SICATSUITE

SICAT AIR *VERSION 1.3*

Instructions for use | English

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1 INTENDED 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 1.0

- Initial release
- Support of German, English, French and Japanese languages

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

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 1 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 (64 bit) 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 Apple Safari 8 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 (32 Bit or 64 Bit) In this case, Windows 7 (32 Bit) is also possible as an operating system.
SIDEXIS 4 with SICAT Suite as a module	Version 4.1.3 SiPlanAPI V3
SIDEXIS 4 with SICAT Suite as a plug-in	Version 4.1.2 (64 Bit)

SOFTWARE PREREQUISITES

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

- Microsoft .NET Framework 4.5
- Microsoft DirectX Redistributable June 2010
- CodeMeter license management software 5.0
- SQL Server Compact Edition 4.0
- SICAT WebConnector

*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 165]*

4 SAFETY INFORMATION

It is important that you read the following chapter relevant to safety:

- *Definition of the danger levels [▶ Page 14]*
- *Qualifications of operating personnel [▶ Page 15]*
- *Safety instructions [▶ Page 508]*

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! According to US Federal Law, this product may be used only by or by instruction of physicians, dentists, or licensed professionals.

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 monitor

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 20]*.

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 [▶ Page 27]*
- *SIDEXIS XG plug-in [▶ Page 178]*
- *Stand-alone version [▶ Page 318]*

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 506]*.

7 OVERVIEW OF SICAT SUITE

SICAT Suite comprises the following parts:

- SICAT Function – the intended use of SICAT Function is shown in the SICAT Function instructions for use.
- SICAT Air – the intended use of SICAT Air is shown in the SICAT Air instructions for use.

LANGUAGES:

SICAT Suite supports the following languages in the user interface:

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

LICENSING

Licensing in SICAT Suite works as follows:

- SICAT assigns acquired licenses to customer activation keys and stores them on the SICAT license server in your license pool.
- An active Internet connection to the SICAT license server is required to activate the licenses.
- You can activate licenses directly online on the computer, on which SICAT Suite is running. Alternatively, the licenses may be activated manually using licensing files.
- You may give back licenses for each SICAT application in your license pool separately.
- Returned licenses are available for renewed activation on the same or another computer.

FULL VERSION AND VIEWER MODE

SICAT applications can start in one of two modes:

- If you have not activated an application license, SICAT Suite will start in Viewer mode.
- If you have activated at least one application license, the full version of SICAT Suite will start.

In general, the following is true:

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

8 INSTALLING SICAT SUITE

CAUTION

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

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

CAUTION

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

Handle the installation media with care and store them appropriately.

CAUTION

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

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

CAUTION

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

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

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

To install SICAT Suite, proceed as follows:

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

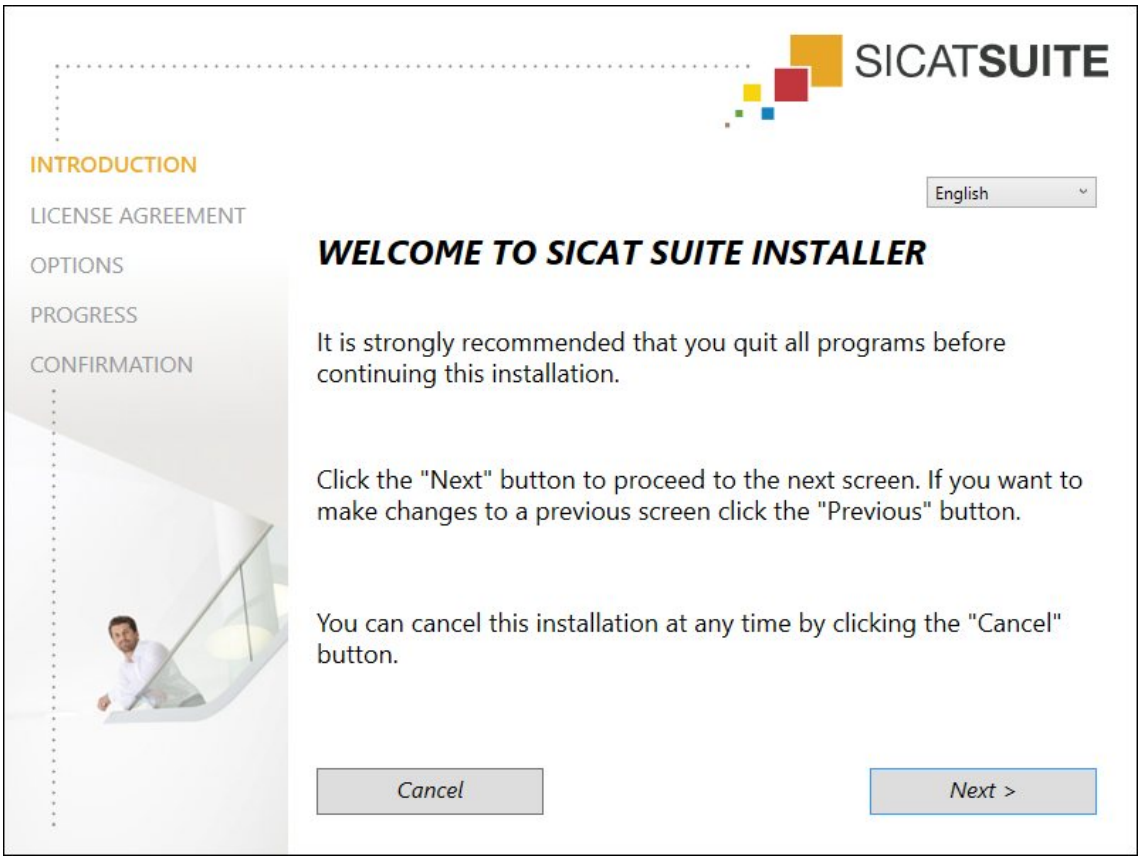
1. Insert the SICAT Suite installation medium into the optical drive of your computer.

   ▶ The **Auto play** window opens.

2. Select the option **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:

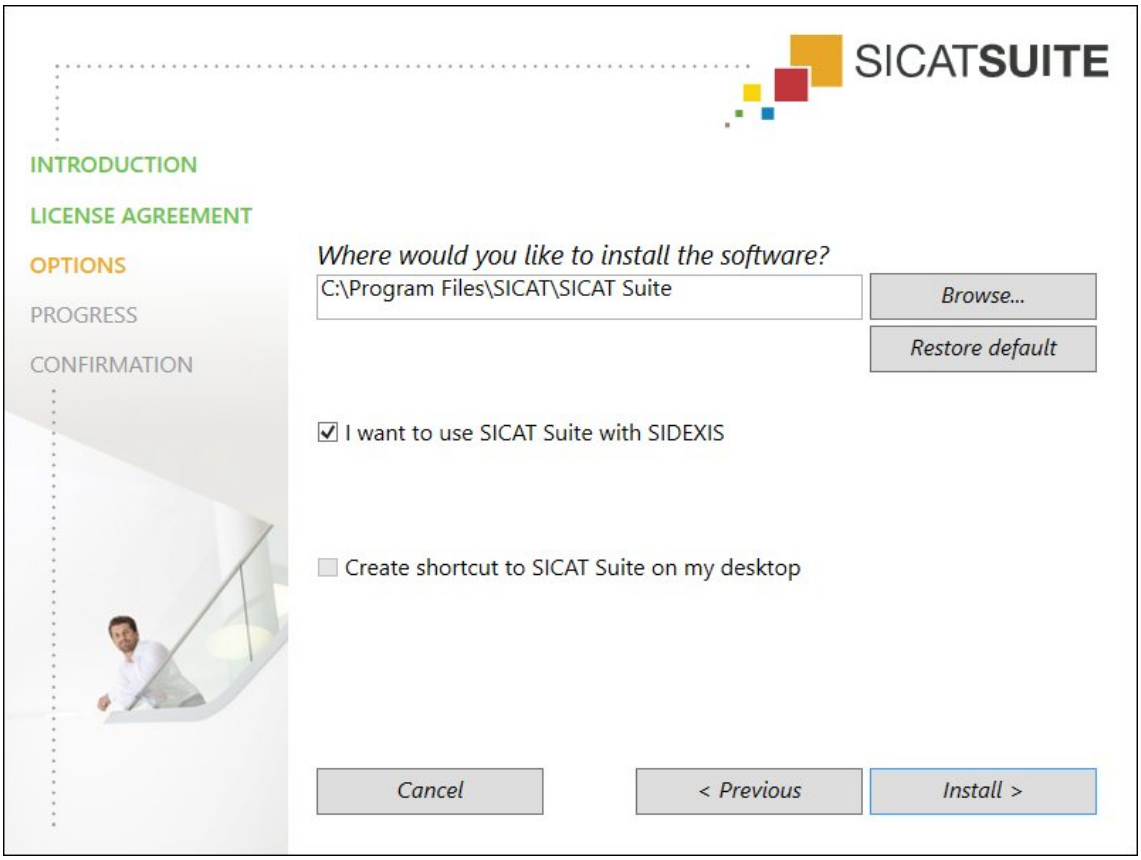


3. Select the desired language for the SICAT Suite installation program in the top right-hand corner of the **INTRODUCTION** window and click on **Next** .

▶ 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 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.

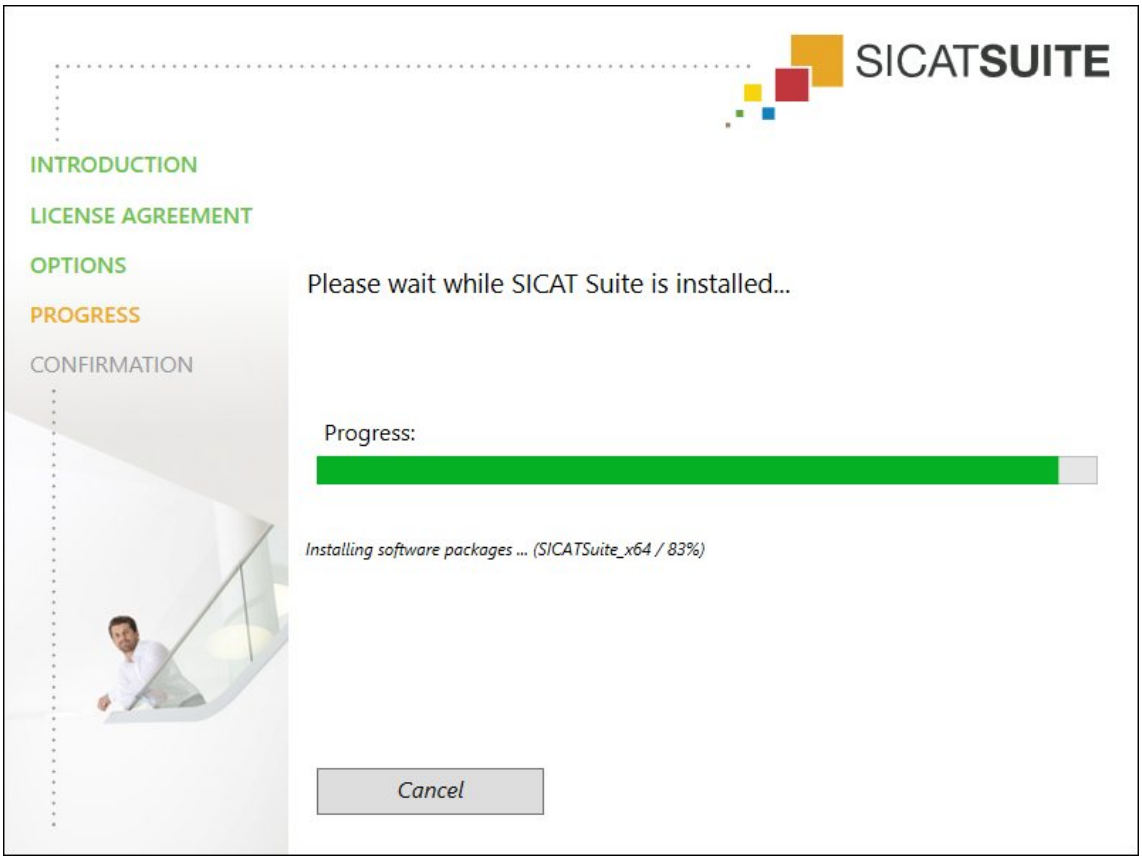
   ▶ If the **I want to use SICAT Suite with SIDEXIS** check box is activated, the **Create shortcut to SICAT Suite on my desktop** check box will not be available.

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

9. Deactivate the **Create start menu group for SICAT Suite** check box if desired. This check box is only available for the stand-alone version of SICAT Suite.

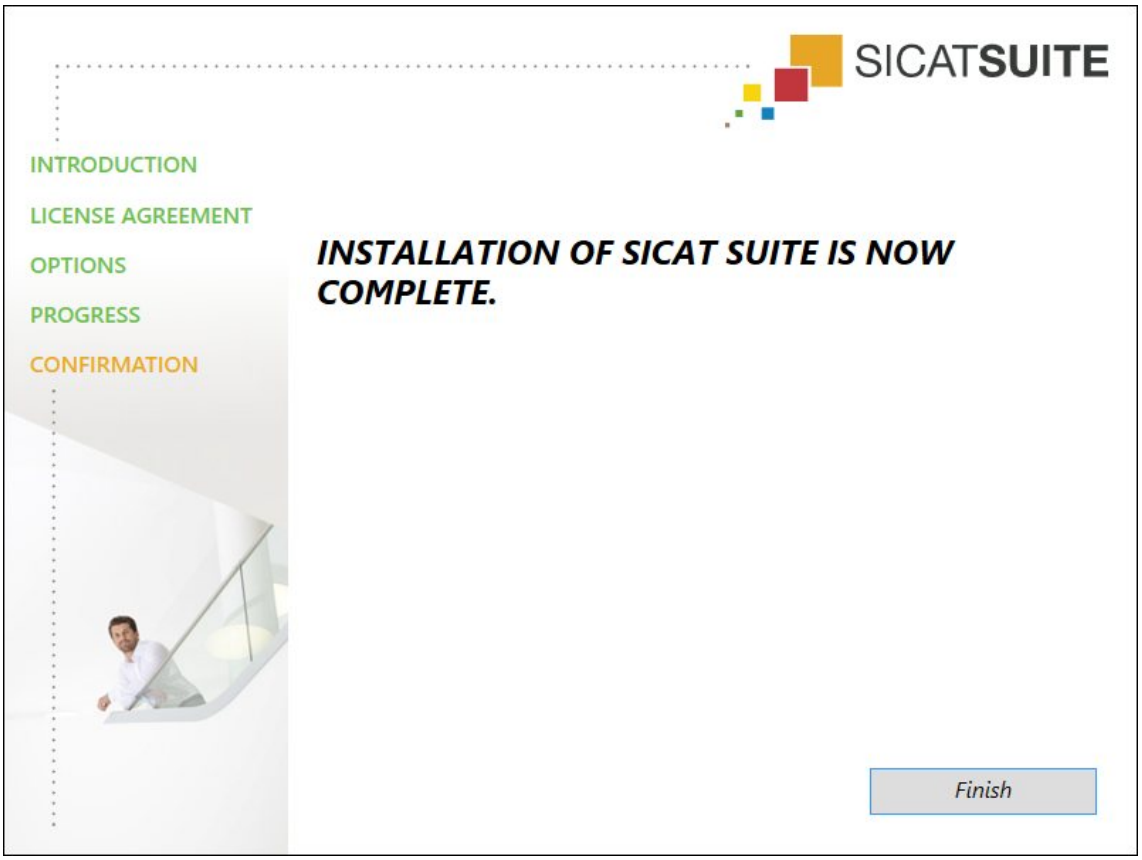
10. Click on the **Install** button.

► The **PROGRESS** window opens:



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

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



11. Click on the **Finish** button.

► The SICAT Suite installation program will close.

9 UPDATING OR REPAIRING SICAT SUITE

UPDATING SICAT SUITE

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

	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 SICAT Suite installation program and clicking on the **Repair** button. All data and settings will be maintained.

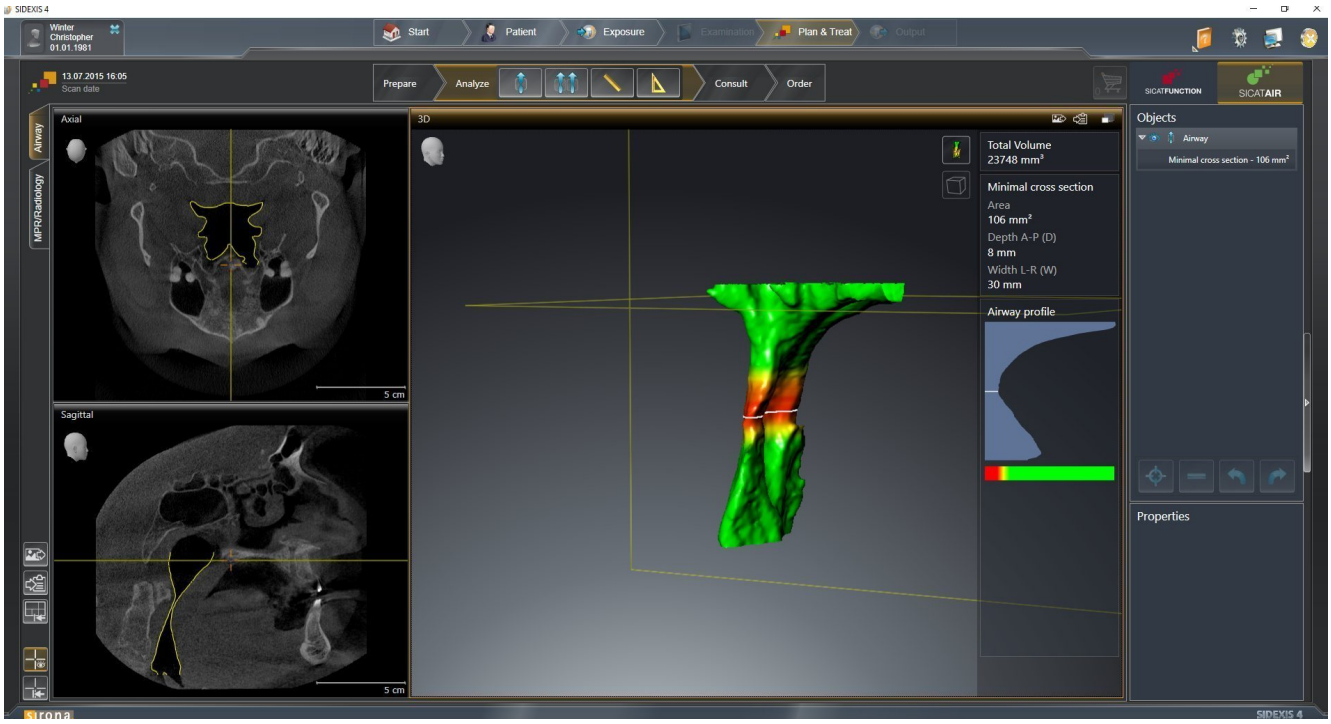
Both updates to and repairs of SICAT Suite use the SICAT Suite installation program. Information on this can be found in the section *Installing SICAT Suite [▶ Page 20]*.

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 34]*.

10 SIDEXIS 4 MODULE

The SIDEXIS 4 module of SICAT Suite directly connects the SICAT applications within the **Plan & Treat** phase to the SIDEXIS 4 user interface. The SICAT applications, SICAT settings and SICAT support tools are located within the SIDEXIS 4 window:



10.1 SPECIAL FEATURES OF THE SIDEXIS 4 VERSION

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 34]*.

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 38]*.

PATIENT DATA AND VOLUME DATA

The version of SICAT Air connected to SIDEXIS 4 uses the SIDEXIS 4 patient data and volume data. The data is therefore backed up via the process intended for SIDEXIS 4.

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 4, SICAT Suite will simply display the values of some settings, as these are transferred from SIDEXIS 4.

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
- 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 card 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 license must be activated.

Otherwise, you cannot make or save any changes to SICAT Air studies. However, you can view 3D X-ray scans and SICAT Air studies.

The following table shows which functions are available in each case:

FUNCTION	LICENSE ACTIVATED	NO LICENSE ACTIVATED
Support area	Yes	Yes
Settings area	Yes	Yes
Making changes	Yes	No
Viewing data without saving changes	No	Yes

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.

Other information is available in the section *Opening read-only data [▶ Page 176]*.

10.2 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.

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 38]*.

HOW TO PROCEED IN SICAT AIR

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 93]*.
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 107]*.
4. Assess the respiratory path in the **Airway** workspace. Information on this can be found in the section *Airway analysis [▶ Page 117]*.
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 [▶ Page 130]*.

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. Check the effect of the therapeutic appliance using the airway comparison. 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 140]*.

10. If you wish to obtain a second opinion, export the data. Information on this can be found in the section *Data export [▶ Page 139]*.

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 177]*.

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 online help [▶ Page 42]*.

Further support is available in the **Support** area. Information on this can be found in the section *Support [▶ Page 172]*.

10.3 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 of the SIDEXIS 4 version [▶ Page 28]*.

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 20]*.

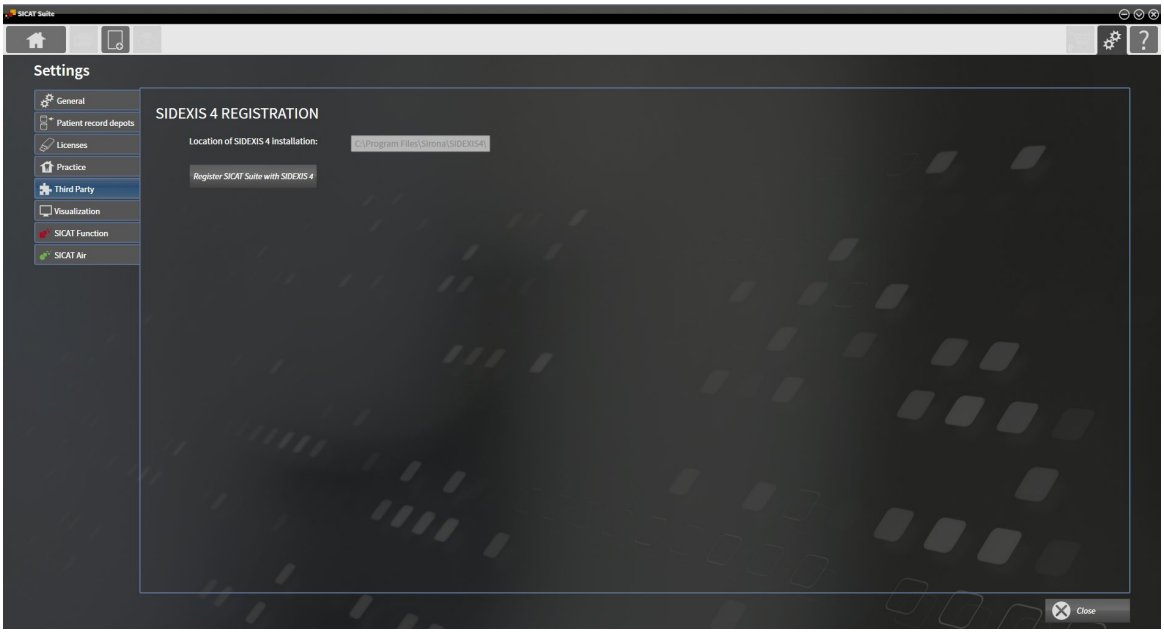
OPENING THE "SIDEXIS 4" WINDOW

1. Start the stand-alone version of SICAT Suite. Information on this can be found in the section *Starting SICAT Suite [▶ Page 324]*.

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 20]*.

☑ 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. You can tell that it has been successfully registered in SIDEXIS 4 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

10.4 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.

10.5 STARTING SICAT SUITE

⚠ **CAUTION**	**Incorrect assignment of patient name or 3D scan could result in confusion of patient scans.** Verify that the 3D scan that is to be imported or already loaded in a SICAT Suite application is associated with the correct name of the patient and the correct scan information.

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

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

To start SICAT Suite as a SIDEXIS 4 module, proceed as follows:

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

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

☑ You have already selected a 3D X-ray scan 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 the **SICAT Suite** icon.

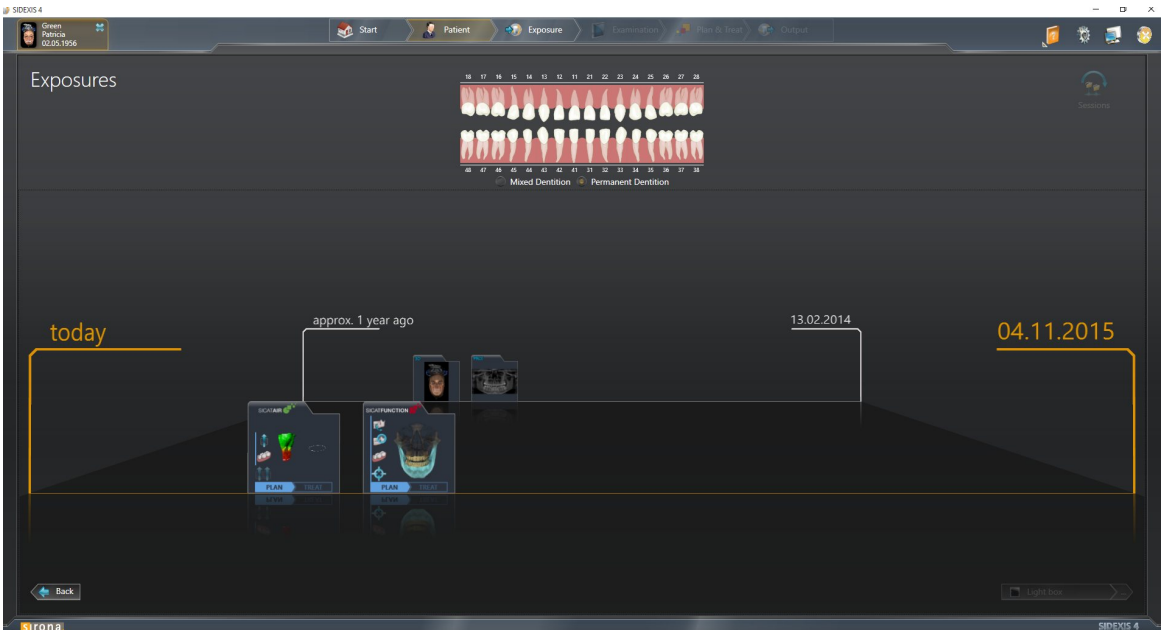
▶ SIDEXIS 4 switches to the **Plan & Treat** phase.

▶ SICAT Suite opens the 3D X-ray scan 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. If you explicitly open a study, the corresponding SICAT application will always start.

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 41]*.

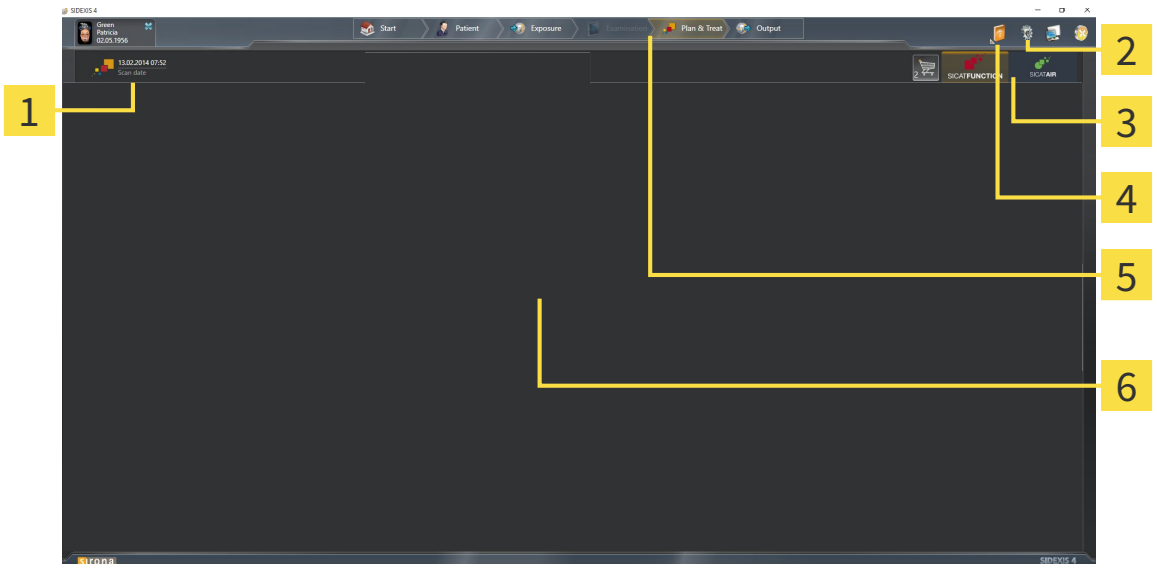
If you have saved an application-specific study, you can select it directly in the **Scans** window and open it in the corresponding SICAT application. If you already have an item in your shopping cart which is based on that study, the shopping cart will open.



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 36]*.

10.6 THE USER INTERFACE OF SICAT SUITE

The user interface of SICAT Suite as a SIDEXIS 4 module is comprised of 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 162]*.
- Buttons to change applications and **Shopping cart** button – Information on this can be found in the sections *Switching between SICAT applications [▶ Page 41]* and *Ordering process [▶ Page 140]*.
- **Help** - Information on this can be found in the section *Opening the online help [▶ Page 42]*.
- The **Application area**, which is located in the other part of SICAT Suite, shows the user interface of the active SICAT application.

10.6.1 SWITCHING BETWEEN SICAT APPLICATIONS

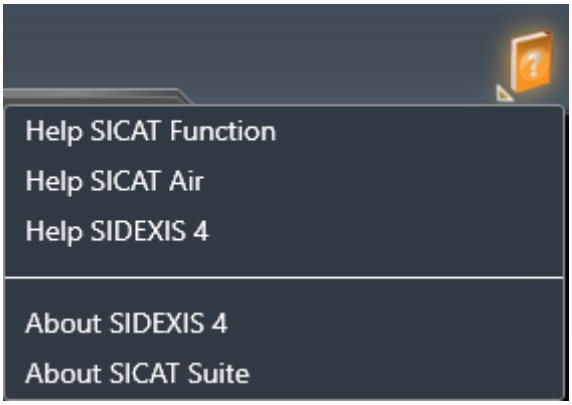
- Click on the button with the label matching the desired SICAT application.

► SICAT Suite will switch to the selected application.

10.7 OPENING THE ONLINE HELP

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.

10.8 LICENSES

To find out more about purchasing SICAT licenses, please contact your on-site sales partner. SICAT will provide demo licenses for testing purposes, through which you will receive temporary access to the full version of one or more SICAT applications.

You can activate licenses for SICAT applications and individual functions as follows:

- After you have purchased one or more licenses, SICAT will provide you or your organization with a personal activation key. You can use activation keys to activate licenses on various computers, on which SICAT Suite is installed.
- Your license pool on the SICAT license server contains the acquired number of licenses for each SICAT application and each individual function.
- If you activate a license on a computer, it will be linked to that computer. The license is taken from your license pool and will no longer be available for activation on another computer.
- An activated license will activate the full version of one or more applications or individual functions. Applications without licenses run in Viewer mode.

The **License Overview** window gives an overview about licenses, which are activated on your computer. These may be licenses for applications or licenses for individual functions. Information on this can be found in the section *Opening the “License overview” window [▶ Page 44]*.

You can activate licenses in two ways:

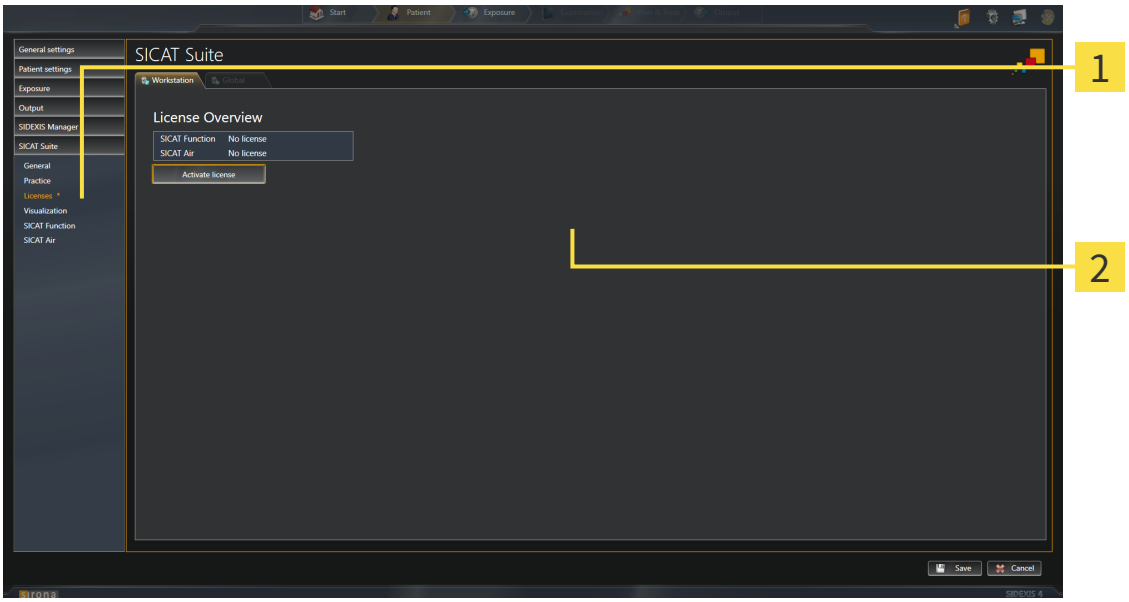
- If the computer, on which SICAT Suite is running, has an active Internet connection, the license can be activated automatically. Information on this can be found in the section *Activating licenses using an active Internet connection [▶ Page 45]*.
- If desired or if the computer, on which SICAT Suite 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]*.

You can deactivate licenses for each application or function individually and return them to the license pool. The computer, on which SICAT Suite is running, requires an active Internet connection for this. 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]*.

You can find information about redeeming voucher codes in the section *Redeeming voucher codes [▶ Page 49]*.

10.8.1 OPENING THE “LICENSE OVERVIEW” 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 45].*
- *Activating licenses manually or without an active Internet connection. [▶ Page 46].*
- *Returning licenses to the license pool [▶ Page 48].*

10.8.2 ACTIVATING LICENSES USING AN ACTIVE INTERNET CONNECTION

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

To start the activation process, proceed as follows:

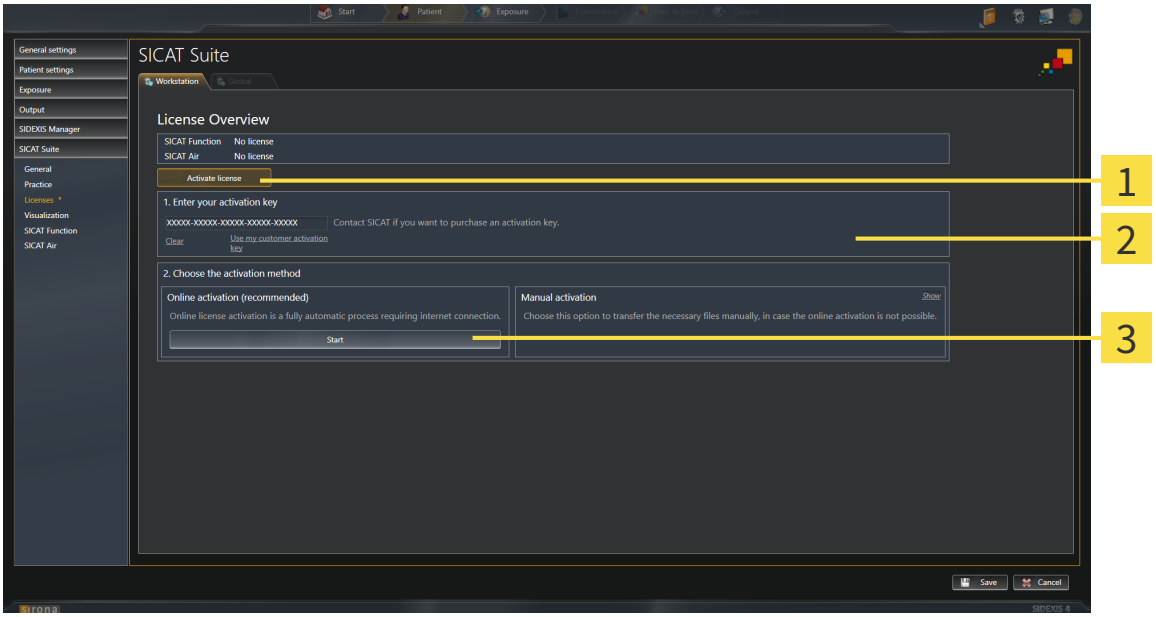
☑ At least one SICAT application or one individual function is missing an active license.

☑ 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 "License overview" window [▶ Page 44]*.

1. Click the **Activate license** button in the **License Overview** window.

   ▶ The **License Overview** area opens:



1 **Activate license** button

2 **Enter your activation key** area

3 **Start** button

2. Enter your customer activation key or a demo license activation key into the **Enter your activation key** field.

3. Click on the **Start** button.

4. If a **Windows Firewall** window opens, you 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 with the following message: **License was successfully activated**.

To activate SICAT Suite again, click on the **Use my customer activation key** button and use your customer activation key. To empty the field with the current license key, click on the **Clear** button in the **Enter your activation key** area.

10.8.3 ACTIVATING LICENSES MANUALLY OR WITHOUT AN ACTIVE INTERNET CONNECTION.

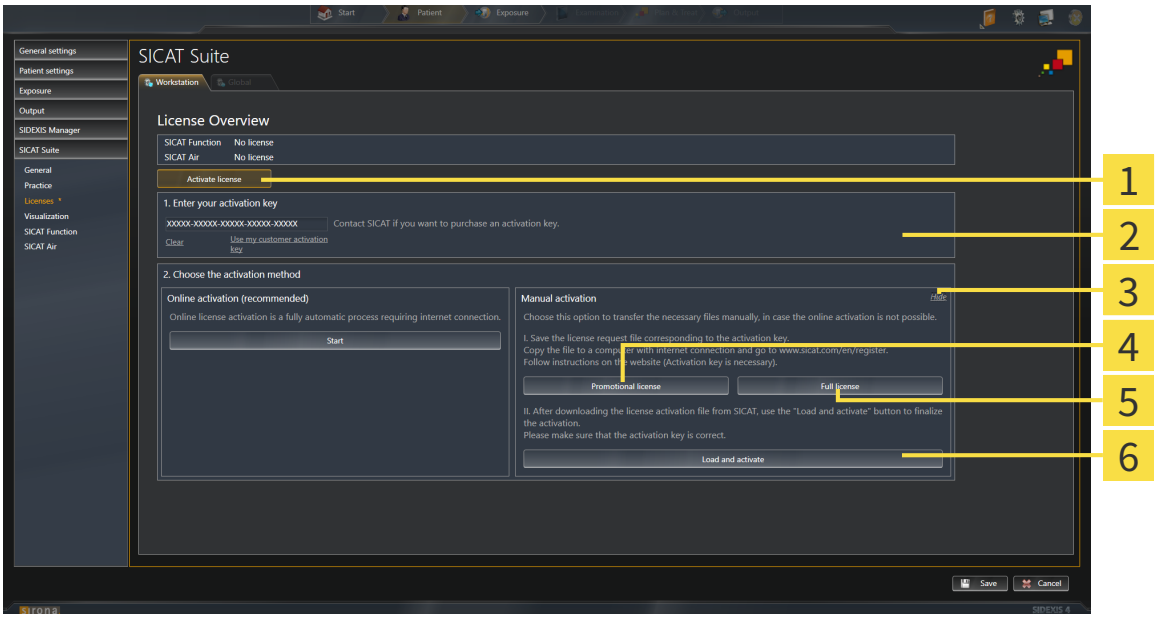
NOTICE	You must close the active patient record before making changes to the licenses.

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 "License overview" window [▶ Page 44]*.

1. Click the **Activate license** button in the **License Overview** window.
   ▶ The **License Overview** area opens.
2. Click on the **Show** button in the **Manual activation** area.
   ▶ The **Manual activation** area expands:



1 **Activate license** button

2 **Enter your activation key** area

3 **Show** button

4 **Promotional license** button

5 **Full license** button

6 **Load and activate** button

3. If you want to activate a full license, click the **Full license** button.
4. If you want 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 file extension **WibuCmRaC** 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 file extension **WibuCmRaU**, which you have 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 with the following message: **License was successfully activated**.

10.8.4 RETURNING LICENSES TO THE LICENSE POOL

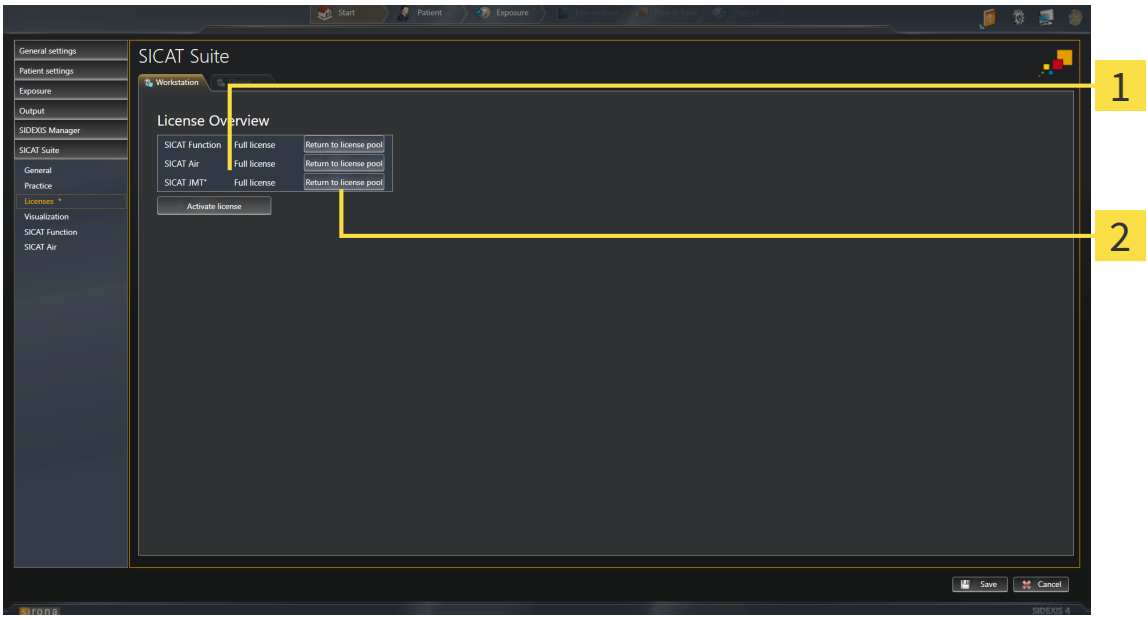
NOTICE	You must close the active patient record before making changes to the licenses.

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 "License overview" window [▶ Page 44]*.



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 with 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.

10.8.5 REDEEMING VOUCHER CODES

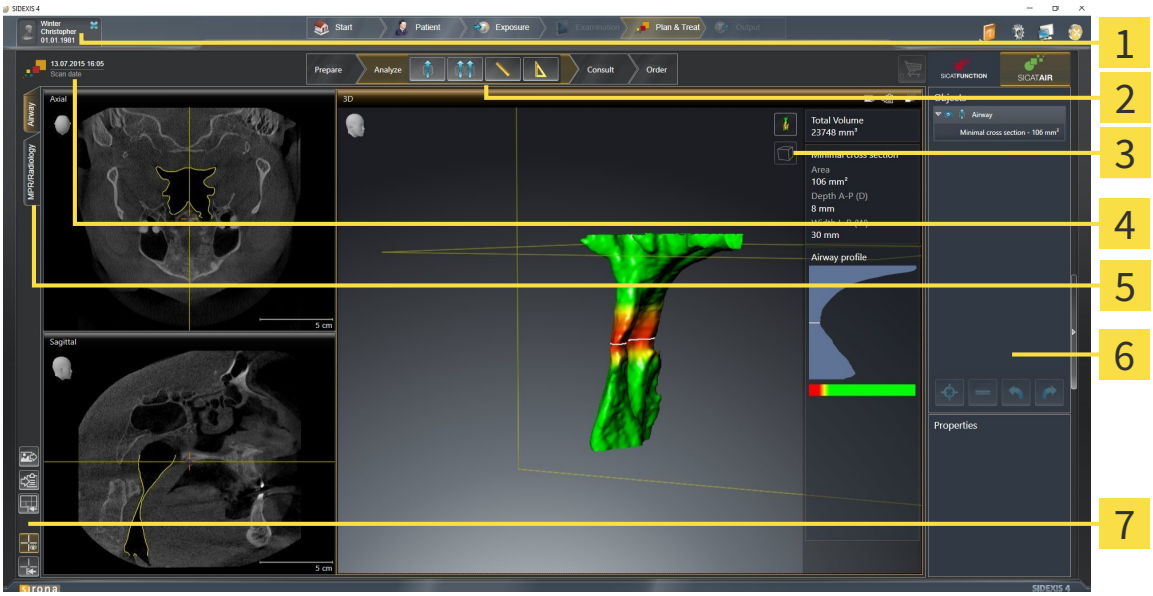
1. Open a web browser on the computer with the active Internet connection and open the http://www.sicat.de web page.
2. Click on the link for the SICAT portal.
   ▶ The SICAT portal opens.
3. Register or log in to the SICAT portal using your username and password if you have not already done so.
4. Click 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 show you a license.
6. Save the license locally on your computer.
7. Start SICAT Suite and activate the license.

Information on this can be found in the sections *Activating licenses using an active Internet connection [▶ Page 45]* and *Activating licenses manually or without an active Internet connection. [▶ Page 46]*.

See the FAQ on the SICAT portal for more help.

10.9 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 the various workflow steps, which include the main tools of the application workflow. This includes tools, which you can use to add and import diagnosis objects and planning objects. Information on this can be found in the section *Workflow toolbar [▶ Page 51]*.
- The **Workspace area** is the part of the user interface below **Workflow toolbar**. It shows the active workspace of SICAT Air. Each workspace contains a certain combination of views. Information on this can be found in the section *Overview of the airway workspace [▶ Page 64]*.
- Only the active view shows the **View toolbar**. It contains tools to adjust the display to the corresponding view. Information on this can be found in the sections *Adjusting the views [▶ Page 70]* and *Adjusting the 3D view [▶ Page 81]*.
- The **Object bar** contains tools to manage diagnosis objects and planning objects. Information on this can be found in the sections *Object bar [▶ Page 53]* and *SICAT Air objects [▶ Page 57]*.
- The **Workspace toolbar** contains tools to change general settings for workspaces and all of the views they contain and to document the contents of workspaces. Information on this can be found in the section *Moving, hiding and showing crosshairs and frames [▶ Page 78]*, *Resetting views [▶ Page 79]*, *Adjusting and resetting the layout of workspaces [▶ Page 67]* and *Creating screenshots of workspaces [▶ Page 68]*.

10.9.1 WORKFLOW TOOLBAR

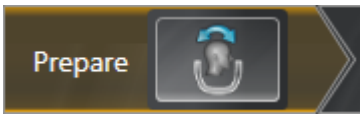
The **Workflow toolbar** in SICAT Air consists of four workflow steps:

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 workflow step **Prepare**:

- **Adjust volume orientation and panoramic region** – Information on this can be found in the sections *Adjusting the volume orientation [▶ Page 93]* and *Adjusting the panoramic region [▶ Page 98]*.

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 108]*.

- **Airway comparison** – Information on this can be found in the section *Carrying out an airway comparison [▶ Page 124]*.

- **Add distance measurement (D)** – Information on this can be found in the section *Adding distance measurements [▶ Page 102]*.

- **Add angle measurement (A)** – Information on this can be found in the section *Adding angle measurements [▶ Page 103]*.

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 [▶ Page 131]*.

- **Draw Circle** – Information on this can be found in the section *Creating images and screenshots [▶ Page 131]*.

- **Generate handout** – Information on this can be found in the section *Preparing handouts [▶ Page 134]*.

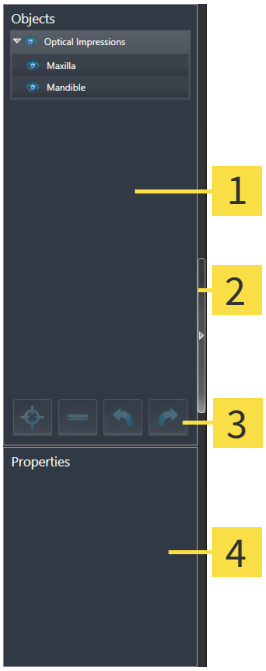
4. WORKFLOW STEP "ORDER"

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 145]*.

- **Order Therapeutic Appliance** – Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶ Page 141]*.

10.9.2 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 grouped list of all diagnosis objects and planning objects that you have added or importeobd 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 54]*.
- The **Object toolbar** contains tools to focus objects, remove objects or object groups and undo or redo object actions or object group actions. Information on this can be found in the section *Managing objects with the object toolbar [▶ Page 56]*.
- The **Properties** area shows the details of the active object.

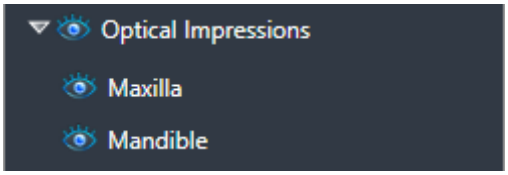
The objects available in SICAT Air can be found in the section *SICAT Air objects [▶ Page 57]*.

Click on the **Hide object bar** button or **Show object bar** button on the right side of the **Object bar** to hide or show the **Object bar**.

10.9.3 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 **Some Shown** icon or **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.

10.9.4 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 54]*.

- 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 54]*.

- 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.

10.9.5 SICAT AIR OBJECTS

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

- **Optical Impressions**
- **Airway**
  - **Minimal cross section**
- **Airway comparison**
- **Handout**
  - **Image**
  - **Screenshot**
  - **Airway comparison**

OPTICAL IMPRESSION OBJECT

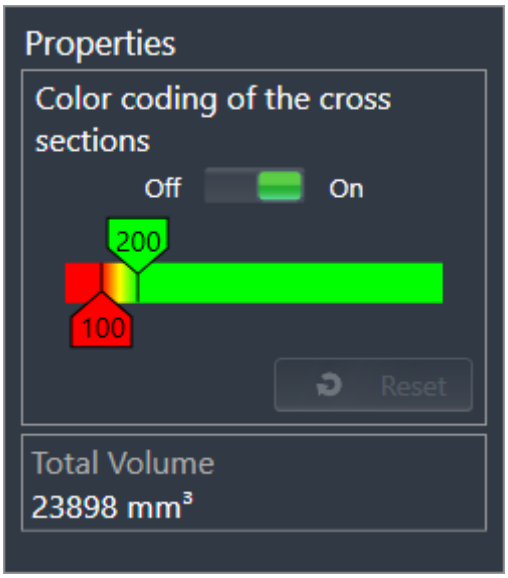
An **Optical Impressions** object contains the following sub-objects:

- **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, which you can use to activate or deactivate color coding.
- The **Color coding of the cross sections** with sliding controllers, which 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, which 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 standard values in the SICAT Air settings can be found in the section *Changing SICAT Air settings [▶ Page 170]*.
- The **Total Volume** of the segmented airway

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 OBJECT

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

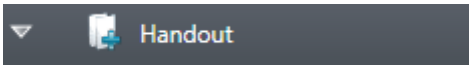
- **Minimal cross section** objects are beneath **Airway** objects.
- The designation of a **Minimal cross section** object contains the smallest cross-sectional area in mm^2.
- In the **Properties** area, the object also displays the cross-section of the slice.
- If you focus on a **Minimal cross section**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

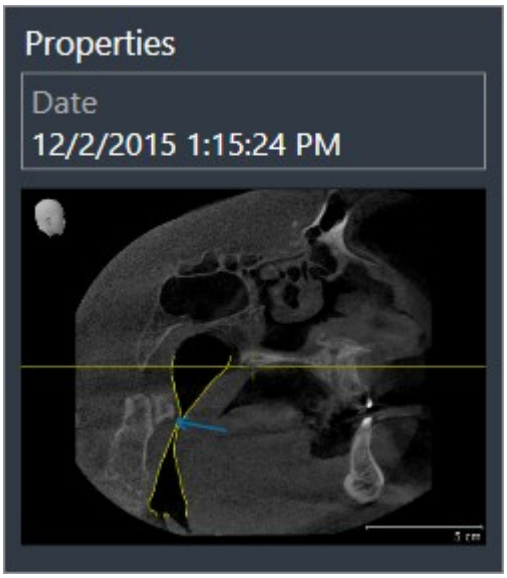
HANDOUT OBJECT



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 a **Handout** object. SICAT Air removes all corresponding **Image** objects and **Screenshot** objects.

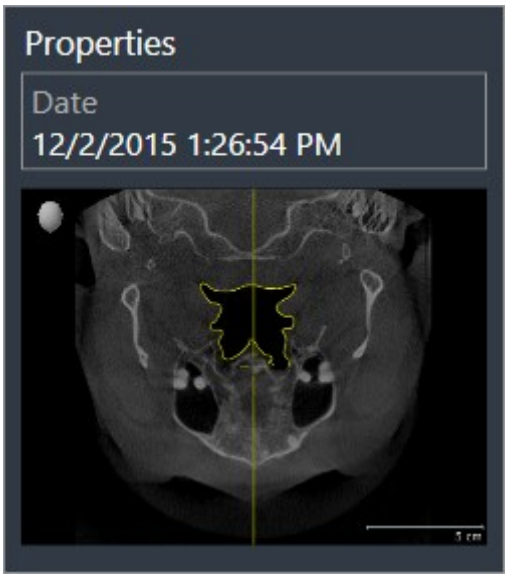
IMAGE OBJECTS



The following applies for **Image** objects:

- **Image** objects are beneath **Handout** objects.
- SICAT Air summarizes all drawing objects of a slice in a workspace for each 2D view and creates an **Image** object from this.
- SICAT Air summarizes 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 an **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 an **Image** object and therefore all arrows and circles contained therein at once. SICAT Air removes **Image** objects both from the **Object browser** and from the **Generate handout** window.
- If you focus on an **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 beneath **Handout** objects.
- SICAT Air creates one **Screenshot** object per screenshot.
- After you have created and activated a **Screenshot** object, **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 a **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.

10.10 WORKSPACES

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

In SICAT Air there are two different workspaces:

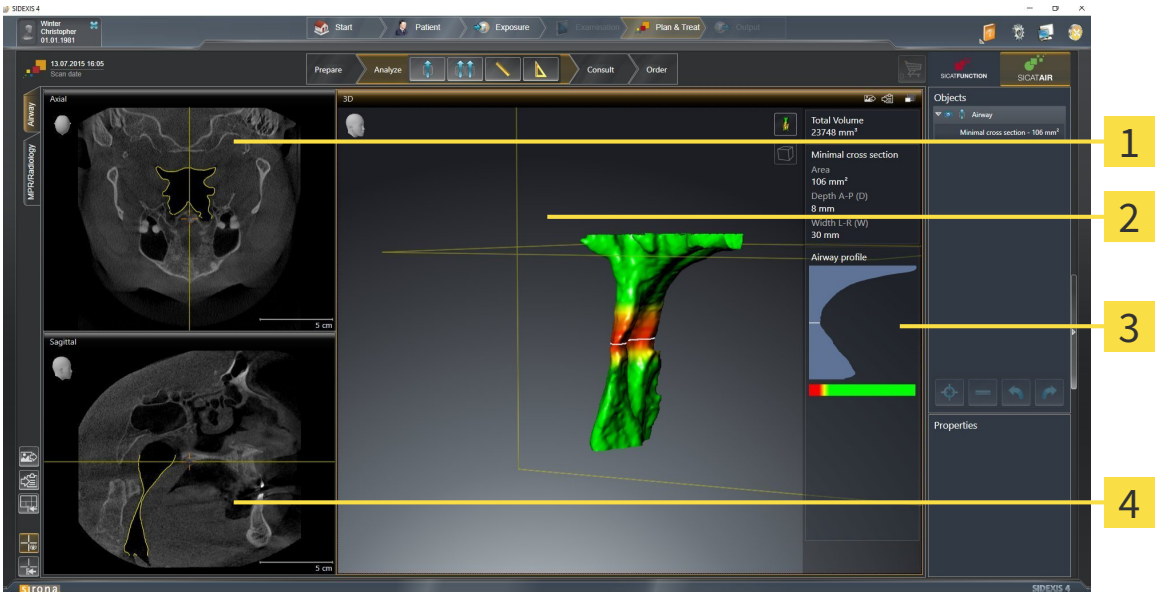
- **Airway** workspace – Information on this can be found in the section *Overview of the airway workspace [▶ Page 64]*.
- **MPR/Radiology** workspace – Information on this can be found in the section *Overview of the MPR/Radiology workspace [▶ Page 65]*.

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 66]*.
- *Adjusting and resetting the layout of workspaces [▶ Page 67]*.
- *Adjusting the views [▶ Page 70]*.
- There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶ Page 81]*.
- You can document the contents of the active workspace. Information on this can be found in the section *Creating screenshots of workspaces [▶ Page 68]*.

10.10.1 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 168]*.

3D VIEW

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

SAGITTAL VIEW

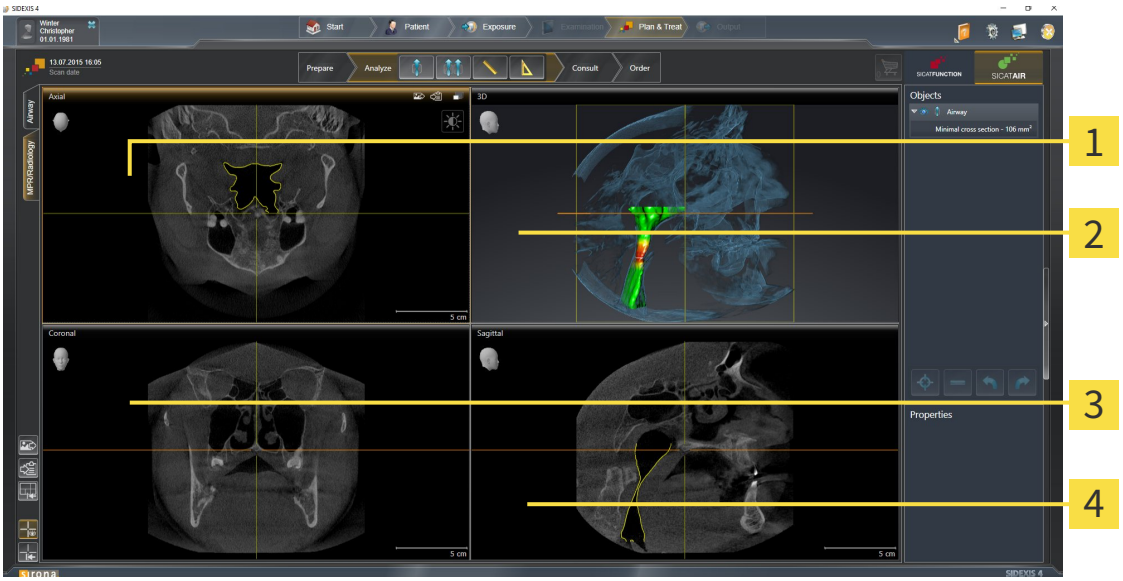
By default, the **Sagittal** view shows slices from the right. You can switch the viewing direction of the **Sagittal** view. Information on this can be found in the section *Changing visualization settings [▶ Page 168]*.

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 70]* and *Adjusting the 3D view [▶ Page 81]*.

If you have created a **Airway** object by segmenting the airway, the airway analysis area will be available in the **3D** view. Information on this can be found in the sections *SICAT Air objects [▶ Page 57]*, *Segmenting the airway [▶ Page 107]* and *Interacting with the airway profile [▶ Page 121]*.

10.10.2 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 168]*.

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 168]*.

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 70]* and *Adjusting the 3D view [▶ Page 81]*.

10.10.3 SWITCHING THE ACTIVE WORKSPACE

To switch 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.

10.10.4 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 standard layout. This means that the software displays all views in their standard sizes.

10.10.5 CREATING SCREENSHOTS OF WORKSPACES

For documentation purposes, you can copy screenshots of the workspaces to the Windows clipboard.

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 66]*.

- 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 66]*.

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

▶ 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.

10.11 VIEWS

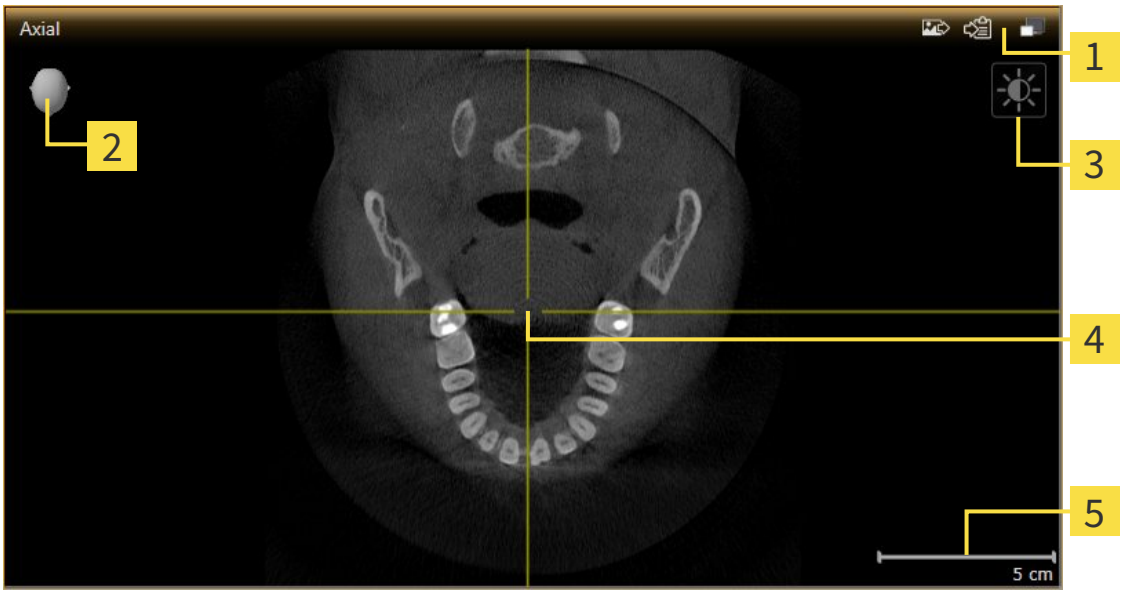
Views are contained in workspaces. A description of the various workspaces and views can be found under *Workspaces [▶ Page 63]*.

You can adjust the views. Information on this can be found in the sections *Adjusting the views [▶ Page 70]* and *Adjusting the 3D view [▶ Page 81]*.

10.11.1 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 72]*.

An active view contains the following elements:



1 Title bar

2 Orientation head

3 View toolbar

4 Crosshair

5 Scale

2D slice views display crosshairs. Crosshairs are lines of intersection with other slice views. SICAT Air synchronizes all slice views with one another. 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.

2D slice views contain a scale.

The following actions are available to adjust the views:

- *Changing the active view [▶ Page 72]*
- *Maximizing and restoring views [▶ Page 73]*
- *Adjusting and resetting the brightness and contrast of the 2D views [▶ Page 74]*
- *Zooming views and panning views [▶ Page 76]*
- *Scrolling through slices in the 2D slice views [▶ Page 77]*
- *Moving, hiding and showing crosshairs and frames [▶ Page 78]*
- *Resetting views [▶ Page 79]*

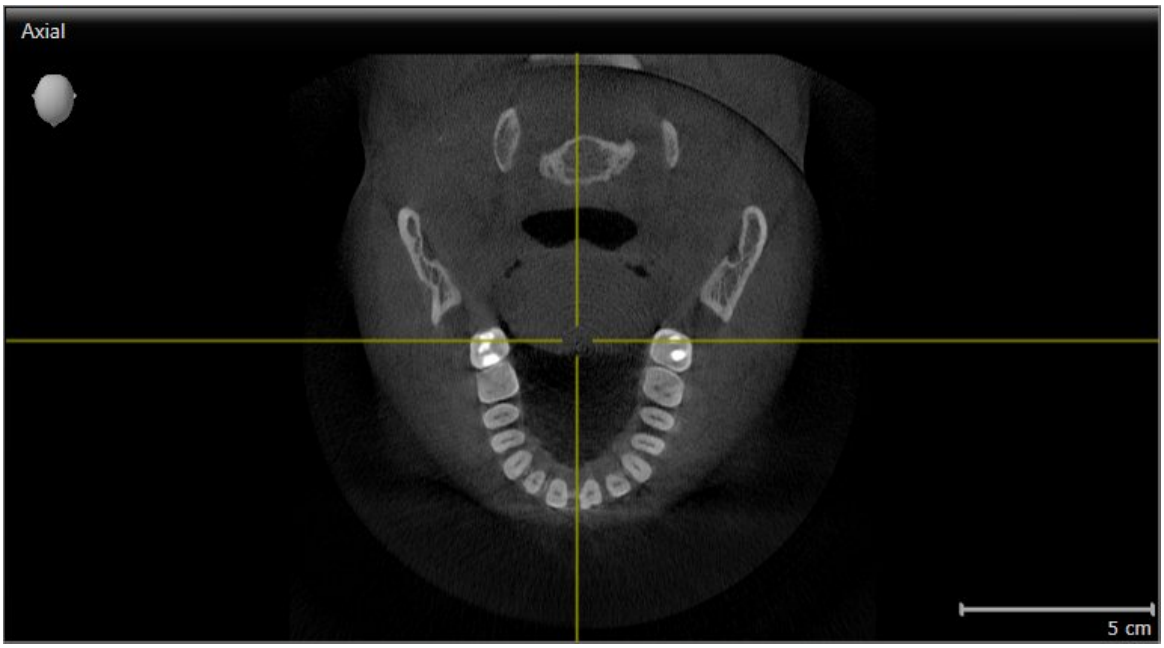
There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶ Page 81]*.

You can document the content of an active view. Information on this can be found in the section *Creating screenshots of views [▶ Page 80]*.

10.11.2 CHANGING THE ACTIVE VIEW

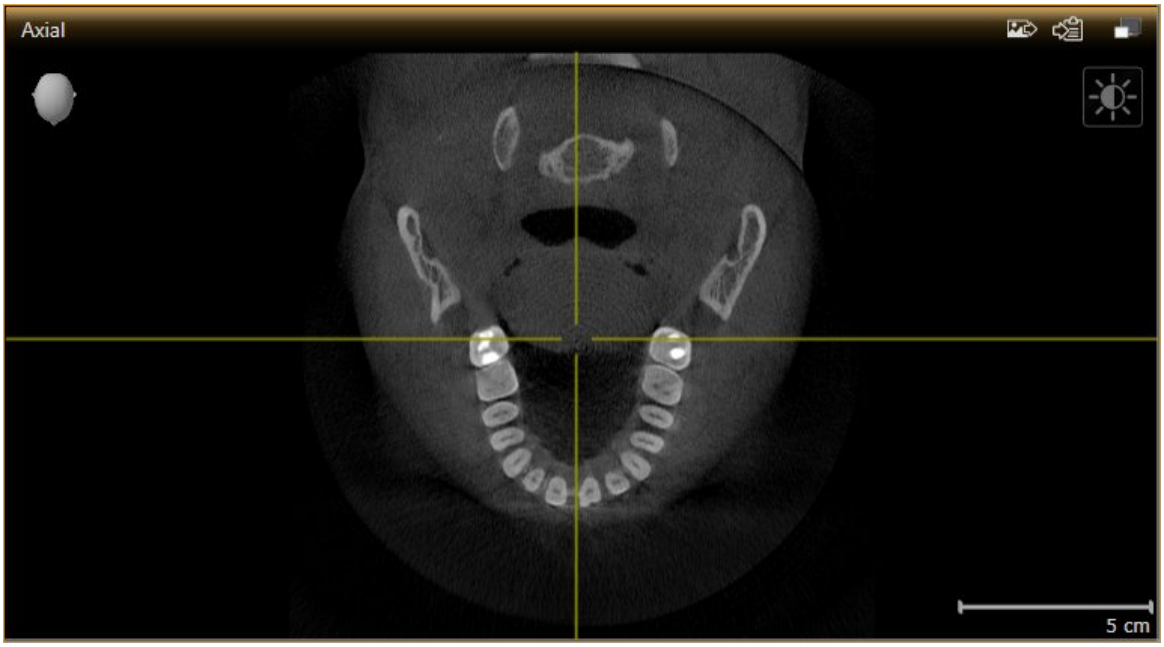
Only the active view shows the **View toolbar** and the title bar.

To activate a view, proceed as follows:



- Click the desired view.

► SICAT Air activates the view:



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

10.11.3 MAXIMIZING AND RESTORING VIEWS

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

☑ The view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 72]*.

☑ The view you require is not maximized.

1. Click on the **Maximize** icon in the title bar of the view you require.
   ▶ 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.

10.11.4 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 2D view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 72]*.

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.

10.11.5 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.

10.11.6 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.

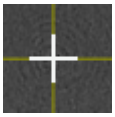
10.11.7 MOVING, HIDING AND SHOWING CROSSHAIRS AND FRAMES

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.

10.11.8 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.

10.11.9 CREATING SCREENSHOTS OF VIEWS

You can take screenshots of the views to document views 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 view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 72]*.

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

▶ SICAT Air adds a screenshot of a workspace 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 view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 72]*.

- 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.

10.12 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 82]*.

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

- *Switching the display mode of the 3D view [▶ Page 84]*
- *Configuring the active display mode of the 3D view [▶ Page 85]*
- *Changing the clipping mode of the 3D view [▶ Page 89]*

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

10.12.1 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 maintains the current viewing direction of the **3D** view.

SELECTING THE 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 standard viewing direction you require.
   ▶ 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.

10.12.2 DISPLAY MODES OF THE 3D VIEW

General information on the **3D** view can be found in the section *Adjusting the 3D view [▶ Page 81]*.

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 **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 57]*.

How to activate a display mode of the **3D** view can be found under *Switching the display mode of the 3D view [▶ Page 84]*.

How to configure the active display mode can be found under *Configuring the active display mode of the 3D view [▶ Page 85]*.

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 86]*.

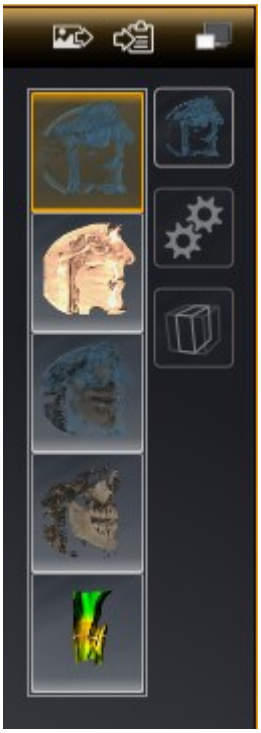
10.12.3 SWITCHING THE DISPLAY MODE OF THE 3D VIEW

All display modes are available in all workspaces.

To switch 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 72]*.

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.

10.12.4 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.

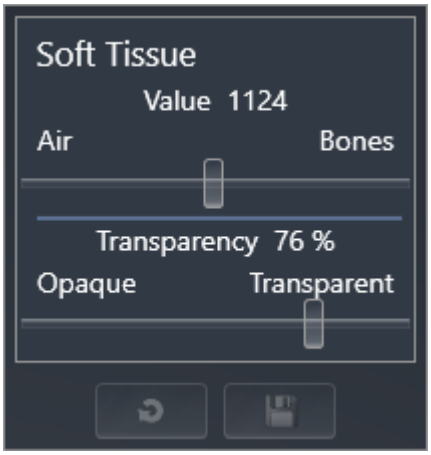
To configure the active display mode of the **3D** view, proceed as follows:

☑ The **3D** view is already active. Information on this can be found in the section *Changing the active view [▶ Page 72]*.

☑ The display mode you require is already active. Information on this can be found in the section *Switching the display mode of the 3D view [▶ Page 84]*.

☑ 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 the **Advanced**.
   ▶ The **Advanced** area opens.
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.

10.12.5 CLIPPING MODES OF THE 3D VIEW

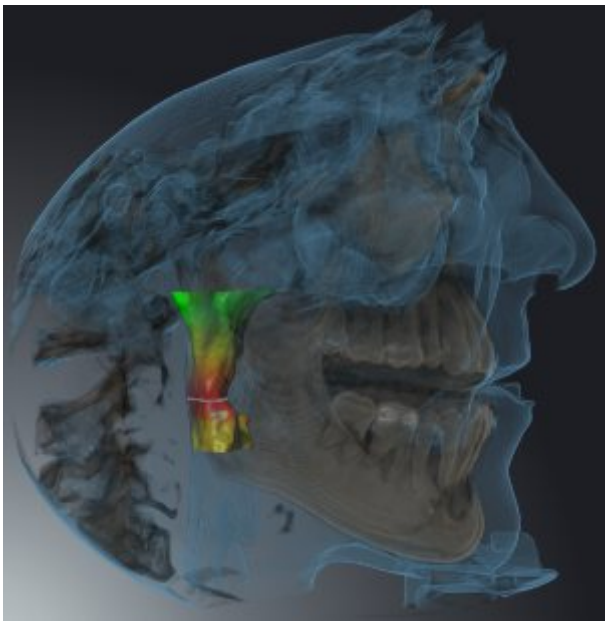
General information on the **3D** view can be found in the section *Adjusting the 3D view [▶ Page 81]*.

