



Instruction

B&B Dental GS (Guide System) is a software for the maxillofacial area diagnosing, dental implantation planning, surgical guides creation, modeling and creation of individual gingival formers and abutments.

It allows:

- to diagnose the upper and the lower jaws based on CT scan*
- to create virtual crowns
- to choose and to plan the position of implants
- to plan a surgical guide with the possibility of its subsequent export**
- to make individual formers of the gum and abutments with the possibility of their subsequent export**
- to create models of jaws in the STL format with the possibility of their export **
- to create a protocol for the future operation
- to save patient data
- to make a quick data exchange with laboratories and other colleagues
- to provide an effective presentation of the treatment plan for the patient.

*** for the diagnosis, expert opinion, etc., please, use the viewer software provided with the CT scanner on which the researches were conducted;*

*** paid options*

The software is designed to reduce risks in dental implantation, to reduce treatment traumatic, to achieve optimal and predictable aesthetic and functional results. It is intended for professional use in dental clinics and dental laboratories. The software is multifunctional, open type allowing to work with any type of implants, guiding sleeves and milling cutters.

1. System requirements

- For Win32 version: Windows 7 and higher, 3 GB RAM, discrete video card with OpenGL technology support (NVIDIA GeForce, etc. with 1 GB of memory).
- For Win64 version: Windows 10 64bit, Intel i5 and higher, 8GB RAM and above, NVIDIA GeForce graphics card with 2GB memory, free hard drive space from 1GB, Full-HD monitor 192x1080.

2. Installation and update

- Download and run the software installation file from the <http://bebdental.cloud>. It takes 100 Mb of free space on the hard disk. After the software is installed, the registration window will automatically appear.

- Fill in the registration form, indicating the valid email address. Click OK. The activation key file will be sent immediately to the specified address.

- Save the key file to any convenient location.

- Activate the software by running the key file with a double click. You can also activate the software by specifying the path to the key file in the corresponding line of the registration form and clicking the OK button.

If you did not receive the key file for the specified email, check the spam folder in your email box. In case of technical problems during registration, send a message to support@bebdental.cloud

Video instruction for installing and activating the software on our YouTube channel B & B Dental.



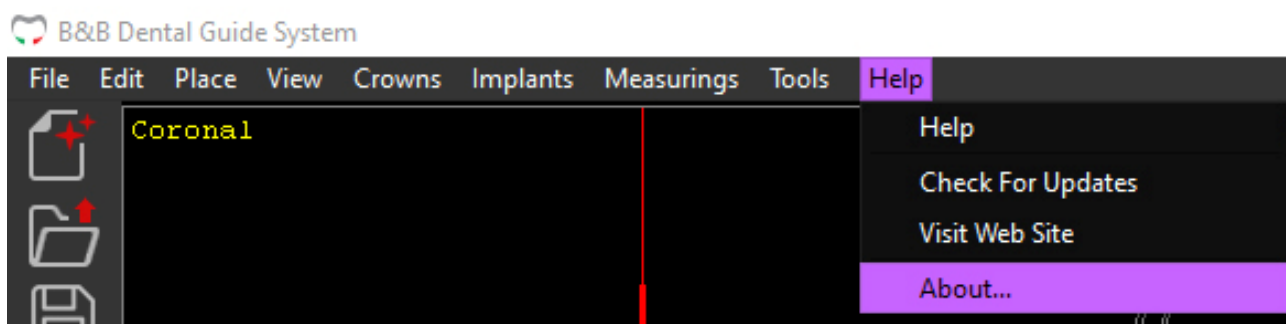
ATTENTION!!! THE KEY FILE, THAT WAS ATTENDED FOR SPECIFIED PC CAN NOT BE USED ON OTHER PCs!

The entered email is the identifier of the created user account. The user can register an unlimited number of copies of the software on different PCs, indicating the same email. In this case, the data specified at the first registration of the email will be assigned to all subsequent. The prepaid functions and access to the cloud storage files will be provided on all PCs.

The owner of the email address controls the transfer of key files for installation on other PCs.

2.1. Updating

Check the current version of the software in the “Help – About” section of the duplicate menu.



Software update version will be offered automatically when the software starts. Click OK to update (recommended), or click Cancel to continue working in the current version.

If, for some reason, the update does not occur, or an error occurs during the update, reinstall the software by clicking the link in the update dialog window.

http://bebdental.cloud/download/Setup_BeBdental.exe

Licenses, libraries and personal information will be retained.
















3. The software interface










The interface of the **B&B Dental GS** consists of:

- the main menu consists of two parts: located vertically on the left part of screen and the horizontal part on the right;
- the auxiliary menu, located horizontally in the upper left part of the screen,
- panel tabs, located vertically on the right side of the screen,
- multi-plane reconstruction (MPR) window - coronal, sagittal, axial and rotating plans (Coronal, Sagittal, Axial, Slice),
- panoramic reconstruction mode windows - multifunctional cross-section, axial slice, 3D rendering and panorama reconstruction windows (Multi-slice, Axial, Volume, Panoramic).

3.1 The main menu allows an interaction with the basic functions of the software

Functions of the main menu buttons:

<i>Button</i>	<i>Name</i>	<i>Function</i>
	New Project Load DICOM	Import a DICOM file to create a new project
	Open Project	Opening the previously saved project
	Save Project	Save the created project
	Save or Send to Cloud	Save your project to the Cloud Service or send it to selected person
	Cloud Service	Opens Cloud Service window
	Undo	The last design step cancellation
	Redo	The subsequent design steps return
	Panoramic Mode	Switching the MPR and PANORAMIC modes
	Show slice	View cross-section plan
	Reset MPR Views	Reset window settings with saved virtual planning objects
	Measure Distance	Check the distance between two points
	Measure Angle	Check the angle between line segments, that were obtained by three points
	Edit Notes	Create and edit notes, ordering form for the laboratory
	Purchase Exports	STL files exports payment
	www.bebdental.it	Opening in browser http://www.bebdental.it

	Show DICOM	ON/OFF DICOM visualization
	Show STLs	ON/OFF STL- surfaces visualization
	Show Nerves	ON/OFF mandibular canals visualization in slice windows
	Show Crowns	ON/OFF crowns visualization in slice windows
	Show Implants	ON/OFF implants and related elements visualization in slice windows
	Show Measuring	ON/OFF graphical measurement results
	Show Surgical Guides	ON/OFF surgical guides surfaces visualization
	Show View Axis	ON/OFF view axes and panoramic curves visualization
	Show Patient Info	ON/OFF patient data visualization

3.2 The auxiliary menu provide access to any software functions

File Edit Place View Crowns Implants Measurements Tools Help


Unique functions of the duplicating menu:

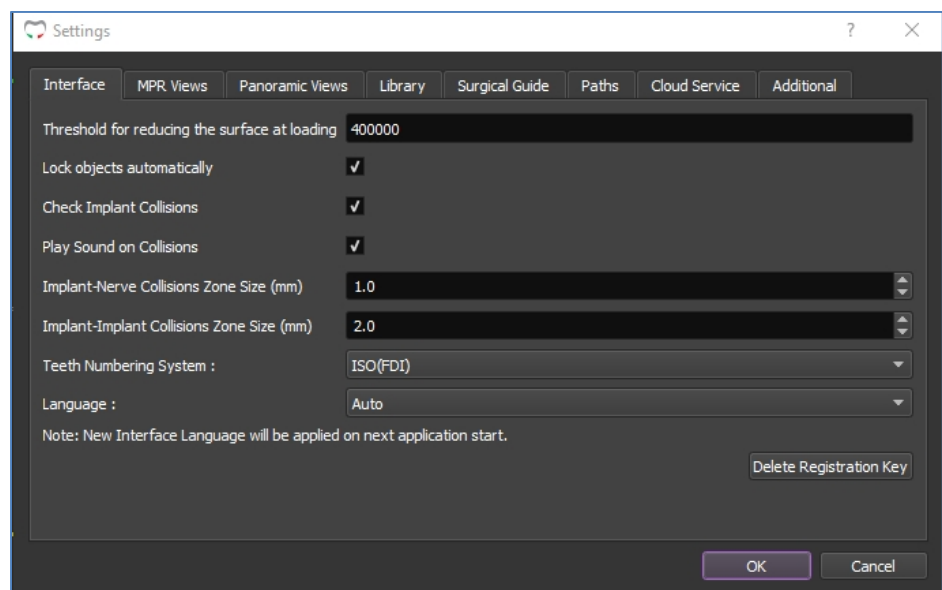
- File: - "Recent projects", "Project properties".
- Measuring: - "Clear Measurements".
- Tools: Settings

Submenu "Settings" of the duplicating menu contains tabs settings of all software functions.

Interface tab:

Lock objects automatically:

After adding an STL-object to the project, it is controlled in the following way: if the function "Lock objects automatically" is selected, the control is blocked (the indicator in the form of a lock) as soon as another STL-object, bookmark or view mode is selected. To continue the object positioning, remove the lock by clicking on the button with the image of the lock .



Check Implant Collisions:

When this function is selected, if there is a collision, you'll see triangular sign "Attention" beside the implant number. The "Attention" sign is red when the implant approaches the mandibular canal, blue - when the implant approaches another implant; purple - when there is a sleeve – STL-surface collision. With the automatic creation of the surgical protocol, collision information will be displayed on the implant page.

