GAMMA Dental Software®

Update Information

Version 8.9

"Gamma"
Medizinisch-wissenschaftliche
Fortbildungs GmbH

MD CE 0483



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Version 8.9

Revision:
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2 Introduction

2.1 About this booklet

On the following pages, we would like to present to you the feature highlights of version 8.9 of GAMMA Dental Software® (GDSW). This update includes many improvements and new features for the CADIAX®, CADIAS®, and CADIAS® 3D analysis modules as well as for the patient management in GAMMA Document Browser and GDSW classic.

Several of the changes implemented in this software version have been suggested by our user base worldwide. If you also have ideas or suggestions for possible improvements, please do not hesitate to contact us.

2.2 Downloading the software

The most recent version of GAMMA Dental Software® is available for download from the *Downloads* section of our website at www.gammadental.com. There, you can also find the current Instructions for Use for all our products and additional information material for free and without registration.



You can also request a paper copy of the Instructions for Use by contacting us directly. Shipping within the European Union is free of charge.

After having downloaded the installation package as a setup file, simply execute that file to start the installation.

2.3 Installation from the flash drive

GAMMA Dental Software® is also available on a USB flash drive that contains not just the software installation package, but also the Instructions for Use in PDF format. The flash drive is write-protected and will appear as an additional drive named "***GDSW***" in your file explorer when plugged in.



Figure 1: Installation from flash drive.

To start the installation, simply insert the USB flash drive into a free USB port of your computer. The logo printed on the flash drive should typically be located on the top side. If the installation routine does not start automatically, you can launch it by executing the file *setup.exe* that you can find in the folder *Setup* on the *GDSW* drive. The Instructions for Use are located in the subfolder *Manuals*. A suitable PDF viewer application is included with every Windows installation.

2.4 Installation procedure

If an older version of GAMMA Dental Software® already exists on your computer, the installation routine will perform an update, which will preserve your personal configuration settings. The update procedure will in no way touch your pre-existing patient files. Nevertheless, **we recommend backing up your patient data before installing the update**. You can easily identify the patient files to back up by their file extensions **.gdb* for GAMMA Document Browser and **.fgw* for GDSW classic. The database directory where these files are located is indicated in the respective application.

Do not switch off your computer during the installation. If you are installing the software on a laptop computer, please ensure that it will not run out of power during the installation procedure.

Furthermore, please ensure that you have your license code at hand when launching the installation routine. You can find this code on your license letter that you received as part of the installation package. Contact us if you need a copy of the license letter at a later time.

In the very first steps of the installation procedure, you are asked to choose the language to be used for the software and to accept the license agreement.

Afterwards, please enter your license code and optionally your user information (Figure 2). The latter is used for identifying the workstation and your practice or company on the printouts created by the software. Click *Next* to continue.

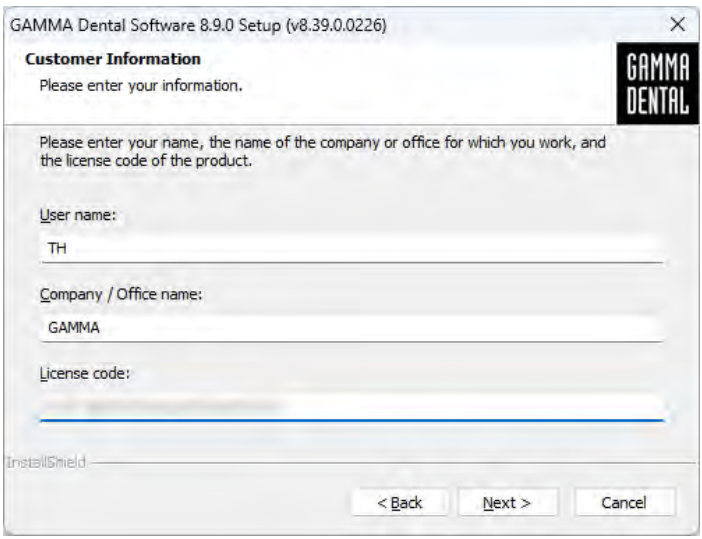


Figure 2: Enter your user information and the license code.