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.

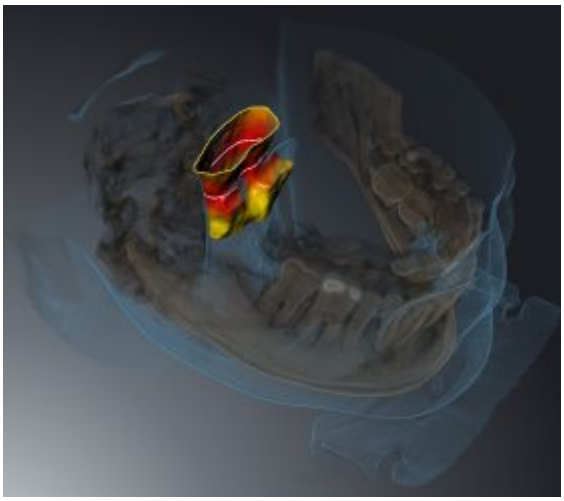


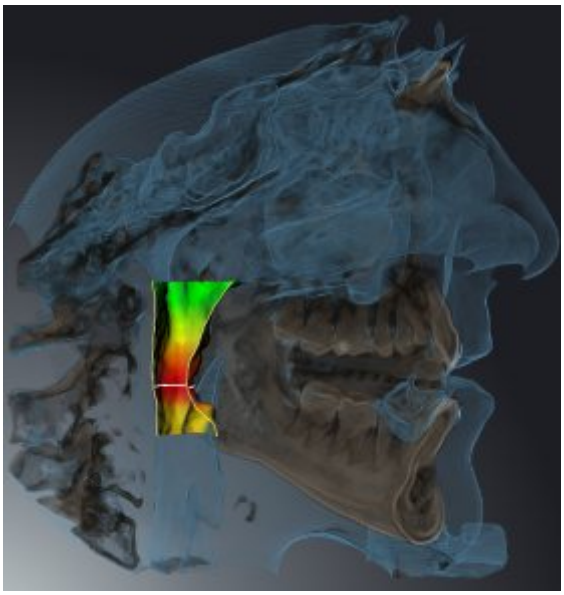
CLIPPING: AIRWAY SLAB

SICAT Air hides all parts of the volume, which are on the side of the airway area. Information on defining the airway region can be found in the section *Defining the airway area [▶ Page 108]*. 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, which are either side of 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 77]*. 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 121]*.





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

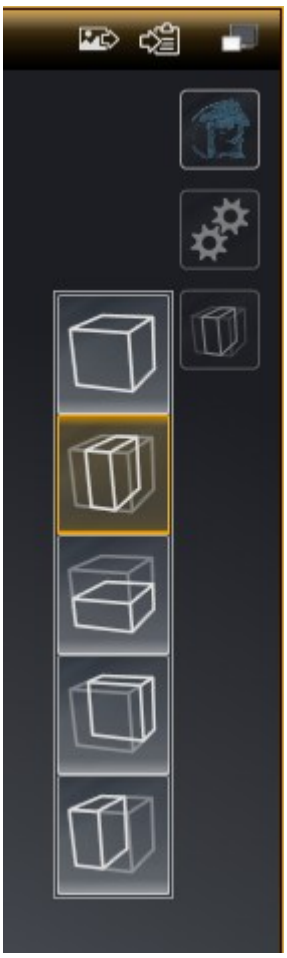
How to activate a clipping mode of the **3D** view can be found under *Changing the clipping mode of the 3D view [▶ Page 89]*.

10.12.6 CHANGING THE CLIPPING MODE OF THE 3D VIEW

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

☑ The **3D** is already active. Information on this can be found in the section *Changing the active view [▶ Page 72]*.

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.

10.13 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:

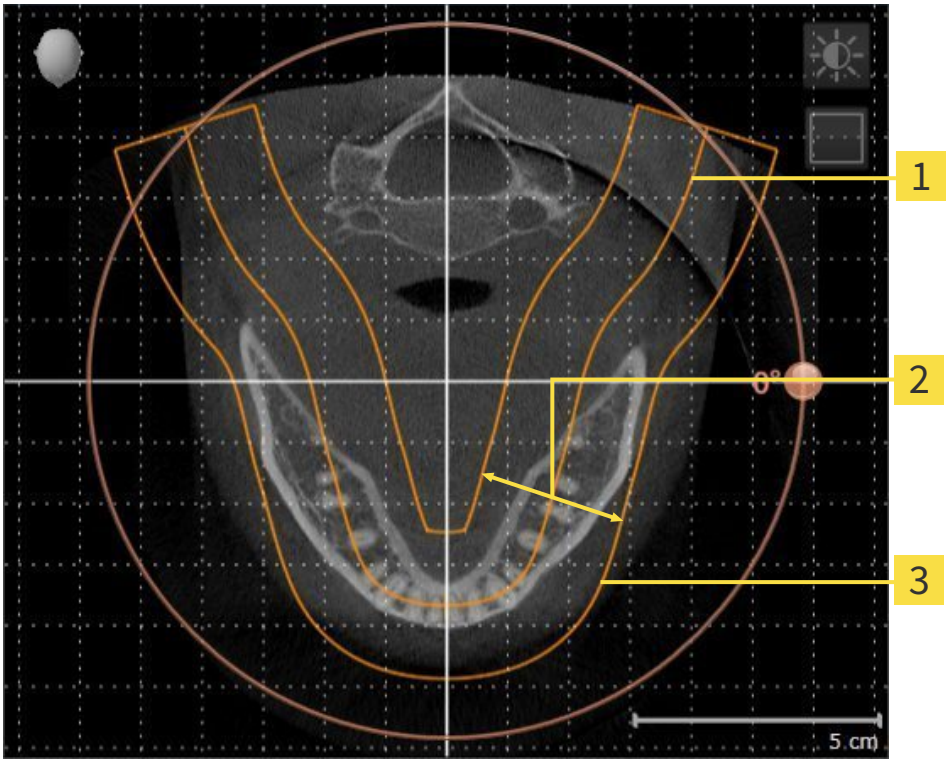
- Sub-optimal positioning of the patient during the 3D X-ray scan
- Orientation according to case, for example orientation of the axial slices parallel to the Frankfurt plane or parallel to the bite plane
- Optimizing the panorama view

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 93]*.

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.

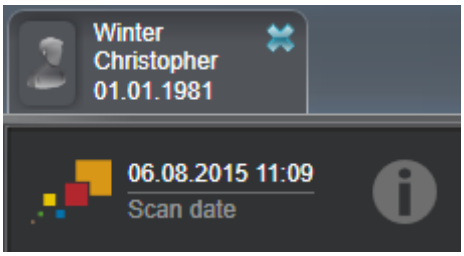
If you adjust the panoramic region in SICAT Air, all other SICAT applications adopt your changes.

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
- 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.

10.13.1 ADJUSTING THE VOLUME ORIENTATION

General information on the volume orientation can be found in the section *Volume orientation and panoramic region [▶ Page 90]*.

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

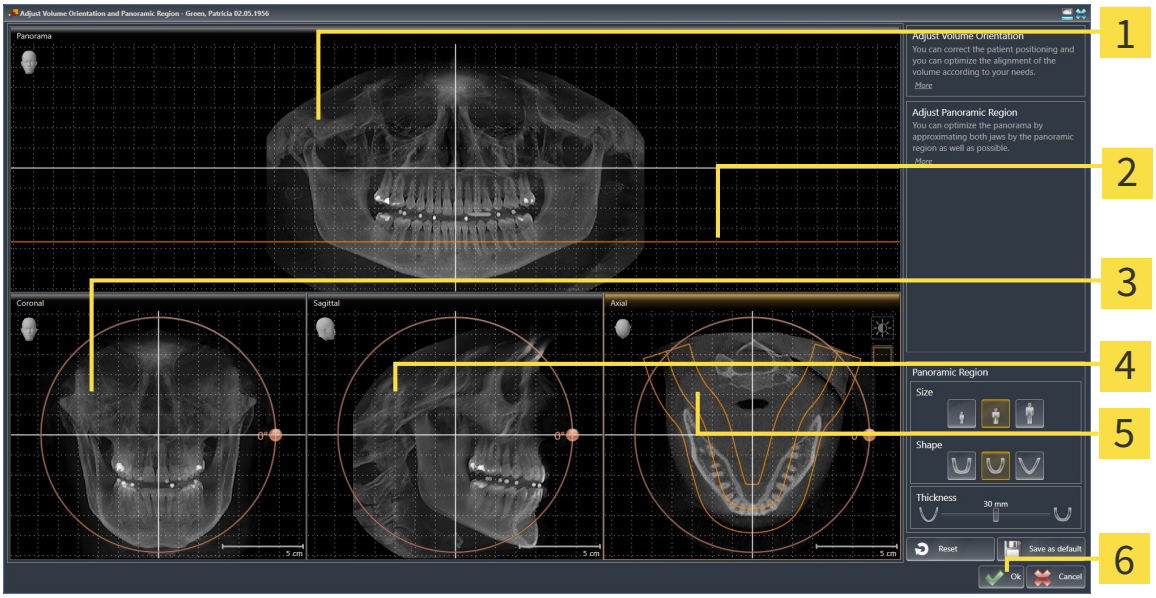
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Rotating volumes in the **Coronal** view
- Rotating volumes in the **Sagittal** view
- Rotating volumes in the **Axial** view

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.

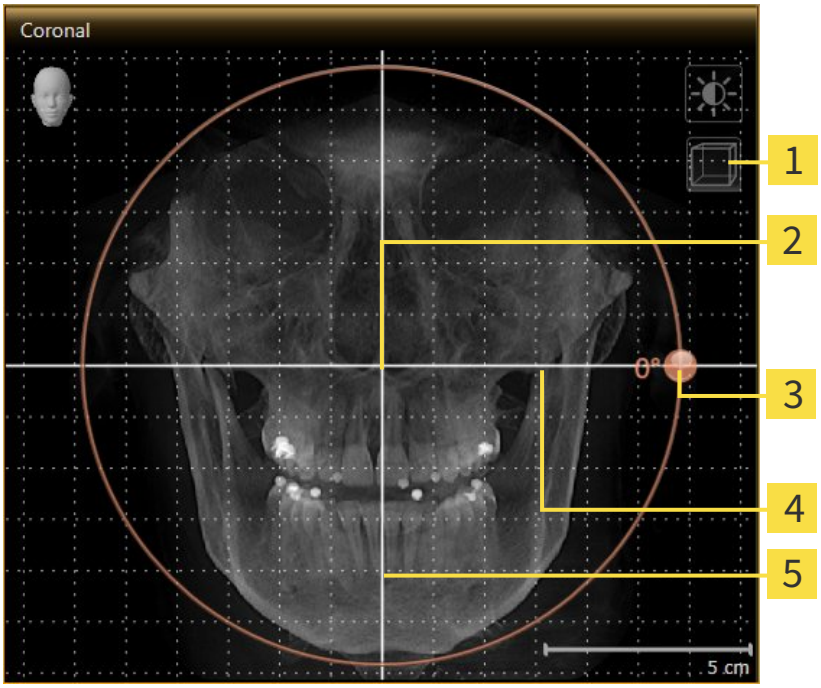
▶ The **Adjust Volume Orientation and Panoramic Region** window opens:



1 **Panorama** view	4 **Sagittal** view with **Rotation** slider
2 Axial reference line	5 **Axial** view with **Rotation** slider
3 **Coronal** view with **Rotation** slider	6 **OK** button

ROTATING VOLUMES IN THE CORONAL VIEW

1. Activate the **Coronal** view:

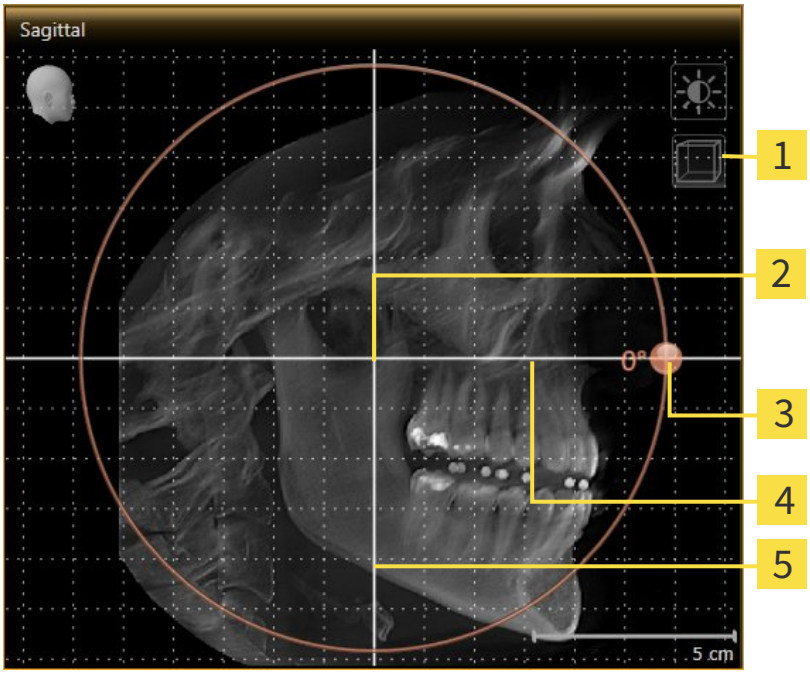


1	**Enable slices mode** icon or **Enable projection mode** icon	4	Horizontal reference line
2	Center of rotation	5	Vertical reference line
3	**Rotation** slider		

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 direction you require.
   ▶ 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:

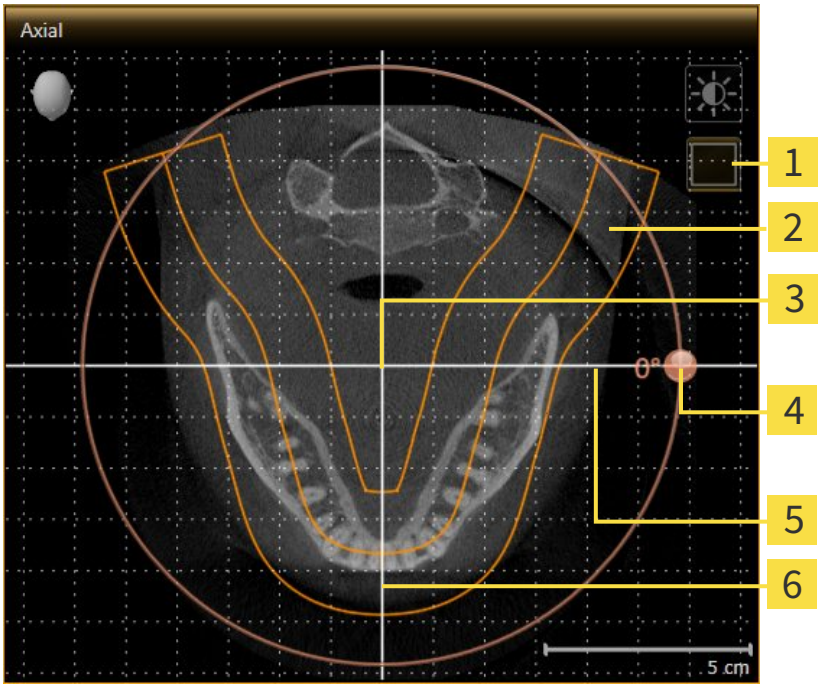


1	**Enable slices mode** icon or **Enable projection mode** icon	4	Horizontal reference line
2	Center of rotation	5	Vertical reference line
3	**Rotation** slider		

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 direction you require.
   ▶ 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.
4. Where necessary, move the panoramic region in the **Axial** view by left clicking on the panorama view and hold 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 direction you require.
   ▶ 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 view you require 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 74]*.
- 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**.

10.13.2 ADJUSTING THE PANORAMIC REGION

General information on the panoramic region can be found in the section *Volume orientation and panoramic region [▶ Page 90]*.

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

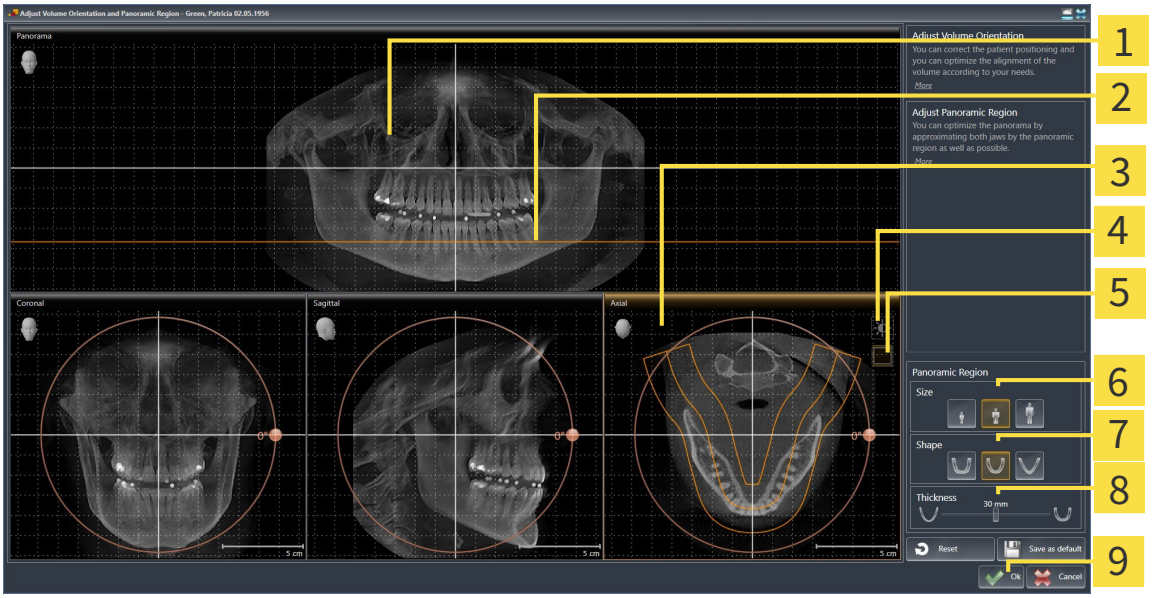
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Adjusting the slice position of the **Axial** view
- Moving the panoramic region
- Rotating volumes in the **Axial** view
- Adjusting **Size**, **Shape** and **Thickness** in the panoramic region

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 **Axial** view of the slice mode is active. Click on the **Enable slices mode** icon if necessary.
2. Place the mouse pointer on the axial reference lines in the **Panorama** view. The axial reference lines illustrate 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** will conform 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 **Axial** view of the projection mode 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 view you require 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 74]*.
- 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**.

10.14 DISTANCE AND ANGLE MEASUREMENTS

There are two different types of measurement in SICAT Air:

- Distance measurements

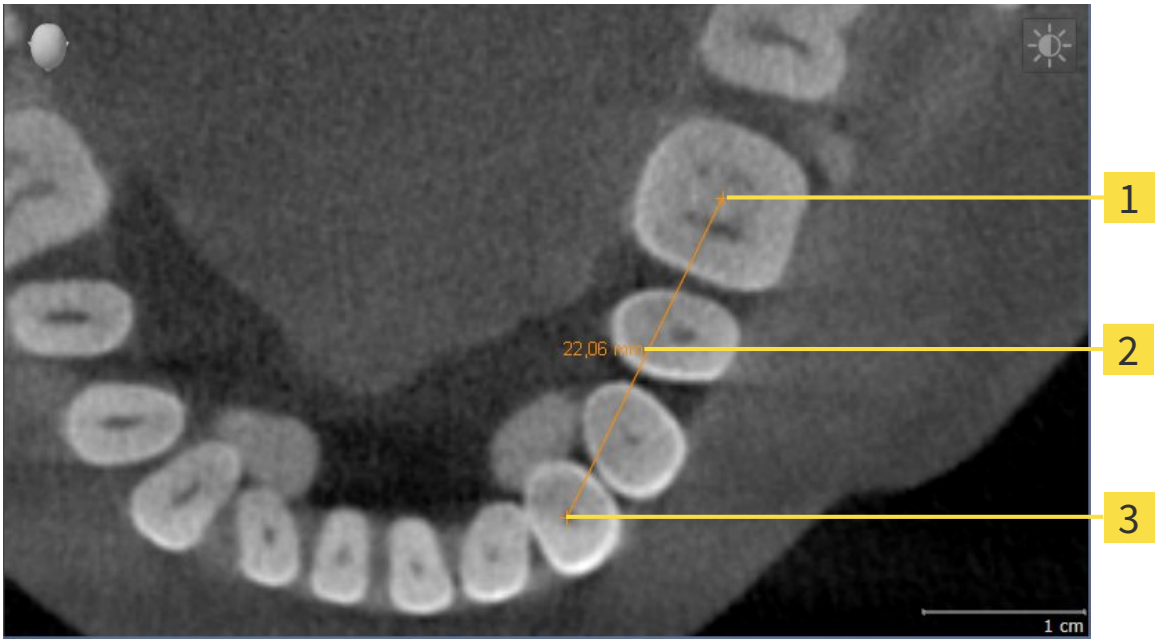
- Angle measurements

The tools to add measurements are 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 also adds it to the **Measurements** group in the **Object browser**.

The following actions are available for measurements:

- *Adding distance measurements [▶ Page 102]*
- *Adding angle measurements [▶ Page 103]*
- *Moving measurements, individual measuring points and measured values [▶ Page 105]*
- Activating, hiding and showing measurements – Information on this can be found in the section *Managing objects with the object browser [▶ Page 54]*.
- 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 56]*.

10.14.1 ADDING DISTANCE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

To add a distance measurement, proceed as follows:

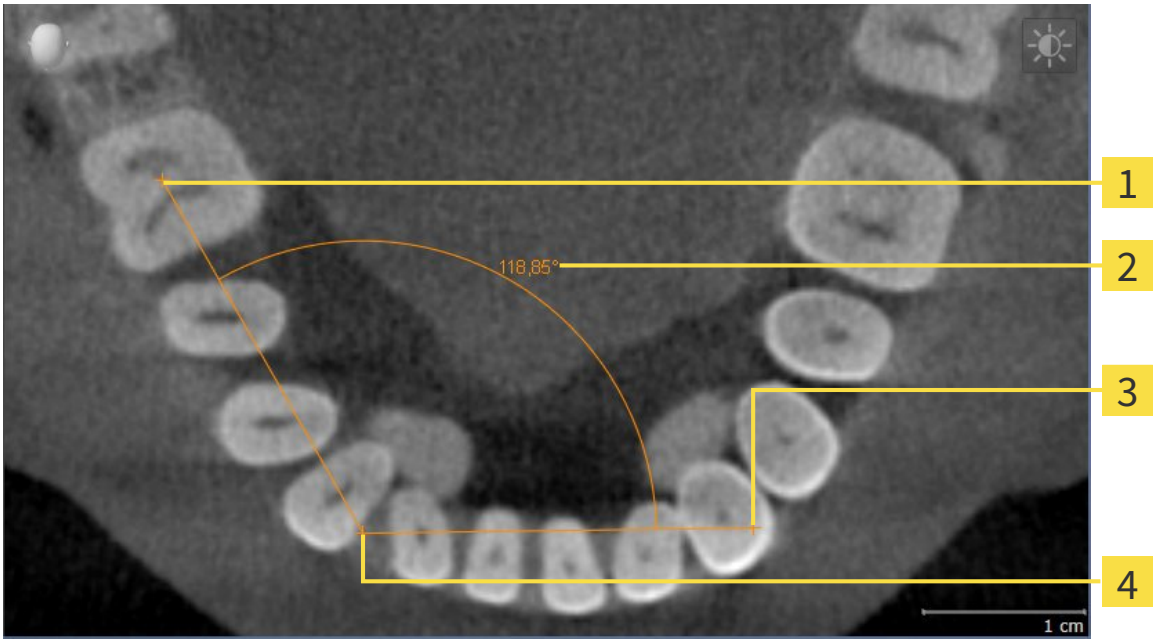
☑ The **Diagnose** workflow step is already expanded.

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**.

10.14.2 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 arm of the angle measurement by 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 arm of the angle measurement by a line from the vertex to the mouse pointer.
   ▶ SICAT Air shows the current angle between both arms of the angle measurement and in the **Object browser**.

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

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

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

10.14.3 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. Information on this can be found in the sections *Managing objects with the object browser [▶ Page 54]* and *Managing objects with the object toolbar [▶ Page 56]*.

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. Information on this can be found in the sections *Managing objects with the object browser [▶ Page 54]* and *Managing objects with the object toolbar [▶ Page 56]*.

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. Information on this can be found in the sections *Managing objects with the object browser [▶ Page 54]* and *Managing objects with the object toolbar [▶ Page 56]*.

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 the 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.

10.15 SEGMENTING THE AIRWAY

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 93]*. 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 108]*

The following steps are optional:

- *Correcting the airway segmentation [▶ Page 112]*
- *Removing non-required areas from the airway [▶ Page 114]*

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 115]*.

10.15.1 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 107]*.

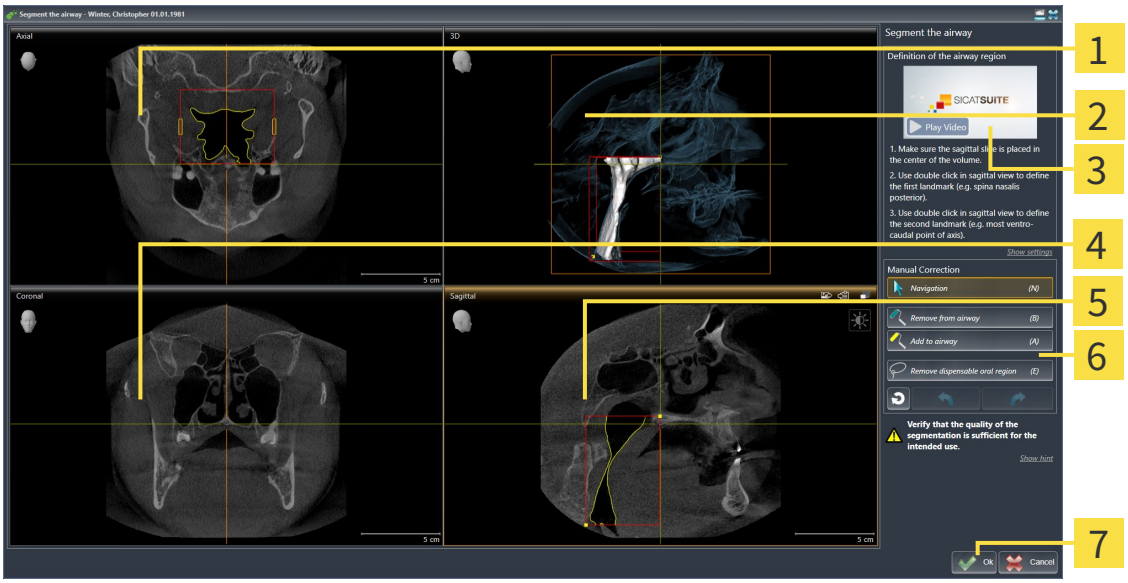
OPENING THE "SEGMENT THE AIRWAY“ WINDOW

☑ 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 93]*.

☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 51]*.

■ 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

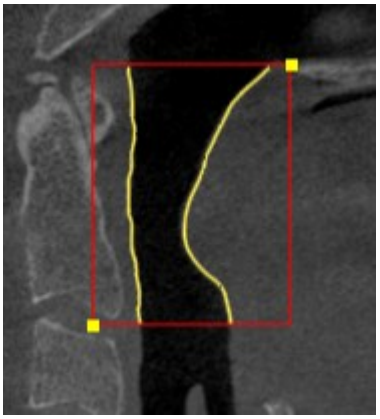
6 Tool area

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.

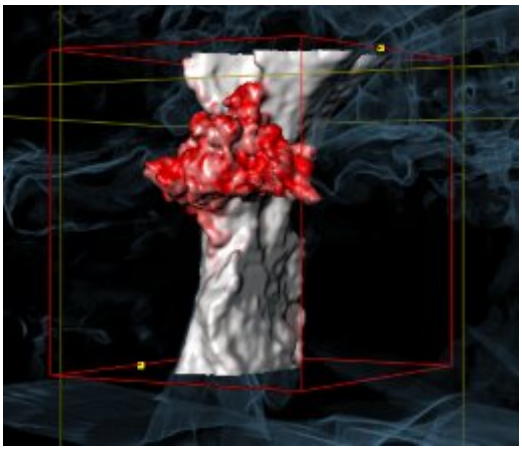
4. Double click on the position of the lower reference point of the airway in the **Sagittal** view.

   ▶ 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 red in the **3D** view, which 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.

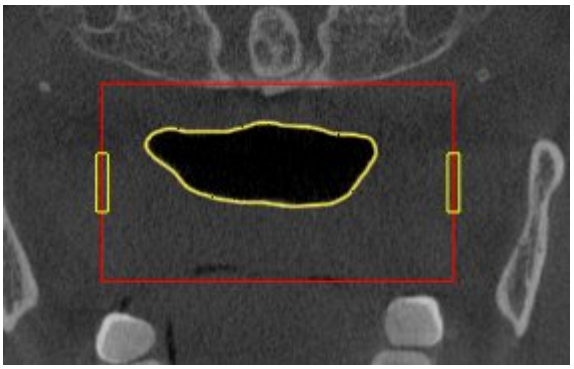
▶ SICAT Air automatically segments the airway again based on the new airway area.

▶ **3D** marks areas red in the SICAT Air view, which 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 markings 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 segments the airway again based on the new airway area.

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

If the segmentation of the airway matches the anatomical circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 116]*.

If the segmentation of the airway does not match the anatomical circumstances, continue with the section *Correcting the airway segmentation [▶ Page 112]* or *Removing non-required areas from the airway [▶ Page 114]*.

In addition to the described process, the following actions are available in the **Segment the airway** assistant:

- 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 74]*.
- 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 80]*.
- 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.

10.15.2 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 the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 107]*.

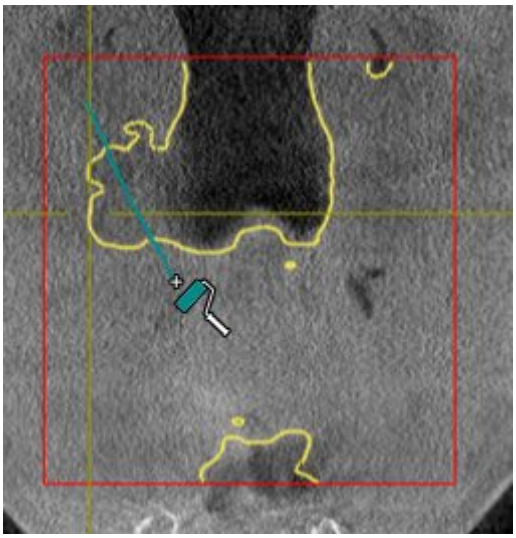
REMOVING INCORRECTLY IDENTIFIED AREAS FROM THE AIRWAY

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

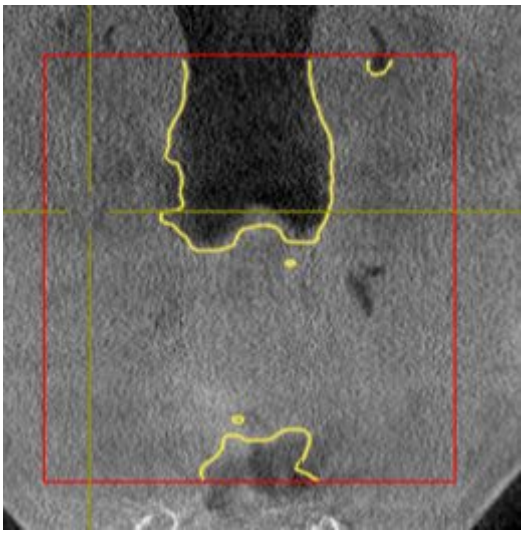
In your corrections, consider in particular the areas marked red in the **3D** view. However, these areas may not be the only areas, which SICAT Air could have incorrectly identified as part of the airway.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶ Page 108]*.

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, which 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 108]*.

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 circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 116]*.

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 115]*.

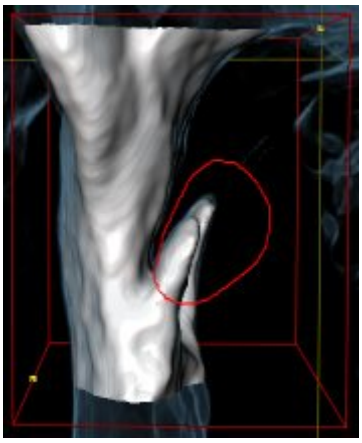
10.15.3 REMOVING NON-REQUIRED AREAS FROM THE AIRWAY

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 107]*.

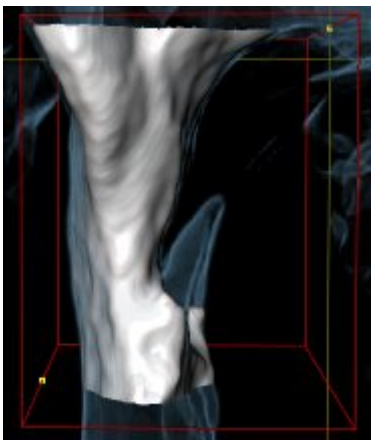
Use the **Remove dispensable oral region** tool in air-carrying areas, which are not part of the relevant airway. This includes, for example the oral cavity and protuberances.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶ Page 108]*.

1. Click the **Remove dispensable oral region** button in the **Segment the airway** window.
   ▶ The mouse pointer becomes a lasso.
2. Frame areas, which 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 circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 116]*.

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 115]*.

10.15.4 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 the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 107]*.

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 *Defining the airway area [▶ Page 108]*.

1. Click the **Show settings** button in the **Segment the airway** window.
   ▶ The **Show settings** area opens.
2. Activate the **Segment the airway manually** check box.
   ▶ If available, SICAT Air will remove the 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 markings.

▶ **3D** marks areas red in the SICAT Air view, which 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 112]*
- *Removing non-required areas from the airway [▶ Page 114]*

If the segmentation of the airway matches the anatomical circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 116]*.

10.15.5 COMPLETING THE SEGMENTATION OF THE AIRWAY

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 107]*.

☑ 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 108]*.

- If the segmentation matches the anatomic characteristics, click **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.

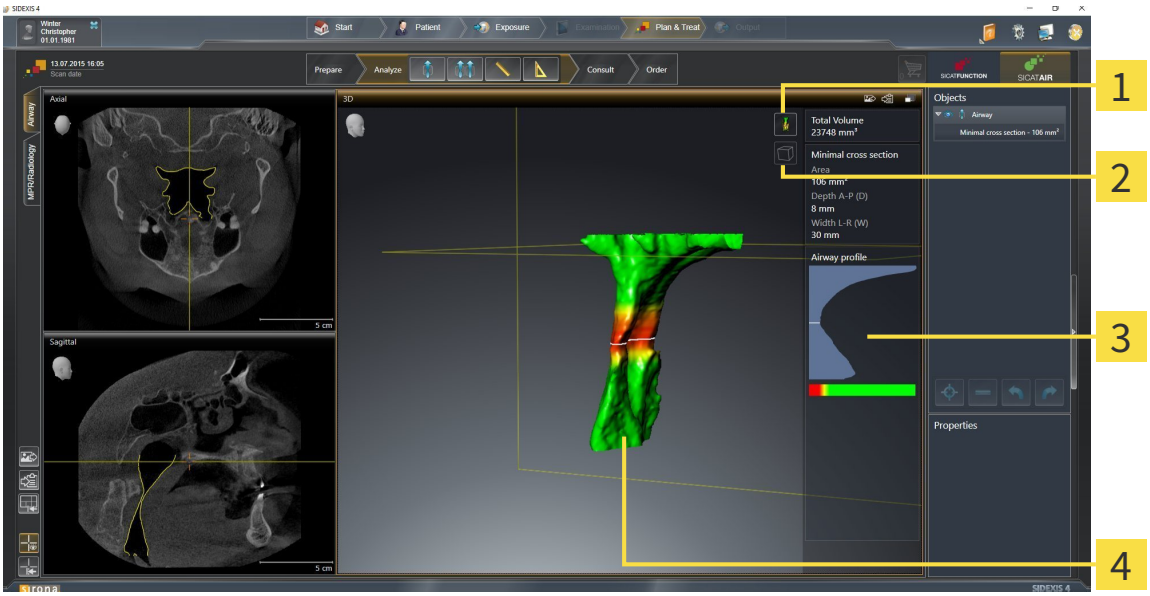
▶ In **Object bar**, SICAT Air creates a **Airway** object.

10.16 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 107]*.

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

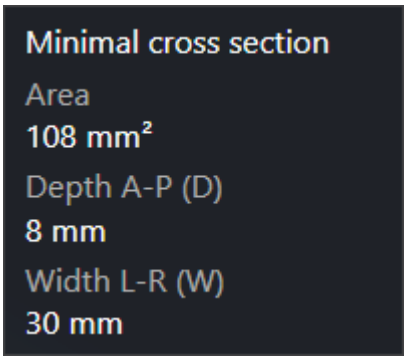
TOTAL VOLUME

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.

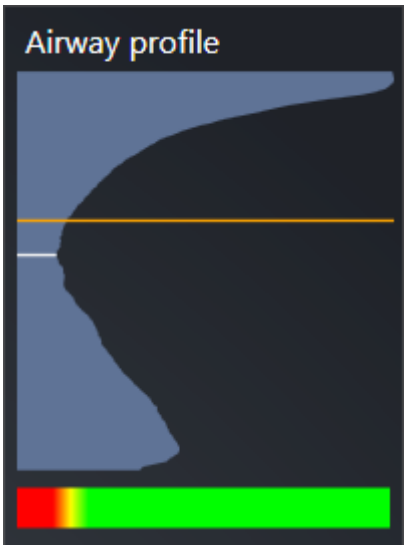
The upper part of the airway analysis area looks as follows:



You can view the following information on the segmented airway:

- **Minimal cross section**
- **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, which 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 section 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 121]*.

The color gradient beneath 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

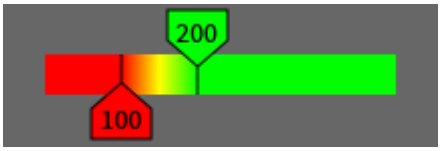
DISPLAY MODES

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 83]*.

CLIPPING MODES

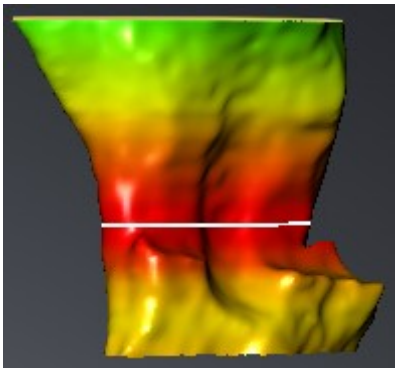
In the **3D** view, SICAT Air can hide certain areas of the volume with different clipping modes. Information on this can be found in the section *Clipping modes of the 3D view [▶ Page 86]*.

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 57]*. You should select the upper threshold so that you can regard all areas of the airway above this as healthy. You should select the lower threshold so that you can regard all areas of the airway below this as pathological. SICAT Air illustrates the area between as the 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 170]*.

10.16.1 INTERACTING WITH THE AIRWAY PROFILE

General information on the airway analysis can be found in the section *Airway analysis [▶ Page 117]*.

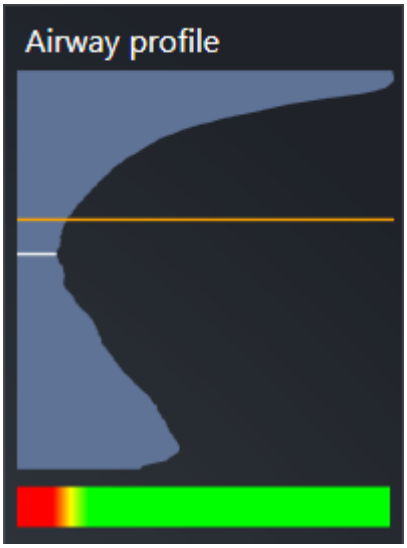
To interact with the airway profile, proceed as follows:

☑ The **Airway** workspace is already open. Information on this can be found in the section *Switching the active workspace [▶ Page 66]*.

☑ You have already segmented the airway. Information on this can be found in the section *Defining the airway area [▶ Page 108]*.

- Click on the slice you require in the airway profile.

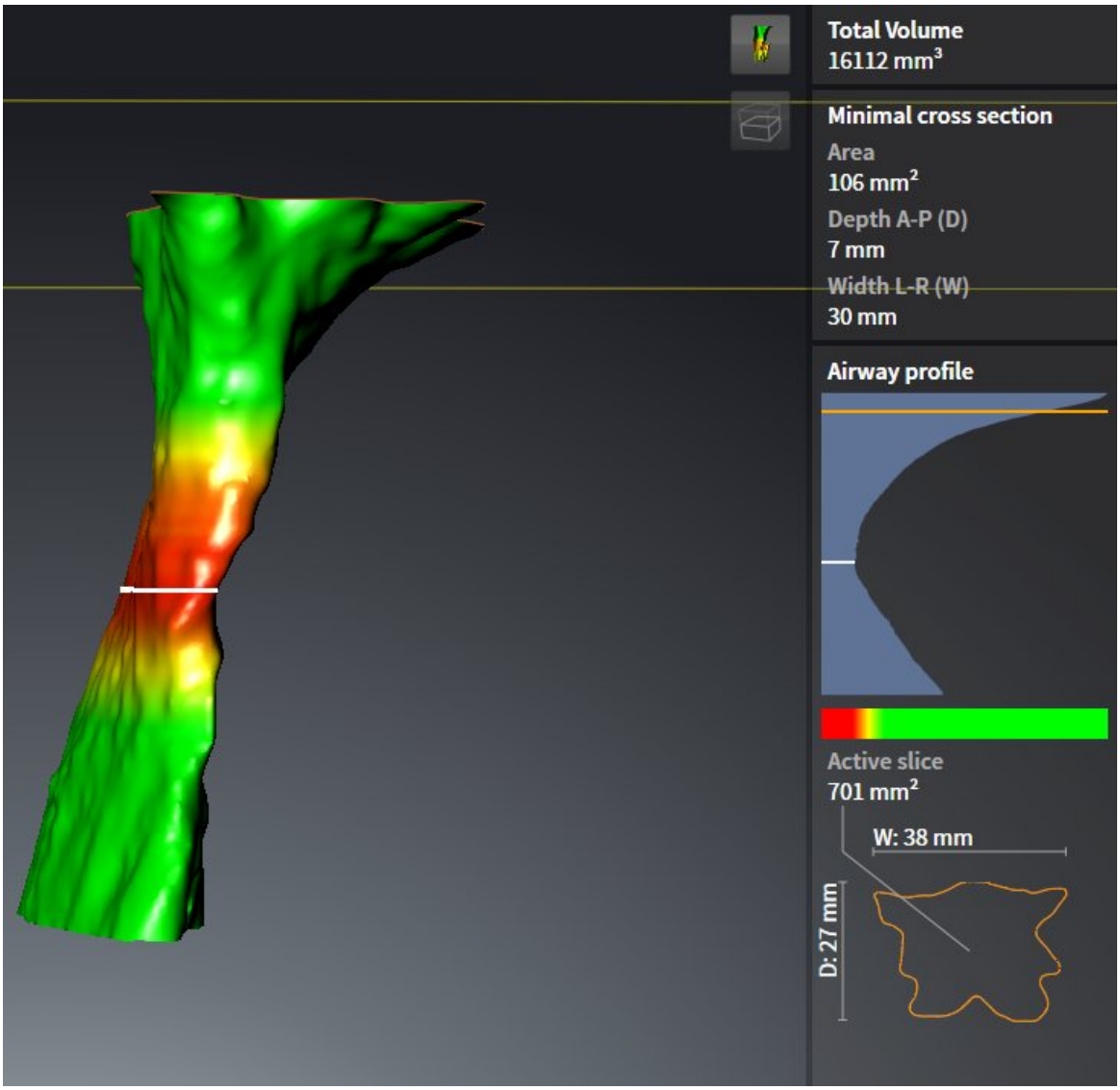
▶ In the airway profile, an orange line shows the selected slice:



▶ 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 middle of the airway in the 2D views.

10.17 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 239]*. 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 lower jaw is in an untreated position.
- In one 3D X-ray scan, the lower jaw 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 labeled the reference data record.

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

The following conditions must be met in order perform an airway comparison:

- Both 3D X-ray scans have the same resolution.
- The reference 3D X-ray scan already has an airway object.
- The 3D X-ray scan with the lower jaw 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 124]*.

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.

10.17.1 CARRYING OUT AN AIRWAY COMPARISON

Information on this can be found in the section *Airway comparison [▶ Page 123]*.

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 108]*.

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

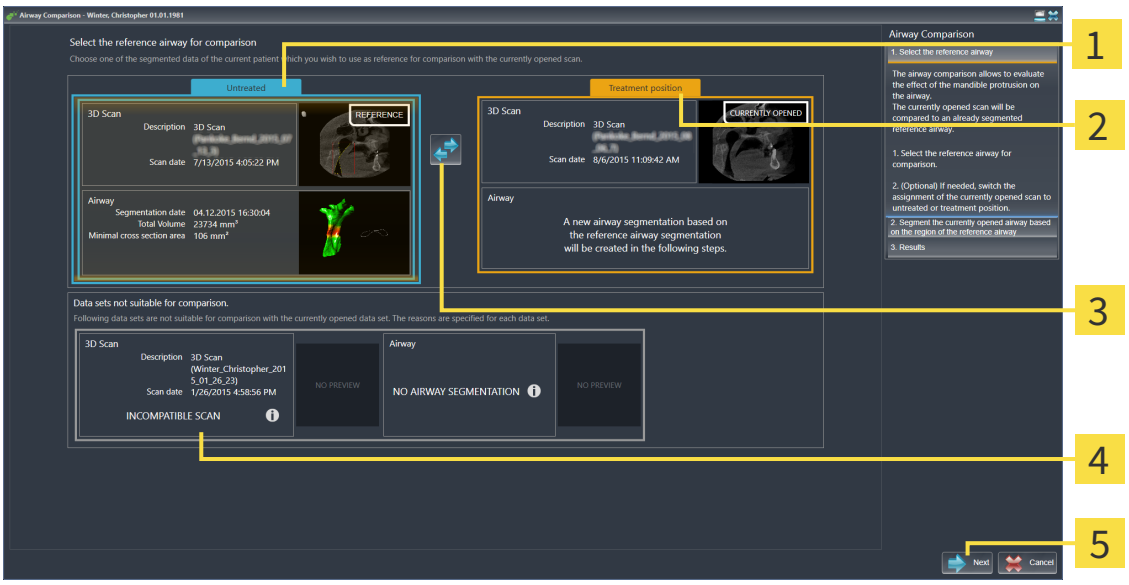
☑ You have already aligned the 3D X-ray scan showing the treatment position according to your requirements, for example according to the Frankfurt plane. Information on this can be found in the section *Adjusting the volume orientation [▶ Page 93]*.

☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 51]*.

■ 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, which are not suitable for the airway comparison

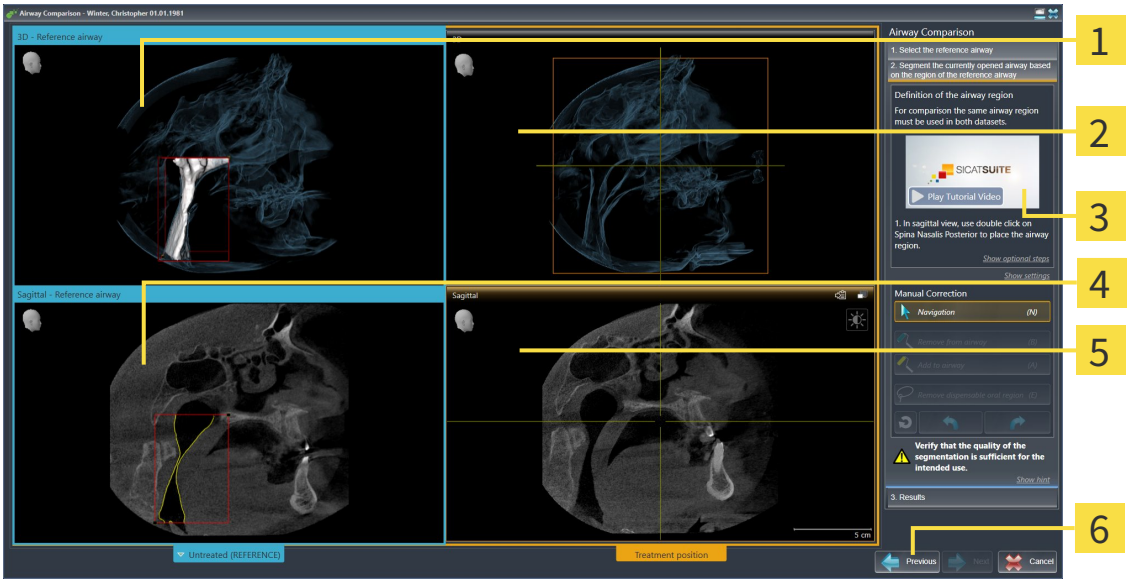
5 **Next** button

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 FOR COMPARISON



1 **3D** view of the 3D X-ray scan in reference position (you cannot change this view)

2 **3D** view of the 3D X-ray scan in the treatment position (you cannot change this view)

3 Tutorial video

4 **Sagittal** view of the volume in reference position

5 **Sagittal** view of the 3D X-ray scan in the treatment position

6 **Previous** button

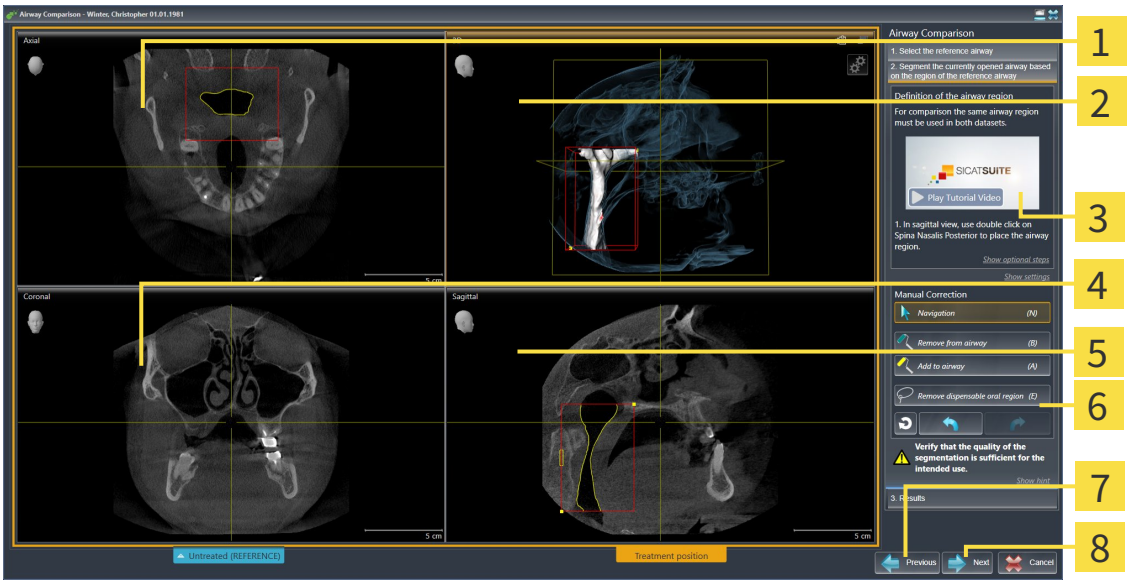
Both airways must be the same height. Therefore, you can only define the top right reference point of the airway area. SICAT Air then automatically defines the lower left reference point of the airway area.

1. Segment the 3D X-ray scan in the treatment position by double clicking on the same anatomical position of the upper reference point of the airway as in the reference 3D X-ray scan in the **Sagittal** view.

   ▶ SICAT Air segments the 3D X-ray scan in the treatment position with the selected upper reference point and an airway area, which 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.

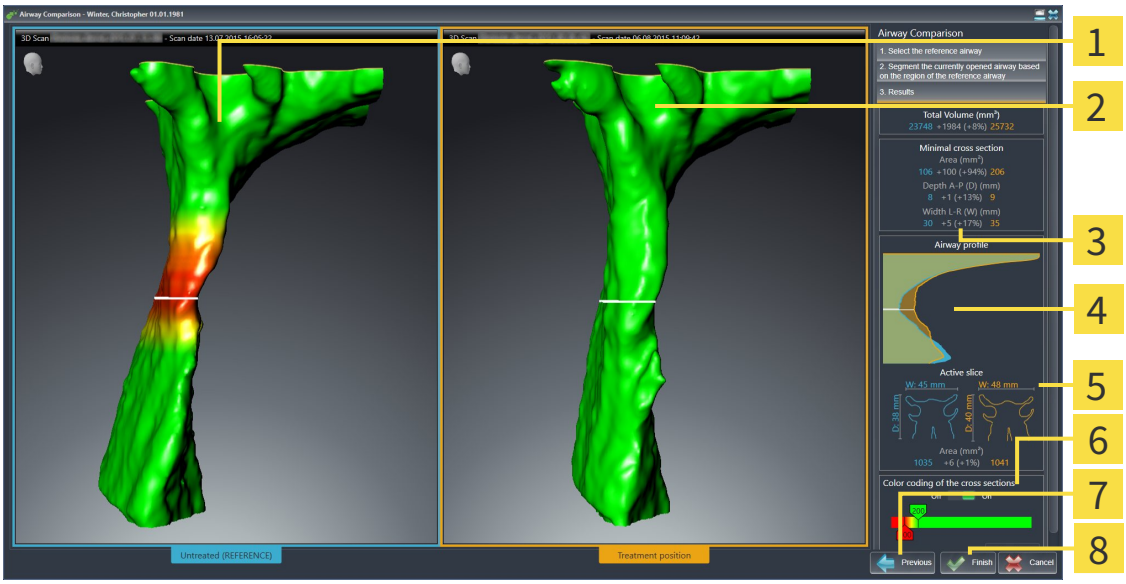
4. Correct the segmentation of the 3D X-ray scan in the treatment position where necessary. The same correction tools are available as in the **Segment the airway** window. Information on this can be found in the sections *Correcting the airway segmentation [▶ Page 112]* and *Removing non-required areas from the airway [▶ Page 114]*.

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

2 **3D** view of the segmented airway of the 3D X-ray scan in the treatment position

3 Juxtaposition of the data of the segmented airway when untreated and in the treatment position

4 Juxtaposition of the airway profiles when untreated and in the treatment position

5 Juxtaposition of the cross-sections when untreated and in the treatment position

6 Color coding

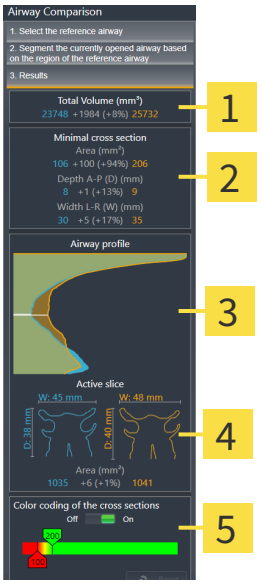
7 **Previous** button

8 **Finish** button

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

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

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



1 **Total volume (mm³)**

2 **Minimal cross section**

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. Otherwise, the view contains the same elements as the airway analysis area. Information on this can be found in the section *Airway analysis [▶ Page 117]*.

5. Use the **Airway profile** area to select a slice, at which the SICAT Air clips the illustration 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 an **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 **Object browser**, SICAT Air displays the page as an **Airway comparison** object beneath 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**.

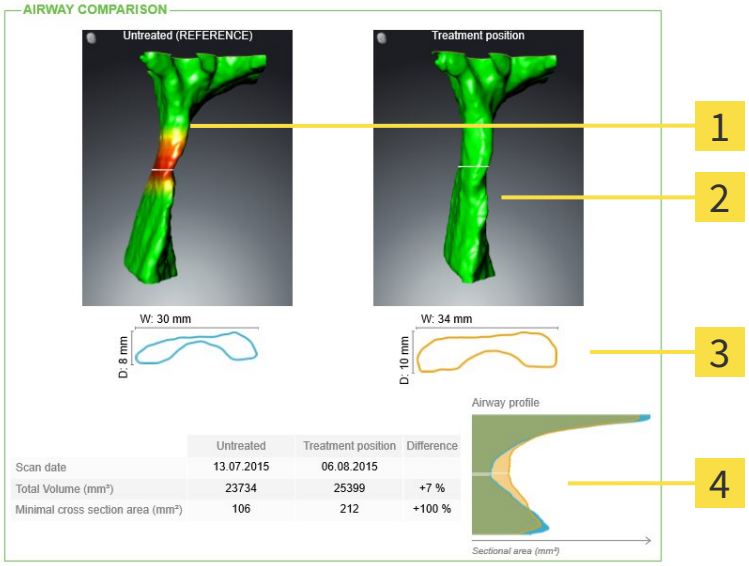
10.18 PATIENT INFORMATION

⚠ **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 a lower jaw protrusion to the patient through illustrations customized for the patient. In SICAT Air, the patient information is performed in two steps:

1. In your practice within SICAT Air
2. Patient information via the handout

You can create 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.

The creation of the handout consists of the following steps:

- *Creating images and screenshots [▶ Page 131]*
- *Preparing handouts [▶ Page 134]*
- *Producing handouts [▶ Page 138]*

You can print handouts or save them as PDF files. You can open the PDF files in PDF viewers, which SICAT Air supports. Information on this can be found in the section *System requirements [▶ Page 11]*.

10.18.1 CREATING IMAGES AND SCREENSHOTS

NOTICE	**Before creating images and screenshots, 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 93]*. If you align the volume only after creating images and screenshots, SICAT Air removes the drawing objects and you must carry out segmentation once more.**

General information on informing the patient can be found in the section *Patient information [▶ Page 130]*.

General information, on managing images and screenshots can be found in the section *SICAT Air objects [▶ Page 57]*.

There are two tools:

- Draw arrows
- Draw circles

DRAW ARROWS

To draw an arrow, 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 93]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 51]*.

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 position you require for the tip of the arrow.
   ▶ SICAT Air shows an arrow in the view.
   ▶ The end of the arrow will now match the position of the mouse pointer.
4. Move the mouse pointer to the desired position for the end of the arrow and release the left button.
   ▶ SICAT Air shows the finished arrow in the view.
   ▶ If not yet available, SICAT Air will create structures required for the **Image** object in the **Object browser**. Information on this can be found in the section *SICAT Air objects [▶ Page 57]*.
   ▶ The image will be available in the **Generate handout** window.
5. Click on the **Draw Arrow** icon.

▶ SICAT Air closes the mode to draw arrows.

DRAW 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 93]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 51]*.

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 position you require for the middle of the circle.
   ▶ 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.
4. 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 structures required for the **Image** object in the **Object browser**. Information on this can be found in the section *SICAT Air objects [▶ Page 57]*.
   ▶ The image will be available in the **Generate handout** window.
5. 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 using a drawing tool by clicking on a point outside the view in question or by pressing the **ESC** key.

CONFIGURING DRAWING TOOLS

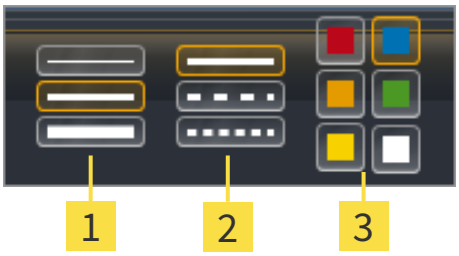
You can configure the **Draw Arrow** drawing tool or **Draw Circle** drawing tool separately. Changes to the settings will only affect drawing objects created after that point.

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 51]*.

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 in 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:

- Click on the **Copy screenshot to clipboard (Ctrl+C)** icon in the **View toolbar** of the view you require.

▶ SICAT Air will create structures required for the **Screenshot** object in the **Object browser** and activate the object. Information on this can be found in the section *SICAT Air objects [▶ Page 57]*.

▶ The screenshot will be available in the **Generate handout** window.

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

Continue with the section *Preparing handouts [▶ Page 134]*.

10.18.2 PREPARING HANDOUTS

General information on informing the patient can be found in the section *Patient information [▶ Page 130]*.

The following actions are available for preparing handouts:

- Opening the **Generate handout** window
- Preparing elements
- Changing settings of the handout

OPENING THE "GENERATE HANDOUT" WINDOW

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

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 51]*.

- Click on the **Generate handout** icon.

▶ The **Generate handout** window opens:

1	Check box to activate and deactivate screenshots	5	**Print** button
2	**Edit image description** icon	6	**Show in PDF Viewer** button
3	**Settings**	7	**OK** button
4	**Export PDF** button		

PREPARING ELEMENTS FOR HANDOUTS

The **Generate handout** window shows screenshots from **Image** objects, screenshots from **Screenshot** objects and information from **Airway Comparison** objects. Information on this can be found in the sections *Creating images and screenshots [▶ Page 131]* and *Carrying out an airway comparison [▶ Page 124]*.

If you want to prepare elements for handouts, proceed as follows:

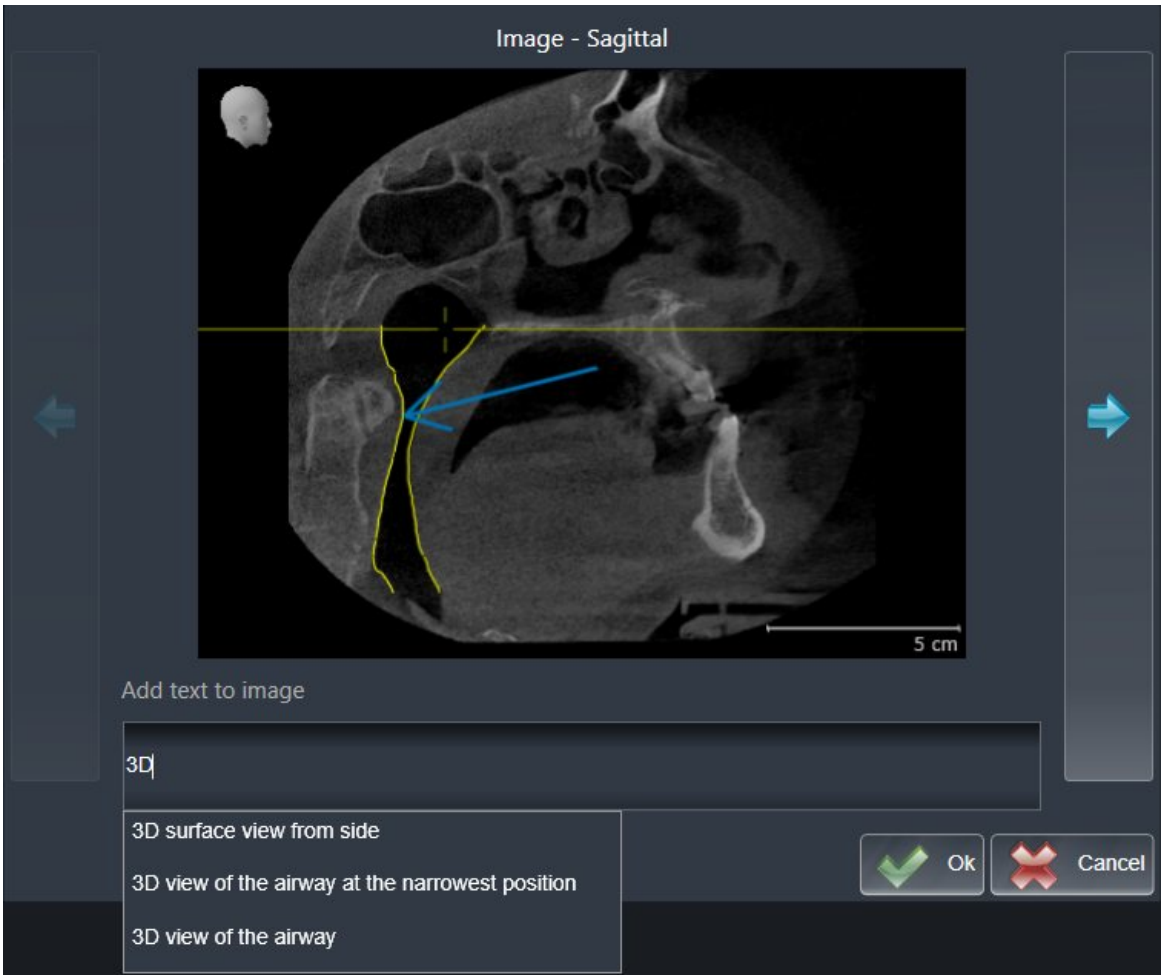
☑ The **Generate handout** window is already open.

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 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:



3. 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.

4. Click on the text block you require.

   ▶ SICAT Air adds the text block to the text input field.

5. If the text you require is not available as a text block, enter some new text.

6. 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.

7. If you wish to change the order of elements in 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 sections *Managing objects with the object toolbar [▶ Page 56]* and *SICAT Air objects [▶ Page 57]*.

CHANGING SETTINGS OF THE HANDOUT

☑ The **Generate handout** window is already open.

1. Click **Show settings**.
2. The **Settings** area expands:

3. Select the paper size you require in the **Paper Size** section.

4. Click **Hide settings**.

► The **Settings** area closes.

► SICAT Air saves your changes.

Continue with the section *Producing handouts [► Page 138]*.

SICAT Air takes the practice logo and practice information text from the general settings. Information on this can be found in the section *Viewing practice information [► Page 167]*.

10.18.3 PRODUCING HANDOUTS

The following actions are available for producing handouts:

- Saving a handout as a PDF file
- Printing handouts
- Displaying handouts in the PDF viewer

SAVING A HANDOUT AS A PDF FILE

☑ The **Generate handout** window is already open.

1. Click on the **Export PDF** button.
   ▶ 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 **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 11]*.

☑ The **Generate handout** 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.

DISPLAYING HANDOUTS IN THE PDF VIEWER

☑ A standard PDF viewer is installed on your computer.

☑ The **Generate handout** window is already open.

- Click on the **Show in PDF Viewer** button.

▶ The standard PDF viewer of your computer will open the handout.

10.19 DATA EXPORT

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.

10.20 ORDERING PROCESS

To order a therapeutic appliance, 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 141]*.
- 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 153]*.
- Complete the order either directly on the computer, on which SICAT Suite is running, or on another computer with an active Internet connection. Information on this can be found in the sections *Completing an order using an active Internet connection [▶ Page 154]* or *Completing an order without an active Internet connection [▶ Page 158]*.

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

10.20.1 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.

General information on the ordering process is found in the section *Ordering process [▶ Page 140]*.

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

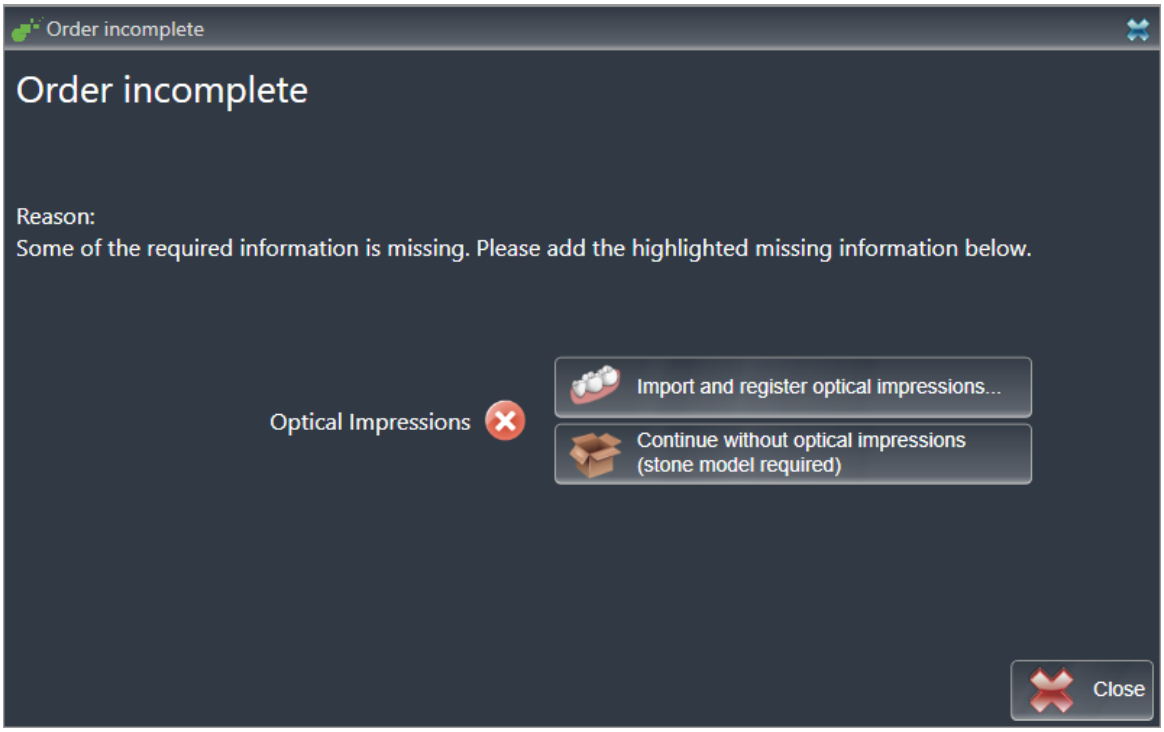
IF YOU HAVE NOT YET ADDED ANY OPTICAL IMPRESSIONS

☑ 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 51]*.

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 145]*.

▶ 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. Information on this can be found in the section *Adjusting the panoramic region [▶ Page 98]*.

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.

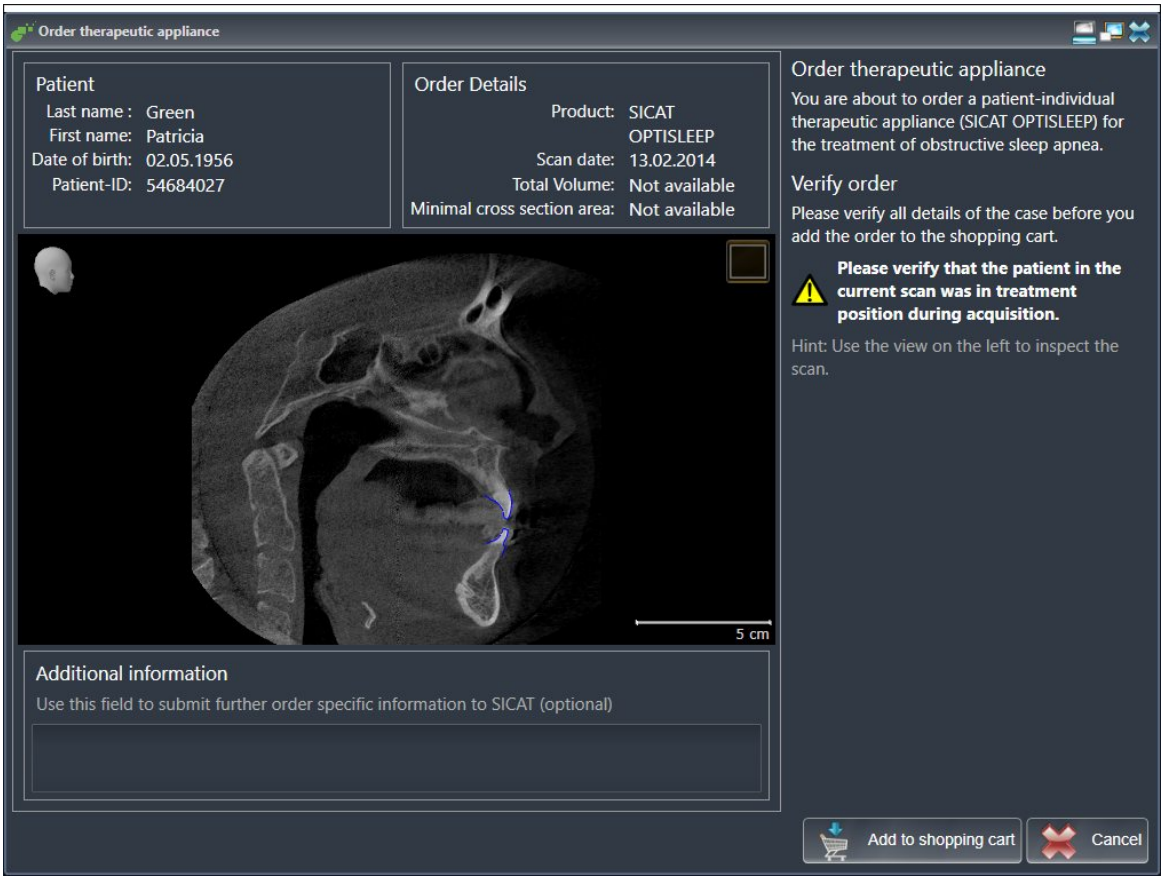
☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 51]*.

- 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 that 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 153]*.

