



Syngo Carbon Enterprise Access

Operator Manual
VA44

Legend

	Indicates a hint Is used to provide information on how to avoid operating errors or information emphasizing important details
	Indicates the solution of a problem Is used to provide troubleshooting information or answers to frequently asked questions
	Indicates a list item
	Indicates a prerequisite Is used for a condition that has to be fulfilled before starting a particular operation
	Indicates a one-step operation
	Indicates steps within operating sequences
<i>Italic</i>	Is used for references and for table or figure titles
	Is used to identify a link to related information as well as previous or next steps
Bold	Is used to identify window titles, menu items, function names, buttons, and keys, for example, the Save button Is used for on-screen output of the system including code-related elements or commands
Orange	Is used to emphasize particularly important sections of the text
Courier	Is used to identify inputs you need to provide
Menu > Menu Item	Is used for the navigation to a certain submenu entry
<variable>	Is used to identify variables or parameters, for example, within a string
 CAUTION	CAUTION Used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury or material damage. CAUTION consists of the following elements: • Information about the nature of a hazardous situation • Consequences of not avoiding a hazardous situation • Methods of avoiding a hazardous situation

 WARNING

WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

WARNING consists of the following elements:

- Information about the nature of a hazardous situation
 - Consequences of not avoiding a hazardous situation
 - Methods of avoiding a hazardous situation
-

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1 Introduction

1.1 Documentation overview

At Siemens Healthineers, we want to address all genders equally in our Instructions for Use. It is not our intention to exclude anyone. We continue to update our documentation with this in mind.

1.2 Technical terms and notation

1.2.1 Generic document

This term refers to any non-DICOM file such as images produced by digital cameras or imaging applications (for example, JPEG, MPM, TIFF), as well as various text, video, and audio file formats (for example, PDF, DOC, MPEG4, MP3) produced by various external applications (for example, Microsoft Office, Adobe Acrobat).

Generic files are wrapped in generic containers, analogous to DICOM studies.

1.2.2 DICOM document

A DICOM document consists of at least one DICOM study, series, and instance.

DICOM documents are produced by medical imaging devices compliant with the DICOM standard.

- Study

A DICOM study contains all the data of a medical examination during which image data is acquired. This includes the actual image data (for example, X-ray, CT, ultrasound) as well as the patient data and descriptions relevant to the examination (such as the examination date or type). A DICOM study contains 1-n DICOM series.

- Series

A DICOM series usually equates to a specific type of data acquired/produced by a particular device or to the position of the patient during acquisition. A series contains 1-n DICOM instances.

- Instance

A DICOM object instance (or simply DICOM instance) is the actual data captured by the device, such as an image or waveform object.

1.2.3 DICOM information

DICOM (Digital Imaging and Communications in Medicine) is a standardized file format used in medical imaging.

In addition to object data (typically image data), the DICOM format contains additional information such as patient name, admission date, device parameters, and physician's name. The DICOM format also contains the information necessary for data exchange between DICOM-capable devices.

1.2.4 EXIF information

EXIF (Exchangeable Image File Format) is a standardized data format generated by, for example, digital cameras when taking a picture.

In addition to the image data commonly contained in JPEG or TIFF format, the EXIF format contains additional information describing the image in more detail, such as date and time information or the type of device used for image capture.

1.2.5 Modality

An imaging modality is a device for acquiring medical images such as X-rays or CTs. In Syngo Carbon Enterprise Access, modalities are identified by abbreviations such as CR for Computed Radiography (for example, when searching).

1.2.6 Organizational unit

An organizational unit is an association of arbitrary actors in a medical organization, for example, a department, medical devices, or groups of people. Organizational units can be customized and expanded with more constituents as needed, and these constituents can be uniformly managed.

All data to be archived is allocated to exactly one organizational unit.

1.2.7 Entity

In Syngo Carbon Enterprise Access, entities are an alternative way to identify documents that do not belong to a patient or visit. This is useful e.g. for archiving documents from clinical studies and trials.

1.2.8 Hounsfield unit

Density calculations of body tissue with the density calculation tool use the Hounsfield scale. The following equation is used to calculate the attenuation coefficients of various body tissues in CT images. It is assumed that the absorption value of tissues and the physical density have a linear dependence (μ = linear attenuation coefficient):

$$HU = \left(\frac{\mu_{Object} - \mu_{Water}}{\mu_{Water}} \right) \times 1000$$

Coefficient	Object
0	Water
1000 through 100	Bone
100 through 0	Liver/Muscle/Kidney
-100 through -200	Fat
-1000	Air

Relative attenuation coefficients of body tissues and water

The relative attenuation values can be determined easily from any point or area of the image. Although it is technically possible to render any number of attenuation values in grayscale, the human eye is not equipped to distinguish between more than 20 shades of gray. Instead, the use of windowing is recommended in order to visually highlight different kinds of body tissue. (Source: Th. Laubenberger/Laubenberger, J. (1999): *Technik der medizinischen Radiologie. 7. überarbeitete Auflage, Köln: Deutscher Ärzte Verlag.*)

Read the safety notices, see (→ Page 9 Safety notices)

1.3 Safety notices

1.3.1 Mammography reading



CAUTION

Syngo Carbon Enterprise Access is not intended to be used for mammography reading.

Diagnostic reading of mammography images can lead to incorrect diagnostic decisions.

- ◆ Use a device or software intended for diagnostic reading of mammography images.

1.3.2 Digital pathology reading



CAUTION

Syngo Carbon Enterprise Access is not intended for diagnostic reading of Digital Pathology images.

Diagnostic reading of digital pathology images can lead to incorrect diagnostic decisions.

- ◆ Use a device or software intended for diagnostic reading of digital pathology images.

1.3.3 Diagnostic decision-making



CAUTION

Image viewing in Syngo Carbon Enterprise Access cannot serve as the sole basis for diagnostic decision-making.

Use of image reading in Syngo Carbon Enterprise Access as the sole basis for diagnostic decision-making can lead to incorrect diagnostic decisions.

- ◆ Be sure to take information from other sources (e.g. lab reports) into account when making diagnostic decisions.

1.3.4 Data import

CAUTION

Syngo Carbon Enterprise Access cannot check the integrity of data or the validity of metadata editing performed prior to import.

Failure to ensure data integrity or provide correct and valid metadata information can result in data becoming inaccessible, invalid or in being assigned to an incorrect patient context.

- Ensure that external devices and software used for capturing and processing data (cameras, scanners, video and sound recording devices, etc.) are properly configured and maintained.
- Set the correct patient context, the correct date and the correct import location prior to import.
- Pay attention to visual indicators and other Syngo Carbon Enterprise Access feedback concerning potential data conflicts and follow the manufacturer's instructions to avoid and resolve them.
- When using features that involve the editing of DICOM metadata, we recommend that you check whether the editing results conform to the DICOM standard.

1.3.5 Data updates

CAUTION

Data can be updated in the background (e.g. import of additional data, metadata editing). Updated data only becomes visible upon refreshing the search or the viewer.

The displayed data or metadata might be incomplete or outdated. Incomplete or outdated data or metadata can lead to incorrect diagnostic decisions.

- Be aware that the search results list and the viewer show the state of the data at a precise moment in time (i.e. the moment the search is carried out or the data is opened).
- Refresh the search results list manually to ensure you are working with the most up-to-date data.
- Pay attention to visual indicators that highlight the arrival of additional data (e.g. the progress flag in the search).
- Be aware that retrieving data from third-party DICOM LTAs or remote nodes might take some time. Use the job queue to track retrieval operations.

1.3.6 Update intervals

CAUTION

The configuration of a short automatic refresh interval for search results can lead to a high system load.

Use of a short automatic refresh interval can result in data being temporarily unavailable due to insufficient system resources.

- Select longer automatic refresh intervals to reduce system load.
- Use the manual refresh option to receive the most up-to-date results.

1.3.7 Data minimization

CAUTION

Syngo Carbon Enterprise Access cannot guarantee that patients will not be reidentified based on exported minimized data.

Reidentification of patients via exported minimized data can lead to the exposure of personally identifiable information.

- Be aware that the data minimization features of Syngo Carbon Enterprise Access only affect specific kinds of personally identifiable information.
- Be sure to comply with local data privacy laws and the data privacy guidelines of your organization.
- Always carefully check minimized data before passing it on to an authorized third party.

1.3.8 Accuracy of calculations

CAUTION

Syngo Carbon Enterprise Access implicitly rounds calculations for display convenience. Rounding varies depending on the type of calculation.

Calculation results might not precisely reflect reality and can thus be insufficient for high-precision diagnostic purposes. Use of rounded calculation results for high-precision diagnostic purposes can lead to incorrect diagnostic decisions.

- Be aware that Syngo Carbon Enterprise Access rounds calculations as follows:
 - Length and area: if pixel spacing ≥ 0.1 mm, 1 decimal place; if pixel spacing < 0.1 mm, 2 decimal places
 - Angle: 1 decimal place
 - Ratio: 2 decimal places
 - Spot density: no decimal place
 - Area density: 1 decimal place
 - Average density: 1 decimal place
- Use specialized viewing equipment/software for high-precision diagnostic reading.

1.3.9 Accuracy of calibrations

CAUTION

Calibration information contained in images might not be accurate. The accuracy of the calibration information depends on the handling and technology of the third-party imagecapturing software or devices.

Inaccurate calibrations can lead to inaccurate calculation results. Inaccurate calculation results can lead to incorrect assumptions about the patient situation and incorrect diagnostic decisions.

- Check the calibration information for accuracy and plausibility. Consult additional professionals if necessary.
- When operating image-capturing software or devices, follow the third-party manufacturer's instructions.
- Follow the guidelines for image capturing set by your organization (e.g. regarding lighting conditions).
- When performing manual calibrations in Syngo Carbon Enterprise Access, check the accuracy and plausibility of your adjustments. Consult additional professionals if necessary.

1.3.10 Viewing conditions

CAUTION

Do not use Syngo Carbon Enterprise Access for viewing on inappropriate or improperly configured devices.

Using Syngo Carbon Enterprise Access on inappropriate devices can cause unexpected behavior and can lead to incorrectly displayed images. Use of incorrectly displayed images for diagnostic purposes can lead to incorrect diagnostic decisions.

- Only use Syngo Carbon Enterprise Access on devices and operating systems approved by the manufacturer.
- Ensure that your viewing hardware (monitors, beamers, etc.) is properly configured and maintained.
- Ensure that the lighting conditions in your work environment are ideal for viewing.
- We recommend using the screen test feature of Syngo Carbon Enterprise Access as a guide for adjusting your viewing devices to the lighting conditions in your work environment.
- Use the product only with supported browsers.

CAUTION

Lossy compressed images are insufficient for primary diagnosis.

The diagnosis and treatment may be made on the basis of insufficient information.

- ◆ Do not use lossy compressed images for primary diagnosis. A compression indicator "Lossy compressed image" is displayed in red color at the bottom center of the segment for lossy compressed images, which indicates "images are not of full diagnostic quality".

1.3.11 Settings for image display quality

CAUTION

The display quality of images might be reduced depending on the configuration of the Syngo Carbon Enterprise Access image quality settings.

Reduced image display quality can lead to reduced visibility of image details. Reduced visibility can lead to incorrect diagnostic decisions.

- When changing the image quality settings, always check your changes on test images to ensure that the image quality is sufficient for viewing purposes.
- Pay attention to the quality value shown for the image: Syngo Carbon Enterprise Access clearly indicates the display quality in a textual overlay as "JPEG(<value>)".
- Be aware that the image quality can change when you carry out continuous operations (zoom, scroll, etc.). Wait for images to settle into their final display quality.
- To view images in lossless format, use the PNG tool.

1.3.12 Native web browser features

CAUTION

Optional native web browser features can interfere with Syngo Carbon Enterprise Access functionality. Syngo Carbon Enterprise Access cannot control these features.

Optional native web browser features can lead to unexpected behavior, display issues or the unintentional transmission of data or personally identifiable information to third parties.

- Deactivate web browser add-ons, plugins and extensions.
- Deactivate web browser features and settings which can cause unexpected behavior or display, including browser zoom, autofill, picture-in-picture video display, and AI-supported tools.

1.3.13 Printing results

CAUTION

Printed images can differ from the display in Syngo Carbon Enterprise Access. Image transformations applied in Syngo Carbon Enterprise Access are not necessarily indicated as such on paper printouts. Printout quality depends on external factors such as the printer type, printer settings, and paper sheet size.

Information on the printout might be incomplete or indeterminable. Use of printouts with incomplete or indeterminable information for diagnostic purposes can lead to incorrect diagnostic decisions.

- Ensure that your printer is properly configured and maintained.
- Check the print preview and make any necessary adjustments to ensure the best print result.
- Be aware that the Syngo Carbon Enterprise Access print function will send the image as it is displayed, including any transformations (mirroring, zoom, presentation states, etc.) you might have applied.
- Compare the printout to the image displayed in Syngo Carbon Enterprise Access and, if necessary, note additional information on the printout.

1.3.14 Operational interruptions

CAUTION

Syngo Carbon Enterprise Access requires an active, stable network connection and direct human oversight for smooth continuous operation.

Network interruptions will temporarily prevent access to data. Leaving Syngo Carbon Enterprise Access unattended can cause configured automatic IT security features to temporarily prevent access to data.

- Ensure that you or another qualified person can always access the workstation running Syngo Carbon Enterprise Access and operate it at all times. Consider scenarios in which you might not be able to operate Syngo Carbon Enterprise Access directly and take organizational measures (e.g. by designating a deputy operator) to ensure that Syngo Carbon Enterprise Access remains active and accessible during important workflows.
- To prevent automatic IT security features from taking effect, occasionally move the mouse to signal activity.
- In case of a network interruption, log in again once it has been resolved to resume your work.

⚠ CAUTION

Computers are not infallible and unexpected errors may occur. For example, in case of power failure, system update, or system maintenance, Syngo Carbon Enterprise Access might not be available for a certain time.

Delayed diagnosis due to system failure. For instance, the system may not be available for use to view the results data for the patient.

- Define system-breakdown scenarios.
- Define backup scan scenarios.
- Implement counter-measures, such as failover solutions or backup systems, and test the implemented measures periodically.
- Prepare a backup plan for response to non-availability of the system or the network. For instance, to use a system on a different network or to use printouts or films.

1.3.15 Medical education

⚠ CAUTION

Access to the system by unqualified persons lead to system malfunction or unwanted manipulation of patient data.

Incorrect or Delayed diagnosis.

- ◆ Grant access only to qualified staff members for Syngo Carbon Enterprise Access.

1.3.16 IT security information

Third-party devices and applications

⚠ CAUTION

Syngo Carbon Enterprise Access may only be used on or in conjunction with approved third-party devices and applications.

Insecure or unapproved third-party devices and applications can lead to system malfunction, loss of data and/or compromised information security.

- Only use Syngo Carbon Enterprise Access on devices, operating systems, and software approved by the manufacturer.
- Only connect Syngo Carbon Enterprise Access to and use it with third-party applications that have been approved by your organization.
- Be aware that the operating standards of any third-party applications accessed by Syngo Carbon Enterprise Access are set by their respective manufacturers.

1.3.17 Account and system security (user)

CAUTION

Prevent unauthorized access to Syngo Carbon Enterprise Access.

Unauthorized access to Syngo Carbon Enterprise Access can lead to the manipulation of patient data and/or exposure of personally identifiable information.

- Always log out of Syngo Carbon Enterprise Access when you have finished working.
- Activate the screen lock function or log out when you temporarily leave your workstation.
- Keep your password confidential and change it regularly.
- Follow the cybersecurity and information security policies of your organization.
- Enable the Windows operating system auto logoff for user accounts and limit the time to auto logoff as appropriate.

1.3.18 Account and system security (admin)

CAUTION

Prevent unauthorized access to Syngo Carbon Enterprise Access.

Unauthorized access to Syngo Carbon Enterprise Access can lead to the manipulation of patient data and/or exposure of personally identifiable information.

- Set up and maintain appropriate information security and protection measures for the Syngo Carbon Enterprise Access installation and for all optional infrastructure, including virus protection software, firewalls, and secure user account passwords.
- Ensure that only authenticated devices can connect to the network.
- Limit user access to Syngo Carbon Enterprise Access functionalities and data as appropriate.
- Do not allow users without the necessary qualifications to change the product or system configuration.
- Enable automatic lock or logout for all products and configure an appropriate session timeout.
- Update virus protection software in accordance with your site security policy.

CAUTION

Anti-virus software has not been installed or updated

Malicious software can damage the system and cause all patient data to be lost.

- ◆ The administrator is responsible for configuring the anti-virus software. Configure and update your anti-virus software regularly.

It is recommended that you install anti-virus software tested by Siemens Healthineers.

1.3.19 No mobile device reading

CAUTION

Syngo Carbon Syngo Carbon Enterprise Access on mobile devices has not been approved for diagnostic reading of images in the United States of America.

Diagnosis may be wrong.

- ◆ Do not use Syngo Carbon Syngo Carbon Enterprise Access on mobile devices for diagnostic reading of medical images in the United States of America.

1.3.20 Patient identification

CAUTION

Inconsistencies in the patient identification policy between collaborating systems of the site.

Wrong assignment of data due to ambiguous data identification.

- ◆ Align the patient identification configuration in between collaborating systems, such as Syngo Carbon IDM, the RIS, Remote Dicom Nodes, or the PACS.

1.4 Network connection



Syngo Carbon Enterprise Access requires an active network connection. For IT security reasons, a (temporary) failure of the network connection may result in you being logged out and having to log in again.

1.5 Workstation accessibility



When using Syngo Carbon Enterprise Access make sure that you can operate the application at all times.

1.6 Supported file formats

Syngo Carbon Enterprise Access supports the viewing of various DICOM and generic files listed in the following.

1.6.1 DICOM storage SOP classes

Syngo Carbon Enterprise Access specifically supports the DICOM storage SOP Classes listed below. In addition, Syngo Carbon Enterprise Access supports viewing of all SOP Classes used for the purpose of image and video storage. Technical limitations (for example, regarding the Transfer Syntax) may apply.

