

# Ez3D-i

## User Manual

Version : 5.4

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- ENGLISH



# Introduction

This manual provides detailed information on how to use Ez3D-i. This document may not be reproduced in any manner without the prior written consent from the publisher.

The user manual of Ewoosoft consists of 1) Product Installation and Server Manual, and 2) Product User Manual. It is recommended that users read this user manual thoroughly before using the program in order to learn the installation process of Ez3D-i S/W and the functions of the program.

For supplementations, this manual is subject to change without prior notice. A printed manual distributed along with the product may not include contents specific to the latest version of the product. For additional information pertaining to this manual and the product, please contact us at:

## **Ewoosoft Co., Ltd.**

- Website: <http://www.ewoosoft.com>
- Tel.: +82-1588-9510

## **About this document**

- Manual Name: Ez3D-i User Manual
- Publication Date: August 2022
- Manual Version: v5.4.1
- Relevant Ez3D-i Version: v5.4
- Manufacturer: Ewoosoft Co., Ltd

## **User Notice**

- This manual is subject to change without prior notice for supplementation.
- Several functions of Ez3D-i might be limited to use depending on countries and languages.
- This document may not be reproduced in any manner without the prior written consent from the publisher.
- To maintain seamless operation, user must read and follow the instructions prior to using Ez3D-i.
- For the optimal use of Ez3D-i, the user must comply with the system requirements.
- When transferring patient data such as images or information, laws and regulations on personal information in the country of use must be obeyed.

**Product Information**

Product: Dental Imaging Processing Software for X-ray System	
Model: Ez3D-i	
	801-ho, Vatechnetworks Bldg.,13, Samsung 1-ro 2-gil, Hwaseong-si, Gyeonggi-do, Korea Ewoosoft Co., Ltd.
Website : www.ewoosoft.com	MADE IN KOREA
	AVISO Bâtiment A 4ème étage 49 Quai de Dion Bouton 92800 Puteaux, France VATECH Global France SARL.
	Serial No. : Marked On the Product
Software Version : Marked On the Product	   

**Standard**

Ez3D-i complies with the following international standards and regulations.

	Manufacturer
	Authorized representative in the European Community
	Serial Number
	Prescription Device
	CE Marking
	Caution
	Consult Instructions for Use

The prescription use statement as required by 21 CFR 801.109(b)(1)

“Caution: Federal Law restricts this device to sale by or the order of a physician or any other practitioners licensed by the law of the state in which that person practices to use or order the use of the device.”

**Unique Device Identification (UDI)**



(01)08800019700340

### **Cyber Security**

Before installing the Ez3D-i, you must follow the instructions below for Cyber security.

The instructions help to protect the program against cyber security threats such as viruses and malware.

- Prior to installing and using Ez3D-i, scan your computer system with anti-virus and anti-spyware programs from a trusted source.
- Install, set up and enable adequate anti-virus software.
- Maintain up-to-date anti-virus software.
- Make sure that your OS has the latest security updates applied.
- Turn on your PC's firewall.
- Windows 10 or higher has a built-in firewall that is turned on by default.

If you have any cyber-security-related concern or problem, please contact our customer support on the phone or via e-mail at the contacts listed below:

- Tel.: +82 1588-9510
- E-mail: [gcs@vatech.co.kr](mailto:gcs@vatech.co.kr)
- Website: <http://www.ewoosoft.com>

## The Main Functions of Ez3D-i

Ez3D-i provides the user with the following functions using 3D VR based on patient's CT image.

- Diagnosis based on high resolution 3D VR
- Simple and easy manipulation of 2D/3D image
- 3D implant simulation
- Powerful consultation using video contents
- Customizable report creation using patient images

Ez3D-i can be used in remote and local network environments with the exact same settings. If it has been installed on several PCs, the user can share the database for patient images and information in several workspaces.

## License Plan Options

Ez3D-i is available in a variety of plans in response to the users' needs. Restrictions on provided tabs and functions may apply by the plans. Please contact our customer support to upgrade your license plan.

Tabs available for each license plan are described below.

Tab	Lite	Basic	Advanced	Endo
Common (MPR/Section/3D PAN/Consult)	O	O	O	O
TMJ	X	O	O	O
SEGMENT	X	X	O	O
ORTHO	X	X	O	O
ENDO	X	X	X	O



- In addition to the license plan above, Consult Premium license is required to use consult contents provided by Ewoosoft. A user without the license is able to view only user-added contents in Consult tab.

Features available for each license plan are described below.

Feature	License Plan				
	Lite	Basic	Advanced	Endo	
Import	Secondary CT	X	O	O	O
	STL Merging (Auto)	O	O	O	O
	3D Photo	X	X	O	O
Export	CT > STL (Export Surface Model)	X	O	O	O
	Edit STL Model (Bone Cutting, Add Object)	X	X	O	O
	Recon Ceph	X	O	O	O
Image Tuning	Filter (Windowing > 'VR')	X	O	O	O
Implant	Tooth Extraction	X	X	O	O
Airway	Measure Airway	X	O	O	O

Not all features provided by Ez3D-i are listed above. Features other than listed above are available in all license plans.



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# Chapter 1. Ez3D-i Basics

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## 1. Indications for Use

Ez3D-i is dental imaging software that is intended to provide diagnostic tools for maxillofacial radiographic imaging. These tools are available to view and interpret a series of DICOM compliant dental radiology images and are meant to be used by trained medical professionals such as radiologist and dentist.

Ez3D-i is intended for use as software to load, view and save DICOM images from CT, panorama, cephalometric and intraoral imaging equipment and to provide 3D visualization, 2D analysis, in various MPR (Multi-Planar Reconstruction) functions.

## 2. PC System Requirement for Ez3D-i

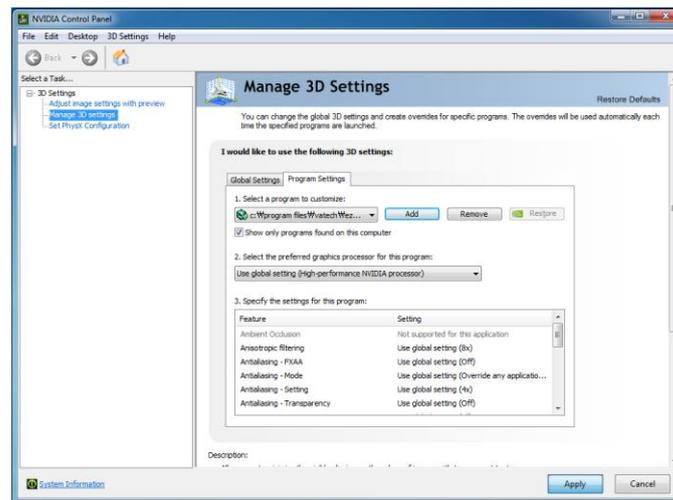
The minimum and recommended system requirements to run Ez3D-i are as follows.

Category	Minimum Requirement	Recommended Requirement
CPU	Dual-Core Processor @3.4GHz	Quad-Core Processor @3.4GHz or Higher
GPU	NVIDIA GPU (GPU Memory: 1GB)	NVIDIA GPU (GPU Memory: 4GB or Higher)
RAM	4 GB	8 GB or More
OS	Windows 10 (x64)	Windows 10 (x64)
Display	1280×1024	1920×1080 or Higher
Network	100M Ethernet LAN(CAT 5 cable) or Wireless Network 802.11n	1G Ethernet LAN(CAT 5E cable) or Higher or Wireless Network 802.11ac or Higher



- The updated version of graphic card driver should be installed on user's PC.

For the users who use NVIDIA graphic card, go to [Control Panel > NVIDIA Control Panel > 3D Settings > Manage 3D settings] to add Ez3D-i.



For laptop users, please set the 'Select the preferred graphics processor for the program' option as 'High-performance NVIDIA processor'.



It is recommended to set DPI Scaling level as 100%.

1. Right click on desktop and select "Display Settings".
2. Use the slider under "Change the size of text, app and other items" to change the DPI scaling level.
3. Click the "Apply" button.

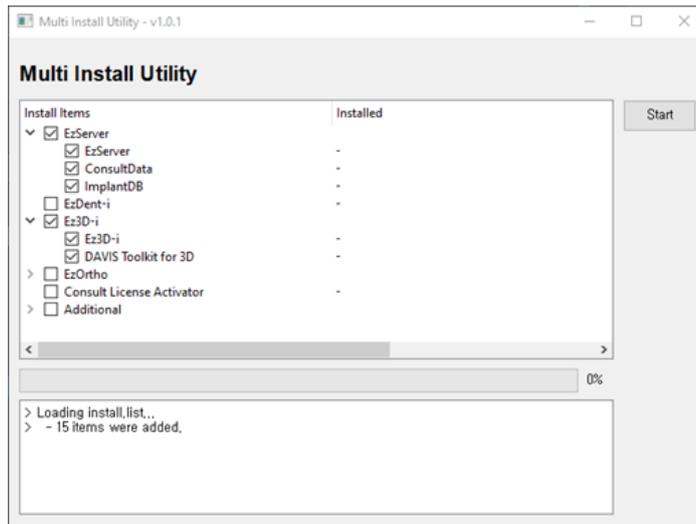
## 3. Before Use

### 3.1 Installation of EzServer

1. Execute MultiInstallUtility.exe.



2. Multi Install Utility window for selecting installation mode will be shown.



All items below must be installed to use all functions of Ez3D-i v5.4 by the PC types.



- Server PC
  - EzServer v5.2 or Higher
  - Consult Data
  - Implant DB
- Client PC
  - Ez3D-i
  - DAVIS Toolkit for 3D



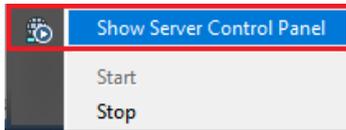
Integrated login function requires EzCommonTools that contains EzWebAgent, a custom browser provided by Ewoosoft, to be installed on the PC where Ez3D-i is installed on. When initially installing a product that uses the integrated login function, the installation of EzCommonTools is automatically executed after installation of the product.

3. Select all items to install and click [Start] to install selected items in order.

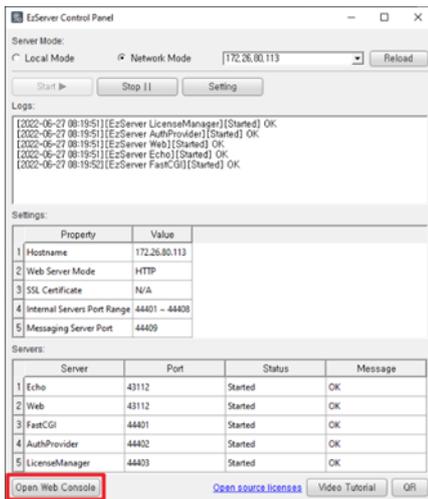
## 3.2 EzServer Settings

Log into EzServer Web Console using Master Admin account to set the server, manage user accounts.

1. Right click on the Server Control Panel tray icon then, click [Show Server Control Panel] from the context menu.



2. Click [Open Web Console] then, EzServer Web Console window appears.



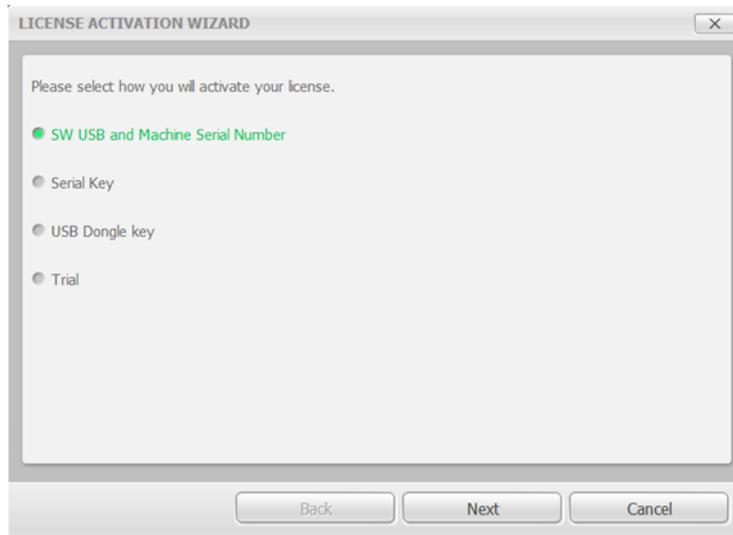
NOTE

- EzServer Web Console is also accessible by executing EzLauncher and selecting EzServer Web Console.



### 3.3 Ez3D-i License Activation

Activate the license using provided license key and enter user information to use all functions of Ez3D-i. The following License Activation Wizard appears when you run Ez3D-i without a license activated.



See 'Installation and Server Manual' for more details.

## 4. Opening Ez3D-i

Ez3D-i can be opened through EzDent-i or by double clicking the Ez3D-i icon on the desktop. To open Ez3D-i.

### 4.1 Opening through EzDent-i

1. Double click the CT images in EzDent-i.
2. Ez3D-i is linked to EzDent-i and Ez3D-i will be opened automatically.

### 4.2 Opening Ez3D-i directly

1. Double click the icon of Ez3D-i on the desktop. Ez3D-i is executed.



>> Ez3D-i Icon



>> Run Ez3D-i

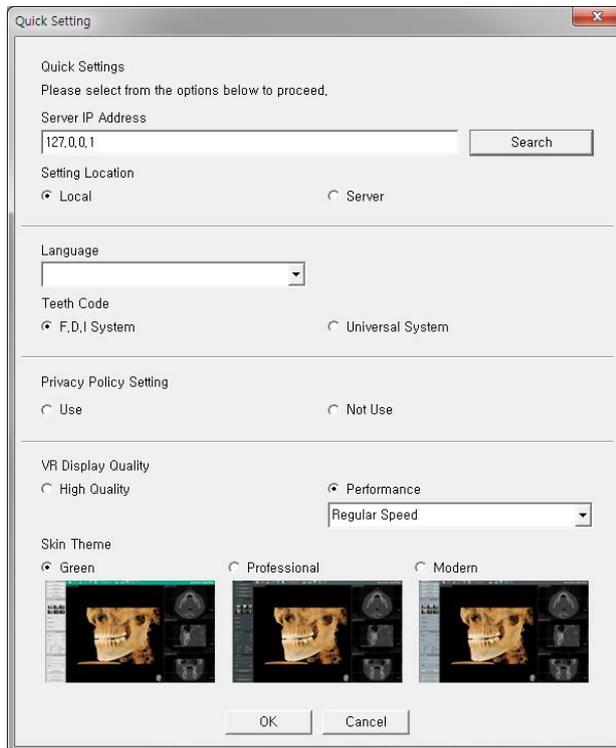
When the Login function is enabled in EzServer, a login dialog appears. Enter ID and password then click [Login] to use Ez3D-i.



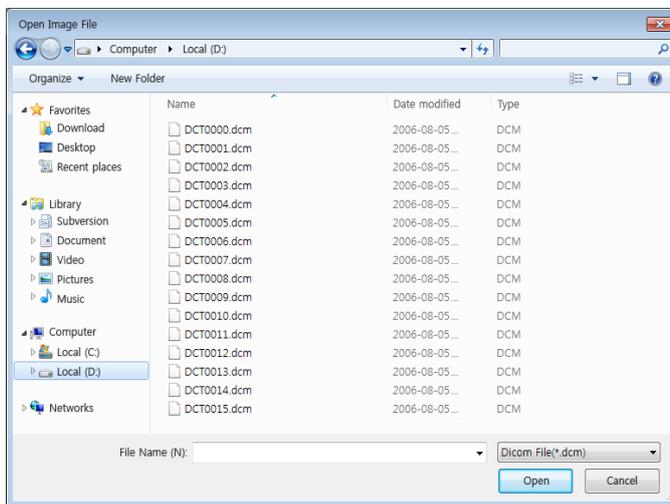
NOTE

User accounts can be added and managed through EzServer Web Console. See EzServer Web Console in 'Chapter 2. Setting up Ez3D-i > 2. Environment > 2.1 General' for details.

- The [Quick Settings] widow appears when the user run Ez3D-i for the first time after installation. With the [Quick Settings] window, the user can set Server IP Address, Setting Location (Local/ Server), Language, Teeth Code, VR Quality Mode and Skin Theme.



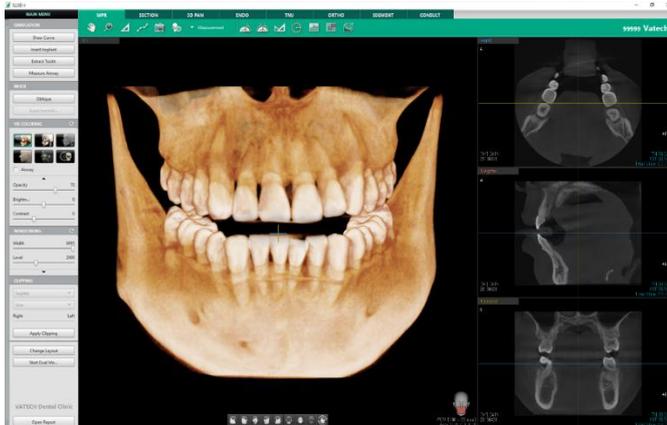
- Click the main menu and the [Open] menu. The following [Open Image File] window appears.



- Select a file in the folder and then click the [Open] button. The selected file will be loaded as follows.



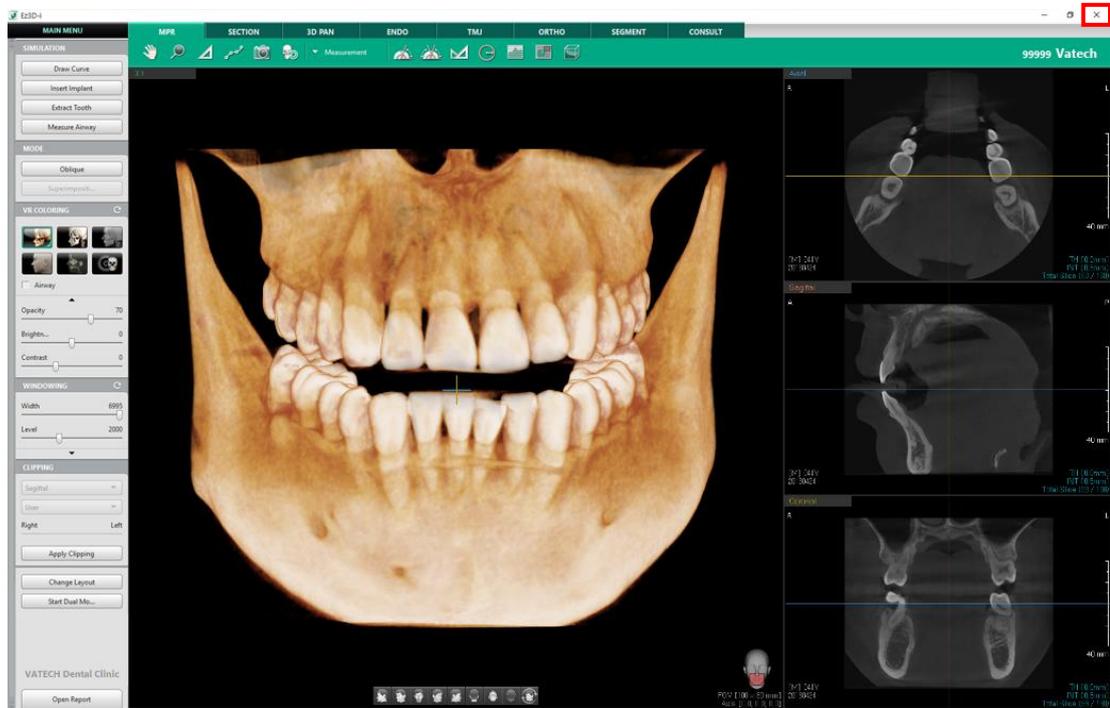
- Once the loading is complete, the first Ez3D-i screen appears as follows.



 <p>NOTE</p>	<div data-bbox="414 739 614 795">  10:54 AM         </div> <p>If the VTFileManager, VTFileManagerAgent, VTPatchManager are running from the Tray icon, Ez3D-i will be running normally.</p> <p>VTFileManager is ON.</p>  <p>VTFileManager is OFF.</p> 
 <p>NOTE</p>	<p>When there is changes in operating status of EzServer (VTFileManager, Database), a pop-up message appears in the lower-right corner of the desktop. If EzServer is working properly, the pop-up message will not appear.</p> <p>When VTFileManager is not working</p> <div data-bbox="454 1209 933 1310">  The File Server does not work. Please check the File Server.         </div> <p>When Database is not working</p> <div data-bbox="454 1355 933 1456">  The DB Server does not work. Please check the DB Server.         </div> <p>When both VTFileManager and Database are not working</p> <div data-bbox="454 1500 933 1601">  The Server does not work. Please check the Server.         </div> <p>When the connection with VTFileManager or Database Server is back to normal</p> <div data-bbox="454 1646 933 1747">  The Server is back to normal status.         </div>

## 4.3 Exiting Ez3D-i

Click the [Exit] button in the upper right corner of the Ez3D-i. Ez3D-i is closed.



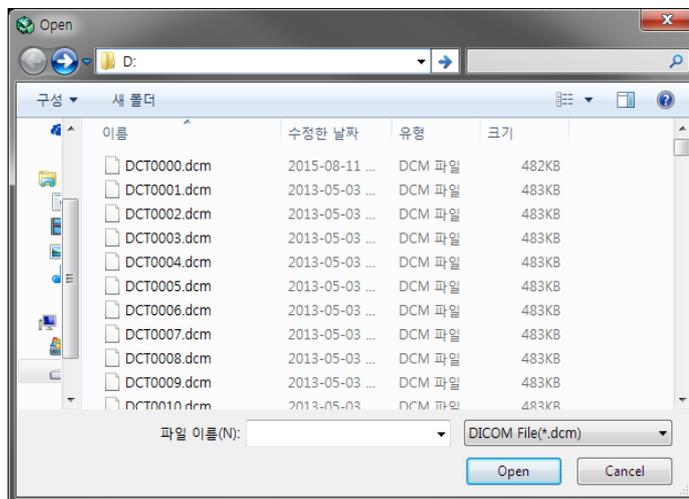
## 5. Utilizing Main Button

The menus included in the main menu ( **MAIN MENU** ) of Ez3D-i are Open, Save as project, Export, Go to 3rd party SW, Import, Export Surface Model, File info, Settings and About.

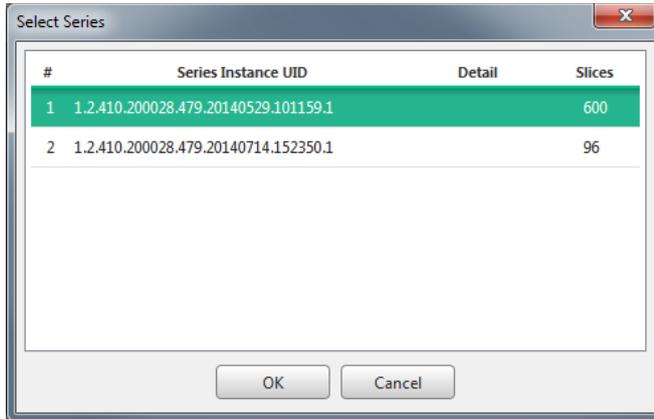
MAIN MENU
Open
Change Series
Save as project
Open Project
Export
Go to 3rd party SW
Import
Export Surface Model
Export Recon Ceph
File info
Settings
About
Logout

### 5.1 Open

1. Click the [Open] menu to open new DICOM file.
2. The [Open] window appears, and then select a file to open. Click the [Open] button. The selected file appears in the workspace.



- When multiple series exists in DICOM file, the following Load Multi Series Volume dialog appears. Select a series and click [OK] to open the series.

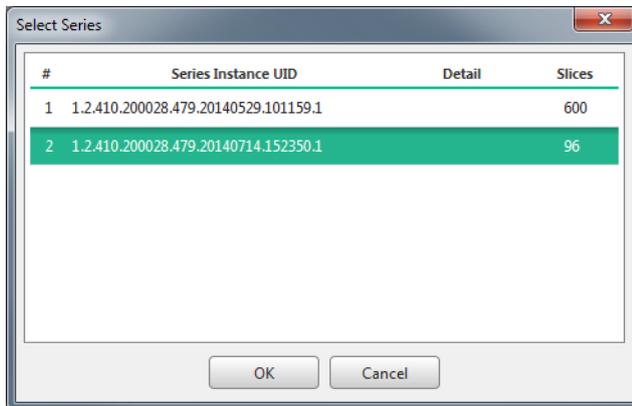


## 5.2 Change Series (DCM with multiple series)



[Change Series] menu is enabled only when Multi Series Volume is displayed in Ez3D-i.

- The following Load Multi Series Volume dialog appears

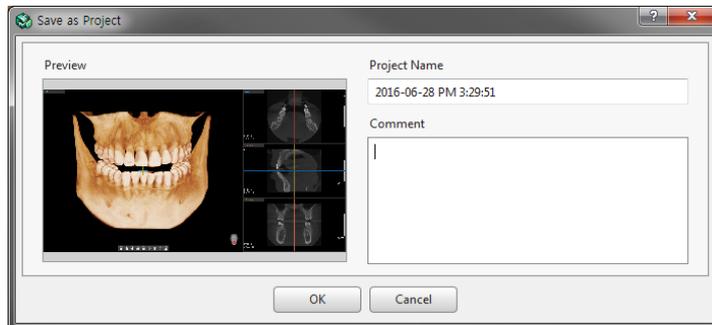


- Select another series to change and click OK. The changed series is applied to the screen.

## 5.3 Save as Project

The current file can be saved with a different name.

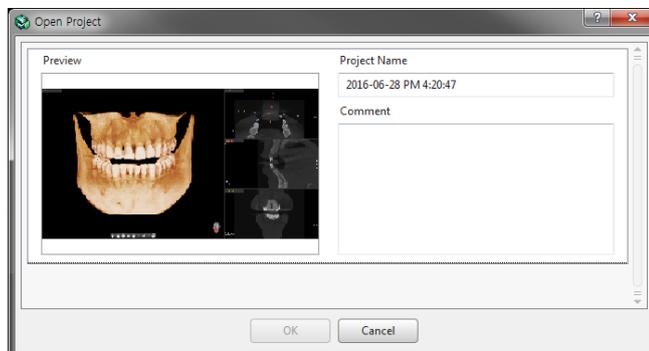
1. When the [Save as Project] window appears, input the project name and the comment, and then click the [OK] button to save. Click [Open Project] from MAIN MENU to check the save projects.



## 5.4 Open Project

Previously edited images (e.g., Annotation, lines, etc.) can be loaded to continue working on the project at a later time.

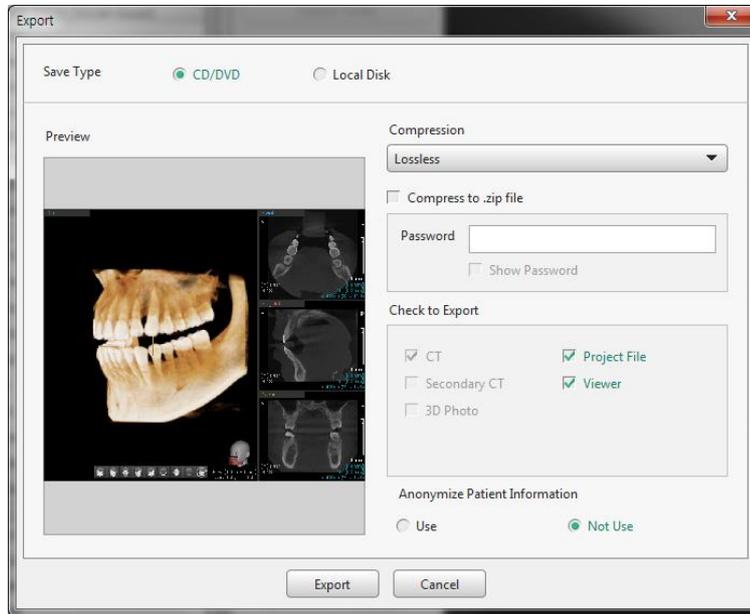
1. The [Open Project] window appears. Select the project to open from the Project list and then click the [OK] button. The selected project appears in the Workspace.



## 5.5 Export

Burn the working file on CD/DVD or save on the local disk.

1. The [Export] window appears as follows. Click to select the location of the exported file in the Save Type section.



Or, click [Export] icon on the toolbar to export the file.



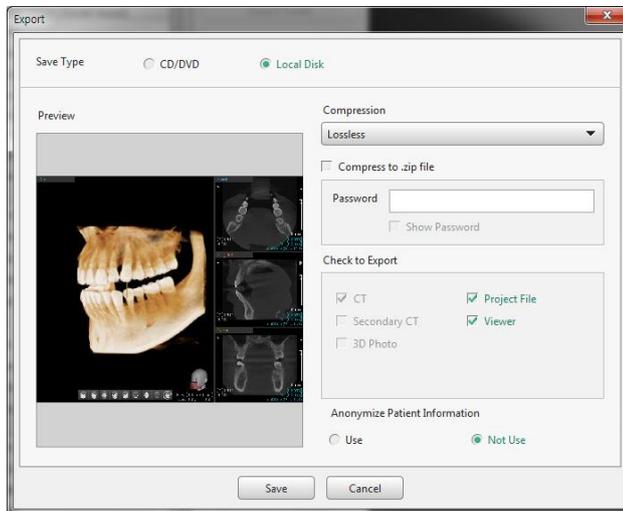
2. Click to select one of the File Compression options as follows.



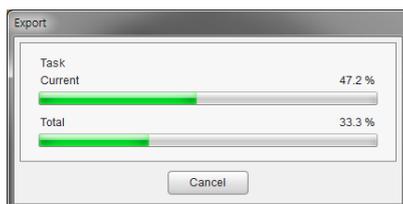
3. Select the type of file to export in the [Check to Export] section. DCM is the default file type for exportable files.
  - When exporting with [CT] option only, the exported file will be saved with the .dcm extension.
  - When exporting with [CT] and other options (Viewer, Project File, Secondary CT, 3D Photo) together, the project file will be saved with the .epf extension and CT files, Secondary CT files and 3D Photo files are saved in folders titled as CT, Secondary CT and 3D Photo respectively.
4. Check [Create Zip File] option if needed.
5. Select [Use] or [Not Use] for [Anonymize Patient Information] option.
6. Click the [Export] button.

### 5.5.1 Save on CD/DVD

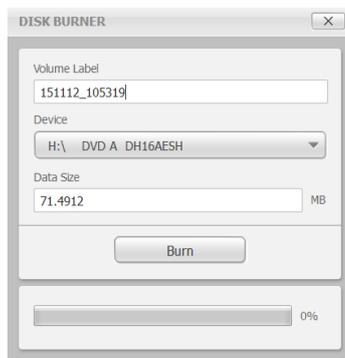
1. Click [CD/DVD] on the Save Type. Click the [Export] button.



2. The [Export] window appears as follows:



3. When the process is complete, the [DISK BURNER] window appears as follows:



4. After inserting empty CD/ DVD RW, click [Burn] to proceed with CD/ DVD burning.

If no disk inserted, the following window appears.



NOTE

**Warning**

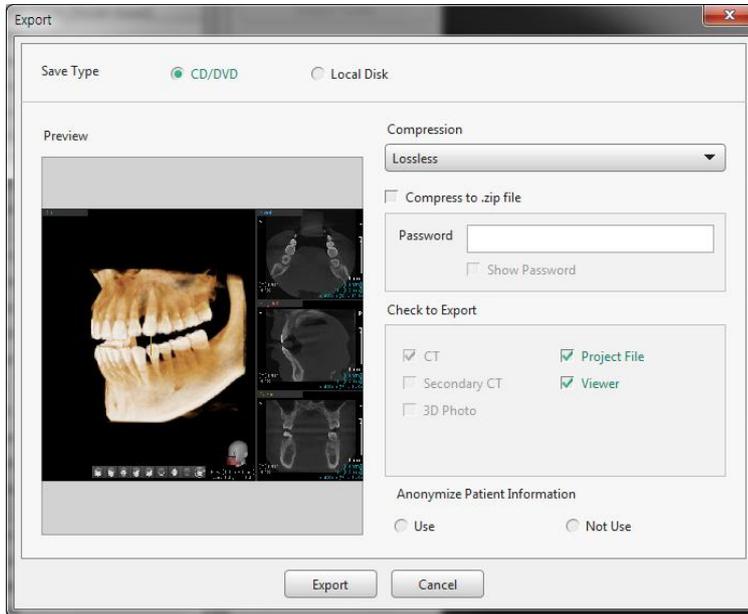


There is no disk.  
Please insert a writable disk.

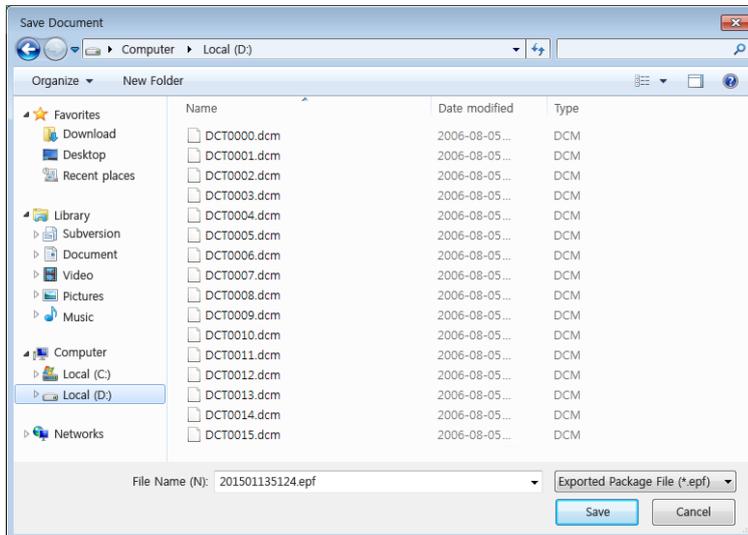
OK

## 5.5.2 Save on Local Disk

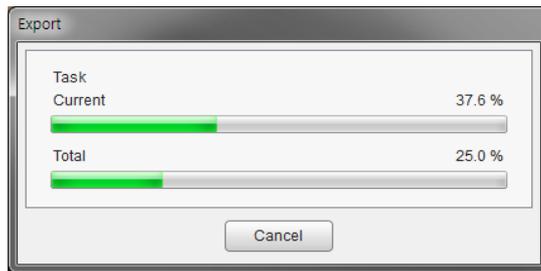
1. Click [Local Disk] to select from Save Type, and then click the [Save] button.



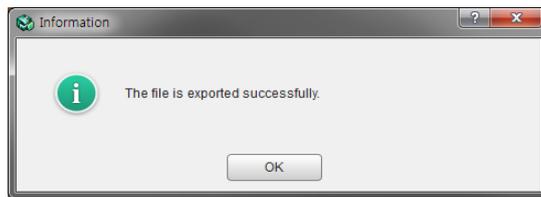
2. The [Save Document] window appears. Select a location to save, then click the [Save] button.



3. The [Export] window appears as follows:



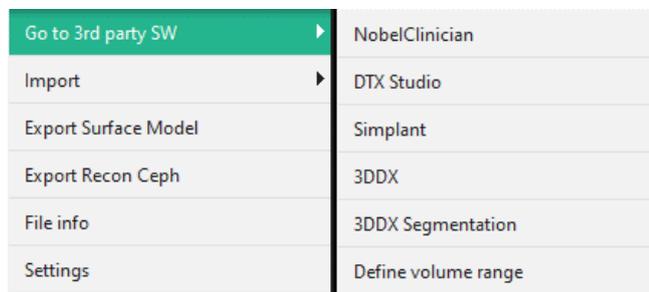
4. When the process is complete, the following Information window appears. Click the [Ok] button to save.



## 5.6 Go to 3rd Party SW

Files can be exported to other software such as NobelClinician and Simplant.

1. Click a software to link from the submenu. The CT image will be sent to the selected software.



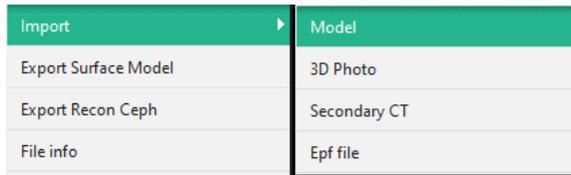
- [Go to 3rd Party SW > Define volume range] function is to export the area after setting the certain area of volume. The file format exported through the [Define volume range] menu is DICOM, and it complies with the DICOM v3.0 standard.
- Drag the mouse point in the [Preview] pane in the dialog to set the desired area and change the resolution.

## 5.7 Import

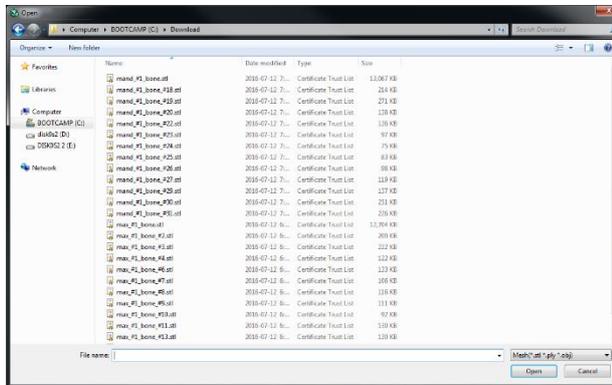
Users can import the external model files, 3D Photos and Secondary CT files as well as check the files with the overlapped data.

### 5.7.1 Import Model

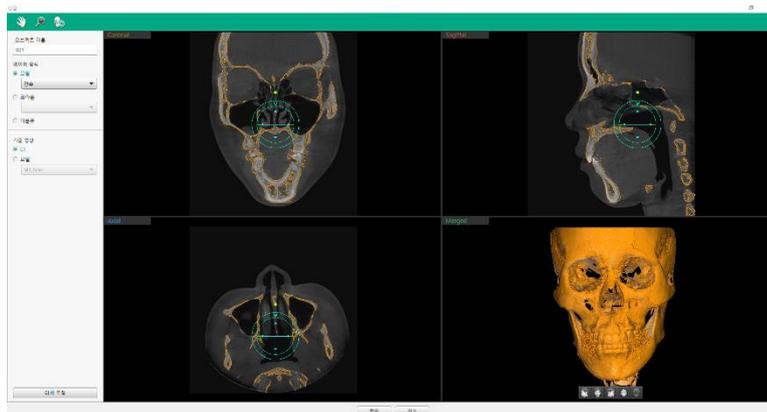
1. Select the [Import > Model] option.



2. Select a file to import and click the [Open] button.



3. The Registration dialog appears as follows. The imported data is automatically placed on the center of the axis.



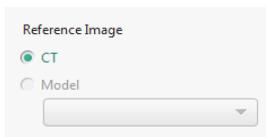
4. Modify the position of imported data using controller on the 2D Views.



5. Please press [OK] button to complete importing without fine tuning. If Fine Tune is required, please proceed the following steps.
6. Data Type and Object Name of the selected model data is displayed on the left.

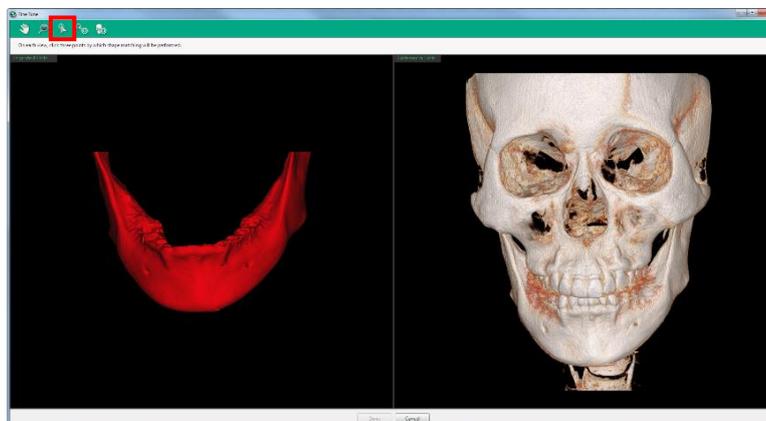


7. Select the type of reference image to merge.

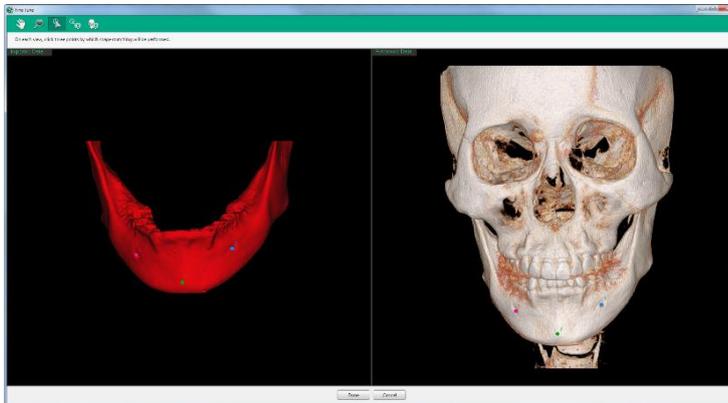


Choose the [Model] option of reference Image for STL - STL matching. You can see all model data to select included in the Data Manager When you select Model option

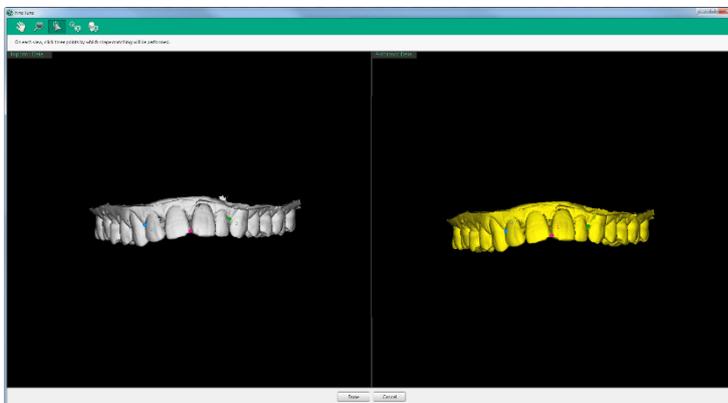
8. Click the [Fine Tune] button to adjust the location automatically by inputting three matching points. The Fine Tune dialog appears as follows.



9. Input three matching points on the Imported Data with the [Insert Matching Point] icon, and then on the Reference CT/ model data at the same positions with the Imported Data and in the same order.

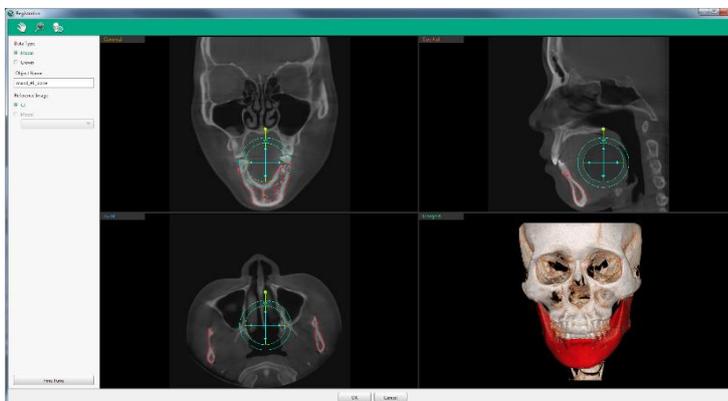


[STL- CT Matching]



[STL-STL Matching]

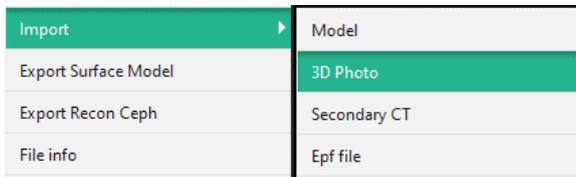
- The colors of inputted matching points differ by the inputting order.
  - You can click and drag the input points.
  - It is recommended to locate each point on the left, middle and right part of the model but not at the same height.
10. Click the [Done] button when matching points are all inserted.
  11. The merged image with the imported data and reference CT image based on the three matching points on the Merged View.



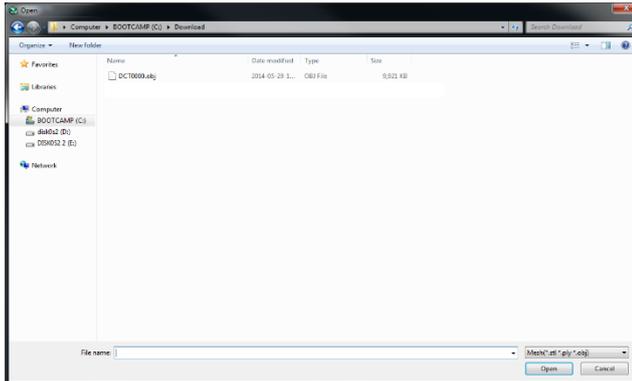
12. Click the [OK] button on the Registration Dialog.

## 5.7.2 Import 3D Photo

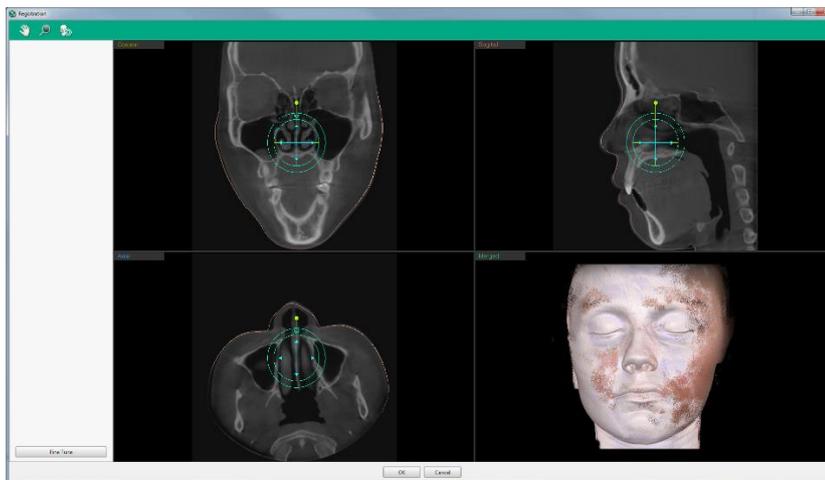
1. Select the [Import > 3D Photo] option.



2. Select a file to import and click the [Open] button.

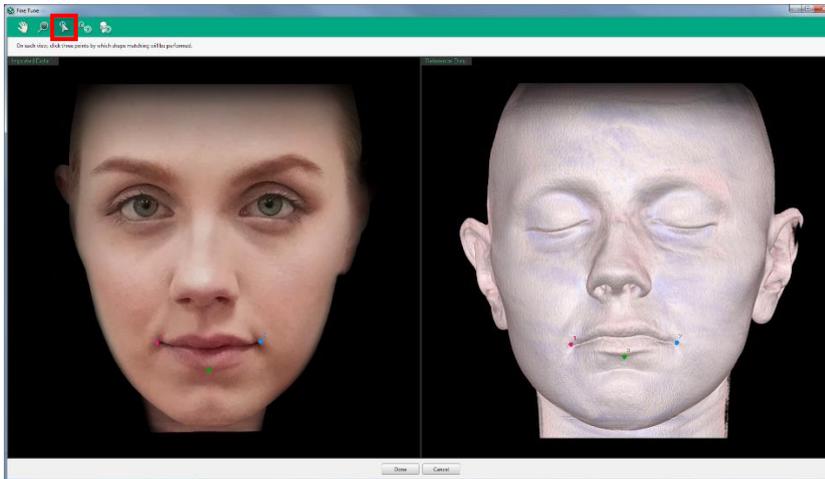


3. The Registration dialog appears. The imported data is automatically placed on the center of the axis. Modify the position of imported data using controller on the 2D Views.

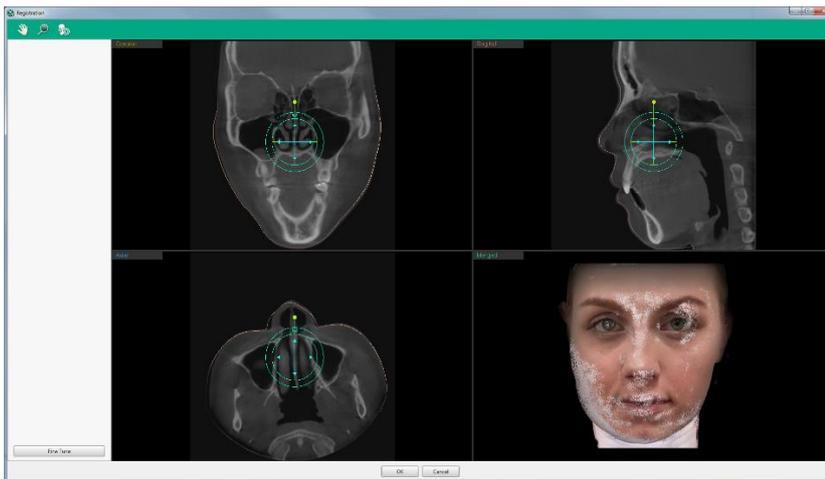


4. Please press [OK] button to complete importing without fine tuning. If Fine Tune is required, please proceed the following steps.

- Click the [Fine Tune] button. Then the Fine Tune dialog appears. Input three matching points on the imported 3D Photo with the [Insert Matching Point] icon, and then on the reference CT data at the same positions with the imported data and in the same order.



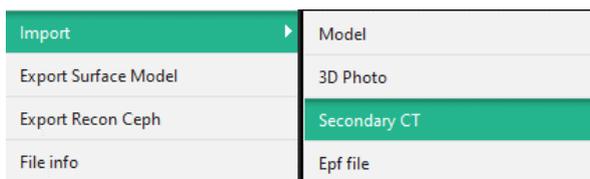
- Click the [Apply] button when matching points are all inserted.
- The merged image with the imported 3D Photo and reference CT image based on the three matching points on the Merged View.



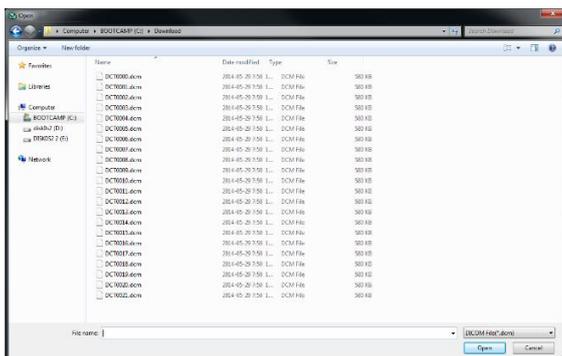
- Click the [Ok] button on the Fine Tune dialog.

### 5.7.3 Import Secondary CT

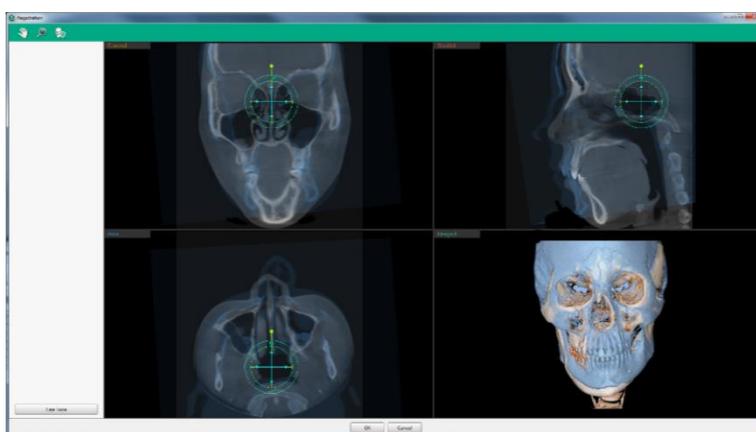
- Select the [Import > Secondary CT] option.



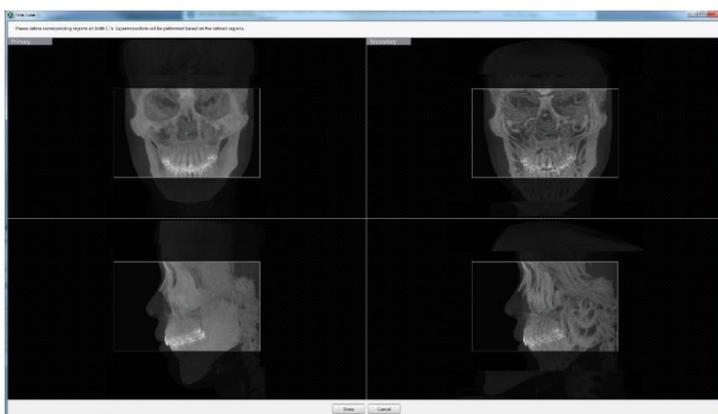
2. Select a file to import and click the [Open] button.



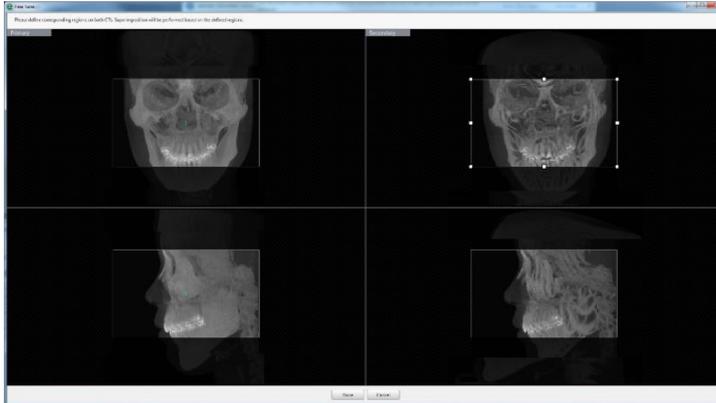
3. The Import Secondary CT Dialog appears. The imported data is automatically placed on the center of the axis. Modify the position of imported secondary CT using controller on the 2D views.



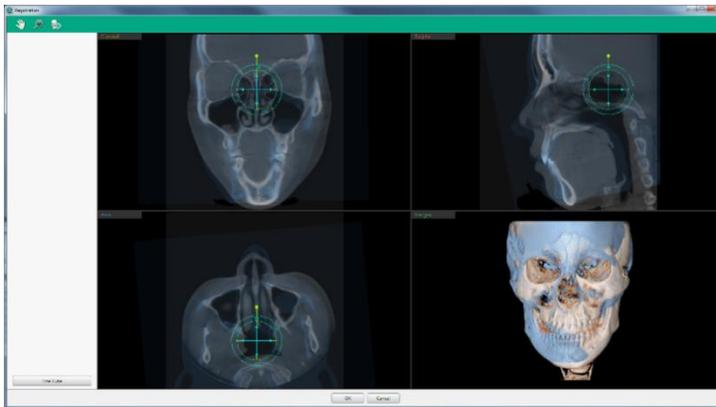
4. Please press [OK] button to complete importing without fine tuning. If Fine Tune is required, please proceed the following steps.
5. Click the [Fine Tune] button. Then the Fine Tune dialog appears.



- Define corresponding regions on the both Primary and Secondary CT by dragging and dropping the points on the boxes shown on the following picture.



- Click the [Apply] button when the adjustment is completed.
- The merged image with the imported secondary CT and reference CT image based on the defined regions on the Merged View.



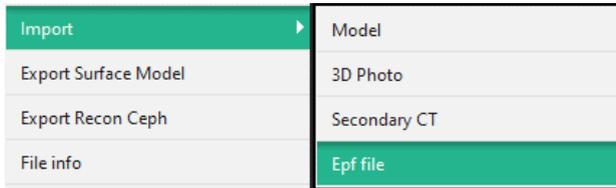
- Click the [OK] button on the Registration dialog.



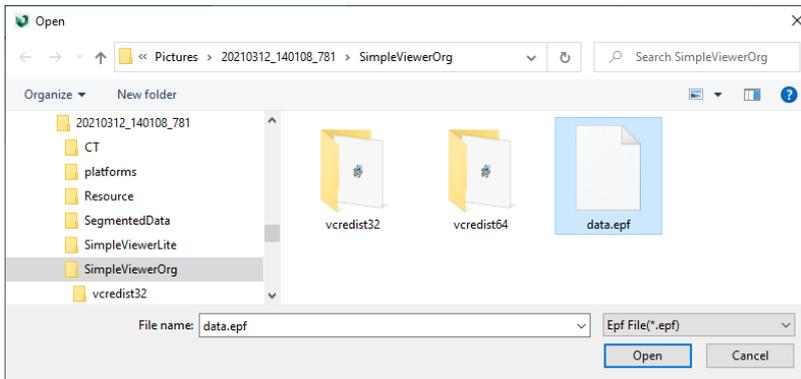
The secondary CT does not show on the View after registration. Please conduct the superimposition function to view the registered the secondary CT data with the primary CT on the view. Please refer to 'Chapter 4. MPR Tab > 13. Superimposition'.

### 5.7.4 Import Epf File

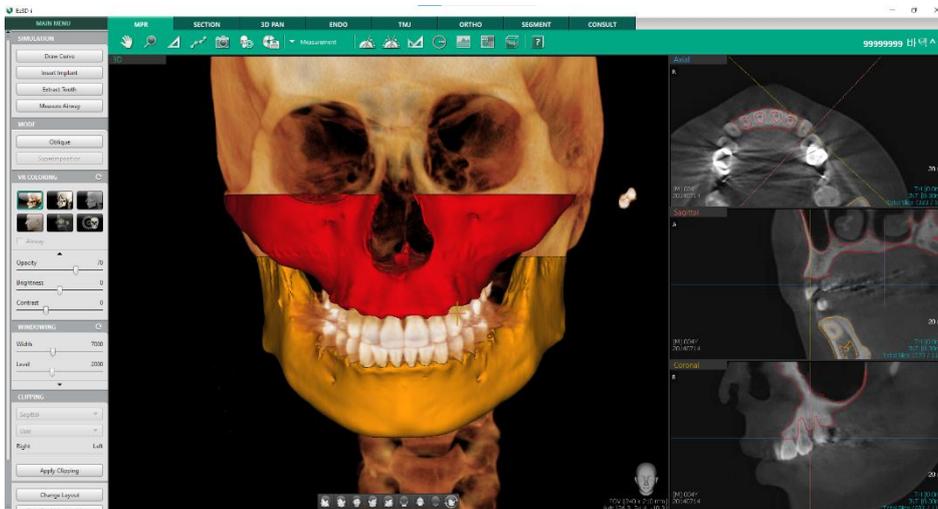
1. Select the [Import > Epf File] option from the Main Menu.



2. Importing an EPF file will lose the existing data in progress. Click OK to proceed when a warning message appears.
3. Select a file to import then click Open.



4. The file currently working is updated with the imported file.

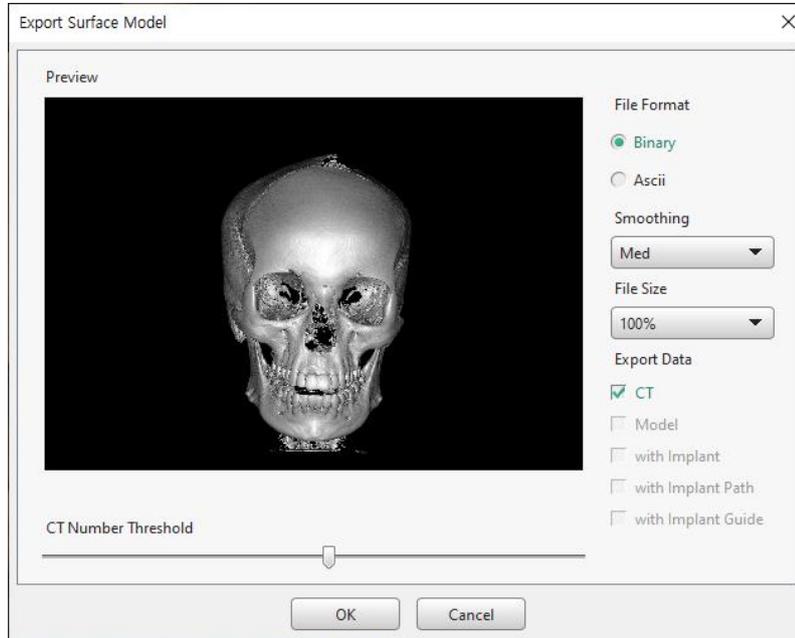


Only an EPF file created from the same patient image can be imported. When the file to import is created on a different CT image, the import function is canceled.

## 5.8 Export Surface Model

User can export the data displayed in 3D view to STL file.

1. Click the [Export Surface Model] button. The [Export Surface Model] dialog appears.



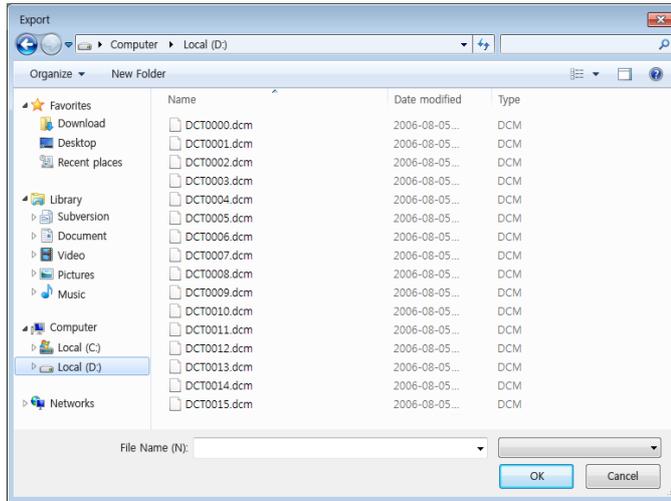
2. Select the format of file, quality, and option to export.
  - File Format: Choose the file format when exporting data between Binary and ASCII.
  - Smoothing: Smooth surface when exporting CT files with the selected level.
  - File Size: Reduce file size to the selected percentage when exporting CT files
  - Export Data: Select data type to be included to the exported data
  - CT Number Threshold: Adjust areas of CT number threshold



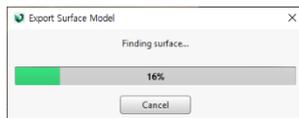
NOTE

- [Smoothing], [File Size] and [CT Number Threshold] option only activated when exporting data including CT.
- Changes in selecting [Export Data] option are directly applied on the Preview right after the user re-select the [Export Data] options.
- The [With Implant Path] and [With Implant Guide] option can be selected only when choosing the [With Implant] option

- Click the [OK] button and the dialog to set a file name and the path appears as follows.



- Input the name of file and select the file type.
- Click the [OK] button and the following windows appear.



When the exporting is completed, the progress bar disappears, and the program is available to use.

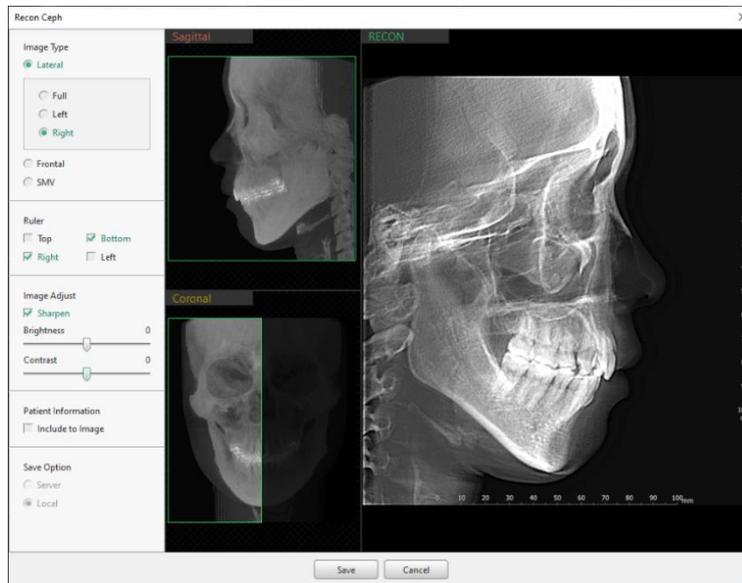


- The Export Surface Model menu is available only in the tab where 3D View Window is provided. In the tabs or layouts that do not provide 3D View Window, the Export Surface Model menu is disabled.
- When exporting a surface model, only the sculpting currently applied to 3D image will be exported. The clipping applied to current 3D image will not be exported.

## 5.9 Export Recon Ceph

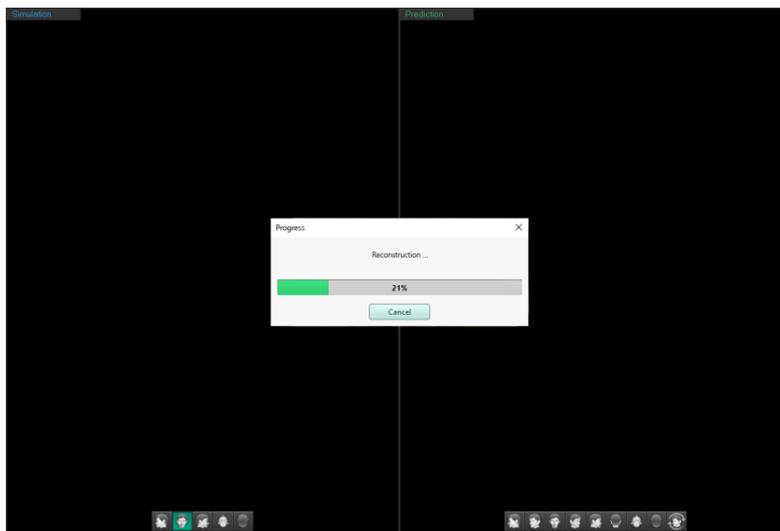
The Ceph Reconstruction function displays a layout to view Ceph images of different ranges as needed for patient counseling.

1. Select the [Export Recon Ceph] from the Main Menu.
2. Recon Ceph dialog appears as follows.



### 5.9.1 Exporting Recon Ceph Image to the Server

1. Set the Save Option as [Server] and click the [Save] button to export the Recon Ceph image to the server.
2. Ceph image is created, and a progress bar is displayed until saving is completed.



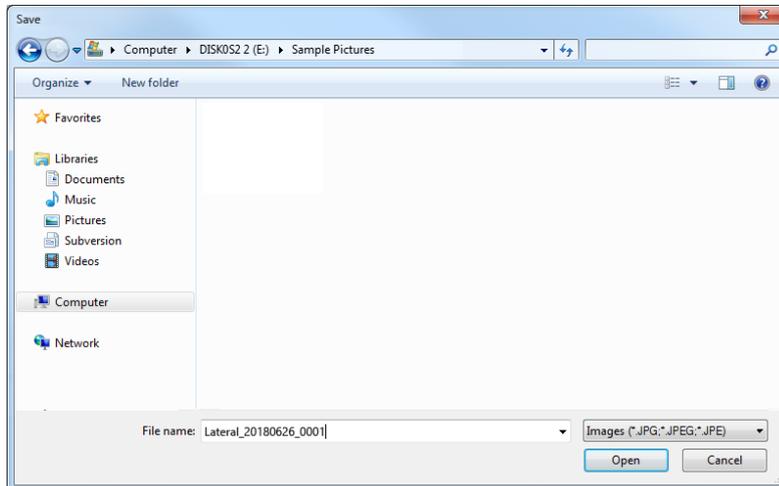
1. The progress bar disappears, and the file is completely saved.



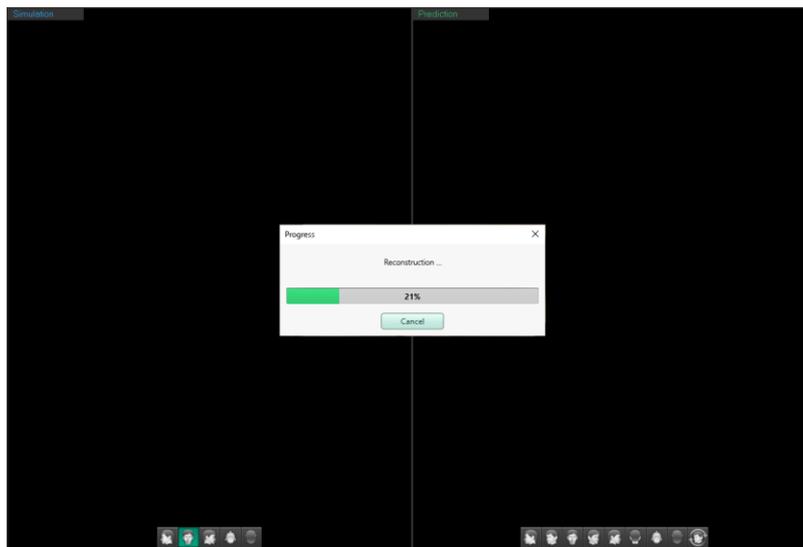
- Only the CT image opened from EzDent-i can be exported to the server.
- The modality is automatically set as Cephalo.
- The position(Lateral, PA, and SMV) of the image is automatically set in response to the selected image type.

## 5.9.2 Exporting Recon Ceph Image to the Local PC

1. Set the Save Option to the [Local] and click the [Save] button to export the Recon Ceph image to the local PC.
2. Set file path, file name and file format in Save dialog. The supported file format is JPEG, BMP, PNG and TIF.



3. Click [Open] button to terminate both Save dialog and Recon Ceph dialog.
4. Ceph image is created, and a progress bar is displayed until saving is completed.



5. The progress bar disappears, and the file is completely saved.

## 5.10 File Info

Patient information, file data, and image data of the corresponding file can be obtained. Patient information contains the patient ID, patient name, gender and age. File data contains the file type, resolution, data size, and file size. Image data contains the image acquisition date and the amount of the radiation dosage.

The 'File Information' dialog box contains the following fields:

- Data Selection:** Primary CT (dropdown)
- Encoding Name:** None (dropdown)
- Patient Information:**
  - Patient ID: \*\*\*\*\*
  - Name: \*\*\*\*\* \*\*
  - Gender: \*
  - Age: \*\*\*\*Y
- File Information:**
  - File Type: CT
  - Resolution: 0.2 x 0.2 x 0.2 mm
  - Dimension: 496 x 496 x 400 pixels
  - Data Size: 187.695 MByte(s)
- Acquisition Information:**
  - Date: 20130424
  - Dose: 4.24291 dGycm^2
  - kVp: 90 kVp
  - mA: 10 mA

Buttons: OK, Cancel



NOTE

To show the patient name properly, click the dropdown menu of the [Encoding Name] option and select the desired encoding option.



NOTE

Patient information displays according to the anonymization setting for each option on Settings.

## 5.11 Settings

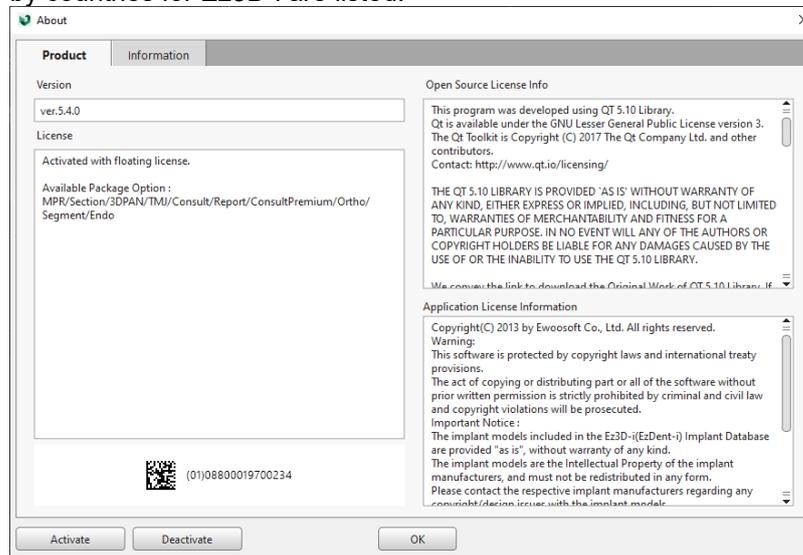
[Settings] provides the user with general setting preferences necessary for using Ez3D-i. For details, see 'Chapter 2. Setting up Ez3D-i'.

The 'Settings' dialog box has the following sections and options:

- Environment:** Selected tab.
- General:**
  - Setting Location:  Local,  Server, Sync button
  - General:**
    - Language: English (dropdown)
    - Teeth Code: F.D.I System (dropdown)
    - Font: Segoe UI (dropdown)
    - Dose Unit: dGycm^2 (dropdown)
  - Save Option:**
    - Project save option: Auto Save (dropdown)
    - Captured image save option: Auto save to image server (dropdown)
  - Theme:**
    - Skin: Green (dropdown)
- Database**
- Linkage/E-Mail**
- Clinic Info**
- Ortho**
- Consult**
- Report**
- DICOM**
- Privacy Policy**
- Buttons: Reset the setting, OK, Cancel

## 5.12 About

The program version, company name, license information, UDI information, and product labels by countries for Ez3D-i are listed.



## 5.13 Logout



- When logged out from Ez3D-i, the account will be logged out from all other products using integrated login.

The current account is logged out from Ez3D-i. When the Login function is disabled in Server, the item is being hidden.

# Chapter 2. Setting up Ez3D-i

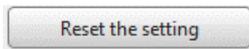
- 1. Reset the Settings ..... 51
- 2. Environment..... 52
- 3. View..... 59
- 4. Measurement/Annotation ..... 64
- 5. Simulation..... 65
- 6. Ortho ..... 72
- 7. Consult ..... 73
- 8. Report ..... 74
- 9. DICOM..... 77
- 10. Privacy Policy ..... 80



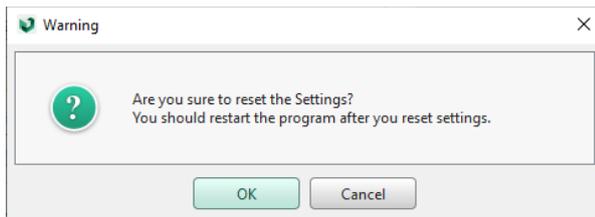
# 1. Reset the Settings

Setting values of Ez3D-i can be reset by clicking [Reset the Setting] button.

1. Click [Reset the Setting] button at the left bottom of Setting dialog.



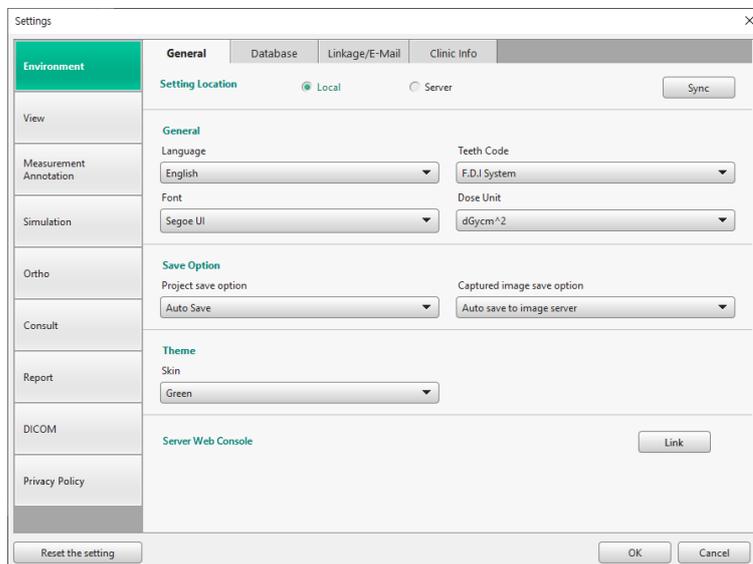
2. Click OK button when the following warning dialog appears.



3. Restart Ez3D-i to apply changes.

## 2. Environment

### 2.1 General



- **Setting Location**

Select an option for setting location of the Ez3D-i Viewer setting.

- [Local]: To apply the settings separately from the Server PC, select the [Local] option. By clicking the [Sync] button, the settings from the Server PC will be applied, but some options can be set separately if necessary.
- [Server]: To apply the settings of Server PC, select the [Server] option.
- [Sync]: The [Sync] button is activated only when the Setting Location is [Local].  
The settings of the Server PC will be applied by clicking the [Sync] button, but the following options can be set separately from the Server PC settings.

- ◆ Environment
  - General: Location & Theme settings
  - Database: All options
  - Linkage/E-mail: 3rd Party Software
- ◆ View
  - General: VR Display Quality
- ◆ DICOM

- **General**

The user can set the program's language environment, font, tooth code, and dose unit.



Some fonts may not be available for certain languages.

- Save Option
- Project save option

When exiting the Ez3D-i program, you can save the project manually or automatically.

- ◆ [Auto Save]: The project is saved automatically.
- ◆ [Manual Save]: When exiting the program, the following window appears:



Click the [Save] button to save the changes and click the [Don't Save] to cancel the changes. The program will not close with the [Cancel] button.



The project will be saved automatically regardless of the project save option in case of exporting with the [Project File] option.

- Captured image save option

Set up the location to save the captured images.

- ◆ [Auto save to image server]: The images captured with Ez3D-i will be automatically saved for both EzDent-i and Ez3D-i.
- ◆ [Manual save to image server]: The images captured with Ez3D-i will be automatically saved for Ez3D-i and can be sent to EzDent-i manually.
- ◆ [Manual save to local]: The images captured with Ez3D-i can be saved locally to the selected location and will be automatically saved for Ez3D-i.
- ◆ [Send to PACS]: The images captured will be saved automatically on both Ez3D-i and a PACS Server.



The captured images will be properly saved according to [Captured image save option] only when the Ez3D-i is linked with EzDent-i and EasyDent4.

- Skin Theme

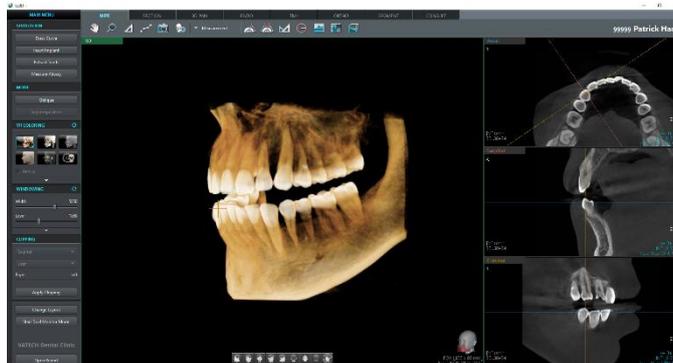
Ez3D-i provides 3 different skin themes of Green, Professional and Modern.

- Green

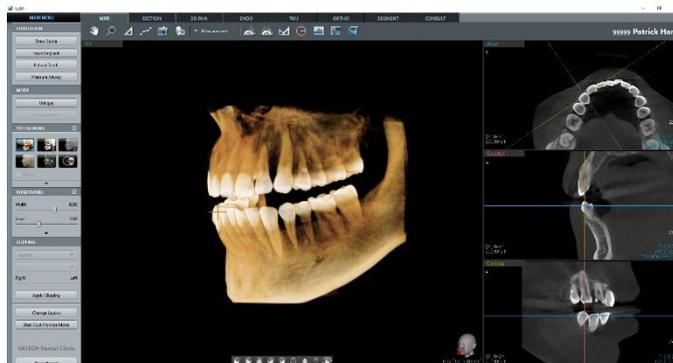


Without selecting any other option, Natural skin will be applied as the default theme.

- Professional



- Modern



- Server Web Console

Click [Link] to open EzServer Web Console to set server settings including managing user accounts, enabling/disabling Login function and setting the security code. See 'Installation and Server Manual' for details.

- Restrictions on Authority by Account Types

When the Login function is enabled in EzServer, restrictions may apply on using functions of Ez3D-i by accounts logged in.