10.20.2 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 mandible (requires a license)

The following tools are available for optical impressions:

- *Importing and registering optical impressions [▶ Page 145]*
- *Re-using optical impressions from other SICAT applications [▶ Page 150]*
- Activating, hiding and showing optical impressions – Information on this can be found in the section *Managing objects with the object browser [▶ Page 54]*.
- Focusing on optical impressions and removing optical impressions – Information on this can be found in the section *Managing objects with the object toolbar [▶ Page 56]*.

10.20.3 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.

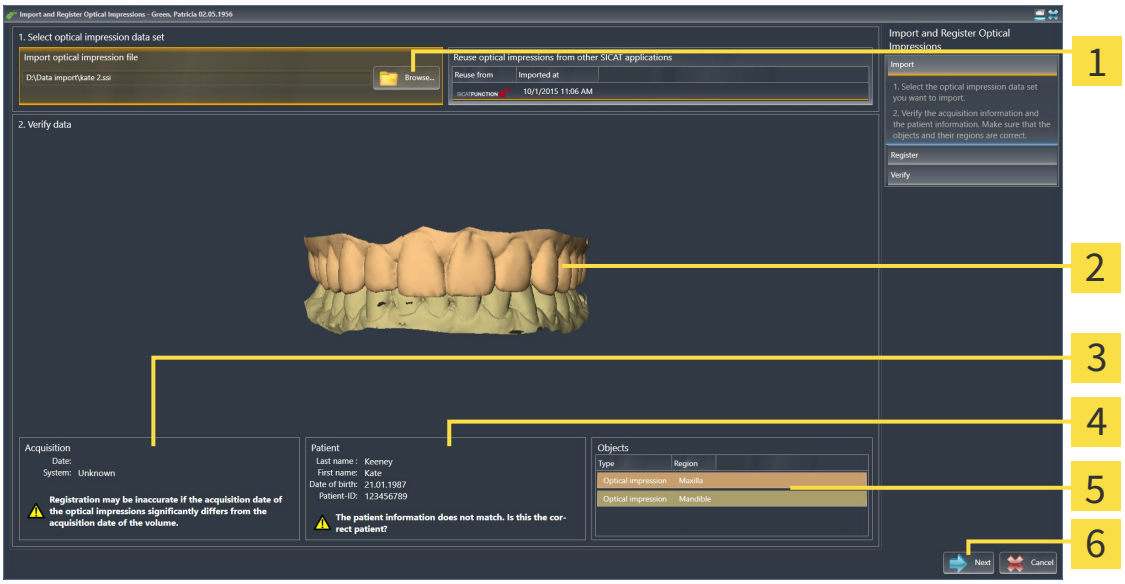
> You can use the **Inspection Window** to check whether an optical impression is precisely aligned to the X-ray data. You can move the **Inspection Window** and scroll through the slices in the **Inspection Window**.

General information on the optical impressions can be found in the section *Optical impressions [▶ Page 144]*.

To import and register optical impressions, proceed as follows:

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

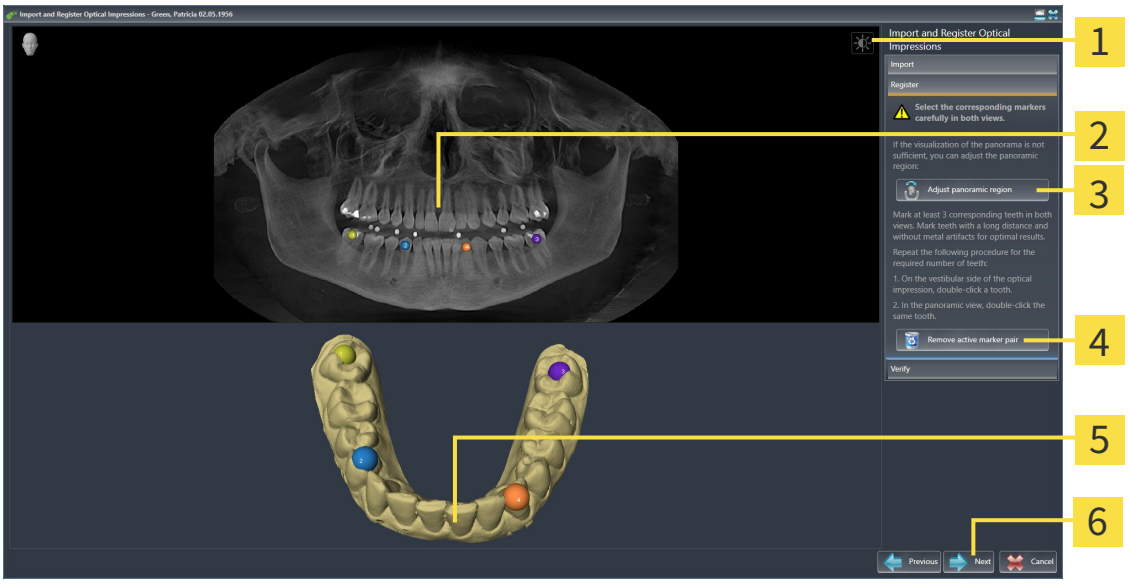
1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** assistant opens with the **Import** step.
2. Click on the **Browse** button.
   ▶ The **Open Optical Impression File** window opens.
3. Browse to the file you require in the **Open Optical Impression File** window, select the file and click on **Open**.
   ▶ The **Open Optical Impression File** window closes.
   ▶ SICAT Air imports the selected file containing the optical impressions:



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. 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 **Next**.

▶ 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

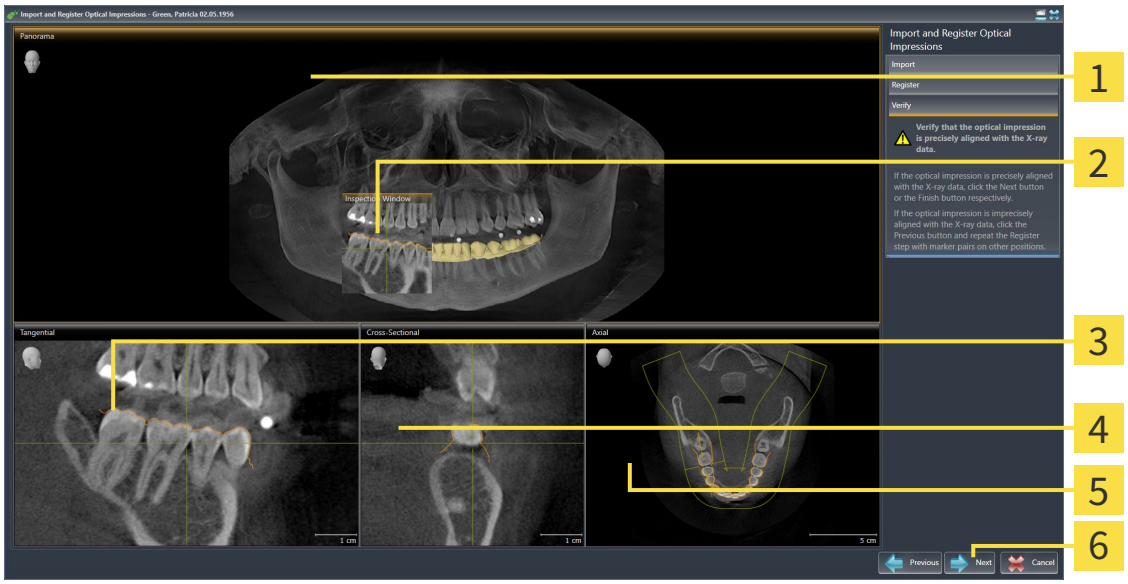
6. For the first optical impression, double click the same teeth both in the **Panorama** view and on the vestibular side of the optical impression in the **3D** view. Make sure that there is a large distance between individual teeth and mark only teeth without metal artifacts. Repeat this step until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

7. 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

8. 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.

9. If the optical impression is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat step **Register** with marker pairs in different positions if necessary.

10. 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.

11. For the second optical impression, double click the same teeth 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.

12. 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.

13. 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.

14. If the optical impression is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat step **Register** with marker pairs in different positions if necessary. You can improve the accuracy of the registration by marking up to five teeth.

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

▶ The **Import and Register Optical Impressions** assistant 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** assistant:

- 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 74]*.
- 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 98]*.
- 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**.

10.20.4 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.

General information on the optical impressions can be found in the section *Optical impressions [▶ Page 144]*.

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

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

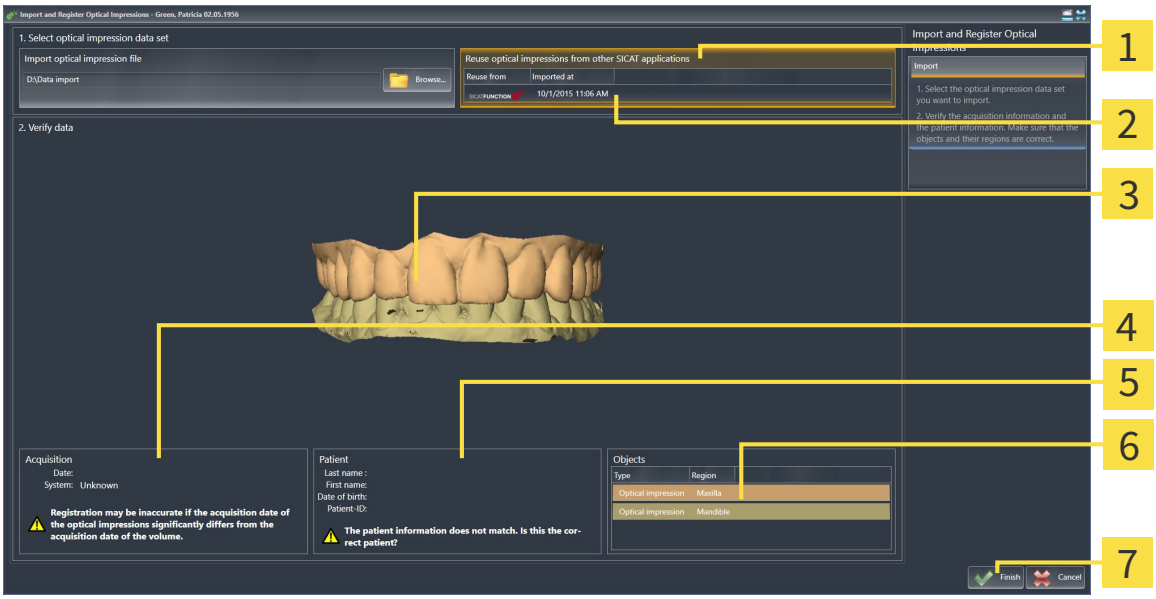
☑ You have already imported optical impressions for the opened study in another SICAT application, which you have not yet used in SICAT Air.

1. Click on the **Import and Register Optical Impressions** icon.

   ▶ The **Import and Register Optical Impressions** assistant opens with the **Import** step.

2. Double-click on the row with the optical impressions you require in the **Reuse optical impressions from other SICAT applications** area.

3. SICAT Air displays the selected optical impressions.



1	**Reuse optical impressions from other SICAT applications** area	5	Patient information
2	List of optical impressions from other SICAT applications	6	List of objects
3	**3D** view of optical impressions	7	**Finish** button
4	Scan information		

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** assistant 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**.

10.20.5 OPENING THE SHOPPING CART

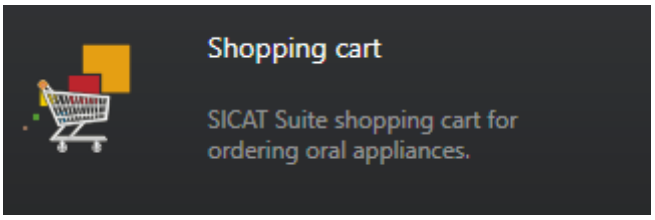
☑ The shopping cart contains at least one therapeutic appliance.

☑ You have activated the display of a 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 button marked **Shopping cart** in the **Navigation bar**.

▶ The **Shopping cart** window opens.

Alternatively, you can also click on the **Shopping cart** button in the **Output** phase:

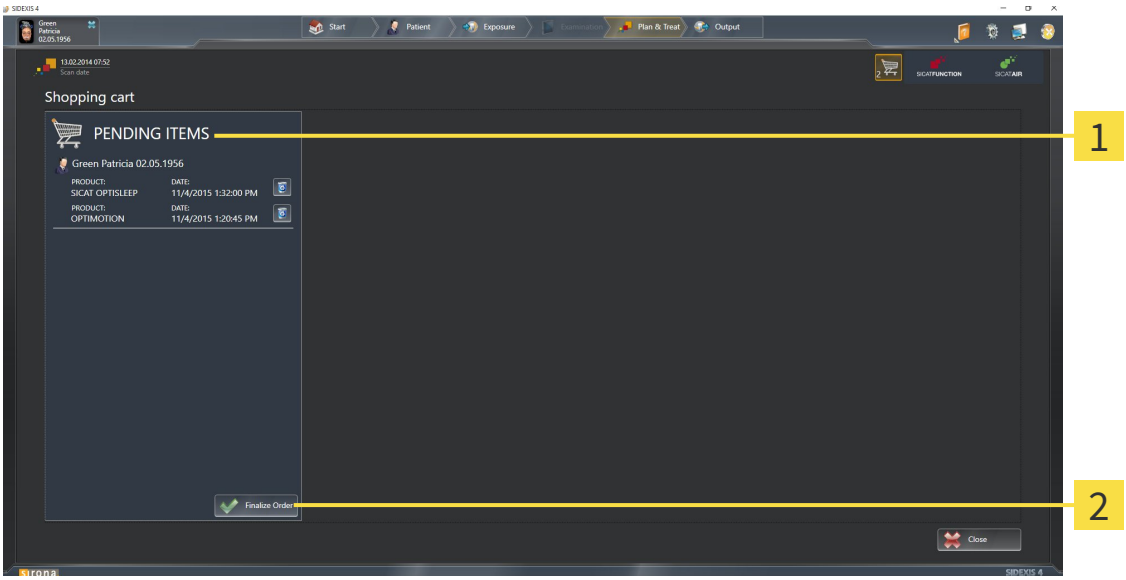


Continue with the following action:

- *Checking the shopping cart and completing the order [▶ Page 153]*

10.20.6 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 152]*.



1 **PENDING ITEMS** list

2 **Finalize Order** button

1. Check in the **Shopping cart** window whether the desired therapeutic appliances 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 154]*
- *Completing an order without an active Internet connection [▶ Page 158]*

10.20.7 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 therapeutic appliances contained in the order, along with the corresponding prices, grouped into patients.

2. Follow the instructions provided under *Performing ordering steps in the SICAT Portal [▶ Page 155]*.

▶ 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 the SIDEXIS 4 timeline, the study icon changes so that the **Treat** entry is 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.

10.20.8 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 therapeutic appliances are included.
3. If necessary, remove the patient, along with all corresponding therapeutic appliances, from the order summary. When completing the order, SICAT Suite will adopt changes that you have made in the SICAT Portal.
4. Check whether the billing address and delivery address match. 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 therapeutic appliances.

10.20.9 THE SICAT WEBCONNECTOR

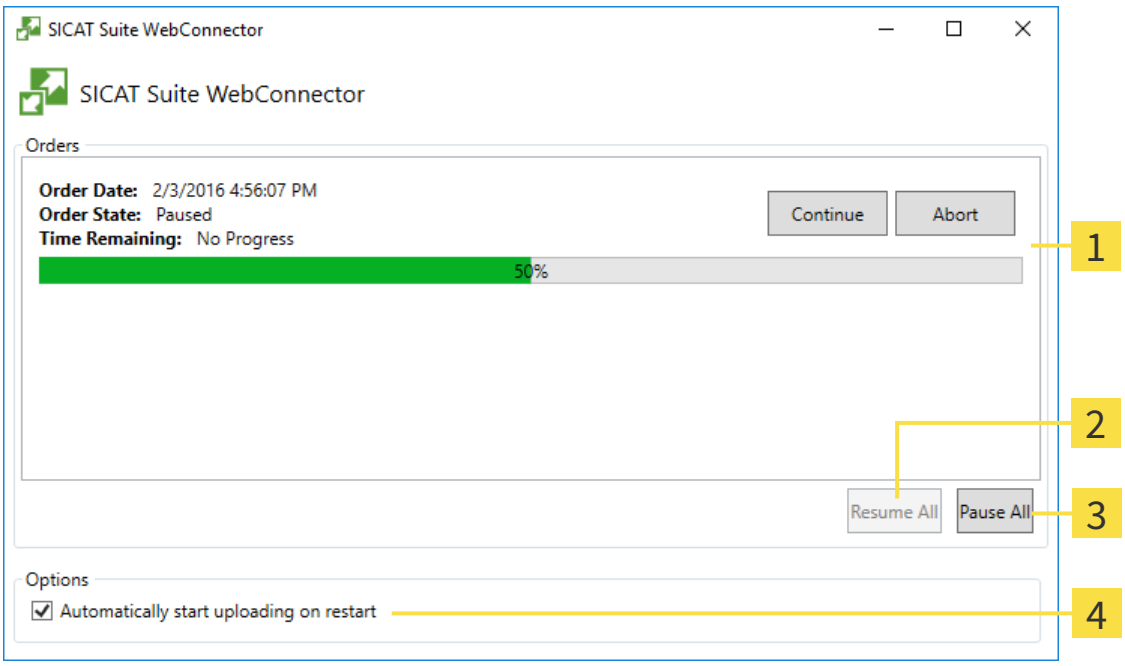
> In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

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 waiting list for the orders.

PAUSING AND CONTINUING THE UPLOAD

You can pause the upload process. This may make sense, for example, if you 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.

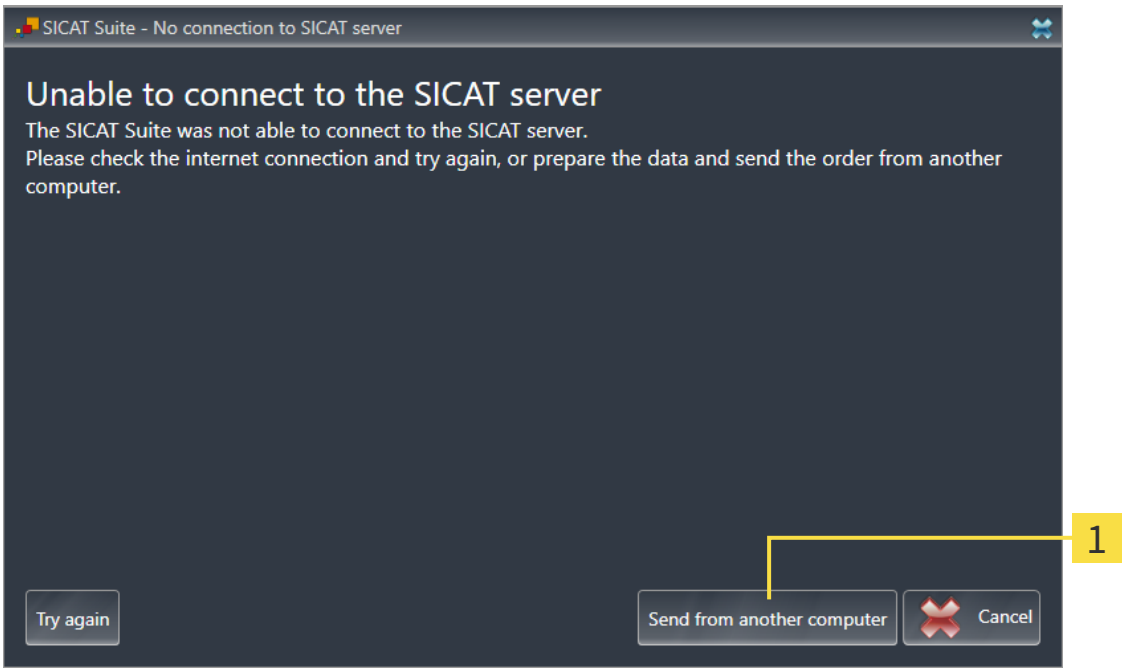
10.20.10 COMPLETING AN ORDER WITHOUT AN ACTIVE INTERNET CONNECTION

If the computer, on which SICAT Suite is running, has no active Internet connection, the transfer will take place using an XML file and a ZIP archive, which you can upload using a web browser on another computer with an active Internet connection. In this case, SICAT Suite will export all therapeutic appliances in the shopping cart at once and create one sub-folder per patient. In the SICAT Portal you can then upload one therapeutic appliance per patient. 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.

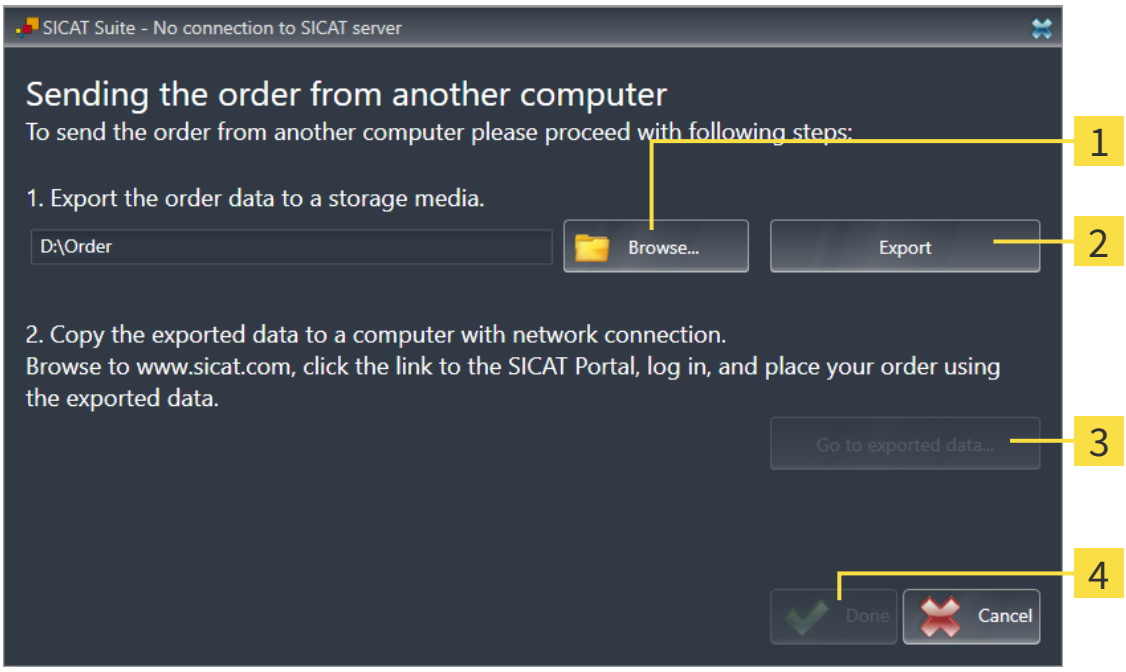
☑ A window will open with the following message: **Unable to connect to the SICAT server**



1 **Send from another computer** button

1. Click on the **Send 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.

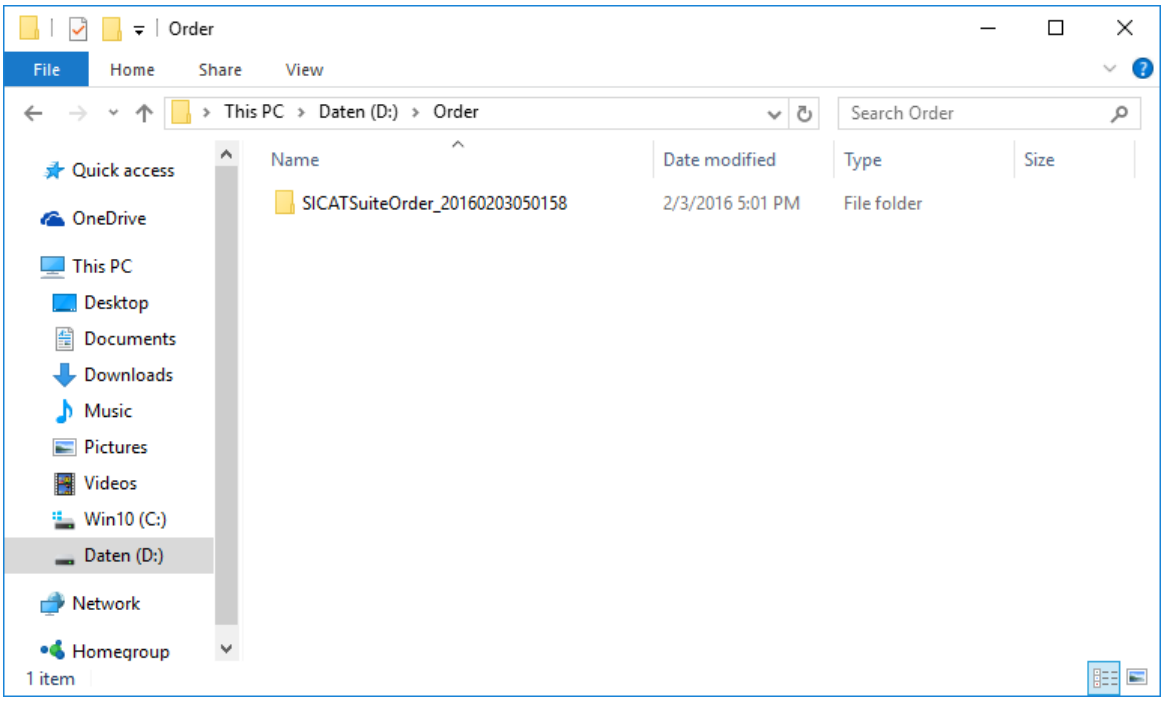
3. Select an existing directory or create a new directory and click on **OK**. Please note that the path to the directory must not be longer than 160 characters.

4. Click on the **Export** button.

   ▶ SICAT Suite exports all data required for the order of the contents of the shopping cart to the stated 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, which contains 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 therapeutic appliances 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 order summary opens and shows the patient contained therein, the corresponding therapeutic appliances and the price.

13. Follow the instructions provided under *Performing ordering steps in the SICAT Portal [▶ Page 155]*.

14. Click on the link to upload the planning data for the therapeutic appliance.

15. Select the corresponding splint 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 splint data to the SICAT server via an encrypted connection.

10.21 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 *Viewing or changing general settings [▶ Page 163]*.
- **Licenses** – Information on this can be found in the section *Licenses [▶ Page 43]*.
- **Practice** – Viewing 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 *Viewing practice information [▶ Page 167]*.
- **Visualization** – Changing general visualization settings. Information on this can be found in the section *Changing visualization settings [▶ Page 168]*.
- **SICAT Air** – Changing application-specific settings of SICAT Air. Information on this can be found in the section *Changing SICAT Air settings [▶ Page 170]*.

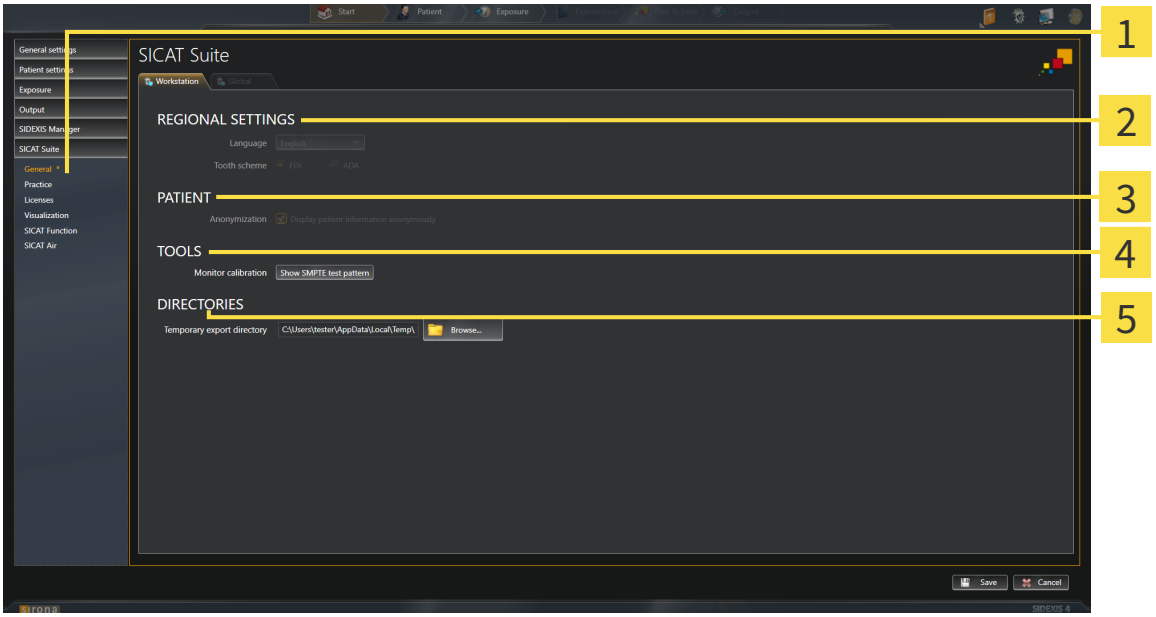
Although settings of SICAT Suite and SICAT applications can be found in the **Workstation** section of the SIDEXIS 4 settings, they apply to active users of the current workstation. SICAT Suite adopts changes to the settings immediately, but only retains them after a restart of SIDEXIS 4 if you click on the **Save** button. If you switch to another category in the settings, SICAT Suite will also save changes to the settings permanently.

10.21.1 VIEWING OR CHANGING 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** button
2 **REGIONAL SETTINGS** area
3 **PATIENT** area
4 **TOOLS** area
5 **DIRECTORIES** area

SICAT Air adopts 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** section under **Tooth scheme**.
- You can view the condition of the **Display patient information anonymously** check box in the **PATIENT** section. If the check box is activated, SICAT Air will adopt the anonymized patient data from SIDEXIS.

You can change the following settings:

- In the **DIRECTORIES** section you can enter a folder in the **Temporary export directory** field, in which SICAT Suite will save order information. You must have full access to this folder.

After viewing 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 165]*.

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.

10.21.2 MONITOR CALIBRATION WITH THE SMPTE TEST IMAGE

CAUTION

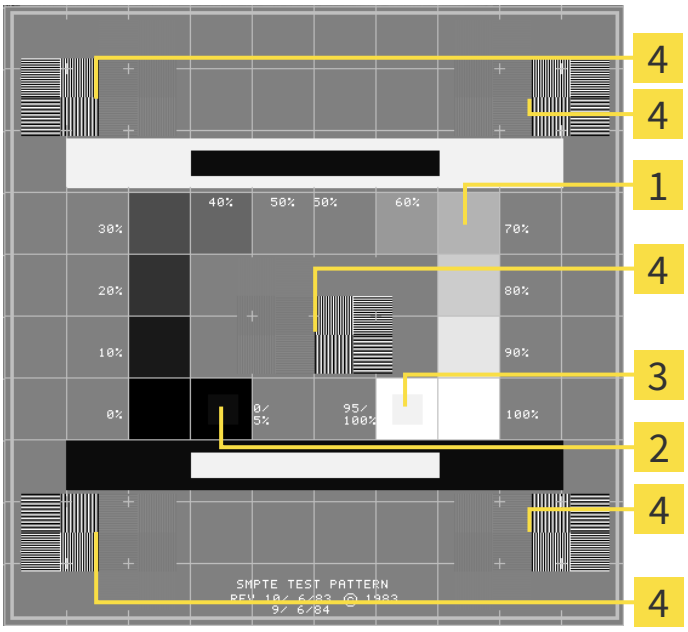
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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.

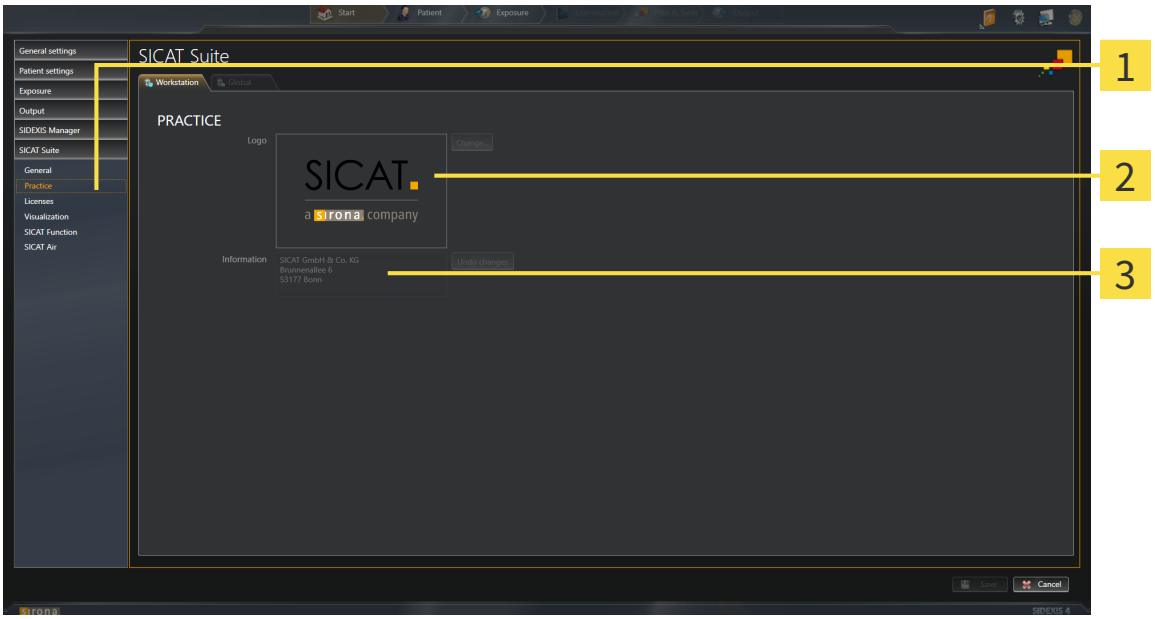
10.21.3 VIEWING PRACTICE INFORMATION

As a SIDEXIS 4 module, SICAT Suite will adopt the practice logo and information text from SIDEXIS 4. Therefore, you can simply view the values of these settings in the SICAT Suite settings. Please make the desired changes to these settings in SIDEXIS 4.

The applications in SICAT Suite use the information displayed here to customize outputs or PDF files.

To open the practice information, proceed as follows:

1. Click on the **Settings** icon in the title bar of SIDEXIS 4.
   ▶ The **Settings** window opens.
2. Click on the **SICAT Suite** group.
   ▶ The **SICAT Suite** group opens.
3. Click on the **Practice** button.
   ▶ The **PRACTICE** window opens:



1 **Practice** button

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.

10.21.4 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

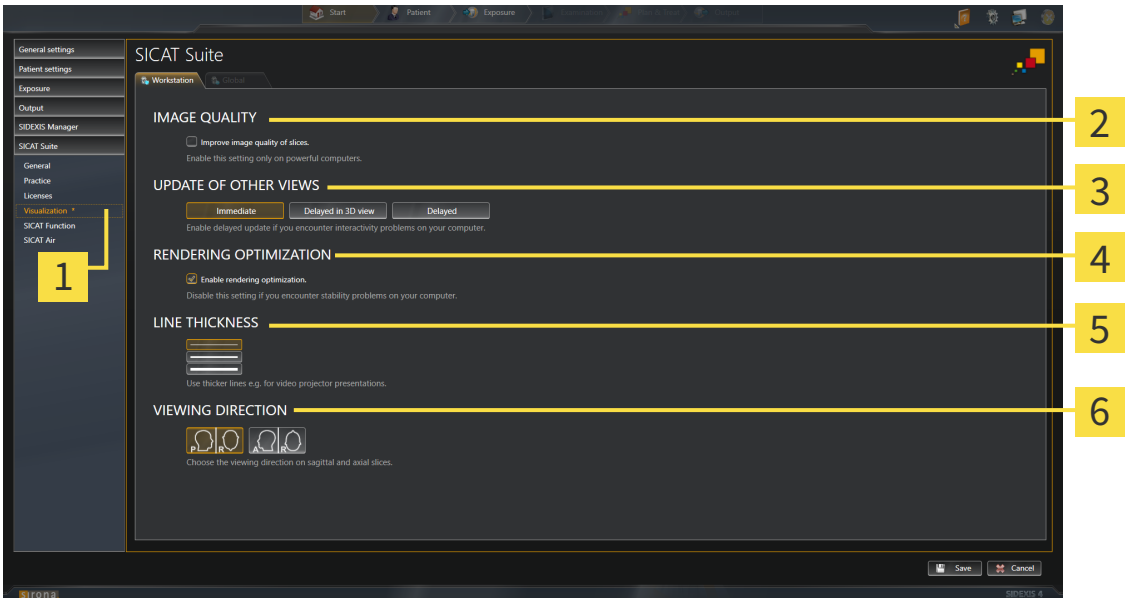
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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** button

2 **IMAGE QUALITY** area

3 **UPDATE OF OTHER VIEWS** area

4 **RENDERING OPTIMIZATION** area

5 **LINE THICKNESS** area

6 **VIEWING DIRECTION** area

4. Select the desired visualization settings.

▶ SICAT Air adopts the amended settings.

▶ SICAT Air saves the settings in your user profile.

The settings are:

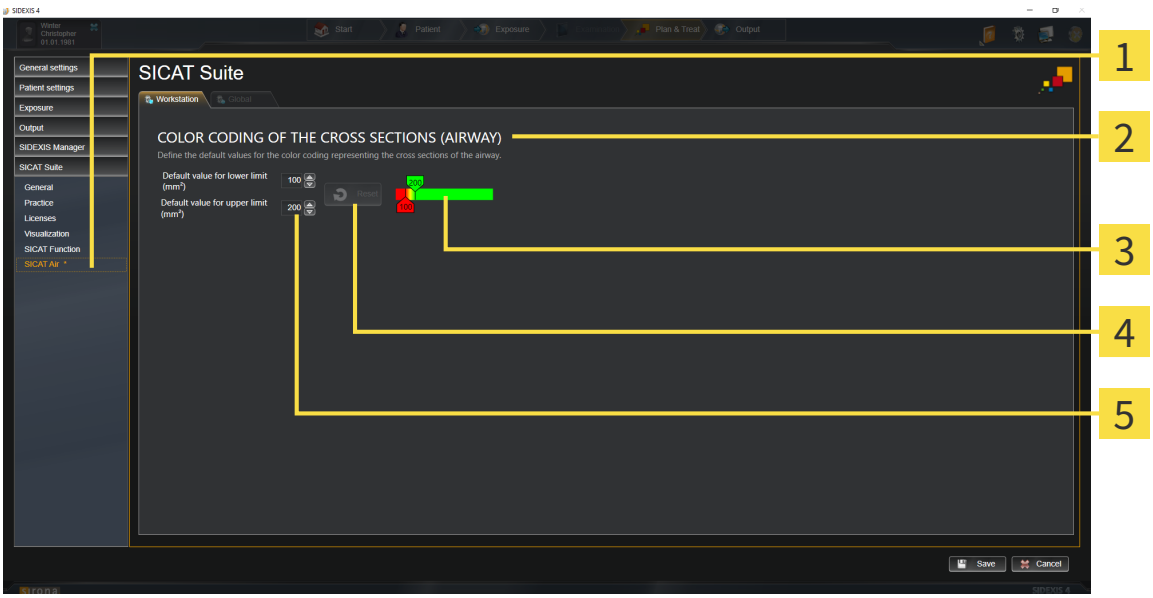
- **Improve image quality of slices** – Improves the display quality of slices as the software averages adjacent slices. Activate this setting only on high-performance computers.
- **UPDATE OF OTHER VIEWS** – Delayed updates improve the interactivity of the active view at the cost of the delayed updating of other views. Activate delayed updates only if you detect interactivity problems on your computer.
- **Enable rendering optimization** – Deactivate this setting only if you detect stability 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.

10.21.5 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** button

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

4. Select the desired standard values for the color coding.

▶ SICAT Air saves the default values in your user profile.

▶ SICAT Air uses the altered default values when you first open a 3D X-ray scan and segment the airway.

▶ SICAT Air uses the altered default values if you reset the values of an **Airway** object.

The settings are:

- **Default value for lower limit (mm²)** – defines the lower value of the cross-sectional area in mm², 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 mm², 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.

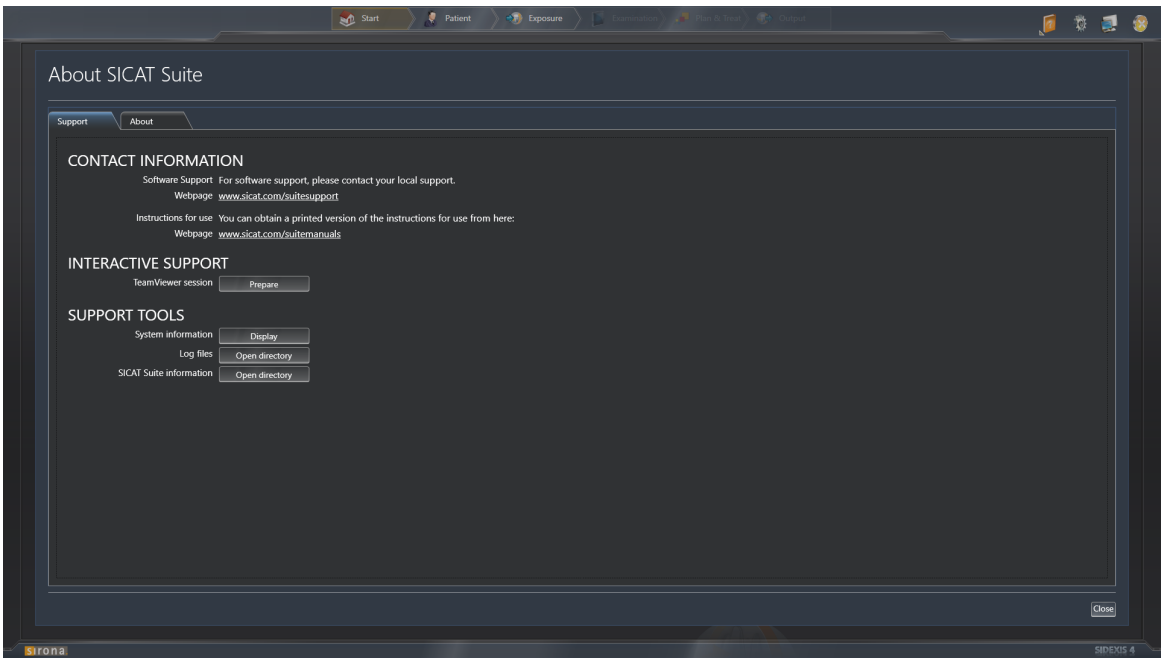
10.22 SUPPORT

SICAT offers you the following support options:

- Online help
- Contact information
- Information on the installed SICAT Suite and SICAT applications

Continue with the following action:

- *Opening the support options [▶ Page 173]*



10.22.1 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.

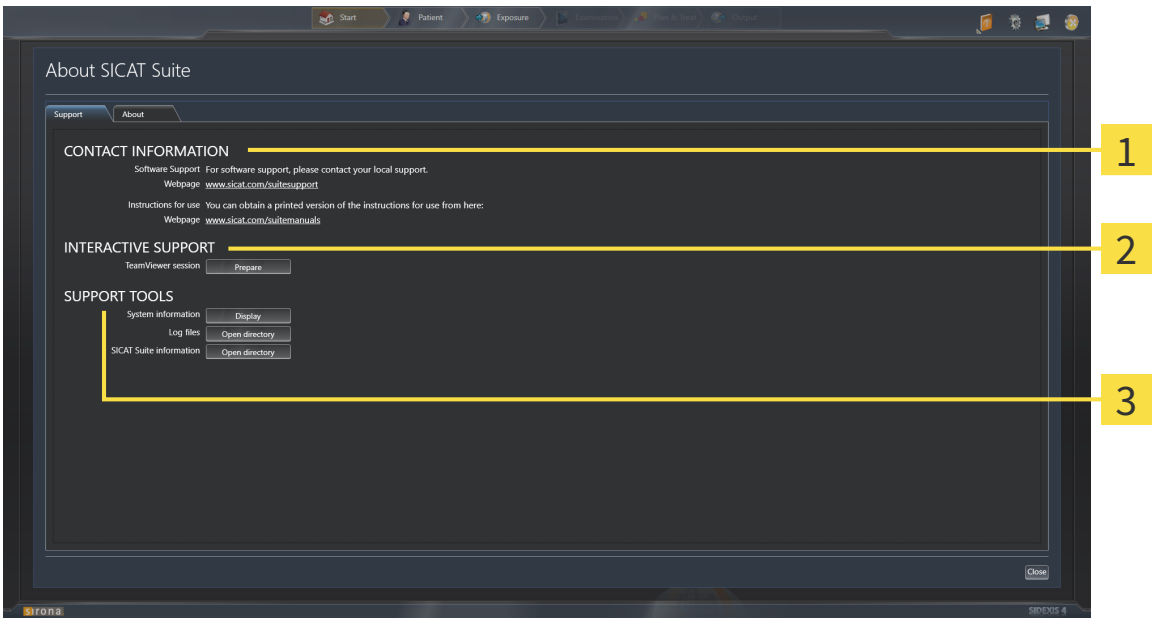
▶ The **SICAT Suite information** window opens.

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

- **Support** – Information on this can be found in the section *Support [▶ Page 172]*.
- **About** – Information on this can be found in the section *Info [▶ Page 175]*.

10.22.2 CONTACT INFORMATION AND SUPPORT TOOLS

The **Support** window contains all of the relevant information and tools so that SICAT Support can help you:



1 **CONTACT INFORMATION** area

2 **INTERACTIVE SUPPORT** area

3 **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.

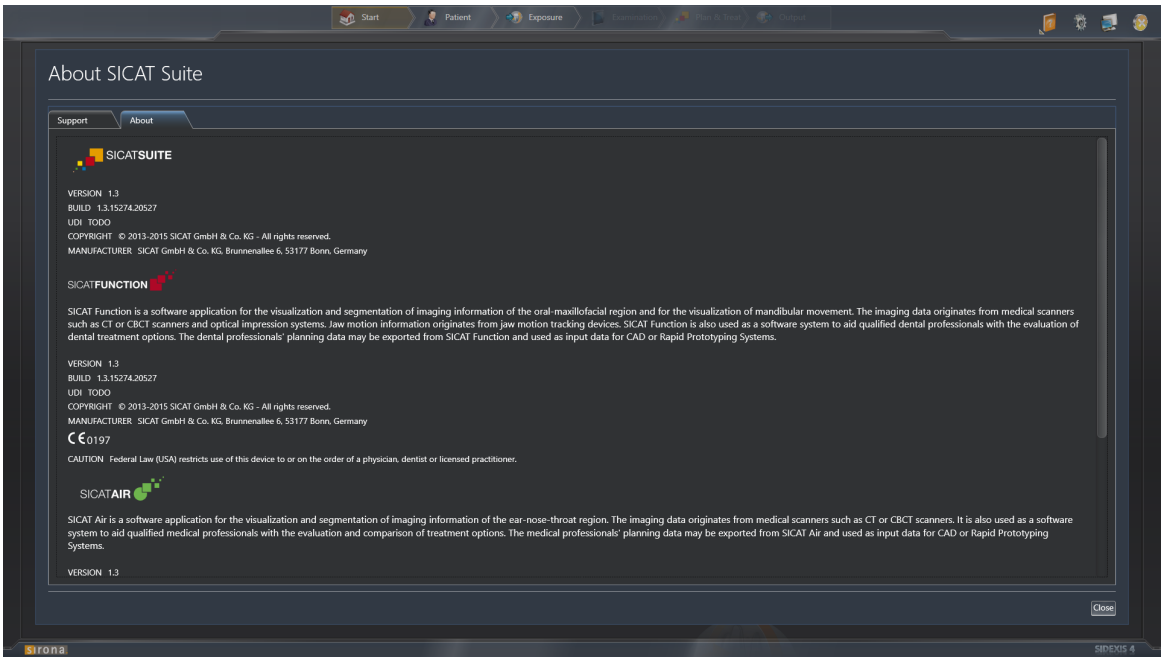
TeamViewer is software that allows mouse and keyboard commands to be remotely controlled and to transfer the contents of a computer's monitor via an active Internet connection. TeamViewer will only establish a connection with your explicit consent. To do so, provide the SICAT support team with a TeamViewer 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** section:

- Click on the **Show** 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 Air will export information on the current installation in a text file.

10.22.3 INFO

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



10.23 OPENING READ-ONLY DATA

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:

ACTIVE SICAT AIR LICENSE	ARE CHANGES POSSIBLE?
No	No
Yes	Yes

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.

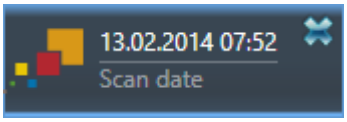
To open data without being able to make and save changes, proceed as follows:

☑ No SICAT Air license is activated.

- 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 38]*.

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

10.24 CLOSING SICAT SUITE



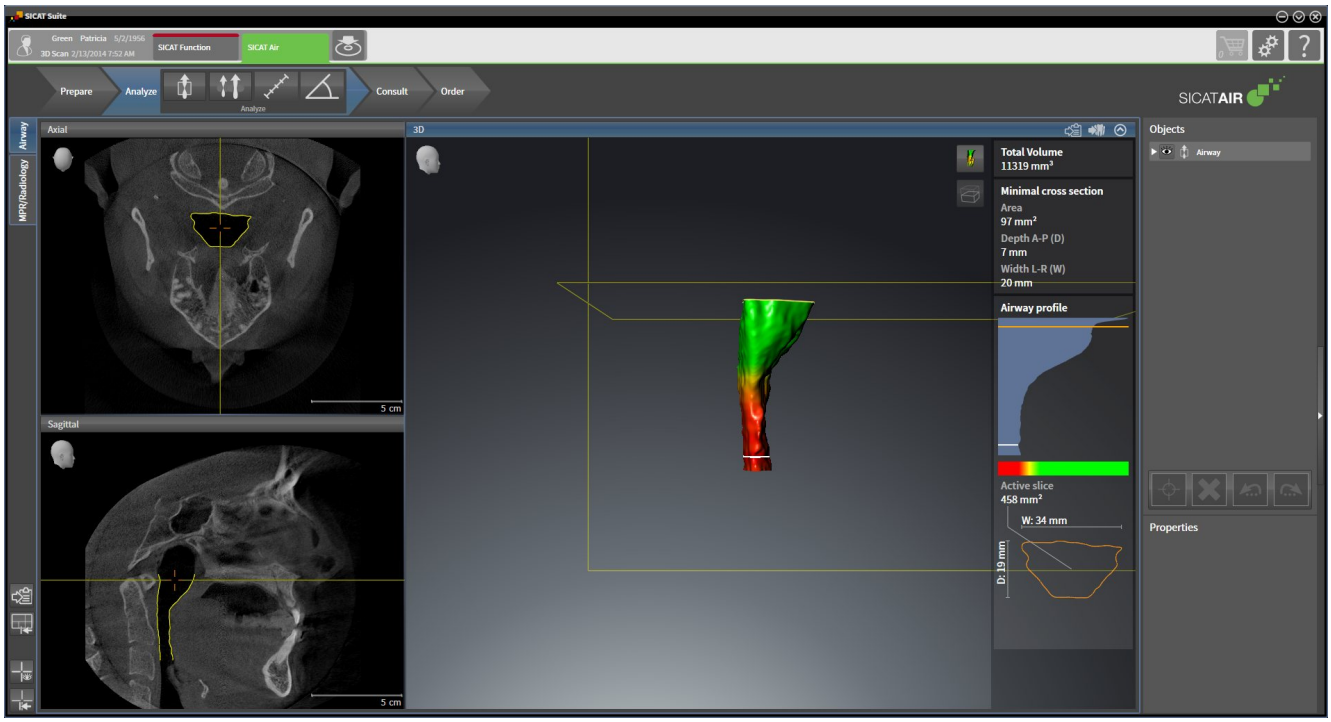
- Click the **Close** button in the top left-hand corner of the currently opened study.

► SICAT Suite closes.

► SICAT Suite stores the changed planning projects of all SICAT applications that are running as a full version in SIDEXIS 4.

11 SIDEXIS XG PLUG-IN

The SIDEXIS XG plug-in for SICAT Suite connects SICAT Suite to SIDEXIS XG, but opens SICAT Suite as a separate application. The SICAT applications, SICAT settings and SICAT support tools are therefore located in their own window:



11.1 SPECIAL FEATURES OF THE SIDEXIS XG VERSION

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 184]*.

PROGRAM START

As a SIDEXIS XG plug-in, SICAT Suite starts as an external application. Information on how to start SICAT Suite as a SIDEXIS XG plug-in can be found in the section *Starting SICAT Suite [▶ Page 186]*.

PATIENT DATA AND VOLUME DATA

The version of SICAT Air connected to SIDEXIS XG uses the SIDEXIS XG patient data and volume data. The data is therefore backed up via the process intended for SIDEXIS XG.

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 XG, SICAT Suite will simply display the values of some settings, as these are transferred from SIDEXIS XG.

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

Otherwise, you cannot make or save any changes to SICAT Air studies. However, you can view 3D X-ray scans and SICAT Air studies.

The following table shows which functions are available in each case:

FUNCTION	LICENSE ACTIVATED	NO LICENSE ACTIVATED
Support area	Yes	Yes
Settings area	Yes	Yes
Saving changes	Yes	No
Viewing data without saving changes	No	Yes

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.

Other information is available in the section *Opening read-only data [▶ Page 316]*.

11.2 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.

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 186]*.

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 239]*.

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 253]*.

4. Assess the respiratory path in the **Airway** workspace. Information on this can be found in the section *Airway analysis [▶ Page 263]*.

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 [▶ Page 269]*.

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. Check the effect of the therapeutic appliance using the airway comparison. 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 281]*.

10. If you wish to obtain a second opinion, export the data. Information on this can be found in the section *Data export [▶ Page 278]*.

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 317]*.

▶ 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 online help [▶ Page 190]*.

Further support is available in the area marked **Support**. Information on this can be found in the section *Support [▶ Page 312]*.

11.3 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 20]*.

OPENING THE "NGPLUGINMANAGER" WINDOW

1. Press the **Windows** key, enter the **SIDEXIS Manager** and click on the **SIDEXIS Manager** icon.
   ▶ The **SIDEXIS Manager** window opens.
2. In the **SIDEXIS Manager** window, click 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 20]*.

☑ 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.

11.4 STARTING SICAT SUITE

CAUTION

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

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

CAUTION

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

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

CAUTION

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

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

To start SICAT Suite as a SIDEXIS 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 20]*.

☑ 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 184]*. 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.

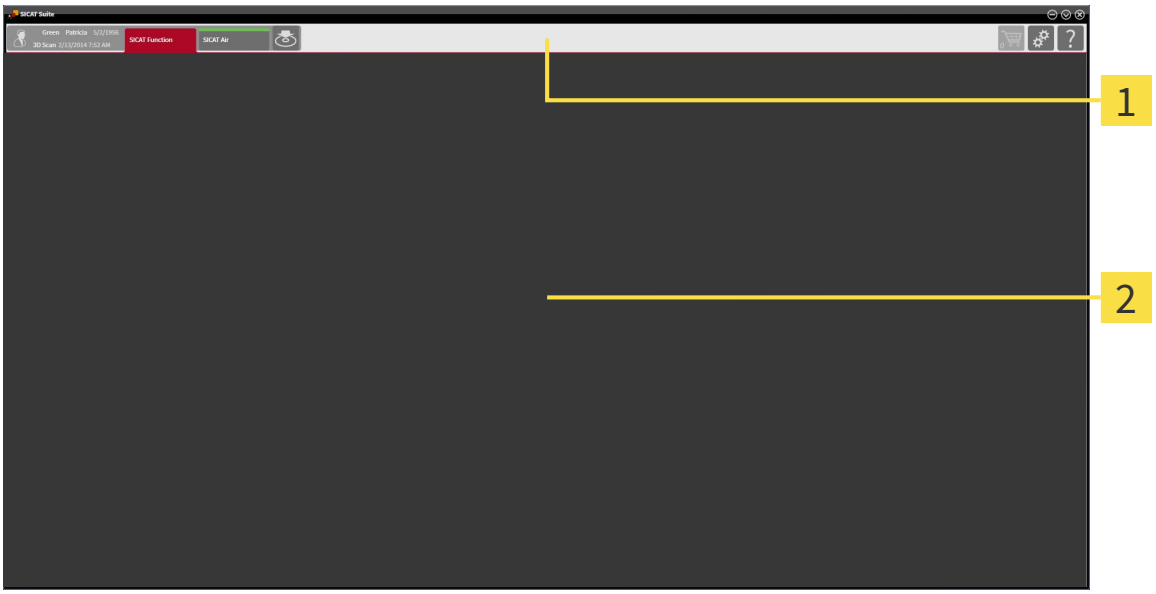
▶ SICAT Suite opens the data record in a SICAT application.

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. If you explicitly open a study, the corresponding SICAT application will always start.

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 316]*.

11.5 THE USER INTERFACE OF SICAT SUITE

The user interface of SICAT Suite as a SIDEXIS XG plug-in is comprised of 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 other 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 189]*.

- **Export data** – Information on this can be found in the section *Data export [▶ Page 278]*.

The section on the right side contains the following tabs:

- **Shopping cart** – Information on this can be found in the section *Ordering process [▶ Page 281]*.

- **Settings** – Information on this can be found in the section *Settings [▶ Page 303]*.

- **Support** – Information on this can be found in the section *Support [▶ Page 312]*.

11.5.1 SWITCHING BETWEEN SICAT APPLICATIONS

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

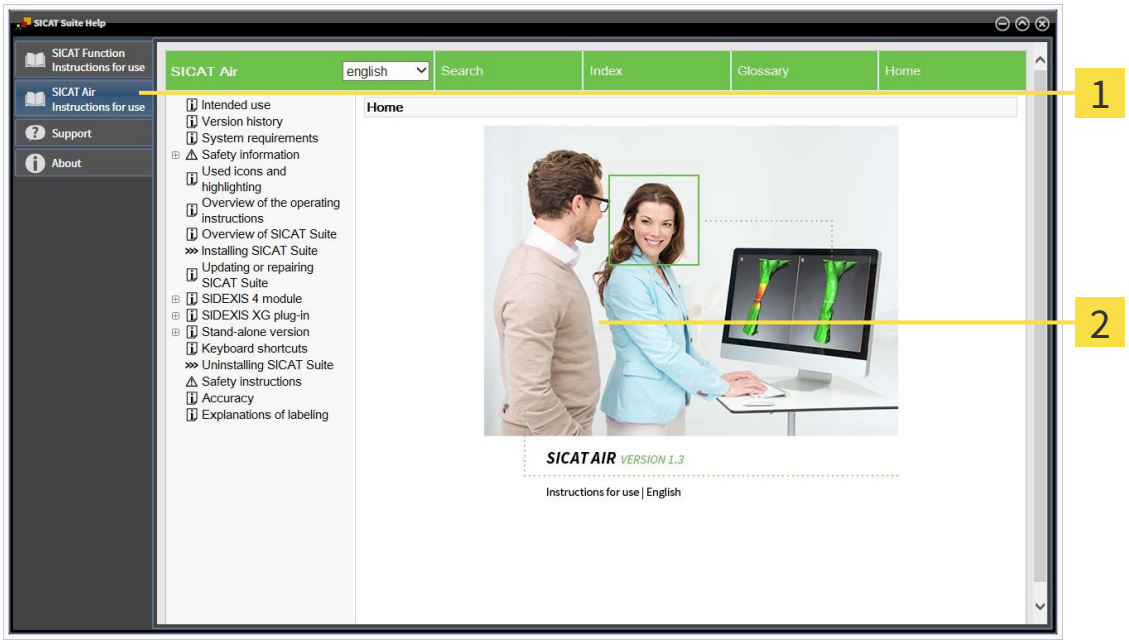
► SICAT Suite will switch to the selected application.

11.6 OPENING THE ONLINE HELP

The instructions for use for SICAT applications are integrated into the **Support** window in the form of online help.

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

11.7 LICENSES

To find out more about purchasing SICAT licenses, please contact your on-site sales partner. SICAT will provide demo licenses for testing purposes, through which you will receive temporary access to the full version of one or more SICAT applications.

You can activate licenses for SICAT applications and individual functions as follows:

- After you have purchased one or more licenses, SICAT will provide you or your organization with a personal activation key. You can use activation keys to activate licenses on various computers, on which SICAT Suite is installed.
- Your license pool on the SICAT license server contains the acquired number of licenses for each SICAT application and each individual function.
- If you activate a license on a computer, it will be linked to that computer. The license is taken from your license pool and will no longer be available for activation on another computer.
- An activated license will activate the full version of one or more applications or individual functions. Applications without licenses run in Viewer mode.

The **License Overview** window gives an overview about licenses, which are activated on your computer. These may be licenses for applications or licenses for individual functions. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶ Page 192]*.

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 193]*.
- 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 194]*.

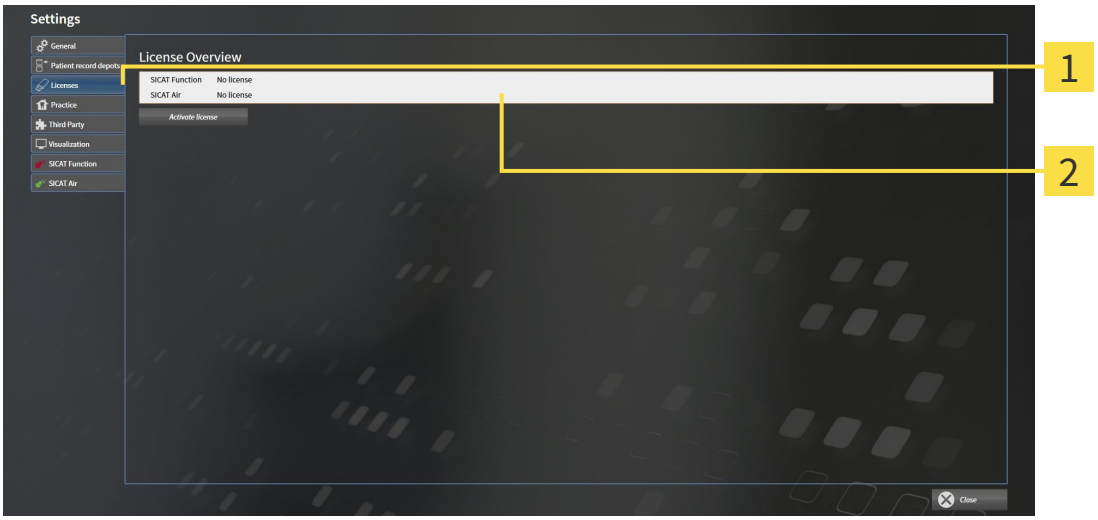
You can deactivate licenses for each application or function individually and return them to the license pool. The computer, on which SICAT Suite is running, requires an active Internet connection for this. After you have deactivated a license, you can enter the same or another activation key. Returned 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 196]*.

You can find information about redeeming voucher codes in the section *Redeeming voucher codes [▶ Page 197]*.

11.7.1 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 193]*
- *Activating licenses manually or without an active Internet connection. [▶ Page 194].*
- *Returning licenses to the license pool [▶ Page 196]*

11.7.2 ACTIVATING LICENSES USING AN ACTIVE INTERNET CONNECTION

To start the activation process, proceed as follows:

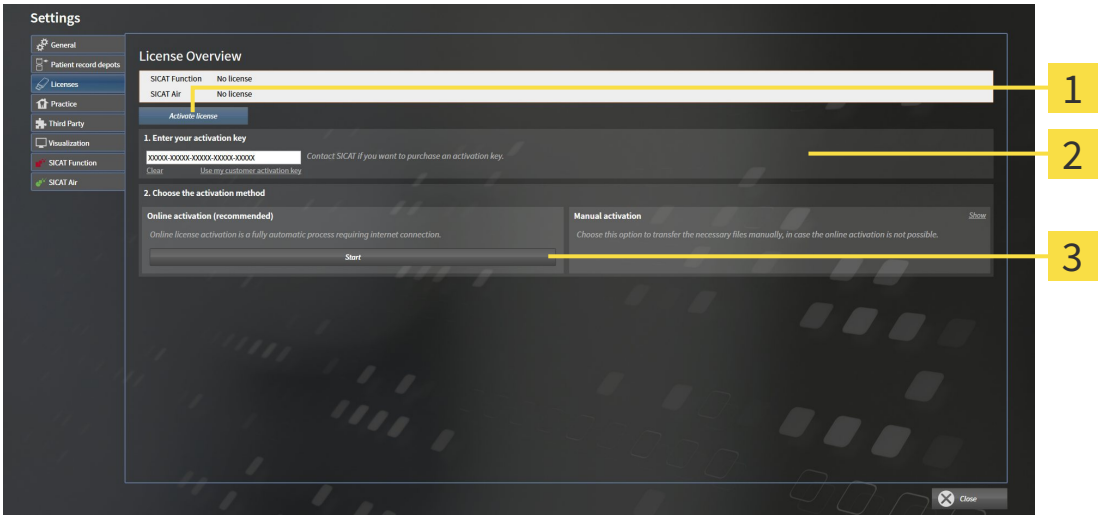
☑ At least one SICAT application or one individual function is missing an active license.

☑ 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 192]*.

1. Click the **Activate license** button in the **License Overview** window.

   ▶ The **License Overview** area opens:



1 **Activate license** button

2 **Enter your activation key** area

3 **Start** button

2. Enter your customer activation key or a demo license activation key into the **Enter your activation key** field.

3. Click on the **Start** button.

4. If a **Windows Firewall** window opens, you 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 with the following message: **License was successfully activated**.

NOTICE	**Restart required** The version of SICAT Suite connected to SIDEXIS XG must be restarted so that license changes take effect.

	To activate SICAT Suite again, click on the **Use my customer activation key** button and use your customer activation key. To empty the field with the current license key, click on the **Clear** button in the **Enter your activation key** area.

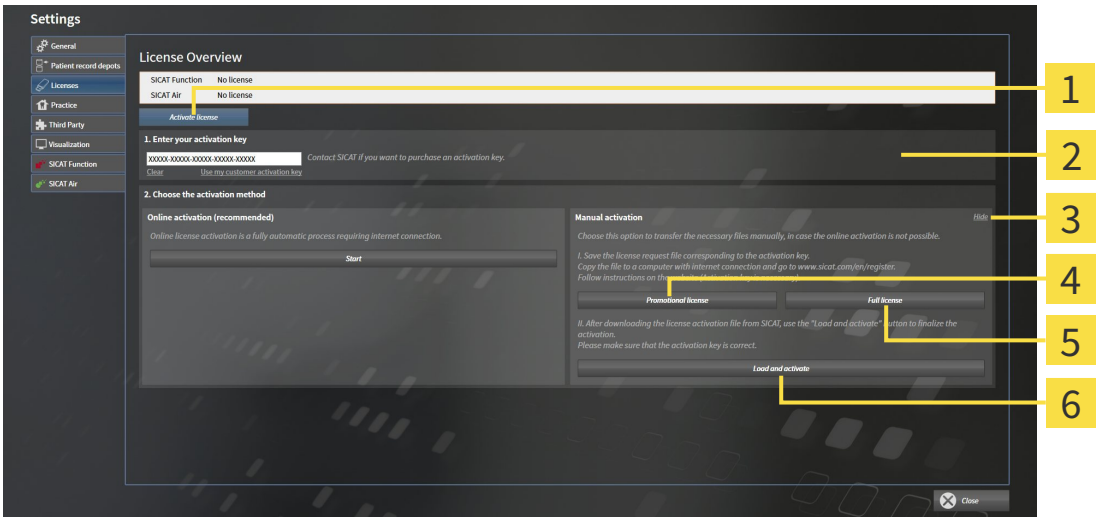
11.7.3 ACTIVATING LICENSES MANUALLY OR WITHOUT AN ACTIVE INTERNET CONNECTION.

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 192]*.

1. Click the **Activate license** button in the **License Overview** window.
   ▶ The **License Overview** area opens.
2. Double-click on the **Manual activation** button in the **Show** area.
   ▶ The **Manual activation** area opens:



1	**Activate license** button	4	**Promotional license** button
2	**Enter your activation key** area	5	**Full license** button
3	**Show** button	6	**Load and activate** button

3. If you want to activate a full license, click the **Full license** button.
4. If you want 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 file extension **WibuCmRaC** 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 file extension **WibuCmRaU**, which you have 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 with the following message: **License was successfully activated**.

NOTICE	**Restart required** The version of SICAT Suite connected to SIDEXIS XG must be restarted so that license changes take effect.

11.7.4 RETURNING LICENSES TO THE LICENSE POOL

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 192]*.

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 with 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** The version of SICAT Suite connected to SIDEXIS XG must be restarted so that license changes take effect.

11.7.5 REDEEMING VOUCHER CODES

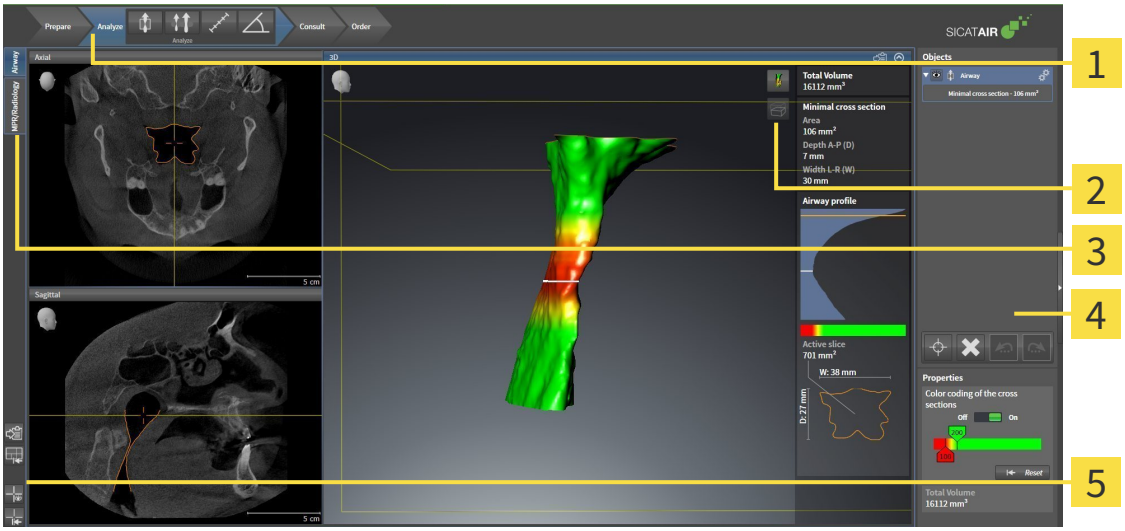
1. Open a web browser on the computer with the active Internet connection and open the http://www.sicat.de web page.
2. Click on the link for the SICAT portal.
   ▶ The SICAT portal opens.
3. Register or log in to the SICAT portal using your username and password if you have not already done so.
4. Click 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 show you a license.
6. Save the license locally on your computer.
7. Start SICAT Suite and activate the license.

Information on this can be found in the section *Activating licenses using an active Internet connection [▶ Page 193]* and *Activating licenses manually or without an active Internet connection. [▶ Page 194]*.

See the FAQ on the SICAT portal for more help.

11.8 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 the various workflow steps, which include the main tools of the application workflow. This includes tools, which you can use to add and import diagnosis objects and planning objects. Information on this can be found in the section *Workflow toolbar [▶ Page 199]*.
- The **Workspace area** is the part of the user interface below **Workflow toolbar**. It shows the active workspace of SICAT Air. Each workspace contains a certain combination of views. Information on this can be found in the section *Workspaces [▶ Page 210]*.
- Only the active view shows the **View toolbar**. It contains tools to adjust the display to the corresponding view. Information on this can be found in the sections *Adjusting the views [▶ Page 217]* and *Adjusting the 3D view [▶ Page 228]*.
- The **Object bar** contains tools to manage diagnosis objects and planning objects. Information on this can be found in the sections *Object bar [▶ Page 201]* and *SICAT Air objects [▶ Page 205]*.
- The **Workspace toolbar** contains tools to change general settings for workspaces and all of the views they contain and to document the contents of workspaces. Information on this can be found in the sections *Moving, hiding and showing crosshairs and frames [▶ Page 225]*, *Resetting views [▶ Page 226]*, *Adjusting and resetting the layout of workspaces [▶ Page 214]* and *Creating screenshots of workspaces [▶ Page 215]*.

11.8.1 WORKFLOW TOOLBAR

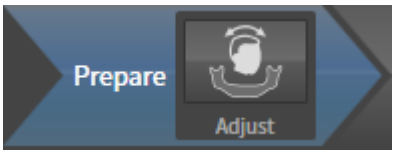
The **Workflow toolbar** in SICAT Air consists of four workflow steps:

1. **Prepare**
2. **Analyze**
3. **Consult**
4. **Order**

EXPANDING AND COLLAPSING WORKFLOW STEPS

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

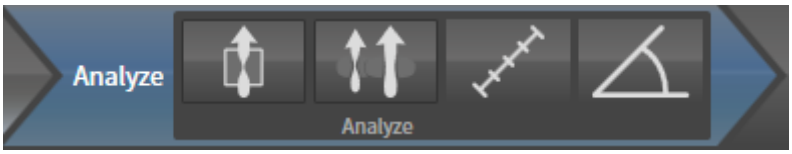
1. WORKFLOW STEP "PREPARE"



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

- **Adjust volume orientation and panoramic region** – Information on this can be found in the sections *Adjusting the volume orientation [▶ Page 239]* and *Adjusting the panoramic region [▶ Page 244]*.