- 12-lead ECG Waveform Storage (1.2.840.10008.5.1.4.1.1.9.1.1)
- General ECG Waveform Storage (1.2.840.10008.5.1.4.1.1.9.1.2)
- Grayscale Softcopy Presentation State Storage (1.2.840.10008.5.1.4.1.1.11.1)
- VL Whole Slide Microscopy Image Storage (1.2.840.10008.5.1.4.1.1.77.1.6)
- Basic Text SR Storage (1.2.840.10008.5.1.4.1.1.88.11)
- Encapsulated PDF Storage (1.2.840.10008.5.1.4.1.1.104.1)
- X-Ray Radiation Dose SR Storage (1.2.840.10008.5.1.4.1.1.88.67)
- Radiopharmaceutical Radiation Dose SR Storage (1.2.840.10008.5.1.4.1.1.88.68)
- Key Object Selection Document Storage (1.2.840.10008.5.1.4.1.1.88.59)

1.6.2 Generic files

Syngo Carbon Enterprise Access supports the following generic files for viewing:

Images

BMP	JPEG-LS	JPEG 2000	TIFF	GIF
PNG	PNM	PCX	WBMP	JPEG (JFIF)

Video/Audio

Syngo Carbon Enterprise Access supports the playback of various video and audio file formats that use the following codecs:

AAC	FLAC	H.264	H.265	PCM
INDEO2	INDEO3	INDEO4	MP3	MPEG1

MPEG2	MPEG4	OPUS	VP8	VP9
WMA	WMV1	WMV2	WMV3	

This means that Syngo Carbon Enterprise Access supports the playback of e.g. M4A audio files that use AAC codec or MPEG video files that use the MPEG-2 codec.

Text

CDA	JSON	TXT
CSV	PDF	XML

2 General information

This chapter describes the general information about Syngo Carbon Enterprise Access.

2.1 Intended purpose

Intended Purpose Statement under the European Medical Device Regulation 2017/745:

Software solutions intended to process, communicate, display, read, and archive medical data for informing and driving clinical management.

2.2 Intended use

Syngo Carbon Enterprise Access is a software intended to be used in clinical image and result distribution for diagnostic purposes by trained medical professionals and provides standardized generic interfaces to connect to medical devices without controlling or altering their functions.

2.3 Patient population

If not limited or specified otherwise within this document then Syngo Carbon Enterprise Access has neither limitations concerning the patient population (for example, age, weight, health, condition) nor limitations concerning region of body or tissue type.

2.4 Indications

Syngo Carbon Enterprise Access is indicated for display and rendering of medical data within healthcare institutions.

2.5 Contraindications

Syngo Carbon Enterprise Access is not intended

- for diagnosis of digital mammography images.
- for diagnosis of digital pathology images.
- to be used for diagnostic purpose on mobile devices in the USA.
- to be used as a sole basis for clinical decisions.

2.6 IT security information

To learn more about the security of your Syngo Carbon Enterprise Access medical devices and to obtain the Manufacturer Disclosure Statement for Medical Device Security (MDS), contact your Siemens Healthineers representative and ask for the document entitled Product & Solution Security Whitepaper and MDS².

2.7 Incident reporting

According to the European Medical Device Regulation 2017/745 (MDR), any serious incident that has occurred in relation to the device should be reported to the manufacturer and the competent authority of the EU Member State in which the user and/or patient is established.

2.8 Clinical benefits

Syngo Carbon Enterprise Access provides the clinical benefits that result & image distribution is facilitated with a wide range of supported file formats and tools.

2.9 Integration scenarios and interoperability

Syngo Carbon Enterprise Access integrates into your IT infrastructure and communicates with other systems. Examples of such systems are as follows:

- RIS, HIS, EHR and EMR systems
- DICOM workstation

2.10 User interface

The graphical user interface is available in German, English, French, Chinese, and Spanish. The default language is English.

2.11 User roles

The use of Syngo Carbon Enterprise Access is intended for specific operator and user roles. The roles listed below may vary in practice depending on the organization (hospital), qualification, and personal responsibilities and can be considered as a general guideline only.

The following table provides the user roles and profiles that are identified for Syngo Carbon Enterprise Access.

User role	Tasks required	Competency profile
Medical Professional (includes but not limited to radiologist, clinician, physician, dentist, technologist, nurse, chiropractor, optometrist, physical or occupational therapist, other trained caregiver)	• Evaluate procedure results • Review results/Reports	• Professional Education in medical profession • Work experience • Product training certificate or comparable product experience
Clinical Administrator	• Application maintenance • Clinical Data maintenance	• Professional Education or Work experience • Product training certificate or comparable product experience

User role	Tasks required	Competency profile
IT Administrator	IT infrastructure maintenance	- Professional Education or work experience - English language skills (proficient or advanced level) - Product training certificate or comparable product experience
Application Specialist	- Configuration of software - Perform user training - Troubleshooting	- Professional Education or work experience - Product training certificate or comparable - Product experience
Service Technician	Troubleshooting - Hardware and Software	- Professional education or work experience - Product training certificate or comparable - Product experience
Implementation Engineer	- Initial installation and configuration of software - Integration on site to customer IT environment	- Professional education or work experience or university education - Product training certificate or comparable - Product experience
Product Vendor /Business Unit	Define, implement and distribute the final end customer product	Usually Siemens Healthcare Business Units



Within this document, the term "Administrator" refers to "Clinical Administrator" and "IT Administrator"

2.12 Training

To ensure that healthcare personnel are equipped with the relevant expertise, and to improve their productivity, mandatory education services tailored to your specific needs are provided. Siemens Healthineers offers training for administrators as part of the overall education Services tailored to your specific needs. The training provided follows the blended learning approach, utilizing various methods including, but not limited to, onsite training, remote training, or e-learning contents that best fit the situation for your enterprise.

For more information, refer to one of the following:

- Contact your local Siemens Healthineers sales representative.
- Healthcare professionals have access to PEPconnect, the Siemens Healthineers learning platform, where they can brush up their knowledge at their own pace, anytime, anywhere. Go to pep.siemens-info.com, and search for Syngo Carbon Enterprise Access to see relevant e-learning contents.
- See <https://www.siemens-healthineers.com/>. Select your country and then select the category **Education & Training**.

3 Usage instructions

3.1 Notes Regarding the Usage of Syngo Carbon Enterprise Access

3.1.1 Brief differences of document statuses

For system performance improvement reasons, the status of documents in Syngo Carbon Enterprise Access may briefly differ between the individual user and the archive. Search results always reflect the document status in the archive at the precise moment of the query. Note that the results list is not updated automatically if you or another user make changes to documents after you have triggered the search. Either rerun the search manually or set an automatic update interval for the results list (For more information, see (→ Page 46 *Setting automatic updates for the results list*)) to see the most recent data.

3.1.2 Scope of functions described

These usage instructions provide a comprehensive description of the functions of Syngo Carbon Enterprise Access. Due to the configuration settings of your organization or missing permissions, some of these functions may not be available to you. If you have any questions, please contact your system administrator.

3.2 Getting started

3.2.1 Accessing Syngo Carbon Enterprise Access

Syngo Carbon Enterprise Access can be accessed using the internet browser. To configure and access Syngo Carbon Enterprise Access, contact your system administrator.

3.2.2 Accessing the instructions for use on your system

You can view the Syngo Carbon Enterprise Access application help for further information and assistance about the application.

✓ You know the correct name and version of your medical device.

Perform the following steps to open the Syngo Carbon Enterprise Access application help.

1 Click the logged-on user icon on the access bar.

2 Click  **Help**.

3 If you require any other document, click the  **Library** icon in the **Categories** section and set the filter to the required document type, for example, **Operator Manual**.

4 From the result list, select the required document.

3.2.3 Logging in and logging out

Login

Enter your username and password on the login screen and click on **Login** button. Depending on your installation, you may also have to select the domain.

You may receive a system message when logging in. Accept the message to complete the login. If you decline the message, your login will be canceled.

Logout

Open the user menu and select **Logout**. Always end your sessions by logging out to prevent unauthorized access.

Changing your password

Choosing a new password

Your password can expire or be reset by your system administrator. In this case, you will be prompted to enter a new password on the login screen.

Editing your password

You can manually change your password at any time: Open the user menu, select Preferences, and edit your password. For more information, see (→ Page 29 *User profile*).



Your chosen password must conform to the guidelines of your organization. You can hover your mouse over the password field to view the password requirements (e.g. length, special characters).

Account security

Your system administrator can enable the following features to strengthen account security:

Session timeout

If you are idle for too long, Syngo Carbon Enterprise Access may lock the screen or log you out to prevent unauthorized access. To continue working, enter your user credentials to unlock the screen or log in again.

- The time remaining until screen lock or logout is indicated in the user menu. Hover your mouse over the menu to view the timer.
- To postpone the session timeout, perform any action or simply move your mouse. Doing so resets the timer.
- The screen lock function saves your work, allowing you to continue where you left off when you unlock the screen.

You can also log out from the lock screen. If you are sharing a workstation with other users, you can log out the previous user to start your own work.



Be aware that logging out means losing the work in progress. Take special care when logging out another user.

Failed login attempts

If you enter your password incorrectly too often, your user account may be suspended for security reasons. To restore your account, you have to contact your system administrator.

3.2.4 Main menu

Use the main menu at the top to access to the main features of Syngo Carbon Enterprise Access:

- Patient Search

In the Patient Search tab, you can search for documents within a patient context. For more information, see (→ Page 32 *Patient search*).

- Entity Search

In the Entity Search tab, you can search for documents within an entity context. An entity is an alternative way of identifying documents in *syngo.share*, e.g. for clinical studies. For more information, see (→ Page 32 *Entity Search*).

- Inbox

In the Inbox tab, you can access all the documents that have been shared with you. For more information, see (→ Page 83 *Inbox/Outbox*).

- Archive

In the Archive tab, you can archive documents. For more information, see.

- Patient Banner/Viewer

This tab only appears when you open at least one document for viewing. In the Viewer, you can view the document in detail and perform various actions. For more information, see (→ Page 48 *Opening Documents*) and (→ Page 63 *Screen layout of Syngo Carbon Enterprise Access*).

- Job queue

The Job Queue tab provides a list of potentially time-intensive operations. For more information, see (→ Page 88 *Job Queue*).

- User Menu

The user menu opens when you click on your user name. It contains various functions, including the settings (For more information, see (→ Page 29 *User settings*)), the logout option and product information.

3.2.5 Adjusting the User Interface

You can hide or display certain parts of the user interface using  or . You can also adjust the width and/or height of certain areas by clicking and dragging the mouse in the desired direction.

3.2.6 Full screen mode

Syngo Carbon Enterprise Access can also be used in full-screen mode. You can activate and deactivate the full-screen mode by clicking on your user name and selecting **Full screen** from the drop-down menu.

3.2.7 Roles and permissions

Roles with permissions must be assigned to users or user groups by the administrator in order to perform tasks in the Syngo Carbon Enterprise Access.

User roles and permissions can be managed in Syngo Carbon IDM configuration portal.

For more information, refer *syngo.share core* - Online Help.

The tables in the following sections provide an overview of the user permissions and the corresponding authorized tasks enabled in Syngo Carbon Enterprise Access.



Deleting or changing the name of a predefined role or task may break the correlation with work items or prevent clinical users from performing specific tasks.

By default, every user role is authorized to perform the following basic functionality in Syngo Carbon Enterprise Access without any user permissions explicitly assigned to them in Syngo Carbon IDM configuration portal.

- Customize tools on the Tool bar for the current user
- Configure monitor settings in **Settings**



CAUTION

Prevent unauthorized access to Syngo Carbon Enterprise Access.

Unauthorized access to Syngo Carbon Enterprise Access can lead to the manipulation of patient data and/or exposure of personally identifiable information.

- Set up and maintain appropriate information security and protection measures for the Syngo Carbon Enterprise Access installation and for all optional infrastructure, including virus protection software, firewalls, and secure user account passwords.
- Ensure that only authenticated devices can connect to the network.
- Limit user access to Syngo Carbon Enterprise Access functionalities and data as appropriate.
- Do not allow users without the necessary qualifications to change the product or system configuration.
- Enable automatic lock or logout for all products and configure an appropriate session timeout.
- Update virus protection software in accordance with your site security policy.

**CAUTION**

Access to the system by unqualified persons lead to system malfunction or unwanted manipulation of patient data.

Incorrect or Delayed diagnosis.

- ◆ Grant access only to qualified staff members for Syngo Carbon Enterprise Access.

Functional Permissions

Functional permissions refer to functions in Syngo Carbon Enterprise Access and are independent from Organizational Units. The following table describes the available functional permissions.

User permission	Operation
Change patient metadata	Allows to change patient metadata
Export document from post inbox	Allows to export documents from the inbox without having general export rights
Manage document log	Allows to view and clean up the document log
Recipient	Allows to use the inbox. If a user group has this permission, it is also displayed in the list of recipients
Show patient jacket	Allows to open Patient Jacket and view further information regarding the present study context
Access XDS-I domain	The user is allowed to perform a query for external documents (in a XDS Affinity Domain)
Use MPR/MIP	The user is allowed to use the MPR/MIP function.

Document Permissions

Document permissions are permissions on Organizational Units defined in *syngo.share* core. Having a specific permission on an Organizational Unit allows the user to access/edit data archived in this Organizational Unit. The following table describes the available document permissions.

User permission	Operation
Administrative reference pointer	Allows to register a reference pointer manually (re-send HL7 reference pointer to external system)
Change document meta data	Change the metadata/properties of a document
Change keyword	Allows to add or remove keywords to/from a document
Change thin slice state	Allows to manually change thin slice state
Change workflow state	Allows to change the workflow state
Copy document	Allows to copy a document. To insert the document somewhere else, the Import document permission is required

User permission	Operation
Delete document from archive	Allows to delete a document from the archive
Export document	Allows the export of a document
Export document minimized	Allows the export of a document only in minimized form
Import document	Allows to insert a document after a copy operation
Move document	Allows to move a document to another Organizational Unit. To insert the document there, the permission Import document permission is required
Print document	Allows to print a document via the system paper printer
Rearrange instances	Allows to rearrange (cut and paste) a study to another study, a series to a study, and a series to another series
Reassign document	Allows to reassign a document to another patient or visit
Register document to patient portal	Allows to manually register documents to Patient Access
Send document	Allows to send DICOM and generic documents
Share document	Allows to share a document with another user via the inbox. The receiving user must have the Recipient permission
View document	Allows to search for and view documents
View restricted document part	Allows to view series and generic files that are marked as restricted

3.3 User settings

You can open the settings window from the user menu.

All settings changes (except for a password change) have to be confirmed by clicking the **OK** button. Some changes require a page reload to become effective.

3.3.1 General

User profile

Password Click **Edit** and enter your old as well as your new password in the respective fields. Click **Confirm** to save.



Follow the instructions on changing your password. These may inform you that your password needs to contain certain characters or be of a certain length. The Confirm button is only set to active once you fulfill all password conditions. Note that passwords are case-sensitive. If the Edit button is deactivated, this means that your user access is managed by an external system (for example, LDAP) and you are not allowed to change your password. Please contact your system administrator.

Language and Date

Language

- By default, Syngo Carbon Enterprise Access uses the browser language. You can change the language by clicking your user name and selecting **Settings** from the drop-down list. Click **OK** to confirm your changes and reload the page.

Date Format

- By default, Syngo Carbon Enterprise Access uses the date format of the tenant. You can change the date format by clicking your user name and selecting **Settings** from the drop-down list. Click **OK** to confirm your changes and reload the page.

Open Documents

- Double-click

You can choose if a double-click on a document opens a viewer tab or a pop-up window. This setting is overruled if your system administrator has configured an external application to open on double-click for that specific case.

- Pop-ups

You can choose if a new pop-up window is opened for each document or if newly opened documents are displayed in an already open pop-up window.

Screen Test

- Syngo Carbon Enterprise Access offers a screen test feature to help you calibrate your screen for an optimal viewing experience. You can perform the screen test by clicking your user name and selecting **Settings** from the drop-down list. Follow the instructions to calibrate your screen. It is recommended to perform the screen test prior to working with Syngo Carbon Enterprise Access.

3.3.2 Search

Other examinations

You can choose the position of the initial examination in the Viewer when comparing with an other examination. For more information, see (→ Page 46 *Other examinations*).

Phonetic search

With the phonetic search, you can search for similar-sounding patient names regardless of spelling. The phonetic search is currently only available for Germany and Austria. For more information, see (→ Page 41 *Phonetic search*).

3.3.3 Tools

Mouse

You can map certain tools to the mouse buttons. Open the drop-down menu for each mouse button to assign one of the available tools. Mouse buttons not supported by your hardware are grayed out. For more information, see (→ Page 67 *Viewport area*).

3.3.4 Viewer

Image display settings

You can adjust the display quality of images for viewing and editing. This is particularly useful when you are accessing Syngo Carbon Enterprise Access over a slower network connection. You can change the settings under **Settings Viewer**. Ensure that you read the Safety Notices before adjusting the settings.

JPEG quality for interaction	Here you can choose between Manual and Adaptive . Selecting Manual allows you to determine all image quality settings yourself. Selecting Adaptive ensures that Syngo Carbon Enterprise Access continuously adjusts the display quality for interactions depending on your network connection.
JPEG quality value for interaction	If you set the display quality to Manual , you can move the slider to select the quality value for interactions. When you perform continuous actions such as zooming, scrolling, or windowing in the Viewer, the quality of the displayed image is adjusted to this value.
JPEG quality value for final display	Move the slider to set the regular display quality. When you stop performing continuous actions in the Viewer, the quality of the displayed image is adjusted to this value.

Playback

The following settings are available in the Playback feature. For more information, see (→ Page 80 *Playback tools*).