Language: Choosing the interface language.

The language will be changed after the software restart. It's no need to restart the PC.

"Delete Registration Key" button

If, for some reason, you need to register under a different account (email), delete the registration key by clicking the button, and re-register with the new registration information.

3.3 The tab bar. Switching tabs allows to open the settings window for the required mode

Functions of the tab bar windows:



3.3.1 "DICOM file" tab

Available instruments: brightness and contrast regulation in slices.
DICOM to STL conversion.



3.3.2 "STL surfaces" tab

Functions, available for any selected STL:

Button	Name	Function
	Color	Change color
	Show On/Off	Display/Hide
	Lock On/Off	Block movements
	Align to...	Align to DICOM or other STL-surface
	Surface healing	Perform surface optimization, to heal the surface from the "holes"
	Export to STL file	Export into STL
	Delete	Delete
	Add STL Surface	Import of optical scanning data of jaws, patterns or impressions
	Group	Open a window with a list of loaded STL-surfaces that can be grouped
	Split surface	Divide the STL surface into parts arbitrarily
	Cut surface	Cut the STL surface arbitrarily
	Delete from DICOM	Cut the volume bounded by the STL-surface from the DICOM image



3.3.3 Panoramic curves " tab

It's available for any modeled panoramic slice:

Button	Name	Function
	Color	Change the color of its outer contour
	Width	Numeric display of the thickness of the panoramic slice in mm with the possibility of its adjustment
	Number of cross slices	Change in the number of cross slices
	Narrow/Wide mode	Fast transition between the specified and minimum thickness of the panoramic slice
	Add to surgical protocol	Adding to surgical protocol
	Delete	Delete
	Add panoramic curve	Adding the panoramic slice



3.3.4 "Nerve" tab

For each trace it is possible:

Button	Name	Function
	Color	Change color
	Diameter	Changes in the diameter of the channel marker in mm
	Show On/Off	Display/Hide
	Lock On/Off	Block movements
	Delete	Delete
	Add nerve	Allows to add nerve



3.3.5 "Crowns" tab

Functions for each selected crown:

Button	Name	Function
	Color	Change color
	Show On/Off	Display/Hide
	Lock On/Off	Block movements
	Delete	Delete
	Add crown	Opens window for virtual crowns choice
	Change the size of the selected crown	
	Replace the crown by selecting another in the crown selection window	



3.3.6 "Implant" tab

It consists of the upper information window, "Drill list" window and the "Parameters" window. Information window contents:

Button	Name	Function
	Number	Switch on/switch off the display of the implant number
	Implant Parameters	Display occlusal diameter and length of the implant or the implant code from the library
	Show On/Off	Display/Hide
	Lock On/Off	Block movements
	Delete	Delete
	Add implant	Opens a window for the selection or design of implants, abutments, guide sleeves and drills
	Add pin	Opens a window for pins, sleeves and drills selection

When the left mouse button is clicked on the installed implant or on any of the accompanying elements, the line corresponding to this implant is activated. This function also works in the opposite mode.

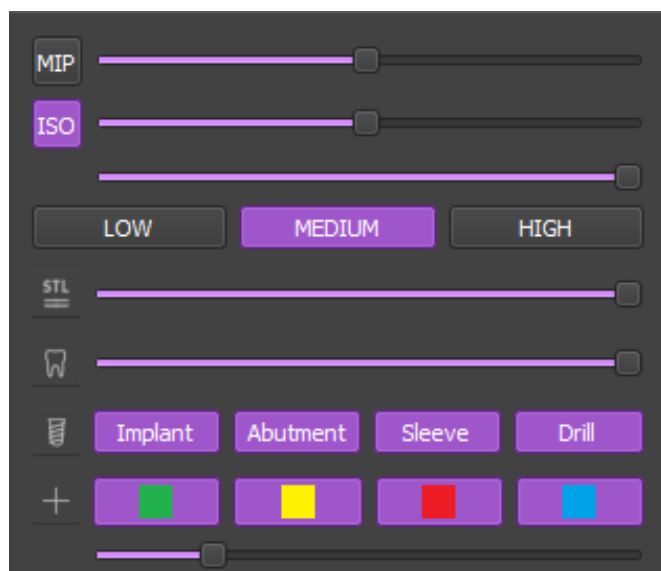
The "Parameters" window contains tools for modeling and display implants, abutments, guide sleeves and drills. These tools duplicate the functionality of "Select Implant" window. Settings changes automatically change the corresponding graphic displays.

"Abutment Advanced" tab is located at the bottom of the window for individual abutments or gum formers creation. The tab will be active if an abutment with advanced parameters was selected when selecting an implant.

"Replace Implant" key for quick replacement of the designed implant is located below.



3.3.7. "Volume" tab



In the window of this tab there are buttons:

- for MIP and ISO rendering modes,
- rendering quality buttons/ CPU load - LOW, MEDIUM, HIGH,
- tools for adjustment the optical density of DICOM and STL objects;
- the visualization buttons for implants, abutments, sleeves and drills, panoramic planes.









ATTENTION!!!

SELECT LOW MODE TO REDUCE THE LOAD OF THE CPU!
IT IS ALSO RECOMMENDED FOR WORKING ON PCs WITHOUT DISCRETE VIDEO CARD.



3.3.8 "Surgical guides" tab

Button	Name	Function
	Color	Change color
	Show On/Off	Display/Hide
	Export STL	Export to STL file
	Delete	Delete
	Make surgical guide	Surgical guide modeling and generation.
	Make surgical guide based on Prosthesis	Designing and generating a surgical guide based on a prosthesis

3.4 Functions of the MPR mode windows

Basic windows of the multi-plane reconstruction mode (MPR) consist of a coronal, sagittal and axial plane, respectively, and are separated by dynamic view axes. The color of each view axis corresponds to the color of the window's name, consisting of the plane formed by this axis. For example: the green color of the horizontal axis in the coronal window corresponds to the green color of the name of the axial window, etc. There are the following types of interaction with the view axes:

- The center of view axes intersection arbitrary movement

To move the center of view axes intersection, put the cursor on it, press and hold the left mouse button. In this case, the intersection of the view axes will move within the given plane. This movement will be synchronized with the change in slice depth in other MPR windows.

- Rapid movement of the center of view axes intersection

To move quickly the center, put the cursor in the desired position and double click with the left mouse button. The center of view axes intersection will move to the selected point.

The same double click on the implant image combines the coronal axis with the implant axis and the center of view axes intersection with its reference point.

- Formation of skew (arbitrary) slices

To rotate the view axes plane, put the cursor on the corresponding view axis more distally from the point of its thickening, press and hold the left mouse button. In this case, the view axis will rotate around the center of view axes intersection.

- Parallel movement of slices

To move the slice in parallel, hover and hold the left mouse button on the thickening of the view axis.

- Change the depth of cut

Put the cursor in any position of the cutoff window. When the mouse wheel is rotated, the depth of the same selected window will be changed. The same function is duplicated by the movement of the slider on the right side of the corresponding window.

- Scaling an image

To scale the image of each slice, press and hold the right mouse button, moving it within the selected window.

- Moving an image

To move the image, press and hold the mouse wheel, moving it within the selected window.

There is a schematic image of the head, facilitating spatial orientation in the lower right corner of each window.

3.5 Rotating Slice Window

The window opens by clicking "Open Slice" button in the Main Menu. Serves for final control and correction of the positioning of the implant and guide sleeve. When double clicking on any of the slices with the left mouse button on the image of the implant or its accompanying elements, its axis will be aligned with the vertical axis of the window. When the mouse wheel rotates in this window, the slice of the adjacent volume will rotate around the axis of the implant. The same function is duplicated by the movement of the slider on the right side.

3.6 Functions of panoramic reconstruction windows

- Panoramic reconstruction window (*Panoramic*)

Serves for general diagnosis of the maxillofacial region and allows an expanded evaluation of the positioning of implants. Functionality:

- arbitrary and rapid movement of the center of view axes intersection, similar to MPR windows;
- parallel movement of slices by hovering and holding the cursor with the left mouse button on the axial or vertical axis;
- change the thickness of the panoramic slice when moving the slider to the right part of the window;
- scaling a panoramic curve when scrolling the mouse wheel;
- the inclination of the transverse slice relatively to the axial axis with an indication of the inclination in degrees;
- parallel slice moving relatively axial axis.

- Cross section window (*Multi-slice Cross-Section*)

There is a perpendicular cut to the panoramic curve at the selected point. It serves to diagnose textures that fall into this section and position the implant.

- The axial slit (*Axial*) window

Used to construct a panoramic curve and display the positions of the transverse, tangential and rotating slices.

3.6. Functions of the 3D rendering window (Volume)

Serves for spatial orientation and volumetric visualization of all elements of the project. It is comfortable to present the treatment plan to patients.

To rotate 3D rendering, press and hold the left mouse button, moving it within the window. Controlling the movement and scaling functions are similar to MPR windows functions.