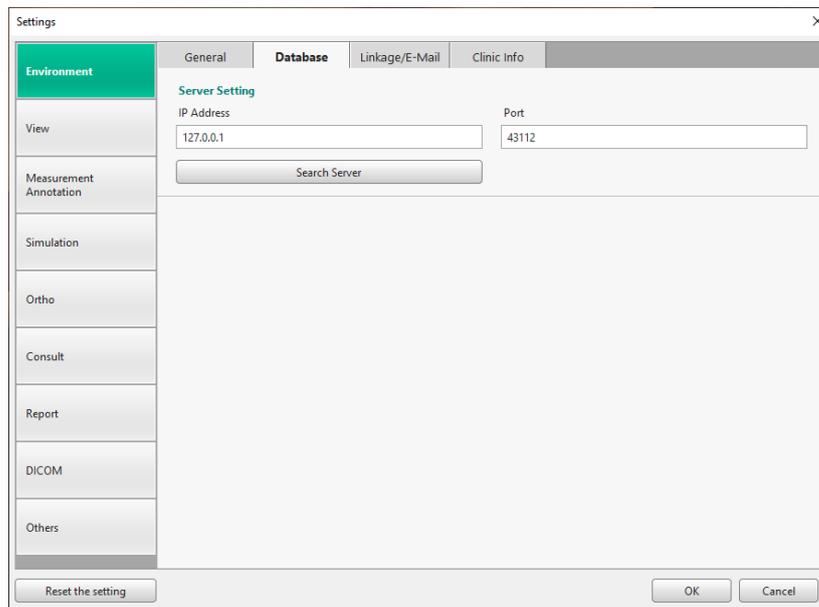
Account	Features Not Allowed
Master Admin	None
Admin	User Account Manager
Doctor	User Account Manager, Delete Data, Edit Shared Data
Staff	User Account Manager, Delete Data, Add and Edit Data, Transfer Data, Export Data, Edit Shared Data

- Security Code

If the Security Code function is enabled in EzServer and functions to apply are selected, a dialog asking the security code appears when using corresponding functions. If the current user logged in is authorized and the Security Code function is disabled, the corresponding function is executed without asking the security code. However, the Security Code function cannot be disabled while the Login function is disabled.

The initial security code is set to numbers '0000' and the code can be changed in EzServer Web Console.

## 2.2 Database



- **Server Setting**

If Ez3D-i is used as Server, input "127.0.0.1" or click the [Search Server] button and select the corresponding IP address.

If Ez3D-i is used as Viewer, check the IP address of Server PC and input the corresponding address. At this time, the IP address must be the IP address of Server PC, not the IP address entered for Server setting (127.0.0.1). Click the [Search Server] to display the list of the IP address that are connected to LAN (Local Area Network). Select the proper IP address from the list and the address will be automatically entered into the input field.



It is recommended to set with a fixed IP address when setting IP address.

## 2.3 Linkage/E-Mail

- Linkage

- 3rd Party Software

User can select the linked program that can send the data in use.

- Path for 3rd Party Software

Browse and set the path of the selected program for [3rd Party Software] option. If the path is not properly set, the relevant program on the [Go to 3rd party SW] menu will not be activated.

- Linkage Software for Toolbar

Select the Create Movie Clip to create a linkage with the movie capturing program.

- Path for Linkage Software for Toolbar

Browse and set the path of the selected program for [Linkage Software for Toolbar] option. Once the path is set, the [Create Movie] icon on the toolbar will be activated.

- E-Mail Sender Information

Users can send a test email from the saved user account. To do this, the email address, name, password and other related information are required.



To use the Email feature properly, you must configure the IMAP/POP3 setting from the sender's email account. In the email setting, change the POP3 and IMAP setting to [Enable].

- SMTP Server Address

If the domain of the user's email address is predefined by Ez3D-i, the SMTP Server address will be automatically filled with the default value.

To use the different email server, input the server address directly into the field.

- Port

The default setting for the Port is 25. To use different port number, input the port number as desired.

When the domain information, such as Naver, Gmail, or AOL, is saved in Ez3D-i, the Port number is entered automatically and cannot be modified.

- Security

Select the encrypted connecting method that is used when sending emails.



The provided Security options are as follows: None, Auto, SSL, and TLS. The default setting value is Auto, but the user can change the option as desired. But, when the domain information, such as Naver, Gmail, or AOL, is saved in Ez3D-i, the Security value is entered automatically and cannot be modified.

## 2.4 Clinic Information

- Clinic Information

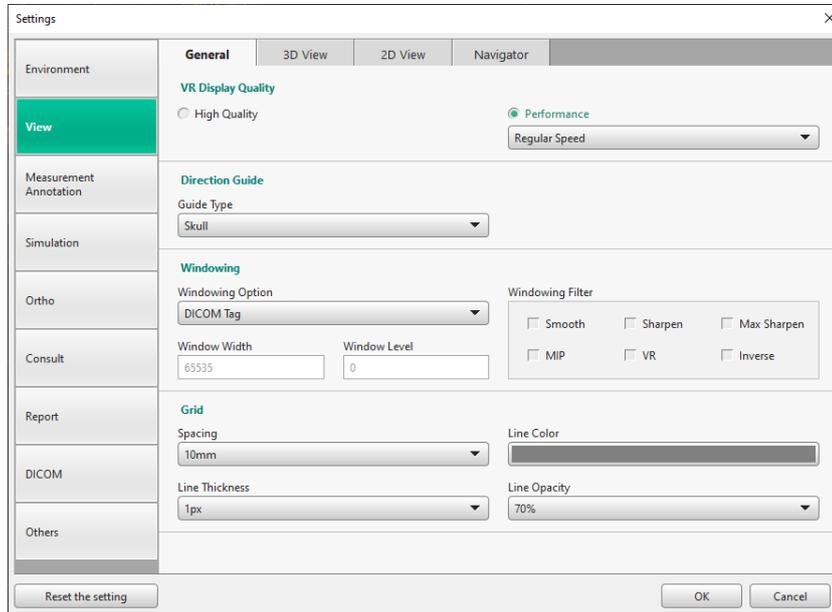
The user can input their clinic information such as the name of the clinic, website address, phone number, fax number, address, clinic logo, and image. The report reflects the information entered.

- Clinic Logo Type

Once the clinic logo (image file) is registered, it appears at the bottom left of the Ez3D-i screen by default. The saved logo will be used in the reports as an advertisement.

## 3. View

### 3.1 General



- VR Display Quality
  - High Quality
 

When PC recommended specification is met, user can set up the VR quality as high performance.
  - Performance
 

The rotation speed of an image compared to the VR Quality can be set with the [Performance] option if the PC specifications are lower than the recommended specifications.

The [Fastest Speed] option displays the images in the minimum definition, and the [Fast Speed] option maintains VR quality as middle level. When it is set to [Fastest Speed] option, the image is displayed with its best quality. But when VR is not moving, the quality is displayed with the best quality. It is recommended to test the PC level before utilizing the software.
- Direction Guide
  - Guide Type
 

The guide type that displays the direction of 3D images, Field of View (FOV) size, and the acquisition point in the MPR tab can be set to be either Skull or Cube.
- Windowing

User can select the Windowing option to use for Ez3D-i.

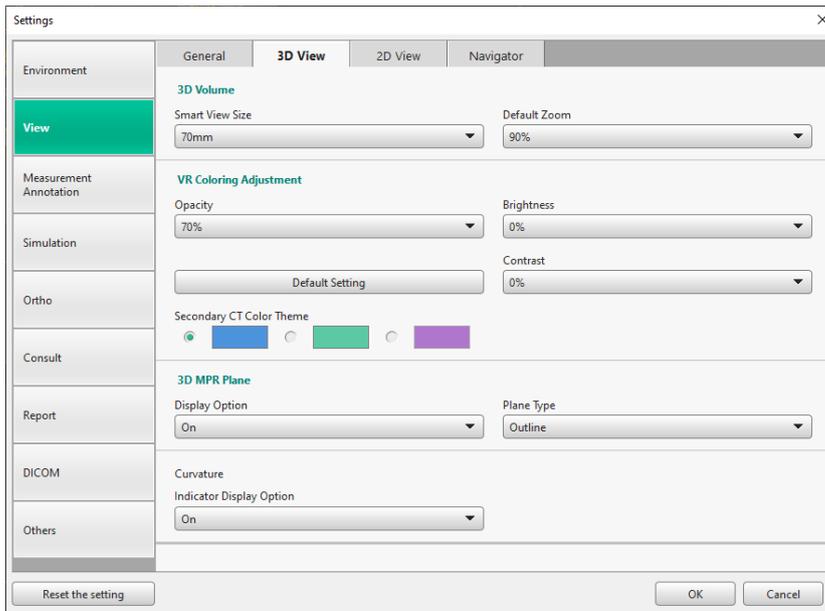
- Windowing Option
  - [DICOM Tag] : applies the Window Width and Window Level values that are stored in the DICOM file.
  - [User Define] : The user can specify and set up the User Define directly.
- Windowing Filter

- Set the filter as default. Refer to ‘Chapter 4. MPR Tab > 3. Adjusting 2D Images’ for how to set filters.

- Grid

The default setting values of the spacing, line color, line thickness or the line opacity of grid, which is on the tool bar in MPR, SECTION, 3D PAN, and TMJ tabs, can be set.

### 3.2 3D View



- 3D Volume

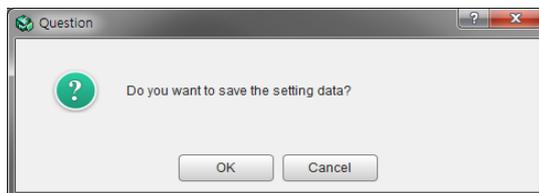
The user can set the 3D image preferences. The Smart View size is the actual size of the magnified 3D images, and the Default Zoom is the default magnification of the 3D image when it is first opened.

- VR Coloring Adjustment

With the adjusting VR coloring function, users can set up the default value in various modes.

- Default Setting

Click the [Default Setting] button and the following window appears.



Click the [OK] button to change Preset VR Coloring values for the 3D images.



- ◆ Setting default coloring value for each model



Select a model from the dropdown list and set the default coloring value for each model.

- If the acquisition device saved in the DICOM file is not in the model list, the coloring values of images will be displayed with the default value.
- VR Coloring values cannot be set in MIP mode.
- Click the [Range Setting] button to set the minimum and maximum values of the range of graph to be displayed.
- Click the [Save as Preset] button to set the current settings as a preset.

- ◆ Importing VR Coloring Graph

Click the [Import Graph] button to open the saved graph file. The acquisition equipment and the values saved for the equipment will be shown.

- ◆ Exporting VR Coloring Graph

Click the [Export Graph] button to save and export the current graph values to the local PC.

- Opacity

Move the slider to adjust the opacity of 3D images. With lower opacity, the image is more transparent, and the inserted structure is displayed clearer.

- Brightness

Move the slider to adjust the brightness of 3D images. Higher number displays the brighter image.

- Contrast

Move the slider to adjust the contrast of 3D images.

- Secondary CT Color Theme

Select default color theme for secondary CT data.

- 3D MPR Plane

- Display Option

User can set to turn on or off the MPR Plane, which is displayed in 3D View.

- Plane Type

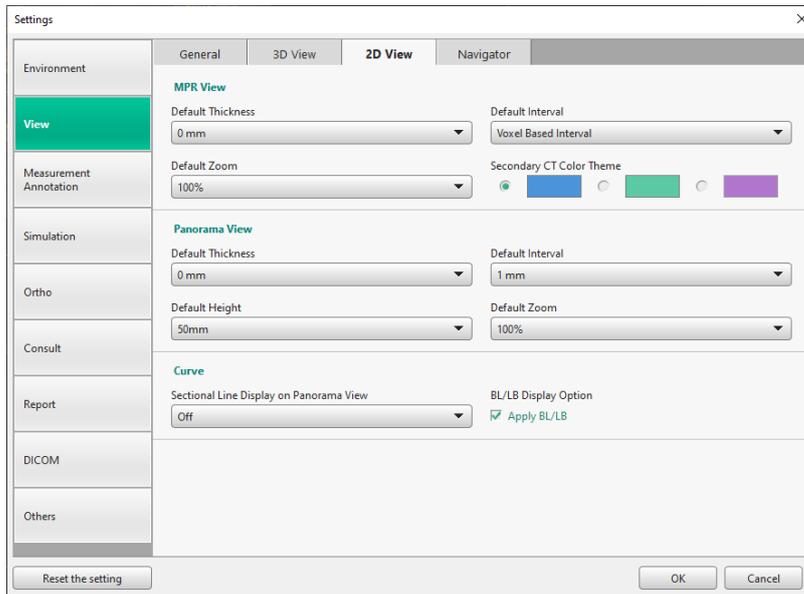
User can set the display type of MPR Plane.

- Curvature

- Indicator Display Option

Show/hide the circle indicator overlay.

### 3.3 2D View



- **MPR View**

The user can set the values of default thickness, basic scale of zoom, interval in Axial/Coronal/Sagittal View and color theme of secondary CT data.

- **Panorama View**

The user can set the default thickness, spacing, height, and the basic scale of zoom for 2D images in Panorama View.

- **Curve-**

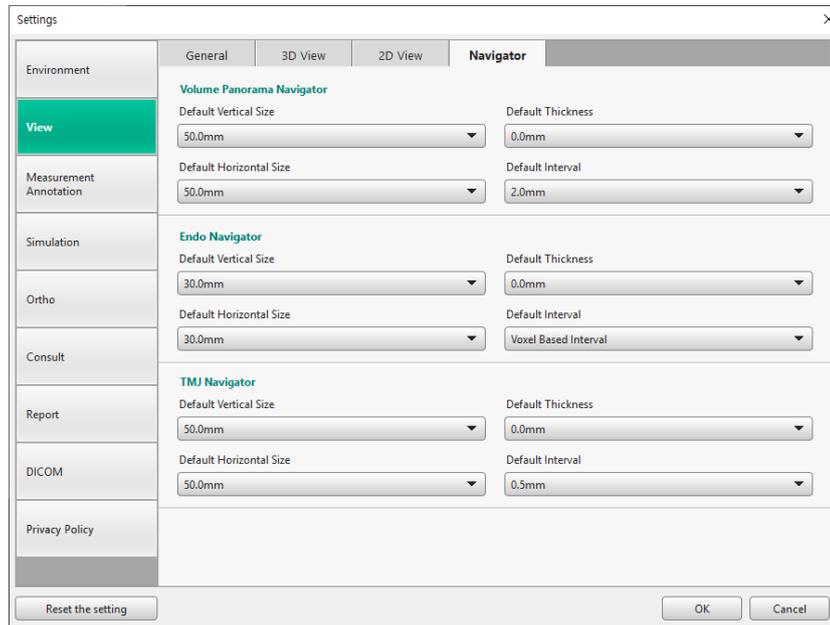
- **Sectional Line Display on Panorama View**

- Show/hide the sectional line on Panorama View in Section tab.

- **BL/LB Display Option**

Click the checkbox of [Apply BL/LB] to select the option, and then the L (Lingual)/ B (Buccal) indication marks will be created on the curves in the SECTION tab. The user can change the display location of L/B mark, and the L/B position of slice image will be changed depending on the L/B mark.

## 3.4 Navigator



- **Volume Panorama Navigator**

Set the default size, thickness, and the interval of the Navigator displayed in the Volume Panorama view of the 3D PAN tab.

- **Endo Navigator**

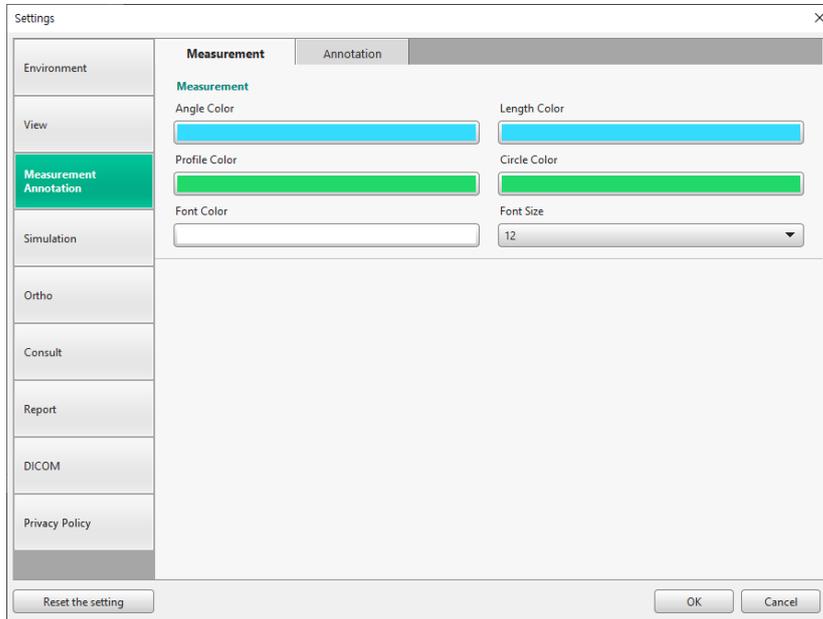
Set the default size, thickness and interval of the Navigator displayed in Endo Tab

- **TMJ Navigator**

Set the default size, thickness, and the interval of the Navigator displayed in the TMJ tab.

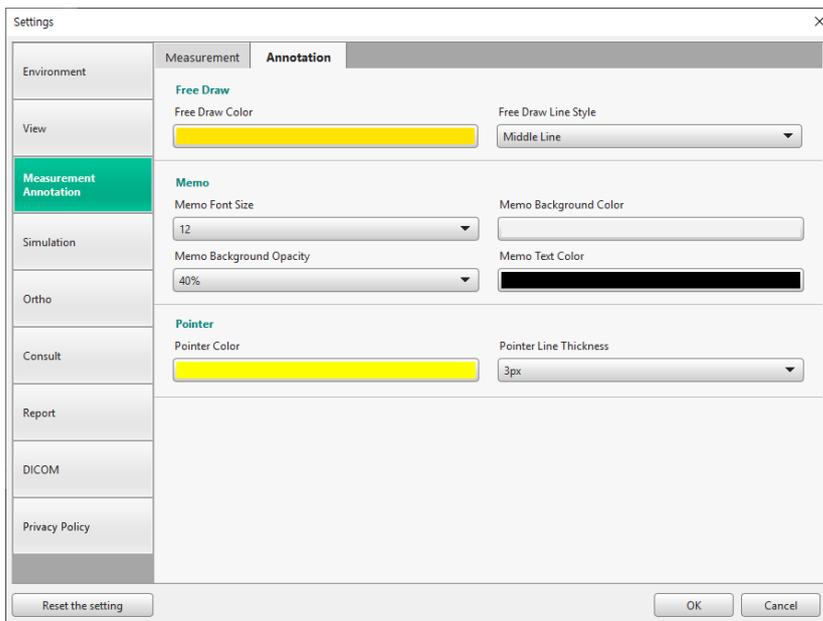
## 4. Measurement/Annotation

### 4.1 Measurement



The user can set the default color for angle, length, profile and circle, and the font size for measurement.

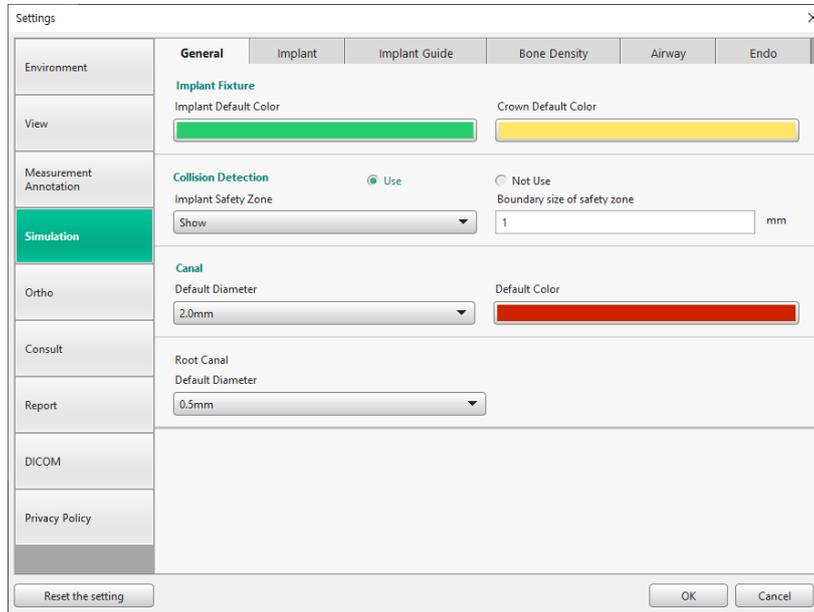
### 4.2 Annotation



The user can set the line color and style of Free Draw. The user can also set the color, the background color, the transparency of memo, the color and the thickness of pointer. Click the [OK] button to save the selected measurement and annotation.

## 5. Simulation

### 5.1 General



- **Implant Fixture**

The user can set the default color of implant and crown.

- **Collision Detection**

Click on the radio button to enable the collision detection. When the collision detection is set to [Use], the Implant Safety Zone and the boundary size can be set.

- **Implant Safety Zone**

User can set to display or hide the minimum space required for implant insertion.

- **Boundary Size of Safety Zone**

User can set the size of Implant Safety Zone.

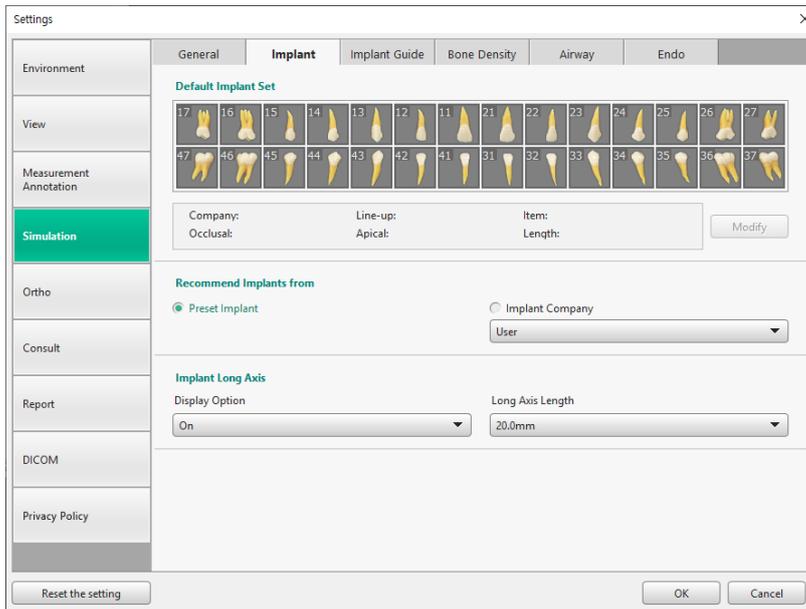
- **Canal**

The user can set the default diameter and base color of the Canal.

- **Root Canal**

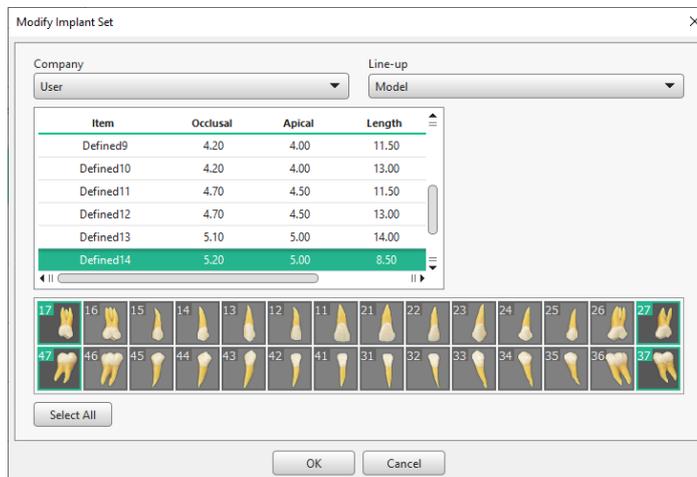
The user can set the default diameter of Root Canal.

## 5.2 Implant



- Preset Implants

For the implant simulation, the user can set the default implant value according to the number of teeth. To change the default implant for the selected number of tooth, click the [Modify] button and the [Modify Implant Set] dialog appears as follows. Set multiple teeth to apply the same implant on them concurrently.



In the [Modify Implant Set] dialog, the user can check the default implant for the selected number of tooth, and set the Implant Company, product family, and model name regarding the default implant value according to each tooth number.

- Recommend Implants from

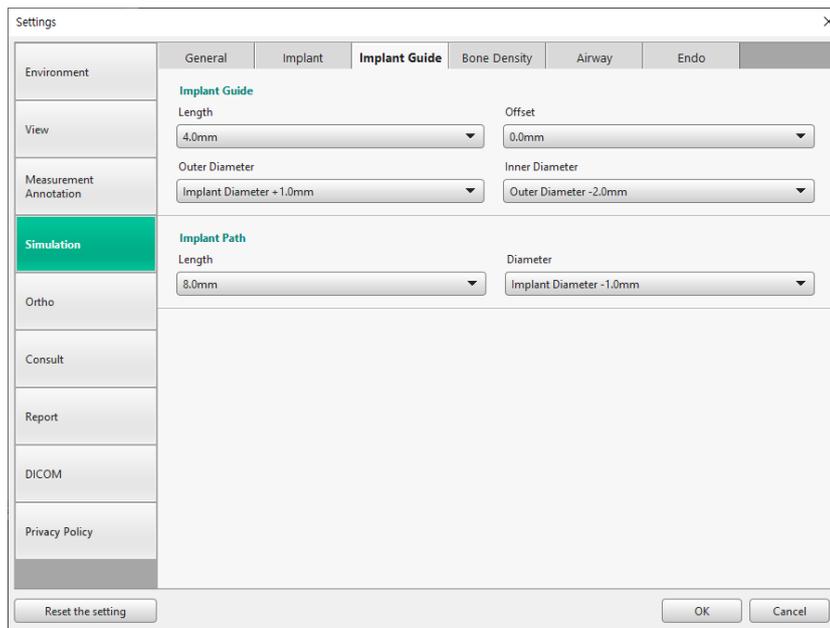
Ez3D-i recommends implants to insert based on the [Recommended Implants from option] while implant simulation with mouse right-clicking after length measurement.

By selecting [Preset Implants] option, Ez3D-i recommend implants among preset implants while by selecting [Implant Company] option, Ez3D-i recommends implants among implants of the selected company.

- Implant Long Axis

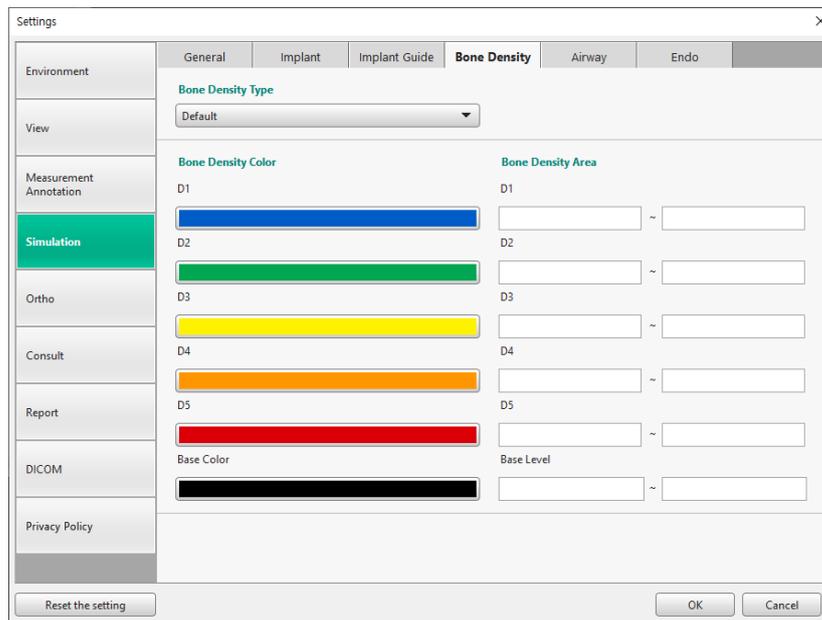
- Display Option  
The user can select whether to display implant long Axis or not.
- Long Axis Size  
The user can set the size of Long Axis between 5, 10, 15, 20, 25, 30, 35, 40, 45, and 50. The default value is 20 mm.

## 5.3 Implant Guide



- Implant Guide
  - Guide Length  
User can set the default length for Implant Guide
  - Offset  
User can set the default offset between Implant and Implant Guide
  - Outer Diameter  
User can set the default outer diameter for Implant Guide
  - Inner Diameter  
User can set the default inner diameter for Implant Guide
- Implant Path
  - Path Length  
User can set the default length for Implant Path
  - Path Diameter  
User can set the default diameter for Implant Path

## 5.4 Bone Density



- Bone Density Type

The bone density values can be set by acquisition equipment.

- Bone Density Color and Area

User can set the color for each Density range that is displayed for Bone Density effect in Windowing group of the 3D PAN tab.

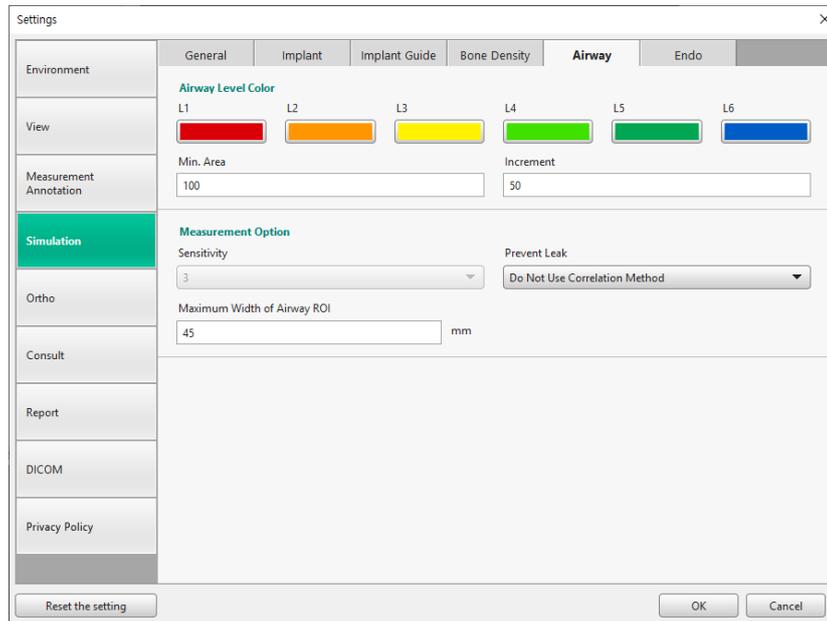


CAUTION

Adjusting bone density range depending on the equipment that you have is required to use the bone density function more accurately. (There are many cases where CBCT has different CT Number values, which are the standard of bone density standard, depending on the equipment.)

Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.

## 5.5 Airway



- Airway Level Color

Set the range to apply to the Airway Volume, which is displayed with the [Airway Measurement] function in the MPR tab, and the color for each level.

The Airway Level Color is used to visualize the area ( $\text{mm}^2$ ) for each Axial slice in the measured Airway area. The color for total of six level (L1 ~ L6) can be set, and the range for each level is set based on the minimum area value and the increment.

The minimum area value refers to the minimum area (unit: $\text{mm}^2$ ) of Airway area, and the increment refers to the value of the increased area (unit: $\text{mm}^2$ ) by each level.

[Ex] If the minimum area value is 100 (unit: $\text{mm}^2$ ) and the increment is 50, the Airway Level Color (L1~L6) means as follows. And if the area of the Airway in the Axial Slice is 125  $\text{mm}^2$ , the mixed color of L1 and L2 is set.

- L1 color is used when the Airway area in the Axial slice is below 10  $\text{mm}^2$ .
- L2 color is used when the Airway area in the Axial slice is 15  $\text{mm}^2$ .
- L3 color is used when the Airway area in the Axial slice is 20  $\text{mm}^2$ .
- L4 color is used when the Airway area in the Axial slice is 25  $\text{mm}^2$ .
- L5 color is used when the Airway area in the Axial slice is 300  $\text{mm}^2$ .
- L6 color is used when the Airway area in the Axial slice exceeds  $\text{mm}^2$ .

- Sensitivity

To adjust the degree of the Prevent Leak function, click the dropdown menu of the [Prevent Leak] to select the [Use Correlation Method] option. When the [Sensitivity] option is set to 1, the Prevent Leak function is applied with the weakest degree. Set the [Sensitivity] option higher to apply the Prevent Leak function with stronger degree.

- Prevent Leak

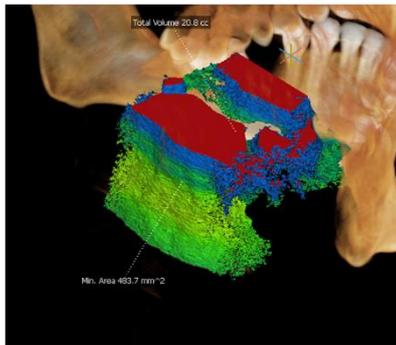
Set the default value for the function that removes the areas, which are not part of the Airway.

The parts, which is not the Airway, may be measured in the CBCT image due to the artifacts made from metal, etc. To prevent this, use the Prevent Leak function to remove the areas, which are not part of the Airway.

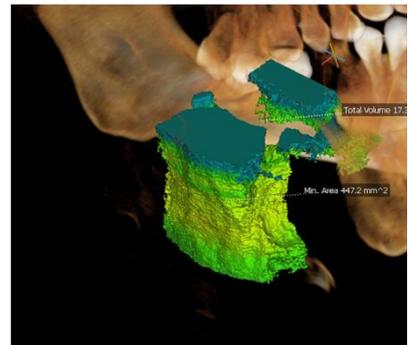


Using the Prevent Leak function increases the time needed for Airway measurement. Also, if the Metal artifact is severe, the function may not work.

- 3D Rendering

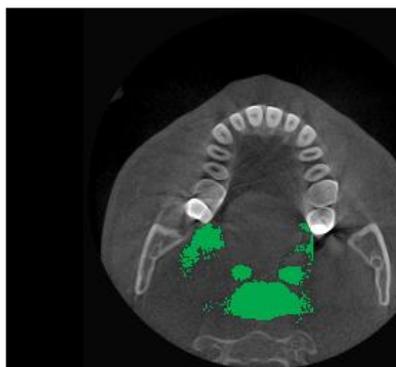


Prevent leak function not in use

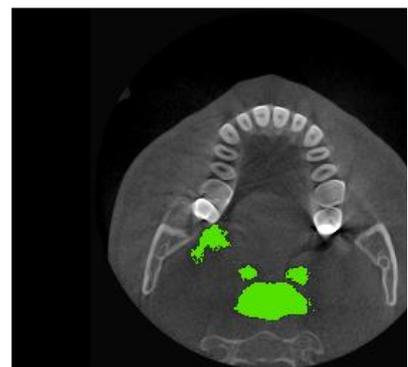


Prevent leak function in use

- Axial Image



Prevent leak function not in use



Prevent leak function in use

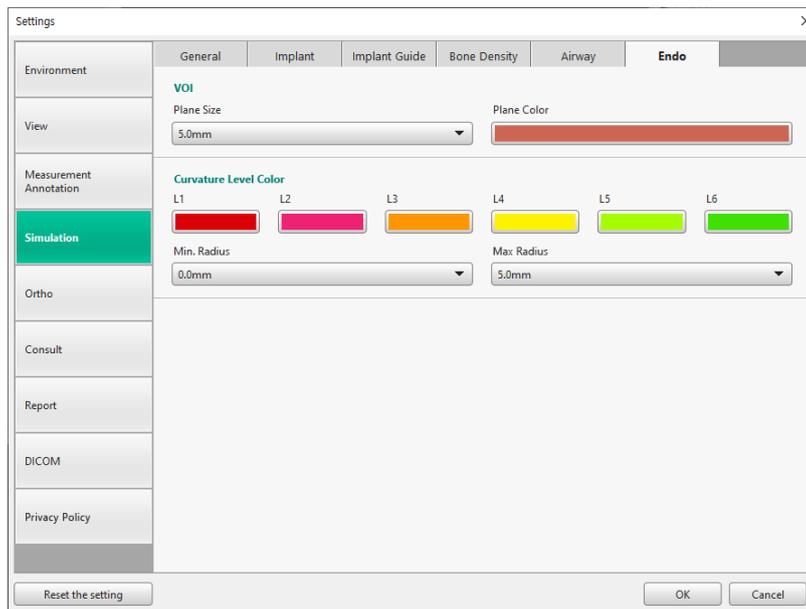
- Maximum Airway ROI Width

Click the starting point and the ending point of the Airway to measure and a square (ROI) will be created based on the center point of the two selected points. The Airway is measured within the square (ROI).

Change the number of Maximum Airway ROI Width to widen or reduce the Airway area.



## 5.6 Endo



- VOI

Set the size and color of plane displayed in VOI view in ENDO tab.

- Curvature Level Color

Set the size and color of curvature circle radius displayed in VOI view in ENDO tab.

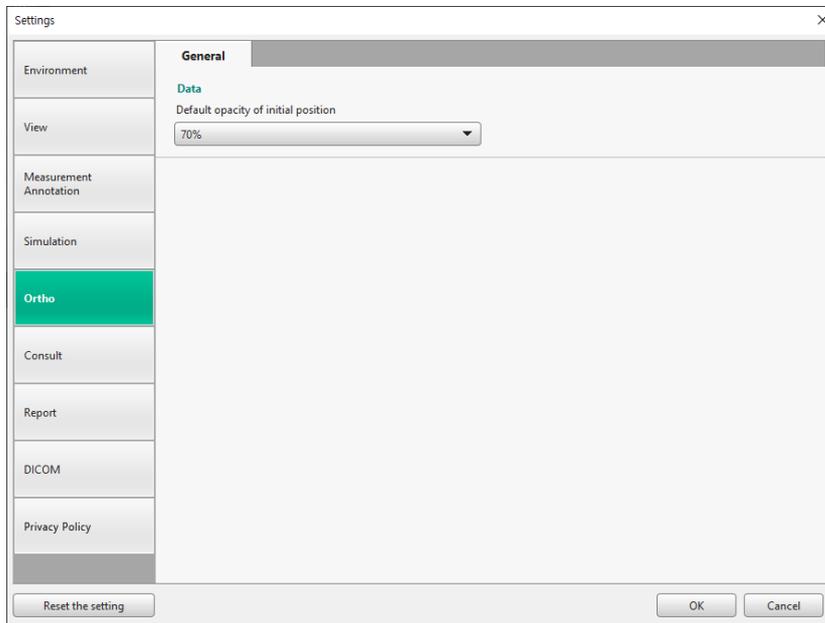


L1 corresponds to the minimum radius and L6 corresponds to the maximum radius. Color gradient value applies between levels.

Radius size smaller/larger than the Min./Max. Radius is displayed as a circle with the minimum/maximum radius.

## 6. Ortho

### 6.1 General

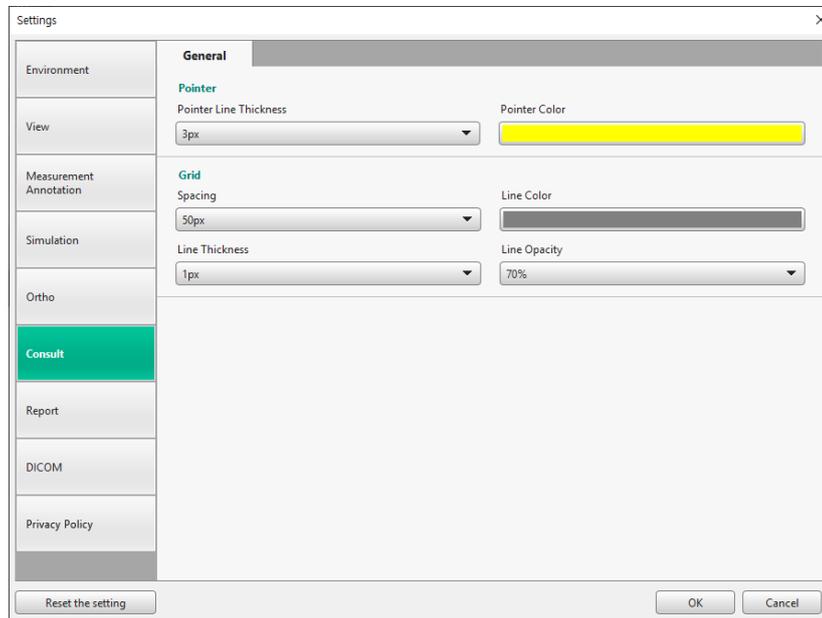


- Data

The user can set the default opacity of original position of Data. The default value for Default opacity of original position is 70% and the values can be set in the range between 0 and 100% (10% intervals).

## 7. Consult

### 7.1 General



- **Pointer**

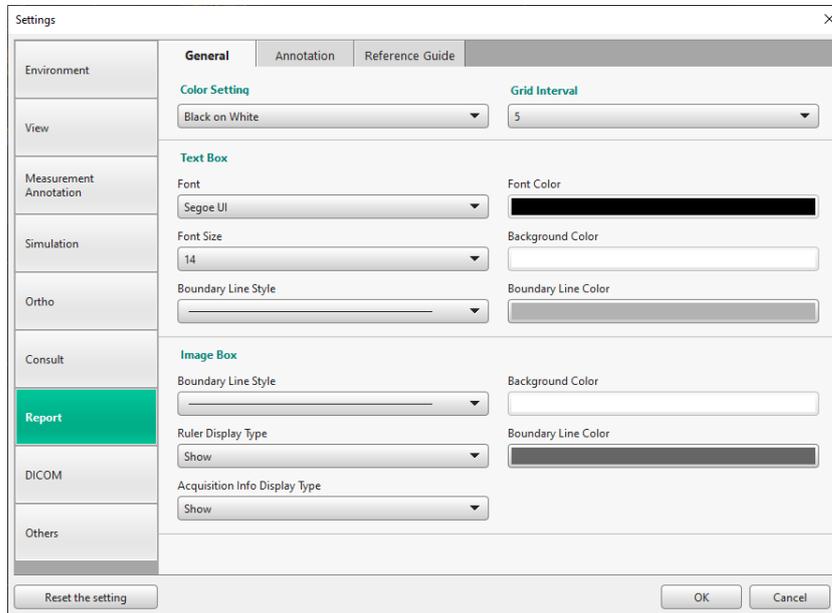
The user can set the line style and color of the pointer.

- **Grid**

The default setting values of the spacing, line color, line thickness or the line opacity of grid, which is on the tool bar in the CONSULT tab, can be set.

## 8. Report

### 8.1 General



- **Color Setting**

The user can set the background color of reports. The color only applies on the screen but does not apply when printing out the report.

- **Text Box**

The user can set the font type, font size, font color, background color, border style, and border color of the text box.

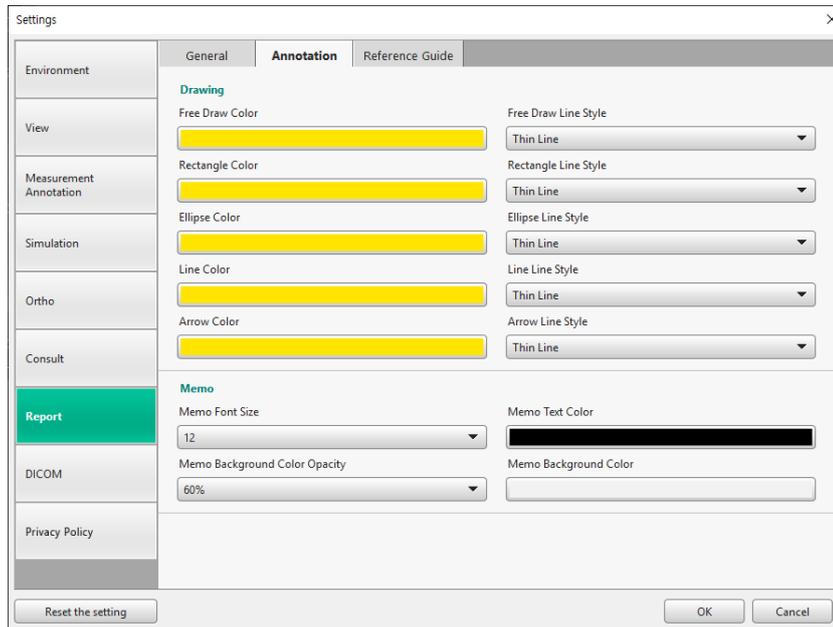
- **Image Box**

The user can set the border style, background color, and border color of the image box, and also display or hide the ruler and acquisition information.

- **Grid**

The user can set the interval of grid.

## 8.2 Annotation



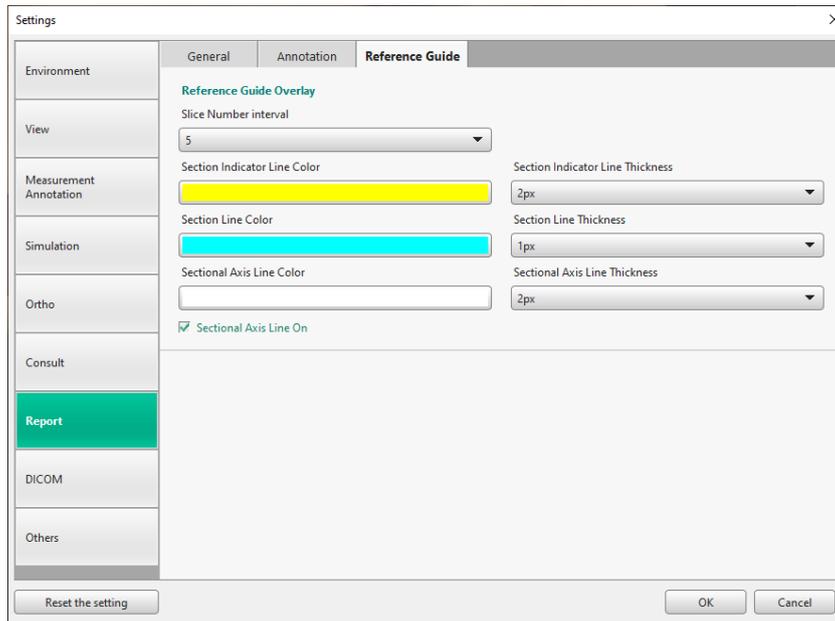
- **Drawing**

The user can select default values for Drawing tools. Color and line style can be set for each annotation tool.

- **Memo**

The user can set the default values for Memo tool.

## 8.3 Reference Guide



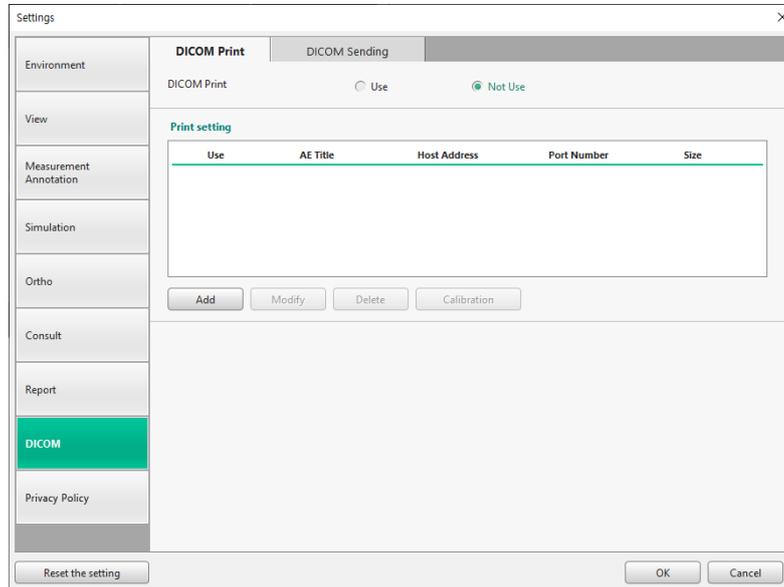
- Reference Guide Overlay

Default values for overlays displayed on reference guide can be set. Slice number interval, and line thickness and color of section indicator line, section line, and sectional axis can be set.

Enable [Sectional Axis Line On] to display the center line of a curve in a scout view of reference images when creating a report.

## 9. DICOM

### 9.1 DICOM Print



- DICOM Print

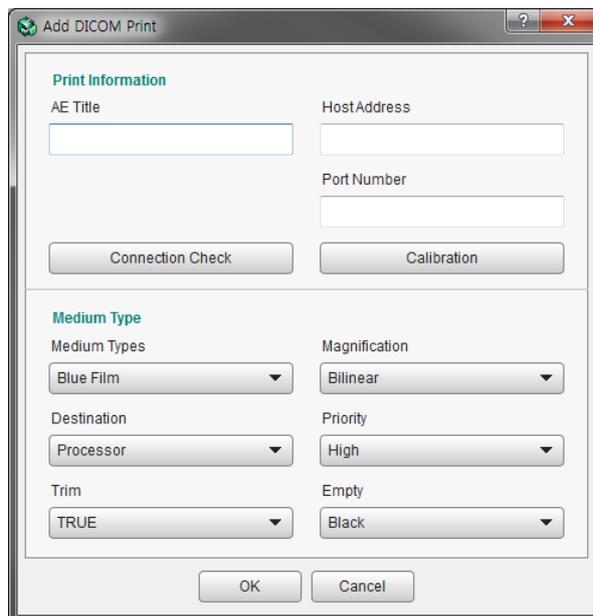
Select an option of whether to use DICOM Print.

- Print Setting

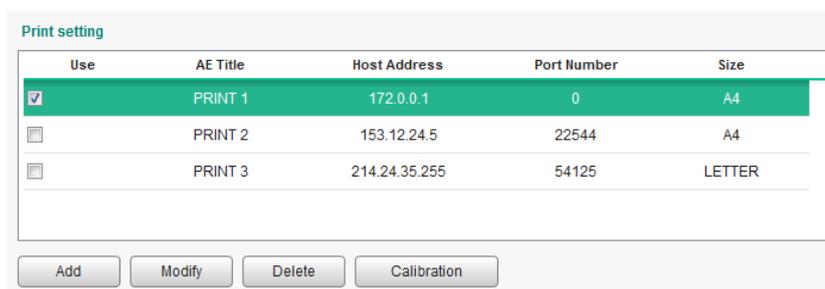
From the Print Setting list, user can check the registered DICOM Print.

- To add DICOM Print

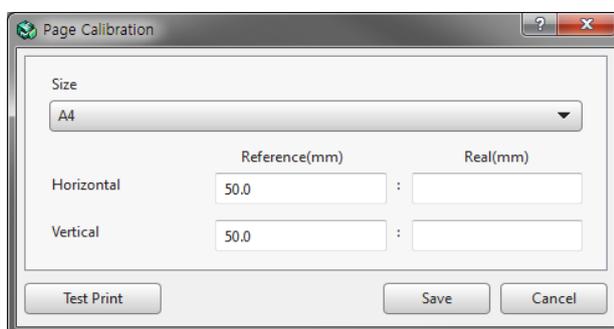
1. Click the [Add] button.
2. Input the DICOM Print information in the [Add DICOM Print] dialog.



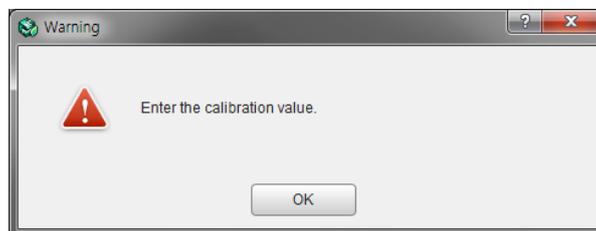
- To calibrate DICOM Print
1. Click the DICOM Print for calibration in DICOM Print list.



2. Click the [Calibration] button.
3. Change the values in the [Page Calibration] dialog, and then click the [Save] button.

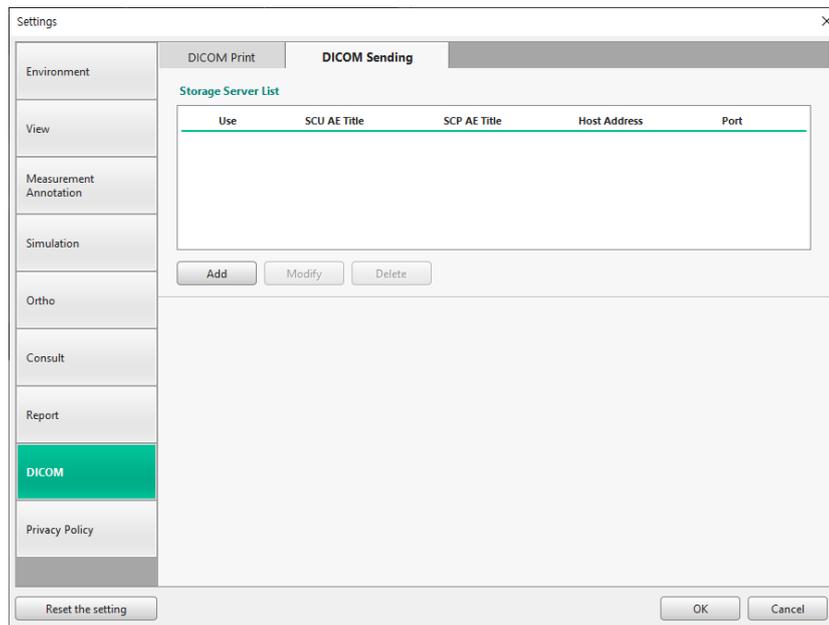


- If the fields for calibration values are left empty, the following message appears.



- One DICOM Print should be in one size and one calibration value. To register different size and calibration value, add a new DICOM Print.

## 9.2 DICOM Sending



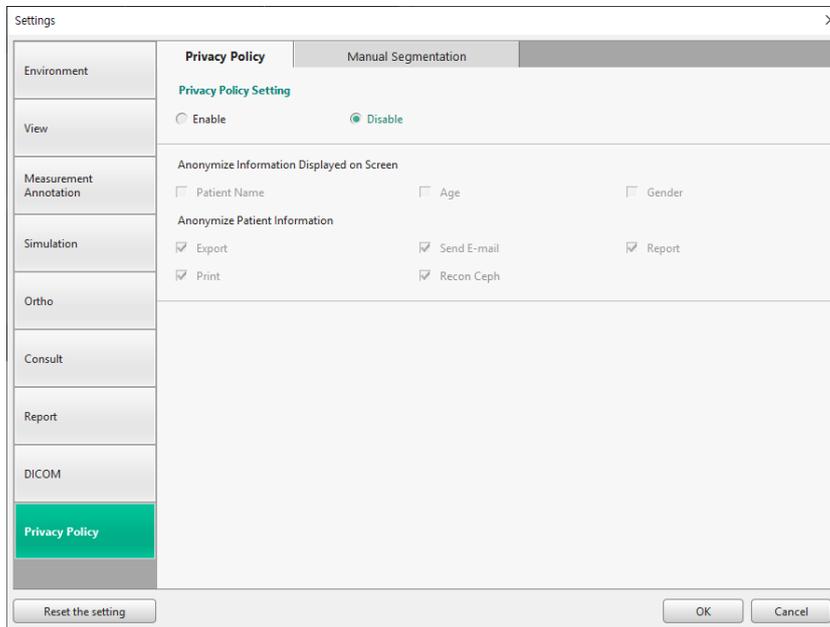
- Storage Server List

The Storage Server List shows the list of registered Storage Server.

To add Storage Server, click the [Add] button. When the [Add Storage Server] dialog appears, input the Server information and click the [Connection Check] button to check if the storage server is connected. Then click the [Save] button.

## 10. Privacy Policy

### 10.1 Privacy Policy



- Privacy Policy Setting

The user can select whether to use the privacy option or not.

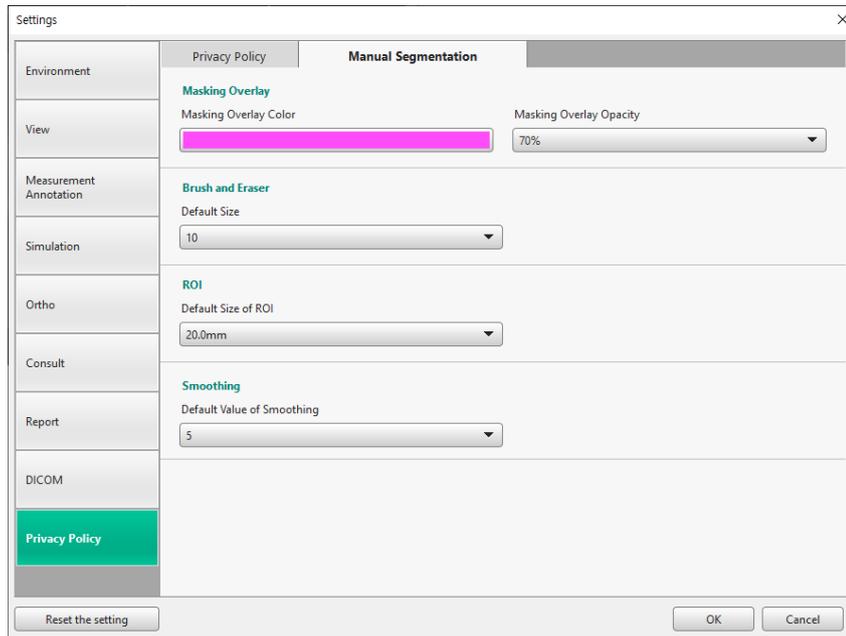
- Anonymize Information Displayed on Screen

The user can select options to display on screen without anonymization. This option is enabled when Privacy Policy Setting is 'Enable'.

- Anonymize Patient Information

The user can select whether to apply anonymization function or not for each option. For options checked, related UI appears when running each function.

## 10.2 Manual Segmentation



The user can set default values for manual segmentation.

- **Marking Overlay**

The user can set the color and opacity value of marking overlay.

- **Brush and Eraser**

The user can set the default size of Brush and Eraser.

- **ROI**

The user can set the default size of ROI.

- **Smoothing**

The user can set default values of Smoothing.



# Chapter 3. Basic Functions

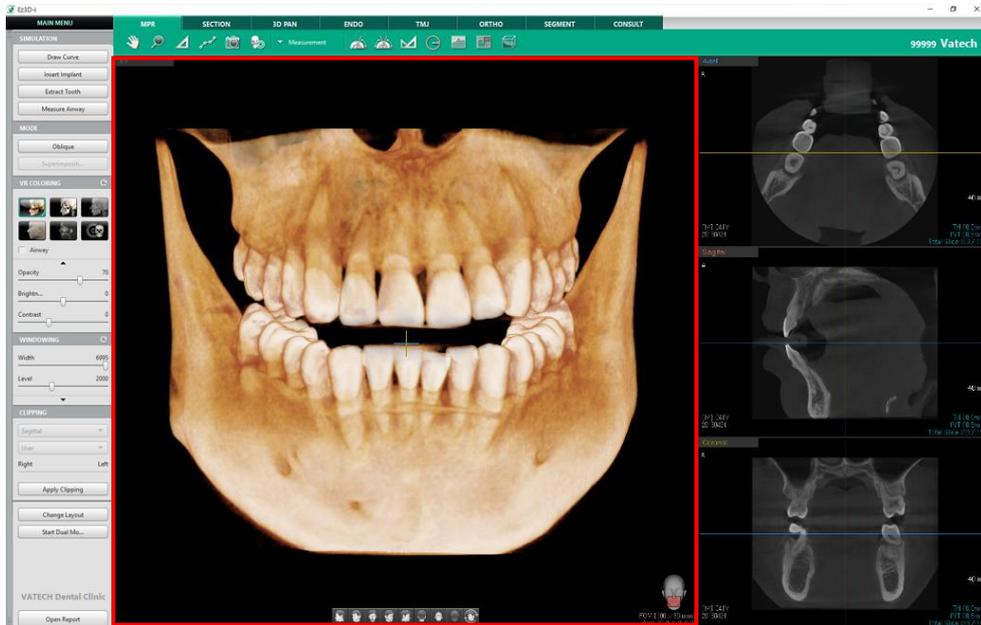
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## 1. Utilizing Smart Click for 3D Images

Double click an area of the 3D image to magnify the image. Corresponding movements of Axial, Sagittal, and Coronal images appear on the screen.

1. Double click on the part of the 3D image that the user wishes to view.

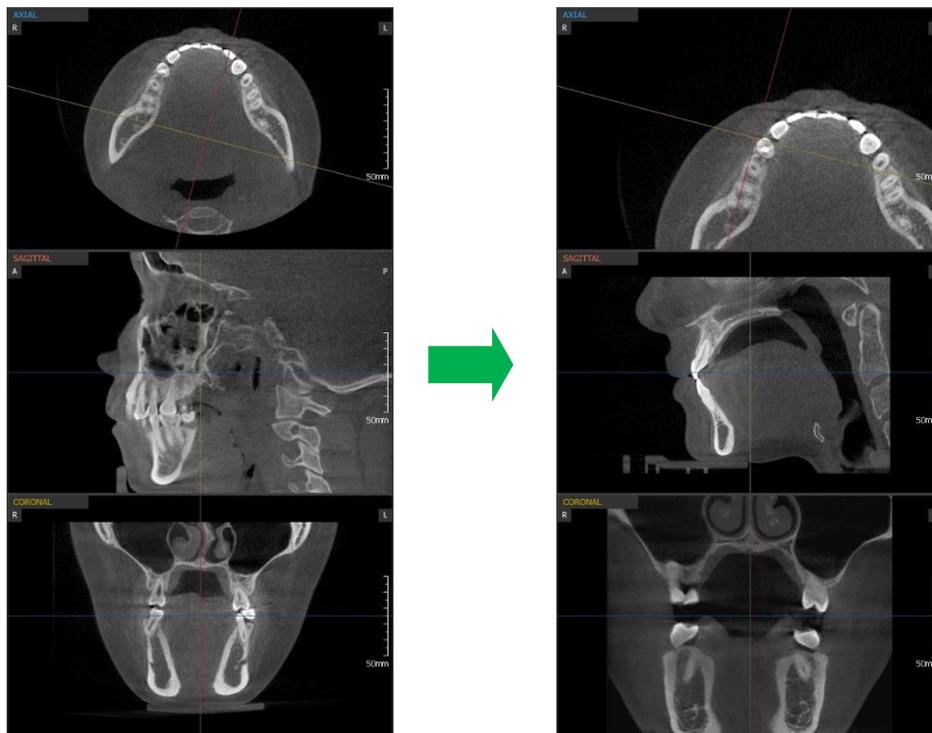


2. The 3D image is rotated and magnified based on where you double-clicked.

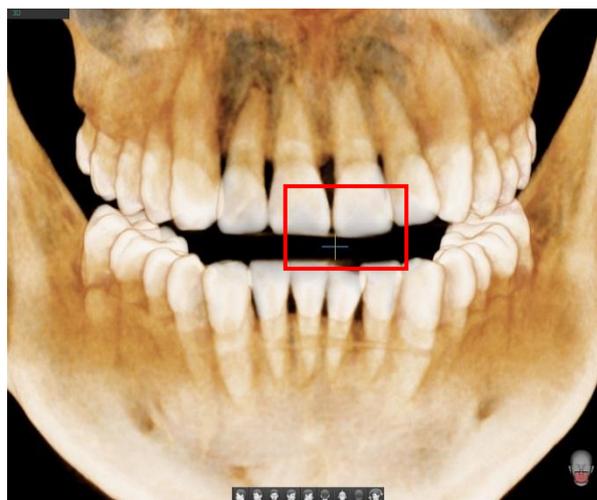


3. Press the 'Ctrl' key on your key board and double click on the image. The 3D image returns to the default ratio set in the Settings.

4. The corresponding view of Axial, Sagittal, and Coronal images appears according to the movement of 3D images.



- To rotate the 3D image while maintaining the enlarged rate, click the Predefined direction buttons or drag the 3D image.
- Use the mouse wheel to enlarge or reduce the size of the image.
- To make the axis disappear from the screen, click on the screen and then press the Spacebar from the keyboard. When pressing <Space bar> once more, the axis is on.

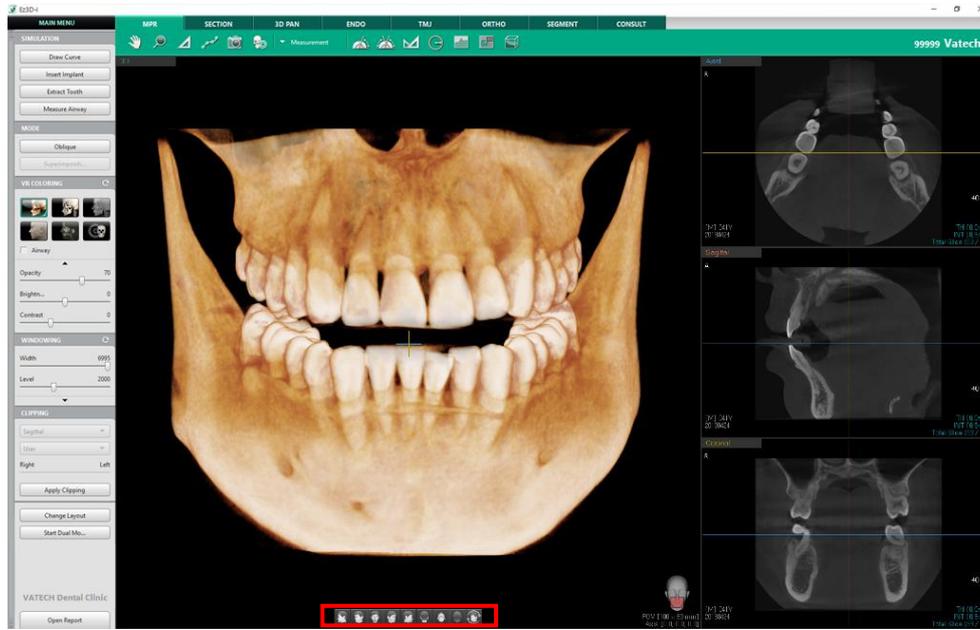


When there is not enough memory, only the part of the image may be shown on the screen. In this case, the compression rate is displayed on the MPR View.

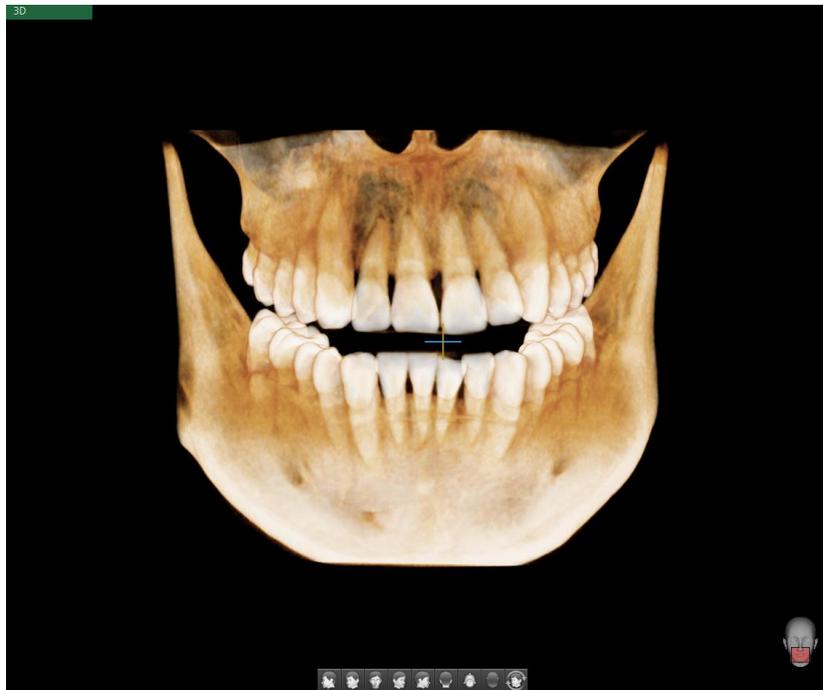
## 2. Controlling Direction of 3D, VR Images

Click the Predefined direction button or drag the 3D image to change the direction of the 3D image.

When clicking the head image button at the bottom of the 3D realm, the 3D image is rotated to the indicated position.



- If the DICOM header file exists, the pink box on the Skull appears to indicate the 3D capture area in relation to the entire view of the skull.



### 3. Adjusting Axis of 2D Image

From a 2D image, the user can adjust the axial view of the selected tooth. The user can check the structure of the surrounding teeth by using the mouse wheel.

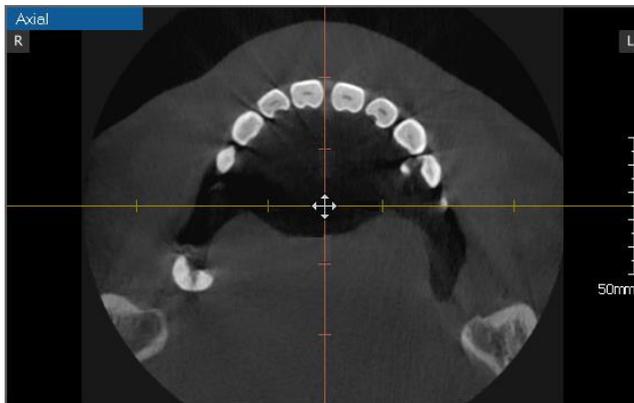


#### Show and hide the axis of the 2D image

Press the Space bar on the keyboard on the selected images to hide or show the axes.

#### 3.1 Adjusting Two Axes Simultaneously

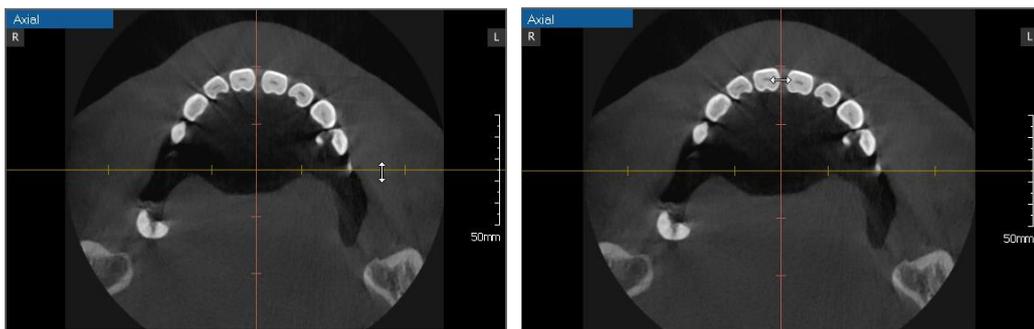
1. Hover the mouse to the point where two axes intersect, the cross-cursor shape  appears.



2. Click and drag to move the two axes of the tooth selected.

#### 3.2 Adjusting One Axis

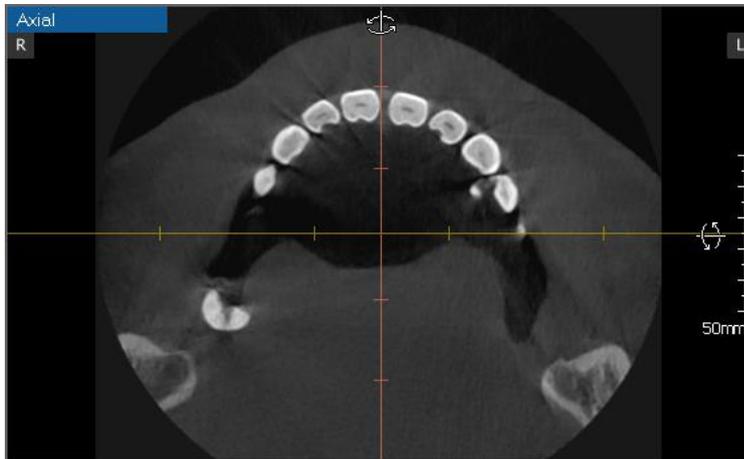
1. Hover the mouse on one axis and the arrow shape cursor  or  appears.



2. Click and drag to move the axis of the selected tooth.

### 3.3 Rotating Axis

1. Hover the mouse on an end point of the axes and the arrow cursor  appears.

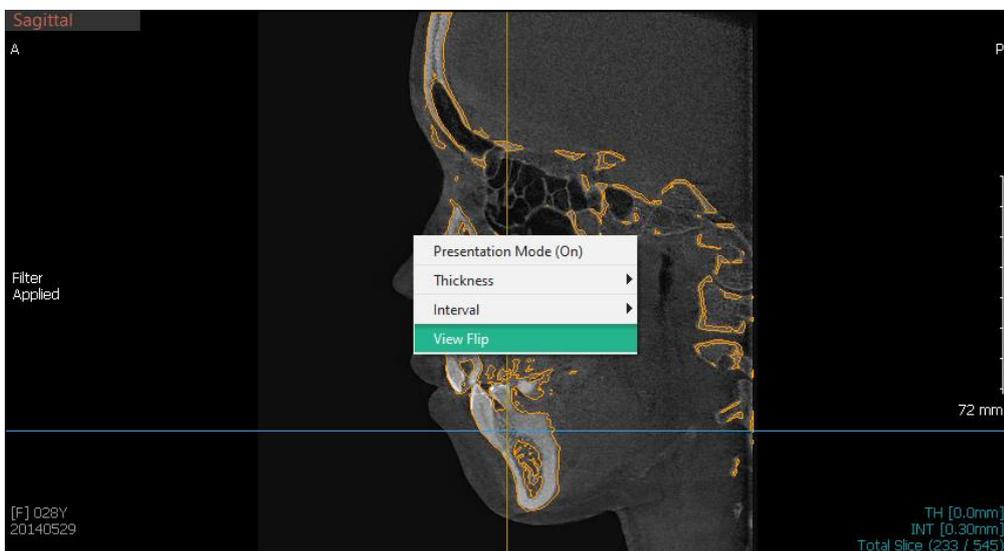


2. Click and drag to adjust the axial direction of the selected tooth.

### 3.4 Horizontally Flipping Axis

View a 2D image such as Axial, Sagittal, Coronal or Section View flipping horizontally based on the axis.

1. Right click on the desired view and select the [View Flip].



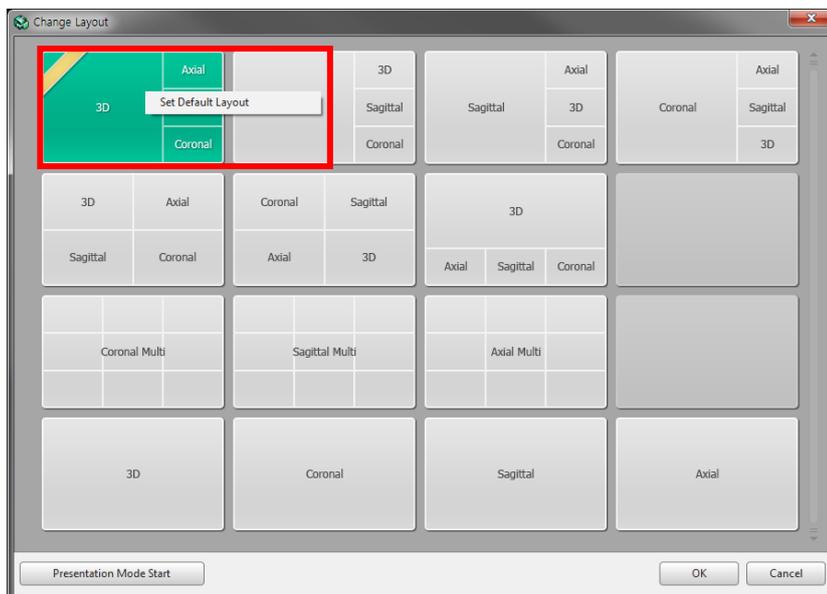
NOTE

- Flipping the image horizontally changes the direction of slices.
- The [Reset View] function does not apply on the state. Use the [Initialize All] function to initialize all including the image direction.

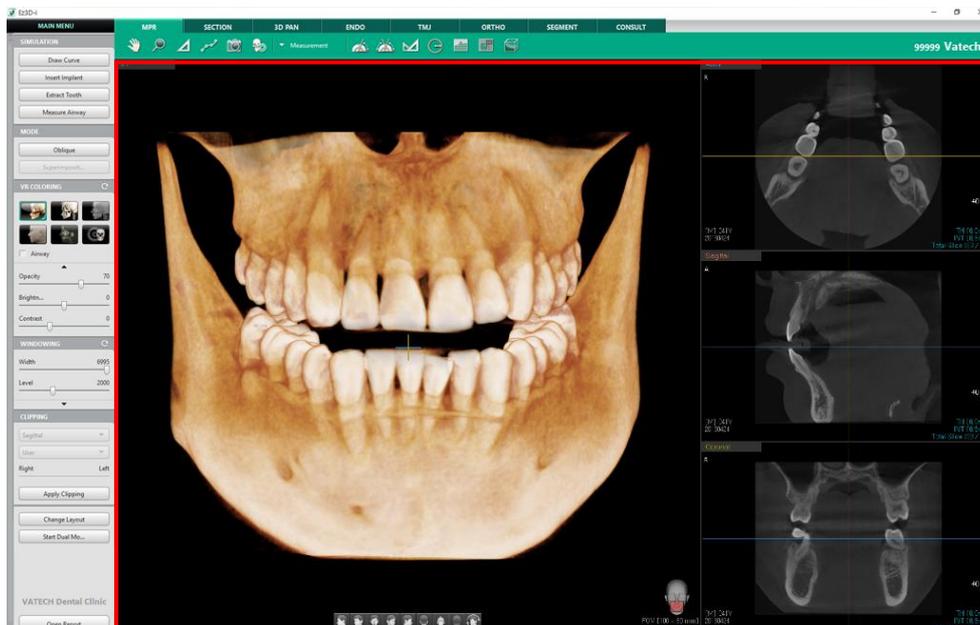
## 4. Changing Layout

The user can change the location and configuration of the images that appear in the Workspace.

1. Click the [Change Layout] button on the bottom left. The [Change Layout] window appears.
2. Click the layout to set as the default layout, and then right click the selected layout.



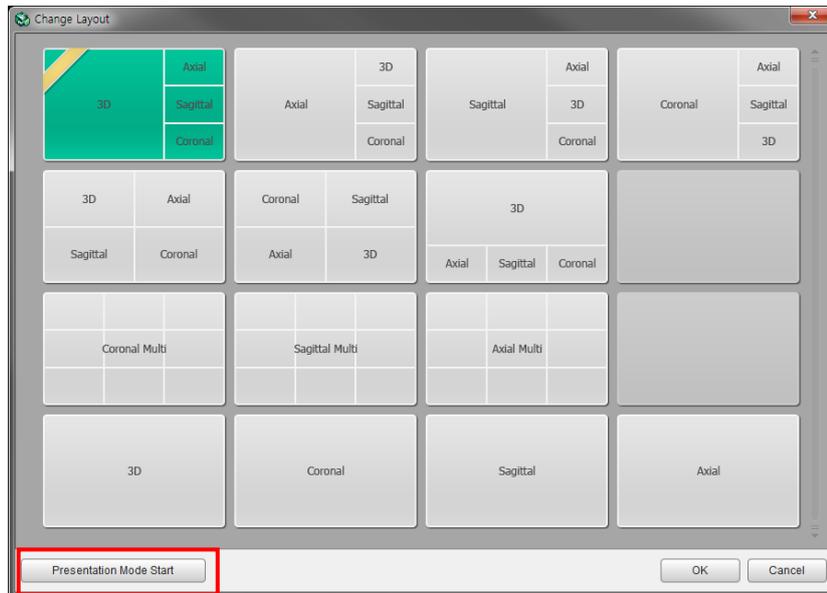
3. Click the [Set Default Layout] button to set it as a default layout and then click the [OK] button. The Workspace configuration has changed to the selected layout.