2. WORKFLOW STEP "ANALYZE"



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

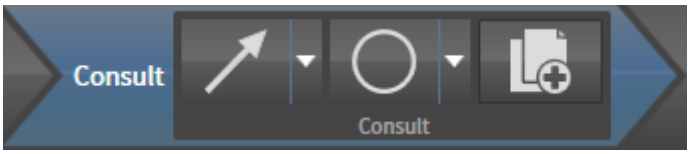
- **Segment the airway** – Information on this can be found in the section *Defining the airway area [▶ Page 254]*.

- **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 248]*.

- **Add angle measurement (A)** – Information on this can be found in the section *Adding angle measurements [▶ Page 249]*.

3. WORKFLOW STEP "CONSULT"



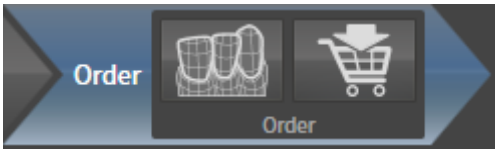
The following tools are available in the **Consult** workflow step:

- **Draw Arrow** – Information on this can be found in the section *Creating images and screenshots [▶ Page 270]*.

- **Draw Circle** – Information on this can be found in the section *Creating images and screenshots [▶ Page 270]*.

- **Generate handout** – Information on this can be found in the section *Preparing handouts [▶ Page 273]*.

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 286]*.

- **Order Therapeutic Appliance** – Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶ Page 282]*.

11.8.2 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 202]*.
- The **Object toolbar** contains tools to focus objects, remove objects or object groups and undo or redo object actions or object group actions. Information on this can be found in the section *Managing objects with the object toolbar [▶ Page 204]*.
- The **Properties** area shows the details of the active object.

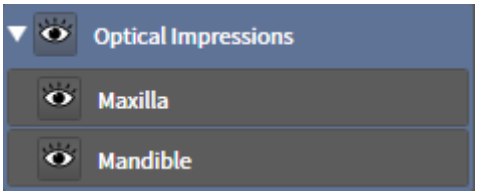
The objects available in SICAT Air can be found in the section *SICAT Air objects [▶ Page 205]*.

Click on the **Hide object bar** button or **Show object bar** button on the right side of the **Object bar** to hide or show the **Object bar**.

11.8.3 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 **Some Shown** icon or **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.

11.8.4 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 202]*.

- 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 202]*.

- 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.

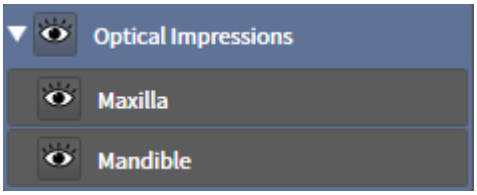
Undo and redo are only available as long as a study is open in a SICAT application.

11.8.5 SICAT AIR OBJECTS

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

- **Optical Impressions**
- **Airway**
  - **Minimal cross section**
- **Handout**
  - **Image**
  - **Screenshot**

OPTICAL IMPRESSION OBJECT



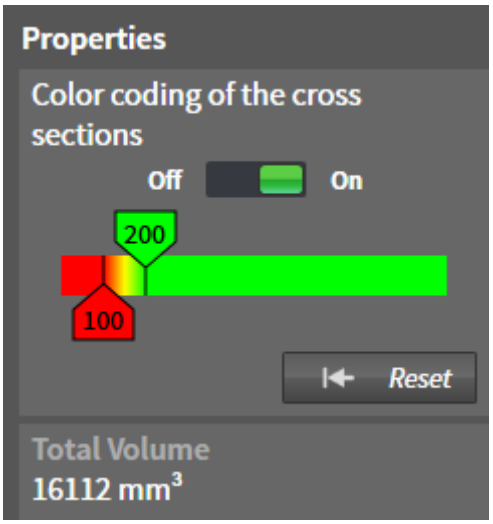
An **Optical Impressions** object contains the following sub-objects:

- **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, which you can use to activate or deactivate Color coding.
- The **Color coding of the cross sections** with sliding controllers, which you can use to define the minimum and maximum value of the cross-sectional area in mm^2 for the color gradient.
- The **Reset**, which 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 standard values in the SICAT Air settings can be found in the section *Changing SICAT Air settings [▶ Page 311]*.
- The **Total Volume** of the segmented airway

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.

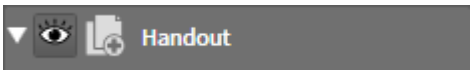
If you move the mouse pointer over a **Airway** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Segment the airway** window.

MINIMAL CROSS SECTION OBJECT

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

- **Minimal cross section** objects are beneath **Airway** objects.
- The designation of a **Minimal cross section** 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** object, the 2D slice views display the slice with the smallest cross-sectional area.

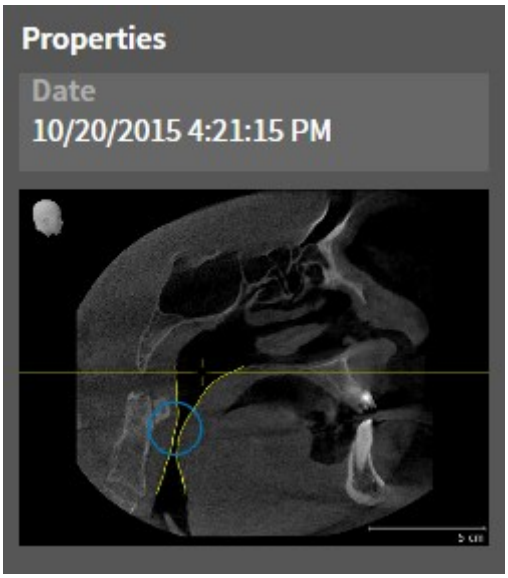
HANDOUT OBJECT



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 a **Handout** object. SICAT Air removes all corresponding **Image** objects and **Screenshot** objects.

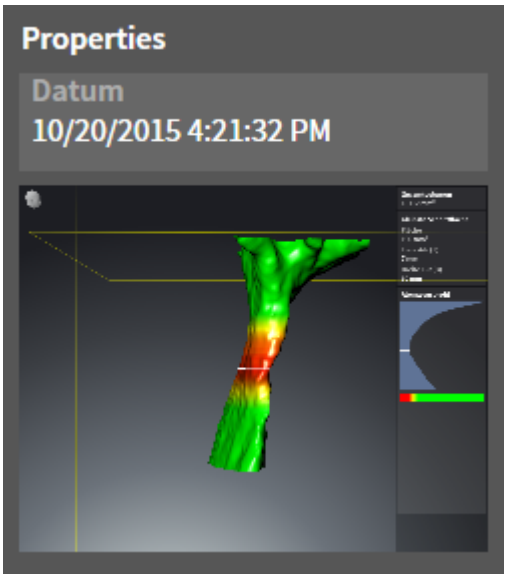
IMAGE OBJECTS



The following applies for **Image** objects:

- **Image** objects are beneath **Handout** objects.
- SICAT Air summarizes all drawing objects of a slice in a workspace for each 2D view and creates an **Image** object from this.
- SICAT Air summarizes 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 an **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 an **Image** object and therefore all arrows and circles contained therein at once. SICAT Air removes **Image** objects both from the **Object browser** and from the **Generate handout** window.
- If you focus on an **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 beneath **Handout** objects.
- SICAT Air creates one **Screenshot** object per screenshot.
- After you have created and activated a **Screenshot** object, **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 a **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.

11.9 WORKSPACES

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

In SICAT Air there are two different workspaces:

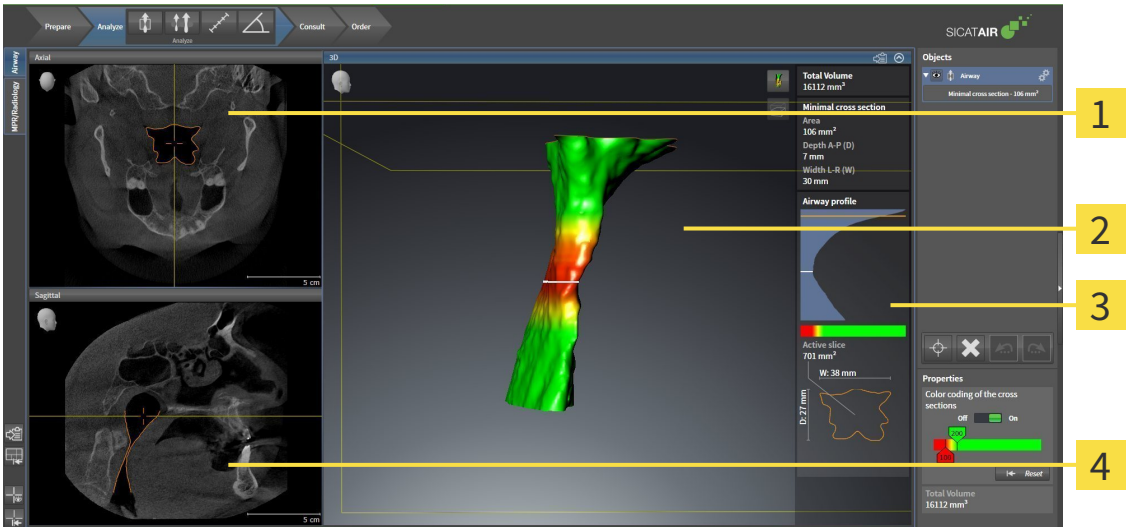
- **Airway** workspace – Information on this can be found in the section *Overview of the airway workspace [▶ Page 211]*.
- **MPR/Radiology** workspace – Information on this can be found in the section *Overview of the MPR/Radiology workspace [▶ Page 212]*.

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:

- *Changing the active workspace [▶ Page 213]*.
- *Adjusting and resetting the layout of workspaces [▶ Page 214]*.
- *Adjusting the views [▶ Page 217]*.
- There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶ Page 228]*.
- You can document the contents of the active workspace. Information on this can be found in the section *Creating screenshots of workspaces [▶ Page 215]*.

11.9.1 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 309]*.

3D VIEW

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

SAGITTAL VIEW

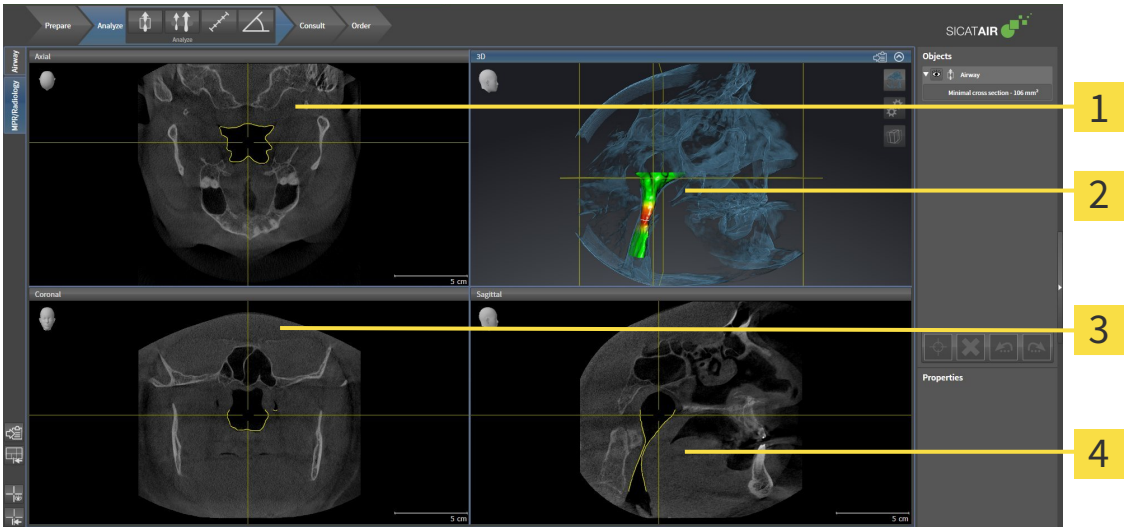
By default, the **Sagittal** view shows slices from the right. You can switch the viewing direction of the **Sagittal** view. Information on this can be found in the section *Changing visualization settings [▶ Page 309]*.

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 217]* and *Adjusting the 3D view [▶ Page 228]*.

If you have created a **Airway** object by segmenting the airway, the airway analysis area will be available in the **3D** view. Information on this can be found in the sections *SICAT Air objects [▶ Page 205]*, *Segmenting the airway [▶ Page 253]* and *Interacting with the airway profile [▶ Page 267]*.

11.9.2 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 309]*.

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 309]*.

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 217]* and *Adjusting the 3D view [▶ Page 228]*.

11.9.3 CHANGING 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.

11.9.4 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 standard layout. This means that the software displays all views in their standard sizes.

11.9.5 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 *Changing the active workspace [▶ Page 213]*.

- 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.

11.10 VIEWS

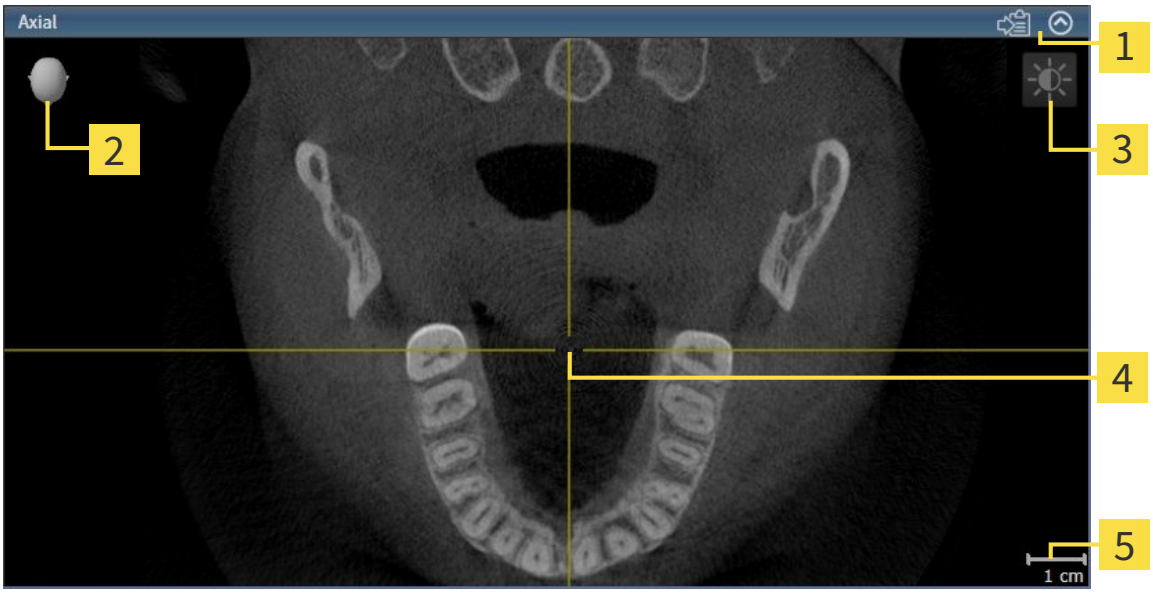
Views are contained in workspaces. A description of the various workspaces and views can be found under *Workspaces [▶ Page 210]*.

You can adjust the views. Information on this can be found in the sections *Adjusting the views [▶ Page 217]* and *Adjusting the 3D view [▶ Page 228]*.

11.10.1 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 219]*.

An active view contains the following elements:



1 Title bar

2 Orientation head

3 View toolbar

4 Crosshair

5 Scale

2D slice views display crosshairs. Crosshairs are lines of intersection with other slice views. SICAT Air synchronizes all slice views with one another. 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.

2D slice views contain a scale.

The following actions are available to adjust the views:

- *Changing the active view [▶ Page 219]*
- *Maximizing and restoring views [▶ Page 220]*
- *Adjusting and resetting the brightness and contrast of the 2D views [▶ Page 221]*
- *Zooming views and panning views [▶ Page 223]*
- *Scrolling through slices in the 2D slice views [▶ Page 224]*
- *Moving, hiding and showing crosshairs and frames [▶ Page 225]*
- *Resetting views [▶ Page 226]*

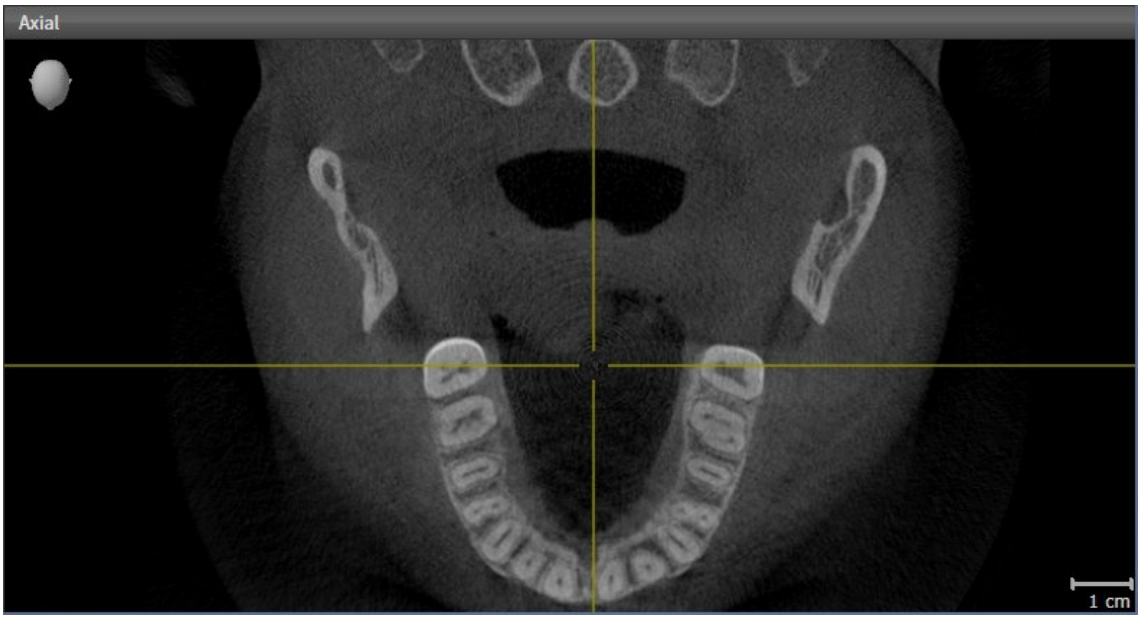
There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶ Page 228]*.

You can document the content of an active view. Information on this can be found in the section *Creating screenshots of views [▶ Page 227]*.

11.10.2 CHANGING THE ACTIVE VIEW

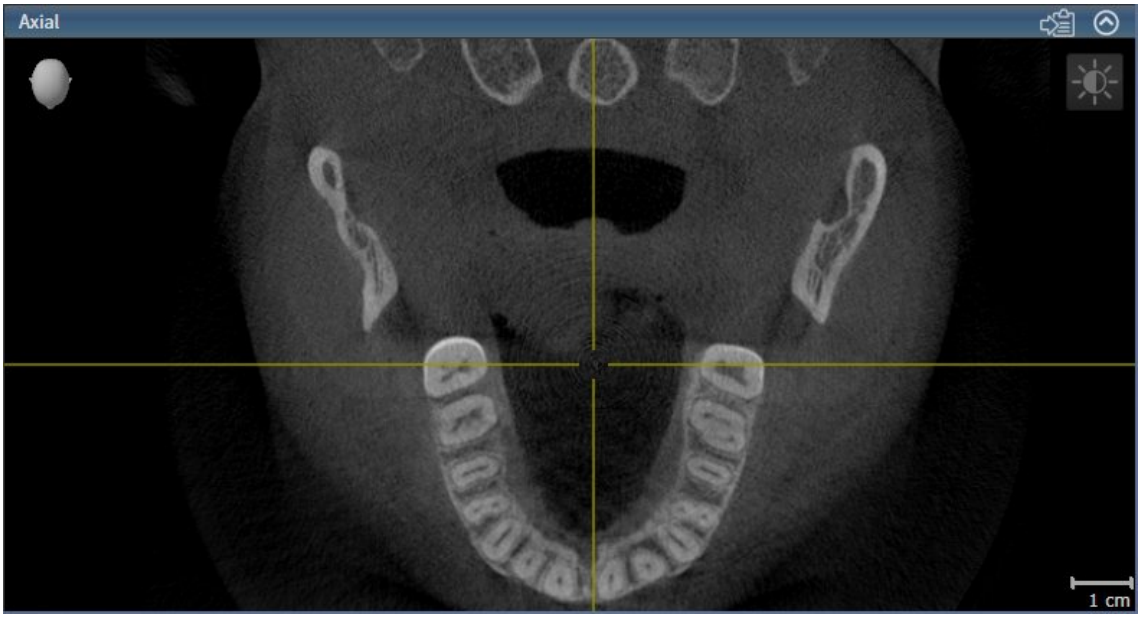
Only the active view shows the **View toolbar** and the title bar.

To activate a view, proceed as follows:



- Click the desired view.

► SICAT Air activates the view:



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

11.10.3 MAXIMIZING AND RESTORING VIEWS

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

☑ The view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 219]*.

☑ The view you require is not maximized.

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

   ▶ 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.

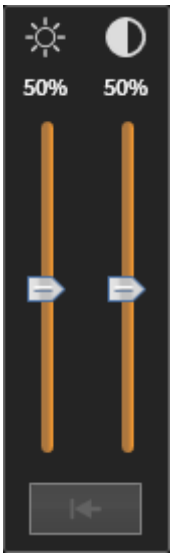
11.10.4 ADJUSTING AND RESETTING THE BRIGHTNESS AND CONTRAST OF THE 2D VIEWS

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

☑ The 2D view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 219]*.

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.

11.10.5 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.

11.10.6 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.

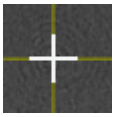
11.10.7 MOVING, HIDING AND SHOWING CROSSHAIRS AND FRAMES

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.

11.10.8 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.

11.10.9 CREATING SCREENSHOTS OF VIEWS

You can take screenshots of the views for documentation views 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 view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 219]*.

- 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.

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 view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 219]*.

- 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.

11.11 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 229]*.

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

- *Switching the display mode of the 3D view [▶ Page 231]*
- *Configuring the active display mode of the 3D view [▶ Page 232]*
- *Changing the clipping mode of the 3D view [▶ Page 236]*

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

11.11.1 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 maintains the current viewing direction of the **3D** view.

SELECTING THE 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 standard viewing direction you require.
   ▶ 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.

11.11.2 DISPLAY MODES OF THE 3D VIEW

General information on the **3D** view can be found in the section *Adjusting the 3D view [▶ Page 228]*.

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.

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

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

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

- **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 205]*.

How to activate a display mode of the **3D** view can be found under *Switching the display mode of the 3D view [▶ Page 231]*.

How to configure the active display mode can be found under *Configuring the active display mode of the 3D view [▶ Page 232]*.

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 233]*.

11.11.3 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** is already active. Information on this can be found in the section *Changing the active view* *[▶ Page 219]*.

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.

11.11.4 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:

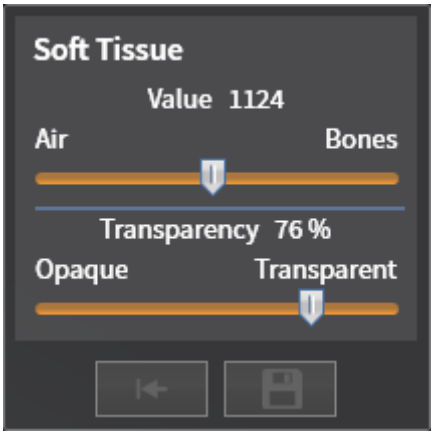
☑ The **3D** is already active. Information on this can be found in the section *Changing the active view [▶ Page 219]*.

☑ The display mode you desire is already active. Information on this can be found in the section *Switching the display mode of the 3D view [▶ Page 231]*.

☑ 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**.

   ▶ The **Advanced** area opens.

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.

11.11.5 CLIPPING MODES OF THE 3D VIEW

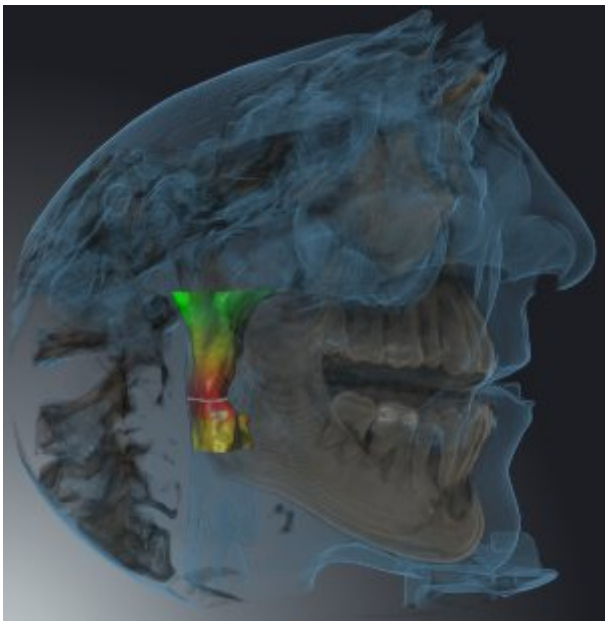
General information on the **3D** view can be found in the section *Adjusting the 3D view [▶ Page 228]*.

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.

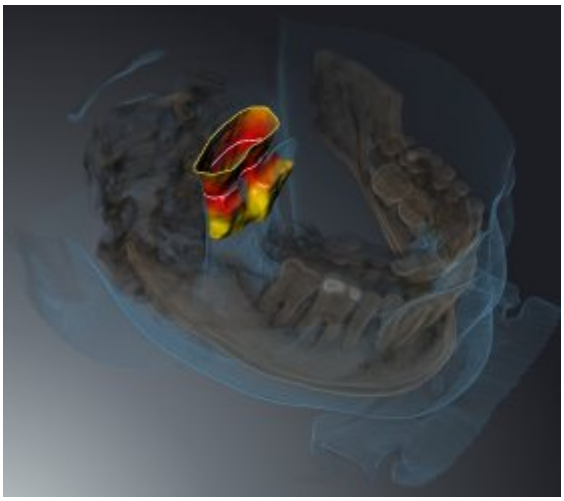


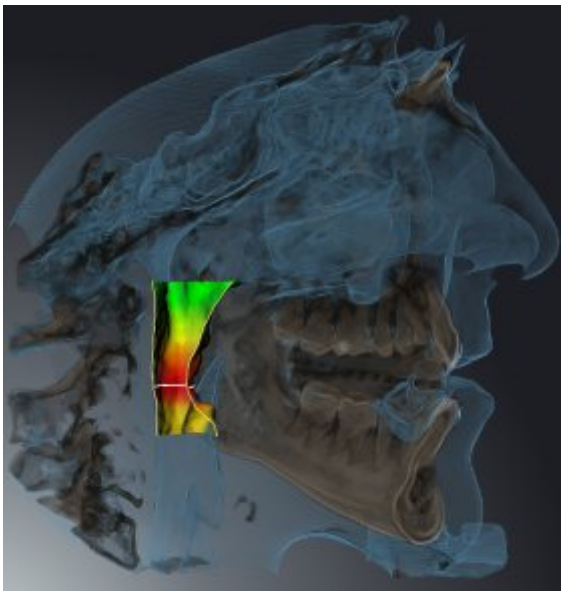
CLIPPING: AIRWAY SLAB

SICAT Air hides all parts of the volume, which are on the side of the airway area. Information on defining the airway region can be found in the section *Defining the airway area [▶ Page 254]*. 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, which are either side of 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 224]*. 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 267]*.





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

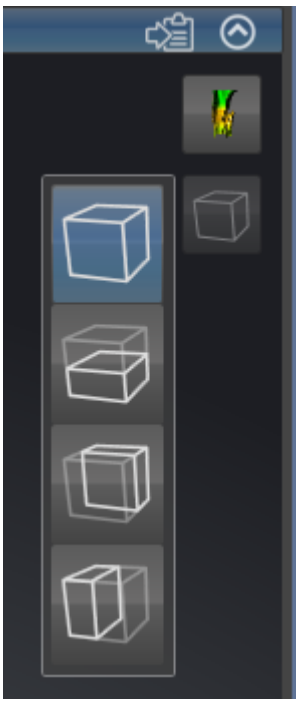
How to activate a clipping mode of the **3D** view can be found under *Changing the clipping mode of the 3D view [▶ Page 236]*.

11.11.6 CHANGING THE CLIPPING MODE OF THE 3D VIEW

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

☑ The **3D** is already active. Information on this can be found in the section *Changing the active view [▶ Page 219]*.

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.

11.12 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:

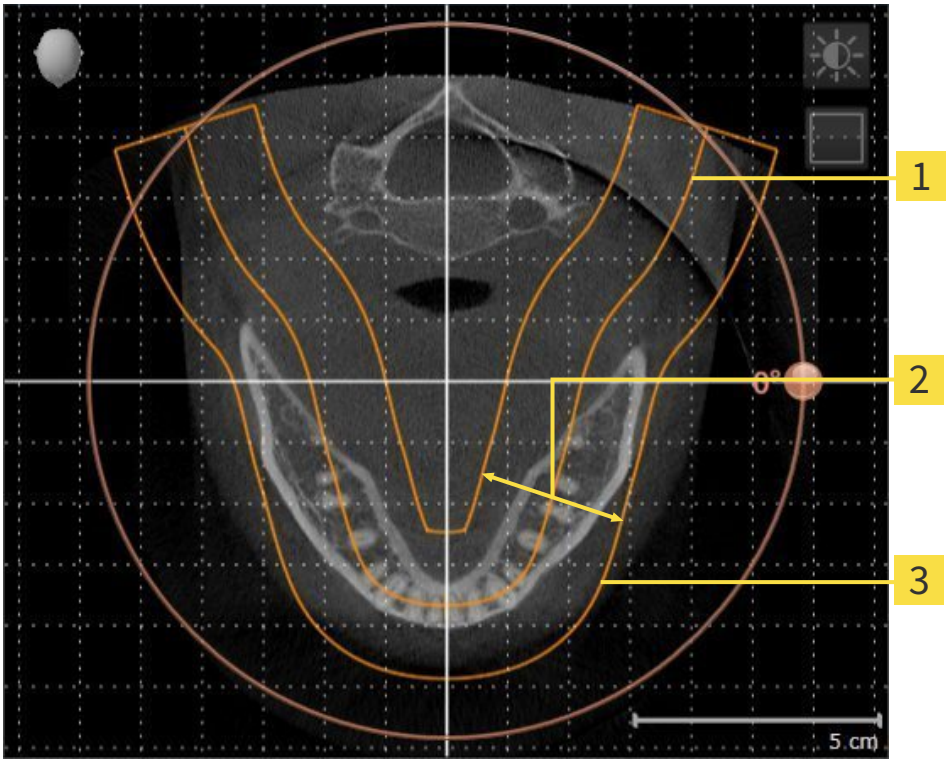
- Sub-optimal positioning of the patient during the 3D X-ray scan
- Orientation according to case, for example orientation of the axial slices parallel to the Frankfurt plane or parallel to the bite plane
- Optimizing the panorama view

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 239]*.

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 244]*.

11.12.1 ADJUSTING THE VOLUME ORIENTATION

General information on the volume orientation can be found in the section *Volume orientation and panoramic region [▶ Page 237]*.

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

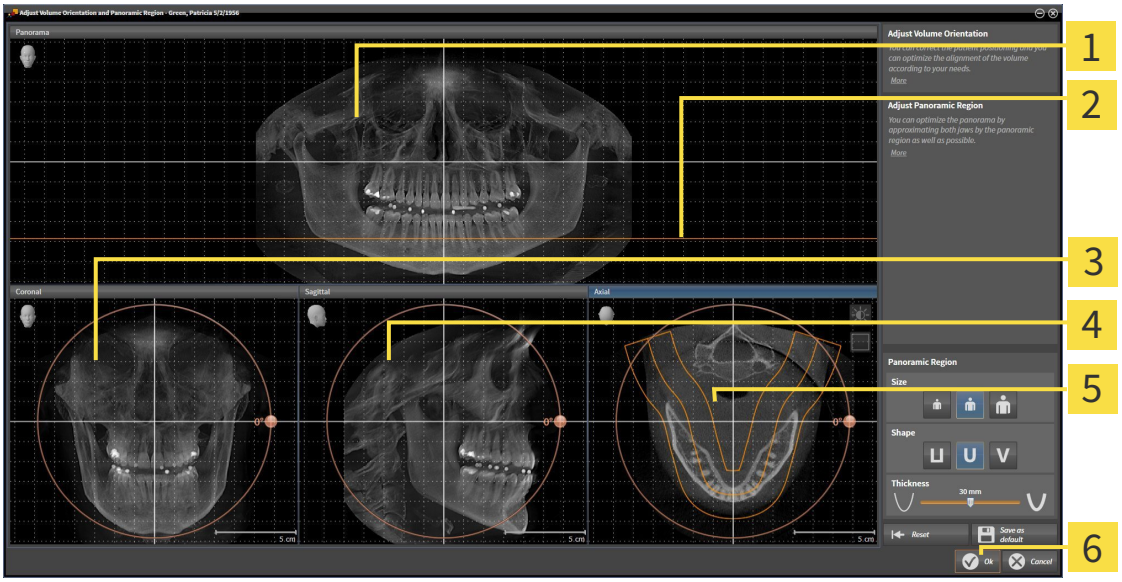
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Rotating volumes in the **Coronal** view
- Rotating volumes in the **Sagittal** view
- Rotating volumes in the **Axial** view

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

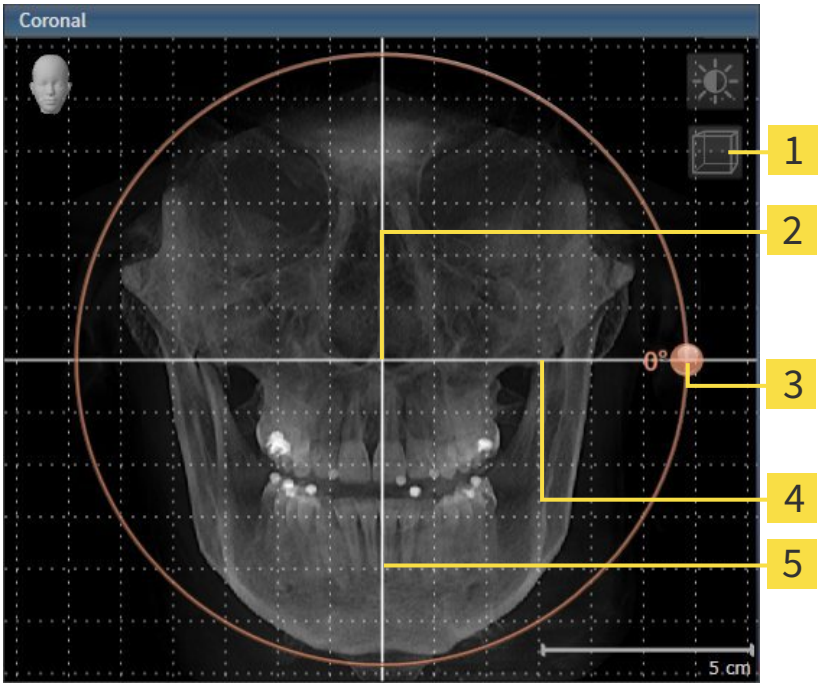
4 **Sagittal** view with **Rotation** slider

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

6 **OK** button

ROTATING VOLUMES IN THE CORONAL VIEW

1. Activate the **Coronal** view:

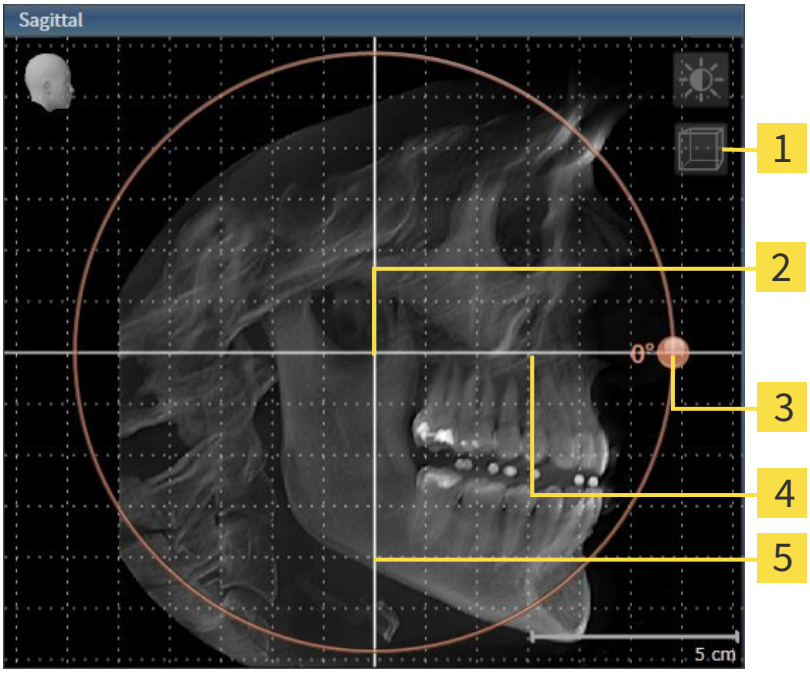


1	**Enable slices mode** icon or **Enable projection mode** icon	4	Horizontal reference line
2	Center of rotation	5	Vertical reference line
3	**Rotation** slider		

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 direction you require.
   ▶ 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:

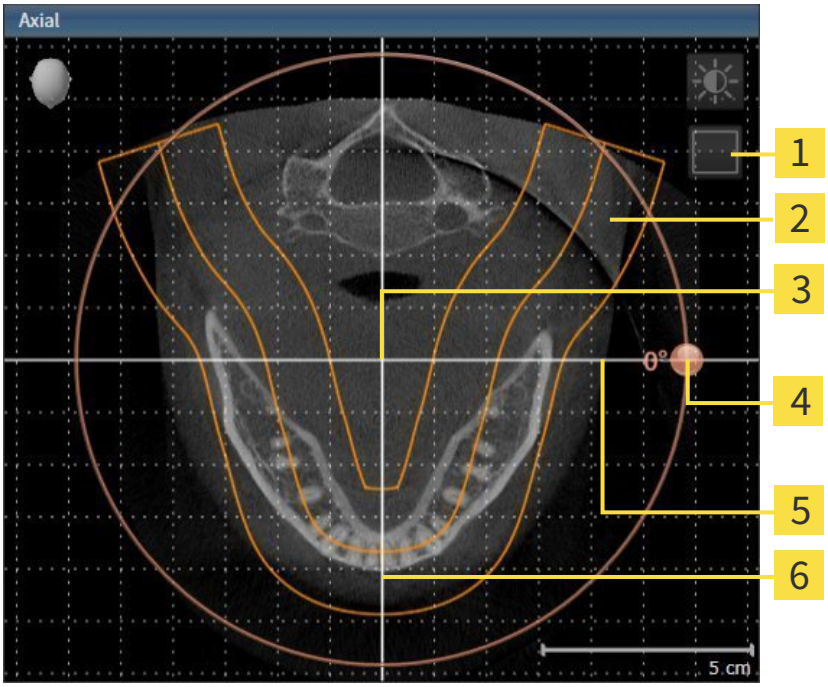


1	**Enable slices mode** icon or **Enable projection mode** icon	4	Horizontal reference line
2	Center of rotation	5	Vertical reference line
3	**Rotation** slider		

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 direction you require.
   ▶ 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 hold 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 direction you require.
   ▶ 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 view you require 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 221]*.
- 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**.

11.12.2 ADJUSTING THE PANORAMIC REGION

General information on the panoramic region can be found in the section *Volume orientation and panoramic region [▶ Page 237]*.

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

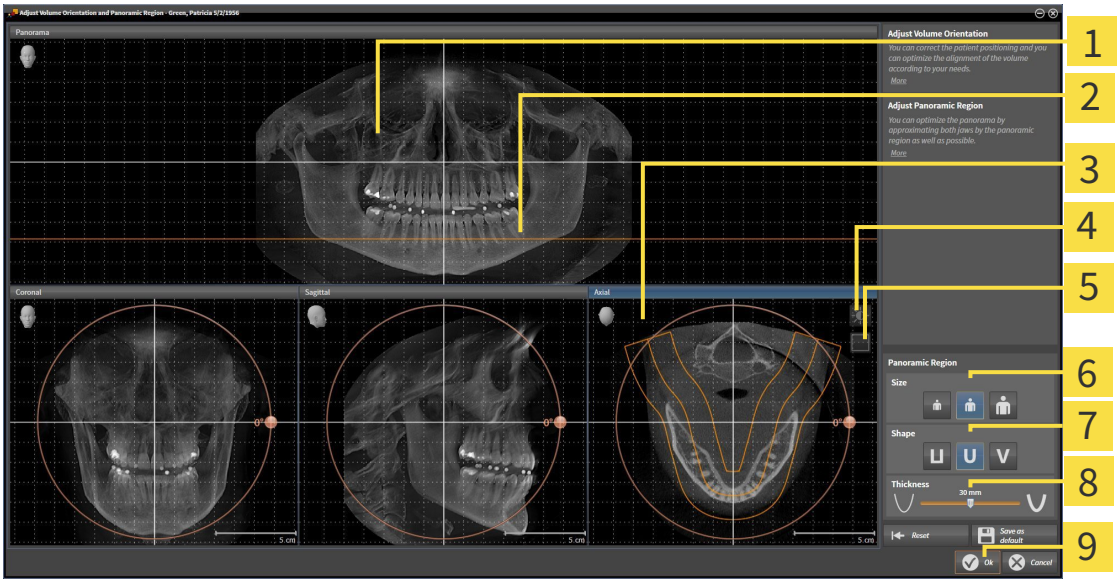
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Adjusting the slice position of the **Axial** view
- Moving the panoramic region
- Rotating volumes in the **Axial** view
- Adjusting **Size**, **Shape** and **Thickness** in the panoramic region

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** will conform 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 view you require 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 221]*.
- 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**.

11.13 DISTANCE AND ANGLE MEASUREMENTS

There are two different types of measurement in SICAT Air:

- Distance measurements

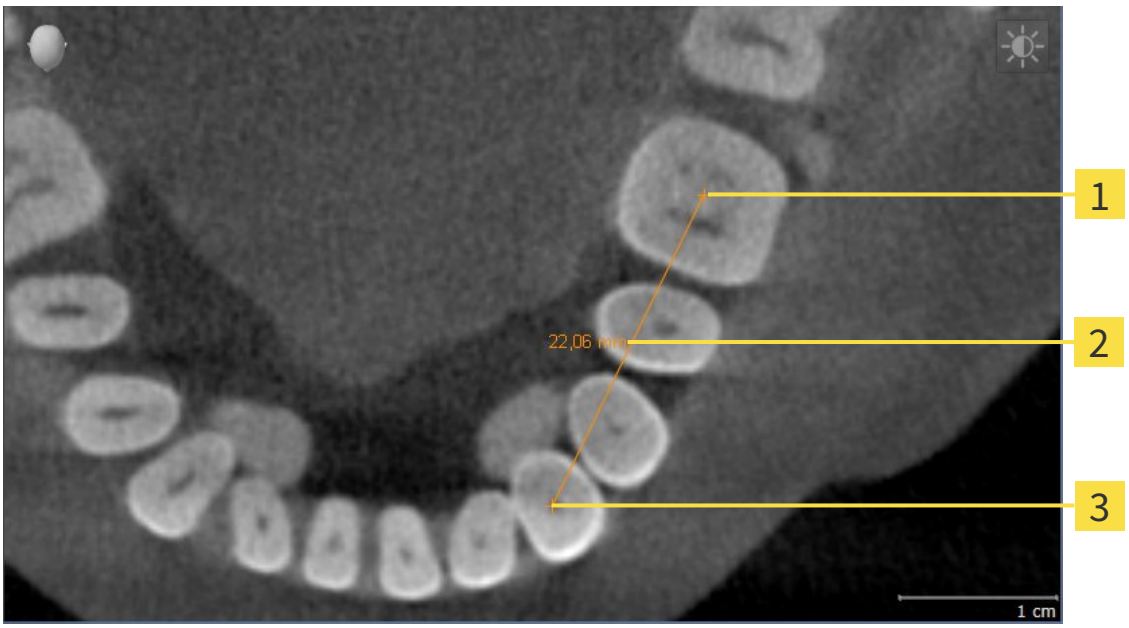
- Angle measurements

The tools to add measurements are 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 also adds it to the **Measurements** group in the **Object browser**.

The following actions are available for measurements:

- *Adding distance measurements [▶ Page 248]*
- *Adding angle measurements [▶ Page 249]*
- *Moving measurements, individual measuring points and measured values [▶ Page 251]*
- Activating, hiding and showing measurements – Information on this can be found in the section *Managing objects with the object browser [▶ Page 202]*.
- 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 204]*.

11.13.1 ADDING DISTANCE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

To add a distance measurement, proceed as follows:

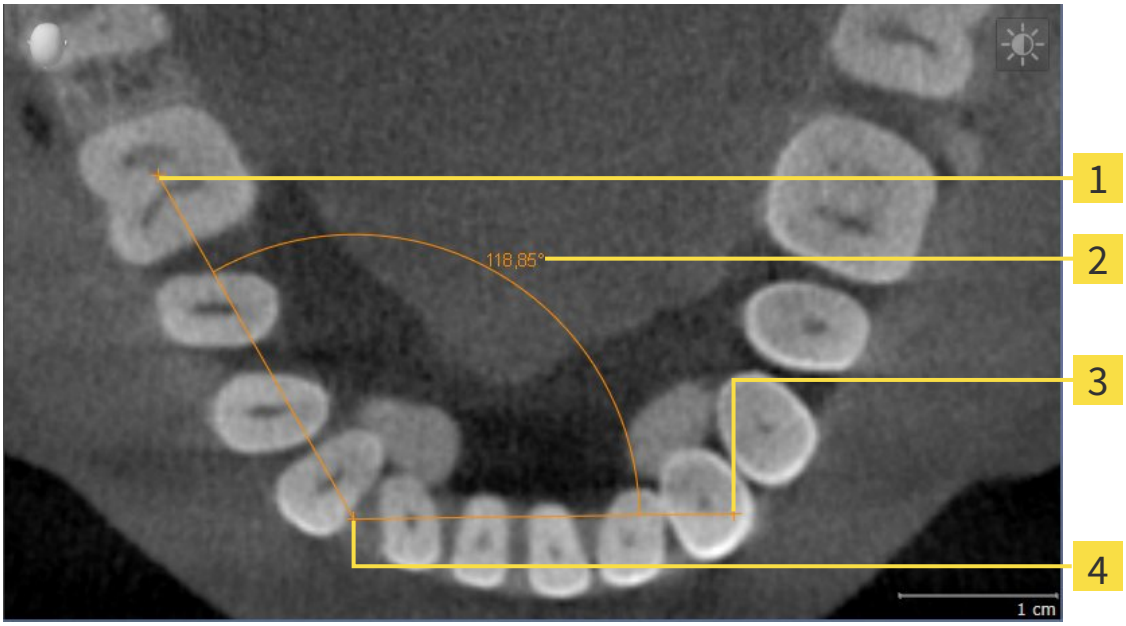
☑ The **Diagnose** workflow step is already expanded.

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**.

11.13.2 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 arm of the angle measurement by 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 arm of the angle measurement by a line from the vertex to the mouse pointer.
   ▶ SICAT Air shows the current angle between both arms of the angle measurement and in the **Object browser**.
5. Move the mouse pointer to the end point of the second arm and left-click.

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

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

11.13.3 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. Information on this can be found in the sections *Managing objects with the object browser [▶ Page 202]* and *Managing objects with the object toolbar [▶ Page 204]*.

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. Information on this can be found in the sections *Managing objects with the object browser [▶ Page 202]* and *Managing objects with the object toolbar [▶ Page 204]*.

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. Information on this can be found in the sections *Managing objects with the object browser [▶ Page 202]* and *Managing objects with the object toolbar [▶ Page 204]*.

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.

11.14 SEGMENTING THE AIRWAY

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 239]*. 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 254]*

The following steps are optional:

- *Correcting the airway segmentation [▶ Page 258]*
- *Removing non-required areas from the airway [▶ Page 260]*

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 261]*

11.14.1 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 253]*.

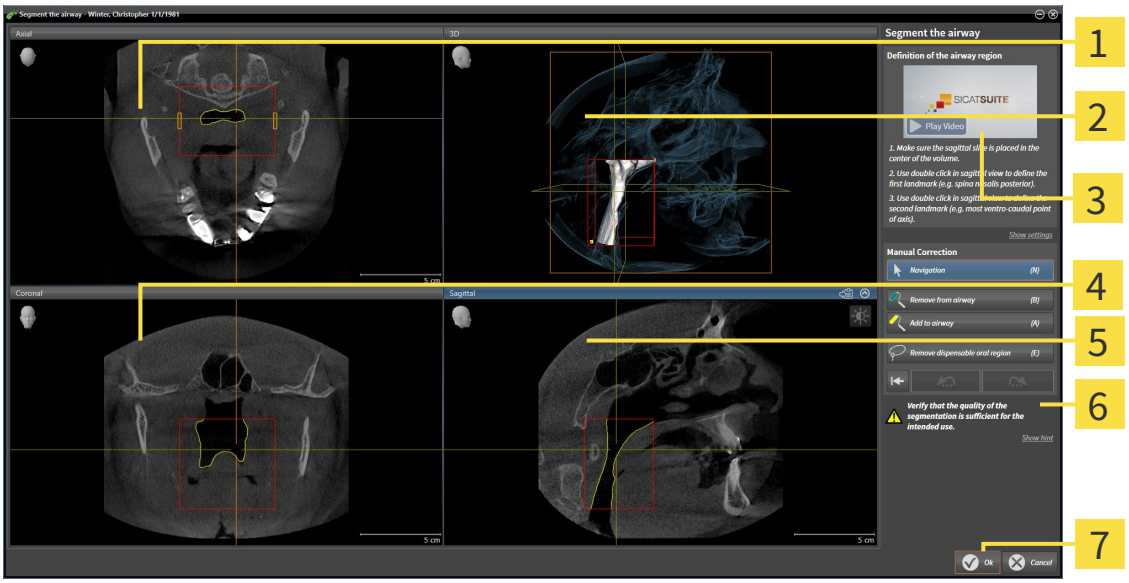
OPENING THE "SEGMENT THE AIRWAY" WINDOW

☑ 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 239]*.

☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 199]*.

■ 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

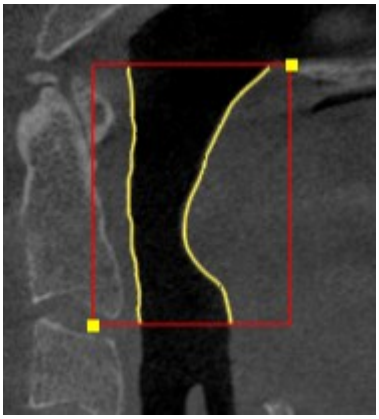
6 Tool area

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 region 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.

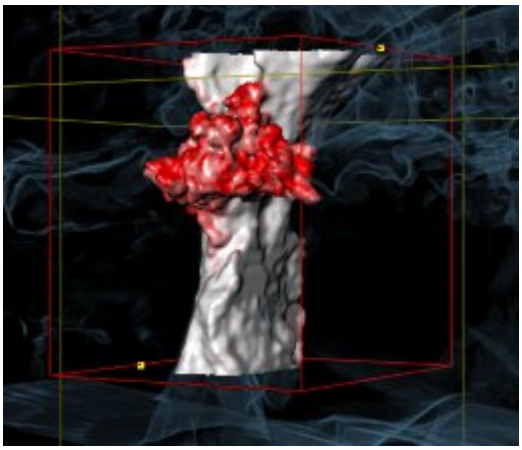
4. Double click on the position of the lower reference point of the airway in the **Sagittal** view.

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

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

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

▶ SICAT Air marks areas red in the **3D** view, which the software cannot clearly identify as a 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 region according to the position of the reference point.
6. Release the left mouse button.

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

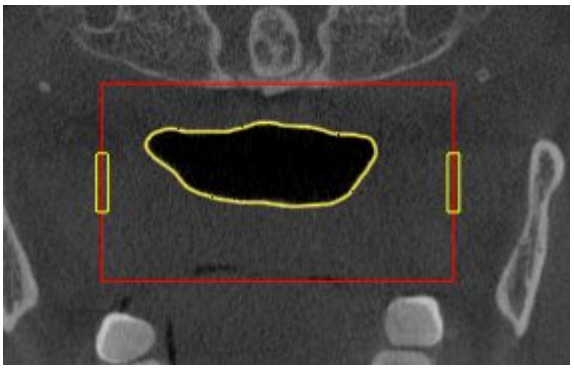
▶ SICAT Air automatically segments the airway again based on the new airway region.

▶ SICAT Air marks areas red in the **3D** view, which the software cannot clearly identify as a 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 markings 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 region according to the new lateral size.

6. Release the left mouse button.

▶ SICAT Air maintains the new position of the marker.

▶ SICAT Air automatically segments the airway again based on the new airway region.

▶ SICAT Air marks areas red in the **3D** view, which the software cannot clearly identify as a airway.

If the segmentation of the airway matches the anatomical circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 262]*.

If the segmentation of the airway does not match the anatomical circumstances, continue with the sections *Correcting the airway segmentation [▶ Page 258]* or *Removing non-required areas from the airway [▶ Page 260]*.

In addition to the described process, the following actions are available in the **Segment the airway** assistant:

- 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 221]*.
- 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 227]*.
- 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.

11.14.2 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 the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 253]*.

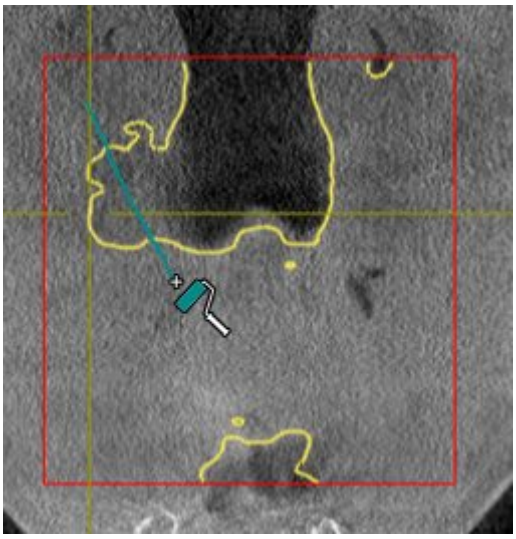
REMOVING INCORRECTLY IDENTIFIED AREAS FROM THE AIRWAY

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

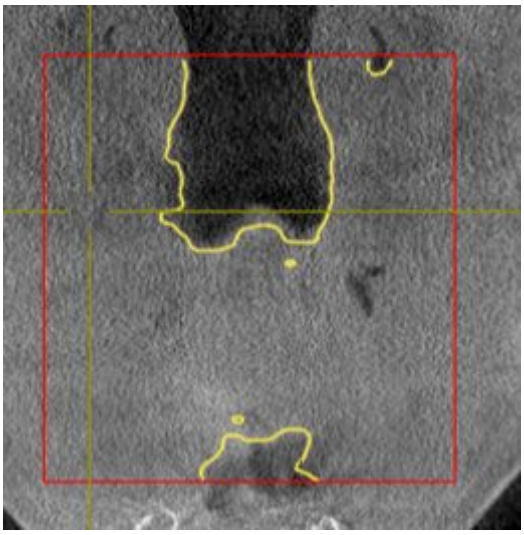
In your corrections, consider in particular the areas marked red in the **3D** view. However, these areas may not be the only areas, which SICAT Air could have incorrectly identified as part of the airway.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶ Page 254]*.

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, which 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 254]*.

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 circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 262]*.

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 261]*

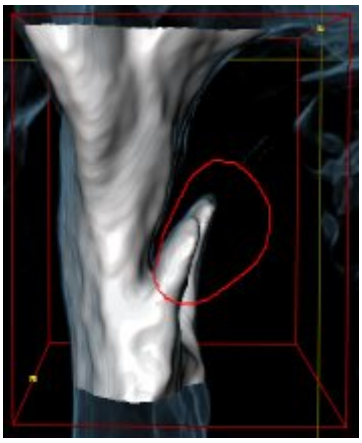
11.14.3 REMOVING NON-REQUIRED AREAS FROM THE AIRWAY

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 253]*.

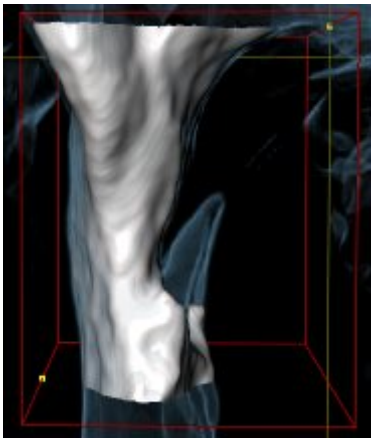
Use the **Remove dispensable oral region** tool in air-carrying areas, which are not part of the relevant airway. This includes, for example the oral cavity and protuberances.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶ Page 254]*.

1. Click the **Remove dispensable oral region** button in the **Segment the airway** window.
   ▶ The mouse pointer becomes a lasso.
2. Frame areas, which 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 circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 262]*.

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 261]*

11.14.4 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 the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 253]*.

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 *Defining the airway area [▶ Page 254]*.

1. Click the **Show settings** button in the **Segment the airway** window.
   ▶ The **Show settings** area opens.
2. Activate the **Segment the airway manually** check box.
   ▶ If available, SICAT Air will remove the 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 markings.

▶ **3D** marks areas red in the SICAT Air view, which 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 258]*
- *Removing non-required areas from the airway [▶ Page 260]*

If the segmentation of the airway matches the anatomical circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 262]*.

11.14.5 COMPLETING THE SEGMENTATION OF THE AIRWAY

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 253]*.

☑ 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 254]*.

- If the segmentation does matches the anatomic characteristics, click **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.

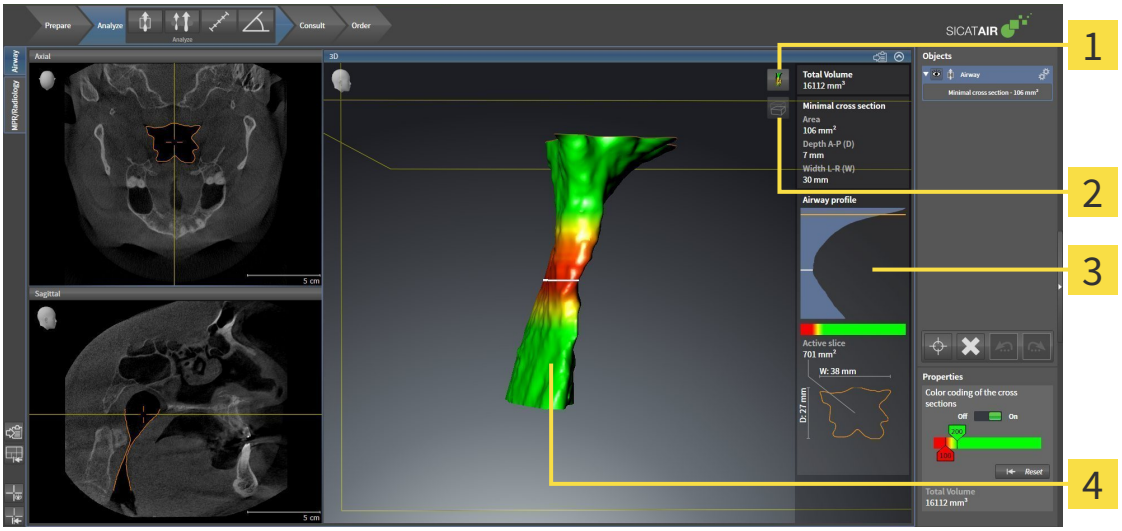
▶ In **Object bar**, SICAT Air creates a **Airway** object.

11.15 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 253]*.

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

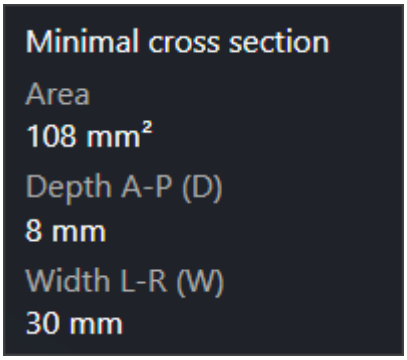
TOTAL VOLUME

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.

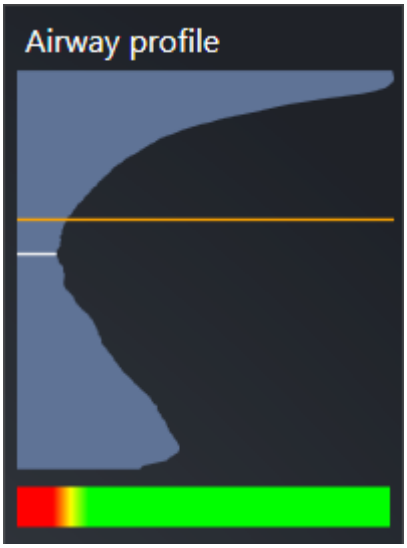
The upper part of the airway analysis area looks as follows:



You can view the following information on the segmented airway:

- **Minimal cross section**
- **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, which 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 section 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 267]*.

The color gradient beneath 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

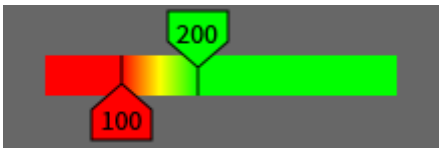
DISPLAY MODES

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 230]*.

CLIPPING MODES

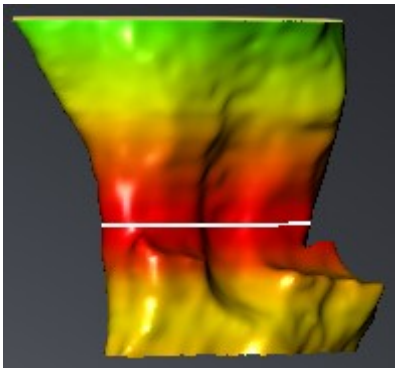
In the **3D** view, SICAT Air can hide certain areas of the volume with different clipping modes. Information on this can be found in the section *Clipping modes of the 3D view [▶ Page 233]*.

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 205]*. You should select the upper threshold so that you can regard all areas of the airway above this as healthy. You should select the lower threshold so that you can regard all areas of the airway below this as pathological. SICAT Air illustrates the area between as the 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 311]*.

11.15.1 INTERACTING WITH THE AIRWAY PROFILE

General information on the airway analysis can be found in the section *Airway analysis [▶ Page 263]*.

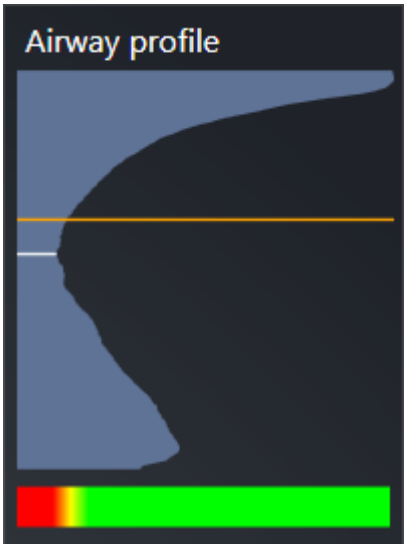
To interact with the airway profile, proceed as follows:

☑ The **Airway** workspace is already open. Information on this can be found in the section *Changing the active workspace [▶ Page 213]*.

☑ You have already segmented the airway. Information on this can be found in the section *Defining the airway area [▶ Page 254]*.

- Click on the slice you require in the airway profile.

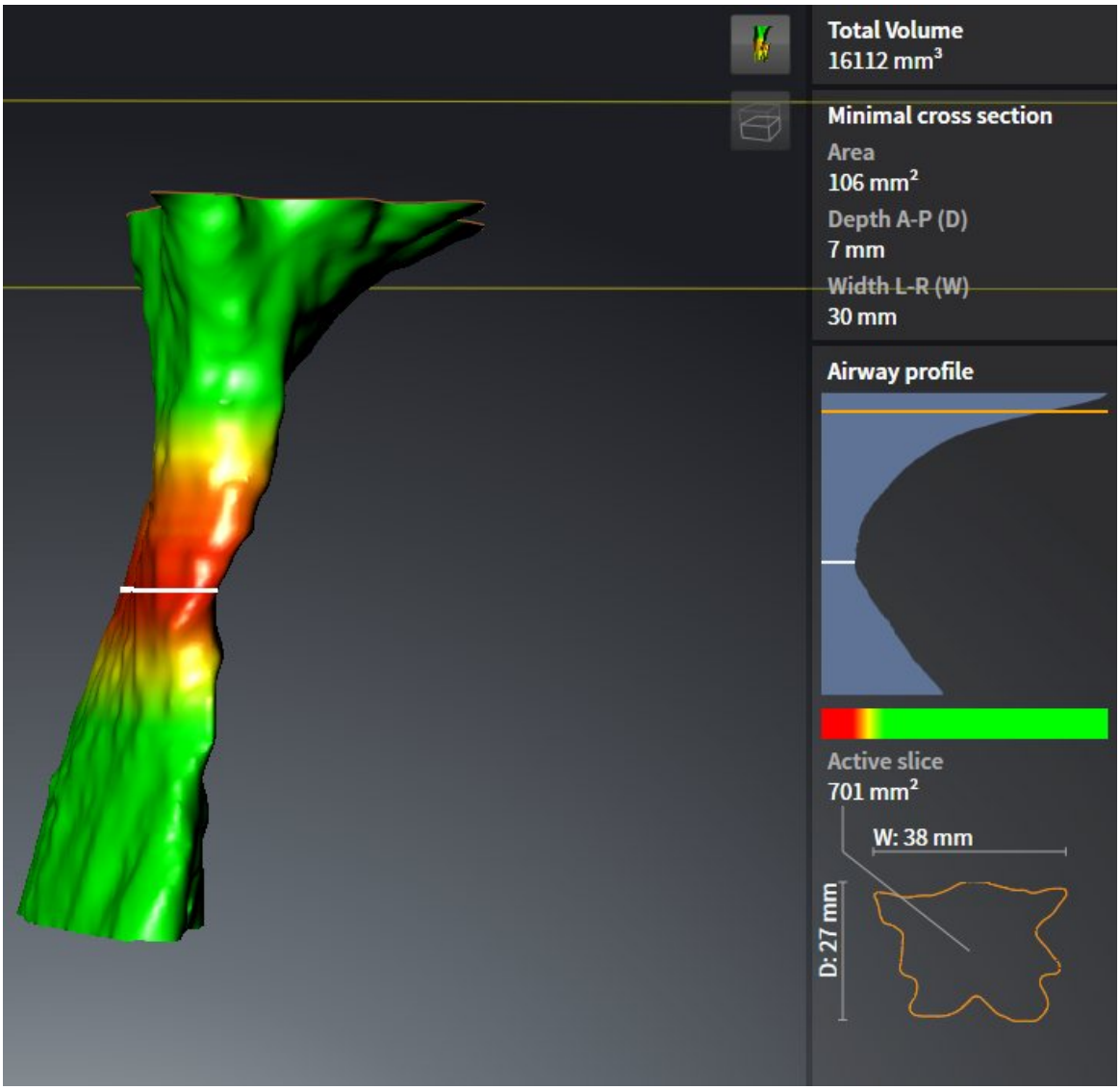
▶ In the airway profile, an orange line shows the selected slice:



▶ 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 middle of the airway in the 2D views.

11.16 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 a lower jaw protrusion to the patient through illustrations customized for the patient. In SICAT Air, the patient information is performed in two steps:

1. In your practice within SICAT Air
2. Patient information via the handout

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

The creation of the handout consists of the following steps:

- *Creating images and screenshots [▶ Page 270]*
- *Preparing handouts [▶ Page 273]*
- *Producing handouts [▶ Page 277]*

You can print handouts or save them as PDF files. You can open the PDF files in PDF viewers, which SICAT Air supports. Information on this can be found in the section *System requirements [▶ Page 11]*.

11.16.1 CREATING IMAGES AND SCREENSHOTS

NOTICE	**Before creating images and screenshots, 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 239]*. If you align the volume only after creating images and screenshots, SICAT Air removes the object and you must carry out segmentation once more.**

General information on informing the patient can be found in the section *Patient information [▶ Page 269]*.

General information, on managing images and screenshots can be found under *SICAT Air objects [▶ Page 205]*.

There are two tools:

- Draw arrows
- Draw circles

DRAW ARROWS

To draw an arrow, 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 239]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 199]*.

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 position you require for the tip of the arrow.
   ▶ SICAT Air shows an arrow in the view.
   ▶ The end of the arrow will now match the position of the mouse pointer.
4. Move the mouse pointer to the desired position for the end of the arrow and release the left button.
   ▶ SICAT Air shows the finished arrow in the view.
   ▶ If not yet available, SICAT Air will create structures required for the **Image** object in the **Object browser**. Information on this can be found in the section *SICAT Air objects [▶ Page 205]*.
   ▶ The image will be available in the **Generate handout** window.
5. Click on the **Draw Arrow** icon.

▶ SICAT Air closes the mode to draw arrows.

DRAW 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 239]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 199]*.

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 position you require for the middle of the circle.
   ▶ 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.
4. 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 structures required for the **Image** object in the **Object browser**. Information on this can be found in the section *SICAT Air objects [▶ Page 205]*.
   ▶ The image will be available in the **Generate handout** window.
5. 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 using a drawing tool by clicking on a point outside the view in question or by pressing the **ESC** key.

CONFIGURING DRAWING TOOLS

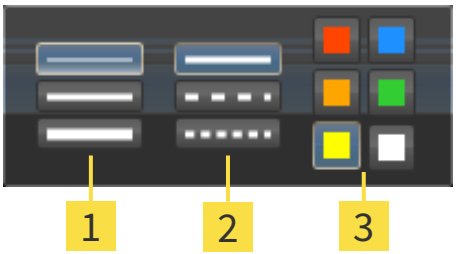
You can configure the **Draw Arrow** drawing tool or **Draw Circle** drawing tool separately. Changes to the settings will only affect drawing objects created after that point.

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 199]*.

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 in 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:

- Click on the **Copy screenshot to clipboard (Ctrl+C)** icon in the **View toolbar** of the view you require.

▶ SICAT Air will create structures required for the **Screenshot** object in the **Object browser** and activate the object. Information on this can be found in the section *SICAT Air objects [▶ Page 205]*.

▶ The screenshot will be available in the **Generate handout** window.

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

Continue with the section *Preparing handouts [▶ Page 273]*.

11.16.2 PREPARING HANDOUTS

General information on informing the patient can be found in the section *Patient information [▶ Page 269]*.

The following actions are available for preparing handouts:

- Opening the **Generate handout** window
- Preparing elements
- Changing settings of the handout

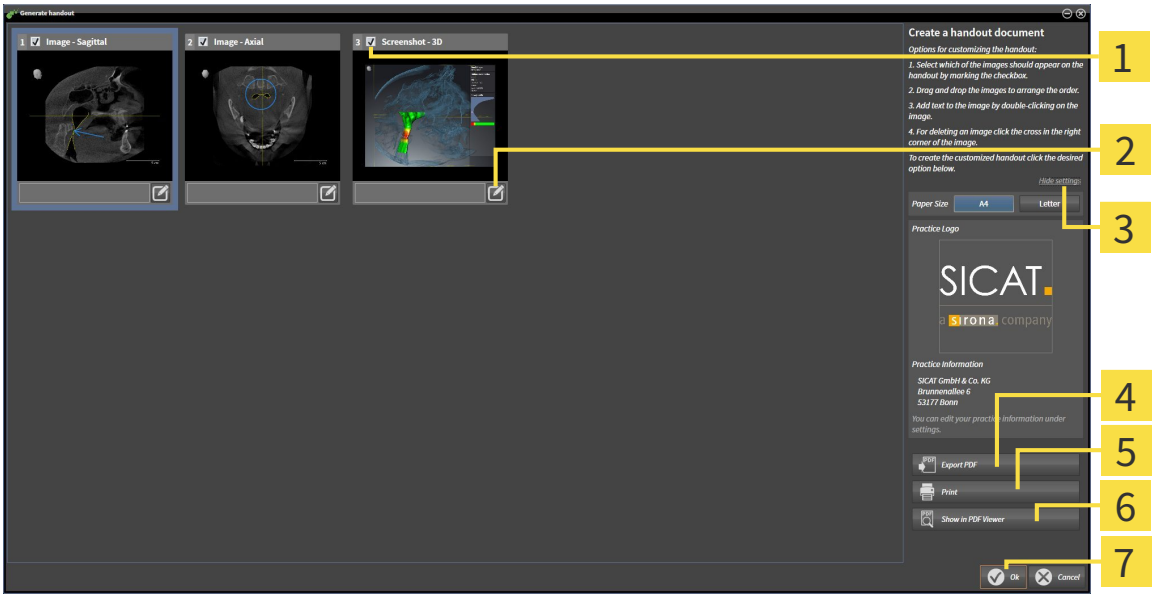
OPENING THE "GENERATE HANDOUT" WINDOW

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

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 199]*.

