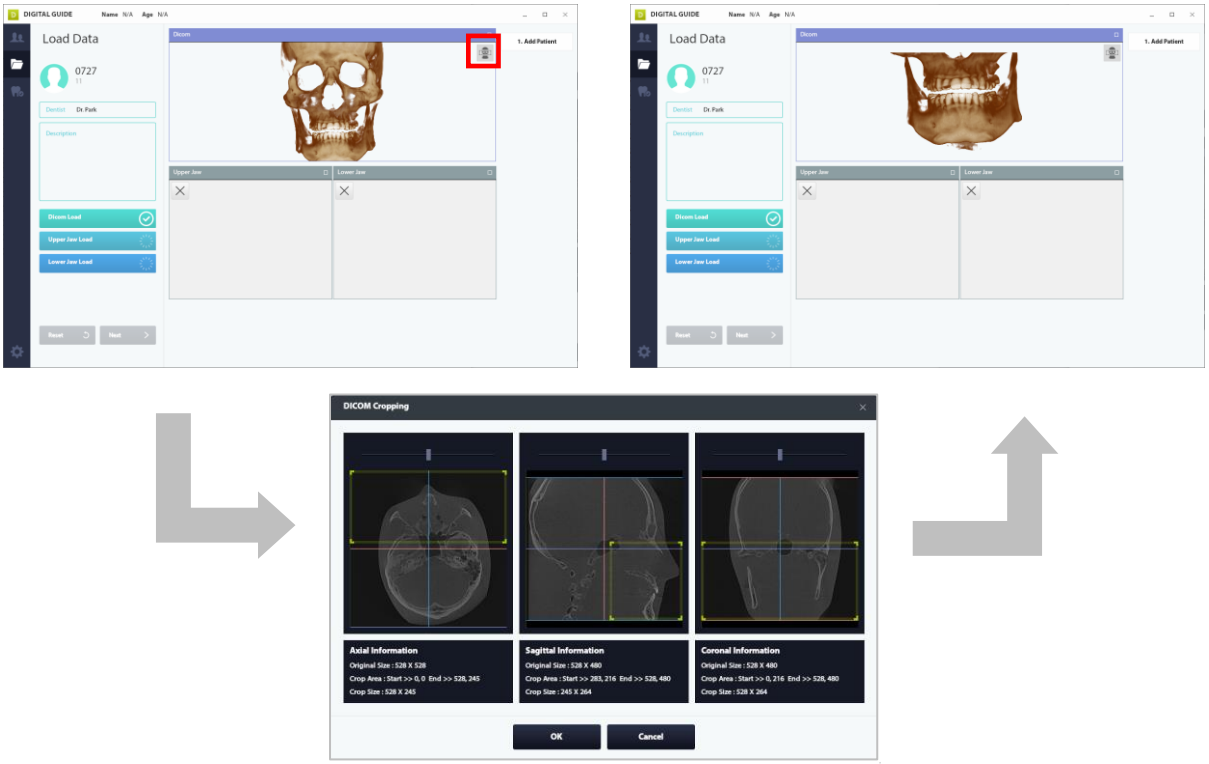
If reloading is required after loading the upper jaw or lower jaw data, press button to delete the data and then reload it. Pressing

button will delete all data.



Data deleted and Reset button enabled

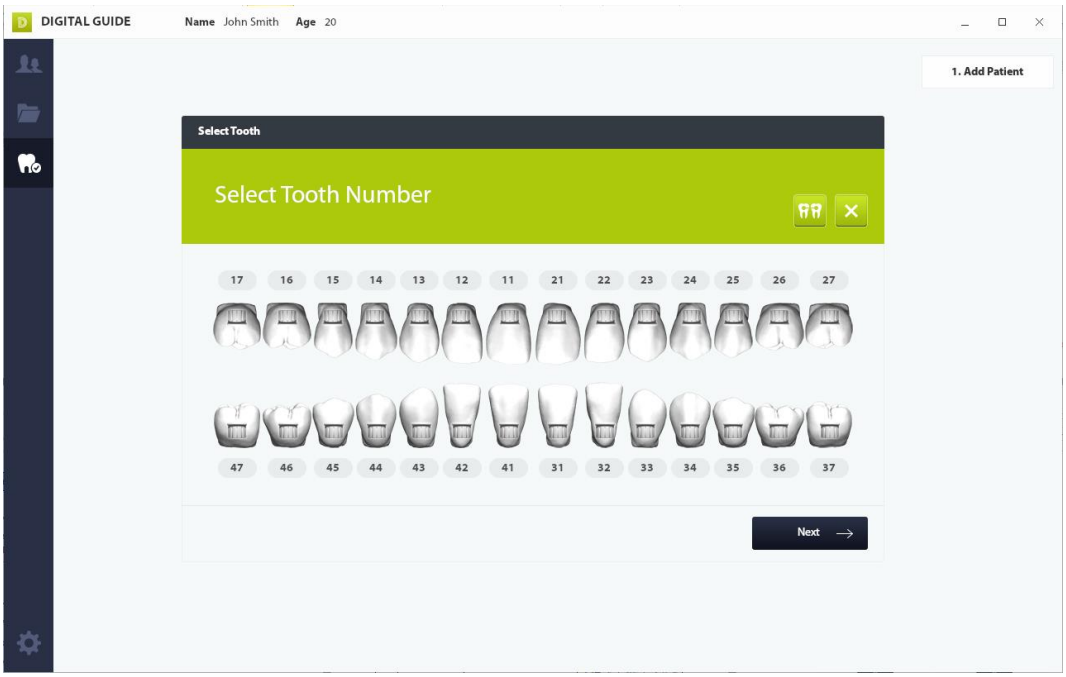
After importing DICOM data, you can use the DICOM Cropping function by pressing button. Alternatively, it can be used by enabling the 'DICOM Cropping' option in User Setting.



DICOM Crop is enabled

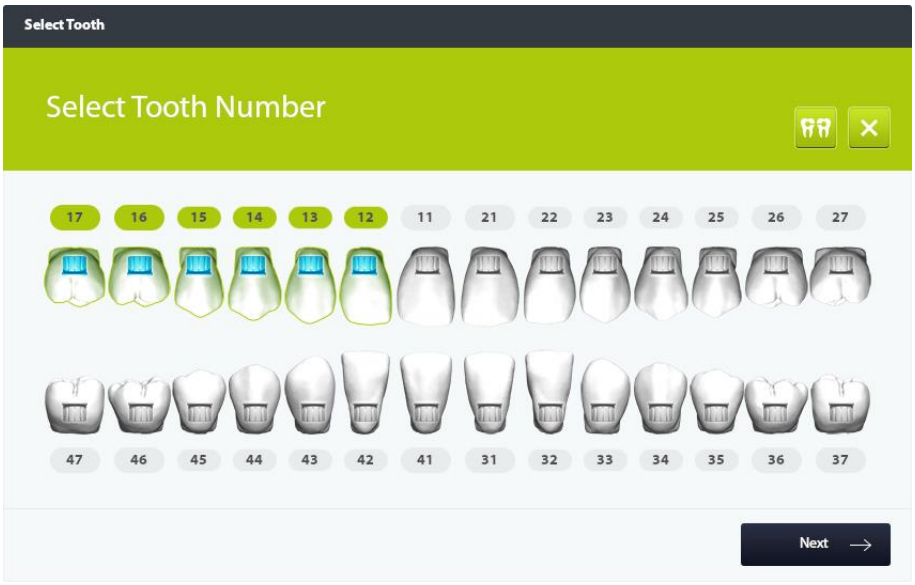
When data loading has been completed, the tooth number selection screen for generating the surgical guide appears.

After selecting the tooth number, the Next button moves on to the next step.



Tooth Number Select Screen

Click the tooth number or crown as shown in the following figure to activate the crown and sleeve.

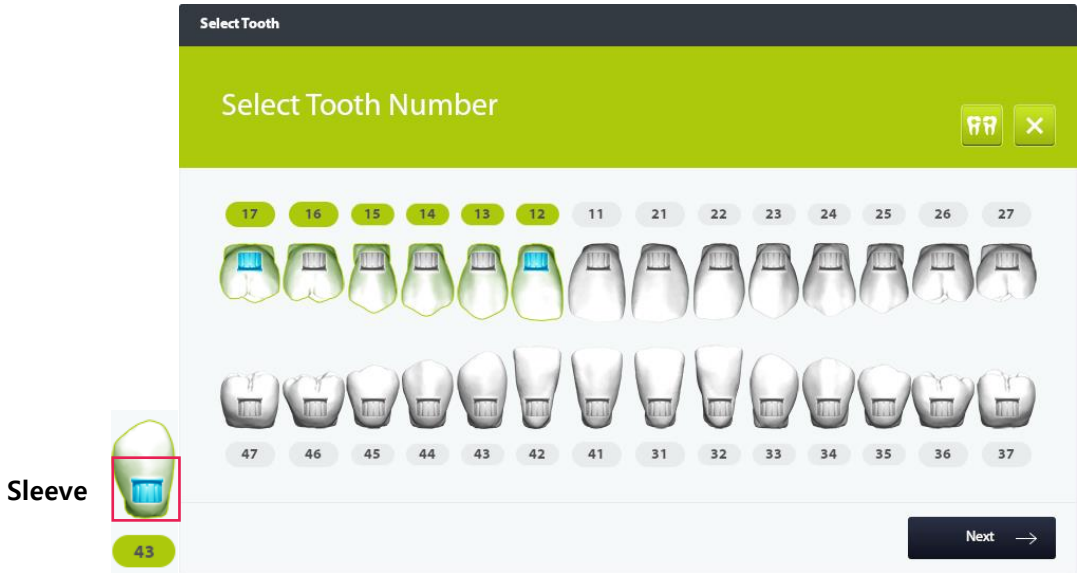


Tooth number select

Clicking the sleeve disenables the sleeve and only the crown is selected.

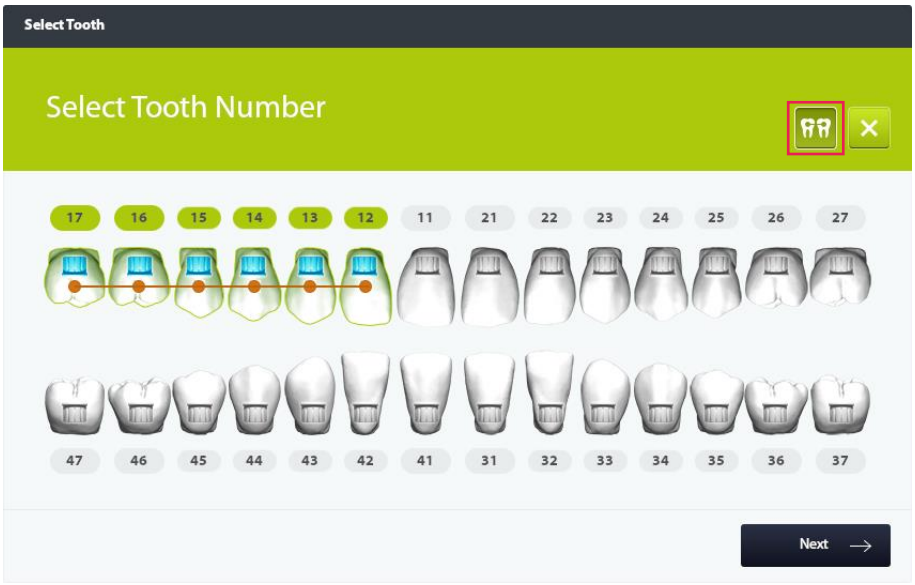
If only crown is selected, sleeves and fixtures will not appear in subsequent steps, nor will they appear when creating a surgical guide.

To find the tooth number that requires surgical guide drilling, select the crown + sleeve without fail.



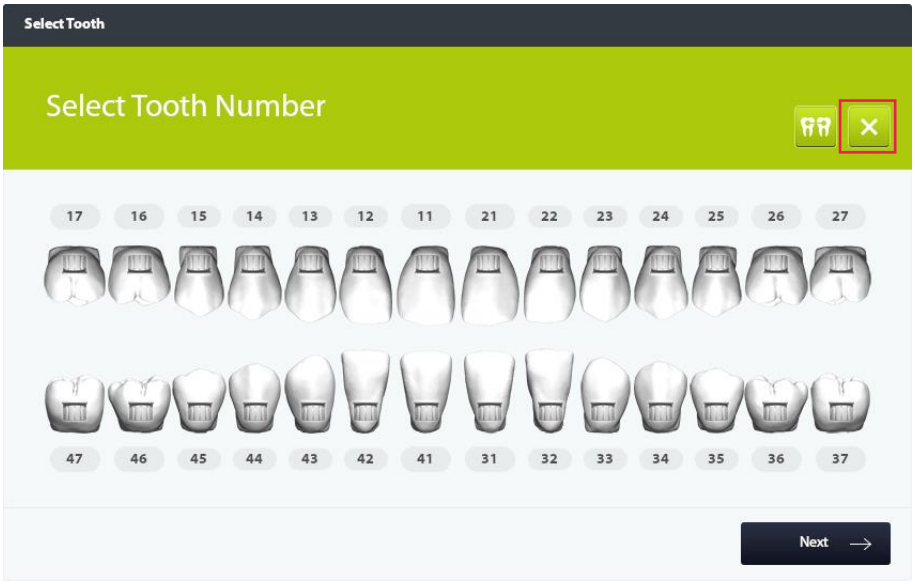
Click the sleeve to release the tooth number

You can use the crown bridge function by pressing button on the top right. After enabling the button, click the mouse at the starting point of the bridge and move the mouse up at the last point to enable the bridge function.

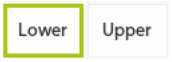


Crown bridge creation

Pressing button releases selection of all bridge teeth.



Bridge teeth select release

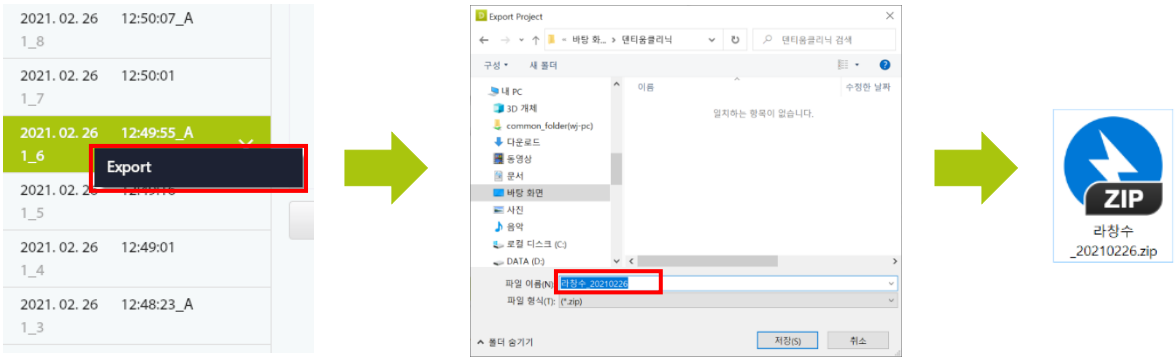
When simulating the upper jaw / lower jaw at the same time, you can use 

button to simulate.

1.4 Export a project

This is a function to save the project processed to the desired folder.

Click the project to export in the project list and click the Export menu. If you enter the location and file name to save in the file explorer window, the data and setting files related to the project will be created as .zip files.

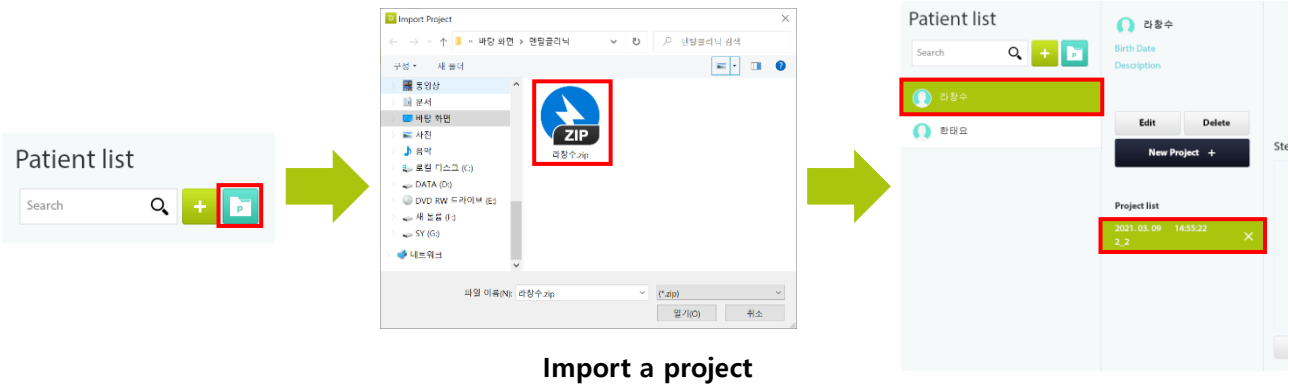


Export a project

1.5 Import a project

This is a function to import the project exported.

Click the Project import button and select the project .Zip file to import in the file explorer window. When the project loading has been completed, a new patient is added to the patient list.



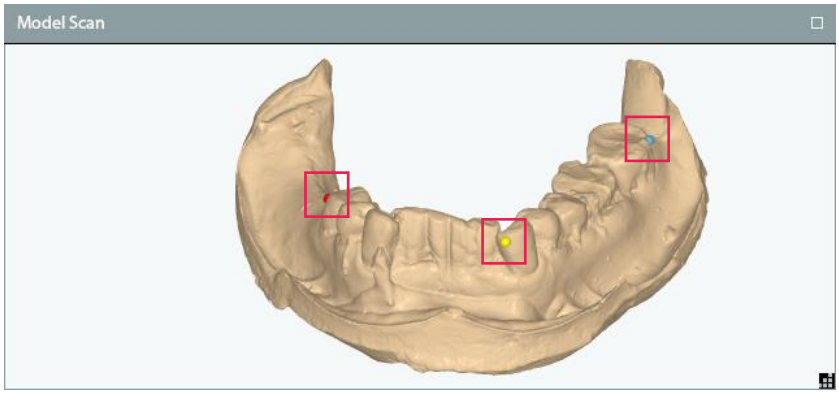
Import a project

2 Data matching

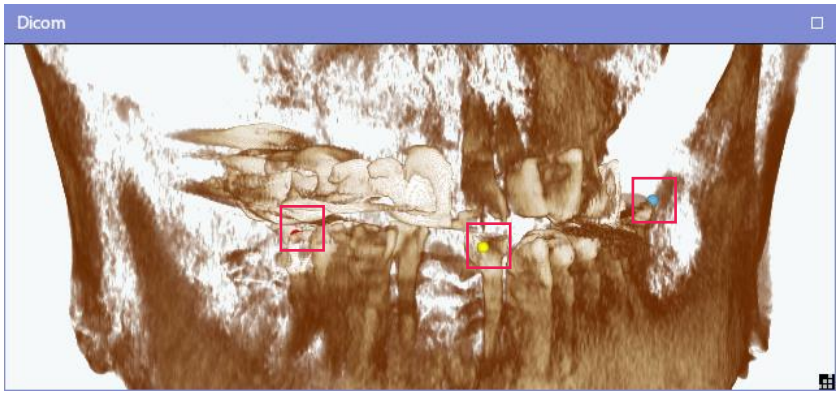
CBCT data (DICOM) is used to utilize the patient's anatomical information, and model data (.stl, .obj) is used to utilize the surface condition of the patient's oral structure. Using both data, it is possible to create an accurate surgical position and surgical guide.

2.1 3-Point matching

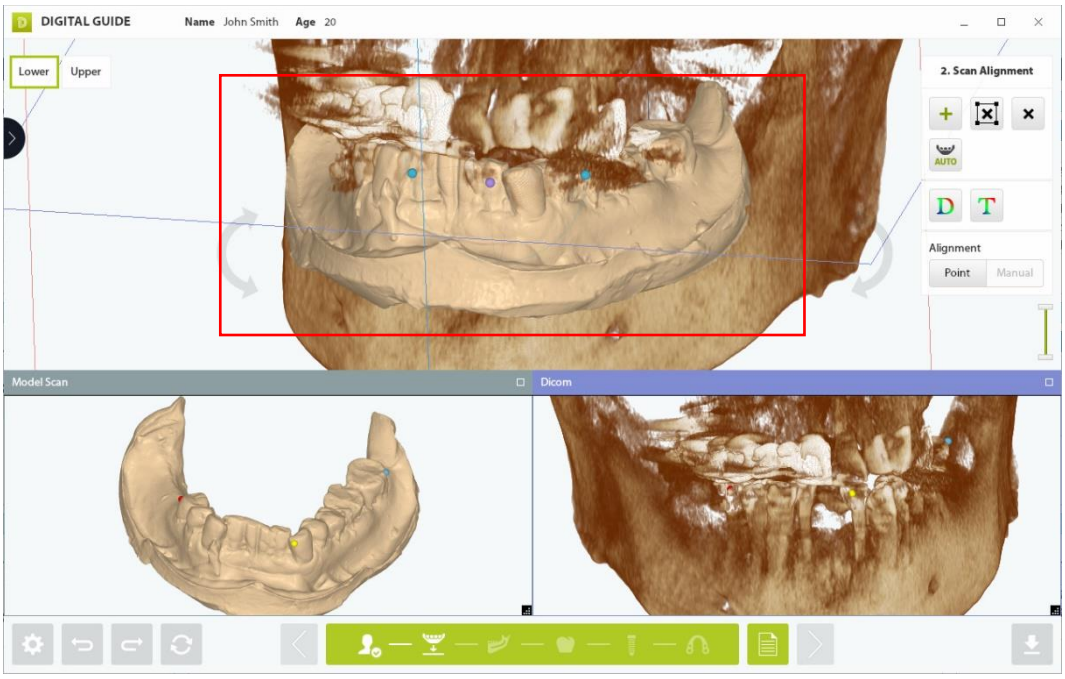
Three points are taken on each data, and the data is matched to one space based on the location of the points. When setting points, the sequence and position must be set at the same position of the two data for accurate data matching.



Set 3 points on the model data

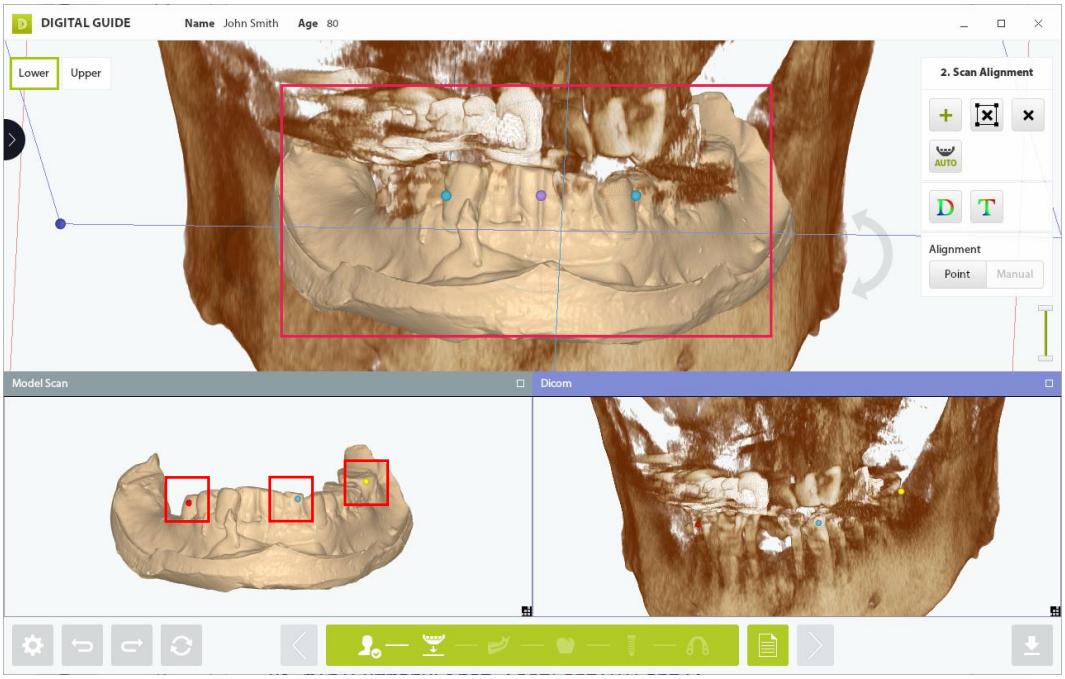


Set 3 points on CT data



Data matching result

**** When setting points, it is advantageous to increase the matching accuracy to set the distance of 3 points as far as possible.**

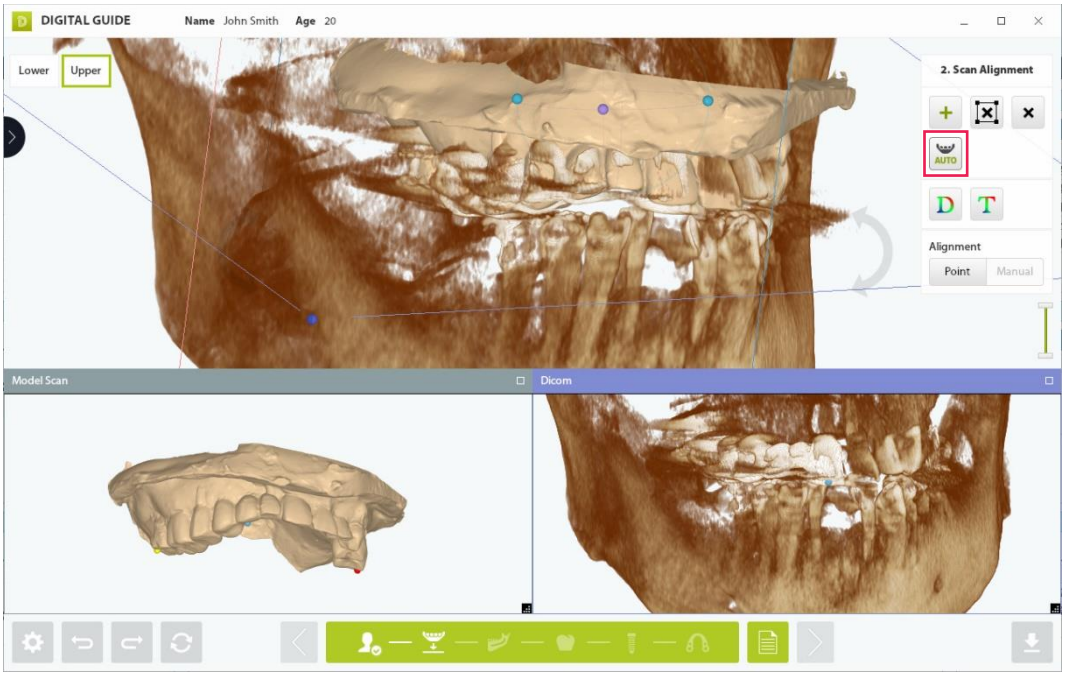


: Delete entire matching points

: Delete the previous points during setting the matching points

2.2 Automatic matching

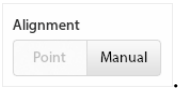
If you click the Auto Matching button , it automatically performs matching without taking 3-points.



- Limitations on the automatic matching function

1. In the case CT image and scan model data are different each other.
2. In the case the patient has an edentulous jaw or less than 3 teeth.
3. In the case the CT image has lots of noise or is cut (partial)
4. Using graphics other than those of NVIDIA do not support the automatic matching function.

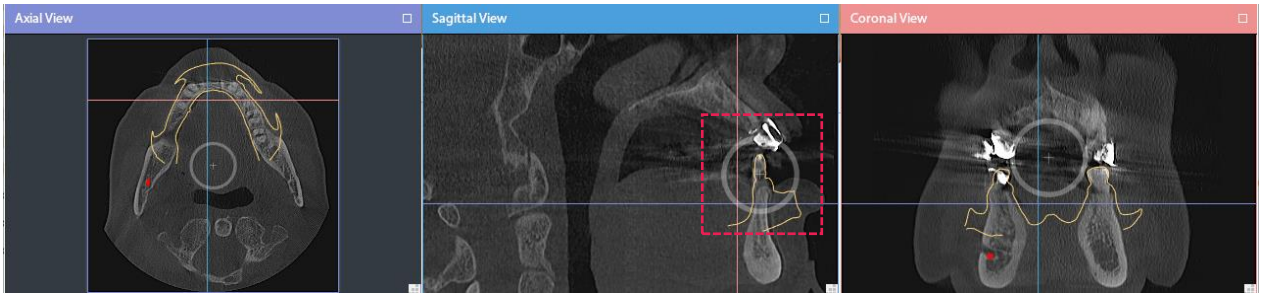
2.3 Manual matching

You can increase the matching precision through manual fine adjustment by pressing the Manual button 

. The boundary line (yellow solid line) of the model data will be displayed on the 2D image. At this time, you can rotate this line by mouse click or rotation control.

Move the position by selecting the model boundary line (yellow solid line)

You can change the rotation center of the model data by clicking button, or Alt + Mouse Left button, or double clicking the Mouse left button.