In the subsequent step, you can change the directory to which the software will be installed. We recommend to proceed with the predefined settings.

Afterwards, you will be asked to specify the directory in which you want to store your patient data (Figure 3). If you need to access the data from multiple PCs, you can specify a network drive that is accessible to all of them.

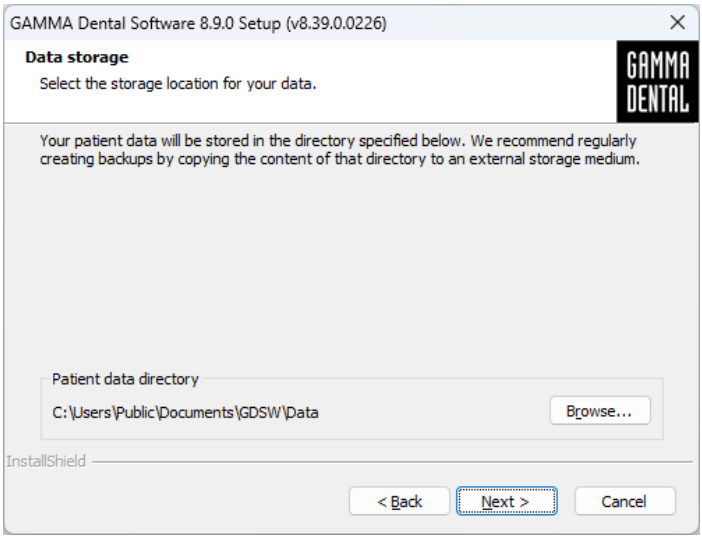


Figure 3: Select the directory in which your patient data should be stored.

The next window summarizes the installation settings. To change any of them, go back to the respective step by clicking on *Back*.

2.5 Software activation

After the successful installation of GAMMA Dental Software®, you can choose to start either GAMMA Document Browser or GDSW classic. In either case, you will be asked to activate the software (Figure 4).

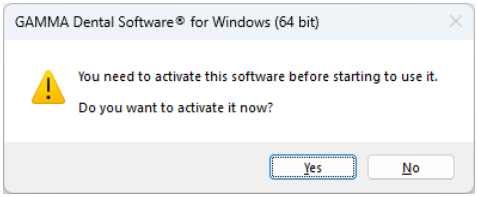


Figure 4: Activation is always performed for the complete GDSW package, regardless of which application invoked it.

The activation procedure has to be carried out only when you start the software for the very first time. Depending on the license code entered during installation, different software modules will be made available. To check your license information or enter a new license code after activation, use the menu *Help* > *About* in the software.

For activating GAMMA Dental Software® on a computer with internet connection, simply select *Online activation* in the following dialog (Figure 5) and click on *Activate*. No further steps are required in this case, and you can immediately start using the software.

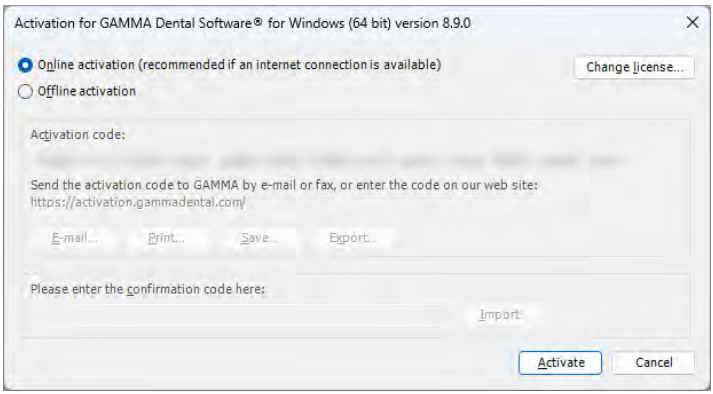


Figure 5: An active internet connection is convenient, but not necessary when activating GAMMA Dental Software®.

If you are installing GAMMA Dental Software® on a computer without an active internet connection, please select *Offline activation*. Send the displayed activation code to GAMMA either via e-mail or by fax or visit the GAMMA activation website (Figure 6) on another device to activate your software:

activation.gammadental.com

Enter your customer number and the activation code shown in the software and click on *Activate*. The system provides *Export* and *Import* functionalities on both ends to minimize the risk of typographic mistakes.

