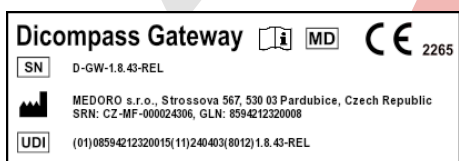


# Dicompass Gateway

User guide

Medoro s.r.o.

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## 1 Introduction

### 1.1 Purpose of this document

This document is a user manual in electronic form, describing the functions and operation of the SW Dicompass Gateway.

The user manual is intended for professional users, i.e. for trained operators of SW Dicompass Gateway, i.e. trained medical and intermediate medical personnel. User training is carried out once after the implementation of the MD and then with each released version with a change in the MAJOR number, i.e. the first number of the versioning format.

Administration of SW Dicompass Gateway does not apply to the regular user, therefore it will not be described here. It is described in detail in the Administrator's Guide.

Please read this manual carefully before using the Dicompass Gateway medical device.

If necessary, this instruction manual is provided in paper form, at no additional cost to the user, within 7 days of receiving the request. The request can be sent by email to [helpdesk@medoro.org](mailto:helpdesk@medoro.org).

Name and address of the manufacturer: **MEDORO s.r.o.**, Štrossova 567, 530 03 Pardubice, Czech Republic, ID: 26002612, VAT number: CZ26002612, <http://www.medoro.org>, <http://www.dicompass.cz>, e-mail: [info@medoro.org](mailto:info@medoro.org)

## 1.2 Reporting serious adverse events

According to Regulation 2017/745 of the European Parliament and Council (EU) from 5th April 2017 on medical devices, amending Directive 2001/83/ES, Regulation (ES) No 178/2002 and Regulation (ES) No 1223/2009 and repealing Council Directives 90/385/EHS and 93/42/EHS, serious adverse event refers to an event which directly or indirectly leads to, may have or may lead to one of the following consequences:

1. death of a patient, user or other person
2. temporary or permanent deterioration of patient's, user's or other person's health
3. serious threat to public health

Any serious adverse event that has occurred in connection with the device in question should be reported to the manufacturer and the competent authority of the Member State in which the user and/or the patient is established.

In the event of an adverse event, contact us using the HelpDesk, by phone on +420 463 356 445, or by email at [helpdesk@medoro.org](mailto:helpdesk@medoro.org).

## 1.3 Description of the intended purpose of use

The intended purpose of SW Dicompass Gateway:

The specialized modular software Dicompass Gateway is intended as a tool for working with image data for the purposes of diagnostic and therapeutic actions in the healthcare sector. Dicompass contains not only a DICOM viewer, but also modules for a complete solution for video digitization from endoscopes, ultrasounds, microscopes, as well as other devices that do not have a direct DICOM output, conversion of recordings from digital cameras, scanners and cameras into DICOM format (DICOMization). Dicompass also offers functions for radiodiagnostics and radiotherapy.

The Dicompass Gateway software is an active medical device that does not come into contact with the patient and its purpose is to display and work with image medical documentation. The Dicompass software is thus intended for all groups of patients undergoing radiological or other (e.g. endoscopic) examinations that generate image documentation.

The Dicompass Gateway software is used for the diagnosis of health conditions requiring radiological or other (e.g. endoscopic) examination generating image documentation.

The indication for the use of MD Dicompass Gateway is connected with the need for a specialized doctor to diagnose the deteriorated condition of the patient using imaging methods. Dicompass enables this image documentation to be archived and subsequently worked with.

Contraindications - Patients in whom it is not possible to obtain evaluable imaging documentation.

Warning: The use of Dicompass is conditioned by the training of users.

Dicompass Gateway is a certified tool for archiving, viewing and postprocessing DICOM data acquired using DICOM modalities, such as X-ray, CT, MR, SONO, ECG and others. This SW uses web technologies and for its purpose it is necessary to use standard HTML browsers (current versions) supporting WebGL (Edge, Chrome, Firefox) across all system platforms (Windows, Apple iOS, Linux, Android). The program's interface aims at user convenience and clarity.

The software is classified and certified as a Class IIb medical device in accordance with applicable legislative requirements.

CE 2265

**Figure 1:** img

Dicompass Gateway is a purely web-based DICOM tool that, in addition to a web browser, does not require any additional support resources installed on the workstation. Thanks to traceless technology, it leaves no traces on the user's PC.

Considering the HTML technology used, it can also be operated on any mobile device (a tablet or a smartphone), both inside and outside of your medical facility.

Dicompass Gateway is a very sophisticated tool for remote consultations and all work performed within this SW is fully audited.

Not only does it contain the basic tools for viewing and working with DICOM images, such as distance measurement, area measurement, windows, annotations, rotation options, screen splitting, support of multiple monitors, including diagnostic ones, etc., but also supports image captions, any image filters, or a wide variety of image displays.

In multiple windows, it is possible to use synchronized image viewing or browsing images marked as important.

Dicompass Gateway supports a number of standardized formats such as JPEG, PNG, SR, MPEG2, MPEG4 and more. Images or recordings can be exported to an external device, burned to a CD/DVD, or sent via metropolitan exchange ePACS / ReDiMed to another medical facility. Dicompass Gateway also supports multiple PACS archives at once. You don't have to search and switch between different functions. The search dialog allows you to set exact parameters. The overall browser settings can be saved to each user account. After logging in, your labels or measurement tools will not be shuffled by your colleagues previous usage.

Thanks to use of web technology, all image documentation is not stored on the end device of the doctor's diagnostic workstation in advance, thus, when it is opened, there may be a delay before



loading. This delay is affected by the speed of the internet connection or the response of the line of the internal network of the medical facility.

MD Dicompass Gateway is a separate device and for its intended purpose of use does not use additional accessories and is not part of the system or kits.

MD Dicompass Gateway does not contain a medicinal substance, including derivatives of human blood or plasma, or tissue or cells of human origin or their derivatives, or tissues or cells of animal origin or their derivatives. It is not intended for introduction into the human body.

Dicompass Gateway is not a single-use resource. It is supplied non-sterile and is not intended for sterilization.

Dicompass Gateway is delivered exclusively electronically and thus does not use a storage requirement.

We recommend using the Dicompass Gateway measurement function only on calibrated images by the modality manufacturer. For non-calibrated images, the results of the MD Dicompass Gateway measurement function are only informative, and to clarify the result, we recommend using the calibration tools of the used modality.

The technical description of the device is part of the service manual.

## 1.4 System requirements

The chart describes the minimum required configuration per server for SW operation Dicompass Gateway:

Parameter	Requirement
CPU	4 cores
RAM	8 GB
HDD	according to desired volume of data
Network interface	1 Gbps

The chart describes the minimum required configuration of a PC for SW operation Dicompass Gateway:

---

Parameter	Requirement
OS	Windows 7, 8, 10, 11 (64 bit) MacOS
Internet browser	Google Chrome (minimum version 56) Microsoft Edge (minimum version 78) Mozilla FireFox (minimum version 48)
CPU	2 cores
RAM	4 GB
HDD	0.5 TB
Network interface	100 Mbps

---

For the correct functionality of MD Dicompass Gateway, it is required that no restrictions be applied to the amount of data transferred or to the number of requests.

The installation and configuration of the MD Dicompass Gateway is carried out according to the service manual, and a handover protocol containing its validation is kept on the correctness of the installation and the functionality of the device at the customer's place. Installation and configuration of the device is performed only by service technicians trained by the manufacturer.

Based on the terms of the customer's service contract, MD Dicompass Gateway is remotely monitored and serviced 5/8, 24/7, or according to other agreed conditions.

Requests can be reported in three ways, by creating a request directly in the Helpdesk system at: - <https://helpdesk.medoro.cz/> - by email at [helpdesk@medoro.org](mailto:helpdesk@medoro.org) - by phone +420775324005, or to a specific service technician, who then enters the request into the Helpdesk system

Regular maintenance is carried out on the basis of released resource updates and their installation.

For the correct and safe functioning of the device, it is not necessary to calibrate MD for the entire specified period of its life.

There are no risks for persons involved in the installation, calibration or servicing of the devices.

The security measures of the Dicompass Gateway resource are determined by the Linux operating system used and its native firewall, which is configured when the system is implemented. Access to the server part of the system is only allowed to trained service technicians by the manufacturer using SSH key encryption. Access to the user part of the system is protected by two-factor user authentication or by connecting to the customer's LDAP/AD.

## 1.5 List of terms and abbreviations used

List of used terms and abbreviations

---

Term	Explanation
AD	Microsoft Active Directory
AE	Application Entity
DICOM	Digital Imaging and COmmunication System - it is a standard for imaging, distribution, storage and printing of medical data
DPGW	Dicompass Gateway
DVR	Direct Volume Rendering - in addition to color, it also uses transparency and can display everything at once. All voxels of volume contribute to the final image
HP	Hanging Protocol - a protocol enabling to change and automate the form of display of the opened study based on many parameters (type of examination, image position ...)
MinIP	Minimum Intensity Projection
MIP	Maximum Intensity Projection
MPR	Multiplanar reconstruction
MWL	a service enabling transmission of patient demographic data within the DICOM protocol - Modality worklist
SSD	Shaded Surface Display, 3D projection way, voxels with a density higher than the given limit contribute to the resulting image
SSO	Single Sign On - automatic user login with their identity logged in the operating system
ID	Patient ID number
VRT	Volume Rendering Technique, 3D projection way

---

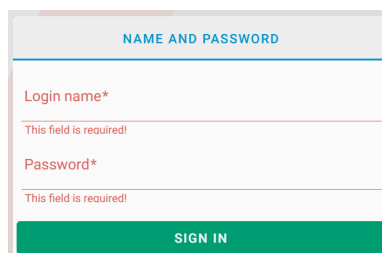
## 2 Login to the system

DPGW supports multiple ways of user authentication / authorization when logging in to the web interface:

- with user name and password from local DPGW database
- with a user name and password authenticated against LDAP or Active Directory

- two-factor authentication (username, password and authenticator)
- Single Sign On (SSO) on stations in the domain in the MS Windows environment
- with certificate - local user
- with certificate - LDAP/AD user
- by passing login information from HIS (information about currently supported HIS which are able to pass user's identity to DPGW can be given to you by the system supplier)
- with temporary one-off token generated directly in DPGW for online consultations

To log in to the web interface, enter the IP address or domain name of the server running DPGW in the address bar of the web browser. If you do not have SSO, login certificate or other advanced authentication method configured, the system will require you to fill in a username and password:



The image shows a web form for logging in. At the top, it says "NAME AND PASSWORD" in blue. Below that, there are two input fields. The first is labeled "Login name\*" and has a red error message "This field is required!" below it. The second is labeled "Password\*" and also has a red error message "This field is required!" below it. At the bottom of the form is a green button with the text "SIGN IN" in white.

**Figure 2:** img

By clicking on the SIGN IN button the user will be logged in. If the login fails (incorrect username or password), a red bar with an error message will be displayed and the login must be repeated with the correct login information. By default, password guessing prevention function is turned on, so that each time you try to log in incorrectly, the time required to authenticate the user to the server increases. If you have forgotten your login details, contact your system administrator or supplier before your account is completely suspended due to random password guessing.

In the case of two-factor authentication, it is also required to enter the numerical code generated in the selected authenticator. If you are logging in to DPGW using two-factor authentication for the first time, you will be redirected to a page with a QR code that you scan with your mobile device in the selected authenticator and you will be assigned an account with a generated unique number for your login to -PRODUCT- SHORT-NAME-. As an authenticator, we recommend, for example, Google Authenticator, which can be downloaded for free from the online distribution service Google Play and the App Store. To work with Google Authenticator, follow the manufacturer's instructions.

After a successful login into the system, the basic screen for searching the system registers will be displayed. The logged-in user may not have all the features described below available. It depends on the type of license and the functional roles that the user has assigned in the system.

## 3 Basics of user interface

### 3.1 Searching in system registers

Web user interface comprises of three main parts:

- Dialog box for managing and searching registers of DPGW, digitizing, dicomization and importing data.
- DICOM box of DICOM viewer with tools for working with image data.
- Administrator interface for system administration and configuration.





You can intuitively switch between sections using interface controls. If you use a multiple monitor setup, it is possible to configure the web environment so that the search and data displaying are shown separately on the preview monitor and the DICOM browser window on other (diagnostic) monitors.



After a successful login into the web interface, the basic dialog box for working with registers of DPGW is displayed. At the top you will find a bookmark bar:









Figure 3: img

- **Archives** ARCHIVES - searching through user-accessible DICOM archives, including the internal database of DPGW (patients, studies, orders). You can edit, delete, or forward the retrieved data to other AEs or exchange networks (ePacs, ReDiMed). The retrieved data can be opened in integrated DICOM viewer by double-clicking.
- **Recent viewed** RECENT VIEWED - viewing recently viewed studies. It is possible to select a filter on User/Station/Organizational Unit - it is affected by whom the studies were displayed. The User filter displays recently viewed studies only by the logged in user. Station filter displays recent studies displayed on the entire station with respect to access rights. Organizational unit filter shows recently displayed studies of the entire organizational unit, again taking into account access rights.
- **User** USER - private DICOM user data box. The user can import data into this box, for example from a CD/DVD, or another user can forward the data there or the user can forward it himself. The data in this box is visible only to the given user and is thus available at any station where the user logs in.
- **Station** STATION - private DICOM station data box. The same rules apply to it as to the user's data box. Only the stored data belonging to the station can therefore be seen by any user who logs into the given station. On the other hand, the user will not see this data on any other station.

- **Working lists**  - work (visit) lists created by user or automatically. Each user/group of users can create any number of worklists that they can share with each other. Individual exams can be added to the worklist simply from the search dialog box or directly from the DICOM viewer. DPGW can even create worklists automatically and execute them based on pre-defined rules when saving modality exams, or when receiving an HL7 message from HIS. This setting must be made by the system administrator.
- **DICOM Import**  - import DICOM data from CD/DVD/folder into user folder, station or archive. The imported data can then be edited in the user/station folder, displayed in a browser or, after checking, forwarded directly to the PACS archive.
- **Digitalization**  - interface for digitization and dicomization of images and videos from the grab card, or local folder with support of categorization and loading of the Modality Worklist.
- **Temporary data**  - management of areas for temporarily stored DICOM data. Above all, these are the so-called “**Unreceived Data**”, i.e. data that could not be stored in the archive due to invalid or inconsistent data. You can correct the data in this area and have it saved again, or download the data in dicomdir format. It is also possible to define an area for the so-called “**Recycle Bin**”, where the data deleted by the user from the web interface is moved, so that it can be restored in case of incorrect deletion.

