SICATFUNCTION

SICAT FUNCTION *VERSION 2.0.20*

Instructions for use | English

STRUCTURE OF THESE INSTRUCTIONS FOR USE

This document contains two versions of the SICAT Function instructions for use:

- SICAT Function as a stand-alone version
- SICAT Function as SIDEXIS 4 module

Each set of instructions for use contains all information that you need for a specific version. For example, if you exclusively use SICAT Function as a SIDEXIS 4 module, you only need to read the corresponding section of these instructions for use. SIDEXIS 4 is an imaging software application by Dentsply Sirona.

The only exceptions are the explanations of labeling and the reverse side containing the manufacturer and support information and the article number of the instructions for use. This information is only stated once at the end of the entire document.

SICATFUNCTION

SICAT FUNCTION *VERSION 2.0.20*

Instructions for use | English | Standalone

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1 INTENDED USE

SICAT Function is a software application for the visualization and segmentation of imaging information of the oral-maxillofacial region and for the visualization of mandibular movement.

The imaging data originates from medical scanners such as CT or CBCT scanners and optical impression systems. Jaw motion information originates from jaw motion tracking devices.

SICAT Function is also used as a software system to aid qualified dental professionals with the evaluation of dental treatment options.

The dental professionals' planning data may be exported from SICAT Function and used as input data for CAD or Rapid Prototyping Systems.

2 VERSION HISTORY

VERSION 2.0

- The Hub is available as an additional option for importing and registering optical impressions.
- STL files that have been imported into Sidexis 4 can be used to import and register optical impressions.
- Optical impressions can be displayed in color if they have been downloaded from the Hub or imported from an SIXD file.
- The volume orientation correction and panoramic curve adjustment can be configured separately for each application.
- In the Panorama view, the inspection window can be maximized.
- The transversal and longitudinal view in the Panorama workspace can be tilted.
- SICAT applications can be used either with workstation licenses or with network licenses.
- SICAT Suite can be used with Sidexis 4 or as a stand-alone version.

VERSION 1.4

- For reasons of legal compliance, SICAT applications require a license even for Viewer mode. Applications without license are not available. For all applications that are approved in your country, SICAT automatically adds Viewer licenses to your customer activation key. You can activate the Viewer licenses by deactivating and re-activating any license. Information on this can be found in the section *Licenses [▶Page 49 - Standalone]*.
- The stand-alone version and the SIDEXIS XG plug-in version of these instructions for use are also available in form of PDF files.
- SICAT Function is able to calculate a virtual hinge axis of the temporomandibular joints based on the jaw motion tracking data.
- SICAT Function shows the lengths of the arms of the Bonwill triangle and calculates the Balkwill angle.

VERSION 1.3

- SIDEXIS 4 module
- Support of Italian, Spanish, Portuguese, Dutch and Russian languages
- The version number of SICAT Function matches the version number of SICAT Suite.
- Alternative option to order therapeutic appliances by manufacturing a plaster model.
- **TMJ** workspace, which shows the motion of segmented condyles.
- Segmentation can be further edited after closing the segmentation window.

VERSION 1.1

- Support of French and Japanese languages
- Volume orientation alignment correction
- Ordering of OPTIMOTION therapeutic appliances
- Change of format for jaw motion tracking data to .jmt files
- Export of optical impressions with integrated anatomical traces

VERSION 1.0

- Initial release
- Support of English and German languages

3 SYSTEM REQUIREMENTS

CAUTION

If your system does not fulfill the system requirements, this may mean that the software will not start or will not function as intended.

Check whether your system meets the minimum software and hardware requirements before installing the software.

Processor	Quad Core 2.3 GHz
RAM	8 GB
Graphics card	Dedicated* DirectX 11 or higher 2 GB graphics memory Current driver with at least WDDM 1.0 support
Screen	Resolution at least 1920x1080 pixels for 100 to 125 percent scale** Maximum resolution 3840x2160 pixels for 100 to 200 percent scale
Free disk space on hard disk	20 GB plus additional storage space for patient records
Storage media	Access to external storage media containing installation files.
Input devices	Keyboard, mouse
Network	Ethernet, 100 Mbit/s, 1000 Mbit/s recommended
Printer for patient information	At least 300 dpi Paper format DIN A4 or US letter
Operating system	Windows 7 SP1 (64 Bit) with KB2670838 Windows 8.1 (64 Bit, Desktop) Windows 10 (64 Bit, Desktop) These operating systems will be supported to the extent and for the duration to and/or for which they are supported by Microsoft.
Web browser	Microsoft Edge Mozilla Firefox Google Chrome JavaScript must be activated. A standard browser must be set.
PDF viewer	Adobe Reader DC or higher, for example

SIDEXIS 4	Version 4.3.1 or higher (SiPlanAPI V5)
Hub	Version 2.X from version 2.1

*SICAT Suite supports only dedicated graphics cards from the NVIDIA GeForce 960 GTX level of performance. Integrated graphics cards are not supported.

** The combination of a low monitor resolution and a high level of scaling may mean that the software displays certain parts of the user interface incompletely.

The monitor must be configured so that it displays the SMPTE test image correctly. Information on this can be found in the section *Monitor calibration with the SMPTE test image [▶Page 229 - Standalone]*

SOFTWARE PREREQUISITES

SICAT Suite requires the following software components and installs them if they are not already available:

- Microsoft .NET Framework 4.6.2
- CodeMeter license management software 7.10a
- SQL Server Compact Edition 4.0
- SICAT WebConnector

The SICAT WebConnector requires specific ports for communication with the SICAT server. The ports must be unblocked in your firewall:

PROTOCOL	DIRECTION OF TRANSMISSION	PORT
HTTP	Outgoing	80
HTTPS	Outgoing	443
FTPS - Management	Outgoing	21
FTPS - Data transmission	Outgoing	49152 -65534

You can also place orders without SICAT WebConnector. Information on this can be found in the section *Ordering process [▶Page 211 - Standalone]*.

4 SAFETY INFORMATION

It is important that you read the following safety-related chapters:

- *Definition of the danger levels [▶Page 14 - Standalone]*
- *Qualifications of operating personnel [▶Page 15 - Standalone]*
- *Safety instructions [▶Page 248 - Standalone]*

4.1 DEFINITION OF THE DANGER LEVELS

These instructions for use use the following safety labels to prevent injuries to operating personnel or patients, as well as material damages:

⚠ **CAUTION**	**Labels a dangerous situation, which could result in smaller injuries if not prevented.**

NOTICE	**Labels information deemed important, but not relevant to safety.**

4.2 QUALIFICATIONS OF OPERATING PERSONNEL

CAUTION

The use of this software by unqualified personnel may result in an incorrect diagnosis and treatment.

The use of the software is restricted to qualified professionals.

The following requirements must be met to use the software:

- You have read the instructions for use.
- You are familiar with the basic structure and functions of the software.

CAUTION! Federal Law (USA) restricts use of this device to or on the order of a physician, dentist or licensed practitioner.

5 USED ICONS AND HIGHLIGHTING

ICONS

The following icons are used in these instructions for use:

	The note icon labels additional information, such as alternative methods.

HIGHLIGHTING

Text and labels of elements shown by SICAT Suite are highlighted in **bold**. This includes the following objects in the user interface:

- Area labels
- Button labels
- Icon labels
- Text in notes and messages on the screen

HANDLING INSTRUCTIONS

Handling instructions are written as numbered lists:

☑ Prerequisites are marked with this icon.

1. Steps are labeled with numbers.

   ▶ Interim results are marked with this icon and indented.

2. Further steps will follow after the interim results.

3. **Optional or conditional step:** Optional or conditional steps are preceded by the aim of the step or the condition and a colon.

▶ Final results are marked with this icon.

- Instructions consisting of just one step are marked with this icon.

PATIENT DATA

All example patient names shown in this document are fictitious. Any similarities to real persons are therefore purely coincidental. In particular, there is no connection between the example patient names and the patient data shown.

6 OVERVIEW OF THE INSTRUCTIONS FOR USE

SICAT Function is part of SICAT Suite in addition to other applications. SICAT Suite forms the framework, in which the SICAT applications run. The applications are therefore installed along with SICAT Suite. Information on this can be found in the section *Installing SICAT Suite [▶Page 20 - Standalone]*.

After installation, SICAT Suite can be used in two versions. Some operating steps vary, depending on the version used. Therefore, these instructions for use deal with the versions separately:

- Stand-alone version
- SIDEXIS 4 module

You do not need to decide on a version when you install SICAT Suite.

The applications are also uninstalled along with SICAT Suite. Information on this can be found in the section *Uninstalling SICAT Suite [▶Page 246 - Standalone]*.

7 OVERVIEW OF SICAT SUITE

SICAT Suite comprises the following applications:

- SICAT Implant – the intended use of SICAT Implant is indicated in the SICAT Implant instructions for use.
- SICAT Function – the intended use of SICAT Function is indicated in the SICAT Function instructions for use.
- SICAT Air – the intended use of SICAT Air is indicated in the SICAT Air instructions for use.
- SICAT Endo – the intended use of SICAT Endo is indicated in the SICAT Endo instructions for use.

LANGUAGES:

SICAT Suite supports the following languages in the user interface:

- English
- German
- French
- Japanese
- Spanish
- Italian
- Dutch
- Portuguese
- Russian

LICENSING

The following steps are required to acquire a license for SICAT applications or individual functions:

- You contact your local sales partner.
- You receive a voucher code.
- Using the voucher code, you generate a license key on the SICAT portal (which can be accessed via SICAT home page).
- SICAT adds the license key to your activation key.
- You use your activation key to activate SICAT applications or individual functions in SICAT Suite. Workstation licenses are activated in SICAT Suite and network licenses are activated on the license server in the local practice network.

FULL VERSION AND VIEWER MODE

SICAT Suite can start in one of two modes:

- If you have activated the Viewer license of at least one SICAT application, SICAT Suite will start in Viewer mode.
- If you have activated the full version license of at least one SICAT application, SICAT Suite will start as full version.

In general, the following is true:

- Applications with an activated full version license will start in the full version.
- Applications with activated Viewer license will start in Viewer mode.
- Applications without an activated license will not start.
- You do not need to choose a mode when you install SICAT Suite.

8 INSTALLING SICAT SUITE

CAUTION

Changes to the software may mean that the software will not start or will not function as intended.

1. Do not make any changes to the software installation.
2. Do not delete or change any of the components in the software installation directory.

CAUTION

Damaged installation media may result in the failure of the installation.

Handle the installation media with care and store them appropriately.

CAUTION

If your system does not fulfill the system requirements, this may mean that the software will not start or will not function as intended.

Check whether your system meets the minimum software and hardware requirements before installing the software.

CAUTION

Insufficient authorizations may mean that the software installation or software update fails.

Make sure you have sufficient privileges on your system if you install or update the software.

The **Auto play** function of Windows on your computer could be deactivated. In this case, you can open the optical medium in the Windows file Explorer and start the file **SICATSuiteSetup.exe** manually. The file name contains the version of SICAT Suite.

To install SICAT Suite, proceed as follows:

☑ Your computer fulfills the system requirements. Information on this can be found in the section *System requirements [▶Page 11 - Standalone]*.

☑ SICAT Suite can be downloaded from the SICAT homepage.

1. Insert the SICAT Suite installation medium into the optical drive of your computer.

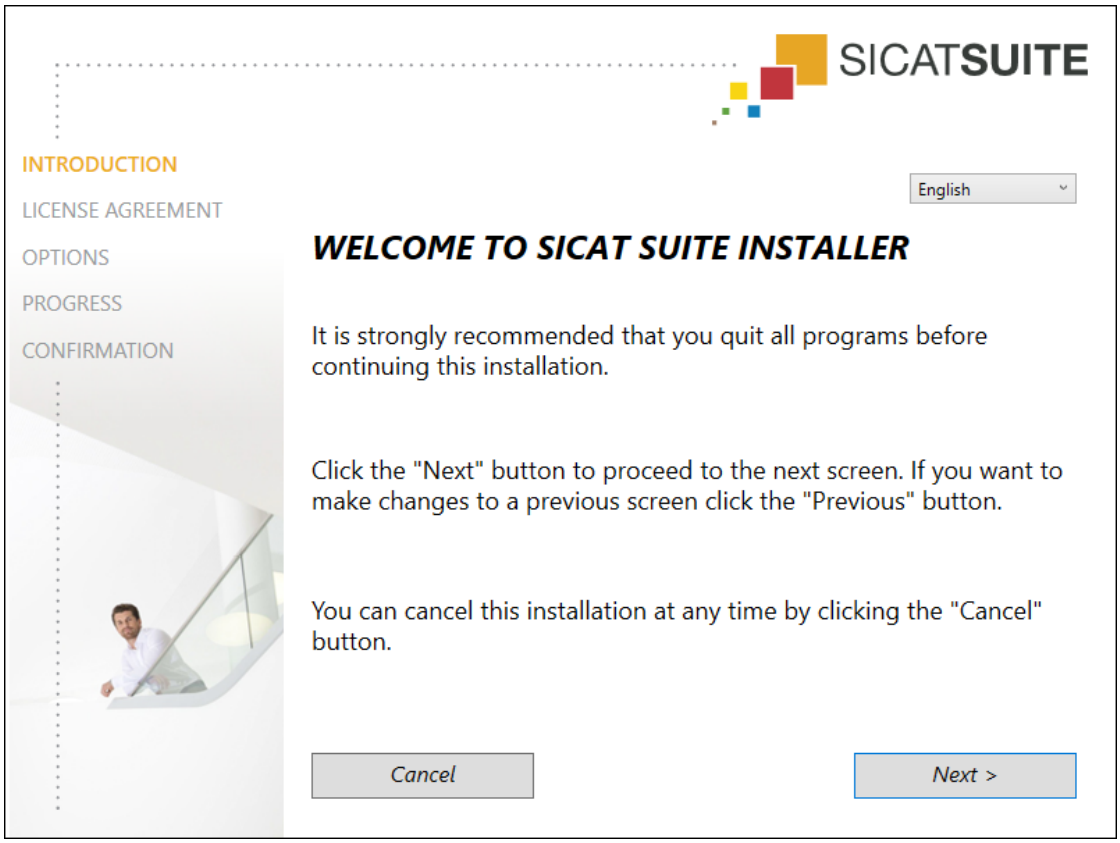
   ▶ The **Auto play** window opens.

2. If you have purchased SICAT Suite as a download version, download the ISO file from the SICAT homepage and use this file for the installation.

3. Select the option **Execute SICATSuiteSetup.exe** in the **Auto play** window. The file name contains the version of SICAT Suite.

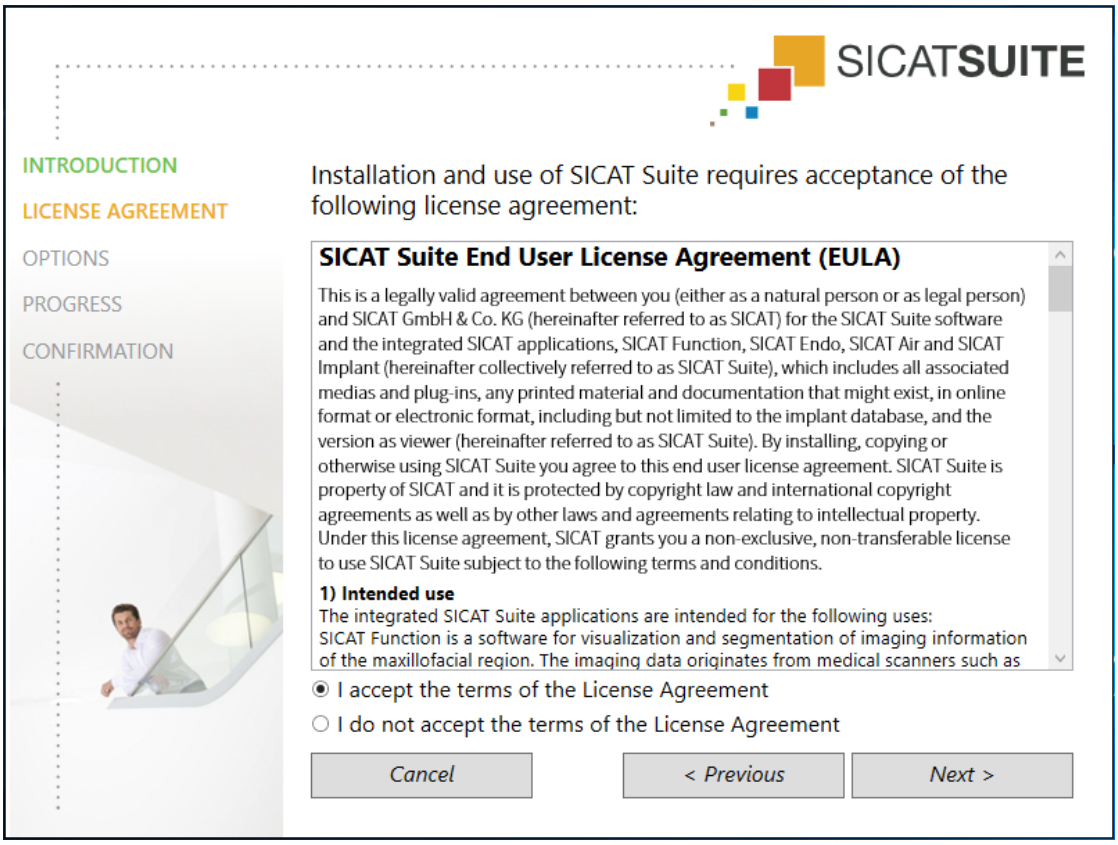
   ▶ The software prerequisites are installed if they are not already available on your computer.

► The SICAT Suite installation program will start and the **INTRODUCTION** window opens:



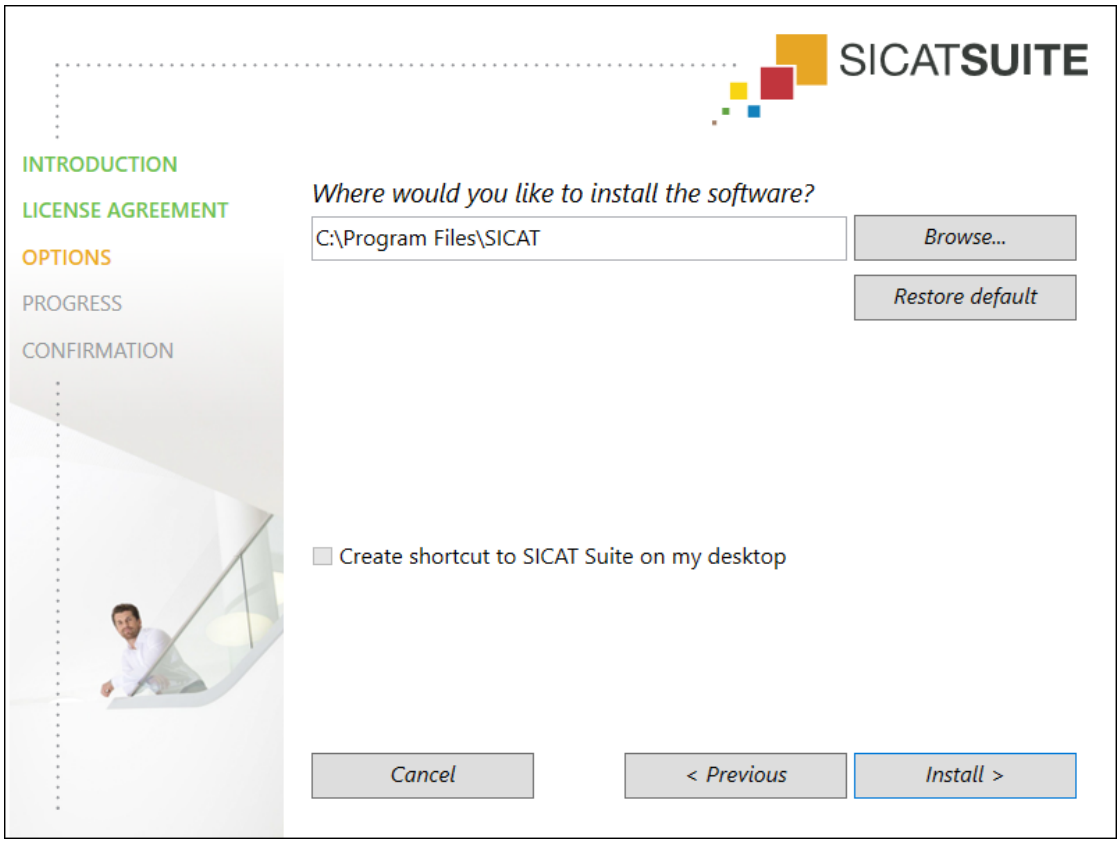
4. Select the desired language for the SICAT Suite installation program in the top right-hand corner of the **INTRODUCTION** window and click on **Next**.

▶ The **LICENSE AGREEMENT** window opens:



5. Read the end-user licensing agreement in full, select the **I accept the terms of the License Agreement** check box and click on **Next**.

▶ The **OPTIONS** window opens:



6. To change the folder on the hard disk in which the SICAT Suite installation program will install SICAT Suite click on the **Browse** button.

   ▶ The **Select folder** window opens.

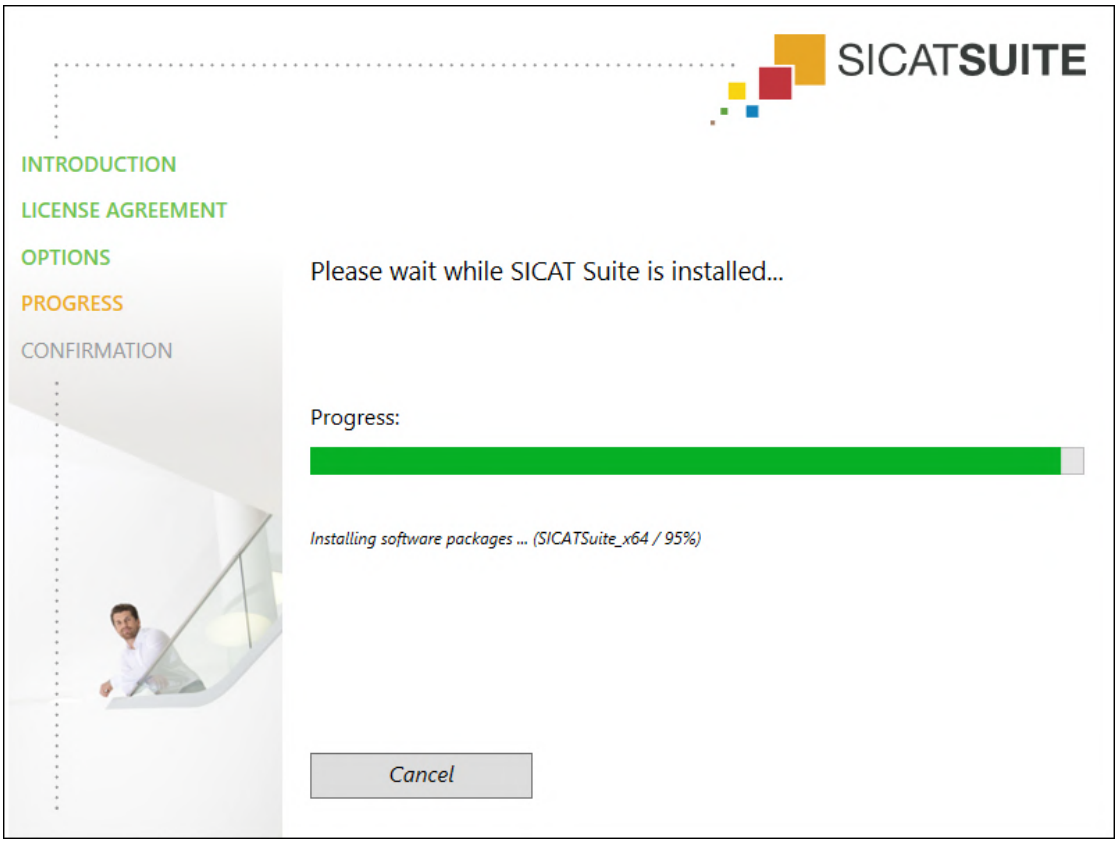
7. Browse to the desired folder in which the SICAT Suite installation program is to create the “SICAT Suite” directory and click on **OK**.

   ▶ The SICAT Suite installation program will enter the directory for the selected folder in the **Where would you like to install the software** field.

8. If available, activate or deactivate the **Create shortcut to SICAT Suite on my desktop** check box.

9. Click on the **Install** button.

▶ The **PROGRESS** window opens:



▶ SICAT Suite and the remaining software prerequisites will be installed.

▶ After the installation is complete, the **CONFIRMATION** window opens:

10. Click on the **Finish** button.

    ▶ The SICAT Suite installation program will close.

    ▶ The SICAT Implant Database installation program will start automatically. If you do not want to install the SICAT Implant Database, click on the **Cancel** button.

9 PERFORMING TEST STEPS AFTER OPERATING SYSTEM UPDATE

⚠ **CAUTION**

Changes to the operating system may mean that the SICAT applications will not start or will not function as intended.

1. Prior to starting the SICAT applications, always check whether the operating system of your computer has installed updates or security updates since you last used the SICAT applications.
2. If the operating system of your computer has installed updates or security updates, perform the steps required for testing the SICAT applications as described in the instructions for use.
3. If the behavior of the SICAT applications differs from the behavior described in the instructions for use, stop using of the software and contact SICAT support immediately.

If the operating system of your computer has installed updates, you must ensure that SICAT Function operates without any errors. Perform the following test steps. If you notice deviation during a test step, prevent further use of SICAT Function on the computer in question and contact SICAT support.

PREPARATIONS

1. Start SICAT Suite as a stand-alone version by pressing the **Windows** key, entering **SICAT Suite** and clicking on the **SICAT Suite** icon.

2. To ensure that nobody has made unintended changes, delete the “Patient Axx” patient.

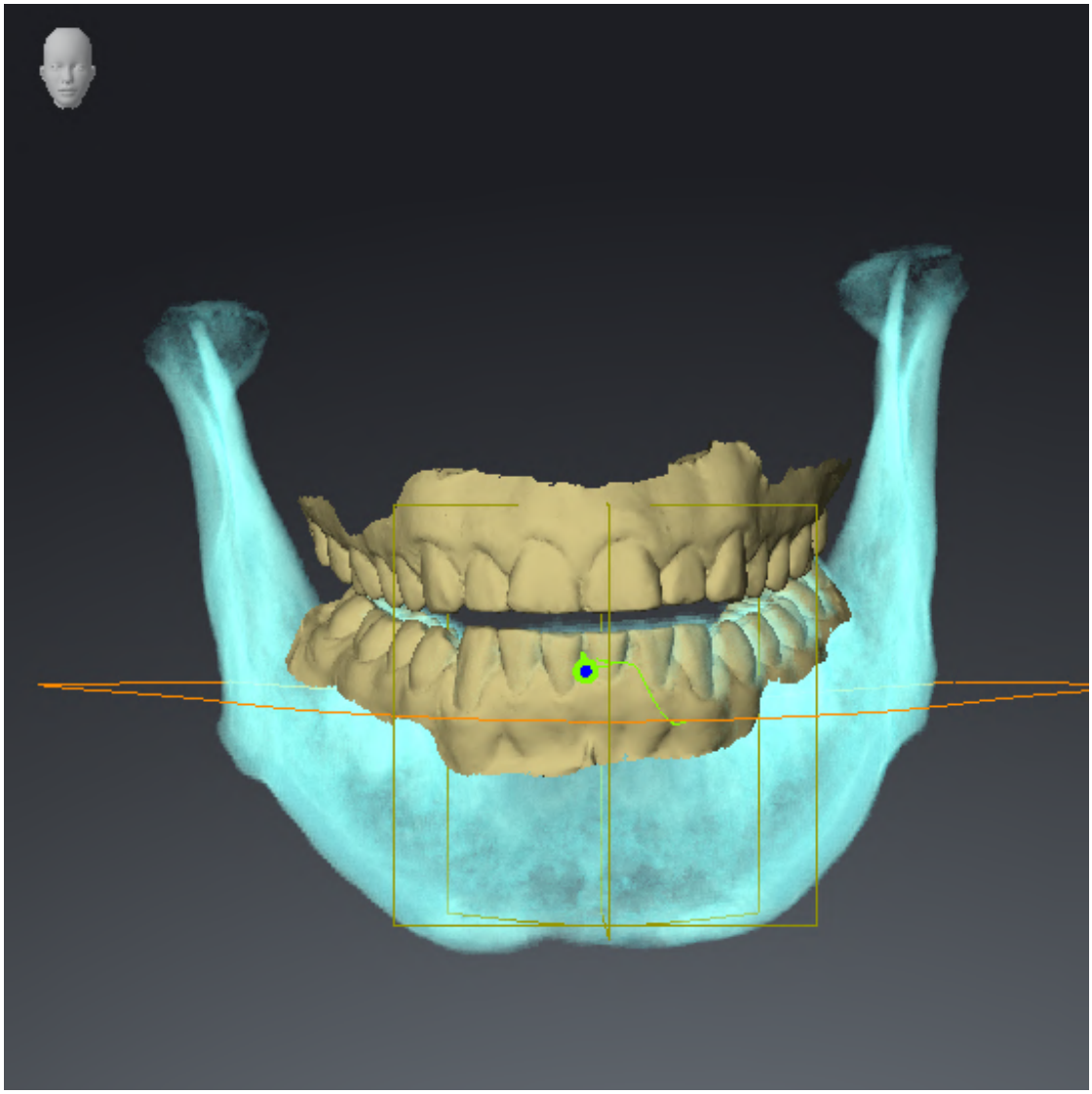
3. Import the reference data record from the “SICATSuite_ReferenceDataset_2.0.zip” file. You will find the data record on the SICAT Suite installation medium.

4. Open the “Patient Axx” reference data record in SICAT Function.

MANDIBLE SEGMENTATION

1. Make sure that the **Panorama** workspace is active.
2. Reset the views to their default values.
3. Make sure that the **3D** view shows the 3D X-ray scan from the front.

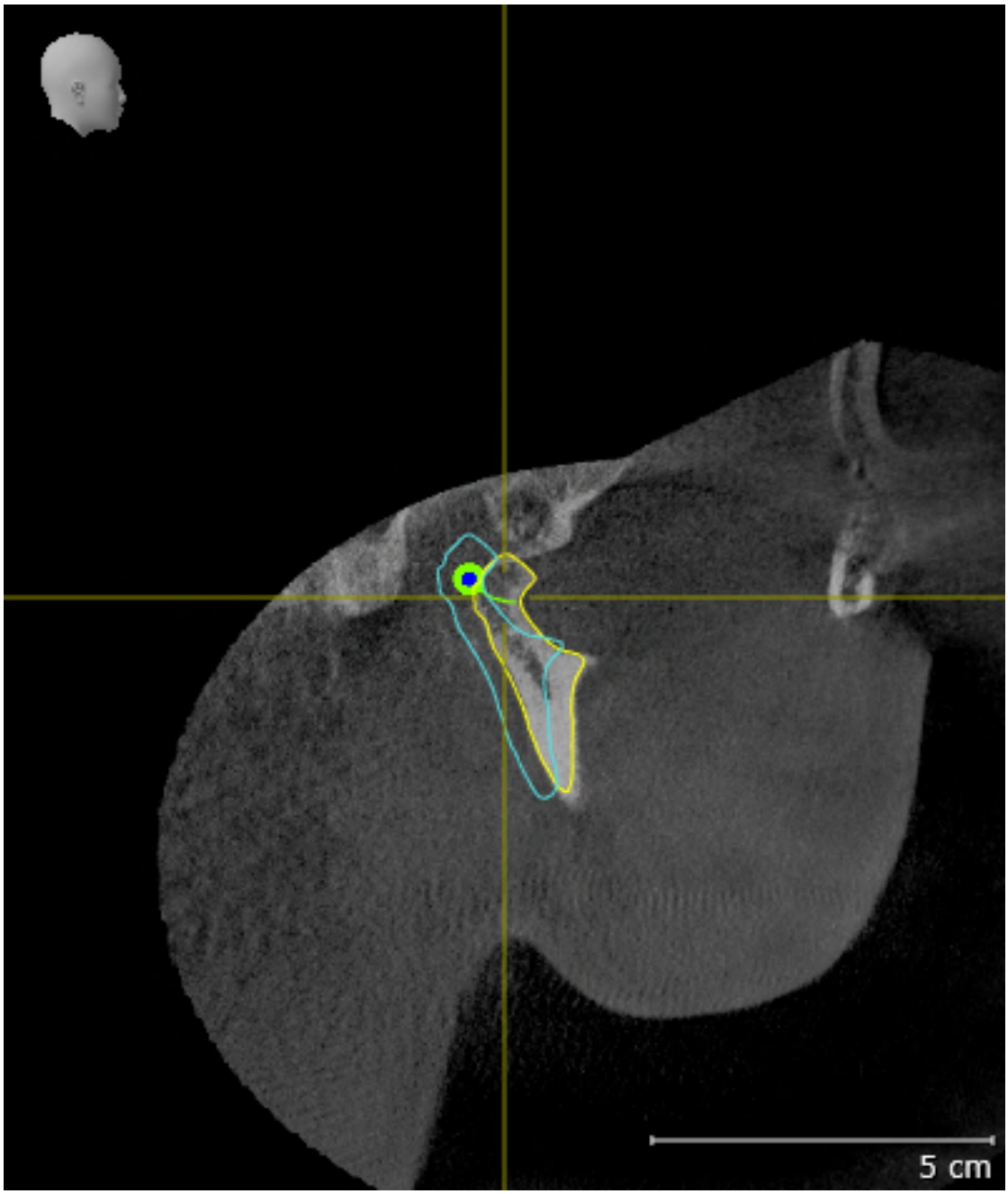
4. Place the mouse pointer over the **Configure active display mode** icon in the **View toolbar** of the **3D** view.
5. Click on the arrow icon next to .**Advanced**.
6. Activate the **Hide Background Region** check box.
7. Select the “lateral_lt.1” element from the **Active Jaw Relation** list.
8. Compare the **3D** view with the following screenshot. Check especially the representation of the mandible segmentation and the optical impressions.



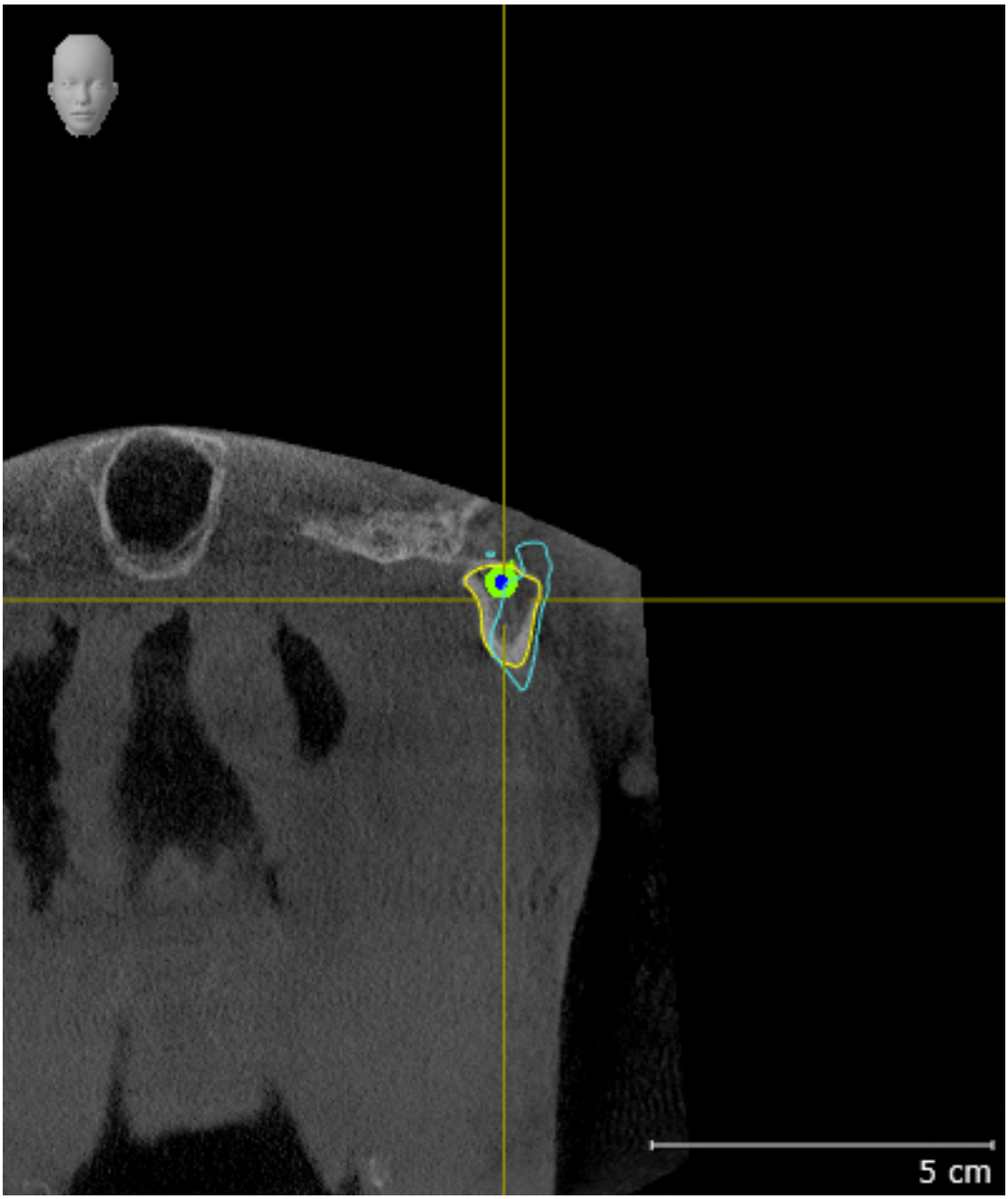
JAW MOTION TRACKING DATA

1. Make sure that the **TMJ** workspace is active.
2. Ensure that the values for **Brightness** and **Contrast** correpsond to the default value of 50%.
3. Select the “lateral_lt.1” element from the **Active Jaw Relation** list.
4. In the **Object browser**, under **Volume Regions** $ **Mandible**, select the **Mandible Right** element and focus on it.
5. In the **Object browser**, under **Volume Regions** $ **Mandible**, select the **Mandible Left** element and focus on it.
6. In the **Object browser**, select the **Volume Regions** element.
7. Activate the **Show Segmentation Boundary** option in the **Properties** area.

8. Compare the **Right CondyleSagittal** view with the following screenshot:

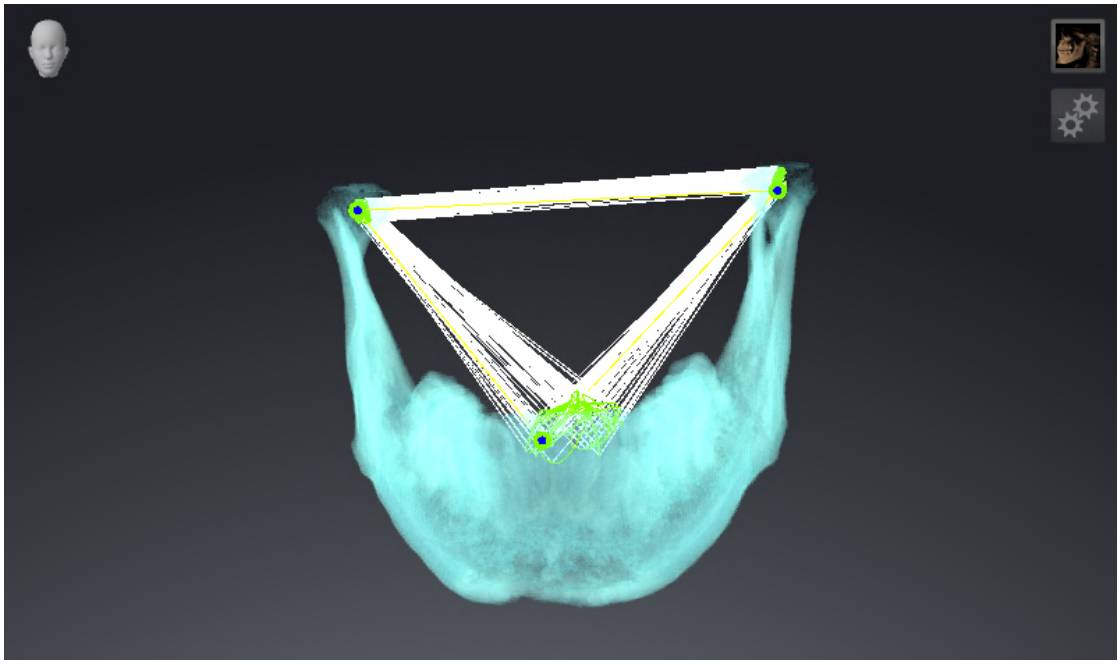


9. Compare the **Left CondyleCoronal** view with the following screenshot:



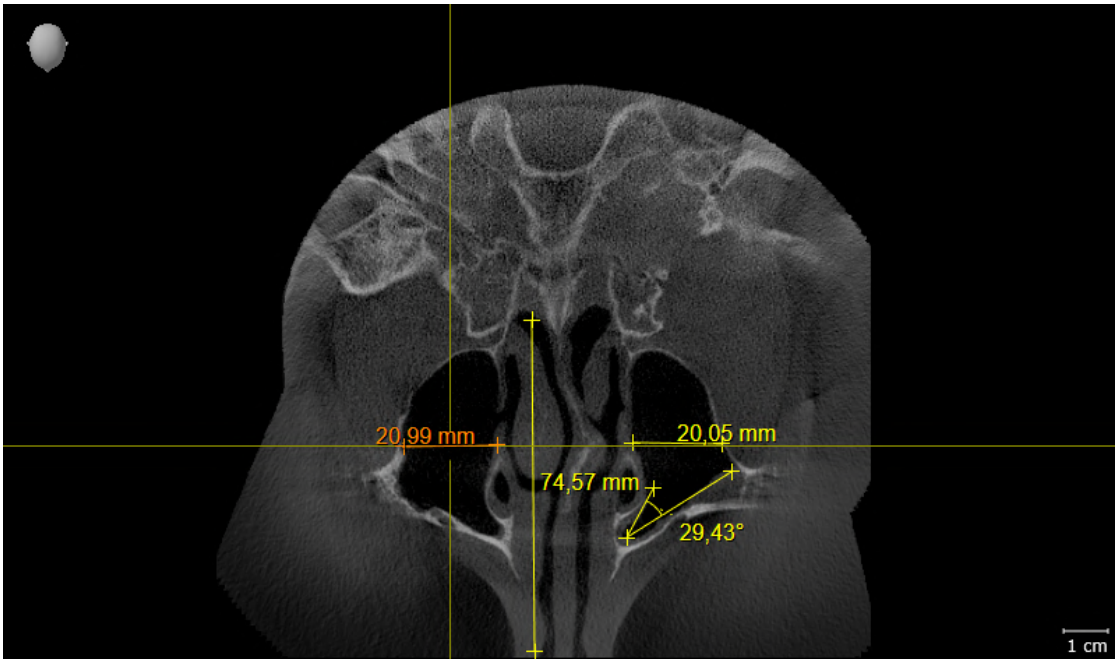
BONWILL TRIANGLE

1. Make sure that the **TMJ** workspace is active.
2. Make sure that the **3D** view shows the 3D X-ray scan from the front.
3. In the **Object browser**, select the **Jaw Motion Tracking Data** element.
4. Activate the **Bonwill triangle** option in the **Properties** area. Make sure that the value for **Steps** is “5”.
5. Select the “chewing.1” element from the **Active Jaw Relation** list.
6. Set the display mode of the **3D** view to **Hide Background Region**.
7. Hide the optical impressions.
8. Compare the **3D** view with the following screenshot. Check especially the representation of the Bonwill triangle and the available tracking points.



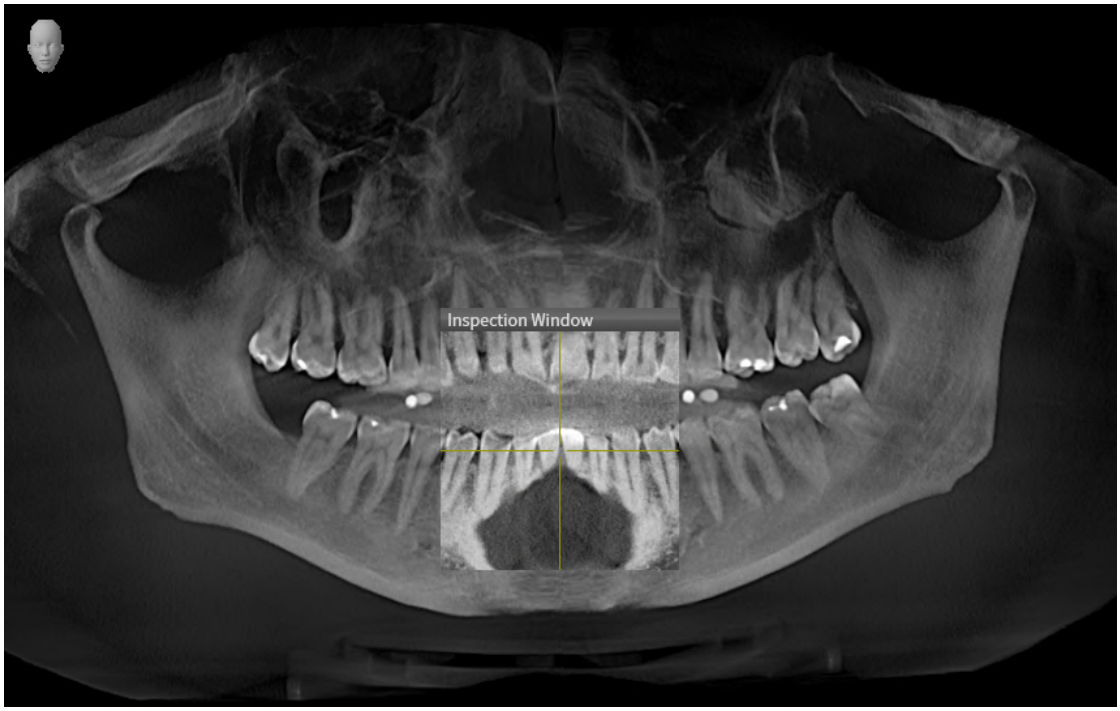
MEASUREMENTS

1. Make sure that the **MPR/Radiology** workspace is active.
2. Ensure that the values for **Brightness** and **Contrast** in the **Axial** view correpsond to the default value of 50 %.
3. In the **Object browser**, under **Measurements**, select the “20.99 mm” element and focus on it.
4. Compare the **Axial** view with the following screenshot. Check especially the representation of the measurement objects (20.99 mm, 20.05 mm, 74.57 mm and 29.43°).



PANORAMIC VIEW

1. Make sure that the **Panorama** workspace is active.
2. Reset the views to their default values.
3. Compare the **Panorama** view with the following screenshot. Check especially the representation of the **Panorama** view and the inspection window.



10 UPDATING OR REPAIRING SICAT SUITE

UPDATING SICAT SUITE

⚠ **CAUTION**	**Insufficient authorizations may mean that the software installation or software update fails.** Make sure you have sufficient privileges on your system if you install or update the software.

You can update SICAT Suite by starting the SICAT Suite installation program and clicking on the **Upgrade** button. The installation program will first uninstall the old version of SICAT Suite. All data and settings will be maintained.

ℹ	A new version of the stand-alone version of SICAT Suite requires updated patient record depots. When first starting the new version or if you are activating an old patient record depot, SICAT Suite will ask if you want to update the patient record depot. SICAT Suite will update the patient record depot automatically when you confirm the message. **CAUTION! You can no longer use updated patient record depots with older versions of SICAT Suite.**

REPAIRING SICAT SUITE

You can repair SICAT Suite by starting the SICAT Suite installation program and clicking on the **Repair** button. All data and settings will be maintained.

Both updates to and repairs of SICAT Suite use the SICAT Suite installation program. Information on this can be found in the section *Installing SICAT Suite [▶Page 20 - Standalone]*.

11 SPECIAL FEATURES IN THIS VERSION

Depending on whether you use SICAT Function as stand-alone version or connected to other software, there are differences in certain areas.

PATIENT DATA AND VOLUME DATA

The stand-alone version of SICAT Suite includes its own central administration of patient records and volume data. The concept of patient records in the stand-alone version of SICAT Suite can be compared to classic patient records:

- Patient records are stored in the patient record depot, which can be compared to filing cabinets.
- Activating a patient record can be compared to removing a patient record from a filing cabinet and placing it on your desk.
- Opening patient data from a patient record in SICAT applications can be compared to taking out pages from the patient record.
- Adding 3D X-ray scans to a patient file can be compared to adding 2D X-ray scans to a classical patient file.
- A 3D X-ray scan may form the basis of several planning projects. Planning objects are also part of a patient record.
- A 3D X-ray scan together with the corresponding planning projects is known as a study.

Information on managing patient record depots can be found in the section *Patient record depots [▶Page 60 - Standalone]*. Information on managing patient records can be found in the section *Patient records [▶Page 79 - Standalone]*.

You should also back up the user settings of the SICAT applications in addition to the patient data. You can find the user settings for each user in two directories separately. You can open the directories by entering **%appdata%\SICAT GmbH & Co. KG** and **%localappdata%\SICAT GmbH & Co. KG** into the address bar of Windows Explorer.

SETTINGS

In the stand-alone version, SICAT Suite manages all settings itself. Information on this can be found in the section *Settings [▶Page 226 - Standalone]*.

LICENSES

The stand-alone version and versions of SICAT Suite connected to other software use the same licenses. You do not need to choose a version when you install SICAT Suite.

OPENING STUDIES WITH OR WITHOUT WRITE PERMISSIONS

The following conditions must be met in order to make changes to SICAT Function studies and save these changes:

- A SICAT Function full version license must be activated.
- A patient record depot must be active.

Otherwise, you cannot make or save any changes to SICAT Function studies. If you have activated a SICAT Function Viewer license, you can view 3D X-ray scans and SICAT Function studies.

The following table shows which functions are available if a license of a SICAT application and a patient record depot are activated:

FUNCTION	APPLICATION FULL VERSION LICENSE AND PATIENT RECORD DEPOT ACTIVATED	APPLICATION VIEWER LICENSE AND NO PATIENT RECORD DEPOT ACTIVATED	NO APPLICATION LICENSE AND NO PATIENT RECORD DEPOT ACTIVATED
Support area	Yes	Yes	Yes
General settings	Yes	Yes	Yes
SICAT Function settings	Yes	Yes	No
Data export	Yes	No	No
Managing patient record depots	Yes	No	No
Managing patient records	Yes	No	No
Data import	Yes	No	No
Help	Yes	Yes	Yes

The following table shows which functions are available if a SICAT Function license and a patient record depot are activated:

FUNCTION	SICAT FUNCTION FULL VERSION LICENSE AND PATIENT RECORD DEPOT ACTIVATED	SICAT FUNCTION VIEWER LICENSE AND PATIENT RECORD DEPOT ACTIVATED	NO SICAT FUNCTION LICENSE AND PATIENT RECORD DEPOT ACTIVATED
Making changes to SICAT Function studies	Yes	No	No
Opening data in Viewer mode	No	Yes	No

Under certain circumstances you cannot make or save changes to SICAT Function studies even if the application license is activated. An ongoing ordering process is one example of a cause of this.

In the stand-alone version, the license status also influences the available functions in the **SICAT Suite Home** window. Information on this can be found in the section *Overview of the “SICAT Suite Home” window. [▶Page 45 - Standalone]*.

Further information is available in the section *Opening read-only data [▶Page 241 - Standalone]*.

12 THE STANDARD WORKFLOW OF SICAT FUNCTION

CAUTION

Security leaks in your information system environment could result in unauthorized access to your patient data and put the privacy or integrity of your patient data at risk.

1. Make sure policies are established within your organization to prevent security threats to your information system environment.
2. Install and run an up-to-date virus scanner.
3. Make sure the pattern files of the virus scanner are updated on a regular basis.

CAUTION

Unauthorized access to your workstation could result in risks to the privacy and integrity of your patient data.

Limit the access to your workstation to authorized individuals only.

CAUTION

Problems in terms of cyber-security could result in unauthorized access to your patient data and risks in relation to the security or integrity of your patient data.

If you suspect problems in relation to the cyber-security of your SICAT application, contact support immediately.

CAUTION

Saving SICAT application data in an unreliable or incompatible network file system could result in data loss

Together with your network administrator, make that SICAT application data can be safely stored in the desired network file system.

CAUTION

The shared use of SICAT Suite and the SICAT applications contained therein with other devices within a computer network or a storage area network could result in previously unknown risks for patients, users and other persons.

Ensure that rules are compiled within your organization to determine, analyze and assess risks in relation to your network.

CAUTION

Changes to your network environment may result in new risks for your network environment. Examples include changes to your network configuration, the connection of additional devices or components to your network, the disconnection of devices or components from your network and the updating or upgrading of network devices or components.

Perform a network risk analysis after any changes to the network.

Before starting work with SICAT Suite, it is important that you have read these instructions for use and in particular all safety information in full. Keep these instructions for use at hand for use when information is needed in future.

DATA RECORDS

SICAT Function combines three different data records:

- 3D X-ray scans, from Dentsply Sirona GALILEOS, for example
- Jaw motion tracking data, from a SICAT JMT⁺ system, for example
- Digital optical impressions, from Dentsply Sirona CEREC, for example

INSTALLATION

Information on how to install SICAT Suite can be found in the section *Installing SICAT Suite [▶Page 20 - Standalone]*.

ACTIVATING FULL VERSION

1. If you have purchased a license for SICAT Function, activate the license to unlock the full version. Information on this can be found in the section *Licenses [▶Page 49 - Standalone]*.

2. In order to save your data, create at least one patient record depot and activate it. Information on this can be found in the section *Patient record depots [▶Page 60 - Standalone]*.

If you have not purchased a license for SICAT Function, open a 3D X-ray scan in Viewer mode. Information on this is available in the section *Opening read-only data [▶Page 241 - Standalone]*.

If the computer, on which SICAT Suite is running, is located in a network environment and where permitted by the network configuration, you can save patient record depots and the patient records therein on a network file system. Normally, the network file system must support the NFS protocol or SMB protocol for this. Information on this can be found in the section *Patient record depots [▶Page 60 - Standalone]*.

START

Information on how to start SICAT Suite can be found in the section *Starting SICAT Suite [▶Page 42 - Standalone]*.

SETTINGS

Change the desired settings in the **Settings** area. Information on this can be found in the section *Settings [▶Page 226 - Standalone]*.

ACQUIRING DATA RECORDS

1. Produce a 3D X-ray scan of the patient while the patient is wearing the SICAT Fusion Bite. For more information, please refer to the SICAT JMT⁺ quick guides.

2. Record patient-specific jaw motion tracking data. For more information, please refer to the SICAT JMT⁺ instructions for use.

3. Create digital optical impressions of the maxilla and mandible. For more information, please refer to the instructions for use for the respective device.

OPENING A DATA RECORD

1. Import the 3D X-ray scan into the patient record depot. Information on this can be found in the section *Data import [▶Page 68 - Standalone]*.

2. To search for patient records and manage imported data, follow the instructions provided under *Patient records [▶Page 79 - Standalone]*.

3. To work with data from patient records, open a patient record in SICAT Function. Information on this can be found in the section *Opening 3D X-ray scans or planning projects from the patient record summary [▶Page 87 - Standalone]*.

HOW TO PROCEED IN SICAT FUNCTION

EDITING A DATA RECORD IN SICAT FUNCTION

1. If necessary, adjust the volume orientation and panoramic region. Information on this can be found in the section *Adjusting volume orientation and panoramic region [▶Page 144 - Standalone]*.

2. Import and register the jaw motion tracking data in SICAT Function. Information on this can be found in the section *Importing and registering jaw motion data [▶Page 156 - Standalone]*.

3. Segment the mandible and if necessary the fossa. For further information about this see *Segmenting the mandible [▶Page 162 - Standalone]* and *Segmenting the fossa [▶Page 164 - Standalone]*.

   ▶ SICAT Function visualizes imported jaw motion tracking data in the **3D** view.

4. Import and register the optical impressions with the 3D X-ray data. Information on this can be found in the section *Optical impressions [▶Page 166 - Standalone]*.

5. Examine the jaw motion tracking data in the **TMJ** workspace. For further information about this see *Overview of the TMJ workspace [▶Page 108 - Standalone]* and *Functions in the TMJ workspace [▶Page 187 - Standalone]*. Use the anatomical traces as a guide, particularly if you have not performed segmentation. For further information about this, see *Visualizing anatomical traces in the 3D view [▶Page 184 - Standalone]*, *Adjusting anatomical traces using the inspection window [▶Page 185 - Standalone]*, *Adjusting anatomical traces using the crosshair in a slice view [▶Page 186 - Standalone]* and *Interacting with jaw motion [▶Page 181 - Standalone]*.

6. Define a treatment position for the OPTIMOTION therapeutic appliance. Information on this can be found in the section *Defining a treatment position [▶Page 212 - Standalone]*.

7. Order a OPTIMOTION therapeutic appliance. Information on this can be found in the section *Ordering process [▶Page 211 - Standalone]*.

8. Export data, for example to obtain a second opinion. Information on this can be found in the section *Data export [▶Page 208 - Standalone]*.

ENDING OR PAUSING WORK ON THE DATA RECORD

- To end or interrupt your work, save it by closing the active patient record. Information on this can be found in the section *Closing SICAT Suite [▶Page 244 - Standalone]*.

INSTRUCTIONS FOR USE AND SUPPORT

The instructions for use can be found in the **SICAT Suite Help** window. Information on this can be found in the section *Opening the instructions for use [▶Page 48 - Standalone]*.

Further support is available in the **Support** area. Information on this can be found in the section *Support [▶Page 237 - Standalone]*.

13 STARTING SICAT SUITE

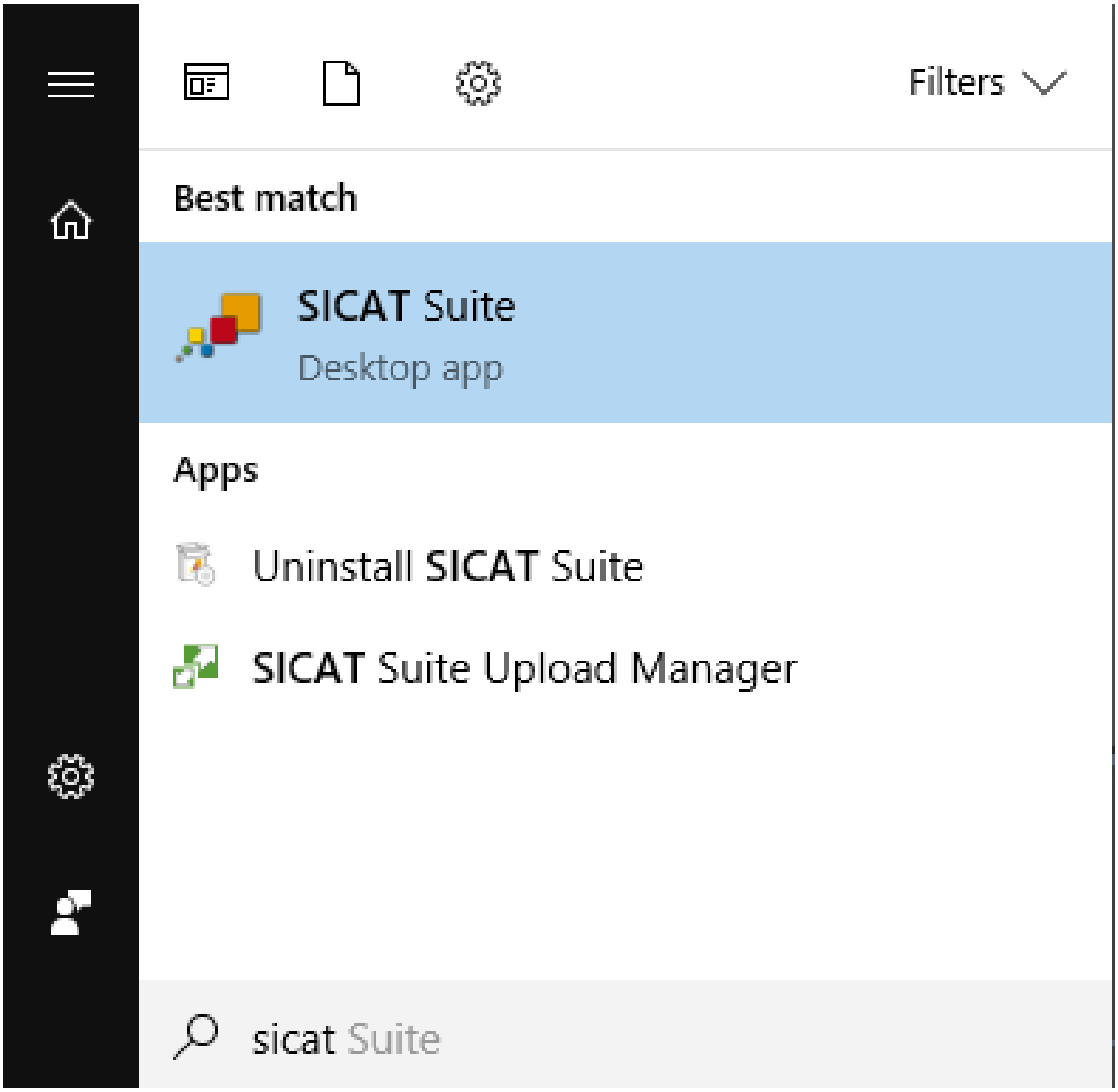
To start SICAT Suite, proceed as follows:

☑ SICAT Suite has already been successfully installed. Information on this can be found in the section *Installing SICAT Suite [▶Page 20 - Standalone]*.

- If a desktop shortcut was created during installation, click on the **SICAT Suite** icon on the Windows desktop.

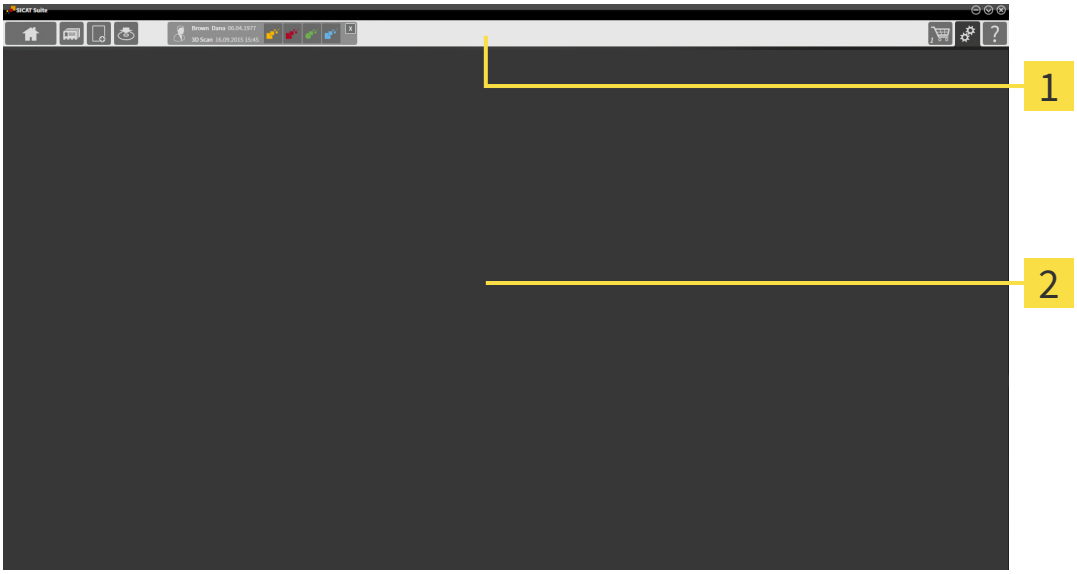
▶ SICAT Suite starts and the **SICAT Suite Home** window opens. Information on this can be found in the section *Overview of the "SICAT Suite Home" window. [▶Page 45 - Standalone]*.

You can also start SICAT Suite by pressing the **Windows** key, entering **SICAT Suite** and clicking on the **SICAT Suite** icon.



14 THE USER INTERFACE OF SICAT SUITE

The SICAT Suite user interface comprises the following parts:



1 **Navigation bar**

2 **Application area**

- The navigation bar at the upper end of SICAT Suite shows tabs to switch between different windows and applications.
- The **Application area**, which is located in the remaining part of SICAT Suite, shows the user interface of the active SICAT application.

The **Navigation bar** is comprised of three different sections. The section on the left side and the section on the right side are always visible. SICAT Suite shows the section in the center only if a patient record is activated.

The section on the left side contains the following tabs:

- **SICAT Suite Home** - Information on this can be found in the section *Overview of the "SICAT Suite Home" window. [▶Page 45 - Standalone]*.

- **Patient records** - Information on this can be found in the section *Patient records [▶Page 79 - Standalone]*.

- **Add new data** - Information on this can be found in the section *Data import [▶Page 68 - Standalone]*.

- **Export data** - Information on this can be found in the section *Data export [▶Page 208 - Standalone]*.

The section in the middle contains the following tabs:

- **Active patient record** - Information on this can be found in the section *Working with active patient records [▶Page 84 - Standalone]*.

- **Applications** - Information on this can be found in the section *Switching between SICAT applications [▶Page 47 - Standalone]*.

The section on the right side contains the following tabs:

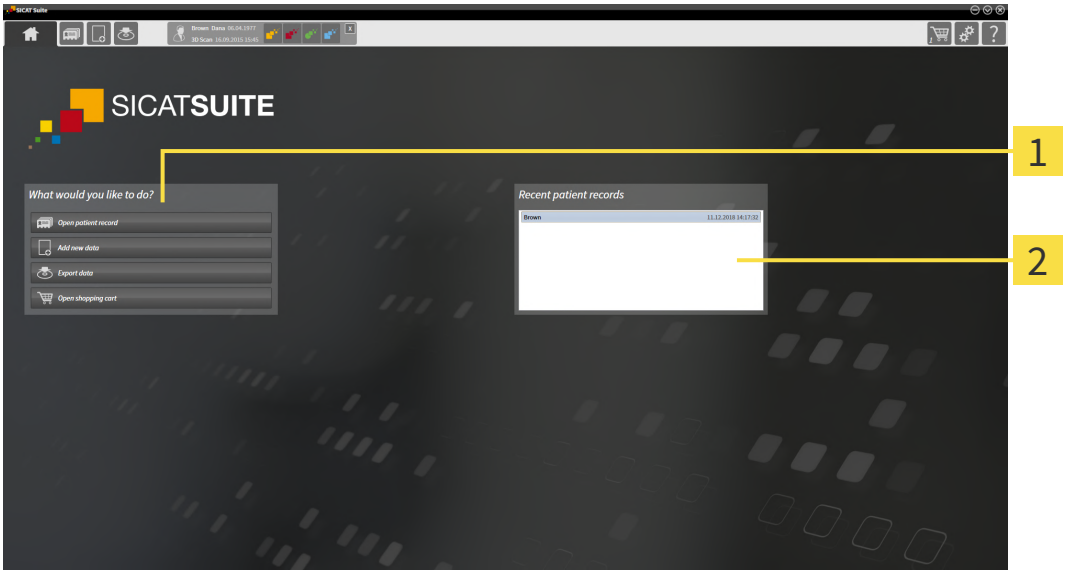
- **Shopping Cart** - Information on this can be found in the section *Ordering process [▶Page 211 - Standalone]*.

- **Settings** - Information on this can be found in the section *Settings [▶Page 226 - Standalone]*.

- **Support** - Information on this can be found in the section *Support [▶Page 237 - Standalone]*.

14.1 OVERVIEW OF THE “SICAT SUITE HOME” WINDOW.

The **SICAT Suite Home** window will greet you when you start the stand-alone version of SICAT Suite:



1 **What would you like to do** area

2 **Recent patient records** area

You can return to this window at any time by clicking the **SICAT Suite Home** icon. The content of the **SICAT Suite Home** window depends on the following parameters:

- Activation status and type of licenses
- Status of the patient record depots

If no license is activated, the **SICAT Suite Home** window will only show a message and the **Activate license** button.

If the Viewer license of at least one SICAT application is activated, but no full version license of a SICAT application is activated, SICAT Suite will run in Viewer mode. In this mode you cannot establish a connection to patient record depots, you cannot create patient record depots and the import, edit and save functions for patient data are not available. Therefore, only the **View new data** button and the **Activate license** button are available in the **SICAT Suite Home** window.

If a full version license is activated, but no patient record depot has been created and activated in SICAT Suite, you can create patient record depots, but the import, edit and save functions for patient data are not available. Therefore, only the **View new data** button and the **Set up patient record depot** button are available in the **SICAT Suite Home** window.

If a full version license is activated and a patient record depot has been created and activated in SICAT Suite, the following buttons are available in the **What would you like to do** area of the **SICAT Suite Home** window:

- **Open** - Information on this can be found in the section *Patient records [▶Page 79 - Standalone]*.

- **Add new data** - Information on this can be found in the section *Data import [▶Page 68 - Standalone]*.

- **Export data** - Information on this can be found in the section *Data export [▶Page 208 - Standalone]*.

- **Shopping Cart** - Information on this can be found in the section *Ordering process [▶Page 211 - Standalone]*.

- In addition, the **Recent patient records** section will display a list of the most recently opened patient records. You can double click these patient records to open them.

If the **Display patient information anonymously** setting is active, the **SICAT Suite Home** window will hide the **Recent patient records** area.

15 SWITCHING BETWEEN SICAT APPLICATIONS

To switch between SICAT applications, proceed as follows:

- Click on the button with the label matching the desired SICAT application in the **Navigation bar**.

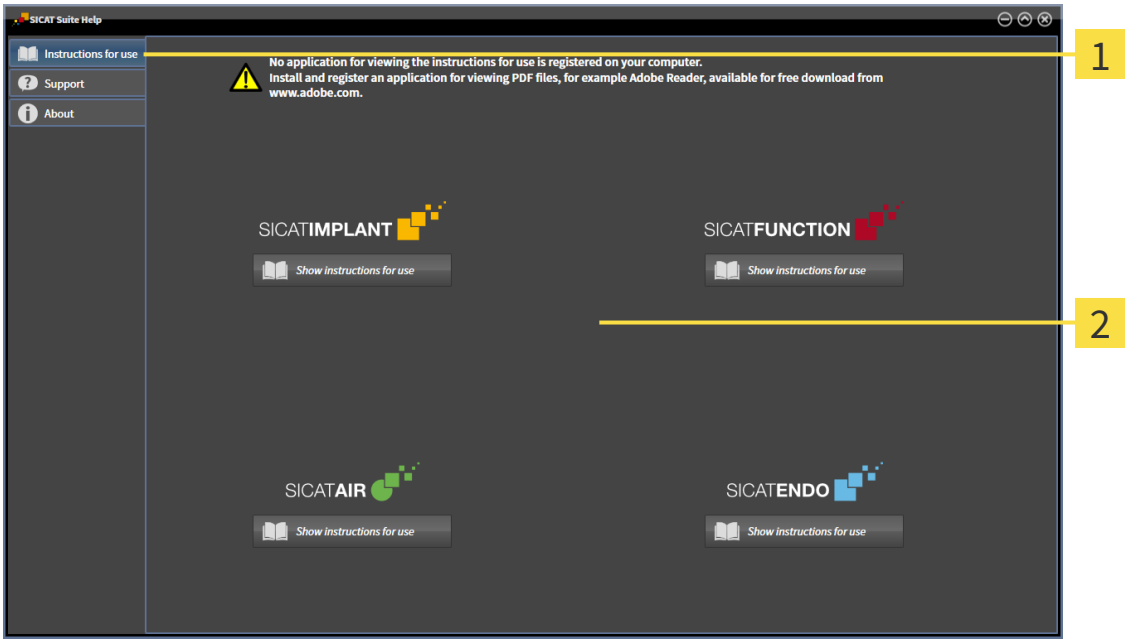
► SICAT Suite will switch to the selected application.

16 OPENING THE INSTRUCTIONS FOR USE

The instructions for use for SICAT applications are available in the **Support** window in the form of PDF files.

You can open the **Support** window by clicking the **Support** icon in the **Navigation bar** or pressing the F1 key.

The **Support** window looks as follows:



1 **Instructions for use** tab

2 **Instructions for use** window

You can open the desired help by clicking the **Show instructions for use** button.

17 LICENSES

SICAT Suite shows only SICAT applications for which you have activated a license.

If the **Add new data** or **View new data** functions are available in SICAT Suite based on activated licenses, you can view previously exported data records even without an activated SICAT Function license.

To be able to use network licenses, you must first set up a license server in the local practice network and connect SICAT Suite with the license server.

For information on setting up a license server in a practice network, please refer to the manufacturer's user manual of the CodeMeter license management software from WIBU-SYSTEMS AG and the *SICAT Suite Version 2.0 Lizenzserver installieren* quick guide, which is available together with the required files in the *License Server Installation* directory on the SICAT Suite installation medium.

The following license types exist:

- A Viewer license, through which you can use an application in Viewer mode for an unlimited period of time.
- A demo license, through which you will receive temporary access to the full version of one or more SICAT applications.
- A full version license, through which you will receive access to the full version of one or more SICAT applications for an unlimited period of time.

These licenses can be obtained both as workstation licenses and as network licenses:

- With a workstation license, you can use the SICAT applications on a specific computer.
- With a network license, you can use the SICAT applications on several computers within a local practice network.

ACQUIRING LICENSES

The following steps are required to acquire a license for SICAT applications or individual functions:

- You contact your local sales partner.
- You receive a voucher code.
- Using the voucher code, you generate a license key on the SICAT portal (which can be accessed via SICAT home page).
- SICAT adds the license key to your activation key.
- You use your activation key to activate SICAT applications or individual functions in SICAT Suite. Workstation licenses are activated in SICAT Suite and network licenses are activated on the license server in the local practice network.

ACTIVATING AND DEACTIVATING LICENSES

The following applies to workstation licenses and network licenses:

- You will only receive license keys for SICAT applications that are approved in your country.
- If you activate a full version license, you will automatically receive Viewer licenses for all applications that are approved in your country.
- If you return a full version license for a SICAT application, you will automatically receive a Viewer license provided the application is approved in your country.

The following applies to workstation licenses only:

- When you activate an activation key for a workstation license on a computer, an included license will be tied to the computer and is no longer available for activation on another computer. An activation key can contain several licenses for SICAT applications or functions.
- You may deactivate workstation licenses for each SICAT application or individual function separately. Returned workstation licenses are available for renewed activation on the same or another computer.

The following applies to network licenses only:

- If you use network licenses, a network license for included SICAT applications or functions will be available to a user on a computer while using SICAT Suite. The network license will be locked for use by other users during this time.
- If you are using a network license, the network license will be automatically returned to the license server in the practice network when you exit SICAT Suite.
- If you switch from a network license to a workstation license, the network license will be automatically returned to the license server in the practice network.
- If you fail to properly exit SICAT Suite and this causes the connection to the license server in the practice network to be terminated, use of the network license by other users will automatically be enabled after a set period of time.

FURTHER ACTIONS

The **Licenses** window gives an overview of the licenses which are activated on your computer. If you are using a demo license, SICAT Suite will display the expiry date of the licenses. Information on this can be found in the section *Opening the "Licenses" window [▶Page 52 - Standalone]*.

You can activate workstation licenses in two ways:

- If the computer on which SICAT Suite is running has an active Internet connection, the license can be activated automatically. Information on this can be found in the section *Activating workstation licenses using an active Internet connection [▶Page 53 - Standalone]*.
- Upon request or if the computer on which SICAT Suite is running has no active Internet connection, the license can be activated manually using the license request files. You have to upload such license request files on the SICAT website. In return, you will receive a license activation file, which you have to activate in SICAT Suite. Information on this can be found in the section *Activating workstation licenses manually or without an active Internet connection [▶Page 55 - Standalone]*.

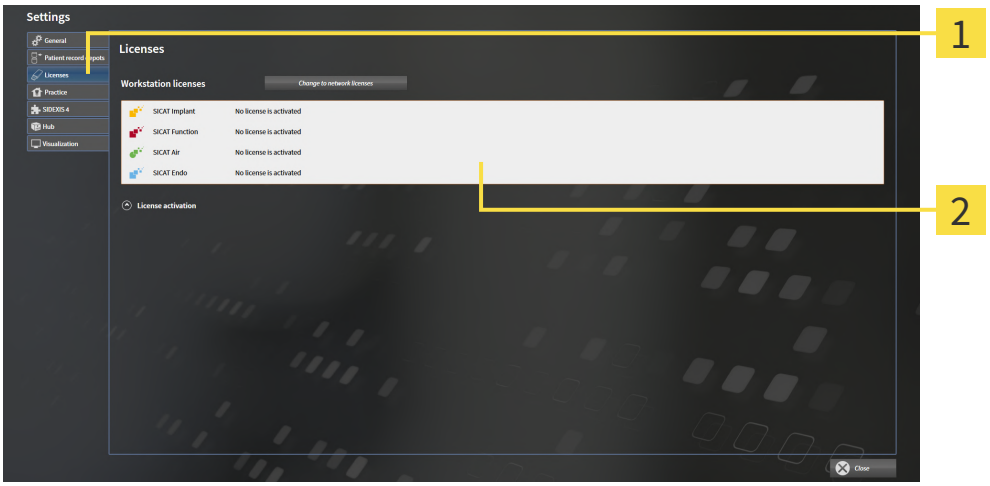
You can deactivate workstation licenses for each application or function individually. After you have deactivated a workstation license, you can enter the same or another activation key. Returned workstation licenses are available for activation on the same or another computer. Information on this can be found in the section *Returning workstation licenses to the license pool [▶Page 57 - Standalone]*.

For information on how to activate network licenses, see *Activating network licenses [▶Page 58 - Standalone]*.

17.1 OPENING THE “LICENSES” WINDOW

1. Click on the **Settings** icon in the **Navigation bar**.
   ▶ The **Settings** window opens.

2. Click the **Licenses** tab.
   ▶ The **Licenses** window opens:



1 **Licenses** tab

2 **Licenses** window

Continue with one of the following actions:

- *Activating workstation licenses using an active Internet connection [▶Page 53 - Standalone]*
- *Activating workstation licenses manually or without an active Internet connection [▶Page 55 - Standalone]*
- *Activating network licenses [▶Page 58 - Standalone]*
- *Returning workstation licenses to the license pool [▶Page 57 - Standalone]*

17.2 ACTIVATING WORKSTATION LICENSES USING AN ACTIVE INTERNET CONNECTION

NOTICE	**Patient record must be closed** You must close the active patient record before making changes to the licenses.

NOTICE	**Shopping cart must be empty** The shopping cart must be empty before you can make any changes to the licenses.

To start the activation process, proceed as follows:

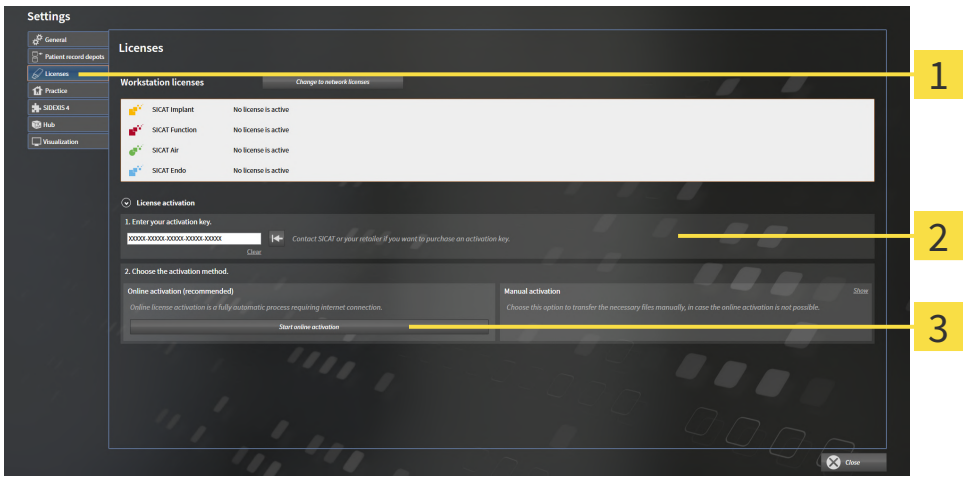
☑ At least one SICAT application or one individual function is missing an active workstation license.

☑ The computer on which SICAT Suite is running has an active Internet connection.

☑ The **Licenses** window is already open. Information on this can be found in the section *Opening the "Licenses" window [▶Page 52 - Standalone]*.

1. Click the **License activation** button in the **Licenses** window.

   ▶ The **License activation** area expands:



1 **License activation** button

2 **Enter your activation key** area

3 **Start online activation** button

2. Enter your activation key in the **Enter your activation key** field.
3. Click on the **Start online activation** button.
4. If a **Windows Firewall** window opens, allow SICAT Suite to access the Internet.

▶ Licenses acquired for installed applications or individual functions are removed from your license pool and activated in SICAT Suite on the current computer.

▶ The message window opens and shows the following message: **License was successfully activated**.

To activate a SICAT application again, you can use your customer activation key by clicking on the **Use my customer activation key** button in the **Enter your activation key** area. To clear the field with the current license key, you can click on the **Clear** button.

17.3 ACTIVATING WORKSTATION LICENSES MANUALLY OR WITHOUT AN ACTIVE INTERNET CONNECTION

NOTICE	**Patient record must be closed** You must close the active patient record before making changes to the licenses.

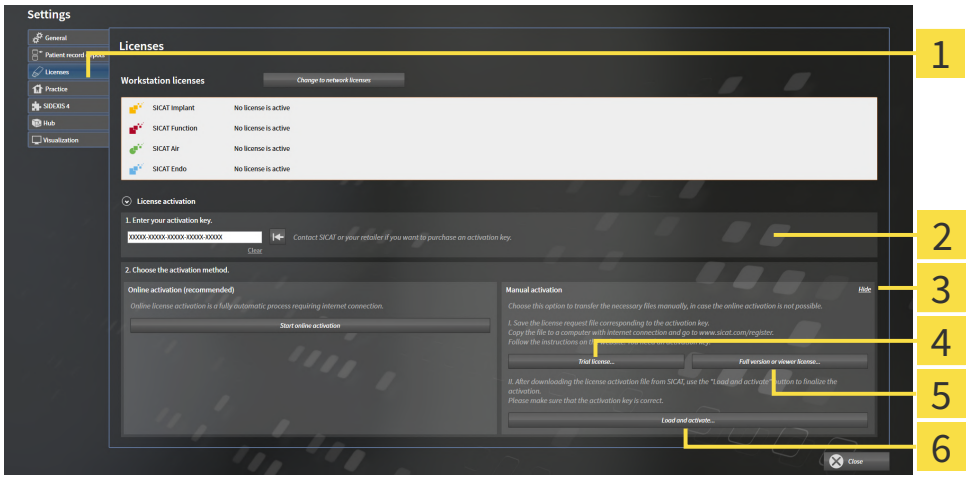
NOTICE	**Shopping cart must be empty** The shopping cart must be empty before you can make any changes to the licenses.

To activate licenses manually or without an active Internet connection, proceed as follows:

☑ At least one SICAT application or one individual function is missing an active workstation license.

☑ The **Licenses** window is already open. Information on this can be found in the section *Opening the "Licenses" window [▶Page 52 - Standalone]*.

1. Click on **License activation** in the **Licenses** window.
   ▶ The **License activation** area expands.
2. Click on **Show** in the **Manual activation** area.
   ▶ The **Manual activation** area expands:



1 **License activation**	4 **Trial license** button
2 **Enter your activation key** area	5 **Full version or viewer license** button
3 **Show**	6 **Load and activate** button

3. If you wish to activate a full version license, click on the **Full version or viewer license** button.
4. If you wish to activate a demo license, click on the **Trial license** button.
   ▶ A Windows Explorer window opens.
5. Select the desired folder for the license request file and click **OK**.
   ▶ A license request file with the **WibuCmRaC** file extension is generated and saved in the selected folder.

6. Copy the license request file on a computer with an active Internet connection, for example using a USB stick.

7. Open a web browser on the computer with the active Internet connection and open the http://www.sicat.com/register web page.

8. Follow the instructions on the activation page.
   ▶ Licenses acquired for installed applications or individual functions are removed from your license pool.
   ▶ The SICAT license server generates a license activation file with the **WibuCmRaU** file extension which you need to download onto your computer.

9. Copy the downloaded license activation file onto the computer on which SICAT Suite is running.

10. Check that the correct key is in the **Enter your activation key** field.

11. Click the **Load and activate** button in the **Licenses** window.
    ▶ A Windows Explorer window opens.

12. Browse to find the license activation file, select it and click **OK**.

▶ The license in the license activation file is installed on the current computer.

▶ The message window opens and shows the following message: **License was successfully activated**.

17.4 RETURNING WORKSTATION LICENSES TO THE LICENSE POOL

NOTICE	**Patient record must be closed** You must close the active patient record before making changes to the licenses.

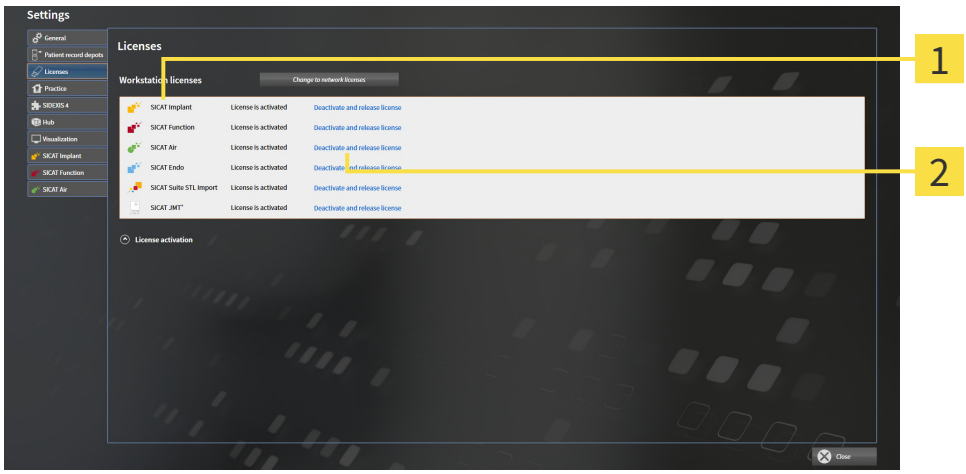
NOTICE	**Shopping cart must be empty** The shopping cart must be empty before you can make any changes to the licenses.

To deactivate a full version license and return it to the license pool, proceed as follows:

☑ You have already activated the full version license of a SICAT application.

☑ The computer on which SICAT Suite is running has an active Internet connection.

☑ The **Licenses** window is already open. Information on this can be found in the section *Opening the "Licenses" window [▶Page 52 - Standalone]*.



1 License status of SICAT applications and individual functions

2 **Deactivate and release license** button

- In the **Licenses** window, click on the **Deactivate and release license** button in the row of the desired SICAT application or individual function.

▶ The selected license is returned to your license pool and will be ready for activation again.

▶ The message window opens and shows the following message: **License was successfully returned to the license pool**.

▶ Without a license, an application will only be available in Viewer mode. If the licenses for all SICAT applications have been returned to your license pool, SICAT Suite will switch entirely to Viewer mode.

If you wish to deactivate a license on a computer without an active Internet connection, please contact SICAT support.

17.5 ACTIVATING NETWORK LICENSES

NOTICE	**Patient record must be closed** You must close the active patient record before making changes to the licenses.

NOTICE	**Shopping cart must be empty** The shopping cart must be empty before you can make any changes to the licenses.

To start the activation process, proceed as follows:

☑ At least one SICAT application or one individual function is missing an active network license.

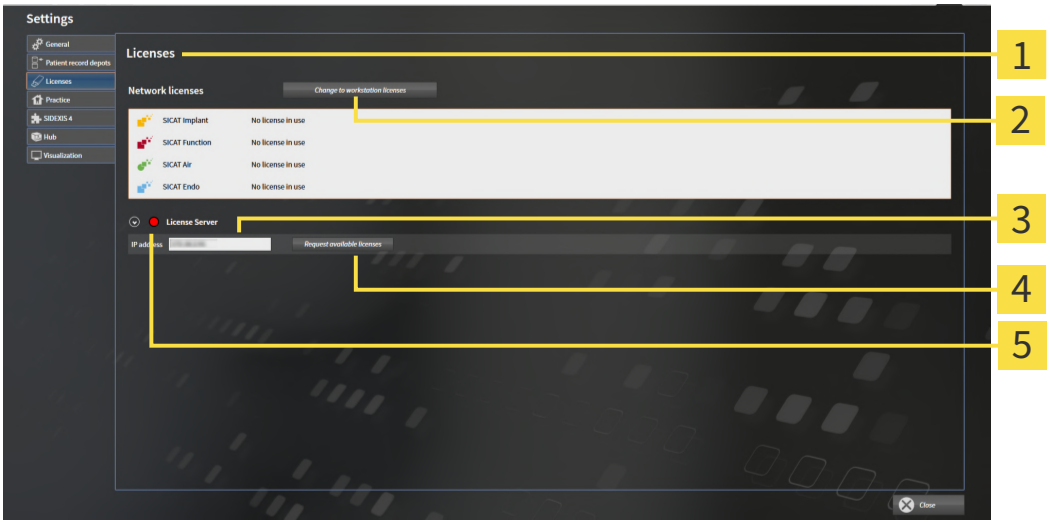
☑ You have set up a license server.

☑ The computer on which SICAT Suite is running has an active network connection to the network in which the license server is located.

☑ The **Licenses** window is already open. Information on this can be found in the section *Opening the "Licenses" window [▶Page 52 - Standalone]*.

1. Click the **Change to network licenses** button in the **Licenses** window.

   ▶ SICAT Function shows information about the network licenses and the **License Server** area opens:



1 **Licenses** window

2 **Change to workstation licenses** button

3 **IP address** area

4 **Request available licenses** button

5 Status indicator

2. In the **IP address** area, enter the IP address of the license server in the practice network.

3. Click on the **Request available licenses** button.

▶ SICAT Suite connects to the license server.

▶ Licenses acquired for installed applications or individual functions will be removed from your license pool and used in SICAT Suite on the current computer.

▶ The status indicator changes from red to green.

▶ The **License Server** area is collapsed.

18 PATIENT RECORD DEPOTS

BACKUP

CAUTION

The absence of a backup mechanism for the patient record depots could result in patient data being irreversibly lost.

Make sure that a regular data backup is created of all patient record depots.

You yourself are responsible for backing up the patient data in the patient record depots. The settings under **Patient record depots** will show where you can find the patient record depots. If you have removed a patient record depot from the **Your patient record depots** list, SICAT Suite will no longer display the corresponding patient record depot even though it still exists on the corresponding data storage medium.

You should also back up the user settings of the SICAT applications in addition to the patient data. You can find the user settings for each user in two directories separately. You can open the directories by entering **%appdata%\SICAT GmbH & Co. KG** and **%localappdata%\SICAT GmbH & Co. KG** into the address bar of Windows Explorer.

DATA SECURITY

CAUTION

Saving SICAT application data in an unreliable or incompatible network file system could result in data loss

Together with your network administrator, make that SICAT application data can be safely stored in the desired network file system.

CAUTION

The shared use of SICAT Suite and the SICAT applications contained therein with other devices within a computer network or a storage area network could result in previously unknown risks for patients, users and other persons.

Ensure that rules are compiled within your organization to determine, analyze and assess risks in relation to your network.

CAUTION

Changes to your network environment may result in new risks for your network environment. Examples include changes to your network configuration, the connection of additional devices or components to your network, the disconnection of devices or components from your network and the updating or upgrading of network devices or components.

Perform a network risk analysis after any changes to the network.

GENERAL INFORMATION

The administration of patient record depots is only available, if an application license is activated in SICAT Suite.

A new version of the stand-alone version of SICAT Suite requires updated patient record depots. When first starting the new version or if you are activating an old patient record depot, SICAT Suite will ask if you want to update the patient record depot. SICAT Suite will update the patient record depot automatically when you confirm the message. **CAUTION! You can no longer use updated patient record depots with older versions of SICAT Suite.**

SICAT Suite manages patient data as follows:

- All 3D scans for a patient and all corresponding planning projects are organized in patient records.
- Patient records are stored in the patient record depot.
- Patient record depots are saved in folders on a local file system or network file system.

SICAT Suite requires at least one patient record depot to run in the full version. Several patient record depots can be managed. However, only one patient record depot can be active at one time. Only one SICAT Suite can access patient record depots at one time both on a local file system and a network file system. You can only edit and save patient records from the active patient record depot.

Patient record depots on network file systems require a network connection with a certain minimum bandwidth. Information on this can be found in the section *System requirements [▶Page 11 - Standalone]*.

The following actions are available for managing patient record depots:

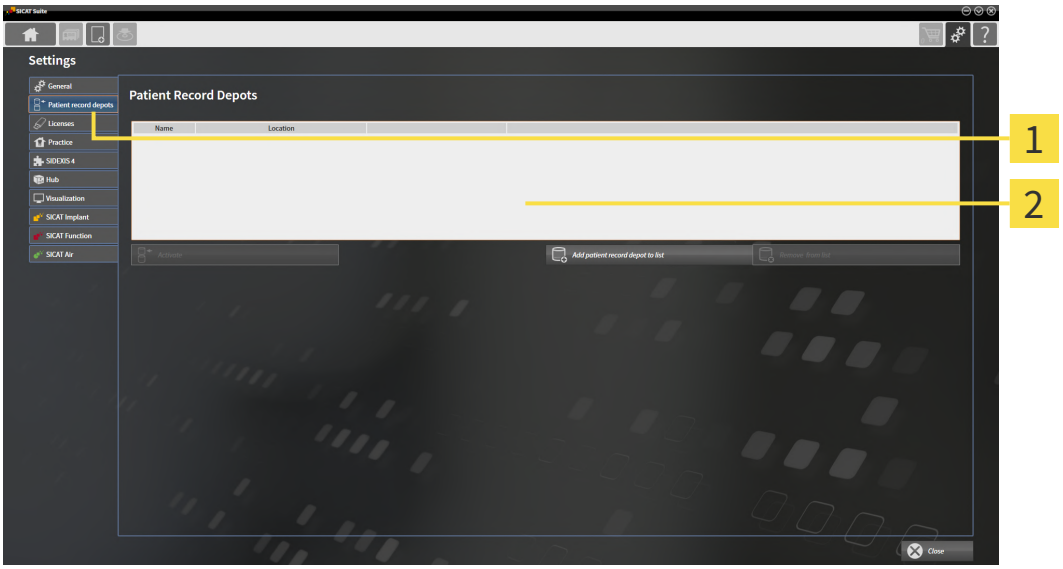
- *Opening the “Patient record depots” window [▶Page 62 - Standalone]*
- *Adding patient record depots [▶Page 63 - Standalone]*
- *Activating another patient record depot [▶Page 65 - Standalone]*
- *Removing patient record depots [▶Page 67 - Standalone]*

18.1 OPENING THE “PATIENT RECORD DEPOTS” WINDOW

To open the **Patient record depots** window, proceed as follows:

1. Click on the **Settings** icon in the **Navigation bar**.
   ▶ The **Settings** window opens.

2. Click the **Patient record depots** tab.
   ▶ The **Patient record depots** window opens:



1 **Patient record depots** tab

2 **Patient record depots** window

Continue with one of the following actions:

- *Adding patient record depots [▶Page 63 - Standalone]*
- *Activating another patient record depot [▶Page 65 - Standalone]*
- *Removing patient record depots [▶Page 67 - Standalone]*

18.2 ADDING PATIENT RECORD DEPOTS

CAUTION

The absence of a backup mechanism for the patient record depots could result in patient data being irreversibly lost.

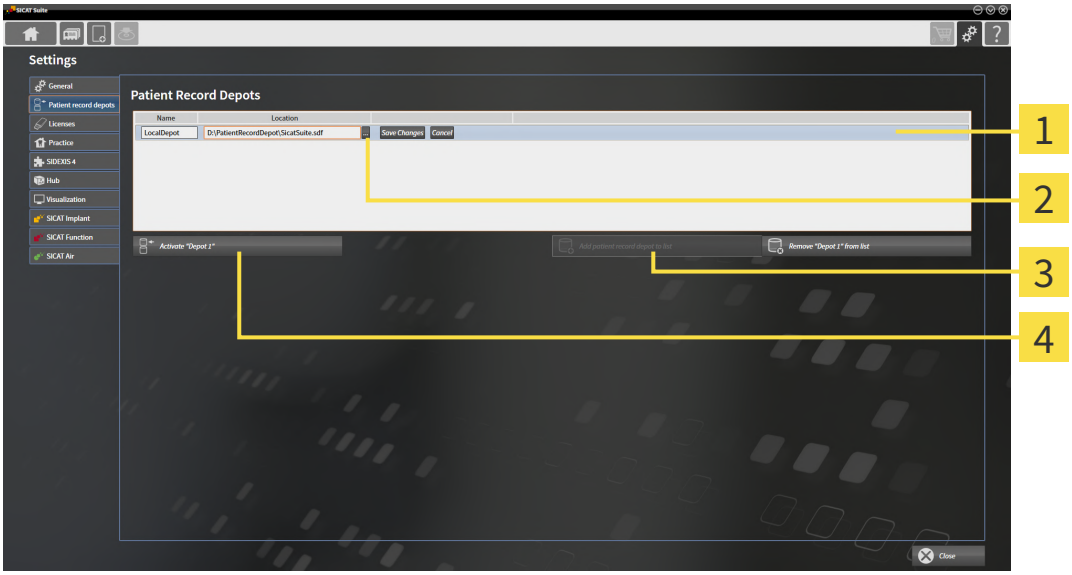
Make sure that a regular data backup is created of all patient record depots.

SICAT Suite saves patient record depots on file systems. You can only save one patient record depot per folder. Therefore, the folder, in which you want to save a new patient record depot, must be empty.

SICAT Suite adds an existing patient record depot if the following conditions have been met: The selected folder already contains a patient record depot, but is not included in the list of patient record depots.

To create a new patient record depot or to add an existing patient record depot, proceed as follows:

☑ The **Patient record depots** window is already open. Information on this can be found in the section *Opening the "Patient record depots" window [▶ Page 62 - Standalone]*.



1 Row of the new patient record depot

2 **Browse** button

3 **Add patient record depot to list** button

4 Button to activate the selected patient record depot

1. Click the **Add patient record depot to list** button in the **Patient record depots** window.

   ▶ SICAT Suite adds a new row to the **Your patient record depots** list for the new patient record depot.

2. Click the button marked **Browse** in the row for the new patient record depot.

   ▶ The **Browse** window opens.

3. Select the folder you require in the **Browse** window and click **OK**.

   ▶ The **Browse** window closes and SICAT Suite adds the path to the folder you require to the row of the new patient record depot.