The website will return a confirmation code, which you will have to enter in the corresponding input box of the activation dialog (Figure 5). By clicking on *Activate*, software activation is now also completed on a system without an internet connection.



Figure 6: Offline activation enables you to activate the software on computers without an internet connection.

GAMMA Dental Software® is now ready for use. In case of any questions regarding the installation or usage of the software, please do not hesitate to contact us via:

E-Mail: support@gammadental.com

Phone: **+43 2243 34140 0**

Fax: **+43 2243 34140 90**

Our hotline is at your disposal on workdays from Monday to Friday between 9 AM and 4 PM (Vienna local time).

3 Updates in version 8.9

3.1 CADIAS® 3D

Undoubtedly, computerized digital methods are an ongoing important factor in modern dentistry. Typical dental developments in the industry aim directly at the design and manufacturing of prosthetic appliances in the dental laboratory, which means that digital dentistry nowadays is more a topic for the dental lab than it is for the practitioner's office. The aspects of functional analysis are widely ignored or neglected by those developments.

The field of instrumental functional analysis is one of the key points of the Vienna School of Interdisciplinary Dentistry (VieSID) in the systematic approach to establish valid and patient-specific evaluations. In particular, occlusal analysis of articulated models is of prime importance. With CADIAS® 3D, GAMMA has developed a sophisticated 3D software system that aims to fill the gap in digital dentistry to allow occlusal model analysis as part of the computerized workflow.



For a complete overview of the features provided by CADIAS® 3D, please refer to the Instructions for Use of GAMMA Dental Software®, which you can also access via the *Help* menu in the software. The software comes with a fully documented patient case, named "Test Patient 3", which you can use to get acquainted and experiment with CADIAS® 3D. Go ahead and give it a try!

3.1.1 Automated alignment of scan data in the digital workflow

GAMMA's innovative digital workflow leverages the Digital Transfer Block Set (order no. 06-230950) to correctly mount intraoral scans in the virtual articulator. Scanning one of the blocks together with the bite fork allows the software to relate the upper jaw scan to the anatomic or kinematic hinge axis, ensuring outstanding digital mounting accuracy. This is an essential prerequisite for the virtual functional analysis and occlusion design in CADIAS® 3D.



Figure 7: A bite fork scan in the articulator allows relating intraoral scans to anatomic or kinematic hinge axis.

Hitherto, the alignment of the scan data captured for the digital workflow had to be made by marking three corresponding point pairs on the two scans being aligned. With this update, this alignment can now be performed automatically, significantly speeding up the process of importing and articulating intraoral scans. This option is turned on by default and can be toggled in the first step of the workflow, falling back to manual alignment (see Figure 8).

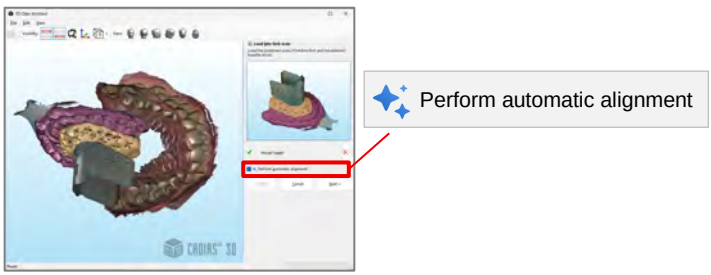


Figure 8: The new option to automatically align scan data for the articulation of intraoral scans in the digital workflow.

When activated, the automatic alignment will be performed for both steps in the workflow: for the alignment of the bite fork to the transfer block, and for the alignment of the upper jaw to the bite fork. Both times, you are able to check the quality of the alignment visually and numerically before proceeding (see Figure 9).