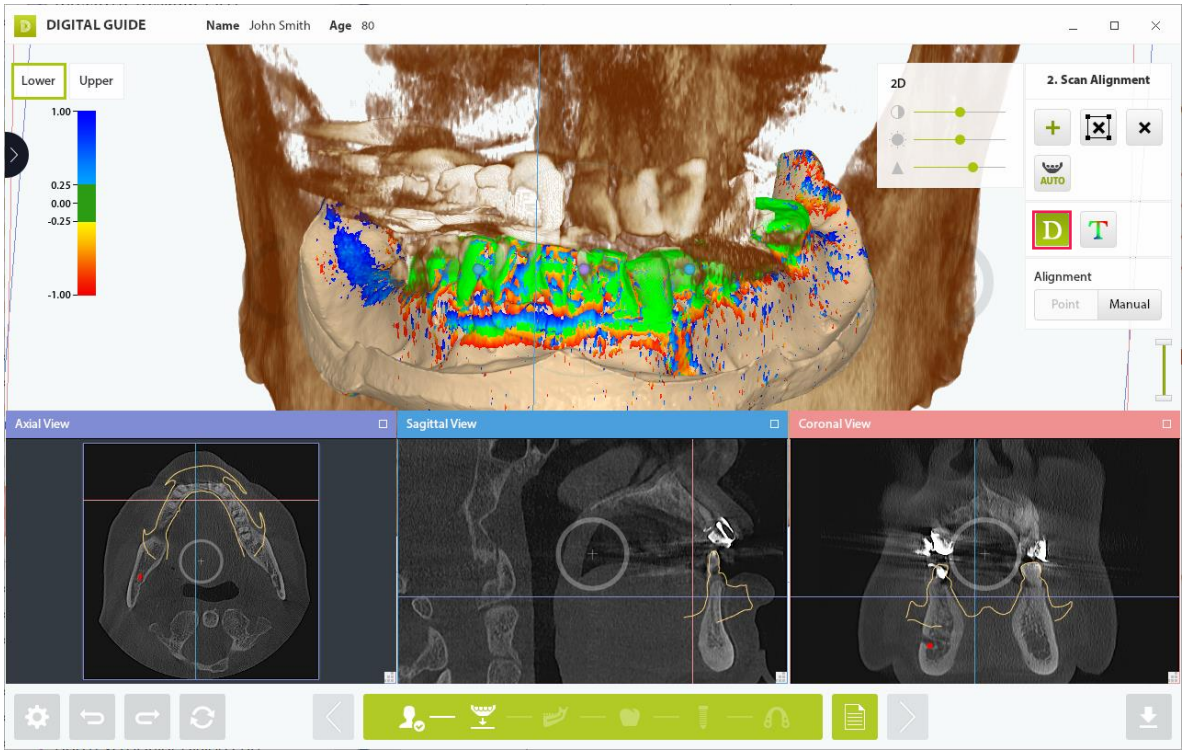


Rotation center movement

The fine adjustment function can be used by using the Up/Down/Left/Right arrow keys on the keyboard.

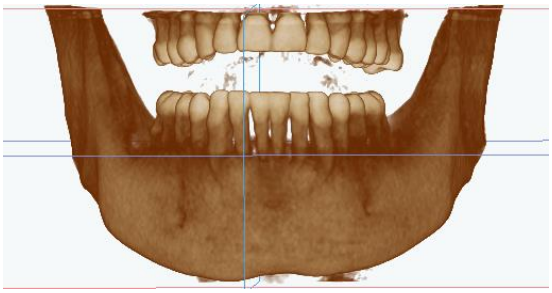
Model data can be moved up (Up), down (Down), left (Left), and right (Right). Pressing the Ctrl key and pressing the Left button turns it to the left, and pressing the Right button turns it to the right.

Pressing button visualizes the matching precision.

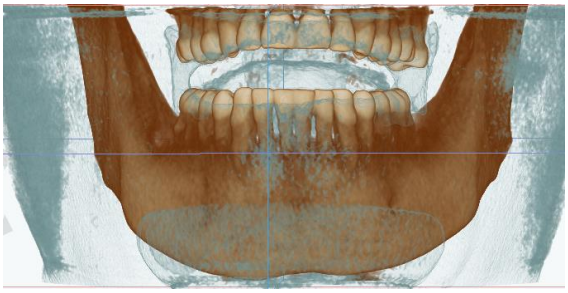


Visualize the matching precision

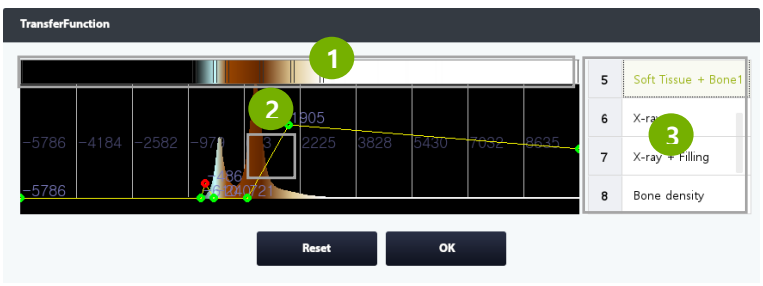
Pressing button can adjust the Transfer Function value.



Default



Soft Tissue + Bone1



The density of the 3D image generated by DICOM depends on the value of the HU (Hounsfield Unit), and this density consists of skin, bones, etc., which are the reference for measuring the density. By applying a color to such reference value, the user can see the desired color and structure.

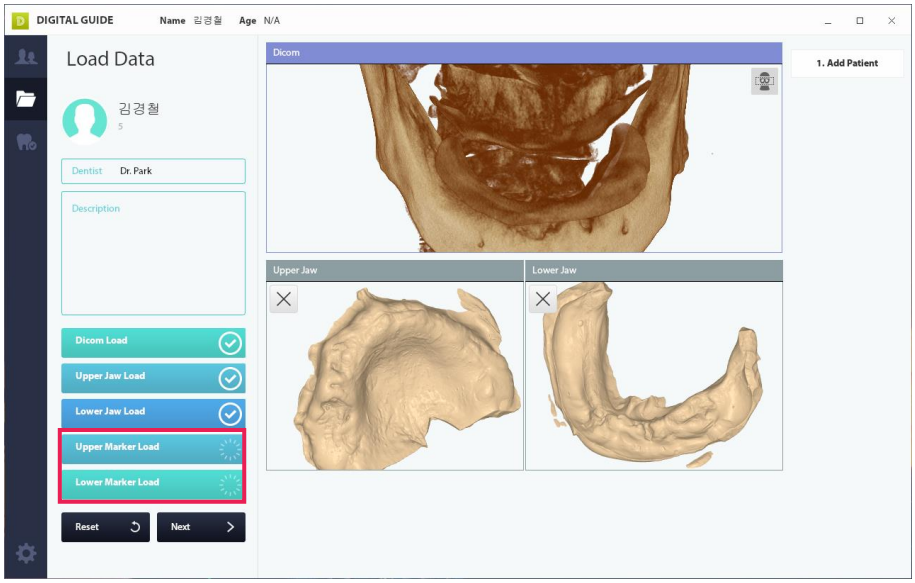
① Color : Click the box to change the color application range by specifying or moving the color.

② HU : Change the application range by changing the point of the line.

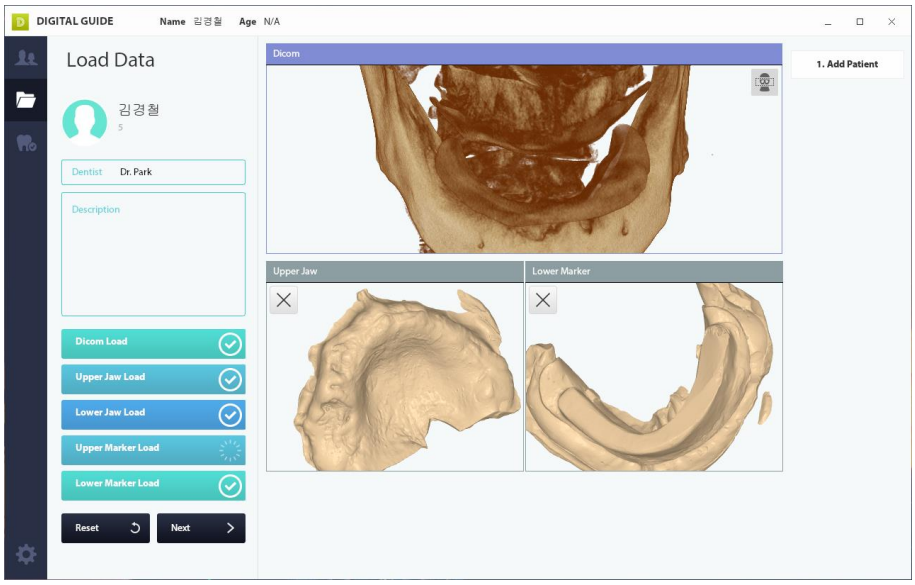
③ PRESET : Apply the specified color and range at once.

2.4 Edentulous jaw matching

This is a function to additionally load marker data when it is difficult to match between CT-models due to no teeth. This function imports CT and STL data taken by biting a jig with a marker in the mouth and performs matching.



If load the model data of the upper and lower jaws, the button that imports the marker data will be enabled.

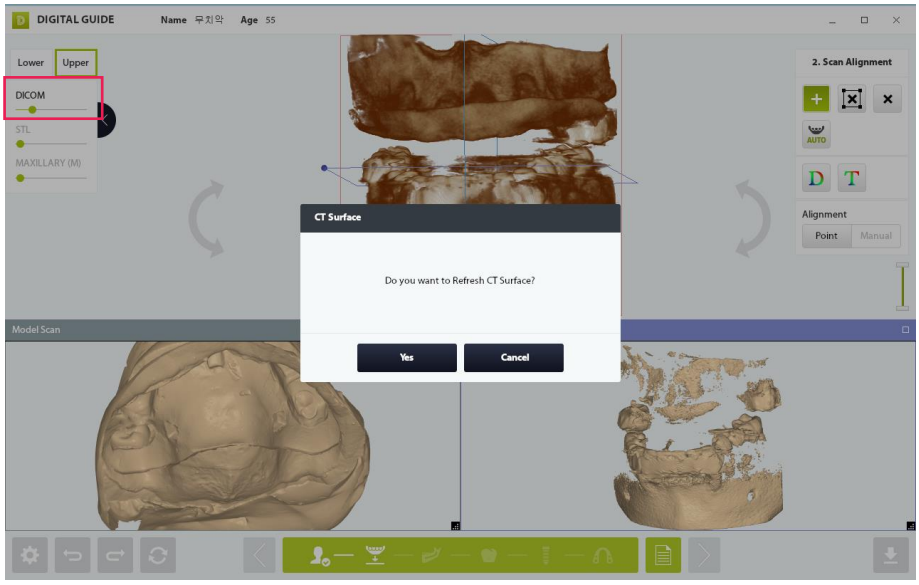


Loading the marker data of the lower jaw

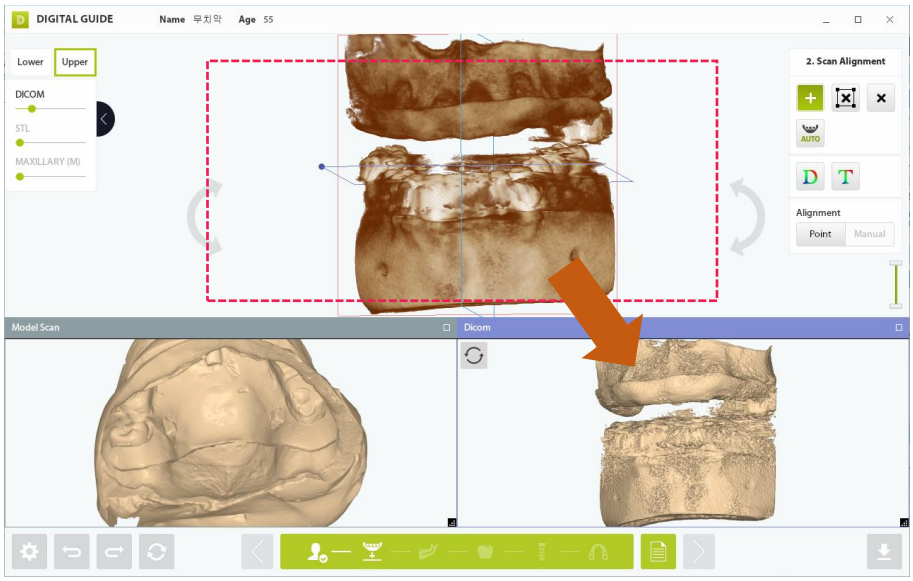
How to re-extract CT Data for edentulous matching

1) Adjust Dicom transparency to extract CT Data using DICOM Slide

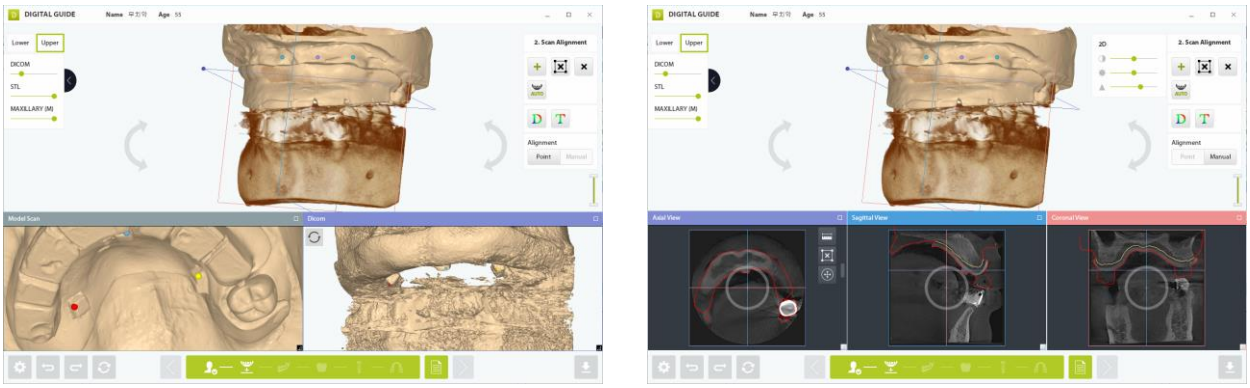
2) : RE-extract the file on Dicom window in the form of CT Data seen in the 3D screen.



Message box to re-create the CT surface



STL re-created on CT



Matching result using the marker data

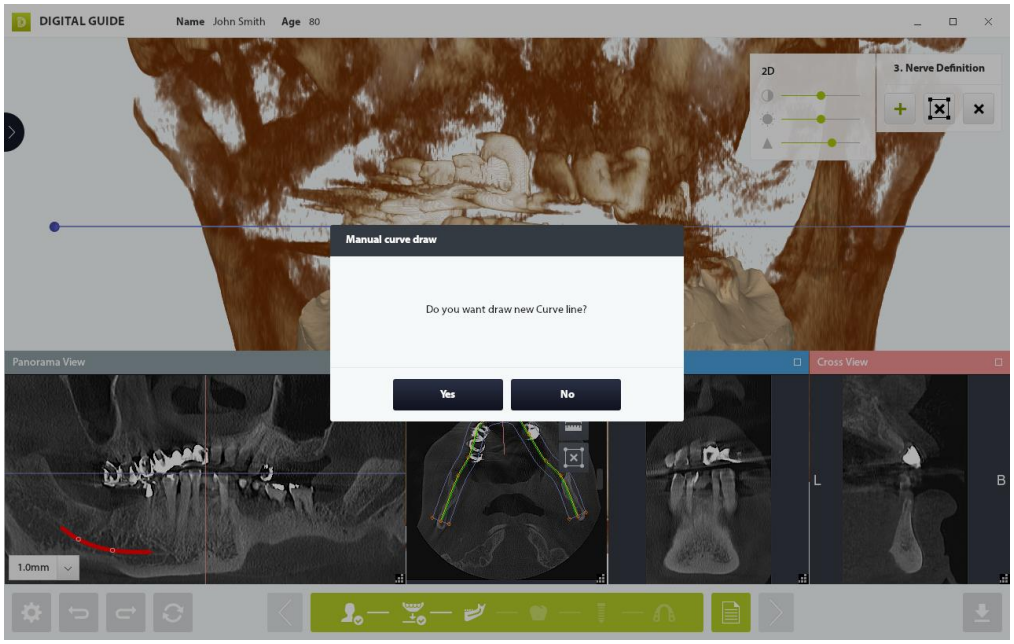
Automatic matching does not operate for the edentulous jaw

Warning: If data is not matched, it is not possible to enter the stage of the surgical guide creation.

3 Neural tube simulation

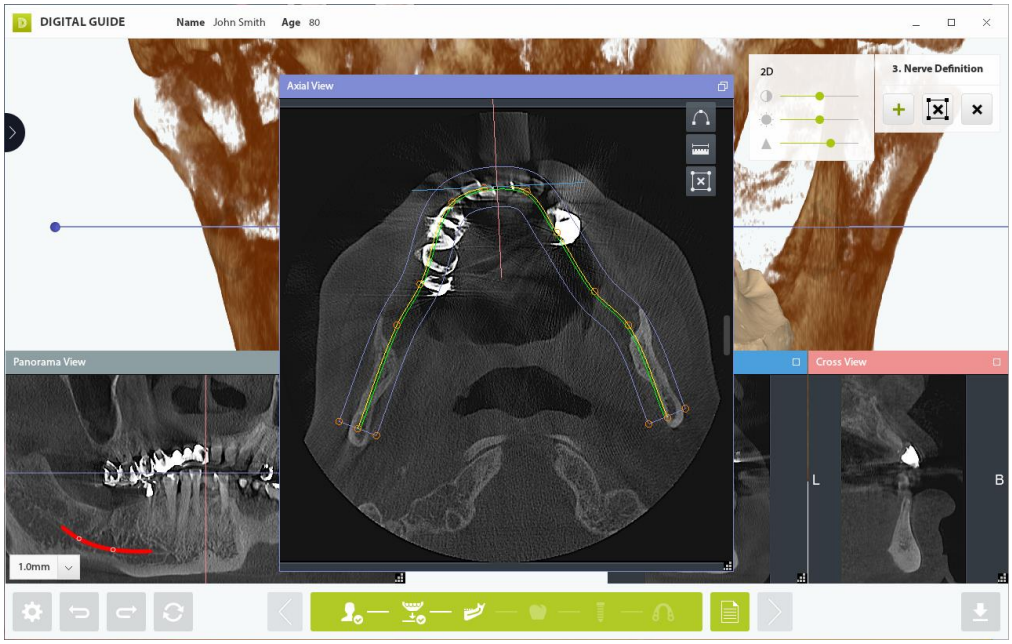
3.1 Drawing the arch curve

: Create a new jaw arch curve (curve line)



Message to create a new jaw arch curve (curve line)

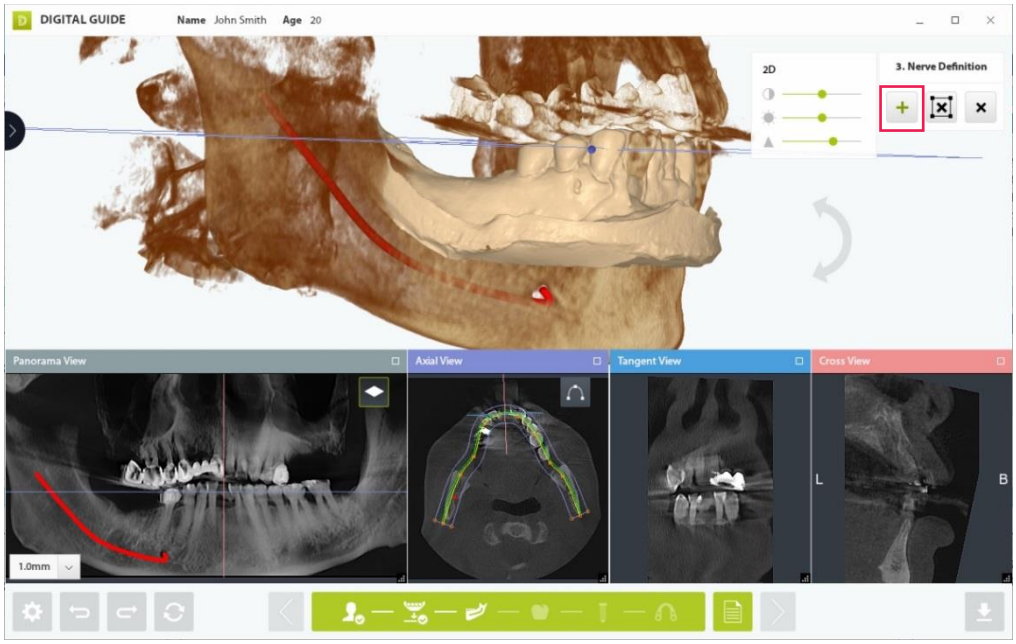
You can modify the curve by moving the orange color control point.



Readjustment of the curve line

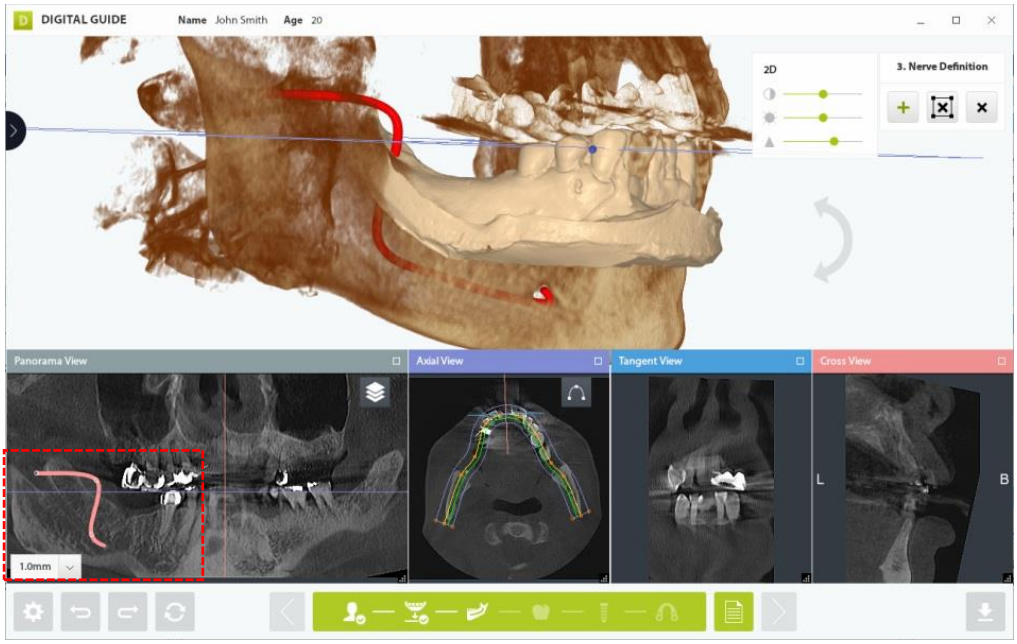
3.2 Drawing the neural tube

: After enabling the function by pressing the Add button, you can create a neural tube by clicking on it in the panoramic view. You can exit by pressing the button again or double-clicking the section.



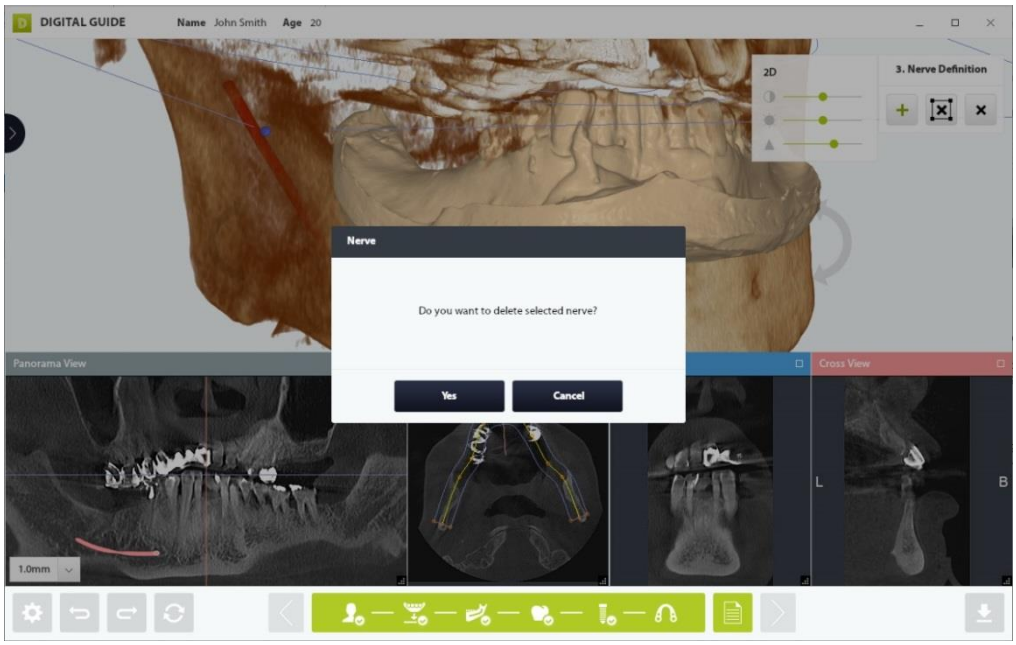
Draw a neural tube

Even after exit, you can modify the neural tube path by moving the control point.



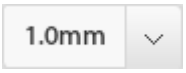
The path can be reset by clicking and moving the white control point with the mouse.

After selecting a neural tube from the 2D image, press the delete key on the keyboard or press to delete the selected neural tube.



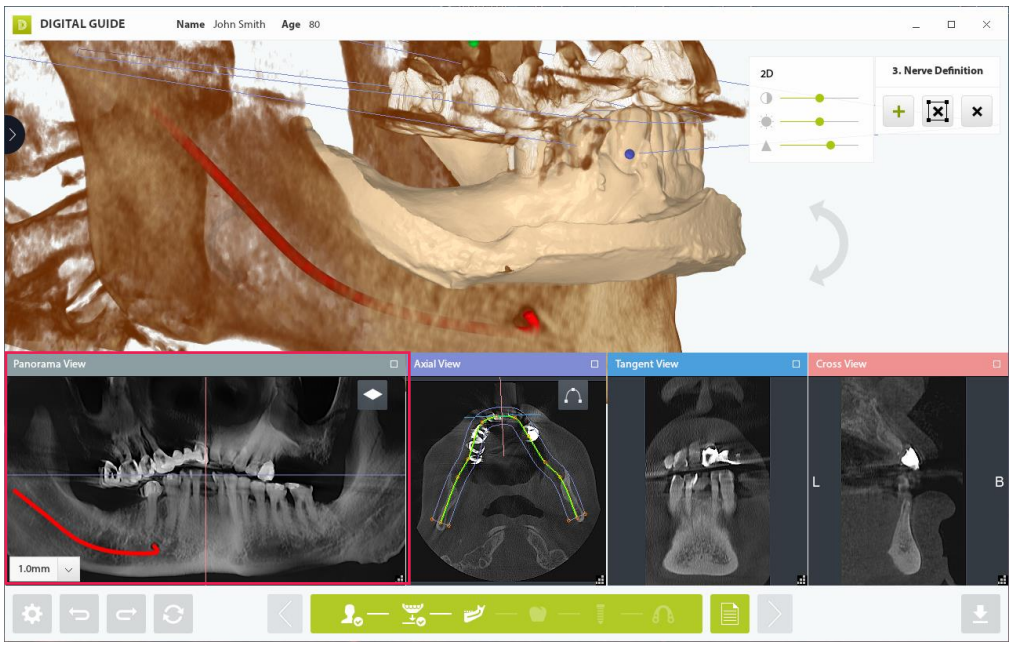
Neural tube delete message

Click button to delete the entire neural tube implanted.

Thickness of the neural tube can be changed by changing the number of the Combo Box  .