## 5. Switching to Presentation Mode

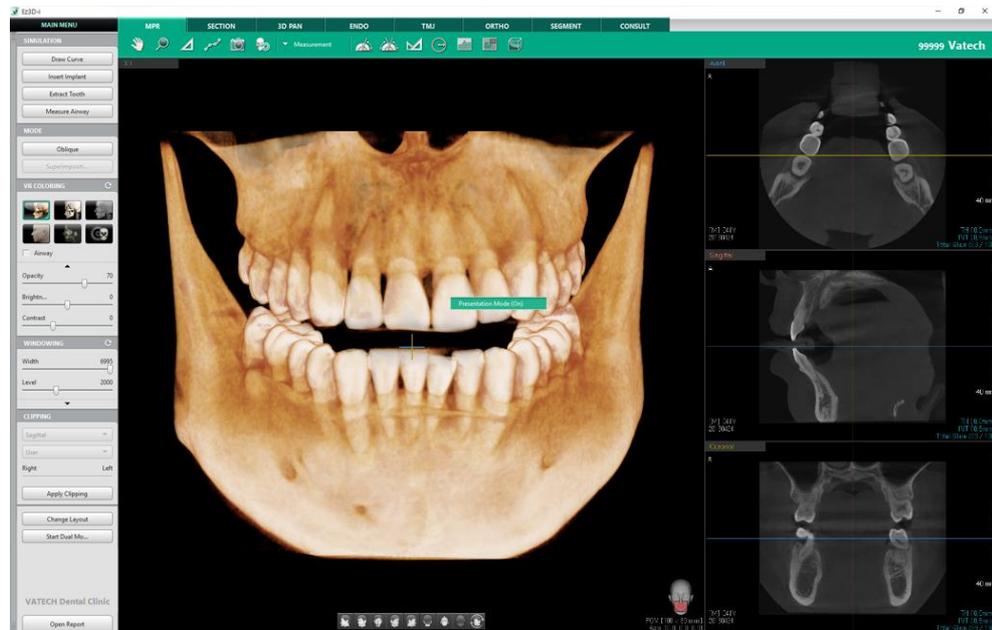
3D, Axial, Sagittal, and Coronal images are displayed on one screen.

1. Click the [Change Layout] button. The [Change Layout] window appears.
2. Click the [Presentation Mode Start] button on the bottom left. The Full Screen Mode window appears.



>> Presentation Mode

- A large image is displayed on the monitor to be utilized during patient consultation. After selecting an image, change it to Full Screen Mode via the keyboard shortcut <Ctrl>+<Enter>.
- Right click the image and select the [Presentation Mode (On)] option to view in the Presentation mode.



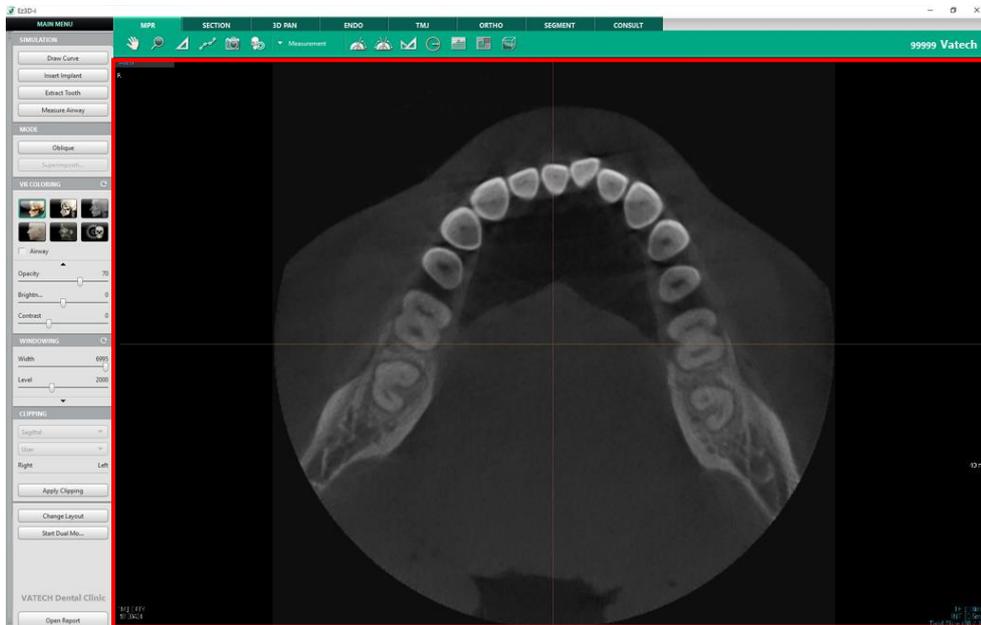
3. The hidden Toolbar reappears when the mouse is placed over the arrow on the left.



4. Click the exit button on the upper right-hand corner to close the Presentation mode.

## 5.1 View Image in Full Screen Mode

1. Double-click on the title of the image in the upper-left corner (axial, sagittal, or coronal). The selected image will be viewed in the full screen.



2. Double click the image tile in Full Screen Mode to return it to the previous layout.



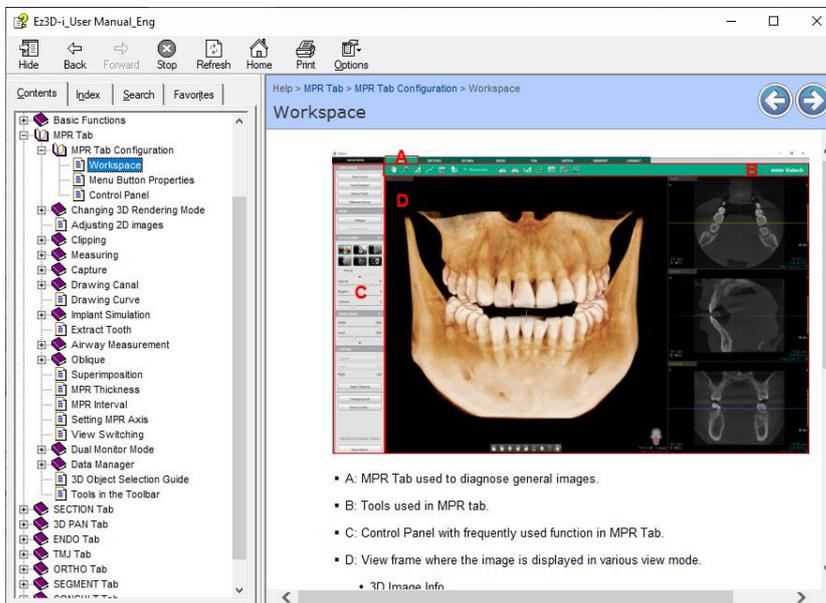
### Utilizing the <Enter> key on the keyboard:

Click the Window Title and press the <Enter> key on the keyboard to maximize the selected window.

To return the window to its previous size, press the <Enter> key on the keyboard in the maximized window.

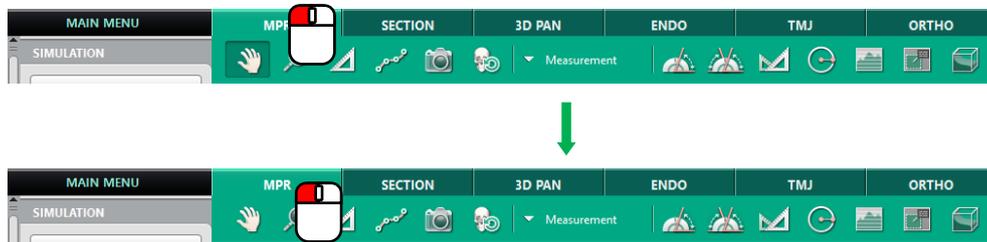
## 6. Help

Click Help() from the toolbar. The user can find the User Manual of Ez3D-I in CHM file format.



## 7. Toolbar

Click the icons on the toolbar of each tab to execute the function. Press the <Esc> key on the keyboard, click the icon again, or right click on the image to cancel the function.



The following functions cannot be canceled with the <Esc> key or with a mouse right click.



Icons	Designation	Icons	Designation
	Reset View		Initialize All
	Undo		Turn Overlay On/Off
	Redo		Show Manager
	Reset		Delete All
	Pointer		

## 8. Shortcut Keys

The following table describes the shortcut keys for general view of images.

Category	Action	Operation
Window (General)	Double click the title of each window.	Single View window Return to the previous layout.
	Hover the mouse over each window.	View focused.
	Press <Enter> key.	Single View window Return to the previous layout.
	Press <Ctrl + Enter> key.	Presentation Mode On/Off
3D View Window	Scroll the mouse wheel.	Zooming
	Click + Drag and Drop.	Rotation
	Right click + Drag and Drop	Panning
	Double click.	Smart Zoom
	Press space bar on the keyboard.	Show / Hide 3D Axis
2D View Window (MPR tab)	Press <Ctrl> key + scroll the mouse wheel.	Zooming
	<Shift> key + Right click + Drag and Drop	Panning
	Scroll the mouse wheel.	Change interval.
	Right click + Drag (left or right) + Drop	Adjust the width (brightness).
	Right click + Drag (up or down) + Drop	Adjust the level (contrast).
	Press space bar on the keyboard.	Show / Hide 2D Axis
Window (Section tab)	Double click.	Move the center of axis to point clicked.
	Double click the title of Section window.	Maximize Section window. Return to the previous layout.
	Double click the Section View image.	Maximize Section window (1X1 size). Return to the previous layout.

## Chapter 4. MPR Tab

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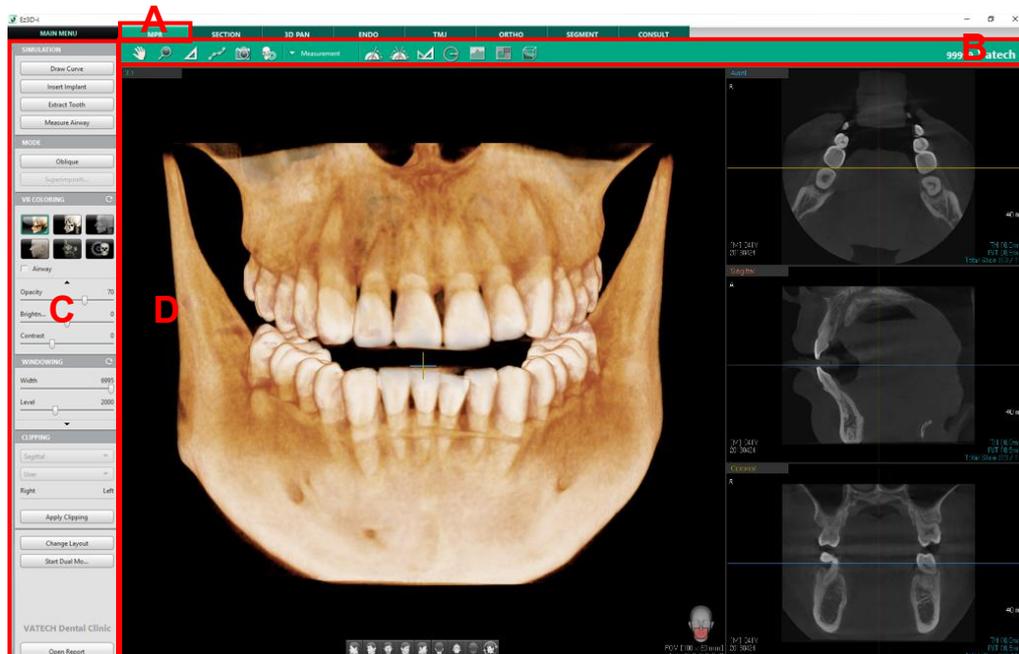


# 1. MPR Tab Configuration

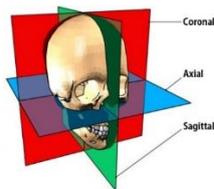
MPR (Multi Planar Reconstruction) tab provides a user-determined cross-sectional view.

Ez3D-i provides 3D VR (Volume Rendering) images as well as Axial, Sagittal, and Coronal images: a cross sectional image from the vertical, lateral and frontal point of view.

## 1.1 Workspace

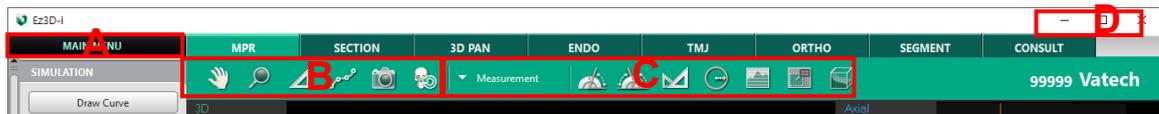


- A: MPR Tab used to diagnose general images.
- B: Tools used in MPR tab.
- C: Control Panel with frequently used function in MPR Tab.
- D: View frame where the image is displayed in various view mode.
- 3D Image Info  
On the bottom at the right corner of 3D view, the FOV of the CT image and the center point of three axes are shown on the MPR view.
- 2D Image Info  
On the bottom at the right corner of 2D images, the thickness, interval, Slice Number (Current Slice/Total Slice) of the image are shown on the MPR view.
- Properties of Axial, Sagittal, Coronal plane



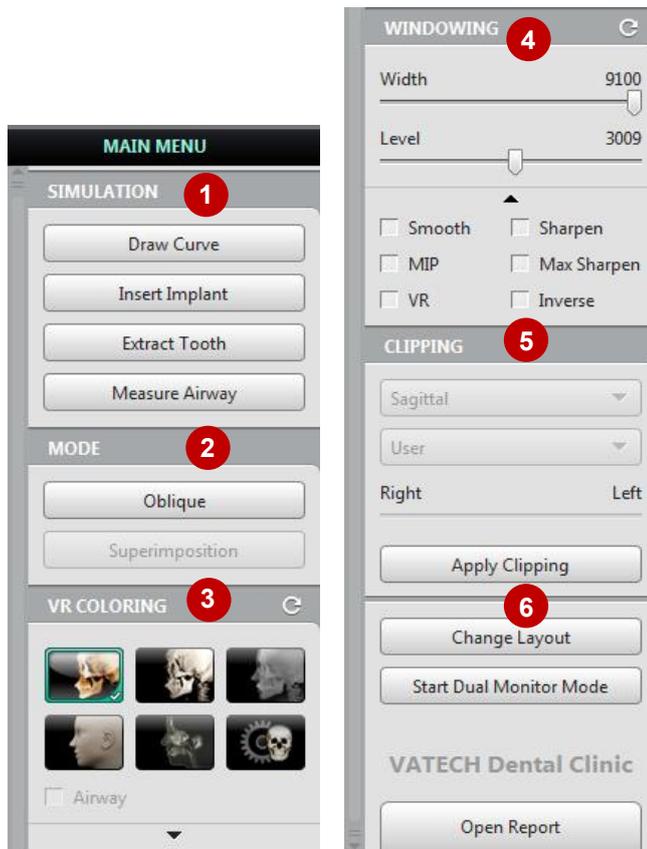
On the Axial, Sagittal, and Coronal view, press the space bar on the keyboard to turn on or off the axes.

## 1.2 Menu Button Properties



- A is the main button. From here, users can load or save files and change the default settings of the program.
- B is the main toolbar. The main tools are configured identically on all tabs.
- C is the expansion toolbar. The expansion tools are configured differently depending on the tab selected by the user.
- D is the window button. It is composed of minimize, maximize and close screen buttons.

## 1.3 Control Panel



Control panel consists of important functions that manipulate the View. It is configured differently depending on the tab selected by the user.

No.	Name	Description
1	SIMULATION Group	Group of buttons to execute functions such as drawing curves, inserting implant, extracting tooth, and measuring Airway.
2	MODE Group	Group of buttons to execute functions such as making Oblique plane and conducting Superimposition.
3	VR COLORING Group	Function to set the Rendering Mode, opacity, brightness, and contrast of data displayed in the 3D View
4	WINDOWING Group	Function to adjust the Width / Level value and to set the image effect of 2D images
5	CLIPPING Group	Function to check the 3D Image by clipping the image in various direction
6	Change Layout Button	Button to change the layout of View Frame

## 2. Changing 3D Rendering Mode

### 2.1 VR Coloring

The image coloring is optimized with the rendering value that the user has chosen.

1. The preset rendering values are as follows: Tooth, Bone, MIP, Soft Tissue, Soft Tissue 2, and VR Coloring.
2. Control the VR coloring icons to change the 3D VR values and to make fine adjustment to the values.
3. The opacity, brightness and contrast of the image can be adjusted by moving the slider to the left or right.
  - Pre-set coloring mode

Click an icon among the following icons with pre-set value for VR coloring function. The screen will display the image according to the selected mode.

Icons	Designation	Description of Functions
	Teeth	Tooth mode view
	Bone	Bone mode view
	MIP	MIP mode view
	Soft Tissue	Soft Tissue mode view
	Soft Tissue 2	View Soft Tissue with low transparency
	VR Coloring	View the VR coloring graph panel

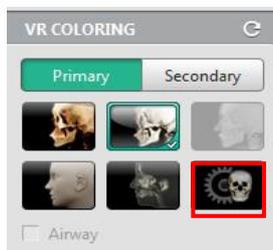
## 2.2 Fine Tuning The VR

3D volume VR is adjusted and optimized by utilizing one of the preset options: Teeth, Bone, MIP, Soft Tissue, and Soft Tissue 2 mode. The opacity, brightness, and contrast of 3D volume VR can be adjusted by clicking the VR Coloring icon.

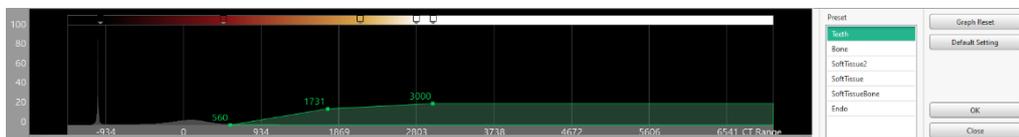
1. Select one of VR Coloring modes to tune VR finely.



2. Select the VR Coloring icon as follows.



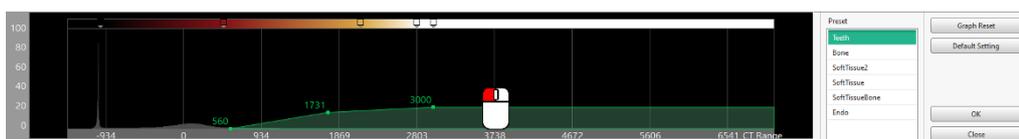
3. The Volume Coloring graph appears in the following screen.



4. Click the opacity, color point on the graph and drag it to the desired point to adjust the VR Coloring. The adjusted coloring value appears on the screen in real time.



5. To move the whole graph line, click and drag the graph area as follows; by doing so, the value of VR Coloring is changed.



6. To initialize all changes, click [Reset] button.





With the [Default Setting] button, users can set up the default value in various modes.

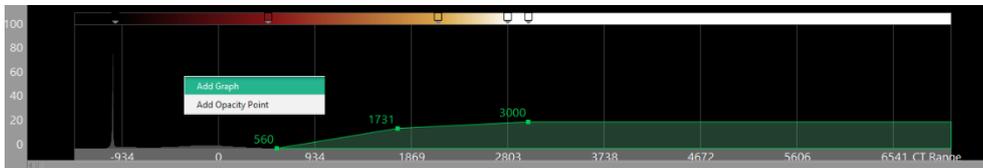
## 2.3 Adding and Deleting VR Coloring Graph

When 2 or more adjusted value is required to view, for instance, soft tissue and bone at the same time, the user can add VR coloring graphs to view the image optimized for each requirement.

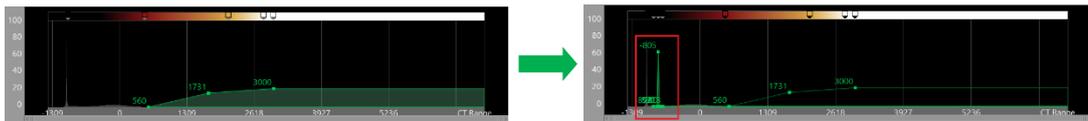


For a CT image that has a project saved from a previous version of Ez3D-i, initialize the graph before adding an additional VR coloring graph.

1. Right click on the outside of existing VR coloring graph then the context menu appears.



2. Click [Add Graph] to add a VR coloring graph. The maximum number of graphs is 3.



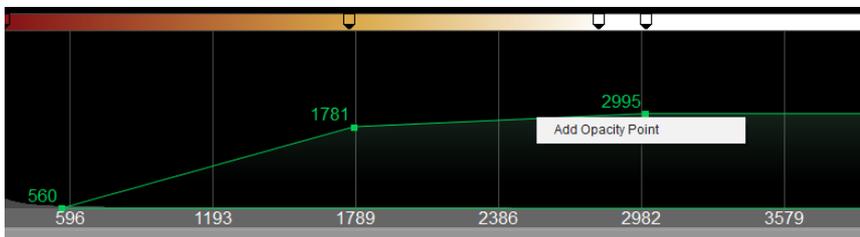
3. Right click on the graph to delete and select [Delete Graph] from the context menu to delete the graph. At least 1 VR coloring graph must exist.

## 2.4 Editing the Volume Coloring Graph

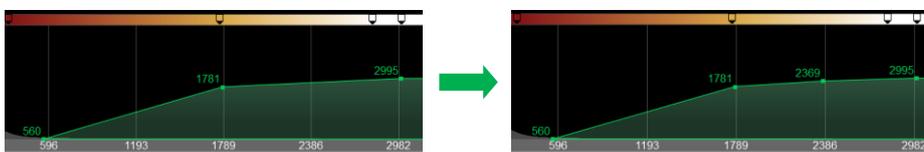
The Volume Coloring graph can be edited by adding and deleting an opacity point, or a color point. The transparency, brightness and contrast of VR can also be adjusted, optimizing each diagnosis.

- Add Opacity Point

1. Right-Click on the Volume Coloring graph. The following list appears:



2. Click [Add Opacity Point], then a new point is added on the graph as shown in the following screen:



- [Add Color Point]

1. Right-click on the desired color area in the above of Volume Coloring graph.



2. Click [Add Color Point].



3. A new Color Point is added, as shown here:

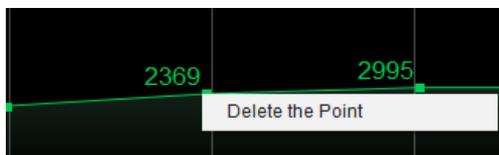


- Delete Opacity Point

1. Right-click on a point on the graph



2. Click [Delete the Point] button to delete



- Delete Color Point

1. Right-click a point on the color area



2. Click [Delete the Point] button to delete



## 2.5 Controlling VR Coloring Mode

While viewing the image in the VR coloring mode, user can move the slider to adjust the display if necessary.

	Opacity	Adjust the transparency of 3D image.
	Brightness	Adjust the brightness of 3D image.
	Contrast	Adjust the contract of 3D image.
	Reset	Initialize the filtering setting values except for the VR Coloring mode.

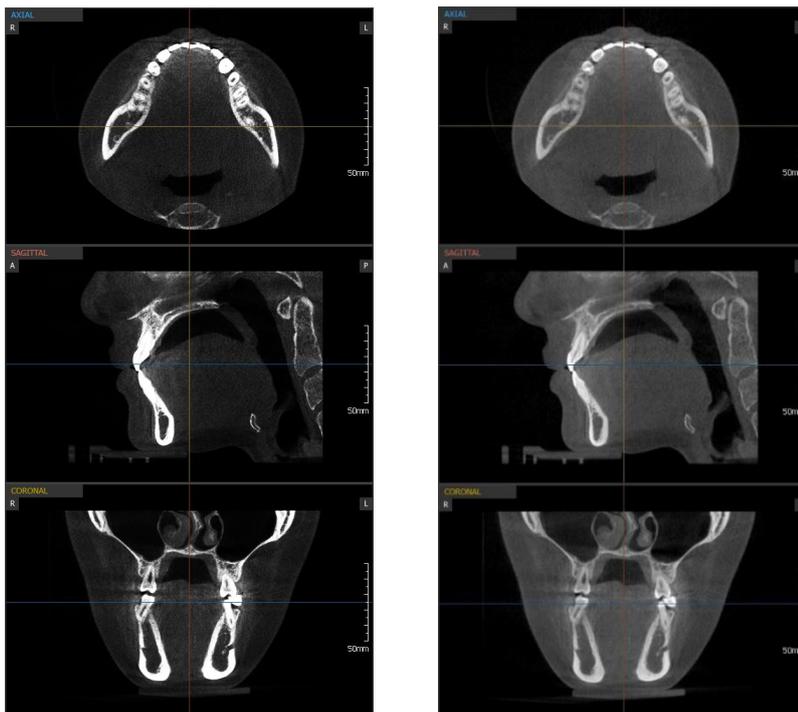
### 3. Adjusting 2D images

By adjusting the brightness and contrast levels of a 2D image, the user can optimize their image for accurate diagnosis. To adjust the brightness and contrast of the 2D image, move the slider to the left or right. Or right-click on the image and drag to manipulate the brightness and contrast value.

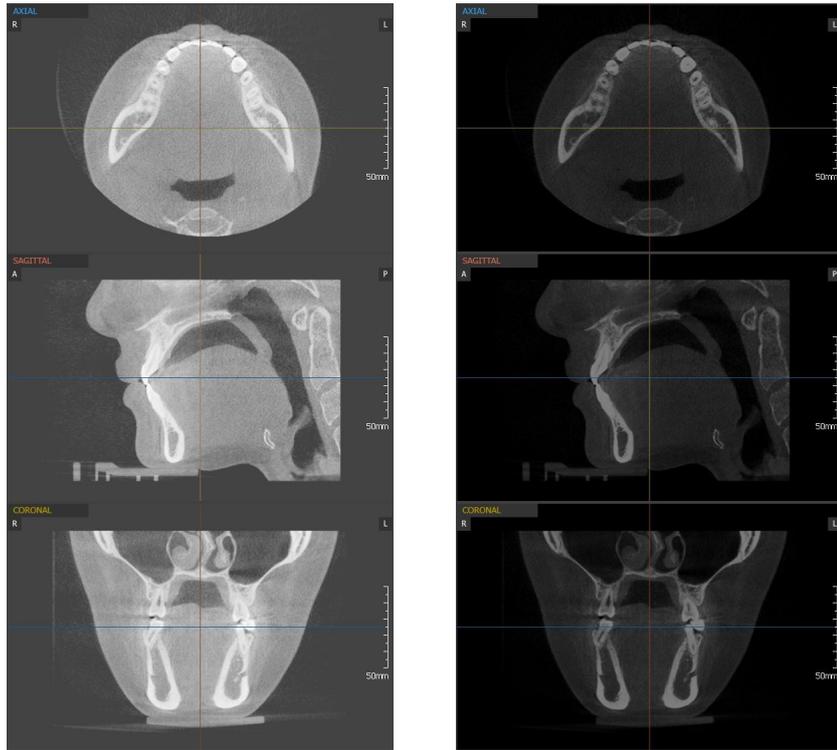
- WINDOWING Icons

Icons	Designation	Description of Functions
	Width	Adjust the brightness of the image
	Level	Adjust the contrast of the image
<input type="checkbox"/> Smooth	Smooth	Make the image smooth
<input type="checkbox"/> MIP	MIP	Reduce the burring area of metal and make the image clearer (MIP: Maximum Intensity Projection)
<input type="checkbox"/> Sharpen	Sharpen	Sharpen the edge of image
<input type="checkbox"/> Max Sharper	Max Sharper	Sharpen the edge of image to its maximum level
<input type="checkbox"/> Inverse	Inverse	Inverse of black and white
<input type="checkbox"/> VR	VR	Check the image in VR mode. 2D VR mode is applied the same with the selected 3D VR mode (Teeth, Bone, MIP, Soft Tissue, Soft Tissue 2).
	Windowing Graph	Use the graph to adjust Windowing value.
	Reset	Initialize all effect applied on images.

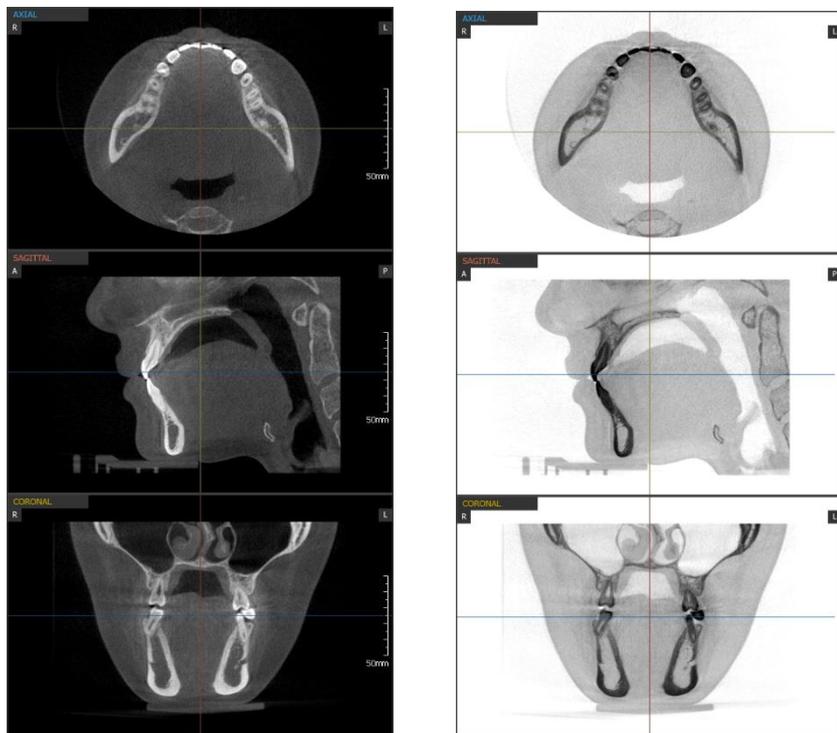
- Comparison of the 2D image brightness [Width]



- Comparison of 2D image contrast [Level]



- Comparison of the 2D image inverse [Inverse]



## 4. Clipping

Clipping cuts a 3D image in an axial direction and shows the cross-sectional view.

The Clipping function can be done by using the slider bar or a user can set the thickness and position of the image slice.

### 4.1 Clipping By Specifying Position

1. Click the [Apply Clipping] button to start clipping.



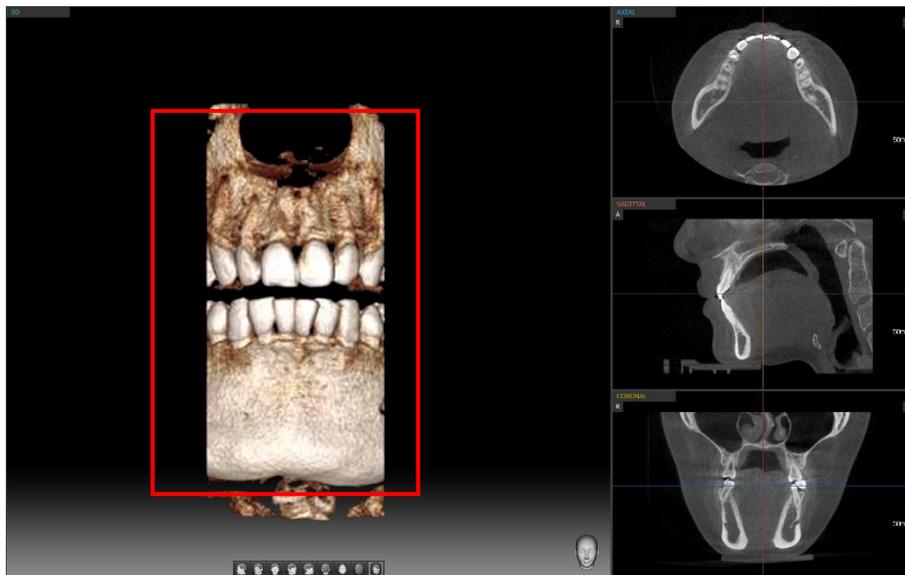
2. Select the axis of the ball by deleting the volume of the 3D images on the clipping window.



3. Slide the bar to the left and right to clip the image in the direction of the corresponding axis.



4. The 3D image cut is displayed as follows.



- Click the [Reset Clipping] to reset the image to the original condition.

- Example of Clipping Image**



<Coronal>

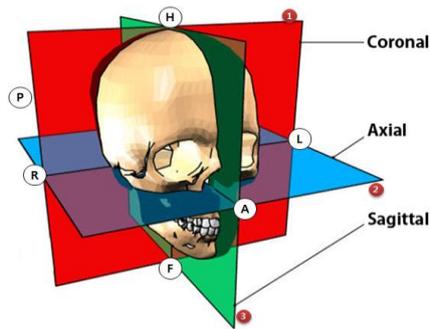


<Sagittal>



<Axial>

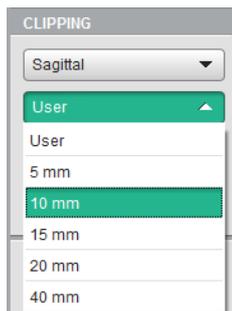
- Clipping direction depending on the corresponding axis**



- When the coronal axis is selected, the slider bar setting is changed to A→P.
  - When the axial axis is selected, the slider bar setting is changed to F→H.
  - When the sagittal axis is selected, the slider bar setting is changed to R→L.

## 4.2 Clipping By Choosing Thickness

- Click the box for the slice thickness selection.

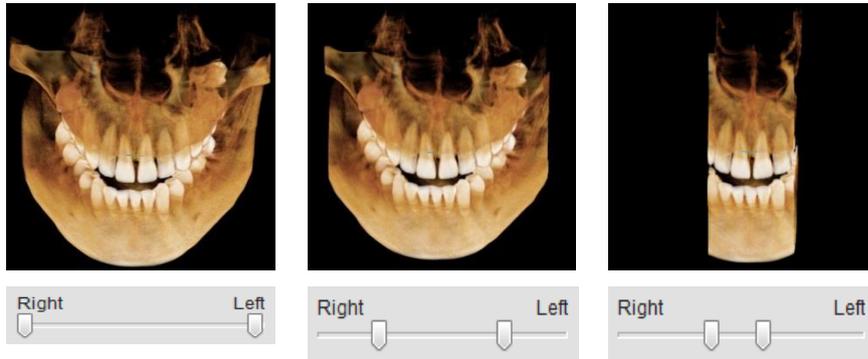


- After selecting the size of the thickness, control the location and thickness of clipping with the slider bar.

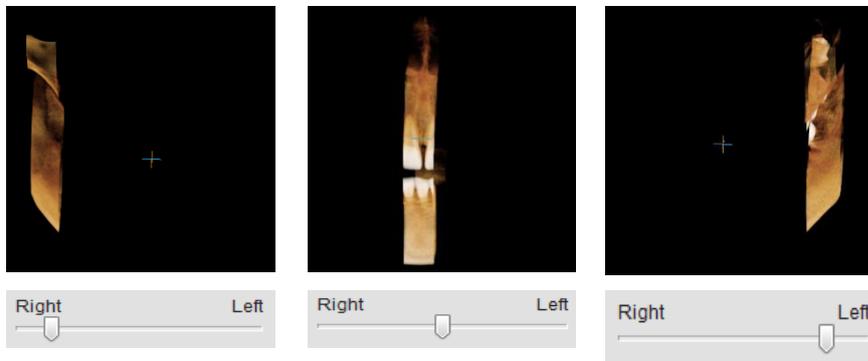


3. The 3D image is chopped as shown in the following screen.

- User Clipping



- Thickness Clipping: 10mm

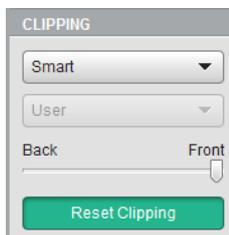


4. Click [Reset Clipping] to return to the original image.

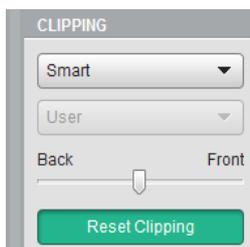
### 4.3 Smart Clipping

Smart Clipping allows user to view the clipping result on the 3D image view.

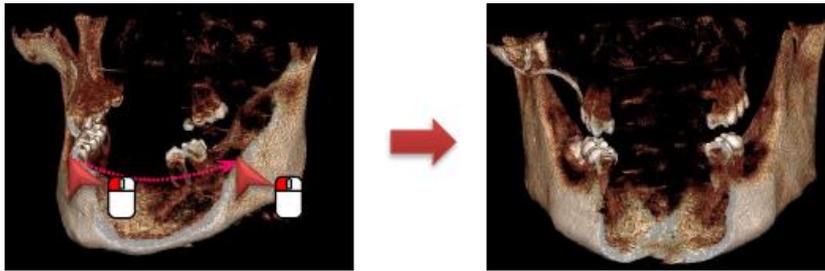
1. Click Smart Clipping in the box as shown here:



2. Control the location of clipping on the slider bar.

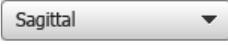


3. 3D image clipping is shown in the following screen.



4. Click [Reset Clipping] to return to the original image.

- Image Icons

Icons	Designation	Description of Functions
	Coronal Clipping	Crop image front and back around the Coronal axis.
	Sagittal Clipping	Crop image front and back around the Sagittal axis.
	Axial Clipping	Crop image front and back around the Axial axis.
	Smart Clipping	Crop image front and back around the Z axis.
	Clipping Slider	Set the area to crop.
	Clipping Combo box	Set the thickness to delete the image volume.
	Reset Clipping	Reset Clipping

## 5. Measuring

The user can measure the length, angle, volume and also see the bone density profile using our basic measuring tools. The measured length, angle, volume can be hidden or deleted on the screen. Also, the user can change the properties of the measured line.

### 5.1 Measuring Length

#### 5.1.1 Measuring Length on 2D Image

1. Click [Length] icon to measure the length as below.



2. Click two points to measure the length. Then the numerical value appears on the screen.



3. Click [Length] icon again or right-click the image to finish measuring.

#### 5.1.2 Measuring Length on 3D Image

1. Click [Length] icon to measure the length as below.

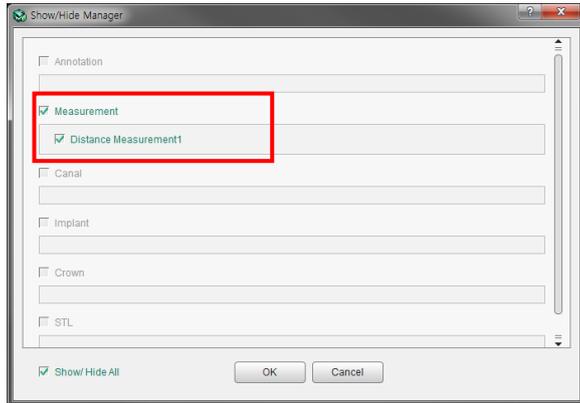


2. Click two points to measure the length. Then the numerical value appears on the screen.



3. Click [Length] icon again or right-click the image to finish measuring.

- The measured length can be controlled by selecting or deselecting the check boxes under the [Show/Hide Manager > Measurement] menu.

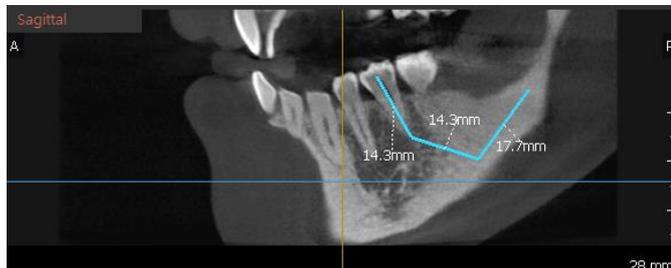


## 5.2 Measuring Multi length

- Click the [MultiLength] icon on the toolbar.



- Click all points to measure length on the 2D image. The measured length is displayed as shown in the following figure.



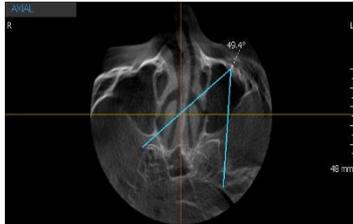
- Double click on the last point to stop measuring.
- Click the [Multi Length] icon again or right click on the image to measuring
- After measuring length or angle, user can change its property.
  - **Property**
    - After measuring length or angle, the user can change the property of them by right clicking directly on the measurement line. Select [Property] button.
    - Here you can change the line color. One done, click the [OK] button.
  - **Hiding and Deleting**
    - After measuring length or angle, select the [Hide] or [Delete] button. Then, select your desired action.

## 5.3 Measuring Angles

1. Click [Angle] icon to measure the angle as shown below:



2. Click three points to measure the angle. Then the numerical value appears on the screen.



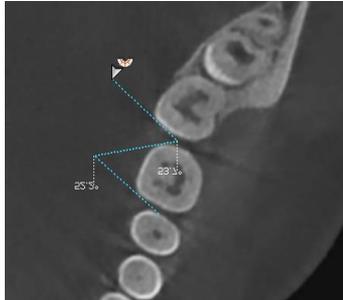
3. Click [Angle] icon again or right-click the image to finish measuring.

## 5.4 Measuring Multi Angle

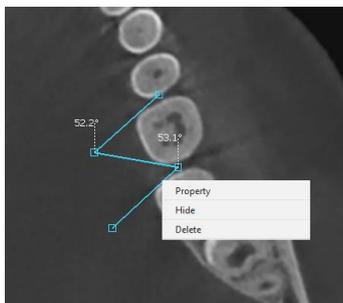
1. Click [Multi Angle] icon to measure multi angle as shown below:



2. Click all points to measure angles in a row in 2D Image View.



3. Values are displayed where angles are made.'
4. Double click the last input point to complete measurement or hit Enter key in keyboard. Then, valid multi-angles are inserted to the last inserted point.
5. Right click the inserted multi-angle overlay to display context menu.



6. The user can view property of the overlay, and hide or delete the overlay by using Property, Hide, and Delete menu.

## 5.5 Measuring Circle Radius

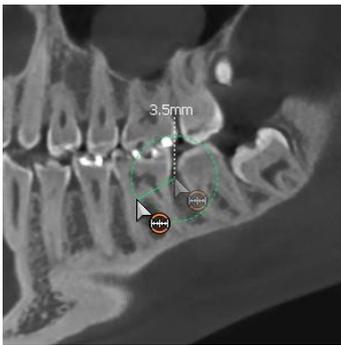
1. Click [Circle Measure] icon to measure radius of circle as shown below:



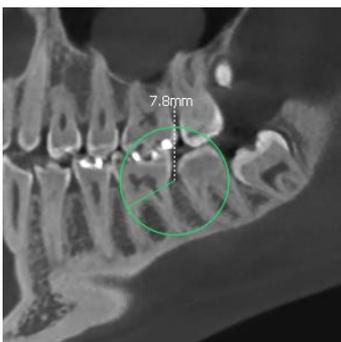
2. Click the first point at desired position to measure in 2D image View.



3. Drag the mouse to adjust circle size, then second point of the circle follows the mouse pointer.



4. Click the position where to stop measurement to complete circle measurement.
5. The measured value is displayed in billboard format, and the circle is displayed in solid line.



6. Select the inserted circle overlay by right-clicking to display context menu.
7. The user can view property of the overlay, and hide or delete the overlay by using Property, Hide, and Delete menu.

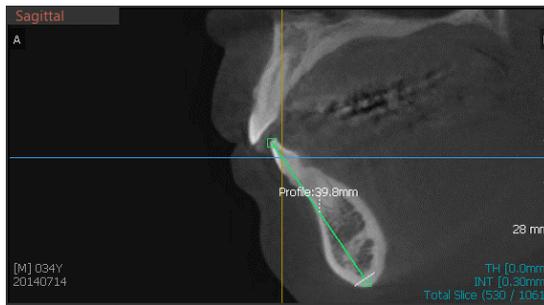


## 5.6 Profile

1. Click [Profile] icon to see the bone density as shown below:



2. Click two points to see the bone density value based on your 2D image.



3. The Profile window appears. This profile graph shows the bone density between two points. Move the mouse on the profile line and control the area. The maximum, minimum, and the average value change in real time based on the selected area.



CAUTION

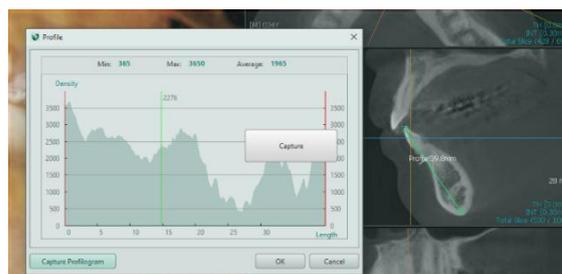
There are many cases where CBCT has different CT Number values, which are the standard of bone density standard, depending on the equipment.

Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.

### • Capture Profile

Click the [Profile Capture] button at the bottom left of the window to capture the Profile Dialog and Profile Object.

1. Click the [Profile Capture] button. The mouse cursor changes to capture mode.
2. Drag the mouse to select desired region then the [Capture] button appears. Click the capture button to capture the selected region.

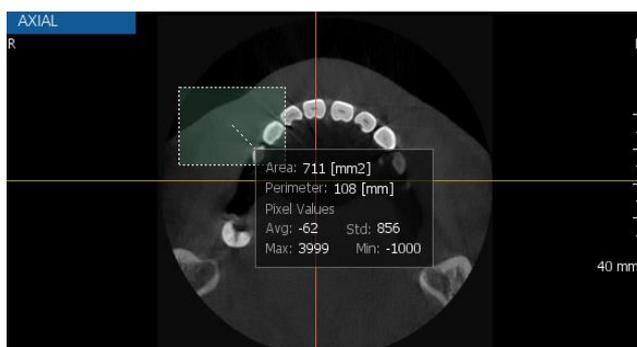


## 5.7 ROI

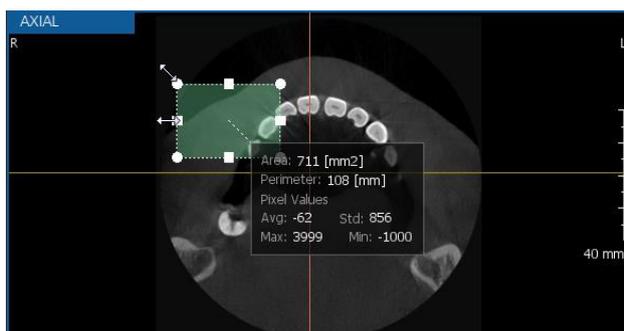
1. Click ROI button to get the information of pixel, average value, maximum value and standard deviation.



2. By selecting ROI in a 2D image, users can check the information on that area.



- Changing the ROI box size

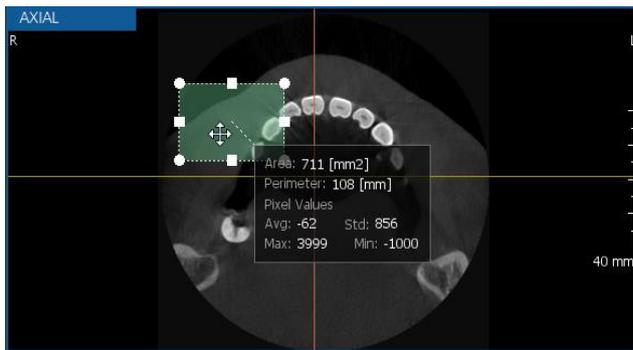


Place the mouse cursor at the edge of the ROI box. The controller appears. While pressing the left button of the mouse, drag the box to change the size. The ROI information changes accordingly.

The box size cannot be adjusted using a keyboard.

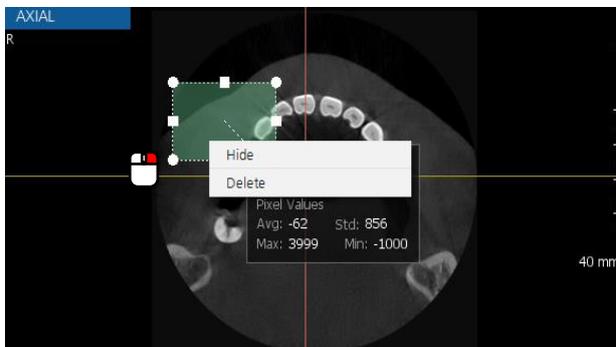
- Left/right/top/bottom: The size of box changes in the direction selected according to amount of the mouse movement.
- Diagonal: The size of box changes with a fixed ratio according to the amount of the mouse movement.

- Moving the ROI box



Place the mouse cursor at the edge of the ROI box. The cursor changes to move the location. While pressing the left button of the mouse, drag the box to the new location.

- Deleting and hiding the ROI box



Right click the ROI box to delete or hide the box.

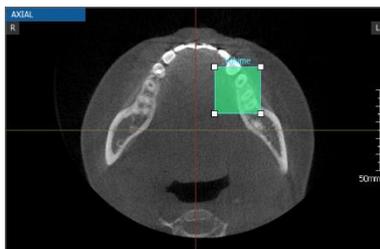
## 5.8 Measuring Volume

1. Click the [Volume] icon to measure the volume as shown below.

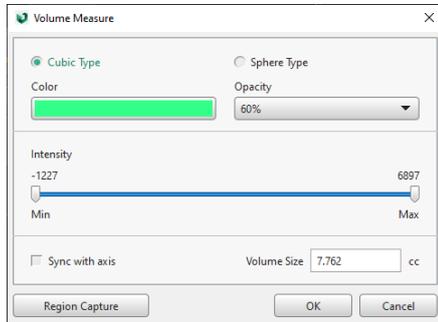


The volume cannot be measured when the image is sculpted.

2. The volume of the selected area will be measured.



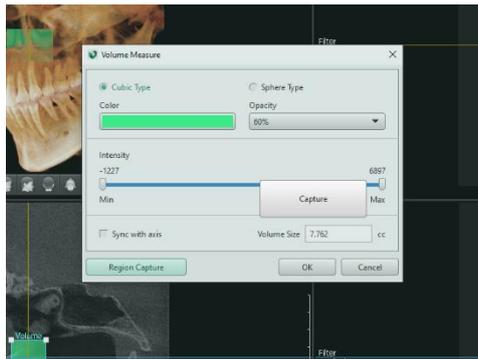
- The Volume Measure window appears, and the numerical value of volume is shown. On this window, the user can change the volume color and adjust the opacity and the intensity. If the intensity is changed, only the volume of the selected area according to the adjusted intensity will be calculated.



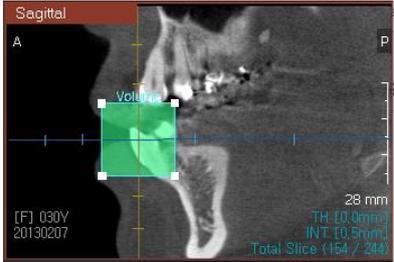
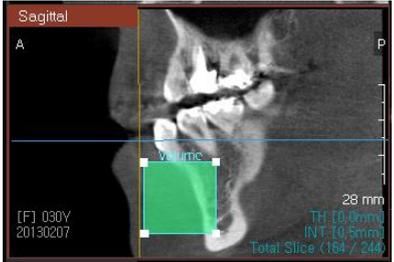
**Region Capture**

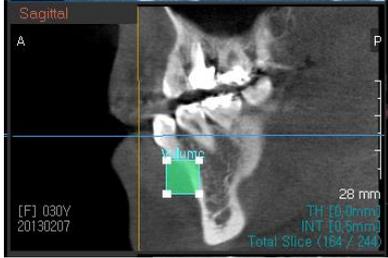
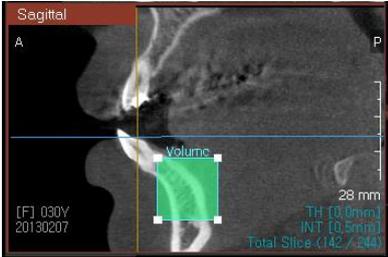
Click the [Region Capture] button to capture the volume with the Volume Measure dialog.

- Click the [Region Capture] button then the mouse icon changes to the capture mode.
- Drag the mouse to set the region to capture then the [Capture] button appears. Click the [Capture] button to capture the selected region.

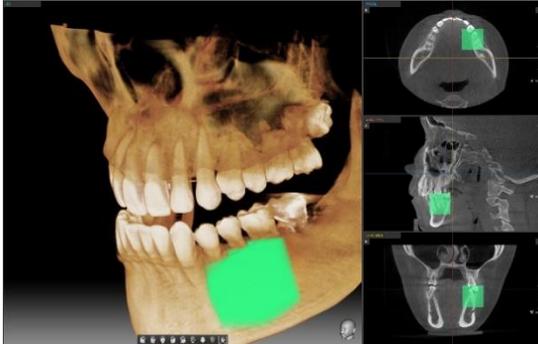


- The user can edit Axis and ROI as well as change slice. By selecting the [Sync with axis] check box, ROI volume and MPR axis are synchronized. The default value is deselecting. Volume is measured as follows by selecting/deselecting the checkbox.

[Sync with axis] Selected	[Sync with axis] Deselected
<p><b>Moving ROI:</b> Move or rotate MPR axis or drag and drop volume measurement ROI to move the volume.</p> 	<p><b>Moving ROI:</b> Drag and drop volume measurement ROI to move the volume.</p> 

<ul style="list-style-type: none"> <li>Changing ROI size: Drag and drop control points of ROI to resize the ROI.</li> </ul>  <ul style="list-style-type: none"> <li>Changing Interval: The function is disabled.</li> </ul>	<ul style="list-style-type: none"> <li>Changing ROI size: Drag and drop control points of ROI to resize the ROI.</li> </ul>  <ul style="list-style-type: none"> <li>Changing Interval: Scroll the mouse wheel on a 2D view to change its slice.</li> </ul> 
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- Click the [OK] button, and the volume is displayed on the 3D and 2D screens as below.



- The user can delete the displayed volume on the 3D and 2D screen.

Right click the volume box on the 2D image and then the following list appears on the screen.



Click the [Delete] menu to delete the volume from the screen.

## 6. Capture

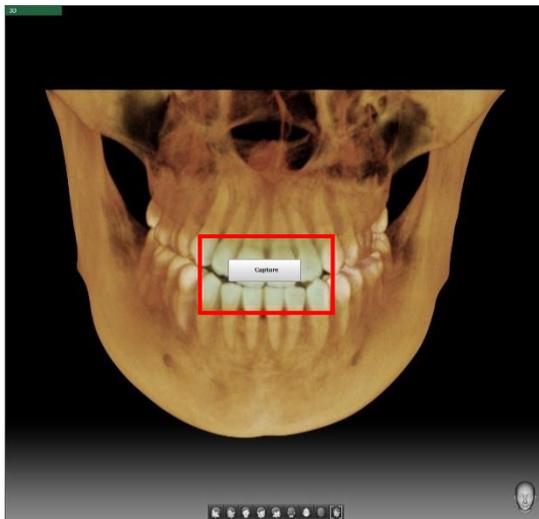
Use the capture icons on the tool bar to capture the selected area, the selected window or multi images.

### 6.1 Capture the Selected Area

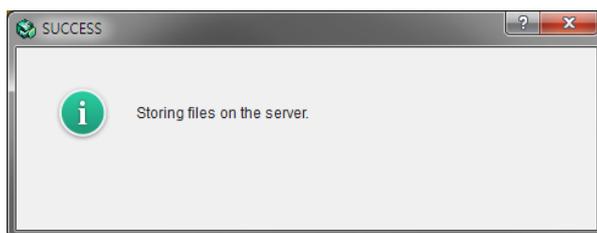
1. To capture the selected area, click the [Capture Region] icon.



2. Click the area and the [Capture] button appears. Check the area and click the [Capture] button.



3. The following window appears, and the image is saved.

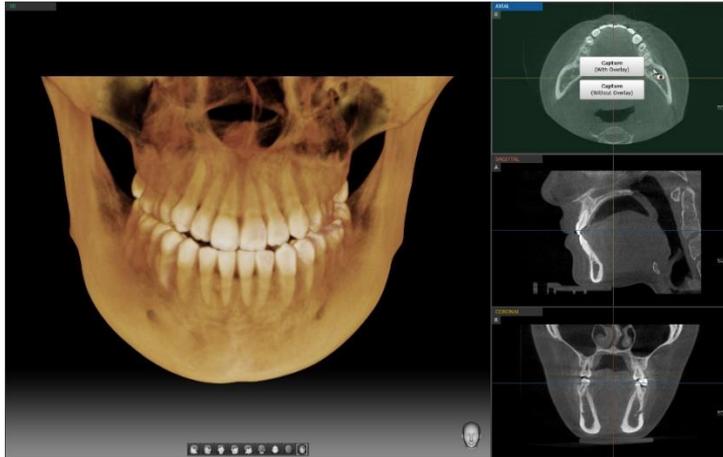


## 6.2 Capture Selected Window

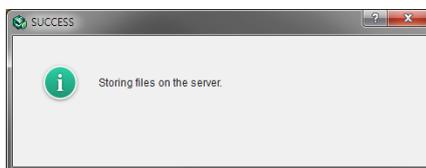
1. To capture the selected window, click the [Capture Window] icon.



2. Click to activate the window to capture. On the 3D viewer, click the [Capture] button, and on the Axial, Sagittal, or Coronal viewer, click the [Capture (With Overlay)] button or the [Capture (Without Overlay)] button to capture.



3. The following window appears, and the image is saved.

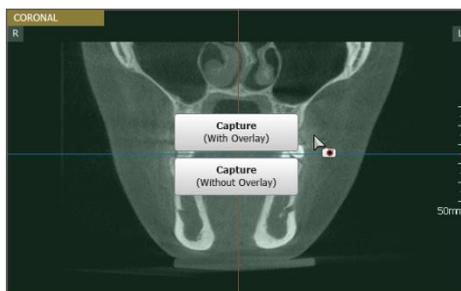


## 6.3 Multi Capture

1. Click [Multi Capture] button to capture the images continuously. Multi captured images cannot be sent to 2D Viewer such as EzDent-i.



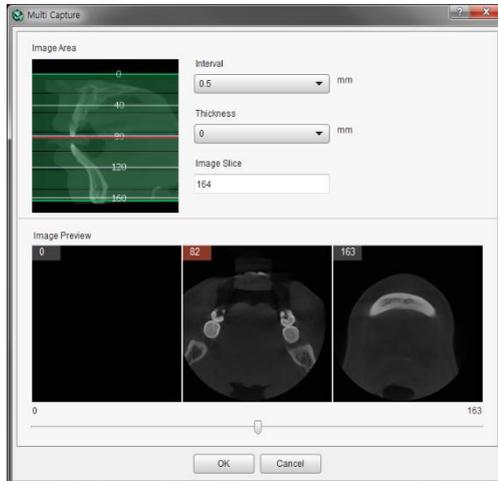
2. Select the window (Axial, Sagittal, Coronal) to capture. Select Capture with overlay or Capture without overlay. [With Overlay] captures the image with overlay user has done. [Without Overlay] captures only the image.



NOTE

The 'Capture (Without Overlay)' button is not shown when secondary CT data exists. Only 'Capture (with overly)' is available with superimposition data.

3. Select the area of the image to capture in the [Multi Capture] window. The [Interval] and [Thickness] options can be only changed when the [Without Overlay] is selected.



- Image Area: Users can check the range of the image.
  - Interval: Users can set the interval of the image.
  - Thickness: Users can set the thickness of the image.
  - Image Slice: Users can see the number of slice images.
  - Image Preview: Users can preview the first and last sliced images.
4. Click the [OK] button to complete the multi capture.

## 6.4 Movie Capturing Program

If the Create Movie Clip is selected in the [MAIN MENU > Settings > Environment > Linkage/E-Mail > Linkage Software for Toolbar] menu, user can run the movie capturing program.

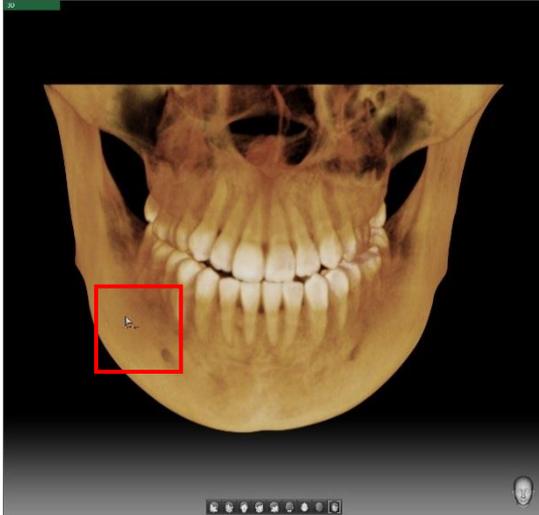
Click the [Create Movie] icon on the toolbar. The movie capturing program saved in the Settings will be launched.



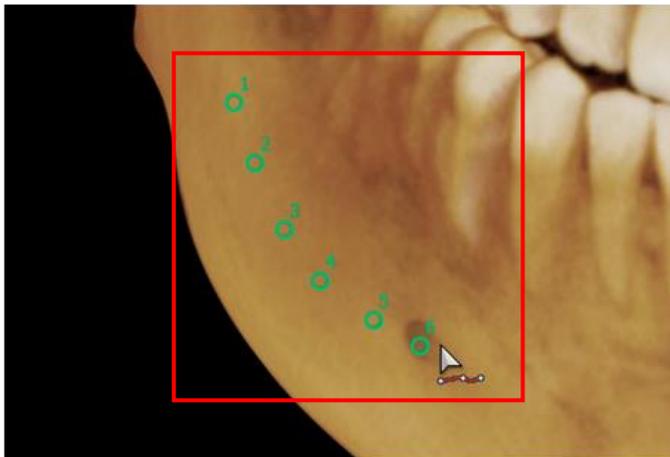
## 7. Drawing Canal

### 7.1 Drawing Canal

1. Click the [Draw Canal] icon on the tool bar. The mouse cursor changes to the drawing mode.



2. To draw the canal line, click points along the mandibular nerve on a 2D or 3D image. Also, existing canals on a 2D or 3D image can be extended.



NOTE

- The drawing method is the same on the 2D and 3D viewers, but on 3D viewer, clipping and sculpting precede drawing canal.
- Right click while drawing the canal line to delete the previously plotted input point.
- Keyboard shortcuts for Canal Drawing (Available only when the Canal Drawing function is on)
  - Volume Rotation: Ctrl + Right Click + Drag
  - Panning: Shift + Right Click + Drag
  - Zooming: Ctrl + Mouse wheel

3. Double click to complete the canal line.

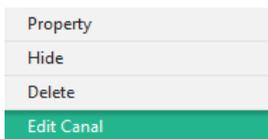


NOTE

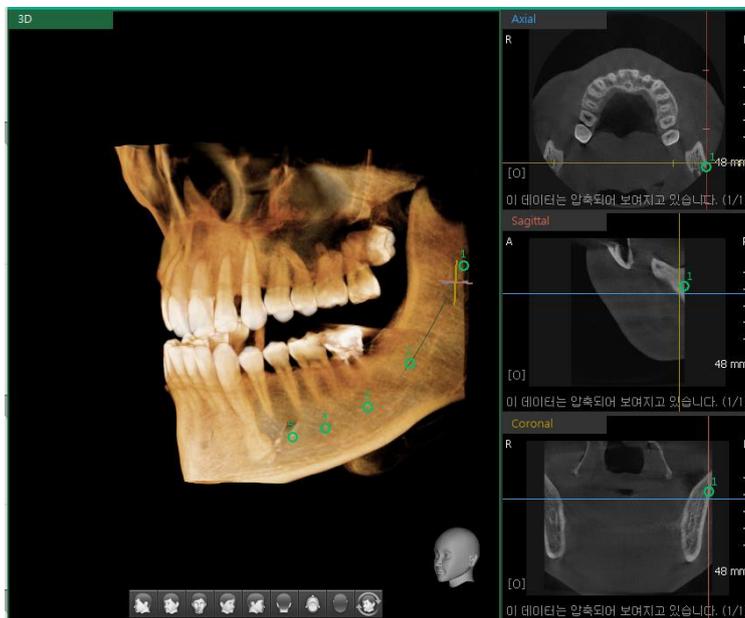
- The completion of canal line can be verified after all points are connected.
- Clicking the [Draw Canal] icon while drawing the canal line will cancel the Draw Canal function. The function can also be canceled by pressing the <Esc> key on the keyboard.
- The canal drawn is displayed on all tabs, and particularly it appears the same in the 3D VR coloring mode.

## 7.2 Editing Canal

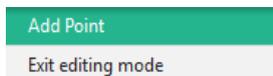
1. Right click on the inserted canal the following context menu appears.



2. Click the [Edit Canal] menu. The inserted canal points and the line connecting the points appear on the 3D image, and the canal points appear on the 2D image.



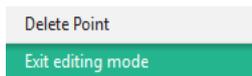
- Right click on the line connecting the canal point to add points.



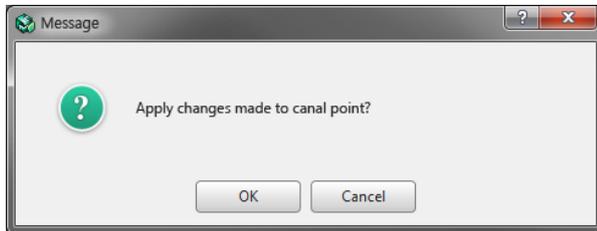
- Right click on the canal point to delete points.



- Right click on the canal and click the [Exit Editing Mode] menu after editing the canal.



- There appears a message asking, "Apply changes made to canal point?"



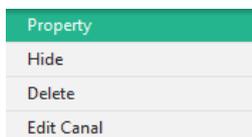
- Press the [OK] button, the new canal points will be applied to the canal.



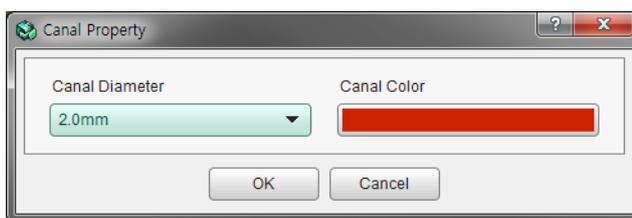
- The image can be moved, zoomed in or out only using the shortcut keys while editing canal.
- When the canal point is selected on the 3D image, the MPR axis is adjusted automatically to display the sectional image where the corresponding point is inserted.
- User can only add or delete the canal points on the 3D image.
- User can only move or delete the canal points on the 2D image.
- Double click to end the canal edit mode.

## 7.3 Changing Properties of Canal

- Select the canal line and click the right mouse button. The following list appears.



- Click [Property] and the [Canal Property] window appears.

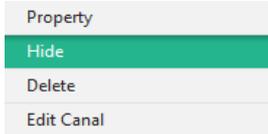


- Click the [Canal Diameter] dropdown menu to select the diameter of the canal line.
- Click [Canal Color] and select the color of the canal line.
- Click the [OK] button and the changes are reflected in the canal line.

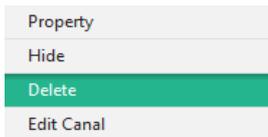
## 7.4 Hiding or Deleting Canal

Select the canal line and click the right mouse button. The following list appears.

- Click [Hide] and the canal line disappears from the screen.



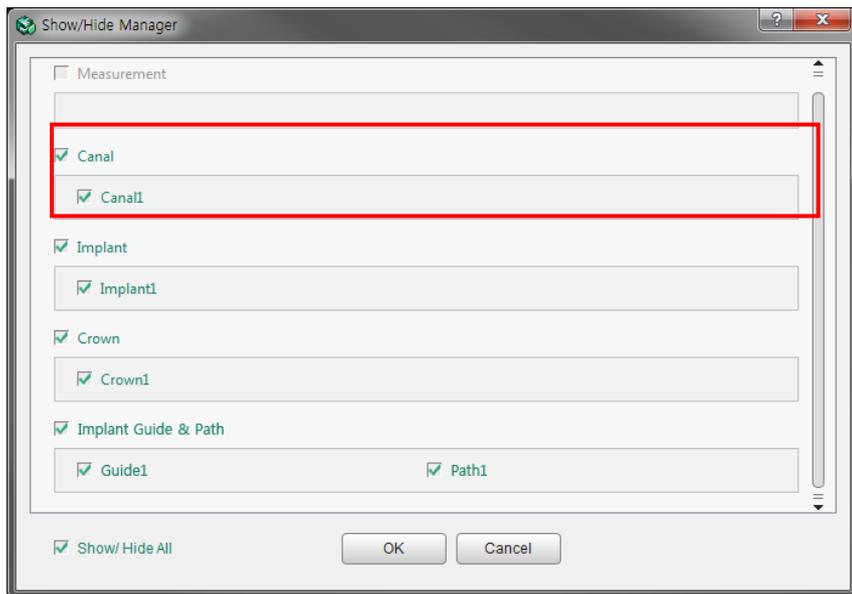
- Click [Delete] to delete the selected canal line.



- Click the [Show Manager] icon. The [Show/Hide Manager] window appears.



- Uncheck a box to hide the object/canal drawing/measurement. Click the [OK] button and the selected canal line disappears from the screen.

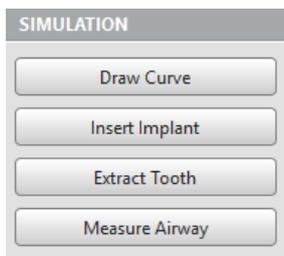


## 8. Drawing Curve

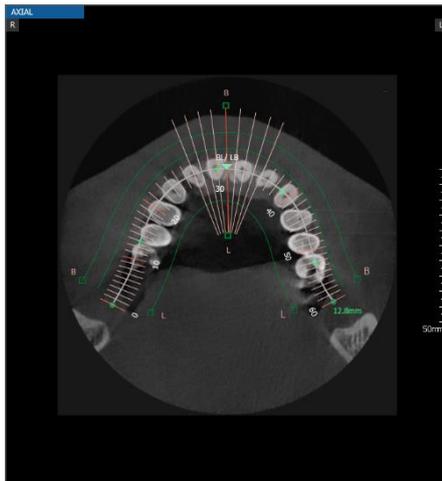
Draw Curve function is to insert a curve line according to the clinical points on MPR image and to check the consecutive images perpendicular to the inserted curve Line.

To draw a curve:

1. Click the [Draw Curve] button



2. Click on clinical point on the MPR Sectional image to insert curve point. The inserted curve point automatically makes an overlay, which forms a curve. Right click while drawing the canal line to delete the previously plotted input point.
3. Double click the left mouse button to finish drawing curve. When the drawing is completed, the screen will be switched to Section tab and the curve will be added to Curve List.



To cancel the drawing, press the <Esc> key on the keyboard. The curve will be deleted.

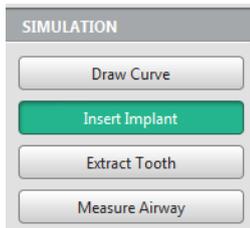
## 9. Implant Simulation

Implant can be inserted with Insert Implant button including Smart, Axis, Click Point options, or by measuring length of a certain tooth.

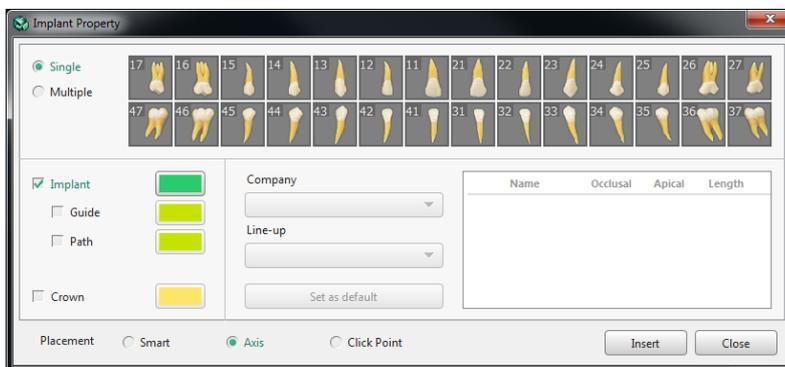
- Smart Placement: An implant/ implants will be inserted into the tooth position matching the selected tooth codes automatically.
- Axis Placement: An implant will be inserted on the axis automatically.
- Click Point Placement: The mouse cursor will change to the insertion mode and an implant/ implants will be inserted at the point where the mouse is clicked.
- Implant Placement by Measuring Length: Regardless of the [Placement] option, an implant can be inserted after measuring the length of the tooth.

### 9.1 Inserting Implant

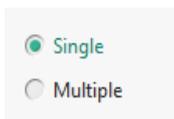
1. Click the [Insert Implant] button.



2. The [Implant Property] dialog appears.



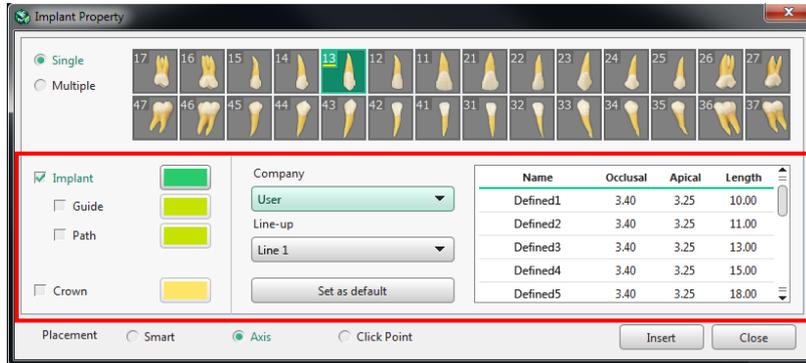
3. Select the Single option to insert only one implant or Multiple option to insert two or more implants in a row.



4. Click the tooth code to insert.

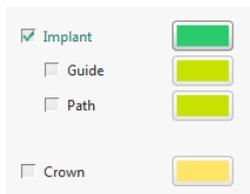


5. The default implant properties for the selected tooth number is shown as follows. Select the desired implant company, line-up and model from the list.



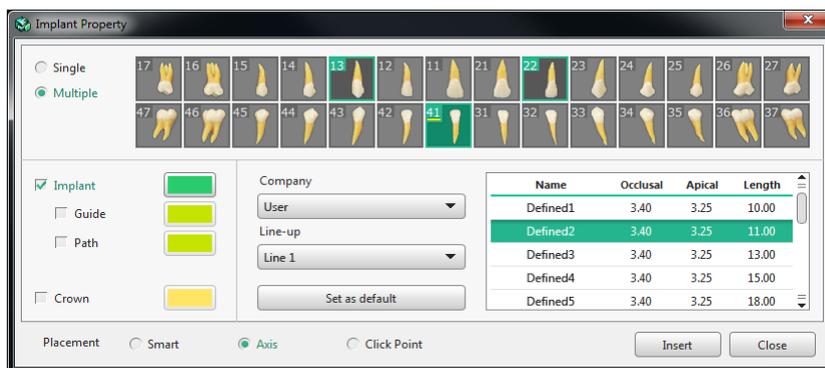
Press the [Set as default] button to set the selected implant as the default for the tooth number. The default implant value can be modified in the [Settings > Simulation > Implant].

6. Select Implant options to insert Implant (with/without Guide and/or Path) or Crown.



\* Please refer to 'Chapter 4. MPR Tab > 9.1.2. Implant Placement Option: Axis' to see the result image according to the different selection of Implant, Guide, Path and Crown options.

7. If you choose Multiple option, repeat from 4 to 6 until you select all tooth codes to insert.



8. Select the Placement option between Smart, Axis, Click Point and click the [Insert] button for implant simulation.

\* Please refer to the following 'Chapter 4. MPR Tab > 9.1.1 Implant Placement Option: Smart, 9.1.2 Implant Placement Option: Axis and 9.1.3 Implant Placement Option: Click Point' to learn the result of Smart, Axis, Click Point placement.

9. Click the [Insert] button then the implant will be shown on the image.

- After inserting an implant, click the implant and drag, or double click the implant and use the controller to adjust the implant position.



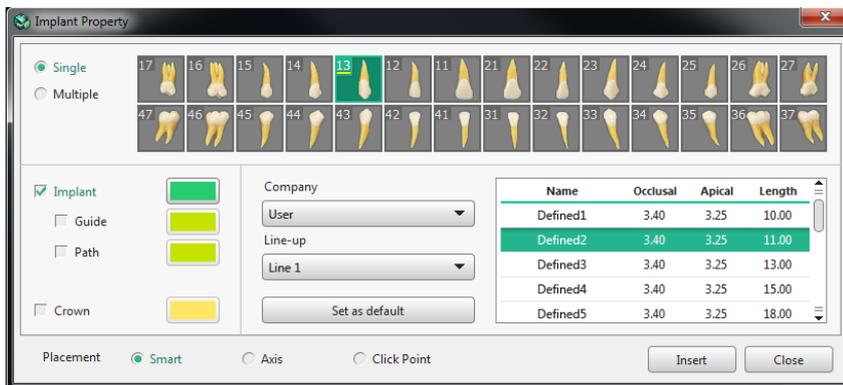
### 9.1.1 Implant Placement Option: Smart

An implant will be inserted automatically if the [Placement] option is set to [Smart].

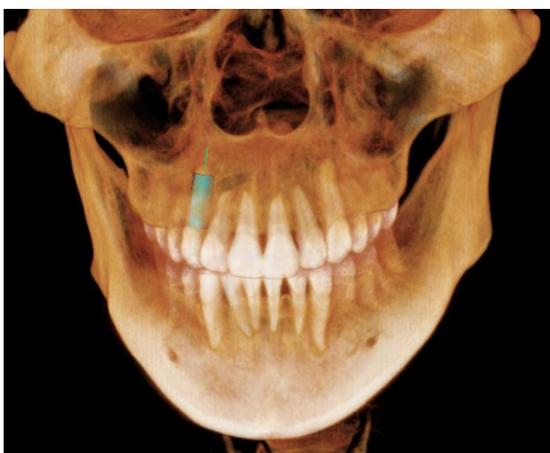


Please note that the Smart placement is available only when there exists a segmented DATA. Please complete tooth segmentation on the SEGMENT Tab before using this option.

- Click the [Insert Implant] button.
- Select the tooth number and implant information on the [Implant Property] window.



- The selected Implant is inserted automatically into the tooth position that matches the selected tooth code.



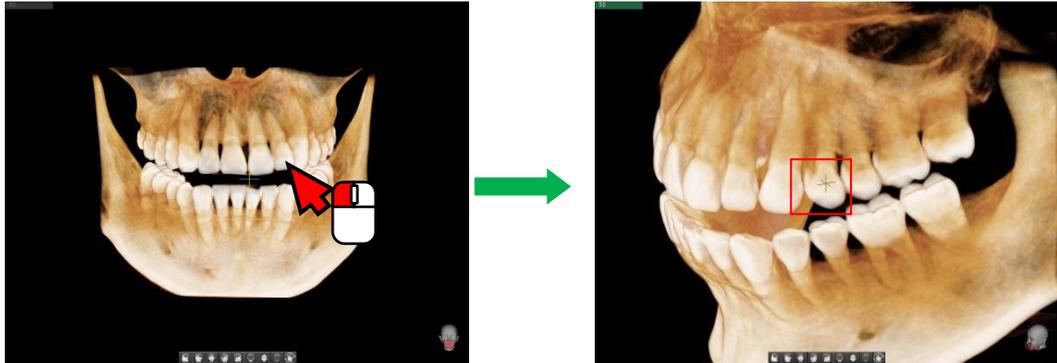
### 9.1.2 Implant Placement Option: Axis



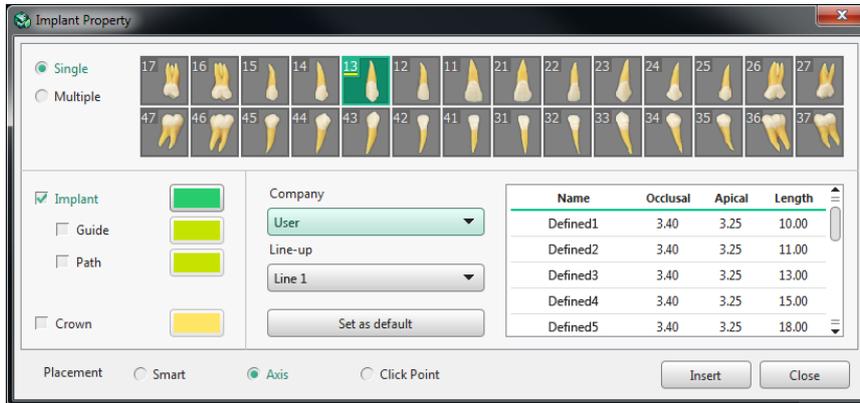
Please note that Axis placement only supports Single implant placement. The Axis option will be disabled when selecting Multiple option.