4. Getting started. New project creation

4.1. DICOM loading



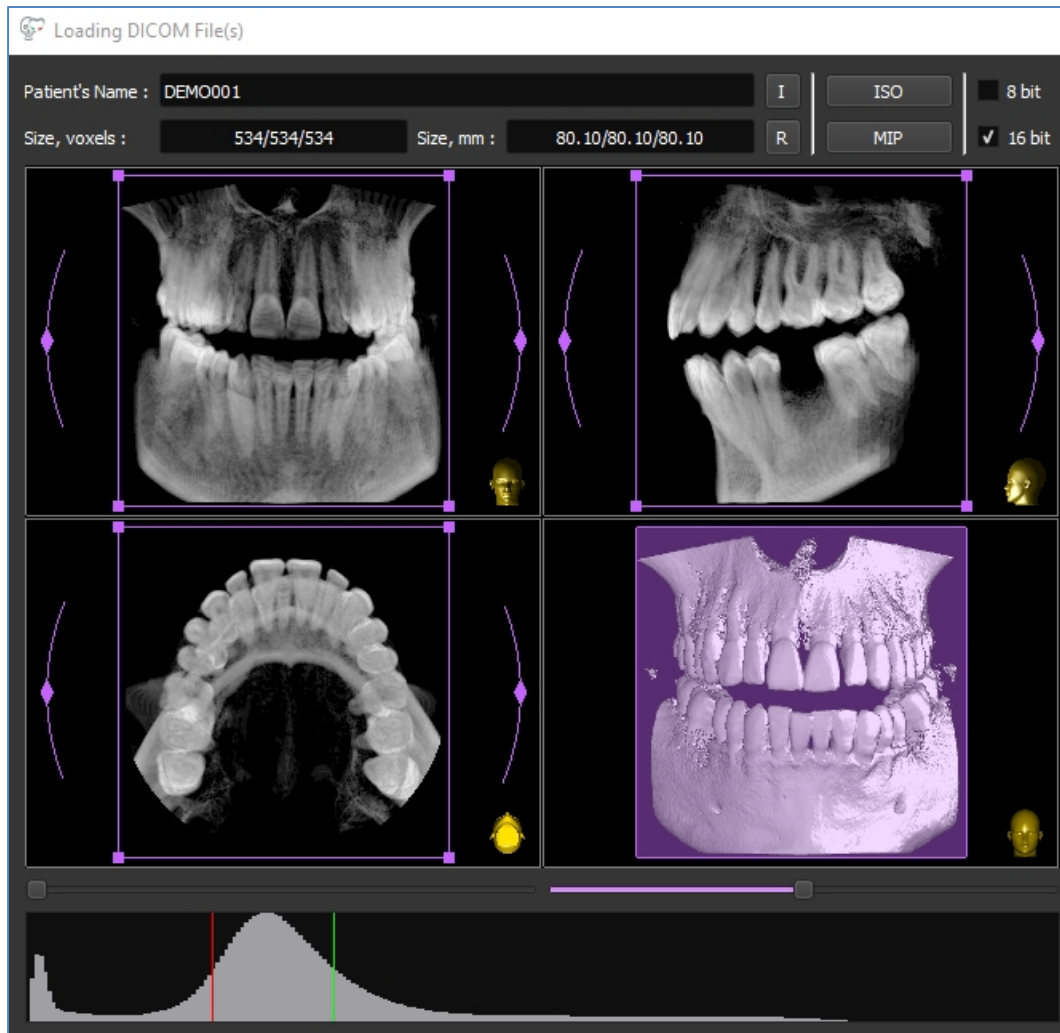
Click the New Project button in the main menu. A new "Open DICOM File" window will appear. Select the folder with the files containing DICOM, and click the "Open" button. After selecting the appropriate file, open it. A new "DICOM Loader" window appears with a preview of the selected DICOM file. Click "OK". The DICOM file will be loaded. If necessary, you can adjust the brightness and contrast of the image with the corresponding knobs in the upper right corner of the screen.

After selecting the appropriate DICOM-file, open it. A new "DICOM Loader" window appears with a preview of the selected DICOM file (B & B Dental GS has to be chosen as the DICOM viewer by default when installed). Click "OK". The DICOM file will be loaded. If necessary, you can adjust the area, position, brightness and contrast of the image with the corresponding knobs in the upper right corner of the screen.



!!IMPORTANT! DO NOT SAVE THE INITIAL DICOM FILES IN A SINGLE FOLDER - THE READING ERROR POSSIBLE. PLACE DICOM-FILES OF PATIENTS IN DIFFERENT FOLDERS.

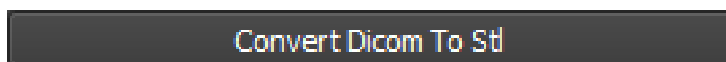
4.2. DICOM alignment and changing the range of slices



In the DICOM alignment and slices range selection (DICOM cutting) window set the desired range of slices by moving the window borders. To do this, place mouse pointer over the border of the window in projection of interest, drag and drop it in the corresponding direction, holding the left mouse button. Rotate the volume by dragging* the pointer, located on the semicircles around the corresponding projection.

** here and further in the text under "drag and drop" we mean moving the object while holding down the left mouse button.*

4.3 DICOM to STL conversion

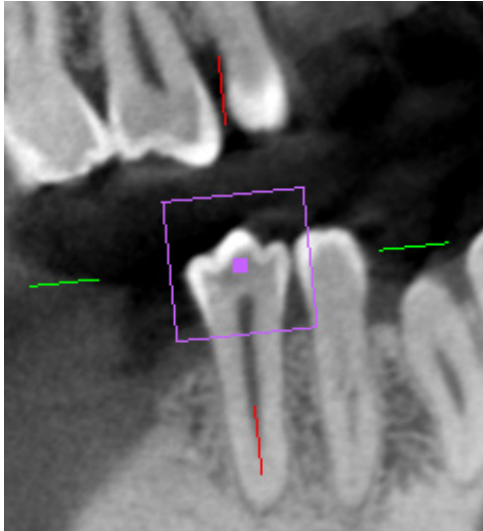


When you click the "Convert DICOM to STL" button, the 3D density level control appears. In the slices and the 3D rendering window, a cube outline appears, within which the conversion will take place. The center of the cube is moved by dragging and dropping. The cube walls (size selection) may be dragged and dropped. Rotate the cube by moving the axis of the walls. In the rendering window, the control is similar.

The converted STL surface will appear in the STL surface tab and will be available for export.

4.4 DICOM Image Segmentation

DICOM Image Segmentation



Before clicking on the "DICOM Image Segmentation" button, the coordinate axes should be placed in the desired location by double-clicking the left mouse button. After that, click the button "DICOM Image Segmentation". The segmentation area is displayed in a purple cube (in sections - square).

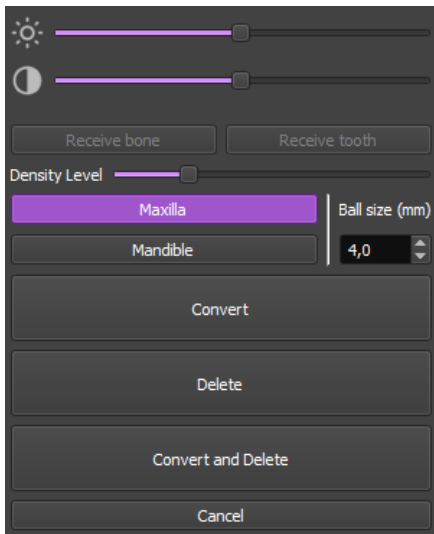
Dimensions and position of the appeared purple square can be changed by pulling it beyond its boundaries or moved - pulling the center of the square.

Further, depending on the purpose, select "Receive bone" or "Receive tooth".

The next step is to adjust the density level (you need to adjust so that most of the required area is selected).

The mouse cursor placed inside the selected area is displayed as a circle (a ball slice).

The size of the circle for editing can be changed by rotating the mouse wheel, or set in mm.



Extra selection can be erased with the pressed mouse right button.

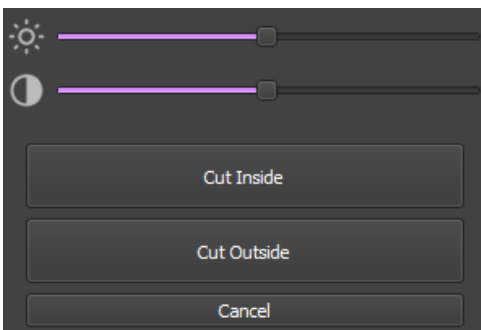
The missing selection can be added with the pressed mouse left button.

Movements along the slice layers can be performed with the mouse scroll wheel by placing the cursor outside the selected zone.

The following actions are available further:

- Button "Convert" - converts selected fragment to STL
- "Delete" button - removes a fragment from the DICOM image
- Button "Convert and Delete" - performs two actions described above simultaneously
- "Cancel" button - cancels DICOM segmentation


4.5 Cut DICOM image



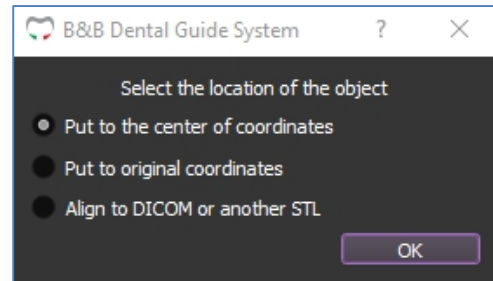
If necessary, the DICOM image can be cropped and unnecessary areas can be deleted (allocated by sequential placement of points with the left mouse button, the selection ends with a double click of the mouse). The selected area can be cut inside, outside or canceled. Cutting is performed in the direction of the perpendicular to the screen.