Changing the thickness of the neural tube

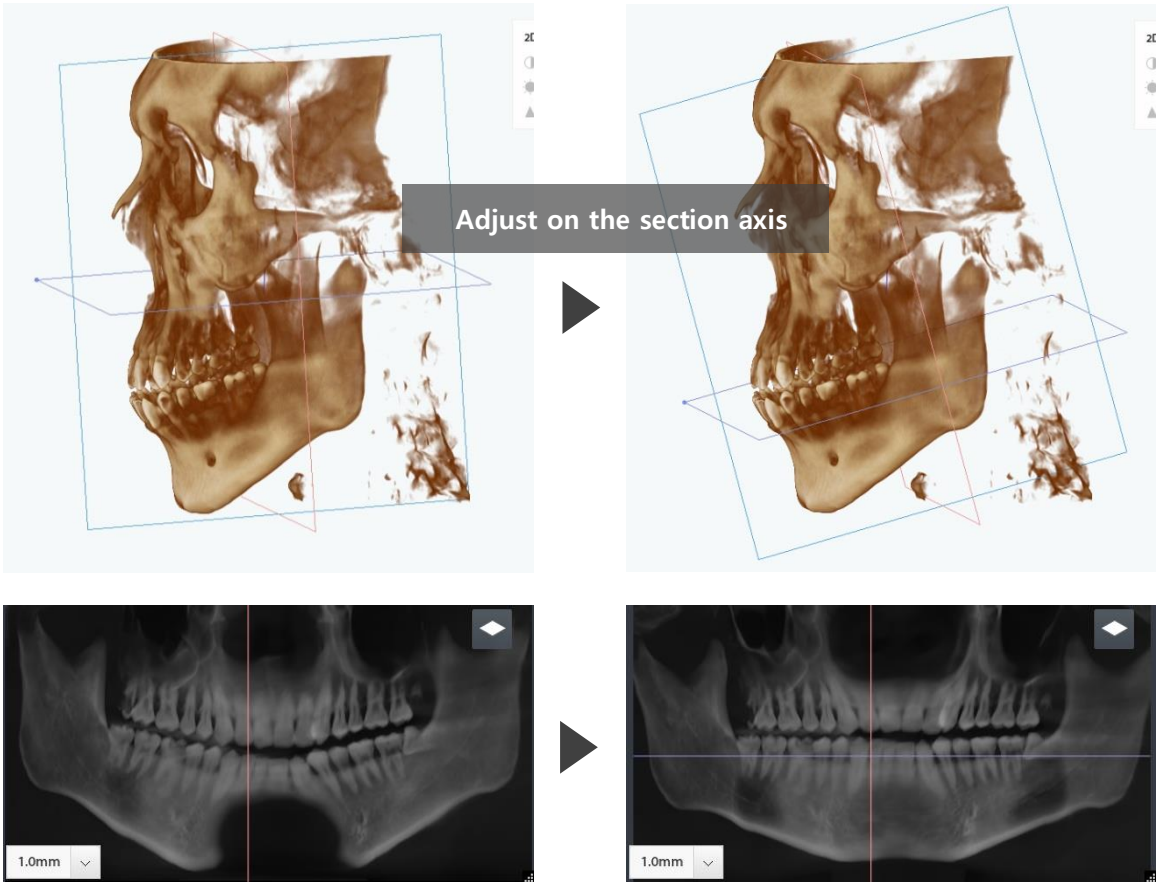
: Changing the Super Panorama Mode



Super Panorama Mode

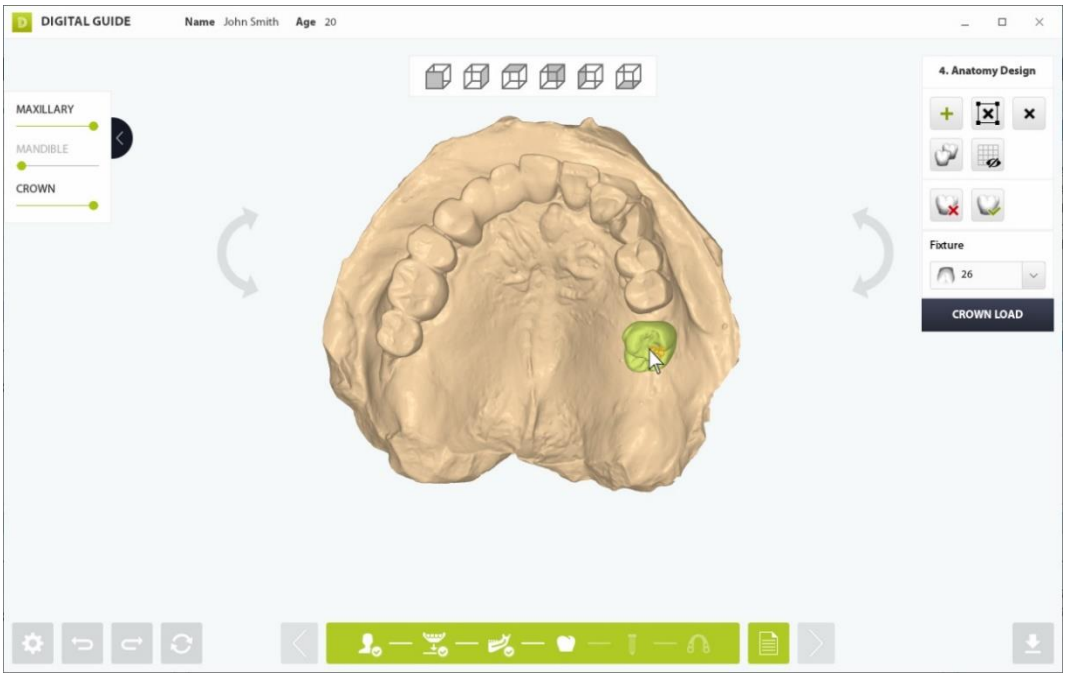
3.3 Reference axis changing function

A function to change the reference axis to view the cross section of the CT image as the default value in the direction desired by the user.



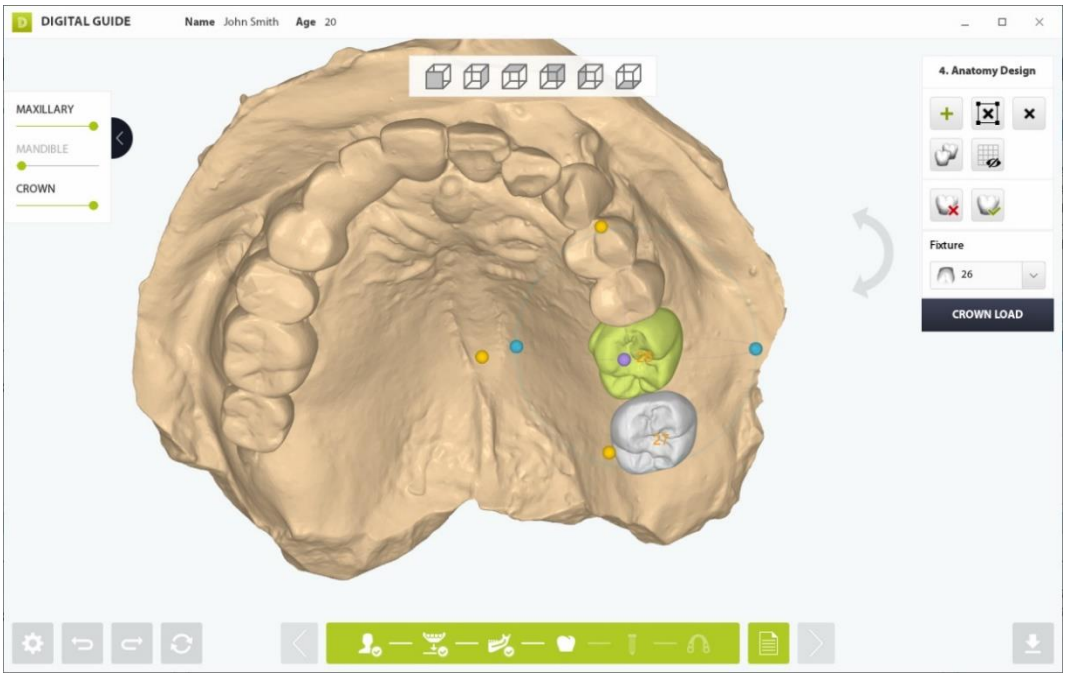
- A dot is created on the blue line representing the axial cross section in the 3D screen of the Scan Alignment step and Nerve Definition step. You can click and drag the point to set the desired reference axis.
- Blue dot can be rotated horizontally, and green dot can be rotated vertically.
- When setting the reference axis, not only the basic position of the section but also the basic angle of the panorama is changed.

4 Crown simulation



Anatomy Design Start Screen

Upon initial entry, the crown follows the mouse point. When you click the mouse on the scan model, the crown will be located at that location. This simulation controls position and rotation of the crown and scale.



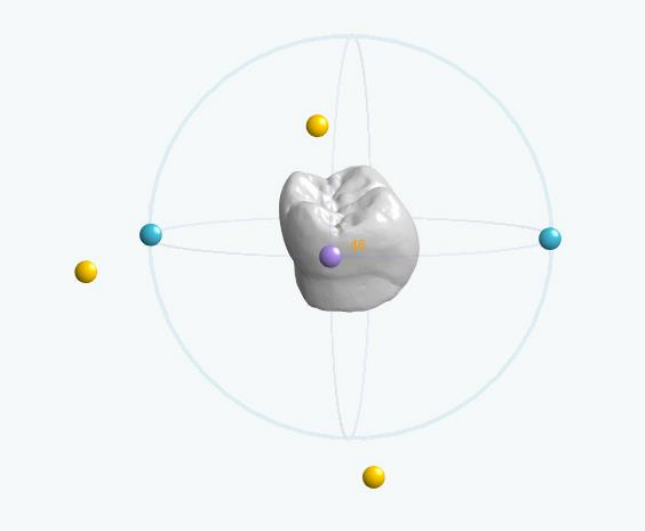
Crown arrangement screen

4.1 How to control the crown

1) Movement : Click the crown and move the mouse

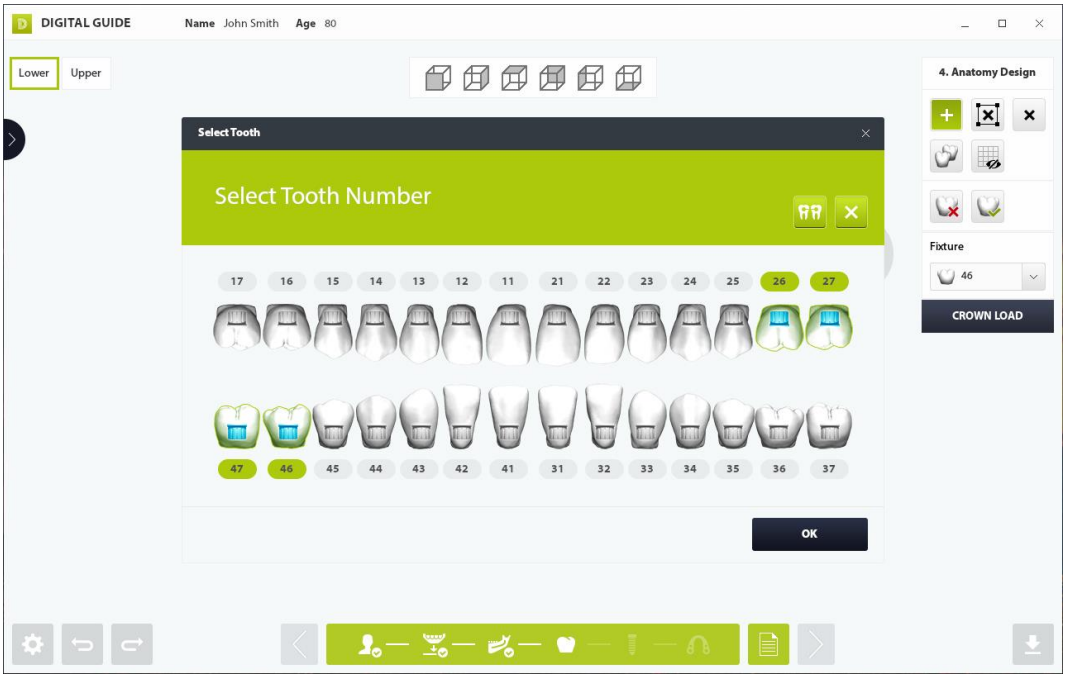
2) Rotation : Rotate by the left/right blue controller and the central violate controller.

3) Size : Click the yellow controller and move the mouse



Crown controller

You may add or change the crown number through buttons

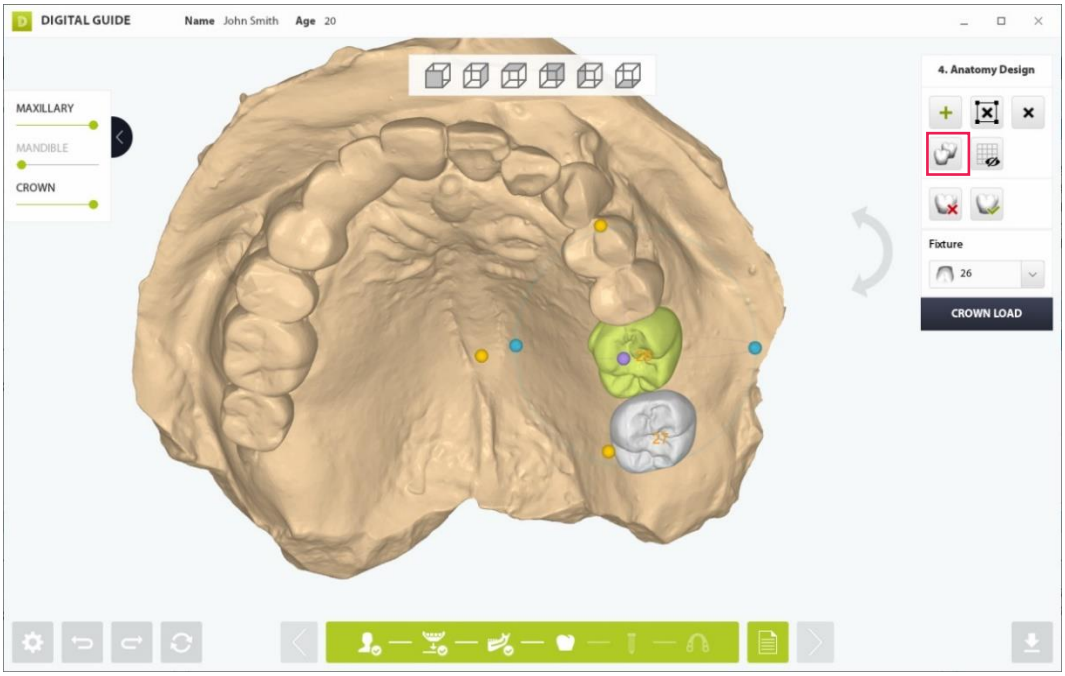


Dialogue to add the crown

When operate multiple crowns, they become grouped by pressing Ctrl + Crown or button to perform the same movement and rotation. And if you click again Ctrl + Crown or empty space, the grouping will be released.

4.2 Crown grouping

When simulate the multiple crowns, you can move and rotate them by grouping.



Select button or Ctrl + Crown to set grouping.

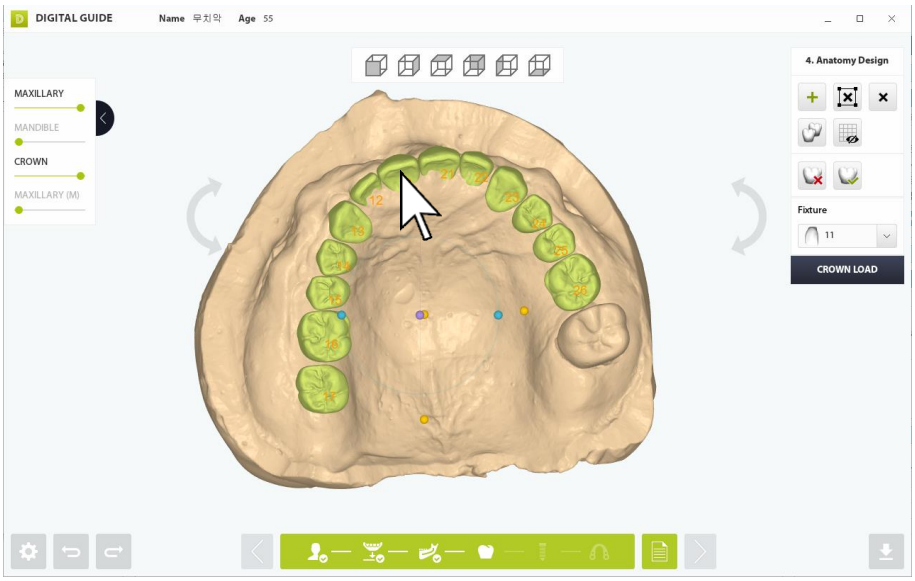
(**Grouped crown : Green / Degrouped crown : White**)

The grouped crown can be simultaneously moved, rotated and scale adjusted.

Click the empty space while grouped to release the grouping.

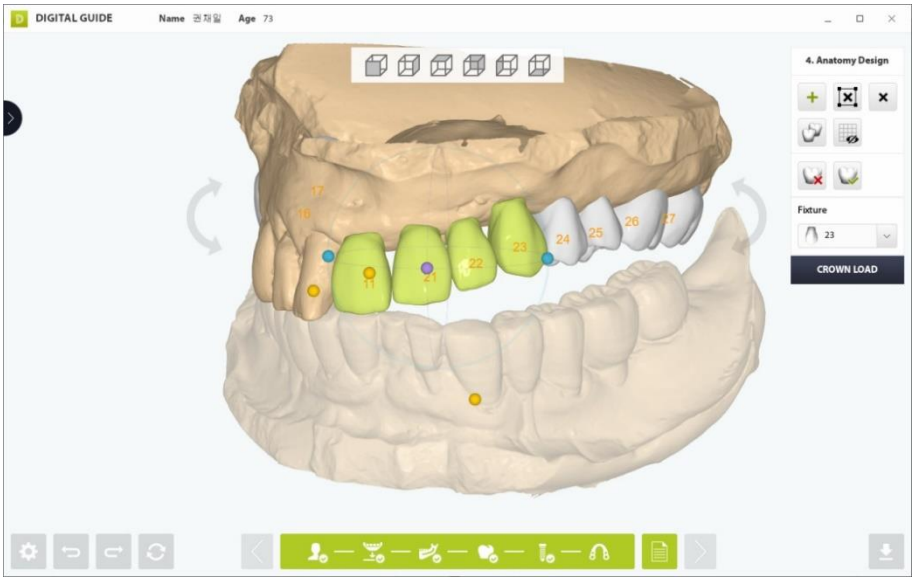
4.3 Crown bridge

Crowns set as bridges follow the mouse point at the same time based on the crown located in the center of the crowns selected as the bridge upon initial entry. When you click the scan model, the crowns are fixed in the aligned position. After that, crowns set as bridges can be operated together by default.

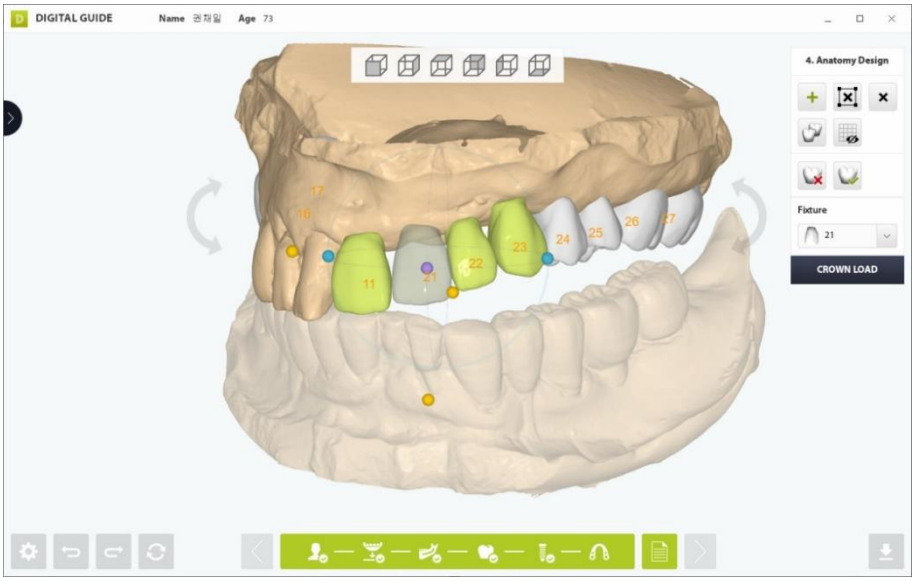


Crown bridge

If you want to operate individually, press Alt key, and click the crown you want to disable, then the crown will be disabled and does not operate together. Pressing the disabled crown again enables only the clicked crown while all other crowns remain disabled. Clicking in the air or another crown group or pressing esc of the keyboard will enable crowns.

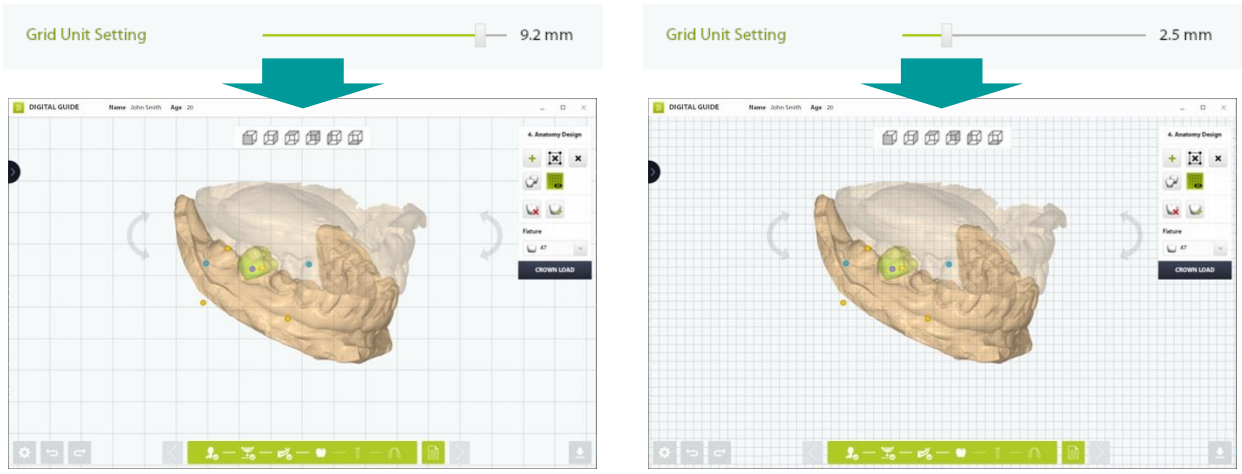


Crown bridge



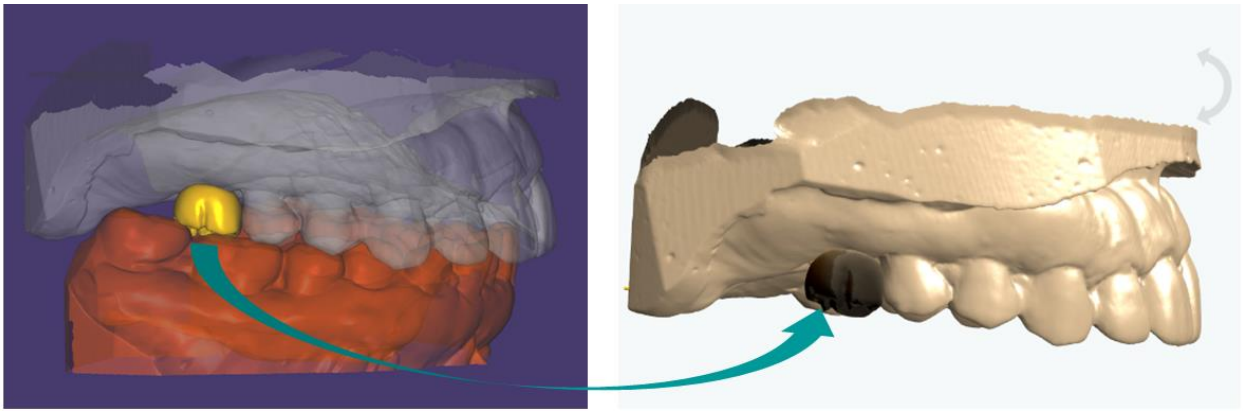
Crown disabling

Pressing button enables the Grid in the screen. The size of the Grid can be designated at User Setting.



If you press

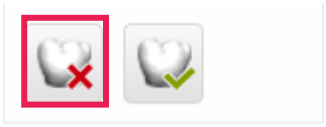
button and export the Crown Virtual Setup data using another CAD program and import it from Digital Guide, you can load the crown designed in the corresponding location.

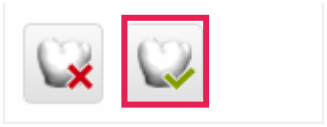


Apply Virtual Setup

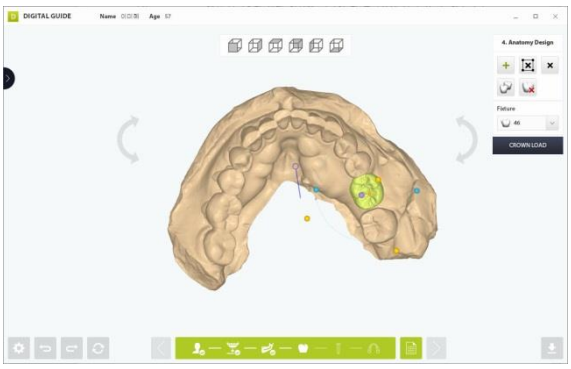
4.4 Extraction function

This is a function to select/delete a specific part of the model data as a function for guide surgery after tooth extraction





Set the tooth extraction area **After tooth extraction**



Cancel the tooth extraction – Return to the original model

5 Fixture simulation

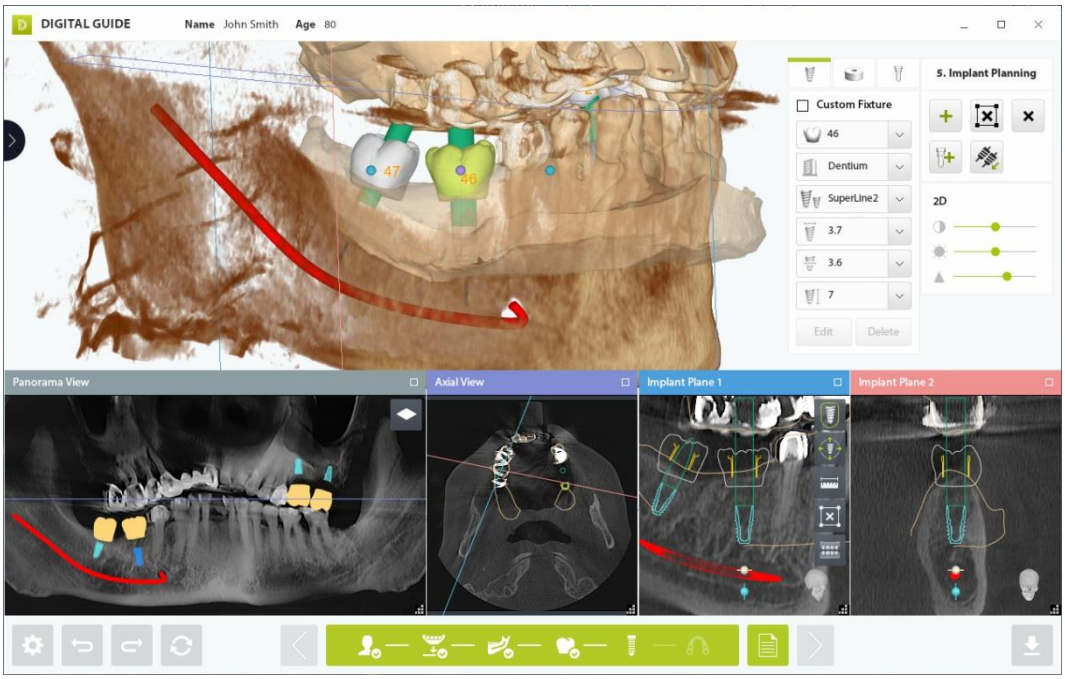
5.1 Fixture simulation tool

This tool provides a fixture simulation function to determine the drilling position of the surgical guide.

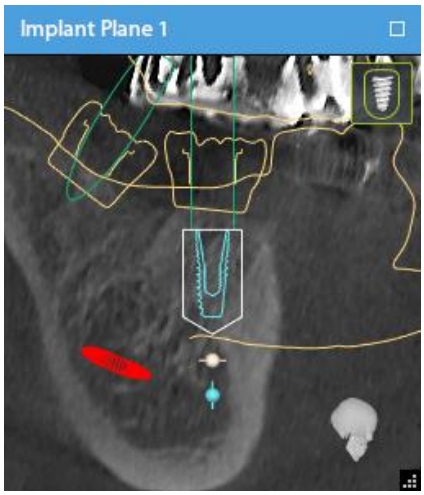
The initial position of the fixture and sleeve is determined based on the crown position performed during the Anatomy Design stage.

This tool finds the position to implant the fixture on the real patient by moving and rotating additional fixtures on the 2/3D image.

When the position is moved after selecting the fixture, the sleeve is also moved according to the position of the fixture.