To the right of the tabs, the name of the currently logged in user, the main menu icon  and the icon for hiding the entire dialog box are displayed - the DICOM viewer window is displayed . If you have a multiple monitor setup where the search dialog is still open on a separate monitor, this close icon is replaced by the logout icon from the web interface of DPGW.

In the main menu  you will find the following items:

- **Settings**  Settings - access to the administrator menu for system administration and configuration
- **Logout**  Logout - logout from the web interface
- **Change Password**  Change password - password change of the currently logged-in user
- **User guide**  User guide - displays the user's manual
- **About**  About application - displays a dialog box with information about the application version, the user and the station to which the user is logged in
- The last item displays information about the instance name of DPGW and the domain to which the user is logged on.

## 3.2 Searching in Archives

ARCHIVES

**Figure 4:** img

Searching in archives serves the user for searching available DICOM archives or internal databases and thus serves as one of the main pillars of - PRODUCT-SHORT-NAME-. This search engine tool is displayed as soon as you log into DPGW or select the Archives tab. It includes 3 areas for searching and working with visual documentation: - Search toolbar - Search parameters - Search results


















### 3.2.1 Search Toolbar



**Figure 5:** img

The individual functions of the search toolbar are listed in the following table:

Icon	Function	Description
	Search	confirmation of patient or study search according to selected parameters in the form
	Clear Tab	clears all added parameters in the form
	Add to Favourites	selected search parameters can be saved as a favourite search and then brought up from the favourites list instead of time-consuming filling out of the search fields
	Show Favourites List	displays a list of saved favourite search parameters
	Forms Settings	possibility to define fields that will be offered during the search on individual levels (Patient, Study, Order)
	Change Layout	possibility to change the layout of search parameters
	Refresh	reloading of the search box
	Enable Auto Refresh	turns on automatic reload of the search box (if this option is enabled, this icon is green)
	Select All	selects all search results for bulk processing



Icon	Function	Description
	Deselect All	removes the selection from the previous point
	View Thumbnails	switches on/off series thumbnails preview (preview on - green icon)
	Hide Manual Filters	switches on/off displaying of manual filters (displaying on - green icon)
	Clear manual filters	removes all added parameters in the searched parameters columns
	Column Settings	settings for displayed columns in search results
	Replace and View	displays selected studies with the replacement of the last displayed ones (double-clicking on the line of the given study also works)
	Add to new tab	display of selected studies in a new DICOM browser tab
	View patients in tabs	display of selected studies in individual DICOM browser tabs
	Add and View	displays selected studies with adding them to recently viewed
	Move series	marks selected study for transfer to another patient
	Send selected	forwards selected studies to another DICOM node
	Export Selected to DICOMDIR	exports selected images to DICOMDIR
	Burn Selected	prepares selected studies for burning in .img format
	Export Selected Images	exports selected images to the selected format
	Add to Worklist	adds selected studies to the worklist - either an existing one or allows you to create a new one
	Add Tags	adding information to the selected study
	Delete Selected	deletes selected studies or series


Some of these tools are also accessible in the context menu, after right-clicking on the selected study.




### 3.2.2 Search Parameters

The search parameters are used to find the required study stored in the selected PACS archive. To get the most accurate search results, we recommend using all fields for data entry.

After entering the required data, it is possible to bring up the search results using the “Search” button , or using the “Enter” key. To clean the form use the function “Clear form” . Both functions are located in the Search Toolbar.

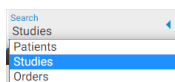
Individual search categories can be expanded up/down using the  button, located on the right of the category name.

To enter data in each category of search parameters, click in the required field and enter alphanumeric characters. To delete them, it is possible to use the “backspace”/“delete” key or the  on the right of the text field.

To speed the work up when searching, you can use the characters entered in the individual text fields:

Character	Description	Example
*	Wildcard for series of characters	when you enter “Tes*” in the “Name” field, it searches for all results whose name starts with Tes + all characters, e.g. Test, Test, Tested, etc.
?	Wildcard for one character	when you enter “Tes?” in the “Name” field, it searches for all results whose name starts with Tes + one character, e.g. Test

The search parameters contain 3 main areas that allow you to search for:



**Figure 6:** img

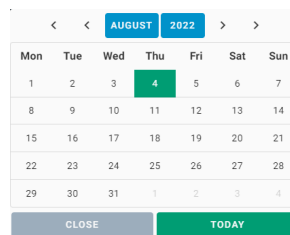
- Patients - contains categories Patient and Archive Selection
- Studies - contains categories Patient, Study, Other, Modality, Tags and Archive Selection
- Orders - contains categories Patient, Order, Examination and Archive Selection

The individual categories are listed and described below:

**Figure 7:** img

**3.2.2.0.1 Patient** The “Patient” category contains a field to identify the patient being searched for and contains the following search fields:

- Identification - allows entering the patient’s birth number
- Last Name - allows entering the patient’s surname
- Name - allows entering the patient’s name
- Date of Birth - allows entering the patient’s date of birth by entering the date in the format YYYY-MM-DD. To make the search easier, this field contains a search calendar function 📅, located on the right of the field. After opening it, you can search in this calendar or select today’s date as the picture shows:



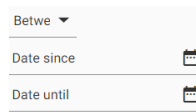
**Figure 8:** img

For the advanced search of the “Date of birth”, it is possible to use special characters =, >, < and “between” which can be offered by using the “Expand” icon ⌵:



**Figure 9:** img

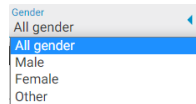
1. The “=” character - used to search for patients with the date of birth on a specific selected date
2. Character “>” - used to search for patients with date of birth after the selected date
3. Character “<” - used to search for patients with date of birth before the selected date
4. “Between” option - used to search for patients with date of birth between the selected dates



A form with three rows. The first row has a dropdown menu labeled 'Betwe'. The second row has a text input field labeled 'Date since' and a calendar icon. The third row has a text input field labeled 'Date until' and a calendar icon.

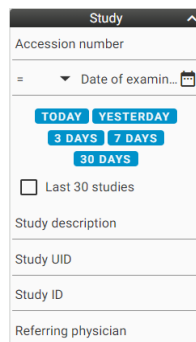
**Figure 10:** img

- Gender - allows you to enter the patient's gender. The drop-down menu is used to select it:



A dropdown menu titled 'Gender' with a blue arrow on the right. The menu is open, showing the following options: 'All gender' (highlighted in blue), 'Male', 'Female', and 'Other'.

**Figure 11:** img

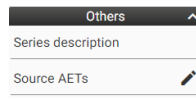


A search form titled 'Study' with a close button (X) in the top right. The form contains the following fields and options: 'Accession number' (text input), '=' (text), 'Date of examin...' (dropdown with calendar icon), 'TODAY' (button), 'YESTERDAY' (button), '3 DAYS' (button), '7 DAYS' (button), '30 DAYS' (button), a checkbox labeled 'Last 30 studies', 'Study description' (text input), 'Study UID' (text input), 'Study ID' (text input), and 'Referring physician' (text input).

**Figure 12:** img

**3.2.2.0.2 Study** The “Study” category contains fields to identify the study you are looking for and contains the following search fields:

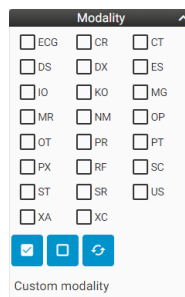
- Accession Number - allows you to enter the number of order on which the examination was performed
- Date of Examination - allows you to enter the examination date in a similar way as described above in the field “Date of birth”, or by selecting one of the offered options
- Last 30 studies - enables the display of the last 30 examinations received in PACS
- Study Description - allows you to enter the name of the study
- Study UID - allows you to enter a unique study number
- Study ID - allows you to enter a study ID
- Referring Physician - allows you to enter the referring physician



**Figure 13:** img

**3.2.2.0.3 Others** The “Others” category contains the following search boxes:

- Series Description - allows searching by series name
- Source AETs - allows searching by DICOM device name (AE Title) from which the data was sent to DPGW



**Figure 14:** img

**3.2.2.0.4 Modality** The “Modality” category contains boxes for refining the search for studies based on the selection of the source modality:

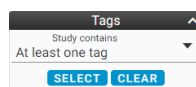
Abbr.	Description	Abbr.	Description	Abbr.	Description	Abbr.	Description
ECG	Electrocardiography	CR	Computed Radiography	CT	Computed Tomography	DS	Digital Subtraction Angiography
DX	Digital Radiography	ES	Endoscopy	IO	Intra-Oral Radiography	KO	Key Object
MG	Mammography	MR	Magnetic Resonance	NM	Nuclear Medicine	OP	Ophthalmic Photography

Abbr.	Description	Abbr.	Description	Abbr.	Description	Abbr.	Description
OT	Other	PR	Presentation State	PT	Positron emission tomography (PET)	PX	Panoramic X-Ray
RF	Radio Fluoroscropy	SC	Secondary Capture	ST	Single-photon emission computed tomography (SPECT)	SR	Structured Report
US	Ultrasound	XA	X-Ray Angiography	XC	External-camera Photography		

To speed up the search, it is possible to use the functions listed in the table:

Character	Description	Example
<input checked="" type="checkbox"/>	Select All	Marks all modalities
<input type="checkbox"/>	Deselect All	Deselect all modalities
<input checked="" type="checkbox"/>	Invert	Inverts marked modalities

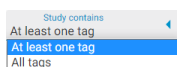
If you do not find the required modality, you can search for it in the “Custom modality” text box by entering the modality name.



**Figure 15:** img

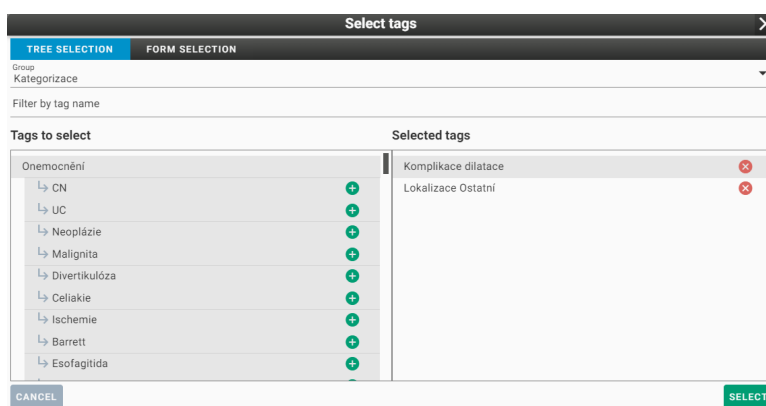
**3.2.2.0.5 Tags** The “Tags” category contains the option to select and then search for labeled studies, i.e. studies containing this added information.

- studies can be searched by value for all selected tags or one of the selected tags:



**Figure 16:** img

Using the “SELECT” button, it is possible to open a table with the option of filtering and marking defined tags:



**Figure 17:** img

In the “TREE SELECTION” dialog, it is possible to search for and then assign already created labels. In the “Group” bar, you can select the desired set of created labels. In the “Filter by label name” window, you can quickly find this label by entering the desired label name. The left column “Select Label” contains all available labels for the given group and can be selected using the icon to move it to the right column “Selected Labels”. Selected labels can then be removed using the icon .

In the “FORM SELECTION” dialog, you can similarly select labels for a given study, but here in the “Group” bar you can find e.g. individual departments of the hospital and according to the group selection, labels can be selected by ticking them  / .

**Figure 18:** img

After selecting individual labels, select the “SELECT” action to select and then search for the selected labels. With the “CANCEL” action, you cancel the action.

Use the “CLEAR” button to remove labels from the search

Warning: Labels are created and managed only by the system administrator. The user is not allowed to add, modify or delete these labels.

**Figure 19:** img

**3.2.2.0.6 List of flag** The category “List of flag” allows you to search for studies according to the assigned flags. Use the “Select Flag” scroll bar to select the desired flag to search for. Individual flags can be edited, see more in the “Add Flags” chapter. To remove the selected flag from the search, select the “CLEAR” action.

**Figure 20:** img

**3.2.2.0.7 Order** The “Order” category contains a field to identify the searched orders and contains the following search boxes:

- Order ID - allows you to enter the number of order which the examination was performed on
- Date and time of creation - allows you to enter the date of creation of the order in a similar way as described above in the field “Date of birth”, or by selecting one of the options offered
- Study UID - allows you to enter a unique study number

**Figure 21:** img

**3.2.2.0.8 Procedure** The “Examination” category contains fields to identify the exam you are looking for and includes the following search boxes:

- Procedure ID - allows you to enter the examination number
- Queue - allows you to enter the name of the workplace where the examination is performed
- Start date - allows you to enter the date of the examination in a similar way as described above in the field “Date of birth”, or by selecting one of the options offered
- Physician examination code - allows you to enter the examination code
- Status - allows you to search for active and already completed examinations. The status contains 3 examination options: “All statuses”, “Active” and “Completed”, which can be marked in the menu opened by the “Expand” icon - :

**Figure 22:** img


**Figure 23:** img

**3.2.2.0.9 Select Archives** The “Select Archives” category is used to specify the source PACS repositories from which the results are to be searched and displayed. This category can contain multiple archives depending on the customer’s SW infrastructure.




Use the  /  checkboxes to select archives.

**Figure 24:** img

**3.2.2.1 Form Items Configuration** The form items configuration determines displaying/hiding  /  fields of each search category. This setting is located in the search toolbar under “Form items configuration” .

### 3.2.3 Favourite Search Parameters

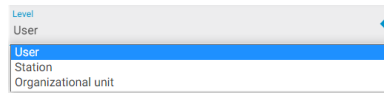
**3.2.3.1 Saving Filters** To make the user’s work easier, it is possible to save the most frequently used parameters as filters for searching using the “Add to Favorites” function . This function is located in the Search Toolbar and saves the complex of currently set search parameters with the option of naming it.