- **DICOM image playback FPS**
You can set a standard FPS rate for DICOM multiframe series playback. In cases where the DICOM multiframe instance already contains a recommended FPS value, this recommended value will be preferred.
- **Autoplay DICOM modalities**
You can enable autoplay for certain DICOM modalities. Only the selected modalities will enter automatic playback when loaded.
- **Autoplay videos**
You can enable or disable autoplay for all videos on a general level. If enabled, all kinds of videos, regardless of their modality or whether they are DICOM or generic, will play back automatically.

Visualization

- Viewport coloring per document

You can switch on and off the color-coding of viewports for multiple documents of the same patient. For more information, see (→ Page 66 *Document preview*) and (→ Page 67 *Viewport area*).

3.4 Searching for documents

Syngo Carbon Enterprise Access offers two ways of searching for documents:

- Patient Search

In the Patient Search tab, you can search for documents within a patient context. See (→ Page 32 *Patient search*).

- Entity Search

In the Entity Search tab, you can search for documents within an entity context. An entity is an alternative way of identifying documents in *syngo.share*, for example, for clinical studies. See (→ Page 32 *Entity Search*) .

3.4.1 Patient search

To start a patient search, perform the following steps:

- 1 The **Patient Search** tab is active by default when you log in to Syngo Carbon Enterprise Access.
- 2 Select a search mode. For more information, see (→ Page 34 *Search modes*).
- 3 Enter your search terms. You can refine or broaden your search by combining different terms. You can clear a search term by clicking x in the search field, or clear the entire search at once by clicking .
- 4 You may have more than one archive available for searching. In this case, you have to select at least one archive before you can start the search. Click **Sources** to select one or multiple archives.
- 5 Press **Enter** or click **Search** to start the search. You can cancel the in-progress search at any time by clicking **Cancel**.
- 6 The results will be displayed in the results list below the search area. For more information, see (→ Page 43 *Results list*).



When you run a search in third-party archives, certain search fields either cannot be considered or are unavailable.

3.4.2 Entity Search

The entity search works in a similar way to the patient search but offers entity-specific search fields. To start an entity search, perform the following steps:

- 1 Click on the **Entity Search** tab and select an entity from the drop-down menu.

- 2 Enter your search terms. The available fields depend on the selected entity.
- 3 Press **Enter** or click **Search** to start the search. You can cancel the in-progress search at any time by clicking **Cancel**.
- 4 The results will be displayed in the results list below the search area. For more information, see (→ Page 43 *Results list*).

3.4.3 Wildcards and further actions

You can use the following wildcards to broaden your searches:

- use `_` or `?` as a placeholder for a single character.
- Use `%` or `*` as a placeholder for any number of characters.

Syngo Carbon Enterprise Access automatically appends an invisible `%` wildcard to the search terms in most search fields, except in ID fields (e.g. **Accession Number**, **Patient ID** and **Visit ID**) and in the phonetic search. This is to ensure the most useful results for any given search.

Example 1: Using `_` and `%`

Ma_er

If you enter this search term to search for patient last names, you will receive results like Mayer, Maher and Mayerson.

Ma%er

If you enter this search term to search for patient last names, you will receive results like Mayer, Maher and Mayerson as well as results like Masters, Mayberry and MacPherson.

Search-related actions

You can also do the following:

- Switch between search modes. For more information, see (→ Page 34 *Search modes*).
- Convert searches from one mode to another. For more information, see (→ Page 34 *Search modes*).
- Customize your search with a variety of search fields. For more information, see (→ Page 37 *Classic Search*).
- Save custom search queries. For more information, see (→ Page 41 *Saving a search query*).
- Edit your saved search queries. For more information, see (→ Page 43 *Editing a saved search query*).
- Set a saved search query as default. For more information, see (→ Page 42 *Setting a search query as standard*).

3.4.4 Search modes

The Patient Search offers two search modes:

- **Smart search**

The Smart search mode lets you quickly and easily search for documents by recognizing your inputs and offering search field suggestions for selection. You can run searches using only your keyboard. No additional search field customization is necessary. The Smart Search supports the most common search fields. For more information, see (→ Page 34 *Smart Search*).

- **Classic search**

The classic search mode offers a variety of search fields that you can customize according to your needs. Input methods vary depending on the type of search field. For more information, see (→ Page 37 *Classic Search*).

You can switch between the Classic Search and Smart Search mode by clicking  > **Search mode** and selecting the desired mode. In this manner, you can also convert existing searches. For more information, see (→ Page 41 *Saving a search query*).



Since the Smart Search supports a limited number of search fields, not all searches can be fully converted. If you choose to convert a classic search with filled search fields that are not supported by the Smart Search, these fields will be ignored. If your classic search contains invalid search terms, it cannot be converted until you correct those search terms.

Smart Search

The Smart Search supports the most common search fields (For more information, see (→ Page 34 *Supported search fields in the Smart Search*)). When you enter a search term, the Smart Search suggests appropriate search fields in the form of a drop-down list. Use the arrow keys to select the desired field for your search term and press Enter to add the term to the Smart Search (you can also make your selection with the mouse).

Smart Search suggestions are based on several criteria, such as whether the search term is an exact match for a field. The Smart Search will offer more refined suggestions the more you use it, that is, if you select particular fields more often, these fields will be

ranked higher as a suggestion. To receive the last suggestion, click .

If you have selected the local archive as a data source, the Smart Search provides the predicted number of results in the local archive before you execute the search. If this predicted number is high, you may want to refine your search terms before executing the search. Since the predicted number is based on data in the local archive, the actual number of search results may differ if you have selected more data sources. For more information, see (→ Page 32 *Patient search*).

Supported search fields in the Smart Search

The below table lists the currently supported search fields and the inputs that will cause them to be presented as suggestions. If a search field is not available in the Smart Search, please select classic mode for searching.



The Smart Search recognizes your inputs based on the current language and date format settings (For more information, see (→ Page 30 *Language and Date*)). Input matching for suggestions is not case-sensitive.

The Smart Search automatically corrects certain inputs such as invalid dates. For example, if you enter "29.02.2022" as a birth date, the Smart Search converts your input to the next valid date, in this case, "01.03.2022".

Search Field	Input	Additional Information
Accession Number	String/Number	Enter a number for this field to be ranked higher as a suggestion.
Assigned Patient Location	String	Multi-selection is possible. Use HL7 notation for this field to be ranked higher as a suggestion.
Birth Name	String	-
Body Part	String	-
Date of Birth	Date	Only selectable when the Patient Age field is not selected.
Description	String	-
Document Workflow State	Fixed list ¹⁾	Multi-selection is possible.
First Name	String	Only selectable when the Name is not selected.
Full-text search	String	Only selectable when you have already selected at least one other search field that is not exclusively searching for DICOM tag content. For available search operators and more details see Full-text search.
Keyword Fields	String	Multi-selection is possible
Last Name	String	Only selectable when the Name field is not selected.
Modality	Fixed list ¹⁾	Multi-selection is possible

1) Search field is suggested when you enter a string that matches a term on the fixed list of this search field, e.g. if you enter "CT", the search field Modality will be suggested since "CT" is on the fixed list for this search field.

Search Field	Input	Additional Information
Mother's Maiden Name	String	Only selectable when you have already selected at least one of the following search fields: First Name, Last Name or Name. If the name contains one or more special characters listed in mother's maiden name, please use a wildcard (see (→ Page 33 <i>Wildcards and further actions</i>)).
Name	String	Combination name field. Only selectable when you have not selected First Name or Last Name. For details on valid inputs, See (→ Page 39 <i>Special search fields</i>).
Patient Age	Number + Time unit	Only selectable when the field Date of Birth is not selected. For the available time units. See (→ Page 39 <i>Special search fields</i>).
Patient ID	String/Number	Enter a number for this field to be ranked higher as a suggestion.
Producer	Fixed list ¹⁾	Multi-selection is possible; available producers depend on your permissions
Sex	Fixed list ¹⁾	Suggested when you enter "Male", "Female", "Other" or "Unknown".
SSN	String/Number	Enter a number for this field to be ranked higher as a suggestion.
Station Name	String	
Study Age	Number + Time unit	Only selectable when the field Study Date is not selected. For the available time units. See (→ Page 39 <i>Special search fields</i>).

Search Field	Input	Additional Information
Study Date	Date/fixed list ¹⁾	Specify dates or time periods by entering a date and selecting "on", "from", "to" or "between" from the suggestions. To receive "between" as a suggestion, you have to enter two dates separated by - or a space. Search for recent documents with relative terms like "last 4/8/12/24 hours", "yesterday", "today", "last 2/3/7/30 days". Only selectable when the field Study Age is not selected.
Visit ID	String/Number	Enter a number for this field to be ranked higher as a suggestion.
XAD Patient ID	String/Number	Enter a number for this field to be ranked higher as a suggestion.

Classic Search

The classic search offers a wide variety of search fields in the categories **Patient**, **Document**, **Order**, **Series**, **Visit**, and **Keywords** (if defined). You can show or hide these search fields according to your needs. To customize your search, perform the following steps:

- 1 Click  > **Configure search fields**. The configuration window shows the available search fields and the displayed search fields. For more information, see (→ Page 38 *Types of search fields in the classic search*).
- 2 Add or remove a search field by selecting it in the appropriate column and clicking on  or  .
 - To select multiple entries at once, press **Shift** or **Ctrl** while clicking.
 - To add a search field at a specific position, additionally select an entry in the displayed search fields column. The new search field will be added directly below this entry.
- 3 To change the order of the displayed search fields select the fields you want to rearrange. Use the arrow buttons to move the selected search fields either by one position at a time or to the very top/bottom.
- 4 Optionally, you can preview your changes by clicking **Preview**.
 - To undo your unsaved changes, click **Reset**.
 - To completely revert all customization, click **Restore default**.

- 5 Click **OK** to save your changes by or reject them by clicking **Cancel** .

Types of search fields in the classic search

Each search field is of a certain type that determines how you can enter your search terms. The following types of search fields are available in the classic search:

Free text Most search fields are free text fields, such as **Last Name**, **First Name**, or **Patient ID**. You can enter your search term directly or paste text from the clipboard by pressing **Ctrl + V**. Leading and/or trailing spaces and/or tab characters are removed automatically. Free text fields are not case-sensitive for searches in *syngo.share* core.

Selection List • In fields of the type selection list, for example, **Modality**, **Document Type**, or **Producer**, you select an entry by clicking the  and selecting from the predefined list.

Some selection lists allow the selection of multiple entries (for example, **Modality** or

Producer), Simply select one entry after the other. To remove an entry, click the  next to it.

Special Selection List Search Fields

- Producer
 - The department (organizational unit) that produced the images/documents. Only departments of which you are a member are displayed.

Date

- In date fields, you can either enter the date directly or click  to select it directly from the calendar. When you select the date from the calendar, you can see the currently valid date format.

Special date search fields

- Study Date
 - This search field combines a selection list with a date search. First, select a time period from the selection list. If the time period is related to the present day or the current time, no further input is required. However, if you want to search for a specific date ("on", "from", "to") or a date range ("between"), one or more date fields will open after you have selected the time period. There, you can enter the required dates manually or select them from a calendar.

Keyword In keyword fields, you can enter a keyword manually or select it from the associated keyword catalogs. To remove a particular keyword, click  right next to it.

- If you enter a string and select a keyword from the suggestions in the drop-down menu, the search will only include this exact keyword. If you enter a string and simply press Enter, your input will be shown in italics and the search will include all keywords containing this string.

- To use the keyword catalogs, click . The catalogs show the keywords in hierarchical order. Click  to expand further hierarchical levels. To filter the catalog, enter part of the desired keyword.

In case  is not displayed, the loading of keywords has been restricted to improve performance. Use the filter option as described to find the desired keyword.

Click on an entry in the catalog to add it to the search field. You can add more than one keyword to a search. The search automatically includes all keywords that are hierarchically below the selected level.

Example 2: Selecting hierarchical keywords

If you select “J00-J06 Acute upper respiratory infections” from the ICD-10 catalog, all diseases/ keywords in that section are included. If you select “J01.4 Acute pansinusitis” on the lowest level, only results matching that exact keyword will be shown.

Automatically included keywords are marked with a square, keywords you select yourself are marked with a checkmark.

- Keywords of the ICOTAGS catalog might appear crossed out. This means that the keyword is deprecated. You can still search for this keyword, but it may not be used for tagging anymore.

Note that if you run a search with a set keyword, the results will only include documents that have been tagged with this keyword on at least one tagging level. For more information, see (→ Page 57 *Keyword tagging*).

Special search fields

Most search fields are straightforward to fill, however, certain search fields function in particular ways and/or require particular inputs.

Full-text search

- The full-text search allows to search the content of generic PDF files. The following operators are available:
 - + Acts as “and” operator. A space between two terms has the same effect.
 - | Acts as “or” operator.
 - * Acts as a wildcard at the end of a search term. The wildcards described in Section (For more information, see (→ Page 33 *Wildcards and further actions*)) do not apply to the full-text search.
 - " " Wraps several terms as an exact phrase to be searched for.
 - () Wraps a term or clause to be preferred over the other search terms.
 - ~n Defines the fuzziness allowed for the search term by the number “n” provided, e.g. “patient~ 1” would find “pateint” but not “apteint”.
 - - Excludes results containing the term.

An OpenSearch instance has to be available in order to use the full-text search. Please contact your system administrator if you have any questions.

Mother's maiden name

- The mother's maiden name may contain special characters. Due to technical reasons, the search field does not support some of these special characters. If the name you are searching for contains one or more of the special characters described in (For more information, see (→ Page 56 *Mother's maiden name*)), please use a wildcard at this position to conduct your search (For more information, see (→ Page 33 *Wildcards and further actions*)).

Name

- This search field allows you to search for last name and/ or first name and different combinations thereof. The following searches are valid and will be mapped correctly to the fields first name and last name of the database:
 - first name last name
 - lastname
 - last name, first name
 - , firstname
 - lastname^firstname
 - ^firstname

Ideographic and phonetic first/last name

- Use the ideographic and phonetic name fields to search for patients with non-alphabetic name information, e.g. Chinese or Japanese characters and their reading/pronunciation.

Patient age/study age

- These fields require a particular syntax. In addition to entering the desired number, you have to indicate the desired unit of time (y = years, w = weeks, d = days, and h = hours). If no unit of time is indicated, years are presumed as unit. Units of time may not be combined. By adding > or <, >= or <=, you can search for certain age ranges. Without a relational operator, the search will only include the precise age.

Example 3:

- Searching for patients younger than 20 weeks: <20w
- Searching for patients exactly 70 years of age: 70y
- Searching for studies of the past week: <=1w

Study date

- This search field combines a selection list with a date search. First, select a time period from the selection list. You can search for time periods related to the present by selecting "last 4/8/12/24 hours", "yesterday", "today", "last 2/3/7/30 days". When you want to search for a specific date or time period, select "on", "from", "to" or "between". In these cases, one or more date fields will open after selecting the time period. Enter the desired dates manually or select them from a calendar.



Spelling in the list above represents the way search terms have to be entered. If first name and last name are not separated by a comma or a caret, they may only consist of one word each because the space marks the separation between the two in this case. Names containing hyphens or other special characters are considered as one word, for example, Smith-Miller or O'Brien.

3.4.5 Phonetic search

Both the classic search and the Smart Search offer the option to start a phonetic search for alphabetic patient names. This feature is currently only available in Germany and Austria. With the phonetic search, you can search for similar-sounding patient names regardless of spelling. Example 4 shows how the phonetic search works:

Example 4: Phonetic search for patient names

If you enter the name "Meier" in an alphabetic name field (e.g. Name or Last name), the phonetic search also provides results for "Maier", "Mair" and "Mayr". If you enter a name with an umlaut, e.g. "Müller", the phonetic search also provides results for "Mueller" and vice versa.

To make use of the phonetic search, you have to activate it in the user settings (For more information, see (→ Page 30 *Phonetic search*)). A small icon next to the alphabetic name fields indicates when the phonetic search is active.

3.4.6 Saving a search query

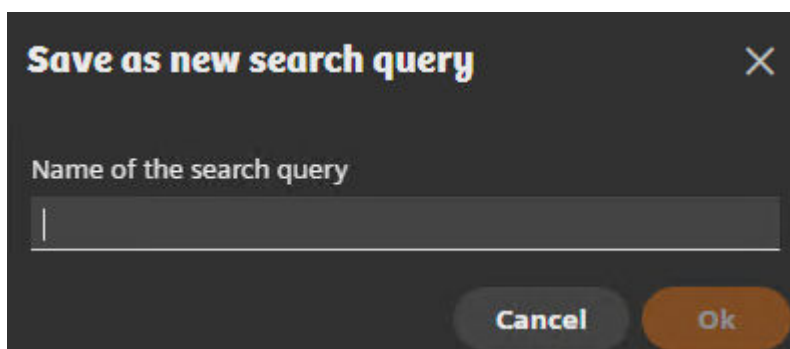
You can save frequently used search queries in order to avoid having to re-enter them every time. Any customizations you apply to the results list (For more information, see (→ Page 45 *Adjusting results list columns*)) are saved alongside the search query and will be applied automatically when you execute the saved search query. Note that saving search queries is not available for the Entity search.

Example 5: Search Query: Display all CTs of a given day in the results list

If you have a daily CT meeting and want to see all CTs of that particular day in the results list, you can create a CT_Meeting search query, save it, and execute it by clicking its name.

- 1 Select the search fields needed from the search settings menu  > **Configure search fields**.
- 2 Fill in the required search fields in the search area.
- 3 Execute the search query.
- 4 Adjust the display of the results list (For more information, see (→ Page 45 *Adjusting results list columns*)) if necessary.
- 5 If you are satisfied with the result, click **Save as** to save the search query.

The **Save as new search query** dialog box is displayed.



- 6 Enter the name of the search query in the **Name of the search query** field.
- 7 Click **Ok**.

You will find the saved search query as a new tab above the search area. Clicking it will execute the saved query.

Setting a search query as standard

- You can set a saved search query to be executed automatically as soon as you log on to Syngo Carbon Enterprise Access. Select the required search query tab, open the search settings menu  and select the **Set as default** check box. When you next log on, Syngo Carbon Enterprise Access will automatically switch to the archive search and load the results list of the standard search query.