4. Click in the **Name** field in the row of the new patient record depot and enter a recognizable name for the new patient record depot.

5. Click **Save Changes** while the new patient record depot is still selected.

   ▶ If a patient record is active at that time, a confirmation message will open.

6. Click the **Switch patient record depot (active patient record will be closed)** button in the confirmation message.

▶ SICAT Suite activates the new patient record depot. The font of the corresponding row changes to bold.

▶ SICAT Suite deactivates the patient record depot that was previously active. The font of the corresponding row changes to normal.

You can click **Cancel** to cancel adding a patient record depot.

You can identify the created patient record depot using an SDF file in the respective folder.

18.3 ACTIVATING ANOTHER PATIENT RECORD DEPOT

It may be helpful to change the active patient record depot, for example in the following cases:

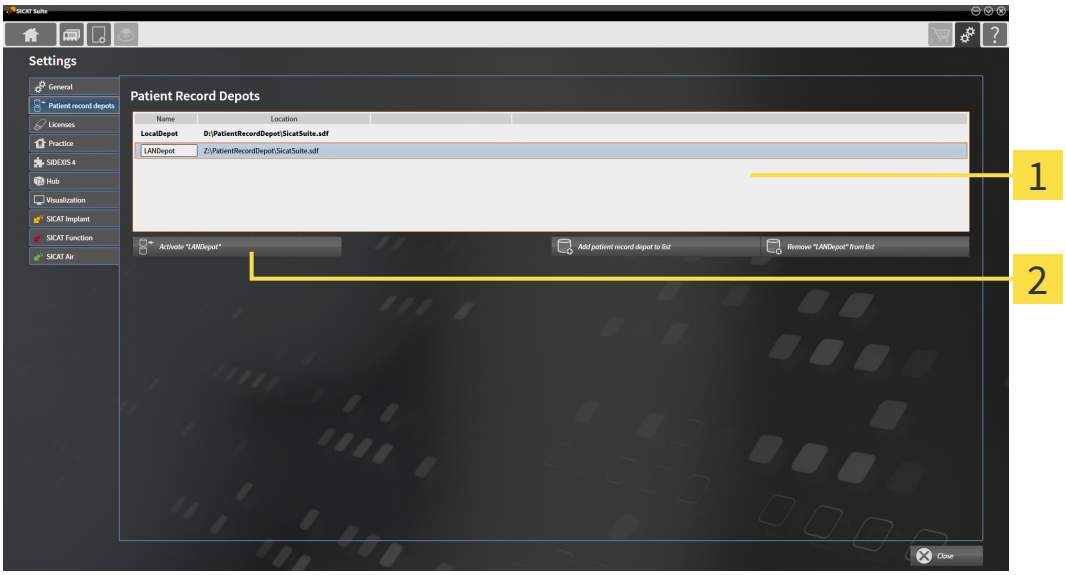
- You want to switch between a patient record depot on your practice's network file system and a patient record depot on your notebook.
- You want to display patient data in public, which has been stored anonymously in another patient record depot, for example for training purposes.

To activate another patient record depot, proceed as follows:

☑ No patient record is active. If a patient record is active, SICAT Suite will close it automatically.

☑ The patient record depot that you want to activate is not opened in SICAT Suite on another computer.

☑ The **Patient record depots** window is already open. Information on this can be found in the section *Opening the "Patient record depots" window [▶ Page 62 - Standalone]*.



1 **Your patient record depots** list

2 Button for activating the selected patient record depot

1. In the **Patient record depots** window, click on the desired patient record depot in the **Your patient record depots** list.

2. Click on the button to activate the selected patient record depot.
   ▶ If a patient record is active at that time, a confirmation message will open.
3. Click the **Switch patient record depot (active patient record will be closed)** button in the confirmation message.

▶ SICAT Suite activates the selected patient record depot.

A new version of the stand-alone version of SICAT Suite requires updated patient record depots. When first starting the new version or if you are activating an old patient record depot, SICAT Suite will ask if you want to update the patient record depot. SICAT Suite will update the patient record depot automatically when you confirm the message. **CAUTION! You can no longer use updated patient record depots with older versions of SICAT Suite.**

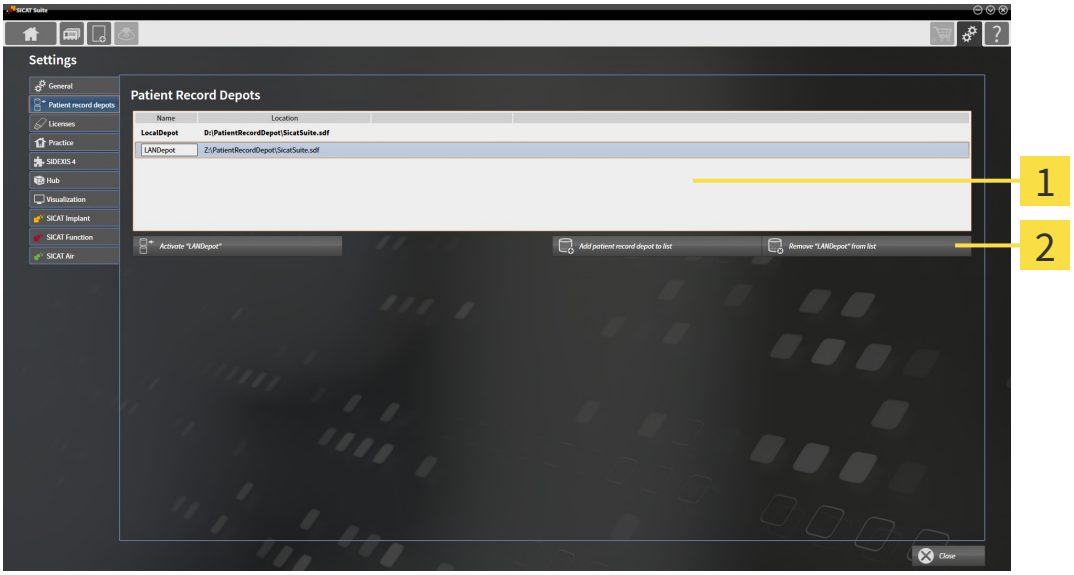
18.4 REMOVING PATIENT RECORD DEPOTS

SICAT Suite only removes a patient record depot from the **Your patient record depots** list. It does not delete patient record depots from the file system. You can add an existing patient record depot, which has been removed from the **Your patient record depots** list, back once again. Information on this can be found in the section *Adding patient record depots [▶Page 63 - Standalone]*.

To remove a patient record depot from the **Your patient record depots** list, proceed as follows:

☑ No patient record depot is opened.

☑ The **Patient record depots** window is already open. Information on this can be found in the section *Opening the "Patient record depots" window [▶Page 62 - Standalone]*.



1 **Your patient record depots** list

2 Button to remove the selected patient record depot

1. Click on the patient record depot you require in the **Patient record depots** window in the **Your patient record depots** list.

2. Click on the button to remove the selected patient record depot.

▶ SICAT Suite removes the selected patient record depot from the **Your patient record depots** list.

19 DATA IMPORT

⚠ **CAUTION**	**Unsuitable 3D X-ray scans may result in an incorrect diagnosis and treatment.** Always verify the quality, integrity, and correct orientation of the displayed 3D data.

⚠ **CAUTION**	**Deleting original data may result in data being lost.** Do not delete the original data following the import.

ℹ	The data import will only be available if both a license is activated and a patient record depot has been created and activated. Without a license or patient record depot you can only open data in Viewer mode. Information on this is available in the section *Opening read-only data [▶Page 241 - Standalone]*.

SICAT Suite can import 3D X-ray scans form the following data formats:

- SICAT Suite DICOM data
- 3D X-ray scans (DICOM, information on this can be found in the section *Supported DICOM format [▶Page 71 - Standalone]*)
- SICAT Implant data
- SICAT surgical guide order data
- GALILEOS Wrap&Go data

Two settings determine the manner in which SICAT Suite imports 3D X-ray scans into the active patient record depot:

- The import settings determine whether SICAT Suite imports a 3D X-ray scan or not, overwrites an existing 3D X-ray scan or creates a duplicate.
- The allocation settings determine the patient record, to which SICAT Suite allocates an imported 3D X-ray scan.

If a data record contains studies from SICAT applications, SICAT Suite imports the studies together with the 3D X-ray scans.

IMPORT SETTINGS FOR 3D X-RAY SCANS

If the active patient record depot contains patient records, you can select different import settings for 3D X-ray scans. The available import settings depend on whether the ID of the data to be imported matches the ID of a patient record in the active patient record depot or not.

You can select import settings individually for each 3D X-ray scan:

DATA TYPE	THE ID MATCHES	THE ID DOES NOT MATCH	ALWAYS AVAILABLE
SICAT Suite DICOM data SICAT Implant data SICAT surgical guide order data	**Overwrite existing** – SICAT Suite imports the 3D X-ray scan and overwrites the existing data record with the same ID.	**Import** – SICAT Suite imports the 3D X-ray scan as a new data record.	**Do not import** – SICAT Suite does not import the 3D X-ray scan.
DICOM data from third-party suppliers GALILEOS Wrap&Go data	**Import anyway** – SICAT Suite imports the 3D X-ray scan as a copy of an existing data record.	**Import** – SICAT Suite imports the 3D X-ray scan as a new data record.	**Do not import** – SICAT Suite does not import the 3D X-ray scan.

ATTRIBUTE COMPARISON FOR PATIENT RECORD ALLOCATION

SICAT Suite analyzes different attributes of the data to be imported. These attributes are:

- Last name
- First name
- Date of birth
- Patient ID, for example the social security number or an internal patient ID for your practice

SETTINGS FOR PATIENT RECORD ALLOCATION

The following list shows the import options, which SICAT Suite suggests, depending on the attribute comparison:

- All attributes of the data to be imported match the attributes of a patient record in the active patient record depot: SICAT Suite suggests the **Assign to existing patient record** option and matching patient record.
- Not all attributes of the data to be imported match the attributes of a patient record in the active patient record depot: SICAT Suite suggests the **Create new patient record** option.

In both cases, you can assign the data to another patient record manually.

Perform the following actions in the order stated to import data:

- *Selecting the data to be imported [▶Page 72 - Standalone]*
- *Selecting an import option [▶Page 74 - Standalone]*
- *Allocating data to an existing patient record [▶Page 76 - Standalone]*

or

- *Creating a new patient record through data import [▶Page 75 - Standalone]*

19.1 SUPPORTED DICOM FORMAT

When importing DICOM data records, SICAT Suite supports data records, which meet the following criteria:

- Data record present in DICOM 3.0 format.
- Data record contains only parallel slices.
- Data record is uncompressed, JPEG compressed or JPEG 2000 compressed.
- Data record matches a supported type from the following list.

The supported data record types are:

- CT Image
- Digital X-Ray Image
- Digital Intraoral X-Ray Image
- X-Ray 3D Craniofacial Image
- Secondary Capture Image (grayscale) (for CT modality only)
- Multiframe Grayscale Word Secondary Capture Image (for CT modality only)

Please see the DICOM conformance statement for further criteria. SICAT will be happy to send this to you upon request. The necessary contact details are found on the reverse.

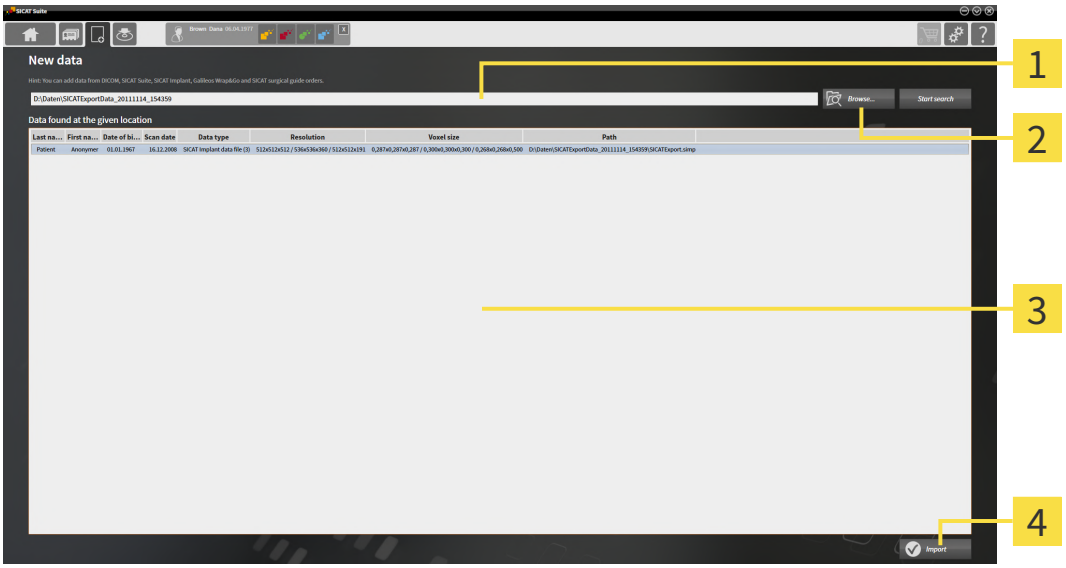
19.2 SELECTING THE DATA TO BE IMPORTED

⚠ **CAUTION**	**Unsuitable X-ray devices may result in an incorrect diagnosis and treatment.** Only use 3D X-ray scans from X-ray devices that are cleared as medical equipment.

⚠ **CAUTION**	**X-ray devices without DICOM conformity could result in incorrect diagnosis and treatment.** Only use 3D volume data from X-ray devices with DICOM conformity declared.

To import data to the active patient record depot, proceed as follows:

1. Click on the **New data** icon in the **Navigation bar**.
   ▶ The **New data** window opens:



1 **Where is the data located** field

2 **Browse** button

3 **Data found at the given location** list

4 **Import** button

2. Click on the **Browse** button.
   ▶ The **Select a file or directory** window opens.
3. Select the file you require in the **Select a file or directory** window and click **OK**.

▶ SICAT Suite closes the **Select a file or directory** window and transfers the path to the file you require or the selected folder into the **Where is the data located** field.

▶ If you have selected a compatible file, SICAT Suite will display the file contents in the **Data found at the given location** list.

▶ If you have selected a folder, SICAT Suite will search the folder and all sub-folders. SICAT Suite will display compatible files in any of the folders searched in the **Data found at the given location** list.

You can also drag & drop to import data into SICAT Suite.

If you use the described procedure, the search will start automatically. You can cancel the search by clicking the **Stop search** button. If you enter a path to a file or a folder manually into the **Where is the data located** field, you have to click on the **Start search** button. This may also be useful to start a new search if the contents of the folder have changed or if you have accidentally canceled the search.

If SICAT Suite does not find certain files even if they are compatible, this may be down to the long path to the files. Copy the files to a higher level of the file system and start your search again.

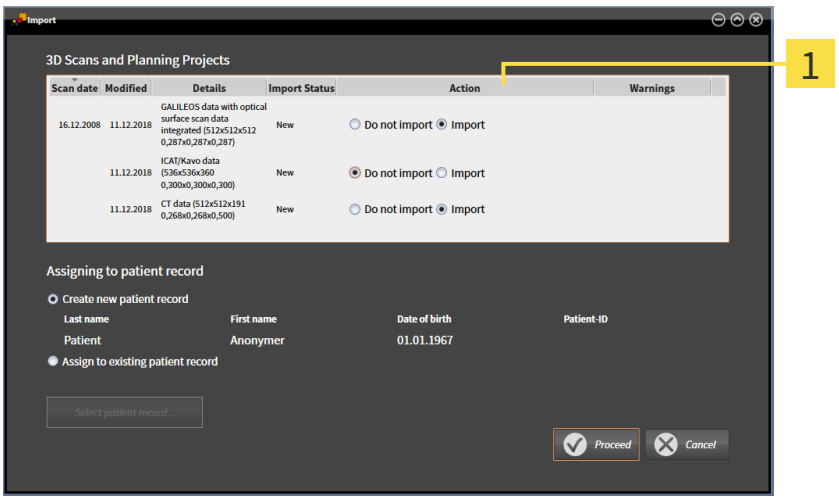
Continue with the section *Selecting an import option [▶Page 74 - Standalone]*.

19.3 SELECTING AN IMPORT OPTION

To select an import option for each study, proceed as follows:

1. Select the desired study from the **Data found at the given location** list and click the **Import** button.

   ▶ The **Import** window opens:



   1 **Action** column

2. In the **Import** window, select one of the following entries from the **Action** column for each study: **Do not import**, **Import anyway**, **Import** or **Overwrite existing**. A detailed description of the options can be found in the section *Data import [▶Page 68 - Standalone]*t.

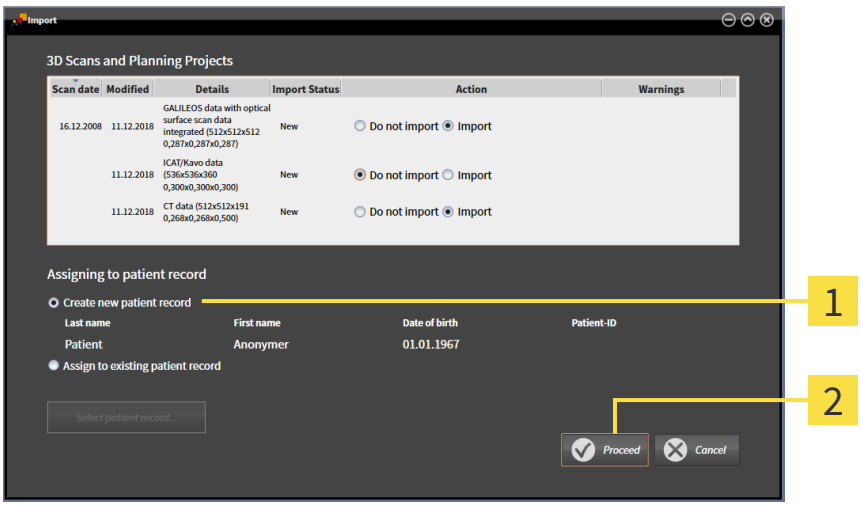
▶ It is defined for all studies individually whether you want to import them or not.

Continue with one of the following actions:

- *Allocating data to an existing patient record [▶Page 76 - Standalone]*
- *Creating a new patient record through data import [▶Page 75 - Standalone]*

19.4 CREATING A NEW PATIENT RECORD THROUGH DATA IMPORT

You can create a new patient record via data import if there is not yet a patient record with the same attribute combination in the active patient record depot.



1 **Create new patient record** option

2 **Proceed** button

To allocate data you wish to import to a new patient record, proceed as follows:

- Select the option **Create new patient record** in the **Assigning to patient record** area and click the **Proceed** button.

▶ SICAT Suite creates a new patient record with the attributes of the selected data.

▶ SICAT Suite imports the selected data and allocates it to the new patient record.

▶ The **Patient record browser** window opens and SICAT Suite highlights the imported patient records in the **Patient records** list. Information on this can be found in the section *Patient records* [▶ *Page 79 - Standalone*].

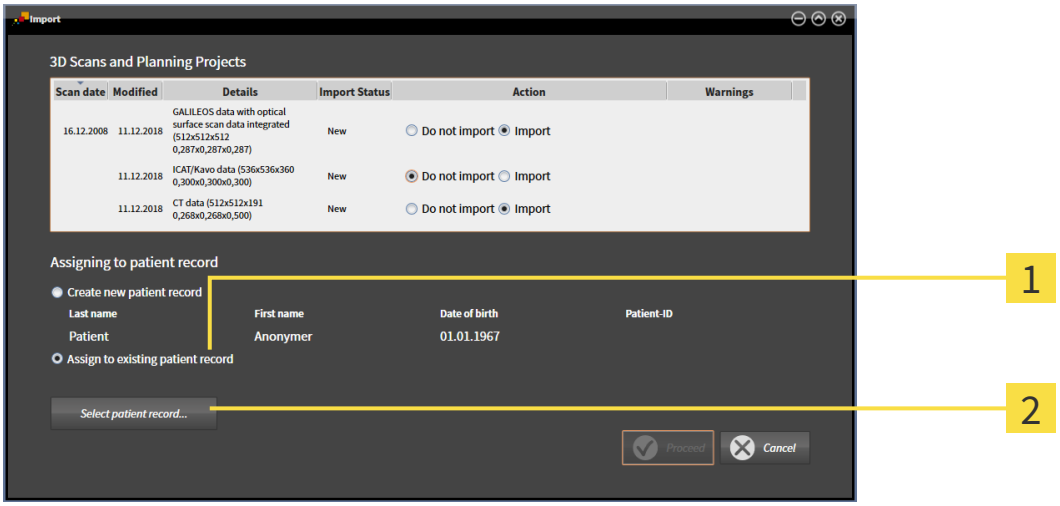
19.5 ALLOCATING DATA TO AN EXISTING PATIENT RECORD

CAUTION

Incorrect assignment of patient name or 3D scan could result in confusion of patient scans.

Verify that the 3D scan that is to be imported or already loaded in a SICAT Suite application is associated with the correct name of the patient and the correct scan information.

SICAT Suite automatically selects the **Assign to existing patient record** option with the corresponding patient record if the following condition applies: All attributes of the data to be imported match the attributes of a patient record in the active patient record depot:



1 **Assign to existing patient record** option

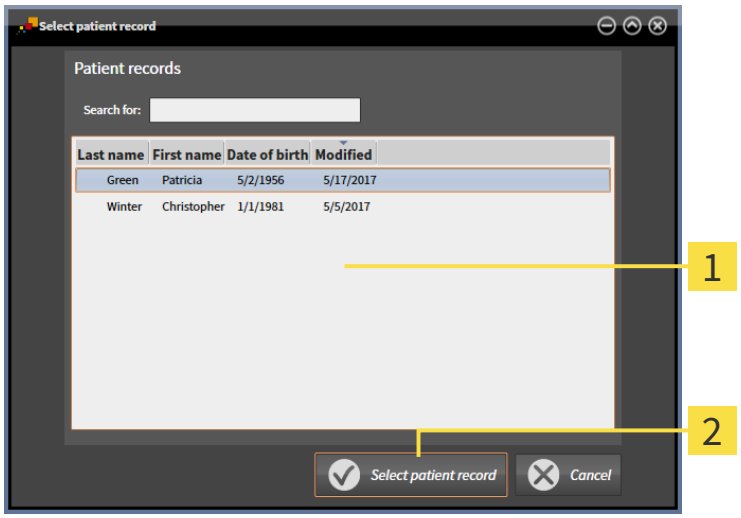
2 **Select patient record** button

To manually allocate data you wish to import to an existing patient record, proceed as follows:

☑ The active patient record depot contains at least one patient record.

1. Select the option **Assign to existing patient record** in the **Assigning to patient record** section and click the **Select patient record** button.

▶ The **Select patient record** window opens and displays a list of the already existing patient records:



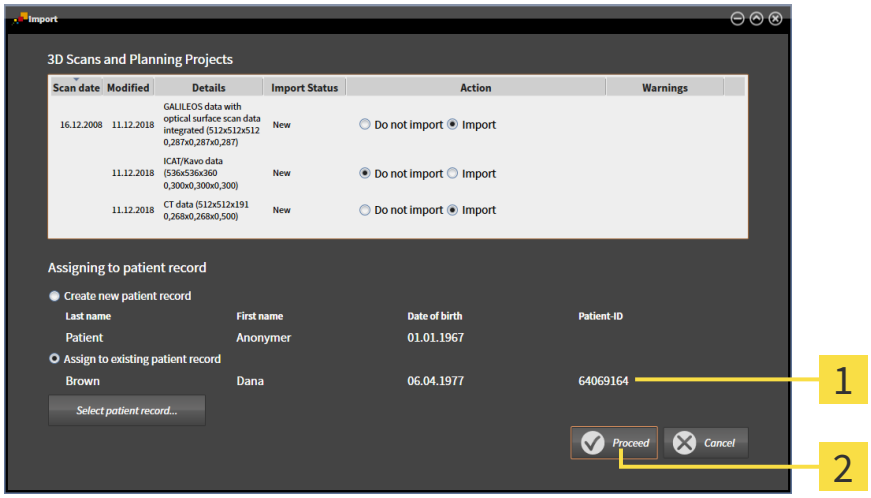
1 **Patient records** list

2 **Select patient record** button

2. Click the desired patient record and click the button marked **Select patient record**.

▶ The **Select patient record** window closes.

▶ The **Import** window displays the attributes of the selected patient record.

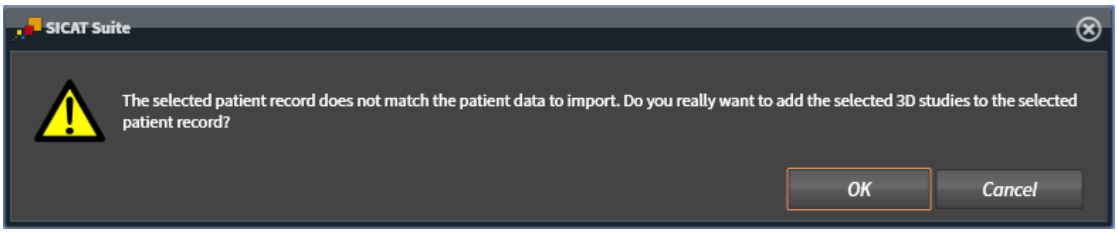


1 Attributes of the selected patient record

2 **Proceed** button

3. Click the **Proceed** button in the **Import** window.

4. If the attributes of the data to be imported do not match the attributes of the selected patient record, a warning message opens:



5. If you still want to import the data, click **OK**.

▶ SICAT Suite imports the selected data and allocates it to an existing patient record.

▶ The **Patient record browser** window opens and SICAT Suite highlights the imported patient records in the **Patient records** list. Information on this can be found in the section *Patient records [▶Page 79 - Standalone]*.

20 PATIENT RECORDS

Patient records may contain several 3D studies. A study consists of a 3D X-ray scan and the corresponding planning projects. In addition, it may also contain documents created during the planning phase.

The following actions are available for managing patient records:

- *Opening the “Patient record browser” window [▶Page 80 - Standalone]*
- *Searching and sorting in the patient record depot [▶Page 81 - Standalone]*
- *Activating patient records [▶Page 83 - Standalone]*
- *Opening 3D X-ray scans or planning projects from the patient record summary [▶Page 87 - Standalone]*
- *Working with active patient records [▶Page 84 - Standalone]*
- *Changing the attributes of patient records [▶Page 86 - Standalone]*
- *Deleting patient records from patient record depots [▶Page 93 - Standalone]*
- *Deleting 3D X-ray scans or planning projects from patient records [▶Page 94 - Standalone]*

There are also actions to import data and to export data from patient records:

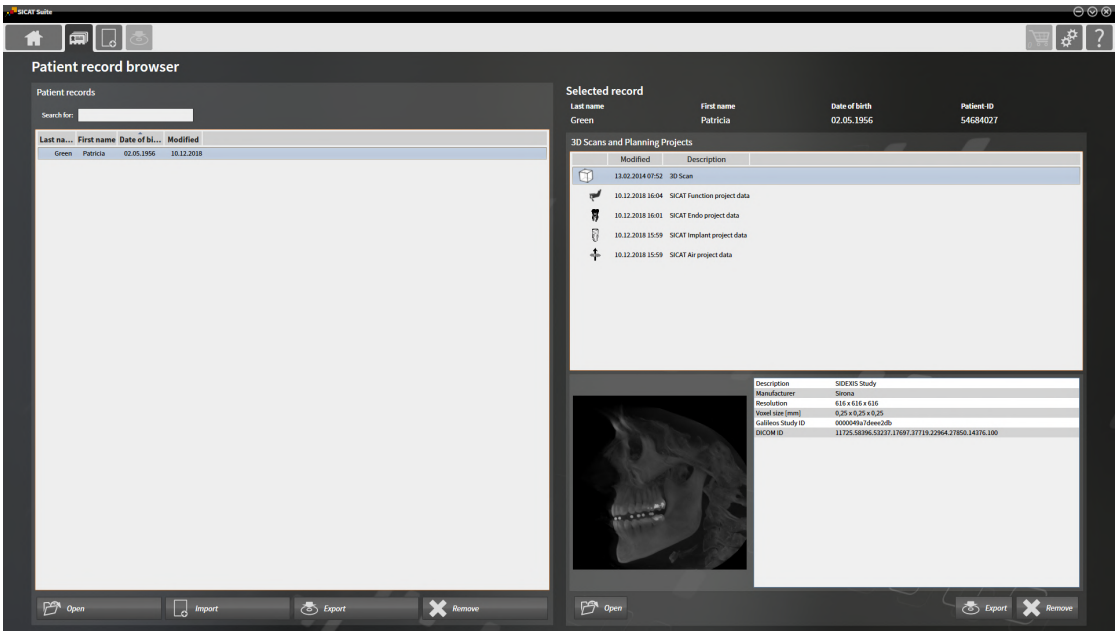
- *Data import [▶Page 68 - Standalone]*
- *Data export [▶Page 208 - Standalone]*

20.1 OPENING THE “PATIENT RECORD BROWSER” WINDOW

To open the **Patient record browser** window, proceed as follows:

- Click on the **Patient records** icon in the **Navigation bar**.

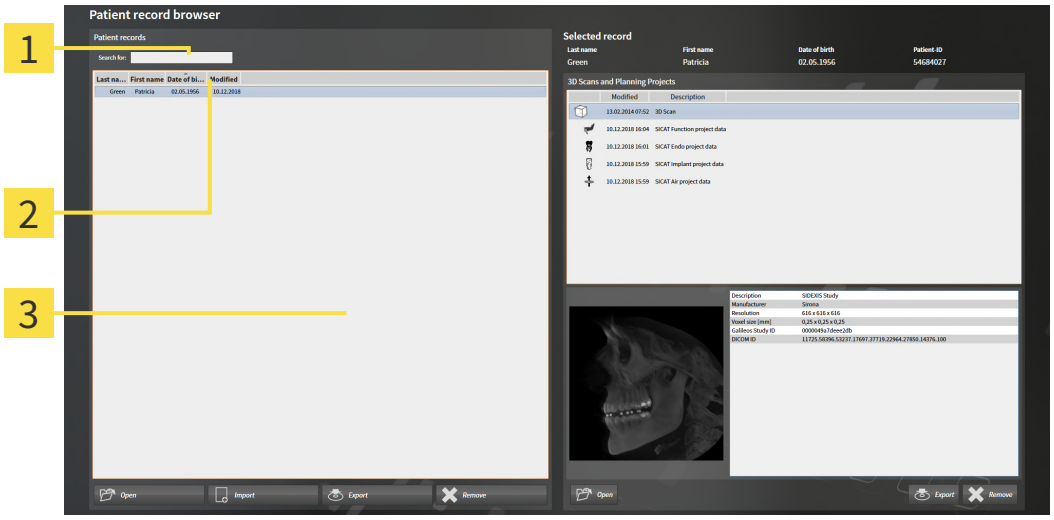
► The **Patient record browser** window opens:



Continue with one of the following actions:

- *Searching and sorting in the patient record depot [►Page 81 - Standalone]*
- *Activating patient records [►Page 83 - Standalone]*
- *Opening 3D X-ray scans or planning projects from the patient record summary [►Page 87 - Standalone]*
- *Working with active patient records [►Page 84 - Standalone]*
- *Changing the attributes of patient records [►Page 86 - Standalone]*
- *Deleting patient records from patient record depots [►Page 93 - Standalone]*
- *Deleting 3D X-ray scans or planning projects from patient records [►Page 94 - Standalone]*

20.2 SEARCHING AND SORTING IN THE PATIENT RECORD DEPOT



1 **Search for** field

2 Column headers with attributes

3 **Patient records** list

SEARCHING FOR PATIENT RECORDS

SICAT Suite searches through the attributes of all patient records for the search text entered.

To search for a patient record, proceed as follows:

☑ The **Patient record browser** window is already open. Information on this can be found in the section *Opening the "Patient record browser" window [▶Page 80 - Standalone]*.

- Enter the desired search text in the **Search for** field.

▶ The **Patient records** list displays all patient records, which contain the search text entered in an attribute.

SICAT Suite will start the search as soon as you start typing.

SORTING PATIENT RECORDS ACCORDING TO ATTRIBUTES

You can sort patient records according to the following attributes:

- **Last name**
- **First name**
- **Date of birth**
- **Modified**

To sort patient records by attributes, proceed as follows:

☑ The **Patient record browser** window is already open. Information on this can be found in the section *Opening the "Patient record browser" window [▶Page 80 - Standalone]*.

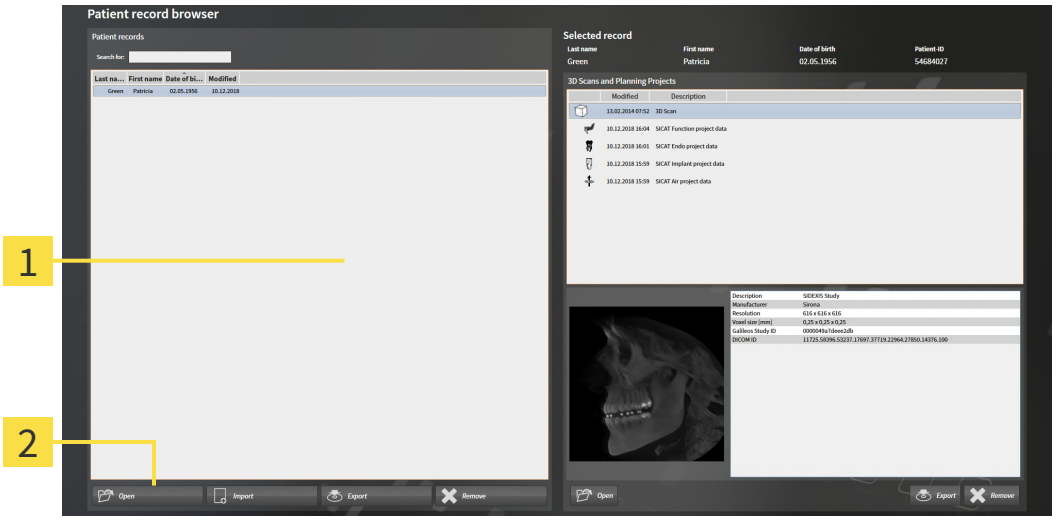
1. Click on the column header of the desired attribute in the **Patient records** list.
   ▶ SICAT Suite sorts the **Patient records** list in the order of the desired attribute.
2. Click again on the column header of the desired attribute in the **Patient records** list.
   ▶ SICAT Suite sorts the **Patient records** list by the desired attribute in reverse order.

By default, patient records are sorted in descending order of the date they were last changed.

20.3 ACTIVATING PATIENT RECORDS

To work with a patient record, activate it as follows:

☑ The **Patient record browser** window is already open. Information on this can be found in the section *Opening the "Patient record browser" window [▶Page 80 - Standalone]*.



1 **Patient records** list

2 Button to activate the selected patient record

1. Select the desired patient record in the **Patient records** list.
2. Click on the button to activate the selected patient record.

▶ SICAT Suite activates the selected patient record.

Continue with the section *Working with active patient records [▶Page 84 - Standalone]*.

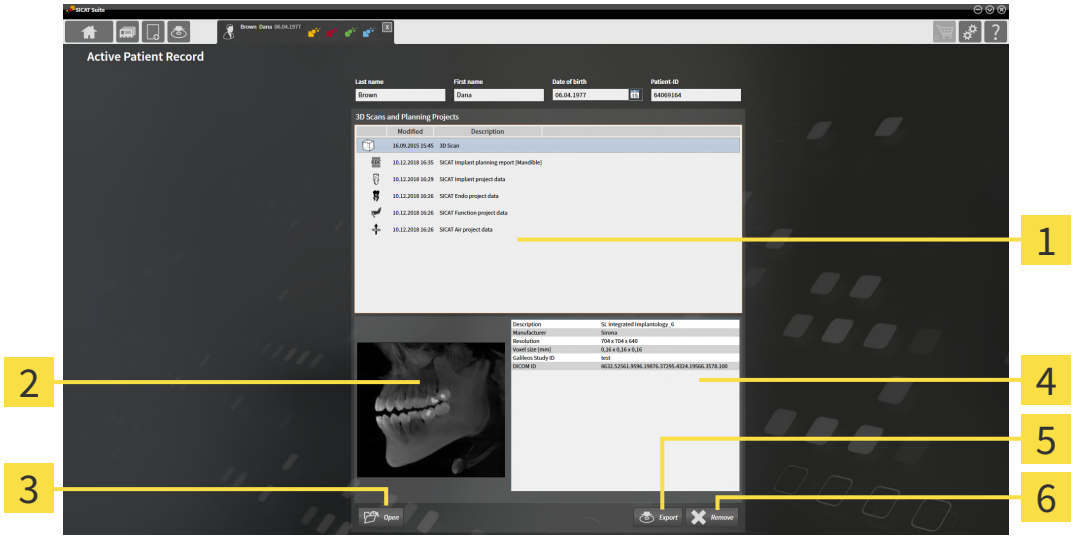
20.4 WORKING WITH ACTIVE PATIENT RECORDS

⚠ **CAUTION**	**Deleted patient records, studies, 3D scans, and planning projects cannot be recovered.** Only delete patient records, studies, 3D scans, and planning projects if you are sure you will never need those data again.

⚠ **CAUTION**	**When deleting 3D scans, all dependent planning projects will be deleted as well.** Only delete 3D scans if you are sure you will never need any dependent planning project again.

To work with an active patient record, proceed as follows:

☑ A patient record is already active. Information on this can be found in the section *Activating patient records [▶Page 83 - Standalone]*.



1 **3D Scans and Planning Projects** list

2 **Overview** area

3 **Open** button

4 **Details** area

5 **Export** button

6 **Delete** button

1. In the **Active Patient Record** window, select the desired 3D X-ray scan or planning project from the **3D Scans and Planning Projects** list .
   ▶ The **Overview** section shows a preview of the selected 3D X-ray scan or planning project.
   ▶ The **Details** section shows details of the selected 3D X-ray scan or planning project, such as DICOM metadata.
2. To open the selected 3D X-ray scan in a SICAT application or open the selected planning project in the corresponding SICAT application, click on the **Open** button.
3. To open the selected document in the default PDF viewer, you first need to save an unencrypted version by clicking on the **Open** button.
   ▶ A Windows Explorer window opens.

4. Switch to the directory in which you wish to save the document.

5. Enter a name in the **File name** field and click on **Save**.
   - ▶ The Windows Explorer window closes.
   - ▶ SICAT Function saves the document as a PDF file.
   - ▶ SICAT Function opens the document in the default PDF viewer.

6. To export the selected study from the active patient record, click on the **Export** button. Information on this can be found in the section *Data export [▶Page 208 - Standalone]*.

7. To delete the selected data 3D X-ray scan or planning project from the active patient record, click on the **Delete** button. Information on this can be found in the section *Deleting 3D X-ray scans or planning projects from patient records [▶Page 94 - Standalone]*.

8. Information on how to change attributes of the active patient record can be found in the section *Changing the attributes of patient records [▶Page 86 - Standalone]*.

20.5 CHANGING THE ATTRIBUTES OF PATIENT RECORDS

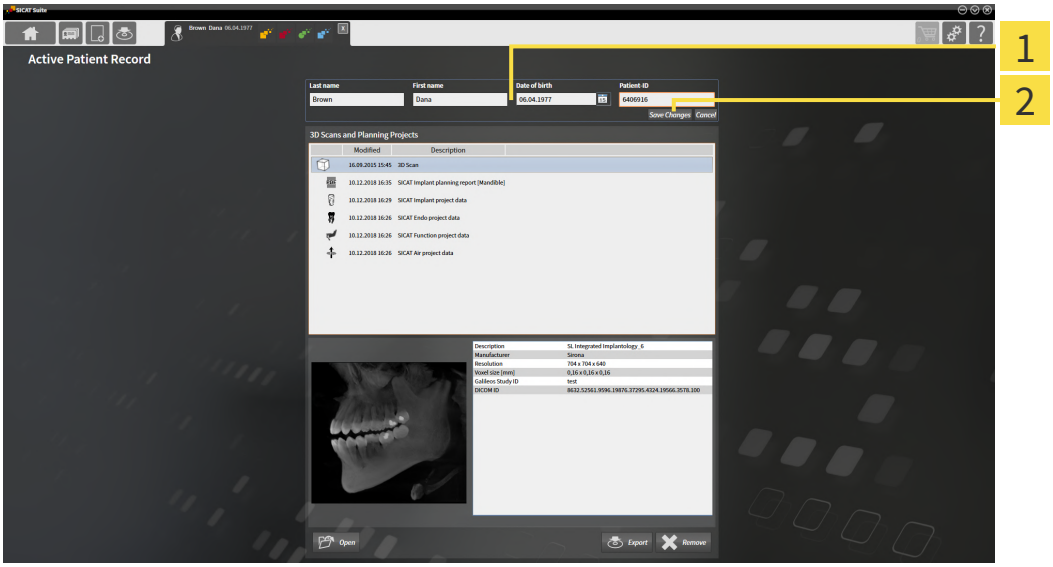
The combination of attributes in each patient record in the active patient record depot must be unique.

You can change the following attributes of a patient record:

- **Last name**
- **First name**
- **Date of birth**
- **Patient-ID**

To change the attributes of patient records, proceed as follows:

☑ A patient record is already active. Information on this can be found in the section *Activating patient records [▶Page 83 - Standalone]*.



1 Attribute fields

2 **Save Changes** button

1. Type the desired values into the attribute fields in the **Active Patient Record** window.
2. Click on the **Save Changes** button.

▶ SICAT Suite saves your changes.

The patient ID does not match the DICOM ID. You can enter any desired ID as the patient ID, for example the social security number or an internal patient ID for your practice.

20.6 OPENING 3D X-RAY SCANS OR PLANNING PROJECTS FROM THE PATIENT RECORD SUMMARY

CAUTION

Incorrect assignment of patient name or 3D scan could result in confusion of patient scans.

Verify that the 3D scan that is to be imported or already loaded in a SICAT Suite application is associated with the correct name of the patient and the correct scan information.

CAUTION

Unsuitable X-ray devices may result in an incorrect diagnosis and treatment.

Only use 3D X-ray scans from X-ray devices that are cleared as medical equipment.

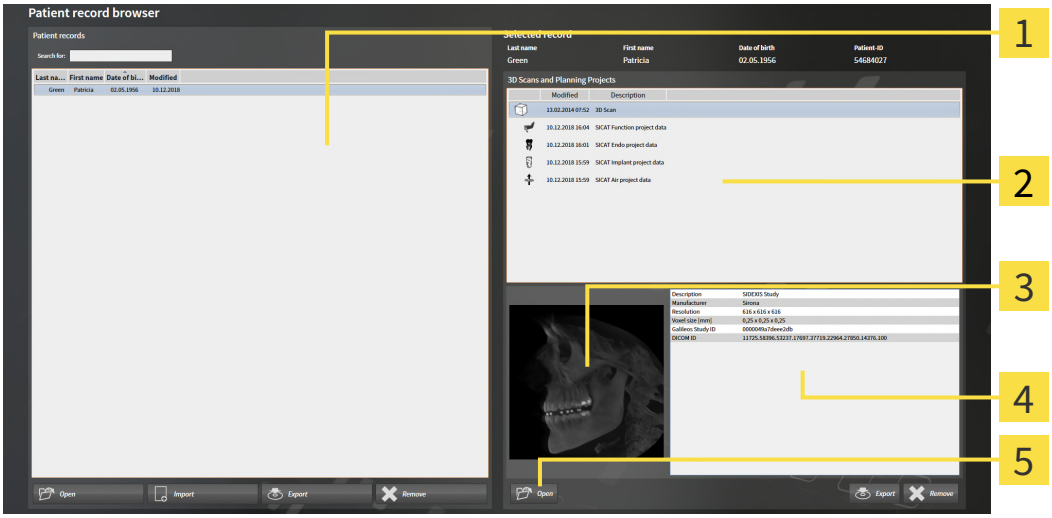
CAUTION

Unsuitable 3D X-ray scans may result in an incorrect diagnosis and treatment.

Always verify the quality, integrity, and correct orientation of the displayed 3D data.

To open a 3D X-ray scan or planning project from **Patient record browser**, proceed as follows:

☑ The **Patient record browser** window is already open. Information on this can be found in the section *Opening the "Patient record browser" window [▶Page 80 - Standalone]*.



1 **Patient records** list

2 **3D Scans and Planning Projects** list

3 **Overview** area

4 **Details** area

5 **Open** button

1. Select the desired patient record from the **Patient records** list in the **Patient record browser** window.

   ▶ In the **Selected record** area, the **3D Scans and Planning Projects** list shows all 3D X-ray scans, planning projects and PDF files of the selected patient record.

2. Select the desired data record or document from the **3D Scans and Planning Projects** list.
   ► The **Overview** and **Details** areas display information on the selected data record or document.

3. Click on the **Open** button.

► If you have selected a data record, it is opened in a SICAT application.

► Once you have selected a document, a Windows File Explorer window opens and you can save the document in any directory. You can then open the document in the standard PDF viewer.

If you open a 3D X-ray scan without the corresponding study and have only activated the license of one SICAT application, that SICAT application will start. If you open a 3D X-ray scan with several corresponding studies and you have activated the licenses for multiple SICAT applications, the application with the most recently changed study will open.

20.7 SICAT FUNCTION STUDIES IN SICAT SUITE

CAUTION

X-ray devices without DICOM conformity could result in incorrect diagnosis and treatment.

Only use 3D volume data from X-ray devices with DICOM conformity declared.

CAUTION

Unsuitable X-ray devices may result in an incorrect diagnosis and treatment.

Only use 3D X-ray scans from X-ray devices that are cleared as medical equipment.

CAUTION

Unsuitable 3D X-ray scans may result in an incorrect diagnosis and treatment.

Always verify the quality, integrity, and correct orientation of the displayed 3D data.

CAUTION

Insufficient visualization quality could result in incorrect diagnosis and treatment.

Before using a SICAT application, for example with the SMPTE test image, check whether the display quality is sufficient.

CAUTION

Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

1. Only perform planning if the environmental conditions allow for sufficient visualization quality. For example, check for appropriate lighting.
2. Check whether the display quality is sufficient using the SMPTE test image.

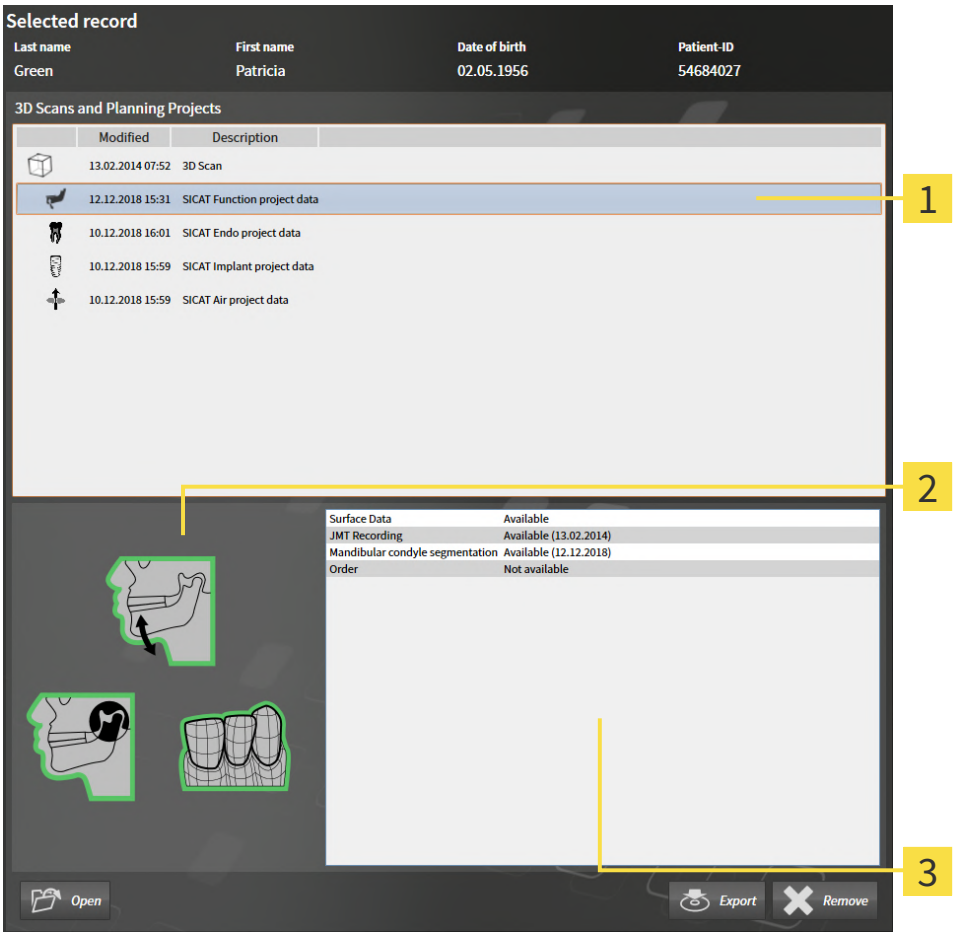
NOTICE

To ensure the correct diagnosis, treatment and registration of jaw motion tracking data, SICAT recommends the use of 3D X-ray data with the following parameters:

1. Slice thickness less than 0.7 mm
2. Voxel size less than 0.7 mm in all three dimensions

The **Patient record browser** displays information on SICAT Function studies if the following conditions have been met:

- You are using the stand-alone version of SICAT Suite.
- You have selected a SICAT Function study in the **3D Scans and Planning Projects** area:

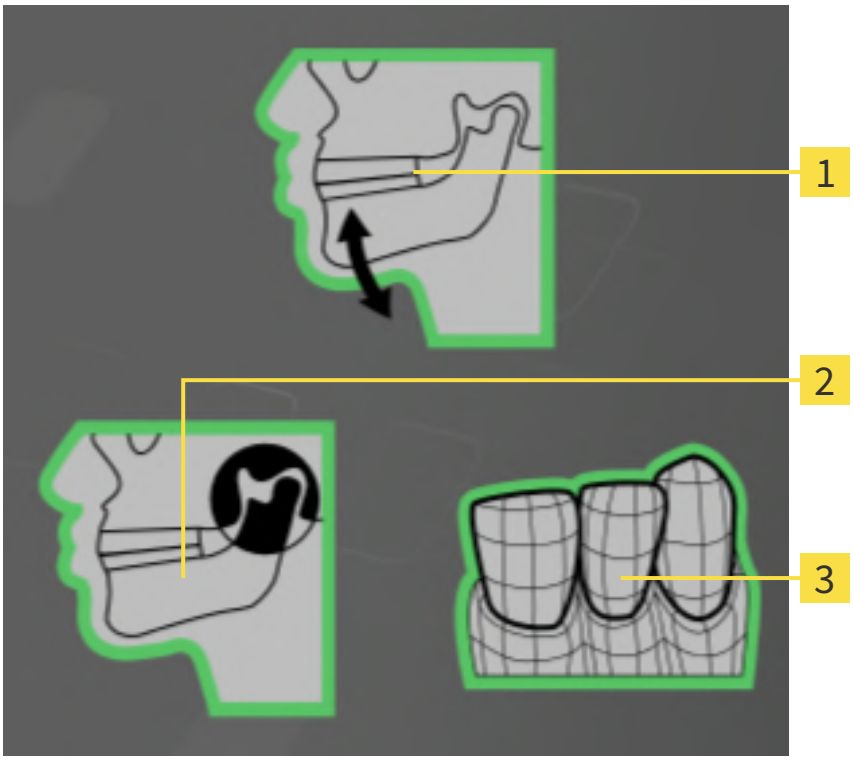


1 Selected SICAT Function study

2 **Overview** area

3 **Details** area

The **Overview** area displays the following elements:



1 Jaw motion tracking data

2 Segmentation

3 Optical impressions

A green border means that the respective element exists in the study.

The **Details** section displays the following information:

- Availability of optical impressions
- Availability of jaw motion tracking data with scan date
- Availability of temporomandibular joint segmentation with creation date
- Availability of an order with status and date

20.8 CLOSING ACTIVE PATIENT RECORDS AND SAVING THEIR PLANNING PROJECTS

To close an active patient record and save the planning projects it contains, proceed as follows:

- Click on the **Close** button in the area of the active patient record.

► SICAT Suite closes the active patient record and saves changes made to planning projects.

20.9 DELETING PATIENT RECORDS FROM PATIENT RECORD DEPOTS

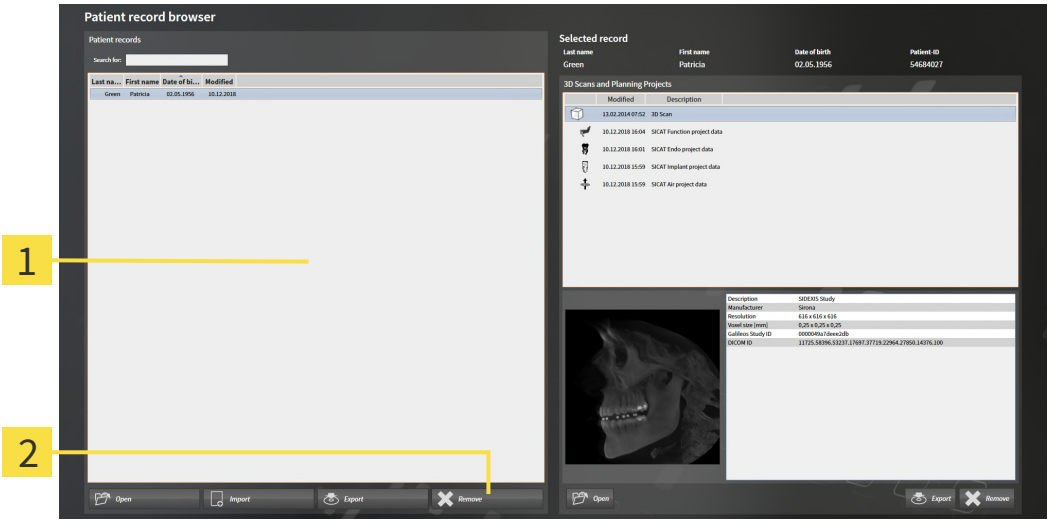
CAUTION

When deleting patient records, all 3D scans, planning projects and PDF files contained in these patient records will be deleted as well.

Only delete patient records if you are sure you will never need any contained 3D scans, planning projects and PDF files again.

To delete a patient record and all 3D scans and planning projects it contains, proceed as follows:

☑ The **Patient record browser** window is already open. Information on this can be found in the section *Opening the "Patient record browser" window [▶Page 80 - Standalone]*.



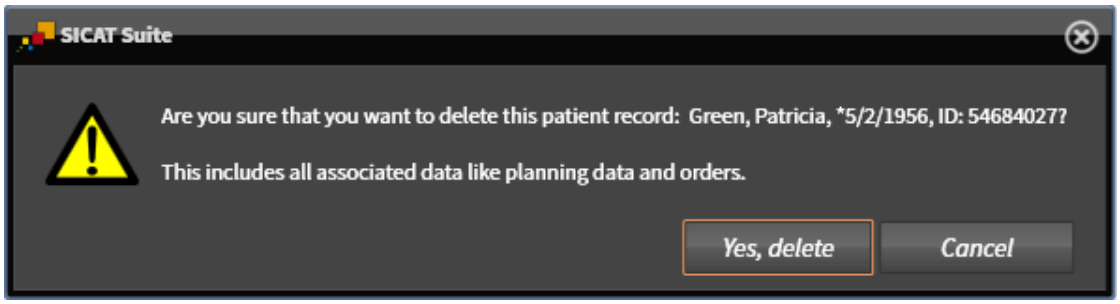
1 **Patient records** list

2 Button to delete the selected patient record

1. Select the desired patient record from the **Patient records** list in the **Patient record browser** window.

2. Click on the button to delete the selected patient record.

   ▶ A confirmation message opens:



3. Click on **Yes, delete** in the confirmation message if you wish to delete the selected data.

▶ SICAT Suite deletes the selected patient records and all 3D scans and planning projects therein from the active patient record depot and removes them from the **Patient records** list.

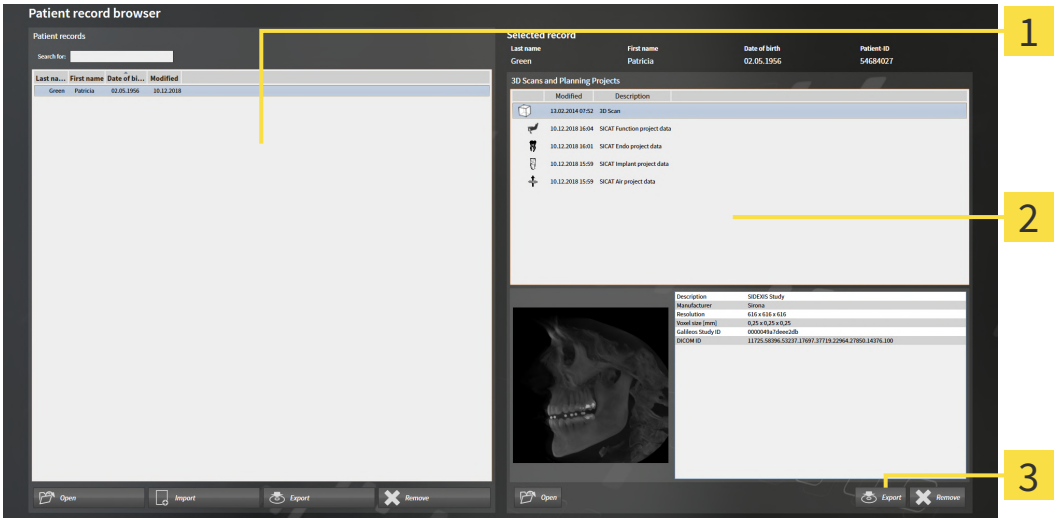
20.10 DELETING 3D X-RAY SCANS OR PLANNING PROJECTS FROM PATIENT RECORDS

⚠ **CAUTION**	**Deleted patient records, studies, 3D scans, and planning projects cannot be recovered.** Only delete patient records, studies, 3D scans, and planning projects if you are sure you will never need those data again.

⚠ **CAUTION**	**When deleting 3D scans, all dependent planning projects will be deleted as well.** Only delete 3D scans if you are sure you will never need any dependent planning project again.

To delete a 3D X-ray scan or planning project from a patient record, proceed as follows:

☑ The **Patient record browser** window is already open. Information on this can be found in the section *Opening the "Patient record browser" window [▶ Page 80 - Standalone]*.



1 **Patient records** list

2 **3D Scans and Planning Projects** list

3 **Delete** button

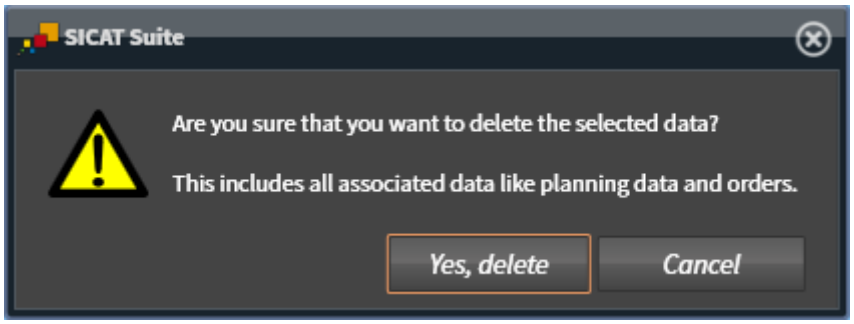
1. Select the desired patient record from the **Patient records** list in the **Patient record browser** window.

   ▶ In the **Selected record** area, the **3D Scans and Planning Projects** list shows all 3D X-ray scans and planning projects in the selected patient record.

2. Select the desired 3D X-ray scan or planning project from the **3D Scans and Planning Projects** list.

3. Click on the **Delete** button.

► A confirmation message opens:



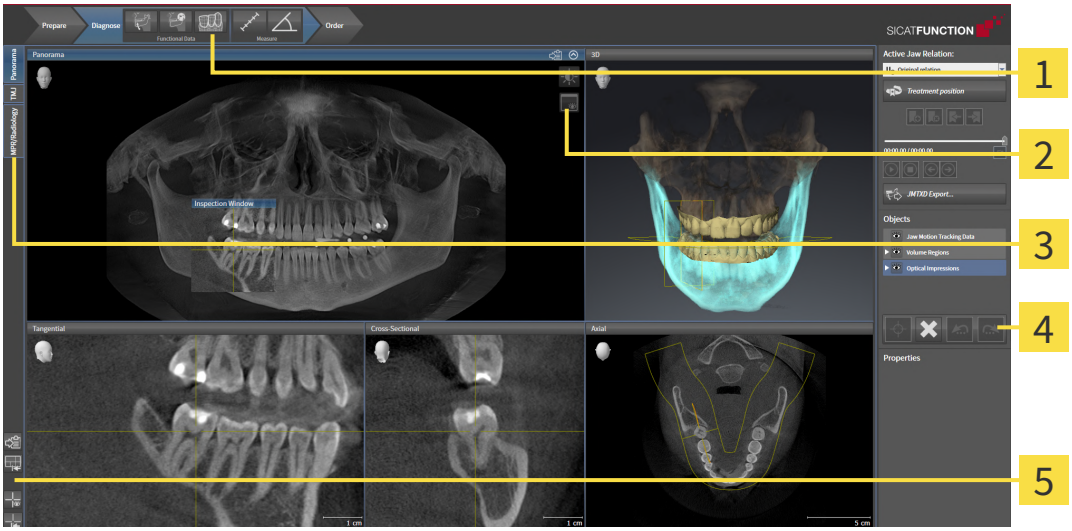
4. Click on **Yes, delete** in the confirmation message if you wish to delete the selected data.

► SICAT Suite deletes the selected 3D scan or planning project from the active patient record and removes it from the **3D Scans and Planning Projects** list.

	You can also delete 3D scans or planning projects from patient records in the **Active Patient Record** window. Information on this can be found in the section *Working with active patient records [►Page 84 - Standalone]*.

21 THE SICAT FUNCTION USER INTERFACE

The SICAT Function user interface comprises the following parts:



1 **Workflow toolbar**

2 **View toolbar**

3 Buttons to change workspaces

4 **Object bar**

5 **Workspace toolbar**

- The **Workflow toolbar** consists of various workflow steps, which include the main tools of the application workflow. This includes tools which you can use to add and import diagnosis objects and planning objects. Information on this can be found in the section *Workflow toolbar [▶Page 97 - Standalone]*.
- The **Workspace area** is the part of the user interface below the **Workflow toolbar**. It displays the active workspace of SICAT Function. Each workspace contains a specific combination of views. Information on this can be found in the section *Workspaces [▶Page 105 - Standalone]*.
- Only the active view shows the **View toolbar**. It contains tools to adjust the display to the corresponding view. For further information about this see *Adjusting the views [▶Page 115 - Standalone]* and *Adjusting the 3D view [▶Page 129 - Standalone]*.
- The **Object bar** contains tools for the management of diagnosis objects and planning objects. Information on this can be found in the section *Object bar [▶Page 99 - Standalone]*.
- The **Workspace toolbar** contains tools for changing the general settings of workspaces and all of the views they contain and for documenting the contents of workspaces. For further information about this, see *Moving, hiding and showing crosshairs and frames [▶Page 123 - Standalone]*, *Resetting views [▶Page 127 - Standalone]*, *Adjusting and resetting the layout of workspaces [▶Page 112 - Standalone]* and *Creating screenshots of workspaces [▶Page 113 - Standalone]*.

21.1 WORKFLOW TOOLBAR

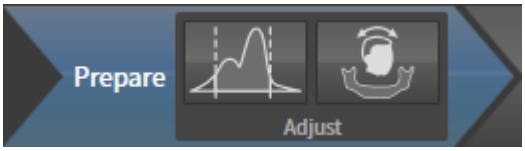
The **Workflow toolbar** in SICAT Function consists of three workflow steps:

1. **Prepare**
2. **Diagnose**
3. **Order**

EXPANDING AND COLLAPSING WORKFLOW STEPS

You can expand and collapse workflow steps by clicking on them.

1. WORKFLOW STEP "PREPARE"

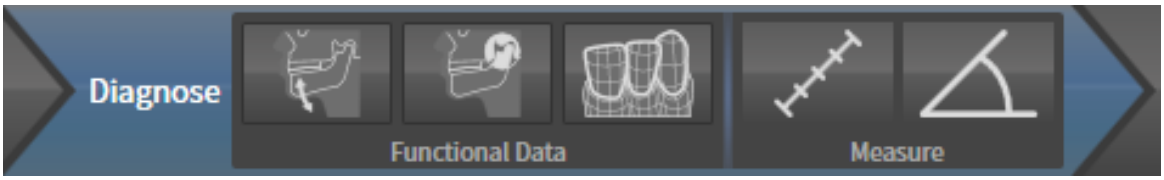


The following tools are available in the **Prepare** workflow step:

- **Adjust gray values** - Information on this can be found in the section *Adjusting gray scale values [▶Page 142 - Standalone]*. This tool is only available and required for volumes from non-Sirona devices.

- **Adjust volume orientation and panoramic region** - For further information see *Adjusting the volume orientation [▶Page 146 - Standalone]* and *Adjusting the panoramic region [▶Page 151 - Standalone]*.

2. WORKFLOW STEP "DIAGNOSE"



The following tools are available in the **Diagnose** workflow step:

- **Import and register jaw motion tracking data** - Information on this can be found in the section *Importing and registering jaw motion data [▶Page 156 - Standalone]*.

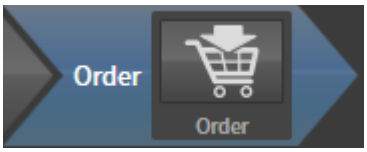
- **Segment condyles and mandible region** - Information on this can be found in the section *Segmentation [▶Page 161 - Standalone]*.

- **Import and register optical impressions** - Information on this can be found in the section *Optical impressions [▶Page 166 - Standalone]*.

- **Add distance measurement (D)** - Information on this can be found in the section *Adding distance measurements [▶Page 203 - Standalone]*.

- **Add angle measurement (A)** - Information on this can be found in the section *Adding angle measurements [▶Page 204 - Standalone]*.

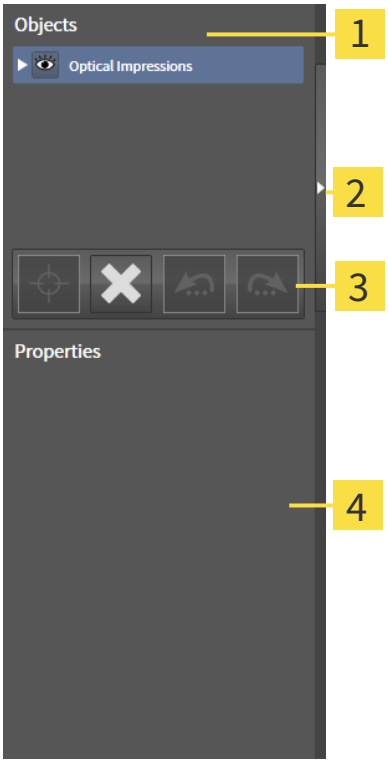
3. WORKFLOW STEP "ORDER"



The following tool is available in the **Order** workflow step:

- **Order Therapeutic Appliance** - Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶Page 213 - Standalone]*.

21.2 OBJECT BAR



1 **Object browser**

2 **Hide object bar** button or **Show object bar** button

3 **Object toolbar**

4 **Properties** area

The **Object bar** contains the following elements:

- The **Object browser** shows a categorized list of all diagnosis objects and planning objects that you have added or imported to the current study. The **Object browser** groups objects automatically. For example, the **Measurements** group contains all measurement objects. You can expand or collapse object groups, activate objects and object groups and show or hide objects and object groups. Information on this can be found in the section *Managing objects with the object browser [▶Page 100 - Standalone]*.
- The **Object toolbar** contains tools for focusing objects, removing objects or object groups and undoing or redoing object actions or object group actions. Information on this can be found in the section *Managing objects with the object toolbar [▶Page 102 - Standalone]*.
- The **Properties** area shows the details of the active object.

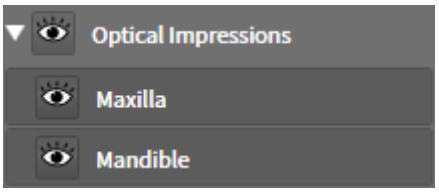
You can change the visibility of the **Object bar** using two buttons on the right side of the **Object bar**: **Hide object bar** and **Show object bar**

The objects available in SICAT Function can be found in the section *SICAT Function objects [▶Page 103 - Standalone]*.

21.3 MANAGING OBJECTS WITH THE OBJECT BROWSER

COLLAPSING AND EXPANDING OBJECT GROUPS

To collapse or expand an object group, proceed as follows:



☑ The desired object group is currently expanded.

1. Click on the **Collapse group** icon next to the desired object group.
   ▶ The object group collapses.

2. Click on the **Expand group** icon next to the desired object group.

▶ The object group expands.

ACTIVATING OBJECTS AND OBJECT GROUPS

Some tools are only available for active objects or object groups.

To activate an object or object group, proceed as follows:

☑ The desired object or the desired object group is currently deactivated.

- Click the desired object or the desired object group.

▶ SICAT Function deactivates a previously activated object or object group.

▶ SICAT Function activates the desired object or the desired object group.

▶ SICAT Function highlights the object or object group in **Object browser** and the views in a certain color.

In the 2D views, you can activate certain objects by clicking on the objects.

HIDING AND SHOWING OBJECTS AND OBJECT GROUPS

This function is available only for certain object types.

To hide and show an object or object group, proceed as follows:

☑ The desired object or the desired object group is currently shown.

1. Click on the **Shown** icon or **Some Shown** icon next to the desired object or object group.

► SICAT Function hides the object or object group.

► SICAT Function displays the **Hidden** icon next to the object or object group.

2. Click on the **Hidden** icon next to the desired object or object group.

► SICAT Function shows the object or object group.

► SICAT Function displays the **Shown** icon next to the object or object group.

21.4 MANAGING OBJECTS WITH THE OBJECT TOOLBAR

These functions are available only for certain object types.

FOCUSING ON OBJECTS

Use this function to find objects in the views.

To focus objects, proceed as follows:

☑ The desired object is already active. Information on this can be found in the section *Managing objects with the object browser [▶Page 100 - Standalone]*.

☑ The object can be focused.

- Click on the **Focus active object (F)** icon.

▶ SICAT Function moves the focus point of the views to the active object.

▶ SICAT Function displays the active object in the views.

You can also focus objects by double clicking on them in **Object browser** or in a view with the exception of the **3D** view.

REMOVING OBJECTS AND OBJECT GROUPS

To remove an object or object group, proceed as follows:

☑ The desired object or the desired object group is already active. Information on this can be found in the section *Managing objects with the object browser [▶Page 100 - Standalone]*.

- Click on the **Remove active object/group (Del)** icon.

▶ SICAT Function removes the object or object group.

UNDOING AND REDOING OBJECT ACTIONS

To undo and redo the last object action or group action, proceed as follows:

1. Click on the **Undo last object/group action (Ctrl+Z)** icon.
   ▶ SICAT Function undoes the last object action or group action.

2. Click on the **Redo object/group action (Ctrl+Y)** icon.

▶ SICAT Function redoes the last undone object action or group action.

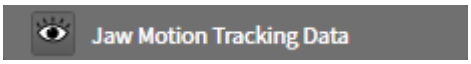
Undo and redo are only available as long as a study is open in a SICAT application.

21.5 SICAT FUNCTION OBJECTS

SICAT Function groups application-specific objects in the **Object browser** as follows:

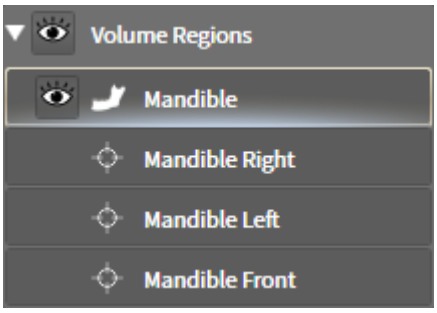
- **Jaw Motion Tracking Data**
- **Volume Regions**
  - **Mandible**
- **Optical Impressions**

JAW MOTION TRACKING DATA OBJECT



After you have imported jaw motion tracking data, SICAT Function displays a **Jaw Motion Tracking Data** object in the **Object browser**.

VOLUME REGIONS OBJECT ANDMANDIBLE OBJECT

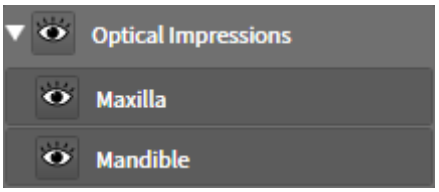


After you have segmented the mandible, SICAT Function displays a **Volume Regions** object in the **Object browser**. The **Volume Regions** object contains the **Mandible** object. The **Mandible** object contains the following sub-objects:

- **Mandible Left**
- **Mandible Right**
- **Mandible Front**

If you focus on one of these sub-objects, SICAT Function will focus all 2D views on the selected object.

OPTICAL IMPRESSION OBJECT



After you have imported and registered optical impressions, SICAT Function displays a **Optical Impressions** object in the **Object browser**. A **Optical Impressions** object contains the following sub-objects:

- **Maxilla**
- **Mandible**

If you focus on one of these sub-objects, SICAT Function will focus all 2D views on the selected object.

If you remove a **Maxilla** or a **Mandible**object, SICAT Function deletes all existing optical impressions from the study.

22 WORKSPACES

SICAT applications constitute studies in various views and assign combinations of views in workspaces.

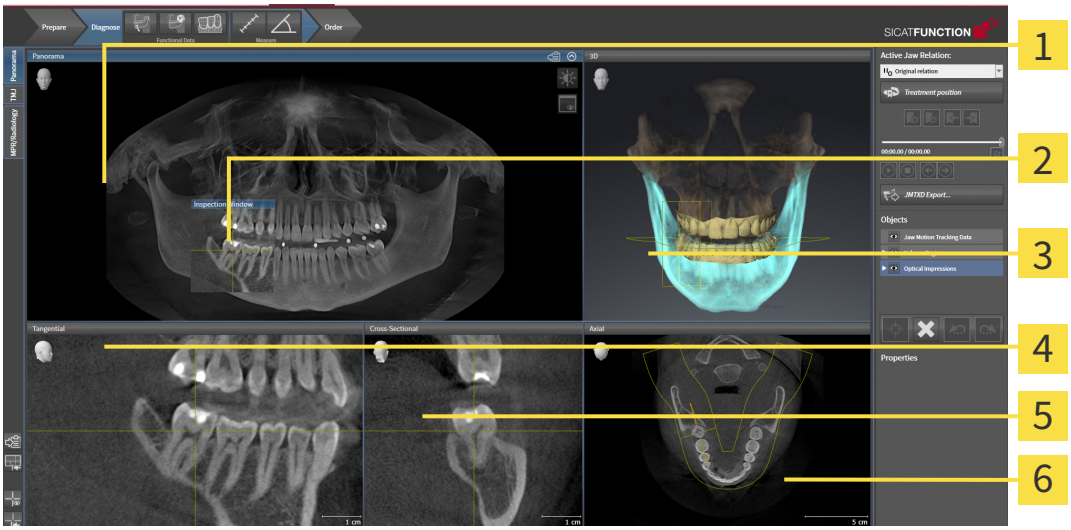
SICAT Function features three different workspaces:

- **Panorama** workspace - Information on this can be found in the section *Overview of the panoramic workspace [▶Page 106 - Standalone]*.
- **TMJ** workspace - Information on this can be found in the section *Overview of the TMJ workspace [▶Page 108 - Standalone]*.
- **MPR/Radiology** workspace - Information on this can be found in the section *Overview of the MPR/Radiology workspace [▶Page 110 - Standalone]*.

The following actions are available for workspaces and the views they contain:

- *Switching workspaces [▶Page 111 - Standalone]*.
- *Adjusting and resetting the layout of workspaces [▶Page 112 - Standalone]*.
- *Adjusting the views [▶Page 115 - Standalone]*.
- There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶Page 129 - Standalone]*.
- You can document the contents of the active workspace. Information on this can be found in the section *Creating screenshots of workspaces [▶Page 113 - Standalone]*.

22.1 OVERVIEW OF THE PANORAMIC WORKSPACE



1 **Panorama** view

2 **Inspection Window**

3 **3D** view

4 **Tangential** view

5 **Cross-Sectional** view

6 **Axial** view

PANORAMA VIEW

The **Panorama** view corresponds to a virtual orthopantomogram (OPG). It shows an orthogonal projection onto the panoramic curve with a certain thickness. You can adjust the panoramic curve and the thickness to both jaws. Information on this can be found in the section *Adjusting the panoramic region [▶Page 151 - Standalone]*.

INSPECTION WINDOW

The **Inspection Window** is embedded in the **Panorama** view. It adds the third dimension to the **Panorama** view by displaying slices parallel to the panoramic curve. You can move, hide, show and maximize the **Inspection Window**. Information on this can be found in the section *Moving, hiding, showing and maximizing the inspection window [▶Page 124 - Standalone]*.

3D VIEW

The **3D** view shows a 3D representation of the opened study.

TANGENTIAL VIEW

The **Tangential** view shows slices that are tangential to the panoramic curve.

CROSS-SECTIONAL VIEW

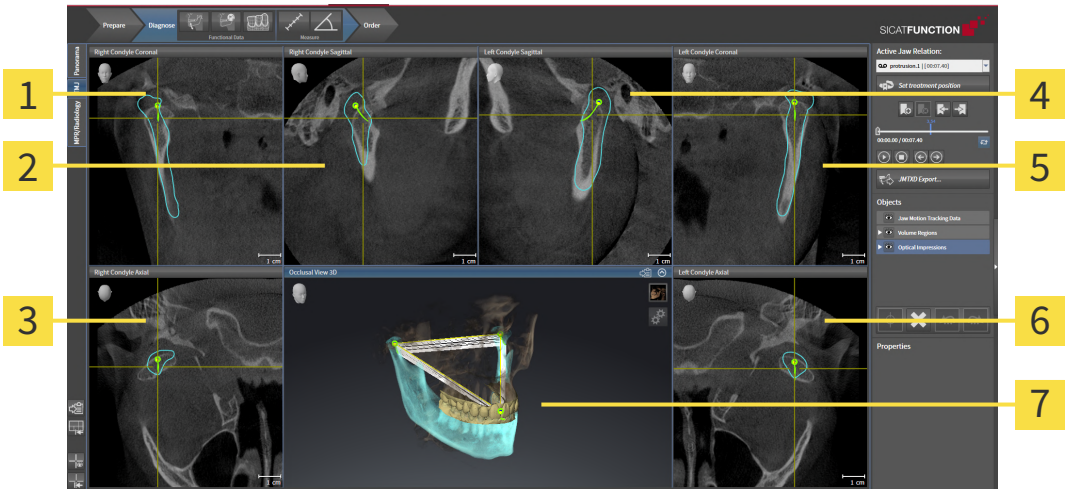
The **Cross-Sectional** view shows slices that are orthogonal to the panoramic curve.

AXIAL VIEW

By default, the **Axial** view shows slices from above. You can switch the viewing direction of the **Axial** view. Information on this can be found in the section *Changing visualization settings [▶Page 234 - Standalone]*.

You can find information on the functions of the views in the sections *Adjusting the views [▶Page 115 - Standalone]* and *Adjusting the 3D view [▶Page 129 - Standalone]*.

22.2 OVERVIEW OF THE TMJ WORKSPACE



1 **Right Condyle Coronal** view

2 **Right Condyle Sagittal** view

3 **Right Condyle Axial** view

4 **Left Condyle Sagittal** view

5 **Left Condyle Coronal** view

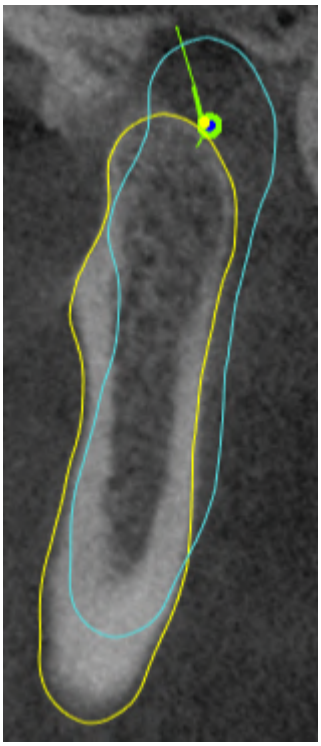
6 **Left Condyle Axial** view

7 **Occlusal View 3D**

You can select the individual anatomical articulation of a patient in the **Active Jaw Relation** and perform a diagnosis in the views. Information on the JMT area is found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*.

The **TMJ** workspace shows the left and right condyles at the same time. Depending on the CBCT device used, a direct comparison of both temporomandibular joints is possible. You can use this comparison to identify asymmetries in terms of the movement and morphology of the temporomandibular joints.

SICAT Function marks the moving condyles differently.

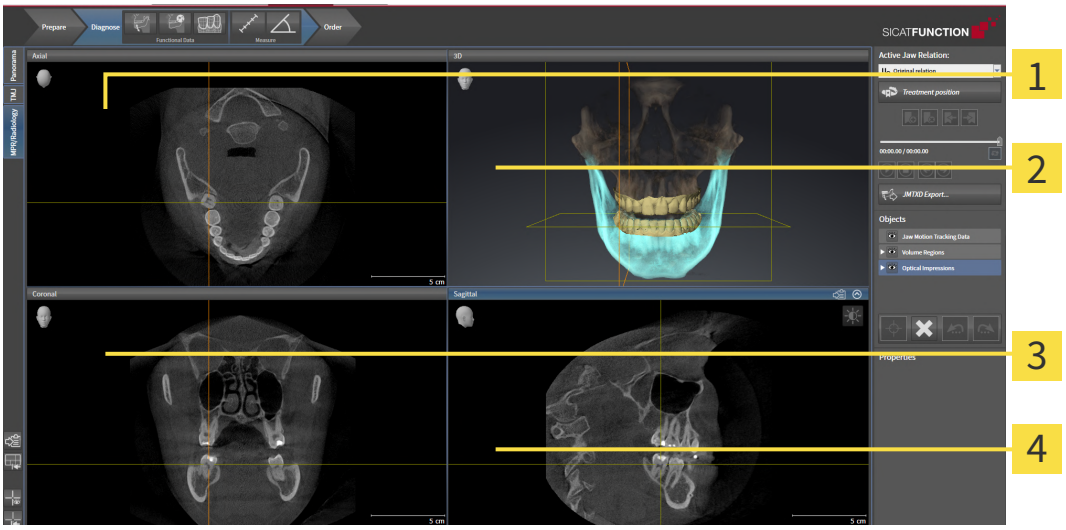


- SICAT Function shows moving condyles as a blue contour in the slice views.
- SICAT Function shows the segmentation boundary as a yellow contour in the slice views.
- SICAT Function shows moved condyles in the **3D** view as a blue 3D object.

To get a better comparison of the left and right temporomandibular joints, the views should be aligned to the median sagittal plane (mirror symmetry plane) of the head. Use the **Adjust Volume Orientation** function to compensate for misalignment during the 3D X-ray scan. Information on this can be found in the section *Adjusting the volume orientation [▶Page 146 - Standalone]*. For the volume orientation, ensure that the temporomandibular joints are as symmetrical as possible to the median sagittal plane.

There are additional options in the **TMJ** workspace to analyze jaw motion tracking data and volume regions. For further information about this, see *Functions in the TMJ workspace [▶Page 187 - Standalone]*, *Using the Bonwill triangle [▶Page 190 - Standalone]*, *Displaying the segmentation boundary [▶Page 191 - Standalone]* and *Displaying condyle-aligned movement [▶Page 192 - Standalone]*.

22.3 OVERVIEW OF THE MPR/RADIOLOGY WORKSPACE



1 **Axial** view

2 **3D** view

3 **Coronal** view

4 **Sagittal** view

AXIAL VIEW

By default, the **Axial** view shows slices from above. You can switch the viewing direction of the **Axial** view. Information on this can be found in the section *Changing visualization settings [▶Page 234 - Standalone]*.

3D VIEW

The **3D** view shows a 3D representation of the opened study.

CORONAL VIEW

The **Coronal** view shows slices from the front.

SAGITTAL VIEW

By default, the **Sagittal** view shows slices from the right. You can switch the viewing direction of the **Sagittal** view. Information on this can be found in the section *Changing visualization settings [▶Page 234 - Standalone]*.

The functions of the views can be found in the sections *Adjusting the views [▶Page 115 - Standalone]* and *Adjusting the 3D view [▶Page 129 - Standalone]*.

22.4 SWITCHING WORKSPACES

To switch the workspace, proceed as follows:

- Click on the tab of the desired workspace in the upper left corner of the workspace region.

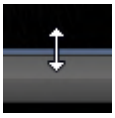
► The selected workspace opens.

22.5 ADJUSTING AND RESETTING THE LAYOUT OF WORKSPACES

ADJUSTING THE LAYOUT OF THE ACTIVE WORKSPACE

To adjust the layout of the active workspace, proceed as follows:

1. Move the mouse pointer over the border between two or more views.
   ► The mouse pointer changes:



2. Click and hold the left mouse button.
3. Move the mouse.
   ► The position of the border will change.
   ► The sizes of the views on all sides of the border will change.
4. Release the left mouse button.

► SICAT Function maintains the current position of the border and the current sizes of the views on all sides of the border.

RESETTING THE LAYOUT OF THE ACTIVE WORKSPACE

To reset the layout of the active workspace, proceed as follows:

- Click on the **Reset layout of active workspace** icon in the **Workspace toolbar**.

► SICAT Function resets the active workspace to the default layout. This means that the software displays all views in their default sizes.

22.6 CREATING SCREENSHOTS OF WORKSPACES

You can copy screenshots of the workspaces to the Windows clipboard for documentation purposes.

COPYING A SCREENSHOT OF A WORKSPACE TO THE WINDOWS CLIPBOARD

To copy a screenshot of a workspace to the Windows clipboard, proceed as follows:

☑ The desired workspace is already active. Information on this can be found in the section *Switching workspaces [▶Page 111 - Standalone]*.

- Click on the **Copy screenshot of active workspace to clipboard** icon in the workspace toolbar.

▶ SICAT Function copies a screenshot of a workspace to the Windows clipboard.

You can add screenshots from the clipboard to several applications, such as image processing software and word processors. In most applications, the paste shortcut key is Ctrl+V.

23 VIEWS

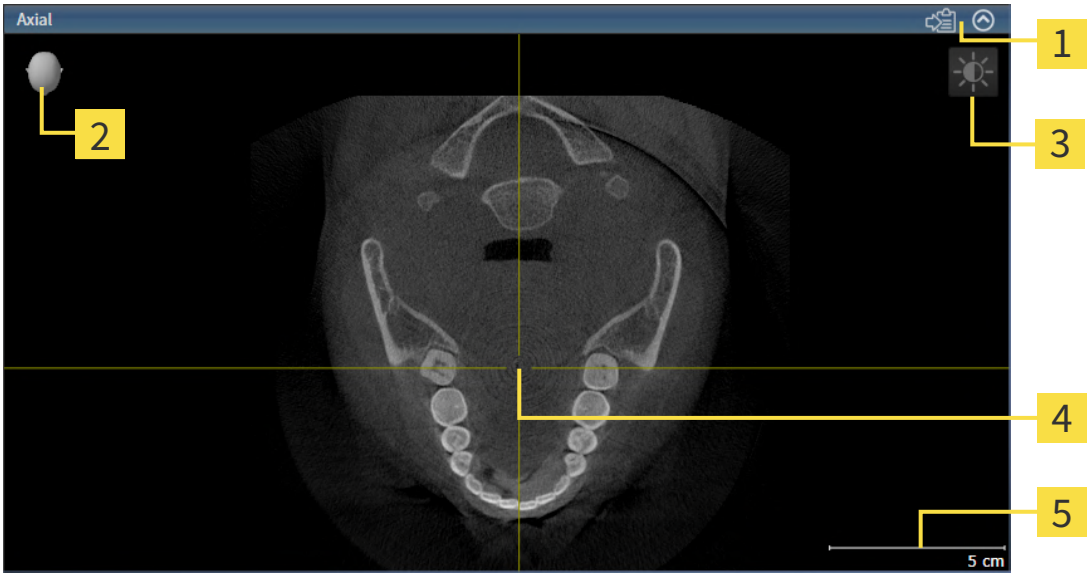
Views are contained in workspaces. A description of the various workspaces and views can be found under *Workspaces [▶Page 105 - Standalone]*.

You can adjust the views. For further information about this see *Adjusting the views [▶Page 115 - Standalone]* and *Adjusting the 3D view [▶Page 129 - Standalone]*.

23.1 ADJUSTING THE VIEWS

Some tools to adjust the views are only available for the active view. Information on how to activate a view can be found under *Changing the active view [▶Page 117 - Standalone]*.

An active view contains the following elements:



1 Title bar	4 Crosshair
2 Orientation head	5 Scale
3 View toolbar	

2D slice views display crosshairs. Crosshairs are lines of intersection with other slice views. SICAT Function synchronizes all slice views with each other. This means that all crosshairs show the same position within the 3D X-ray data. You can use this to match anatomical structures beyond the views.

The **3D** view shows frames, which illustrate the current position of the 2D slice views.

The following actions are available to adjust the views:

- *Changing the active view [▶Page 117 - Standalone]*
- *Maximizing and restoring views [▶Page 118 - Standalone]*
- *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 119 - Standalone]*
- *Zooming views and panning views [▶Page 121 - Standalone]*
- *Scrolling through slices in the 2D slice views [▶Page 122 - Standalone]*
- *Moving, hiding and showing crosshairs and frames [▶Page 123 - Standalone]*
- *Moving, hiding, showing and maximizing the inspection window [▶Page 124 - Standalone]*
- *Tilting views [▶Page 126 - Standalone]*
- *Resetting views [▶Page 127 - Standalone]*

There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶Page 129 - Standalone]*.

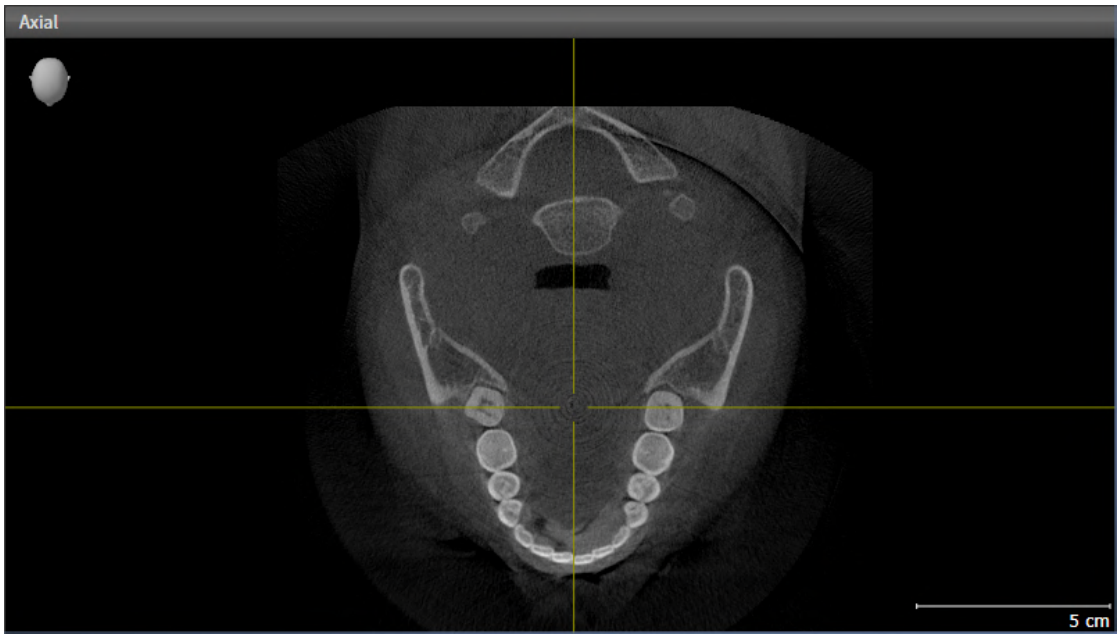
You can document the content of an active view. Information on this can be found in the section *Creating screenshots of views [▶ Page 128 - Standalone]*.

23.2 CHANGING THE ACTIVE VIEW

Only the active view shows the **View toolbar** and the title bar.

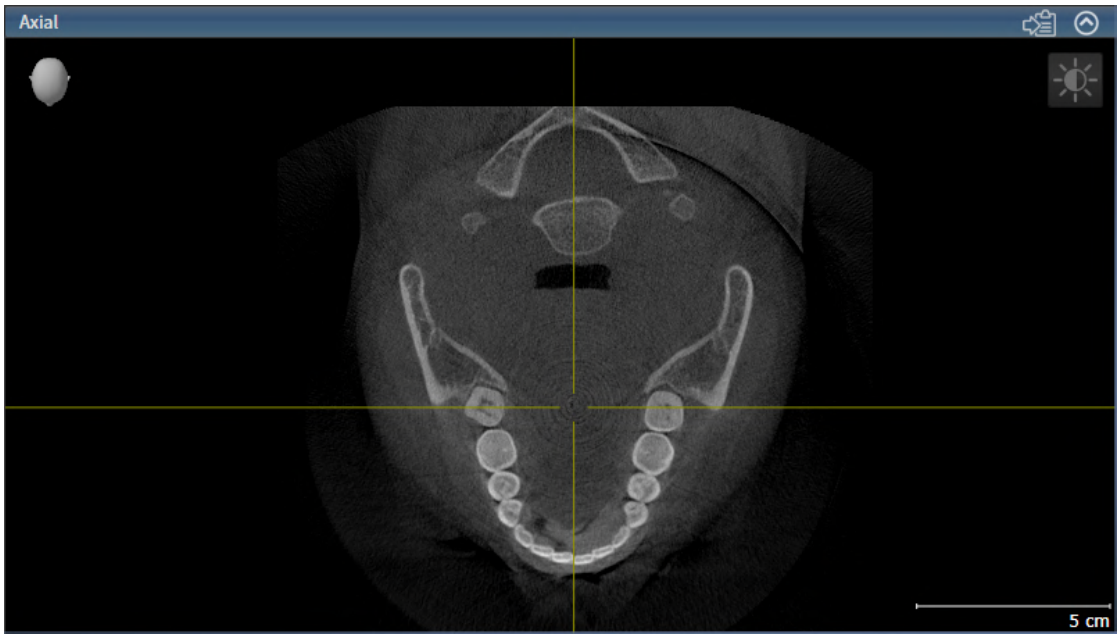
To activate a view, proceed as follows:

1. Place the mouse pointer over the desired view:



2. Click the desired view.

► SICAT Function activates the view:



You can identify the activated view by the blue title bar.

23.3 MAXIMIZING AND RESTORING VIEWS

To maximize a view and restore it to its previous size, proceed as follows:

☑ The desired view is already active. Information on this can be found in the section *Changing the active view [▶Page 117 - Standalone]*.

☑ The desired view is not maximized.

1. Click on the **Maximize** icon in the title bar of the desired view.

   ▶ SICAT Function maximizes the view.

2. Click on the **Restore** icon in the title bar of the maximized view.

   ▶ SICAT Function restores the view to its previous size.

The following alternatives are available to maximize views and restore them to their previous size:

- To maximize a view, you can also double click on the title bar of the view you require.
- To restore a view to its previous size, you can also double click on the title bar of the maximized view.

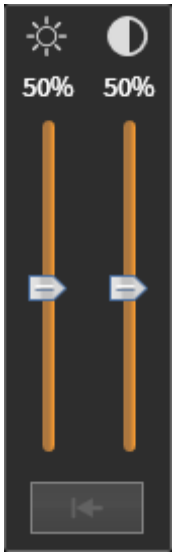
23.4 ADJUSTING AND RESETTING THE BRIGHTNESS AND CONTRAST OF THE 2D VIEWS

To adjust the brightness and contrast of a 2D view, proceed as follows:

☑ The desired 2D view is already active. Information on this can be found in the section *Changing the active view [▶Page 117 - Standalone]*.

1. Place the mouse pointer over the **Adjust brightness and contrast** icon in the **View toolbar** of the 2D view.

   ▶ The transparent **Adjust brightness and contrast** window opens:



2. Move the mouse pointer over the **Brightness** slider.
3. Click and hold the left mouse button and move the mouse up or down.

   ▶ SICAT Function adjusts the brightness of the 2D view according to the position of the **Brightness** slider.

4. Release the left mouse button.

   ▶ SICAT Function maintains the current brightness of the 2D view.

5. Move the mouse pointer over the **Contrast** slider.
6. Click and hold the left mouse button and move the mouse up or down.

   ▶ SICAT Function adjusts the contrast of the 2D view according to the position of the **Contrast** slider.

7. Release the left mouse button.

   ▶ SICAT Function maintains the current contrast of the 2D view.

8. Move the mouse pointer out of the transparent **Adjust brightness and contrast** window.

▶ The transparent **Adjust brightness and contrast** window closes.

To reset the brightness and contrast of the 2D view to the default values, click on the **Reset brightness and contrast** icon.

The brightness and contrast of all 2D slice views are linked together.

23.5 ZOOMING VIEWS AND PANNING VIEWS

ZOOMING A VIEW

Zooming magnifies or shrinks the contents of a view.

To zoom a view, proceed as follows:

1. Place the mouse pointer over the desired view.
2. Move the mouse wheel forwards.
   ▶ The view will zoom in.
3. Move the mouse wheel backwards.

▶ The view will zoom out.

Alternatively, you can click on the mouse wheel and move the mouse up and down to zoom in or out.

PANNING A VIEW

To move a section in a view, proceed as follows:

1. Place the mouse pointer over the desired view.
2. Press and hold down the right mouse button.
   ▶ The mouse pointer changes.
3. Move the mouse.
   ▶ The section in the view will move according to the movement of the mouse pointer.
4. Release the right mouse button.

▶ SICAT Function maintains the current position of the view.

23.6 SCROLLING THROUGH SLICES IN THE 2D SLICE VIEWS

To scroll through slices in a 2D slice view, proceed as follows:

1. Move the mouse pointer over the desired 2D slice view.
2. Click and hold the left mouse button.
   ▶ The mouse pointer becomes a two-way arrow.
3. Move the mouse up or down as desired.
   ▶ With the exception of the **Cross-Sectional** slice, all slices move in parallel.
   ▶ The **Cross-Sectional** slice moves along the panoramic curve.
   ▶ SICAT Function adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Function adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Function maintains the current slice.

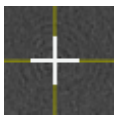
23.7 MOVING, HIDING AND SHOWING CROSSHAIRS AND FRAMES

MOVING A CROSSHAIR

To move the crosshair in a 2D slice view, proceed as follows:

☑ All crosshairs and frames are currently shown.

1. Move the mouse pointer in the view you require to the middle of the crosshair.
   ▶ The mouse pointer becomes a crosshair:



2. Click and hold the left mouse button.
3. Move the mouse.
   ▶ The crosshair in the view will track the movements of the mouse.
   ▶ SICAT Function adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Function adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Function maintains the current position of the crosshair.