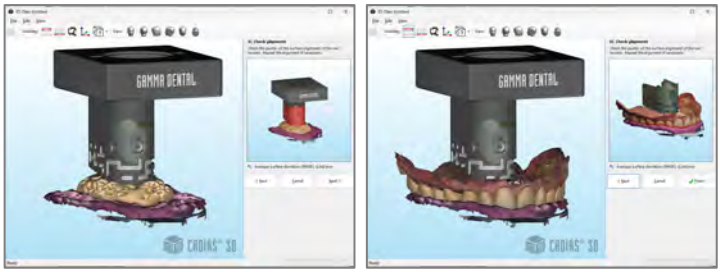


Figure 9: The result of the automatic alignment – first aligning the bite fork scan to the transfer block and subsequently aligning the upper jaw to the bite fork.

To facilitate the automatic alignment, the 3D models of the digital transfer blocks have been revised, which also improves the accuracy and robustness of the manual alignment.

3.1.2 Support for face scans and textured models

Most face scanners and some intraoral scanners output textured 3D meshes, which are regular OBJ or PLY files accompanied by a texture image. When displayed, that image is projected onto the mesh surface, which can provide much greater detail than simple coloration of the individual triangles, as it is independent from the resolution of the mesh.

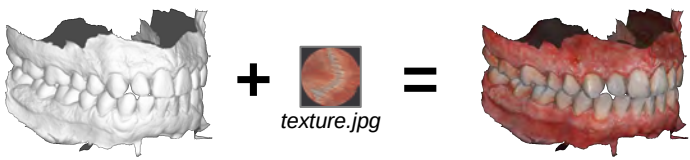


Figure 10: Textured models are accompanied by a texture image that can provide much greater detail than simple triangle colors.

With this version, CADIAS® 3D receives full support for textured meshes – from import and display to tooth segmentation and data export. The visual settings that are accessible by right-clicking any model in the 3D environment now also allow switching between textured display, triangle-based true colors, the solid default color, or a custom color.

The integration of face scans allows aesthetic parameters such as the relationship between the bipupillar line and incisal plane to be considered for the functional analysis and occlusion design in CADIAS® 3D. To ensure correct orientation of the face scan in the virtual articulator, the kinematically located hinge axis points and the infraorbital point can be marked on the skin before the face scan is acquired. These reference points can subsequently be digitized on the scan surface when the data is being imported, using the manual three-point articulation feature in the 3D Data Assistant (see Figure 11).

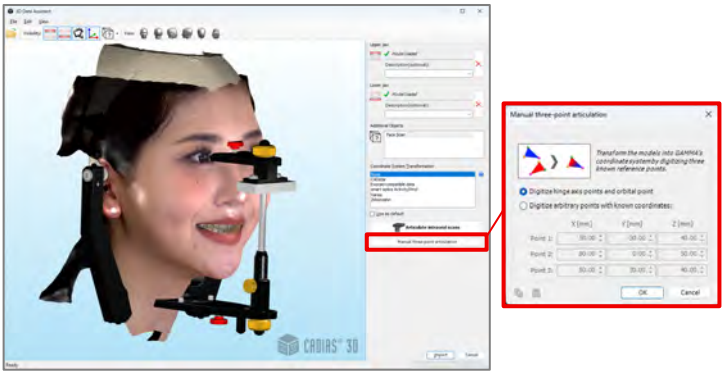


Figure 11: Face scans for consideration of aesthetics may now be imported and articulated based on marked right and left hinge axis points and the orbital point.

Please note that the articulation of intraoral scans based on face scan data may be sufficiently accurate for purposes related to aesthetics, but it may not replace the precise mounting performed with the digital transfer blocks as part of the GAMMA digital workflow.

3.1.3 Direct saving to file when saving in CADIAS® 3D

When saving CADIAX® or CADIAS® analysis data in GAMMA Document Browser, the changes were generally not written to disk immediately, but rather they were kept in working memory. Only when initiating another save in GAMMA Document Browser would such changes be persisted. With CADIAS® 3D, this behavior has now been improved to write the changes to disk immediately, ensuring that pending changes are not lost in case of a computer crash or shutdown.

3.1.4 Lower jaw movement export for Dynamic Occlusal Protocol

In the Dynamic Occlusal Protocol, an arbitrary set of condylography or articulator-guided movements can be selected for analyzing a patient's dynamic guidance system. For each movement, a region of interest can be defined, which makes it possible to limit the analysis to the excursive or incursive part of the movement.