Reordering saved search queries

By default, saved search queries are ordered alphabetically. You can rearrange your saved search queries in any desired order. Click on  > **Reorder search queries**. Select the desired search query and use the arrow buttons to move the search query either by one position at a time or to the very top/bottom. Press **Ctrl** and click to select multiple search queries and move them together.

You can revert your changes by clicking **Reset**. To return to the default alphabetical order, click **Restore default**. To discard your changes and close the window, click **Cancel**. To save your changes and close the window, click **OK**.

Once you saved your personal order, new search queries will be added at the beginning of the list. You can move them to the desired position as described above. If you resume the default alphabetical order, new search queries will be sorted alphabetically.

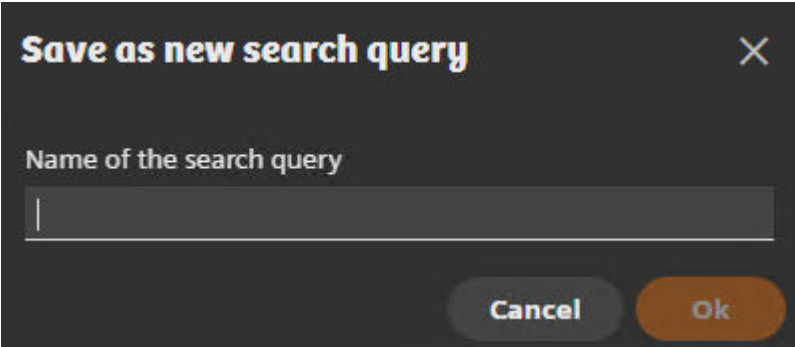
Editing a saved search query

To edit saved search queries, apply the changes needed (for example, hide/show search fields, enter additional search parameters) and start the search.

Click **Save** to save the updated query under the same name.

Click  button next to the **Save** button and click **Save as** to save the query with a different name.

The **Save as new search query** dialog box is displayed.



The dialog box titled "Save as new search query" has a close button (X) in the top right corner. It contains a text input field labeled "Name of the search query" with a cursor inside. At the bottom, there are two buttons: "Cancel" and "Ok".

Enter the name of the search query in the **Name of the search query** field.

Click **Ok**.

To discard the changes, click  next to **Save** button and select **Discard changes**.

3.5 Results list

When the search is complete, a results list is displayed corresponding to the entered search criteria. A result can be a DICOM study (examination) or a generic document (generic container).

Specify more filters to further refine the displayed results.



Depending on permissions and/or system settings, the results list might not show all documents or document parts matching your query. If you find that results are missing, contact your system administrator to check your permissions and/or settings.

You can set an automatic update interval for the results list. For more information, see (→ Page 46 *Setting automatic updates for the results list*).



The results list is static between two searches.

If the results list update is deactivated, changes to data in the background (for example, deletion of a file from the archive) are not automatically shown in the list. In this case, click **Search** to update the results list manually. The changes that you make to the search results (for example, setting a new workflow state) are shown immediately.

Exporting Search Results

Click **CSV** to export the search results to a CSV file.



If you apply a filter to the search results and then export the CSV file, only the filtered results are exported.

You can also copy individual column entries to the clipboard for further use, for example, when filling out a form or spreadsheet. Right-click on the desired entry and select **Copy to clipboard** from the context menu.

Previewing Documents

When you select an entry, the series contained in it are loaded into the **Series** tab. The **References** tab lists generic documents linked to the study, provided that such documents exist (For more information, see (→ Page 46 *References*)). You can switch between a list view and thumbnail view in both tabs.

In the image preview below, you can switch between a list view of all images contained in the series and a preview image. By default, the first image in the selected series is shown in the preview.

You can scroll backward and forward through series and multiframe images simply by pressing and holding down the left mouse button and moving it up or down.

You can also use the scroll tool to directly jump to instances that have been tagged with keywords. The instance tagged with keywords are displayed as bold dots on the scroller.

The functions described above are also available for generic containers and their files.

3.5.1 Results list columns

The results list contains several columns, for example, patient ID, name, date of birth, modality, producer, and many more. You can show and hide columns according to your needs (For more information, see (→ Page 45 *Adjusting results list columns*)). Your view is saved automatically. Saved search queries (For more information, see (→ Page 41 *Saving a search query*)) also save a changed display of the results list, which will be applied automatically when the search query is executed.

The content of the columns is self-explanatory in most cases. An explanation of some columns is provided below:

Online Information

- The availability status of a document differs depending on whether the document is stored in syngo.share core or in a DICOM archive. An overview of the various states is given below.

Status		syngo.share core		DICOM archive
Online	Green	Data is physically available in syngo.share core.	Green	Data is immediately available from the Retrieve AET.
Nearline	Orange	Data is stored in a third-party VNA or an LTA; metadata is available in syngo.share core. The document can be restored and viewed in Syngo Carbon Enterprise Access by double-clicking it.	Orange	Data can be retrieved but is stored on relatively slow media and retrieval may take some time.
Offline		-	Red	Manual intervention is needed to retrieve the document.
Partially Online	Green/Orange	Parts of the study or series have the status "Online", other parts have the status "Nearline".		-
Unavailable		-	Red	The document cannot be retrieved.
Unknown		-	Gray	The third-party archive does not provide the instance availability.

LTA State

- The LTA state is displayed if a document has to be loaded from the long-term archive. If the document is online or was successfully retrieved, there is no entry in the column.

3.5.2 Adjusting results list columns

The results list can be adjusted in many ways. You can switch between a list view grouped by patients or documents. For each view, the following adjustments are available:

- Move the columns freely by simply dragging them with the mouse.
- Adjust the column width by clicking and dragging with the mouse.

- Sort the columns by clicking the arrow shown when you point to a column header and selecting the sorting icons.
- Sort the columns quickly by clicking the column header.
- Show/hide the columns as required. Click the arrow shown when you point to a column header and (de) select the required columns in the **Columns** list.

These settings are saved automatically. Note that for saved search queries, you will have to save any changes that you make manually. For more information, see (→ Page 41 *Saving a search query*).



It is not always possible to sort columns. This occurs when the system pre-groups and pre-sorts the results in the background. In these cases, subsequent manual sorting would interfere with this arrangement.

3.5.3 Setting automatic updates for the results list

Syngo Carbon Enterprise Access automatically updates the results list if you set an update interval. You can select among several intervals.

The results list update interval selected is valid for saved search queries as well as for manual searches. If a saved search query is set as default, the update interval starts when you log on to Syngo Carbon Enterprise Access.



Automatic updating of the results list causes a higher system load. The shorter the update interval, the higher the load. To avoid an unnecessarily high system load, use a longer duration between updates, or, if it is not needed, disable the automatic update function.

3.5.4 References

The References tab in the preview area displays generic documents that are linked to the selected document, such as reports or discharge letters that have been associated with a DICOM study.

References are limited to documents from the same patient (based on the patient ID). Just like in the Series tab, you can switch between a list view and a thumbnail view. For more information, see (→ Page 43 *Results list*).

References are ordered by their generic file type. References without an assigned generic file type are listed in a separate section at the bottom of the list. You can assign or change the generic file type in the document properties. For more information, see (→ Page 55 *Viewing and editing patient and document properties*).

3.5.5 Other examinations

You can load and view other examinations available for retrieved DICOM studies. Other examinations are displayed in a separate area below the results list. The area is collapsed

by default. Click  to expand it. If any authority of the DICOM study selected in the results list is from another site, the other examinations list is deactivated.

You can expand the area and select a study from the results list to automatically load other examinations that much. You can also trigger this action via the context menu of the results list (**Show other examinations**). After loading the examinations, you can further filter them by prior examinations (checked by default), modality, body part, and produce. You can also add/ remove, rearrange, and sort the various columns just like in the results list. For more information, see (→ Page 45 *Adjusting results list columns*).

Select another examination to receive a preview of the contained series and instances. For guidance purposes, the current study remains highlighted in the results list.

Double-click another examination to open it in the viewer. To display another examination alongside the initial examination, select **Open with initial examination** in the context menu of the **Other Examinations** area. The position of the initial

examination can be changed in the settings menu . You can then view and edit the images contained in either examination. For more information, see (→ Page 67 *The viewer*).



Note that other examinations are always loaded from the same archives selected for the initial search. If you suspect other examinations in other archives, you must first click  in the search area and select these archives to include them in the search.

3.5.6 Patient Information and QR Code

Syngo Carbon Enterprise Access provides quick access to the most important patient information such as name, date of birth and patient ID from a variety of locations, most notably the results list when set to the patient view and the viewer tab/patient banner.

Click on  in the context menu.

The patient information screen also displays a QR code for the patient ID. You can scan this QR code with a mobile device and open the patient record with e.g. the Visual Capture application. For more information, see (→ Page 55 *Viewing and editing patient and document properties*).

3.6 Actions

Actions can be found by opening the context menu (right-click) in the patient search results list. The available actions depend on your user permissions and whether the actions can be applied to the currently selected data. If an action is not shown, you are missing the corresponding permission (user permissions are assigned by your system administrator). If an action is not applicable to the currently selected data, it is highlighted in gray.

The selected action is executed on the level on which it is called: on the patient level (in the patientgrouped view), on the DICOM study level or generic document level, DICOM series level, or DICOM instance or generic file level. If you call an action on the DICOM study or generic document level, it is applied to all files contained therein.

For studies from third-party archives or any installation without *syngo.share* core, only a reduced number of actions is available.

The following sections describe the most important context menu actions. Depending on the entry level, on permissions and on the selected data, the entries in the context menu may vary.

3.6.1 Opening Documents

Syngo Carbon Enterprise Access offers several means of opening and loading documents.

- Opening Documents in the Viewer
- Opening Documents in External Applications
- Opening Documents in Concentriq
- Retrieving Documents



The term Concentriq applies to the applications Concentriq AP and Concentriq AP-Dx.

Opening Documents in the Viewer

To open any part of a document in the Viewer, double-click on it or select **Open** from the results list context menu.

If you open a lower-level item, the corresponding higher level item(s) are also opened in the **Document Navigator** of the Viewer. For example, if you open a DICOM series in the Viewer, the corresponding study and any other series it contains are also displayed in the Document Preview.

Opening documents in a pop-up window or on another display

Right-click the document and select **Open in pop-up window** to open the document in a pop-up window. Depending on the browser, you can alternatively select a specific display on which the document is opened (For example, you have multiple displays and you grant the browser permission to access the displays).

In the settings, you can select if a new pop-up window is opened for each document or if the already opened pop-up window should be used to display a newly opened document. For more information, see (→ Page 30 *Open Documents*).

You can also set a double-click to open a pop-up window instead of a viewer tab. Pop-up windows are closed automatically when you log out of Syngo Carbon Enterprise Access.

Opening Additional Documents

The Viewer tab stays open when you switch back to the search tab. This enables you to open additional documents for the currently displayed patient. The documents are added to the **Document Navigator**. The already opened viewports remain in place. To view a newly opened document, either change the layout (For more information, see (→ Page 68 *Layout tools*)) to have more viewports available and open the document in an empty viewport, or drag the document into an active viewport to replace the displayed document.

Opening Multiple Documents at Once

You can open up to nine DICOM studies and/or generic containers of the same patient for viewing at once. The documents have to be in the same archive. Press **Ctrl** and click to select multiple documents, then select **Open** from the context menu to open all the selected documents in the Viewer. Each document is opened in its own viewport in one Viewer tab.

Opening Documents from Multiple Patients

Depending on the configuration, you can open up to three Viewer tabs for different patients and/or entities. Adding more documents to already displayed patients/entities is possible without limitation.



Any quality assurance operations (For more information, see (→ Page 51 *Quality assurance operations in Syngo Carbon Enterprise Access*)) performed on an open document only become visible after you close and reopen the document.

Retrieving Documents

You can retrieve *syngo.share* documents that have been moved to a long-term archive as well as documents from third-party DICOM archives.

syngo.share documents (that is, documents archived in *syngo.share* core) that have been moved to a long-term archive are given the status Nearline. Open the context menu and select **Retrieve** to return them to the online status. Once retrieved, these documents can be displayed in Syngo Carbon Enterprise Access and all actions are available as usual.

When you use Retrieve on documents stored in a third-party DICOM archive, the documents are imported into the archive (*syngo.share* core or a third-party archive). You can retrieve documents that have the status Online or Nearline from third-party archives.

For more information on the online status, see (→ Page 44 *Results list columns*).

Opening documents externally

Syngo Carbon Enterprise Access allows you to open documents or document parts (i.e. individual DICOM series/instances or generic files) in external applications for viewing, printing, etc.

These external applications are available in the context menu if they have been configured by your system administrator. If your administrator has set one or more default applications, these applications will open automatically when you double-click on a document or document part.

Opening Documents in Concentriq

You can open generic documents in Concentriq, a platform for digital pathology. Select the desired document and click on **Open with Concentriq** in the context menu. You can also select and open multiple documents. A new browser tab opens for each document.



The term Concentriq applies to the applications Concentriq AP and Concentriq AP-Dx. This action is only available for documents which originate from Concentriq. To use this feature, you must have access to Concentriq.

Printing Documents

You can print images and textual documents (for example, PDFs and structured reports) in the search tabs or in the Viewer. For more information, see (→ Page 9 *Safety notices*).

Printing in the Search Tab

To print a document in the **Patient Search** or **Entity Search** tab, go to the **Instances** area,

select the  view. If there are multiple instances available, you have to scroll to the instance (that is, the image or text document) you want to

print first. Then click the Print button,  to open your browser's print function.

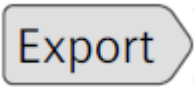


Any adjustments you have made to an image (for example, contrast) are printed as well.

Printing in the Viewer

To print a document in the Viewer, open the desired file or series. If there are multiple instances available, scroll to the desired instance in the viewport. For more information, see (→ Page 67 *Viewport area*).

- Images:

Click   in the specific toolbar to open your browser's print function.



Note that any adjustments you have made to the image (for example, contrast, annotations) are printed as well.

- PDFs:

Click  in the PDF toolbar.

Manual trigger for sending generic documents via HL7 message

You can manually trigger the sending of a generic document to a configured HL7 application via an HL7 MDM message. This function complements the already available file system connectivity.

3.6.2 Quality assurance operations in Syngo Carbon Enterprise Access

Syngo Carbon Enterprise Access offers a variety of functions to assure quality of the data archived. The below table provides an overview of the functions, states their availability for DICOM and generic data, and links to the corresponding sections.

Function	DICOM	Generic	Description
Change patient metadata ¹	☑	☑	See (→ Page 55 <i>Viewing and editing patient and document properties</i>)
Change study/document meta-data	☑	☑	See (→ Page 55 <i>Viewing and editing patient and document properties</i>)
Change series meta-data	☑	☐	See (→ Page 55 <i>Viewing and editing patient and document properties</i>)
Change work-flow state	☑	☐	See work flow state
Move series	☑	☐	See (→ Page 53 <i>Reassigning documents</i>), See (→ Page 53 <i>Moving or merging studies and series</i>)
Move study	☑	☑	See (→ Page 53 <i>Moving documents</i>), See (→ Page 53 <i>Reassigning documents</i>)
Merge series	☑	☐	See (→ Page 53 <i>Moving or merging studies and series</i>)
Merge study	☑	☐	See (→ Page 53 <i>Moving or merging studies and series</i>)
Copy study	☑	☑	See (→ Page 52 <i>Copying documents</i>)

Function	DICOM	Generic	Description
Split study ²	☒	☒	See (→ Page 52 <i>Copying documents</i>), See (→ Page 58 <i>External search</i>)
Delete study	☒	☒	See (→ Page 52 <i>Deleting documents</i>)
Delete series	☒	☒	See (→ Page 52 <i>Deleting documents</i>)
Delete report (generic document)	☐	☒	See (→ Page 52 <i>Deleting documents</i>)
Rotate image (generic file)	☐	☒	See (→ Page 56 <i>Rotating Generic Images</i>)
Change thin slice state	☒	☐	See (→ Page 56 <i>Thin-slice state</i>)

QA operations in Syngo Carbon Enterprise Access²⁾³⁾



While quality assurance (QA) operations are carried out on a document, the corresponding study or generic container is locked in order to prevent multiple users from executing QA operations at the same time. The document can be viewed, but a warning will inform the user about ongoing QA operations.

Deleting documents

This function allows you to delete documents or parts of documents from the archive. After clicking on Delete, you have to select a reason for deletion for quality assurance purposes.

Copying documents

This function allows the copying of documents to a different producer (organizational unit) and makes them available to other users. Selecting **Copy** opens a dialog box with a selection list of possible storage areas. Specific entries can be filtered via the search field.

Clicking **OK** selects an organizational unit and starts the process. The document will subsequently exist twice in the archive, once in each organizational unit. Any keywords and annotations are also copied.

2) Patient data can only be changed for non-HL7-managed patients.

3) via Copy, Delete

Moving documents

This function lets you move documents to a different producer (organizational unit). Selecting **Move** opens a dialog box with a selection list of possible storage areas. Specific entries can be filtered via the search field.

Clicking **OK** selects an organizational unit and moves the selected study or file to the specified organizational unit. The results list is updated immediately.

Reassigning documents

A document can be reassigned to another patient or visit. Furthermore, incorrectly imported DICOM studies and series can be reassigned to the appropriate requested procedure (on the study level) or scheduled procedure step (on the series level) of HL7 orders. To reassign a document, select it in the results list and click **Reassign** in the context menu.



You can manually trigger the sending of a generic document to a configured HL7 application via an HL7 MDM message. This function complements the already available file system connectivity.

Reassigning documents to another patient or visit

- To reassign a document **to another patient or visit**, select **To another patient/visit**. The patient and visit search screen opens. You can either search for the exact visit ID or for the patient. Various search fields are available for the patient search.

Note that you cannot search for a visit ID and patient simultaneously.

Select the entry to which the document should be reassigned in the results list and click **OK**.