An implant will be inserted at the center of the axis if the [Placement] Option is set to [Axis].

1. Double click the tooth to place an implant. The screen will automatically rotate and zoom the image to display the selected tooth on the axis.



2. Click the [Insert Implant] button.
3. Select the tooth number and implant information on the [Implant Property] window.



4. Click the [Insert] button, then the selected implant will be inserted at the center of the axis.

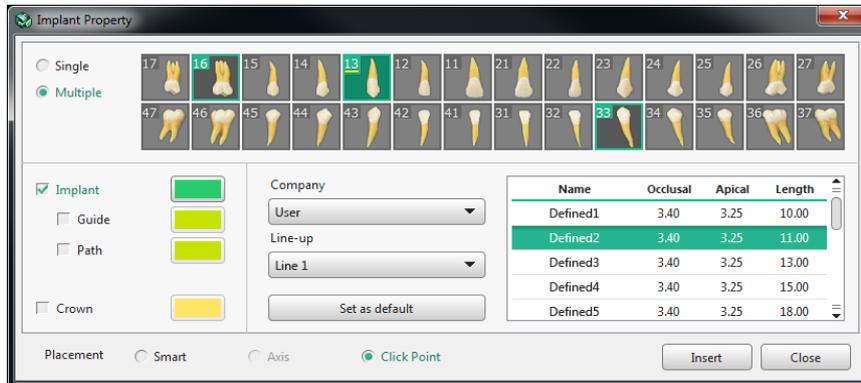
	Options	Result Image
Implant Only	<input checked="" type="checkbox"/> Implant <input type="checkbox"/> Guide <input type="checkbox"/> Path <input type="checkbox"/> Crown	

<p>Implant &amp; Crown</p>	<p><input checked="" type="checkbox"/> Implant </p> <p><input type="checkbox"/> Guide </p> <p><input type="checkbox"/> Path </p> <p><input checked="" type="checkbox"/> Crown </p>	
<p>Crown Only</p>	<p><input type="checkbox"/> Implant </p> <p><input type="checkbox"/> Guide </p> <p><input type="checkbox"/> Path </p> <p><input checked="" type="checkbox"/> Crown </p>	
<p>Implant with Guide &amp; Path</p>	<p><input checked="" type="checkbox"/> Implant </p> <p><input checked="" type="checkbox"/> Guide </p> <p><input checked="" type="checkbox"/> Path </p> <p><input type="checkbox"/> Crown </p>	

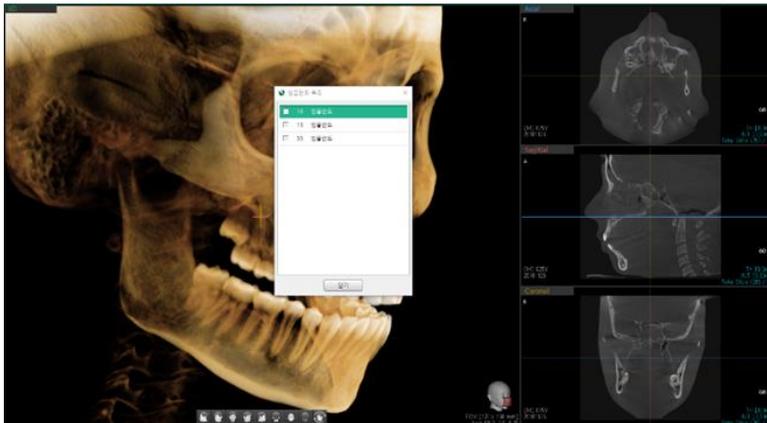
### 9.1.3 Implant Placement Option: Click Point

An implant will be inserted at the selected point of the image if the [Placement] option is set to [Click Point].

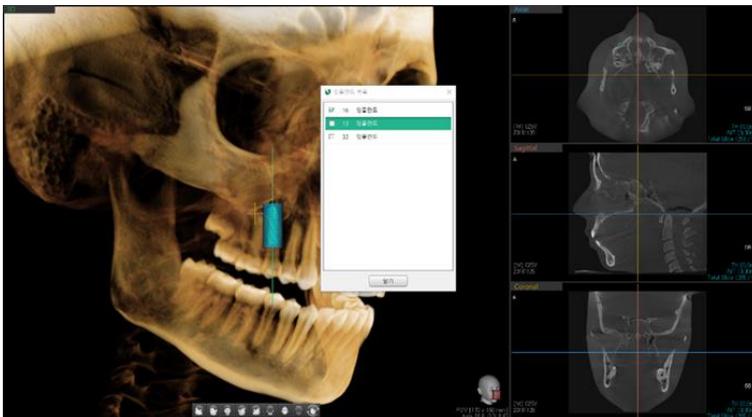
1. Click the [Insert Implant] button.
2. Select the tooth number and implant information on the [Implant Property] window.



3. The list of selected implants is displayed to show the current implant placement status of all selected tooth codes.



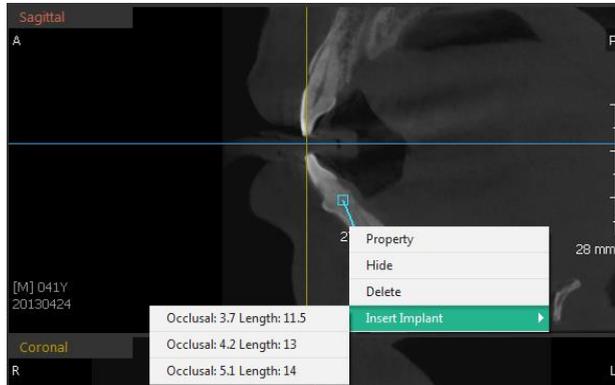
4. Click the position to insert an implant on the image.
5. The inserted implant is shown on the image.



6. Click the points to insert rest of the implants on the list.

### 9.1.4 Implant Insertion by Measuring Length

1. Click the [Length] icon on the toolbar to measure 2D length.
2. Click the measured length on the image. Right click it and select the [Insert Implant] menu. It will display recommended implant options that are similar to the measurement.



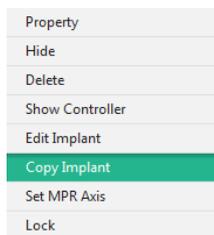
The implant options are selected from the implant list for each tooth that are set in the [Settings > Simulation > Implant].

3. Click the proper implant and it will be inserted.  
 After inserting an implant, right click to delete or hide the implant or to change its properties. If the implant is deleted on the 3D image, it will also be deleted on the 2D image.

## 9.2 Editing Implant

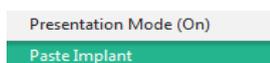
### 9.2.1 Copying and Pasting Implant

1. Right click on the inserted implant to open the context menu.
2. Click the [Copy Implant] option to copy the selected implant.



The Tooth Code is not included in the copied implant information. Enter or edit the Tooth Code in the Property menu of the copied implant.

3. Right click on the point where you want to insert implant to open the context menu.
4. Click the [Paste Implant] option. The copied implant is inserted.



## 9.2.2 Editing Implant

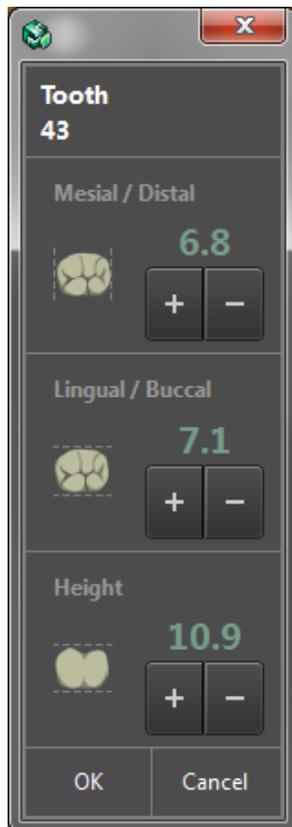
1. Right click on the inserted implant to open the context menu.
2. Click the [Edit Implant] option.
3. Use the + / - button to edit the Length, Occlusal, and Apical information.



- The Company and the Model (line-up) can be modified if they are applied from the same company and the model group.
- Occlusal Diameter can be only adjusted to the width that the currently selected Length supports.
- Apical Diameter can be only adjusted to the width that the currently selected Occlusal Diameter supports.

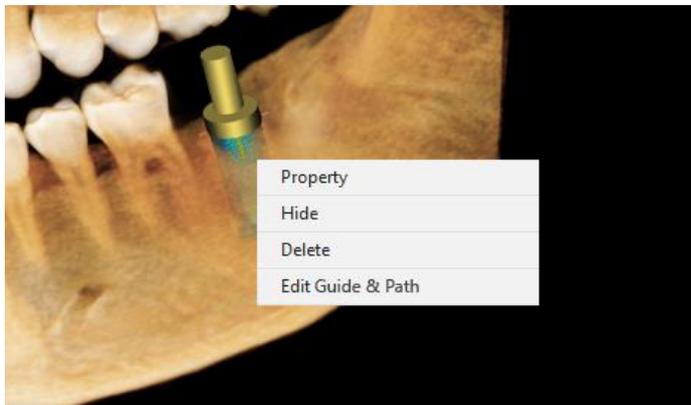
### 9.2.3 Editing Crown

1. Right click on the crown of the inserted implant to open the context menu.
2. Click the [Edit Crown] option.
3. Use the + / - button to edit the Mesial/Distal, Lingual/Buccal, and Height information. in the [Edit Crown] window.



## 9.2.4 Editing Implant Guide & Path

1. Right click on the inserted implant guide and/or implant path.



2. Select the [Edit Guide & Path] option.



3. The [Edit Guide & Path] window appears. Change the values in the [Implant Guide] and [Implant Path] option on the dialog.



An error message appears when values out of range are inserted.

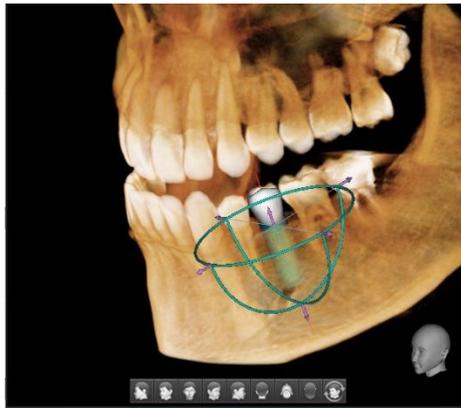
4. After setting the values, press the [OK] button to apply changed values [Cancel] button to restore the original values.

## 9.3 Moving, Rotating and Locking Implant

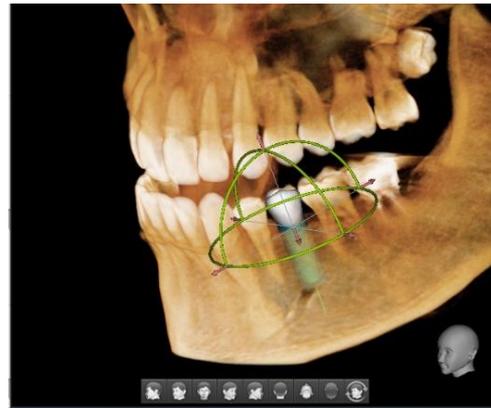
### 9.3.1 Moving ,Rotating and Locking 3D image

The inserted implant can be moved on the 3D image. The selected implant moves horizontally with the direction of the current 3D image.

Double click or right click on the implant to show the controller. Click and drag the arrow of the controller to move or rotate the implant as desired.

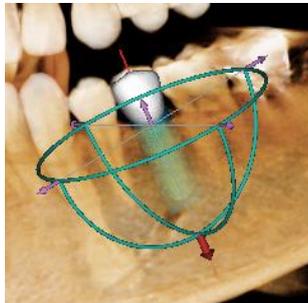


Implant Controller



Crown Controller

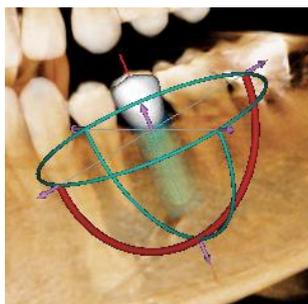
- Moving
  - Click one of the six arrows. The color of the selected arrow changes.



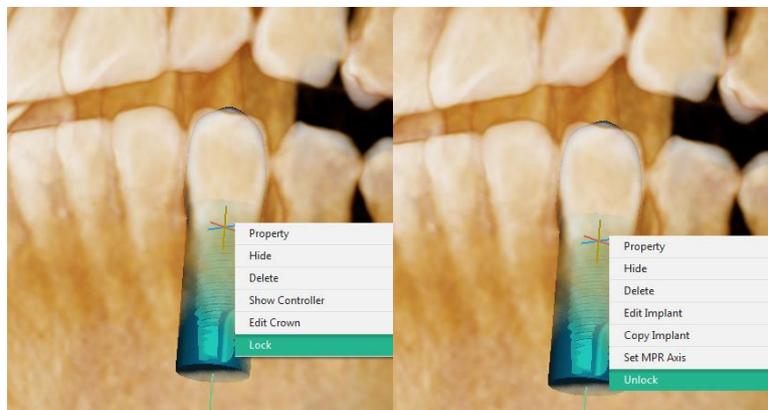
- Move with the up/down arrow keys on the keyboard: down arrow key moves to the left by -0.1mm and the up-arrow key moves to the right by +0.1mm.
- Click the other arrows or rotation controller to cancel the selection.

- Rotating

- Click one of the three rotation controllers. The color of the selected controller changes.

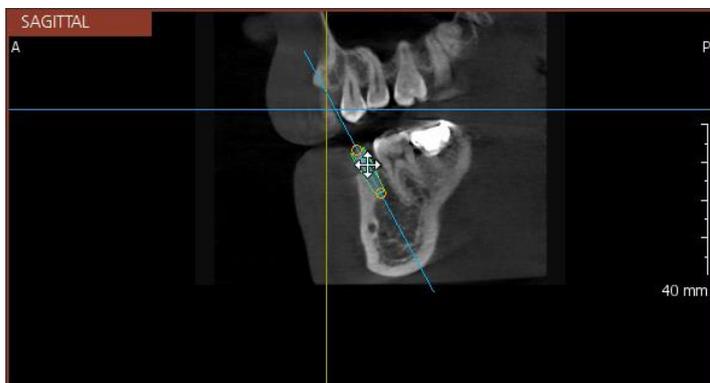


- Move with the up/down arrow keys on the keyboard: up arrow key turns it clockwise by one degree and the down arrow key turns it counterclockwise by one degree.
- Click the other arrows or rotation controller to cancel the selection. Click the other arrows or rotation controller to cancel the selection.
- Locking/ Unlocking
  - Right click on the implant and select the [Lock] option to fix the location of the implant.
    - ♦ Right click on the crown and select the [Lock] option to fix the location of the crown.
    - ♦ An implant guide and/ or implant path follows the attribute of the implant regarding the Lock/ Unlock option.
  - Right click on the locked implant and select [Unlock] option to change the location of the implant.

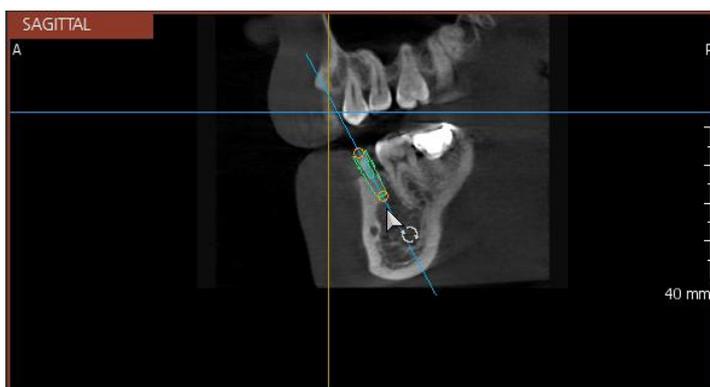


### 9.3.2 Moving, Rotating and Locking 2D image

After choosing the implant from a 2D image, a control line is created to rotate the implant. Click and drag a point to move and rotate the implant.



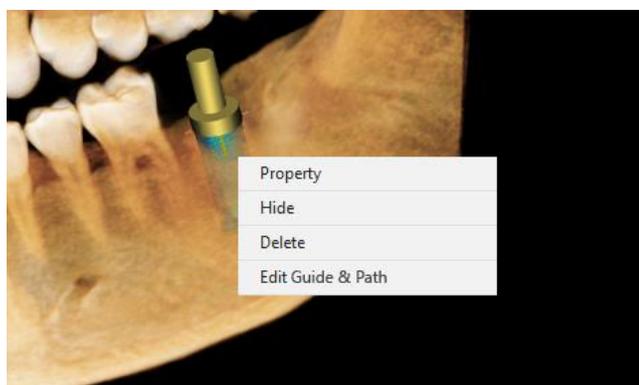
Click on the implant. When the mouse cursor changes to the cross , the implant can be moved. And when the mouse cursor changes to the curved arrow , the implant can be rotated.



Right click on the implant and select the [Lock] option to fix the location of the inserted implant on 2D images as well as 3D images.

## 9.4 Showing and Hiding Implant

1. Right click on the inserted implant, crown, or implant guide & path.



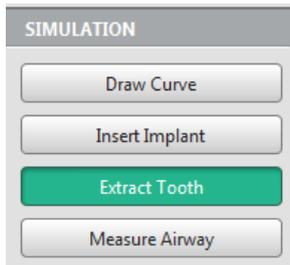
2. Select the [Hide] option.
3. The selected implant, crown or Implant guide & path will not be displayed in the view.

## 10. Extract Tooth

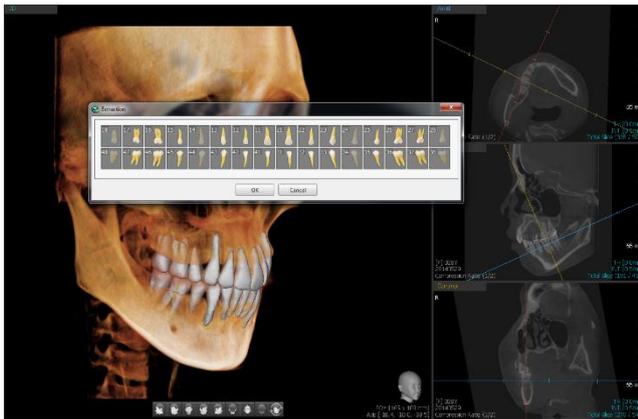
Extract Tooth function is to simulate tooth extraction before conducting implant simulation or orthognathic simulation on the 3D View. As tooth extraction is required in many treatment cases, this function enables users to simulate under the condition similar to the real environment.

This function is available only when there exists segmented data. Please complete tooth segmentation or import segmentation data on the SEGMENT Tab before using this function.

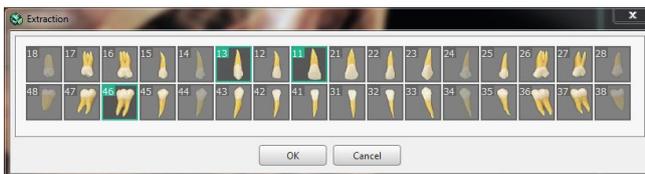
1. Click the [Extract Tooth] Button in the SIMULATION group.



2. The [Extraction] dialog appears, and segmented tooth objects are displayed on the 3D View.



3. Click the number buttons of teeth to extract and press the [OK] button.



4. The selected teeth are not shown on the image.



## 11. Airway Measurement



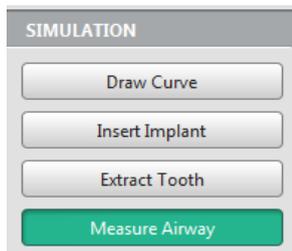
The Airway measurement may have incorrect error range and values depending on the CBCT equipment value.

Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.

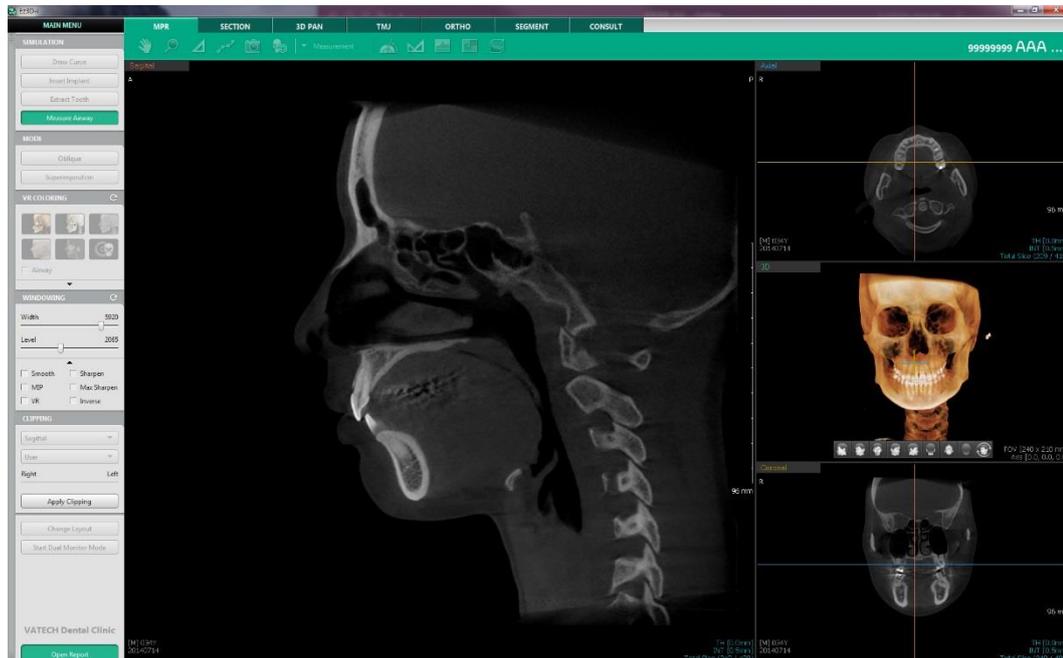
The Airway Measurement function measures the airway volume of the clinical point.

### 11.1 Measuring Airway

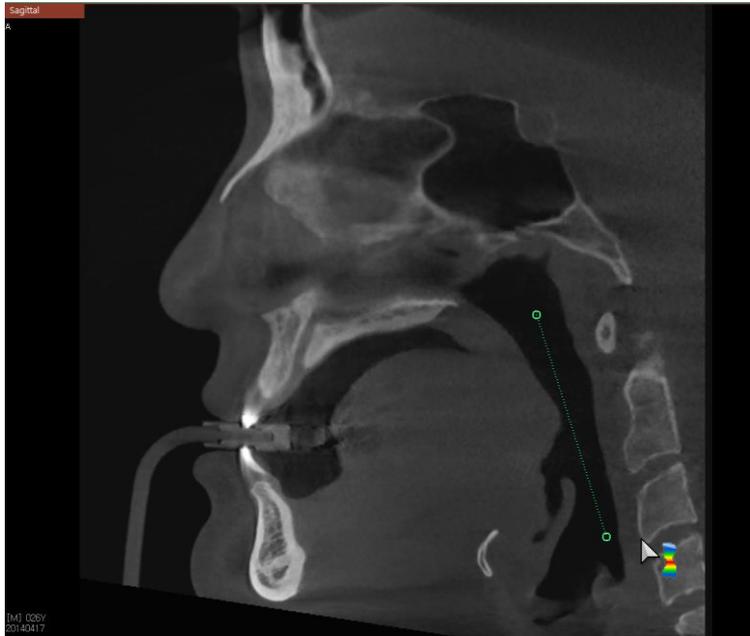
1. Click the [Measure Airway] to start the Airway measurement function.



2. The 3D and Sagittal images change to select the Airway position for measuring as shown in the following figure.



3. When the mouse pointer changes into , click on the starting and the ending points of the airway to measure.



- Click the two points that are included in the Airway, regardless of the inputting order, to create a straight path.
  - Use the mouse wheel to change the interval on the Sagittal View, and the points can be inserted only on the Sagittal View.
4. After inputting the starting and the ending points, the Airway volume is created according to the predefined Intensity in the Settings, and the Airway Measurement function is terminated.



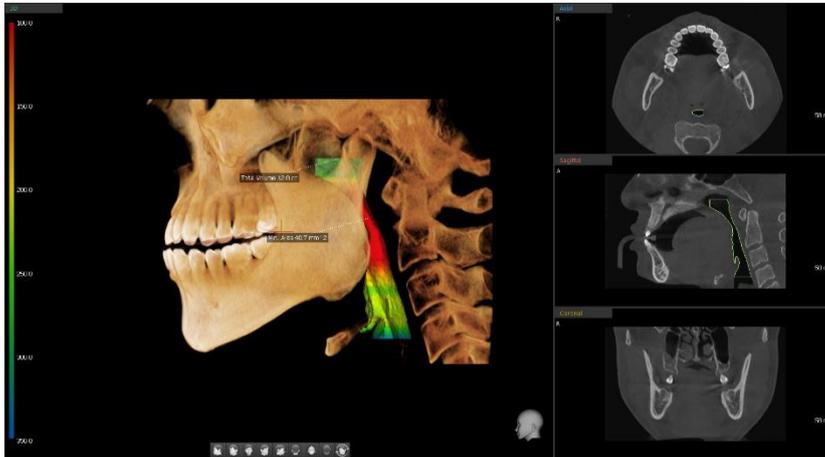
NOTE

- The Airway function cannot be applied in the layouts where 3D Volume is not included.
- The interval cannot be changed while inputting Airway points.
- The layout returns to the previous layout when the Airway Measurement function is terminated, but the MPR axis does not go back to how it was before the measurement.

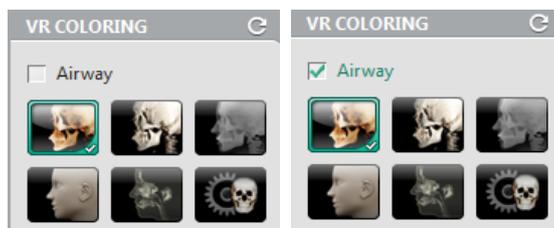
## 11.2 Displaying Airway

The measured Airway is displayed in different colors depending on the area, and the Gradient Bar, which guides the color by Airway area, is also shown with the Airway.

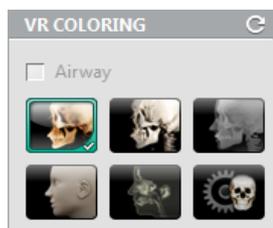
The total volume (cc) and the area (mm<sup>2</sup>) of the smallest area among the cross sectional areas are also displayed in the measured Airway volume.



- The color for the six points can be changed in the [MAINMENU > Settings > Simulation > Airway] menu.
- The measured airway is displayed on the 2D images as a form of outline so that the user can check the cross-sectional areas of each axis.
- The Airway Volume is not displayed on the CT data when opening the CT data with the results of the Airway Measurement. Click the checkmark of the Airway option in the VR Coloring Group to display the Airway.

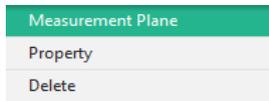


- The progress window appears when recalculating the Airway. When there is no result of Airway measurement, the checkbox of the Airway option in the VR Coloring Group is disabled.

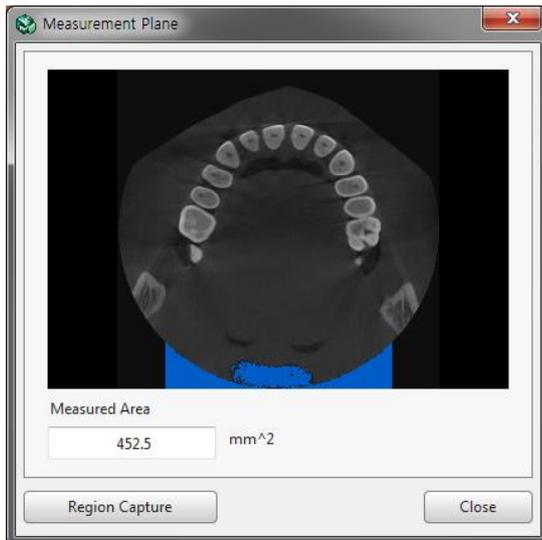


## 11.3 Viewing Sectional information of Airway

1. Right click on the measured airway to open the context menu.



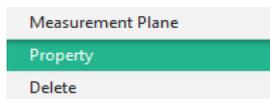
2. Click the [Measurement Plane] option. The pop-up window appears to measure the sectional Airway on the Axial view.



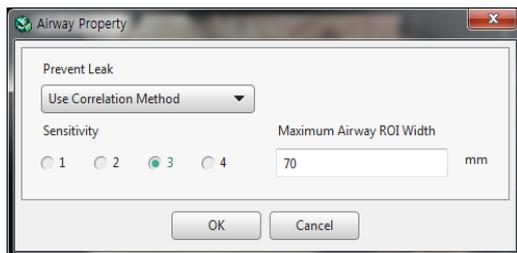
- Use the mouse wheel to change the interval, and the airway of the corresponding Axial view is displayed on the sectional image.
- The sum of all area is displayed if the Airway area is not connected and shown disconnected.
- The default image of the pop-up window is the corresponding Axial view for the minimum cores-sectional airway.
- Click the [Region Capture] button to capture the pop-up window and the selected area in the View screen.
- While the [Measurement Plane] window is on, the user can control 2D and 3D images on the View and use short cut keys including <Ctrl> key.

## 11.4 Airway Properties

1. Right click on the measured airway to open the context menu.



2. Click the [Property] option. The pop-up window appears to change the properties of the measured airway.



- **Prevent Leak**  
Set the default value for the function that removes the areas, which are not part of the Airway.
- **Sensitivity**  
To adjust the degree of the Prevent Leak function, click the dropdown menu of the [Prevent Leak] to select the [Use Correlation Method] option.
- **Maximum Airway ROI Width**  
Click the starting point and the ending point of the Airway to measure and a square (ROI) will be created based on the center point of the two selected points. The Airway is measured within the square (ROI).  
Change the number of Maximum Airway ROI Width to widen or reduce the Airway area.

## 12. Oblique

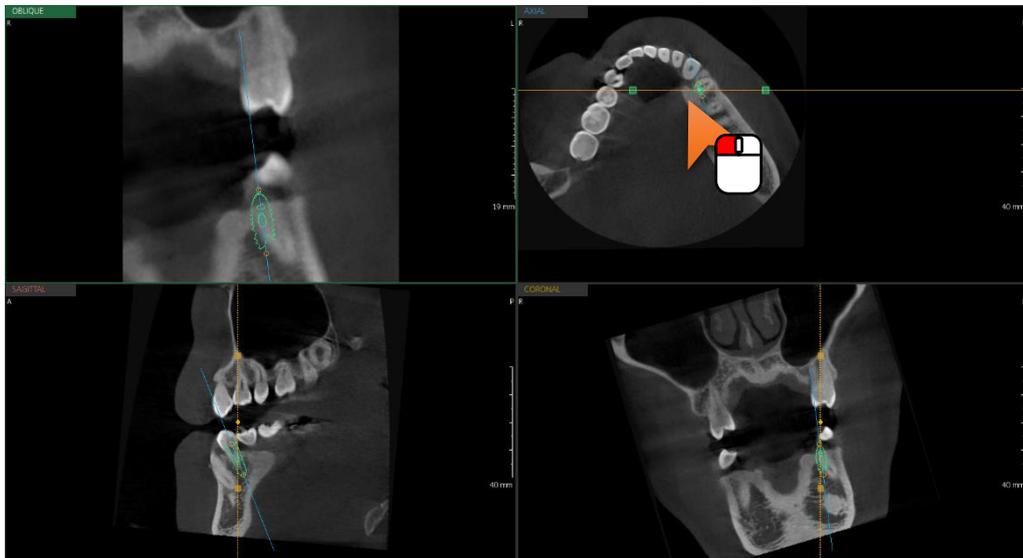
Oblique function is to create the Plane on the MPR 2D View based on the selected point by user and to check images by rotating images based on the Center point of the Plane.

### 12.1 Drawing Oblique Plane

1. Click the [Oblique] Button to execute the Oblique Plane Drawing function.



2. Click the Center point of Oblique Axis on the MPR View.



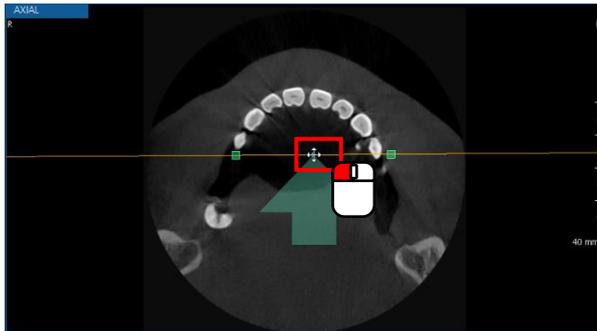
- Based on the Oblique Center point, the Oblique Line and the Oblique Guide Point are created.
  - Based on the created Oblique Line, the MPR Axis is updated and the rotating Oblique View is created based on the Oblique Line.
  - The 3D View Window is switched to display the Oblique View and the relevant image is displayed according to the Oblique Line.
    - The axis can be controlled only on the view where the Oblique is inserted.
    - Scroll the mouse wheel to zoom in or out the image on the Oblique View.
    - The interval cannot be changed on the Oblique View
3. Click the Oblique button again to close the Oblique view and the Oblique Plane will not be saved.

## 12.2 Editing Oblique Axis

User can move or rotate the Oblique Line to check the images. When user clicks the Oblique Line to select or place a mouse over the Oblique line, the direction of image is displayed as cursor.

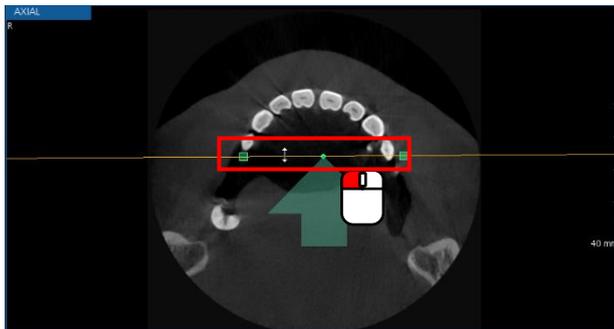
- Center Point Translation

Click and then drag and drop the Oblique Center Point to move the whole Oblique Axis to a different location.



- Oblique Line Panning

Click and then drag and drop the area inside the Oblique Guide Point (not the Oblique Center Picking points) to pan the image along the MPR Axis.



- Oblique Rotation

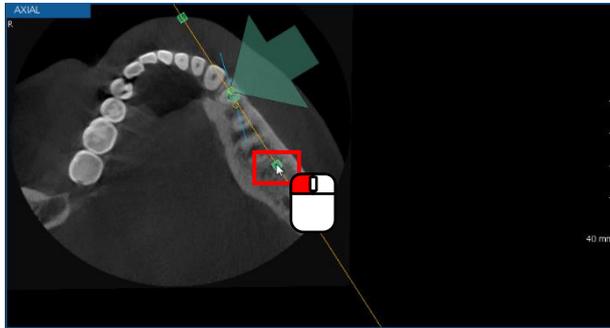
Click and then drag and drop the area outside of Oblique Guide Point to rotate on Oblique Center.



- When placing a mouse over the Center Point Picking Area, the Translation Guide Overlay is displayed.

- When placing a mouse over the Oblique Line Panning Area, the Panning Guide Overlay is displayed.
- Enlarging Oblique Image

Click and drag the Oblique Guide Point to enlarge or reduce the Oblique image based on the Oblique Center point.



## 13. Superimposition

Superimposition function is to compare primary CT and secondary CT by overlapping the two CT image on the same view. After adding the before/ after surgery image of a patient as primary CT and secondary CT in the same Data group, the user can use Superimposition function to compare the original image with the after surgery image.

1. If there exists no secondary CT image on the Data group, import a secondary CT file.



Please refer to the '*Chapter 1. Ez3D-i Basics > 5.7.3 Import Secondary CT*' for more information about import process.

2. If secondary CT is not registered, register the secondary CT data.



Please refer to the '*Chapter 4. MPR Tab > 19.2 Data Registration*' for more information about registration process.

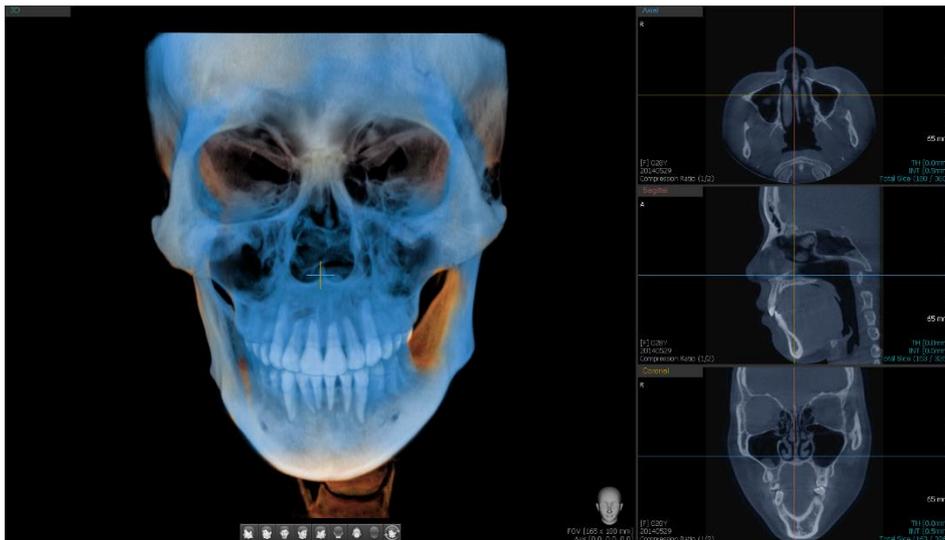
3. After registration, click the [Superimposition] Button in the MODE group to view the overlapped secondary CT image on the Primary CT image. Please note that the secondary CT image does not show on the View before superimposition is done.



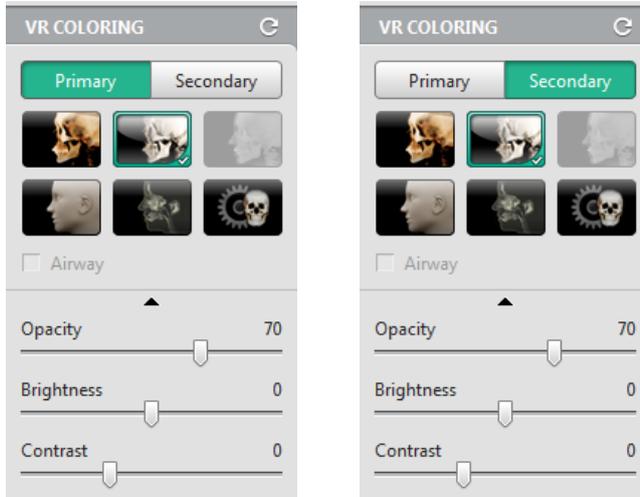
An error message appears when there is no registered secondary CT data.

Please refer to the '*Chapter 4. MPR Tab > 19. Data Manager*' for more information about registration process.

The progress of data loading is shown on the View.



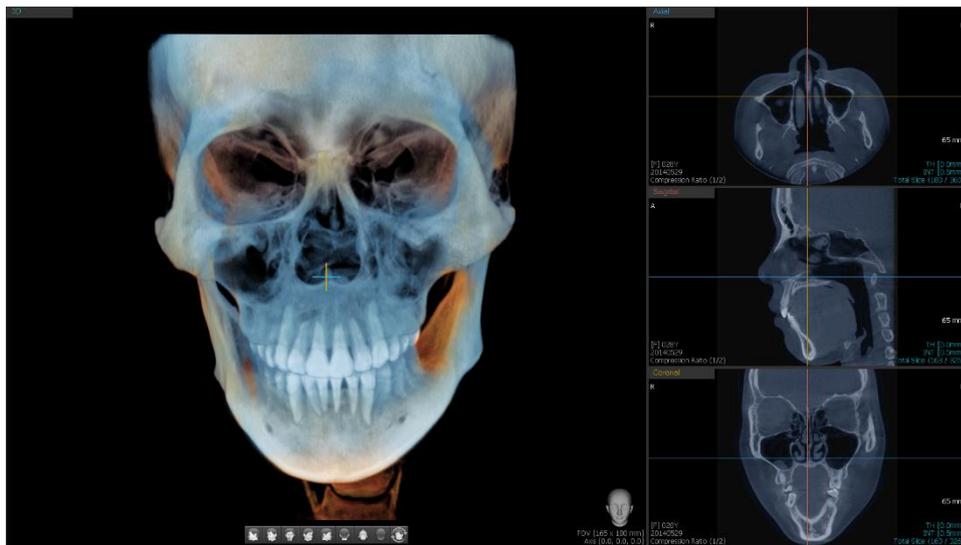
- After completing superimposition, select Primary or Secondary option for VR COLORING and WINDOWING option to apply different settings for each primary and secondary CT.



[Primary]

[Secondary]

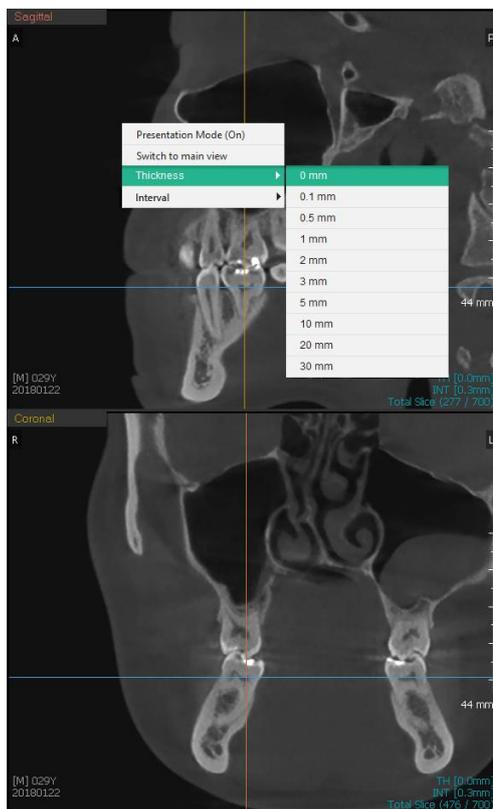
- The changed value is applied on the 3D and 2D Views.



## 14. MPR Thickness

The thickness of MPR 2D image can be changed.

1. Click the right mouse button on the MPR 2D image.
2. Click the Thickness option and select the thickness from the expanded list. The selected thickness will be applied to all MPR sectional images.

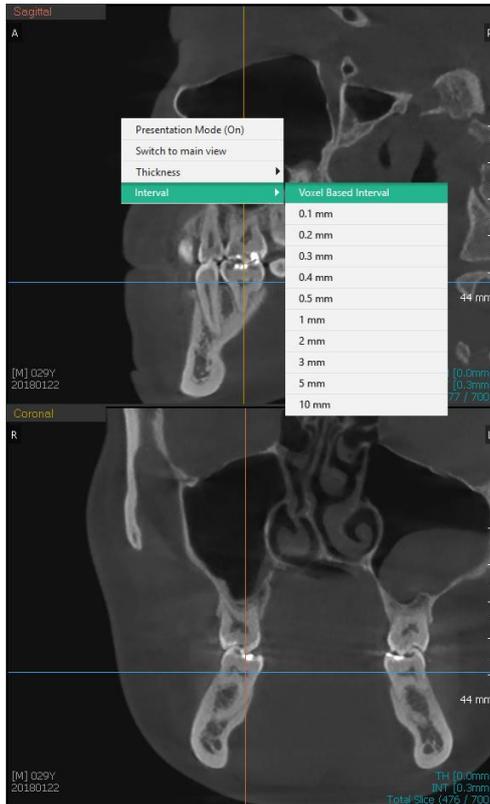


- The default setting for MPR thickness can be changed in the Settings, and image will be restored to its original condition when resetting.
- Once the thickness has changed, the Thickness option will disappear from the context menu.

## 15. MPR Interval

The interval of MPR 2D image can be changed.

1. Click the right mouse button on the MPR 2D image.
2. Click the Interval option and select the interval from the expanded list. The selected interval will be applied to all MPR sectional images.



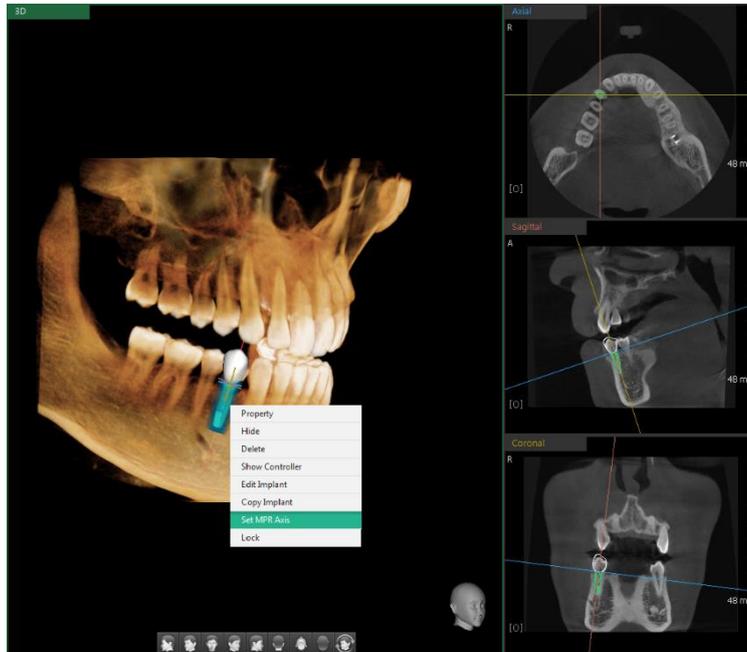
NOTE

- The default setting for MPR interval can be changed in Settings, and image will be restored to its original condition when resetting.
- Once the Interval has changed, the Interval option will disappear from the context menu.

## 16. Setting MPR Axis

The position of MPR axis can be reset according the axis of the inserted implant.

1. Right click on the implant, which will be the standard for the axis rearrangement, to open the context menu.
2. Click the [Set MPR Axis] option. The MPR axis changes in the direction of the implant axis.

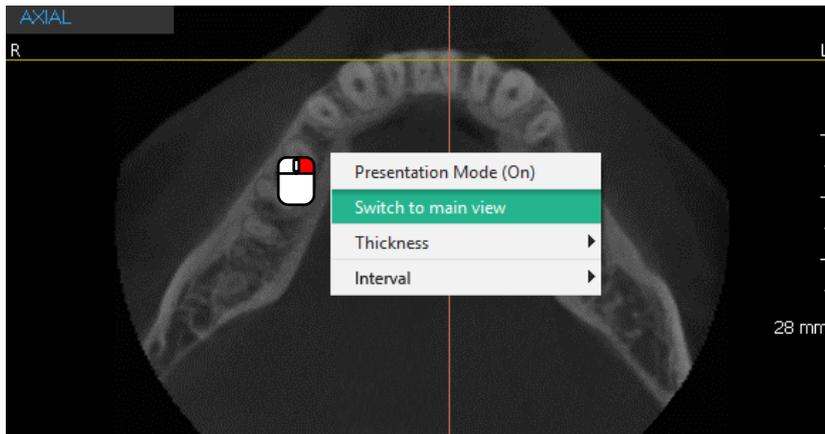


This MPR axis setting function does not work in the Section tab, 3D Pan tab, and the Multi Slice View.

## 17. View Switching

User can check images by switching the one of the View Windows and the Main View Window. This View Switching function can be applied for the layout that includes "Main View Window."

1. Click the right mouse button on the image to send to Main View Window.
2. Click the Switch to Main view option from the context menu. The selected View is displayed in the Main View Window.



## 18. Dual Monitor Mode

### 18.1 Starting Dual Monitor Mode

1. Click the [Start Dual Monitor Mode] button.

Start Dual Monitor Mode



If Ez3D-i fails to detect dual monitors, the [Start Dual Monitor Mode] button will not be activated.

2. Ez3D-i enters into the Dual Monitor Mode displaying both Main View and Secondary View on each monitor.



Main View

Secondary View

Dual Monitor Mode does not support following functions:

- Control Panel: Oblique, Measuring Airway, Changing Layout, Drawing Curve
- View Frame: Making a single window by doubling clicking the window title bar to
- Context Menu: Presentation Mode On, Switching to main view
- Short Key: <Ctrl + Enter> key

### 18.2 Exiting Dual Monitor Mode

Click the [x] icon at the top right corner of the Secondary View to exit Dual Monitor Mode.



## 19. Data Manager

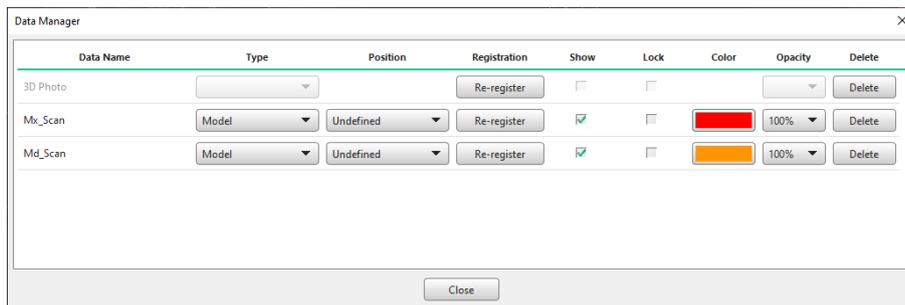
Data Manager Dialog manages the properties of 3D objects, IO Scanner data, Secondary CT data imported from EzDent-i and Ez3D-i.

### 19.1 Data Manager Layout

1. Click the [Data Manager] icon in the [ETC] option.



2. The [Data Manager] dialog appears.



- Name: The user can modify object name by double clicking object name.
- Type: The user can choose the file type of the 3D object
- Position: The user can set whether the model data is maxillary or mandible, or set its tooth code.
- Registration: According to the registration status of the object, the [Active] or [Re-register] button will be activated.



NOTE

- [Activate]
  - : For objects that are included in EzDent-i data group, [Data Manager] will automatically appear in the [Data Manager] window to activate the objects.
  - : For the unregistered data, [Name], [Type], [Show], [Lock], [Color] and [Opacity] options are not activated while only [Delete] option can be selected.
- [Re-register]
  - : For already registered objects, registration can be done with the [Re-register] option.
  - : As old versions of Ez3D-i (less than v4.2) do not support registration option, data imported at these versions are regarded as registered data. Those data need to be registered with the [Re-register] button.

- Show: Show or hide objects in the View
- Lock: Lock or unlock to stop or allow changing object location
- Color: Select the colors of objects
- Opacity: Select the opacity of objects
- Delete: Click the Delete button to remove the selected object in the view.

## 19.2 Data Registration

1. Double click CT data in EzDent-i to start Ez3D-i.
2. The [Data Manager] dialog appears automatically when Ez3D-i starts.

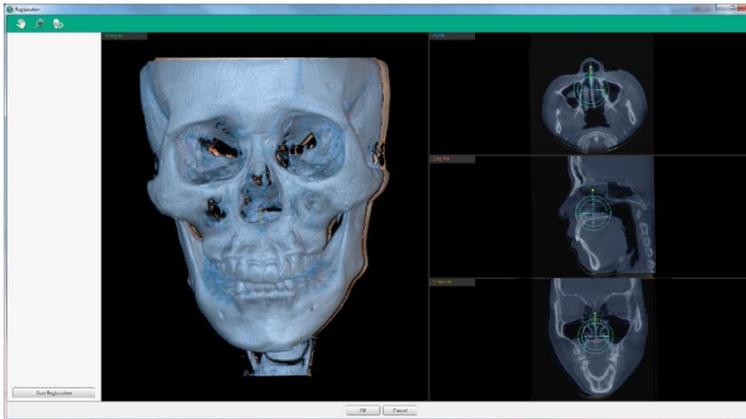


The user can run Data Manager directly on Ez3D-i by clicking the [Data Manager] icon in the [ETC] toolbar group.

3. For unregistered objects, click the [Active] button below the [Registration] option to activate the data.



4. After activation, the [Registration] dialog appears automatically.



5. Please proceed data registration.



Please refer to 'Chapter 1. Ez3D-i Basics > 5.7.1 Import Model, 5.7.2 Import 3D Photo, 5.7.3 Import Secondary CT'.

6. The registered data can be seen on the Merged View of Registration dialog.
7. Complete registration by clicking the [OK] button.

## 19.3 Data Re-register

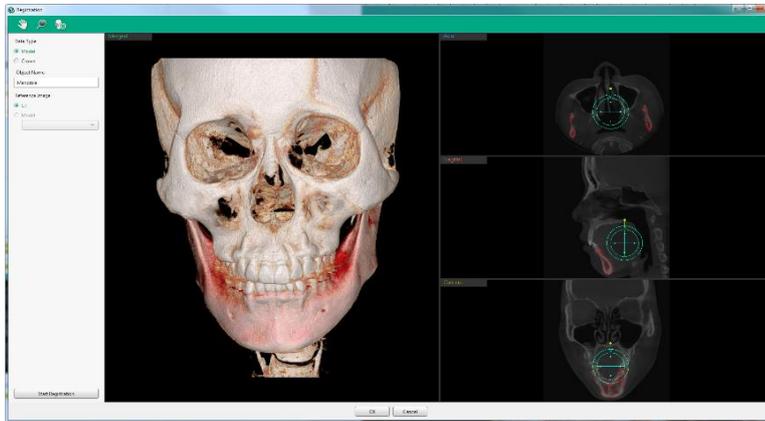
1. Click the [Data Manager] icon in the [ETC] toolbar group.



2. The [Data Manager] dialog appears.
3. For objects to be registered, press the [Re-register] button below the [Registration] option.



4. The [Registration] dialog appears automatically.



5. Please proceed data registration.



Please refer to 'Chapter 1. Ez3D-i Basics > 5.7.1 Import Model, 5.7.2 Import 3D Photo, 5.7.3 Import Secondary CT'.

6. The registered data can be seen on the Merged View of Registration dialog.
7. Complete registration by clicking the [OK] button.

## 19.4 Changing Name of Data

1. Click the [Data Manager] icon in the [ETC] toolbar group.



2. The [Data Manager] dialog appears.



3. Double click the object name to change the name of the object.



- If the [Registration] option is [Active], you cannot rename the object as the Object Name is disabled.
- The object name changed in Ez3D-i will not be reflected in EzDent-i.

4. [Data Name] dialog appears.



5. Change the name in the [Data Name] option and click the [OK] button.

## 19.5 Deleting Data

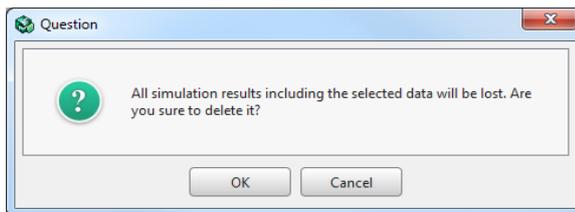
1. Click the [Data Manager] icon in the [ETC] toolbar group.



2. The [Data Manager] window appears.
3. Press the [X] button of the object below the [Delete] option.

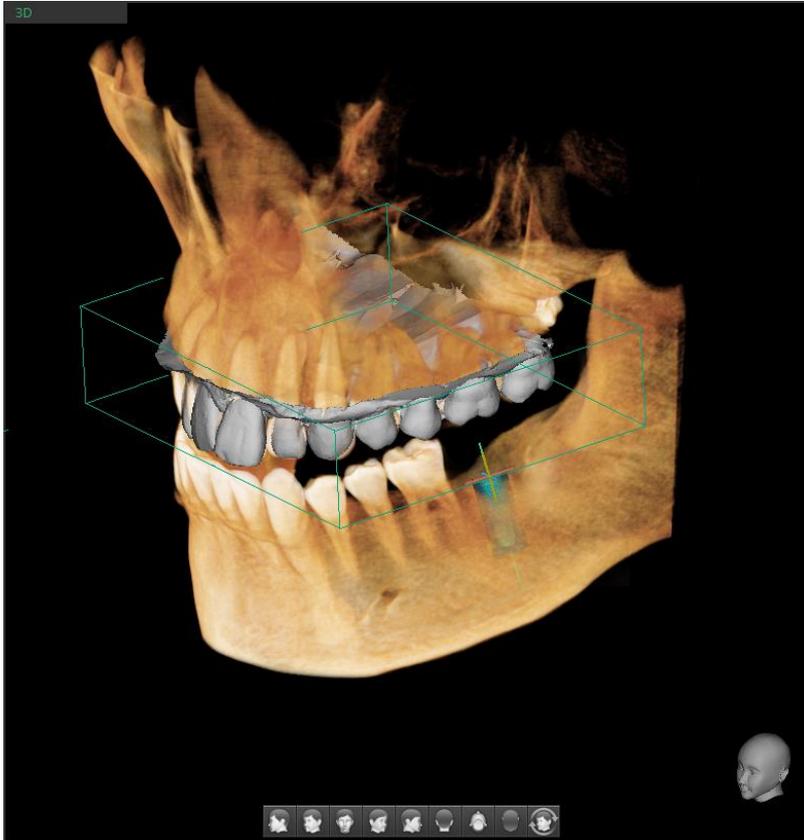


4. When “Delete object (project name) from the project?” message appears, click the [OK] button to delete the object from the current project.



## 20. 3D Object Selection Guide

3D Object Selection Guide as a form of bounding guide appears when a 3D object is being selected in the 3D View.



- The 3D Object cannot be controlled by the 3D Object Selection Guide.
- The 3D Object Selection Guide is able to move the selected object in the plane.

## 21. Tools in the Toolbar

- Main Tools

Icons	Designation	Description of Features
	Panning	Move images
	Zooming	Zoom in or out
	Length	Measure the distance
	Draw Canal	Draw canal
	Capture View frame	Capture the View frame area
	Reset View	Initialize rotate, move, zoom
	Export	Save the current image as a file.

- Advanced Tools

Icons	Designation		Description of Features
	Capture	Select Window Capture	Capture the selected window
		Capture Window	Capture the View Window area
		Multi-Capture	Capture multiple images
		Create Movie	Run the movie capture program.
	Measurement	Angle	Measure the angle between three points
		Multi Angle	Measure multi angle.
		Multi Length	Measure multi length.
		Circle Measure	Measure the radius of inserted circle
		Profile	Density Profile between two points
		ROI	Measure pixel, average value, maximum value and standard deviation of ROI
		Volume Measure	Measure the volume of the threshold area from the selected area.
		Annotation	Pointer

Icons	Designation		Description of Features
		Free draw	Draw freely on the 2D image
		Memo	Write memos directly on your images
	Sculpt	Sculpt	View the selected area separately
		Inverse	Invert the Sculpt view area
		Undo	Undo your last action
		Redo	Revert Undo
		Reset	Reset Sculpt
		Grid	Check the scale of the image with grid
	On/Off	Implant Long Axis	Show/ Hide implant long axis
		Turn Overlay On/Off	Show / Hide all input objects
		Show Manager	Show / Hide individual input object
		Show/Hide Patient Information	Show / Hide patient information on the image
		Data Manager	Manage properties of imported data
	Etc	Delete All	Delete all input objects
		Initialize All	Initialize all changes

The following functions cannot be canceled <Esc> Key or with a mouse right click.



Icons	Designation	Icons	Designation
	Reset View		Initialize All
	Undo		Turn Overlay On/Off
	Redo		Show Manager
	Reset		Delete All
	Pointer		

- [Create Movie] icon will not appear on the toolbar if the software to link is not set.
- The data drawn using the [Pointer] function is not saved to the project file.
- All functions are disabled while the [Pointer] function is in use.
- Use the pointer function to draw on the current screen temporarily.
- Click the [Annotation > Pointer] icon on the tool bar, and then the following window appears.



- [Pointer]: Drag to draw and mark the area for View Frame.
- [Eraser]: Erase the pointer overlay. The point overlay inserted on the path of the Erase icon moves will be deleted.
- [Thickness]: Set the thickness of Pointer or Eraser.
- [Pointer Color]: Set the color of Pointer.
- [View Frame Capture]: Capture the View Frame while the pointer drawing mode is on.
- [Reset Pointer]: Delete all pointer objects inserted on the image.
- [Exit]: Close the Pointer function.

## Chapter 5. SECTION Tab

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# 1. SECTION Tab Configuration

The SECTION Tab is provided so that the user can examine the clinical structure of an image.

Ez3D-i capabilities include Axial View, Panorama View, Section View, arch drawing and mandibular nerve drawing.

## 1.1 Workspace



- A is Axial Window screen. The information about the arch can be examined. Click the [Draw Curve] button to draw a curve along the arch.
- B is Section Window screen. The information about a specific area of the image can be examined closely. Click the [Draw Canal] button to draw the canal along the mandibular nerve.
- C is Panorama Window screen. The information about the image of the mandibular nerve can be examined. Click the [Draw Canal] button to draw the canal along the mandibular nerve.



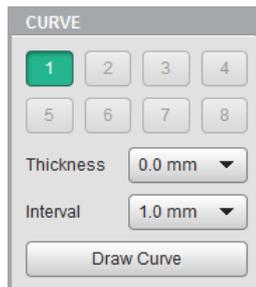
Imported data will not be displayed on the Panorama Window.

## 2. Drawing and Modifying Curve

Enter the criteria for your panoramic image generation (interval, thickness). Then, click to draw a curve on the axial image and panoramic images are generated automatically.

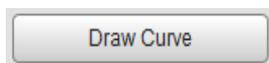
### 2.1 Drawing Curve

A curve is detected and registered as the button 1 of curve list when entering to Section tab. When it fails to detect a curve, the default curve defined in the program is applied.

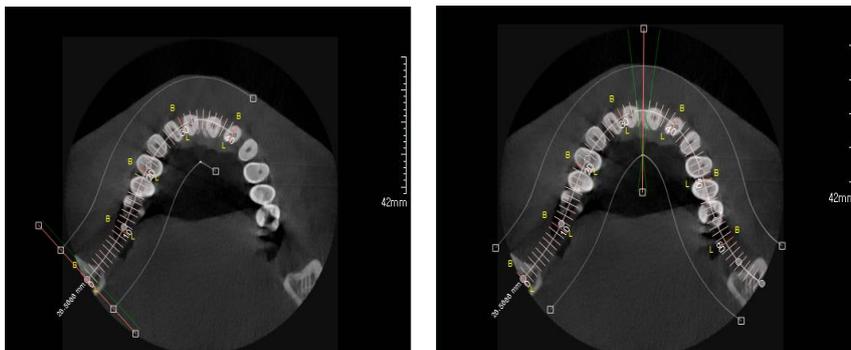


After drawing a curve in the MPR tab, the screen will be automatically switched to Section tab, and the inserted curve will be added to the curve list. Refer to the 'Chapter 4. MPR Tab > 8. Drawing Curve' for the direction on how to insert a curve in the MPR tab.

1. Click the [Draw Curve] button and the mouse cursor will change into drawing mode.



2. Click points on the Axial Window to draw the curve line on the arch. Draw the curve line from left to right. Double click to complete the curve line.



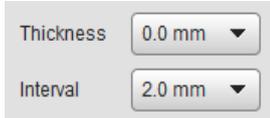
- Click the [Draw Curve] button while drawing the curve line to cancel the Draw Curve function.
- Click the right mouse button while drawing the curve line to delete the previously inputted point.
- The drawn curve is added to the Curve List. The number buttons on the Curve List will be activated according to the curves drawn.





If the curve line is drawn from right to left side, users will get a horizontally inverted image on the Panorama pane.

- The interval and the thickness of slice image created based on the curve can be changed.



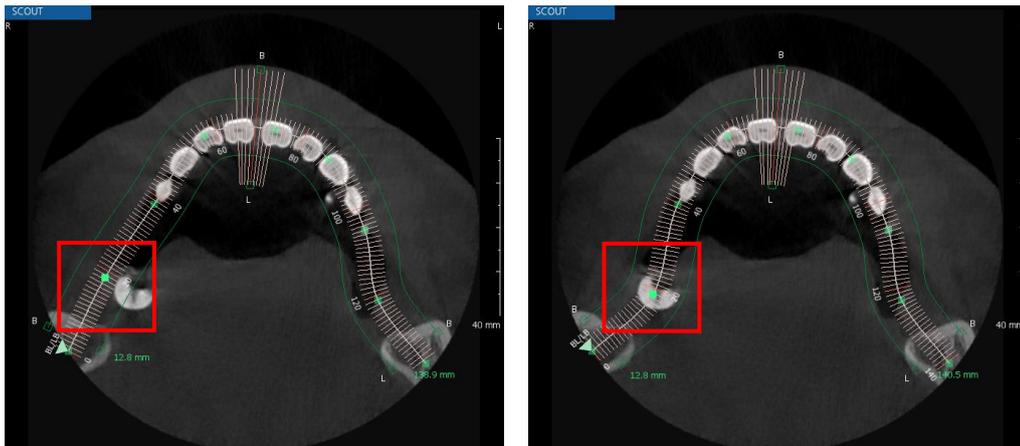
Use the mouse wheel to change the curve interval while drawing the curve line.

## 2.2 Modifying Input Curve

Click a point on the curve and drag it to the desired point to modify the line.

- Moving point

Click one of the curve points to select. And drag and drop the point to curve line.



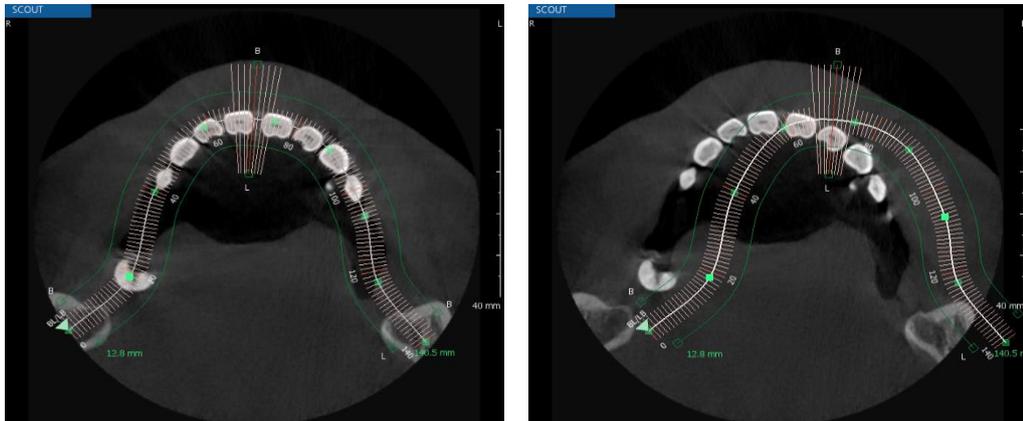
- Adding point

After selecting the curve line, right-click to display a menu. Click the [Add Point] menu to add a new point.



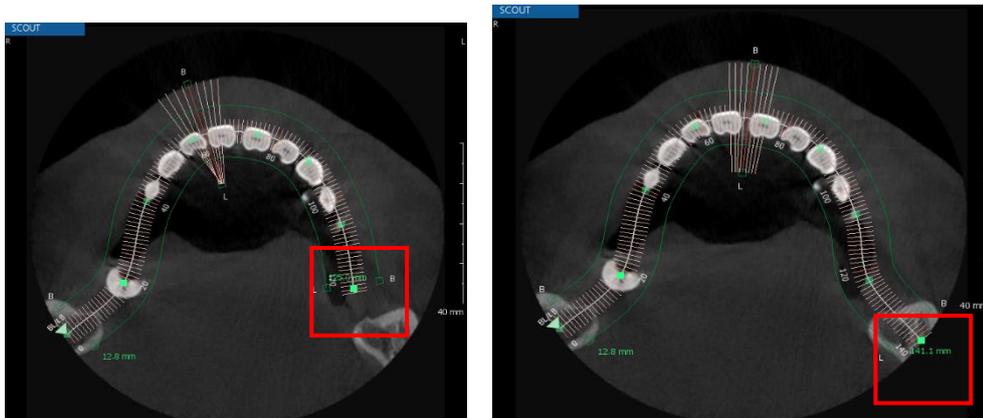
- Moving curve

To move the whole curve line, click the entire curve line and drag it to the desired location.



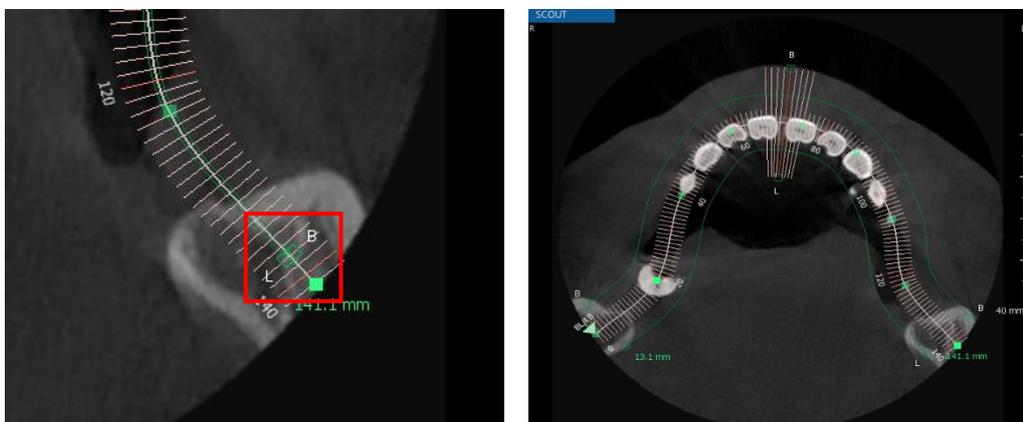
- Adjusting curve length

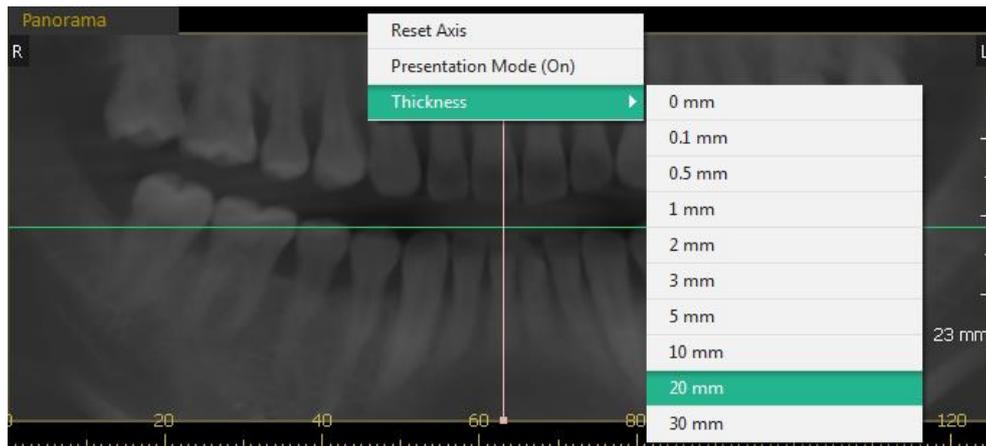
Move the start point and the end point of the curve line to adjust the length of the curve line.



- Changing panorama thickness

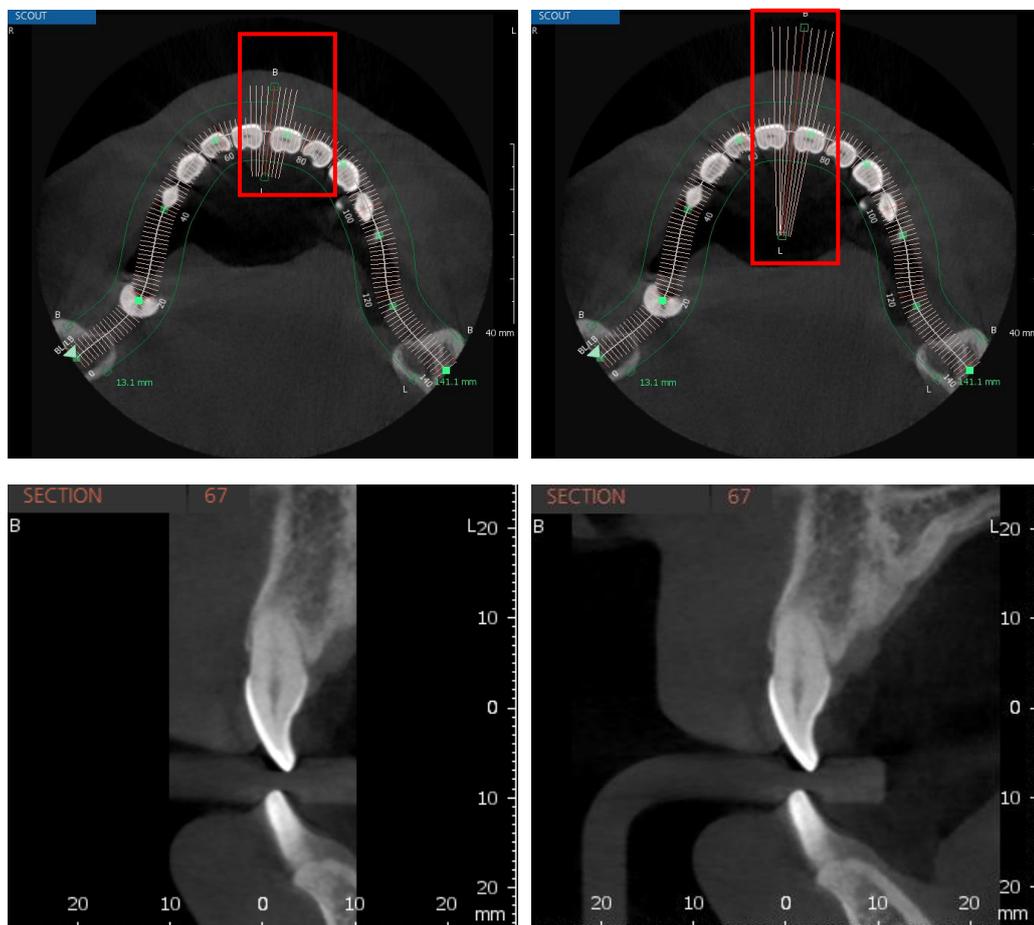
Click and drag the L/B point of the Panorama Thickness Line to adjust the thickness of the panorama view. Or right click on the image of the Panorama View to change the thickness.





- Changing width of Section images

Click and drag the Section Width Point on the curve line to adjust the width of the Section images.



Modifying the input curve will be reflected in real-time with the section view and panorama view.

- Switching L/B Direction

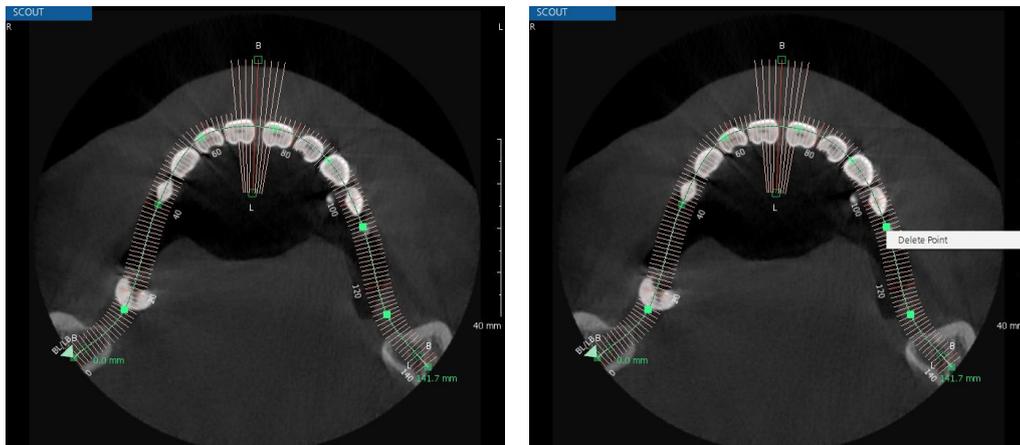
Right click on the sectional line on the curve then click the [L/B Switching] button to change the sectional line direction.



Please note that switching L/B direction does not change the direction of slices.

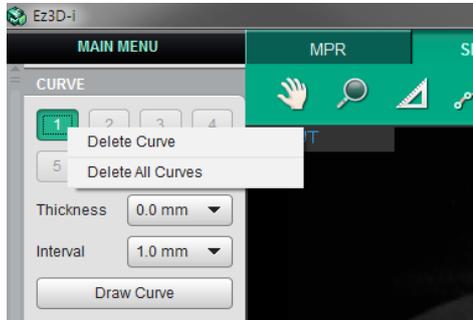
## 2.3 Deleting Curve Point

Select a point on the curve and right-click. Click the [Delete Point] menu to delete the selected point.



## 2.4 Deleting Curve

1. Right click the number button to delete the corresponding curve.
2. Click the [Delete Curve] option to delete the selected curve only. And click the [Delete All Curves] option to delete all inserted curves.



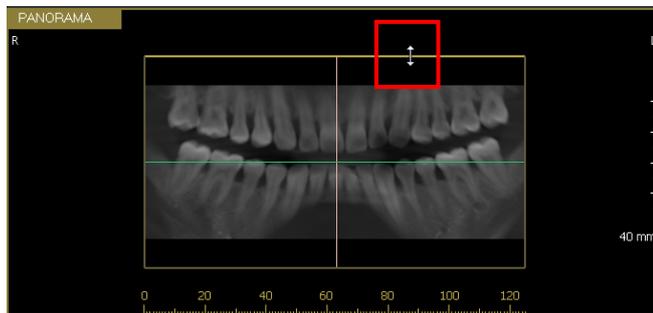
3. If a curve is deleted, the numbers for inserted curves are rearranged automatically in the order of drawn time.

## 2.5 Adjusting Section Panorama

The section images can be adjusted through the Panorama window of SECTION tab.

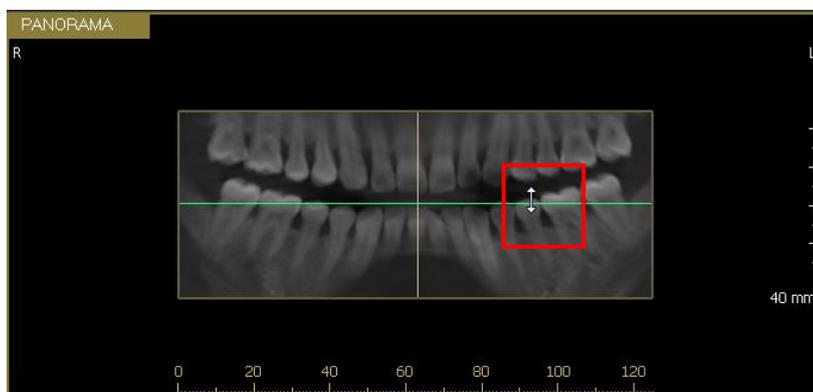
- Resizing Panorama Image (Vertical)

Drag the edge of the Panorama image to resize.