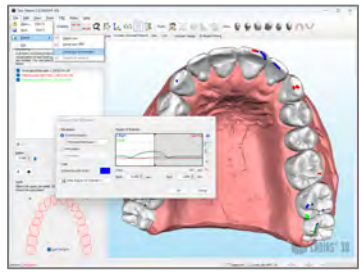


Figure 12: Movements defined in the Dynamic Occlusal Protocol can now be exported as exocad® Jaw Motion files.

With this update, it is now possible to export this set of movements as a single combined Jaw Motion file for exocad®. Doing so will take into account the region of interest specific to each movement, as well as whether the movements are carried out freely or with tooth guidance. This can serve as a generic and flexible way of exporting a specific set of movements for the CAD/CAM process.

3.1.5 Highlighting of interactable 3D objects

Several features in CADIAS® 3D allow 3D objects to be selected interactively by clicking them in the 3D environment, such as the selection of teeth or models for VTO or the digitization of point landmarks.

To provide better visual feedback about which objects can be selected, they will now be highlighted with a subtle blue hue as the mouse cursor moves over them, in addition to the changing cursor shape.

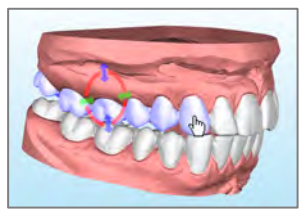


Figure 13: Highlighting of teeth when selecting them for VTO.

3.1.6 Smooth view transitions and background logo

When switching between predefined views in the 3D environment, such as frontal view, lateral right view, top view, etc., the transitions are now animated smoothly to make navigation more intuitive. This option—as well as the CADIAS® 3D logo in the background—can be disabled in the *Options* menu.



Figure 14: CADIAS® 3D logo in the background.

3.1.7 Miscellaneous improvements

- When performing a manual alignment of intraoral scans in the digital workflow, the three points marked on the scans can now easily be corrected via drag-and-drop if required.
- The performance of the VTO feature to close the upper and lower jaw models to first contact has been improved significantly.
- The base plates for 3D Model Printing have been revised for a more precise fit and better reproduction of digital contacts on the printed models. The mounting blocks in the software now also provide a context menu to control visual settings.
- The Dynamic Occlusal Protocol now also detects occlusal contacts between teeth that are not immediately adjacent, which is important e.g. in cases with multiple extractions.
- The export of lower jaw movements and graphical analyses will now restore the previously selected export directory and file format.
- Custom colors can now be assigned during the data import in the 3D Data Assistant and will carry over into CADIAS® 3D.
- The number of previously used model descriptions retained by the 3D Data Assistant has been raised from 10 to 15.

3.1.8 Fixed issues

- When changing the transfer block selection during the digital workflow, previously marked alignment points did not update.
- When exporting a mesh in PLY format and enabling the inclusion of axis-orbital triangles with the purpose of transferring the reference plane to third-party applications, the exported file was invalid.
- Opening a dialog window while a movement replay was in progress potentially led to the application hanging indefinitely.
- An error occurred when deleting a model from the database that was actively used for VTO or for a movement replay.
- The dental arches indicating present teeth for upper and lower jaw did not update correctly during automatic tooth segmentation.

3.2 CADIAX®

3.2.1 Real-time indication of distance from reference position

When carrying out a condylography recording with CADIAX® 4, the coordinate system now displays the distance of the current stylus position from the previously set reference position, in real-time. This also represents the distance of the real-time cursor (red cross) from the origin of the coordinate system.

This value can be extremely useful to assess the reproducibility of the patient's reference position – both to ensure the correct starting position before a movement recording, and to check whether the same position is returned to afterwards. It may also indicate whether a refix of the reference position should be performed.

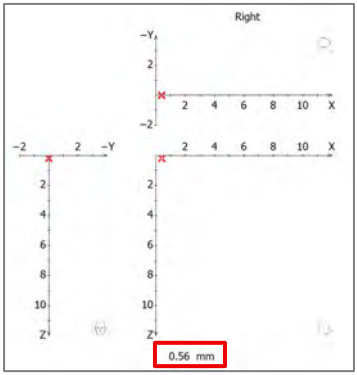


Figure 15: Display of the current stylus distance from reference position below the coordinate system in real-time.