When using the search box “Examination date”, DPGW always uses the current date and time.


**Figure 25:** img


The “Save favorite parameters” feature includes the following saving options:

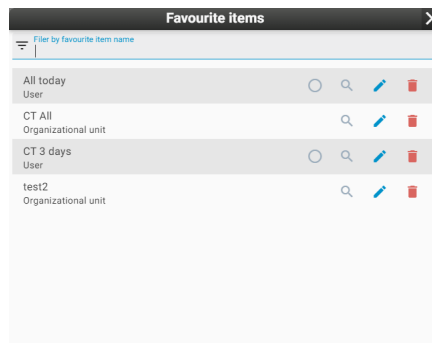
- Level - possibility to save to a logical drive in the menu opened by the “Expand” icon - :



**Figure 26:** img

- User - saves the filter to the currently logged in user's account
  - Station - saves the filters to the currently used station (e.g. PC). The parameters then can be used by all users using this station
  - Organizational unit - saves the filters to the user's current organizational unit (e.g. doctors, nurses, assistants, etc. according to the current settings by the administrator)
- Name - used to name the favorite filter
  - Automatic search - after selecting a favorite filter, it will automatically search for the desired results and it is not necessary to use the “Search” function 
  - Default after login - after the user logs in, it automatically fills in the search filter according to the specified criteria

**3.2.3.2 Load Filters** The “Favourite Items” function  located in the Search Toolbar allows you to select an already saved search filter.



**Figure 27:** img

The consequently opened “Favourite Items” table allows you to select or specify the saved filters using the “Filter by favourite item name”.

The tools for the saved filters administration are on the right of the saved filters:

Icon	Function	Description
	Default after login	After the user logs in, it automatically fills in the search filter according to the specified criteria
	Search	Searches for results according to the parameters of the saved filter
	Edit	allows you to edit a saved filter. Selecting this function changes the Search Toolbar with the option “Save Changes” , or “Cancel changes”
	Delete	Removes the saved filter from the favorite parameters list

### 3.2.4 Search Results

The “Search Results” are used for displaying the search results corresponding to the entered search parameters.

Full name	Identification	Date of birth	Modality	Tags	Date of examination
> <input type="checkbox"/> ANONYMI Anonym (6)	1111	1953-05-16	CT, SR		2015-12-07 07:31
> <input type="checkbox"/> ANONYM-JZ (6)	ct1236	2018-05-01	CT, SR		2011-03-28 15:16
> <input type="checkbox"/> ANONYM-OA (18)	petct	2018-05-01	CT, PT, SR		2009-01-28 00:00

Figure 28: img

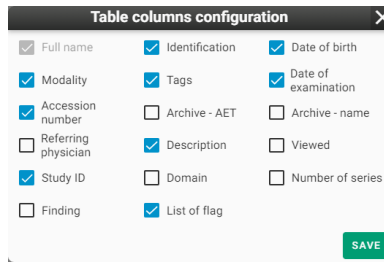
**3.2.4.1 Table Columns Configuration** The search results are sorted by value columns which can be set with the “Column Settings” function . After opening it, it is possible to specify displaying of individual columns using the checkboxes. The “Save” button then saves the required columns to the user’s account. The “Column settings” parameters may vary depending on the selected search parameter area:

- Patient



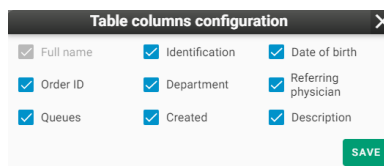
Figure 29: img

- Study





**Figure 30:** img

- Orders



**Figure 31:** img

After finding the required study parameters, these results can be sorted in descending/ascending order  /  by clicking on the value of the required column.





**Figure 32:** img

To specify the searched parameters, it is possible to use text boxes for individual column values:



**Figure 33:** img

These text boxes can be hidden by using the “Hide manual filters” function , located in the search toolbar.

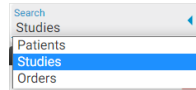
When entering parameters in the text boxes of the columns of the searched parameters, these can be removed by the “Clear manual filters” function , located in the Search toolbar.

**3.2.4.2 Categories of found data** DPGW works with data depending on following sequence:

- PATIENT - the main folder containing all performed examinations and stored data, i.e. Studies and Orders

- Study - a component of the examination (X-ray, CT, MRI, etc.), containing individual series
  - \* Series - a folder with individual instances (e.g. performed protocol for CT examination)
    - Instance - specific stored files (e.g. X-ray image)

The search results may vary depending on the selected search parameter area:



**Figure 34:** img

- Patients - searches for patients according to the required criteria, i.e. main folders containing individual studies

Level	Accession number	Modality	Date of examination	Study ID	Archive	Description
> <input type="checkbox"/> Study (1)	747489298328849	DX	2007-04-11 11:57		DPGWTEST8	Plice
> <input type="checkbox"/> Study (7)	7474892983288492	DX	2013-10-09 11:32		DPGWTEST8	C, Th
▼ <input type="checkbox"/> Study (15)	7474892983288492	CT	2017-08-21 11:35		DPGWTEST8	Head*01_Head_Neuro (Adult)
Level	Series preview	Modality	Date & time	Tags	Description	
<input type="checkbox"/> Series 1 (1)		CT	2017-08-21 11:35		Topogram 0.6 T20s	
<input type="checkbox"/> Series 3 (50)		CT	2017-08-21 11:39		AX Head 3.0	

**Figure 35:** img

- Studies - searches for individual studies according to the required criteria. The same patient may then appear multiple times in the search results, however, with a different study. When selecting this area, we recommend entering as many search parameters as possible.

Level	Series preview	Modality	Date & time	Tags	Description
<input type="checkbox"/> Series 11 (4)		MG	2017-12-19 11:34		MG FOR PRESENTATION
Level	Series preview	Modality	Date & time	Tags	Description
<input type="checkbox"/> Series 1954 (2)		DX	2007-04-11 11:00		Wrist

**Figure 36:** img

- Order - searches for input orders according to the required criteria. The same patient may then appear multiple times in the search results, however, with a different order. When selecting this area, we recommend entering as many search parameters as possible.

Level	Procedure ID	Queue	Start	Status	Phys. examination code	Examination text
<input type="checkbox"/>	AC8020.1	COS_62	2021-04-05 16:00	Active	PROC-001	Gastro


**Figure 37:** img

### 3.2.5 Actions with Search Results

After finding the required parameters, DPGW allows you to work with this documentation using the functions located in the search toolbar or in the floating panel on the line of the found patient, study, series and order. These features may vary depending on the search category selected.

The individual steps are described in more detail in this chapter:




#### 3.2.5.1 Search Toolbar Actions

**3.2.5.1.1 Selecting Search Results** The “Select All/Deselect All” function  /  allows the user to select or deselect all search results.

If the user wants to select/deselect individual search results, he can do so with a checkbox in the search results column on the left of the patient’s name / .


Marking multiple consecutive search results is enabled using the “Shift” key on the keyboard.


**3.2.5.1.2 Viewing Search Results** Search results can be opened and displayed in the integrated DICOM viewer in three modes:


- Replace and View  - replaces the data opened in the DICOM viewer with the selected search results data
- Add to new tab  - will display the selected studies in a new DICOM browser tab
- Add and View  - adds the selected search results data to the already open DICOM browser data

You can also view the search results in the DICOM viewer by double-clicking on the result itself. This function substitutes the “Replace and View” mode of a specific result.

According to the above-mentioned “Select Search Results” function of DPGW described above, specific search results can be marked and viewed at the same time.

**3.2.5.1.3 Moving Series** After selecting the chosen series in the “Studies” filter category of the “Archives” window, these series can be moved into the selected study using the “Move Series” icon  located in the Search toolbar.

Selecting this function changes the icon  and the function becomes active. Click on this icon to cancel the action.


To insert selected series into another study, perform the action on the floating panel of the study by using “Insert Selected Series” . To confirm this action, it is necessary to agree to the change of DICOM tags of the series contained in the table “Edit tags value” to move the series by clicking “Save”:

Edit tags value					
<input checked="" type="checkbox"/>	VR	Name	Pattern image	Original image	Result
<input type="checkbox"/>	SH	AccessionNumber	7474892983288492	7474892983288492	7474892983288492
<input checked="" type="checkbox"/>	LO	AcquisitionDeviceProcessingDescription	UNIQUE: S:200 L:4.0 SCL d:1.2 g:3 sb:3 eq:-0.3 nr:0 dc:3.9 ba...	Wrist	UNIQUE: S:200 L:4.0 SCL d:1.2 g:3 sb:3 eq:-0.3 nr:0 dc:3.9 ba...
<input checked="" type="checkbox"/>	LO	AnatomicRegionSequence[1]/CodeMeaning		Wrist	
<input checked="" type="checkbox"/>	AS	PatientAge			
	DA	PatientBirthDate			
	TM	PatientBirthTime			
	LO	PatientID	1111	1111	1111
	PN	PatientName	Test	Test	Test
	CS	PatientSex	M	M	M
<input checked="" type="checkbox"/>	LO	SeriesDescription	BEDERNI PATER	Wrist	BEDERNI PATER
	UI	SeriesInstanceUID	1.3.6.1.4.1.5962.99.1.704337845.1669676133.15 51187564469.22940.0	1.3.6.1.4.1.5962.99.1.704337845.1669676133.15 51187564469.22908.0	1.3.6.1.4.1.5962.99.1.704337845.1669676133.15 51187564469.22940.0
<input checked="" type="checkbox"/>	LO	StudyDescription	BEDERNI PATER	MAMMOGRAFIE DIAGNOSTICKA	BEDERNI PATER

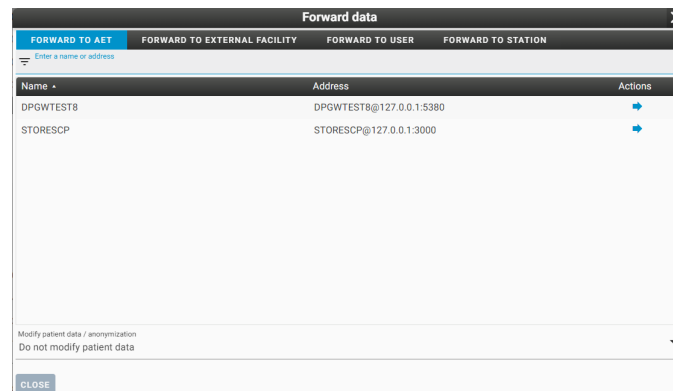
If the series are successfully moved, the system notifies you at the bottom of the screen:

Series has been successfully moved

**Figure 38:** img

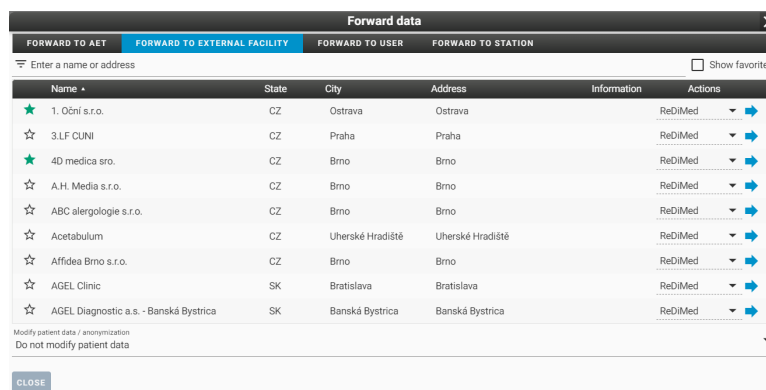
**3.2.5.1.4 Forwarding Data** In the “Archives” window, the marked data can be forwarded to the selected destination with the “Forward selected” .

Selecting this function displays a table for possible forwarding of the selected data:



**Figure 39:** img

This table contains: - Forwarding area: - AET - forwards the selected data to AETitle (another DICOM modality) - External facility - forwards the selected data to another medical facility



**Figure 40:** img

In the list, you can search for the desired medical facility and choose the type of exchange network ePACS, ReDiMed, or mDEX. The selected study can then be sent using the “Forward” action ➔. If you select the mDEX exchange network, you can choose whether to send the data normally or urgently (mDEX statim), data sent in this way will be prioritized for upload.

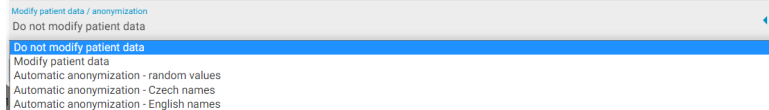
Individual medical facilities can be marked with a star icon and included as favorites. By checking the “Show favorites” box, you will subsequently filter out only marked medical facilities.

- User - saves the selected data to the currently logged in user’s account
- Station - saves the selected data on the currently used station (e.g. PC) and the selected data can be seen by all users using this station
- Text filter for easy search



- List of possible destinations - after selecting a specific destination to send data to, data can be sent with the action “Forward” →
- Modify patient data/anonymization - before forwarding, the selected data can be modified using

the drop-down bar function:



- Do not modify patient data - DICOM tags will not be changed during forwarding
- Modify patient data - manual editing of DICOM tags of selected data; the table will be

A screenshot of a form titled "Modify patient data / anonymization" with the sub-header "Modify patient data". The form contains several input fields: "First name", "Last name\*" (with "Test" entered), "Middle name", "Prefix", "Suffix", and "Patient ID\*" (with "1111" entered). A "CLOSE" button is located at the bottom right of the form.

extended by the following lines:

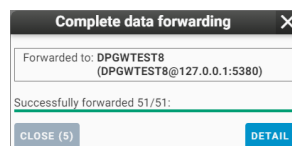
- Automatic anonymization - random values
- Automatic anonymization - Czech names
- Automatic anonymization - English names

By selecting the “Forward” action, the process of sending data to the chosen destination is started. The status of the upload process is displayed in the lower right corner of the screen:




**Figure 41:** img

After the forwarding process is completed, the system informs about the status of the result in the “Complete data forwarding” window:

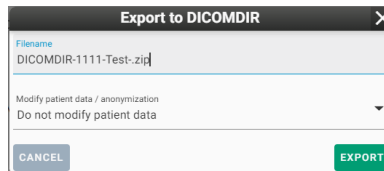


**Figure 42:** img

**3.2.5.1.5 Exporting to DICOMDIR** In the “Archives” window, the selected patients, studies or series can be saved into the local storage of the station in the set destination selected in the web browser

settings. This data is stored in the DICOMdir format, i.e. the folder of DICOM files compressed by the zip method. The action can be performed by using “Export to DICOMDIR” icon .