Reassigning documents to another order

- To reassign a DICOM study to a requested procedure or a DICOM series to a scheduled procedure step, select **To another order**.

On the Reassign screen, search for the correct order. Note that you cannot search for the order ID or requested procedure ID simultaneously. Select the desired order in the results list and click **OK**.

Reassigning documents to another entity

- This action is only available in the Entity Search. To reassign a document to another entity, select **Reassign > Entity** from the context menu.

On the Reassign screen, search for the desired entity. Select it in the results list and click **OK**.

Moving or merging studies and series

Syngo Carbon Enterprise Access allows you to rearrange DICOM studies and series via a cut-and-paste operation. This function is useful for correcting acquisition errors. The following operations are available:

- Merge studies
- Merge series (of the same modality)
- Move series to another study

Perform the following steps to rearrange studies or series:

- 1 Select the required studies or series in the corresponding results list. Press **Ctrl** on the keyboard to select more than one study or series.
- 2 Open the context menu and click **Cut**. The selected studies or series are cut to the clipboard.
- 3 Search for the target study or series and select the required target document.
- 4 Open the context menu on the required target study or series and click **Paste**. A dialog box opens informing you about what exactly will be done and what will be the consequences of the required operation. Confirm the operation by selecting whether you want to keep or delete the source document. The copied studies or series are pasted into the target study or series, and the source is deleted or kept depending on the previous selection.

Once the rearrange operation is completed, the results list is refreshed and the target document is selected. If you chose to delete the source document, it will no longer be listed.

As long as a document is part of a rearrange operation, it is locked and highlighted in color. You cannot cut and paste a locked document or merge it with another document.

The cut documents remain in the clipboard until:

- they are pasted into another series or study. Upon completion of the operation, the clipboard is cleared.
- new documents are cut to the clipboard. In this case, the previously cut documents are overwritten.

Document navigator

The Document Navigator displays basic information about the documents you have opened alongside a thumbnail image. You can collapse/expand the Document Navigator

by clicking on  or .

To collapse/expand the individual levels of a document, click on the document entry. Double-click on an entry to open the document in the viewport area. You can also drag and drop the document to a specific viewport. For more information, see (→ Page 68 *Layout tools*).

When you open multiple documents of the same patient, they are color-coded for your convenience. The corresponding viewports in the viewport area are highlighted in the same color. For more information, see (→ Page 67 *Viewport area*).

You can switch off the color highlighting in the settings. For more information, see (→ Page 32 *Visualization*).

Document Navigator Context Menu

The Document Navigator offers its own context menu with a limited selection of actions which varies slightly depending on the type and level of the document. Most of the available actions are general actions that are described in section (For more information, see (→ Page 47 *Actions*)); however, the following context menu entries are specific to the Document Navigator:

- **Clear viewer and hang document** is available on the document level (i.e. when you right-click on a study or generic container). This action clears the Viewer and hangs the selected document.
- **Clear viewer and hang series** is available on the series level. This action clears the Viewer and hangs the selected series.

Multiframe instances

If a DICOM series contains multiframe instances, the instances are displayed in the **Document Navigator** below the series entry. This way, you can more easily navigate through the multiframe instances and execute actions on specific instances instead of the entire series.

Grouping of OP and OPT Series

Referenced OP and OPT series are grouped together. The series information and the thumbnail of the OPT are not displayed. The reference lines of the linked OPT series, however, are included in the thumbnail of the OP series. For more information on working with ophthalmic images. For more information, see (→ Page 80 *Ophthalmic images*).

Instances/Files

The Instances tab displays the instances of the selected series or the selected generic file. Just like in the **Series** tab, you can switch between a list view and an image preview.

- **Scrolling:** If the selected series contains multiple instances or an instance is multiframe, you can scroll through the instances/frames in the image preview.
- **Viewport resizing:** When using a multi-viewport layout, you can maximize a viewport to focus on its displayed image. Click on  in the specific toolbar or simply press **F** to maximize the selected viewport. To return to the multi-viewport layout, click on  or press **F** again.
- **Keywords:** DICOM instances that have been tagged with keywords are marked with a dot. Note that if a series contains a large number of instances, the markings may be grouped together. Hover your mouse over the dot to view detailed tagging information. Click on the dot to jump to the tagged instance.
- **Key Image Notes:** DICOM studies can contain Key Image Notes (KINs). KINs are a way to mark images as significant and provide additional information, e.g. for teaching purposes or consultation with other departments. KINs are DICOM instances of the modality KO. Images referenced by a KIN are marked with a dot just like images with keywords. Hover your mouse over the dot to receive more information about the referencing KIN. Click on the dot to jump to the tagged instance.

Viewing and editing patient and document properties

The document properties can be accessed from the context menu on any level of the results list by clicking on **Properties of** in the context menu. Note that the context menu entry varies to match the document type and level.

The **Properties** window contains tabs for every available level of the document, including the patient. You can edit the desired properties directly. Click on **OK** to apply your changes or click on **Cancel** to discard them.



The patient and document properties are also accessible from the specific toolbar in the Viewer. For more information, see (→ Page 67 *Viewport area*).

Mother's maiden name

The field mother's maiden name is only available for Spanish-speaking countries. It allows several special characters, however, these have to be entered using the escape sequences described in the table below.

Special Character	Escape Sequence
\	\\
	\\
~	\\~
^	\\^
&	\\&

Rotating Generic Images

In the image preview, you can rotate JPEG images clockwise and counterclockwise in steps of 90 degrees. This function is only available from the preview image, and not from the list view. You can save the rotation applied to the image. However, no other operation performed on the image is saved.

Thin-slice state

On the series level, you can (de)select a checkbox to specify whether a DICOM series is a thin-slice series. Thin-slice series are specially highlighted in the thumbnail view.

Viewing and correcting warnings and errors

Syngo Carbon Enterprise Access provides a document error and warning log (document log untranslated). An error log is created if an error occurs during import. In case automatic corrective measures are taken during a re-import, a warning log is created.

To find documents with an error or warning, use the search filter Document Log.

Follow these steps to access the document log and review entries:

- 1 Right-click a document in the results list to open the context menu and select **Show document log**.
- 2 A new window opens and lists all errors and warnings logged for the selected file.
- 3 Click the required entry to see the error/warning details.

- 4 You can select entries and remove them from the document log by clicking on **Set as resolved**. This is useful for indicating that you have acknowledged a warning or when an error has been resolved with a re-import. You can skip this step if you wish to keep the log entries for traceability reasons.



The actual correction of errors is handled by your system administrator.

3.6.3 Keyword tagging

Syngo Carbon Enterprise Access lets you apply keywords to documents. Documents tagged with keywords can be searched for and grouped by their keywords. Keywords can be based on catalogs (for example, ICD 10) and/ or on free text. The advantage of catalogs is that they contain exactly defined keywords which can be easily searched. The advantage of free text keywords is that any required keyword can be applied to a document. However, the disadvantage is that it might become difficult to find entries when a keyword has multiple forms of expression, for example, “femoral fracture” and “broken thigh bone”.

Catalog

- This contains predefined keywords.

ICOTAGS

- This is a special catalog that allows only one keyword to be set. This exclusive behavior is useful for keywords like “diagnosis-relevant”.

Free text

- These keywords are not restricted to a predefined catalog. Any required keyword can be applied to a document.

You can assign any number of keywords from any level of the keyword trees to studies, series, and images as well as general documents and generic files. If keywords were incorrectly assigned, they can be easily removed as well.

To assign keywords on the various levels, right-click the element on the required level and select **Keywords > Add keyword** from the context menu. The form for assigning keywords opens. If available, keywords from the ICOTAGS catalog are displayed directly in the context menu entry **Keywords** for quick selection.

The keyword groups can be chosen from a selection menu. If a catalog is extendable, you can enter a new keyword directly in the text field. It is also possible that no keyword catalog has been assigned to a field. These are so-called free-text catalogs, which allow keyword tagging via manual text entry.

Click the arrow key next to the keyword search field to view the keywords of the respective keyword catalog. Navigate the tree to find the required keyword or use the filter function to search for the keyword in the catalog. To actually apply the keyword tagging, select and click the appropriate entries in the catalog. Click **OK** to save the keyword tagging.

To remove a keyword, open the properties of a study, series, or instance (or a generic document or file) and remove the required keywords by clicking . Click **OK** to confirm your changes.

3.6.4 External search

Use the external search to find patients or visits in syngo.share import. To use this function, *icourl* must be installed.

Searching in Other syngo.share Applications

Use **External search** to find patients or visits in *syngo.share import* or *syngo.share view*. To use this function, *icourl* must be installed.

Searching for External Documents

In the patient view, you can use **Search for external documents** to start a cross-enterprise search (XDS search) for documents for a given patient. This allows you to find documents from affiliated healthcare enterprises that have agreed to share documents with each other.

The search results are displayed in a pop-up window, which offers many of the same customization options as the regular search results list (for example, showing/hiding columns, sorting or filtering the results). You can open and edit the external documents in the Viewer. You can open and edit the external documents in the viewer, however, they cannot be archived locally.

3.6.5 Downloading and exporting documents

You can download or export documents to a local storage device.

- Downloading documents
- Exporting documents

Downloading documents

Use **Download** to save selected documents to a local storage device as an unencrypted ZIP file. This is a one-click alternative to the **Export** function.

Exporting documents

Use **Export** to export documents as a ZIP or ISO file to a local storage device. You can select the minimization of DICOM patient data for both export formats

- Exporting a ZIP file
- Exporting an ISO file
- Exporting with minimized patient data

Exporting a ZIP file

To export documents as a ZIP file, proceed as follows:

- 1 Select **Format > ZIP**.
- 2 Optionally, you can select **Encrypt** to create an encrypted ZIP file. In this case, you have to set a password.

- 3 Optionally, you can create subfolders for the individual DICOM series. In this case, you have to select the naming scheme for the subfolders:
 - **Series Instance UID:** Folders will be named according to values in the DICOM tag `Series Instance UID`.
 - **Series description:** Folders will be named after the values in the DICOM tag `Series Description`. Be aware of the following:
 - If the `Series Description` tag contains any of the special characters `\/:*? <>|`, they will be replaced by `_` in the subfolder name.
 - If the `Series Description` is empty, the subfolder will be named after the `Series Instance UID`.
 - If two or more series have the same `Series Description`, the duplicate subfolder names will be numbered.
- 4 Select **Original** or **Minimized** DICOM patient data according to your preference. For more information, see (→ Page 59 *Exporting with minimized patient data*).
- 5 Click on **Export** to download the **ZIP** file to your local storage device.

Exporting an ISO file

When you choose to export the selected documents as an ISO file, a DICOMDIR is created and wrapped into an ISO file that you can burn to a CD/DVD with an external application. To export documents as an ISO file, proceed as follows:

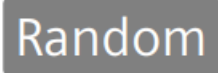
- 1 Select **Format > ISO**.
- 2 Optionally, you can select the following:
 - **Add nonconvertible DICOM instances**

With this option, you can include DICOM instances in your ISO export that cannot be converted to the designated Transfer Syntax Explicit VR Little Endian, such as videos. Doing so can result in the creation of a DICOMDIR that does not conform to the DICOM standard, meaning that you may not be able to fully view it in a third-party application. However, it allows you to export all DICOM instances regardless of their type.
 - **Only ISO 9660 level 1**

ISO 9660 is a file system standard for optical media like CDs and DVDs. Level 1 imposes severe restrictions on the file size as well as on the length of the file and directory names and the permitted characters used in those names. With this option, you can ensure that the CD/DVD can be read by legacy operating systems and devices. Please be aware that selecting this option may lead to issues if the export includes one or more DICOM instances that exceed 4 GiB.
- 3 Select whether you want to keep the original DICOM patient data or minimize them for the export. For more information, see (→ Page 59 *Exporting with minimized patient data*).
- 4 Click on **Export** to download the **ISO** file to your local storage device.

Exporting with minimized patient data

To export documents with minimized patient data, select **Patient data > Minimized**. You can minimize the following patient data by either manually entering new values or by

clicking on  :

- Patient ID
- Last name
- First name
- Date of birth
- Birth name
- Ideographic last name (if available in original data set)
- Ideographic first name (if available in original data set)
- Phonetic last name (if available in original data set)
- Phonetic first name (if available in original data set)

All other attributes belonging to the patient module are removed.



Please keep the following points about data minimization in mind:

- Minimization only applies to the metadata of the patient module in the DICOM header and to the name of the export file.
- Minimization cannot alter patient data contained in documents, especially in images, PDFs, and CDAs.
- Minimization cannot alter DICOM tag values of the patient module if they are nested in DICOM elements other than the Modified Attributes Sequence (0400,0550) of the Original Attributes Sequence (0400,0561).

Adding documents to collections

You can organize documents in collections for e.g. medical analyses, clinical studies, conferences or briefings. Collections are grouped in containers. These containers can be unscheduled or scheduled, e.g. for weekly meetings and other events that occur at

fixed intervals. Scheduled containers are indicated by  and list collections by their scheduled date. To add documents to a collection, do the following:

- 1 Select one or more documents. To select multiple documents at once, click while pressing **Ctrl** or **Shift**.
- 2 Right-click to open the context menu and choose **Add to collection**.
- 3 Go to the desired container in the list. If your collection menu contains a lot of entries, you can use the filter function to quickly find the desired container. You can also favorite containers you want to use frequently.
- 4 Select a collection in the container. You can add the same documents to multiple collections in different containers.
- 5 You can add a comment. The comment will be stored on case level. If several cases are affected by your selection of documents, the comment will be added to each case. If a case already has a comment, the new comment will be appended. Comments are limited to 1000 characters total.
- 6 Confirm your selection with **Add**.



This function is only available in Syngo Carbon environment with Syngo Carbon Space installed.

Distributing documents

You can distribute documents in various ways for further processing or use, e.g. by sending them to connected systems or by sharing documents with colleagues for collaborative work.

- Sending documents
- Registering reference pointers
- Registering documents in the Patient Portal
- Sharing documents

Sending documents

You can send DICOM and generic documents to other systems or devices connected to syngo.share. These devices are shown as recipients (targets) and are configured by your system administrator. You can send DICOM studies, series and instances, as well as generic containers and generic files.

To send a document, proceed as follows:

- 1 Select one or more documents. To select multiple DICOM documents or multiple generic documents at once, click while pressing **Ctrl** or **Shift**.
- 2 Right-click to open the context menu and choose:
 - **Send** to send DICOM documents to a DICOM-capable application;
 - **Send to filesystem** to send generic documents to a connected filesystem;
 - **Send to external system** to send generic documents to an HL7-capable application.
- 3 If you have favorite targets, you can select them directly from the context menu. To select another or multiple targets, click on **Other targets** to open a selection list of all available systems/ devices.
 - You can enter part of the target's name in the filter field to narrow your options.
 - Targets that you have added to your list of favorites are listed separately.
- 4 Click to select the desired target from the list. To select multiple targets at once, click while pressing **Ctrl** or **Shift**.
- 5 Confirm your selection with Start sending. You can track the progress of send operations (i.e. Send and Send to filesystem) in the Job queue. For more information, see (→ Page 88 *Job Queue*).

Registering reference pointers

You can manually register documents in order to make them available to subsystems. This means that for each selected document, a reference pointer containing all relevant information about the document is sent to the subsystem.

Select the documents to be registered and choose **Register reference pointer** from the context menu. If you have bookmarked favorites, you can select them directly. To open a list of all possible recipients, click **Other targets**. If your list of recipients contains several entries, enter part of the recipient's name in the filter field to filter your options. Select the required recipient(s) and click **Send**.

For more information on the list of favorites, see (→ Page 61 *Distributing documents*).

Registering documents in the patient portal

This function registers documents to Patient Access via multi-selection (**Ctrl** or **Shift**), you can select and register multiple documents or generic files at the same time.

Sharing documents

This function allows you to release examinations to physicians in private practice as well as medical institutions for electronic diagnosis communication. Select the required document(s) and choose **Share** from the context menu. Enter the relevant information in the dialog box:

Recipient

- The selection list contains all possible recipients, meaning these users are registered participants of the electronic diagnosis communication in the healthcare facility. Either browse the list or enter a term in the search field to filter your results. You can select one or more recipients at a time.

Validity period

- You can add a validity date for your share. To allow permanent access to your share, check the box **indefinitely**. The default validity date is set by your institution.

Priority

- Check the box to mark a share as high priority.

Message

- Below the list of recipients, you can add a message to be sent to all selected recipients.

Click **OK** to release the document(s). Every recipient will receive a notification in their inbox (For more information, see (→ Page 83 *Inbox/Outbox*)) as well as an email notification (if they have provided an email address).

3.6.6 Patient related actions

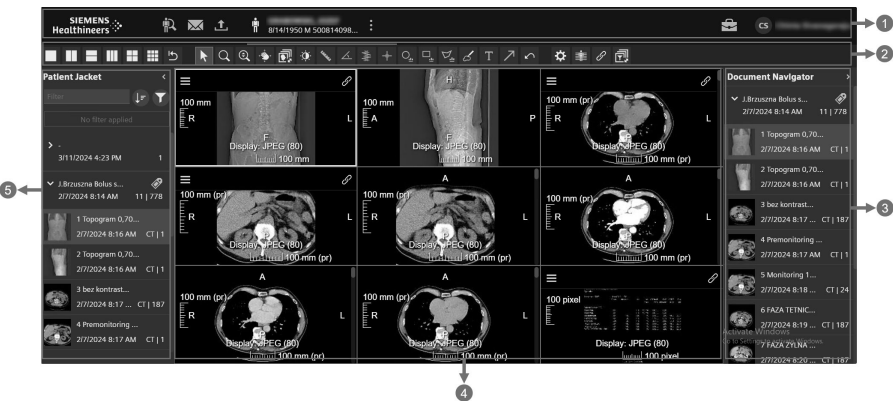
The Patient category contains actions related to or based on the patient. You can do the following:

- View patient information. For more information, see (→ Page 47 *Patient Information and QR Code*).
- Edit patient details. For more information, see (→ Page 55 *Viewing and editing patient and document properties*).