3.2.2 Immediate refix without leaving the Recording pane

So far, refixing the reference position always required a switch to the *Refix Reference Position* pane, with the coordinate system no longer being visible. This made it difficult to verify whether the patient assumed the desired reference position before hitting the foot switch.

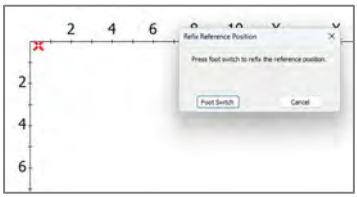


Figure 16: A new dialog window allows refixing the reference position without losing sight of the coordinate system.

With this update, pressing the toolbar button REFIX *Refix Reference Position* will bring up a new dialog window that allows the reference position to be refixed while keeping the coordinate system in view. Should you prefer to perform the refix on the *Refix Reference Position* pane, you can still switch to this pane manually.

3.2.3 Improved user experience with recording macros

Recording macros in CADIAX® Recorder allow defining a sequence of curve and CPM recordings ahead of time, which can be reused for all subsequent patient examinations.

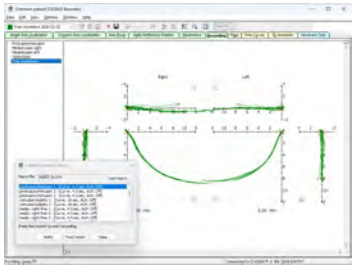


Figure 17: The revised macro dialog with direct access to the refix function.

In conjunction with the revised refix feature, usage of recording macros has been improved in several ways. For instance, the macro dialog now provides a *Refix* button that gives direct access to the new refix dialog window. Also, closing and reopening the macro dialog automatically resumes at the previously selected entry, which allows the recording session to be continued seamlessly. The recording of the selected entry can now also be started by pressing the *Enter* key on the keyboard. And last but not least, choosing to load a macro file will now default to the last used directory.

3.2.4 Consistent indication of lost stylus-flag contact

The CADIAX® 4 system relies on electromechanical contact between stylus and flag in order to capture the mandibular movements correctly.

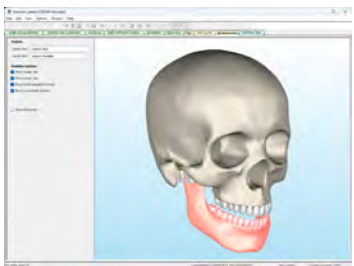


Figure 18: A loss of stylus-flag contact will now be indicated by the mandible turning red in the 3D Animation, as well as a "No contact" hint in the status bar.

This update improves the handling of situations where contact between stylus and flag is lost, which may be due to dust or dirt on the sensitive measuring surfaces or because of improper facebow adjustment. This includes a consistent indication of lost stylus-flag contact in the status bar – from axis localization through recording to the real-time display of the stylus position on the flags. On the *3D Animation* pane, the mandible is additionally colored red for immediate visual feedback. Furthermore, attempting to set the reference position or to measure a CPM while there is no contact will show a corresponding error.

3.2.5 Miscellaneous improvements

- Refixing the reference position will now reset the mandible shown in the *3D Animation* to the zero position.
- In *3D Animation*, pressing the + *Clear Tracks* button in the toolbar will now clear the previously recorded condylographic tracings.
- The real-time cursor on the *Recording* pane will now only appear if the facebow parameters have been entered.
- The system will now measure continuously while on the *Single Axis Localization* and *Refix Reference Position* panes in order to correctly detect whether stylus-flag contact is still present.

3.2.6 Fixed issues

- The axis movement visualized on the *3D Animation* pane was lagging behind the condyle position during the replay.
- CADIAX® compact 2 Recorder did not save recovery files correctly if the patient name contained unsupported characters.
- The stylus distance indicator in the coordinate system of CADIAX® compact 2 Recorder did not appear correctly.
- The detection of stylus-flag contact has been revised to reduce the likelihood of false positive detections.
- An application crash that occurred when importing specific curves from an ASCII file has been fixed.