To immediately move the crosshair to the position of the mouse pointer, you can also double click in a 2D view.

HIDING AND SHOWING CROSSHAIRS AND FRAMES

To hide and show all crosshairs and frames, proceed as follows:

☑ All crosshairs and frames are currently shown.

1. Click on the **Hide crosshairs and frames** icon in the **Workspace toolbar**.
   ▶ SICAT Function hides the crosshairs in all 2D slice views.
   ▶ SICAT Function hides the frames in the **3D** view.

2. Click on the **Show crosshairs and frames** icon.
   ▶ SICAT Function shows the crosshairs in all 2D slice views.
   ▶ SICAT Function shows the frames in the **3D** view.

23.8 MOVING, HIDING, SHOWING AND MAXIMIZING THE INSPECTION WINDOW

MOVING THE INSPECTION WINDOW

To move the **Inspection Window**, proceed as follows:

☑ The **Panorama** workspace is already open. Information on this can be found in the section *Changing the active workspace [▶Page 111 - Standalone]*.

☑ The **Inspection Window** is already shown:

1. Place the mouse pointer on the **Inspection Window** title bar in the **Panorama** view.
   ▶ The mouse pointer becomes a hand.
2. Click and hold the left mouse button.
3. Move the mouse.
   ▶ The **Inspection Window** tracks the movement of the mouse pointer.
   ▶ SICAT Function adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Function adjusts the frames of the **3D** view according to the current focus point.
4. Release the left mouse button.

▶ SICAT Function maintains the current **Inspection Window** position.

HIDING, SHOWING AND MAXIMIZING THE INSPECTION WINDOW

The **Set inspection window** icon is both a status indicator and a switch.

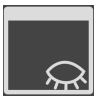
To hide, show and maximize the **Inspection Window**, proceed as follows:

☑ The **Panorama** workspace is already open. Information on this can be found in the section *Switching workspaces [▶Page 111 - Standalone]*.

☑ The **Inspection Window** is already shown.

1. Place the mouse pointer over the **Set inspection window** icon in the **View toolbar** of the **Panorama** view.

   ▶ SICAT Function displays the icons for setting the inspection window:



2. Click on the **Hide inspection window** icon.

   ▶ SICAT Function hides the **Inspection Window**.

3. Click on the **Use default inspection window size** icon.

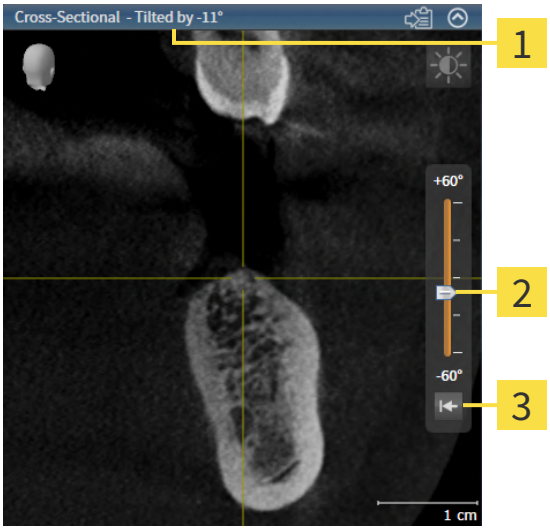
   ▶ SICAT Function shows the **Inspection Window**.

4. Click on the **Show maximized inspection window** icon.

   ▶ SICAT Function maximizes the inspection window.

23.9 TILTING VIEWS

In the **Panorama** workspace, you can tilt the **Tangential** and **Cross-Sectional** views. This allows you to optimize alignment in both views for viewing a specific anatomical structure (e. g. a tooth) or a planning object.



1 Currently set tilt

2 Slider for tilt adjustment

3 **Reset tilt** button

☑ The **Panorama** workspace is already open. Information on this can be found in the section *Switching workspaces [▶Page 111 - Standalone]*.

☑ The **Tangential** or **Cross-Sectional** view is already active. Information on this can be found in the section *Changing the active view [▶Page 117 - Standalone]*.

- To adjust the tilt, move the slider up or down to the desired tilt while pressing the mouse key. You can also change the tilt by clicking on the slider and using the **Up** and **Down** arrow keys.

▶ SICAT Function tilts the active view and shows the currently set tilt in the title bar of the active view.

▶ SICAT Function updates the line of the crosshair in the **Tangential** or **Cross-Sectional** view.

▶ SICAT Function tilts the corresponding frame in the **3D** view.

You can reset the tilt to 0° by clicking the **Reset tilt** button.

23.10 RESETTING VIEWS

To reset all views, proceed as follows:

- Click on the **Workspace toolbar** icon in the **Reset views**.

► SICAT Function resets all views to the default values for zoom, panning, scrolling, moving the crosshairs and moving the **Inspection Window**.

► SICAT Function resets the viewing direction of the **3D** view to the default value.

► SICAT Function resets the tilt of views to 0°.

23.11 CREATING SCREENSHOTS OF VIEWS

You can take screenshots of the views to document them and output screenshots in the following ways:

- Copying to the Windows clipboard.

COPYING A SCREENSHOT OF A VIEW TO THE WINDOWS CLIPBOARD

To copy a screenshot of a view to the Windows clipboard, proceed as follows:

☑ The desired view is already active. Information on this can be found in the section *Changing the active view [▶Page 117 - Standalone]*.

- Click on the **Copy screenshot to clipboard (Ctrl+C)** icon in the title bar of the view.

▶ SICAT Function copies a screenshot of the view to the Windows clipboard.

You can add screenshots from the clipboard to several applications, such as image processing software and word processors. In most applications, the paste shortcut key is Ctrl+V.

24 ADJUSTING THE 3D VIEW

You can change the direction of the **3D** view at any time. Information on this can be found in the section *Changing the direction of the 3D view [▶Page 130 - Standalone]*.

The following actions are available to configure the **3D** view:

- *Switching the display mode of the 3D view [▶Page 134 - Standalone]*
- *Configuring the active display mode of the 3D view [▶Page 135 - Standalone]*
- *Moving a clipping [▶Page 137 - Standalone]*
- *Switching off and switching on the display of optical impressions in color [▶Page 139 - Standalone]*

24.1 CHANGING THE DIRECTION OF THE 3D VIEW

There are two ways to change the direction of the **3D** view:

- Interactive changes
- Selecting a standard viewing direction

INTERACTIVELY CHANGING THE DIRECTION OF THE 3D VIEW

To interactively change the direction of the **3D** view, proceed as follows:

1. Place the mouse pointer on the **3D** view.
2. Click and hold the left mouse button.
   ▶ The mouse pointer becomes a hand.
3. Move the mouse.
   ▶ The viewing direction changes according to the movement of the mouse.
4. Release the left mouse button.

▶ SICAT Function keeps the current viewing direction of the **3D** view.

SELECTING A STANDARD VIEWING DIRECTION

To select a standard viewing direction in the **3D** view, proceed as follows:

1. Place the mouse pointer over the Orientation head icon in the top left corner of the **3D** view.
   ▶ The transparent **Viewing direction** window opens:

   ▶ In the middle of the transparent **Viewing direction** window, the highlighted Orientation head shows the current viewing direction.
2. Click on the Orientation head icon that shows the desired standard viewing direction.
   ▶ The direction of the **3D** view changes according to your selection.
3. Move the mouse pointer out of the transparent **Viewing direction** window.

▶ The transparent **Viewing direction** window closes.

24.2 DISPLAY MODES OF THE 3D VIEW

General information on the **3D** view can be found in the section *Adjusting the 3D view [▶ Page 129 - Standalone]*.

SICAT Function offers a total of two different display modes for the **3D** view:

- The **Overview** display mode provides an overview of the entire 3D X-ray scan.

- The **Clipped** display mode shows only one section of the 3D X-ray scan, which can be panned.

Information on how to activate a display mode of the **3D** view can be found in the section *Switching the display mode of the 3D view [▶Page 134 - Standalone]*.

Information on how to configure the active display mode can be found in the section *Configuring the active display mode of the 3D view [▶Page 135 - Standalone]*.

24.3 SWITCHING THE DISPLAY MODE OF THE 3D VIEW

All display modes are available in all workspaces.

To change the display mode of the **3D** view, proceed as follows:

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶Page 117 - Standalone]*.

1. Place the mouse pointer over the **Switch display mode** icon in the **View toolbar** of the **3D** view.
   ▶ The transparent **Switch display mode** window opens:

2. Click on the icon for the desired display mode.
   ▶ SICAT Function activates the desired display mode.
3. Move the mouse pointer out of the transparent **Switch display mode** window.

▶ The transparent **Switch display mode** window closes.

24.4 CONFIGURING THE ACTIVE DISPLAY MODE OF THE 3D VIEW

Only configurable display modes show the **Configure active display mode** icon. The transparent **Configure active display mode** window only shows the settings that are relevant for the active display mode.

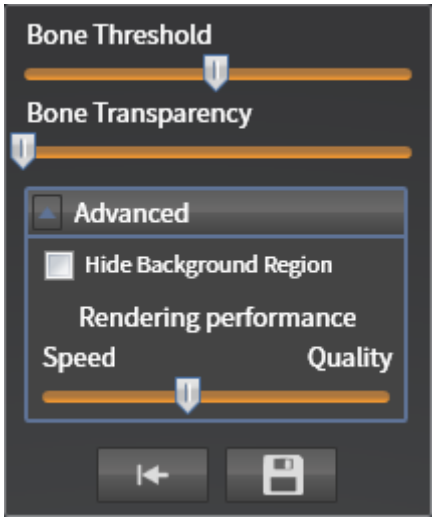
To configure the active display mode of the **3D** view, proceed as follows:

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶Page 117 - Standalone]*.

☑ The desired display mode is already active. Information on this can be found in the section *Switching the display mode of the 3D view [▶Page 134 - Standalone]*.

☑ The active display mode is configurable.

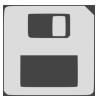
1. Place the mouse pointer over the **Configure active display mode** icon in the **View toolbar** of the **3D** view.
   ▶ The transparent **Configure active display mode** window opens:



2. Move the slider you require.
   ▶ SICAT Function adjusts the **3D** view according to the position of the slider.
3. Where available, click on the arrow icon next to .**Advanced**.
   ▶ The **Advanced** area expands.
4. Activate or deactivate the available check box.
   ▶ SICAT Function adjusts the **3D** view according to the status of the check box.
5. Move the slider you require.
   ▶ SICAT Function adjusts the **3D** view according to the position of the slider.
6. Move the mouse pointer out of the transparent **Configure active display mode** window.

▶ The transparent **Configure active display mode** window closes.

You can reset to the default settings by clicking the **Reset configuration of active display mode to default values** button.



You can save the current settings as default settings by clicking the **Save configuration of active display mode as default values** button.

Where available, move the **Rendering performance** slider further left on slow computers.

24.5 MOVING A CLIPPING

General information on the **3D** view can be found in the section *Adjusting the 3D view [▶Page 129 - Standalone]*.

With the **Clipped** display mode, you can hide parts of the volume of the **3D** view. SICAT Function then only displays one slice section of the volume and SICAT Function will synchronize its position with the crosshair. To move the slice section, proceed as follows:

☑ You have already activated the **Clipped** display mode. Information on this can be found in the section *Switching the display mode of the 3D view [▶Page 134 - Standalone]*.

- In the **Axial** view, **Coronal** view or **Sagittal** view, scroll to the desired slice. Information on this can be found in the section *Scrolling through slices in the 2D slice views [▶Page 122 - Standalone]*.

▶ SICAT Function moves the slice section image according to the selected slice:

24.6 SWITCHING OFF AND SWITCHING ON THE DISPLAY OF OPTICAL IMPRESSIONS IN COLOR

In the **3D** view, optical impressions are automatically displayed in color if you have previously imported optical impressions in color and display in color is activated.

You can switch the display of optical impressions in color to a monochrome display if only the exact recognition of the shape and geometry is important.

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶Page 117 - Standalone]*.

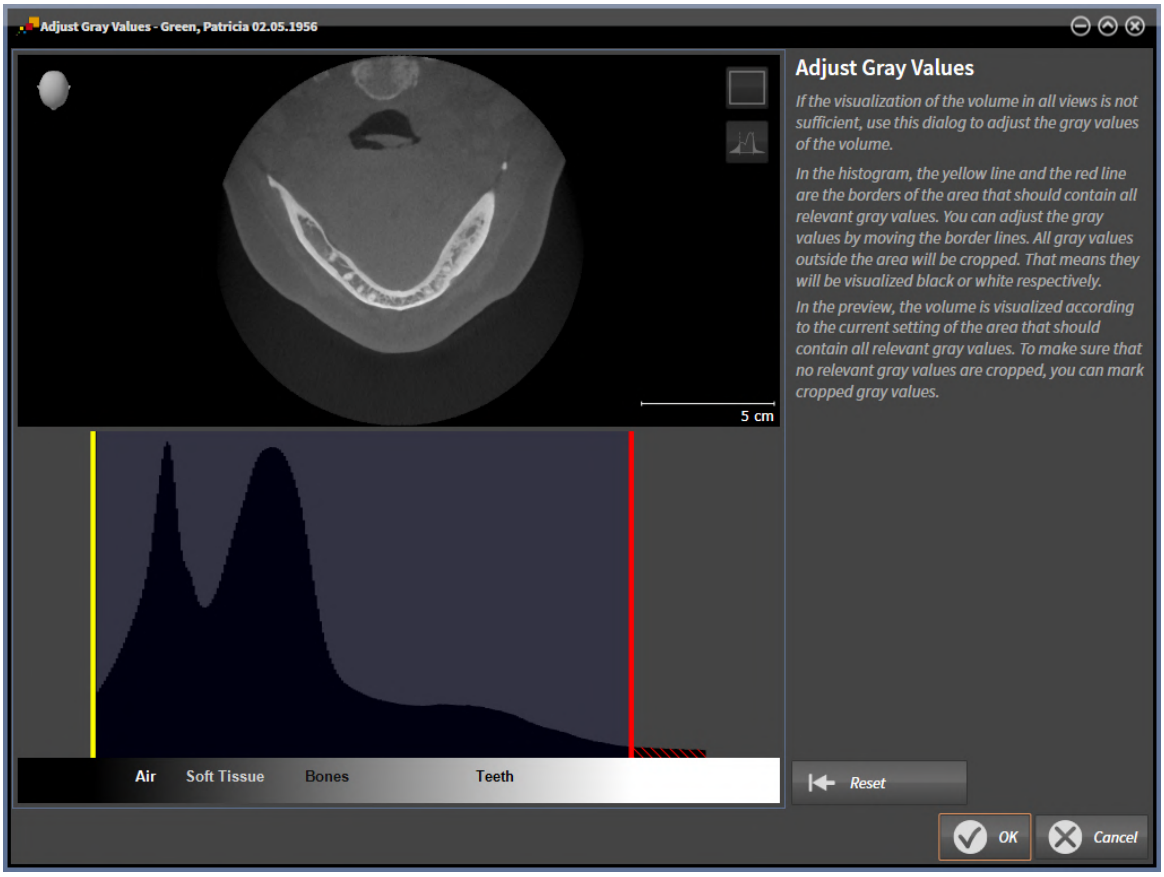
1. Click on the **Turn the colored display for optical impressions off** icon in the **View toolbar**.
   ▶ SICAT Function switches from display in color to monochrome display.

2. Click on the **Turn the colored display for optical impressions on** icon in the **View toolbar**.
   ▶ SICAT Function switches from monochrome display to display in color.

25 GRAY SCALE VALUES

You can only adjust gray scale values for volumes, which have been created by non-Sirona 3D X-ray devices.

If the illustration of the volume is insufficient, you can adjust the gray scale values of the volume in the **Adjust Gray Values** window:



The **Adjust Gray Values** window has two parts:

- The upper section shows an **Axial** slice view or a **Coronal** projection view.
- The lower section shows a histogram with the frequency distribution of the gray scale values.

In the histogram, the yellow and red lines show the borders of the area, which should contain all of the relevant gray scale values. You can adjust the gray scale values by moving the limits. SICAT Function cuts all gray scale values outside the area. This means that the software shows them either in black or white.

SICAT Function displays the volume in the **Axial** slice view or **Axial** projection view according to the area which should contain all of the relevant gray scale values. To ensure that SICAT Function does not hide any relevant image information, the software can label gray scale values that have been cropped out.

In the **Axial** slice view, you can scroll through the layers and check them for cropped-out gray values.

In the **Coronal** projection view, you can check all slices for cropped-out gray values simultaneously.

Only adjust the gray scale values if the illustration of the volume is insufficient in all views. Information on this can be found in the section *Adjusting gray scale values [▶Page 142 - Standalone]*.

For example, to highlight certain anatomical structures, you can temporarily adjust the brightness and contrast of the 2D views. Information on this can be found in the section *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 119 - Standalone]*.

You can also adjust the display of the **3D** view. For further information see *Switching the display mode of the 3D view [▶Page 134 - Standalone]*, *Configuring the active display mode of the 3D view [▶Page 135 - Standalone]* and Changing the clipping mode of the 3D view.

25.1 ADJUSTING GRAY SCALE VALUES

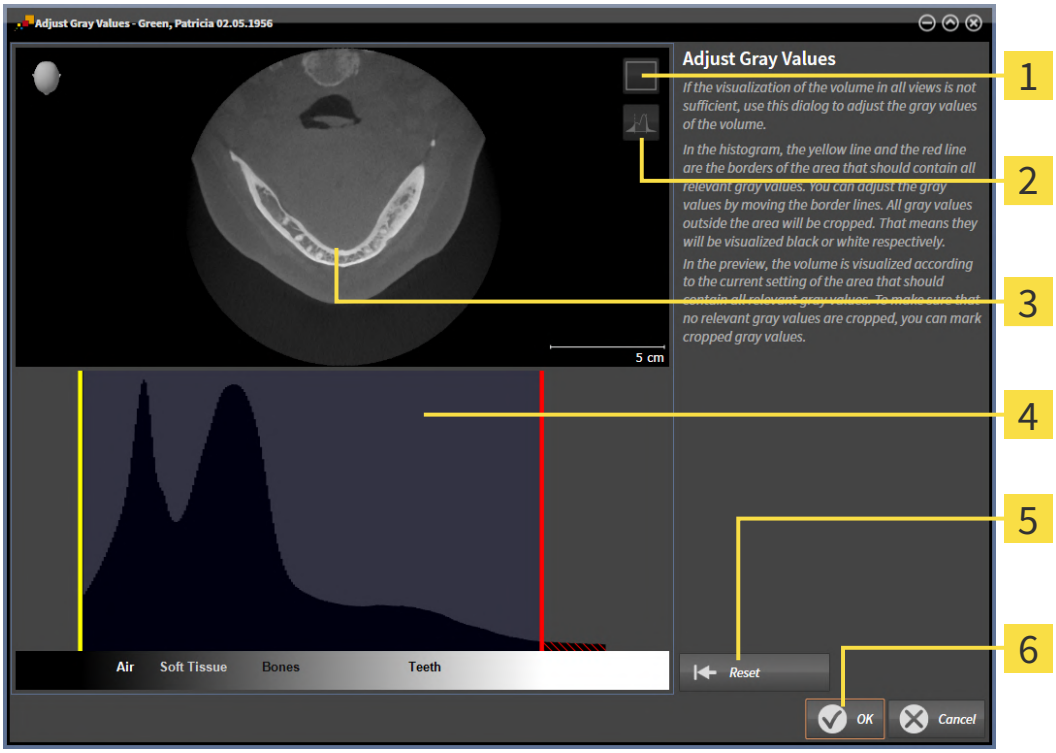
General information on gray scale values can be found in the section *Gray scale values [▶ Page 140 - Standalone]*.

To adjust the gray scale values of the volume, proceed as follows:

☑ The **Prepare** workflow step is already expanded.

1. Click on the **Adjust gray values** icon.

   ▶ The **Adjust Gray Values** window opens:



1 **Enable coronal projection mode** icon or **Enable axial slices mode** icon

2 **Unmark cropped gray values** icon or **Mark cropped gray values** icon

3 **Axial** slice view or **Coronal** projection view

4 Histogram

5 **Reset** button

6 **OK** button

2. Make sure that the axial slice mode is active. Click on the **Enable axial slices mode** icon if necessary.

3. Move the yellow line to adjust the lower border of the area, which should contain all of the relevant gray scale values.

   ▶ SICAT Function adjusts all gray scale values in the **Axial** slice view accordingly.

▶ SICAT Function marks all gray scale values beneath the lowest relevant gray scale value in yellow.

4. Scroll through the axial slices. Make sure that all of the relevant gray scale values have not been marked yellow. Move the yellow line again if necessary.

5. Move the red line to adjust the upper border of the area, which should contain all of the relevant gray scale values.
   ▶ SICAT Function adjusts all gray scale values in the **Axial** slice view accordingly.
   ▶ SICAT Function labels all gray scale values above the highest relevant gray scale value in red.

6. Scroll through the axial slices. Make sure that all of the relevant gray scale values have not been marked red. Move the red line again if necessary.

7. Click **OK**.

▶ The **Adjust Gray Values** window closes and SICAT Function displays the volume with the correspondingly adjusted gray scale values in all views.

In addition to the described process, the following actions are available in the **Adjust Gray Values** window:

- To assess all of the layers at once, click on the **Enable coronal projection mode** icon. Click on the **Enable axial slices mode** icon to switch back to the **Axial** slice view.
- To move both borders at once, you can click on and move the area, which should contain all of the relevant gray scale values.
- To reset the area, which should contain all of the relevant gray scale values, to the default settings, click on the **Reset** button.
- If you do not want to mark the cut-out gray scale values, click on the **Unmark cropped gray values** icon.
- If you do not want to save your changes, click **Cancel**.

26 ADJUSTING VOLUME ORIENTATION AND PANORAMIC REGION

If an adjustment of the volume orientation is required, perform this when starting work on the 3D X-ray scan. If you adjust the volume orientation later, you may have to repeat your diagnosis or planning under certain circumstances.

VOLUME ORIENTATION

You can adjust the volume orientation for all views by rotating the volume around the three principal axes. This may be necessary in the following cases:

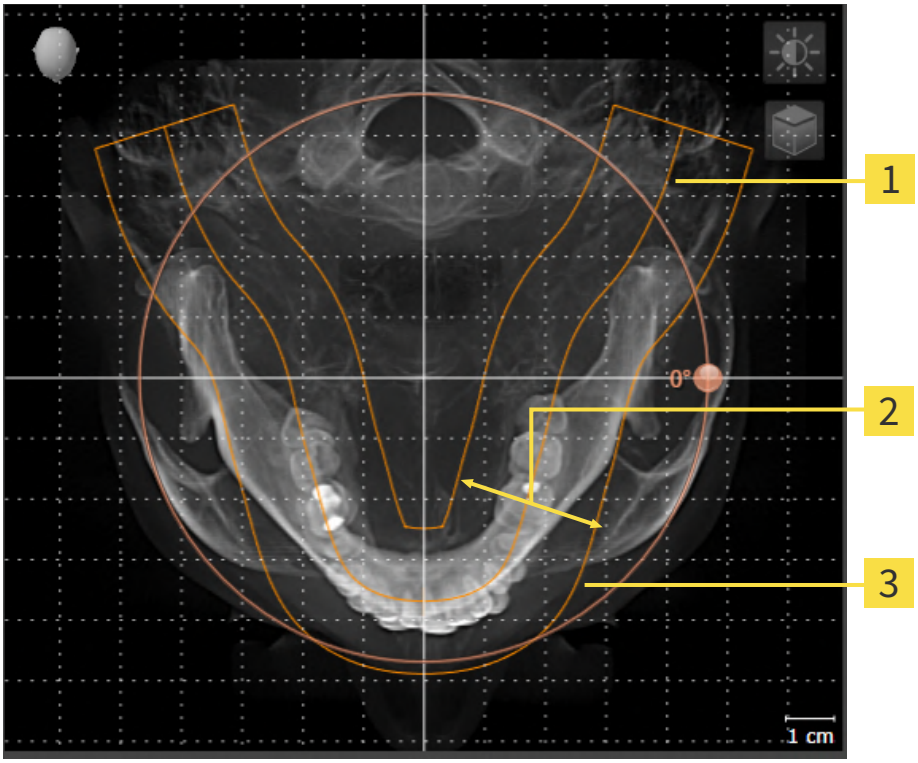
- Sub-optimal positioning of the patient during the 3D X-ray scan
- Orientation according to case, for example orientation of the axial slices parallel to the Frankfurt plane or parallel to the bite plane
- Optimizing the **Panorama** view

If you adjust the volume orientation in SICAT Function, SICAT Function applies your settings to your currently open planning.

Information on how to adjust the volume orientation can be found in the section *Adjusting the volume orientation [▶Page 146 - Standalone]*.

PANORAMIC REGION

SICAT Function calculates the **Panorama** view on the basis of the volume and panoramic region. To optimize the **Panorama** view, you should adjust the panoramic region to both jaws of the patient. This is vital for effective and efficient diagnosis and treatment planning.



1 Panoramic curve

2 Thickness

3 Panoramic region

The panoramic region is defined by the two following components:

- Shape and position of the panoramic curve
- Thickness of the panoramic region

Both of the following conditions must be met to optimally adjust the panoramic region:

- The panoramic region must contain all teeth and both jaws in full.
- The panoramic region should be as thin as possible.

If you adjust the panoramic region in SICAT Function, SICAT Function applies your settings to your currently open planning.

Information on adjusting the panoramic region can be found in the section *Adjusting the panoramic region [▶Page 151 - Standalone]*.

26.1 ADJUSTING THE VOLUME ORIENTATION

General information on volume orientation can be found in the section *Adjusting volume orientation and panoramic region [▶Page 144 - Standalone]*.

The adjustment of the volume orientation consists of the following steps:

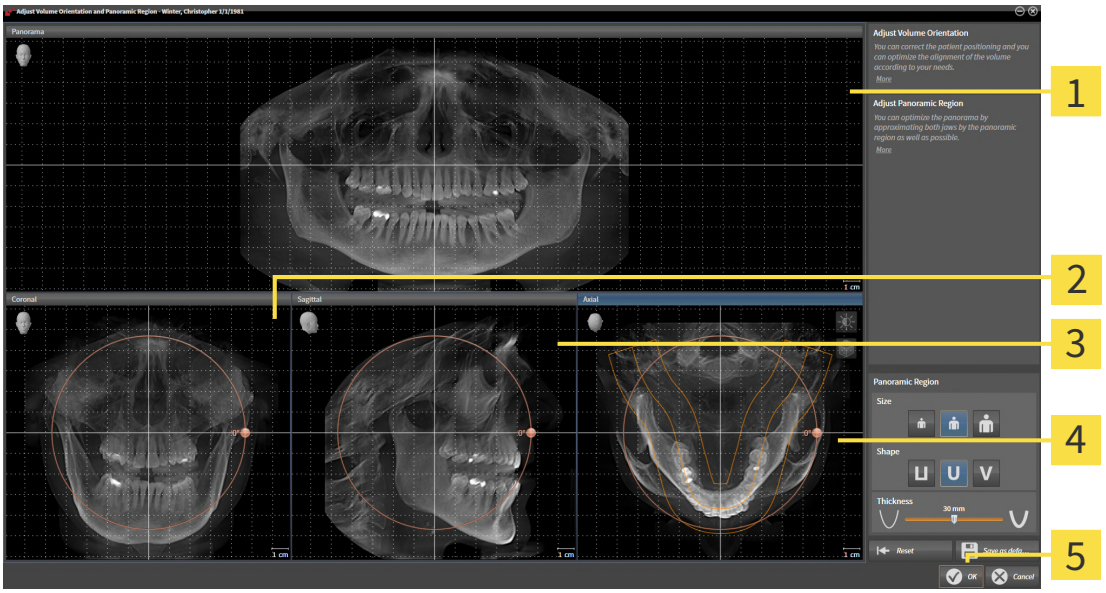
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Rotating volumes in the **Coronal** view
- Rotating volumes in the **Sagittal** view
- Rotating volumes in the **Axial** view

OPENING THE "ADJUST VOLUME ORIENTATION AND PANORAMIC REGION" WINDOW

☑ The **Prepare** workflow step is already expanded.

- Click on the **Adjust volume orientation and panoramic region** icon.

▶ The **Adjust Volume Orientation and Panoramic Region** window opens:



1 **Panorama** view

2 **Coronal** view with **Rotation** slider

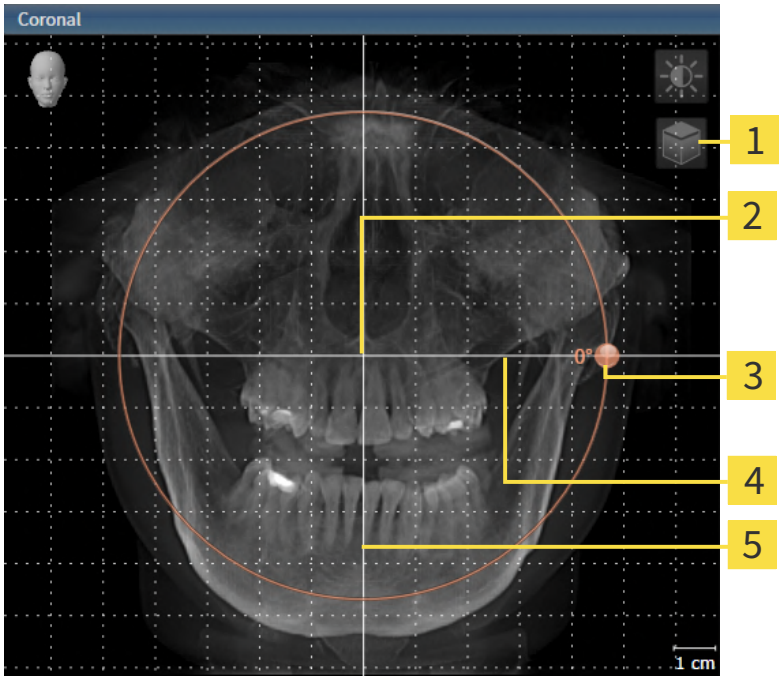
3 **Sagittal** view with **Rotation** slider

4 **Axial** view with **Rotation** slider

5 **OK** button

ROTATING VOLUMES IN THE CORONAL VIEW

1. Activate the **Coronal** view:



1 **Enable slices mode** icon or **Enable projection mode** icon

2 Center of rotation

3 **Rotation** slider

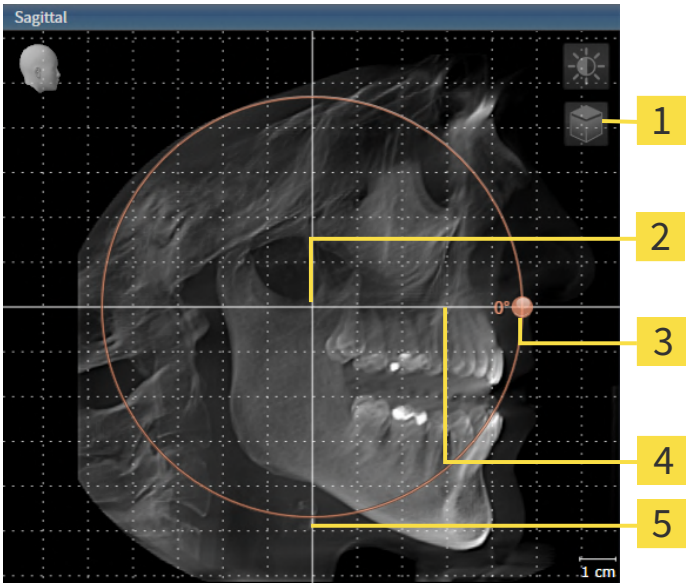
4 Horizontal reference line

5 Vertical reference line

2. Make sure that the projection mode is active. If the slice mode is active, click on the **Enable projection mode** icon.
3. Place the mouse pointer on the **Rotation** slider.
4. Click and hold the left mouse button.
5. Move the **Rotation** slider along the circle in the desired direction.
   ▶ SICAT Function rotates the volume in the **Coronal** view in a circle around the center of rotation and in the other views accordingly.
6. Release the left mouse button when you have reached the desired rotation of the volume. Orientate yourself using the horizontal reference lines, the vertical reference lines and the grid.

ROTATING VOLUMES IN THE SAGITTAL VIEW

1. Activate the **Sagittal** view:



1 **Enable slices mode** icon or **Enable projection mode** icon

2 Center of rotation

3 **Rotation** slider

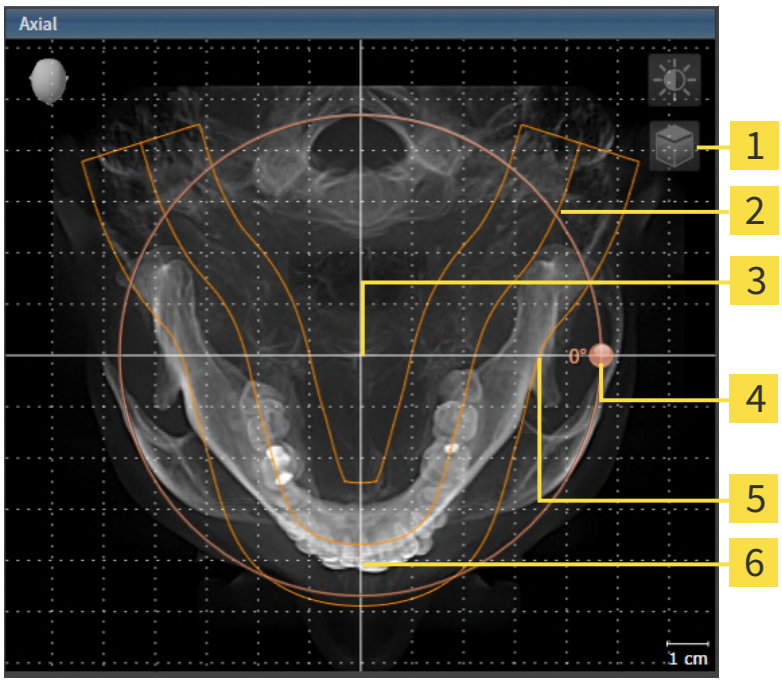
4 Horizontal reference line

5 Vertical reference line

2. Make sure that the projection mode is active. If the slice mode is active, click on the **Enable projection mode** icon.
3. Place the mouse pointer on the **Rotation** slider.
4. Click and hold the left mouse button.
5. Move the **Rotation** slider along the circle in the desired direction.
   ▶ SICAT Function rotates the volume in the **Sagittal** view in a circle around the center of rotation and in the other views accordingly.
6. Release the left mouse button when you have reached the desired rotation of the volume. Orientate yourself using the horizontal reference lines, the vertical reference lines and the grid.

ROTATING VOLUMES IN THE AXIAL VIEW

1. Activate the **Axial** view:



1	**Enable slices mode** icon or **Enable projection mode** icon	4	**Rotation** slider
2	Panoramic region	5	Horizontal reference line
3	Center of rotation	6	Vertical reference line

2. Make sure that the projection mode is active. If the slice mode is active, click on the **Enable projection mode** icon.
3. Where necessary, move the panoramic region in the **Axial** view by left clicking on the panorama view and holding the left button as you move the mouse. SICAT Function moves the center of rotation, the horizontal reference lines and the vertical reference lines accordingly.
4. Place the mouse pointer on the **Rotation** slider.
5. Click and hold the left mouse button.
6. Move the **Rotation** slider along the circle in the desired direction.
   ▶ SICAT Function rotates the volume in the **Axial** view in a circle around the center of rotation and in the other views accordingly.
7. Release the left mouse button when you have reached the desired rotation of the volume. Orientate yourself using the panoramic region, the horizontal reference lines, vertical reference lines and the grid.
8. To save your changes, click **OK**.

▶ SICAT Function saves the altered volume orientation and displays the volume with the corresponding orientation in all views.

In addition to the described process, the following actions are available in the **Adjust Volume Orientation and Panoramic Region** window:

- You can adjust the brightness and contrast of a 2D image by activating the desired view and clicking the **Adjust brightness and contrast** icon. Information on this can be found in the section *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 119 - Standalone]*.
- You can zoom in the views. SICAT Function synchronizes the zoom between the **Coronal** view and the **Sagittal** view.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- To reset the volume orientation and panoramic region to the last saved default setting, click on the **Reset** button.
- If you do not want to save your changes, click on **Cancel**.

26.2 ADJUSTING THE PANORAMIC REGION

General information on the panoramic region can be found in the section *Adjusting volume orientation and panoramic region [▶Page 144 - Standalone]*.

The adjustment of the panoramic region consists of the following steps:

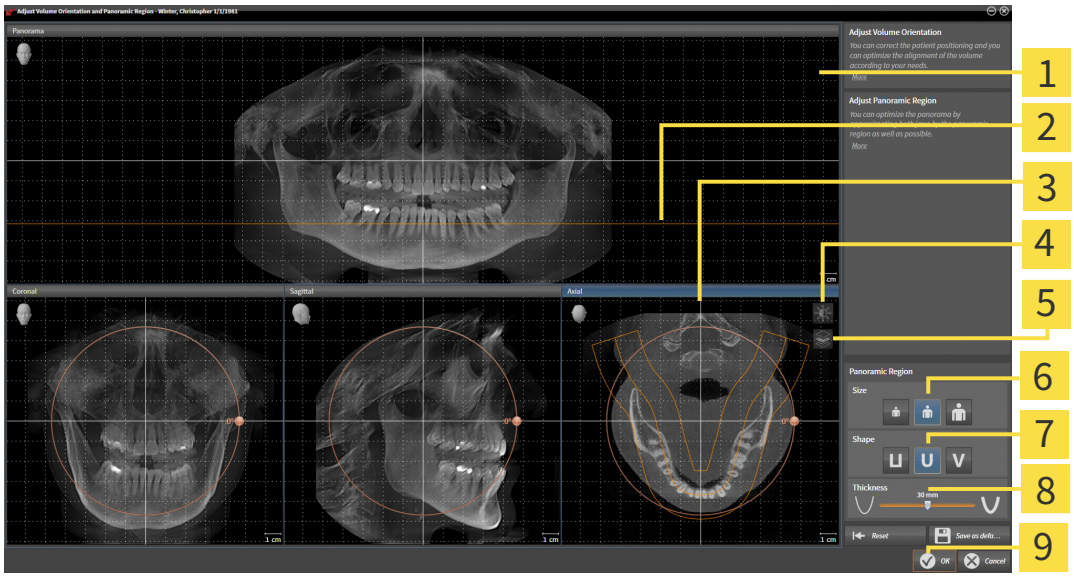
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Adjusting the slice position of the **Axial** view
- Moving the panoramic region
- Rotating volumes in the **Axial** view
- Adjusting **Size**, **Shape** and **Thickness** of the panoramic region

OPENING THE "ADJUST VOLUME ORIENTATION AND PANORAMIC REGION" WINDOW

☑ The **Prepare** workflow step is already expanded.

- Click on the **Adjust volume orientation and panoramic region** icon.

▶ The **Adjust Volume Orientation and Panoramic Region** window opens:



1 **Panorama** view

2 Axial reference line

3 **Axial** view with **Rotation** slider

4 **Adjust brightness and contrast** icon

5 **Enable projection mode** icon or **Enable slices mode** icon

6 **Size** buttons

7 **Shape** buttons

8 **Thickness** slider

9 **OK** button

ADJUSTING THE SLICE POSITION OF THE AXIAL VIEW

1. Make sure that the slice mode of the **Axial** view is active. If the projection mode is active, click on the **Enable slices mode** icon.
2. Place the mouse pointer on the axial reference line in the **Panorama** view. The axial reference line illustrates the current slice position of the **Axial** view.
3. Click and hold the left mouse button.
4. Move the mouse up or down as desired.
   ▶ The slice in the **Axial** view will change according to the position of the axial reference lines in the **Panorama** view.
5. When the axial reference line is on the roots of the mandibular teeth, release the left mouse button.
   ▶ The **Axial** view maintains the current slice.

MOVING THE PANORAMIC REGION

1. Place the mouse pointer on the panoramic region in the **Axial** view.
2. Click and hold the left mouse button.
   ▶ The mouse pointer changes.
3. Move the mouse.
   ▶ SICAT Function moves the panoramic region according to the position of the mouse pointer.
4. When the central curve of the panoramic region is on the roots of the mandibular teeth, release the left mouse button.
   ▶ The panoramic region will remain in its current position.

ROTATING VOLUMES IN THE AXIAL VIEW

1. Place the mouse pointer on the **Rotation** slider in the **Axial** view.
2. Click and hold the left mouse button.
3. Move the **Rotation** slider along the circle in the direction you require.
   ▶ SICAT Function rotates the volume in the **Axial** view in a circle accordingly around the center of rotation and in the other views accordingly.
4. When the roots of the mandibular teeth follow the central curve of the panoramic region, release the left mouse button.

ADJUSTING THE SIZE, SHAPE AND THICKNESS OF THE PANORAMIC REGION

1. Make sure that the projection mode is active. If the slice mode is active, click on the **Enable projection mode** icon.

2. Select the **Size** of the panoramic region that best reflects the mandible of the patient by clicking on the corresponding **Size** button.

3. Select the **Shape** of the panoramic region that best reflects the mandible of the patient by clicking on the corresponding **Shape** button.

4. Select the **Thickness** of the panoramic region by moving the **Thickness** slider. Make sure that the panoramic region contains all teeth and both jaws in full. Keep the thickness as low as possible.

5. To save your changes, click **OK**.

► SICAT Function saves the altered volume orientation and altered panoramic region and displays the **Panorama** view accordingly.

In addition to the described process, the following actions are available in the **Adjust Volume Orientation and Panoramic Region** window:

- You can adjust the brightness and contrast of a 2D image by activating the desired view and clicking the **Adjust brightness and contrast** icon. Information on this can be found in the section *Adjusting and resetting the brightness and contrast of the 2D views [► Page 119 - Standalone]*.
- You can zoom in the views. SICAT Function synchronizes the zoom between the **Coronal** view and the **Sagittal** view.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- To reset the volume orientation and panoramic region to the last saved default setting, click on the **Reset** button.
- If you do not want to save your changes, click on **Cancel**.

27 JAW MOTION TRACKING DATA

Patient-specific jaw motion and jaw positions provide information regarding the patient's chewing dynamics. You can use this information for patient analysis and diagnosis. In addition, the information can be integrated in the patient's treatment planning.

SICAT Function visualizes patient-specific jaw motion and jaw positions. The application supports the following sources of jaw motion tracking data:

- Motion data from jaw motion tracking devices
- Static positions of jaw motion tracking devices
- Buccal bite positions that are recorded with an intra-oral camera

A list of the compatible jaw motion tracking devices can be found in the section *Compatible jaw motion tracking devices [▶Page 155 - Standalone]*.

You can import buccal bite positions together with optical impressions. Information on this can be found in the section *Optical impressions [▶Page 166 - Standalone]*.

In addition to importing jaw motion tracking data, you have to perform further steps to prepare the display of jaw motion tracking data. Information on this can be found in the section *The standard workflow of SICAT Function [▶Page 37 - Standalone]*.

After you have prepared all of the data you require, the following jaw motion tracking data actions will be available:

- *Interacting with jaw motion [▶Page 181 - Standalone]*
- *Visualizing anatomical traces in the 3D view [▶Page 184 - Standalone]*
- *Adjusting anatomical traces using the inspection window [▶Page 185 - Standalone]*
- *Adjusting anatomical traces using the crosshair in a slice view [▶Page 186 - Standalone]*

Representation accuracy of jaw motion tracking data	< 0.6 mm

27.1 COMPATIBLE JAW MOTION TRACKING DEVICES

CAUTION

The use of jaw motion tracking devices with an unsuitable intended use may result in an incorrect diagnosis and treatment.

Only use jaw tracking data from devices with an intended use that covers the use of the jaw motion tracking data with SICAT Function.

CAUTION

The use of unsupported jaw motion tracking devices or incompatible registration devices may result in an incorrect diagnosis and treatment.

Only use jaw motion tracking data that has been recorded using a supported combination of a jaw motion tracking devices (such as SICAT JMT⁺) and a compatible registration device (such as SICAT Fusion Bite).

Ensure that you only record jaw motion tracking data with a compatible jaw motion tracking device in combination with a supported registration device. Import only such jaw motion tracking data from compatible jaw motion tracking devices to SICAT Function. You can only import jaw motion tracking data to SICAT Function that has been recorded using jaw motion tracking devices that support the SICAT JTI Format V1.0 interface.

SICAT Function currently supports the following combinations of jaw motion tracking devices and jaw motion registration devices:

- SICAT JMT⁺ in combination with a SICAT Fusion Bite, manufactured by: SICAT GmbH & Co. KG, Brunnenallee 6, 53177 Bonn
- SICAT JMT blue in combination with a SICAT Fusion Bite, manufacturer: zebris Medical GmbH, Am Galgenbühl 14, 88316 Isny, Germany

27.2 IMPORTING AND REGISTERING JAW MOTION DATA

CAUTION

The use of other data as 3D X-ray scans as a lone source of information may result in an incorrect diagnosis and treatment.

1. Use 3D X-ray scans as a preferred source of information for diagnosis and planning.
2. Use other data, such as optical impressions, only as an auxiliary source of information.

CAUTION

Unsuitable jaw motion tracking devices could result in incorrect diagnosis and treatment.

Only use jaw tracking data from devices cleared as medical devices.

CAUTION

Incorrect recording of jaw motion tracking data and 3D X-ray scans may result in an incorrect diagnosis and treatment.

Ensure that jaw motion tracking data and 3D X-ray scans have been recorded in accordance with the device manufacturer's instructions. Use the stated type of registration device.

CAUTION

Jaw motion tracking data that does not match the patient and date of the 3D X-ray scans may result in an incorrect diagnosis and treatment.

Make sure that the patient and date of the jaw motion tracking data match the patient and date in the 3D X-ray scan shown.

CAUTION

Insufficient integrity or quality of jaw motion tracking data may result in an incorrect diagnosis and treatment.

Check the integrity and quality of the jaw motion tracking data imported.

CAUTION

Insufficient quality, precision and resolution of jaw motion tracking data may result in an incorrect diagnosis and treatment.

Only use jaw motion tracking data of a sufficient quality, resolution and precision for the intended diagnosis and treatment.

CAUTION

Excessive artifacts, insufficient resolution or insufficient quality of the 3D X-ray scans may mean that the marker and registration device detection mechanism fails. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Use only 3D X-ray scans that enable the correct detection of markers and registration devices.

CAUTION

Incorrect positions, types and orientations of the registration device may result in an incorrect diagnosis and treatment.

After the JMT wizard has identified the registration device, check the correct position, type and orientation of the registration device, taking into account the 3D X-ray scans.

CAUTION

The incorrect registration of jaw motion tracking data for 3D X-ray scans may result in an incorrect diagnosis and treatment.

Check that the registered jaw motion tracking data is correctly aligned to the 3D X-ray scans.

NOTICE

To ensure the correct registration of jaw motion tracking data, SICAT recommends the use of 3D X-ray data with the following parameters:

1. Slice thickness less than 0.7 mm
2. Voxel size less than 0.7 mm in all three dimensions

Before you can import recorded jaw motion tracking data to SICAT Function, you have to export the data from the jaw motion tracking device software. Exporting files that are suitable for SICAT Function is described in the instructions for use of the jaw motion tracking device.

If the opened study already contains registered jaw motion data, you have to confirm that SICAT Function will remove this data when you open the assistant **Import and Register Jaw Motion Tracking Data** again.

During the import process of the jaw motion tracking data, you have to mark three spherical fiducial markers within the **Axial** view of the **Import and Register Jaw Motion Tracking Data** assistant so that SICAT Function can subsequently identify them.

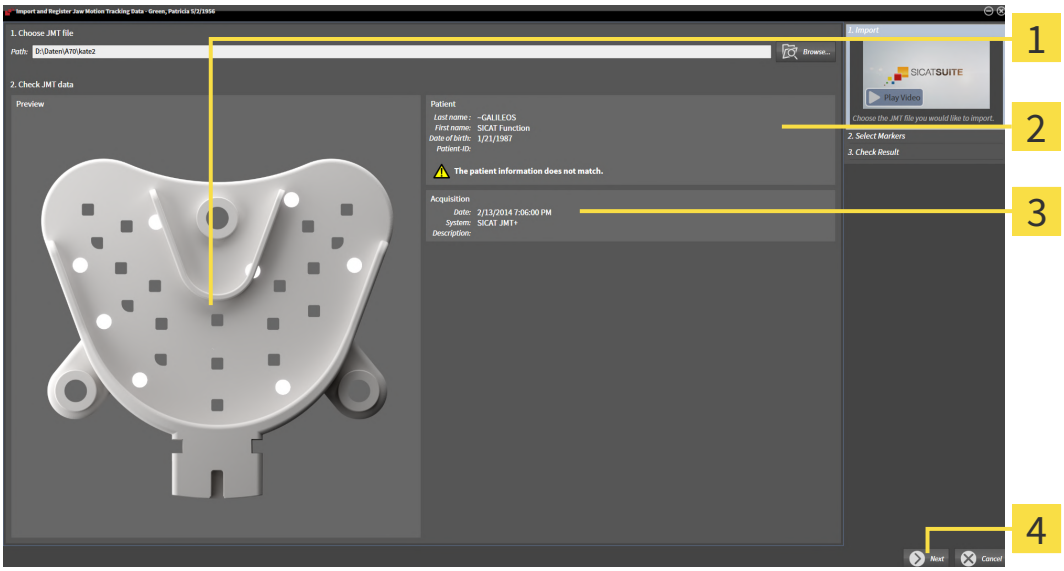
General information on jaw motion tracking data can be found in the section *Jaw motion tracking data [▶Page 154 - Standalone]*.

To import and register jaw motion tracking data, proceed as follows:

☑ The **Diagnose** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 97 - Standalone]*.

1. Click on the **Import and Register Jaw Motion Tracking Data** icon.
   ▶ The **Import and Register Jaw Motion Tracking Data** wizard opens with the **Import** step.
2. Click the **Browse** button in the **Import and Register Jaw Motion Tracking Data** wizard.
   ▶ The **Load JMT Export File** window opens.
3. Switch to the desired jaw motion tracking data file in the **Load JMT Export File** window, select the file and click on **Open**.
   ▶ The **Load JMT Export File** window closes and SICAT Function transfers the path to the desired file with the jaw motion tracking data into the **Path** field.
   ▶ The **Bite fork** view shows a preview of the bite fork, which was used when recording the jaw motion tracking data.

▶ The **Patient** area and the **Acquisition** area display information from the file with the jaw motion tracking data:



1 SICAT Fusion Bite view

2 **Patient** area

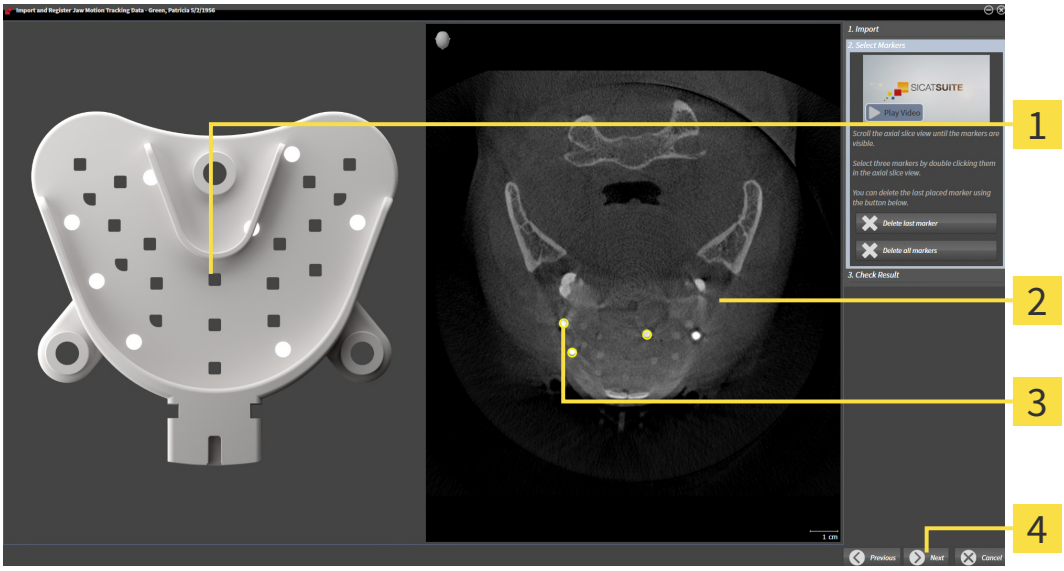
3 **Acquisition** area

4 **Next** button

4. Make sure that the file with the jaw motion tracking data matches the active study.

5. Click **Next**.

▶ The **Select Markers** step opens:



1 **Bite fork** view

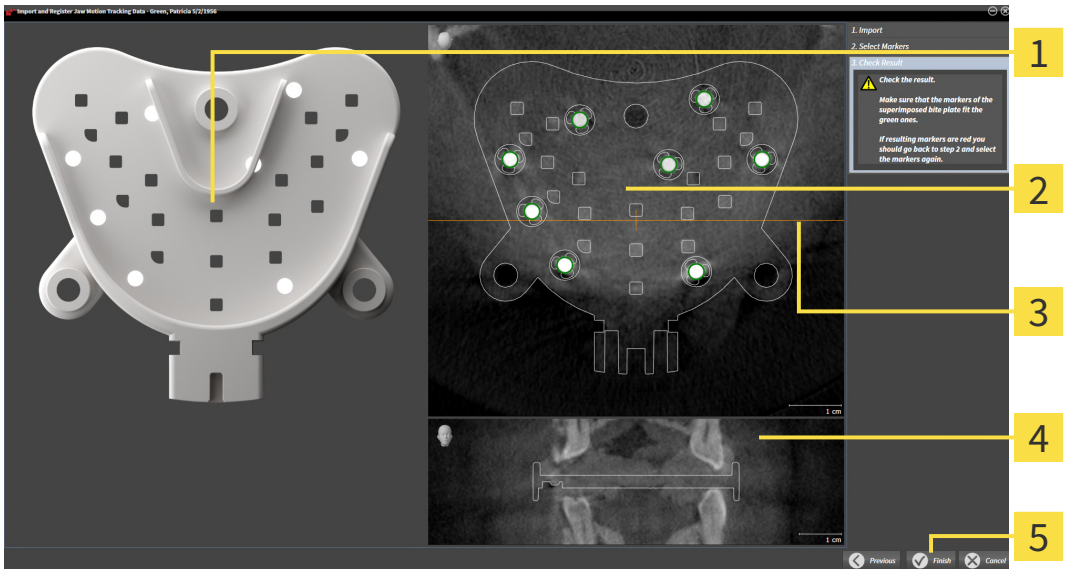
2 **Axial** view

3 Selected marker

4 **Next** button

6. Scroll through the axial slices until the **Axial** slice view displays at least one fiducial marker.

7. Double click a fiducial marker in the **Axial** slice view.
   ▶ SICAT Function marks the fiducial marker.
8. Repeat the last step until up to three fiducial markers have been marked.
9. Click **Next**.
   ▶ SICAT Function registers the jaw motion tracking data.
   ▶ The **Check Result** step opens:



1 **Bite fork** view
2 **Axial** slice view
3 Coronal reference line
4 **Coronal** view
5 **Finish** button

10. Make sure that the fiducial markers on the **Bite fork** and in the **Axial** slice view match.
11. In the **Coronal** view, ensure that SICAT Function has correctly recognized the location of the bite fork. Move the coronal reference line in the **Axial** view or scroll through the slices in the **Coronal** view.
12. Click **Finish**.

▶ SICAT Function imports the registered jaw motion tracking data.

▶ The **Import and Register Jaw Motion Tracking Data** wizard closes.

▶ SICAT Function displays in the **Object browser** a **Jaw Motion Tracking Data** object. Information on this can be found in the section *SICAT Function objects* [▶ *Page 103 - Standalone*].

In addition to the described process, the following actions are available in the **Import and Register Jaw Motion Tracking Data** assistant:

- If you are not satisfied with the most recently placed marker, you can click the **Delete last marker**" button.
- If the **Bite fork** is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat step **Select Markers** with markers in different positions if necessary.
- If you want to cancel importing and registering jaw motion data, click **Cancel**.

28 SEGMENTATION

CAUTION

Excessive artifacts or the insufficient resolution of 3D X-ray scans may result in the failure of the segmentation process or lead to insufficient results. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Only use 3D X-ray scans that allow for a sufficient quality of segmentation of the relevant anatomical structures.

CAUTION

Insufficient segmentation quality may result in an incorrect diagnosis and treatment.

Check that the segmentation quality is sufficient for the intended use.

To display the movement of the mandible, you have to define the border between the mandible and the background. This is called segmentation. You can use the **Mandible segmentation** assistant to segment both the mandible and the fossa of the patient. In SICAT Function, segmentation is a semi-automatic process.

Semi-automatic process means that you have to mark parts of the mandible and fossa manually using the drawing tools in the **Mandible segmentation** assistant. After a marking, the segmentation assistant will automatically mark similar areas.

The following actions are available to segment the mandible and fossa:

- *Segmenting the mandible [▶Page 162 - Standalone]*
- *Segmenting the fossa [▶Page 164 - Standalone]*

You can perform the following actions after segmenting the mandible:

- Visualizing and playing-back individual anatomical movements of the patient in the **3D** view. Information on this can be found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*.
- Visualizing individual anatomical traces of the patient in the **3D** view. Information on this can be found in the section *Visualizing anatomical traces in the 3D view [▶Page 184 - Standalone]*.
- Visualization of the moved temporomandibular joints in the **TMJ** workspace. Information on this can be found in the section *Functions in the TMJ workspace [▶Page 187 - Standalone]*.

28.1 SEGMENTING THE MANDIBLE

The **Segment Condyles and Mandible Region** assistant performs a precalculation of the segmentation each time it is started. The duration of the precalculation depends on the performance of your computer.

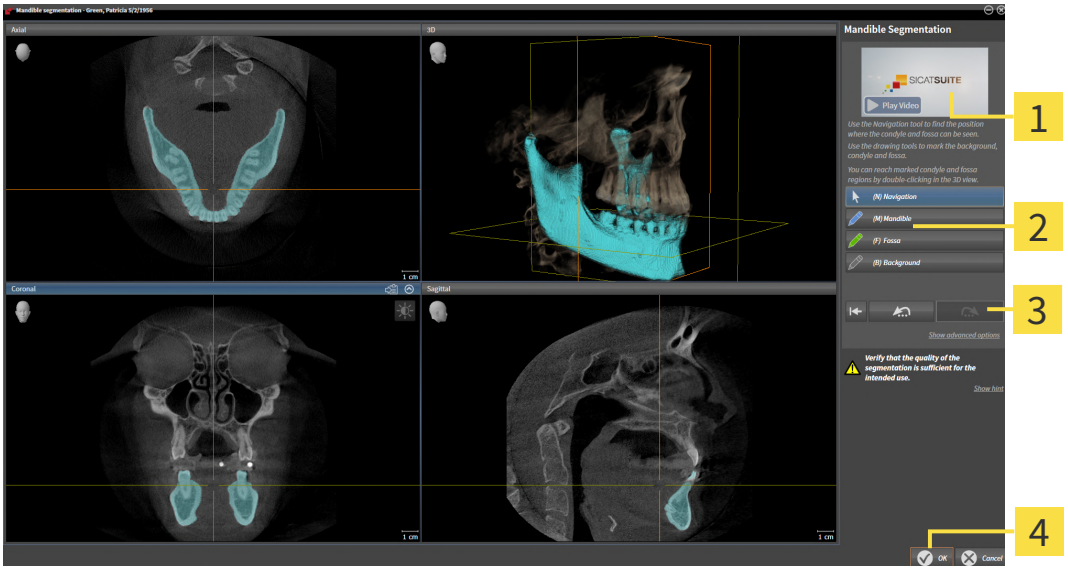
The segmentation of SICAT Function works with areas instead of anatomical contours. For this reason, it is only rarely necessary to exactly trace the anatomical contours. Instead, mark contingous areas by drawing lines within the areas.

General information on segmentation can be found in the section *Segmentation [▶Page 161 - Standalone]*.

To segment the mandible, proceed as follows:

☑ The **Diagnose** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 97 - Standalone]*.

1. Click on the **Segment condyles and mandible region** icon.
   ▶ The **Mandible segmentation** wizard opens:



1	Example video	3	**Reset** button, **Undo** button and **Redo** button
2	**Drawing tools** area	4	**OK** button

   ▶ The **Mandible segmentation** wizard performs a precalculation of the segmentation.

2. Adjust the **Axial** view, **Coronal** view or **Sagittal** view so that the mandible and fossa are visible.

3. Click on the **Mandible** button.
4. Move the mouse pointer onto the mandible in the desired 2D slice view.
   ▶ The mouse pointer becomes a pen.
5. Click and hold the left mouse button.
6. Trace the inner region of the mandible with the mouse pointer.

▶ SICAT Function shows your marking as a blue line.

7. Release the left mouse button.

   ▶ SICAT Function segments the mandible using your marking.

8. If you want to add additional areas to the mandible, click on the **Navigation** icon, navigate within a 2D view to the structures you require and mark them as described above.

9. Click on the **OK** button if the segmentation meets your requirements.

▶ The **Mandible segmentation** wizard closes.

▶ SICAT Function displays in the **Object browser** a **Volume Regions** object. Information on this can be found in the section *SICAT Function objects [▶Page 103 - Standalone]*.

▶ The **3D** view shows the results of the segmentation.

You can use the **Background** drawing tool to either mark areas as background or to correct large areas of semi-automatic segmentation.

You can also continue or improve the segmentation at a later time.

You can scroll through the 2D slice views by switching to **Navigation** mode.

In addition to the described process, the following actions are available in the **Segment Condyles and Mandible Region** window:

- There are special keyboard shortcuts in the **Segment Condyles and Mandible Region** window. Information on this can be found in the section *Keyboard shortcuts [▶Page 245 - Standalone]*.
- If you double click on a position in the **3D** view that belongs to the segmented area, all 2D slice views will display the corresponding slice. In addition, SICAT Function will center the crosshairs on the position. Use this navigation tool to correct marks that have gone outside the intended area or to close holes, for example.
- If the segmentation does not match the anatomic characteristics, you can click on the **Undo** button.
- If you want to restore an action that you have undone, you can click on the **Redo** button.
- If you want to undo all work steps, you can click on the **Reset** button.
- In rare cases, the precalculation of the data record may not provide an optimal result. In such a case, you can click **Show advanced options** and deactivate the **Auto detect background** check box. After this, you can mark areas that do not belong to the mandibular bone or the fossa with at least one stroke using the **Background** drawing tool.
- If you want to cancel the segmentation of the condyles and mandibular area, you can click **Cancel**.

28.2 SEGMENTING THE FOSSA

Thanks to the introduction of the **TMJ** workspace, segmentation of the fossa is no longer mandatory in most cases. Use the **TMJ** workspace to assess the dynamic condlye-fossa relationship even without segmenting the fossa.

	The **Segment Condyles and Mandible Region** assistant performs a precalculation of the segmentation each time it is started. The duration of the precalculation depends on the performance of your computer.

	The segmentation of SICAT Function works with areas instead of anatomical contours. For this reason, it is only rarely necessary to exactly trace the anatomical contours. Instead, mark contingous areas by drawing lines within the areas.

General information on segmentation can be found in the section *Segmentation [▶Page 161 - Standalone]*.

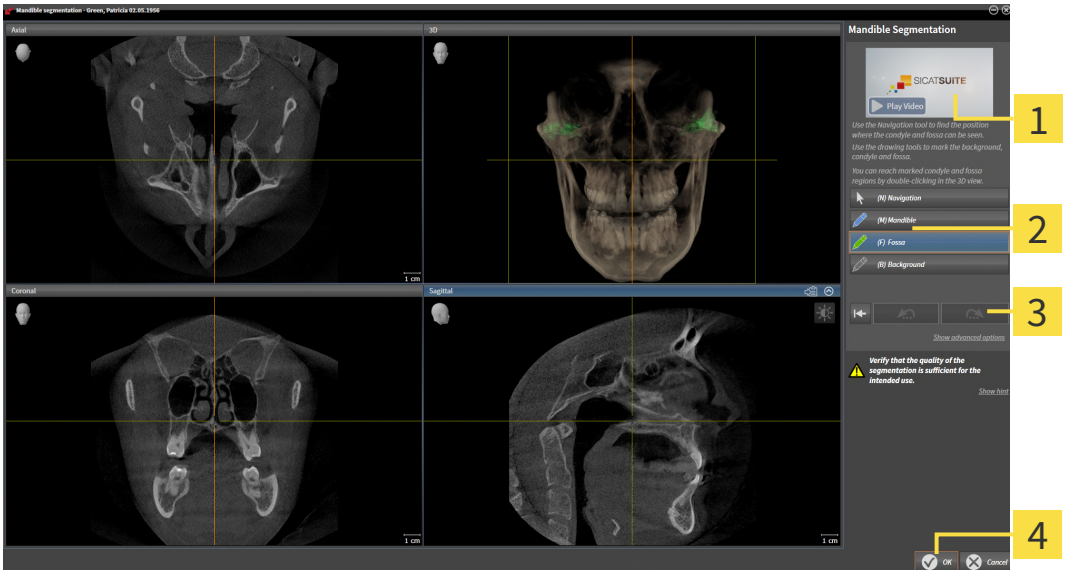
To segment the fossa, proceed as follows:

☑ The **Diagnose** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 97 - Standalone]*.

☑ The CBCT scan includes the fossa.

1. Click on the **Segment condyles and mandible region** icon.

   ▶ The **Mandible segmentation** wizard opens:



1	Example video	3	**Reset** button, **Undo** button and **Redo** button
2	**Drawing tools** area	4	**OK** button

   ▶ The **Mandible segmentation** wizard performs a precalculation of the segmentation.

2. Adjust the **Axial** view, **Coronal** view or **Sagittal** view so that the mandible and fossa are visible.

3. Click on the **Fossa** button.

4. Move the mouse pointer onto the fossa in the 2D slice view you require.

   ▶ The mouse pointer becomes a pen.

5. Click and hold the left mouse button.
6. Trace the inner region of the fossa with the mouse pointer.
   ▶ SICAT Function shows your marking as a green line.
7. Release the left mouse button.
   ▶ SICAT Function segments the fossa using your marking.
8. If you want to add additional areas to the fossa, click on the **Navigation** icon, navigate within a 2D view to the desired structures and mark them as described above.
9. Click on the **OK** button if the segmentation meets your requirements.

▶ The **Mandible segmentation** wizard closes.

▶ SICAT Function displays in the **Object browser** a **Volume Regions** object. Information on this can be found in the section *SICAT Function objects [▶Page 103 - Standalone]*.

▶ The **3D** view shows the results of the segmentation.

You can use the **Background** drawing tool to either mark areas as background or to correct large areas of semi-automatic segmentation.

You can also continue or improve the segmentation at a later time.

You can scroll through the 2D slice views by switching to **Navigation** mode.

In addition to the described process, the following actions are available in the **Segment Condyles and Mandible Region** window:

- There are special keyboard shortcuts in the **Segment Condyles and Mandible Region** window. Information on this can be found in the section *Keyboard shortcuts [▶Page 245 - Standalone]*.
- If you double click on a position in the **3D** view that belongs to the segmented area, all 2D slice views will display the corresponding slice. In addition, SICAT Function will center the crosshairs on the position. Use this navigation tool to correct marks that have gone outside the intended area or to close holes, for example.
- If the segmentation does not match the anatomic characteristics, you can click on the **Undo** button.
- If you want to restore an action that you have undone, you can click on the **Redo** button.
- If you want to undo all work steps, you can click on the **Reset** button.
- In rare cases, the precalculation of the data record may not provide an optimal result. In such a case, you can click **Show advanced options** and deactivate the **Auto detect background** check box. After this, you can mark areas that do not belong to the mandibular bone or the fossa with at least one stroke using the **Background** drawing tool.
- If you want to cancel the segmentation of the condyles and mandibular area, you can click **Cancel**.

29 OPTICAL IMPRESSIONS

SICAT Function can overlay (register) matching 3D X-ray data and optical impressions for the same patient. The overlaid representation provides additional information for planning and implementation. This allows you to implement the therapy based on optical impressions.

To use optical impressions, proceed as follows:

1. Import of optical impressions using the following import methods:
   - *Downloading optical impressions from the Hub [▶Page 168 - Standalone]*
   - *Importing optical impressions from a file [▶Page 171 - Standalone]*
   - *Re-using optical impressions from SICAT applications [▶Page 174 - Standalone]*
2. Registration (overlay) of the optical impressions with 3D X-ray data: *Registering and checking optical impressions [▶Page 176 - Standalone]*

> Registration is not required if optical impressions from a SICAT application are reused.

SICAT Function supports the following data formats for optical impressions:

- SIXD data records that contain an optical impression of the maxilla and the mandible (each for the entire maxillary and mandibular arch). Use this format if you are using a CEREC system that supports the SIXD format.
- SSI data records that contain an optical impression of the maxilla and the mandible (each for the entire maxillary and mandibular arch). Use this format if you are using a CEREC system that does **not** support the SIXD format.
- STL data records* that contain an optical impression of the maxilla **or** the mandible (for the entire maxillary and mandibular arch, respectively). Use this format if you are using another CAD/CAM system that supports the STL format.

*You need an activated **SICAT Suite STL Import** license for STL data records. Additional steps must be observed when importing. Information on this can be found in the section *Additional steps for optical impressions in STL format [▶Page 173 - Standalone]*.

> Please note the following limitations with respect to optical impressions in STL data records:
>
> - STL data records do not support buccal bite positions. There is no entry for the buccal relation in the **Active Jaw Relation** list in the **Active Jaw Relation**.
> - You cannot export jaw motion tracking data on the basis of STL data records. If you click on the button **JMTXD Export** in the JMT area, SICAT Function shows a corresponding message.

The following actions are available for optical impressions:

- Activating, hiding and showing optical impressions: *Managing objects with the object browser [▶Page 100 - Standalone]*
- Focusing on and removing optical impressions: *Managing objects with the object toolbar [▶Page 102 - Standalone]*
- Setting the display of optical impressions in color: *Switching off and switching on the display of optical impressions in color [▶Page 139 - Standalone]*

29.1 IMPORTING OPTICAL IMPRESSIONS

CAUTION

The use of other data as 3D X-ray scans as a lone source of information may result in an incorrect diagnosis and treatment.

1. Use 3D X-ray scans as a preferred source of information for diagnosis and planning.
2. Use other data, such as optical impressions, only as an auxiliary source of information.

CAUTION

Inappropriate optical impression devices could result in incorrect diagnosis and treatment.

Only use optical impression data from devices cleared as medical devices.

CAUTION

Optical impression data that does not match patient and date of 3D X-ray data could result in incorrect diagnosis and treatment.

Make sure the patient and date of the imported optical impression data match the patient and date of the visualized 3D X-ray data.

CAUTION

Insufficient integrity or quality of optical impressions may result in an incorrect diagnosis and treatment.

Check the integrity and quality of the optical impressions imported.

CAUTION

Insufficient integrity and precision of optical impressions may result in an incorrect diagnosis and treatment.

Only use optical impressions of a sufficient quality and precision for the intended diagnosis and treatment.

29.1.1 DOWNLOADING OPTICAL IMPRESSIONS FROM THE HUB

You can download optical impressions in SIXD format from the Hub and import them into SICAT Function.

☑ The connection to the Hub is established. Information on this can be found in the section *Activating and deactivating Hub use [▶Page 232 - Standalone]*.

☑ The license for using the Hub is activated. Information on this can be found in the section *Licenses [▶Page 49 - Standalone]*.

☑ The **Diagnose** workflow step is expanded.

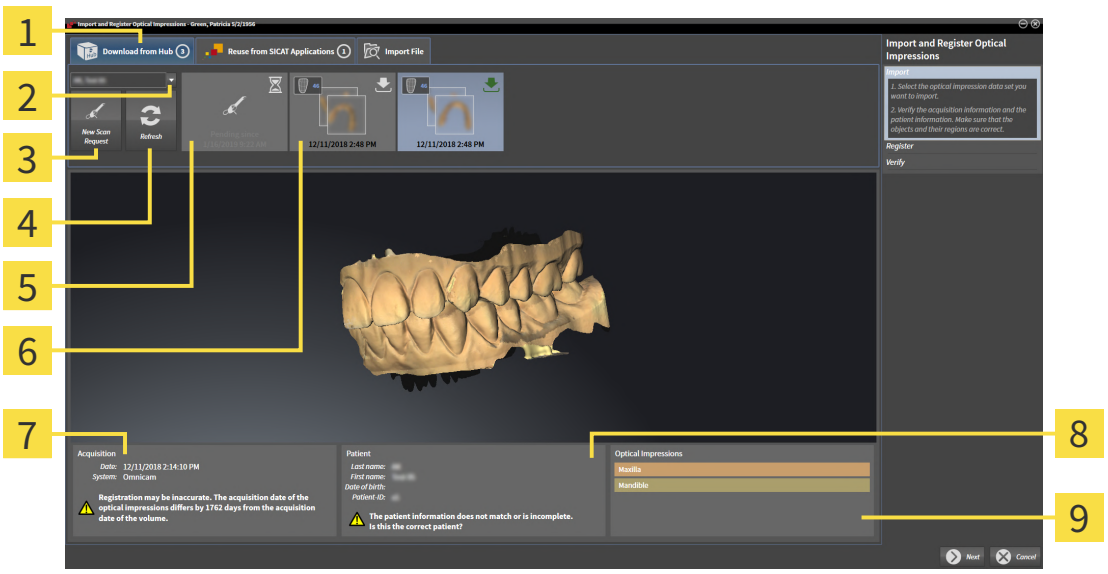
1. Click on the **Import and Register Optical Impressions** icon.

   ▶ SICAT Function opens the **Import and Register Optical Impressions** wizard with the step **Import**.

2. Click on the **Download from Hub** tab.

3. Select a patient.

   ▶ SICAT Function displays outstanding scan jobs and available optical impressions.

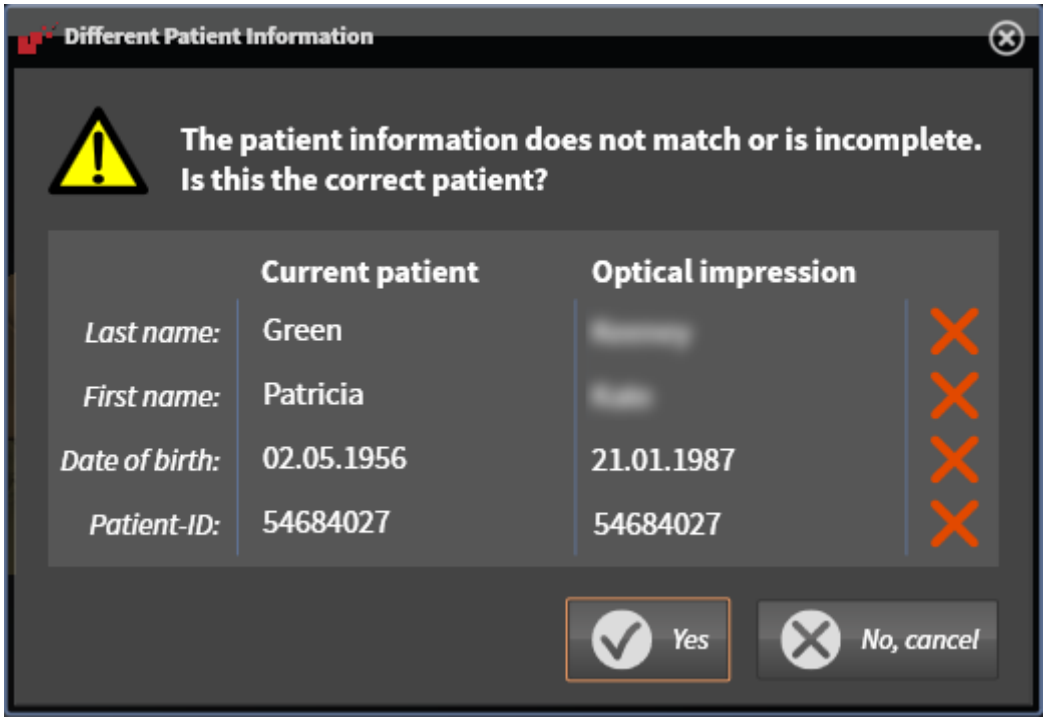


1	**Download from Hub** tab
2	**Patient selection** button
3	**New Scan Request** button
4	**Refresh** button
5	Scan request with status: pending not yet downloaded
6	Available optical impressions with status: not yet downloaded already downloaded
7	Scan information
8	Patient information
9	**Optical Impressions** area

4. Click on the desired optical impressions.

   ▶ SICAT Function downloads the optical impressions if the impressions have not already been downloaded. After the impressions have been downloaded, SICAT Function displays the impressions in the **3D** view.

5. Check the selection for registration.
6. Check whether the scan information and patient information match.
7. Check the jaws in the **Optical Impressions** area.
8. Click **Next**.
   ▶ If the patient data in the 3D X-ray scan and in the optical impressions differ,SICAT Function will open the **Different Patient Information** window:



9. Compare the patient information. If you are sure that, despite different patient information, the optical impressions match the current patient, click on the **Yes** button.
   ▶ The **Register** step opens for the first optical impression: Follow the steps in section *Registering and checking optical impressions [▶Page 176 - Standalone]*.

To enable you to check whether the 3D X-ray data and the optical impressions match, the **Import and Register Optical Impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

- If the desired optical impressions are not displayed, you can refresh the overview by clicking on the **Refresh** button. Or you can send a scan request for recording the optical impressions to the Hub. Information on this can be found in the section *Creating a scan request for an optical impression [▶Page 170 - Standalone]*.
- In the default setting, the connection to the Hub is disconnected. Information on adjusting the connection can be found in the section *Activating and deactivating Hub use [▶Page 232 - Standalone]*.
- You can use the Hub if you have activated the corresponding license to use the Hub. Information on this can be found in the section *Licenses [▶Page 49 - Standalone]*.

29.1.1.1 CREATING A SCAN REQUEST FOR AN OPTICAL IMPRESSION

You can send a request for scanning optical impressions to the Hub.

☑ The connection to the Hub is established. Information on this can be found in the section *Activating and deactivating Hub use [▶Page 232 - Standalone]*.

☑ The license for using the Hub is activated. Information on this can be found in the section *Licenses [▶Page 49 - Standalone]*.

☑ The **Diagnose** workflow step is already expanded.

1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** wizard opens with the **Import** step.

2. Click on the **Download from Hub** tab.
3. Select a patient.
   ▶ SICAT Function displays outstanding scan jobs and available optical impressions.

4. Click on the **New Scan Request** icon.
   ▶ SICAT Function displays the **New Scan Request** window. You can now define specifications for the scan request.
5. Select a dentist.
6. If necessary, enter additional information such as scanning instructions.
7. To send the scan request to the Hub, click on **Create scan request** and confirm the query with OK.

▶ SICAT Function sends the scan request to the Hub and displays the pending scan request in the **Download from Hub** tab with the icon .

▶ You can edit the scan request in CEREC and take an optical impression in CEREC.

29.1.2 IMPORTING OPTICAL IMPRESSIONS FROM A FILE

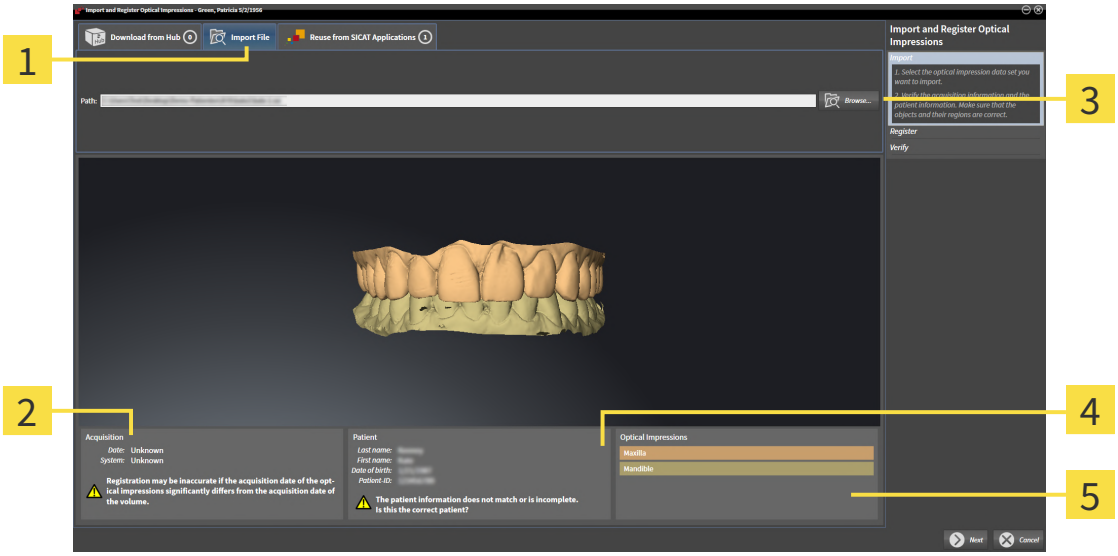
You can import one or more files with optical impressions.

Please note the following limitations with respect to optical impressions in STL data records:

- STL data records do not support buccal bite positions. There is no entry for the buccal relation in the **Active Jaw Relation** list in the **Active Jaw Relation**.
- You cannot export jaw motion tracking data on the basis of STL data records. If you click on the button **JMTXD Export** in the JMT area, SICAT Function shows a corresponding message.

☑ The **Diagnose** workflow step is expanded.

1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** wizard opens with the **Import** step.
2. Click on the **Import File** tab.

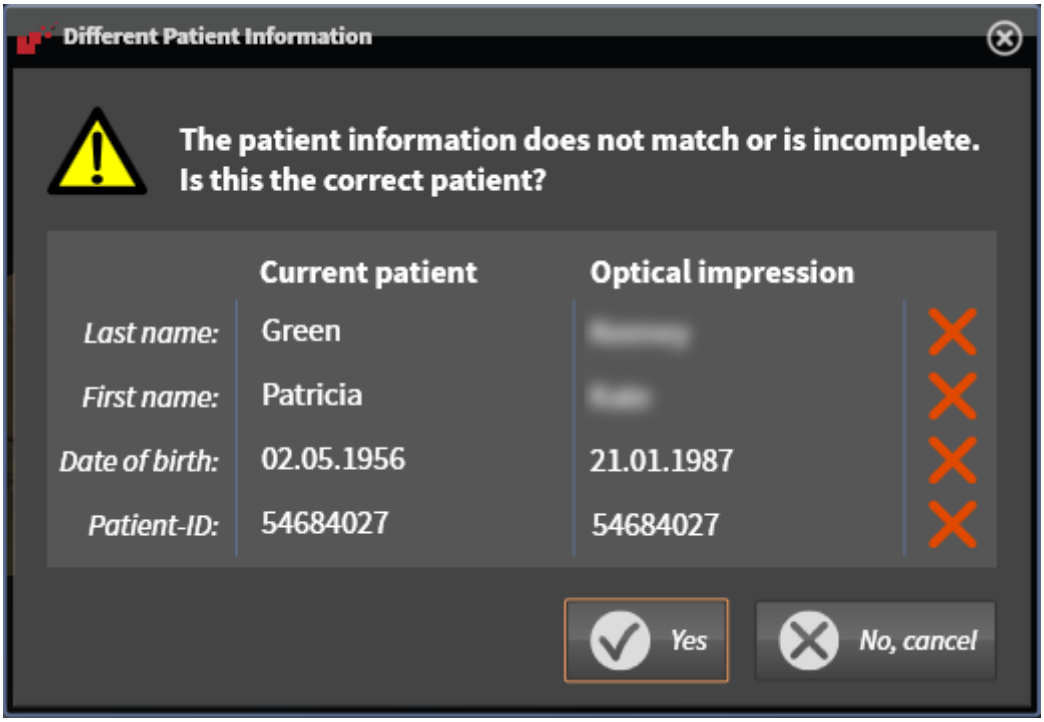


1 **Import File** tab
2 Scan information
3 **Browse** button
4 Patient information
5 **Optical Impressions** area

3. Click on the **Browse** button.
4. In the **Open Optical Impression File** window, switch to the desired file with the optical impressions file, select the file and click on **Open**.
   ▶ SICAT Function opens the selected file.
5. **Defining jaw assignment and orientation for STL file:** When you select an STL file with an optical impression of the maxilla or mandible, SICAT Function opens a window where you can adjust the assignment and orientation of the jaw. To do this, follow the steps in section *Additional steps for*

optical impressions in STL format [▶Page 173 - Standalone].
Then, you can select another STL file with the maxilla or mandible that is still missing and adjust the assignment and orientation of the jaw. Then, continue with the next step.

6. Check the selection for registration.
7. Check the scan information and patient information.
8. Check the jaws in the **Optical Impressions** area.
9. Click **Next**.
   ▶ If the patient data in the 3D X-ray scan and in the optical impressions differ,SICAT Function will open the **Different Patient Information** window:



10. Compare the patient information. If you are sure that, despite different patient information, the optical impressions match the current patient, click on the **Yes** button.
    ▶ The **Register** step opens for the first optical impression: Follow the steps in section *Registering and checking optical impressions [▶Page 176 - Standalone]*.

	To enable you to check whether the 3D X-ray data and the optical impressions match, the **Import and Register Optical Impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

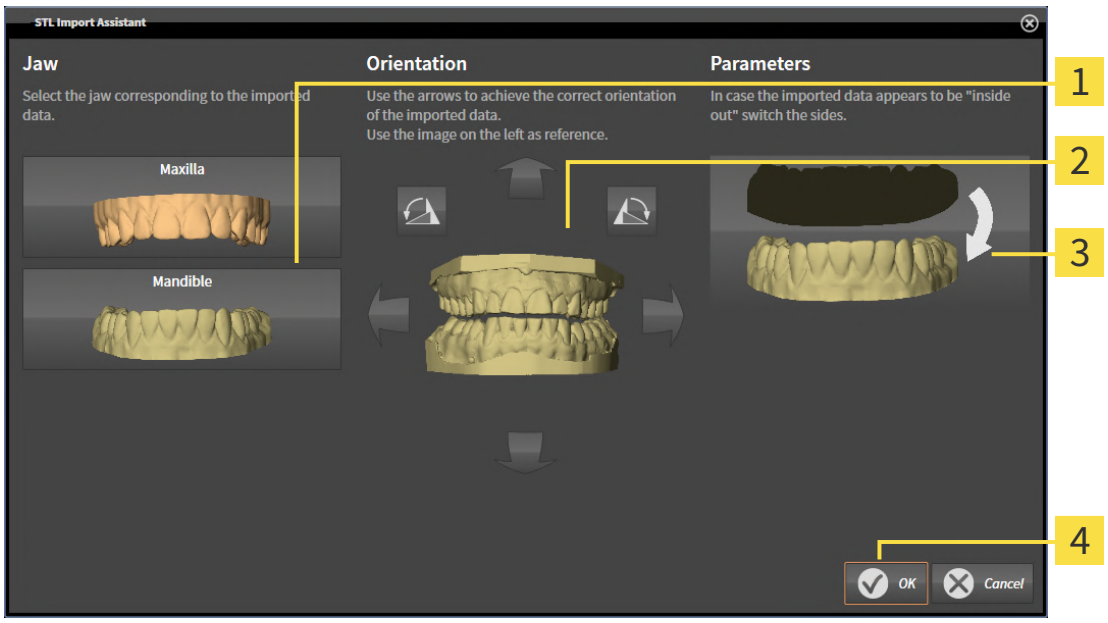
29.1.2.1 ADDITIONAL STEPS FOR OPTICAL IMPRESSIONS IN STL FORMAT

STL files do not contain information regarding the position and orientation of optical impressions. Therefore, you need to adjust position and orientation if required.

☑ You have already activated a **SICAT Suite STL import** license.

1. Open the optical impressions in a file in STL format. Information on this can be found in the section *Importing optical impressions from a file [▶Page 171 - Standalone]*.

   ▶ The **STL import wizard** window opens:



1 Selection of the jaw

2 Changing the orientation

3 Switching inside and outside

2. In the **Jaw** area, select whether the optical impression contains the **Maxilla** or the **Mandible** by clicking on the corresponding symbol.

3. If required, change the orientation of the optical impressions for rough pre-positioning by clicking on the arrow symbols or the rotation symbols in the **Orientation** area.

4. If required, switch the inside and the outside of the optical impressions by clicking on the representation of the optical impression in the **Parameters** area.

5. Click on the **OK** button.

6. If required, repeat those steps for a second STL file. SICAT Function automatically attributes the second STL file to the other jaw.

   ▶ SICAT Function displays the imported optical impressions in the **Import and Register Optical Impressions** wizard.

7. Continue with the import of the optical impressions. Information on this can be found in the section *Importing optical impressions from a file [▶Page 171 - Standalone]*.

29.1.3 RE-USING OPTICAL IMPRESSIONS FROM SICAT APPLICATIONS

You can re-use optical impressions from a SICAT application.

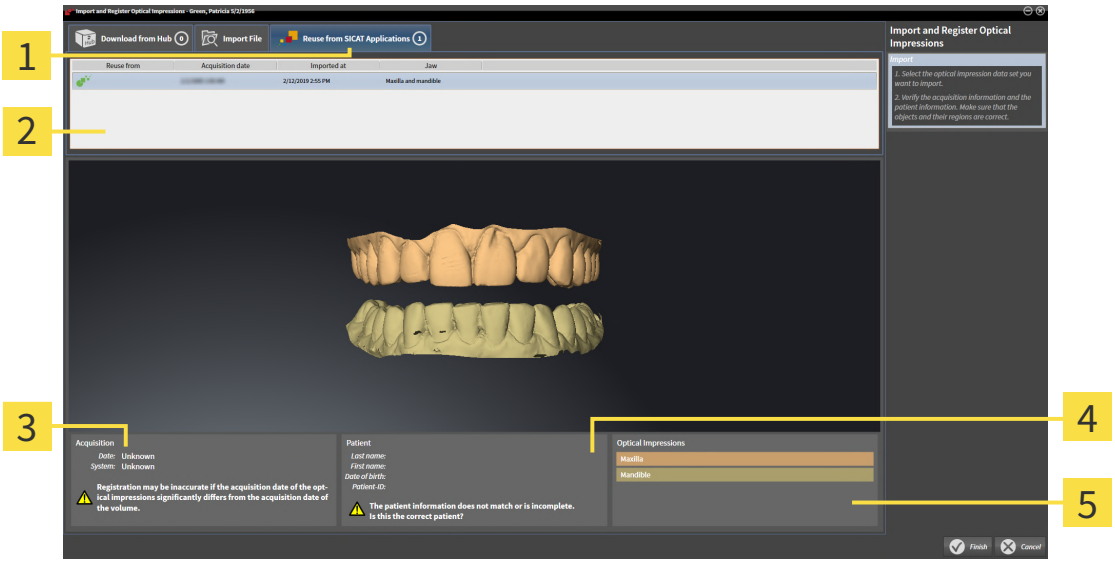
Please note the following limitations with respect to optical impressions in STL data records:

- STL data records do not support buccal bite positions. There is no entry for the buccal relation in the **Active Jaw Relation** list in the **Active Jaw Relation**.
- You cannot export jaw motion tracking data on the basis of STL data records. If you click on the button **JMTXD Export** in the JMT area, SICAT Function shows a corresponding message.

☑ You have already imported suitable optical impressions for the opened study in a SICAT application, which you have not yet used in SICAT Function.

☑ The **Diagnose** workflow step is expanded.

1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** wizard opens with the **Import** step.
2. Click on the **Reuse from SICAT Applications** tab.
3. In the upper area, click on the row with the optical impressions that you want to re-use.
   ▶ SICAT Function displays the optical impressions selected:



1 **Reuse from SICAT Applications** tab

2 List of re-usable optical impressions

3 Scan information

4 Patient information

5 **Optical Impressions** area

4. Check the scan information and patient information.
5. Check the jaws in the **Optical Impressions** area.

6. Click on the **Finish** button.

▶ SICAT Function closes the **Import and Register Optical Impressions** wizard.

▶ SICAT Function adds the selected optical impressions to the **Object browser**.

▶ SICAT Function displays the optical impressions selected.

To enable you to check whether the 3D X-ray data and the optical impressions match, the **Import and Register Optical Impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

29.2 REGISTERING AND CHECKING OPTICAL IMPRESSIONS

CAUTION

The incorrect registration of optical impressions for 3D X-ray scans may result in an incorrect diagnosis and treatment.

Check that the registered optical impressions are correctly aligned to the 3D X-ray scans.

CAUTION

Excessive artifacts, insufficient resolution or the lack of points for registration may mean that the registration process for optical impressions fails. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Only use optical impression data and 3D X-ray data that allow for an adequate registration.

CAUTION

The selection of markings in the registration process for optical impressions that do not correspond to one another may result in an incorrect diagnosis and treatment.

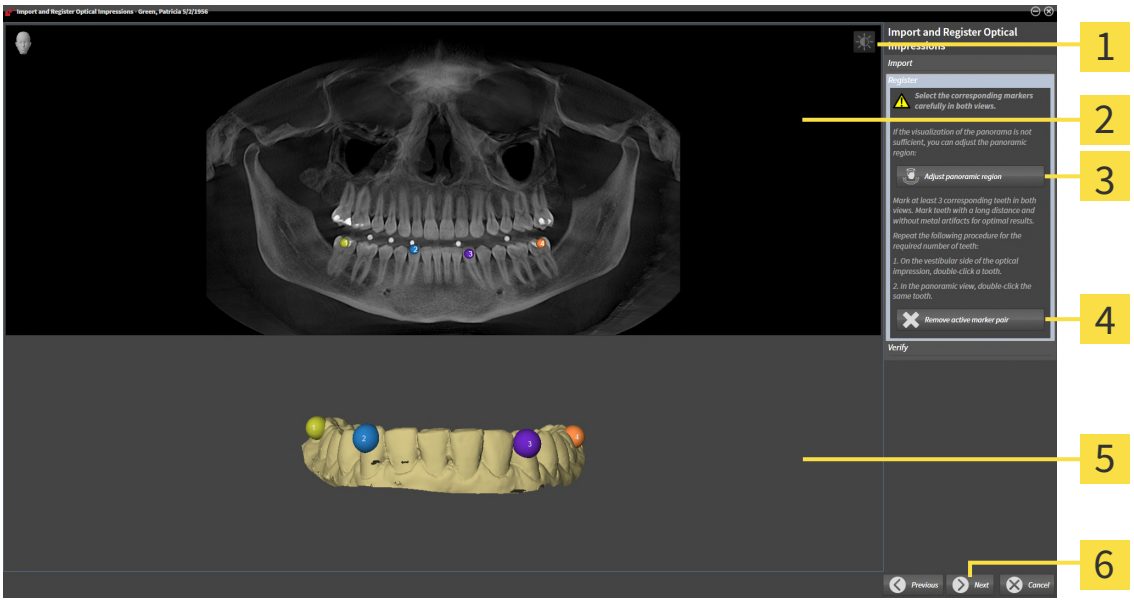
When you register optical impressions, carefully select corresponding markings in the 3D X-ray scans and optical impressions.

You can use the **Inspection Window** to check whether an optical impression is precisely aligned to the X-ray data. You can move the **Inspection Window** and scroll through the slices in the **Inspection Window**.

Optical impressions in color are automatically displayed in color in the **Import** step in the 3D preview. However, in the steps **Register** and **Verify** optical impressions in color are displayed in one color so that you can recognize the shape and geometry more exactly.

To register and check optical impressions, proceed as follows:

☑ The **Import and Register Optical Impressions** wizard is open at the **Register** step.



1 **Adjust brightness and contrast** icon

2 **Panorama** view

3 **Adjust panoramic region** button

4 **Remove active marker pair** button

5 **3D** view which shows the first optical impression

6 **Next** button

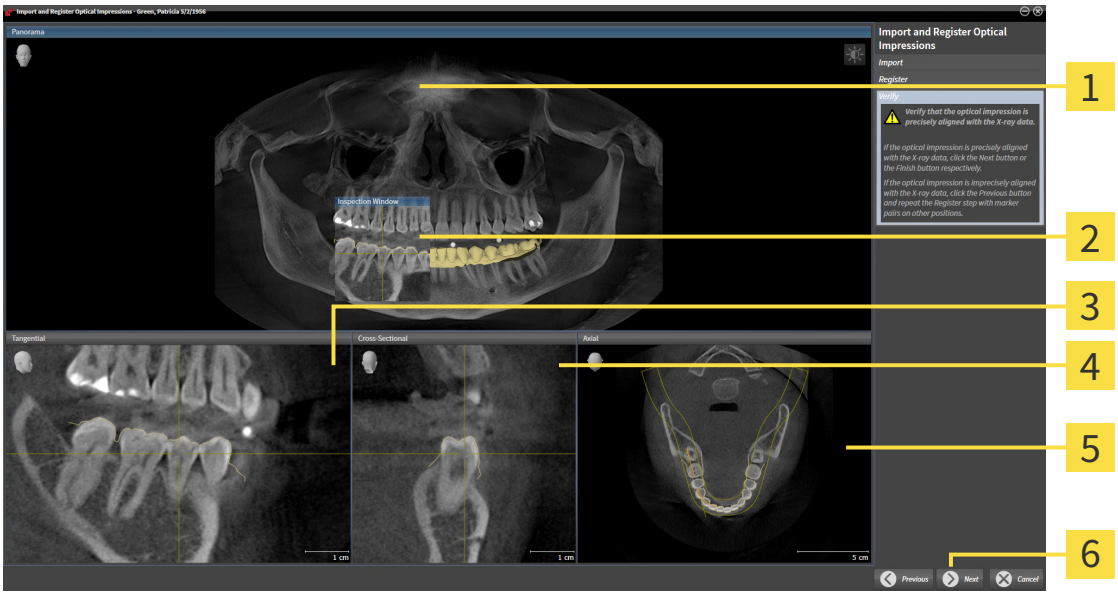
1. Double click the same tooth both in the **Panorama** view and on the vestibular side of the optical impression in the **3D** view. Make sure that the distance between individual teeth is as large as possible and mark only teeth without metal artifacts. Repeat this step until you have marked at least **three** matching teeth in both views.

   ▶ Markings with different colors and numbers in both views will display corresponding teeth in the optical impression.

2. Click **Next**.

   ▶ SICAT Function calculates the registration of the optical impression with the X-ray data.

▶ The **Verify** step opens:



1 **Panorama** view

2 **Inspection Window**

3 **Tangential** view

4 **Cross-Sectional** view

5 **Axial** view

6 **Finish** button

3. In the 2D views, check whether the optical impression is precisely aligned with the X-ray data. **In every slice view**, scroll through the slices and check the contours shown.
4. If the optical impression is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat the **Register** step with marker pairs in different positions if necessary.
5. If the first optical impression is precisely aligned to the X-ray data, click on the **Next** button. Repeat the previous steps for the second optical impression.
6. If the second optical impression is precisely aligned to the X-ray data, click on the **Finish** button.