4.6 STL loading

To create a surgical guide in the software, you need to import the data of the optical scanning of the jaw, or its model or impression.

Click the "Add STL Surface" button  in the main menu. Select the folder with the files containing STL, and click the "Open" button in the appeared window "Open STL File". The STL will boot. Then select the location of the object: in the center of coordinates, in the original coordinates, or immediately start aligning to DICOM or another STL.

For correct positioning of implants, if necessary, the same is done for loading the data of optical scanning of prostheses or scanning patterns.



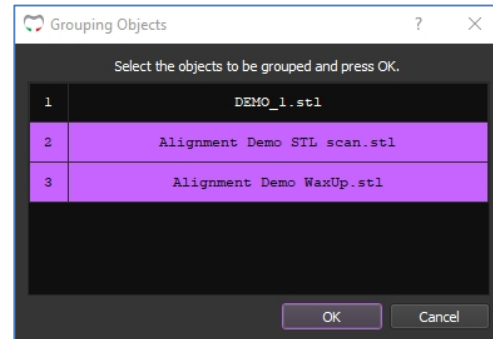
The visualization of optical scans is configured in the "STL Surfaces" window of the "STL" tab, which opens automatically

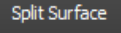


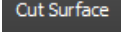
STL surfaces can be grouped by clicking the button


"Group" .

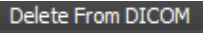
In the window that appears select the files you need. If the surfaces are grouped, moving one of them will automatically move all the grouped surfaces. The mutual position of the grouped surfaces remains unchanged.



Pressing the  button allows you to arbitrarily divide the surfaces on so-called "hermetic" and "non-hermetic" parts. First, by sequentially arranging points (left mouse button), it is needed to set the separation contour. Detachment of points ends with a double click of the mouse or pressing the "Draw curve" button. Thus, one STL surface will be divided into several surfaces, each of which will be highlighted in a different color.

If it becomes necessary to cut the STL surface - this can be done by pressing the  button. This function allows to cut STL surface either inside or outside the contour, created by sequentially arranging points. The contour is not attached to the surface. Cutting performs in a perpendicular to the screen direction. If it is

necessary to "close" the hole in the surface, obtained after cutting - press the "Surface treatment" button .

Clicking the  button cut the volume bounded by the STL-surface from the DICOM image.

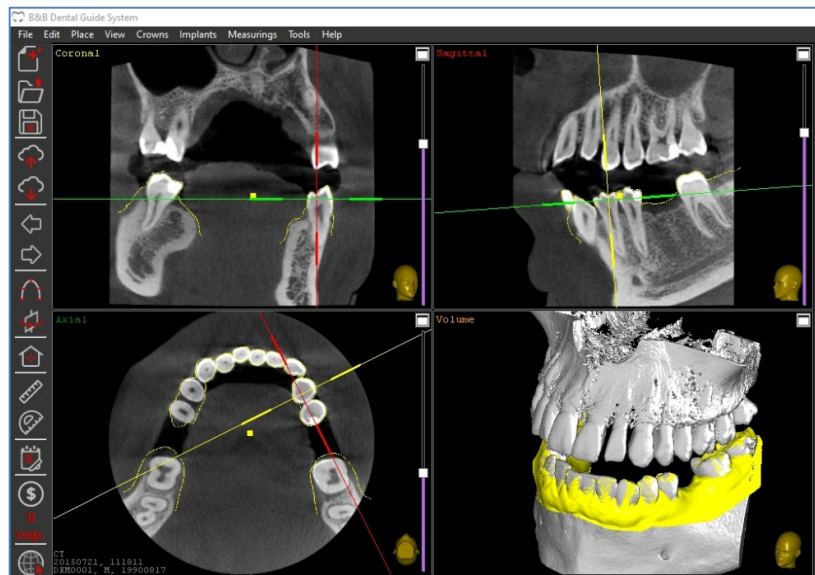
4.7 STL and DICOM alignment

The quality of the STL and DICOM alignment determines the accuracy of the future guide.

- Manual mode

Combination is performed in the MPR windows by successive approximation and rotation of the STL slices. To move the STL press and hold the "reference point" of the selected scan with the left mouse button. Pressing and holding the left button on the STL contour allows the rotation.

The view axes have to be set in a position in which objects with their distinct contours, suitable for alignment (for example, crown parts of the teeth) are visible in all 3 sections. Use the rotation of the view axes if necessary. Remember that STL is a 3D object, and changing its position on one of the slices relative to the DICOM automatically leads to changes on the other two slices.



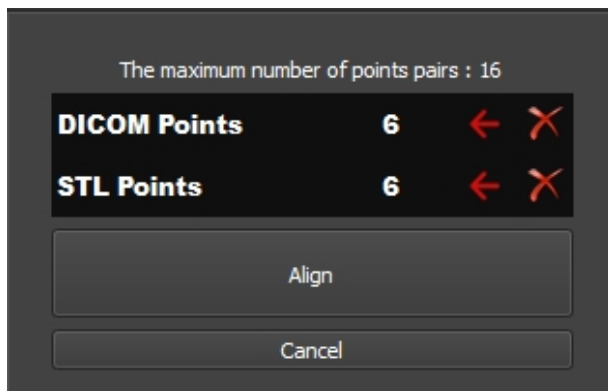
- Automatic alignment by 3 or more points



Clicking the «Align to...» button opens the window for selection the second surface and after that the DICOM and STL surface manager opens.



The next step is to place identical dots (red, green, blue etc.) on the DICOM file surface and in the same sequence on the STL surface. Pressing the "ALIGN" button closes the combining manager and the STL surface is placed in the project in the specified position. After automatic alignment, you may need to adjust in manual mode.



- Automatic re-alignment


After three identical points marked on two surfaces, select the option "Align using ICP".

When combined with DICOM – functions work depends on the selected density level. Experimental function.

After alignment process ends, if it is not selected "Lock objects automatically", block the random movement and rotation of the STL slice by clicking the "lock" button in the "STL surface" window. The STL reference point must disappear.

5. Tracing the mandibular canal

For the safe planning of implantation in the lateral areas of the lower jaw, a clearer visualization of the mandibular canal is often required. To do this:

1. Move the slice of the selected MPR window to the jaw region, where the boundaries of the mandibular canal (for example, the area of the mental opening) are clearly visible.
2. Click the "Add Nerve" button  in the main menu and align the resulting circle cursor with the

outline of the mandibular canal.


3. Trace the mandibular canal, alternately clicking on the left mouse button, orienting the cursor on the center of the canal, and changing the depth of the cut by scrolling the mouse wheel.
4. Complete the operation either by double-clicking the left mouse button or by clicking the "Add Nerve" button in the main menu.
5. If necessary, correct the canal trace by hovering the cursor and keeping the left mouse button pressed on the positioning points inside the canal.
6. Then block the random movement of these points by clicking the "lock" button in the "Nerve" tab window, which is automatically activated. Their image inside the canal will disappear.

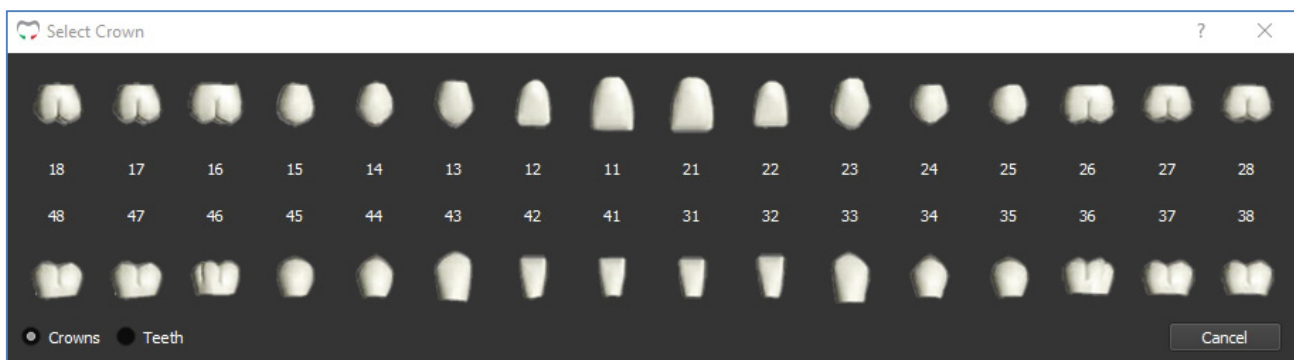


ATTENTION!!! TO WORK WITH THIS FUNCTION THE MOUSE WITH THE SCROLLING WHEEL IS NEEDED.

6. Virtual setting of crowns

For the correct positioning of implants, the software provides a virtual setting of the crowns. How it works:


1. Move the center of view axes intersection to the intended center of the future crown.
2. Click the "Add Crown" button  in the main menu. A new "Select Crown" window opens. Click the left mouse button to select the crown of the corresponding topography, it will appear in the project windows.



3. To move the crown, click and hold the anchor point with the left mouse button. Rotation is possible by pressing and holding the same cursor button on the contour line of the crown. Check the setting of the crown in the 3D window.
4. Then lock the random movement of the crown by pressing the "lock" button in the "Crown" tab window, which is automatically activated.