Clicking the icon opens “Export to DICOMDIR” table:



**Figure 43:** img


This table contains the following parameters: - Filename - text box for selecting the name of the saved .zip file - Modify patient data/anonymization - allows anonymization of patient data, similar to the “Forward” function described above

Selecting the “Export” button starts the downloading process. The status of the export process is displayed in the lower right corner of the screen:

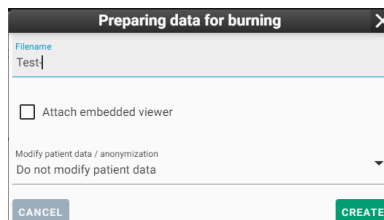


**Figure 44:** img

To enable file downloads, it is necessary to enable pop-ups in your web browser (Chrome, Firefox, etc.).

**3.2.5.1.6 Burn selected** In the “Archives” window, the selected patients, studies or series can be saved in the local storage of the station in the set destination selected in the web browser settings. This data is stored in ISO format, i.e. a CD image. The action can be performed by using “Burn” function .

Clicking the icon opens “Preparing data for burning” table:



**Figure 45:** img


This table contains the following parameters: - Filename - text field for selecting the name of the saved .ISO file - Attach embedded viewer - an executable DICOM viewer will be integrated into the ISO file for possible displaying of burned DICOM data - Modify patient data/anonymization - allows anonymization of patient data, similar to the “Forward” function described above

Selecting the “Create” button starts the downloading process. The status of the export process is displayed in the lower right corner of the screen:



**Figure 46:** img

Warning: To enable file downloads, it is necessary to enable pop-ups in your web browser (Chrome, Firefox, etc.).

**3.2.5.1.7 Exporting Images** In the “Archives” window, the selected patients, studies or series can be saved in the local storage of the station in the set destination selected in the web browser settings. This data is saved in the selected file format (JPG, PNG, TIFF) compressed by the zip method. The action can be performed by using the “Export images” function .

Clicking the icon opens “Export images” table:

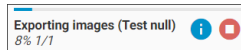
 A screenshot of a web dialog box titled "Export images" with a close button (X) in the top right corner. The dialog contains the following elements:
 

- A "Filename" field with the text "EXPORT-1111-Test.zip".
- A checkbox labeled "Print patient data to the images" which is currently unchecked.
- An "Export file format" dropdown menu set to "JPG".
- A "Modify patient data / anonymization" dropdown menu set to "Do not modify patient data".
- At the bottom, there are two buttons: "CANCEL" on the left and "EXPORT" on the right.

**Figure 47:** img

This table contains the following parameters: - Filename - text field for selecting the name of the saved .zip file - Print patient data to the images - adds OSD labels directly to the image - Export file format - option to select exporting to JPG, PNG and TIFF - Modify patient data / anonymization - allows anonymization of patient data, similar to the “Forward” function described above

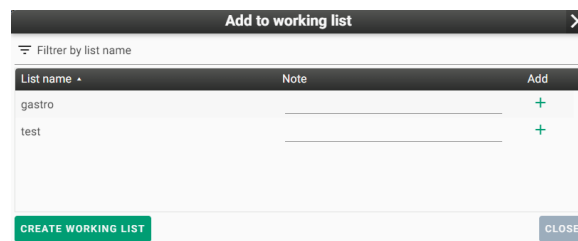
Selecting the “Export” button start the downloading process. The status of the export process is displayed in the lower right corner of the screen:



**Figure 48:** img

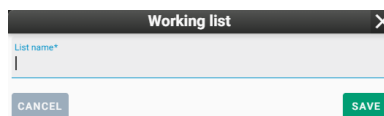
To enable file downloads, it is necessary to enable pop-ups in your web browser (Chrome, Firefox, etc.).

**3.2.5.1.8 Adding to Worklist** In the “Archives” window, you can add selected patients or studies to worklist using “Add to worklist” . Clicking this icon opens “Add to working list” table:



**Figure 49:** img

This table contains the following parameters: - Text filter to facilitate searching for created work lists which can be sorted in descending/ascending order - List of created worklists - List name - Note - the option to insert a note on the study shortcut added to the worklist - Add - adds a study shortcut to the selected worklist - Create working list - opens a table with the option to create a new worklist and name it:



**Figure 50:** img


- Cancel - cancels performed action

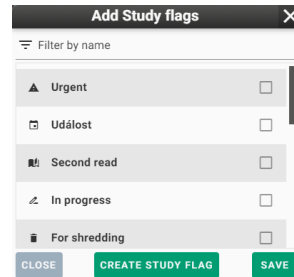
If the data shortcuts have been successfully added to the worklist, the system notifies you at the bottom of the screen:



**Figure 51:** img

For more information on using worklists, refer to the “Worklists” chapter.

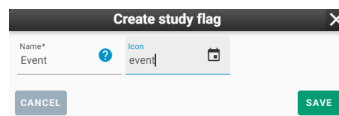
**3.2.5.1.9 Adding Study Flags** In the “Archives” window, you can assign flags to individual studies to add additional information. Clicking the “Add flags” icon , which brings up the following table:



**Figure 52:** img

This table contains the following parameters:

- Filter by name - text field for finding a specific flag name
- List of created flags with the option to select a specific one
- Close - cancels the current action
- Create study flag - creates a new flag with the possibility of naming it and assigning an icon to it (icons follow Google fonts and can be found here: <https://fonts.google.com/icons>, after entering their name, the selected icon will appear):




**Figure 53:** img

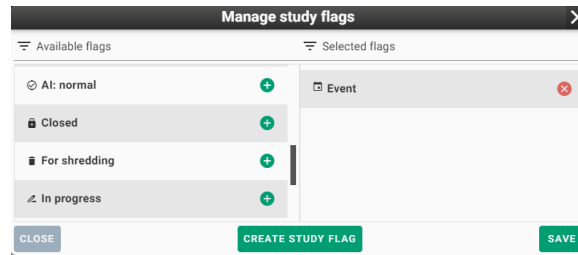
- Save - saves the selected flag for the study. If the flag was successfully added to the study, the system notifies you at the bottom of the screen:



**Figure 54:** img


Once saved, the individual flag icons will be visible in the search results window in the “Available Flags” column.

The flags assigned to the study can be managed using the “Manage Study Flags” function  located in the floating study panel. The opened table allows you to add and remove flags:



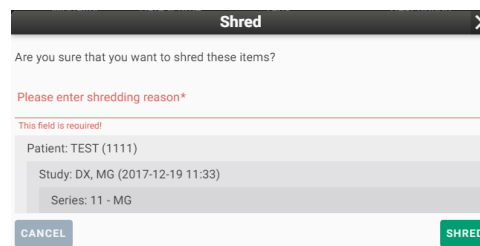
**Figure 55:** img

Individual flags can be managed in “Settings” of DPGW in the “Study Flags” tab. More detailed information on flag management is described in the “Settings” chapter.

**3.2.5.1.10 Shredding** In the “Archives” window, the selected data can be deleted using “Shred items” function .

Warning: This data will be irreversibly deleted from the archive, so use this action with caution.

Clicking the “Shred Items” icon opens “Shred” table with the following options:





**Figure 56:** img

- Shredding reason - Text field for entry of required data shredding reason
- Information about shredded data
- Cancel - cancels the performed action
- Shred - performs the action

Warning: For possible shredding of selected data, the user’s authorization based on his roles is required. If you do not see this option and it is needed, contact your administrator.
























**Figure 57:** img

**3.2.5.2 Floating Panel Actions** In the window of search results, it is possible to open a menu of floating panel actions for individual patients, studies, series and orders using the arrow for showing it  and hiding it .

Floating panel actions vary depending on selected data areas (patients, studies, series, and orders).

The individual functions of the floating panel are listed in the following table:

Icon	Function	Description
	View in Viewer	displaying of selected studies with replacing currently displayed (for more information, see chapter “Viewing Search Results”)
	Add and View in Viewer	displaying of selected studies with adding to already displayed (for more information, see chapter “Viewing Search Results”)
	Add to new tab	display of selected studies in a new DICOM browser tab (more information in the chapter “Displaying search results”)
	Detailed Information	opens a table with detailed information about selected data
	Select Patient for Digitalization	Selects patient’s initials and inserts them in the “Digitalization” window
	Edit Patient/Procedure	allows editing of patient’s information or editing information about procedure on order
	Edit Study/Order	allows editing of information about the selected study/order
	Forwarding data	forwarding selected studies to another DICOM node (for more information, see chapter “Forwarding Selected Data”)
	Export to DICOMDIR	exports selected images to DICOMDIR (for more information, see chapter “Export Selected to DICOMDIR”)
	Burn	prepares selected studies for burning in CD image format (for more information, see chapter “Data Burning”)

Icon	Function	Description
	Export Images	exports images to the selected format (for more information, see chapter “Exporting images”)
	Study Forwarding to External Network	allows sending selected studies using external networks (ePACS, ReDiMed, etc.)
	Patient Merge	merges two patients into one
	Move Study/Series	marks study/series for moving them to different patient/study (for more information, see chapter “Moving Series”)
	Move Images	marking for moving selected images to another patient/series
	Add to Worklist	adds selected studies to either existing worklist or allows to create a new one (for more information, see the chapter “Add to Worklist”)
	Add to Last Worklist	adds selected studies to last selected worklist (for more information, see chapter “Add to worklist”)
	Flags Management	adding and removing flags of selected study (for more information, see chapter “Adding Study Flags”)
	Add Last Flag	adds last selected flag to selected study (for more information, see chapter “Adding Study Flags”)
	Shred	deletes selected patient (for more information, see chapter “Shredding”)
	Shred instances	delete individual images



**Figure 58:** img



**3.2.5.2.1 Detailed Information** Clicking the “Detailed Information” icon opens a table with overview of detailed information of the selected data:

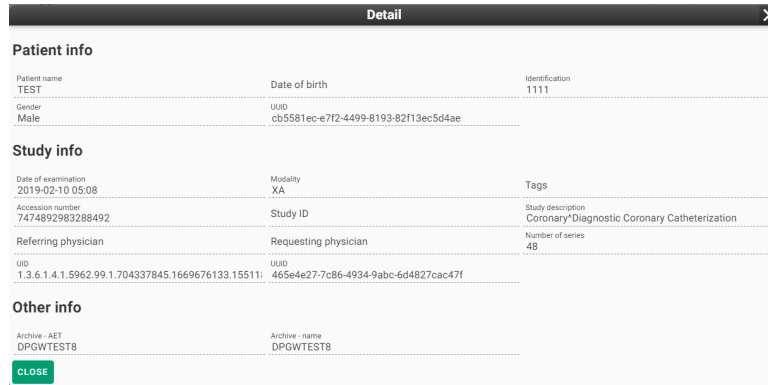


Figure 59: img

It has only informative function without the possibility of data modification.



Figure 60: img

**3.2.5.2.2 Edit Patient/Exam** DPGW allows you to edit patient demographics and exams on orders. This paragraph describes the procedure for editing the data of individual areas:

1. **Edit Patient**

Clicking the “Edit Patient” icon opens a “Patient” table with following data to be edited:

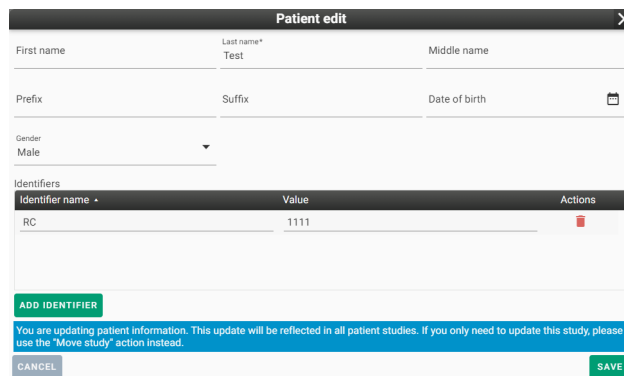


Figure 61: img

- Name

- Last name
- Middle name
- Academic title before
- Academic title after
- Date of birth - date of birth format in the form of YYYY-MM-DD, or the option to open a calendar (described in more detail in the section “Search criteria->Patient->Date of birth”)
- Gender - allows you to select the gender of the patient by selecting a parameter in the drop-down bar (described in more detail in the section “Search criteria->Patient->Gender”)
- Identifiers - a list of added identifiers and the possibility of removing them
- Add identifier - creating of new patient identifiers (in this case birth number with value 1111)
- Cancel - cancels the performed action
- Save - saves the modified patient data and if the modification was successfully saved, the system notifies you at the bottom of the screen:

Patient has been successfully edited ✕

**Figure 62:** img

## 2. Edit Procedure

This action is located in the floating panel of the selected procedure.