▶ SICAT Function closes the **Import and Register Optical Impressions** wizard.

▶ SICAT Function adds the selected optical impressions to the **Object browser**.

▶ SICAT Function displays the registered optical impressions .

In addition to the described process, the following actions are available in the **Import and Register Optical Impressions** wizard:

- You can adjust the brightness and contrast of a 2D image by clicking the **Adjust brightness and contrast** icon. Information on this can be found in the section *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 119 - Standalone]*.
- You can adjust the panoramic area by clicking the **Adjust panoramic region** icon. Information on this can be found in the section *Adjusting the panoramic region [▶Page 151 - Standalone]*.
- If you wish to remove a specific marker pair in the **Register** step, you can select a marker from the pair in both views via mouse click and click on the **Remove active marker pair** button.
- If you want to cancel importing and registering optical impressions, click **Cancel**.

30 ANATOMICAL ARTICULATION

SICAT Function visualizes the anatomical articulation of a patient by matching the software the 3D X-ray data with motion data from a digital measurement device for jaw motion records. This is known as anatomical articulation. After the segmentation of the mandible you can track all of the patient's movements up to the temporomandibular joints.

SICAT Function requires the following data for anatomical articulation:

- Segmented 3D X-ray data – Information on this can be found in the section *Segmentation [▶Page 161 - Standalone]*.
- Registered jaw motion tracking data – Information on this can be found in the section *Jaw motion tracking data [▶Page 154 - Standalone]*.

SICAT Function can use optical impressions as additional sources of information. For example, you can use optical impressions to analyze the jaw motion of a patient before the terminal occlusion. Information on this can be found in the section *Optical impressions [▶Page 166 - Standalone]*.

You can perform a diagnosis regarding the individual mandible movements of a patient with these tools:

- **Active Jaw Relation** - Information on this can be found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*. You can use the Play button in the **Active Jaw Relation** to playback the individual movement of a patient's mandible in the **3D** view. In addition, you can use a button in the **Active Jaw Relation** to export jaw motion tracking data.
- **3D** view- Information on this can be found in the section *Adjusting the 3D view [▶Page 129 - Standalone]*.
- **Inspection Window** - Information on this can be found in the section *Moving, hiding, showing and maximizing the inspection window [▶Page 124 - Standalone]*.

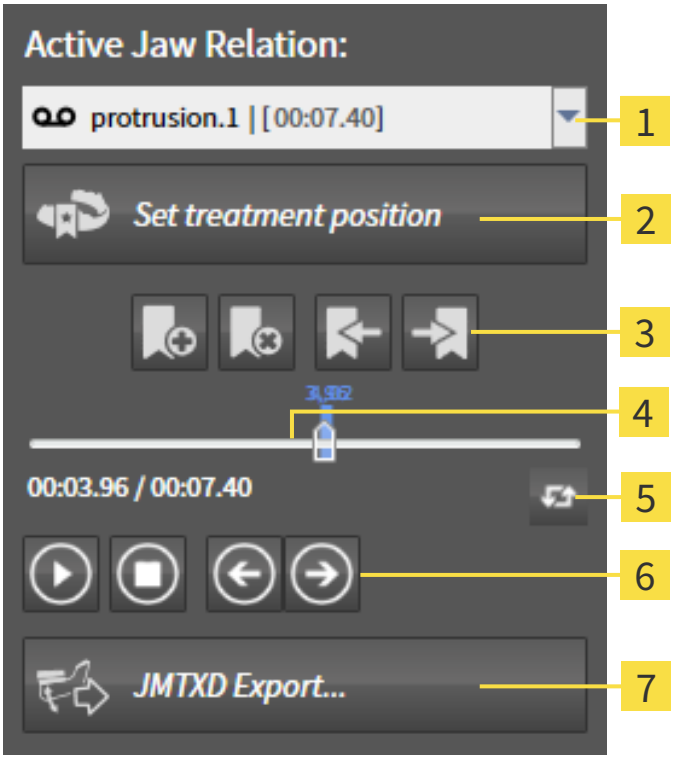
To perform a diagnosis of individual movements of a patient's mandible, you can place the crosshair by double clicking the selected position on the mandible in a 2D slice view. SICAT Function will then show the corresponding anatomical trace at the selected position in the **3D** view. Information on this can be found in the section *Moving, hiding and showing crosshairs and frames [▶Page 123 - Standalone]*.

Alternatively, you can place the **Inspection Window** on the selected position on the mandible. Information on this can be found in the section *Visualizing anatomical traces in the 3D view [▶Page 184 - Standalone]*.

In the **3D** view, SICAT Function will use different colors to show whether the selected position is on or outside the segmented mandible. For further information about this see *Adjusting anatomical traces using the inspection window [▶Page 185 - Standalone]* and *Adjusting anatomical traces using the crosshair in a slice view [▶Page 186 - Standalone]*.

30.1 INTERACTING WITH JAW MOTION

SICAT Function includes the **Active Jaw Relation** to manage jaw motion:



1 **Active Jaw Relation** list

2 **Set treatment position** button

3 Bookmark button

4 Time line with slider

5 **Switch play mode** icon

6 Play button

7 **JMTXD Export** button

You can carry out the following actions in the **Active Jaw Relation**:

- Selecting static jaw relations or jaw motion
- Interacting with jaw motion.
- Managing bookmarks.
- Defining a treatment position. Information on this can be found in the section *Defining a treatment position [▶Page 212 - Standalone]*.
- Exporting jaw motion tracking data.

SELECTING JAW RELATIONS OR JAW MOTION

To select a **Static jaw relation** or **Dynamic jaw relation**, proceed as follows:

1. Click on the **Active Jaw Relation** list.
   ▶ The **Active Jaw Relation** list opens.
2. Select the desired **Static jaw relation** or **Dynamic jaw relation**.

▶ The **Active Jaw Relation** list closes.

▶ The **Active Jaw Relation** shows the designation of the selected jaw relation.

▶ The **3D** view shows the selected jaw relation.

INTERACTING WITH JAW MOTION

To interact with jaw motion, proceed as follows:

☑ Jaw motion tracking data has already been imported. Information on this can be found in the section *Importing and registering jaw motion data [▶Page 156 - Standalone]*.

1. Click on the **Start** icon to start the playback.

2. Click on the **Stop** icon to stop the playback.

3. Click on the **Skip forward** icon to jump one frame forwards.

4. Click on the **Skip backward** icon to jump one frame backwards.

5. Click on the **Switch play mode** icon to switch between single and continuous playback mode.
6. To manually change the position on the time line, click on the slider in the JMT area, move the mouse and release the left mouse button at the desired position.

MANAGING BOOKMARKS IN THE JMT AREA

To manage bookmarks in the JMT area, proceed as follows:

1. To add a bookmark at the current position on the time line, click the **Add bookmark** icon.

2. To delete a bookmark at the current position on the time line, click the **Delete bookmark** icon.

3. To move the slide controller to the position of the next bookmark, click the **Skip to next bookmark** icon.

4. To move the slide controller to the position of the previous bookmark, click the **Skip to previous bookmark** icon.

You cannot delete a bookmark in the following cases:

- You have defined a bookmark as the treatment position, for which there is an order in the shopping cart. To delete the bookmark, complete the order or delete the order.
- You have selected a bookmark as an active jaw relation. To delete the bookmark, select the corresponding trace of movement or static jaw relation and click the **Skip to next bookmark** icon.

EXPORTING JAW MOTION TRACKING DATA

To export jaw motion tracking data, proceed as follows:

☑ You have already imported and registered jaw motion tracking data.

☑ You have already imported and registered optical impressions of both jaws.

1. Click on the **JMTXD Export** button.
   ▶ A Windows Explorer window opens.
2. Select a target folder and change the file name if required.
3. Click on the **Save** button.

▶ SICAT Function closes the Windows Explorer window.

▶ SICAT Function exports the jaw motion tracking data and the optical impressions to the selected file (JMTXD file format, compatible from CEREC 4.4 and from InLab15).

You can export jaw motion data anonymously if you activate anonymization beforehand in the settings.

30.2 VISUALIZING ANATOMICAL TRACES IN THE 3D VIEW

Anatomical traces show the spatial path of motion of an individual point in the mandible. They resemble the illustration of conventional axis-based condylography systems. The point, the trace of movement of which is shown, is called the trace point. You can freely choose trace points in SICAT Function. You can select the individual movements of a patient in the JMT area and perform a diagnosis in the **3D** view. General information on the JMT area can be found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*.

To show anatomical traces in the **3D** view, perform the following steps.

- Register the jaw motion tracking data with the 3D X-ray data – Information on this can be found in the section *Jaw motion tracking data [▶Page 154 - Standalone]*.
- Segment the 3D X-ray data – Information on this can be found in the section *Segmentation [▶Page 161 - Standalone]*.

After you have imported the jaw motion data and segmented the 3D X-ray data, the **3D** view will initially show the original relations of the 3D X-ray scan. When you select a recorded motion, the **3D** view will show anatomical traces.

SICAT Function marks the position of the anatomical traces using different colors:

- If the anatomical traces are on the patient's mandible, SICAT Function will mark them in green.
- If the anatomical traces are not on the patient's mandible, SICAT Function will mark them in red.

You can place the anatomical traces on the patient's mandible. For further information about this see *Adjusting anatomical traces using the inspection window [▶Page 185 - Standalone]* and *Adjusting anatomical traces using the crosshair in a slice view [▶Page 186 - Standalone]*.

You can select a display mode for the **3D** view and adjust it according to your needs. Information on this can be found in the section *Adjusting the 3D view [▶Page 129 - Standalone]*.

You can display a combination of three different trace points. Information on this can be found in the section *Using the Bonwill triangle [▶Page 190 - Standalone]*.

You can show and hide the segmentation boundary. Information on this can be found in the section *Displaying the segmentation boundary [▶Page 191 - Standalone]*.

You can display the condyle-aligned movement. Information on this can be found in the section *Displaying condyle-aligned movement [▶Page 192 - Standalone]*.

30.3 ADJUSTING ANATOMICAL TRACES USING THE INSPECTION WINDOW

To use the **Inspection Window** to analyze individual movements of the patient on all points of the mandible, proceed as follows:

☑ The **Panorama** workspace is already active. Information on this can be found in the section *Switching workspaces [▶Page 111 - Standalone]*.

☑ The **Panorama** view is already active. Information on this can be found in the section *Changing the active view [▶Page 117 - Standalone]*.

☑ The **Inspection Window** is already shown. Information on this can be found in the section *Moving, hiding, showing and maximizing the inspection window [▶Page 124 - Standalone]*.

- Move the **Inspection Window** to the desired anatomical region:

▶ SICAT Function updates the position of the anatomical traces in the **3D** view according to the **Inspection Window** position. The current trace point is located in the crosshair of the inspection window.

▶ The anatomical traces are located at the new position.

If the trace point is outside the patient's mandible, you can position the anatomical traces on the patient's mandible. Information on this can be found in the section *Adjusting anatomical traces using the crosshair in a slice view [▶Page 186 - Standalone]*.

To move the **Inspection Window** immediately to the desired anatomical region, you can also double click the desired position in the **Panorama** view.

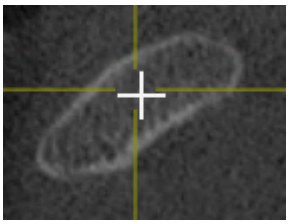
30.4 ADJUSTING ANATOMICAL TRACES USING THE CROSSHAIR IN A SLICE VIEW

To use the crosshair to analyze individual movements of the patient on all points of the mandible, proceed as follows:

☑ The crosshairs are currently shown in the 2D slice views. Information on this can be found in the section *Moving, hiding and showing crosshairs and frames [▶Page 123 - Standalone]*.

1. Activate the desired 2D slice view. Information on this can be found in the section *Changing the active view [▶Page 117 - Standalone]*.

2. Move the crosshair to the desired anatomical region. Information on this can be found in the section *Moving, hiding and showing crosshairs and frames [▶Page 123 - Standalone]*.



▶ SICAT Function updates the position of the anatomical traces in the **3D** view to the position of the crosshair.

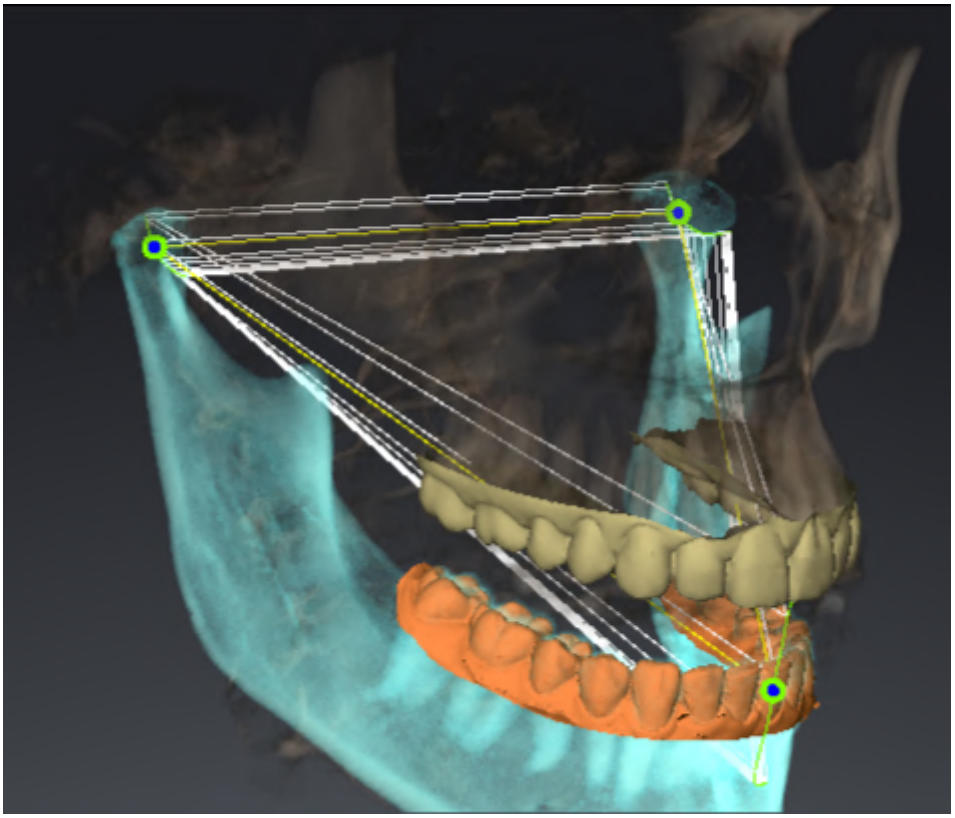
In the **3D** view, SICAT Function labels the anatomical traces red if you select a position outside the patient's mandible.

To immediately move the crosshair to the position of the mouse pointer, you can also double click in a 2D view.

31 FUNCTIONS IN THE TMJ WORKSPACE

The **TMJ** workspace helps you in diagnosing and planning the treatment of craniomandibular dysfunctions. Depending on the CBCT scan, you can compare the left and right temporomandibular joints in terms of morphology and movement in the **TMJ** workspace.

In the **TMJ** workspace, you can display three different anatomical traces simultaneously for each movement:



- Trace for the left condyle
- Trace for the right condyle
- Trace for a point on the occlusion, for example the interincisal point

You can move the trace points for the left and right condyles in the slice views of the **TMJ** workspace. Information on this can be found in the section *Moving trace points [▶Page 188 - Standalone]*.

In the **3D** view, you can set the trace point for the interincisal point by double clicking. Information on this can be found in the section *Setting the interincisal point [▶Page 189 - Standalone]*.

There are additional options in the **TMJ** workspace to perform a diagnosis on the individual anatomical articulation of a patient. For further information see *Displaying the segmentation boundary [▶Page 191 - Standalone]*, *Displaying condyle-aligned movement [▶Page 192 - Standalone]* and *Using the Bonwill triangle [▶Page 190 - Standalone]*. You can also use the Bonwill triangle to read articulator values. Information on this can be found in the section *Articulator values [▶Page 193 - Standalone]*.

31.1 MOVING TRACE POINTS

SICAT Function shows traces of corresponding trace points in the left and right condyles simultaneously. You can use the traces to compare the entire movement of the joints with one another.

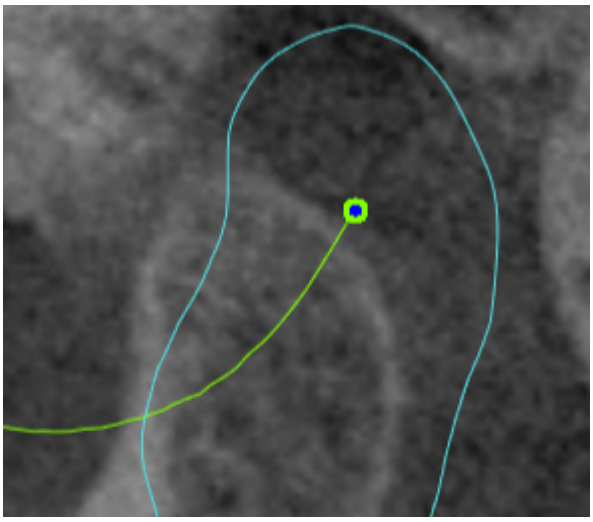
To move the trace points for the left and right condyles in the slice views, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 187 - Standalone]* and *Overview of the TMJ workspace [▶Page 108 - Standalone]*.

☑ You have already selected a dynamic jaw relation.

1. Place the mouse pointer on the desired trace point.
2. Click and hold the left mouse button.
3. Place the mouse pointer on the desired position of the trace point.
4. Release the left mouse button.

   ▶ SICAT Function moves the trace point for the left and right condyle in the slice views to the selected position:



31.2 SETTING THE INTERINCISAL POINT

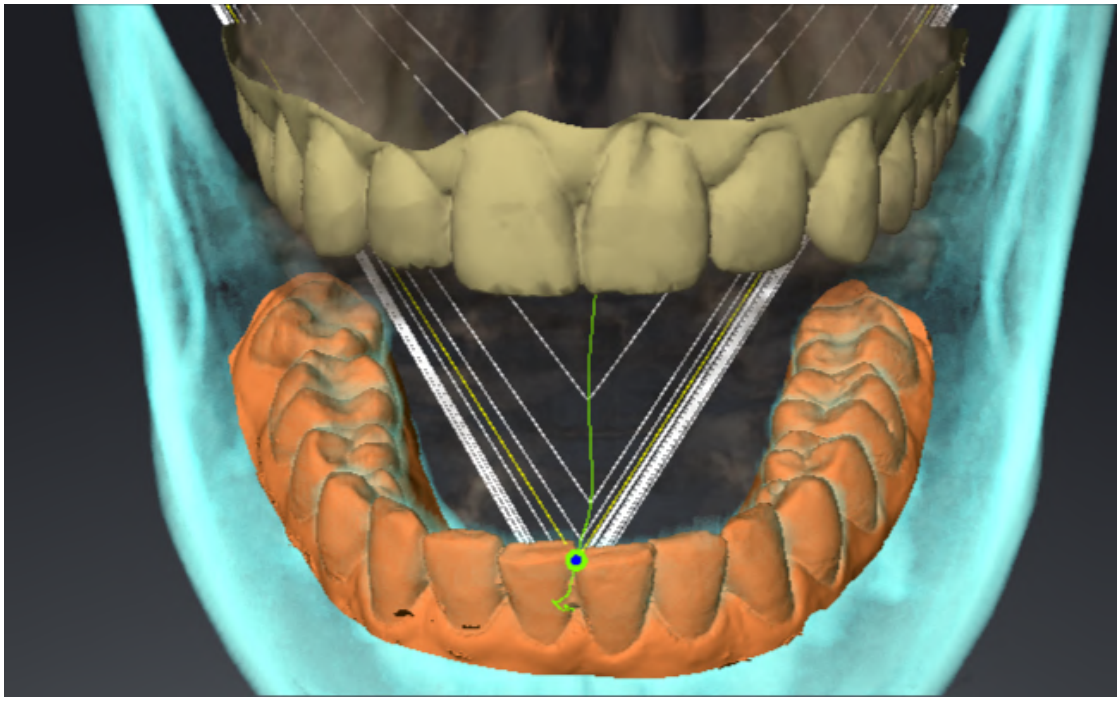
To set the trace point for the interincisal point in the **3D** view, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 187 - Standalone]* and *Overview of the TMJ workspace [▶Page 108 - Standalone]*.

☑ You have already selected a dynamic jaw relation.

- Move the mouse pointer to the desired position in the **3D** view and double click the left mouse button.

▶ SICAT Function uses the selected position on the digital dental impressions as a trace point:



Using the frontal view on the interincisal point you can identify and more closely observe lateral movements of the lower jaw.

31.3 USING THE BONWILL TRIANGLE

DISPLAYING THE BONWILL TRIANGLE

The SICAT Function uses the **Bonwill triangle** to show the connection of the three trace points. This way, you can identify asymmetries and jumps in the movement more easily.

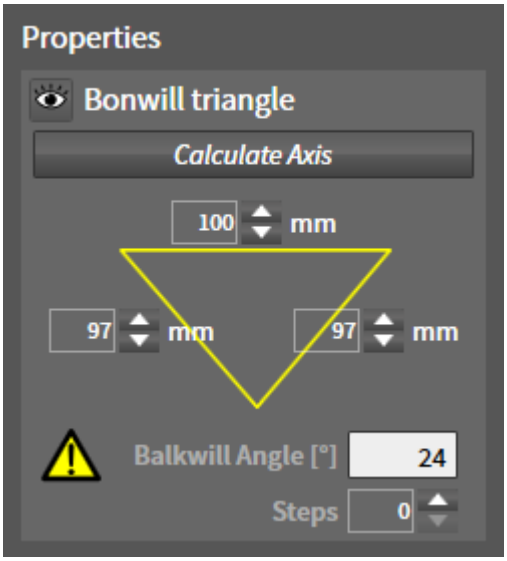
To display the **Bonwill triangle**, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 187 - Standalone]* and *Overview of the TMJ workspace [▶Page 108 - Standalone]*.

☑ You have already selected a dynamic jaw relation.

- Click on **Jaw Motion Tracking Data** in the **Object browser**.

▶ SICAT Function shows the **Bonwill triangle** under **Properties**:



CONFIGURING THE BONWILL TRIANGLE

To set the step width of the Bonwill triangle, proceed as follows:

1. Click on **Jaw Motion Tracking Data** in the **Object browser**.
2. Click on one of the arrow buttons next to the **Steps** in the **Properties** area.

▶ SICAT Function changes the value of the **Steps** field.

▶ The **3D** view shows the selected step width of the Bonwill triangle.

	Set the step width so that you can identify possible asymmetries in the movement well.

31.4 DISPLAYING THE SEGMENTATION BOUNDARY

If you display the segmentation boundary, you can compare the quality of segmentation with the 3D X-ray scans. If the segmentation boundary differs from the 3D X-ray scans, you can correct the segmentation in the **Segment Condyles and Mandible Region** window.

The blue contour shows the position of the condyles given the current movement. This means that the blue contour is typically not congruent with the 3D X-ray scans and is not suitable for checking the segmentation quality. Use the yellow contour instead for checking the segmentation boundary.

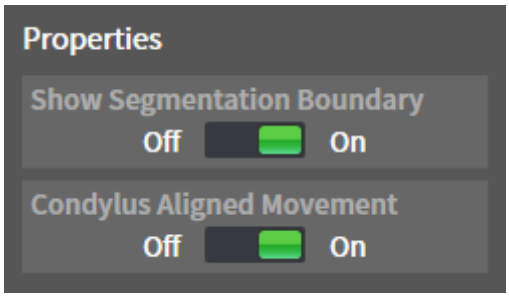
To display the segmentation boundary, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 187 - Standalone]* and *Overview of the TMJ workspace [▶Page 108 - Standalone]*.

☑ You have already selected a dynamic jaw relation or a static jaw relation.

1. Click on **Volume Regions** in the **Object browser**.

   ▶ SICAT Function shows the **Show Segmentation Boundary** option under **Properties**:



2. Move the slide controller for the **Show Segmentation Boundary** option to the **On** position.

   ▶ The 2D views show the segmentation boundary as a yellow contour.

SICAT Function marks the segmented position of the articulation using different colors:

- SICAT Function marks the condyles in motion at the segmented position in blue.
- SICAT Function shows the original segmentation of the 3D X-ray scans using a control line. SICAT Function marks the control line in yellow.

31.5 DISPLAYING CONDYLE-ALIGNED MOVEMENT

When both condyles are captured in the 3D X-ray scan, you can use the condyle aligned movement to display moving condyles in relation to the fossa. If the condyle-aligned movement is activated, all points of the condyle are visible in the slice views of the **TMJ** workspace during the entire movement. If the condyle-aligned movement is deactivated, all points of the fossa are visible in the slice views of the **TMJ** workspace during the entire movement.

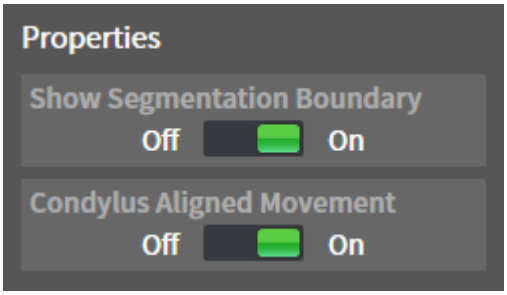
To display the condyle-aligned movement, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 187 - Standalone]* and *Overview of the TMJ workspace [▶Page 108 - Standalone]*.

☑ You have already selected a dynamic jaw relation or a static jaw relation.

1. Click on **Volume Regions** in the **Object browser**.

   ▶ SICAT Function shows the **Condylus Aligned Movement** option under **Properties**:



2. Move the slide controller for the **Condylus Aligned Movement** option to the **On** position.

   ▶ The **3D** view shows the condyle-aligned movement.

32 ARTICULATOR VALUES

CAUTION

Incorrect volume orientations and incorrect determination of the incisal point may result in an incorrect diagnosis and treatment.

1. Make sure that the 3D X-ray scan is oriented in such a way that the occlusal plane of the maxilla is parallel to the axial slices.
2. Make sure that you have selected a jaw relation in which the patient's teeth are in occlusion so that the occlusal planes of the maxilla and mandible are aligned.
3. Make sure that the incisal point in the software is located over the anatomically correct incisal point between the lower central incisors.

CAUTION

An insufficiently accurate definition of the Bonwill triangle may result in an incorrect diagnosis and treatment.

1. Make sure that you have defined the Bonwill triangle according to the correct anatomic landmarks.
2. Make sure that the definition of the Bonwill triangle is suitable for the intended use.

CAUTION

The use of unsuitable jaw motion tracking data may cause an incorrect calculation of the hinge axis.

Only use a guided opening movement or a guided closing movement to calculate the hinge axis.

SICAT Function helps you to determine individual articulator values for each patient. You can construct and create individual prosthetic restorations by applying the values to an articulator. Currently, parameter determination is optimized for articulators using the occlusal plane as reference plane.

On example of an articulator using the occlusal plane as reference plane, is the virtual articulator of the CEREC software (Dentsply Sirona). Information on how to program the CEREC articulator with the individual values can be found in the CEREC instructions for use.

NECESSARY JAW MOTION RECORDING

You can determine most articulator values by means of jaw motion recordings. You need jaw motion records of a specific type to determine the values:

ARTICULATOR VALUE	REQUIRED JAW MOTION RECORDING
Sagittal condylar path inclination of the left and right temporomandibular joints.	Protrusion
Left and right Bennett angle and left and right immediate side shift	Left and right laterotrusion
Hinge axis	Guided opening movement or guided closing movement

VALUES FOR THE CEREC ARTICULATOR

You can use SICAT Function to determine the following values for the CEREC articulator:

CEREC ARTICULATOR PARAMETERS	DESCRIPTION
Arms	The arms are the distances from the left or right condyle to the incisal point between the lower central incisors. SICAT Function shows the length of the arms directly on the Bonwill triangle.
Base	The base is the distance between the left and the right condyles (intercondylar distance). SICAT Function shows the length of the base directly on the Bonwill triangle.
Balkwill angle	The Balkwill angle is the angle between the occlusal plane and the Bonwill triangle. SICAT Function shows the Balkwill angle directly on the Bonwill triangle.
Left and right sagittal condylar path inclination	The sagittal condylar path inclination is the angle between the protrusion trace of the left or right condyle and the occlusal plane. You can measure this angle in the sagittal views of the **TMJ** workspace using a protrusion trace. Make sure that the 3D X-ray data is oriented horizontally to the occlusal plane of the maxilla. Please observe the safety warning regarding volume orientation. Measure the angle between the protrusion trace of the left and right temporomandibular joint and the horizontal plane.
Left and right Bennet angle	The Bennett angle is the angle between the protrusion movement and the laterotrusion. You can measure this angle in the axial views of the **TMJ**-workspace using a laterotrusion on the left side and on the right side. Make sure that the 3D X-ray scans are oriented horizontally to the occlusal plane of the maxilla. Please observe the safety warning regarding volume orientation. Measure the angle between the laterotrusion trace and the sagittal plane.
Left and right immediate side shift	

VISIBILITY OF THE CONDYLES IN THE 3D X-RAY SCAN

You can determine the articulator values mainly by means of jaw motion recordings. Only the intercondylar distance (“base” length of the Bonwill triangle in the CEREC articulator) cannot be determined from the jaw motion tracking data alone.

If the temporomandibular joints are not visible in the 3D X-ray scan, you can calculate the position of the “base” arm of the Bonwill triangle using the hinge axis. You can determine the hinge axis based on a guided opening movement or closing movement. It is crucial that the mandible performs a rotary movement and does not shift forwards.

If both condyles are included in the 3D X-ray scan, you can determine the intercondylar distance based on the 3D X-ray scan. Please refer to the following table to see which jaw motion tracking data you need for each articulator value.

	CONDYLES ARE VISIBLE IN THE 3D X-RAY SCANS	CONDYLES ARE NOT VISIBLE IN THE 3D X-RAY SCANS
Cause	■ You have used an X-ray apparatus with a large field of view (FOV) for the 3D X-ray scan.	You have used an X-ray apparatus with a small field of view (FOV) for the 3D X-ray scan. You have made a 3D X-ray scan of a plaster model.
Consequence	In the 3D X-ray scan, the left trace point and the right trace point can be placed at the condyles.	In the 3D X-ray scan, the left trace point and the right trace point cannot be placed at the condyles.
Steps required	Place the left trace point and the right trace point in the slice views of the **TMJ** workspace. Use the position of the condyles in the 3D X-ray scan for orientation.	To calculate the hinge axis, a recording of guided opening movement or a guided closing movement is required. A guided opening movement or closing movement means that the patient opens his or her jaws by a few millimeters and closes them again and you manipulate the condyles using the Lauritzen manipulation or the Dawson manipulation to prevent the mandible from moving forwards. SICAT Function places the left trace point and the right trace point in such a way that both trace points will automatically be on the hinge axis of the temporomandibular joints.

THE BONWILL TRIANGLE IN SICAT FUNCTION

The Bonwill triangle in SICAT Function helps you to determine the following articulator values:

- Left and right arms [mm]
- Base [mm]
- Balkwill angle [°]

However, this requires that the three corners of the Bonwill triangle have been correctly placed:

- Left trace point
- Right trace point
- Incisal point

In the **TMJ** workspace, in the **3D** view, you can place the incisal point by double clicking on the anatomically correct point. Placement both of the left trace point and the right trace point differs depending on whether or not the condyles are visible in the 3D X-ray scan.

Information on how to read the articulator values can be found in the section *Reading articulator values if condyles are visible [▶Page 197 - Standalone]* or in the section *Reading articulator values if condyles are not visible [▶Page 199 - Standalone]*.

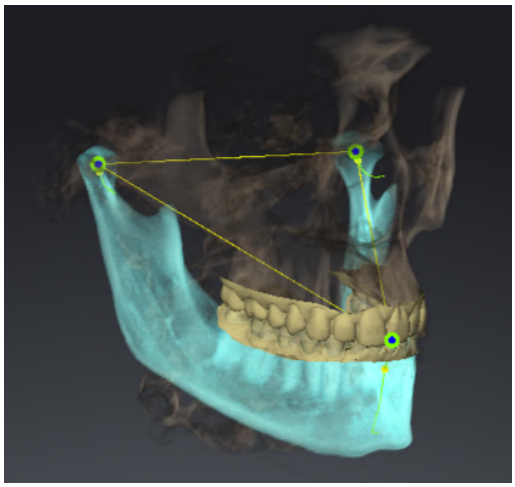
32.1 READING ARTICULATOR VALUES IF CONDYLES ARE VISIBLE

ADJUSTING THE BONWILL TRIANGLE IF CONDYLES ARE VISIBLE

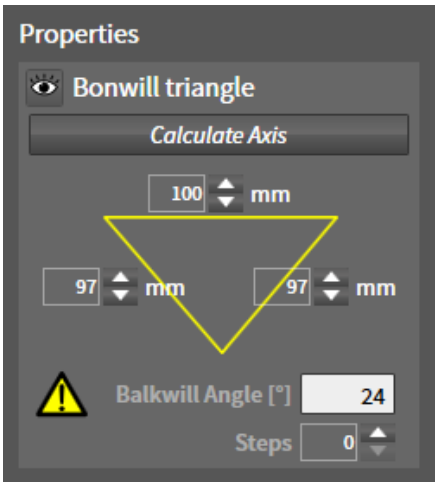
Use the slice views in the **TMJ** workspace for the following steps:

1. Click on the left trace point or the right trace point, hold the left mouse button and place the trace point in the corresponding condyle.

2. Place the incisal point between the incisors of the mandible by double clicking at the anatomically correct position. If you cannot see an incisal point between the incisors of the mandible, select an opening movement and open the jaws a little. Information on how to select a specific position within a jaw motion recording, can be found in the section *Interacting with jaw motion* *[▶Page 181 - Standalone]*.



The screenshot shows a 3D X-ray scan with a large field of view (FOV) in which a Bonwill triangle is aligned with respect to the patient's anatomy. The condyles are visible. The left trace point and the right trace point are placed in the center of the visible condyles. The incisal point in SICAT Function is placed between the central incisors of the mandible.



SICAT Function displays the length of the arms of the Bonwill triangle in mm. You can directly write down the values for the articulator. SICAT Function also shows the Balkwill angle. The Balkwill angle only applies to closed jaws and if the occlusal plane is horizontally aligned.

DETERMINING THE ARTICULATOR VALUES IF CONDYLES ARE VISIBLE

To determine the articulator values, proceed as follows:

☑ You have oriented the 3D X-ray scan in such a way that the occlusal plane of the maxilla is horizontally aligned and the jaws are aligned as symmetrically as possible with respect to the median sagittal plane. These correct alignments are necessary so that you will be able to correctly register the data and apply them to the articulator. Information on this can be found in the section *Adjusting volume orientation and panoramic region [▶Page 144 - Standalone]*.

☑ You have already imported jaw motion tracking data. Information on this can be found in the section *Jaw motion tracking data [▶Page 154 - Standalone]*.

☑ The **TMJ** workspace is already open. Information on this can be found in the section *Overview of the TMJ workspace [▶Page 108 - Standalone]*.

☑ You have already selected a dynamic jaw relation in the **Active Jaw Relation** list. Information on this can be found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*.

1. In the **Object browser**, select the **Jaw Motion Tracking Data** object.

   ▶ SICAT Function will show the Bonwill triangle in the **Properties** area.

2. In the **3D** view, set the incisal point between the lower central incisors by double clicking on the segmented mandible or the optical impressions at the anatomically correct position. If the incisal point of the incisors of the mandible is concealed, open the jaws by playing back the movement until the incisors of the mandible are visible. Place the incisal point by double clicking and close the jaws again.

3. Set the left trace point and the right trace point in the center of the condyles by moving the trace points in the coronal, sagittal and axial views.

4. Write down the base value, the Balkwill angle and the values for the lengths of the arms. Please note that, depending on the articulator used, only one arm value can be entered.

5. During the selected protrusion movement, select a point in time when the jaws are closed. Information on how to select a specific position within a jaw motion recording, can be found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*.

6. Ensure that the rows of teeth are closed.

7. In the sagittal views, use the **Add angle measurement (A)** tool to measure the sagittal condylar path inclination in the left temporomandibular joint and in the right temporomandibular joint Write down the values.

8. Select laterotrusion to the left. In the axial views, use the **Add angle measurement (A)** tool to measure the Bennett angle in the right temporomandibular joint Write down the value.

9. If available, measure the immediate side shift in the right temporomandibular joint. Write down the value.

10. Select laterotrusion to the right. In the axial views, use the **Add angle measurement (A)** tool to measure the Bennett angle in the left temporomandibular joint Write down the value.

11. If available, measure the immediate side shift in the left temporomandibular joint. Write down the value.

32.2 READING ARTICULATOR VALUES IF CONDYLES ARE NOT VISIBLE

ADJUSTING THE BONWILL TRIANGLE IF CONDYLES ARE NOT VISIBLE

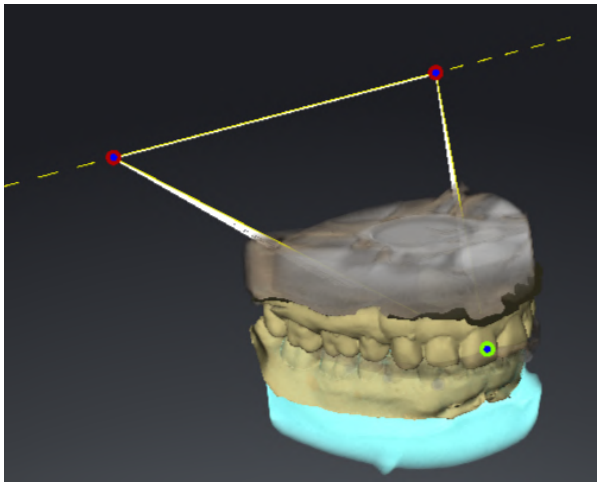
Proceed as follows:

1. From the **Active Jaw Relation** list, select a guided opening movement or guided closing movement.

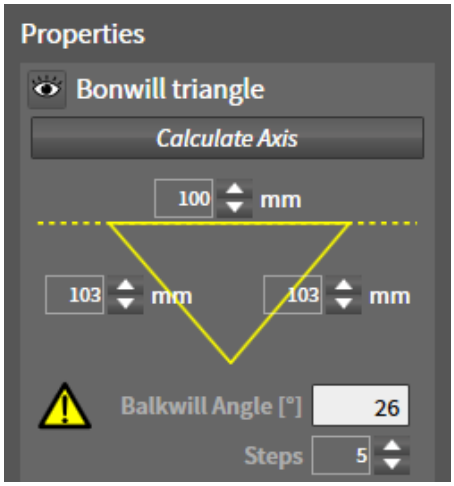
2. Click on the **Calculate Axis** button.

► SICAT Function shows the calculated axis as dashed line in the**3D** view. SICAT Function automatically places the left trace point and the right trace point in such a way that both trace points are positioned on the calculated hinge axis in the **TMJ** workspace.

► If you select the **Jaw Motion Tracking Data** object in the **Object browser**, SICAT Function shows the calculated axis in the **Properties** area.



The screenshot shows an example of a plaster model scan in which the condyles are not visible. The hinge axis was determined using a guided opening movement. The dashed line indicates the calculated axis. SICAT Function automatically placed the left trace point and the right trace point in such a way that both trace points are positioned on the calculated axis. The incisal point in SICAT Function is placed between the central incisors of the mandible.



SICAT Function displays the length of the arms of the Bonwill triangle in mm. You can directly write down the values for the articulator. SICAT Function also shows the Balkwill angle. The Balkwill angle only applies to closed jaws and if the occlusal plane is horizontally aligned.

DETERMINING THE ARTICULATOR VALUES IF CONDYLES ARE NOT VISIBLE

To determine the articulator values, proceed as follows:

☑ You have oriented the 3D X-ray scan in such a way that the occlusal plane of the maxilla is horizontally aligned and the jaws are aligned as symmetrically as possible with respect to the median sagittal plane. These correct alignments are necessary so that you will be able to correctly register the data and apply them to the articulator. Information on this can be found in the section *Adjusting volume orientation and panoramic region [▶Page 144 - Standalone]*.

☑ You have already imported jaw motion tracking data. Information on this can be found in the section *Jaw motion tracking data [▶Page 154 - Standalone]*.

☑ The **TMJ** workspace is already open. Information on this can be found in the section *Overview of the TMJ workspace [▶Page 108 - Standalone]*.

☑ You have already selected a dynamic jaw relation in the **Active Jaw Relation** list. Information on this can be found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*.

1. In the **Object browser**, select the **Jaw Motion Tracking Data** object.

   ▶ SICAT Function will show the Bonwill triangle in the **Properties** area.

2. In the **3D** view, set the incisal point between the lower central incisors by double clicking on the segmented mandible or the optical impressions at the anatomically correct position. If the incisal point of the incisors of the mandible is concealed, open the jaws by playing back the movement until the incisors of the mandible are visible. Place the incisal point by double clicking and close the jaws again.

3. From the **Active Jaw Relation** list, select a guided opening movement or a guided closing movement.

4. Click on the **Calculate Axis** button in the **Properties** area. If required, set the length of the basis to the average value of 100 mm.

5. In the **Object browser**, select the **Jaw Motion Tracking Data** object.

   ▶ SICAT Function shows the values of the base, arms and Balkwill angle in the **Properties** area.

6. Write down the base value, the Balkwill angle and the values for the lengths of the arms. Please note that, depending on the articulator used, only one arm value can be entered.

7. Select a protrusion movement. During the protrusion movement, select a point in time when the jaws are closed. Information on how to select a specific position within a jaw motion recording, can be found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*.

8. Ensure that the rows of teeth are closed.

9. In the sagittal views, use the **Add angle measurement (A)** tool to measure the sagittal condylar path inclination in the left temporomandibular joint and in the right temporomandibular joint Write down the values.

10. Select laterotrusion to the left. In the axial views, use the **Add angle measurement (A)** tool to measure the Bennett angle in the right temporomandibular joint Write down the value.

11. If available, measure the immediate side shift in the right temporomandibular joint. Write down the value.

12. Select laterotrusion to the right. In the axial views, use the **Add angle measurement (A)** tool to measure the Bennett angle in the left temporomandibular joint Write down the value.

13. If available, measure the immediate side shift in the left temporomandibular joint. Write down the value.

33 DISTANCE AND ANGLE MEASUREMENTS

SICAT Function features two different types of measurement:

- Distance measurements

- Angle measurements

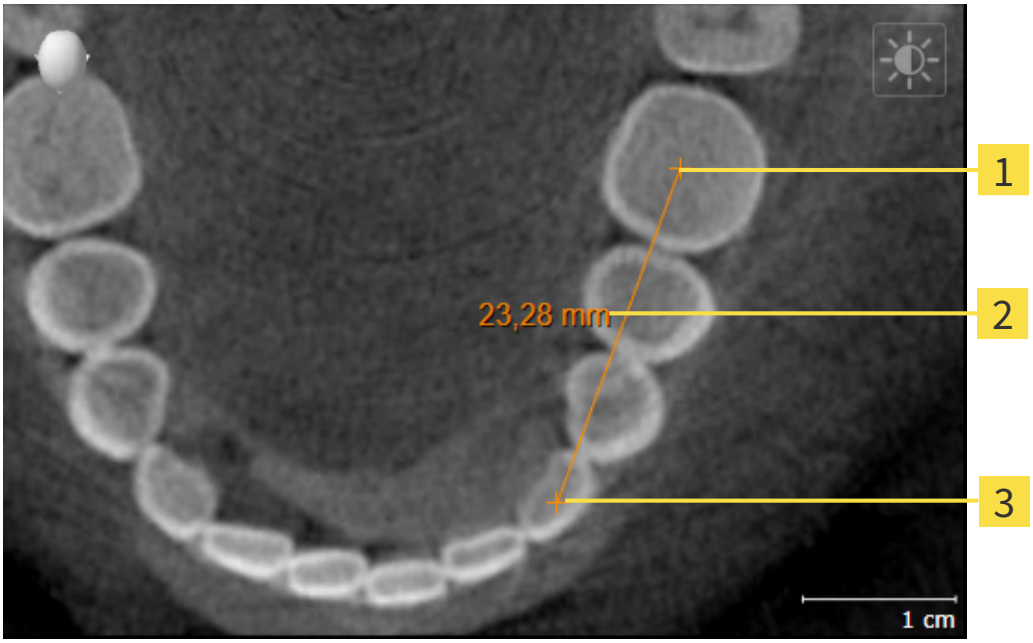
The tools to add measurements are available in the **Diagnose** step of the **Workflow toolbar**. You can add measurements in all 2D slice views. Every time you add a measurement, SICAT Function will also add it to the **Measurements** group in the **Object browser**.

You cannot add measurement objects in the **Inspection Window**.

The following actions are available for measurements:

- *Adding distance measurements [▶Page 203 - Standalone]*
- *Adding angle measurements [▶Page 204 - Standalone]*
- *Moving measurements, individual measuring points and measured values [▶Page 206 - Standalone]*
- Activating, hiding and showing measurements - Information on this can be found in the section *Managing objects with the object browser [▶Page 100 - Standalone]*.
- Focusing on measurements, removing measurements and undoing and redoing measurement actions – Information on this can be found in the section *Managing objects with the object toolbar [▶Page 102 - Standalone]*.

33.1 ADDING DISTANCE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

To add a distance measurement, proceed as follows:

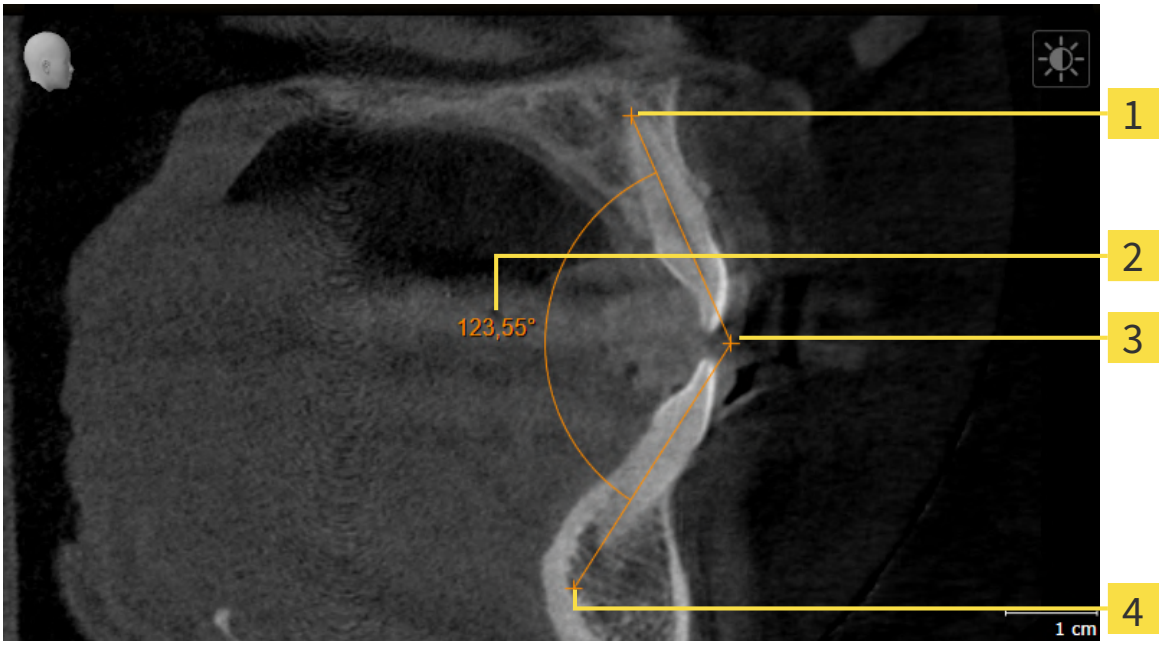
☑ The **Diagnose** workflow step is already expanded.

1. In the **Diagnose** workflow step, click the **Add distance measurement (D)** icon.
   ▶ SICAT Function adds a new distance measurement to the **Object browser**.
2. Move the mouse pointer over the desired 2D slice view.
   ▶ The mouse pointer becomes a cross.
3. Click on the starting point of the distance measurement.
   ▶ SICAT Function illustrates the starting point using a small cross.
   ▶ SICAT Function shows a distance line between the starting point and the mouse pointer.
   ▶ SICAT Function shows the current distance between the starting point and the mouse pointer in the middle of the distance line and in the **Object browser**.
4. Move the mouse pointer to the end point of the distance measurement and left-click.

▶ SICAT Function illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

33.2 ADDING ANGLE MEASUREMENTS



1 Starting point

2 Measured value

3 Vertex

4 End point

To add an angle measurement, proceed as follows:

☑ The **Diagnose** workflow step is already expanded.

1. In the **Diagnose** workflow step, click the **Add angle measurement (A)** icon.
   ▶ SICAT Function adds a new angle measurement to the **Object browser**.
2. Move the mouse pointer over the desired 2D slice view.
   ▶ The mouse pointer becomes a cross.
3. Click on the starting point of the angle measurement.
   ▶ SICAT Function illustrates the starting point using a small cross.
   ▶ SICAT Function shows the first arm of the angle measurement by means of a line from the starting point to the mouse pointer.
4. Move the mouse pointer to the vertex of the angle measurement and left-click.
   ▶ SICAT Function illustrates the vertex using a small cross.
   ▶ SICAT Function shows the second arm of the angle measurement by a line from the vertex to the mouse pointer.
   ▶ SICAT Function shows the current angle between both arms of the angle measurement and in the **Object browser**.

5. Move the mouse pointer to the end point of the second arm and left-click.

► SICAT Function illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

33.3 MOVING MEASUREMENTS, INDIVIDUAL MEASURING POINTS AND MEASURED VALUES

MOVING MEASUREMENTS

To move a measurement, proceed as follows:

☑ SICAT Function shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 100 - Standalone]* and *Managing objects with the object toolbar [▶Page 102 - Standalone]*.

1. Place the mouse pointer on one of the measurement lines.
   ▶ The mouse pointer becomes a cross.
2. Click and hold the left mouse button.
3. Place the mouse pointer on the desired position of the measurement.
   ▶ The measurement tracks the movement of the mouse pointer.
4. Release the left mouse button.

▶ SICAT Function maintains the current position of the measurement.

MOVING INDIVIDUAL MEASURING POINTS

To move an individual measuring point, proceed as follows:

☑ SICAT Function shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 100 - Standalone]* and *Managing objects with the object toolbar [▶Page 102 - Standalone]*.

1. Place the mouse pointer on the desired measuring point.
   ▶ The mouse pointer becomes a cross.
2. Click and hold the left mouse button.
3. Place the mouse pointer on the desired position of the measuring point.
   ▶ The measuring point tracks the movement of the mouse pointer.
   ▶ The measured value changes as you move the mouse.
4. Release the left mouse button.

▶ SICAT Function maintains the current position of the measuring point.

MOVING MEASURED VALUES

To move a measured value, proceed as follows:

☑ SICAT Function shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 100 - Standalone]* and *Managing objects with the object toolbar [▶Page 102 - Standalone]*.

1. Place the mouse pointer on the desired measured value.
   ▶ The mouse pointer becomes a cross.
2. Click and hold the left mouse button.
3. Place the mouse pointer on the desired position of the measured value.
   ▶ The measured value tracks the movement of the mouse pointer.
   ▶ SICAT Function shows a dotted line between the measured value and the corresponding measurement.
4. Release the left mouse button.

▶ SICAT Function maintains the current position of the measured value.

After you have moved the value of a measurement, the SICAT Function will define the value at an absolute position. To position the value again relative to the measurement, double click on the value.

34 DATA EXPORT

You can export data.

You can export the studies of the patient record currently open.

SICAT Suite can export the following data:

- Patient records (DICOM)
- 3D studies
- Documents

Exported data may contain the following elements:

DATA TYPE	EXPORT FORMAT
3D scans	DICOM
3D studies	SICAT proprietary
Document	PDF

SICAT Suite exports 3D scans and studies either into Zip archives or DICOM directories. Where necessary, SICAT Suite can anonymize patient data for export.

To export documents, select the documents in the **3D Scans and Planning Projects** area and click on the **Export** button. Afterwards, a Windows Explorer window will open and you can select a target directory.

Perform the following actions in the order stated to export data:

- Open the **Export data** window. Information on this can be found in the section *Opening the "Forwarding data" window [▶Page 209 - Standalone]*.
- Export the desired data. Information on this can be found in the section *Exporting data [▶Page 210 - Standalone]*.

34.1 OPENING THE “FORWARDING DATA” WINDOW

To export data, you first have to open the **Export data** window.

To open the **Export data** window in the stand-alone version of SICAT Suite, perform one of the following actions:

- Click on the **Export data** icon in the **Navigation bar** if a patient record is currently active.

  ▶ The **Export data** window opens.

- Click the **Export data** button in the **SICAT Suite Home** window.

  ▶ The **Export data** window opens.

- Select a 3D X-ray scan, a study or a planning object in the **Active Patient Record** window and click the **Export data** button.

  ▶ SICAT Suite activates the patient record and opens the **Export data** window for the selected data.

- Select a patient record in the **Patient record browser** window and click the button to forward the information of the selected patient.

  ▶ SICAT Suite activates the patient record and opens the **Export data** window. All 3D X-ray scans and planning projects of the patient record are selected for export.

- Select a 3D X-ray scan or a planning object in the **Patient record browser** window and click the **Export data** button.

  ▶ SICAT Suite activates the patient record and opens the **Export data** window.

SICAT Suite exports only the selected 3D X-ray scans and planning projects for the active patient record.

Continue with the section *Exporting data [▶Page 210 - Standalone]*.

34.2 EXPORTING DATA

To export studies, proceed as follows:

☑ The **Export data** window is already open. Information on this can be found in the section *Opening the "Forwarding data" window [▶Page 209 - Standalone]*.

1 **Anonymize** check box	4 **Choose the export path** field
2 Attributes of the patient record	5 **Export data** button
3 List of 3D studies	6 **Zip result into one file** check box

1. Activate the **Anonymize** check box in the **Export data** window if desired.

   ▶ The attributes of the exported patient record will change to **Patient** for **Last name**, **Anonymous** for **First name** and **01.01** with the year of birth for **Date of birth**. The attributes of the patient record in the patient record depot remain unchanged.

2. Make sure that the desired 3D studies of the desired patient have been selected.

3. Click on the **Browse** button.

   ▶ The **Folder search** window opens.

4. Select a target folder and click on **OK** in the **Folder search** window.

   ▶ The **Folder search** window closes and SICAT Suite transfers the path of the desired folder to the **Choose the export path** field.

5. Activate or deactivate the **Zip result into one file** check box.

6. Click on the **Export data** button.

▶ SICAT Suite exports the selected studies into a Zip file or into the selected folder.

Both Zip files and folders contain the 3D X-ray scans in DICOM format and planning data in a proprietary file format. You can view the 3D X-ray scans with any DICOM viewer and the planning data with the corresponding SICAT application.

35 ORDERING PROCESS

To order the desired product, proceed as follows:

- Define a treatment position in SICAT Function and place the desired planning data for therapeutic appliances in the shopping cart. For further information about this see *Defining a treatment position [▶Page 212 - Standalone]* and *Placing therapeutic appliances in the shopping cart [▶Page 213 - Standalone]*.
- Check the shopping cart and start the order. Information on this can be found in the section *Checking the shopping cart and completing the order [▶Page 218 - Standalone]*.
- Complete the order either directly on the computer on which SICAT Suite is running or on another computer with an active Internet connection. For further information see section *Completing an order using an active Internet connection [▶Page 219 - Standalone]* or section *Completing an order without an active Internet connection [▶Page 223 - Standalone]*.

You can add orders to the shopping cart, which belong to different patients, 3D X-ray scans and applications. The contents of the shopping cart will remain when you close SICAT Suite.

35.1 DEFINING A TREATMENT POSITION

To define a treatment position, proceed as follows:

☑ You have already imported jaw motion tracking data. Information on this can be found in the section *Importing and registering jaw motion data [▶Page 156 - Standalone]*.

☑ You have already imported optical impressions. Information on this can be found in the section *Importing optical impressions [▶Page 167 - Standalone]*.

1. If you wish to define a treatment position based on a static jaw relation, select a static jaw relation from the **Active Jaw Relation** list. Information on this can be found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*.

2. If you wish to define a treatment position based on a jaw movement, select a jaw movement from the **Active Jaw Relation** list and jump to the desired position. Information on this can be found in the section *Interacting with jaw motion [▶Page 181 - Standalone]*.

3. Click on the **Treatment position** button.

▶ If you have selected a treatment position that is based on a jaw movement, SICAT Function will set a bookmark at the corresponding position.

▶ The **Treatment position** button becomes the **Clear treatment position** button.

▶ SICAT Function saves the selected treatment position for the therapeutic appliance order.

REMOVING A TREATMENT POSITION

To remove a defined treatment position, proceed as follows:

☑ You have selected the static jaw relation or the bookmark for a jaw movement upon which the defined treatment position is based.

1. Click on the **Clear treatment position** button.
   ▶ SICAT Function opens a message window with the following contents: **Do you really want to clear the treatment position**

2. If you really want to remove the treatment position, click **Continue**.

OVERWRITING A TREATMENT POSITION

To overwrite a defined treatment position, proceed as follows:

☑ You have already defined a treatment position.

1. Select a static jaw relation or a jaw movement position that does not match the defined treatment position.

2. Click on the **Treatment position** button.
   ▶ SICAT Function opens a message window with the following contents: **You already have specified a treatment position If you continue, this treatment position will be replaced with the currently selected static jaw relation**

3. If you really want to replace the treatment position, click **Continue**.

Continue with the section *Placing therapeutic appliances in the shopping cart [▶Page 213 - Standalone]*.

35.2 PLACING THERAPEUTIC APPLIANCES IN THE SHOPPING CART

CAUTION

Incorrect data in an order may result in an incorrect order.

If you complete an order, ensure that you select and transfer the correct data for the order.

CAUTION

An incorrect order might lead to the wrong treatment.

1. Check your order before sending it.
2. Confirm the correct planning of your order.

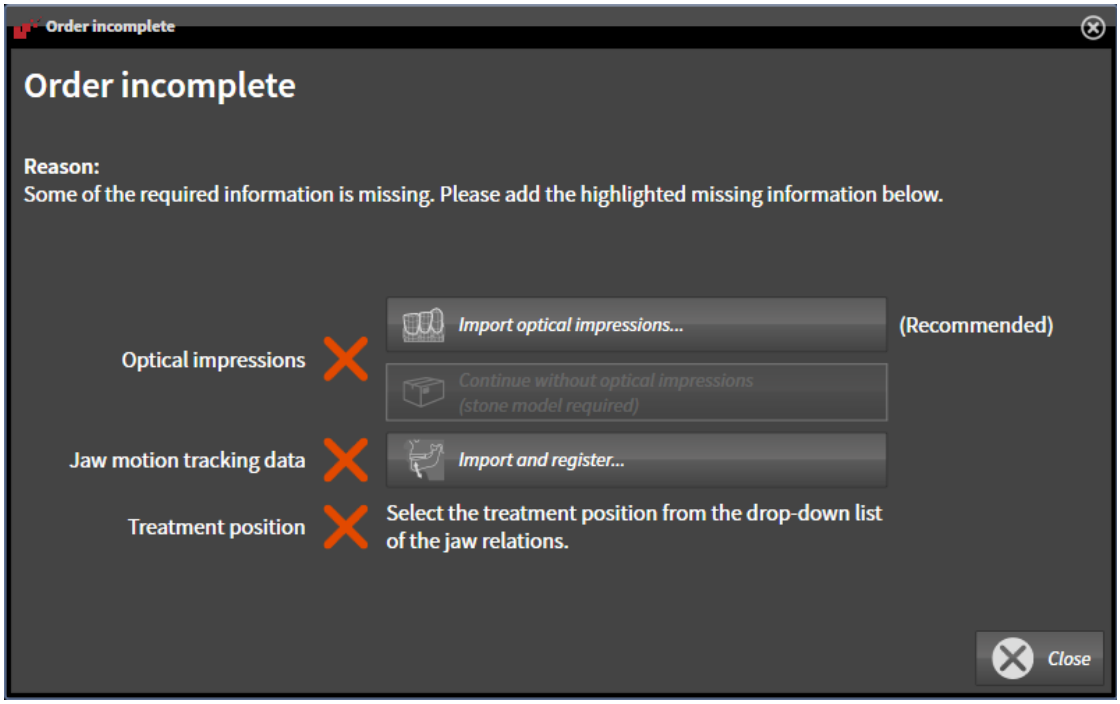
General information on the ordering process can be found in the section *Ordering process [▶Page 211 - Standalone]*.

In SICAT Function, you can place a therapeutic appliance in the shopping cart in the first part of the ordering process. Certain prerequisites must be met so that you can place therapeutic appliances in the shopping cart. SICAT Function will notify you if you have not fulfilled all of the prerequisites.

IF THE PREREQUISITES ARE NOT FULFILLED

☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 97 - Standalone]*.

1. Click on the **Order Therapeutic Appliance** icon.
   ▶ The **Order incomplete** window opens:



2. If you have not yet imported any optical impressions, click on the **Import and register** button and import optical impressions corresponding to the 3D X-ray scan. Information on this can be found in the section *Optical impressions [▶Page 166 - Standalone]*.

3. If you have not yet imported any jaw motion data, click on the **Import and register** button and import the jaw motion data. Information on this can be found in the section *Importing and registering jaw motion data [▶Page 156 - Standalone]*.

4. If you have not yet defined a treatment position, close the **Order incomplete** window and define a treatment position. Information on this can be found in the section *Defining a treatment position [▶Page 212 - Standalone]*.

You may have to adjust the orientation of the volume and the panoramic curve, before importing optical impressions. You can access the **Adjust Volume Orientation and Panoramic Region** window directly from the **Import and Register Optical Impressions** window by clicking on the **Adjust panoramic region** button in the **Register** step. Information on this can be found in the section *Adjusting the panoramic region [▶Page 151 - Standalone]*.

If you wish to send plaster casts to SICAT instead of optical impressions, you can place therapeutic appliances in the shopping cart without optical impressions by clicking the **Continue without optical impressions (stone model required)** button in the **Order incomplete** window. After this, the **Order OPTIMOTION** step will display the **This order will be placed without optical impression data. The stone model must be sent to the SICAT Lab** information.

IF THE PREREQUISITES ARE FULFILLED

☑ You have already imported optical impressions.

☑ You have already imported jaw motion tracking data.

☑ You have already defined a treatment position.

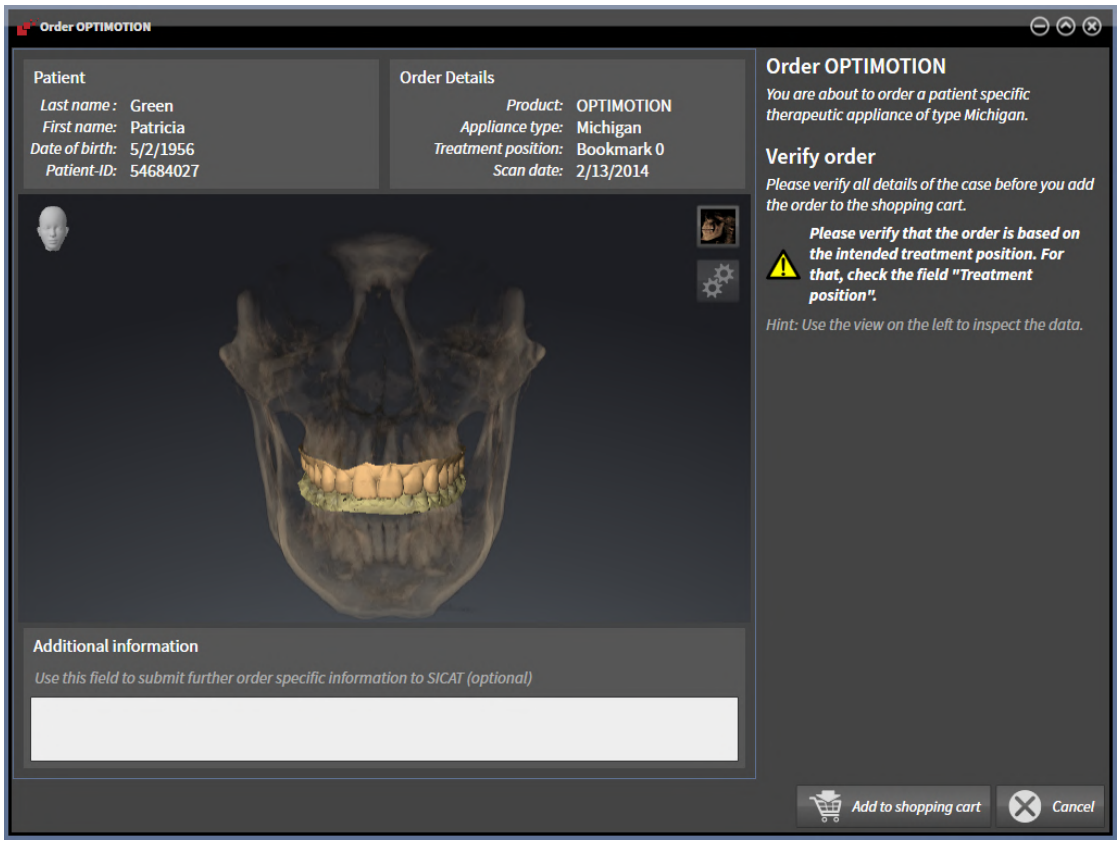
☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 97 - Standalone]*.

- Click on the **Order Therapeutic Appliance** icon.

► The **Order OPTIMOTION** window opens.

CHECK YOUR ORDER IN THE “ORDER OPTIMOTION" WINDOW

☑ The **Order OPTIMOTION** window is already open.



1. Check in the **Patient** section and **Order Details** section that the patient information and scan information are correct.
2. Check in the **3D** view that the treatment position is correct.
3. If desired, enter additional information for SICAT in the **Additional Information** field.

4. Click on the **Add to shopping cart** button.

▶ SICAT Function places the desired planning data for therapeutic appliances in the SICAT shopping cart.

▶ The **Order OPTIMOTION** window closes.

▶ SICAT Function opens the SICAT Suite shopping cart.

As long as there is an order in the shopping cart, you can no longer overwrite optical impressions, jaw motion data and the treatment position of a plan. This is only possible once more when you have completed or deleted the order. If you overwrite or delete optical impressions, jaw motion data or the treatment position of a plan, you cannot order the same theraputic appliance again.

You can cancel the order by clicking on **Cancel**.

Continue with the section *Checking the shopping cart and completing the order [▶Page 218 - Standalone]*.

35.3 OPENING THE SHOPPING CART

The **Shopping Cart** icon shows the number of elements in the shopping cart.

☑ The shopping cart contains at least one product.

- If the shopping cart is not yet open, click the **Shopping Cart** button on the **Navigation bar**.

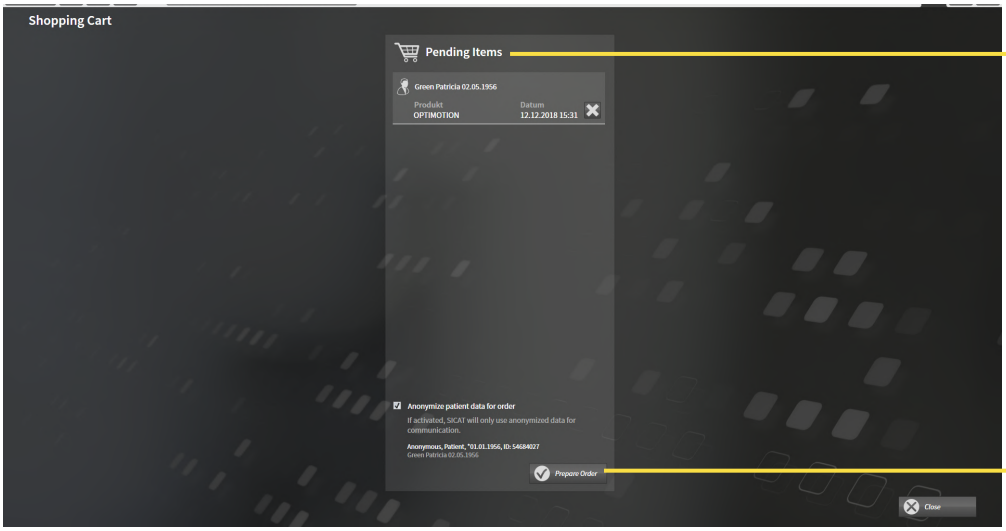
▶ The **Shopping Cart** window opens.

Continue with the following action:

- *Checking the shopping cart and completing the order [▶Page 218 - Standalone]*

35.4 CHECKING THE SHOPPING CART AND COMPLETING THE ORDER

☑ The **Shopping Cart** window is already open. Information on this can be found in the section *Opening the shopping cart [▶Page 217 - Standalone]*.



1 **Pending Items** list

2 **Prepare Order** button

1. Check in the **Shopping Cart** window whether the desired products are included.
2. Activate or deactivate the **Anonymize patient data for order** check box.
3. Click on the **Prepare Order** button.

▶ SICAT Suite sets the status of the orders to **Preparing** and establishes a connection to the SICAT server via the SICAT WebConnector.

▶ Changes to the order are only possible in the SICAT Portal with an active Internet connection.

Continue with one of the following actions:

- *Completing an order using an active Internet connection [▶Page 219 - Standalone]*
- *Completing an order without an active Internet connection [▶Page 223 - Standalone]*

35.5 COMPLETING AN ORDER USING AN ACTIVE INTERNET CONNECTION

In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

☑ The computer on which SICAT Suite is running has an active Internet connection.

☑ The **Allow access to the Internet for placing orders** checkbox is activated. Information on this can be found in the section *Using general settings [▶Page 227 - Standalone]*.

☑ The SICAT Portal was automatically opened in your browser.

1. Register or log in to the SICAT portal using your username and password if you have not already done so.

   ▶ The ordering overview opens and shows the products contained in the order, along with the corresponding prices, grouped according to patients.

2. Follow the instructions in the section *Performing ordering steps in the SICAT Portal [▶Page 220 - Standalone]*.

▶ SICAT Suite prepares the order data for uploading.

▶ As soon as the preparations are complete, SICAT WebConnector will transfer the order data via an encrypted connection to the SICAT server.

▶ The status of the order in the shopping cart will change to **Uploading**.

SICAT Suite will display orders until they are fully uploaded. This also applies to orders that are uploaded on another computer if several computers are using the active patient record depot. You can pause, continue and cancel the uploading of orders in the shopping cart that have been started on the current computer.

If you log off from Windows while uploading the orders, SICAT WebConnector will pause the process. The software will continue uploading automatically after you log back on.

35.6 PERFORMING ORDERING STEPS IN THE SICAT PORTAL

After you have performed ordering steps in SICAT Suite, the SICAT Portal will open in your standard web browser. In the SICAT Portal, you can change your orders, select qualified providers for production and view the prices of the products.

To perform ordering steps in the SICAT Portal, proceed as follows:

1. Register or log in to the SICAT portal using your username and password if you have not already done so.
2. Check whether the desired products are included.
3. If necessary, remove specific patients along with all corresponding products from the ordering overview. When completing the order, SICAT Suite will apply changes that you have made in the SICAT Portal.
4. Check whether the billing address and delivery address are correct. Change these where necessary.
5. Select the desired shipping method.
6. Accept the general terms and conditions and send off the order.

You can remove patients and all corresponding appliances from the SICAT Portal by selecting a patient and clicking on the button to remove the patient. In the shopping cart, you will again have full access to the composition of the products.

35.7 THE SICAT WEBCONNECTOR

The SICAT WebConnector requires specific ports for communication with the SICAT server. Information on this can be found in the section *System requirements [▶Page 11 - Standalone]*.

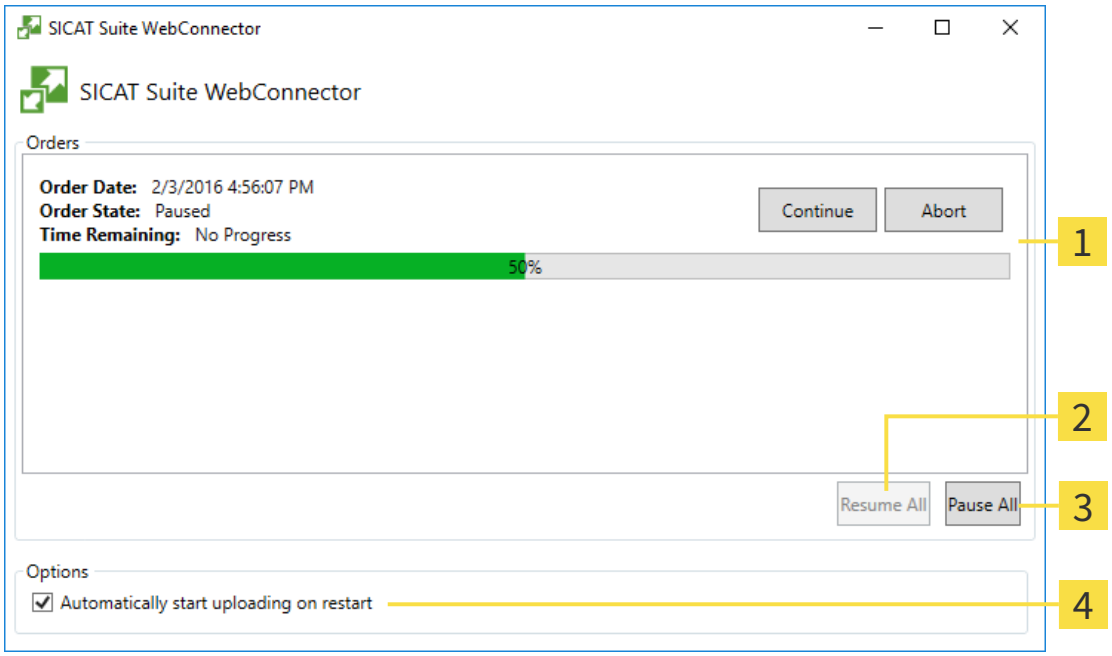
In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

If the computer, on which SICAT Suite is running, has an active Internet connection, SICAT Suite will transfer your orders in the background in encrypted format via the SICAT WebConnector. SICAT Function will show the status of the transfer directly in the shopping cart and can pause the SICAT WebConnector. The SICAT WebConnector will continue the transfer even if you have closed SICAT Suite. If the order cannot be uploaded as desired, you can open the user SICAT WebConnector interface.

OPENING THE “SICAT SUITE WEBCONNECTOR" WINDOW

- In the notifications area, click the **SICAT Suite WebConnector** icon in the task bar.

▶ The **SICAT Suite WebConnector** window opens:



1 **Orders** list

2 **Continue all** button

3 **Stop all** button

4 **Continue uploading automatically after restart** check box

The **Orders** list shows the queue of orders.

PAUSING AND CONTINUING THE UPLOAD

You can pause the upload process. This may be sensible, for example, if your Internet connection is overloaded. The settings only affect upload processes in the SICAT WebConnector. Upload processes via a web browser are not affected.

☑ The **SICAT Suite WebConnector** window is already open.

1. Click on the **Stop all** button.
   ▶ The SICAT WebConnector pauses the uploading of all orders.
2. Click on the **Continue all** button.
   ▶ The SICAT WebConnector continues the uploading of all of the orders.

DEACTIVATING AUTOMATIC CONTINUATION AFTER A RESTART

You can prevent the SICAT WebConnector from automatically continuing uploads after restarting Windows.

☑ The **SICAT Suite WebConnector** window is already open.

- Deactivate the **Continue uploading automatically after restart** check box.

▶ If you restart your computer, the SICAT WebConnector will no longer automatically continue uploading your orders.

35.8 COMPLETING AN ORDER WITHOUT AN ACTIVE INTERNET CONNECTION

If the computer on which SICAT Suite is running cannot connect to the SICAT server, SICAT Suite will open the **SICAT Suite - No connection to SICAT server** window. The window will indicate one of the following causes for the problem:

- **There is no Internet connection. SICAT WebConnector cannot connect to the SICAT server**
- **SICAT Portal is not available**
- **The "SICATWebConnector" service is not installed**
- **The "SICATWebConnector" service is not running**
- **An unknown error has occured. SICAT WebConnector cannot connect to the SICAT server**

This chapter only shows screenshots for the scenario that no Internet connection is available.

Below the cause, possible steps for solving the problem will be shown.

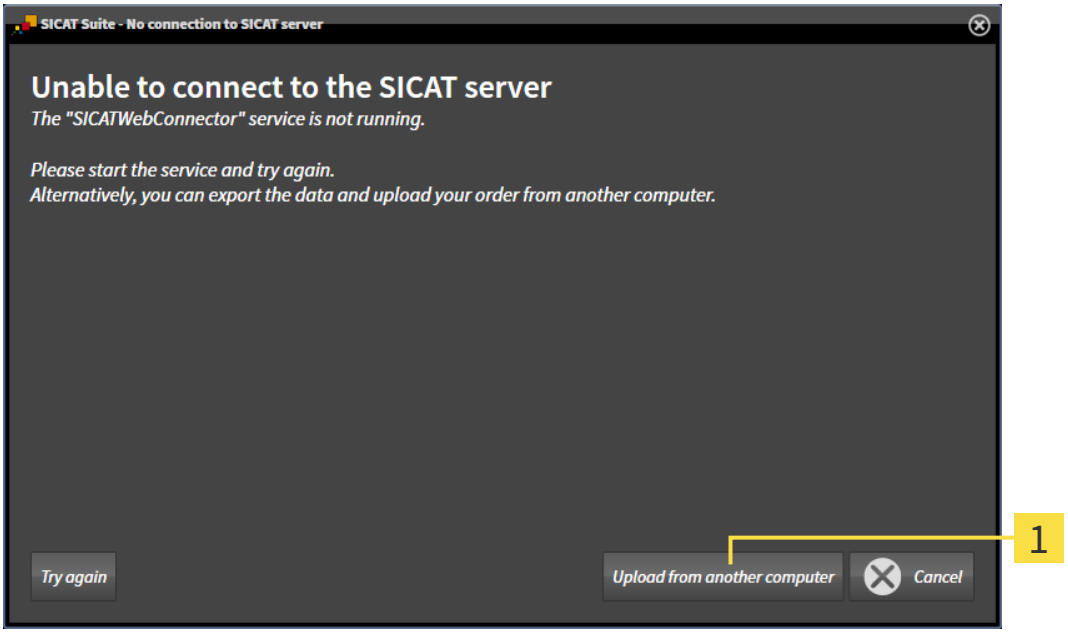
If you have deactivated the **Allow access to the Internet for placing orders** checkbox in the settings on the **General** tab, the **Sending the order from another computer** window opens directly.

As an alternative to troubleshooting or if you have disabled access to the Internet, you can upload an order via a web browser on another computer with an active Internet connection. For orders via web browser, SICAT Suite will export all products in the shopping cart at once and create one sub-folder per patient. Each sub-folder contains one XML file with the information regarding the order and a ZIP archive with the data SICAT needs for production. In the SICAT Portal, you can then successively upload the XML file and the ZIP archive. The transfer will be encrypted.

To complete the order without an active Internet connection, proceed as follows:

☑ The computer on which SICAT Suite is running does not have an active Internet connection.

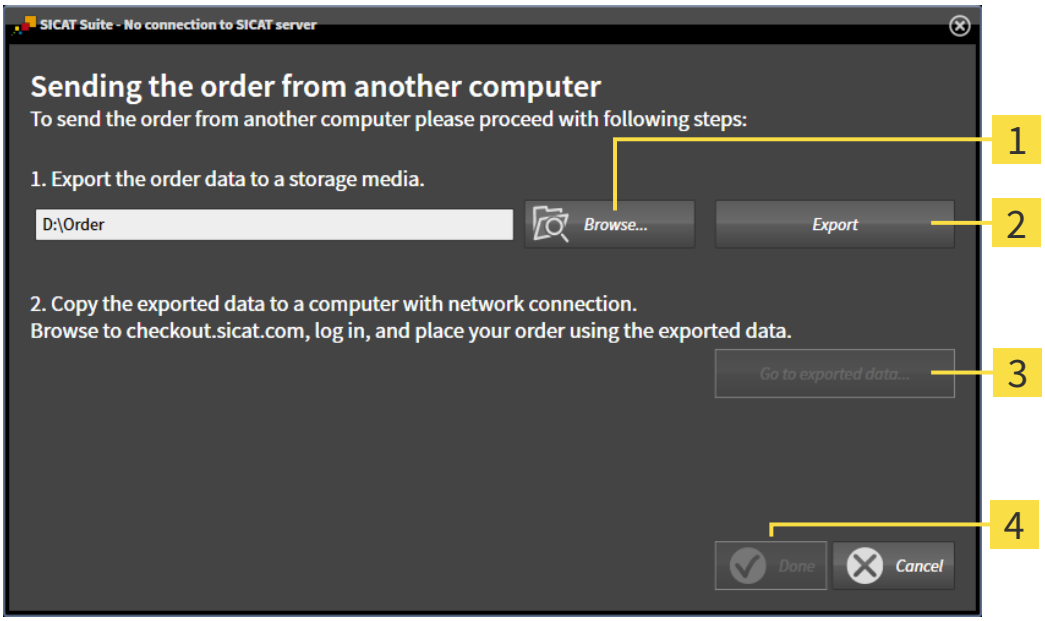
☑ A window will appear with the following message: **Unable to connect to the SICAT server**



1 **Upload from another computer** button

1. Click on the **Upload from another computer** button.

▶ The **Sending the order from another computer** window opens:



1 **Browse** button

2 **Export** button

3 **Go to exported data** button

4 **Done** button

2. Click on the **Browse** button.

   ▶ A Windows Explorer window opens.

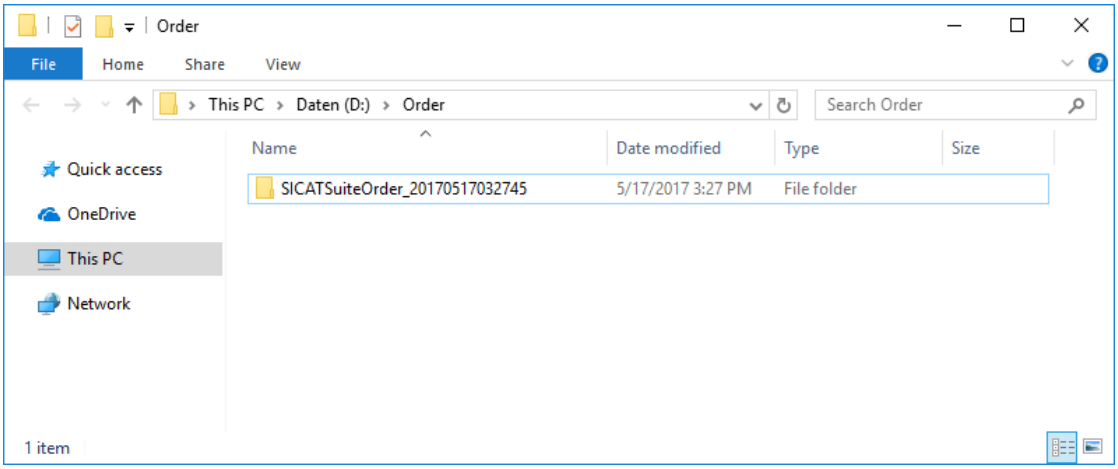
3. Select an existing directory or create a new directory and click on **OK**. Please note that the path to the directory must not be longer than 160 characters.

4. Click on the **Export** button.

   ▶ SICAT Suite will export all data required for ordering the shopping cart contents to the selected folder. SICAT Suite will create a sub-folder for each patient.

5. Click on the **Go to exported data** button.

   ▶ A Windows Explorer window opens and shows the directory with the exported data:



6. Copy the folder that contains the data of the required appliances to a computer with an active Internet connection, for example using a USB stick.

7. Click on **Done** in the **Sending the order from another computer** window.
   ▶ SICAT Suite closes the **Sending the order from another computer** window.
   ▶ SICAT Suite removes all products included in the order from the shopping cart.

8. Open a web browser on the computer with the active Internet connection and open the www.sicat.com web page.

9. Select the link for the SICAT portal.
   ▶ The SICAT portal opens.

10. Register or log in to the SICAT portal using your username and password if you have not already done so.

11. Click on the link to upload the order.

12. Select the desired order on the computer with the active Internet connection. This is an XML file whose name starts with **SICATSuiteOrder**.
    ▶ The ordering overview opens and shows the patients contained therein, the corresponding product and the price.

13. Follow the instructions in the section *Performing ordering steps in the SICAT Portal [▶Page 220 - Standalone]*.

14. Click on the link to upload the planning data for the product.

15. Select the corresponding product data on the computer with the active Internet connection. This is a Zip archive that is located in the same folder as the previously uploaded XML file and whose file name starts with **SICATSuiteExport**.

▶ Once you have executed the order, your browser will transfer the archive with the product data to the SICAT server via an encrypted connection.

SICAT Suite does not automatically delete exported data. When an ordering process is completed, you should delete exported data manually for security reasons.

36 SETTINGS

You can change or view general settings in the **Settings** window. After you have clicked on the **Settings** icon, the option bar will show the following tabs on the left-hand side of the **Settings** window:

- **General** - Information on this can be found in the section *Using general settings [▶Page 227 - Standalone]*.
- **Patient record depots** - You can specify where the patient record depots are to be located. Information on this can be found in the section *Patient record depots [▶Page 60 - Standalone]*.
- **Licenses** - Information on this can be found in the section *Licenses [▶Page 49 - Standalone]*.
- **Practice** – Viewing or changing the logo and the information text of your practice, for example for use on print-outs. Information on this can be found in the section *Using practice information [▶Page 231 - Standalone]*.
- **SIDEXIS 4** - Only relevant if SIDEXIS 4 is installed on your system.
- **Hub** - Activating or deactivating Hub use. Information on this can be found in the section *Activating and deactivating Hub use [▶Page 232 - Standalone]*.
- **Visualization** – Changing general visualization settings. Information on this can be found in the section *Changing visualization settings [▶Page 234 - Standalone]*.
- **SICAT Function** – Changing application-specific settings of SICAT Function. Information on this can be found in the section *Changing SICAT Function settings [▶Page 236 - Standalone]*.

If you change the settings, SICAT Function will apply the changes immediately and saves the settings in your user profile.

36.1 USING GENERAL SETTINGS

To open the general settings, proceed as follows:

1. Click on the **Settings** icon in the **Navigation bar**.
   ▶ The **Settings** window opens.

2. Click the **General** tab.
   ▶ The **General** window opens:

1 **General** tab	4 **Tools** area
2 **Regional Settings** area	5 **Directories** area
3 **Patient** area	6 **Orders** area

You can change the following settings:

- You can change the language of the user interface in the **Language** list in the **Regional Settings** area.
- You can change the current in the tooth scheme in the **Regional Settings** area under **Tooth scheme**.
- You can change the status of the **Display patient information anonymously** check box in the **Patient** area. If the check box is selected, SICAT Suite will display the attributes of the patient record in the **Navigation bar** as **Patient** for **Last name**, **Anonymous** for **First name** and **01.01.** with the year of birth for **Date of birth**. In the **SICAT Suite Home** window, SICAT will hide the **Recent patient records** list.
- In the **Directories** area, you can enter a folder in the **Temporary export directory** field in which SICAT Suite is to save order information. You must have full access to this folder.
- You can change the status of the **Allow access to the Internet for placing orders** check box in the **Orders** area. If the checkbox is activated, SICAT Suite connects to the Internet to place orders.

Besides viewing or changing general settings, you can open the SMPTE test image to calibrate your monitor:

- Click on the **Show SMPTE test pattern** button under **Tools**, **Monitor calibration** to calibrate your monitor. Information on this can be found in the section Monitor calibration with the SMPTE test image.

The supported tooth schemes are FDI and ADA.

36.2 MONITOR CALIBRATION WITH THE SMPTE TEST IMAGE

CAUTION

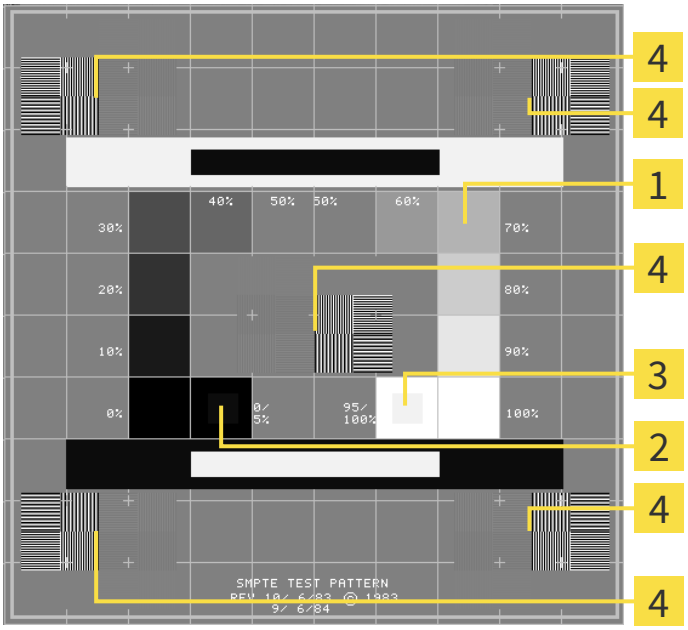
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

1. Only perform planning if the environmental conditions allow for sufficient visualization quality. For example, check for appropriate lighting.
2. Check whether the display quality is sufficient using the SMPTE test image.

The suitability of your monitor for displaying data in SICAT applications depends on four key properties:

- Brightness
- Contrast
- Local resolution (linearity)
- Distortion (aliasing)

The SMPTE test image is a reference image, which helps you check the following properties of your monitor:



1 Gray scale squares

2 0% square

3 100% square

4 Squares containing a sample bar with a high contrast

CHECKING BRIGHTNESS AND CONTRAST

In the middle of an SMPTE test image there is a series of squares, showing the gray scale progression from black (0% brightness) to white (100% brightness):

- The 0% square contains a smaller square to show the difference in brightness between 0% and 5%.
- The 100% square contains a smaller square to show the difference in brightness between 95% and 100%.

To check or configure your monitor, proceed as follows:

☑ The SMPTE test image is already open.

- Check whether you can see the visual difference between the inner square and outer square in the 0% square and 100% square. Change the settings of your monitor where necessary.

Several monitors can only show the difference in brightness in the 100% square, but not the 0% square. You can reduce ambient light to improve the ability to distinguish between the different brightness levels in the 0% square.

CHECKING THE LOCAL RESOLUTION AND DISTORTION

In the corners and the middle of the SMPTE test image, there are 6 squares showing a sample bar with a high contrast. In terms of local resolution and distortion, you should be able to differentiate between horizontal and vertical lines with different widths, which change between black and white:

- From wide to narrow (6 pixels, 4 pixels, 2 pixels)
- Horizontal and vertical

To check or configure your monitor, proceed as follows:

- Check in the 6 squares containing a sample bar with a high contrast whether you can see the differences between all of the lines. Change the settings of your monitor where necessary.

CLOSING THE SMPTE TEST IMAGE

To close the SMPTE test image, proceed as follows:

- Press the **ESC** key.

▶ The SMPTE test image closes.

36.3 USING PRACTICE INFORMATION

The applications in SICAT Suite use the information displayed here to customize outputs or PDF files.

To open the practice information, proceed as follows:

1. Click on the **Settings** icon in the **Navigation bar**.
   ▶ The **Settings** window opens.

2. Click the **Practice** tab.
   ▶ The **PRACTICE** window opens:

1 **Practice** tab

2 **Logo** area

3 **Information** area

You can change the following settings:

- You can set the logo of your practice in the **Logo** area. You can select the logo of your practice using the **Change** button. SICAT Suite copies the selected file to your SICAT Suite user directory.
- You can enter a text which identifies your practice, for example the name and address, in the **Information** area. You can increase the number of lines to a maximum of five by pressing the **Enter** key. You can undo changes to the information text by clicking the **Undo changes** button.

36.4 ACTIVATING AND DEACTIVATING HUB USE

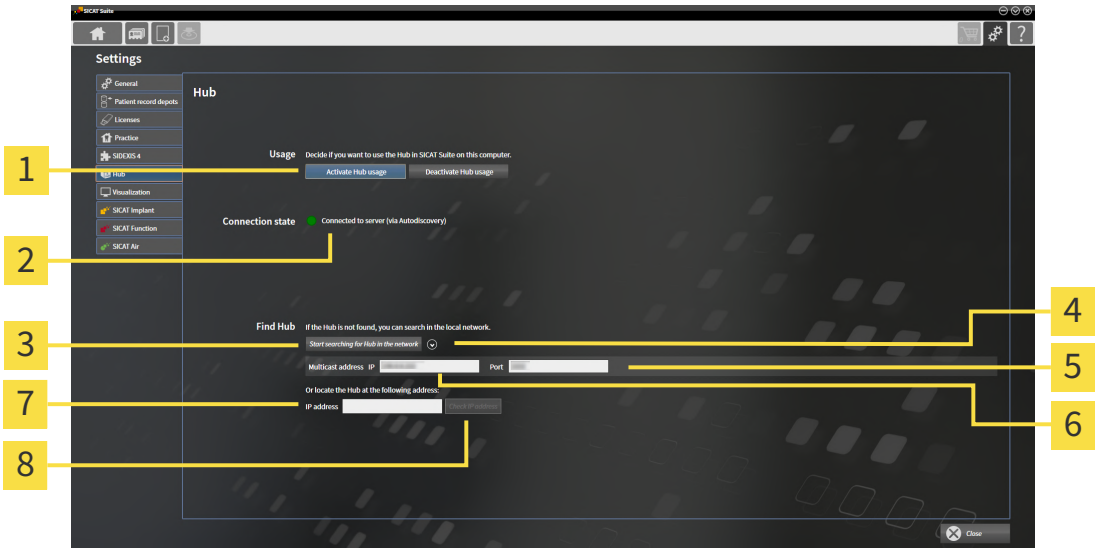
In the settings, you can activate and deactivate Hub use and check the connection settings. In the default setting, Hub use is deactivated.

ACTIVATING HUB USE

☑ The license for using the Hub is activated. Information on this can be found in the section *Licenses [▶Page 49 - Standalone]*.

1. Click on the **Settings** icon in the **Navigation bar**.
   ▶ The **Settings** window opens.

2. Click on the **Hub** tab.
   ▶ The **Hub** window opens:



1	**Activate Hub usage** and **Deactivate Hub usage**	5	Input field **Port**
2	**Connection state**	6	Input field **Multicast address IP**
3	**Start searching for Hub in the network** button	7	Input field **IP address**
4	Show and hide	8	**Check IP address** button

3. Click on the **Activate Hub usage** button.
   ▶ SICAT Suite attempts to connect to the Hub.
   ▶ If a green icon appears next to **Connection state**, SICAT Suite was able to connect to the Hub.
   ▶ If a red icon appears next to **Connection state**, SICAT Suite was not able to connect to the Hub.

4. If SICAT Suite was not able to connect to the hub, check whether the multicast address set on the Hub differs from the one shown here:
   – Click on the icon next to the **Start searching for Hub in the network** button.
   – In the **Multicast address** field, enter the multicast address set on the Hub. By default, the multicast address is 239.0.0.222.

– In the **Port** field, enter the port set on the Hub. By default, the port is 2222.
– Click on the **Start searching for Hub in the network** button. When SICAT Suite finds the Hub, the green icon is displayed and the Hub can be used.

5. If SICAT Suite was not able to connect to the Hub using a multicast address, try connecting by directly entering the Hub's IP address:
   – Enter the Hub's IP address in the field **IP address** and click on the **Check IP address** button. If SICAT Suite finds the Hub under the specified IP address, the Hub can be used.

6. If SICAT Suite was not able to connect to the Hub using either a multicast address or the Hub's IP address, contact customer support for the Hub.

DEACTIVATING HUB USE

1. Click on the **Settings** icon in the **Navigation bar**.

2. Click on **Hub** in the **Settings** window.
   ▶ The **Hub** window opens.

3. Click on the **Deactivate Hub usage** button.
   ▶ SICAT Suite deactives Hub use.

36.5 CHANGING VISUALIZATION SETTINGS

CAUTION

Insufficient visualization quality could result in incorrect diagnosis and treatment.

Before using a SICAT application, for example with the SMPTE test image, check whether the display quality is sufficient.

CAUTION

Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

1. Only perform planning if the environmental conditions allow for sufficient visualization quality. For example, check for appropriate lighting.
2. Check whether the display quality is sufficient using the SMPTE test image.

Visualization settings determine the visualization of the volume, diagnosis objects and planning objects in all SICAT applications.

To open the **Visualization** window, proceed as follows:

1. Click on the **Settings** icon.
   ▶ The **Settings** window opens.

2. Click the **Visualization** tab.
   ▶ The **Visualization** window opens:

1 **Visualization** tab

2 **IMAGE QUALITY** area

3 **UPDATE OF OTHER VIEWS** area

4 **LINE THICKNESS** area

5 **VIEWING DIRECTION** area

The settings are:

- **Improve image quality of slices** – Improves the image quality of slices as the software averages adjacent slices. Activate this setting only on high-performance computers.
- **UPDATE OF OTHER VIEWS** – Delayed updates improve the interactivity of the active view but causes delays in the updating of other views. Activate delayed updates only if you detect interactivity problems on your computer.
- **LINE THICKNESS** – Changes the thickness of lines. Thicker lines are useful for presentations on projectors.
- **VIEWING DIRECTION** – Switches the viewing directions of the **Axial** slice view and **Sagittal** slice view.

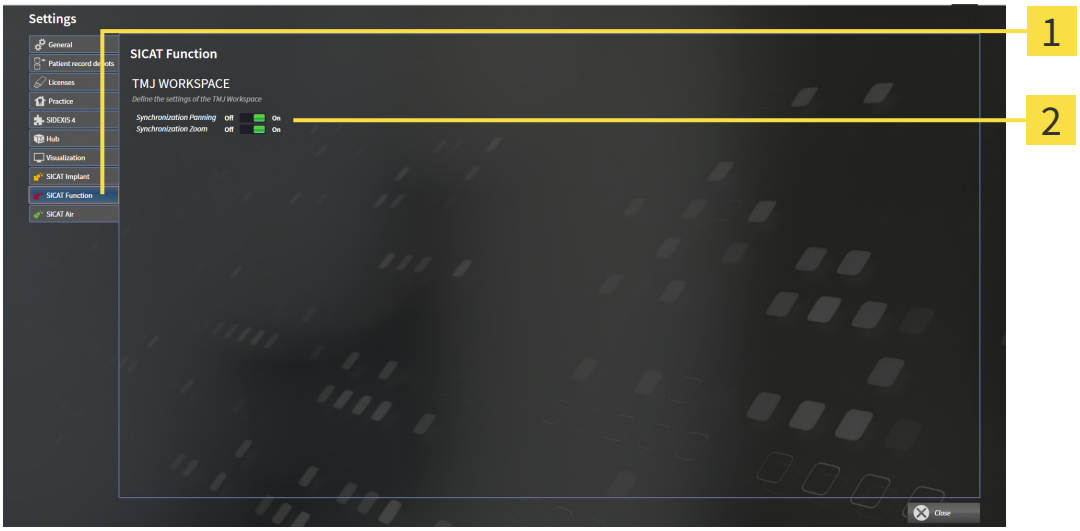
36.6 CHANGING SICAT FUNCTION SETTINGS

SICAT Function settings determine the synchronization of panning and zooming in the **TMJ** workspace of SICAT Function.

