SICATAIR

SICAT AIR VERSION 1.4

Instructions for use | English

STRUCTURE OF THESE INSTRUCTIONS FOR USE

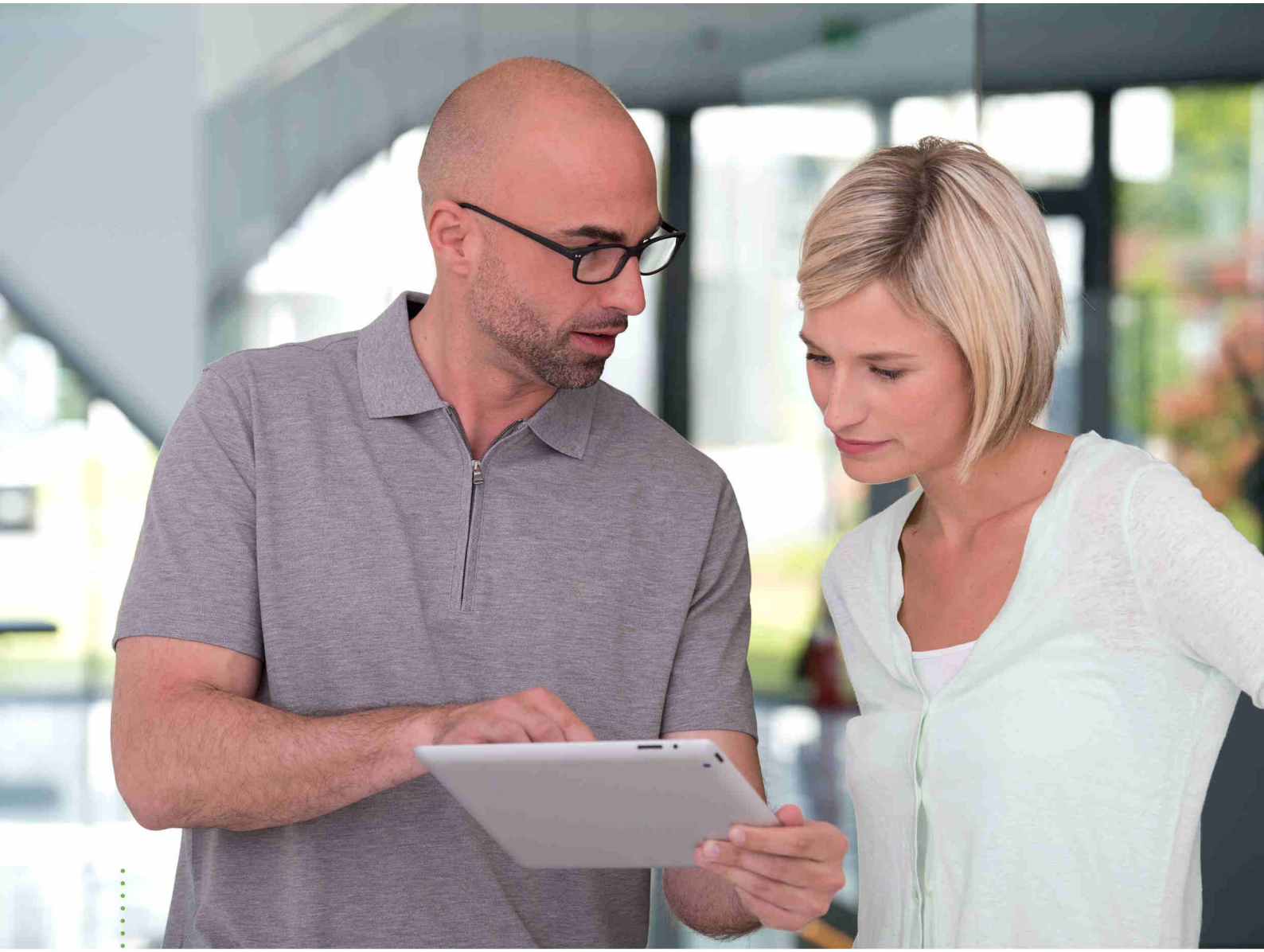
This document contains three different versions of the SICAT Air instructions for use:

- One version for SICAT Air as a SIDEXIS 4 module
- One version for SICAT Air as a SIDEXIS XG plug-in
- One version for SICAT Air as a stand-alone version

Each set of instructions for use contains all information that you need for a specific version. For example, if you exclusively use SICAT Air as a SIDEXIS 4 module, you only need to read the corresponding section of these instructions for use.

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.

SICATAIR



SICAT AIR *VERSION 1.4*

Instructions for use | English | SIDEXIS 4

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1 INTENDED USE AND INDICATIONS FOR USE

SICAT Air is a software for visualization and segmentation of imaging information of the ear-nose-throat region. The imaging data originates from medical scanners such as CT or CBCT scanners. It is also used as a software system to aid qualified medical professionals with the evaluation and comparison of treatment options. The medical professionals' planning data may be exported from SICAT Air and used for the realization of the planned therapy.

INDICATIONS FOR USE

SICAT Air is a software application for:

- Aiding diagnosis in the ear-nose-throat region
- Aiding treatment planning in the ear-nose-throat region
- Aiding comparisons of different treatment options
- Aiding treatment planning for oral appliances

2 VERSION HISTORY

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 45 - 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 Air supports different resolutions of the 3D X-ray scans that are to be compared for airway comparison.
- The handout creation window features a preview function.

VERSION 1.3

- SIDEXIS 4 module
- Support of Italian, Spanish, Portuguese, Dutch and Russian languages
- The version number of SICAT Air matches the version number of SICAT Suite.
- Airway comparison
- Text blocks for handouts

VERSION 1.0

- Initial release
- Support of German, English, French and Japanese 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 (64 Bit, Desktop) Windows 8.1 (64 Bit, Desktop) Windows 10 (64 Bit, Desktop)
Web browser	Microsoft Internet Explorer 11 or higher Mozilla Firefox 39 or higher Google Chrome 44 or higher JavaScript must be activated. A standard browser must be set.
PDF viewer	Adobe Reader DC or higher, for example
SIDEXIS XG with SICAT Suite as a plug-in	Version 2.6.1 (64 Bit)

SIDEXIS 4 with SICAT Suite as a module	Version 4.2 SiPlanAPI V4
SIDEXIS 4 with SICAT Suite as a plug-in	Version 4.1.2 (64 Bit)

*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 172 - SIDEXIS 4]*

SOFTWARE PREREQUISITES

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

- Microsoft .NET Framework 4.5
- CodeMeter license management software 6.30d
- 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 147 - 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 189 - 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.

Only educated or properly trained personnel may use the software.

If you are undergoing education or training or if you are using this software within the scope of general training, you may use the software only under the constant supervision of a qualified person.

You must meet the following prerequisites to use the software:

- You have read the instructions for use.
- You are familiar with the basic structure and functions of the software.
- You are able to identify software malfunctions and take suitable steps where necessary.

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.

▶ Final results are marked with this icon.

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

6 OVERVIEW OF THE INSTRUCTIONS FOR USE

SICAT Air 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]*.

SICAT Suite is currently available in three versions. Some operating steps vary, depending on the version used. Therefore, these instructions for use deal with the versions separately:

- SIDEXIS 4 module
- SIDEXIS XG plug-in
- Stand-alone version

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 187 - SIDEXIS 4]*.

7 OVERVIEW OF SICAT SUITE

SICAT Suite comprises the following parts:

- 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 activate 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 on computers on which SICAT Suite is installed.

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.

ℹ	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.

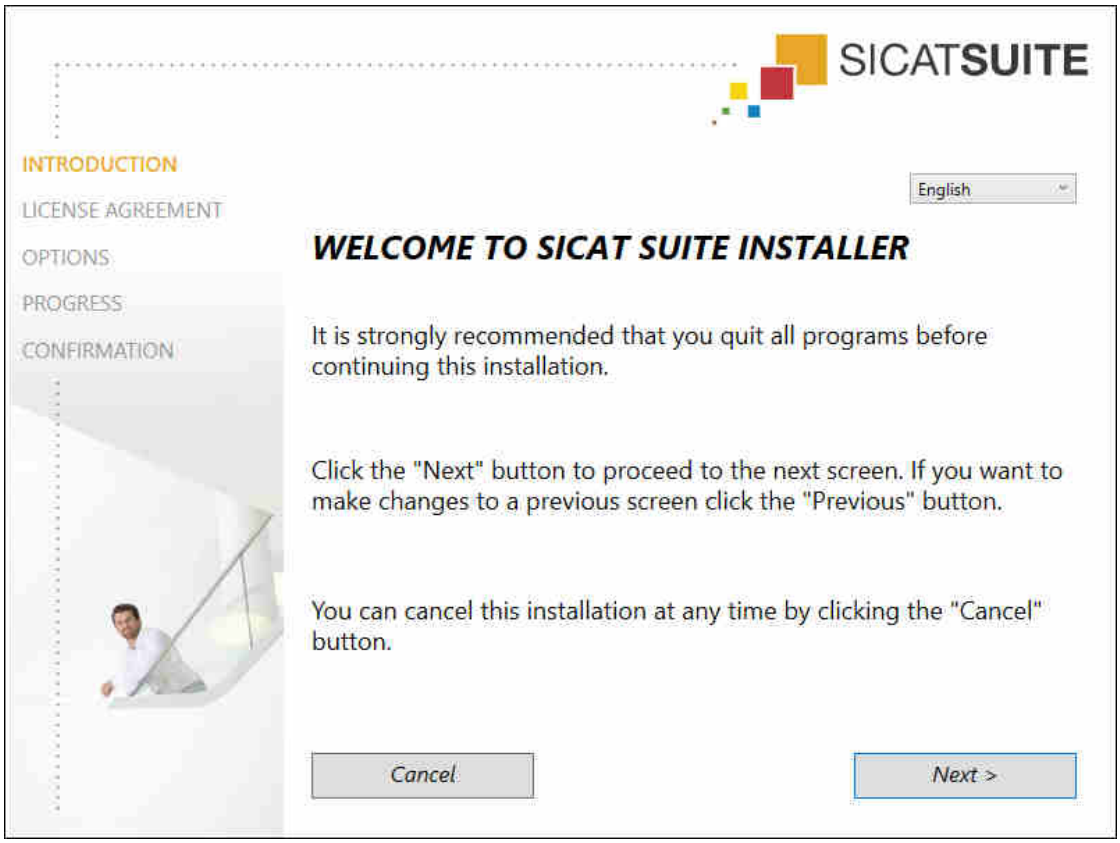
To install SICAT Suite, proceed as follows:

☑ Your computer fulfills the system requirements. Information on this can be found in the section *System requirements [▶Page 9 - SIDEXIS 4]*.

1. Insert the SICAT Suite installation medium into the optical drive of your computer.
   ▶ The **Auto play** window opens.

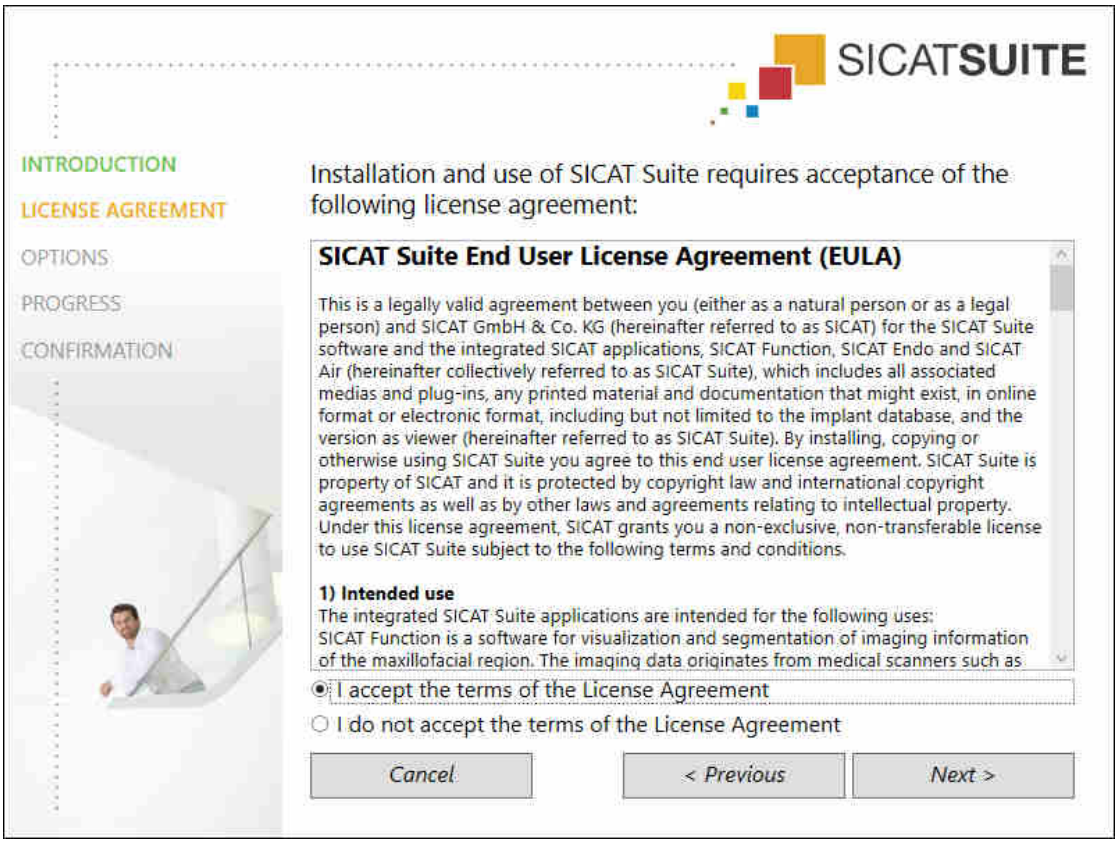
2. Select the option **Execute SICATSuiteSetup.exe** in the **Auto play** window. The file name contains the version of SICAT Suite.
   ▶ The software prerequisites are installed if they are not already available on your computer.

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



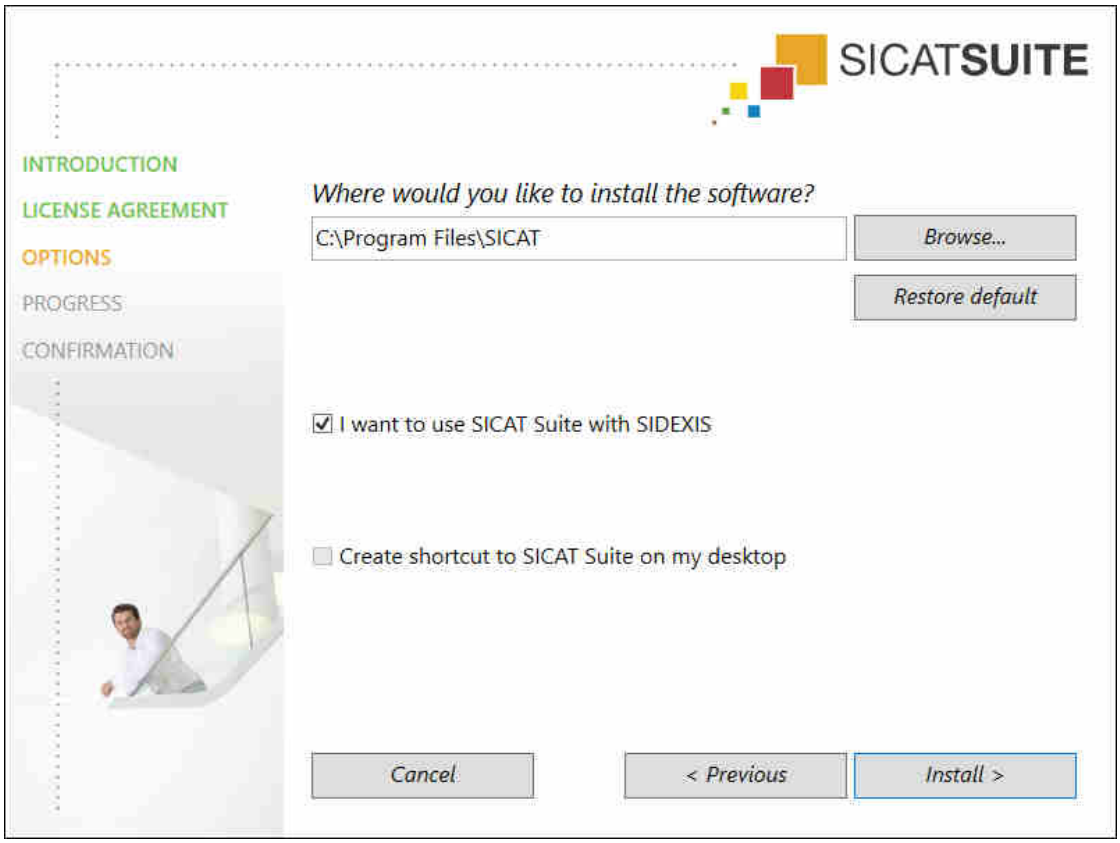
3. Select the desired language for the SICAT Suite installation program in the top right-hand corner of the **INTRODUCTION** window and click on **Next**.

▶ The **LICENSE AGREEMENT** window opens:



4. 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:



5. 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.

6. 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.

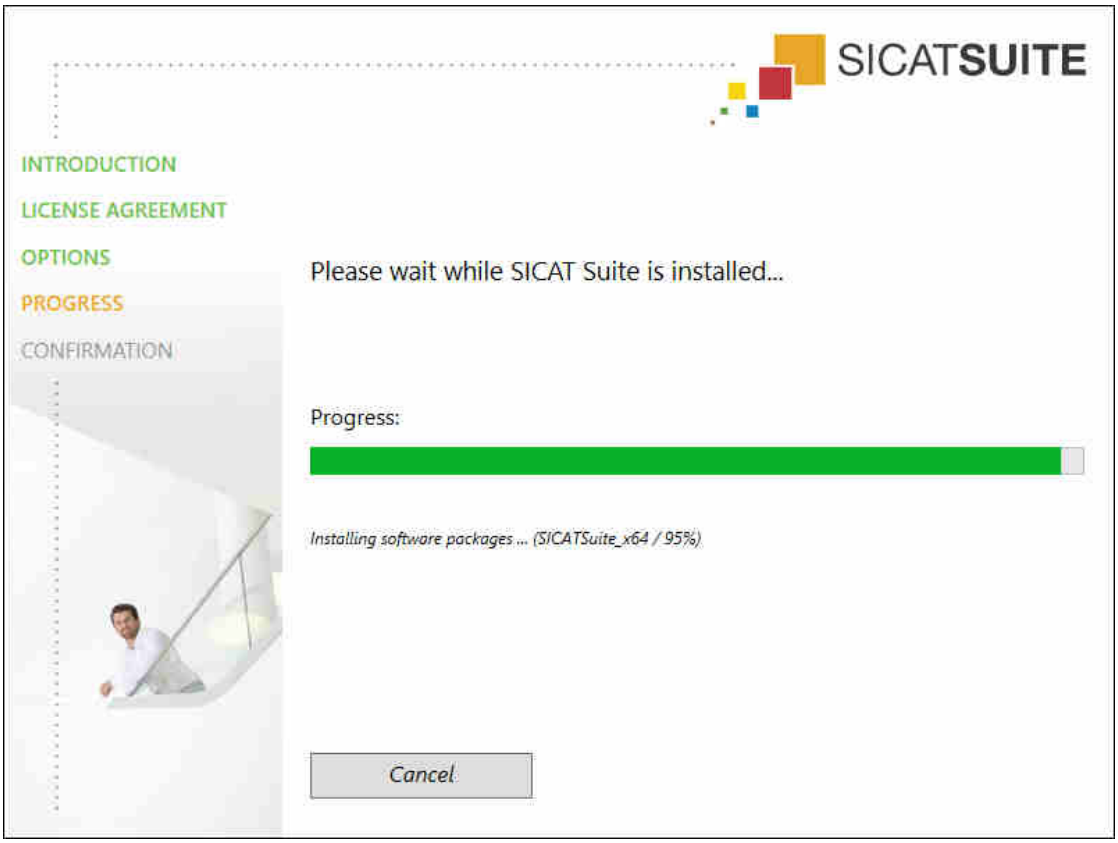
7. If SIDEXIS XG or SIDEXIS 4 is installed on your computer, the **I want to use SICAT Suite with SIDEXIS** check box will be available. You can register SICAT Suite during the installation or register it manually as a SIDEXIS XG plug-in or SIDEXIS 4 module later.

   ▶ 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.

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

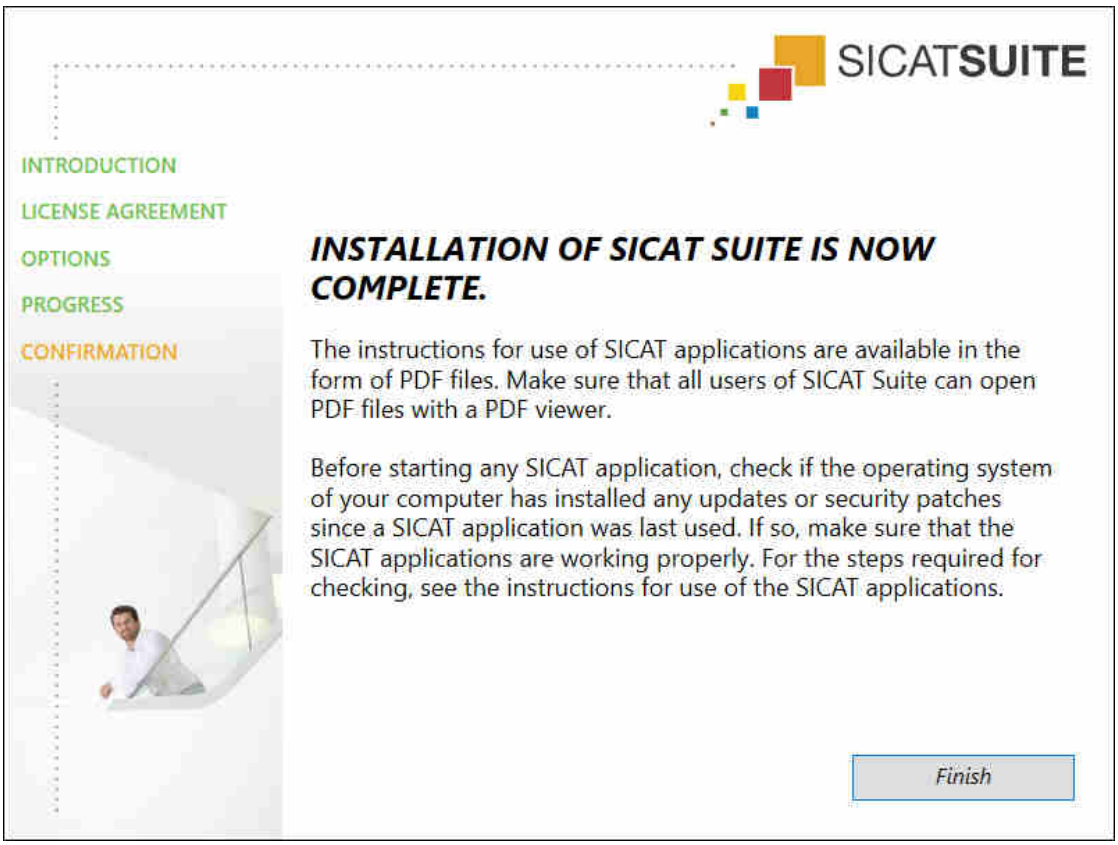
9. Click on the **Install** button.

▶ 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.

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 Air operates without any errors. Perform the following test steps. If you notice deviation during a test step, prevent further use of SICAT Air on the computer in question and contact SICAT support.

PREPARATIONS

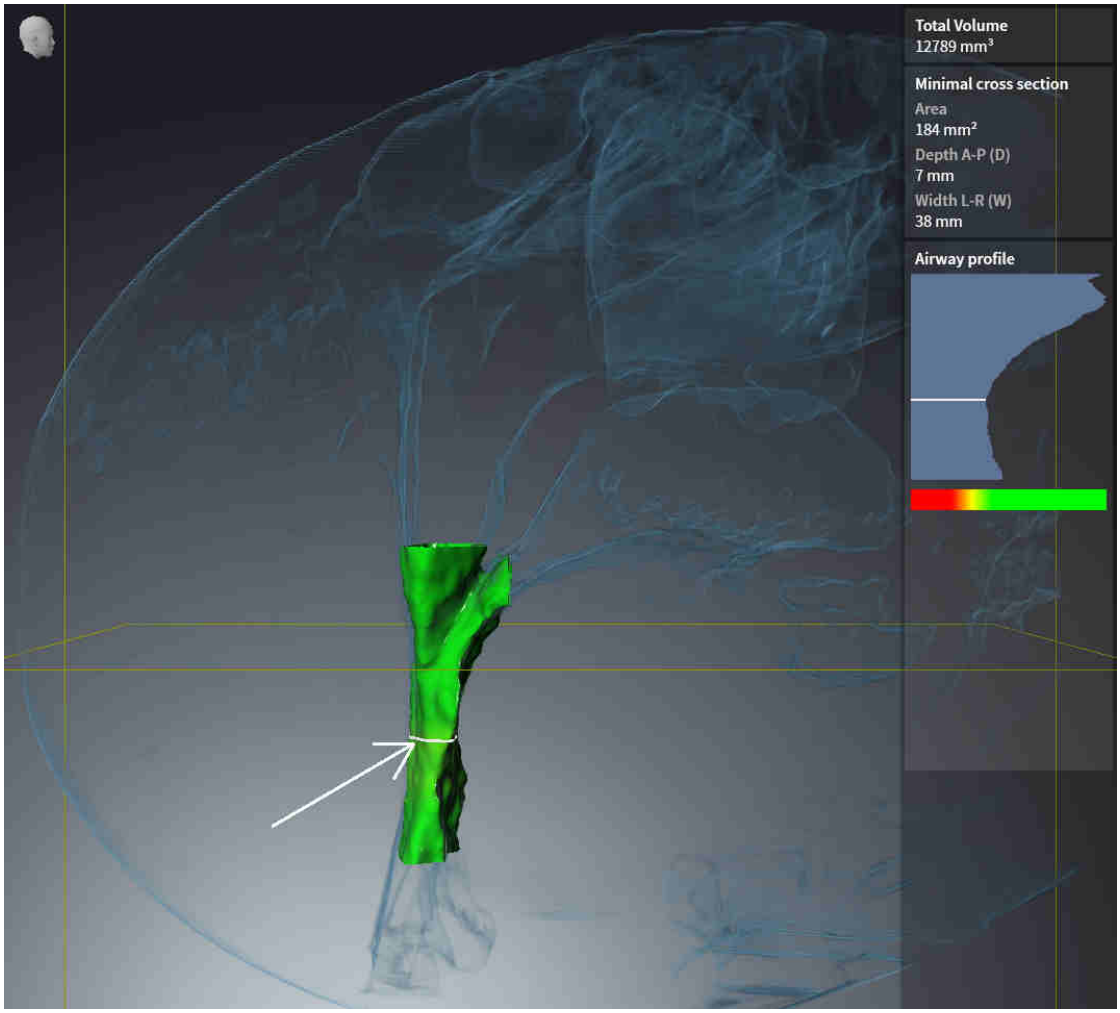
1. To ensure that nobody has made unintended changes, delete the “Axx Patient” patient.
2. Import the reference data record from the “SICATSuite_ReferenceDataset_1.4.zip” file. You will find the data record on the SICAT Suite installation medium.
3. Open the “Patient Axx” reference data record in SICAT Air.

ACTIVATING THE AIRWAY WORKSPACE

- Make sure that the **Airway** workspace is active.

AIRWAY SEGMENTATION

1. Set the display mode of the **3D** view to **Volumetric view with soft tissue**.
2. Make sure that the default values are set in the **3D** view: Air 1124 and transparency 76%
3. Set the clipping mode to **Clipping: None**.
4. Reset the **Airway** workspace using the corresponding function in the **Workspace toolbar**.
5. Compare the **3D** view with the following screenshot. In particular, check the airway profile, the position of the annotation and the following values: **Total volume** and **Minimal cross section area**

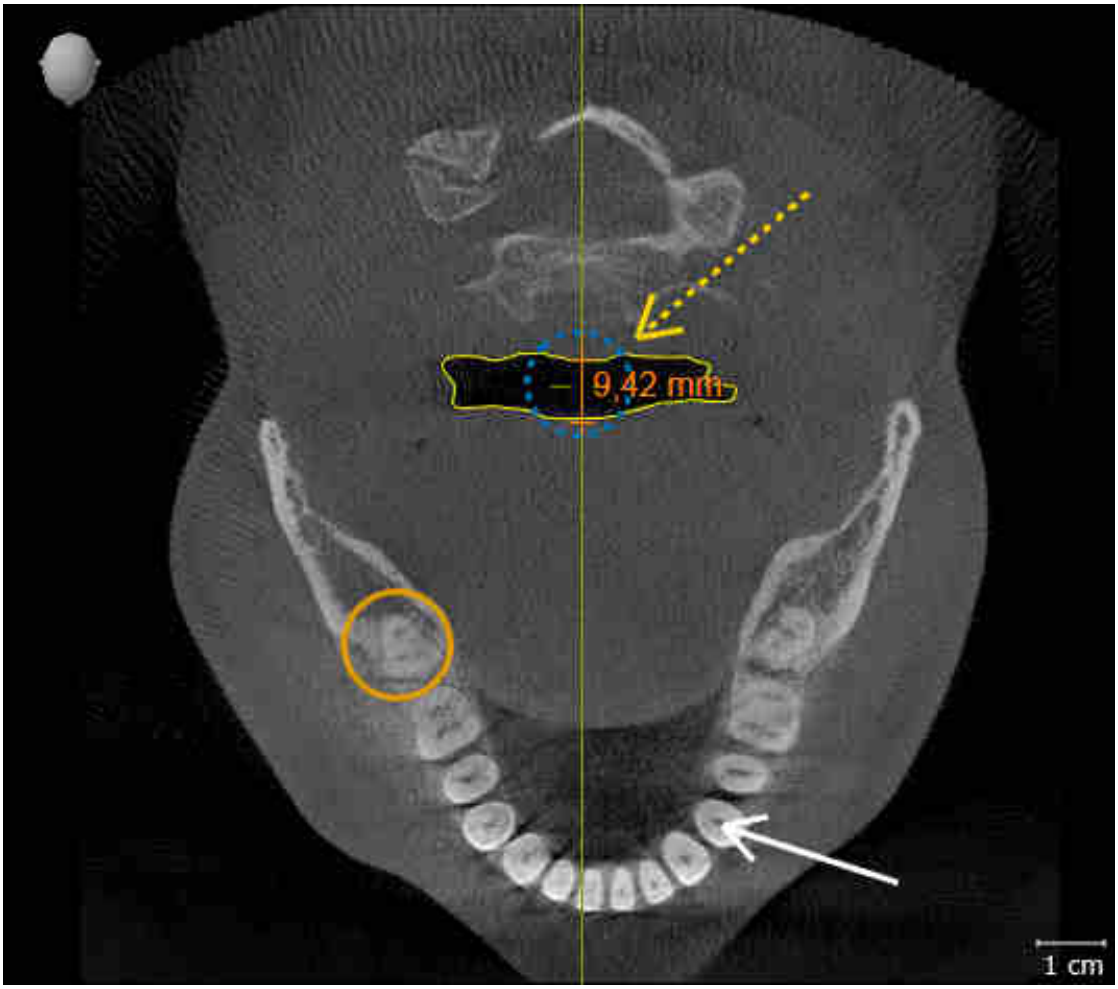


ANNOTATIONS

1. Ensure that the values for **Brightness** and **Contrast** in the **Axial** view are set to the default value of 50%.

2. In the **Object browser**, under **Handout**, select the “Image - Axial” element and focus on it.

3. Compare the **Axial** view with the following screenshot. In particular, check the positions and the representation of the annotations and the distance measurement.

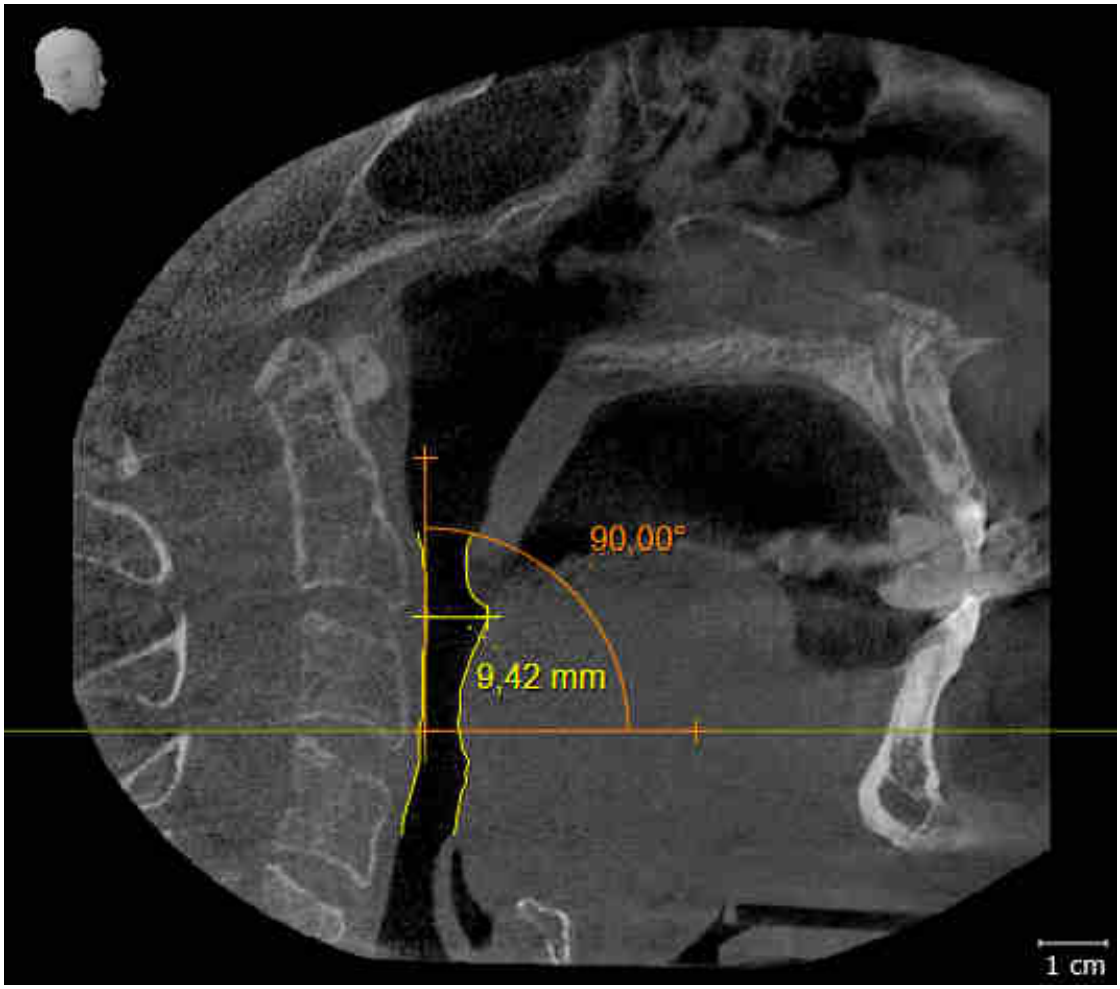


MEASUREMENTS

1. Ensure that the values for **Brightness** and **Contrast** in the **Sagittal** view are set to the default value of 50%.

2. In the **Object browser**, under **Measurements**, select the “90.00°” element and focus on it.

3. Compare the **Sagittal** view with the following screenshot. In particular, check the representation of the measurement objects (90.00° and 9.42 mm) and the orientation of the volume.



10 UPDATING OR REPAIRING SICAT SUITE

UPDATING SICAT SUITE

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

	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.**

	If you update SIDEXIS XG to SIDEXIS 4.1.3 or higher and then update SICAT Suite, the SICAT Suite installer will register SICAT Suite as a SIDEXIS 4 module. When you open a 3D X-ray scan, 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]*.

UPDATING FROM PLUG-IN TO MODULE IN SIDEXIS 4

From version 1.3 onwards, SICAT Suite supports SIDEXIS 4 from version 4.1.3 as a module, but no longer as a plug-in. If you install the update to SICAT Suite 1.3 after SIDEXIS 4, SICAT Suite will automatically be registered as a module. If you update SIDEXIS 4 after updating SICAT Suite, you have to register manually. Information on this can be found in the section *Registering and removing SICAT Suite as a SIDEXIS 4 module [▶Page 36 - SIDEXIS 4]*.

11 SPECIAL FEATURES IN THIS VERSION

Depending on whether you use SICAT Air 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 36 - 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 40 - SIDEXIS 4]*.

PATIENT DATA AND VOLUME DATA

The version of SICAT Air 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.

DATA SYNCHRONIZATION BETWEEN SICAT AIR AND SIDEXIS 4

SICAT Air and SIDEXIS 4 synchronize the volume orientation and panoramic region in both directions. The following restrictions apply here:

- SICAT Air only supports rotations of the volume orientation up to a maximum of 30 degrees.
- If the synchronization of the volume orientation influences previously added diagnosis objects or planning objects which are based on a different volume orientation, SICAT Air will open a message window. The message window will inform you of the exact impacts of the synchronization and you can select between the following options:
  - **Synchronize**
  - **Not now**
  - **Never** for the current 3D X-ray scan and the current volume orientation in SIDEXIS 4
- If the synchronization of the panoramic region influences previously added diagnosis objects or planning objects which are based on a differently set panoramic region, SICAT Air will open a message window. In the message window, you can select one of two options:
  - **OK** - SICAT Air performs the synchronization and removes the objects.
  - **Cancel** - SICAT Air does not perform the synchronization and keeps the objects.
- SICAT Air supports only standard panoramic curves of SIDEXIS 4, not the shifting of individual points.
- SICAT Air supports only panoramic curves that are at least 10 mm thick.
- SICAT Air supports only panoramic curves that have not been rotated in SIDEXIS 4.

If at least one of the restrictions applies, SICAT Air and SIDEXIS 4 no longer synchronize the volume orientation and panoramic region or just the panoramic region.

In addition, SICAT Air adopts the focus point and viewing direction of **3D** view from SIDEXIS 4 when you open a 3D X-ray scan in SICAT Air 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

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. This means, amongst other things, that other workstations can withdraw your write permissions for open records. If this occurs, SIDEXIS 4 will close the record immediately and you cannot save changes to SICAT Air studies.

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

- A SICAT Air 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 Air 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 Air studies without a Viewer license:

- In SIDEXIS 4, export SICAT Air studies and import the data to SIDEXIS on another computer. SICAT Air must be installed on this computer.
- In SIDEXIS 4, create a Wrap&Go package which contains SICAT Air studies. Install the Wrap&Go package on another computer. Then, install SICAT Air.

In both cases you cannot make or save any changes to the planning.

Under certain circumstances you cannot make or save changes to SICAT Air 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 183 - SIDEXIS 4]*.

12 THE STANDARD WORKFLOW OF SICAT AIR

⚠ **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.

INSTALLATION

Information on how to install SICAT Suite can be found in the section *Installing SICAT Suite [▶Page 18 - SIDEXIS 4]*.

ACTIVATING FULL VERSION

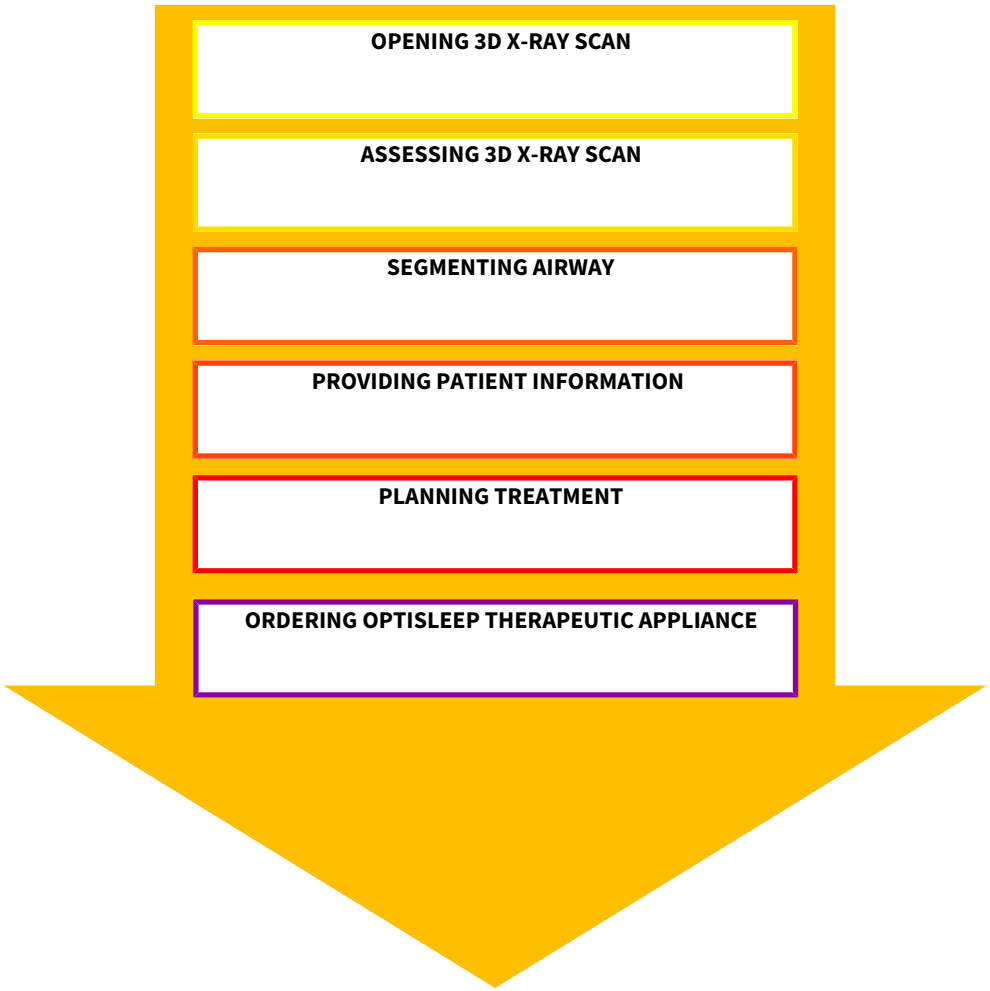
- If you have purchased a license for SICAT Air, activate the license to unlock the full version. Information on this can be found in the section *Licenses [▶Page 45 - SIDEXIS 4]*.

If you have not purchased a license for SICAT Air, open a 3D X-ray scan in Viewer mode. Information on this is available in the section *Opening read-only data [▶Page 183 - SIDEXIS 4]*.

SETTINGS

Change the desired settings in the **Settings** area. Information on this can be found in the section *Settings [▶Page 169 - SIDEXIS 4]*.

HOW TO PROCEED IN SICAT AIR



OPENING A DATA RECORD

1. Select a 3D X-ray scan or a SICAT Air study in the timeline.
2. Start SICAT Air. Information on this can be found in the section *Starting SICAT Suite [▶Page 40 - SIDEXIS 4]*.

EDITING DATA RECORDS IN SICAT AIR

1. Align the 3D X-ray scan according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]*.
2. Assess the 3D X-ray scan and get an overview of the upper airways.
3. Segment the respiratory path. Information on this can be found in the section *Segmenting the airway [▶Page 113 - SIDEXIS 4]*.
4. Assess the airway in the **Airway** workspace. Information on this can be found in the section *Airway analysis [▶Page 123 - SIDEXIS 4]*.
5. Inform the patient and create a handout for the patient based on this. Information on this can be found in the section Patient information.
6. Perform treatment planning.
7. Create a 3D X-ray scan of the patient with the jaw in a protruded treatment position. Open the scan in SICAT Air.
8. Verify the effect of the therapeutic appliance. Consider in particular changes to the airways and the effects on the temporomandibular joint.
9. Order a customized therapeutic appliance for the patient. Information on this can be found in the section *Ordering process [▶Page 147 - SIDEXIS 4]*.
10. If you wish to obtain a second opinion, export the data. Information on this can be found in the section *Data export [▶Page 146 - SIDEXIS 4]*.

You can verify the effect of the therapeutic appliance in particular by using the airway comparison. Information on this can be found in the section *Airway comparison [▶Page 129 - 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 185 - SIDEXIS 4]*.

SICAT Air saves airway objects, the airway comparison, the handout, the segmentation and optical impressions in a study, which is based on the 3D X-ray scan.

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 44 - SIDEXIS 4]*.

Further support is available in the **Support** area. Information on this can be found in the section *Support [▶Page 179 - 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 29 - 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

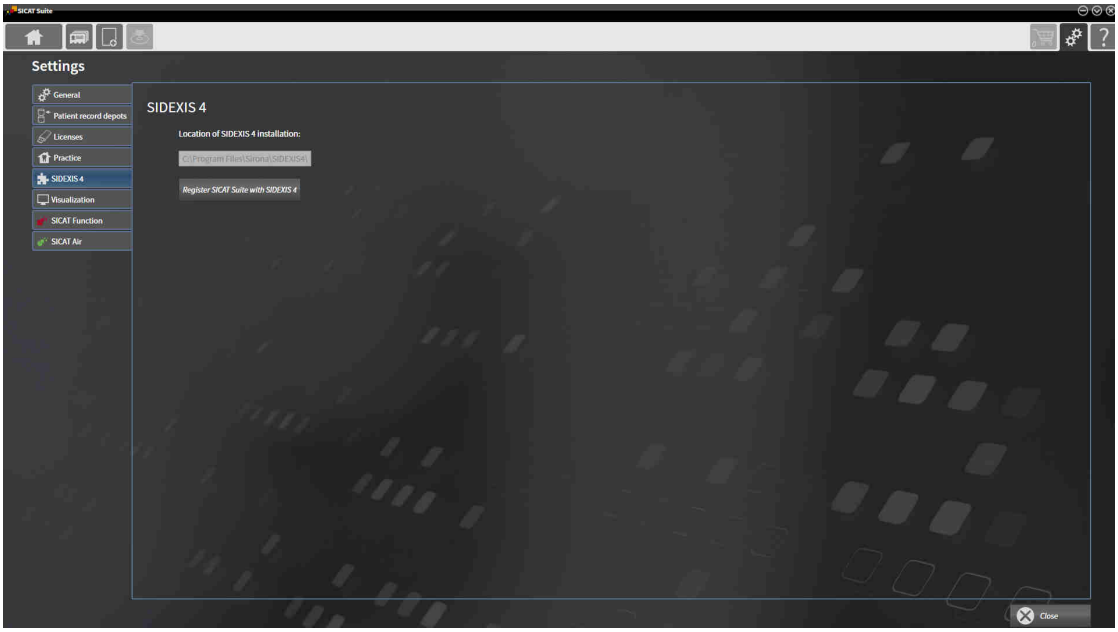
1. Start the stand-alone version of SICAT Suite. Information on this can be found in the section *Starting SICAT Suite [▶Page 40 - SIDEXIS 4]*.

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 AIR 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.

If SICAT Suite is running as a SIDEXIS 4 module, the patient data will be managed in SIDEXIS 4.

SIDEXIS 4 displays preview pictures of SICAT Air studies if the following conditions have been fulfilled:

- You are using SICAT Suite as a SIDEXIS 4 module.
- A SICAT Air study is available for the selected patient.

1 Availability of airway segmentation

2 Availability of optical impressions

3 Availability of an airway comparison

4 Planning

5 Order

The preview pictures contain the following information:

- Availability of airway segmentation
- Availability of optical impressions
- Availability of an airway comparison
- 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 Air, you must first start SICAT Suite.

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 36 - SIDEXIS 4]*. If SICAT Suite is installed after SIDEXIS 4, registration can take place automatically.

☑ You have already selected a 3D X-ray scan or a study in SIDEXIS 4.

1. Click on the **Show in** icon on the right of the **Show in 3D study** button.

2. In the **Show in** window, click on the **SICAT Suite** icon.

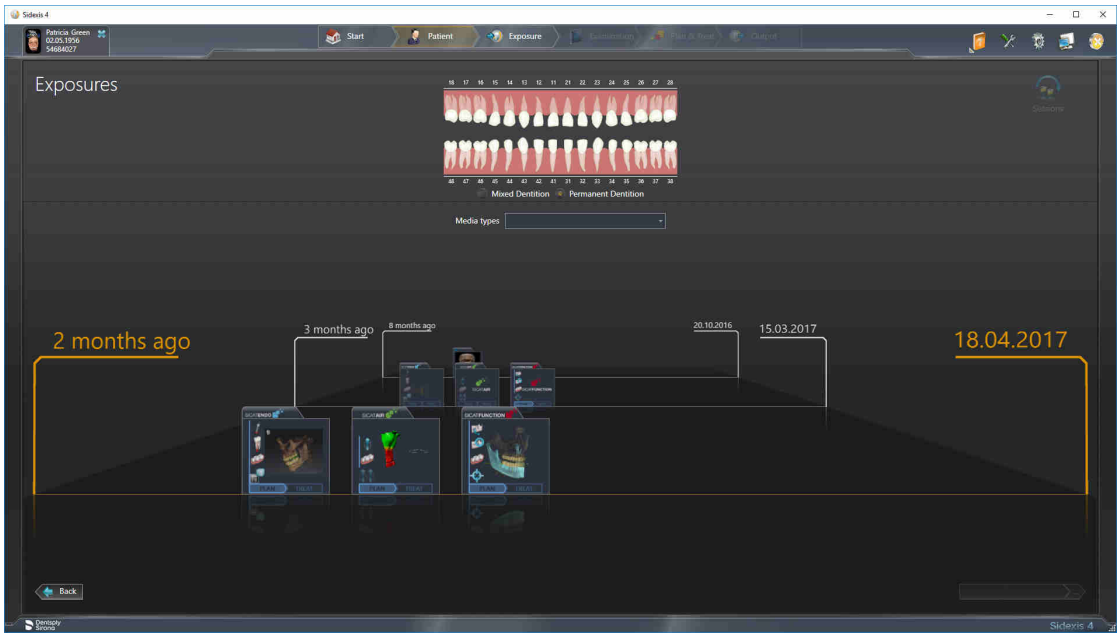
▶ SIDEXIS 4 switches to the **Plan & Treat** phase.

▶ SICAT Suite opens the 3D X-ray scan in a SICAT application.

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 a 3D X-ray scan. Information on this can be found in the section *Switching between SICAT applications [▶Page 43 - SIDEXIS 4]*.

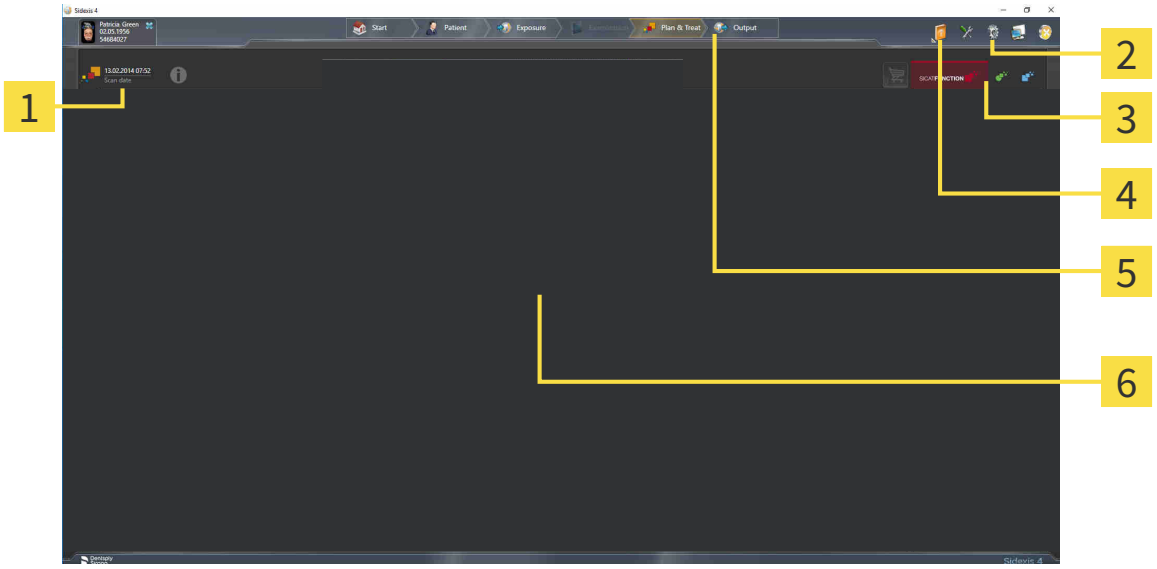
If you have saved an application-specific study, you can select it directly in the **Scans** window and open it in the corresponding SICAT application. If you already have an item in your shopping cart which is based on that study, the shopping cart will open.



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 Air studies in SIDEXIS 4 [▶Page 38 - 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 169 - SIDEXIS 4]*.
- Buttons to change applications and **Shopping cart** button – Information on this can be found in the sections *Switching between SICAT applications [▶Page 43 - SIDEXIS 4]* and *Ordering process [▶Page 147 - SIDEXIS 4]*.
- **Help** - Information on this can be found in the section *Opening the instructions for use [▶Page 44 - 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:

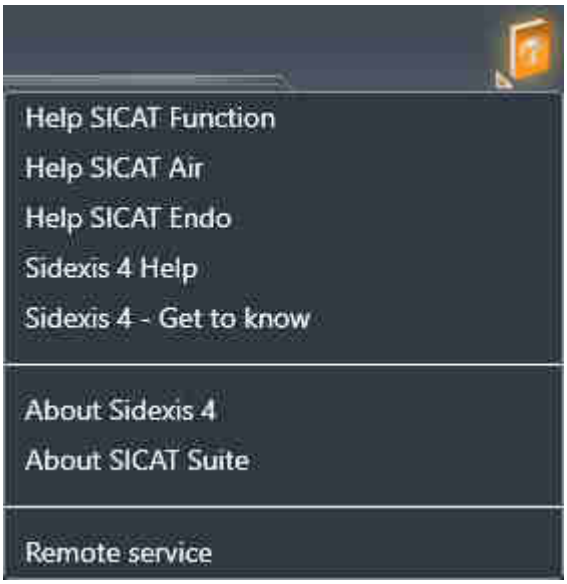
- Click on the button with the label matching the desired SICAT application.

► 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, you can view SICAT Air plans even without activated SICAT Air license.

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.

The following steps are required to activate 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 on computers on which SICAT Suite is installed.

The following applies for activating and deactivating licenses:

- You will only receive license keys for SICAT applications that are approved in your country.
- If you activate an activation key on a computer, one license of all included SICAT applications or included functions will be linked to that computer. The licenses will be no longer available for activation on another computer.
- You may deactivate licenses for each SICAT application or individual function separately. Returned licenses are available for renewed activation on the same or another computer.
- 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.
- If you activate a full version license, you will automatically receive Viewer licenses for all applications that are approved in your country.

Information on how to convert a voucher code into an activation key can be found in section *Redeeming voucher codes [▶Page 54 - SIDEXIS 4]*._

The **License Overview** 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 “Your licenses at a glance” window [▶Page 47 - SIDEXIS 4]*.

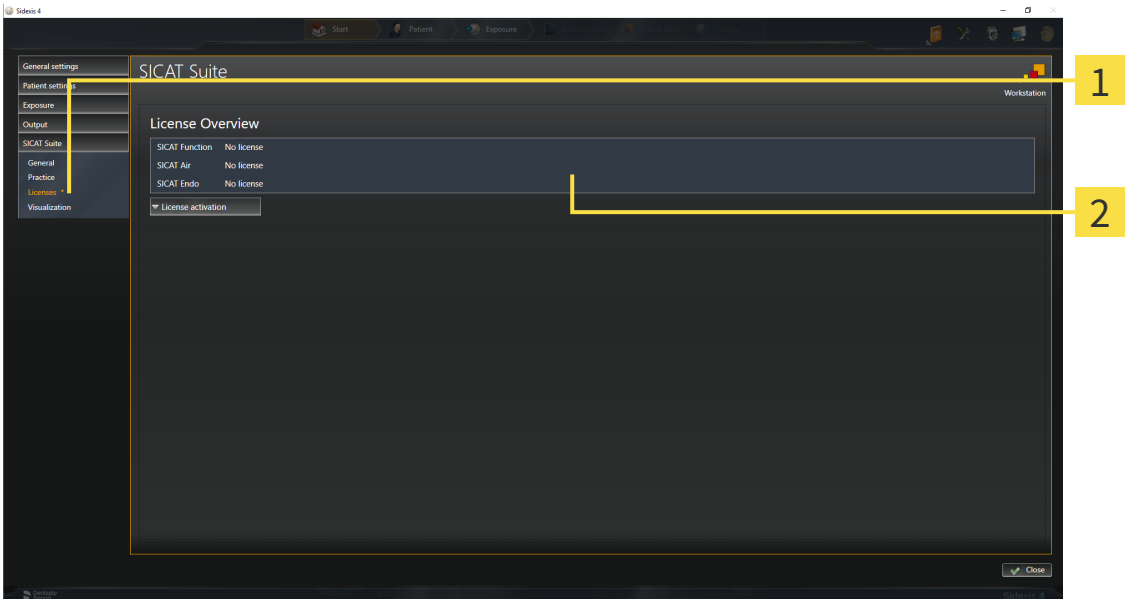
You can activate licenses in two ways:

- 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 licenses using an active Internet connection [▶Page 48 - 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 licenses manually or without an active Internet connection. [▶Page 50 - SIDEXIS 4]*.

You can deactivate licenses for each application or function individually. After you have deactivated a license, you can enter the same or another activation key. Returned licenses are available for activation on the same or another computer. Information on this can be found in the section *Returning licenses to the license pool [▶Page 52 - SIDEXIS 4]*.

19.1 OPENING THE “YOUR LICENSES AT A GLANCE” 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 **License Overview** window opens:



1 **Licenses** tab

2 **License Overview** window

Continue with one of the following actions:

- *Activating licenses using an active Internet connection [▶Page 48 - SIDEXIS 4]*
- *Activating licenses manually or without an active Internet connection. [▶Page 50 - SIDEXIS 4]*
- *Returning licenses to the license pool [▶Page 52 - SIDEXIS 4]*

19.2 ACTIVATING 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:

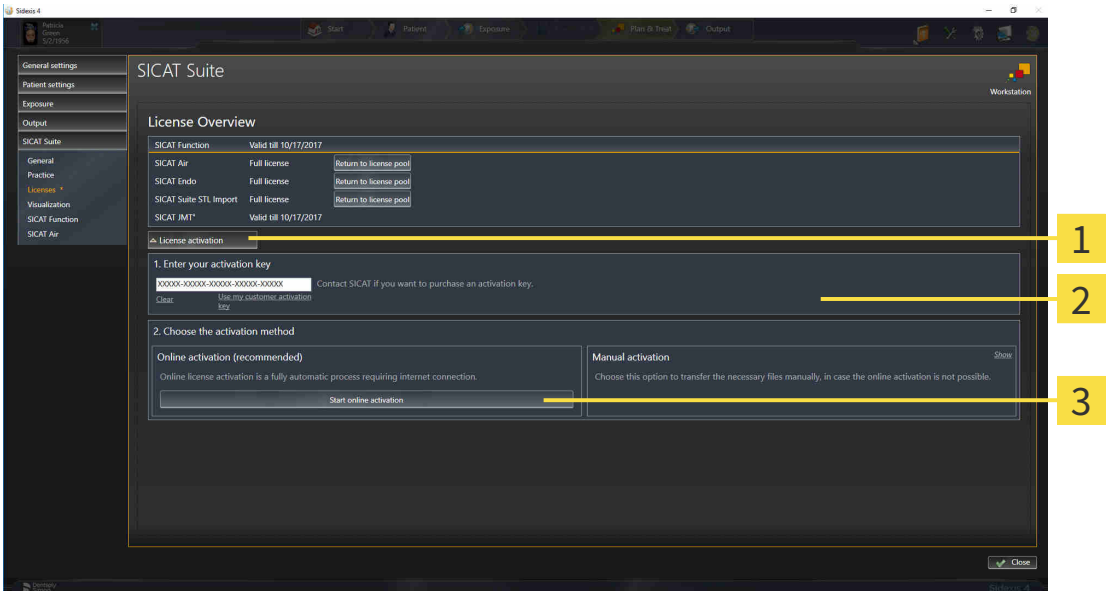
☑ At least one SICAT application or one individual function is missing an active license.

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

☑ The **License Overview** window is already open. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶Page 47 - SIDEXIS 4]*.

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

   ▶ The **License Overview** 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 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.

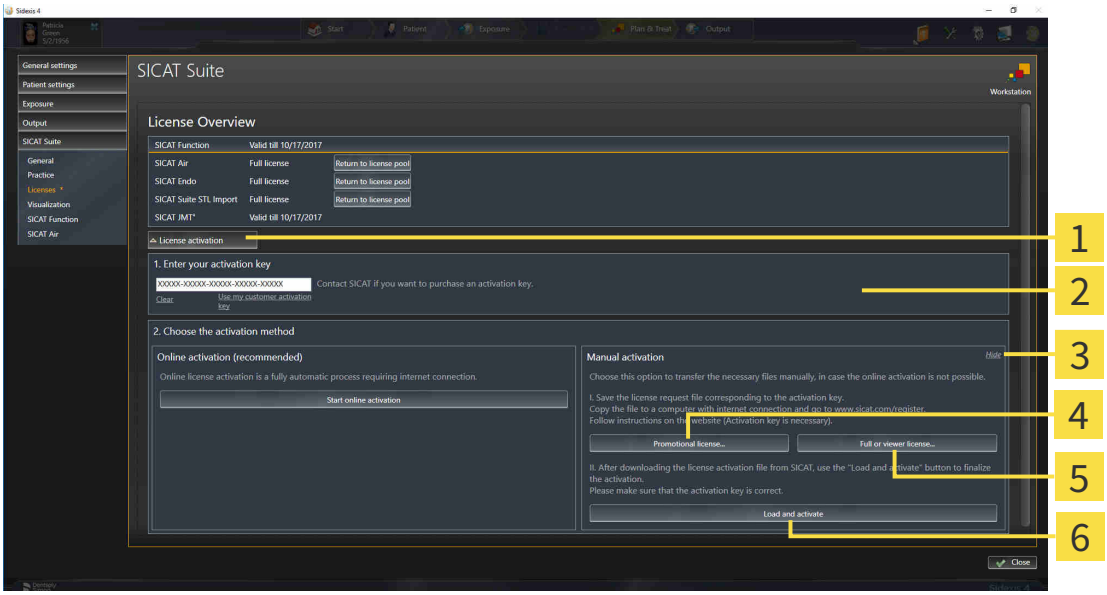
To activate licenses manually or without an active Internet connection, proceed as follows:

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

☑ The **License Overview** window is already open. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶Page 47 - SIDEXIS 4]*.

1. Click on **License activation** in the **License Overview** window.
   ▶ The **License activation** area expands.

2. Click on **Display** in the **Manual activation** area.
   ▶ The **Manual activation** area expands:



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

3. If you wish to activate a full license, click the **Full or viewer license** button.

4. If you wish to activate a demo license, click the **Promotional 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 **License Overview** 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 LICENSES TO THE LICENSE POOL

NOTICE

Patient record must be closed

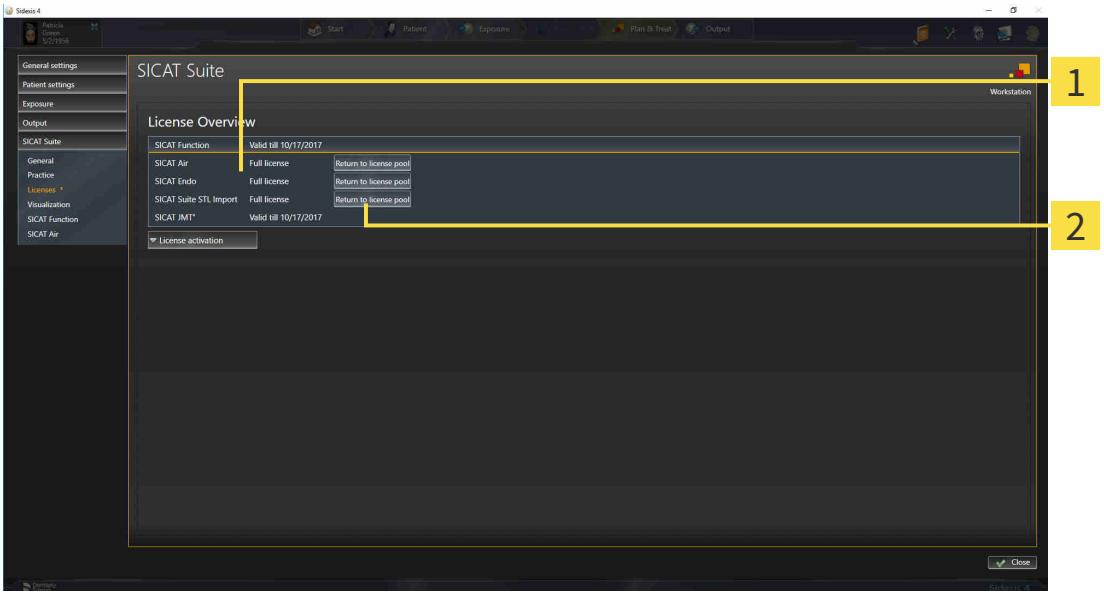
You must close the active patient record before making changes to the licenses.

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

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

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

☑ The **License Overview** window is already open. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶Page 47 - SIDEXIS 4]*.



1 License status of SICAT applications and individual functions

2 **Return to license pool** button

- In the **License Overview** window, click on the **Return to license pool** 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 REDEEMING VOUCHER CODES

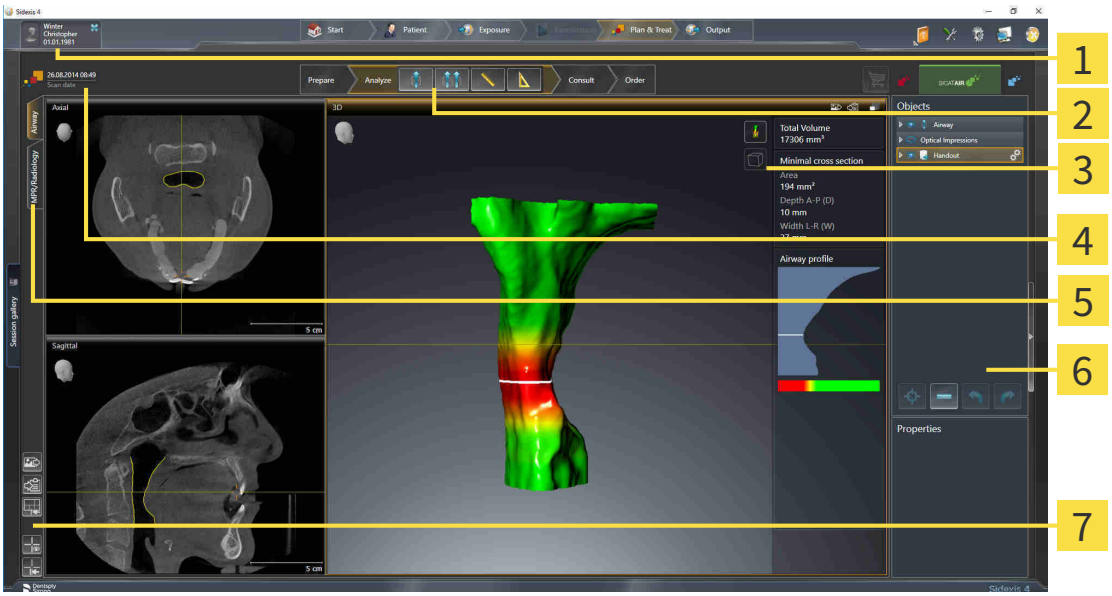
1. Open a web browser on the computer with the active Internet connection and open the http://www.sicat.com web page.
2. Select the link for the SICAT portal.
   ▶ The SICAT portal opens.
3. Register or log in to the SICAT portal using your username and password if you have not already done so.
4. Click on the entry to manage your licenses in the account management section.
5. Enter your voucher code and confirm the code.
   ▶ The SICAT Portal will generate a license key and add the license key to your activation key.
6. Start SICAT Suite and activate the license.

For further information about this see *Activating licenses using an active Internet connection [▶Page 48 - SIDEXIS 4]* and *Activating licenses manually or without an active Internet connection. [▶Page 50 - SIDEXIS 4]*.

See the FAQ on the SICAT portal for more help.

20 THE SICAT AIR USER INTERFACE

The SICAT Air 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 that you can use to add and import diagnosis objects and planning objects. Information on this can be found in the section *Workflow toolbar [▶Page 56 - SIDEXIS 4]*.
- The **Workspace area** is the part of the user interface below the **Workflow toolbar**. It displays the active workspace of SICAT Air. Each workspace contains a specific combination of views. Information on this can be found in the section *Overview of the airway workspace [▶Page 69 - 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 75 - SIDEXIS 4]* and *Adjusting the 3D view [▶Page 86 - SIDEXIS 4]*.
- The **Object bar** contains tools for the management of diagnosis objects and planning objects. For further information see section *Object bar [▶Page 58 - SIDEXIS 4]* and section *SICAT Air objects [▶Page 62 - 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 83 - SIDEXIS 4]*, *Resetting views [▶Page 84 - SIDEXIS 4]*, *Adjusting and resetting the layout of workspaces [▶Page 72 - SIDEXIS 4]* and *Creating screenshots of workspaces [▶Page 73 - SIDEXIS 4]*.

20.1 WORKFLOW TOOLBAR

The **Workflow toolbar** in SICAT Air consists of four workflow steps:

1. **Prepare**
2. **Analyze**
3. **Consult**
4. **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** - Information on this can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]* and *Adjusting the panoramic region [▶Page 104 - SIDEXIS 4]*.

2. WORKFLOW STEP "ANALYZE"

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

- **Segment the airway** - Information on this can be found in the section *Defining the airway area [▶Page 114 - SIDEXIS 4]*.

- **Airway comparison** - Information on this can be found in the section *Carrying out an airway comparison [▶Page 130 - SIDEXIS 4]*.

- **Add distance measurement (D)** - Information on this can be found in the section *Adding distance measurements [▶Page 108 - SIDEXIS 4]*.

- **Add angle measurement (A)** - Information on this can be found in the section *Adding angle measurements [▶Page 109 - SIDEXIS 4]*.

3. WORKFLOW STEP "CONSULT"

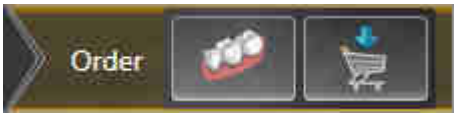
The following tools are available in the **Consult** workflow step:

- **Draw Arrow** - Information on this can be found in the section Creating images and screenshots.

- **Draw Circle** - Information on this can be found in the section Creating images and screenshots.

- **Generate handout** - Information on this can be found in the section Preparing handouts.

4. WORKFLOW STEP "ORDER"

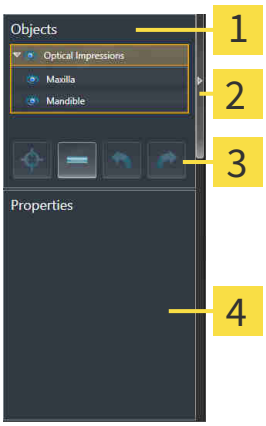


The following tools are available in the **Order** workflow step:

- **Import and register optical impressions** - Information on this can be found in the section *Importing and registering optical impressions [▶Page 152 - SIDEXIS 4]*.

- **Order therapeutic appliance** - Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶Page 148 - 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 59 - 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 61 - 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 Air can be found in the section *SICAT Air objects [▶Page 62 - 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** icon next to the desired object group.
   ▶ The object group collapses.

2. Click on the **Expand** 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 Air deactivates a previously activated object or object group.

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

▶ SICAT Air 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 Air hides the object or object group.

► SICAT Air 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 Air shows the object or object group.

► SICAT Air 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 59 - SIDEXIS 4]*.

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

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

▶ SICAT Air 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 59 - SIDEXIS 4]*.

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

▶ SICAT Air 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 Air undoes the last object action or group action.

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

▶ SICAT Air 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 AIR OBJECTS

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

- **Optical impressions**
- **Airway**
  - **Minimal cross section area**
- **Airway comparison**
- **Handout**
  - **Image**
  - **Screenshot**
  - **Airway comparison**

OPTICAL IMPRESSION OBJECT

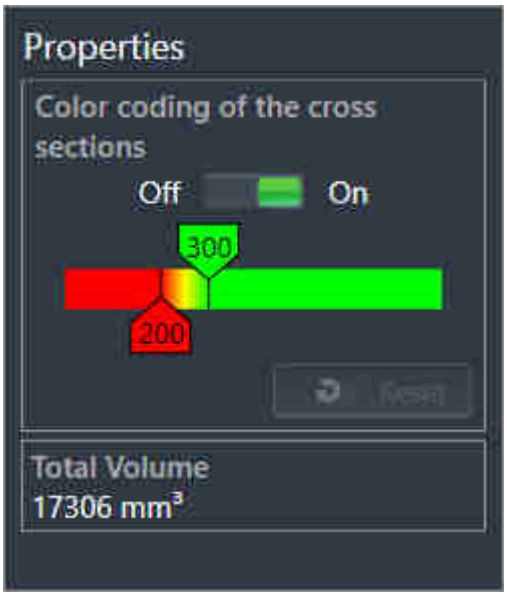
After you have imported and registered optical impressions, SICAT Air displays a **Optical impressions** object in the **Object browser**. A **Optical impressions** object contains the following sub-objects:

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

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

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

AIRWAY OBJECT



After you have segmented the airway, SICAT Air displays the **Airway** object in **Object browser**. The **Object bar** displays the following elements in the **Properties** area for this object:

- A switch that you can use to activate or deactivate the Color coding.
- The **Color coding of the cross sections** with sliders that you can use to define the minimum and maximum value of the cross-sectional area in mm^2 for the color gradient.
- The **Reset** button that you can use to reset the values for the color coding to the values from the SICAT Air settings. Information on how to define the default values in the SICAT Air settings can be found in the section *Changing SICAT Air settings [▶Page 177 - SIDEXIS 4]*.
- The **Total volume** of the segmented airway area

SICAT Air applies changes to the properties immediately to the airway in the **3D** view.

If you focus on the **Airway** object, SICAT Air will adjust the workspace region as follows:

- If not already active, SICAT Air will activate the **Airway** workspace.
- SICAT Air focuses all views on the middle of the smallest cross-sectional area.

If you hide the **Airway** object, SICAT Air will also hide the airway section.

If you move the mouse pointer over a **Airway** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Segment the airway** window.

MINIMAL CROSS SECTION AREA OBJECT

The following applies for **Minimal cross section area** objects:

- **Minimal cross section area** objects are beneath **Airway** objects.
- The designation of a **Minimal cross section area** object contains the smallest cross-sectional area in mm^2.
- In the **Properties** area, the object also displays the cross-section of the slice.
- If you focus on a **Minimal cross section area** object, the 2D slice views display the slice with the smallest cross-sectional area.

AIRWAY COMPARISON OBJECT

The following applies for **Airway comparison** objects:

- If you move the mouse pointer over a **Airway comparison** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Airway comparison** window.
- After you have created and activated an **Airway comparison**, the **Object browser** will display the following in the **Properties** area:
  - Creation time of the object
  - Preview of the object
- You can use the **Remove active object/group (Del)** function to remove an **Airway comparison** object. After removing it, you cannot restore the previous **Airway comparison** object and must perform the airway comparison once again.

HANDOUT OBJECT

The following applies for **Handout** objects:

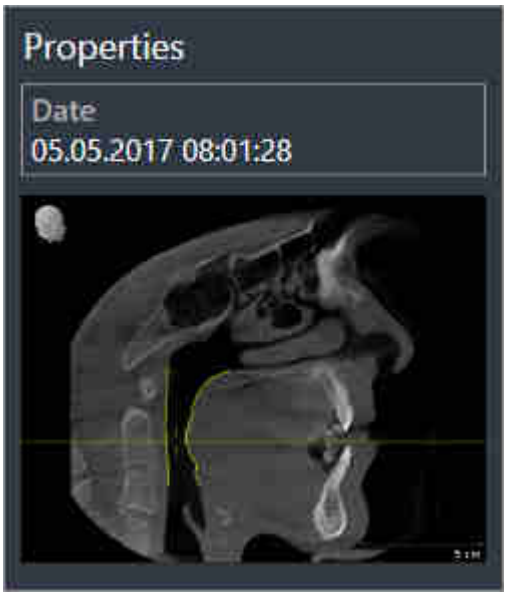
- If you move the mouse pointer over a **Handout** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Generate handout** window.
- You can use the **Remove active object/group (Del)** function to remove an **Handout** object. SICAT Air removes all associated**Screenshot** objects and **Image** objects.

IMAGE OBJECTS

The following applies for **Image** objects:

- **Image** objects are below**Handout** objects.
- SICAT Air combines all drawing objects of a slice in a workspace for each 2D view and creates a **Image** object from this.
- SICAT Air combines all drawing objects of a certain viewing direction and zoom factor in a workspace for the **3D** view and creates an **Image** object from this.
- After you have created and activated a **Image** object, the **Object browser** will display the following in the **Properties** area:
  - Creation time of the object
  - Preview of the object
- You can use the **Undo last object/group action (Ctrl+Z)** and **Redo object/group action (Ctrl+Y)** functions for individual arrows and circles.
- You can use the **Remove active object/group (Del)** function to remove a **Image** object and thus all arrows and circles contained in it at once. SICAT Air removes **Image** objects both from the **Object browser** and from the **Generate handout** window.
- If you focus on a **Image** object, SICAT Air restores the corresponding view for the time at which you have created the last arrow or circle contained therein.

SCREENSHOT OBJECTS



The following applies for **Screenshot** objects:

- **Screenshot** objects are below**Handout** objects.
- SICAT Air creates one **Screenshot** object per screenshot.
- After you have created and activated a **Screenshot** object, the **Object browser** will display the following in the **Properties** area:
  - Creation time of the object
  - Preview of the object
- You can use the **Remove active object/group (Del)** function to remove an **Screenshot** object. SICAT Air removes **Screenshot** objects both from the **Object browser** and from the **Generate handout** window.
- If you focus on a **Screenshot** object, SICAT Air restores the corresponding view for the time at which you have created the object.
- The show and hide functions are not available.

21 WORKSPACES

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

SICAT Air features two different workspaces:

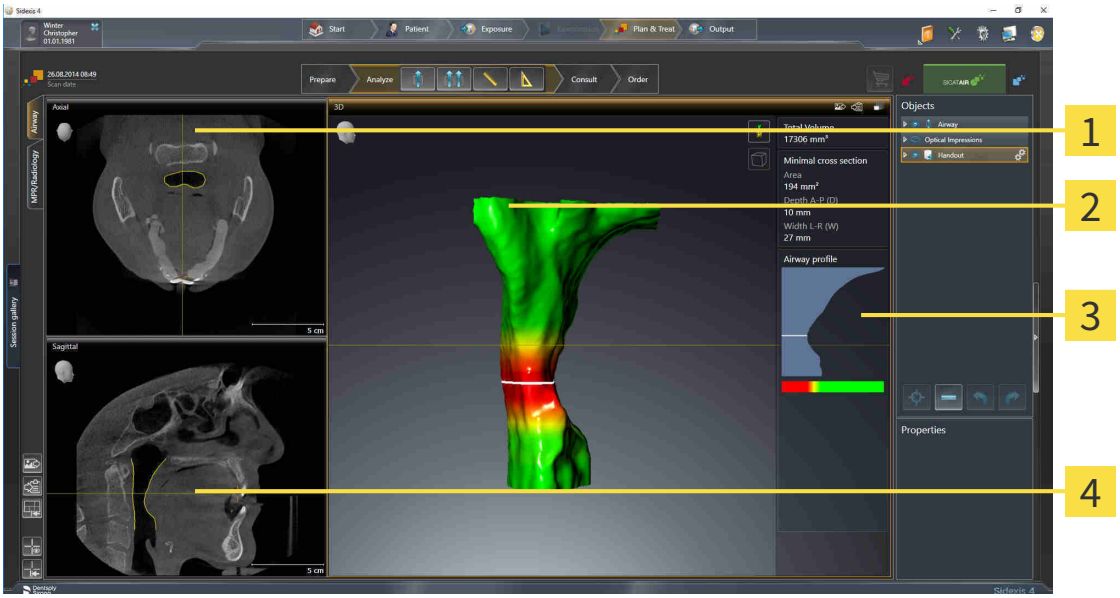
- **Airway** workspace - Information on this can be found in the section *Overview of the airway workspace [▶Page 69 - SIDEXIS 4]*.
- **MPR/Radiology** workspace - Information on this can be found in the section *Overview of the MPR/Radiology workspace [▶Page 70 - SIDEXIS 4]*.

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

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

- *Switching the active workspace [▶Page 71 - SIDEXIS 4]*.
- *Adjusting and resetting the layout of workspaces [▶Page 72 - SIDEXIS 4]*.
- *Adjusting the views [▶Page 75 - 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 86 - 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 73 - SIDEXIS 4]*.

21.1 OVERVIEW OF THE AIRWAY WORKSPACE



1 **Axial** view

2 **3D** view

3 Airway analysis area

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 175 - SIDEXIS 4]*.

3D VIEW

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

SAGITTAL VIEW

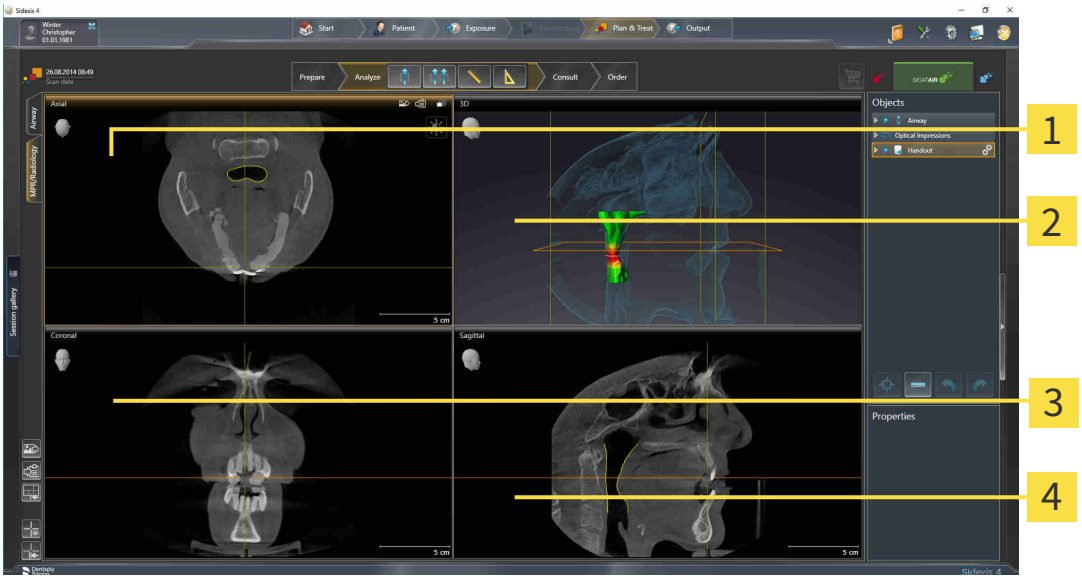
By default, the **Sagittal** view shows slices from the right. You can switch the viewing direction of the **Sagittal** view. Information on this can be found in the section *Changing visualization settings [▶Page 175 - SIDEXIS 4]*.

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

The functions of the views can be found in the sections *Adjusting the views [▶Page 75 - SIDEXIS 4]* and *Adjusting the 3D view [▶Page 86 - SIDEXIS 4]*.

If you have created an **Airway** object by segmenting the airway, the airway analysis area will be available in the **3D** view. For further information see *SICAT Air objects [▶Page 62 - SIDEXIS 4]*, *Segmenting the airway [▶Page 113 - SIDEXIS 4]* and *Interacting with the airway profile [▶Page 126 - SIDEXIS 4]*.

21.2 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 175 - 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 175 - SIDEXIS 4]*.

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

The functions of the views can be found in the sections *Adjusting the views [▶Page 75 - SIDEXIS 4]* and *Adjusting the 3D view [▶Page 86 - SIDEXIS 4]*.

21.3 SWITCHING THE ACTIVE WORKSPACE

To change the active 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.

21.4 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 Air 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 Air resets the active workspace to the default layout. This means that the software displays all views in their default sizes.

21.5 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 the active workspace [▶Page 71 - SIDEXIS 4]*.

- Click on the **Add screenshot of active workspace to SIDEXIS 4 output** icon in the workspace toolbar.

▶ SICAT Air 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 the active workspace [▶Page 71 - SIDEXIS 4]*.

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

▶ SICAT Air 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

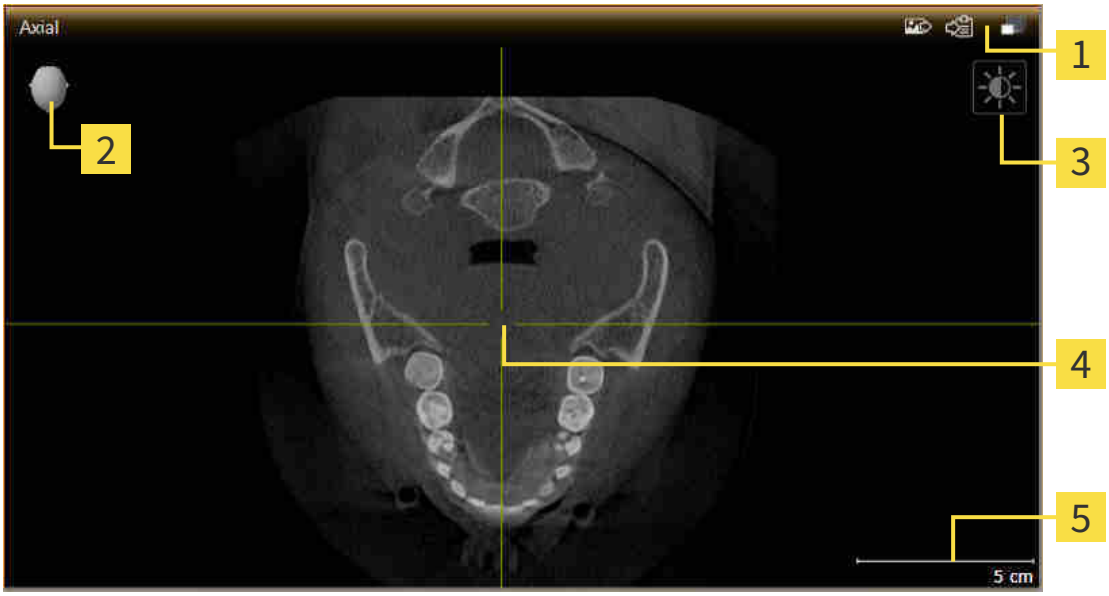
Views are contained in workspaces. A description of the various workspaces and views can be found under *Workspaces [▶Page 68 - SIDEXIS 4]*.

You can adjust the views. For further information about this see *Adjusting the views [▶Page 75 - SIDEXIS 4]* and *Adjusting the 3D view [▶Page 86 - 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 77 - SIDEXIS 4]*.

An active view contains the following elements:



1 Title bar

2 Orientation head

3 View toolbar

4 Crosshairs

5 Scale

2D slice views display crosshairs. Crosshairs are lines of intersection with other slice views. SICAT Air 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 77 - SIDEXIS 4]*
- *Maximizing and restoring views [▶Page 78 - SIDEXIS 4]*
- *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 79 - SIDEXIS 4]*
- *Zooming views and panning views [▶Page 81 - SIDEXIS 4]*
- *Scrolling through slices in the 2D slice views [▶Page 82 - SIDEXIS 4]*
- *Moving, hiding and showing crosshairs and frames [▶Page 83 - SIDEXIS 4]*
- *Resetting views [▶Page 84 - 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 86 - 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 85 - SIDEXIS 4]*.

22.2 CHANGING THE ACTIVE VIEW

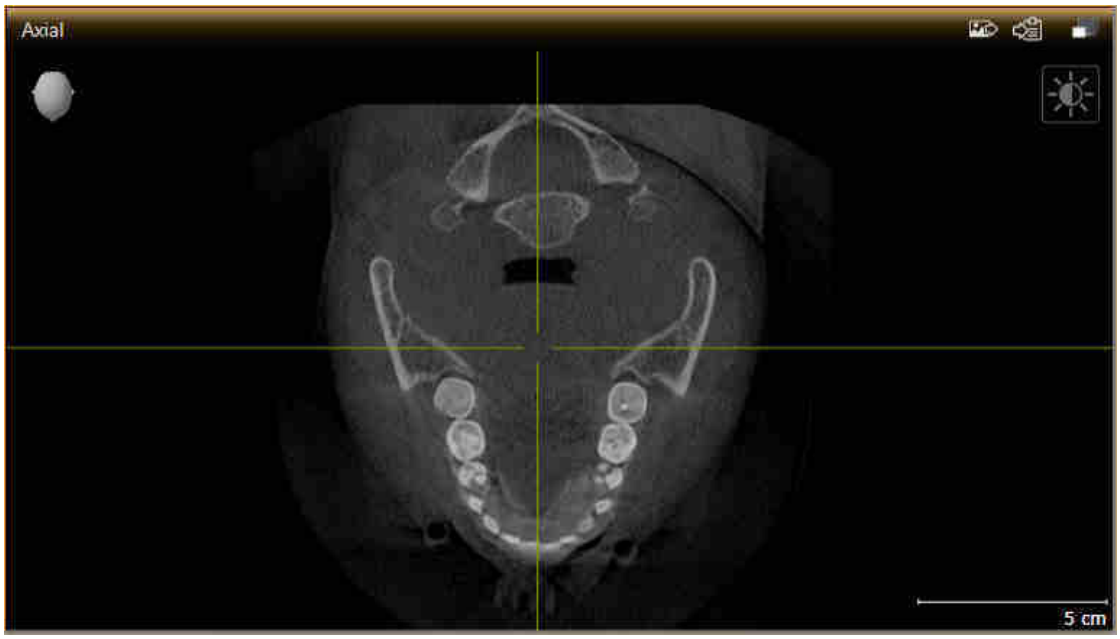
Only the active view shows the **View toolbar** and the title bar.

To activate a view, proceed as follows:

1. Place the mouse pointe over the desired view:

2. Click the desired view.

► SICAT Air 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 77 - SIDEXIS 4]*.

☑ The desired view is not maximized.

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

   ▶ SICAT Air maximizes the view.

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

   ▶ SICAT Air 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 77 - 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 Air adjusts the brightness of the 2D view according to the position of the **Brightness** slider.

4. Release the left mouse button.

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

7. Release the left mouse button.

   ▶ SICAT Air 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 Air 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 Air adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Air adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Air 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 Air adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Air adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Air 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 Air hides the crosshairs in all 2D slice views.
   ▶ SICAT Air hides the frames in the **3D** view.

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

22.8 RESETTING VIEWS

To reset all views, proceed as follows:

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

► SICAT Air resets all views to the default values for zoom, panning views, scrolling, and moving the crosshairs.

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

22.9 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

☑ You have started SICAT Air from SIDEXIS 4.

☑ The desired view is already active. Information on this can be found in the section *Changing the active view [▶Page 77 - SIDEXIS 4]*.

- Click on the **Add screenshot to SIDEXIS 4 output** icon in the title bar of the view.

▶ SICAT Air 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 77 - SIDEXIS 4]*.

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

▶ SICAT Air 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 87 - SIDEXIS 4]*.

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

- *Switching the display mode of the 3D view [▶Page 89 - SIDEXIS 4]*
- *Configuring the active display mode of the 3D view [▶Page 90 - SIDEXIS 4]*
- *Changing the clipping mode of the 3D view [▶Page 95 - SIDEXIS 4]*

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

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:

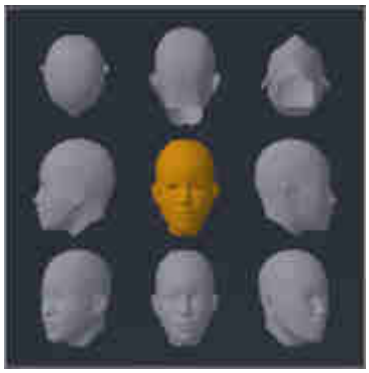
1. Place the mouse pointer on the **3D** view.
2. Click and hold the left mouse button.
   ▶ The mouse pointer becomes a hand.
3. Move the mouse.
   ▶ The viewing direction changes according to the movement of the mouse.
4. Release the left mouse button.

▶ SICAT Air 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 86 - SIDEXIS 4]*.

SICAT Air provides different display modes for the **3D** view in the **MPR/Radiology** workspace and **Airway** workspace:

- The **Volumetric view with soft tissue** displays only the soft tissue.

- The **Surface view** displays a non-transparent slice through the volume.

- The **Volumetric view with bones and soft tissue** combines the **Volumetric view with soft tissue** and the **Volumetric view with bones**.

- The **Volumetric view with bones** displays only the bone.

- The **Opaque view of the airway** displays the segmented airway. The airway is the same as the **Airway** object in SICAT Air. Settings in the **Airway** object affect the **Opaque view of the airway**. Information on this can be found in the section *SICAT Air objects [▶Page 62 - SIDEXIS 4]*.

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 89 - 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 90 - SIDEXIS 4]*.

You can find information on how to use the different display modes together with the various clipping modes in the section *Clipping modes of the 3D view [▶Page 92 - 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 77 - 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 Air 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.

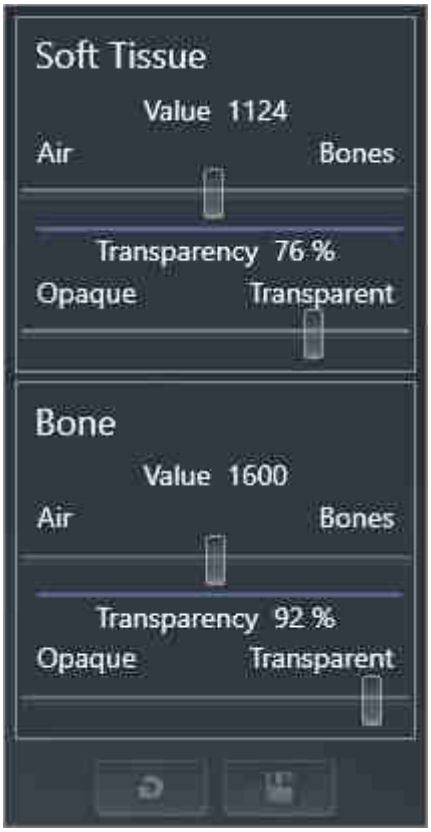
To configure the active display mode of the **3D** view, proceed as follows:

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶Page 77 - 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 89 - 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 Air adjusts the **3D** view according to the position of the slider.
3. Where available, click on the arrow icon next to .**Advanced options**.
   ▶ The **Advanced options** area expands.
4. Activate or deactivate the available check box.
   ▶ SICAT Air adjusts the **3D** view according to the status of the check box.