- Click on the **Generate handout** icon.

▶ The **Generate handout** window opens:



1	Check box to activate and deactivate screenshots	5	**Print** button
2	**Edit image description** icon	6	**Show in PDF Viewer** button
3	**Settings**	7	**OK** button
4	**Export PDF** button		

PREPARING ELEMENTS FOR HANDOUTS

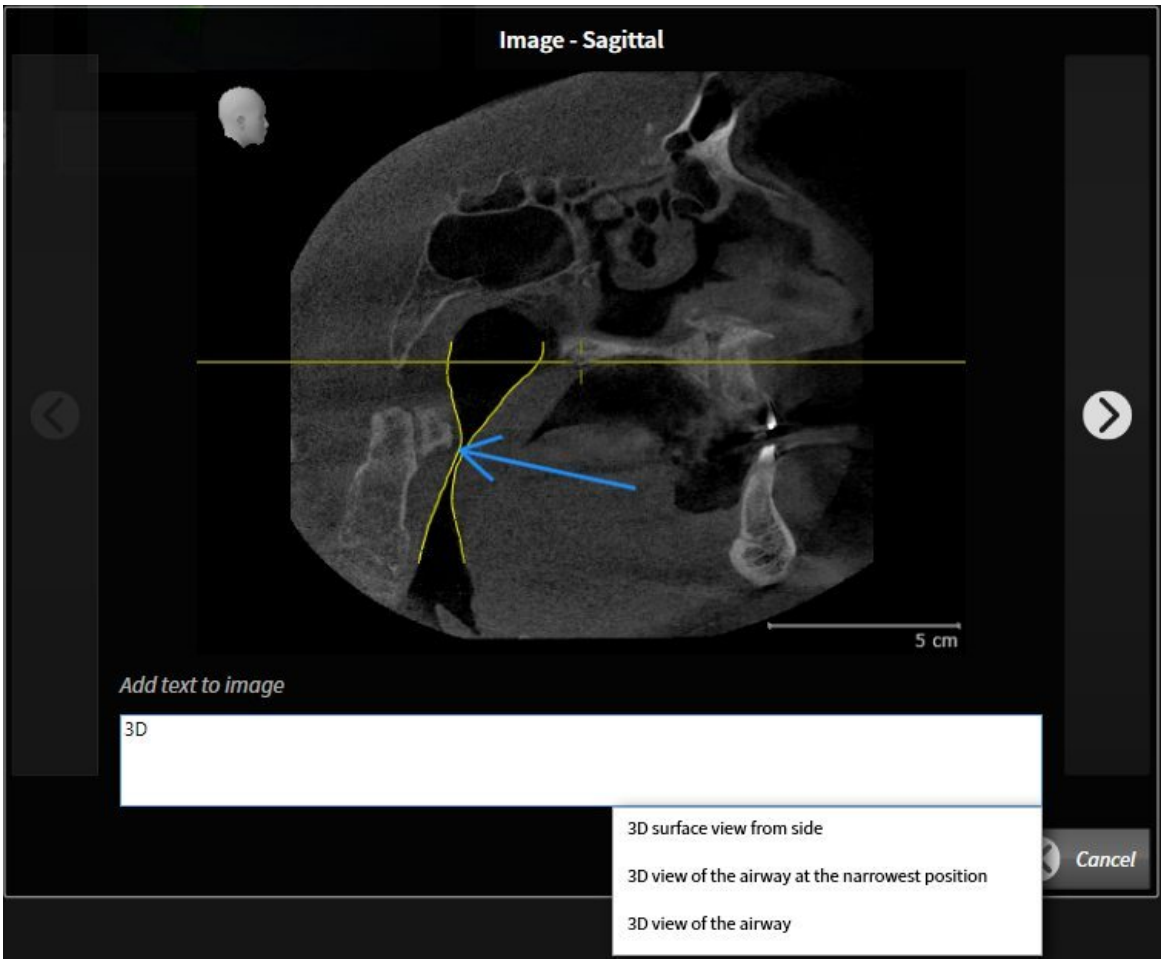
The **Generate handout** window shows screenshots from **Image** objects, screenshots from **Screenshot** objects. Information on this can be found in the section *Creating images and screenshots [▶ Page 270]*.

If you want to prepare elements for handouts, proceed as follows:

☑ The **Generate handout** window is already open.

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 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:



3. 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.

4. Click on the text block you require.
   ▶ SICAT Air adds the text block to the text input field.

5. If the text you require is not available as a text block, enter the new text.

6. 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.

7. If you wish to change the order of elements in 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 sections *Managing objects with the object toolbar [▶ Page 204]* and *SICAT Air objects [▶ Page 205]*.

CHANGING SETTINGS OF THE HANDOUT

☑ The **Generate handout** window is already open.

1. Click **Show settings**.
2. The **Settings** area expands:

3. Select the paper size you require in the **Paper Size** area.

4. Click **Hide settings**.

▶ The **Settings** area closes:

▶ SICAT Air saves your changes.

Continue with the section *Producing handouts [▶ Page 277]*.

SICAT Air takes the practice logo and practice information text from the general settings. Information on this can be found in the section *Viewing practice information [▶ Page 308]*.

11.16.3 PRODUCING HANDOUTS

The following actions are available for producing handouts:

- Saving a handout as a PDF file
- Printing handouts
- Displaying handouts in the PDF viewer

SAVING A HANDOUT AS A PDF FILE

☑ The **Generate handout** window is already open.

1. Click on the **Export PDF** button.
   ▶ 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 **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 11]*.

☑ The **Generate handout** 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.

DISPLAYING HANDOUTS IN THE PDF VIEWER

☑ A standard PDF viewer is installed on your computer.

☑ The **Generate handout** window is already open.

- Click on the **Show in PDF Viewer** button.

▶ The standard PDF viewer of your computer will open the handout.

11.17 DATA EXPORT

You can export the currently open patient data and volume data.

This is the study, which 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 279]*.
- Export the desired data. Information on this is available in the section *Exporting data [▶ Page 280]*.

11.17.1 OPENING THE “FORWARDING 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.

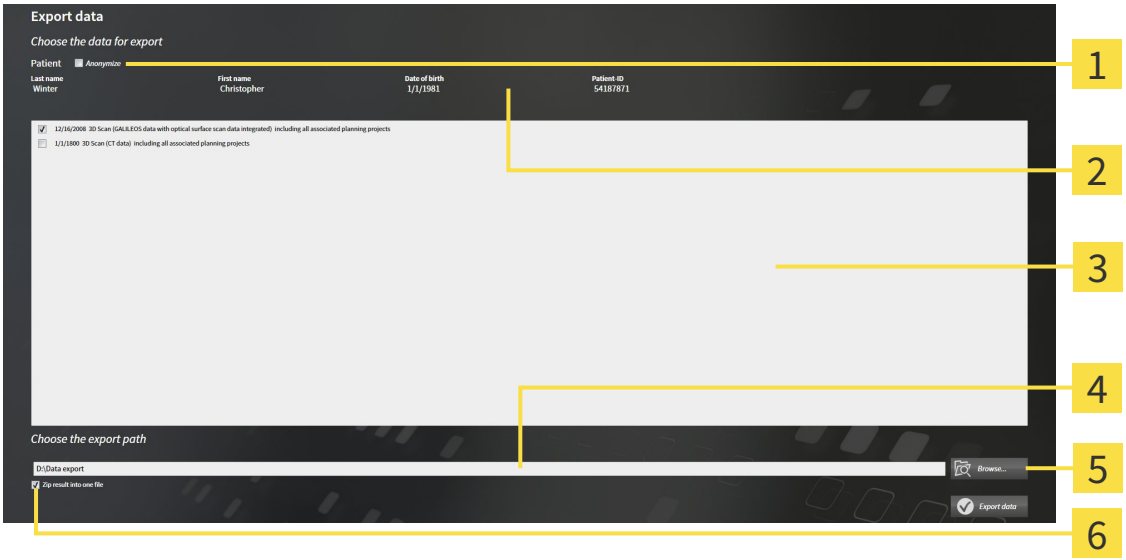
SICAT Suite exports only the selected 3D X-ray scans and planning projects for the active patient record.

Continue with the section *Exporting data [▶ Page 280]*.

11.17.2 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 279]*.



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 to the file you require into 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.

11.18 ORDERING PROCESS

To order a therapeutic appliance, 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 282]*.
- 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 294]*.
- Complete the order either directly on the computer, on which SICAT Suite is running, or on another computer with an active Internet connection. Information on this can be found in the sections *Completing an order using an active Internet connection [▶ Page 295]* or *Completing an order without an active Internet connection [▶ Page 299]*.

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.

11.18.1 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.

General information on the ordering process is found in the section *Ordering process [▶ Page 281]*.

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

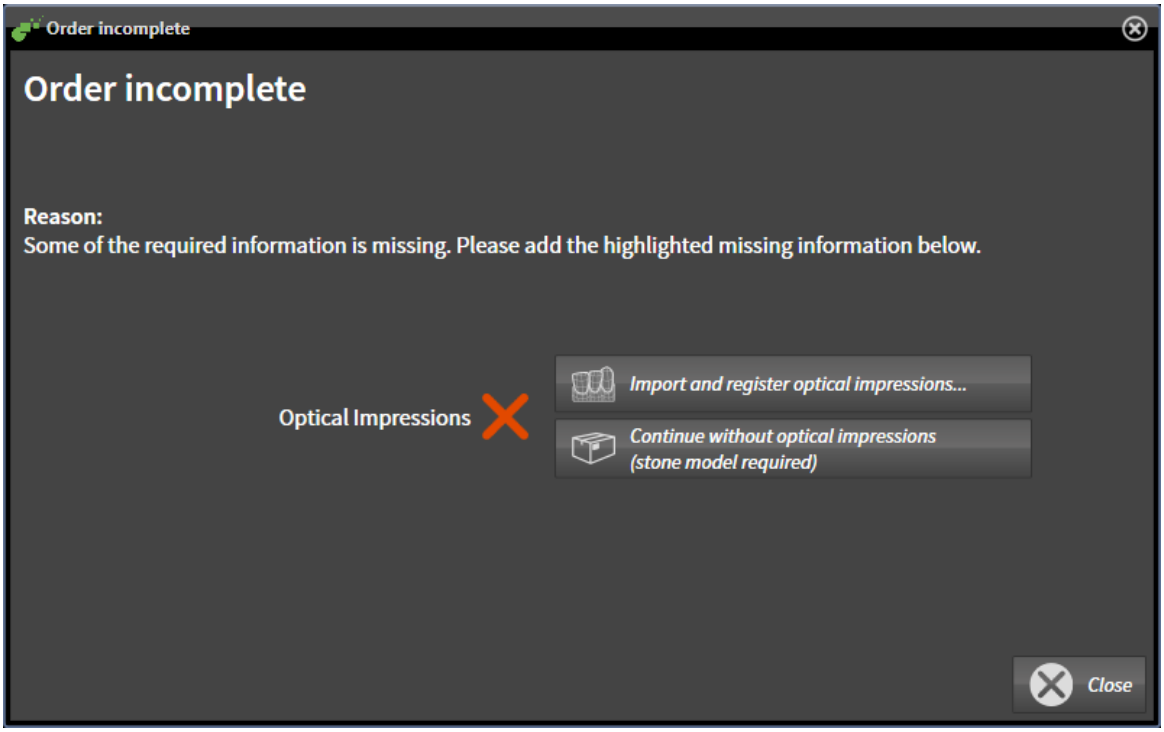
IF YOU HAVE NOT YET ADDED ANY OPTICAL IMPRESSIONS

☑ 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 199]*.

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 286]*.

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

ℹ	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. Information on this can be found in the section *Adjusting the panoramic region [▶ Page 244]*.

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.

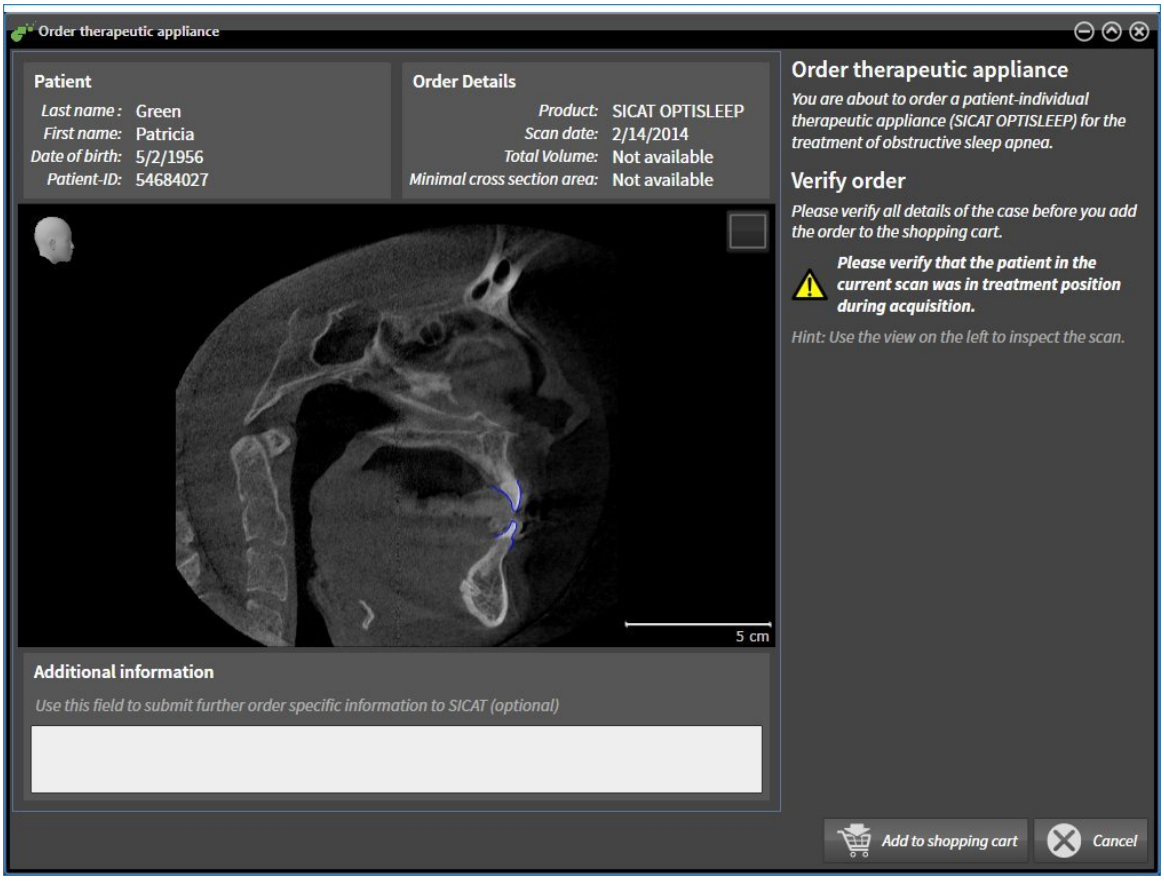
☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 199]*.

- 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** area and **Order Details** area that 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.

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

▶ The planning data you require for therapeutic appliances are located in the SICAT 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 294]*.

11.18.2 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 mandible (requires a license)

The following tools are available for optical impressions:

- *Importing and registering optical impressions [▶ Page 286]*
- *Re-using optical impressions from other SICAT applications [▶ Page 291]*
- Activating, hiding and showing optical impressions – Information on this can be found in the section *Managing objects with the object browser [▶ Page 202]*.
- Focusing on optical impressions and removing optical impressions – Information on this can be found in the section *Managing objects with the object toolbar [▶ Page 204]*.

11.18.3 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.

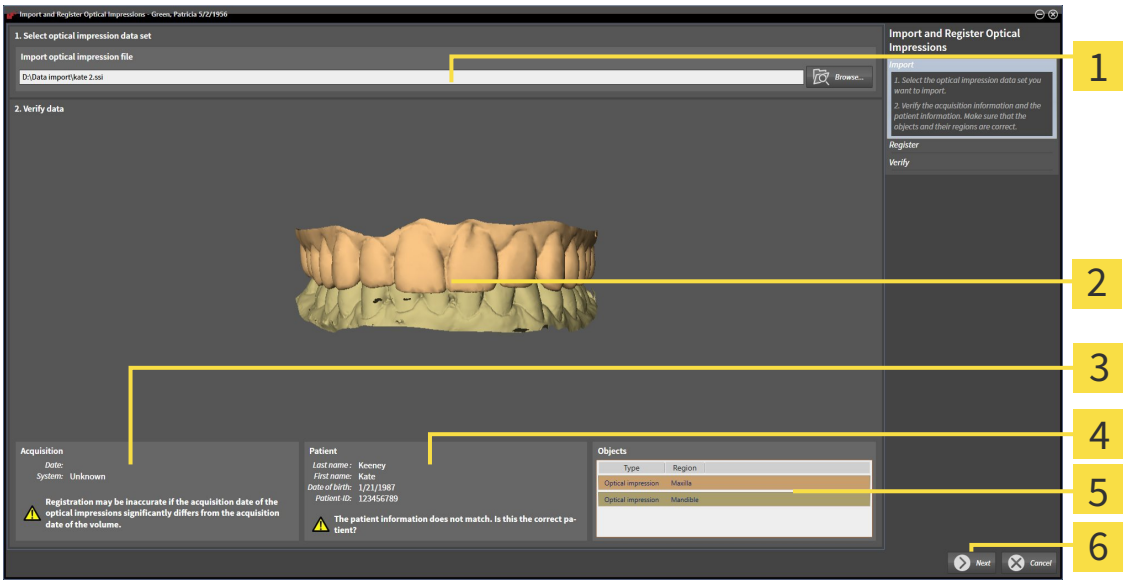
You can use the **Inspection Window** to check whether an optical impression is precisely aligned to the X-ray data. You can move the **Inspection Window** and scroll through the slices in the **Inspection Window**.

General information on the optical impressions can be found in the section *Optical impressions [▶ Page 285]*.

To import and register optical impressions, proceed as follows:

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

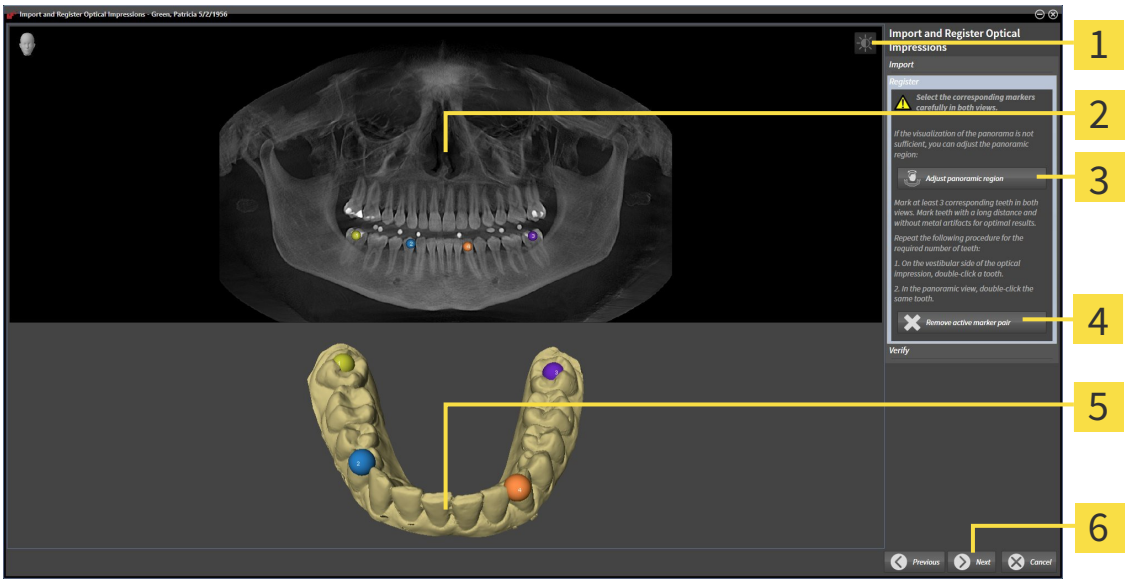
1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** assistant opens with the **Import** step.
2. Click on the **Browse** button.
   ▶ The **Open Optical Impression File** window opens.
3. Switch to the file you require in the **Open Optical Impression File** window, select the file and click on **Open**.
   ▶ The **Open Optical Impression File** window closes.
   ▶ SICAT Air imports the selected file with optical impressions:



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. 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 **Next**.

▶ 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

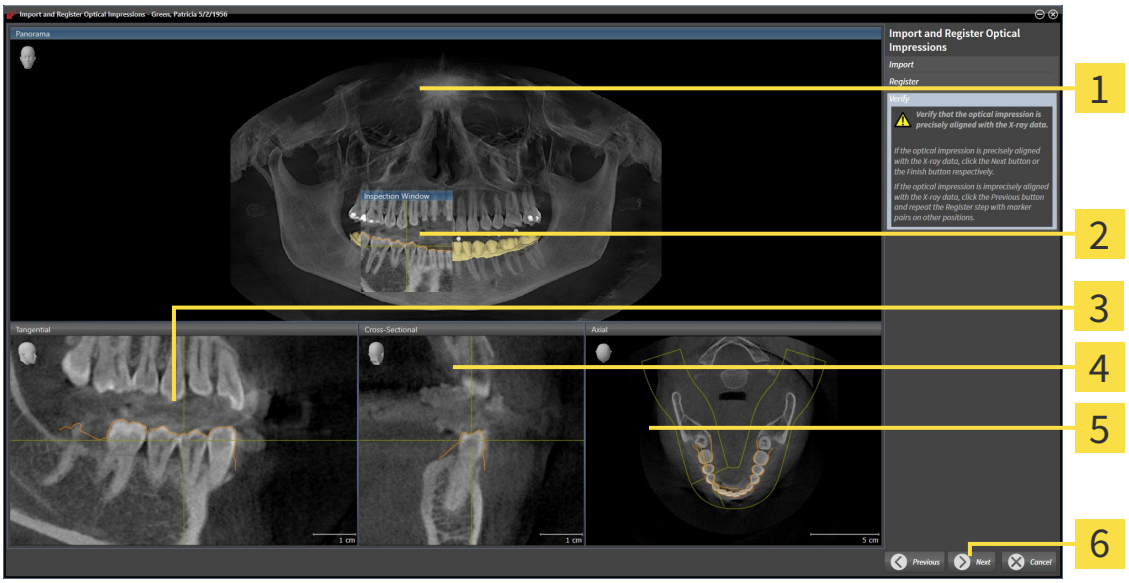
6. For the first optical impression, double click the same teeth both in the **Panorama** view and on the vestibular side of the optical impression in the **3D** view. Make sure that there is a large distance between individual teeth and mark only teeth without metal artifacts. Repeat this step until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

7. 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

8. 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.

9. If the optical impression is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat step **Register** with marker pairs in different positions if necessary.

10. 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:

11. For the second optical impression, double click the same teeth 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.

12. 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:

13. 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.

14. If the optical impression is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat step **Register** with marker pairs in different positions if necessary. You can improve the accuracy of the registration by marking up to five teeth.

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

▶ The **Import and Register Optical Impressions** assistant closes.

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

▶ SICAT Air displays the optical impressions registered.

In addition to the described process, the following actions are available in the **Import and Register Optical Impressions** assistant:

- 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 221]*.
- 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 244]*.
- 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**.

11.18.4 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.

General information on the optical impressions can be found in the section *Optical impressions [▶ Page 285]*.

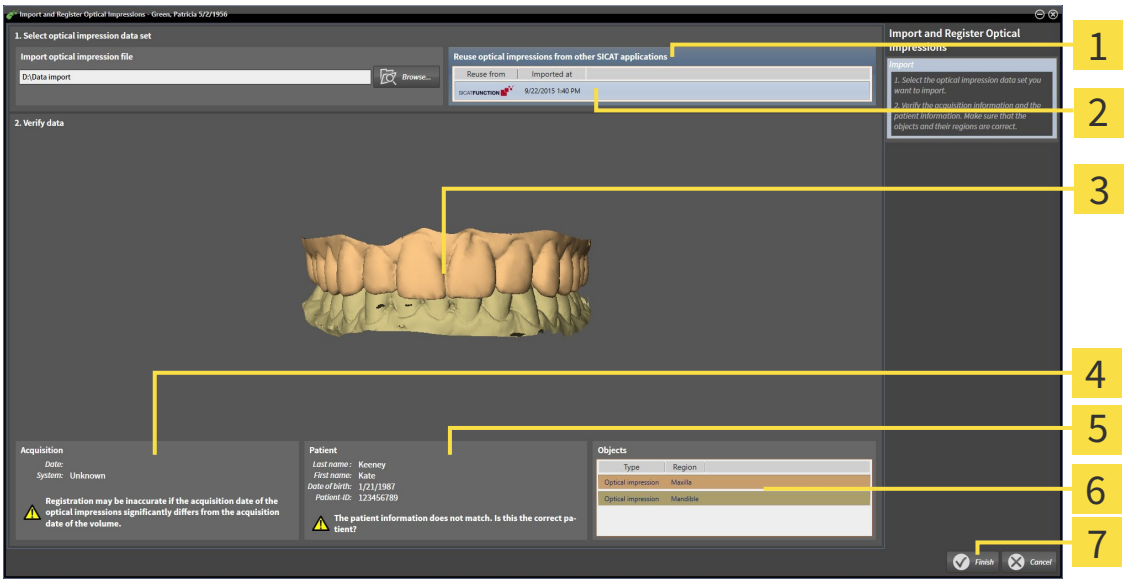
To re-use optical impressions from another SICAT application, proceed as follows:

☑ 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** assistant opens with the **Import** step.
2. Double-click on the row with the optical impressions you require 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	5	Patient information
2	List of optical impressions from other SICAT applications	6	List of objects
3	**3D** view of optical impressions	7	**Finish** button
4	Scan information		

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** assistant 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**.

11.18.5 OPENING THE SHOPPING CART

The **Shopping cart** icon shows the number of elements in the shopping cart.

☑ The shopping cart contains at least one therapeutic appliance.

- If the shopping cart is not yet open, click the button marked **Shopping cart** in the **Navigation bar**.

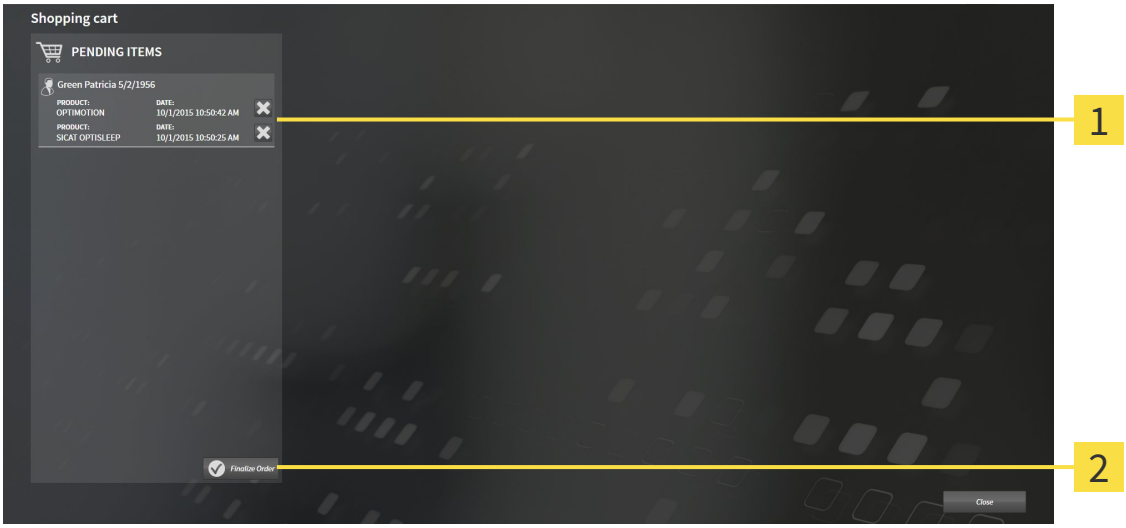
▶ The **Shopping cart** window opens.

Continue with the following action:

- *Checking the shopping cart and completing the order [▶ Page 294]*

11.18.6 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 293]*.



1 **PENDING ITEMS** list

2 **Finalize Order** button

1. Check in the **Shopping cart** window whether the desired therapeutic appliances 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 295]*
- *Completing an order without an active Internet connection [▶ Page 299]*

11.18.7 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 therapeutic appliances contained in the order, along with the corresponding prices, grouped into patients.

2. Follow the instructions provided under *Performing ordering steps in the SICAT Portal [▶ Page 296]*.

▶ 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 297]*.

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.

11.18.8 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 therapeutic appliances are included.
3. If necessary, remove the patient, along with all corresponding therapeutic appliances, from the order summary. When completing the order, SICAT Suite will adopt changes that you have made in the SICAT Portal.
4. Check whether the billing address and delivery address match. 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 therapeutic appliances.

11.18.9 THE SICAT WEBCONNECTOR

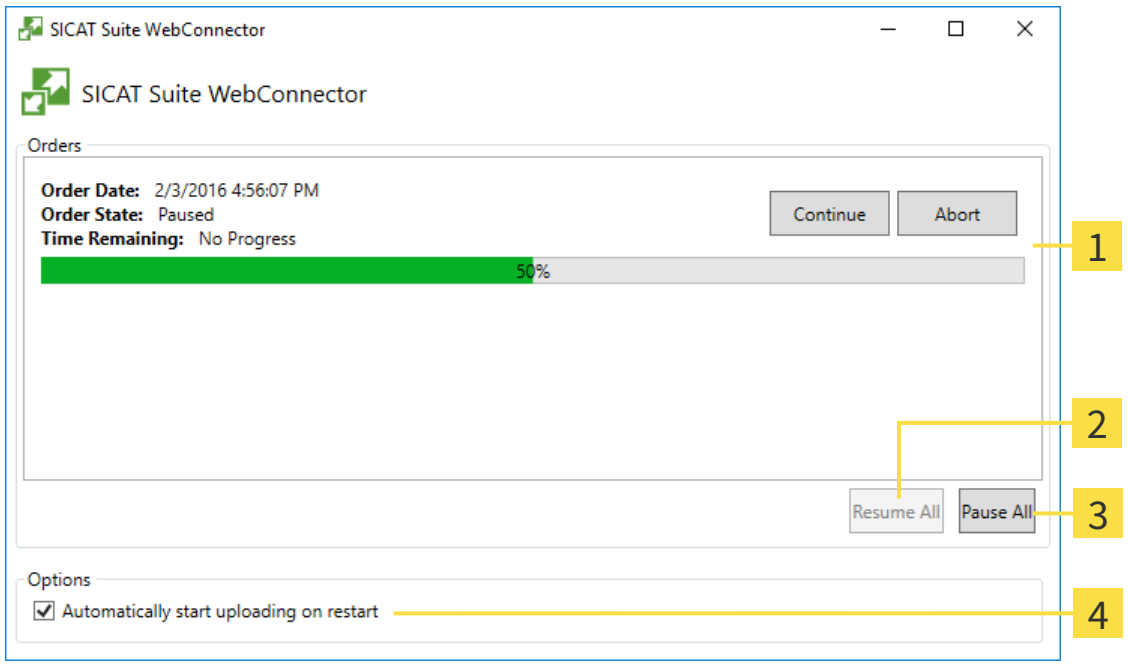
> In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

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 waiting list for the orders.

PAUSING AND CONTINUING THE UPLOAD

You can pause the upload process. This may make sense, for example, if you 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.

11.18.10 COMPLETING AN ORDER WITHOUT AN ACTIVE INTERNET CONNECTION

If the computer, on which SICAT Suite is running, has no active Internet connection, the transfer will take place using an XML file and a ZIP archive, which you can upload using a web browser on another computer with an active Internet connection. In this case, SICAT Suite will export all therapeutic appliances in the shopping cart at once and create one sub-folder per patient. In the SICAT Portal you can then upload one therapeutic appliance per patient. The transfer will be encrypted.

To complete the order without an active Internet connection, proceed as follows:

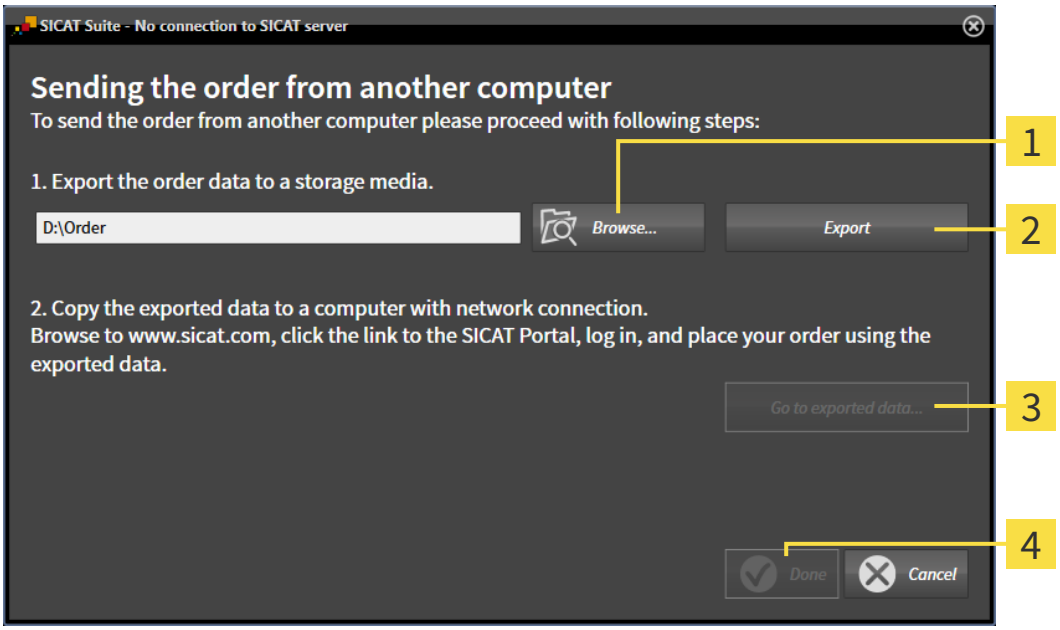
☑ The computer, on which SICAT Suite is running, does not have an active Internet connection.

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

1 **Send from another computer** button

1. Click on the **Send 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.

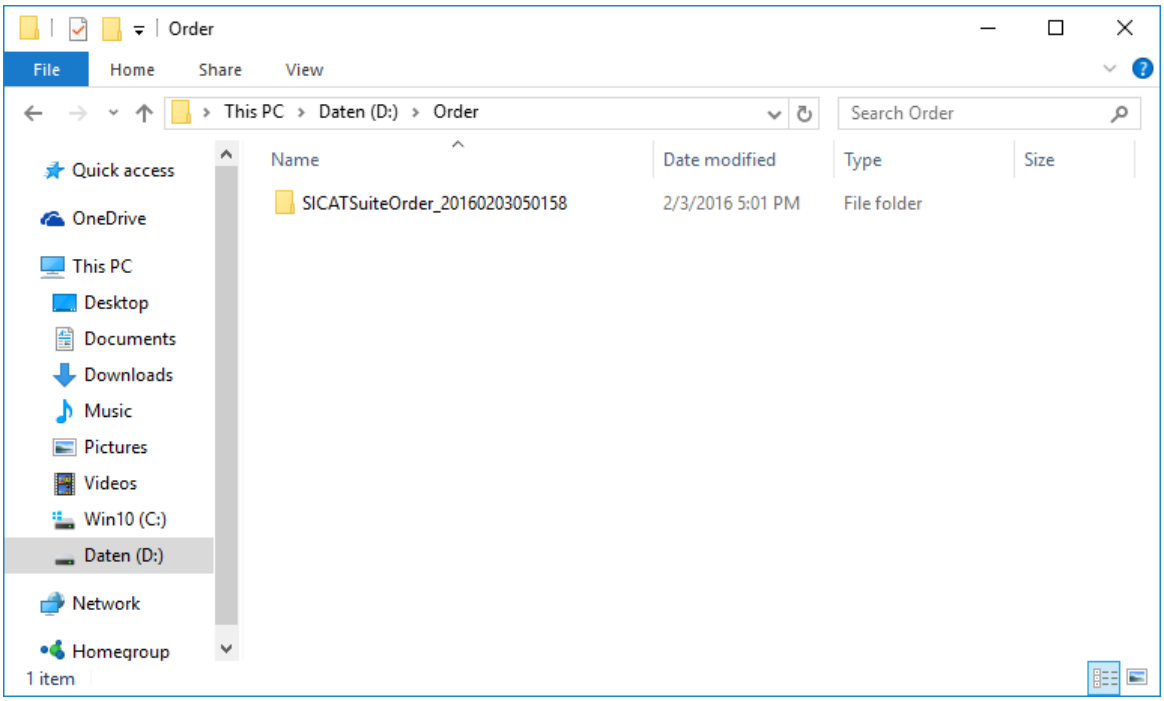
3. Select an existing directory or create a new directory and click on **OK**. Please note that the path to the directory must not be longer than 160 characters.

4. Click on the **Export** button.

   ▶ SICAT Suite exports all data required for the order of the contents of the shopping cart to the stated 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, which contains 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 therapeutic appliances 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 order summary opens and shows the patients contained therein, the corresponding therapeutic appliances and the price.

13. Follow the instructions provided under *Performing ordering steps in the SICAT Portal [▶ Page 296]*.

14. Click on the link to upload the planning data for the therapeutic appliance.

15. Select the corresponding splint 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 splint 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.

11.19 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 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 *Viewing or changing general settings [▶ Page 304]*.
- **Licenses** – Information on this can be found in the section *Licenses [▶ Page 191]*.
- **Practice** – Viewing 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 *Viewing practice information [▶ Page 308]*.
- **Visualization** – Changing general visualization settings. Information on this can be found in the section *Changing visualization settings [▶ Page 309]*.
- **SICAT Air** – Changing application-specific settings of SICAT Air. Information on this can be found in the section *Changing SICAT Air settings [▶ Page 311]*.

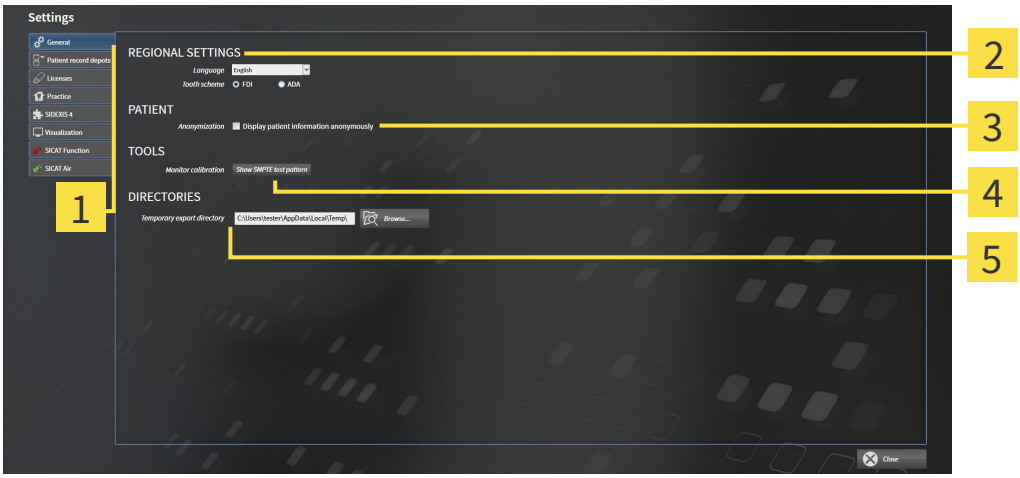
11.19.1 VIEWING OR CHANGING GENERAL SETTINGS

> 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 adopts 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** section under **Tooth scheme**.
- You can view the condition of the **Display patient information anonymously** check box in the **PATIENT** section. If the check box is activated, SICAT Air will adopt the anonymized patient data from SIDEXIS.

You can change the following settings:

- In the **DIRECTORIES** section you can enter a folder in the **Temporary export directory** field, in which SICAT Suite will save order information. You must have full access to this folder.

After viewing 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 306*].

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.

11.19.2 MONITOR CALIBRATION WITH THE SMPTE TEST IMAGE

CAUTION

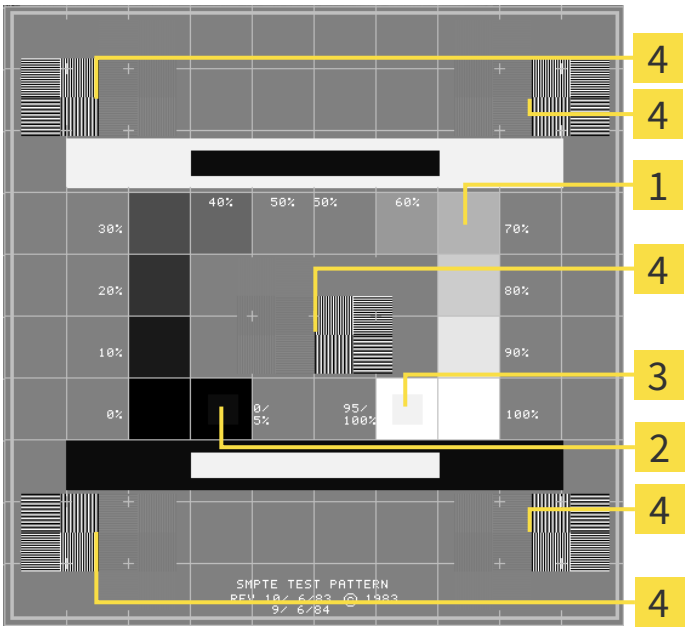
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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.

11.19.3 VIEWING PRACTICE INFORMATION

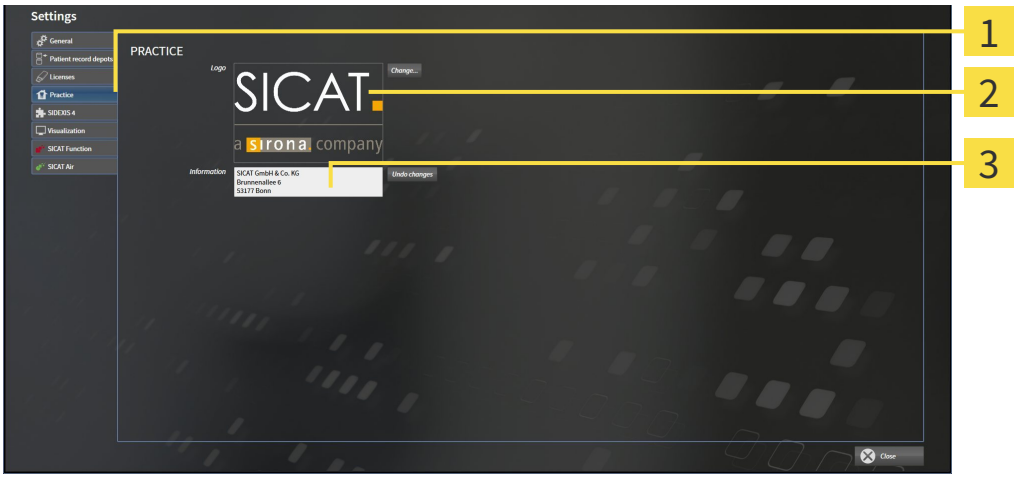
As a SIDEXIS XG plug-in, SICAT Suite adopts the practice logo and information text from SIDEXIS XG. Therefore, you can simply view the values of these settings in the SICAT Suite settings. Please make the desired changes to these settings in SIDEXIS XG.

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.

11.19.4 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

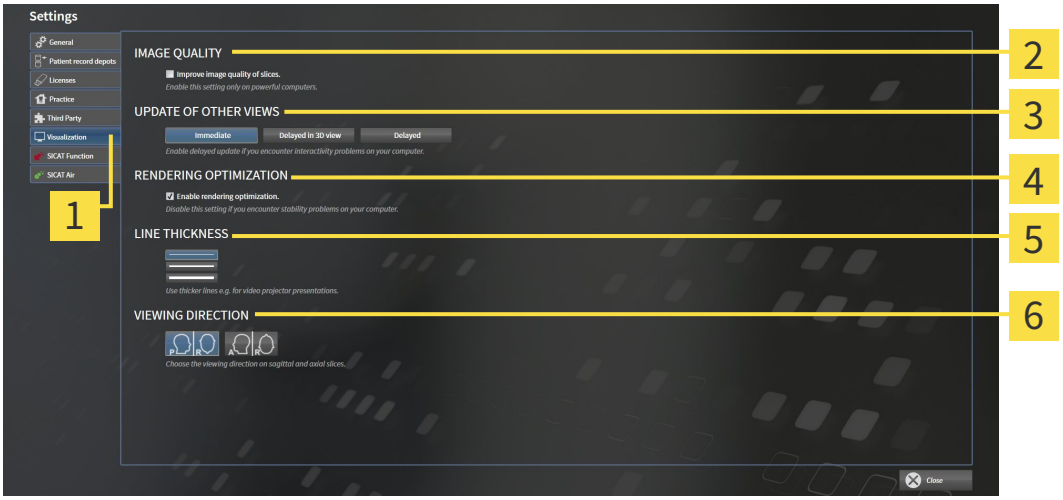
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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	4	**RENDERING OPTIMIZATION** area
2	**IMAGE QUALITY** area	5	**LINE THICKNESS** area
3	**UPDATE OF OTHER VIEWS** area	6	**VIEWING DIRECTION** area

3. Select the desired visualization settings.

▶ SICAT Air adopts the amended settings.

▶ SICAT Air saves the settings in your user profile.

The settings are:

- **Improve image quality of slices** – Improves the display 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 at the cost of the delayed updating of other views. Activate delayed updates only if you detect interactivity problems on your computer.
- **Enable rendering optimization** – Deactivate this setting only if you detect stability 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.

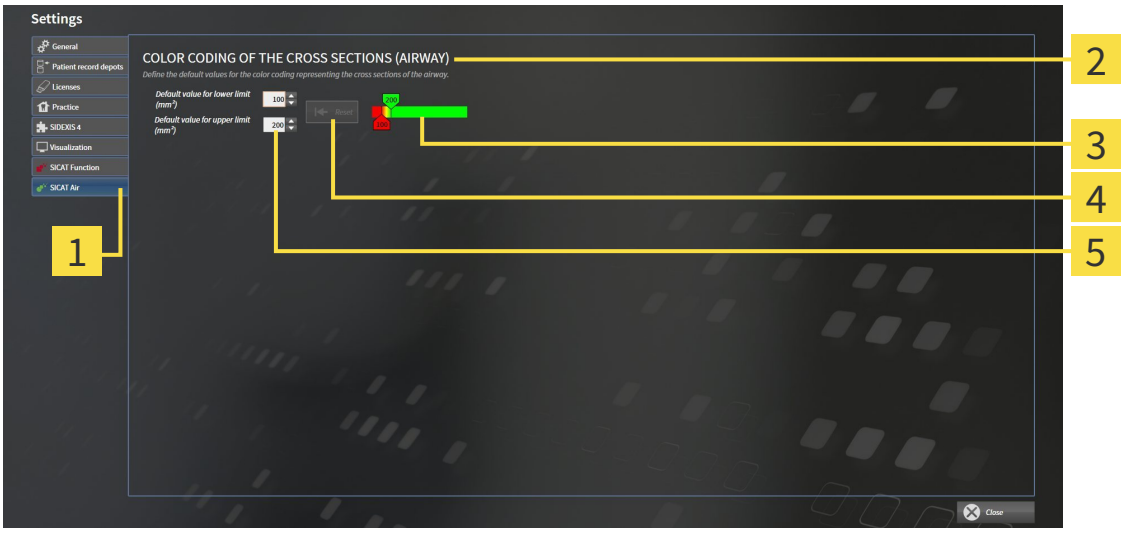
11.19.5 CHANGING SICAT AIR SETTINGS

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

3. Select the desired standard values for the color coding.

▶ SICAT Air saves the default values in your user profile.

▶ SICAT Air uses the altered default values when you first open a 3D X-ray scan and segment the airway.

▶ SICAT Air uses the altered default values if you want to reset the values of a **Airway** object.

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.

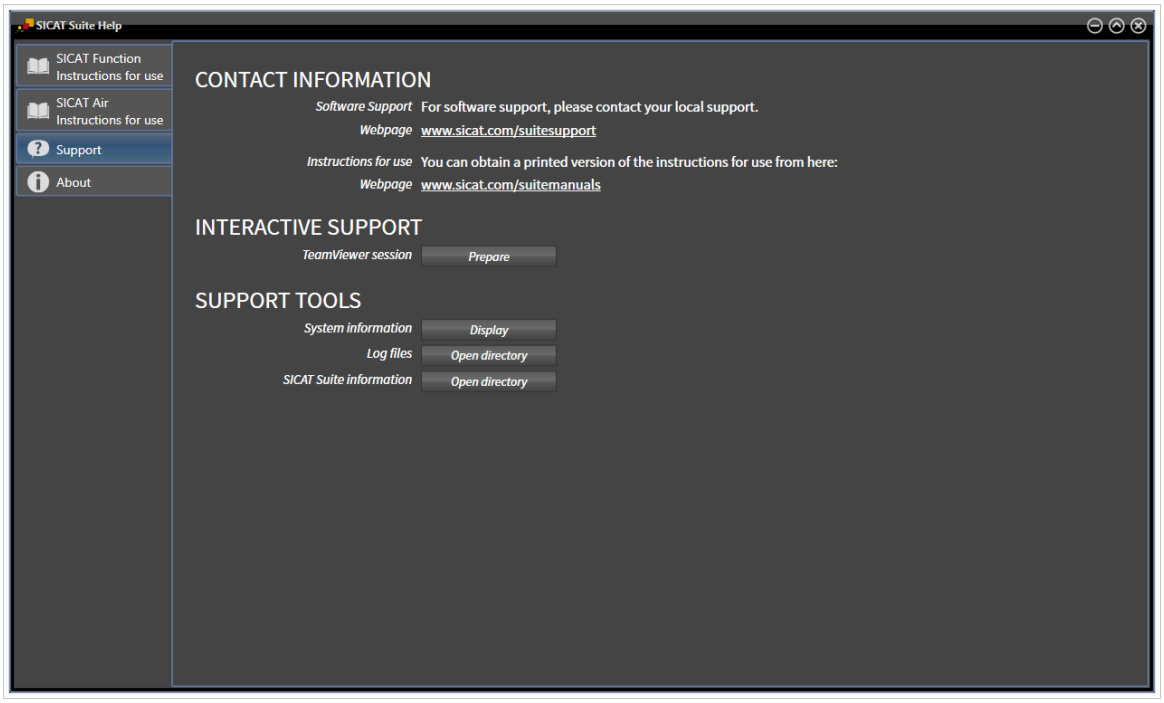
11.20 SUPPORT

SICAT offers you the following support options:

- Online help
- Contact information
- Information on the installed SICAT Suite and SICAT applications

Continue with the following action:

- *Opening the support options [▶ Page 313]*



11.20.1 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:

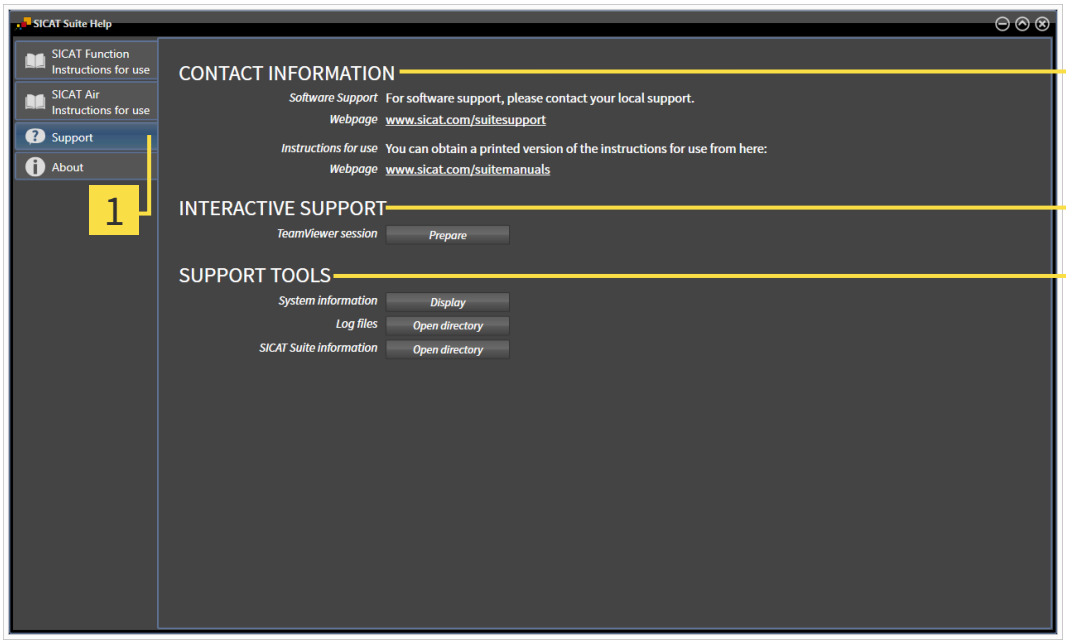
- **Instructions for use** - Information on this can be found in the section *Opening the online help [▶ Page 190]*.

- **Support** – Information on this can be found in the section *Contact information and support tools [▶ Page 314]*.

- **About** – Information on this can be found in the section *Info [▶ Page 315]*.

11.20.2 CONTACT INFORMATION AND SUPPORT TOOLS

The **Support** window contains all of the relevant information and tools so that SICAT Support can help you:



1 **Support** tab

2 **CONTACT INFORMATION** area

3 **INTERACTIVE SUPPORT** area

4 **SUPPORT TOOLS** area

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.

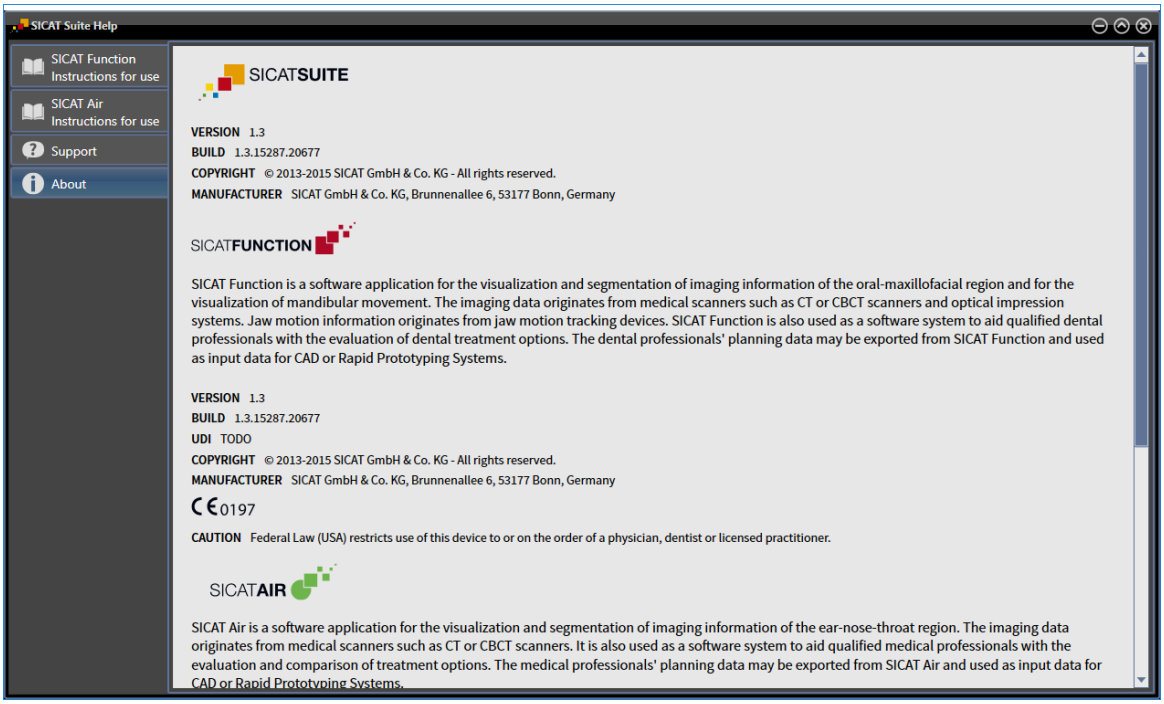
TeamViewer is software that allows mouse and keyboard commands to be remotely controlled and to transfer the contents of a computer's monitor via an active Internet connection. TeamViewer will only establish a connection with your explicit consent. To do so, provide the SICAT support team with a TeamViewer 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** section:

- Click on the **Show** 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 Air will export information on the current installation in a text file.

11.20.3 INFO

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



11.21 OPENING READ-ONLY DATA

The 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:

ACTIVE SICAT AIR LICENSE	ANOTHER SIDEXIS XG WORKSTATION IS USING THE 3D X-RAY SCAN	ARE CHANGES POSSIBLE?
No	Irrelevant	No
Yes	Yes	No
Yes	No	Yes

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:

☑ No SICAT Air license is activated or another SIDEXIS XG workstation is using the 3D X-ray scan.

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 186]*.
   ▶ 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.

11.22 CLOSING SICAT SUITE

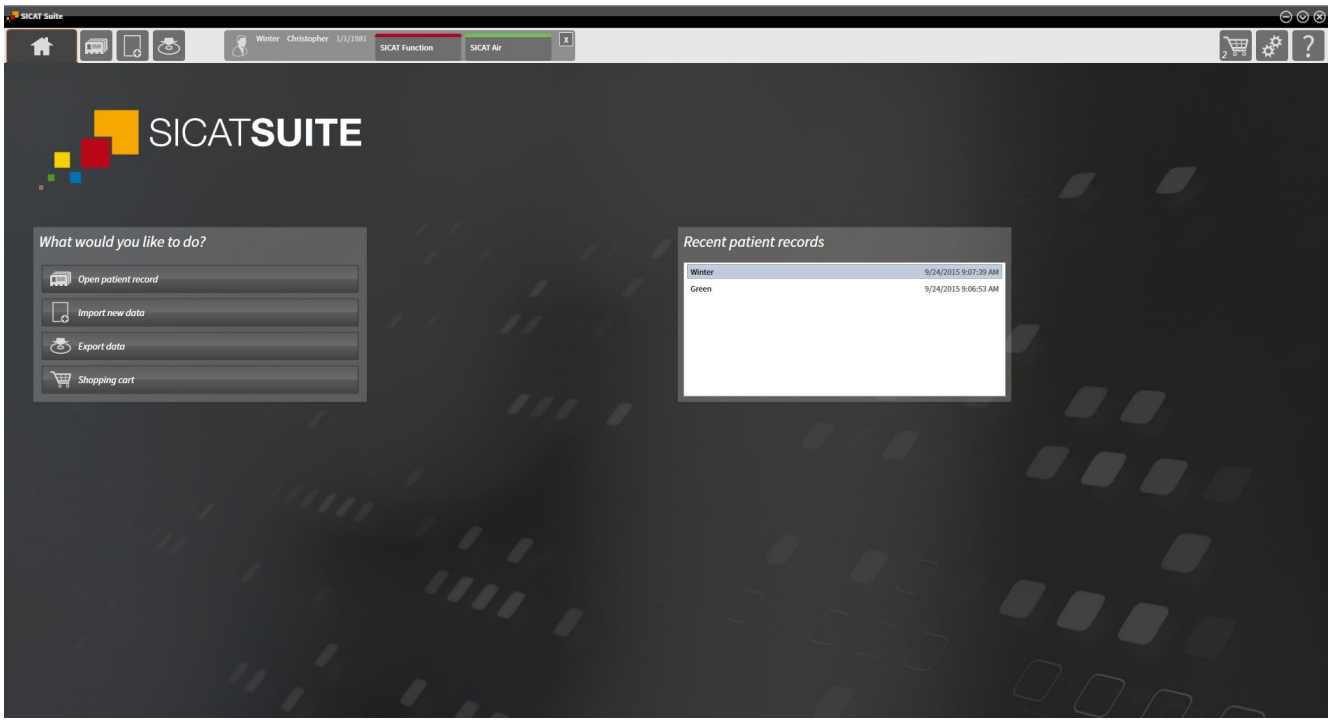
- Click on the **Close** button in the top right-hand corner of SICAT Air.

► All SICAT applications will close.

► SIDEXIS stores the changed planning projects of all SICAT applications that are running as a full version.

12 STAND-ALONE VERSION

The stand-alone version of SICAT Suite is running independently of other programs. This means that the administration and editing of patient data and changes to settings takes place entirely in SICAT Suite and the SICAT applications:



12.1 SPECIAL FEATURES OF THE STAND-ALONE VERSION

PATIENT RECORDS 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 the patient record depot can be found in the section *Patient record depots [▶ Page 338]*. Information on managing patient records can be found in the section *Patient records [▶ Page 356]*.

SETTINGS

In the stand-alone version, SICAT Suite manages all settings itself. Information on this can be found in the section *Settings [▶ Page 489]*.

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 license must be activated.
- A patient record depot must be active.

Otherwise, you cannot make or save any changes to SICAT Air studies. However, you can view 3D X-ray scans and SICAT Air studies.

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

FUNCTION	APPLICATION LICENSE AND PATIENT RECORD DEPOT ACTIVATED	NO APPLICATION LICENSE AND PATIENT RECORD DEPOT ACTIVATED
Support area	Yes	Yes
Settings area	Yes	Yes
Data export	Yes	No
Managing patient record depots	Yes	No
Managing patient records	Yes	No
Data import	Yes	No

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

FUNCTION	SICAT AIR LICENSE AND PATIENT RECORD DEPOT ACTIVATED	NO SICAT AIR LICENSE AND PATIENT RECORD DEPOT ACTIVATED
Making changes to SICAT Air studies.	Yes	No
Opening data in Viewer mode	No	Yes

Under certain circumstances, you cannot make or save changes to SICAT Air studies even if the SICAT Air 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 327]*.

Other information is available in the section *Opening read-only data [▶ Page 501]*.

12.2 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 AND START

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

Information on how to start SICAT Suite can be found in the section*Starting SICAT Suite [▶ Page 324]*.

ACTIVATE FULL VERSION.

1. If you have purchased a license for SICAT Air, activate the license to activate the full version. Information on this can be found in the section *Licenses [▶ Page 331]*.

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 338]*.

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 501]*.

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 338]*.

Change the desired settings in the **Settings** area. Information on this can be found in the section *Settings [▶ Page 489]*.

HOW TO PROCEED IN SICAT AIR

OPENING A DATA RECORD

1. Importing the 3D X-ray scan into the patient record depot. Information on this can be found in the section *Data import [▶ Page 346]*.

2. To search for patient records and manage imported data, follow the instructions provided under *Patient records [▶ Page 356]*.

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 364]*.

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 418]*.

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 432]*.

4. Assess the respiratory path in the **Airway** workspace. Information on this can be found in the section *Airway analysis [▶ Page 442]*.

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 [▶ Page 455]*.

6. Perform treatment planning.

7. Create a 3D X-ray scan of the patient with the jaw in a protruded treatment position. Import the scan and open it in SICAT Air.

8. Check the effect of the therapeutic appliance using the airway comparison. 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 467]*.

10. If you wish to obtain a second opinion, export the data. Information on this can be found in the section *Data export [▶ Page 464]*.

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 504]*.

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 online help.

Further support is available in the area marked **Support**. Information on this can be found in the section *Support [▶ Page 497]*.

12.3 STARTING SICAT SUITE

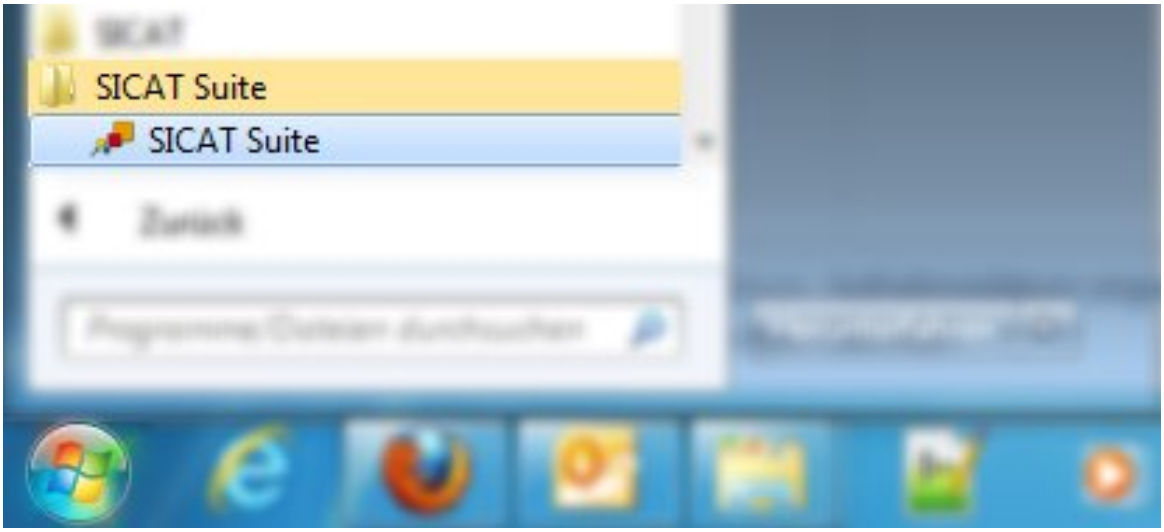
To start SICAT Suite, proceed as follows:

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

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

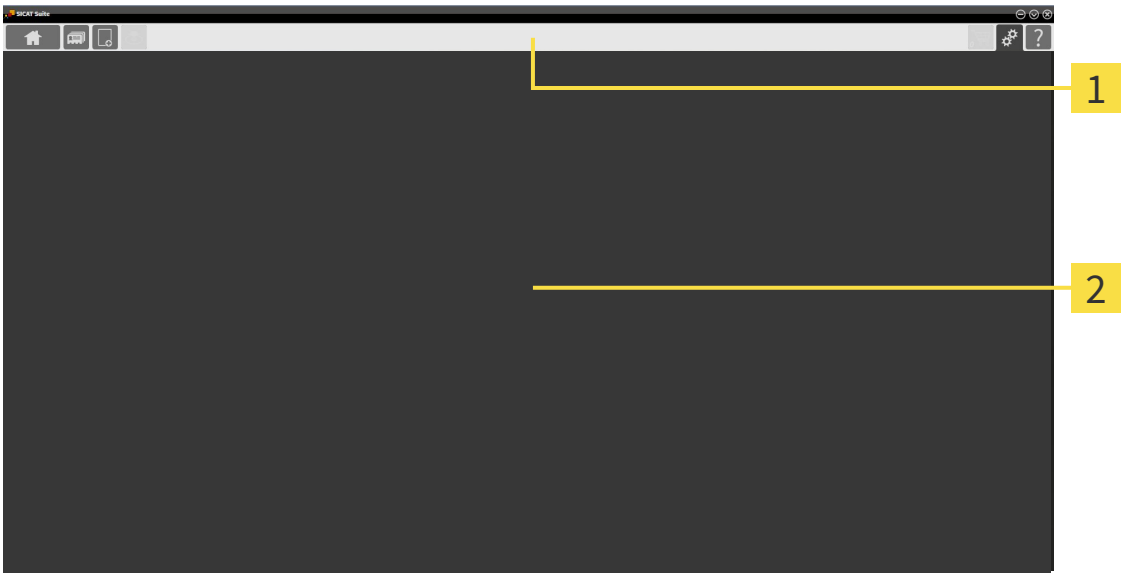
▶ SICAT Suite starts and the **SICAT Suite Home** window opens. Information on this can be found in the section *Overview of the "SICAT Suite Home" window. [▶ Page 327]*.

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



12.4 THE USER INTERFACE OF SICAT SUITE

The user interface of the stand-alone version of SICAT Suite is comprised of 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 other 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 327]*.

- **Patient records** – Information on this can be found in the section *Patient records [▶ Page 356]*.

- **Import new data** – Information on this can be found in the section *Data import [▶ Page 346]*.

- **Export data** – Information on this can be found in the section *Data export [▶ Page 464]*.

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 361]*.

- **Applications** – Information on this can be found in the section *Switching between SICAT applications [▶ Page 329]*.

The section on the right side contains the following tabs:

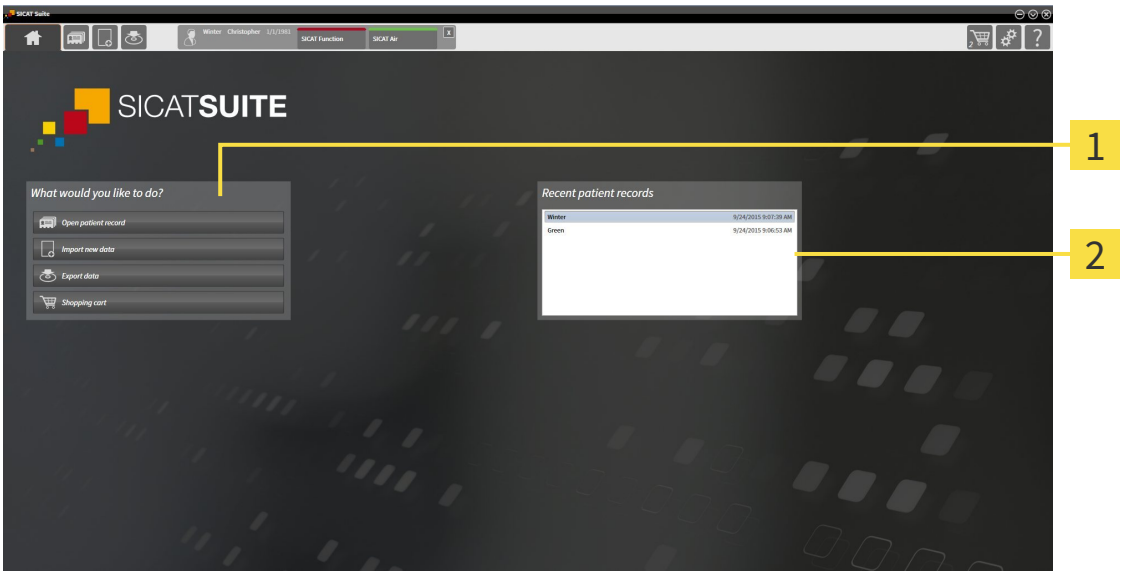
- **Shopping cart** – Information on this can be found in the section *Ordering process [▶ Page 467]*.

- **Settings** – Information on this can be found in the section *Settings [▶ Page 489]*.

- **Support** – Information on this can be found in the section *Support [▶ Page 497]*.

12.4.1 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 state of the licenses
- Status of the patient record depots

If no license 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 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 license is activated and a patient record depot has been created and activated in SICAT Suite, the following buttons area available in the **What would you like to do** area of the **SICAT Suite Home** window:

- **Open patient record** – Information on this can be found in the section *Patient records [▶ Page 356]*.

- **Import new data** – Information on this can be found in the section *Data import [▶ Page 346]*.

- **Export data** – Information on this can be found in the section *Data export [▶ Page 464]*.

- **Shopping cart** – Information on this can be found in the section *Ordering process [▶ Page 467]*.

- 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.

12.4.2 SWITCHING BETWEEN SICAT APPLICATIONS

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

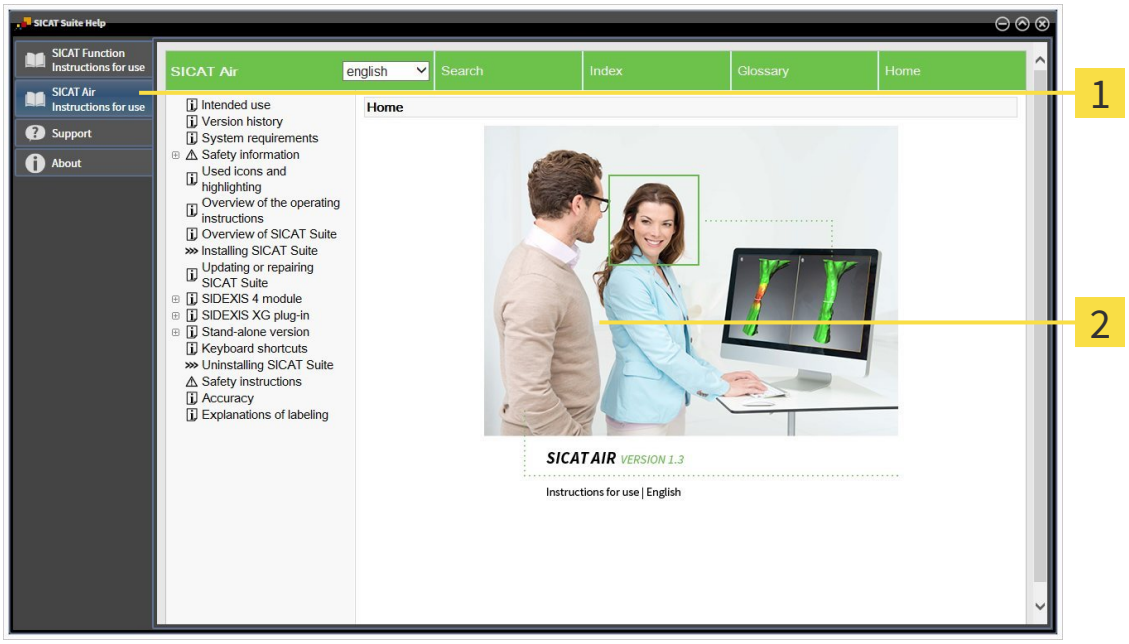
► SICAT Suite will switch to the selected application.