In cases of extensive defects in the dentition, it is better to arrange the crowns, guided by the scan surface of the prosthesis preloaded into the software.

7. Measurements


To measure the distance between points, click the "Measure distance" button . The pointer will change its type. Consistently match the first and the second dots.

To measure the angle between segments formed by three points, click the "Measure Angle" button .

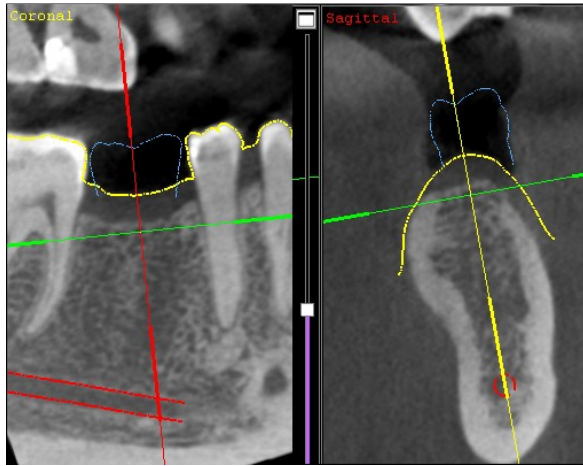
The appeared footnote with the measurement result can be dragged with the left mouse button. The position of the points can be also changed by dragging and dropping them. Delete the measurement by clicking on the footnote with the right mouse button.

8. Virtual implant planning

In the **B&B Dental GS** software, the selection and virtual planning of the implant positions are possible in the

MPR (Multi-planar Reconstruction) mode and in the PANORAMIC mode. The choice of the mode depends on the complexity of the clinical situation and the individual preferences of the user of the software. Switching of modes is carried out by the "Panoramic curve" button .

8.1 Implantation planning in the Multi-planar Reconstruction (MPR) mode.

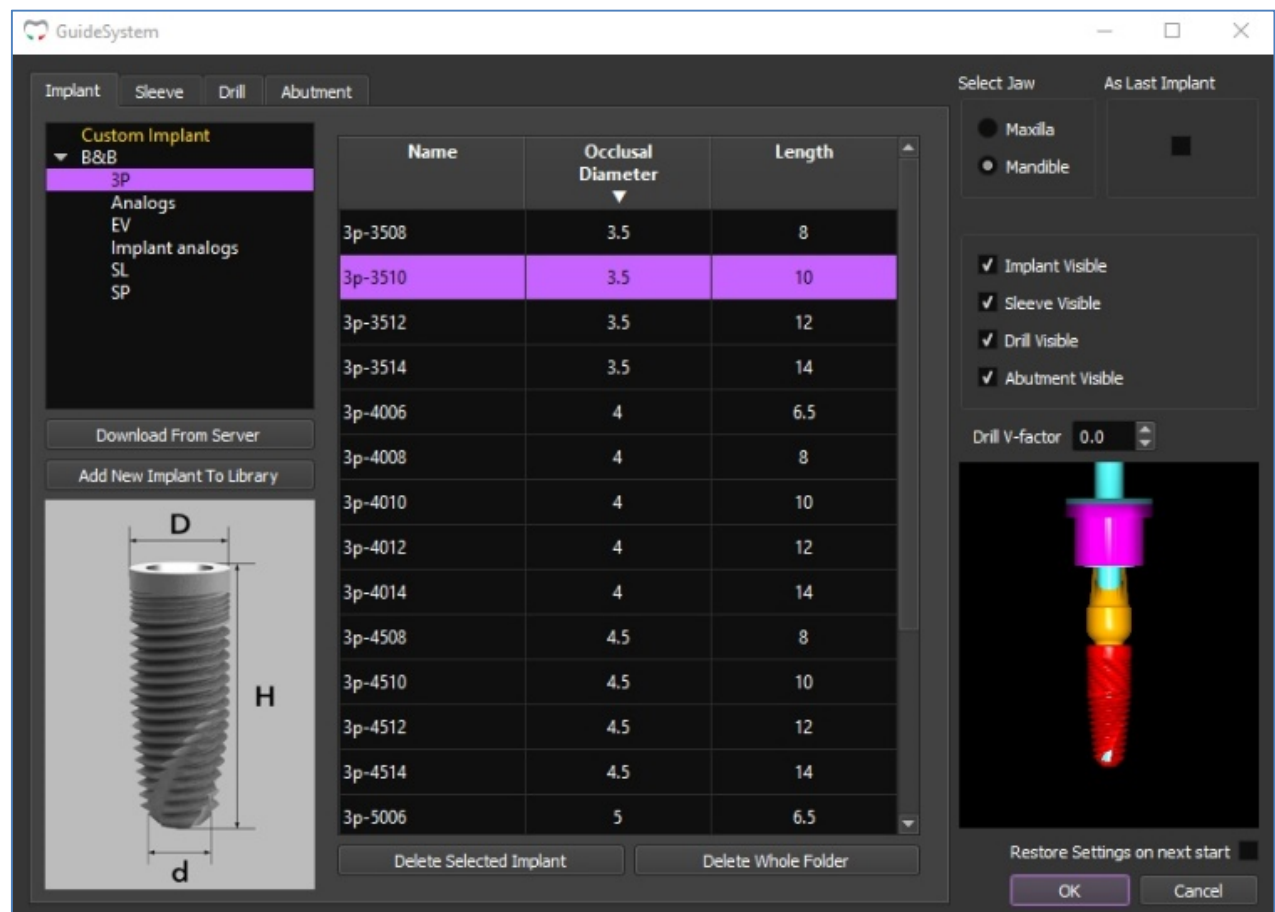


8.1.1 Set the view planes to the most convenient for planning position by placing the coronal and sagittal planes along the axis of the planned implant, and the center of view axes intersection to the assumed position of the implant support point.

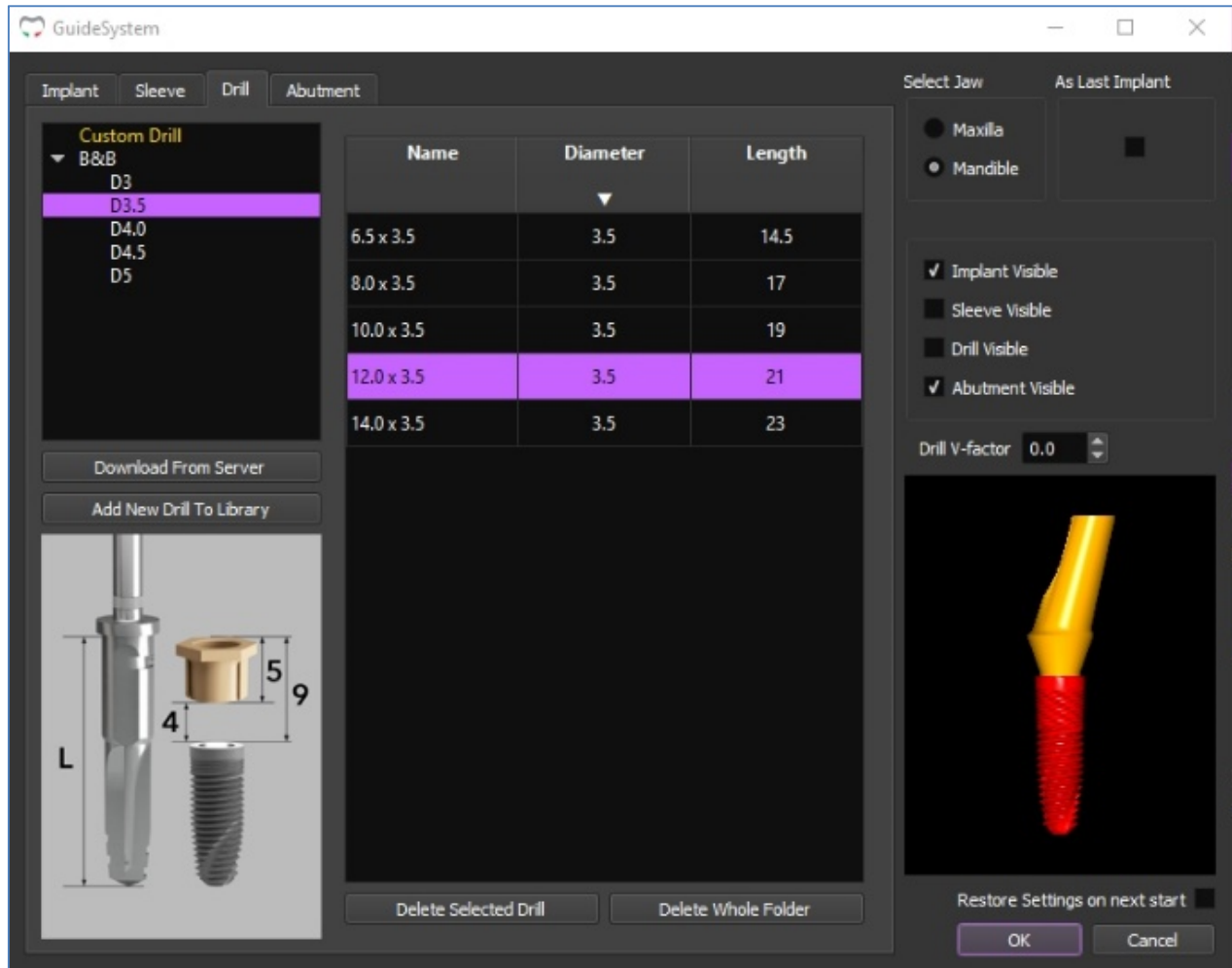
8.1.2 Perform all necessary measurements in the area of future implantation. To do this, activate the "Measure Distance" or "Measure Angle" buttons in the main menu. Measurements are made by left-clicking on the cut points, between which you want to make a measurement. If necessary, adjust the position of any of the marked points, hover the cursor over it and hold down the left mouse button.