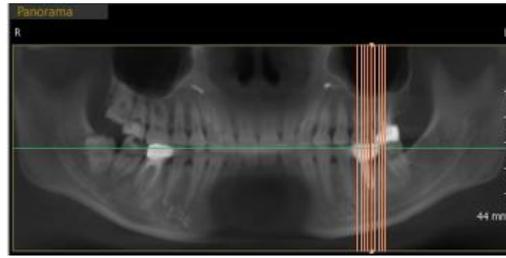


- Moving Section line

Click the green line on the Panorama image and drag it upward or downward. The Section image are adjusted accordingly.

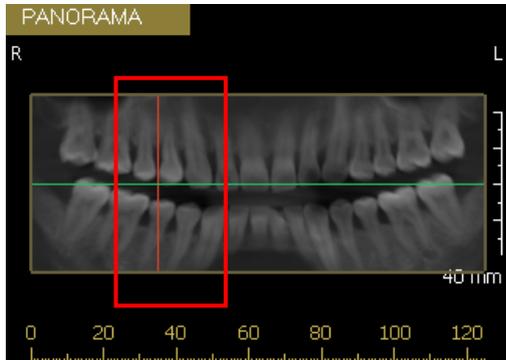
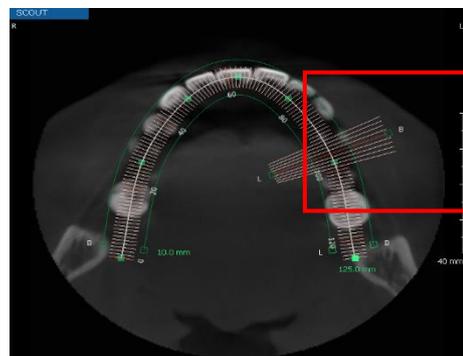
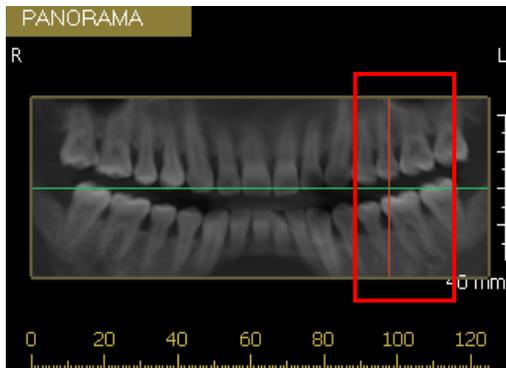


Set to show/hide sectional lines on Panorama View in the Settings. See 'Chapter 2. Ez3D-i Settings > 3. View > 3.3 2D View' for more information.



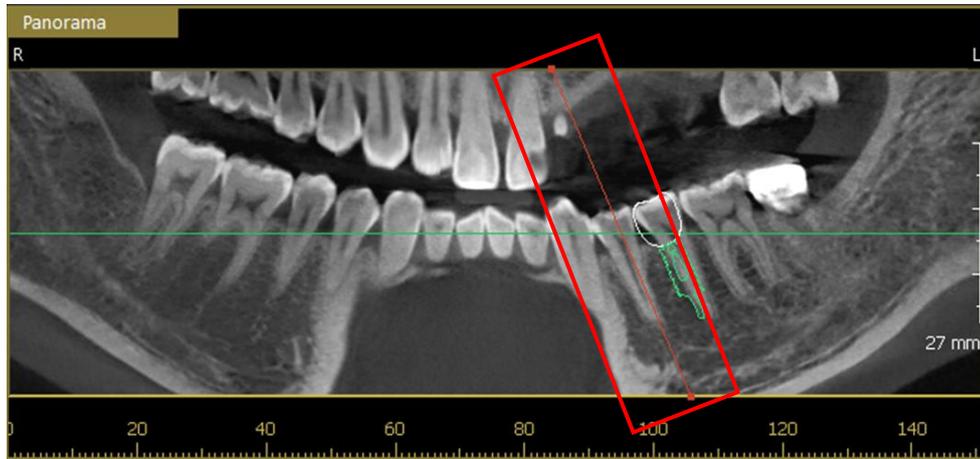
- Moving Curve Positioning Line

Click the pink line on the Panorama image and drag it to the left or right to move the Curve Positioning Line.



- Adjusting Curve Positioning Line

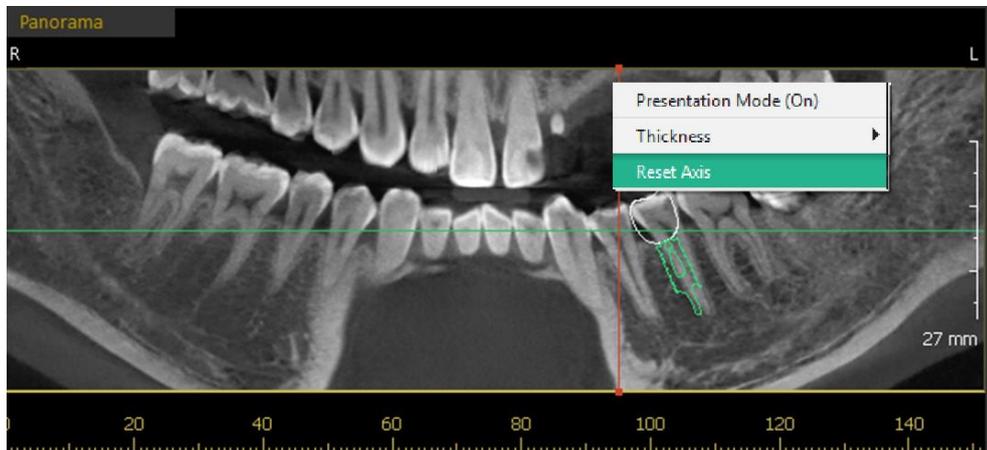
Click the end points of the pink line on the Panorama image and drag it to the left and right to adjust the Curve Positioning Line.



When the Curve Positioning Curve is not set in the 90 degrees, the pointed part on the Panorama image may not be displayed as the sectional image.

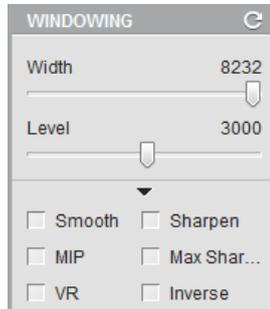
- Resetting Curve Positioning Line

Right click on the Curve Positioning Line to open the context menu. Click the [Reset Axis] option to reset the adjusted Curve Positioning Line.



### 3. Windowing

Move the slider to adjust the brightness and the contrast of the 2D images.



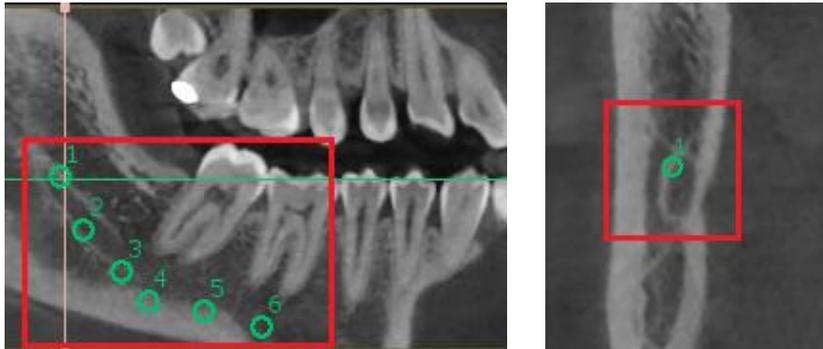
- Width: Move the slider to adjust the brightness (WIDTH) of the 2D image. The image is brighter with higher number.
- Level: Move the slider to adjust the contract (LEVEL) of the 2D image. The image is clearer with higher number.
- WINDOWING Icons

Icons	Designation	Description of Functions
	Width	Adjust the brightness of the image
	Level	Adjust the contrast of the image
<input type="checkbox"/> Smooth	Smooth	Make the image smooth
<input type="checkbox"/> MIP	MIP	Reduce the burring area of metal and make the image clearer (MIP: Maximum Intensity Projection)
<input type="checkbox"/> Sharpen	Sharpen	Sharpen the edge of image
<input type="checkbox"/> Max Sharper	Max Sharper	Sharpen the edge of image to its maximum level
<input type="checkbox"/> Inverse	Inverse	Inverse of black and white
<input type="checkbox"/> VR	VR	Check the image in VR mode
	Reset	Initialize the image value

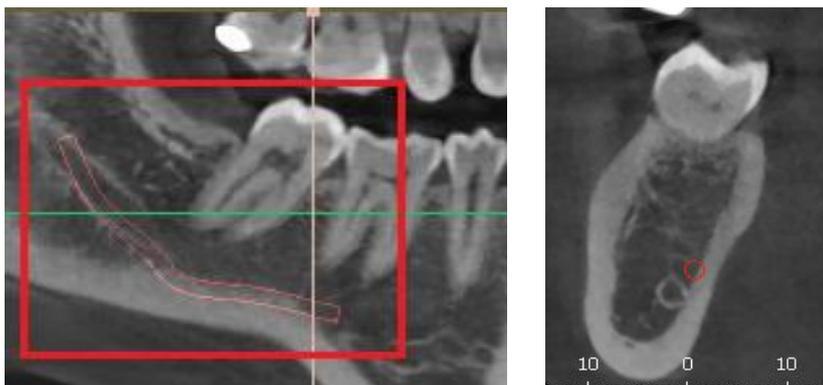
## 4. Canal Drawing

### 4.1 Drawing Canal

1. Click the [Draw Canal] icon on the toolbar. The mouse cursor changes to the drawing mode.
2. To draw the canal line, click points along the mandibular nerve on the panorama window or the section view.



3. Double click to complete the canal line.



- The completion of canal line can be verified after all points are connected.
- Right-click while drawing the canal line to delete the previously plotted input point.
- Clicking the [Draw Canal] icon while drawing the canal line will cancel the Draw Canal function. The function can also be canceled by pressing the <Esc> key on the keyboard.

## 4.2 Editing Canal

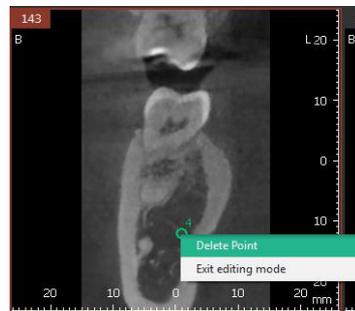
1. Right click on the inserted canal the following context menu appears.
2. Click the [Edit Canal] menu and the canal points appear.



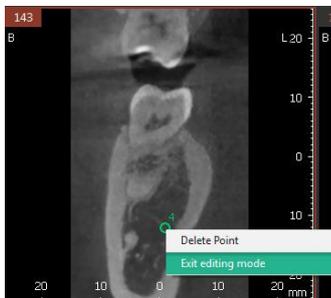
Right click on the canal point to delete points.



NOTE



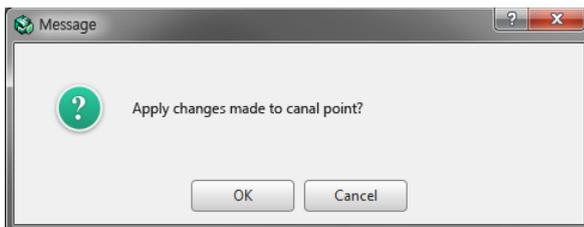
3. Right click on the canal and click the [Exit Editing Mode] menu after editing the canal.



NOTE

User can only move or delete the canal points on the 2D image.  
Double click to end the canal edit mode.

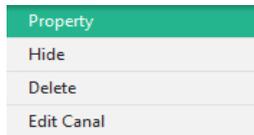
4. There appears a message asking “Apply changes made to canal point?”



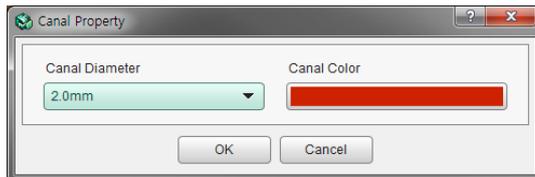
5. Press the [OK] button, the new canal points will be applied to the canal.

## 4.3 Changing Properties of Canal

1. Select the canal line and click the right mouse button. The following list appears.



2. Click [Property] and the [Canal Property] window appears.

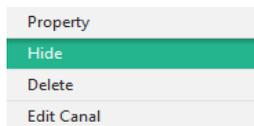


3. Click the [Canal Diameter] dropdown menu to select the diameter of the canal line. Click [Canal Color] and select the color of the canal line.
4. Click the [OK] button and the changes are reflected in the canal line.

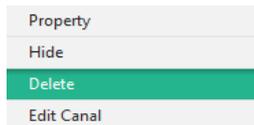
## 4.4 Hiding or Deleting Canal

Select the canal line and click the right mouse button. The following list appears.

- Click [Hide] and the canal line disappears from the screen.



- Click [Delete] to delete the selected canal line.



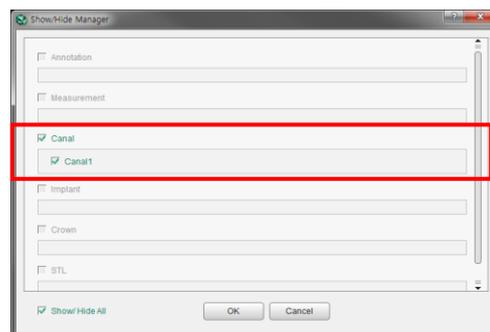
- Click the [Show Manager] icon. The [Show/Hide Manager] window appears.



- Uncheck a box to hide the object/canal drawing/measurement. Click the [OK] button and the selected canal line disappears from the screen



NOTE

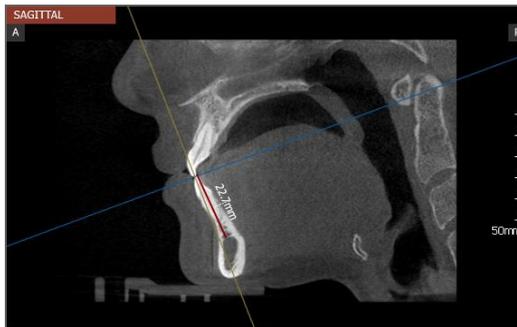


## 5. Measuring Length

1. Click the [Length] icon to measure the length as below.

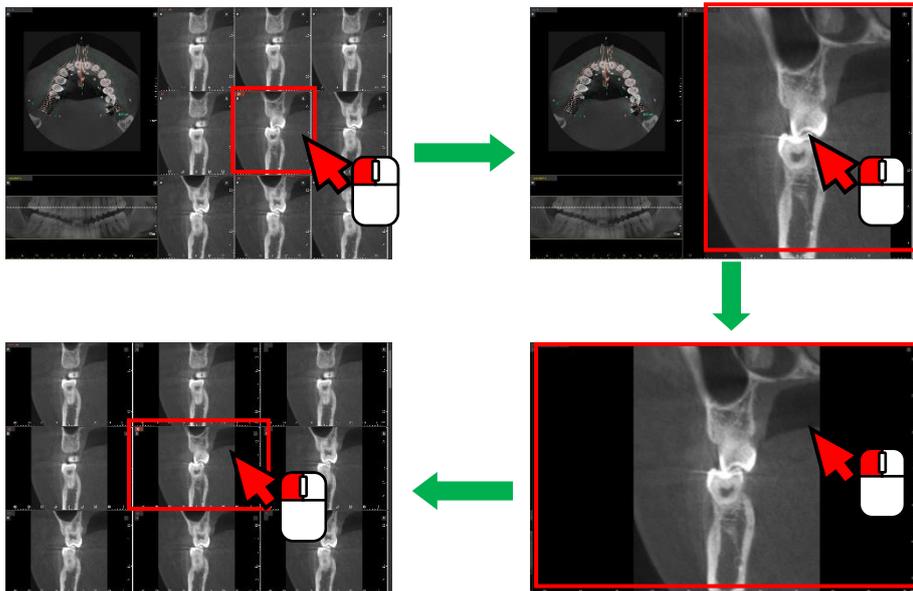


2. Click two points to measure the length. Then the numerical value appears on the screen.



3. Click the [Length] icon again (or right-click the mouse, click the <ESC> key) to finish measuring.

## 6. Full Screen Mode



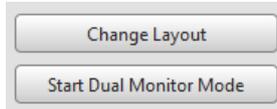
Double click the image in the Section view on the Section tab to view the image in the full screen mode without changing the layout.

Double click the image in the full screen mode to return to the previous layout.

## 7. Dual Monitor Mode

### 7.1 Starting Dual Monitor Mode

1. Click the [Start Dual Monitor Mode] button.



If Ez3D-i fails to detect dual monitors, the [Start Dual Monitor Mode] button will not be activated.

2. Ez3D-i enters into the Dual Monitor Mode displaying both Main View and Secondary View on each monitor.



Main View

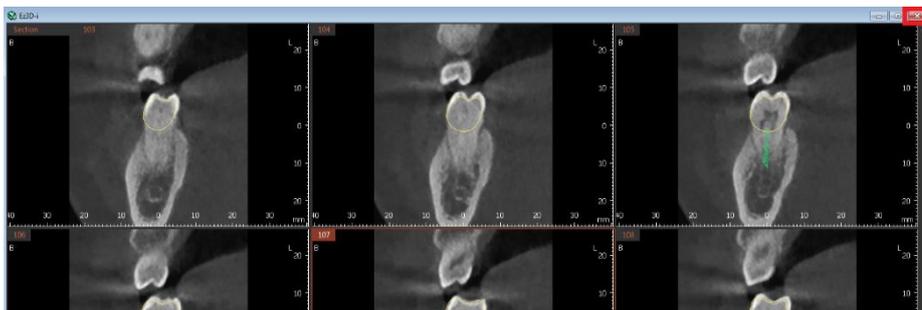
Secondary View

Dual Monitor Mode does not support following functions:

- Control Panel: Changing Layout
- View Frame: Making a single window by doubling clicking the window title bar
- Context Menu: Presentation Mode On
- Short Key: <Ctrl + Enter> key

### 7.2 Exiting Dual Monitor Mode

Click the [x] icon at the top right corner of the Secondary View to exit Dual Monitor Mode.



## 8. Tools in the Toolbar

- Main Tools

Icons	Designation	Description of Features
	Panning	Move images
	Zooming	Zoom in or out
	Length	Measure the distance between two points on the 2D image
	Draw Canal	Draw canal
	Capture View Frame	Capture the View frame area
	Reset View	Initialize rotate, move, zoom
	Export	Save the current image as a file.

- Advanced Tools

Icons	Designation	Description of Features	
	Capture	Capture Region	Capture the selected area
		Capture Window	Capture the View Window Area
		Multi-Capture	Capture multiple images
		Create Movie	Run the movie capture program.
	Measurement	Angle	Measure the angle between three points.
		Multi Angle	Measure multi angle
		Multi Length	Measure multi length.
		Circle Measurement	Measure the radius of inserted circle
		Profile	Density Profile between two points
		ROI	Measure pixel, average value, maximum value and standard aviation of ROI
		Annotation	Pointer
	Free draw		Draw freely

Icons	Designation		Description of Features
		Memo	Write memos directly on your images
	On/Off	Grid	Check the scale of the image with grid.
		Implant Long Axis	Show/ Hide implant long axis
		Turn Overlay On/Off	Show / Hide the entire input objects
		Show Manager	Show / Hide individual input object
		Show/Hide Patient Information	Show / Hide patient information on the image
		Data Manager	Manage properties of imported data
	Etc	Delete All	Delete all input objects
		Initialize All	Initialize all changes

The following functions cannot be canceled with the <Esc> key or with a mouse right click.



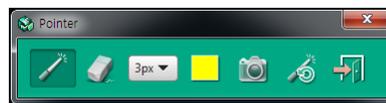
NOTE

Icons	Designation	Icons	Designation
	Reset View		Initialize All
	Turn Overlay On/Off		Show Manager
	Delete All		Pointer

- [Create Movie] icon will not appear on the toolbar if the software to link is not set.
- The data drawn using the [Pointer] function is not saved to the project file.
- All functions are disabled while the [Pointer] function is in use.
- Use the pointer function to draw on the current screen temporarily.
- Click the [Annotation > Pointer] icon on the tool bar, and then the following window appears.



NOTE



- [Pointer]: Drag to draw and mark the area for View Frame.
- [Eraser]: Erase the pointer overlay. The point overlay inserted on the path of the Erase icon moves will be deleted.
- [Thickness]: Set the thickness of Pointer or Eraser.
- [Pointer Color]: Set the color of Pointer.
- [View Frame Capture]: Capture the View Frame while the pointer drawing mode is on.
- [Reset Pointer]: Delete all pointer objects inserted on the image.
- [Exit]: Close the Pointer function.

## Chapter 6. 3D PAN Tab

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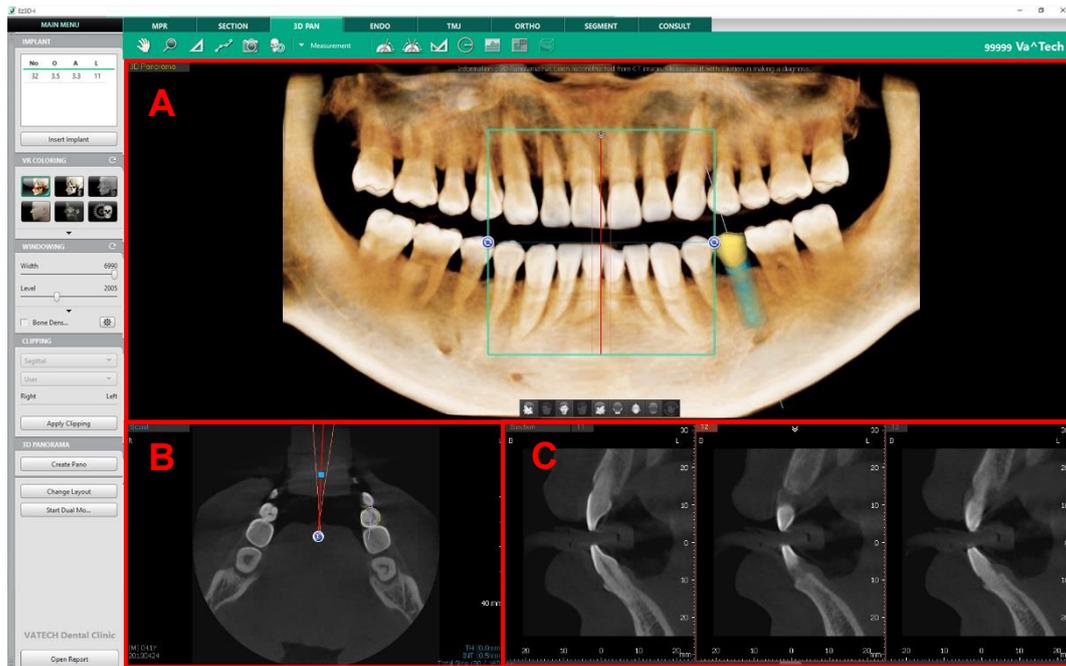


# 1. 3D PAN Tab Configuration

The 3D PAN tab provides the user the ability to simulate implant placement at a desired tooth location.

The implant simulation capability of Ez3D-i includes the implant placement, the implant library and bone density estimation around the implants.

## 1.1 Workspace



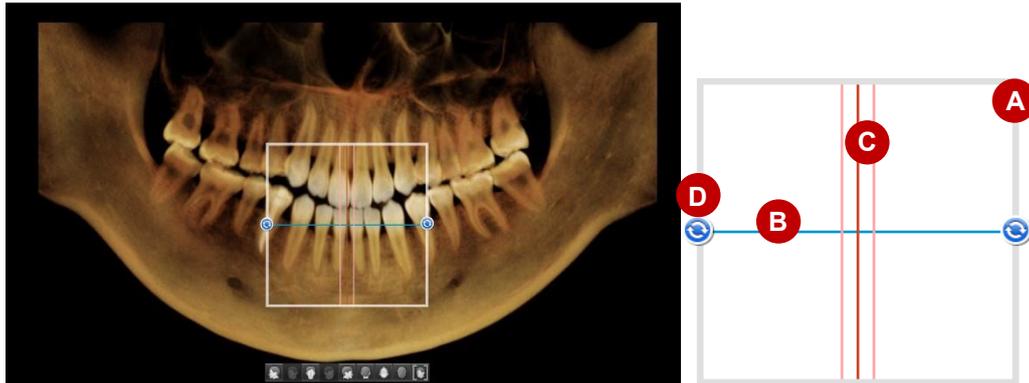
- A is the 3D Volume Window screen.
- B is the Scout Window screen.
- C is the section view window screen (2D view window), which is defined by the navigator of 3D view and by the controller of 2D view.

## 2. Navigator

Navigators on 3D and 2D images are used to adjust the image view and display the cross-sectional view.

### 2.1 3D Navigator on 3D image

The 3D navigator consists of a frame that indicates the cross-sectional image of panorama 3D and the indicator lines that displays the corresponding cross-sectional images.



No	Name	Description
A	Frame	The default size of the frame is 30mm x 35mm x 35mm, and the size can be changed in the [Settings > View > 3D View > Volume Panorama Navigator].
B	Axial Indicator Line	Also called Axial line. It displays and sets the location of Axial View, which divides the image within the navigator horizontally.
C	Sectional Indicator Line	Also called Section line. It displays and sets the location of Section View, which divides the image within the navigator vertically.
D	Rotating Controller	The Rotating controller rotates the Navigator to view cross sectional images.

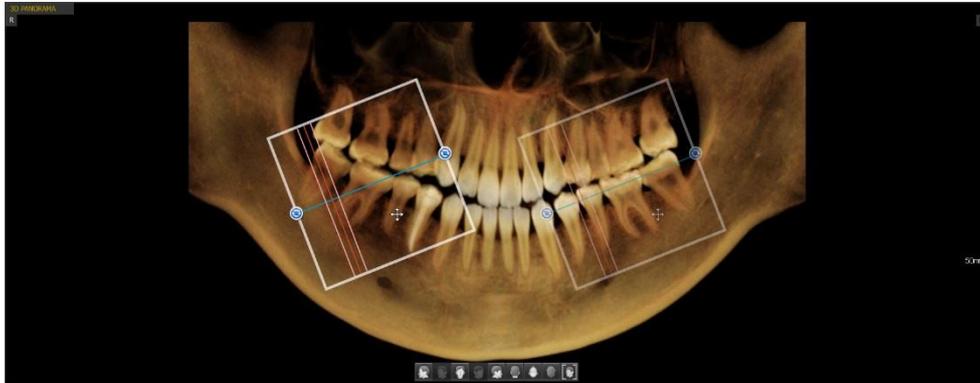


- The navigator can be displayed or hidden by pressing the Space Key on the keyboard.
- The navigator is only displayed when the 3D panorama volume is set in the Front view.

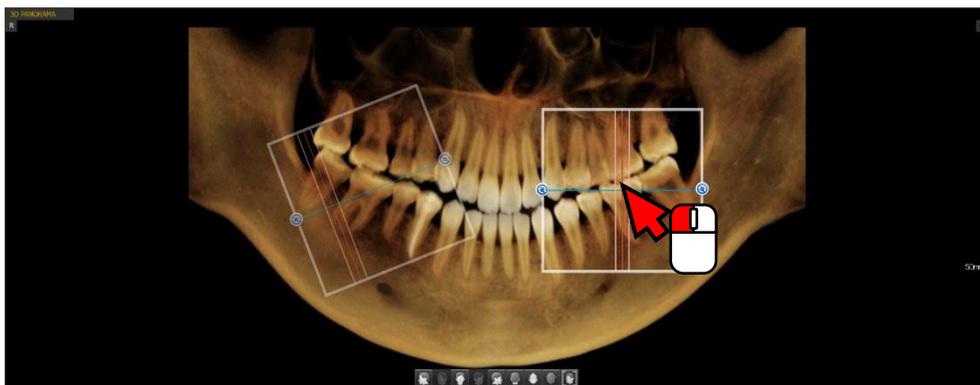
### 2.1.1 Moving Navigator

User can move the Navigator and change the displayed range.

- Drag the inside of the Navigator to change its location. When moving, the rotation value and the position of section line are maintained.



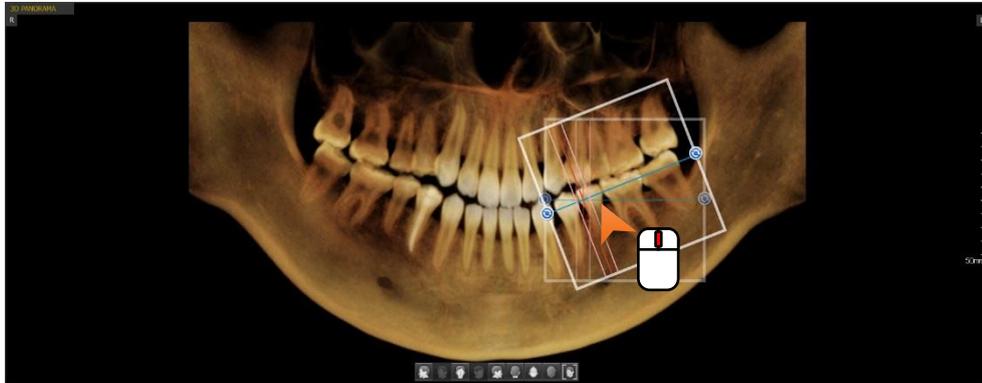
- Double click the desired spot to view the cross-sectional image. The navigator moves to the selected position. In this case, the rotation value and the position of section line are reset. Also, if the user double clicks the inside of Navigator, the navigator rotates back to its original position based on the clicked spot.



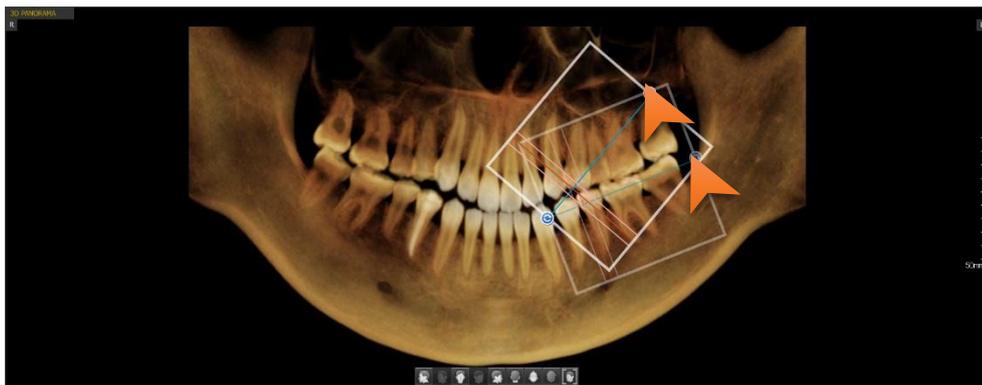
## 2.1.2 Rotating Navigator

User can rotate the Navigator and change the displayed range.

- Click the Navigator and scroll the mouse wheel. The navigator rotates based on the intersecting point between the Axial Line and the Section Line.



- Drag the Control buttons on either side of Navigator Box. The navigator rotates based on the other unselected button.



The Overlay displaying the direction of Axial View automatically changes as the navigator rotates.

### 2.1.3 Moving Indicator Line

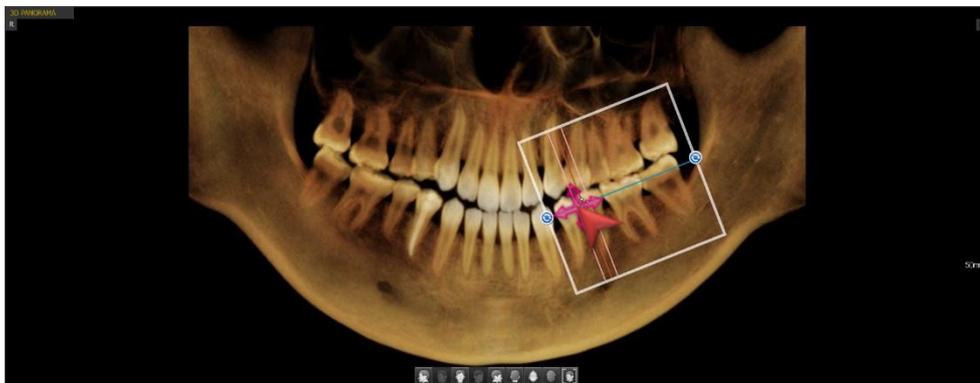
User can move the Line Indicator and view the cross-sectional images for corresponding point accordingly.

- Drag and move the Line Indicator. The 2D images change accordingly.



Line Indicator moves while maintaining the interval. The interval and thickness can be changed in the Setting.

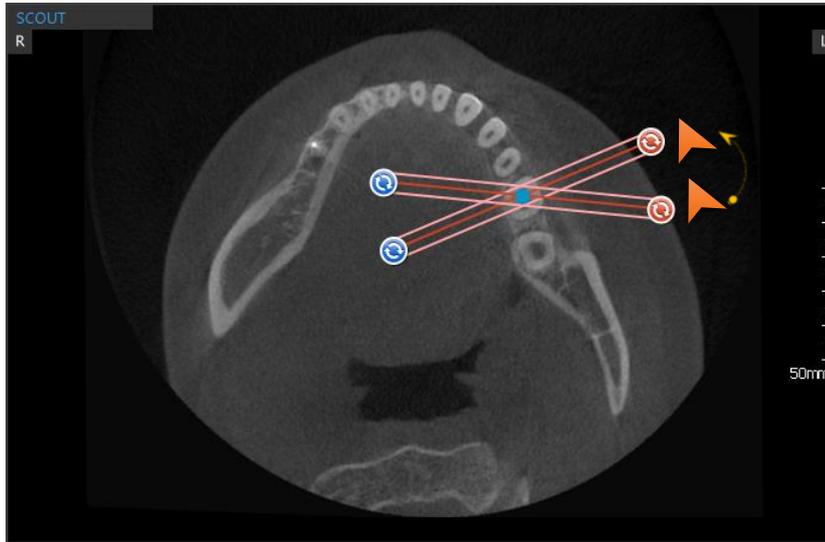
- Click the intersecting point between the Section Line and Axial Line and drag to move the lines at the same time.



## 2.2 Axial Navigator

Axial Navigator is the controller that displays the same location of Section line of 3D Navigator and can be adjusted on the Axial view. The Section Line only can be rotated.

Drag the Rotation button at both ends of the Section Center Line to rotate the Section line in the Axial direction. The Section Line rotates based on the intersecting point between the predefined Arch Line and the Section Center Line and the intersecting point cannot be moved.



The Section Controller and the Section Line can be displayed or hidden by pressing the Space Key on the keyboard.



The Section Controller and the Section Line can be displayed or hidden by pressing the Space Key on the keyboard.

### 3. Clipping

The Clipping function is to cut a 3D image in the selected direction to view the cross-sectional image.

1. Click the [Apply Clipping] button to execute clipping function.



2. Click to select the direction to clip a 3D image.



3. Click the combo box to set the area for clipping.



4. Drag the slider and the image will be clipped in the selected direction.



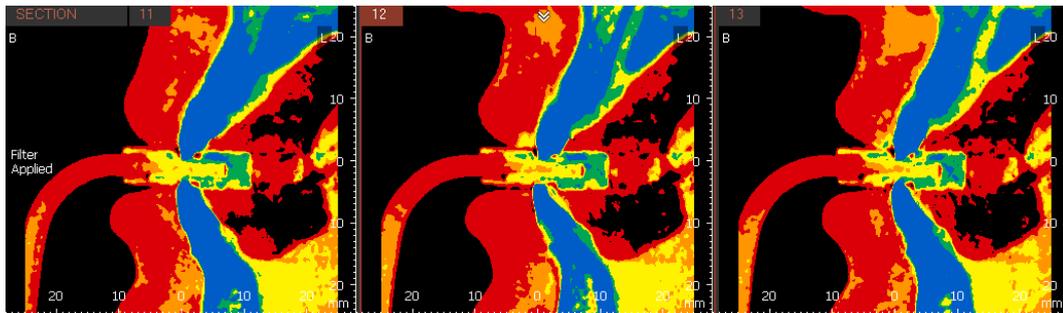
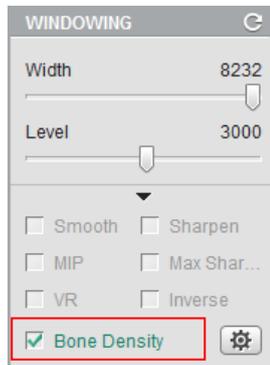
To reset the clipping, click the [Reset Clipping] button.

A green rectangular button with a thin border, containing the text "Reset Clipping" in a white font.

## 4. Bone Density

The bone density of selected cross-sectional images can be checked.

In the Windowing Group, click the [Bone Density] Button to display all 2D images in the Bone Density mode. Move the slider at the bottom of the screen to change the Sectional image position.



CAUTION

Adjusting bone density range depending on the equipment that you have is required to use the bone density function more accurately. (There are many cases where CBCT has different CT Number values, which are the standard of bone density standard, depending on the equipment.)

Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.



NOTE

Because the CT Number can be different by acquisition equipment, the values can be set according to the user's equipment in the Settings. Bone density area (D1 - D5) can be changed to appropriate CT Number based on the user's acquisition equipment in the [Settings > Simulation > Bone Density > Bone Density Area], and also the color can be changed.

## 5. Panorama View

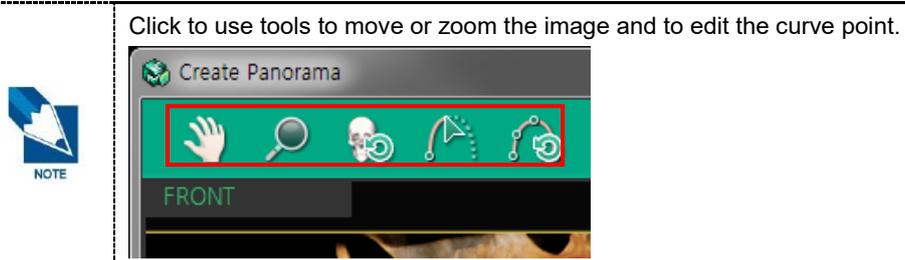
User can select an area to view in panorama.



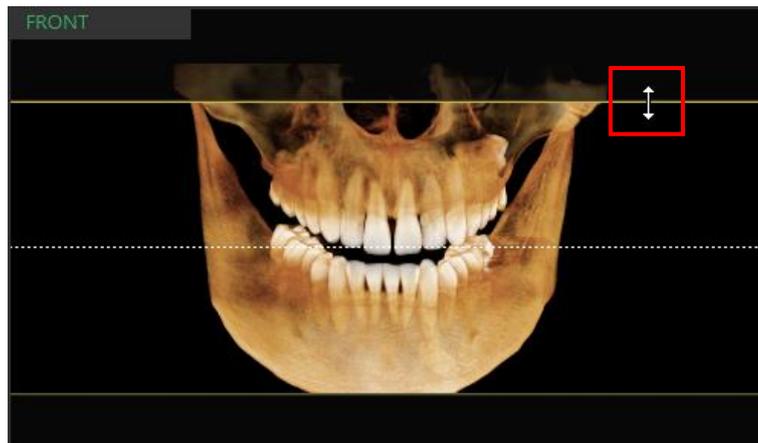
3D Panorama has been reconstructed from CT image.

Users should be aware of this limitation before diagnosing and performing simulation according to the panorama image. Please use it with caution in making a diagnosis.

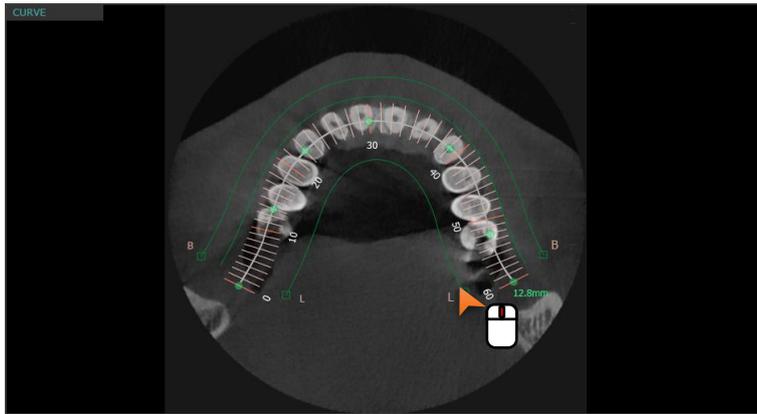
1. Click the [Create Pano] button. The [Create Panorama] dialog appears to select an area.



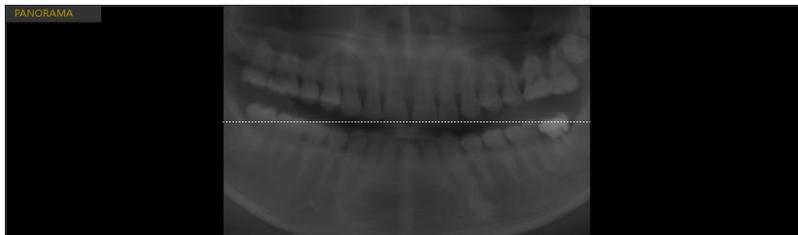
2. Drag and drop the lines to adjust the area in the Front view window.



3. Drag the curve point and L/B point to adjust the selected area in the Curve view.



4. Review the 2D image in the Panorama window based on the selected area in the Front and Curve view windows, and then click the [OK] button. The Create Panorama dialog closes and the Volume Panorama for the selected area is displayed.



The imported STL is not displayed in the 3D Panorama pane, but only in the Section image pane.

## 6. Implant Simulation

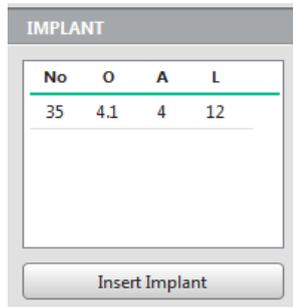
Implants can be inserted with Insert Implant button including Smart, Axis, Click Point options, or by measuring length of a certain tooth.

### 6.1 Inserting Implant

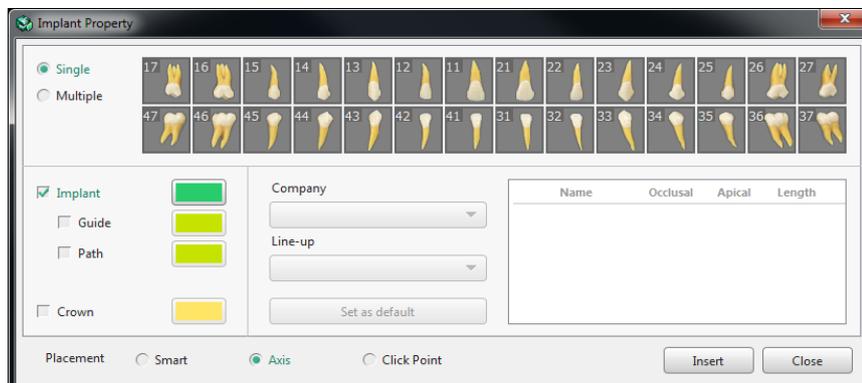


Please refer to the 'Chapter 4. MPR Tab > 9. Implant Simulation' to learn more details about Smart/Axis/Click Point, Single/Multiple, Implant/Guide/Path/Crown options on the Implant Property dialog.

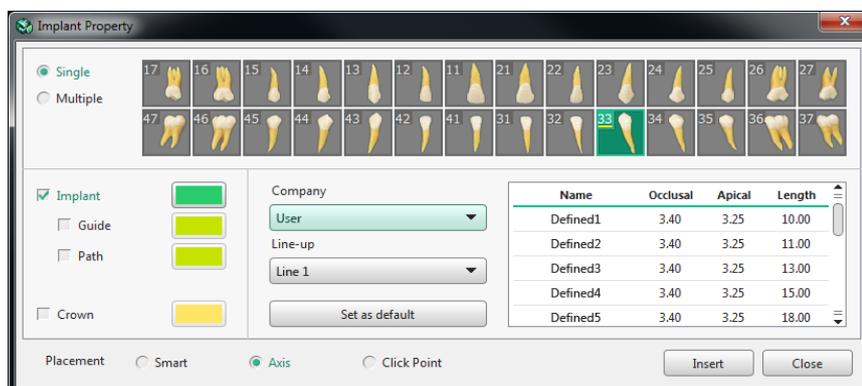
1. Double click on the image to designate the point for implant insertion, and then click the [Insert Implant] button.



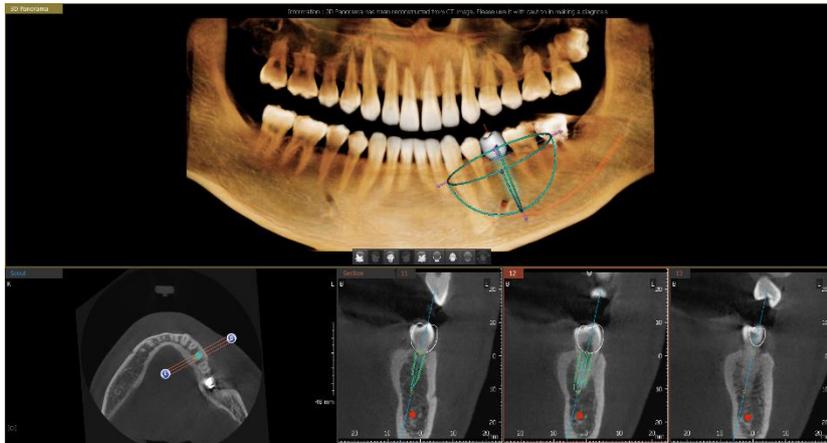
2. The Implant Manager window appears. (When double clicking, the Axial and Section images will be shown accordingly.)



3. Select the appropriate tooth number, company name, implant line up and implant model for simulation from their respective dropdown menus.



- Click the [OK] button. The simulated implant is placed the previously designated tooth location.



- After inserting an implant, right click the implant and then click the [Show Info] menu. Then it shows the information of the fixture inserted.



## 6.2 Inserting implant by Measuring Length

1. Click the [Length] icon.

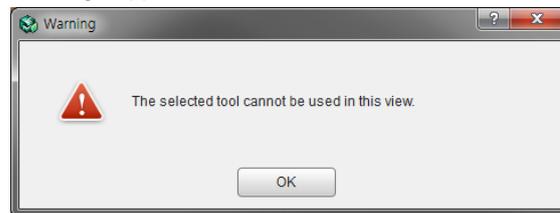


2. Measure the length by clicking two points in the 2D Coronal image of the tooth for implant simulation. At this time, first clicked point is considered as Occlusal, and second point is considered as Apical.

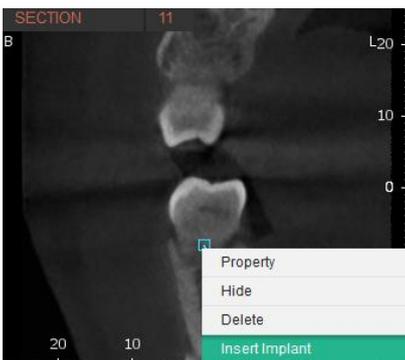


3. After completing the measurement, click the [Length] icon again to return the Normal Cursor mode.

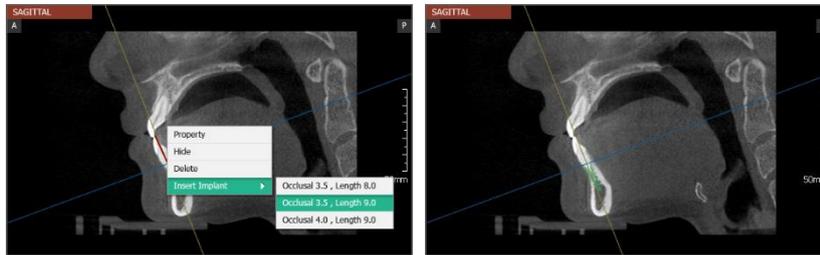
On the [3D PANORAMA] window of the 3D PAN tab, the length measuring is not available. Like this case, when the 3D length measuring is not available, following message appears.



4. Click the line indicated by the measured length, and then click the right mouse button. Upon clicking the right mouse button, the following list appears.

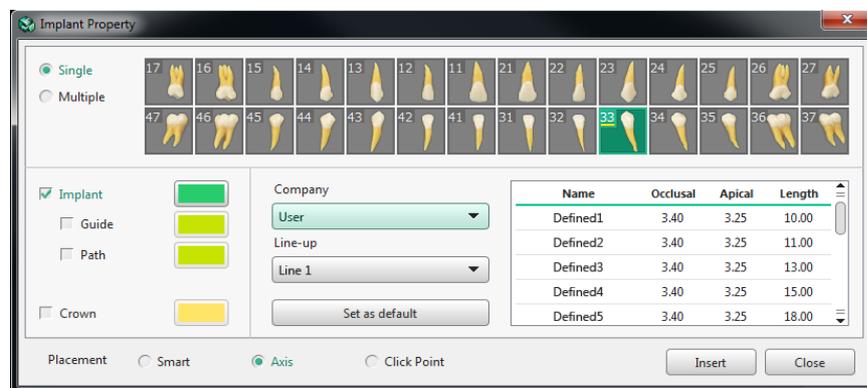
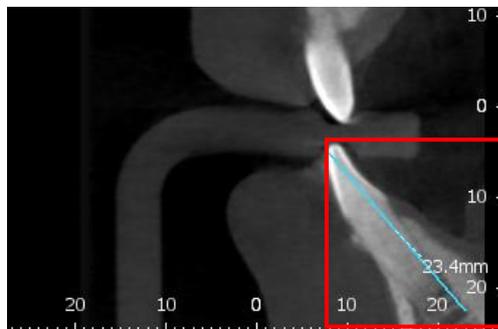


- Click the [Insert Implant] menu, then it shows three fixtures that are recommended with the information of Apical and length. When user selects one of them, the fixture is automatically inserted.



- Default implant value depending on the measured length**

When the implant placement simulation is performed with the [Length] icon, the implant default value is selected based on the approximation of the measured length, not the corresponding tooth number. The user can select the implant value as desired by moving the scroll bar up and down.



>>The implant default value determined by the approximation of the measured length



If implant information does not show in the [Implant Property] window, install Implant DB. Implant DB installation is described in the Installation and Server Manual.

## 6.3 Copying and Pasting Implant

1. Right click on the inserted implant to open the context menu.
2. Click the [Copy Implant] option to copy the selected implant.



The Tooth Code is not included in the copied implant information.  
Enter or edit the Tooth Code in the Property menu of the copied implant.

3. Right click on the point where you want to insert implant to open the context menu.
4. Click the [Paste Implant] option. The copied implant is inserted.

## 6.4 Editing Implant

1. Right click on the inserted implant to open the context menu.
2. Click the [Edit Implant] option.
3. Use the + / - button to edit the Length, Occlusal, and Apical information.



- The Company and the Model (line-up) can be modified if they are applied from the same company and the model group.
- Occlusal Diameter can be only adjusted to the width that the currently selected Length supports.
- Apical Diameter can be only adjusted to the width that the currently selected Occlusal Diameter supports.

## 6.5 Editing Crown

1. Right click on the crown of the inserted implant to open the context menu.
2. Click the [Edit Crown] option.
3. Use the + / - button to edit the Mesial/Distal, Lingual/Buccal, and Height information. in the [Edit Crown] window.

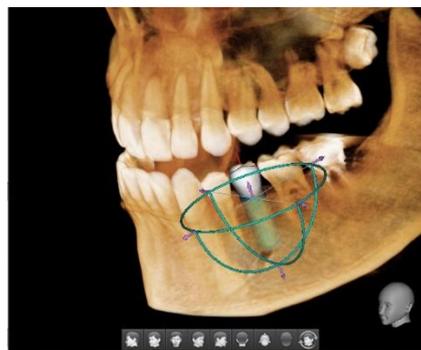


## 6.6 Moving, Rotating and Locking Implant

### 6.6.1 Moving, Rotating and Locking 3D image

The inserted implant can be moved on the 3D image. The selected implant moves horizontally with the direction of the current 3D image.

Double click or right click on the implant to show the controller. Click and drag the arrow of the controller to move or rotate the implant as desired.



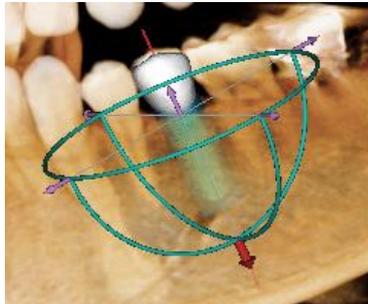
Implant Controller



Crown Controller

- Moving

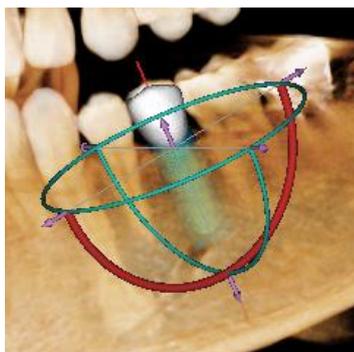
1. Click one of the six arrows. The color of the selected arrow changes.



2. Move with the up/down arrow keys on the keyboard: down arrow key moves to the left by - 0.1mm and the up-arrow key moves to the right by +0.1mm.
3. Click the other arrows or rotation controller to cancel the selection.

- Rotating

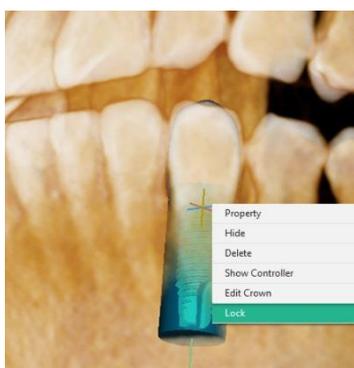
- a. Click one of the three rotation controllers. The color of the selected controller changes.



- b. Move with the up/down arrow keys on the keyboard: up arrow key turns it clockwise by one degree and the down arrow key turns it counterclockwise by one degree.
- c. Click the other arrows or rotation controller to cancel the selection.

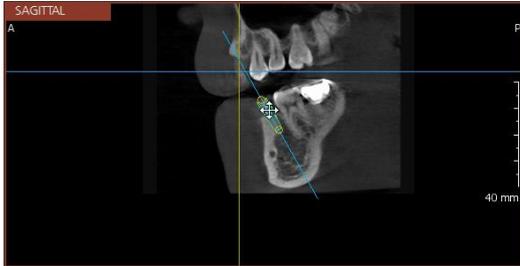
- Locking/ Unlocking

- a. Right click on the implant and select the [Lock] option to fix the location of the implant.
- b. Right click on the locked implant and select [Unlock] option to change the location of the implant.

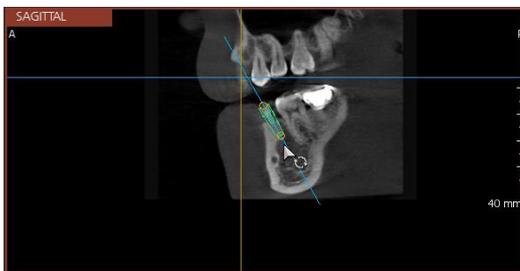


## 6.6.2 Moving, Rotating and Locking 2D image

After choosing the implant from a 2D image, a control line is created to rotate the implant. Click and drag a point to move and rotate the implant.



Click on the implant. When the mouse cursor changes to the cross , the implant can be moved. And when the mouse cursor changes to the curved arrow , the implant can be rotated.

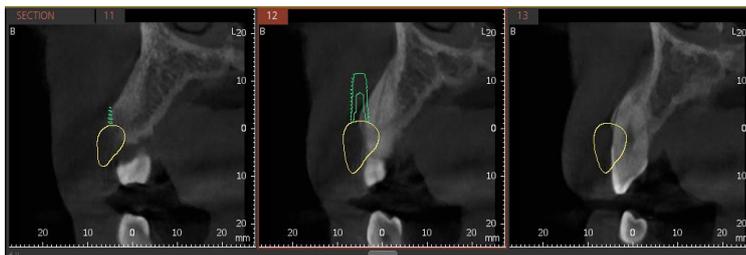


Right click on the implant and select the [Lock] option to fix the location of the inserted implant on 2D images as well as 3D images.

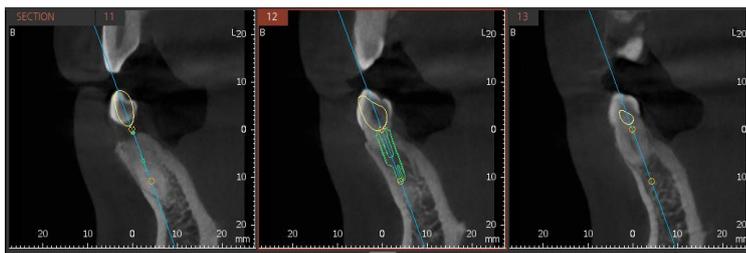
- Selecting implant from the Implant list

When two or more implants are inserted, user may select an implant from the list to display the controller of the relevant implant. At this time, the axis of 2D Section images changes accordingly.

>> When selecting implant for tooth number 13



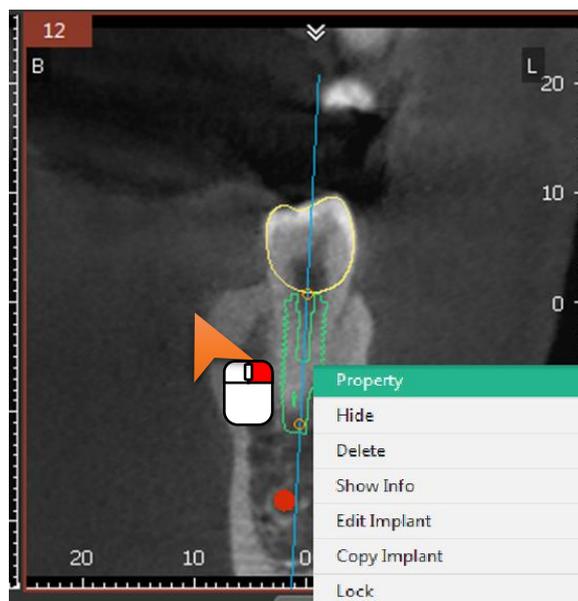
>> When selecting implant for tooth number 32



### 6.6.3 Changing Property of Implant

The properties of inserted implant, such as the tooth number, company, line-up, color, crown simulation, and crown color can be changed.

- 2D View
  - a. Click the inserted implant on the 2D image viewer. Right click the implant and the following list appears.



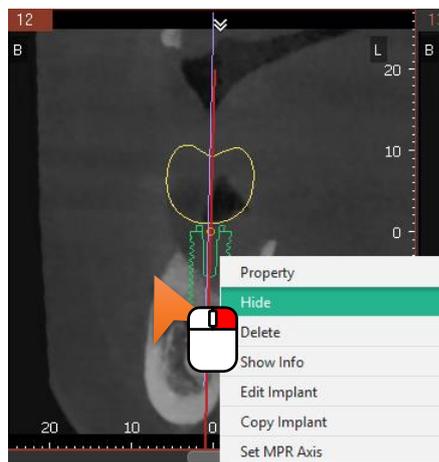
- b. Click the [Property] menu and the [Implant Property] window appears. Change the implant properties.
  - c. Click the [OK] button. The changes are saved and displayed on the image.
- 3D View
    - a. Right click the implant from the Implant List and click the [Property] menu. The Implant Manager window appears.
    - b. Change the [Property] menu and the [Implant Property] window appears. Change the implant properties.
    - c. Click the [OK] button. The changes are saved and displayed on the image.

## 6.7 Hiding and Deleting Implant

1. Right click the implant from a list or on image for 3D view. For implant inserted in 2D view, right click the implant
2. Click the [Hide] option to hide the implant from the screen or the [Delete] option to delete the implant.
  - 3D View



- 2D View

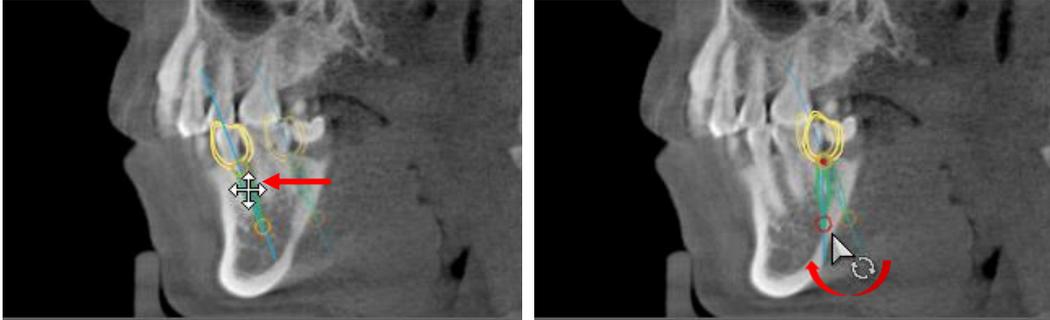


## 6.8 Moving, Rotating and Locking Crown

The inserted Crown Object can be rotated and moved.

- When the crown is inserted with implant

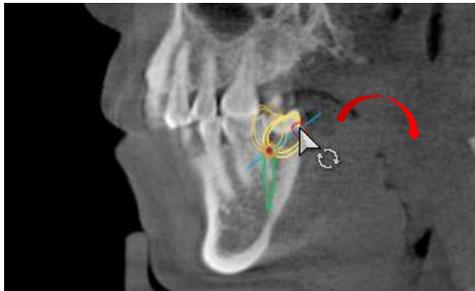
When the Implant Object and Crown Object are inserted as a set, the group of Implant and Crown Object is rotated or moved like the Implant Object



- When the crown is inserted alone

When the Crown is selected for moving or rotation, control points are created in the direction of Crown Axis and Occlusal / Root.

- Rotating
  - ♦ Drag the Control Point or the Crown Axis outside of control point and the crown rotates based on the other unselected point.



- ♦ Click and select Crown, and then press the up or down arrow key on the keyboard to rotate the crown.

- Moving
  - ♦ Click the inside of crown other than the Crown Control Point and drag it to move its position.



- Locking/ Unlocking
  - ◆ Right click on the crown and select the [Lock] option to fix the location of the crown.



- ◆ Right click on the locked crown and select [Unlock] option to change the location of the crown.



The moving, rotating and locking method for 3D Control is the same with the Implant Object, and the crown and implant moves at the same time on 3D view.

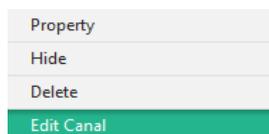
## 7. Drawing Canal

### 7.1 Drawing Canal

1. Click the [Draw Canal] icon on the toolbar. The mouse cursor changes to the drawing mode.
2. To draw the canal line, click points along the mandibular nerve on 2D and 3D images.
  - The drawing method is the same on the 2D and 3D viewers, but on 3D viewer, clipping and sculpting precede drawing canal.
  - Right-click while drawing the canal line to delete the previously plotted input point
3. Double click to complete the canal line.
  - The completion of canal line can be verified after all points are connected.
  - Clicking the [Draw Canal] icon while drawing the canal line will cancel the Draw Canal function. The function can also be canceled by pressing the <Esc> key on the keyboard.
  - The canal drawn is displayed on all tabs, and particularly it appears the same in the 3D VR coloring mode.

### 7.2 Editing Canal

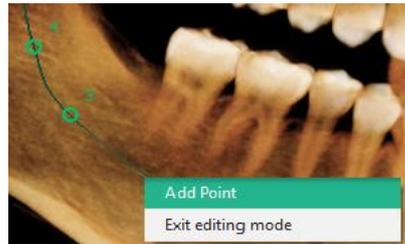
1. Right click on the inserted canal the following context menu appears.



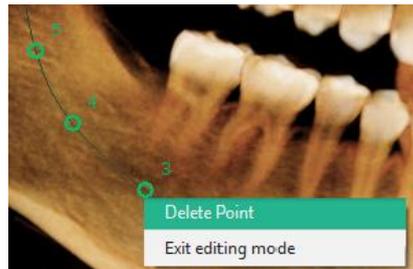
2. Click the [Edit Canal] menu. The inserted canal points appear on the 2D and 3D images.



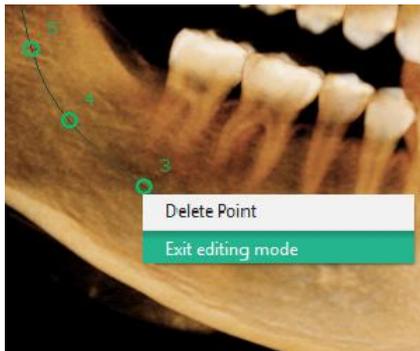
- Right click on the line connecting the canal point to add points.



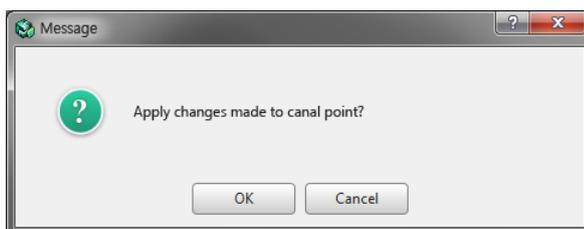
- Right click on the canal point to delete points.



3. Right click on the canal and click the [Exit Editing Mode] menu after editing the canal.



4. There appears a message asking “Apply changes made to canal point?”



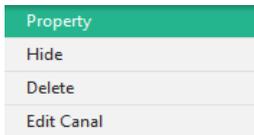
5. Press the [OK] button, the new canal points will be applied to the canal.



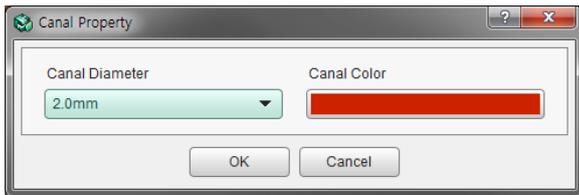
- The image can be moved, zoomed in or out only using the shortcut keys while editing canal.
- When the canal point is selected on the 3D image, the MPR axis is adjusted automatically to display the sectional image where the corresponding point is inserted.
- User can only add or delete the canal points on the 3D image.
- User can only move or delete the canal points on the 2D image.
- Double click to end the canal edit mode.

### 7.3 Changing Properties of Canal

1. Select the canal line and click the right mouse button. The following list appears.



2. Click the [Property] menu and the [Canal Property] window appears.

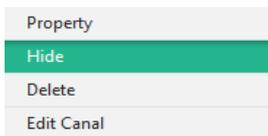


3. Click the [Canal Diameter] dropdown menu to select the diameter of the canal line. Click [Canal Color] and select the color of the canal line.
4. Click the [OK] button and the changes are reflected to the canal line.

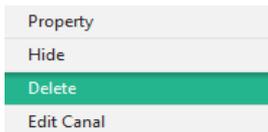
### 7.4 Hiding or Deleting Canal

Select the canal line and click the right mouse button. The following list appears.

- Click [Hide] and the canal line disappears from the screen.



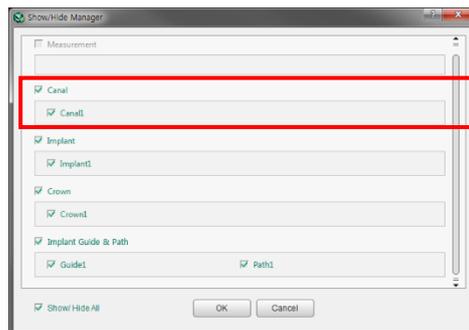
- Click [Delete] to delete the selected canal line.



1. Click the [Show Manager] icon. The Show/Hide Manager window appears.



2. Uncheck a box to hide the object/canal drawing/measurement. Click [Close] and the selected canal line disappears from the screen.

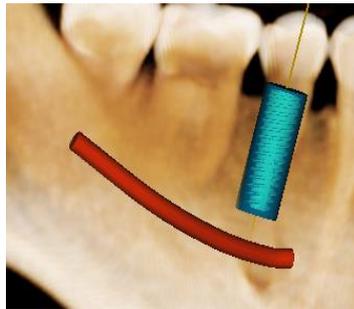


## 8. Collision Detection

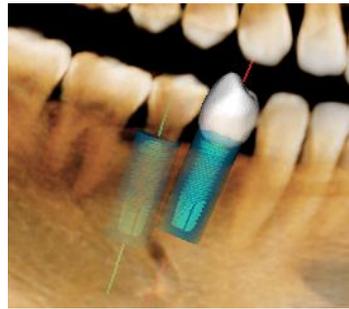
The Collision Detection function detects the collision between inserted implant and canal or between implant and implant. The collision detection recognizes it as collision when the safety zone and the implant or canal are collided. When the safety zone and safety zone are collided, it does not recognize it as collision.

- Safety Zone

The Safety zone displays the area where canal or implant cannot be inserted. The boundary size for safety zone can be changed in the [Settings > Simulation > General > Collision Detection], and the boundary size is indicated on the basis of implant.



Implant and Canal

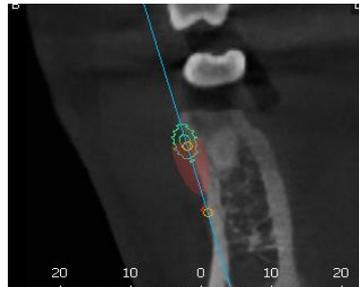
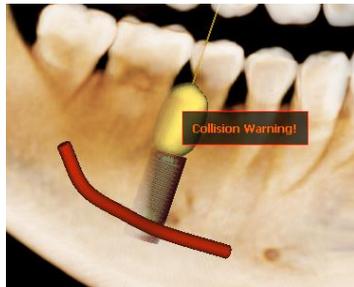


Implant and Implant

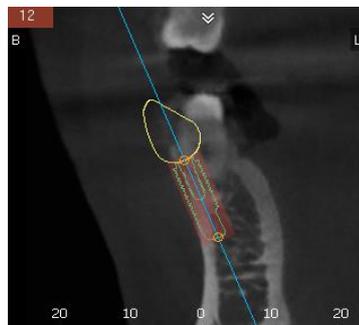
- Collision Detection

When collision is detected between implant and canal or between implant and implant, the color of safety zone changes and warning message 'Collision Warning!' pops up.

- Implant and Canal



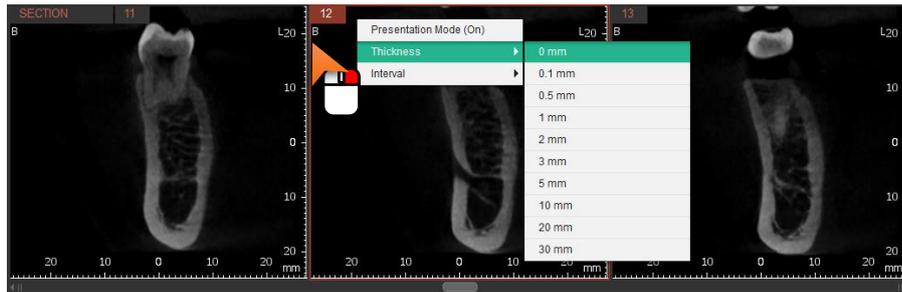
- Implant and Implant



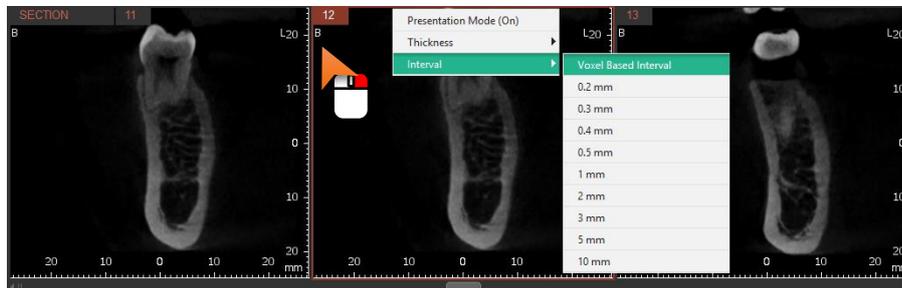
## 9. Changing Section View Thickness and Interval

The thickness and interval of the Section View, which displays the cross-sectional images where the navigator is located, can be changed.

- Changing Thickness
  1. Click the right mouse button on the cross-sectional view pane.
  2. Click the [Thickness] option and select the thickness from the expanded list. The selected thickness will be applied to all cross-sectional images.



- Changing Interval
  1. Click the right mouse button on the cross-sectional view pane.
  2. Click the [Interval] option and select the interval from the expanded list. The selected interval will be applied to all cross-sectional images.



- The default value for thickness and interval can be changed in the [Settings > View > 3D View > Volume Panorama Navigator].
- Once the thickness or the interval has changed, the relevant option will disappear from the context menu.

## 10. Dual Monitor Mode

### 10.1 Starting Dual Monitor Mode

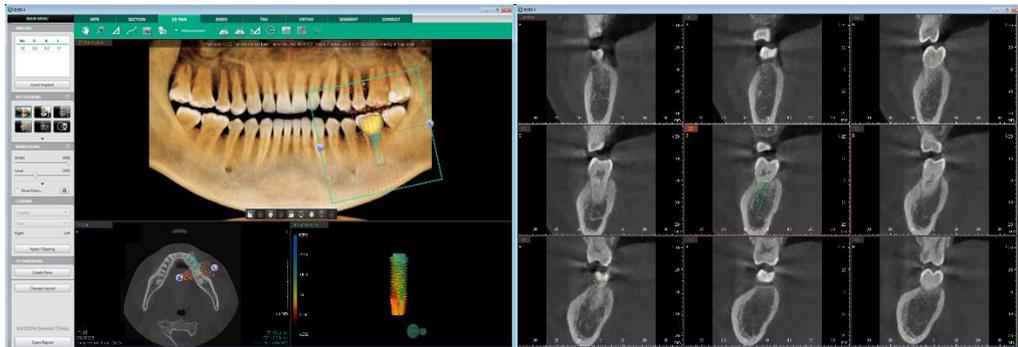
1. Click the [Start Dual Monitor Mode] button.

Start Dual Monitor Mode



If Ez3D-i fails to detect dual monitors, the [Dual Monitor Mode Start] button will not be activated.

2. Ez3D-i enters into the Dual Monitor Mode displaying both Main View and Secondary View on each monitor.



Main View

Secondary View



Dual Monitor Mode does not support following functions.

- Control Panel: Changing Layout
- View Frame: Making a single window by doubling clicking the window title bar to
- Context Menu: Presentation Mode On
- Short Key: <Ctrl + Enter> key

### 10.2 Exiting Dual Monitor Mode

Click the [x] icon at the top right corner of the Secondary View to exit Dual Monitor Mode.



## 11. Tools in the Toolbar

- Main Tools

Icons	Designation	Description of Features
	Panning	Move the image
	Zooming	Zoom in or out
	Length	Measure the distance between two points on the 2D image
	Draw Canal	Draw canal
	Capture View Frame	Capture the View frame area
	Reset View	Initialize rotate, move, zoom
	Export	Save the current image as a file.

- Advanced Tools

Icons	Designation	Description of Features	
	Measurement	Angle	Measure the angle between three points
		Multi Angle	Measure multi angle
		Multi Length	Measure multi length.
		Circle Measurement	Measure the radius of inserted circle
		Profile	Density Profile between two points
		ROI	Measure pixel, average value, maximum value and standard deviation of ROI
		Volume Measure	Obtain the volume of the threshold area from the selected region
	Capture	Capture Region	Capture the selected region
		Capture Window	Capture the View Window area
		Multi-Capture	Capture multiple images
		Create Movie	Run the movie capture program.
	Annotation	Pointer	Draw freely on the 2D and 3D image.

Icons	Designation		Description of Features
		Free draw	Draw freely
		Memo	Write memos directly on your images
	Sculpt	Sculpt	View the selected area separately
		Inverse	Invert the Sculpt area
		Undo	Undo your last action
		Redo	Revert Undo
		Reset	Initialize Sculpt
		Grid	Check the scale of the image with grid.
	On/Off	Implant Long Axis	Show/ Hide implant long axis
		Turn Overlay On/Off	Show / Hide all input objects
		Show Manager	Show / Hide the individual input objects
		Show/Hide Patient Information	Show / Hide patient information on the image
	Etc	Data Manager	Manage properties of imported data
		Delete All	Delete all input objects
		Initialize All	Initialize all changes

The following functions cannot be canceled with the <Esc> key or with a mouse right click.



Icons	Designation	Icons	Designation
	Reset View		Initialize All
	Undo		Turn Overlay On/Off
	Redo		Show Manager
	Reset		Delete All
	Pointer		

- [Create Movie] icon will not appear on the toolbar if the software to link is not set.
- The data drawn using the [Pointer] function is not saved to the project file.
- All functions are disabled while the [Pointer] function is in use.
- Use the pointer function to draw on the current screen temporarily.
- Click the [Annotation > Pointer] icon on the tool bar, and then the following window appears.



- [Pointer]: Drag to draw and mark the area for View Frame.
- [Eraser]: Erase the pointer overlay. The point overlay inserted on the path of the Erase icon moves will be deleted.
- [Thickness]: Set the thickness of Pointer or Eraser.
- [Pointer Color]: Set the color of Pointer.
- [View Frame Capture]: Capture the View Frame while the pointer drawing mode is on.
- [Reset Pointer]: Delete all pointer objects inserted on the image.
- [Exit]: Close the Pointer function.

# Chapter 7. ENDO Tab

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# 1. ENDO Tab Configuration

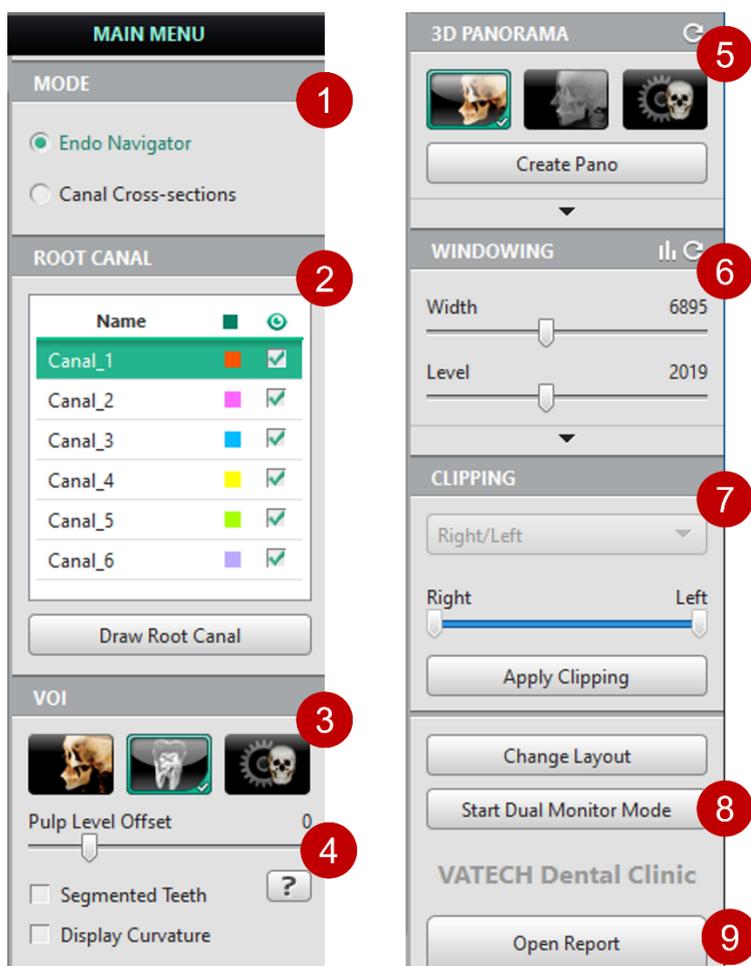
ENDO tab provides functions especially for Endodontics and enables users to set VOI and conduct Root Canal simulation.