Clicking the “Edit Procedure” icon opens a “Procedure” table with following data to be edited:

Procedure		
Procedure ID* AC8020.1	Queue COS_62	Status Active
Phys. examination code PROC-001	System Medoro	Start 2021-04-05 16:00
End		
Examination text Gastro	Description Gastro	
<input type="button" value="CANCEL"/>		<input type="button" value="SAVE"/>

**Figure 63:** img

- Procedure ID - procedure designation
- Queue - the name of the workplace performing the procedure
- Status - indicates whether the patient has already undergone the procedure or not. This can be changed in the drop-down menu with the values Active/ Completed:

Status
Active
Active
Completed

**Figure 64:** img

- Examination code - designation of the examination performed
- System - the system in which the order was created
- Start - the format of the examination commencement in the form of YYYY-MM-DD, or the option to open a calendar (described in more detail in the section “Search criteria->Patient->Date of birth”)
- End - the format of the examination completion date in the form of YYYY-MM-DD, or the option to open a calendar (described in more detail in the section “Search criteria->Patient->Date of birth”)
- Examination Text - the name of the performed procedure
- Description - the reasoned description of the required procedure
- Cancel - cancels the performed action
- Save - saves the modified exams



**Figure 65:** img

**3.2.5.2.3 Edit Study/Order** DPGW allows you to edit study data and orders. This paragraph describes the procedure for editing the data of individual areas:

1. Edit Study

Clicking the “Edit Study” icon opens a “Study” table containing the data to be edited:

Study		
Study ID	Accession number 7474892983288492	Description Coronary*Diagnostic Coronary Catheterization
Referring physician	Requesting physician	Date of examination 2019-02-10
Study time 05:08:44		
CANCEL		SAVE

**Figure 66:** img

- Study ID - study designation
- Accession number - the designation of the order on the basis of which the procedure was performed
- Description - name of the performed procedure
- Referring physician - the doctor performing the examination
- Requesting physician - the doctor creating the request for the examination
- Date of examination - examination date format in the form of YYYY-MM-DD, or the option to open a calendar (described in more detail in the section “Search criteria->Patient->Date of birth”)

- Study time - examination time format in the form HH-MM-SS
- Cancel - cancels the performed action
- Save - saves the modified study, if the modification was successfully saved, the system notifies you at the bottom of the screen:

Study has been successfully edited

Figure 67: img

2. Edit Order

Clicking the “Edit Order” icon opens a “Order” table containing the data to be edited:

The screenshot shows a form titled "Order" with the following fields:

- Order ID\*: ACB025
- External ID: ACB025
- DAC group: (empty)
- Priority: Routine (dropdown menu)
- Status: Active (dropdown menu)
- Department: (empty)
- Referring physician: (empty)
- Requesting department: (empty)
- Requesting physician: (empty)
- Weight: (empty)
- Height: (empty)
- Age: (empty)
- Unit: (dropdown menu)
- Description: Gastro

Buttons: CANCEL, SAVE

Figure 68: img

- Order ID - the designation of the order on the basis of which the examination was performed
- External ID - the identification of the order made by the external SW that sent the request (RIS)
- DAC group - the item used for data access control purposes
- Priority - the option to select the urgency of the examination request by selecting the priority in the drop-down menu:

The screenshot shows a dropdown menu for "Priority" with the following options:

- Routine
- Statim
- Routine (highlighted)
- Referring physician

Figure 69: img

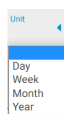
- Status - indicates whether the patient has already undergone the examination or not. This can be changed in the drop-down menu with the values of Active/Completed:

The screenshot shows a dropdown menu for "Status" with the following options:

- Active
- Active (highlighted)
- Completed

Figure 70: img

- Department - the designation of the department in which the patient is hospitalized
- Referring physician - the doctor performing the examination
- Requesting department - the designation of the department of the doctor creating the order for the examination
- Requesting physician - the doctor creating the order for the examination
- Weight
- Height
- Age - the ability to specify a unit of time in the case of a patient who has not reached 1 year of age in the drop-down menu:



**Figure 71:** img

- Description - the name of the performed procedure
- Cancel - cancels the performed action
- Save - saves the modified order



**Figure 72:** img

**3.2.5.2.4 Study Forwarding to External Network** This table contains audit records of the patient’s referral to another medical facility through the external network.

Study forwarding to external network							
Created	Destination name	Login name	User name	Station name	Network	Domain	Forwarded
2022-07-25 11:30	nemocnice			172.16.23.61	ePACS	Nemocnice	545/545

**Figure 73:** img




**Figure 74:** img

### 3.2.5.2.5 Patient Merge


This function is used to merge two patients into one.


This action can be performed in the searched data window in the “Search Patients” area.

The implementation of the action process: 1. Mark the patient whose demographic data you want to keep by using the floating panel “Patient Merge” . When the patient is selected, the system notifies you at the bottom of the screen:

Patient selected. Now you can select other patients to merge with this patient. 


**Figure 75:** img


After selecting a patient to merge, a new icon will appear in the “Patient Merge” search toolbar  with the number of selected patients 1.

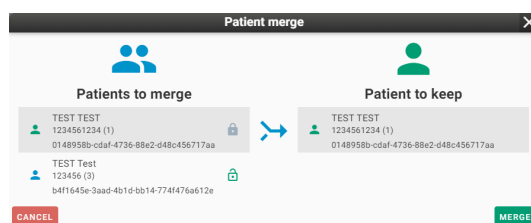
2. Mark the patient to be merged into the first patient by clicking “Patient Merge”  on the floating panel. If the patient has been selected, the system notifies you at the bottom of the screen:

Patient for merge was selected. You can select another patient. 

**Figure 76:** img

After selecting a patient to merge, a new icon will appear in the “Patient Merge” search toolbar  with the number of selected patients 2.

3. If you want to merge more patients into the first, proceed as in point 2. The toolbar icon will change depending on the number of patients selected.
4. To merge, click the “Patient Merge”  in search toolbar to open a table of patient merge options:



**Figure 77:** img

The Patient Merge table offers the option to swap patients using this function .

To perform the action, press MERGE or to cancel the action, press CANCEL.

If the patients are successfully merged, the system notifies you at the bottom of the screen:

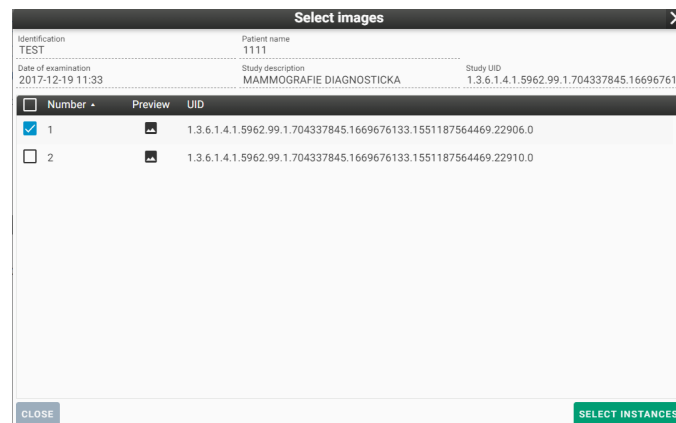
Patient merged successfully. x

**Figure 78:** img



**Figure 79:** img

**3.2.5.2.6 Move instances** The function serving the purpose of selecting specific images in the “Study” filter area in the “Archives” window, and moving these images into the selected series. Clicking the “Move instances” opens “Select images” table.



**Figure 80:** img

In this table, you can use the checkboxes  /  to select specific images and then confirm their selection by clicking “Select Instances”.

If the images are successfully selected, the system notifies you at the bottom of the screen:

Study has been successfully selected. Please select target series. x

**Figure 81:** img

Using this function adds the “Delete selected data” to the toolbar. Click this icon to cancel the action.

To insert selected images into another series, use the “Insert selected images” on the floating panel. To confirm the action, it is necessary to agree to the change of DICOM series tags by clicking “Save” in the table “Edit tags” to move images:

VR	Name	Pattern Image	Original Image	Result
SH	AccessionNumber	7474892983288492	7474892983288492	7474892983288492
<input checked="" type="checkbox"/>	LO	AcquisitionDeviceProcessingDescription	UNIQUE: S:200 L:4.0 SCL d:1.2 g:3 sb:3 eq:-0.3 nr:0 dc:3.9 ba...	UNIQUE: S:200 L:4.0 SCL d:1.2 g:3 sb:3 eq:-0.3 nr:0 dc:3.9 ba...
<input checked="" type="checkbox"/>	LO	AnatomicRegionSequence[1]/CodeMeaning	Wrist	
<input checked="" type="checkbox"/>	AS	PatientAge		
DA	PatientBirthDate			
TM	PatientBirthTime			
LO	PatientID	1111	1111	1111
PN	PatientName	Test	Test	Test
CS	PatientSex	M	M	M
<input checked="" type="checkbox"/>	LO	SeriesDescription	BEDERNI PATER	BEDERNI PATER
UI	SeriesInstanceUID	1.3.6.1.4.1.5962.99.1.704337845.1669676133.1551187564469.22940.0	1.3.6.1.4.1.5962.99.1.704337845.1669676133.1551187564469.22908.0	1.3.6.1.4.1.5962.99.1.704337845.1669676133.1551187564469.22940.0
<input checked="" type="checkbox"/>	LO	StudyDescription	BEDERNI PATER	MAMMOGRAFIE DIAGNOSTICKA

Figure 82: img

If the images are successfully moved, the system notifies you at the bottom of the screen:



Figure 83: img



Figure 84: img

### 3.2.5.2.7 Shred instances

The function for deleting individual images.

Clicking the “Shred instances” icon on floating panel opens a table for selecting individual images:

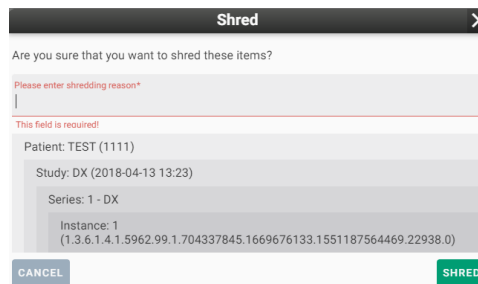
Number	Preview	UID
<input checked="" type="checkbox"/> 1		1.3.6.1.4.1.5962.99.1.704337845.1669676133.1551187564469.22938.0
<input type="checkbox"/> 1		1.3.6.1.4.1.5962.99.1.704337845.1669676133.1551187564469.22906.0
<input type="checkbox"/> 2		1.3.6.1.4.1.5962.99.1.704337845.1669676133.1551187564469.22941.0
<input type="checkbox"/> 3		1.3.6.1.4.1.5962.99.1.704337845.1669676133.1551187564469.22912.0
<input type="checkbox"/> 4		1.3.6.1.4.1.5962.99.1.704337845.1669676133.1551187564469.22914.0

Figure 85: img

In this table, you can use checkboxes /  check boxes to select specific instances and then confirm their shredding by clicking “Shred Instances”.



To confirm the action, you will be asked to enter the reason for shredding:



**Figure 86:** img

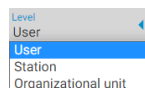
Warning: This data will be irreversibly deleted from the archive, so use this action with caution.

Warning: For possible shredding of selected data, the user's authorization is required based on his role. If you do not have this option available and it is desirable, contact your administrator.

### 3.3 Recent Viewed

The "Recent Viewed" tab **RECENT VIEWED** is used for displaying recently viewed studies in a viewer window.

It is possible to select a level filter of User/Station/Organizational Unit that affects whom the studies were displayed by:






**Figure 87:** img

- User - displays recently viewed studies only from the user that is logged in
- Station - displays recent studies displayed on the workstation
- Organizational unit - displays recently viewed studies of the entire organizational unit

Working with these studies is then similar to working in the "Archives" tab, i.e. using the "Search toolbar" and "Floating panel actions" whose functions are described above in this user manual.

### 3.4 Local data - station / user

DPGW allows you to forward data to a specified organizational unit, i.e. to a specific user or station. To forward, use the "Forward selected" function  in the "Search toolbar", or "Floating panel actions" . The opened "Forward data" table contains several tabs. Select the bookmark **FORWARD TO USER** to forward

data to the user , or select the bookmark **FORWARD TO STATION** to forward the data to the station. When you select the required tab, you can then search and browse existing users and stations. Use the “Forward” button to forward to the found destination . The forwarded data is stored in the organizational unit folder of the user/station located on the server with installed DPGW, so the user does not download the data directly to the used workstation. Access to the forwarded data thus depends on the selected organizational unit:

### 3.4.1 User

To access the data forwarded to the user, use the “User” tab **USER**.

The “User” tab is a private DICOM box for user data. The user can import data into this box, for example from a CD/DVD, or another user can forward it to him there or he can forward the data himself. The data in this box is visible only to the given user and is thus available at any station where the user logs in.

### 3.4.2 Station


Use the “Station” tab **STATION** to access data forwarded to the station.




The “Station” tab is a private box for DICOM data. The same rules apply to it as for the user’s box. The stored data belongs only to the station and can therefore be seen by any user who logs on to the given station. Conversely, the user will not see this data on another station.

### 3.4.3 Work with local data




Working with local data, whether by selecting the “User” or “Station” tab is similar to the “Archives” tab. The work is performed on data separated from the PACS archive, so it does not have a direct impact on the data already stored in the production archive. To work with local data, use the functions located in the “Toolbar” or “Floating panel actions”.

- Tool bar:


Icon	Function	Description
	Refresh	reloading of local data window

Icon	Function	Description
	Replace and View	displays selected studies with replacing already displayed (alternated by double-clicking on the line of the given study)
	Add a View	displays selected studies in addition to already displayed
	Delete	deletes selected studies or series from the local data tab

- Floating panel action:

Icon	Function	Description
	Edit patient	allows editing of patient demographic data
	Data forwarding	forwards selected studies to another DICOM node (for more information, see the “Forward selected” chapter)
	Delete	deletes selected studies or series from the local data tab

## 4 Working lists

The tab “Working lists”  allows the user to manually or automatically create work (visitation) lists. Each user / group of users can create any number of working lists that they can share with each other. Individual examinations can be added to the working list simply from the search dialog or directly from the DICOM browser. DPGW can automatically create and fill in working lists based on defined rules when saving examinations from modality, or when receiving an HL7 message from NIS. This setting must be made by the system administrator.

To add a study from the archives tab to the working list, follow the chapter User interface basics-> Search in archives-> Actions with retrieved data-> Actions of the search toolbar->**Add to worklist**

The tab Working lists contains three main areas for working and the displaying archives and studies in them. These areas will be described in the following paragraphs:













- Working list toolbar
- Manage working lists
- Working list studies


## 4.1 Working list toolbar



**Figure 88:** img

Individual functions of the working list toolbar are listed in the following table:

Icon	Function	Description
	Reload	reloads working list
	Create Working List	creates new working list
	Change Working list Order	allows change of order of studies in a working list
	Open All Items	displays individual studies by expanding patients information in “Studies in working list”
	Mark All	marks all results in “Studies in working list” for processing more of them at once
	Deselect All	deselects all from the previous option
	Replace and View	displays selected studies with replacing of already displayed (double-clicking on the line of the given study also works)
	Add and View	displays selected studies with adding them to already displayed
	Add all and View	displays all studies in a working list with adding them to already displayed
	View patients in tabs	display of all marked studies in the search dialog in individual DICOM viewer tabs
	Replace, View and Delete	displays selected studies with replacing already displayed and removing them from the working list at the same time
	Delete	deletes selected patients off a working list

Icon	Function	Description
	Table Columns Configuration	configures displayed columns in “Studies in a working list”



## 4.2 Management of working lists



Management of working lists is located in the left panel in the tab “Working List”. Already created working lists are displayed in this area and DPGW allows working with them.