Fixture simulation start screen



2D Fixture Control UI

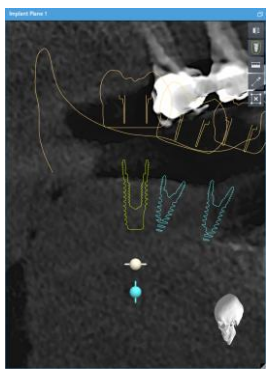
Fixture movement : Move the mouse after clicking the fixture

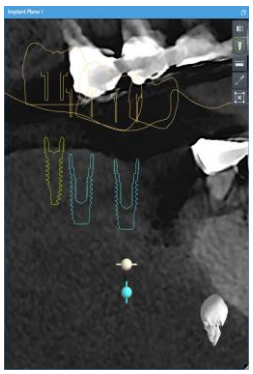
Fixture rotation : White controller

Fixture length : Blue controller (the length can be changed within the corresponding product family)

How to synchronize the axes of multiple fixtures

- If you double-click the reference fixture, the color changes to green. After that, if you double-click the rotation controller (white) of the target fixture, the axes will be synchronized.
- After clicking the axis synchronization button, the first fixture selected becomes the reference fixture.
  Fixtures selected after the second time will be synchronized to the slope of the reference fixture. Fixture can be selected in both 2D section and 3D





Reference fixture of axis synchronization button : Green Select the synchronization fixture

: Length

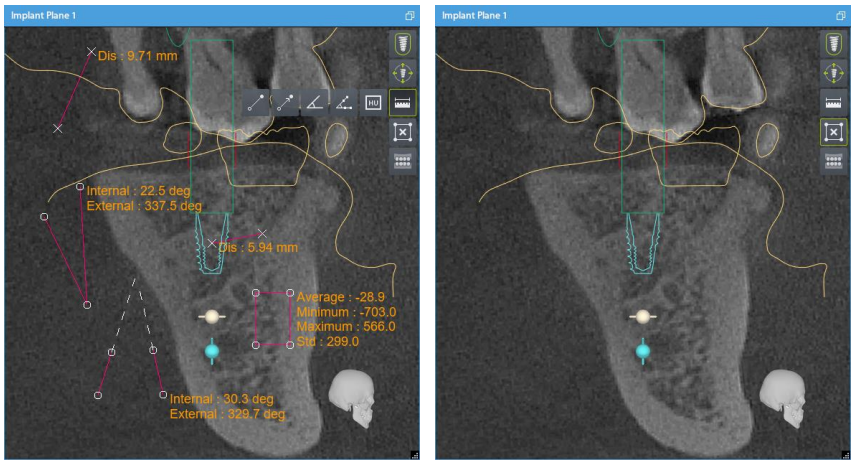
: Shows the moving distance of the fixture

: Angle

: Measure the angle using 4 points, such as the angle between adjacent teeth and fixtures

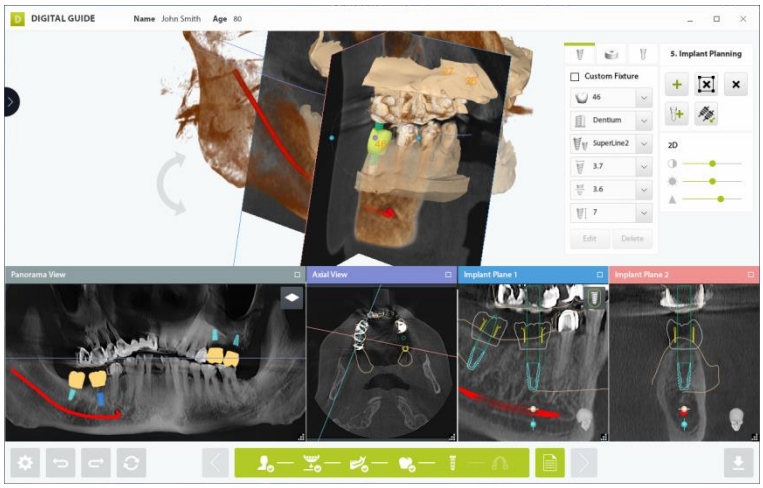
: Calculation of maximum/minimum/average values of HU (Hounsfield Unit) values within a specific area

: Delete all measured values



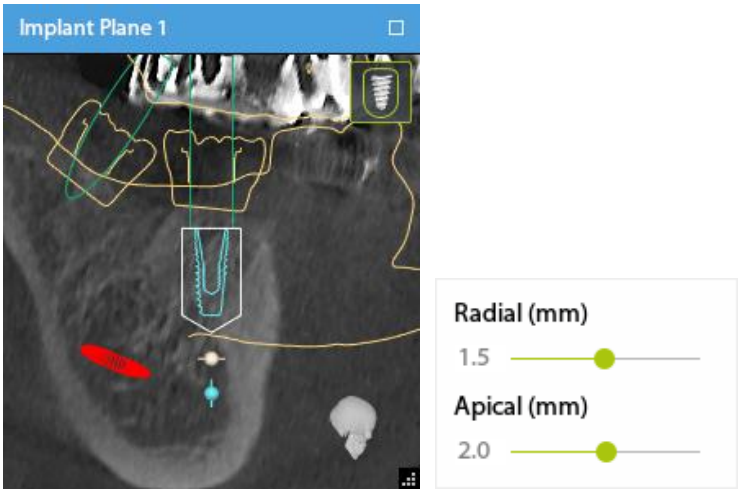
Measurement and initialization

: Displays 2D image position on the 3D image



3D superposition of fixture's cross-sectional image

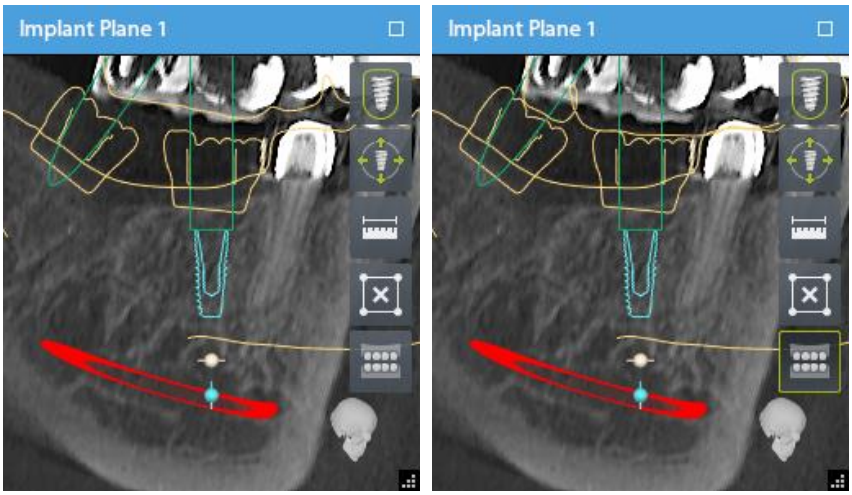
: Shows a safe area



Radial : Set a safe distance to the axis direction

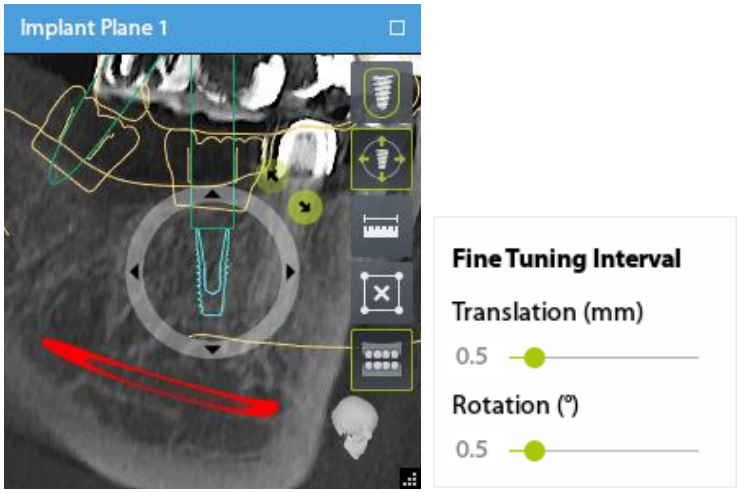
Apical : Set a safe distance to the lower direction

: Shows an occlusal data



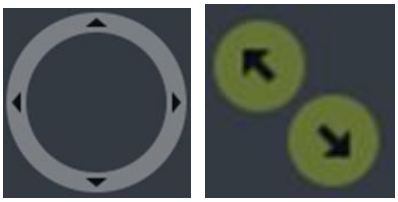
When the occlusal state is disabled, it is displayed as a matching state (Left), when the occlusal state is enabled, it is displayed as an occlusal state (Right).

: Fixture fine tuning



Translation : Travel distance per 1 time clicking the movement button

Rotation : Rotating amount per 1 time clicking the rotation button

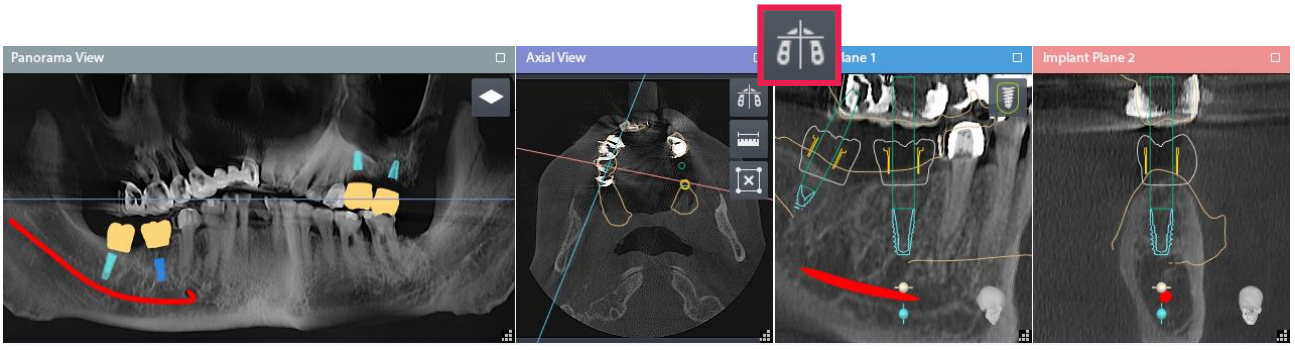


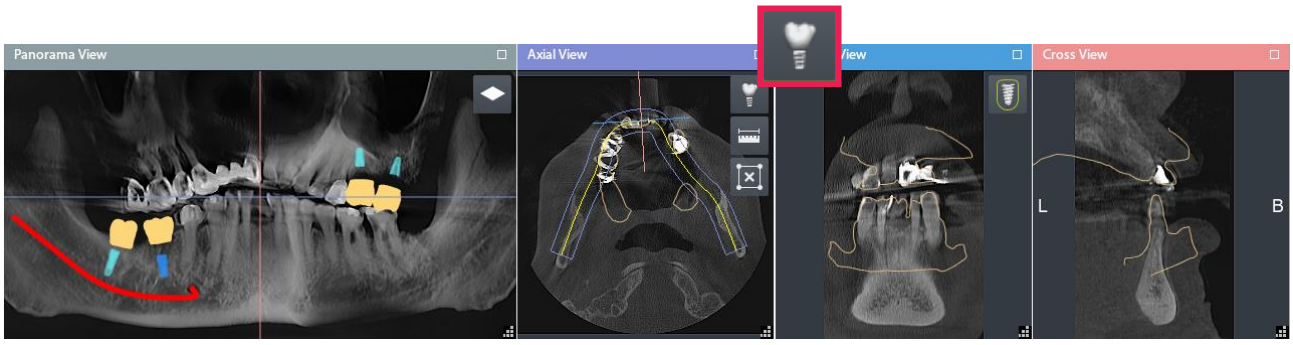
Up/down/left/right movement controller (left), clockwise/counterclockwise rotation controller (right)

If you move the fixture while holding down the Ctrl key, a cross-shaped ruler based on the fixture is created, and you can move it finely since the ruler displays the travel distance (mm) of the fixture in the forward direction.

Fixture fine tuning using Ctrl key

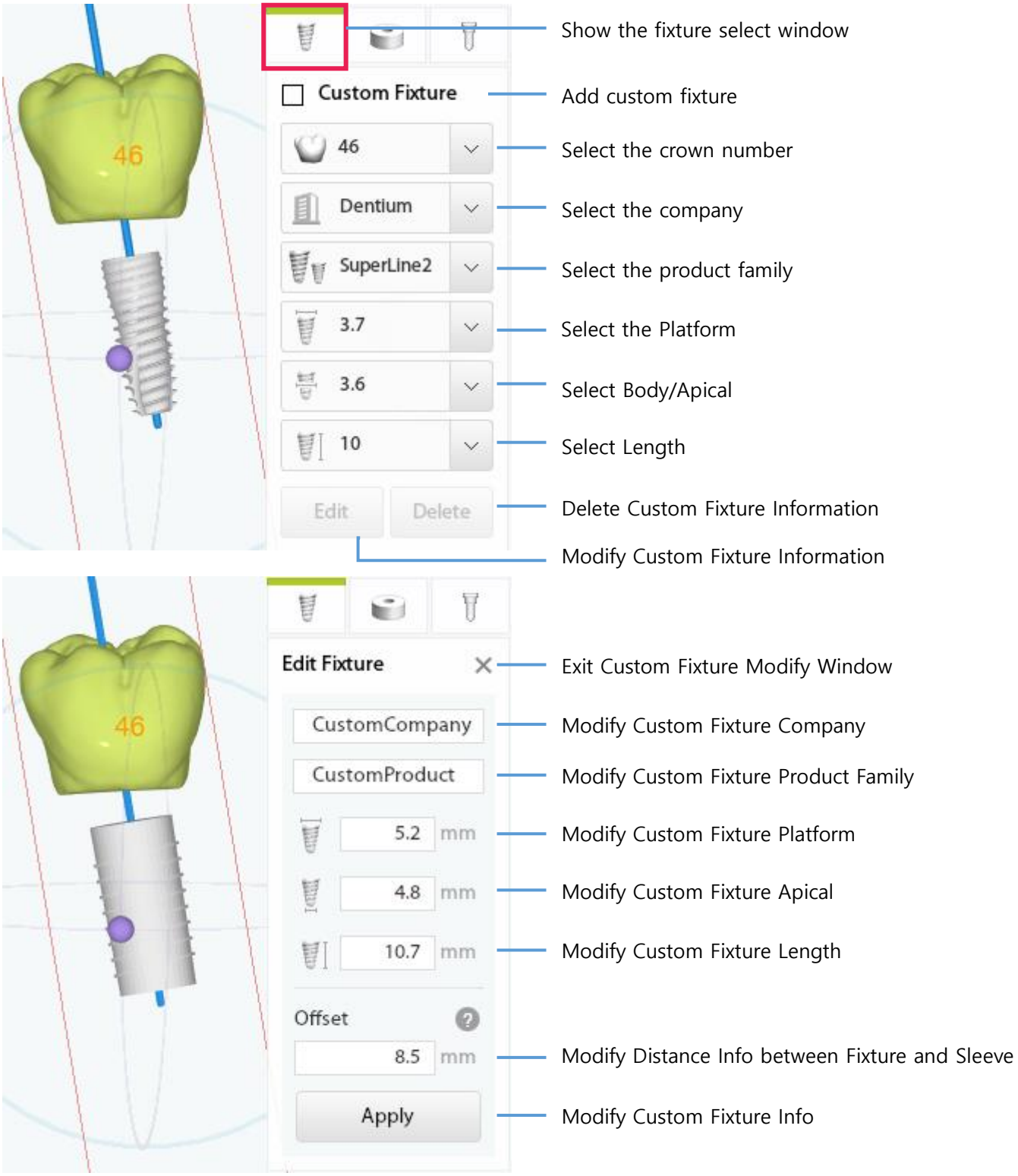
You can change the section view in 5 steps between Implant Mode and Panorama Mode using the / buttons of Axial.





5.2 Fixture selection and customizing

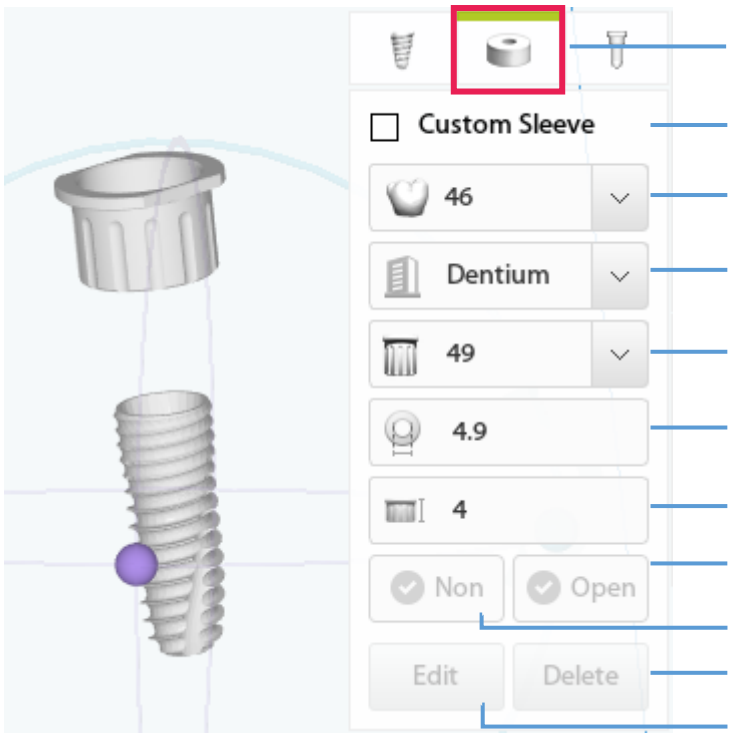
This function supports custom features so that you can select our fixture products or register and use third-party's fixture information.

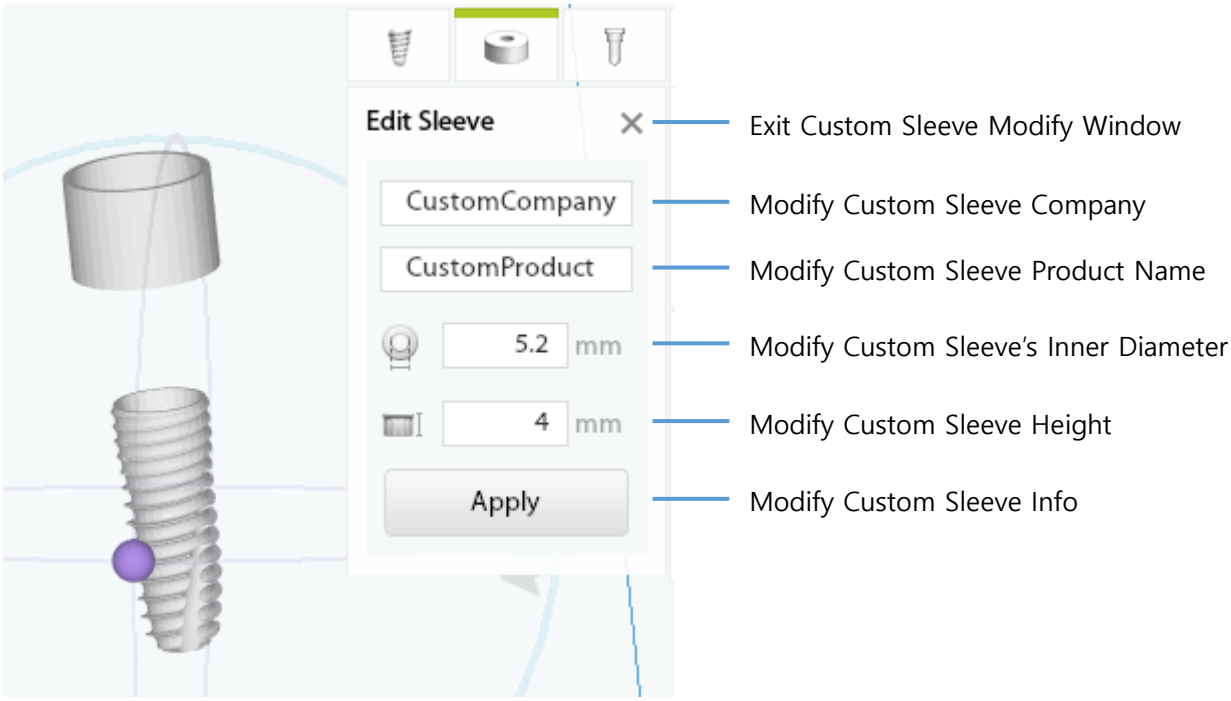


5.3 Sleeve selection and customizing

This function supports custom functions so that you can select our sleeve products or register and use third party's sleeve information.

※ In case of custom sleeve, only Non-Sleeve type is supported.

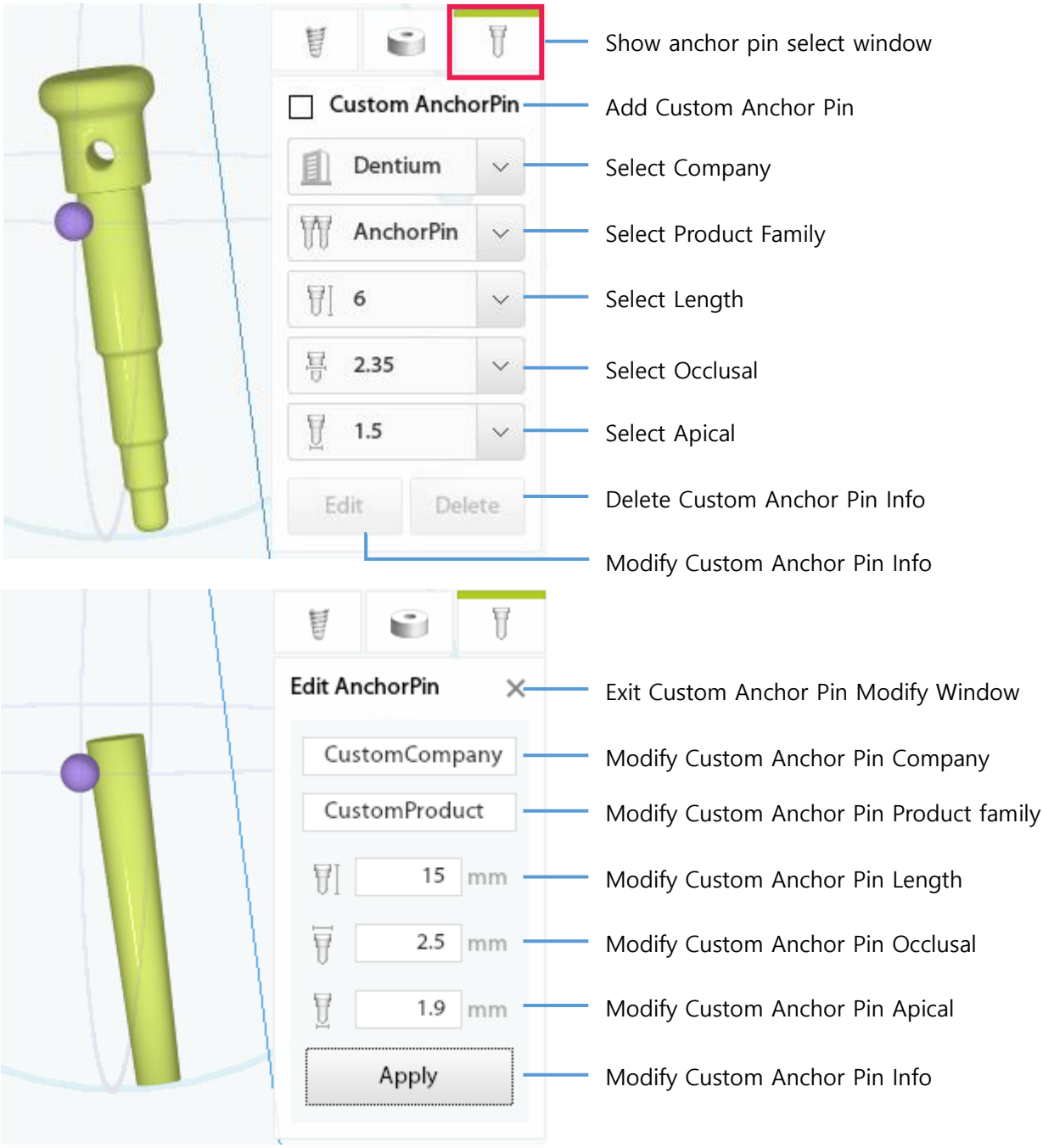




5.4 Anchor pin selection and customizing

When you click Add Anchor Pin button, the added anchor pin follows the mouse, and when you click on the desired location, the anchor pin will be implanted at that location.

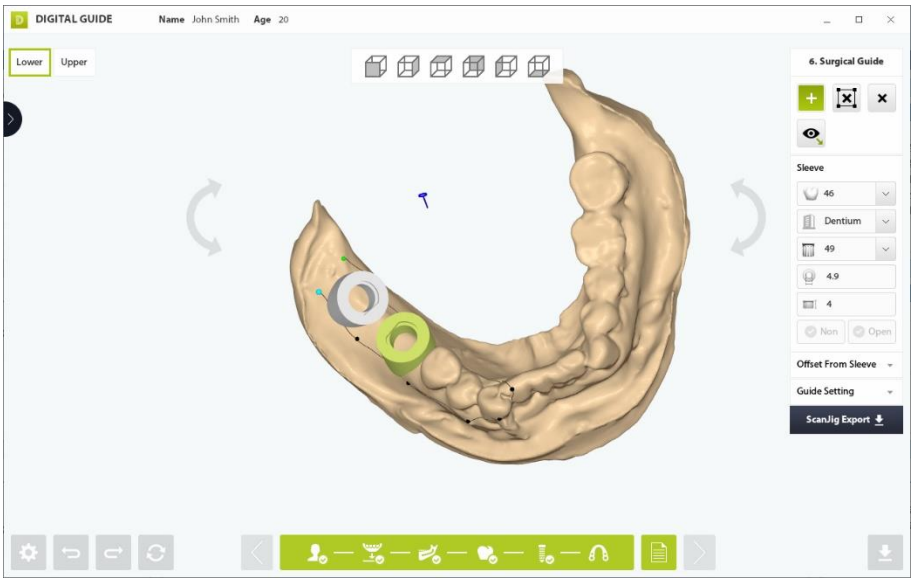
This function supports a custom function so that you can select our anchor pin product or register and use other company's anchor pin information.



6 Surgical guide area setting/creation

6.1 Sleeve setting

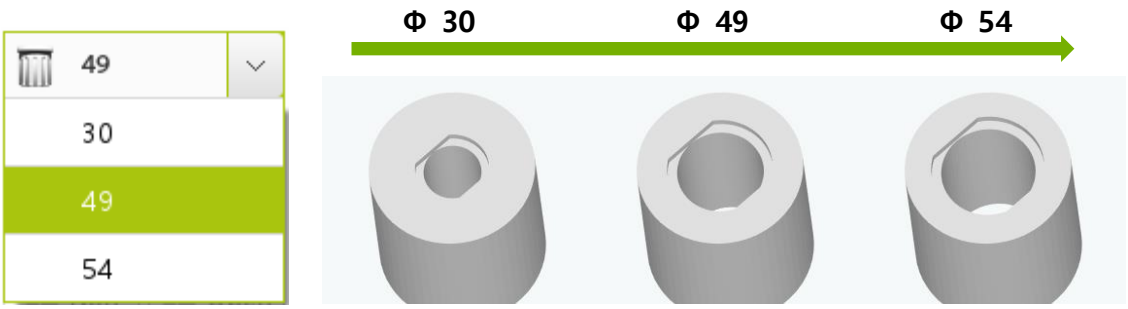
This function sets the area for generating the surgical guide after setting the drilling position through fixture simulation. After enabling the area designation button, click the mouse to set the area.



Surgical Guide Creation Step

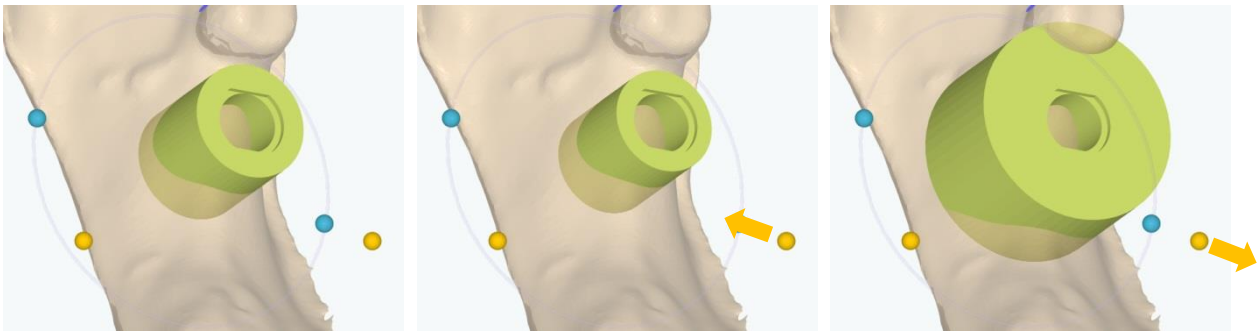
Select the sleeve to determine the inner diameter.

Inner diameter : 30 (Dentium Simple Kit) / 49 (Dentium Full Kit) / 54(Digital Guide kit 5.0)



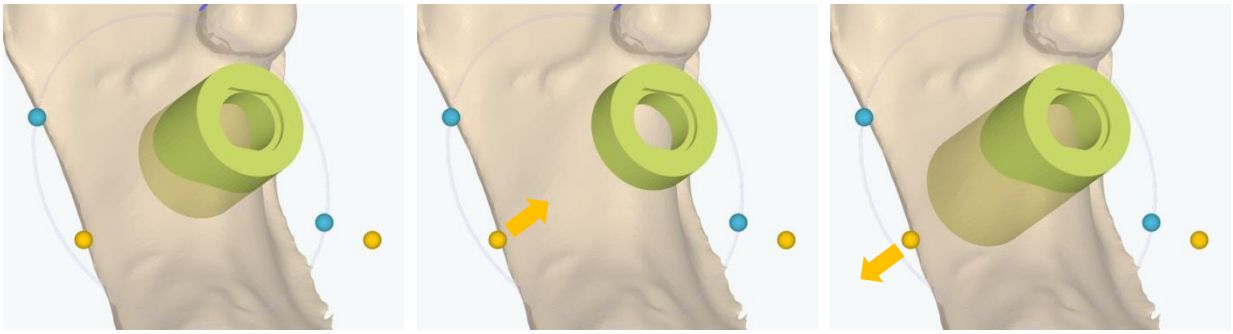
Sleeve Combo Box / 30 -> 49 -> 54 in sequence

Determine the outer diameter using the sleeve outer diameter adjust peaker.