To change the SICAT Function settings, proceed as follows:

1. Click on the **Settings** icon.
   ▶ The **Settings** window opens.

2. Click the **SICAT Function** tab.
   ▶ The **SICAT Function** window opens:



1 **SICAT Function** tab

2 **Define the settings of the TMJ Workspace** area

The settings are:

- **Synchronization Panning**
- **Synchronization Zoom**

You can use the settings to activate or deactivate SICAT Function synchronizing the panning or zooming of views in the **TMJ** workspace between the left and right condyles.

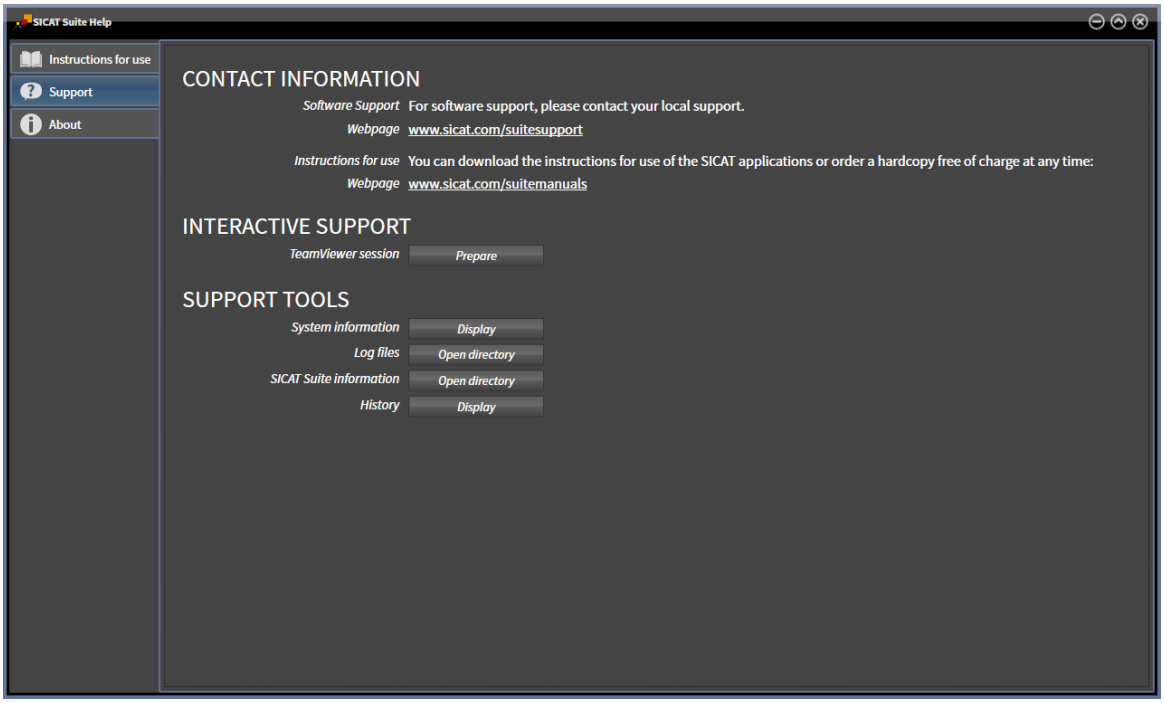
37 SUPPORT

SICAT offers you the following support options:

- PDF documents
- Contact information
- Information on the installed SICAT Suite and SICAT applications

Continue with the following action:

- *Opening the support options [▶Page 238 - Standalone]*



37.1 OPENING THE SUPPORT OPTIONS

You can open the **Support** window by clicking the **Support** icon in the **Navigation bar** or pressing the F1 key.

The SICAT Suite **Support** window comprises the following tabs:

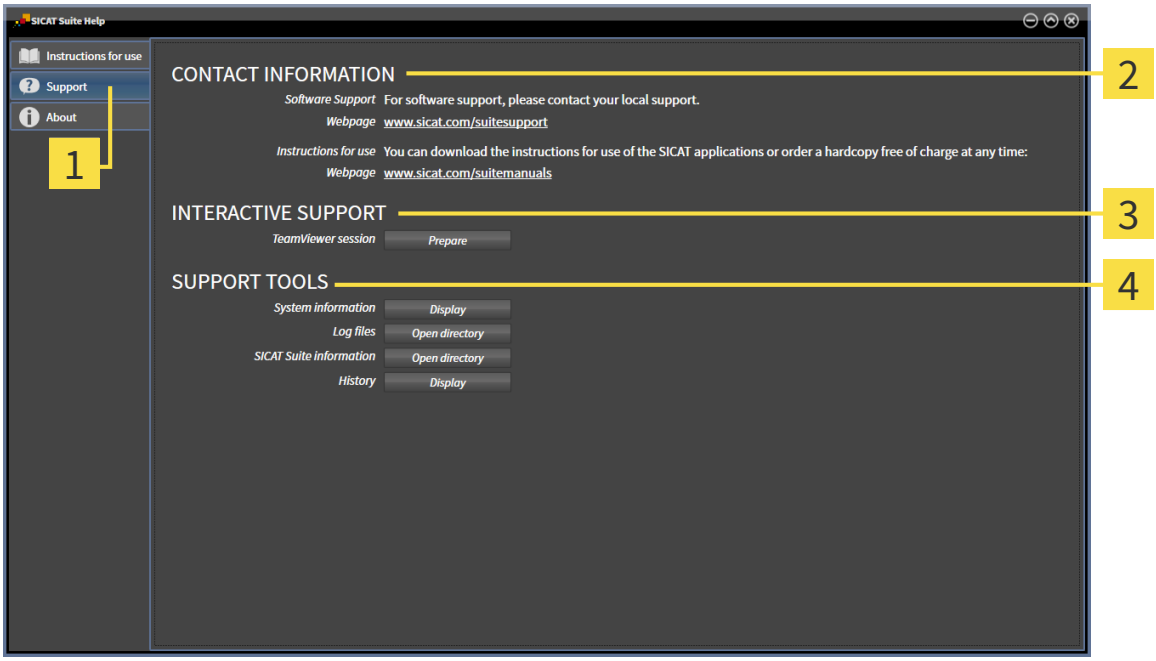
- **Instructions for use** - Information on this can be found in the section *Opening the instructions for use [▶Page 48 - Standalone]*.

- **Support** - Information on this can be found in the section *Contact information and support tools [▶Page 239 - Standalone]*.

- **About** - Information on this can be found in the section Info.

37.2 CONTACT INFORMATION AND SUPPORT TOOLS

The **Support** window contains all of the relevant information and tools to enable SICAT Support to help you:



1 **Support** tab

2 **CONTACT INFORMATION** area

3 **INTERACTIVE SUPPORT** area

4 **SUPPORT TOOLS** area

The **CONTACT INFORMATION** area contains information about where you can find the instructions for use.

The following tools are available in the **INTERACTIVE SUPPORT** area:

- Click on the **Prepare** button in the **TeamViewer session** area and SICAT Function will open a TeamViewer session.

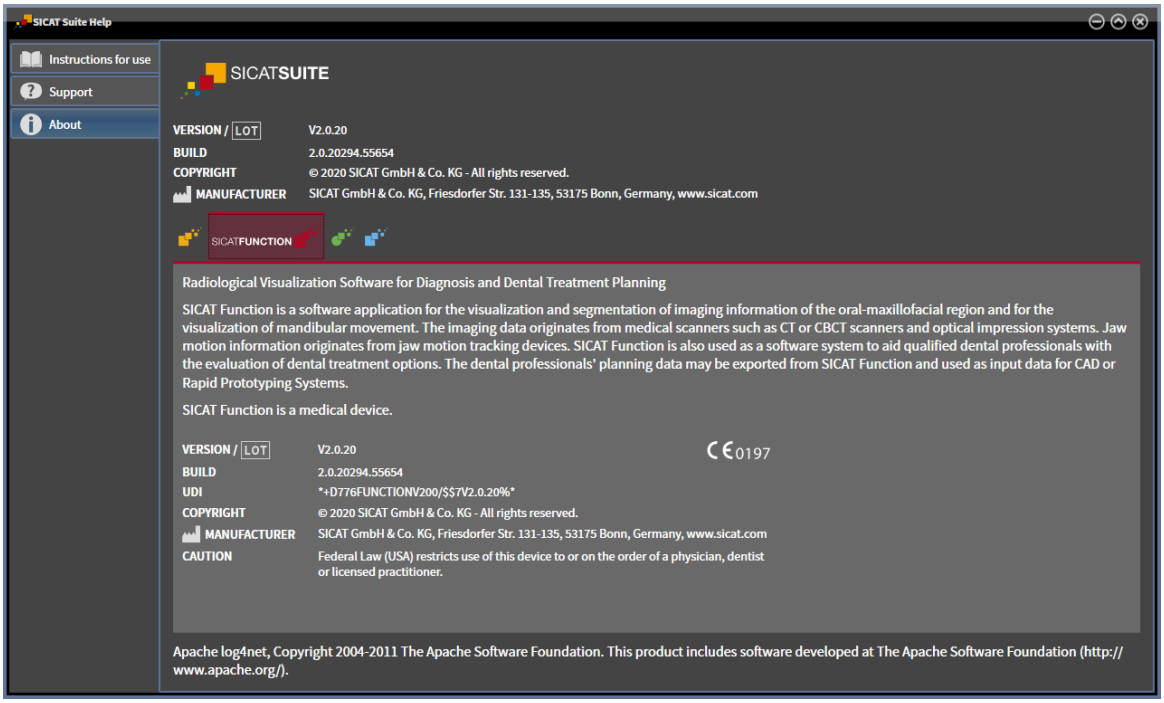
TeamViewer is software that allows mouse and keyboard commands to be remotely controlled and to transfer the contents of a computer's monitor via an active Internet connection. TeamViewer will only establish a connection if you explicitly consent. To do so, provide the SICAT support team with a TeamViewer ID and a password. This allows the SICAT support team to help you directly on-site.

The following tools are available in the **SUPPORT TOOLS** area:

- Click on the **Display** button in the **System information** area and SICAT Function will open the system information of the operating system.
- Click on the **Open directory** button in the **Log files** area and SICAT Function will open the log directory of SICAT Suite in a Windows Explorer window.
- Click on the **Open directory** button in the **SICAT Suite information** area and **SICAT Suite information** will export information on the current installation in a text file.
- Click on **Show messages** in the **SICAT Suite information** area and SICAT Function will show the message window.

37.3 ABOUT

The **About** tab displays information on SICAT Suite and all installed SICAT applications on several tabs:



38 OPENING READ-ONLY DATA

You can open data as read-only.

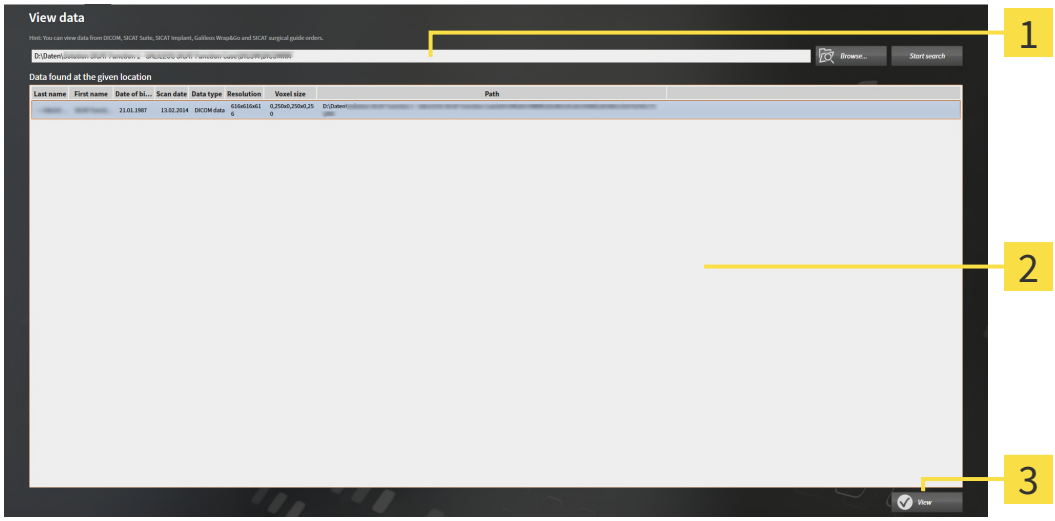
Which data you can view in the stand-alone version without being able to make and save changes depends on the status of your license and the availability of a patient record depot:

TYPE OF SICAT FUNCTION LICENSE	PATIENT RECORD DEPOT ACTIVE?	VIEWING WITHOUT CHANGES POSSIBLE?
None	Irrelevant	No
Viewer	Irrelevant	For SICAT data
Full version	No	Yes
Full version	Yes	No

You can only view DICOM data if you have activated a full version license of SICAT Function and no patient record depot is active.

To view data without being able to make and save changes, proceed as follows:

1. Click on the **View data** icon in the **Navigation bar**.
   ▶ The **View data** window opens:



1 **Where is the data located** field

2 **Data found at the given location** list

3 **View** button

2. Click on the **Browse** button.
   ▶ The **Select a file or directory** window opens.
3. Select the file or folder you wish to view in the **Select a file or directory** window and click **OK**.
   ▶ SICAT Suite closes the **Select a file or directory** window and transfers the path of the file you require or the selected folder into the **Where is the data located** field.

- ▶ If you have selected a compatible file, SICAT Suite will display the file contents in the **Data found at the given location** list.
- ▶ If you have selected a folder, SICAT Suite will search the folder and all sub-folders. SICAT Suite will display compatible files that are contained in one of the searched folders in the **Data found at the given location** list.

4. Select the desired 3D X-ray scan or planning project from the **Data found at the given location** list and click on the **View data** button.
   - ▶ SICAT Suite creates a temporary patient record, which contains 3D X-ray scans and planning projects, and activates it.
5. Continue with the section *Working with active patient records [▶Page 84 - Standalone]*.

You can also drag a compatible file or folder to the **Where is the data located** field using Drag & Drop to select data.

If you use the described procedure, the search will start automatically. You can cancel the search by clicking the **Stop search** button. If you enter a path to a file or a folder manually into the **Where is the data located** field, you have to click on the **Start search** button. This may also be useful to start a new search if the contents of the folder have changed or if you have accidentally canceled the search.

39 CLOSING SICAT FUNCTION

To close SICAT Function, proceed as follows:

- Click on the **Close** button in the area of the active patient record.

► SICAT Suite saves the active patient record.

► SICAT Suite closes all SICAT applications.

► SICAT Suite closes the active patient record.

40 CLOSING SICAT SUITE

- Click on the **Close** button in the top right-hand corner of SICAT Suite.

► If the full version of SICAT Suite is running, it has write authorization and a study is opened, it will save all planning projects.

► SICAT Suite closes.

41 KEYBOARD SHORTCUTS

If you move the mouse pointer over certain functions, SICAT Function displays the keyboard shortcut in brackets next to the designation of the function.

The following keyboard shortcuts are available in all SICAT applications:

KEYBOARD SHORTCUTS	DESCRIPTION
A	Add an angle measurement
D	Add a distance measurement
F	Focus on an active object
Ctrl + C	Copy the contents of the active view to the clipboard
Ctrl + Z	Undo the last object action
Ctrl + Y	Redo the most recently undone object action
Del	Remove the active object or active object group
ESC	Cancel the current action (such as adding a measurement)
F1	Open the **Support** window, if a SICAT application is active, open the instructions for use

The following keyboard shortcuts are available in the **Mandible segmentation** window of SICAT Function:

KEYBOARD SHORTCUTS	DESCRIPTION
N	Navigation
M	Segmenting the mandible
F	Segmenting the fossa
B	Segment the background

42 UNINSTALLING SICAT SUITE

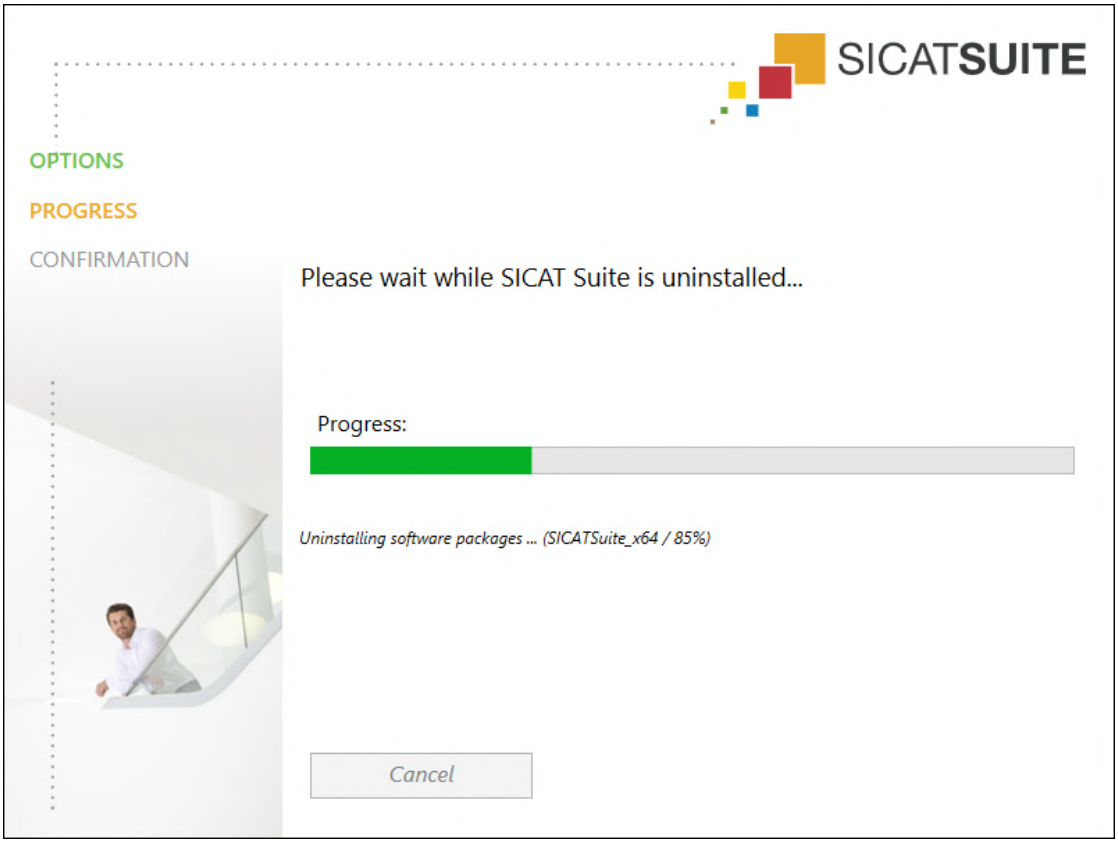
The SICAT Suite uninstallation program maintains active licenses on your computer. Therefore, SICAT Suite warns you that it will not automatically delete licenses before the uninstallation. If you no longer wish to use SICAT Suite on this computer, deactivate the licenses before uninstallation. Information on this can be found in the section *Returning workstation licenses to the license pool [▶Page 57 - Standalone]*.

Before uninstalling SICAT Suite, make sure that the SICAT WebConnector has uploaded all orders in full as the uninstallation program will automatically close the SICAT WebConnector. Information on this can be found in the section *The SICAT WebConnector [▶Page 221 - Standalone]*.

To uninstall SICAT Suite, proceed as follows:

☑ The SICAT WebConnector has successfully uploaded all orders.

1. Click on **Programs and features** in the Windows **Control panel**.
   ▶ The **Programs and features** window opens.
2. Select the **SICAT Suite** entry, which contains the version of SICAT Suite, from the list.
3. Click on the **Uninstall** button.
   ▶ The uninstallation program will start and the **PROGRESS** window opens:



▶ After the uninstallation is complete, the **CONFIRMATION** window opens.

4. Click on the **Finish** button.

▶ The SICAT Suite uninstallation program will close.

	To open the SICAT Suite uninstallation program, you can also start the SICAT Suite installation program on a computer, on which SICAT Suite is already installed.

	The SICAT Suite uninstallation program will call the uninstallation programs of some software prerequisites, which were installed together with SICAT Suite. If other installed applications still need the software prerequisites, they will be retained.

43 SAFETY INSTRUCTIONS

3D X-RAY SCANS

⚠ **CAUTION**	**Unsuitable X-ray devices may result in an incorrect diagnosis and treatment.** Only use 3D X-ray scans from X-ray devices that are cleared as medical equipment.

⚠ **CAUTION**	**Unsuitable 3D X-ray scans may result in an incorrect diagnosis and treatment.** Always verify the quality, integrity, and correct orientation of the displayed 3D data.

⚠ **CAUTION**	**X-ray devices without DICOM conformity could result in incorrect diagnosis and treatment.** Only use 3D volume data from X-ray devices with DICOM conformity declared.

DISPLAY CONDITIONS

⚠ **CAUTION**	**Insufficient visualization quality could result in incorrect diagnosis and treatment.** Before using a SICAT application, for example with the SMPTE test image, check whether the display quality is sufficient.

⚠ **CAUTION**	**Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.** 1. Only perform planning if the environmental conditions allow for sufficient visualization quality. For example, check for appropriate lighting. 2. Check whether the display quality is sufficient using the SMPTE test image.

DATA MANAGEMENT

⚠ **CAUTION**	**Incorrect assignment of patient name or 3D scan could result in confusion of patient scans.** Verify that the 3D scan that is to be imported or already loaded in a SICAT Suite application is associated with the correct name of the patient and the correct scan information.

⚠ **CAUTION**	**Deleting original data may result in data being lost.** Do not delete the original data following the import.

CAUTION

The absence of a backup mechanism for the patient record depots could result in patient data being irreversibly lost.

Make sure that a regular data backup is created of all patient record depots.

CAUTION

When deleting patient records, all 3D scans, planning projects and PDF files contained in these patient records will be deleted as well.

Only delete patient records if you are sure you will never need any contained 3D scans, planning projects and PDF files again.

CAUTION

Deleted patient records, studies, 3D scans, and planning projects cannot be recovered.

Only delete patient records, studies, 3D scans, and planning projects if you are sure you will never need those data again.

CAUTION

When deleting 3D scans, all dependent planning projects will be deleted as well.

Only delete 3D scans if you are sure you will never need any dependent planning project again.

NETWORK

CAUTION

Saving SICAT application data in an unreliable or incompatible network file system could result in data loss

Together with your network administrator, make that SICAT application data can be safely stored in the desired network file system.

CAUTION

The shared use of SICAT Suite and the SICAT applications contained therein with other devices within a computer network or a storage area network could result in previously unknown risks for patients, users and other persons.

Ensure that rules are compiled within your organization to determine, analyze and assess risks in relation to your network.

CAUTION

Changes to your network environment may result in new risks for your network environment. Examples include changes to your network configuration, the connection of additional devices or components to your network, the disconnection of devices or components from your network and the updating or upgrading of network devices or components.

Perform a network risk analysis after any changes to the network.

QUALIFICATIONS OF OPERATING PERSONNEL

CAUTION

The use of this software by unqualified personnel may result in an incorrect diagnosis and treatment.

The use of the software is restricted to qualified professionals.

SAFETY

CAUTION

Security leaks in your information system environment could result in unauthorized access to your patient data and put the privacy or integrity of your patient data at risk.

1. Make sure policies are established within your organization to prevent security threats to your information system environment.
2. Install and run an up-to-date virus scanner.
3. Make sure the pattern files of the virus scanner are updated on a regular basis.

CAUTION

Unauthorized access to your workstation could result in risks to the privacy and integrity of your patient data.

Limit the access to your workstation to authorized individuals only.

CAUTION

Problems in terms of cyber-security could result in unauthorized access to your patient data and risks in relation to the security or integrity of your patient data.

If you suspect problems in relation to the cyber-security of your SICAT application, contact support immediately.

SOFTWARE INSTALLATION

CAUTION

Changes to the software may mean that the software will not start or will not function as intended.

1. Do not make any changes to the software installation.
2. Do not delete or change any of the components in the software installation directory.

CAUTION

Damaged installation media may result in the failure of the installation.

Handle the installation media with care and store them appropriately.

CAUTION

If your system does not fulfill the system requirements, this may mean that the software will not start or will not function as intended.

Check whether your system meets the minimum software and hardware requirements before installing the software.

CAUTION

Insufficient authorizations may mean that the software installation or software update fails.

Make sure you have sufficient privileges on your system if you install or update the software.

ORDERS

CAUTION

Incorrect data in an order may result in an incorrect order.

If you complete an order, ensure that you select and transfer the correct data for the order.

CAUTION

An incorrect order might lead to the wrong treatment.

1. Check your order before sending it.
2. Confirm the correct planning of your order.

JAW MOTION TRACKING DATA

CAUTION

The use of other data as 3D X-ray scans as a lone source of information may result in an incorrect diagnosis and treatment.

1. Use 3D X-ray scans as a preferred source of information for diagnosis and planning.
2. Use other data, such as optical impressions, only as an auxiliary source of information.

CAUTION

Unsuitable jaw motion tracking devices could result in incorrect diagnosis and treatment.

Only use jaw tracking data from devices cleared as medical devices.

CAUTION

The use of jaw motion tracking devices with an unsuitable intended use may result in an incorrect diagnosis and treatment.

Only use jaw tracking data from devices with an intended use that covers the use of the jaw motion tracking data with SICAT Function.

CAUTION

The use of unsupported jaw motion tracking devices or incompatible registration devices may result in an incorrect diagnosis and treatment.

Only use jaw motion tracking data that has been recorded using a supported combination of a jaw motion tracking devices (such as SICAT JMT⁺) and a compatible registration device (such as SICAT Fusion Bite).

CAUTION

Incorrect recording of jaw motion tracking data and 3D X-ray scans may result in an incorrect diagnosis and treatment.

Ensure that jaw motion tracking data and 3D X-ray scans have been recorded in accordance with the device manufacturer's instructions. Use the stated type of registration device.

CAUTION

Jaw motion tracking data that does not match the patient and date of the 3D X-ray scans may result in an incorrect diagnosis and treatment.

Make sure that the patient and date of the jaw motion tracking data match the patient and date in the 3D X-ray scan shown.

CAUTION

Insufficient integrity or quality of jaw motion tracking data may result in an incorrect diagnosis and treatment.

Check the integrity and quality of the jaw motion tracking data imported.

CAUTION

Insufficient quality, precision and resolution of jaw motion tracking data may result in an incorrect diagnosis and treatment.

Only use jaw motion tracking data of a sufficient quality, resolution and precision for the intended diagnosis and treatment.

CAUTION

Excessive artifacts, insufficient resolution or insufficient quality of the 3D X-ray scans may mean that the marker and registration device detection mechanism fails. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Use only 3D X-ray scans that enable the correct detection of markers and registration devices.

CAUTION

Incorrect positions, types and orientations of the registration device may result in an incorrect diagnosis and treatment.

After the JMT wizard has identified the registration device, check the correct position, type and orientation of the registration device, taking into account the 3D X-ray scans.

CAUTION

The incorrect registration of jaw motion tracking data for 3D X-ray scans may result in an incorrect diagnosis and treatment.

Check that the registered jaw motion tracking data is correctly aligned to the 3D X-ray scans.

OPTICAL IMPRESSIONS

CAUTION

The use of other data as 3D X-ray scans as a lone source of information may result in an incorrect diagnosis and treatment.

1. Use 3D X-ray scans as a preferred source of information for diagnosis and planning.
2. Use other data, such as optical impressions, only as an auxiliary source of information.

CAUTION

Inappropriate optical impression devices could result in incorrect diagnosis and treatment.

Only use optical impression data from devices cleared as medical devices.

CAUTION

Optical impression data that does not match patient and date of 3D X-ray data could result in incorrect diagnosis and treatment.

Make sure the patient and date of the imported optical impression data match the patient and date of the visualized 3D X-ray data.

CAUTION

Insufficient integrity or quality of optical impressions may result in an incorrect diagnosis and treatment.

Check the integrity and quality of the optical impressions imported.

CAUTION

Insufficient integrity and precision of optical impressions may result in an incorrect diagnosis and treatment.

Only use optical impressions of a sufficient quality and precision for the intended diagnosis and treatment.

CAUTION

Excessive artifacts, insufficient resolution or the lack of points for registration may mean that the registration process for optical impressions fails. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Only use optical impression data and 3D X-ray data that allow for an adequate registration.

CAUTION

The selection of markings in the registration process for optical impressions that do not correspond to one another may result in an incorrect diagnosis and treatment.

When you register optical impressions, carefully select corresponding markings in the 3D X-ray scans and optical impressions.

CAUTION

The incorrect registration of optical impressions for 3D X-ray scans may result in an incorrect diagnosis and treatment.

Check that the registered optical impressions are correctly aligned to the 3D X-ray scans.

SEGMENTATION

CAUTION

Excessive artifacts or the insufficient resolution of 3D X-ray scans may result in the failure of the segmentation process or lead to insufficient results. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Only use 3D X-ray scans that allow for a sufficient quality of segmentation of the relevant anatomical structures.

CAUTION

Insufficient segmentation quality may result in an incorrect diagnosis and treatment.

Check that the segmentation quality is sufficient for the intended use.

44 ACCURACY

The following table shows the accuracy values in all SICAT applications:

Measurement accuracy for distance measurements	< 100 µm
Measurement accuracy for angle measurements	< 1 degree
Representation accuracy	< 20 µm
Representation accuracy of jaw motion tracking data	< 0.6 mm

GLOSSARY

3D X-ray scan

A 3D X-ray scan is a volumetric X-ray image.

ADA

American Dental Association

Application

SICAT applications are programs belonging to SICAT Suite.

Bite fork

A bite fork is a bite plate with radiopaque fiducial markers that SICAT uses to register data from 3D X-ray images and jaw motion tracking data.

Crosshairs

Crosshairs are lines of intersection with other slice views.

FDI

Fédération Dentaire Internationale, World Dental Federation

Frames

In the 3D view, frames show the positions of the 2D slice views.

Hub

An external memory that acts as a server and enables data exchange between different devices in a local network.

Message window

The message window shows messages on completed procedures in the bottom right corner of the screen.

Navigation bar

The navigation bar in the upper part of SICAT Suite contains the most important icons in SICAT Suite. If a patient record is active, the navigation bar allows switching between patient records and different applications.

Optical impressions

An optical impression is the result of a 3D surface scan of teeth, impression material or plaster casts.

Patient record

A patient record contains all 3D scans and planning projects, which belong to a certain patient. SICAT Suite saves patient records in patient record depots.

Patient record depots

A patient record depot contains patient records. SICAT Suite saves patient record depots in folders on a local file system or network file system.

Planning project

A planning project is comprised of planning data from a SICAT application based on a 3D X-ray scan.

SICAT JMT⁺

SICAT JMT⁺ saves the movements of the lower jaw.

SICAT Portal

SICAT Portal is a website, which you can use to order appliances from SICAT, amongst other things.

SIXD

File format to exchange optical impressions.

SMPTE

Society of Motion Picture and Television Engineers

SSI

File format to exchange optical impressions.

STL

Surface Tessellation Language, standard file format to exchange mesh data, which may contain optical impressions, for example.

Study

A study consists of a 3D X-ray scan and the corresponding planning project.

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SICATFUNCTION

SICAT FUNCTION *VERSION 2.0.20*

Instructions for use | English | SIDEXIS 4

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1 INTENDED USE

SICAT Function is a software application for the visualization and segmentation of imaging information of the oral-maxillofacial region and for the visualization of mandibular movement.

The imaging data originates from medical scanners such as CT or CBCT scanners and optical impression systems. Jaw motion information originates from jaw motion tracking devices.

SICAT Function is also used as a software system to aid qualified dental professionals with the evaluation of dental treatment options.

The dental professionals' planning data may be exported from SICAT Function and used as input data for CAD or Rapid Prototyping Systems.

2 VERSION HISTORY

VERSION 2.0

- The Hub is available as an additional option for importing and registering optical impressions.
- STL files that have been imported into Sidexis 4 can be used to import and register optical impressions.
- Optical impressions can be displayed in color if they have been downloaded from the Hub or imported from an SIXD file.
- The volume orientation correction and panoramic curve adjustment can be configured separately for each application.
- In the Panorama view, the inspection window can be maximized.
- The transversal and longitudinal view in the Panorama workspace can be tilted.
- SICAT applications can be used either with workstation licenses or with network licenses.
- SICAT Suite can be used with Sidexis 4 or as a stand-alone version.

VERSION 1.4

- For reasons of legal compliance, SICAT applications require a license even for Viewer mode. Applications without license are not available. For all applications that are approved in your country, SICAT automatically adds Viewer licenses to your customer activation key. You can activate the Viewer licenses by deactivating and re-activating any license. Information on this can be found in the section *Licenses [▶Page 50 - SIDEXIS 4]*.
- The stand-alone version and the SIDEXIS XG plug-in version of these instructions for use are also available in form of PDF files.
- SICAT Function is able to calculate a virtual hinge axis of the temporomandibular joints based on the jaw motion tracking data.
- SICAT Function shows the lengths of the arms of the Bonwill triangle and calculates the Balkwill angle.

VERSION 1.3

- SIDEXIS 4 module
- Support of Italian, Spanish, Portuguese, Dutch and Russian languages
- The version number of SICAT Function matches the version number of SICAT Suite.
- Alternative option to order therapeutic appliances by manufacturing a plaster model.
- **TMJ** workspace, which shows the motion of segmented condyles.
- Segmentation can be further edited after closing the segmentation window.

VERSION 1.1

- Support of French and Japanese languages
- Volume orientation alignment correction
- Ordering of OPTIMOTION therapeutic appliances
- Change of format for jaw motion tracking data to .jmt files
- Export of optical impressions with integrated anatomical traces

VERSION 1.0

- Initial release
- Support of English and German languages

3 SYSTEM REQUIREMENTS

CAUTION

If your system does not fulfill the system requirements, this may mean that the software will not start or will not function as intended.

Check whether your system meets the minimum software and hardware requirements before installing the software.

Processor	Quad Core 2.3 GHz
RAM	8 GB
Graphics card	Dedicated* DirectX 11 or higher 2 GB graphics memory Current driver with at least WDDM 1.0 support
Screen	Resolution at least 1920x1080 pixels for 100 to 125 percent scale** Maximum resolution 3840x2160 pixels for 100 to 200 percent scale
Free disk space on hard disk	20 GB plus additional storage space for patient records
Storage media	Access to external storage media containing installation files.
Input devices	Keyboard, mouse
Network	Ethernet, 100 Mbit/s, 1000 Mbit/s recommended
Printer for patient information	At least 300 dpi Paper format DIN A4 or US letter
Operating system	Windows 7 SP1 (64 Bit) with KB2670838 Windows 8.1 (64 Bit, Desktop) Windows 10 (64 Bit, Desktop) These operating systems will be supported to the extent and for the duration to and/or for which they are supported by Microsoft.
Web browser	Microsoft Edge Mozilla Firefox Google Chrome JavaScript must be activated. A standard browser must be set.
PDF viewer	Adobe Reader DC or higher, for example

SIDEXIS 4	Version 4.3.1 or higher (SiPlanAPI V5)
Hub	Version 2.X from version 2.1

*SICAT Suite supports only dedicated graphics cards from the NVIDIA GeForce 960 GTX level of performance. Integrated graphics cards are not supported.

** The combination of a low monitor resolution and a high level of scaling may mean that the software displays certain parts of the user interface incompletely.

The monitor must be configured so that it displays the SMPTE test image correctly. Information on this can be found in the section *Monitor calibration with the SMPTE test image* [▶Page 192 - SIDEXIS 4]

SOFTWARE PREREQUISITES

SICAT Suite requires the following software components and installs them if they are not already available:

- Microsoft .NET Framework 4.6.2
- CodeMeter license management software 7.10a
- SQL Server Compact Edition 4.0
- SICAT WebConnector

The SICAT WebConnector requires specific ports for communication with the SICAT server. The ports must be unblocked in your firewall:

PROTOCOL	DIRECTION OF TRANSMISSION	PORT
HTTP	Outgoing	80
HTTPS	Outgoing	443
FTPS - Management	Outgoing	21
FTPS - Data transmission	Outgoing	49152 -65534

You can also place orders without SICAT WebConnector. Information on this can be found in the section *Ordering process* [▶Page 175 - SIDEXIS 4].

4 SAFETY INFORMATION

It is important that you read the following safety-related chapters:

- *Definition of the danger levels [▶Page 12 - SIDEXIS 4]*
- *Qualifications of operating personnel [▶Page 13 - SIDEXIS 4]*
- *Safety instructions [▶Page 208 - SIDEXIS 4]*

4.1 DEFINITION OF THE DANGER LEVELS

These instructions for use use the following safety labels to prevent injuries to operating personnel or patients, as well as material damages:

⚠ **CAUTION**	**Labels a dangerous situation, which could result in smaller injuries if not prevented.**

NOTICE	**Labels information deemed important, but not relevant to safety.**

4.2 QUALIFICATIONS OF OPERATING PERSONNEL

⚠ **CAUTION**	**The use of this software by unqualified personnel may result in an incorrect diagnosis and treatment.** The use of the software is restricted to qualified professionals.

The following requirements must be met to use the software:

- You have read the instructions for use.
- You are familiar with the basic structure and functions of the software.

CAUTION! Federal Law (USA) restricts use of this device to or on the order of a physician, dentist or licensed practitioner.

5 USED ICONS AND HIGHLIGHTING

ICONS

The following icons are used in these instructions for use:

	The note icon labels additional information, such as alternative methods.

HIGHLIGHTING

Text and labels of elements shown by SICAT Suite are highlighted in **bold**. This includes the following objects in the user interface:

- Area labels
- Button labels
- Icon labels
- Text in notes and messages on the screen

HANDLING INSTRUCTIONS

Handling instructions are written as numbered lists:

☑ Prerequisites are marked with this icon.

1. Steps are labeled with numbers.

   ▶ Interim results are marked with this icon and indented.

2. Further steps will follow after the interim results.

3. **Optional or conditional step:** Optional or conditional steps are preceded by the aim of the step or the condition and a colon.

▶ Final results are marked with this icon.

- Instructions consisting of just one step are marked with this icon.

PATIENT DATA

All example patient names shown in this document are fictitious. Any similarities to real persons are therefore purely coincidental. In particular, there is no connection between the example patient names and the patient data shown.

6 OVERVIEW OF THE INSTRUCTIONS FOR USE

SICAT Function is part of SICAT Suite in addition to other applications. SICAT Suite forms the framework, in which the SICAT applications run. The applications are therefore installed along with SICAT Suite. Information on this can be found in the section *Installing SICAT Suite [▶Page 18 - SIDEXIS 4]*.

After installation, SICAT Suite can be used in two versions. Some operating steps vary, depending on the version used. Therefore, these instructions for use deal with the versions separately:

- Stand-alone version
- SIDEXIS 4 module

You do not need to decide on a version when you install SICAT Suite.

The applications are also uninstalled along with SICAT Suite. Information on this can be found in the section *Uninstalling SICAT Suite [▶Page 206 - SIDEXIS 4]*.

7 OVERVIEW OF SICAT SUITE

SICAT Suite comprises the following applications:

- SICAT Implant – the intended use of SICAT Implant is indicated in the SICAT Implant instructions for use.
- SICAT Function – the intended use of SICAT Function is indicated in the SICAT Function instructions for use.
- SICAT Air – the intended use of SICAT Air is indicated in the SICAT Air instructions for use.
- SICAT Endo – the intended use of SICAT Endo is indicated in the SICAT Endo instructions for use.

LANGUAGES:

SICAT Suite supports the following languages in the user interface:

- English
- German
- French
- Japanese
- Spanish
- Italian
- Dutch
- Portuguese
- Russian

LICENSING

The following steps are required to acquire a license for SICAT applications or individual functions:

- You contact your local sales partner.
- You receive a voucher code.
- Using the voucher code, you generate a license key on the SICAT portal (which can be accessed via SICAT home page).
- SICAT adds the license key to your activation key.
- You use your activation key to activate SICAT applications or individual functions in SICAT Suite. Workstation licenses are activated in SICAT Suite and network licenses are activated on the license server in the local practice network.

FULL VERSION AND VIEWER MODE

SICAT Suite can start in one of two modes:

- If you have activated the Viewer license of at least one SICAT application, SICAT Suite will start in Viewer mode.
- If you have activated the full version license of at least one SICAT application, SICAT Suite will start as full version.

In general, the following is true:

- Applications with an activated full version license will start in the full version.
- Applications with activated Viewer license will start in Viewer mode.
- Applications without an activated license will not start.
- You do not need to choose a mode when you install SICAT Suite.

8 INSTALLING SICAT SUITE

CAUTION

Changes to the software may mean that the software will not start or will not function as intended.

1. Do not make any changes to the software installation.
2. Do not delete or change any of the components in the software installation directory.

CAUTION

Damaged installation media may result in the failure of the installation.

Handle the installation media with care and store them appropriately.

CAUTION

If your system does not fulfill the system requirements, this may mean that the software will not start or will not function as intended.

Check whether your system meets the minimum software and hardware requirements before installing the software.

CAUTION

Insufficient authorizations may mean that the software installation or software update fails.

Make sure you have sufficient privileges on your system if you install or update the software.

The **Auto play** function of Windows on your computer could be deactivated. In this case, you can open the optical medium in the Windows file Explorer and start the file **SICATSuiteSetup.exe** manually. The file name contains the version of SICAT Suite.

If you install SIDEXIS 4 and then install SICAT Suite, you can register SICAT Suite as a SIDEXIS 4 module during installation. This allows you to use SICAT Suite integrated with SIDEXIS 4.

If you install SICAT Suite first and then install SIDEXIS 4 you cannot register SICAT Suite as a SIDEXIS 4 module during installation. You can manually register SICAT Suite as a SIDEXIS 4 module later on. For more information, see *Registering and removing SICAT Suite as a SIDEXIS 4 module [▶Page 41 - SIDEXIS 4]*.

To install SICAT Suite, proceed as follows:

☑ Your computer fulfills the system requirements. Information on this can be found in the section *System requirements [▶Page 9 - SIDEXIS 4]*.

☑ SICAT Suite can be downloaded from the SICAT homepage.

1. Insert the SICAT Suite installation medium into the optical drive of your computer.

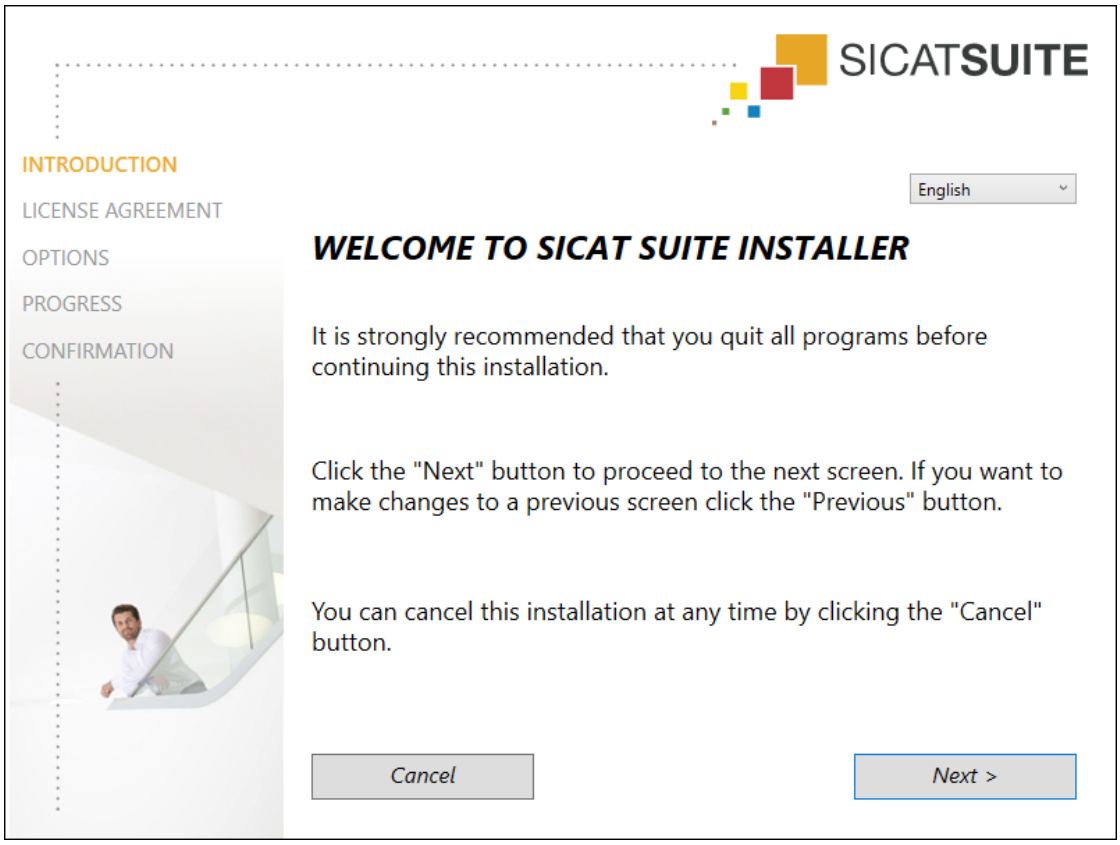
   ▶ The **Auto play** window opens.

2. If you have purchased SICAT Suite as a download version, download the ISO file from the SICAT homepage and use this file for the installation.

3. Select the option **Execute SICATSuiteSetup.exe** in the **Auto play** window. The file name contains the version of SICAT Suite.

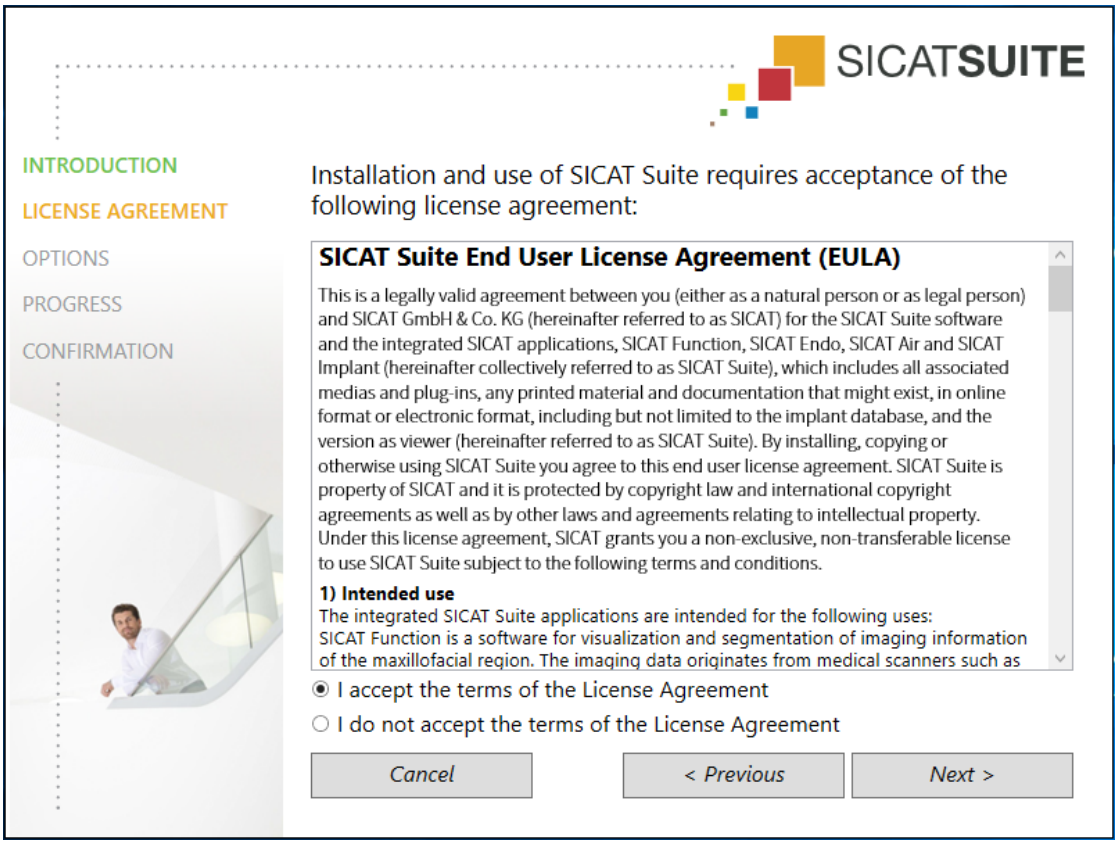
   ▶ The software prerequisites are installed if they are not already available on your computer.

   ▶ The SICAT Suite installation program will start and the **INTRODUCTION** window opens:



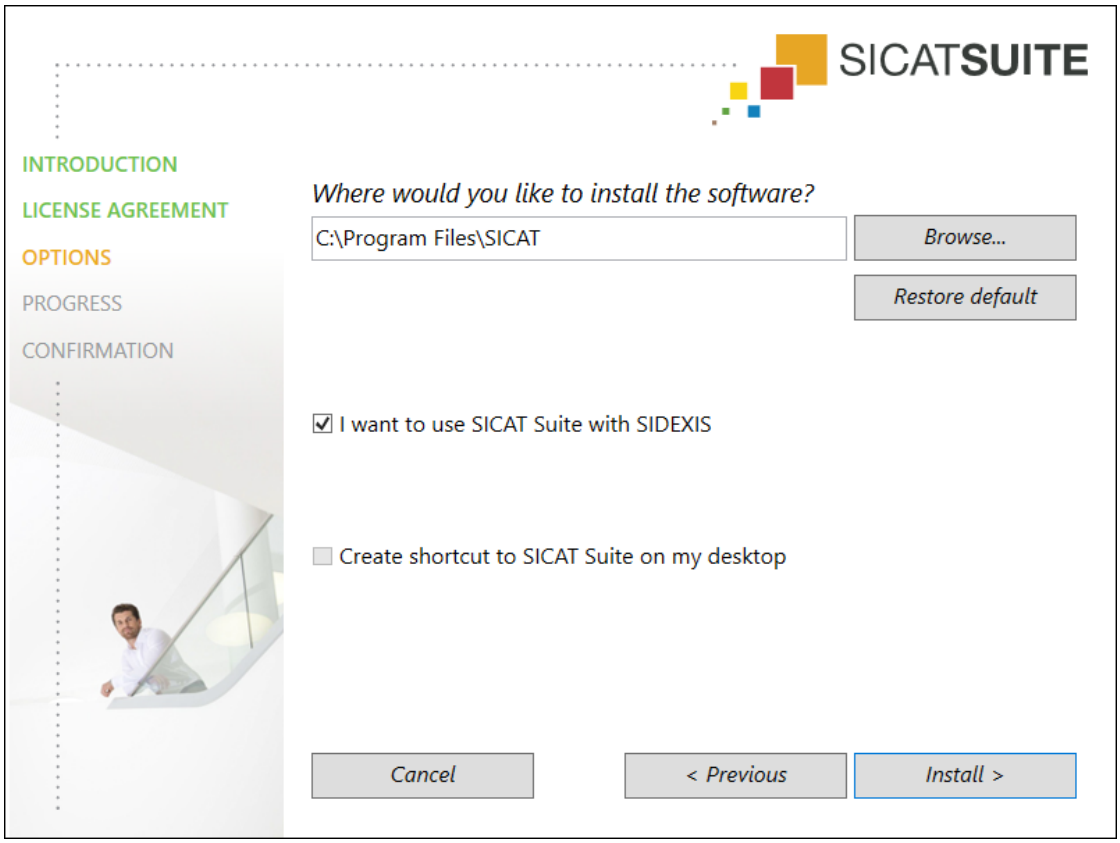
4. Select the desired language for the SICAT Suite installation program in the top right-hand corner of the **INTRODUCTION** window and click on **Next**.

▶ The **LICENSE AGREEMENT** window opens:



5. Read the end-user licensing agreement in full, select the **I accept the terms of the License Agreement** check box and click on **Next**.

▶ The **OPTIONS** window opens:



6. To change the folder on the hard disk in which the SICAT Suite installation program will install SICAT Suite click on the **Browse** button.

   ▶ The **Select folder** window opens.

7. Browse to the desired folder in which the SICAT Suite installation program is to create the “SICAT Suite” directory and click on **OK**.

   ▶ The SICAT Suite installation program will enter the directory for the selected folder in the **Where would you like to install the software** field.

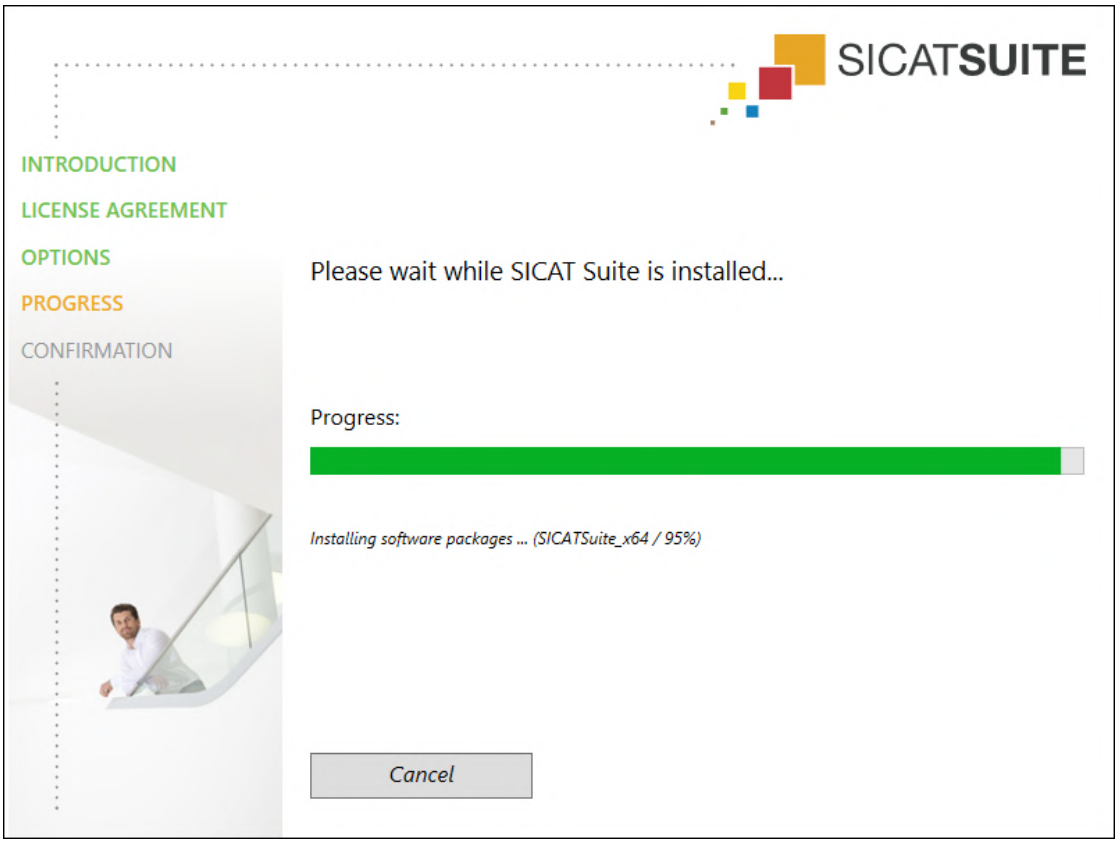
8. If SIDEXIS 4 is installed on your computer, the **I want to use SICAT Suite with SIDEXIS** check box will be available. You can register SICAT Suite during installation or manually register SICAT Suite as a SIDEXIS 4 module later on.

   ▶ If the **I want to use SICAT Suite with SIDEXIS** check box is activated, the **Create shortcut to SICAT Suite on my desktop** check box will not be available.

9. If available, activate or deactivate the **Create shortcut to SICAT Suite on my desktop** check box.

10. Click on the **Install** button.

▶ The **PROGRESS** window opens:



▶ SICAT Suite and the remaining software prerequisites will be installed.

▶ After the installation is complete, the **CONFIRMATION** window opens:

11. Click on the **Finish** button.

    ▶ The SICAT Suite installation program will close.

    ▶ The SICAT Implant Database installation program will start automatically. If you do not want to install the SICAT Implant Database, click on the **Cancel** button.

9 PERFORMING TEST STEPS AFTER OPERATING SYSTEM UPDATE

CAUTION

Changes to the operating system may mean that the SICAT applications will not start or will not function as intended.

1. Prior to starting the SICAT applications, always check whether the operating system of your computer has installed updates or security updates since you last used the SICAT applications.
2. If the operating system of your computer has installed updates or security updates, perform the steps required for testing the SICAT applications as described in the instructions for use.
3. If the behavior of the SICAT applications differs from the behavior described in the instructions for use, stop using of the software and contact SICAT support immediately.

If the operating system of your computer has installed updates, you must ensure that SICAT Function operates without any errors. Perform the following test steps. If you notice deviation during a test step, prevent further use of SICAT Function on the computer in question and contact SICAT support.

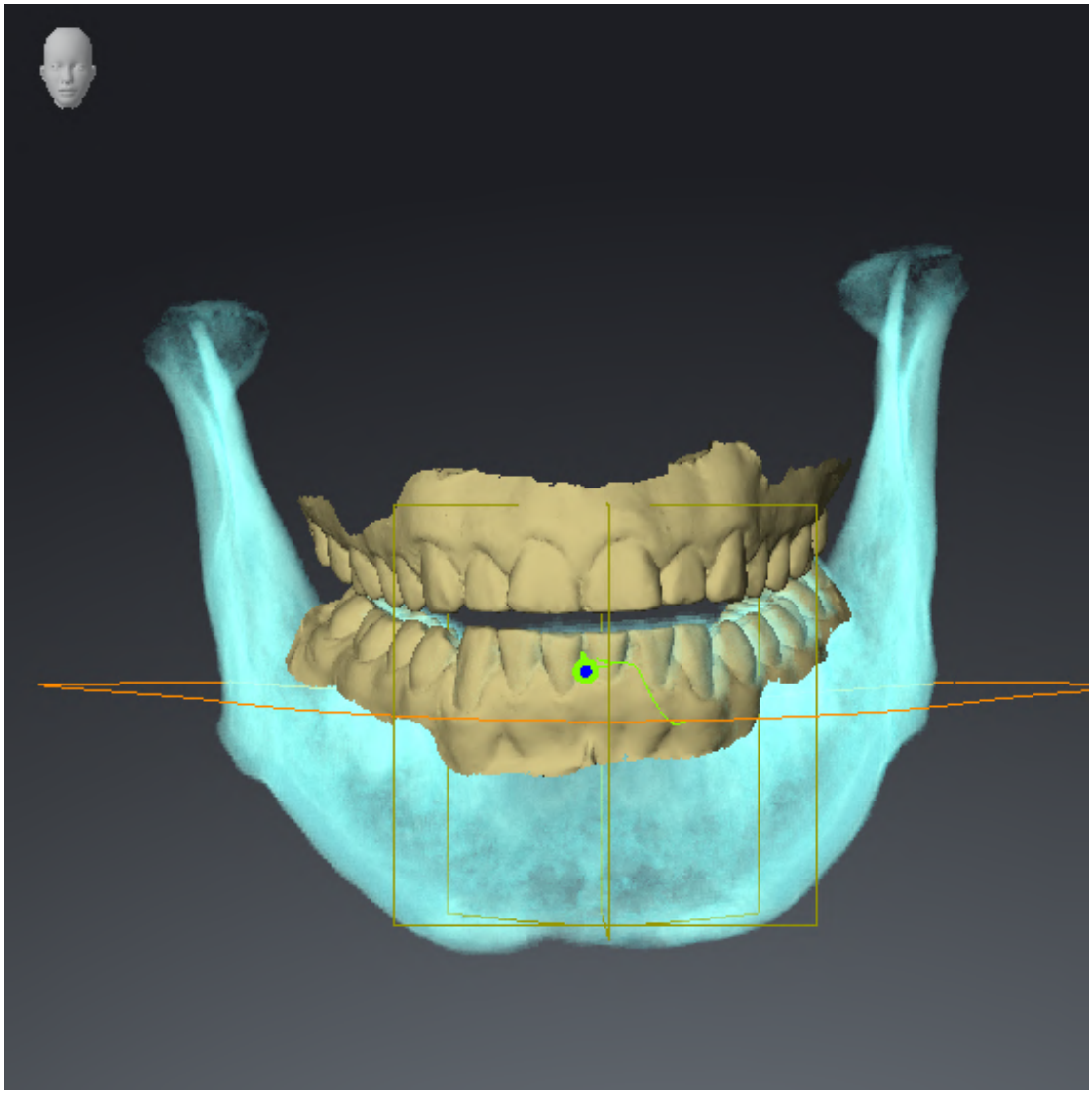
PREPARATIONS

1. If SIDEXIS 4 is open, please close the program.
2. Start SICAT Suite as a stand-alone version by pressing the **Windows** key, entering **SICAT Suite** and clicking on the **SICAT Suite** icon.
3. To ensure that nobody has made unintended changes, delete the “Patient Axx” patient.
4. Import the reference data record from the “SICATSuite_ReferenceDataset_2.0.zip” file. You will find the data record on the SICAT Suite installation medium.
5. Open the “Patient Axx” reference data record in SICAT Function.

MANDIBLE SEGMENTATION

1. Make sure that the **Panorama** workspace is active.
2. Reset the views to their default values.
3. Make sure that the **3D** view shows the 3D X-ray scan from the front.

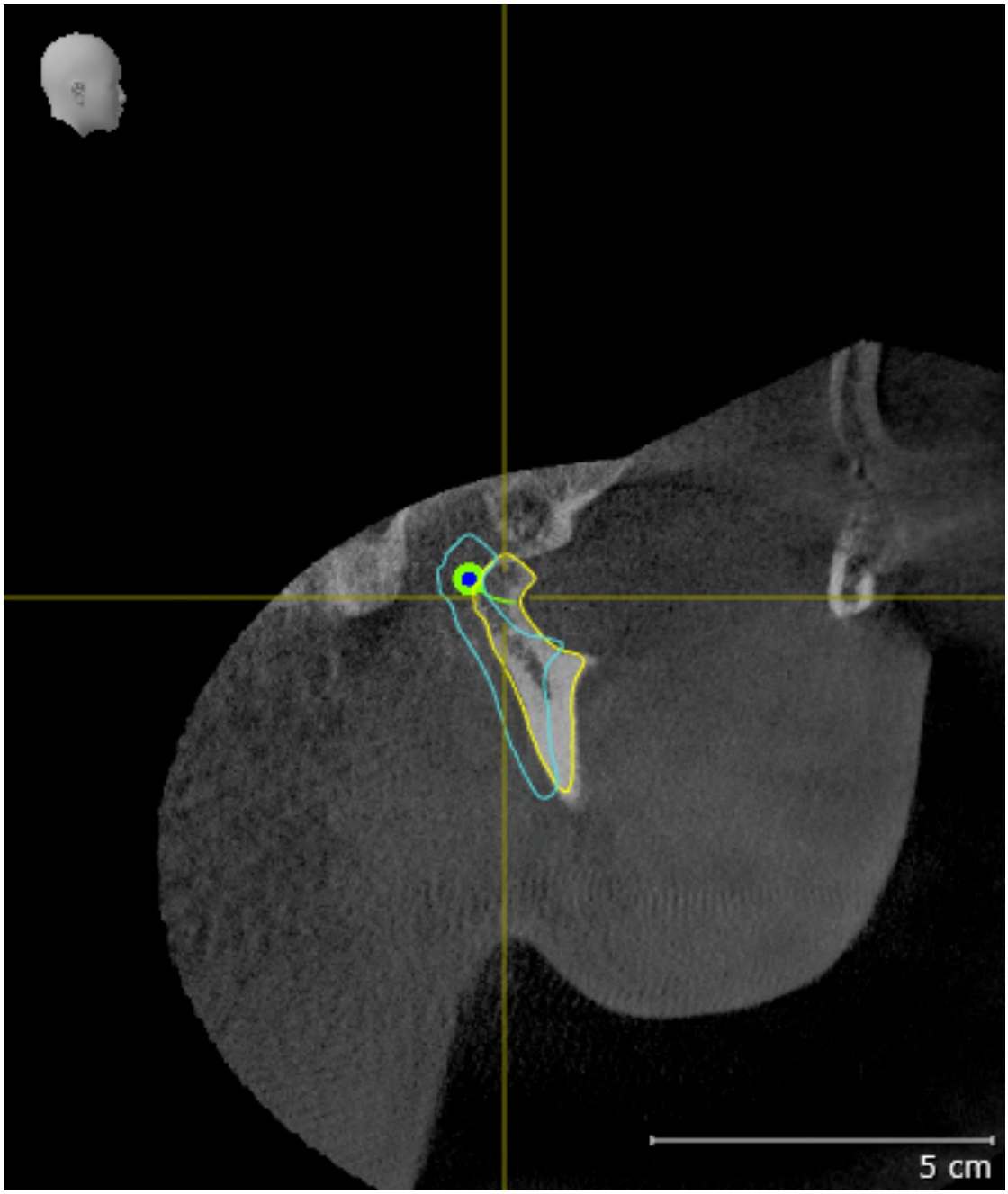
4. Place the mouse pointer over the **Configure active display mode** icon in the **View toolbar** of the **3D** view.
5. Click on the arrow icon next to .**Advanced**.
6. Activate the **Hide Background Region** check box.
7. Select the “lateral_lt.1” element from the **Active Jaw Relation** list.
8. Compare the **3D** view with the following screenshot. Check especially the representation of the mandible segmentation and the optical impressions.



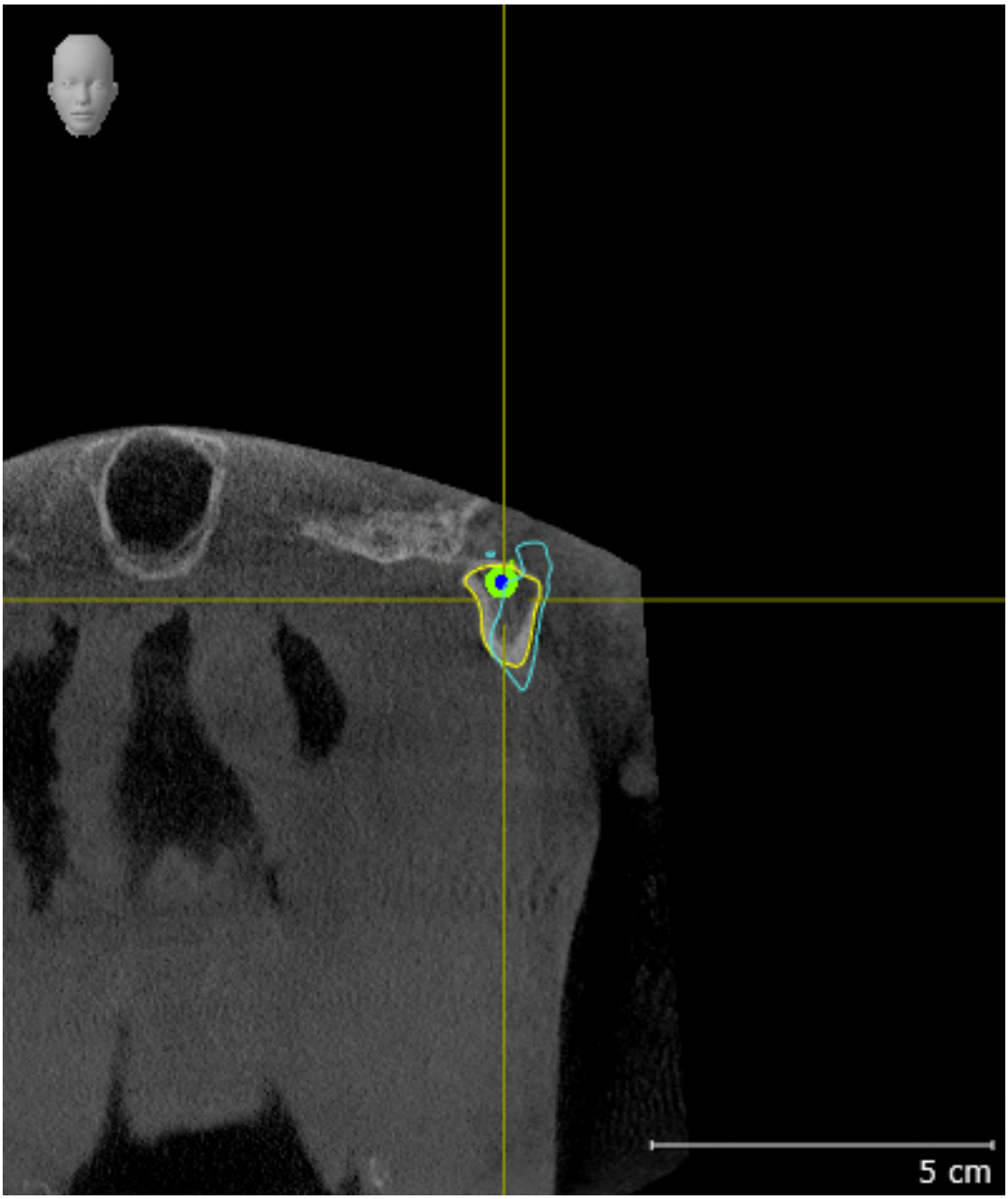
JAW MOTION TRACKING DATA

1. Make sure that the **TMJ** workspace is active.
2. Ensure that the values for **Brightness** and **Contrast** correpsond to the default value of 50%.
3. Select the “lateral_lt.1” element from the **Active Jaw Relation** list.
4. In the **Object browser**, under **Volume Regions** $ **Mandible**, select the **Mandible Right** element and focus on it.
5. In the **Object browser**, under **Volume Regions** $ **Mandible**, select the **Mandible Left** element and focus on it.
6. In the **Object browser**, select the **Volume Regions** element.
7. Activate the **Show Segmentation Boundary** option in the **Properties** area.

8. Compare the **Right CondyleSagittal** view with the following screenshot:

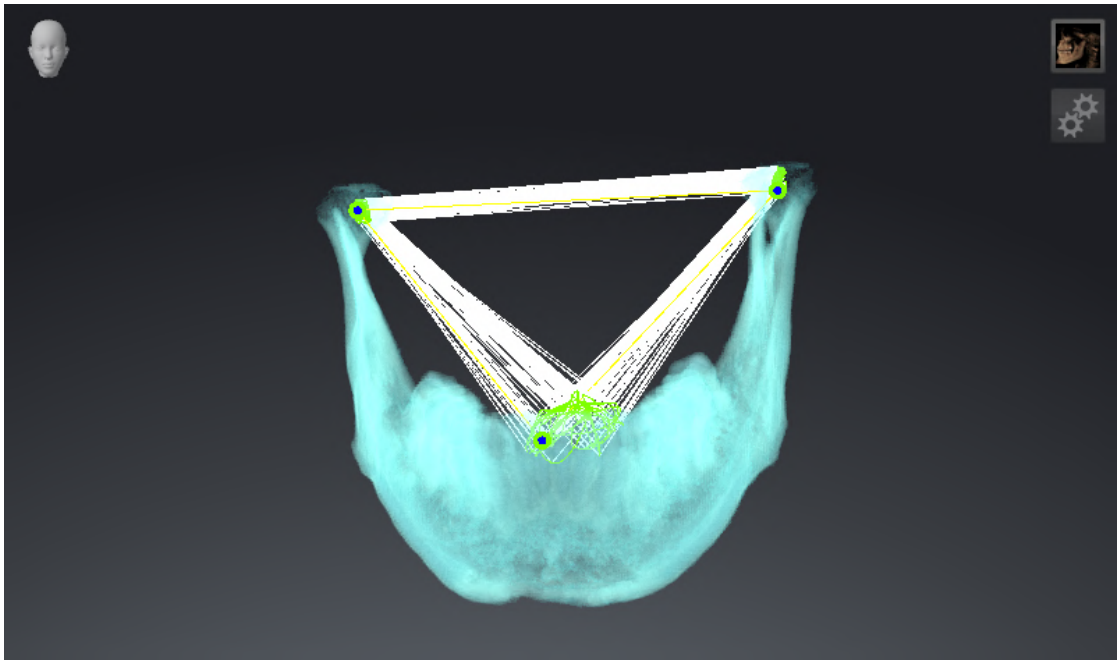


9. Compare the **Left CondyleCoronal** view with the following screenshot:



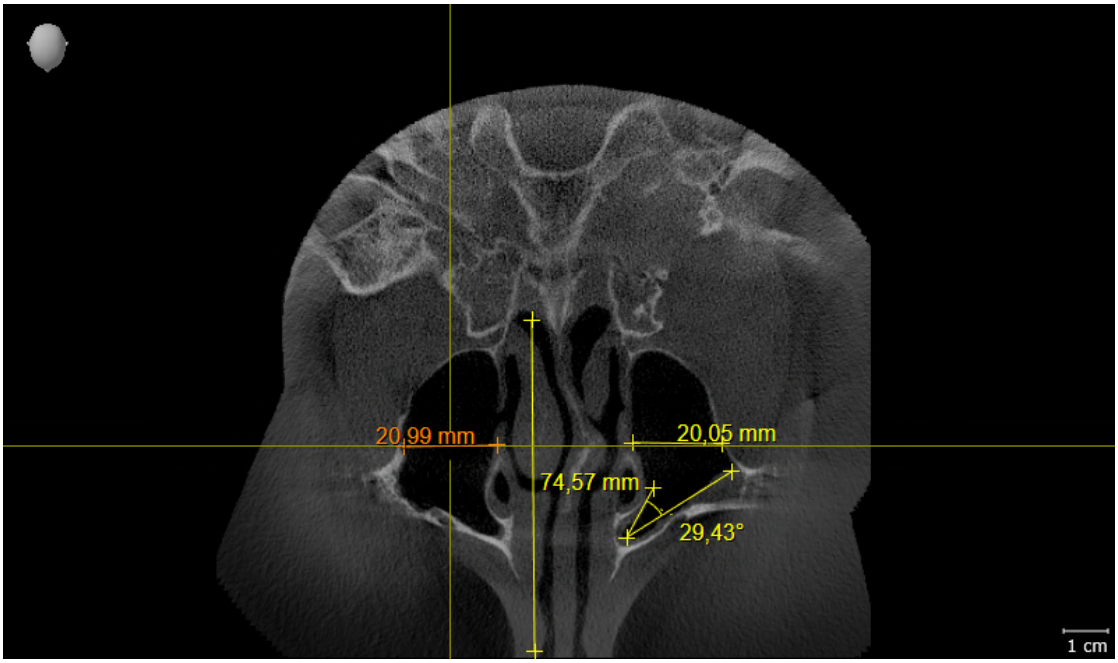
BONWILL TRIANGLE

1. Make sure that the **TMJ** workspace is active.
2. Make sure that the **3D** view shows the 3D X-ray scan from the front.
3. In the **Object browser**, select the **Jaw Motion Tracking Data** element.
4. Activate the **Bonwill triangle** option in the **Properties** area. Make sure that the value for **Steps** is “5”.
5. Select the “chewing.1” element from the **Active Jaw Relation** list.
6. Set the display mode of the **3D** view to **Hide Background Region**.
7. Hide the optical impressions.
8. Compare the **3D** view with the following screenshot. Check especially the representation of the Bonwill triangle and the available tracking points.



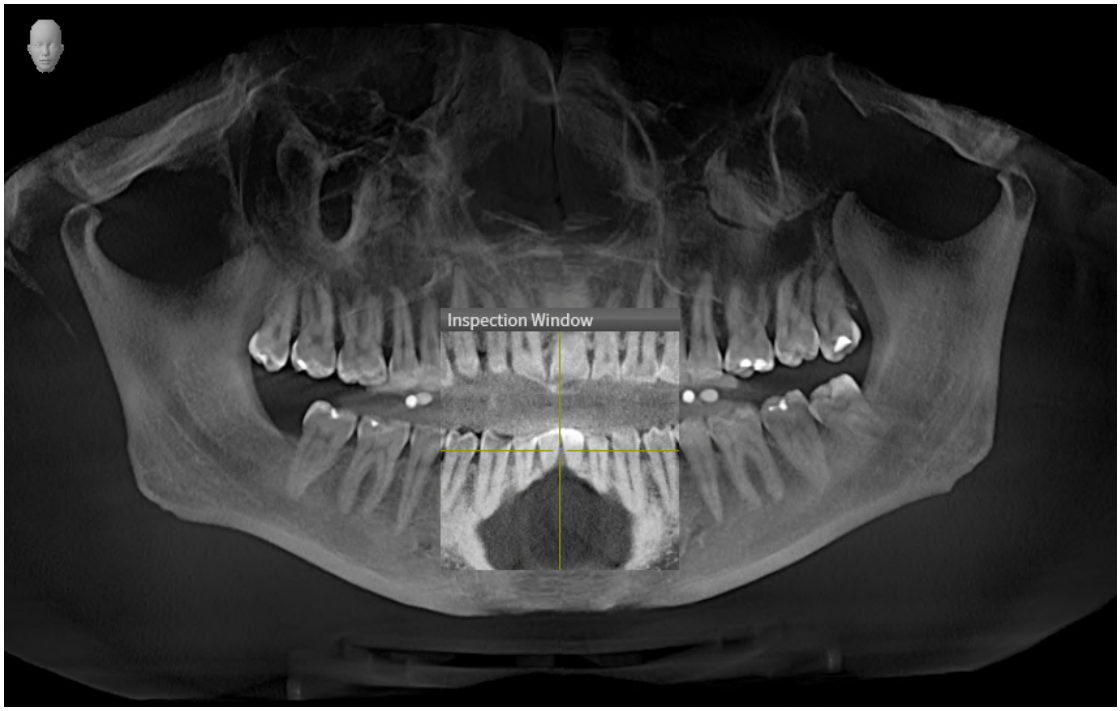
MEASUREMENTS

1. Make sure that the **MPR/Radiology** workspace is active.
2. Ensure that the values for **Brightness** and **Contrast** in the **Axial** view correpsond to the default value of 50 %.
3. In the **Object browser**, under **Measurements**, select the “20.99 mm” element and focus on it.
4. Compare the **Axial** view with the following screenshot. Check especially the representation of the measurement objects (20.99 mm, 20.05 mm, 74.57 mm and 29.43°).



PANORAMIC VIEW

1. Make sure that the **Panorama** workspace is active.
2. Reset the views to their default values.
3. Compare the **Panorama** view with the following screenshot. Check especially the representation of the **Panorama** view and the inspection window.



10 UPDATING OR REPAIRING SICAT SUITE

UPDATING SICAT SUITE

⚠ **CAUTION**	**Insufficient authorizations may mean that the software installation or software update fails.** Make sure you have sufficient privileges on your system if you install or update the software.

You can update SICAT Suite by starting the SICAT Suite installation program and clicking on the **Upgrade** button. The installation program will first uninstall the old version of SICAT Suite. All data and settings will be maintained.

Please take note of the following scenarios before updating SICAT Suite:

SIDEXIS 4 IS INSTALLED IN A VERSION LOWER THAN V4.3.1

SICAT Suite version 2.0 is not compatible with any version of SIDEXIS 4 lower than V4.3.1. Information on this can be found in the section *System requirements [▶Page 9 - SIDEXIS 4]*.

1. Upgrade SIDEXIS 4 to V4.3.1 or higher.
2. Upgrade SICAT Suite.

ℹ	If SICAT Suite was registered as a SIDEXIS 4 module before the update, the registration will stay the same. If SICAT Suite was **not** registered as a SIDEXIS 4 module before the update, you can also register SICAT Suite manually as a SIDEXIS 4 module to use SICAT Suite integrated with SIDEXIS 4. Information on this can be found in the section *Registering and removing SICAT Suite as a SIDEXIS 4 module [▶Page 41 - SIDEXIS 4]*.

SIDEXIS XG IS INSTALLED

SICAT Suite version 2.0 is not compatible with SIDEXIS XG. Information on this can be found in the section *System requirements [▶Page 9 - SIDEXIS 4]*.

1. Upgrade SIDEXIS XG to SIDEXIS 4 V4.3.1 or higher.
2. Upgrade SICAT Suite.

ℹ	If SICAT Suite was registered as a SIDEXIS XG plug-in before the update, SICAT Suite will be registered as SIDEXIS 4 module. If SICAT Suite was **not** registered as a SIDEXIS XG plug-in before the update, you can also register SICAT Suite manually as a SIDEXIS 4 module. Information on this can be found in the section *Registering and removing SICAT Suite as a SIDEXIS 4 module [▶Page 41 - SIDEXIS 4]*.

ℹ	When you open a 3D X-ray scan after the update, SICAT Suite will check whether there are studies in SIDEXIS XG for this 3D X-ray scan and transfer these from SIDEXIS XG to SIDEXIS 4.

REPAIRING SICAT SUITE

You can repair SICAT Suite by starting the SICAT Suite installation program and clicking on the **Repair** button. All data and settings will be maintained.

Both updates to and repairs of SICAT Suite use the SICAT Suite installation program. Information on this can be found in the section *Installing SICAT Suite [▶Page 18 - SIDEXIS 4]*.

11 SPECIAL FEATURES IN THIS VERSION

Depending on whether you use SICAT Function as stand-alone version or connected to other software, there are differences in certain areas.

MANUAL REGISTRATION AS A SIDEXIS 4 MODULE

In addition to the automatic connection during installation, you can also manually register and remove SICAT Suite as a SIDEXIS 4 module. Information on this can be found in the section *Registering and removing SICAT Suite as a SIDEXIS 4 module [▶Page 41 - SIDEXIS 4]*.

PROGRAM START

SICAT Suite will start as a SIDEXIS 4 module within SIDEXIS 4 in the **Plan & Treat** phase. You can find information about how to start SICAT Suite as a SIDEXIS 4 module in the section *Starting SICAT Suite [▶Page 45 - SIDEXIS 4]*.

PATIENT DATA AND VOLUME DATA

The version of SICAT Function connected to SIDEXIS uses the SIDEXIS patient data and volume data. The data is therefore backed up via the processes intended for SIDEXIS.

You should also back up the user settings of the SICAT applications in addition to the patient data. You can find the user settings for each user in two directories separately. You can open the directories by entering **%appdata%\SICAT GmbH & Co. KG** and **%localappdata%\SICAT GmbH & Co. KG** into the address bar of Windows Explorer.

SETTINGS

You can find the SICAT Suite settings as a category in the SIDEXIS 4 settings.

In the version connected to SIDEXIS, SICAT Suite will only display the values of some settings, as these are imported from SIDEXIS.

LICENSES

The stand-alone version and versions of SICAT Suite connected to other software use the same licenses. You do not need to choose a version when you install SICAT Suite.

TRANSFER OF DATA FROM SIDEXIS 4

When a volume is first opened in SICAT Function SICAT Function applies the volume orientation and the panoramic region from SIDEXIS 4. The following restrictions apply here:

- SICAT Function only supports rotations of the volume orientation up to a maximum of 30 degrees.
- SICAT Function supports only standard panoramic curves from SIDEXIS 4, not the shifting of individual supporting points from SIDEXIS 4.
- SICAT Function supports only panoramic curves that are at least 10 mm thick.
- SICAT Function supports only panoramic curves that have not been rotated in SIDEXIS 4.

If at least one of the restrictions applies, SICAT Function will not apply the volume orientation and panoramic region or will not apply the panoramic region.

In addition, SICAT Function adopts the focus point and viewing direction of **3D** view from SIDEXIS 4 when you open a 3D X-ray scan in SICAT Function for the first time.

DATA EXPORT

If SICAT Suite runs as a SIDEXIS 4 module, the data export will take place via the corresponding SIDEXIS 4 functions. For more information, please refer to the SIDEXIS 4 installation instructions.

ADDING SCREENSHOTS TO A SIDEXIS 4 OUTPUT

You can add screenshots of views and workspaces to a SIDEXIS 4 output. Following this, you can use the 2D output options of SIDEXIS 4. For more information, please refer to the SIDEXIS 4 installation instructions.

SHOPPING CART

You can find the shopping cart in SICAT Suite and in the **Output** phase of SIDEXIS 4.

OPENING STUDIES WITH OR WITHOUT WRITE PERMISSIONS

A SICAT Function study consists of a 3D X-ray scan and the corresponding planning project. A planning project is comprised of planning data from a SICAT application based on a 3D X-ray scan.

If the computers on which SIDEXIS 4 and SICAT Suite are running are in a network environment, and where permitted by SIDEXIS 4 and the network configuration, SIDEXIS 4 could be part of a multi-workstation installation. One of the results of this is that when SIDEXIS 4 opens a data record, it checks whether the data record is already in use. If this is the case, the data record in SICAT Suite is opened in read-only Viewer mode and you cannot save changes to SICAT Function studies.

The following conditions must be met in order to make changes to SICAT Function studies and save these changes:

- A SICAT Function full version license must be activated.

The following table shows which functions are available in each case:

FUNCTION	FULL VERSION LICENSE ACTIVATED	VIEWER LICENSE ACTIVATED	NO LICENSE ACTIVATED
Support area	Yes	Yes	Yes
General settings	Yes	Yes	Yes
SICAT Function settings	Yes	Yes	No
Making changes	Yes	No	No
Viewing data without saving changes	No	Yes	No
Help	Yes	Yes	Yes

In the following cases, you can view SICAT Function studies without a Viewer license:

- In SIDEXIS 4, export SICAT Function studies and import the data to SIDEXIS on another computer. SICAT Function must be installed on this computer.
- In SIDEXIS 4, create a Wrap&Go package which contains SICAT Function studies. Install the Wrap&Go package on another computer. Then, install SICAT Function.

In both cases you cannot make or save any changes to the planning.

Under certain circumstances you cannot make or save changes to SICAT Function studies even if the application license is activated. An ongoing ordering process is one example of a cause of this.

Further information is available in the section *Opening read-only data [▶Page 203 - SIDEXIS 4]*.

12 THE STANDARD WORKFLOW OF SICAT FUNCTION

CAUTION

Security leaks in your information system environment could result in unauthorized access to your patient data and put the privacy or integrity of your patient data at risk.

1. Make sure policies are established within your organization to prevent security threats to your information system environment.
2. Install and run an up-to-date virus scanner.
3. Make sure the pattern files of the virus scanner are updated on a regular basis.

CAUTION

Unauthorized access to your workstation could result in risks to the privacy and integrity of your patient data.

Limit the access to your workstation to authorized individuals only.

CAUTION

Problems in terms of cyber-security could result in unauthorized access to your patient data and risks in relation to the security or integrity of your patient data.

If you suspect problems in relation to the cyber-security of your SICAT application, contact support immediately.

CAUTION

Saving SICAT application data in an unreliable or incompatible network file system could result in data loss

Together with your network administrator, make that SICAT application data can be safely stored in the desired network file system.

CAUTION

The shared use of SICAT Suite and the SICAT applications contained therein with other devices within a computer network or a storage area network could result in previously unknown risks for patients, users and other persons.

Ensure that rules are compiled within your organization to determine, analyze and assess risks in relation to your network.

CAUTION

Changes to your network environment may result in new risks for your network environment. Examples include changes to your network configuration, the connection of additional devices or components to your network, the disconnection of devices or components from your network and the updating or upgrading of network devices or components.

Perform a network risk analysis after any changes to the network.

Before starting work with SICAT Suite, it is important that you have read these instructions for use and in particular all safety information in full. Keep these instructions for use at hand for use when information is needed in future.

DATA RECORDS

SICAT Function combines three different data records:

- 3D X-ray scans, from Dentsply Sirona GALILEOS, for example
- Jaw motion tracking data, from a SICAT JMT⁺ system, for example
- Digital optical impressions, from Dentsply Sirona CEREC, for example

INSTALLATION

Information on how to install SICAT Suite can be found in the section *Installing SICAT Suite [▶Page 18 - SIDEXIS 4]*.

Information on how to manually register SICAT Suite as SIDEXIS 4 module can be found in the section *Registering and removing SICAT Suite as a SIDEXIS 4 module [▶Page 41 - SIDEXIS 4]*.

ACTIVATING FULL VERSION

- If you have purchased a license for SICAT Function, activate the license to unlock the full version. Information on this can be found in the section *Licenses [▶Page 50 - SIDEXIS 4]*.

If you have not purchased a license for SICAT Function, open a 3D X-ray scan in Viewer mode. Information on this is available in the section *Opening read-only data [▶Page 203 - SIDEXIS 4]*.

SETTINGS

Change the desired settings in the **Settings** area. Information on this can be found in the section *Settings [▶Page 189 - SIDEXIS 4]*.

ACQUIRING DATA RECORDS

1. Produce a 3D X-ray scan of the patient while the patient is wearing the SICAT Fusion Bite. For more information, please refer to the SICAT JMT⁺ quick guides.
2. Record patient-specific jaw motion tracking data. For more information, please refer to the SICAT JMT⁺ instructions for use.
3. Create digital optical impressions of the maxilla and mandible. For more information, please refer to the instructions for use for the respective device.

OPENING A DATA RECORD

1. Select a 3D X-ray scan or a SICAT Function study in the timeline.
2. Start SICAT Function. Information on this can be found in the section *Starting SICAT Suite [▶Page 45 - SIDEXIS 4]*.

HOW TO PROCEED IN SICAT FUNCTION

EDITING A DATA RECORD IN SICAT FUNCTION

1. If necessary, adjust the volume orientation and panoramic region. Information on this can be found in the section *Adjusting volume orientation and panoramic region [▶Page 106 - SIDEXIS 4]*.

2. Import and register the jaw motion tracking data in SICAT Function. Information on this can be found in the section *Importing and registering jaw motion data [▶Page 119 - SIDEXIS 4]*.

3. Segment the mandible and if necessary the fossa. For further information about this see *Segmenting the mandible [▶Page 125 - SIDEXIS 4]* and *Segmenting the fossa [▶Page 127 - SIDEXIS 4]*.

   ▶ SICAT Function visualizes imported jaw motion tracking data in the **3D** view.

4. Import and register the optical impressions with the 3D X-ray data. Information on this can be found in the section *Optical impressions [▶Page 129 - SIDEXIS 4]*.

5. Examine the jaw motion tracking data in the **TMJ** workspace. For further information about this see *Overview of the TMJ workspace [▶Page 74 - SIDEXIS 4]* and *Functions in the TMJ workspace [▶Page 153 - SIDEXIS 4]*. Use the anatomical traces as a guide, particularly if you have not performed segmentation. For further information about this, see *Visualizing anatomical traces in the 3D view [▶Page 150 - SIDEXIS 4]*, *Adjusting anatomical traces using the inspection window [▶Page 151 - SIDEXIS 4]*, *Adjusting anatomical traces using the crosshair in a slice view [▶Page 152 - SIDEXIS 4]* and *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.

6. Define a treatment position for the OPTIMOTION therapeutic appliance. Information on this can be found in the section *Defining a treatment position [▶Page 176 - SIDEXIS 4]*.

7. Order a OPTIMOTION therapeutic appliance. Information on this can be found in the section *Ordering process [▶Page 175 - SIDEXIS 4]*.

8. Export data, for example to obtain a second opinion. Information on this can be found in the section *Data export [▶Page 174 - SIDEXIS 4]*.

ENDING OR PAUSING WORK ON THE DATA RECORD

- To end or pause your work, save it by closing SICAT Suite within SIDEXIS 4. Information on this can be found in the section *Closing SICAT Suite [▶Page 204 - SIDEXIS 4]*.

INSTRUCTIONS FOR USE AND SUPPORT

The instructions for use can be found in the **SICAT Suite Help** window. Information on this can be found in the section *Opening the instructions for use [▶Page 49 - SIDEXIS 4]*.

Further support is available in the **Support** area. Information on this can be found in the section *Support [▶Page 199 - SIDEXIS 4]*.

13 REGISTERING AND REMOVING SICAT SUITE AS A SIDEXIS 4 MODULE

General information on using SICAT Suite with SIDEXIS 4 can be found under *Special features in this version [▶Page 34 - SIDEXIS 4]*

If you install SICAT Suite after SIDEXIS 4, the SICAT Suite installation program will automatically register it as a SIDEXIS 4 module. Information on this can be found in the section *Installing SICAT Suite [▶Page 18 - SIDEXIS 4]*.

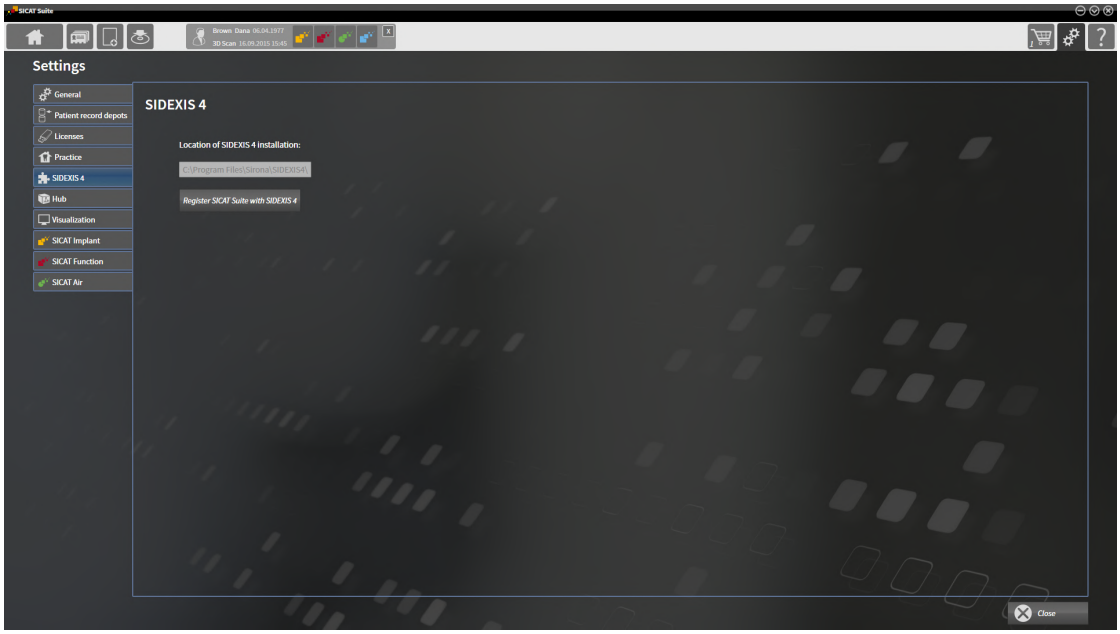
OPENING THE "SIDEXIS 4" WINDOW

1. Start the stand-alone version of SICAT Suite. Information on this can be found in the section *Starting SICAT Suite [▶Page 45 - SIDEXIS 4]*.

2. Click on the **Settings** icon.
   ▶ The **Settings** window opens.

3. Click the **SIDEXIS 4** tab.

▶ The **SIDEXIS 4** window opens:



REGISTERING SICAT SUITE AS A SIDEXIS 4 MODULE

☑ SICAT Suite has already been successfully installed. Information on this can be found in the section *Installing SICAT Suite [▶Page 18 - SIDEXIS 4]*.

☑ SIDEXIS 4 is not open.

☑ The stand-alone version of SICAT Suite has already been started.

☑ The **SIDEXIS 4** window is already open.

1. Click on the **Register SICAT Suite with SIDEXIS 4** button.
2. Start SIDEXIS 4.

▶ SICAT Suite is registered as a SIDEXIS 4 module. Registration in SIDEXIS 4 has been successful if the **Plan & Treat** phase is visible:

REMOVING SICAT SUITE AS A SIDEXIS 4 MODULE

☑ SICAT Suite is already registered as a SIDEXIS 4 module.

☑ SIDEXIS 4 is not open.

☑ The stand-alone version of SICAT Suite has already been started.

☑ The **SIDEXIS 4** window is already open.

1. Click on the **Remove SICAT Suite from SIDEXIS 4** button.
2. Start SIDEXIS 4.

▶ SICAT Suite is no longer available as a SIDEXIS 4 module

14 SICAT FUNCTION STUDIES IN SIDEXIS 4

⚠ **CAUTION**	**X-ray devices without DICOM conformity could result in incorrect diagnosis and treatment.** Only use 3D volume data from X-ray devices with DICOM conformity declared.

⚠ **CAUTION**	**Unsuitable X-ray devices may result in an incorrect diagnosis and treatment.** Only use 3D X-ray scans from X-ray devices that are cleared as medical equipment.

⚠ **CAUTION**	**Unsuitable 3D X-ray scans may result in an incorrect diagnosis and treatment.** Always verify the quality, integrity, and correct orientation of the displayed 3D data.

⚠ **CAUTION**	**Insufficient visualization quality could result in incorrect diagnosis and treatment.** Before using a SICAT application, for example with the SMPTE test image, check whether the display quality is sufficient.

⚠ **CAUTION**	**Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.** 1. Only perform planning if the environmental conditions allow for sufficient visualization quality. For example, check for appropriate lighting. 2. Check whether the display quality is sufficient using the SMPTE test image.

NOTICE	To ensure the correct diagnosis, treatment and registration of jaw motion tracking data, SICAT recommends the use of 3D X-ray data with the following parameters: 1. Slice thickness less than 0.7 mm 2. Voxel size less than 0.7 mm in all three dimensions

If SICAT Suite is running as a SIDEXIS 4 module, the patient data will be managed in SIDEXIS 4.

SIDEXIS 4 displays preview images of SICAT Function studies if the following conditions have been fulfilled:

- You are using SICAT Suite as a SIDEXIS 4 module.
- A SICAT Function study is available for the selected patient.

1	Jaw motion tracking data	4	Treatment position
2	Segmentation	5	Plan
3	Optical impressions	6	Order

The preview pictures contain the following information:

- Availability of jaw motion tracking data
- Availability of temporomandibular joint segmentation
- Availability of optical impressions
- Availability of a treatment position
- Planning not available, in process or completed
- Order not available, therapeutic appliance to be ordered is in shopping cart or order has been uploaded

A bright display of the icons means that the respective element is available in a study.

15 STARTING SICAT SUITE

CAUTION

Incorrect assignment of patient name or 3D scan could result in confusion of patient scans.

Verify that the 3D scan that is to be imported or already loaded in a SICAT Suite application is associated with the correct name of the patient and the correct scan information.

CAUTION

Unsuitable X-ray devices may result in an incorrect diagnosis and treatment.

Only use 3D X-ray scans from X-ray devices that are cleared as medical equipment.

CAUTION

Unsuitable 3D X-ray scans may result in an incorrect diagnosis and treatment.