- Search for other patient IDs.
This allows you to see if the same patient has been registered with different patient IDs in other Sites and add their documents to the results list. Sites are other healthcare facilities (e.g. individual hospitals of one hospital group) that are part of your syngo.share core installation.
- Search for external documents based on the patient ID
This allows you to find documents from affiliated healthcare providers that have agreed to share documents with your institution. The results are shown in the **Patient Jacket**. From there, you can open the external documents in the viewer and work with them as usual. For more information on the **Patient Jacket**. For more information, see (→ Page 64 *Patient Jacket*).
- Search for the patient ID in other syngo.share applications. For more information, see (→ Page 58 *Searching in Other syngo.share Applications*).
- Set the patient as the context for archiving new documents. For more information, see (→ Page 85 *Archiving documents*).

3.7 Screen layout of Syngo Carbon Enterprise Access

Syngo Carbon Enterprise Access is divided into the following sections.



- (1) Access bar - The patient tab displays the studies related to the patient and details such as study date, patient name, and department name.
- (2) Toolbar - Shows the layout selection and the configured favorite tools. For more information, see (→ Page 67 *The viewer*).
- (3) **Document Navigator** - Displays the number of documents in the currently displayed study and allows you to navigate through them.
- (4) Image area - Displays study images within the segments. The image that you are currently working with is highlighted around the image segment. Double-click an image within the image segment to view it full screen.
- (5) **Patient Jacket** - Shows all the related studies of the patient in the patient tab. The related studies include both online and remote studies.

Zoom	Description
 Zoom in/ Zoom out	Zooms in or out of the displayed study. For more information, see (→ Page 70 <i>Scaling tools</i>)

Zoom	Description
 Magnifier	Magnifies the displayed study. For more information, see (→ Page 70 <i>Scaling tools</i>)
Fit to window	Sets the displayed study based on the window size.
Buttons	Description
 (Move)	Moves the image within a window panel
	Scrolls through the focal planes using the mouse wheel while holding Shift on the keyboard.
 (Reset)	Resets the analysis measurement.
 (Show/hide) button	Description
Show/hide text	Selecting this option displays the text on the study.
Show/hide annotations	Selecting this option displays the annotations on the study.
Show/hide overlay	Selecting this option displays the overlays on the study.
Icon	Indication
	Shows the position of the current slide while you scroll through multiple overlapping slice image series.
	Indicates that the study is synchronized with a group. For more information, see (→ Page 76 <i>Synchronized scrolling</i>).

3.8 Patient Jacket

The Patient Jacket provides a list of all documents which are associated with the current patient. To open the **Patient Jacket**, click on **J**.

The Jacket is also available for entities and offers many of the same features. You can expand/collapse the Patient Jacket by clicking on  or  or by pressing **J**.

3.8.1 Working with the Patient Jacket

The Patient Jacket groups documents in tabs based on their location:

- **Local** shows the documents available in the local archive.
- **Remote** shows the documents available in remote archives (remote nodes).
- **External** shows the documents made available by external healthcare providers.

You can do the following in the **Patient Jacket**. The available actions vary depending on the selected tab:

Preview document parts

Select a document in the list to receive a thumbnail overview of the document's parts (i.e. its series or generic files). If the document is referenced by other documents, these references are shown as well.

Select a series/file thumbnail to receive a more detailed preview (by default, the preview shows the first series/file).

Open documents in the viewer

Double-click on a document, a series/file or the preview to open the document in the viewer. Doing so adds the document to the **Document Navigator**. If you open a series/file, it is additionally opened in an empty viewport (if available).

Group documents

Click on  and select the criterion for grouping the documents. To remove the grouping, select **No grouping**.

Sort the list of documents

Click on  to sort the listed documents in descending/ascending order.

Find particular documents

Start typing the desired string to bring up a free text filter. This way, you can find particular documents in the list or narrow the number of displayed documents.

Filter the documents

(For more information, see (→ Page 65 *Filtering in Patient Jacket*))

View prior examinations

Right-click to open the context menu and select **List prior examinations**.

Open documents with Concentriq

Right-click to open the context menu and select Open with Concentriq. This option is only available for documents which originate from Concentriq. For more information, see (→ Page 49 *Opening Documents in Concentriq*).

3.8.2 Filtering in Patient Jacket

You can apply filters to narrow down the number of listed items. To apply a filter, click  and select one or more of the available filter criteria.

The filter will remain in effect until you clear it by clicking . You can also remove the active filter via  **Clear filter** menu. You can save filter for reuse.

Saving a filter

- ◆ To save a filter, select the desired filter criteria and click on **Save as**. You can then enter a name for your new filter. Click **OK** to save your filter.

Applying a filter

- ◆ To apply a filter, click on  next to  and select the desired filter.

Editing a filter

- ◆ To edit a filter, apply it first. Then click , make the desired changes to the filter criteria, and click **Save**. If you want to save your changes as a new filter instead, click **Save as** and enter a new name. To undo all unsaved changes, click  **Undo changes**.

Renaming a filter

- ◆ To rename a filter, apply it first. Then click    **Rename** and enter a new name.

Deleting a filter

- ◆ To delete a filter, apply it first. Then click    **Delete**.

Setting a default filter

- ◆ You can set a filter as the default, meaning it will be applied automatically the first time you open the Patient Jacket. To set a filter as default, apply it first. Then click    **Set as default**. To remove the default filter, either deselect it in the filter settings or set a different filter as default.



If your administrator has set filters to read-only, you can only apply predefined filters.

3.9 Document preview

The Document Preview displays basic information about the documents you have opened alongside a thumbnail image. You can collapse/expand the Document Preview by clicking on  or .

To collapse/expand the individual levels of a document, click on the document entry. Double-click on an entry to open the document in the viewport area. You can also drag and drop the document to a specific viewport. For more information, see (→ Page 68 *Layout tools*).

When you open multiple documents of the same patient, they are color-coded for your convenience. The corresponding viewports in the viewport area are highlighted in the same color (For more information, see (→ Page 67 *Viewport area*)). You can switch off the color highlighting in the settings.

3.9.1 Viewer context menu

A limited context menu is available when viewing documents. Right-click on a study or series to open the context menu. Depending on the selected document and the location from where you access the context menu, different actions are available. For detailed information on the actions, please see the corresponding sections in the chapter. For more information, see (→ Page 47 *Actions*).

The following context menu entry is Viewer-specific and only accessible on series level:

- Clear and hang series This entry clears the Viewer and hangs the selected series.

3.10 Viewport area

The central viewport area can display one or more documents in individual viewports. All viewports showing series of the same study or files of the same generic container are highlighted in the same color. The color highlighting matches the entry in the **Document Navigator**. For more information, see (→ Page 54 *Document navigator*).

DICOM instances that have been tagged with keywords are marked with a dot. Note that if a series contains a large number of instances, the markings may be grouped together. You can hover your mouse over the dot to view detailed tagging information. Moreover you can jump to a tagged instance by clicking on the dot.

The viewport area offers a variety of tools for viewing purposes. Which tools are available and can be applied depends on the document type in the active viewport.

You can also map certain tools to the mouse buttons in the settings. For more information, see (→ Page 70 *Scaling tools*).

3.10.1 The viewer

The viewer is intended to be used for viewing purposes only. It provides a number of viewing tools, such as zoom and windowing, and includes options for displaying or hiding image information like overlays and calculations. Most of these tools can be found in the global toolbar in the upper part of the viewer. Depending on the file type, additional tools are available in the specific toolbar.



Editing steps are not saved; the viewer is only used for viewing.

The viewer supports many document and image formats in addition to DICOM images. If a file format is not supported, a message is displayed.

If problems arise when viewing a video, it may have been imported with a variable bitrate.

The following sections provide an overview of the most important viewer functions. Availability and applicability of these tools depend on the file type being displayed. You can map certain tools to your mouse buttons in the settings menu .

Syngo Carbon Enterprise Access also offers a screen test in the settings menu to help you calibrate your screen for an optimum viewing experience. It is recommended to perform the screen test prior to working with the viewer. For more information, see (→ Page 30 *Screen Test*).

Layout tools

You can customize the viewport area by using the following functions and tools:

Layout

You can use layouts to automate the display of series/images. Layouts automatically arrange and visualize images according to rules you define, allowing you to save time and reduce the need for manual layout adjustments.

Syngo Carbon Enterprise Access offers two types of layouts:

- **Public layouts**

These layouts are managed by your organization. They are available to all users.

- **Private layouts**

These are layouts you create for your own purposes. They are only available to you.

You can view and apply the available layouts in the layout selection menu. Layouts that

match the open document are indicated with .

Geometry

Syngo Carbon Enterprise Access automatically chooses a suitable viewport arrangement when you open a document or uses the arrangement defined in a matching layout. You can use the geometry tool to manually change the viewport arrangement.

Managing layouts

To manage and customize your private layouts, go to **Configure layouts > Manage layouts**. You can do the following:

- **Create a layout**

To create a new layout, click on **Add** and select the criteria for applying the layout. For step-by-step instructions, see (→ Page 69 *Creating a layout*).

- **Edit a layout**

To edit an existing layout, select it in the list and click on **Edit**. Make the desired changes. You can also directly edit the active layout by going to **Configure layouts > Edit current layout**.

- **Copy a layout**

To copy an existing layout, select it in the list and click on **Copy**. Give the copy a new name and adjust its description. This way, you can quickly create multiple layouts with minor differences.

- **Delete a layout**

To delete a layout, select it in the list and click on **Delete**.

- **Change the order of layouts**

To change the order of layouts, select the layout you want to move and use the arrow buttons to move the layout either by one position at a time or to the very top/bottom. The order affects which layout is applied when you open a document. For more information, see (→ Page 70 *Changing and resetting a layout*).



Any changes you make to your private layouts will be saved once you close the window with **Ok**.

Creating a layout To create a layout, do the following:

- 1 Give your custom layout a meaningful name and a description.
- 2 Select the matching conditions, i.e. the criteria for applying the layout. You can add more criteria by clicking on + and remove them by clicking on -. For example, you can set the layout to apply to documents whose description contains certain words or which contain series/images from particular modalities.

Example 6: Matching conditions

- Study description contains "Fracture"
- Modalities in study are "CT, MR"
- Body part examined is "Cranium"

A layout with these criteria will be applied to documents that contain CT or MR series of skull fractures.

- 3 Additionally, you can set criteria for excluding certain document parts from display. This way, you can concentrate on the data that is most relevant to your work. For example, you can exclude particular series types or modalities.

Example 7: Exclude document parts from display

- Thin-slice series yes
- Modality "SR"

A layout with these criteria will not display any thin-slice series or structured reports contained in matching documents.

- 4 Go to **Geometry** and select the desired viewport arrangement. If you select Auto, syngo.share webview diagnostic will choose a layout based on the number of series/images contained in a document.

- 5 Optionally, you can determine which series/images should be displayed in which viewport. Go to **Data assignment**, which shows panels that correspond to your chosen geometry, and set the display criteria for the individual panels.
 - If you leave panels empty, Syngo Carbon Enterprise Access will automatically open any remaining series/images in these viewports in order.
 - If there are multiple matches for your criteria, syngo.share webview diagnostic selects the first match for display. If there are multiple references available, syngo.share webview diagnostic selects the most recent reference.

Example 8: Data assignment per panel

Panel 1	Panel 2	Panel 3
Current study	Reference	-
Modality is "CT"	Generic file type is "Diagnostic imaging report"	-

Assignment for a 1x3 geometry

This data assignment ensures that the first viewport will show a CT series and the second will show the most recent diagnostic imaging report that references the current document. Since nothing is defined for the final viewport in the layout, it will show the first of any remaining series.

- 6 Optionally, you can apply certain viewing tools to the individual viewports, such as pseudo colors, synchronized scrolling, or presets (depending on the modality). Go to **Visualization** and select your preferred visualization options.
- 7 Once you have finished customizing the layout, click on **Add** to add it to your private layouts.

Applying a layout

When you open a document that matches the criteria of a layout, this layout is automatically applied. If the document matches the criteria of multiple layouts, the first layout in the list is applied. To apply a different layout, select it in the layout menu.

Changing and resetting a layout

You can manually adjust the applied layout at any time, e.g. by opening additional or excluded series/files or by applying other visualizations. To return to the original layout, click on **Reset layout**. Be aware that doing so reloads the study, meaning any annotations and visualizations (e.g. windowing) you may have applied are also reset.

Pointer

The pointer is used to select drawings and annotations for editing.

PNG

PNG is used to view the current image in a lossless format. If you perform further actions on the image, the display quality will revert to the configured values. For more information, see (→ Page 29 *User settings*).

Scaling tools

The viewer offers various scaling tools, for example, the magnifier or zoom. The zoom tool allows you to scale the image smoothly by pressing and holding the left mouse button. In the specific toolbar, further scaling options are available.

Magnifier

The magnifier function enlarges a portion of an image and can be used on both DICOM and generic images.

Clicking the required area in an image enlarges that area in a separate window. If you click and drag the mouse, the magnifier window will follow your movement. Click the left mouse button again to close the window.

Annotations are not considered when you use the magnifier, however, any overlays that have been saved with the image will be shown.

Scrolling

This tool allows you to scroll backward and forward through series and multiframe images simply by pressing and holding down the left mouse button and moving it up or down.

Pan

The pan tool allows you to move the image in the required direction while pressing the left mouse button.

Windowing

The windowing function controls the level and width in DICOM instances, or the brightness and contrast in generic images. For DICOM instances, the window tool changes slightly depending on the algorithm used in the background:

- **Standard windowing:** For standard windowing, you control the level and width separately. Move the mouse up or down while holding the mouse button to adjust the level. To adjust the width, move the mouse left or right.
- **Percentage-based windowing:** For percentage-based windowing, you control the level and width simultaneously. Move the mouse in any direction while holding the mouse button to adjust the level and width. To adjust the upper/lower thresholds of the window to specific values, you can use **Advanced windowing**. For more information, see (→ Page 78 *Enhanced visualization*).

Units

Syngo Carbon Enterprise Access uses the following units for calculation.

- mm/mm²

Calibrated lengths are calculated in millimeters (mm). Calibrated surface areas are calculated in square millimeters (mm²).

- μm/μm²

For DICOM whole slide images (WSI), the unit display changes to micrometers (μm) / square micrometers (μm²) if the length falls below 1 mm or the surface area falls below 0.1 mm².

- pixel/pixel²

Uncalibrated lengths are calculated in pixels (pixel). Uncalibrated surface areas are calculated in square pixels (pixel²).

- °

Plane angles are calculated in degrees (°).

- HU

Densities are calculated in Hounsfield units (HU).

Calculation tools

You can perform various calculations using the following tools.

Calculations will not be stored with an image. Calculations are retained in the image until the **Reset** button is clicked or a new series is loaded. For safety information. For more information, see (→ Page 9 *Safety notices*).

- Distance**
- Clicking the distance calculation tool changes your mouse cursor to a crosshair. Left-click the starting point of your calculation and move the mouse in a certain direction to draw a line. Left-click again to set the end point. The calculation is now fixed and its length is displayed next to the line in millimeters or pixels. The unit of length shown depends on the image. You can make adjustments as long as the image or DICOM series remains open in the viewer.

Usually DICOM images already include a calibration, and therefore distance is calculated in millimeters (mm). Generic images do not necessarily provide calibration information and therefore the length is shown in pixels. It is also possible to manually calibrate an image. For more information, see (→ Page 73 *Calibrating calculations*).

- Distance ratio**
- The Distance ratio tool is used to calculate the ratio between two distances or lengths. You can either draw lines to calculate or click on two existing lines to show their ratio.

- Cobb Angle**
- Use this tool to calculate a Cobb angle. Click on the image in multiple locations to set the angle.

- Angle**
- This tool calculates an angle or cobb angle. Once the tool is activated, click the image to draw the two sides of the angle (two clicks per side). Three angle sizes can be calculated:
 - **Alpha:** The acute angle between the two sides (<90°).
 - **Beta:** The obtuse angle between the two sides (180°- alpha).
 - **Gamma:** The reflex angle between the two sides (360°- alpha).

When drawing the angle, the current default angle is calculated. Hovering over the other angles shows each angle as dashed helper lines. Click to calculate another angle. The selected angle (alpha, beta, or gamma) is then stored as the new default angle.

Select the **Angle ratio** tool to also calculate the ratio between two angles. To calculate the ratio between two already drawn angles, select them with the angle ratio tool.

Pixel lens

- This tool calculates modality-dependent pixel values in DICOM grayscale images and spot density in CT images (for example, bone density). Move the mouse over the image to view the pixel value or the density value of any given spot. Click to set the displayed pixel value/density for points of interest. This allows you to compare the values of different locations.

Reset

This function resets all editing steps. Note that this function does not affect manual calibration. For more information, see (→ Page 73 *Calibrating calculations*).

Overlay and annotation settings

Use  to show/hide various kinds of supplemental information:

- **Text overlay:** The text overlay provides details about the patient, the examination and the image.
- **DICOM overlay:** The DICOM overlay, if available, provides supplemental information that is included in the DICOM image.
- **PR annotations:** PR annotations provide information that are included in the DICOM Presentation State.
- **User annotations:** These are any annotations you add to the image (e.g. text, drawings, calculations).

Reference line (Localizer)

When scrolling through multiple overlapping slice image series, the position of the current slice can be shown in the other series for reference. The reference point in another series is called a Localizer in the DICOM standard. This function can only be applied to series with certain anatomical positioning characteristics (for example, orientation, reference point).

Transformation

Use transformation tools to rotate the image clockwise or counterclockwise in 90-degree steps. You can also flip the image vertically and horizontally.

Calibrating calculations

Use this tool to manually calibrate calculations on DICOM and non-DICOM images. Note that DICOM images often already come with calibration information that is part of the DICOM image or is provided through a DICOM display preset called a DICOM Presentation State. If you add a manual calibration, it will be applied to all previously made annotations within the image. In the case of a DICOM Multiframe Image, i.e. an image that consists of several subimages, the change will be applied across all subimages.