5. Move the slider you require.

   ► SICAT Air 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.

23.5 CLIPPING MODES OF THE 3D VIEW

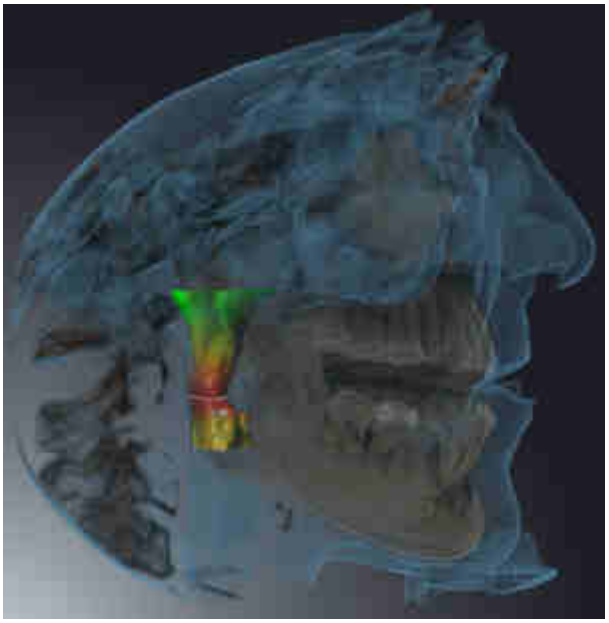
General information on the **3D** view can be found in the section *Adjusting the 3D view [▶Page 86 - SIDEXIS 4]*.

You can hide parts of the volume in the **3D** view using the clipping modes.

SICAT Air provides different clipping modes in the **3D** view depending on the display mode:

CLIPPING: NONE

SICAT Air displays all parts of the volume contained in the active display mode.

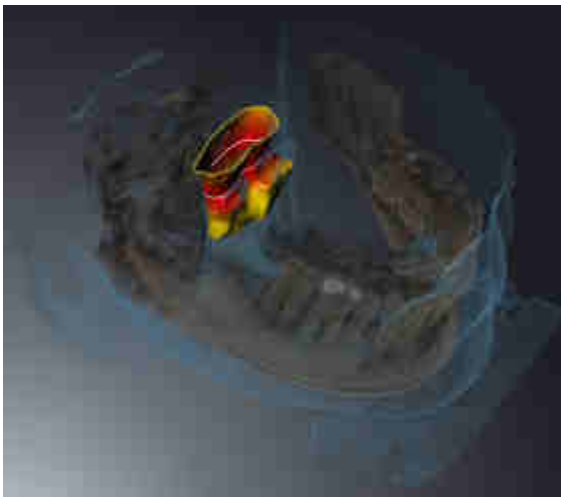


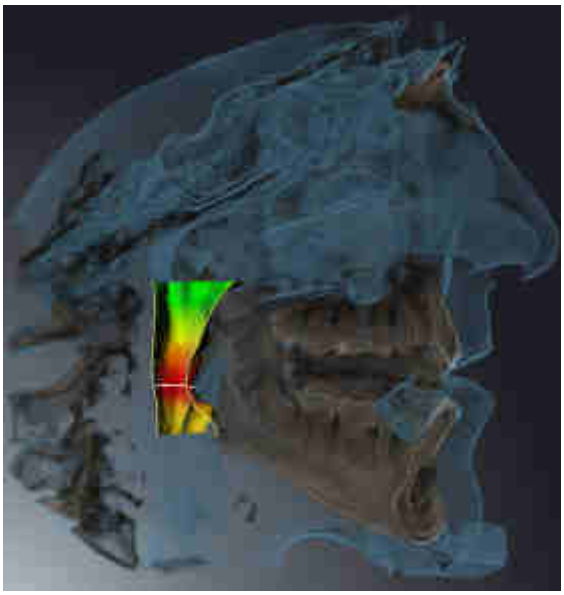
CLIPPING: AIRWAY SLAB

SICAT Air hides all parts of the volume that are on the side of the airway area. Information on how to adjust the airway area can be found in the section *Defining the airway area [▶Page 114 - SIDEXIS 4]*. If you have not defined an airway area, SICAT Air will use default values.

CLIPPING: ACTIVE SLICE

SICAT Air hides all parts of the volume that are beyond a slice you have selected. You can set the slice depending on the clipping mode in the **Axial** slice view, **Coronal** slice view or **Sagittal** slice view. Information on this can be found in the section *Scrolling through slices in the 2D slice views [▶Page 82 - SIDEXIS 4]*. A workspace only provides the slice clipping modes for which it contains the corresponding slice views. In the **Airway** workspace, you can also define the axial slice in the airway profile. Information on this can be found in the section *Interacting with the airway profile [▶Page 126 - SIDEXIS 4]*.





CLIPPING MODES IN CERTAIN DISPLAY MODES

The following table shows which clipping modes are available in the display modes:

	Clipping: None	**Clipping: Airway Slab**	**Clipping: Active slice**
Volumetric view with soft tissue	Yes	Yes*	Yes
Surface view	No	No	Yes, sagittal*
Volumetric view with bones and soft tissue	Yes*	Yes	Yes
Volumetric view with bones	Yes*	No	Yes
Opaque view of the airway	Yes*	No	Yes

*Standard

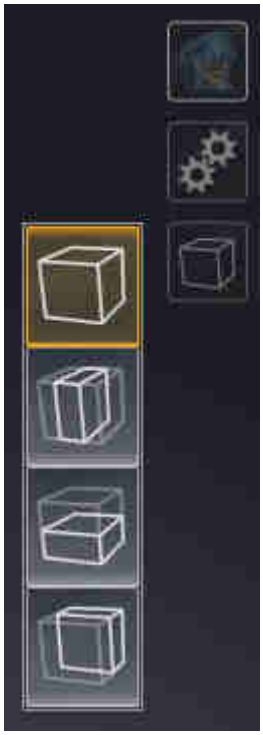
Information on how to activate a clipping mode of the **3D** view can be found in the section *Changing the clipping mode of the 3D view [▶Page 95 - SIDEXIS 4]*.

23.6 CHANGING THE CLIPPING MODE OF THE 3D VIEW

To change the clipping 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 77 - SIDEXIS 4]*.

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



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

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

24 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:

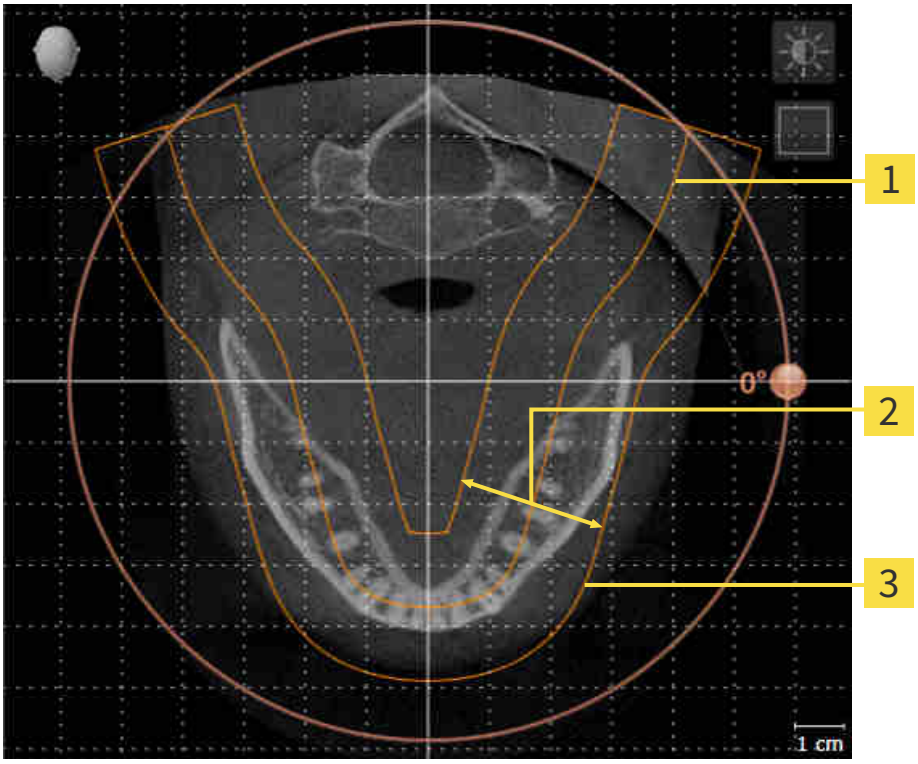
- Sub-optimal positioning of the patient during the 3D X-ray scan
- Orientation according to case, for example orientation of the axial slices parallel to the Frankfurt plane or parallel to the bite plane
- Optimizing the panorama view

If you adjust the volume orientation in SICAT Air, all other SICAT applications adopt your changes.

Information on how to adjust the volume orientation can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]*.

PANORAMIC REGION

SICAT Air 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 Air, all other SICAT applications adopt your changes.

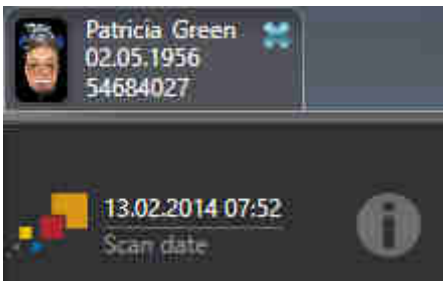
Information on adjusting the panoramic region can be found in the section *Adjusting the panoramic region [▶Page 104 - SIDEXIS 4]*.

DATA SYNCHRONIZATION BETWEEN SICAT AIR AND SIDEXIS 4

SICAT Air and SIDEXIS 4 synchronize the volume orientation and panoramic region in both directions. The following restrictions apply here:

- SICAT Air only supports rotations of the volume orientation up to a maximum of 30 degrees.
- If the synchronization of the volume orientation influences previously added diagnosis objects or planning objects which are based on a different volume orientation, SICAT Air will open a message window. The message window will inform you of the exact impacts of the synchronization and you can select between the following options:
  - **Synchronize**
  - **Not now**
  - **Never** for the current 3D X-ray scan and the current volume orientation in SIDEXIS 4
- If the synchronization of the panoramic region influences previously added diagnosis objects or planning objects which are based on a differently set panoramic region, SICAT Air will open a message window. In the message window, you can select one of two options:
  - **OK** - SICAT Air performs the synchronization and removes the objects.
  - **Cancel** - SICAT Air does not perform the synchronization and keeps the objects.
- SICAT Air supports only standard panoramic curves of SIDEXIS 4, not the shifting of individual points.
- SICAT Air supports only panoramic curves that are at least 10 mm thick.
- SICAT Air supports only panoramic curves that have not been rotated in SIDEXIS 4.

If at least one of the restrictions applies, SICAT Air and SIDEXIS 4 no longer synchronize the volume orientation and panoramic region or just the panoramic region.



In this case, SICAT Air shows an information icon next to the information on the current 3D X-ray scan. If you move the mouse pointer over this information icon, you will receive information about which data is no longer synchronized and instructions for how to synchronize the data again.

24.1 ADJUSTING THE VOLUME ORIENTATION

General information on volume orientation can be found in the section *Volume orientation and panoramic region [▶Page 96 - SIDEXIS 4]*.

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

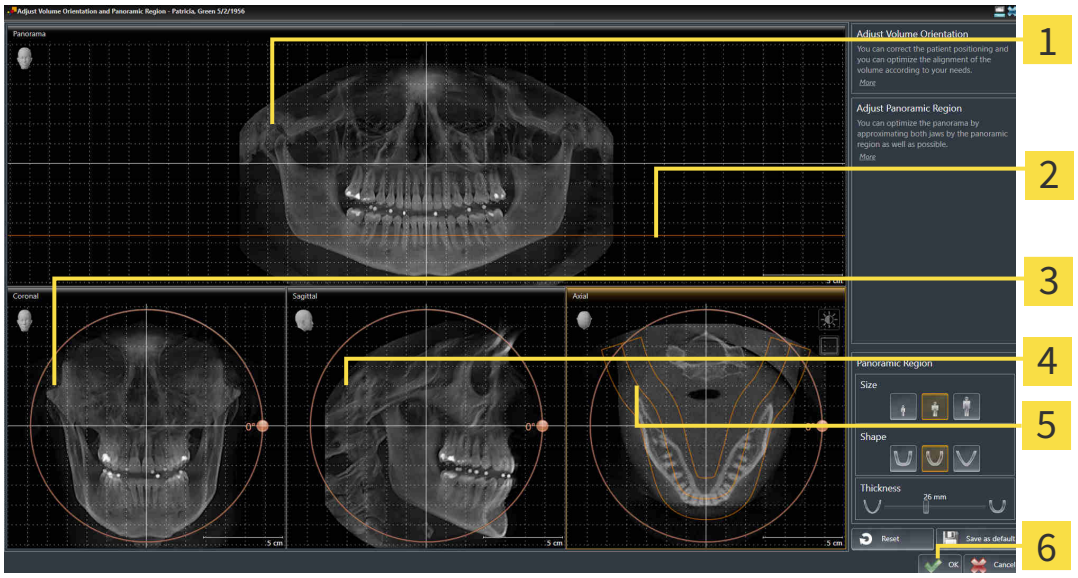
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Rotating volumes in the **Coronal** view
- Rotating volumes in the **Sagittal** view
- Rotating volumes in the **Axial** view

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 Axial reference line

3 **Coronal** view with **Rotation** slider

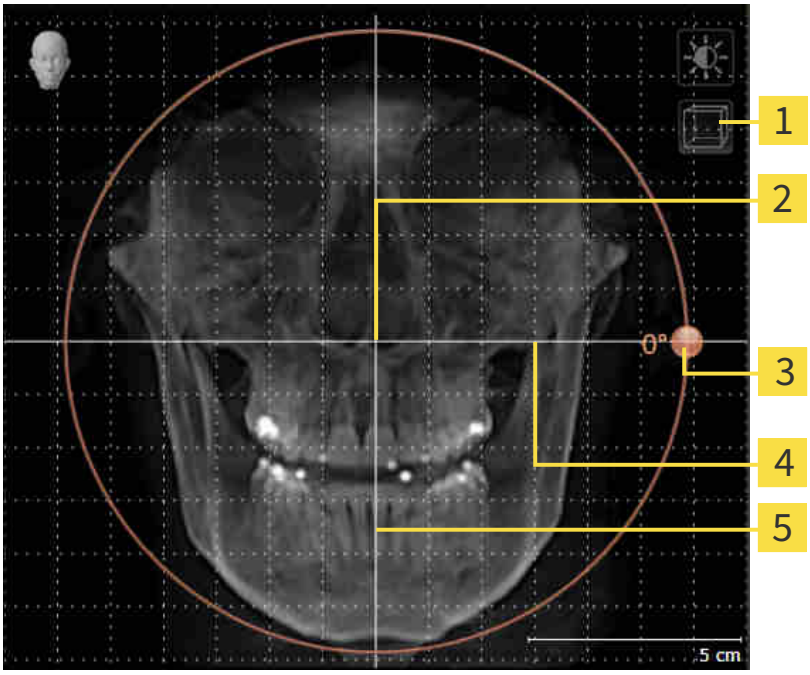
4 **Sagittal** view with **Rotation** slider

5 **Axial** view with **Rotation** slider

6 **OK** button

ROTATING VOLUMES IN THE CORONAL VIEW

1. Activate the **Coronal** view:

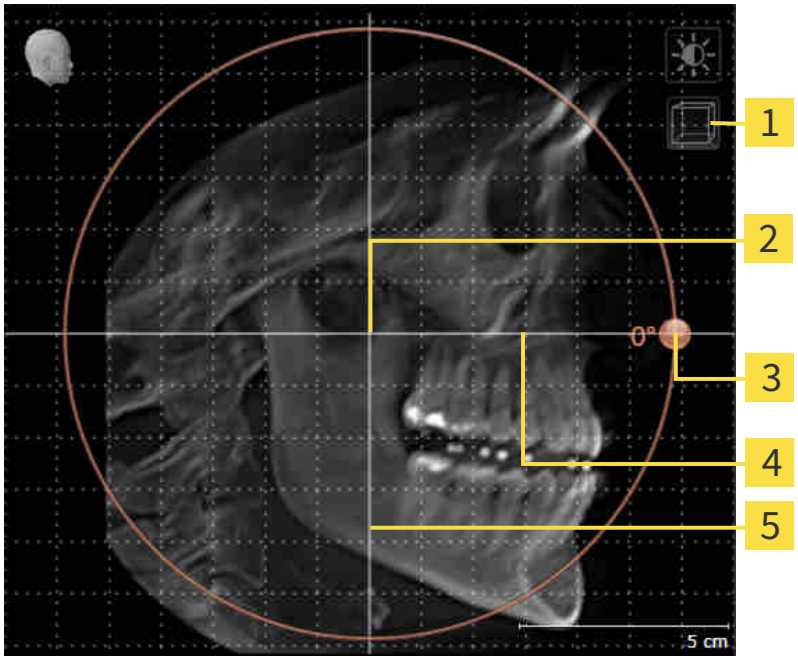


1 **Enable slices mode** icon or **Enable projection mode** icon	4 Horizontal reference line
2 Center of rotation	5 Vertical reference line
3 **Rotation** slider	

2. Make sure that the projection mode is active. Click on the **Enable projection mode** icon if necessary.
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 Air 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

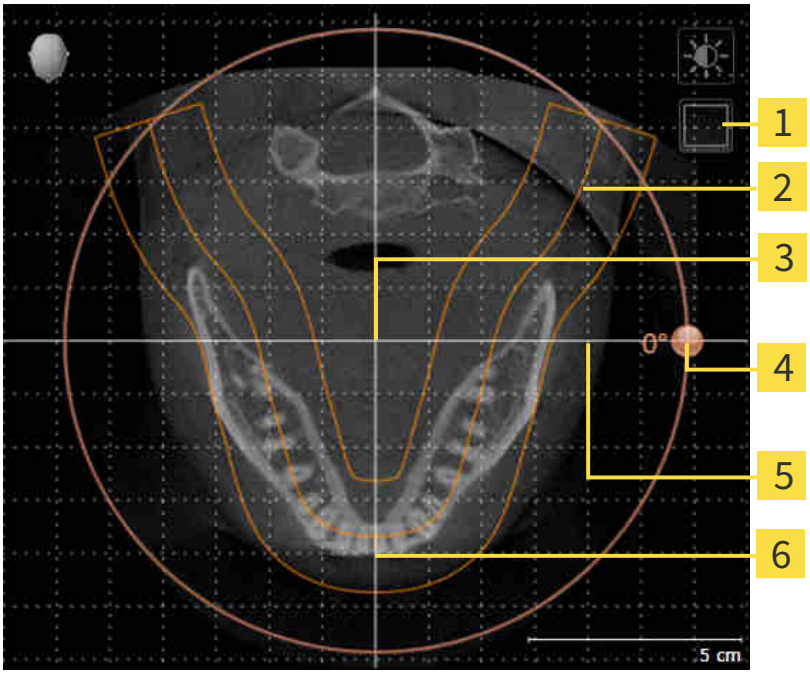
4 Horizontal reference line

5 Vertical reference line

2. Make sure that the projection mode is active. Click on the **Enable projection mode** icon if necessary.
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 Air 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 projection mode** icon or **Enable slices 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 slice mode is active. Click on the **Enable slices mode** icon if necessary.
3. Scroll to a slice with the roots of the mandibular teeth, for example by left clicking on the axial reference lines in the panorama view and hold the left button as you move the mouse up or down as desired.
4. 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 Air moves the center of rotation, the horizontal reference lines and the vertical reference lines accordingly.
5. Place the mouse pointer on the **Rotation** slider.
6. Click and hold the left mouse button.
7. Move the **Rotation** slider along the circle in the desired direction.
   ▶ SICAT Air rotates the volume in the **Axial** view in a circle around the center of rotation and in the other views accordingly.
8. 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.
9. To save your changes, click **OK**.

▶ If the change of the volume orientation affects existing objects in SICAT applications, SICAT Air opens a message window which states the exact impact.

10. If you still want to adjust the volume orientation, click on the **Adjust** button in the message window.

▶ SICAT Air 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 79 - SIDEXIS 4]*.
- You can zoom in the views. SICAT Air synchronizes the zoom between the views with the exception of the **Axial** view.
- To reset the volume orientation and panoramic region, click on the **Reset** button.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- If you do not want to save your changes, click **Cancel**.

24.2 ADJUSTING THE PANORAMIC REGION

General information on the panoramic region can be found in the section *Volume orientation and panoramic region [▶Page 96 - SIDEXIS 4]*.

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

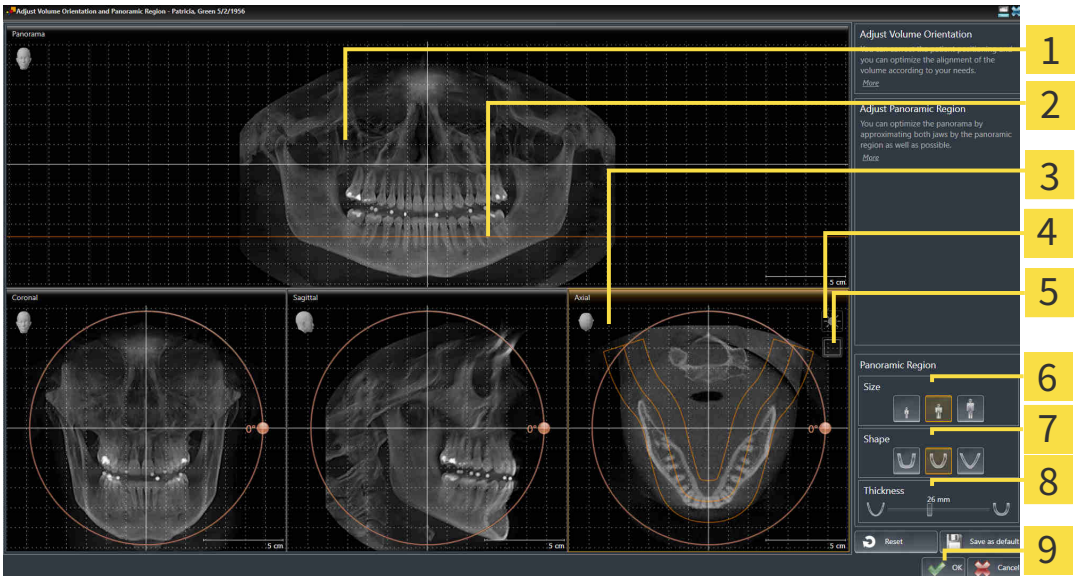
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Adjusting the slice position of the **Axial** view
- Moving the panoramic region
- Rotating volumes in the **Axial** view
- Adjusting**Size**, **Shape** and **Thickness** of the panoramic region

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. Click on the **Enable slices mode** icon if necessary.
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 Air 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 Air 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. Select the **Size** of the panoramic region that best reflects the mandible of the patient by clicking on the corresponding **Size** button.

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

3. Make sure that the projection mode of the **Axial** view is active. Click on the **Enable projection mode** icon if necessary.

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 Air 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 79 - SIDEXIS 4]*.
- You can zoom in the views. SICAT Air synchronizes the zoom between the views with the exception of the **Axial** view.
- To reset the volume orientation and panoramic region, click on the **Reset** button.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- If you do not want to save your changes, click **Cancel**.

25 DISTANCE AND ANGLE MEASUREMENTS

SICAT Air features two different types of measurement:

- Distance measurements

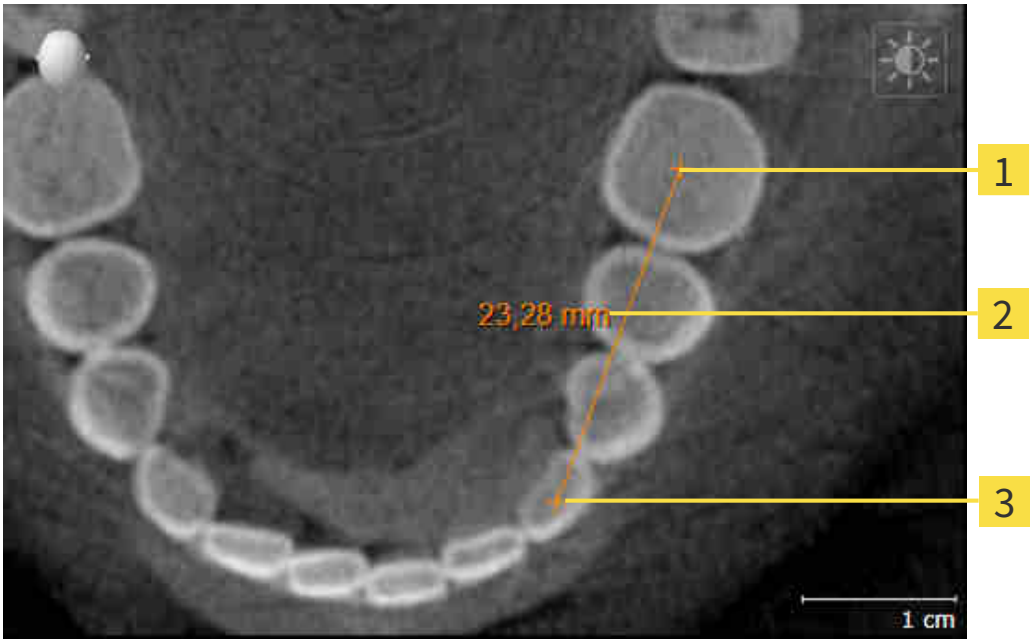
- Angle measurements

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 Air will also add it to the **Measurements** group in the **Object browser**.

The following actions are available for measurements:

- *Adding distance measurements [▶Page 108 - SIDEXIS 4]*
- *Adding angle measurements [▶Page 109 - SIDEXIS 4]*
- *Moving measurements, individual measuring points and measured values [▶Page 111 - SIDEXIS 4]*
- Activating, hiding and showing measurements - Information on this can be found in the section *Managing objects with the object browser [▶Page 59 - 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 61 - SIDEXIS 4]*.

25.1 ADDING DISTANCE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

To add a distance measurement, proceed as follows:

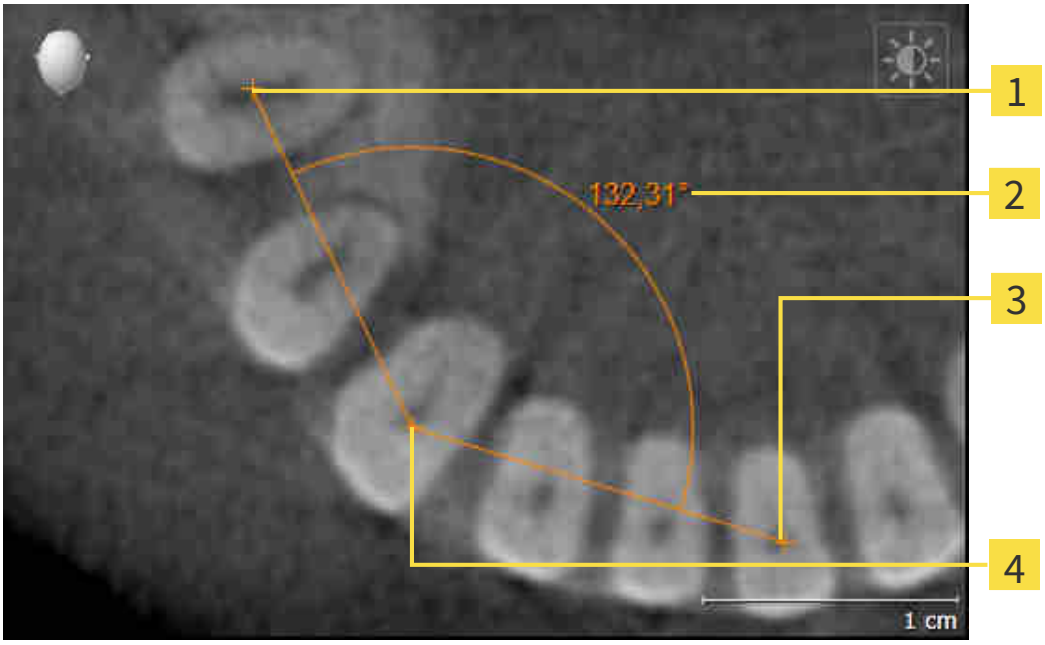
☑ The **Diagnose** workflow step is already expanded.

1. In the **Diagnose** workflow step, click the **Add distance measurement (D)** icon.
   ▶ SICAT Air 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 Air illustrates the starting point using a small cross.
   ▶ SICAT Air shows a distance line between the starting point and the mouse pointer.
   ▶ SICAT Air 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 Air illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

25.2 ADDING ANGLE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

4 Vertex

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 Air 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 Air illustrates the starting point using a small cross.
   ▶ SICAT Air shows the first side 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 Air illustrates the vertex using a small cross.
   ▶ SICAT Air shows the second side of the angle measurement by a line from the vertex to the mouse pointer.
   ▶ SICAT Air shows the current angle between both sides of the angle measurement and in the **Object browser**.

5. Move the mouse pointer to the end point of the second side and left-click.

► SICAT Air illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

25.3 MOVING MEASUREMENTS, INDIVIDUAL MEASURING POINTS AND MEASURED VALUES

MOVING MEASUREMENTS

To move a measurement, proceed as follows:

☑ SICAT Air shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 59 - SIDEXIS 4]* and *Managing objects with the object toolbar [▶Page 61 - 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 Air maintains the current position of the measurement.

MOVING INDIVIDUAL MEASURING POINTS

To move an individual measuring point, proceed as follows:

☑ SICAT Air shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 59 - SIDEXIS 4]* and *Managing objects with the object toolbar [▶Page 61 - 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 Air maintains the current position of the measuring point.

MOVING MEASURED VALUES

To move a measured value, proceed as follows:

☑ SICAT Air shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 59 - SIDEXIS 4]* and *Managing objects with the object toolbar [▶Page 61 - 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 Air shows a dotted line between the measured value and the corresponding measurement.
4. Release the left mouse button.

▶ SICAT Air maintains the current position of the measured value.

After you have moved the value of a measurement, the SICAT Air will define the value at an absolute position. To position the value again relative to the measurement, double click on the value.

26 SEGMENTING THE AIRWAY

NOTICE	**Before segmenting the airway, it may be useful to align the volume according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]*. If you align the volume only after segmenting the airway, SICAT Air removes the Airway object and you must carry out segmentation once more.**

In SICAT Air you require an **Airway** object for the airway analysis. You create an **Airway** object by segmenting the airway. The **Airway** object illustrates the airway separately, displays the key information and offers additional interaction options.

SICAT Air requires an airway area to segment the airway. You can define the airway area with two anatomical reference points in the **Segment the airway** window. After this, SICAT Air will create an airway area in the form of a cuboid. The software defines the airway area using reference points and a configurable lateral width. SICAT Air finally performs an automatic segmentation of the airway in the airway area. You can subsequently move the reference points and change the lateral width, whereupon the software will perform the automatic segmentation of the airway once more.

SICAT Air marks areas red in the **3D** view, which the software cannot clearly identify as an airway. If SICAT Air has incorrectly assigned parts of the volume, correction tools are available.

Segmenting the airway consists of the following step:

- *Defining the airway area [▶Page 114 - SIDEXIS 4]*

The following steps are optional:

- *Correcting the airway segmentation [▶Page 118 - SIDEXIS 4]*
- *Removing non-required areas from the airway [▶Page 120 - SIDEXIS 4]*

If the automatic segmentation of the airway still does not meet the anatomical circumstances even after using the correction tools, you can segment the airway manually. Information on this can be found in the section *Segmenting the airway manually [▶Page 121 - SIDEXIS 4]*.

26.1 DEFINING THE AIRWAY AREA

⚠ **CAUTION**	**3D X-ray scans of insufficient quality may result in the quality of the segmented airway and airway profile being insufficient.** Only use 3D X-ray scans of a sufficient quality to create the segmented airway and airway profile with a sufficient quality and resolution.

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶Page 113 - SIDEXIS 4]*.

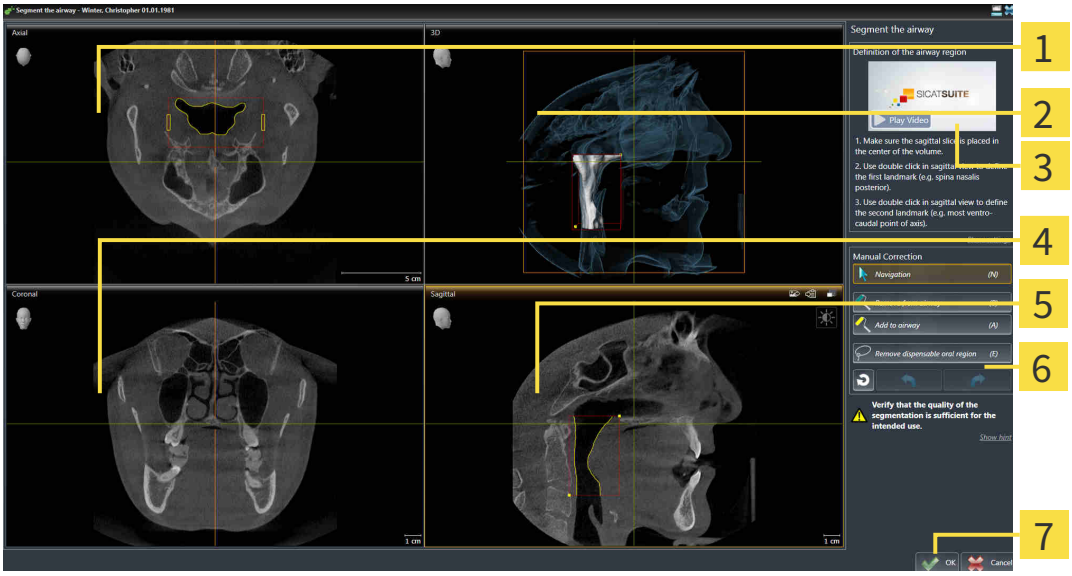
OPENING THE “SEGMENT THE AIRWAY" WINDOW

☑ You have already aligned the volume according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]*.

☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 56 - SIDEXIS 4]*.

- Click on the **Segment the airway** icon.

▶ The **Segment the airway** window opens:



1 **Axial** view

2 **3D** view

3 Example video

4 **Coronal** view

5 **Sagittal** view

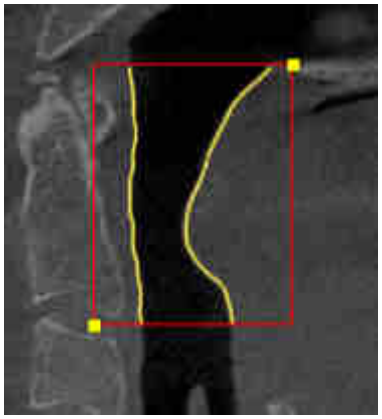
6 Tool area

7 **OK** button

SETTING ANATOMICAL REFERENCE POINTS TO DEFINE THE AIRWAY AREA

1. Make sure that the **Sagittal** view shows the desired point for the upper reference point in the airway. If necessary, scroll through the slices in the **Sagittal** view.

2. Double click on the position of the upper reference point of the airway in the **Sagittal** view:



   ▶ SICAT Air marks the upper reference point with a yellow rectangle.

   ▶ The lower reference point will now match the position of the mouse pointer.

   ▶ SICAT Air marks the airway area with a red frame.

3. Make sure that the **Sagittal** view shows the desired point for the lower reference point in the airway. If necessary, scroll through the slices in the **Sagittal** view.

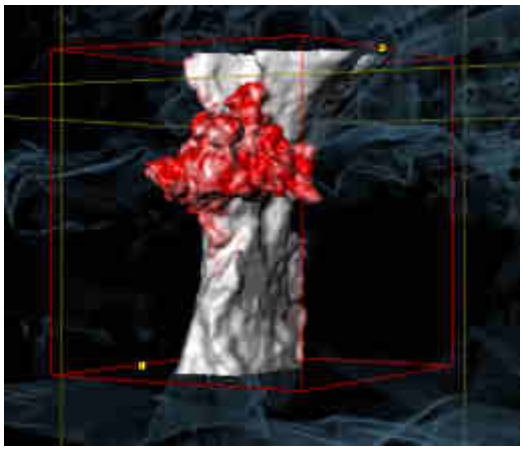
4. Double click on the position of the lower reference point of the airway in the **Sagittal** view.

   ▶ SICAT Air marks the lower reference point with a yellow rectangle.

▶ SICAT Air defines the airway area according to the position of the reference points.

▶ SICAT Air automatically segments the airway based on the airway area.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway:



MOVING REFERENCE POINTS OF THE AIRWAY AREA

You can move the reference points in all 2D views.

1. Make sure that the navigation mode is active. Click on the **Navigation** button if necessary.
2. Make sure that the desired 2D view shows the desired reference point. If necessary, scroll through the slices.
3. Place the mouse pointer on a reference point.
   ▶ The mouse pointer becomes a crosshair.
4. Click and hold the left mouse button.
5. Place the mouse pointer on the new position of the reference point.
   ▶ The reference point tracks the movement of the mouse pointer.
   ▶ SICAT Air adjusts the airway area according to the position of the reference point.
6. Release the left mouse button.

▶ SICAT Air maintains the new position of the reference point.

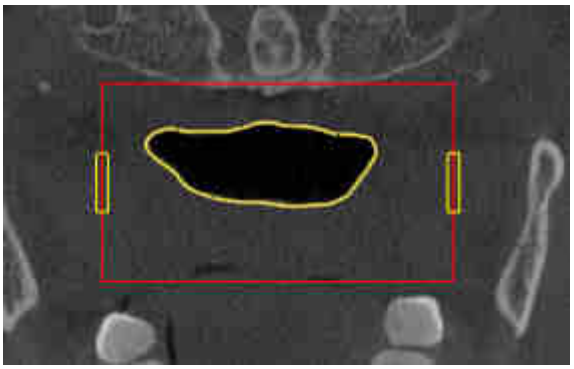
▶ SICAT Air automatically re-segments the airway based on the new airway area.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway.

CHANGING THE LATERAL SIZE OF THE AIRWAY AREA

The default lateral size is 60 mm.

1. Make sure that the navigation mode is active. Click on the **Navigation** button if necessary.
2. Make sure that the **Axial** view shows the markers for the lateral size. If necessary, scroll through the slices in the **Axial** view:



3. Place the mouse pointer on a marker of the lateral size.
   ▶ The mouse pointer becomes a two-way arrow.
4. Click and hold the left mouse button.
5. Place the mouse pointer on the desired position of the marker.
   ▶ The marker tracks the movement of the mouse pointer.
   ▶ SICAT Air adjusts the airway area according to the new lateral size.

6. Release the left mouse button.

► SICAT Air maintains the new position of the marker.

► SICAT Air automatically re-segments the airway based on the new airway area.

► SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway.

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [►Page 122 - SIDEXIS 4]*.

If the segmentation does not match the anatomical characteristics , continue with the section *Correcting the airway segmentation [►Page 118 - SIDEXIS 4]* or *Removing non-required areas from the airway [►Page 120 - SIDEXIS 4]*.

In addition to the described process, the following actions are available in the **Segment the airway** 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 79 - SIDEXIS 4]*.
- You can copy screenshots of individual views to the clipboard and to the handout by clicking on the **Copy screenshot to clipboard (Ctrl+C)** icon. Information on this can be found in the section *Creating screenshots of views [►Page 85 - SIDEXIS 4]*.
- If you want to undo the last work step, you can click on the **Undo (Ctrl+Z)** button.
- If you want to redo the last work step, you can click on the **Redo (Ctrl+Y)** button.
- If you want to undo all work steps, you can click on the **Remove airway segmentation and reset all changes** button and confirm this in the message window by clicking **OK**.
- If you want to cancel the segmentation of the airway, you can click **Cancel**.

The **Undo (Ctrl+Z)** and **Redo (Ctrl+Y)** functions are only available as long as the **Segment the airway** window is open.

26.2 CORRECTING THE AIRWAY SEGMENTATION

The segmentation of SICAT Air 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 of the airway can be found in the section *Segmenting the airway [▶Page 113 - SIDEXIS 4]*.

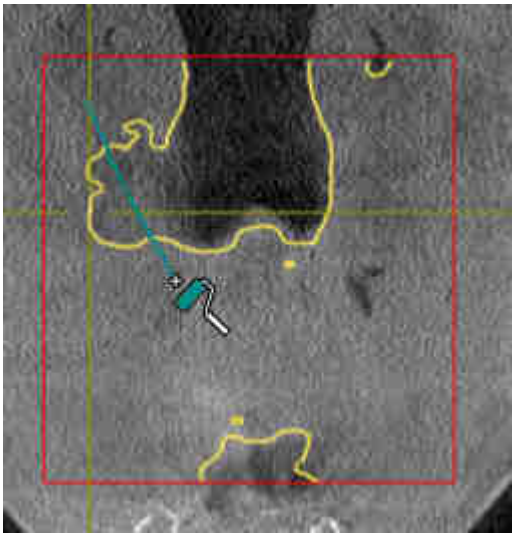
REMOVING INCORRECTLY IDENTIFIED AREAS FROM THE AIRWAY

You can remove areas from the airway in all 2D views.

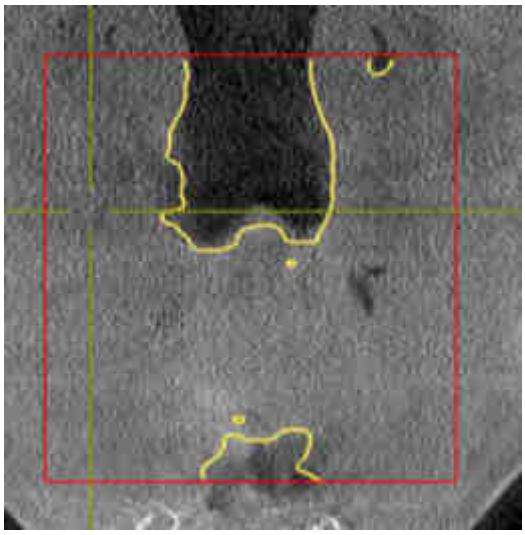
In your corrections, consider in particular the areas marked red in the **3D** view. However, these areas may not be the only areas that SICAT Air may have incorrectly identified as part of the airway.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶Page 114 - SIDEXIS 4]*.

1. Click the **Remove from airway** button in the **Segment the airway** window.
   ▶ The mouse pointer becomes a blue paint roller.
2. Mark the areas that SICAT Air has incorrectly identified as part of the airway in a 2D view within the airway area.



▶ SICAT Air removes the marked area from the airway:



ADDING INCORRECTLY IDENTIFIED AREAS TO THE AIRWAY

You can mark areas as part of the airway in all 2D views.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶Page 114 - SIDEXIS 4]*.

1. Click the **Add to airway** button in the **Segment the airway** window.
   ▶ The mouse pointer becomes a yellow paint roller.
2. Mark additional areas as part of the airway in a 2D view within the airway area.
   ▶ SICAT Air identifies the marked area as part of the airway.

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [▶Page 122 - SIDEXIS 4]*.

If the automatic segmentation of the airway still does not meet the anatomical circumstances even after using the correction tools, you can segment the airway manually. Information on this can be found in the section *Segmenting the airway manually [▶Page 121 - SIDEXIS 4]*.

26.3 REMOVING NON-REQUIRED AREAS FROM THE AIRWAY

General information on segmentation of the airway can be found in the section *Segmenting the airway [▶Page 113 - SIDEXIS 4]*.

Use the **Remove dispensable oral region** tool in air-carrying areas, which are not part of the relevant airway. This includes, for example the oral cavity and protuberances.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶Page 114 - SIDEXIS 4]*.

1. Click the **Remove dispensable oral region** button in the **Segment the airway** window.

   ▶ The mouse pointer becomes a lasso.

2. Frame areas that you wish to completely remove from detection in the **3D** view. It does not matter whether this is in the airway or an area outside the airway:

▶ SICAT Air removes the entire area behind the marker from the volume. This means that SICAT Air can no longer identify this area as an airway or area outside the airway:

You can also use the **Remove dispensable oral region** function in the 2D views. In this case, SICAT Air makes changes to the current slice only.

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [▶Page 122 - SIDEXIS 4]*.

If the automatic segmentation of the airway still does not meet the anatomical circumstances even after using the correction tools, you can segment the airway manually. Information on this can be found in the section *Segmenting the airway manually [▶Page 121 - SIDEXIS 4]*.

26.4 SEGMENTING THE AIRWAY MANUALLY

The segmentation of SICAT Air 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 of the airway can be found in the section *Segmenting the airway [▶Page 113 - SIDEXIS 4]*.

Even if you use the correction tools, SICAT Air may still not be able to automatically produce usable segmentation of the airway on certain 3D X-ray scans. In this case, segment the airway manually:

☑ You have already defined an airway area. Information on this can be found in the section *Setting the airway area [▶Page 114 - SIDEXIS 4]*.

1. Click the **Show settings** button in the **Segment the airway** window.
   ▶ The **Show settings** area expands.
2. Activate the **Segment the airway manually** check box.
   ▶ If available, SICAT Air will remove the automatic segmentation of the airway and accompanying corrections.

3. To mark areas as part of the airway, use the **Add to airway** drawing tool within the airway area.

4. To mark areas outside the airway, use the **Remove from airway** drawing tool within the airway area.

▶ SICAT Air segments the airway according to your markers.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway.

If you want to segment the airway manually, you have to mark the airway as well as areas outside the airway. After this, SICAT Air will perform the segmentation.

The tools to correct the automatic segmentation of the airway are also available for the manual segmentation of the airway:

- *Correcting the airway segmentation [▶Page 118 - SIDEXIS 4]*
- *Removing non-required areas from the airway [▶Page 120 - SIDEXIS 4]*

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [▶Page 122 - SIDEXIS 4]*.

26.5 COMPLETING THE SEGMENTATION OF THE AIRWAY

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶Page 113 - SIDEXIS 4]*.

☑ You have already defined an airway area in the **Segment the airway** window. Information on this can be found in the section *Defining the airway area [▶Page 114 - SIDEXIS 4]*.

- If the segmentation matches the anatomical characteristics, click on **OK**.

▶ SICAT Air adopts the segmented airway.

▶ SICAT Air closes the **Segment the airway** window.

▶ If not already active, SICAT Air will activate the **Airway** workspace.

▶ In the **3D** view, SICAT Air activates the **Opaque view of the airway** display mode.

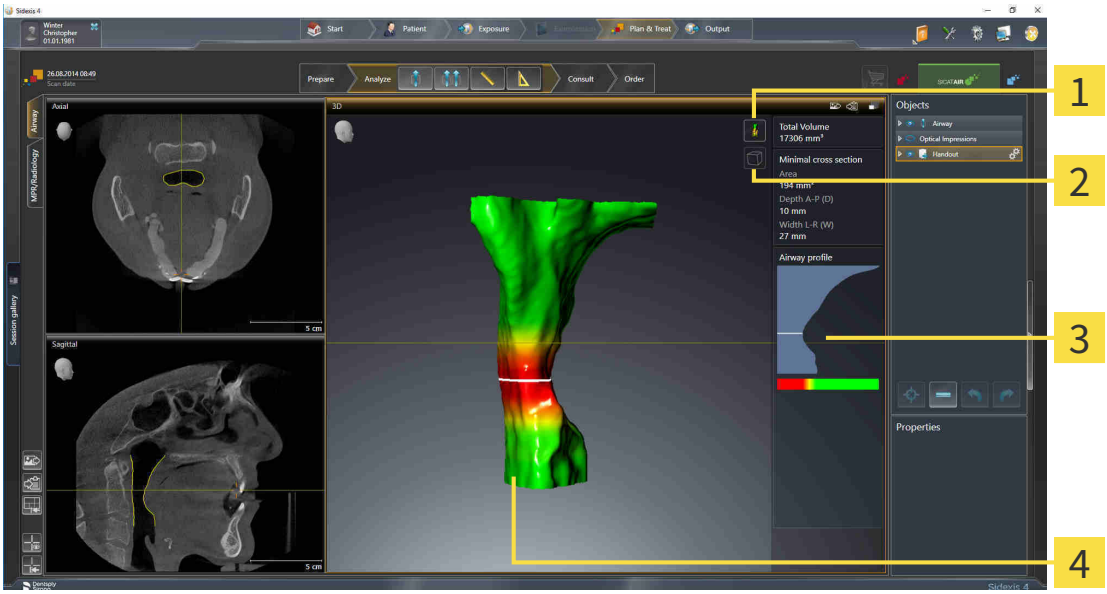
▶ In the **Object bar**, SICAT Air creates an **Airway** object.

27 AIRWAY ANALYSIS

Before starting the airway analysis, you have to segment the airway. Information on this can be found in the section *Segmenting the airway [▶Page 113 - SIDEXIS 4]*.

SICAT Air provides the following possibilities for the airway analysis:

- Airway analysis area
- Display modes
- Clipping modes
- Color coding



1 **Switch display mode** icon

2 **Switch clipping mode** icon

3 Airway analysis area

4 Segmented **Airway** object with color coding

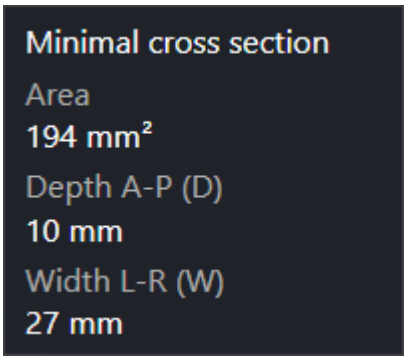
TOTAL VOLUME

Above the airway profile, SICAT Air displays the **Total volume** of the **Airway** object in mm^3.

AIRWAY ANALYSIS AREA

After you have segmented the airway, SICAT Air displays the airway analysis area in the **Airway** workspace.

The upper part of the airway analysis area looks as follows:



You can view the following information on the segmented airway:

- **Minimal cross section area**
- **Depth A-P (D)**
- **Width L-R (W)**

The middle section of the airway analysis area displays the airway profile. The airway profile visualizes the cross-sectional areas of the axial slices along the airway:

The airway profile contains two lines that have the following meanings:

- The white line symbolizes the slice with the smallest cross-sectional area.
- The orange line symbolizes the selected slice.

The selected slice determines the position of the clipping in the **3D** view and the information in the lower section of the airway analysis area.

Information on selecting a slice in the airway profile can be found in the section *Interacting with the airway profile [▶Page 126 - SIDEXIS 4]*.

The color gradient below the airway profile establishes the relationship between the color coding and slice areas.

The lower part of the airway analysis area looks as follows:

You can view the following information on the cross-section of the selected slice:

- Visualization of the cross-section
- Cross-sectional area
- Width
- Depth

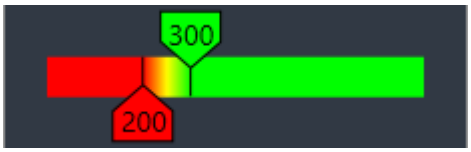
DISPLAY MODES

In the **3D** view, SICAT Air can highlight certain aspects of the volume with different display modes. Information on this can be found in the section *Display modes of the 3D view [▶Page 88 - SIDEXIS 4]*.

CLIPPING MODES

In the **3D** view, SICAT Air can hide certain areas of the volume with different clipping modes. Information on this can be found in the section *Clipping modes of the 3D view [▶Page 92 - SIDEXIS 4]*.

COLOR CODING



SICAT Air gives the segmented airway a color coding. The color coding is equivalent to the cross-sectional areas of the airway profile. You can use the color coding in the **3D** view to highlight bottlenecks in the airway object.

You can configure the color coding. Information on this can be found in the section *SICAT Air objects [▶Page 62 - SIDEXIS 4]*. You should select the upper threshold in such a way that you can regard all areas of the airway above this as healthy. You should select the lower threshold in such a way that you can regard all areas of the airway below this as pathological. SICAT Air represents the area between them as a color gradient:

In the SICAT Air settings, you can define default values for the color coding. Information on this can be found in the section *Changing SICAT Air settings [▶Page 177 - SIDEXIS 4]*.

27.1 INTERACTING WITH THE AIRWAY PROFILE

General information on airway analysis can be found in the section *Airway analysis [▶Page 123 - SIDEXIS 4]*.

To interact with the airway profile, proceed as follows:

☑ The **Airway** workspace is already open. Information on this can be found in the section *Switching the active workspace [▶Page 71 - SIDEXIS 4]*.

☑ You have already segmented the airway. Information on this can be found in the section *Defining the airway area [▶Page 114 - SIDEXIS 4]*.

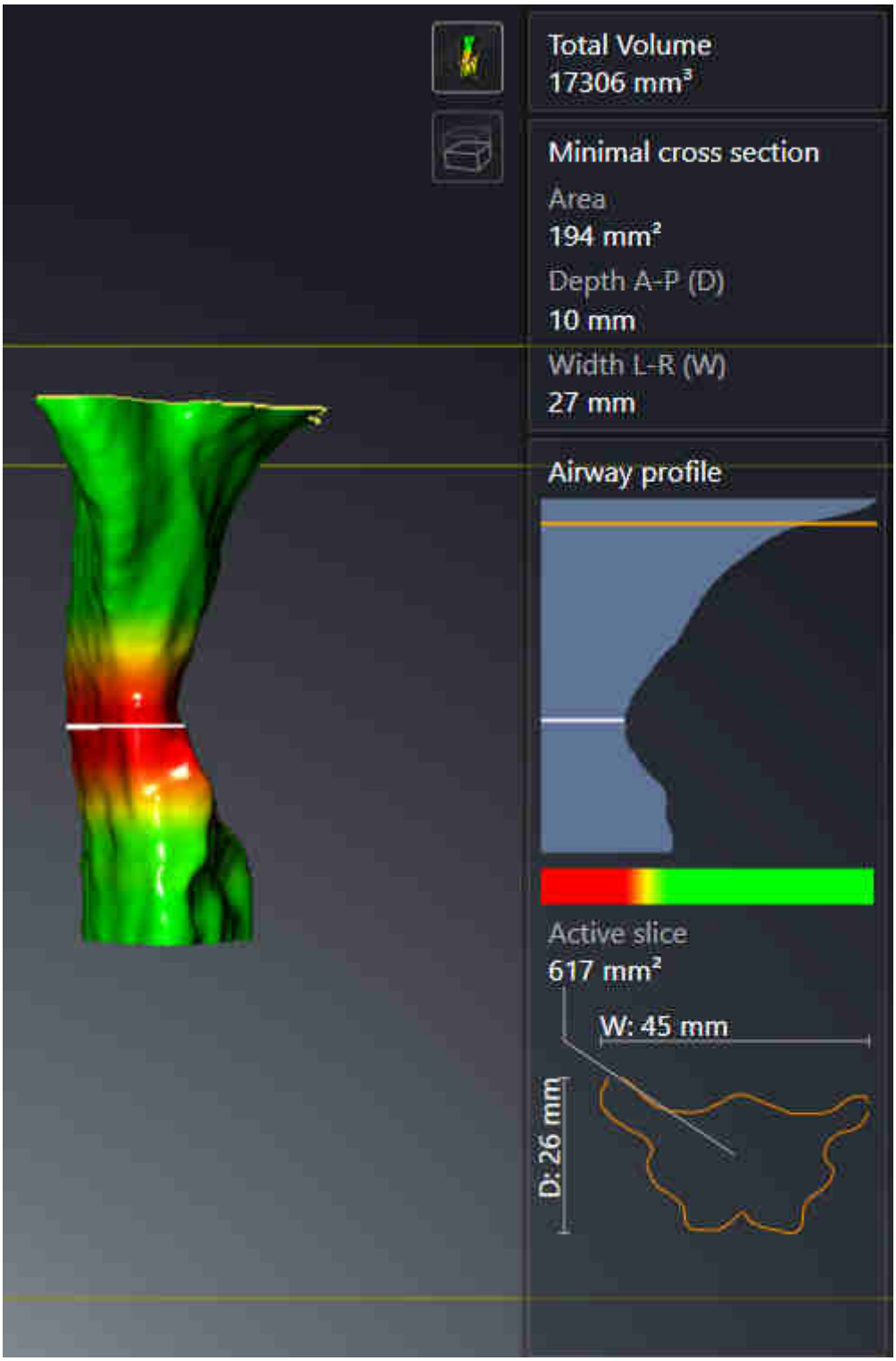
- Click on the desired slice in the airway profile.

▶ In the airway profile, an orange line shows the selected slice:

▶ SICAT Air displays information for the selected slice:

▶ In the **3D** view, SICAT Air activates the **Clipping: Designated Slice (select in slice view)** clipping mode.

▶ The **3D** view hides the area above the selected slice:



► SICAT Air focuses the crosshair on the center of the airway in the 2D views.

28 AIRWAY COMPARISON

⚠ **CAUTION**	**3D X-ray scans of insufficient quality may result in the quality of the segmented airway and airway profile being insufficient.** Only use 3D X-ray scans of a sufficient quality to create the segmented airway and airway profile with a sufficient quality and resolution.

⚠ **CAUTION**	**The use of incorrect data for the airway comparison may result in an incorrect diagnosis and treatment.** Use the correct patient, the correct 3D X-ray scans, the correct airway segmentation data, the correct interesting area and the correct size when selecting airway profiles for the airway comparison.

NOTICE	**Before segmenting the airway, it may be sensible to align the volume according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]*. If you align the volume only after segmenting the airway, SICAT Air removes the Airway object and you must carry out segmentation once more.**

You can use the Airway comparison to compare the segmented upper airways of two 3D X-ray scans:

- In one 3D X-ray scan, the mandible is in an untreated position.
- In one 3D X-ray scan, the mandible is in a protruded treatment position.

You can use the airway comparison to assess the effects of the treatment position on the patient's airway.

The airway comparison is always performed on the basis of the currently opened 3D X-ray scan and one other data record. The other data record is called reference data record.

ℹ	The rear walls of the airways must be aligned equally so that the airway comparison delivers correct values.

The following conditions must be met for you to be able to perform an airway comparison:

- The reference 3D X-ray scan already has an airway object.
- The 3D X-ray scan with the mandible in the treatment position is open.

If all of the conditions are fulfilled, you can open the **Airway comparison** window and perform an airway comparison. Information on this can be found in the section *Carrying out an airway comparison [▶Page 130 - SIDEXIS 4]*.

ℹ	The segmentation of the 3D X-ray scan in the treatment position in the **Airway comparison** window does not depend on the segmentation in the **Segment the airway** window. Both objects in the **Object browser** are also independent of one another.

28.1 CARRYING OUT AN AIRWAY COMPARISON

Information on this can be found in the section *Airway comparison [▶Page 129 - SIDEXIS 4]*.

OPENING THE “AIRWAY COMPARISON” WINDOW

☑ You have already segmented the airway area in the reference 3D X-ray scan. Information on this can be found in the section *Defining the airway area [▶Page 114 - SIDEXIS 4]*.

☑ You have already opened the 3D X-ray scan showing the treatment position.

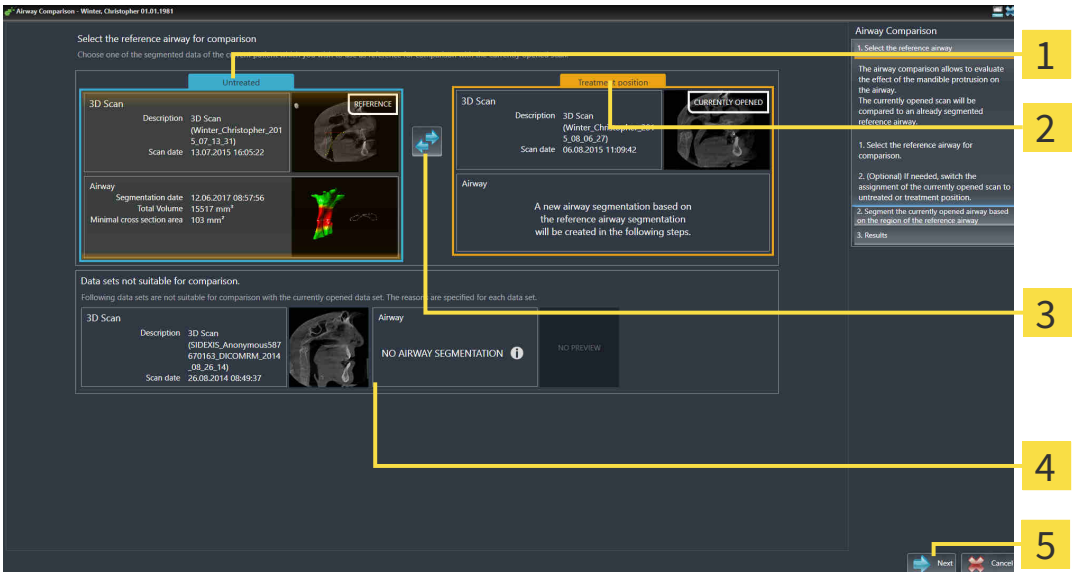
☑ You have already aligned the 3D X-ray scan showing the treatment position according to your requirements, for example, according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]*.

☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 56 - SIDEXIS 4]*.

- Click on the **Airway comparison** icon.

▶ The **Airway comparison** window opens with the **Select the reference airway for comparison** step.

SELECTING THE REFERENCE AIRWAY



1 **Untreated** list

2 **Treatment position** list

3 **Switch the assignment to untreated and treatment position** icon

4 List of 3D X-ray scans that are not suitable for the airway comparison

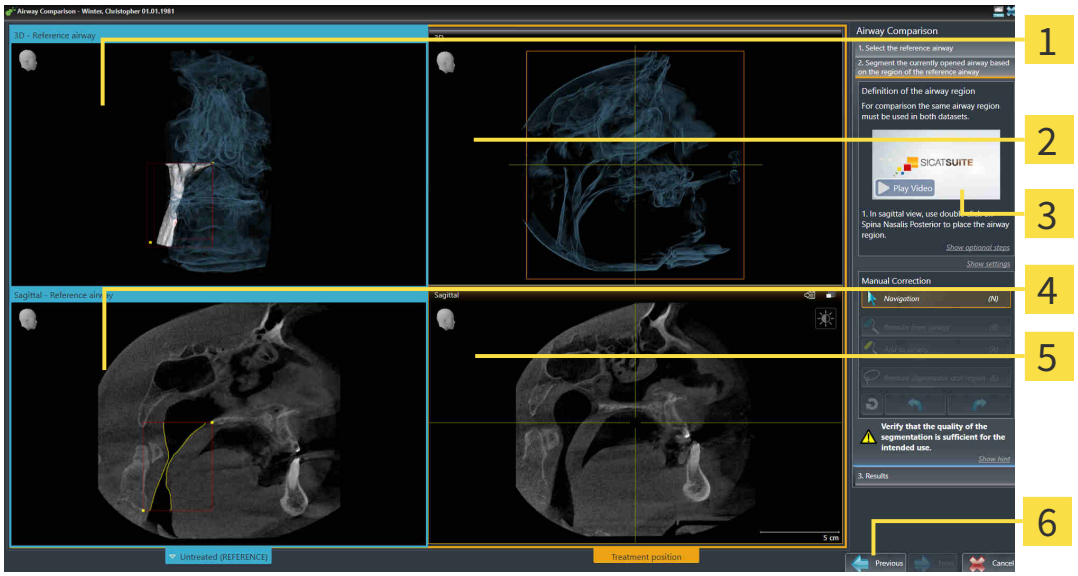
5 **Next** button

1. Select the desired reference airway where necessary.
2. Click on the **Switch the assignment to untreated and treatment position** icon, if necessary, to define whether the reference airway in the 3D X-ray scan is in an untreated position or in the treatment position.

3. Click on the **Next** button.

▶ The **Segment the currently opened airway based on the region of the reference airway** step opens.

SEGMENTING THE AIRWAY IN TREATMENT POSITION FOR COMPARISON

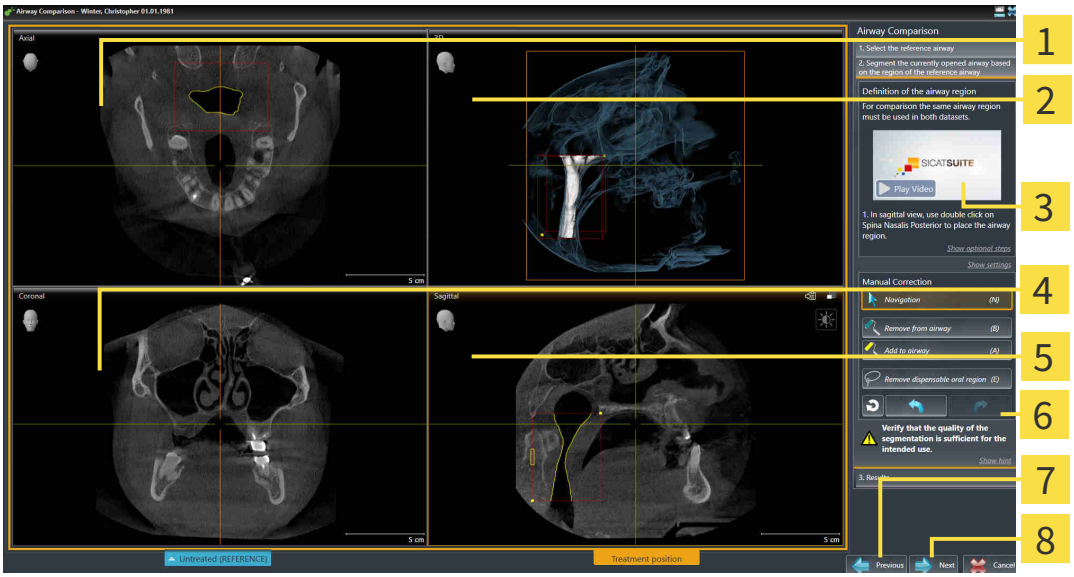


1	**3D** view of the 3D X-ray scan in reference position (you cannot change this view)	4	**Sagittal** view of the volume in reference position
2	**3D** view of the 3D X-ray scan in the treatment position (you cannot change this view)	5	**Sagittal** view of the 3D X-ray scan in the treatment position
3	Tutorial video	6	**Previous** button

Both airways must be the same height. Therefore, you can only define the upper right reference point of the airway area in the 3D X-ray scan in the treatment position. SICAT Air then automatically defines the lower left reference point of the airway area.

1. In the **Sagittal** view of the 3D X-ray scan in the treatment position, double-click on the same anatomical position of the upper reference point of the airway area as in the reference 3D X-ray scan.
   ▶ SICAT Air segments the 3D X-ray scan in the treatment position with the selected upper reference point and an airway area that has the same dimensions as the segmentation of the reference 3D X-ray scan.
   ▶ SICAT Air hides the **3D** view and the **Sagittal** view of the reference 3D X-ray scan.

▶ SICAT Air displays the **Axial** view and the **Coronal** view of the 3D X-ray scan in the treatment position.



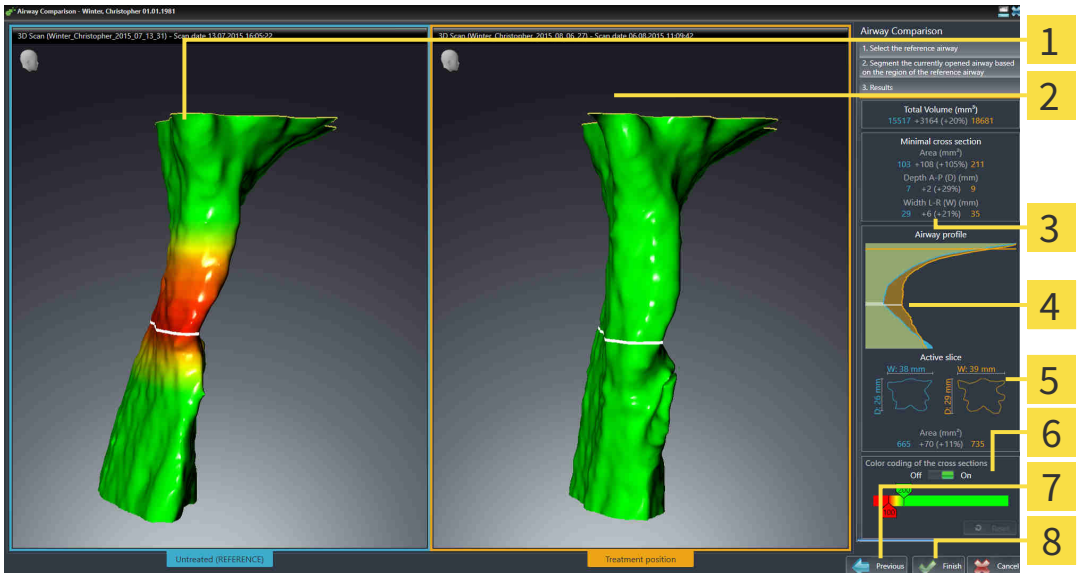
1	**Axial** view of the 3D X-ray scan in the treatment position	5	**Sagittal** view of the 3D X-ray scan in the treatment position
2	**3D** view of the 3D X-ray scan in the treatment position	6	Tool area
3	Tutorial video	7	**Previous** button
4	**Coronal** view of the 3D X-ray scan in the treatment position	8	**Next** button

2. Where necessary, correct the position of the upper reference point by moving it.
   ▶ While you are moving the upper reference point, SICAT Air displays the **3D** view and the **Sagittal** view of the reference 3D X-ray scan.
3. Where necessary, adjust the lateral width in the **Sagittal** view.
4. Correct the segmentation of the 3D X-ray scan in the treatment position where necessary. The same correction tools are available as in the **Segment the airway** window. For further information about this see *Correcting the airway segmentation [▶Page 118 - SIDEXIS 4]* and *Removing non-required areas from the airway [▶Page 120 - SIDEXIS 4]*.
5. Click on the **Next** button.

▶ The **Results** step opens.

You can hide and show the **Axial** view and the **Coronal** view of the 3D X-ray scan in the treatment position by clicking on the icon.

COMPARING AIRWAYS

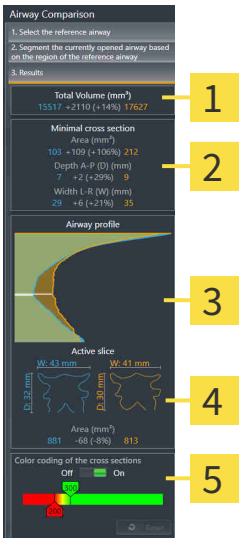


1	**3D** view of the untreated airway	5	Juxtaposition of the cross-sections when untreated and in the treatment position
2	**3D** view of the segmented airway of the 3D X-ray scan in the treatment position	6	Color coding
3	Juxtaposition of the data of the segmented airway when untreated and in the treatment position	7	**Previous** button
4	Juxtaposition of the airway profiles when untreated and in the treatment position	8	**Finish** button

1. Move the segmented airways so that you can easily compare both airways . SICAT Air does not synchronize the movement.

2. Rotate the segmented airways. SICAT Air synchronizes the movement.

3. Zoom the segmented airways. SICAT Air synchronizes the zoom.



1 **Total volume (mm³)**

2 **Minimal cross section area**

3 **Airway profile**

4 **Active slice**

5 **Color coding of the cross sections**

4. Use the illustration of the cross-section and the information in the airway comparison area on the right hand side to compare the segmented airways. The blue values belong to the untreated airway, while the orange values belong to the airway in the treatment position. The percentage values show the change from the untreated airway to the airway in the treatment position. The other elements of the view are identical to those in the airway analysis area. Information on this can be found in the section *Airway analysis [▶Page 123 - SIDEXIS 4]*.

5. Use the **Airway profile** area to select a slice at which SICAT Air cuts the depiction of the airways in the **3D** view. The selected slice applies for both airways.

6. Adjust the color gradient to highlight the cross-sectional areas of the airways and in particular bottlenecks. The settings for the color gradient apply for both airways.

7. Click on the **Finish** button.

▶ SICAT Air saves the airway comparison.

▶ SICAT Air creates a **Airway comparison** object in the **Object browser**.

▶ SICAT Air creates a separate page in the handout with screenshots and a comparison of the most important measured values from the airway comparison. In the **Object browser**, SICAT Air displays the page as an **Airway comparison** object under the **Handout** object.

You can return to the previous page of the **Airway comparison** assistant by clicking the **Previous** button.

You can cancel the airway comparison by clicking on the **Cancel** button, the ⊗ icon, pressing **ESC** or by pressing the key combinationAlt+F4. SICAT Air will then not create a **Airway comparison** object and will not save the segmentation of the airway for the volume in the treatment position.

If a study already contains an **Airway comparison** object, SICAT Air will overwrite it only if you have completed the segmentation in full once more.

After you have performed an airway comparison, you can also open the **Airway comparison** window by clicking on the **Details** icon next to the **Airway comparison** object in the **Object browser**.

Starting from the study, in which you performed the airway comparison, if you open the **Airway comparison** window once more, it will open immediately with the step **Comparsion of the airway with and without therapeutic appliance**.

29 PATIENT INFORMATION

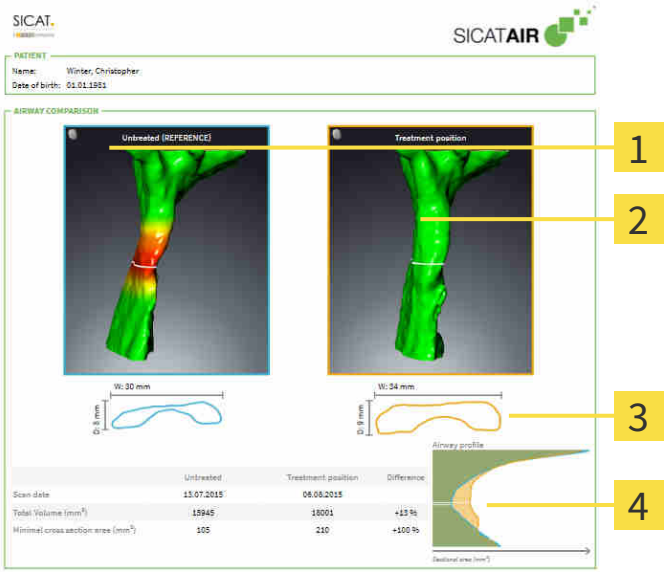
⚠ **CAUTION**	**Using the handout for diagnosis purposes may result in an incorrect diagnosis and treatment.** Only use the visualization functions for medical images of the software user interface to perform a diagnosis on medical images and to plan the treatment.

You can explain your diagnosis and highlight the effects of the treatment to the patient through illustrations customized for the patient. The patient information consists of two steps:

1. In your practice within SICAT Air
2. By way of a patient information via the handout

You can compile the contents of the handouts during your explanations on the monitor.

The sources are images based on drawing objects, screenshots and the airway comparison. The airway comparison plays a key role and has its own page on the handout:



1	**Untreated** screenshot	3	Juxtaposition of the slices with the smallest cross-sectional area
2	**Treatment position** screenshot	4	Comparison of the numerical values and **Airway profile**

The patient can better understand the results you have discussed and also better discuss this with others using the handout.

Creating the handout consists of the following steps:

- *Creating images and screenshots [▶Page 137 - SIDEXIS 4]*
- *Preparing handouts [▶Page 140 - SIDEXIS 4]*
- *Generating handouts [▶Page 144 - SIDEXIS 4]*

29.1 CREATING IMAGES AND SCREENSHOTS

NOTICE	**Before creating images and screenshots, it may be useful to align the volume according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]*. If you align the volume only after creating images and screenshots, SICAT Air removes the drawing object and you must carry out segmentation once more.**

General information on patient information can be found in the section *Patient information [▶Page 136 - SIDEXIS 4]*.

General information on managing images and screenshots can be found in the section *SICAT Air objects [▶Page 62 - SIDEXIS 4]*.

There are two drawing tools:

- **Draw Arrow**
- **Draw Circle**

DRAWING ARROWS

To draw an arrow, proceed as follows:

☑ You have already aligned the volume according to your requirements. Information on this can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 56 - SIDEXIS 4]*.

1. In the **Consult** workflow step, click the **Draw Arrow** icon.
2. Place the mouse pointer over the desired view.
   ▶ The mouse pointer becomes a pen.
3. Click and hold the left mouse button on the desired arrow tip position.
4. Move the mouse.
   ▶ SICAT Air shows an arrow in the view.
   ▶ The end of the arrow will now match the position of the mouse pointer.
5. Move the mouse pointer to the desired arrow end position and release the left button.
   ▶ SICAT Air shows the finished arrow in the view.
   ▶ If not yet available, SICAT Air will create the structures required for the **Image** object in the **Object browser**.
   ▶ The image will be available in the **Report Generation** window.
6. Click on the **Draw Arrow** icon.

▶ SICAT Air closes the mode for drawing arrows.

DRAWING CIRCLES

To draw a circle, proceed as follows:

☑ You have already aligned the volume according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 99 - SIDEXIS 4]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 56 - SIDEXIS 4]*.

1. In the **Consult** workflow step, click the **Draw Circle** icon.
2. Place the mouse pointer over the desired view.
   ▶ The mouse pointer becomes a pen.
3. Click and hold the left mouse button on the desired position for the center of the circle.
4. Move the mouse.
   ▶ SICAT Air shows a circle in the view.
   ▶ The radius of the circle will now match the distance between the center and the position of the mouse pointer.
5. Move the mouse pointer to achieve the desired radius and release the left button.
   ▶ SICAT Air shows the finished circle in the view.
   ▶ If not yet available, SICAT Air will create the structures required for the **Image** object in the **Object browser**.
   ▶ The image will be available in the **Report Generation** window.
6. Click on the **Draw Circle** icon.

▶ SICAT Air closes the mode to draw circles.

As long as the **Draw Arrow** drawing tool or **Draw Circle** drawing tool is active, you can create several drawing objects one after another. You can cancel the use of a drawing tool by clicking on a point outside the view in question or by pressing the **ESC** key.

CONFIGURING DRAWING TOOLS

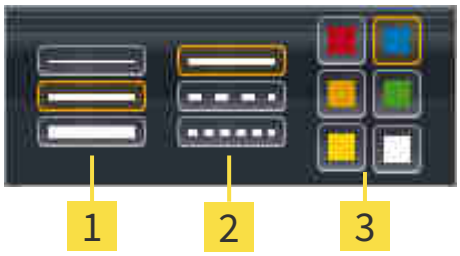
You can configure the **Draw Arrow** drawing tool or the **Draw Circle** drawing tool separately. Changes to the settings will only affect drawing objects created after that point.

To configure a drawing tool, proceed as follows:

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 56 - SIDEXIS 4]*.

1. In the **Consult** workflow step, click on the corresponding **Configure drawing tool** icon next to the **Draw Arrow** icon or **Draw Circle** icon.

▶ The transparent **Configure drawing tool** window opens:



1 Icons for the **Line thickness**

2 Icons for the **Line type**

3 Icons for the **Line color**

2. Click the desired icons to configure the **Line thickness**, **Line type** and **Line color** of the drawing tool.
3. Click on any point outside the transparent **Configure drawing tool** window.

▶ SICAT Air closes the transparent **Configure drawing tool** window.

▶ SICAT Air saves the settings in your user profile.

▶ SICAT Air uses the new settings for drawing objects created from then on.

ADDING SCREENSHOTS TO THE “GENERATE HANDOUT" WINDOW

You can create screenshots of any view in any workspace and any window as long as the respective view contains the **Copy screenshot to clipboard (Ctrl+C)** icon.

To add screenshots to the handout, proceed as follows:

1. To create a screenshot of a view, click on the **Copy screenshot to clipboard (Ctrl+C)** icon in the **View toolbar** of the desired view.
2. To create a screenshot of the entire workspace, click on the **Copy screenshot to clipboard (Ctrl +C)** icon in the **Workspace toolbar**.

▶ SICAT Air will create the structures that are required for the **Screenshot**object in the **Object browser** and will activate the object.

▶ The screenshot will be available in the **Report Generation** window.

▶ SICAT Air copies a screenshot to the clipboard.

Continue with the section *Preparing handouts [▶Page 140 - SIDEXIS 4]*.

29.2 PREPARING HANDOUTS

General information on patient information can be found in the section *Patient information [▶Page 136 - SIDEXIS 4]*.

The following actions are available for preparing handouts:

- Opening the **Report Generation** window
- Changing handout settings
- Preparing elements

OPENING THE “REPORT GENERATION" WINDOW

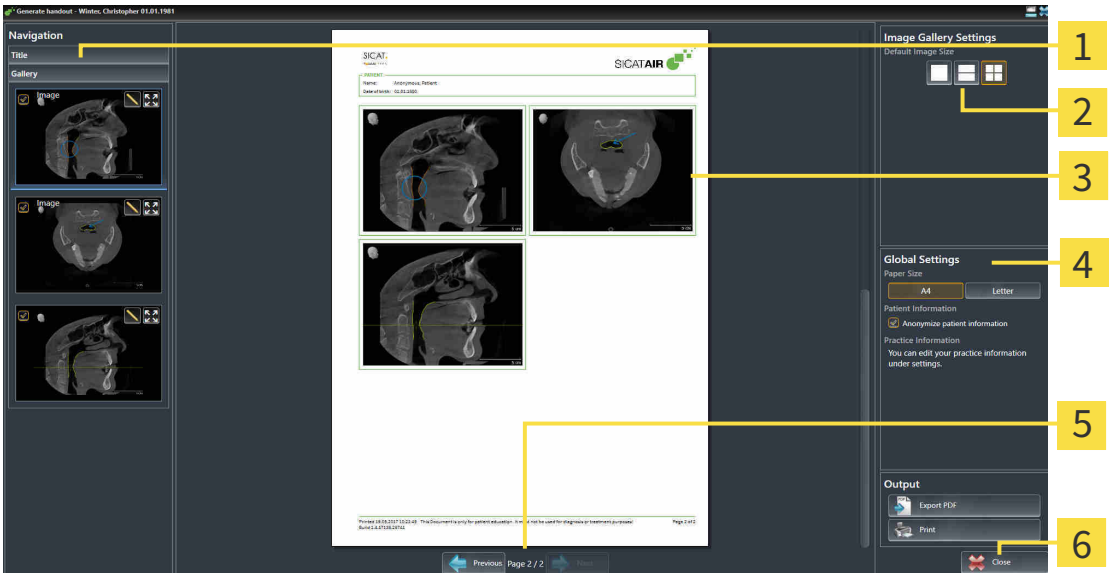
☑ You have created at least one **Image** object or one **Screenshot** object.

☑ Alternatively, you have created one **Airway comparison** object.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 56 - SIDEXIS 4]*.

- Click on the **Create Patient Information Report** icon.

▶ The **Report Generation** window opens:



1 **Gallery** area	4 **Global Settings** area
2 Buttons for arranging the images	5 Page navigation
3 Preview	6 **Close** button

CHANGING HANDOUT SETTINGS

☑ The **Report Generation** window is already open.

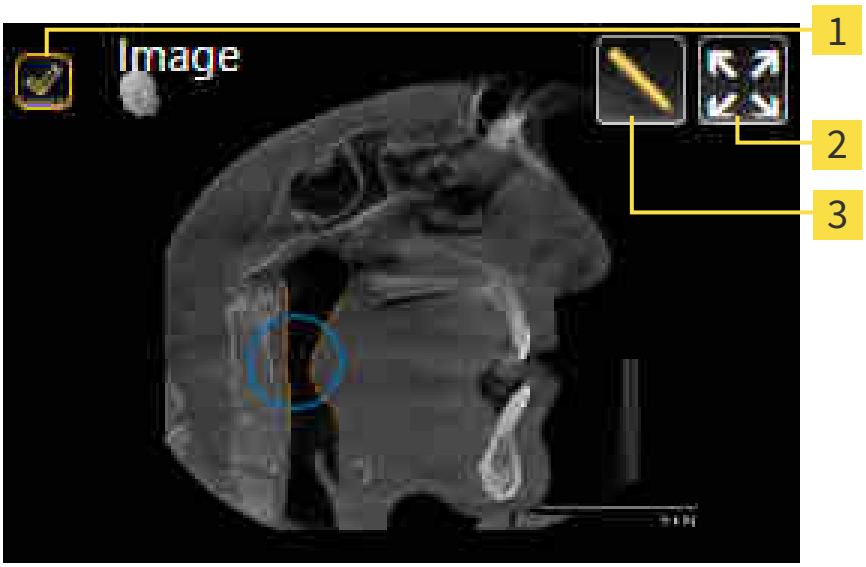
1. Click on the icon for the desired arrangement of the images in the **Image Gallery Settings** area.
   ▶ SICAT Air shows the images according to the selected settings.
2. Click on the row with the button with the desired paper size in the **Global Settings** area.
   ▶ SICAT Air changes the paper size according to the selected setting.
3. Activate or deactivate the **Anonymize patient information** check box.
   ▶ SICAT Air shows the actual patient information or anonymized patient information according to the selected setting.

PREPARING ELEMENTS FOR HANDOUTS

The **Report Generation** window shows screenshots from **Image** objects, screenshots from **Screenshot** objects and information from **Airway comparison**objects. For further information about this see *Creating images and screenshots [▶Page 137 - SIDEXIS 4]* and *Carrying out an airway comparison [▶Page 130 - SIDEXIS 4]*.

To prepare elements for handouts, proceed as follows:

☑ The **Report Generation** window is already open.



1 Check box for hiding and showing

2 **Show image on single page** icon

3 **Edit image description** icon

1. If you want to hide an element on the handout, deactivate the corresponding check box for the element.
   ▶ SICAT Air hides the element on the handout.

2. If you want SICAT Air to show an image alone on a page, click on the **Show image on single page** icon.

3. If you want to add a description to an element, click on the **Edit image description** icon of the element.
   ▶ SICAT Air displays an enlarged version of the element and a text input field:

4. Enter text into the text input field.
   ▶ If the text you have entered is part of an existing text block, SICAT Air will display the list of text blocks.

5. Click on the desired text block.
   ▶ SICAT Air adds the text block to the text input field.

6. If the desired text is not available as a text block, enter a new text.

7. Click on the **OK** button.
   ▶ SICAT Air saves the text as a description of the screenshot.
   ▶ If the text you have entered is not available as a text block, SICAT Air will save the description as a new text block in your user profile.

8. If you wish to change the order of elements on the handout, adjust them using drag & drop.

If you place the mouse pointer on a text block, SICAT Air will display the **Remove this auto complete text from the list** icon. If you click on the **Remove this auto complete text from the list** icon, SICAT Air will remove the text block from your user profile.

You can switch between the elements in the window showing the enlarged versions of the elements by clicking on the **Next item** button and **Previous item** button.

You can completely remove elements from the handout using the **Object browser**. Information on this can be found in the section *Managing objects with the object toolbar [▶Page 61 - SIDEXIS 4]*.

Continue with the section *Generating handouts [▶Page 144 - SIDEXIS 4]*.

SICAT Air takes the practice logo and practice information text from the general settings. Information on this can be found in the section *Using practice information [▶Page 174 - SIDEXIS 4]*.

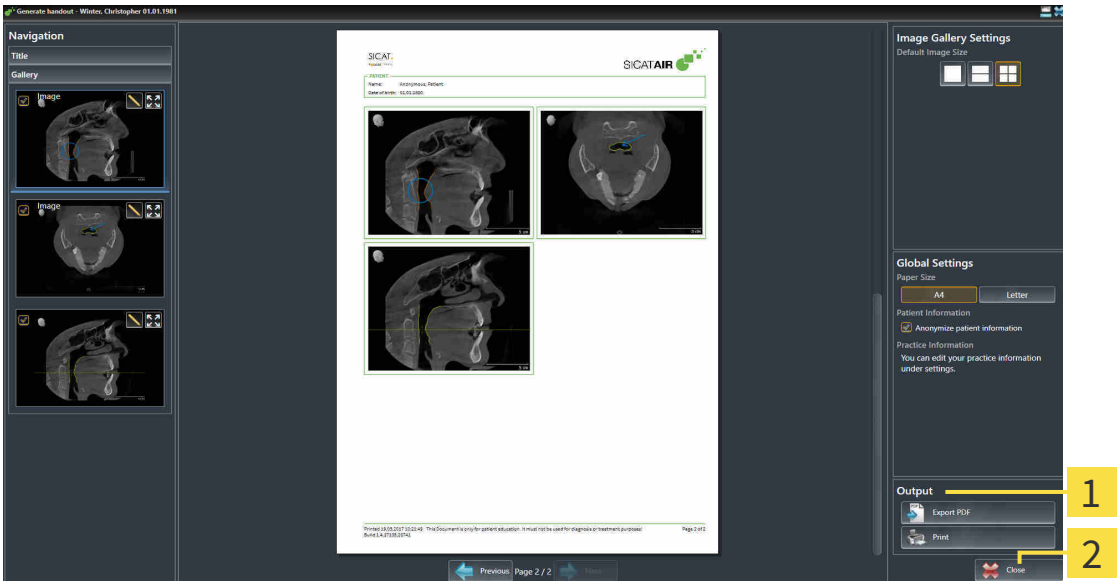
29.3 GENERATING HANDOUTS

The following actions are available for producing handouts:

- Saving a handout as a PDF file
- Printing handouts

SAVING A HANDOUT AS A PDF FILE

☑ The **Report Generation** window is already open.



1 **Output** area

2 **Close** button

1. Click on the **Export PDF** button in the **output** area.
   ▶ A Windows Explorer window opens.
2. Switch to the directory in which you wish to save the handout.
3. Enter a name in the **File name** field and click on **Save**.

▶ The Windows Explorer window closes.

▶ SICAT Air saves the handout as a PDF file.

PRINTING HANDOUTS

Handouts of a suitable quality require a printer that meets certain requirements. Information on this can be found in the section *System requirements [▶Page 9 - SIDEXIS 4]*.

☑ The **Report Generation** window is already open.

1. Click on the **Print** button.
   ▶ The **Print** window opens.
2. Select the desired printer and adjust the print settings where necessary.
3. Click **Print**.

▶ SICAT Air sends the handout to the printer.

30 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.

31 ORDERING PROCESS

To order the desired product, proceed as follows:

- Place the desired planning data for therapeutic appliances in the shopping cart in SICAT Air. Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶Page 148 - 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 161 - 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 162 - SIDEXIS 4]* or section *Completing an order without an active Internet connection [▶Page 166 - SIDEXIS 4]*.

You can add orders to the shopping cart, which are part of the same 3D X-ray scan.

31.1 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 147 - SIDEXIS 4]*.

In SICAT Air, the first part of the ordering process for a therapeutic appliance consists of the following steps:

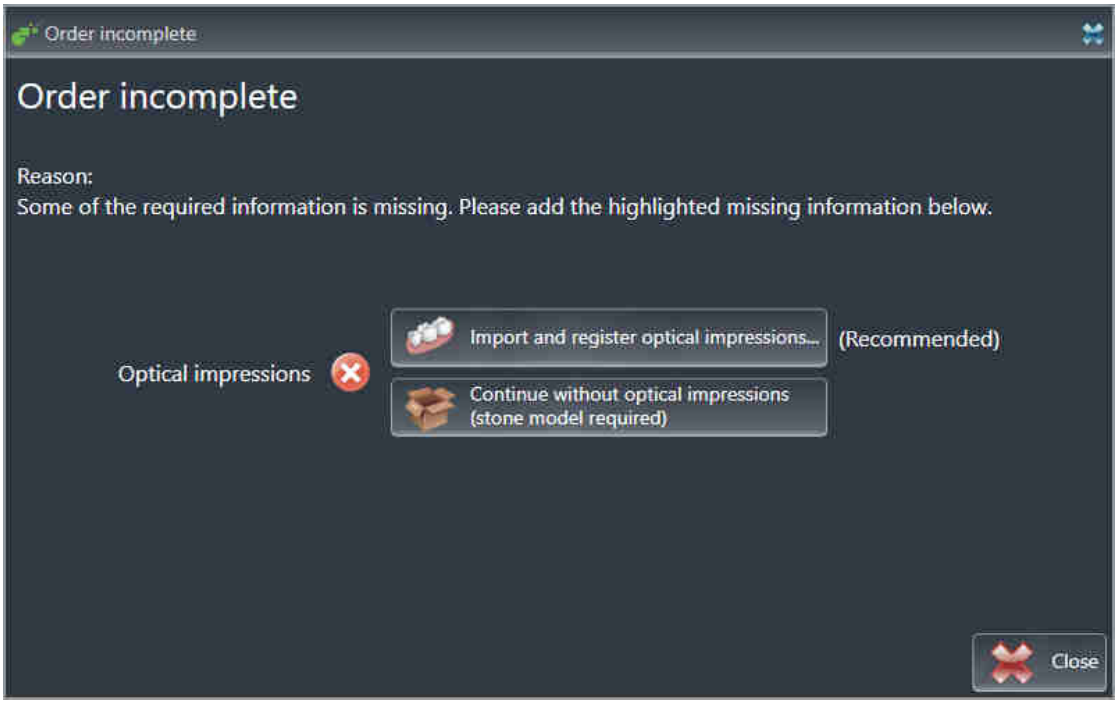
IF YOU HAVE NOT YET ADDED ANY OPTICAL IMPRESSIONS

☑ The 3D X-ray scan has been created in the treatment position.

☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 56 - SIDEXIS 4]*.

1. Click on the **Order therapeutic appliance** icon.

   ▶ The **Order incomplete** window opens:



2. Click on the **Import and register optical impressions** button and import optical impressions corresponding to the 3D X-ray scan. Information on this can be found in the section *Importing and registering optical impressions [▶Page 152 - SIDEXIS 4]*.

▶ The **Order therapeutic appliance** window opens.

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 104 - 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 pressing on the **Continue without optical impressions (stone model required)** button in the **Order incomplete** window. After this, the **Order therapeutic appliance** 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 YOU HAVE ALREADY ADDED OPTICAL IMPRESSIONS

☑ The 3D X-ray scan has been created in the treatment position.