8.1.3 The measurement results will be displayed in the windows of the "Measuring" tab, which is automatically activated. Click "Add Implant" button in the main menu. A new "Select Implant" window opens. In the upper right corner of the window, make a choice of the upper or lower jaw.

8.1.4 In the "Implant" tab window, select the desired implant from the library. Focus on the schematic image in the left part of the window.

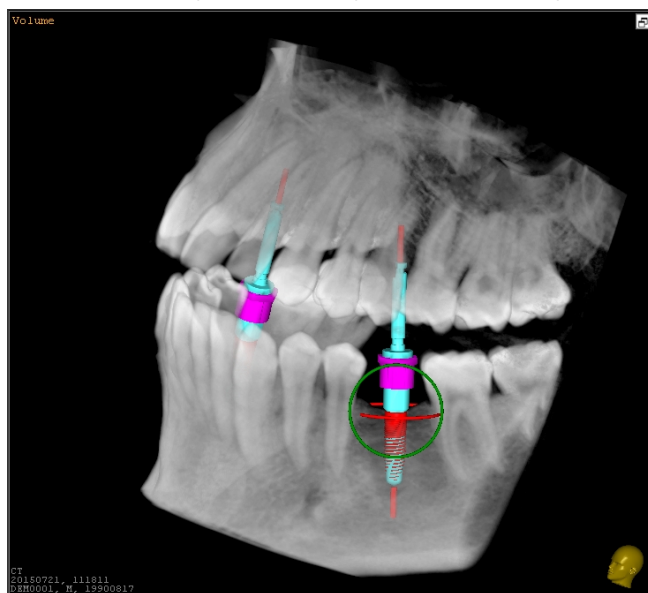


8.1.5 Similarly, select from the library or design the abutment, guide sleeve and drill individually in the appropriate tabs of the "Select Implant" window. At the same time, in the right part of the window, 3D visualization of each selected element will occur.



8.1.6 Click the "OK" button. The implant with all the accompanying fixed co-axial elements will be set to the position specified by the position of the view planes. In this case, the reference point of the implant will coincide with the center of view axes intersection. The "Implant" tab is automatically activated.

8.1.7 If necessary, correct the position of the implant due to the topography of the jaw and the position of the virtual crown. The implant can be moved by dragging and dropping its reference point, and rotated by dragging and dropping any point of its contour. In 3D-rendering, to move the implant, click on the implant with the left mouse button. A green circle appears around the implant reference point. Implant can be moved by holding the left mouse button and placing the cursor inside the circle. Implant can be rotated by placing the cursor on the circle itself and rotating the circle with the left mouse button.




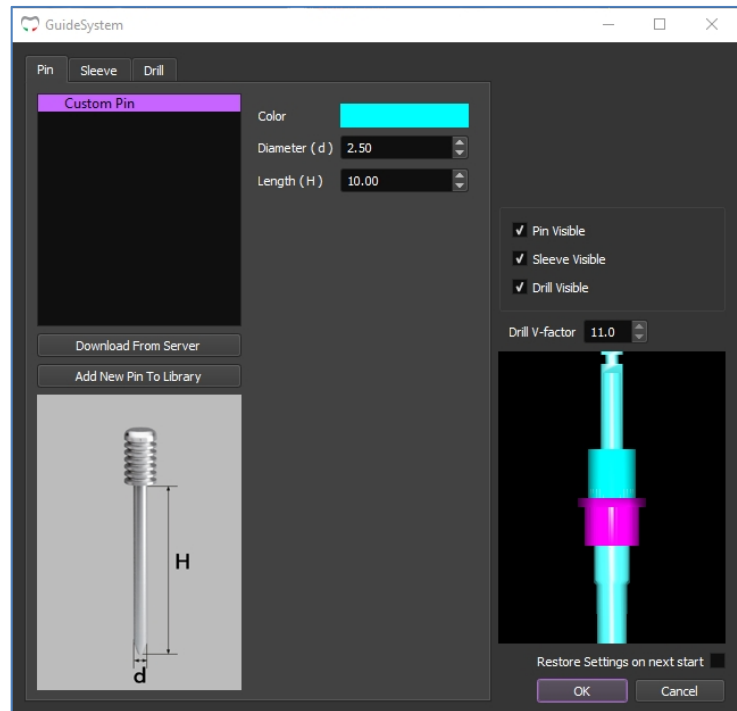
At this stage, it is also possible to correct the parameters of the implant itself with the help of the "Implant Parameters" of the "Implant" tab (the function is available only for individually created implants) or its quick replacement (the "Replace Implant" key). In case of replacement, the axis and the reference point of the new and replaced implants will coincide.

8.1.8 Implant position control in the "Slice" window

For final control of the implant position in any window, double click on the image of the implant. In this case, the coronal axis on the main sections will be aligned with the implant axis, and the center-point of coordinates with its reference point. Also, in the "Slice" window, the implant axis aligns with the vertical axis of the window. When the mouse wheel rotates in this window, the slice of the adjacent volume will rotate around the implant axis, which allows us to control its positioning effectively. The function is duplicated by moving the slider in the right part of the window.


8.1.9 Lock the movement of the implant with the "Lock" button of the "Implant" tab. The implant reference point disappears.

8.1.10 Clicking on the "Add"  button opens the window for fixing pins, sleeves and drills selection. Planning the position of the fixing pin is similar to planning the position of the implant.





8.2 Planning an implantation in PANORAMIC mode. The construction of a panoramic curve.


To plan an implantation in this mode, it is necessary to construct a panoramic curve on the axial section. To do this:

8.2.1 In the main menu, click the "Panoramic Mode" button . In the Panoramic reconstruction window that appears, select the position of the axial axis by hovering and holding the cursor with the left mouse button or with a double click. Set the desired level of the axial slice by pressing and holding the left mouse button on the axial axis. The function is duplicated by rotating the mouse wheel in the axial section window.

8.2.2 In the axial section window, adjust the position of the panoramic curve (usually along the central line of the alveolar ridge). For this, the following functions are available in the software:

- new curve drawing: open "Panoramic curves" tab on the right. Click "Add panoramic curve";
- button . On the axial slice mark consistently dots of the panoramic curve. Double-click ends drawing;
- clicking the button  switch the panoramic curve mode: slice/layer;
- it is possible to change the thickness of the panoramic slice in a relevant window or in axial slice window (pressing and holding the left mouse button on the side circular editing elements). The function is duplicated by moving the slider in the "Panoramic" window;
- the number of displayed transverse (to the panoramic curve) slices is adjusted from 1 to 5 in the

corresponding window;

- clicking the button  add selected panoramic curve to automatic protocol;
- moving (pressing and holding the left mouse button on any part of the curve between the editing elements).

If necessary, it is possible to build up four panoramic curves with the function of saving them and quickly switching between them. Panoramic curves are saved automatically when you move to the next curve selection line in the "Panoramic Curves" window. Panoramic reconstruction in the "Panoramic" window is automatically synchronized with the selection of the panoramic curve.



ATTENTION!!! EDITING ELEMENTS MAY NOT BE ACTIVE IF THEY CONTACT WITH THE CONTOURS OF OTHER STL-OBJECTS. FOR EDITING THE PANORAMIC CURVE, TEMPORARILY TURN OFF THE DISPLAY OF THESE OBJECTS.

8.2.3 The choice of the position of the future implant is possible:

- in the window of panoramic reconstruction with the help of a smooth or rapid movement of view axes;
- in the axial section by double clicking the left mouse button within the thickness of the panoramic slice (the function is duplicated by moving the slider in the same window). In this case, a transverse, tangential and rotating cut will move to a predetermined region;
- on the transverse or tangential slices when the mouse wheel is scrolled in the corresponding window.

8.2.4 Plan the dimensions and position of the implant and its accompanying elements in the same way as in paragraphs 8.1.2 - 8.1.9.

9. Drilling Parameters

When using B & B DENTAL SURGICAL KIT and choosing the implants, abutments, sleeves or any other elements from installed B & B Dental Library the Surgical Protocol is generated automatically. "Drill length", "Drill diameter" and "Drill V-factor" windows are inactive and cannot be edited.

The sequence of using the drills is displayed in the window "Drill list".

For some particular clinical cases you may need to create your own drilling protocol and to add additional drills from drop-down menu "Drill Fast Select". You can also select drills quickly by placing the mouse cursor on the "Drill Fast Select" panel by scrolling the mouse wheel.