Always verify the quality, integrity, and correct orientation of the displayed 3D data.

To start SICAT Suite as a SIDEXIS 4 module, proceed as follows:

☑ SICAT Suite has already been successfully installed. Information on this can be found in the section *Installing SICAT Suite [▶Page 18 - SIDEXIS 4]*.

☑ SICAT Suite has already been registered as a SIDEXIS 4 module. Information on this can be found in the section *Registering and removing SICAT Suite as a SIDEXIS 4 module [▶Page 41 - SIDEXIS 4]*. If SICAT Suite is installed after SIDEXIS 4, registration may take place automatically.

☑ You have already selected a 3D X-ray scan or a study in SIDEXIS 4.

☑ Optionally, you have also selected optical impressions in addition to a 3D X-ray scan or study.

1. If you have selected a 3D X-ray scan and, optionally, optical impressions, click on the **Show in** icon and then on the **SICAT Suite** icon.

2. If you have selected a study and, optionally, optical impressions, click on the **SICAT Suite** icon.

▶ SIDEXIS 4 switches to the **Plan & Treat** phase.

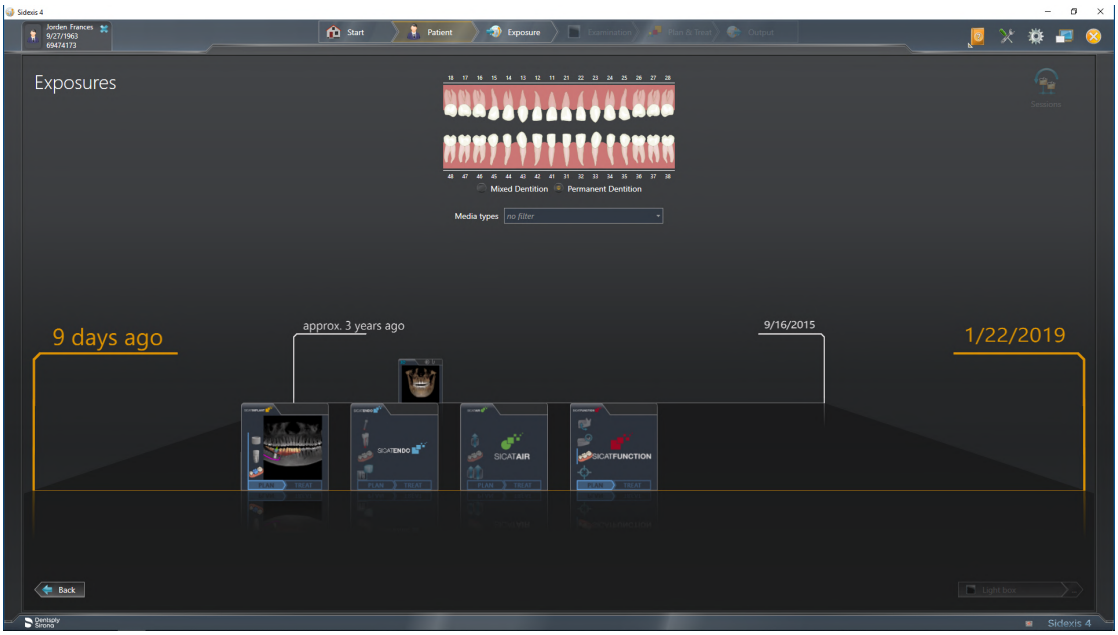
▶ SICAT Suite opens the 3D X-ray scan with the corresponding study in SICAT Function.

▶ If you have selected a 3D X-ray scan or study together with optical impressions, the SICAT Function will first open the **Import and Register Optical Impressions** wizard with the step **Import**. For more information, see *Optical impressions [▶Page 129 - SIDEXIS 4]*.

If you open a 3D X-ray scan without the corresponding study and have only activated the license of one SICAT application, that SICAT application will start. If you open a 3D X-ray scan with several corresponding studies and you have activated the licenses for multiple SICAT applications, the application with the most recently changed study will open.

You can change to another SICAT application after opening the 3D X-ray scan. Information on this can be found in the section *Switching between SICAT applications [▶Page 48 - SIDEXIS 4]*.

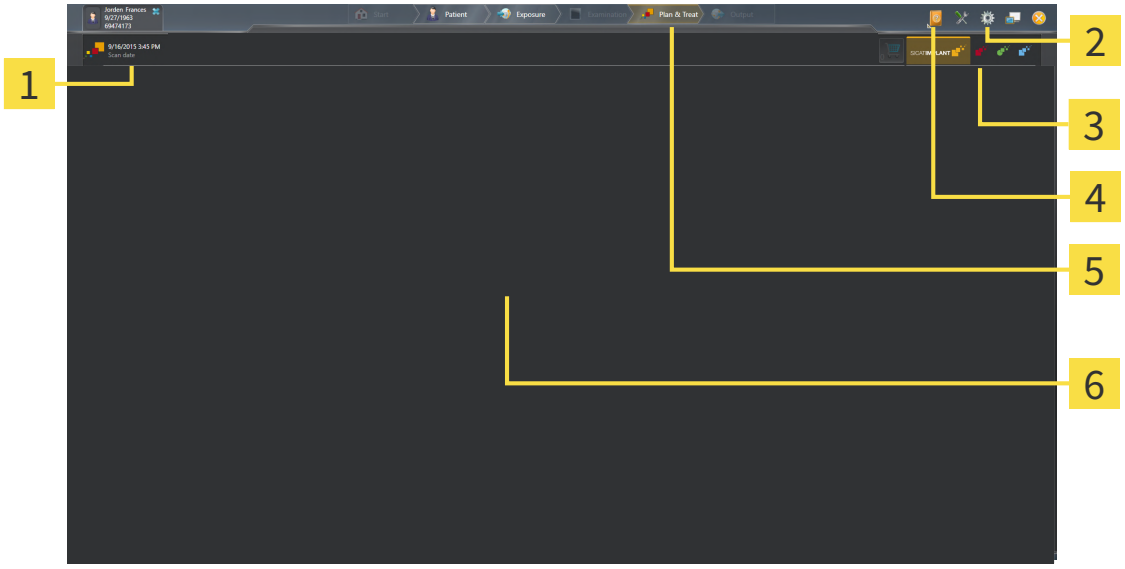
If you have saved an application-specific study, you can select it directly in the **Scans** window and open it in the corresponding SICAT application. If you already have an item in your shopping cart which is based on that study, the shopping cart will open.



SIDEXIS 4 also shows the studies in the **Patient details** window in the **Last scans** area. Information on this can be found in the section *SICAT Function studies in SIDEXIS 4 [▶Page 43 - SIDEXIS 4]*.

16 THE USER INTERFACE OF SICAT SUITE

The SICAT Suite user interface comprises the following parts:



1	Currently opened study	4	**Help**
2	**Settings**	5	SIDEXIS 4 phase bar
3	Buttons to change applications and **Shopping Cart** button	6	**Application area**

- Currently opened study – here you will find information on the currently opened study and a button to close SICAT Suite.
- **Settings** - Information on this can be found in the section *Settings [▶Page 189 - SIDEXIS 4]*.
- Buttons to change applications and **Shopping Cart** button – Information on this can be found in the sections *Switching between SICAT applications [▶Page 48 - SIDEXIS 4]* and *Ordering process [▶Page 175 - SIDEXIS 4]*.
- **Help** - Information on this can be found in the section *Opening the instructions for use [▶Page 49 - SIDEXIS 4]*.
- The **Application area**, which is located in the remaining part of SICAT Suite, shows the user interface of the active SICAT application.

17 SWITCHING BETWEEN SICAT APPLICATIONS

To switch between SICAT applications, proceed as follows:

- Click on the button with the label matching the desired SICAT application.

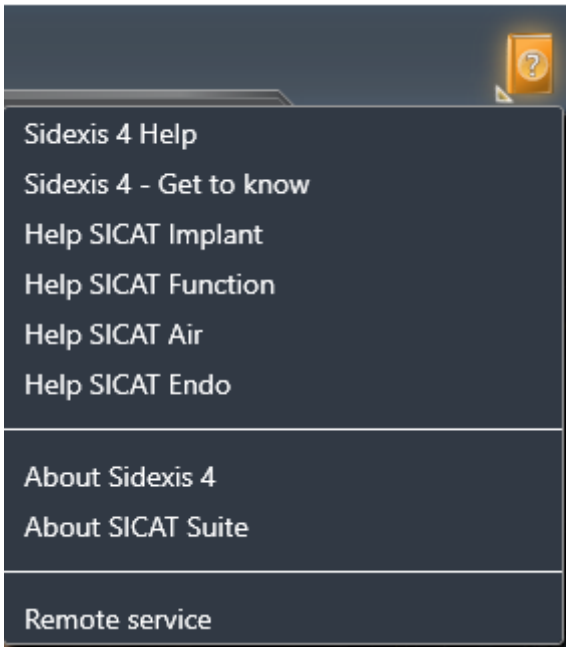
▶ SICAT Suite will switch to the selected application.

18 OPENING THE INSTRUCTIONS FOR USE

The **Help** menu in SIDEXIS 4 contains the instructions for use for the SICAT applications in the form of PDF files. To open the instructions for use of a SICAT application, proceed as follows:

1. Click on the **Help** icon.

   ► A list of the available instructions for use opens:



2. Click the desired instructions for use.

► The selected instructions for use open.

If a SICAT application is open, you can also press the F1 key to open the corresponding help.

19 LICENSES

SICAT Suite shows only SICAT applications for which you have activated a license.

In the SICAT Suite version which is connected to SIDEXIS 4, you can view SICAT Function plans even without activated SICAT Function license.

To be able to use network licenses, you must first set up a license server in the local practice network and connect SICAT Suite with the license server.

For information on setting up a license server in a practice network, please refer to the manufacturer's user manual of the CodeMeter license management software from WIBU-SYSTEMS AG and the *SICAT Suite Version 2.0 Lizenzserver installieren* quick guide, which is available together with the required files in the *License Server Installation* directory on the SICAT Suite installation medium.

The following license types exist:

- A Viewer license, through which you can use an application in Viewer mode for an unlimited period of time.
- A demo license, through which you will receive temporary access to the full version of one or more SICAT applications.
- A full version license, through which you will receive access to the full version of one or more SICAT applications for an unlimited period of time.

These licenses can be obtained both as workstation licenses and as network licenses:

- With a workstation license, you can use the SICAT applications on a specific computer.
- With a network license, you can use the SICAT applications on several computers within a local practice network.

ACQUIRING LICENSES

The following steps are required to acquire a license for SICAT applications or individual functions:

- You contact your local sales partner.
- You receive a voucher code.
- Using the voucher code, you generate a license key on the SICAT portal (which can be accessed via SICAT home page).
- SICAT adds the license key to your activation key.
- You use your activation key to activate SICAT applications or individual functions in SICAT Suite. Workstation licenses are activated in SICAT Suite and network licenses are activated on the license server in the local practice network.

ACTIVATING AND DEACTIVATING LICENSES

The following applies to workstation licenses and network licenses:

- You will only receive license keys for SICAT applications that are approved in your country.
- If you activate a full version license, you will automatically receive Viewer licenses for all applications that are approved in your country.
- If you return a full version license for a SICAT application, you will automatically receive a Viewer license provided the application is approved in your country.

The following applies to workstation licenses only:

- When you activate an activation key for a workstation license on a computer, an included license will be tied to the computer and is no longer available for activation on another computer. An activation key can contain several licenses for SICAT applications or functions.
- You may deactivate workstation licenses for each SICAT application or individual function separately. Returned workstation licenses are available for renewed activation on the same or another computer.

The following applies to network licenses only:

- If you use network licenses, a network license for included SICAT applications or functions will be available to a user on a computer while using SICAT Suite. The network license will be locked for use by other users during this time.
- If you are using a network license, the network license will be automatically returned to the license server in the practice network when you exit SICAT Suite.
- If you switch from a network license to a workstation license, the network license will be automatically returned to the license server in the practice network.
- If you fail to properly exit SICAT Suite and this causes the connection to the license server in the practice network to be terminated, use of the network license by other users will automatically be enabled after a set period of time.
- If you are using SICAT Suite with network licenses SIDEXIS 4, you can specify in the settings for SICAT Suite whether a time limit should apply for establishing the connection to the license server in the practice network.

FURTHER ACTIONS

The **Licenses** window gives an overview of the licenses which are activated on your computer. If you are using a demo license, SICAT Suite will display the expiry date of the licenses. Information on this can be found in the section *Opening the "Licenses" window [▶Page 53 - SIDEXIS 4]*.

You can activate workstation licenses in two ways:

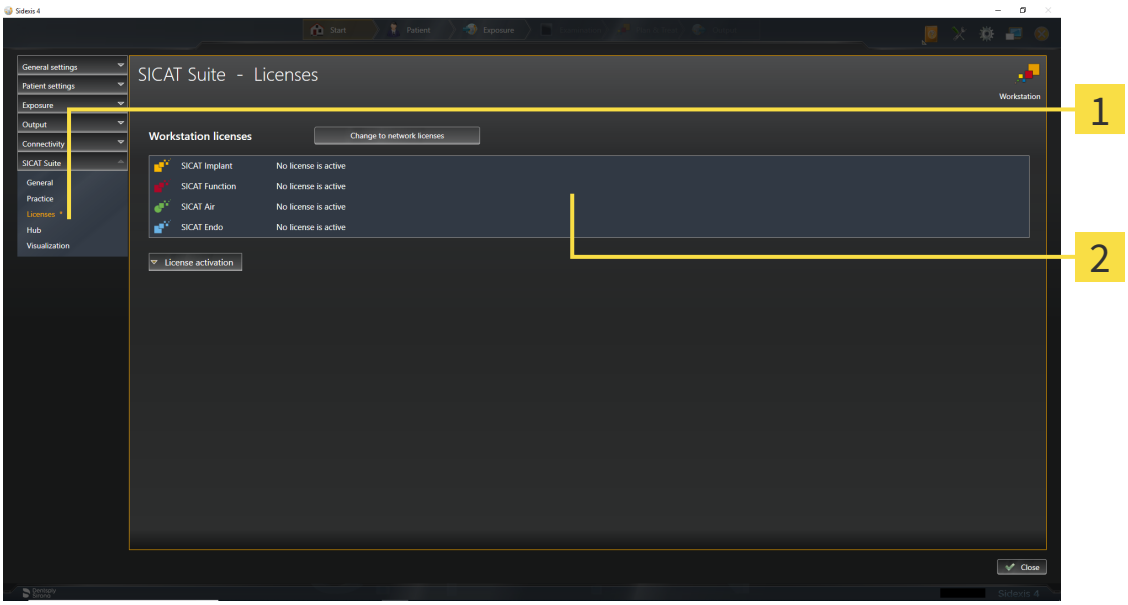
- If the computer on which SICAT Suite is running has an active Internet connection, the license can be activated automatically. Information on this can be found in the section *Activating workstation licenses using an active Internet connection [▶Page 54 - SIDEXIS 4]*.
- Upon request or if the computer on which SICAT Suite is running has no active Internet connection, the license can be activated manually using the license request files. You have to upload such license request files on the SICAT website. In return, you will receive a license activation file, which you have to activate in SICAT Suite. Information on this can be found in the section *Activating workstation licenses manually or without an active Internet connection [▶Page 56 - SIDEXIS 4]*.

You can deactivate workstation licenses for each application or function individually. After you have deactivated a workstation license, you can enter the same or another activation key. Returned workstation licenses are available for activation on the same or another computer. Information on this can be found in the section *Returning workstation licenses to the license pool [▶Page 58 - SIDEXIS 4]*.

For information on how to activate network licenses, see *Activating network licenses [▶Page 60 - SIDEXIS 4]*.

19.1 OPENING THE “LICENSES” WINDOW

1. Click on the **Settings** icon in the title bar of SIDEXIS 4.
   ▶ The **Settings** window opens.
2. Click on the **SICAT Suite** group.
   ▶ The **SICAT Suite** group opens.
3. Click on the **Licenses** button.
   ▶ The **Licenses** window opens:



1 **Licenses** tab

2 **Licenses** window

Continue with one of the following actions:

- *Activating workstation licenses using an active Internet connection [▶Page 54 - SIDEXIS 4]*
- *Activating workstation licenses manually or without an active Internet connection [▶Page 56 - SIDEXIS 4]*
- *Activating network licenses [▶Page 60 - SIDEXIS 4]*
- *Returning workstation licenses to the license pool [▶Page 58 - SIDEXIS 4]*

19.2 ACTIVATING WORKSTATION LICENSES USING AN ACTIVE INTERNET CONNECTION

NOTICE	**Patient record must be closed** You must close the active patient record before making changes to the licenses.

To start the activation process, proceed as follows:

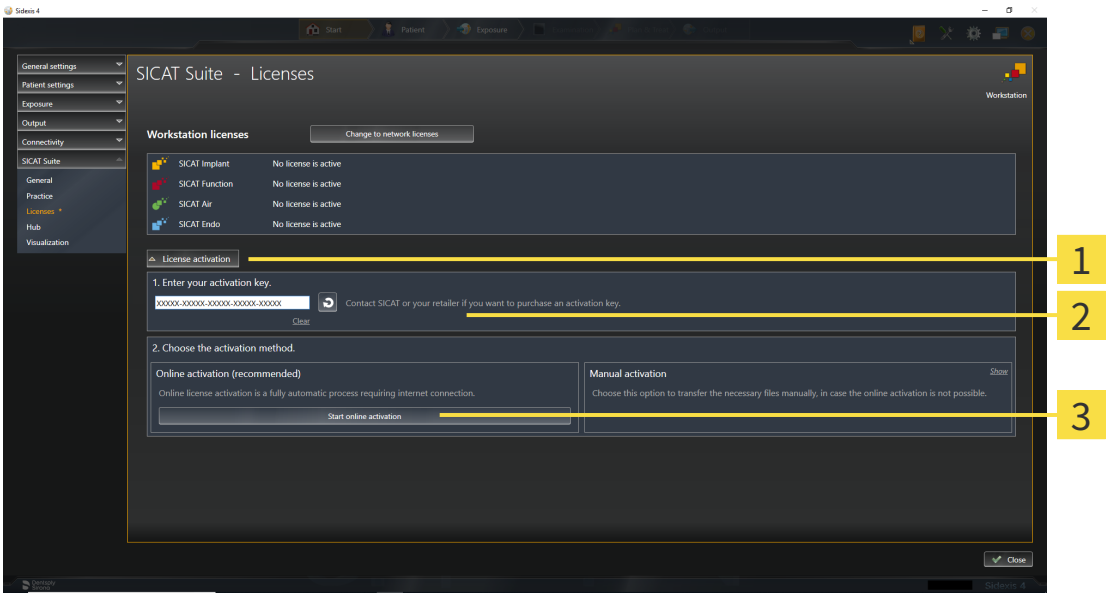
☑ At least one SICAT application or one individual function is missing an active workstation license.

☑ The computer on which SICAT Suite is running has an active Internet connection.

☑ The **Licenses** window is already open. Information on this can be found in the section *Opening the "Licenses" window [▶Page 53 - SIDEXIS 4]*.

1. Click the **License activation** button in the **Licenses** window.

   ▶ The **License activation** area expands:



1 **License activation** button

2 **Enter your activation key** area

3 **Start online activation** button

2. Enter your activation key in the **Enter your activation key** field.
3. Click on the **Start online activation** button.
4. If a **Windows Firewall** window opens, allow SICAT Suite to access the Internet.

▶ Licenses acquired for installed applications or individual functions are removed from your license pool and activated in SICAT Suite on the current computer.

▶ The message window opens and shows the following message: **License was successfully activated**.

NOTICE

Restart required

If a version of a SICAT application which is connected to SIDEXIS requires a re-start after a license change, SICAT Suite will open a corresponding message window.

To activate a SICAT application again, you can use your customer activation key by clicking on the **Use my customer activation key** button in the **Enter your activation key** area. To clear the field with the current license key, you can click on the **Clear** button.

19.3 ACTIVATING WORKSTATION LICENSES MANUALLY OR WITHOUT AN ACTIVE INTERNET CONNECTION

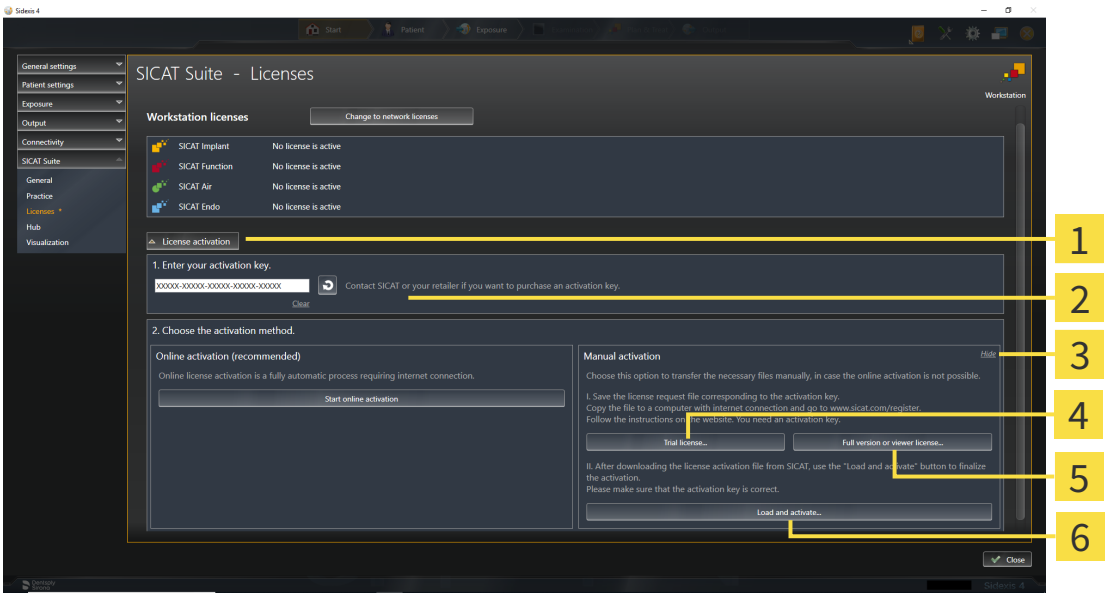
NOTICE	**Patient record must be closed** You must close the active patient record before making changes to the licenses.

To activate licenses manually or without an active Internet connection, proceed as follows:

☑ At least one SICAT application or one individual function is missing an active workstation license.

☑ The **Licenses** window is already open. Information on this can be found in the section *Opening the "Licenses" window [▶Page 53 - SIDEXIS 4]*.

1. Click on **License activation** in the **Licenses** window.
   ▶ The **License activation** area expands.
2. Click on **Show** in the **Manual activation** area.
   ▶ The **Manual activation** area expands:



1 **License activation**	4 **Trial license** button
2 **Enter your activation key** area	5 **Full version or viewer license** button
3 **Show**	6 **Load and activate** button

3. If you wish to activate a full version license, click on the **Full version or viewer license** button.
4. If you wish to activate a demo license, click on the **Trial license** button.
   ▶ A Windows Explorer window opens.
5. Select the desired folder for the license request file and click **OK**.
   ▶ A license request file with the **WibuCmRaC** file extension is generated and saved in the selected folder.

6. Copy the license request file on a computer with an active Internet connection, for example using a USB stick.

7. Open a web browser on the computer with the active Internet connection and open the http://www.sicat.com/register web page.

8. Follow the instructions on the activation page.
   ▶ Licenses acquired for installed applications or individual functions are removed from your license pool.
   ▶ The SICAT license server generates a license activation file with the **WibuCmRaU** file extension which you need to download onto your computer.

9. Copy the downloaded license activation file onto the computer on which SICAT Suite is running.

10. Check that the correct key is in the **Enter your activation key** field.

11. Click the **Load and activate** button in the **Licenses** window.
    ▶ A Windows Explorer window opens.

12. Browse to find the license activation file, select it and click **OK**.

▶ The license in the license activation file is installed on the current computer.

▶ The message window opens and shows the following message: **License was successfully activated**.

NOTICE	**Restart required** If a version of a SICAT application which is connected to SIDEXIS requires a restart after a license change, SICAT Suite will open a corresponding message window.

19.4 RETURNING WORKSTATION LICENSES TO THE LICENSE POOL

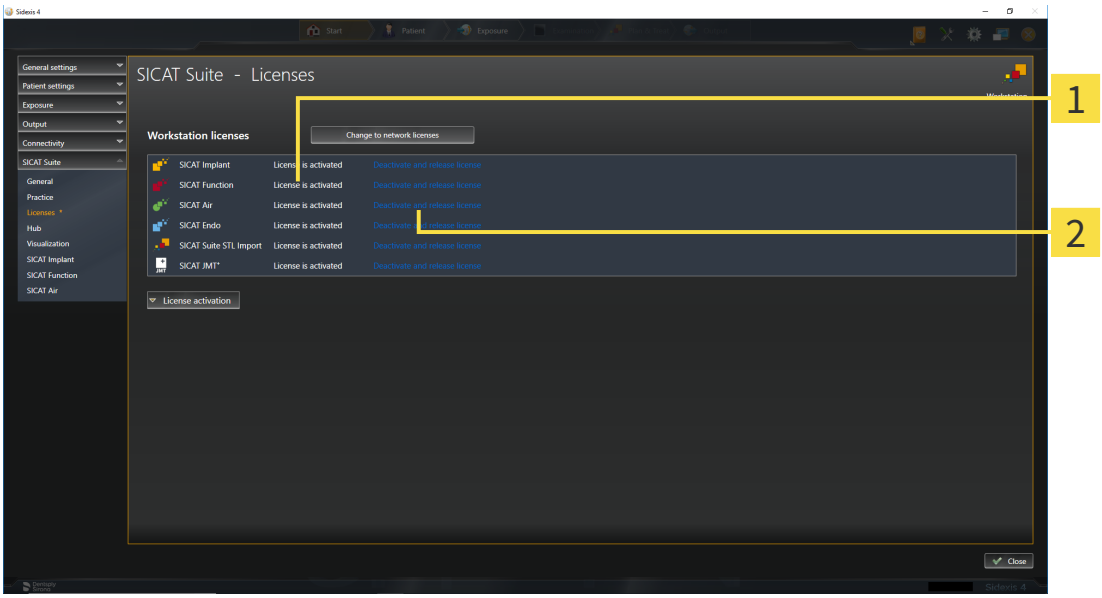
NOTICE	**Patient record must be closed** You must close the active patient record before making changes to the licenses.

To deactivate a full version license and return it to the license pool, proceed as follows:

☑ You have already activated the full version license of a SICAT application.

☑ The computer on which SICAT Suite is running has an active Internet connection.

☑ The **Licenses** window is already open. Information on this can be found in the section *Opening the "Licenses" window [▶Page 53 - SIDEXIS 4]*.



1 License status of SICAT applications and individual functions

2 **Deactivate and release license** button

- In the **Licenses** window, click on the **Deactivate and release license** button in the row of the desired SICAT application or individual function.

▶ The selected license is returned to your license pool and will be ready for activation again.

▶ The message window opens and shows the following message: **License was successfully returned to the license pool**.

▶ Without a license, an application will only be available in Viewer mode. If the licenses for all SICAT applications have been returned to your license pool, SICAT Suite will switch entirely to Viewer mode.

NOTICE	**Restart required** If a version of a SICAT application which is connected to SIDEXIS requires a re-start after a license change, SICAT Suite will open a corresponding message window.

If you wish to deactivate a license on a computer without an active Internet connection, please contact SICAT support.

19.5 ACTIVATING NETWORK LICENSES

NOTICE	**Patient record must be closed** You must close the active patient record before making changes to the licenses.

To start the activation process, proceed as follows:

☑ At least one SICAT application or one individual function is missing an active network license.

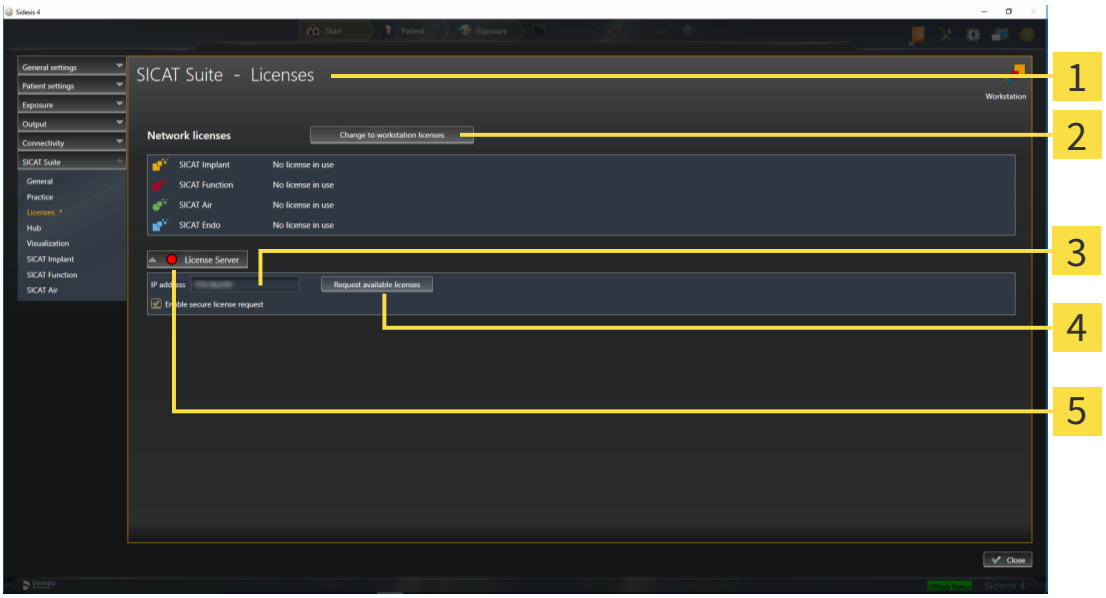
☑ You have set up a license server.

☑ The computer on which SICAT Suite is running has an active network connection to the network in which the license server is located.

☑ The **Licenses** window is already open. Information on this can be found in the section *Opening the "Licenses" window [▶Page 53 - SIDEXIS 4]*.

1. Click the **Change to network licenses** button in the **Licenses** window.

   ▶ SICAT Function shows information about the network licenses and the **License Server** area opens:



1 **Licenses** window

2 **Change to workstation licenses** button

3 **IP address** area

4 **Request available licenses** button

5 Status indicator

2. In the **IP address** area, enter the IP address of the license server in the practice network.

3. Click on the **Request available licenses** button.

▶ SICAT Suite connects to the license server.

▶ Licenses acquired for installed applications or individual functions will be removed from your license pool and used in SICAT Suite on the current computer.

▶ The status indicator changes from red to green.

▶ The **License Server** area is collapsed.

To ensure that the network licenses can be retrieved from the license server without a time limit, the **Enable Secure License Request** check box is selected by default.

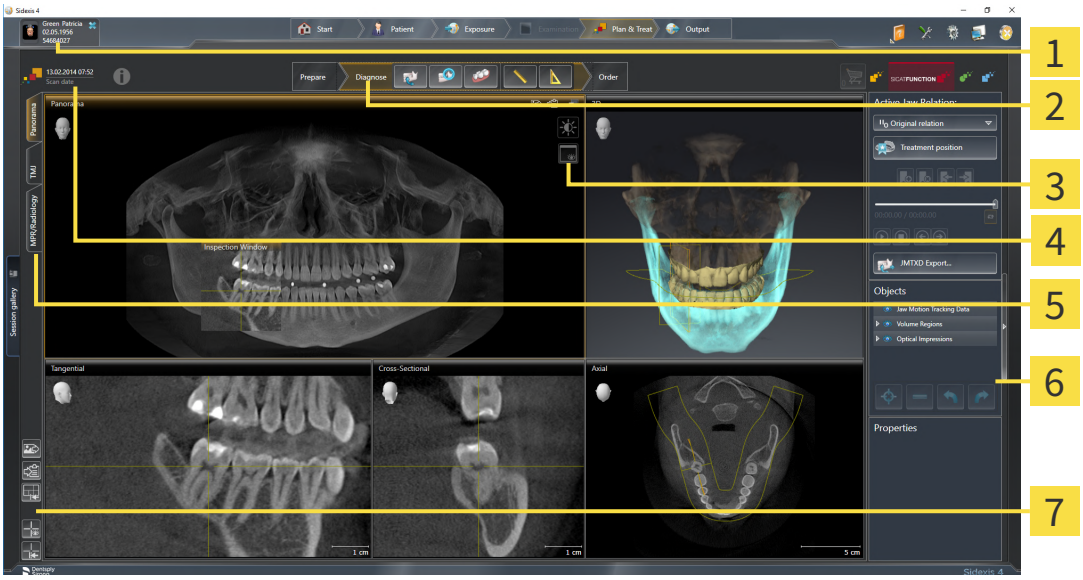
NOTICE

Restart required

If a version of a SICAT application which is connected to SIDEXIS requires a restart after a license change, SICAT Suite will open a corresponding message window.

20 THE SICAT FUNCTION USER INTERFACE

The SICAT Function user interface comprises the following parts:



1 **Active patient record** tab

2 **Workflow toolbar**

3 **View toolbar**

4 Information about the open 3D X-ray scan

5 Buttons to change workspaces

6 **Object bar**

7 **Workspace toolbar**

- The **Active patient record** tab shows the attributes of the active patient record.
- The **Workflow toolbar** consists of various workflow steps, which include the main tools of the application workflow. This includes tools which you can use to add and import diagnosis objects and planning objects. Information on this can be found in the section *Workflow toolbar [▶Page 63 - SIDEXIS 4]*.
- The **Workspace area** is the part of the user interface below the **Workflow toolbar**. It displays the active workspace of SICAT Function. Each workspace contains a specific combination of views. Information on this can be found in the section *Workspaces [▶Page 71 - SIDEXIS 4]*.
- Only the active view shows the **View toolbar**. It contains tools to adjust the display to the corresponding view. For further information about this see *Adjusting the views [▶Page 81 - SIDEXIS 4]* and *Adjusting the 3D view [▶Page 95 - SIDEXIS 4]*.
- The **Object bar** contains tools for the management of diagnosis objects and planning objects. Information on this can be found in the section *Object bar [▶Page 65 - SIDEXIS 4]*.
- The **Workspace toolbar** contains tools for changing the general settings of workspaces and all of the views they contain and for documenting the contents of workspaces. For further information about this, see *Moving, hiding and showing crosshairs and frames [▶Page 89 - SIDEXIS 4]*, *Resetting views [▶Page 93 - SIDEXIS 4]*, *Adjusting and resetting the layout of workspaces [▶Page 78 - SIDEXIS 4]* and *Creating screenshots of workspaces [▶Page 79 - SIDEXIS 4]*.

20.1 WORKFLOW TOOLBAR

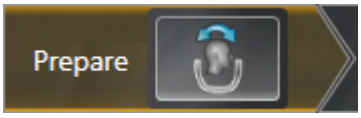
The **Workflow toolbar** in SICAT Function consists of three workflow steps:

1. **Prepare**
2. **Diagnose**
3. **Order**

EXPANDING AND COLLAPSING WORKFLOW STEPS

You can expand and collapse workflow steps by clicking on them.

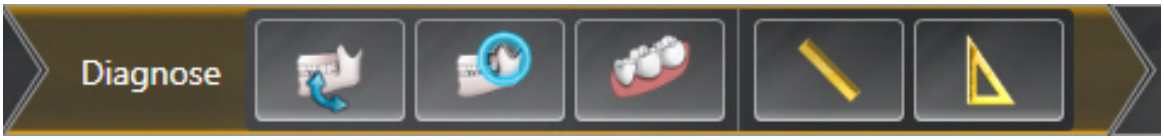
1. WORKFLOW STEP "PREPARE"



The following tool is available in the **Prepare** workflow step:

- **Adjust volume orientation and panoramic region** - For further information see *Adjusting the volume orientation [▶Page 109 - SIDEXIS 4]* and *Adjusting the panoramic region [▶Page 114 - SIDEXIS 4]*.

2. WORKFLOW STEP "DIAGNOSE"

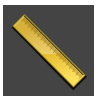


The following tools are available in the **Diagnose** workflow step:

- **Import and register jaw motion tracking data** - Information on this can be found in the section *Importing and registering jaw motion data [▶Page 119 - SIDEXIS 4]*.

- **Segment condyles and mandible region** - Information on this can be found in the section *Segmentation [▶Page 124 - SIDEXIS 4]*.

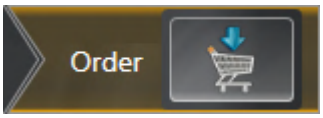
- **Import and register optical impressions** - Information on this can be found in the section *Optical impressions [▶Page 129 - SIDEXIS 4]*.



- **Add distance measurement (D)** - Information on this can be found in the section *Adding distance measurements [▶Page 169 - SIDEXIS 4]*.

- **Add angle measurement (A)** - Information on this can be found in the section *Adding angle measurements [▶Page 170 - SIDEXIS 4]*.

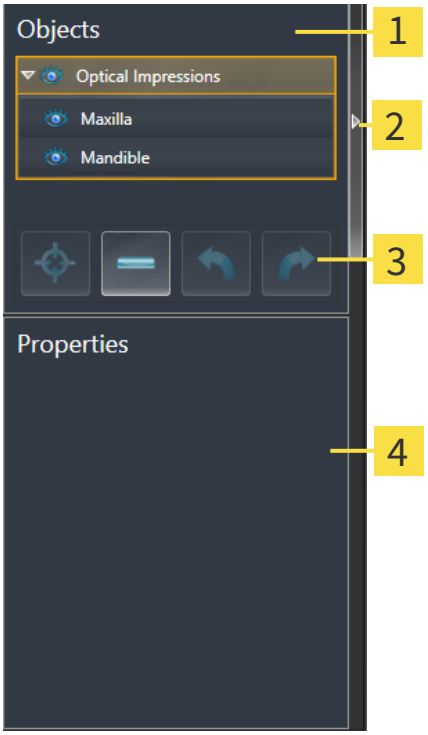
3. WORKFLOW STEP "ORDER"



The following tool is available in the **Order** workflow step:

- **Order Therapeutic Appliance** - Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶Page 177 - SIDEXIS 4]*.

20.2 OBJECT BAR



1 **Object browser**

2 **Hide object bar** button or **Show object bar** button

3 **Object toolbar**

4 **Properties** area

The **Object bar** contains the following elements:

- The **Object browser** shows a categorized list of all diagnosis objects and planning objects that you have added or imported to the current study. The **Object browser** groups objects automatically. For example, the **Measurements** group contains all measurement objects. You can expand or collapse object groups, activate objects and object groups and show or hide objects and object groups. Information on this can be found in the section *Managing objects with the object browser [▶Page 66 - SIDEXIS 4]*.
- The **Object toolbar** contains tools for focusing objects, removing objects or object groups and undoing or redoing object actions or object group actions. Information on this can be found in the section *Managing objects with the object toolbar [▶Page 68 - SIDEXIS 4]*.
- The **Properties** area shows the details of the active object.

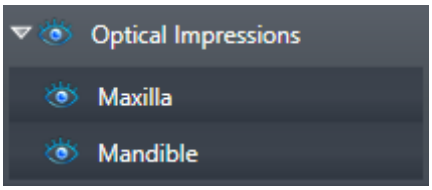
You can change the visibility of the **Object bar** using two buttons on the right side of the **Object bar**: **Hide object bar** and **Show object bar**

The objects available in SICAT Function can be found in the section *SICAT Function objects [▶Page 69 - SIDEXIS 4]*.

20.3 MANAGING OBJECTS WITH THE OBJECT BROWSER

COLLAPSING AND EXPANDING OBJECT GROUPS

To collapse or expand an object group, proceed as follows:



☑ The desired object group is currently expanded.

1. Click on the **Collapse group** icon next to the desired object group.
   ▶ The object group collapses.

2. Click on the **Expand group** icon next to the desired object group.

▶ The object group expands.

ACTIVATING OBJECTS AND OBJECT GROUPS

Some tools are only available for active objects or object groups.

To activate an object or object group, proceed as follows:

☑ The desired object or the desired object group is currently deactivated.

- Click the desired object or the desired object group.

▶ SICAT Function deactivates a previously activated object or object group.

▶ SICAT Function activates the desired object or the desired object group.

▶ SICAT Function highlights the object or object group in **Object browser** and the views in a certain color.

In the 2D views, you can activate certain objects by clicking on the objects.

HIDING AND SHOWING OBJECTS AND OBJECT GROUPS

This function is available only for certain object types.

To hide and show an object or object group, proceed as follows:

☑ The desired object or the desired object group is currently shown.

1. Click on the **Shown** icon or **Some Shown** icon next to the desired object or object group.

► SICAT Function hides the object or object group.

► SICAT Function displays the **Hidden** icon next to the object or object group.

2. Click on the **Hidden** icon next to the desired object or object group.

► SICAT Function shows the object or object group.

► SICAT Function displays the **Shown** icon next to the object or object group.

20.4 MANAGING OBJECTS WITH THE OBJECT TOOLBAR

These functions are available only for certain object types.

FOCUSING ON OBJECTS

Use this function to find objects in the views.

To focus objects, proceed as follows:

☑ The desired object is already active. Information on this can be found in the section *Managing objects with the object browser [▶Page 66 - SIDEXIS 4]*.

☑ The object can be focused.

- Click on the **Focus active object (F)** icon.

▶ SICAT Function moves the focus point of the views to the active object.

▶ SICAT Function displays the active object in the views.

You can also focus objects by double clicking on them in **Object browser** or in a view with the exception of the **3D** view.

REMOVING OBJECTS AND OBJECT GROUPS

To remove an object or object group, proceed as follows:

☑ The desired object or the desired object group is already active. Information on this can be found in the section *Managing objects with the object browser [▶Page 66 - SIDEXIS 4]*.

- Click on the **Remove active object/group (Del)** icon.

▶ SICAT Function removes the object or object group.

UNDOING AND REDOING OBJECT ACTIONS

To undo and redo the last object action or group action, proceed as follows:

1. Click on the **Undo last object/group action (Ctrl+Z)** icon.
   ▶ SICAT Function undoes the last object action or group action.

2. Click on the **Redo object/group action (Ctrl+Y)** icon.

▶ SICAT Function redoes the last undone object action or group action.

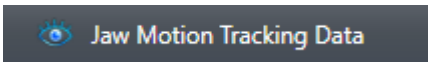
Undo and redo are only available as long as a study is open in a SICAT application.

20.5 SICAT FUNCTION OBJECTS

SICAT Function groups application-specific objects in the **Object browser** as follows:

- **Jaw Motion Tracking Data**
- **Volume Regions**
  - **Mandible**
- **Optical Impressions**

JAW MOTION TRACKING DATA OBJECT



After you have imported jaw motion tracking data, SICAT Function displays a **Jaw Motion Tracking Data** object in the **Object browser**.

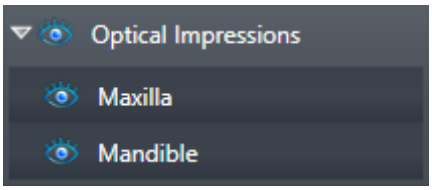
VOLUME REGIONS OBJECT ANDMANDIBLE OBJECT

After you have segmented the mandible, SICAT Function displays a **Volume Regions** object in the **Object browser**. The **Volume Regions** object contains the **Mandible** object. The **Mandible** object contains the following sub-objects:

- **Mandible Left**
- **Mandible Right**
- **Mandible Front**

If you focus on one of these sub-objects, SICAT Function will focus all 2D views on the selected object.

OPTICAL IMPRESSION OBJECT



After you have imported and registered optical impressions, SICAT Function displays a **Optical Impressions** object in the **Object browser**. A **Optical Impressions** object contains the following sub-objects:

- **Maxilla**
- **Mandible**

If you focus on one of these sub-objects, SICAT Function will focus all 2D views on the selected object.

If you remove a **Maxilla** or a **Mandible**object, SICAT Function deletes all existing optical impressions from the study.

21 WORKSPACES

SICAT applications constitute studies in various views and assign combinations of views in workspaces.

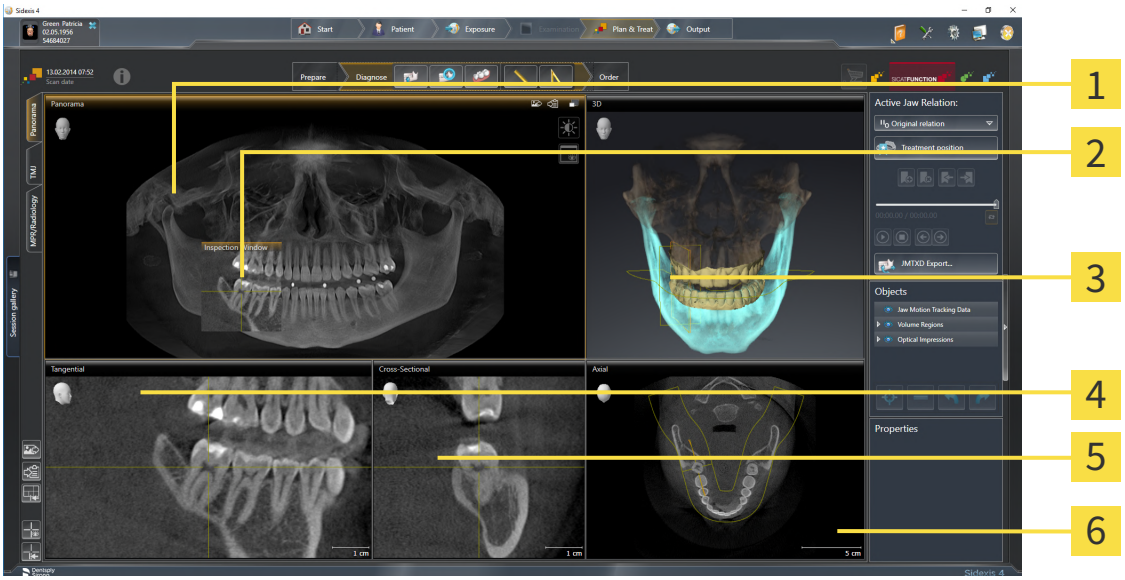
SICAT Function features three different workspaces:

- **Panorama** workspace - Information on this can be found in the section *Overview of the panoramic workspace [▶Page 72 - SIDEXIS 4]*.
- **TMJ** workspace - Information on this can be found in the section *Overview of the TMJ workspace [▶Page 74 - SIDEXIS 4]*.
- **MPR/Radiology** workspace - Information on this can be found in the section *Overview of the MPR/Radiology workspace [▶Page 76 - SIDEXIS 4]*.

The following actions are available for workspaces and the views they contain:

- *Switching workspaces [▶Page 77 - SIDEXIS 4]*.
- *Adjusting and resetting the layout of workspaces [▶Page 78 - SIDEXIS 4]*.
- *Adjusting the views [▶Page 81 - SIDEXIS 4]*.
- There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶Page 95 - SIDEXIS 4]*.
- You can document the contents of the active workspace. Information on this can be found in the section *Creating screenshots of workspaces [▶Page 79 - SIDEXIS 4]*.

21.1 OVERVIEW OF THE PANORAMIC WORKSPACE



1 **Panorama** view

2 **Inspection Window**

3 **3D** view

4 **Tangential** view

5 **Cross-Sectional** view

6 **Axial** view

PANORAMA VIEW

The **Panorama** view corresponds to a virtual orthopantomogram (OPG). It shows an orthogonal projection onto the panoramic curve with a certain thickness. You can adjust the panoramic curve and the thickness to both jaws. Information on this can be found in the section *Adjusting the panoramic region [▶Page 114 - SIDEXIS 4]*.

INSPECTION WINDOW

The **Inspection Window** is embedded in the **Panorama** view. It adds the third dimension to the **Panorama** view by displaying slices parallel to the panoramic curve. You can move, hide, show and maximize the **Inspection Window**. Information on this can be found in the section *Moving, hiding, showing and maximizing the inspection window [▶Page 90 - SIDEXIS 4]*.

3D VIEW

The **3D** view shows a 3D representation of the opened study.

TANGENTIAL VIEW

The **Tangential** view shows slices that are tangential to the panoramic curve.

CROSS-SECTIONAL VIEW

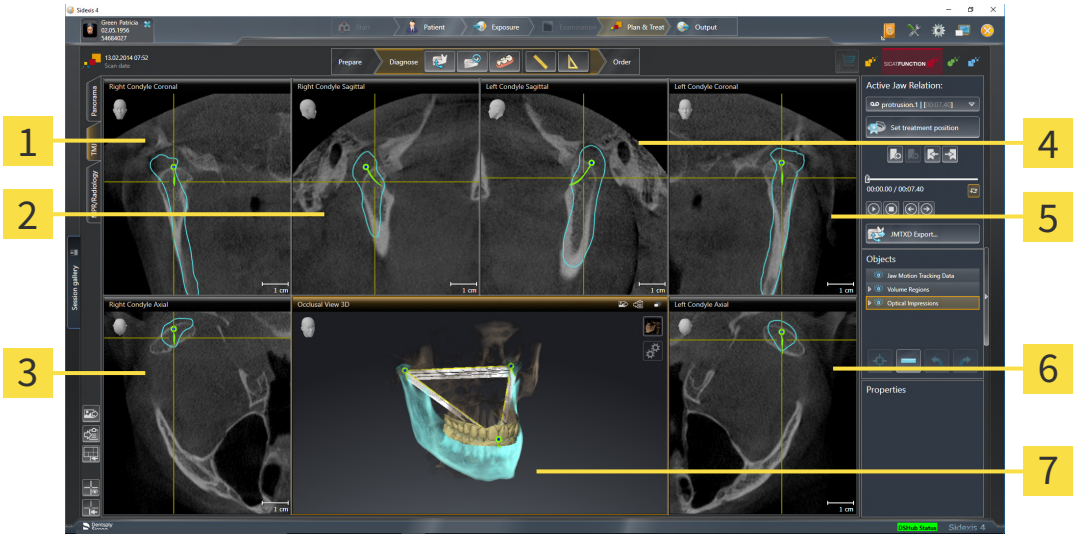
The **Cross-Sectional** view shows slices that are orthogonal to the panoramic curve.

AXIAL VIEW

By default, the **Axial** view shows slices from above. You can switch the viewing direction of the **Axial** view. Information on this can be found in the section *Changing visualization settings [▶Page 196 - SIDEXIS 4]*.

You can find information on the functions of the views in the sections *Adjusting the views [▶Page 81 - SIDEXIS 4]* and *Adjusting the 3D view [▶Page 95 - SIDEXIS 4]*.

21.2 OVERVIEW OF THE TMJ WORKSPACE



1 **Right Condyle Coronal** view

2 **Right Condyle Sagittal** view

3 **Right Condyle Axial** view

4 **Left Condyle Sagittal** view

5 **Left Condyle Coronal** view

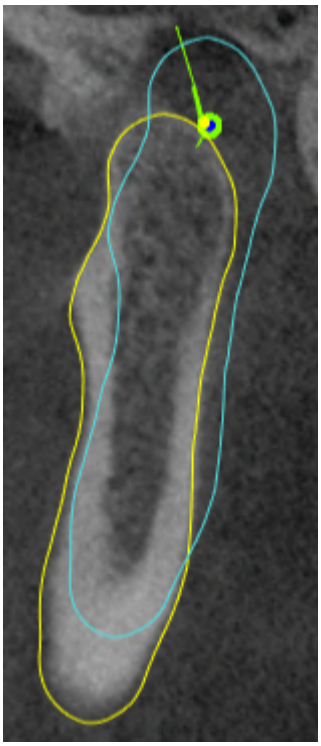
6 **Left Condyle Axial** view

7 **Occlusal View 3D**

You can select the individual anatomical articulation of a patient in the **Active Jaw Relation** and perform a diagnosis in the views. Information on the JMT area is found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.

The **TMJ** workspace shows the left and right condyles at the same time. Depending on the CBCT device used, a direct comparison of both temporomandibular joints is possible. You can use this comparison to identify asymmetries in terms of the movement and morphology of the temporomandibular joints.

SICAT Function marks the moving condyles differently.

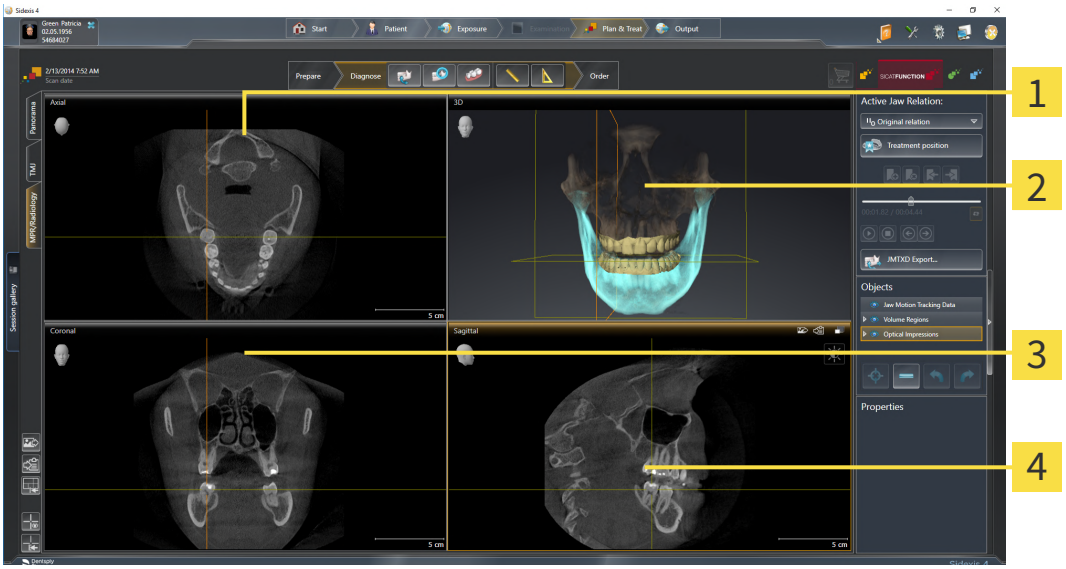


- SICAT Function shows moving condyles as a blue contour in the slice views.
- SICAT Function shows the segmentation boundary as a yellow contour in the slice views.
- SICAT Function shows moved condyles in the **3D** view as a blue 3D object.

To get a better comparison of the left and right temporomandibular joints, the views should be aligned to the median sagittal plane (mirror symmetry plane) of the head. Use the **Adjust Volume Orientation** function to compensate for misalignment during the 3D X-ray scan. Information on this can be found in the section *Adjusting the volume orientation [▶Page 109 - SIDEXIS 4]*. For the volume orientation, ensure that the temporomandibular joints are as symmetrical as possible to the median sagittal plane.

There are additional options in the **TMJ** workspace to analyze jaw motion tracking data and volume regions. For further information about this, see *Functions in the TMJ workspace [▶Page 153 - SIDEXIS 4]*, *Using the Bonwill triangle [▶Page 156 - SIDEXIS 4]*, *Displaying the segmentation boundary [▶Page 157 - SIDEXIS 4]* and *Displaying condyle-aligned movement [▶Page 158 - SIDEXIS 4]*.

21.3 OVERVIEW OF THE MPR/RADIOLOGY WORKSPACE



1 **Axial** view

2 **3D** view

3 **Coronal** view

4 **Sagittal** view

AXIAL VIEW

By default, the **Axial** view shows slices from above. You can switch the viewing direction of the **Axial** view. Information on this can be found in the section *Changing visualization settings [▶Page 196 - SIDEXIS 4]*.

3D VIEW

The **3D** view shows a 3D representation of the opened study.

CORONAL VIEW

The **Coronal** view shows slices from the front.

SAGITTAL VIEW

By default, the **Sagittal** view shows slices from the right. You can switch the viewing direction of the **Sagittal** view. Information on this can be found in the section *Changing visualization settings [▶Page 196 - SIDEXIS 4]*.

The functions of the views can be found in the sections *Adjusting the views [▶Page 81 - SIDEXIS 4]* and *Adjusting the 3D view [▶Page 95 - SIDEXIS 4]*.

21.4 SWITCHING WORKSPACES

To switch the workspace, proceed as follows:

- Click on the tab of the desired workspace in the upper left corner of the workspace region.

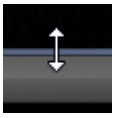
► The selected workspace opens.

21.5 ADJUSTING AND RESETTING THE LAYOUT OF WORKSPACES

ADJUSTING THE LAYOUT OF THE ACTIVE WORKSPACE

To adjust the layout of the active workspace, proceed as follows:

1. Move the mouse pointer over the border between two or more views.
   ► The mouse pointer changes:



2. Click and hold the left mouse button.
3. Move the mouse.
   ► The position of the border will change.
   ► The sizes of the views on all sides of the border will change.
4. Release the left mouse button.

► SICAT Function maintains the current position of the border and the current sizes of the views on all sides of the border.

RESETTING THE LAYOUT OF THE ACTIVE WORKSPACE

To reset the layout of the active workspace, proceed as follows:

- Click on the **Reset layout of active workspace** icon in the **Workspace toolbar**.

► SICAT Function resets the active workspace to the default layout. This means that the software displays all views in their default sizes.

21.6 CREATING SCREENSHOTS OF WORKSPACES

You can copy screenshots of the workspaces to the Windows clipboard for documentation purposes.

ADDING A SCREENSHOT OF A WORKSPACE TO THE SIDEXIS 4 OUTPUT

To add a screenshot of a workspace to a SIDEXIS 4 output, proceed as follows:

☑ The desired workspace is already active. Information on this can be found in the section *Switching workspaces [▶Page 77 - SIDEXIS 4]*.

- Click on the **Add screenshot of active workspace to SIDEXIS 4 output** icon in the workspace toolbar.

▶ SICAT Function adds a screenshot of the workspace to the SIDEXIS 4 output.

COPYING A SCREENSHOT OF A WORKSPACE TO THE WINDOWS CLIPBOARD

To copy a screenshot of a workspace to the Windows clipboard, proceed as follows:

☑ The desired workspace is already active. Information on this can be found in the section *Switching workspaces [▶Page 77 - SIDEXIS 4]*.

- Click on the **Copy screenshot of active workspace to clipboard** icon in the workspace toolbar.

▶ SICAT Function copies a screenshot of a workspace to the Windows clipboard.

You can add screenshots from the clipboard to several applications, such as image processing software and word processors. In most applications, the paste shortcut key is Ctrl+V.

22 VIEWS

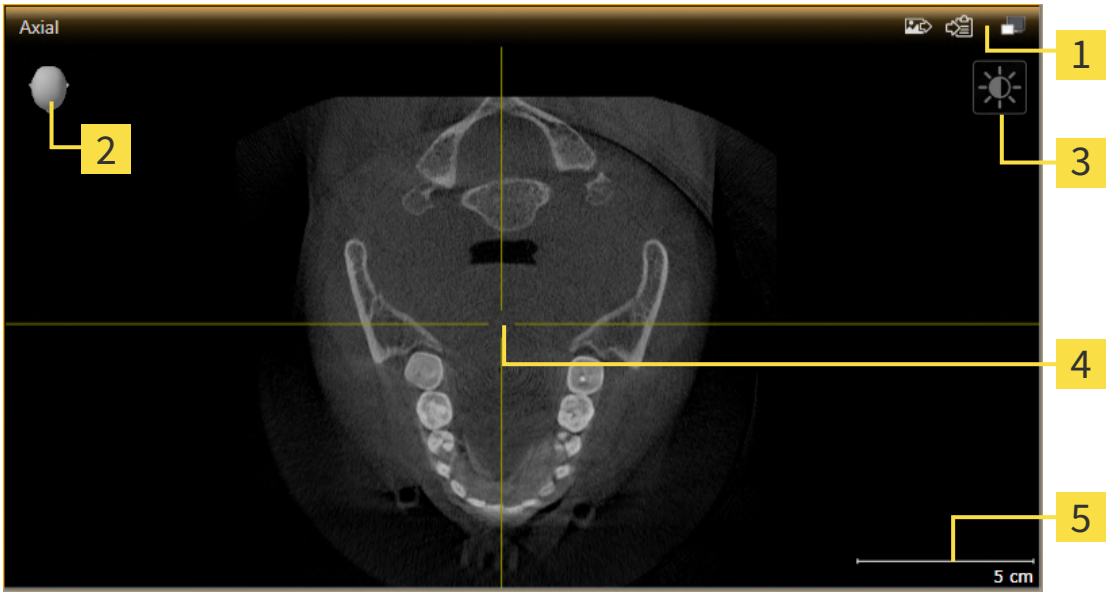
Views are contained in workspaces. A description of the various workspaces and views can be found under *Workspaces [▶Page 71 - SIDEXIS 4]*.

You can adjust the views. For further information about this see *Adjusting the views [▶Page 81 - SIDEXIS 4]* and *Adjusting the 3D view [▶Page 95 - SIDEXIS 4]*.

22.1 ADJUSTING THE VIEWS

Some tools to adjust the views are only available for the active view. Information on how to activate a view can be found under *Changing the active view [▶Page 83 - SIDEXIS 4]*.

An active view contains the following elements:



1	Title bar	4	Crosshair
2	Orientation head	5	Scale
3	View toolbar		

2D slice views display crosshairs. Crosshairs are lines of intersection with other slice views. SICAT Function synchronizes all slice views with each other. This means that all crosshairs show the same position within the 3D X-ray data. You can use this to match anatomical structures beyond the views.

The **3D** view shows frames, which illustrate the current position of the 2D slice views.

The following actions are available to adjust the views:

- *Changing the active view [▶Page 83 - SIDEXIS 4]*
- *Maximizing and restoring views [▶Page 84 - SIDEXIS 4]*
- *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 85 - SIDEXIS 4]*
- *Zooming views and panning views [▶Page 87 - SIDEXIS 4]*
- *Scrolling through slices in the 2D slice views [▶Page 88 - SIDEXIS 4]*
- *Moving, hiding and showing crosshairs and frames [▶Page 89 - SIDEXIS 4]*
- *Moving, hiding, showing and maximizing the inspection window [▶Page 90 - SIDEXIS 4]*
- *Tilting views [▶Page 92 - SIDEXIS 4]*
- *Resetting views [▶Page 93 - SIDEXIS 4]*

There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶Page 95 - SIDEXIS 4]*.

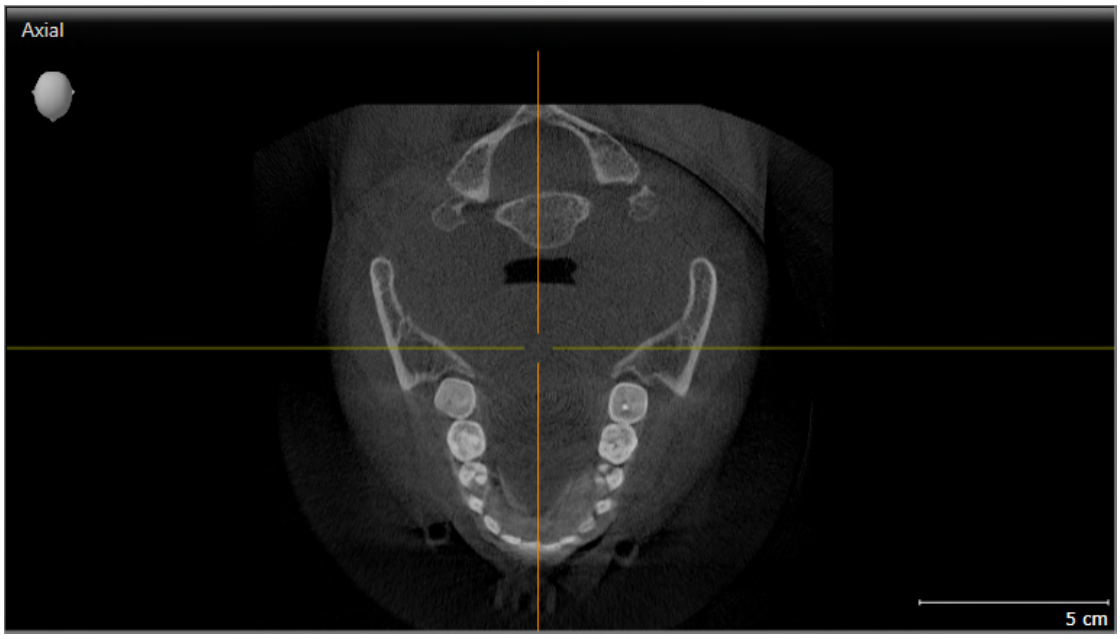
You can document the content of an active view. Information on this can be found in the section *Creating screenshots of views [▶ Page 94 - SIDEXIS 4]*.

22.2 CHANGING THE ACTIVE VIEW

Only the active view shows the **View toolbar** and the title bar.

To activate a view, proceed as follows:

1. Place the mouse pointer over the desired view:



2. Click the desired view.

► SICAT Function activates the view:

You can identify the activated view by the orange title bar.

22.3 MAXIMIZING AND RESTORING VIEWS

To maximize a view and restore it to its previous size, proceed as follows:

☑ The desired view is already active. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

☑ The desired view is not maximized.

1. Click on the **Maximize** icon in the title bar of the desired view.

   ▶ SICAT Function maximizes the view.

2. Click on the **Restore** icon in the title bar of the maximized view.

   ▶ SICAT Function restores the view to its previous size.

The following alternatives are available to maximize views and restore them to their previous size:

- To maximize a view, you can also double click on the title bar of the view you require.
- To restore a view to its previous size, you can also double click on the title bar of the maximized view.

22.4 ADJUSTING AND RESETTING THE BRIGHTNESS AND CONTRAST OF THE 2D VIEWS

To adjust the brightness and contrast of a 2D view, proceed as follows:

☑ The desired 2D view is already active. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

1. Place the mouse pointer over the **Adjust brightness and contrast** icon in the **View toolbar** of the 2D view.
   ▶ The transparent **Adjust brightness and contrast** window opens:

2. Move the mouse pointer over the **Brightness** slider.
3. Click and hold the left mouse button and move the mouse up or down.
   ▶ SICAT Function adjusts the brightness of the 2D view according to the position of the **Brightness** slider.
4. Release the left mouse button.
   ▶ SICAT Function maintains the current brightness of the 2D view.

5. Move the mouse pointer over the **Contrast** slider.
6. Click and hold the left mouse button and move the mouse up or down.
   ▶ SICAT Function adjusts the contrast of the 2D view according to the position of the **Contrast** slider.
7. Release the left mouse button.
   ▶ SICAT Function maintains the current contrast of the 2D view.
8. Move the mouse pointer out of the transparent **Adjust brightness and contrast** window.

▶ The transparent **Adjust brightness and contrast** window closes.

To reset the brightness and contrast of the 2D view to the default values, click on the **Reset brightness and contrast** icon.

The brightness and contrast of all 2D slice views are linked together.

22.5 ZOOMING VIEWS AND PANNING VIEWS

ZOOMING A VIEW

Zooming magnifies or shrinks the contents of a view.

To zoom a view, proceed as follows:

1. Place the mouse pointer over the desired view.
2. Move the mouse wheel forwards.
   ▶ The view will zoom in.
3. Move the mouse wheel backwards.

▶ The view will zoom out.

Alternatively, you can click on the mouse wheel and move the mouse up and down to zoom in or out.

PANNING A VIEW

To move a section in a view, proceed as follows:

1. Place the mouse pointer over the desired view.
2. Press and hold down the right mouse button.
   ▶ The mouse pointer changes.
3. Move the mouse.
   ▶ The section in the view will move according to the movement of the mouse pointer.
4. Release the right mouse button.

▶ SICAT Function maintains the current position of the view.

22.6 SCROLLING THROUGH SLICES IN THE 2D SLICE VIEWS

To scroll through slices in a 2D slice view, proceed as follows:

1. Move the mouse pointer over the desired 2D slice view.
2. Click and hold the left mouse button.
   ▶ The mouse pointer becomes a two-way arrow.
3. Move the mouse up or down as desired.
   ▶ With the exception of the **Cross-Sectional** slice, all slices move in parallel.
   ▶ The **Cross-Sectional** slice moves along the panoramic curve.
   ▶ SICAT Function adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Function adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Function maintains the current slice.

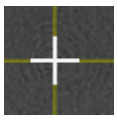
22.7 MOVING, HIDING AND SHOWING CROSSHAIRS AND FRAMES

MOVING A CROSSHAIR

To move the crosshair in a 2D slice view, proceed as follows:

☑ All crosshairs and frames are currently shown.

1. Move the mouse pointer in the view you require to the middle of the crosshair.
   ▶ The mouse pointer becomes a crosshair:



2. Click and hold the left mouse button.
3. Move the mouse.
   ▶ The crosshair in the view will track the movements of the mouse.
   ▶ SICAT Function adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Function adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Function maintains the current position of the crosshair.

To immediately move the crosshair to the position of the mouse pointer, you can also double click in a 2D view.

HIDING AND SHOWING CROSSHAIRS AND FRAMES

To hide and show all crosshairs and frames, proceed as follows:

☑ All crosshairs and frames are currently shown.

1. Click on the **Hide crosshairs and frames** icon in the **Workspace toolbar**.
   ▶ SICAT Function hides the crosshairs in all 2D slice views.
   ▶ SICAT Function hides the frames in the **3D** view.

2. Click on the **Show crosshairs and frames** icon.
   ▶ SICAT Function shows the crosshairs in all 2D slice views.
   ▶ SICAT Function shows the frames in the **3D** view.

22.8 MOVING, HIDING, SHOWING AND MAXIMIZING THE INSPECTION WINDOW

MOVING THE INSPECTION WINDOW

To move the **Inspection Window**, proceed as follows:

☑ The **Panorama** workspace is already open. Information on this can be found in the section *Changing the active workspace [▶Page 77 - SIDEXIS 4]*.

☑ The **Inspection Window** is already shown:

1. Place the mouse pointer on the **Inspection Window** title bar in the **Panorama** view.
   ▶ The mouse pointer becomes a hand.
2. Click and hold the left mouse button.
3. Move the mouse.
   ▶ The **Inspection Window** tracks the movement of the mouse pointer.
   ▶ SICAT Function adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Function adjusts the frames of the **3D** view according to the current focus point.
4. Release the left mouse button.

▶ SICAT Function maintains the current **Inspection Window** position.

HIDING, SHOWING AND MAXIMIZING THE INSPECTION WINDOW

The **Set inspection window** icon is both a status indicator and a switch.

To hide, show and maximize the **Inspection Window**, proceed as follows:

☑ The **Panorama** workspace is already open. Information on this can be found in the section *Switching workspaces [▶Page 77 - SIDEXIS 4]*.

☑ The **Inspection Window** is already shown.

1. Place the mouse pointer over the **Set inspection window** icon in the **View toolbar** of the **Panorama** view.

   ▶ SICAT Function displays the icons for setting the inspection window:

2. Click on the **Hide inspection window** icon.

   ▶ SICAT Function hides the **Inspection Window**.

3. Click on the **Use default inspection window size** icon.

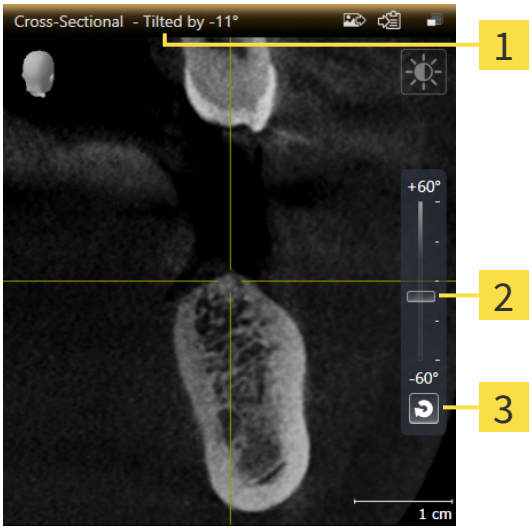
   ▶ SICAT Function shows the **Inspection Window**.

4. Click on the **Show maximized inspection window** icon.

   ▶ SICAT Function maximizes the inspection window.

22.9 TILTING VIEWS

In the **Panorama** workspace, you can tilt the **Tangential** and **Cross-Sectional** views. This allows you to optimize alignment in both views for viewing a specific anatomical structure (e. g. a tooth) or a planning object.



1 Currently set tilt

2 Slider for tilt adjustment

3 **Reset tilt** button

☑ The **Panorama** workspace is already open. Information on this can be found in the section *Switching workspaces [▶Page 77 - SIDEXIS 4]*.

☑ The **Tangential** or **Cross-Sectional** view is already active. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

- To adjust the tilt, move the slider up or down to the desired tilt while pressing the mouse key. You can also change the tilt by clicking on the slider and using the **Up** and **Down** arrow keys.

▶ SICAT Function tilts the active view and shows the currently set tilt in the title bar of the active view.

▶ SICAT Function updates the line of the crosshair in the **Tangential** or **Cross-Sectional** view.

▶ SICAT Function tilts the corresponding frame in the **3D** view.

You can reset the tilt to 0° by clicking the **Reset tilt** button.

22.10 RESETTING VIEWS

To reset all views, proceed as follows:

- Click on the **Workspace toolbar** icon in the **Reset views**.

► SICAT Function resets all views to the default values for zoom, panning, scrolling, moving the crosshairs and moving the **Inspection Window**.

► SICAT Function resets the viewing direction of the **3D** view to the default value.

► SICAT Function resets the tilt of views to 0°.

22.11 CREATING SCREENSHOTS OF VIEWS

You can take screenshots of the views to document them and output screenshots in the following ways:

- Adding to the SIDEXIS 4 output.
- Copying to the Windows clipboard.

ADDING A SCREENSHOT OF A VIEW TO THE SIDEXIS 4 OUTPUT

☑ The desired view is already active. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

- Click on the **Add screenshot to SIDEXIS 4 output** icon in the title bar of the view.

▶ SICAT Function adds a screenshot of the view to the SIDEXIS 4 output.

COPYING A SCREENSHOT OF A VIEW TO THE WINDOWS CLIPBOARD

To copy a screenshot of a view to the Windows clipboard, proceed as follows:

☑ The desired view is already active. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

- Click on the **Copy screenshot to clipboard (Ctrl+C)** icon in the title bar of the view.

▶ SICAT Function copies a screenshot of the view to the Windows clipboard.

You can add screenshots from the clipboard to several applications, such as image processing software and word processors. In most applications, the paste shortcut key is Ctrl+V.

23 ADJUSTING THE 3D VIEW

You can change the direction of the **3D** view at any time. Information on this can be found in the section *Changing the direction of the 3D view [▶Page 96 - SIDEXIS 4]*.

The following actions are available to configure the **3D** view:

- *Switching the display mode of the 3D view [▶Page 100 - SIDEXIS 4]*
- *Configuring the active display mode of the 3D view [▶Page 101 - SIDEXIS 4]*
- *Moving a clipping [▶Page 103 - SIDEXIS 4]*
- *Switching off and switching on the display of optical impressions in color [▶Page 105 - SIDEXIS 4]*

23.1 CHANGING THE DIRECTION OF THE 3D VIEW

There are two ways to change the direction of the **3D** view:

- Interactive changes
- Selecting a standard viewing direction

INTERACTIVELY CHANGING THE DIRECTION OF THE 3D VIEW

To interactively change the direction of the **3D** view, proceed as follows:

1. Place the mouse pointer on the **3D** view.
2. Click and hold the left mouse button.
   ▶ The mouse pointer becomes a hand.
3. Move the mouse.
   ▶ The viewing direction changes according to the movement of the mouse.
4. Release the left mouse button.

▶ SICAT Function keeps the current viewing direction of the **3D** view.

SELECTING A STANDARD VIEWING DIRECTION

To select a standard viewing direction in the **3D** view, proceed as follows:

1. Place the mouse pointer over the Orientation head icon in the top left corner of the **3D** view.
   ▶ The transparent **Viewing direction** window opens:

   ▶ In the middle of the transparent **Viewing direction** window, the highlighted Orientation head shows the current viewing direction.
2. Click on the Orientation head icon that shows the desired standard viewing direction.
   ▶ The direction of the **3D** view changes according to your selection.
3. Move the mouse pointer out of the transparent **Viewing direction** window.

▶ The transparent **Viewing direction** window closes.

23.2 DISPLAY MODES OF THE 3D VIEW

General information on the **3D** view can be found in the section *Adjusting the 3D view [▶ Page 95 - SIDEXIS 4]*.

SICAT Function offers a total of two different display modes for the **3D** view:

- The **Overview** display mode provides an overview of the entire 3D X-ray scan.

- The **Clipped** display mode shows only one section of the 3D X-ray scan, which can be panned.

Information on how to activate a display mode of the **3D** view can be found in the section *Switching the display mode of the 3D view [▶Page 100 - SIDEXIS 4]*.

Information on how to configure the active display mode can be found in the section *Configuring the active display mode of the 3D view [▶Page 101 - SIDEXIS 4]*.

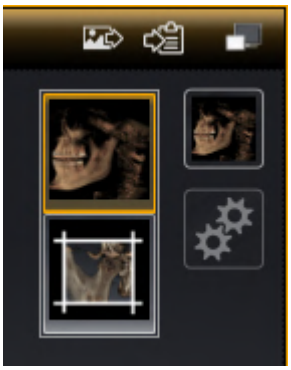
23.3 SWITCHING THE DISPLAY MODE OF THE 3D VIEW

All display modes are available in all workspaces.

To change the display mode of the **3D** view, proceed as follows:

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

1. Place the mouse pointer over the **Switch display mode** icon in the **View toolbar** of the **3D** view.
   ▶ The transparent **Switch display mode** window opens:



2. Click on the icon for the desired display mode.
   ▶ SICAT Function activates the desired display mode.
3. Move the mouse pointer out of the transparent **Switch display mode** window.

▶ The transparent **Switch display mode** window closes.

23.4 CONFIGURING THE ACTIVE DISPLAY MODE OF THE 3D VIEW

Only configurable display modes show the **Configure active display mode** icon. The transparent **Configure active display mode** window only shows the settings that are relevant for the active display mode.

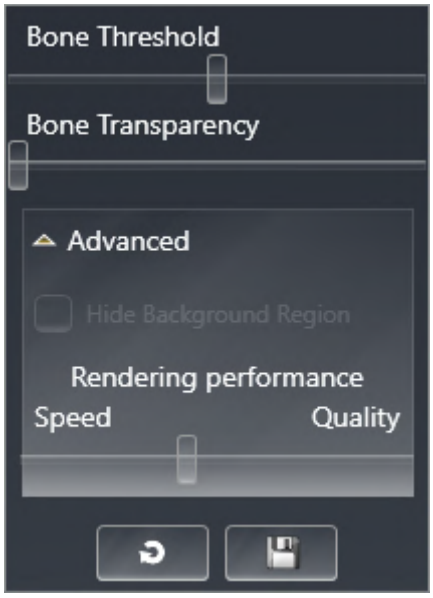
To configure the active display mode of the **3D** view, proceed as follows:

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

☑ The desired display mode is already active. Information on this can be found in the section *Switching the display mode of the 3D view [▶Page 100 - SIDEXIS 4]*.

☑ The active display mode is configurable.

1. Place the mouse pointer over the **Configure active display mode** icon in the **View toolbar** of the **3D** view.
   ▶ The transparent **Configure active display mode** window opens:



2. Move the slider you require.
   ▶ SICAT Function adjusts the **3D** view according to the position of the slider.
3. Where available, click on the arrow icon next to .**Advanced**.
   ▶ The **Advanced** area expands.
4. Activate or deactivate the available check box.
   ▶ SICAT Function adjusts the **3D** view according to the status of the check box.
5. Move the slider you require.
   ▶ SICAT Function adjusts the **3D** view according to the position of the slider.
6. Move the mouse pointer out of the transparent **Configure active display mode** window.

▶ The transparent **Configure active display mode** window closes.

You can reset to the default settings by clicking the **Reset configuration of active display mode to default values** button.

You can save the current settings as default settings by clicking the **Save configuration of active display mode as default values** button.

Where available, move the **Rendering performance** slider further left on slow computers.

23.5 MOVING A CLIPPING

General information on the **3D** view can be found in the section *Adjusting the 3D view [▶Page 95 - SIDEXIS 4]*.

With the **Clipped** display mode, you can hide parts of the volume of the **3D** view. SICAT Function then only displays one slice section of the volume and SICAT Function will synchronize its position with the crosshair. To move the slice section, proceed as follows:

☑ You have already activated the **Clipped** display mode. Information on this can be found in the section *Switching the display mode of the 3D view [▶Page 100 - SIDEXIS 4]*.

- In the **Axial** view, **Coronal** view or **Sagittal** view, scroll to the desired slice. Information on this can be found in the section *Scrolling through slices in the 2D slice views [▶Page 88 - SIDEXIS 4]*.

▶ SICAT Function moves the slice section image according to the selected slice:

23.6 SWITCHING OFF AND SWITCHING ON THE DISPLAY OF OPTICAL IMPRESSIONS IN COLOR

In the **3D** view, optical impressions are automatically displayed in color if you have previously imported optical impressions in color and display in color is activated.

You can switch the display of optical impressions in color to a monochrome display if only the exact recognition of the shape and geometry is important.

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

1. Click on the **Turn the colored display for optical impressions off** icon in the **View toolbar**.
   ▶ SICAT Function switches from display in color to monochrome display.

2. Click on the **Turn the colored display for optical impressions on** icon in the **View toolbar**.
   ▶ SICAT Function switches from monochrome display to display in color.

24 ADJUSTING VOLUME ORIENTATION AND PANORAMIC REGION

If an adjustment of the volume orientation is required, perform this when starting work on the 3D X-ray scan. If you adjust the volume orientation later, you may have to repeat your diagnosis or planning under certain circumstances.

VOLUME ORIENTATION

You can adjust the volume orientation for all views by rotating the volume around the three principal axes. This may be necessary in the following cases:

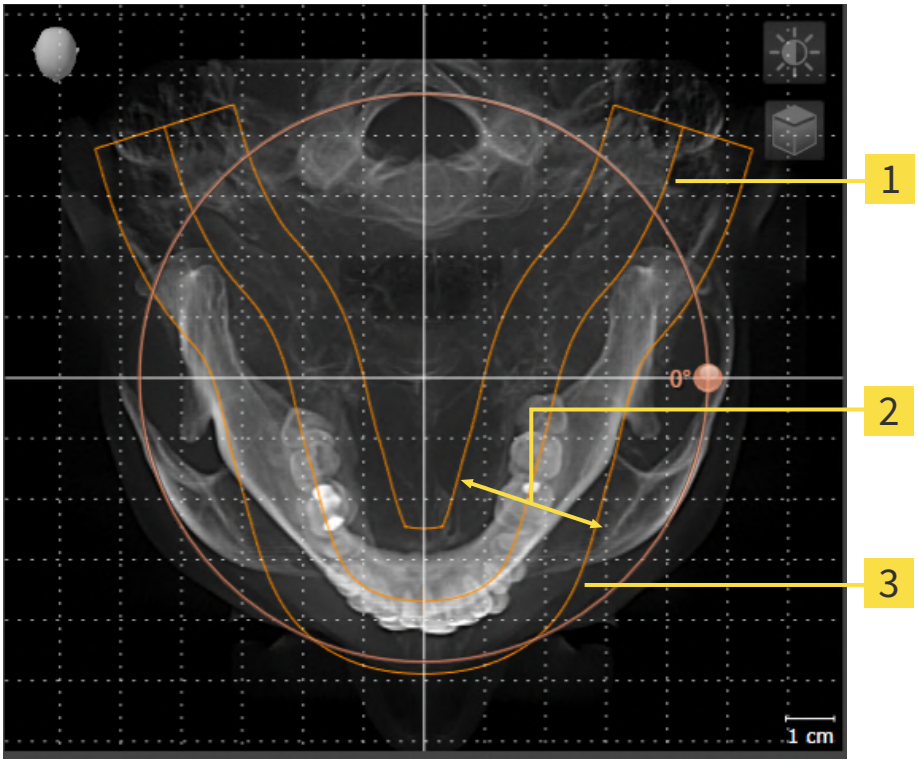
- Sub-optimal positioning of the patient during the 3D X-ray scan
- Orientation according to case, for example orientation of the axial slices parallel to the Frankfurt plane or parallel to the bite plane
- Optimizing the **Panorama** view

If you adjust the volume orientation in SICAT Function, SICAT Function applies your settings to your currently open planning.

Information on how to adjust the volume orientation can be found in the section *Adjusting the volume orientation* *[▶Page 109 - SIDEXIS 4]*.

PANORAMIC REGION

SICAT Function calculates the **Panorama** view on the basis of the volume and panoramic region. To optimize the **Panorama** view, you should adjust the panoramic region to both jaws of the patient. This is vital for effective and efficient diagnosis and treatment planning.



1 Panoramic curve

2 Thickness

3 Panoramic region

The panoramic region is defined by the two following components:

- Shape and position of the panoramic curve
- Thickness of the panoramic region

Both of the following conditions must be met to optimally adjust the panoramic region:

- The panoramic region must contain all teeth and both jaws in full.
- The panoramic region should be as thin as possible.

If you adjust the panoramic region in SICAT Function, SICAT Function applies your settings to your currently open planning.

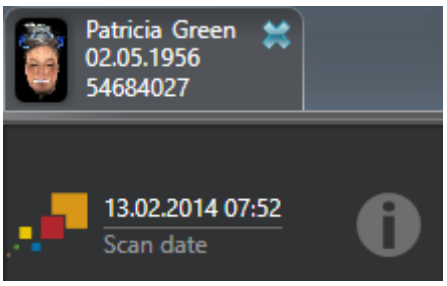
Information on adjusting the panoramic region can be found in the section *Adjusting the panoramic region [▶Page 114 - SIDEXIS 4]*.

TRANSFER OF DATA FROM SIDEXIS 4

When a volume is first opened in SICAT Function SICAT Function applies the volume orientation and the panoramic region from SIDEXIS 4. The following restrictions apply here:

- SICAT Function only supports rotations of the volume orientation up to a maximum of 30 degrees.
- SICAT Function supports only standard panoramic curves from SIDEXIS 4, not the shifting of individual supporting points from SIDEXIS 4.
- SICAT Function supports only panoramic curves that are at least 10 mm thick.
- SICAT Function supports only panoramic curves that have not been rotated in SIDEXIS 4.

If at least one of the restrictions applies, SICAT Function will not apply the volume orientation and panoramic region or will not apply the panoramic region.



In this case, SICAT Function shows an information icon next to the information on the current 3D X-ray scan. If you move the mouse pointer over the information icon, you will receive the following information:

- Settings and data that are not transferred.
- Instructions on how to adjust the settings in SICAT Function.

24.1 ADJUSTING THE VOLUME ORIENTATION

General information on volume orientation can be found in the section *Adjusting volume orientation and panoramic region [▶Page 106 - SIDEXIS 4]*.

The adjustment of the volume orientation consists of the following steps:

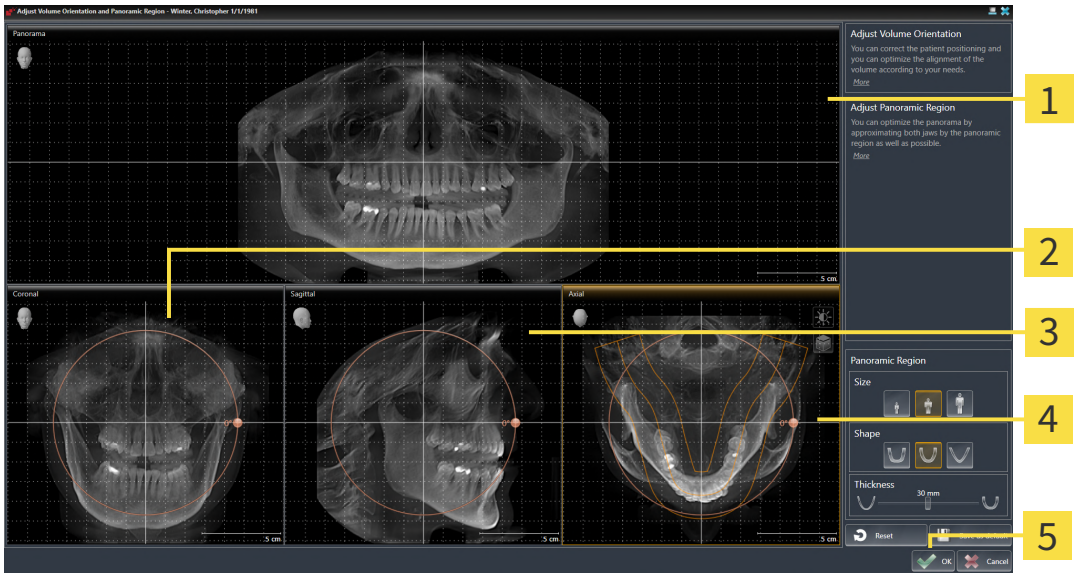
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Rotating volumes in the **Coronal** view
- Rotating volumes in the **Sagittal** view
- Rotating volumes in the **Axial** view

OPENING THE "ADJUST VOLUME ORIENTATION AND PANORAMIC REGION" WINDOW

☑ The **Prepare** workflow step is already expanded.

- Click on the **Adjust volume orientation and panoramic region** icon.

▶ The **Adjust Volume Orientation and Panoramic Region** window opens:



1 **Panorama** view

2 **Coronal** view with **Rotation** slider

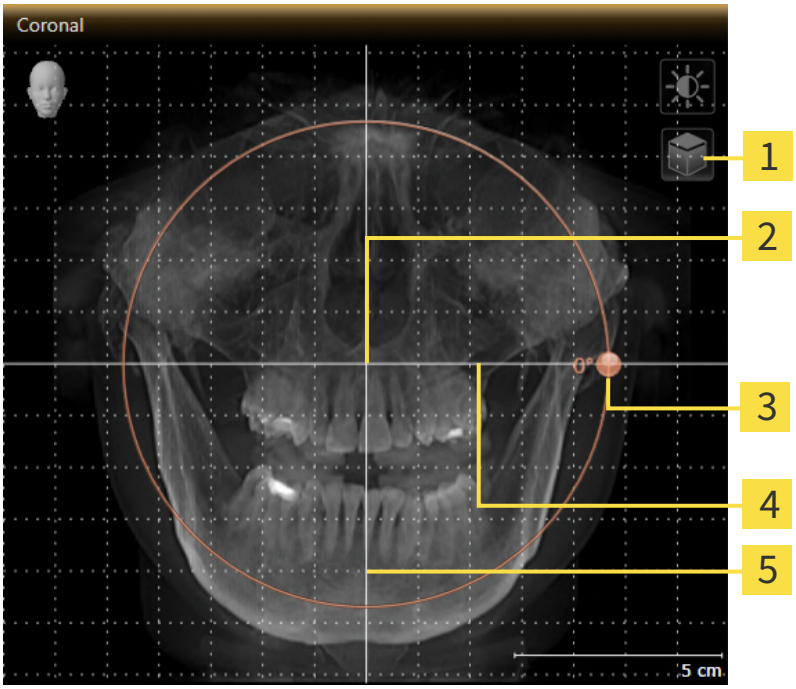
3 **Sagittal** view with **Rotation** slider

4 **Axial** view with **Rotation** slider

5 **OK** button

ROTATING VOLUMES IN THE CORONAL VIEW

1. Activate the **Coronal** view:

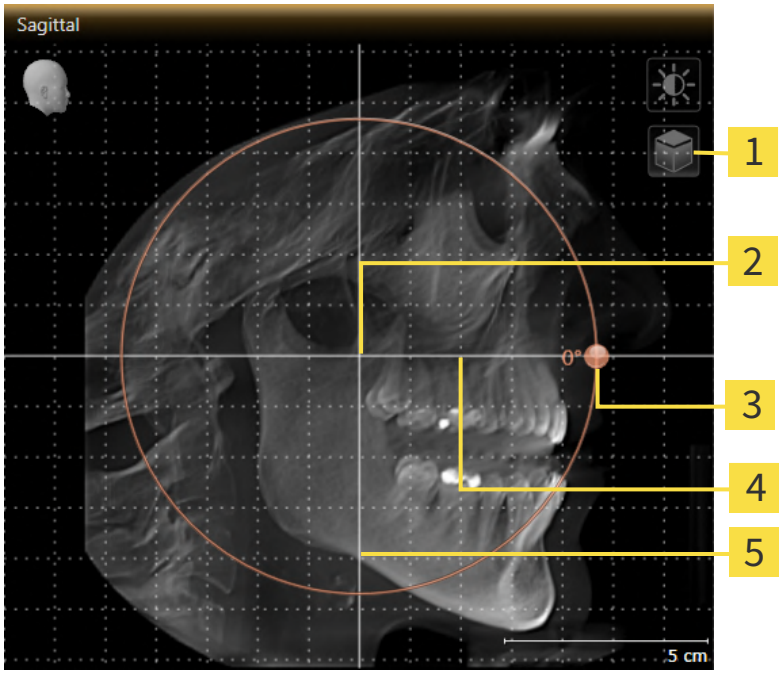


1 **Enable slices mode** icon or **Enable projection mode** icon	4 Horizontal reference line
2 Center of rotation	5 Vertical reference line
3 **Rotation** slider	

2. Make sure that the projection mode is active. If the slice mode is active, click on the **Enable projection mode** icon.
3. Place the mouse pointer on the **Rotation** slider.
4. Click and hold the left mouse button.
5. Move the **Rotation** slider along the circle in the desired direction.
   ▶ SICAT Function rotates the volume in the **Coronal** view in a circle around the center of rotation and in the other views accordingly.
6. Release the left mouse button when you have reached the desired rotation of the volume. Orientate yourself using the horizontal reference lines, the vertical reference lines and the grid.

ROTATING VOLUMES IN THE SAGITTAL VIEW

1. Activate the **Sagittal** view:



1 **Enable slices mode** icon or **Enable projection mode** icon

2 Center of rotation

3 **Rotation** slider

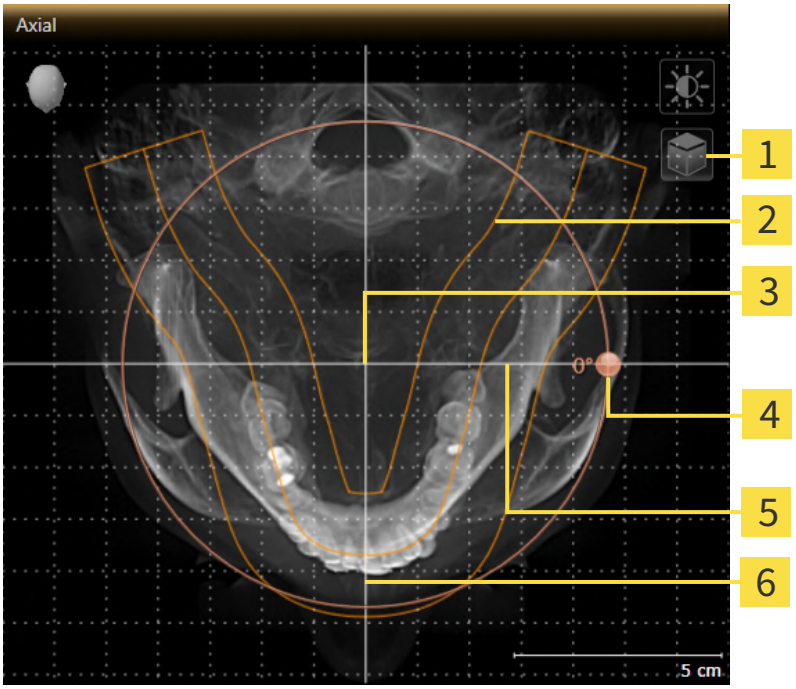
4 Horizontal reference line

5 Vertical reference line

2. Make sure that the projection mode is active. If the slice mode is active, click on the **Enable projection mode** icon.
3. Place the mouse pointer on the **Rotation** slider.
4. Click and hold the left mouse button.
5. Move the **Rotation** slider along the circle in the desired direction.
   ▶ SICAT Function rotates the volume in the **Sagittal** view in a circle around the center of rotation and in the other views accordingly.
6. Release the left mouse button when you have reached the desired rotation of the volume. Orientate yourself using the horizontal reference lines, the vertical reference lines and the grid.

ROTATING VOLUMES IN THE AXIAL VIEW

1. Activate the **Axial** view:



1	**Enable slices mode** icon or **Enable projection mode** icon	4	**Rotation** slider
2	Panoramic region	5	Horizontal reference line
3	Center of rotation	6	Vertical reference line

2. Make sure that the projection mode is active. If the slice mode is active, click on the **Enable projection mode** icon.
3. Where necessary, move the panoramic region in the **Axial** view by left clicking on the panorama view and holding the left button as you move the mouse. SICAT Function moves the center of rotation, the horizontal reference lines and the vertical reference lines accordingly.
4. Place the mouse pointer on the **Rotation** slider.
5. Click and hold the left mouse button.
6. Move the **Rotation** slider along the circle in the desired direction.
   ▶ SICAT Function rotates the volume in the **Axial** view in a circle around the center of rotation and in the other views accordingly.
7. Release the left mouse button when you have reached the desired rotation of the volume. Orientate yourself using the panoramic region, the horizontal reference lines, vertical reference lines and the grid.
8. To save your changes, click **OK**.

▶ SICAT Function saves the altered volume orientation and displays the volume with the corresponding orientation in all views.

In addition to the described process, the following actions are available in the **Adjust Volume Orientation and Panoramic Region** window:

- You can adjust the brightness and contrast of a 2D image by activating the desired view and clicking the **Adjust brightness and contrast** icon. Information on this can be found in the section *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 85 - SIDEXIS 4]*.
- You can zoom in the views. SICAT Function synchronizes the zoom between the **Coronal** view and the **Sagittal** view.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- To reset the volume orientation and panoramic region to the last saved default setting, click on the **Reset** button.
- If you do not want to save your changes, click on **Cancel**.

24.2 ADJUSTING THE PANORAMIC REGION

General information on the panoramic region can be found in the section *Adjusting volume orientation and panoramic region [▶Page 106 - SIDEXIS 4]*.