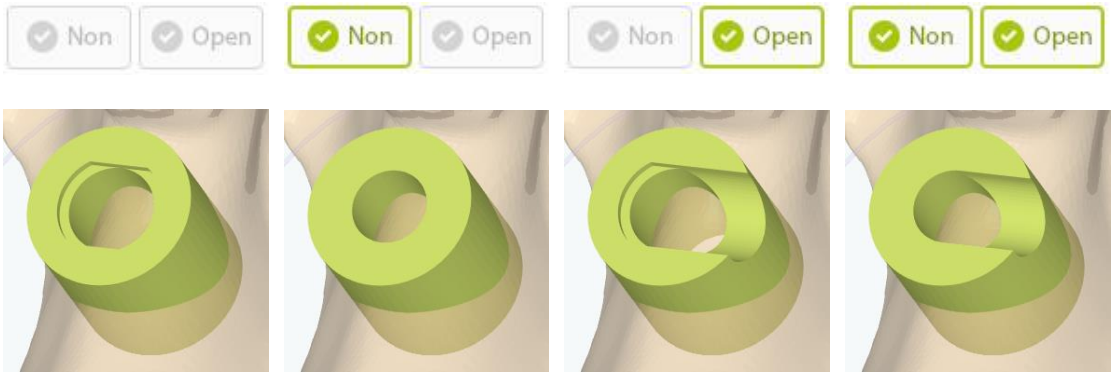
Adjust sleeve outer diameter. Default/Narrow/Wide

Determine the length using the sleeve length adjust peaker.



Adjust sleeve length. Default/Short/Long

Change the sleeve type with sleeve type button



Metal Sleeve type / Non-Sleeve type / Open Sleeve type / Non-Open Sleeve type

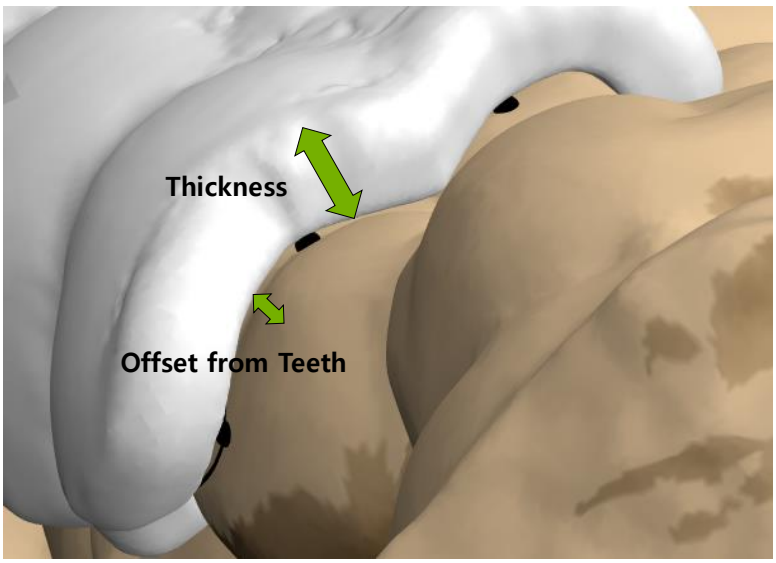
You can set the guide to be created on Offset from Sleeve and Guide Setting.

Offset from Sleeve : Sets the offset value of inner diameter of sleeve hole

- Sleeve : Sets inner diameter offset of Metal Sleeve and Open Sleeve
- Non-Sleeve : Sets inner offset of Non-Sleeve and Non-Open Sleeve

Guide Setting : Sets the thickness and gap value of Guide

- Thickness : Surgical Guide Thickness
- Offset from Teeth : Gap between Tooth and Surgical



Thickness and Offset of Surgical Guide

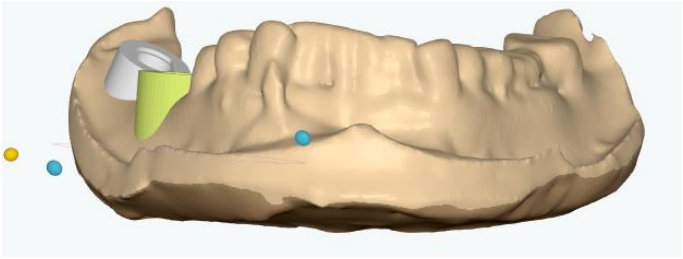
6.2 Guide area setting

Set the insertion direction using the space bar or button.

The direction of the model data displayed on the screen is the insertion direction.

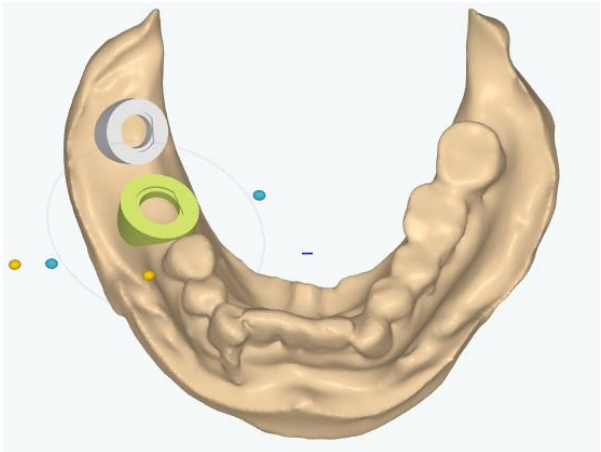
*** Please decide carefully since the surgical guide undercut area is determined according to the insertion direction.**

If you press the space bar in the model data status as shown below, the undercut area will be wrongly set.



Wrong insertion direction

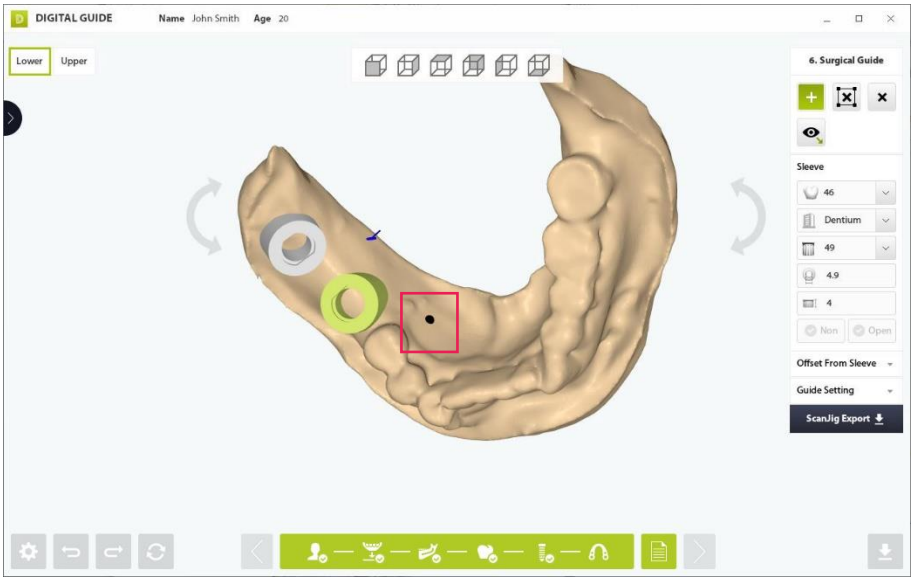
If you press the space bar as below after rotating the model data, a normal insertion direction will be determined.



Normal insertion direction

: Start to prepare the data to create Surgical Guide

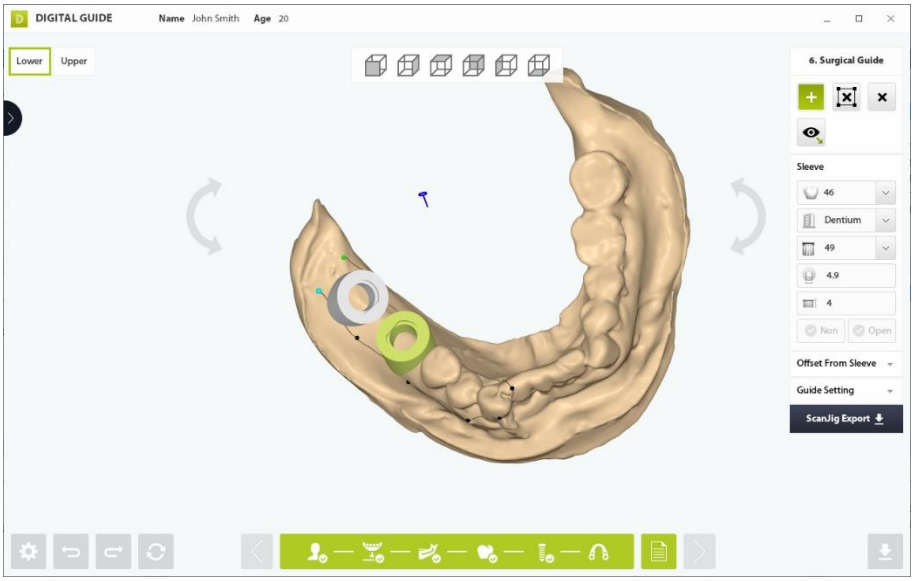
If the black point follows to the mouse pointer, it means that the guide area is ready to be set.



Prepare to set Surgical Guide area - Black point

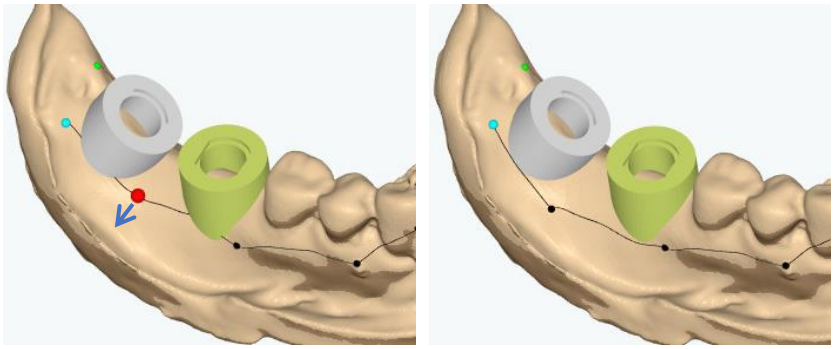
Set the Surgical Guide creation area through mouse click.

The point can be changed with the previous point through Ctrl+Z, and Ctrl+Y can return the point.



Set the surgical guide creation area

After setting the area, you can reset the area again by moving the control point.



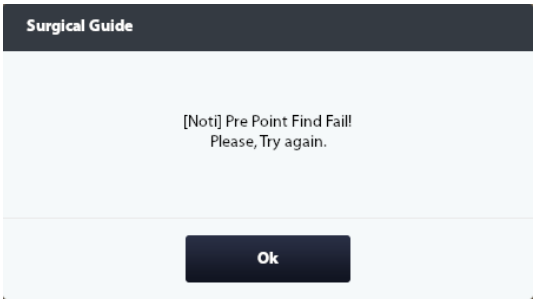
Area reset

The first point is light blue, the last point created just before is yellow-green, and the point that the mouse over for correction excluding the first and last points is displayed in red.

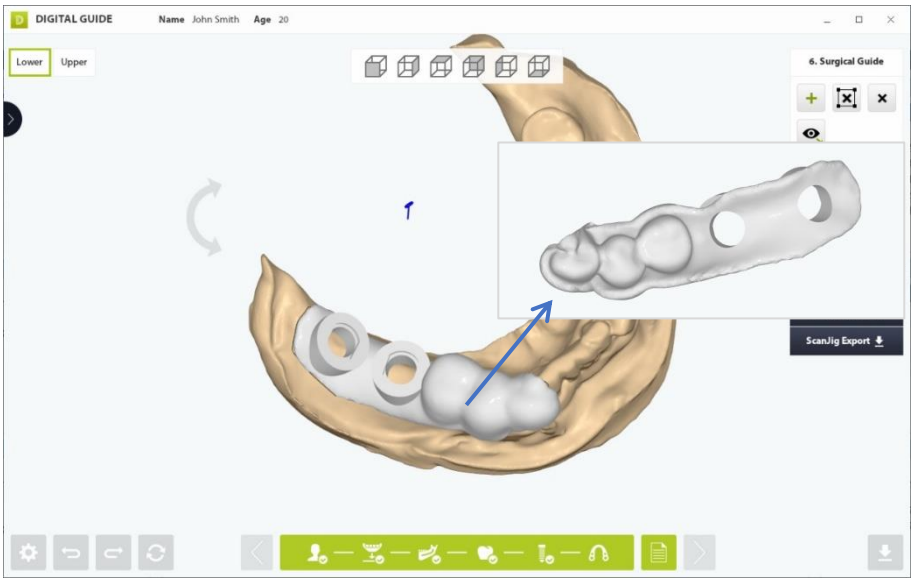
When the point superimposes the first point, the size of the light blue point changes, and when you click it, a surgical guide will be created based on the set area.

In case of point setting error, select the point again adjacent to the previous area.

If there is an empty space on the path, there is a possibility of error.

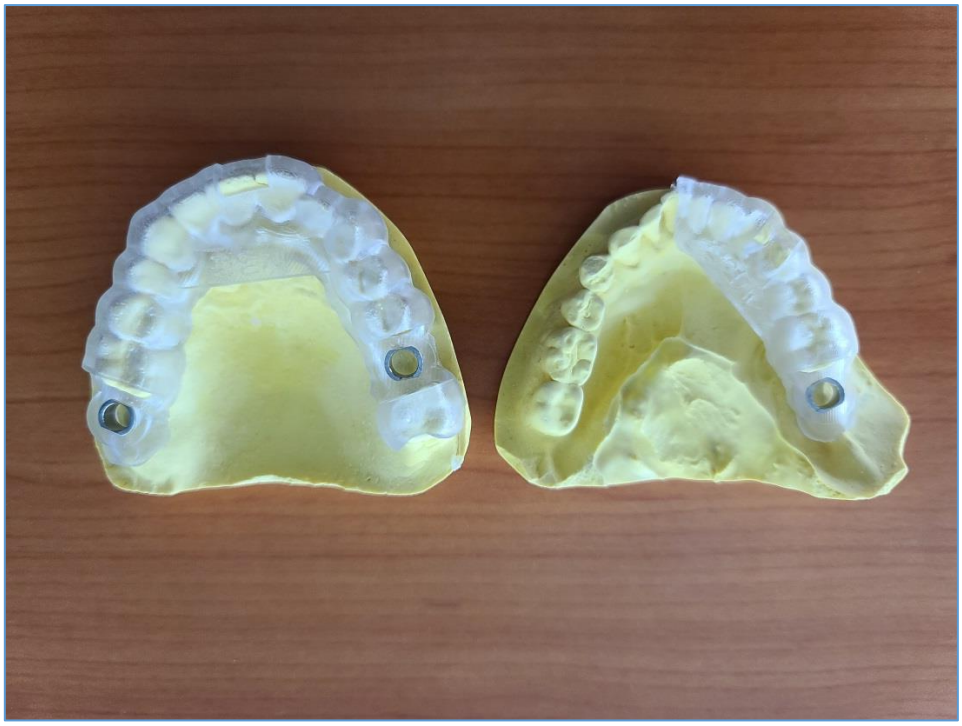


Point setting error



Create Surgical Guide deliverable

The surgical guide deliverable is created as stl file and can be used during surgery by printing it out using a 3D printer.

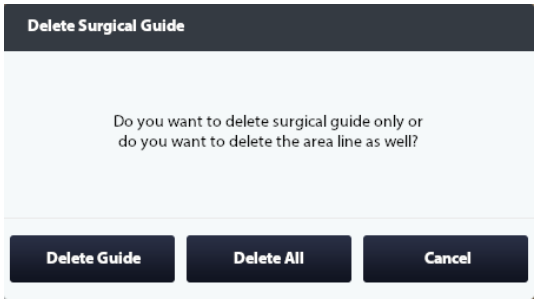


Actual Surgical Guide Deliverable printed out using a 3D printer

Can delete user-created surgical guides and set guide areas.

: Deletes both the created guide and the guide area set by the user

: Selectively deletes the guide and guide area set by the user

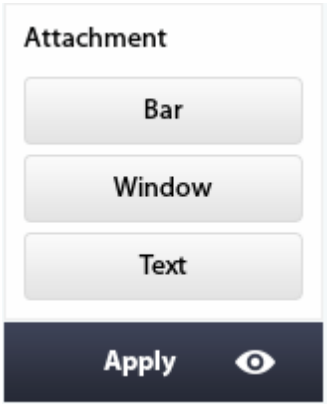


Delete Guide : Deletes the created guide

Delete All : Deletes both the created guide and the set guide area

6.3 Guide attachment

A guide is created by designating a guide area, and bar, window, and text can be attached to the created guide.

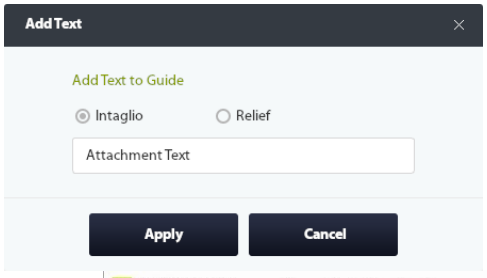


Bar : Creates a support bar. This bar is created by marking two points on the created guide.

Window : Creates a window. This window initially follows the mouse and is created at the corresponding location clicked on the guide.

Text : Generates text. If you enter the desired type and text, this text initially follows the mouse and is created at the corresponding position clicked on the guide.

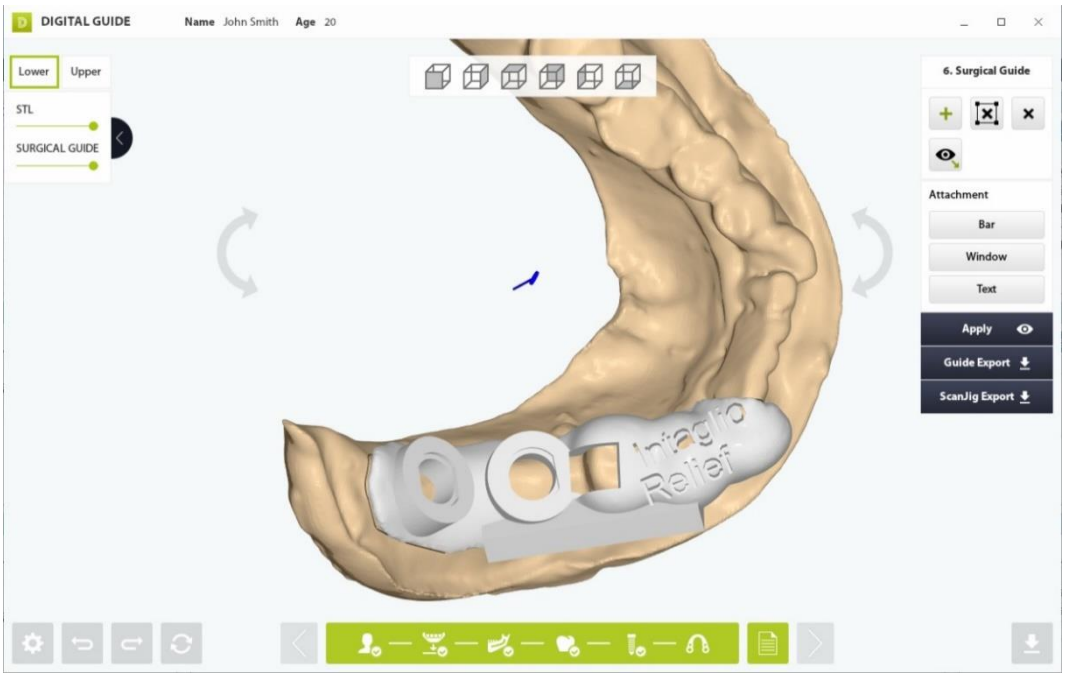
Apply : Bar, Window, and Text are actually applied to the selected location.



Intaglio : Creates intaglio text.

Relief : Creates embossed text.

Select the location of Bar, Window and Text

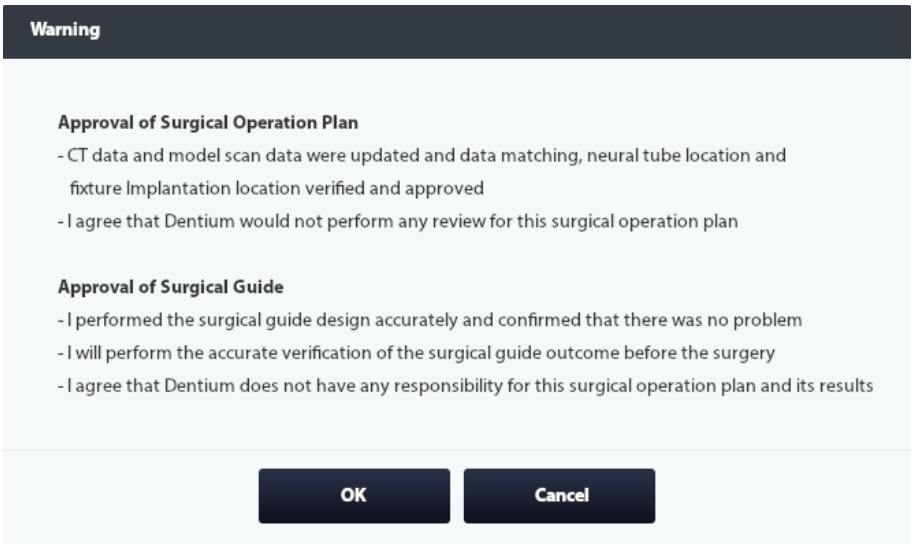


Applies Bar, Window and Text

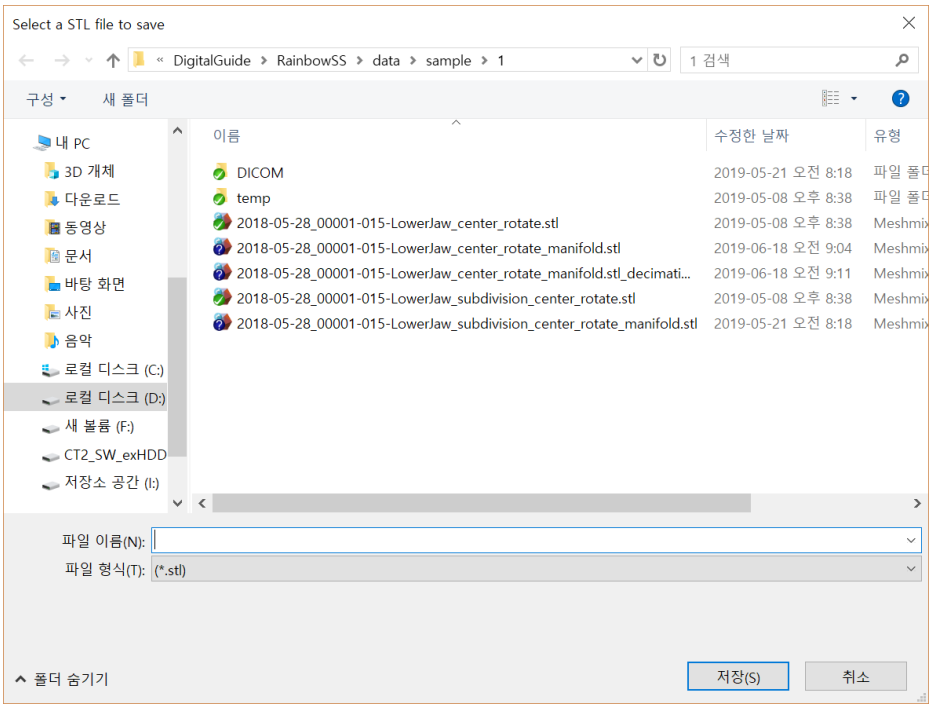
6.4 Surgical guide output

Finally, if you press

after checking the surgical guide result, a warning window appears. After confirming the contents correctly, press the Ok button to set the STL storage path.

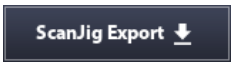


Warning for creation of Surgical Guide

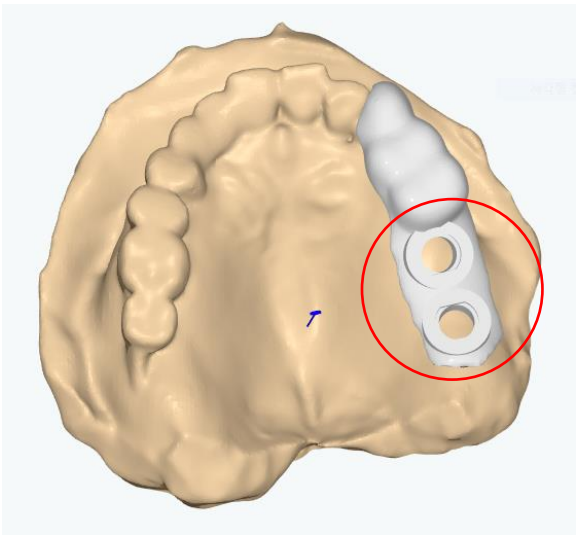


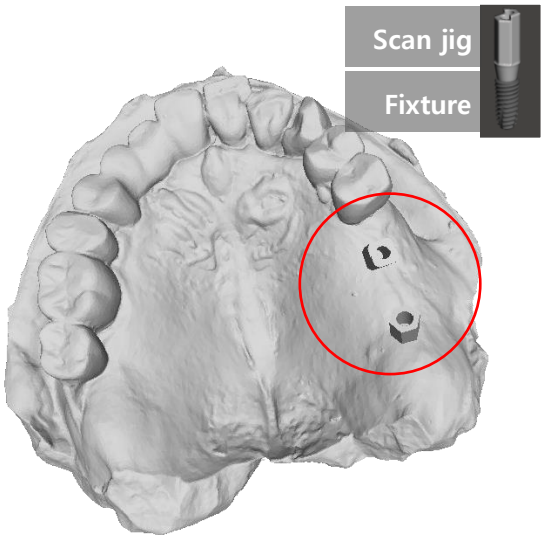
Set the storage path of Surgical Guide

6.5 Scan jig merge model extraction

This function outputs the original data including the scan jig based on the location where the guide was created when 

button is clicked. In addition, this function provides fixture position information to other programs in the steps after implanting the fixture (abutment/crown design, etc.).





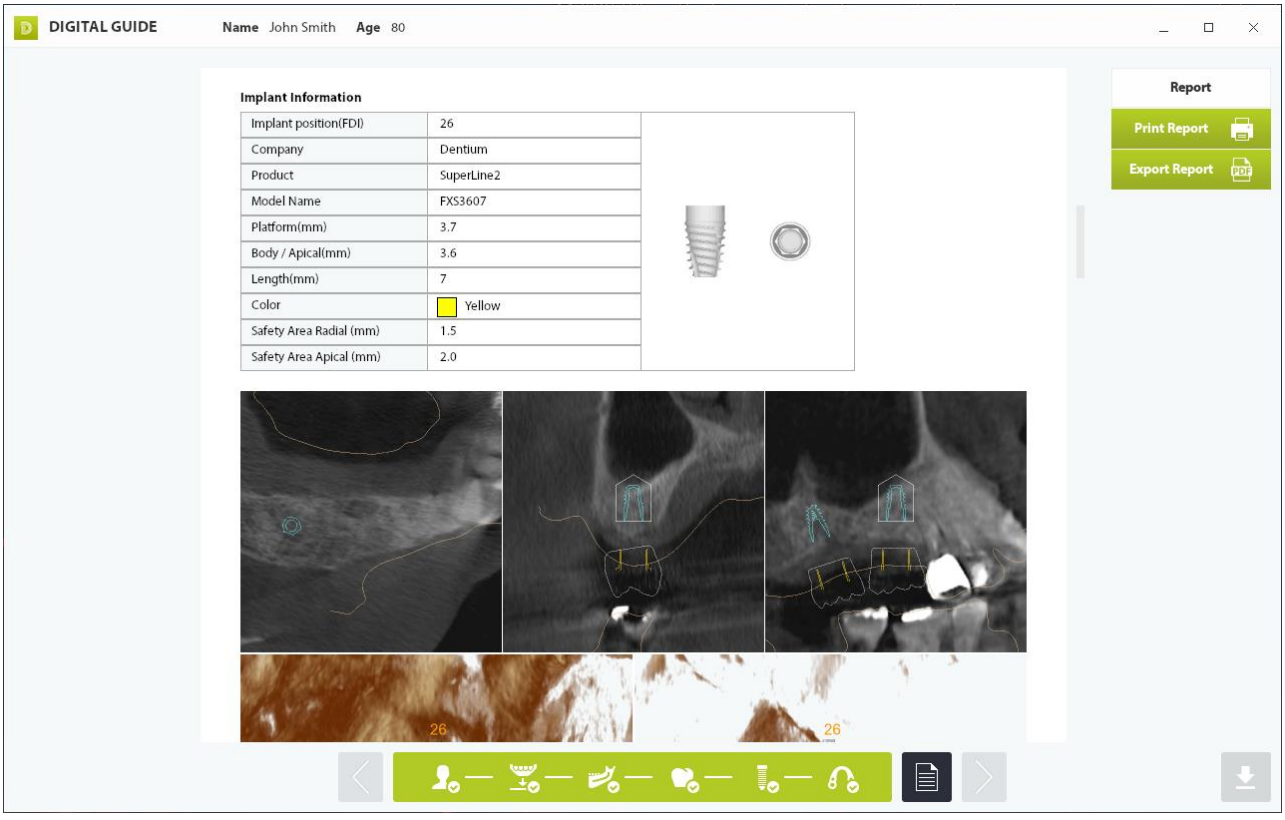
- Scan jig name according to the fixture setting

Fixture			Scan jig
Company name	Product family	Platform	Product name
Dentium	SimpleLine2	All	scjsi4865
	NrLine	All	gscji45
	NrLine-B		
	Others	All	Scji4565
Bright	TissueLevel	3.4	bisc3436ht

TissueLevel-B		
TissueLevel	3.8	bisc3838hl
TissueLevel-B		
TissueLevel	4.2	bisc4248ht
TissueLevel-B		
BoneLevel	All	Bih385090th
BoneLevel-B		

7 Report

This is a function that provides information such as fixture simulation images and fixture specifications necessary for surgery.