3.3 CADIAS®

3.3.1 Fixed issues

- Opening a CADIAS® analysis from GAMMA Document Browser would attempt to activate VTO mode even if no VTO item was present.

3.4 GAMMA Document Browser

3.4.1 Improved element positioning in Cell Design view

The *Cell Design* view allows deep customization of every detail of a cell's appearance, defining how the data will appear in the patient documentation and presentation. On this view, it is now possible to activate a "Snap to grid" option in the general view properties, accessible by clicking on the gray background. When activated, this option ensures that elements are always aligned to the grid when they are repositioned or resized, which is helpful to create a more consistent layout.

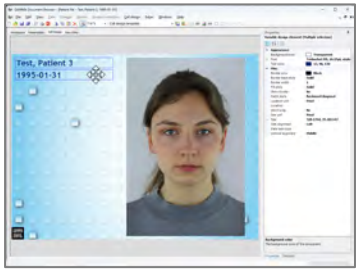


Figure 19: The Cell Design view now supports consistent repositioning and resizing, for multiple elements at once.

In addition, it is now possible to move multiple cell design elements at the same time by first selecting them with the *Shift* or *Ctrl* keys pressed and subsequently dragging them to a new position. This adjustment will also respect the aforementioned "Snap to grid" option to keep the elements aligned.

3.4.2 Simplified insertion of cell design elements

On the *Cell Design* view, various static shapes can be inserted to create a unique design matching your dental office or lab. Insertion of these shapes has been simplified by removing the dedicated square and circle options, which can be created by simply holding down the *Shift* key (see Table 1). In addition, pressing the *Escape* key now properly cancels the insertion.

Without ***Shift*** key	With ***Shift*** key
Rectangle	*Square*
Rounded rectangle	*Rounded square*
Ellipse	*Circle*

Table 1: Hold down *Shift* while inserting cell design elements to create shapes with a 1:1 aspect ratio.

3.4.3 Miscellaneous improvements

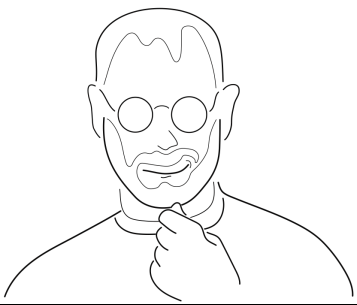
- Attempting to open or create a text document without having WordPad installed will now show a corresponding error message.
- Several properties concerning the appearance of cells and data areas, such as border width, background image, etc., are now also available on the *Workspace* view.

3.4.4 Fixed issues

- Opening patient files from File Explorer in some cases inadvertently restored the size of the application window.
- Depending on the system locale, the *Options* dialog showed blank pages for several application languages.
- A conversion error when opening older patient data from a local SQL database storage has been fixed.
- A potential application crash when consecutively opening multiple files from the File Explorer has been fixed.
- In the Image Assistant, the option of pasting from the clipboard is now correctly disabled when another image is opened for editing.

…

And one more thing…



3.5 General

3.5.1 Preliminary support for macOS with Parallels® Desktop

This update addresses the last known issues that hitherto prevented GAMMA Dental Software® from being used on macOS through the popular Parallels® Desktop virtualization software (www.parallels.com).



Figure 20: Preliminary support for using all features of GAMMA Dental Software® on macOS through Parallels® Desktop is now available.

This preliminary support covers all features of GAMMA Dental Software® – from CADIAX® recording and patient documentation to the virtual occlusion analysis in CADIAS® 3D. The 3D rendering system has been improved to ensure compatibility with the virtual graphics adapter of Parallels® Desktop.

In addition, the software package now includes a dedicated CADIAX® device driver for systems with ARM processors, including not just Apple silicon (M1 and later), but also some Windows-based notebooks and tablets. This allows CADIAX® devices to be correctly detected and operated on such systems.

These changes have been validated on systems with Apple's M1 and M4 processors. Please get in touch, should you encounter any remaining issues.



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