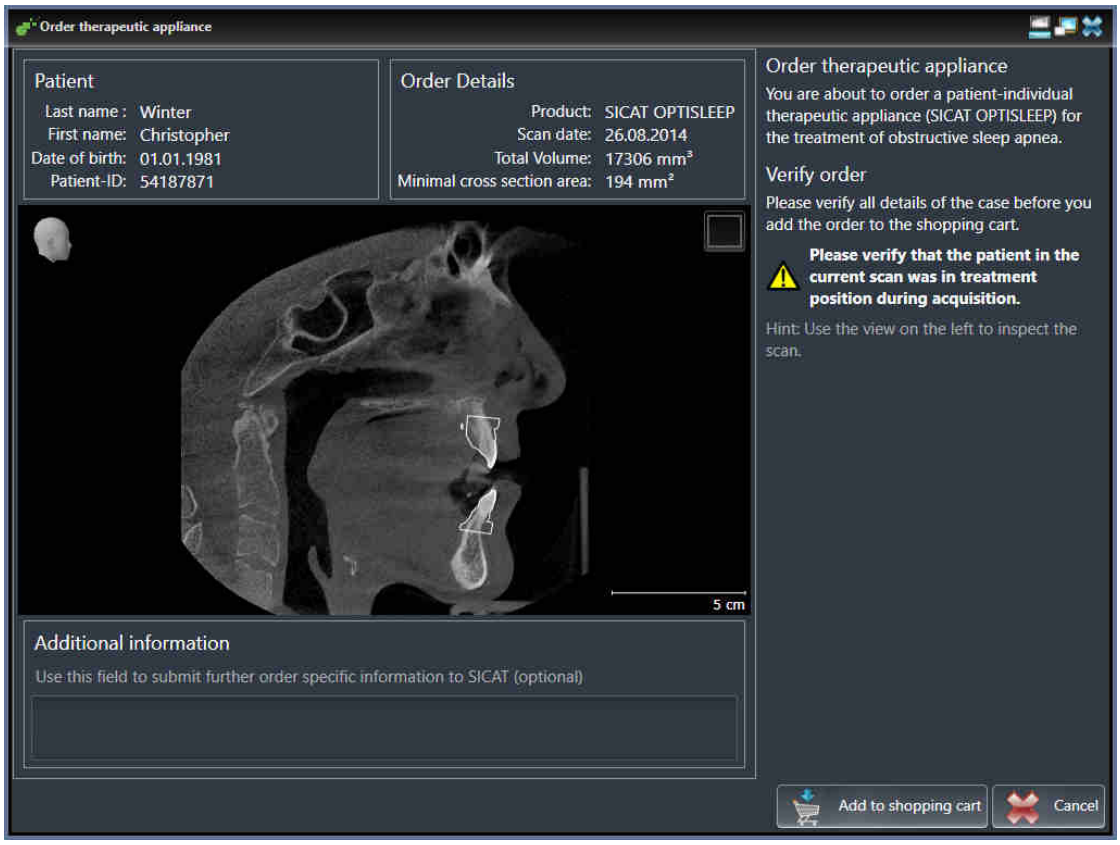
☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 56 - SIDEXIS 4]*.

- Click on the **Order therapeutic appliance** icon.

▶ The **Order therapeutic appliance** window opens.

CHECK YOUR ORDER IN THE “ORDER THERAPEUTIC APPLIANCE" WINDOW

☑ The **Order therapeutic appliance** window is already open.



1. Check in the **Patient** section and **Order Details** section whether the patient information and scan information are correct.
2. Check in the 2D view that the scan has been created in the treatment position.
3. If desired, enter additional information for SICAT in the **Additional information** field.
4. Click on the **Add to shopping cart** button.

▶ SICAT Air places the desired planning data for therapeutic appliances in the SICAT shopping cart.

▶ The **Order therapeutic appliance** window closes.

▶ SICAT Air opens the SICAT Suite shopping cart.

As long as there is an order in the shopping cart, you can no longer overwrite optical impressions of a plan. This is only possible once more when you have completed or deleted the order. If you overwrite or delete optical impressions of a plan, you cannot order the same treatment position again.

You can cancel the order by clicking on **Cancel**.

Continue with the section *Checking the shopping cart and completing the order [▶Page 161 - SIDEXIS 4]*.

31.2 OPTICAL IMPRESSIONS

You can import and register optical impressions only for X-ray data that has been created by Sirona 3D-X-ray devices.

SICAT Air can show matching X-ray data and optical impressions for the same patient simultaneously. The combined illustration provides additional information for analysis and diagnosis. In addition, the treatment implementation is based on optical impressions.

The following actions are required to use data with optical impressions in SICAT Air:

- Importing a file with optical impressions consisting of a lower jaw scan and upper jaw scan, which contains data with optical impressions from an optical impression system, such as CEREC with an open GALILEOS license
- Registering optical impressions on X-ray data

SICAT Air supports the following file formats for optical impressions:

- SIXD files which contain an optical impression of the maxilla and an optical impression of the mandible
- SSI files which contain an optical impression of the maxilla and an optical impression of the mandible
- STL files which contain an optical impression of the maxilla or an optical impression of the mandible (**SICAT Suite STL Import** license required)

The following tools are available for optical impressions:

- *Importing and registering optical impressions [▶Page 152 - SIDEXIS 4]*
- *Re-using optical impressions from other SICAT applications [▶Page 158 - SIDEXIS 4]*
- Activating, hiding and showing optical impressions - Information on this can be found in the section *Managing objects with the object browser [▶Page 59 - SIDEXIS 4]*.
- Focusing on optical impressions and removing optical impressions – Information on this can be found in the section *Managing objects with the object toolbar [▶Page 61 - SIDEXIS 4]*.

Optical impressions in STL format require additional steps during import. Information on this can be found in the section *Additional steps for optical impressions in STL format [▶Page 157 - SIDEXIS 4]*.

31.3 IMPORTING AND REGISTERING 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.

To enable you to check whether 3D X-ray data and optical impressions match, the **Import and register optical impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

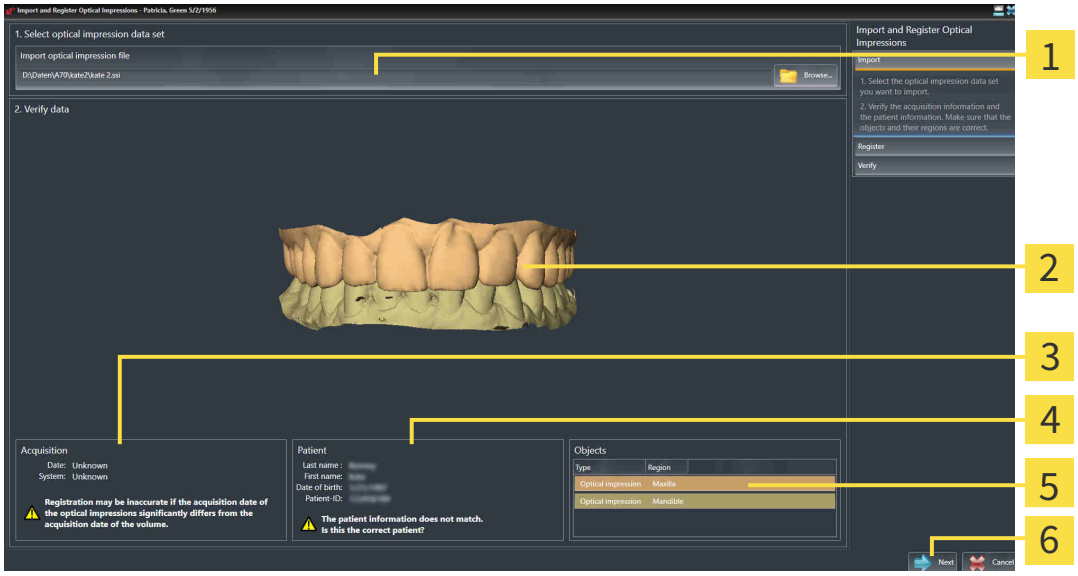
You can use the **Inspection Window** to check whether an optical impression is precisely aligned to the X-ray data. You can move the **Inspection Window** and scroll through the slices in the **Inspection Window**.

General information on optical impressions can be found in the section *Optical impressions [▶ Page 151 - SIDEXIS 4]*.

To import and register optical impressions, proceed as follows:

☑ The **Order** 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 **Browse** button.
   ▶ The **Open Optical Impression File** window opens.
3. In the **Open Optical Impression File** window, select the desired optical impressions file and click on **Open**.
   ▶ The **Open Optical Impression File** window closes.
   ▶ SICAT Air imports the selected optical impressions file:



1	**Import optical impression file** area	4	Patient information
2	**3D** view of optical impressions	5	List of objects
3	Scan information	6	**Next** button

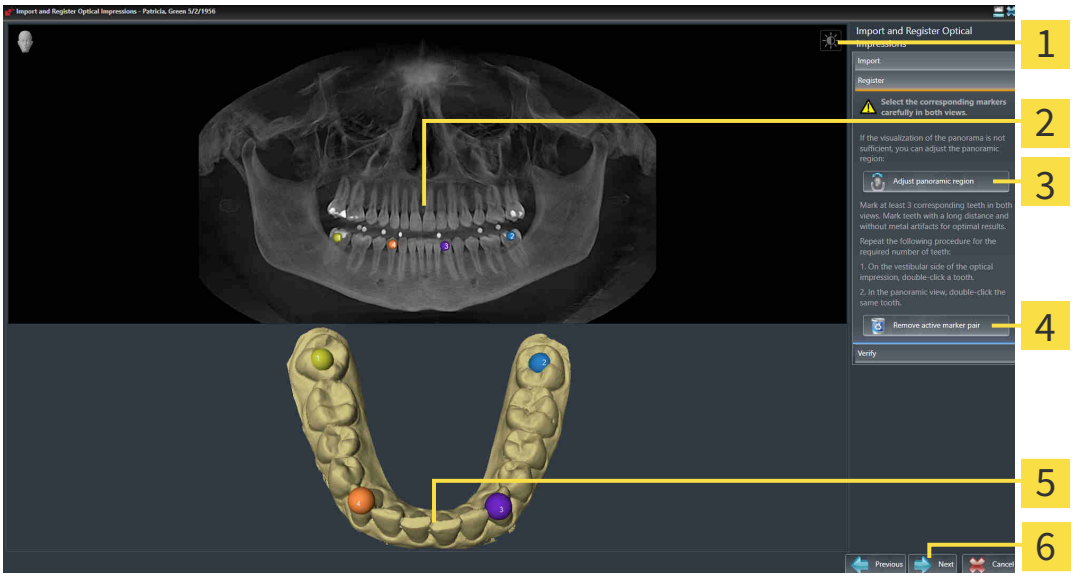
4. Check the scan information and patient information.
5. Make sure that the objects and their regions are correct. The background color in the list of objects matches the color of the objects in the **3D** view.

6. Click **Next**.

   ▶ If the patient data in the 3D X-ray scan and in the optical impression differ,SICAT Air will open the **Different patient information** window:

7. Compare the patient information. If you are sure that the optical impression matches the current patient, click on the **Yes** button.

   ▶ The **Register** step opens for the first optical impression:



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

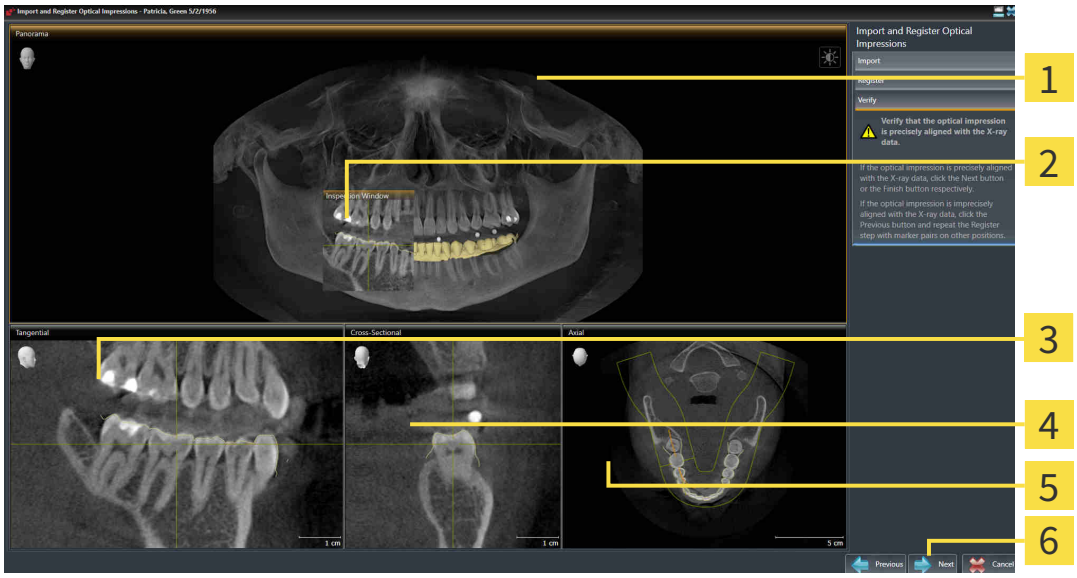
8. For the first optical impression, double click the same tooth both in the **Panorama** view and on the vestibular side of the optical impression in the **3D** view. Make sure that there is a large distance between individual teeth and mark only teeth without metal artifacts. Repeat this step until 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 first optical impression.

9. Click **Next**.

   ▶ SICAT Air calculates the registration of the first optical impression with the X-ray data.

   ▶ The **Verify** step opens for the first optical impression:



1	**Panorama** view	4	**Cross-Sectional** view
2	**Inspection Window**	5	**Axial** view
3	**Tangential** view	6	**Next** button

10. Check whether the optical impression is precisely aligned to the X-ray data in the 2D slice views. Scroll through the slices and check the contours shown.

11. 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.

12. If the first optical impression is precisely aligned to the X-ray data, click on the **Next** button.

    ▶ The **Register** step opens for the second optical impression:

13. For the second optical impression, 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 there is a large distance between individual teeth and mark only teeth without metal artifacts where possible. Repeat this step until you have marked at least three matching teeth in both views. You can improve the accuracy of the registration by marking up to five teeth.

    ▶ Markings with different colors and numbers in both views will display corresponding teeth in the second optical impression.

14. Click **Next**.

▶ SICAT Air calculates the registration of the second optical impression with the X-ray data.

▶ The **Verify** step opens for the second optical impression:

15. Check whether the optical impression is precisely aligned to the X-ray data in the 2D slice views. Scroll through the slices and check the contours shown.

16. 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. You can improve the accuracy of the registration by marking up to five teeth.

17. If the second optical impression is precisely aligned to the X-ray data, click on the **Finish** button.

▶ The **Import and register optical impressions** wizard closes.

▶ SICAT Air adds the selected optical impressions to the **Object browser**.

▶ SICAT Air 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 79 - 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 104 - SIDEXIS 4]*.
- If you wish to remove a certain marker pair in the **Register** step, you can select a marker from the pair and click on the **Remove active marker pair** button.
- If you want to cancel importing and registering optical impressions, click **Cancel**.

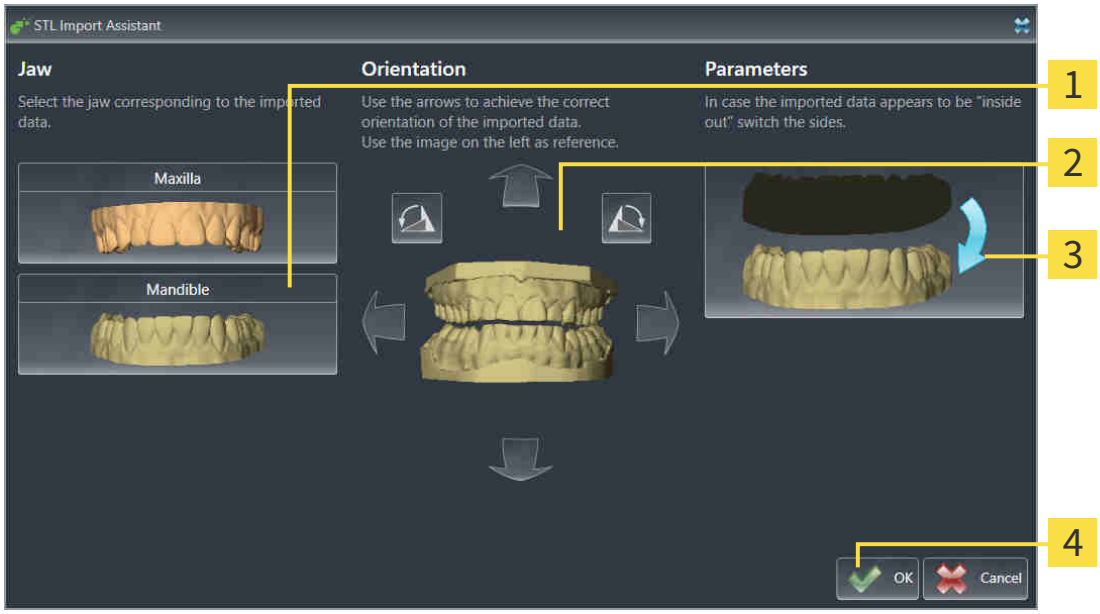
31.4 ADDITIONAL STEPS FOR OPTICAL IMPRESSIONS IN STL FORMAT

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 and registering optical impressions [▶Page 152 - SIDEXIS 4]*.

   ▶ The **STL import wizard** window opens:



1	Selection of the jaw	3	Switching inside and outside
2	Changing the orientation	4	**OK** button

2. In the **jaw** area, select whether the optical impression contains the **maxilla** or the **mandibula** 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 **parameter** area.

5. Click on the **OK** button.

6. If required, repeat those steps for a second STL file. SICAT Air automatically attributes the second STL file to the other jaw.

   ▶ SICAT Air displays the imported optical impressions in the **Import and register optical impressions** wizard.

7. Continue with the registration of the optical impressions. Information on this can be found in the section *Importing and registering optical impressions [▶Page 152 - SIDEXIS 4]*.

31.5 RE-USING OPTICAL IMPRESSIONS FROM OTHER SICAT APPLICATIONS

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

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.

To enable you to check whether 3D X-ray data and optical impressions match, the **Import and register optical impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

General information on the optical impressions can be found in the section *Optical impressions [▶ Page 151 - SIDEXIS 4]*.

To re-use optical impressions from another SICAT application, proceed as follows:

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

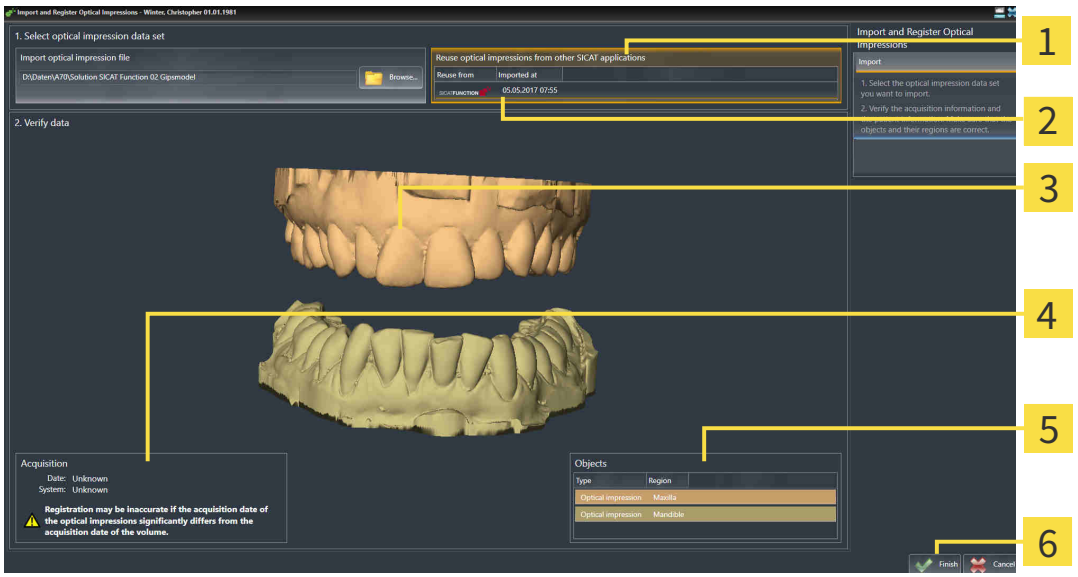
☑ You have already imported optical impressions for the opened study in another SICAT application, which you have not yet used in SICAT Air.

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 row with the desired optical impressions in the **Reuse optical impressions from other SICAT applications** area.

3. SICAT Air displays the optical impressions selected.



1	**Reuse optical impressions from other SICAT applications** area	4	Scan information
2	List of optical impressions from other SICAT applications	5	List of objects
3	**3D** view of optical impressions	6	**Finish** button

4. Check the scan information and patient information. Make sure that the objects and their regions are correct. The background color in the list of objects matches the color of the objects in the **3D** view.

5. Click on the **Finish** button.

► The **Import and register optical impressions** wizard closes.

► SICAT Air adds the selected optical impressions to the **Object browser**.

► SICAT Air displays the optical impressions selected.

If you want to cancel the transfer of optical impressions from another SICAT application, click **Cancel**.

31.6 OPENING THE SHOPPING CART

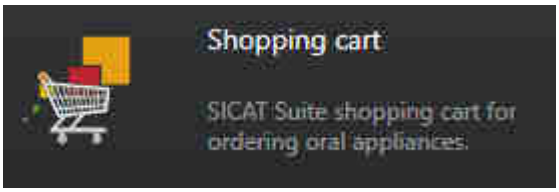
☑ The shopping cart contains at least one product.

☑ 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:

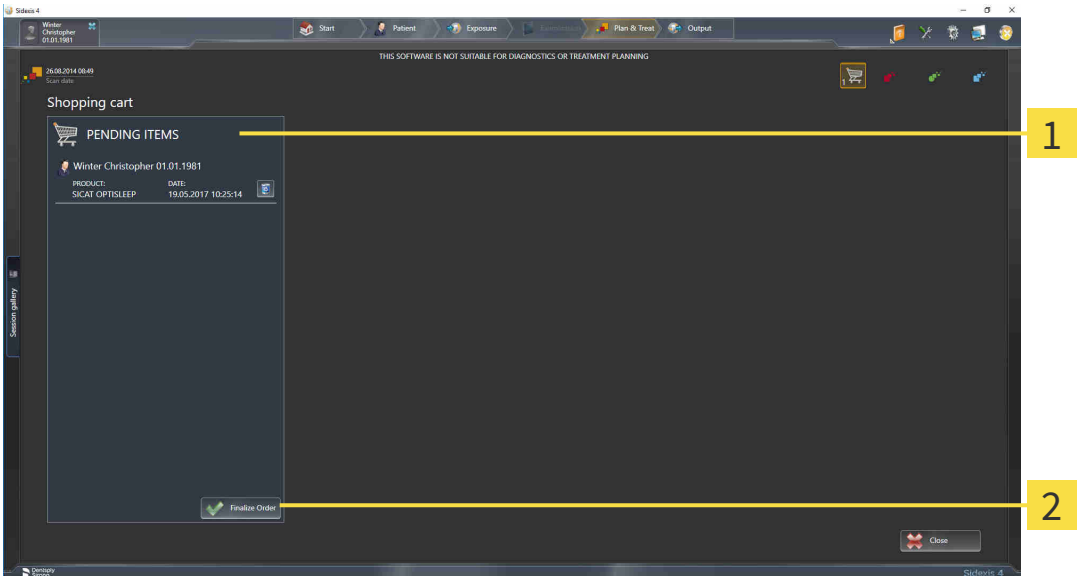


Continue with the following action:

- *Checking the shopping cart and completing the order [▶Page 161 - SIDEXIS 4]*

31.7 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 160 - SIDEXIS 4]*.



1 **PENDING ITEMS** list

2 **Finalize Order** button

1. Check in the **Shopping cart** window whether the desired products are included.
2. Click on the **Finalize 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 162 - SIDEXIS 4]*
- *Completing an order without an active Internet connection [▶Page 166 - SIDEXIS 4]*

31.8 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 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 163 - 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.

31.9 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.

31.10 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]*.

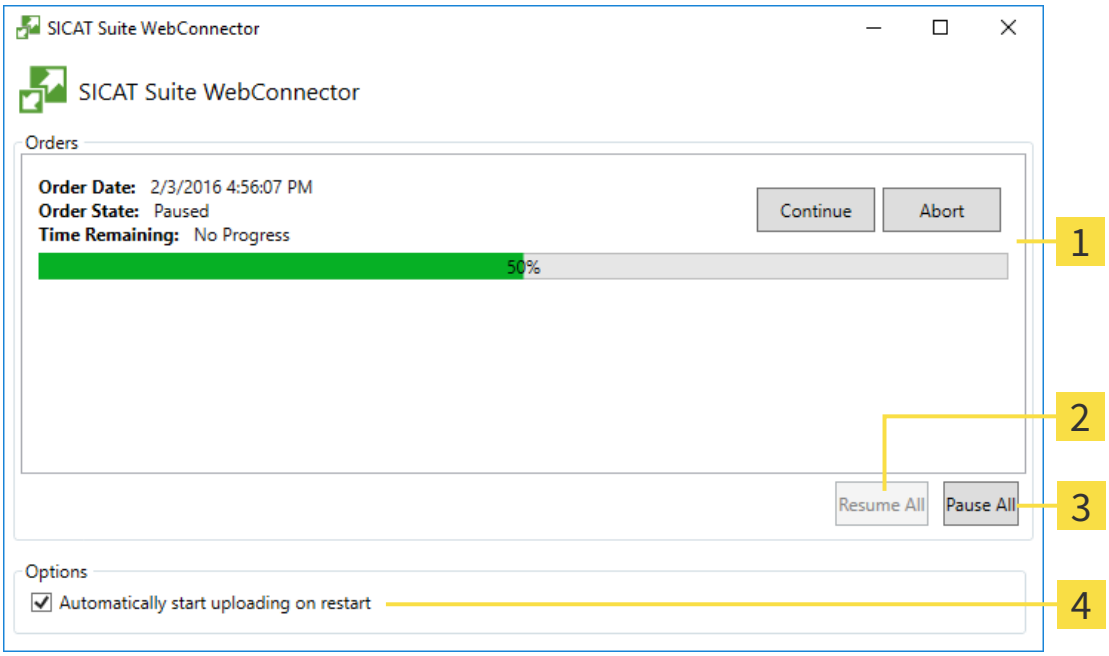
In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

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 Air 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.

31.11 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 **Unable to connect to the 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.

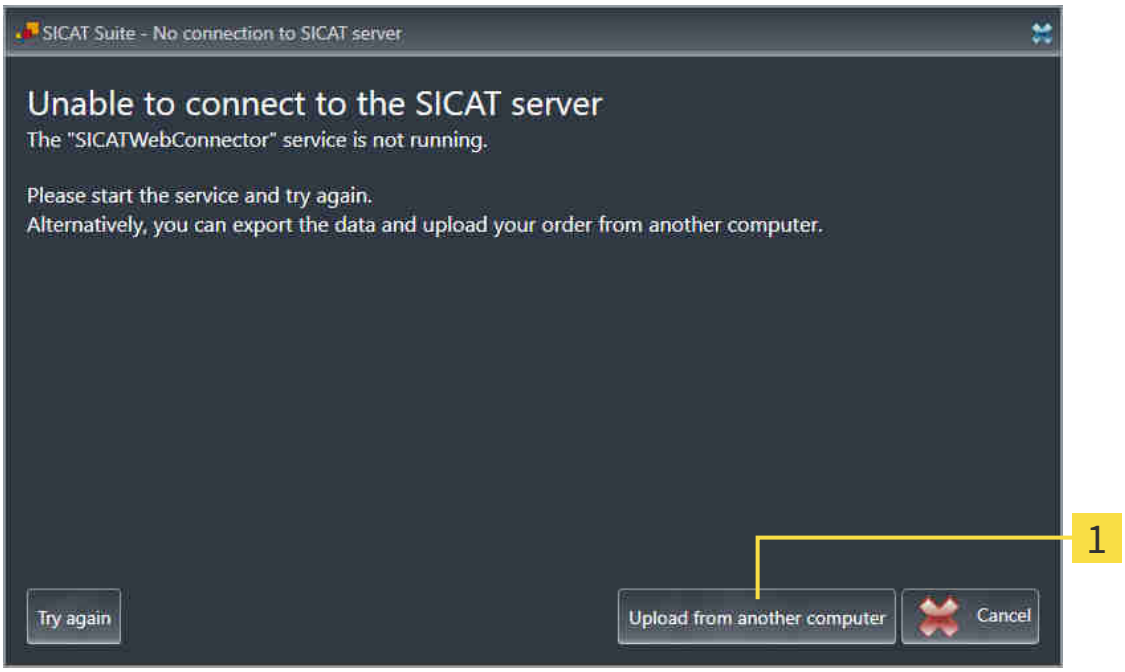
Below the cause, possible steps for solving the problem will be shown.

As an alternative to eliminating the problem, you can upload an order using another computer with an active Internet connection via a web browser. 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.

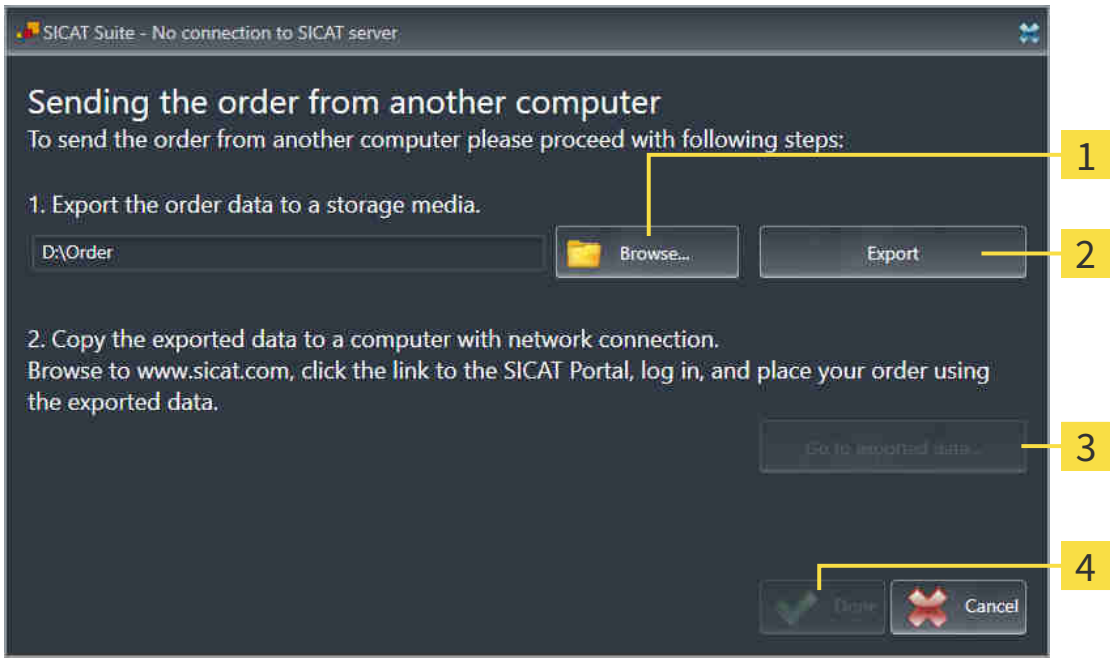
☑ A window will appear with the following message: **Unable to connect to the SICAT server**



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.

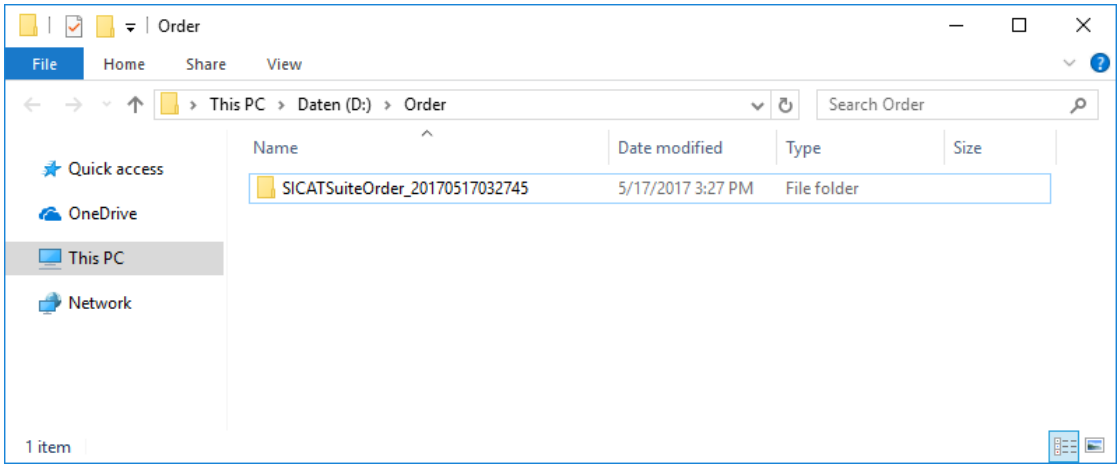
3. Select an existing directory or create a new directory and click on **OK**. Please note that the path to the directory must not be longer than 160 characters.

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 http://www.sicat.de 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 163 - 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.

32 SETTINGS

The versions of SICAT Suite connected to SIDEXIS adopt several settings from SIDEXIS. You can view the values of such settings in SICAT Air, but only make changes in the SIDEXIS 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 170 - SIDEXIS 4]*.
- **Licenses** - Information on this can be found in the section *Licenses [▶Page 45 - 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 174 - SIDEXIS 4]*.
- **Visualization** – Changing general visualization settings. Information on this can be found in the section *Changing visualization settings [▶Page 175 - SIDEXIS 4]*.
- **SICAT Air** – Changing application-specific settings of SICAT Air. Information on this can be found in the section *Changing SICAT Air settings [▶Page 177 - SIDEXIS 4]*.

If you change the settings, SICAT Air will apply the changes immediately and saves the settings in your user profile.

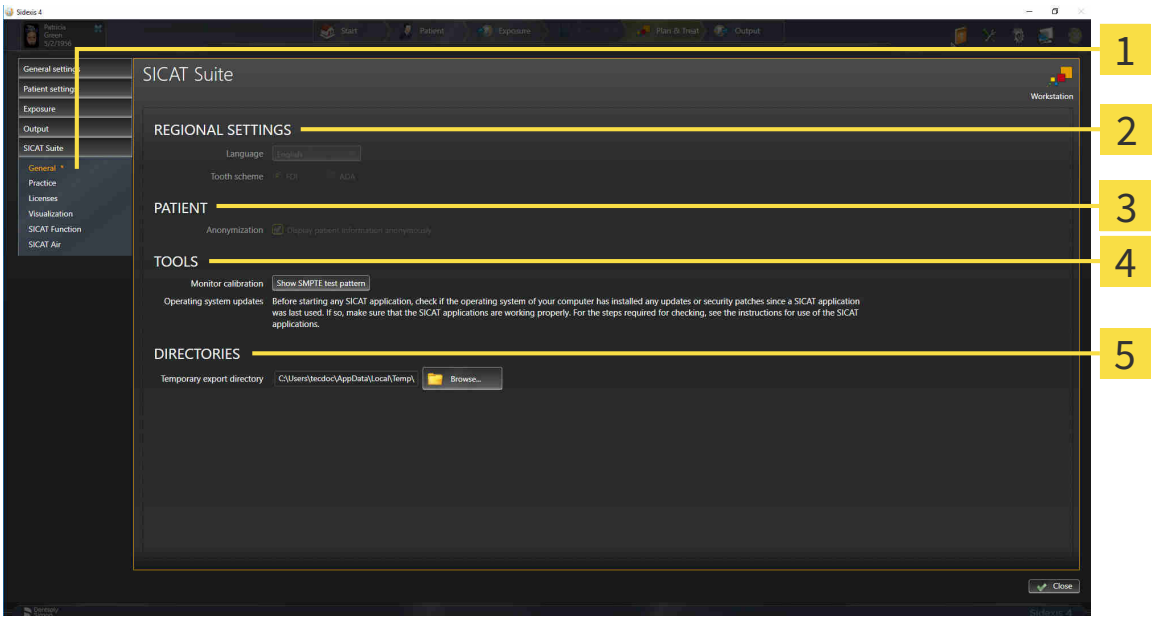
The settings in SICAT Suite are valid for the active user of the current workstation. SICAT Suite applies all changes in the settings immediately. If you switch to another category in the settings, SICAT Suite will also save changes to the settings permanently.

32.1 USING GENERAL SETTINGS

The versions of SICAT Suite connected to SIDEXIS adopt several settings from SIDEXIS. You can view the values of such settings in SICAT Air, but only make changes in the SIDEXIS 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

SICAT Air 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 Air 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.

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 [▶Page 172 - SIDEXIS 4]*.

If you select a language in SIDEXIS Selecting, which SICAT Air does not support, SICAT Air will display English text in the user interface.

The supported tooth schemes are FDI and ADA.

32.2 MONITOR CALIBRATION WITH THE SMPTE TEST IMAGE

CAUTION

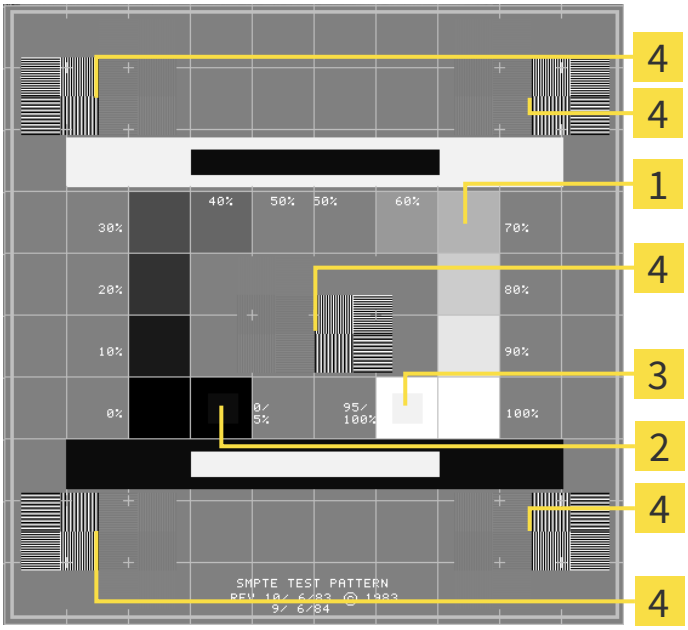
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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.

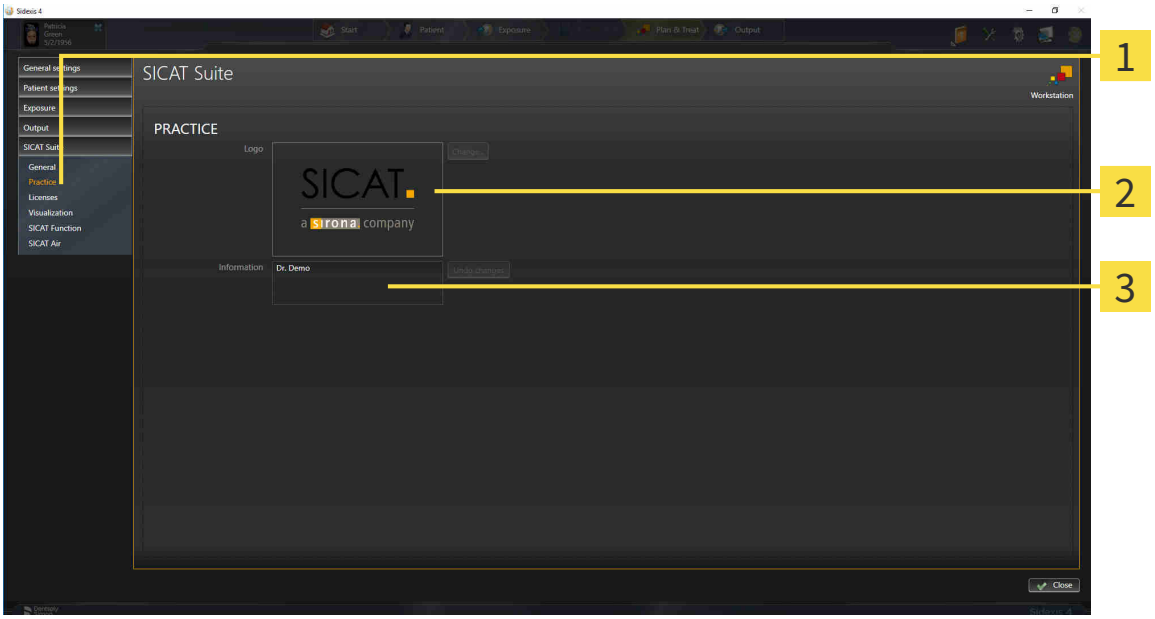
32.3 USING PRACTICE INFORMATION

The versions of SICAT Suite connected to SIDEXIS adopt the practice logo and the information text from SIDEXIS. 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.

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.

32.4 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

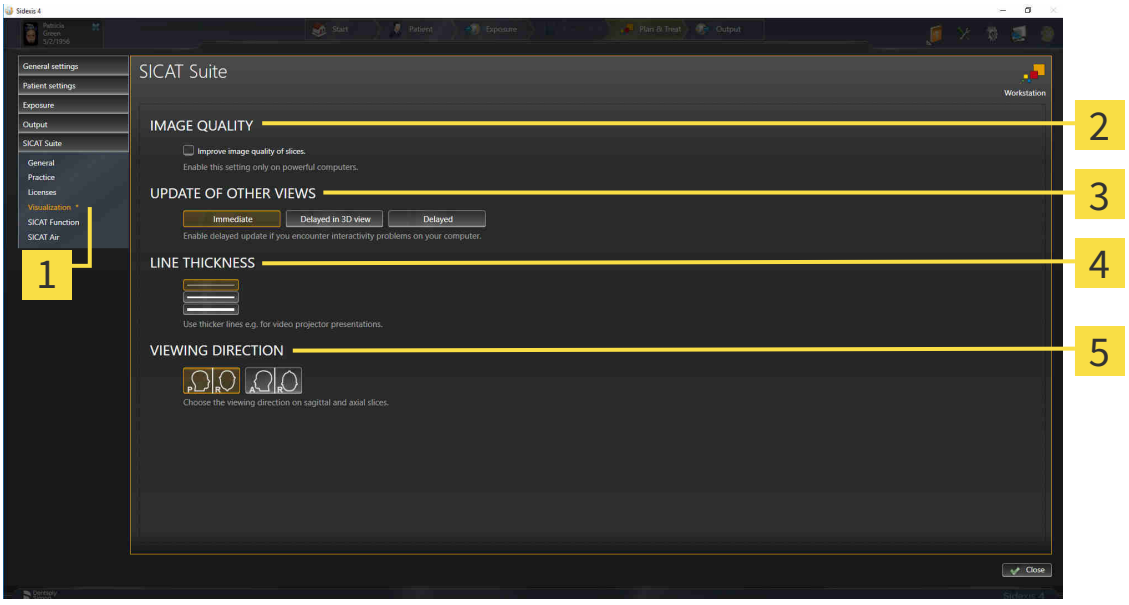
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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:

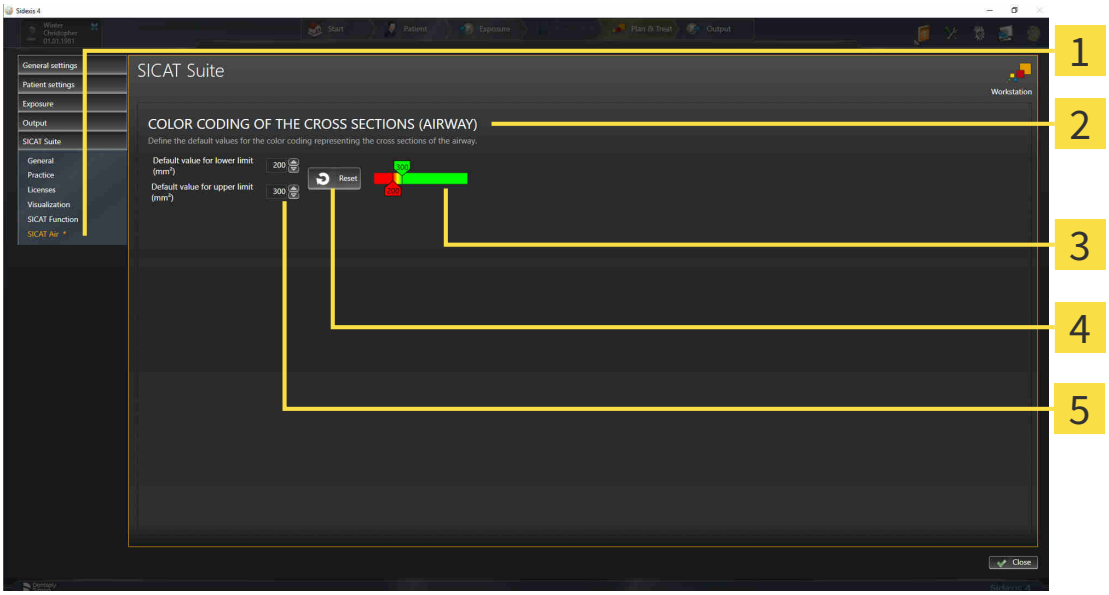
- **Improve image quality of slices** – Improves the image quality of slices as the software averages adjacent slices. Activate this setting only on high-performance computers.
- **UPDATE OF OTHER VIEWS** – Delayed updates improve the interactivity of the active view but causes delays in the updating 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.

32.5 CHANGING SICAT AIR SETTINGS

SICAT Air settings determine the color gradient of the **Airway** object in SICAT Air.

To change the SICAT Air 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 Air** button.
   ▶ The **SICAT Air** window opens:



1 **SICAT Air** tab

2 **COLOR CODING OF THE CROSS SECTIONS (AIRWAY)** area

3 **Color coding** with sliders

4 **Reset** button

5 **Default value for lower limit (mm²)** field and **Default value for upper limit (mm²)** field

The settings are:

- **Default value for lower limit (mm²)** – defines the lower value of the cross-sectional area in mm^2, from which the **Color coding** starts entirely in red.
- **Default value for upper limit (mm²)** – defines the upper value of the cross-sectional area in mm^2, from which the **Color coding** ends entirely in green.

If you change the values in the fields **Default value for lower limit (mm²)** and **Default value for upper limit (mm²)**, the sliders display the effects on the **Color coding**. If you move the sliders in **Color coding**, the values in the fields adapt accordingly.

You can reset the settings for **Default value for lower limit (mm²)** and **Default value for upper limit (mm²)** to the default settings of SICAT Air by clicking the **Reset** button.

SICAT Air uses the changed default values in two cases:

- You open a 3D X-ray scan for the first time:
- You reset the values of an **Airway** object.

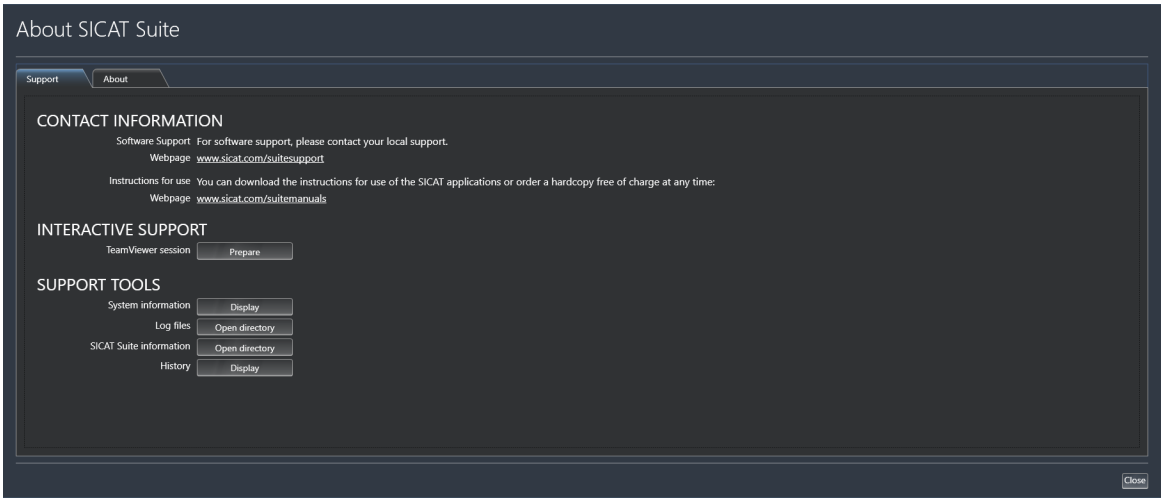
33 SUPPORT

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 180 - SIDEXIS 4]*



33.1 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.

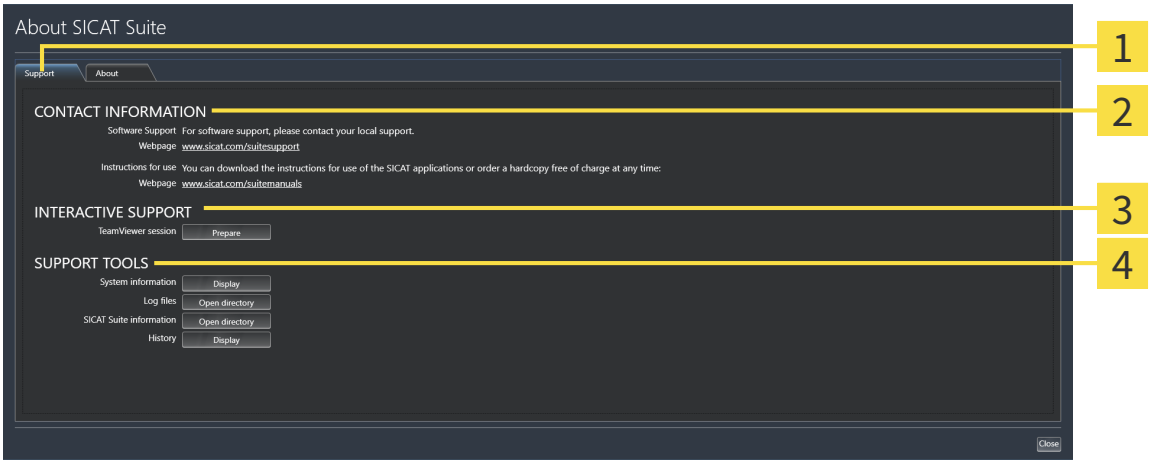
▶ The **SICAT Suite information** window opens.

The **SICAT Suite information** window comprises the following tabs:

- **Support** - Information on this can be found in the section *Support [▶Page 179 - SIDEXIS 4]*.
- **About** - Information on this can be found in the section *Info [▶Page 182 - SIDEXIS 4]*.

33.2 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 Air will open a TeamViewer session.

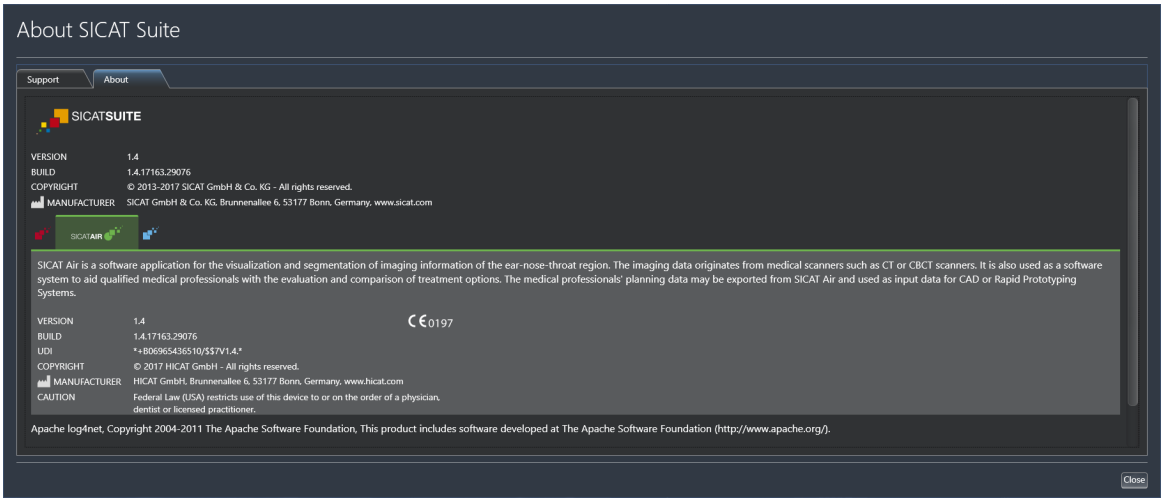
TeamViewer is software that allows mouse and keyboard commands to be remotely controlled and to transfer the contents of a computer's monitor via an active Internet connection. TeamViewer will only establish a connection if you explicitly consent. To do so, provide the SICAT support team with a TeamViewer 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 Air will open the system information of the operating system.
- Click on the **Open directory** button in the **Log files** area and SICAT Air 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 Air will show the message window.

33.3 INFO

The **About** window displays information on SICAT Suite and all installed SICAT applications on several tabs:



34 OPENING READ-ONLY DATA

You can open data as read-only.

The data you can view in SICAT Air as a SIDEXIS 4 module without being able to make and save changes depends on the status of your license:

TYPE OF SICAT AIR LICENSE	VIEWING WITHOUT CHANGES POSSIBLE?
None	No
Viewer	Yes
Full version	No

In the following cases, you can view SICAT Air studies without a Viewer license:

- In SIDEXIS 4, export SICAT Air studies and import the data to SIDEXIS on another computer. SICAT Air must be installed on this computer.
- In SIDEXIS 4, create a Wrap&Go package which contains SICAT Air studies. Install the Wrap&Go package on another computer. Then, install SICAT Air.

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. This means, amongst other things, that other workstations can withdraw your write permissions for open records. If this occurs, SIDEXIS 4 will close the record immediately and you cannot save changes to SICAT Air 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 Sirona SIDEXIS 4. Information on this can be found in the section *Starting SICAT Suite [▶Page 40 - SIDEXIS 4]*.

▶ SICAT Suite opens the 3D X-ray scan and planning project from the current SIDEXIS 4 examination.

▶ Unless there are reasons preventing this, SICAT Air applies the volume orientation and panoramic curve from SIDEXIS 4. Information on this can be found in the section *Volume orientation and panoramic region [▶Page 96 - SIDEXIS 4]*.

The following conditions must be met for you to be able to adjust volume orientation and panoramic curve.

- You have activated a license which allows you to open 3D X-ray scans or SICAT Air studies. Information on this can be found in the section *Licenses [Page 45 - SIDEXIS 4]*.
- No other corresponding study of SICAT Function or any other SICAT application contains objects relating to the 3D X-ray scan which would be affected by a change in the volume orientation or the panoramic curve.

If the conditions are not met, SICAT Air deactivates the buttons and control elements that you can use for changing volume orientation or panoramic curves in the**Adjust Volume Orientation and Panoramic Region** window.

35 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.

36 KEYBOARD SHORTCUTS

If you move the mouse pointer over certain functions, SICAT Air 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 **Segment the airway** window of SICAT Air:

KEYBOARD SHORTCUTS	DESCRIPTION
N	Navigation
B	Remove from the respiratory path
A	Add to the respiratory path
E	Remove non-required oral area

37 UNINSTALLING SICAT SUITE

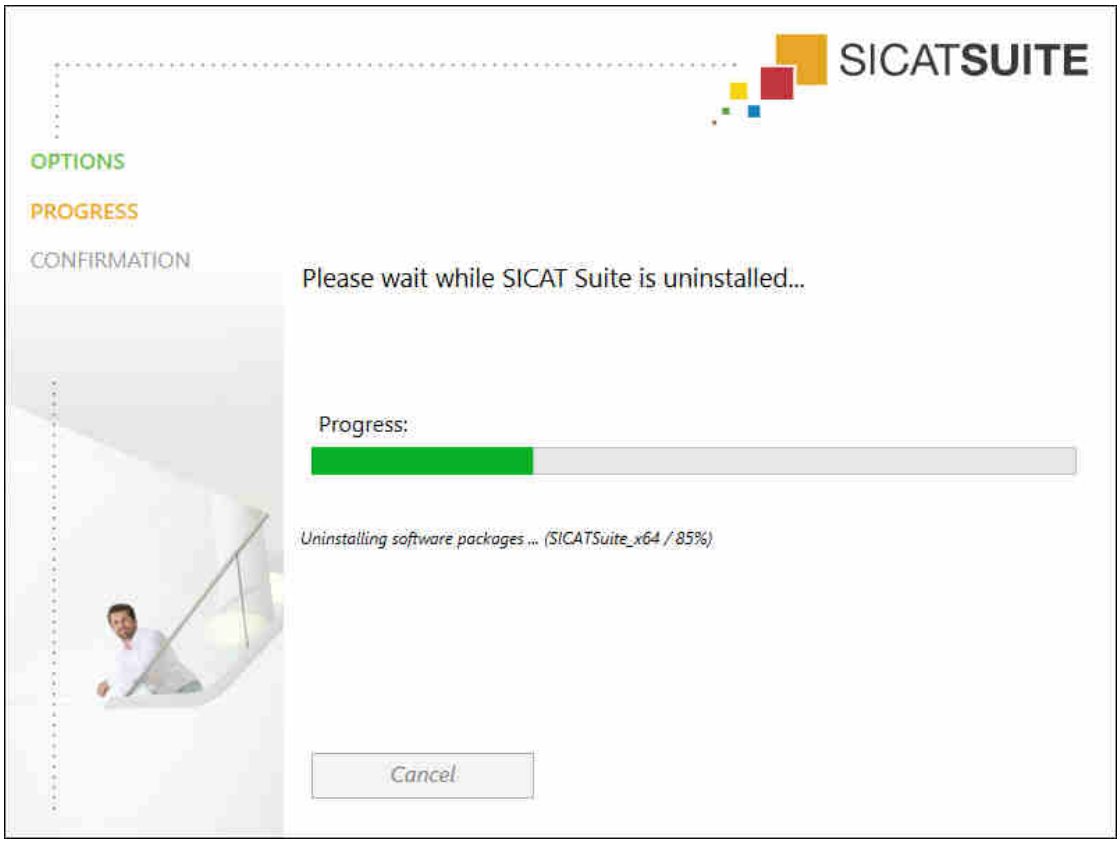
The SICAT Suite uninstallation program maintains active licenses on your computer. Therefore, SICAT Suite warns you that it will not automatically delete licenses before the uninstallation. If you no longer wish to use SICAT Suite on this computer, deactivate the licenses before uninstallation. Information on this can be found in the section *Returning licenses to the license pool [▶Page 52 - 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 164 - 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.

38 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.

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.

CAUTION

3D X-ray scans of insufficient quality may result in the quality of the segmented airway and airway profile being insufficient.

Only use 3D X-ray scans of a sufficient quality to create the segmented airway and airway profile with a sufficient quality and resolution.

AIRWAY COMPARISON

CAUTION

The use of incorrect data for the airway comparison may result in an incorrect diagnosis and treatment.

Use the correct patient, the correct 3D X-ray scans, the correct airway segmentation data, the correct interesting area and the correct size when selecting airway profiles for the airway comparison.

PATIENT INFORMATION

CAUTION

Using the handout for diagnosis purposes may result in an incorrect diagnosis and treatment.

Only use the visualization functions for medical images of the software user interface to perform a diagnosis on medical images and to plan the treatment.

39 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

GLOSSARY

ADA

American Dental Association

Airway

The term airway labels the object, which SICAT Air creates during segmentation. It is the upper part of the airways that is relevant in SICAT Air.

Airway analysis area

The term airway analysis area labels the bar in the airway workspace, which contains the relevant measured values and airway profile.

Airway area

The airway region is the region of interest, which you define in the segmentation window using the anatomical reference points and lateral size.

Airway comparison

The airway comparison juxtaposes two segmented airways in 3D views. The juxtaposition allows you to compare the lower jaw in an untreated position and in the treatment position. This allows you to assess the impacts of a therapeutic appliance.

Airway profile

Designates the 2D diagram, which shows the cross-sectional areas along the segmented airway.

Application

SICAT applications are programs belonging to SICAT Suite.

Color coding

Color coding highlights the size of the sections of the airway using different colors.

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.

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.

Reference data record

The reference data record is a data record with a segmented airway, which is not currently open in SICAT Air. The reason for the differentiation between an open data record and the reference data record is that SICAT Air can only ever open one 3D X-ray scan.

Registration

Spatial leveling

Segmentation

Segmentation is the process, in which the software separates certain areas from the volume.

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.

Treatment position

Treatment position means that the patient's lower jaw is in a protruding position, which prevents bottlenecks in the airway, during the 3D X-ray scan.

Untreated

Untreated means that the patient’s lower jaw is in occlusion during the 3D X-ray scan.

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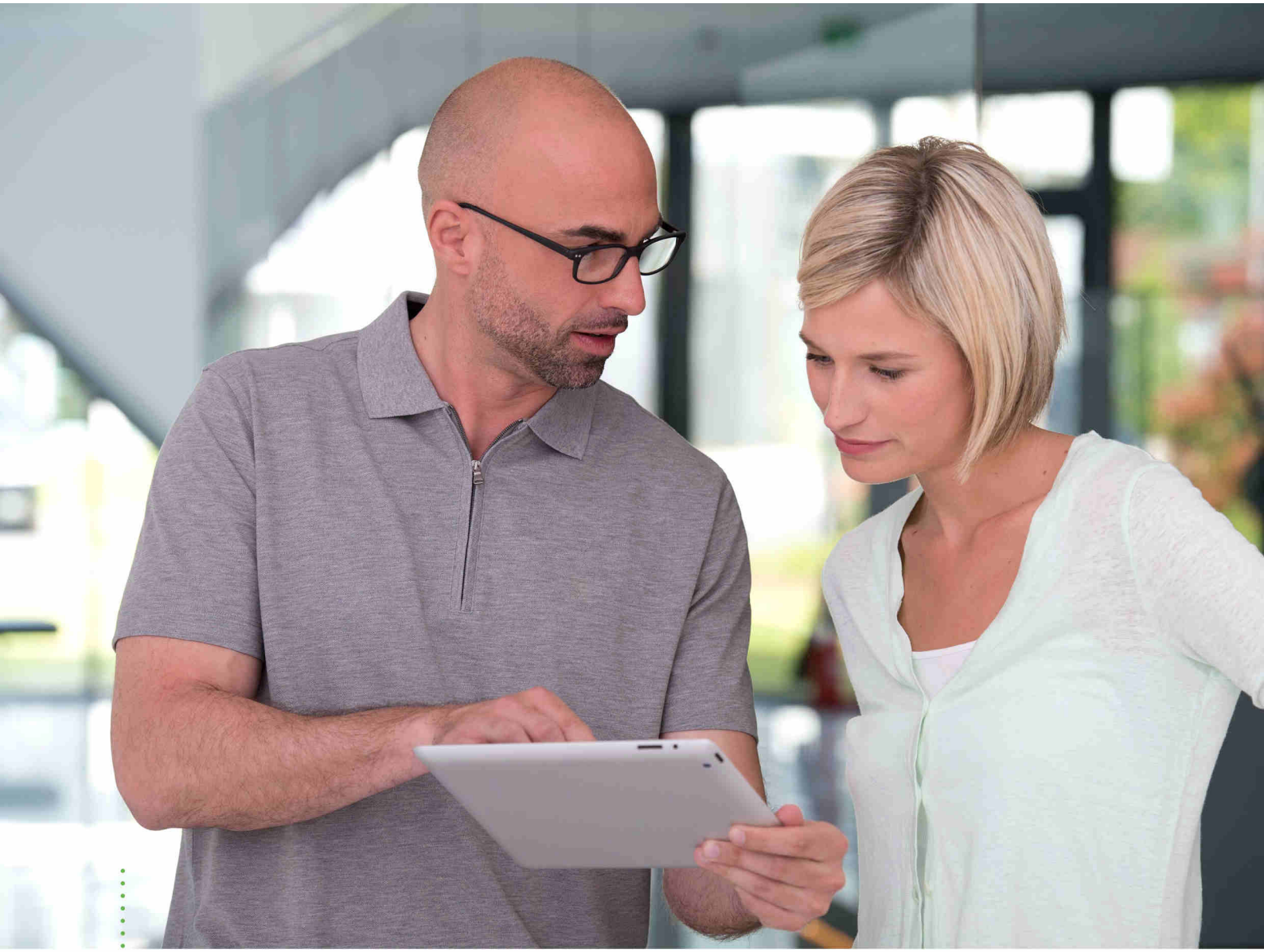

SICAT AIR *VERSION 1.4*

Instructions for use | English | SIDEXIS XG

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1 INTENDED USE AND INDICATIONS FOR USE

SICAT Air is a software for visualization and segmentation of imaging information of the ear-nose-throat region. The imaging data originates from medical scanners such as CT or CBCT scanners. It is also used as a software system to aid qualified medical professionals with the evaluation and comparison of treatment options. The medical professionals' planning data may be exported from SICAT Air and used for the realization of the planned therapy.

INDICATIONS FOR USE

SICAT Air is a software application for:

- Aiding diagnosis in the ear-nose-throat region
- Aiding treatment planning in the ear-nose-throat region
- Aiding comparisons of different treatment options
- Aiding treatment planning for oral appliances

2 VERSION HISTORY

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 39 - SIDEXIS XG]*.
- 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 Air supports different resolutions of the 3D X-ray scans that are to be compared for airway comparison.
- The handout creation window features a preview function.

VERSION 1.3

- SIDEXIS 4 module
- Support of Italian, Spanish, Portuguese, Dutch and Russian languages
- The version number of SICAT Air matches the version number of SICAT Suite.
- Airway comparison
- Text blocks for handouts

VERSION 1.0

- Initial release
- Support of German, English, French and Japanese 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 (64 Bit, Desktop) Windows 8.1 (64 Bit, Desktop) Windows 10 (64 Bit, Desktop)
Web browser	Microsoft Internet Explorer 11 or higher Mozilla Firefox 39 or higher Google Chrome 44 or higher JavaScript must be activated. A standard browser must be set.
PDF viewer	Adobe Reader DC or higher, for example
SIDEXIS XG with SICAT Suite as a plug-in	Version 2.6.1 (64 Bit)

SIDEXIS 4 with SICAT Suite as a module	Version 4.2 SiPlanAPI V4
SIDEXIS 4 with SICAT Suite as a plug-in	Version 4.1.2 (64 Bit)

*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 158 - SIDEXIS XG]*

SOFTWARE PREREQUISITES

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

- Microsoft .NET Framework 4.5
- CodeMeter license management software 6.30d
- 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 133 - SIDEXIS XG]*.

4 SAFETY INFORMATION

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

- *Definition of the danger levels [▶Page 10 - SIDEXIS XG]*
- *Qualifications of operating personnel [▶Page 11 - SIDEXIS XG]*
- *Safety instructions [▶Page 174 - SIDEXIS XG]*

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.

Only educated or properly trained personnel may use the software.

If you are undergoing education or training or if you are using this software within the scope of general training, you may use the software only under the constant supervision of a qualified person.

You must meet the following prerequisites to use the software:

- You have read the instructions for use.
- You are familiar with the basic structure and functions of the software.
- You are able to identify software malfunctions and take suitable steps where necessary.

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.

▶ Final results are marked with this icon.

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

6 OVERVIEW OF THE INSTRUCTIONS FOR USE

SICAT Air 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 16 - SIDEXIS XG]*.

SICAT Suite is currently available in three versions. Some operating steps vary, depending on the version used. Therefore, these instructions for use deal with the versions separately:

- SIDEXIS 4 module
- SIDEXIS XG plug-in
- Stand-alone version

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 172 - SIDEXIS XG]*.

7 OVERVIEW OF SICAT SUITE

SICAT Suite comprises the following parts:

- 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 activate 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 on computers on which SICAT Suite is installed.

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.

ℹ	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.

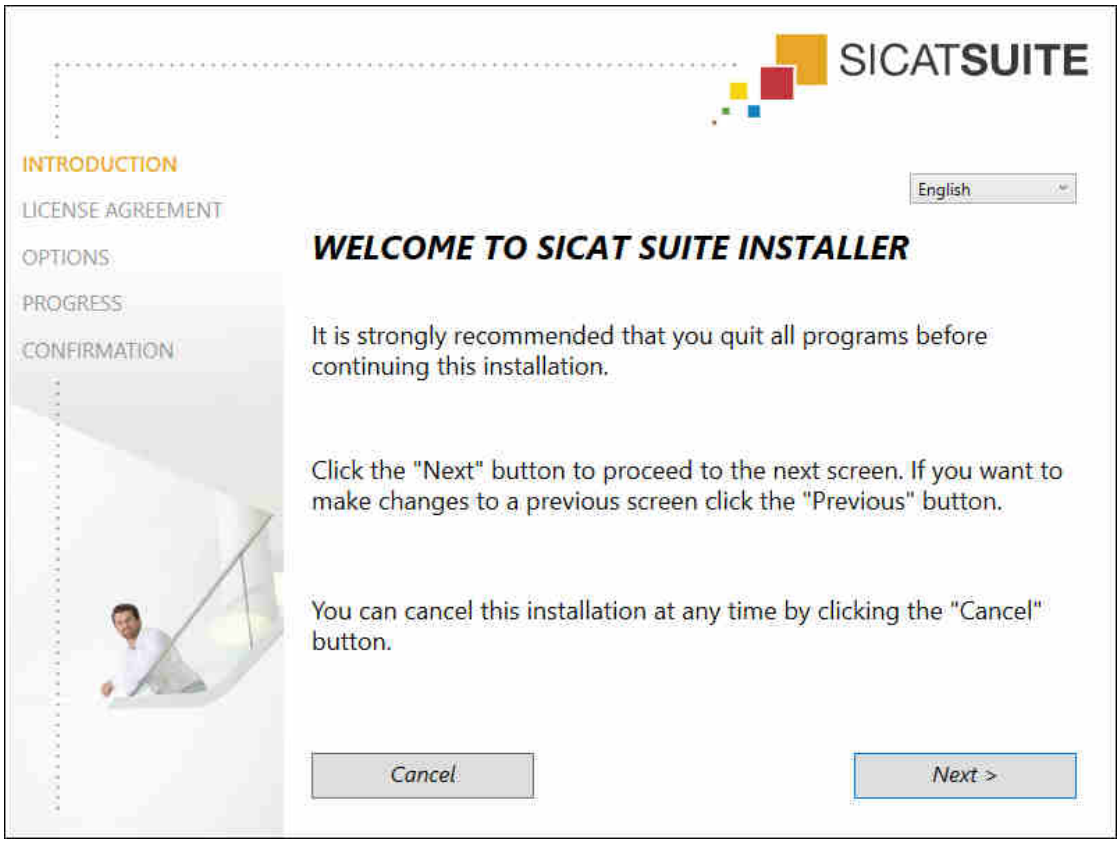
To install SICAT Suite, proceed as follows:

☑ Your computer fulfills the system requirements. Information on this can be found in the section *System requirements [▶Page 7 - SIDEXIS XG]*.

1. Insert the SICAT Suite installation medium into the optical drive of your computer.
   ▶ The **Auto play** window opens.

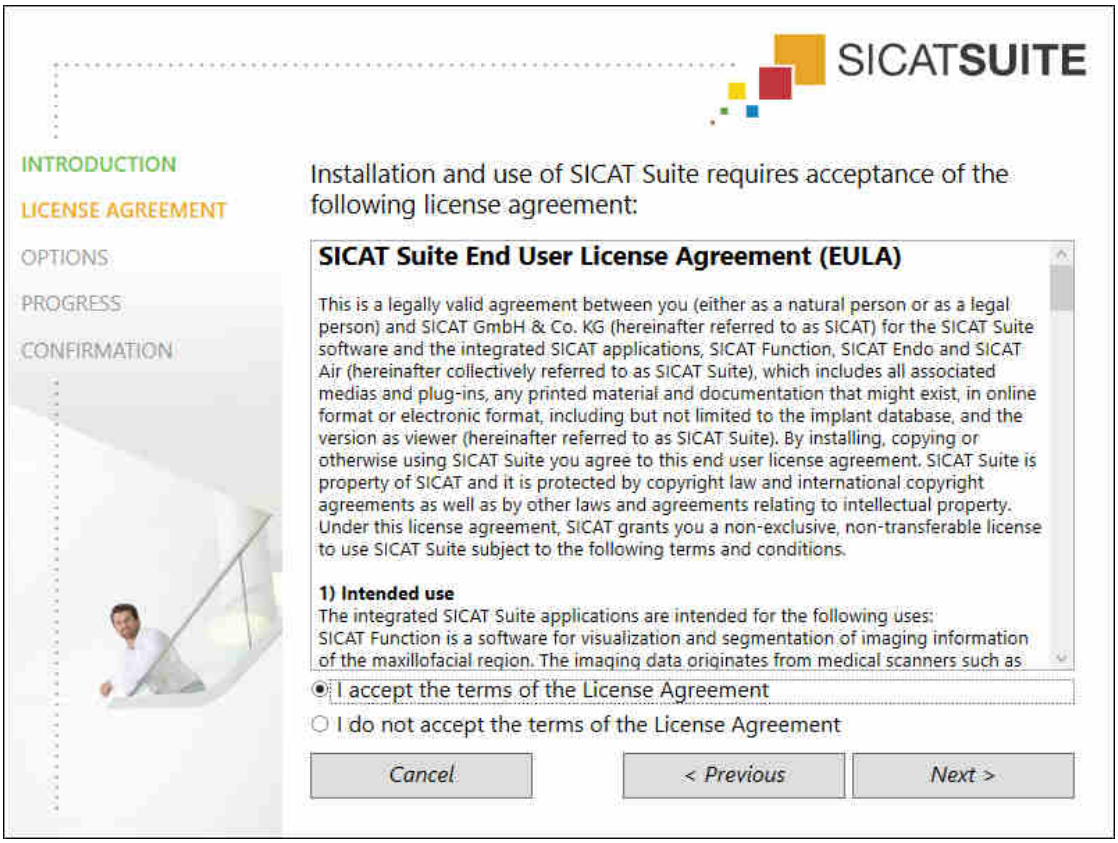
2. Select the option **Execute SICATSuiteSetup.exe** in the **Auto play** window. The file name contains the version of SICAT Suite.
   ▶ The software prerequisites are installed if they are not already available on your computer.

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



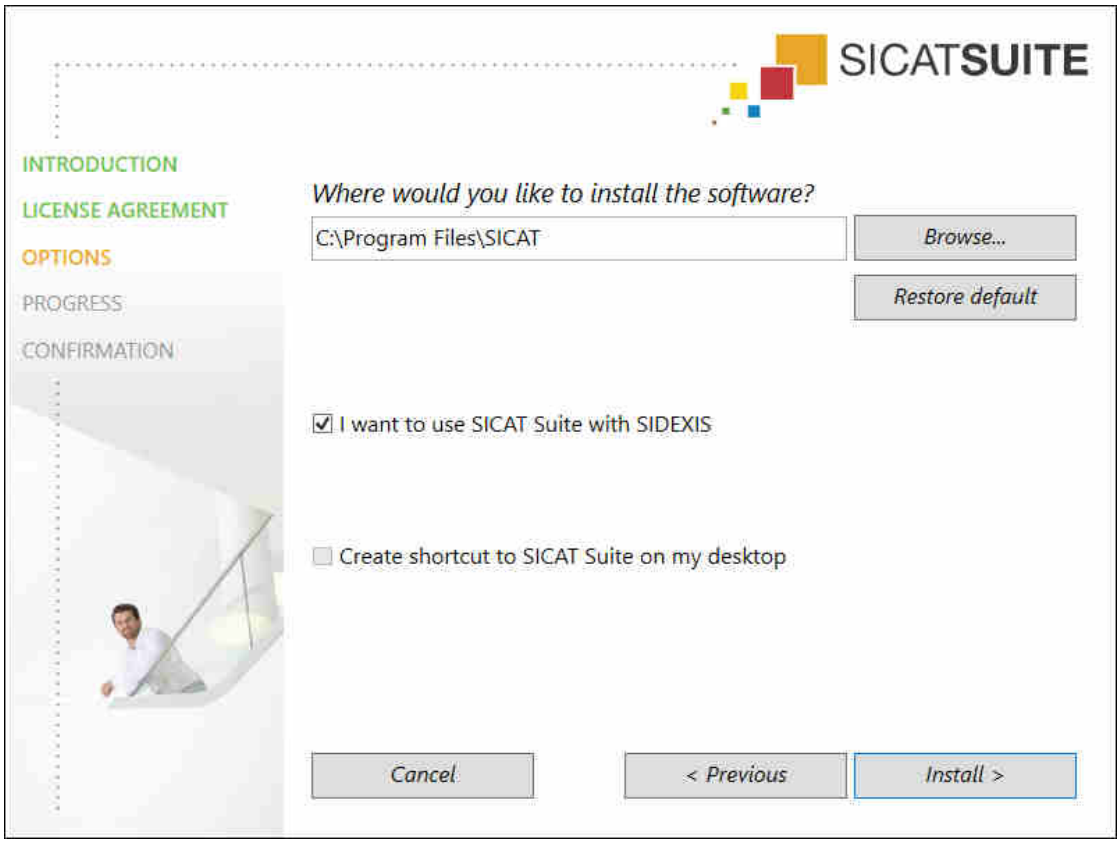
3. Select the desired language for the SICAT Suite installation program in the top right-hand corner of the **INTRODUCTION** window and click on **Next**.

▶ The **LICENSE AGREEMENT** window opens:



4. 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:



5. 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.

6. 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.

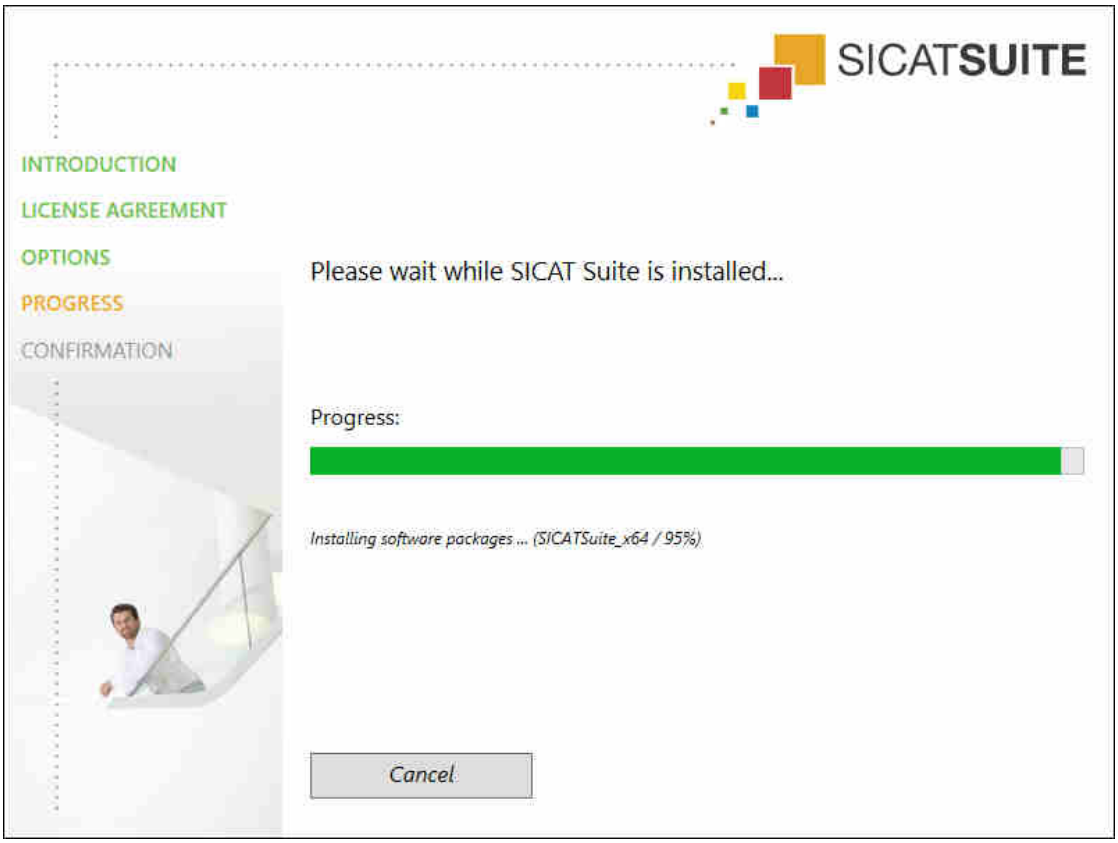
7. If SIDEXIS XG or SIDEXIS 4 is installed on your computer, the **I want to use SICAT Suite with SIDEXIS** check box will be available. You can register SICAT Suite during the installation or register it manually as a SIDEXIS XG plug-in or SIDEXIS 4 module later.

   ▶ 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.

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

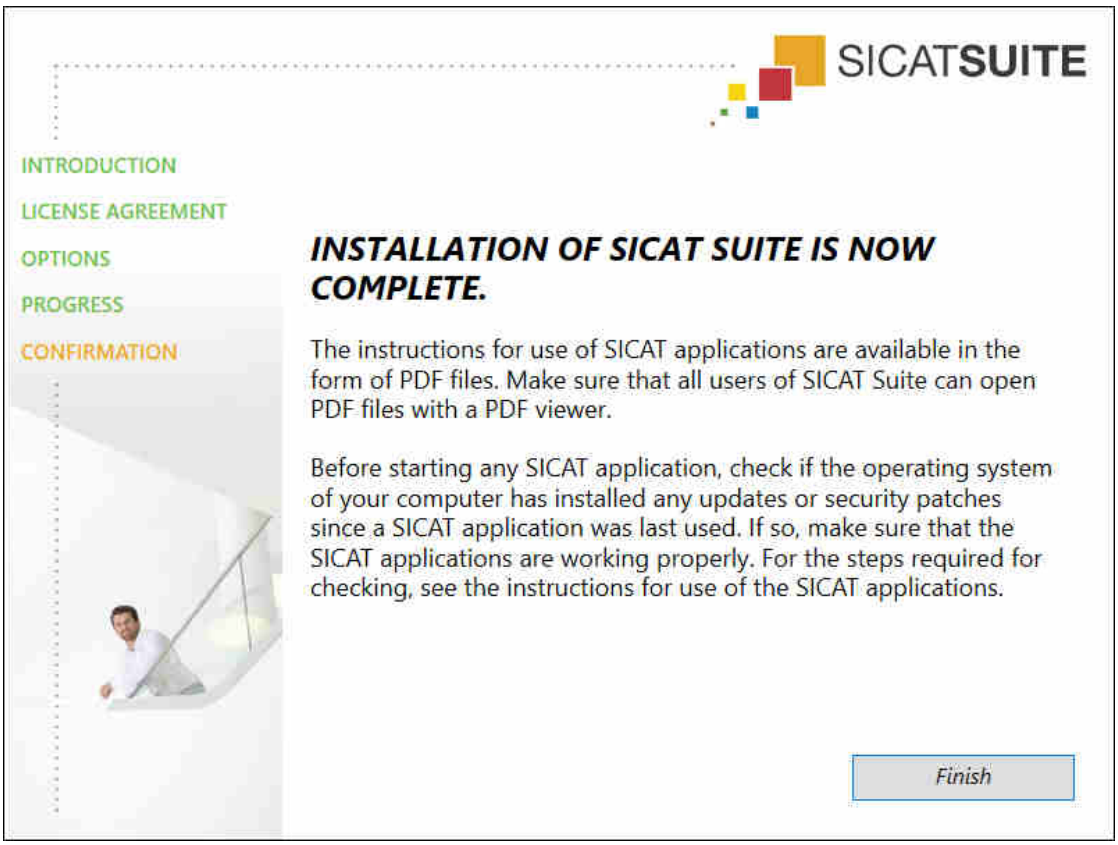
9. Click on the **Install** button.

▶ 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.

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 Air operates without any errors. Perform the following test steps. If you notice deviation during a test step, prevent further use of SICAT Air on the computer in question and contact SICAT support.

PREPARATIONS

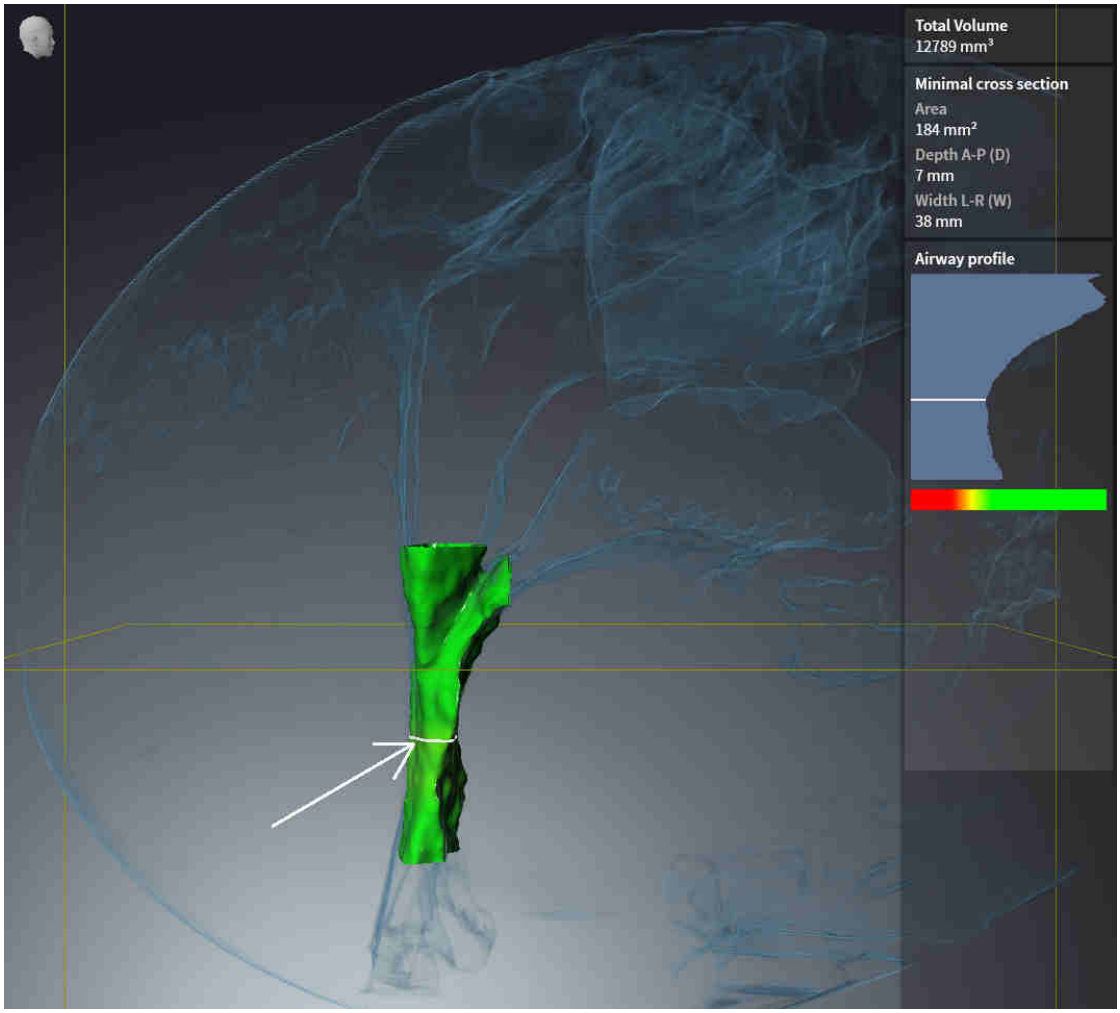
1. To ensure that nobody has made unintended changes, delete the “Axx Patient” patient.
2. Import the reference data record from the “SICATSuite_ReferenceDataset_1.4.zip” file. You will find the data record on the SICAT Suite installation medium.
3. Open the “Patient Axx” reference data record in SICAT Air.

ACTIVATING THE AIRWAY WORKSPACE

- Make sure that the **Airway** workspace is active.

AIRWAY SEGMENTATION

1. Set the display mode of the **3D** view to **Volumetric view with soft tissue**.
2. Make sure that the default values are set in the **3D** view: Air 1124 and transparency 76%
3. Set the clipping mode to **Clipping: None**.
4. Reset the **Airway** workspace using the corresponding function in the **Workspace toolbar**.
5. Compare the **3D** view with the following screenshot. In particular, check the airway profile, the position of the annotation and the following values: **Total volume** and **Minimal cross section area**

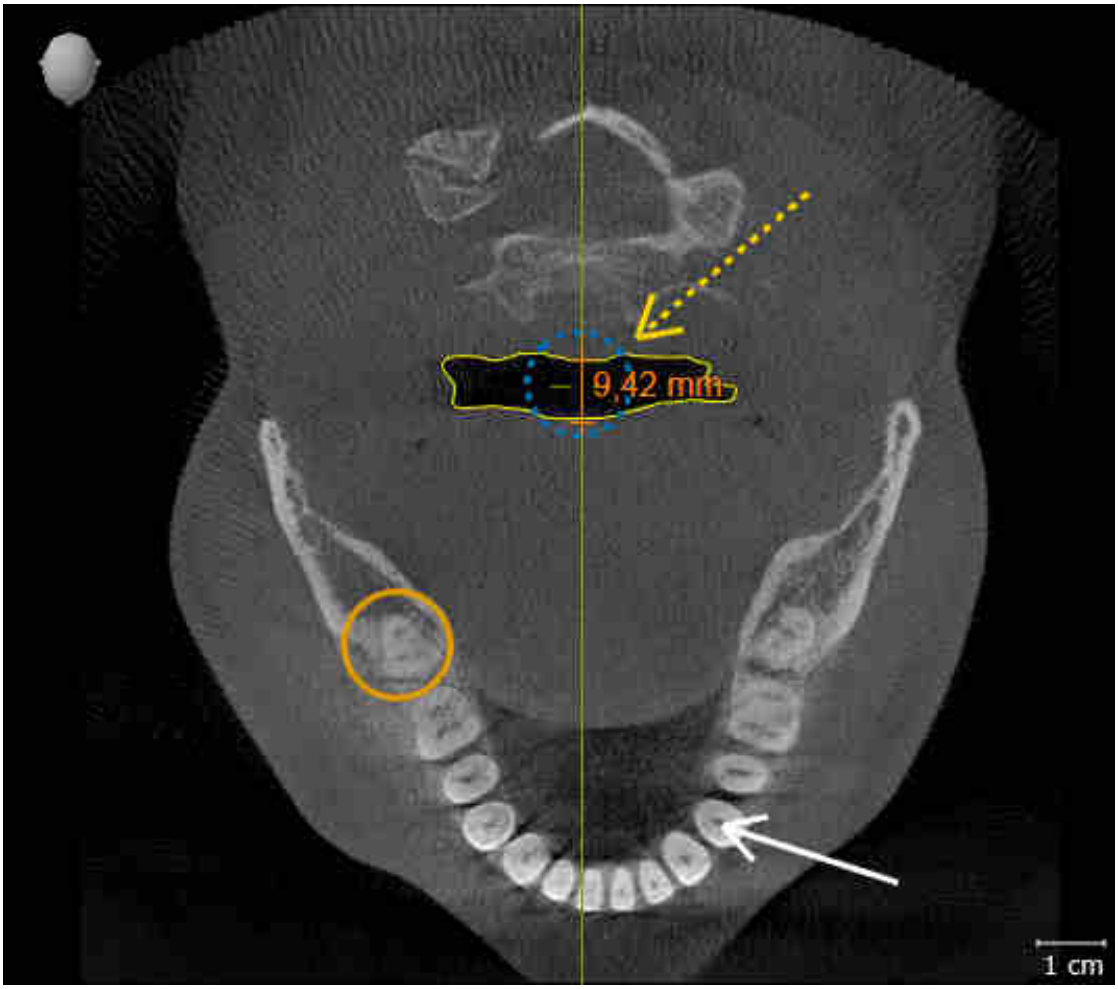


ANNOTATIONS

1. Ensure that the values for **Brightness** and **Contrast** in the **Axial** view are set to the default value of 50%.

2. In the **Object browser**, under **Handout**, select the “Image - Axial” element and focus on it.

3. Compare the **Axial** view with the following screenshot. In particular, check the positions and the representation of the annotations and the distance measurement.

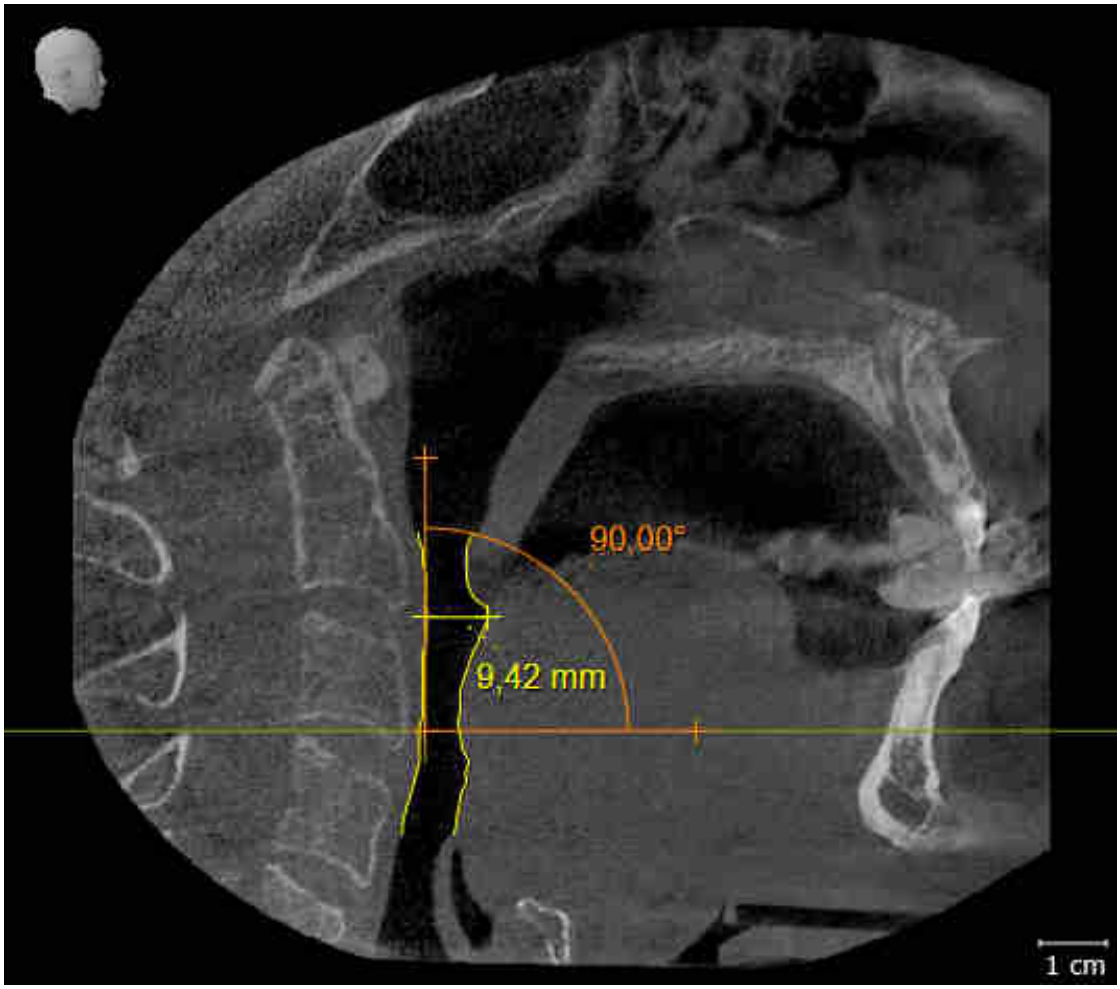


MEASUREMENTS

1. Ensure that the values for **Brightness** and **Contrast** in the **Sagittal** view are set to the default value of 50%.

2. In the **Object browser**, under **Measurements**, select the “90.00°” element and focus on it.

3. Compare the **Sagittal** view with the following screenshot. In particular, check the representation of the measurement objects (90.00° and 9.42 mm) and the orientation of the volume.



10 UPDATING OR REPAIRING SICAT SUITE

UPDATING SICAT SUITE

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

	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.**

	If you update SIDEXIS XG to SIDEXIS 4.1.3 or higher and then update SICAT Suite, the SICAT Suite installer will register SICAT Suite as a SIDEXIS 4 module. When you open a 3D X-ray scan, 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 16 - SIDEXIS XG]*.