The adjustment of the panoramic region consists of the following steps:

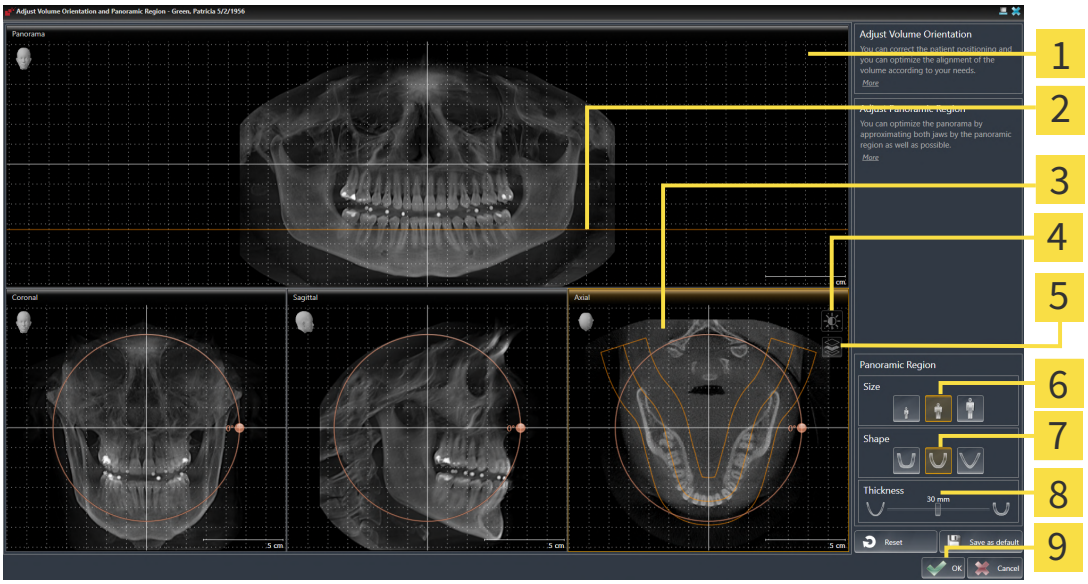
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Adjusting the slice position of the **Axial** view
- Moving the panoramic region
- Rotating volumes in the **Axial** view
- Adjusting **Size**, **Shape** and **Thickness** of the panoramic region

OPENING THE "ADJUST VOLUME ORIENTATION AND PANORAMIC REGION" WINDOW

☑ The **Prepare** workflow step is already expanded.

- Click on the **Adjust volume orientation and panoramic region** icon.

▶ The **Adjust Volume Orientation and Panoramic Region** window opens:



1 **Panorama** view

2 Axial reference line

3 **Axial** view with **Rotation** slider

4 **Adjust brightness and contrast** icon

5 **Enable projection mode** icon or **Enable slices mode** icon

6 **Size** buttons

7 **Shape** buttons

8 **Thickness** slider

9 **OK** button

ADJUSTING THE SLICE POSITION OF THE AXIAL VIEW

1. Make sure that the slice mode of the **Axial** view is active. If the projection mode is active, click on the **Enable slices mode** icon.
2. Place the mouse pointer on the axial reference line in the **Panorama** view. The axial reference line illustrates the current slice position of the **Axial** view.
3. Click and hold the left mouse button.
4. Move the mouse up or down as desired.
   ▶ The slice in the **Axial** view will change according to the position of the axial reference lines in the **Panorama** view.
5. When the axial reference line is on the roots of the mandibular teeth, release the left mouse button.
   ▶ The **Axial** view maintains the current slice.

MOVING THE PANORAMIC REGION

1. Place the mouse pointer on the panoramic region in the **Axial** view.
2. Click and hold the left mouse button.
   ▶ The mouse pointer changes.
3. Move the mouse.
   ▶ SICAT Function moves the panoramic region according to the position of the mouse pointer.
4. When the central curve of the panoramic region is on the roots of the mandibular teeth, release the left mouse button.
   ▶ The panoramic region will remain in its current position.

ROTATING VOLUMES IN THE AXIAL VIEW

1. Place the mouse pointer on the **Rotation** slider in the **Axial** view.
2. Click and hold the left mouse button.
3. Move the **Rotation** slider along the circle in the direction you require.
   ▶ SICAT Function rotates the volume in the **Axial** view in a circle accordingly around the center of rotation and in the other views accordingly.
4. When the roots of the mandibular teeth follow the central curve of the panoramic region, release the left mouse button.

ADJUSTING THE SIZE, SHAPE AND THICKNESS OF THE PANORAMIC REGION

1. Make sure that the projection mode is active. If the slice mode is active, click on the **Enable projection mode** icon.

2. Select the **Size** of the panoramic region that best reflects the mandible of the patient by clicking on the corresponding **Size** button.

3. Select the **Shape** of the panoramic region that best reflects the mandible of the patient by clicking on the corresponding **Shape** button.

4. Select the **Thickness** of the panoramic region by moving the **Thickness** slider. Make sure that the panoramic region contains all teeth and both jaws in full. Keep the thickness as low as possible.
5. To save your changes, click **OK**.

► SICAT Function saves the altered volume orientation and altered panoramic region and displays the **Panorama** view accordingly.

In addition to the described process, the following actions are available in the **Adjust Volume Orientation and Panoramic Region** window:

- You can adjust the brightness and contrast of a 2D image by activating the desired view and clicking the **Adjust brightness and contrast** icon. Information on this can be found in the section *Adjusting and resetting the brightness and contrast of the 2D views [►Page 85 - SIDEXIS 4]*.
- You can zoom in the views. SICAT Function synchronizes the zoom between the **Coronal** view and the **Sagittal** view.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- To reset the volume orientation and panoramic region to the last saved default setting, click on the **Reset** button.
- If you do not want to save your changes, click on **Cancel**.

25 JAW MOTION TRACKING DATA

Patient-specific jaw motion and jaw positions provide information regarding the patient's chewing dynamics. You can use this information for patient analysis and diagnosis. In addition, the information can be integrated in the patient's treatment planning.

SICAT Function visualizes patient-specific jaw motion and jaw positions. The application supports the following sources of jaw motion tracking data:

- Motion data from jaw motion tracking devices
- Static positions of jaw motion tracking devices
- Buccal bite positions that are recorded with an intra-oral camera

A list of the compatible jaw motion tracking devices can be found in the section *Compatible jaw motion tracking devices [▶Page 118 - SIDEXIS 4]*.

You can import buccal bite positions together with optical impressions. Information on this can be found in the section *Optical impressions [▶Page 129 - SIDEXIS 4]*.

In addition to importing jaw motion tracking data, you have to perform further steps to prepare the display of jaw motion tracking data. Information on this can be found in the section *The standard workflow of SICAT Function [▶Page 37 - SIDEXIS 4]*.

After you have prepared all of the data you require, the following jaw motion tracking data actions will be available:

- *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*
- *Visualizing anatomical traces in the 3D view [▶Page 150 - SIDEXIS 4]*
- *Adjusting anatomical traces using the inspection window [▶Page 151 - SIDEXIS 4]*
- *Adjusting anatomical traces using the crosshair in a slice view [▶Page 152 - SIDEXIS 4]*

Representation accuracy of jaw motion tracking data	< 0.6 mm

25.1 COMPATIBLE JAW MOTION TRACKING DEVICES

CAUTION

The use of jaw motion tracking devices with an unsuitable intended use may result in an incorrect diagnosis and treatment.

Only use jaw tracking data from devices with an intended use that covers the use of the jaw motion tracking data with SICAT Function.

CAUTION

The use of unsupported jaw motion tracking devices or incompatible registration devices may result in an incorrect diagnosis and treatment.

Only use jaw motion tracking data that has been recorded using a supported combination of a jaw motion tracking devices (such as SICAT JMT⁺) and a compatible registration device (such as SICAT Fusion Bite).

Ensure that you only record jaw motion tracking data with a compatible jaw motion tracking device in combination with a supported registration device. Import only such jaw motion tracking data from compatible jaw motion tracking devices to SICAT Function. You can only import jaw motion tracking data to SICAT Function that has been recorded using jaw motion tracking devices that support the SICAT JTI Format V1.0 interface.

SICAT Function currently supports the following combinations of jaw motion tracking devices and jaw motion registration devices:

- SICAT JMT⁺ in combination with a SICAT Fusion Bite, manufactured by: SICAT GmbH & Co. KG, Brunnenallee 6, 53177 Bonn
- SICAT JMT blue in combination with a SICAT Fusion Bite, manufacturer: zebris Medical GmbH, Am Galgenbühl 14, 88316 Isny, Germany

25.2 IMPORTING AND REGISTERING JAW MOTION DATA

CAUTION

The use of other data as 3D X-ray scans as a lone source of information may result in an incorrect diagnosis and treatment.

1. Use 3D X-ray scans as a preferred source of information for diagnosis and planning.
2. Use other data, such as optical impressions, only as an auxiliary source of information.

CAUTION

Unsuitable jaw motion tracking devices could result in incorrect diagnosis and treatment.

Only use jaw tracking data from devices cleared as medical devices.

CAUTION

Incorrect recording of jaw motion tracking data and 3D X-ray scans may result in an incorrect diagnosis and treatment.

Ensure that jaw motion tracking data and 3D X-ray scans have been recorded in accordance with the device manufacturer's instructions. Use the stated type of registration device.

CAUTION

Jaw motion tracking data that does not match the patient and date of the 3D X-ray scans may result in an incorrect diagnosis and treatment.

Make sure that the patient and date of the jaw motion tracking data match the patient and date in the 3D X-ray scan shown.

CAUTION

Insufficient integrity or quality of jaw motion tracking data may result in an incorrect diagnosis and treatment.

Check the integrity and quality of the jaw motion tracking data imported.

CAUTION

Insufficient quality, precision and resolution of jaw motion tracking data may result in an incorrect diagnosis and treatment.

Only use jaw motion tracking data of a sufficient quality, resolution and precision for the intended diagnosis and treatment.

CAUTION

Excessive artifacts, insufficient resolution or insufficient quality of the 3D X-ray scans may mean that the marker and registration device detection mechanism fails. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Use only 3D X-ray scans that enable the correct detection of markers and registration devices.

CAUTION

Incorrect positions, types and orientations of the registration device may result in an incorrect diagnosis and treatment.

After the JMT wizard has identified the registration device, check the correct position, type and orientation of the registration device, taking into account the 3D X-ray scans.

⚠ **CAUTION**	**The incorrect registration of jaw motion tracking data for 3D X-ray scans may result in an incorrect diagnosis and treatment.** Check that the registered jaw motion tracking data is correctly aligned to the 3D X-ray scans.

NOTICE	To ensure the correct registration of jaw motion tracking data, SICAT recommends the use of 3D X-ray data with the following parameters: 1. Slice thickness less than 0.7 mm 2. Voxel size less than 0.7 mm in all three dimensions

ℹ	Before you can import recorded jaw motion tracking data to SICAT Function, you have to export the data from the jaw motion tracking device software. Exporting files that are suitable for SICAT Function is described in the instructions for use of the jaw motion tracking device.

ℹ	If the opened study already contains registered jaw motion data, you have to confirm that SICAT Function will remove this data when you open the assistant **Import and Register Jaw Motion Tracking Data** again.

ℹ	During the import process of the jaw motion tracking data, you have to mark three spherical fiducial markers within the **Axial** view of the **Import and Register Jaw Motion Tracking Data** assistant so that SICAT Function can subsequently identify them.

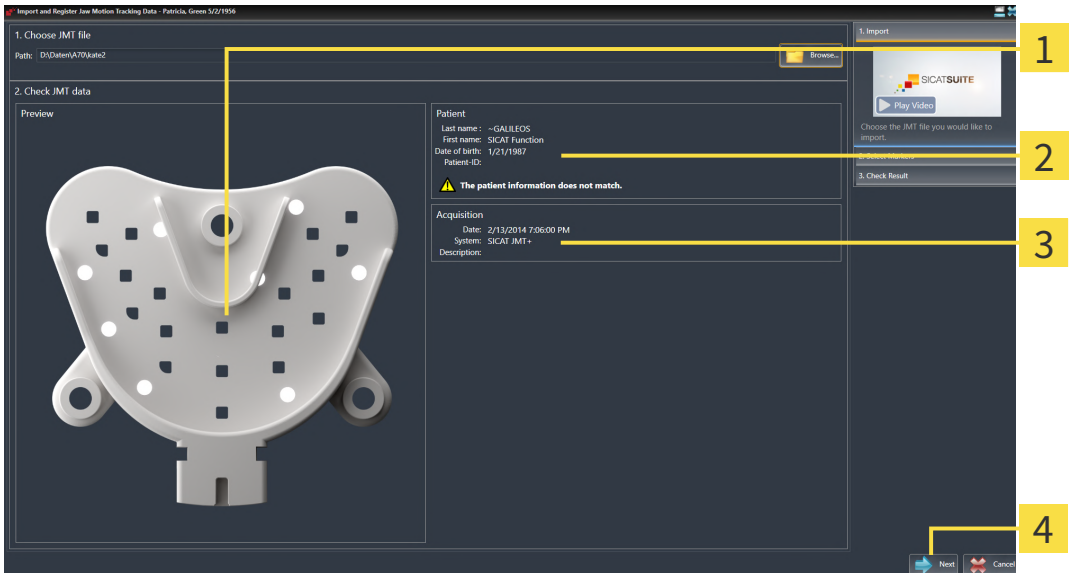
General information on jaw motion tracking data can be found in the section *Jaw motion tracking data [▶Page 117 - SIDEXIS 4]*.

To import and register jaw motion tracking data, proceed as follows:

☑ The **Diagnose** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 63 - SIDEXIS 4]*.

1. Click on the **Import and Register Jaw Motion Tracking Data** icon.
   ▶ The **Import and Register Jaw Motion Tracking Data** wizard opens with the **Import** step.
2. Click the **Browse** button in the **Import and Register Jaw Motion Tracking Data** wizard.
   ▶ The **Load JMT Export File** window opens.
3. Switch to the desired jaw motion tracking data file in the **Load JMT Export File** window, select the file and click on **Open**.
   ▶ The **Load JMT Export File** window closes and SICAT Function transfers the path to the desired file with the jaw motion tracking data into the **Path** field.
   ▶ The **Bite fork** view shows a preview of the bite fork, which was used when recording the jaw motion tracking data.

▶ The **Patient** area and the **Acquisition** area display information from the file with the jaw motion tracking data:

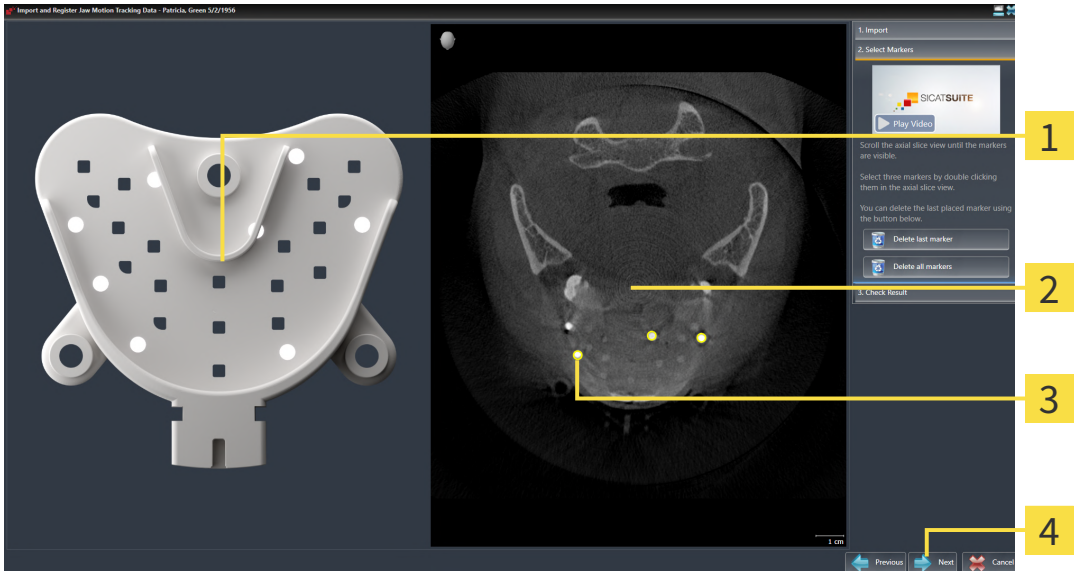


1	SICAT Fusion Bite view	3	**Acquisition** area
2	**Patient** area	4	**Next** button

4. Make sure that the file with the jaw motion tracking data matches the active study.

5. Click **Next**.

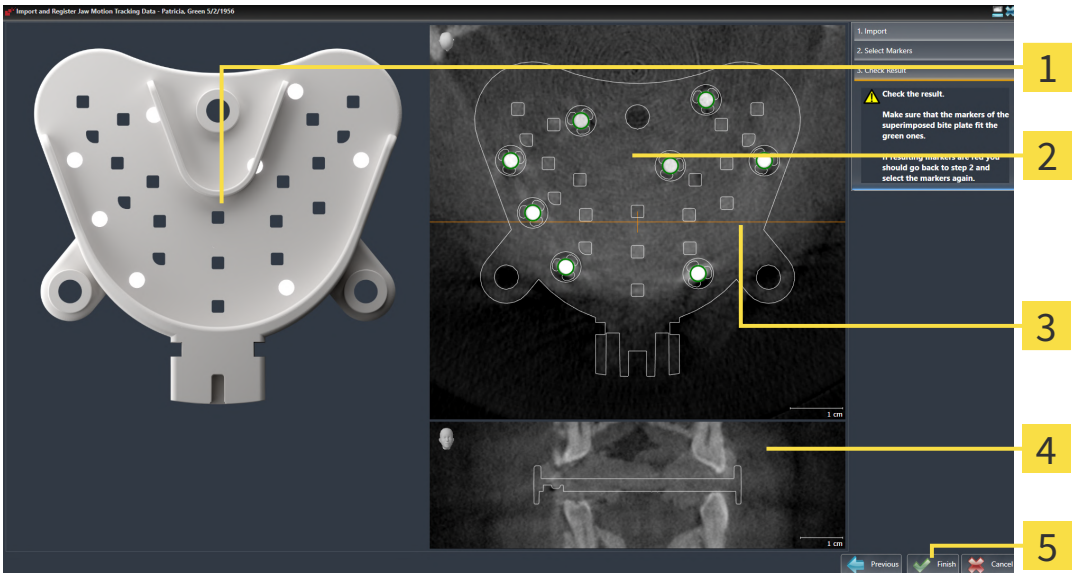
▶ The **Select Markers** step opens:



1	**Bite fork** view	3	Selected marker
2	**Axial** view	4	**Next** button

6. Scroll through the axial slices until the **Axial** slice view displays at least one fiducial marker.

7. Double click a fiducial marker in the **Axial** slice view.
   ▶ SICAT Function marks the fiducial marker.
8. Repeat the last step until up to three fiducial markers have been marked.
9. Click **Next**.
   ▶ SICAT Function registers the jaw motion tracking data.
   ▶ The **Check Result** step opens:



1 **Bite fork** view
2 **Axial** slice view
3 Coronal reference line
4 **Coronal** view
5 **Finish** button

10. Make sure that the fiducial markers on the **Bite fork** and in the **Axial** slice view match.
11. In the **Coronal** view, ensure that SICAT Function has correctly recognized the location of the bite fork. Move the coronal reference line in the **Axial** view or scroll through the slices in the **Coronal** view.
12. Click **Finish**.

▶ SICAT Function imports the registered jaw motion tracking data.

▶ The **Import and Register Jaw Motion Tracking Data** wizard closes.

▶ SICAT Function displays in the **Object browser** a **Jaw Motion Tracking Data** object. Information on this can be found in the section *SICAT Function objects [▶Page 69 - SIDEXIS 4]*.

In addition to the described process, the following actions are available in the **Import and Register Jaw Motion Tracking Data** assistant:

- If you are not satisfied with the most recently placed marker, you can click the **Delete last marker**" button.
- If the **Bite fork** is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat step **Select Markers** with markers in different positions if necessary.
- If you want to cancel importing and registering jaw motion data, click **Cancel**.

26 SEGMENTATION

⚠ **CAUTION**	**Excessive artifacts or the insufficient resolution of 3D X-ray scans may result in the failure of the segmentation process or lead to insufficient results. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.** Only use 3D X-ray scans that allow for a sufficient quality of segmentation of the relevant anatomical structures.

⚠ **CAUTION**	**Insufficient segmentation quality may result in an incorrect diagnosis and treatment.** Check that the segmentation quality is sufficient for the intended use.

To display the movement of the mandible, you have to define the border between the mandible and the background. This is called segmentation. You can use the **Mandible segmentation** assistant to segment both the mandible and the fossa of the patient. In SICAT Function, segmentation is a semi-automatic process.

Semi-automatic process means that you have to mark parts of the mandible and fossa manually using the drawing tools in the **Mandible segmentation** assistant. After a marking, the segmentation assistant will automatically mark similar areas.

The following actions are available to segment the mandible and fossa:

- *Segmenting the mandible [▶Page 125 - SIDEXIS 4]*
- *Segmenting the fossa [▶Page 127 - SIDEXIS 4]*

You can perform the following actions after segmenting the mandible:

- Visualizing and playing-back individual anatomical movements of the patient in the **3D** view. Information on this can be found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.
- Visualizing individual anatomical traces of the patient in the **3D** view. Information on this can be found in the section *Visualizing anatomical traces in the 3D view [▶Page 150 - SIDEXIS 4]*.
- Visualization of the moved temporomandibular joints in the **TMJ** workspace. Information on this can be found in the section *Functions in the TMJ workspace [▶Page 153 - SIDEXIS 4]*.

26.1 SEGMENTING THE MANDIBLE

> The **Segment Condyles and Mandible Region** assistant performs a precalculation of the segmentation each time it is started. The duration of the precalculation depends on the performance of your computer.

> The segmentation of SICAT Function works with areas instead of anatomical contours. For this reason, it is only rarely necessary to exactly trace the anatomical contours. Instead, mark contingous areas by drawing lines within the areas.

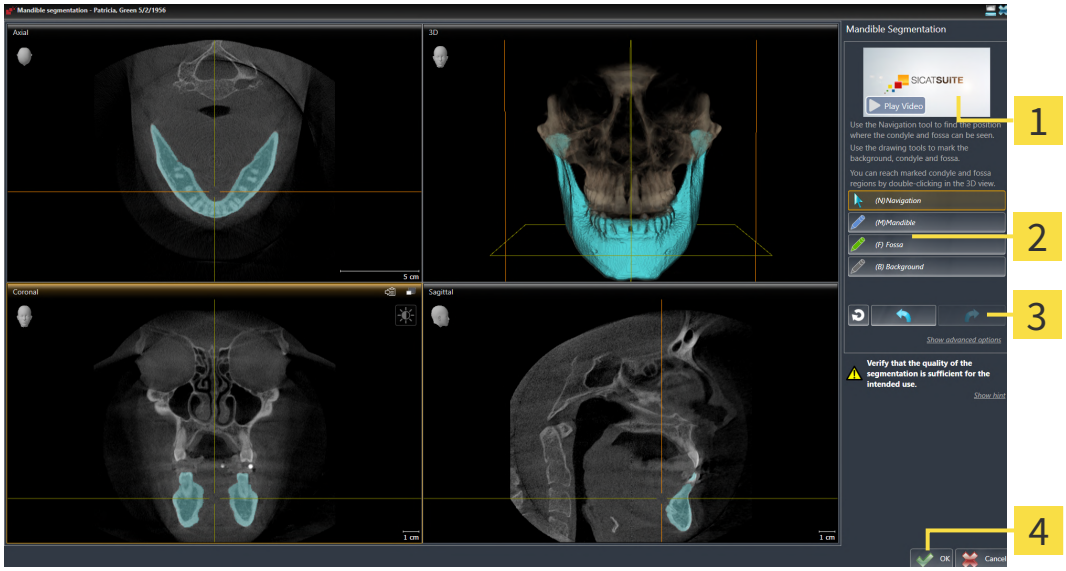
General information on segmentation can be found in the section *Segmentation [▶Page 124 - SIDEXIS 4]*.

To segment the mandible, proceed as follows:

☑ The **Diagnose** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 63 - SIDEXIS 4]*.

1. Click on the **Segment condyles and mandible region** icon.

   ▶ The **Mandible segmentation** wizard opens:



1	Example video	3	**Reset** button, **Undo** button and **Redo** button
2	**Drawing tools** area	4	**OK** button

   ▶ The **Mandible segmentation** wizard performs a precalculation of the segmentation.

2. Adjust the **Axial** view, **Coronal** view or **Sagittal** view so that the mandible and fossa are visible.

3. Click on the **Mandible** button.
4. Move the mouse pointer onto the mandible in the desired 2D slice view.

   ▶ The mouse pointer becomes a pen.

5. Click and hold the left mouse button.
6. Trace the inner region of the mandible with the mouse pointer.

   ▶ SICAT Function shows your marking as a blue line.

7. Release the left mouse button.

   ▶ SICAT Function segments the mandible using your marking.

8. If you want to add additional areas to the mandible, click on the **Navigation** icon, navigate within a 2D view to the structures you require and mark them as described above.

9. Click on the **OK** button if the segmentation meets your requirements.

▶ The **Mandible segmentation** wizard closes.

▶ SICAT Function displays in the **Object browser** a **Volume Regions** object. Information on this can be found in the section *SICAT Function objects [▶Page 69 - SIDEXIS 4]*.

▶ The **3D** view shows the results of the segmentation.

You can use the **Background** drawing tool to either mark areas as background or to correct large areas of semi-automatic segmentation.

You can also continue or improve the segmentation at a later time.

You can scroll through the 2D slice views by switching to **Navigation** mode.

In addition to the described process, the following actions are available in the **Segment Condyles and Mandible Region** window:

- There are special keyboard shortcuts in the **Segment Condyles and Mandible Region** window. Information on this can be found in the section *Keyboard shortcuts [▶Page 205 - SIDEXIS 4]*.
- If you double click on a position in the **3D** view that belongs to the segmented area, all 2D slice views will display the corresponding slice. In addition, SICAT Function will center the crosshairs on the position. Use this navigation tool to correct marks that have gone outside the intended area or to close holes, for example.
- If the segmentation does not match the anatomic characteristics, you can click on the **Undo** button.
- If you want to restore an action that you have undone, you can click on the **Redo** button.
- If you want to undo all work steps, you can click on the **Reset** button.
- In rare cases, the precalculation of the data record may not provide an optimal result. In such a case, you can click **Show advanced options** and deactivate the **Auto detect background** check box. After this, you can mark areas that do not belong to the mandibular bone or the fossa with at least one stroke using the **Background** drawing tool.
- If you want to cancel the segmentation of the condyles and mandibular area, you can click **Cancel**.

26.2 SEGMENTING THE FOSSA

Thanks to the introduction of the **TMJ** workspace, segmentation of the fossa is no longer mandatory in most cases. Use the **TMJ** workspace to assess the dynamic condlye-fossa relationship even without segmenting the fossa.

The **Segment Condyles and Mandible Region** assistant performs a precalculation of the segmentation each time it is started. The duration of the precalculation depends on the performance of your computer.

The segmentation of SICAT Function works with areas instead of anatomical contours. For this reason, it is only rarely necessary to exactly trace the anatomical contours. Instead, mark contingous areas by drawing lines within the areas.

General information on segmentation can be found in the section *Segmentation [▶Page 124 - SIDEXIS 4]*.

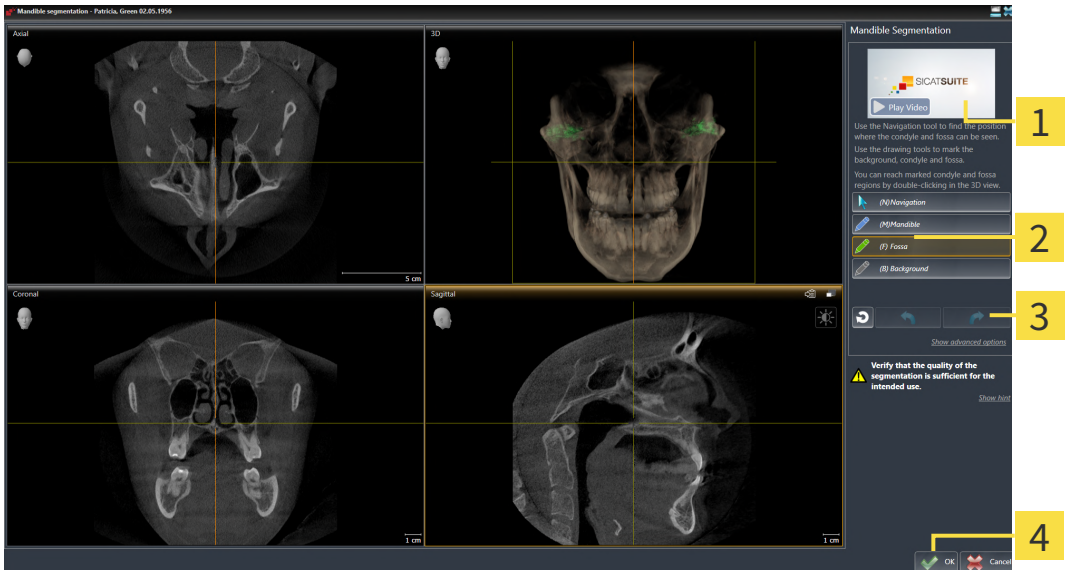
To segment the fossa, proceed as follows:

☑ The **Diagnose** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 63 - SIDEXIS 4]*.

☑ The CBCT scan includes the fossa.

1. Click on the **Segment condyles and mandible region** icon.

   ▶ The **Mandible segmentation** wizard opens:



1	Example video	3	**Reset** button, **Undo** button and **Redo** button
2	**Drawing tools** area	4	**OK** button

   ▶ The **Mandible segmentation** wizard performs a precalculation of the segmentation.

2. Adjust the **Axial** view, **Coronal** view or **Sagittal** view so that the mandible and fossa are visible.

3. Click on the **Fossa** button.

4. Move the mouse pointer onto the fossa in the 2D slice view you require.

   ▶ The mouse pointer becomes a pen.

5. Click and hold the left mouse button.
6. Trace the inner region of the fossa with the mouse pointer.
   ▶ SICAT Function shows your marking as a green line.
7. Release the left mouse button.
   ▶ SICAT Function segments the fossa using your marking.
8. If you want to add additional areas to the fossa, click on the **Navigation** icon, navigate within a 2D view to the desired structures and mark them as described above.
9. Click on the **OK** button if the segmentation meets your requirements.

▶ The **Mandible segmentation** wizard closes.

▶ SICAT Function displays in the **Object browser** a **Volume Regions** object. Information on this can be found in the section *SICAT Function objects [▶Page 69 - SIDEXIS 4]*.

▶ The **3D** view shows the results of the segmentation.

You can use the **Background** drawing tool to either mark areas as background or to correct large areas of semi-automatic segmentation.

You can also continue or improve the segmentation at a later time.

You can scroll through the 2D slice views by switching to **Navigation** mode.

In addition to the described process, the following actions are available in the **Segment Condyles and Mandible Region** window:

- There are special keyboard shortcuts in the **Segment Condyles and Mandible Region** window. Information on this can be found in the section *Keyboard shortcuts [▶Page 205 - SIDEXIS 4]*.
- If you double click on a position in the **3D** view that belongs to the segmented area, all 2D slice views will display the corresponding slice. In addition, SICAT Function will center the crosshairs on the position. Use this navigation tool to correct marks that have gone outside the intended area or to close holes, for example.
- If the segmentation does not match the anatomic characteristics, you can click on the **Undo** button.
- If you want to restore an action that you have undone, you can click on the **Redo** button.
- If you want to undo all work steps, you can click on the **Reset** button.
- In rare cases, the precalculation of the data record may not provide an optimal result. In such a case, you can click **Show advanced options** and deactivate the **Auto detect background** check box. After this, you can mark areas that do not belong to the mandibular bone or the fossa with at least one stroke using the **Background** drawing tool.
- If you want to cancel the segmentation of the condyles and mandibular area, you can click **Cancel**.

27 OPTICAL IMPRESSIONS

You can import and register optical impressions only for X-ray data that has been created by Dentsply Sirona 3D-X-ray devices.

SICAT Function can overlay (register) matching 3D X-ray data and optical impressions for the same patient. The overlaid representation provides additional information for planning and implementation. This allows you to implement the therapy based on optical impressions.

To use optical impressions, proceed as follows:

1. Import of optical impressions using the following import methods:
   - *Downloading optical impressions from the Hub [▶Page 132 - SIDEXIS 4]*
   - *Importing optical impressions from a file [▶Page 135 - SIDEXIS 4]*
   - *Transferring optical impressions from SIDEXIS 4 [▶Page 138 - SIDEXIS 4]*
   - *Re-using optical impressions from SICAT applications [▶Page 140 - SIDEXIS 4]*
2. Registration (overlay) of the optical impressions with 3D X-ray data: *Registering and checking optical impressions [▶Page 142 - SIDEXIS 4]*

Registration is not required if optical impressions from a SICAT application are reused.

SICAT Function supports the following data formats for optical impressions:

- SIXD data records that contain an optical impression of the maxilla and the mandible (each for the entire maxillary and mandibular arch). Use this format if you are using a CEREC system that supports the SIXD format.
- SSI data records that contain an optical impression of the maxilla and the mandible (each for the entire maxillary and mandibular arch). Use this format if you are using a CEREC system that does **not** support the SIXD format.
- STL data records* that contain an optical impression of the maxilla **or** the mandible (for the entire maxillary and mandibular arch, respectively). Use this format if you are using another CAD/CAM system that supports the STL format.

*You need an activated **SICAT Suite STL Import** license for STL data records. Additional steps must be observed when importing. Information on this can be found in the section *Additional steps for optical impressions in STL format [▶Page 137 - SIDEXIS 4]*.

Please note the following limitations with respect to optical impressions in STL data records:

- STL data records do not support buccal bite positions. There is no entry for the buccal relation in the **Active Jaw Relation** list in the **Active Jaw Relation**.
- You cannot export jaw motion tracking data on the basis of STL data records. If you click on the button **JMTXD Export** in the JMT area, SICAT Function shows a corresponding message.

The following actions are available for optical impressions:

- Activating, hiding and showing optical impressions: *Managing objects with the object browser [▶Page 66 - SIDEXIS 4]*
- Focusing on and removing optical impressions: *Managing objects with the object toolbar [▶Page 68 - SIDEXIS 4]*
- Setting the display of optical impressions in color: *Switching off and switching on the display of optical impressions in color [▶Page 105 - SIDEXIS 4]*

27.1 IMPORTING OPTICAL IMPRESSIONS

CAUTION

The use of other data as 3D X-ray scans as a lone source of information may result in an incorrect diagnosis and treatment.

1. Use 3D X-ray scans as a preferred source of information for diagnosis and planning.
2. Use other data, such as optical impressions, only as an auxiliary source of information.

CAUTION

Inappropriate optical impression devices could result in incorrect diagnosis and treatment.

Only use optical impression data from devices cleared as medical devices.

CAUTION

Optical impression data that does not match patient and date of 3D X-ray data could result in incorrect diagnosis and treatment.

Make sure the patient and date of the imported optical impression data match the patient and date of the visualized 3D X-ray data.

CAUTION

Insufficient integrity or quality of optical impressions may result in an incorrect diagnosis and treatment.

Check the integrity and quality of the optical impressions imported.

CAUTION

Insufficient integrity and precision of optical impressions may result in an incorrect diagnosis and treatment.

Only use optical impressions of a sufficient quality and precision for the intended diagnosis and treatment.

27.1.1 DOWNLOADING OPTICAL IMPRESSIONS FROM THE HUB

You can download optical impressions in SIXD format from the Hub and import them into SICAT Function.

☑ The connection to the Hub is established. Information on this can be found in the section *Viewing Hub connection status [▶Page 195 - SIDEXIS 4]*.

☑ The license for using the Hub is activated. Information on this can be found in the section *Licenses [▶Page 50 - SIDEXIS 4]*.

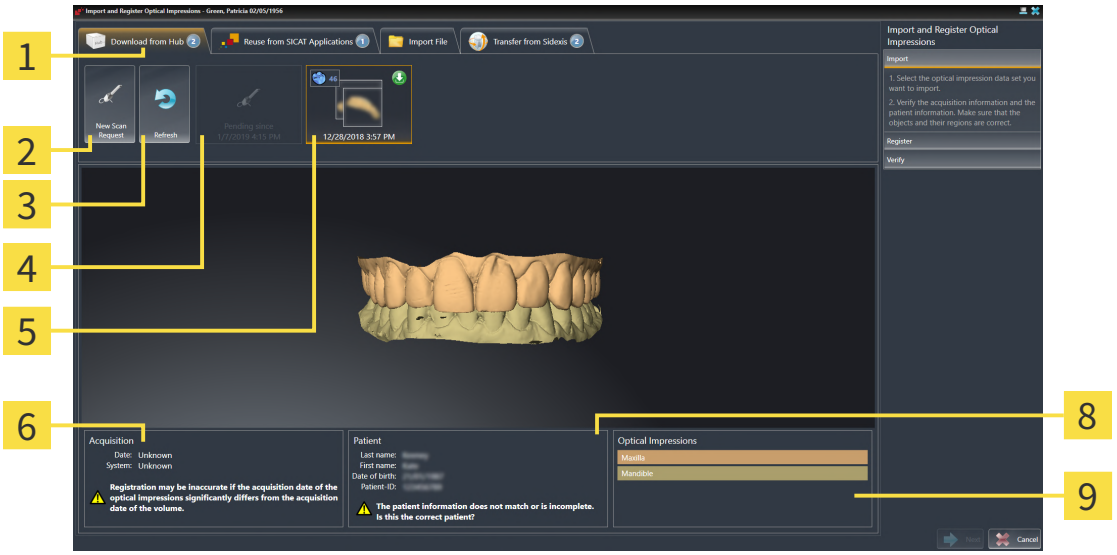
☑ The **Diagnose** workflow step is expanded.

1. Click on the **Import and Register Optical Impressions** icon.

   ▶ SICAT Function opens the **Import and Register Optical Impressions** wizard with the step **Import**.

2. Click on the **Download from Hub** tab.

   ▶ SICAT Function displays outstanding scan jobs and available optical impressions.



1	**Download from Hub** tab	5	Available optical impressions with status: not yet downloaded already downloaded
2	**New Scan Request** button	6	Scan information
3	**Refresh** button	7	Patient information
4	Scan request with status: pending not yet downloaded	8	**Optical Impressions** area

3. Click on the desired optical impressions.

   ▶ SICAT Function downloads the optical impressions if the impressions have not already been downloaded. After the impressions have been downloaded, SICAT Function displays the impressions in the **3D** view.

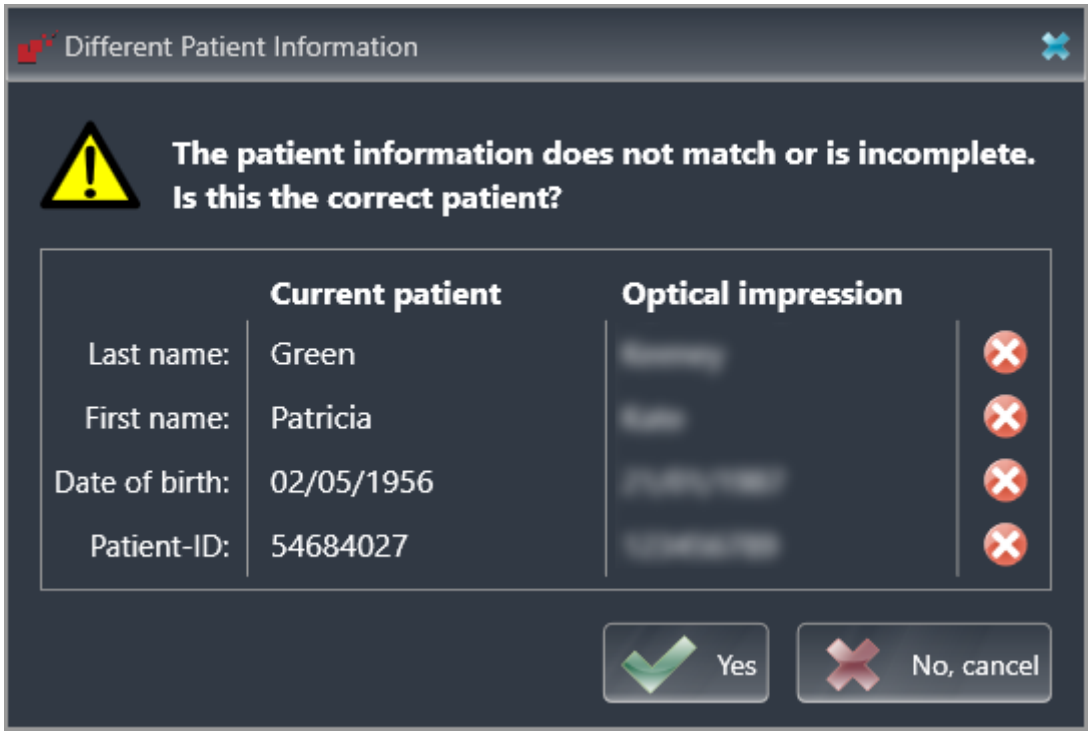
4. Check the selection for registration.

5. Check whether the scan information and patient information match.

6. Check the jaws in the **Optical Impressions** area.

7. Click **Next**.

   ▶ If the patient data in the 3D X-ray scan and in the optical impressions differ,SICAT Function will open the **Different Patient Information** window:



8. Compare the patient information. If you are sure that, despite different patient information, the optical impressions match the current patient, click on the **Yes** button.

   ▶ The **Register** step opens for the first optical impression: Follow the steps in section *Registering and checking optical impressions [▶Page 142 - SIDEXIS 4]*.

To enable you to check whether the 3D X-ray data and the optical impressions match, the **Import and Register Optical Impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

- If the desired optical impressions are not displayed, you can refresh the overview by clicking on the **Refresh** button. Or you can send a scan request for recording the optical impressions to the Hub. Information on this can be found in the section *Creating a scan request for an optical impression [▶Page 134 - SIDEXIS 4]*.
- In the default setting, the connection to the Hub is disconnected. Information on the connection status can be found in the section *Viewing Hub connection status [▶Page 195 - SIDEXIS 4]*.
- You can use the Hub if you have activated the corresponding license to use the Hub. Information on this can be found in the section *Licenses [▶Page 50 - SIDEXIS 4]*.

27.1.1.1 CREATING A SCAN REQUEST FOR AN OPTICAL IMPRESSION

You can send a request for scanning optical impressions to the Hub.

☑ SIDEXIS 4 has established the connection with the Hub. Information on this can be found in the section *Viewing Hub connection status [▶Page 195 - SIDEXIS 4]*.

☑ The license for using the Hub is activated. Information on this can be found in the section *Licenses [▶Page 50 - SIDEXIS 4]*.

☑ The **Diagnose** workflow step is already expanded.

1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** wizard opens with the **Import** step.

2. Click on the **Download from Hub** tab.
   ▶ SICAT Function displays outstanding scan jobs and available optical impressions.

3. Click on the **New Scan Request** icon.
   ▶ SICAT Function displays the **New Scan Request** window. You can now define specifications for the scan request.
4. Select a dentist.
5. If necessary, enter additional information such as scanning instructions.
6. To send the scan request to the Hub, click on **Create scan request** and confirm the query with OK.

▶ SICAT Function sends the scan request to the Hub and displays the pending scan request in the **Download from Hub** tab with the icon .

▶ You can edit the scan request in CEREC and take an optical impression in CEREC.

27.1.2 IMPORTING OPTICAL IMPRESSIONS FROM A FILE

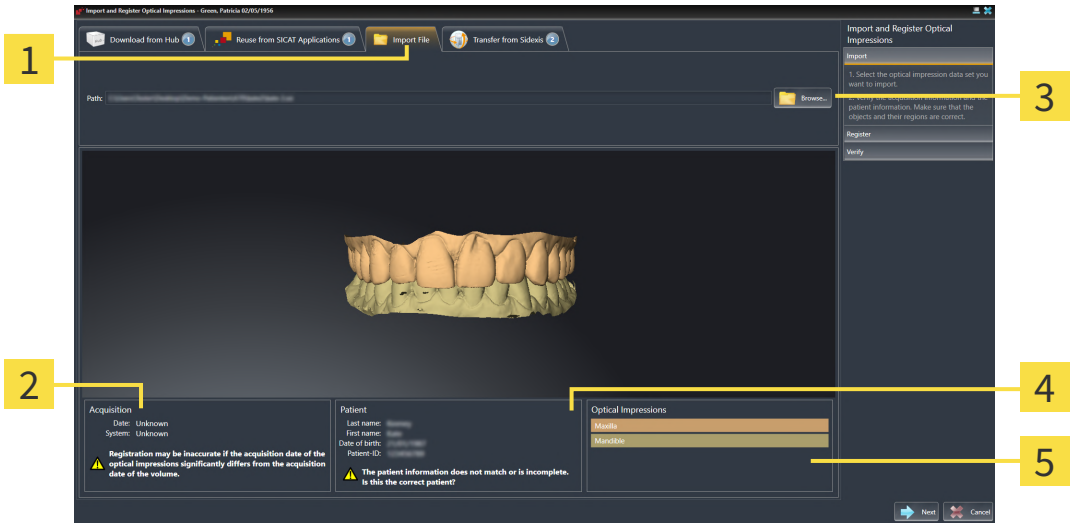
You can import one or more files with optical impressions.

Please note the following limitations with respect to optical impressions in STL data records:

- STL data records do not support buccal bite positions. There is no entry for the buccal relation in the **Active Jaw Relation** list in the **Active Jaw Relation**.
- You cannot export jaw motion tracking data on the basis of STL data records. If you click on the button **JMTXD Export** in the JMT area, SICAT Function shows a corresponding message.

☑ The **Diagnose** workflow step is expanded.

1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** wizard opens with the **Import** step.
2. Click on the **Import File** tab.



1 **Import File** tab

2 Scan information

3 **Browse** button

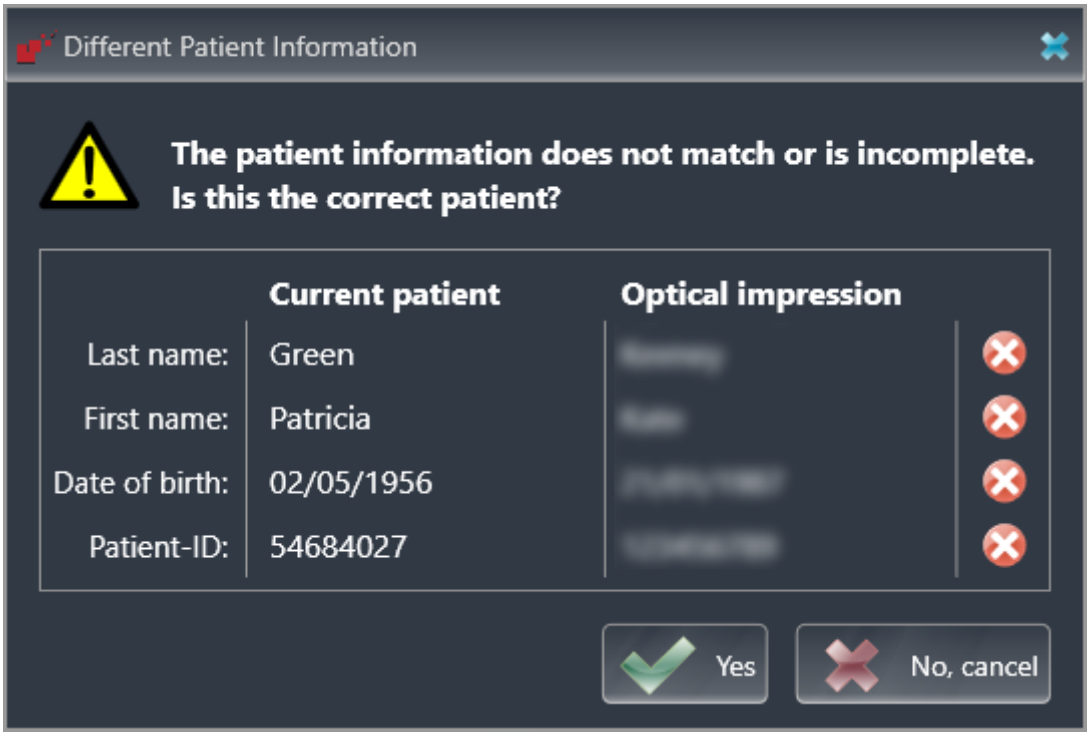
4 Patient information

5 **Optical Impressions** area

3. Click on the **Browse** button.
4. In the **Open Optical Impression File** window, switch to the desired file with the optical impressions file, select the file and click on **Open**.
   ▶ SICAT Function opens the selected file.
5. **Defining jaw assignment and orientation for STL file:** When you select an STL file with an optical impression of the maxilla or mandible, SICAT Function opens a window where you can adjust the assignment and orientation of the jaw. To do this, follow the steps in section *Additional steps for*

optical impressions in STL format [▶Page 137 - SIDEXIS 4].
Then, you can select another STL file with the maxilla or mandible that is still missing and adjust the assignment and orientation of the jaw. Then, continue with the next step.

6. Check the selection for registration.
7. Check the scan information and patient information.
8. Check the jaws in the **Optical Impressions** area.
9. Click **Next**.
   ▶ If the patient data in the 3D X-ray scan and in the optical impressions differ,SICAT Function will open the **Different Patient Information** window:



10. Compare the patient information. If you are sure that, despite different patient information, the optical impressions match the current patient, click on the **Yes** button.
    ▶ The **Register** step opens for the first optical impression: Follow the steps in section *Registering and checking optical impressions [▶Page 142 - SIDEXIS 4]*.

	To enable you to check whether the 3D X-ray data and the optical impressions match, the **Import and Register Optical Impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

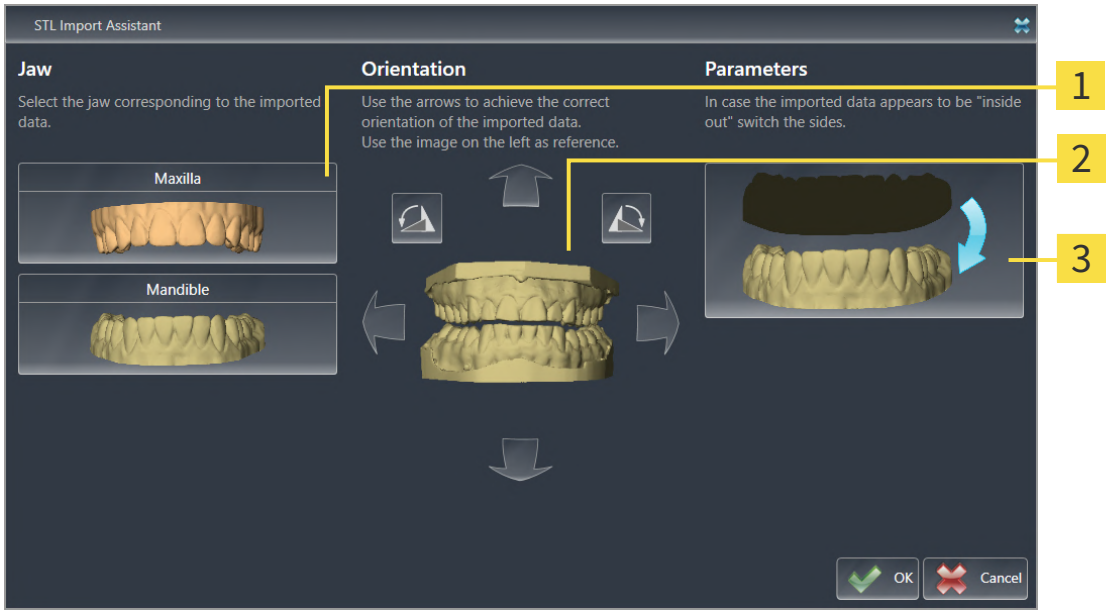
27.1.2.1 ADDITIONAL STEPS FOR OPTICAL IMPRESSIONS IN STL FORMAT

STL files do not contain information regarding the position and orientation of optical impressions. Therefore, you need to adjust position and orientation if required.

☑ You have already activated a **SICAT Suite STL import** license.

1. Open the optical impressions in a file in STL format. Information on this can be found in the section *Importing optical impressions from a file [▶Page 135 - SIDEXIS 4]*.

   ▶ The **STL import wizard** window opens:



1 Selection of the jaw

2 Changing the orientation

3 Switching inside and outside

2. In the **Jaw** area, select whether the optical impression contains the **Maxilla** or the **Mandible** by clicking on the corresponding symbol.

3. If required, change the orientation of the optical impressions for rough pre-positioning by clicking on the arrow symbols or the rotation symbols in the **Orientation** area.

4. If required, switch the inside and the outside of the optical impressions by clicking on the representation of the optical impression in the **Parameters** area.

5. Click on the **OK** button.

6. If required, repeat those steps for a second STL file. SICAT Function automatically attributes the second STL file to the other jaw.

   ▶ SICAT Function displays the imported optical impressions in the **Import and Register Optical Impressions** wizard.

7. Continue with the import of the optical impressions. Information on this can be found in the section *Importing optical impressions from a file [▶Page 135 - SIDEXIS 4]*.

27.1.3 TRANSFERRING OPTICAL IMPRESSIONS FROM SIDEXIS 4

You can transfer optical impressions in STL format that have been imported into SIDEXIS 4 and have already been used there from SIDEXIS 4 to SICAT Function.

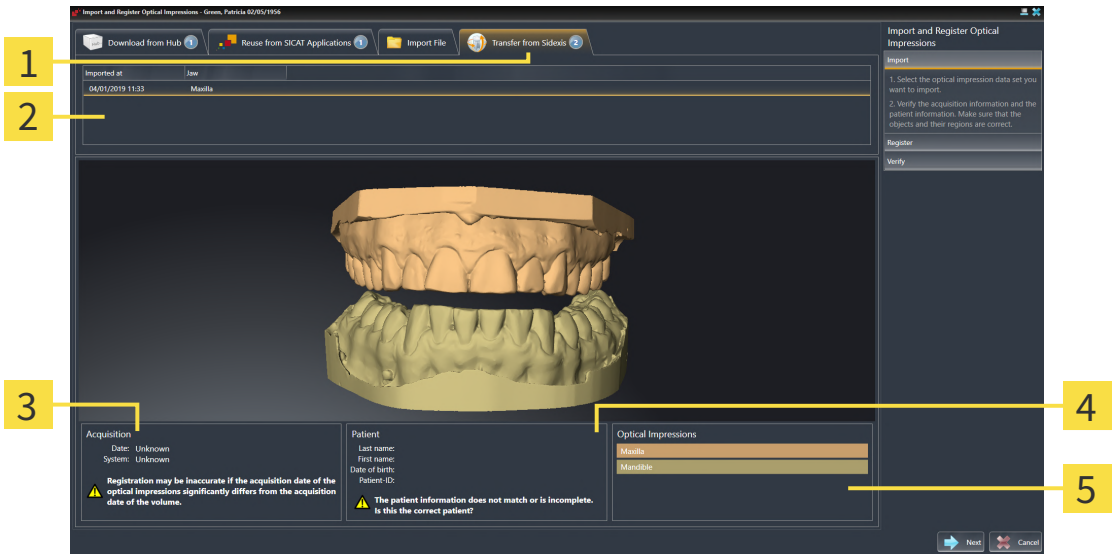
Please note the following limitations with respect to optical impressions in STL data records:

- STL data records do not support buccal bite positions. There is no entry for the buccal relation in the **Active Jaw Relation** list in the **Active Jaw Relation**.
- You cannot export jaw motion tracking data on the basis of STL data records. If you click on the button **JMTXD Export** in the JMT area, SICAT Function shows a corresponding message.

☑ You are already using two optical impressions of two jaws for the opened study in SIDEXIS 4 which you are not yet using in SICAT Function.

☑ The **Diagnose** workflow step is expanded.

1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** wizard opens with the **Import** step.
2. Click on the **Transfer from Sidexis** tab. The tab will only be displayed if at least one optical impression in SIDEXIS 4 is suitable for planning in SICAT Function.
3. In the upper area, click on the row with the optical impressions that you want to transfer.
   ▶ SICAT Function displays the optical impressions selected:



1 **Transfer from Sidexis** tab

2 List of optical impressions

3 Scan information

4 Patient information

5 **Optical Impressions** area

4. Check the selection for registration.
5. Check the scan information and patient information.

6. Check the jaws in the **Optical Impressions** area.

7. Click **Next**.

   ▶ The **Register** step opens for the first optical impression: Follow the steps in section *Registering and checking optical impressions [▶Page 142 - SIDEXIS 4]*.

To enable you to check whether the 3D X-ray data and the optical impressions match, the **Import and Register Optical Impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

27.1.4 RE-USING OPTICAL IMPRESSIONS FROM SICAT APPLICATIONS

You can re-use optical impressions from a SICAT application.

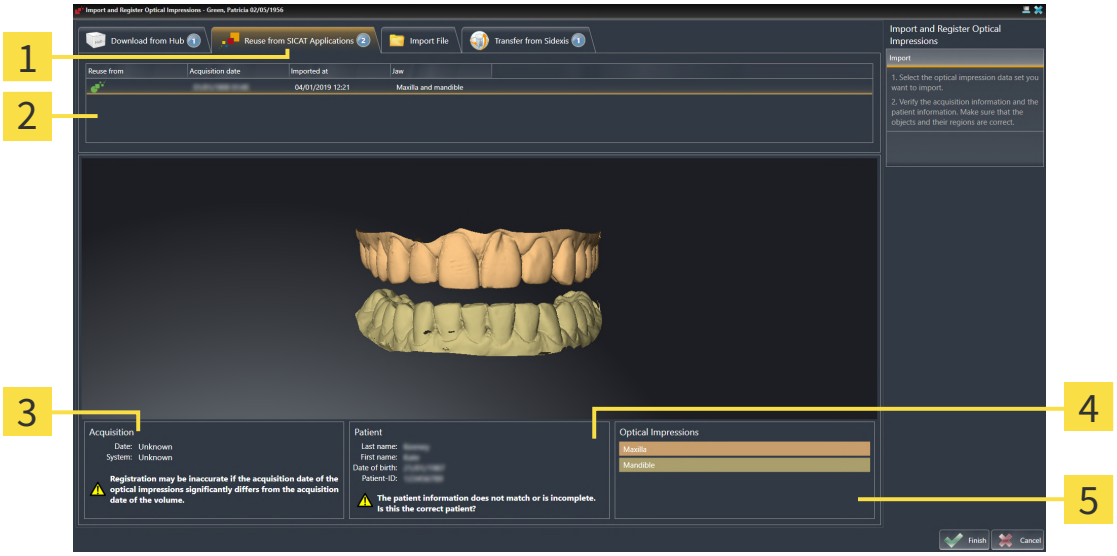
Please note the following limitations with respect to optical impressions in STL data records:

- STL data records do not support buccal bite positions. There is no entry for the buccal relation in the **Active Jaw Relation** list in the **Active Jaw Relation**.
- You cannot export jaw motion tracking data on the basis of STL data records. If you click on the button **JMTXD Export** in the JMT area, SICAT Function shows a corresponding message.

☑ You have already imported suitable optical impressions for the opened study in a SICAT application, which you have not yet used in SICAT Function.

☑ The **Diagnose** workflow step is expanded.

1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** wizard opens with the **Import** step.
2. Click on the **Reuse from SICAT Applications** tab.
3. In the upper area, click on the row with the optical impressions that you want to re-use.
   ▶ SICAT Function displays the optical impressions selected:



1 **Reuse from SICAT Applications** tab

2 List of re-usable optical impressions

3 Scan information

4 Patient information

5 **Optical Impressions** area

4. Check the scan information and patient information.
5. Check the jaws in the **Optical Impressions** area.

6. Click on the **Finish** button.

▶ SICAT Function closes the **Import and Register Optical Impressions** wizard.

▶ SICAT Function adds the selected optical impressions to the **Object browser**.

▶ SICAT Function displays the optical impressions selected.

To enable you to check whether the 3D X-ray data and the optical impressions match, the **Import and Register Optical Impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

27.2 REGISTERING AND CHECKING OPTICAL IMPRESSIONS

⚠ **CAUTION**	**The incorrect registration of optical impressions for 3D X-ray scans may result in an incorrect diagnosis and treatment.** Check that the registered optical impressions are correctly aligned to the 3D X-ray scans.

⚠ **CAUTION**	**Excessive artifacts, insufficient resolution or the lack of points for registration may mean that the registration process for optical impressions fails. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.** Only use optical impression data and 3D X-ray data that allow for an adequate registration.

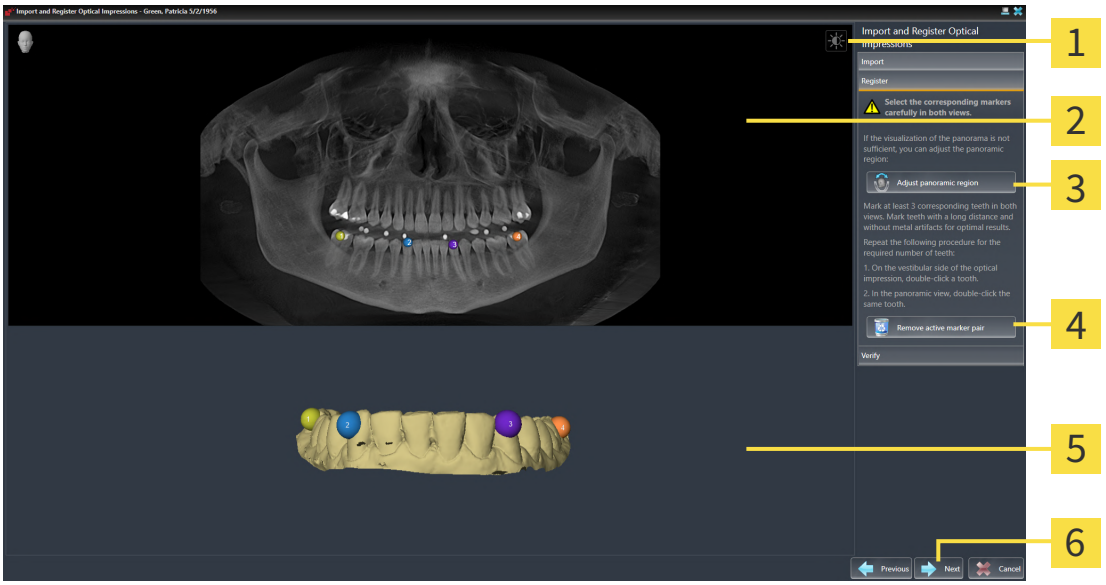
⚠ **CAUTION**	**The selection of markings in the registration process for optical impressions that do not correspond to one another may result in an incorrect diagnosis and treatment.** When you register optical impressions, carefully select corresponding markings in the 3D X-ray scans and optical impressions.

ℹ	You can use the **Inspection Window** to check whether an optical impression is precisely aligned to the X-ray data. You can move the **Inspection Window** and scroll through the slices in the **Inspection Window**.

ℹ	Optical impressions in color are automatically displayed in color in the **Import** step in the 3D preview. However, in the steps **Register** and **Verify** optical impressions in color are displayed in one color so that you can recognize the shape and geometry more exactly.

To register and check optical impressions, proceed as follows:

☑ The **Import and Register Optical Impressions** wizard is open at the **Register** step.



1 **Adjust brightness and contrast** icon	4 **Remove active marker pair** button
2 **Panorama** view	5 **3D** view which shows the first optical impression
3 **Adjust panoramic region** button	6 **Next** button

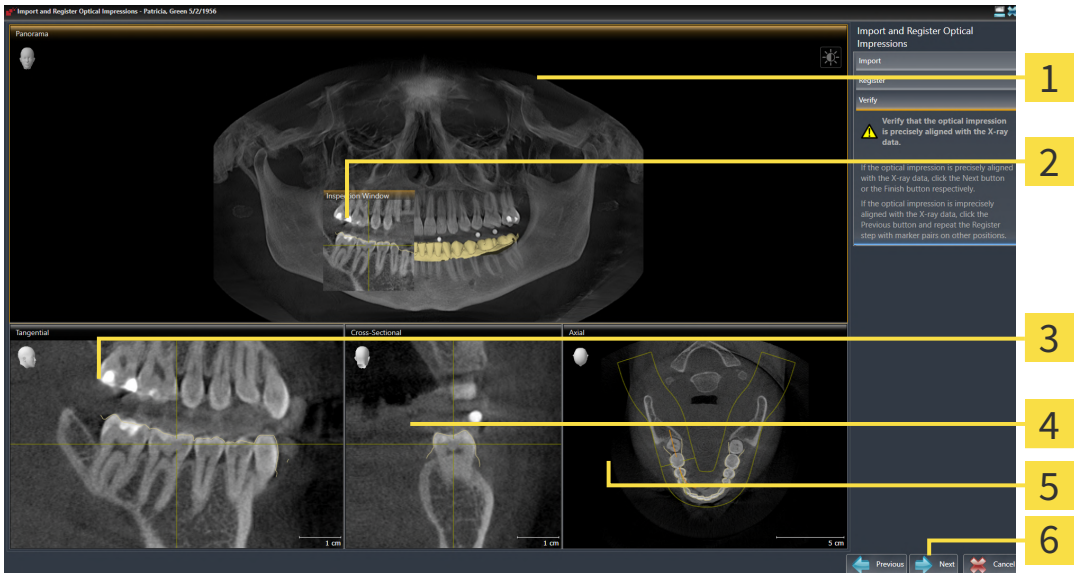
1. Double click the same tooth both in the **Panorama** view and on the vestibular side of the optical impression in the **3D** view. Make sure that the distance between individual teeth is as large as possible and mark only teeth without metal artifacts. Repeat this step until you have marked at least **three** matching teeth in both views.

   ▶ Markings with different colors and numbers in both views will display corresponding teeth in the optical impression.

2. Click **Next**.

   ▶ SICAT Function calculates the registration of the optical impression with the X-ray data.

▶ The **Verify** step opens:



1 **Panorama** view	4 **Cross-Sectional** view
2 **Inspection Window**	5 **Axial** view
3 **Tangential** view	6 **Finish** button

3. In the 2D views, check whether the optical impression is precisely aligned with the X-ray data. **In every slice view**, scroll through the slices and check the contours shown.
4. If the optical impression is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat the **Register** step with marker pairs in different positions if necessary.
5. If the first optical impression is precisely aligned to the X-ray data, click on the **Next** button. Repeat the previous steps for the second optical impression.
6. If the second optical impression is precisely aligned to the X-ray data, click on the **Finish** button.

▶ SICAT Function closes the **Import and Register Optical Impressions** wizard.

▶ SICAT Function adds the selected optical impressions to the **Object browser**.

▶ SICAT Function displays the registered optical impressions .

In addition to the described process, the following actions are available in the **Import and Register Optical Impressions** wizard:

- You can adjust the brightness and contrast of a 2D image by clicking the **Adjust brightness and contrast** icon. Information on this can be found in the section *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 85 - SIDEXIS 4]*.
- You can adjust the panoramic area by clicking the **Adjust panoramic region** icon. Information on this can be found in the section *Adjusting the panoramic region [▶Page 114 - SIDEXIS 4]*.
- If you wish to remove a specific marker pair in the **Register** step, you can select a marker from the pair in both views via mouse click and click on the **Remove active marker pair** button.
- If you want to cancel importing and registering optical impressions, click **Cancel**.

28 ANATOMICAL ARTICULATION

SICAT Function visualizes the anatomical articulation of a patient by matching the software the 3D X-ray data with motion data from a digital measurement device for jaw motion records. This is known as anatomical articulation. After the segmentation of the mandible you can track all of the patient's movements up to the temporomandibular joints.

SICAT Function requires the following data for anatomical articulation:

- Segmented 3D X-ray data – Information on this can be found in the section *Segmentation [▶Page 124 - SIDEXIS 4]*.
- Registered jaw motion tracking data – Information on this can be found in the section *Jaw motion tracking data [▶Page 117 - SIDEXIS 4]*.

SICAT Function can use optical impressions as additional sources of information. For example, you can use optical impressions to analyze the jaw motion of a patient before the terminal occlusion. Information on this can be found in the section *Optical impressions [▶Page 129 - SIDEXIS 4]*.

You can perform a diagnosis regarding the individual mandible movements of a patient with these tools:

- **Active Jaw Relation** - Information on this can be found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*. You can use the Play button in the **Active Jaw Relation** to playback the individual movement of a patient's mandible in the **3D** view. In addition, you can use a button in the **Active Jaw Relation** to export jaw motion tracking data.
- **3D** view- Information on this can be found in the section *Adjusting the 3D view [▶Page 95 - SIDEXIS 4]*.
- **Inspection Window** - Information on this can be found in the section *Moving, hiding, showing and maximizing the inspection window [▶Page 90 - SIDEXIS 4]*.

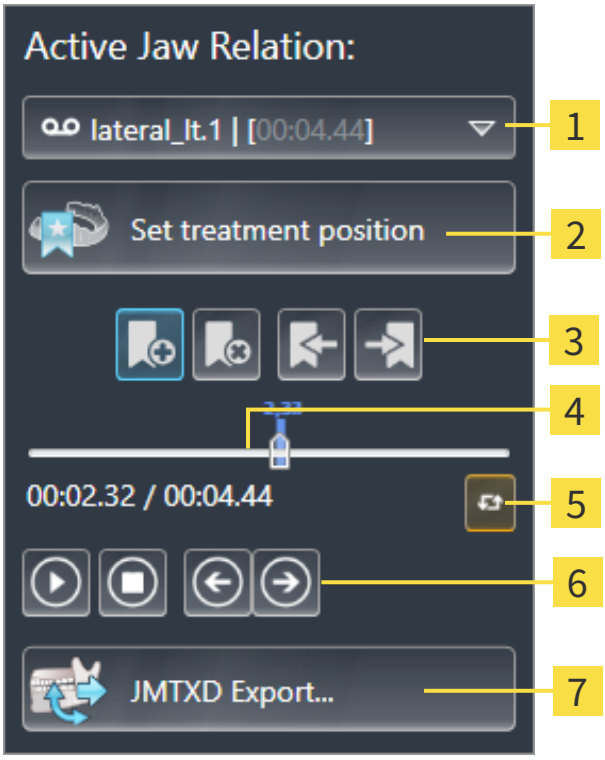
To perform a diagnosis of individual movements of a patient's mandible, you can place the crosshair by double clicking the selected position on the mandible in a 2D slice view. SICAT Function will then show the corresponding anatomical trace at the selected position in the **3D** view. Information on this can be found in the section *Moving, hiding and showing crosshairs and frames [▶Page 89 - SIDEXIS 4]*.

Alternatively, you can place the **Inspection Window** on the selected position on the mandible. Information on this can be found in the section *Visualizing anatomical traces in the 3D view [▶Page 150 - SIDEXIS 4]*.

In the **3D** view, SICAT Function will use different colors to show whether the selected position is on or outside the segmented mandible. For further information about this see *Adjusting anatomical traces using the inspection window [▶Page 151 - SIDEXIS 4]* and *Adjusting anatomical traces using the crosshair in a slice view [▶Page 152 - SIDEXIS 4]*.

28.1 INTERACTING WITH JAW MOTION

SICAT Function includes the **Active Jaw Relation** to manage jaw motion:



1 **Active Jaw Relation** list

2 **Set treatment position** button

3 Bookmark button

4 Time line with slider

5 **Switch play mode** icon

6 Play button

7 **JMTXD Export** button

You can carry out the following actions in the **Active Jaw Relation**:

- Selecting static jaw relations or jaw motion
- Interacting with jaw motion.
- Managing bookmarks.
- Defining a treatment position. Information on this can be found in the section *Defining a treatment position [▶Page 176 - SIDEXIS 4]*.
- Exporting jaw motion tracking data.

SELECTING JAW RELATIONS OR JAW MOTION

To select a **Static jaw relation** or **Dynamic jaw relation**, proceed as follows:

1. Click on the **Active Jaw Relation** list.
   ▶ The **Active Jaw Relation** list opens.
2. Select the desired **Static jaw relation** or **Dynamic jaw relation**.

▶ The **Active Jaw Relation** list closes.

▶ The **Active Jaw Relation** shows the designation of the selected jaw relation.

▶ The **3D** view shows the selected jaw relation.

INTERACTING WITH JAW MOTION

To interact with jaw motion, proceed as follows:

☑ Jaw motion tracking data has already been imported. Information on this can be found in the section *Importing and registering jaw motion data [▶Page 119 - SIDEXIS 4]*.

1. Click on the **Start** icon to start the playback.

2. Click on the **Stop** icon to stop the playback.

3. Click on the **Skip forward** icon to jump one frame forwards.

4. Click on the **Skip backward** icon to jump one frame backwards.

5. Click on the **Switch play mode** icon to switch between single and continuous playback mode.
6. To manually change the position on the time line, click on the slider in the JMT area, move the mouse and release the left mouse button at the desired position.

MANAGING BOOKMARKS IN THE JMT AREA

To manage bookmarks in the JMT area, proceed as follows:

1. To add a bookmark at the current position on the time line, click the **Add bookmark** icon.

2. To delete a bookmark at the current position on the time line, click the **Delete bookmark** icon.

3. To move the slide controller to the position of the next bookmark, click the **Skip to next bookmark** icon.

4. To move the slide controller to the position of the previous bookmark, click the **Skip to previous bookmark** icon.

You cannot delete a bookmark in the following cases:

- You have defined a bookmark as the treatment position, for which there is an order in the shopping cart. To delete the bookmark, complete the order or delete the order.
- You have selected a bookmark as an active jaw relation. To delete the bookmark, select the corresponding trace of movement or static jaw relation and click the **Skip to next bookmark** icon.

EXPORTING JAW MOTION TRACKING DATA

To export jaw motion tracking data, proceed as follows:

☑ You have already imported and registered jaw motion tracking data.

☑ You have already imported and registered optical impressions of both jaws.

1. Click on the **JMTXD Export** button.

   ▶ A Windows Explorer window opens.

2. Select a target folder and change the file name if required.

3. Click on the **Save** button.

▶ SICAT Function closes the Windows Explorer window.

▶ SICAT Function exports the jaw motion tracking data and the optical impressions to the selected file (JMTXD file format, compatible from CEREC 4.4 and from InLab15).

You can export jaw motion data anonymously if you activate anonymization beforehand in the settings.

28.2 VISUALIZING ANATOMICAL TRACES IN THE 3D VIEW

Anatomical traces show the spatial path of motion of an individual point in the mandible. They resemble the illustration of conventional axis-based condylography systems. The point, the trace of movement of which is shown, is called the trace point. You can freely choose trace points in SICAT Function. You can select the individual movements of a patient in the JMT area and perform a diagnosis in the **3D** view. General information on the JMT area can be found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.

To show anatomical traces in the **3D** view, perform the following steps.

- Register the jaw motion tracking data with the 3D X-ray data – Information on this can be found in the section *Jaw motion tracking data [▶Page 117 - SIDEXIS 4]*.
- Segment the 3D X-ray data – Information on this can be found in the section *Segmentation [▶Page 124 - SIDEXIS 4]*.

After you have imported the jaw motion data and segmented the 3D X-ray data, the **3D** view will initially show the original relations of the 3D X-ray scan. When you select a recorded motion, the **3D** view will show anatomical traces.

SICAT Function marks the position of the anatomical traces using different colors:

- If the anatomical traces are on the patient's mandible, SICAT Function will mark them in green.
- If the anatomical traces are not on the patient's mandible, SICAT Function will mark them in red.

You can place the anatomical traces on the patient's mandible. For further information about this see *Adjusting anatomical traces using the inspection window [▶Page 151 - SIDEXIS 4]* and *Adjusting anatomical traces using the crosshair in a slice view [▶Page 152 - SIDEXIS 4]*.

You can select a display mode for the **3D** view and adjust it according to your needs. Information on this can be found in the section *Adjusting the 3D view [▶Page 95 - SIDEXIS 4]*.

You can display a combination of three different trace points. Information on this can be found in the section *Using the Bonwill triangle [▶Page 156 - SIDEXIS 4]*.

You can show and hide the segmentation boundary. Information on this can be found in the section *Displaying the segmentation boundary [▶Page 157 - SIDEXIS 4]*.

You can display the condyle-aligned movement. Information on this can be found in the section *Displaying condyle-aligned movement [▶Page 158 - SIDEXIS 4]*.

28.3 ADJUSTING ANATOMICAL TRACES USING THE INSPECTION WINDOW

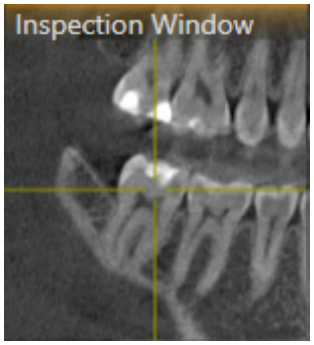
To use the **Inspection Window** to analyze individual movements of the patient on all points of the mandible, proceed as follows:

☑ The **Panorama** workspace is already active. Information on this can be found in the section *Switching workspaces [▶Page 77 - SIDEXIS 4]*.

☑ The **Panorama** view is already active. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

☑ The **Inspection Window** is already shown. Information on this can be found in the section *Moving, hiding, showing and maximizing the inspection window [▶Page 90 - SIDEXIS 4]*.

- Move the **Inspection Window** to the desired anatomical region:



▶ SICAT Function updates the position of the anatomical traces in the **3D** view according to the **Inspection Window** position. The current trace point is located in the crosshair of the inspection window.

▶ The anatomical traces are located at the new position.

If the trace point is outside the patient's mandible, you can position the anatomical traces on the patient's mandible. Information on this can be found in the section *Adjusting anatomical traces using the crosshair in a slice view [▶Page 152 - SIDEXIS 4]*.

To move the **Inspection Window** immediately to the desired anatomical region, you can also double click the desired position in the **Panorama** view.

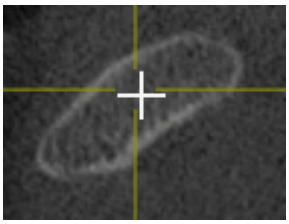
28.4 ADJUSTING ANATOMICAL TRACES USING THE CROSSHAIR IN A SLICE VIEW

To use the crosshair to analyze individual movements of the patient on all points of the mandible, proceed as follows:

☑ The crosshairs are currently shown in the 2D slice views. Information on this can be found in the section *Moving, hiding and showing crosshairs and frames [▶Page 89 - SIDEXIS 4]*.

1. Activate the desired 2D slice view. Information on this can be found in the section *Changing the active view [▶Page 83 - SIDEXIS 4]*.

2. Move the crosshair to the desired anatomical region. Information on this can be found in the section *Moving, hiding and showing crosshairs and frames [▶Page 89 - SIDEXIS 4]*.



▶ SICAT Function updates the position of the anatomical traces in the **3D** view to the position of the crosshair.

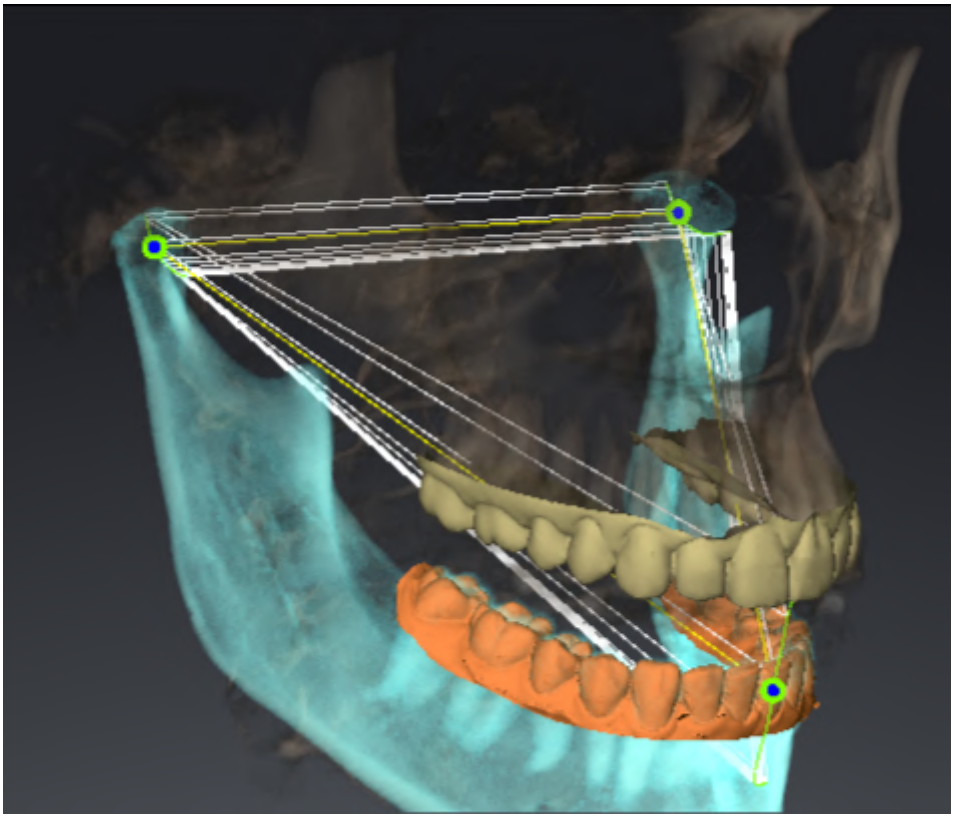
In the **3D** view, SICAT Function labels the anatomical traces red if you select a position outside the patient's mandible.

To immediately move the crosshair to the position of the mouse pointer, you can also double click in a 2D view.

29 FUNCTIONS IN THE TMJ WORKSPACE

The **TMJ** workspace helps you in diagnosing and planning the treatment of craniomandibular dysfunctions. Depending on the CBCT scan, you can compare the left and right temporomandibular joints in terms of morphology and movement in the **TMJ** workspace.

In the **TMJ** workspace, you can display three different anatomical traces simultaneously for each movement:



- Trace for the left condyle
- Trace for the right condyle
- Trace for a point on the occlusion, for example the interincisal point

You can move the trace points for the left and right condyles in the slice views of the **TMJ** workspace. Information on this can be found in the section *Moving trace points [▶Page 154 - SIDEXIS 4]*.

In the **3D** view, you can set the trace point for the interincisal point by double clicking. Information on this can be found in the section *Setting the interincisal point [▶Page 155 - SIDEXIS 4]*.

There are additional options in the **TMJ** workspace to perform a diagnosis on the individual anatomical articulation of a patient. For further information see *Displaying the segmentation boundary [▶Page 157 - SIDEXIS 4]*, *Displaying condyle-aligned movement [▶Page 158 - SIDEXIS 4]* and *Using the Bonwill triangle [▶Page 156 - SIDEXIS 4]*. You can also use the Bonwill triangle to read articulator values. Information on this can be found in the section *Articulator values [▶Page 159 - SIDEXIS 4]*.

29.1 MOVING TRACE POINTS

SICAT Function shows traces of corresponding trace points in the left and right condyles simultaneously. You can use the traces to compare the entire movement of the joints with one another.

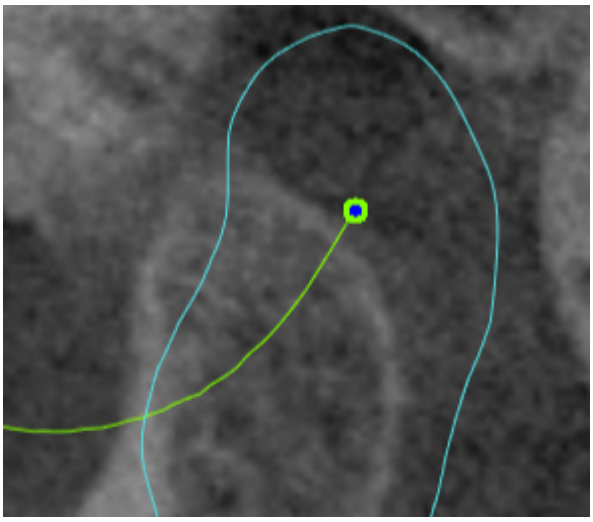
To move the trace points for the left and right condyles in the slice views, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 153 - SIDEXIS 4]* and *Overview of the TMJ workspace [▶Page 74 - SIDEXIS 4]*.

☑ You have already selected a dynamic jaw relation.

1. Place the mouse pointer on the desired trace point.
2. Click and hold the left mouse button.
3. Place the mouse pointer on the desired position of the trace point.
4. Release the left mouse button.

   ▶ SICAT Function moves the trace point for the left and right condyle in the slice views to the selected position:



29.2 SETTING THE INTERINCISAL POINT

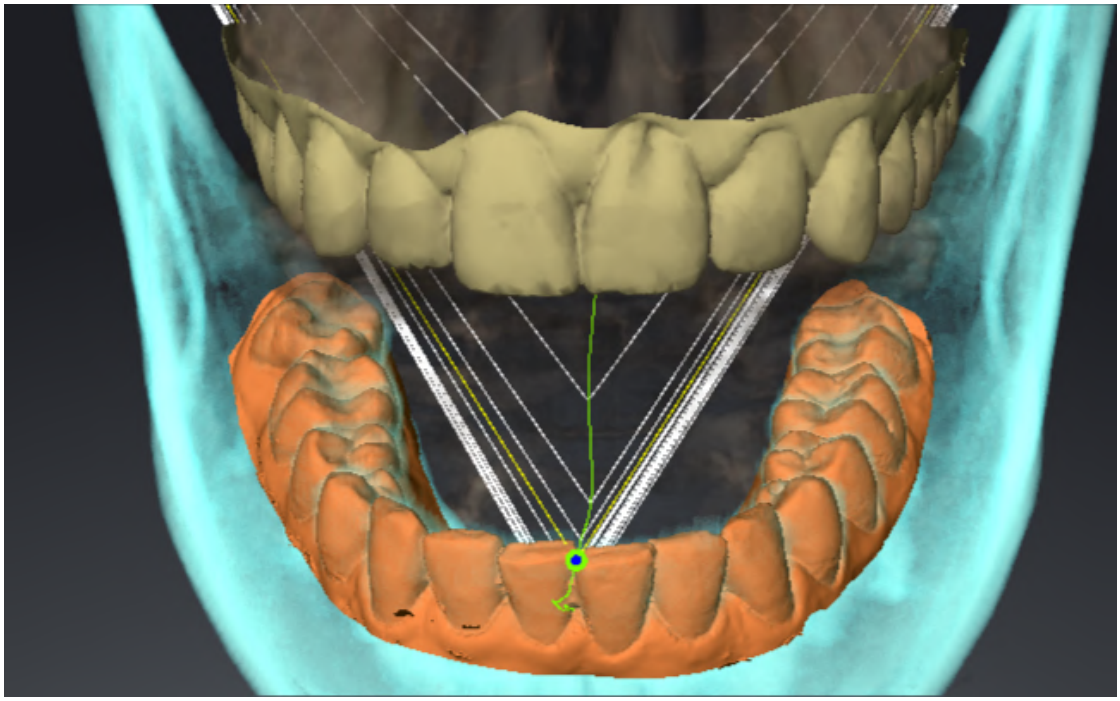
To set the trace point for the interincisal point in the **3D** view, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 153 - SIDEXIS 4]* and *Overview of the TMJ workspace [▶Page 74 - SIDEXIS 4]*.

☑ You have already selected a dynamic jaw relation.

- Move the mouse pointer to the desired position in the **3D** view and double click the left mouse button.

▶ SICAT Function uses the selected position on the digital dental impressions as a trace point:



Using the frontal view on the interincisal point you can identify and more closely observe lateral movements of the lower jaw.

29.3 USING THE BONWILL TRIANGLE

DISPLAYING THE BONWILL TRIANGLE

The SICAT Function uses the **Bonwill triangle** to show the connection of the three trace points. This way, you can identify asymmetries and jumps in the movement more easily.

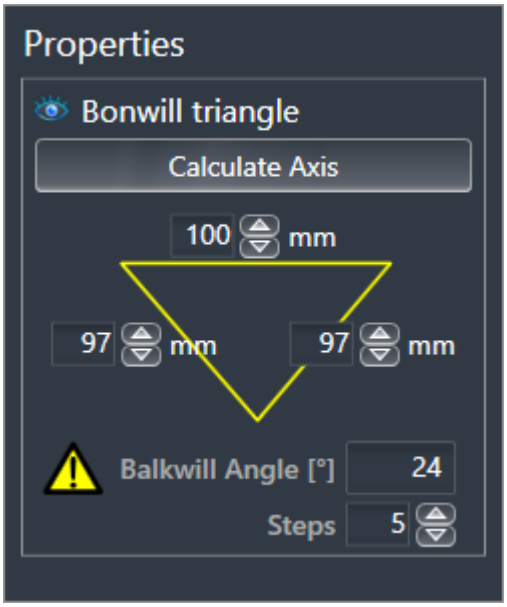
To display the **Bonwill triangle**, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 153 - SIDEXIS 4]* and *Overview of the TMJ workspace [▶Page 74 - SIDEXIS 4]*.

☑ You have already selected a dynamic jaw relation.

- Click on **Jaw Motion Tracking Data** in the **Object browser**.

▶ SICAT Function shows the **Bonwill triangle** under **Properties**:



CONFIGURING THE BONWILL TRIANGLE

To set the step width of the Bonwill triangle, proceed as follows:

1. Click on **Jaw Motion Tracking Data** in the **Object browser**.
2. Click on one of the arrow buttons next to the **Steps** in the **Properties** area.

▶ SICAT Function changes the value of the **Steps** field.

▶ The **3D** view shows the selected step width of the Bonwill triangle.

Set the step width so that you can identify possible asymmetries in the movement well.

29.4 DISPLAYING THE SEGMENTATION BOUNDARY

If you display the segmentation boundary, you can compare the quality of segmentation with the 3D X-ray scans. If the segmentation boundary differs from the 3D X-ray scans, you can correct the segmentation in the **Segment Condyles and Mandible Region** window.

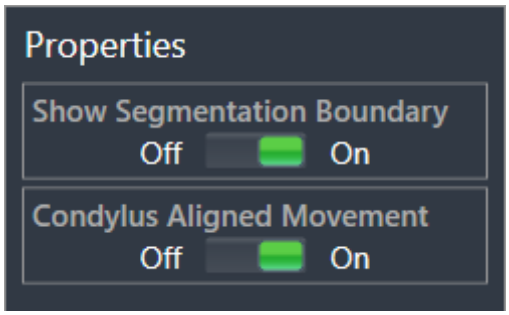
The blue contour shows the position of the condyles given the current movement. This means that the blue contour is typically not congruent with the 3D X-ray scans and is not suitable for checking the segmentation quality. Use the yellow contour instead for checking the segmentation boundary.

To display the segmentation boundary, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 153 - SIDEXIS 4]* and *Overview of the TMJ workspace [▶Page 74 - SIDEXIS 4]*.

☑ You have already selected a dynamic jaw relation or a static jaw relation.

1. Click on **Volume Regions** in the **Object browser**.
   ▶ SICAT Function shows the **Show Segmentation Boundary** option under **Properties**:



2. Move the slide controller for the **Show Segmentation Boundary** option to the **On** position.
   ▶ The 2D views show the segmentation boundary as a yellow contour.

SICAT Function marks the segmented position of the articulation using different colors:

- SICAT Function marks the condyles in motion at the segmented position in blue.
- SICAT Function shows the original segmentation of the 3D X-ray scans using a control line. SICAT Function marks the control line in yellow.

29.5 DISPLAYING CONDYLE-ALIGNED MOVEMENT

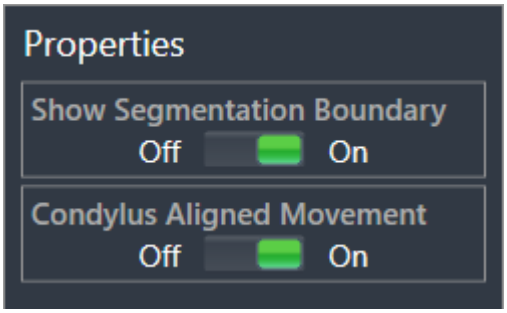
When both condyles are captured in the 3D X-ray scan, you can use the condyle aligned movement to display moving condyles in relation to the fossa. If the condyle-aligned movement is activated, all points of the condyle are visible in the slice views of the **TMJ** workspace during the entire movement. If the condyle-aligned movement is deactivated, all points of the fossa are visible in the slice views of the **TMJ** workspace during the entire movement.

To display the condyle-aligned movement, proceed as follows:

☑ You have already opened the **TMJ** workspace. General information on the **TMJ** workspace can be found in the section *Functions in the TMJ workspace [▶Page 153 - SIDEXIS 4]* and *Overview of the TMJ workspace [▶Page 74 - SIDEXIS 4]*.

☑ You have already selected a dynamic jaw relation or a static jaw relation.

1. Click on **Volume Regions** in the **Object browser**.
   ▶ SICAT Function shows the **Condylus Aligned Movement** option under **Properties**:



2. Move the slide controller for the **Condylus Aligned Movement** option to the **On** position.
   ▶ The **3D** view shows the condyle-aligned movement.

30 ARTICULATOR VALUES

CAUTION

Incorrect volume orientations and incorrect determination of the incisal point may result in an incorrect diagnosis and treatment.

1. Make sure that the 3D X-ray scan is oriented in such a way that the occlusal plane of the maxilla is parallel to the axial slices.
2. Make sure that you have selected a jaw relation in which the patient's teeth are in occlusion so that the occlusal planes of the maxilla and mandible are aligned.
3. Make sure that the incisal point in the software is located over the anatomically correct incisal point between the lower central incisors.

CAUTION

An insufficiently accurate definition of the Bonwill triangle may result in an incorrect diagnosis and treatment.

1. Make sure that you have defined the Bonwill triangle according to the correct anatomic landmarks.
2. Make sure that the definition of the Bonwill triangle is suitable for the intended use.

CAUTION

The use of unsuitable jaw motion tracking data may cause an incorrect calculation of the hinge axis.

Only use a guided opening movement or a guided closing movement to calculate the hinge axis.

SICAT Function helps you to determine individual articulator values for each patient. You can construct and create individual prosthetic restorations by applying the values to an articulator. Currently, parameter determination is optimized for articulators using the occlusal plane as reference plane.

On example of an articulator using the occlusal plane as reference plane, is the virtual articulator of the CEREC software (Dentsply Sirona). Information on how to program the CEREC articulator with the individual values can be found in the CEREC instructions for use.

NECESSARY JAW MOTION RECORDING

You can determine most articulator values by means of jaw motion recordings. You need jaw motion records of a specific type to determine the values:

ARTICULATOR VALUE	REQUIRED JAW MOTION RECORDING
Sagittal condylar path inclination of the left and right temporomandibular joints.	Protrusion
Left and right Bennett angle and left and right immediate side shift	Left and right laterotrusion
Hinge axis	Guided opening movement or guided closing movement

VALUES FOR THE CEREC ARTICULATOR

You can use SICAT Function to determine the following values for the CEREC articulator:

CEREC ARTICULATOR PARAMETERS	DESCRIPTION
Arms	The arms are the distances from the left or right condyle to the incisal point between the lower central incisors. SICAT Function shows the length of the arms directly on the Bonwill triangle.
Base	The base is the distance between the left and the right condyles (intercondylar distance). SICAT Function shows the length of the base directly on the Bonwill triangle.
Balkwill angle	The Balkwill angle is the angle between the occlusal plane and the Bonwill triangle. SICAT Function shows the Balkwill angle directly on the Bonwill triangle.
Left and right sagittal condylar path inclination	The sagittal condylar path inclination is the angle between the protrusion trace of the left or right condyle and the occlusal plane. You can measure this angle in the sagittal views of the **TMJ** workspace using a protrusion trace. Make sure that the 3D X-ray data is oriented horizontally to the occlusal plane of the maxilla. Please observe the safety warning regarding volume orientation. Measure the angle between the protrusion trace of the left and right temporomandibular joint and the horizontal plane.
Left and right Bennet angle	The Bennett angle is the angle between the protrusion movement and the laterotrusion. You can measure this angle in the axial views of the **TMJ**-workspace using a laterotrusion on the left side and on the right side. Make sure that the 3D X-ray scans are oriented horizontally to the occlusal plane of the maxilla. Please observe the safety warning regarding volume orientation. Measure the angle between the laterotrusion trace and the sagittal plane.
Left and right immediate side shift	

VISIBILITY OF THE CONDYLES IN THE 3D X-RAY SCAN

You can determine the articulator values mainly by means of jaw motion recordings. Only the intercondylar distance (“base” length of the Bonwill triangle in the CEREC articulator) cannot be determined from the jaw motion tracking data alone.

If the temporomandibular joints are not visible in the 3D X-ray scan, you can calculate the position of the “base” arm of the Bonwill triangle using the hinge axis. You can determine the hinge axis based on a guided opening movement or closing movement. It is crucial that the mandible performs a rotary movement and does not shift forwards.

If both condyles are included in the 3D X-ray scan, you can determine the intercondylar distance based on the 3D X-ray scan. Please refer to the following table to see which jaw motion tracking data you need for each articulator value.

	CONDYLES ARE VISIBLE IN THE 3D X-RAY SCANS	CONDYLES ARE NOT VISIBLE IN THE 3D X-RAY SCANS
Cause	■ You have used an X-ray apparatus with a large field of view (FOV) for the 3D X-ray scan.	You have used an X-ray apparatus with a small field of view (FOV) for the 3D X-ray scan. You have made a 3D X-ray scan of a plaster model.
Consequence	In the 3D X-ray scan, the left trace point and the right trace point can be placed at the condyles.	In the 3D X-ray scan, the left trace point and the right trace point cannot be placed at the condyles.
Steps required	Place the left trace point and the right trace point in the slice views of the **TMJ** workspace. Use the position of the condyles in the 3D X-ray scan for orientation.	To calculate the hinge axis, a recording of guided opening movement or a guided closing movement is required. A guided opening movement or closing movement means that the patient opens his or her jaws by a few millimeters and closes them again and you manipulate the condyles using the Lauritzen manipulation or the Dawson manipulation to prevent the mandible from moving forwards. SICAT Function places the left trace point and the right trace point in such a way that both trace points will automatically be on the hinge axis of the temporomandibular joints.

THE BONWILL TRIANGLE IN SICAT FUNCTION

The Bonwill triangle in SICAT Function helps you to determine the following articulator values:

- Left and right arms [mm]
- Base [mm]
- Balkwill angle [°]

However, this requires that the three corners of the Bonwill triangle have been correctly placed:

- Left trace point
- Right trace point
- Incisal point

In the **TMJ** workspace, in the **3D** view, you can place the incisal point by double clicking on the anatomically correct point. Placement both of the left trace point and the right trace point differs depending on whether or not the condyles are visible in the 3D X-ray scan.

Information on how to read the articulator values can be found in the section *Reading articulator values if condyles are visible [▶Page 163 - SIDEXIS 4]* or in the section *Reading articulator values if condyles are not visible [▶Page 165 - SIDEXIS 4]*.

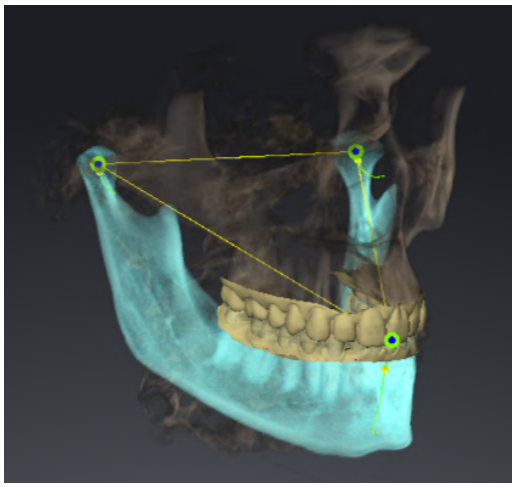
30.1 READING ARTICULATOR VALUES IF CONDYLES ARE VISIBLE

ADJUSTING THE BONWILL TRIANGLE IF CONDYLES ARE VISIBLE

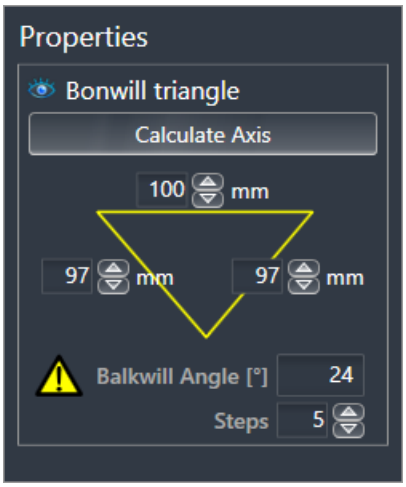
Use the slice views in the **TMJ** workspace for the following steps:

1. Click on the left trace point or the right trace point, hold the left mouse button and place the trace point in the corresponding condyle.