To simplify work, worklists can be filtered by their name using the “Filter by list name” text field:



**Figure 89:** img

Working lists can be sorted alphabetically by clicking on the “List Name” line in descending order , or in ascending order .

After creating worklists using the “Create working list” function , the names of these lists appear in the “List name” column in this area. The “Actions” column  allows you to work with lists and contains the following functions:

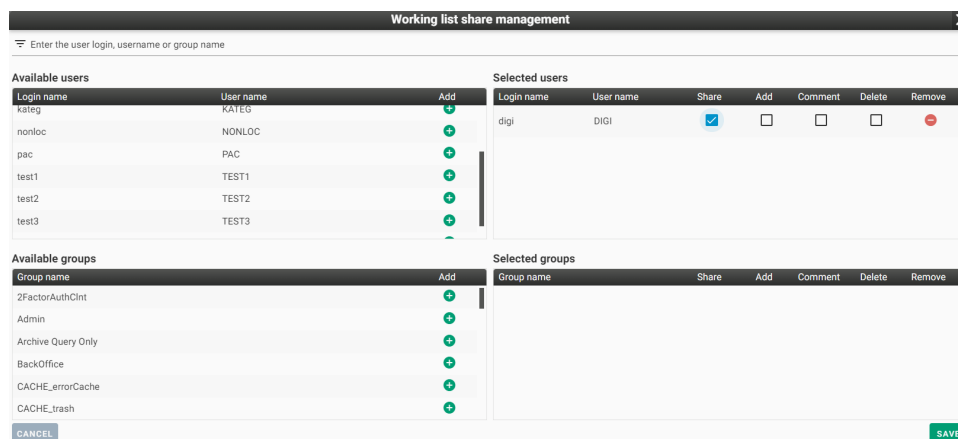
### 4.2.1 Share



**Figure 90:** img


This feature allows the user to share individual working lists with other users or groups of users created in the system DPGW.

“Working list share management” table can be opened by using the “Share” function:




**Figure 91:** img

In the table header, the available users and user groups can be filtered using the text box . The search result is applied to both areas at the same time.

To share with a specific available user or group, it is necessary to move the user/group to the area of selected by using action “Add” . After successful addition, the user or group will be displayed in the “Selected users / Selected groups” area.

Shared users/groups can be given permissions for working with shared worklists using the check boxes  /  in the columns of “Selected users / Selected groups”, containing following functions:

- Share - allows selected user / group to view the created working list
- Add - allows the selected user / group to add studies to the created working list
- Comment - allows the selected user / group to add comments to studies in the created working list
- Delete - allows the selected user / group to delete studies in the created working list
- Remove  - removes a user / group from the “Selected users / Selected groups” area

After finishing work in the table “Working list share management”, “CANCEL” can be used to cancel the performed action, or “SAVE” to save the performed action.

If worklists have been successfully shared with users / groups, the system will notify you with the following bar at the bottom of the screen:

Users with access to working list was successfully updated. 

**Figure 92:** img

### 4.2.2 Edit



**Figure 93:** img

The “Edit” function allows the user to change the name of the created working list. Selecting the “Edit” action brings up the “Working list” table:

A dialog box titled "Working list" with a close button (X) in the top right corner. It contains a text input field labeled "List name" with the text "test" entered. Below the input field are two buttons: "CANCEL" and "SAVE".

**Figure 94:** img

The table contains a text box for editing the name of the worklist, the “CANCEL” button - cancels the performed action or “SAVE” button - saves the performed action.

### 4.2.3 Remove



**Figure 95:** img

The function “Remove” allows to delete created working list. Selecting “Remove” action brings up “Question” table:

A dialog box titled "Question" with a close button (X) in the top right corner. It contains the text "Are you sure to delete working list 'test?'". Below the text are two buttons: "NO" and "YES".

**Figure 96:** img

The table contains buttons: “NO” - cancels performed action and “YES” - deletes selected working list.


### 4.3 Working list studies

Full name	Identification	Date of birth	Added	Note	Accession number	Modality	Date of examination	Source AET
TEST Dicom	1234567890	1957-04-15	2021-04-21 08:50			XC	2021-04-19	DPGWTEST8
TEST Dicom	1234567890	1957-04-15	2021-04-21 08:50			SR, XC	2021-04-19	DPGWTEST8
TEST Dicom	1234567890	1957-04-15	2021-04-21 08:51			XC	2021-04-19	DPGWTEST8
ANONYMI Anonym	1111	1953-05-16	2022-07-22 09:40		182-185	CT, SR	2015-12-07	DPGWTEST8
TEST	1111		2022-08-04 13:49		7474892983288492	XA	2019-02-10	DPGWTEST8

Figure 97: img

The “Working list study” area contains individual studies of created working list. To view the studies, it is necessary to select a specific worklist in the left panel “Manage working lists”. The name of the worklist (in this case TEST) is displayed in the header of this area and it is possible to work with it further.

#### 4.3.1 Table columns configuration

Results can be sorted according to value column which can be set by using function “Table columns configuration” . After opening the table it is possible to set displaying of individual columns using the check boxes. The “Save” button then saves required columns.

**Table columns configuration** ✕

<input checked="" type="checkbox"/> Full name	<input checked="" type="checkbox"/> Identification	<input checked="" type="checkbox"/> Date of birth
<input checked="" type="checkbox"/> Added	<input checked="" type="checkbox"/> Note	<input checked="" type="checkbox"/> Accession number
<input checked="" type="checkbox"/> Modality	<input checked="" type="checkbox"/> Date of examination	<input checked="" type="checkbox"/> Source AET
<input checked="" type="checkbox"/> Referring physician	<input checked="" type="checkbox"/> Description	

SAVE

Figure 98: img


After selecting specific working list, it is possible to sort results in descending/ascending order  by clicking on the value of the required column.



Figure 99: img


To specify the searched parameters, it is possible to use text fields by the individual column values:

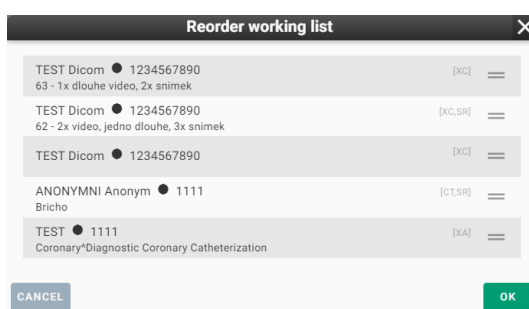




**Figure 100:** img

### 4.3.2 Change working list priority

The “Change working list priority” function  located in “Worklist toolbar” allows user to change the order of patients added to a specific working list in the “Working list study” area. Selecting the action will bring up the “Change worklist order” table.



**Figure 101:** img

The change of order of selected patient is then performed by the drag&drop style, i.e. by dragging to the selected position.



The button “CANCEL” - cancels performed action and “OK” - saves order of patients into a working list.

This function is active in case of adding more patients into a working list.

### 4.3.3 Floating panel action









**Figure 102:** img

In the “Working list study” area, a menu for individual patients can be opened by the action of floating panel, using the arrow for opening  and then hiding  the menu.


Warning: The floating panel action expands when you add a note.

Individual functions of the floating panel are following:

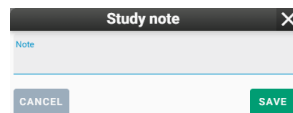
Icon	Function	Description
	Add note	adds note to a selected patient in a working list
	Edit note	allows to edit added note
	Remove note	removes added note
	Replace and open	displays selected studies with replacing of already displayed ones (more information in chapter “Displaying of search results”)
	Replace, open and delete	displays selected studies with replacing of already displayed ones and deleting them from the working list
	Delete	removes selected patients from a working list

#### 4.3.4 Note action

DPGW allows user to add notes to individual patients and work with them in a specific worklist in the range of Add, Edit and Delete:

- Add note 

Choosing the function opens the “Study note” table:




**Figure 103:** img

The table contains text box for inserting a note and the “CANCEL” button - cancels the performed action or “SAVE” - saves the performed action.

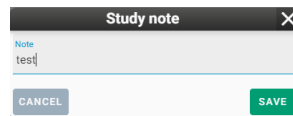
In case that a note is successfully inserted, the system notifies about this with the following bar at the bottom of the screen:



**Figure 104:** img

- Edit note 

Choosing the function opens the “Study note” table with already filled-in test note for modification:

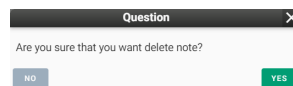


**Figure 105:** img

The table contains text box for modification of the note, the “CANCEL” button - cancels the performed action or “SAVE” - saves the performed action.

- Remove note 

Choosing the function opens “Question” table:



**Figure 106:** img


The table contains buttons “NO” - cancels the performed action and “YES” - deletes the note.

In case that the note is successfully deleted, the system notifies about this with the following bar at the bottom of the screen:



**Figure 107:** img

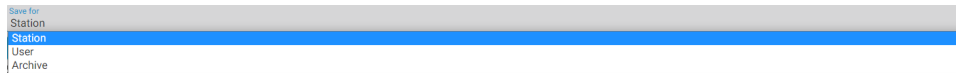
## 5 DICOM data import

DICOM data import tab  allows the user to upload DICOM files to system logical drives. Folders and .dcm or .zip files located in local storage or on removable media (flash drive, CD / DVD) can also be imported.

Warning: Follow your IT administrator’s security instructions when importing data from removable media.

## 5.1 Destination selection

The destination selection for data entry is located in the header of the “Import DICOM” folder and contains the following system logical units:



**Figure 108:** img

- User - imports data for currently logged-in user into “User” folder
- Station - imports data on currently used station (PC) into “Station” folder. The data can be used by all users using this station
- Archive - imports data directly into PACS archive DPGW

## 5.2 Data input

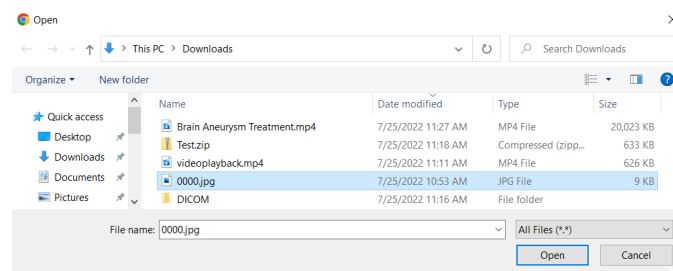
Only folders and files of the .dcm or .zip type can be imported from the local storage or removable media inserted into the workstation. To enter data, use one of the following options:

### 5.2.1 Choose files



**Figure 109:** img

Selecting the “Choose files” options opens a table with local files:

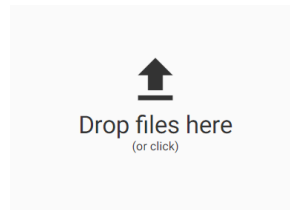


**Figure 110:** img

In this table, select the file you want to import. To select multiple files, use the ctrl or shift keyboard shortcuts in this table with the left mouse button or keyboard arrows. Only .dcm and .zip files can be imported.

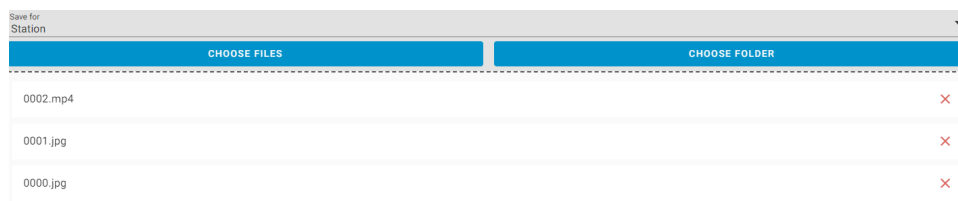
After choosing the required files, insert them with the “Open” action, or use “Cancel” to cancel the action.

Files can also be inserted by clicking or using drag & drop style, i.e. by dragging them to the “Drop files here” area:



**Figure 111:** img

The inserted files appear in the list and other ones can be added as described above:



**Figure 112:** img

Use the cross icon on the right of the file name to remove files from the list.

Import of inserted files into chosen destination can be done by clicking the “Import” button.



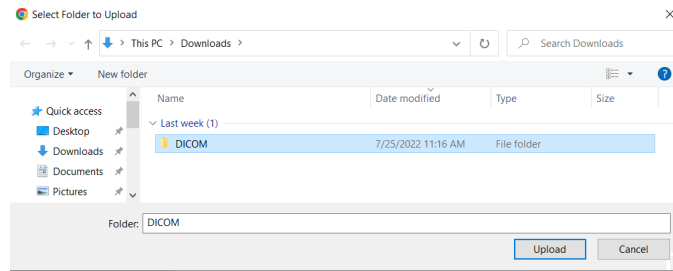
**Figure 113:** img

### 5.2.2 Choose folder



**Figure 114:** img

Clicking the “Select folder” button opens a table with local folders:



**Figure 115:** img

In this table, choose the folder you want to import and choose the “Upload” action to insert the data into the list for import. The import list will then contain all the files from the selected folder:



**Figure 116:** img

Use the cross icon on the right of the file name to remove files from the list.

Import of inserted files into the selected destination can be done by clicking the “Import” button:



**Figure 117:** img

### 5.3 Viewing progress and results of import

After clicking the “Import” button, you will be informed about the status of the import process.