11 SPECIAL FEATURES IN THIS VERSION

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

MANUAL REGISTRATION AS A SIDEXIS XG PLUG-IN

In addition to the automatic connection during installation, you can also manually register and remove SICAT Suite as a SIDEXIS XG plug-in. Information on this can be found in the section *Registering and removing SICAT Suite as a SIDEXIS XG plug-in [▶Page 32 - SIDEXIS XG]*.

PROGRAM START

As a SIDEXIS XG plug-in, SICAT Suite starts as an external application. You can find information about how to start SICAT Suite as a SIDEXIS XG plug-in in the section *Starting SICAT Suite [▶Page 34 - SIDEXIS XG]*.

PATIENT DATA AND VOLUME DATA

The version of SICAT Air 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.

AIRWAY COMPARISON

The airway comparison is not available in SIDEXIS XG.

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.

OPENING STUDIES WITH OR WITHOUT WRITE PERMISSIONS

If the computers, on which SIDEXIS XG and SICAT Suite are running, are in a network environment and where permitted by SIDEXIS XG and the network configuration, SIDEXIS XG could be part of a multi-workstation installation. This may mean, amongst other things, that you can only open data records opened on other workstations in read-only mode.

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

- A SICAT Air full version license must be activated.
- The 3D X-ray scan to which the SICAT Air study belongs is not open on other workstations.

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

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 Air 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 Air studies without a Viewer license:

- In SIDEXIS 4, export SICAT Air studies and import the data to SIDEXIS on another computer. SICAT Air must be installed on this computer.
- In SIDEXIS 4, create a Wrap&Go package which contains SICAT Air studies. Install the Wrap&Go package on another computer. Then, install SICAT Air.

In both cases you cannot make or save any changes to the planning.

Under certain circumstances you cannot make or save changes to SICAT Air 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 168 - SIDEXIS XG]*.

12 THE STANDARD WORKFLOW OF SICAT AIR

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.

INSTALLATION

Information on how to install SICAT Suite can be found in the section *Installing SICAT Suite [▶Page 16 - SIDEXIS XG]*.

ACTIVATING FULL VERSION

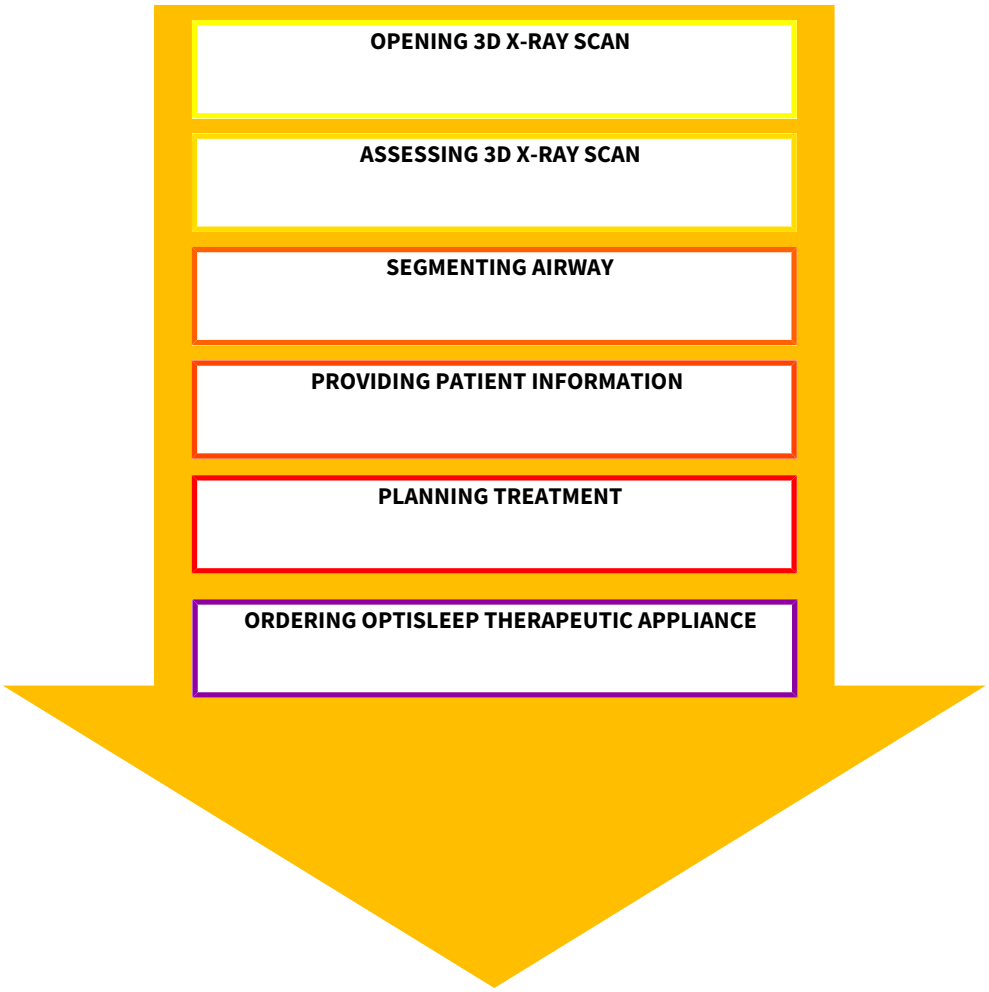
- If you have purchased a license for SICAT Air, activate the license to unlock the full version. Information on this can be found in the section *Licenses [▶Page 39 - SIDEXIS XG]*.

If you have not purchased a license for SICAT Air, open a 3D X-ray scan in Viewer mode. Information on this is available in the section *Opening read-only data [▶Page 168 - SIDEXIS XG]*.

SETTINGS

Change the desired settings in the **Settings** area. Information on this can be found in the section *Settings [▶Page 155 - SIDEXIS XG]*.

HOW TO PROCEED IN SICAT AIR



OPENING A DATA RECORD

- To work with data from SIDEXIS XG, open an examination containing a 3D X-ray scan in SIDEXIS XG and start SICAT Suite. Information on this can be found in the section *Starting SICAT Suite [▶Page 34 - SIDEXIS XG]*.

EDITING DATA RECORDS IN SICAT AIR

1. Align the 3D X-ray scan according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 90 - SIDEXIS XG]*.
2. Assess the 3D X-ray scan and get an overview of the upper airways.
3. Segment the respiratory path. Information on this can be found in the section *Segmenting the airway [▶Page 104 - SIDEXIS XG]*.
4. Assess the airway in the **Airway** workspace. Information on this can be found in the section *Airway analysis [▶Page 114 - SIDEXIS XG]*.
5. Inform the patient and create a handout for the patient based on this. Information on this can be found in the section Patient information.
6. Perform treatment planning.
7. Create a 3D X-ray scan of the patient with the jaw in a protruded treatment position. Open the scan in SICAT Air.
8. Verify the effect of the therapeutic appliance. Consider in particular changes to the airways and the effects on the temporomandibular joint.
9. Order a customized therapeutic appliance for the patient. Information on this can be found in the section *Ordering process [▶Page 133 - SIDEXIS XG]*.
10. If you wish to obtain a second opinion, export the data. Information on this can be found in the section *Data export [▶Page 130 - SIDEXIS XG]*.

ENDING OR PAUSING WORK ON THE DATA RECORD

- To end or interrupt your work, save it by closing SICAT Suite. Information on this can be found in the section *Closing SICAT Suite [▶Page 170 - SIDEXIS XG]*.

SICAT Air saves airway objects, the handout, the segmentation and optical impressions in a study which is based on the 3D X-ray scan.

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 38 - SIDEXIS XG]*.

Further support is available in the **Support** area. Information on this can be found in the section *Support [▶Page 164 - SIDEXIS XG]*.

13 REGISTERING AND REMOVING SICAT SUITE AS A SIDEXIS XG PLUG-IN

If you install SICAT Suite after SIDEXIS XG and have checked the corresponding check box, the SICAT Suite installation program will automatically register it as a plug-in. Information on this can be found in the section *Installing SICAT Suite [▶Page 16 - SIDEXIS XG]*.

OPENING THE "NGPLUGINMANAGER" WINDOW

1. Press the **Windows** key, enter **SIDEXIS Manager** and click on the **SIDEXIS Manager** icon.
   ▶ The **SIDEXIS Manager** window opens.
2. In the **SIDEXIS Manager** window, click on the **NGPluginManager** icon.
3. Where necessary, accept the message from the Windows user account control.

▶ The **Plug-in Manager** window opens.

REGISTERING SICAT SUITE

☑ SICAT Suite has already been successfully installed. Information on this can be found in the section *Installing SICAT Suite [▶Page 16 - SIDEXIS XG]*.

☑ The **Plug-in Manager** window is already open.

1. Click on the **Add** button.
   ▶ A Windows Explorer window opens.
2. Switch to the installation directory of SICAT Suite, such as C:\Program Files\SICAT\SICAT Suite.
3. Select the Sicat.PlanAndTreat.XG.exe file.
4. Click on the **Open** button.

▶ SICAT Suite is registered as a SIDEXIS plug-in.

PLACING THE SICAT SUITE ICON

1. Click on the **Set up** entry in the **View** menu.
   ▶ The **Set up** window opens with the **Orders** tab.
2. Click on the **Program plug-ins** entry under **Categories**.
3. Drag the **SICAT Suite** icon from the **Set up** window to the desired position in the SIDEXIS XG icon bars.

REMOVING SICAT SUITE

☑ SICAT Suite is already registered as a SIDEXIS plug-in.

☑ The **Plug-in Manager** window is already open.

1. Select the **SICAT Suite** entry.
2. Click on the **Remove** button.
3. Restart SIDEXIS.

▶ SICAT Suite is no longer available as a SIDEXIS plug-in.

14 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 Air, you must first start SICAT Suite.

To start SICAT Suite as a SIDEXIS XG plug-in, proceed as follows:

☑ SICAT Suite has already been successfully installed. Information on this can be found in the section *Installing SICAT Suite [▶Page 16 - SIDEXIS XG]*.

☑ SICAT Suite has already been registered as a SIDEXIS XG plug-in. Information on this can be found in the section *Registering and removing SICAT Suite as a SIDEXIS XG plug-in [▶Page 32 - SIDEXIS XG]*. If SICAT Suite is installed after SIDEXIS XG, registration may take place automatically.

☑ The SICAT Suite button has already been placed in SIDEXIS XG.

☑ You have already opened a 3D X-ray scan in SIDEXIS XG.

- Click on the **SICAT Suite** button.

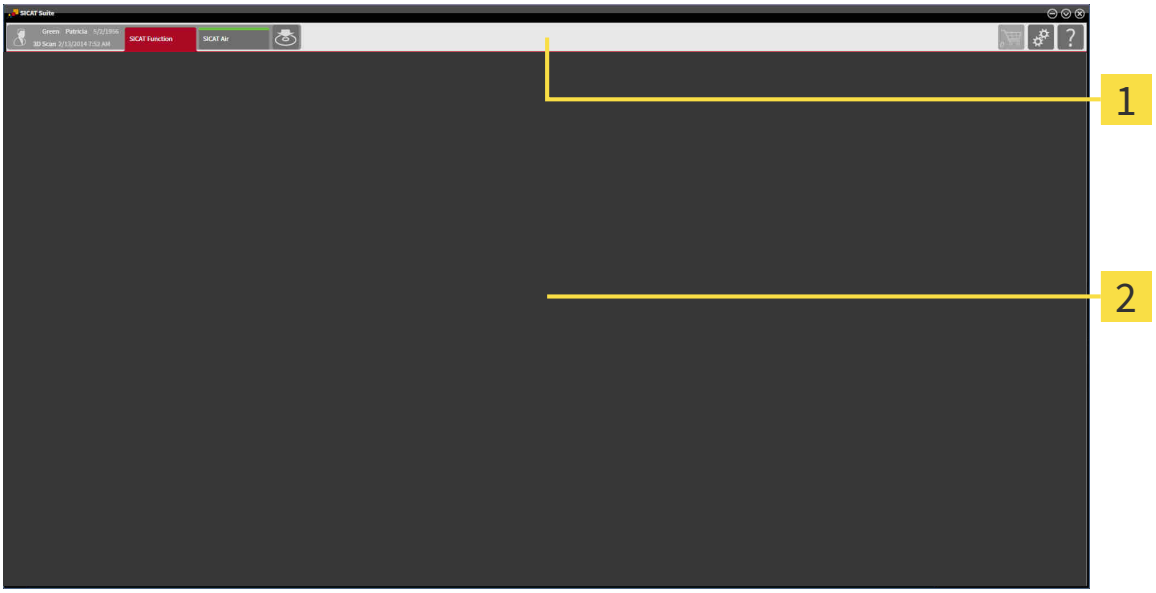
▶ SICAT Suite opens the data record in a SICAT application.

ℹ	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.

ℹ	In the following two cases, the data record is only opened in Viewer mode: No license is activated or another SIDEXIS XG workstation is using the data record. Information on this is available in the section *Opening read-only data [▶Page 168 - SIDEXIS XG]*.

15 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 two different sections. The section on the left side and the section on the right side are always visible.

The section on the left side contains the following tabs:

- Patient data and volume data – attributes of active patient data and volume data depending on the settings in SIDEXIS XG.

- **Applications** – buttons which can be used to switch between the different SICAT applications. Information on this can be found in the section *Switching between SICAT applications [▶Page 37 - SIDEXIS XG]*.

- **Export data** - Information on this can be found in the section *Data export [▶Page 130 - SIDEXIS XG]*.

The section on the right side contains the following tabs:

- **Shopping cart** - Information on this can be found in the section *Ordering process [▶Page 133 - SIDEXIS XG]*.

- **Settings** - Information on this can be found in the section *Settings [▶Page 155 - SIDEXIS XG]*.

- **Support** - Information on this can be found in the section *Support [▶Page 164 - SIDEXIS XG]*.

16 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**.

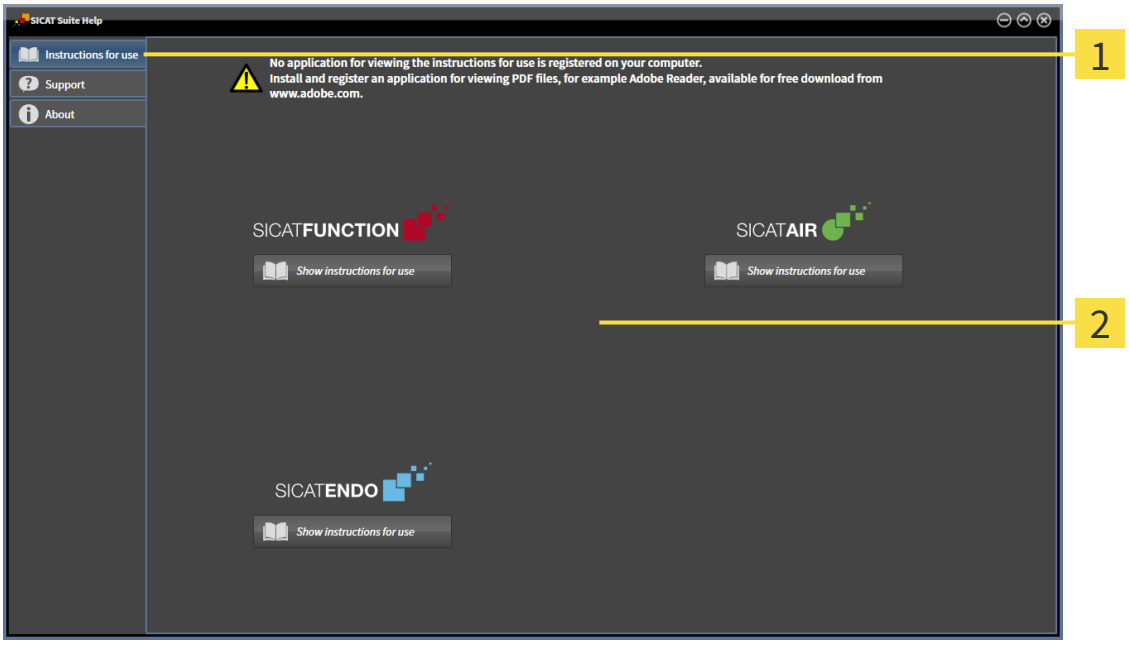
► SICAT Suite will switch to the selected application.

17 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.

18 LICENSES

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

In the SICAT Suite version which is connected to SIDEXIS, you can view SICAT Air plans even without activated SICAT Air license.

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.

The following steps are required to activate 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 on computers on which SICAT Suite is installed.

The following applies for activating and deactivating licenses:

- You will only receive license keys for SICAT applications that are approved in your country.
- If you activate an activation key on a computer, one license of all included SICAT applications or included functions will be linked to that computer. The licenses will be no longer available for activation on another computer.
- You may deactivate licenses for each SICAT application or individual function separately. Returned licenses are available for renewed activation on the same or another computer.
- 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.
- If you activate a full version license, you will automatically receive Viewer licenses for all applications that are approved in your country.

Information on how to convert a voucher code into an activation key can be found in section *Redeeming voucher codes [▶Page 47 - SIDEXIS XG]*._

The **License Overview** 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 “Your licenses at a glance” window [▶Page 41 - SIDEXIS XG]*.

You can activate licenses in two ways:

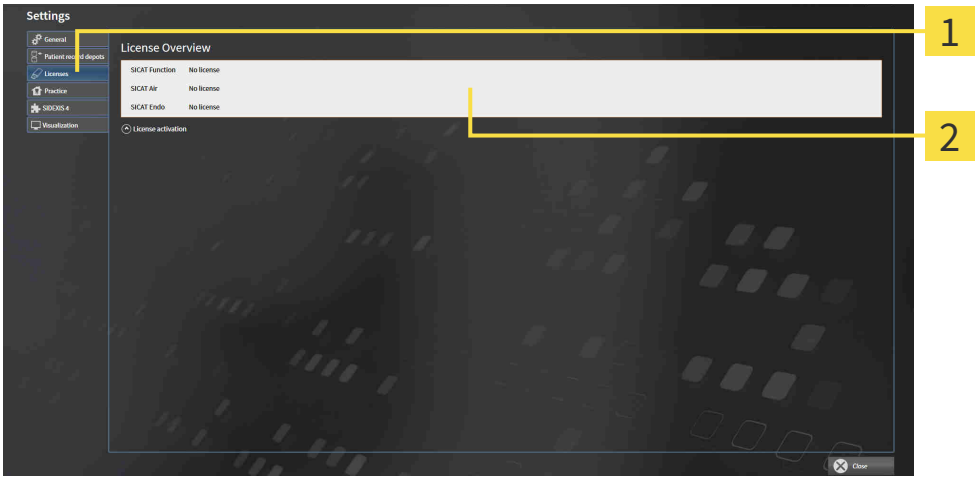
- If the computer on which SICAT Suite is running has an active Internet connection, the license can be activated automatically. Information on this can be found in the section *Activating licenses using an active Internet connection [▶Page 42 - SIDEXIS XG]*.
- Upon request or if the computer on which 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 licenses manually or without an active Internet connection. [▶Page 44 - SIDEXIS XG]*.

You can deactivate licenses for each application or function individually. After you have deactivated a license, you can enter the same or another activation key. Returned licenses are available for activation on the same or another computer. Information on this can be found in the section *Returning licenses to the license pool [▶Page 46 - SIDEXIS XG]*.

18.1 OPENING THE “YOUR LICENSES AT A GLANCE” WINDOW

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

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



1 **Licenses** tab

2 **License Overview** window

Continue with one of the following actions:

- *Activating licenses using an active Internet connection [▶Page 42 - SIDEXIS XG]*
- *Activating licenses manually or without an active Internet connection. [▶Page 44 - SIDEXIS XG]*
- *Returning licenses to the license pool [▶Page 46 - SIDEXIS XG]*

18.2 ACTIVATING LICENSES USING AN ACTIVE INTERNET CONNECTION

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:

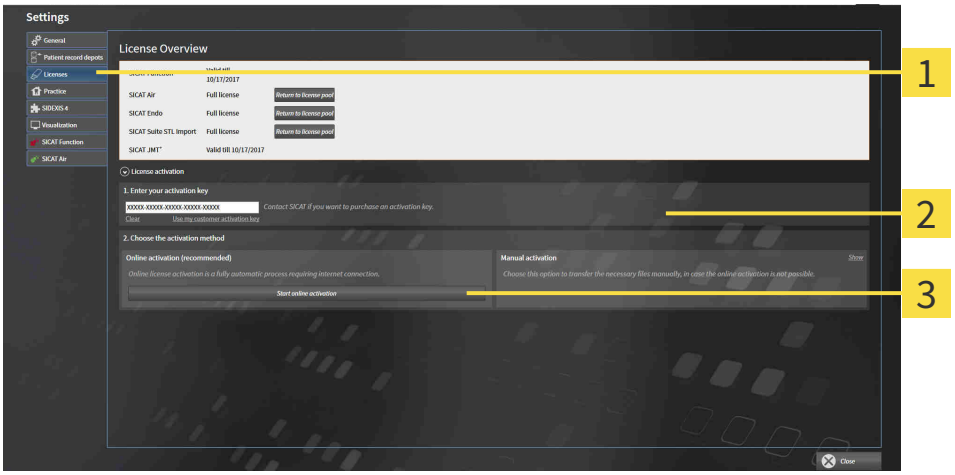
☑ At least one SICAT application or one individual function is missing an active license.

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

☑ The **License Overview** window is already open. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶Page 41 - SIDEXIS XG]*.

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

   ▶ The **License Overview** 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.

18.3 ACTIVATING LICENSES MANUALLY OR WITHOUT AN ACTIVE INTERNET CONNECTION.

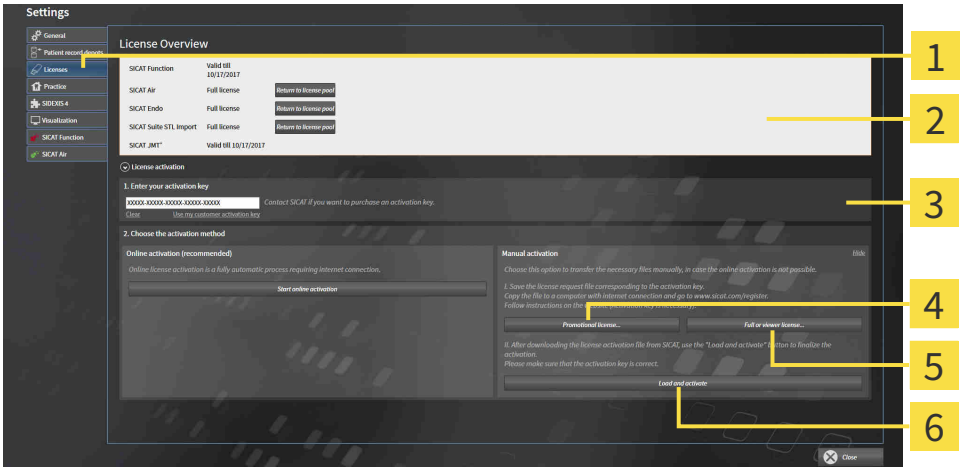
NOTICE	**Shopping cart must be empty** The shopping cart must be empty before you can make any changes to the licenses.

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 license.

☑ The **License Overview** window is already open. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶Page 41 - SIDEXIS XG]*.

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



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

3. If you wish to activate a full license, click the **Full or viewer license** button.
4. If you wish to activate a demo license, click the **Promotional 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 **License Overview** 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.

18.4 RETURNING LICENSES TO THE LICENSE POOL

NOTICE

Shopping cart must be empty

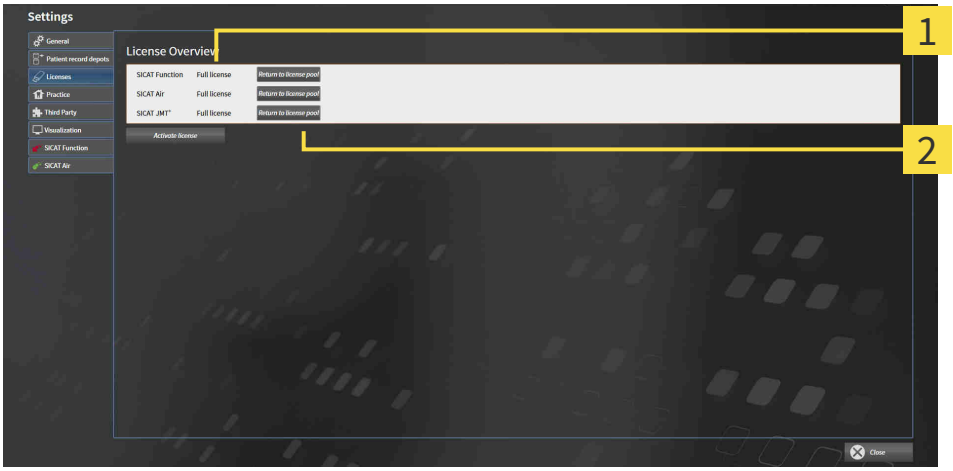
The shopping cart must be empty before you can make any changes to the licenses.

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

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

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

☑ The **License Overview** window is already open. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶Page 41 - SIDEXIS XG]*.



1 License status of SICAT applications and individual functions

2 **Return to license pool** button

- In the **License Overview** window, click on the **Return to license pool** 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 restart 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.

18.5 REDEEMING VOUCHER CODES

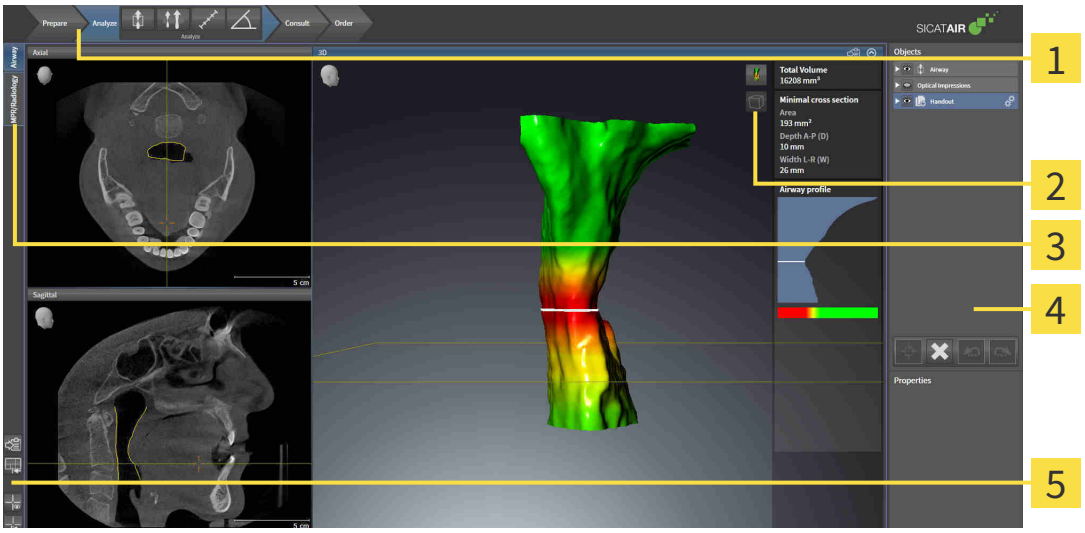
1. Open a web browser on the computer with the active Internet connection and open the http://www.sicat.com web page.
2. Select the link for the SICAT portal.
   ▶ The SICAT portal opens.
3. Register or log in to the SICAT portal using your username and password if you have not already done so.
4. Click on the entry to manage your licenses in the account management section.
5. Enter your voucher code and confirm the code.
   ▶ The SICAT Portal will generate a license key and add the license key to your activation key.
6. Start SICAT Suite and activate the license.

For further information about this see *Activating licenses using an active Internet connection [▶Page 42 - SIDEXIS XG]* and *Activating licenses manually or without an active Internet connection. [▶Page 44 - SIDEXIS XG]*.

See the FAQ on the SICAT portal for more help.

19 THE SICAT AIR USER INTERFACE

The SICAT Air 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 that you can use to add and import diagnosis objects and planning objects. Information on this can be found in the section *Workflow toolbar [▶Page 49 - SIDEXIS XG]*.
- The **Workspace area** is the part of the user interface below the **Workflow toolbar**. It displays the active workspace of SICAT Air. Each workspace contains a specific combination of views. Information on this can be found in the section *Overview of the airway workspace [▶Page 61 - SIDEXIS XG]*.
- 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 67 - SIDEXIS XG]* and *Adjusting the 3D view [▶Page 78 - SIDEXIS XG]*.
- The **Object bar** contains tools for the management of diagnosis objects and planning objects. For further information see section *Object bar [▶Page 51 - SIDEXIS XG]* and section *SICAT Air objects [▶Page 55 - SIDEXIS XG]*.
- 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 75 - SIDEXIS XG]*, *Resetting views [▶Page 76 - SIDEXIS XG]*, *Adjusting and resetting the layout of workspaces [▶Page 64 - SIDEXIS XG]* and *Creating screenshots of workspaces [▶Page 65 - SIDEXIS XG]*.

19.1 WORKFLOW TOOLBAR

The **Workflow toolbar** in SICAT Air consists of four workflow steps:

1. **Prepare**
2. **Analyze**
3. **Consult**
4. **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** - Information on this can be found in the section *Adjusting the volume orientation [▶Page 90 - SIDEXIS XG]* and *Adjusting the panoramic region [▶Page 95 - SIDEXIS XG]*.

2. WORKFLOW STEP "ANALYZE"

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

- **Segment the airway** - Information on this can be found in the section *Defining the airway area [▶Page 105 - SIDEXIS XG]*.

- **Airway comparison** - The airway comparison is not available in SIDEXIS XG.

- **Add distance measurement (D)** - Information on this can be found in the section *Adding distance measurements [▶Page 99 - SIDEXIS XG]*.

- **Add angle measurement (A)** - Information on this can be found in the section *Adding angle measurements [▶Page 100 - SIDEXIS XG]*.

3. WORKFLOW STEP "CONSULT"

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

- **Draw Arrow** - Information on this can be found in the section Creating images and screenshots.

- **Draw Circle** - Information on this can be found in the section Creating images and screenshots.

- **Generate handout** - Information on this can be found in the section Preparing handouts.

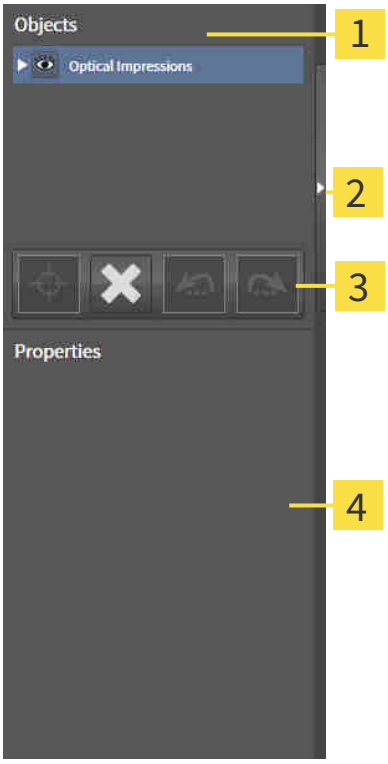
4. WORKFLOW STEP "ORDER"

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

- **Import and register optical impressions** - Information on this can be found in the section *Importing and registering optical impressions [▶Page 138 - SIDEXIS XG]*.

- **Order therapeutic appliance** - Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶Page 134 - SIDEXIS XG]*.

19.2 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 52 - SIDEXIS XG]*.
- 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 54 - SIDEXIS XG]*.
- 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 Air can be found in the section *SICAT Air objects [▶Page 55 - SIDEXIS XG]*.

19.3 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** icon next to the desired object group.
   ▶ The object group collapses.

2. Click on the **Expand** 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 Air deactivates a previously activated object or object group.
  ▶ SICAT Air activates the desired object or the desired object group.
  ▶ SICAT Air 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 Air hides the object or object group.

► SICAT Air 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 Air shows the object or object group.

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

19.4 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 52 - SIDEXIS XG]*.

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

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

▶ SICAT Air 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 52 - SIDEXIS XG]*.

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

▶ SICAT Air 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 Air undoes the last object action or group action.

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

▶ SICAT Air 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.

19.5 SICAT AIR OBJECTS

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

- **Optical impressions**
- **Airway**
  - **Minimal cross section area**
- **Handout**
  - **Image**
  - **Screenshot**

OPTICAL IMPRESSION OBJECT

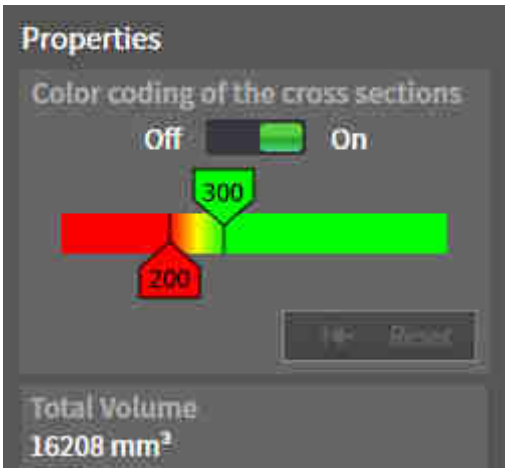
After you have imported and registered optical impressions, SICAT Air displays a **Optical impressions** object in the **Object browser**. A **Optical impressions** object contains the following sub-objects:

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

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

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

AIRWAY OBJECT



After you have segmented the airway, SICAT Air displays the **Airway** object in **Object browser**. The **Object bar** displays the following elements in the **Properties** area for this object:

- A switch that you can use to activate or deactivate the Color coding.
- The **Color coding of the cross sections** with sliders that you can use to define the minimum and maximum value of the cross-sectional area in mm^2 for the color gradient.
- The **Reset** button that you can use to reset the values for the color coding to the values from the SICAT Air settings. Information on how to define the default values in the SICAT Air settings can be found in the section *Changing SICAT Air settings [▶Page 163 - SIDEXIS XG]*.
- The **Total volume** of the segmented airway area

SICAT Air applies changes to the properties immediately to the airway in the **3D** view.

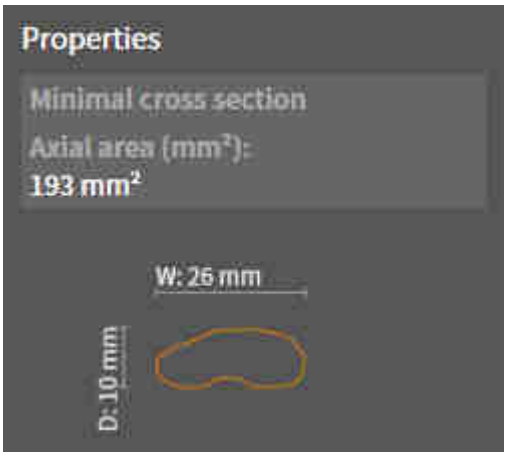
If you focus on the **Airway** object, SICAT Air will adjust the workspace region as follows:

- If not already active, SICAT Air will activate the **Airway** workspace.
- SICAT Air focuses all views on the middle of the smallest cross-sectional area.

If you hide the **Airway** object, SICAT Air will also hide the airway section.

If you move the mouse pointer over a **Airway** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Segment the airway** window.

MINIMAL CROSS SECTION AREA OBJECT



The following applies for **Minimal cross section area** objects:

- **Minimal cross section area** objects are beneath **Airway** objects.
- The designation of a **Minimal cross section area** object contains the smallest cross-sectional area in mm^2.
- In the **Properties** area, the object also displays the cross-section of the slice.
- If you focus on a **Minimal cross section area** object, the 2D slice views display the slice with the smallest cross-sectional area.

HANDOUT OBJECT

The following applies for **Handout** objects:

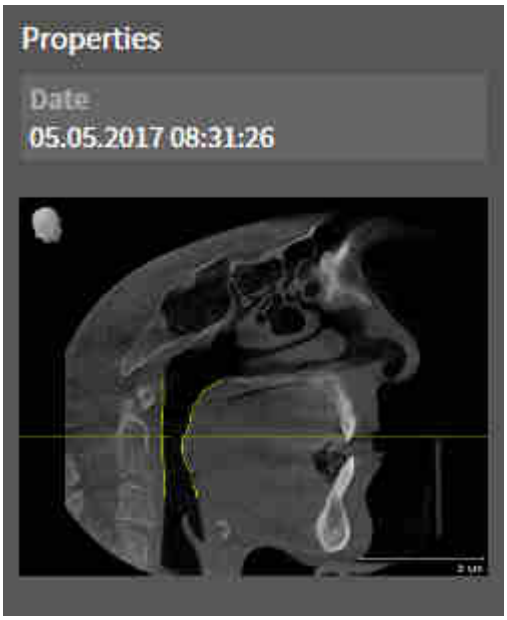
- If you move the mouse pointer over a **Handout** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Generate handout** window.
- You can use the **Remove active object/group (Del)** function to remove an **Handout** object. SICAT Air removes all associated**Screenshot** objects and **Image** objects.

IMAGE OBJECTS

The following applies for **Image** objects:

- **Image** objects are below**Handout** objects.
- SICAT Air combines all drawing objects of a slice in a workspace for each 2D view and creates a **Image** object from this.
- SICAT Air combines all drawing objects of a certain viewing direction and zoom factor in a workspace for the **3D** view and creates an **Image** object from this.
- After you have created and activated a **Image** object, the **Object browser** will display the following in the **Properties** area:
  - Creation time of the object
  - Preview of the object
- You can use the **Undo last object/group action (Ctrl+Z)** and **Redo object/group action (Ctrl+Y)** functions for individual arrows and circles.
- You can use the **Remove active object/group (Del)** function to remove a **Image** object and thus all arrows and circles contained in it at once. SICAT Air removes **Image** objects both from the **Object browser** and from the **Generate handout** window.
- If you focus on a **Image** object, SICAT Air restores the corresponding view for the time at which you have created the last arrow or circle contained therein.

SCREENSHOT OBJECTS



The following applies for **Screenshot** objects:

- **Screenshot** objects are below**Handout** objects.
- SICAT Air creates one **Screenshot** object per screenshot.
- After you have created and activated a **Screenshot** object, the **Object browser** will display the following in the **Properties** area:
  - Creation time of the object
  - Preview of the object
- You can use the **Remove active object/group (Del)** function to remove an **Screenshot** object. SICAT Air removes **Screenshot** objects both from the **Object browser** and from the **Generate handout** window.
- If you focus on a **Screenshot** object, SICAT Air restores the corresponding view for the time at which you have created the object.
- The show and hide functions are not available.

20 WORKSPACES

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

SICAT Air features two different workspaces:

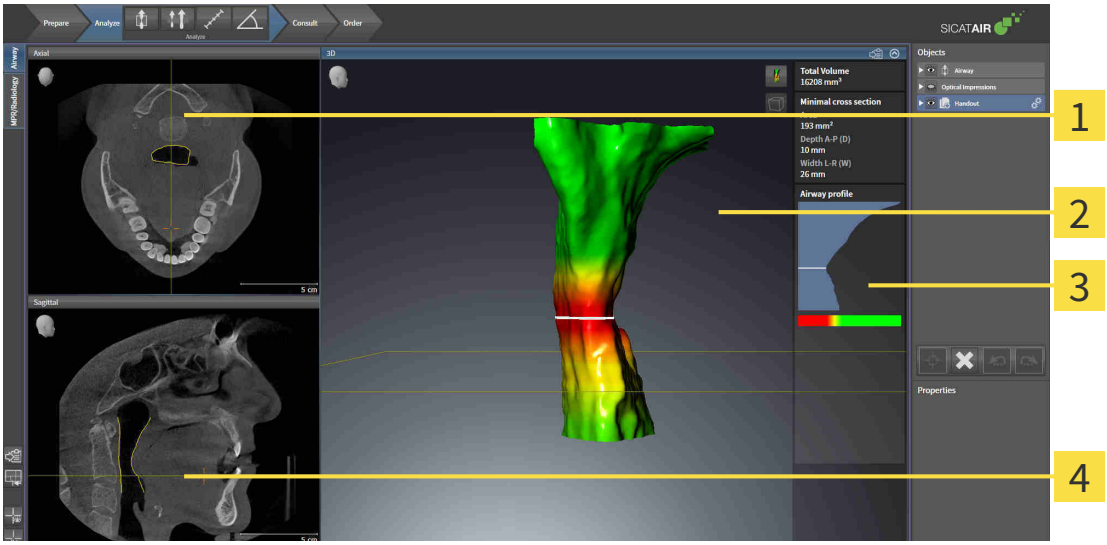
- **Airway** workspace - Information on this can be found in the section *Overview of the airway workspace [▶Page 61 - SIDEXIS XG]*.
- **MPR/Radiology** workspace - Information on this can be found in the section *Overview of the MPR/Radiology workspace [▶Page 62 - SIDEXIS XG]*.

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

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

- *Switching the active workspace [▶Page 63 - SIDEXIS XG]*.
- *Adjusting and resetting the layout of workspaces [▶Page 64 - SIDEXIS XG]*.
- *Adjusting the views [▶Page 67 - SIDEXIS XG]*.
- There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶Page 78 - SIDEXIS XG]*.
- You can document the contents of the active workspace. Information on this can be found in the section *Creating screenshots of workspaces [▶Page 65 - SIDEXIS XG]*.

20.1 OVERVIEW OF THE AIRWAY WORKSPACE



1 **Axial** view

2 **3D** view

3 Airway analysis area

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 161 - SIDEXIS XG]*.

3D VIEW

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

SAGITTAL VIEW

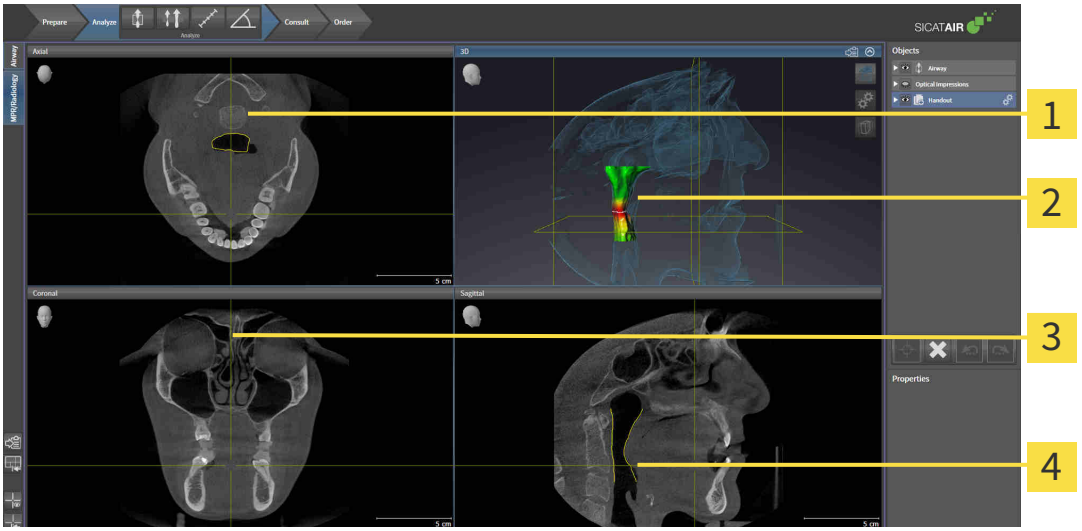
By default, the **Sagittal** view shows slices from the right. You can switch the viewing direction of the **Sagittal** view. Information on this can be found in the section *Changing visualization settings [▶Page 161 - SIDEXIS XG]*.

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

The functions of the views can be found in the sections *Adjusting the views [▶Page 67 - SIDEXIS XG]* and *Adjusting the 3D view [▶Page 78 - SIDEXIS XG]*.

If you have created an **Airway** object by segmenting the airway, the airway analysis area will be available in the **3D** view. For further information see *SICAT Air objects [▶Page 55 - SIDEXIS XG]*, *Segmenting the airway [▶Page 104 - SIDEXIS XG]* and *Interacting with the airway profile [▶Page 117 - SIDEXIS XG]*.

20.2 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 161 - SIDEXIS XG]*.

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 161 - SIDEXIS XG]*.

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

The functions of the views can be found in the sections *Adjusting the views [▶Page 67 - SIDEXIS XG]* and *Adjusting the 3D view [▶Page 78 - SIDEXIS XG]*.

20.3 SWITCHING THE ACTIVE WORKSPACE

To change the active 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.

20.4 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 Air 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 Air resets the active workspace to the default layout. This means that the software displays all views in their default sizes.

20.5 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 the active workspace [▶Page 63 - SIDEXIS XG]*.

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

▶ SICAT Air 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.

21 VIEWS

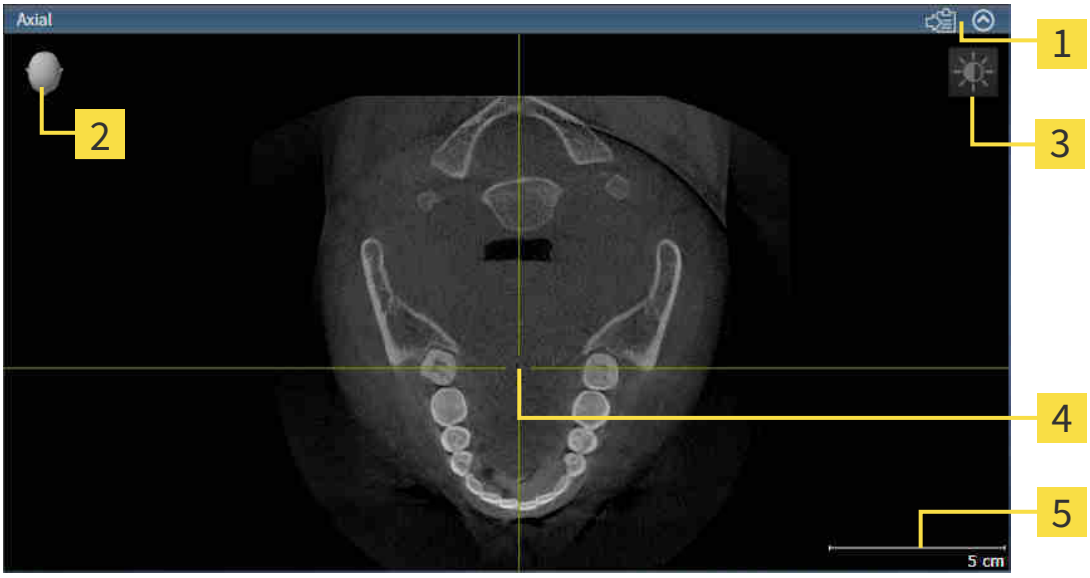
Views are contained in workspaces. A description of the various workspaces and views can be found under *Workspaces [▶Page 60 - SIDEXIS XG]*.

You can adjust the views. For further information about this see *Adjusting the views [▶Page 67 - SIDEXIS XG]* and *Adjusting the 3D view [▶Page 78 - SIDEXIS XG]*.

21.1 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 69 - SIDEXIS XG]*.

An active view contains the following elements:



1 Title bar

2 Orientation head

3 View toolbar

4 Crosshairs

5 Scale

2D slice views display crosshairs. Crosshairs are lines of intersection with other slice views. SICAT Air 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 69 - SIDEXIS XG]*
- *Maximizing and restoring views [▶Page 70 - SIDEXIS XG]*
- *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 71 - SIDEXIS XG]*
- *Zooming views and panning views [▶Page 73 - SIDEXIS XG]*
- *Scrolling through slices in the 2D slice views [▶Page 74 - SIDEXIS XG]*
- *Moving, hiding and showing crosshairs and frames [▶Page 75 - SIDEXIS XG]*
- *Resetting views [▶Page 76 - SIDEXIS XG]*

There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶Page 78 - SIDEXIS XG]*.

You can document the content of an active view. Information on this can be found in the section *Creating screenshots of views [▶ Page 77 - SIDEXIS XG]*.

21.2 CHANGING THE ACTIVE VIEW

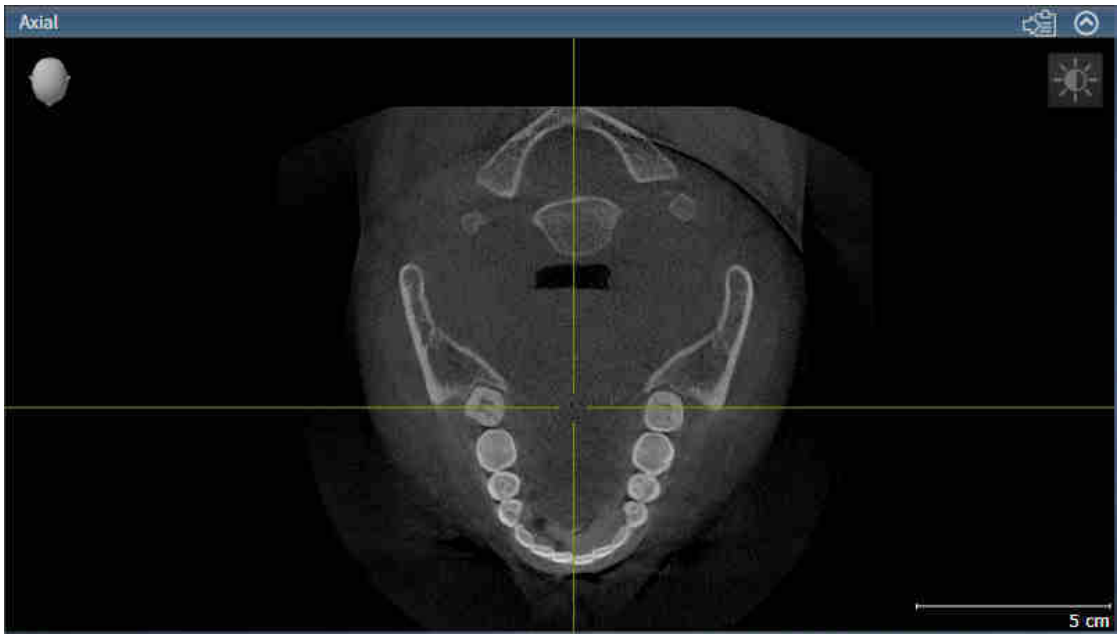
Only the active view shows the **View toolbar** and the title bar.

To activate a view, proceed as follows:

1. Place the mouse pointe over the desired view:

2. Click the desired view.

► SICAT Air activates the view:



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

21.3 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 69 - SIDEXIS XG]*.

☑ The desired view is not maximized.

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

   ▶ SICAT Air maximizes the view.

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

   ▶ SICAT Air 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.

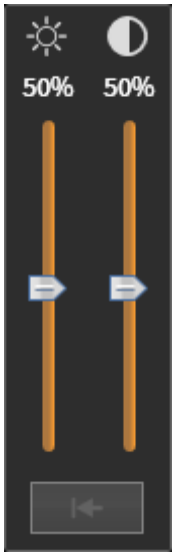
21.4 ADJUSTING AND RESETTING THE BRIGHTNESS AND CONTRAST OF THE 2D VIEWS

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 69 - SIDEXIS XG]*.

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 Air adjusts the brightness of the 2D view according to the position of the **Brightness** slider.

4. Release the left mouse button.

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

7. Release the left mouse button.

   ▶ SICAT Air 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.

21.5 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 Air maintains the current position of the view.

21.6 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 Air adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Air adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Air maintains the current slice.

21.7 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 Air adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Air adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Air 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 Air hides the crosshairs in all 2D slice views.
   ▶ SICAT Air hides the frames in the **3D** view.

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

21.8 RESETTING VIEWS

To reset all views, proceed as follows:

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

► SICAT Air resets all views to the default values for zoom, panning views, scrolling, and moving the crosshairs.

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

21.9 CREATING SCREENSHOTS OF VIEWS

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

- Exporting to the current SIDEXIS XG examination.
- Copying to the Windows clipboard.

EXPORTING A SCREENSHOT OF A VIEW TO THE CURRENT SIDEXIS EXAMINATION

To export a screenshot of a view to the current SIDEXIS examination, proceed as follows:

☑ The desired view is already active. Information on this can be found in the section *Changing the active view [▶Page 69 - SIDEXIS XG]*.

- Click on the **Export screenshot to current SIDEXIS exam** icon in the title bar of the view.

▶ SICAT Air exports a screenshot of a view to the current SIDEXIS examination.

If you open a screenshot which you have created in a SICAT application in SIDEXIS XG, the SICAT application starts with the corresponding study.

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 69 - SIDEXIS XG]*.

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

▶ SICAT Air 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.

22 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 79 - SIDEXIS XG]*.

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

- *Switching the display mode of the 3D view [▶Page 81 - SIDEXIS XG]*
- *Configuring the active display mode of the 3D view [▶Page 82 - SIDEXIS XG]*
- *Changing the clipping mode of the 3D view [▶Page 87 - SIDEXIS XG]*

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

22.1 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:

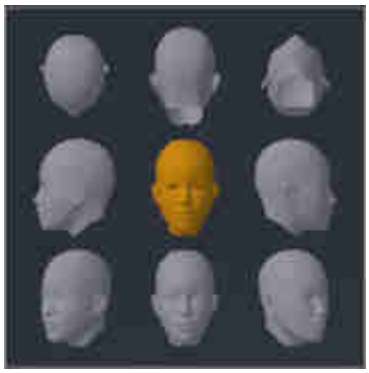
1. Place the mouse pointer on the **3D** view.
2. Click and hold the left mouse button.
   ▶ The mouse pointer becomes a hand.
3. Move the mouse.
   ▶ The viewing direction changes according to the movement of the mouse.
4. Release the left mouse button.

▶ SICAT Air 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.

22.2 DISPLAY MODES OF THE 3D VIEW

General information on the **3D** view can be found in the section *Adjusting the 3D view [▶Page 78 - SIDEXIS XG]*.

SICAT Air provides different display modes for the **3D** view in the **MPR/Radiology** workspace and **Airway** workspace:

- The **Volumetric view with soft tissue** displays only the soft tissue.

- The **Surface view** displays a non-transparent slice through the volume.

- The **Volumetric view with bones and soft tissue** combines the **Volumetric view with soft tissue** and the **Volumetric view with bones**.

- The **Volumetric view with bones** displays only the bone.

- The **Opaque view of the airway** displays the segmented airway. The airway is the same as the **Airway** object in SICAT Air. Settings in the **Airway** object affect the **Opaque view of the airway**. Information on this can be found in the section *SICAT Air objects [▶Page 55 - SIDEXIS XG]*.

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 81 - SIDEXIS XG]*.

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 82 - SIDEXIS XG]*.

You can find information on how to use the different display modes together with the various clipping modes in the section *Clipping modes of the 3D view [▶Page 84 - SIDEXIS XG]*.

22.3 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 69 - SIDEXIS XG]*.

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 Air 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.

22.4 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.

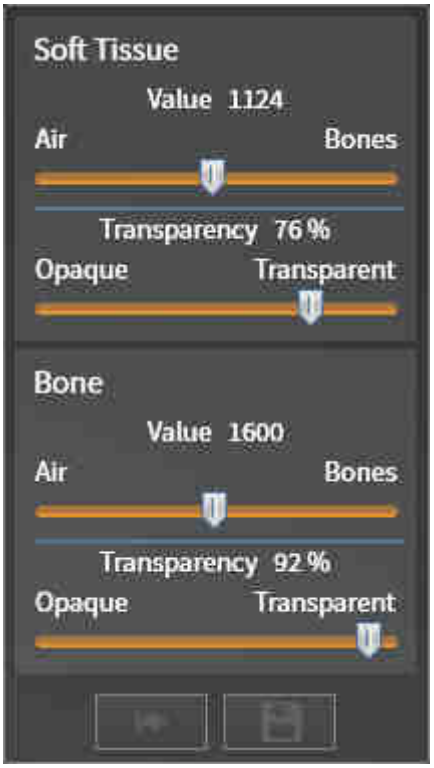
To configure the active display mode of the **3D** view, proceed as follows:

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶Page 69 - SIDEXIS XG]*.

☑ 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 81 - SIDEXIS XG]*.

☑ 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 Air adjusts the **3D** view according to the position of the slider.
3. Where available, click on the arrow icon next to .**Advanced options**.
   ▶ The **Advanced options** area expands.
4. Activate or deactivate the available check box.
   ▶ SICAT Air adjusts the **3D** view according to the status of the check box.
5. Move the slider you require.
   ▶ SICAT Air 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.

22.5 CLIPPING MODES OF THE 3D VIEW

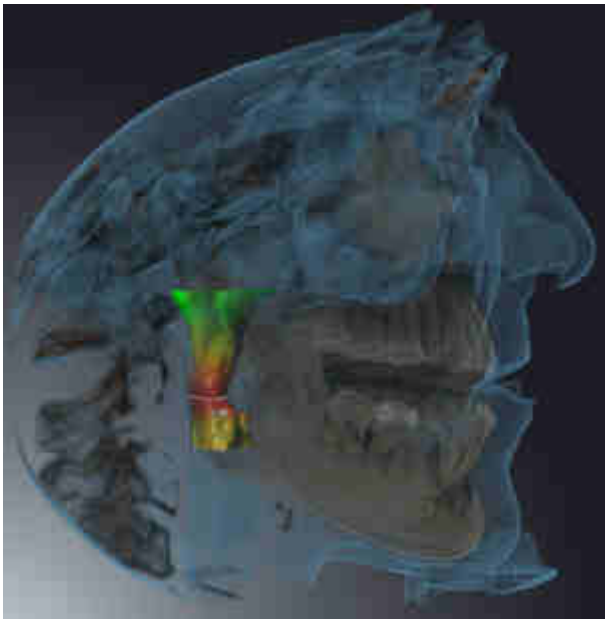
General information on the **3D** view can be found in the section *Adjusting the 3D view [▶Page 78 - SIDEXIS XG]*.

You can hide parts of the volume in the **3D** view using the clipping modes.

SICAT Air provides different clipping modes in the **3D** view depending on the display mode:

CLIPPING: NONE

SICAT Air displays all parts of the volume contained in the active display mode.

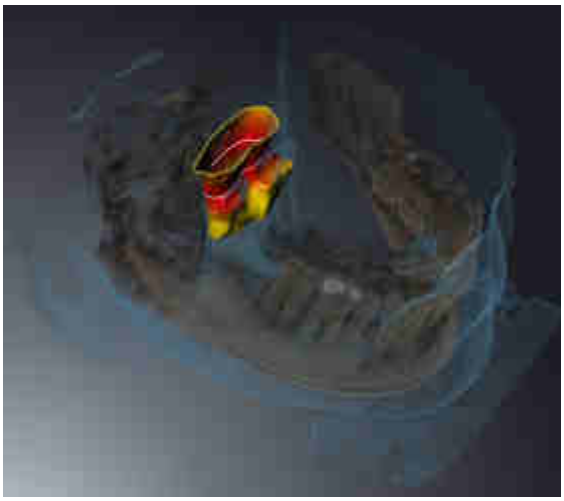


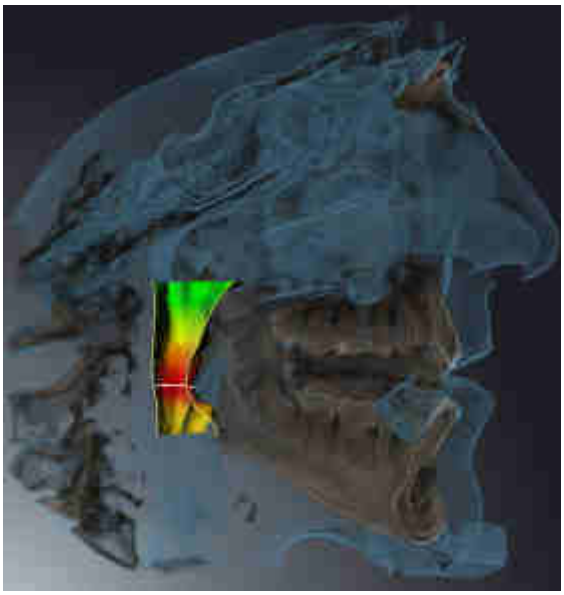
CLIPPING: AIRWAY SLAB

SICAT Air hides all parts of the volume that are on the side of the airway area. Information on how to adjust the airway area can be found in the section *Defining the airway area [▶Page 105 - SIDEXIS XG]*. If you have not defined an airway area, SICAT Air will use default values.

CLIPPING: ACTIVE SLICE

SICAT Air hides all parts of the volume that are beyond a slice you have selected. You can set the slice depending on the clipping mode in the **Axial** slice view, **Coronal** slice view or **Sagittal** slice view. Information on this can be found in the section *Scrolling through slices in the 2D slice views [▶Page 74 - SIDEXIS XG]*. A workspace only provides the slice clipping modes for which it contains the corresponding slice views. In the **Airway** workspace, you can also define the axial slice in the airway profile. Information on this can be found in the section *Interacting with the airway profile [▶Page 117 - SIDEXIS XG]*.





CLIPPING MODES IN CERTAIN DISPLAY MODES

The following table shows which clipping modes are available in the display modes:

	Clipping: None	**Clipping: Airway Slab**	**Clipping: Active slice**
Volumetric view with soft tissue	Yes	Yes*	Yes
Surface view	No	No	Yes, sagittal*
Volumetric view with bones and soft tissue	Yes*	Yes	Yes
Volumetric view with bones	Yes*	No	Yes
Opaque view of the airway	Yes*	No	Yes

*Standard

Information on how to activate a clipping mode of the **3D** view can be found in the section *Changing the clipping mode of the 3D view [▶Page 87 - SIDEXIS XG]*.

22.6 CHANGING THE CLIPPING MODE OF THE 3D VIEW

To change the clipping 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 69 - SIDEXIS XG]*.

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

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

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

23 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:

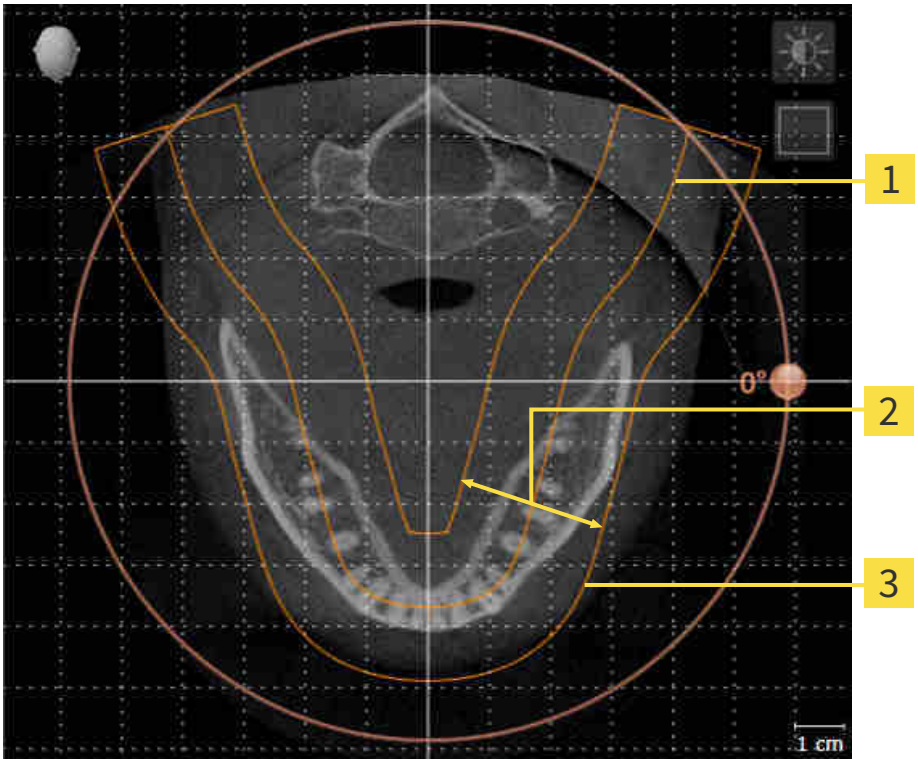
- Sub-optimal positioning of the patient during the 3D X-ray scan
- Orientation according to case, for example orientation of the axial slices parallel to the Frankfurt plane or parallel to the bite plane
- Optimizing the panorama view

If you adjust the volume orientation in SICAT Air, all other SICAT applications adopt your changes.

Information on how to adjust the volume orientation can be found in the section *Adjusting the volume orientation [▶Page 90 - SIDEXIS XG]*.

PANORAMIC REGION

SICAT Air 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 Air, all other SICAT applications adopt your changes.

Information on adjusting the panoramic region can be found in the section *Adjusting the panoramic region [▶Page 95 - SIDEXIS XG]*.

23.1 ADJUSTING THE VOLUME ORIENTATION

General information on volume orientation can be found in the section *Volume orientation and panoramic region [▶Page 88 - SIDEXIS XG]*.

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

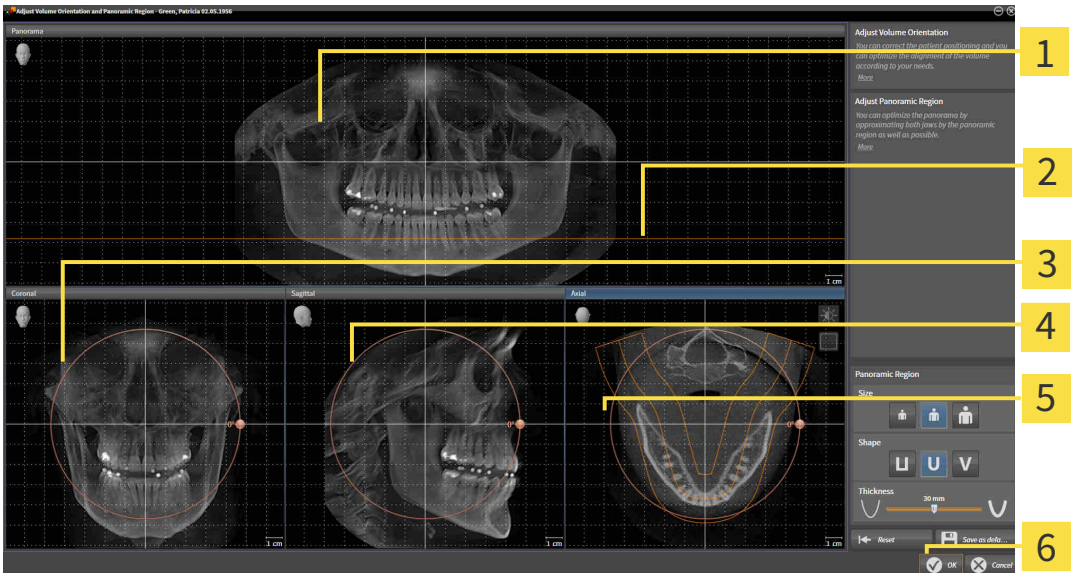
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Rotating volumes in the **Coronal** view
- Rotating volumes in the **Sagittal** view
- Rotating volumes in the **Axial** view

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 Axial reference line

3 **Coronal** view with **Rotation** slider

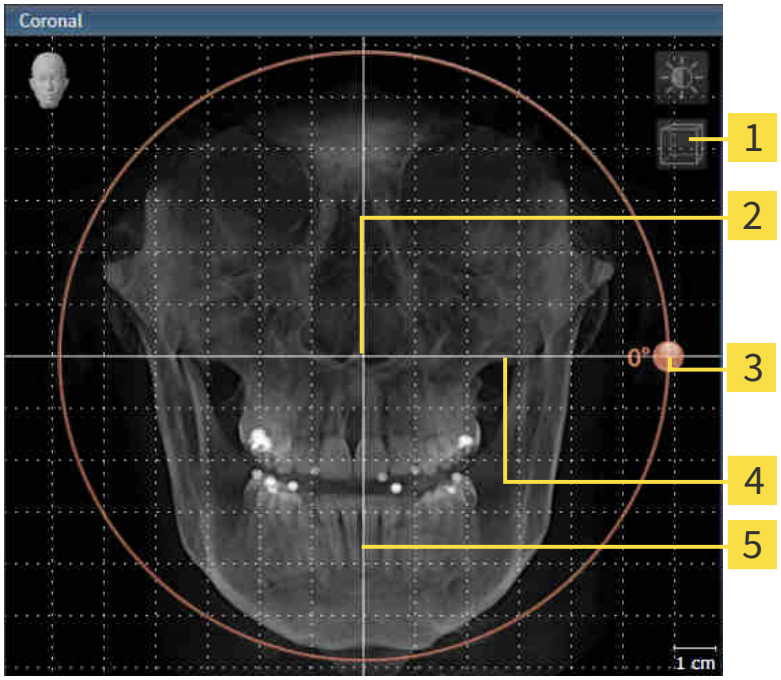
4 **Sagittal** view with **Rotation** slider

5 **Axial** view with **Rotation** slider

6 **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

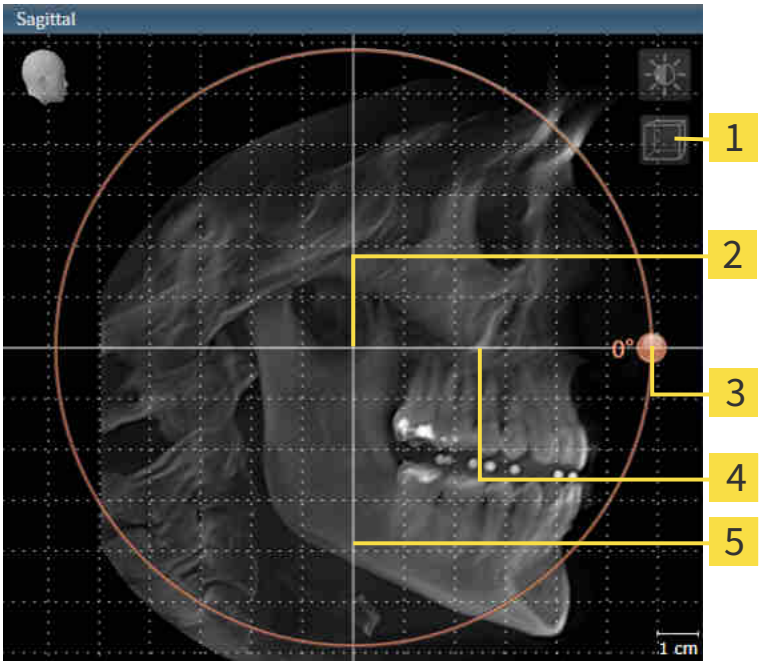
4 Horizontal reference line

5 Vertical reference line

2. Make sure that the projection mode is active. Click on the **Enable projection mode** icon if necessary.
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 Air 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:

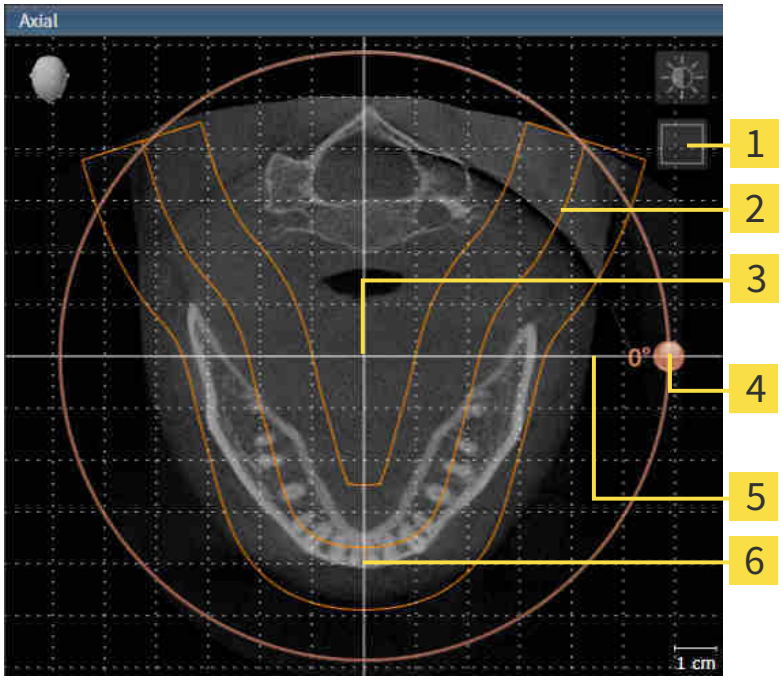


1	**Enable slices mode** icon or **Enable projection mode** icon	4	Horizontal reference line
2	Center of rotation	5	Vertical reference line
3	**Rotation** slider		

2. Make sure that the projection mode is active. Click on the **Enable projection mode** icon if necessary.
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 Air 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 projection mode** icon or **Enable slices 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 slice mode is active. Click on the **Enable slices mode** icon if necessary.
3. Scroll to a slice with the roots of the mandibular teeth, for example by left clicking on the axial reference lines in the panorama view and hold the left button as you move the mouse up or down as desired.
4. 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 Air moves the center of rotation, the horizontal reference lines and the vertical reference lines accordingly.
5. Place the mouse pointer on the **Rotation** slider.
6. Click and hold the left mouse button.
7. Move the **Rotation** slider along the circle in the desired direction.
   ▶ SICAT Air rotates the volume in the **Axial** view in a circle around the center of rotation and in the other views accordingly.
8. 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.
9. To save your changes, click **OK**.

▶ If the change of the volume orientation affects existing objects in SICAT applications, SICAT Air opens a message window which states the exact impact.

10. If you still want to adjust the volume orientation, click on the **Adjust** button in the message window.

▶ SICAT Air 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 71 - SIDEXIS XG]*.
- You can zoom in the views. SICAT Air synchronizes the zoom between the views with the exception of the **Axial** view.
- To reset the volume orientation and panoramic region, click on the **Reset** button.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- If you do not want to save your changes, click **Cancel**.

23.2 ADJUSTING THE PANORAMIC REGION

General information on the panoramic region can be found in the section *Volume orientation and panoramic region [▶Page 88 - SIDEXIS XG]*.

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

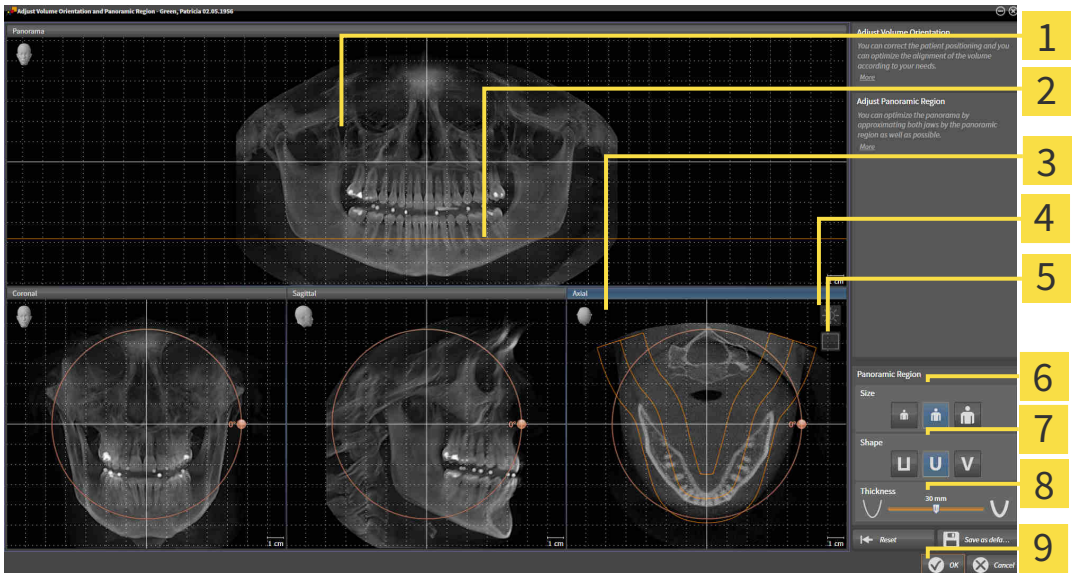
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Adjusting the slice position of the **Axial** view
- Moving the panoramic region
- Rotating volumes in the **Axial** view
- Adjusting**Size**, **Shape** and **Thickness** of the panoramic region

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. Click on the **Enable slices mode** icon if necessary.
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 Air 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 Air 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. Select the **Size** of the panoramic region that best reflects the mandible of the patient by clicking on the corresponding **Size** button.

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

3. Make sure that the projection mode of the **Axial** view is active. Click on the **Enable projection mode** icon if necessary.

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 Air 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 71 - SIDEXIS XG]*.
- You can zoom in the views. SICAT Air synchronizes the zoom between the views with the exception of the **Axial** view.
- To reset the volume orientation and panoramic region, click on the **Reset** button.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- If you do not want to save your changes, click **Cancel**.

24 DISTANCE AND ANGLE MEASUREMENTS

SICAT Air features two different types of measurement:

- Distance measurements

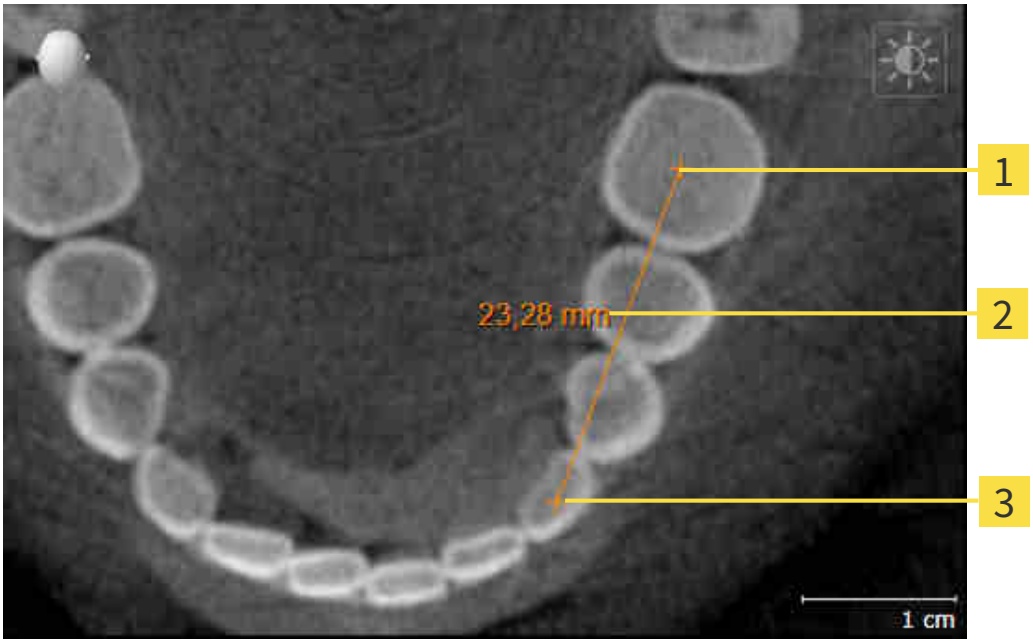
- Angle measurements

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 Air will also add it to the **Measurements** group in the **Object browser**.

The following actions are available for measurements:

- *Adding distance measurements [▶Page 99 - SIDEXIS XG]*
- *Adding angle measurements [▶Page 100 - SIDEXIS XG]*
- *Moving measurements, individual measuring points and measured values [▶Page 102 - SIDEXIS XG]*
- Activating, hiding and showing measurements - Information on this can be found in the section *Managing objects with the object browser [▶Page 52 - SIDEXIS XG]*.
- 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 54 - SIDEXIS XG]*.

24.1 ADDING DISTANCE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

To add a distance measurement, proceed as follows:

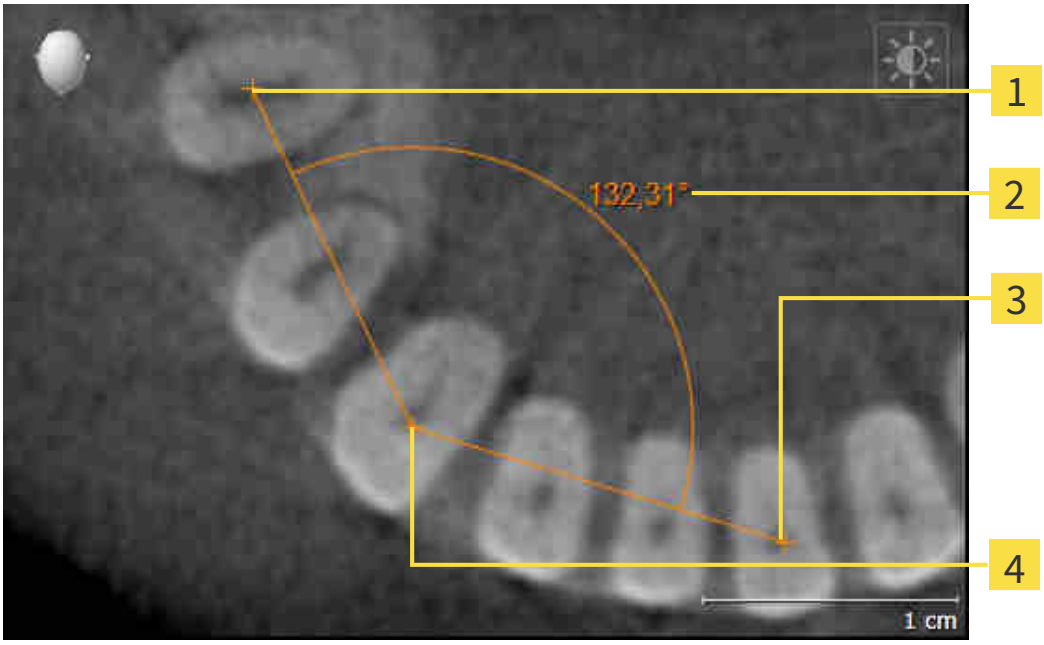
☑ The **Diagnose** workflow step is already expanded.

1. In the **Diagnose** workflow step, click the **Add distance measurement (D)** icon.
   ▶ SICAT Air 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 Air illustrates the starting point using a small cross.
   ▶ SICAT Air shows a distance line between the starting point and the mouse pointer.
   ▶ SICAT Air 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 Air illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

24.2 ADDING ANGLE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

4 Vertex

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 Air 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 Air illustrates the starting point using a small cross.
   ▶ SICAT Air shows the first side 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 Air illustrates the vertex using a small cross.
   ▶ SICAT Air shows the second side of the angle measurement by a line from the vertex to the mouse pointer.
   ▶ SICAT Air shows the current angle between both sides of the angle measurement and in the **Object browser**.

5. Move the mouse pointer to the end point of the second side and left-click.

► SICAT Air illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

24.3 MOVING MEASUREMENTS, INDIVIDUAL MEASURING POINTS AND MEASURED VALUES

MOVING MEASUREMENTS

To move a measurement, proceed as follows:

☑ SICAT Air shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 52 - SIDEXIS XG]* and *Managing objects with the object toolbar [▶Page 54 - SIDEXIS XG]*.

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 Air maintains the current position of the measurement.

MOVING INDIVIDUAL MEASURING POINTS

To move an individual measuring point, proceed as follows:

☑ SICAT Air shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 52 - SIDEXIS XG]* and *Managing objects with the object toolbar [▶Page 54 - SIDEXIS XG]*.

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 Air maintains the current position of the measuring point.

MOVING MEASURED VALUES

To move a measured value, proceed as follows:

☑ SICAT Air shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 52 - SIDEXIS XG]* and *Managing objects with the object toolbar [▶Page 54 - SIDEXIS XG]*.

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 Air shows a dotted line between the measured value and the corresponding measurement.
4. Release the left mouse button.

▶ SICAT Air maintains the current position of the measured value.

After you have moved the value of a measurement, the SICAT Air will define the value at an absolute position. To position the value again relative to the measurement, double click on the value.

25 SEGMENTING THE AIRWAY

NOTICE	**Before segmenting the airway, it may be useful to align the volume according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 90 - SIDEXIS XG]*. If you align the volume only after segmenting the airway, SICAT Air removes the Airway object and you must carry out segmentation once more.**

In SICAT Air you require an **Airway** object for the airway analysis. You create an **Airway** object by segmenting the airway. The **Airway** object illustrates the airway separately, displays the key information and offers additional interaction options.

SICAT Air requires an airway area to segment the airway. You can define the airway area with two anatomical reference points in the **Segment the airway** window. After this, SICAT Air will create an airway area in the form of a cuboid. The software defines the airway area using reference points and a configurable lateral width. SICAT Air finally performs an automatic segmentation of the airway in the airway area. You can subsequently move the reference points and change the lateral width, whereupon the software will perform the automatic segmentation of the airway once more.

SICAT Air marks areas red in the **3D** view, which the software cannot clearly identify as an airway. If SICAT Air has incorrectly assigned parts of the volume, correction tools are available.

Segmenting the airway consists of the following step:

- *Defining the airway area [▶Page 105 - SIDEXIS XG]*

The following steps are optional:

- *Correcting the airway segmentation [▶Page 109 - SIDEXIS XG]*
- *Removing non-required areas from the airway [▶Page 111 - SIDEXIS XG]*

If the automatic segmentation of the airway still does not meet the anatomical circumstances even after using the correction tools, you can segment the airway manually. Information on this can be found in the section *Segmenting the airway manually [▶Page 112 - SIDEXIS XG]*.

25.1 DEFINING THE AIRWAY AREA

> ⚠ **CAUTION**
>
> **3D X-ray scans of insufficient quality may result in the quality of the segmented airway and airway profile being insufficient.**
>
> Only use 3D X-ray scans of a sufficient quality to create the segmented airway and airway profile with a sufficient quality and resolution.

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶Page 104 - SIDEXIS XG]*.

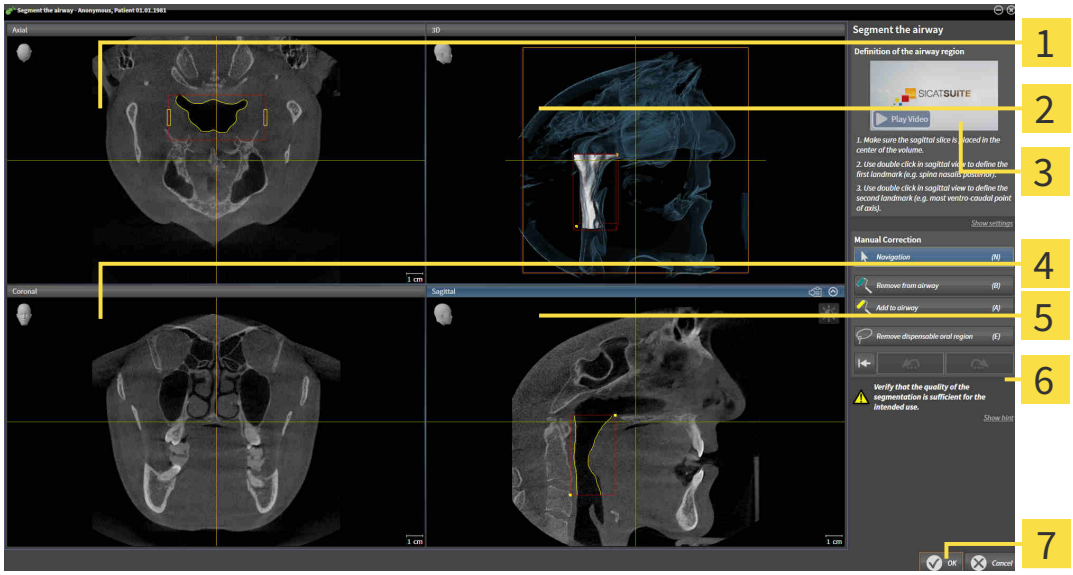
OPENING THE “SEGMENT THE AIRWAY" WINDOW

☑ You have already aligned the volume according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 90 - SIDEXIS XG]*.

☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 49 - SIDEXIS XG]*.

- Click on the **Segment the airway** icon.

▶ The **Segment the airway** window opens:



1 **Axial** view

2 **3D** view

3 Example video

4 **Coronal** view

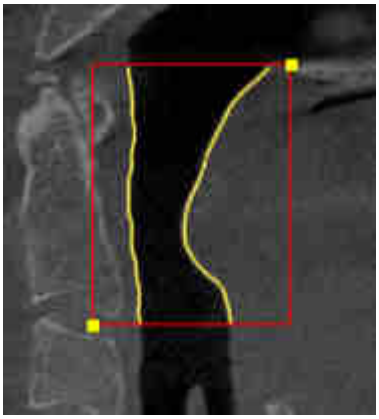
5 **Sagittal** view

6 Tool area

7 **OK** button

SETTING ANATOMICAL REFERENCE POINTS TO DEFINE THE AIRWAY AREA

1. Make sure that the **Sagittal** view shows the desired point for the upper reference point in the airway. If necessary, scroll through the slices in the **Sagittal** view.
2. Double click on the position of the upper reference point of the airway in the **Sagittal** view:

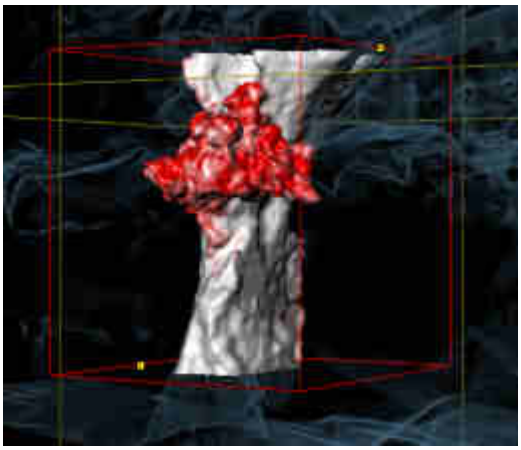


   ▶ SICAT Air marks the upper reference point with a yellow rectangle.
   ▶ The lower reference point will now match the position of the mouse pointer.
   ▶ SICAT Air marks the airway area with a red frame.
3. Make sure that the **Sagittal** view shows the desired point for the lower reference point in the airway. If necessary, scroll through the slices in the **Sagittal** view.
4. Double click on the position of the lower reference point of the airway in the **Sagittal** view.
   ▶ SICAT Air marks the lower reference point with a yellow rectangle.

▶ SICAT Air defines the airway area according to the position of the reference points.

▶ SICAT Air automatically segments the airway based on the airway area.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway:



MOVING REFERENCE POINTS OF THE AIRWAY AREA

You can move the reference points in all 2D views.

1. Make sure that the navigation mode is active. Click on the **Navigation** button if necessary.
2. Make sure that the desired 2D view shows the desired reference point. If necessary, scroll through the slices.
3. Place the mouse pointer on a reference point.
   ▶ The mouse pointer becomes a crosshair.
4. Click and hold the left mouse button.
5. Place the mouse pointer on the new position of the reference point.
   ▶ The reference point tracks the movement of the mouse pointer.
   ▶ SICAT Air adjusts the airway area according to the position of the reference point.
6. Release the left mouse button.

▶ SICAT Air maintains the new position of the reference point.

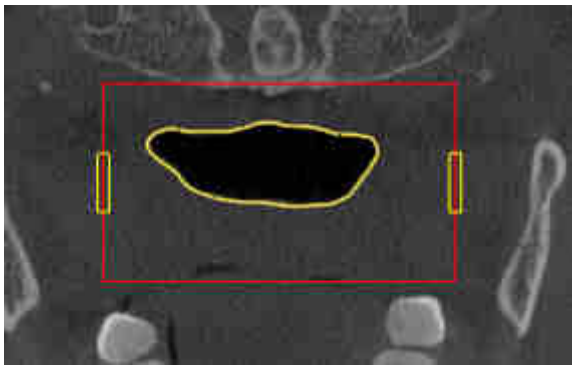
▶ SICAT Air automatically re-segments the airway based on the new airway area.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway.

CHANGING THE LATERAL SIZE OF THE AIRWAY AREA

The default lateral size is 60 mm.

1. Make sure that the navigation mode is active. Click on the **Navigation** button if necessary.
2. Make sure that the **Axial** view shows the markers for the lateral size. If necessary, scroll through the slices in the **Axial** view:



3. Place the mouse pointer on a marker of the lateral size.
   ▶ The mouse pointer becomes a two-way arrow.
4. Click and hold the left mouse button.
5. Place the mouse pointer on the desired position of the marker.
   ▶ The marker tracks the movement of the mouse pointer.
   ▶ SICAT Air adjusts the airway area according to the new lateral size.

6. Release the left mouse button.

▶ SICAT Air maintains the new position of the marker.

▶ SICAT Air automatically re-segments the airway based on the new airway area.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway.

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [▶Page 113 - SIDEXIS XG]*.

If the segmentation does not match the anatomical characteristics , continue with the section *Correcting the airway segmentation [▶Page 109 - SIDEXIS XG]* or *Removing non-required areas from the airway [▶Page 111 - SIDEXIS XG]*.

In addition to the described process, the following actions are available in the **Segment the airway** 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 71 - SIDEXIS XG]*.
- You can copy screenshots of individual views to the clipboard and to the handout by clicking on the **Copy screenshot to clipboard (Ctrl+C)** icon. Information on this can be found in the section *Creating screenshots of views [▶Page 77 - SIDEXIS XG]*.
- If you want to undo the last work step, you can click on the **Undo (Ctrl+Z)** button.
- If you want to redo the last work step, you can click on the **Redo (Ctrl+Y)** button.
- If you want to undo all work steps, you can click on the **Remove airway segmentation and reset all changes** button and confirm this in the message window by clicking **OK**.
- If you want to cancel the segmentation of the airway, you can click **Cancel**.

The **Undo (Ctrl+Z)** and **Redo (Ctrl+Y)** functions are only available as long as the **Segment the airway** window is open.

25.2 CORRECTING THE AIRWAY SEGMENTATION

The segmentation of SICAT Air 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 of the airway can be found in the section *Segmenting the airway [▶Page 104 - SIDEXIS XG]*.

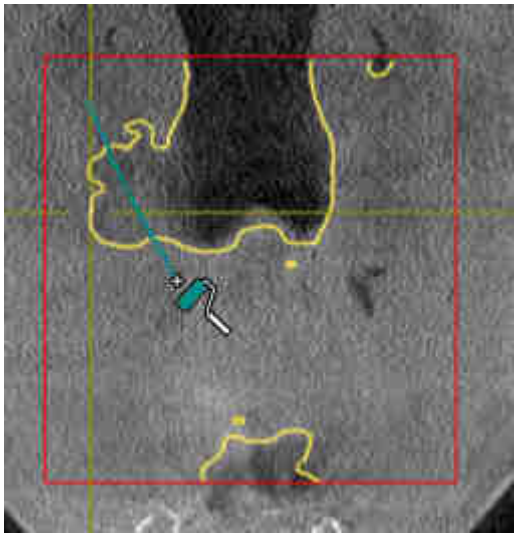
REMOVING INCORRECTLY IDENTIFIED AREAS FROM THE AIRWAY

You can remove areas from the airway in all 2D views.

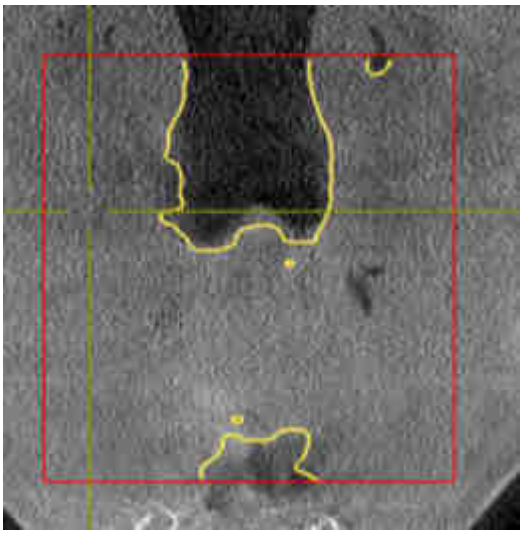
In your corrections, consider in particular the areas marked red in the **3D** view. However, these areas may not be the only areas that SICAT Air may have incorrectly identified as part of the airway.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶Page 105 - SIDEXIS XG]*.