12.5 OPENING THE ONLINE HELP

The instructions for use for SICAT applications are integrated into the **Support** window in the form of online help.

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

12.6 LICENSES

To find out more about purchasing SICAT licenses, please contact your on-site sales partner. SICAT will provide demo licenses for testing purposes, through which you will receive temporary access to the full version of one or more SICAT applications.

You can activate licenses for SICAT applications and individual functions as follows:

- After you have purchased one or more licenses, SICAT will provide you or your organization with a personal activation key. You can use activation keys to activate licenses on various computers, on which SICAT Suite is installed.
- Your license pool on the SICAT license server contains the acquired number of licenses for each SICAT application and each individual function.
- If you activate a license on a computer, it will be linked to that computer. The license is taken from your license pool and will no longer be available for activation on another computer.
- An activated license will activate the full version of one or more applications or individual functions. Applications without licenses run in Viewer mode.

The **License Overview** window gives an overview about licenses, which are activated on your computer. These may be licenses for applications or licenses for individual functions. Information on this can be found in the section *Opening the "Your licenses at a glance" window [▶ Page 332]*.

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 333]*.
- 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 334]*.

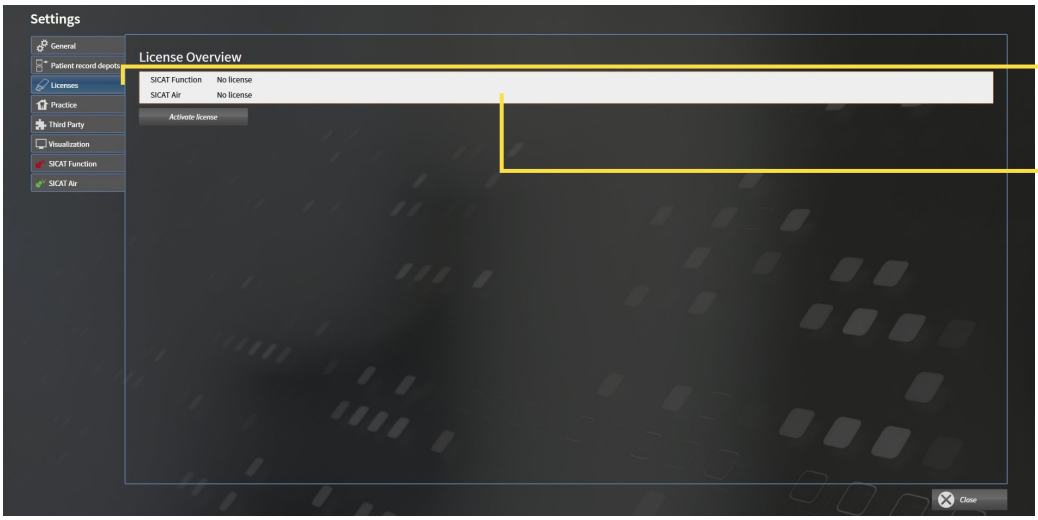
You can deactivate licenses for each application or function individually and return them to the license pool. The computer, on which SICAT Suite is running, requires an active Internet connection for this. After you have deactivated a license, you can enter the same or another activation key. Returned 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 336]*.

You can find information about redeeming voucher codes in the section *Redeeming voucher codes [▶ Page 337]*.

12.6.1 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 333]*
- *Activating licenses manually or without an active Internet connection. [▶ Page 334].*
- *Returning licenses to the license pool [▶ Page 336]*

12.6.2 ACTIVATING LICENSES USING AN ACTIVE INTERNET CONNECTION

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

To start the activation process, proceed as follows:

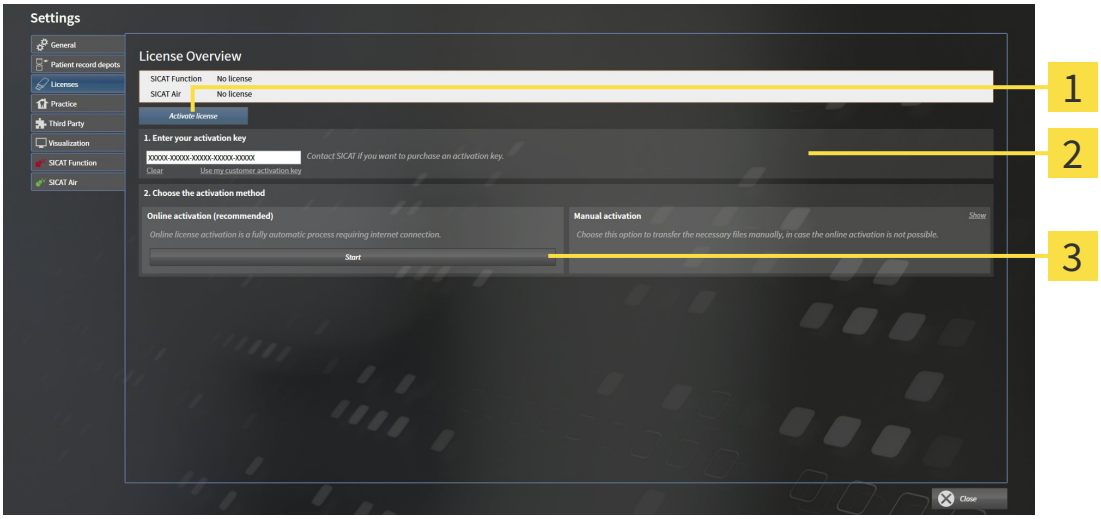
☑ At least one SICAT application or one individual function is missing an active license.

☑ 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 332]*.

1. Click the **Activate license** button in the **License Overview** window.

   ▶ The **License Overview** area opens:



1 **Activate license** button

2 **Enter your activation key** area

3 **Start** button

2. Enter your customer activation key or a demo license activation key into the **Enter your activation key** field.

3. Click on the **Start** button.

4. If a **Windows Firewall** window opens, you 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 with the following message: **License was successfully activated**.

To activate SICAT Suite again, click on the **Use my customer activation key** button and use your customer activation key. To empty the field with the current license key, click on the **Clear** button in the **Enter your activation key** area.

12.6.3 ACTIVATING LICENSES MANUALLY OR WITHOUT AN ACTIVE INTERNET CONNECTION.

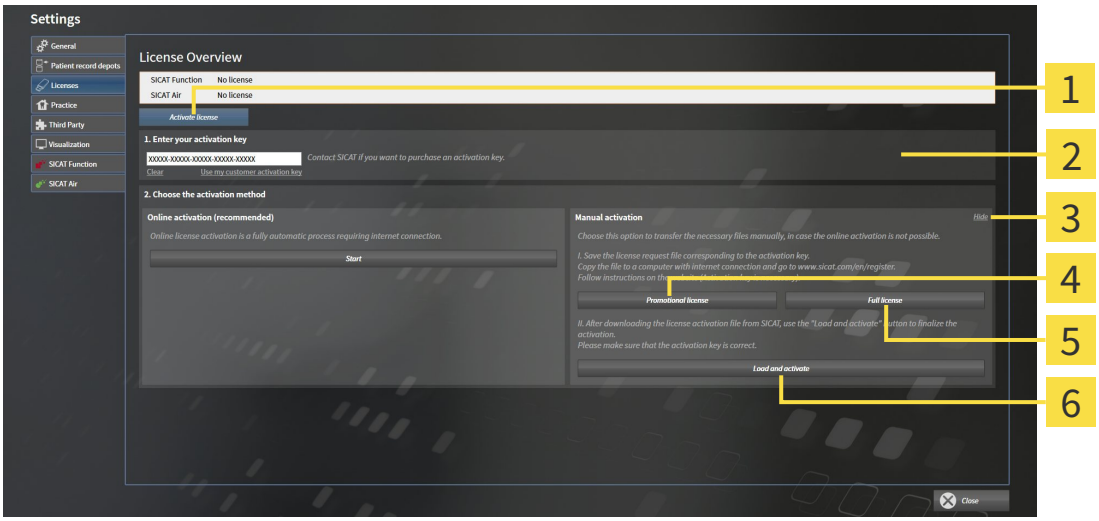
NOTICE	You must close the active patient record before making changes to the licenses.

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 332]*.

1. Click the **Activate license** button in the **License Overview** window.
   ▶ The **License Overview** area opens.
2. Double-click on the **Manual activation** button in the **Show** area.
   ▶ The **Manual activation** area opens:



1	**Activate license** button	4	**Promotional license** button
2	**Enter your activation key** area	5	**Full license** button
3	**Show** button	6	**Load and activate** button

3. If you want to activate a full license, click the **Full license** button.
4. If you want 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 file extension **WibuCmRaC** 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 file extension **WibuCmRaU**, which you have 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 with the following message: **License was successfully activated**.

12.6.4 RETURNING LICENSES TO THE LICENSE POOL

NOTICE	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 332]*.

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 with 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.

12.6.5 REDEEMING VOUCHER CODES

1. Open a web browser on the computer with the active Internet connection and open the http://www.sicat.de web page.
2. Click on 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 show you a license.
6. Save the license locally on your computer.
7. Start SICAT Suite and activate the license.

Information on this can be found in the section *Activating licenses using an active Internet connection [▶ Page 333]* and *Activating licenses manually or without an active Internet connection. [▶ Page 334]*.

See the FAQ on the SICAT portal for more help.

12.7 PATIENT RECORD DEPOTS

BACKUP

CAUTION

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

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

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

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

DATA SECURITY

CAUTION

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

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

CAUTION

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

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

CAUTION

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

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

GENERAL INFORMATION

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

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

SICAT Suite manages patient data as follows:

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

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

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

The following actions are available for managing patient record depots:

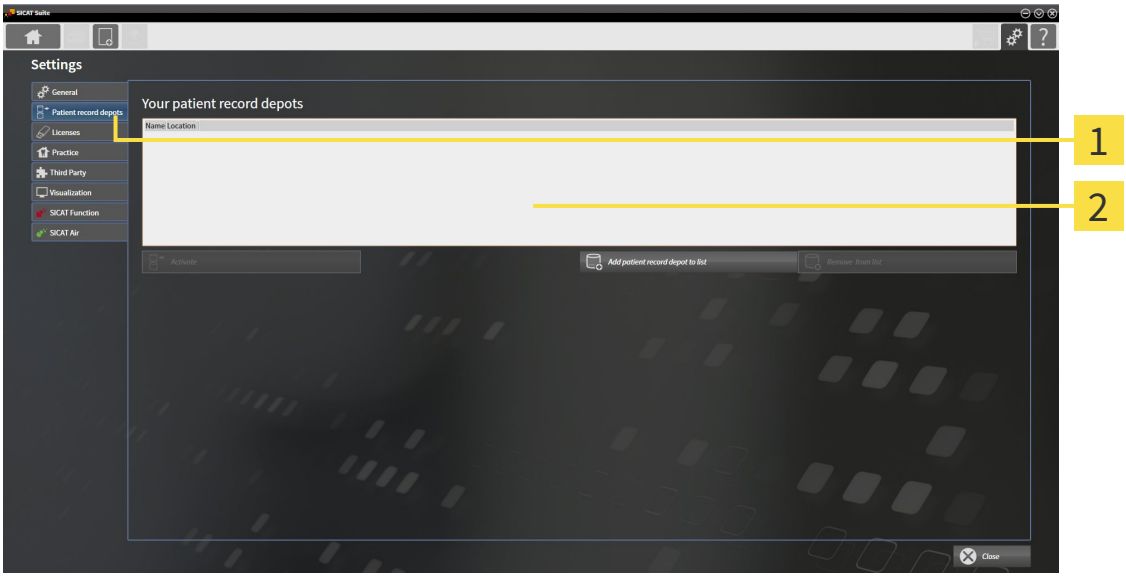
- *Opening the “Patient record depots” window [▶ Page 340]*
- *Adding patient record depots [▶ Page 341]*
- *Activating another patient record depot [▶ Page 343]*
- *Removing patient record depots [▶ Page 345]*

12.7.1 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 341]*
- *Activating another patient record depot [▶ Page 343]*
- *Removing patient record depots [▶ Page 345]*

12.7.2 ADDING PATIENT RECORD DEPOTS

CAUTION

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

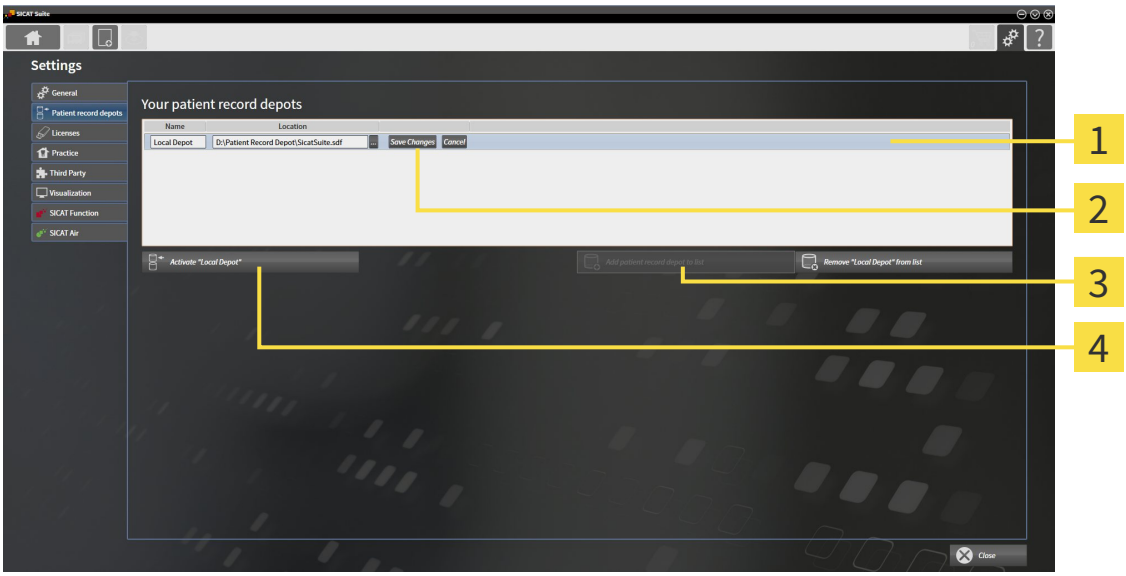
Make sure that a regular data backup is created of all patient record depots.

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 340]*.



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.

12.7.3 ACTIVATING ANOTHER PATIENT RECORD DEPOT

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

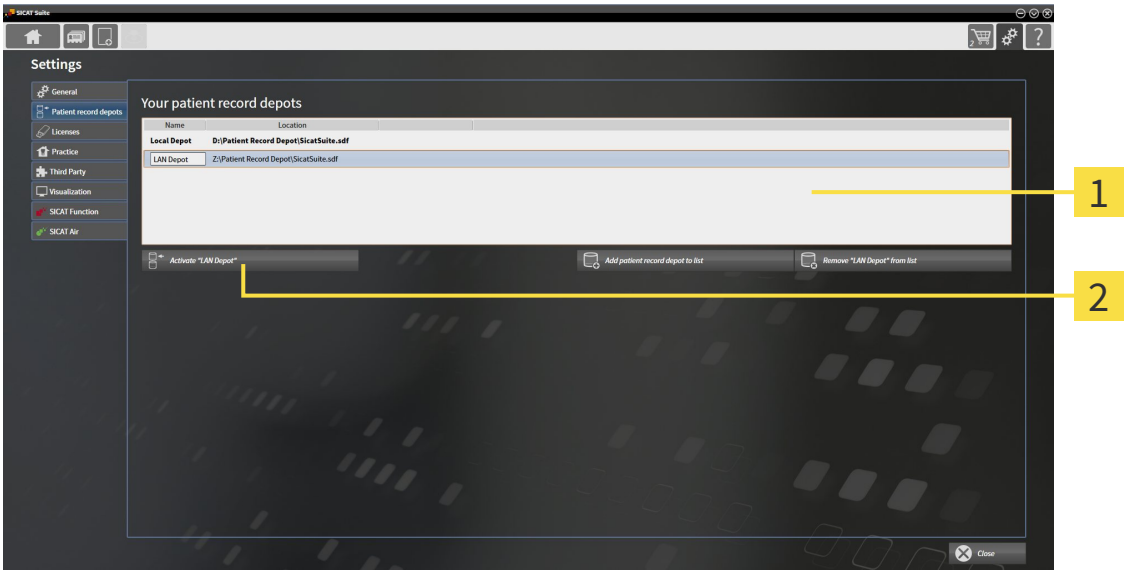
- You want to switch between a patient record depot on your practice's network file system and a patient record depot on your notebook.
- You want to display patient data in public, which has been stored anonymously in another patient record depot, for example for training purposes.

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 340]*.



1 **Your patient record depots** list

2 Button to activate 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 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.**

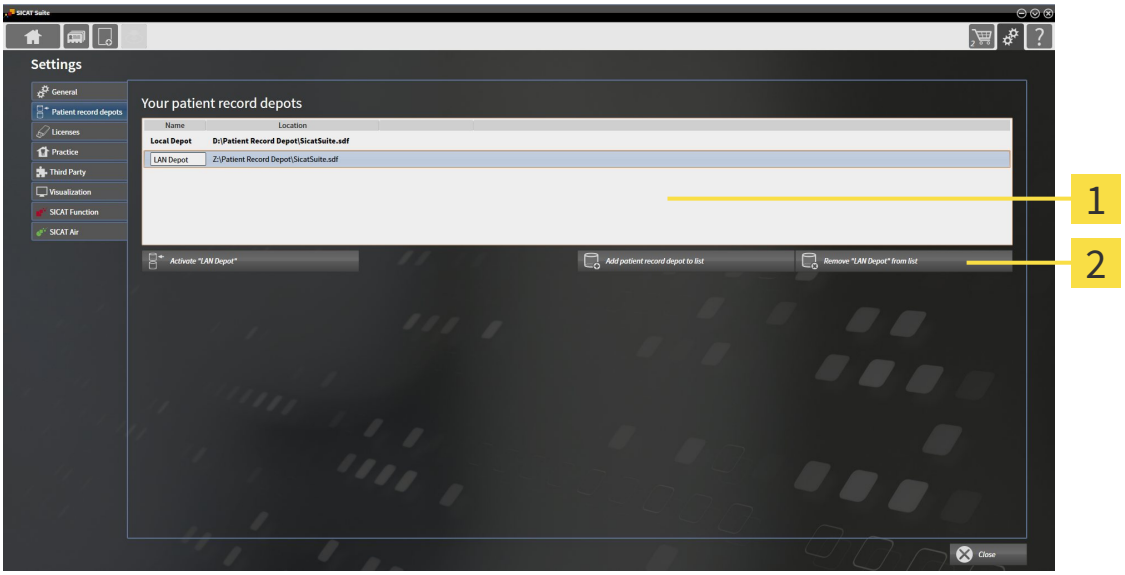
12.7.4 REMOVING PATIENT RECORD DEPOTS

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 341]*.

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 340]*.



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.

12.8 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 501]*.

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 348]*)
- 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 349]*
- *Selecting an import option [▶ Page 351]*
- *Allocating data to an existing patient record [▶ Page 353]*

or

- *Creating a new patient record through data import [▶ Page 352]*

12.8.1 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.

12.8.2 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.

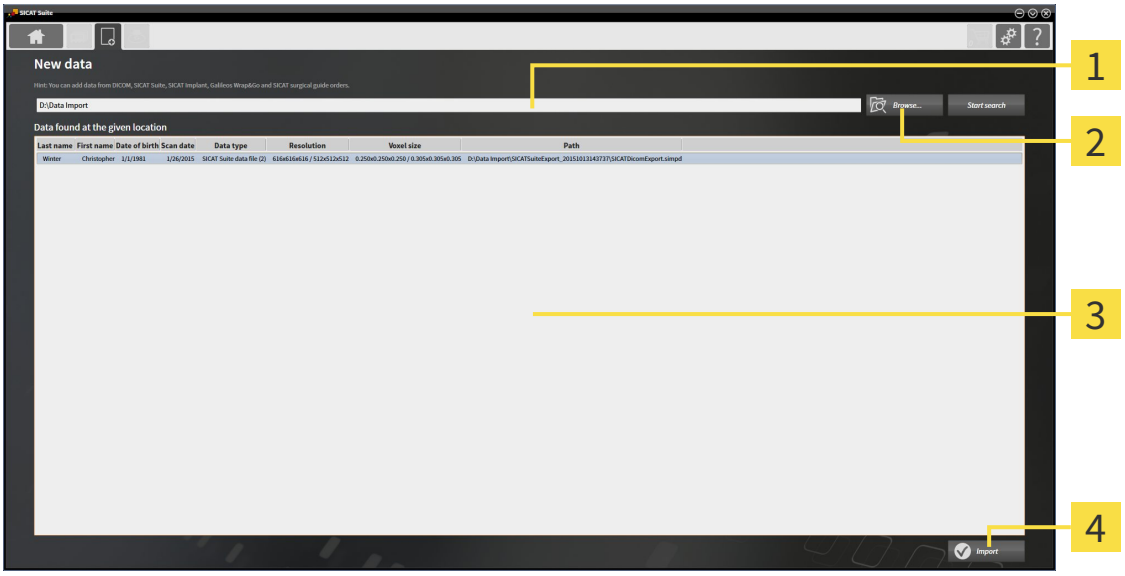
CAUTION

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.

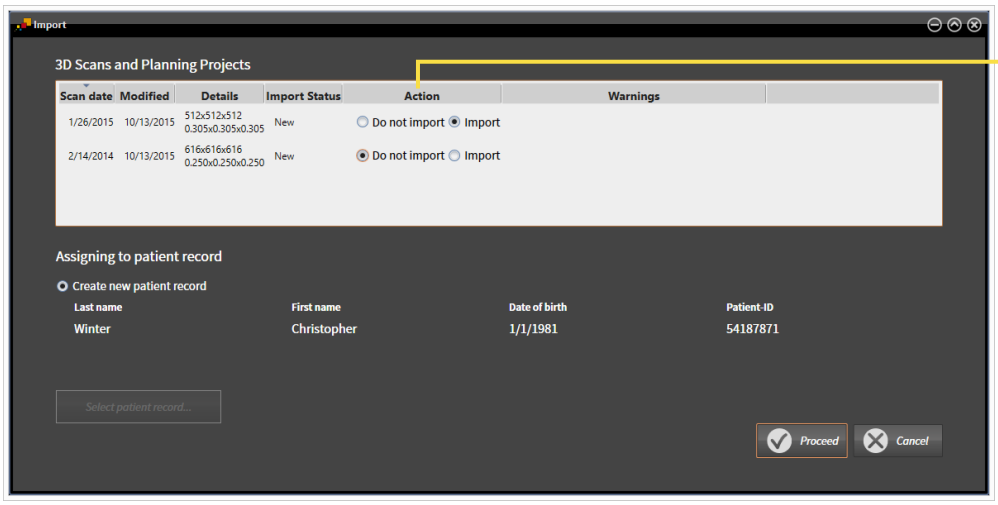
Continue with the section *Selecting an import option [▶ Page 351]*.

12.8.3 SELECTING AN IMPORT OPTION

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

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

   ▶ The **Import** window opens:



1 **Action** column

2. Select one of the entries **Do not import**, **Import anyway**, **Import** or **Overwrite existing** for each study in the **Action** column of the **Import** window. A detailed description of the options can be found in the section *Data import [▶ Page 346]*.

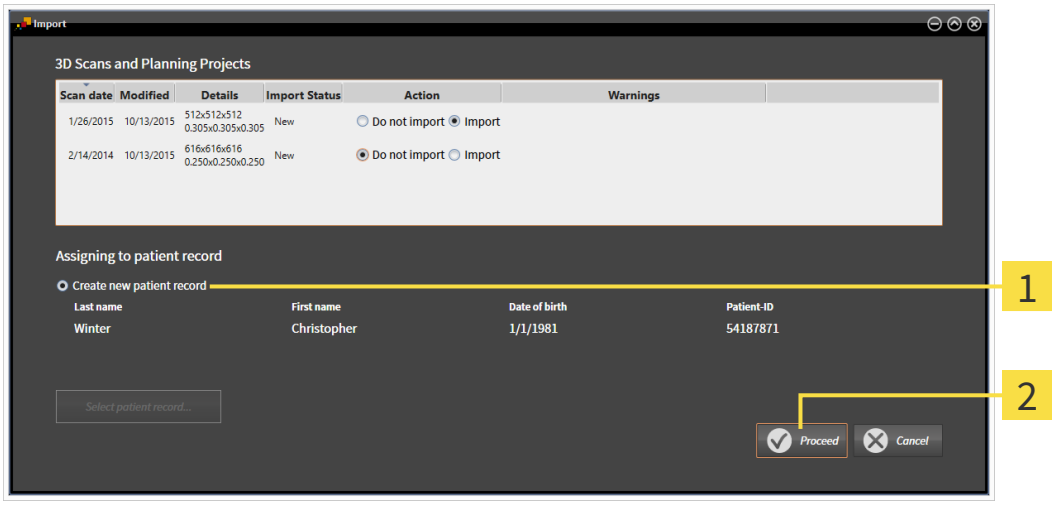
▶ It is defined for all studies individually whether you want to import them or not.

Continue with one of the following actions:

- *Allocating data to an existing patient record [▶ Page 353]*
- *Creating a new patient record through data import [▶ Page 352]*

12.8.4 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 356]*.

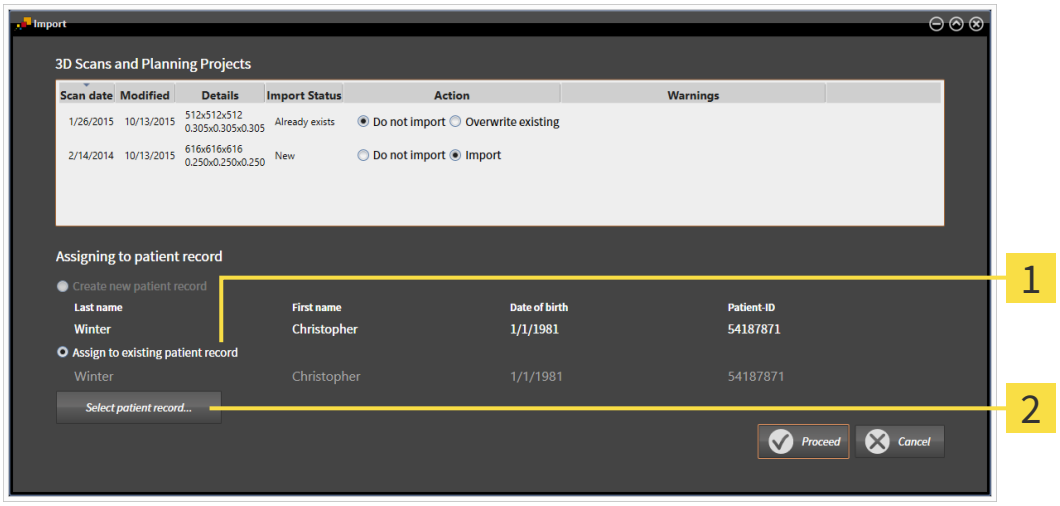
12.8.5 ALLOCATING DATA TO AN EXISTING PATIENT RECORD

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

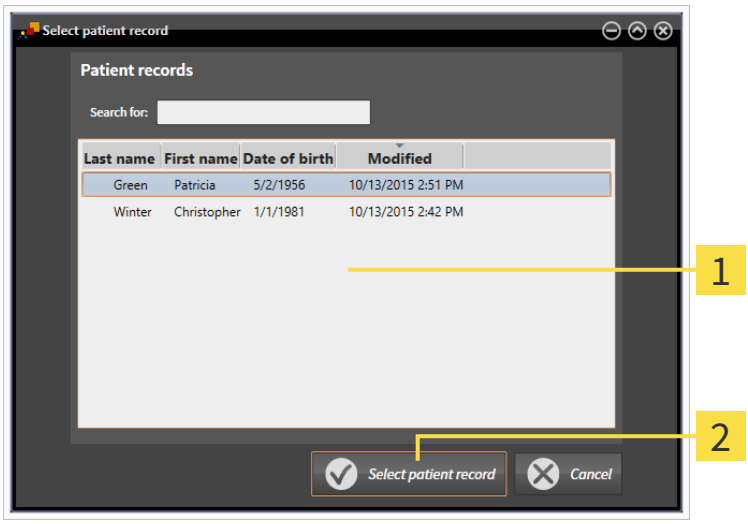
2 **Select patient record** button

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.

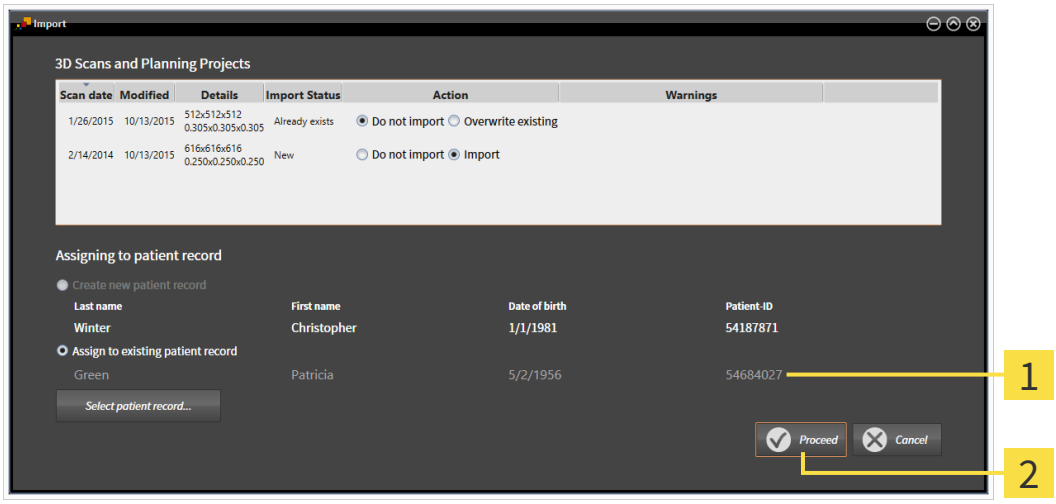
▶ The **Select patient record** window opens and displays a list of the already existing patient records:



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.

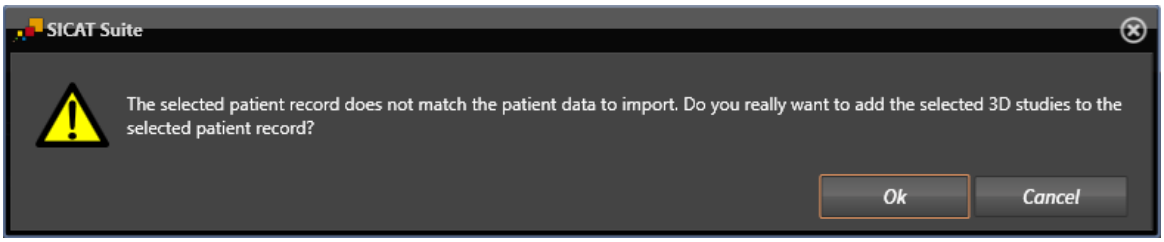


1 Attributes of the selected patient record

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 356]*.

12.9 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 357]*
- *Searching and sorting in the patient record depot [▶ Page 358]*
- *Activating patient records [▶ Page 360]*
- *Opening 3D X-ray scans or planning projects from the patient record summary [▶ Page 364]*
- *Working with active patient records [▶ Page 361]*
- *Changing the attributes of patient records [▶ Page 363]*
- *Deleting patient records from patient record depots [▶ Page 368]*
- *Deleting 3D X-ray scans or planning projects from patient records [▶ Page 369]*

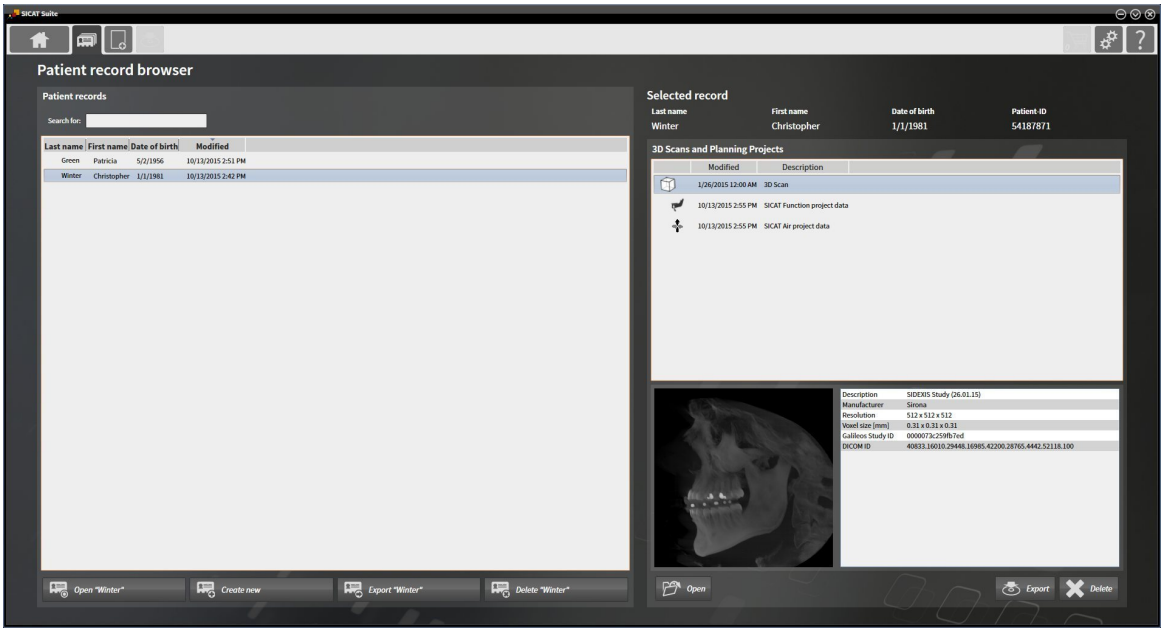
There are also actions to import data and to export data from patient records:

- *Data import [▶ Page 346]*
- *Data export [▶ Page 464]*

12.9.1 OPENING THE “PATIENT RECORD BROWSER” WINDOW

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

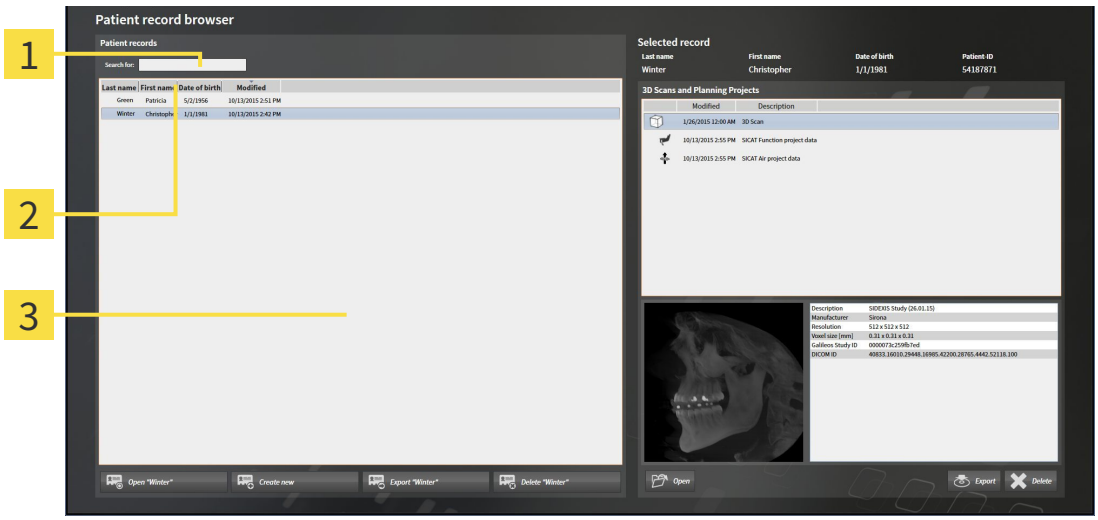
- Click on the **Patient records** icon in the **Navigation bar**.
  ▶ The **Patient record browser** window opens:



Continue with one of the following actions:

- *Searching and sorting in the patient record depot [▶ Page 358]*
- *Activating patient records [▶ Page 360]*
- *Opening 3D X-ray scans or planning projects from the patient record summary [▶ Page 364]*
- *Working with active patient records [▶ Page 361]*
- *Changing the attributes of patient records [▶ Page 363]*
- *Deleting patient records from patient record depots [▶ Page 368]*
- *Deleting 3D X-ray scans or planning projects from patient records [▶ Page 369]*

12.9.2 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 357]*.

- 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 357]*.

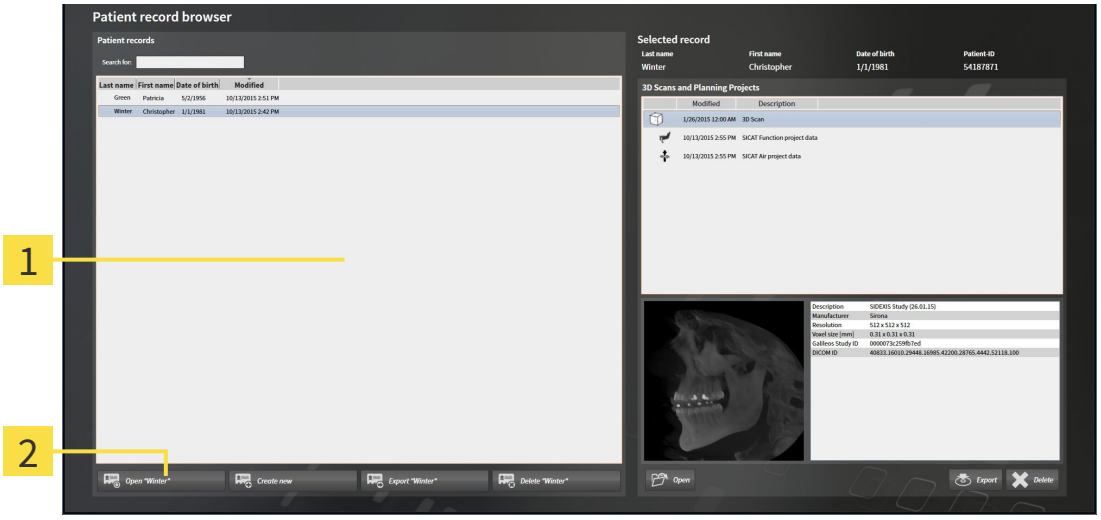
1. Click on the column header of the desired attribute in the **Patient records** list.
   ▶ SICAT Suite sorts the **Patient records** list in the order of the desired attribute.
2. Click again on the column header of the desired attribute in the **Patient records** list.
   ▶ SICAT Suite sorts the **Patient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

12.9.3 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 357]*.



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 361]*.

12.9.4 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.

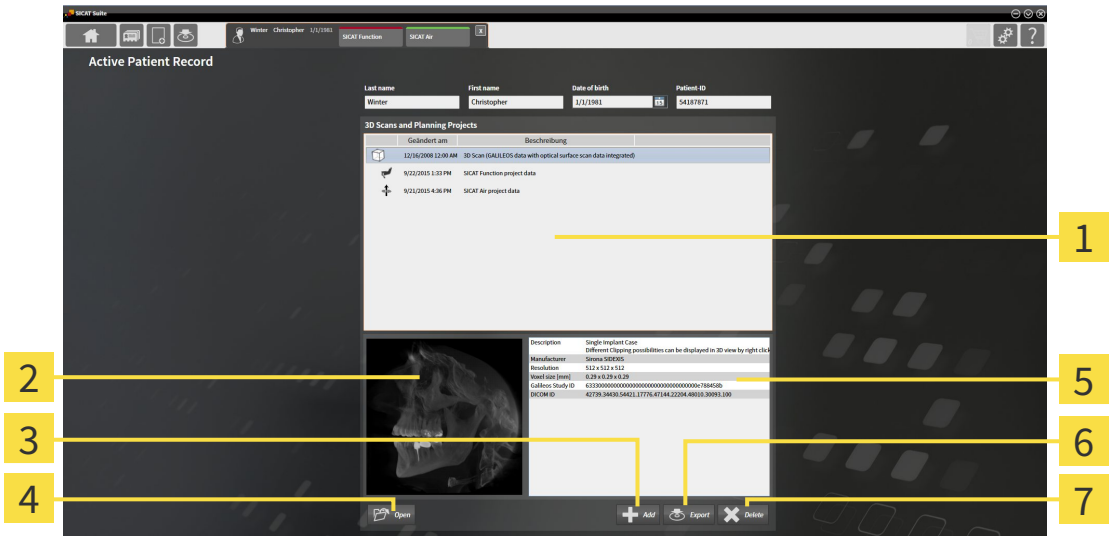
CAUTION

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 360]*.



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

2 **Preview** area

3 **Add** button

4 **Open** button

5 **Details** area

6 **Export** button

7 **Delete** button

1. Select the desired 3D X-ray scan or planning project in the **3D Scans and Planning Projects** list in the **Active Patient Record** window.
   ▶ The **Preview** 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. Click on the **Open** button to open the selected document in the standard PDF viewer.

4. Click on the **Add** button to import data to the active patient record. Information on this can be found in the section *Data import [▶ Page 346]*.

5. Click on the **Export** button to export the selected data from the active patient record. Information on this can be found in the section *Data export [▶ Page 464]*.

6. Click on the **Delete** button to delete the selected data 3D X-ray scan or planning project from the active patient record. Information on this can be found in the section *Deleting 3D X-ray scans or planning projects from patient records [▶ Page 369]*.

7. How to change attributes of the active patient record can be found under *Changing the attributes of patient records [▶ Page 363]*.

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. If you explicitly open a study, the corresponding SICAT application will always start.

12.9.5 CHANGING THE ATTRIBUTES OF PATIENT RECORDS

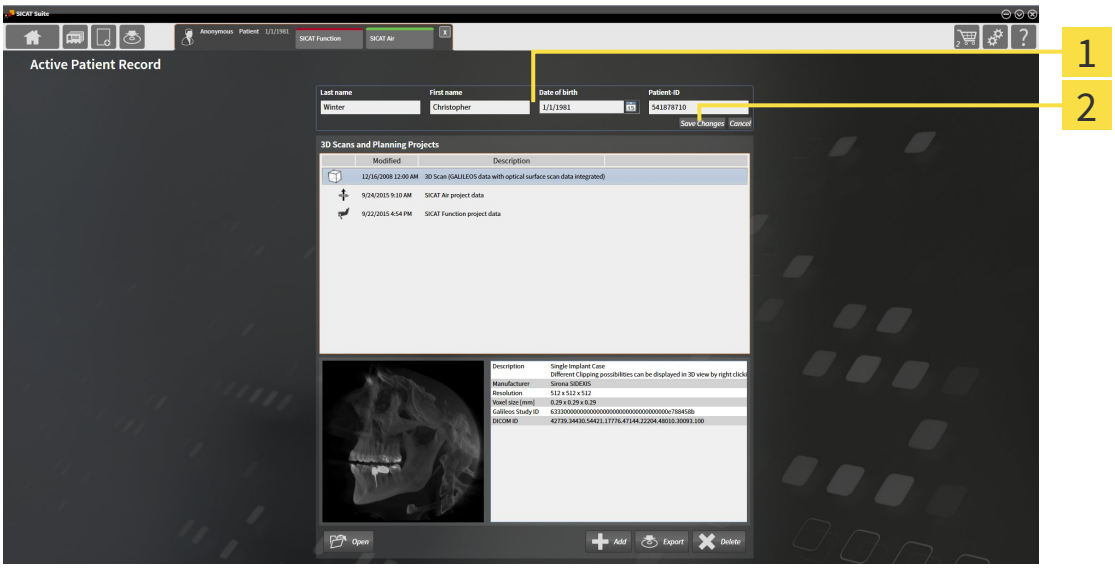
The combination of attributes in each patient record in the active patient record depot must be unique.

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 360]*.



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.

12.9.6 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.

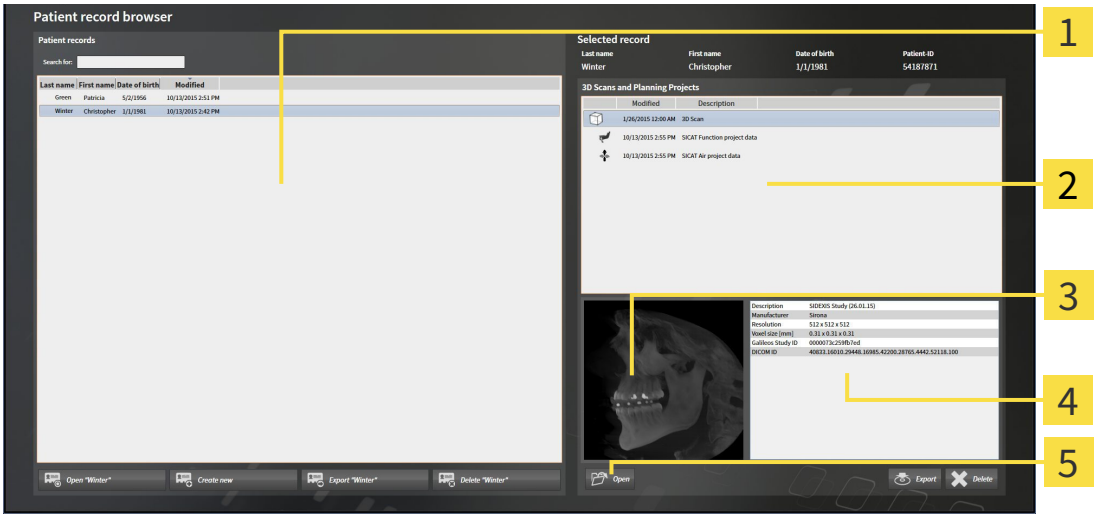
CAUTION

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 357]*.



1 **Patient records** list

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

3 **Preview** 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 **Preview** 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. If you explicitly open a study, the corresponding SICAT application will always start.

12.9.7 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

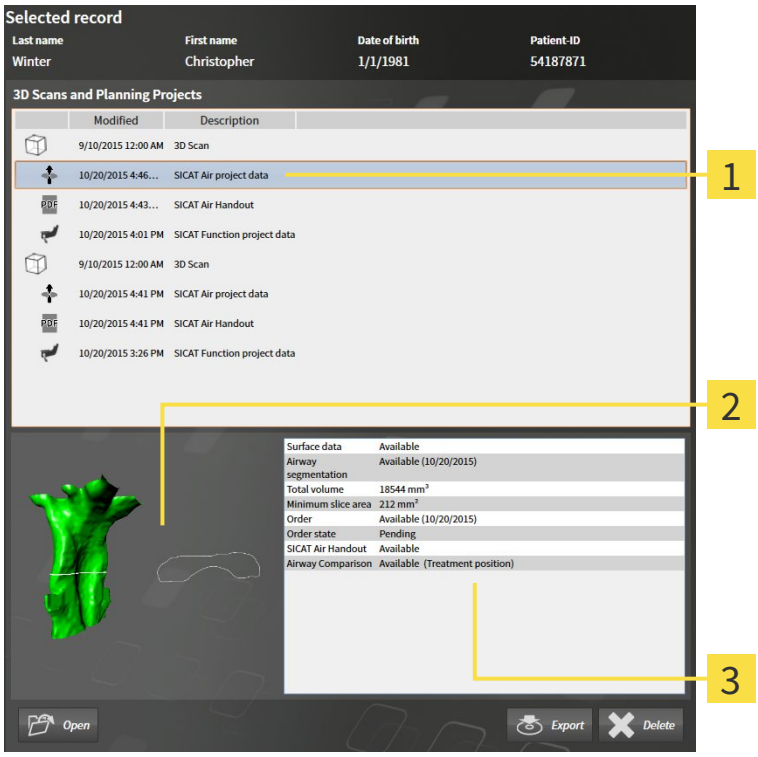
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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 **Preview** area

3 **Details** area

If you have already segmented the airway, the **Preview** 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**

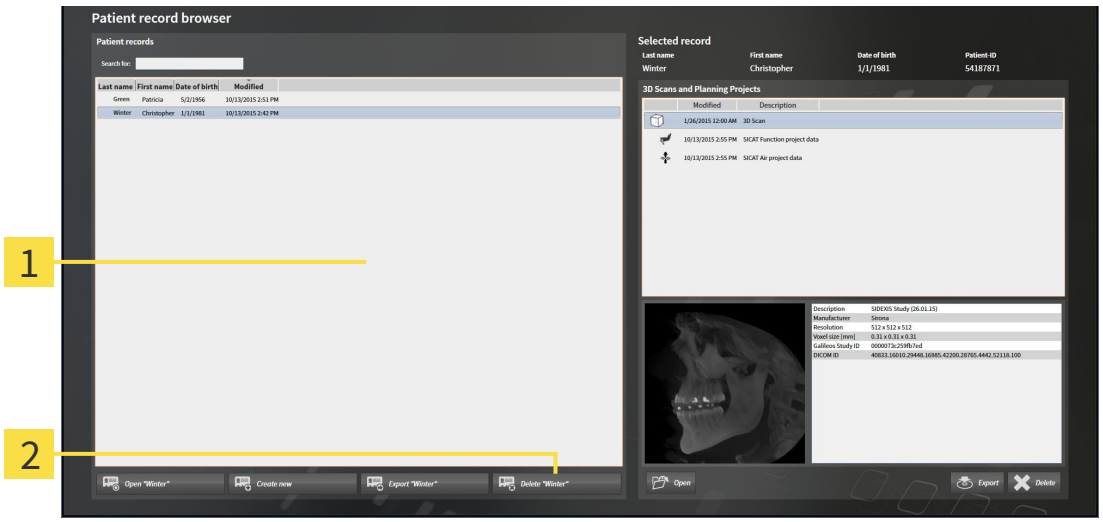
The **Patient record browser** also displays handouts that you have created with SICAT Air in the **3D Scans and Planning Projects** section. You can open handouts in the standard PDF viewer by double clicking them.

12.9.8 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 357]*.



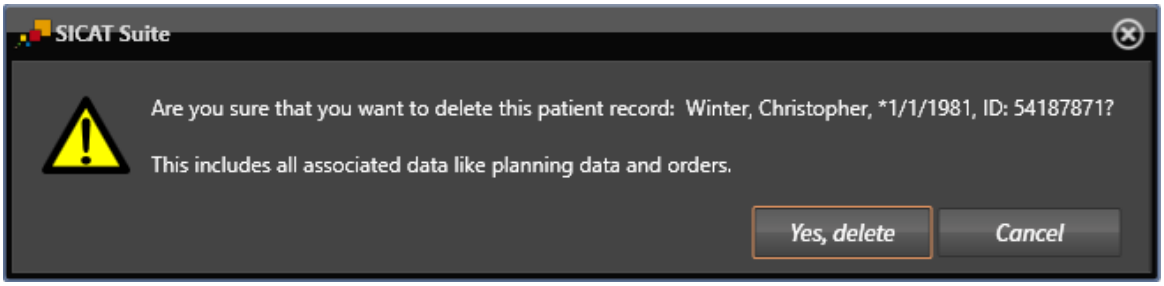
1 **Patient records** list

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.

12.9.9 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.

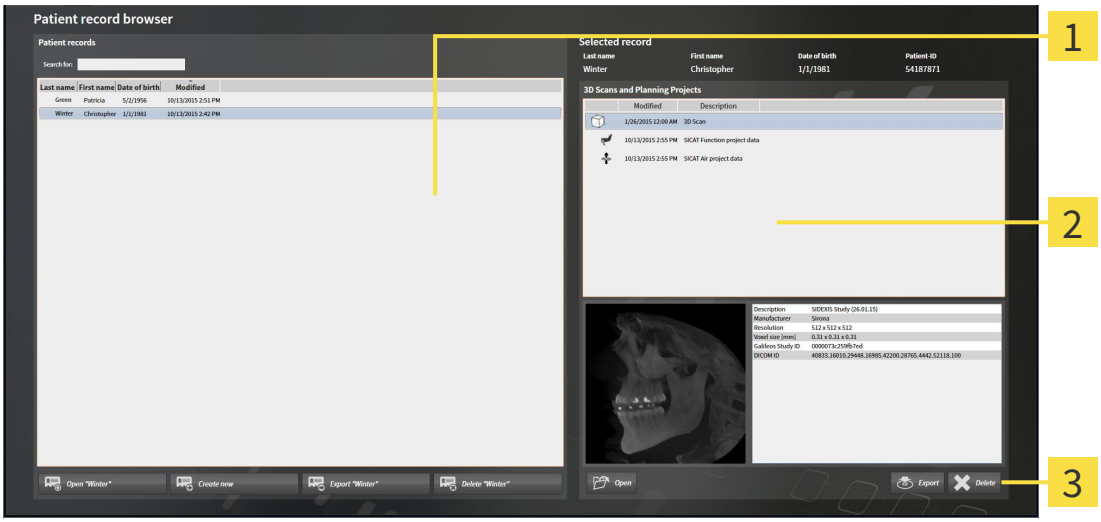
CAUTION

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 357]*.



1 **Patient records** list

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

3 **Delete** button

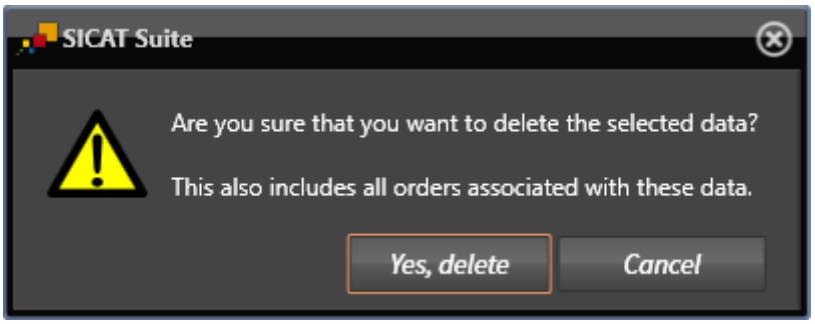
1. Select the desired patient record from the **Patient records** list in the **Patient record browser** window.

   ▶ 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:



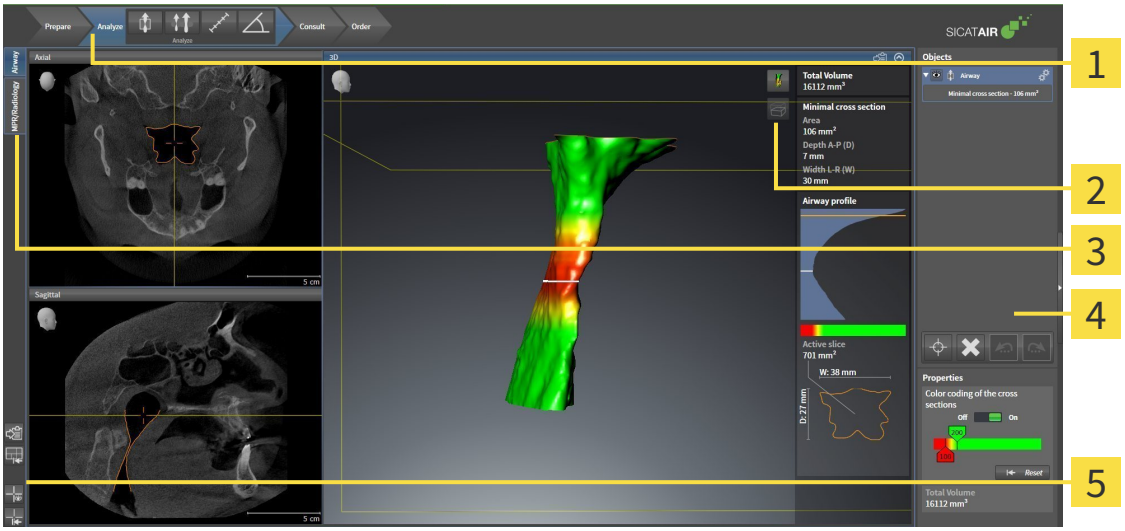
4. Click on **Yes, delete** in the confirmation message if you wish to delete the selected data.

► 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 361]*.

12.10 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 the various workflow steps, which include the main tools of the application workflow. This includes tools, which you can use to add and import diagnosis objects and planning objects. Information on this can be found in the section *Workflow toolbar [▶ Page 372]*.
- The **Workspace area** is the part of the user interface below **Workflow toolbar**. It shows the active workspace of SICAT Air. Each workspace contains a certain combination of views. Information on this can be found in the section *Workspaces [▶ Page 385]*.
- Only the active view shows the **View toolbar**. It contains tools to adjust the display to the corresponding view. Information on this can be found in the sections *Adjusting the views [▶ Page 392]* and *Adjusting the 3D view [▶ Page 403]*.
- The **Object bar** contains tools to manage diagnosis objects and planning objects. Information on this can be found in the section *Object bar [▶ Page 375]* and *SICAT Air objects [▶ Page 379]*.
- The **Workspace toolbar** contains tools to change general settings for workspaces and all of the views they contain and to document the contents of workspaces. Information on this can be found in the section *Moving, hiding and showing crosshairs and frames [▶ Page 400]*, *Resetting views [▶ Page 401]*, *Adjusting and resetting the layout of workspaces [▶ Page 389]* and *Creating screenshots of workspaces [▶ Page 390]*.

12.10.1 WORKFLOW TOOLBAR

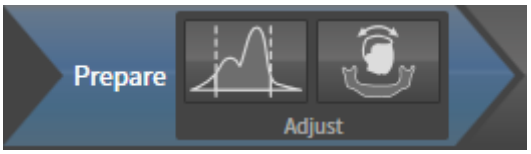
The **Workflow toolbar** in SICAT Air consists of four workflow steps:

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"

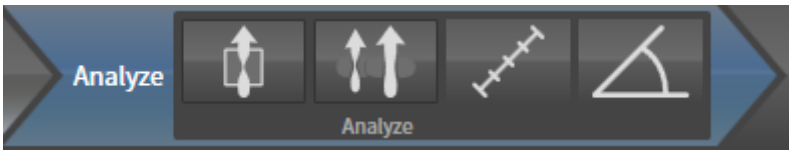


The following tools are available in the **Prepare** workflow step:

- **Adjust Gray Values** – Information on this can be found in the section *Adjusting gray scale values [▶ Page 414]*. 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 sections *Adjusting the volume orientation [▶ Page 418]* and *Adjusting the panoramic region [▶ Page 423]*.

2. WORKFLOW STEP "ANALYZE"



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

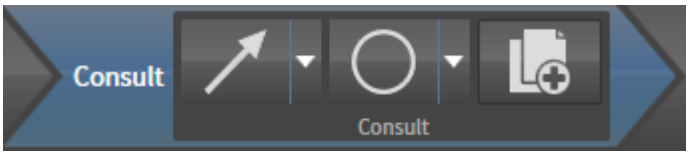
- **Segment the airway** – Information on this can be found in the section *Defining the airway area [▶ Page 433]*.

- **Airway comparison** – Information on this can be found in the section *Carrying out an airway comparison [▶ Page 449]*.

- **Add distance measurement (D)** – Information on this can be found in the section *Adding distance measurements [▶ Page 427]*.

- **Add angle measurement (A)** – Information on this can be found in the section *Adding angle measurements [▶ Page 428]*.

3. WORKFLOW STEP "CONSULT"



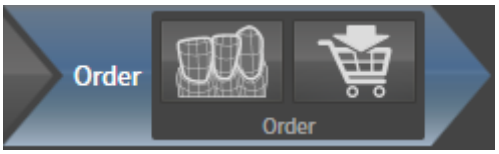
The following tools are available in the **Consult** workflow step:

- **Draw Arrow** – Information on this can be found in the section *Creating images and screenshots [▶ Page 456]*.

- **Draw Circle** – Information on this can be found in the section *Creating images and screenshots [▶ Page 456]*.

- **Generate handout** – Information on this can be found in the section *Preparing handouts [▶ Page 459]*.

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 472]*.

- **Order Therapeutic Appliance** – Information on this can be found in the section *Placing therapeutic appliances in the shopping cart [▶ Page 468]*.

12.10.2 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 376]*.
- The **Object toolbar** contains tools to focus objects, remove objects or object groups and undo or redo object actions or object group actions. Information on this can be found in the section *Managing objects with the object toolbar [▶ Page 378]*.
- The **Properties** area shows the details of the active object.

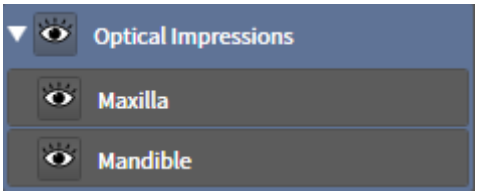
The objects available in SICAT Air can be found in the section *SICAT Air objects [▶ Page 379]*.

Click on the **Hide object bar** button or **Show object bar** button on the right side of the **Object bar** to hide or show the **Object bar**.

12.10.3 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 **Some Shown** icon or **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.

12.10.4 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 376]*.

- 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 376]*.

- 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.

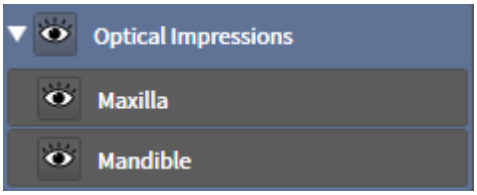
Undo and redo are only available as long as a study is open in a SICAT application.

12.10.5 SICAT AIR OBJECTS

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

- **Optical Impressions**
- **Airway**
  - **Minimal cross section**
- **Airway comparison**
- **Handout**
  - **Image**
  - **Screenshot**
  - **Airway comparison**

OPTICAL IMPRESSION OBJECT



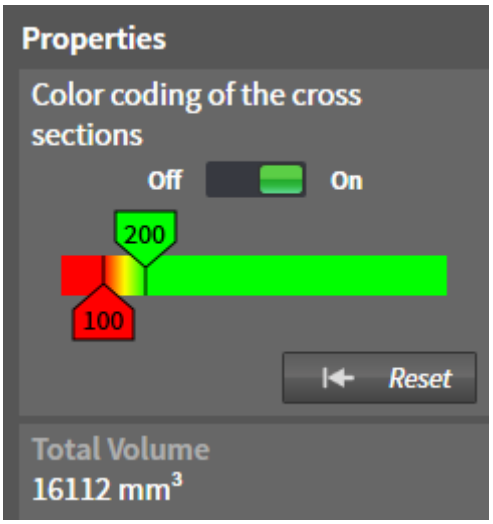
An **Optical Impressions** object contains the following sub-objects:

- **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, which you can use to activate or deactivate Color coding.
- The **Color coding of the cross sections** with sliding controllers, which you can use to define the minimum and maximum value of the cross-sectional area in mm^2 for the color gradient.
- The **Reset**, which 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 standard values in the SICAT Air settings can be found in the section *Changing SICAT Air settings [▶ Page 496]*.
- The **Total Volume** of the segmented airway

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.

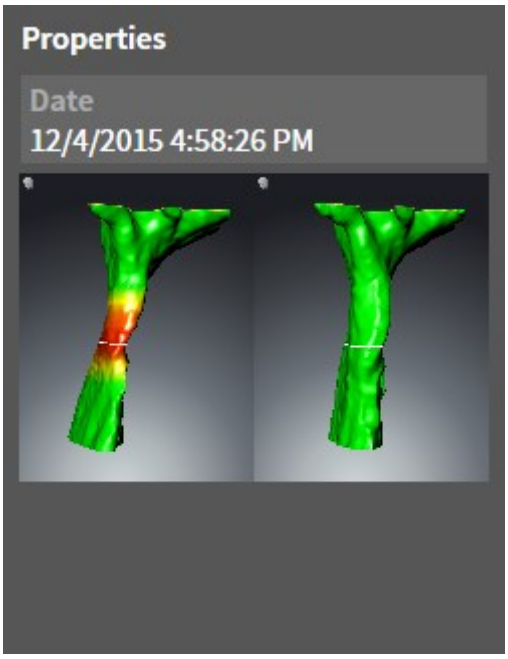
If you move the mouse pointer over a **Airway** object, SICAT Air will display a gear icon. Click on the gear icon and SICAT Air will open the **Segment the airway** window.

MINIMAL CROSS SECTION OBJECT

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

- **Minimal cross section** objects are beneath **Airway** objects.
- The designation of a **Minimal cross section** 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** object, the 2D slice views display the slice with the smallest cross-sectional area.

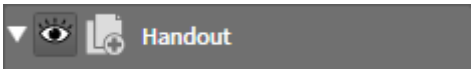
AIRWAY COMPARISON OBJECT



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

- If you move the mouse pointer over an **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**, **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.

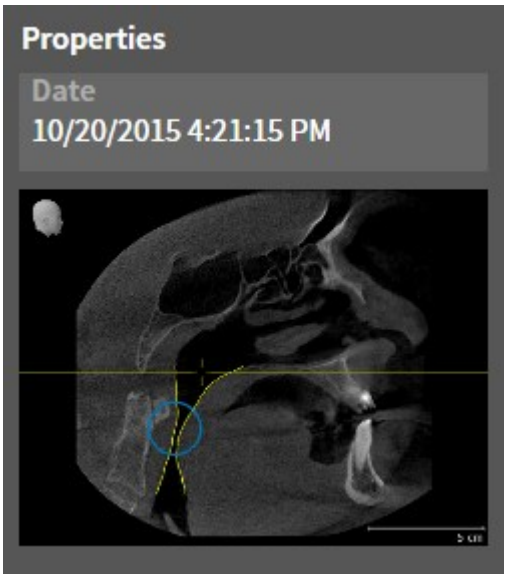
HANDOUT OBJECT



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 a **Handout** object. SICAT Air removes all corresponding **Image** objects and **Screenshot** objects.

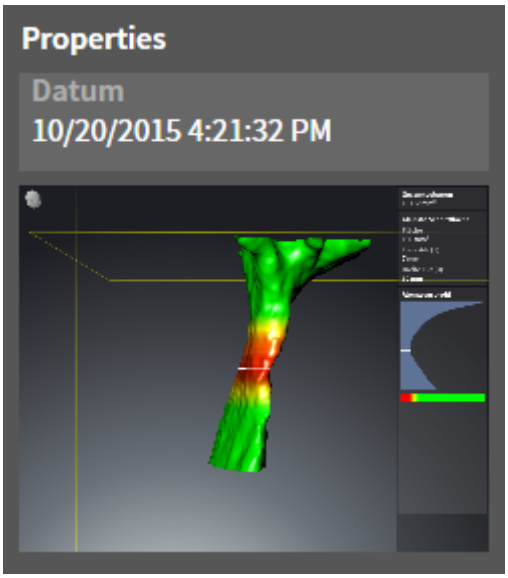
IMAGE OBJECTS



The following applies for **Image** objects:

- **Image** objects are beneath **Handout** objects.
- SICAT Air summarizes all drawing objects of a slice in a workspace for each 2D view and creates an **Image** object from this.
- SICAT Air summarizes 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 an **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 an **Image** object and therefore all arrows and circles contained therein at once. SICAT Air removes **Image** objects both from the **Object browser** and from the **Generate handout** window.
- If you focus on an **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 beneath **Handout** objects.
- SICAT Air creates one **Screenshot** object per screenshot.
- After you have created and activated a **Screenshot** object, **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 a **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.

12.11 WORKSPACES

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

In SICAT Air there are two different workspaces:

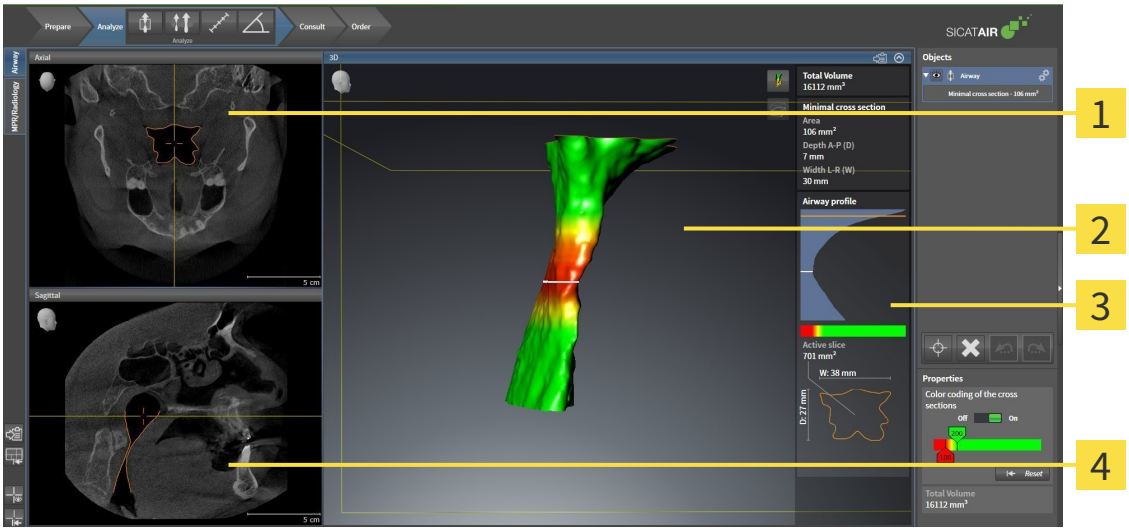
- **Airway** workspace – Information on this can be found in the section *Overview of the airway workspace [▶ Page 386]*.
- **MPR/Radiology** workspace – Information on this can be found in the section *Overview of the MPR/Radiology workspace [▶ Page 387]*.

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:

- *Changing the active workspace [▶ Page 388]*.
- *Adjusting and resetting the layout of workspaces [▶ Page 389]*.
- *Adjusting the views [▶ Page 392]*.
- There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶ Page 403]*.
- You can document the contents of the active workspace. Information on this can be found in the section *Creating screenshots of workspaces [▶ Page 390]*.

12.11.1 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 494]*.

3D VIEW

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

SAGITTAL VIEW

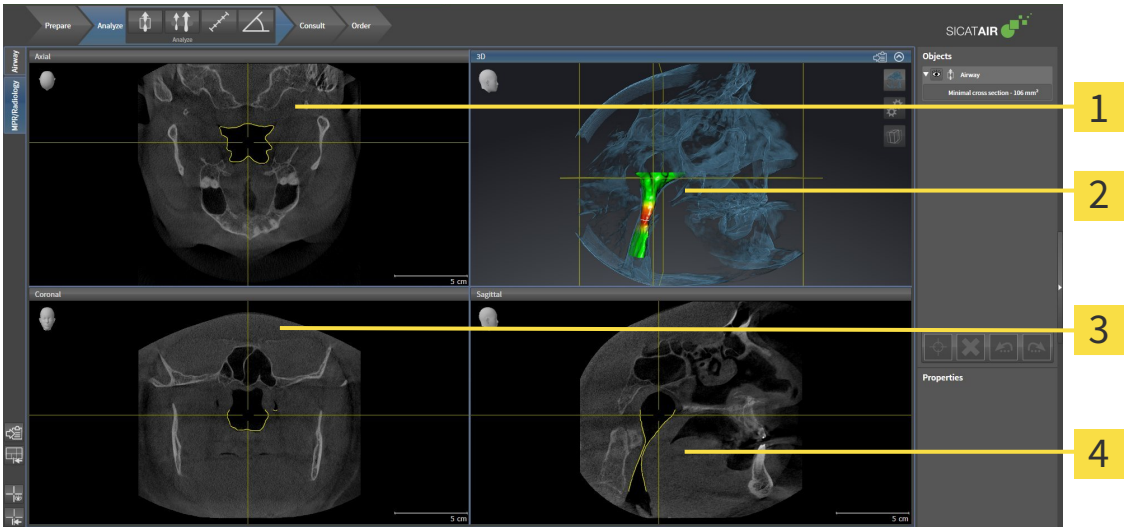
By default, the **Sagittal** view shows slices from the right. You can switch the viewing direction of the **Sagittal** view. Information on this can be found in the section *Changing visualization settings [▶ Page 494]*.

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 392]* and *Adjusting the 3D view [▶ Page 403]*.

If you have created a **Airway** object by segmenting the airway, the airway analysis area will be available in the **3D** view. Information on this can be found in the sections *SICAT Air objects [▶ Page 379]*, *Segmenting the airway [▶ Page 432]* and *Interacting with the airway profile [▶ Page 446]*.

12.11.2 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 494]*.

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 494]*.

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 392]* and *Adjusting the 3D view [▶ Page 403]*.

12.11.3 CHANGING 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.

12.11.4 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 standard layout. This means that the software displays all views in their standard sizes.

12.11.5 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 *Changing the active workspace [▶ Page 388]*.

- 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.