Report Screen

7.1 Report layout

① : Displays the hospital information

② : Displays the patient information

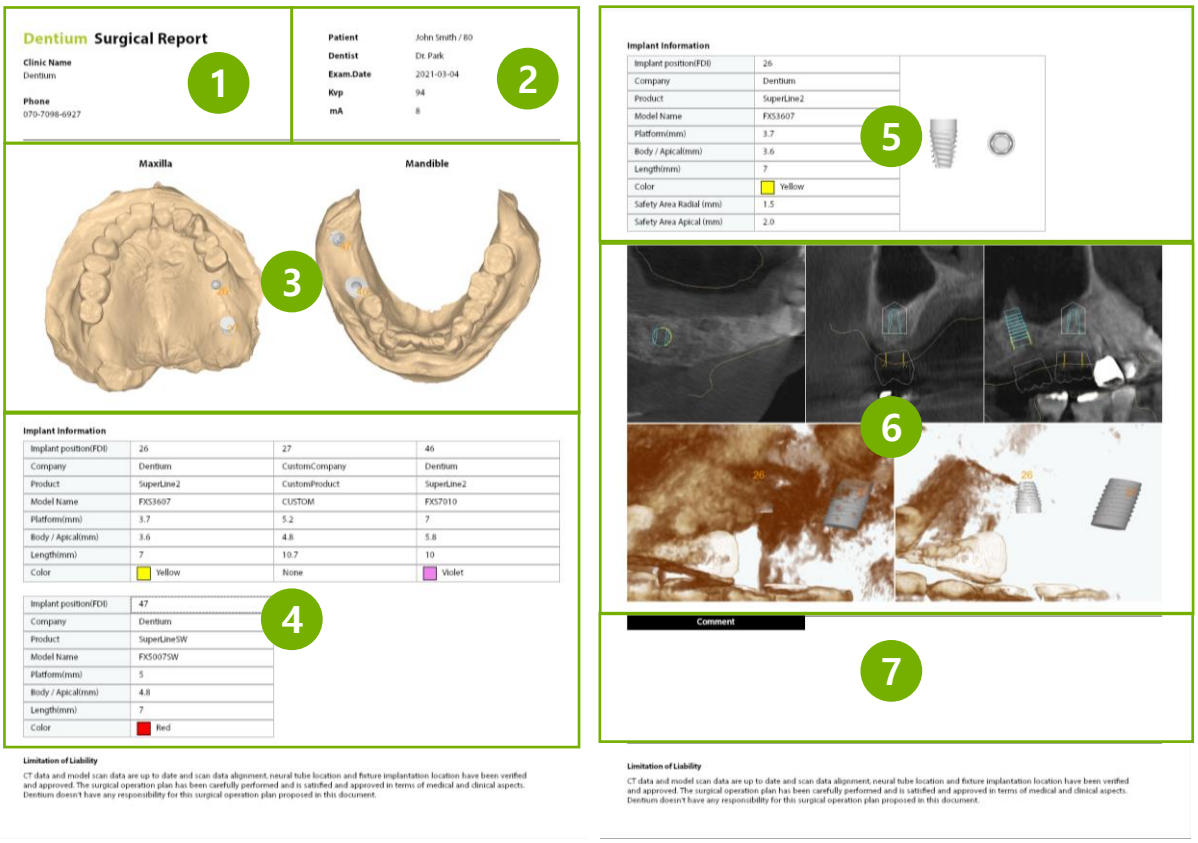
③ : Fixture position simulation capture screen on the model

④ : Displays all fixture information used in simulation

⑤ : Displays the fixture information used in simulation

⑥ : Fixture simulation capture screen

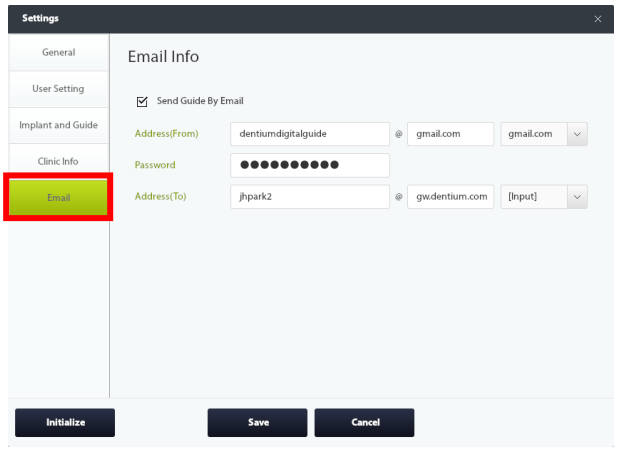
⑦ : User's comment box



Report layout – Entire summary information (left), detailed information by fixture (right)

8 E-mail transmission

Sets the e-mail address in the prescribed window.



Setting window – Email Tab : Can select E-mail address setting and sending

*** Sender's e-mail address is only available in Gmail account (google)**

- Send Guide By Email : Selects whether to send an email at the same time when exporting a guide
- Address(From) : Sender's e-mail address
- Password : Sender's e-mail password
- Address(To) : Receiver's e-mail address (* Other than Gmail is available)

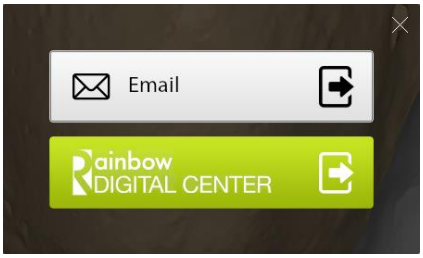
*** Need to change the sender's e-mail security level**

Allow low-security apps from the link https://myaccount.google.com/lesssecureapps: 'Please change it to 'Enable'.

8.1 E-mail transmission of Surgical Guide STL File

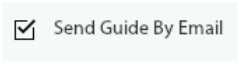
This is the function to send the completed guide data to a specific email address.

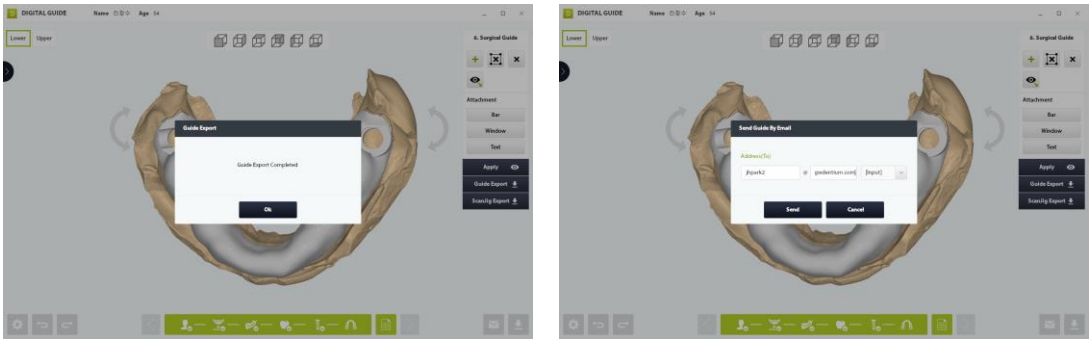
After creating the guide, click the button corresponding to located at the bottom of the program to enter the Send E-Mail pop-up menu.



Send E-Mail popup window

Click button to enter the receiver's email address and click button. The Surgical Guide STL file will be sent to the email address you entered.

In addition, if the sending function is enabled by selecting  in the setting window, a pop-up window for entering the receiver's email address automatically appears when the guide is saved after the guide is created in the Surgical Guide step, and when button is clicked, the guide STL file will be sent to the email address.



E-mail sending window automatically pops up after completing the guide export

8.2 Request the Dentium Milling Center (rainbow Digital Center) to print the surgical guide

model

This is a function to send STL file and request Dentium Milling Center to print the completed guide data.

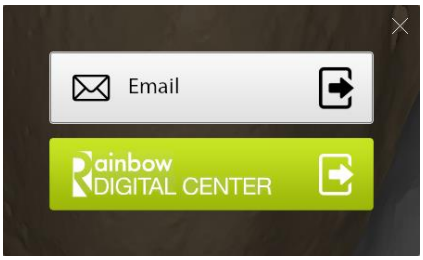
Only guides created with the settings below can request the milling center to print.

*** Conditions to requesting print Surgical Guide Model**

Metal/non sleeve offset: 0.02

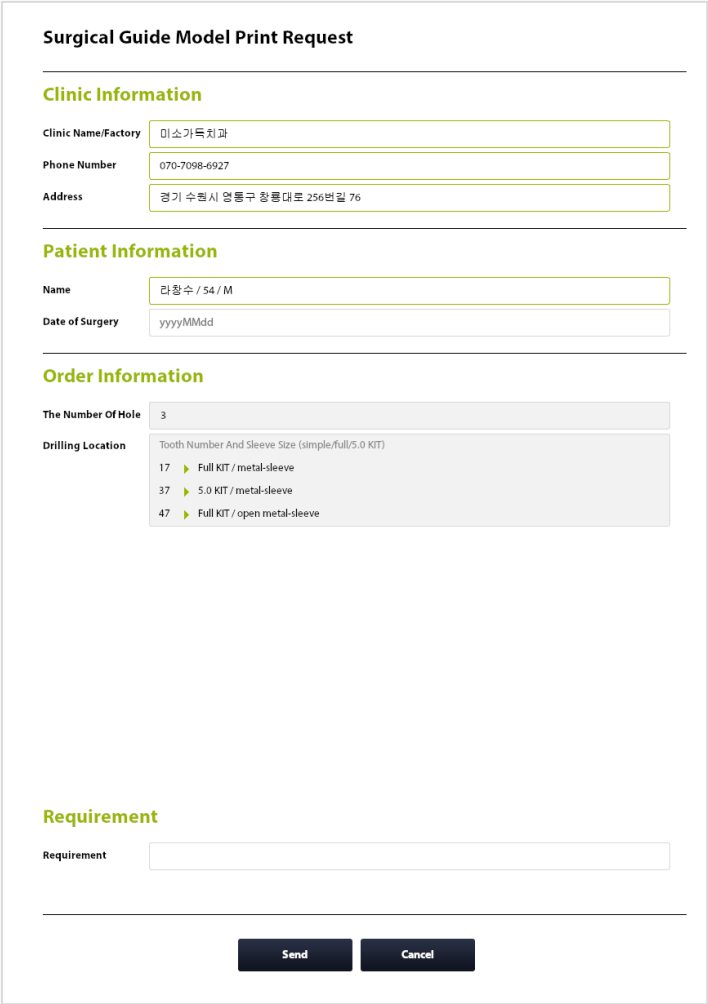
Offset From Teeth: 0.15 or 0.2

Click the button corresponding to located at the bottom of the program to enter the Send E-Mail pop-up window menu.



Send E-mail pop-up window

Click button to prepare the Surgical Guide Model Print Request



Surgical Guide Model Print Request

Clinic Information : Clinic information set in the setting window is automatically entered as default.

- Clinic Name/Factory : Name of dental clinic or dental laboratory
- Phone Number : Phone number
- Address : Shipping address information

Patient Information : Patient information is automatically entered as default. Be sure to enter the scheduled surgery date in accordance with the format.

- Name : Patient's name / age / gender
- Date of Surgery : Expected date of surgery (Format: yyyyMMdd)

Order Information : Drilling position and sleeve information set through fixture simulation are automatically entered.

- The Number of Hole : Number of Holes
- Drilling Location : Surgical location (Implant tooth number and sleeve size)

Requirement : Enter the requirement when printing.

Click **Send** button when the surgical guide model output request form has been completed.

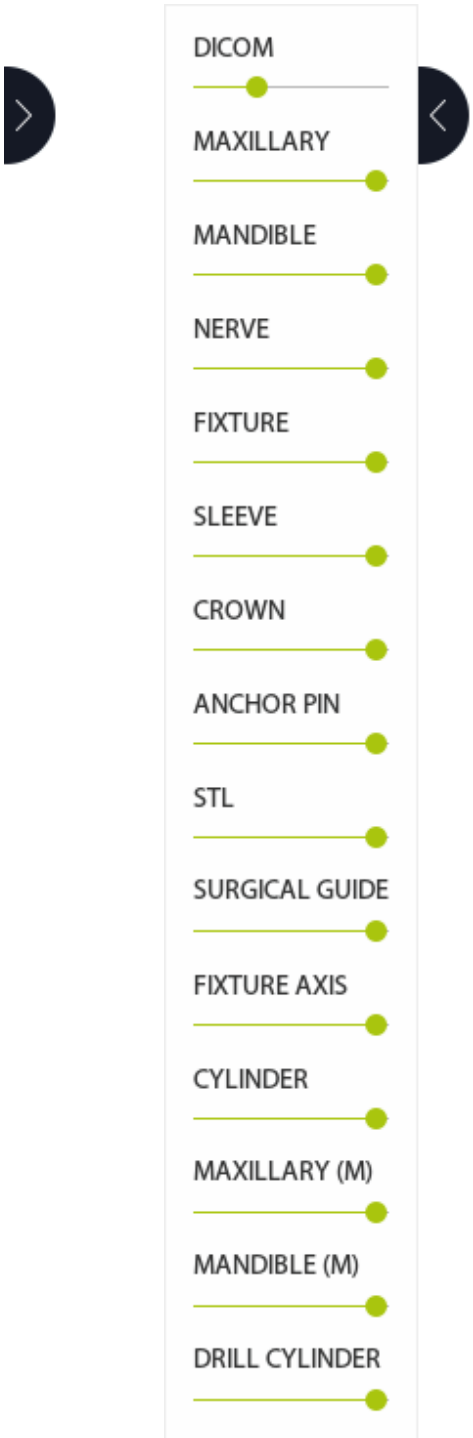
The PDF file of the surgical guide model output request and the guide STL file are sent to the milling center.

Transmit Surgical guide model output request in PDF file and STL file to the milling center

9 Tools

9.1 Image Operating Tools

This is a tool that allows you to adjust the transparency of objects displayed on the screen.



Default status **Unfold status**

DICOM : Adjusts the degree of density expression of CT data.

MAXILLARY : Adjusts the transparency of the maxillary model data.

MANDIBLE : Adjusts the transparency of the mandible model data.

NERVE : Adjusts the transparency of the neural tube.

FIXTURE : Adjusts the transparency of the fixture.

SLEEVE : Adjusts the transparency of the sleeve.

CROWN : Adjusts the transparency of the crown (prosthesis).

ANCHOR PIN : Adjusts the transparency of the anchor pin.

STL : Adjusts the transparency of model data.

SURGICAL GUIDE : Adjusts the transparency of the surgical guide.

FIXTURE AXIS : Adjusts the transparency of the fixture's center axis.

CYLINDER : Adjusts the transparency of the cylinder attached to the guide for drilling.

MAXILLARY(M) : Adjusts the transparency of the maxillary marker data.

MANDIBLE(M) : Adjusts the transparency of the mandibular marker data.

DRILL CYLINDER : Adjusts the transparency of the hole's inner diameter (cylinder) for drilling.

(Each slider only shows the content that corresponds to the operation step.)

9.2 Data Matching Tool

: Enables point setting

: Deletes all points

: Deletes selected point

: Performs automatic matching

: Displays matching precision

: Operates transfer function

Point Manual : 3 points / Switching to manual matching

9.3 Neural Tube Definition Tool

: Enables neural tube insertion

: Delete all neural tubes

: Deletes selected neural tube

9.4 Crown design tool

: Enables the implant selection window

: Deletes all implants

: Deletes selected implant

: Crown grouping

: Enables the grid

: Enables designation of the tooth extraction area

: Performs tooth extraction function

: Returns to the state before extraction

Fixture : Selects the corresponding fixture

CROWN LOAD : Loads external crown

9.5 Implant planning tool

: Enables the implant select window

: Deletes all implants

: Deletes selected implant

: Adds anchor pin

: Synchronizes the fixture tilt

9.6 Surgical Guide Creation Tool

: Enables guide area designation

: Deletes the entire guide

: Deletes both the creation guide and the guide area

: Sets the insertion direction

Sleeve : Changes the currently selected sleeve information

Non Open Non/Open : Designates Non-Sleeve/Open-Sleeve

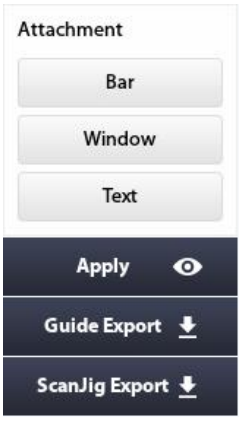
Offset From Sleeve

- Sleeve : Sets inner diameter thickness offset of Metal Sleeve and Open Sleeve
- Non-Sleeve : Sets inner diameter thickness offset of Non-Sleeve

Guide Setting

- Thickness : Sets Guide thickness
- Offset From Teeth : Sets the offset between the scan model and the guide

Bar : Adds bar



Window : Adds window

Text : Adds text

Apply : Applies attachment

Guide Export : Extracts guide

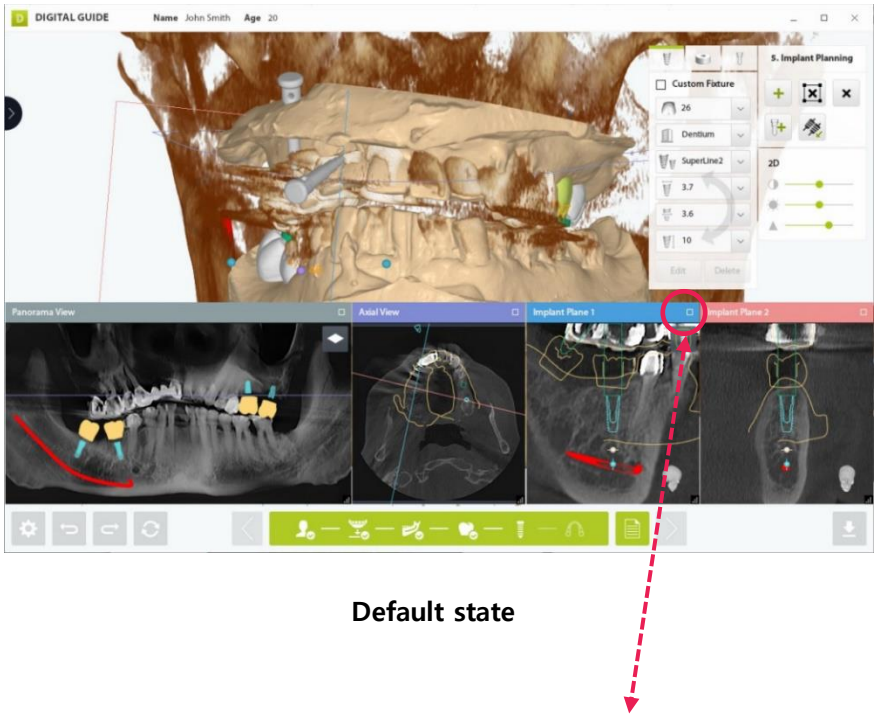
ScanJig Export : Extracts scan jig

9.7 Report Tool

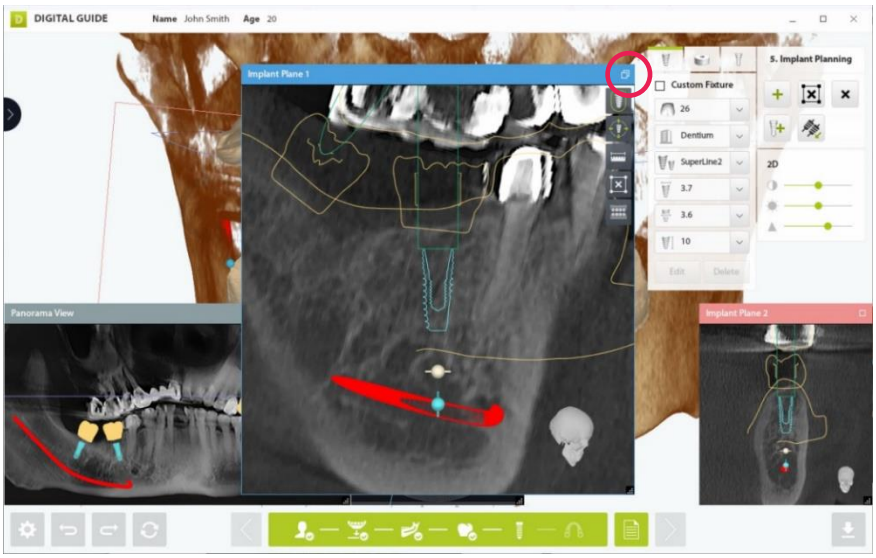
Print Report : Prints report

Export Report : Prints report PDF

9.8 Changing the size of the sectional image window



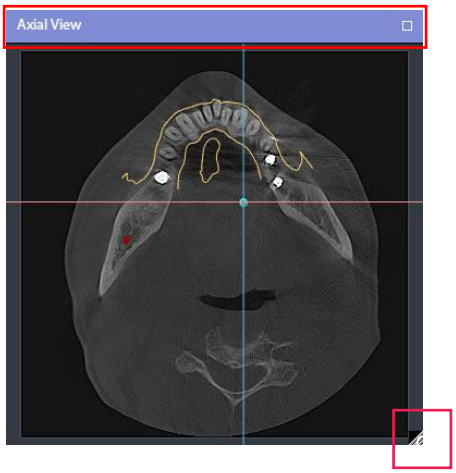
Default state

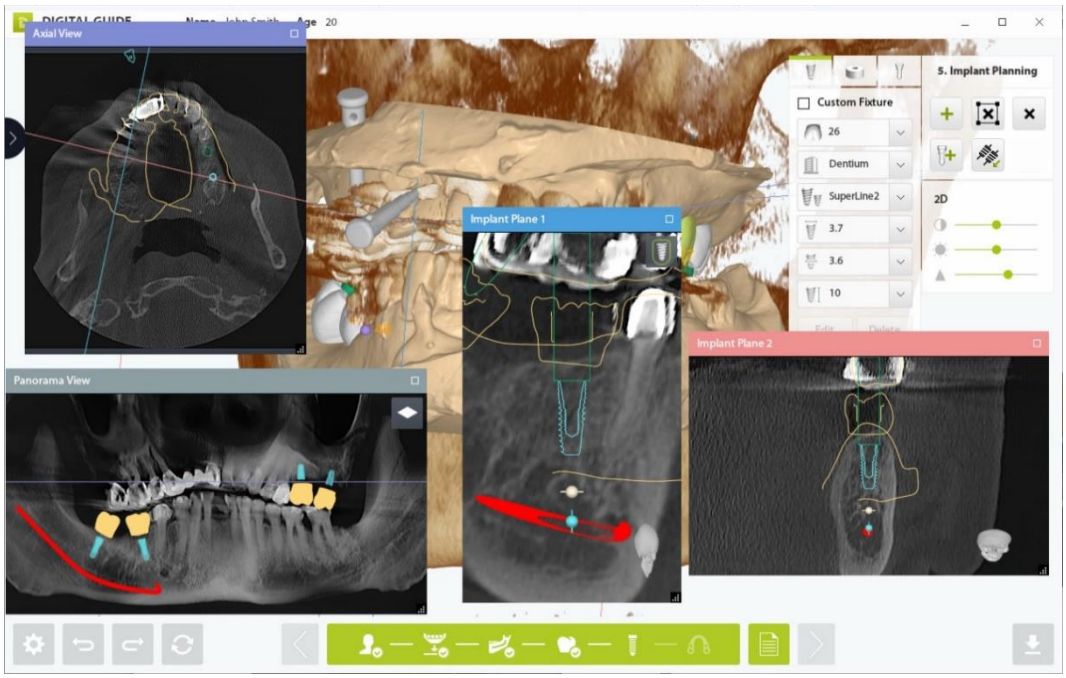


Window size enlarge mode

9.9 Layout change and initialization

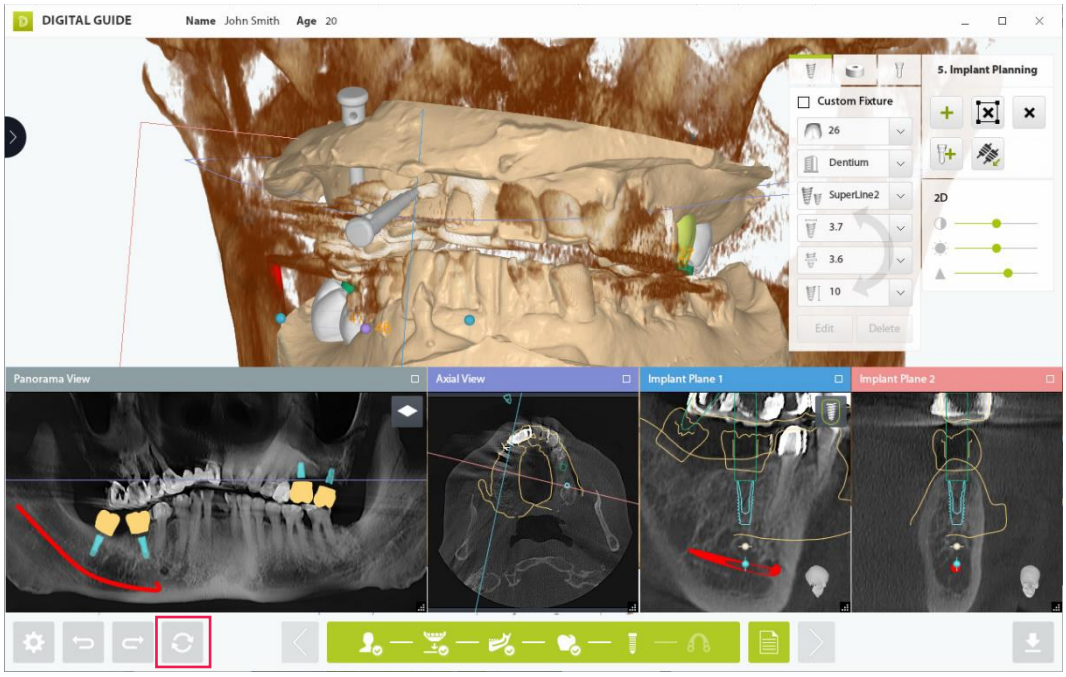
Click the title bar of each view to move. Can adjust the size holding right bottom.





Layout change

 : Can change to initial layout state using reset button



Reset to initial state of layout

9.10 Undo / Redo

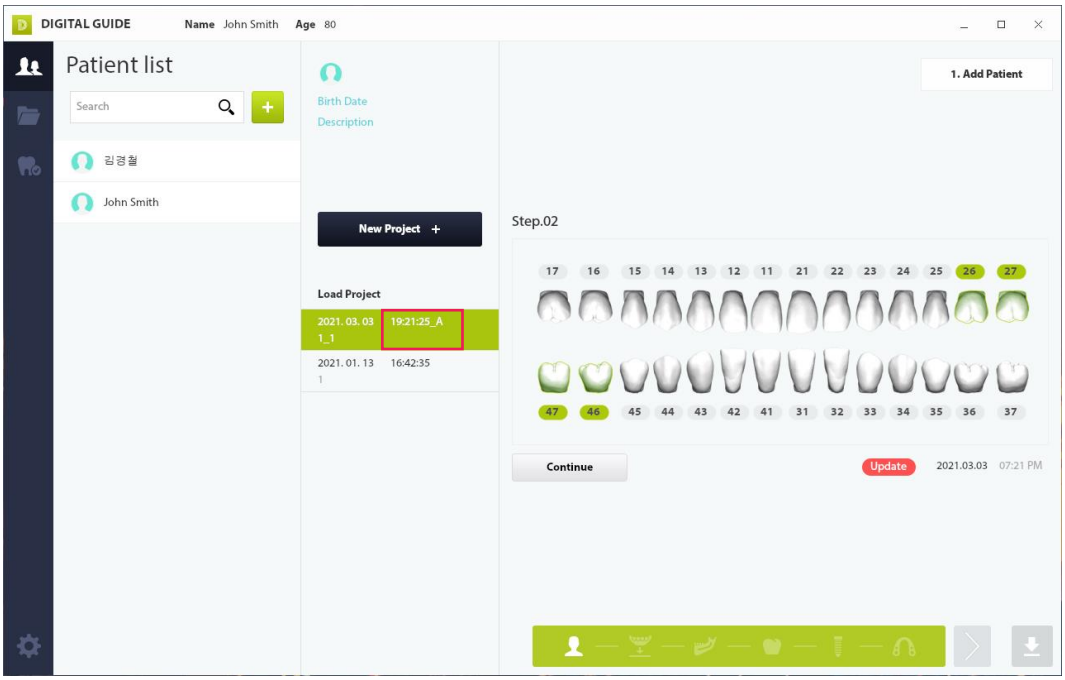
You can cancel or redo the work through button located at the bottom left of the program and Ctrl + Z, Ctrl + Y.