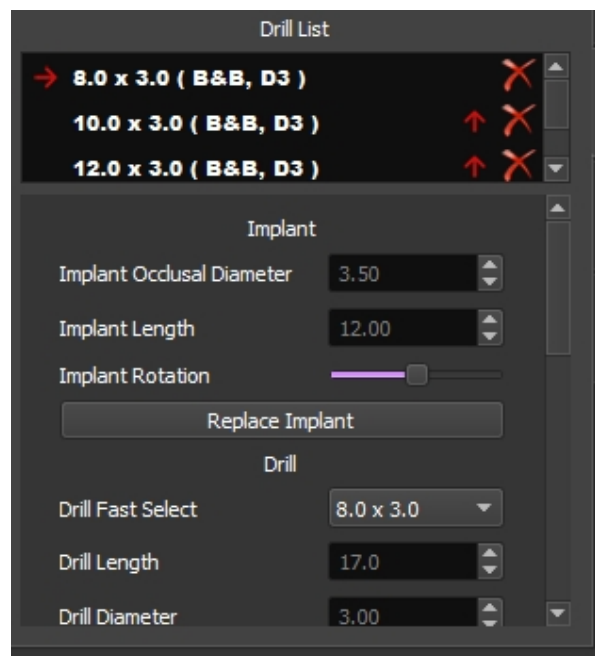
It is recommended to check the positioning of the sleeve in the slice rotation mode in the "Slice" window. Extra options:

- *Spacer*

If necessary, the depth of drilling can be limited by an additional spacer - a bushing, which is worn on the drill bit. When drilling, the bushing will be located between the drill stopper and the stop edge of the guide sleeve. When using a spacer, specify its height in the "Spacer" window.

- *Sleeve lock*

After the length and additional parameters of the finishing drill are selected, the position of the sleeve can be fixed. When you press the "lock" button, the position of the sleeve relative to the implant will not change when the drill bit parameter is changed. The apical part of the drill will not be attached to the apex of the implant. In this way, you can visually check the depth of drilling with other available drills.



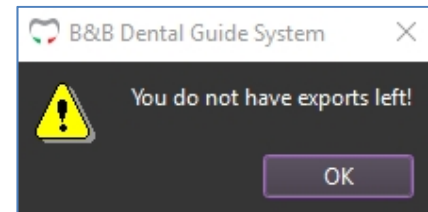
10. Surgical guide designing and creation

After the final positioning of the sleeves, it is possible to design and generate a surgical guide.

10.1 "Make surgical guide" button

Surgical guide planning is a paid option. If the user's account has no paid exports, the message "You do not have exports left" appears. In this case, you need to buy one of the export packages to generate the guide.

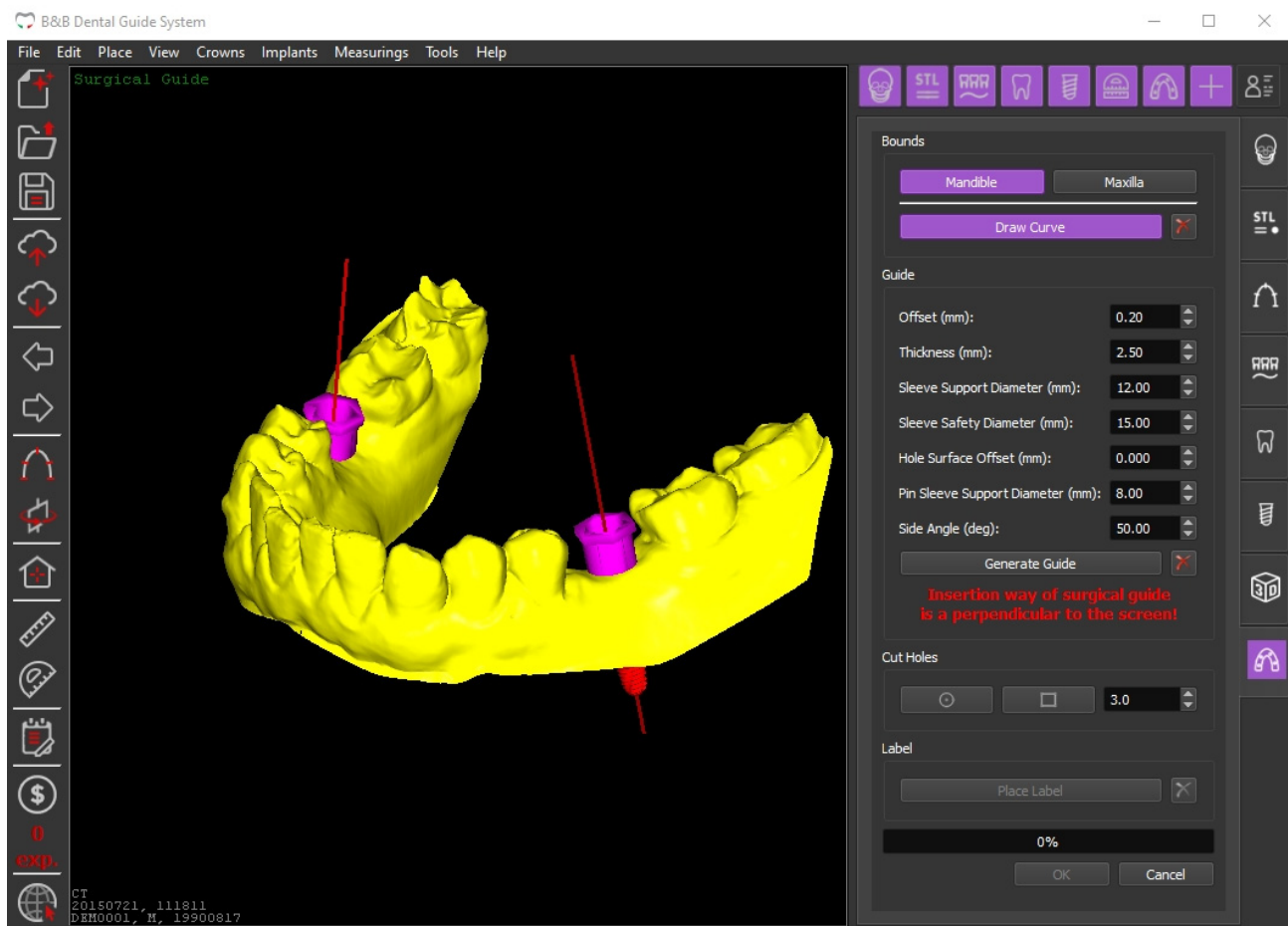
Check and change the default guide settings, if necessary.



IMPORTANT!!! THE CREATED GUIDE WILL BE CONSTRUCTED AND BASED ON THE FIRST DISPLAYED STL SURFACE IN THE STL-SURFACES LIST OF THE MAIN TAB.

10.2 In the "Make Surgical Guide" window, specify the boundaries of the future guide.

To do this, by consecutive clicking the left mouse button, mark the points of the contour of the future guide on the selected STL surface. If necessary, use the rotation or scaling of the STL surface in the same way as working in the 3D rendering window. Complete the construction by setting the last point of the border of the guide by double clicking the left button, or by pressing the "Draw Curve" button.



10.3 Editing the outline of the future guide.

The position of the points defining the outline of the guide on the reference STL surface can be changed after finishing of their arrangement ("Draw Curve" button "pressed"). Set the mouse pointer to the position you want to change. Drag the point to the desired location by clicking and holding the left mouse button.

After the final positioning of the sleeves, it is possible to design and generate a surgical guide.

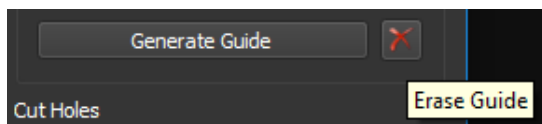
10.4 Generating a guide

Check the position of the sleeves, the outline of the guide and the path of reference (the position of the reference STL surface relative to the perpendicular to the screen).

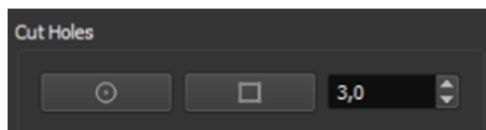


IMPORTANT!!! DIRECTION OF A GUIDE LANDING IS PERPENDICULAR TO THE PLANE OF THE SCREEN.

To select automatically the landing direction, click 2 times with the left mouse button within the working window. Set the STL surface to the desired position. Pay attention to undercuts.



Click the "Generate Guide" button. The guide will be generated and displayed in the "Make Surgical Guide" window.



If it is necessary to create round or square holes in the obtained guide, click, respectively, the button (circle) or (square), adjust the size of the mouse wheel and mark with the left mouse button where it is needed to make additional holes in the guide.

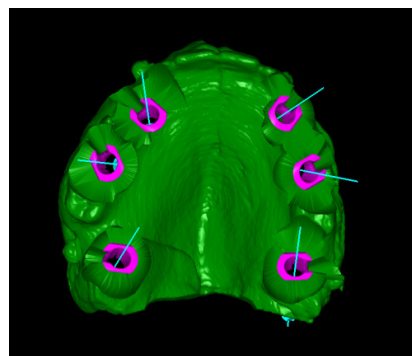
If the design of the generated guide is optimal, move the guide to the project by clicking OK. At the same time, one "credit / export" will be debited from the account.

If the guide design does not look optimal, delete the generated guide by pressing the "Erase Guide" button and repeat the procedure by changing the original guide parameters.