1. Click the **Remove from airway** button in the **Segment the airway** window.
   ▶ The mouse pointer becomes a blue paint roller.
2. Mark the areas that SICAT Air has incorrectly identified as part of the airway in a 2D view within the airway area.



► SICAT Air removes the marked area from the airway:



ADDING INCORRECTLY IDENTIFIED AREAS TO THE AIRWAY

You can mark areas as part of the airway in all 2D views.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [►Page 105 - SIDEXIS XG]*.

1. Click the **Add to airway** button in the **Segment the airway** window.
   ► The mouse pointer becomes a yellow paint roller.
2. Mark additional areas as part of the airway in a 2D view within the airway area.
   ► SICAT Air identifies the marked area as part of the airway.

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [►Page 113 - SIDEXIS XG]*.

If the automatic segmentation of the airway still does not meet the anatomical circumstances even after using the correction tools, you can segment the airway manually. Information on this can be found in the section *Segmenting the airway manually [►Page 112 - SIDEXIS XG]*.

25.3 REMOVING NON-REQUIRED AREAS FROM THE AIRWAY

General information on segmentation of the airway can be found in the section *Segmenting the airway [▶Page 104 - SIDEXIS XG]*.

Use the **Remove dispensable oral region** tool in air-carrying areas, which are not part of the relevant airway. This includes, for example the oral cavity and protuberances.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶Page 105 - SIDEXIS XG]*.

1. Click the **Remove dispensable oral region** button in the **Segment the airway** window.
   ▶ The mouse pointer becomes a lasso.
2. Frame areas that you wish to completely remove from detection in the **3D** view. It does not matter whether this is in the airway or an area outside the airway:

▶ SICAT Air removes the entire area behind the marker from the volume. This means that SICAT Air can no longer identify this area as an airway or area outside the airway:

You can also use the **Remove dispensable oral region** function in the 2D views. In this case, SICAT Air makes changes to the current slice only.

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [▶Page 113 - SIDEXIS XG]*.

If the automatic segmentation of the airway still does not meet the anatomical circumstances even after using the correction tools, you can segment the airway manually. Information on this can be found in the section *Segmenting the airway manually [▶Page 112 - SIDEXIS XG]*.

25.4 SEGMENTING THE AIRWAY MANUALLY

The segmentation of SICAT Air 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 of the airway can be found in the section *Segmenting the airway [▶Page 104 - SIDEXIS XG]*.

Even if you use the correction tools, SICAT Air may still not be able to automatically produce usable segmentation of the airway on certain 3D X-ray scans. In this case, segment the airway manually:

☑ You have already defined an airway area. Information on this can be found in the section *Setting the airway area [▶Page 105 - SIDEXIS XG]*.

1. Click the **Show settings** button in the **Segment the airway** window.
   ▶ The **Show settings** area expands.
2. Activate the **Segment the airway manually** check box.
   ▶ If available, SICAT Air will remove the automatic segmentation of the airway and accompanying corrections.

3. To mark areas as part of the airway, use the **Add to airway** drawing tool within the airway area.

4. To mark areas outside the airway, use the **Remove from airway** drawing tool within the airway area.

▶ SICAT Air segments the airway according to your markers.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway.

If you want to segment the airway manually, you have to mark the airway as well as areas outside the airway. After this, SICAT Air will perform the segmentation.

The tools to correct the automatic segmentation of the airway are also available for the manual segmentation of the airway:

- *Correcting the airway segmentation [▶Page 109 - SIDEXIS XG]*
- *Removing non-required areas from the airway [▶Page 111 - SIDEXIS XG]*

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [▶Page 113 - SIDEXIS XG]*.

25.5 COMPLETING THE SEGMENTATION OF THE AIRWAY

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶Page 104 - SIDEXIS XG]*.

☑ You have already defined an airway area in the **Segment the airway** window. Information on this can be found in the section *Defining the airway area [▶Page 105 - SIDEXIS XG]*.

- If the segmentation matches the anatomical characteristics, click on **OK**.

▶ SICAT Air adopts the segmented airway.

▶ SICAT Air closes the **Segment the airway** window.

▶ If not already active, SICAT Air will activate the **Airway** workspace.

▶ In the **3D** view, SICAT Air activates the **Opaque view of the airway** display mode.

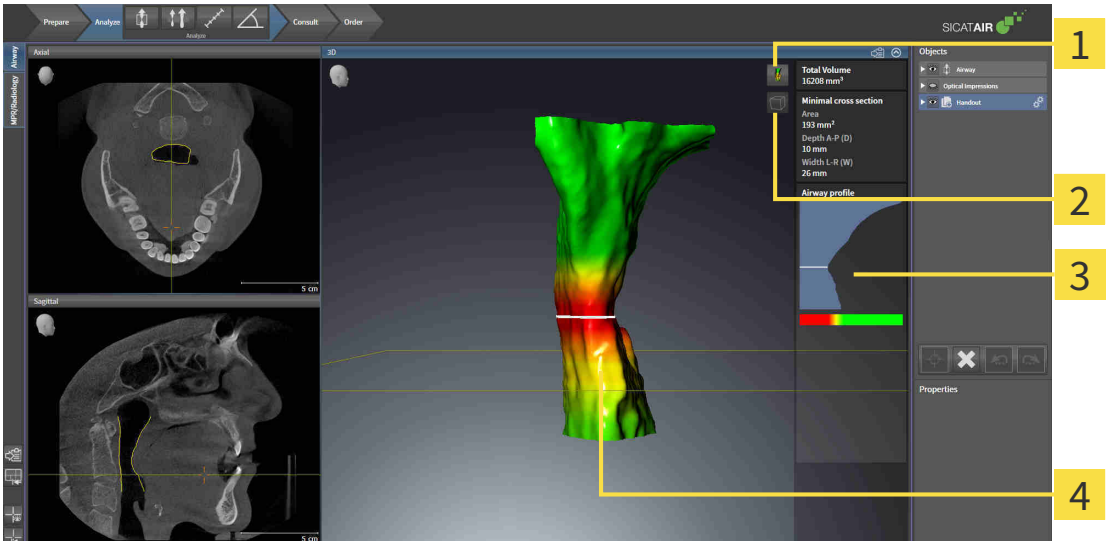
▶ In the **Object bar**, SICAT Air creates an **Airway** object.

26 AIRWAY ANALYSIS

Before starting the airway analysis, you have to segment the airway. Information on this can be found in the section *Segmenting the airway [▶Page 104 - SIDEXIS XG]*.

SICAT Air provides the following possibilities for the airway analysis:

- Airway analysis area
- Display modes
- Clipping modes
- Color coding



1 **Switch display mode** icon

2 **Switch clipping mode** icon

3 Airway analysis area

4 Segmented **Airway** object with color coding

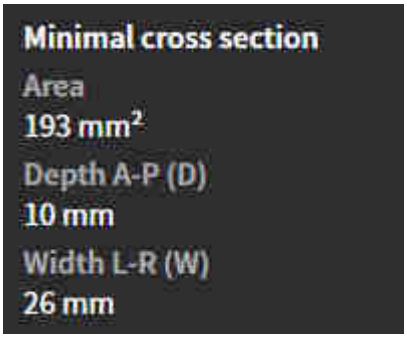
TOTAL VOLUME

Above the airway profile, SICAT Air displays the **Total volume** of the **Airway** object in mm^3.

AIRWAY ANALYSIS AREA

After you have segmented the airway, SICAT Air displays the airway analysis area in the **Airway** workspace.

The upper part of the airway analysis area looks as follows:



You can view the following information on the segmented airway:

- **Minimal cross section area**
- **Depth A-P (D)**
- **Width L-R (W)**

The middle section of the airway analysis area displays the airway profile. The airway profile visualizes the cross-sectional areas of the axial slices along the airway:

The airway profile contains two lines that have the following meanings:

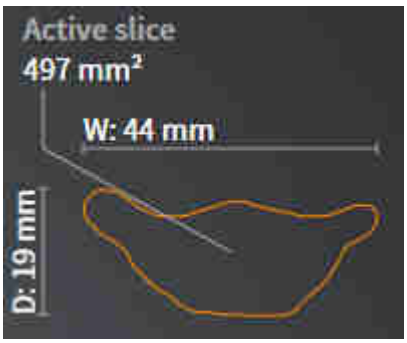
- The white line symbolizes the slice with the smallest cross-sectional area.
- The orange line symbolizes the selected slice.

The selected slice determines the position of the clipping in the **3D** view and the information in the lower section of the airway analysis area.

Information on selecting a slice in the airway profile can be found in the section *Interacting with the airway profile [*▶*Page 117 - SIDEXIS XG**]*.

The color gradient below the airway profile establishes the relationship between the color coding and slice areas.

The lower part of the airway analysis area looks as follows:



You can view the following information on the cross-section of the selected slice:

- Visualization of the cross-section
- Cross-sectional area
- Width
- Depth

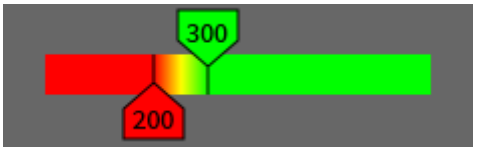
DISPLAY MODES

In the **3D** view, SICAT Air can highlight certain aspects of the volume with different display modes. Information on this can be found in the section *Display modes of the 3D view [▶Page 80 - SIDEXIS XG]*.

CLIPPING MODES

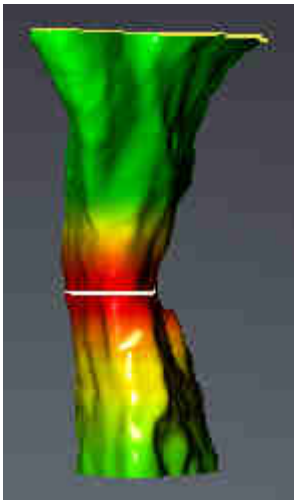
In the **3D** view, SICAT Air can hide certain areas of the volume with different clipping modes. Information on this can be found in the section *Clipping modes of the 3D view [▶Page 84 - SIDEXIS XG]*.

COLOR CODING



SICAT Air gives the segmented airway a color coding. The color coding is equivalent to the cross-sectional areas of the airway profile. You can use the color coding in the **3D** view to highlight bottlenecks in the airway object.

You can configure the color coding. Information on this can be found in the section *SICAT Air objects [▶Page 55 - SIDEXIS XG]*. You should select the upper threshold in such a way that you can regard all areas of the airway above this as healthy. You should select the lower threshold in such a way that you can regard all areas of the airway below this as pathological. SICAT Air represents the area between them as a color gradient:



In the SICAT Air settings, you can define default values for the color coding. Information on this can be found in the section *Changing SICAT Air settings [▶Page 163 - SIDEXIS XG]*.

26.1 INTERACTING WITH THE AIRWAY PROFILE

General information on airway analysis can be found in the section *Airway analysis [▶Page 114 - SIDEXIS XG]*.

To interact with the airway profile, proceed as follows:

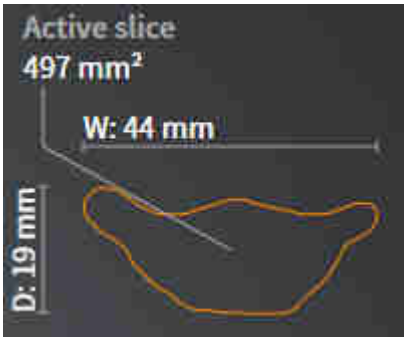
☑ The **Airway** workspace is already open. Information on this can be found in the section *Switching the active workspace [▶Page 63 - SIDEXIS XG]*.

☑ You have already segmented the airway. Information on this can be found in the section *Defining the airway area [▶Page 105 - SIDEXIS XG]*.

- Click on the desired slice in the airway profile.

► In the airway profile, an orange line shows the selected slice:

► SICAT Air displays information for the selected slice:



► In the **3D** view, SICAT Air activates the **Clipping: Designated Slice (select in slice view)** clipping mode.

► The **3D** view hides the area above the selected slice:

► SICAT Air focuses the crosshair on the center of the airway in the 2D views.

27 PATIENT INFORMATION

⚠ **CAUTION**	**Using the handout for diagnosis purposes may result in an incorrect diagnosis and treatment.** Only use the visualization functions for medical images of the software user interface to perform a diagnosis on medical images and to plan the treatment.

You can explain your diagnosis and highlight the effects of the treatment to the patient through illustrations customized for the patient. The patient information consists of two steps:

1. In your practice within SICAT Air
2. By way of a patient information via the handout

You can compile the contents of the handouts during your explanations on the monitor.

The sources are images based on drawing objects and screenshots.

The patient can better understand the results you have discussed and also better discuss this with others using the handout.

Creating the handout consists of the following steps:

- *Creating images and screenshots [▶Page 121 - SIDEXIS XG]*
- *Preparing handouts [▶Page 124 - SIDEXIS XG]*
- *Generating handouts [▶Page 128 - SIDEXIS XG]*

27.1 CREATING IMAGES AND SCREENSHOTS

NOTICE	**Before creating images and screenshots, it may be useful to align the volume according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 90 - SIDEXIS XG]*. If you align the volume only after creating images and screenshots, SICAT Air removes the drawing object and you must carry out segmentation once more.**

General information on patient information can be found in the section *Patient information [▶Page 120 - SIDEXIS XG]*.

General information on managing images and screenshots can be found in the section *SICAT Air objects [▶Page 55 - SIDEXIS XG]*.

There are two drawing tools:

- **Draw Arrow**
- **Draw Circle**

DRAWING ARROWS

To draw an arrow, proceed as follows:

☑ You have already aligned the volume according to your requirements. Information on this can be found in the section *Adjusting the volume orientation [▶Page 90 - SIDEXIS XG]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 49 - SIDEXIS XG]*.

1. In the **Consult** workflow step, click the **Draw Arrow** icon.
2. Place the mouse pointer over the desired view.
   ▶ The mouse pointer becomes a pen.
3. Click and hold the left mouse button on the desired arrow tip position.
4. Move the mouse.
   ▶ SICAT Air shows an arrow in the view.
   ▶ The end of the arrow will now match the position of the mouse pointer.
5. Move the mouse pointer to the desired arrow end position and release the left button.
   ▶ SICAT Air shows the finished arrow in the view.
   ▶ If not yet available, SICAT Air will create the structures required for the **Image** object in the **Object browser**.
   ▶ The image will be available in the **Report Generation** window.
6. Click on the **Draw Arrow** icon.

▶ SICAT Air closes the mode for drawing arrows.

DRAWING CIRCLES

To draw a circle, proceed as follows:

☑ You have already aligned the volume according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 90 - SIDEXIS XG]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 49 - SIDEXIS XG]*.

1. In the **Consult** workflow step, click the **Draw Circle** icon.
2. Place the mouse pointer over the desired view.
   ▶ The mouse pointer becomes a pen.
3. Click and hold the left mouse button on the desired position for the center of the circle.
4. Move the mouse.
   ▶ SICAT Air shows a circle in the view.
   ▶ The radius of the circle will now match the distance between the center and the position of the mouse pointer.
5. Move the mouse pointer to achieve the desired radius and release the left button.
   ▶ SICAT Air shows the finished circle in the view.
   ▶ If not yet available, SICAT Air will create the structures required for the **Image** object in the **Object browser**.
   ▶ The image will be available in the **Report Generation** window.
6. Click on the **Draw Circle** icon.

▶ SICAT Air closes the mode to draw circles.

As long as the **Draw Arrow** drawing tool or **Draw Circle** drawing tool is active, you can create several drawing objects one after another. You can cancel the use of a drawing tool by clicking on a point outside the view in question or by pressing the **ESC** key.

CONFIGURING DRAWING TOOLS

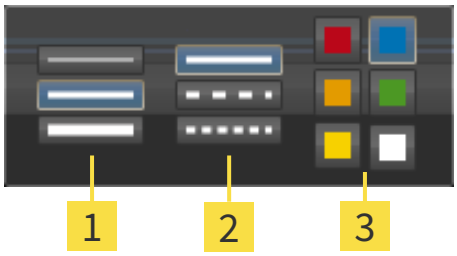
You can configure the **Draw Arrow** drawing tool or the **Draw Circle** drawing tool separately. Changes to the settings will only affect drawing objects created after that point.

To configure a drawing tool, proceed as follows:

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 49 - SIDEXIS XG]*.

1. In the **Consult** workflow step, click on the corresponding **Configure drawing tool** icon next to the **Draw Arrow** icon or **Draw Circle** icon.

▶ The transparent **Configure drawing tool** window opens:



1 Icons for the **Line thickness**

2 Icons for the **Line type**

3 Icons for the **Line color**

2. Click the desired icons to configure the **Line thickness**, **Line type** and **Line color** of the drawing tool.
3. Click on any point outside the transparent **Configure drawing tool** window.

▶ SICAT Air closes the transparent **Configure drawing tool** window.

▶ SICAT Air saves the settings in your user profile.

▶ SICAT Air uses the new settings for drawing objects created from then on.

ADDING SCREENSHOTS TO THE “GENERATE HANDOUT" WINDOW

You can create screenshots of any view in any workspace and any window as long as the respective view contains the **Copy screenshot to clipboard (Ctrl+C)** icon.

To add screenshots to the handout, proceed as follows:

1. To create a screenshot of a view, click on the **Copy screenshot to clipboard (Ctrl+C)** icon in the **View toolbar** of the desired view.
2. To create a screenshot of the entire workspace, click on the **Copy screenshot to clipboard (Ctrl +C)** icon in the **Workspace toolbar**.

▶ SICAT Air will create the structures that are required for the **Screenshot**object in the **Object browser** and will activate the object.

▶ The screenshot will be available in the **Report Generation** window.

▶ SICAT Air copies a screenshot to the clipboard.

Continue with the section *Preparing handouts [▶Page 124 - SIDEXIS XG]*.

27.2 PREPARING HANDOUTS

General information on patient information can be found in the section *Patient information [▶Page 120 - SIDEXIS XG]*.

The following actions are available for preparing handouts:

- Opening the **Report Generation** window
- Changing handout settings
- Preparing elements

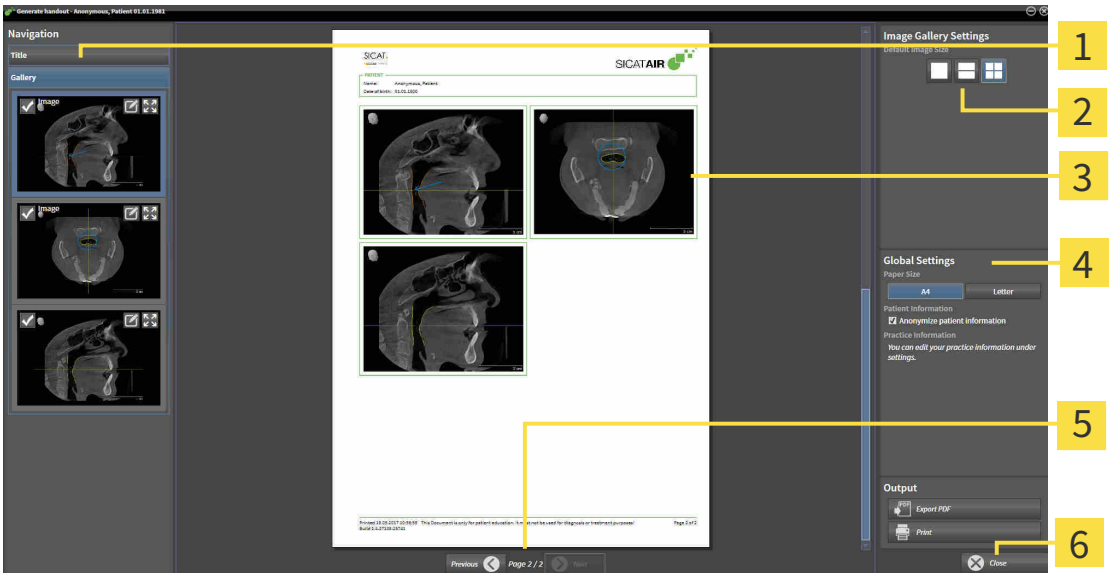
OPENING THE “REPORT GENERATION" WINDOW

☑ You have created at least one **Image** object or one **Screenshot** object.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 49 - SIDEXIS XG]*.

- Click on the **Create Patient Information Report** icon.

▶ The **Report Generation** window opens:



1	**Gallery** area	4	**Global Settings** area
2	Buttons for arranging the images	5	Page navigation
3	Preview	6	**Close** button

CHANGING HANDOUT SETTINGS

☑ The **Report Generation** window is already open.

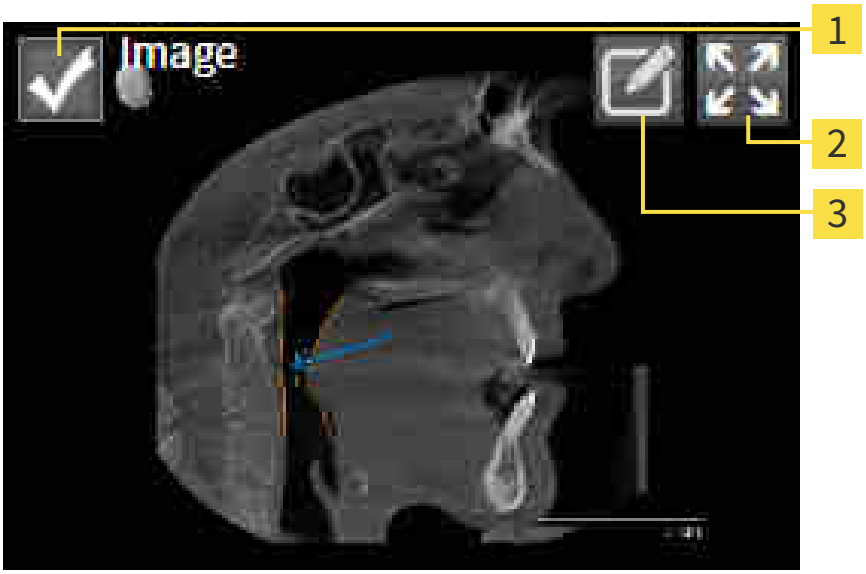
1. Click on the icon for the desired arrangement of the images in the **Image Gallery Settings** area.
   ▶ SICAT Air shows the images according to the selected settings.
2. Click on the row with the button with the desired paper size in the **Global Settings** area.
   ▶ SICAT Air changes the paper size according to the selected setting.
3. Activate or deactivate the **Anonymize patient information** check box.
   ▶ SICAT Air shows the actual patient information or anonymized patient information according to the selected setting.

PREPARING ELEMENTS FOR HANDOUTS

The **Report Generation** window shows screenshots from **Image** objects and screenshots from **Screenshot** objects. Information on this can be found in the section *Creating images and screenshots [▶Page 121 - SIDEXIS XG]*.

To prepare elements for handouts, proceed as follows:

☑ The **Report Generation** window is already open.



1 Check box for hiding and showing

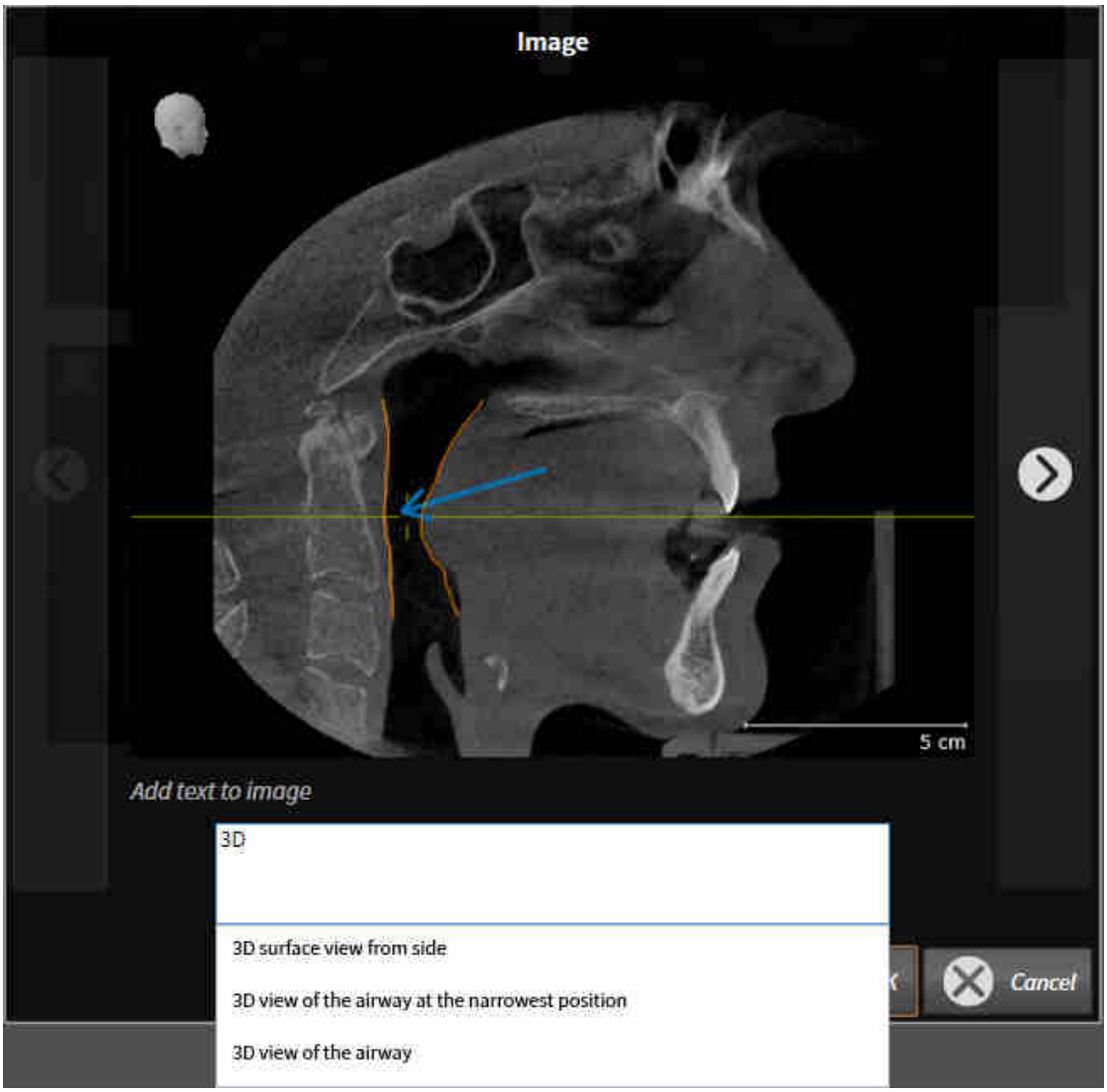
2 **Show image on single page** icon

3 **Edit image description** icon

1. If you want to hide an element on the handout, deactivate the corresponding check box for the element.
   ▶ SICAT Air hides the element on the handout.

2. If you want SICAT Air to show an image alone on a page, click on the **Show image on single page** icon.

3. If you want to add a description to an element, click on the **Edit image description** icon of the element.
   ▶ SICAT Air displays an enlarged version of the element and a text input field:



4. Enter text into the text input field.
   ▶ If the text you have entered is part of an existing text block, SICAT Air will display the list of text blocks.

5. Click on the desired text block.
   ▶ SICAT Air adds the text block to the text input field.

6. If the desired text is not available as a text block, enter a new text.

7. Click on the **OK** button.
   ▶ SICAT Air saves the text as a description of the screenshot.
   ▶ If the text you have entered is not available as a text block, SICAT Air will save the description as a new text block in your user profile.

8. If you wish to change the order of elements on the handout, adjust them using drag & drop.

If you place the mouse pointer on a text block, SICAT Air will display the **Remove this auto complete text from the list** icon. If you click on the **Remove this auto complete text from the list** icon, SICAT Air will remove the text block from your user profile.

You can switch between the elements in the window showing the enlarged versions of the elements by clicking on the **Next item** button and **Previous item** button.

You can completely remove elements from the handout using the **Object browser**. Information on this can be found in the section *Managing objects with the object toolbar [▶Page 54 - SIDEXIS XG]*.

Continue with the section *Generating handouts [▶Page 128 - SIDEXIS XG]*.

SICAT Air takes the practice logo and practice information text from the general settings. Information on this can be found in the section *Using practice information [▶Page 160 - SIDEXIS XG]*.

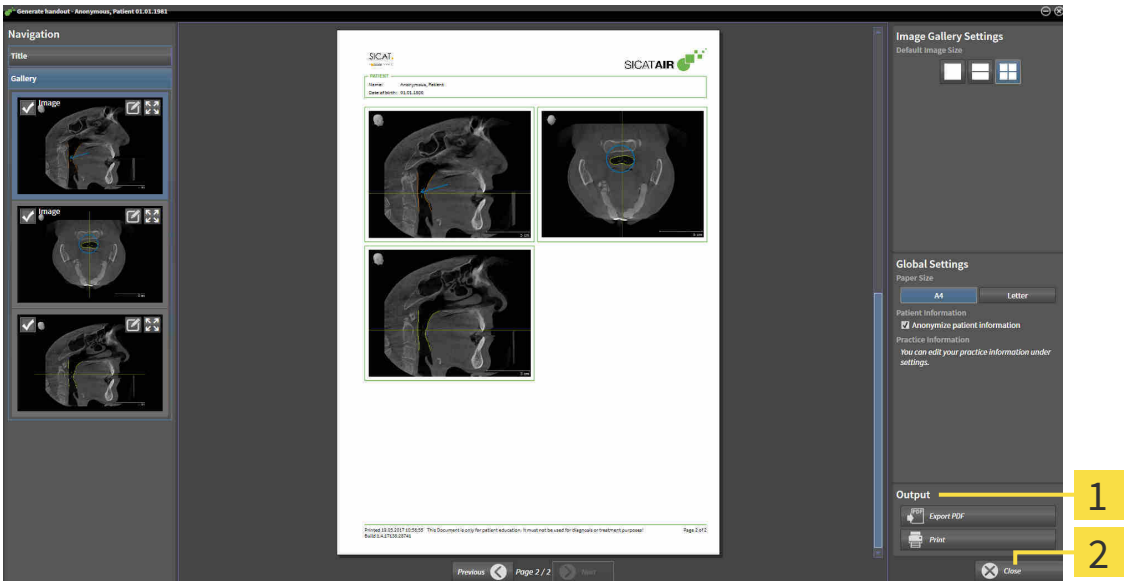
27.3 GENERATING HANDOUTS

The following actions are available for producing handouts:

- Saving a handout as a PDF file
- Printing handouts

SAVING A HANDOUT AS A PDF FILE

☑ The **Report Generation** window is already open.



1 **Output** area

2 **Close** button

1. Click on the **Export PDF** button in the **output** area.
   ▶ A Windows Explorer window opens.
2. Switch to the directory in which you wish to save the handout.
3. Enter a name in the **File name** field and click on **Save**.

▶ The Windows Explorer window closes.

▶ SICAT Air saves the handout as a PDF file.

PRINTING HANDOUTS

Handouts of a suitable quality require a printer that meets certain requirements. Information on this can be found in the section *System requirements [▶Page 7 - SIDEXIS XG]*.

☑ The **Report Generation** window is already open.

1. Click on the **Print** button.
   ▶ The **Print** window opens.
2. Select the desired printer and adjust the print settings where necessary.
3. Click **Print**.

▶ SICAT Air sends the handout to the printer.

28 DATA EXPORT

You can export data.

You can export the currently open patient data and volume data.

This is the study that was opened from SIDEXIS XG.

NOTICE	**Reimporting exported data** You can only import data that was previously exported from SICAT Suite as a SIDEXIS XG plug-in in the stand-alone version of SICAT Suite.

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.

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 131 - SIDEXIS XG]*.
- Export the desired data. Information on this can be found in the section *Exporting data [▶Page 132 - SIDEXIS XG]*.

28.1 OPENING THE “FORWARDING DATA” WINDOW

To export data, you first have to open the**Export data** window.

To open the **Export data** window in SICAT Suite as a SIDEXIS XG plug-in, proceed as follows:

- Click on the **Export data** icon in the **Navigation bar**.

► The **Export data** window opens.

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 132 - SIDEXIS XG]*.

28.2 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 131 - SIDEXIS XG]*.

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.

29 ORDERING PROCESS

To order the desired product, proceed as follows:

- Place the desired planning data for therapeutic appliances in the shopping cart in SICAT Air. Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶Page 134 - SIDEXIS XG]*.
- 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 147 - SIDEXIS XG]*.
- 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 148 - SIDEXIS XG]* or section *Completing an order without an active Internet connection [▶Page 152 - SIDEXIS XG]*.

You can add orders to the shopping cart, which are part of the same 3D X-ray scan. You should then complete the ordering process in full as the contents of the shopping cart will be lost when you close SICAT Suite.

29.1 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 133 - SIDEXIS XG]*.

In SICAT Air, the first part of the ordering process for a therapeutic appliance consists of the following steps:

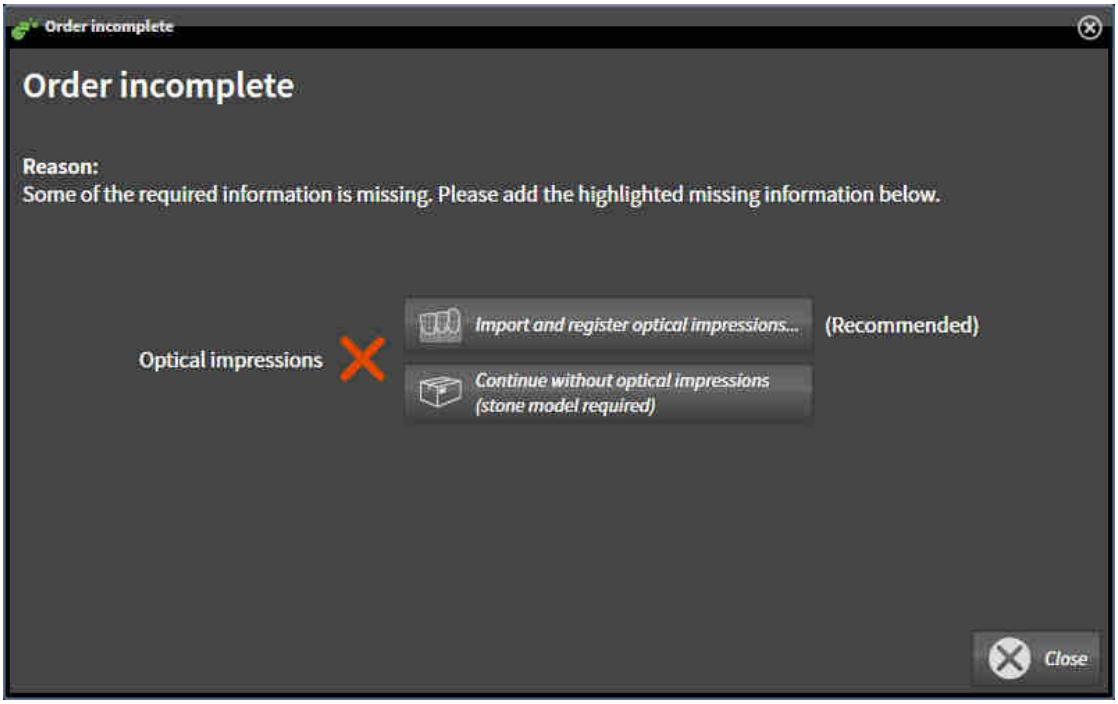
IF YOU HAVE NOT YET ADDED ANY OPTICAL IMPRESSIONS

☑ The 3D X-ray scan has been created in the treatment position.

☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 49 - SIDEXIS XG]*.

1. Click on the **Order therapeutic appliance** icon.

   ▶ The **Order incomplete** window opens:



2. Click on the **Import and register optical impressions** button and import optical impressions corresponding to the 3D X-ray scan. Information on this can be found in the section *Importing and registering optical impressions [▶Page 138 - SIDEXIS XG]*.

▶ The **Order therapeutic appliance** window opens.

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 95 - SIDEXIS XG]*.

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 pressing on the **Continue without optical impressions (stone model required)** button in the **Order incomplete** window. After this, the **Order therapeutic appliance** 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 YOU HAVE ALREADY ADDED OPTICAL IMPRESSIONS

☑ The 3D X-ray scan has been created in the treatment position.

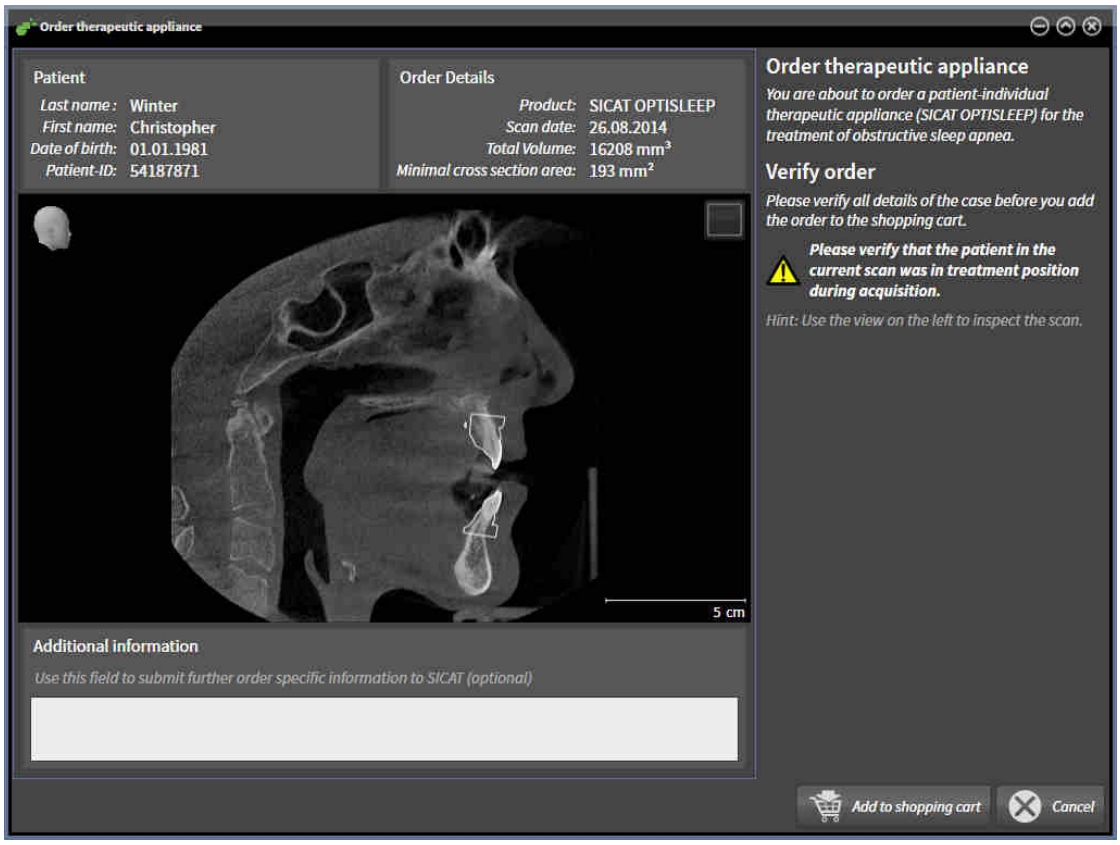
☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 49 - SIDEXIS XG]*.

- Click on the **Order therapeutic appliance** icon.

▶ The **Order therapeutic appliance** window opens.

CHECK YOUR ORDER IN THE “ORDER THERAPEUTIC APPLIANCE" WINDOW

☑ The **Order therapeutic appliance** window is already open.



1. Check in the **Patient** section and **Order Details** section whether the patient information and scan information are correct.
2. Check in the 2D view that the scan has been created in the treatment position.
3. If desired, enter additional information for SICAT in the **Additional information** field.
4. Click on the **Add to shopping cart** button.

▶ SICAT Air places the desired planning data for therapeutic appliances in the SICAT shopping cart.

▶ The **Order therapeutic appliance** window closes.

▶ SICAT Air opens the SICAT Suite shopping cart.

As long as there is an order in the shopping cart, you can no longer overwrite optical impressions of a plan. This is only possible once more when you have completed or deleted the order. If you overwrite or delete optical impressions of a plan, you cannot order the same treatment position again.

You can cancel the order by clicking on **Cancel**.

Continue with the section *Checking the shopping cart and completing the order [▶Page 147 - SIDEXIS XG]*.

29.2 OPTICAL IMPRESSIONS

You can import and register optical impressions only for X-ray data that has been created by Sirona 3D-X-ray devices.

SICAT Air can show matching X-ray data and optical impressions for the same patient simultaneously. The combined illustration provides additional information for analysis and diagnosis. In addition, the treatment implementation is based on optical impressions.

The following actions are required to use data with optical impressions in SICAT Air:

- Importing a file with optical impressions consisting of a lower jaw scan and upper jaw scan, which contains data with optical impressions from an optical impression system, such as CEREC with an open GALILEOS license
- Registering optical impressions on X-ray data

SICAT Air supports the following file formats for optical impressions:

- SIXD files which contain an optical impression of the maxilla and an optical impression of the mandible
- SSI files which contain an optical impression of the maxilla and an optical impression of the mandible
- STL files which contain an optical impression of the maxilla or an optical impression of the mandible (**SICAT Suite STL Import** license required)

The following tools are available for optical impressions:

- *Importing and registering optical impressions [▶Page 138 - SIDEXIS XG]*
- *Re-using optical impressions from other SICAT applications [▶Page 144 - SIDEXIS XG]*
- Activating, hiding and showing optical impressions - Information on this can be found in the section *Managing objects with the object browser [▶Page 52 - SIDEXIS XG]*.
- Focusing on optical impressions and removing optical impressions – Information on this can be found in the section *Managing objects with the object toolbar [▶Page 54 - SIDEXIS XG]*.

Optical impressions in STL format require additional steps during import. Information on this can be found in the section *Additional steps for optical impressions in STL format [▶Page 143 - SIDEXIS XG]*.

29.3 IMPORTING AND REGISTERING 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.

To enable you to check whether 3D X-ray data and optical impressions match, the **Import and register optical impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

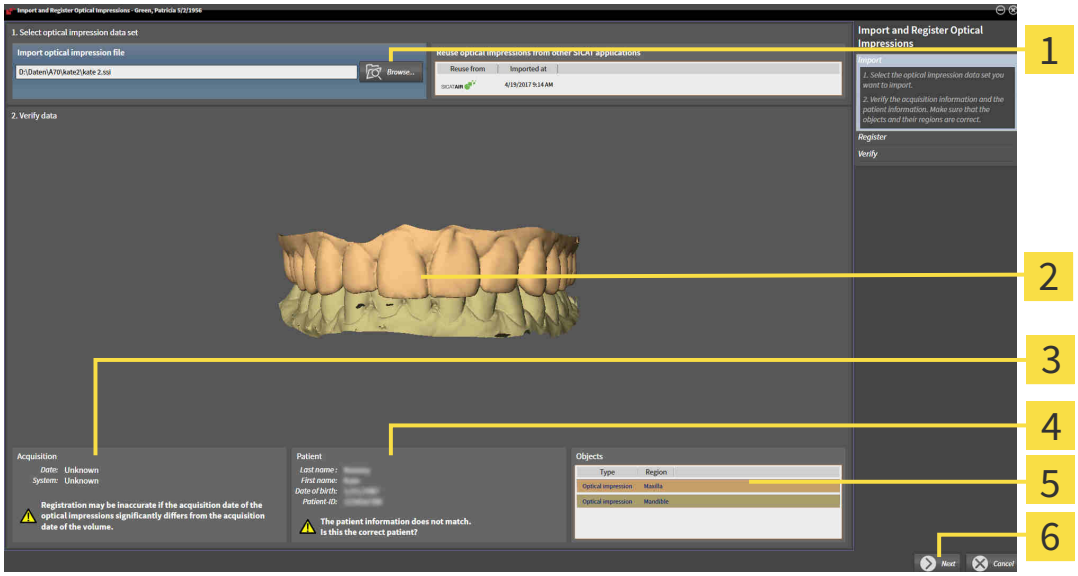
You can use the **Inspection Window** to check whether an optical impression is precisely aligned to the X-ray data. You can move the **Inspection Window** and scroll through the slices in the **Inspection Window**.

General information on optical impressions can be found in the section *Optical impressions [▶ Page 137 - SIDEXIS XG]*.

To import and register optical impressions, proceed as follows:

☑ The **Order** 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 **Browse** button.
   ▶ The **Open Optical Impression File** window opens.
3. In the **Open Optical Impression File** window, select the desired optical impressions file and click on **Open**.
   ▶ The **Open Optical Impression File** window closes.
   ▶ SICAT Air imports the selected optical impressions file:

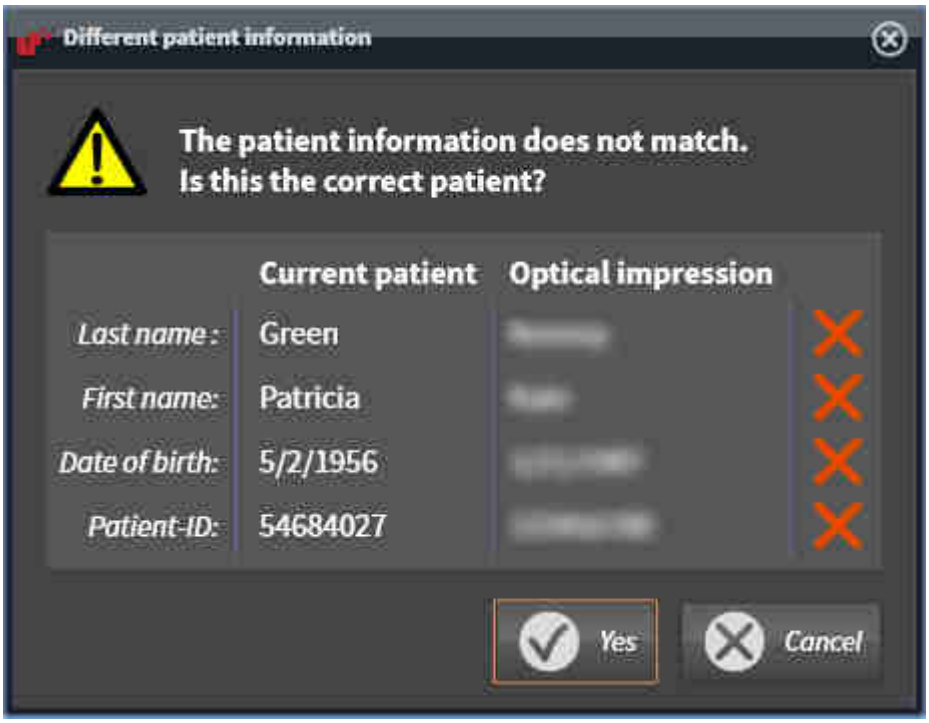


1	**Import optical impression file** area	4	Patient information
2	**3D** view of optical impressions	5	List of objects
3	Scan information	6	**Next** button

4. Check the scan information and patient information.
5. Make sure that the objects and their regions are correct. The background color in the list of objects matches the color of the objects in the **3D** view.

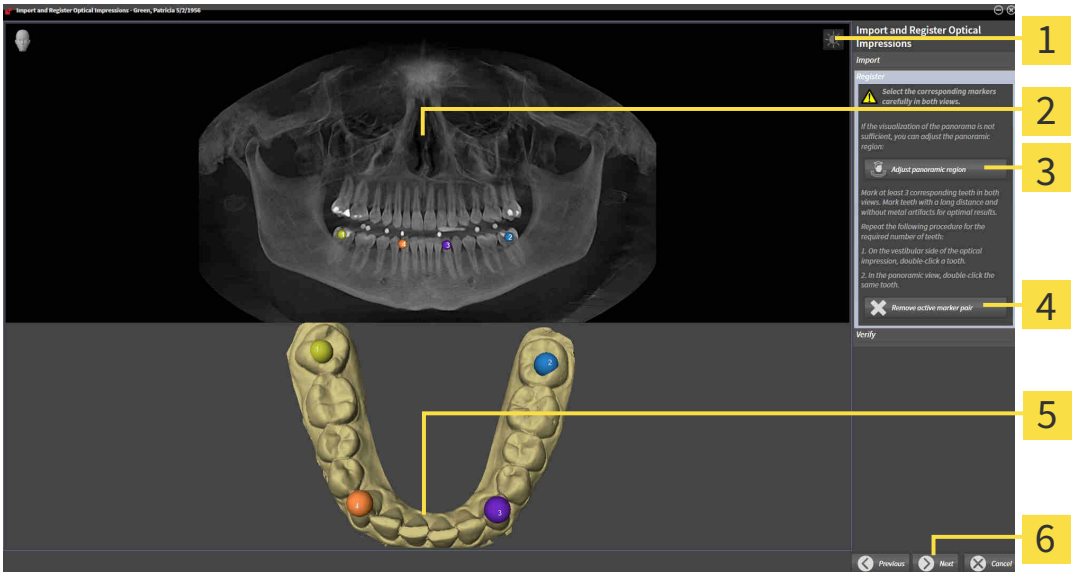
6. Click **Next**.

   ▶ If the patient data in the 3D X-ray scan and in the optical impression differ,SICAT Air will open the **Different patient information** window:



7. Compare the patient information. If you are sure that the optical impression matches the current patient, click on the **Yes** button.

   ▶ The **Register** step opens for the first optical impression:



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

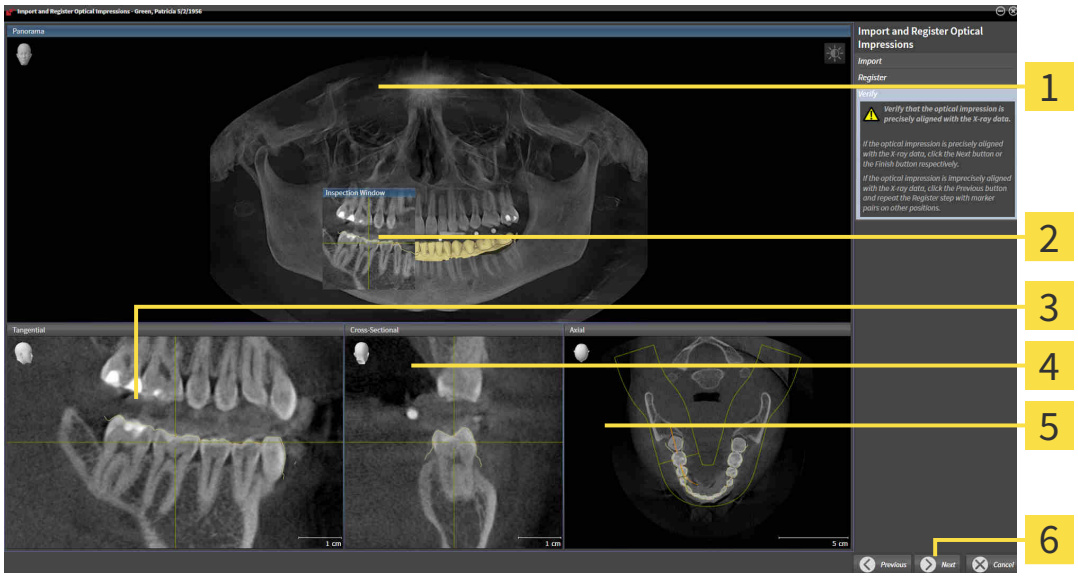
8. For the first optical impression, double click the same tooth both in the **Panorama** view and on the vestibular side of the optical impression in the **3D** view. Make sure that there is a large distance between individual teeth and mark only teeth without metal artifacts. Repeat this step until 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 first optical impression.

9. Click **Next**.

   ▶ SICAT Air calculates the registration of the first optical impression with the X-ray data.

   ▶ The **Verify** step opens for the first optical impression:



1 **Panorama** view	4 **Cross-Sectional** view
2 **Inspection Window**	5 **Axial** view
3 **Tangential** view	6 **Next** button

10. Check whether the optical impression is precisely aligned to the X-ray data in the 2D slice views. Scroll through the slices and check the contours shown.

11. 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.

12. If the first optical impression is precisely aligned to the X-ray data, click on the **Next** button.

    ▶ The **Register** step opens for the second optical impression:

13. For the second optical impression, 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 there is a large distance between individual teeth and mark only teeth without metal artifacts where possible. Repeat this step until you have marked at least three matching teeth in both views. You can improve the accuracy of the registration by marking up to five teeth.

    ▶ Markings with different colors and numbers in both views will display corresponding teeth in the second optical impression.

14. Click **Next**.

▶ SICAT Air calculates the registration of the second optical impression with the X-ray data.

▶ The **Verify** step opens for the second optical impression:

15. Check whether the optical impression is precisely aligned to the X-ray data in the 2D slice views. Scroll through the slices and check the contours shown.

16. 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. You can improve the accuracy of the registration by marking up to five teeth.

17. If the second optical impression is precisely aligned to the X-ray data, click on the **Finish** button.

▶ The **Import and register optical impressions** wizard closes.

▶ SICAT Air adds the selected optical impressions to the **Object browser**.

▶ SICAT Air 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 71 - SIDEXIS XG]*.
- 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 95 - SIDEXIS XG]*.
- If you wish to remove a certain marker pair in the **Register** step, you can select a marker from the pair and click on the **Remove active marker pair** button.
- If you want to cancel importing and registering optical impressions, click **Cancel**.

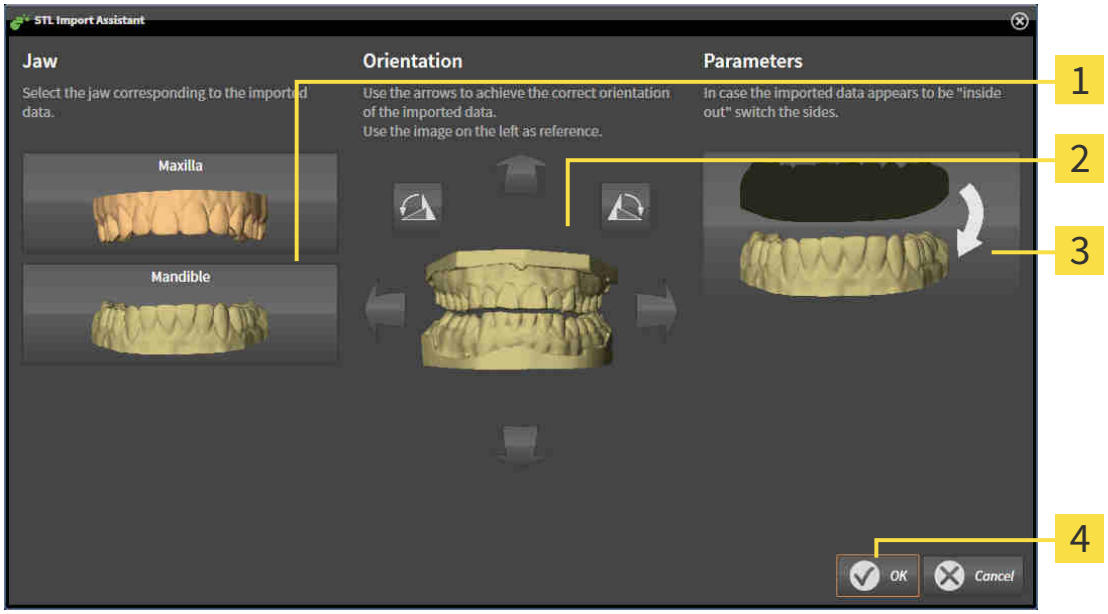
29.4 ADDITIONAL STEPS FOR OPTICAL IMPRESSIONS IN STL FORMAT

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 and registering optical impressions [▶Page 138 - SIDEXIS XG]*.

   ▶ The **STL import wizard** window opens:



1	Selection of the jaw	3	Switching inside and outside
2	Changing the orientation	4	**OK** button

2. In the **jaw** area, select whether the optical impression contains the **maxilla** or the **mandibula** 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 **parameter** area.

5. Click on the **OK** button.

6. If required, repeat those steps for a second STL file. SICAT Air automatically attributes the second STL file to the other jaw.

   ▶ SICAT Air displays the imported optical impressions in the **Import and register optical impressions** wizard.

7. Continue with the registration of the optical impressions. Information on this can be found in the section *Importing and registering optical impressions [▶Page 138 - SIDEXIS XG]*.

29.5 RE-USING OPTICAL IMPRESSIONS FROM OTHER SICAT APPLICATIONS

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

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.

To enable you to check whether 3D X-ray data and optical impressions match, the **Import and register optical impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

General information on the optical impressions can be found in the section *Optical impressions [▶ Page 137 - SIDEXIS XG]*.

To re-use optical impressions from another SICAT application, proceed as follows:

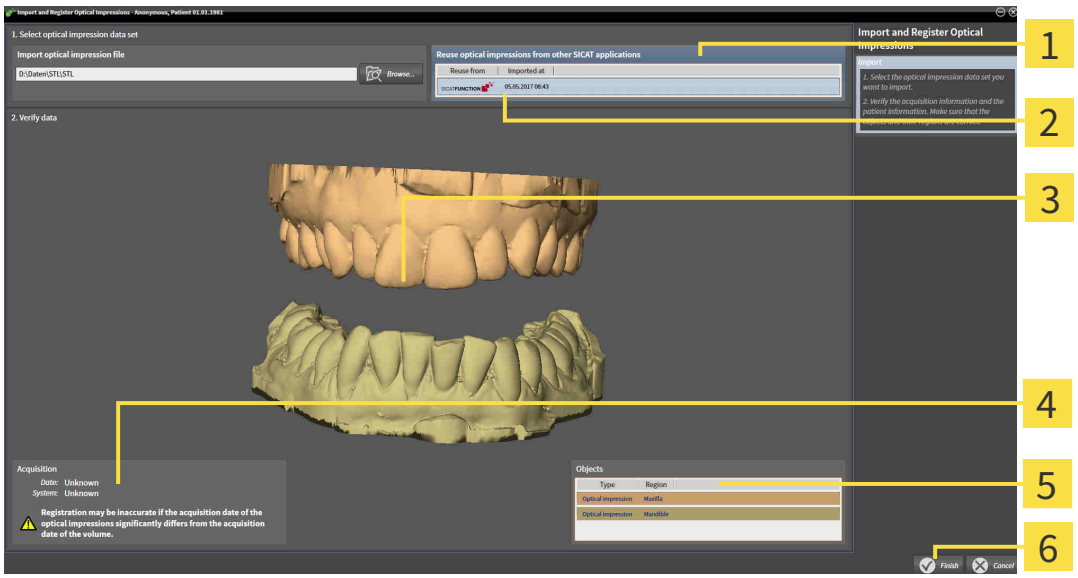
☑ The **Order** workflow step is already expanded.

☑ You have already imported optical impressions for the opened study in another SICAT application, which you have not yet used in SICAT Air.

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 row with the desired optical impressions in the **Reuse optical impressions from other SICAT applications** area.

3. SICAT Air displays the optical impressions selected.



1 **Reuse optical impressions from other SICAT applications** area	4 Scan information
2 List of optical impressions from other SICAT applications	5 List of objects
3 **3D** view of optical impressions	6 **Finish** button

4. Check the scan information and patient information. Make sure that the objects and their regions are correct. The background color in the list of objects matches the color of the objects in the **3D** view.

5. Click on the **Finish** button.

► The **Import and register optical impressions** wizard closes.

► SICAT Air adds the selected optical impressions to the **Object browser**.

► SICAT Air displays the optical impressions selected.

If you want to cancel the transfer of optical impressions from another SICAT application, click **Cancel**.

29.6 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 147 - SIDEXIS XG]*

29.7 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 146 - SIDEXIS XG]*.

1 **PENDING ITEMS** list

2 **Finalize Order** button

1. Check in the **Shopping cart** window whether the desired products are included.
2. Click on the **Finalize 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 148 - SIDEXIS XG]*
- *Completing an order without an active Internet connection [▶Page 152 - SIDEXIS XG]*

29.8 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 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 149 - SIDEXIS XG]*.

▶ 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**.

You can add orders to the shopping cart, which are based on the same 3D X-ray scan. You should then complete the ordering process in full as the contents of the shopping cart will be lost when you close SICAT Air.

If you close SIDEXIS XG and open it again, SICAT Suite will show that the order has been uploaded in full, regardless of the actual status. You can view the actual status in the SICAT WebConnector. Information on this can be found in the section *The SICAT WebConnector [▶Page 150 - SIDEXIS XG]*.

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.

29.9 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.

29.10 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 7 - SIDEXIS XG]*.

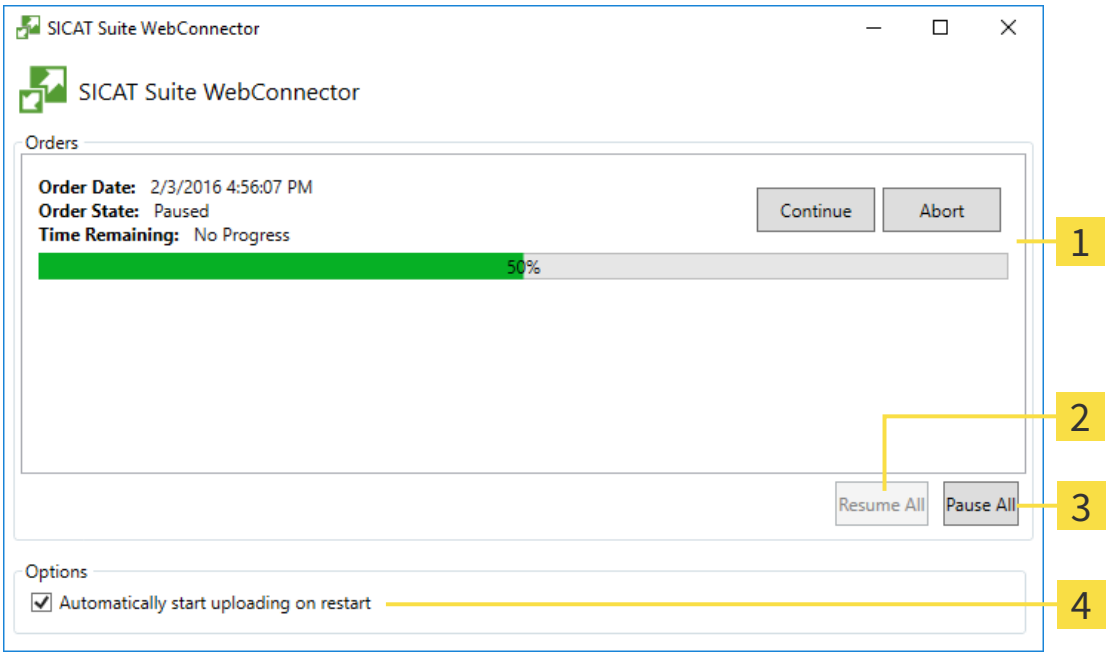
In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

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 Air 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.

29.11 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 **Unable to connect to the 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.

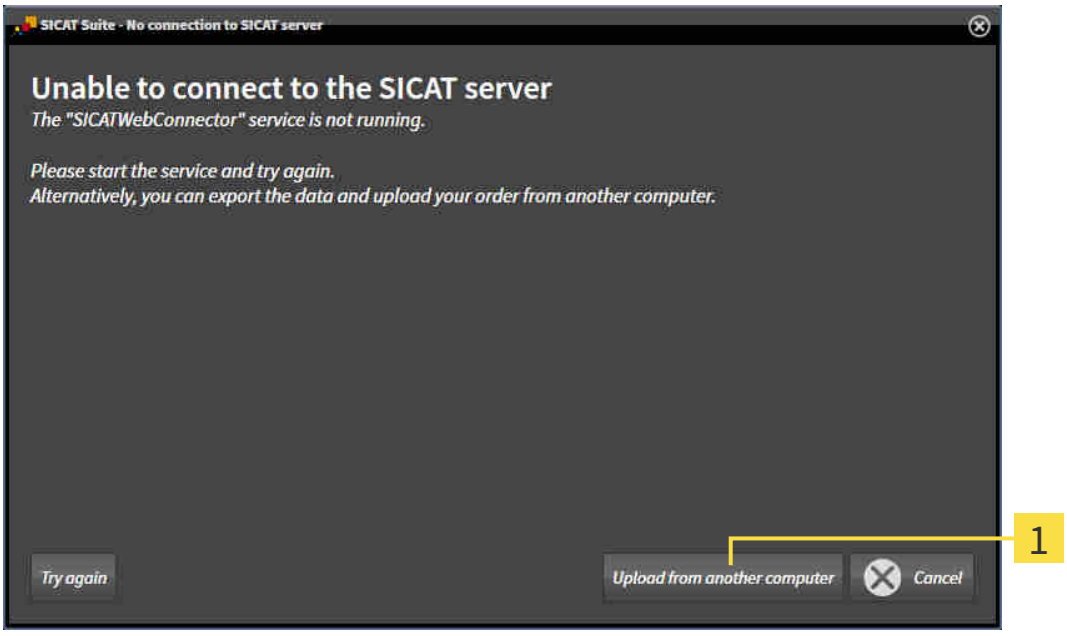
Below the cause, possible steps for solving the problem will be shown.

As an alternative to eliminating the problem, you can upload an order using another computer with an active Internet connection via a web browser. 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.

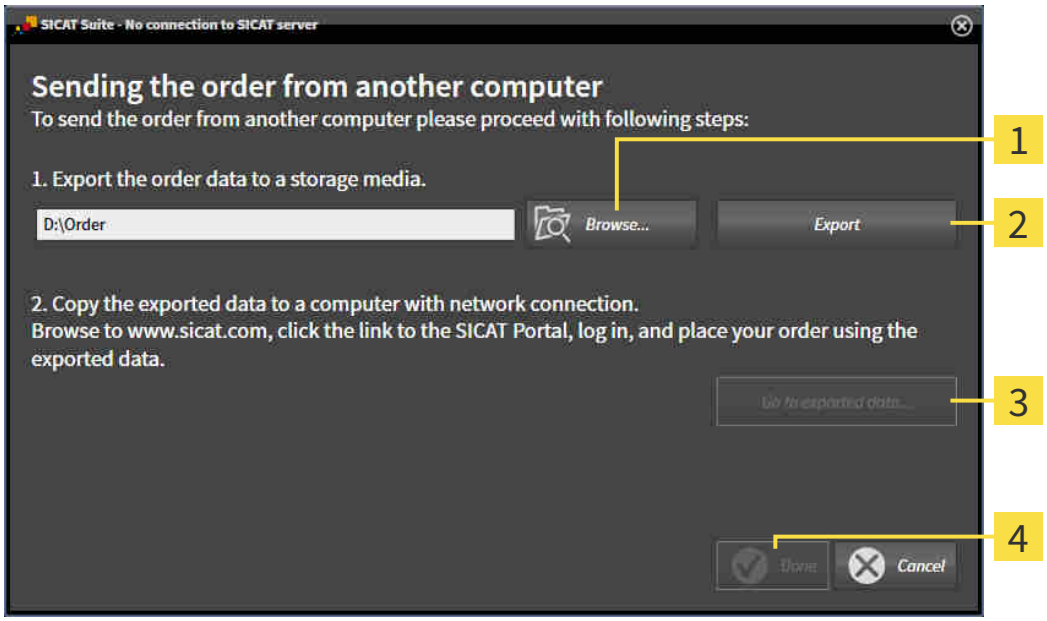
☑ A window will appear with the following message: **Unable to connect to the SICAT server**



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.

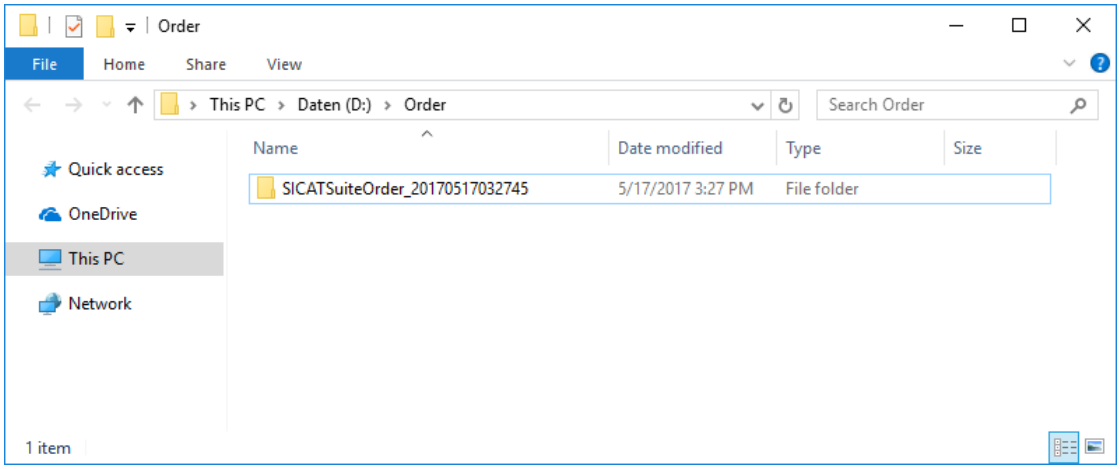
3. Select an existing directory or create a new directory and click on **OK**. Please note that the path to the directory must not be longer than 160 characters.

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 http://www.sicat.de 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 149 - SIDEXIS XG]*.

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.

30 SETTINGS

The versions of SICAT Suite connected to SIDEXIS adopt several settings from SIDEXIS. You can view the values of such settings in SICAT Air, but only make changes in the SIDEXIS 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 156 - SIDEXIS XG]*.
- **Licenses** - Information on this can be found in the section *Licenses [▶Page 39 - SIDEXIS XG]*.
- **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 160 - SIDEXIS XG]*.
- **Visualization** – Changing general visualization settings. Information on this can be found in the section *Changing visualization settings [▶Page 161 - SIDEXIS XG]*.
- **SICAT Air** – Changing application-specific settings of SICAT Air. Information on this can be found in the section *Changing SICAT Air settings [▶Page 163 - SIDEXIS XG]*.

If you change the settings, SICAT Air will apply the changes immediately and saves the settings in your user profile.

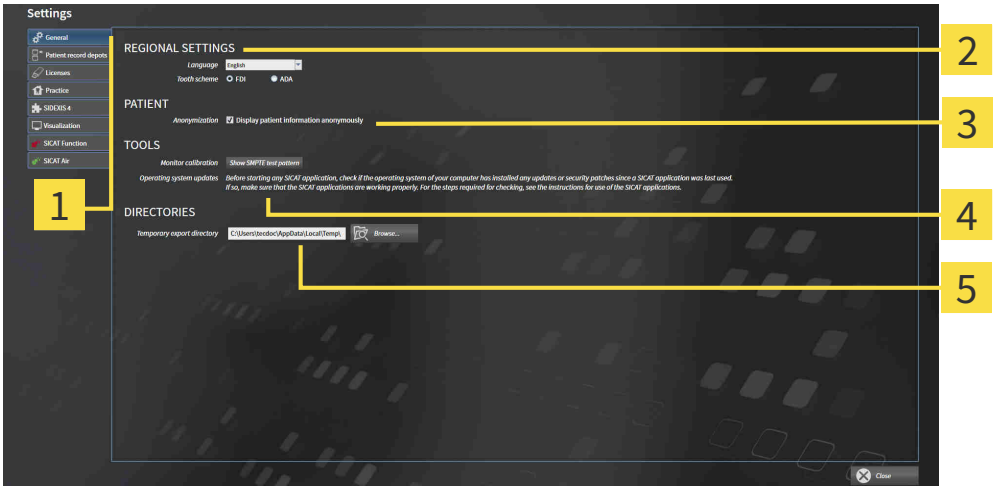
30.1 USING GENERAL SETTINGS

The versions of SICAT Suite connected to SIDEXIS adopt several settings from SIDEXIS. You can view the values of such settings in SICAT Air, but only make changes in the SIDEXIS 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

2 **REGIONAL SETTINGS** area

3 **PATIENT** area

4 **TOOLS** area

5 **DIRECTORIES** area

SICAT Air 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 Air 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.

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 [▶Page 158 - SIDEXIS XG]*.

If you select a language in SIDEXIS Selecting, which SICAT Air does not support, SICAT Air will display English text in the user interface.

If you change the language in SIDEXIS XG, you have to restart SICAT Suite so that the change takes effect.

The supported tooth schemes are FDI and ADA.

30.2 MONITOR CALIBRATION WITH THE SMPTE TEST IMAGE

CAUTION

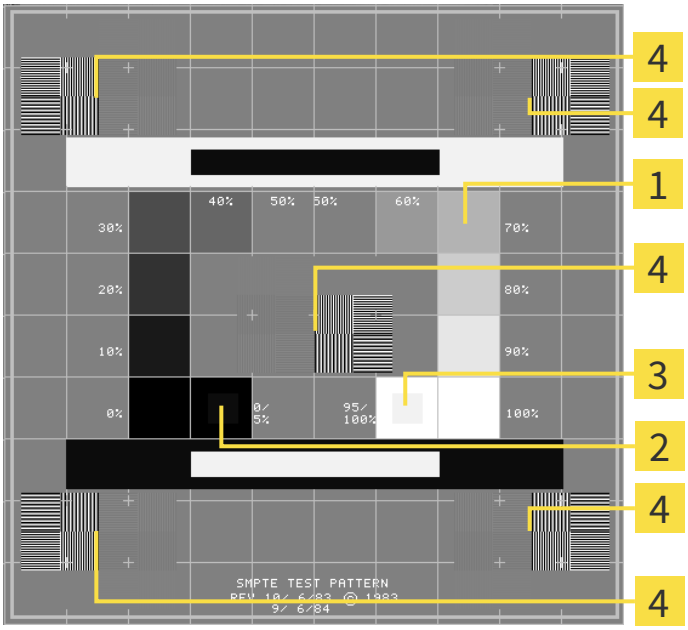
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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.

30.3 USING PRACTICE INFORMATION

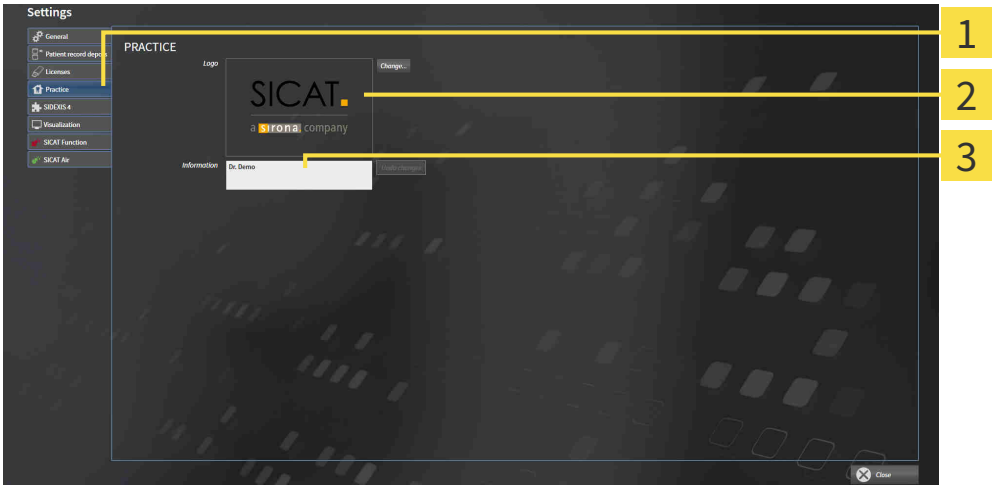
The versions of SICAT Suite connected to SIDEXIS adopt the practice logo and the information text from SIDEXIS. Therefore, you can only view the values of these settings in the SICAT Suite settings. Please make the desired changes to these settings in SIDEXIS.

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 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.

30.4 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.

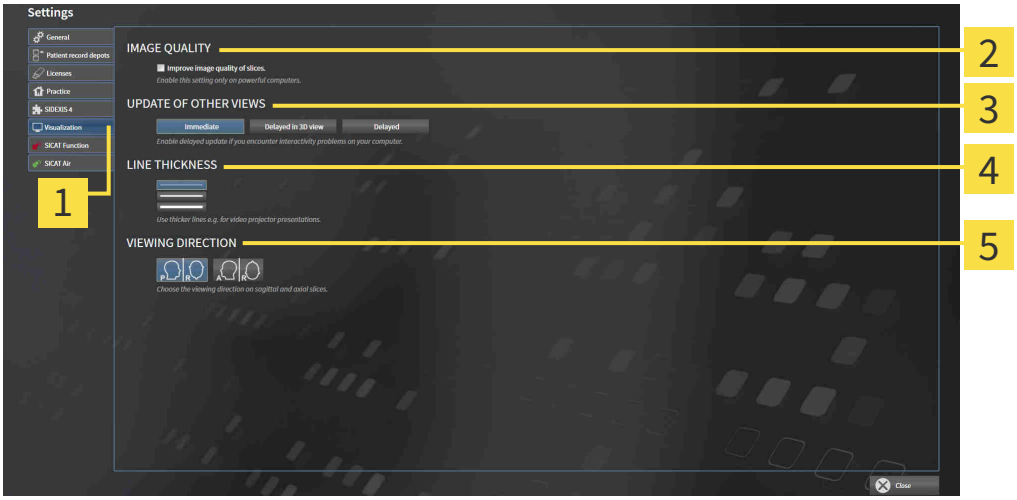
1. Only perform planning if the environmental conditions allow for sufficient visualization quality. For example, check for appropriate lighting.
2. Check whether the display quality is sufficient using the SMPTE test image.

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.

30.5 CHANGING SICAT AIR SETTINGS

SICAT Air settings determine the color gradient of the **Airway** object in SICAT Air.

To change the SICAT Air settings, proceed as follows:

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

2. Click the **SICAT Air** tab.
   ▶ The **SICAT Air** window opens:

1 **SICAT Air** tab

2 **COLOR CODING OF THE CROSS SECTIONS (AIRWAY)** area

3 **Color coding** with sliders

4 **Reset** button

5 **Default value for lower limit (mm²)** field and **Default value for upper limit (mm²)** field

The settings are:

- **Default value for lower limit (mm²)** – defines the lower value of the cross-sectional area in mm^2, from which the **Color coding** starts entirely in red.
- **Default value for upper limit (mm²)** – defines the upper value of the cross-sectional area in mm^2, from which the **Color coding** ends entirely in green.

If you change the values in the fields **Default value for lower limit (mm²)** and **Default value for upper limit (mm²)**, the sliders display the effects on the **Color coding**. If you move the sliders in **Color coding**, the values in the fields adapt accordingly.

You can reset the settings for **Default value for lower limit (mm²)** and **Default value for upper limit (mm²)** to the default settings of SICAT Air by clicking the **Reset** button.

SICAT Air uses the changed default values in two cases:

- You open a 3D X-ray scan for the first time:
- You reset the values of an **Airway** object.

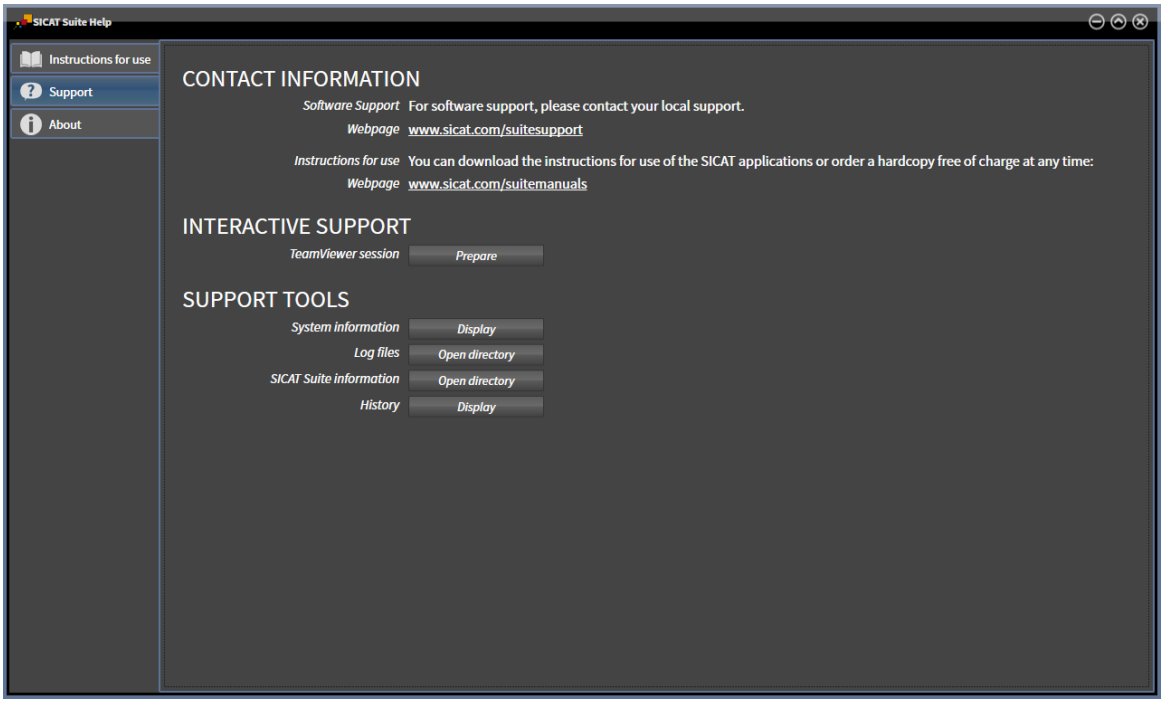
31 SUPPORT

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 165 - SIDEXIS XG]*



31.1 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:

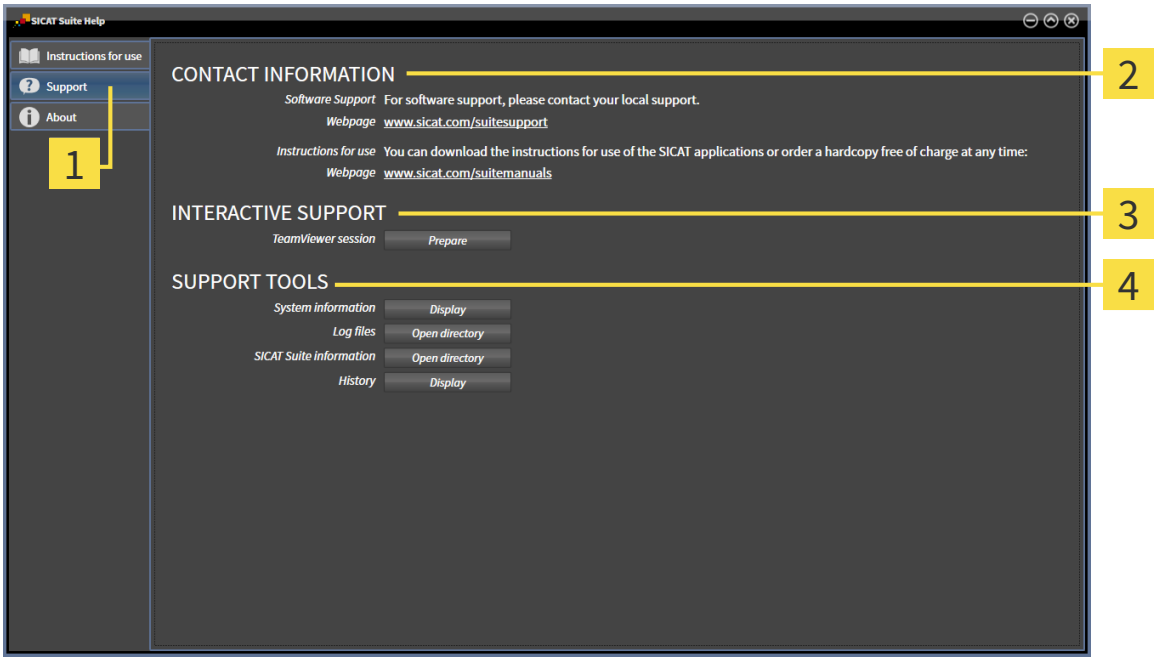
- **Instructions for use** - Information on this can be found in the section *Opening the instructions for use [▶Page 38 - SIDEXIS XG]*.

- **Support** - Information on this can be found in the section *Contact information and support tools [▶Page 166 - SIDEXIS XG]*.

- **About** - Information on this can be found in the section *Info [▶Page 167 - SIDEXIS XG]*.

31.2 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 Air will open a TeamViewer session.

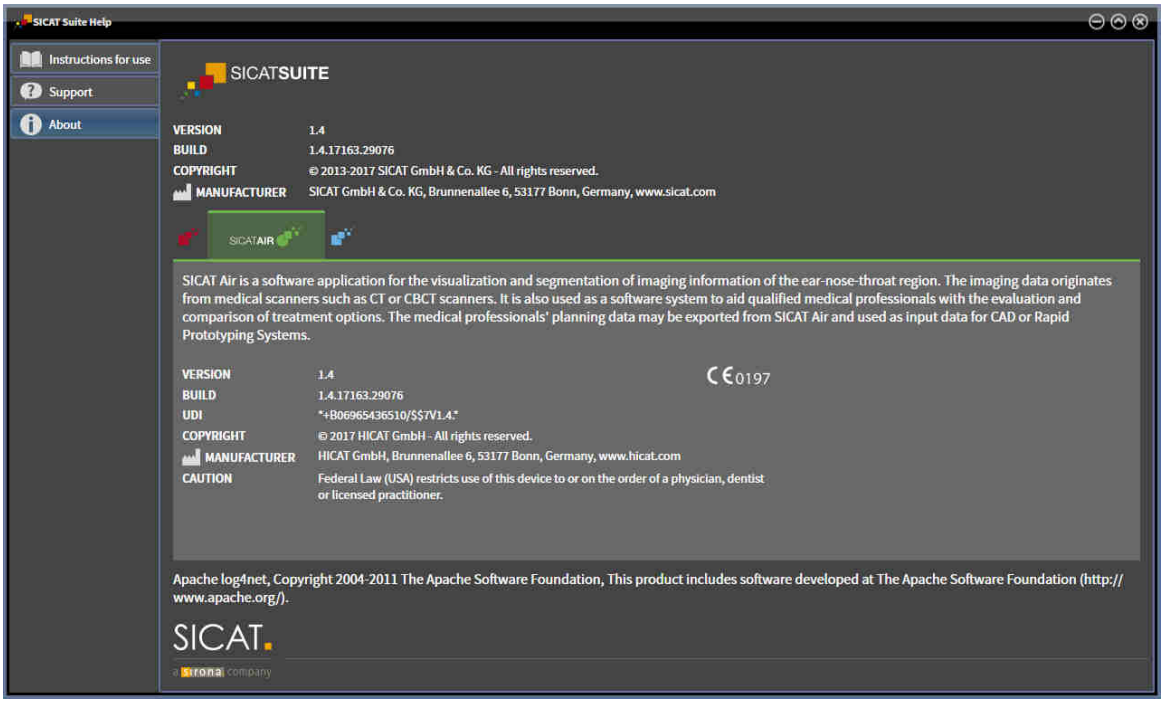
TeamViewer is software that allows mouse and keyboard commands to be remotely controlled and to transfer the contents of a computer's monitor via an active Internet connection. TeamViewer will only establish a connection if you explicitly consent. To do so, provide the SICAT support team with a TeamViewer 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 Air will open the system information of the operating system.
- Click on the **Open directory** button in the **Log files** area and SICAT Air 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 Air will show the message window.

31.3 INFO

The **About** window displays information on SICAT Suite and all installed SICAT applications on several tabs:



32 OPENING READ-ONLY DATA

You can open data as read-only.

Which data you can view in SICAT Air as a SIDEXIS XG plug-in without being able to make and save changes depends on the status of your license and the use of the current 3D X-ray scan:

TYPE OF SICAT AIR LICENSE	ANOTHER SIDEXIS XG WORKSTATION IS USING THE 3D X-RAY SCAN	VIEWING WITHOUT CHANGES POSSIBLE?
None	Irrelevant	No
Viewer	Irrelevant	Yes
Full version	Yes	Yes
Full version	No	No

In the following cases, you can view SICAT Air studies without a Viewer license:

- In SIDEXIS 4, export SICAT Air studies and import the data to SIDEXIS on another computer. SICAT Air must be installed on this computer.
- In SIDEXIS 4, create a Wrap&Go package which contains SICAT Air studies. Install the Wrap&Go package on another computer. Then, install SICAT Air.

In both cases you cannot make or save any changes to the planning.

You can find more information about multi-workstation support of SIDEXIS XG in the SIDEXIS XG instructions for use.

To open data without being able to make and save changes, proceed as follows:

1. Start SICAT Suite with a 3D X-ray scan from Sirona SIDEXIS XG. Information on this can be found in the section *Starting SICAT Suite [▶Page 34 - SIDEXIS XG]*.
   ▶ SICAT Suite opens the 3D X-ray scan and planning project from the current SIDEXIS XG examination.
   ▶ If another SIDEXIS XG workstation is using the current 3D X-ray scan, a window opens and displays the following message: **This patient record is being used by another user and can only be opened in read-only mode**
2. Click the **Open in read-only mode** button in the message window.

▶ SICAT Suite opens the 3D X-ray scan and planning project from the current SIDEXIS XG examination.

The following conditions must be met for you to be able to adjust volume orientation and panoramic curve.

- You have activated a license which allows you to open 3D X-ray scans or SICAT Air studies. Information on this can be found in the section *Licenses [▶Page 39 - SIDEXIS XG]*.
- No other corresponding study of SICAT Function or any other SICAT application contains objects relating to the 3D X-ray scan which would be affected by a change in the volume orientation or the panoramic curve.

If the conditions are not met, SICAT Air deactivates the buttons and control elements that you can use for changing volume orientation or panoramic curves in the**Adjust Volume Orientation and Panoramic Region** window.

33 CLOSING SICAT SUITE

- Click on the **Close** button in the top right-hand corner of SICAT Air.

► All SICAT applications will close.

► SIDEXIS stores the changed planning projects of all SICAT applications that are running as a full version.

34 KEYBOARD SHORTCUTS

If you move the mouse pointer over certain functions, SICAT Air 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 **Segment the airway** window of SICAT Air:

KEYBOARD SHORTCUTS	DESCRIPTION
N	Navigation
B	Remove from the respiratory path
A	Add to the respiratory path
E	Remove non-required oral area

35 UNINSTALLING SICAT SUITE

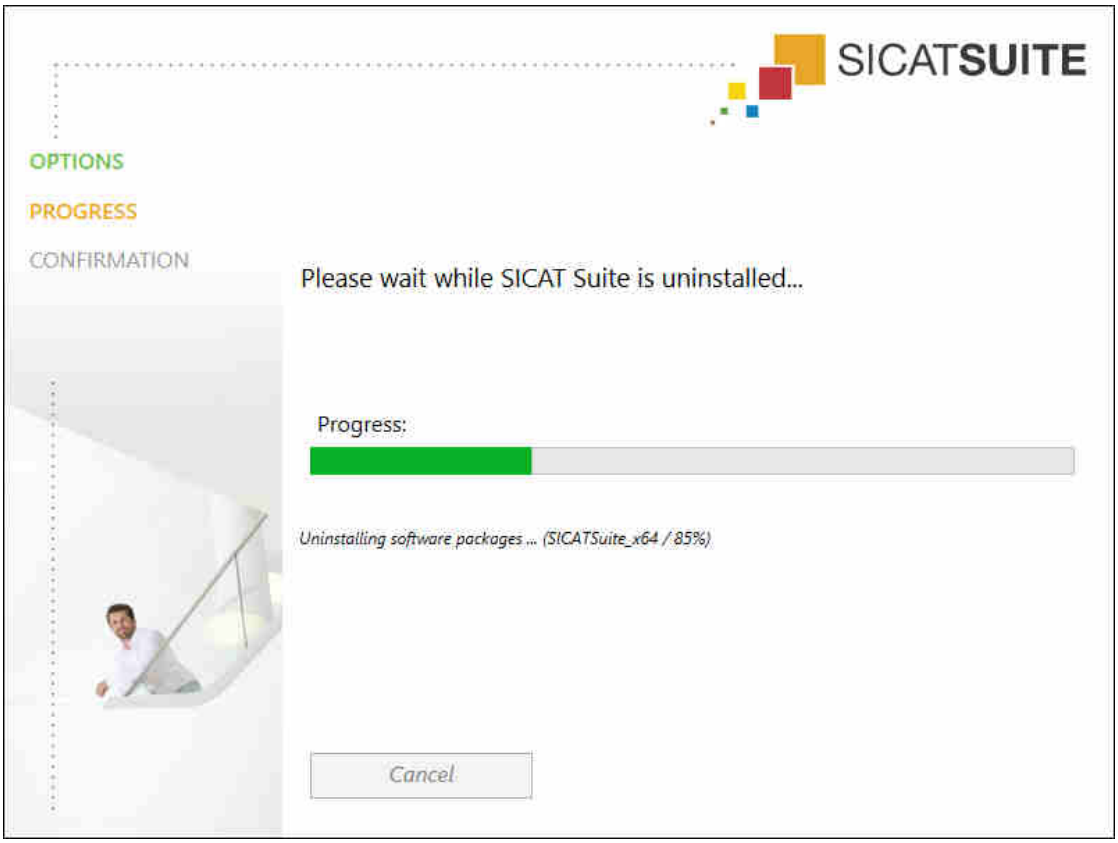
The SICAT Suite uninstallation program maintains active licenses on your computer. Therefore, SICAT Suite warns you that it will not automatically delete licenses before the uninstallation. If you no longer wish to use SICAT Suite on this computer, deactivate the licenses before uninstallation. Information on this can be found in the section *Returning licenses to the license pool [▶Page 46 - SIDEXIS XG]*.

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 150 - SIDEXIS XG]*.

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.

36 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.

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.

CAUTION

3D X-ray scans of insufficient quality may result in the quality of the segmented airway and airway profile being insufficient.

Only use 3D X-ray scans of a sufficient quality to create the segmented airway and airway profile with a sufficient quality and resolution.

AIRWAY COMPARISON

CAUTION

The use of incorrect data for the airway comparison may result in an incorrect diagnosis and treatment.

Use the correct patient, the correct 3D X-ray scans, the correct airway segmentation data, the correct interesting area and the correct size when selecting airway profiles for the airway comparison.

PATIENT INFORMATION

CAUTION

Using the handout for diagnosis purposes may result in an incorrect diagnosis and treatment.

Only use the visualization functions for medical images of the software user interface to perform a diagnosis on medical images and to plan the treatment.

37 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

GLOSSARY

ADA

American Dental Association

Airway

The term airway labels the object, which SICAT Air creates during segmentation. It is the upper part of the airways that is relevant in SICAT Air.

Airway analysis area

The term airway analysis area labels the bar in the airway workspace, which contains the relevant measured values and airway profile.

Airway area

The airway region is the region of interest, which you define in the segmentation window using the anatomical reference points and lateral size.