Application work: Sets positions of matching model / neural tube / crown / fixture and the guide area

9.11 Automatic Save

After performing the key functions, the project status is automatically saved.

You can prevent loss of surgical information due to unexpected program termination, etc.



Auto Save: Mark as "Save Time_A"

Manual save: Mark "Save time" (Manual save: Save project using button)

Time for Auto Save

① : Switch step

② : Data matching

③ : Create neural tube

④ : Perform tooth extraction

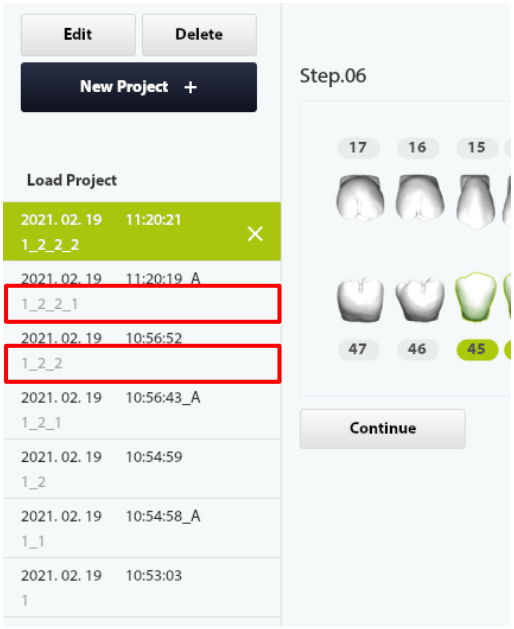
⑤ : Create Guide

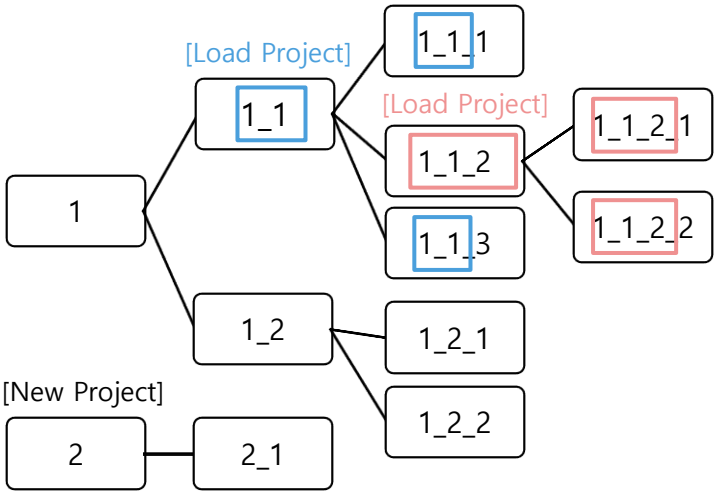
9.12 Project management No.

When saving a project manually/automatically, a management number will be automatically created.

You can check the saving history of the project.

A new management number is created by adding the string "_maximum value among the same hierarchy" to the existing management number of the loaded project.



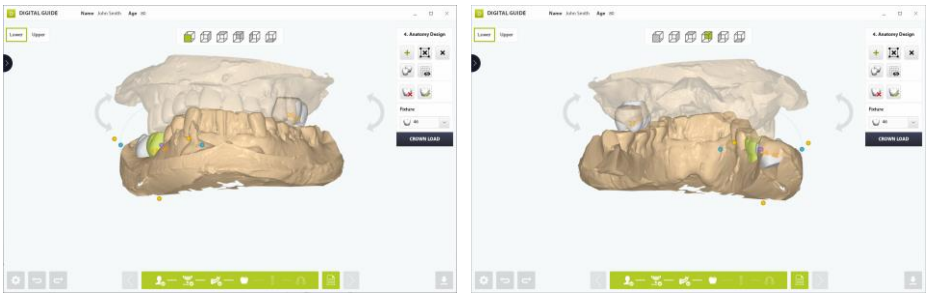


Automatic creation structure of Project Management No.

→ Loaded project management number _ maximum value among the same hierarchy

9.13 Model Viewport Rotation

You can rotate the model data by clicking the Front / Rear / Up / Down / Left / Right buttons.



10 Configuration

You can change/save initial values of user information (hospital name, address, phone number, etc.) and variable data used in the program. After saving the environment settings, the program must be restarted to apply the set values.

10.1 General

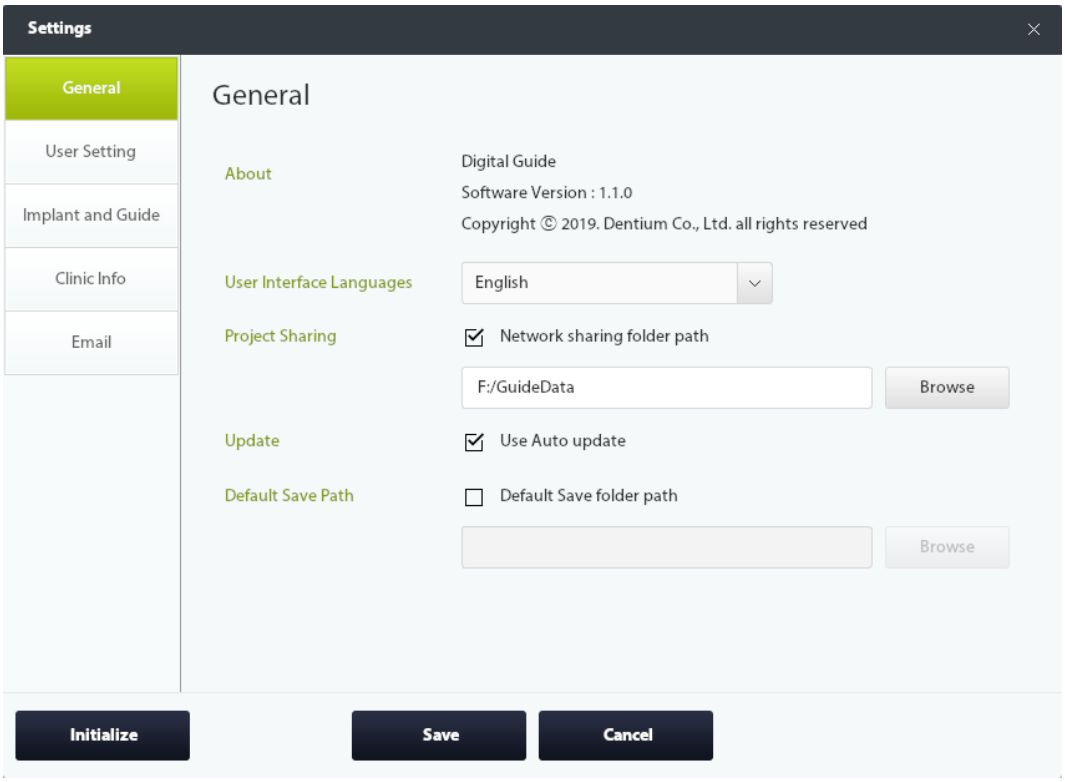
About : Displays software name/version

User Interface Languages : Selects the language to be used (Korean / English)

Project Sharing : Selects whether to use the sharing function and sets the sharing folder path

Update : Selects whether to use the automatic update function

Default Save Path : Sets the default save paths of guides, scan jigs, and reports



General Setting

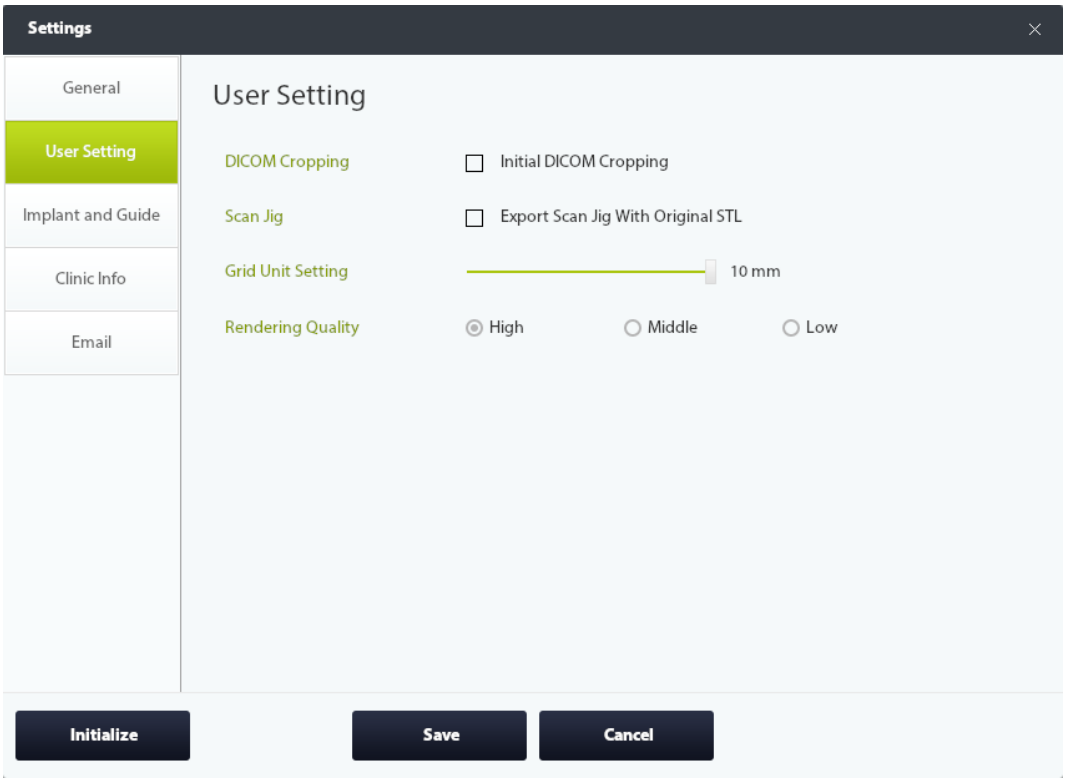
10.2 User Setting

DICOM Cropping : Sets DICOM cropping function

Scan Jig : Selects whether to automatically extract the scan jig merge model when printing the guide

Grid Unit Setting : Sets the grid spacing of Anatomy Design stage

Rendering Quality : Sets the rendering quality



User Setting

10.3 Implant and Guide

Implant Planning Settings

Implant Safety Zone - Radial Distance : Sets the safety distance in the radial direction of the fixture

Implant Safety Zone - Apical Distance : Sets the safety distance toward the bottom of the fixture

Fine Tuning Interval - Translation : Sets the fixture fine tuning shift value

Fine Tuning Interval – Rotation : Sets the rotation value of the fixture fine tuning.

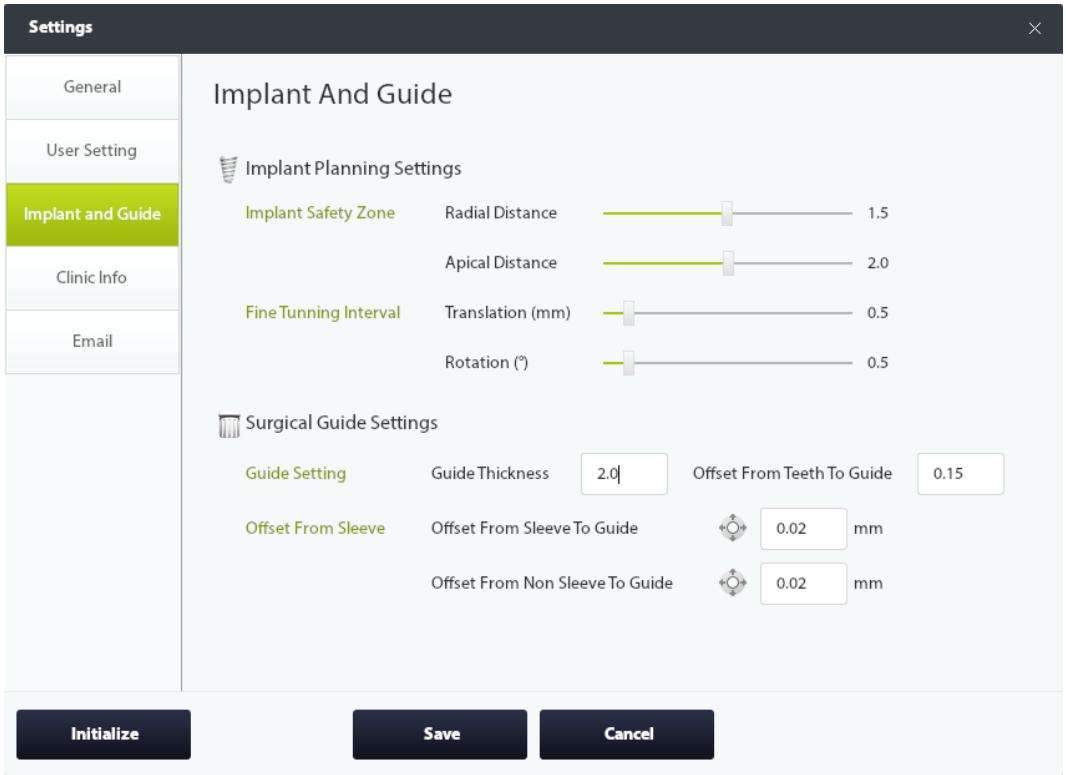
Surgical Guide Settings

Guide Thickness : Surgical guide thickness

Offset From Teeth To Guide : Gap between tooth and guide

Offset From Sleeve To Guide : Gap between guide and sleeve

Offset From Non Sleeve To Guide : Gap between guide and non-sleeve



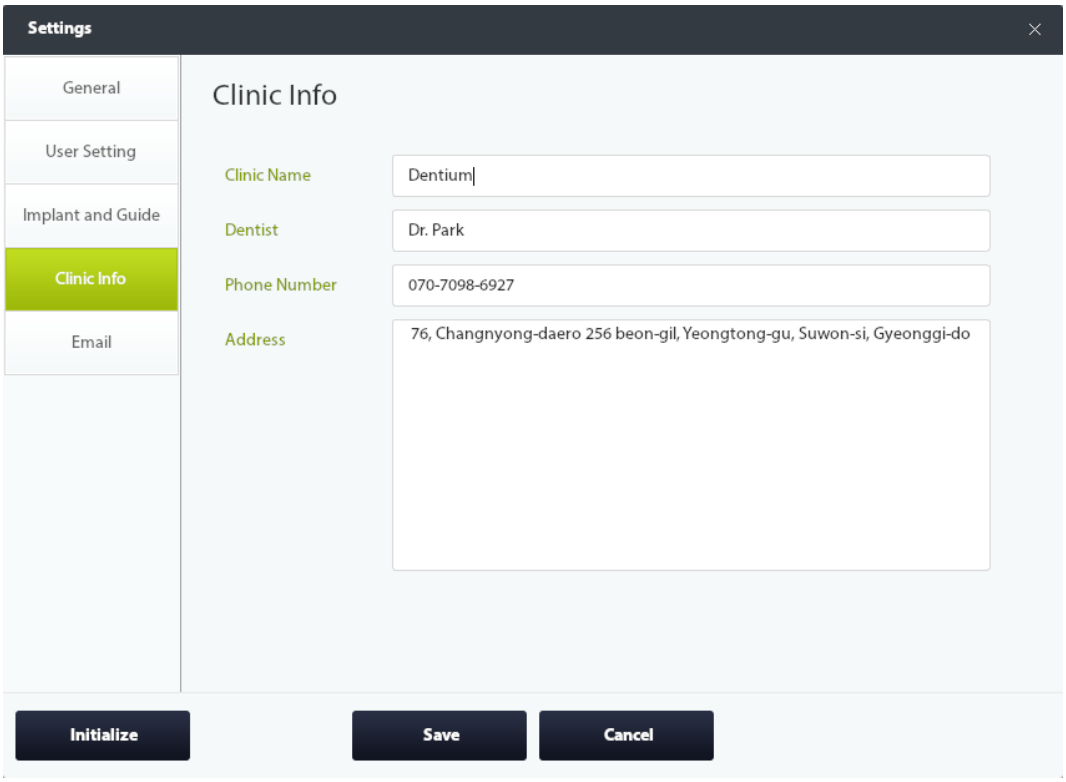
10.4 Clinic Info

Clinic Name : Sets the hospital name

Dentist : Sets the doctor's name

Phone Number : Sets the phone No. of the hospital

Address : Sets the address of the hospital



Clinic Info Setting

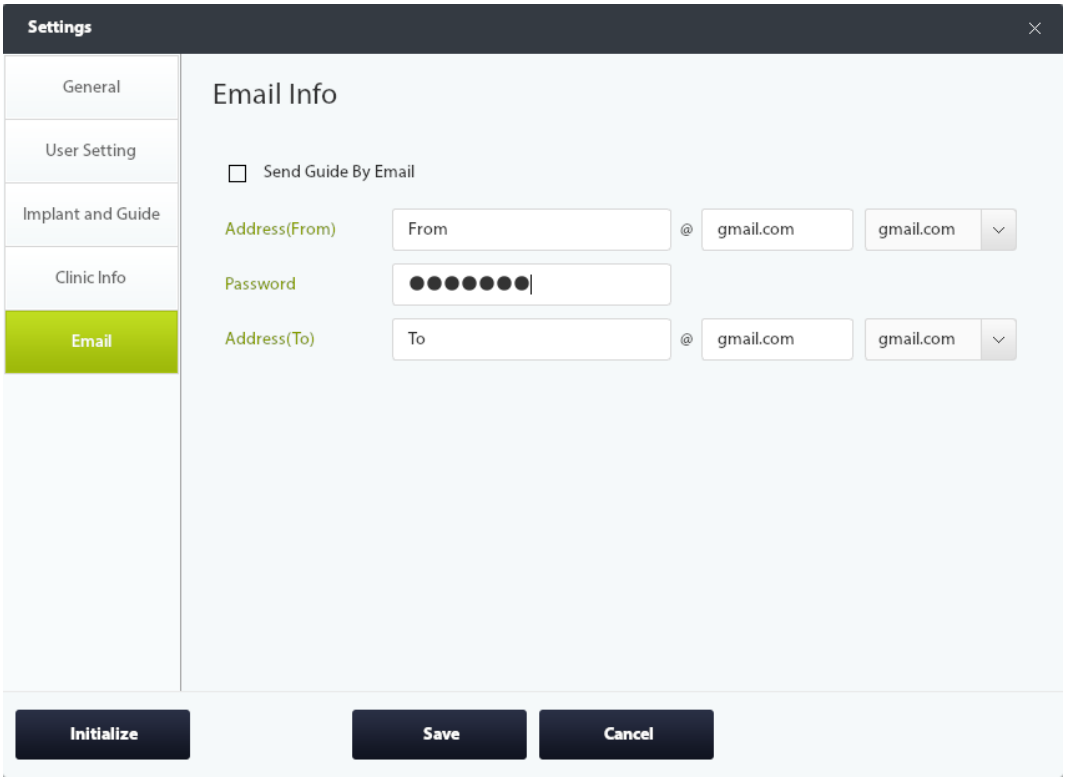
10.5 E-mail

Send Guide By Email : Selects whether to send E-mail at the same time when exporting Guide

Address(From) : Enter the sender's E-mail address

Password : Sets the password

Address(To) : Enter the receiver's E-mail address



Email Setting

Neural tube and fixture simulation and surgical guide creation must be carried out by specialists with sufficient experience and expertise.

The structure, location, and content may not be same as actual ones and no results are guaranteed.

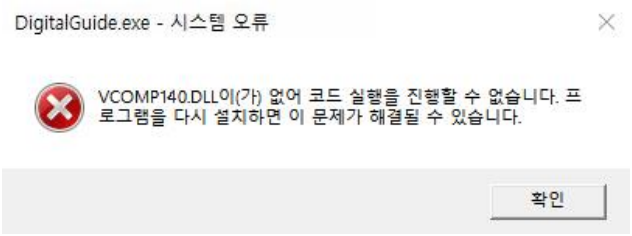
Digital Guide Manual

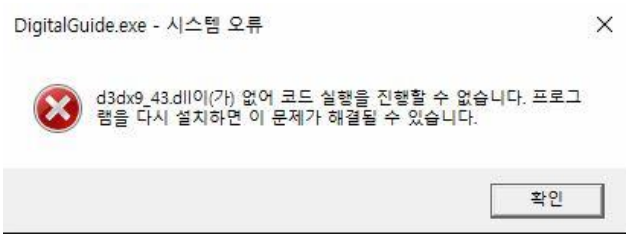
FAQ

Dentium
For Dentists By Dentists

V FAQ

1. When starting the program, a system error 'Can't proceed with code execution due to no ~.dll' appears.



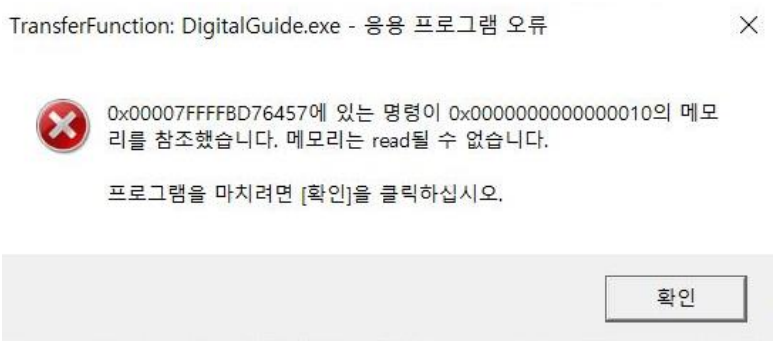


Default setting necessary for using the program is necessary. See the warning message and install the necessary items referring to the following.

- ~120.dll -> Install redistribution package of visual studio 2013 (x86, x64) : https://www.microsoft.com/ko-kr/download/details.aspx?id=40784
- ~140.dll -> Install redistribution package of visual studio 2015 (x86, x64) : https://www.microsoft.com/ko-kr/download/details.aspx?id=48145
- - d3d~.dll -> Install directX:

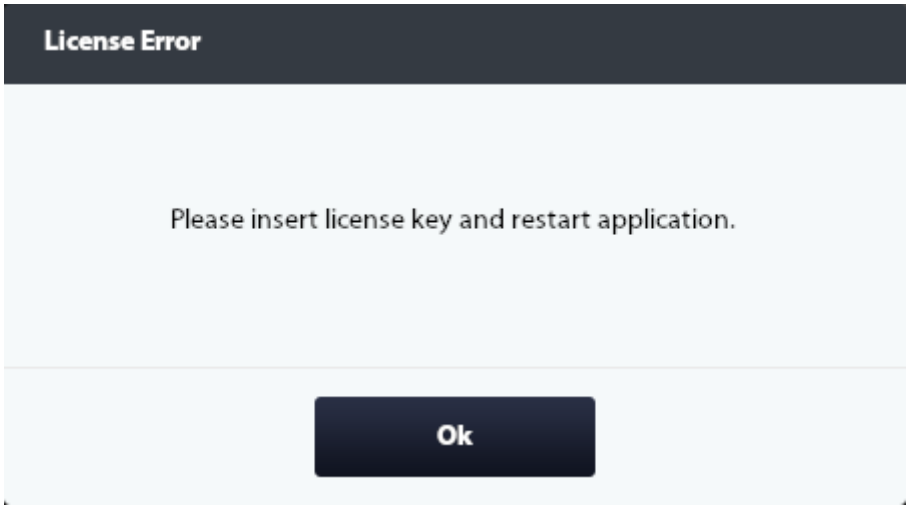
  https://www.microsoft.com/ko-kr/download/details.aspx?id=35

2. A memory error window occurs while using the program.



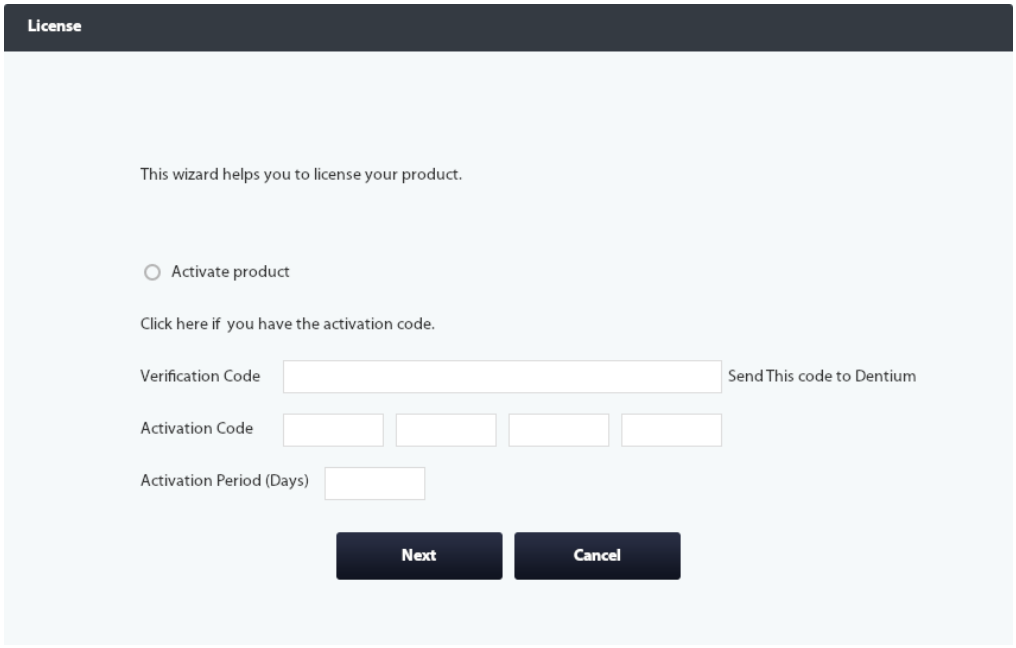
There is not enough capacity remained on the hard disk. Please secure the capacity.

3. When starting the program, a license error window appears.



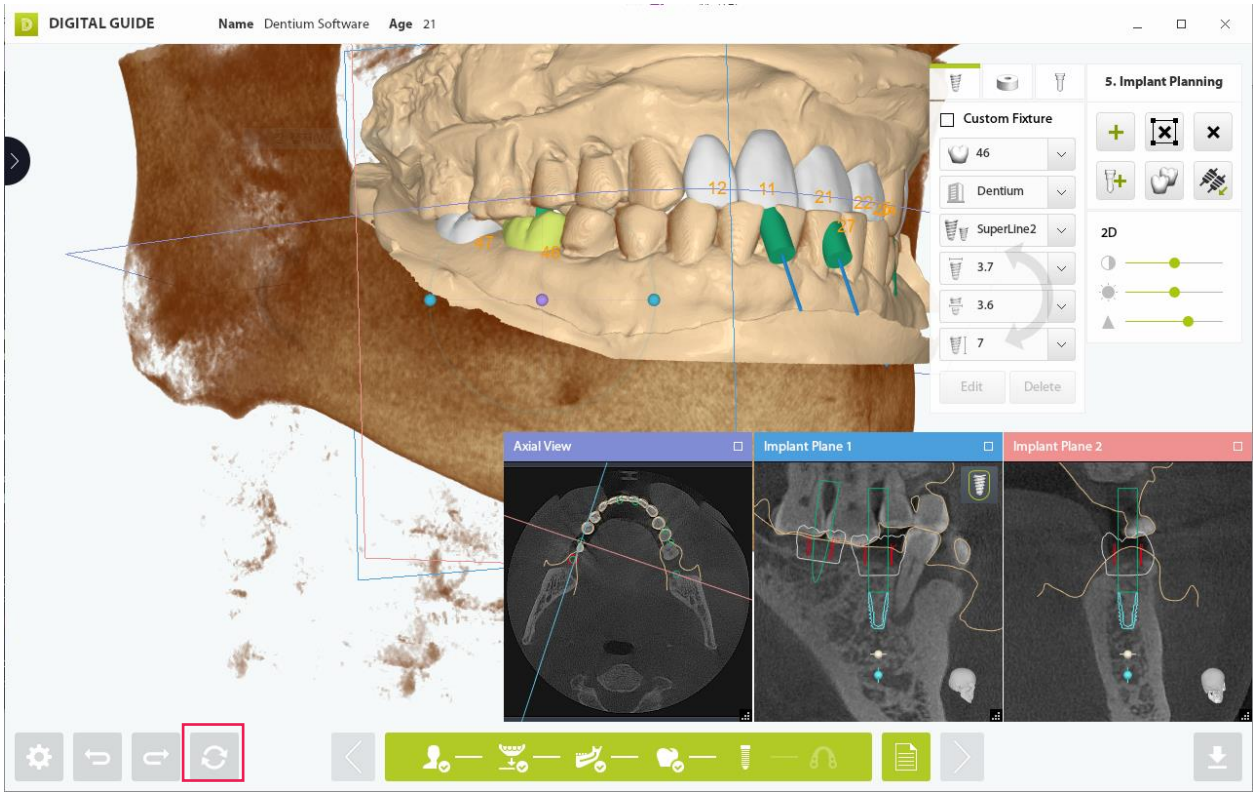
- Check if the dongle key is properly inserted.
- If the license error still occurs even though the dongle key is inserted, insert it into another USB pod.