10.5 Make surgical guide based on Prosthesis



Press the «Make surgical guide based on Prosthesis» button to create a guide based on prosthesis or kappa STL-scan (the so-called "hermetic body"). A guide that repeats the shape of the original surface (prosthesis or kappa) will be created. Support for guide sleeves will be created automatically in the corresponding positions. It is not necessary to draw a counter and to choose the direction of reference.



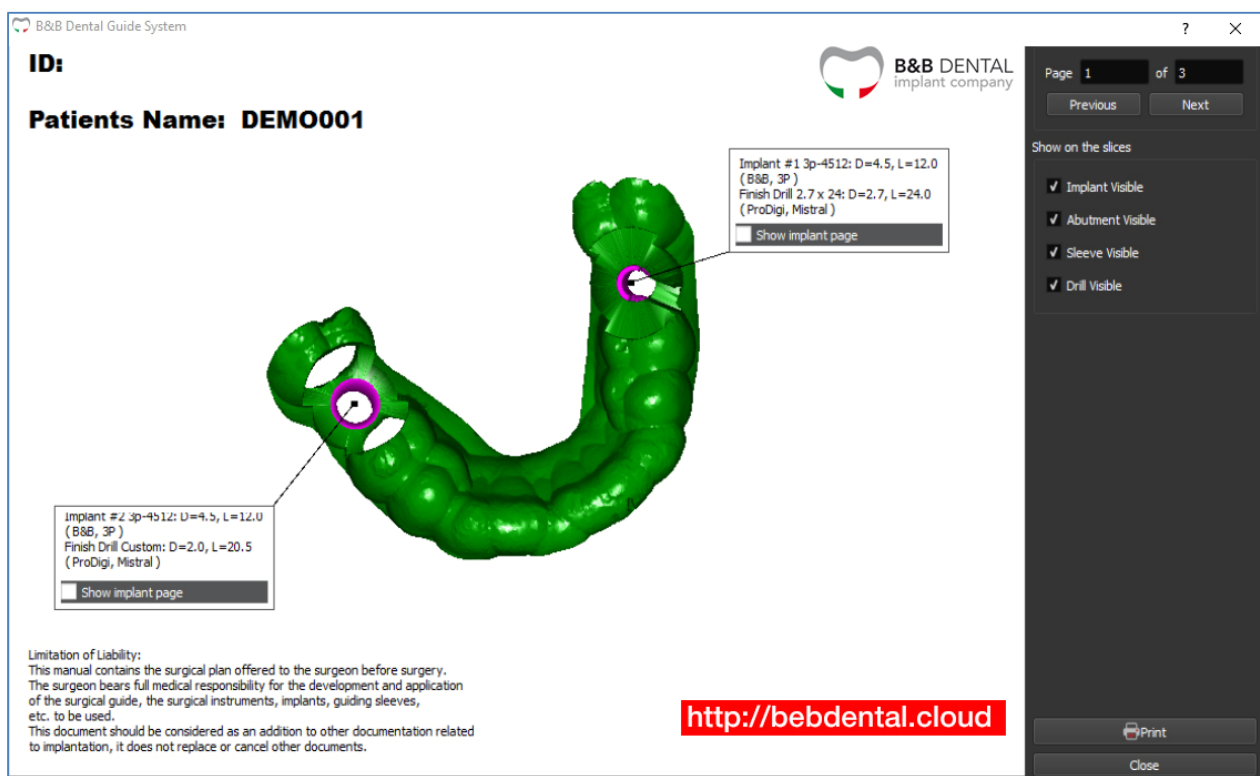
11. Creating a surgical protocol

After the guide is generated and moved to the project (paid function), the generated template will be displayed in the guides list of the Guides tab. In addition to the buttons for managing STL-files, the "Show Surgical Protocol"  button is available.

Clicking this button opens the protocol editing window.



First page: the position of the displayed guide can be adjusted with the left mouse button. Size – by the right-click. Information callouts with parameters for each hole in the template can be dragged. If you select the "Create implant page" option, a separate implant page will be created, which will display detailed information about the type of implant, associated elements and also the drilling protocol. Two mutually perpendicular cuts, available for editing, will also be offered.

If one or more panoramic curves have been selected for display in the protocol, they will be created on the following pages. Images can be edited - move around the page and change their size.



12. Project files exchange

To work with the cloud service, there are two buttons in the main menu:

Icon	Name	Function
	Save or Send to Cloud	Save your project to the Cloud Service or send it to some person
	Cloud Service	Opens Cloud Service window

Save Project to Cloud



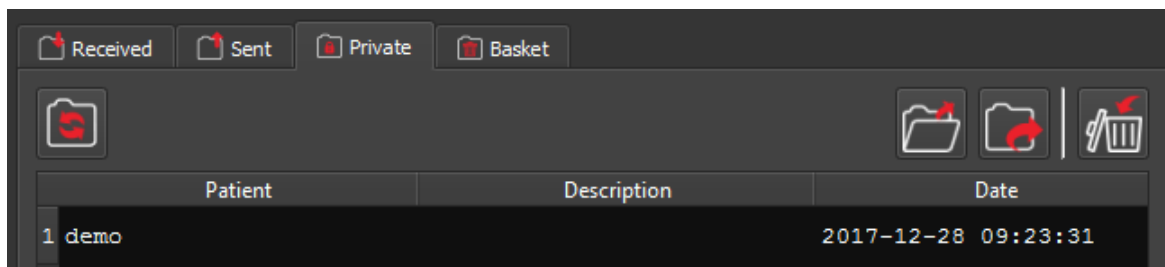
Send Project to Cloud



If you need to save your project, click the button " Save or Send to Cloud" - " Save Project to Cloud".

In the "Save Project" window that will open, you will see a screenshot of the project at the time of saving, and fields for editing. If necessary, edit the name and requisites of the patient, or anonymize the project by clicking the "Anonymize Project" button.

Click OK - the project will be saved in the cloud storage. The saved project will appear on the "Private"

tab in the opened dialog box.



In this window, it is possible to send the project to a specific recipient (button ) or you can do this by clicking the button  in the main menu.




The button  directly opens the cloud service. Possible functions when working with the Cloud:

- viewing received, sent, private projects, as well as projects that were sent to the basket.
- the ability to sort projects by patient name, contact, by date.
- working with the address book.

The "Contacts" button in the Cloud Service menu opens an address book that can be edited by the user. Enter the name of your partner-recipient and its e-mail address. The notice of sending and the download link will be send to the specified e-mail. Also, the posted project will appear in the list of available projects in the cloud service of the recipient.

Clicking on the "Refresh" button will execute a request to the cloud service, and update the information about the list of available projects and their status.

Open the project from the list of available ones by double clicking on it with the left mouse button or clicking on the corresponding icon. Available icons:

Icon	Name	Function
	Open Project	Open selected project
	Forward Project	Sending project to a partner
	Move to Basket	Moves the project to the basket (where it can be either restored or deleted permanently)



IMPORTANT!!! PROJECTS STORE IN THE CLOUD FOR 3 MONTH. AFTER THIS PERIOD THEY WOULD BE AUTOMATICALLY DELETED.

13. Payment

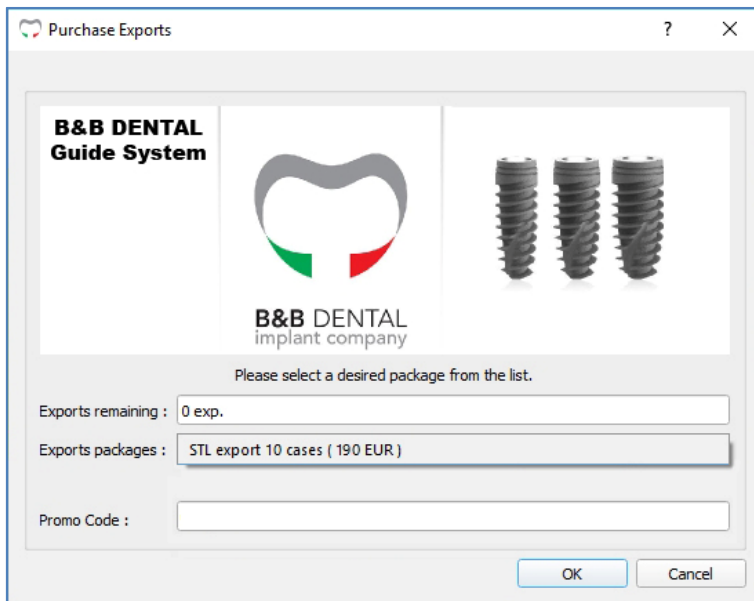
Free functions of the software:

- downloading and installing the software;
- implant planning, project creation;
- exchange of projects between users.

Paid functions:

- surgical guide planning with the possibility of its subsequent export;
- individual gum formers and abutments modeling with the possibility of their subsequent export;
- jaw model creating in the STL format with the possibility of its export.

Clicking the button  opens a dialog window where you can select the number of STL exports



In the dialog that appears, select the number of exports to purchase.

If you have a promotional code, enter it in the "Promo code" field.

As the required number of exports is selected - clicking on the OK button will automatically open the <https://payway.sinergia.bcc.it> window in the Internet browser. Enter billing information.

Successful planning with B&B Dental GS!

If you have any questions or technical problems while using the software, please contact us by email:
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