Airway profile

Designates the 2D diagram, which shows the cross-sectional areas along the segmented airway.

Application

SICAT applications are programs belonging to SICAT Suite.

Color coding

Color coding highlights the size of the sections of the airway using different colors.

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.

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.

Registration

Spatial leveling

Segmentation

Segmentation is the process, in which the software separates certain areas from the volume.

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.

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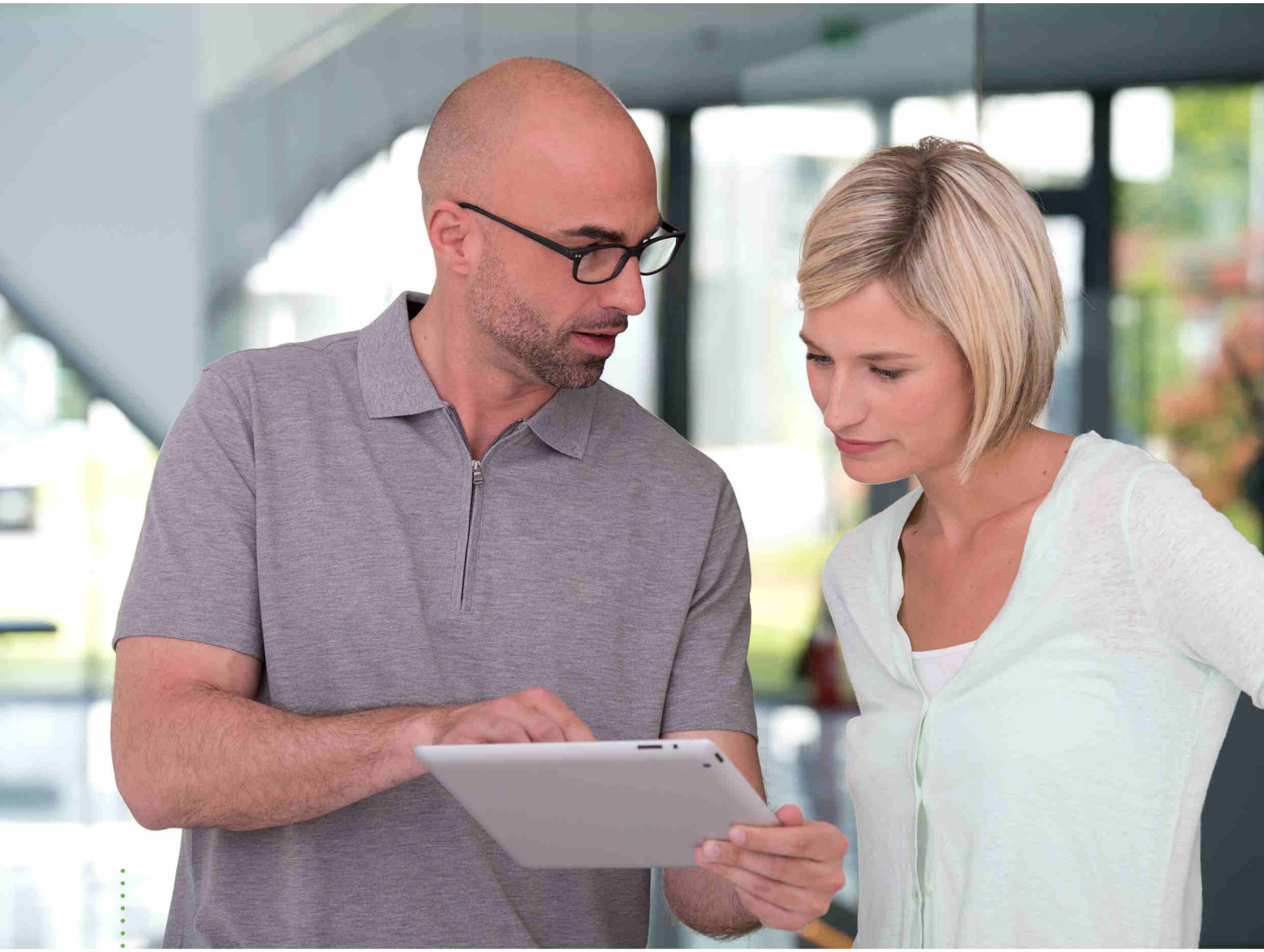
SICATAIR



SICAT AIR *VERSION 1.4*

Instructions for use | English | Standalone

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1 INTENDED USE AND INDICATIONS FOR USE

SICAT Air is a software for visualization and segmentation of imaging information of the ear-nose-throat region. The imaging data originates from medical scanners such as CT or CBCT scanners. It is also used as a software system to aid qualified medical professionals with the evaluation and comparison of treatment options. The medical professionals' planning data may be exported from SICAT Air and used for the realization of the planned therapy.

INDICATIONS FOR USE

SICAT Air is a software application for:

- Aiding diagnosis in the ear-nose-throat region
- Aiding treatment planning in the ear-nose-throat region
- Aiding comparisons of different treatment options
- Aiding treatment planning for oral appliances

2 VERSION HISTORY

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 41 - 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 Air supports different resolutions of the 3D X-ray scans that are to be compared for airway comparison.
- The handout creation window features a preview function.

VERSION 1.3

- SIDEXIS 4 module
- Support of Italian, Spanish, Portuguese, Dutch and Russian languages
- The version number of SICAT Air matches the version number of SICAT Suite.
- Airway comparison
- Text blocks for handouts

VERSION 1.0

- Initial release
- Support of German, English, French and Japanese 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 (64 Bit, Desktop) Windows 8.1 (64 Bit, Desktop) Windows 10 (64 Bit, Desktop)
Web browser	Microsoft Internet Explorer 11 or higher Mozilla Firefox 39 or higher Google Chrome 44 or higher JavaScript must be activated. A standard browser must be set.
PDF viewer	Adobe Reader DC or higher, for example
SIDEXIS XG with SICAT Suite as a plug-in	Version 2.6.1 (64 Bit)

SIDEXIS 4 with SICAT Suite as a module	Version 4.2 SiPlanAPI V4
SIDEXIS 4 with SICAT Suite as a plug-in	Version 4.1.2 (64 Bit)

*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 207 - Standalone]*

SOFTWARE PREREQUISITES

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

- Microsoft .NET Framework 4.5
- CodeMeter license management software 6.30d
- 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 182 - Standalone]*.

4 SAFETY INFORMATION

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

- *Definition of the danger levels [▶Page 11 - Standalone]*
- *Qualifications of operating personnel [▶Page 12 - Standalone]*
- *Safety instructions [▶Page 224 - 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.

Only educated or properly trained personnel may use the software.

If you are undergoing education or training or if you are using this software within the scope of general training, you may use the software only under the constant supervision of a qualified person.

You must meet the following prerequisites to use the software:

- You have read the instructions for use.
- You are familiar with the basic structure and functions of the software.
- You are able to identify software malfunctions and take suitable steps where necessary.

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.

▶ Final results are marked with this icon.

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

6 OVERVIEW OF THE INSTRUCTIONS FOR USE

SICAT Air 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 17 - Standalone]*.

SICAT Suite is currently available in three versions. Some operating steps vary, depending on the version used. Therefore, these instructions for use deal with the versions separately:

- SIDEXIS 4 module
- SIDEXIS XG plug-in
- Stand-alone version

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 222 - Standalone]*.

7 OVERVIEW OF SICAT SUITE

SICAT Suite comprises the following parts:

- 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 activate 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 on computers on which SICAT Suite is installed.

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 8 - Standalone]*.

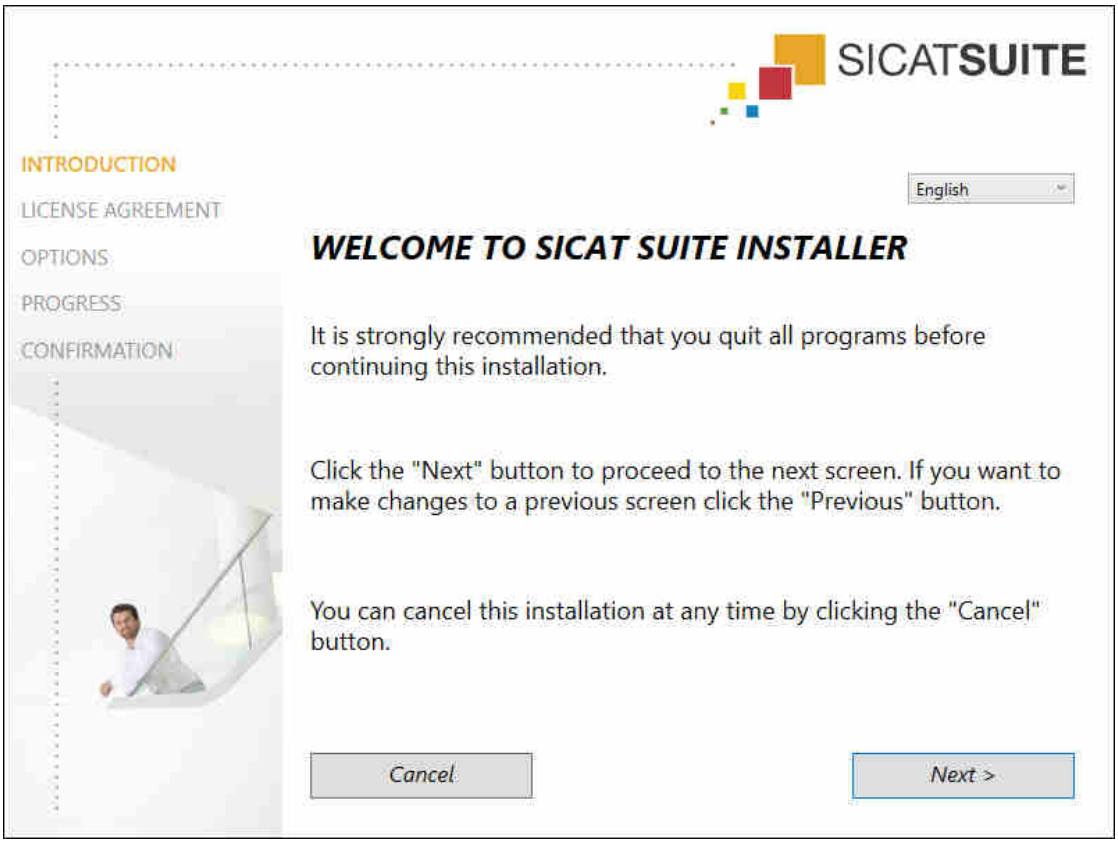
1. Insert the SICAT Suite installation medium into the optical drive of your computer.

   ▶ The **Auto play** window opens.

2. 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:

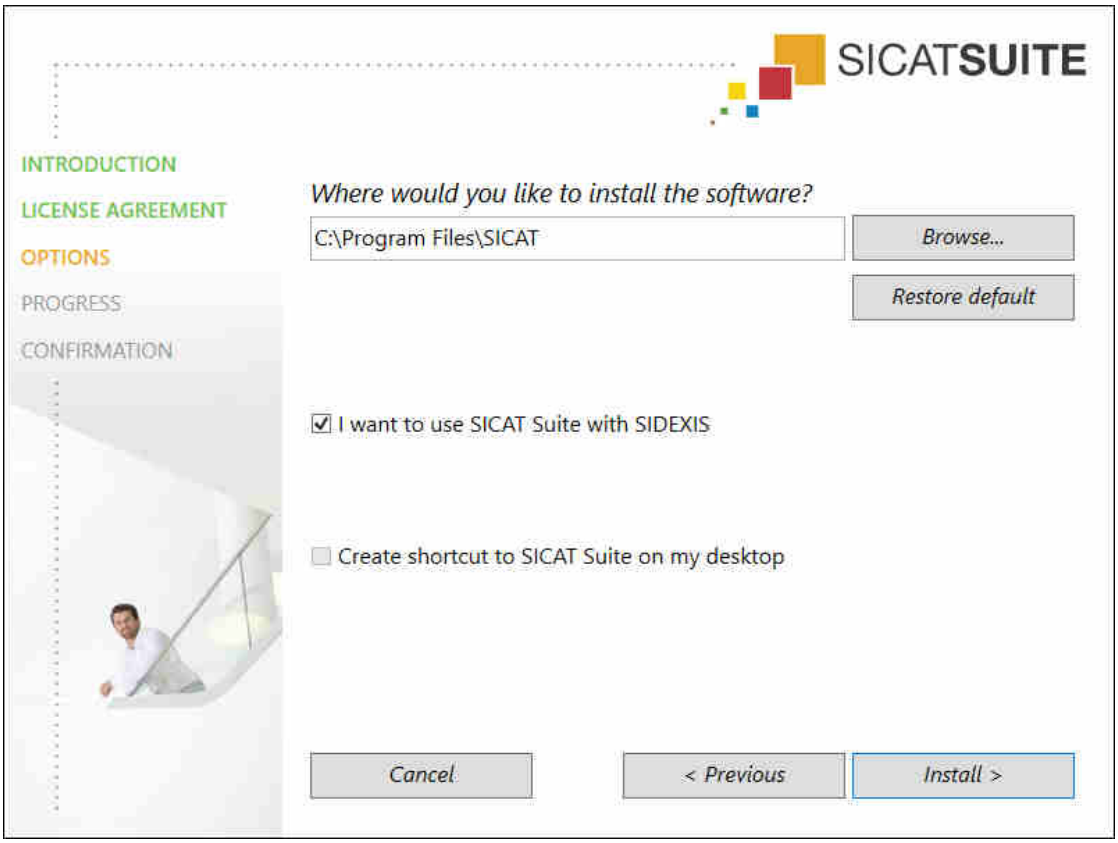


3. Select the desired language for the SICAT Suite installation program in the top right-hand corner of the **INTRODUCTION** window and click on **Next**.

▶ The **LICENSE AGREEMENT** window opens:

4. 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:



5. 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.

6. 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.

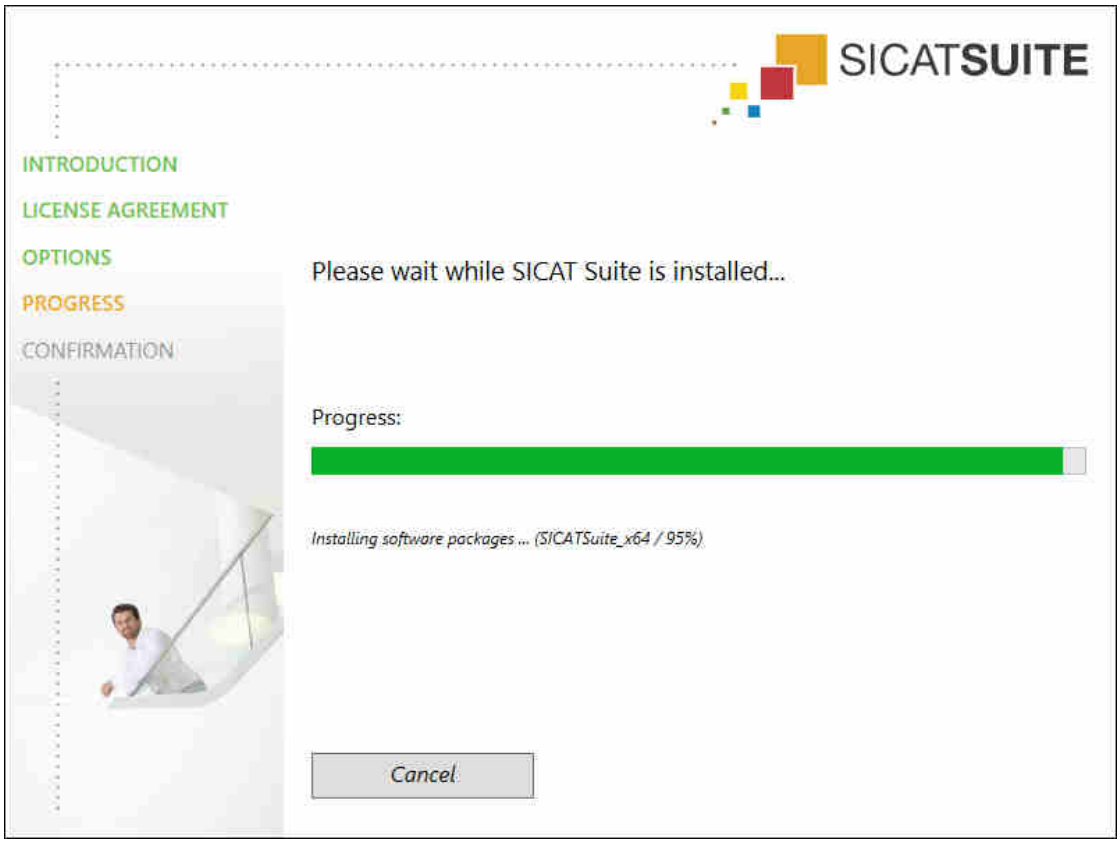
7. If SIDEXIS XG or SIDEXIS 4 is installed on your computer, the **I want to use SICAT Suite with SIDEXIS** check box will be available. You can register SICAT Suite during the installation or register it manually as a SIDEXIS XG plug-in or SIDEXIS 4 module later.

   ▶ 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.

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

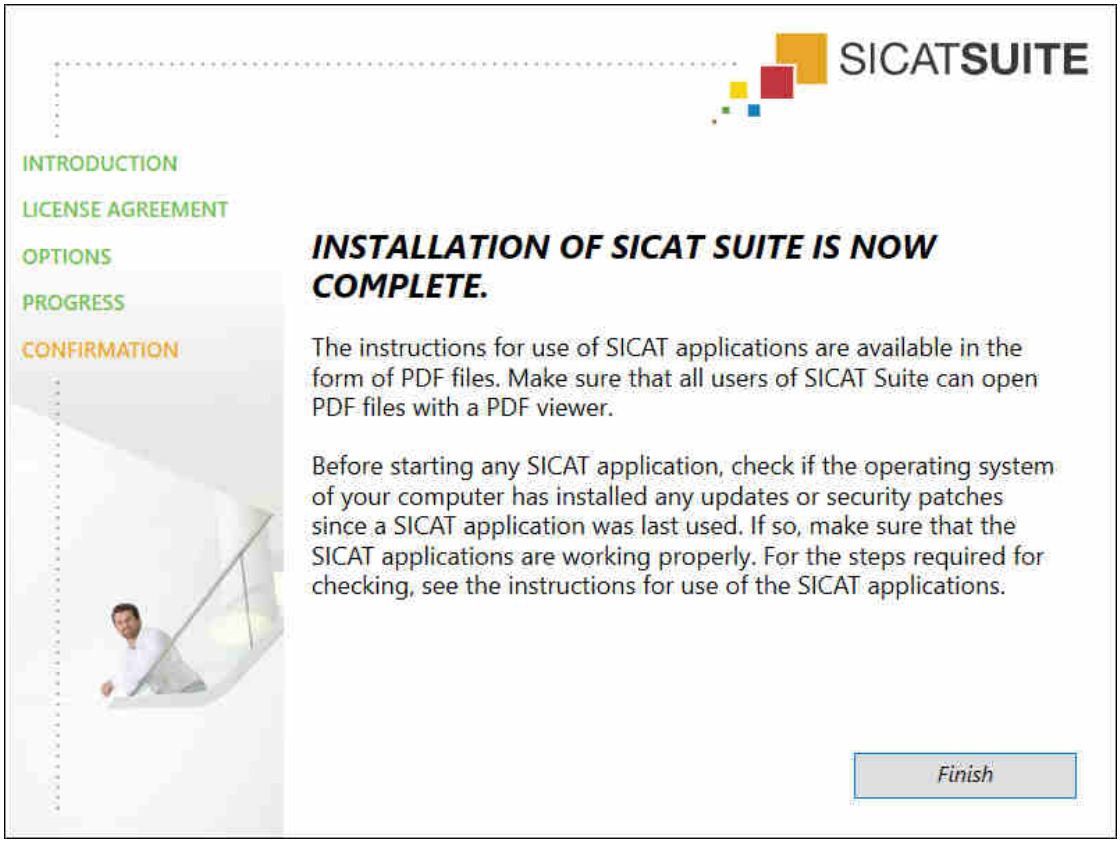
9. Click on the **Install** button.

▶ 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.

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 Air operates without any errors. Perform the following test steps. If you notice deviation during a test step, prevent further use of SICAT Air on the computer in question and contact SICAT support.

PREPARATIONS

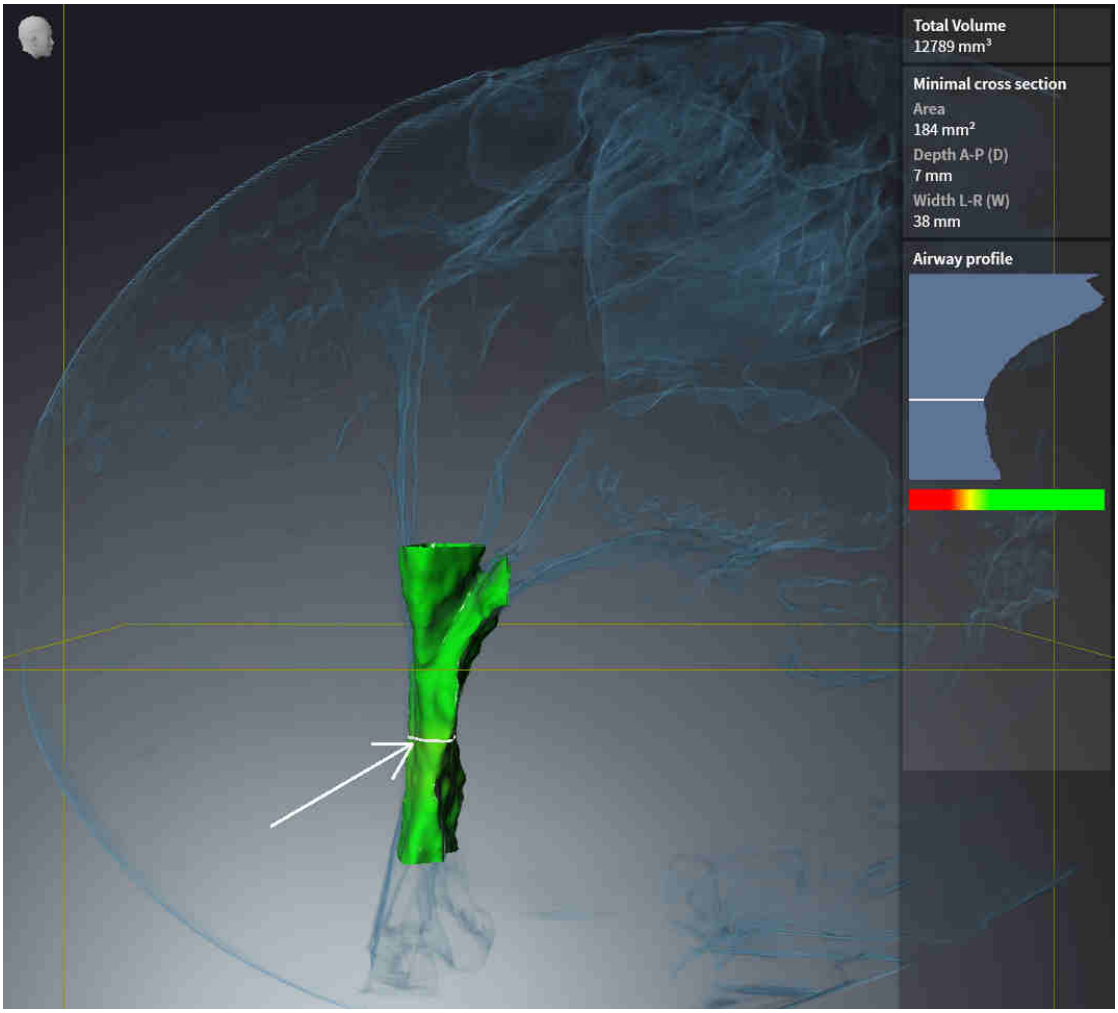
1. To ensure that nobody has made unintended changes, delete the “Axx Patient” patient.
2. Import the reference data record from the “SICATSuite_ReferenceDataset_1.4.zip” file. You will find the data record on the SICAT Suite installation medium.
3. Open the “Patient Axx” reference data record in SICAT Air.

ACTIVATING THE AIRWAY WORKSPACE

- Make sure that the **Airway** workspace is active.

AIRWAY SEGMENTATION

1. Set the display mode of the **3D** view to **Volumetric view with soft tissue**.
2. Make sure that the default values are set in the **3D** view: Air 1124 and transparency 76%
3. Set the clipping mode to **Clipping: None**.
4. Reset the **Airway** workspace using the corresponding function in the **Workspace toolbar**.
5. Compare the **3D** view with the following screenshot. In particular, check the airway profile, the position of the annotation and the following values: **Total volume** and **Minimal cross section area**

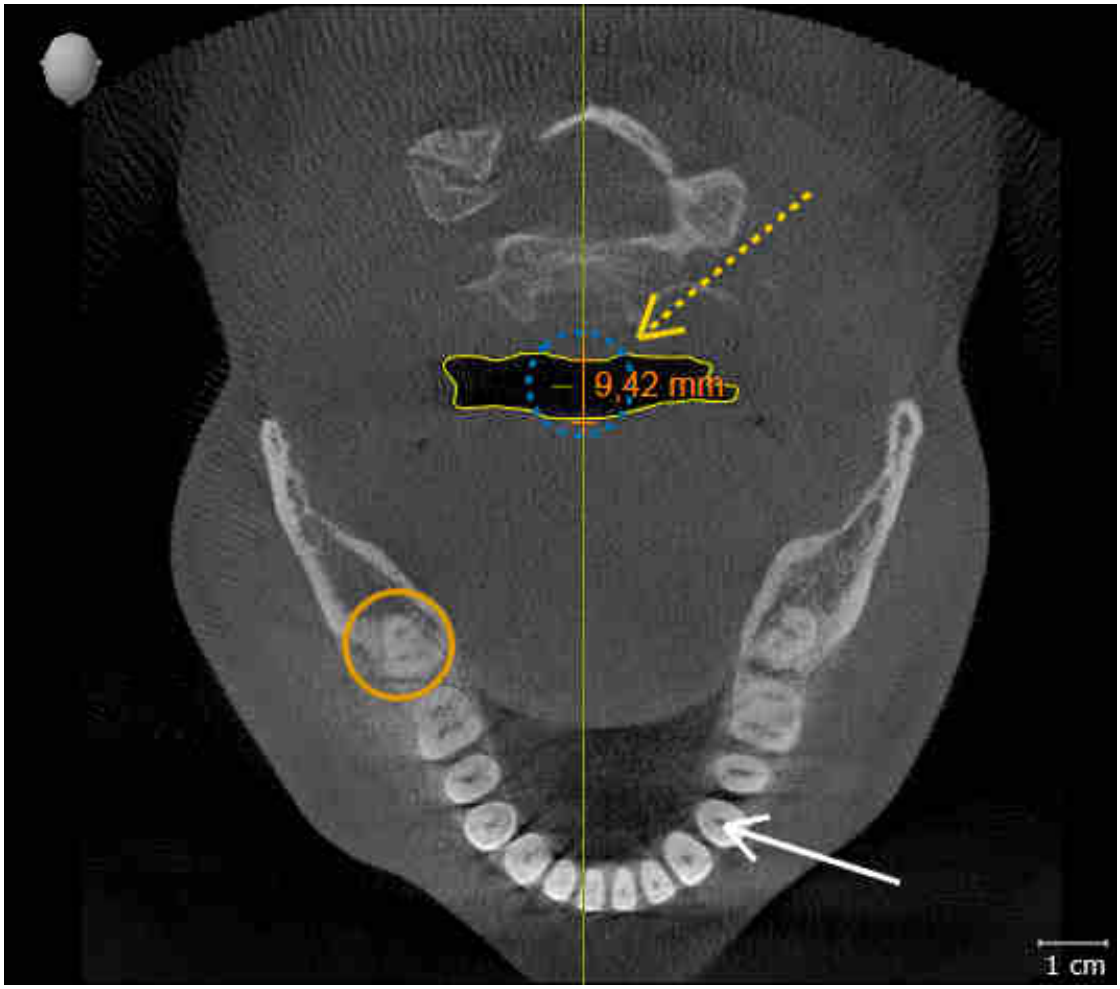


ANNOTATIONS

1. Ensure that the values for **Brightness** and **Contrast** in the **Axial** view are set to the default value of 50%.

2. In the **Object browser**, under **Handout**, select the “Image - Axial” element and focus on it.

3. Compare the **Axial** view with the following screenshot. In particular, check the positions and the representation of the annotations and the distance measurement.

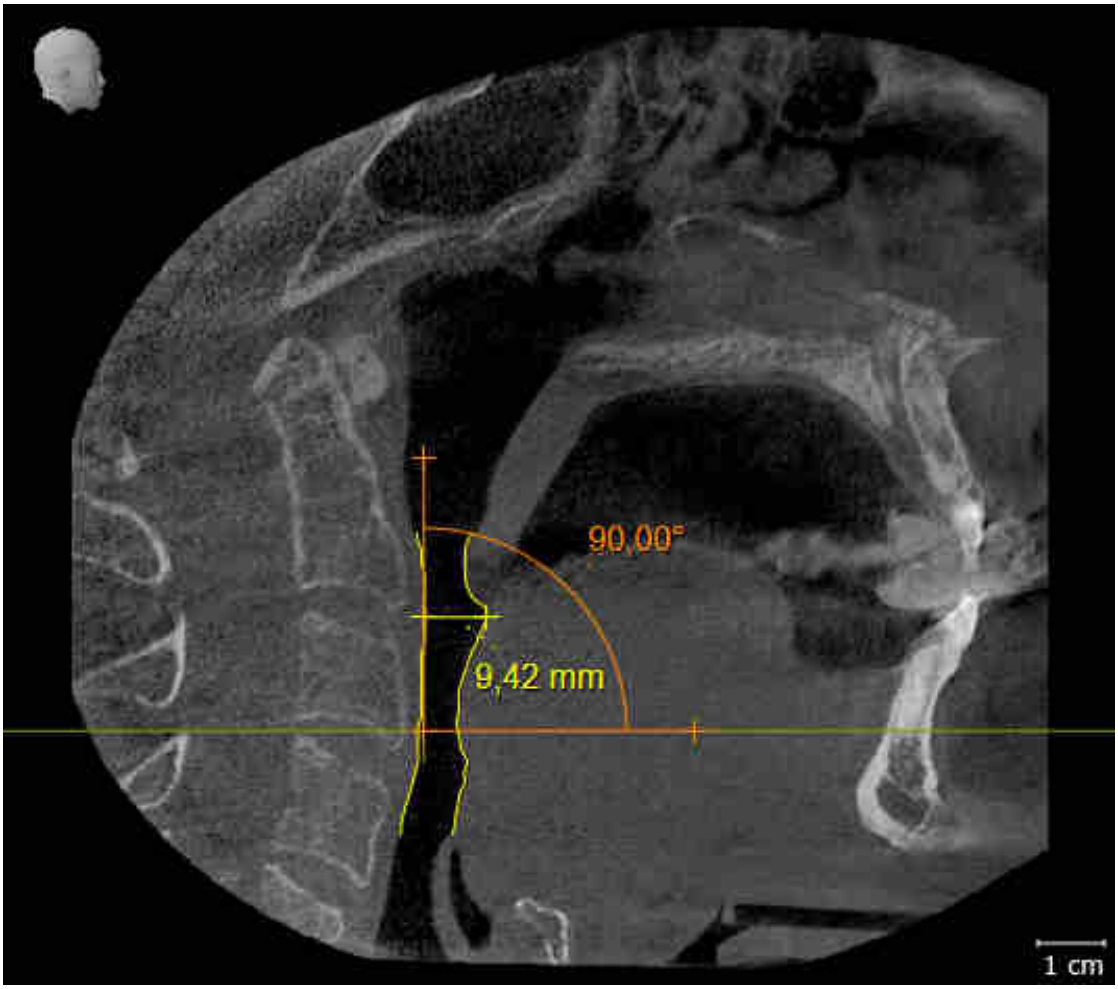


MEASUREMENTS

1. Ensure that the values for **Brightness** and **Contrast** in the **Sagittal** view are set to the default value of 50%.

2. In the **Object browser**, under **Measurements**, select the “90.00°” element and focus on it.

3. Compare the **Sagittal** view with the following screenshot. In particular, check the representation of the measurement objects (90.00° and 9.42 mm) and the orientation of the volume.



10 UPDATING OR REPAIRING SICAT SUITE

UPDATING SICAT SUITE

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

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.**

If you update SIDEXIS XG to SIDEXIS 4.1.3 or higher and then update SICAT Suite, the SICAT Suite installer will register SICAT Suite as a SIDEXIS 4 module. When you open a 3D X-ray scan, 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 17 - Standalone]*.

11 SPECIAL FEATURES IN THIS VERSION

Depending on whether you use SICAT Air 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 50 - Standalone]*. Information on managing patient records can be found in the section *Patient records [▶Page 68 - 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 204 - 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 Air studies and save these changes:

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

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

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

Under certain circumstances you cannot make or save changes to SICAT Air 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 37 - Standalone]*.

Further information is available in the section *Opening read-only data [▶Page 217 - Standalone]*.

12 THE STANDARD WORKFLOW OF SICAT AIR

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.

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.

INSTALLATION

Information on how to install SICAT Suite can be found in the section *Installing SICAT Suite [▶Page 17 - Standalone]*.

ACTIVATING FULL VERSION

1. If you have purchased a license for SICAT Air, activate the license to unlock the full version. Information on this can be found in the section *Licenses [▶Page 41 - 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 50 - Standalone]*.

If you have not purchased a license for SICAT Air, open a 3D X-ray scan in Viewer mode. Information on this is available in the section *Opening read-only data [▶Page 217 - 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 50 - Standalone]*.

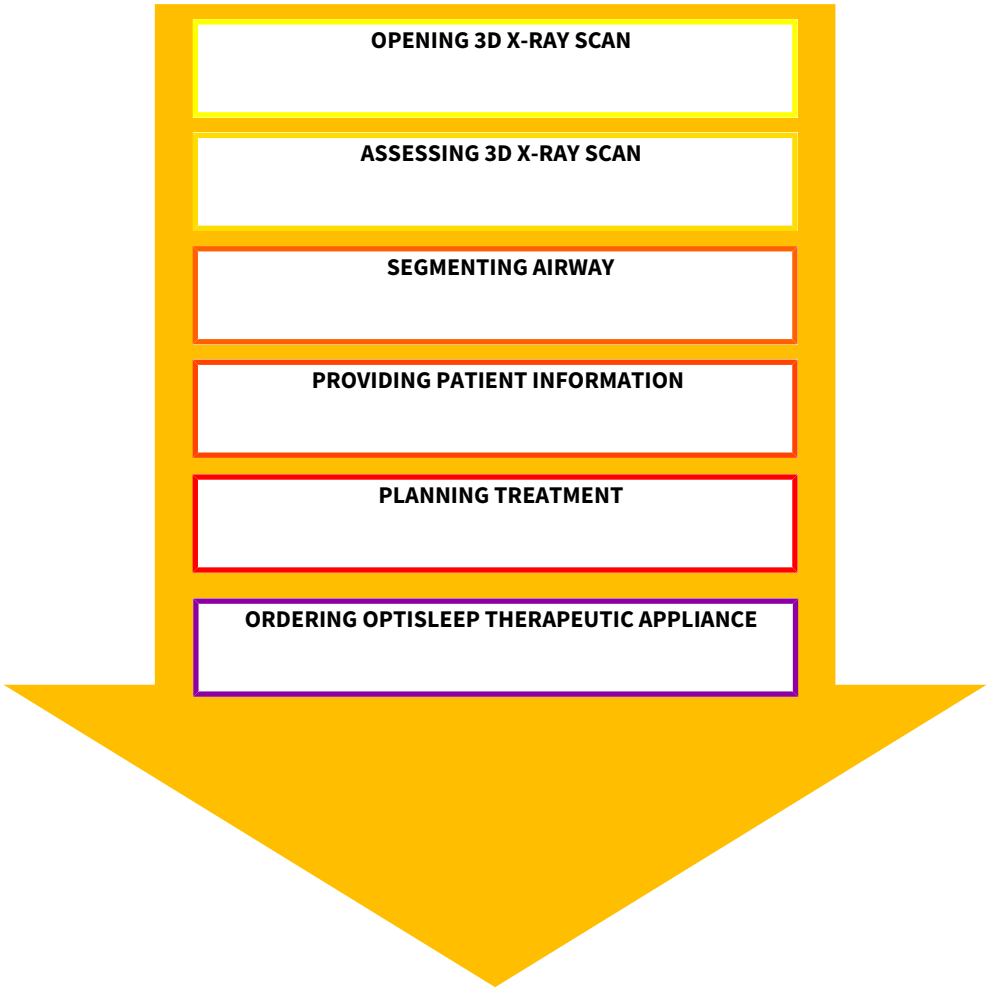
START

Information on how to start SICAT Suite can be found in the section *Starting SICAT Suite [▶Page 34 - Standalone]*.

SETTINGS

Change the desired settings in the **Settings** area. Information on this can be found in the section *Settings [▶Page 204 - Standalone]*.

HOW TO PROCEED IN SICAT AIR



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 58 - Standalone]*.

2. To search for patient records and manage imported data, follow the instructions provided under *Patient records [▶Page 68 - Standalone]*.

3. To work with data from patient records, open a patient record in SICAT Air. Information on this can be found in the section *Opening 3D X-ray scans or planning projects from the patient record summary [▶Page 76 - Standalone]*.

EDITING DATA RECORDS IN SICAT AIR

1. Align the 3D X-ray scan according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]*.

2. Assess the 3D X-ray scan and get an overview of the upper airways.

3. Segment the respiratory path. Information on this can be found in the section *Segmenting the airway [▶Page 146 - Standalone]*.

4. Assess the airway in the **Airway** workspace. Information on this can be found in the section *Airway analysis [▶Page 156 - Standalone]*.

5. Inform the patient and create a handout for the patient based on this. Information on this can be found in the section Patient information.

6. Perform treatment planning.

7. Create a 3D X-ray scan of the patient with the jaw in a protruded treatment position. Open the scan in SICAT Air.

8. Verify the effect of the therapeutic appliance. Consider in particular changes to the airways and the effects on the temporomandibular joint.

9. Order a customized therapeutic appliance for the patient. Information on this can be found in the section *Ordering process [▶Page 182 - Standalone]*.

10. If you wish to obtain a second opinion, export the data. Information on this can be found in the section *Data export [▶Page 179 - Standalone]*.

You can verify the effect of the therapeutic appliance in particular by using the airway comparison. Information on this can be found in the section *Airway comparison [▶Page 162 - 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 220 - Standalone]*.

SICAT Air saves airway objects, the airway comparison, the handout, the segmentation and optical impressions in a study, which is based on the 3D X-ray scan.

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 40 - Standalone]*.

Further support is available in the **Support** area. Information on this can be found in the section *Support [▶Page 213 - Standalone]*.

13 STARTING SICAT SUITE

To start SICAT Air, you must first start SICAT Suite.

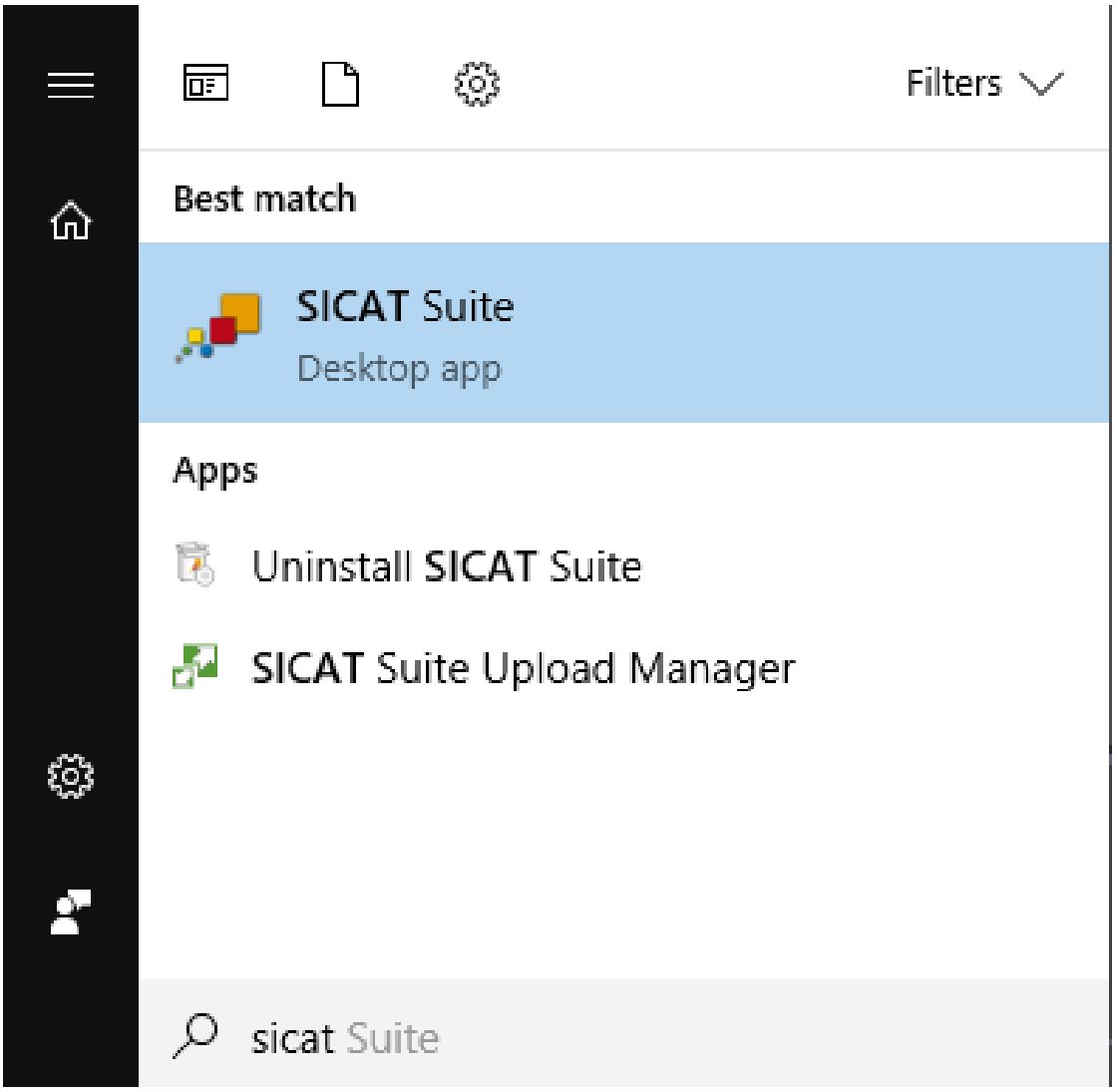
To start SICAT Suite, proceed as follows:

☑ SICAT Suite has already been successfully installed. Information on this can be found in the section *Installing SICAT Suite [▶Page 17 - 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 37 - 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 37 - Standalone]*.

- **Patient records** - Information on this can be found in the section *Patient records [▶Page 68 - Standalone]*.

- **Add new data** - Information on this can be found in the section *Data import [▶Page 58 - Standalone]*.

- **Export data** - Information on this can be found in the section *Data export [▶Page 179 - 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 73 - Standalone]*.

- **Applications** - Information on this can be found in the section *Switching between SICAT applications [▶Page 39 - Standalone]*.

The section on the right side contains the following tabs:

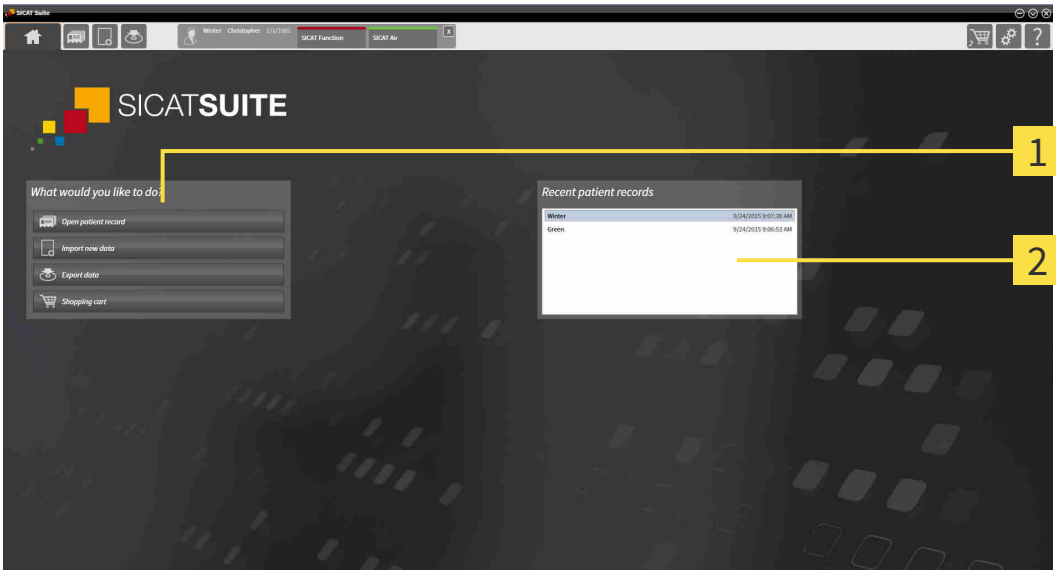
- **Shopping cart** - Information on this can be found in the section *Ordering process [▶Page 182 - Standalone]*.

- **Settings** - Information on this can be found in the section *Settings [▶Page 204 - Standalone]*.

- **Support** - Information on this can be found in the section *Support [▶Page 213 - 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 68 - Standalone]*.

- **Add new data** - Information on this can be found in the section *Data import [▶Page 58 - Standalone]*.

- **Export data** - Information on this can be found in the section *Data export [▶Page 179 - Standalone]*.

- **Shopping cart** - Information on this can be found in the section *Ordering process [▶Page 182 - 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**.

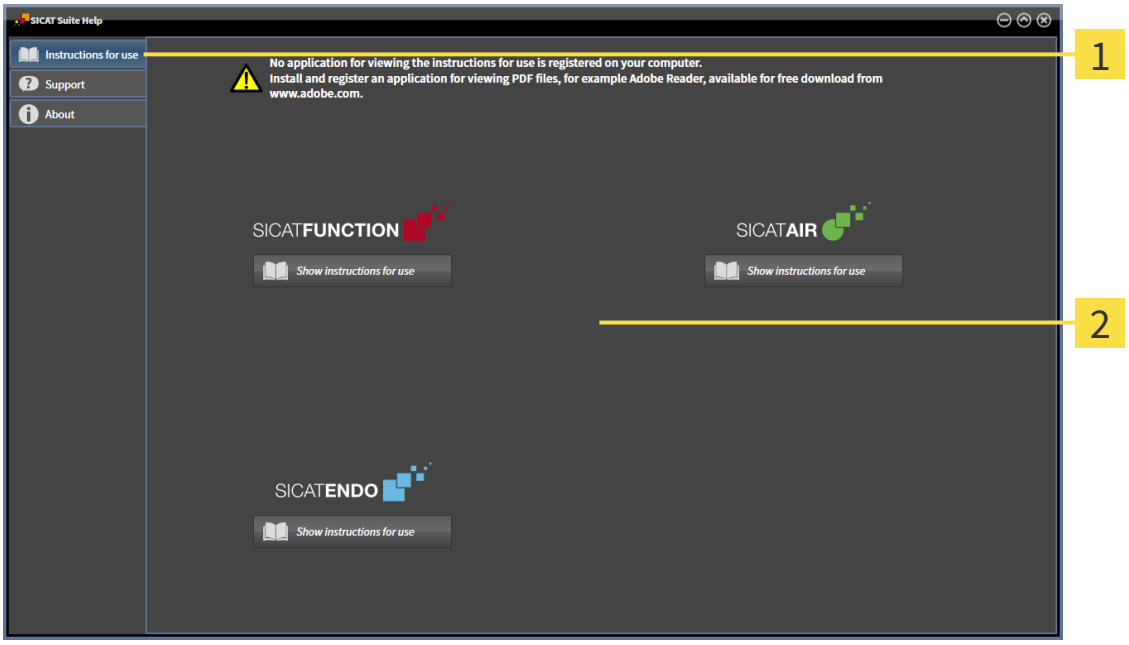
► SICAT Suite will switch to the selected application.

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 Air license.

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.

The following steps are required to activate 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 on computers on which SICAT Suite is installed.

The following applies for activating and deactivating licenses:

- You will only receive license keys for SICAT applications that are approved in your country.
- If you activate an activation key on a computer, one license of all included SICAT applications or included functions will be linked to that computer. The licenses will be no longer available for activation on another computer.
- You may deactivate licenses for each SICAT application or individual function separately. Returned licenses are available for renewed activation on the same or another computer.
- 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.
- If you activate a full version license, you will automatically receive Viewer licenses for all applications that are approved in your country.

Information on how to convert a voucher code into an activation key can be found in section *Redeeming voucher codes [▶Page 49 - Standalone]*._

The **License Overview** 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 “Your licenses at a glance” window [▶Page 43 - Standalone]*.

You can activate licenses in two ways:

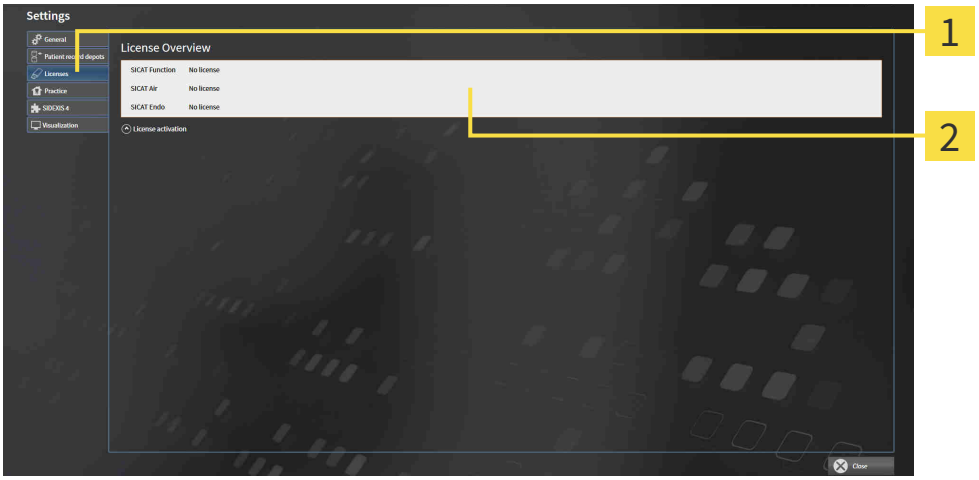
- If the computer on which SICAT Suite is running has an active Internet connection, the license can be activated automatically. Information on this can be found in the section *Activating licenses using an active Internet connection [▶Page 44 - Standalone]*.
- Upon request or if the computer on which 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 licenses manually or without an active Internet connection. [▶Page 46 - Standalone]*.

You can deactivate licenses for each application or function individually. After you have deactivated a license, you can enter the same or another activation key. Returned licenses are available for activation on the same or another computer. Information on this can be found in the section *Returning licenses to the license pool [▶Page 48 - Standalone]*.

17.1 OPENING THE “YOUR LICENSES AT A GLANCE” WINDOW

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

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



1 **Licenses** tab

2 **License Overview** window

Continue with one of the following actions:

- *Activating licenses using an active Internet connection [▶Page 44 - Standalone]*
- *Activating licenses manually or without an active Internet connection. [▶Page 46 - Standalone]*
- *Returning licenses to the license pool [▶Page 48 - Standalone]*

17.2 ACTIVATING 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:

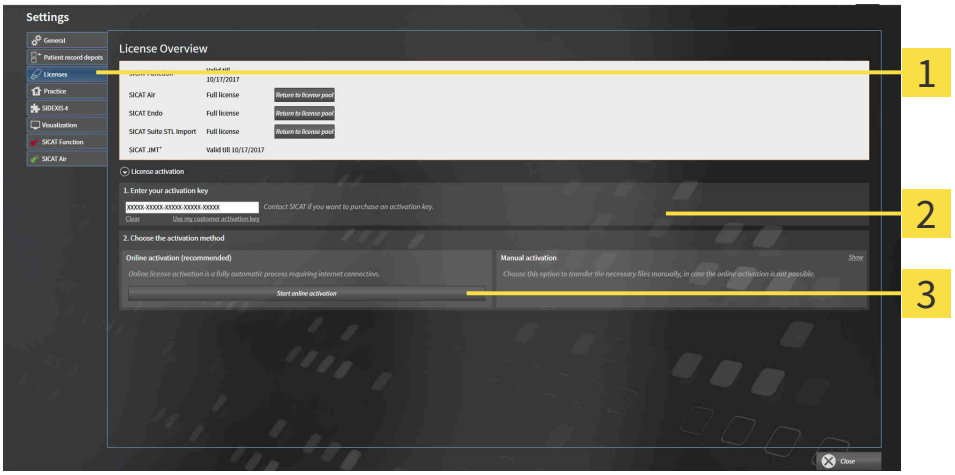
☑ At least one SICAT application or one individual function is missing an active license.

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

☑ The **License Overview** window is already open. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶Page 43 - Standalone]*.

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

   ▶ The **License Overview** 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 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.

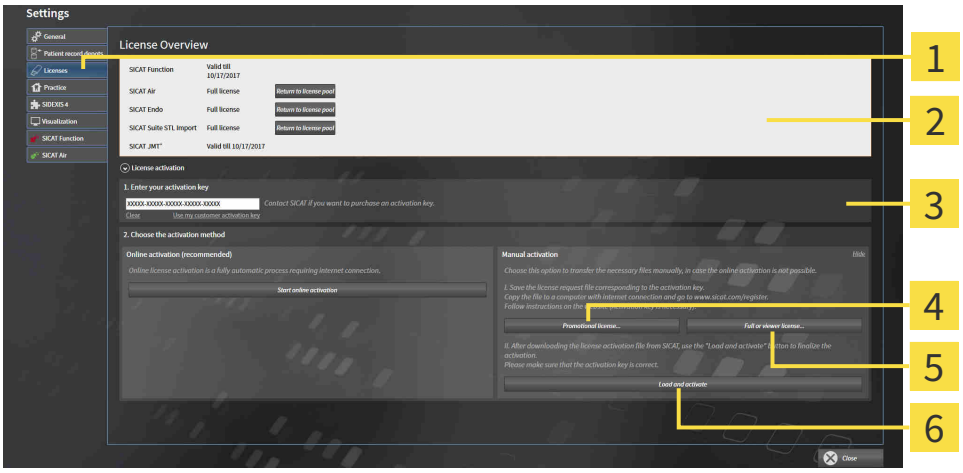
NOTICE	**Shopping cart must be empty** The shopping cart must be empty before you can make any changes to the licenses.

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 license.

☑ The **License Overview** window is already open. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶Page 43 - Standalone]*.

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



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

3. If you wish to activate a full license, click the **Full or viewer license** button.
4. If you wish to activate a demo license, click the **Promotional 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 **License Overview** 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 LICENSES TO THE LICENSE POOL

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

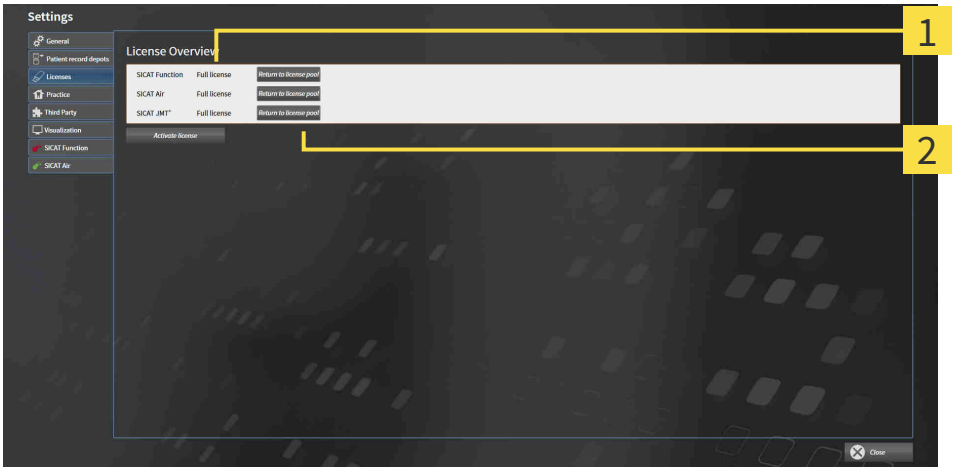
NOTICE	**Shopping cart must be empty** The shopping cart must be empty before you can make any changes to the licenses.

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

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

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

☑ The **License Overview** window is already open. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶Page 43 - Standalone]*.



1 License status of SICAT applications and individual functions

2 **Return to license pool** button

- In the **License Overview** window, click on the **Return to license pool** 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 REDEEMING VOUCHER CODES

1. Open a web browser on the computer with the active Internet connection and open the http://www.sicat.com web page.
2. Select the link for the SICAT portal.
   ▶ The SICAT portal opens.
3. Register or log in to the SICAT portal using your username and password if you have not already done so.
4. Click on the entry to manage your licenses in the account management section.
5. Enter your voucher code and confirm the code.
   ▶ The SICAT Portal will generate a license key and add the license key to your activation key.
6. Start SICAT Suite and activate the license.

For further information about this see *Activating licenses using an active Internet connection [▶Page 44 - Standalone]* and *Activating licenses manually or without an active Internet connection. [▶Page 46 - Standalone]*.

See the FAQ on the SICAT portal for more help.

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.

ℹ	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 8 - Standalone]*.

The following actions are available for managing patient record depots:

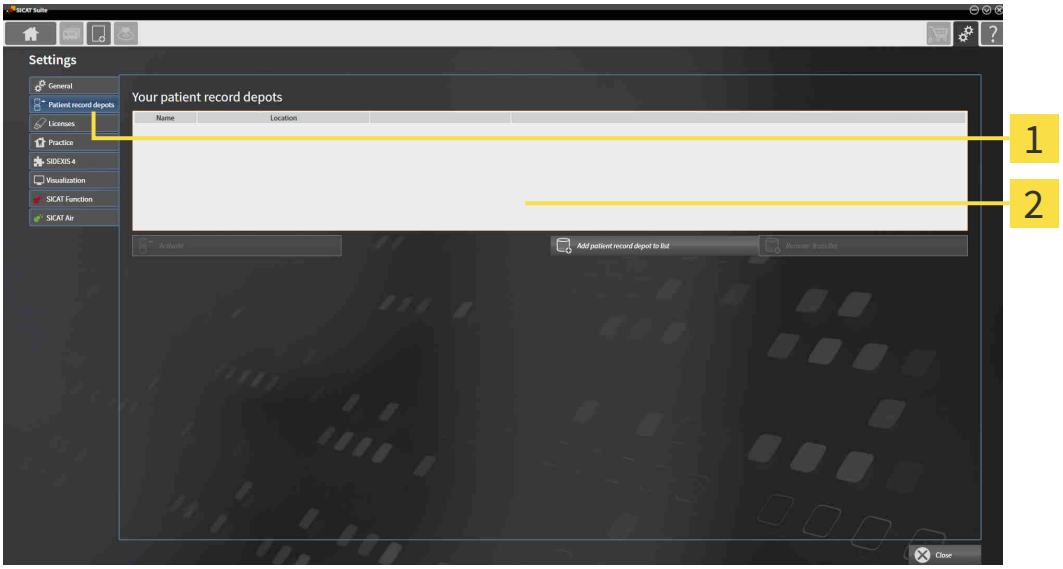
- *Opening the “Patient record depots” window [▶Page 52 - Standalone]*
- *Adding patient record depots [▶Page 53 - Standalone]*
- *Activating another patient record depot [▶Page 55 - Standalone]*
- *Removing patient record depots [▶Page 57 - Standalone]*

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 53 - Standalone]*
- *Activating another patient record depot [▶Page 55 - Standalone]*
- *Removing patient record depots [▶Page 57 - 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.

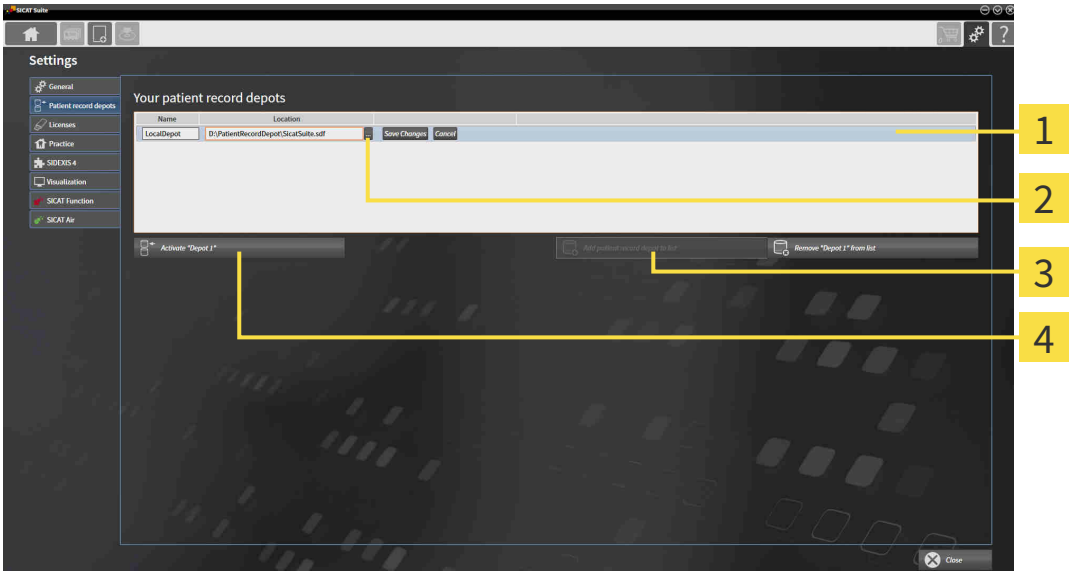
Make sure that a regular data backup is created of all patient record depots.

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 52 - 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:

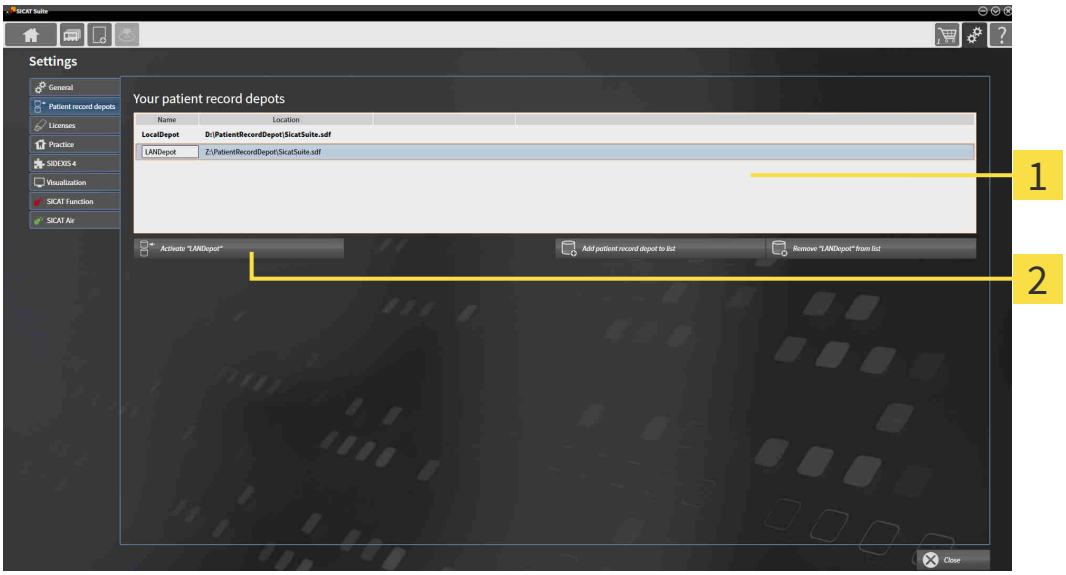
- You want to switch between a patient record depot on your practice's network file system and a patient record depot on your notebook.
- You want to display patient data in public, which has been stored anonymously in another patient record depot, for example for training purposes.

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 52 - 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.**

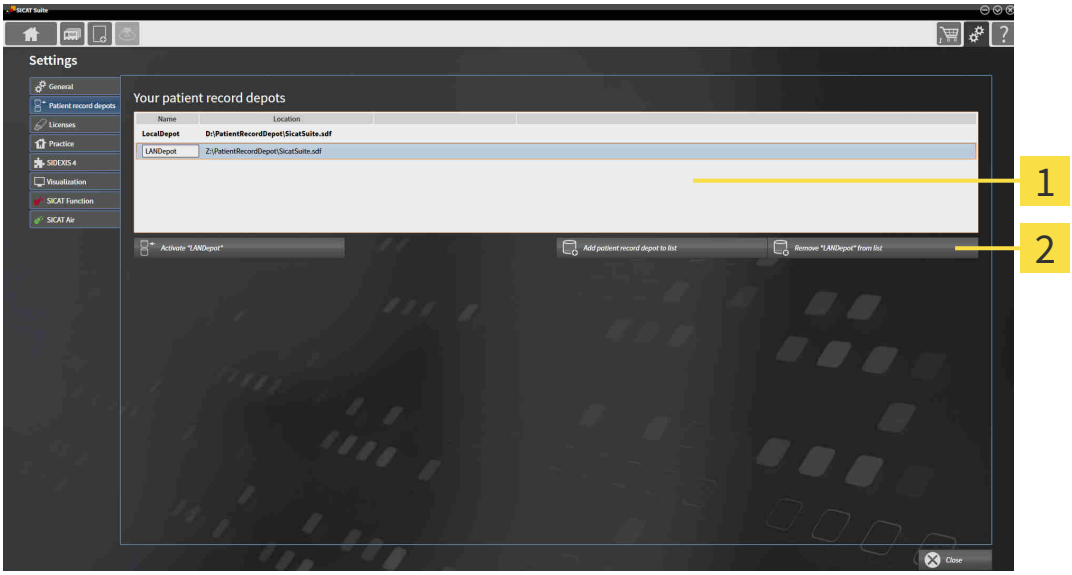
18.4 REMOVING PATIENT RECORD DEPOTS

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 53 - 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 52 - 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 217 - 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 60 - 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 61 - Standalone]*
- *Selecting an import option [▶Page 63 - Standalone]*
- *Allocating data to an existing patient record [▶Page 65 - Standalone]*

or

- *Creating a new patient record through data import [▶Page 64 - 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.

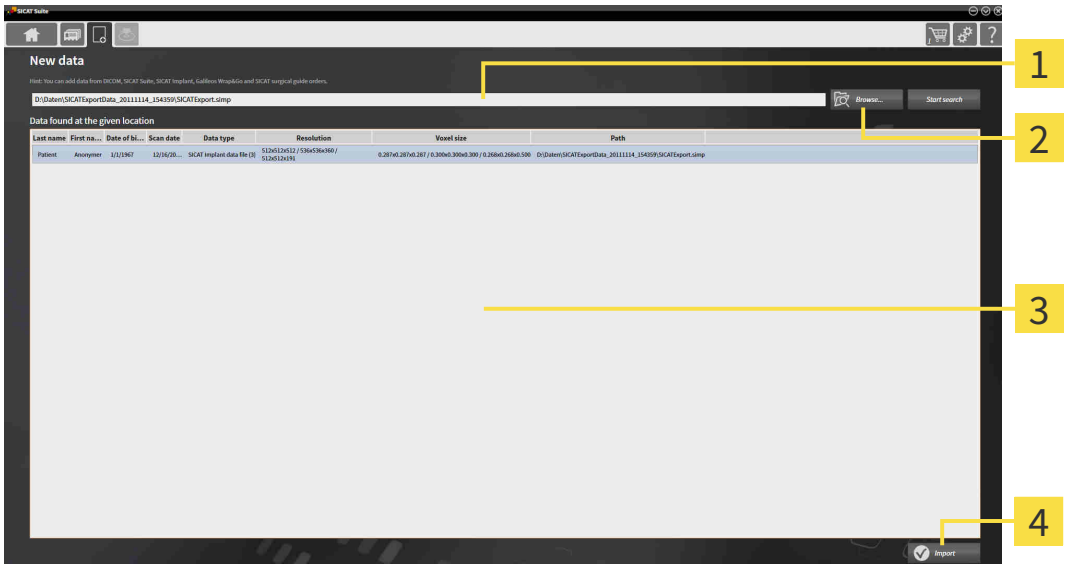
CAUTION

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.

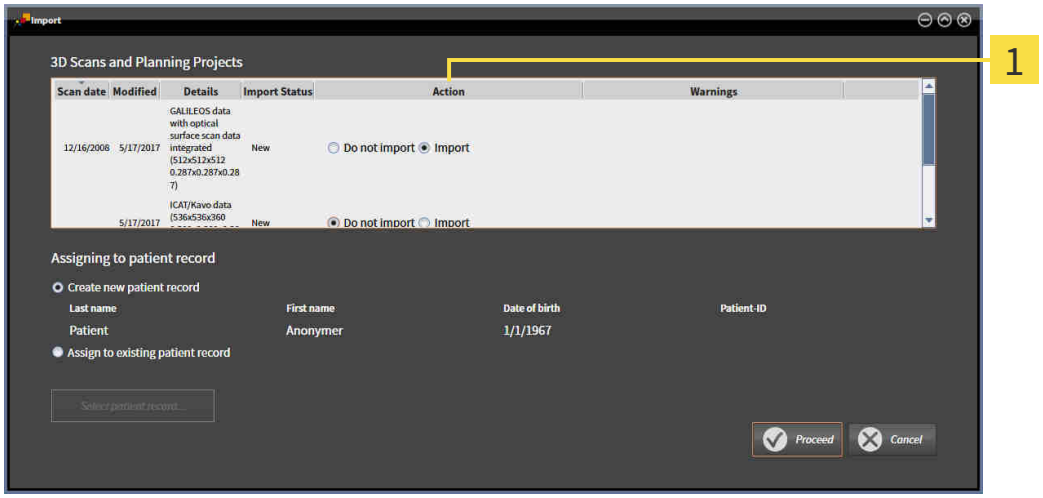
Continue with the section *Selecting an import option [▶Page 63 - Standalone]*.

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 58 - Standalone]*t.

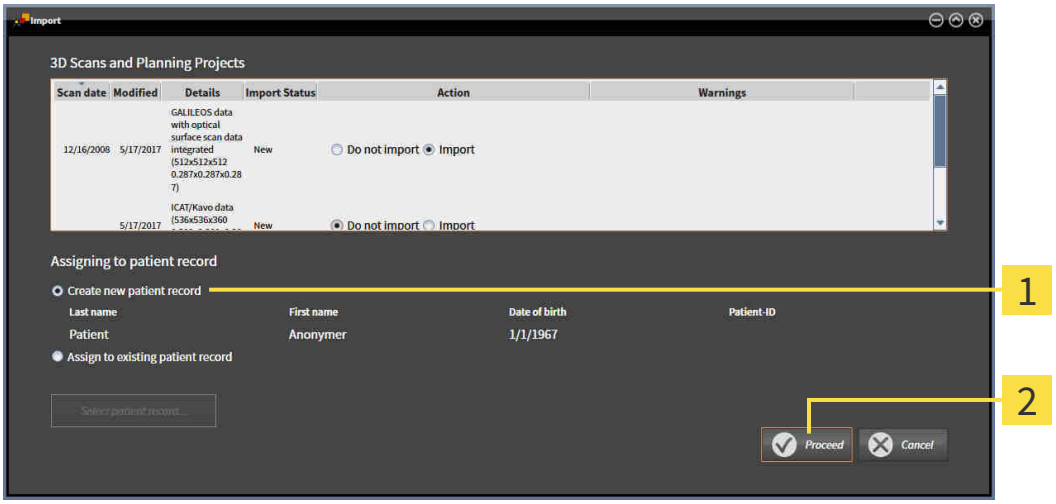
▶ It is defined for all studies individually whether you want to import them or not.

Continue with one of the following actions:

- *Allocating data to an existing patient record [▶Page 65 - Standalone]*
- *Creating a new patient record through data import [▶Page 64 - 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 68 - Standalone*].

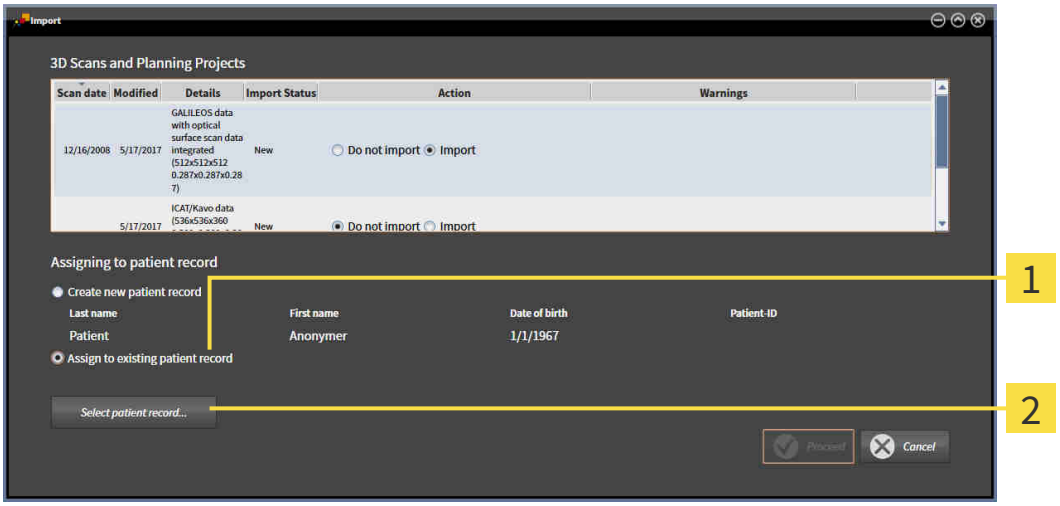
19.5 ALLOCATING DATA TO AN EXISTING PATIENT RECORD

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

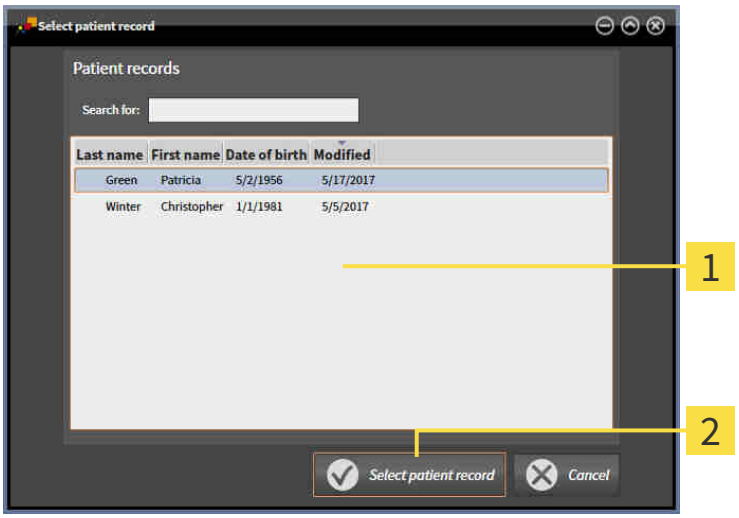
2 **Select patient record** button

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:



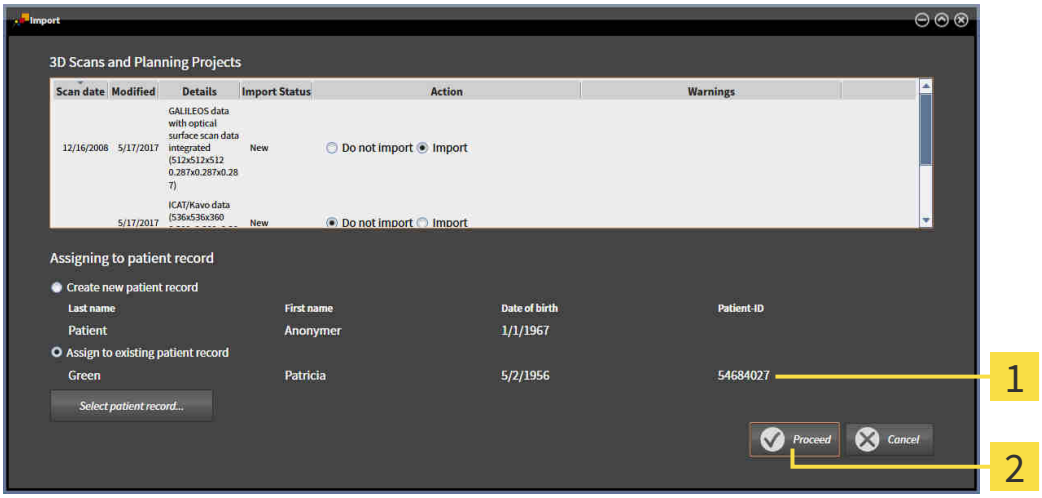
1 **Patient records** list

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.

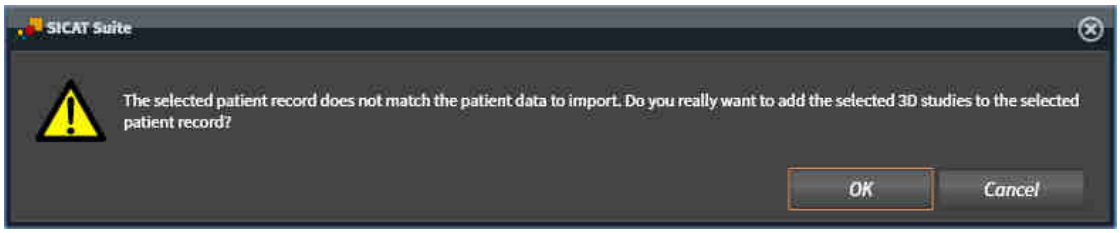


1 Attributes of the selected patient record

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 68 - 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 69 - Standalone]*
- *Searching and sorting in the patient record depot [▶Page 70 - Standalone]*
- *Activating patient records [▶Page 72 - Standalone]*
- *Opening 3D X-ray scans or planning projects from the patient record summary [▶Page 76 - Standalone]*
- *Working with active patient records [▶Page 73 - Standalone]*
- *Changing the attributes of patient records [▶Page 75 - Standalone]*
- *Deleting patient records from patient record depots [▶Page 81 - Standalone]*
- *Deleting 3D X-ray scans or planning projects from patient records [▶Page 82 - Standalone]*

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

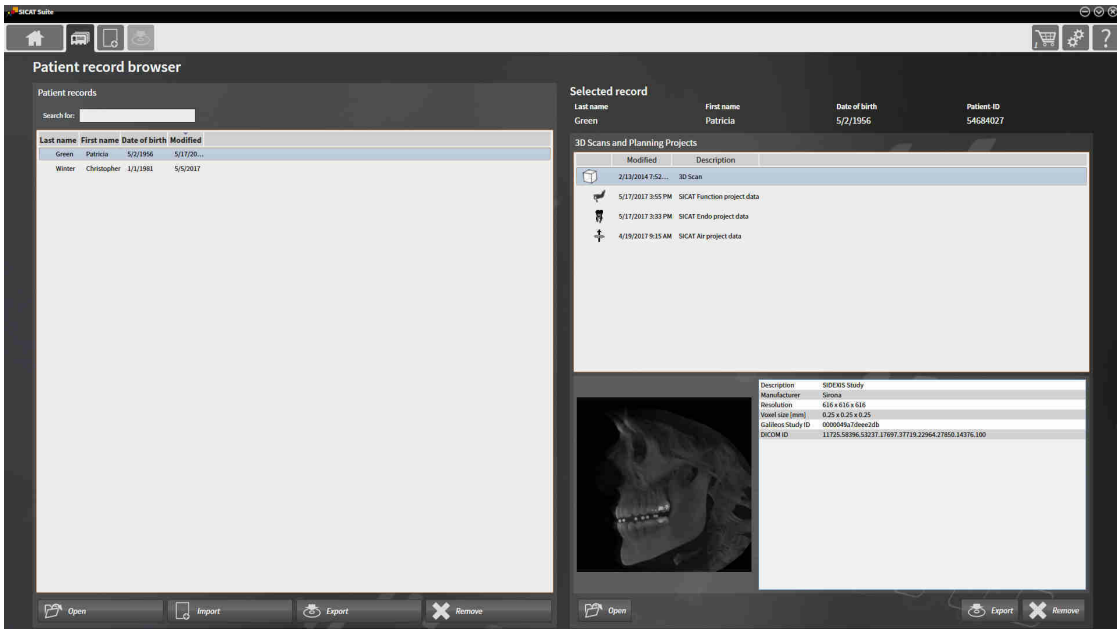
- *Data import [▶Page 58 - Standalone]*
- *Data export [▶Page 179 - Standalone]*

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**.

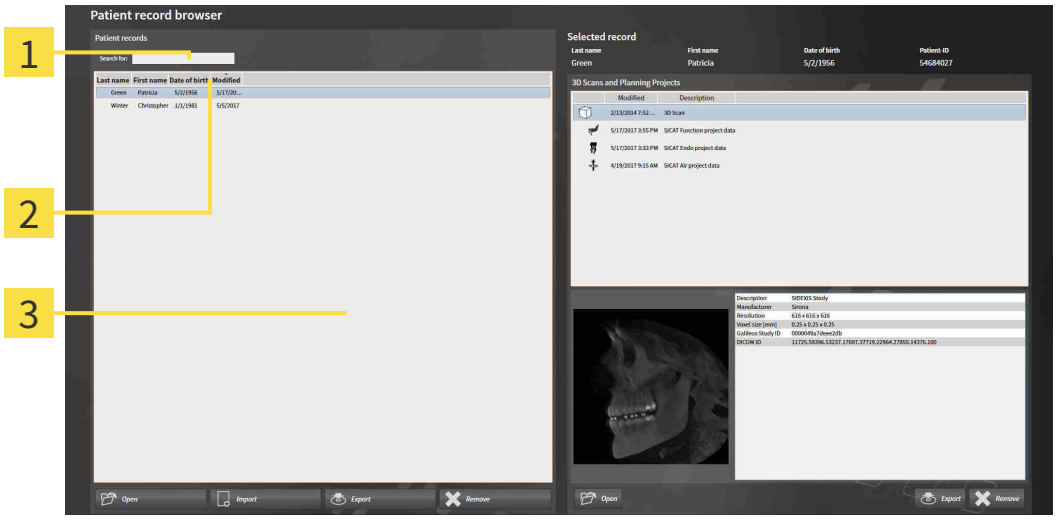
▶ The **Patient record browser** window opens:



Continue with one of the following actions:

- *Searching and sorting in the patient record depot [▶Page 70 - Standalone]*
- *Activating patient records [▶Page 72 - Standalone]*
- *Opening 3D X-ray scans or planning projects from the patient record summary [▶Page 76 - Standalone]*
- *Working with active patient records [▶Page 73 - Standalone]*
- *Changing the attributes of patient records [▶Page 75 - Standalone]*
- *Deleting patient records from patient record depots [▶Page 81 - Standalone]*
- *Deleting 3D X-ray scans or planning projects from patient records [▶Page 82 - 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 69 - 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 69 - Standalone]*.

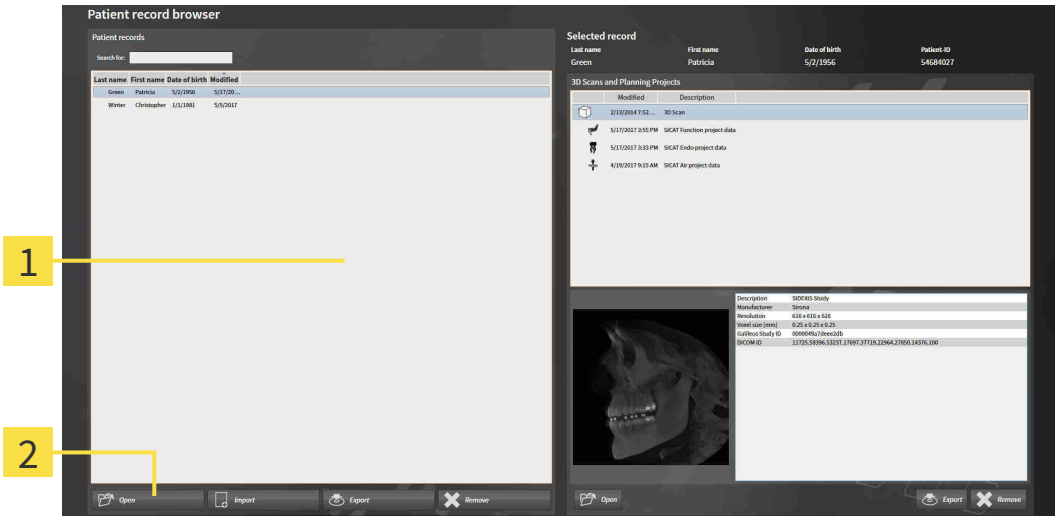
1. Click on the column header of the desired attribute in the **Patient records** list.
   ▶ SICAT Suite sorts the **Patient records** list in the order of the desired attribute.
2. Click again on the column header of the desired attribute in the **Patient records** list.
   ▶ SICAT Suite sorts the **Patient 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 69 - 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 73 - 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.

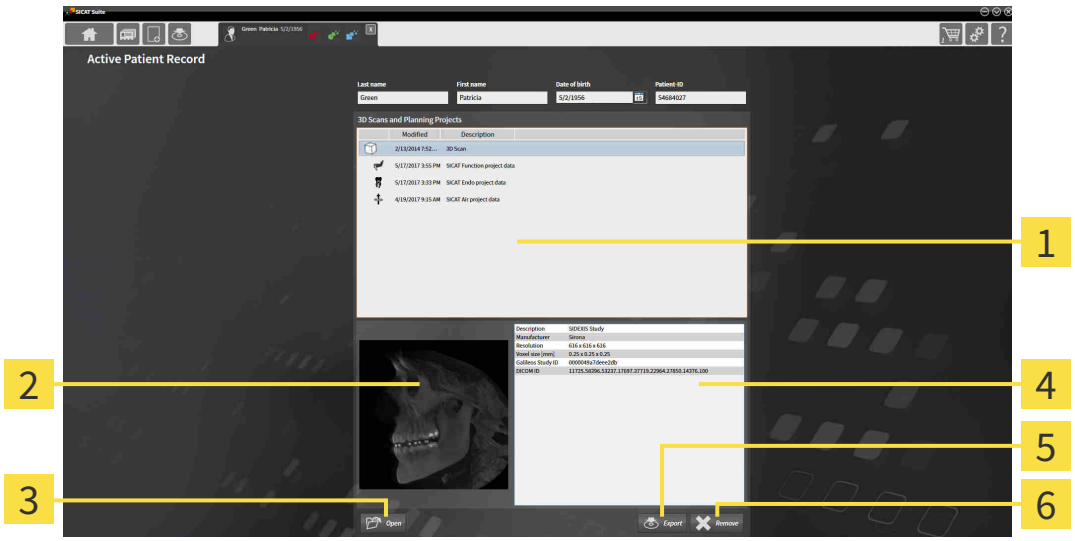
CAUTION

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 72 - 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.

PDF

3. To open the selected document in the standard PDF viewer, click on the **Open** button.
4. 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 179 - Standalone]*.

5. 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 82 - Standalone]*.

6. Information on how to change attributes of the active patient record can be found in the section *Changing the attributes of patient records [▶Page 75 - Standalone]*.

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.

20.5 CHANGING THE ATTRIBUTES OF PATIENT RECORDS

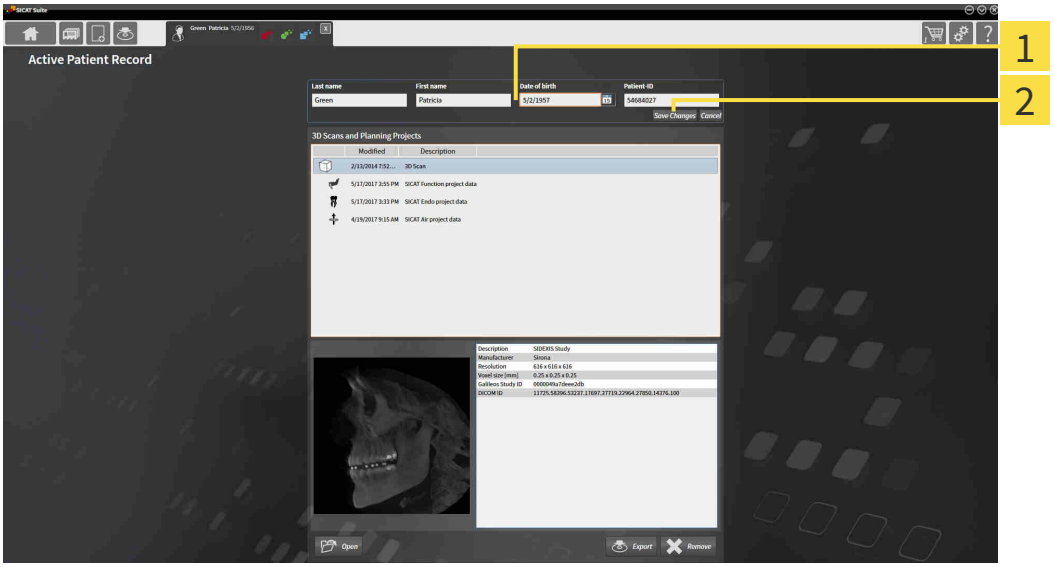
The combination of attributes in each patient record in the active patient record depot must be unique.

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 72 - 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.

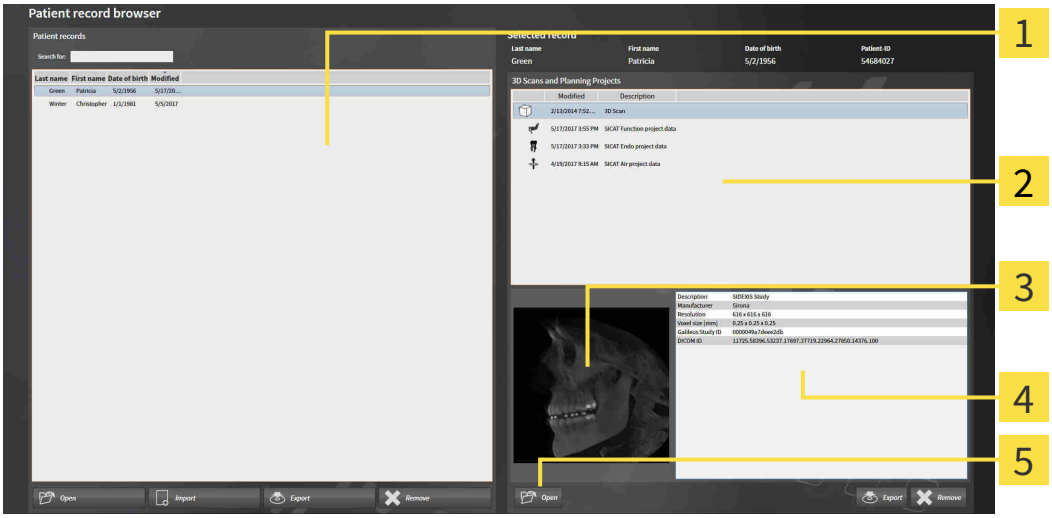
CAUTION

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 69 - 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** section, 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** sections 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.

▶ If you have selected a document, it is opened 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 AIR 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.

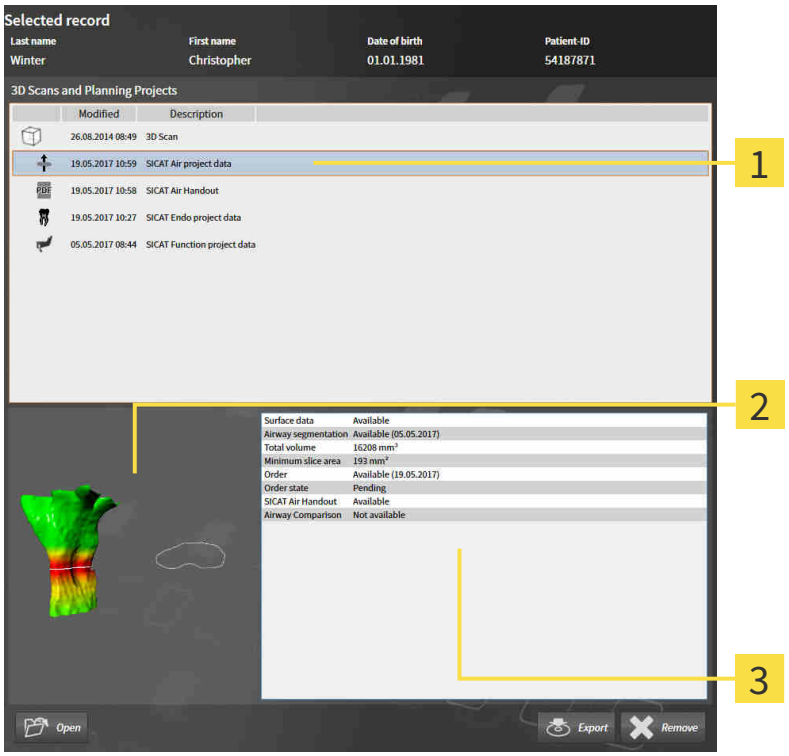
⚠ **CAUTION**	**Insufficient visualization quality could result in incorrect diagnosis and treatment.** Before using a SICAT application, for example with the SMPTE test image, check whether the display quality is sufficient.

⚠ **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.

If SICAT Suite is running in the stand-alone version, the patient data will be managed in SICAT Suite.

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

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



1 Selected SICAT Air study

2 **Overview** area

3 **Details** area

If you have already segmented the airway, the **Overview** section displays the following elements:

- Illustration of the segmented airway, highlighting the smallest cross-section
- Contour of the slice with the smallest cross-section:

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

- Availability of optical impressions
- Availability of airway segmentation with a date of creation, total volume and minimal slice area
- Availability of an order with status and date
- Availability of a handout
- Availability of an airway comparison

If you have already segmented the airway, the **Patient record browser** displays the following information:

- **Total volume**
- **Minimum slice area**

The **Patient record browser** also displays handouts that you have created with SICAT Air in the **3D Scans and Planning Projects** section. You can open handouts in the standard PDF viewer by double clicking them.