4. When starting the program, the license input window appears.

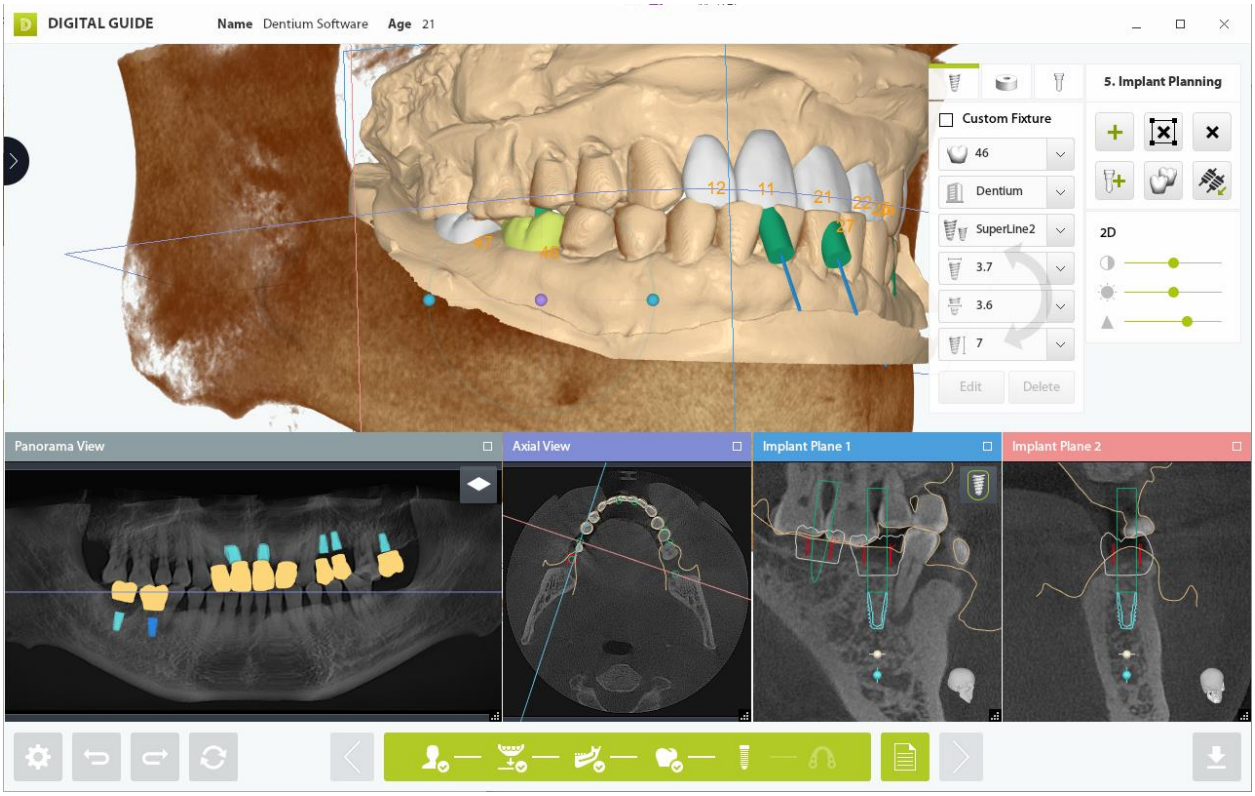


- The license has not been authenticated or the license period has expired. Please contact Dentium to renew your license.

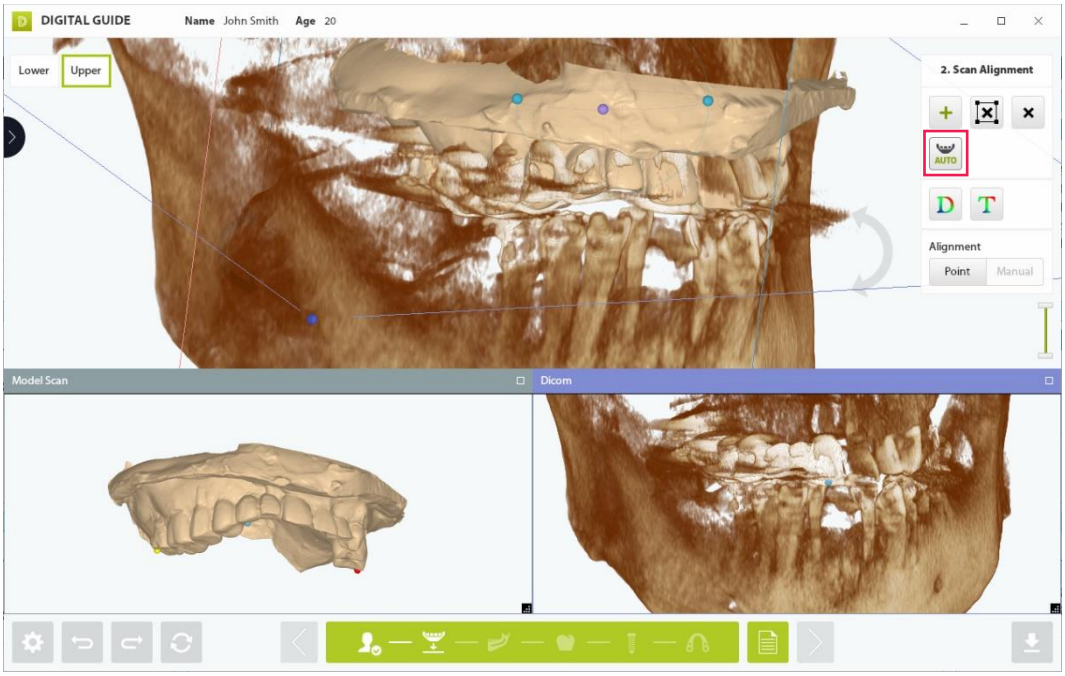
5. The cross-section window disappears.



If the cross-section window is not visible as above, click Reset Layout.



6. Automatic matching fails



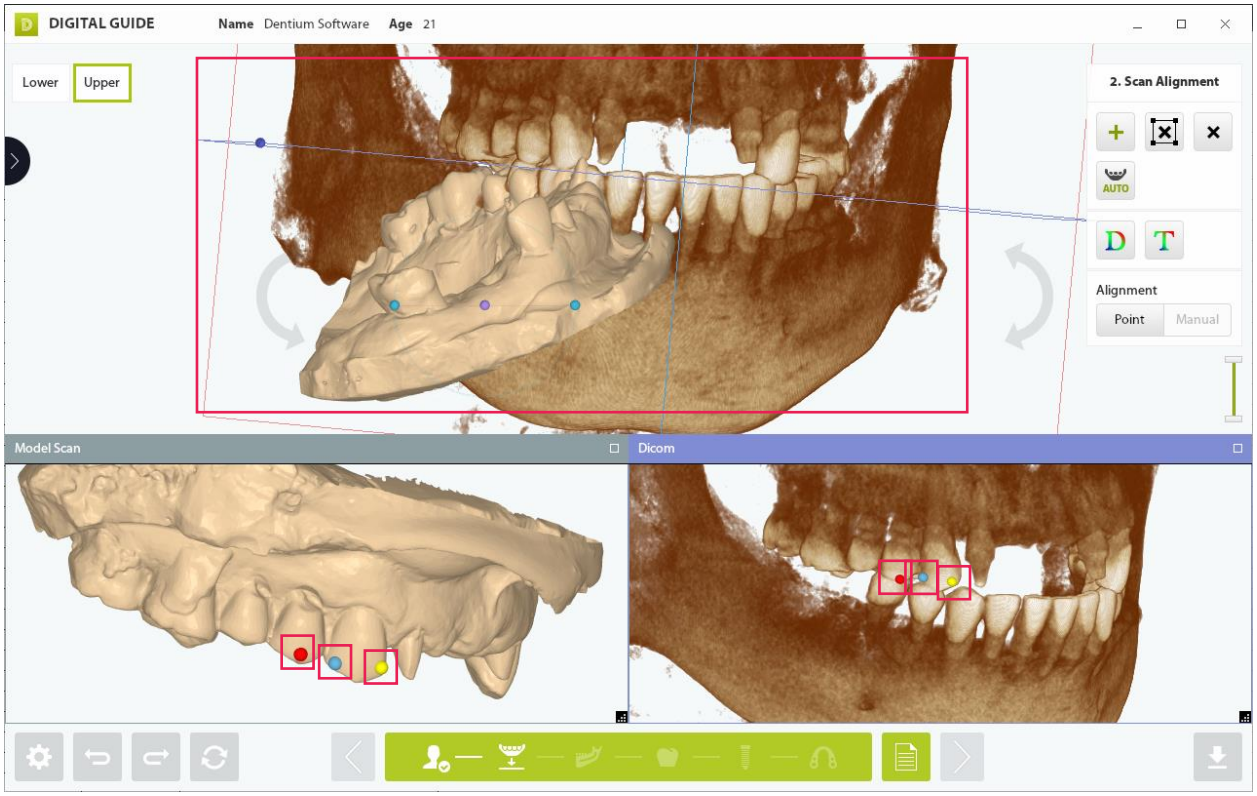
- **Limitations on the automatic matching function**

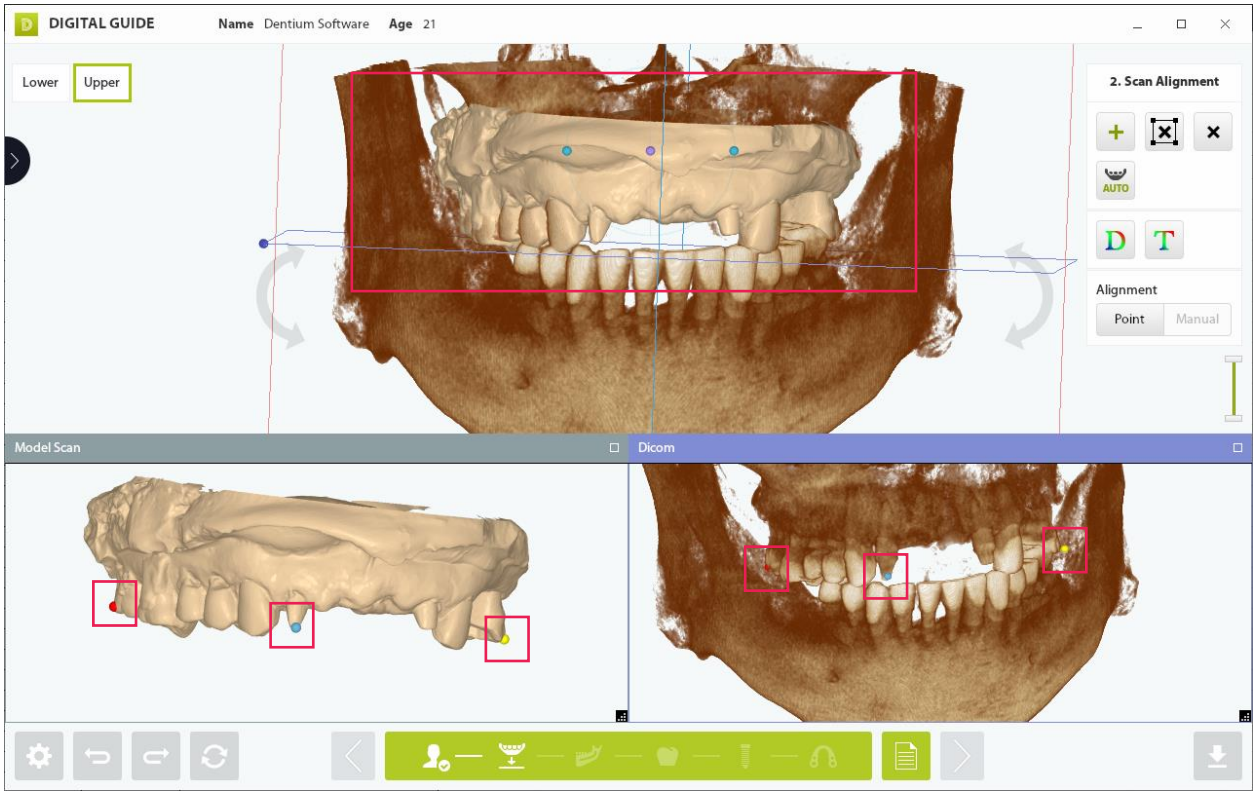
1. When CT image and scan model data are different each other

2. Patients with edentulous jaw or if the number of teeth is less than 3
3. When there is a lot of noise in the CT image, or the image is cut (partial)
4. Automatic matching function is not supported when using graphic cards other than NVIDIA graphic cards

It may fail in other cases. If it fails, please use Point Matching or Manual Matching.

7. Point matching is distorted

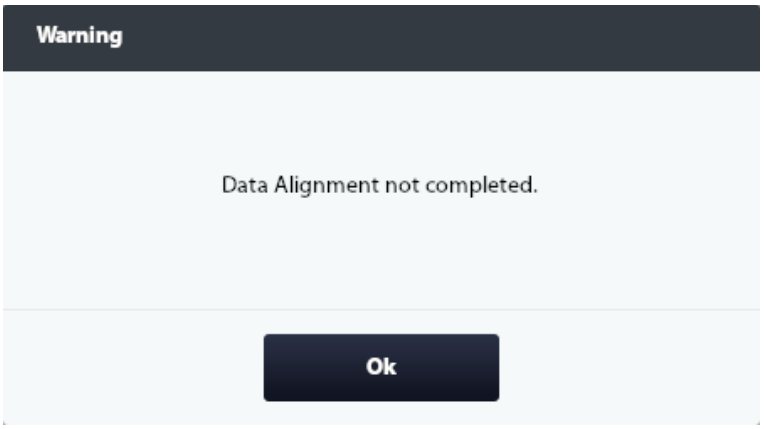




*** When setting points, it is advantageous for improving the matching precision to set 3**

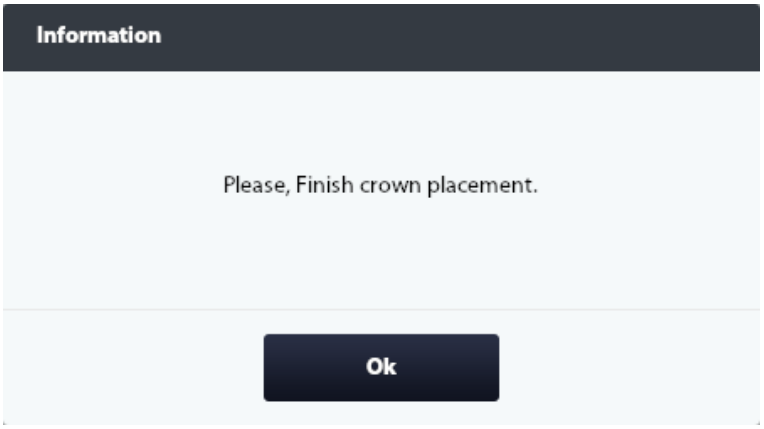
points as far as possible.

8. When switching to Anatomy Design or Implant Planning, the following warning window appears.



Return to Scan Alignment to complete the matching.

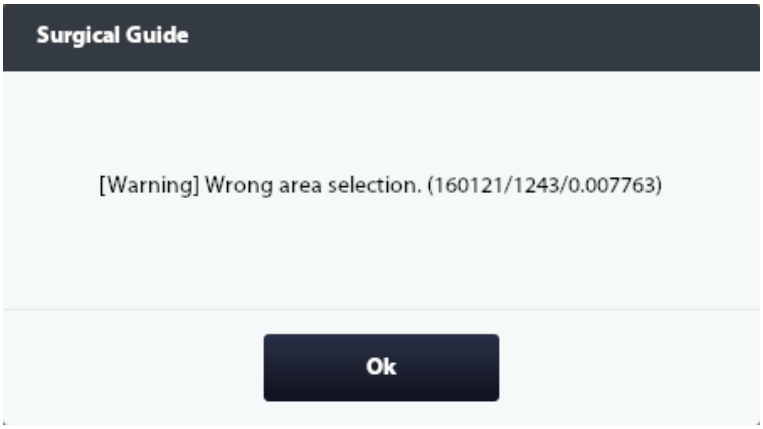
9. When switching steps in the Anatomy Design or Implant Planning tab, the following warning window appears.



Can move the step after completing the arrangement for the new crown.

If the crown is not visible, put the cursor over the scan model to see the crown following the mouse.

10. When creating a guide, the following warning window appears.



- Occurs when the guide creation area is too narrow or there is a hole or twisted area in the creation area.
- Increase the guide area and designate the guide area to avoid holes and tears.
- If the hole or tear is too severe, you will need to re-scan.

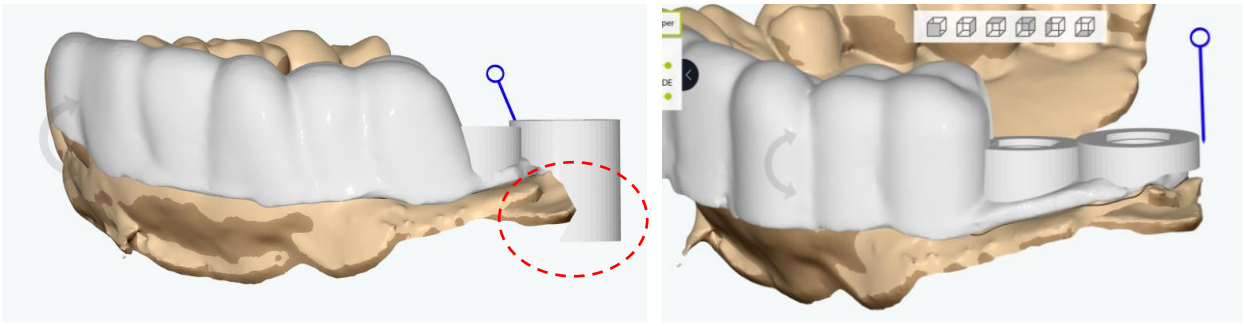
11. Sleeves, support bars, etc. are not attached to the guide.

- An error may occur if adjacent cylinders are stuck to completely parallel lines. Move or rotate the position very finely in the Implant Planning step. (Shift + arrow keys: fine movement, Shift + Alt + arrow keys: fine rotation)
- Delete the vaccine or antivirus program from your PC or use the program after exit.
- The vaccine and anti-virus programs may limit the overall function of the program.

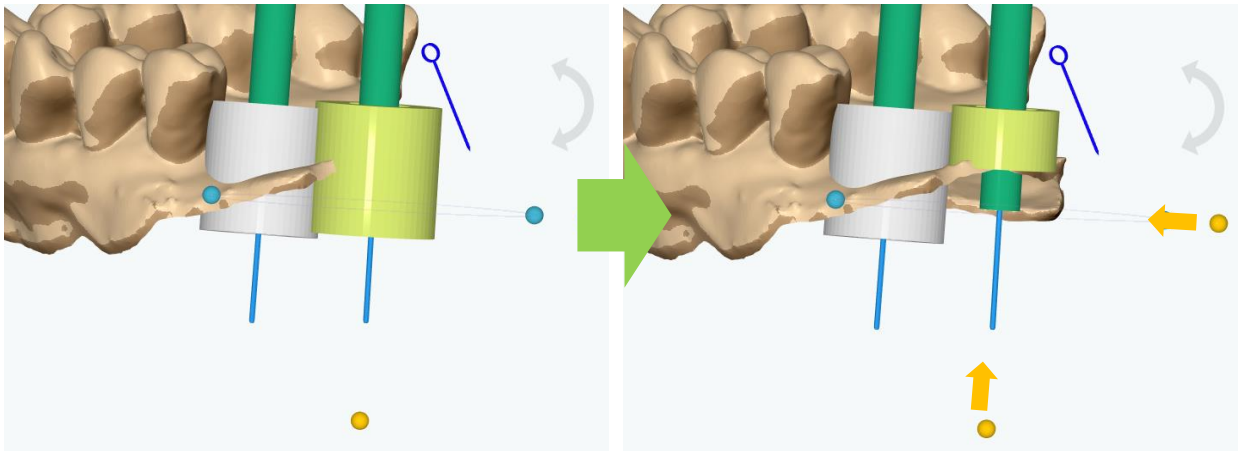
12. The shape of the guide created is strange.

- Check the undercut direction.
- Check if there are any holes or torn areas in the model in the creation area.
- If the hole or tear is severe, you will need to re-scan.

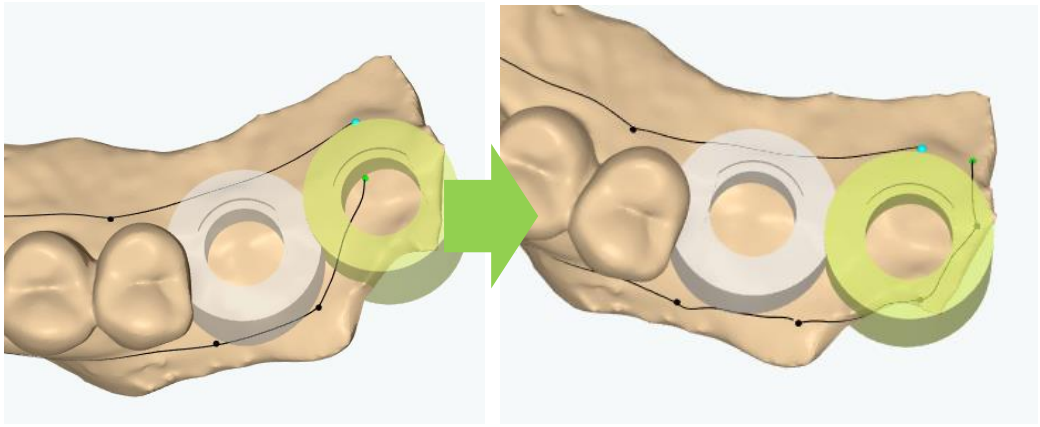
13. The lower part of the cylinder is not cut properly.



Lower cutting error　　Normal



Create the guide by adjusting the outer diameter and height of the cylinder.

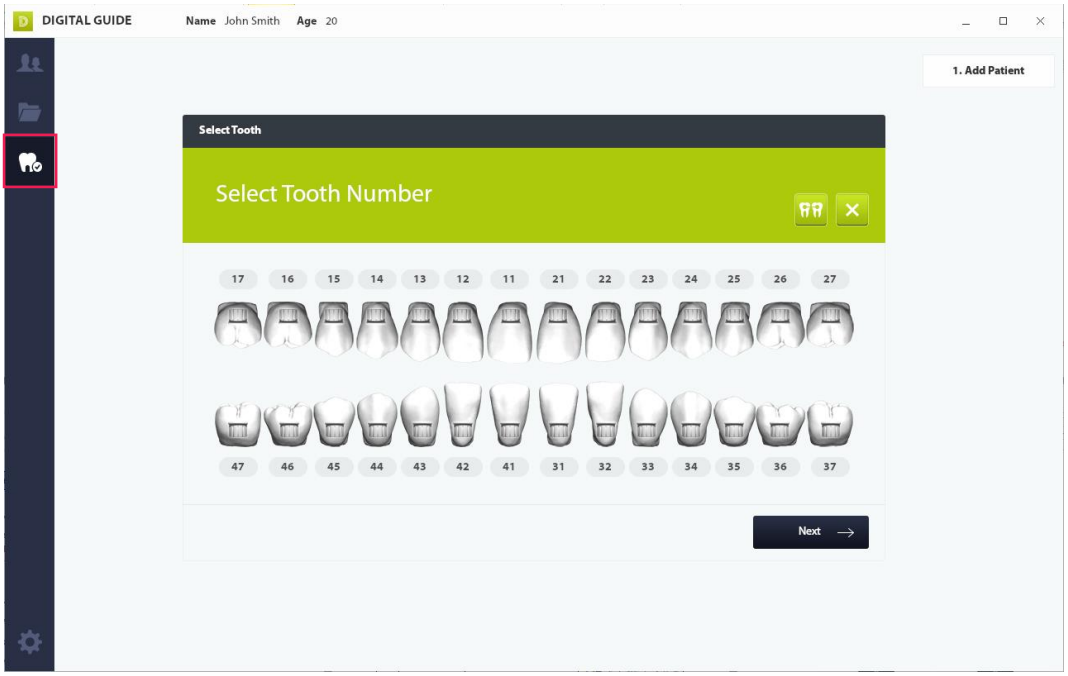


Designate the guide area sufficiently to cover the cylinder. Designate the guide area as wide as possible even when the scan model is short compared to the sleeve position.

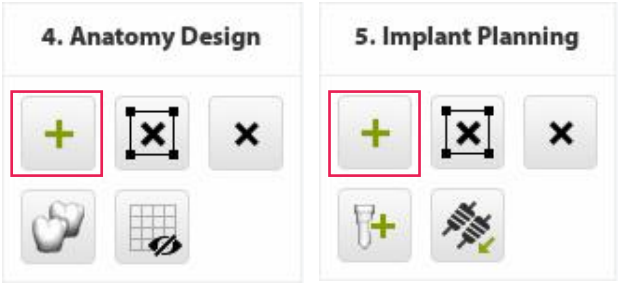
If the lower part of the cylinder is not cut even with the above measures, cut it using a window.

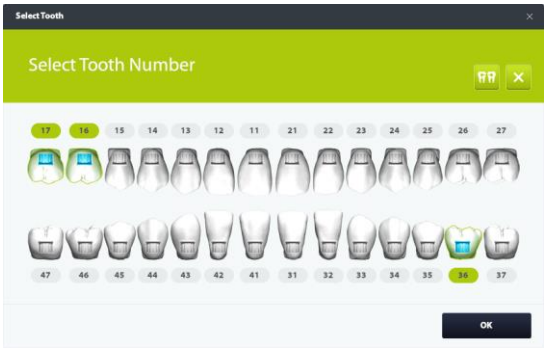
14. I want to add or change the implant crown/fixture during surgical guide planning.

- After moving the Patient list, press the Implant button to move to the tooth selection window without selecting another patient.



- Click the + button in the upper right corner of the Anatomy Design or Implant Planning step to display the tooth select window.

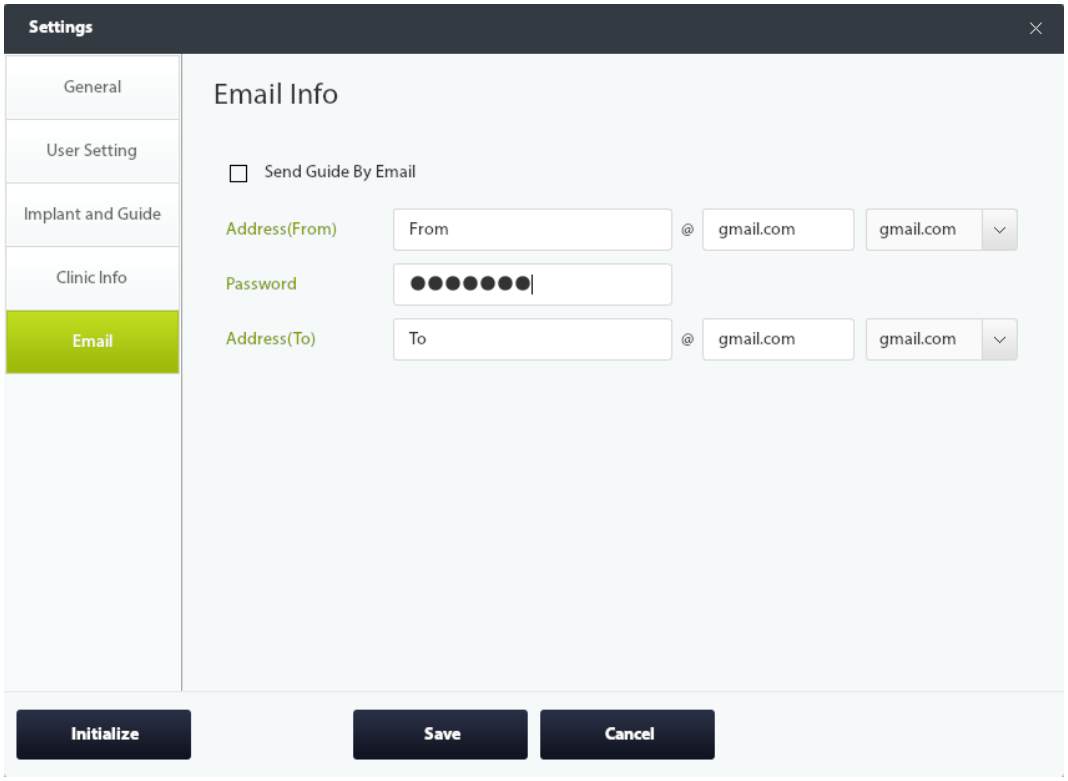




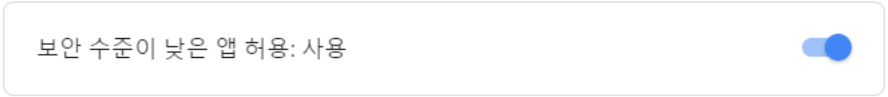
- When adding a tooth in a direction that is not matched in the Anatomy Design or Implant Planning step, please note that the direction of the tooth that is placed as default may be different from the direction of the scan model.

15. E-mail transmission / request milling center to print fails

- Check that the email address and password set in the settings are correct.
- Sender's e-mail address is available only with Gmail account (google).



- The sender's e-mail security level needs to be changed.
  Allow low-security apps at the link https://myaccount.google.com/lesssecureapps: Please change it to 'Enable'.



Digital Guide Manual

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