You can only reset the calibration by using the calibration tool menu rather than the reset function. For more information, see (→ Page 73 *Reset*).

CAUTION

Calibration information contained in images might not be accurate. The accuracy of the calibration information depends on the handling and technology of the third-party imagecapturing software or devices.

Inaccurate calibrations can lead to inaccurate calculation results. Inaccurate calculation results can lead to incorrect assumptions about the patient situation and incorrect diagnostic decisions.

- Check the calibration information for accuracy and plausibility. Consult additional professionals if necessary.
- When operating image-capturing software or devices, follow the third-party manufacturer's instructions.
- Follow the guidelines for image capturing set by your organization (e.g. regarding lighting conditions).
- When performing manual calibrations in Syngo Carbon Enterprise Access, check the accuracy and plausibility of your adjustments. Consult additional professionals if necessary.

Invert

The inversion tool displays a negative of the image, i.e. white parts of the image are displayed in black, black parts in white.

Color adjustment

For all color images (DICOM and generic color images, DICOM Whole Slide Images) a color adjustment tool is available. You can adjust the following values with a slider or by entering a numerical value:

- Gamma
- Brightness
- Contrast
- RGB saturation (separately for red, green, and blue)

If you have already adjusted brightness and contrast with the windowing tool, the changed values are applied in the color adjustment tool.

For the display of Whole Slide Images, the settings can be saved for your user. When you open another whole slide image, the saved color settings are automatically applied to that image. Clicking **Reset** sets all values back to default. If you want to overwrite saved changed values, the reset values have to be saved.

DICOM metadata

The DICOM metadata, i.e., the DICOM header, can be displayed for any DICOM instance in the viewer. It is possible to switch between the document view and the metadata view or to show both side by side.

The DICOM metadata view has its own search function. When you start typing the search term and hits are highlighted immediately. You can move to the next and previous hit by using  and  next to the search field or **F3** and **Shift + F3**. Click  to clear the search field.

Drawing and annotation tools

These tools allow you to add graphical and text annotations to images. You can only edit or delete annotations while the image or DICOM series is open in the viewer. Annotations only exist temporarily and are not saved. Certain annotations have restrictions, which are explained in a note. To remove an annotation, select it using the pointer tool. For more information, see (→ Page 70 *Pointer*)) and press **DEL** on the keyboard.

Rectangle/Square

- Use this tool to draw a rectangular shape and calculate its area. For CT images, the average density is also calculated and displayed in HU. To draw a square, press and hold **SHIFT** on the keyboard.

Polygon

- This tool lets you draw a polygon on the image and calculate its area (except polygons with intersecting lines). Click **Polygon** to set a new corner. To finish the polygon, either double-click or press **Esc**.

Ellipse/Circle

- Use this tool to draw a circle or ellipse on the image and calculate its area. For CT images, the average density is also calculated and displayed in HU. To draw a perfect circle, press and hold **SHIFT** on the keyboard.

Freehand

- This tool lets you draw any required shape on the image.

Text

- Use this tool to add textual descriptions to the image.

Arrow Use the **Arrow** tool to draw an arrow on the image.



To calculate distances, angles and areas on ultrasound images, the entire annotation has to be inside the calibrated image region. The calibrated image region is marked with a red frame as soon as you select a calculation tool.

Capture tool

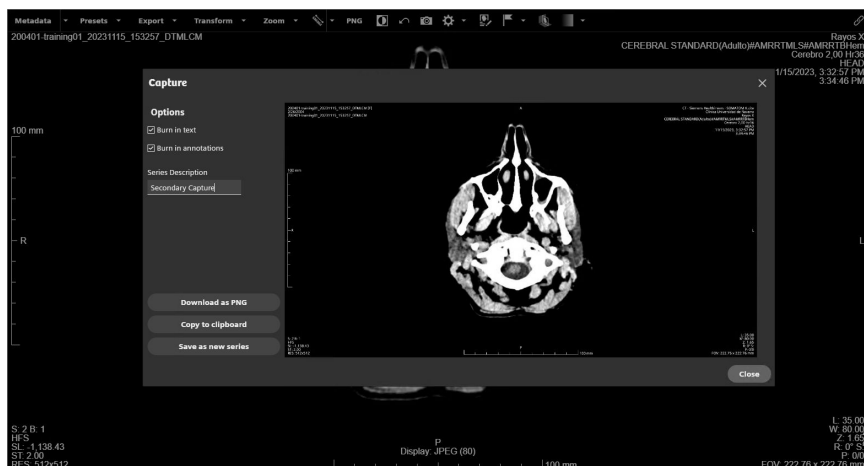
The **Capture** tool enables you to take a snapshot of the image in the currently selected viewport, including all displayed information overlays, DICOM overlays and annotations.

Perform the following steps to take a snapshot of the image.

- 1 Click .

The **Capture** dialog box is displayed.

- Unselect **Burn in text** and **Burn in annotations** check boxes under the **Options** to burn in the supplemental information. If selected, information stays permanently on the captured image. For more information, see (→ Page 73 *Overlay and annotation settings*).
- You can edit or delete the default **Series Description** to save the captured image as new series (modality: OT), file to the current study or container.



- Click **Download as PNG**, **Copy to clipboard** or **Save as new series** to copy the image on your local system. You can also drag the image into any another external application.



Select the viewport area and press **Ctrl + C** to quickly capture an image and copy to clipboard.

The copy to clipboard and **Ctrl + C** options availability depends on the browser.

Capturing video still frames

If you take a capture from a running video, the video playback will pause at the exact frame you photographed. You can resume the playback after closing the capture dialogue. The options to burn text information and/or the annotations into the captured image are not available for still frame captures.

Synchronized scrolling

This function makes it possible to automatically or manually synchronize multiple series while scrolling, meaning that all synchronized series will show the nearest possible anatomic position. A typical application of this tool would be the synchronization of two associated series, one recorded without and one with contrast agent.

Generally speaking, synchronized scrolling is only possible when the images of the different series contain information about their spatial positioning and their image planes do not exceed a certain angle.

You can activate synchronized scrolling for selected series by clicking  or by pressing **S** on the required series. To activate synchronized scrolling for all displayed series containing the necessary information on spatial positioning, click the synchronizing symbol  in the global toolbar.

Depending on whether the series are spatially related and on which image you activate synchronized scrolling, the series are either automatically or manually synchronized:

- Automatic synchronized scrolling is applied to spatially related series. The synchronized series are automatically scrolled to the current image slice position of the active series.
- Automatic synchronized scrolling is also applied to series without a spatial relationship, as long as the function is activated on the very first image in each series, meaning that synchronization between series is based on the anatomically topmost image (starting image). If this does not produce the required result, you can make manual adjustments (see below).
- Manual synchronized scrolling can be used for series with no spatial relationship, provided that the topmost image is not used as the starting image for scrolling. This allows you to make manual corrections by first selecting the most anatomically similar images across all series that you wish to synchronize. By making these similar images your starting images, you can use synchronized scrolling in manual mode.
- Filtered scrolling can be used to scroll only between instances that have been tagged with keywords and/or are referenced by Key Image Notes (KINs). You can also combine filtered scrolling with synchronized scrolling. In this case, the scrolling behavior depends on the tagged instances in the active viewport.



Check carefully to what extent the slice images share the same anatomical positioning characteristics, as Syngo Carbon Enterprise Access does not provide feedback in this regard. The starting images should possess the same anatomical positioning characteristics in order to avoid errors.

The pan function (For more information, see (→ Page 71 *Pan*)) and all the scaling tools except the magnifying glass (For more information, see (→ Page 70 *Scaling tools*)) are applied to all synchronized series consistently.

You can deactivate synchronized scrolling for all displayed documents by clicking **Reset** in the global tool bar.

VOI LUT presentation

VOI (Value of Interests) LUT (Lookup Table) is a type of nonlinear windowing. While DICOM images with one or more VOI LUTs are being loaded into the viewer, the **VOI** button on the specific toolbar lets you switch between the available VOI LUTs (for example, High+Contrast) or display the DICOM images without VOI LUTs.

Presets

Under Presets, you can select and apply presets for the optimized windowing of certain body parts (e.g. cranium, lungs) to DICOM grayscale images.

Presets are only available for certain modalities.

Presentation states

If a DICOM study with Presentation States (Grayscale Presentation States) is opened in Syngo Carbon Enterprise Access, the most recently created Presentation State is automatically applied. Use the **PR** drop-down list to select the required Presentation State or deactivate an active Presentation State.

Enhanced visualization

The Enhanced visualization category offers tools for highlighting visual details in DICOM instances:

- **Pseudo colors:** With the Pseudo colors tool, you can apply various color palettes to DICOM grayscale images. Click on the tool and select the desired palette. To return the image to grayscale display, select the first palette.
- **Advanced windowing:** With the Advanced windowing tool, you can define an upper and lower threshold to improve the visibility of particular details in the image. Simply drag the sliders into position in the gradient bar to achieve the desired result.

ECG tools

For viewing DICOM ECGs, some additional tools are available:

Metadata

- Hides or shows the metadata block above the ECG.

DICOM Metadata

- The DICOM metadata view offers its own search function. Start typing the search term and hits will be highlighted immediately. You can move to the next and previous hit by using  and  next to the search field or by using **F3** and **Shift + F3**. Click  to clear the search field.

Caliper

- Adds visual interval guidelines. Select the start and end point of the interval with the mouse. The selected interval will be automatically repeated across the spectrum.

Time calibration/Paper feed speed

- Time calibration, i.e. paper feed speed in mm/s, can be selected from the drop-down list.

Voltage calibration

- Voltage calibration in mm/mV can be selected from the drop-down list.

Channel layout

- If the active channel group consists of exactly twelve channels, there are several channel layouts available for viewing the ECG.

Channel group

- The channel group can be selected from the drop-down list.

Fit in view

- Fits the image to the window size.



The DICOM metadata, i.e., the DICOM header, can be displayed for any DICOM instance in the viewer. It is possible to switch between the document view and the metadata view or to show both side by side.

Whole slide images for digital pathology

Syngo Carbon Enterprise Access supports the display of DICOM brightfield microscopy images for digital pathology.



Your annotations, drawings, and calculations will be discarded if you change the zoom layer or focal plane.

The following functions are available specifically for the display of digital pathology images:

Zoom layer

- The zoom layer can be selected in the drop-down list. Alternatively, you can scroll through the zoom layers using the mouse wheel or the zoom tool in the toolbar (For more information, see (→ Page 70 *Scaling tools*)). Zooming is always centered on the current position of the mouse pointer.

Focal plane

- If focal planes are available, they can be selected in the drop-down list. Alternatively, you can scroll through the focal planes using the mouse wheel while holding **Shift** on the keyboard.

Thumbnail

- If available, the thumbnail shows the slide overview. When the image is displayed in a zoom layer, the thumbnail indicates the location of the zoomed area. You can navigate to any area of the image by clicking it in the thumbnail.

Grid

- Use the grid tool to display a rectangular grid for guidance. You can customize the grid as follows:
 - **Move the grid:** Click and drag a horizontal or vertical grid line in the desired direction to reposition the grid.
 - **Adjust the grid spacing:** Click and drag a grid corner in the desired direction to quickly resize the grid. You can also adjust the spacing in the toolbar by clicking on  and entering a value.
 - **Reset the grid spacing:** To return to the default grid spacing, click on  **Reset**.
 - **Save the grid spacing:** To save your preferred grid spacing, click on  **Save**. Be aware that doing so overwrites the default value. If you wish to return to the previous grid spacing, you will have to manually enter the previous value and save it.

Note that the grid will remain in the same position relative to the image. This means that if you use certain tools, e.g. zoom, the grid may end up outside the visible area. To keep it in frame, you will have to select a smaller grid spacing.

Ophthalmic images

Syngo Carbon Enterprise Access supports the viewing of ophthalmic images, i.e. ophthalmic tomography (OPT) and ophthalmic photography (OP). When loading a series that disposes of a referenced OP or OPT image, the two instances will be loaded either side by side or one below the other in a split viewport. For the OP, the image navigator (For more information, see (→ Page 73 *Reference line (Localizer)*)) is automatically activated, highlighting the slice displayed from the OPT. Either part of the split viewport can be closed via the x and reopened via the OP|OPT button in the specific toolbar.

Due to the highly curved shape of the retina, the localizer information for ophthalmic images is recorded in a special DICOM tag (Ophthalmic Frame Location Sequence). Depending on the type of series, the appearance of the localizer varies – if the ophthalmic image orientation is designated as linear, the localizer appears as an arrow; if it is designated as non-linear, the localizer appears as path segments.

If multiframe series are hung, all corresponding localizers are displayed on the scout image and may overlap.

You can switch the reference lines off and on in the general toolbar. Both the OP as well as the OPT display dispose of their individual specific toolbars with all the usual tools available.

Playback tools

Syngo Carbon Enterprise Access offers different types of playback tools in the viewer tab. You can set a standard FPS rate and enable or disable autoplay in the settings. For more information, see (→ Page 31 *Playback*).

- **Generic video playback**

You can play back generic videos. The video toolbar offers basic playback and volume control.

- **DICOM video playback**

DICOM video playback offers the same toolbar as generic video playback. If a DICOM series contains multiple video instances, you can use **Instances** in the viewport menu to switch between them.

- **DICOM series playback**

You can also play back DICOM series of certain modalities. The series toolbar offers different playback modes (e.g. looping) and settings for manual browsing (e.g. image step size).

- **Playback range:** You can limit playback to a specific range of images by clicking on [] to set a beginning and an end point. You can adjust the playback range by dragging the markings to the desired position.
- **Playback speed:** You can adjust the frame rate (FPS value) to slow down or speed up series playback.
- **Multiframe playback:** You can switch between the individual instances of a

multiframe series by clicking on  and  in the toolbar or by selecting the instance via **Instances** in the viewport menu.



You may need to grant browser-specific permissions to use autoplay in your web browser of choice. In addition, note that playback speed may depend on the available hardware as well as the size and number of opened documents.

Multi-planar reconstruction (MPR)

Using the MPR function, you can display DICOM slice image series from imaging devices in the main sectional planes (axial, sagittal, coronal). If a slice image series fulfills the requirements for MPR, the MPR button is available in the specific toolbar once the series has been loaded.

When you activate the MPR mode, the series undergoes an in-depth validation. To be displayed in MPR mode, a slice image series must fulfill the following requirements:

- The series must contain at least two images of the same orientation and image reference position.
- The slices must be parallel to one another.
- The pixel distance must be known.
- The image resolution must be identical.

The validation can result in the following scenarios:

- The series does not fulfill the specified requirements. MPR mode is deactivated.
- The series contains images with varying slice distances. In this case, a window opens where you can enter the required slice distance. The system suggests a value.
- The resources on the server are insufficient or too many sessions are currently using the MPR function. In this case, you have to try again later.

Working with MPR mode

Viewport

In MPR mode, the viewport is split into three segments, one for each anatomical plane. By default, the viewport displays the axial plane on the top left, the sagittal plane on the bottom left, and the coronal plane on the right.

Section lines

In MPR mode, section lines are displayed to help with orientation. You can hide or show these section lines in the information overlay settings. For more information, see (→ Page 73 *Overlay and annotation settings*).

You can change the position of the section lines using the pointer tool (For more information, see (→ Page 70 *Pointer*)). When you move or rotate the section lines, the view in the other two segments automatically changes to match.

- To move the section lines, click on the desired position. You can also drag them to the desired position while holding the mouse button.
- To rotate the section lines, click directly on a line and drag it while holding the mouse button (the cursor shape changes to ).

Zoom

- You can zoom in and out of the image in the active viewport.
- You can zoom parts of an anatomical region of a image without modifying the original image.

Scrolling

- You can scroll through the reconstructed images of the series using the mouse wheel. The position of section lines in the other viewports will adapt accordingly. You can also use the scroll tool to directly jump to instances that have been tagged with keywords. The instance tagged with keywords are displayed as bold dots on the scroller.

Pan

- Panning the image in one viewport does not affect the view in the other viewports.

Windowing

- Windowing in one viewport affects all viewports alike.

MPR layout

- You can change the layout of the three anatomical planes by selecting it from the drop-down list. The available layouts are listed by the initial letters of the anatomical planes (A for axial, S for sagittal and C for coronal).

Sequence

- If the series contains images of different sequences, the required sequence can be selected from a drop-down list.

Intensity projection

- The intensity projection is displayed in the right viewport. The following intensity projections are available from the drop-down list:
 - Off

The intensity projection is disabled, standard MPR mode is applied.
 - MIP

The maximum intensity projection displays the value with the highest (maximum) intensity within the selected projection range at position (x,y) for the pixel (x,y).
 - MinIP

The minimum intensity projection displays the value with the lowest (minimum) intensity within the selected projection range at position (x,y) for the pixel (x,y).
 - AVG

The average projection uses the arithmetic mean value of the intensities at position (x,y) within the selected projection range.
 - MED

The median projection uses the median (central) value of the distribution of the intensity values within the selected projection range at position (x,y) for every pixel (x,y).

Projection range

- The range to be considered for the intensity projection is defined here. The projection range is visualized around the section lines.

3.11 Inbox/Outbox

The **Inbox/Outbox**  tab, contains all documents that have been shared with you, such as physician's letters, findings, or medical images. The **Inbox** contains all documents that have been shared with you, the **Outbox** contains all documents you have shared.

Click a share to display the shared documents as well as the (optionally) included message. For requesting documents. For more information, see (→ Page 85 *Requesting documents*).

If a share notification contains more than one document, you can sort them by clicking the available columns. Select a document to receive a preview of the DICOM series and images or generic files contained in it.

You can double-click a shared document to open it directly in the viewer for viewing and editing purposes. You can also open individual elements by double-clicking an entry in the preview area.



Items in the inbox/outbox are actually links to items in the archive which have been shared with you or you have shared with others. This means that removing a share from the inbox or revoking a share in the outbox does not remove the document from the archive.

The number of running jobs is the number of failed jobs indicated in the job queue plus the number of new entries in the inbox.