20.8 DELETING PATIENT RECORDS FROM PATIENT RECORD DEPOTS

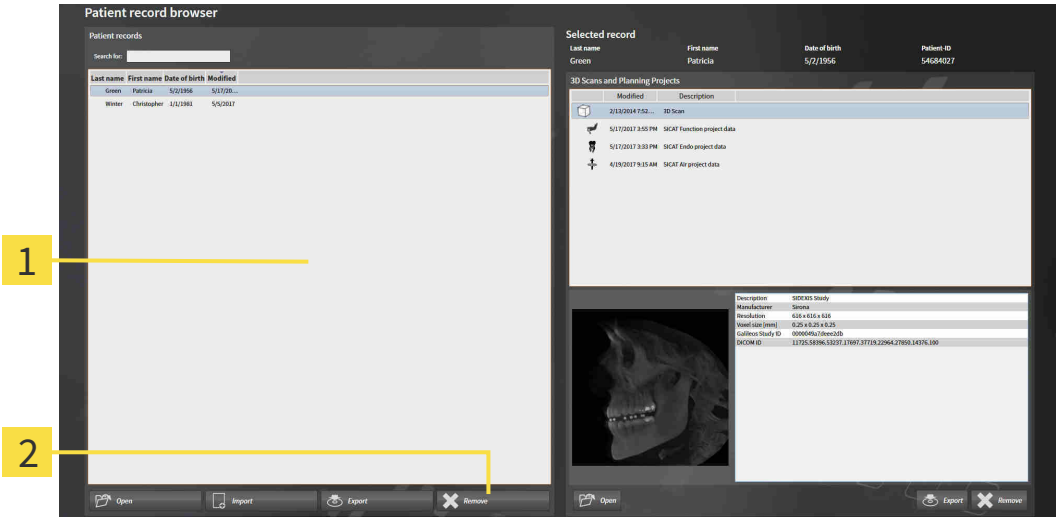
CAUTION

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 69 - Standalone]*.



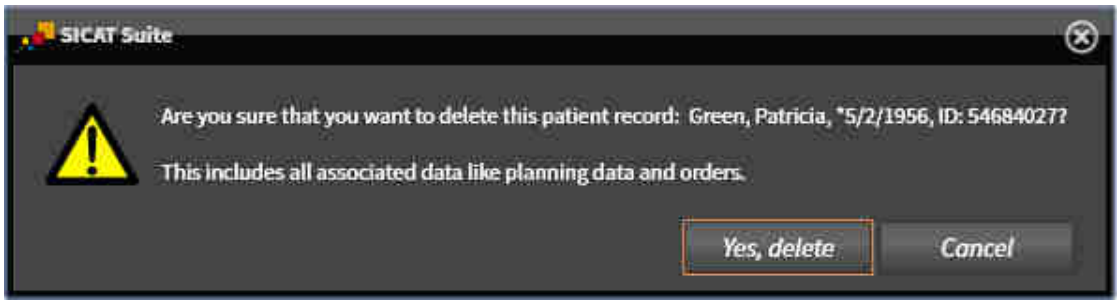
1 **Patient records** list

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.

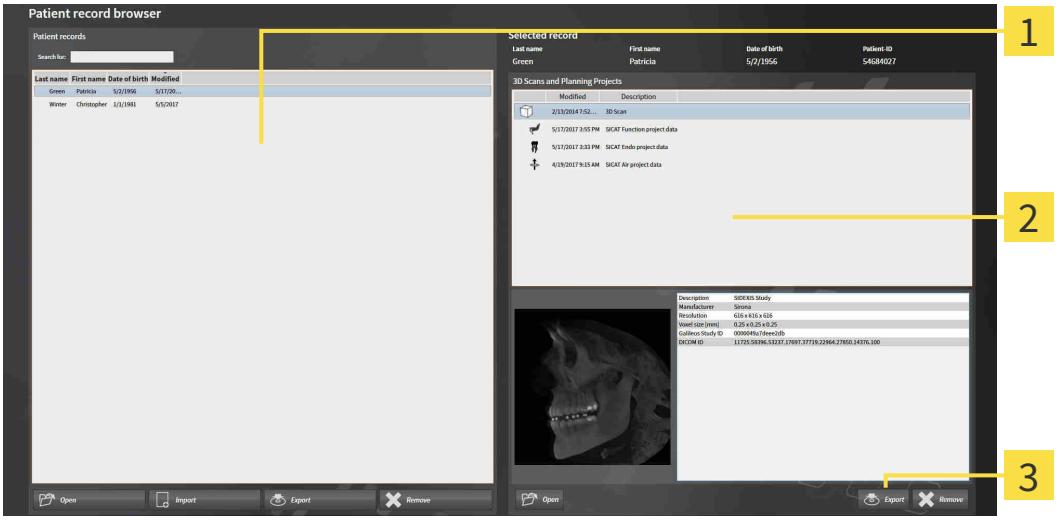
20.9 DELETING 3D X-RAY SCANS OR PLANNING PROJECTS FROM PATIENT RECORDS

⚠ **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 69 - Standalone]*.



1 **Patient records** list

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

3 **Delete** button

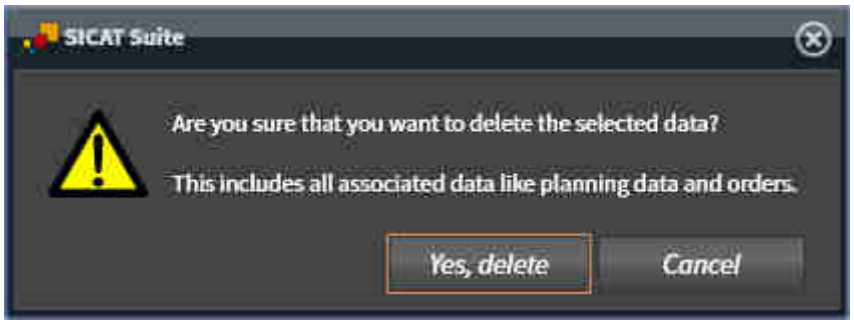
1. Select the desired patient record from the **Patient records** list in the **Patient record browser** window.

   ▶ 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:



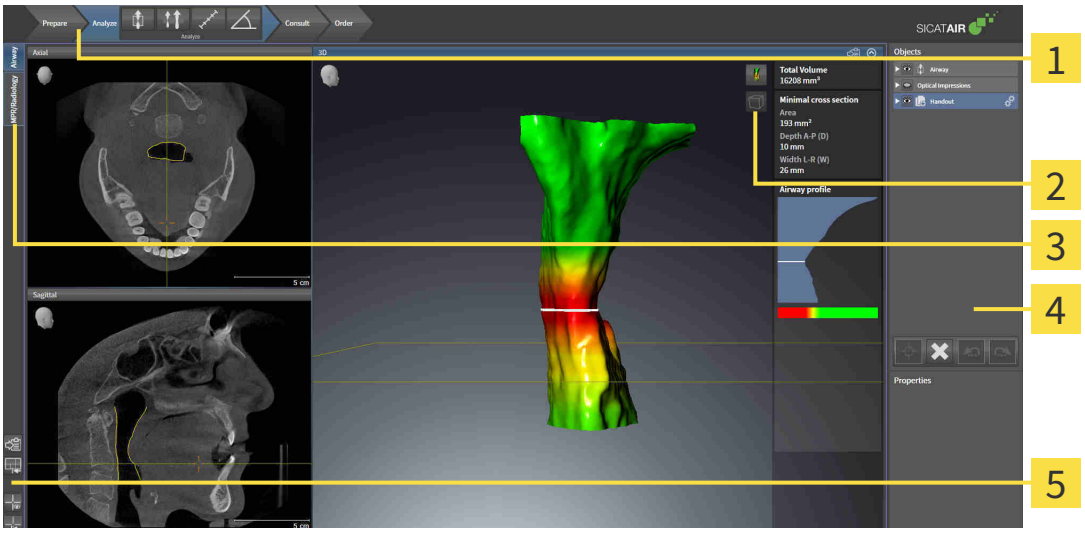
4. Click on **Yes, delete** in the confirmation message if you wish to delete the selected data.

► 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 73 - Standalone]*.

21 THE SICAT AIR USER INTERFACE

The SICAT Air 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 that you can use to add and import diagnosis objects and planning objects. Information on this can be found in the section *Workflow toolbar [▶Page 85 - Standalone]*.
- The **Workspace area** is the part of the user interface below the **Workflow toolbar**. It displays the active workspace of SICAT Air. Each workspace contains a specific combination of views. Information on this can be found in the section *Overview of the airway workspace [▶Page 99 - 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 105 - Standalone]* and *Adjusting the 3D view [▶Page 116 - Standalone]*.
- The **Object bar** contains tools for the management of diagnosis objects and planning objects. For further information see section *Object bar [▶Page 88 - Standalone]* and section *SICAT Air objects [▶Page 92 - 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 113 - Standalone]*, *Resetting views [▶Page 114 - Standalone]*, *Adjusting and resetting the layout of workspaces [▶Page 102 - Standalone]* and *Creating screenshots of workspaces [▶Page 103 - Standalone]*.

21.1 WORKFLOW TOOLBAR

The **Workflow toolbar** in SICAT Air consists of four workflow steps:

1. **Prepare**
2. **Analyze**
3. **Consult**
4. **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 128 - Standalone]*. This tool is only available and required for volumes from non-Sirona devices.

- **Adjust volume orientation and panoramic region** - Information on this can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]* and *Adjusting the panoramic region [▶Page 137 - Standalone]*.

2. WORKFLOW STEP "ANALYZE"

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

- **Segment the airway** - Information on this can be found in the section *Defining the airway area [▶Page 147 - Standalone]*.

- **Airway comparison** - Information on this can be found in the section *Carrying out an airway comparison [▶Page 163 - Standalone]*.

- **Add distance measurement (D)** - Information on this can be found in the section *Adding distance measurements [▶Page 141 - Standalone]*.

- **Add angle measurement (A)** - Information on this can be found in the section *Adding angle measurements [▶Page 142 - Standalone]*.

3. WORKFLOW STEP "CONSULT"

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

- **Draw Arrow** - Information on this can be found in the section Creating images and screenshots.

- **Draw Circle** - Information on this can be found in the section Creating images and screenshots.

- **Generate handout** - Information on this can be found in the section Preparing handouts.

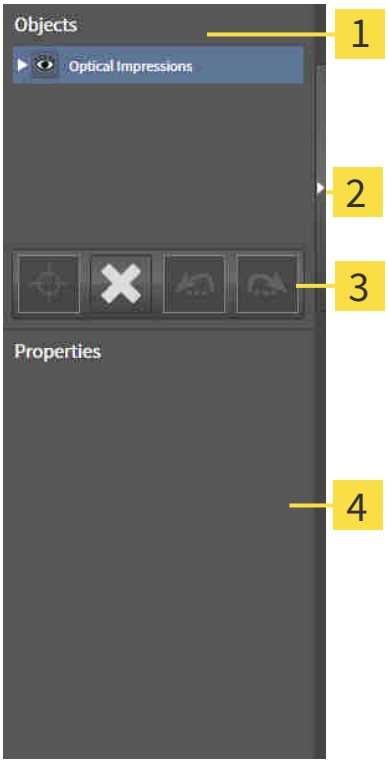
4. WORKFLOW STEP "ORDER"

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

- **Import and register optical impressions** - Information on this can be found in the section *Importing and registering optical impressions [▶Page 187 - Standalone]*.

- **Order therapeutic appliance** - Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶Page 183 - 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 89 - 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 91 - 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 Air can be found in the section *SICAT Air objects [▶Page 92 - 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** icon next to the desired object group.
   ▶ The object group collapses.

2. Click on the **Expand** 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 Air deactivates a previously activated object or object group.

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

▶ SICAT Air 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 Air hides the object or object group.

► SICAT Air 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 Air shows the object or object group.

► SICAT Air 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 89 - Standalone]*.

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

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

▶ SICAT Air 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 89 - Standalone]*.

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

▶ SICAT Air 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 Air undoes the last object action or group action.

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

▶ SICAT Air 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 AIR OBJECTS

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

- **Optical impressions**
- **Airway**
  - **Minimal cross section area**
- **Airway comparison**
- **Handout**
  - **Image**
  - **Screenshot**
  - **Airway comparison**

OPTICAL IMPRESSION OBJECT

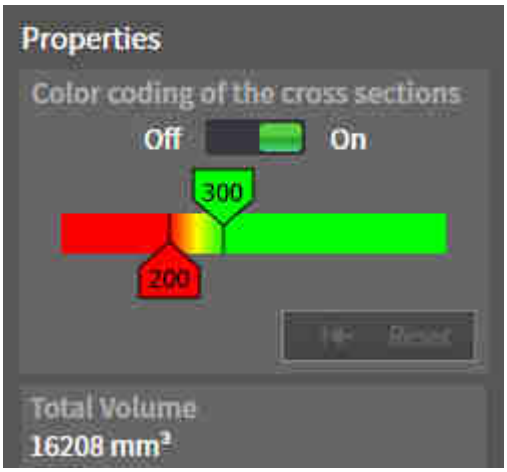
After you have imported and registered optical impressions, SICAT Air displays a **Optical impressions** object in the **Object browser**. A **Optical impressions** object contains the following sub-objects:

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

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

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

AIRWAY OBJECT



After you have segmented the airway, SICAT Air displays the **Airway** object in **Object browser**. The **Object bar** displays the following elements in the **Properties** area for this object:

- A switch that you can use to activate or deactivate the Color coding.
- The **Color coding of the cross sections** with sliders that you can use to define the minimum and maximum value of the cross-sectional area in mm^2 for the color gradient.
- The **Reset** button that you can use to reset the values for the color coding to the values from the SICAT Air settings. Information on how to define the default values in the SICAT Air settings can be found in the section *Changing SICAT Air settings [▶Page 212 - Standalone]*.
- The **Total volume** of the segmented airway area

SICAT Air applies changes to the properties immediately to the airway in the **3D** view.

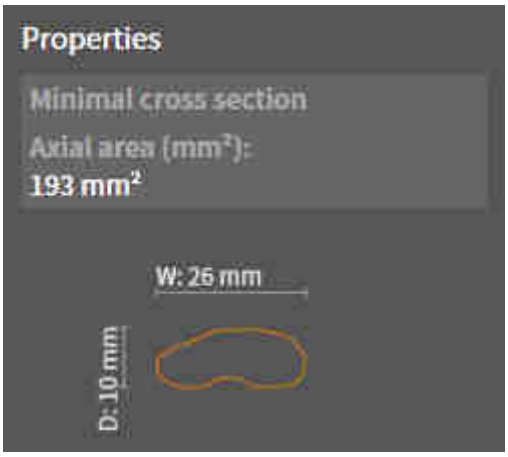
If you focus on the **Airway** object, SICAT Air will adjust the workspace region as follows:

- If not already active, SICAT Air will activate the **Airway** workspace.
- SICAT Air focuses all views on the middle of the smallest cross-sectional area.

If you hide the **Airway** object, SICAT Air will also hide the airway section.

If you move the mouse pointer over a **Airway** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Segment the airway** window.

MINIMAL CROSS SECTION AREA OBJECT



The following applies for **Minimal cross section area** objects:

- **Minimal cross section area** objects are beneath **Airway** objects.
- The designation of a **Minimal cross section area** object contains the smallest cross-sectional area in mm^2.
- In the **Properties** area, the object also displays the cross-section of the slice.
- If you focus on a **Minimal cross section area** object, the 2D slice views display the slice with the smallest cross-sectional area.

AIRWAY COMPARISON OBJECT

The following applies for **Airway comparison** objects:

- If you move the mouse pointer over a **Airway comparison** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Airway comparison** window.
- After you have created and activated an **Airway comparison**, the **Object browser** will display the following in the **Properties** area:
  - Creation time of the object
  - Preview of the object
- You can use the **Remove active object/group (Del)** function to remove an **Airway comparison** object. After removing it, you cannot restore the previous **Airway comparison** object and must perform the airway comparison once again.

HANDOUT OBJECT

The following applies for **Handout** objects:

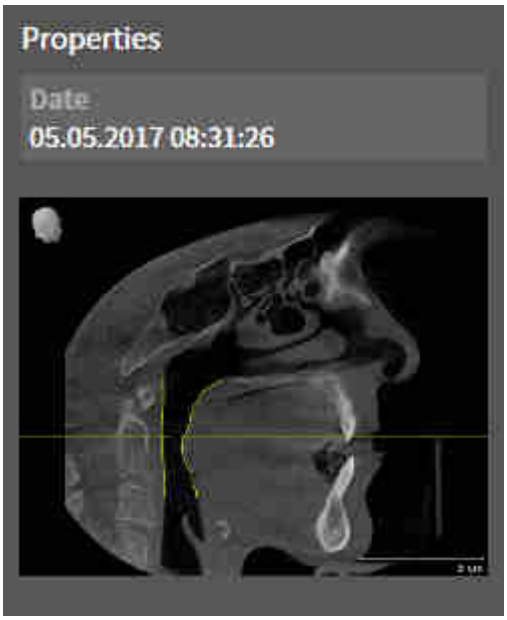
- If you move the mouse pointer over a **Handout** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Generate handout** window.
- You can use the **Remove active object/group (Del)** function to remove an **Handout** object. SICAT Air removes all associated**Screenshot** objects and **Image** objects.

IMAGE OBJECTS

The following applies for **Image** objects:

- **Image** objects are below**Handout** objects.
- SICAT Air combines all drawing objects of a slice in a workspace for each 2D view and creates a **Image** object from this.
- SICAT Air combines all drawing objects of a certain viewing direction and zoom factor in a workspace for the **3D** view and creates an **Image** object from this.
- After you have created and activated a **Image** object, the **Object browser** will display the following in the **Properties** area:
  - Creation time of the object
  - Preview of the object
- You can use the **Undo last object/group action (Ctrl+Z)** and **Redo object/group action (Ctrl+Y)** functions for individual arrows and circles.
- You can use the **Remove active object/group (Del)** function to remove a **Image** object and thus all arrows and circles contained in it at once. SICAT Air removes **Image** objects both from the **Object browser** and from the **Generate handout** window.
- If you focus on a **Image** object, SICAT Air restores the corresponding view for the time at which you have created the last arrow or circle contained therein.

SCREENSHOT OBJECTS



The following applies for **Screenshot** objects:

- **Screenshot** objects are below**Handout** objects.
- SICAT Air creates one **Screenshot** object per screenshot.
- After you have created and activated a **Screenshot** object, the **Object browser** will display the following in the **Properties** area:
  - Creation time of the object
  - Preview of the object
- You can use the **Remove active object/group (Del)** function to remove an **Screenshot** object. SICAT Air removes **Screenshot** objects both from the **Object browser** and from the **Generate handout** window.
- If you focus on a **Screenshot** object, SICAT Air restores the corresponding view for the time at which you have created the object.
- The show and hide functions are not available.

22 WORKSPACES

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

SICAT Air features two different workspaces:

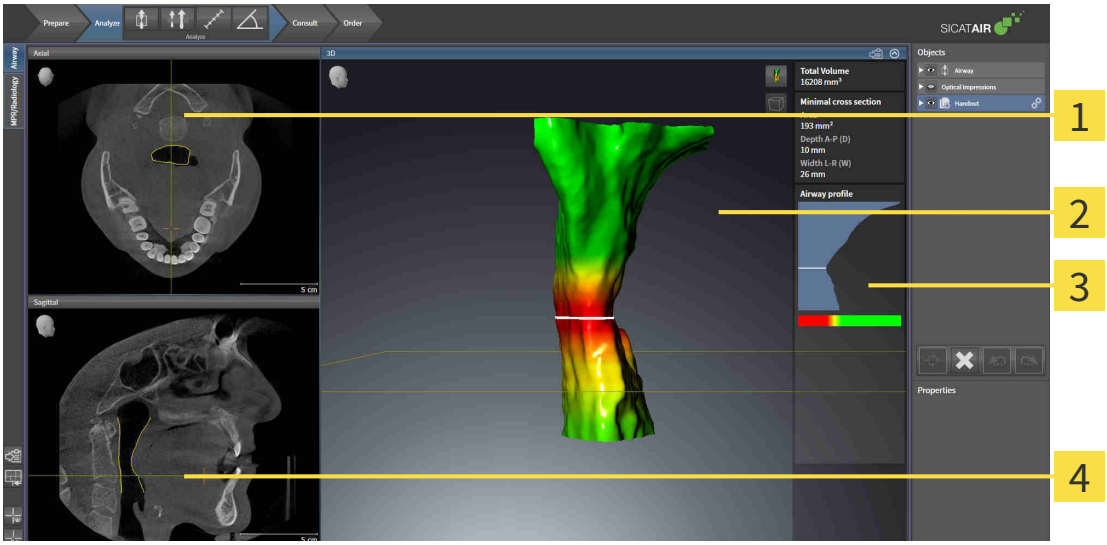
- **Airway** workspace - Information on this can be found in the section *Overview of the airway workspace [▶Page 99 - Standalone]*.
- **MPR/Radiology** workspace - Information on this can be found in the section *Overview of the MPR/Radiology workspace [▶Page 100 - Standalone]*.

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

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

- *Switching the active workspace [▶Page 101 - Standalone]*.
- *Adjusting and resetting the layout of workspaces [▶Page 102 - Standalone]*.
- *Adjusting the views [▶Page 105 - Standalone]*.
- There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶Page 116 - Standalone]*.
- You can document the contents of the active workspace. Information on this can be found in the section *Creating screenshots of workspaces [▶Page 103 - Standalone]*.

22.1 OVERVIEW OF THE AIRWAY WORKSPACE



1 **Axial** view

2 **3D** view

3 Airway analysis area

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 210 - Standalone]*.

3D VIEW

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

SAGITTAL VIEW

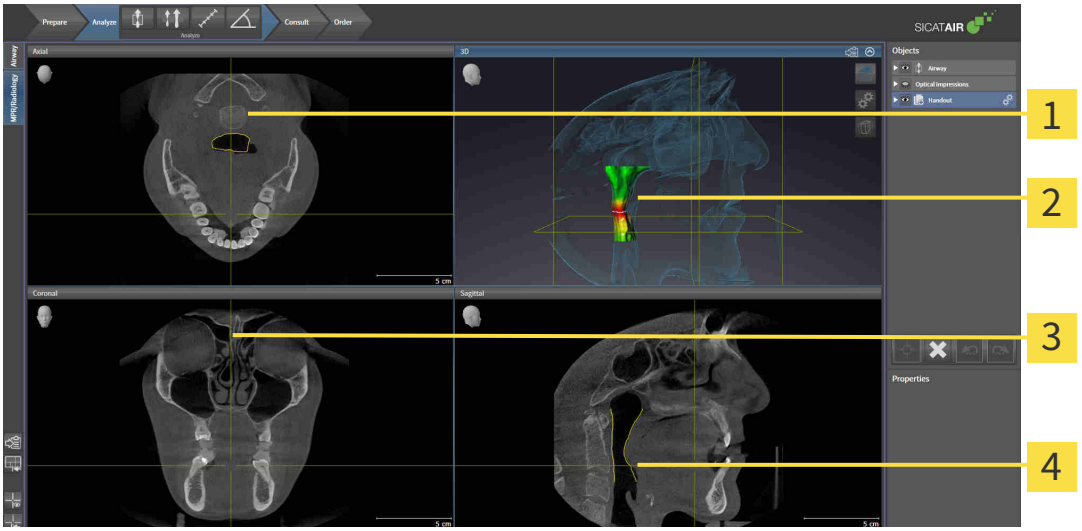
By default, the **Sagittal** view shows slices from the right. You can switch the viewing direction of the **Sagittal** view. Information on this can be found in the section *Changing visualization settings [▶Page 210 - Standalone]*.

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

The functions of the views can be found in the sections *Adjusting the views [▶Page 105 - Standalone]* and *Adjusting the 3D view [▶Page 116 - Standalone]*.

If you have created an **Airway** object by segmenting the airway, the airway analysis area will be available in the **3D** view. For further information see *SICAT Air objects [▶Page 92 - Standalone]*, *Segmenting the airway [▶Page 146 - Standalone]* and *Interacting with the airway profile [▶Page 159 - Standalone]*.

22.2 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 210 - 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 210 - Standalone]*.

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

The functions of the views can be found in the sections *Adjusting the views [▶Page 105 - Standalone]* and *Adjusting the 3D view [▶Page 116 - Standalone]*.

22.3 SWITCHING THE ACTIVE WORKSPACE

To change the active 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.

22.4 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 Air 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 Air resets the active workspace to the default layout. This means that the software displays all views in their default sizes.

22.5 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 the active workspace [▶Page 101 - Standalone]*.

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

▶ SICAT Air 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

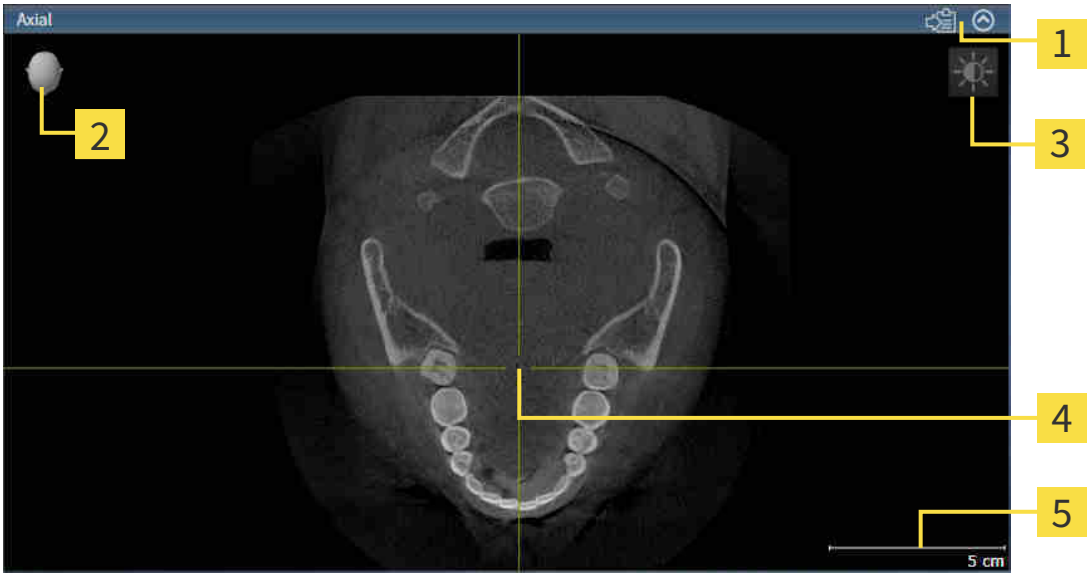
Views are contained in workspaces. A description of the various workspaces and views can be found under *Workspaces [▶Page 98 - Standalone]*.

You can adjust the views. For further information about this see *Adjusting the views [▶Page 105 - Standalone]* and *Adjusting the 3D view [▶Page 116 - 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 107 - Standalone]*.

An active view contains the following elements:



1 Title bar

2 Orientation head

3 View toolbar

4 Crosshairs

5 Scale

2D slice views display crosshairs. Crosshairs are lines of intersection with other slice views. SICAT Air 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 107 - Standalone]*
- *Maximizing and restoring views [▶Page 108 - Standalone]*
- *Adjusting and resetting the brightness and contrast of the 2D views [▶Page 109 - Standalone]*
- *Zooming views and panning views [▶Page 111 - Standalone]*
- *Scrolling through slices in the 2D slice views [▶Page 112 - Standalone]*
- *Moving, hiding and showing crosshairs and frames [▶Page 113 - Standalone]*
- *Resetting views [▶Page 114 - Standalone]*

There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶Page 116 - Standalone]*.

You can document the content of an active view. Information on this can be found in the section *Creating screenshots of views [▶ Page 115 - Standalone]*.

23.2 CHANGING THE ACTIVE VIEW

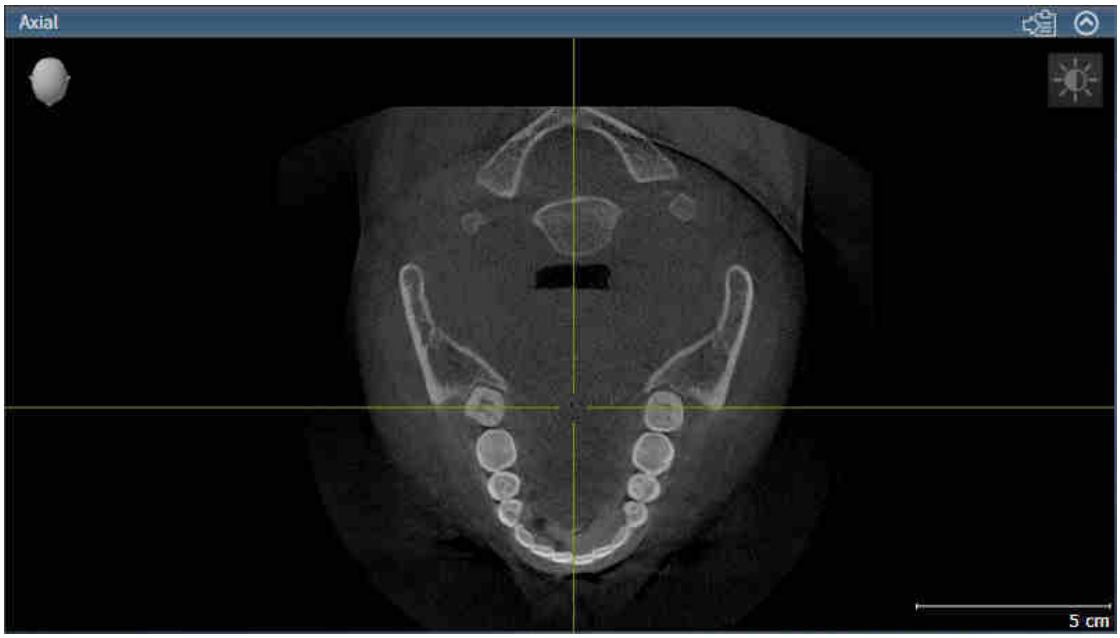
Only the active view shows the **View toolbar** and the title bar.

To activate a view, proceed as follows:

1. Place the mouse pointe over the desired view:

2. Click the desired view.

► SICAT Air activates the view:



You can identify the activated view by the orange 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 107 - Standalone]*.

☑ The desired view is not maximized.

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

   ▶ SICAT Air maximizes the view.

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

   ▶ SICAT Air 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.

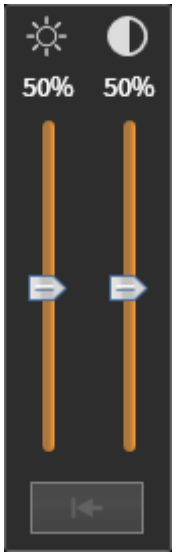
23.4 ADJUSTING AND RESETTING THE BRIGHTNESS AND CONTRAST OF THE 2D VIEWS

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 107 - 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 Air adjusts the brightness of the 2D view according to the position of the **Brightness** slider.

4. Release the left mouse button.

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

7. Release the left mouse button.

   ▶ SICAT Air 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 Air 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 Air adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Air adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Air 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 Air adjusts the slices and crosshairs of other views according to the current focus point.
   ▶ SICAT Air adjusts the frames of the **3D** views according to the current focus point.
4. Release the left mouse button.

▶ SICAT Air 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 Air hides the crosshairs in all 2D slice views.
   ▶ SICAT Air hides the frames in the **3D** view.

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

23.8 RESETTING VIEWS

To reset all views, proceed as follows:

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

► SICAT Air resets all views to the default values for zoom, panning views, scrolling, and moving the crosshairs.

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

23.9 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 107 - Standalone]*.

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

▶ SICAT Air 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 117 - Standalone]*.

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

- *Switching the display mode of the 3D view [▶Page 119 - Standalone]*
- *Configuring the active display mode of the 3D view [▶Page 120 - Standalone]*
- *Changing the clipping mode of the 3D view [▶Page 125 - Standalone]*

When you close SICAT Air, the software will save the layout of the workspaces and the settings of the views.

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:

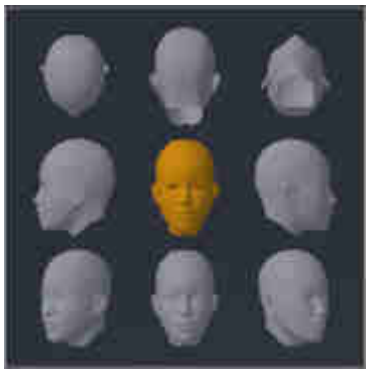
1. Place the mouse pointer on the **3D** view.
2. Click and hold the left mouse button.
   ▶ The mouse pointer becomes a hand.
3. Move the mouse.
   ▶ The viewing direction changes according to the movement of the mouse.
4. Release the left mouse button.

▶ SICAT Air 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 116 - Standalone]*.

SICAT Air provides different display modes for the **3D** view in the **MPR/Radiology** workspace and **Airway** workspace:

- The **Volumetric view with soft tissue** displays only the soft tissue.

- The **Surface view** displays a non-transparent slice through the volume.

- The **Volumetric view with bones and soft tissue** combines the **Volumetric view with soft tissue** and the **Volumetric view with bones**.

- The **Volumetric view with bones** displays only the bone.

- The **Opaque view of the airway** displays the segmented airway. The airway is the same as the **Airway** object in SICAT Air. Settings in the **Airway** object affect the **Opaque view of the airway**. Information on this can be found in the section *SICAT Air objects [▶Page 92 - Standalone]*.

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 119 - 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 120 - Standalone]*.

You can find information on how to use the different display modes together with the various clipping modes in the section *Clipping modes of the 3D view [▶Page 122 - 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 107 - 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 Air 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.

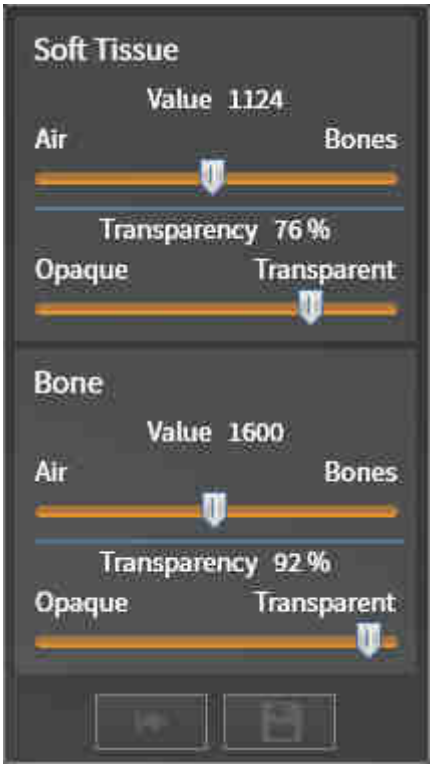
To configure the active display mode of the **3D** view, proceed as follows:

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶Page 107 - 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 119 - 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 Air adjusts the **3D** view according to the position of the slider.
3. Where available, click on the arrow icon next to .**Advanced options**.
   ▶ The **Advanced options** area expands.
4. Activate or deactivate the available check box.
   ▶ SICAT Air adjusts the **3D** view according to the status of the check box.
5. Move the slider you require.
   ▶ SICAT Air 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.

24.5 CLIPPING MODES OF THE 3D VIEW

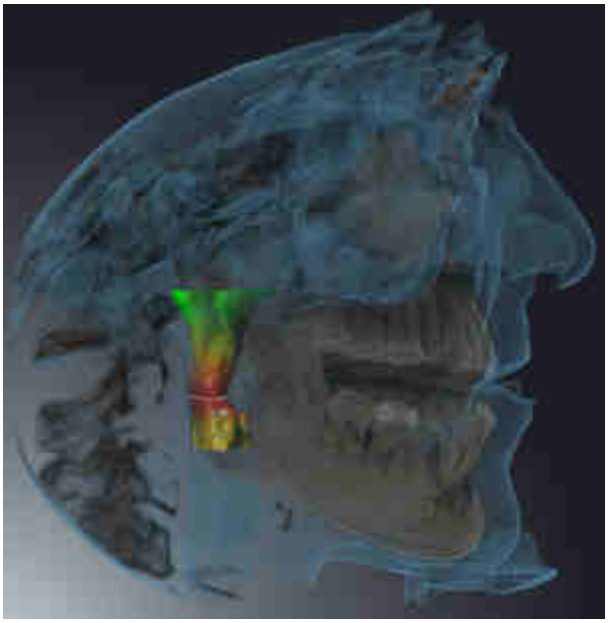
General information on the **3D** view can be found in the section *Adjusting the 3D view [▶Page 116 - Standalone]*.

You can hide parts of the volume in the **3D** view using the clipping modes.

SICAT Air provides different clipping modes in the **3D** view depending on the display mode:

CLIPPING: NONE

SICAT Air displays all parts of the volume contained in the active display mode.

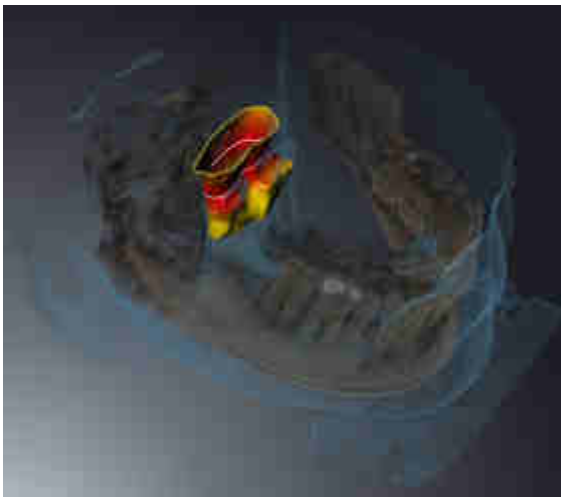


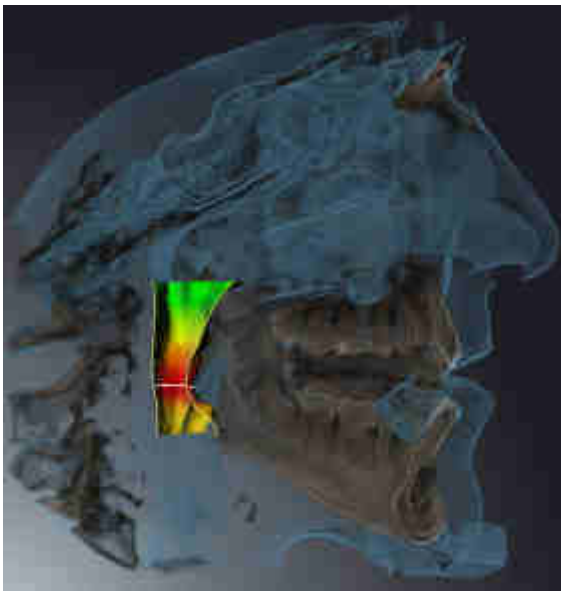
CLIPPING: AIRWAY SLAB

SICAT Air hides all parts of the volume that are on the side of the airway area. Information on how to adjust the airway area can be found in the section *Defining the airway area [▶Page 147 - Standalone]*. If you have not defined an airway area, SICAT Air will use default values.

CLIPPING: ACTIVE SLICE

SICAT Air hides all parts of the volume that are beyond a slice you have selected. You can set the slice depending on the clipping mode in the **Axial** slice view, **Coronal** slice view or **Sagittal** slice view. Information on this can be found in the section *Scrolling through slices in the 2D slice views [▶Page 112 - Standalone]*. A workspace only provides the slice clipping modes for which it contains the corresponding slice views. In the **Airway** workspace, you can also define the axial slice in the airway profile. Information on this can be found in the section *Interacting with the airway profile [▶Page 159 - Standalone]*.





CLIPPING MODES IN CERTAIN DISPLAY MODES

The following table shows which clipping modes are available in the display modes:

	Clipping: None	**Clipping: Airway Slab**	**Clipping: Active slice**
Volumetric view with soft tissue	Yes	Yes*	Yes
Surface view	No	No	Yes, sagittal*
Volumetric view with bones and soft tissue	Yes*	Yes	Yes
Volumetric view with bones	Yes*	No	Yes
Opaque view of the airway	Yes*	No	Yes

*Standard

Information on how to activate a clipping mode of the **3D** view can be found in the section *Changing the clipping mode of the 3D view [▶Page 125 - Standalone]*.

24.6 CHANGING THE CLIPPING MODE OF THE 3D VIEW

To change the clipping 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 107 - Standalone]*.

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

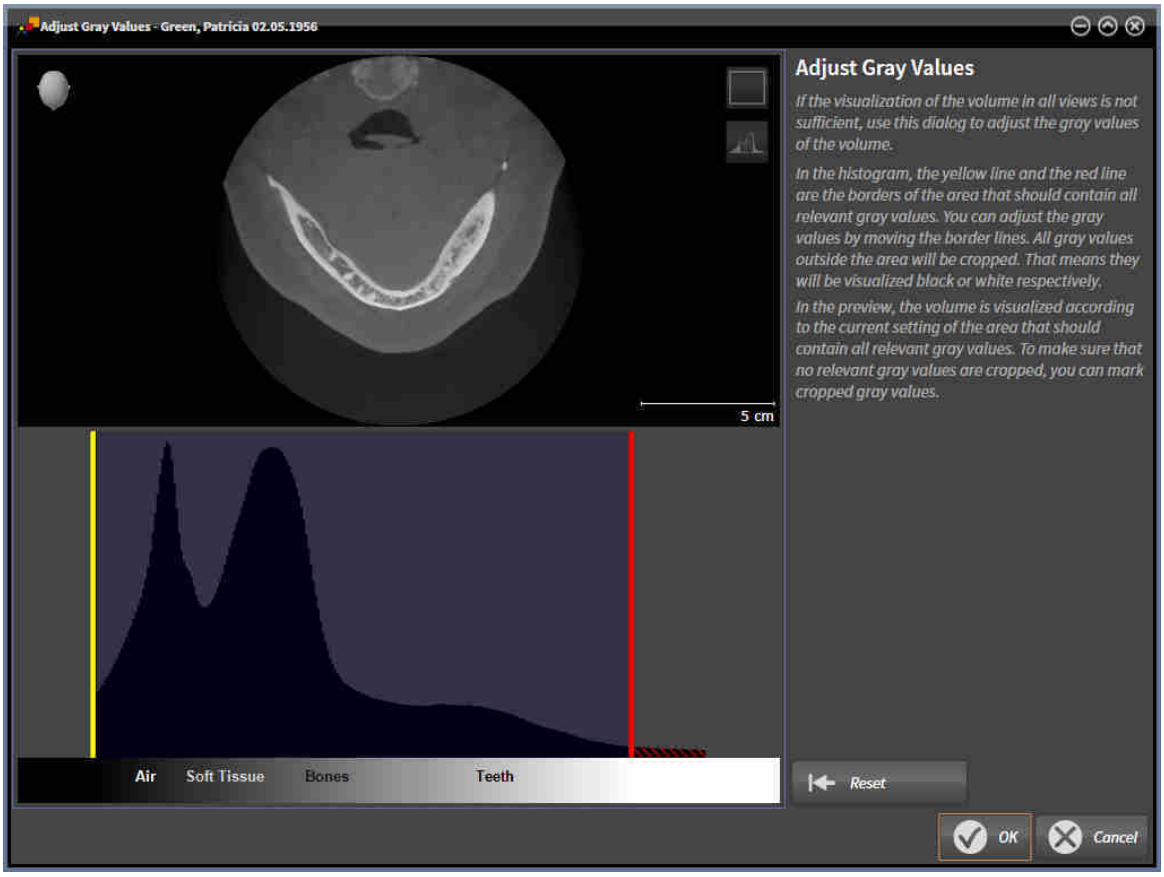
2. Click on the icon of the desired clipping mode.
   ▶ SICAT Air activates the desired clipping mode.
3. Move the mouse pointer out of the transparent **Switch clipping mode** window.

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

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 Air cuts all gray scale values outside the area. This means that the software shows them either in black or white.

SICAT Air 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 Air 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 128 - 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 109 - Standalone]*.

You can also adjust the display of the **3D** view. For further information see *Switching the display mode of the 3D view [▶Page 119 - Standalone]*, *Configuring the active display mode of the 3D view [▶Page 120 - Standalone]* and *Changing the clipping mode of the 3D view [▶Page 125 - Standalone]*.

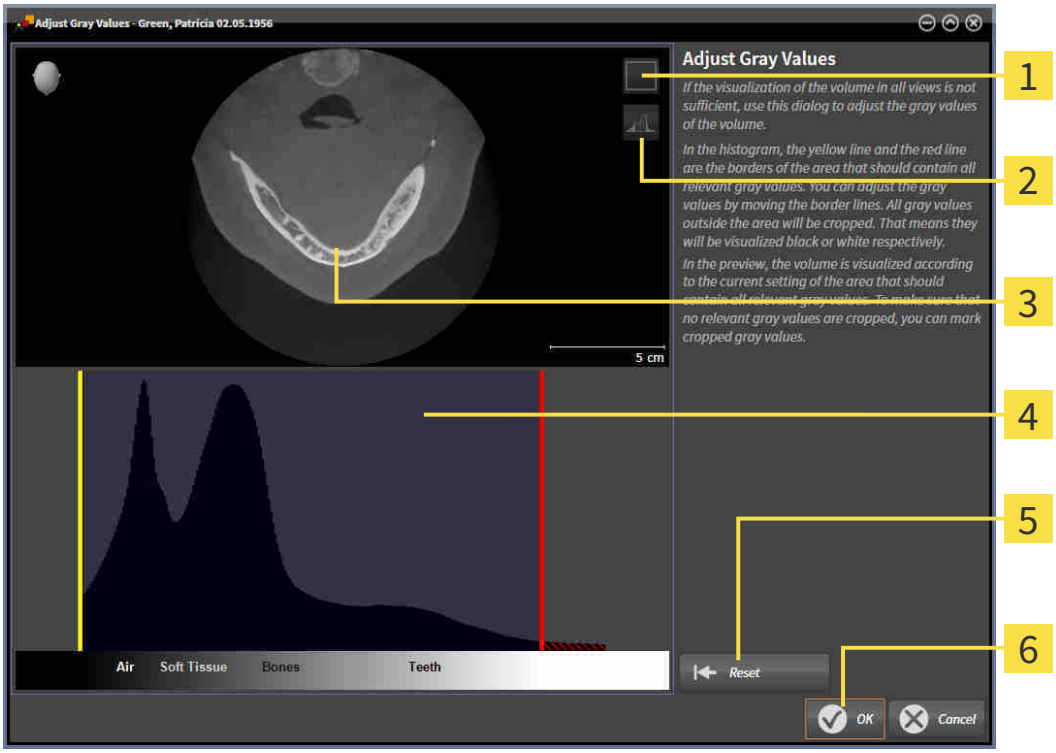
25.1 ADJUSTING GRAY SCALE VALUES

General information on gray scale values can be found in the section *Gray scale values [▶ Page 126 - 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 Air adjusts all gray scale values in the **Axial** slice view accordingly.
   ▶ SICAT Air 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 Air adjusts all gray scale values in the **Axial** slice view accordingly.

   ▶ SICAT Air 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 Air 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 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:

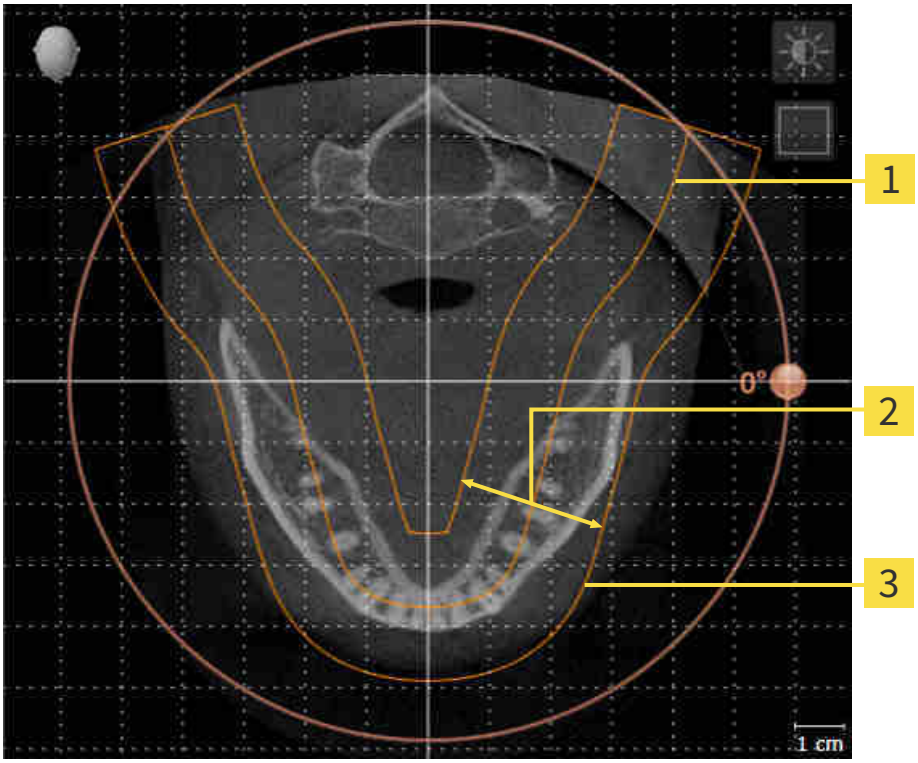
- Sub-optimal positioning of the patient during the 3D X-ray scan
- Orientation according to case, for example orientation of the axial slices parallel to the Frankfurt plane or parallel to the bite plane
- Optimizing the panorama view

If you adjust the volume orientation in SICAT Air, all other SICAT applications adopt your changes.

Information on how to adjust the volume orientation can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]*.

PANORAMIC REGION

SICAT Air 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 Air, all other SICAT applications adopt your changes.

Information on adjusting the panoramic region can be found in the section *Adjusting the panoramic region [▶Page 137 - Standalone]*.

26.1 ADJUSTING THE VOLUME ORIENTATION

General information on volume orientation can be found in the section *Volume orientation and panoramic region [▶Page 130 - Standalone]*.

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

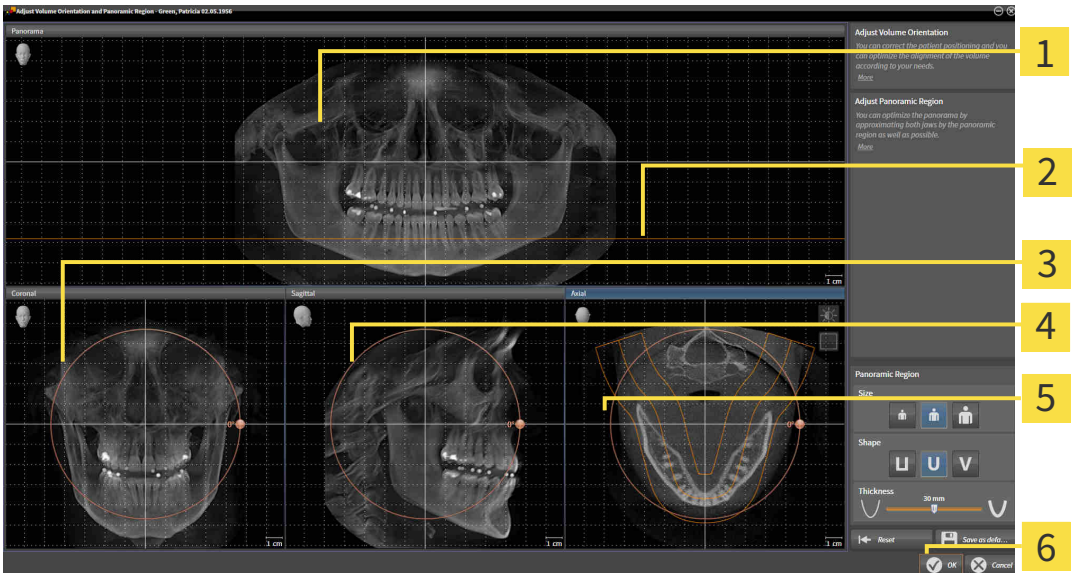
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Rotating volumes in the **Coronal** view
- Rotating volumes in the **Sagittal** view
- Rotating volumes in the **Axial** view

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 Axial reference line

3 **Coronal** view with **Rotation** slider

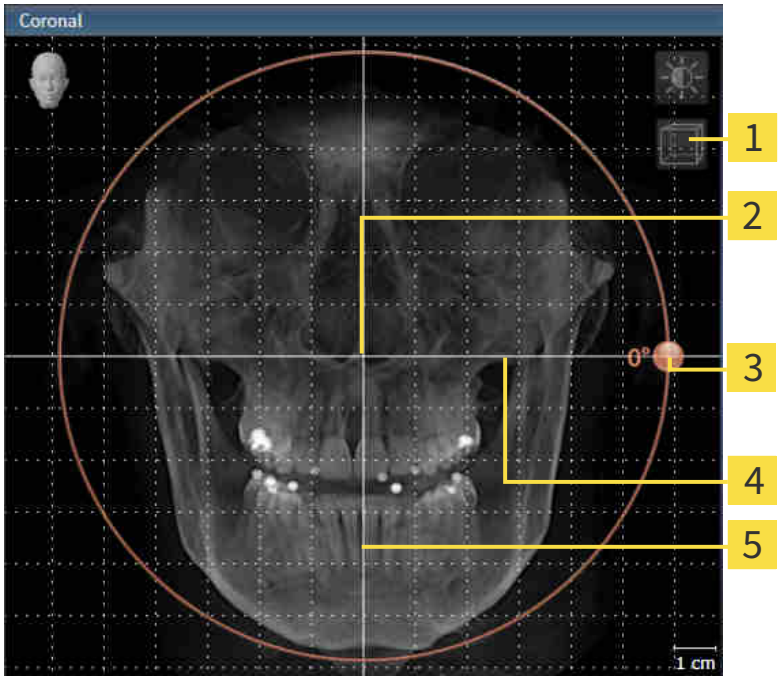
4 **Sagittal** view with **Rotation** slider

5 **Axial** view with **Rotation** slider

6 **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

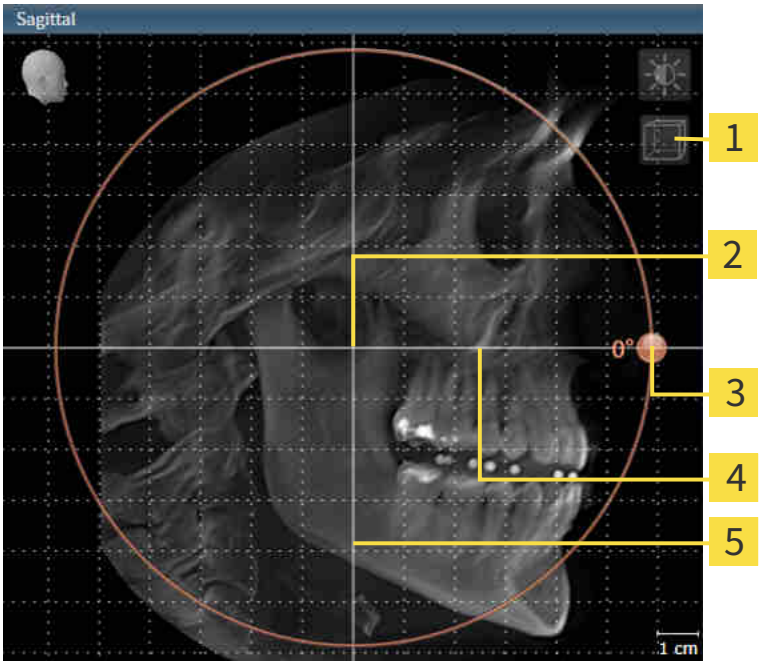
4 Horizontal reference line

5 Vertical reference line

2. Make sure that the projection mode is active. Click on the **Enable projection mode** icon if necessary.
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 Air 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:

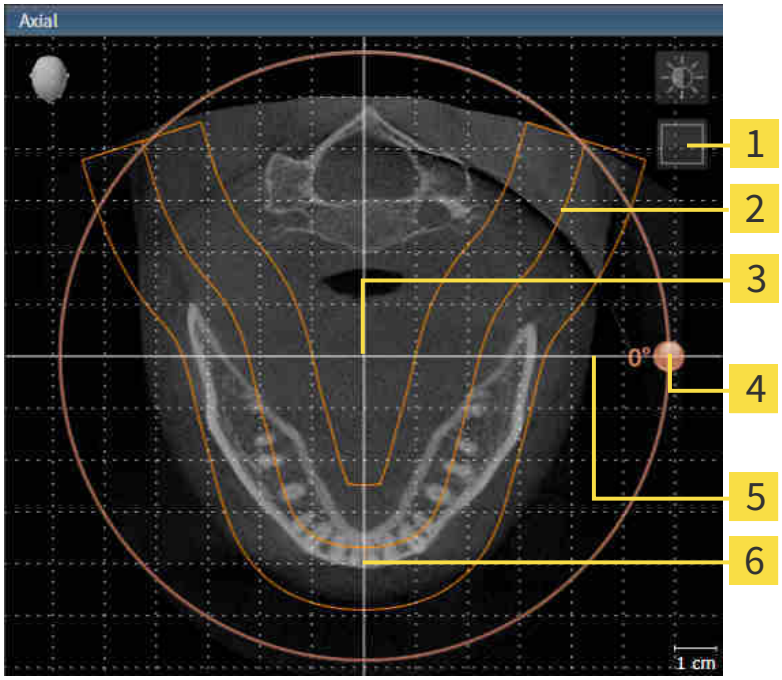


1 **Enable slices mode** icon or **Enable projection mode** icon	4 Horizontal reference line
2 Center of rotation	5 Vertical reference line
3 **Rotation** slider	

2. Make sure that the projection mode is active. Click on the **Enable projection mode** icon if necessary.
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 Air 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 projection mode** icon or **Enable slices 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 slice mode is active. Click on the **Enable slices mode** icon if necessary.
3. Scroll to a slice with the roots of the mandibular teeth, for example by left clicking on the axial reference lines in the panorama view and hold the left button as you move the mouse up or down as desired.
4. 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 Air moves the center of rotation, the horizontal reference lines and the vertical reference lines accordingly.
5. Place the mouse pointer on the **Rotation** slider.
6. Click and hold the left mouse button.
7. Move the **Rotation** slider along the circle in the desired direction.
   ▶ SICAT Air rotates the volume in the **Axial** view in a circle around the center of rotation and in the other views accordingly.
8. 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.
9. To save your changes, click **OK**.

▶ If the change of the volume orientation affects existing objects in SICAT applications, SICAT Air opens a message window which states the exact impact.

10. If you still want to adjust the volume orientation, click on the **Adjust** button in the message window.

▶ SICAT Air 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 109 - Standalone]*.
- You can zoom in the views. SICAT Air synchronizes the zoom between the views with the exception of the **Axial** view.
- To reset the volume orientation and panoramic region, click on the **Reset** button.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- If you do not want to save your changes, click **Cancel**.

26.2 ADJUSTING THE PANORAMIC REGION

General information on the panoramic region can be found in the section *Volume orientation and panoramic region [▶Page 130 - Standalone]*.

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

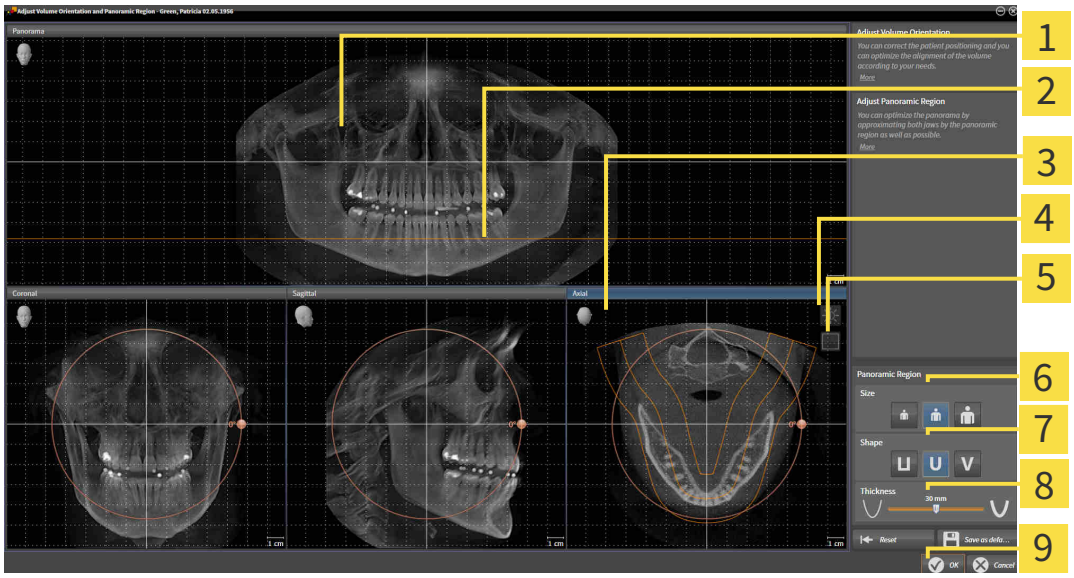
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Adjusting the slice position of the **Axial** view
- Moving the panoramic region
- Rotating volumes in the **Axial** view
- Adjusting**Size**, **Shape** and **Thickness** of the panoramic region

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	6 **Size** buttons
2 Axial reference line	7 **Shape** buttons
3 **Axial** view with **Rotation** slider	8 **Thickness** slider
4 **Adjust brightness and contrast** icon	9 **OK** button
5 **Enable projection mode** icon or **Enable slices mode** icon	

ADJUSTING THE SLICE POSITION OF THE AXIAL VIEW

1. Make sure that the slice mode of the **Axial** view is active. Click on the **Enable slices mode** icon if necessary.
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 Air 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 Air 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. Select the **Size** of the panoramic region that best reflects the mandible of the patient by clicking on the corresponding **Size** button.

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

3. Make sure that the projection mode of the **Axial** view is active. Click on the **Enable projection mode** icon if necessary.

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 Air 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 109 - Standalone]*.
- You can zoom in the views. SICAT Air synchronizes the zoom between the views with the exception of the **Axial** view.
- To reset the volume orientation and panoramic region, click on the **Reset** button.
- To save the current volume orientation and panoramic region as a default, click on the **Save as default** button.
- If you do not want to save your changes, click **Cancel**.

27 DISTANCE AND ANGLE MEASUREMENTS

SICAT Air features two different types of measurement:

- Distance measurements

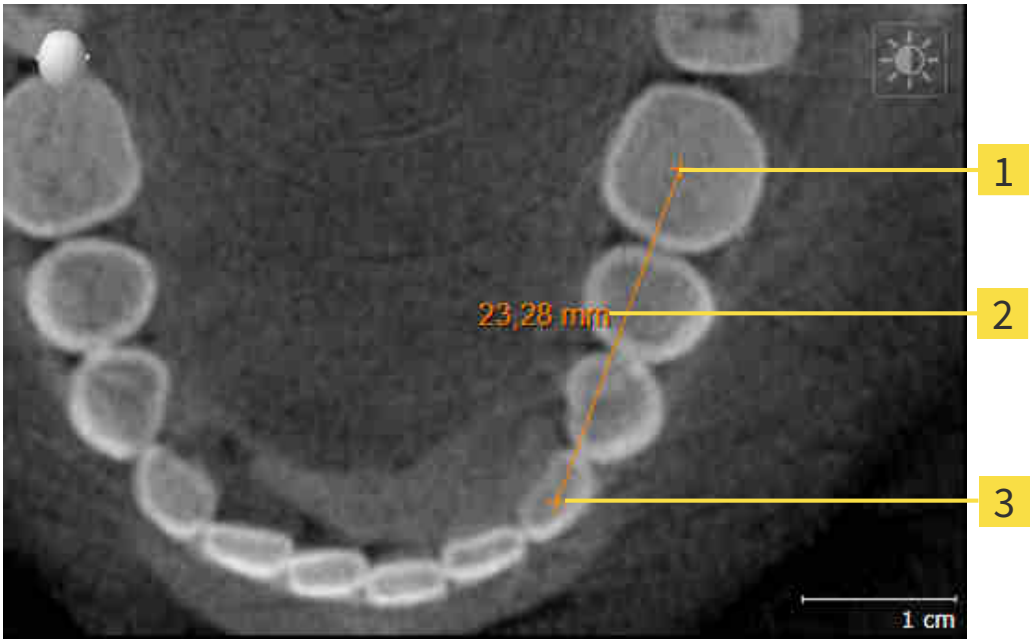
- Angle measurements

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 Air will also add it to the **Measurements** group in the **Object browser**.

The following actions are available for measurements:

- *Adding distance measurements [▶Page 141 - Standalone]*
- *Adding angle measurements [▶Page 142 - Standalone]*
- *Moving measurements, individual measuring points and measured values [▶Page 144 - Standalone]*
- Activating, hiding and showing measurements - Information on this can be found in the section *Managing objects with the object browser [▶Page 89 - 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 91 - Standalone]*.

27.1 ADDING DISTANCE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

To add a distance measurement, proceed as follows:

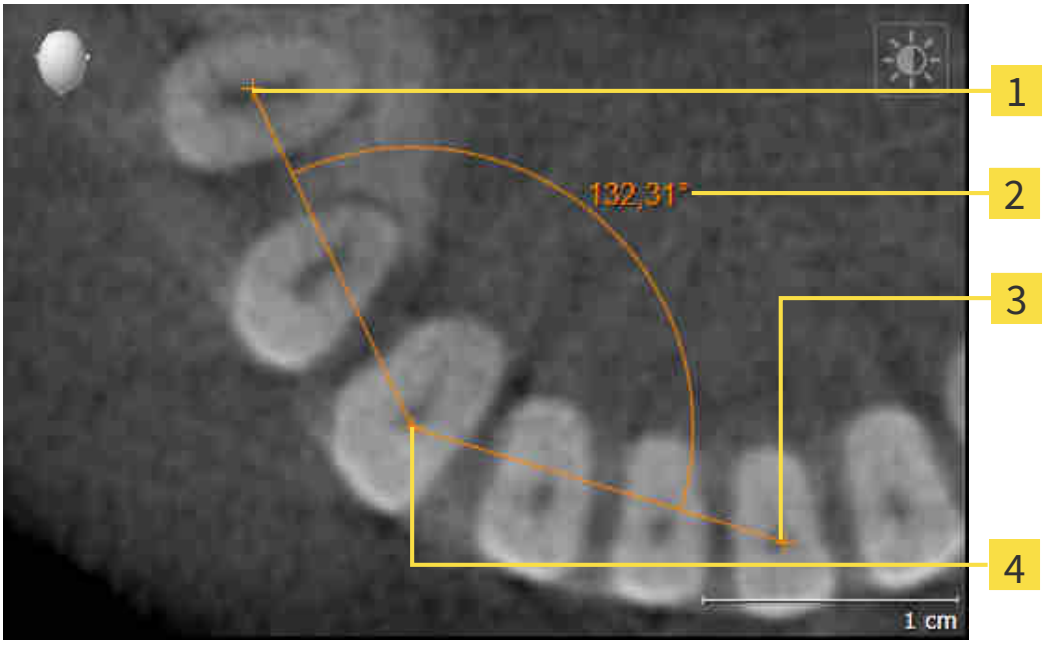
☑ The **Diagnose** workflow step is already expanded.

1. In the **Diagnose** workflow step, click the **Add distance measurement (D)** icon.
   ▶ SICAT Air 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 Air illustrates the starting point using a small cross.
   ▶ SICAT Air shows a distance line between the starting point and the mouse pointer.
   ▶ SICAT Air 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 Air illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

27.2 ADDING ANGLE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

4 Vertex

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 Air 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 Air illustrates the starting point using a small cross.
   ▶ SICAT Air shows the first side 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 Air illustrates the vertex using a small cross.
   ▶ SICAT Air shows the second side of the angle measurement by a line from the vertex to the mouse pointer.
   ▶ SICAT Air shows the current angle between both sides of the angle measurement and in the **Object browser**.

5. Move the mouse pointer to the end point of the second side and left-click.

► SICAT Air illustrates the end point using a small cross.

You can cancel adding measurements at any time by pressing **ESC**.

27.3 MOVING MEASUREMENTS, INDIVIDUAL MEASURING POINTS AND MEASURED VALUES

MOVING MEASUREMENTS

To move a measurement, proceed as follows:

☑ SICAT Air shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 89 - Standalone]* and *Managing objects with the object toolbar [▶Page 91 - 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 Air maintains the current position of the measurement.

MOVING INDIVIDUAL MEASURING POINTS

To move an individual measuring point, proceed as follows:

☑ SICAT Air shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 89 - Standalone]* and *Managing objects with the object toolbar [▶Page 91 - 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 Air maintains the current position of the measuring point.

MOVING MEASURED VALUES

To move a measured value, proceed as follows:

☑ SICAT Air shows the desired measurement already in a 2D slice view. For further information about this see *Managing objects with the object browser [▶Page 89 - Standalone]* and *Managing objects with the object toolbar [▶Page 91 - 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 Air shows a dotted line between the measured value and the corresponding measurement.
4. Release the left mouse button.

▶ SICAT Air maintains the current position of the measured value.

After you have moved the value of a measurement, the SICAT Air will define the value at an absolute position. To position the value again relative to the measurement, double click on the value.

28 SEGMENTING THE AIRWAY

NOTICE	**Before segmenting the airway, it may be useful to align the volume according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]*. If you align the volume only after segmenting the airway, SICAT Air removes the Airway object and you must carry out segmentation once more.**

In SICAT Air you require an **Airway** object for the airway analysis. You create an **Airway** object by segmenting the airway. The **Airway** object illustrates the airway separately, displays the key information and offers additional interaction options.

SICAT Air requires an airway area to segment the airway. You can define the airway area with two anatomical reference points in the **Segment the airway** window. After this, SICAT Air will create an airway area in the form of a cuboid. The software defines the airway area using reference points and a configurable lateral width. SICAT Air finally performs an automatic segmentation of the airway in the airway area. You can subsequently move the reference points and change the lateral width, whereupon the software will perform the automatic segmentation of the airway once more.

SICAT Air marks areas red in the **3D** view, which the software cannot clearly identify as an airway. If SICAT Air has incorrectly assigned parts of the volume, correction tools are available.

Segmenting the airway consists of the following step:

- *Defining the airway area [▶Page 147 - Standalone]*

The following steps are optional:

- *Correcting the airway segmentation [▶Page 151 - Standalone]*
- *Removing non-required areas from the airway [▶Page 153 - Standalone]*

If the automatic segmentation of the airway still does not meet the anatomical circumstances even after using the correction tools, you can segment the airway manually. Information on this can be found in the section *Segmenting the airway manually [▶Page 154 - Standalone]*.

28.1 DEFINING THE AIRWAY AREA

CAUTION

3D X-ray scans of insufficient quality may result in the quality of the segmented airway and airway profile being insufficient.

Only use 3D X-ray scans of a sufficient quality to create the segmented airway and airway profile with a sufficient quality and resolution.

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶Page 146 - Standalone]*.

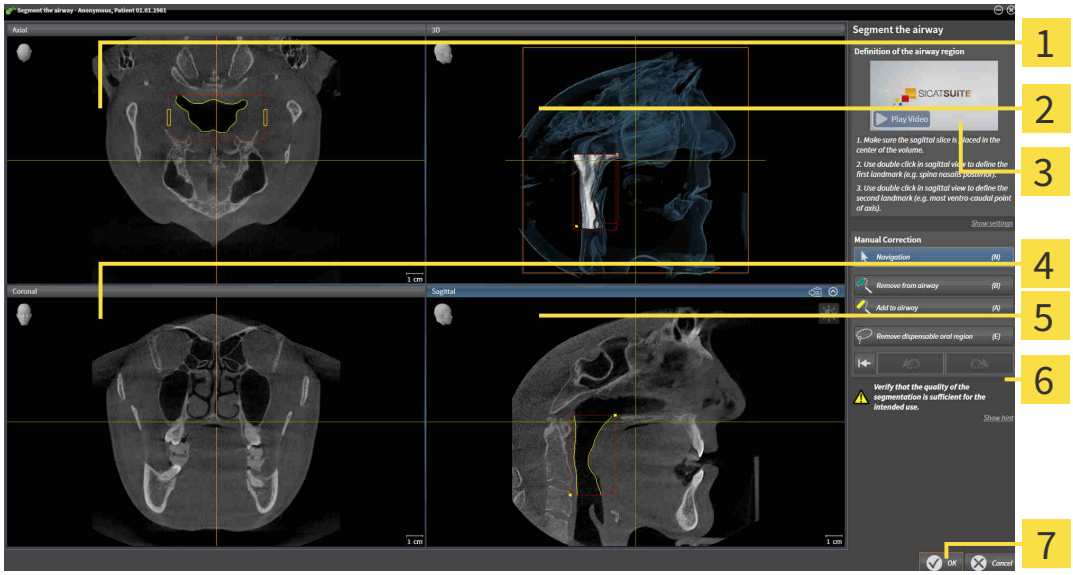
OPENING THE “SEGMENT THE AIRWAY" WINDOW

☑ You have already aligned the volume according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]*.

☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 85 - Standalone]*.

- Click on the **Segment the airway** icon.

▶ The **Segment the airway** window opens:



1 **Axial** view

2 **3D** view

3 Example video

4 **Coronal** view

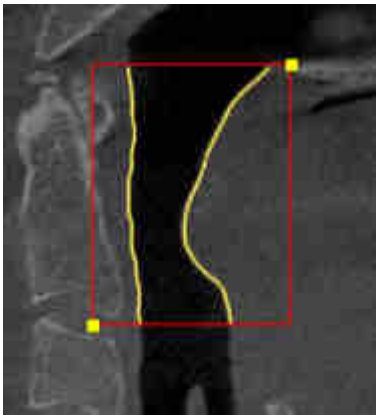
5 **Sagittal** view

6 Tool area

7 **OK** button

SETTING ANATOMICAL REFERENCE POINTS TO DEFINE THE AIRWAY AREA

1. Make sure that the **Sagittal** view shows the desired point for the upper reference point in the airway. If necessary, scroll through the slices in the **Sagittal** view.
2. Double click on the position of the upper reference point of the airway in the **Sagittal** view:

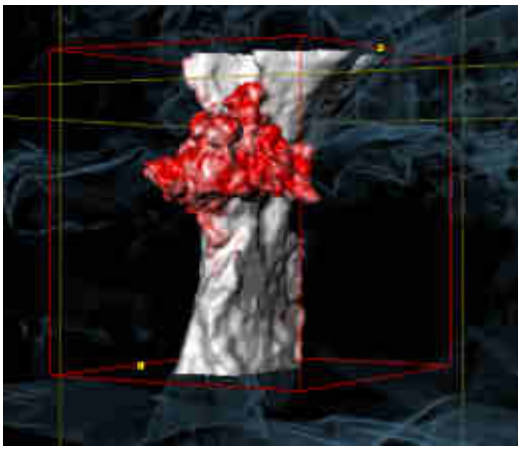


   ▶ SICAT Air marks the upper reference point with a yellow rectangle.
   ▶ The lower reference point will now match the position of the mouse pointer.
   ▶ SICAT Air marks the airway area with a red frame.
3. Make sure that the **Sagittal** view shows the desired point for the lower reference point in the airway. If necessary, scroll through the slices in the **Sagittal** view.
4. Double click on the position of the lower reference point of the airway in the **Sagittal** view.
   ▶ SICAT Air marks the lower reference point with a yellow rectangle.

▶ SICAT Air defines the airway area according to the position of the reference points.

▶ SICAT Air automatically segments the airway based on the airway area.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway:



MOVING REFERENCE POINTS OF THE AIRWAY AREA

You can move the reference points in all 2D views.

1. Make sure that the navigation mode is active. Click on the **Navigation** button if necessary.
2. Make sure that the desired 2D view shows the desired reference point. If necessary, scroll through the slices.
3. Place the mouse pointer on a reference point.
   ▶ The mouse pointer becomes a crosshair.
4. Click and hold the left mouse button.
5. Place the mouse pointer on the new position of the reference point.
   ▶ The reference point tracks the movement of the mouse pointer.
   ▶ SICAT Air adjusts the airway area according to the position of the reference point.
6. Release the left mouse button.

▶ SICAT Air maintains the new position of the reference point.

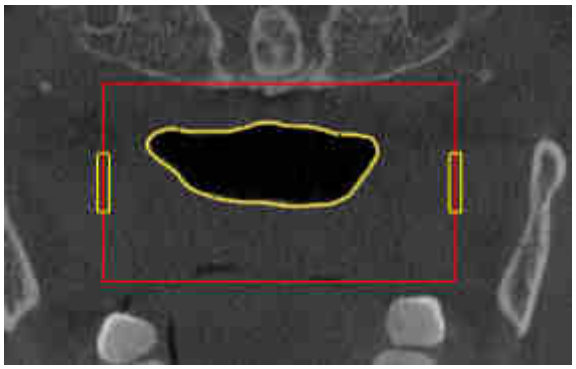
▶ SICAT Air automatically re-segments the airway based on the new airway area.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway.

CHANGING THE LATERAL SIZE OF THE AIRWAY AREA

The default lateral size is 60 mm.

1. Make sure that the navigation mode is active. Click on the **Navigation** button if necessary.
2. Make sure that the **Axial** view shows the markers for the lateral size. If necessary, scroll through the slices in the **Axial** view:



3. Place the mouse pointer on a marker of the lateral size.
   ▶ The mouse pointer becomes a two-way arrow.
4. Click and hold the left mouse button.
5. Place the mouse pointer on the desired position of the marker.
   ▶ The marker tracks the movement of the mouse pointer.
   ▶ SICAT Air adjusts the airway area according to the new lateral size.

6. Release the left mouse button.

▶ SICAT Air maintains the new position of the marker.

▶ SICAT Air automatically re-segments the airway based on the new airway area.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway.

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [▶Page 155 - Standalone]*.

If the segmentation does not match the anatomical characteristics , continue with the section *Correcting the airway segmentation [▶Page 151 - Standalone]* or *Removing non-required areas from the airway [▶Page 153 - Standalone]*.

In addition to the described process, the following actions are available in the **Segment the airway** 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 109 - Standalone]*.
- You can copy screenshots of individual views to the clipboard and to the handout by clicking on the **Copy screenshot to clipboard (Ctrl+C)** icon. Information on this can be found in the section *Creating screenshots of views [▶Page 115 - Standalone]*.
- If you want to undo the last work step, you can click on the **Undo (Ctrl+Z)** button.
- If you want to redo the last work step, you can click on the **Redo (Ctrl+Y)** button.
- If you want to undo all work steps, you can click on the **Remove airway segmentation and reset all changes** button and confirm this in the message window by clicking **OK**.
- If you want to cancel the segmentation of the airway, you can click **Cancel**.

The **Undo (Ctrl+Z)** and **Redo (Ctrl+Y)** functions are only available as long as the **Segment the airway** window is open.

28.2 CORRECTING THE AIRWAY SEGMENTATION

The segmentation of SICAT Air 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 of the airway can be found in the section *Segmenting the airway [▶Page 146 - Standalone]*.

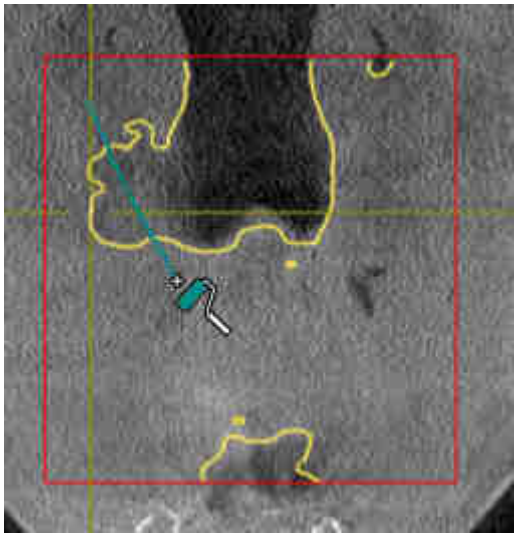
REMOVING INCORRECTLY IDENTIFIED AREAS FROM THE AIRWAY

You can remove areas from the airway in all 2D views.

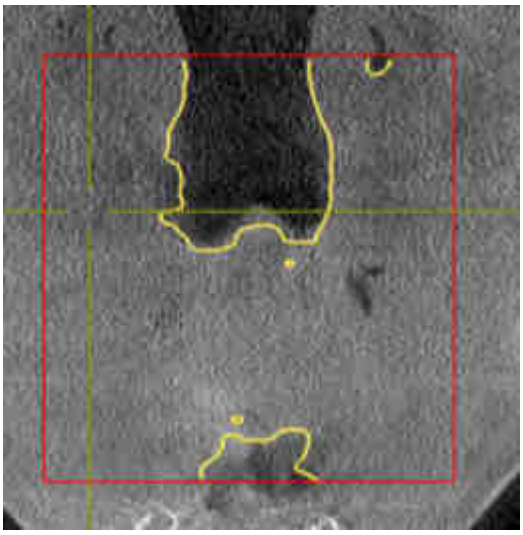
In your corrections, consider in particular the areas marked red in the **3D** view. However, these areas may not be the only areas that SICAT Air may have incorrectly identified as part of the airway.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶Page 147 - Standalone]*.

1. Click the **Remove from airway** button in the **Segment the airway** window.
   ▶ The mouse pointer becomes a blue paint roller.
2. Mark the areas that SICAT Air has incorrectly identified as part of the airway in a 2D view within the airway area.



► SICAT Air removes the marked area from the airway:



ADDING INCORRECTLY IDENTIFIED AREAS TO THE AIRWAY

You can mark areas as part of the airway in all 2D views.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [►Page 147 - Standalone]*.

1. Click the **Add to airway** button in the **Segment the airway** window.
   ► The mouse pointer becomes a yellow paint roller.
2. Mark additional areas as part of the airway in a 2D view within the airway area.
   ► SICAT Air identifies the marked area as part of the airway.

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [►Page 155 - Standalone]*.

If the automatic segmentation of the airway still does not meet the anatomical circumstances even after using the correction tools, you can segment the airway manually. Information on this can be found in the section *Segmenting the airway manually [►Page 154 - Standalone]*.

28.3 REMOVING NON-REQUIRED AREAS FROM THE AIRWAY

General information on segmentation of the airway can be found in the section *Segmenting the airway [▶Page 146 - Standalone]*.

Use the **Remove dispensable oral region** tool in air-carrying areas, which are not part of the relevant airway. This includes, for example the oral cavity and protuberances.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶Page 147 - Standalone]*.

1. Click the **Remove dispensable oral region** button in the **Segment the airway** window.

   ▶ The mouse pointer becomes a lasso.

2. Frame areas that you wish to completely remove from detection in the **3D** view. It does not matter whether this is in the airway or an area outside the airway:

▶ SICAT Air removes the entire area behind the marker from the volume. This means that SICAT Air can no longer identify this area as an airway or area outside the airway:

You can also use the **Remove dispensable oral region** function in the 2D views. In this case, SICAT Air makes changes to the current slice only.

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [▶Page 155 - Standalone]*.

If the automatic segmentation of the airway still does not meet the anatomical circumstances even after using the correction tools, you can segment the airway manually. Information on this can be found in the section *Segmenting the airway manually [▶Page 154 - Standalone]*.

28.4 SEGMENTING THE AIRWAY MANUALLY

The segmentation of SICAT Air 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 of the airway can be found in the section *Segmenting the airway [▶Page 146 - Standalone]*.

Even if you use the correction tools, SICAT Air may still not be able to automatically produce usable segmentation of the airway on certain 3D X-ray scans. In this case, segment the airway manually:

☑ You have already defined an airway area. Information on this can be found in the section *Setting the airway area [▶Page 147 - Standalone]*.

1. Click the **Show settings** button in the **Segment the airway** window.
   ▶ The **Show settings** area expands.
2. Activate the **Segment the airway manually** check box.
   ▶ If available, SICAT Air will remove the automatic segmentation of the airway and accompanying corrections.

3. To mark areas as part of the airway, use the **Add to airway** drawing tool within the airway area.

4. To mark areas outside the airway, use the **Remove from airway** drawing tool within the airway area.

▶ SICAT Air segments the airway according to your markers.

▶ SICAT Air marks areas in the **3D** view red that the software cannot clearly identify as an airway.

If you want to segment the airway manually, you have to mark the airway as well as areas outside the airway. After this, SICAT Air will perform the segmentation.

The tools to correct the automatic segmentation of the airway are also available for the manual segmentation of the airway:

- *Correcting the airway segmentation [▶Page 151 - Standalone]*
- *Removing non-required areas from the airway [▶Page 153 - Standalone]*

If the segmentation of the airway matches the anatomical characteristics, continue with the section *Completing the segmentation of the airway [▶Page 155 - Standalone]*.

28.5 COMPLETING THE SEGMENTATION OF THE AIRWAY

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶Page 146 - Standalone]*.

☑ You have already defined an airway area in the **Segment the airway** window. Information on this can be found in the section *Defining the airway area [▶Page 147 - Standalone]*.

- If the segmentation matches the anatomical characteristics, click on **OK**.

▶ SICAT Air adopts the segmented airway.

▶ SICAT Air closes the **Segment the airway** window.

▶ If not already active, SICAT Air will activate the **Airway** workspace.

▶ In the **3D** view, SICAT Air activates the **Opaque view of the airway** display mode.

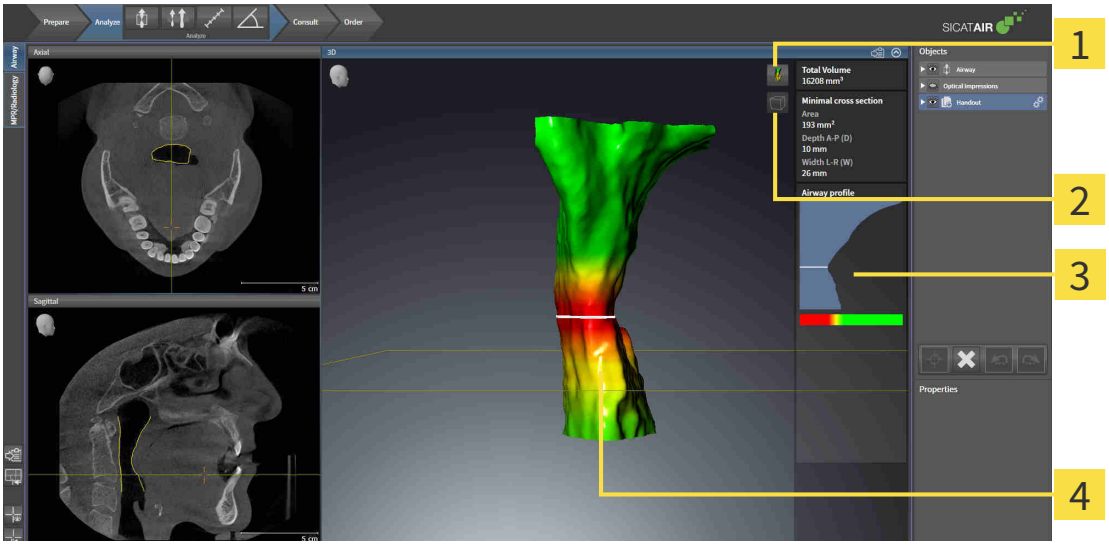
▶ In the **Object bar**, SICAT Air creates an **Airway** object.

29 AIRWAY ANALYSIS

Before starting the airway analysis, you have to segment the airway. Information on this can be found in the section *Segmenting the airway [▶Page 146 - Standalone]*.

SICAT Air provides the following possibilities for the airway analysis:

- Airway analysis area
- Display modes
- Clipping modes
- Color coding



1 **Switch display mode** icon

2 **Switch clipping mode** icon

3 Airway analysis area

4 Segmented **Airway** object with color coding

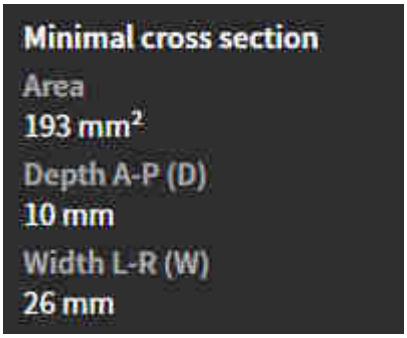
TOTAL VOLUME

Above the airway profile, SICAT Air displays the **Total volume** of the **Airway** object in mm^3.

AIRWAY ANALYSIS AREA

After you have segmented the airway, SICAT Air displays the airway analysis area in the **Airway** workspace.

The upper part of the airway analysis area looks as follows:



You can view the following information on the segmented airway:

- **Minimal cross section area**
- **Depth A-P (D)**
- **Width L-R (W)**

The middle section of the airway analysis area displays the airway profile. The airway profile visualizes the cross-sectional areas of the axial slices along the airway:

The airway profile contains two lines that have the following meanings:

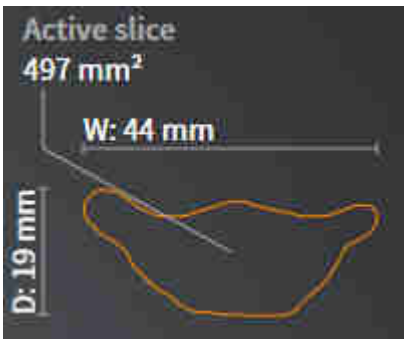
- The white line symbolizes the slice with the smallest cross-sectional area.
- The orange line symbolizes the selected slice.

The selected slice determines the position of the clipping in the **3D** view and the information in the lower section of the airway analysis area.

Information on selecting a slice in the airway profile can be found in the section *Interacting with the airway profile [▶Page 159 - Standalone]*.

The color gradient below the airway profile establishes the relationship between the color coding and slice areas.

The lower part of the airway analysis area looks as follows:



You can view the following information on the cross-section of the selected slice:

- Visualization of the cross-section
- Cross-sectional area
- Width
- Depth

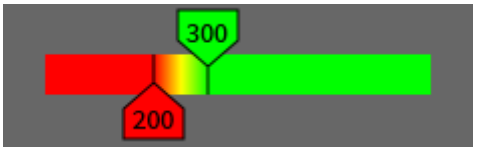
DISPLAY MODES

In the **3D** view, SICAT Air can highlight certain aspects of the volume with different display modes. Information on this can be found in the section *Display modes of the 3D view [▶Page 118 - Standalone]*.

CLIPPING MODES

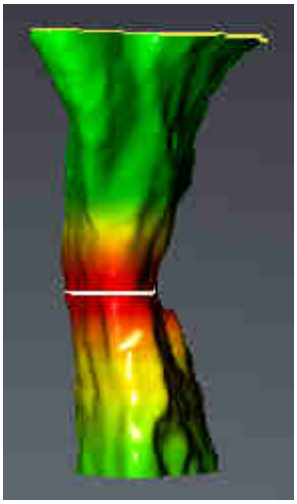
In the **3D** view, SICAT Air can hide certain areas of the volume with different clipping modes. Information on this can be found in the section *Clipping modes of the 3D view [▶Page 122 - Standalone]*.

COLOR CODING



SICAT Air gives the segmented airway a color coding. The color coding is equivalent to the cross-sectional areas of the airway profile. You can use the color coding in the **3D** view to highlight bottlenecks in the airway object.

You can configure the color coding. Information on this can be found in the section *SICAT Air objects [▶Page 92 - Standalone]*. You should select the upper threshold in such a way that you can regard all areas of the airway above this as healthy. You should select the lower threshold in such a way that you can regard all areas of the airway below this as pathological. SICAT Air represents the area between them as a color gradient:



In the SICAT Air settings, you can define default values for the color coding. Information on this can be found in the section *Changing SICAT Air settings [▶Page 212 - Standalone]*.

29.1 INTERACTING WITH THE AIRWAY PROFILE

General information on airway analysis can be found in the section *Airway analysis [▶Page 156 - Standalone]*.

To interact with the airway profile, proceed as follows:

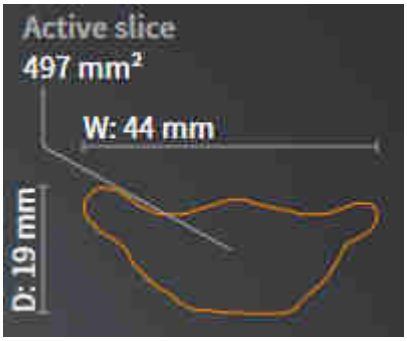
☑ The **Airway** workspace is already open. Information on this can be found in the section *Switching the active workspace [▶Page 101 - Standalone]*.

☑ You have already segmented the airway. Information on this can be found in the section *Defining the airway area [▶Page 147 - Standalone]*.

- Click on the desired slice in the airway profile.

► In the airway profile, an orange line shows the selected slice:

► SICAT Air displays information for the selected slice:



► In the **3D** view, SICAT Air activates the **Clipping: Designated Slice (select in slice view)** clipping mode.

► The **3D** view hides the area above the selected slice:

► SICAT Air focuses the crosshair on the center of the airway in the 2D views.

30 AIRWAY COMPARISON

⚠ **CAUTION**	**3D X-ray scans of insufficient quality may result in the quality of the segmented airway and airway profile being insufficient.** Only use 3D X-ray scans of a sufficient quality to create the segmented airway and airway profile with a sufficient quality and resolution.

⚠ **CAUTION**	**The use of incorrect data for the airway comparison may result in an incorrect diagnosis and treatment.** Use the correct patient, the correct 3D X-ray scans, the correct airway segmentation data, the correct interesting area and the correct size when selecting airway profiles for the airway comparison.

NOTICE	**Before segmenting the airway, it may be sensible to align the volume according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]*. If you align the volume only after segmenting the airway, SICAT Air removes the Airway object and you must carry out segmentation once more.**

You can use the Airway comparison to compare the segmented upper airways of two 3D X-ray scans:

- In one 3D X-ray scan, the mandible is in an untreated position.
- In one 3D X-ray scan, the mandible is in a protruded treatment position.

You can use the airway comparison to assess the effects of the treatment position on the patient's airway.

The airway comparison is always performed on the basis of the currently opened 3D X-ray scan and one other data record. The other data record is called reference data record.

ℹ	The rear walls of the airways must be aligned equally so that the airway comparison delivers correct values.

The following conditions must be met for you to be able to perform an airway comparison:

- The reference 3D X-ray scan already has an airway object.
- The 3D X-ray scan with the mandible in the treatment position is open.

If all of the conditions are fulfilled, you can open the **Airway comparison** window and perform an airway comparison. Information on this can be found in the section *Carrying out an airway comparison [▶Page 163 - Standalone]*.

ℹ	The segmentation of the 3D X-ray scan in the treatment position in the **Airway comparison** window does not depend on the segmentation in the **Segment the airway** window. Both objects in the **Object browser** are also independent of one another.

30.1 CARRYING OUT AN AIRWAY COMPARISON

Information on this can be found in the section *Airway comparison [▶Page 162 - Standalone]*.

OPENING THE “AIRWAY COMPARISON” WINDOW

☑ You have already segmented the airway area in the reference 3D X-ray scan. Information on this can be found in the section *Defining the airway area [▶Page 147 - Standalone]*.

☑ You have already opened the 3D X-ray scan showing the treatment position.