12.12 VIEWS

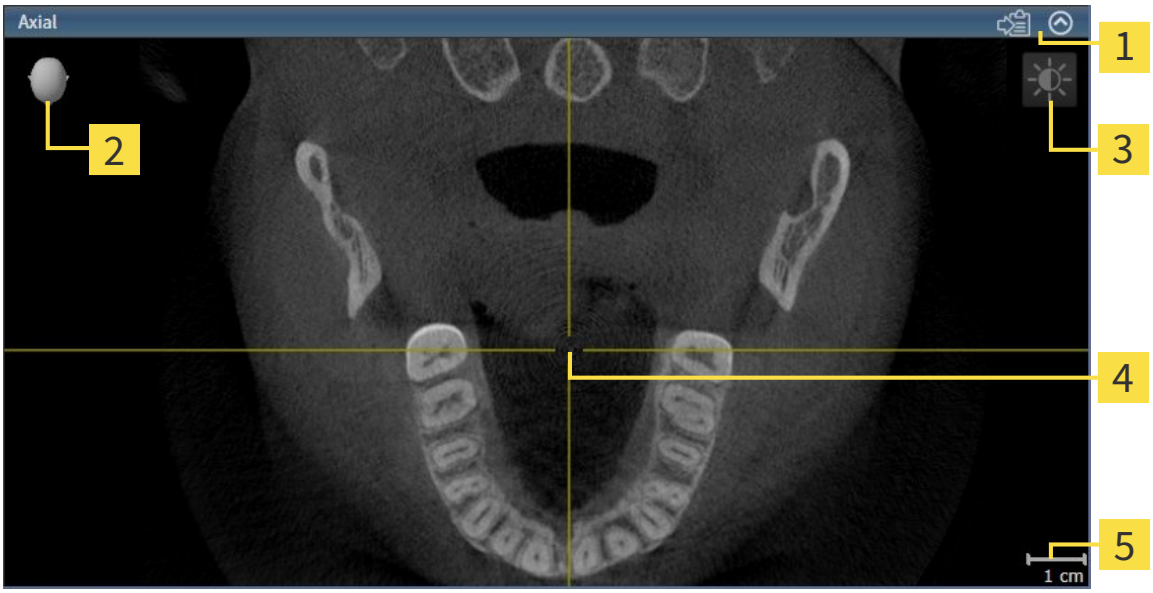
Views are contained in workspaces. A description of the various workspaces and views can be found under *Workspaces [▶ Page 385]*.

You can adjust the views. Information on this can be found in the sections *Adjusting the views [▶ Page 392]* and *Adjusting the 3D view [▶ Page 403]*.

12.12.1 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 394]*.

An active view contains the following elements:



1 Title bar

2 Orientation head

3 View toolbar

4 Crosshair

5 Scale

2D slice views display crosshairs. Crosshairs are lines of intersection with other slice views. SICAT Air synchronizes all slice views with one another. 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.

2D slice views contain a scale.

The following actions are available to adjust the views:

- *Changing the active view [▶ Page 394]*
- *Maximizing and restoring views [▶ Page 395]*
- *Adjusting and resetting the brightness and contrast of the 2D views [▶ Page 396]*
- *Zooming views and panning views [▶ Page 398]*
- *Scrolling through slices in the 2D slice views [▶ Page 399]*
- *Moving, hiding and showing crosshairs and frames [▶ Page 400]*
- *Resetting views [▶ Page 401]*

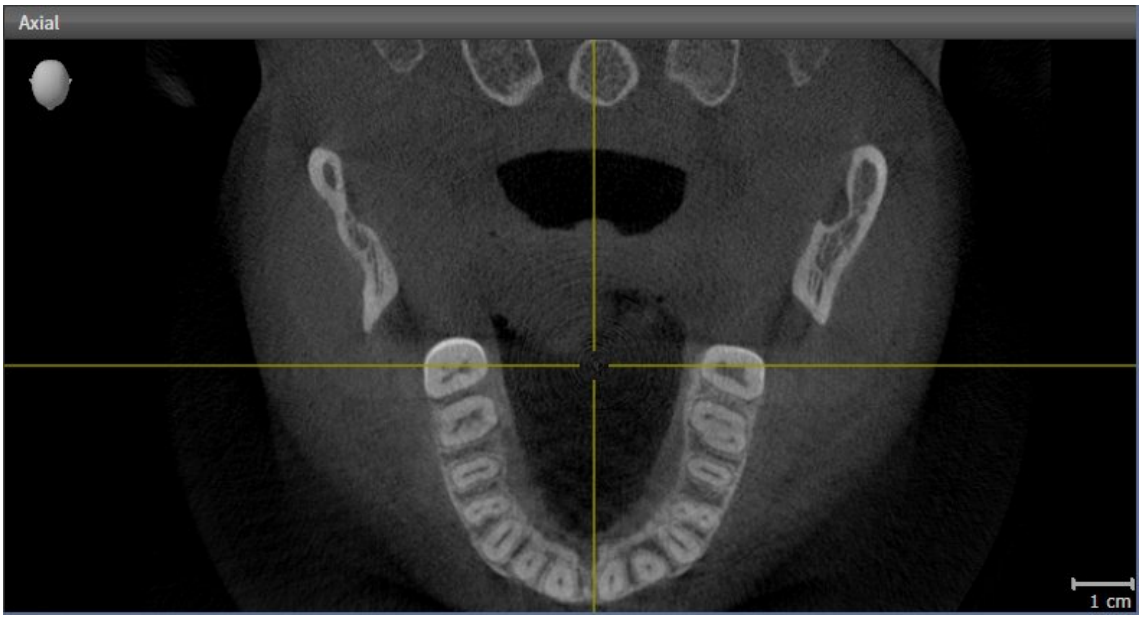
There are additional possibilities to adjust the **3D** view. Information on this can be found in the section *Adjusting the 3D view [▶ Page 403]*.

You can document the content of an active view. Information on this can be found in the section *Creating screenshots of views [▶ Page 402]*.

12.12.2 CHANGING THE ACTIVE VIEW

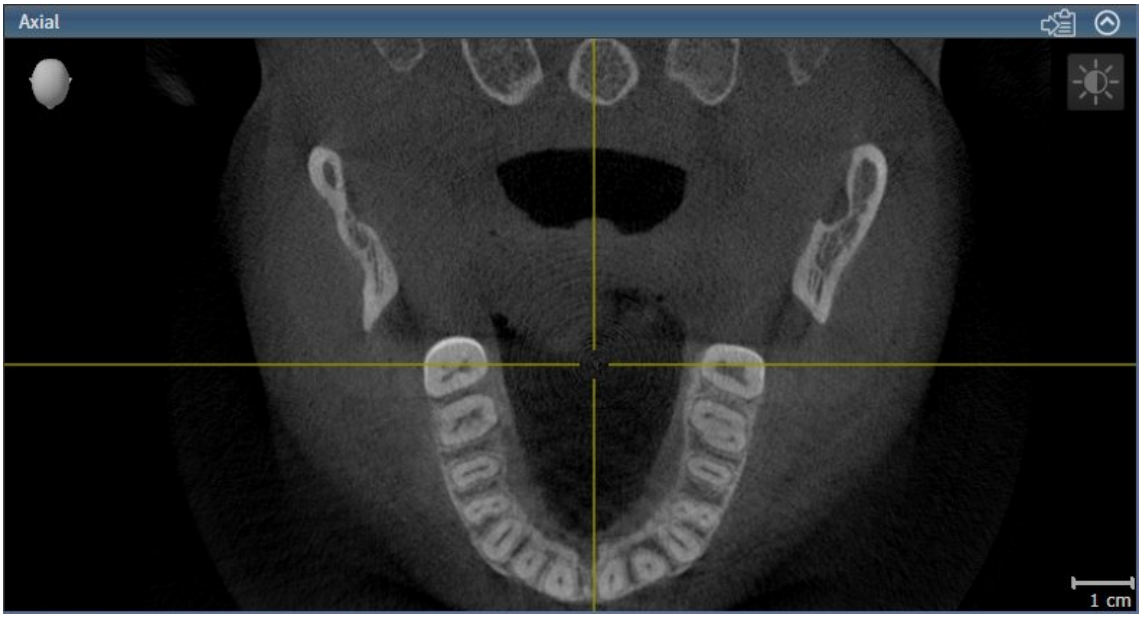
Only the active view shows the **View toolbar** and the title bar.

To activate a view, proceed as follows:



- Click the desired view.

► SICAT Air activates the view:



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

12.12.3 MAXIMIZING AND RESTORING VIEWS

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

☑ The view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 394]*.

☑ The view you require is not maximized.

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

   ▶ 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.

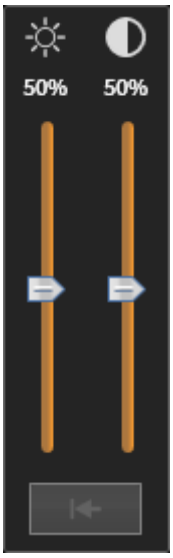
12.12.4 ADJUSTING AND RESETTING THE BRIGHTNESS AND CONTRAST OF THE 2D VIEWS

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

☑ The 2D view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 394]*.

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.

12.12.5 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.

12.12.6 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.

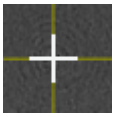
12.12.7 MOVING, HIDING AND SHOWING CROSSHAIRS AND FRAMES

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.

12.12.8 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.

12.12.9 CREATING SCREENSHOTS OF VIEWS

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

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 view you require is already active. Information on this can be found in the section *Changing the active view [▶ Page 394]*.

- 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.

12.13 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 404]*.

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

- *Switching the display mode of the 3D view [▶ Page 406]*
- *Configuring the active display mode of the 3D view [▶ Page 407]*
- *Changing the clipping mode of the 3D view [▶ Page 411]*

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

12.13.1 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 maintains the current viewing direction of the **3D** view.

SELECTING THE 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 standard viewing direction you require.
   ▶ 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.

12.13.2 DISPLAY MODES OF THE 3D VIEW

General information on the **3D** view can be found in the section *Adjusting the 3D view [▶ Page 403]*.

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.

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

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

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

- **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 379]*.

How to activate a display mode of the **3D** view can be found under *Switching the display mode of the 3D view [▶ Page 406]*.

How to configure the active display mode can be found under *Configuring the active display mode of the 3D view [▶ Page 407]*.

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 408]*.

12.13.3 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** is already active. Information on this can be found in the section *Changing the active view [▶ Page 394]*.

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.

12.13.4 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:

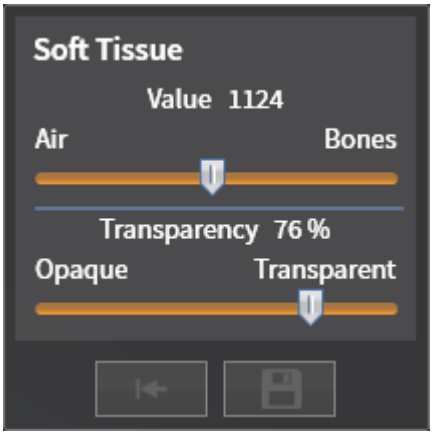
☑ The **3D** is already active. Information on this can be found in the section *Changing the active view [▶ Page 394]*.

☑ The display mode you desire is already active. Information on this can be found in the section *Switching the display mode of the 3D view [▶ Page 406]*.

☑ 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**.

   ▶ The **Advanced** area opens.

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.

12.13.5 CLIPPING MODES OF THE 3D VIEW

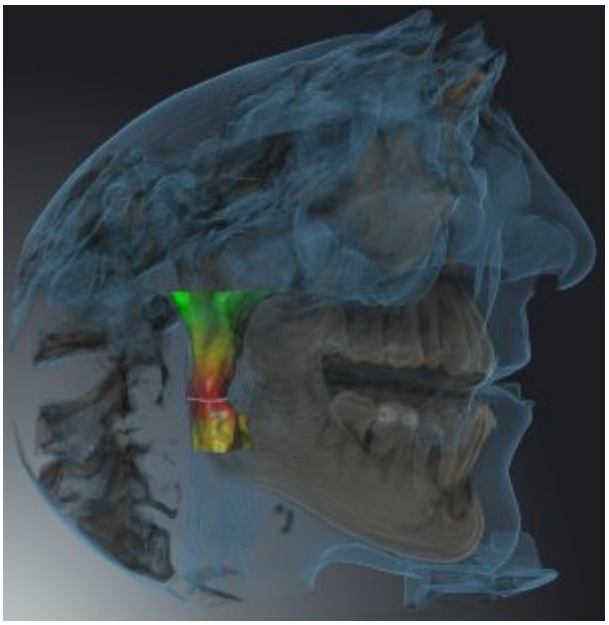
General information on the **3D** view can be found in the section *Adjusting the 3D view [▶ Page 403]*.

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.

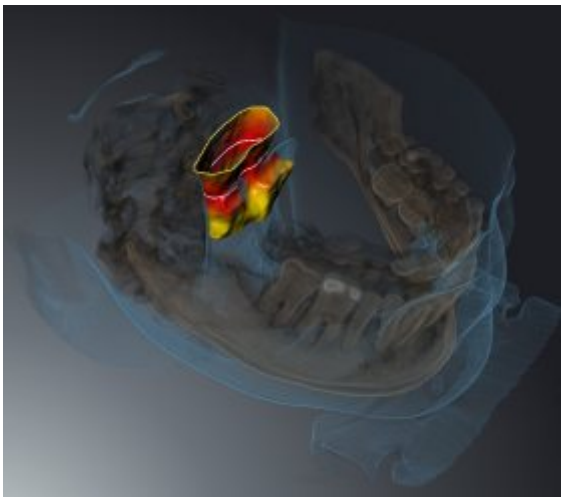


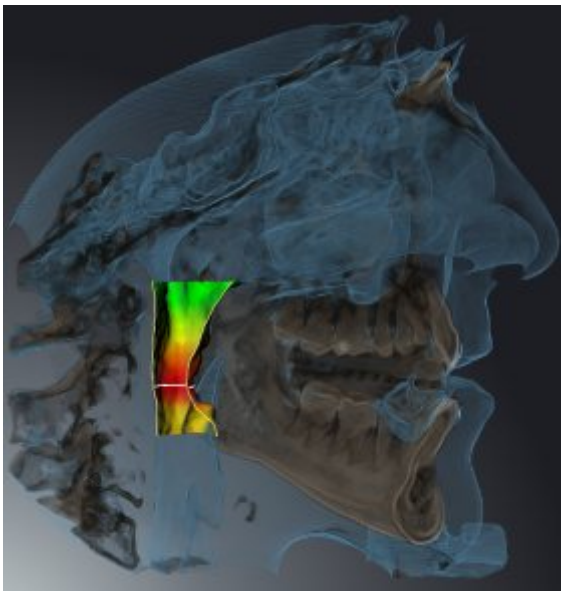
CLIPPING: AIRWAY SLAB

SICAT Air hides all parts of the volume, which are on the side of the airway area. Information on defining the airway region can be found in the section *Defining the airway area [▶ Page 433]*. If you have not defined an airway region, SICAT Air will use default values.

CLIPPING: ACTIVE SLICE

SICAT Air hides all parts of the volume, which are either side of 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 399]*. 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 446]*.





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

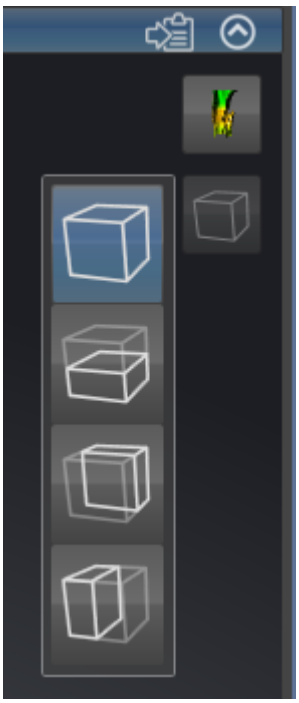
How to activate a clipping mode of the **3D** view can be found under *Changing the clipping mode of the 3D view [▶ Page 411]*.

12.13.6 CHANGING THE CLIPPING MODE OF THE 3D VIEW

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

☑ The **3D** is already active. Information on this can be found in the section *Changing the active view [▶ Page 394]*.

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:



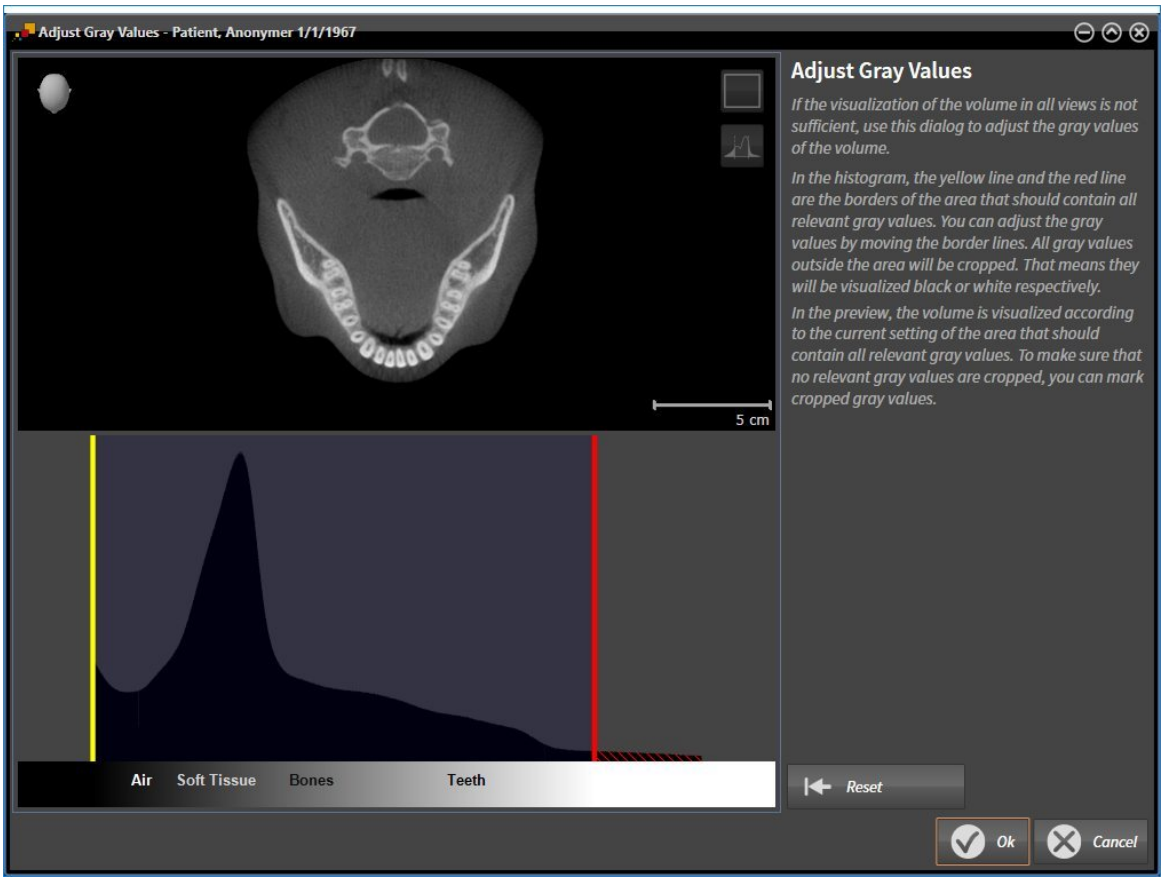
2. Click on the icon of the desired clipping mode.
   ▶ SICAT Air activates the desired clipping mode.
3. Move the mouse pointer out of the transparent **Switch clipping mode** window.

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

12.14 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 borders. 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 **Coronal** 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 cut out.

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

In the **Coronal** projection view, you can check all slices for cut-out gray scale values at once.

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 414]*.

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 396]*.

You can also adjust the display of the **3D** view. Information on this can be found in the section *Switching the display mode of the 3D view [▶ Page 406]*, *Configuring the active display mode of the 3D view [▶ Page 407]* and *Changing the clipping mode of the 3D view [▶ Page 411]*.

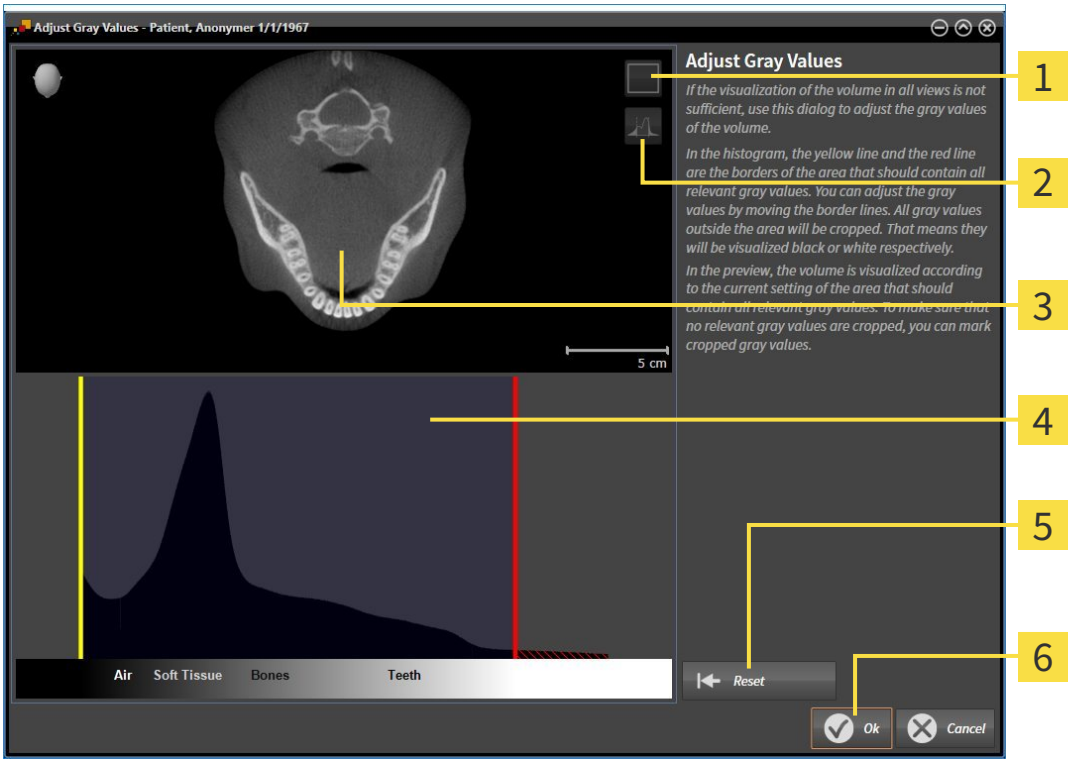
12.14.1 ADJUSTING GRAY SCALE VALUES

General information on gray scale values can be found in the section *Gray scale values [▶ Page 412]*.

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 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 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**.

12.15 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:

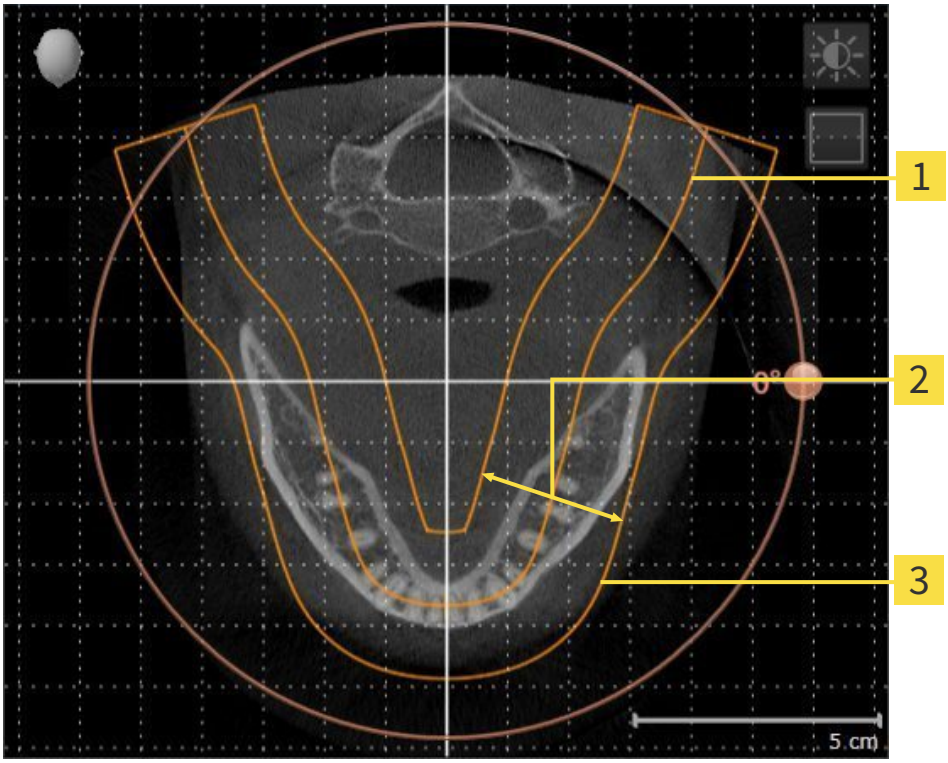
- Sub-optimal positioning of the patient during the 3D X-ray scan
- Orientation according to case, for example orientation of the axial slices parallel to the Frankfurt plane or parallel to the bite plane
- Optimizing the panorama view

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 418]*.

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 423]*.

12.15.1 ADJUSTING THE VOLUME ORIENTATION

General information on the volume orientation can be found in the section *Volume orientation and panoramic region [▶ Page 416]*.

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

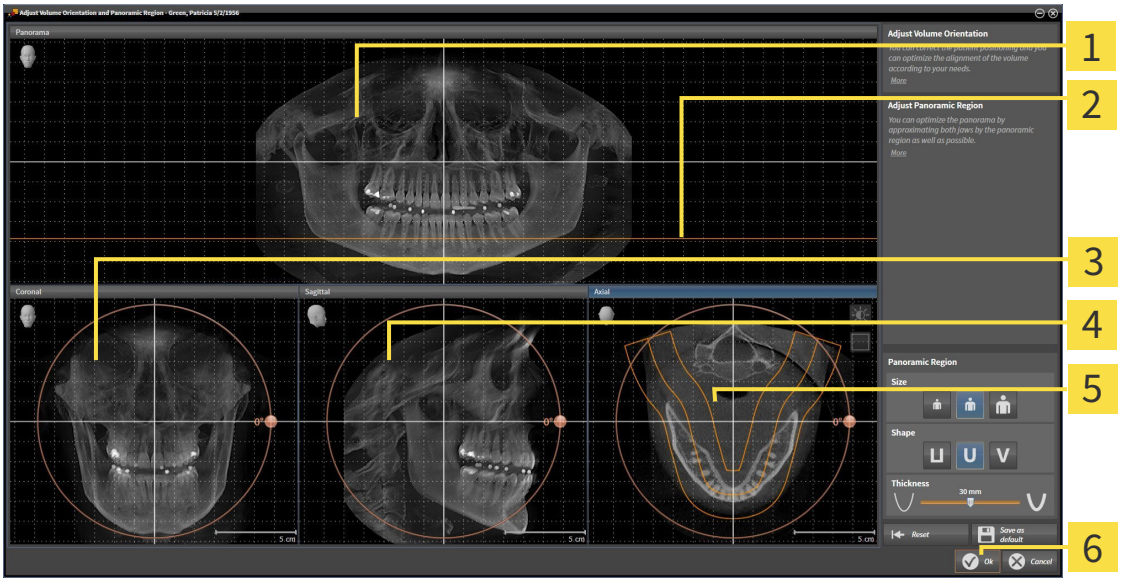
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Rotating volumes in the **Coronal** view
- Rotating volumes in the **Sagittal** view
- Rotating volumes in the **Axial** view

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.

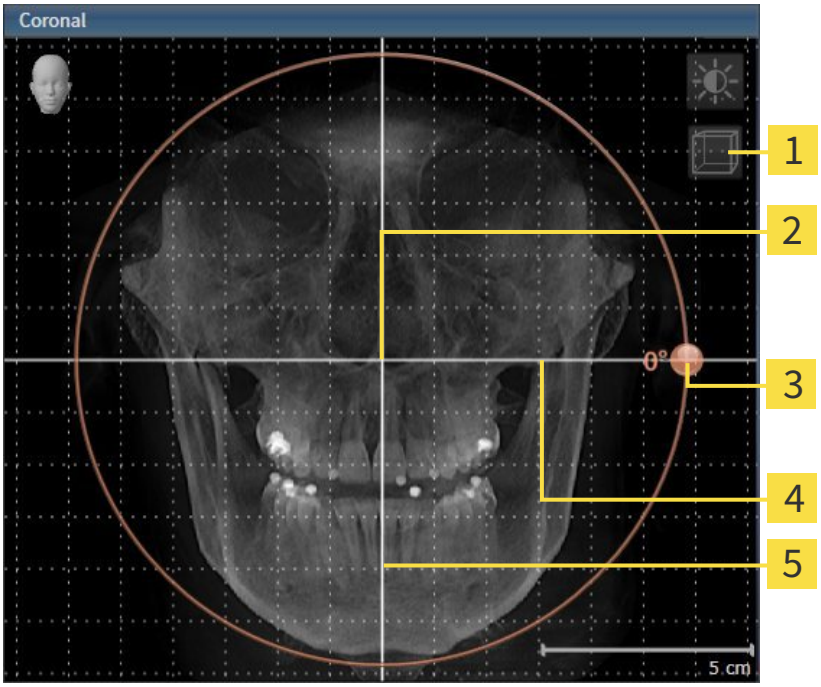
▶ The **Adjust Volume Orientation and Panoramic Region** window opens:



1	**Panorama** view	4	**Sagittal** view with **Rotation** slider
2	Axial reference line	5	**Axial** view with **Rotation** slider
3	**Coronal** view with **Rotation** slider	6	**OK** button

ROTATING VOLUMES IN THE CORONAL VIEW

1. Activate the **Coronal** view:

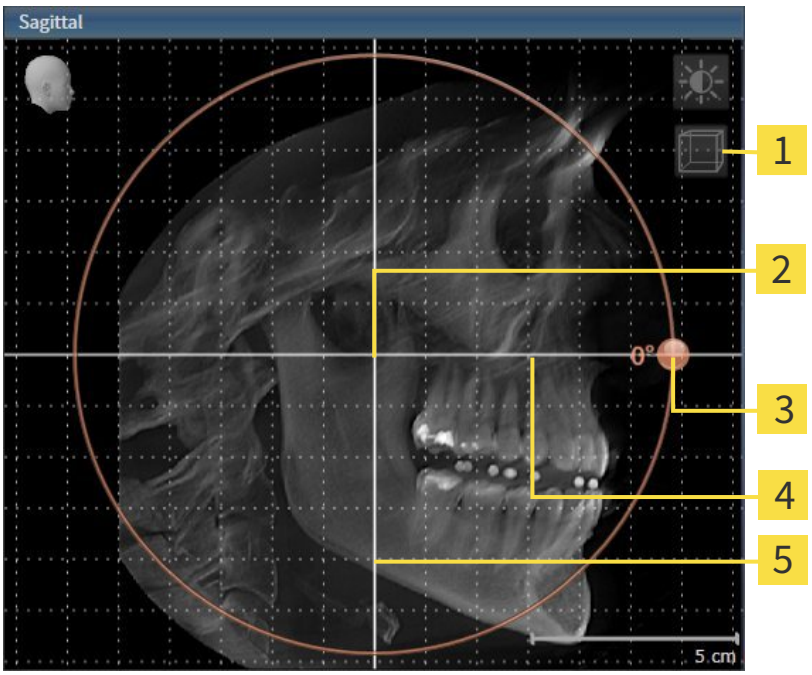


1	**Enable slices mode** icon or **Enable projection mode** icon
2	Center of rotation
3	**Rotation** slider
4	Horizontal reference line
5	Vertical reference line

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 direction you require.
   ▶ 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:

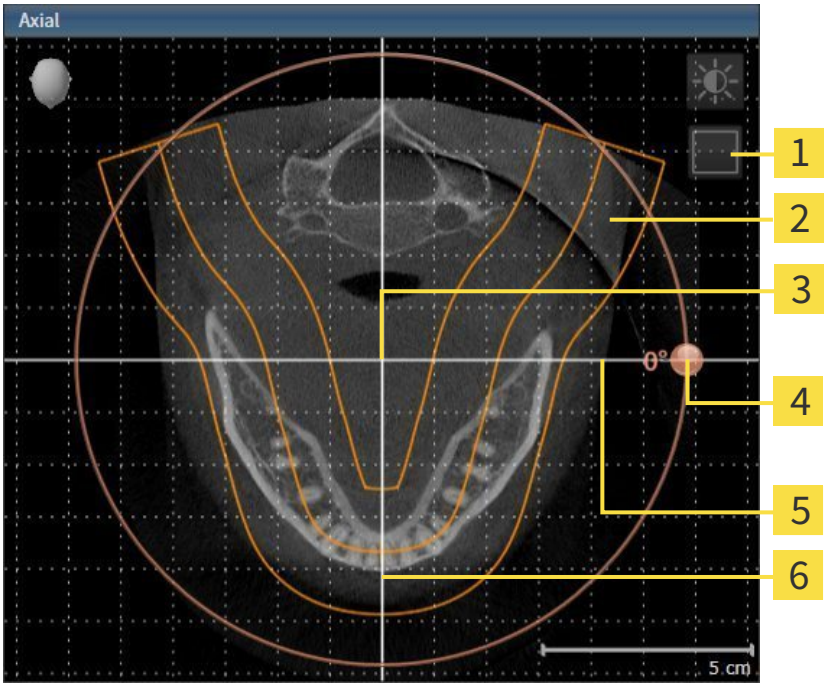


1	**Enable slices mode** icon or **Enable projection mode** icon	4	Horizontal reference line
2	Center of rotation	5	Vertical reference line
3	**Rotation** slider		

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 direction you require.
   ▶ 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 hold 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 direction you require.
   ▶ 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 view you require 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 396]*.
- 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**.

12.15.2 ADJUSTING THE PANORAMIC REGION

General information on the panoramic region can be found in the section *Volume orientation and panoramic region [▶ Page 416]*.

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

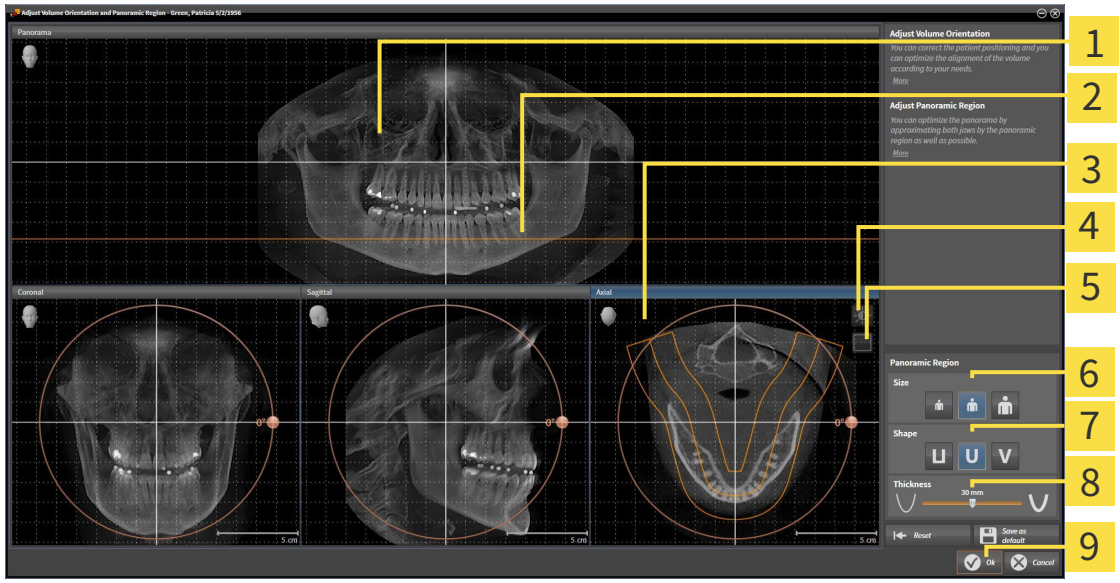
- Opening the **Adjust Volume Orientation and Panoramic Region** window
- Adjusting the slice position of the **Axial** view
- Moving the panoramic region
- Rotating volumes in the **Axial** view
- Adjusting **Size**, **Shape** and **Thickness** in the panoramic region

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** will conform 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 view you require 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 396]*.
- 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**.

12.16 DISTANCE AND ANGLE MEASUREMENTS

There are two different types of measurement in SICAT Air:

- Distance measurements

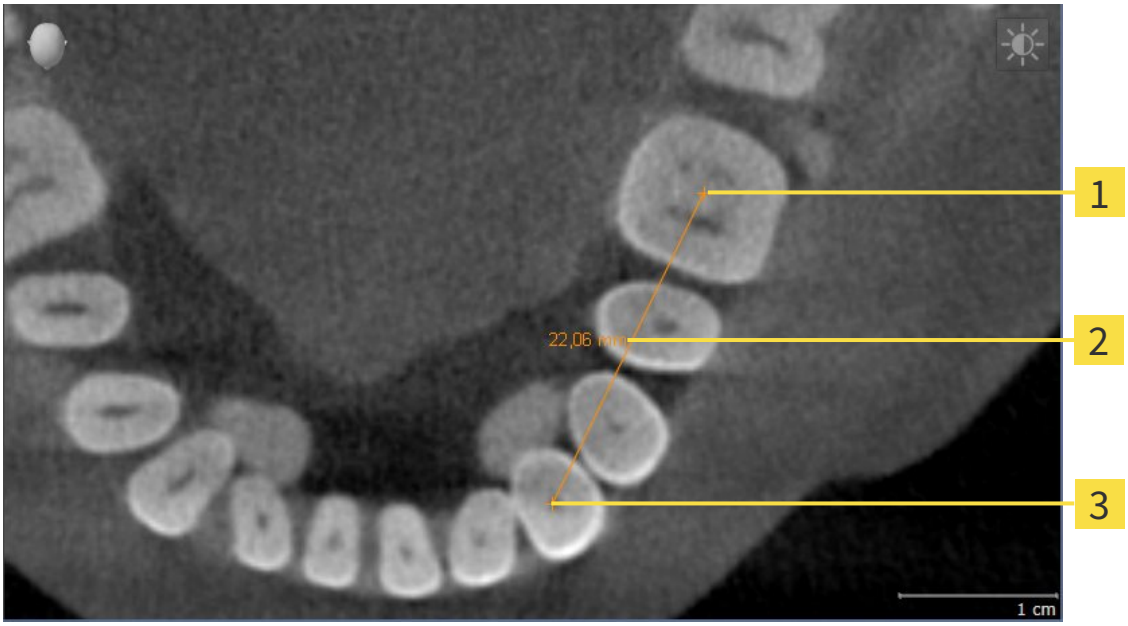
- Angle measurements

The tools to add measurements are 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 also adds it to the **Measurements** group in the **Object browser**.

The following actions are available for measurements:

- *Adding distance measurements [▶ Page 427]*
- *Adding angle measurements [▶ Page 428]*
- *Moving measurements, individual measuring points and measured values [▶ Page 430]*
- Activating, hiding and showing measurements – Information on this can be found in the section *Managing objects with the object browser [▶ Page 376]*.
- 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 378]*.

12.16.1 ADDING DISTANCE MEASUREMENTS



1 Starting point

2 Measured value

3 End point

To add a distance measurement, proceed as follows:

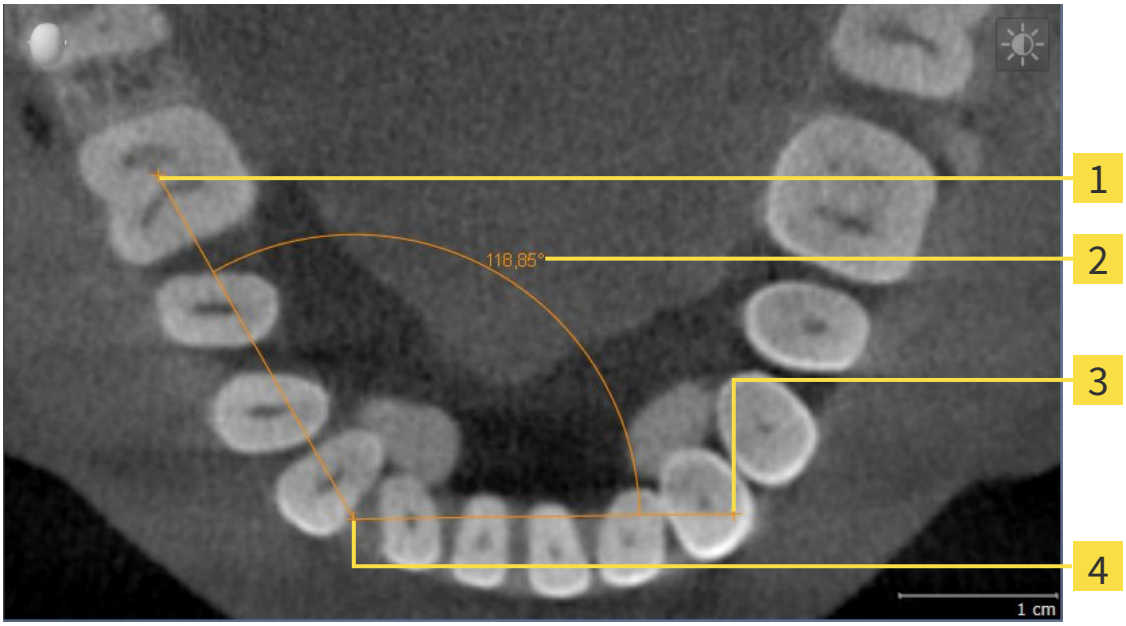
☑ The **Diagnose** workflow step is already expanded.

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**.

12.16.2 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 arm of the angle measurement by 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 arm of the angle measurement by a line from the vertex to the mouse pointer.
   ▶ SICAT Air shows the current angle between both arms of the angle measurement and in the **Object browser**.
5. Move the mouse pointer to the end point of the second arm and left-click.

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

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

12.16.3 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. Information on this can be found in the sections *Managing objects with the object browser [▶ Page 376]* and *Managing objects with the object toolbar [▶ Page 378]*.

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. Information on this can be found in the sections *Managing objects with the object browser [▶ Page 376]* and *Managing objects with the object toolbar [▶ Page 378]*.

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. Information on this can be found in the sections *Managing objects with the object browser [▶ Page 376]* and *Managing objects with the object toolbar [▶ Page 378]*.

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.

12.17 SEGMENTING THE AIRWAY

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 418]*. 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 433]*

The following steps are optional:

- *Correcting the airway segmentation [▶ Page 437]*
- *Removing non-required areas from the airway [▶ Page 439]*

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 440]*.

12.17.1 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 432]*.

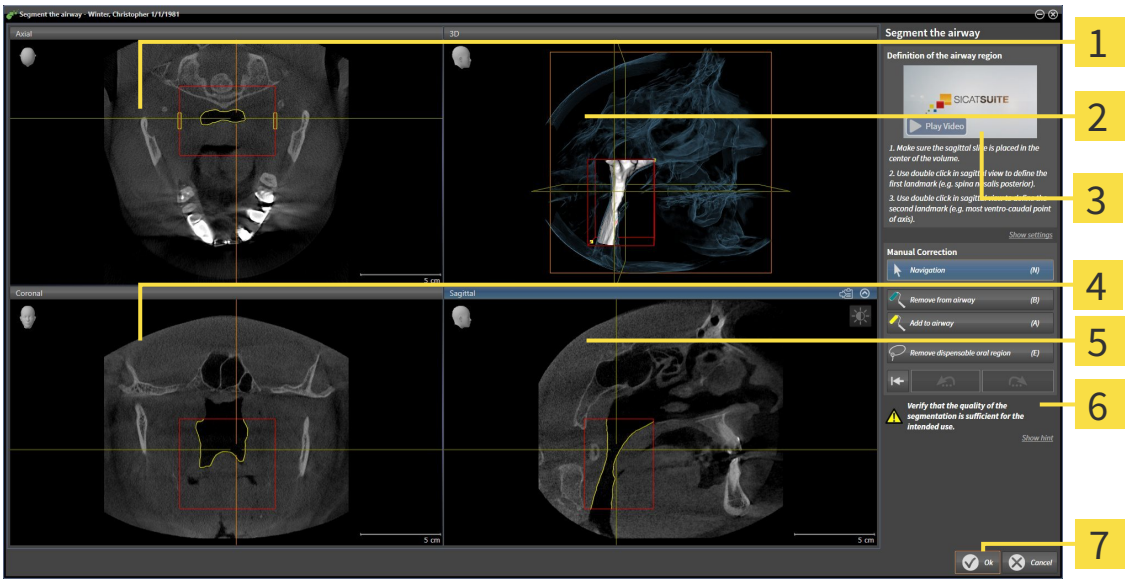
OPENING THE "SEGMENT THE AIRWAY" WINDOW

☑ 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 418]*.

☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 372]*.

- 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

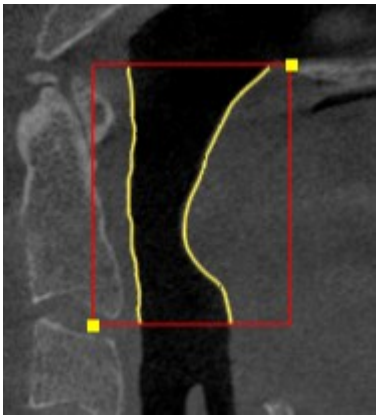
6 Tool area

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 region 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.

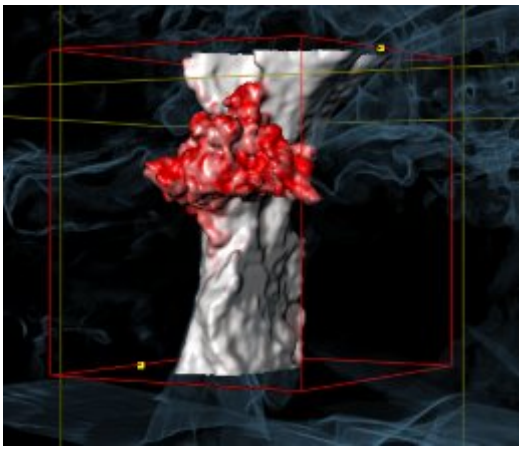
4. Double click on the position of the lower reference point of the airway in the **Sagittal** view.

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

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

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

▶ SICAT Air marks areas red in the **3D** view, which the software cannot clearly identify as a 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 region according to the position of the reference point.
6. Release the left mouse button.

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

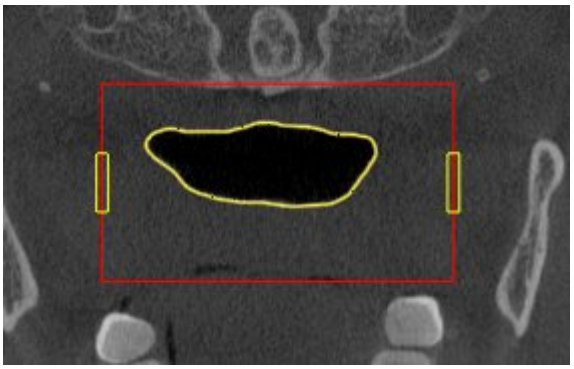
▶ SICAT Air automatically segments the airway again based on the new airway region.

▶ SICAT Air marks areas red in the **3D** view, which the software cannot clearly identify as a 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 markings 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 region according to the new lateral size.

6. Release the left mouse button.

▶ SICAT Air maintains the new position of the marker.

▶ SICAT Air automatically segments the airway again based on the new airway region.

▶ SICAT Air marks areas red in the **3D** view, which the software cannot clearly identify as a airway.

If the segmentation of the airway matches the anatomical circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 441]*.

If the segmentation of the airway does not match the anatomical circumstances, continue with the section *Correcting the airway segmentation [▶ Page 437]* or *Removing non-required areas from the airway [▶ Page 439]*.

In addition to the described process, the following actions are available in the **Segment the airway** assistant:

- 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 396]*.
- 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 402]*.
- 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.

12.17.2 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 the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 432]*.

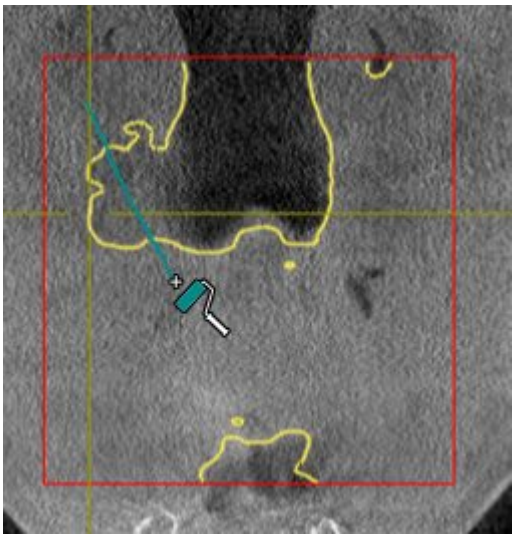
REMOVING INCORRECTLY IDENTIFIED AREAS FROM THE AIRWAY

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

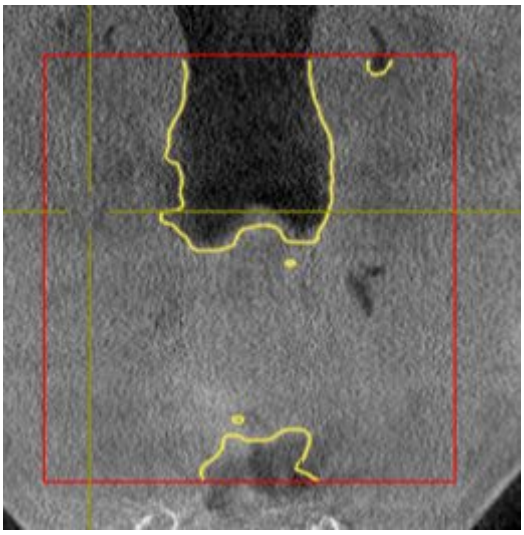
In your corrections, consider in particular the areas marked red in the **3D** view. However, these areas may not be the only areas, which SICAT Air could have incorrectly identified as part of the airway.

☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶ Page 433]*.

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, which 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 433]*.

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 circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 441]*.

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 440]*.

12.17.3 REMOVING NON-REQUIRED AREAS FROM THE AIRWAY

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 432]*.

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.

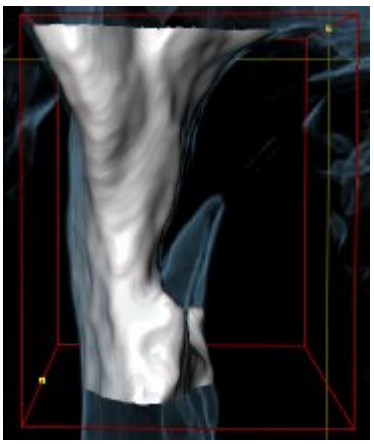
☑ You have already defined an airway area. Information on this can be found in the section *Defining the airway area [▶ Page 433]*.

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

   ▶ The mouse pointer becomes a lasso.

2. Frame areas, which 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 circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 441]*.

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 440]*.

12.17.4 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 the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 432]*.

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 *Defining the airway area [▶ Page 433]*.

1. Click the **Show settings** button in the **Segment the airway** window.
   ▶ The **Show settings** area opens.
2. Activate the **Segment the airway manually** check box.
   ▶ If available, SICAT Air will remove the 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 markings.

▶ **3D** marks areas red in the SICAT Air view, which 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 437]*
- *Removing non-required areas from the airway [▶ Page 439]*

If the segmentation of the airway matches the anatomical circumstances, continue with the section *Completing the segmentation of the airway [▶ Page 441]*.

12.17.5 COMPLETING THE SEGMENTATION OF THE AIRWAY

General information on the segmentation of the airway can be found in the section *Segmenting the airway [▶ Page 432]*.

☑ 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 433]*.

- If the segmentation does matches the anatomic characteristics, click **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.

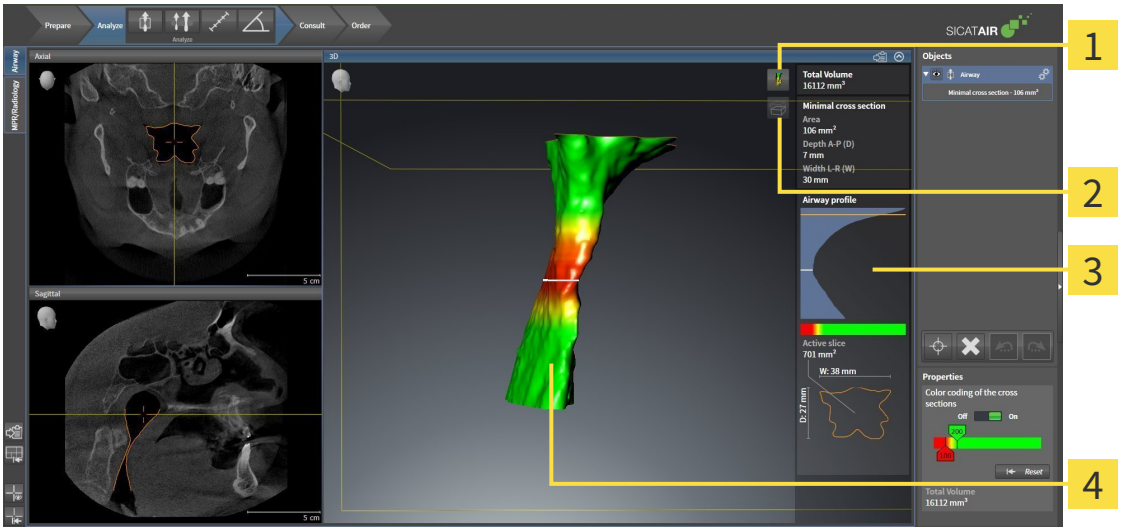
▶ In **Object bar**, SICAT Air creates a **Airway** object.

12.18 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 432]*.

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

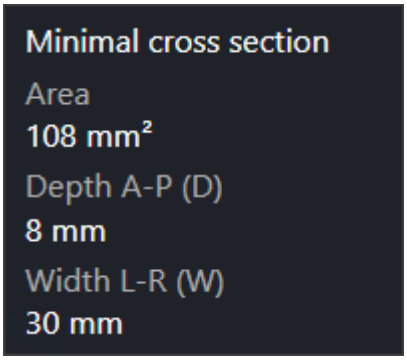
TOTAL VOLUME

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.

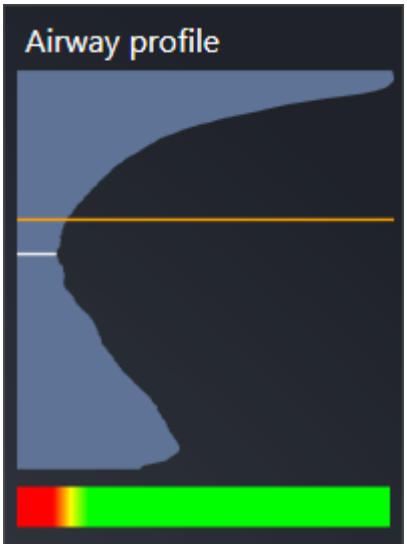
The upper part of the airway analysis area looks as follows:



You can view the following information on the segmented airway:

- **Minimal cross section**
- **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, which 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 section 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 446]*.

The color gradient beneath 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

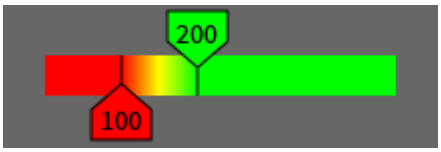
DISPLAY MODES

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 405]*.

CLIPPING MODES

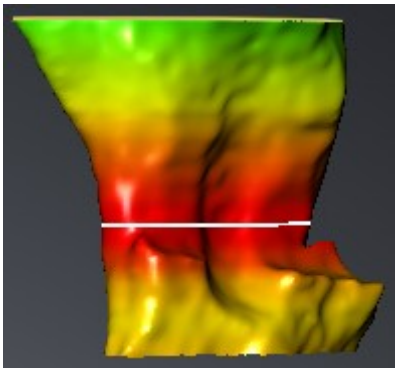
In the **3D** view, SICAT Air can hide certain areas of the volume with different clipping modes. Information on this can be found in the section *Clipping modes of the 3D view [▶ Page 408]*.

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 379]*. You should select the upper threshold so that you can regard all areas of the airway above this as healthy. You should select the lower threshold so that you can regard all areas of the airway below this as pathological. SICAT Air illustrates the area between as the 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 496]*.

12.18.1 INTERACTING WITH THE AIRWAY PROFILE

General information on the airway analysis can be found in the section *Airway analysis [▶ Page 442]*.

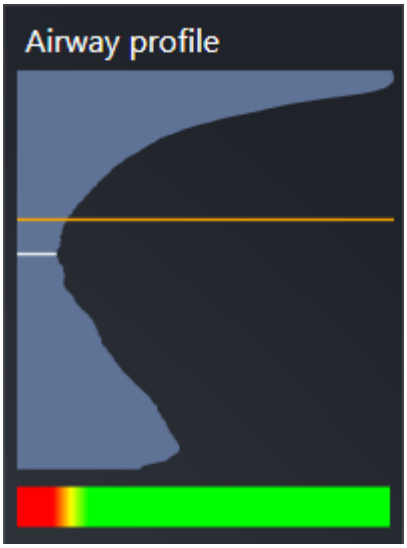
To interact with the airway profile, proceed as follows:

☑ The **Airway** workspace is already open. Information on this can be found in the section *Changing the active workspace [▶ Page 388]*.

☑ You have already segmented the airway. Information on this can be found in the section *Defining the airway area [▶ Page 433]*.

- Click on the slice you require in the airway profile.

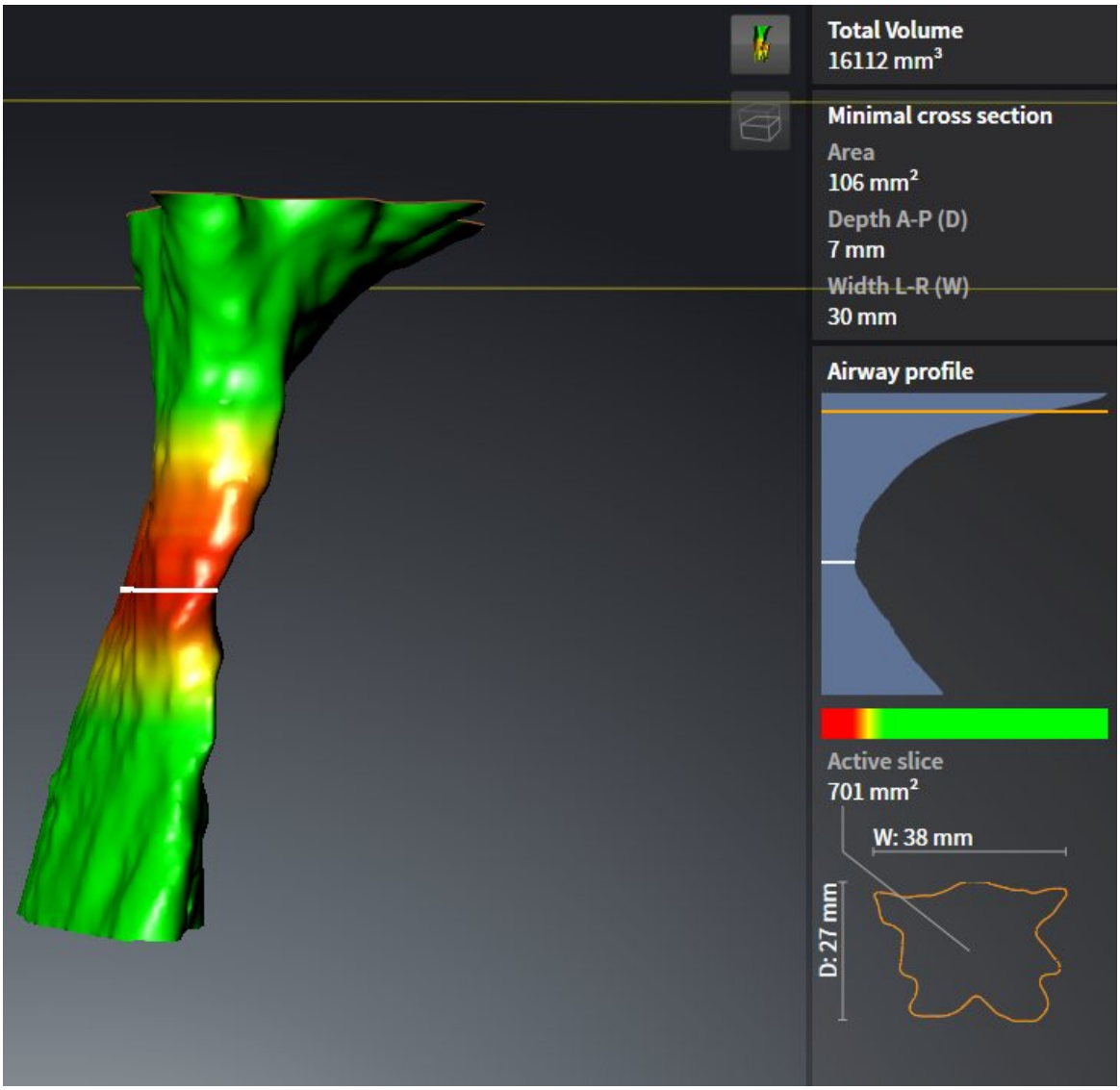
▶ In the airway profile, an orange line shows the selected slice:



▶ 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 middle of the airway in the 2D views.

12.19 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 418]*. 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 area, the lower jaw is in an untreated position.
- In one 3D X-ray scan area, the lower jaw 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 labeled the 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 in order perform an airway comparison:

- Both 3D X-ray scans have the same resolution.
- The reference 3D X-ray scan already has an airway object.
- The 3D X-ray scan with the lower jaw 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 449]*.

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.

12.19.1 CARRYING OUT AN AIRWAY COMPARISON

Information on this can be found in the section *Airway comparison [▶ Page 448]*.

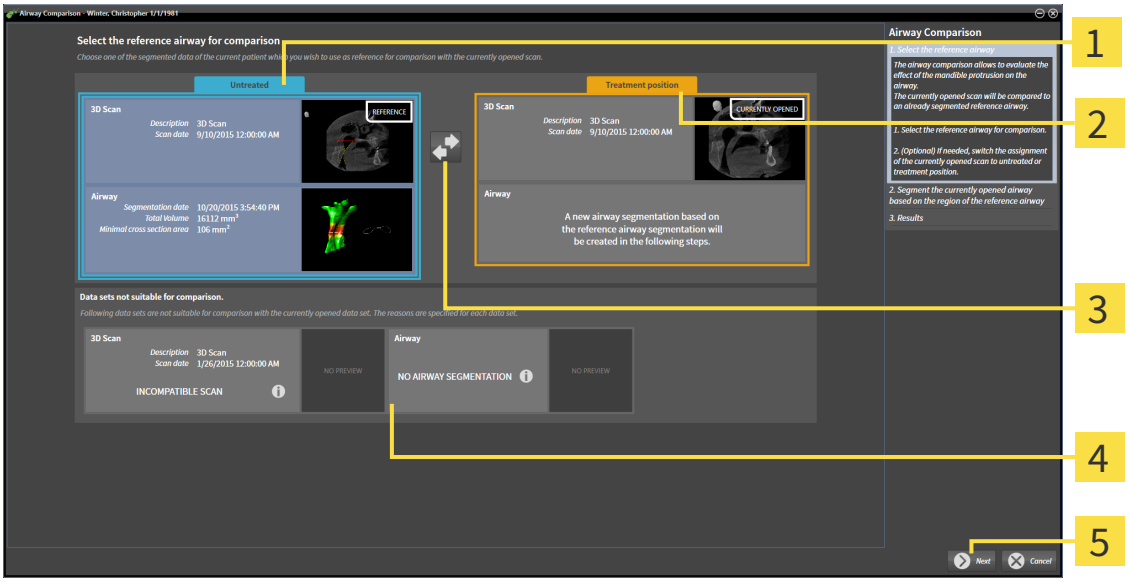
OPENING THE “AIRWAY COMPARISON” WINDOW

- ☑ 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 433]*.
- ☑ 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 418]*.
- ☑ The **Analyze** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 372]*.

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

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

SELECTING THE REFERENCE AIRWAY



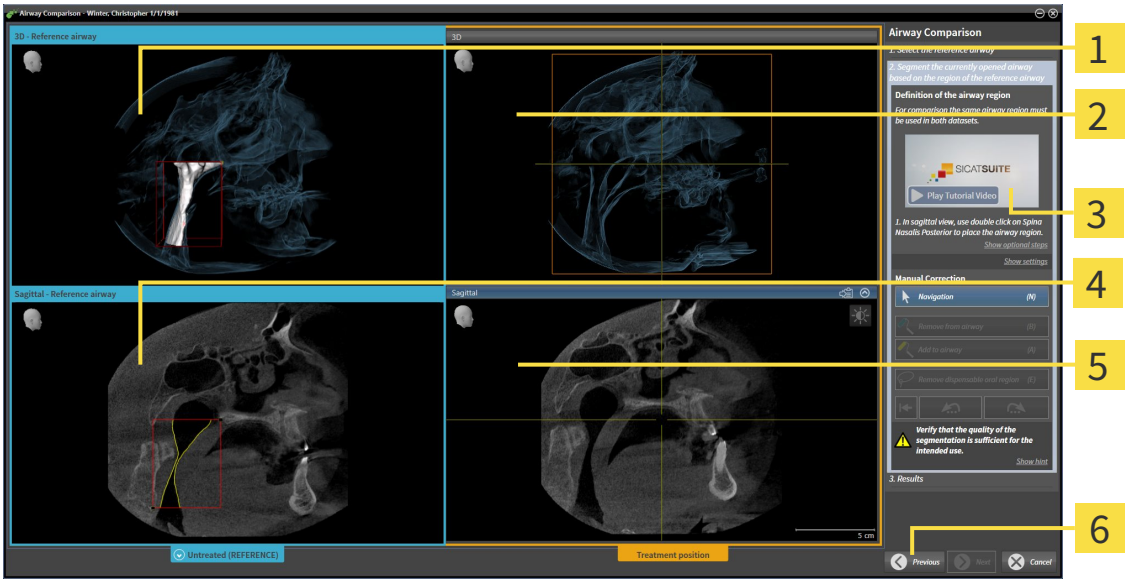
1 **Untreated** list	4 List of 3D X-ray scans, which are not suitable for the airway comparison
2 **Treatment position** list	5 **Next** button
3 **Switch the assignment to untreated and treatment position** icon	

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 FOR COMPARISON



1 **3D** view of the 3D X-ray scan in reference position (you cannot change this view)

2 **3D** view of the 3D X-ray scan in the treatment position (you cannot change this view)

3 Tutorial video

4 **Sagittal** view of the volume in reference position

5 **Sagittal** view of the 3D X-ray scan in the treatment position

6 **Previous** button

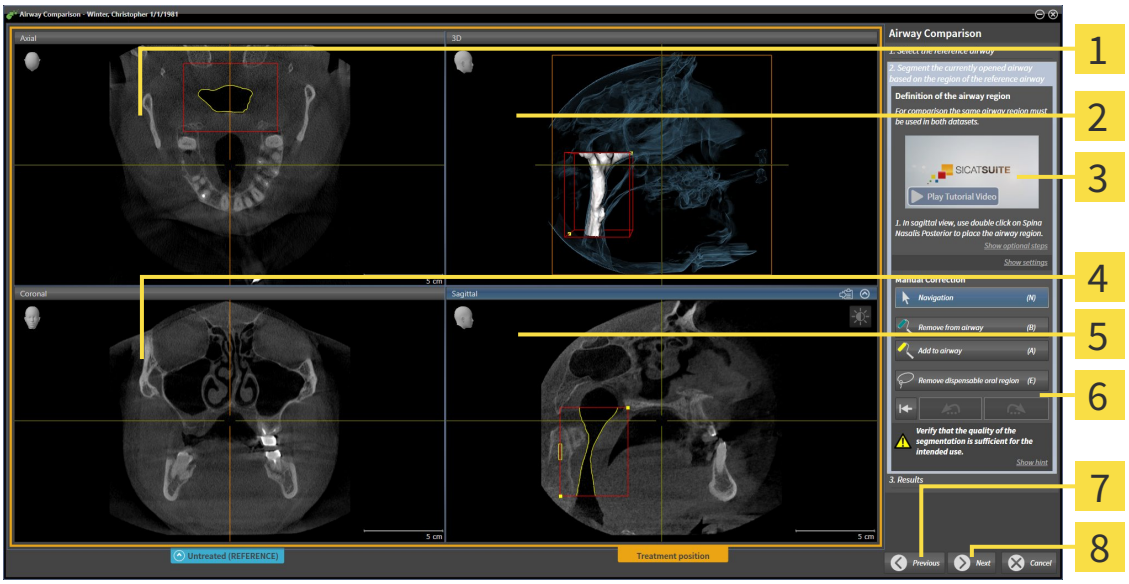
Both airways must be the same height. Therefore, you can only define the top right reference point of the airway area. SICAT Air then automatically defines the lower left reference point of the airway area.

1. Segment the 3D X-ray scan in the treatment position by double clicking on the same anatomical position of the upper reference point of the airway as in the reference 3D X-ray scan in the **Sagittal** view.

   ▶ SICAT Air segments the 3D X-ray scan in the treatment position with the selected upper reference point and an airway area, which 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

2 **3D** view of the 3D X-ray scan in the treatment position

3 Tutorial video

4 **Coronal** view of the 3D X-ray scan in the treatment position

5 **Sagittal** view of the 3D X-ray scan in the treatment position

6 Tool area

7 **Previous** button

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.

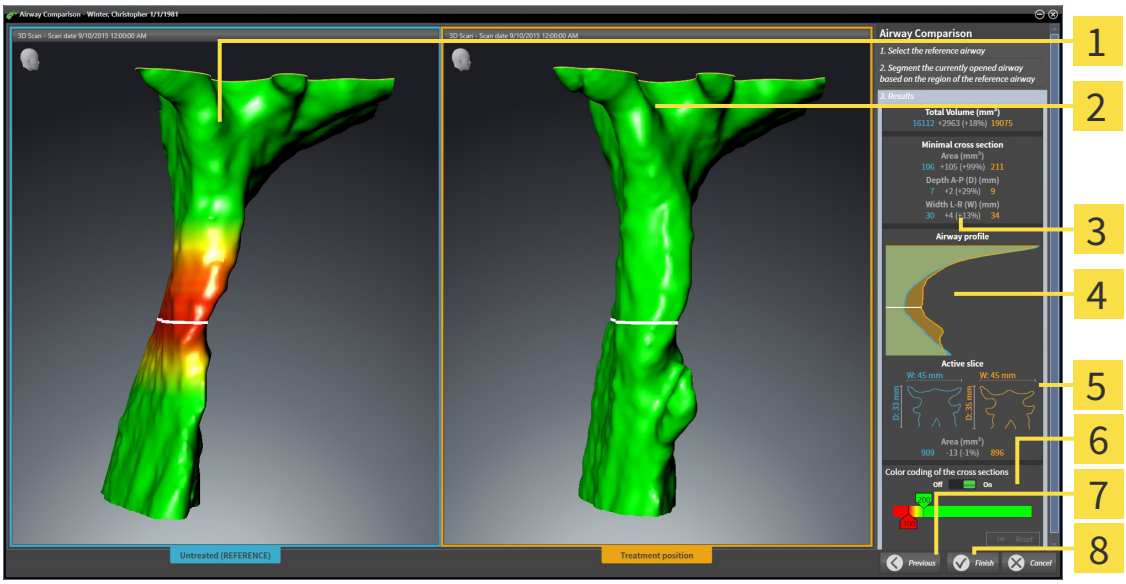
4. Correct the segmentation of the 3D X-ray scan in the treatment position where necessary. The same correction tools are available as in the **Segment the airway** window. Information on this can be found in the sections *Correcting the airway segmentation [▶ Page 437]* and *Removing non-required areas from the airway [▶ Page 439]*.

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

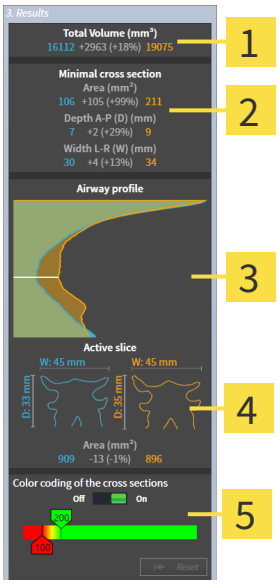


1 **3D** view of the untreated airway	5 Juxtaposition of the cross-sections when untreated and in the treatment position
2 **3D** view of the segmented airway of the 3D X-ray scan in the treatment position	6 Color coding
3 Juxtaposition of the data of the segmented airway when untreated and in the treatment 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 compare both airway systems well. SICAT Air does not synchronize the movement.

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

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



1 **Total volume (mm³)**

2 **Minimal cross section**

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. Otherwise, the view contains the same elements as the airway analysis area. Information on this can be found in the section *Airway analysis [▶ Page 442]*.

5. Use the **Airway profile** area to select a slice, at which the SICAT Air cuts the illustration 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 a **Airway comparison** object beneath 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**.