## 1.1 Workspace



- A Section: VOI (Volume of Interest) Window to display selected area in Panorama View
- B Section: View Window to display Panorama Curve area in 3D Panorama
- C Section: View Window to display cross-sectional image of Navigator/Root Canal Axis
- D Section: View Window to display cross-section of Endo Navigator Axis after rotating based on Axis
- E Section: View Window to display cross-sections based on Endo Navigator/Canal cross-sections

## 1.2 Control Panel



Control panel is an area where main functions to manipulate views are grouped. Configuration may differ according to the Tab that the user selected.

No	Name	Description
1	Mode Group	Radio to change to Endo Navigator or Canal cross-sections mode
2	Root Canal Group	Function group to insert Root Canal and select to view the inserted Root Canal
3	VOI Group	Function group to select options to display in VOI View (Only Tooth Segmentation Data/With Root Curvature)
4	Pulp Level Offset	Slider to change the center value of VR Coloring Graph
5	3D PANORAMA Group	Function to adjust 3D Panorama area and Rendering Mode
6	WINDOWING Group	Function to adjust Width/ Level value or set Image Effect in image displayed in 2D View
7	Change Layout button	Button to change frame layout
8	Set Dual Monitor Mode button	Button to enter into Dual Monitor mode
9	Open Report button	Button to open Report

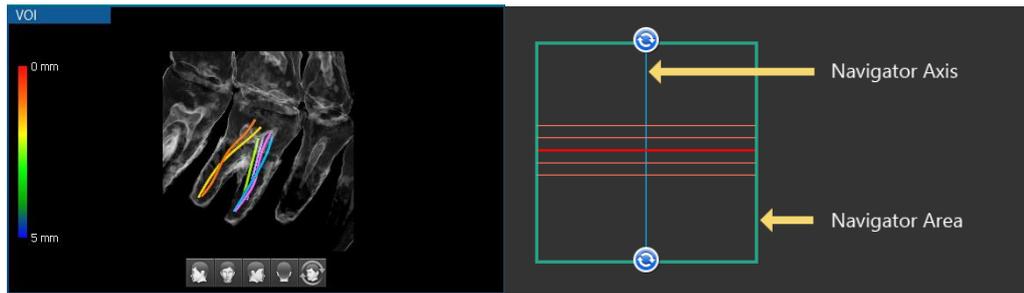
## 2. ENDO Navigator

Image can be viewed using ENDO navigator in Panorama View. VOI area is updated according to the change of ENDO navigator location and direction. Basic operations of the navigator is same as 3D PAN tab

### 2.1 Displaying Navigator Area

- **VOI View**

Image is rendered into Endo mode to easily view Root Canal in VOI View.

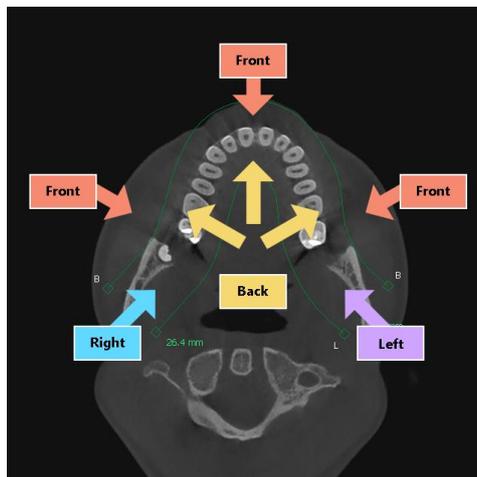


NOTE

Functions including zooming in/out, moving, and rotating can be conducted, and basic operations are the same as 3D View.

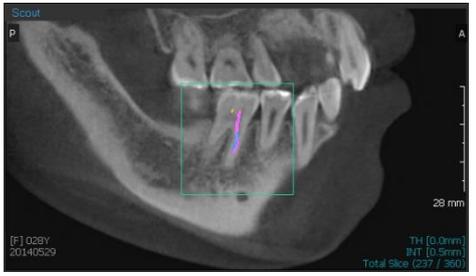
However, shortcut key for zooming function is replaced with Ctrl + Mouse scrolling. Mouse scrolling can be used to move Curvature Overlay according to Canal cross-sections.

Volume orientation can be selected by clicking direction buttons at the bottom, and each direction faces the following direction.



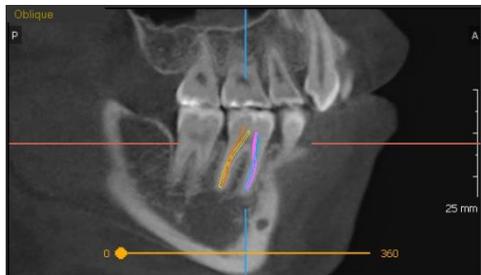
▪ **Scout View**

Basic properties of Scout View displayed in a mode where sectional image can be selected using ENDO navigator are the same as those of MPR image.

When selecting ENDO Navigator	When selecting Canal cross-sections
	
<ul style="list-style-type: none"> <li>▪ Sectional Axis: Vertical Line to display progress direction of Endo Navigator Sectional Line.</li> <li>▪ Section Line: Sectional Line Overlay of Endo Navigator.</li> <li>▪ However, Sectional Axis/Line cannot be moved/rotated. Function to change Scout image slice is not supported.</li> </ul>	<p>Axis is updated to the position of Section Center View in Canal cross-sections function.</p>

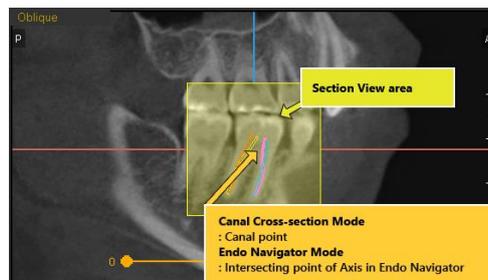
▪ **Oblique View**

User can move cross-sectional image to view while rotating based on Sectional Axis.



- Guideline: Guideline is displayed at the location of Section Center View
- Oblique Controller : Image is rotated (0~360 degree) based on Section Axis

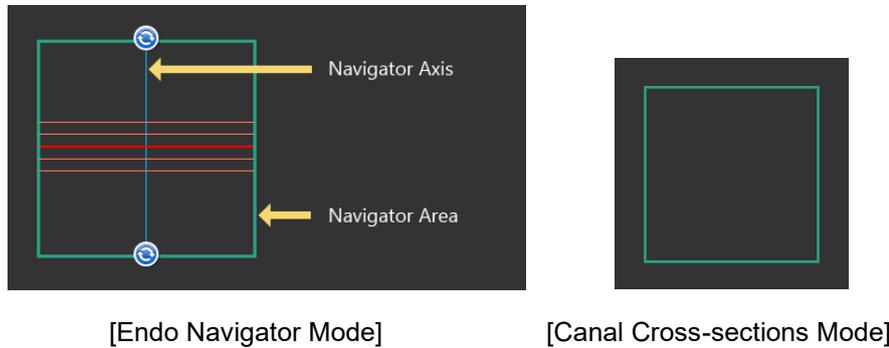
Oblique View is displayed with magnification ratio of MPR image.



- Endo Navigator Reference: Cross-section of Axis
- Canal cross-sections Reference: Canal Plane position

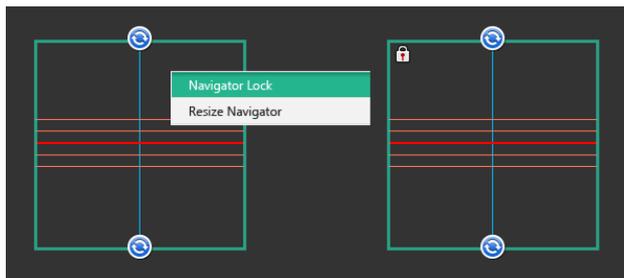
## 2.2 Changing ENDO Navigator Mode

Navigator mode can be set using radio buttons provided in Mode Group in Control Panel.



## 2.3 Locking/Unlocking ENDO Navigator

1. Right click the navigator of overlay in Panorama View.
2. Click the [Navigator Lock/Unlock] provided in context menu to lock/unlock.

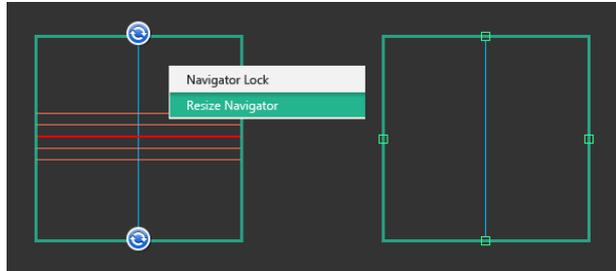


The following message appears when the selected Canal is not included in VOI and the navigator is locked. Click [Yes] to unlock the Navigator.



## 2.4 Changing Navigator Size

1. Right click the Navigator.
2. Click the [Resize Navigator] provided in context menu.



3. Section Line moves to the center of Endo Navigator and is hidden.
4. The user can adjust size by selecting a point and moving
5. When completed, right click the navigator and click [Exit Resizing Mode] button in context menu.



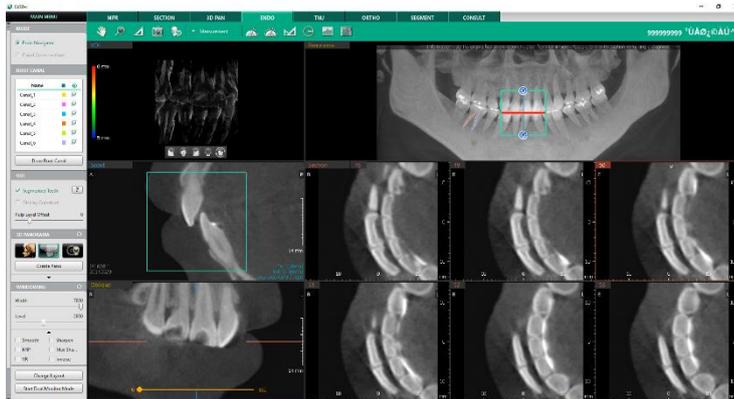
Navigator cannot be rotated while changing Navigator size.

### 3. Curve Detection

Curve is displayed on the screen when entered ENDO tab. If it fails to detect curve, the user can set a curve.

#### 3.1 Displaying Curve

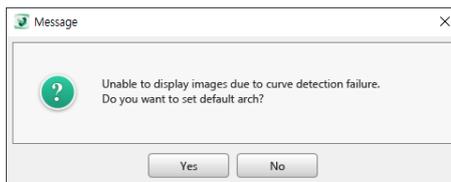
1. Open CT data.
2. Panorama Curve is displayed when ENDO tab is selected.



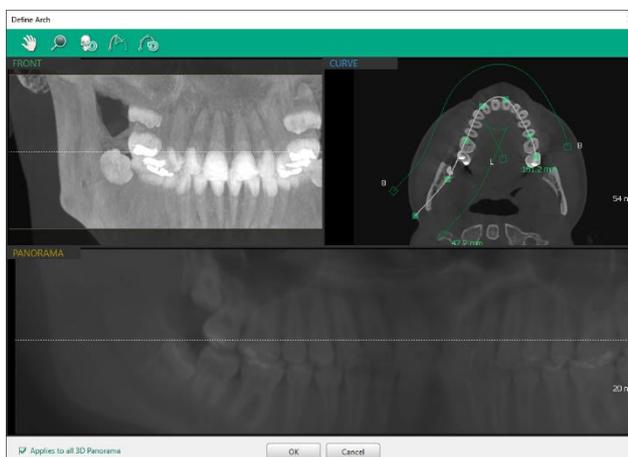
3. When arch is successfully displayed, each view displays corresponding image to create 3D Panorama.

#### 3.2 Defining Arch by User

1. Open CT data.
2. Panorama Curve is displayed when ENDO tab is selected.
3. When curve is not properly displayed, the following error message appears.



4. Click the [Yes] button to automatically display [Define Arch] dialog.



5. Define Arch by using editing/inserting Arch functions.
6. Click [OK] button to apply changes

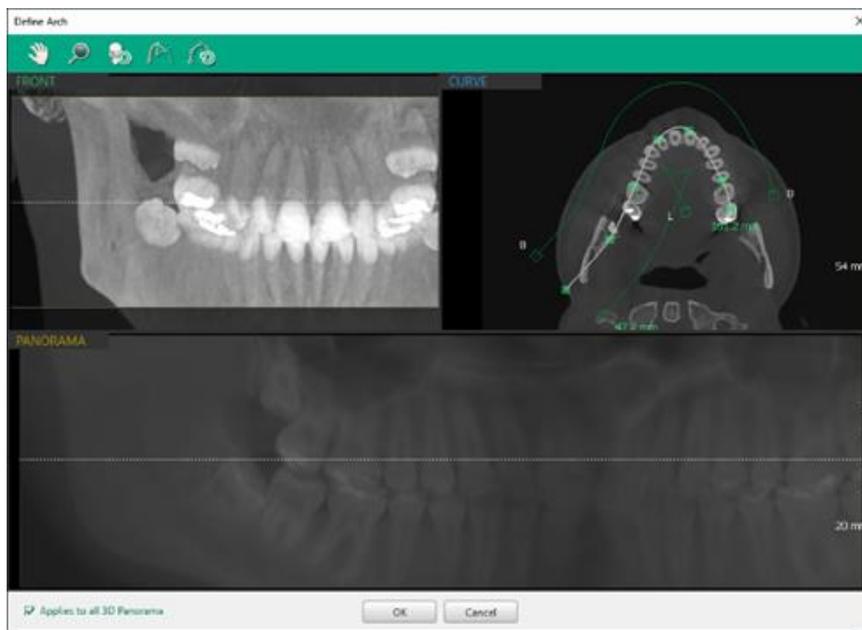


The arch set by user-define function is initially shared with 3D PAN/ ENDO Tab, then edited/managed separately.

Checking the [Applies to all 3D Panorama] checkbox at the bottom left of the [Define Arch] dialog will share the arch set by user-define function with all 3D panorama. Uncheck the checkbox to prevent the arch from being shared.

### 3.3 Editing Curve

1. Click [Create Pano] button in Control Panel.
2. [Define Arch] dialog appears.



3. Change the Curve of Panorama.
4. Click [OK] to apply changes.



If existing panorama arch has measurement and/or annotations, the following message appears.



Clicking the [Yes] button will delete all measurement and annotation to apply the arch.

If the [Applies to all 3D Panorama] checkbox is checked, it checks for all 3D panoramas whether each of them has measurement and/or annotations.



Endo Navigator is initialized when the edited Curve is applied.

Canal cross-sections option is changed to be unchecked when the edited curve is applied.

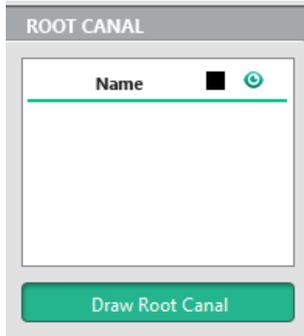
Image is updated in the View Frame based on the edited Panorama Curve

## 4. Drawing Root Canal

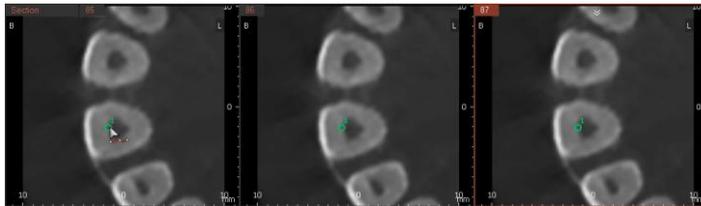
Basic operations of Root Canal Simulation function are the same as Canal drawing.

### 4.1 Drawing Root Canal

1. Click [Draw Root Canal] button in Control Panel.

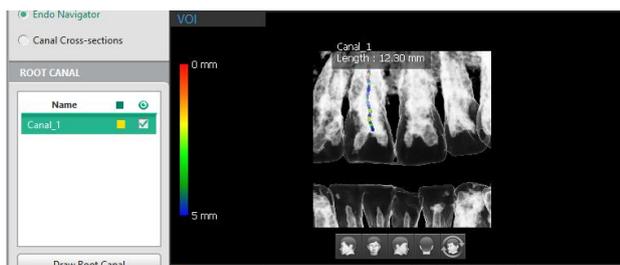


2. Insert point by clicking the position where Root Canal exists in 2D View.

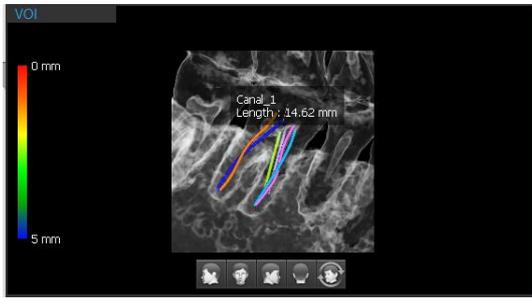
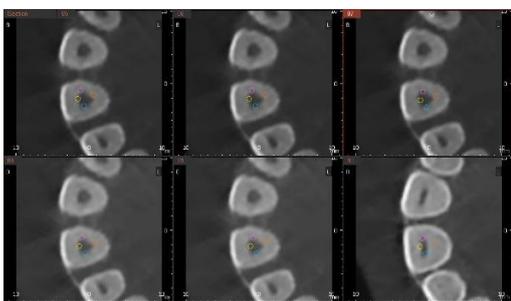


The entered point is displayed both in 2D and 3D View, and Endo Navigator can be moved/rotated while drawing Root Canal.

3. Select [Draw Root Canal] button to terminate when entering point is complete.
4. New Root Canal item is added to Root Canal List, and Root Canal overlay is displayed in all Views.

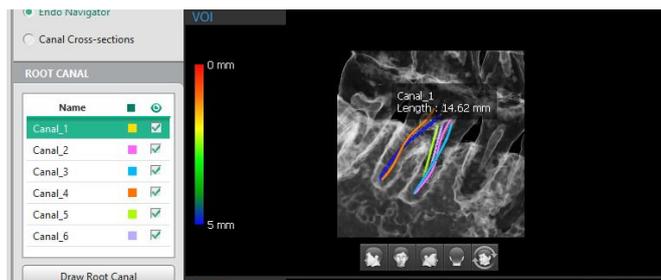


Please refer to the following table for more details about overlays displayed in 2D/3D area.

3D	2D
	
<ul style="list-style-type: none"> <li>▪ Information of the selected Root Canal is displayed in Billboard format in VOI View.</li> <li>▪ Root Canal Label can be selected and moved by a user.</li> <li>▪ Name and total length of Root Canal are displayed.</li> <li>▪ Root Canal Label is displayed at the first entered Root Canal Point in [Draw Root Canal] function.</li> <li>▪ Connection Line of Root Canal Label is displayed as dotted line.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Root Canal Overlay of cross-section is displayed as a line in 2D View.</li> <li>▪ Line of the selected Root Canal is displayed thicker.</li> </ul>

## 4.2 Selecting Root Canal

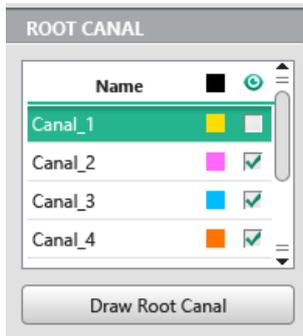
1. The entered Root Canal is displayed in the list up to 100.
2. The user can select desired Root Canal from Root Canal List or click directly on the View to select.



3. VOI is updated with the selected Root Canal.
4. Endo Navigator, Section Plane, and 2D Image are updated based on the updated VOI.

## 4.3 Showing/Hiding Root Canal

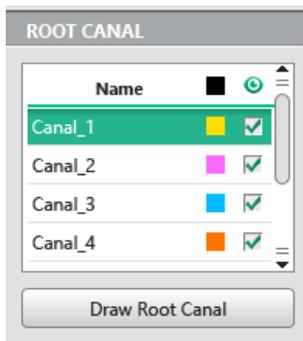
1. Select/Deselect Show check button in Root Canal List.



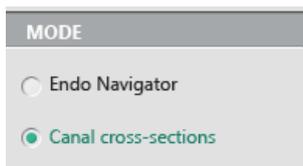
2. The selected Root Canal is displayed in View while unselected Root Canal is hidden from the View.

## 4.4 Displaying Root Canal Cross-section

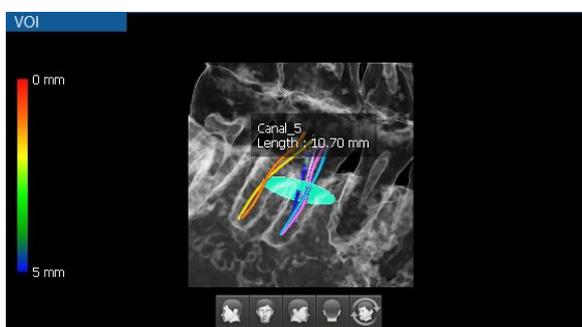
1. Select a Root Canal to use in Canal Cross-sections function.



2. Select [Canal Cross-sections] radio button.



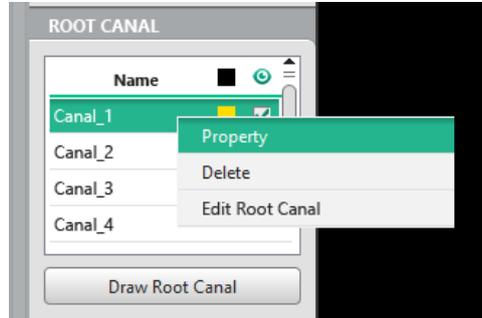
3. Section Plane is displayed in VOI View.



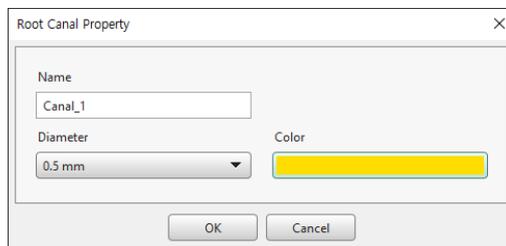
4. Image is updated according to Section Plane.
5. If another Root Canal is selected, VOI is updated according to the selected Root Canal.

## 4.5 Setting Root Canal Properties

1. Select an item in Root Canal List or VOI View, and right click.
2. Select Property to open Root Canal Property dialog.



3. Edit properties including Name, Diameter, and Color.



4. Click [OK] button to save changes.

[OK] button is not enabled when Name is not entered, and the following message appears when duplicated name exists.



When this message appears, click [Close] button and try again with a name which is not duplicated.

5. When Root Canal Property is changed, the list is updated.

## 4.6 Deleting Root Canal

1. Select an item in Root Canal List or VOI View, and right click.
2. Select Delete menu.
3. The selected Root Canal is deleted from the list.

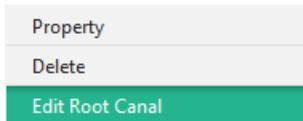


When all Root Canals are deleted in [Canal Cross-sections] mode, it automatically changes to [Endo Navigator] mode.

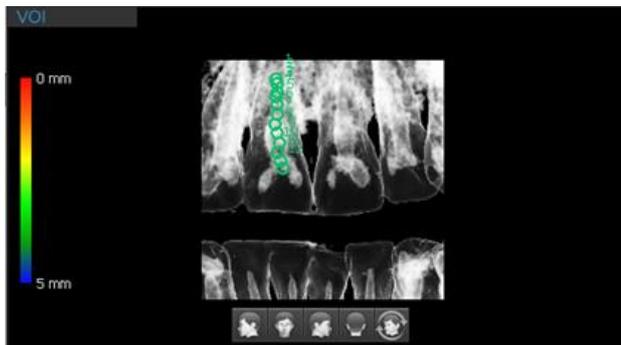
## 4.7 Editing Root Canal Point

Shape of the entered Root Canal can be edited by moving points in Edit mode. Basic operations are the same as editing canal in MPR Tab.

1. Select an item in Root Canal List or VOI View, and right click.
2. Select Edit Root Canal menu.



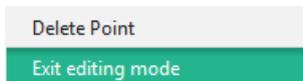
3. The selected Root Canal enters Edit mode, and points consisting Root Canal overlay are displayed.



4. Drag and drop a Root Canal point to the desired position.



5. To add a Root Canal point, right click on the desired point of the Root Canal overlay on VOI view then, select the [Add Point] from the context menu.
6. Select Exit Root Canal menu to complete.

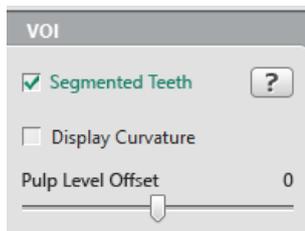


## 5. Displaying VOI

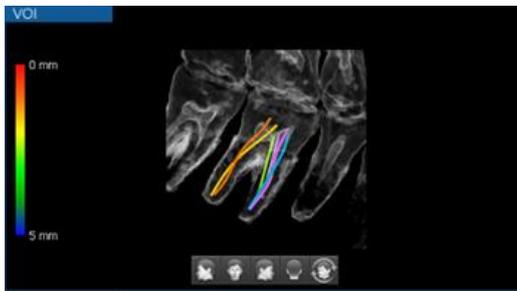
### 5.1 Displaying Tooth Data

This is a function to display Tooth Segmentation result in VOI.

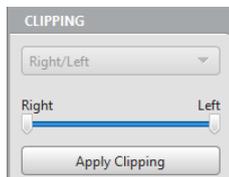
1. Select Segmented Teeth check button. The button is disabled when there is no Tooth Segmentation result.



2. Only Tooth Segmentation data area is displayed in VOI, and only Root canals included in VOI is displayed in overlay.



3. Click the [Apply Clipping] button then select the desired region using the slider bar.



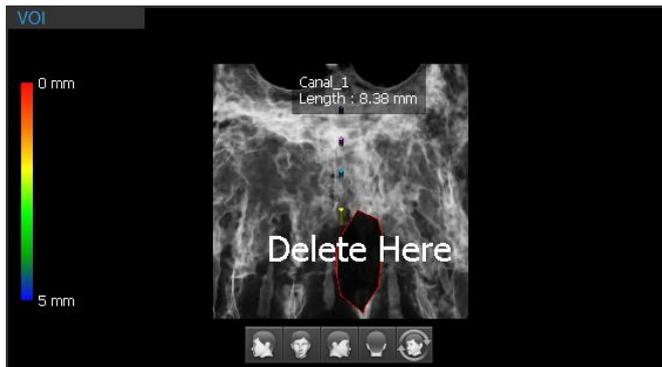
4. Only the region selected is displayed on the VOI view.



### 5.1.1 Sculpting Selected Region

Select an area to be displayed on the VOI view.

1. Select a sculpting tool from the toolbar.
  - [Free Sculpting]: Select an area by drawing freely.
  - [Polygonal Sculpting]: Select an area by connecting the points inserted with straight lines.
2. Select an area then the [Delete Here] message appears outside of the selected area.



For [Polygonal Sculpting], double click on the last point to automatically generate a polygon by connecting the points inserted.

3. Click the [Delete Here] to remove the surrounding objectives and view only the selected area on the VOI view.



## 5.2 Changing VR Coloring

Apply the desired VR coloring value and view the optimized image.

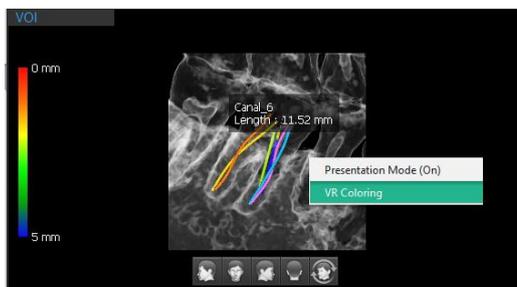
1. Select either Teeth, Endo, or Setting to apply the pre-set coloring on a 3D image.
2. Control the VR coloring icons to change the 3D VR values and to make fine adjustment to the values.
  - Pre-set Coloring Mode

Click an icon among the following icons with pre-set value for VR coloring function. The screen will display the image according to the selected mode.

Icon	Item	Description
	Teeth	Tooth mode view
	Endo	Endo mode view
	VR Coloring	View the VR coloring graph panel

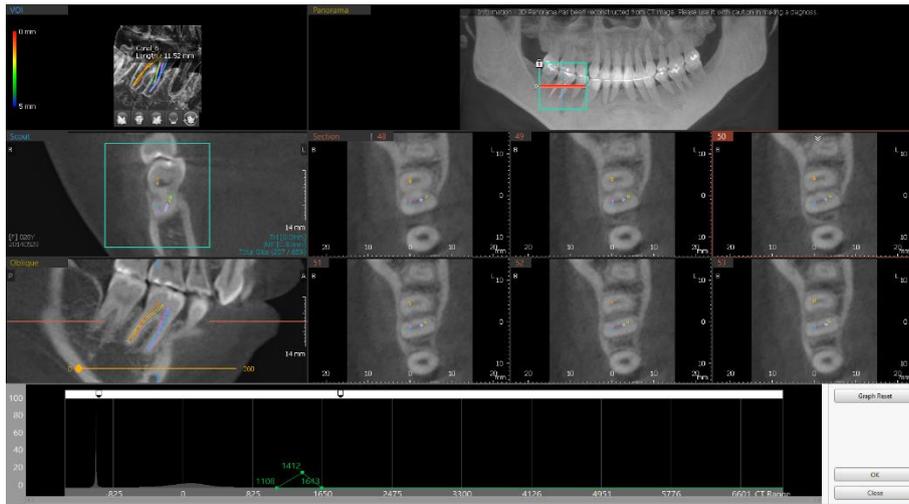
### 5.2.1 VR Coloring Graph

1. VR of VOI View is basically rendered in Endo mode to easily view Root and Canal of tooth.
2. Right click in VOI View to display context menu.

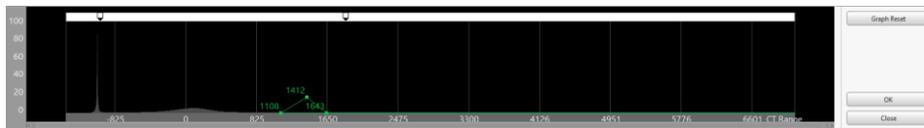


3. Select VR Coloring menu. Or, select Setting from the pre-set coloring icon.

- VR Coloring Panel is displayed at the bottom of View Frame.



- Edit VR Coloring graph. Basic function of editing VR Coloring is the same as MPR Tab.

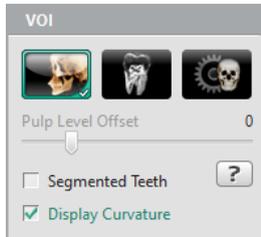


- Click [Close] button to terminate VR Coloring editing mode.

### 5.2.2 Pulp Level Offset

This is a function to move the CT Range of VR Coloring graph without entering to the VR Coloring mode.

- Move the Pulp Level Offset slider in VOI Group to adjust the CT Range for the whole graph.



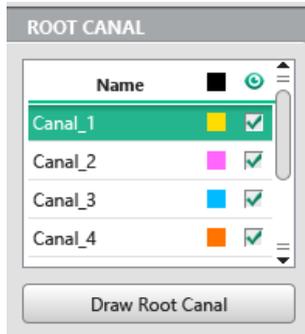
- The adjusted pulp level applies to VOI view as shown in the following table.

-500	0	+2000

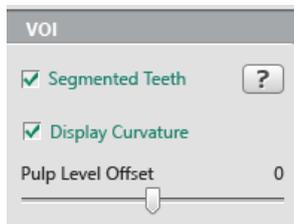
## 5.3 Displaying Curvature

This is a function to view curvature of Root Canal in each position.

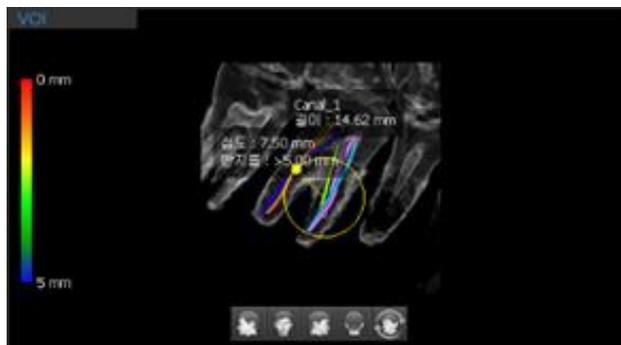
1. Select a Root Canal item in Root Canal List.



2. Check Display Curvature check button in VOI group



3. Root Canal Curvature overlay is displayed where the measured value (Curvature Circle Radius) is the smallest among the selected Root Canal in VOI view.



4. Curvature can be viewed while moving position by scrolling mouse in VOI View



NOTE

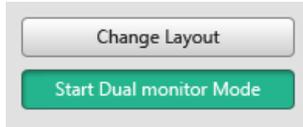
The circle indicator overlay can be shown/hidden in the Settings.

- Measured position of Curvature is displayed as a point in Root Canal. Drag and drop the measured value overlay to the desired place.
- Connection line from measured position to the center of circle is displayed.
- Measured value is displayed on the upper right of the curvature circle, and connection line to center of circle is displayed in dotted line.

## 6. Dual Monitor Mode

### 6.1 Starting Dual Monitor Mode

1. Click the [Start Dual Monitor Mode] button in Control Panel.



If Ez3D-i fails to detect dual monitors, the [Dual Monitor Mode Start] button will not be activated.

1. Ez3D-i enters Dual Monitor Mode displaying both Main View and Secondary View on each monitor.



Main View

Secondary View

Dual Monitor Mode does not support following functions:

- Control Panel: Changing Layout
- View Frame: Making a single window by doubling clicking the window title bar to
- Context Menu: Presentation Mode On
- Short Key: <Ctrl + Enter> key

### 6.2 Exiting Dual Monitor Mode

Click the [x] icon at the top right corner of the Secondary View to exit Dual Monitor Mode.



## 7. Tools in the Toolbar

- Main Tools

Icons	Designation	Description of Features
	Panning	Move images
	Zooming	Zoom in or out
	Length	Measure the distance between two points on the 2D image
	Capture View Frame	Capture the View frame area
	Reset View	Initialize rotate, move, zoom
	Export	Save the current image as a file.

- Advanced Tools

Icons	Designation	Description of Features	
	Measurement	Angle	Measure the angle between three points.
		Multi Angle	Measure multi angle
		Multi Length	Measure multi length.
		Circle Measurement	Measure the radius of inserted circle
		Profile	Density Profile between two points
		ROI	Measure pixel, average value, maximum value and standard deviation of ROI
	Capture	Capture Region	Capture the selected area
		Capture Window	Capture the View Window Area
		Multi-Capture	Capture multiple images
		Create Movie	Run the movie capture program.
	Annotation	Pointer	Draw freely on the 2D and 3D image.
		Free draw	Draw freely
		Memo	Write memos directly on your images

Icons	Designation		Description of Features
	On/Off	Grid	Check the scale of the image with grid.
		Turn Overlay On/Off	Show / Hide the entire input objects
		Show Manager	Show / Hide individual input object
		Show/Hide Patient Information	Show / Hide patient information on the image
	Sculpt	Free Sculpt	Draw freely to select the area to view on the VOI view
		Polygonal Sculpt	Draw a polygon to select the area to view on the VOI view
		Reverse	Reverse the sculpted area
		Undo	Undo your last action
		Redo	Revert Undo
	Etc	Reset All	Initialize All
		Data Manager	Manage properties of imported data
		Delete All	Delete all input objects
		Initialize All	Initialize all changes

The following functions cannot be canceled <Esc> Key or with a mouse right click.



Icons	Designation	Icons	Designation
	Reset View		Initialize All
	Turn Overlay On/Off		Show Manager
	Delete All		Pointer



[Create Movie] icon will not appear on the toolbar if the software to link is not set.

The data drawn using the [Pointer] function is not saved to the project file. All functions are disabled while the [Pointer] function is in use.

Use the pointer function to draw on the current screen temporarily.

Click the [Annotation > Pointer] icon on the tool bar, and then the following window appears.



[Pointer]: Drag to draw and mark the area for View Frame.

[Eraser]: Erase the pointer overlay. The point overlay inserted on the path of the Erase

icon moves will be deleted.

[Thickness]: Set the thickness of Brush or Eraser.

[Pointer Color]: Set the color of Brush.

[View Frame Capture]: Capture the View Frame while the pointer drawing mode is on.

[Reset Pointer]: Delete all pointer objects inserted on the image.

[Exit]: Close the pointer function.

## Chapter 8. TMJ Tab

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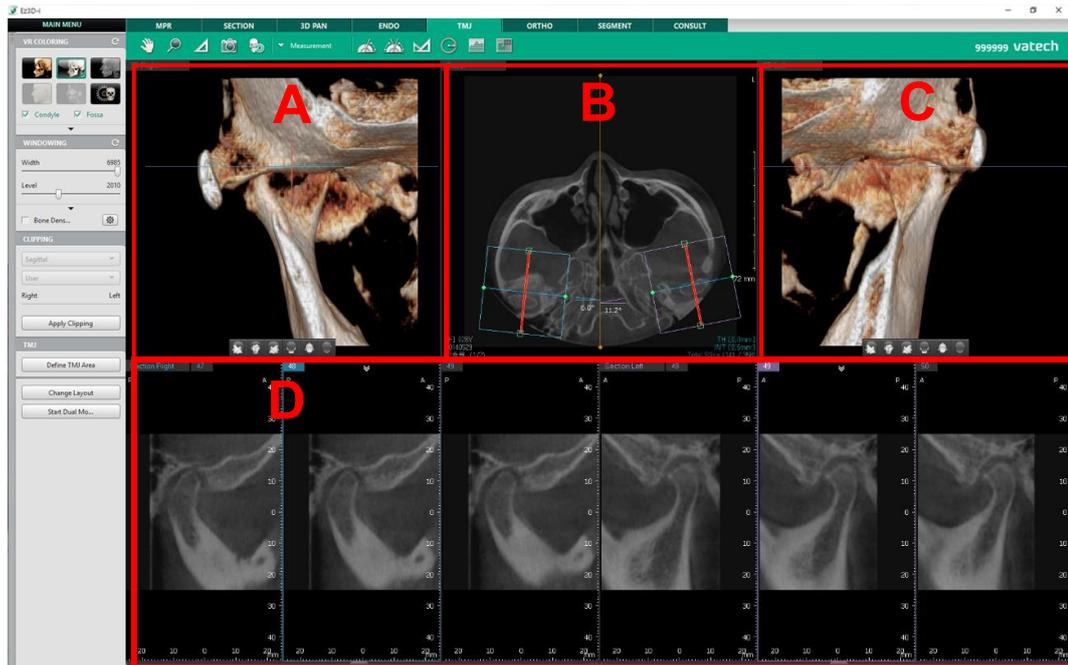


# 1. TMJ Tab Configuration

TMJ tab enable users to set the TMJ area and view the cross-sectional images for the clinical diagnosis of TMJ.

Ez3D-i provides the Axial View of TMJ, the Condyle/Fossa images in 3D and the Section images, and supports functions to separate the Condyle/Fossa and display the bone density.

## 1.1 Workspace



- A Section: Right front 3D VR (Volume Rendering) Window
- B Section: Scout Window
- C Section: Left front 3D VR (Volume Rendering) Window
- D Section: Section View window that can view the continuous sectional images, which are defined by the navigator of the Scout View and the controller of the Axial View

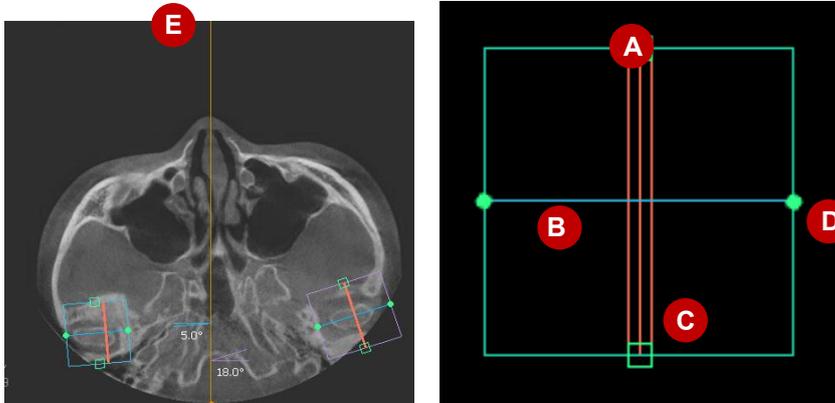


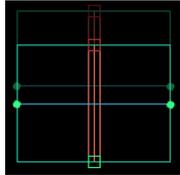
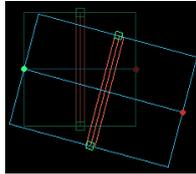
Based in the FOV size of the image, when the image is in the size of that both TMJ is shown, the image is displayed in the layout that the left and the right images appear. Also, when the image is in the size of that only one TMJ is shown, the image is displayed in the layout that only one side of image appears.

To view the image in a different layout, click the [Change Layout] button. You can change the layout regardless of the FOV size.

## 2. Navigator

The TMJ navigator consists of a frame that indicates the range of the cross-sectional image of TMJ area and the TMJ Sectional Line that displays the corresponding cross sectional images.



No	Name	Description
A	TMJ Section Width Control Point	<p>The default size of the frame is 50mm x 50mm, and the size can be changed in the [Settings &gt; View &gt; Navigator &gt; TMJ Navigator].</p> <p>The size can be adjusted using the Control Points.</p> 
B	TMJ Center Line	<p>It is the Line that designates the range to check the TMJ sectional images. The angle between the extension line of the Center Line and the Mid Line is the Axial Condylar Angle.</p> <p>The TMJ Center line is linked with the Front Image.</p>
C	TMJ Sectional Line	<p>Section line. It displays and sets the location of Section View, which divides the image within the navigator vertically. The angle between the extension line of the Sectional Line and the Mid Line is the Coronal Condylar Angle.</p>
D	TMJ Navigator Control Point	<p>Move the Control Point located on the both sides of the TMJ Navigator to adjust the size.</p> 
E	Midline	<p>It is the center line of the clinical head, and it acts as guide line related to the bilateral symmetry function. It is created on the center of the Sagittal direction of the volume. But, the Midline is not displayed in the Single TMJ layout.</p>

- The navigator can be displayed or hidden by pressing the <Space Key> on the keyboard.
- Click the Reset Views icon on the tool bar to reset the position and size of TMJ navigator.
- The Box size, which is set when defining TMJ area, does not affect the size of the TMJ navigator.

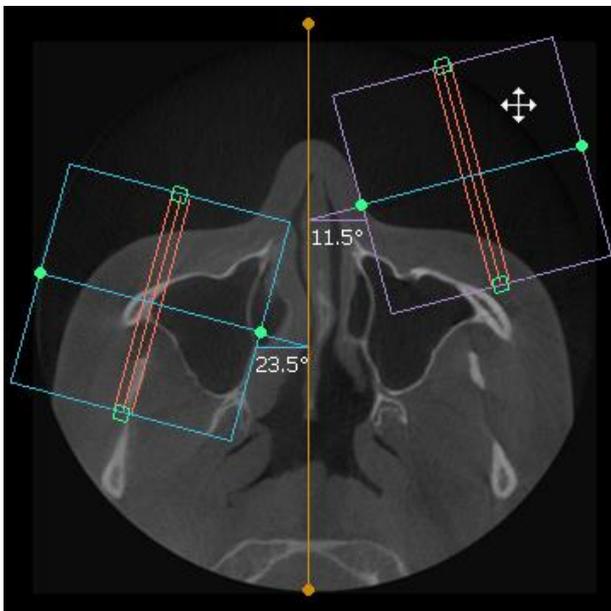
- The current position of the navigator and axis can be viewed on the 3D view.



## 2.1 Moving Navigator

User can move the Navigator and change the displayed range of the sectional images.

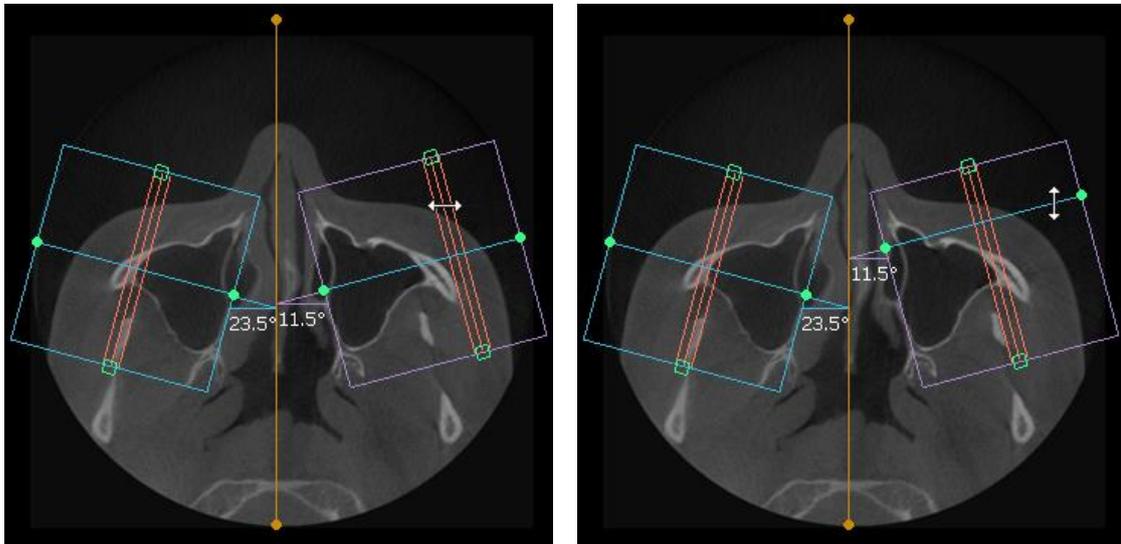
Drag the inside of the Navigator to change its location. When moving, the size and the position of TMJ Sectional Line are maintained.



## 2.2 Moving TMJ Sectional Line

TMJ Sectional Line displays and sets the location of Section View, which divides the image within the navigator vertically. You can move the TMJ Sectional Line to view the sectional images of the selected point accordingly.

Drag and move the Line Indicator. The 2D images change accordingly.



Line Indicator moves while maintaining the interval. The interval and thickness can be changed in the Settings.

### 3. VR Coloring Group

The VR Coloring Group consists of the functions to set the VR Coloring and to display the segmented Condyle/Fossa.

#### 3.1 Showing Condyle/Fossa

The VR Coloring Group provides the function to show or hide the Condyle/Fossa.

The checkboxes of the Condyle and the Fossa options are segmented and selected automatically.

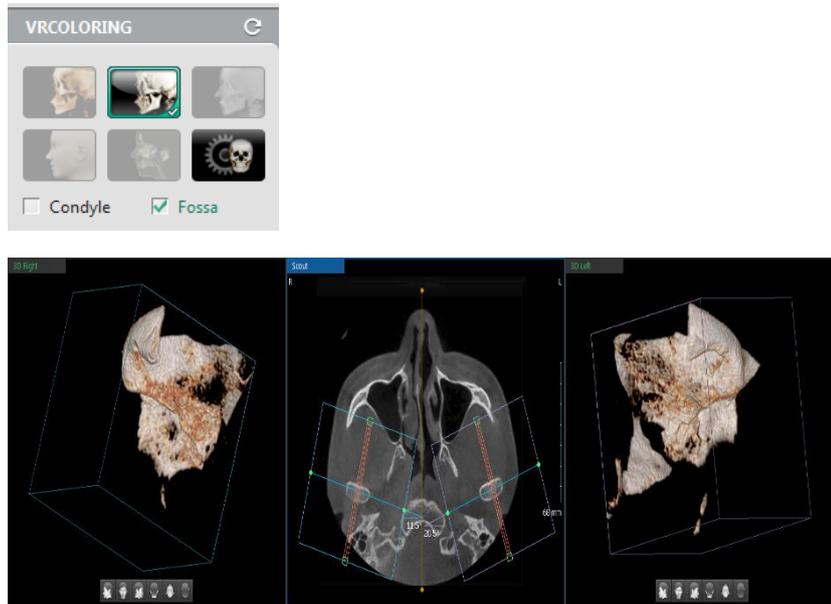
- When both Condyle/Fossa are selected



- When only Condyle is selected



- When only Fossa is selected



When the TMJ information of the DICOM header is incorrect or missing, the Segmentation will not be done properly. In this case, user must redefine the location of the Condyle Head using [Define TMJ Area].

### 3.2 VR Coloring

The image coloring is optimized with the rendering value that the user has chosen.



Only the Teeth, Bone, and the MIP mode are supported.

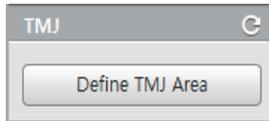
When only one of the Condyle or Fossa is selected, the VR coloring is set to the Bone mode, and the user cannot use the Teeth and the MIP mode.

When changing the Condyle/Fossa option while the Teeth or the MIP modes are selected, the mode changes to the Bone mode automatically and the previous condition is not saved.

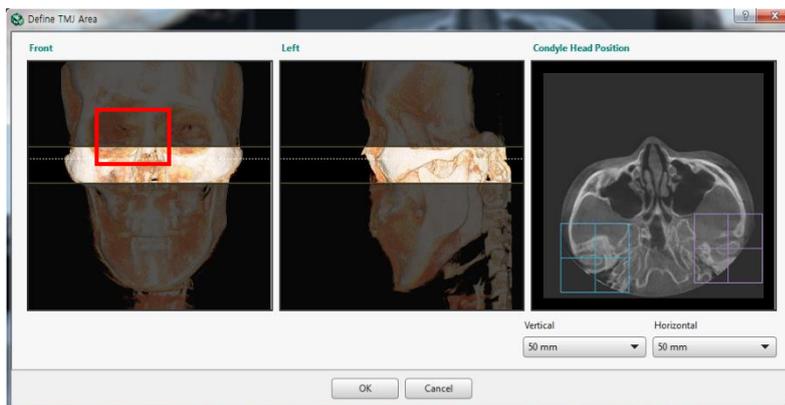
## 4. Defining TMJ Area

It is to set the height to check with the TMJ area and the standard point for the TMJ Segmentation (segmentation of Condyle/Fossa).

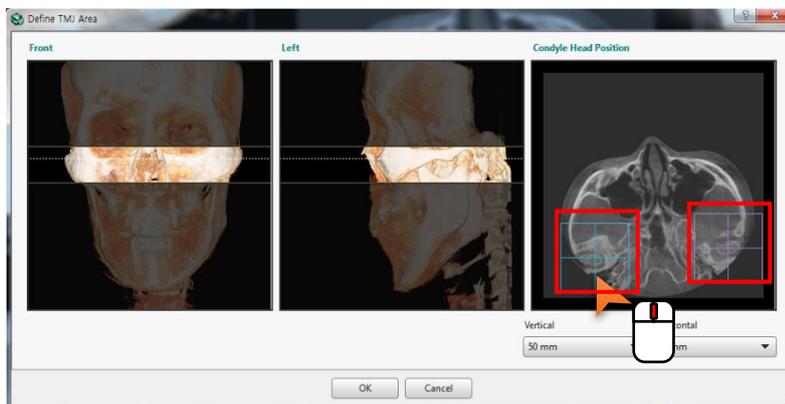
1. Click the [Define TMJ Area] button. A window appears to select the area.



2. Drag the Area Selection line to adjust the position in the Front and the Left view.



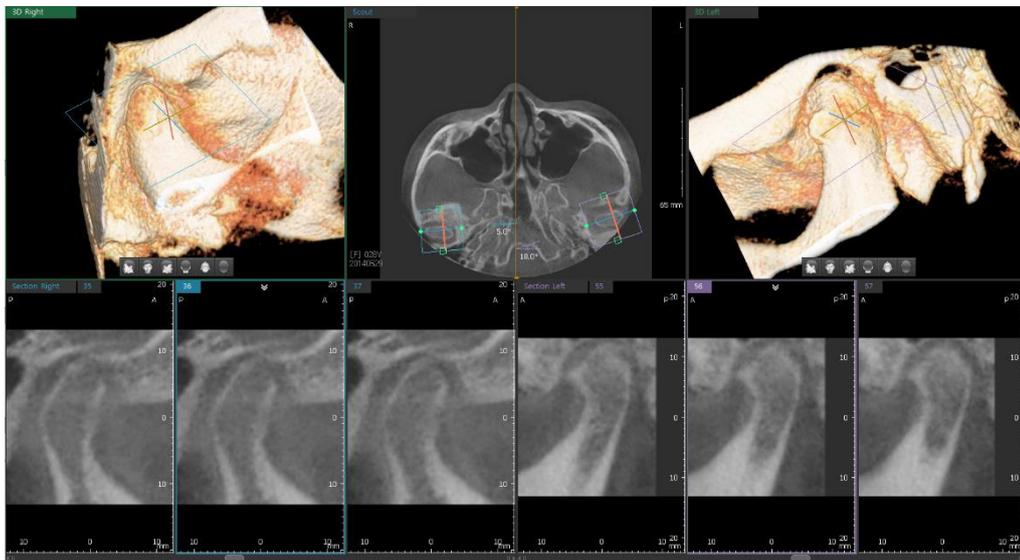
3. Drag the Condyle Head Position to the Condyle center in the Condyle Head Position View



NOTE

- The accurate Condyle position will increase the accuracy of the TMJ Segmentation.
- Use the mouse wheel to view the previous and the next Axial images in the Condyle Head Position View
- The movable range for Slice is within the TMJ area that is set in the front and the side view.
- Condyle Head Position function and the TMJ navigator are not synchronized.
- The number of the Condyle Head Position is determined according to the view frame layout.
- Vertical: Set the width of the Left/Right direction to check in the 3D format after the Segmentation.
- Horizontal: Set the width of the Front/Back direction to check in the 3D format after the Segmentation.

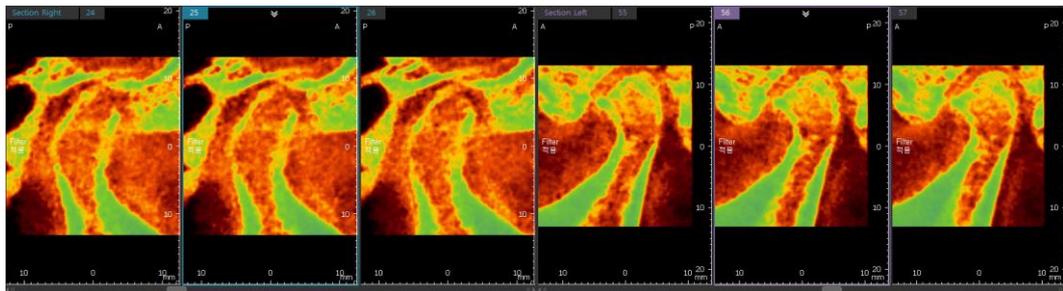
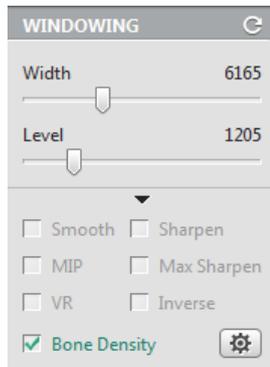
4. Check the selected area in the front and the side view and the Condyle Head Position image, and then click the [OK] button. The [Define TMJ Area] window is closed and the TMJ area of the selected area is displayed.



## 5. Bone Density

The bone density of selected cross-sectional images can be checked.

In the Windowing Group, click the [Bone Density] Button to display all 2D images in the Bone Density mode. Move the slider at the bottom of the screen to change the Sectional image position.



CAUTION

Adjusting bone density range depending on the equipment that you have is required to use the bone density function more accurately. (There are many cases where CBCT has different CT Number values, which are the standard of bone density standard, depending on the equipment.)

Users should be aware of this limitation before diagnosing and performing simulation according to the bone density value. The treatment based on the incorrect measurement may cause failure in operation or complications.



NOTE

Because the CT Number can be different by acquisition equipment, the values can be set according to the user's equipment in the Settings. Bone density area (D1 - D5) can be changed to appropriate CT Number based on the user's acquisition equipment in the [Settings > Simulation > Bone Density > Bone Density Area], and the color can be changed.

## 6. Clipping

The Clipping function is to cut a 3D image in the selected direction to view the cross-sectional image.

1. Click the [Apply Clipping] button to execute clipping function.



2. Click to select the direction to clip a 3D image.



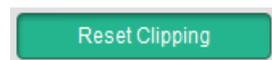
3. Click the combo box to set the area for clipping.



4. Drag the slider and the image will be clipped in the selected direction.



The Clipping function is applied to the 3D images on the left and the right at the same time. To reset the clipping, click the [Reset Clipping] button.

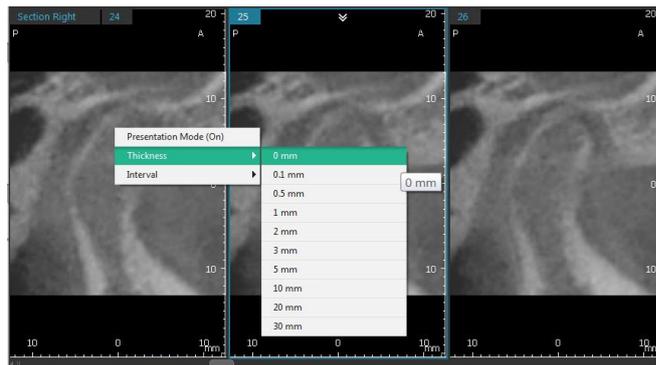


## 7. Changing Section View Thickness and Interval

The thickness and interval of the Section View, which displays the cross-sectional images where the navigator is located, can be changed.

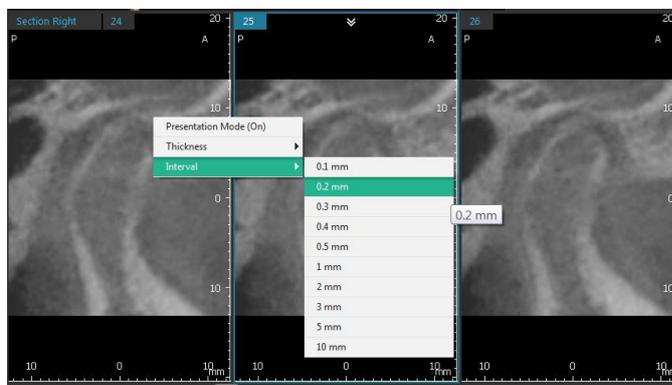
- Changing Thickness

1. Click the right mouse button on the cross-sectional view pane.
2. Click the [Thickness] option and select the thickness from the expanded list. The selected thickness will be applied to all cross-sectional images.



- Changing Interval

1. Click the right mouse button on the cross-sectional view pane.
2. Click the [Interval] option and select the interval from the expanded list. The selected interval will be applied to all cross-sectional images.



## 8. Dual Monitor Mode

### 8.1 Starting Dual Monitor Mode

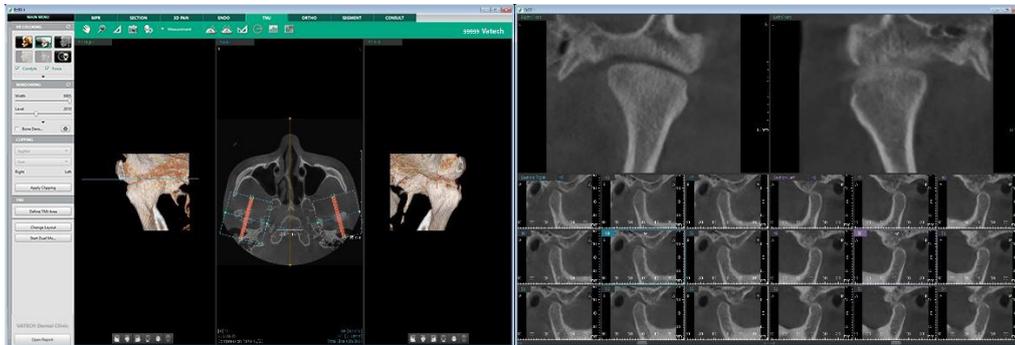
1. Click the [Start Dual Monitor Mode] button.

Start Dual Monitor Mode



If Ez3D-i fails to detect dual monitors, the [Dual Monitor Mode Start] button will not be activated.

2. Ez3D-i enters into the Dual Monitor Mode displaying both Main View and Secondary View on each monitor.



Main View

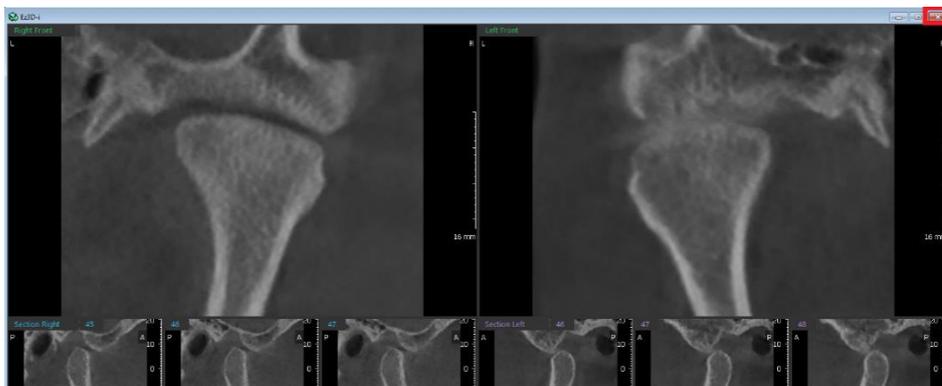
Secondary View

Dual Monitor Mode does not support following functions:

- Control Panel: Changing Layout
- View Frame: Making a single window by doubling clicking the window title bar to
- Context Menu: Presentation Mode On
- Short Key: <Ctrl + Enter> key

### 8.2 Exiting Dual Monitor Mode

Click the [x] icon at the top right corner of the Secondary View to exit Dual Monitor Mode.



## 9. Tools in the Toolbar

- Main Tools

Icons	Designation	Description of Features
	Panning	Move images
	Zooming	Zoom in or out
	Length	Measure the distance between two points on the 2D image
	Capture View Frame	Capture the View frame area
	Reset View	Initialize rotate, move, zoom
	Export	Save the current image as a file.

- Advanced Tools

Icons	Designation	Description of Features	
	Measurement	Angle	Measure the angle between three points.
		Multi Angle	Measure multi angle
		Multi Length	Measure multi length.
		Circle Measurement	Measure the radius of inserted circle
		Profile	Density Profile between two points
		ROI	Measure pixel, average value, maximum value and standard aviation of ROI
	Capture	Capture Region	Capture the selected area
		Capture Window	Capture the View Window Area
		Multi-Capture	Capture multiple images
		Create Movie	Run the movie capture program.
	Annotation	Pointer	Draw freely on the 2D and 3D image.
		Free draw	Draw freely
		Memo	Write memos directly on your images

Icons	Designation		Description of Features
	On/Off	Grid	Check the scale of the image with grid.
		Turn Overlay On/Off	Show / Hide the entire input objects
		Show Manager	Show / Hide individual input object
		Show/Hide Patient Information	Show / Hide patient information on the image
	Etc	Data Manager	Manage properties of imported data
		Delete All	Delete all input objects
		Initialize All	Initialize all changes

The following functions cannot be canceled <Esc> Key or with a mouse right click.



Icons	Designation	Icons	Designation
	Reset View		Initialize All
	Turn Overlay On/Off		Show Manager
	Delete All		Pointer



- [Create Movie] icon will not appear on the toolbar if the software to link is not set.
- The data drawn using the [Pointer] function is not saved to the project file.
- All functions are disabled while the [Pointer] function is in use.
- Use the pointer function to draw on the current screen temporarily.
- Click the [Annotation > Pointer] icon on the tool bar, and then the following window appears.



- [Pointer]: Drag to draw and mark the area for View Frame.
- [Eraser]: Erase the pointer overlay. The point overlay inserted on the path of the Erase icon moves will be deleted.
- [Thickness]: Set the thickness of Brush or Eraser.
- [Pointer Color]: Set the color of Brush.
- [View Frame Capture]: Capture the View Frame while the pointer drawing mode is on.
- [Reset Pointer]: Delete all pointer objects inserted on the image.
- [Exit]: Close the pointer function.

# Chapter 9. ORTHO Tab

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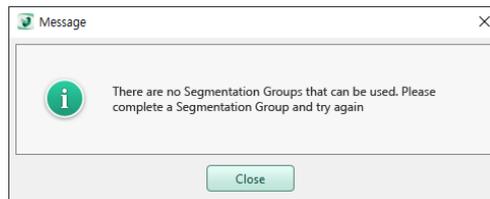
# 1. ORTHO Tab Configuration

ORTHO Tab provides orthodontic simulation function using 3D Photo and segmented data from CT including Bone model and Tooth model data. The Predict Soft Tissue feature enables you to predict how the treatment plan established may affect the face of a patient. In addition, the Comparison enables you to establish a treatment plan by comparing photos before and after the treatment.

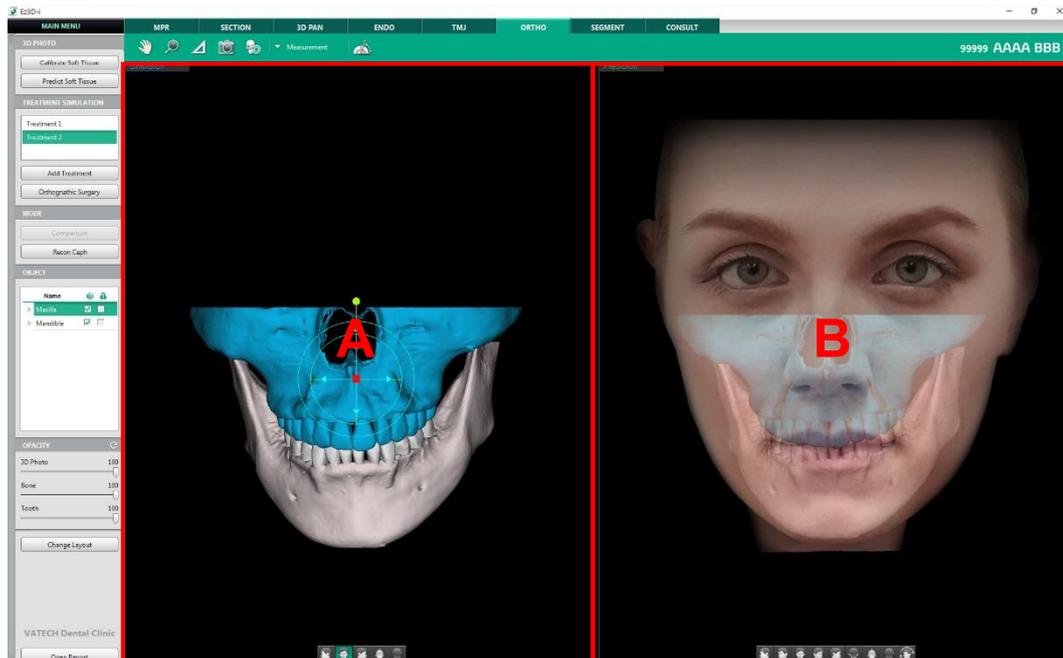


All functions on the ORTHO Tab are available only when there exists segmented DATA (3D Photo, Bone Model, Tooth Model Data). Please complete tooth segmentation or import segmented data on the SEGMENT Tab before using functions on ORTHO Tab.

The following error message appears when entering Endo Tab without Segmentation result, and Orth Tab is maintained as black after clicking [Close] button



## 1.1 Workspace



A Section: Simulation Window

B Section: Prediction Window

## 2. Calibrate Soft Tissue

Calibrate Soft Tissue function enables users to input four landmarks that are required to conduct Predict Soft Tissue function.

1. Click the [Calibrate Soft Tissue] button in the 3D PHOTO group.



### ■ Pop-up Message Handling

When there exists no 3D Photo in Data Group.



1. Click the [Close] button
2. Go to [MAIN MENU > Import > 3D Photo]
3. Register the imported 3D Photo.

\* Please refer to 'Chapter 1. Ez3D-i Basics > 5.7.2 Import 3D Photo'

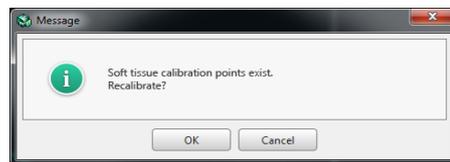
When 3D Photo in Data Group is not registered yet.



1. Click the [Yes] button.
2. The Registration Dialog automatically papers.

\* Please refer to 'Chapter 1. Ez3D-i Basics > 5.7.2 Import 3D Photo'

Where Soft Tissue calibration is already done.



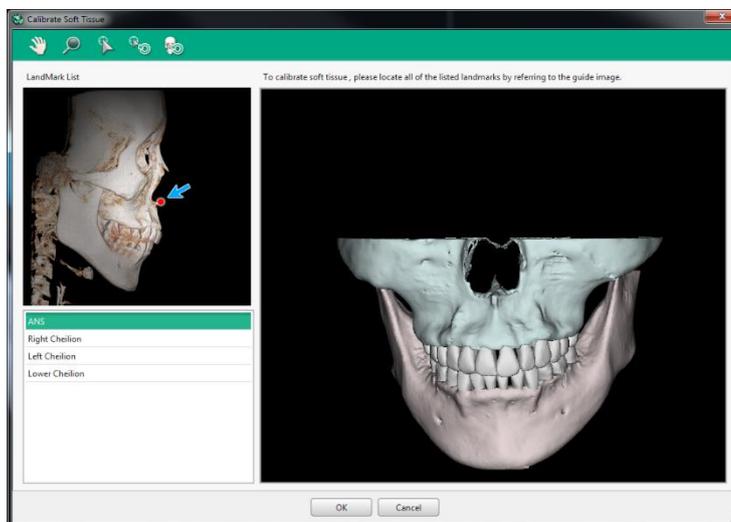
1. Click the [OK] button to re-calibrate soft tissue or click the [Cancel] button to use the existing points without recalibration.

- 2-1. [OK]: Proceed next step.
- 2-2. [Cancel]: Skip the calibration process.



NOTE

2. The [Calibrate Soft Tissue] dialog appears.



3. Click the [Point insert] icon in the toolbar.



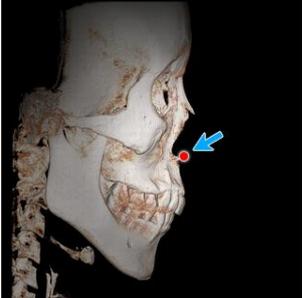
4. The [Landmark List] on the left part of the dialog will show the list of landmarks to be inserted and a guide image to follow. Click the corresponding position where the guide image is showing on the insert view image.



Please follow the guide image and the order of landmarks shown on the list.

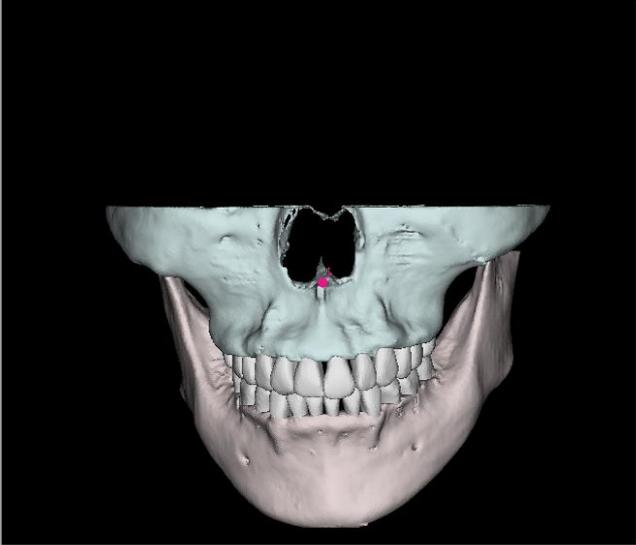
#### 4-1. ANS

LandMark List



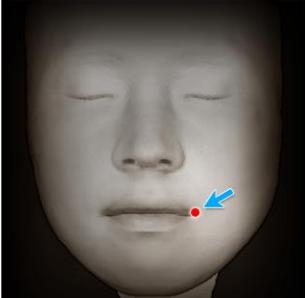
ANS
Right Cheilion
Left Cheilion
Lower Cheilion

To calibrate soft tissue , please locate all of the listed landmarks by referring to the guide image.



#### 4-2. Right Cheilion

LandMark List



ANS
Right Cheilion
Left Cheilion
Lower Cheilion

To calibrate soft tissue , please locate all of the listed landmarks by referring to the guide image.



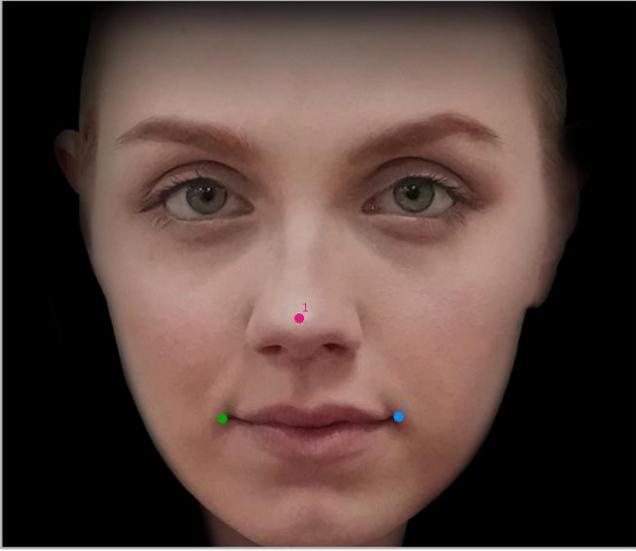
### 4-3. Left Cheilion

LandMark List



ANS
Right Cheilion
Left Cheilion
Lower Cheilion

To calibrate soft tissue , please locate all of the listed landmarks by referring to the guide image.



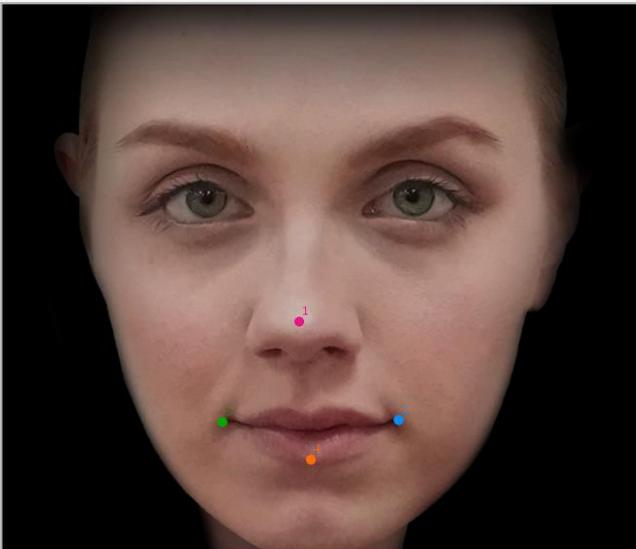
### 4-4. Lower Cheilion

LandMark List



ANS
Right Cheilion
Left Cheilion
Lower Cheilion

To calibrate soft tissue , please locate all of the listed landmarks by referring to the guide image.



5. Click the [OK] button on the bottom of the dialog after completing inserting all landmarks.

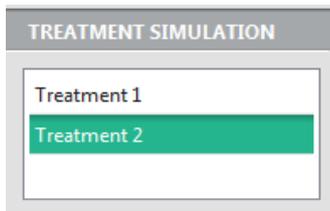
### 3. Treatment Simulation

The user can add treatment plans to the list of TREATMENT SIMULATION. Each treatment includes the structure of object tree, result of object simulation (moving, rotating) and bone cutting.

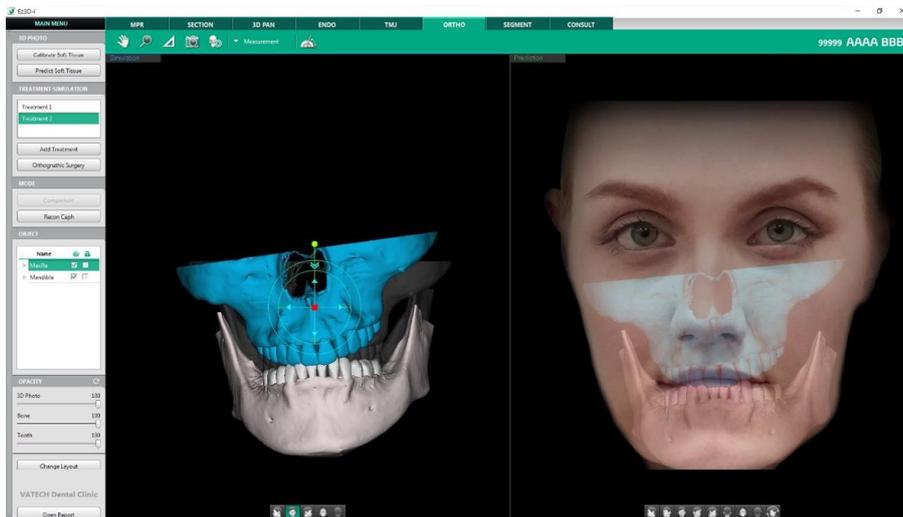


#### 3.1 Select Treatment

1. Click one of the treatment on the list to select.



2. The bone data, tooth data and 3D photo included in selected treatment are displayed on the view.

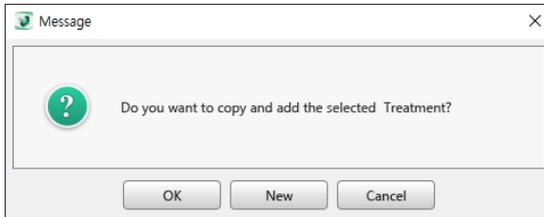


## 3.2 Add Treatment

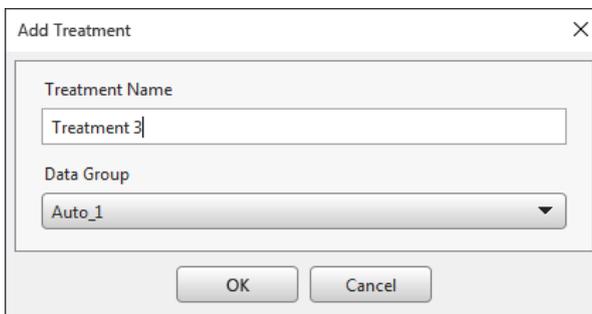
1. Click the [Add Treatment] button.



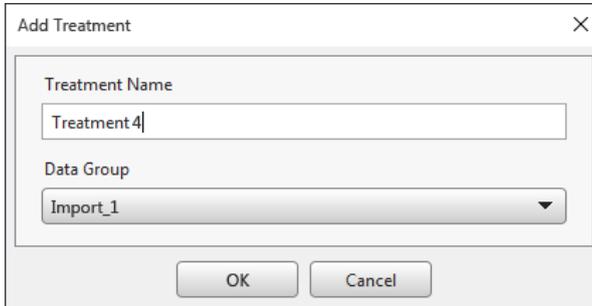
2. Click [New] button in the following dialog to continue.



3. [Add Treatment] dialog appears.



4. Input Treatment Name and select a file name from Data Group.



5. Click the [Orthognathic Surgery] button when bone segmentation is required.



Please refer to 'Chapter 9. ORTHO Tab > 4. Bone Segmentation'.

6. Click the [OK] button to complete.
7. The inserted treatment is added to the list of TREATMENT SIMULATION.



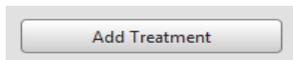
### 3.3 Copy and Add Treatment

The Clipping function is to cut a 3D image in the selected direction to view the cross-sectional image.

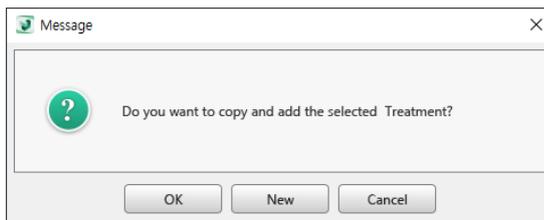
1. Click one of the treatment on the list to copy.