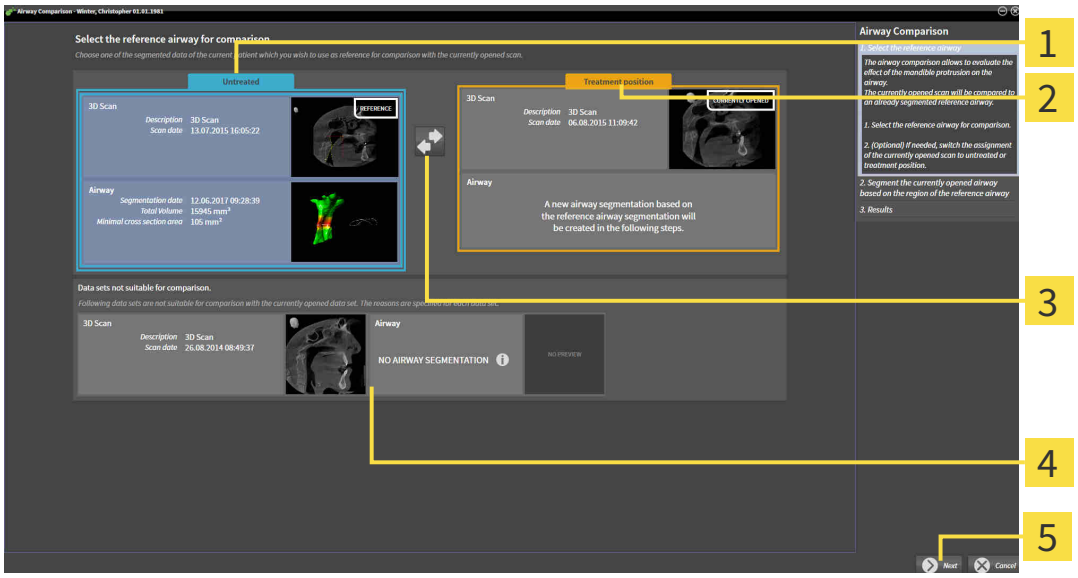
☑ You have already aligned the 3D X-ray scan showing the treatment position according to your requirements, for example, according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]*.

☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 85 - Standalone]*.

- Click on the **Airway comparison** icon.

▶ The **Airway comparison** window opens with the **Select the reference airway for comparison** step.

SELECTING THE REFERENCE AIRWAY



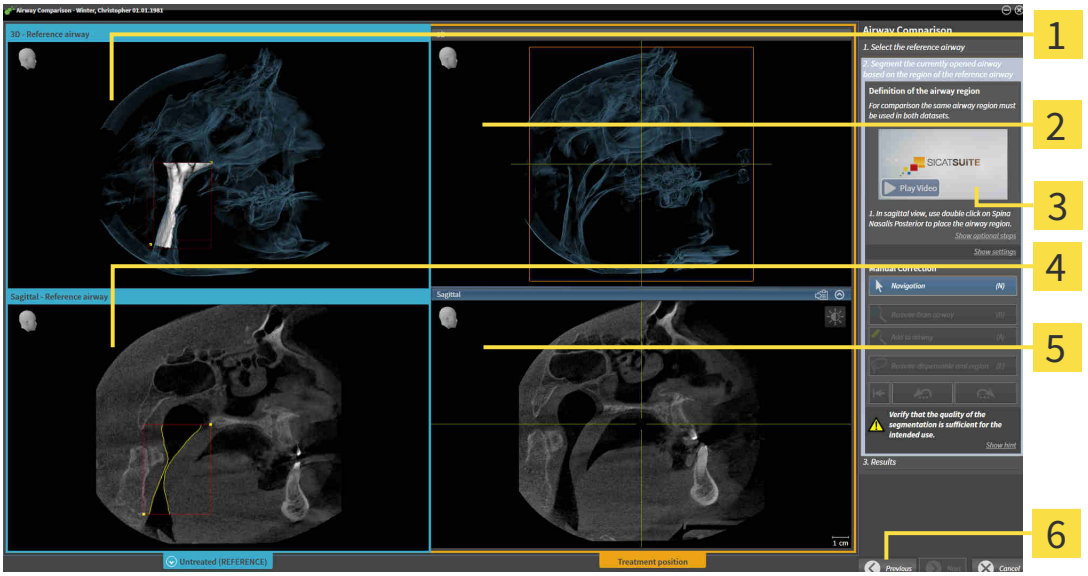
1 **Untreated** list	4 List of 3D X-ray scans that are not suitable for the airway comparison
2 **Treatment position** list	5 **Next** button
3 **Switch the assignment to untreated and treatment position** icon	

1. Select the desired reference airway where necessary.
2. Click on the **Switch the assignment to untreated and treatment position** icon, if necessary, to define whether the reference airway in the 3D X-ray scan is in an untreated position or in the treatment position.

3. Click on the **Next** button.

► The **Segment the currently opened airway based on the region of the reference airway** step opens.

SEGMENTING THE AIRWAY IN TREATMENT POSITION FOR COMPARISON

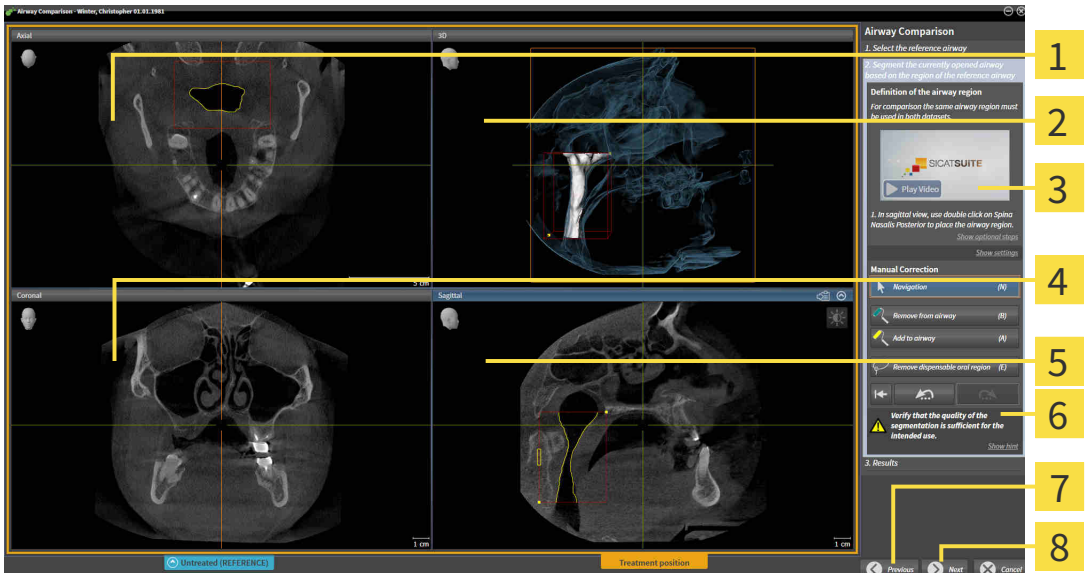


1 **3D** view of the 3D X-ray scan in reference position (you cannot change this view)	4 **Sagittal** view of the volume in reference position
2 **3D** view of the 3D X-ray scan in the treatment position (you cannot change this view)	5 **Sagittal** view of the 3D X-ray scan in the treatment position
3 Tutorial video	6 **Previous** button

Both airways must be the same height. Therefore, you can only define the upper right reference point of the airway area in the 3D X-ray scan in the treatment position. SICAT Air then automatically defines the lower left reference point of the airway area.

1. In the **Sagittal** view of the 3D X-ray scan in the treatment position, double-click on the same anatomical position of the upper reference point of the airway area as in the reference 3D X-ray scan.
   ► SICAT Air segments the 3D X-ray scan in the treatment position with the selected upper reference point and an airway area that has the same dimensions as the segmentation of the reference 3D X-ray scan.
   ► SICAT Air hides the **3D** view and the **Sagittal** view of the reference 3D X-ray scan.

▶ SICAT Air displays the **Axial** view and the **Coronal** view of the 3D X-ray scan in the treatment position.



1 **Axial** view of the 3D X-ray scan in the treatment position	5 **Sagittal** view of the 3D X-ray scan in the treatment position
2 **3D** view of the 3D X-ray scan in the treatment position	6 Tool area
3 Tutorial video	7 **Previous** button
4 **Coronal** view of the 3D X-ray scan in the treatment position	8 **Next** button

2. Where necessary, correct the position of the upper reference point by moving it.

   ▶ While you are moving the upper reference point, SICAT Air displays the **3D** view and the **Sagittal** view of the reference 3D X-ray scan.

3. Where necessary, adjust the lateral width in the **Sagittal** view.

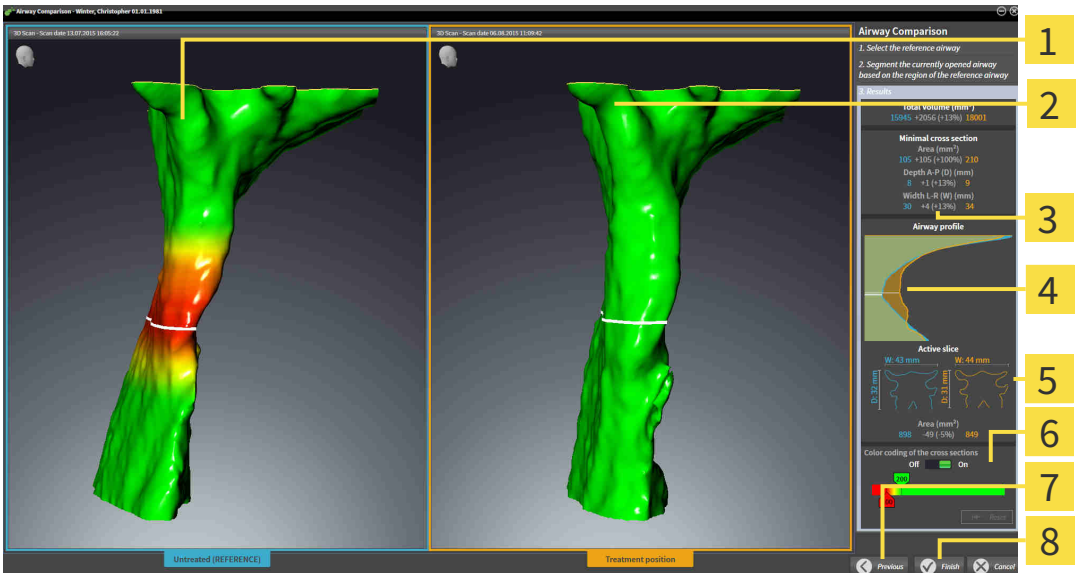
4. Correct the segmentation of the 3D X-ray scan in the treatment position where necessary. The same correction tools are available as in the **Segment the airway** window. For further information about this see *Correcting the airway segmentation [▶Page 151 - Standalone]* and *Removing non-required areas from the airway [▶Page 153 - Standalone]*.

5. Click on the **Next** button.

▶ The **Results** step opens.

You can hide and show the **Axial** view and the **Coronal** view of the 3D X-ray scan in the treatment position by clicking on the ⌃ icon.

COMPARING AIRWAYS

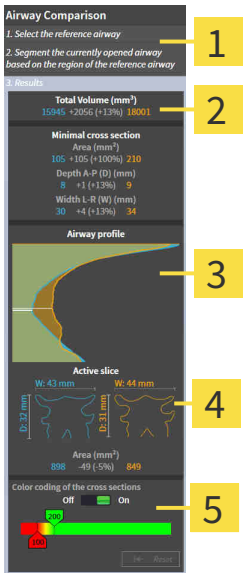


1	**3D** view of the untreated airway	5	Juxtaposition of the cross-sections when untreated and in the treatment position
2	**3D** view of the segmented airway of the 3D X-ray scan in the treatment position	6	Color coding
3	Juxtaposition of the data of the segmented airway when untreated and in the treatment position	7	**Previous** button
4	Juxtaposition of the airway profiles when untreated and in the treatment position	8	**Finish** button

1. Move the segmented airways so that you can easily compare both airways . SICAT Air does not synchronize the movement.

2. Rotate the segmented airways. SICAT Air synchronizes the movement.

3. Zoom the segmented airways. SICAT Air synchronizes the zoom.



1 **Total volume (mm³)**

2 **Minimal cross section area**

3 **Airway profile**

4 **Active slice**

5 **Color coding of the cross sections**

4. Use the illustration of the cross-section and the information in the airway comparison area on the right hand side to compare the segmented airways. The blue values belong to the untreated airway, while the orange values belong to the airway in the treatment position. The percentage values show the change from the untreated airway to the airway in the treatment position. The other elements of the view are identical to those in the airway analysis area. Information on this can be found in the section *Airway analysis [▶ Page 156 - Standalone]*.

5. Use the **Airway profile** area to select a slice at which SICAT Air cuts the depiction of the airways in the **3D** view. The selected slice applies for both airways.

6. Adjust the color gradient to highlight the cross-sectional areas of the airways and in particular bottlenecks. The settings for the color gradient apply for both airways.

7. Click on the **Finish** button.

▶ SICAT Air saves the airway comparison.

▶ SICAT Air creates a **Airway comparison** object in the **Object browser**.

▶ SICAT Air creates a separate page in the handout with screenshots and a comparison of the most important measured values from the airway comparison. In the **Object browser**, SICAT Air displays the page as an **Airway comparison** object under the **Handout** object.

You can return to the previous page of the **Airway comparison** assistant by clicking the **Previous** button.

You can cancel the airway comparison by clicking on the **Cancel** button, the ⊗ icon, pressing **ESC** or by pressing the key combinationAlt+F4. SICAT Air will then not create a **Airway comparison** object and will not save the segmentation of the airway for the volume in the treatment position.

If a study already contains an **Airway comparison** object, SICAT Air will overwrite it only if you have completed the segmentation in full once more.

After you have performed an airway comparison, you can also open the **Airway comparison** window by clicking on the **Details** icon next to the **Airway comparison** object in the **Object browser**.

Starting from the study, in which you performed the airway comparison, if you open the **Airway comparison** window once more, it will open immediately with the step **Comparsion of the airway with and without therapeutic appliance**.

31 PATIENT INFORMATION

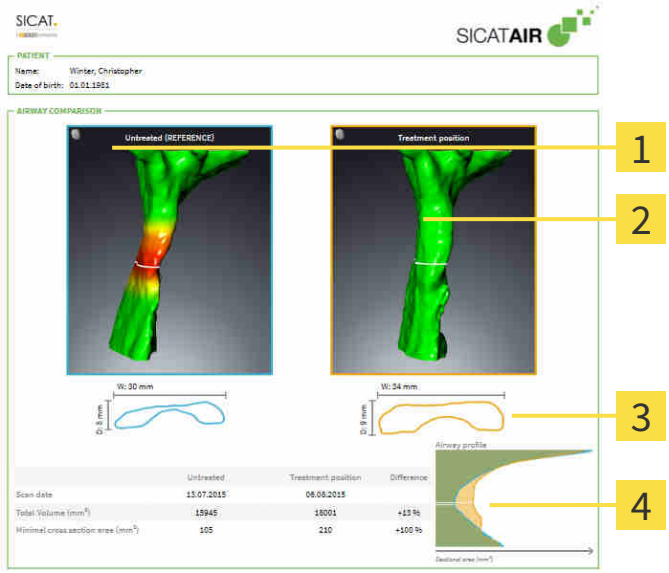
> ⚠ **CAUTION**
>
> **Using the handout for diagnosis purposes may result in an incorrect diagnosis and treatment.**
>
> Only use the visualization functions for medical images of the software user interface to perform a diagnosis on medical images and to plan the treatment.

You can explain your diagnosis and highlight the effects of the treatment to the patient through illustrations customized for the patient. The patient information consists of two steps:

1. In your practice within SICAT Air
2. By way of a patient information via the handout

You can compile the contents of the handouts during your explanations on the monitor.

The sources are images based on drawing objects, screenshots and the airway comparison. The airway comparison plays a key role and has its own page on the handout:



1 **Untreated** screenshot

2 **Treatment position** screenshot

3 Juxtaposition of the slices with the smallest cross-sectional area

4 Comparison of the numerical values and **Airway profile**

The patient can better understand the results you have discussed and also better discuss this with others using the handout.

Creating the handout consists of the following steps:

- *Creating images and screenshots [▶Page 170 - Standalone]*
- *Preparing handouts [▶Page 173 - Standalone]*
- *Generating handouts [▶Page 177 - Standalone]*

31.1 CREATING IMAGES AND SCREENSHOTS

NOTICE	**Before creating images and screenshots, it may be useful to align the volume according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]*. If you align the volume only after creating images and screenshots, SICAT Air removes the drawing object and you must carry out segmentation once more.**

General information on patient information can be found in the section *Patient information [▶Page 169 - Standalone]*.

General information on managing images and screenshots can be found in the section *SICAT Air objects [▶Page 92 - Standalone]*.

There are two drawing tools:

- **Draw Arrow**
- **Draw Circle**

DRAWING ARROWS

To draw an arrow, proceed as follows:

☑ You have already aligned the volume according to your requirements. Information on this can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 85 - Standalone]*.

1. In the **Consult** workflow step, click the **Draw Arrow** icon.
2. Place the mouse pointer over the desired view.
   ▶ The mouse pointer becomes a pen.
3. Click and hold the left mouse button on the desired arrow tip position.
4. Move the mouse.
   ▶ SICAT Air shows an arrow in the view.
   ▶ The end of the arrow will now match the position of the mouse pointer.
5. Move the mouse pointer to the desired arrow end position and release the left button.
   ▶ SICAT Air shows the finished arrow in the view.
   ▶ If not yet available, SICAT Air will create the structures required for the **Image** object in the **Object browser**.
   ▶ The image will be available in the **Report Generation** window.
6. Click on the **Draw Arrow** icon.

▶ SICAT Air closes the mode for drawing arrows.

DRAWING CIRCLES

To draw a circle, proceed as follows:

☑ You have already aligned the volume according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶Page 132 - Standalone]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 85 - Standalone]*.

1. In the **Consult** workflow step, click the **Draw Circle** icon.
2. Place the mouse pointer over the desired view.
   ▶ The mouse pointer becomes a pen.
3. Click and hold the left mouse button on the desired position for the center of the circle.
4. Move the mouse.
   ▶ SICAT Air shows a circle in the view.
   ▶ The radius of the circle will now match the distance between the center and the position of the mouse pointer.
5. Move the mouse pointer to achieve the desired radius and release the left button.
   ▶ SICAT Air shows the finished circle in the view.
   ▶ If not yet available, SICAT Air will create the structures required for the **Image** object in the **Object browser**.
   ▶ The image will be available in the **Report Generation** window.
6. Click on the **Draw Circle** icon.

▶ SICAT Air closes the mode to draw circles.

As long as the **Draw Arrow** drawing tool or **Draw Circle** drawing tool is active, you can create several drawing objects one after another. You can cancel the use of a drawing tool by clicking on a point outside the view in question or by pressing the **ESC** key.

CONFIGURING DRAWING TOOLS

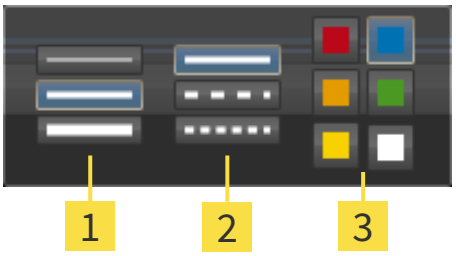
You can configure the **Draw Arrow** drawing tool or the **Draw Circle** drawing tool separately. Changes to the settings will only affect drawing objects created after that point.

To configure a drawing tool, proceed as follows:

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 85 - Standalone]*.

1. In the **Consult** workflow step, click on the corresponding **Configure drawing tool** icon next to the **Draw Arrow** icon or **Draw Circle** icon.

▶ The transparent **Configure drawing tool** window opens:



1 Icons for the **Line thickness**

2 Icons for the **Line type**

3 Icons for the **Line color**

2. Click the desired icons to configure the **Line thickness**, **Line type** and **Line color** of the drawing tool.

3. Click on any point outside the transparent **Configure drawing tool** window.

▶ SICAT Air closes the transparent **Configure drawing tool** window.

▶ SICAT Air saves the settings in your user profile.

▶ SICAT Air uses the new settings for drawing objects created from then on.

ADDING SCREENSHOTS TO THE “GENERATE HANDOUT" WINDOW

You can create screenshots of any view in any workspace and any window as long as the respective view contains the **Copy screenshot to clipboard (Ctrl+C)** icon.

To add screenshots to the handout, proceed as follows:

1. To create a screenshot of a view, click on the **Copy screenshot to clipboard (Ctrl+C)** icon in the **View toolbar** of the desired view.

2. To create a screenshot of the entire workspace, click on the **Copy screenshot to clipboard (Ctrl +C)** icon in the **Workspace toolbar**.

▶ SICAT Air will create the structures that are required for the **Screenshot**object in the **Object browser** and will activate the object.

▶ The screenshot will be available in the **Report Generation** window.

▶ SICAT Air copies a screenshot to the clipboard.

Continue with the section *Preparing handouts [▶Page 173 - Standalone]*.

31.2 PREPARING HANDOUTS

General information on patient information can be found in the section *Patient information [▶Page 169 - Standalone]*.

The following actions are available for preparing handouts:

- Opening the **Report Generation** window
- Changing handout settings
- Preparing elements

OPENING THE “REPORT GENERATION" WINDOW

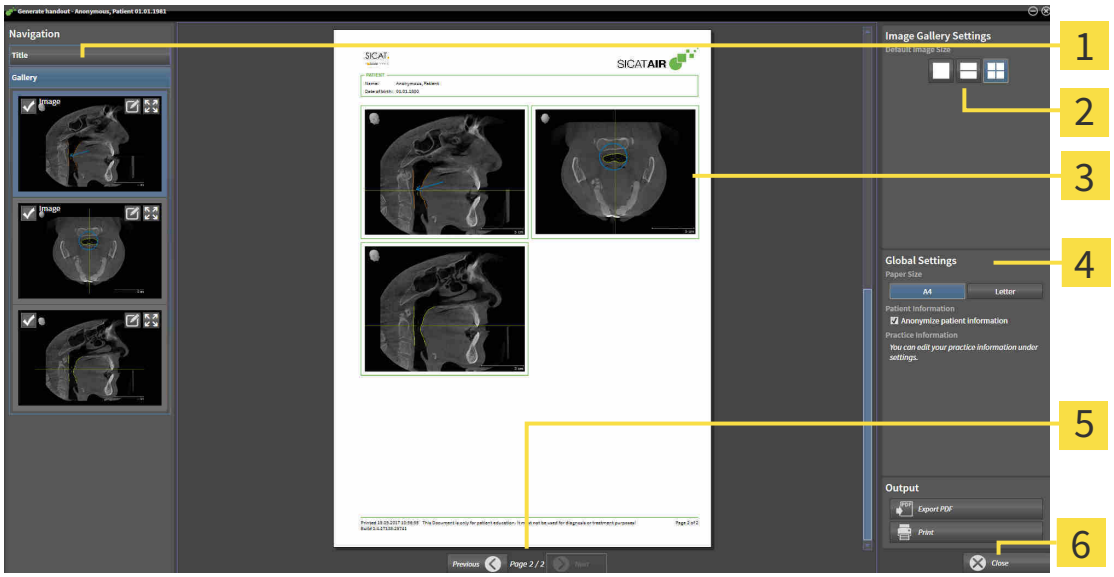
☑ You have created at least one **Image** object or one **Screenshot** object.

☑ Alternatively, you have created one **Airway comparison** object.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 85 - Standalone]*.

- Click on the **Create Patient Information Report** icon.

▶ The **Report Generation** window opens:



1	**Gallery** area	4	**Global Settings** area
2	Buttons for arranging the images	5	Page navigation
3	Preview	6	**Close** button

CHANGING HANDOUT SETTINGS

☑ The **Report Generation** window is already open.

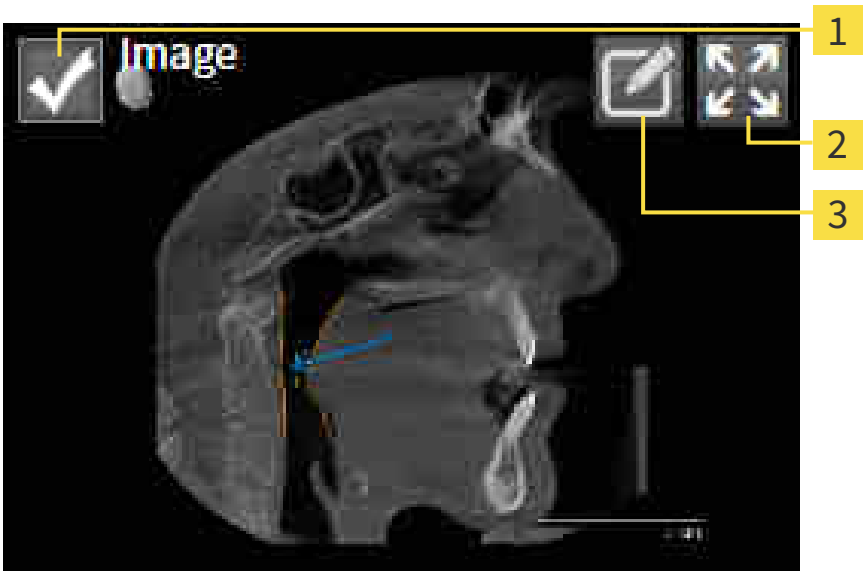
1. Click on the icon for the desired arrangement of the images in the **Image Gallery Settings** area.
   ▶ SICAT Air shows the images according to the selected settings.
2. Click on the row with the button with the desired paper size in the **Global Settings** area.
   ▶ SICAT Air changes the paper size according to the selected setting.
3. Activate or deactivate the **Anonymize patient information** check box.
   ▶ SICAT Air shows the actual patient information or anonymized patient information according to the selected setting.

PREPARING ELEMENTS FOR HANDOUTS

The **Report Generation** window shows screenshots from **Image** objects, screenshots from **Screenshot** objects and information from **Airway comparison**objects. For further information about this see *Creating images and screenshots [▶Page 170 - Standalone]* and *Carrying out an airway comparison [▶Page 163 - Standalone]*.

To prepare elements for handouts, proceed as follows:

☑ The **Report Generation** window is already open.



1 Check box for hiding and showing

2 **Show image on single page** icon

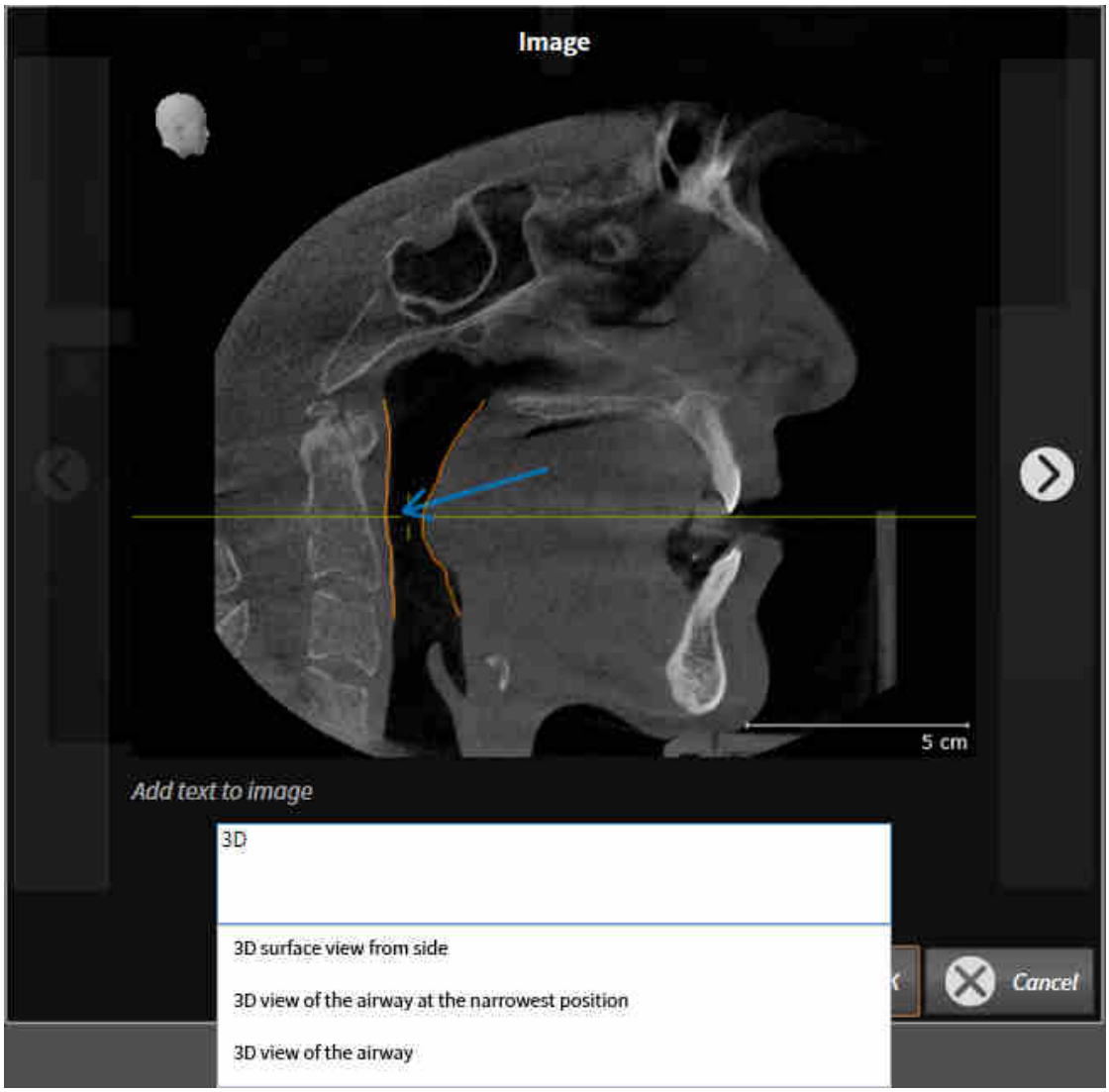
3 **Edit image description** icon

1. If you want to hide an element on the handout, deactivate the corresponding check box for the element.
   ▶ SICAT Air hides the element on the handout.

2. If you want SICAT Air to show an image alone on a page, click on the **Show image on single page** icon.

3. If you want to add a description to an element, click on the **Edit image description** icon of the element.

   ▶ SICAT Air displays an enlarged version of the element and a text input field:



4. Enter text into the text input field.

   ▶ If the text you have entered is part of an existing text block, SICAT Air will display the list of text blocks.

5. Click on the desired text block.

   ▶ SICAT Air adds the text block to the text input field.

6. If the desired text is not available as a text block, enter a new text.

7. Click on the **OK** button.

   ▶ SICAT Air saves the text as a description of the screenshot.

   ▶ If the text you have entered is not available as a text block, SICAT Air will save the description as a new text block in your user profile.

8. If you wish to change the order of elements on the handout, adjust them using drag & drop.

If you place the mouse pointer on a text block, SICAT Air will display the **Remove this auto complete text from the list** icon. If you click on the **Remove this auto complete text from the list** icon, SICAT Air will remove the text block from your user profile.

You can switch between the elements in the window showing the enlarged versions of the elements by clicking on the **Next item** button and **Previous item** button.

You can completely remove elements from the handout using the **Object browser**. Information on this can be found in the section *Managing objects with the object toolbar [▶Page 91 - Standalone]*.

Continue with the section *Generating handouts [▶Page 177 - Standalone]*.

SICAT Air takes the practice logo and practice information text from the general settings. Information on this can be found in the section *Using practice information [▶Page 209 - Standalone]*.

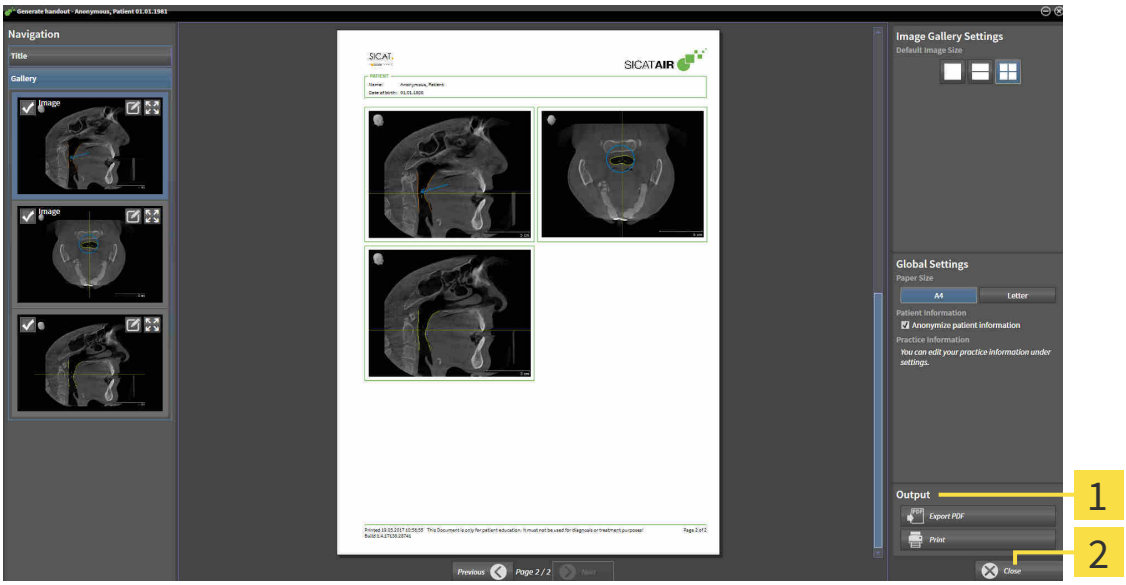
31.3 GENERATING HANDOUTS

The following actions are available for producing handouts:

- Saving a handout as a PDF file
- Printing handouts

SAVING A HANDOUT AS A PDF FILE

☑ The **Report Generation** window is already open.



1 **Output** area

2 **Close** button

1. Click on the **Export PDF** button in the **output** area.
   ▶ A Windows Explorer window opens.
2. Switch to the directory in which you wish to save the handout.
3. Enter a name in the **File name** field and click on **Save**.

▶ The Windows Explorer window closes.

▶ SICAT Air saves the handout as a PDF file.

SICAT Air also saves the PDF file in the patient record.

PRINTING HANDOUTS

Handouts of a suitable quality require a printer that meets certain requirements. Information on this can be found in the section *System requirements [▶Page 8 - Standalone]*.

☑ The **Report Generation** window is already open.

1. Click on the **Print** button.
   ▶ The **Print** window opens.
2. Select the desired printer and adjust the print settings where necessary.
3. Click **Print**.

▶ SICAT Air sends the handout to the printer.

32 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 180 - Standalone]*.
- Export the desired data. Information on this can be found in the section *Exporting data [▶Page 181 - Standalone]*.

32.1 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 181 - Standalone]*.

32.2 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 180 - 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.

33 ORDERING PROCESS

To order the desired product, proceed as follows:

- Place the desired planning data for therapeutic appliances in the shopping cart in SICAT Air. Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶Page 183 - 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 196 - 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 197 - Standalone]* or section *Completing an order without an active Internet connection [▶Page 201 - 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.

33.1 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 182 - Standalone]*.

In SICAT Air, the first part of the ordering process for a therapeutic appliance consists of the following steps:

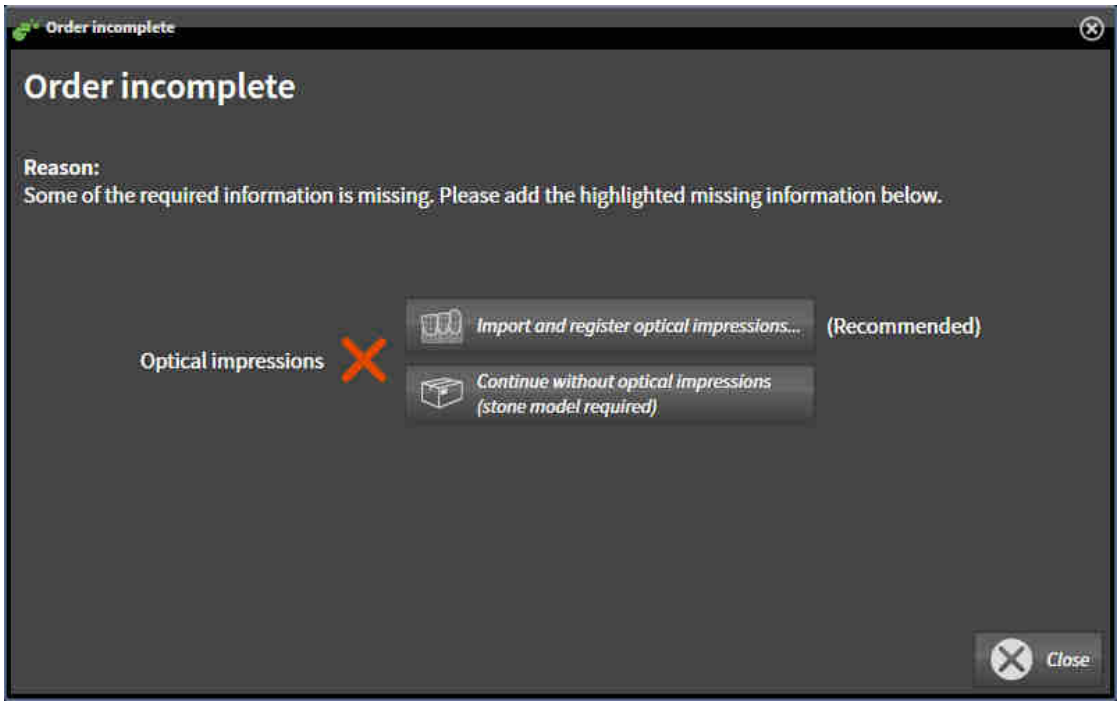
IF YOU HAVE NOT YET ADDED ANY OPTICAL IMPRESSIONS

☑ The 3D X-ray scan has been created in the treatment position.

☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 85 - Standalone]*.

1. Click on the **Order therapeutic appliance** icon.

   ▶ The **Order incomplete** window opens:



2. Click on the **Import and register optical impressions** button and import optical impressions corresponding to the 3D X-ray scan. Information on this can be found in the section *Importing and registering optical impressions [▶Page 187 - Standalone]*.

▶ The **Order therapeutic appliance** window opens.

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 137 - 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 pressing on the **Continue without optical impressions (stone model required)** button in the **Order incomplete** window. After this, the **Order therapeutic appliance** 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 YOU HAVE ALREADY ADDED OPTICAL IMPRESSIONS

☑ The 3D X-ray scan has been created in the treatment position.

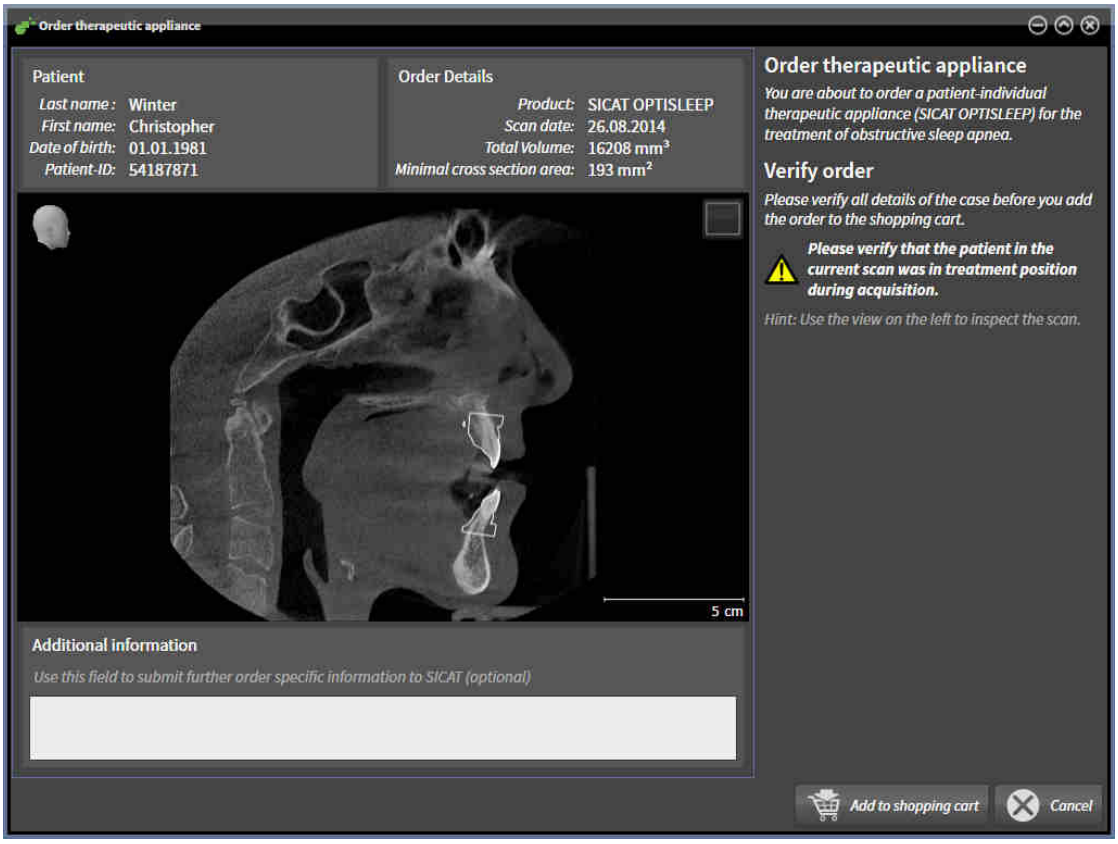
☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶Page 85 - Standalone]*.

- Click on the **Order therapeutic appliance** icon.

▶ The **Order therapeutic appliance** window opens.

CHECK YOUR ORDER IN THE “ORDER THERAPEUTIC APPLIANCE" WINDOW

☑ The **Order therapeutic appliance** window is already open.



1. Check in the **Patient** section and **Order Details** section whether the patient information and scan information are correct.
2. Check in the 2D view that the scan has been created in the treatment position.
3. If desired, enter additional information for SICAT in the **Additional information** field.

4. Click on the **Add to shopping cart** button.

▶ SICAT Air places the desired planning data for therapeutic appliances in the SICAT shopping cart.

▶ The **Order therapeutic appliance** window closes.

▶ SICAT Air opens the SICAT Suite shopping cart.

As long as there is an order in the shopping cart, you can no longer overwrite optical impressions of a plan. This is only possible once more when you have completed or deleted the order. If you overwrite or delete optical impressions of a plan, you cannot order the same treatment position again.

You can cancel the order by clicking on **Cancel**.

Continue with the section *Checking the shopping cart and completing the order [▶Page 196 - Standalone]*.

33.2 OPTICAL IMPRESSIONS

You can import and register optical impressions only for X-ray data that has been created by Sirona 3D-X-ray devices.

SICAT Air can show matching X-ray data and optical impressions for the same patient simultaneously. The combined illustration provides additional information for analysis and diagnosis. In addition, the treatment implementation is based on optical impressions.

The following actions are required to use data with optical impressions in SICAT Air:

- Importing a file with optical impressions consisting of a lower jaw scan and upper jaw scan, which contains data with optical impressions from an optical impression system, such as CEREC with an open GALILEOS license
- Registering optical impressions on X-ray data

SICAT Air supports the following file formats for optical impressions:

- SIXD files which contain an optical impression of the maxilla and an optical impression of the mandible
- SSI files which contain an optical impression of the maxilla and an optical impression of the mandible
- STL files which contain an optical impression of the maxilla or an optical impression of the mandible (**SICAT Suite STL Import** license required)

The following tools are available for optical impressions:

- *Importing and registering optical impressions [▶Page 187 - Standalone]*
- *Re-using optical impressions from other SICAT applications [▶Page 193 - Standalone]*
- Activating, hiding and showing optical impressions - Information on this can be found in the section *Managing objects with the object browser [▶Page 89 - Standalone]*.
- Focusing on optical impressions and removing optical impressions – Information on this can be found in the section *Managing objects with the object toolbar [▶Page 91 - Standalone]*.

Optical impressions in STL format require additional steps during import. Information on this can be found in the section *Additional steps for optical impressions in STL format [▶Page 192 - Standalone]*.

33.3 IMPORTING AND REGISTERING 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.

To enable you to check whether 3D X-ray data and optical impressions match, the **Import and register optical impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

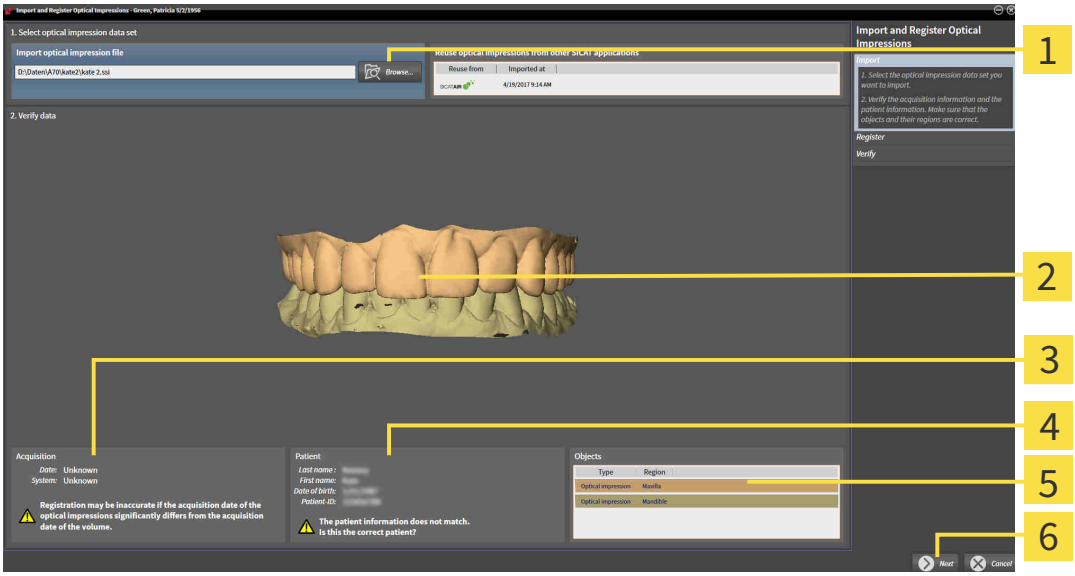
You can use the **Inspection Window** to check whether an optical impression is precisely aligned to the X-ray data. You can move the **Inspection Window** and scroll through the slices in the **Inspection Window**.

General information on optical impressions can be found in the section *Optical impressions [▶Page 186 - Standalone]*.

To import and register optical impressions, proceed as follows:

☑ The **Order** 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 **Browse** button.
   ▶ The **Open Optical Impression File** window opens.
3. In the **Open Optical Impression File** window, select the desired optical impressions file and click on **Open**.
   ▶ The **Open Optical Impression File** window closes.
   ▶ SICAT Air imports the selected optical impressions file:

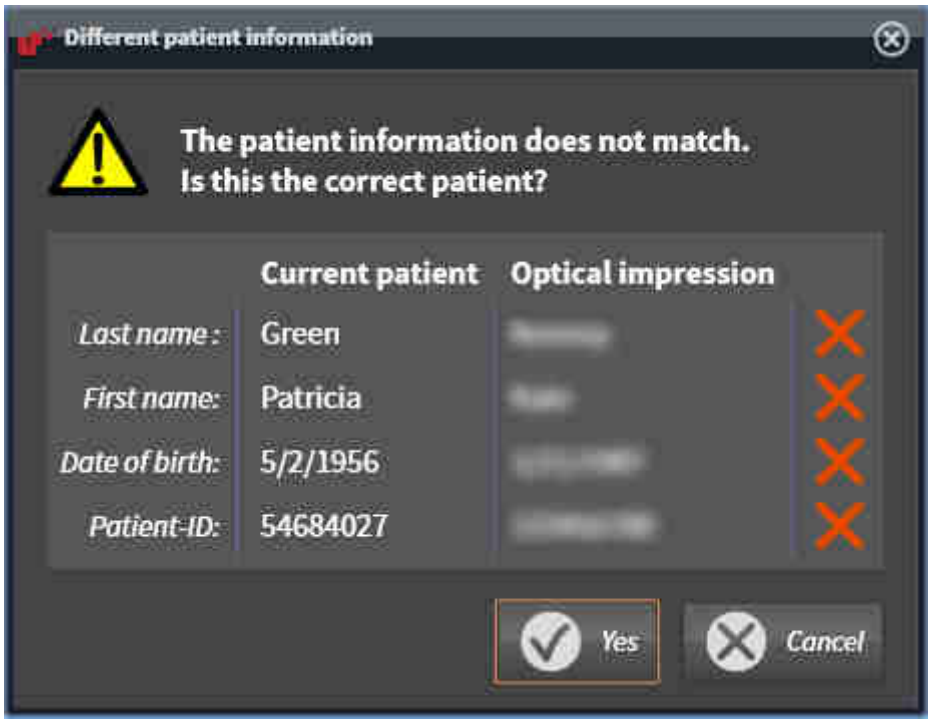


1	**Import optical impression file** area	4	Patient information
2	**3D** view of optical impressions	5	List of objects
3	Scan information	6	**Next** button

4. Check the scan information and patient information.
5. Make sure that the objects and their regions are correct. The background color in the list of objects matches the color of the objects in the **3D** view.

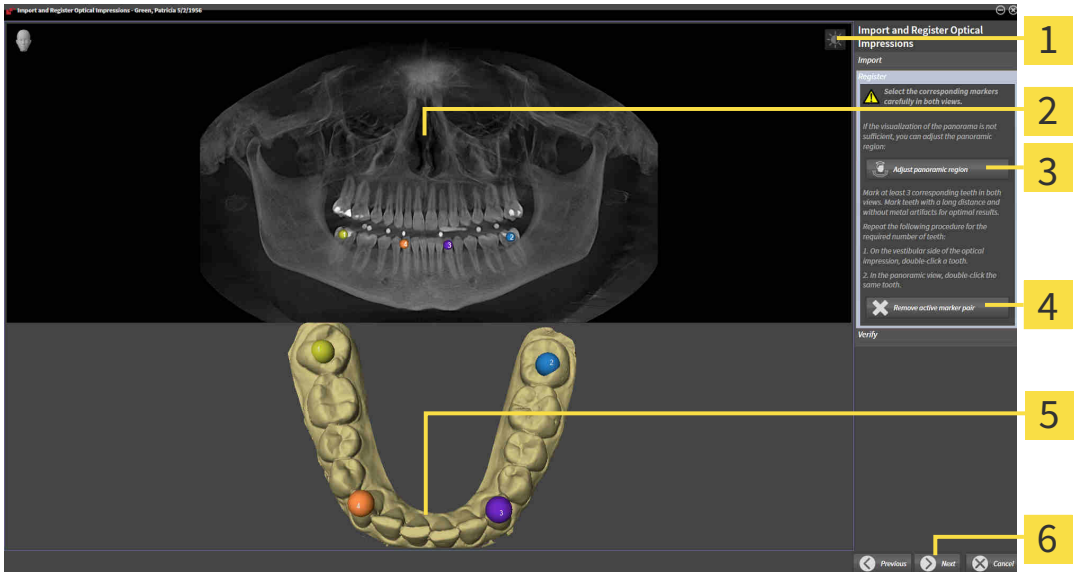
6. Click **Next**.

   ▶ If the patient data in the 3D X-ray scan and in the optical impression differ,SICAT Air will open the **Different patient information** window:



7. Compare the patient information. If you are sure that the optical impression matches the current patient, click on the **Yes** button.

   ▶ The **Register** step opens for the first optical impression:



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

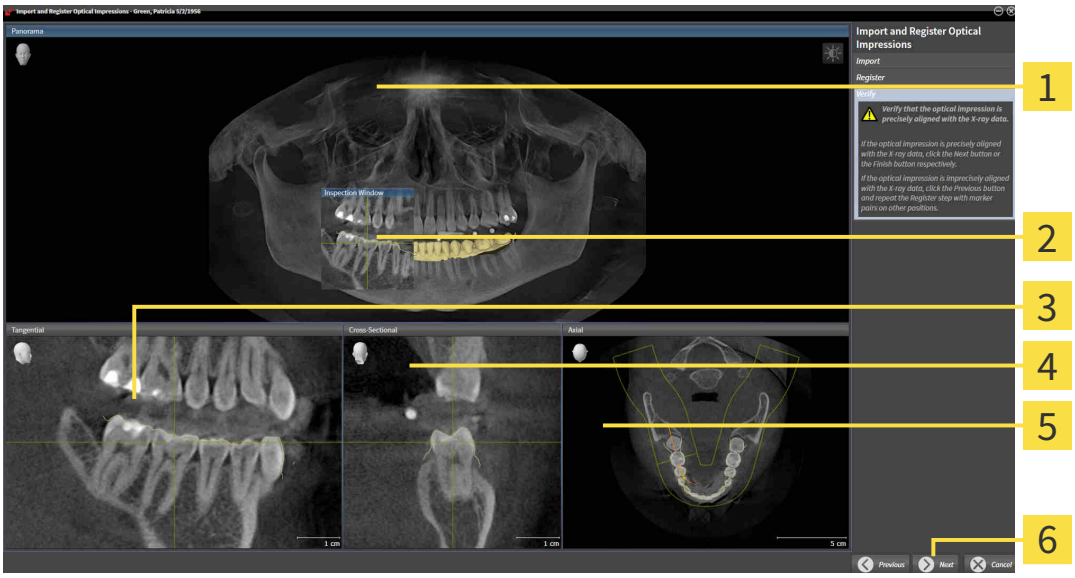
8. For the first optical impression, double click the same tooth both in the **Panorama** view and on the vestibular side of the optical impression in the **3D** view. Make sure that there is a large distance between individual teeth and mark only teeth without metal artifacts. Repeat this step until 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 first optical impression.

9. Click **Next**.

   ▶ SICAT Air calculates the registration of the first optical impression with the X-ray data.

   ▶ The **Verify** step opens for the first optical impression:



1 **Panorama** view	4 **Cross-Sectional** view
2 **Inspection Window**	5 **Axial** view
3 **Tangential** view	6 **Next** button

10. Check whether the optical impression is precisely aligned to the X-ray data in the 2D slice views. Scroll through the slices and check the contours shown.

11. 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.

12. If the first optical impression is precisely aligned to the X-ray data, click on the **Next** button.

    ▶ The **Register** step opens for the second optical impression:

13. For the second optical impression, 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 there is a large distance between individual teeth and mark only teeth without metal artifacts where possible. Repeat this step until you have marked at least three matching teeth in both views. You can improve the accuracy of the registration by marking up to five teeth.

    ▶ Markings with different colors and numbers in both views will display corresponding teeth in the second optical impression.

14. Click **Next**.

▶ SICAT Air calculates the registration of the second optical impression with the X-ray data.

▶ The **Verify** step opens for the second optical impression:

15. Check whether the optical impression is precisely aligned to the X-ray data in the 2D slice views. Scroll through the slices and check the contours shown.

16. 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. You can improve the accuracy of the registration by marking up to five teeth.

17. If the second optical impression is precisely aligned to the X-ray data, click on the **Finish** button.

▶ The **Import and register optical impressions** wizard closes.

▶ SICAT Air adds the selected optical impressions to the **Object browser**.

▶ SICAT Air 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 109 - 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 137 - Standalone]*.
- If you wish to remove a certain marker pair in the **Register** step, you can select a marker from the pair and click on the **Remove active marker pair** button.
- If you want to cancel importing and registering optical impressions, click **Cancel**.

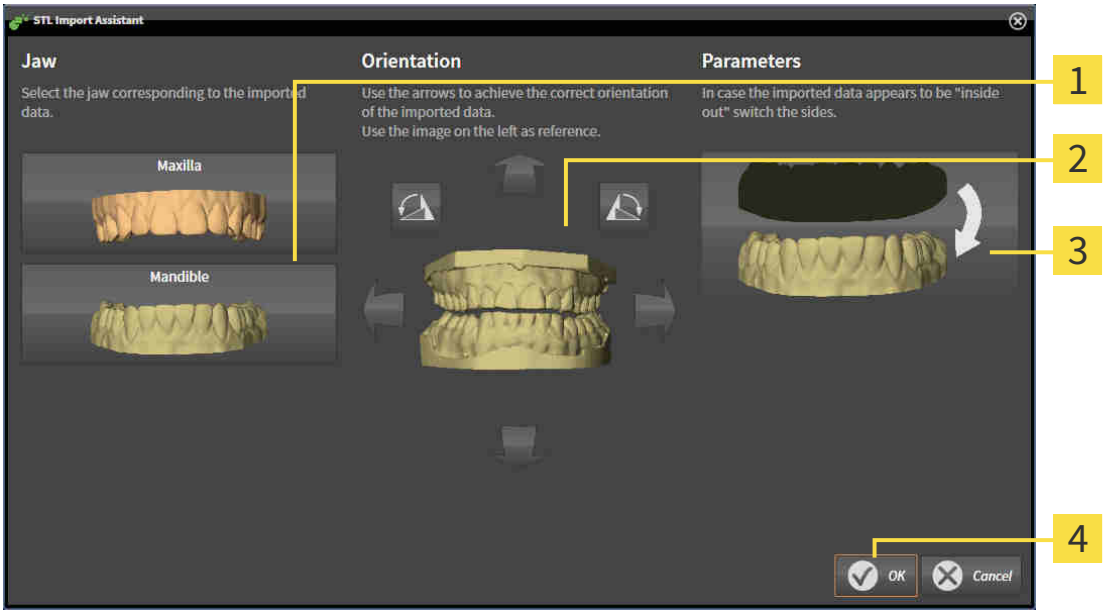
33.4 ADDITIONAL STEPS FOR OPTICAL IMPRESSIONS IN STL FORMAT

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 and registering optical impressions [▶Page 187 - Standalone]*.

   ▶ The **STL import wizard** window opens:



1	Selection of the jaw	3	Switching inside and outside
2	Changing the orientation	4	**OK** button

2. In the **jaw** area, select whether the optical impression contains the **maxilla** or the **mandibula** 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 **parameter** area.

5. Click on the **OK** button.

6. If required, repeat those steps for a second STL file. SICAT Air automatically attributes the second STL file to the other jaw.

   ▶ SICAT Air displays the imported optical impressions in the **Import and register optical impressions** wizard.

7. Continue with the registration of the optical impressions. Information on this can be found in the section *Importing and registering optical impressions [▶Page 187 - Standalone]*.

33.5 RE-USING OPTICAL IMPRESSIONS FROM OTHER SICAT APPLICATIONS

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

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.

To enable you to check whether 3D X-ray data and optical impressions match, the **Import and register optical impressions** wizard always shows the patient data and ignores the **Anonymize** setting.

General information on the optical impressions can be found in the section *Optical impressions [▶ Page 186 - Standalone]*.

To re-use optical impressions from another SICAT application, proceed as follows:

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

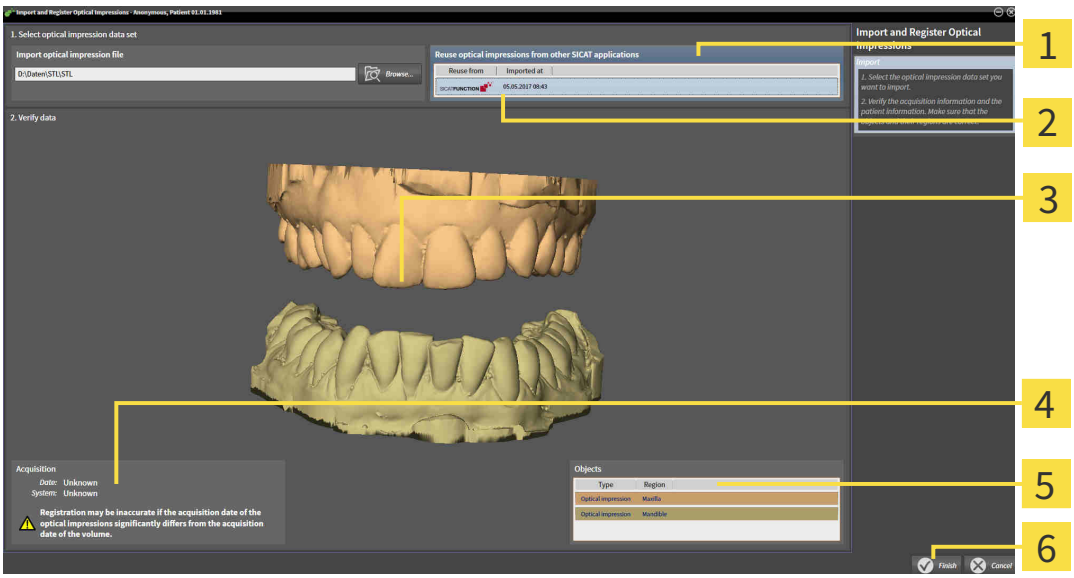
☑ You have already imported optical impressions for the opened study in another SICAT application, which you have not yet used in SICAT Air.

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 row with the desired optical impressions in the **Reuse optical impressions from other SICAT applications** area.

3. SICAT Air displays the optical impressions selected.



1 **Reuse optical impressions from other SICAT applications** area	4 Scan information
2 List of optical impressions from other SICAT applications	5 List of objects
3 **3D** view of optical impressions	6 **Finish** button

4. Check the scan information and patient information. Make sure that the objects and their regions are correct. The background color in the list of objects matches the color of the objects in the **3D** view.

5. Click on the **Finish** button.

▶ The **Import and register optical impressions** wizard closes.

▶ SICAT Air adds the selected optical impressions to the **Object browser**.

▶ SICAT Air displays the optical impressions selected.

If you want to cancel the transfer of optical impressions from another SICAT application, click **Cancel**.

33.6 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 196 - Standalone]*

33.7 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 195 - Standalone]*.

1 **PENDING ITEMS** list

2 **Finalize Order** button

1. Check in the **Shopping cart** window whether the desired products are included.
2. Click on the **Finalize 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 197 - Standalone]*
- *Completing an order without an active Internet connection [▶Page 201 - Standalone]*

33.8 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 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 198 - 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.

33.9 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.

33.10 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 8 - Standalone]*.

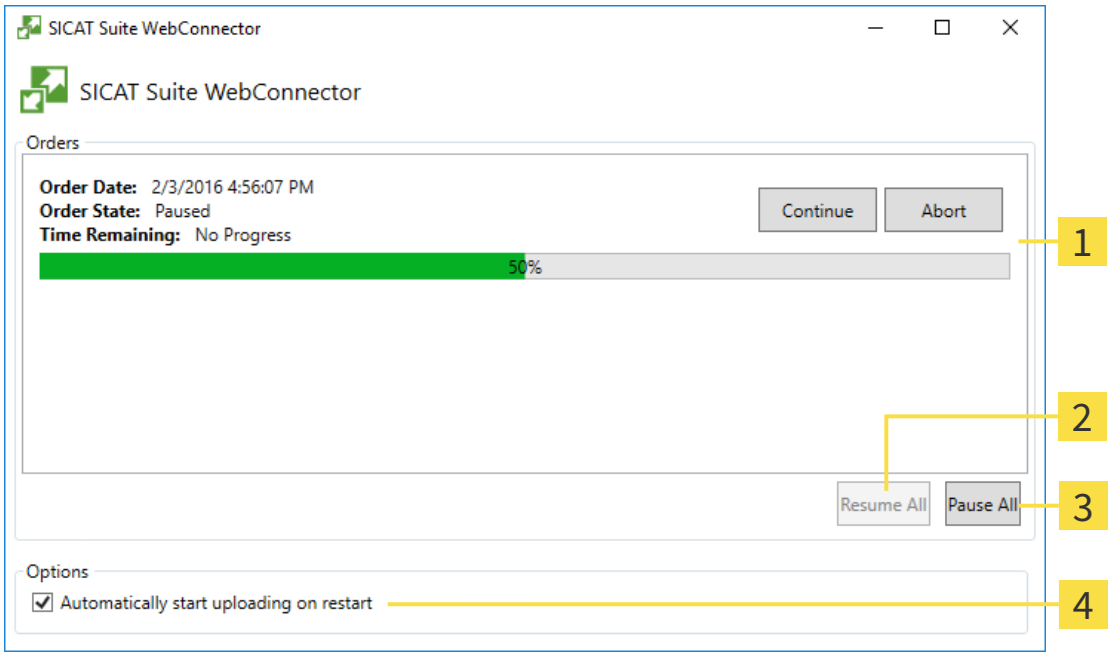
In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

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 Air 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.

33.11 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 **Unable to connect to the 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.

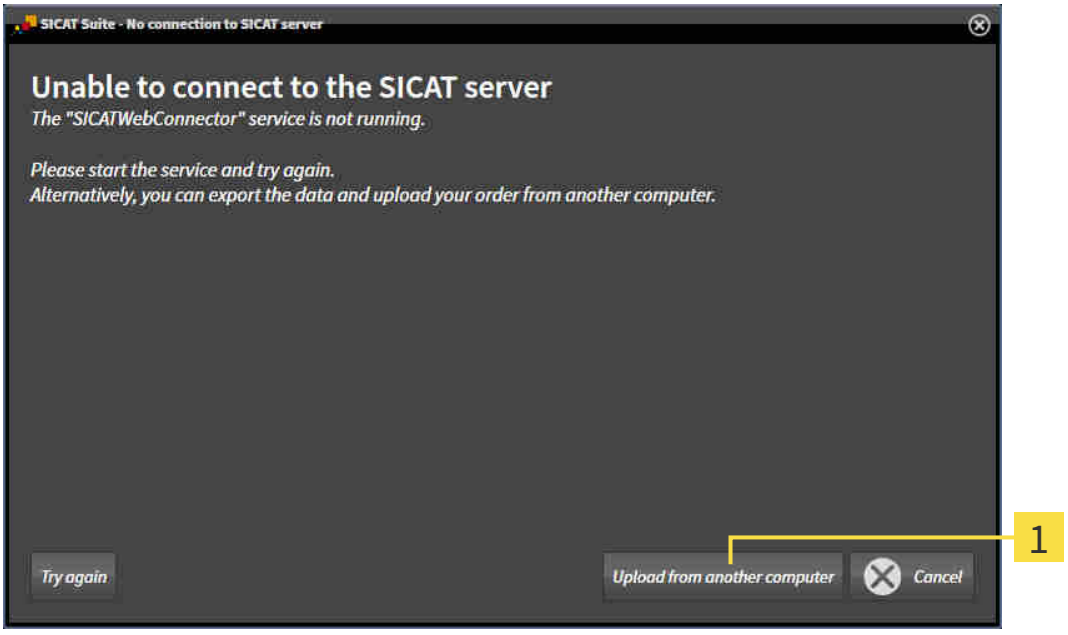
Below the cause, possible steps for solving the problem will be shown.

As an alternative to eliminating the problem, you can upload an order using another computer with an active Internet connection via a web browser. 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.

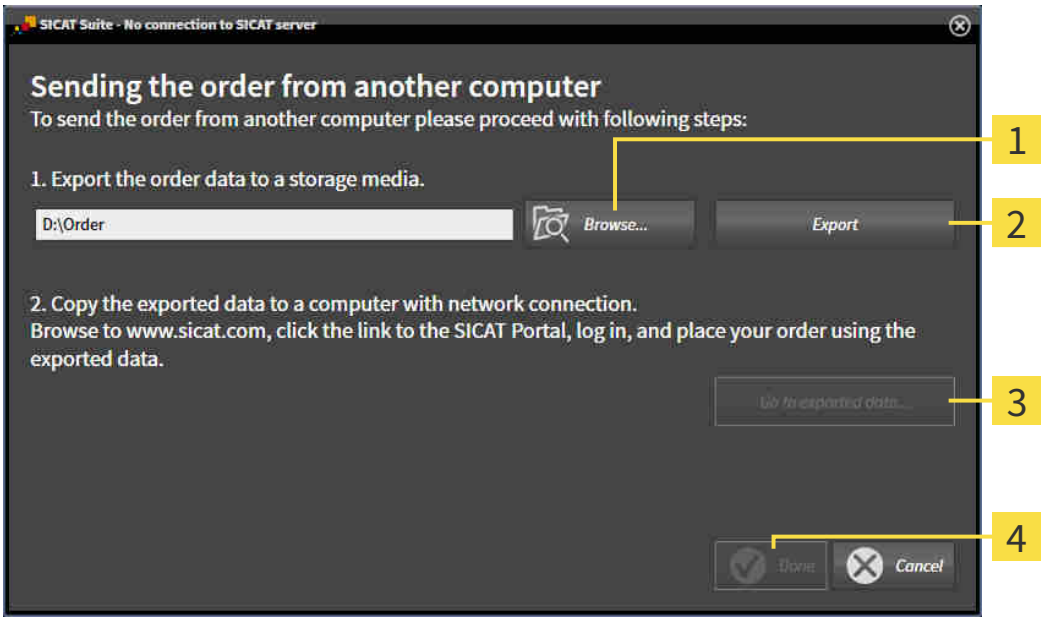
☑ A window will appear with the following message: **Unable to connect to the SICAT server**



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.

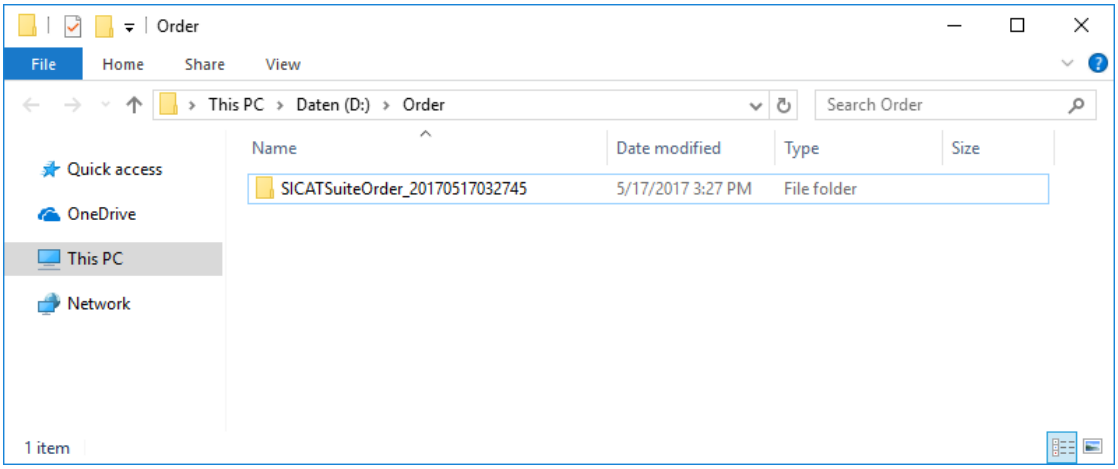
3. Select an existing directory or create a new directory and click on **OK**. Please note that the path to the directory must not be longer than 160 characters.

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 http://www.sicat.de 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 198 - 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.

34 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 205 - Standalone]*.
- **Your patient record depots** – only available in the stand-alone version of SICAT Suite. Information on this can be found in the section *Patient record depots [▶Page 50 - Standalone]*.
- **Licenses** - Information on this can be found in the section *Licenses [▶Page 41 - 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 209 - Standalone]*.
- **Visualization** – Changing general visualization settings. Information on this can be found in the section *Changing visualization settings [▶Page 210 - Standalone]*.
- **SICAT Air** – Changing application-specific settings of SICAT Air. Information on this can be found in the section *Changing SICAT Air settings [▶Page 212 - Standalone]*.

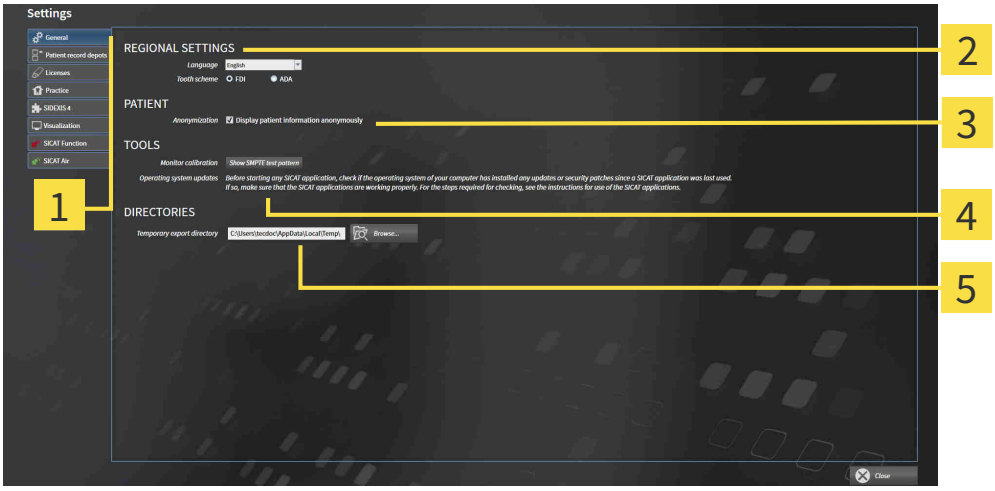
If you change the settings, SICAT Air will apply the changes immediately and saves the settings in your user profile.

34.1 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

2 **REGIONAL SETTINGS** area

3 **PATIENT** area

4 **TOOLS** area

5 **DIRECTORIES** 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.

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 [▶Page 207 - Standalone]*.

The supported tooth schemes are FDI and ADA.

34.2 MONITOR CALIBRATION WITH THE SMPTE TEST IMAGE

CAUTION

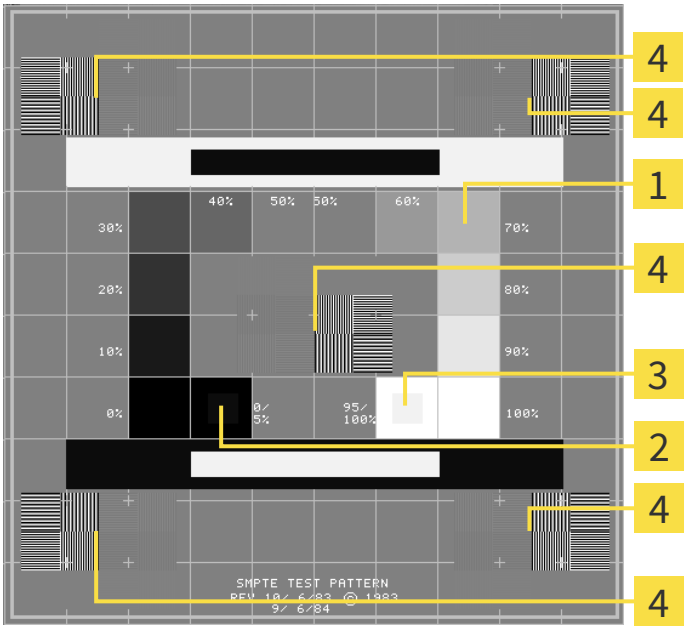
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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.

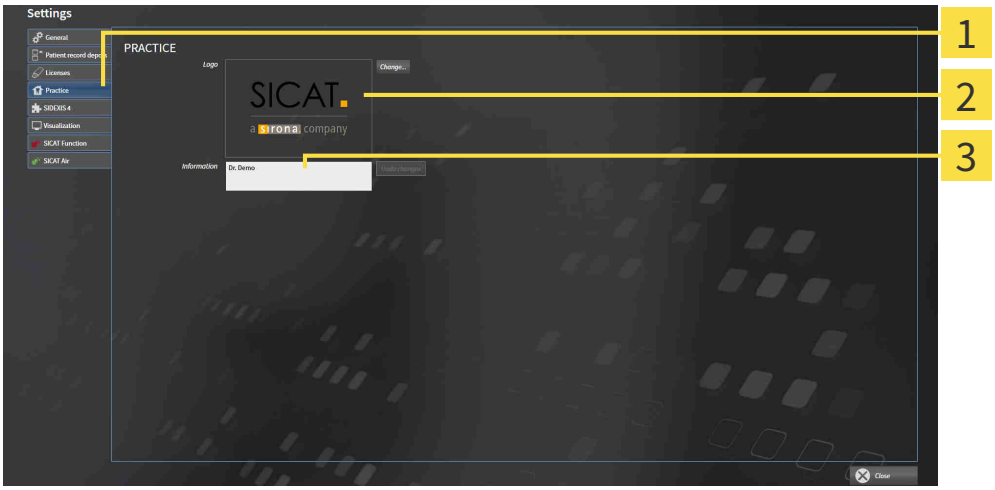
34.3 USING PRACTICE INFORMATION

The 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.

34.4 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.

34.5 CHANGING SICAT AIR SETTINGS

SICAT Air settings determine the color gradient of the **Airway** object in SICAT Air.

To change the SICAT Air settings, proceed as follows:

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

2. Click the **SICAT Air** tab.
   ▶ The **SICAT Air** window opens:

1 **SICAT Air** tab

2 **COLOR CODING OF THE CROSS SECTIONS (AIRWAY)** area

3 **Color coding** with sliders

4 **Reset** button

5 **Default value for lower limit (mm²)** field and **Default value for upper limit (mm²)** field

The settings are:

- **Default value for lower limit (mm²)** – defines the lower value of the cross-sectional area in mm^2, from which the **Color coding** starts entirely in red.
- **Default value for upper limit (mm²)** – defines the upper value of the cross-sectional area in mm^2, from which the **Color coding** ends entirely in green.

If you change the values in the fields **Default value for lower limit (mm²)** and **Default value for upper limit (mm²)**, the sliders display the effects on the **Color coding**. If you move the sliders in **Color coding**, the values in the fields adapt accordingly.

You can reset the settings for **Default value for lower limit (mm²)** and **Default value for upper limit (mm²)** to the default settings of SICAT Air by clicking the **Reset** button.

SICAT Air uses the changed default values in two cases:

- You open a 3D X-ray scan for the first time:
- You reset the values of an **Airway** object.

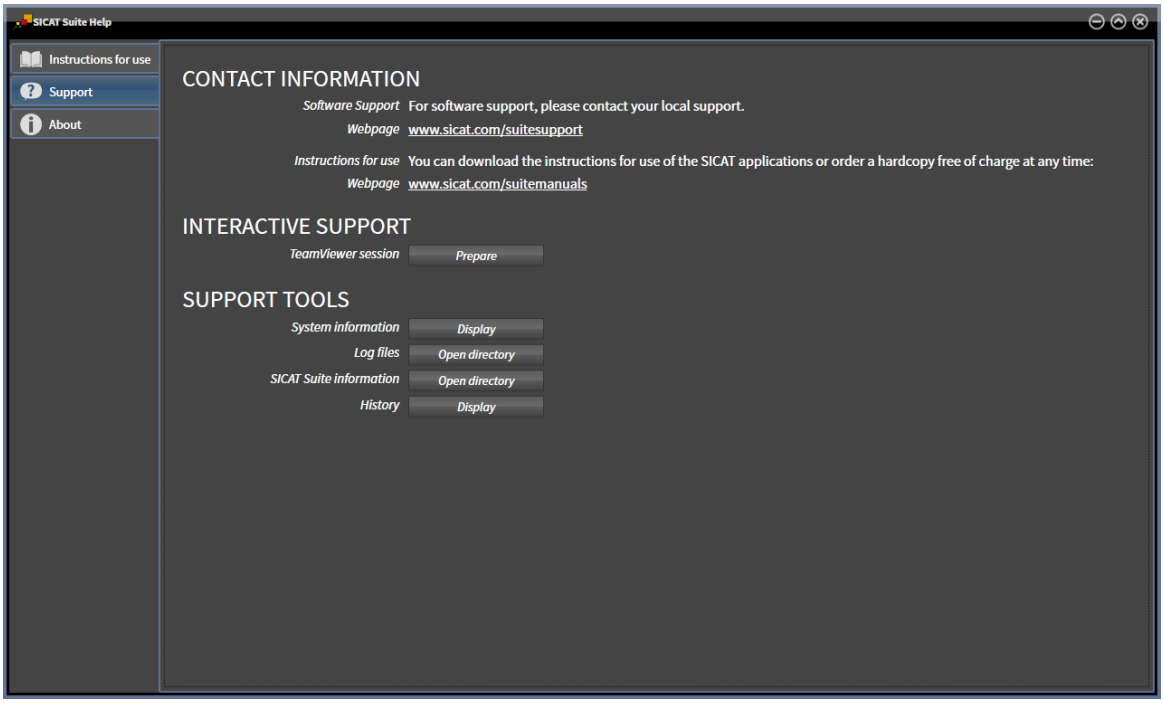
35 SUPPORT

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 214 - Standalone]*



35.1 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:

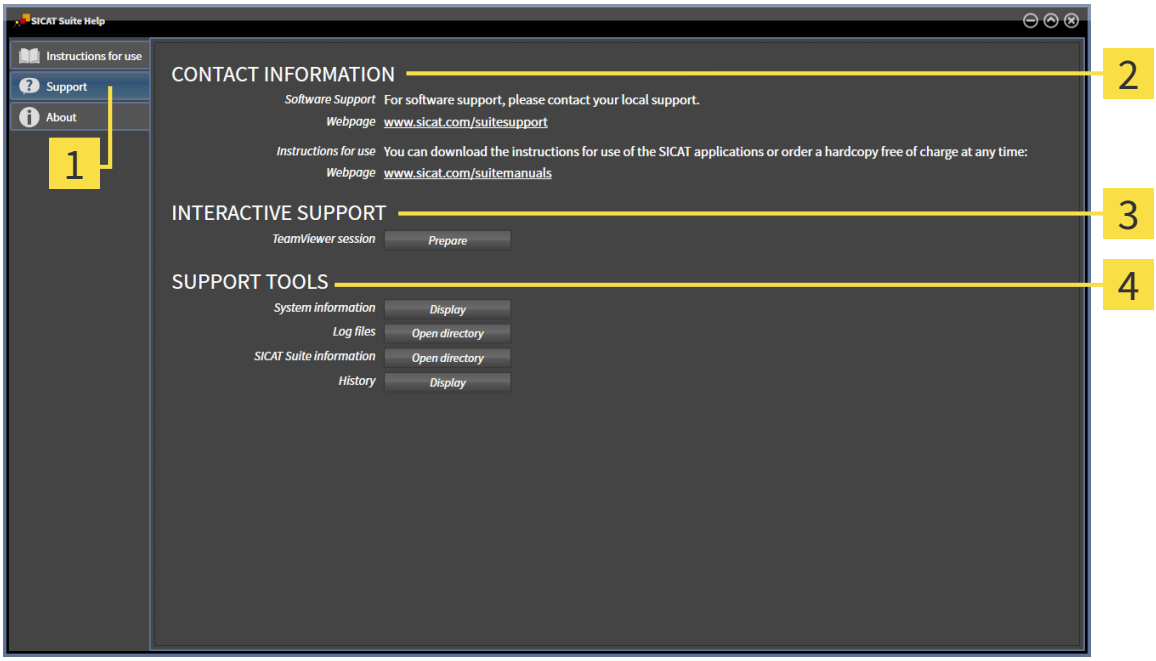
- **Instructions for use** - Information on this can be found in the section *Opening the instructions for use [▶Page 40 - Standalone]*.

- **Support** - Information on this can be found in the section *Contact information and support tools [▶Page 215 - Standalone]*.

- **About** - Information on this can be found in the section *Info [▶Page 216 - Standalone]*.

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 Air will open a TeamViewer session.

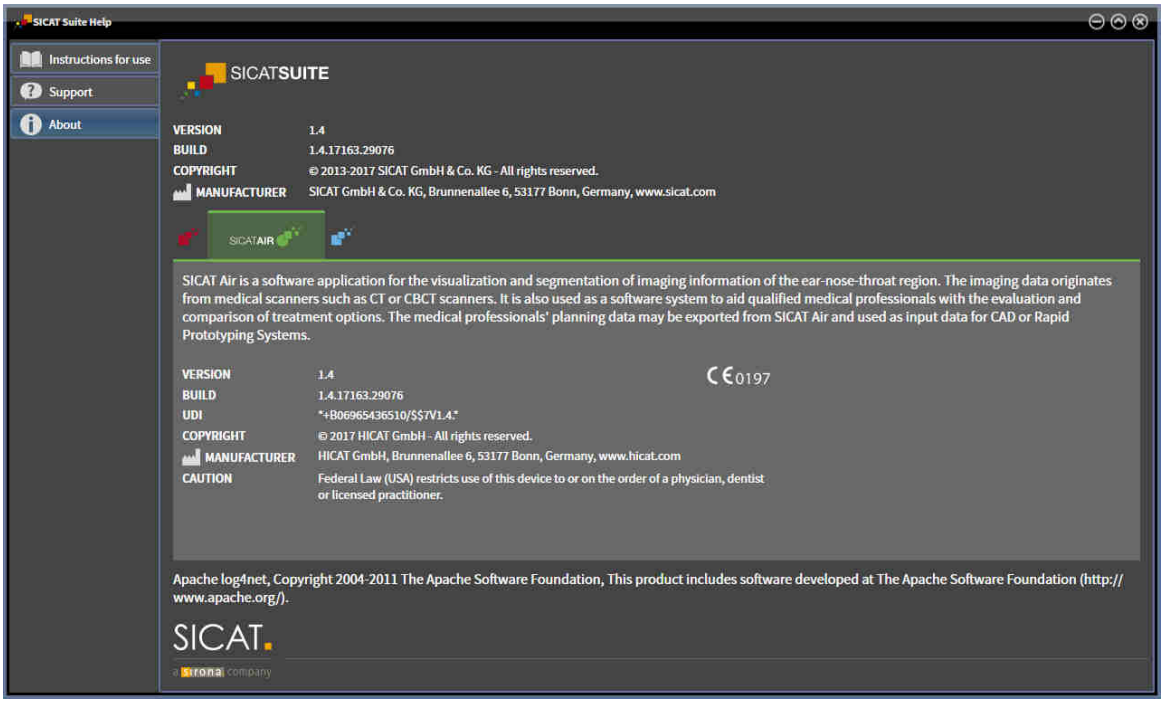
TeamViewer is software that allows mouse and keyboard commands to be remotely controlled and to transfer the contents of a computer's monitor via an active Internet connection. TeamViewer will only establish a connection if you explicitly consent. To do so, provide the SICAT support team with a TeamViewer 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 Air will open the system information of the operating system.
- Click on the **Open directory** button in the **Log files** area and SICAT Air 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 Air will show the message window.

35.3 INFO

The **About** window 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.

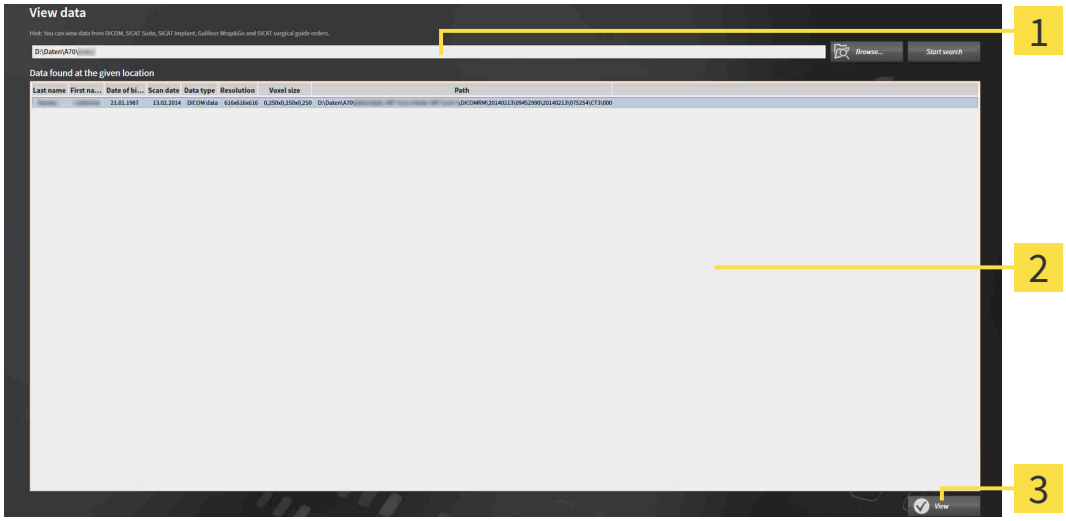
Which data you can view in the stand-alone version without being able to make and save changes depends on the status of your license and the availability of a patient record depot:

TYPE OF SICAT AIR 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 Air 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 73 - 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.

The following conditions must be met for you to be able to adjust volume orientation and panoramic curve.

- You have activated a license which allows you to open 3D X-ray scans or SICAT Air studies. Information on this can be found in the section *Licenses [▶Page 41 - Standalone]*.
- No other corresponding study of SICAT Function or any other SICAT application contains objects relating to the 3D X-ray scan which would be affected by a change in the volume orientation or the panoramic curve.

If the conditions are not met, SICAT Air deactivates the buttons and control elements that you can use for changing volume orientation or panoramic curves in the**Adjust Volume Orientation and Panoramic Region** window.

37 CLOSING SICAT AIR THE AND SAVING PLANNING PROJECTS

To close SICAT Air, proceed as follows:

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

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

► SICAT Air closes.

► SICAT Suite closes the active patient record.

38 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.

39 KEYBOARD SHORTCUTS

If you move the mouse pointer over certain functions, SICAT Air 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 **Segment the airway** window of SICAT Air:

KEYBOARD SHORTCUTS	DESCRIPTION
N	Navigation
B	Remove from the respiratory path
A	Add to the respiratory path
E	Remove non-required oral area

40 UNINSTALLING SICAT SUITE

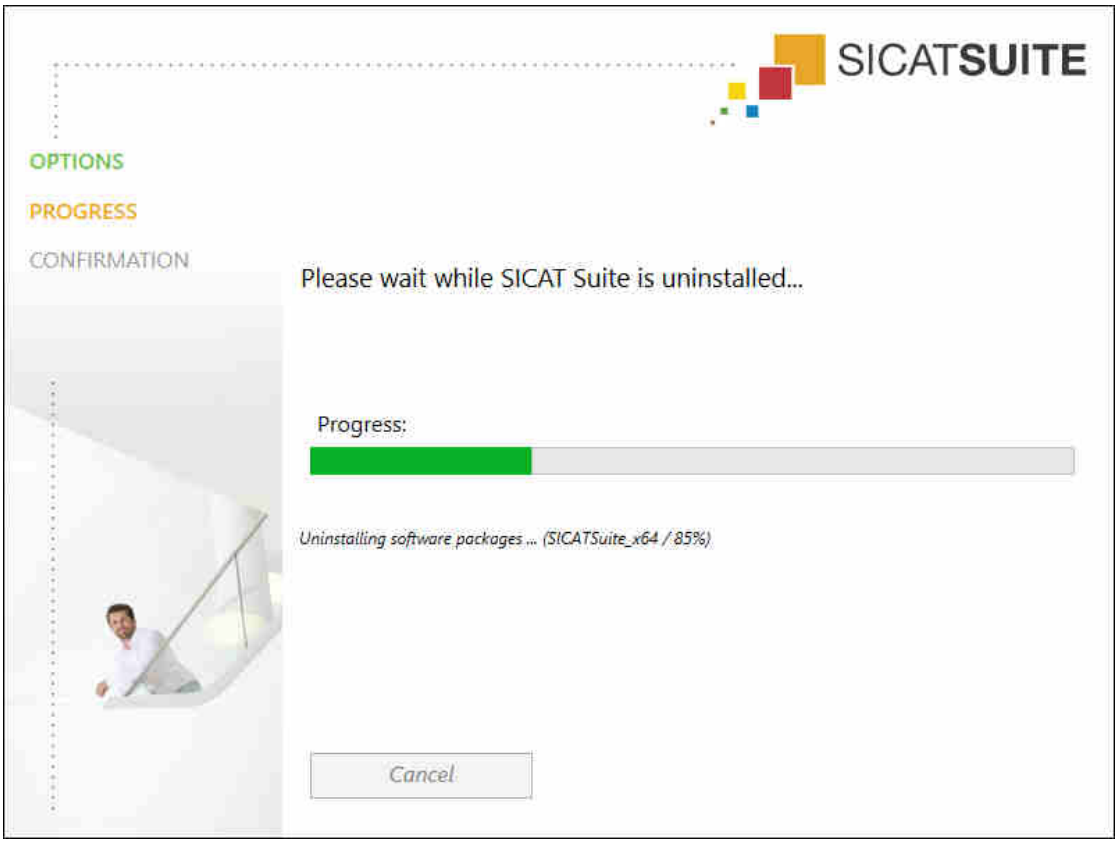
The SICAT Suite uninstallation program maintains active licenses on your computer. Therefore, SICAT Suite warns you that it will not automatically delete licenses before the uninstallation. If you no longer wish to use SICAT Suite on this computer, deactivate the licenses before uninstallation. Information on this can be found in the section *Returning licenses to the license pool [▶Page 48 - 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 199 - 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.

41 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.

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.

CAUTION

3D X-ray scans of insufficient quality may result in the quality of the segmented airway and airway profile being insufficient.

Only use 3D X-ray scans of a sufficient quality to create the segmented airway and airway profile with a sufficient quality and resolution.

AIRWAY COMPARISON

CAUTION

The use of incorrect data for the airway comparison may result in an incorrect diagnosis and treatment.

Use the correct patient, the correct 3D X-ray scans, the correct airway segmentation data, the correct interesting area and the correct size when selecting airway profiles for the airway comparison.

PATIENT INFORMATION

CAUTION

Using the handout for diagnosis purposes may result in an incorrect diagnosis and treatment.

Only use the visualization functions for medical images of the software user interface to perform a diagnosis on medical images and to plan the treatment.

42 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

GLOSSARY

3D X-ray scan

A 3D X-ray scan is a volumetric X-ray image.

ADA

American Dental Association

Airway

The term airway labels the object, which SICAT Air creates during segmentation. It is the upper part of the airways that is relevant in SICAT Air.

Airway analysis area

The term airway analysis area labels the bar in the airway workspace, which contains the relevant measured values and airway profile.

Airway area

The airway region is the region of interest, which you define in the segmentation window using the anatomical reference points and lateral size.

Airway comparison

The airway comparison juxtaposes two segmented airways in 3D views. The juxtaposition allows you to compare the lower jaw in an untreated position and in the treatment position. This allows you to assess the impacts of a therapeutic appliance.

Airway profile

Designates the 2D diagram, which shows the cross-sectional areas along the segmented airway.

Application

SICAT applications are programs belonging to SICAT Suite.

Color coding

Color coding highlights the size of the sections of the airway using different colors.

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.

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.

Reference data record

The reference data record is a data record with a segmented airway, which is not currently open in SICAT Air. The reason for the differentiation between an open data record and the reference data record is that SICAT Air can only ever open one 3D X-ray scan.

Registration

Spatial leveling

Segmentation

Segmentation is the process, in which the software separates certain areas from the volume.

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.

Smallest slice area

The smallest slice area is the place in the airway with the smallest cross-sectional area.

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.

Treatment position

Treatment position means that the patient's lower jaw is in a protruding position, which prevents bottlenecks in the airway, during the 3D X-ray scan.

Untreated

Untreated means that the patient's lower jaw is in occlusion during the 3D X-ray scan.

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43 EXPLANATIONS OF LABELING

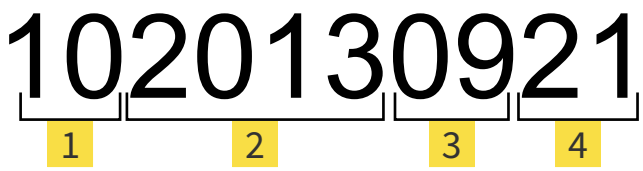
- Caution! Observe the accompanying documents.

- Observe the instructions for use.

- Manufacturer

- Batch code

This is an example of a batch code:



1 Product version in AB format (10 means V1.0)

2 Year of manufacture

3 Month of manufacture

4 Day of manufacture

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