12.20 PATIENT INFORMATION

CAUTION

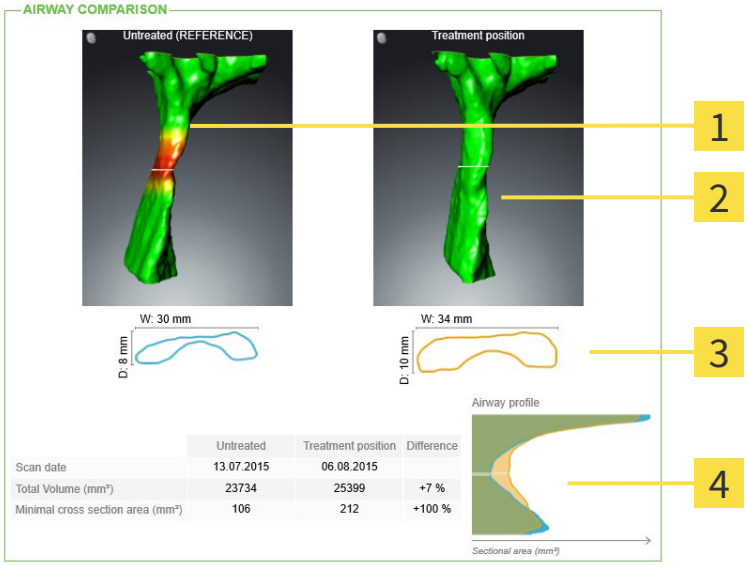
Using the handout for diagnosis purposes may result in an incorrect diagnosis and treatment.

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 a lower jaw protrusion to the patient through illustrations customized for the patient. In SICAT Air, the patient information is performed in two steps:

1. In your practice within SICAT Air
2. Patient information via the handout

You can create 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.

The creation of the handout consists of the following steps:

- *Creating images and screenshots [▶ Page 456]*
- *Preparing handouts [▶ Page 459]*
- *Producing handouts [▶ Page 463]*

You can print handouts or save them as PDF files. You can open the PDF files in PDF viewers, which SICAT Air supports. Information on this can be found in the section *System requirements [▶ Page 11]*.

12.20.1 CREATING IMAGES AND SCREENSHOTS

NOTICE	**Before creating images and screenshots, 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 418]*. If you align the volume only after creating images and screenshots, SICAT Air removes the object and you must carry out segmentation once more.**

General information on informing the patient can be found in the section *Patient information [▶ Page 455]*.

General information, on managing images and screenshots can be found under *SICAT Air objects [▶ Page 379]*.

There are two tools:

- Draw arrows
- Draw circles

DRAW ARROWS

To draw an arrow, 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 418]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 372]*.

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 position you require for the tip of the arrow.
   ▶ SICAT Air shows an arrow in the view.
   ▶ The end of the arrow will now match the position of the mouse pointer.
4. Move the mouse pointer to the desired position for the end of the arrow and release the left button.
   ▶ SICAT Air shows the finished arrow in the view.
   ▶ If not yet available, SICAT Air will create structures required for the **Image** object in the **Object browser**. Information on this can be found in the section *SICAT Air objects [▶ Page 379]*.
   ▶ The image will be available in the **Generate handout** window.
5. Click on the **Draw Arrow** icon.

▶ SICAT Air closes the mode to draw arrows.

DRAW 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 418]*.

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 372]*.

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 position you require for the middle of the circle.
   ▶ 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.
4. 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 structures required for the **Image** object in the **Object browser**. Information on this can be found in the section *SICAT Air objects [▶ Page 379]*.
   ▶ The image will be available in the **Generate handout** window.
5. 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 using a drawing tool by clicking on a point outside the view in question or by pressing the **ESC** key.

CONFIGURING DRAWING TOOLS

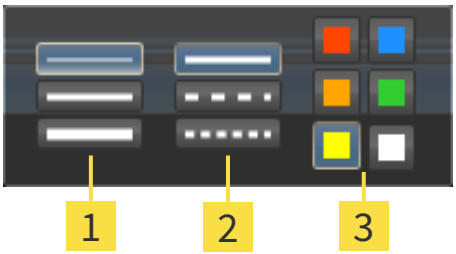
You can configure the **Draw Arrow** drawing tool or **Draw Circle** drawing tool separately. Changes to the settings will only affect drawing objects created after that point.

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 372]*.

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 in 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:

- Click on the **Copy screenshot to clipboard (Ctrl+C)** icon in the **View toolbar** of the view you require.

▶ SICAT Air will create structures required for the **Screenshot** object in the **Object browser** and activate the object. Information on this can be found in the section *SICAT Air objects [▶ Page 379]*.

▶ The screenshot will be available in the **Generate handout** window.

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

Continue with the section *Preparing handouts [▶ Page 459]*.

12.20.2 PREPARING HANDOUTS

General information on informing the patient can be found in the section *Patient information [▶ Page 455]*.

The following actions are available for preparing handouts:

- Opening the **Generate handout** window
- Preparing elements
- Changing settings of the handout

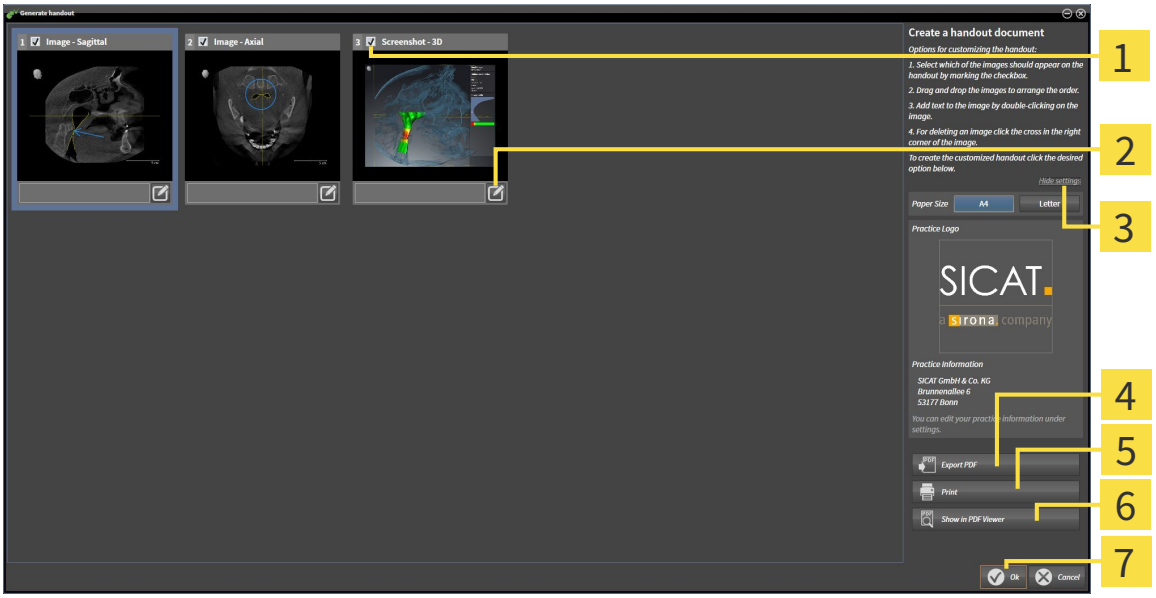
OPENING THE "GENERATE HANDOUT" WINDOW

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

☑ The **Consult** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 372]*.

- Click on the **Generate handout** icon.

▶ The **Generate handout** window opens:



1	Check box to activate and deactivate screenshots	5	**Print** button
2	**Edit image description** icon	6	**Show in PDF Viewer** button
3	**Settings**	7	**OK** button
4	**Export PDF** button		

PREPARING ELEMENTS FOR HANDOUTS

The **Generate handout** window shows screenshots from **Image** objects, screenshots from **Screenshot** objects and information from **Airway Comparison** objects. Information on this can be found in the sections *Creating images and screenshots [▶ Page 456]* and *Carrying out an airway comparison [▶ Page 449]*.

If you want to prepare elements for handouts, proceed as follows:

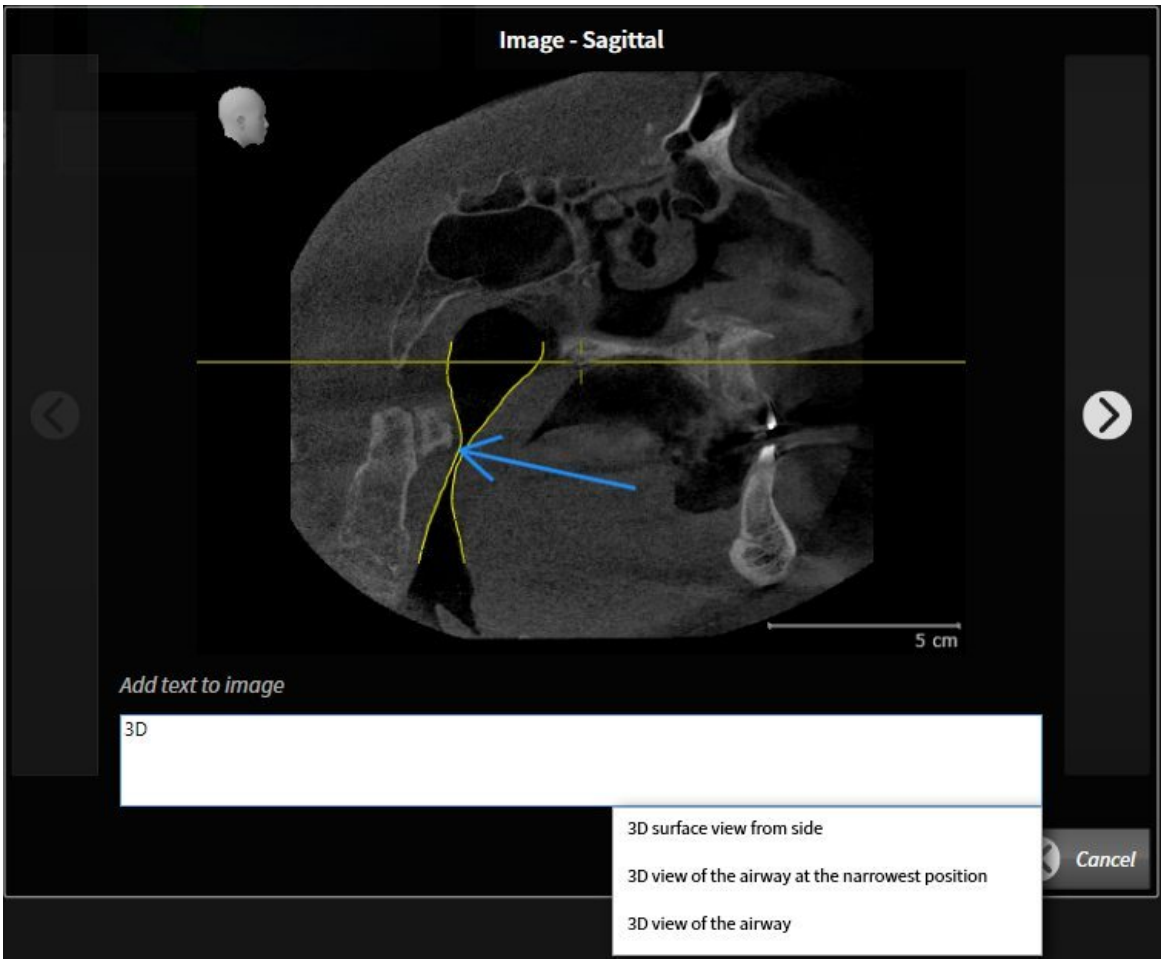
☑ The **Generate handout** window is already open.

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 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:



3. 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.

4. Click on the text block you require.

   ▶ SICAT Air adds the text block to the text input field.

5. If the text you require is not available as a text block, enter the new text.

6. 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.

7. If you wish to change the order of elements in 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.

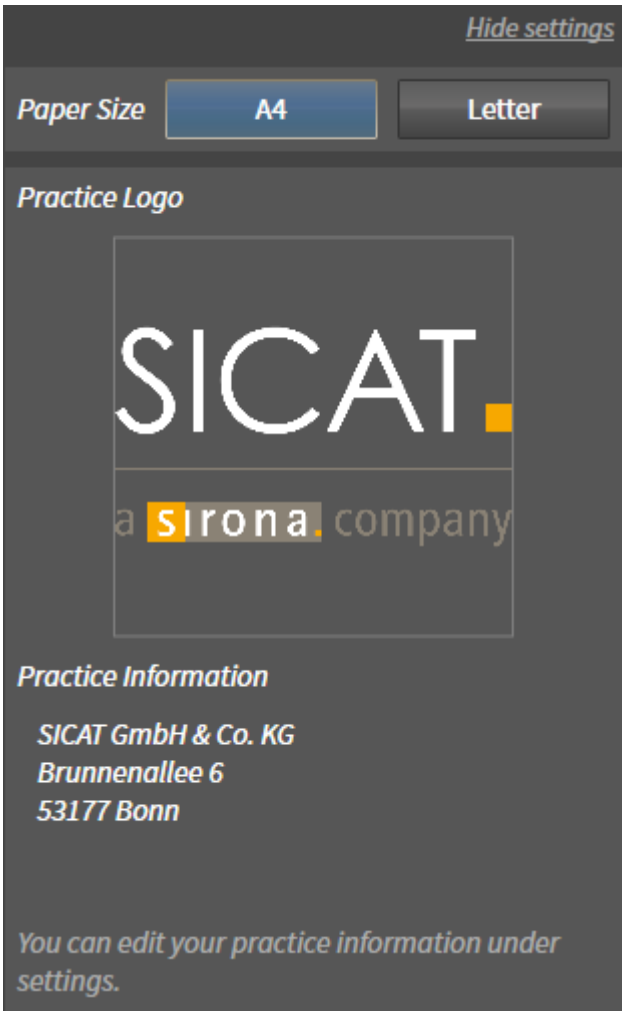
You can completely remove elements from the handout using the **Object browser**. Information on this can be found in the sections *Managing objects with the object toolbar [▶ Page 378]* and *SICAT Air objects [▶ Page 379]*.

CHANGING SETTINGS OF THE HANDOUT

☑ The **Generate handout** window is already open.

1. Click **Show settings**.

2. The **Settings** area expands:



3. Select the paper size you require in the **Paper Size** area.

4. Click **Hide settings**.

▶ The **Settings** area closes:

▶ SICAT Air saves your changes.

Continue with the section *Producing handouts [▶ Page 463]*.

SICAT Air takes the practice logo and practice information text from the general settings. Information on this can be found in the section *Changing practice information [▶ Page 493]*.

12.20.3 PRODUCING HANDOUTS

The following actions are available for producing handouts:

- Saving a handout as a PDF file
- Printing handouts
- Displaying handouts in the PDF viewer

SAVING A HANDOUT AS A PDF FILE

☑ The **Generate handout** window is already open.

1. Click on the **Export PDF** button.
   ▶ 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 **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 11]*.

☑ The **Generate handout** 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.

DISPLAYING HANDOUTS IN THE PDF VIEWER

☑ A standard PDF viewer is installed on your computer.
☑ The **Generate handout** window is already open.

- Click on the **Show in PDF Viewer** button.

▶ The standard PDF viewer of your computer will open the handout.

12.21 DATA EXPORT

You can export the studies of the currently opened patient record.

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
Planning projects	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 465]*.
- Export the desired data. Information on this is available in the section *Exporting data [▶ Page 466]*.

12.21.1 OPENING THE “FORWARDING 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 to 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.

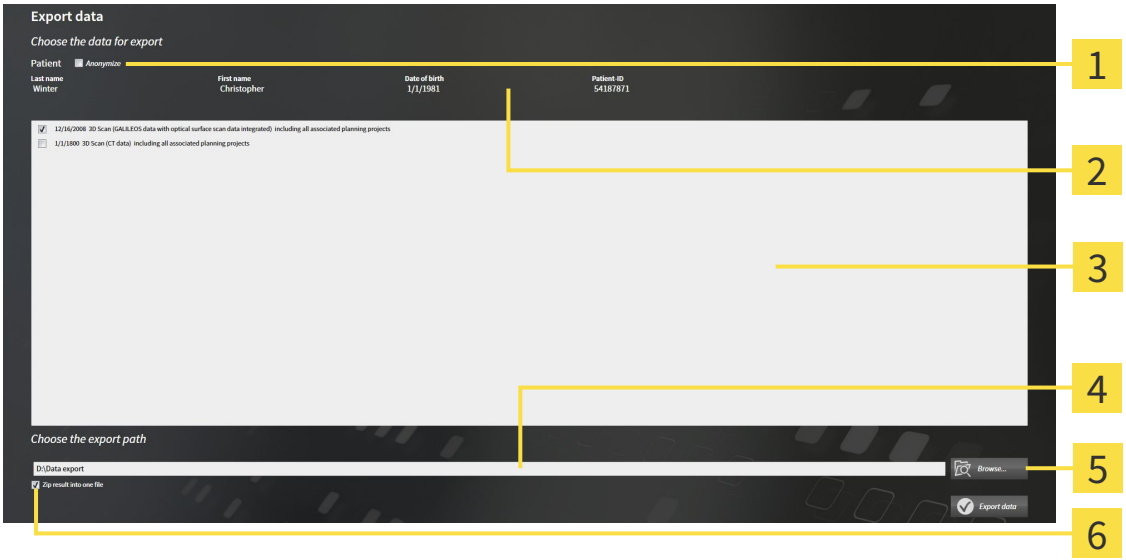
SICAT Suite exports only the selected 3D X-ray scans and planning projects for the active patient record.

Continue with the section *Exporting data [▶ Page 466]*.

12.21.2 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 465]*.



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 to the file you require into 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.

12.22 ORDERING PROCESS

To order a therapeutic appliance, 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 468]*.
- Check the shopping cart in SICAT Suite and start the order. Information on this can be found in the section *Checking the shopping cart and completing the order [▶ Page 480]*.
- Complete the order either directly on the computer, on which SICAT Suite is running, or on another computer with an active Internet connection. Information on this can be found in the sections *Completing an order using an active Internet connection [▶ Page 481]* or *Completing an order without an active Internet connection [▶ Page 485]*.

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.

12.22.1 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.

General information on the ordering process is found in the section *Ordering process [▶ Page 467]*.

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

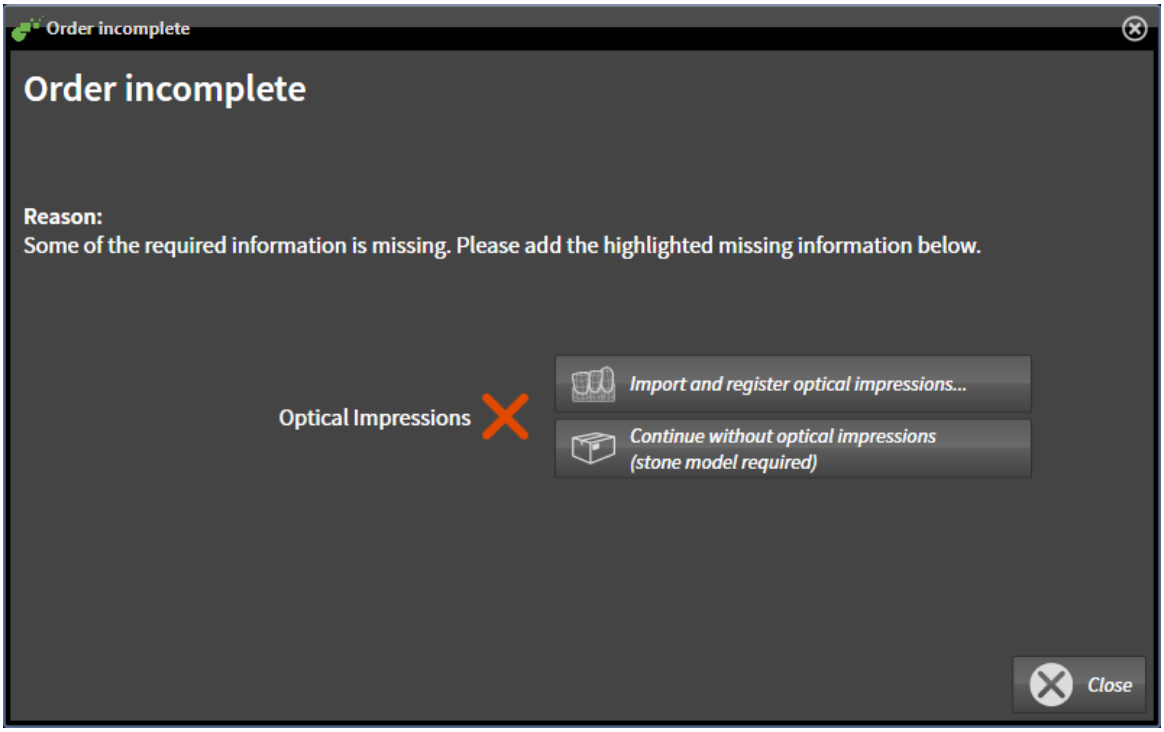
IF YOU HAVE NOT YET ADDED ANY OPTICAL IMPRESSIONS

☑ 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 372]*.

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 472]*.

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

ℹ	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. Information on this can be found in the section *Adjusting the panoramic region [▶ Page 423]*.

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.

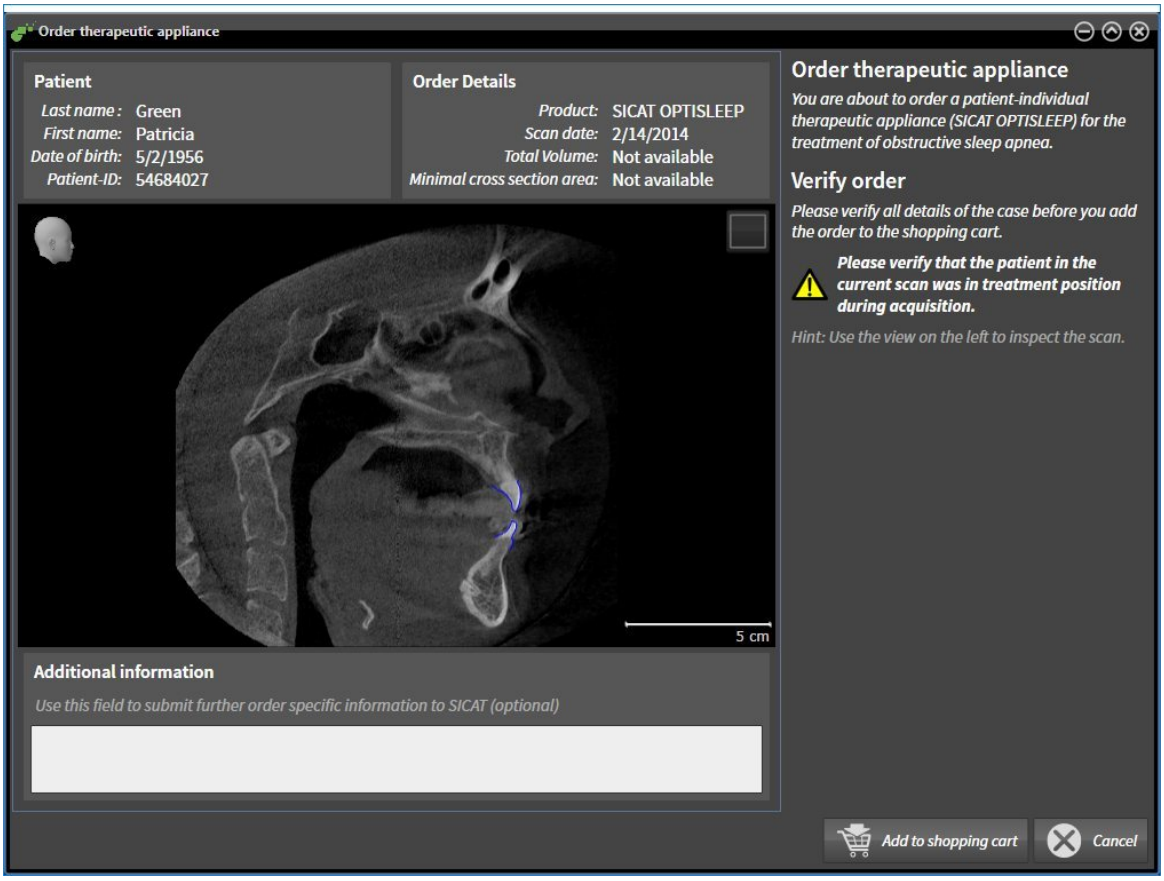
☑ The **Order** workflow step is already expanded. Information on this can be found in the section *Workflow toolbar [▶ Page 372]*.

- 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** area and **Order Details** area that 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.

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

▶ The planning data you require for therapeutic appliances are located in the SICAT 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 480]*.

12.22.2 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 mandible (requires a license)

The following tools are available for optical impressions:

- *Importing and registering optical impressions [▶ Page 472]*
- *Re-using optical impressions from other SICAT applications [▶ Page 477]*
- Activating, hiding and showing optical impressions – Information on this can be found in the section *Managing objects with the object browser [▶ Page 376]*.
- Focusing on optical impressions and removing optical impressions – Information on this can be found in the section *Managing objects with the object toolbar [▶ Page 378]*.

12.22.3 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.

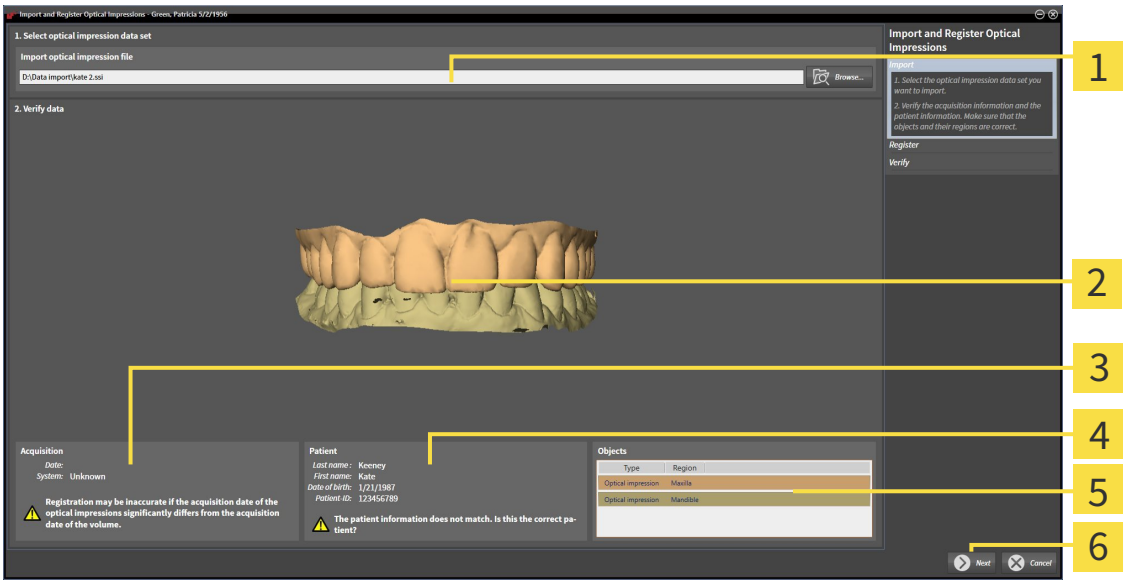
You can use the **Inspection Window** to check whether an optical impression is precisely aligned to the X-ray data. You can move the **Inspection Window** and scroll through the slices in the **Inspection Window**.

General information on the optical impressions can be found in the section *Optical impressions [▶ Page 471]*.

To import and register optical impressions, proceed as follows:

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

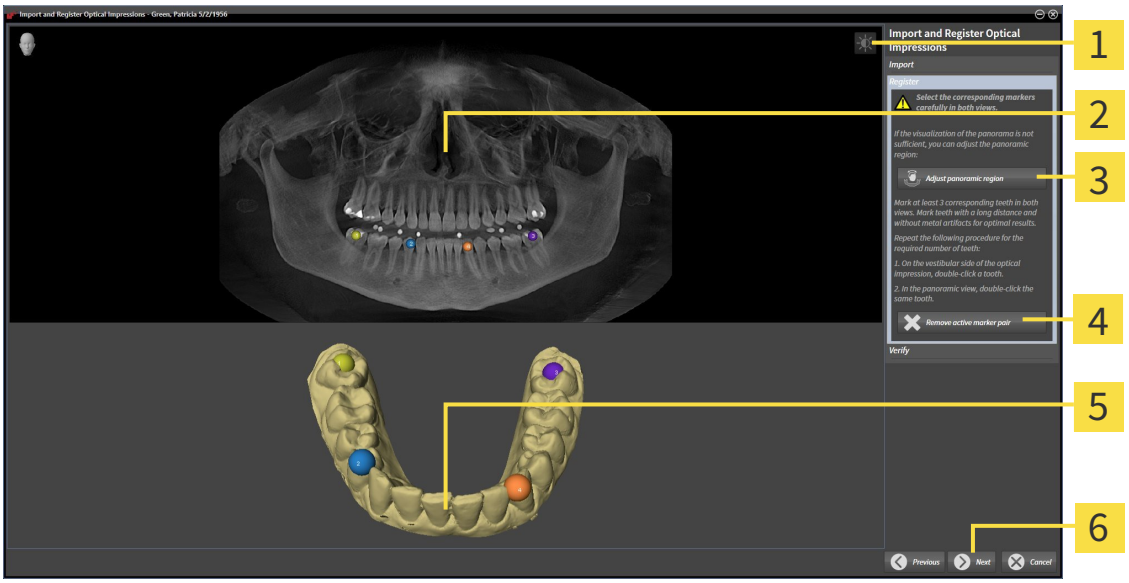
1. Click on the **Import and Register Optical Impressions** icon.
   ▶ The **Import and Register Optical Impressions** assistant opens with the **Import** step.
2. Click on the **Browse** button.
   ▶ The **Open Optical Impression File** window opens.
3. Switch to the file you require in the **Open Optical Impression File** window, select the file and click on **Open**.
   ▶ The **Open Optical Impression File** window closes.
   ▶ SICAT Air imports the selected file with optical impressions:



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. 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 **Next**.

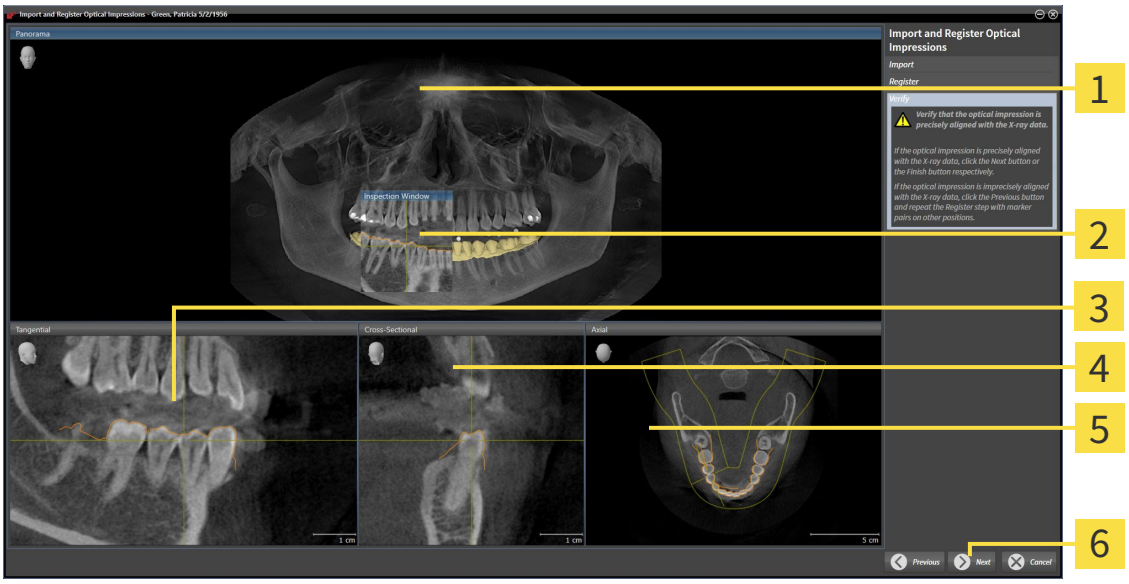
▶ The **Register** step opens for the first optical impression:



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

6. For the first optical impression, double click the same teeth 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.
7. 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

8. 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.

9. If the optical impression is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat step **Register** with marker pairs in different positions if necessary.

10. 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:

11. For the second optical impression, double click the same teeth 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.

12. 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:

13. 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.

14. If the optical impression is imprecisely aligned to the X-ray data, click on the **Previous** button and repeat step **Register** with marker pairs in different positions if necessary. You can improve the accuracy of the registration by marking up to five teeth.

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

▶ The **Import and Register Optical Impressions** assistant closes.

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

▶ SICAT Air displays the optical impressions registered.

In addition to the described process, the following actions are available in the **Import and Register Optical Impressions** assistant:

- 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 396]*.
- 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 423]*.
- 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**.

12.22.4 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.

General information on the optical impressions can be found in the section *Optical impressions [▶ Page 471]*.

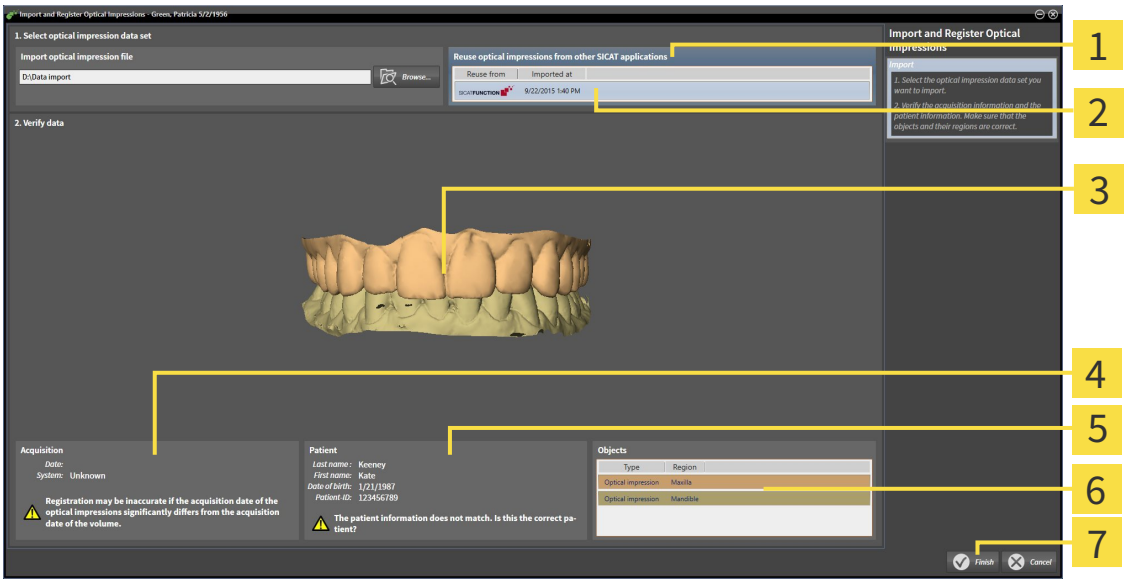
To re-use optical impressions from another SICAT application, proceed as follows:

☑ 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** assistant opens with the **Import** step.
2. Double-click on the row with the optical impressions you require 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	5	Patient information
2	List of optical impressions from other SICAT applications	6	List of objects
3	**3D** view of optical impressions	7	**Finish** button
4	Scan information		

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** assistant 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**.

12.22.5 OPENING THE SHOPPING CART

The **Shopping cart** icon shows the number of elements in the shopping cart.

☑ The shopping cart contains at least one therapeutic appliance.

- If the shopping cart is not yet open, click the button marked **Shopping cart** in the **Navigation bar**.

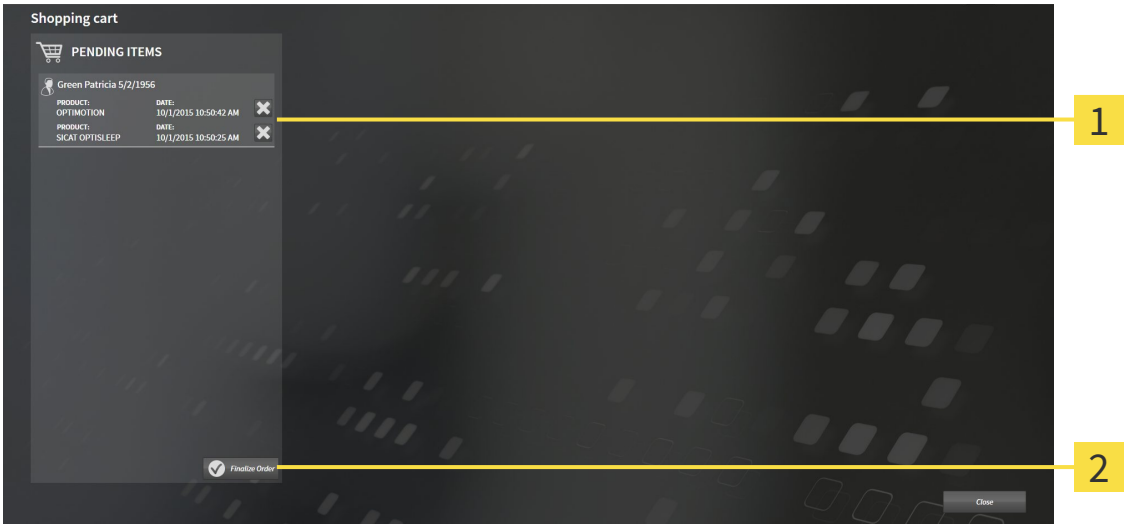
▶ The **Shopping cart** window opens.

Continue with the following action:

- *Checking the shopping cart and completing the order [▶ Page 480]*

12.22.6 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 479]*.



1 **PENDING ITEMS** list

2 **Finalize Order** button

1. Check in the **Shopping cart** window whether the desired therapeutic appliances 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 481]*
- *Completing an order without an active Internet connection [▶ Page 485]*

12.22.7 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 therapeutic appliances contained in the order, along with the corresponding prices, grouped into patients.

2. Follow the instructions provided under *Performing ordering steps in the SICAT Portal [▶ Page 482]*.

▶ 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.

12.22.8 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 therapeutic appliances are included.
3. If necessary, remove the patient, along with all corresponding therapeutic appliances, from the order summary. When completing the order, SICAT Suite will adopt changes that you have made in the SICAT Portal.
4. Check whether the billing address and delivery address match. 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 therapeutic appliances.

12.22.9 THE SICAT WEBCONNECTOR

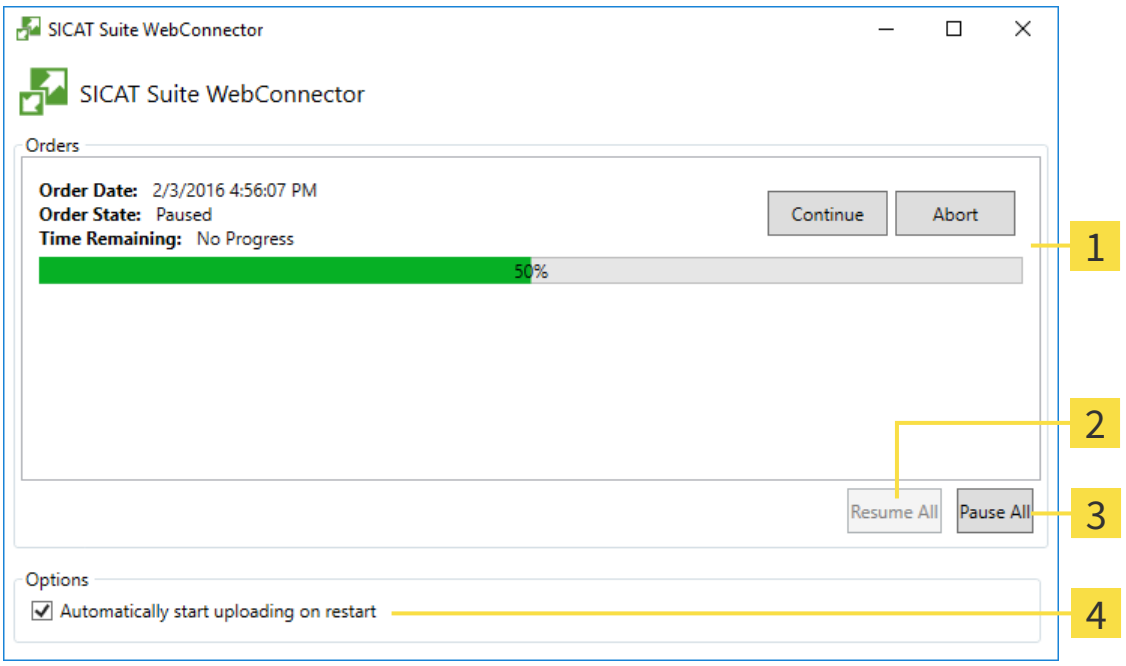
In certain versions of Windows, you have to set a standard browser in order for the ordering process to work.

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 waiting list for the orders.

PAUSING AND CONTINUING THE UPLOAD

You can pause the upload process. This may make sense, for example, if you 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.

12.22.10 COMPLETING AN ORDER WITHOUT AN ACTIVE INTERNET CONNECTION

If the computer, on which SICAT Suite is running, has no active Internet connection, the transfer will take place using an XML file and a ZIP archive, which you can upload using a web browser on another computer with an active Internet connection. In this case, SICAT Suite will export all therapeutic appliances in the shopping cart at once and create one sub-folder per patient. In the SICAT Portal you can then upload one therapeutic appliance per patient. The transfer will be encrypted.

To complete the order without an active Internet connection, proceed as follows:

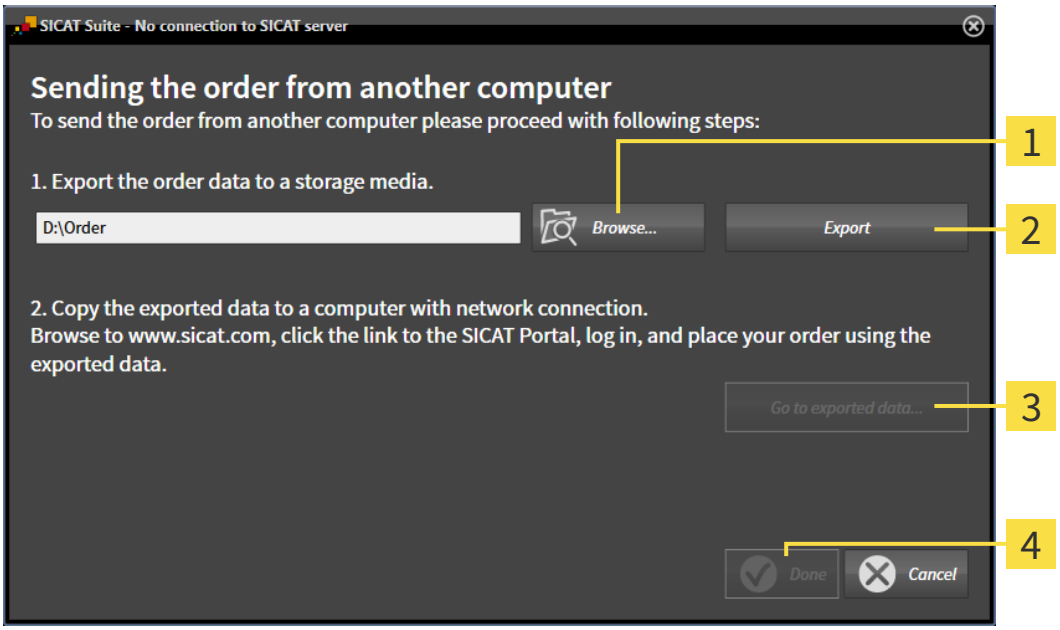
☑ The computer, on which SICAT Suite is running, does not have an active Internet connection.

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

1 **Send from another computer** button

1. Click on the **Send 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.

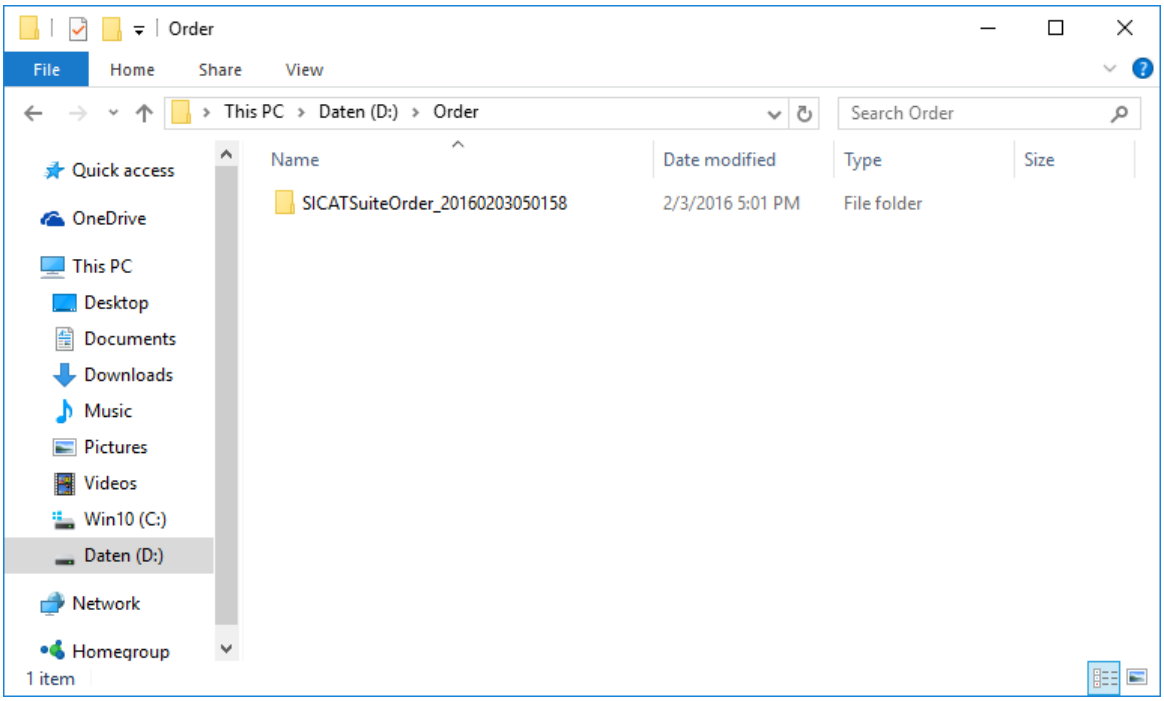
3. Select an existing directory or create a new directory and click on **OK**. Please note that the path to the directory must not be longer than 160 characters.

4. Click on the **Export** button.

   ▶ SICAT Suite exports all data required for the order of the contents of the shopping cart to the stated 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, which contains 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 therapeutic appliances 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 order summary opens and shows the patients contained therein, the corresponding therapeutic appliances and the price.

13. Follow the instructions provided under *Performing ordering steps in the SICAT Portal [▶ Page 482]*.

14. Click on the link to upload the planning data for the therapeutic appliance.

15. Select the corresponding splint 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 splint 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.

12.23 SETTINGS

In the stand-alone version of SICAT Suite, you can change the general settings. The changes take effect immediately.

You can change 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:

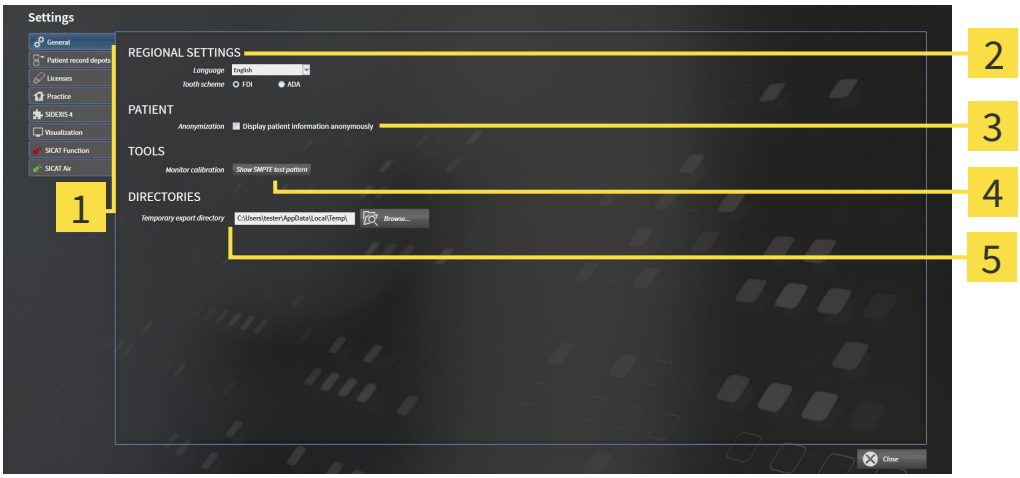
- **General** – Information on this can be found in the section *Changing general settings [▶ Page 490]*.
- **Your patient record depots** – only available in the stand-alone version of SICAT Suite. Information on this can be found in the section *Patient record depots [▶ Page 338]*.
- **Licenses** – Information on this can be found in the section *Licenses [▶ Page 331]*.
- **Practice** – Changing the logo and the information text of your practice, for example for use on printouts. Information on this can be found in the section *Changing practice information [▶ Page 493]*.
- **Visualization** – Changing general visualization settings. Information on this can be found in the section *Changing visualization settings [▶ Page 494]*.
- **SICAT Air** – Changing application-specific settings of SICAT Air. Information on this can be found in the section *Changing SICAT Air settings [▶ Page 496]*.

12.23.1 CHANGING 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** section under **Tooth scheme**.
- You can change the condition 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** section you can enter a folder in the **Temporary export directory** field, in which SICAT Suite will save order information. You must have full access to this folder.

After 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 491]*.

The supported tooth schemes are FDI and ADA.

12.23.2 MONITOR CALIBRATION WITH THE SMPTE TEST IMAGE

CAUTION

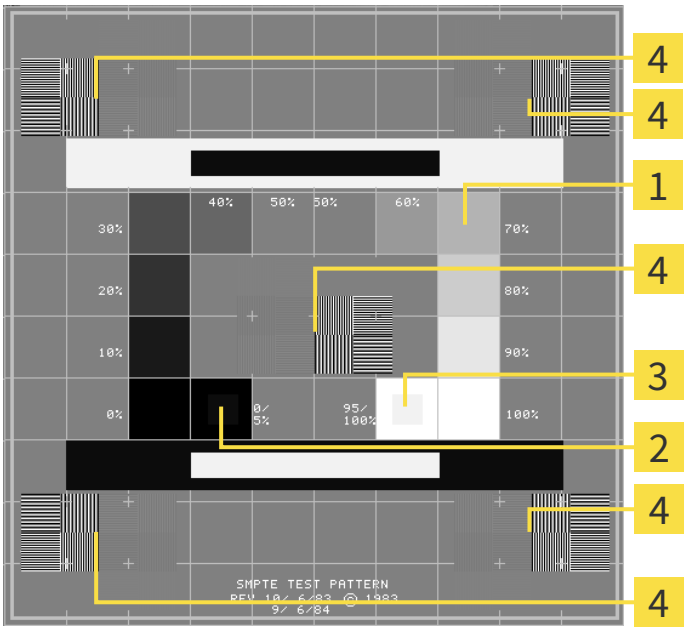
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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.

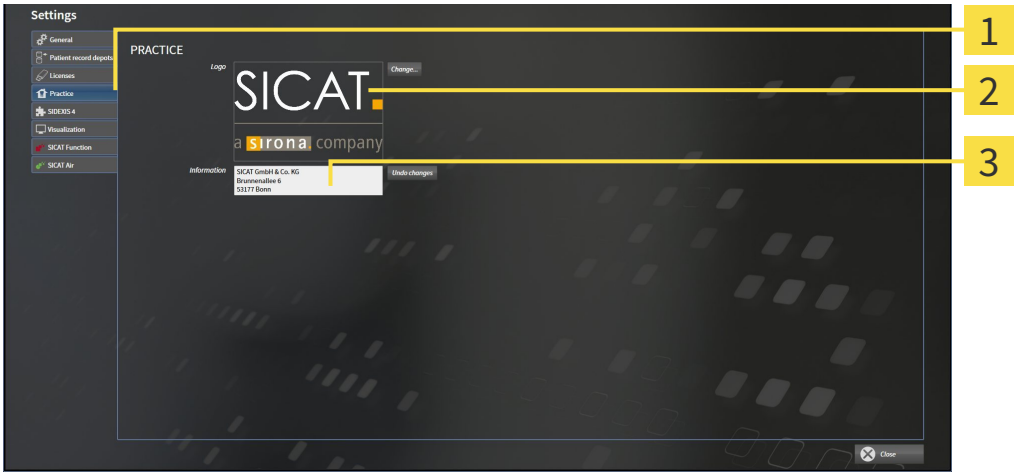
12.23.3 CHANGING PRACTICE INFORMATION

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 stated file to your SICAT Suite user directory.
- You can change a text, which identifies your practice, for example the name and address, in the **Information** area. You can increase the number of rows to a maximum of five by pressing the **Enter** key. You can undo changes to the information text by clicking the **Undo changes** button.

12.23.4 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

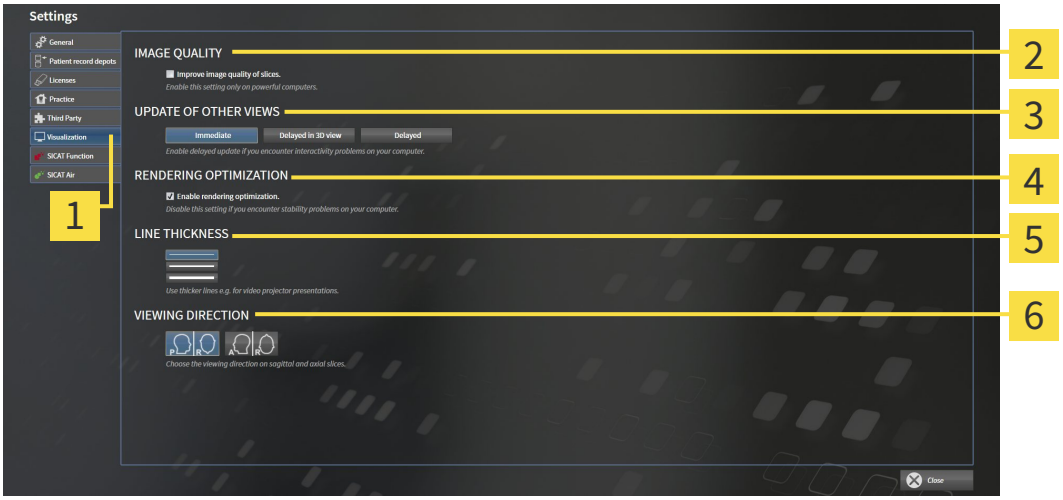
Insufficient environmental visualization conditions could result in incorrect diagnosis and treatment.

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	4	**RENDERING OPTIMIZATION** area
2	**IMAGE QUALITY** area	5	**LINE THICKNESS** area
3	**UPDATE OF OTHER VIEWS** area	6	**VIEWING DIRECTION** area

3. Select the desired visualization settings.

▶ SICAT Air adopts the amended settings.

▶ SICAT Air saves the settings in your user profile.

The settings are:

- **Improve image quality of slices** – Improves the display 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 at the cost of the delayed updating of other views. Activate delayed updates only if you detect interactivity problems on your computer.
- **Enable rendering optimization** – Deactivate this setting only if you detect stability 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.

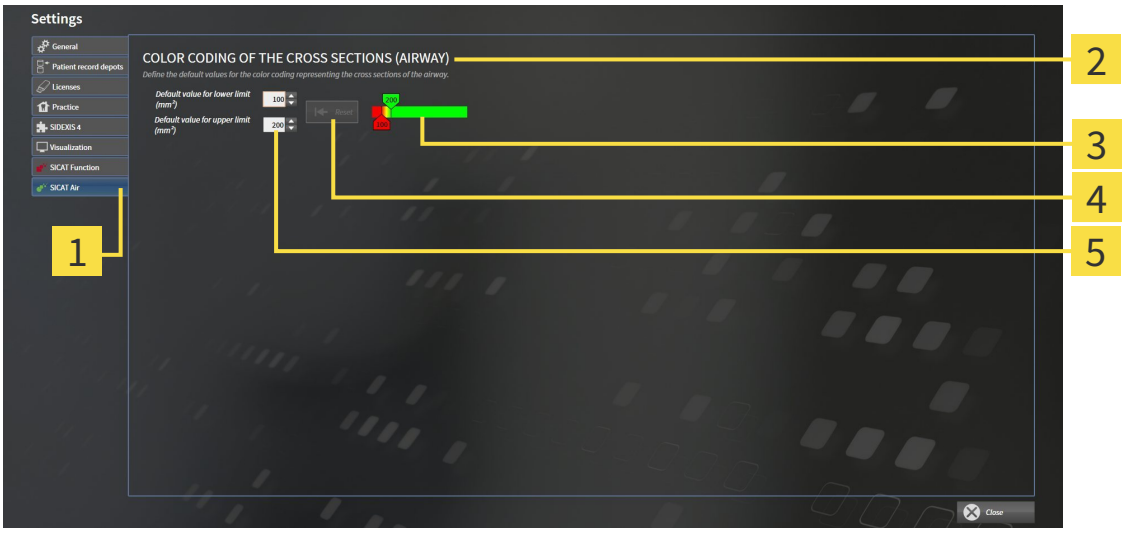
12.23.5 CHANGING SICAT AIR SETTINGS

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

3. Select the desired standard values for the color coding.

▶ SICAT Air saves the default values in your user profile.

▶ SICAT Air uses the altered default values when you first open a 3D X-ray scan and segment the airway.

▶ SICAT Air uses the altered default values if you want to reset the values of a **Airway** object.

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.

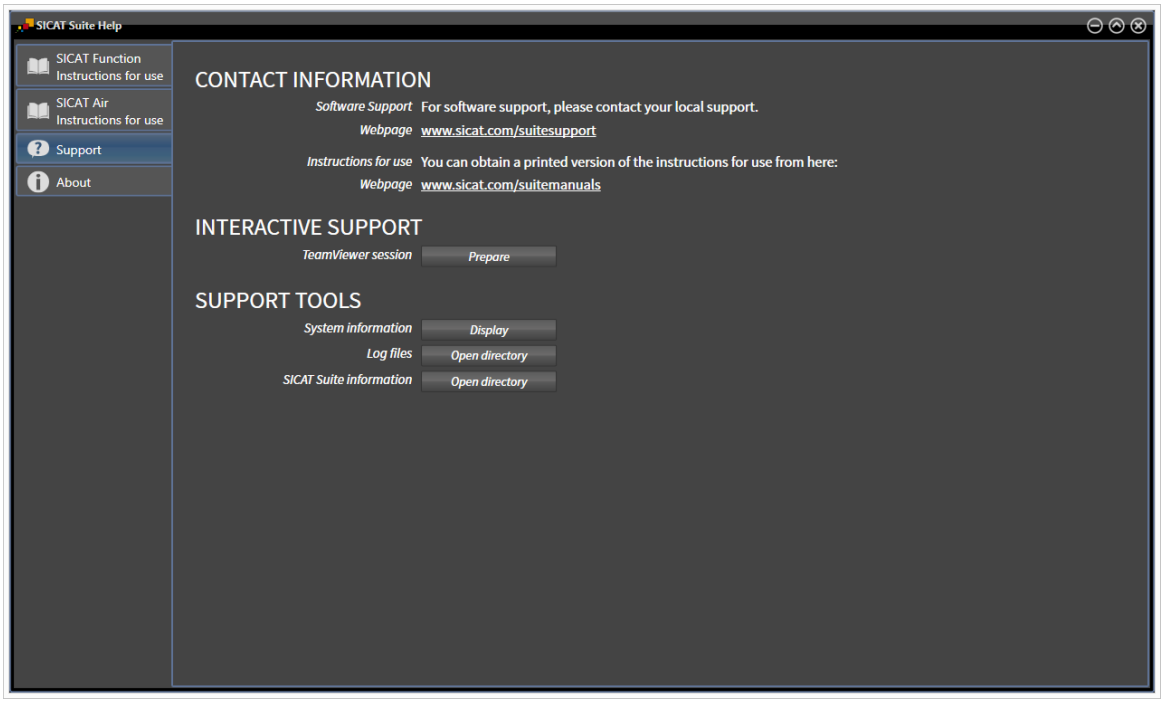
12.24 SUPPORT

SICAT offers you the following support options:

- Online help
- Contact information
- Information on the installed SICAT Suite and SICAT applications

Continue with the following action:

- *Opening the support options [▶ Page 498]*



12.24.1 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:

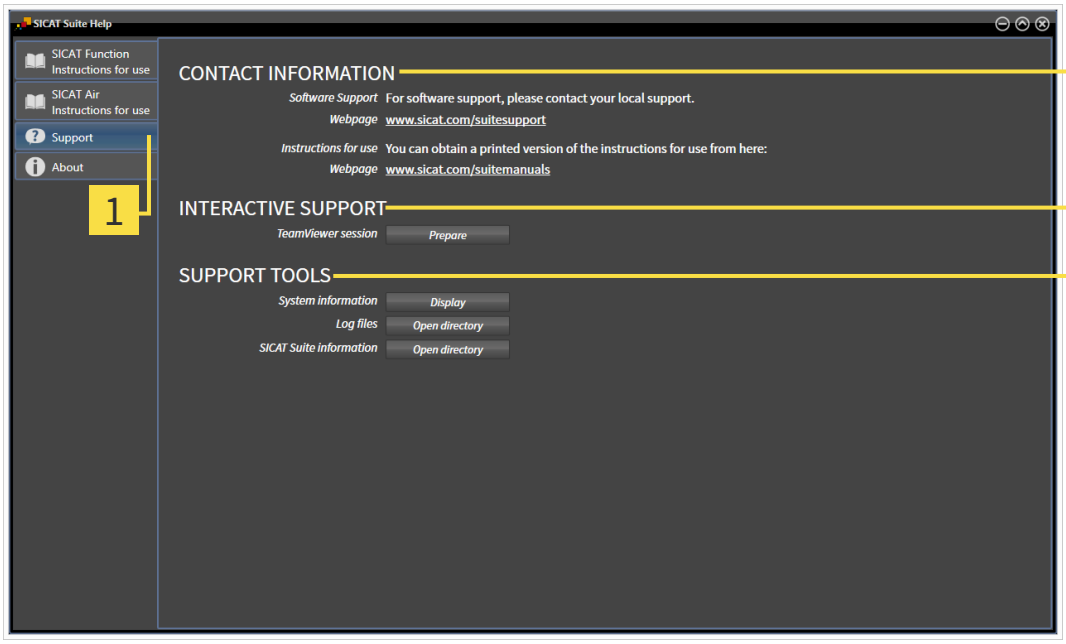
- **Instructions for use** - Information on this can be found in the section *Opening the online help [▶ Page 330]*.

- **Support** – Information on this can be found in the section *Contact information and support tools [▶ Page 499]*.

- **About** – Information on this can be found in the section *Info [▶ Page 500]*.

12.24.2 CONTACT INFORMATION AND SUPPORT TOOLS

The **Support** window contains all of the relevant information and tools so that SICAT Support can help you:



1 **Support** tab

2 **CONTACT INFORMATION** area

3 **INTERACTIVE SUPPORT** area

4 **SUPPORT TOOLS** area

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.

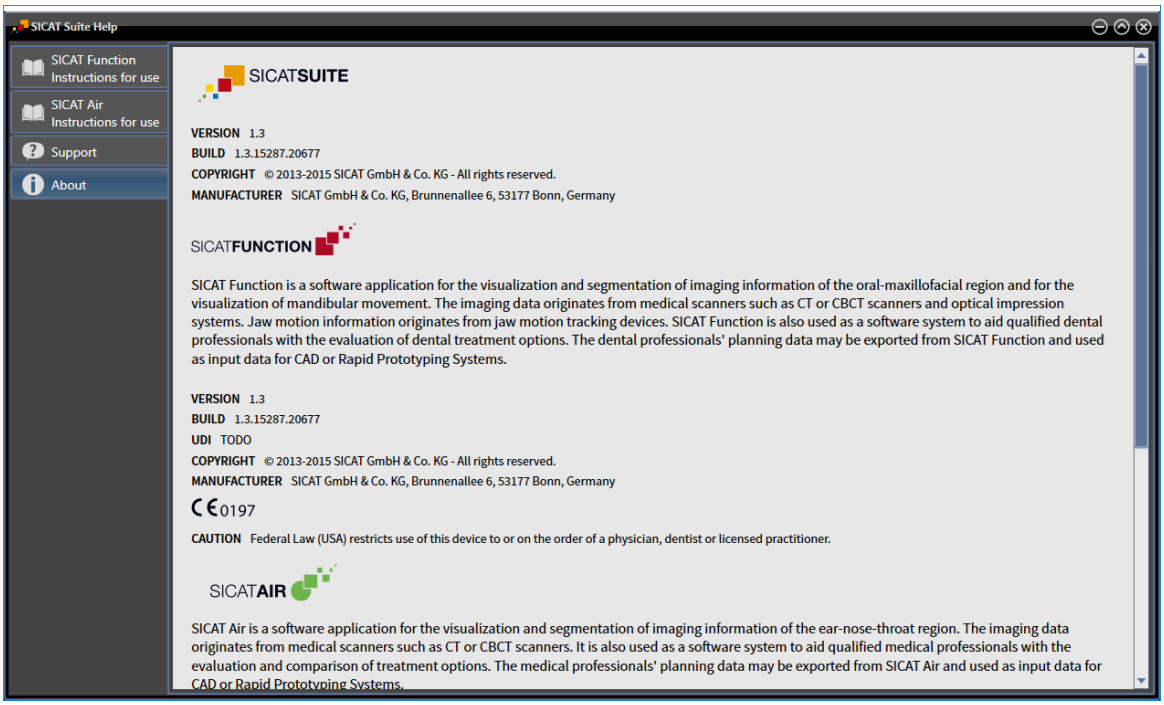
TeamViewer is software that allows mouse and keyboard commands to be remotely controlled and to transfer the contents of a computer's monitor via an active Internet connection. TeamViewer will only establish a connection with your explicit consent. To do so, provide the SICAT support team with a TeamViewer 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** section:

- Click on the **Show** 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 Air will export information on the current installation in a text file.

12.24.3 INFO

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



12.25 OPENING READ-ONLY DATA

The 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:

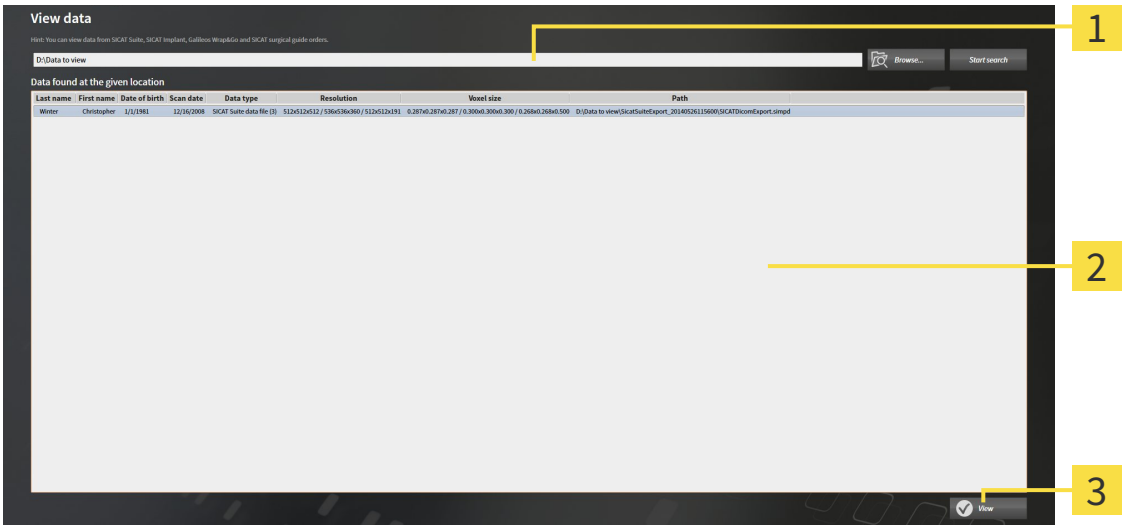
ACTIVE SICAT AIR LICENSE	ACTIVE PATIENT RECORD DEPOT	DATA YOU CAN VIEW
No	No	SICAT data
Yes	No	SICAT data and DICOM data
Yes	Yes	You can import and edit data in the full version. Information on this can be found in the section *Data import* [▶ *Page 346*].

To view data without being able to make and save changes, proceed as follows:

☑ No SICAT Air license is active.

☑ No patient record depot is active.

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 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 one of the folders searched in the **Data found at the given location** list.

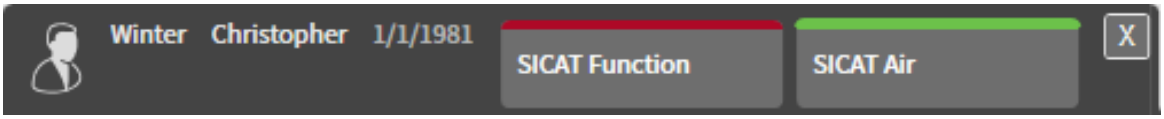
4. Select the desired 3D X-ray scan or planning project from the **Data found at the given location** list and click on the **View data** button.
   - ▶ SICAT Suite creates a temporary patient record, which contains 3D X-ray scans and planning projects, and activates it.
5. Continue with the section *Working with active patient records [▶ Page 361]*.

You can also drag & drop to view data in 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.

12.26 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.

12.27 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.

13 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

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

14 UNINSTALLING SICAT SUITE

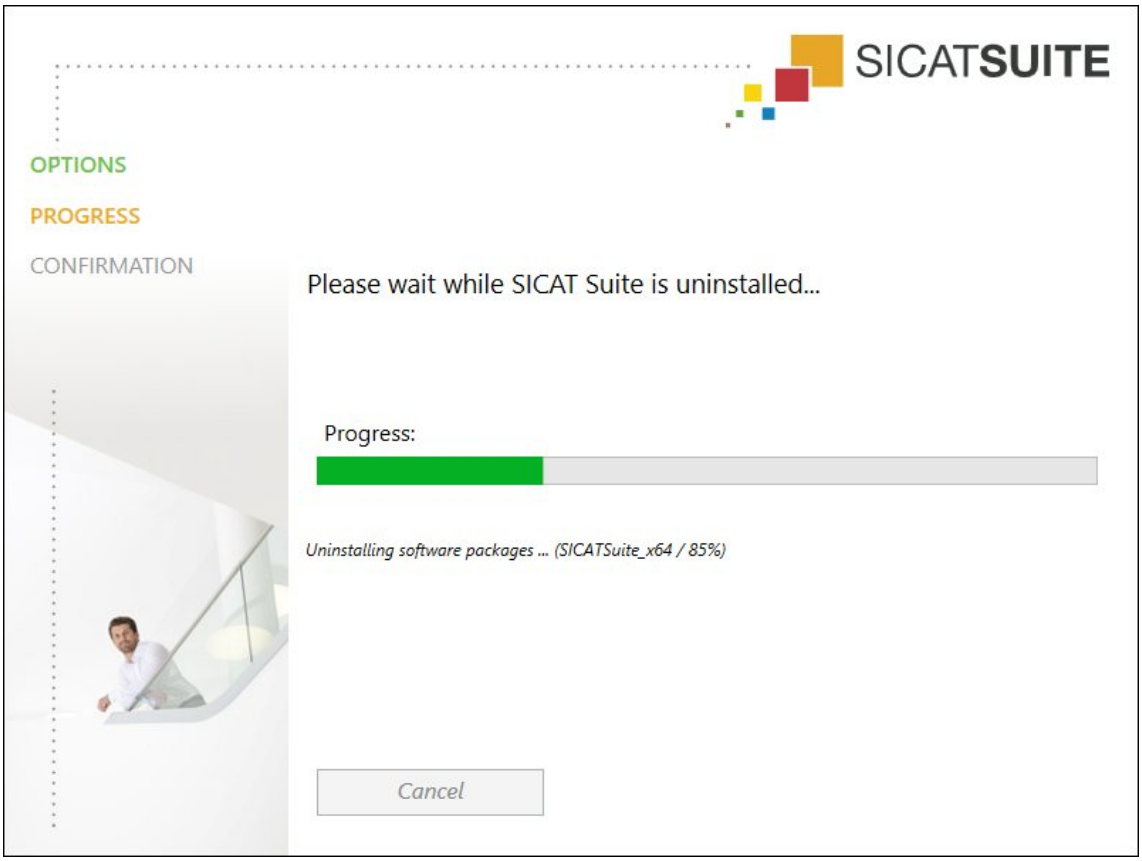
The SICAT Suite uninstallation program maintains active licenses on your computer. Therefore, SICAT Suite warns you that it will not automatically delete licenses before the uninstallation. If you no longer wish to use SICAT Suite on this computer, deactivate the licenses before uninstallation. Information on this can be found in the section Deactivating licenses.

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 483]*.

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.

15 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.

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.

16 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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EXPLANATIONS OF LABELING

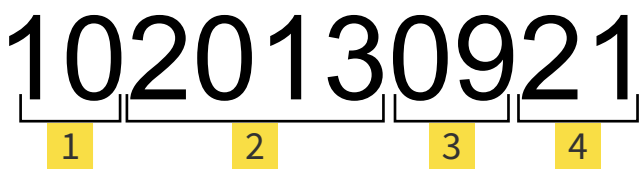
- Caution! Observe the accompanying documents.

- 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

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