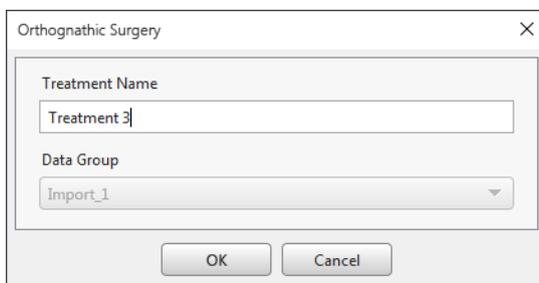
2. Click the [Add Treatment] button.



3. Click OK in the following dialog to continue.



4. The following Orthognathic Surgery dialog appears



5. Modify the defined treatment name.



Please note that users cannot change Data Group as it is disabled when selecting [Copy and Add treatment].

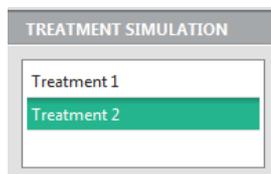
6. Click the [OK] button to complete.

- The inserted treatment is added to the list of TREATMENT SIMULATION.

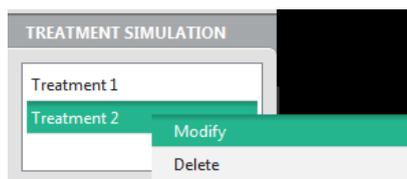


### 3.4 Modify Treatment

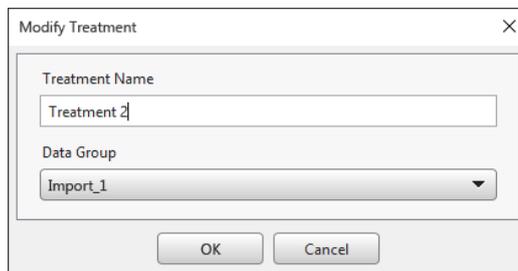
- Click one of the treatment to modify on the list and right click on the treatment name.



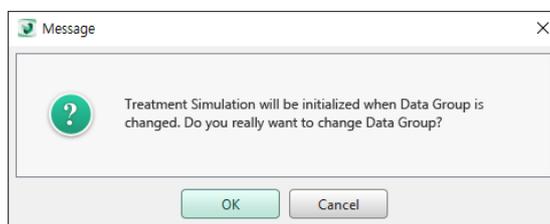
- Select [Modify].



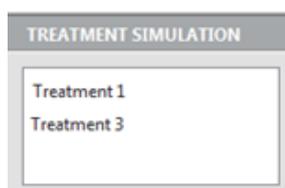
- Change Treatment Name in [Treatment Property] dialog.



- Change Data Group and click the [OK] button.

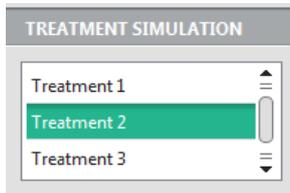


- Click OK button to update the treatment on the list.

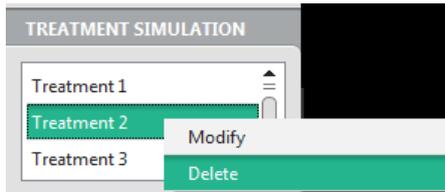


### 3.5 Delete Treatment

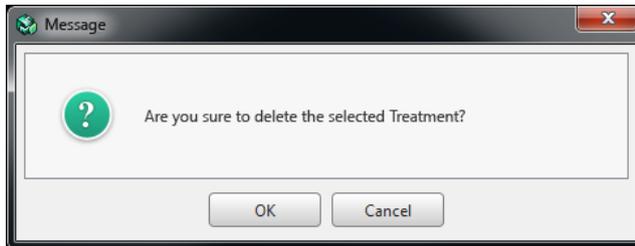
1. Click one of the treatment to delete on the list and right click on the treatment name.



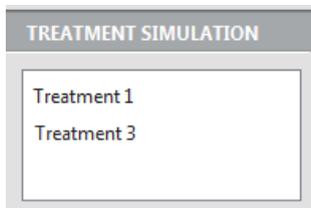
2. Select [Delete].



3. Click [OK] to confirm to delete the treatment from the list.



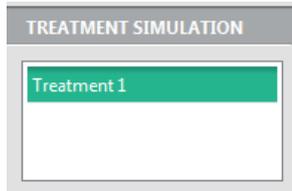
4. The selected treatment is deleted from the list.



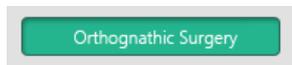
## 4. Bone Segmentation

Bone segmentation function is to segment a bone model for orthognathic surgery according to user defined cutting lines and save the result as a STL file format.

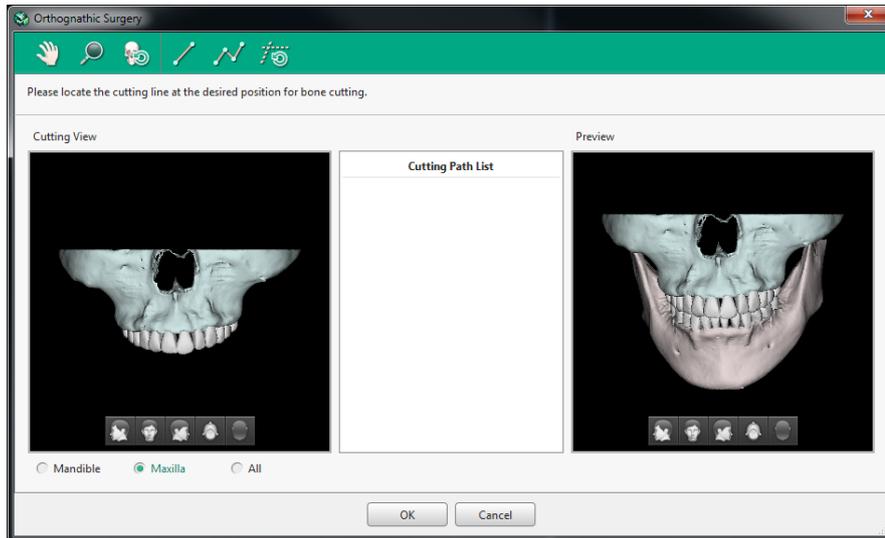
1. A default item is automatically created in TREATMENT SIMULATION list when there exists tooth segmentation data.



2. Select [Orthognathic Surgery] button for bone segmentation.



3. The [Orthognathic Surgery] dialog appears.



4. Select a data option on the Cutting View.



5. Select a direction on the Cutting View.



6. Click the Cutting Line icon  or Cutting Multi Line icon  on the toolbar.

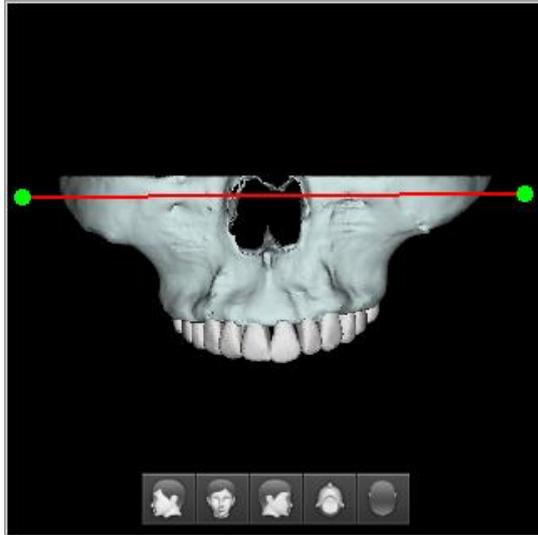


Click the Reset All icon to delete all the inserted cutting lines.

## 7. Draw line or Multi Line on the Cutting View

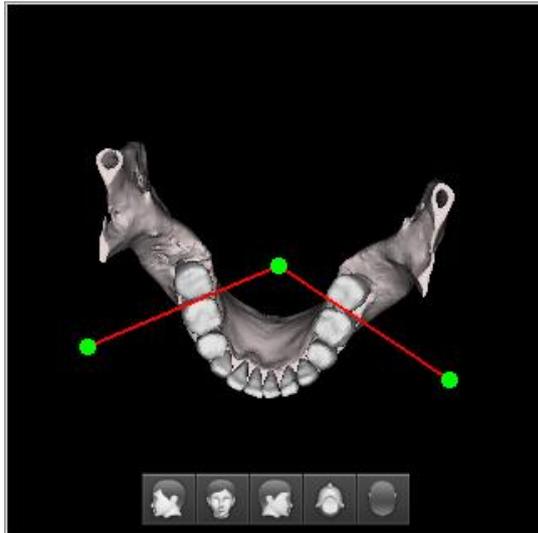
- Line

Click on two points (start and end point) on the Cutting View.

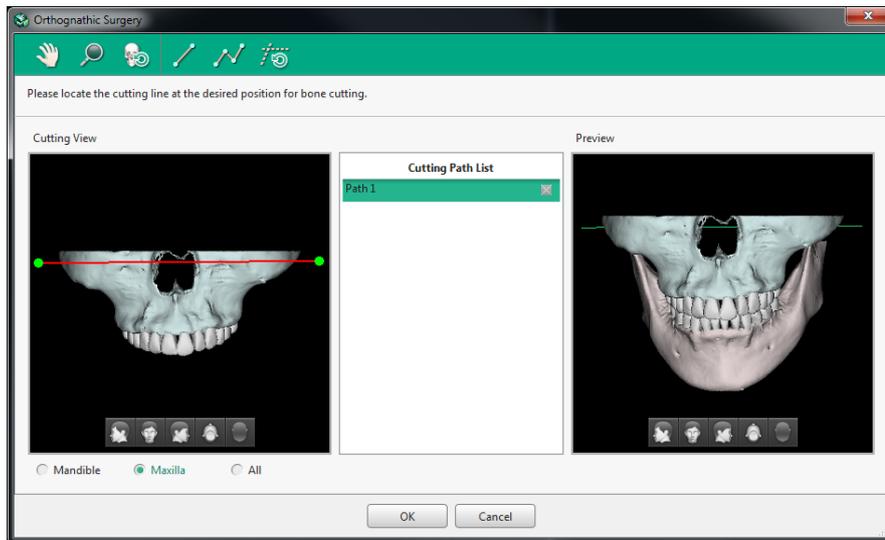


- Multi Line

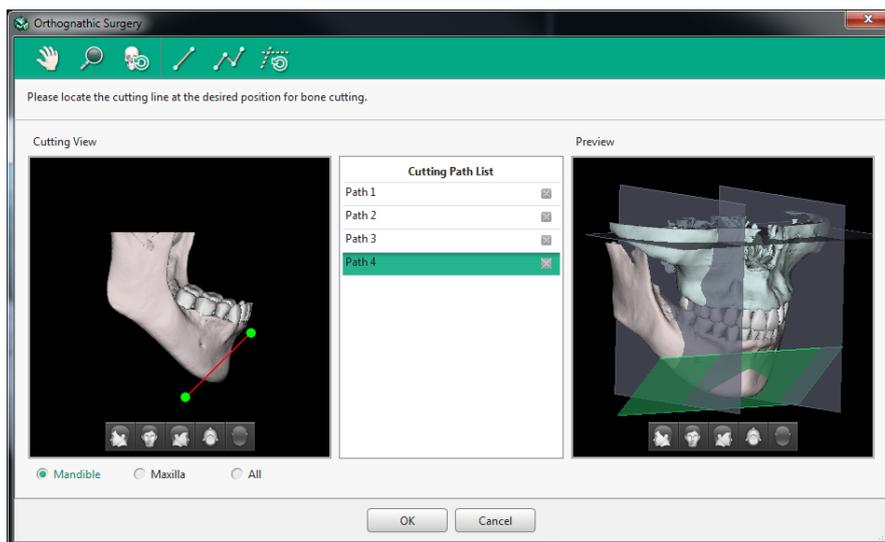
Click multiple points and double-click at the last points on the Cutting View. Then the image will be divided into two areas based on the inserted multi-line



- The inserted cutting path will be added to the Cutting Path List and shown in the Preview on the right.



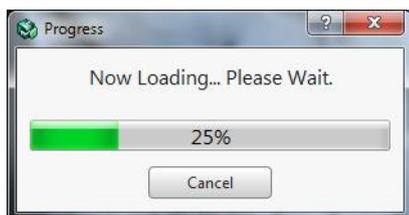
- You can add multiple cutting paths by repeating to select data option, select direction and draw cutting line.



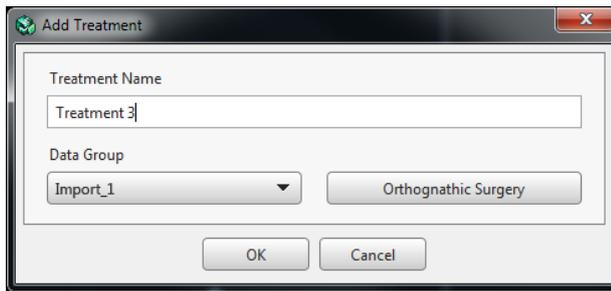
- Press the [OK] button on the button to apply the cutting paths.



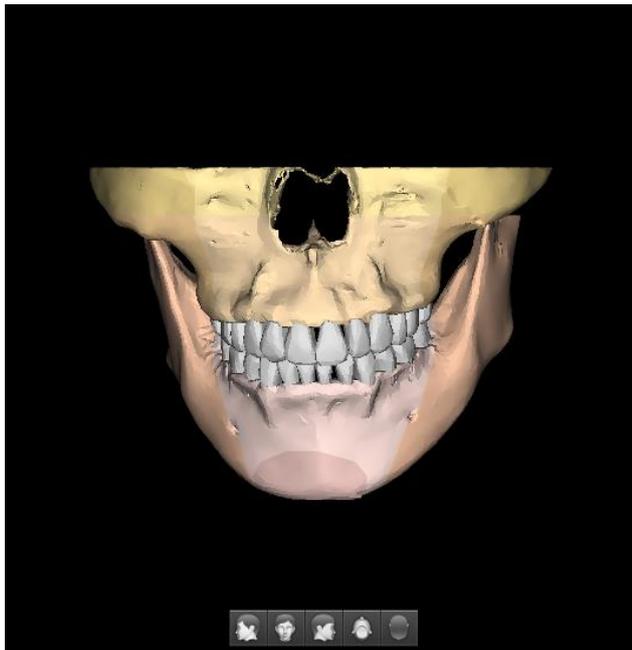
- Please wait until the bone segmetation process is completed.



12. The screen is back to the [Treatment Simulation] dialog when bone cutting is done.



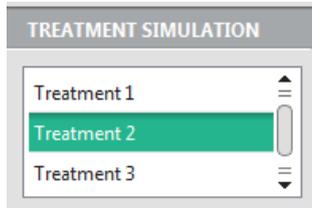
13. Click the [OK] button to complete adding treatment and display the segmented result on the screen.



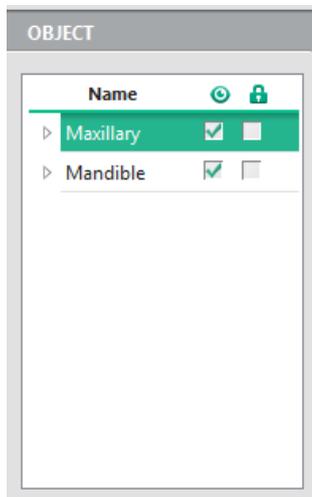
## 5. Object Simulation

The OBJECT group manage bone model and tooth model. It shows bone models and tooth models on the model object list in a tree structure. This list of objects enables users to choose an object from the list so that they can move and rotate the selected object with a controller.

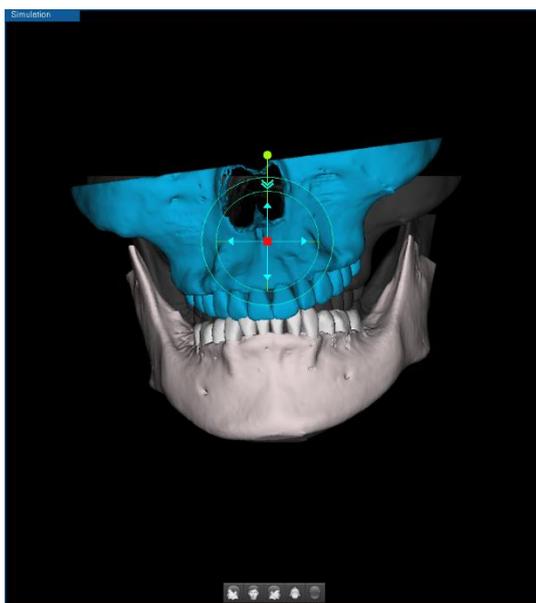
1. Select one treatment simulation from the list.



2. Select the object from the OBJECT list by clicking the model name.



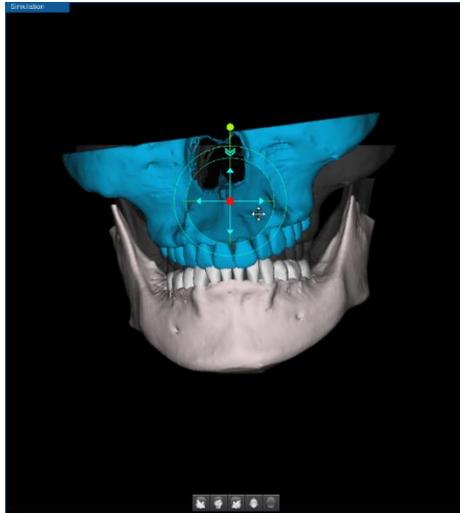
3. The user can change the properties (Show/Hide, Lock/Unlock) of each object by ticking the check box. Please note that the locked object cannot be moved.
4. A controller appears at the center of the selected objects in the SIMULATION view.



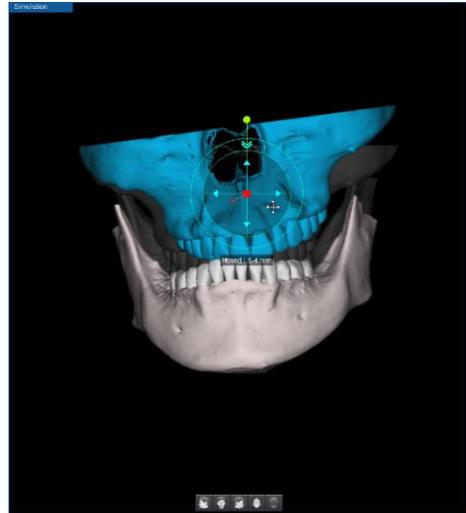
5. Change the direction and location of the image by using the controller.

▪ **Moving**

Drag & drop the inner circle area of the controller or use the direction keys on the keyboard to move the object.



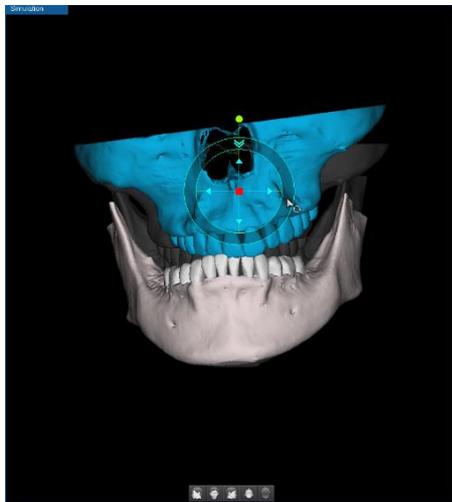
[Before]



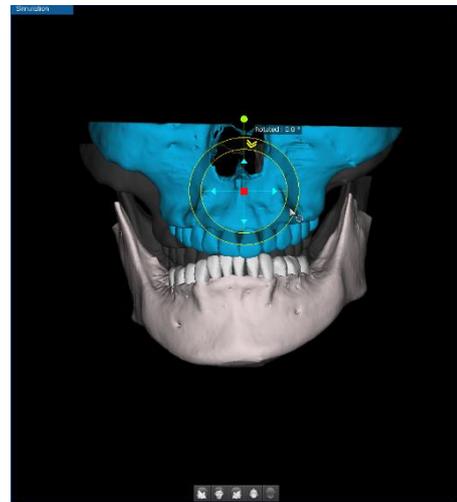
[After]

▪ **Rotating**

Drag & drop outer ring of the controller or use up & down direction keys on the keyboard to rotate the object.



[Before]



[After]

## 6. Predict Soft Tissue



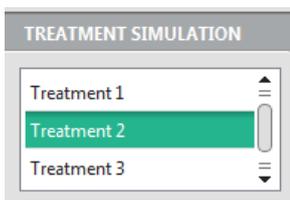
The Predict Soft Tissue function is a simulation to predict patient's facial condition after surgery. The actual result may vary on a person-to-person basis.

The user must be aware of the limits of simulation and should carefully proceed one's treatment planning.

3D Photo, Bone model and Tooth model data should be imported and registered in advance. Also, four landmarks are required to be input by a user before starting to predict soft tissue.

Please refer to 'Chapter 9. ORTHO Tab > 2. Calibrate Soft Tissue' for more information about Calibrate Soft Tissue.

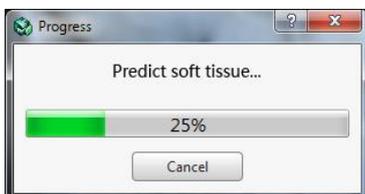
1. Select a treatment from the TREATMENT SIMULATION list.



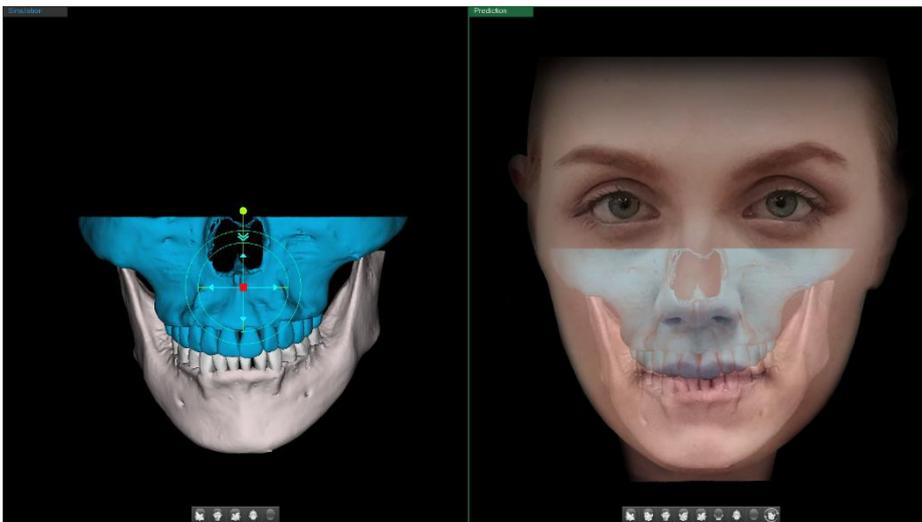
2. Click the [Predict Soft Tissue] button in the 3D PHOTO group.



3. The following progress bar appears on the screen.



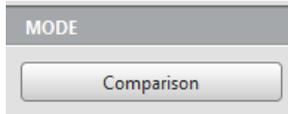
4. The result of Predict Soft Tissue is shown on the PREDICTION View.



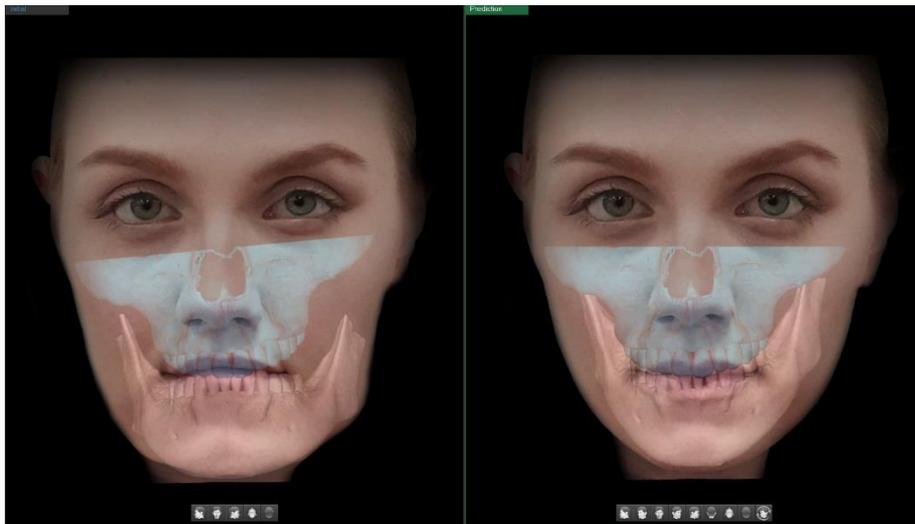
## 7. Comparison

The Comparison button in the MODE group is show before and after image of Predict Soft Tissue simulation at the same time to help users see the difference comparing the Initial and Prediction view.

1. Click the [Comparison] button in the MODE group.

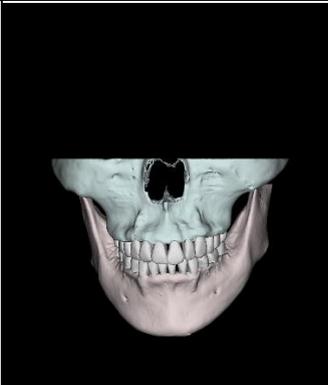
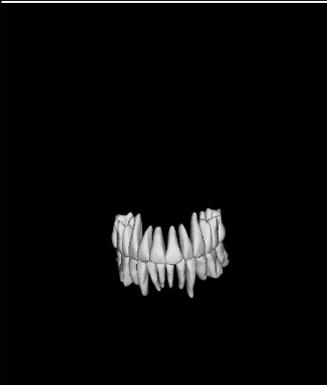
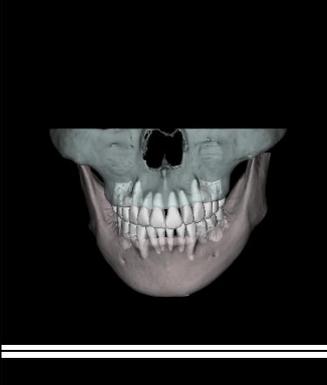
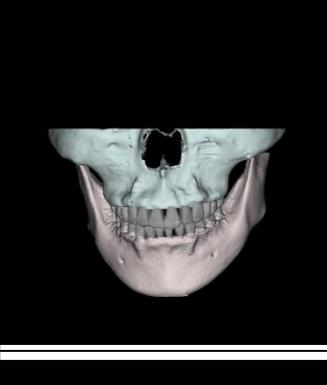
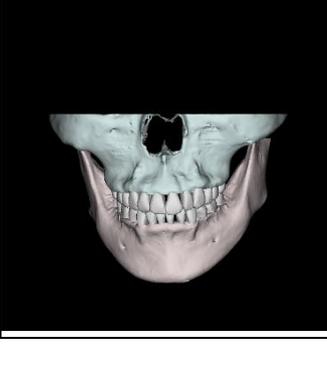
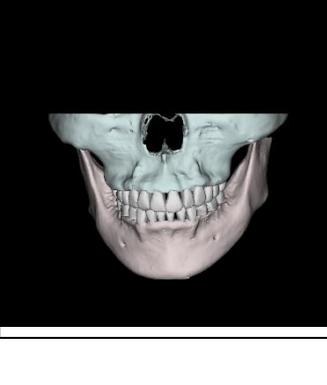


2. The layout is changed to compare the initial 3D photo and prediction result of the 3D photo image.

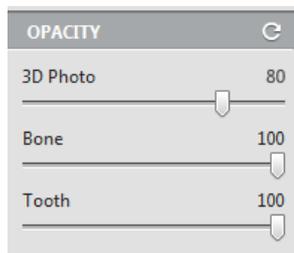


## 8. The layout Opacity settings

The following images show how the image changes according to opacity settings.

	3D Photo	Bone	Tooth
Opacity 0			
Opacity 30			
Opacity 60			
Opacity 100			

Users can adjust data opacity in the range between 0 and 100 (1 interval) by controlling slides in OPACITY group.



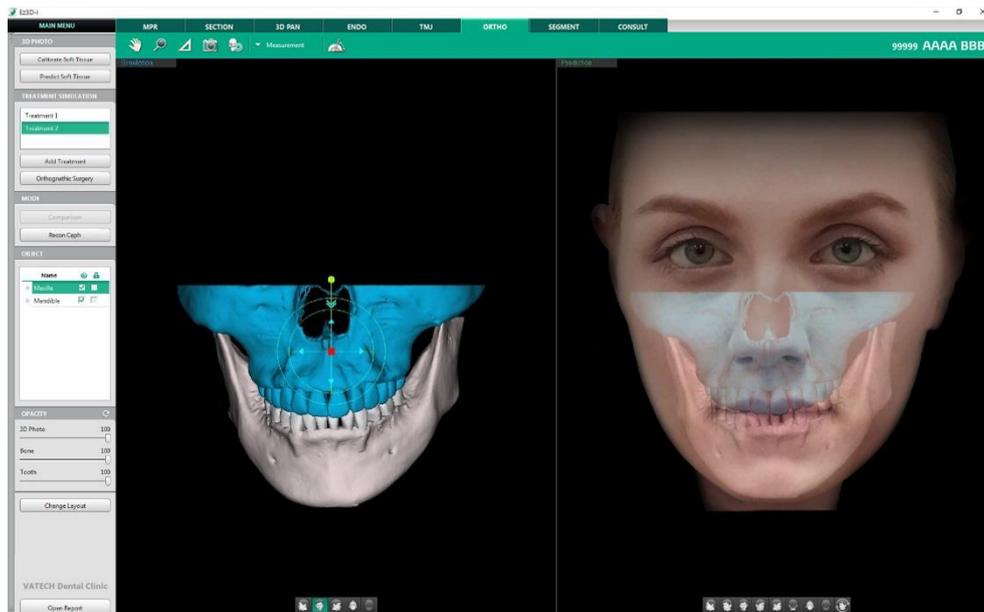
## 9. Change Layout

There are two layouts available on ORTHO Tab.

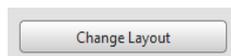
- 1+1(Simulation View+ Prediction Result View)
- 2+1(Simulation Maxilla View + Simulation Mandible View + Prediction Result View)

By clicking the [Change Layout] button, the current layout can be changed to the other layout.

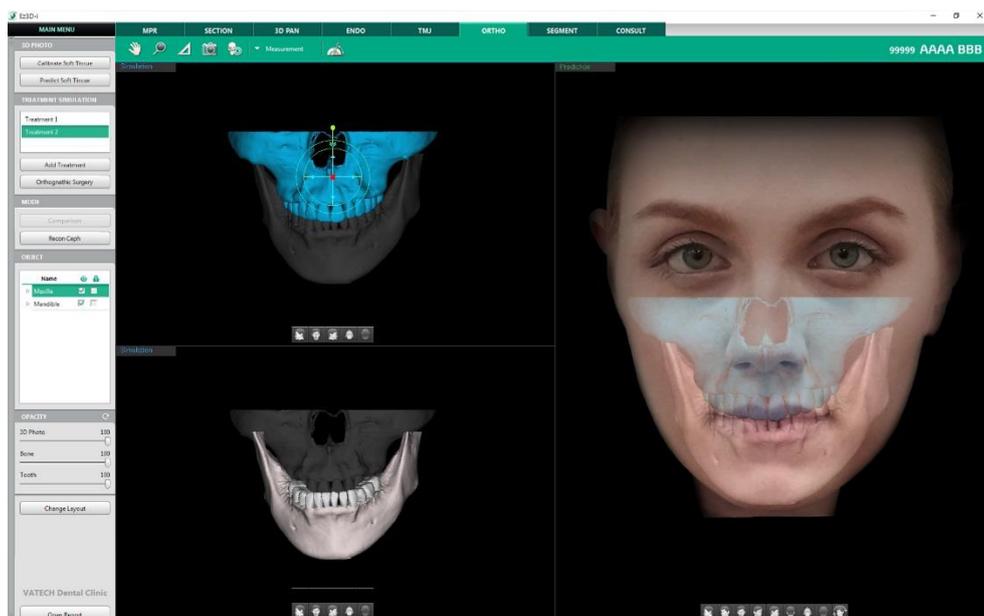
1. The default layout consists of SIMULATION and PREDICTION view is shown as follows.



2. Click the [Change Layout] button.



3. Then the SIMULATION View is divided into MAXILLA and MANDIBLE view.



## 10. Tools in the Toolbar

- Main Tools

Icons	Designation	Description of Features
	Panning	Move images
	Zooming	Zoom in or out
	Length	Measure the distance between two points on 2D images
	Capture View Frame	Capture the View frame area
	Reset View	Initialize rotate, move, zoom
	Export	Save the current image as a file.

- Advanced Tools

Icons	Designation		Description of Features
	Measurement	Angle	Measure the angle between three points.
	Capture	Capture Region	Capture the selected area
		Capture Window	Capture the View Window Area
		Create Movie	Run the movie capture program.
	Annotation	Pointer	Draw freely on the 2D and 3D image.
	On/Off	Grid	Check the scale of the image with grid.
		Show Manager	Show / Hide individual input object
		Turn Overlay On/Off	Show / Hide the entire input objects
		Show/Hide Patient Information	Show / Hide patient information on the image
	Etc	Data Manager	Manage properties of imported data
		Delete All	Delete all input objects
		Initialize Treatment	Initialize all changes except tree structure and bone segmentation from the current treatment



The following functions cannot be canceled <Esc> Key or with a mouse right click.

Icons	Designation	Icons	Designation
	Reset View		Initialize Treatment
	Turn Overlay On/Off		Show Manager
	Delete All		Pointer



- [Create Movie] icon will not appear on the toolbar if the software to link is not set.
- The data drawn using the [Pointer] function is not saved to the project file.
- All functions are disabled while the [Pointer] function is in use.
- Use the pointer function to draw on the current screen temporarily.
- Click the [Annotation > Pointer] icon on the tool bar, and then the following window appears.



- [Pointer]: Drag to draw and mark the area for View Frame.
- [Eraser]: Erase the pointer overlay. The point overlay inserted on the path of the Erase icon moves will be deleted.
- [Thickness]: Set the thickness of Brush or Eraser.
- [Pointer Color]: Set the color of Brush.
- [View Frame Capture]: Capture the View Frame while the pointer drawing mode is on.
- [Reset Pointer]: Delete all pointer objects inserted on the image.
- [Exit]: Close the pointer function.

# Chapter 10. SEGMENT Tab

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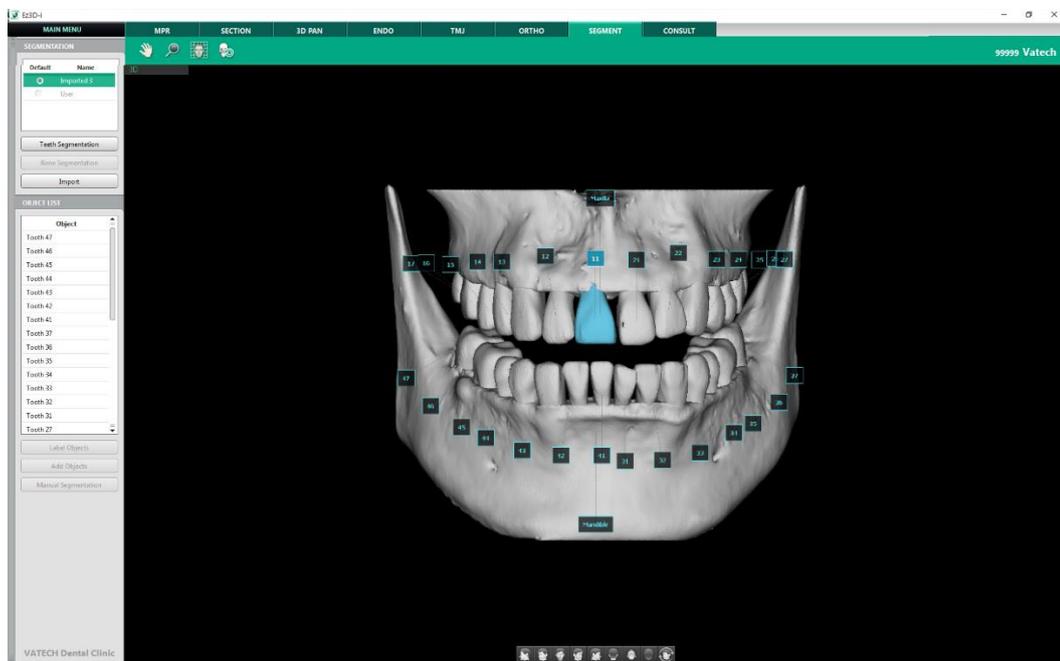
# 1. SEGMENT Tab Configuration

Segmentation function is to segment image into bone data (including Maxilla and mandible) and each tooth data as separate objects to be used during simulation such as tooth extraction and Predict Soft Tissue.

Teeth segmentation data and Bone segmentation data is required to conduct orthognathic simulation on the ORTHO Tab. Please conduct segmentation function or import segmentation data on the SEGMENT Tab before using functions on the ORTHO Tab.

SEGMENTATION tab enables users to conduct teeth segmentation and bone segmentation or import segmented data as well as to manage segregated data. Also, users can manage objects included in each segmentation group through list of segmentation groups and list of objects as well as change tooth code by using Label Object function.

## 1.1 Workspace



## 2. Quick Segmentation



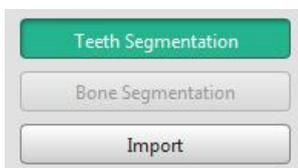
Quick Segmentation is a simulation function to separate individual teeth from CT data. Its error range is  $\pm 10\%$ . Users must be aware of and carefully consider the error range when consulting a patient. This function is not intended for actual surgery planning but for patient consultation only.



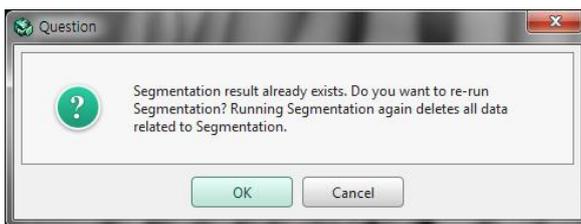
Teeth Segmentation and Bone segmentation are only available for User group.

### 2.1 Teeth Segmentation

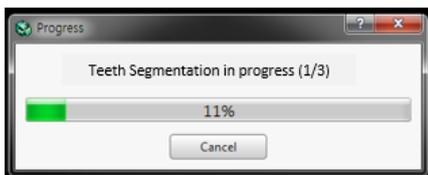
1. Select a segmentation group and click [Teeth Segmentation].



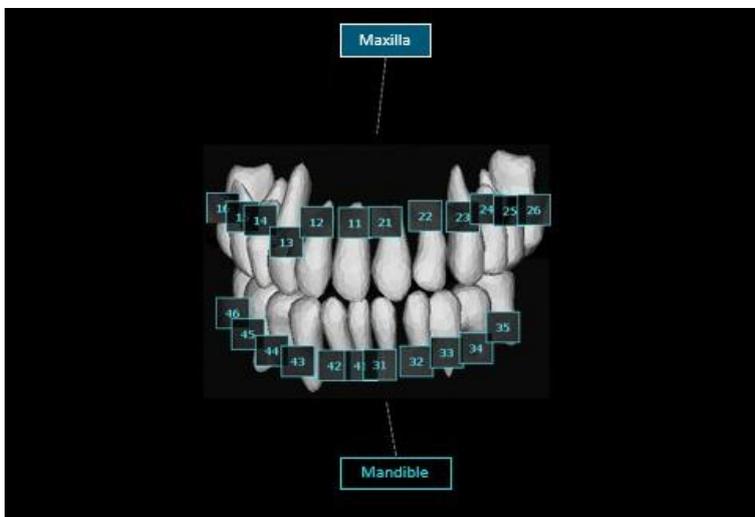
2. When the following dialog appears, click OK to conduct Teeth Segmentation again, or Cancel to maintain previous segmentation results.



3. Please wait until segmentation process is completed.

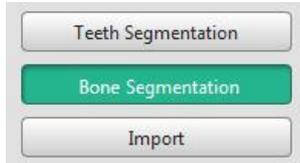


4. The result of Teeth Segmentation is shown on the 3D View.



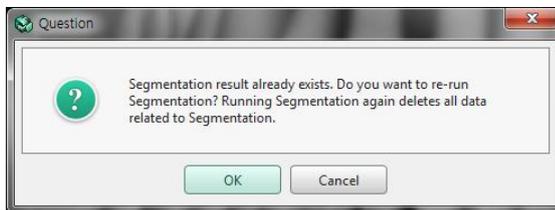
## 2.2 Bone Segmentation

1. Select a segmentation group and click the [Bone Segmentation] button.

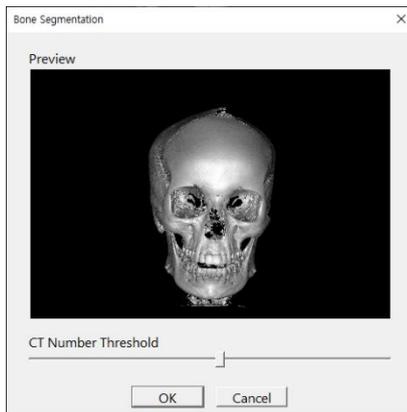


Bone segmentation is enabled after Teeth Segmentation is completed and only when it is available for the User group.

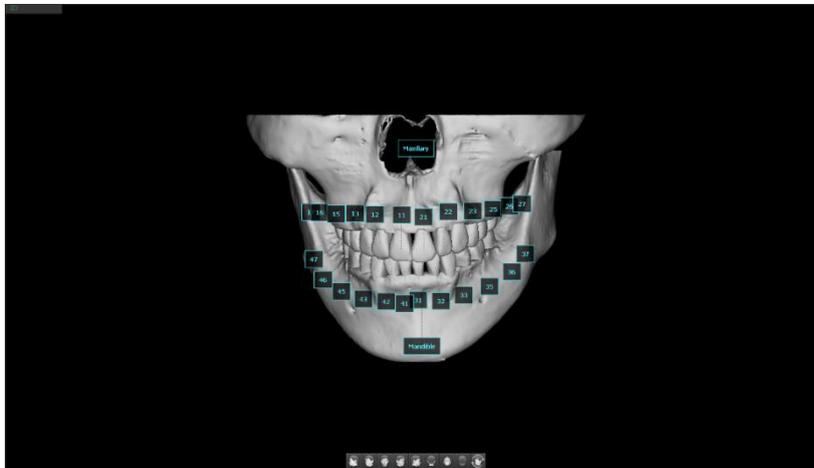
2. When the following dialog appears, click OK to conduct Teeth Segmentation again, or Cancel to maintain previous segmentation results.



3. Move the slider to set the CT number threshold and click [OK] to proceed.

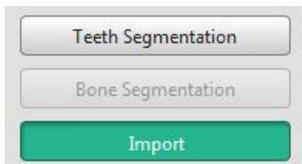


4. When the segmentation is complete, the result of Bone Segmentation is shown on the 3D View.

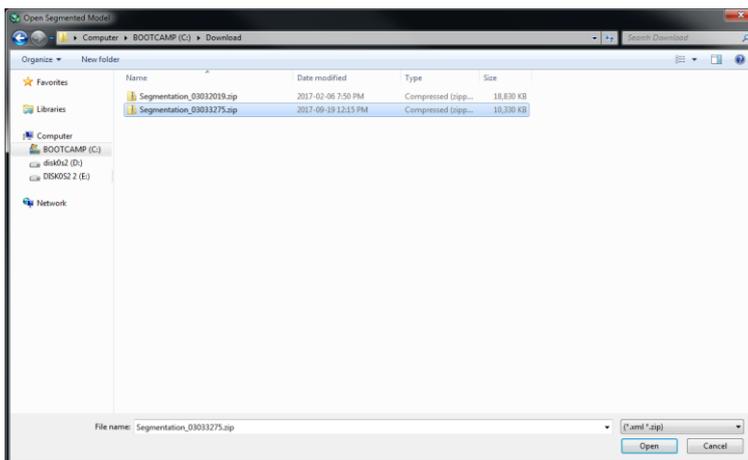


### 3. Import Segmentation Data

1. Click the [Import] button in the SEGMENTATION group.

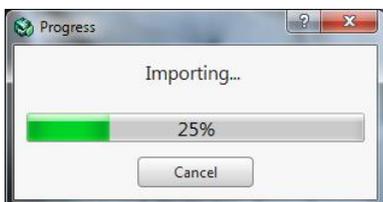


2. Select a file directory to import and click the [OK] button.

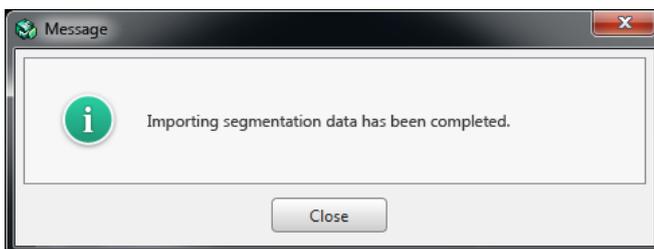


- Only zip files are available to be chosen and multi file selection is not supported.

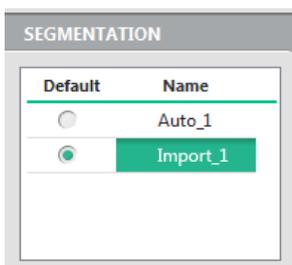
3. Please wait until import process is completed.



4. Click the [Close] button when the following message appears.



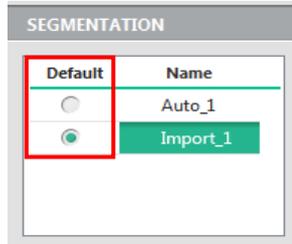
5. The imported file is added to the SEGMENTAION list with a name automatically created.



## 4. Segmentation List

### 4.1 Set as Default Group

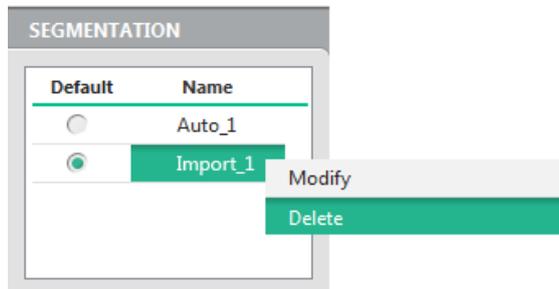
The user can set the default group by clicking the Default radio button.



When the default group is changed, all changes made to tooth segmentation data will be lost.

### 4.2 Modify/ Delete

1. Click a segmentations group on the list and right click on the segmentation group name.
2. Select Modify/ Delete.

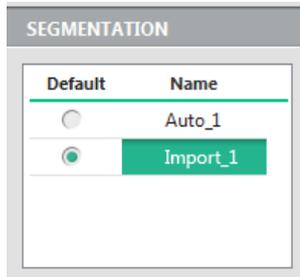


When a segmentation group is deleted, all orthognathic treatment included in the segmentation group will be lost as well.

## 5. Object List

### 5.1 Select an Object

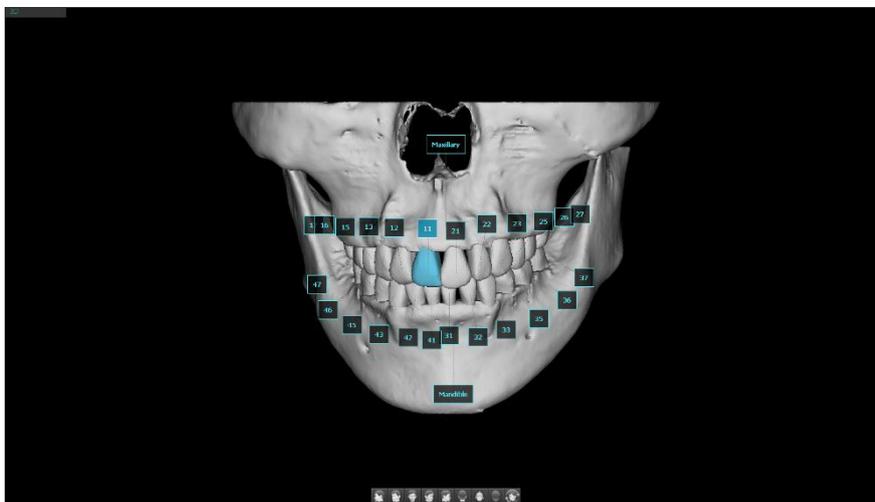
1. Click on of the segmentation group from the SEGMENTATION list.



2. Click an object on the list.

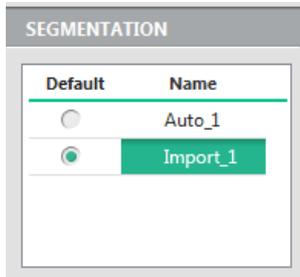


3. The selected object will be shown as selected in a different color on the 3D View. An object can also be selected by clicking on the view.



## 5.2 Show/Hide Objects

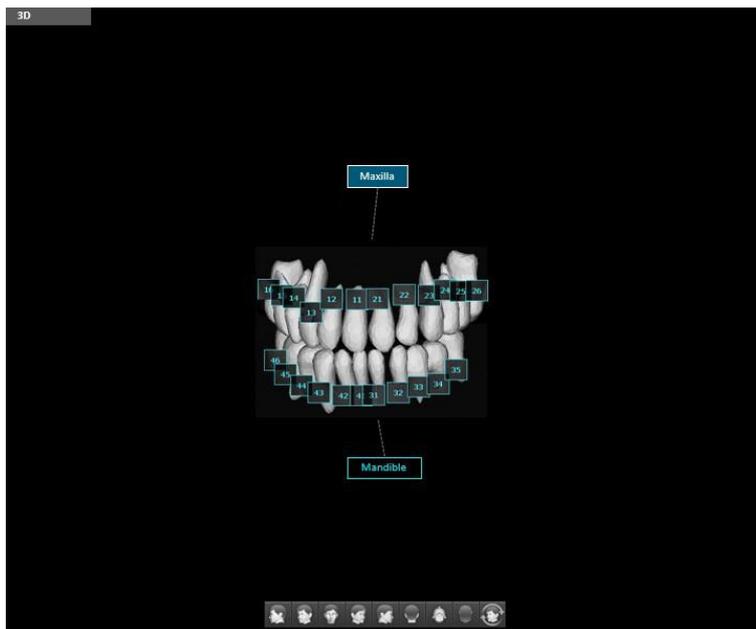
1. Select a segmentation group on the list.



2. Check/uncheck the check boxes on the right of each object to show/hide objects on screen.



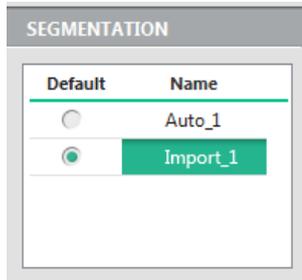
3. The unchecked objects will be hidden.



## 6. Label Object

### 6.1 Modify Labels of Objects

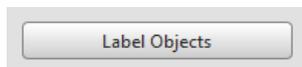
1. Click on of the segmentation group from the SEGMENTATION list.



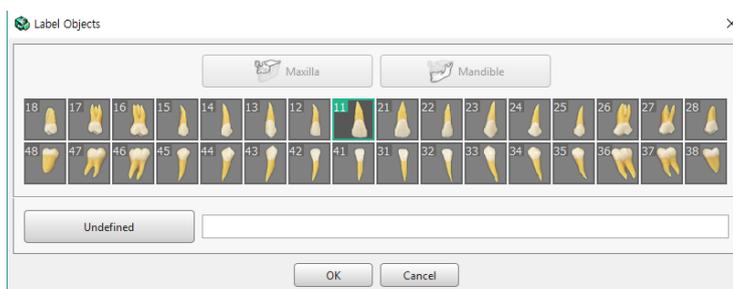
2. Click an object on the list.



3. Click the [Label Objects] button.

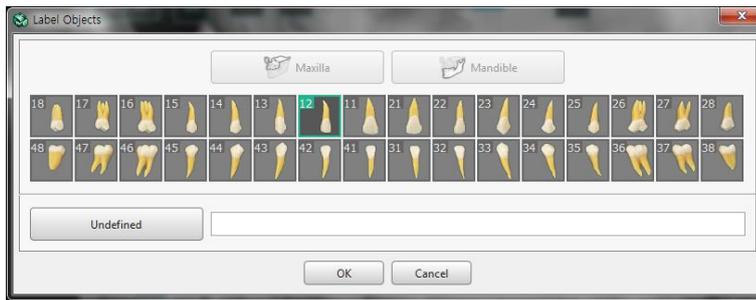


4. The [Label Objects] dialog appears as follows.

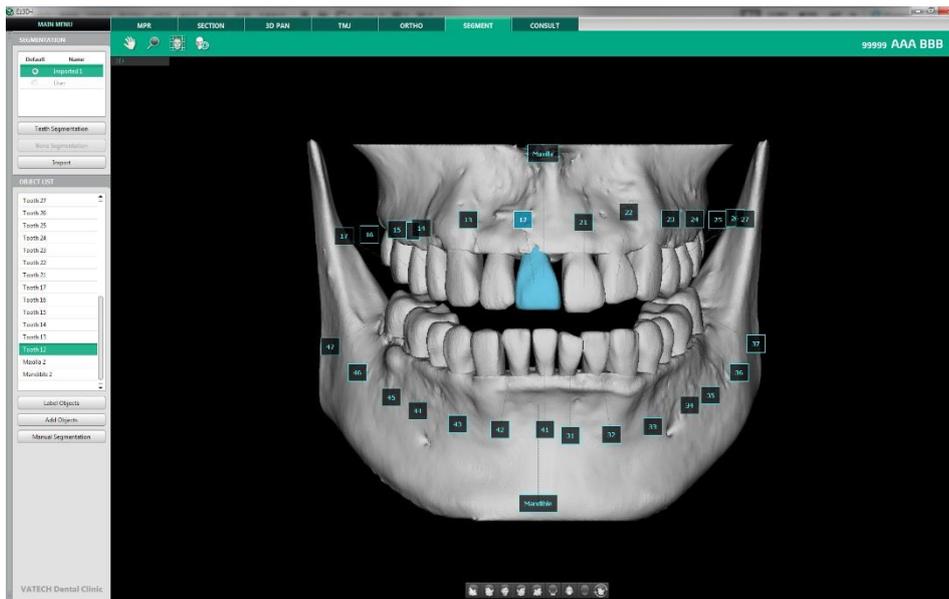


Maxilla and Mandible buttons are disabled when Maxilla and Mandible objects already exist to prevent duplication.

- Select a desired label button to change current label to and click the [OK] button.



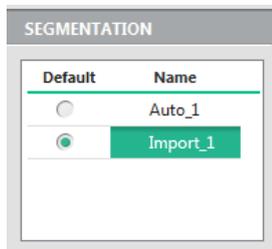
- The labels of objects are automatically updated.



## 7. Add Object

### 7.1 Creating object with manual segmentation

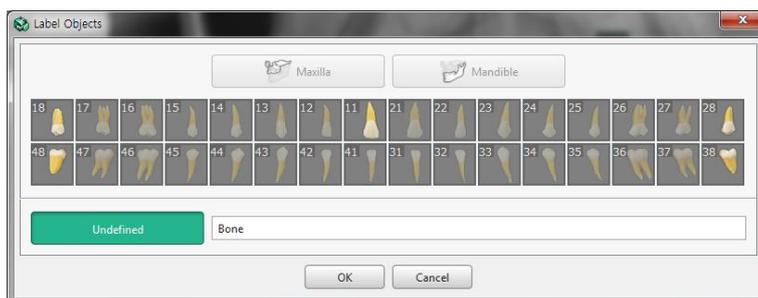
1. Click on of the segmentation group on the list.



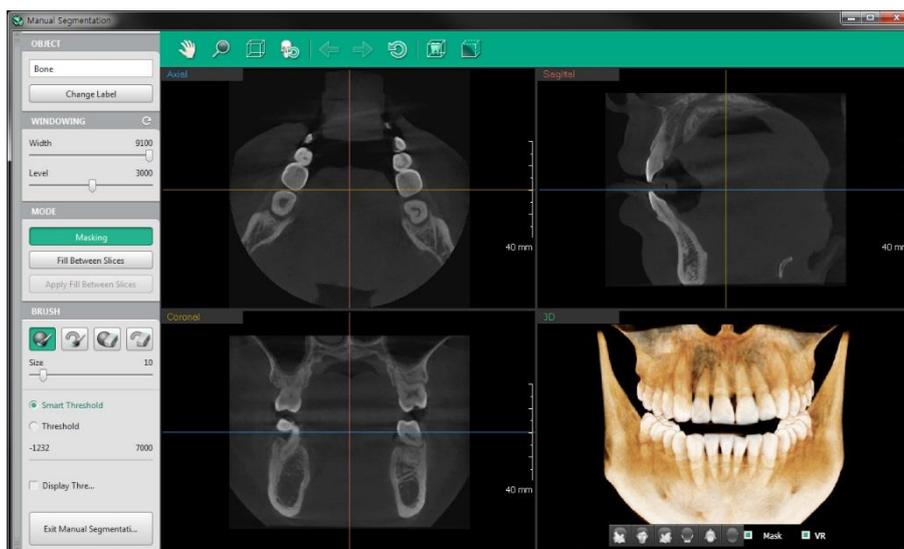
2. Click Add Object button.



3. Select a label of the object to add, and click OK.



4. [Manual Segmentation] dialog appears.

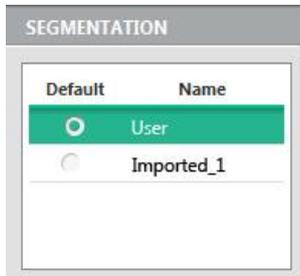


5. Please refer to 'Chapter 10. SEGMENT Tab > 8. Manual Segmentation' to complete manual segmentation.
6. Exit Manual Segmentation dialog to display the results on the screen.

## 8. Manual Segmentation

### 8.1 Start Manual Segmentation

1. Click on one of the segmentation groups from the SEGMENTATION list.



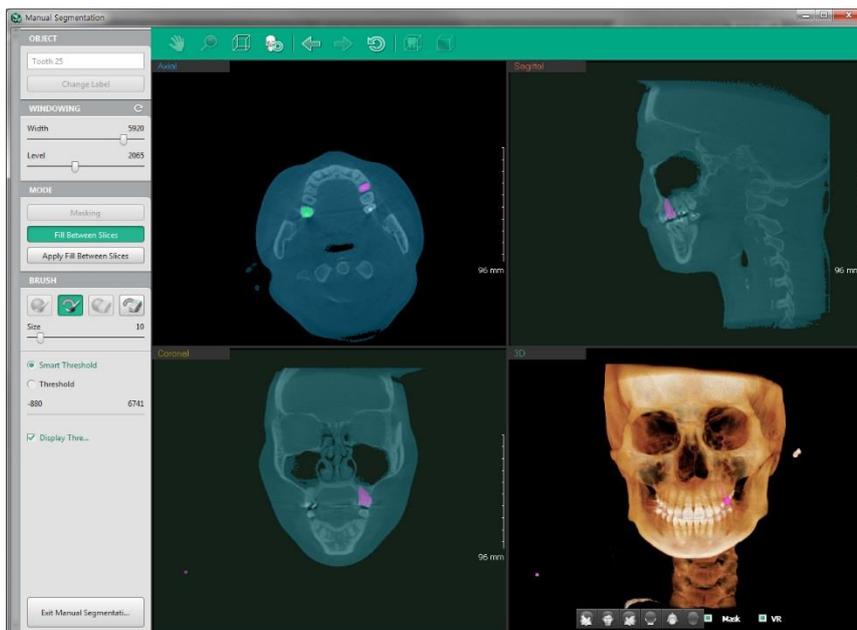
2. Select an object to conduct manual segmentation from the OBJECT LIST.



3. Click Manual Segmentation button.



4. Manual Segmentation dialog appears.



## 8.2 Object Labelling

1. Check the current object label.



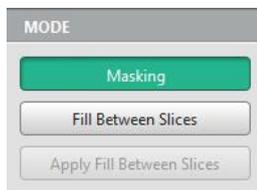
2. Click Change Label if it needs to be changed.
3. Label Objects dialog appears.



4. Select an object to change to and click OK.
5. The changed label applies when End Manual Segmentation button is clicked.

## 8.3 Masking

1. Masking button is enabled as default when Manual Segmentation dialog appears.



2. Select a brush in the BRUSH group.



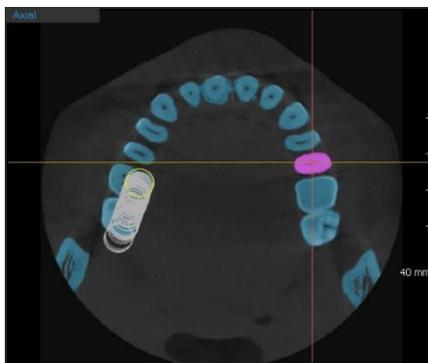
	Sphere Brush	Tool to insert mask with sphere-shaped brush
	Circle Brush	Tool to insert mask with circle-shaped brush
	Sphere Eraser	Tool to delete mask with sphere-shaped eraser
	Circle Eraser	Tool to delete mask with circle-shaped eraser
	Size	Tool to change the size of brush and eraser

3. Select a threshold type and range.



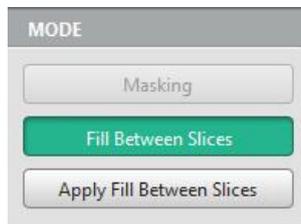
Smart Threshold	Mask with threshold value of seed area (circle or sphere area where mouse-clicked)
Threshold	Mask with threshold range set in the Threshold Slider

4. Click and drag in the image panel to conduct masking function.

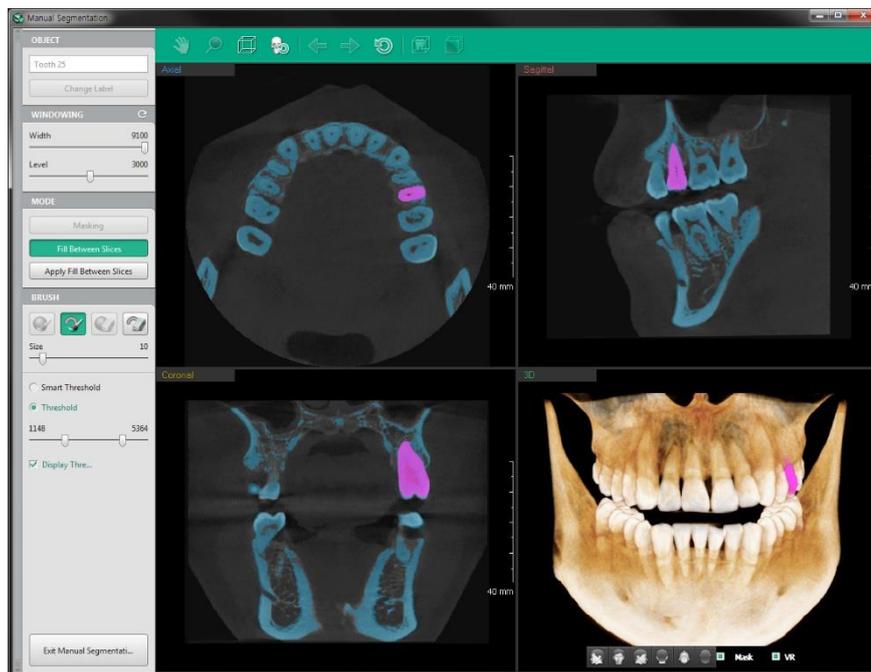


## 8.4 Filling Between Slices

1. Click Fill Between Slices button .



2. Apply Fill between Slices button is enabled and the workspace enters into Fill Between Slices mode.



3. Select a view to insert mask.
4. Select a brush or erase to draw on each slice on 2D view.
5. Click Apply Fill between Slices button after completing drawing.

Apply Fill Between Slices

6. Volume mask connecting more than two masks is created.

## 9. Tools in the Toolbar

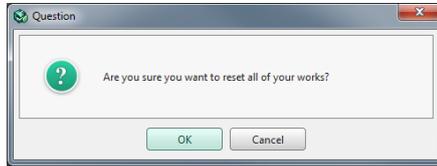
- Main Tools

Icons	Designation	Description of Features
	Panning	Move images
	Zooming	Zoom in or out
	Grid	Check the scale of the image with grid.
	Reset View	Initialize rotate, move, zoom
	Export	Save the current image as a file.

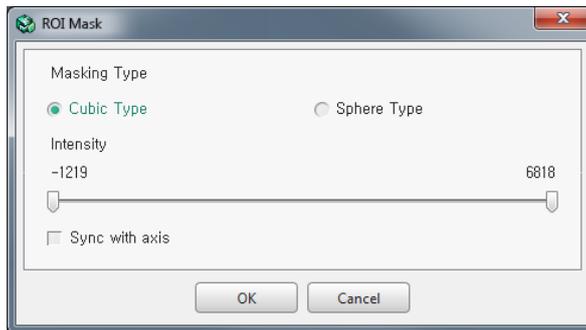
- Advanced Tools

Icons	Designation	Description of Features
	Show Bounding Box	Display bounding box of mask volume of 3D view
	Undo	Undo your last action
	Redo	Revert Undo
	Reset All	Initialize Sculpt
	ROI	Measure pixel, average value, maximum value and standard deviation of ROI
	Smoothing	Rounding edges of masking volume data

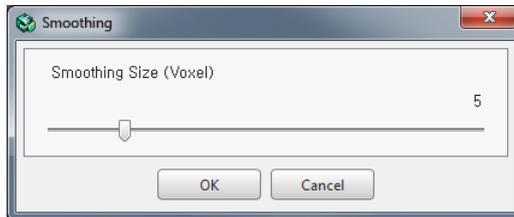
- [Undo]: Function to undo masking result.
- [Redo]: Cancel Undo function. It is possible to redo each step of undo results.
- [Reset All]: Function to initialize all masking results. The following message pops up when selecting Reset All button. When OK is clicked, all masking data is deleted, and it returns to the initial status.



- [ROI]: Function to set region and create volume measure with the set threshold value. The following ROI Mask dialog appears when ROI tool icon is clicked. Select Masking Type, Intensity (Threshold value applied to the selected ROI), View Mode only check box if needed, and click OK button to apply changes.



- [Smoothing]: Function to apply rounding effect to masked volume data. A pop-up dialog appears to set smoothing size when selecting Smoothing tool icon. Move the slider to adjust smoothing value and click OK to apply the change.



# Chapter 11. CONSULT Tab

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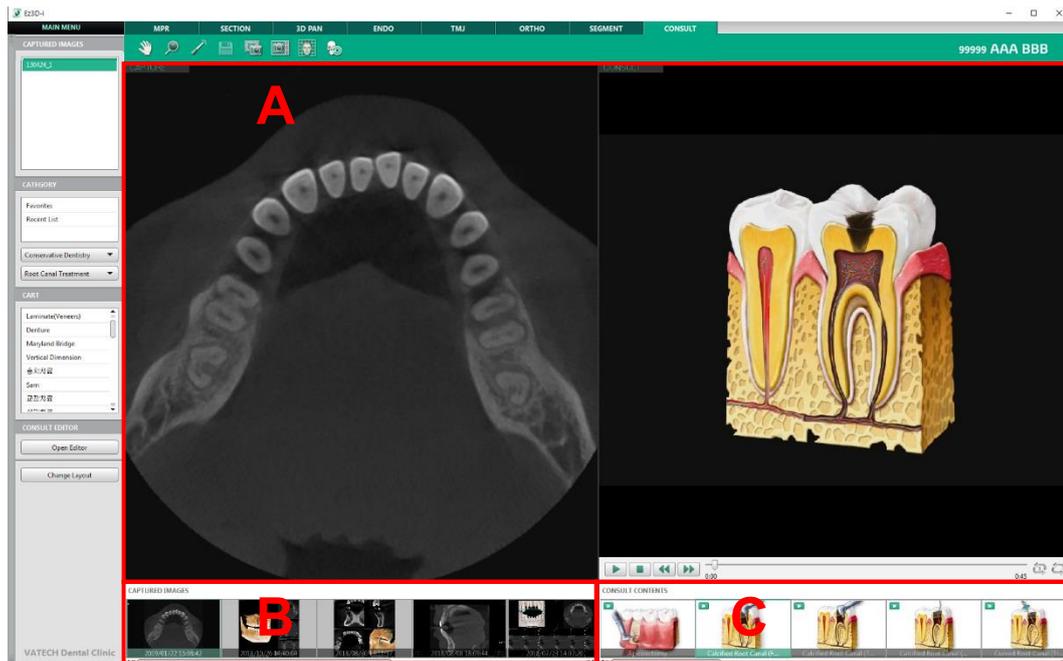


# 1. CONSULT Tab Configuration

The CONSULT Tab allows users to manage the image data necessary for counseling patients by organizing images into carts depending on the treatment category.

Ez3D-i can add, edit and delete the images in the cart as desired for patient counseling.

## 1.1 Workspace



- A is Consult Content screen. It shows the list of videos and images for patient counseling Drag & drop one of the videos then it is automatically played.
- B is the Captured Image screen. The image captured by the user in other tabs is displayed.
- C is the screen showing the consult content. The user can drag and drop to play the videos and images in the list above for patient consultation.



NOTE

Right click the captured images in the B window to delete or save it with different name.

Also, the captured images in the thumbnail list can be added to the workspace, and the image on the workspace can be added to the Consult Image by right clicking the image.

Multi captured images cannot be viewed in the Report tab.



CAUTION

If operating system of user's PC is Windows 7 edition and Media Player has not installed yet, video for consultation does not play.

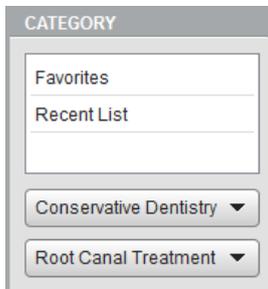
Please visit <http://windows.microsoft.com>, download Media Player 12 and install it.

In the Windows vista environment, the consultation video will not be played.

## 2. Selecting Consulting Images in the Cart

[Favorites] category includes the user's preferred consultation videos.

[Recent List] includes the user's most recently used consultation videos.



### 3. Consult Contents

User can add captured images and consult contents to view frame for consultation.

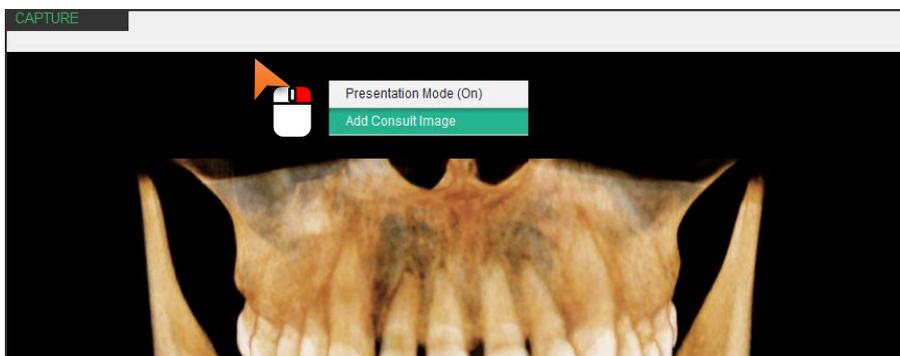


For the patients who have the same Patient ID, categories by acquisition date is created in the [CAPTURED IMAGES] list below the main menu, and the images in each category appear in the thumbnail list.

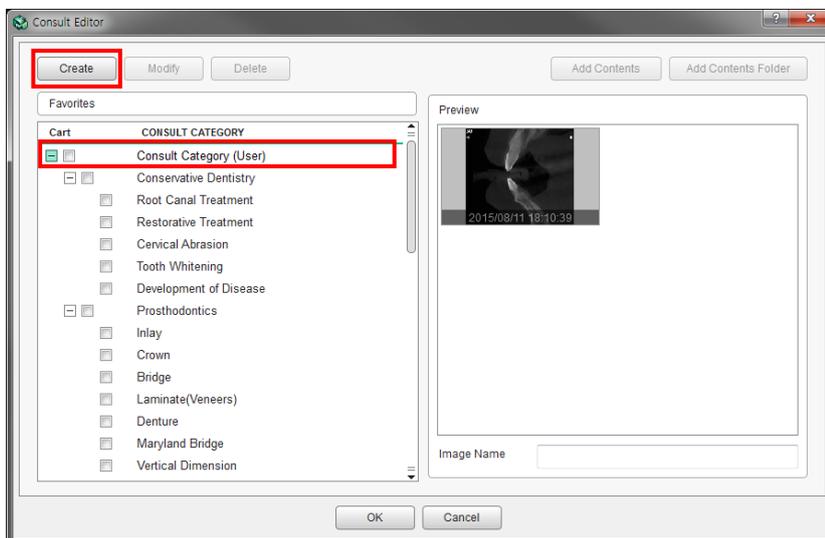
#### 3.1 Adding Consult Image

User can add captured images as consult contents.

1. Right click image in the [CAPTURE] window and click the [Add Consult Image] option. The [Consult Editor] dialog appears.



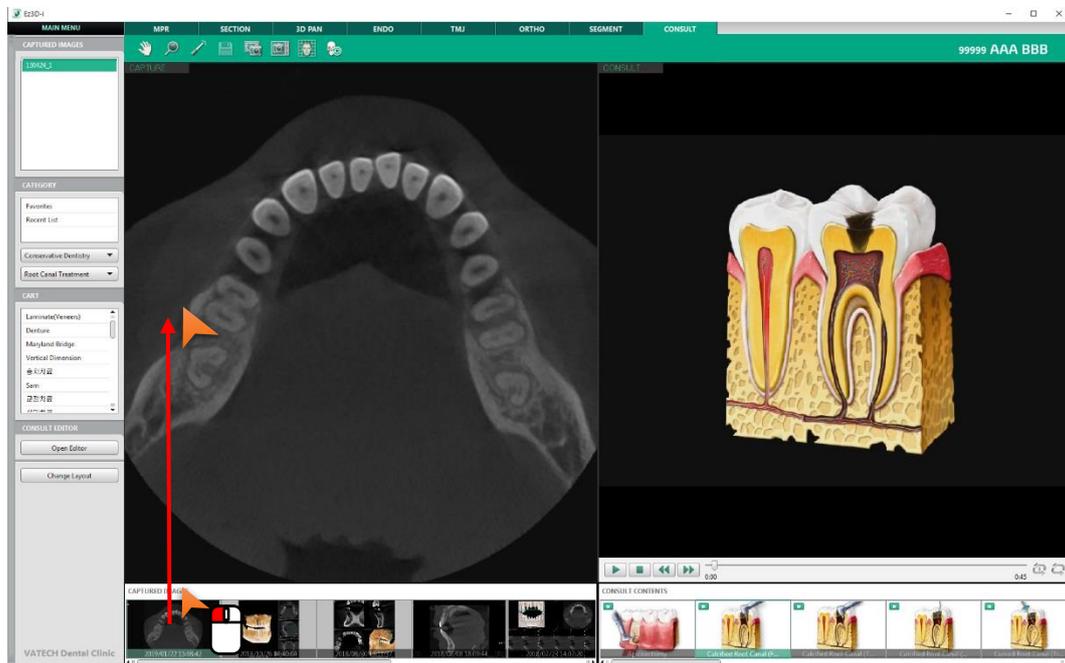
2. Click to select a category to where the image is added. Or click the [Create] button to create a new category.



3. Click the [OK] button. The image is added to the selected category.

### 3.2 Adding Consult Contents

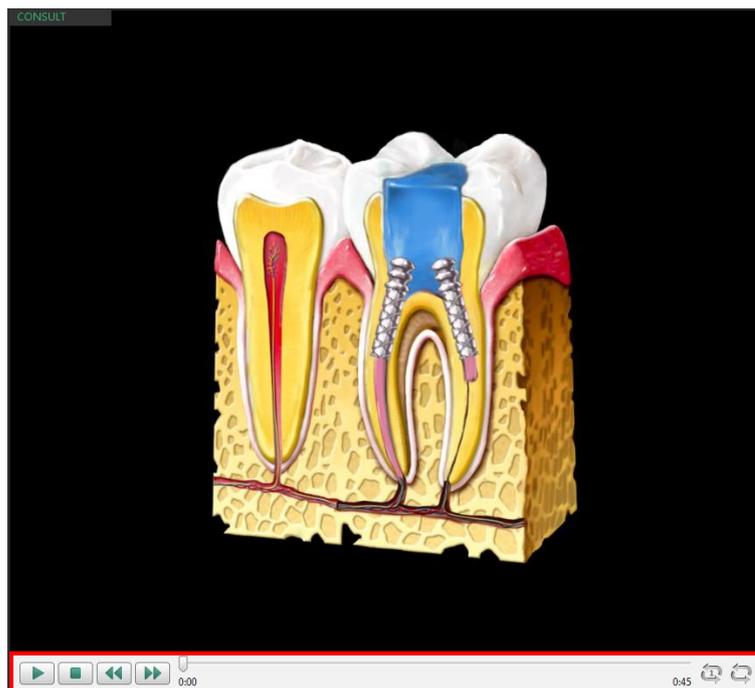
Drag and drop the image and consult content from the thumbnail view to the view frame.



### 3.3 Playing Movie Clip

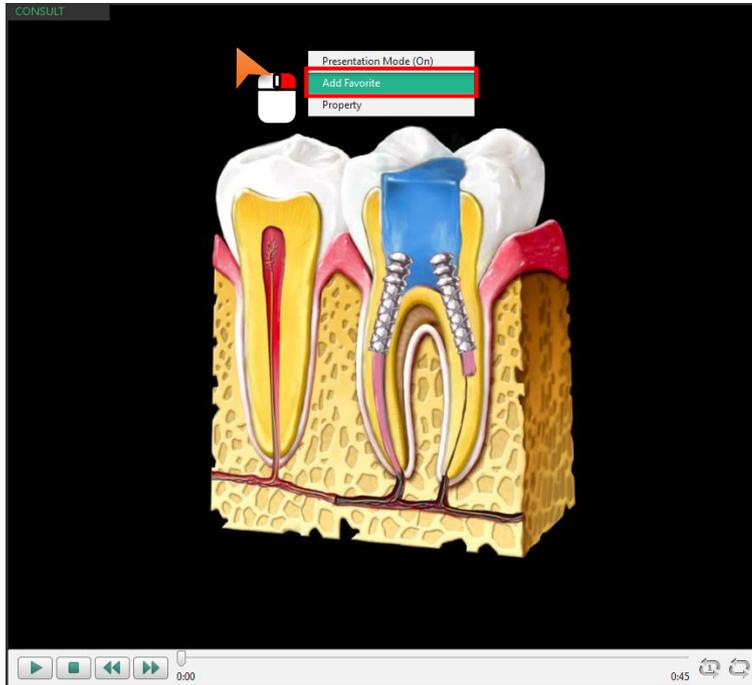
User can add consult contents such as movie clip to view frame and play for more efficient consultation.

Drag and drop the movie clip to the view frame. The control bar appears at the bottom of the Consult pane.