1. Information about the status of upload to the browser cache with the display of a progress bar for each file in the list of inserted data:



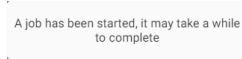
**Figure 118:** img

And the overall progress of all files:



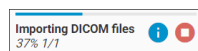
**Figure 119:** img

- Information about the status of upload to selected system destination in DPGW. Information about the start of the import operation is displayed in the middle of the screen:



**Figure 120:** img

In the lower right hand corner, you will simultaneously be informed about the status of the data import:



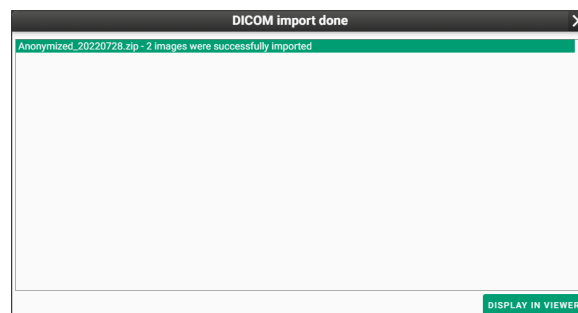
**Figure 121:** img

- action can be used to display more information about the import status. • action can be used to cancel the import.

The data import time varies depending on the volume of the imported data.

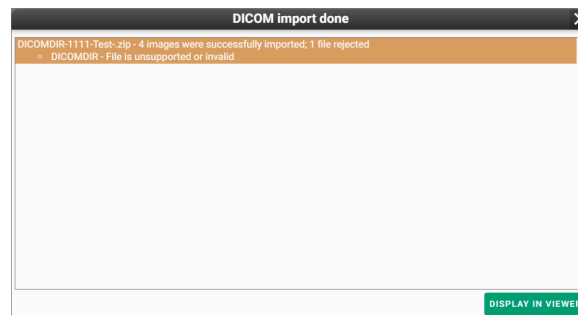
- After the data import is completed, you will be informed of the result by the table “Import of DICOM files has been completed”. These results may vary depending on the imported data, and one of the following may occur:

- Data imported successfully - This option reports that the data import was successful:



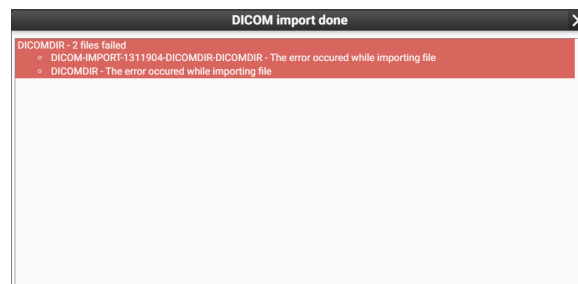
**Figure 122:** img

- Data partially imported - This option reports that the data import was successful only for valid files, the rest ended in error:



**Figure 123:** img

- Data not imported - This option reports that the data could not be imported and all data ended in error:




**Figure 124:** img

When exporting data to the DICOMDIR file folder, a compressed .zip folder is created and it contains a DICOMDIR file and a subfolder with individual images, i.e. .dcm files. In this case, a separate DICOMDIR file was imported but ended in error due to the fact that this file is only a representative of the study and does not contain data for possible import (individual slides).

Successfully imported data can be opened directly from the table of import results using “Display in viewer” button. This function is similar to the “Replace and view” function described in the chapter “Displaying search results”.

## 6 Digitalization and conversion of data into DICOM format

### 6.1 Digitalization tab

“Digitalization” tab  contains an interface for digitizing and dicomization of images and videos from the grab card, or local folders with support for categorization and loading of the Modality Worklist. This tab contains several main areas for uploading data:



1. Select digi station
2. Adding the patient and adding information to the procedure
3. Dicomization/digitization of data and its modification
4. Working record set
5. Saving and deleting of uploaded data

These areas are described in the following paragraphs:

## 6.2 Select digi station

If multiple digitizing stations are connected to the DPGW system, the user is allowed to select required digitizing station.








Name -	Host	Connecte d	Free	Used by user	Actions
Advantech	10.20.0.228	✗	✓		■
Advantech 4k test	10.20.0.229	✗	✓		■
Axiomtek	10.20.0.166	✗	✓		■
ODS_65	10.20.0.65	✗	✓		■
Digi composite	10.20.0.150	✗	✓		■
Gastroenterology_56	10.20.0.56	✗	✓		■
Havirov Test	10.20.0.155	✗	✓		■
Orthopedics_62	10.20.0.62	✓	✓		■
Urology_63	10.20.0.63	✓	✓		■
2setup	10.20.0.153	✓	✓		■

**Figure 125:** img

“Reload” action  updates the list of digitization stations connected to the DPGW system.

Action “Continue without digitization”  skips selecting a digitizing station.

The list of digitization stations includes:

- Name - the name of the digitizing station
- Host - IP address where the digitizing station is located
- Connected - information about the availability status of the digitizing station, information  indicates the availability of the digitization station, information  indicates the unavailability of the digitizing station
- Free - information status about using the digitizing station, information  means that the digitization station is not used by another user, information  means that the digitizing station is used by another user
- Used by user - if the digitizing station is already used by another user, the name of the user is indicated here
- Action - by clicking the “Select” action  choose the selected digitization station for work (you can replace this action by double-clicking the selected line of the digitization station)

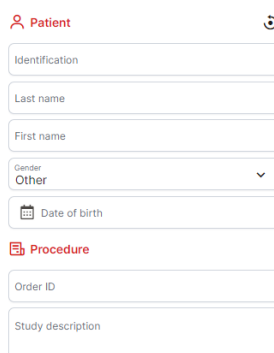
## 6.3 Adding the patient and adding information to the procedure

Patient demographics can be entered manually or by selecting from the worklist.

Warning: It is very important to enter patient data with 100% accuracy! With an incorrect birth number, surname, and first name, it is possible to accidentally duplicate one patient with different data. Therefore, the images then do not pair up.


### 6.3.1 Manual entry

To manually enter patient's demographic data, click the "Manual" tab Manual. Selecting this tab will allow you to enter data using the text boxes:





The screenshot shows a form with two main sections: "Patient" and "Procedure". The "Patient" section includes fields for Identification, Last name, First name, Gender (with a dropdown menu showing "Other"), and Date of birth (with a calendar icon). The "Procedure" section includes fields for Order ID and Study description.

**Figure 126:** img


- Identification - allows entering the patient's birth number - this field is required
- Last name - allows entering the patient's last name - this field is required
- First name - allows entering the patient's name
- Gender - allows entering the patient's gender. The drop-down menu is used to select it
- Date of birth - allows entering the patient's date of birth by entering it in the format YYYY-MM-DD. To make the search easier, this field includes a calendar function , located to the right of the field. Once opened, you can search the calendar or select today's date
- Order ID - allows entering the order number on which the examination was performed
- Study description - allows entering the name of the study

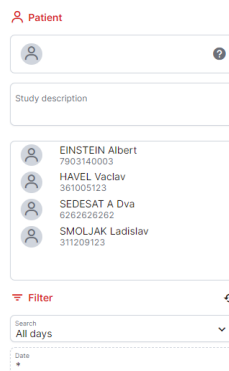
Whispering can be used to fill text into text fields, i.e. it automatically completes text when typing in the text field.

To delete text in text fields, you can use the delete function  located in the field, to the right of the entered text.

For automatic completion of manual entry fields, it is possible to use the actions in the “Archives” dialog, “Floating panel actions” and select the “Select patient for digitization” action for the selected patient , after saving the digitization records, a new study will be created for this patient with the record saved in the PACS archive.

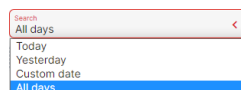
### 6.3.2 Worklist

The second option is to select the patient from the worklist . It includes patients who are pre-registered, booked or waiting for an examination. The image below shows the patients waiting for the examination from the worklist. Click the patient on the list to select them.





**Figure 127:** img

The worklist can be filtered by time period using the scrolling menu in the “Search” section:

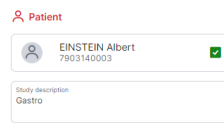


**Figure 128:** img

If you select “Custom date”, you can enter a specific day in the “Date” field or select it using the calendar .

The list of patients in the worklist can be updated using with the “Reload” button .

Select the patient from the worklist, which will move to the “Patient” field, including filling in the “Study description” field:



**Figure 129:** img

With this action, a patient will be selected for digitization or dicomization.


Warning: Carefully select the demographic data of the patient from the worklist section, to avoid possible substitution of the patient. If you have selected a patient other than the one you want in the worklist section, you can click on another patient from the worklist to make a change. If you have selected a patient from the worklist and it is necessary to enter the patient manually, click on the “Manual” tab and enter the patient data, the data will be applied according to the active tab.

## 6.4 Dicomization/digitization of data and its modification

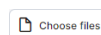
This area allows the import of nonDICOM data and its modification with subsequent conversion to DICOM format. The options for each category is described below:

Warning: The individual categories of dicomization/digitization may differ depending on the selected digitization station, skipping the selection of digitization stations, or assigned user roles and the license used.

### 6.4.1 Dicomization

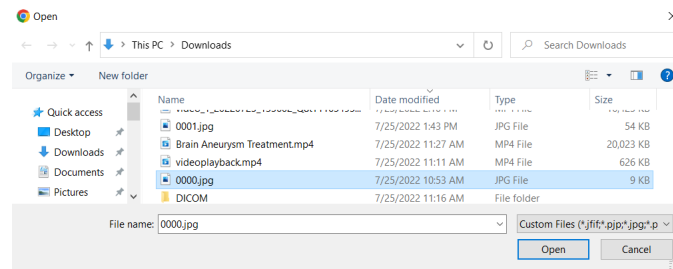
The category “DICOMIZATION”  is used for conversion of nonDICOM data into DICOM format and subsequent storage in the system of DPGW.

Only files and folders with files such as .jfif, .jpeg, .jpg, .jpp, .jpg, .m4v, .mp4, .pdf can be dicomized from the local storage or removable media inserted into the workstation. To enter data, use one of the following options:



**Figure 130:** img

**6.4.1.1 Choose file** Clicking the “Choose files” button opens a table with local files:

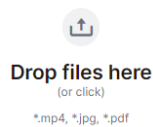


**Figure 131:** img

In this table, select the file you want to import. To select multiple files, use the ctrl or shift keyboard shortcuts with the left mouse button or keyboard arrows in this table. Only .jif, .jpeg, .jpg, .m4v, .mp4, .pdf files can be dicomized.

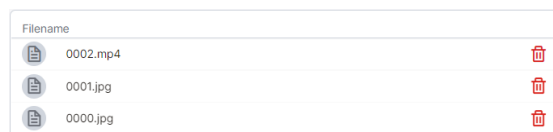
After selecting the required files, insert them using the “Open” button, or use “Cancel” to cancel the action.

Files can also be inserted by clicking or using drag & drop style, i.e. by dragging them to the “Drag files here” area:



**Figure 132:** img

The imported files then appear in a list and you can add more to them in above-mentioned way:



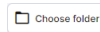
**Figure 133:** img

Use the “bin” action to the right of the file name to remove the file from the list.

Import the imported files into the “Working set” by selecting the “Import” action on the right under the list of selected files.

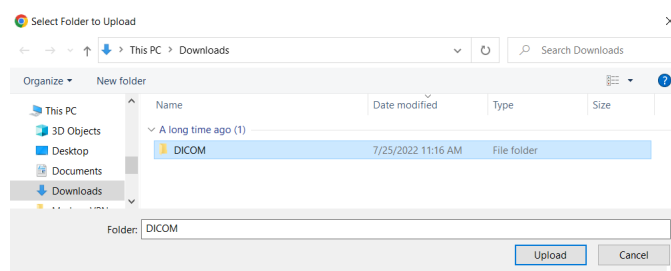


**Figure 134:** img



**Figure 135:** img

#### 6.4.1.2 Choose folder Clicking the “Select folder” action opens a table with local folders:



**Figure 136:** img

In this table, select the folder you want to dicomize and select the “Upload” action to put the data onto the dicomization list. The “Dicomization” category then contains all the files from the selected folder:

Filename	
0002.mp4	
0001.jpg	
0000.jpg	

**Figure 137:** img

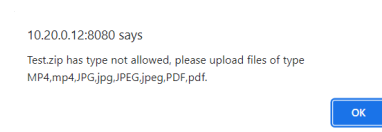
Use the “bin” action to the right of the file name to remove the file from the list.

Import the imported files into the “Working set” by selecting the “Import” action on the right under the list of selected files.



**Figure 138:** img

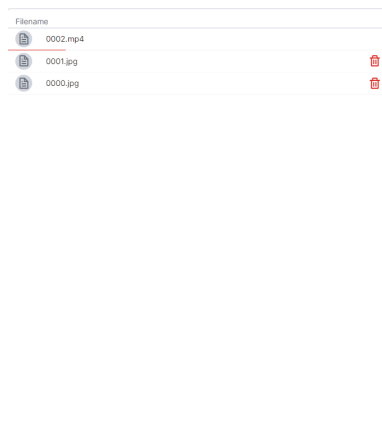
If you select files of any unsupported type, you will be notified by a web browser pop-up window and the files will not be added to the list for dicomization:



**Figure 139:** img

**6.4.1.3 Displaying the process and results of dicomization** After clicking the “Import” button, you will be notified about the status of the data upload process into the “Working set”.

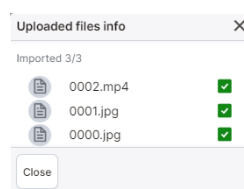
1. Information about the status of the data upload progress into the “Working set” with displaying the progress indicator for the individual files in the list of imported data:



**Figure 140:** img

The data import time varies depending on the size of the imported files.