2. Place the incisal point between the incisors of the mandible by double clicking at the anatomically correct position. If you cannot see an incisal point between the incisors of the mandible, select an opening movement and open the jaws a little. Information on how to select a specific position within a jaw motion recording, can be found in the section *Interacting with jaw motion* *[▶Page 147 - SIDEXIS 4]*.



The screenshot shows a 3D X-ray scan with a large field of view (FOV) in which a Bonwill triangle is aligned with respect to the patient's anatomy. The condyles are visible. The left trace point and the right trace point are placed in the center of the visible condyles. The incisal point in SICAT Function is placed between the central incisors of the mandible.



SICAT Function displays the length of the arms of the Bonwill triangle in mm. You can directly write down the values for the articulator. SICAT Function also shows the Balkwill angle. The Balkwill angle only applies to closed jaws and if the occlusal plane is horizontally aligned.

DETERMINING THE ARTICULATOR VALUES IF CONDYLES ARE VISIBLE

To determine the articulator values, proceed as follows:

☑ You have oriented the 3D X-ray scan in such a way that the occlusal plane of the maxilla is horizontally aligned and the jaws are aligned as symmetrically as possible with respect to the median sagittal plane. These correct alignments are necessary so that you will be able to correctly register the data and apply them to the articulator. Information on this can be found in the section *Adjusting volume orientation and panoramic region [▶Page 106 - SIDEXIS 4]*.

☑ You have already imported jaw motion tracking data. Information on this can be found in the section *Jaw motion tracking data [▶Page 117 - SIDEXIS 4]*.

☑ The **TMJ** workspace is already open. Information on this can be found in the section *Overview of the TMJ workspace [▶Page 74 - SIDEXIS 4]*.

☑ You have already selected a dynamic jaw relation in the **Active Jaw Relation** list. Information on this can be found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.

1. In the **Object browser**, select the **Jaw Motion Tracking Data** object.

   ▶ SICAT Function will show the Bonwill triangle in the **Properties** area.

2. In the **3D** view, set the incisal point between the lower central incisors by double clicking on the segmented mandible or the optical impressions at the anatomically correct position. If the incisal point of the incisors of the mandible is concealed, open the jaws by playing back the movement until the incisors of the mandible are visible. Place the incisal point by double clicking and close the jaws again.

3. Set the left trace point and the right trace point in the center of the condyles by moving the trace points in the coronal, sagittal and axial views.

4. Write down the base value, the Balkwill angle and the values for the lengths of the arms. Please note that, depending on the articulator used, only one arm value can be entered.

5. During the selected protrusion movement, select a point in time when the jaws are closed. Information on how to select a specific position within a jaw motion recording, can be found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.

6. Ensure that the rows of teeth are closed.

7. In the sagittal views, use the **Add angle measurement (A)** tool to measure the sagittal condylar path inclination in the left temporomandibular joint and in the right temporomandibular joint Write down the values.

8. Select laterotrusion to the left. In the axial views, use the **Add angle measurement (A)** tool to measure the Bennett angle in the right temporomandibular joint Write down the value.

9. If available, measure the immediate side shift in the right temporomandibular joint. Write down the value.

10. Select laterotrusion to the right. In the axial views, use the **Add angle measurement (A)** tool to measure the Bennett angle in the left temporomandibular joint Write down the value.

11. If available, measure the immediate side shift in the left temporomandibular joint. Write down the value.

30.2 READING ARTICULATOR VALUES IF CONDYLES ARE NOT VISIBLE

ADJUSTING THE BONWILL TRIANGLE IF CONDYLES ARE NOT VISIBLE

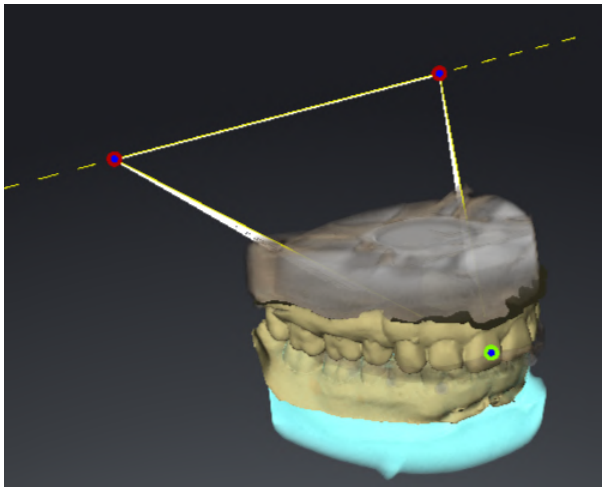
Proceed as follows:

1. From the **Active Jaw Relation** list, select a guided opening movement or guided closing movement.

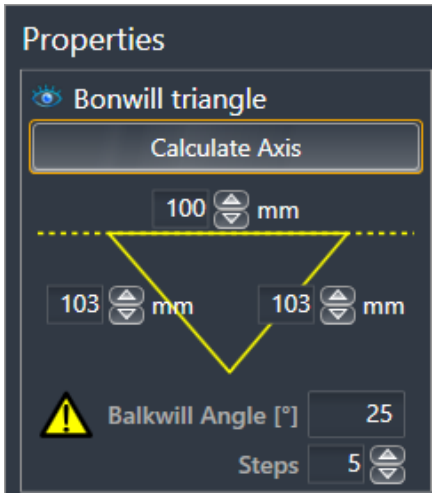
2. Click on the **Calculate Axis** button.

► SICAT Function shows the calculated axis as dashed line in the**3D** view. SICAT Function automatically places the left trace point and the right trace point in such a way that both trace points are positioned on the calculated hinge axis in the **TMJ** workspace.

► If you select the **Jaw Motion Tracking Data** object in the **Object browser**, SICAT Function shows the calculated axis in the **Properties** area.



The screenshot shows an example of a plaster model scan in which the condyles are not visible. The hinge axis was determined using a guided opening movement. The dashed line indicates the calculated axis. SICAT Function automatically placed the left trace point and the right trace point in such a way that both trace points are positioned on the calculated axis. The incisal point in SICAT Function is placed between the central incisors of the mandible.



SICAT Function displays the length of the arms of the Bonwill triangle in mm. You can directly write down the values for the articulator. SICAT Function also shows the Balkwill angle. The Balkwill angle only applies to closed jaws and if the occlusal plane is horizontally aligned.

DETERMINING THE ARTICULATOR VALUES IF CONDYLES ARE NOT VISIBLE

To determine the articulator values, proceed as follows:

☑ You have oriented the 3D X-ray scan in such a way that the occlusal plane of the maxilla is horizontally aligned and the jaws are aligned as symmetrically as possible with respect to the median sagittal plane. These correct alignments are necessary so that you will be able to correctly register the data and apply them to the articulator. Information on this can be found in the section *Adjusting volume orientation and panoramic region [▶Page 106 - SIDEXIS 4]*.

☑ You have already imported jaw motion tracking data. Information on this can be found in the section *Jaw motion tracking data [▶Page 117 - SIDEXIS 4]*.

☑ The **TMJ** workspace is already open. Information on this can be found in the section *Overview of the TMJ workspace [▶Page 74 - SIDEXIS 4]*.

☑ You have already selected a dynamic jaw relation in the **Active Jaw Relation** list. Information on this can be found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.

1. In the **Object browser**, select the **Jaw Motion Tracking Data** object.

   ▶ SICAT Function will show the Bonwill triangle in the **Properties** area.

2. In the **3D** view, set the incisal point between the lower central incisors by double clicking on the segmented mandible or the optical impressions at the anatomically correct position. If the incisal point of the incisors of the mandible is concealed, open the jaws by playing back the movement until the incisors of the mandible are visible. Place the incisal point by double clicking and close the jaws again.

3. From the **Active Jaw Relation** list, select a guided opening movement or a guided closing movement.

4. Click on the **Calculate Axis** button in the **Properties** area. If required, set the length of the basis to the average value of 100 mm.

5. In the **Object browser**, select the **Jaw Motion Tracking Data** object.

   ▶ SICAT Function shows the values of the base, arms and Balkwill angle in the **Properties** area.

6. Write down the base value, the Balkwill angle and the values for the lengths of the arms. Please note that, depending on the articulator used, only one arm value can be entered.

7. Select a protrusion movement. During the protrusion movement, select a point in time when the jaws are closed. Information on how to select a specific position within a jaw motion recording, can be found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.

8. Ensure that the rows of teeth are closed.

9. In the sagittal views, use the **Add angle measurement (A)** tool to measure the sagittal condylar path inclination in the left temporomandibular joint and in the right temporomandibular joint Write down the values.

10. Select laterotrusion to the left. In the axial views, use the **Add angle measurement (A)** tool to measure the Bennett angle in the right temporomandibular joint Write down the value.

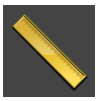
11. If available, measure the immediate side shift in the right temporomandibular joint. Write down the value.

12. Select laterotrusion to the right. In the axial views, use the **Add angle measurement (A)** tool to measure the Bennett angle in the left temporomandibular joint Write down the value.

13. If available, measure the immediate side shift in the left temporomandibular joint. Write down the value.

31 DISTANCE AND ANGLE MEASUREMENTS

SICAT Function features two different types of measurement:



- Distance measurements

- Angle measurements

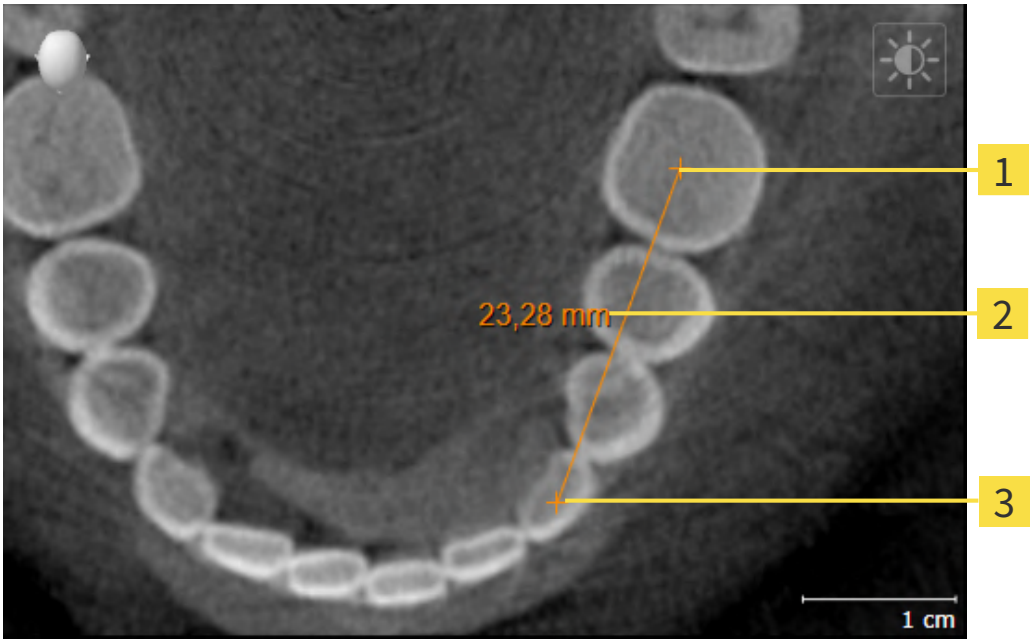
The tools to add measurements are available in the **Diagnose** step of the **Workflow toolbar**. You can add measurements in all 2D slice views. Every time you add a measurement, SICAT Function will also add it to the **Measurements** group in the **Object browser**.

You cannot add measurement objects in the **Inspection Window**.

The following actions are available for measurements:

- *Adding distance measurements [▶Page 169 - SIDEXIS 4]*
- *Adding angle measurements [▶Page 170 - SIDEXIS 4]*
- *Moving measurements, individual measuring points and measured values [▶Page 172 - SIDEXIS 4]*
- Activating, hiding and showing measurements - Information on this can be found in the section *Managing objects with the object browser [▶Page 66 - SIDEXIS 4]*.
- Focusing on measurements, removing measurements and undoing and redoing measurement actions – Information on this can be found in the section *Managing objects with the object toolbar [▶Page 68 - SIDEXIS 4]*.

31.1 ADDING DISTANCE MEASUREMENTS



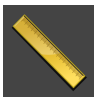
1 Starting point

2 Measured value

3 End point

To add a distance measurement, proceed as follows:

☑ The **Diagnose** workflow step is already expanded.

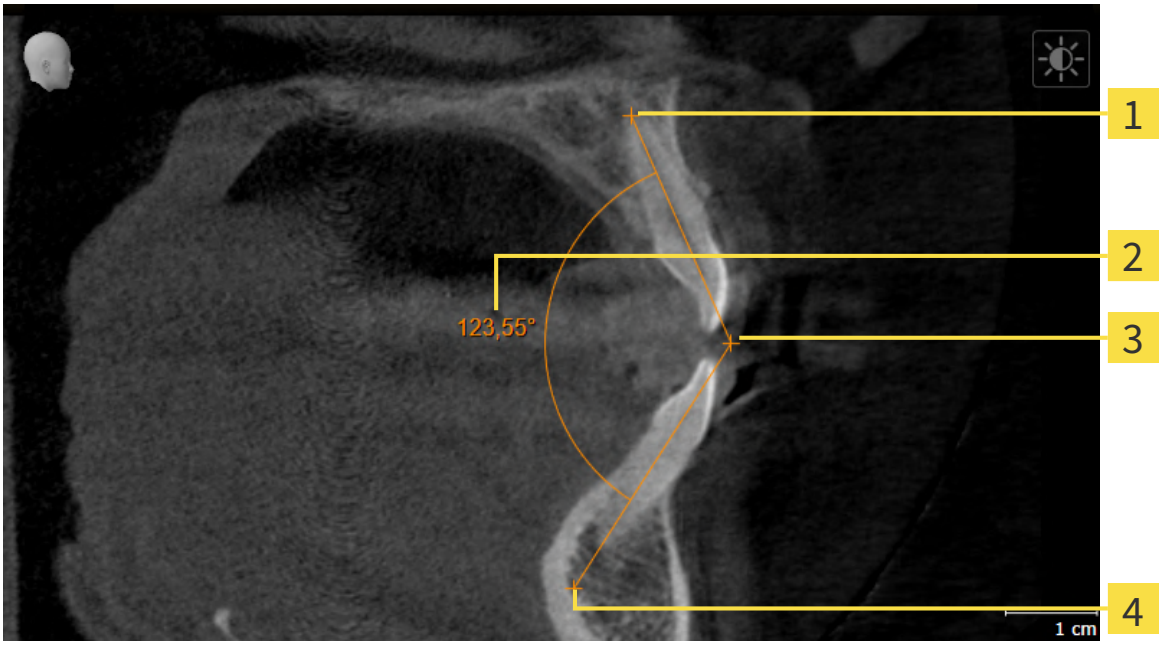


1. In the **Diagnose** workflow step, click the **Add distance measurement (D)** icon.
   ▶ SICAT Function adds a new distance measurement to the **Object browser**.
2. Move the mouse pointer over the desired 2D slice view.
   ▶ The mouse pointer becomes a cross.
3. Click on the starting point of the distance measurement.
   ▶ SICAT Function illustrates the starting point using a small cross.
   ▶ SICAT Function shows a distance line between the starting point and the mouse pointer.
   ▶ SICAT Function shows the current distance between the starting point and the mouse pointer in the middle of the distance line and in the **Object browser**.
4. Move the mouse pointer to the end point of the distance measurement and left-click.

▶ SICAT Function illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

31.2 ADDING ANGLE MEASUREMENTS



1 Starting point

2 Measured value

3 Vertex

4 End point

To add an angle measurement, proceed as follows:

☑ The **Diagnose** workflow step is already expanded.

1. In the **Diagnose** workflow step, click the **Add angle measurement (A)** icon.
   ▶ SICAT Function adds a new angle measurement to the **Object browser**.
2. Move the mouse pointer over the desired 2D slice view.
   ▶ The mouse pointer becomes a cross.
3. Click on the starting point of the angle measurement.
   ▶ SICAT Function illustrates the starting point using a small cross.
   ▶ SICAT Function shows the first arm of the angle measurement by means of a line from the starting point to the mouse pointer.
4. Move the mouse pointer to the vertex of the angle measurement and left-click.
   ▶ SICAT Function illustrates the vertex using a small cross.
   ▶ SICAT Function shows the second arm of the angle measurement by a line from the vertex to the mouse pointer.
   ▶ SICAT Function shows the current angle between both arms of the angle measurement and in the **Object browser**.

5. Move the mouse pointer to the end point of the second arm and left-click.

► SICAT Function illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

31.3 MOVING MEASUREMENTS, INDIVIDUAL MEASURING POINTS AND MEASURED VALUES

MOVING MEASUREMENTS

To move a measurement, proceed as follows:

☑ SICAT Function shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 66 - SIDEXIS 4]* and *Managing objects with the object toolbar [▶Page 68 - SIDEXIS 4]*.

1. Place the mouse pointer on one of the measurement lines.
   ▶ The mouse pointer becomes a cross.
2. Click and hold the left mouse button.
3. Place the mouse pointer on the desired position of the measurement.
   ▶ The measurement tracks the movement of the mouse pointer.
4. Release the left mouse button.

▶ SICAT Function maintains the current position of the measurement.

MOVING INDIVIDUAL MEASURING POINTS

To move an individual measuring point, proceed as follows:

☑ SICAT Function shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 66 - SIDEXIS 4]* and *Managing objects with the object toolbar [▶Page 68 - SIDEXIS 4]*.

1. Place the mouse pointer on the desired measuring point.
   ▶ The mouse pointer becomes a cross.
2. Click and hold the left mouse button.
3. Place the mouse pointer on the desired position of the measuring point.
   ▶ The measuring point tracks the movement of the mouse pointer.
   ▶ The measured value changes as you move the mouse.
4. Release the left mouse button.

▶ SICAT Function maintains the current position of the measuring point.

MOVING MEASURED VALUES

To move a measured value, proceed as follows:

☑ SICAT Function shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 66 - SIDEXIS 4]* and *Managing objects with the object toolbar [▶Page 68 - SIDEXIS 4]*.

1. Place the mouse pointer on the desired measured value.
   ▶ The mouse pointer becomes a cross.
2. Click and hold the left mouse button.
3. Place the mouse pointer on the desired position of the measured value.
   ▶ The measured value tracks the movement of the mouse pointer.
   ▶ SICAT Function shows a dotted line between the measured value and the corresponding measurement.
4. Release the left mouse button.

▶ SICAT Function maintains the current position of the measured value.

After you have moved the value of a measurement, the SICAT Function will define the value at an absolute position. To position the value again relative to the measurement, double click on the value.

32 DATA EXPORT

You can export data.

If SICAT Suite runs as a SIDEXIS 4 module, please use the corresponding SIDEXIS 4 functions for the data export. For more information, please refer to the SIDEXIS 4 installation instructions.

33 ORDERING PROCESS

To order the desired product, proceed as follows:

- Define a treatment position in SICAT Function and place the desired planning data for therapeutic appliances in the shopping cart. For further information about this see *Defining a treatment position [▶Page 176 - SIDEXIS 4]* and *Placing therapeutic appliances in the shopping cart [▶Page 177 - SIDEXIS 4]*.
- Check the shopping cart and start the order. Information on this can be found in the section *Checking the shopping cart and completing the order [▶Page 181 - SIDEXIS 4]*.
- Complete the order either directly on the computer on which SICAT Suite is running or on another computer with an active Internet connection. For further information see section *Completing an order using an active Internet connection [▶Page 182 - SIDEXIS 4]* or section *Completing an order without an active Internet connection [▶Page 186 - SIDEXIS 4]*.

You can add orders to the shopping cart, which are part of the same 3D X-ray scan.

33.1 DEFINING A TREATMENT POSITION

To define a treatment position, proceed as follows:

☑ You have already imported jaw motion tracking data. Information on this can be found in the section *Importing and registering jaw motion data [▶Page 119 - SIDEXIS 4]*.

☑ You have already imported optical impressions. Information on this can be found in the section *Importing optical impressions [▶Page 131 - SIDEXIS 4]*.

1. If you wish to define a treatment position based on a static jaw relation, select a static jaw relation from the **Active Jaw Relation** list. Information on this can be found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.

2. If you wish to define a treatment position based on a jaw movement, select a jaw movement from the **Active Jaw Relation** list and jump to the desired position. Information on this can be found in the section *Interacting with jaw motion [▶Page 147 - SIDEXIS 4]*.

3. Click on the **Treatment position** button.

▶ If you have selected a treatment position that is based on a jaw movement, SICAT Function will set a bookmark at the corresponding position.

▶ The **Treatment position** button becomes the **Clear treatment position** button.

▶ SICAT Function saves the selected treatment position for the therapeutic appliance order.

REMOVING A TREATMENT POSITION

To remove a defined treatment position, proceed as follows:

☑ You have selected the static jaw relation or the bookmark for a jaw movement upon which the defined treatment position is based.

1. Click on the **Clear treatment position** button.
   ▶ SICAT Function opens a message window with the following contents: **Do you really want to clear the treatment position**

2. If you really want to remove the treatment position, click **Continue**.

OVERWRITING A TREATMENT POSITION

To overwrite a defined treatment position, proceed as follows:

☑ You have already defined a treatment position.

1. Select a static jaw relation or a jaw movement position that does not match the defined treatment position.

2. Click on the **Treatment position** button.
   ▶ SICAT Function opens a message window with the following contents: **You already have specified a treatment position If you continue, this treatment position will be replaced with the currently selected static jaw relation**

3. If you really want to replace the treatment position, click **Continue**.

Continue with the section *Placing therapeutic appliances in the shopping cart [▶Page 177 - SIDEXIS 4]*.

33.2 PLACING THERAPEUTIC APPLIANCES IN THE SHOPPING CART

CAUTION

Incorrect data in an order may result in an incorrect order.

If you complete an order, ensure that you select and transfer the correct data for the order.

CAUTION

An incorrect order might lead to the wrong treatment.

1. Check your order before sending it.
2. Confirm the correct planning of your order.

General information on the ordering process can be found in the section *Ordering process [▶Page 175 - SIDEXIS 4]*.

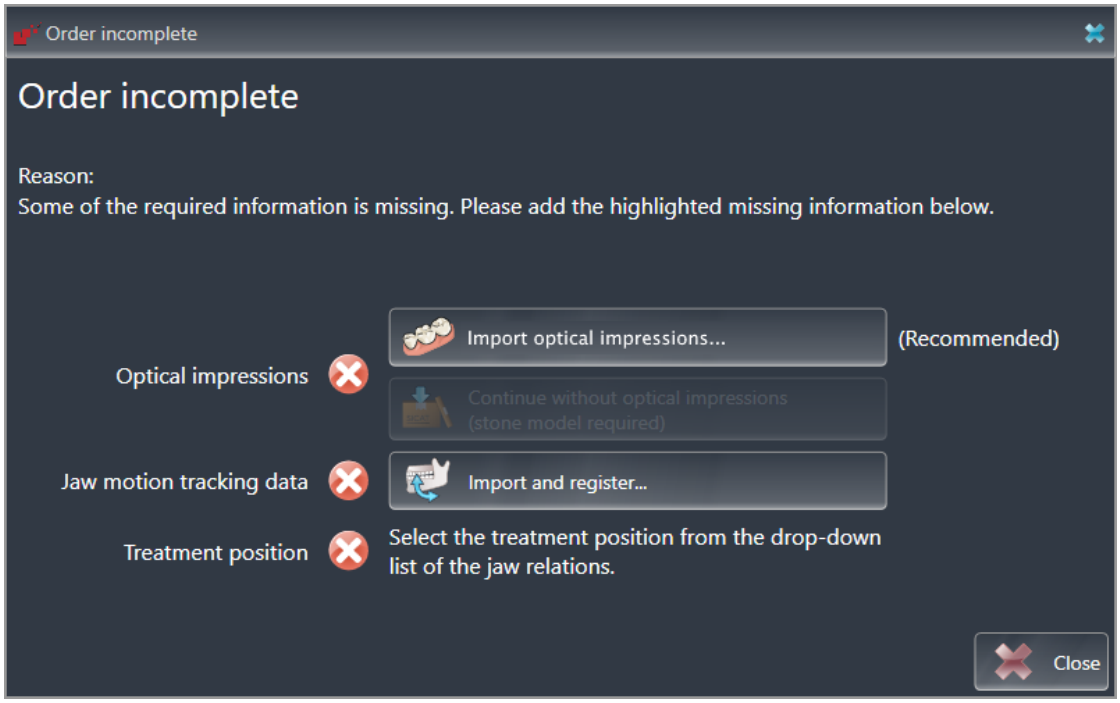
In SICAT Function, you can place a therapeutic appliance in the shopping cart in the first part of the ordering process. Certain prerequisites must be met so that you can place therapeutic appliances in the shopping cart. SICAT Function will notify you if you have not fulfilled all of the prerequisites.

IF THE PREREQUISITES ARE NOT FULFILLED

☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 63 - SIDEXIS 4]*.

1. Click on the **Order Therapeutic Appliance** icon.

   ▶ The **Order incomplete** window opens:



2. If you have not yet imported any optical impressions, click on the **Import and register** button and import optical impressions corresponding to the 3D X-ray scan. Information on this can be found in the section *Optical impressions [▶Page 129 - SIDEXIS 4]*.

3. If you have not yet imported any jaw motion data, click on the **Import and register** button and import the jaw motion data. Information on this can be found in the section *Importing and registering jaw motion data [▶Page 119 - SIDEXIS 4]*.

4. If you have not yet defined a treatment position, close the **Order incomplete** window and define a treatment position. Information on this can be found in the section *Defining a treatment position [▶Page 176 - SIDEXIS 4]*.

	You may have to adjust the orientation of the volume and the panoramic curve, before importing optical impressions. You can access the **Adjust Volume Orientation and Panoramic Region** window directly from the **Import and Register Optical Impressions** window by clicking on the **Adjust panoramic region** button in the **Register** step. Information on this can be found in the section *Adjusting the panoramic region [▶Page 114 - SIDEXIS 4]*.

	If you wish to send plaster casts to SICAT instead of optical impressions, you can place therapeutic appliances in the shopping cart without optical impressions by clicking the **Continue without optical impressions (stone model required)** button in the **Order incomplete** window. After this, the **Order OPTIMOTION** step will display the **This order will be placed without optical impression data. The stone model must be sent to the SICAT Lab** information.

IF THE PREREQUISITES ARE FULFILLED

☑ You have already imported optical impressions.

☑ You have already imported jaw motion tracking data.

☑ You have already defined a treatment position.

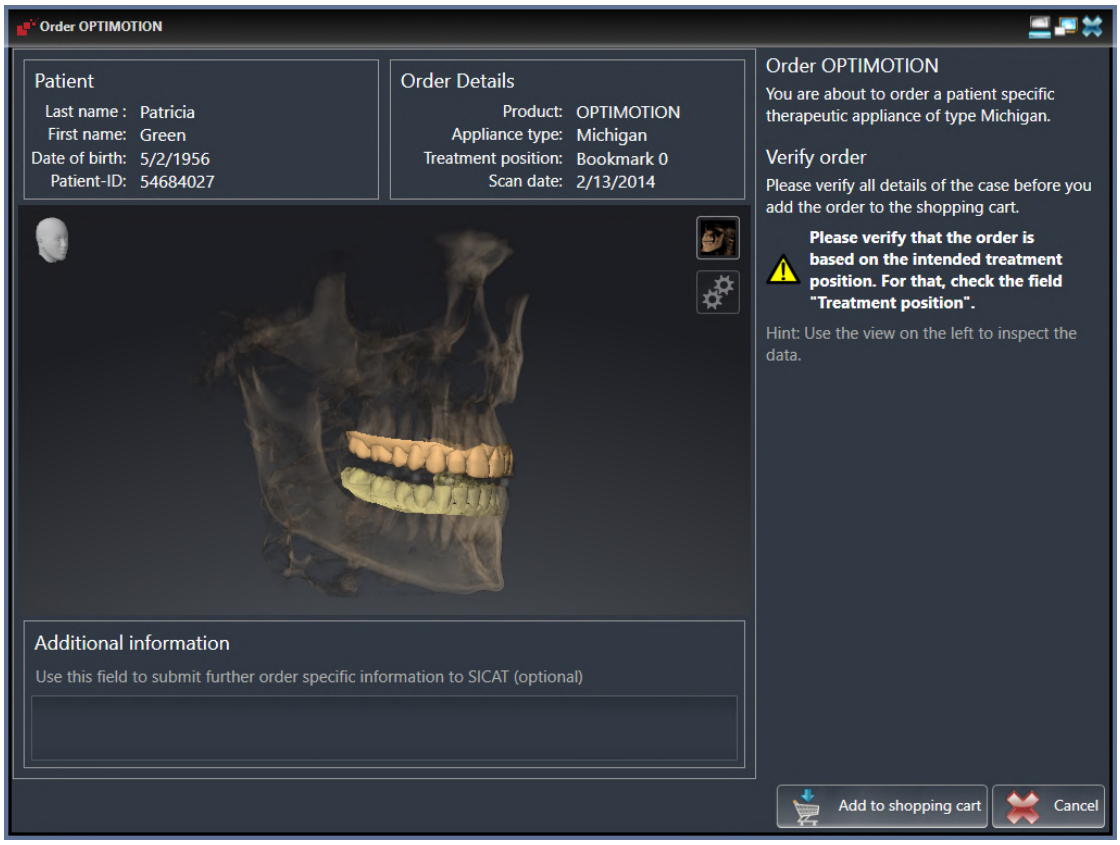
☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 63 - SIDEXIS 4]*.

- Click on the **Order Therapeutic Appliance** icon.

► The **Order OPTIMOTION** window opens.

CHECK YOUR ORDER IN THE “ORDER OPTIMOTION" WINDOW

☑ The **Order OPTIMOTION** window is already open.



1. Check in the **Patient** section and **Order Details** section that the patient information and scan information are correct.
2. Check in the **3D** view that the treatment position is correct.
3. If desired, enter additional information for SICAT in the **Additional Information** field.

4. Click on the **Add to shopping cart** button.

▶ SICAT Function places the desired planning data for therapeutic appliances in the SICAT shopping cart.

▶ The **Order OPTIMOTION** window closes.

▶ SICAT Function opens the SICAT Suite shopping cart.

As long as there is an order in the shopping cart, you can no longer overwrite optical impressions, jaw motion data and the treatment position of a plan. This is only possible once more when you have completed or deleted the order. If you overwrite or delete optical impressions, jaw motion data or the treatment position of a plan, you cannot order the same theraputic appliance again.

You can cancel the order by clicking on **Cancel**.

Continue with the section *Checking the shopping cart and completing the order [▶Page 181 - SIDEXIS 4]*.

33.3 OPENING THE SHOPPING CART

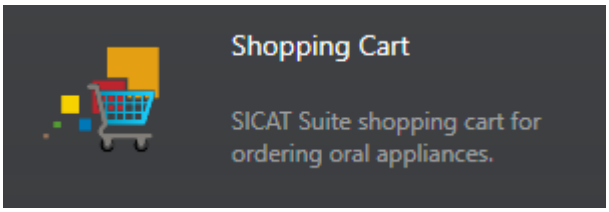
☑ The shopping cart contains at least one product.

☑ You have activated the display of the shopping cart in the **Output** phase. For more information, please refer to the SIDEXIS 4 instructions for use.

- If the shopping cart is not yet open, click the **Shopping Cart** button on the **Navigation bar**.

▶ The **Shopping Cart** window opens.

Alternatively, you can also click on the **Shopping Cart** button in the **Output** phase:

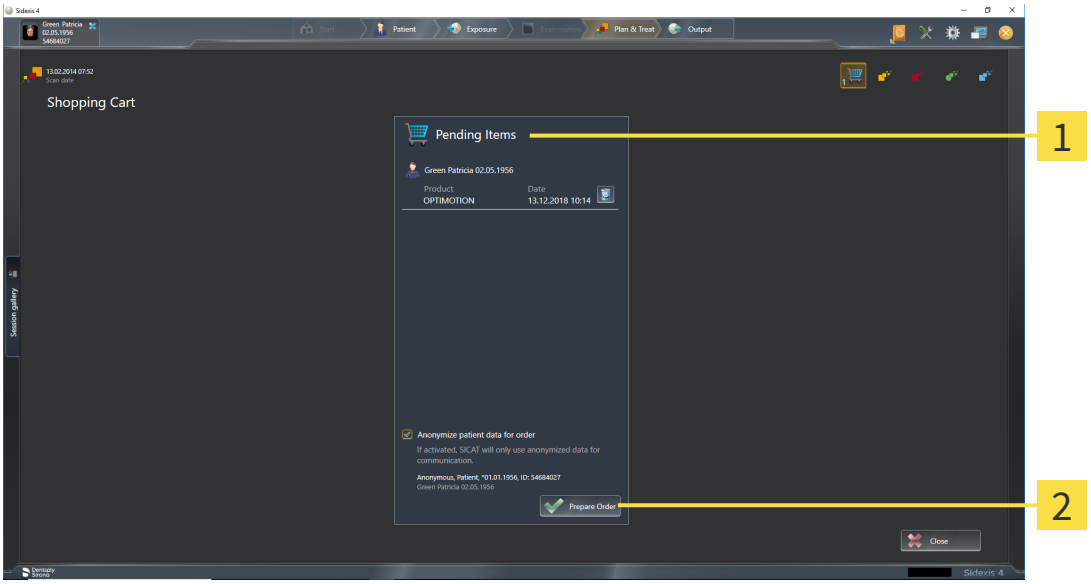


Continue with the following action:

- *Checking the shopping cart and completing the order [▶Page 181 - SIDEXIS 4]*

33.4 CHECKING THE SHOPPING CART AND COMPLETING THE ORDER

☑ The **Shopping Cart** window is already open. Information on this can be found in the section *Opening the shopping cart [▶Page 180 - SIDEXIS 4]*.



1 **Pending Items** list

2 **Prepare Order** button

1. Check in the **Shopping Cart** window whether the desired products are included.
2. Activate or deactivate the **Anonymize patient data for order** check box.
3. Click on the **Prepare Order** button.

▶ SICAT Suite sets the status of the orders to **Preparing** and establishes a connection to the SICAT server via the SICAT WebConnector.

▶ Changes to the order are only possible in the SICAT Portal with an active Internet connection.

Continue with one of the following actions:

- *Completing an order using an active Internet connection [▶Page 182 - SIDEXIS 4]*
- *Completing an order without an active Internet connection [▶Page 186 - SIDEXIS 4]*

33.5 COMPLETING AN ORDER USING AN ACTIVE INTERNET CONNECTION

In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

☑ The computer on which SICAT Suite is running has an active Internet connection.

☑ The **Allow access to the Internet for placing orders** checkbox is activated. Information on this can be found in the section *Using general settings [▶Page 190 - SIDEXIS 4]*.

☑ The SICAT Portal was automatically opened in your browser.

1. Register or log in to the SICAT portal using your username and password if you have not already done so.

   ▶ The ordering overview opens and shows the products contained in the order, along with the corresponding prices, grouped according to patients.

2. Follow the instructions in the section *Performing ordering steps in the SICAT Portal [▶Page 183 - SIDEXIS 4]*.

▶ SICAT Suite prepares the order data for uploading.

▶ As soon as the preparations are complete, SICAT WebConnector will transfer the order data via an encrypted connection to the SICAT server.

▶ The status of the order in the shopping cart will change to **Uploading**.

In addition, the symbol of the study will change in the SIDEXIS 4 timeline and the **Treat** entry will be highlighted.

SICAT Suite will display orders until they are fully uploaded. This also applies to orders that are uploaded on other computers if several computers are using the same SIDEXIS server. You can pause, continue and cancel the uploading of orders in the shopping cart that have been started on the current computer.

If you log off from Windows while uploading the orders, SICAT WebConnector will pause the process. The software will continue uploading automatically after you log back on.

33.6 PERFORMING ORDERING STEPS IN THE SICAT PORTAL

After you have performed ordering steps in SICAT Suite, the SICAT Portal will open in your standard web browser. In the SICAT Portal, you can change your orders, select qualified providers for production and view the prices of the products.

To perform ordering steps in the SICAT Portal, proceed as follows:

1. Register or log in to the SICAT portal using your username and password if you have not already done so.
2. Check whether the desired products are included.
3. If necessary, remove specific patients along with all corresponding products from the ordering overview. When completing the order, SICAT Suite will apply changes that you have made in the SICAT Portal.
4. Check whether the billing address and delivery address are correct. Change these where necessary.
5. Select the desired shipping method.
6. Accept the general terms and conditions and send off the order.

You can remove patients and all corresponding appliances from the SICAT Portal by selecting a patient and clicking on the button to remove the patient. In the shopping cart, you will again have full access to the composition of the products.

33.7 THE SICAT WEBCONNECTOR

The SICAT WebConnector requires specific ports for communication with the SICAT server. Information on this can be found in the section *System requirements [▶Page 9 - SIDEXIS 4]*.

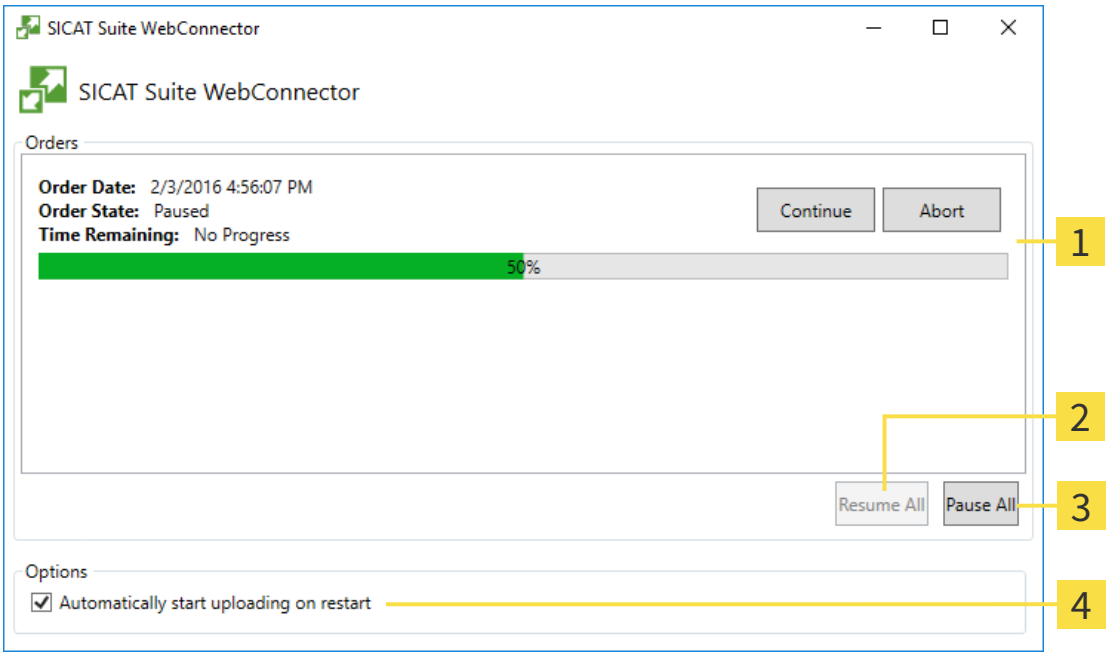
In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

If the computer, on which SICAT Suite is running, has an active Internet connection, SICAT Suite will transfer your orders in the background in encrypted format via the SICAT WebConnector. SICAT Function will show the status of the transfer directly in the shopping cart and can pause the SICAT WebConnector. The SICAT WebConnector will continue the transfer even if you have closed SICAT Suite. If the order cannot be uploaded as desired, you can open the user SICAT WebConnector interface.

OPENING THE “SICAT SUITE WEBCONNECTOR" WINDOW

- In the notifications area, click the **SICAT Suite WebConnector** icon in the task bar.

▶ The **SICAT Suite WebConnector** window opens:



1 **Orders** list

2 **Continue all** button

3 **Stop all** button

4 **Continue uploading automatically after restart** check box

The **Orders** list shows the queue of orders.

PAUSING AND CONTINUING THE UPLOAD

You can pause the upload process. This may be sensible, for example, if your Internet connection is overloaded. The settings only affect upload processes in the SICAT WebConnector. Upload processes via a web browser are not affected.

☑ The **SICAT Suite WebConnector** window is already open.

1. Click on the **Stop all** button.
   ▶ The SICAT WebConnector pauses the uploading of all orders.
2. Click on the **Continue all** button.
   ▶ The SICAT WebConnector continues the uploading of all of the orders.

DEACTIVATING AUTOMATIC CONTINUATION AFTER A RESTART

You can prevent the SICAT WebConnector from automatically continuing uploads after restarting Windows.

☑ The **SICAT Suite WebConnector** window is already open.

- Deactivate the **Continue uploading automatically after restart** check box.

▶ If you restart your computer, the SICAT WebConnector will no longer automatically continue uploading your orders.

33.8 COMPLETING AN ORDER WITHOUT AN ACTIVE INTERNET CONNECTION

If the computer on which SICAT Suite is running cannot connect to the SICAT server, SICAT Suite will open the **SICAT Suite - No connection to SICAT server** window. The window will indicate one of the following causes for the problem:

- **There is no Internet connection. SICAT WebConnector cannot connect to the SICAT server**
- **SICAT Portal is not available**
- **The "SICATWebConnector" service is not installed**
- **The "SICATWebConnector" service is not running**
- **An unknown error has occured. SICAT WebConnector cannot connect to the SICAT server**

This chapter only shows screenshots for the scenario that no Internet connection is available.

Below the cause, possible steps for solving the problem will be shown.

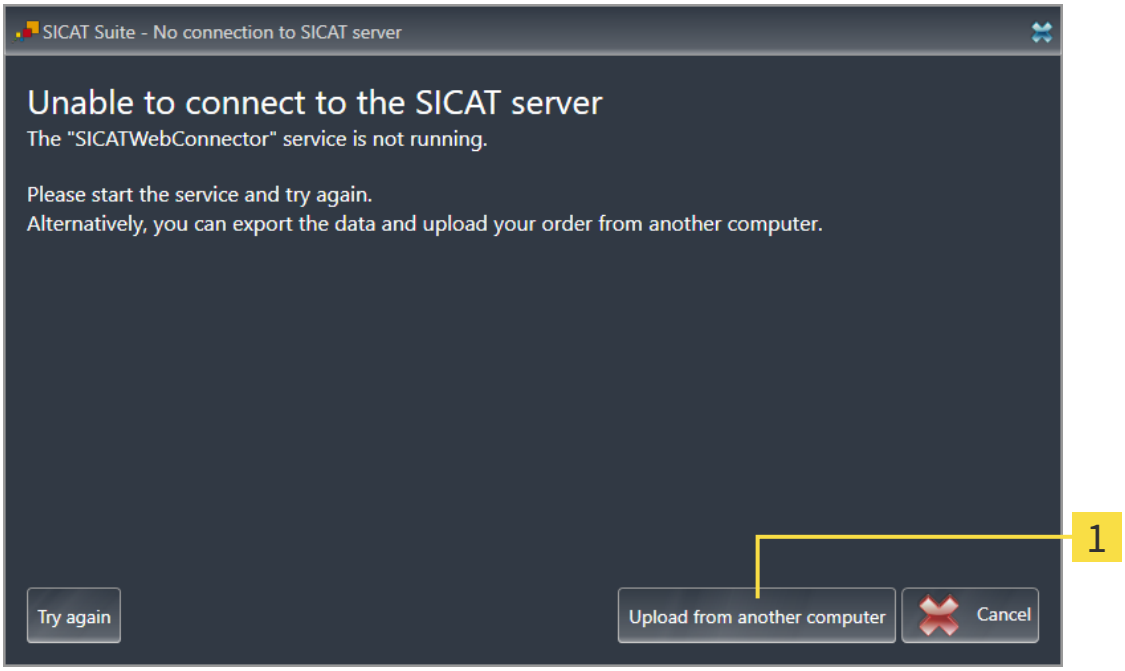
If you have deactivated the **Allow access to the Internet for placing orders** checkbox in the settings on the **General** tab, the **Sending the order from another computer** window opens directly.

As an alternative to troubleshooting or if you have disabled access to the Internet, you can upload an order via a web browser on another computer with an active Internet connection. For orders via web browser, SICAT Suite will export all products in the shopping cart at once and create one sub-folder per patient. Each sub-folder contains one XML file with the information regarding the order and a ZIP archive with the data SICAT needs for production. In the SICAT Portal, you can then successively upload the XML file and the ZIP archive. The transfer will be encrypted.

To complete the order without an active Internet connection, proceed as follows:

☑ The computer on which SICAT Suite is running does not have an active Internet connection.

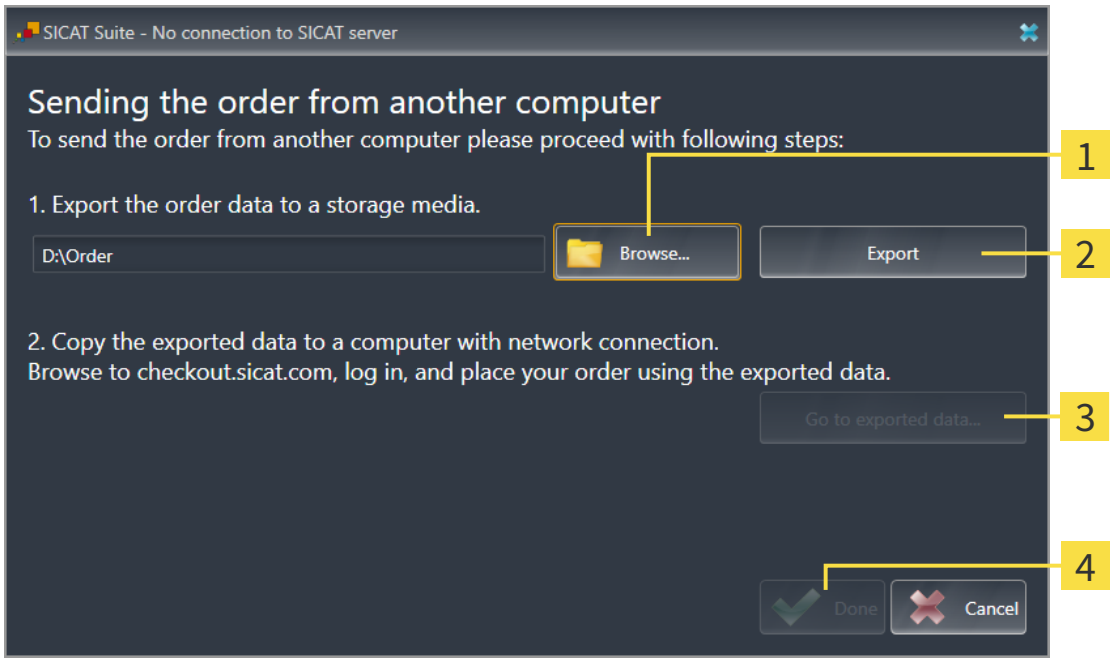
☑ A window will appear with the following message: **Unable to connect to the SICAT server**



1 **Upload from another computer** button

1. Click on the **Upload from another computer** button.

   ▶ The **Sending the order from another computer** window opens:



1	**Browse** button	3	**Go to exported data** button
2	**Export** button	4	**Done** button

2. Click on the **Browse** button.

   ▶ A Windows Explorer window opens.

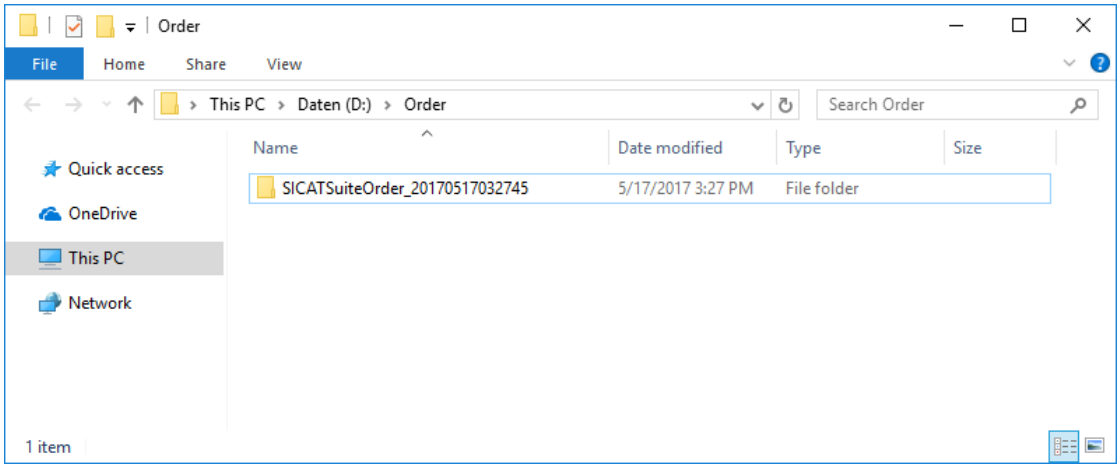
3. Select an existing directory or create a new directory and click on **OK**. Please note that the path to the directory must not be longer than 160 characters.

4. Click on the **Export** button.

   ▶ SICAT Suite will export all data required for ordering the shopping cart contents to the selected folder. SICAT Suite will create a sub-folder for each patient.

5. Click on the **Go to exported data** button.

   ▶ A Windows Explorer window opens and shows the directory with the exported data:



6. Copy the folder that contains the data of the required appliances to a computer with an active Internet connection, for example using a USB stick.

7. Click on **Done** in the **Sending the order from another computer** window.
   ▶ SICAT Suite closes the **Sending the order from another computer** window.
   ▶ SICAT Suite removes all products included in the order from the shopping cart.

8. Open a web browser on the computer with the active Internet connection and open the www.sicat.com web page.

9. Select the link for the SICAT portal.
   ▶ The SICAT portal opens.

10. Register or log in to the SICAT portal using your username and password if you have not already done so.

11. Click on the link to upload the order.

12. Select the desired order on the computer with the active Internet connection. This is an XML file whose name starts with **SICATSuiteOrder**.
    ▶ The ordering overview opens and shows the patients contained therein, the corresponding product and the price.

13. Follow the instructions in the section *Performing ordering steps in the SICAT Portal [▶ Page 183 - SIDEXIS 4]*.

14. Click on the link to upload the planning data for the product.

15. Select the corresponding product data on the computer with the active Internet connection. This is a Zip archive that is located in the same folder as the previously uploaded XML file and whose file name starts with **SICATSuiteExport**.

▶ Once you have executed the order, your browser will transfer the archive with the product data to the SICAT server via an encrypted connection.

SICAT Suite does not automatically delete exported data. When an ordering process is completed, you should delete exported data manually for security reasons.

34 SETTINGS

The version of SICAT Suite which is connected to SIDEXIS 4 applies many settings from SIDEXIS 4. You can view the values of such settings in SICAT Function, but you can only change them in the SIDEXIS 4 settings.

You can change or view general settings in the **Settings** window. After you have clicked on the **Settings** group, the menu will show the following buttons on the left-hand side:

- **General** - Information on this can be found in the section *Using general settings [▶Page 190 - SIDEXIS 4]*.
- **Licenses** - Information on this can be found in the section *Licenses [▶Page 50 - SIDEXIS 4]*.
- **Practice** – Viewing or changing the logo and the information text of your practice, for example for use on print-outs. Information on this can be found in the section *Using practice information [▶Page 194 - SIDEXIS 4]*.
- **Hub** - SIDEXIS 4 applies the hub connection settings and the connection status is displayed. Information on this can be found in the section *Viewing Hub connection status [▶Page 195 - SIDEXIS 4]*.
- **Visualization** – Changing general visualization settings. Information on this can be found in the section *Changing visualization settings [▶Page 196 - SIDEXIS 4]*.
- **SICAT Function** – Changing application-specific settings of SICAT Function. Information on this can be found in the section *Changing SICAT Function settings [▶Page 198 - SIDEXIS 4]*.

If you change the settings, SICAT Function will apply the changes immediately and saves the settings in your user profile.

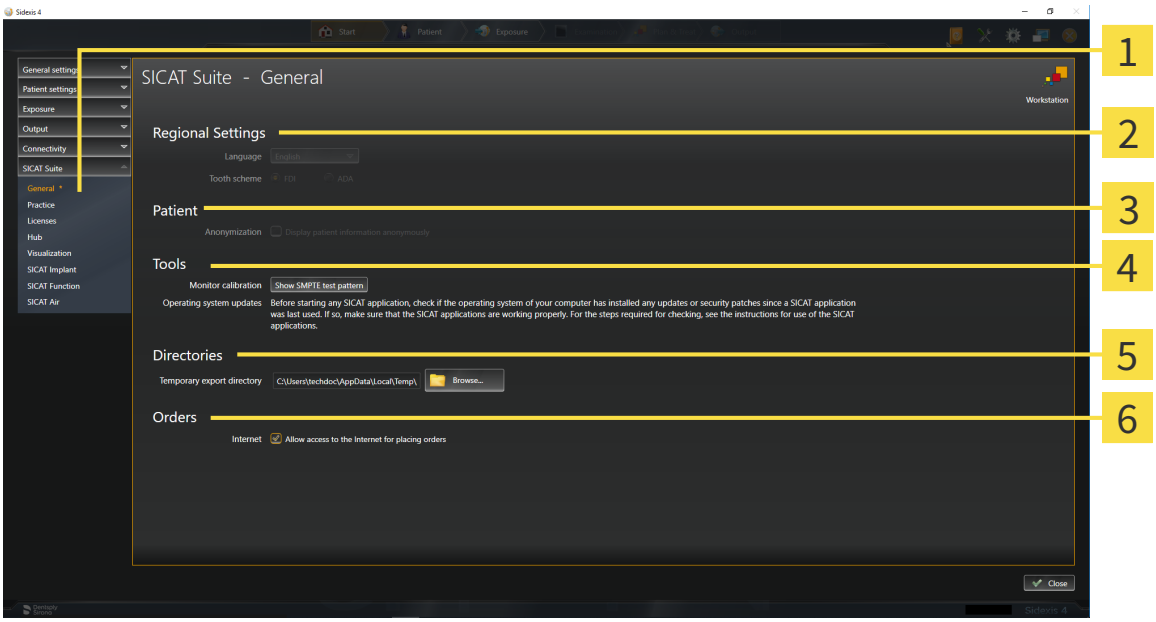
The settings in SICAT Suite are valid for the active user of the current workstation. SICAT Suite applies all changes in the settings immediately. If you switch to another category in the settings, SICAT Suite will also save changes to the settings permanently.

34.1 USING GENERAL SETTINGS

The version of SICAT Suite which is connected to SIDEXIS 4 applies many settings from SIDEXIS 4. You can view the values of such settings in SICAT Function, but you can only change them in the SIDEXIS 4 settings.

To open the general settings, proceed as follows:

1. Click on the **Settings** icon in the title bar of SIDEXIS 4.
   ▶ The **Settings** window opens.
2. Click on the **SICAT Suite** group.
   ▶ The **SICAT Suite** group opens.
3. Click on the **General** button.
   ▶ The **General** window opens:



1 **General** tab

2 **Regional Settings** area

3 **Patient** area

4 **Tools** area

5 **Directories** area

6 **Orders** area

SICAT Function applies the following settings from SIDEXIS, which you can view here:

- You can view the language of the user interface in the **Language** list in the **Regional Settings** section.
- You can view the current tooth scheme in the **Regional Settings** area under **Tooth scheme**.
- You can view the status of the **Display patient information anonymously** check box in the **Patient** area. If the check box is activated, SICAT Function will apply the anonymized patient data from SIDEXIS.

You can change the following settings:

- In the **Directories** area, you can enter a folder in the **Temporary export directory** field in which SICAT Suite is to save order information. You must have full access to this folder.
- You can change the status of the **Allow access to the Internet for placing orders** check box in the **Orders** area. If the checkbox is activated, SICAT Suite connects to the Internet to place orders.

Besides viewing or changing general settings, you can open the SMPTE test image to calibrate your monitor:

- Click on the **Show SMPTE test pattern** button under **Tools**, **Monitor calibration** to calibrate your monitor. Information on this can be found in the section Monitor calibration with the SMPTE test image.

If you select a language in SIDEXIS Selecting, which SICAT Function does not support, SICAT Function will display English text in the user interface.

The supported tooth schemes are FDI and ADA.

34.2 MONITOR CALIBRATION WITH THE SMPTE TEST IMAGE

CAUTION

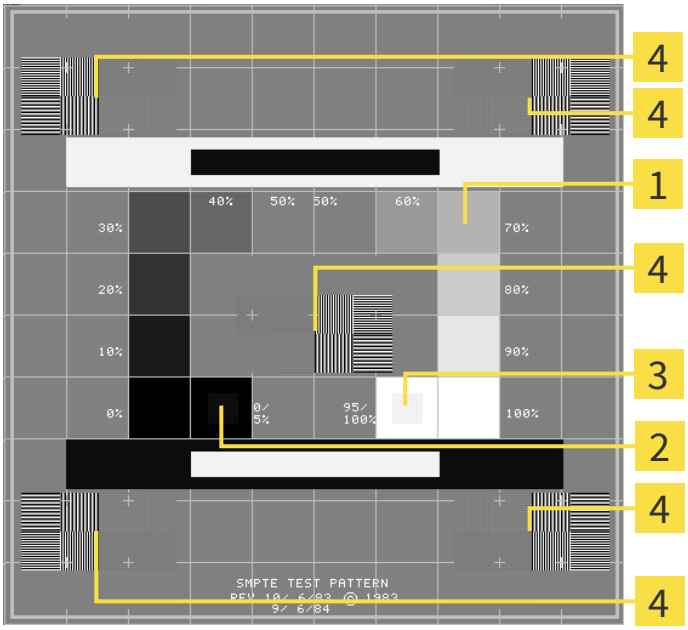
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

1. Only perform planning if the environmental conditions allow for sufficient visualization quality. For example, check for appropriate lighting.
2. Check whether the display quality is sufficient using the SMPTE test image.

The suitability of your monitor for displaying data in SICAT applications depends on four key properties:

- Brightness
- Contrast
- Local resolution (linearity)
- Distortion (aliasing)

The SMPTE test image is a reference image, which helps you check the following properties of your monitor:



1 Gray scale squares

2 0% square

3 100% square

4 Squares containing a sample bar with a high contrast

CHECKING BRIGHTNESS AND CONTRAST

In the middle of an SMPTE test image there is a series of squares, showing the gray scale progression from black (0% brightness) to white (100% brightness):

- The 0% square contains a smaller square to show the difference in brightness between 0% and 5%.
- The 100% square contains a smaller square to show the difference in brightness between 95% and 100%.

To check or configure your monitor, proceed as follows:

☑ The SMPTE test image is already open.

- Check whether you can see the visual difference between the inner square and outer square in the 0% square and 100% square. Change the settings of your monitor where necessary.

Several monitors can only show the difference in brightness in the 100% square, but not the 0% square. You can reduce ambient light to improve the ability to distinguish between the different brightness levels in the 0% square.

CHECKING THE LOCAL RESOLUTION AND DISTORTION

In the corners and the middle of the SMPTE test image, there are 6 squares showing a sample bar with a high contrast. In terms of local resolution and distortion, you should be able to differentiate between horizontal and vertical lines with different widths, which change between black and white:

- From wide to narrow (6 pixels, 4 pixels, 2 pixels)
- Horizontal and vertical

To check or configure your monitor, proceed as follows:

- Check in the 6 squares containing a sample bar with a high contrast whether you can see the differences between all of the lines. Change the settings of your monitor where necessary.

CLOSING THE SMPTE TEST IMAGE

To close the SMPTE test image, proceed as follows:

- Press the **ESC** key.

▶ The SMPTE test image closes.

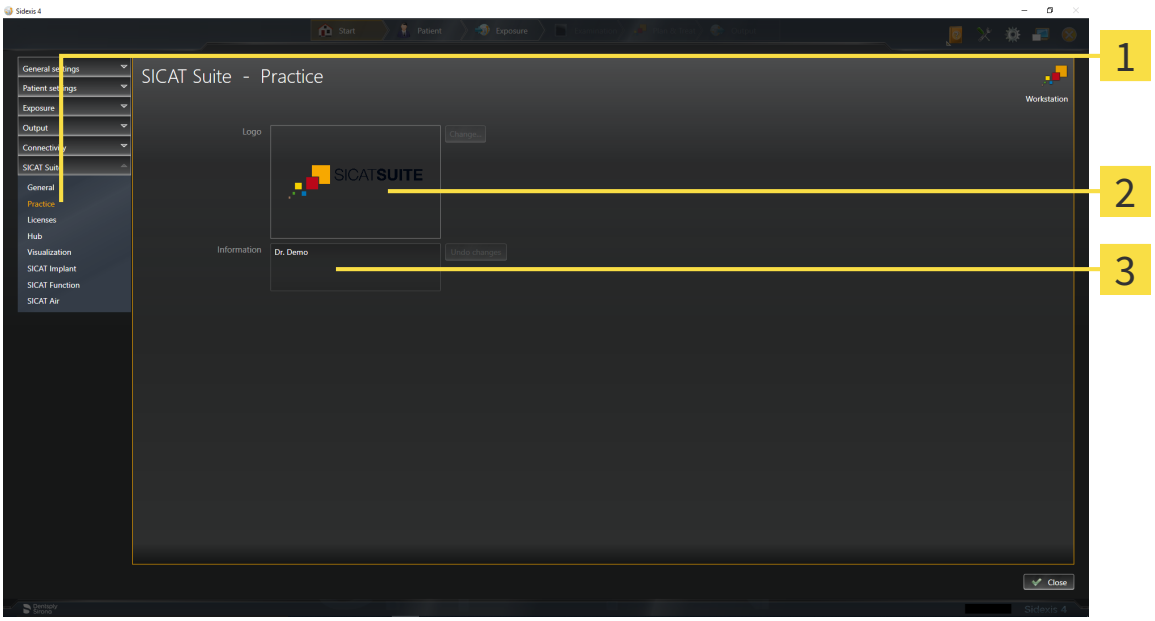
34.3 USING PRACTICE INFORMATION

The version of SICAT Suite connected to SIDEXIS 4 uses the practice logo and the informational copy from SIDEXIS 4. Therefore, you can only view the values of these settings in the SICAT Suite settings. Please make the desired changes to these settings in SIDEXIS 4.

The applications in SICAT Suite use the information displayed here to customize outputs or PDF files.

To open the practice information, proceed as follows:

1. Click on the **Settings** icon in the title bar of SIDEXIS 4.
   ▶ The **Settings** window opens.
2. Click on the **SICAT Suite** group.
   ▶ The **SICAT Suite** group opens.
3. Click on the **Practice** button.
   ▶ The **PRACTICE** window opens:



1 **Practice** tab

2 **Logo** area

3 **Information** area

You can view the following settings:

- You can view the logo of your practice in the **Logo** section.
- You can view a text, which identifies your practice, for example the name and address, in the **Information** section.

34.4 VIEWING HUB CONNECTION STATUS

You can view the Hub's connection status in SICAT Suite. SICAT Suite applies the settings for Hub use from SIDEXIS 4.

☑ The license for using the Hub is activated. Information on this can be found in the section *Licenses* *[▶Page 50 - SIDEXIS 4]*.

1. Click on the **Settings** icon in the title bar of SIDEXIS 4.
   ▶ The **Settings** window opens.
2. Click on the **SICAT Suite** group.
   ▶ The **SICAT Suite** group opens.
3. Click on the **Hub** button.
   ▶ The **Hub** window opens.

▶ You can see the connection status on the right side.

34.5 CHANGING VISUALIZATION SETTINGS

CAUTION

Insufficient visualization quality could result in incorrect diagnosis and treatment.

Before using a SICAT application, for example with the SMPTE test image, check whether the display quality is sufficient.

CAUTION

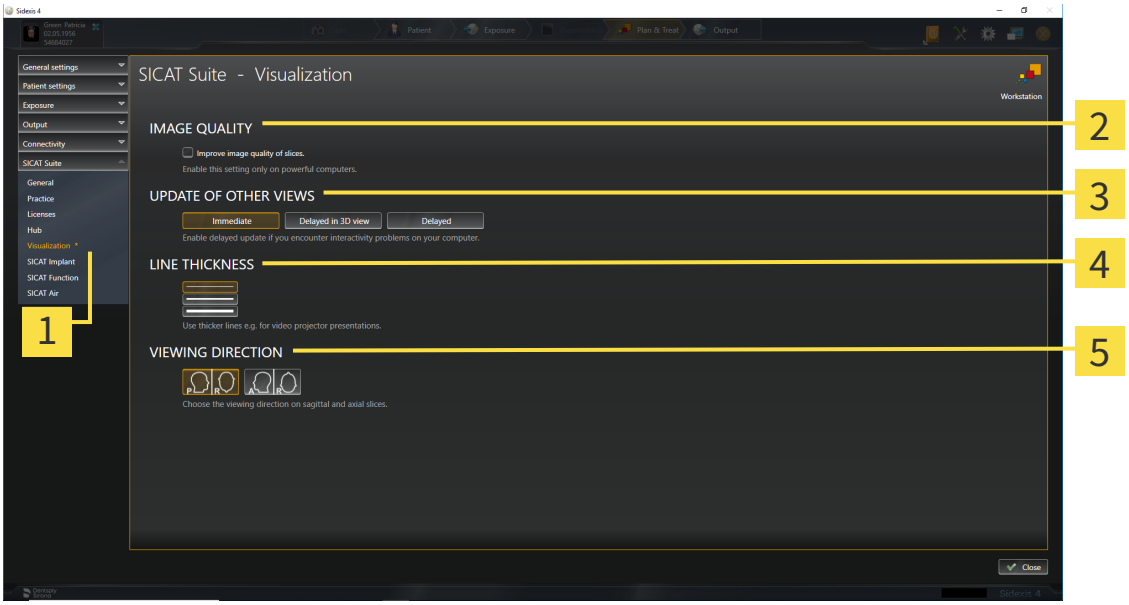
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

1. Only perform planning if the environmental conditions allow for sufficient visualization quality. For example, check for appropriate lighting.
2. Check whether the display quality is sufficient using the SMPTE test image.

Visualization settings determine the visualization of the volume, diagnosis objects and planning objects in all SICAT applications.

To open the **Visualization** window, proceed as follows:

1. Click on the **Settings** icon in the title bar of SIDEXIS 4.
   ▶ The **Settings** window opens.
2. Click on the **SICAT Suite** group.
   ▶ The **SICAT Suite** group opens.
3. Click on the **Visualization** button.
   ▶ The **Visualization** window opens:



1 **Visualization** tab

2 **IMAGE QUALITY** area

3 **UPDATE OF OTHER VIEWS** area

4 **LINE THICKNESS** area

5 **VIEWING DIRECTION** area

The settings are:

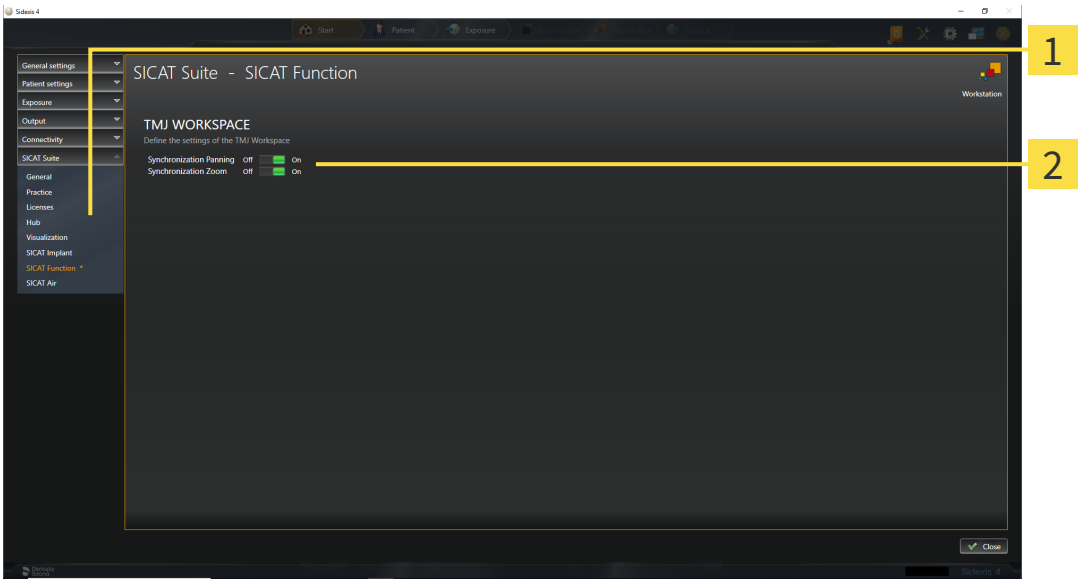
- **Improve image quality of slices** – Improves the image quality of slices as the software averages adjacent slices. Activate this setting only on high-performance computers.
- **UPDATE OF OTHER VIEWS** – Delayed updates improve the interactivity of the active view but causes delays in the updating of other views. Activate delayed updates only if you detect interactivity problems on your computer.
- **LINE THICKNESS** – Changes the thickness of lines. Thicker lines are useful for presentations on projectors.
- **VIEWING DIRECTION** – Switches the viewing directions of the **Axial** slice view and **Sagittal** slice view.

34.6 CHANGING SICAT FUNCTION SETTINGS

SICAT Function settings determine the synchronization of panning and zooming in the **TMJ** workspace of SICAT Function.

To change the SICAT Function settings, proceed as follows:

1. Click on the **Settings** icon in the title bar of SIDEXIS 4.
   ▶ The **Settings** window opens.
2. Click on the **SICAT Suite** group.
   ▶ The **SICAT Suite** group opens.
3. Click on the **SICAT Function** button.
   ▶ The **SICAT Function** window opens:



1 **SICAT Function** tab

2 **Define the settings of the TMJ Workspace** area

The settings are:

- **Synchronization Panning**
- **Synchronization Zoom**

You can use the settings to activate or deactivate SICAT Function synchronizing the panning or zooming of views in the **TMJ** workspace between the left and right condyles.

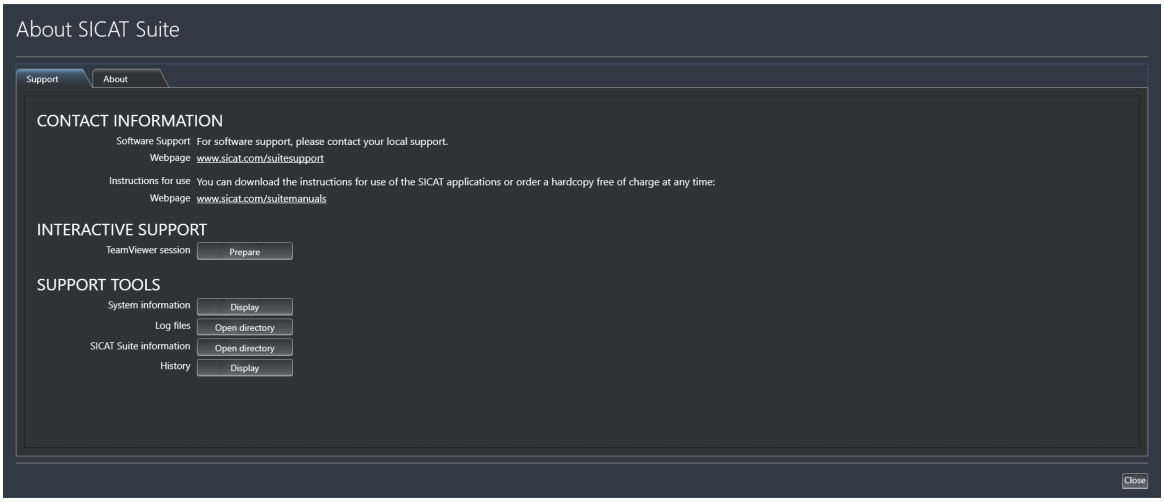
35 SUPPORT

SICAT offers you the following support options:

- PDF documents
- Contact information
- Information on the installed SICAT Suite and SICAT applications

Continue with the following action:

- *Opening the support options [▶Page 200 - SIDEXIS 4]*



35.1 OPENING THE SUPPORT OPTIONS

To open the **SICAT Suite information** window, proceed as follows:

1. Click on the **Help** icon.
2. Click on the **SICAT Suite information** entry.

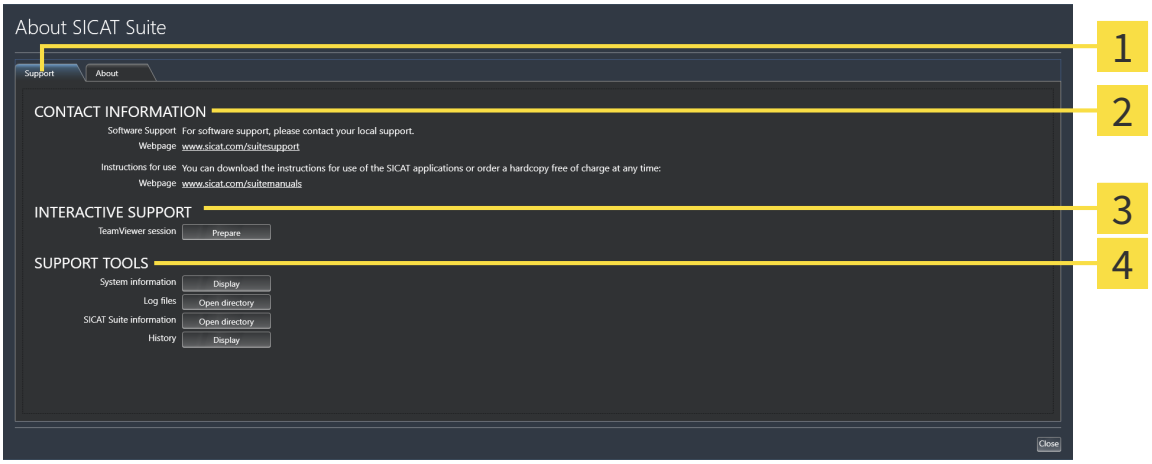
► The **SICAT Suite information** window opens.

The **SICAT Suite information** window comprises the following tabs:

- **Support** - Information on this can be found in the section *Support [►Page 199 - SIDEXIS 4]*.
- **About** - Information on this can be found in the section Info.

35.2 CONTACT INFORMATION AND SUPPORT TOOLS

The **Support** window contains all of the relevant information and tools to enable SICAT Support to help you:



1 **Support** tab

2 **CONTACT INFORMATION** area

3 **INTERACTIVE SUPPORT** area

4 **SUPPORT TOOLS** area

The **CONTACT INFORMATION** area contains information about where you can find the instructions for use.

The following tools are available in the **INTERACTIVE SUPPORT** area:

- Click on the **Prepare** button in the **TeamViewer session** area and SICAT Function will open a TeamViewer session.

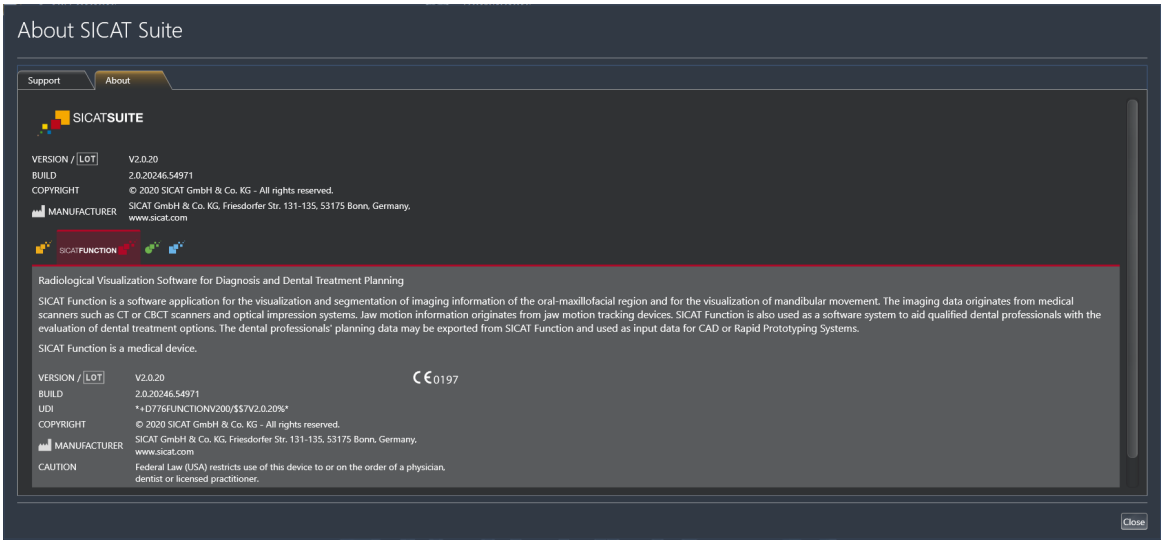
TeamViewer is software that allows mouse and keyboard commands to be remotely controlled and to transfer the contents of a computer's monitor via an active Internet connection. TeamViewer will only establish a connection if you explicitly consent. To do so, provide the SICAT support team with a TeamViewer ID and a password. This allows the SICAT support team to help you directly on-site.

The following tools are available in the **SUPPORT TOOLS** area:

- Click on the **Display** button in the **System information** area and SICAT Function will open the system information of the operating system.
- Click on the **Open directory** button in the **Log files** area and SICAT Function will open the log directory of SICAT Suite in a Windows Explorer window.
- Click on the **Open directory** button in the **SICAT Suite information** area and **SICAT Suite information** will export information on the current installation in a text file.
- Click on **Show messages** in the **SICAT Suite information** area and SICAT Function will show the message window.

35.3 ABOUT

The **About** tab displays information on SICAT Suite and all installed SICAT applications on several tabs:



36 OPENING READ-ONLY DATA

You can open data as read-only.

The data you can view in SICAT Function as a SIDEXIS 4 module without being able to make and save changes depends on the status of your license:

TYPE OF SICAT FUNCTION LICENSE	VIEWING WITHOUT CHANGES POSSIBLE?
None	No
Viewer	Yes
Full version	No

In the following cases, you can view SICAT Function studies without a Viewer license:

- In SIDEXIS 4, export SICAT Function studies and import the data to SIDEXIS on another computer. SICAT Function must be installed on this computer.
- In SIDEXIS 4, create a Wrap&Go package which contains SICAT Function studies. Install the Wrap&Go package on another computer. Then, install SICAT Function.

In both cases you cannot make or save any changes to the planning.

If the computers on which SIDEXIS 4 and SICAT Suite are running are in a network environment, and where permitted by SIDEXIS 4 and the network configuration, SIDEXIS 4 could be part of a multi-workstation installation. One of the results of this is that when SIDEXIS 4 opens a data record, it checks whether the data record is already in use. If this is the case, the data record in SICAT Suite is opened in read-only Viewer mode and you cannot save changes to SICAT Function studies.

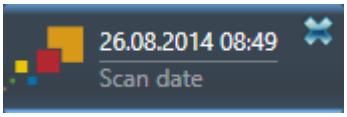
To open data without being able to make and save changes, proceed as follows:

- Start SICAT Suite with a 3D X-ray scan from SIDEXIS 4. Information on this can be found in the section *Starting SICAT Suite [▶Page 45 - SIDEXIS 4]*.

▶ SICAT Suite opens the 3D X-ray scan and planning project from the current SIDEXIS 4 examination.

▶ If this is the first data transfer from SIDEXIS 4 and the settings in SIDEXIS 4 are compatible with the settings in SICAT Suite, SICAT Function will apply the volume orientation and panoramic curve of SIDEXIS 4. Information on this can be found in the section *Adjusting volume orientation and panoramic region [▶Page 106 - SIDEXIS 4]*.

37 CLOSING SICAT SUITE



- Click the **Close** button in the top left-hand corner of the currently opened study.

► SICAT Suite closes.

► SICAT Suite stores the changed planning projects of all SICAT applications that are running as a full version in SIDEXIS 4.

38 KEYBOARD SHORTCUTS

If you move the mouse pointer over certain functions, SICAT Function displays the keyboard shortcut in brackets next to the designation of the function.

The following keyboard shortcuts are available in all SICAT applications:

KEYBOARD SHORTCUTS	DESCRIPTION
A	Add an angle measurement
D	Add a distance measurement
F	Focus on an active object
Ctrl + C	Copy the contents of the active view to the clipboard
Ctrl + Z	Undo the last object action
Ctrl + Y	Redo the most recently undone object action
Del	Remove the active object or active object group
ESC	Cancel the current action (such as adding a measurement)
F1	Open the **Support** window, if a SICAT application is active, open the instructions for use

The following keyboard shortcuts are available in the **Mandible segmentation** window of SICAT Function:

KEYBOARD SHORTCUTS	DESCRIPTION
N	Navigation
M	Segmenting the mandible
F	Segmenting the fossa
B	Segment the background

39 UNINSTALLING SICAT SUITE

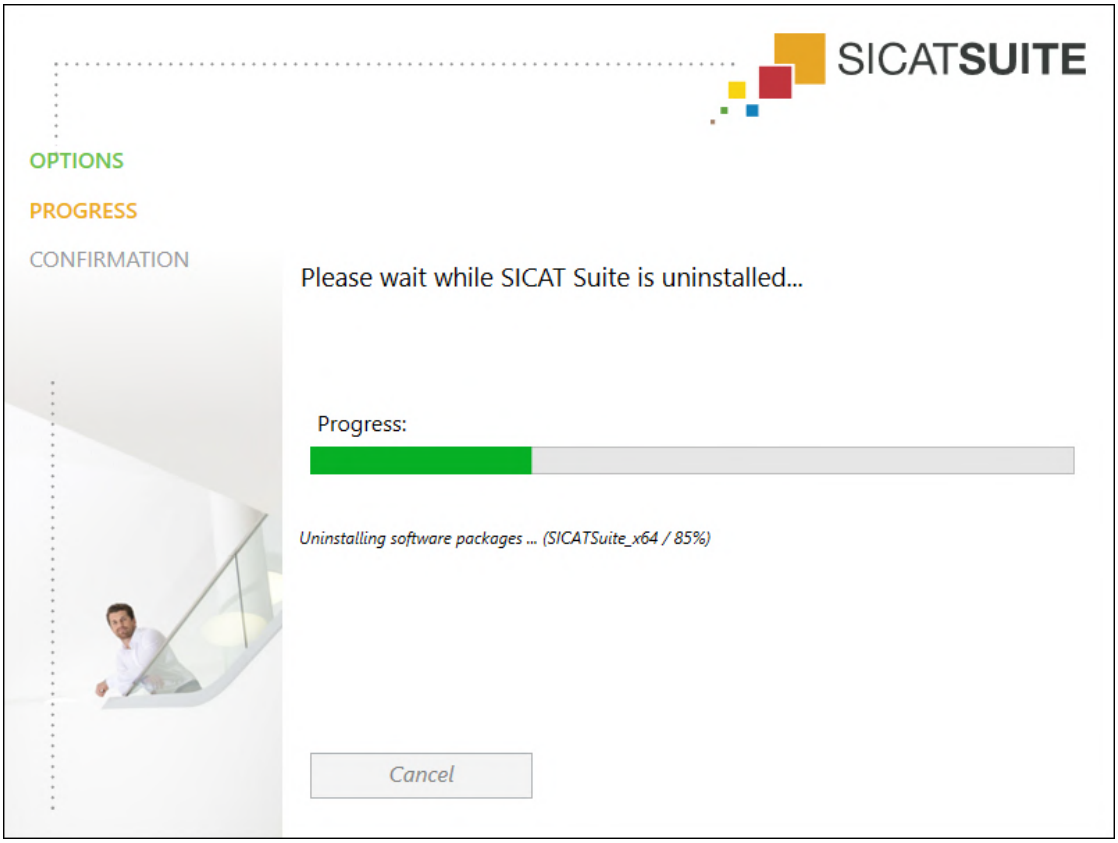
The SICAT Suite uninstallation program maintains active licenses on your computer. Therefore, SICAT Suite warns you that it will not automatically delete licenses before the uninstallation. If you no longer wish to use SICAT Suite on this computer, deactivate the licenses before uninstallation. Information on this can be found in the section *Returning workstation licenses to the license pool [▶Page 58 - SIDEXIS 4]*.

Before uninstalling SICAT Suite, make sure that the SICAT WebConnector has uploaded all orders in full as the uninstallation program will automatically close the SICAT WebConnector. Information on this can be found in the section *The SICAT WebConnector [▶Page 184 - SIDEXIS 4]*.

To uninstall SICAT Suite, proceed as follows:

☑ The SICAT WebConnector has successfully uploaded all orders.

1. Click on **Programs and features** in the Windows **Control panel**.
   ▶ The **Programs and features** window opens.
2. Select the **SICAT Suite** entry, which contains the version of SICAT Suite, from the list.
3. Click on the **Uninstall** button.
   ▶ The uninstallation program will start and the **PROGRESS** window opens:



▶ After the uninstallation is complete, the **CONFIRMATION** window opens.

4. Click on the **Finish** button.

▶ The SICAT Suite uninstallation program will close.

	To open the SICAT Suite uninstallation program, you can also start the SICAT Suite installation program on a computer, on which SICAT Suite is already installed.

	The SICAT Suite uninstallation program will call the uninstallation programs of some software prerequisites, which were installed together with SICAT Suite. If other installed applications still need the software prerequisites, they will be retained.

40 SAFETY INSTRUCTIONS

3D X-RAY SCANS

⚠ **CAUTION**	**Unsuitable X-ray devices may result in an incorrect diagnosis and treatment.** Only use 3D X-ray scans from X-ray devices that are cleared as medical equipment.

⚠ **CAUTION**	**Unsuitable 3D X-ray scans may result in an incorrect diagnosis and treatment.** Always verify the quality, integrity, and correct orientation of the displayed 3D data.

⚠ **CAUTION**	**X-ray devices without DICOM conformity could result in incorrect diagnosis and treatment.** Only use 3D volume data from X-ray devices with DICOM conformity declared.

DISPLAY CONDITIONS

⚠ **CAUTION**	**Insufficient visualization quality could result in incorrect diagnosis and treatment.** Before using a SICAT application, for example with the SMPTE test image, check whether the display quality is sufficient.

⚠ **CAUTION**	**Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.** 1. Only perform planning if the environmental conditions allow for sufficient visualization quality. For example, check for appropriate lighting. 2. Check whether the display quality is sufficient using the SMPTE test image.

DATA MANAGEMENT

⚠ **CAUTION**	**Incorrect assignment of patient name or 3D scan could result in confusion of patient scans.** Verify that the 3D scan that is to be imported or already loaded in a SICAT Suite application is associated with the correct name of the patient and the correct scan information.

⚠ **CAUTION**	**Deleting original data may result in data being lost.** Do not delete the original data following the import.

CAUTION

The absence of a backup mechanism for the patient record depots could result in patient data being irreversibly lost.

Make sure that a regular data backup is created of all patient record depots.

CAUTION

When deleting patient records, all 3D scans, planning projects and PDF files contained in these patient records will be deleted as well.

Only delete patient records if you are sure you will never need any contained 3D scans, planning projects and PDF files again.

CAUTION

Deleted patient records, studies, 3D scans, and planning projects cannot be recovered.

Only delete patient records, studies, 3D scans, and planning projects if you are sure you will never need those data again.

CAUTION

When deleting 3D scans, all dependent planning projects will be deleted as well.

Only delete 3D scans if you are sure you will never need any dependent planning project again.

NETWORK

CAUTION

Saving SICAT application data in an unreliable or incompatible network file system could result in data loss

Together with your network administrator, make that SICAT application data can be safely stored in the desired network file system.

CAUTION

The shared use of SICAT Suite and the SICAT applications contained therein with other devices within a computer network or a storage area network could result in previously unknown risks for patients, users and other persons.

Ensure that rules are compiled within your organization to determine, analyze and assess risks in relation to your network.

CAUTION

Changes to your network environment may result in new risks for your network environment. Examples include changes to your network configuration, the connection of additional devices or components to your network, the disconnection of devices or components from your network and the updating or upgrading of network devices or components.

Perform a network risk analysis after any changes to the network.

QUALIFICATIONS OF OPERATING PERSONNEL

CAUTION

The use of this software by unqualified personnel may result in an incorrect diagnosis and treatment.

The use of the software is restricted to qualified professionals.

SAFETY

CAUTION

Security leaks in your information system environment could result in unauthorized access to your patient data and put the privacy or integrity of your patient data at risk.

1. Make sure policies are established within your organization to prevent security threats to your information system environment.
2. Install and run an up-to-date virus scanner.
3. Make sure the pattern files of the virus scanner are updated on a regular basis.

CAUTION

Unauthorized access to your workstation could result in risks to the privacy and integrity of your patient data.

Limit the access to your workstation to authorized individuals only.

CAUTION

Problems in terms of cyber-security could result in unauthorized access to your patient data and risks in relation to the security or integrity of your patient data.

If you suspect problems in relation to the cyber-security of your SICAT application, contact support immediately.

SOFTWARE INSTALLATION

CAUTION

Changes to the software may mean that the software will not start or will not function as intended.

1. Do not make any changes to the software installation.
2. Do not delete or change any of the components in the software installation directory.

CAUTION

Damaged installation media may result in the failure of the installation.

Handle the installation media with care and store them appropriately.

CAUTION

If your system does not fulfill the system requirements, this may mean that the software will not start or will not function as intended.

Check whether your system meets the minimum software and hardware requirements before installing the software.

CAUTION

Insufficient authorizations may mean that the software installation or software update fails.

Make sure you have sufficient privileges on your system if you install or update the software.

ORDERS

CAUTION

Incorrect data in an order may result in an incorrect order.

If you complete an order, ensure that you select and transfer the correct data for the order.

CAUTION

An incorrect order might lead to the wrong treatment.

1. Check your order before sending it.
2. Confirm the correct planning of your order.

JAW MOTION TRACKING DATA

CAUTION

The use of other data as 3D X-ray scans as a lone source of information may result in an incorrect diagnosis and treatment.

1. Use 3D X-ray scans as a preferred source of information for diagnosis and planning.
2. Use other data, such as optical impressions, only as an auxiliary source of information.

CAUTION

Unsuitable jaw motion tracking devices could result in incorrect diagnosis and treatment.

Only use jaw tracking data from devices cleared as medical devices.

CAUTION

The use of jaw motion tracking devices with an unsuitable intended use may result in an incorrect diagnosis and treatment.

Only use jaw tracking data from devices with an intended use that covers the use of the jaw motion tracking data with SICAT Function.

CAUTION

The use of unsupported jaw motion tracking devices or incompatible registration devices may result in an incorrect diagnosis and treatment.

Only use jaw motion tracking data that has been recorded using a supported combination of a jaw motion tracking devices (such as SICAT JMT*) and a compatible registration device (such as SICAT Fusion Bite).

CAUTION

Incorrect recording of jaw motion tracking data and 3D X-ray scans may result in an incorrect diagnosis and treatment.

Ensure that jaw motion tracking data and 3D X-ray scans have been recorded in accordance with the device manufacturer's instructions. Use the stated type of registration device.

CAUTION

Jaw motion tracking data that does not match the patient and date of the 3D X-ray scans may result in an incorrect diagnosis and treatment.

Make sure that the patient and date of the jaw motion tracking data match the patient and date in the 3D X-ray scan shown.

CAUTION

Insufficient integrity or quality of jaw motion tracking data may result in an incorrect diagnosis and treatment.

Check the integrity and quality of the jaw motion tracking data imported.

CAUTION

Insufficient quality, precision and resolution of jaw motion tracking data may result in an incorrect diagnosis and treatment.

Only use jaw motion tracking data of a sufficient quality, resolution and precision for the intended diagnosis and treatment.

CAUTION

Excessive artifacts, insufficient resolution or insufficient quality of the 3D X-ray scans may mean that the marker and registration device detection mechanism fails. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Use only 3D X-ray scans that enable the correct detection of markers and registration devices.

CAUTION

Incorrect positions, types and orientations of the registration device may result in an incorrect diagnosis and treatment.

After the JMT wizard has identified the registration device, check the correct position, type and orientation of the registration device, taking into account the 3D X-ray scans.

CAUTION

The incorrect registration of jaw motion tracking data for 3D X-ray scans may result in an incorrect diagnosis and treatment.

Check that the registered jaw motion tracking data is correctly aligned to the 3D X-ray scans.

OPTICAL IMPRESSIONS

CAUTION

The use of other data as 3D X-ray scans as a lone source of information may result in an incorrect diagnosis and treatment.

1. Use 3D X-ray scans as a preferred source of information for diagnosis and planning.
2. Use other data, such as optical impressions, only as an auxiliary source of information.

CAUTION

Inappropriate optical impression devices could result in incorrect diagnosis and treatment.

Only use optical impression data from devices cleared as medical devices.

CAUTION

Optical impression data that does not match patient and date of 3D X-ray data could result in incorrect diagnosis and treatment.

Make sure the patient and date of the imported optical impression data match the patient and date of the visualized 3D X-ray data.

CAUTION

Insufficient integrity or quality of optical impressions may result in an incorrect diagnosis and treatment.

Check the integrity and quality of the optical impressions imported.

CAUTION

Insufficient integrity and precision of optical impressions may result in an incorrect diagnosis and treatment.

Only use optical impressions of a sufficient quality and precision for the intended diagnosis and treatment.

CAUTION

Excessive artifacts, insufficient resolution or the lack of points for registration may mean that the registration process for optical impressions fails. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Only use optical impression data and 3D X-ray data that allow for an adequate registration.

CAUTION

The selection of markings in the registration process for optical impressions that do not correspond to one another may result in an incorrect diagnosis and treatment.

When you register optical impressions, carefully select corresponding markings in the 3D X-ray scans and optical impressions.

CAUTION

The incorrect registration of optical impressions for 3D X-ray scans may result in an incorrect diagnosis and treatment.

Check that the registered optical impressions are correctly aligned to the 3D X-ray scans.

SEGMENTATION

CAUTION

Excessive artifacts or the insufficient resolution of 3D X-ray scans may result in the failure of the segmentation process or lead to insufficient results. Examples of excessive artifacts in 3D X-ray scans include movement artifacts and metal artifacts.

Only use 3D X-ray scans that allow for a sufficient quality of segmentation of the relevant anatomical structures.

CAUTION

Insufficient segmentation quality may result in an incorrect diagnosis and treatment.

Check that the segmentation quality is sufficient for the intended use.

41 ACCURACY

The following table shows the accuracy values in all SICAT applications:

Measurement accuracy for distance measurements	< 100 µm
Measurement accuracy for angle measurements	< 1 degree
Representation accuracy	< 20 µm
Representation accuracy of jaw motion tracking data	< 0.6 mm

GLOSSARY

ADA

American Dental Association

Application

SICAT applications are programs belonging to SICAT Suite.

Bite fork

A bite fork is a bite plate with radiopaque fiducial markers that SICAT uses to register data from 3D X-ray images and jaw motion tracking data.

Crosshairs

Crosshairs are lines of intersection with other slice views.

FDI

Fédération Dentaire Internationale, World Dental Federation

Frames

In the 3D view, frames show the positions of the 2D slice views.

Hub

An external memory that acts as a server and enables data exchange between different devices in a local network.

Message window

The message window shows messages on completed procedures in the bottom right corner of the screen.

Optical impressions

An optical impression is the result of a 3D surface scan of teeth, impression material or plaster casts.

Planning project

A planning project is comprised of planning data from a SICAT application based on a 3D X-ray scan.

SICAT JMT+

SICAT JMT+ saves the movements of the lower jaw.

SICAT Portal

SICAT Portal is a website, which you can use to order appliances from SICAT, amongst other things.

SIXD

File format to exchange optical impressions.

SMPTE

Society of Motion Picture and Television Engineers

SSI

File format to exchange optical impressions.

STL

Surface Tessellation Language, standard file format to exchange mesh data, which may contain optical impressions, for example.

Study

A study consists of a 3D X-ray scan and the corresponding planning project.

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EXPLANATIONS OF LABELING

ICONS

Caution! Observe the accompanying documents.

Observe the instructions for use.

Manufacturer

Batch code

Medical device

CE0197 CE marking including number of the notified body
TÜV Rheinland LGA Products GmbH, Tillystraße 2, 90431 Nürnberg, Germany

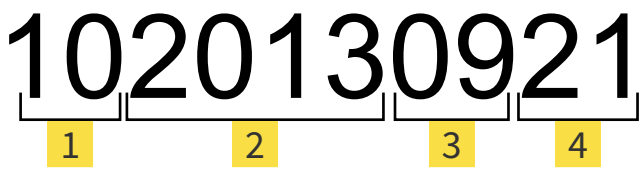
SOFTWARE BATCH CODE

The software batch code displayed in the software. Information on this can be found in the section *About [▶Page 202 - SIDEXIS 4]*.

V2.0.20

BATCH CODE OF THE SICAT INSTALLATION MEDIUM

The batch code of the SICAT installation medium (if available) that is printed on the SICAT installation medium:



1 Product version in AB format (10 means V1.0)

2 Year of manufacture of the installation medium

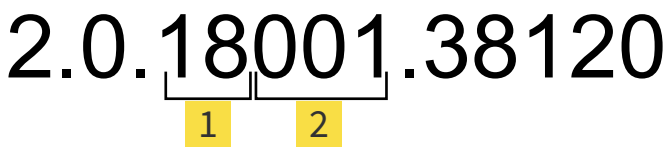
3 Month of manufacture of the installation medium

4 Day of manufacture of the installation medium

DATE OF MANUFACTURE

The software's date of manufacture can be inferred from the build number displayed in the software. Information on this can be found in the section *About [▶ Page 202 - SIDEXIS 4]*.

Example of a build number:



1 Year of manufacture of the software (18 means 2018)

2 Day of manufacture of the software (001 means 1 January)

The year of manufacture of the SICAT installation medium can be inferred from the batch code of the SICAT installation medium.

REVISION: 2020-11-16

CONTACT

MANUFACTURER

SICAT GMBH & CO. KG

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53175 BONN, GERMANY

WWW.SICAT.COM

CE 0197

ARTICLE NO.: 6458751
CHANGE NO.: 129943
DOCUMENT ID: DA70IFU002

LOCAL SUPPORT

WWW.SICAT.COM/SUITESUPPORT

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SICAT