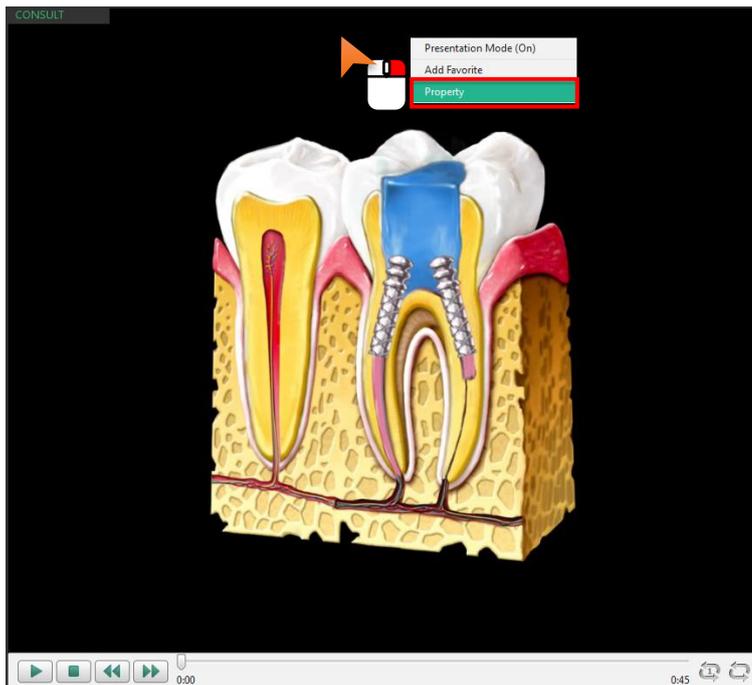
### 3.4 Adding to Favorite

Right click on the Consult pane and click the [Add Favorite] option. The content will be added to the [Favorites] category.



### 3.5 Viewing Property

Right click on the Consult pane and click the [Property] option to view the information of corresponding content. The [Consult Editor] dialog appears.



## 4. Editing Cart

Users can add, change and delete categories in the cart. Within a category, the user can add new content or create a new folder.



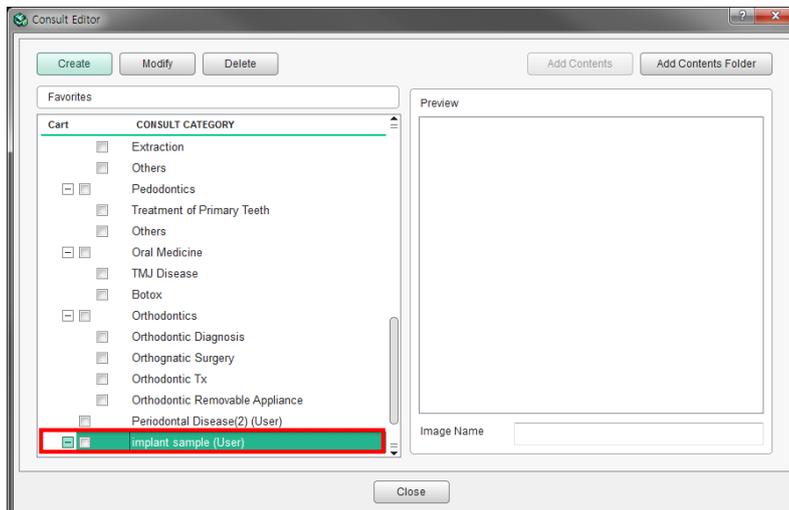
The [Favorites] category cannot be modified or deleted.

### 4.1 Adding New Category

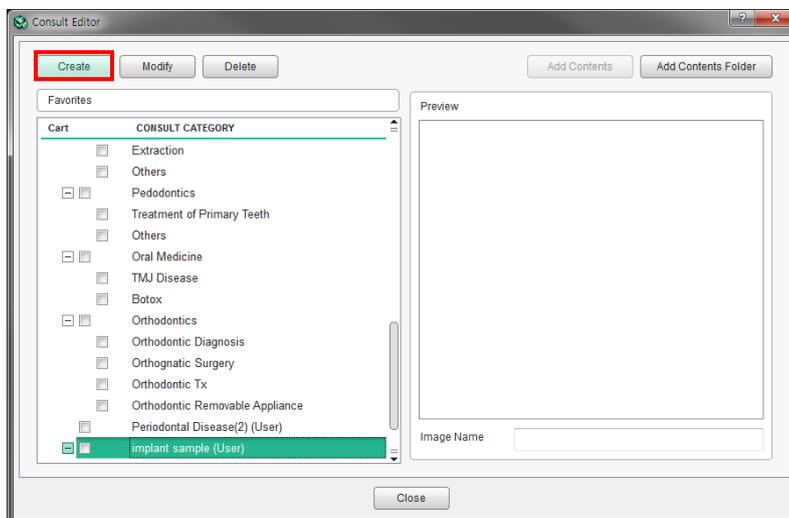
1. Click the [Open Editor] button. The [Consult Editor] window appears.



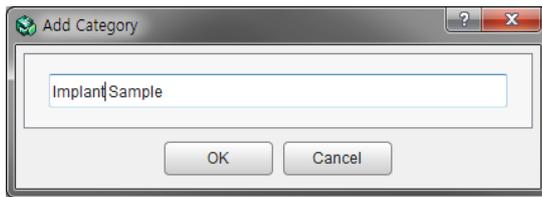
2. Click and select the category to add to a sub-category.



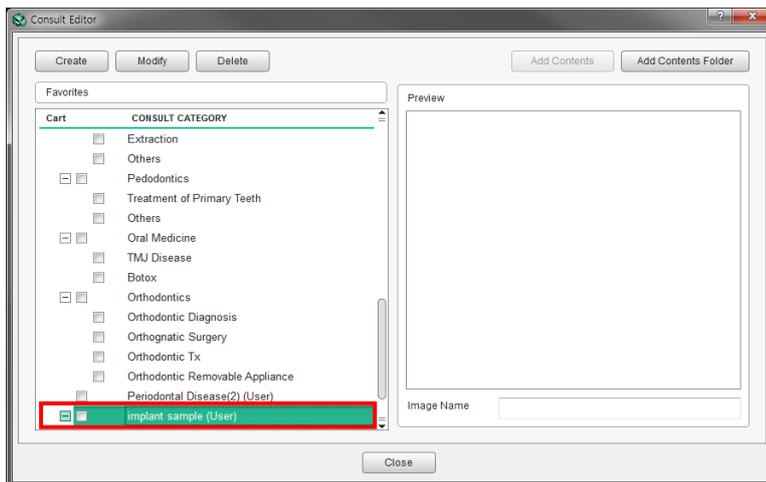
3. Click the [Create] button. The [Add Category] window appears.



4. Enter the name of the category and then click the [OK] button to create the category.



5. The word "(User)" will be added to the category created by user.

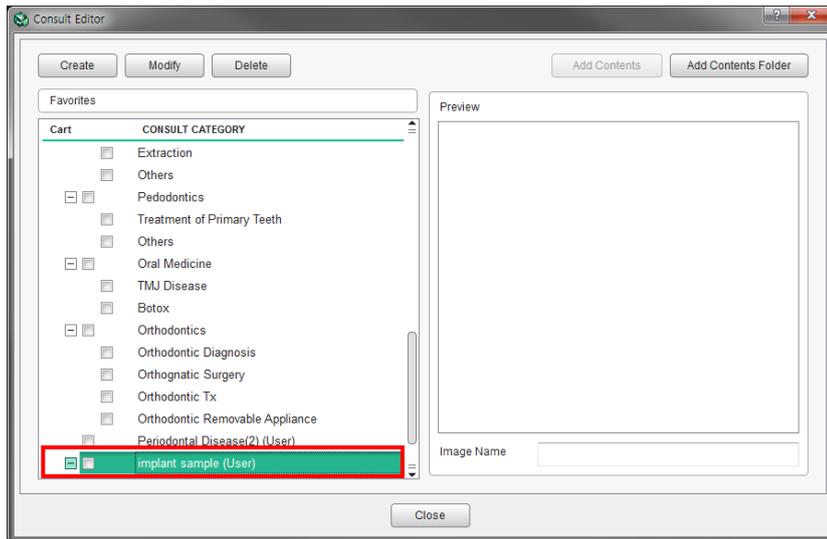


## 4.2 Modifying Category

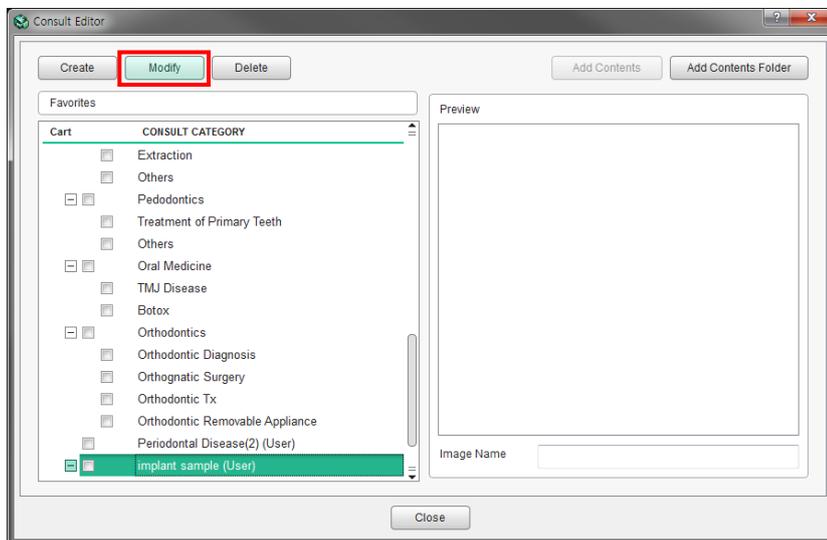
1. Click the [Open Editor] button. The [Consult Editor] window appears.



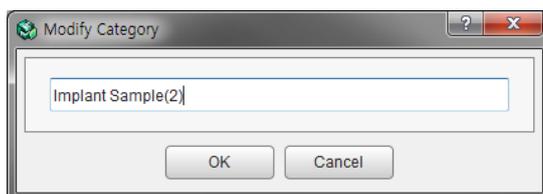
2. Click and select the category you wish to modify.



3. Click the [Modify] button. The [Modify Category] window appears.



4. Enter the new name of the category and then click the [OK] button to change the name.

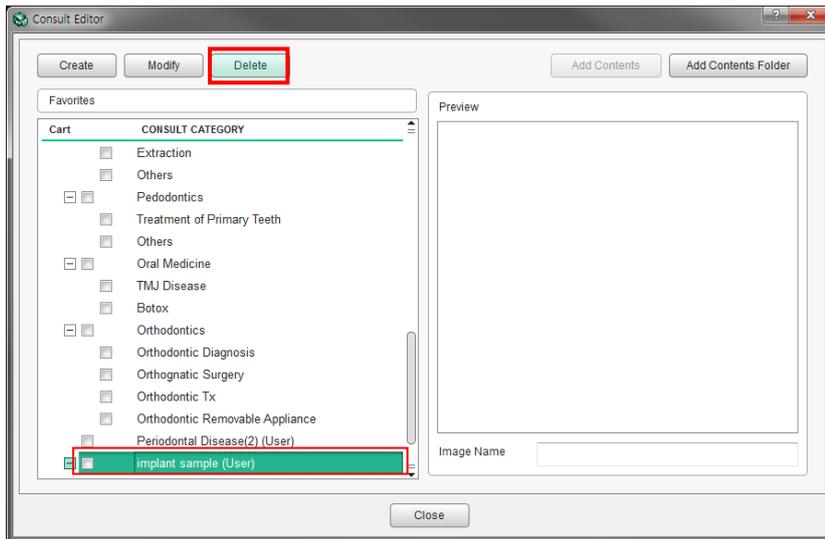


## 4.3 Deleting Category

1. Click the [Open Editor] button. The [Consult Editor] window appears.



2. Select the category you wish to delete and then click the [Delete] button.



3. The following [DELETE] window appears to confirm the deletion. Click the [Yes] button. The category is deleted.

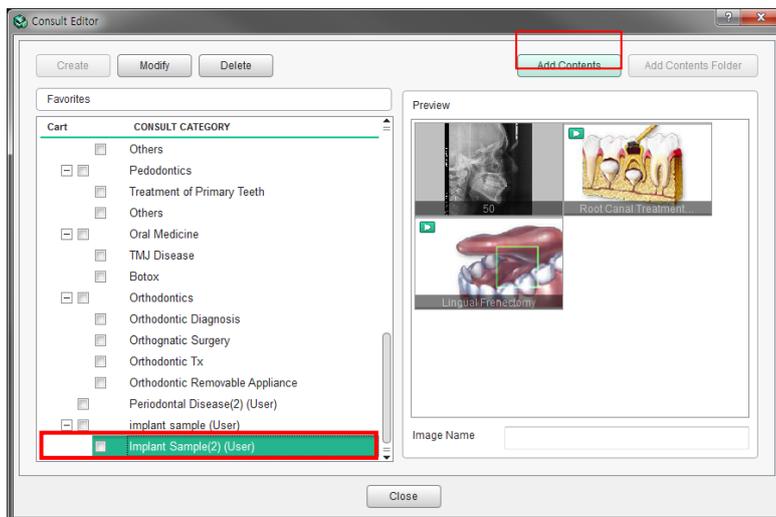


## 4.4 Adding Contents

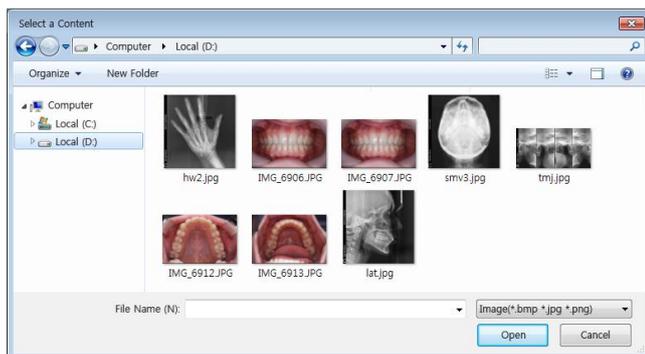
1. Click the [Open Editor] button. The [Consult Editor] window appears.



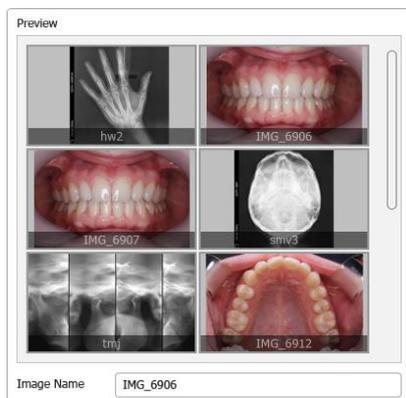
2. Select the category to add new contents, and then click the [Add Contents] button.



3. The following Select Content window appears. Click the content to add and then click the [Open] button. Image format (\*.bmp, \*.jpg, \*.png), video format (\*.avi, \*.mov, \*.mp4, \*.wma), and document format (\*.doc, \*.docx, \*.ppt, \*.pptx, \*.pdf) can be added.



4. The added contents appear in the [Preview] window. The name of the contents can be changed in the [Image Name] field.

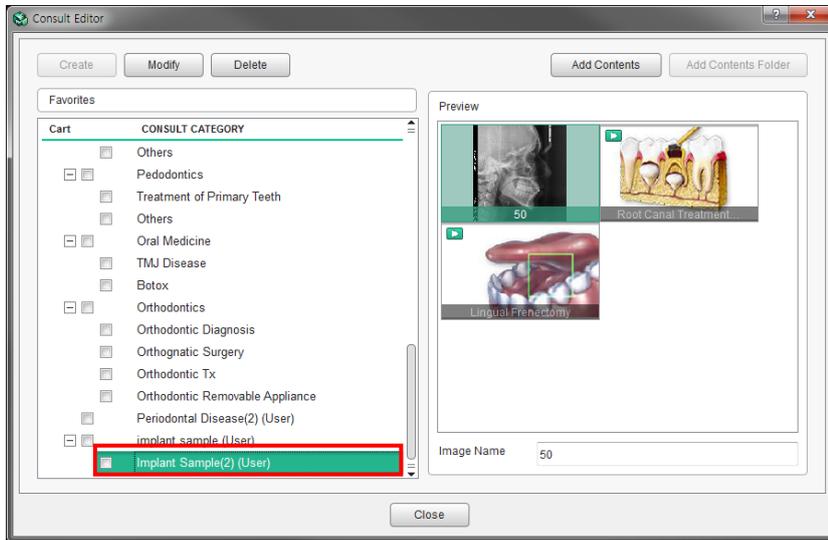


When opening the document format contents, the file will not be opened with Ez3D-i, but the relevant program will be executed to open the file.

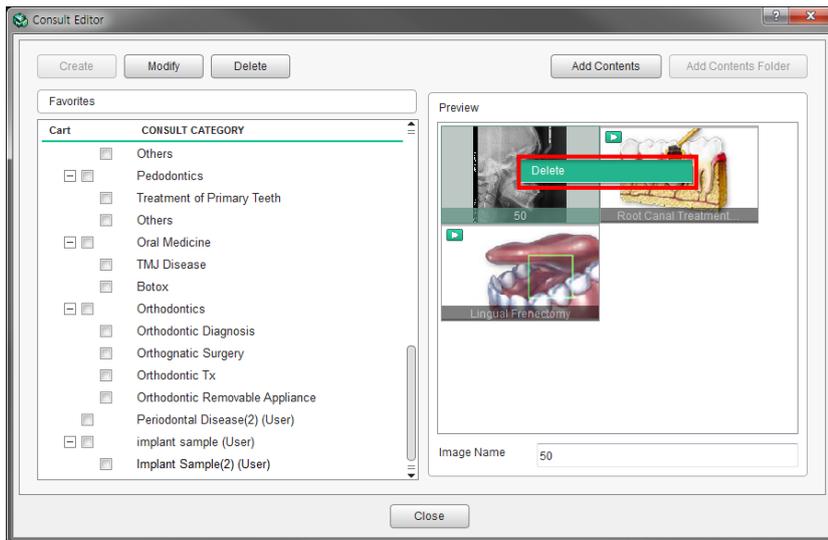
Contents cannot be added to the Basic category and the categories that have sub-categories. Users can only add contents to the categories that are added by user and that do not have sub-categories.

## 4.5 Deleting Contents

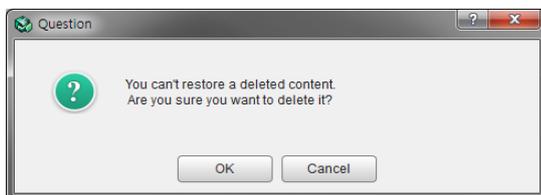
1. Click and select the category that includes the contents to delete.



2. Right click the contents to delete and click the [Delete] option.



3. Click the [OK] button to confirm the deletion. The selected contents will be deleted.

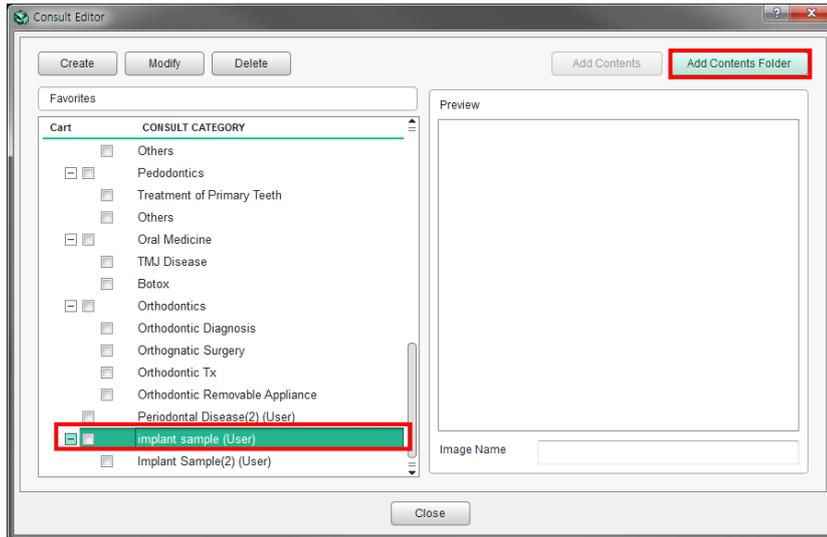


## 4.6 Adding Content Folder

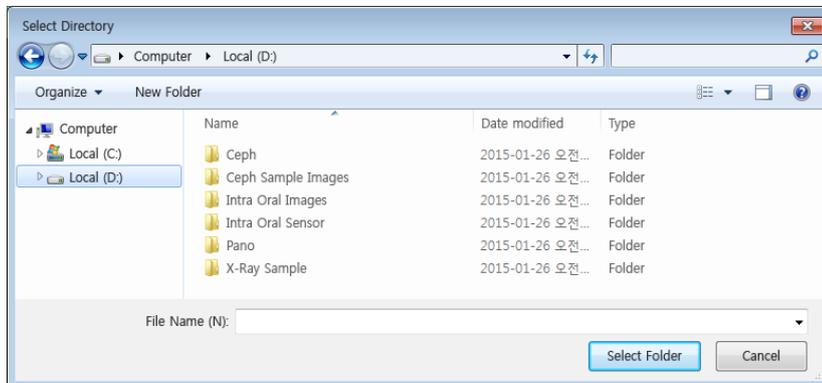
1. Click the [Open Editor] button. The [Consult Editor] window appears.



2. Select the category to add a content folder. Click the [Add Content Folder] button.



3. Select the folder to add in the [Select Directory] dialog.

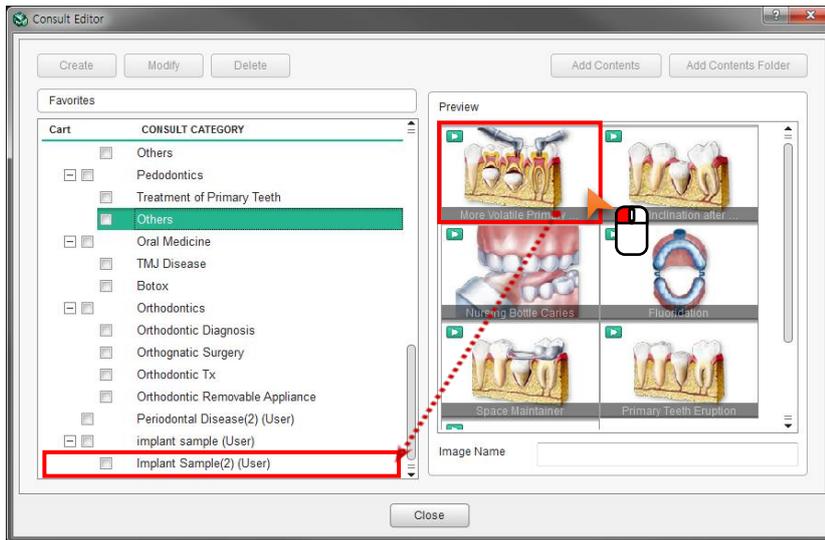


4. Click the [Select Folder] button. The added folder appears.

## 4.7 Coping Consult Image

User can copy consult image to the categories added by user.

1. Click the category that has the image to copy. The images in the selected category are displayed in the Preview pane.
2. Click the image in the image list, and drag and drop it to the category to where the image is copied.



The image can be copied only to the categories added by users, and if the category has sub-categories, it cannot be copied to the main (upper) category.

## 5. Tools in the Toolbar

- Main Tools

Icons	Designation	Description of Features
	Panning	Move the image
	Zooming	Zoom in or out
	Pointer	Draw freely
	Save to DB	Save the selected image in the database.
	Capture Region	Window capture
	Capture Window	Capture the View Window area
	Grid	Check the scale of the image with grid.
	Reset View	Reset panning and zooming



NOTE

### Save to Database

The [Save to DB] icon is enabled only when the [Captured image save option] is set to [Manual save to image server] and run through the linked EzDent-i.

The option will not be enabled if either condition is not satisfied.

- The point overlay remains even when showing in the Full Screen mode or the [Pointer] function is terminated in the Consult tab. But, the point overlay will be deleted when loading other images or closing the program.
- When capturing images with the [Capture Region] and the [Capture Window] function, the images are not saved to the DB.
- The data drawn using the [Pointer] function is not saved to the project file.
- All functions are disabled while the [Pointer] function is in use.
- Use the pointer function to draw on the current screen temporarily.
- Click the [Annotation > Pointer] icon on the tool bar, and then the following window appears.



NOTE



- [Pointer]: Drag to draw and mark the area for View Frame.
- [Eraser]: Erase the pointer overlay. The point overlay inserted on the path of the Erase icon moves will be deleted.
- [Thickness]: Set the thickness of Pointer or Eraser.
- [Pointer Color]: Set the color of Pointer.
- [View Frame Capture]: Capture the View Frame while the pointer drawing mode is on.
- [Reset Pointer]: Delete all pointer objects inserted on the image.
- [Exit]: Close the Pointer function.

# Chapter 12. REPORT

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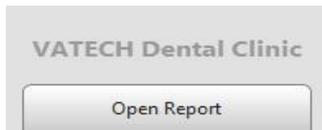


## 1. Starting Report Dialog

Report dialog allows users to keep diagnosis and counseling records. It can be used as a chart to record images of patient and treatment description.

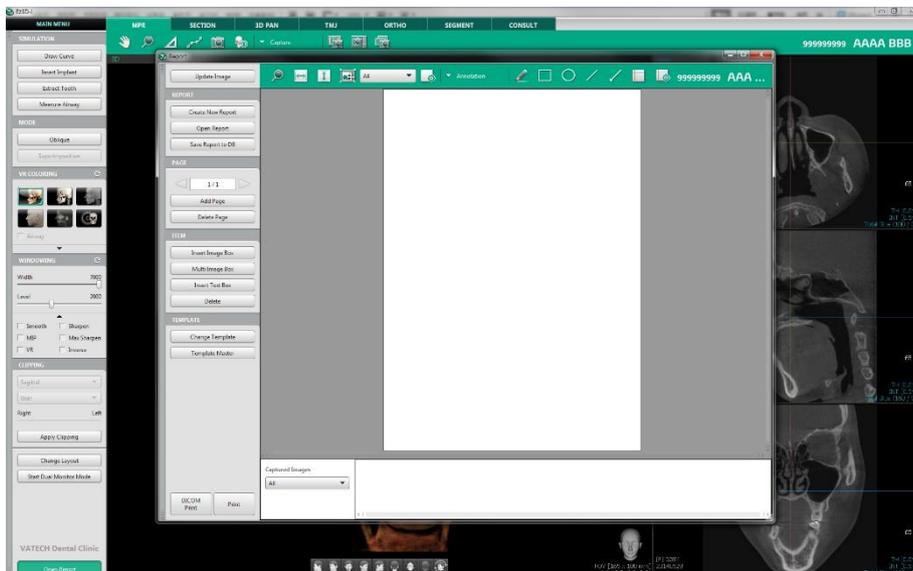
Ez3D-i can send the report to the patient directly via email as a PDF file.

1. Click Report button at the bottom left of control panel.



Report button is displayed on all diagnosis tabs except Segment and Consult tab.

2. Report dialog appears as follows.

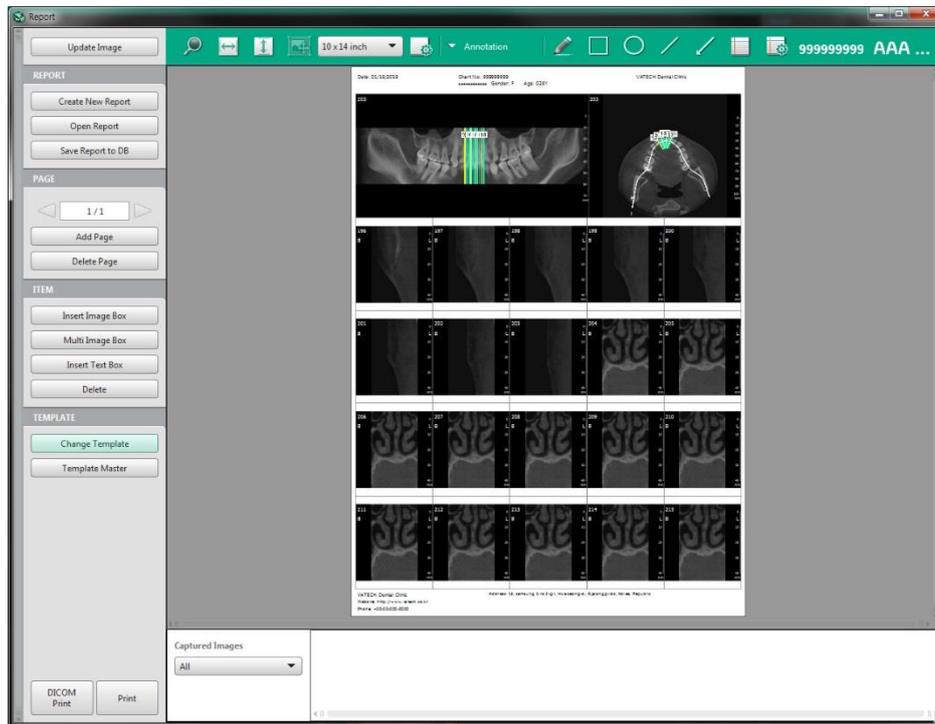


3. Please wait until loading progress is completed.



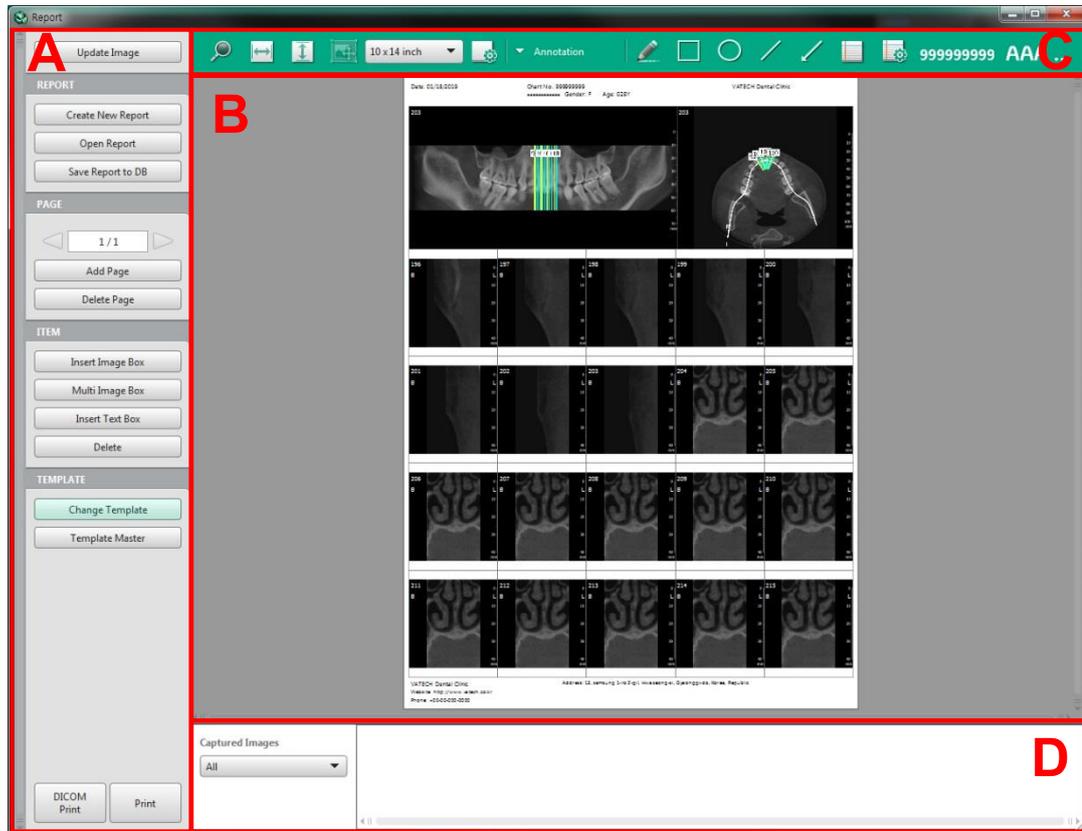
4. When Loading Progress is completed, Change Template Dialog pops up to select a report template to open.

5. Default template is opened on the workspace of Report dialog and images are displayed on the image boxes when Auto Fill option is enabled.



Please refer to 'Chapter 12. Report > 3.4 Inserting Images' for more information about how to fill image boxes with captured images.

## 2. Report Dialog Layout



- **A: Control Panel**
  - Show list of templates
  - Add pages and item boxes
  - Print/Save/Open report
- **B: Workspace**
  - Display template title
  - Display report template
  - Display image on the report
- **C: Tool bar**
  - Display tools to be used in the Workspace
- **D: Captured Image**
  - Display image thumbnails to select and insert in the report

## 3. Editing Report

### 3.1 Updating Image

1. Click Update Image button to update image boxes with current images on diagnosis tab.



Please click Update Image button when a report is opened.

2. Images are updated according to Auto Fill setting.
  - If the property of image box is set as 'Auto Fill', the image is updated.
  - If the property of image box is set as 'Captured', the image is not updated.

### 3.2 Managing Report Page



#### 3.2.1 Changing Page

- [] button is to view previous page. The button is disabled when it reaches the first page.
- Page Number is to show current page/total page
- [] Button is to view next page. The button is disabled when it reaches the last page.

#### 3.2.2 Adding Page

1. Click Add Page button to add a page to the selected report.



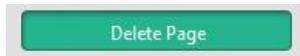
2. A new blank page is added to the last page.



Pages can be added up to 10.

### 3.2.3 Deleting Page

1. Click Delete Page button to delete a page which is currently displaying on the report.



2. Click OK to delete when the following message appears.



3. The page is deleted and the previous page is displayed.

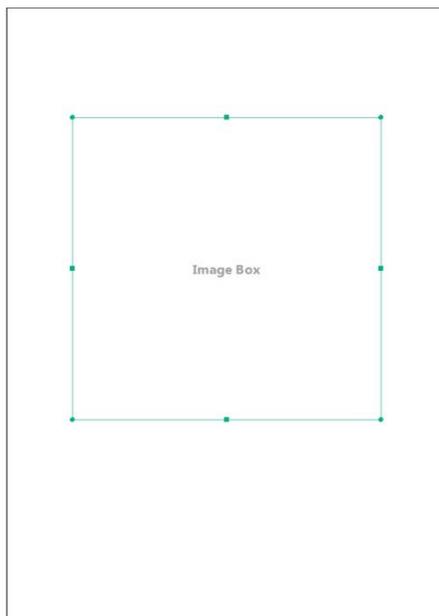
## 3.3 Adding/Deleting Item Box

### 3.3.1 Adding Single Image Box

1. Select Insert Image Box button to create an image box on the selected report.



2. A single image box is inserted on the default position in default size.



3. Drag and drop the inserted image box to move to the desired position. Or resize the image box by using the control point.

- Right click while selecting image box to show context menu. You can edit or delete image as well as copy or delete image box by clicking each item on context menu.



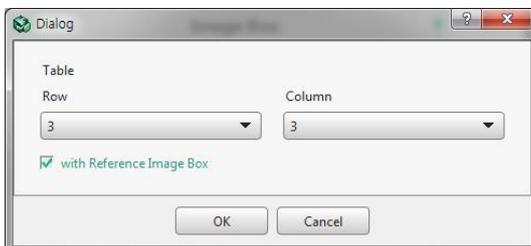
Edit Image option is only enabled when Auto Fill option is enabled. This function is used to change auto fill image.

### 3.3.2 Adding Multi Image Box

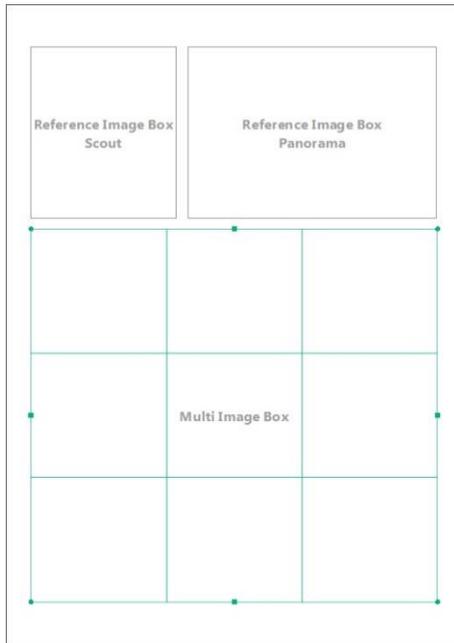
- Select Multi Image Box button to create an image box on the selected report.



- Select number of rows and columns of tables when Image Box dialog appears and click OK.



- Image box is created with the selected number of tables.



NOTE

Reference Guide Image boxes are display above Multi Image Box. Property of each Reference Guide Image can be changed, and property is initialized when Reference Guide Image Box is hidden.

- Drag and drop the inserted image box to move to the desired position. Or resize the image box by using the control point.
- Right click while selecting image box to show context menu. You can edit or delete image as well as copy or delete image box by clicking each item on context menu.



NOTE

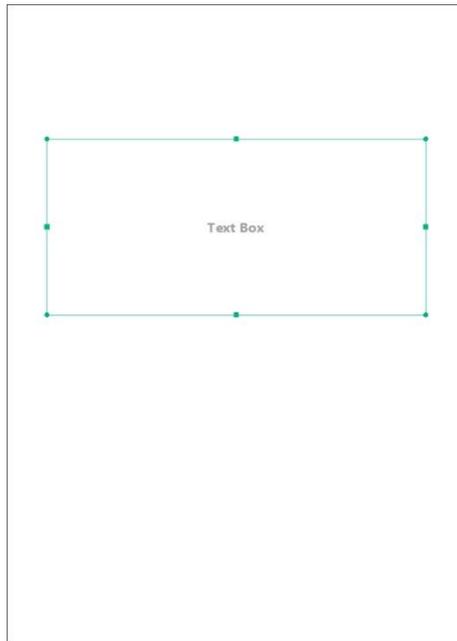
Edit Image option is only enabled when Auto Fill option is enabled. This function is used to change auto fill image.

### 3.3.3 Adding Text Box

- Click Insert Text Box button to a text box on the selected report.



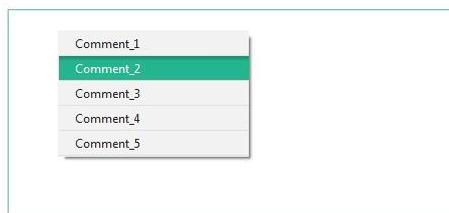
2. A text box is created on the default position in default size.



3. Drag and drop the inserted text box to move to the desired position. Or resize the text box by using the control point.
4. Right click while selecting text box to show context menu. You can copy or delete image box by clicking each item on context menu.

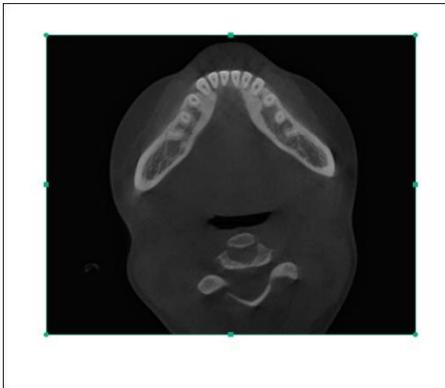


5. Double click text box to input or edit text.
6. Right click on Text Input Mode to display context menu and click desired preset comment to input in the textbox.



### 3.3.4 Deleting Item Boxes

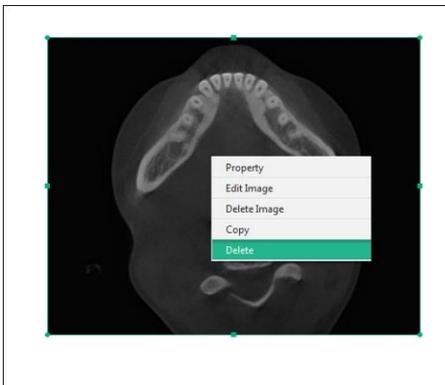
1. Select an Item Box on the workspace of the report.



2. Click Delete button on the ITEM option.



3. The selected item is deleted from the workspace.



NOTE

Item boxes can also be deleted by...

Short Cut Key: Select Item Box + Delete Key

Context Menu: Select Item Box > Right-click > Select Delete on the context menu

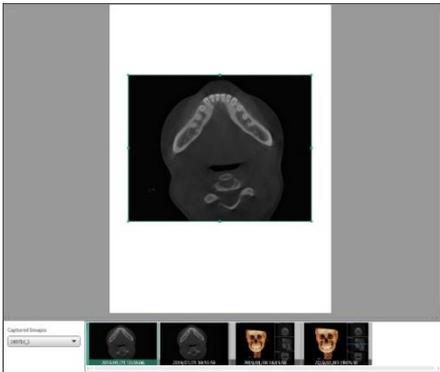
## 3.4 Inserting Images

### 3.4.1 Inserting Single Captured Image

1. Select captured CT data to insert.



2. Click a thumbnail of image to insert.
3. Drag and drop the selected thumbnail on the desired image box.
4. The selected image is shown in the image box.

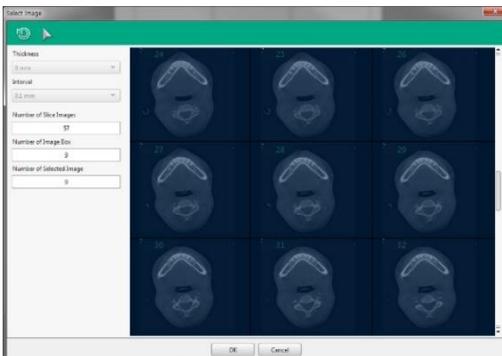


### 3.4.2 Inserting Multi Captured Image

1. Select captured CT data to insert.



2. Click a thumbnail of image to insert.
3. Drag and drop the selected thumbnail on the desired image box.
4. Select Image dialog appears.



5. Select an image to insert and click OK button.
6. The selected image is displayed on the image boxes on the report.

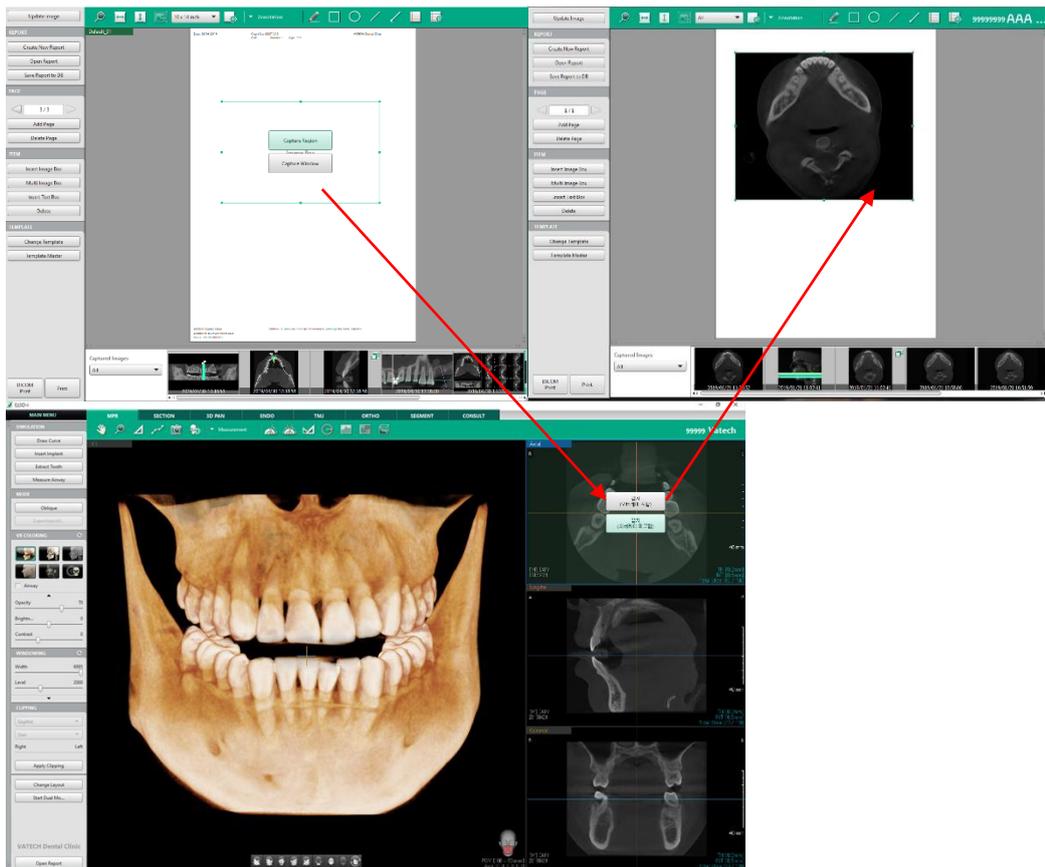
### 3.4.3 Capturing and Inserting Single Image

1. Capture Region/Capture Window buttons are displayed when hovering over image box.



Capture Region/Capture Window buttons are only displayed when Image Fill option is set as Captured.

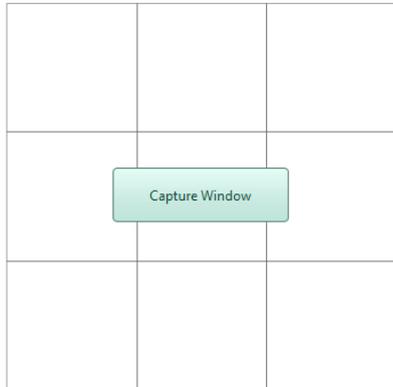
2. Click Capture Region/Capture Window button to switch to main module.
3. Hover over on the View to capture and click Capture button displayed on the View.



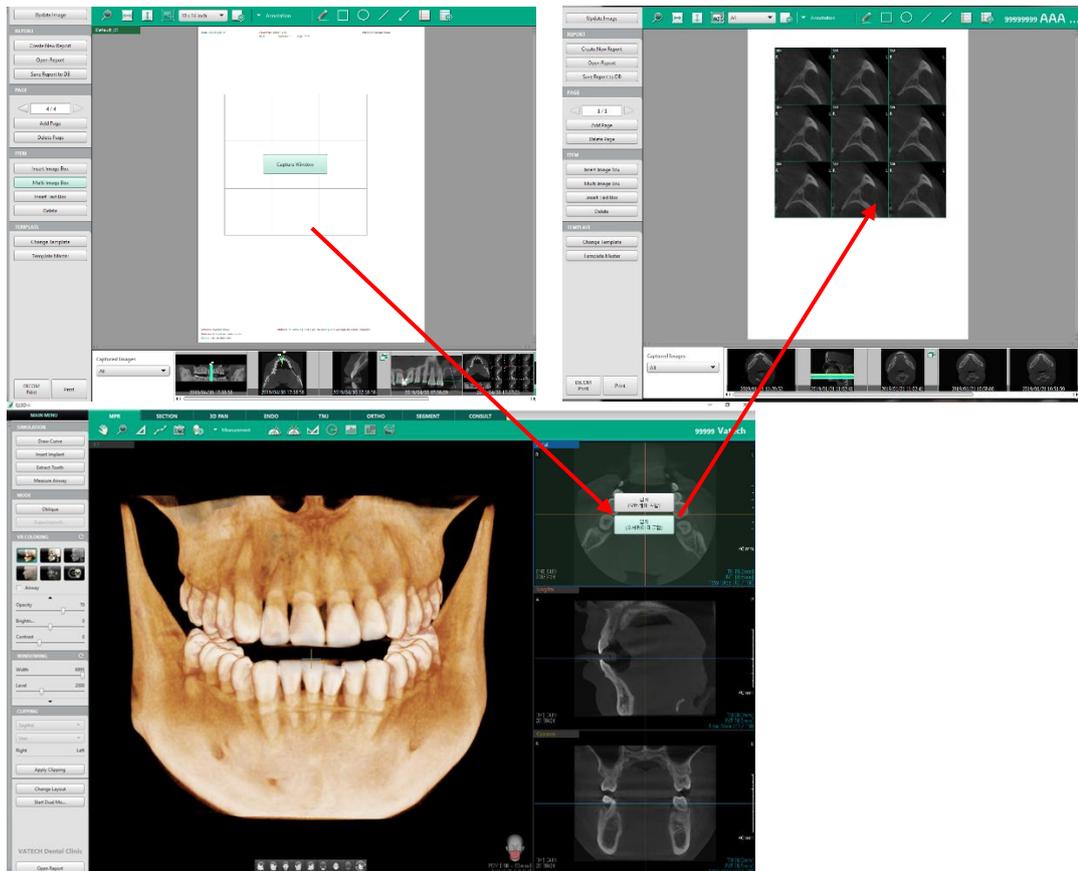
4. The captured image is displayed in the image box on the report.

### 3.4.4 Capturing and Inserting Multi Image

1. Capture button is displayed when hovering over image box.



2. Click Capture button to switch to main module.
3. Hover over on the View to capture and click Capture button displayed on the View.

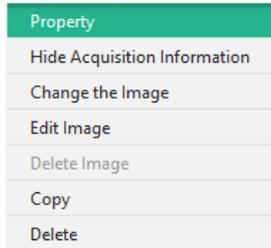


4. The captured image slices are displayed in the image boxes on the report. Also, Reference Guide Image box is filled with guide image of the captured image.

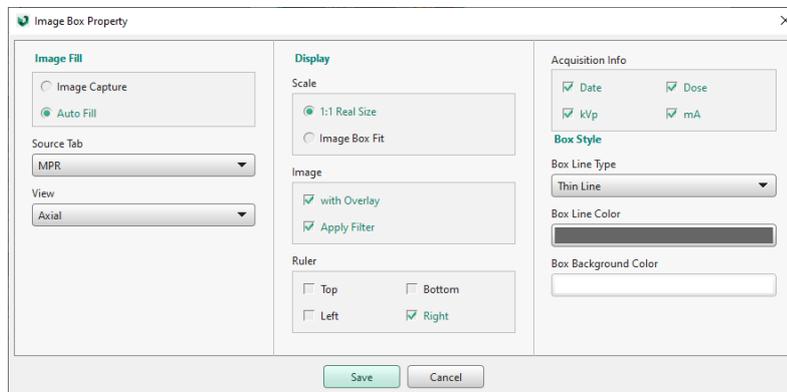
## 3.5 Changing Properties

### 3.5.1 Changing Properties of Single Image Box

1. Right click on an image box to display the context menu and click Property, or double click the image box.



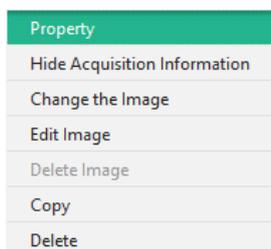
2. Image Box Property dialog appears.



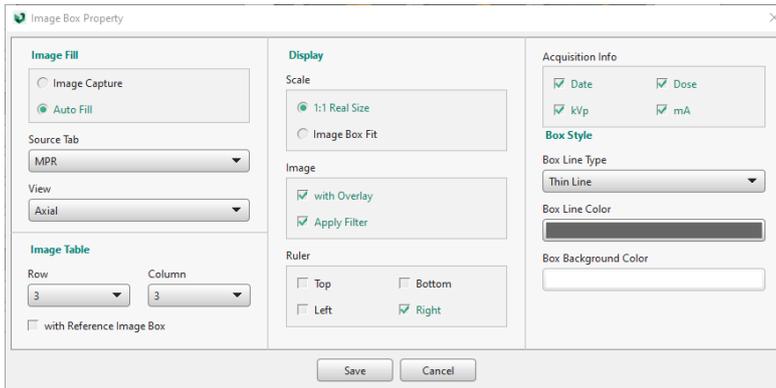
3. Select Image Fill, Display, and Box Style options.
  - Image Capture: The user manually select an image from the captured images
  - Auto Fill: Image box is automatically filled with image from the set Source tab with the set View selected in drop-down list below.
4. Click Save button to apply changes.

### 3.5.2 Changing Properties of Multi Image Box

1. Right click on a multi image box to display the context menu and click Property, or double click the image box.



- Image Box Property dialog appears.



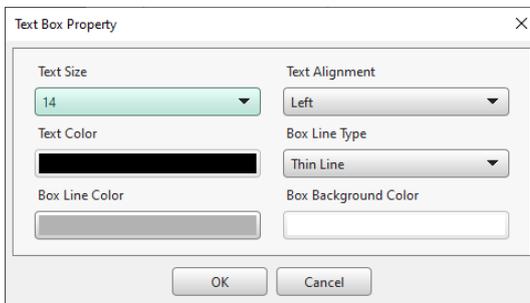
- Select Image Fill, Image Table, Display, and Box Style options.
  - Image Capture: The user manually select images from the captured images
  - Auto Fill: Image boxes are automatically filled with image from the set Source tab with the set View selected in drop-down list below
  - With Reference Image Box: Image tables includes a Reference Guide Image box
- Click Save button to apply changes.

### 3.5.3 Changing Properties of Text Box

- Right click on a text box to display the context menu and click Property.



- Text Box Property dialog appears.

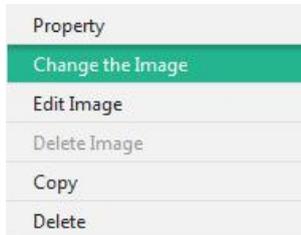


- Change Text Size, Text Color, Box Line Color, Text Alignment, Box Line Type, or Box Background Color.
- Check Transparent if you want to set box background color as transparent. When the box is checked, Box Background Color option is disabled.
- Click Save button to apply changes.

## 3.6 Changing Image Slice

### 3.6.1 Changing Image of Single Image Box

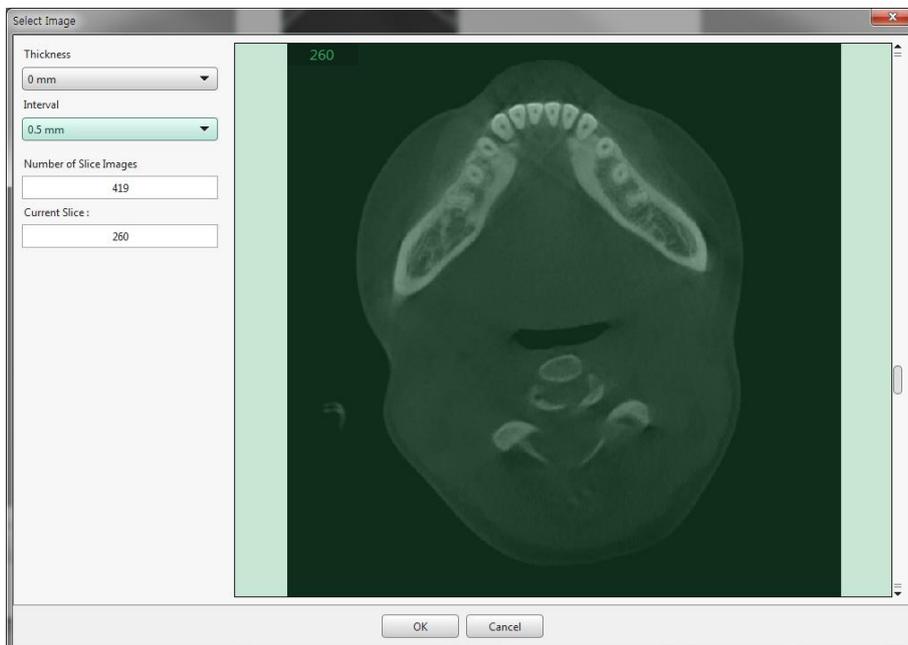
1. Right click on an image box to display the context menu and click Change the Image.



NOTE

[Change the Image] is enabled only on a 2D image that its Image Fill option is set to Auto Fill.

2. Select Image dialog appears.

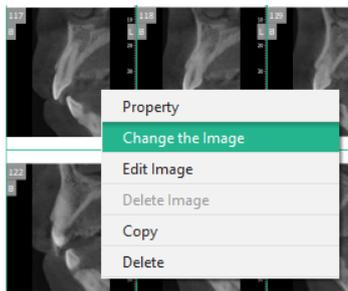


\* Thickness and Interval of the image can be changed on Select Image dialog.

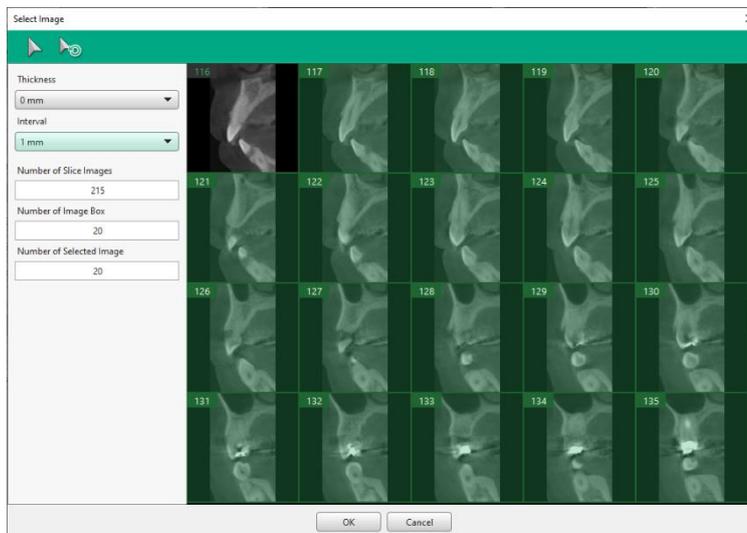
3. Change the slice by scrolling the mouse wheel or using scroll bar.
4. Click OK button to apply the changed slice.

### 3.6.2 Changing Images of Multi Image Box

1. Right click on a multi image box to display the context menu and click Change the image.



2. Select Image dialog appears.



\* Thickness and Interval of the images can be changed on the dialog.

3. Click Select button to select an image.

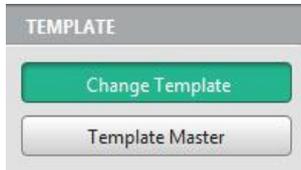


4. Images can be multi-selected by using short cut keys.
  - Shift Key + Click: Continuous selection
  - Ctrl Key + Click: Multiple selection of the selected images
5. Click OK button to apply the changed slice.

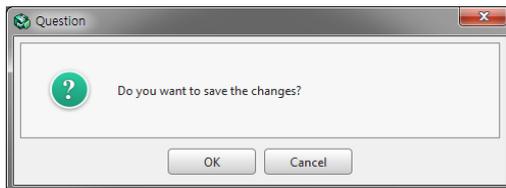
## 3.7 Managing Template

### 3.7.1 Changing Template

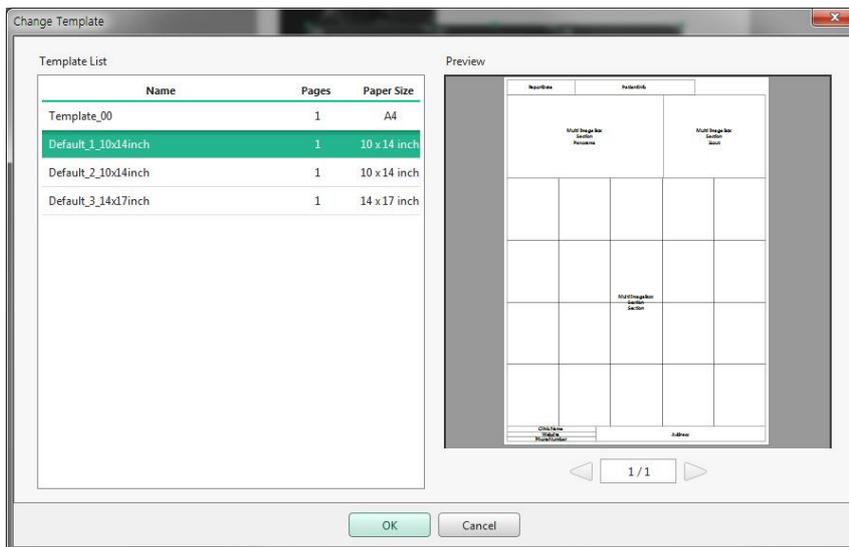
1. Select Change Template button to change report template.



2. Click OK to save changes made to current report.



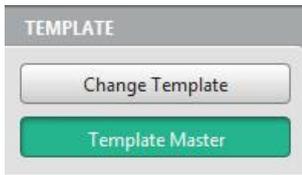
3. Change Template dialog appears.



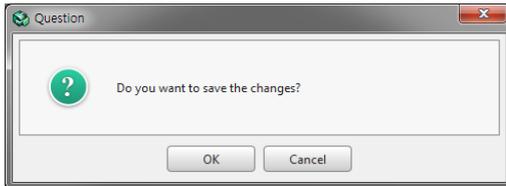
4. Select the desired template on the Template List and check the selected template on the Preview window.
5. Click OK to apply the selected template.
6. Image boxes are automatically filled with images from designated diagnosis tab.

### 3.7.2 Template Master

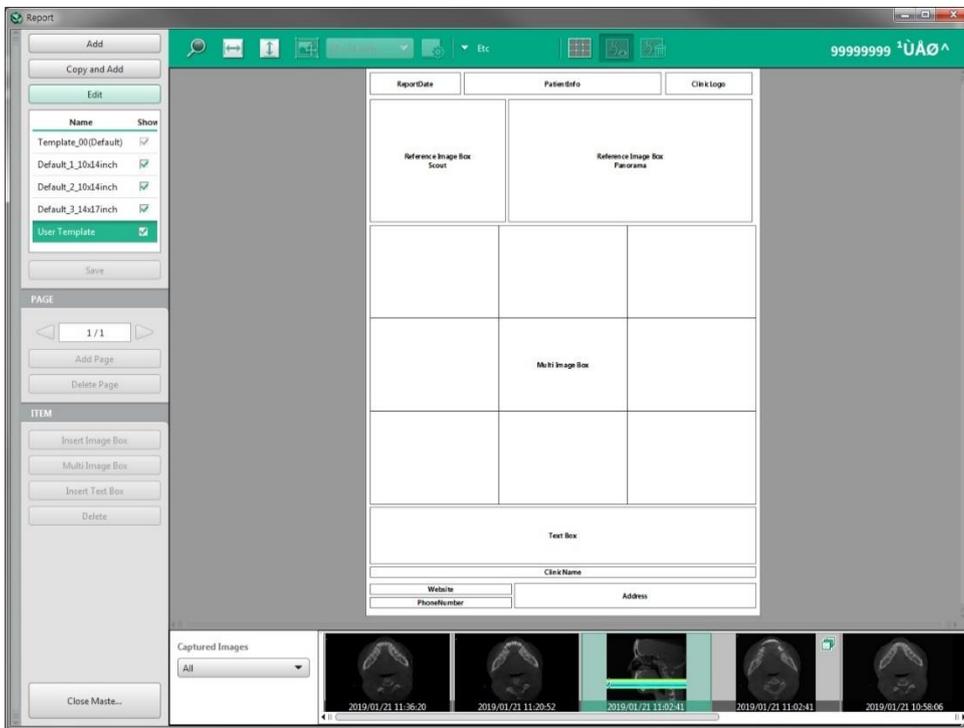
1. Click Template Master button to enter Template Master mode.



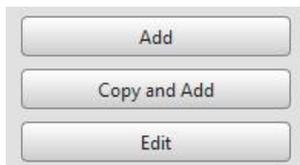
2. Click OK to save changes made to current report.



3. Report dialog enters to Template Master Mode.

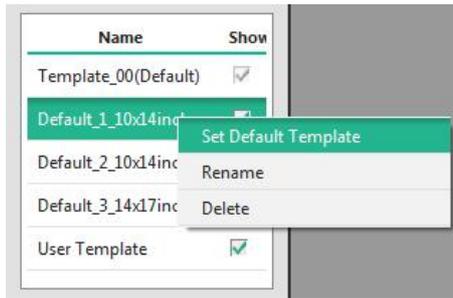


4. Add, Copy and Add, or Edit template as desired.



Add	New blank template is added to insert items as desired
Copy and Add	The selected template is copied and added to the list.
Edit	Image box/Text box/Header/Footer of selected template can be edited

5. Right click on template name to view the context menu.



Set Default Template	The selected template is set as default template.
Rename	The user can change the template name.
Delete	The user can delete the selected template from the list. * Please note that the default template and templates provided by manufacturer cannot be deleted.

6. Click Save button to save changes made to the template.



7. Click Close Master Mode button to close Template Master Mode.



8. Click OK when the following dialog appears.



## 3.8 Adding Memo

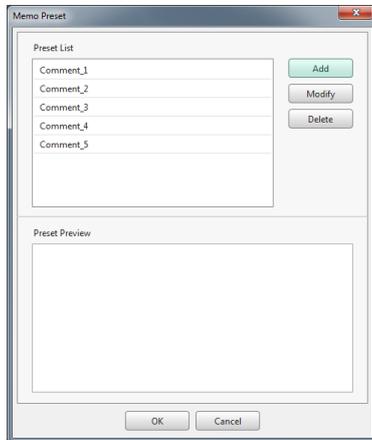
### 3.8.1 Creating Memo

The user can insert a memo in report.

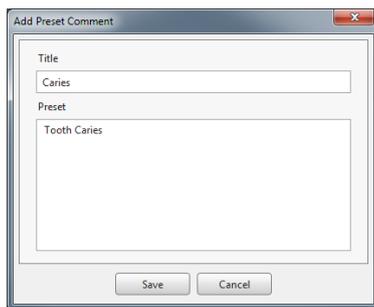
1. Click Memo button (  ) in toolbar.
2. Click the desired position to enter memo.
3. Enter comment in memo input field. You can insert a preset comment by right clicking to run context menu during memo input mode.
4. Enter ESC key or click outside of memo to exit memo input mode.

### 3.8.2 Adding Memo Preset

1. Click Memo Preset button() in toolbar.
2. Memo Preset dialog appears.



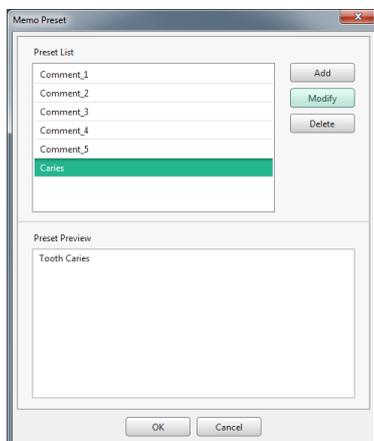
3. Click Add button to add a Preset.
4. Preset dialog appears.



5. Enter Title and Preset, and click Save button.

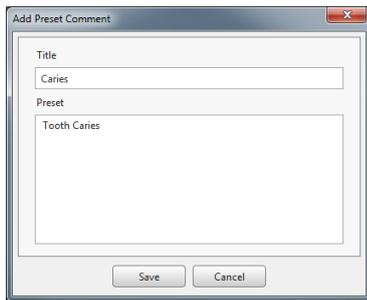
### 3.8.3 Modifying Memo Preset

1. Click Memo Preset button() in toolbar.
2. Memo Preset dialog appears.



3. Select a preset from Preset List and Click Modify button to edit the Preset.

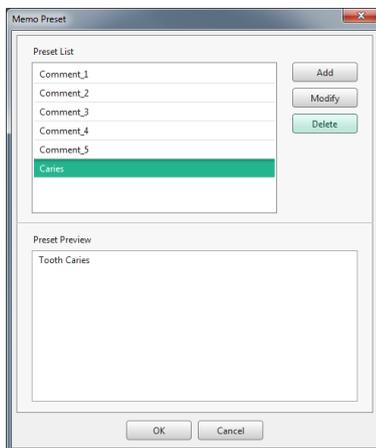
4. Preset dialog appears.



5. Edit Title or Preset, and click Save button.

### 3.8.4 Deleting Memo Preset

1. Click Memo Preset button in toolbar.
2. Memo Preset dialog appears.



3. Select a preset from Preset List and click Delete button to delete the Preset.
4. Click OK button to confirm when the following message appears.



5. The selected preset is deleted from Preset List.

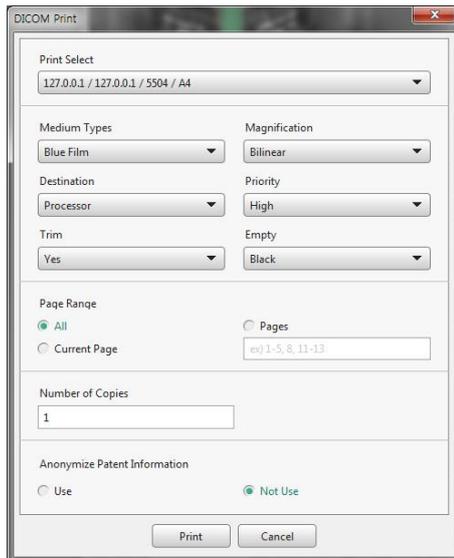
## 4. Printing Report

### 4.1 DICOM Print

1. Click DICOM Print button on Control Panel after report is completed.



2. Click Save button when DICOM Print dialog appears.

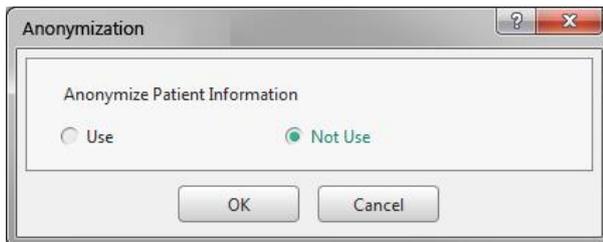


## 4.2 Print

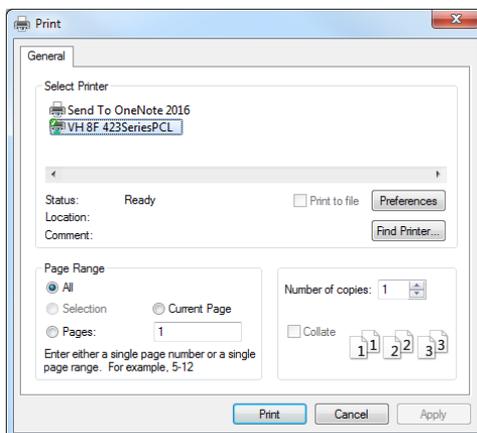
1. Click Print button on Control Panel after report is completed.



2. Select Use option when Anonymization dialog appears if you want to anonymize patient information, and click OK button.



3. Print dialog appears.



4. Click Print button.

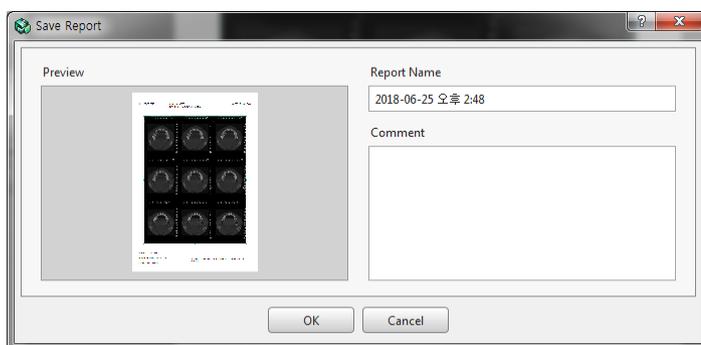
## 5. Saving/Exporting Report

### 5.1 Saving Report

1. Click Save Report to DB button.



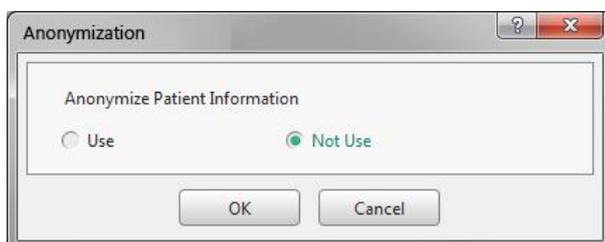
2. Save Report dialog appears.



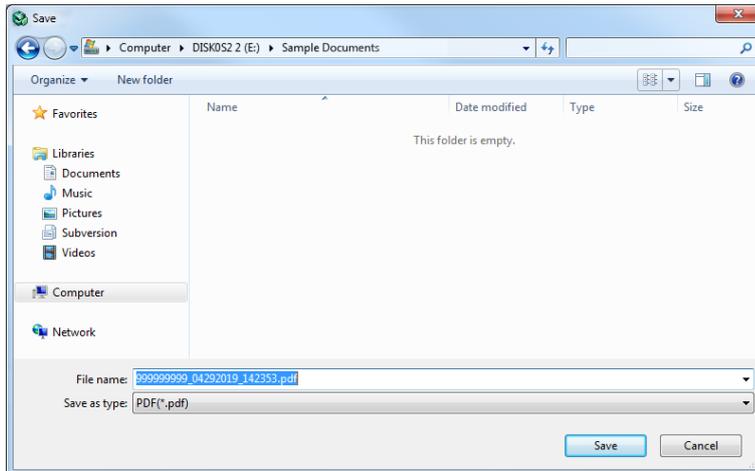
3. Enter comments and click OK button.

### 5.2 Exporting to PDF/DICOM

1. Select Export on extend tool bar.
2. Click Export to PDF button(  ) or Export to DICOM button(  ) on Export tool bar.
3. Select Use option when Anonymization dialog appears if you want to anonymize patient information, and click OK button.



- Set file path, file name, file format on the Save dialog and click Save.



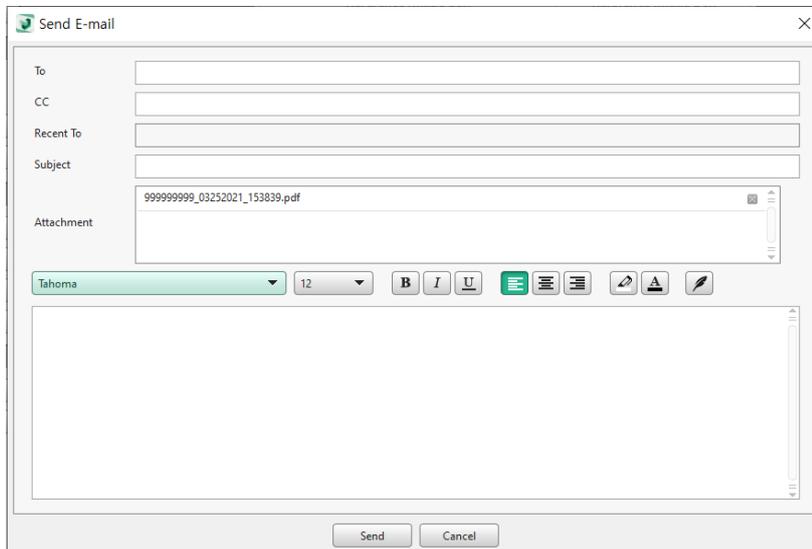
- The report is exported after being converted into pdf or DICOM file.

### 5.3 Sending E-mail

- Select Export on extend tool bar.
- Click Send E-mail button on Export tool bar.



- Send E-mail dialog appears with files attached.



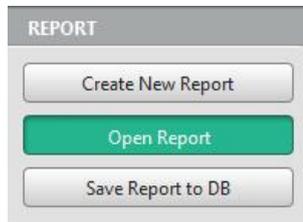
Click [Edit Signature] to save a signature to use when sending emails. If there exists a signature previously added, the signature is displayed in the text box.

- Fill the To, CC, Subject, and text box to send email.
- Select Use for Anonymize Patient Information option if required.
- Click Send button to complete sending email.

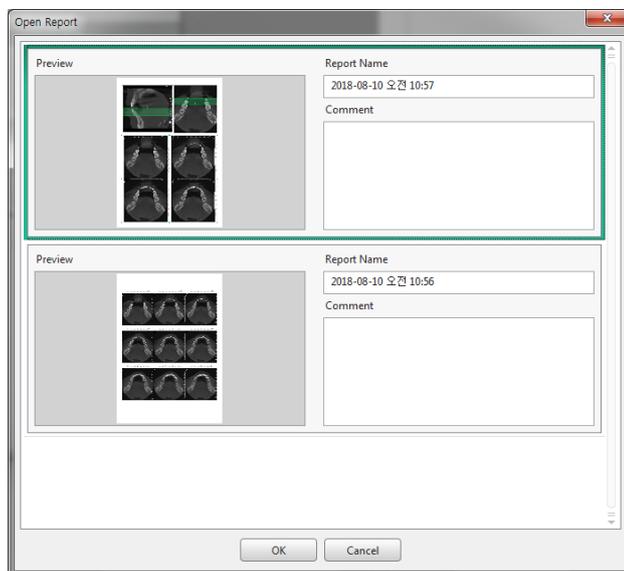
## 6. Opening/Creating Report

### 6.1 Opening Report

1. Click Open Report button.



2. Open Report dialog appears to show saved reports in DB.



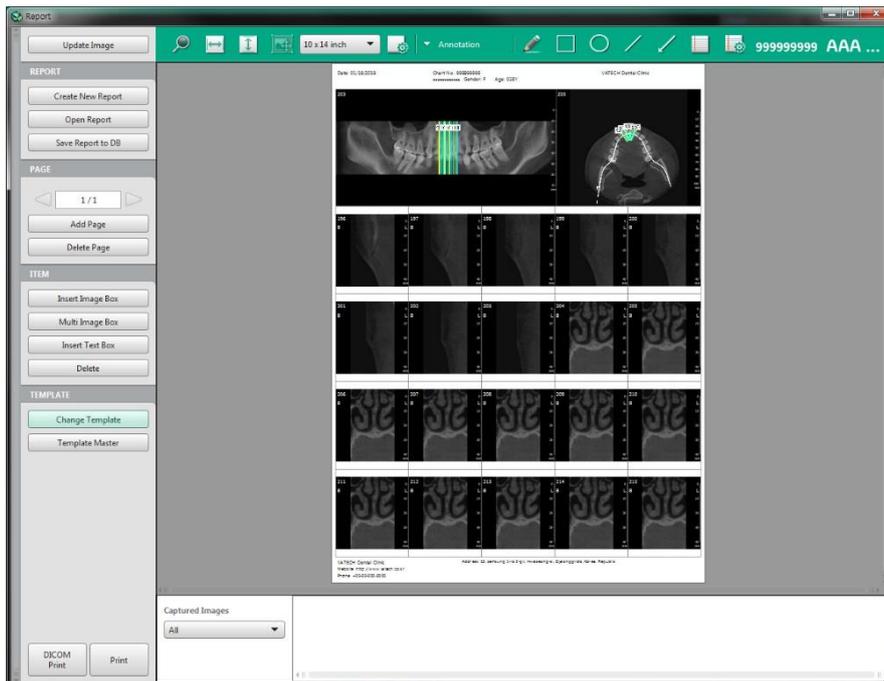
3. Select a report to open and click OK.
4. The selected report is opened.

## 6.2 Creating a New Report

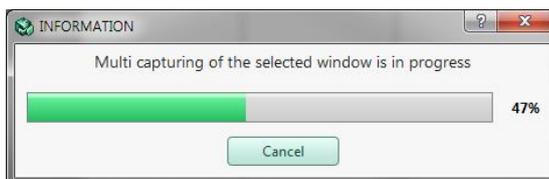
1. Click Create New Report button.



2. New report is created and a default template is displayed.



3. If there exists image boxes with Auto Fill option enabled, the following progress bar displays to load images.



4. The newly created report is displayed.

## 7. Tools in the Toolbar

- Main Tools

Icons	Designation	Description of Features
	Zooming	Zoom in or out
	Horizontal Fit	Fit the report on horizontal axis
	Vertical Fit	Fit the report on the vertical axis
	Edit Image	Edit image in image box by zooming and panning
	Page Size	Select the size of Report
	Page Setting	Set up a page

- Advanced Tools

Icons	Designation	Description of Features	
	Annotation	Free Draw	Draw freely on the 2D image
		Rectangle	Draw rectangles on the 2D image
		Ellipse	Draw ellipses on the 2D image
		Line	Draw lines on the 2D image
		Arrow	Draw arrows on the 2D image
		Memo	Write memos directly on images
		Memo Preset	Set memo presets
		Export	Export to PDF
	Send E-mail		Send email
	Export to DICOM		Export as a DICOM file.
	Etc.	Grid	Check the scale of the image with grid.
		Turn Overly On/Off	Show/Hide entire input objects
		Delete All	Delete all input objects

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# Ez3D-i

Version : 5.4