3.11.1 Actions

Actions for the inbox and the outbox

The following actions are available for the list overview of your inbox/outbox:

Refresh

- If configured by your system administrator, your inbox will periodically refresh in order to display the newest shares. If your system administrator has not set an automatic refresh, you have to refresh your inbox manually in order to see any new shares. Click



on button to manually refresh your inbox. You can always refresh the inbox manually, if the refresh interval is too long for you.

The outbox is refreshed as soon as you share new documents. In order to see updated

information on whether a share has been read, you have to click on  to manually refresh your outbox.

Filter

- Filters the contents of your inbox/outbox when you enter a term in the filter field. This action searches for the term in every share and shows all matches. Entries that do not fulfill the search criteria are not shown.

Customize the columns

- For more information, see (→ Page 45 *Adjusting results list columns*).

The following actions are available in the context menu of shared documents in both the inbox and the outbox:

Open/Open with

- Opens the document in the internal viewer or in an external app if configured. For more information, see (→ Page 48 *Opening Documents*).

Remove share

- Removes the selected share from the inbox.

Download

- Quick export of a selection compressed as a ZIP file. This function is the equivalent of the **Export** function for the original, non-encrypted data. For more information, see (→ Page 58 *Downloading and exporting documents*).

Export

- Exports a selection from the archive using various options. For more information, see (→ Page 58 *Downloading and exporting documents*).

Actions for the inbox

The following actions are available for shares in the inbox. Right-click on the share to open the context menu:

Mark as read/unread

- Changes the message status to "read" or "unread".

Remove share

- Removes the selected share from the inbox.

Actions for the outbox

The following actions are available for shares in the outbox. Right-click on the share to open the context menu:

Edit share

- You can edit the availability period of the share and change the priority..

Export

- You can revoke the share. The share will be removed from your outbox and the inbox of the recipient(s).

3.11.2 Requesting documents

Your health care institution determines the procedure for requesting documents, although this is usually done by phone. If configured by your system administrator, you can find more information on the procedure by clicking on **Request document** in the user menu from the inbox.

3.11.3 Availability period

The hospital operator determines the availability period of shares. The time limit is displayed in the header of the individual share (**Valid until**). For shares that are available indefinitely, this field is empty. The shared documents are available in your inbox/outbox until the end of the set period.

After the end of the availability period, the share is removed from your inbox/outbox. If you were not able to view the shared documents in time, you can request them again.



If a document is deleted from the archive, it will no longer appear in your inbox/outbox.

3.12 Archiving documents



Under **Archive** () tab, you can archive documents within a patient, entity, or visit context in Syngo Carbon Enterprise Access.

Perform the following steps to archive the documents.

- 1 Set the context in which the documents are archived. The context can be either a patient/visit or an entity.

Enter the **Patient ID** or **Visit ID** in the **Visit ID/Patient ID** field or alternatively select **Choose**. For more information, see (→ Page 86 *Setting the context for a patient ID or visit ID*) or (→ Page 87 *Setting the context for an entity*).

- 2 Click **Producer** drop-down list and select the required producer.



The **Producer** field marked with * is mandatory to select.

-
- 3 Enter the correct details in the **Accession Number**, **Body Part**, and **Description** fields.

- 4 Enter or select the correct date and time in the **Study Date** field.



For DICOM documents, the correct date and time are set automatically from the DICOM metadata.

-
- 5 Click **Add** to browse the local files or drag and drop the documents directly into the upload area.



Select the document and press delete button on the keyboard to delete the document

from the upload area or click .



Optionally you can tag document with keywords. For more information, see (→ Page 57 *Keyword tagging*).

-
- 6 Click **Archive** to start the archiving process.



You can check the archiving progress in the Job queue (For more information, see (→ Page 88 *Job Queue*)). While archiving is in progress, you only have access to part of the data and execute certain actions until archiving is complete.

3.12.1 Setting the context for a patient ID or visit ID

Perform the following steps to set context for a patient ID or visit ID.

- 1 Click **Choose**.

The **Choose** dialog box is displayed and **Patient** tab is selected by default. On the **Patient** tab, the **Search** tab is selected by default.

- 2 Enter the required search criteria in the fields displayed on the **Search** tab and click **Search**. The **Patient ID** is a mandatory field on the **Create** tab.

The patients matching results are displayed in the **patients found** list.

– or –

If you want to create a new patient, then select **Create** and enter the required details in the fields on **Create** tab.

- 3 Select the correct patient from the **patients found** list on the **Search** tab.



Skip this step if you are creating a new patient on the **Create** tab.

- 4 Click **OK**.

3.12.2 Setting the context for an entity

Perform the following steps to set context for an entity.

- 1 Click **Choose**.

The **Choose** dialog box is displayed and **Patient** tab is selected by default.

- 2 Select the **Entity** tab.

- 3 Enter the required search criteria in the fields displayed on the **Search** tab and click **Search**.

The details of the entities are displayed in the result list.

– or –

If you want to create new entity, then select **Create** and enter the required details in the fields on **Create** tab.

- 4 Click **OK**.

3.12.3 Presetting a context / quick-archiving

You can also start archiving from the **Patient search**, **Entity search** and the **Patient banner**. This sets the context of the selected patient or entity and takes you directly to the **Archive** tab, helps you to skip the context search.

- **Patient search results list**

Click **Patient > Archive to patient** in the context menu.

- **Entity search results list**

Click **Archive to entity** in the context menu.

- **Patient banner**

Click  > **Archive to patient**.

3.12.4 Best practices for archiving

When archiving documents, keep in mind the following.

- **Handling context merges**

DICOM documents automatically set the correct patient context from their metadata. If you have previously set a different context, then the DICOM metadata is merged with that context. If you want to prevent the merge, click Clear and start over.

- **Archiving to multiple producers**

By default, Archival of DICOM documents is allowed to only one producer. When an existing DICOM document is archived to another producer, only the original location will be updated.

- **Making corrections after archiving**

If an issue occurred after archiving, you can use the quality assurance operations to make changes. For example, you can reassign a document to a different patient/visit or move a document to a different producer. For more information, see (→ Page 51 *Quality assurance operations in Syngo Carbon Enterprise Access*).

- **Ensuring correct video playback**

Only archive videos with a constant bitrate. Videos with a variable bitrate may not be played back properly.

3.13 Job Queue

In the **Job Queue** () tab, you can view the status of potentially time-intensive jobs such as the sending or restoration of documents. If an error occurs, the tab as well as the affected job are marked with a badge. You can view error details by clicking **Info**. The tab also shows whether jobs are currently running in the background.

The following actions are available in the **Job Queue** tab:

Cancel

- You can cancel certain jobs.

Retry

- You can retry canceled or failed jobs. This option is available for all jobs except for uploading documents. You have to retry failed uploads manually.



The number of items in the Job Queue are displayed next to the icon.



The job status list is maintained between sessions and across multiple tabs. So-called “hanging” jobs, i.e. jobs that do not log any progress for more than one day, are automatically assigned the status “Failed”. After one additional day, they are automatically cleared from the queue together with any other failed or canceled jobs.

To manually clear the queue, click the corresponding button.

3.14 Keyboard shortcuts in Syngo Carbon Enterprise Access

General viewer commands

Keys	Description
J	Show/hide Patient Jacket
Q	Quit viewer (return to search)
R	Reset viewer
Esc	General: reset selected tool
Esc	Drawing annotations: undo most recent annotation
E	Properties
K	Add keywords
F	Maximize/downsize viewport

Viewing tools

Keys	Description
M	Magnifier
P	Pan
S	(De-)Activate synchronized scrolling in active viewport
Z	Zoom
Shift + Mouse-wheel	Whole Slide Images: Switch between focal planes
Ctrl + C	Copy captured image to clipboard

Viewer layouts

Keys	Description
1	Apply 1x1 layout
2	Apply 1x2 layout
3	Apply 2x1 layout
4	Apply 1x3 layout
5	Apply 2x2 layout
6	Apply 3x3 layout

Annotation tools

Keys	Description
A	Angle
C	Ellipse
D	Density
F or W	Level/Width, Brightness/Contrast
L	Length/Distance
Del	Delete selected annotation

Patient/Entity search

Keys	Description
Del	Delete a selected document/document parts from the archive

Playback

Keys	Description
Spacebar	Start/pause video/series playback
→	Next video frame
←	Previous video frame

Navigation

Keys	Description
↓	Next instance/frame
↑	Previous instance/frame
→	Next series/file/instance
←	Previous series/file/instance
Page ↓	Next set of images (layout view)
Page ↑	Previous set of images (layout view)
Home	First set of images (depending on layout)

Keys	Description
End	Last set of images (depending on layout)
Del	Set selected viewport at first position and reset hanging
Ctrl + →	Next viewport
Ctrl + ←	Previous viewport

Display tools

Keys	Description
W	Level/Width, Brightness/Contrast
Shift + W	No windowing preset
Shift + 1-9	Apply windowing preset
O	Color Adjustment

4 Emergency access

Syngo Carbon Enterprise Access has an emergency access mode in case e.g. the hospital information system (HIS) of your organization becomes temporarily unavailable. This allows you to carry out routine tasks in Syngo Carbon Enterprise Access without interruption (e.g. searching for patients).

A note on the login screen will inform you when your system administrator has activated the emergency access mode.

You can log in with your user name and default password (if you have an LDAP-administered account) or with a specific emergency access account established by your organization.

After entering your login information, click on **Login** or press **Enter** on the keyboard.

In emergency access mode, the search screen as well as the results list are pre-configured, although you can still adjust them according to your needs. Usage does not differ from the standard mode (For more information, see (→ Page 24 *Usage instructions*)). However, some actions and/or functions may be deactivated.

5 Mobile access

Syngo Carbon Enterprise Access is optimized for use on specific tablet computers (iPads), allowing you to work from anywhere within your organization independent of a dedicated workstation. In addition, syngo.share webview diagnostic offers a mobile version with on-the-go access to the inbox and non-diagnostic viewing for easy collaborative working.

- Diagnostic use on tablets (iPads)
- Mobile version for non-diagnostic use

5.1 Diagnostic use on tablets (iPads)

The mobile diagnostic use of Syngo Carbon Enterprise Access is only allowed on the following tablets supporting iPadOS 16:

- iPad (≥ 2020)
- iPad Air (≥ 2019)
- iPad Pro (≥ 2017)

5.1.1 Access

To use Syngo Carbon Enterprise Access on your tablet, you must first do the following:

- Enable the browser's mobile view.
- Use touch input.

To access Syngo Carbon Enterprise Access, use the same URL as you would for the desktop version and log in with your user credentials. Be sure to replace the placeholders in the following URL template with the details of your organization's installation:

`https://<server>/webviewdiagnostic/<tenant>/<site>`



For ease of use, you can create a home screen shortcut for launching Syngo Carbon Enterprise Access (recommended). This will open the browser in full-screen mode, which offers the best user experience. For information on creating a home screen shortcut, please refer to the user documentation of your device.

5.1.2 Features and limitations

The tablet version of Syngo Carbon Enterprise Access offers the same range of features as the desktop version, with a few notable exceptions due to technological limitations of the devices. The following Syngo Carbon Enterprise Access functions are not supported for tablets:

- Downloading, printing and exporting documents
- Exporting search results as CSV
- Filtering search results

- Opening documents in external applications
- Opening documents in a new tab from the properties window
- Viewing CDA attachments (for CDA level 2 and CDA level 3)

5.1.3 Usage

The following features have been adapted to the tablet screen size and touch input. For detailed usage instructions for these and all other Syngo Carbon Enterprise Access features. For more information, see (→ Page 24 *Usage instructions*).

Volume control

- Use the volume buttons of your tablet to adjust the volume of videos.

Full screen viewing

- Create a home screen shortcut to open Syngo Carbon Enterprise Access in full-screen mode.

Displaying document details

- The series/preview area of the search results list is initially hidden. Select a document from the results list to view its details.

Selecting multiple entries

- In order to select multiple entries in the search results list or the series/preview area, select the check boxes next to the required entries. In the series/preview area, you first have to switch to list view by tapping .

Using the context menu

- To access the context menu, tap to select an entry, then tap . In the patient-grouped results list, long press on the patient header to open the context menu (tapping the header displays the list of associated documents instead).

Navigating through tagged instances

- To view keyword details in the instance preview or the viewer, tap the dot-shaped marker once. To jump to an instance, tap the marker twice.

Dragging and dropping files

- To drag and drop series or files from the **Document Navigator**, drag the thumbnail to the desired location. For more information on the **Document Navigator**. For more information, see (→ Page 54 *Document navigator*).

Moving viewports

- To move a viewport, long-press on its specific toolbar and move it to the desired location.

Selecting desired angle

- On tablets, the dashed helper lines are always visible. Tap on the desired angle to select it for calculation and to set it as the new default angle.

Deleting annotations

- To delete a selected annotation, tap  icon.

Finishing a polygon annotation

- To finish a polygon annotation, tap on  in the toolbar.

5.1.4 Touch gestures

The viewer supports several touch gestures for easier viewing:

Two-finger swipe

- Scroll by swiping two fingers up or down.

Pinch

- Zoom in or out by pinching/unpinching your fingers.

Three-finger swipe

- Pan an image by swiping three fingers in the required direction.

In addition, the following gestures are available specifically for whole slide images.

Two-finger swipe

- Change the focal plane by swiping two fingers up or down.

Pinch

- Change the zoom layer by pinching/unpinching your fingers.

Three-finger swipe

- Pan an image by swiping three fingers in the required direction.

5.2 Mobile version for non-diagnostic use

The mobile version of Syngo Carbon Enterprise Access is tailored to the smaller screen sizes of smartphones. Additionally, you can access it on any mobile device that supports the following browsers:

- Google Chrome ≥ 115
- Microsoft Edge ≥ 115
- Mozilla Firefox ≥ 115
- Mozilla Firefox ESR ≥ 115
- Apple Safari ≥ 16



The mobile version is optimized for portrait mode.

5.2.1 Access

To access the mobile version of Syngo Carbon Enterprise Access on your smartphone or mobile device of choice, use the following URL template. Be sure to replace the placeholders with the details of your organization's installation:

`https://<server>/webviewmobile/<tenant>/<site>`

You will be automatically redirected to the mobile version if you attempt to access the desktop version's URL on an incompatible smartphone or mobile device.



For ease of use, you can create a home screen shortcut for launching syngo.share webview diagnostic (recommended). This will open the browser in full-screen mode, which offers the best user experience. For information on creating a home screen shortcut, please refer to your device's user documentation.

- To log in, enter your user credentials. You may additionally have to select your domain.
- To log out, tap your user icon and select **Logout**.

5.2.2 Mobile inbox

After logging in, you are taken directly to your inbox, where you can see an overview of your document shares.

You can do the following:

Refresh your inbox

- Your inbox automatically refreshes at set intervals. To manually refresh it, tap



Open shares

- Tap on a share to open it and view its details. To return to the share overview, tap on

Filter shares

- Enter a string in the filter field to filter shares, e.g. from a particular sender or date.

Sort shares

- Tap on to sort your shares by date.

Mark shares as read/unread

- Tap on and select Mark as read/unread.

Delete shares

- Tap on and select Remove share. If you accidentally remove a share, you have to ask your colleagues to share the document with you again.

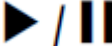
5.2.3 Mobile viewing

To view a shared document, open the share notification and tap on the desired document in the list. The first image will be opened in the viewer.



This mobile viewing feature is not to be used for diagnostic reading. A pop-up message will notify you of this restriction.

You can navigate as follows:

- To jump to a particular image in the current series, tap on or drag the scroll bar. To browse the images freely, use the **Scroll** tool.
- To start/stop video playback, tap on . To jump to a particular timestamp, tap on or drag the playback bar.
- Playback tools are available for DICOM series of certain modalities. Tap on  to stop the playback and jump to the beginning. To switch between multiframe instances, tap on .
- To view another series or generic file, tap on it in the series/file area. Swipe left or right to view all available entries.
- To return to the share and view other documents, tap on .



Note that playback speed may depend on the available hardware as well as the size and number of opened documents.

In addition, the viewer offers the following tools. Tap their icons to select them. The available tools depend on the type of image/file.

Zoom

- Zoom does not have a dedicated icon since it is always available. Simply pinch/unpinch your fingers to zoom in and out of an image.

Scroll

- Swipe left or right on  to scroll forwards or backwards through the images in a series.

Move

- Drag the image to the desired position.

Window

- Slide your finger up or down on  to adjust the level/brightness. Slide your finger left or right to adjust the width/contrast.

– Windowing presets

Certain modalities offer windowing presets for optimized viewing of particular body parts.

Tap on  to select a preset and automatically adjust the windowing values. To remove a preset, tap on  again and choose **No selection**.

Annotations

• Length

Move your finger across the image to draw the length annotation.

- **Angle**

Move your finger across the image to draw the first side of the angle. Repeat to draw the other side.

To move an annotation, select it and drag it to the desired position. To delete an

annotation, select it and tap .

Rotate

- Tap on  to rotate the image by 90°.

Reset

- Tap on  to return the image to its original state.

Fullscreen

- Tap on  to view the image in fullscreen mode. Tap the tool again to exit fullscreen mode.

6 Appendix

6.1 Requesting Printed Instructions for Use

You can request printed documentation for your medical device in the teamplay Fleet platform. One printed copy may be free of charge, depending on your country-specific law. For example, if you are a customer inside the European Union.

✓ You know the correct name of the medical device for which you want to request the Instructions for Use.

✓ You are registered at teamplay Fleet.

1 Enter the following URL into a web browser with internet access:
<https://fleet.siemens-healthineers.com/>.

2 Enter your login data.

teamplay Fleet opens.

For further information about your teamplay Fleet account, contact your Siemens Healthineers representative.

3 In the product information area, select your medical device.

4 Click **Request printed user documents**.

5 Enter the delivery address and click **Submit**.

You will receive a confirmation email.

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The original language of this document is English.

Made in Germany

Caution: Federal law restricts this device to sale by or on the order of a physician.

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