2. After the data import is completed, you will be informed about the result by the “Uploaded files info” table:



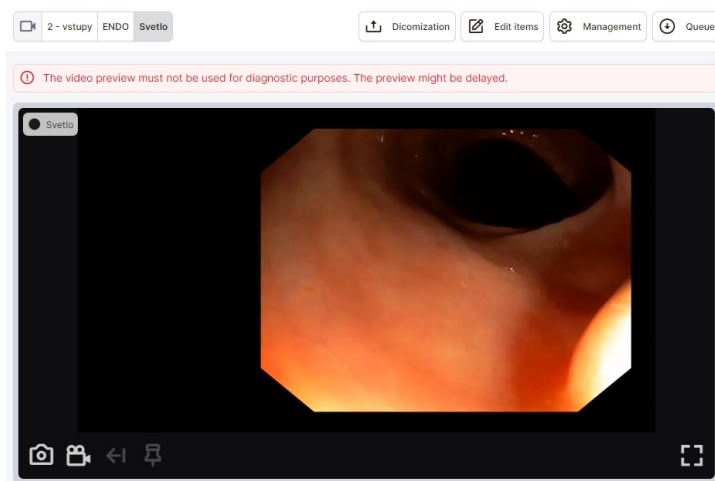
**Figure 141:** img

Shortcuts to the uploaded files will then appear in the “Working set” toolbar.

### 6.4.2 Digitization

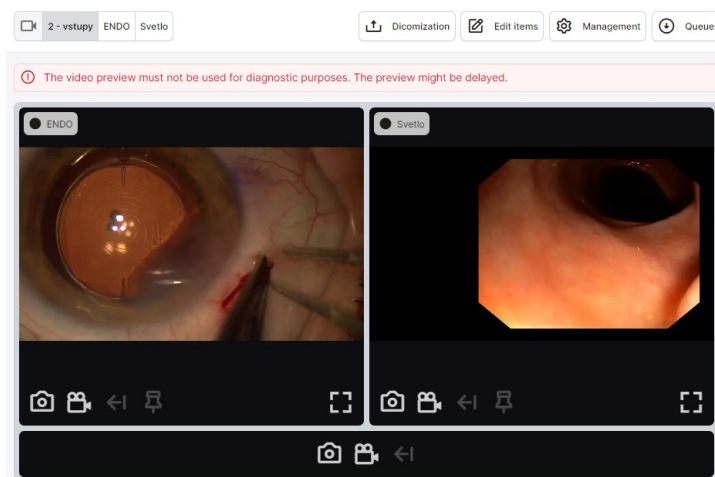
Digitization is used for conversion of analog data from examination modalities (e.g. endoscope) to DICOM format and subsequent storage in the DPGW system.

Warning: The video preview must not be used for diagnostic purposes. The preview might be delayed.




**Figure 142:** img






If the digitizing station contains multiple outputs, it is possible to display multiple inputs (previews):





**Figure 143:** img

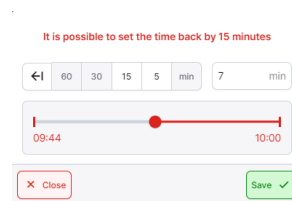
To capture a single image from the input of the digitizing station, select the action “Take snapshot” . The image will be captured in the “Working set”.



To capture video from the input of the digitizing station, select the “Start video recording” action . Video recording will be marked with an icon, the name of the recording modality and the time of the recorded video  in the upper left corner of the preview. After starting the video recording, the user is allowed to add  marks to the video to mark important parts (see more in the “Edit video” section) . The  mark action will change color to verify the marking of the video. To stop video recording, choose the action “Stop video recording” . The video will be captured in the “Working Set”.

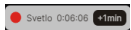
Action “Maximize video preview”  allows you to expand the window with a preview of the input from the digitization station.

Action “Timeshift”  allows the user to go back a period of time in the recorded video, using the displayed table:



**Figure 144:** img

When reverse recording is active, this information will be displayed next to the video recording icon:



Warning: The “Timeshift” action may vary depending on the configuration of the DPGW product.

Digitization control supports control directly from the camera head of the device or through the pedal control, touch monitor or tablet.

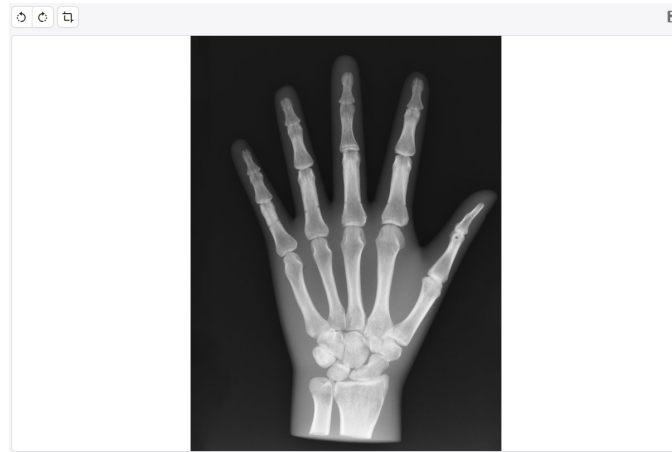
### 6.4.3 Edit items




**Figure 145:** img

The “Edit items” category allows the user to edit the uploaded data after selecting the specific record from the “Working set”. Data editing options vary depending on the type of record being edited, namely video, image, or pdf:

**6.4.3.1 Edit Image** By selecting an image from the “Working set” opens a preview of the selected image in the “Edit items” category with the following functions:



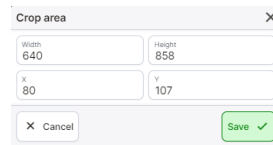
**Figure 146:** img

- Crop tool  - this tool is used to crop out a certain area in the image:



**Figure 147:** img

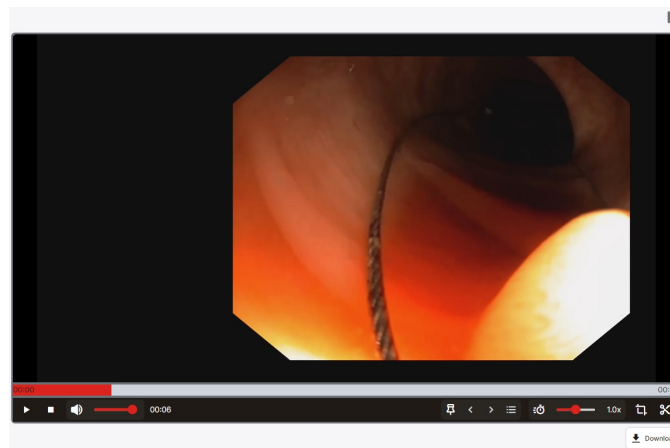
You can resize the crop area by dragging the red squares located in the upper left and lower right corners of the crop area. When you hover the mouse over the crop area, the numeric values for these squares represent their location in pixels, relative to the cropped image. A numeric value in the center of the crop area indicates the resolution size of the image after cropping. Click in the image to be edited by cropping to display the “Crop area” table for possible manual entry of crop values:



**Figure 148:** img

- Rotate 90° - the image will be rotated 90° clockwise or counterclockwise, depending on the selected rotation direction
- Download Original Edited - the image will be downloaded to the local storage of the PC, in case you select “Original” the image will be downloaded without modifications, in case you select ” Edited” the image will be downloaded with modifications, in .jpg format
- Save changes - this is an informative icon indicating the save status of the edit

**6.4.3.2 Edit video** Selecting a video from the “Working set” opens the video viewer with the following functions in the “Edit items” category:





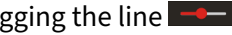


**Figure 149:** img

- “Timeline” - red bar which indicates the location in the selected video. Click or drag right/left to move in the timeline of the video. You can change the timeline scroll speed by dragging up/down:



**Figure 150:** img


- “Play” - the play function is used to play the video. The beginning of the video can be changed using the timeline.


- “Stop”  - the video stop function
- “Volume”  - the function for adjusting the volume of the playing video. You can change the volume by dragging the line 
- “Time stamp” - for example  indicates the current position on the timeline
- “Add mark”  - the function for adding a marker to the selected part on the timeline. Clicking the action adds the mark to the timeline as showed:

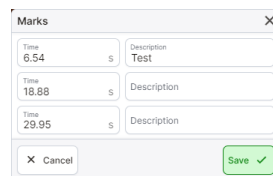


**Figure 151:** img

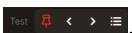
You can move between the markers with the left/right arrow .

To delete a selected mark, click it on the timeline. The original “Add mark” action will change to “Remove mark” . Clicking the icon removes the mark.


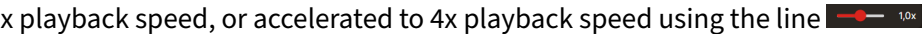


Action “Marks”  allows the user to manage added marks. By selecting this action, you will display the “Marks” table, in which it is possible to manually edit individual mark times and add their description:

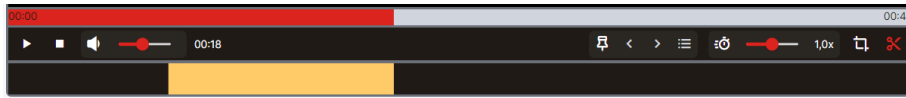


**Figure 152:** img

Hovering over a mark with a description will display it to the left of the mark insertion action .

After digitizing the video with the marks into the PACS archive, these marks will be visible when the video is opened in the DPGW DICOM viewer.

- “Speed”  - the function for determining the video playback speed. The video can be slowed down to 0.1x playback speed, or accelerated to 4x playback speed using the line 
- “Crop tool”  - for more info, see chapter “Edit image”
- “Editing tool”  - this tool is used for editing video that will be digitized and then sent to the PACS archive. Selecting this tool will display a bar for defining editing:





**Figure 153:** img


The bottom bar indicates the location of the video cut. To mark the beginning of video editing, click in the selected part of the bar. You then determine the start and end of the video by moving the squares to the requested area. The marked part of the video can be moved by dragging the yellow part of the section.

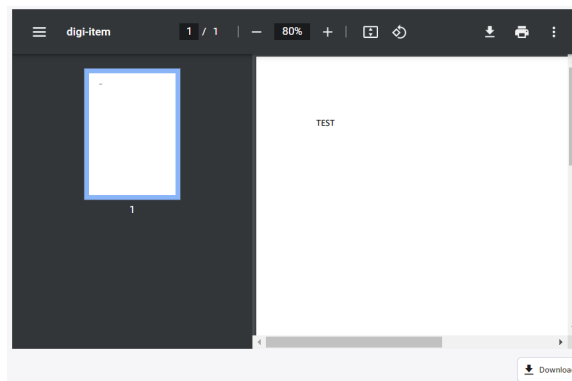
The edit tool allows you to add multiple edits to the selected video. To add, click outside the already selected cut and specify the length of the video cut:



**Figure 154:** img

- “Download”  - the video will be downloaded to the local PC storage in .mp4 format.
- “Save changes”  - this is an informative icon indicating the save status of the edit

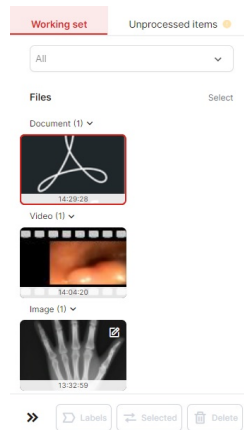
**6.4.3.3 Edit pdf** Selecting a PDF file from the “Working set” will open an external pdf viewer in the “Edit items” category with the option to download it  on a workstation (PC):



**Figure 155:** img

## 6.5 Working set

After uploading the data by dicomization/digitization, this data is moved to the “Working set” area in the right column:



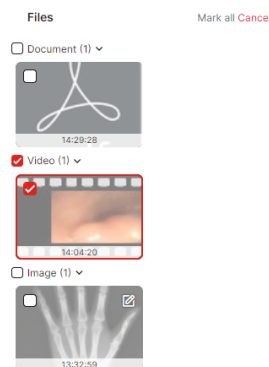
**Figure 156:** img

A working set allows the user to work with the imported data. When you click on the selected file, it is marked with a red frame and you will be redirected to the “Edit items” category described above.

The pencil icon to the right of the file in the “Working Set” indicates the edited file.

The “Working set” section allows you to perform the following actions:



- “Select” Select - allows you to select files for processing in the “Working set” section:



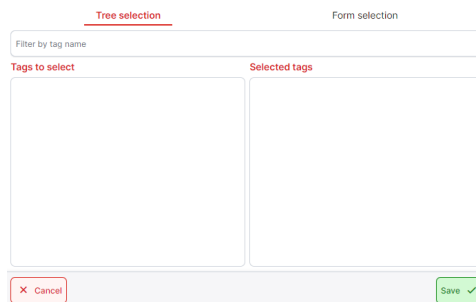
**Figure 157:** img

The “Select” action changes to “Mark all” to mark all files, or “Cancel” to deselect files.

If you select the “Select” action and mark the selected file, the following actions will be available:

- “Delete”  - removes selected files
- “Labels”  - this action allows the user to assign predefined labels to a file using the displayed table:

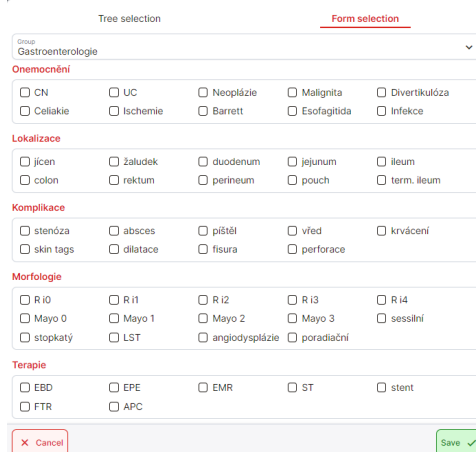
1. Table for label search - search for a label by entering text in the “Filter by tag name” field, click on the searched label in the “Tags to select” field, move it to the “Selected tags” field, and then choose to save:



The screenshot shows a dialog box titled "Form selection" with two tabs: "Tree selection" and "Form selection". The "Form selection" tab is active. At the top, there is a search bar labeled "Filter by tag name". Below it, there are two columns: "Tags to select" on the left and "Selected tags" on the right. At the bottom of the dialog, there are two buttons: "Cancel" (with a red 'X' icon) and "Save" (with a green checkmark icon).

**Figure 158:** img

2. Table for label selection - First select the group of labels from the “Group” scrolling menu, then select the required label by clicking in the check box. If you have selected all the required labels, perform the save action:



The screenshot shows a dialog box titled "Form selection" with two tabs: "Tree selection" and "Form selection". The "Form selection" tab is active. At the top, there is a dropdown menu labeled "Group" with the value "Gastroenterologie". Below it, there are several sections of checkboxes for labels:

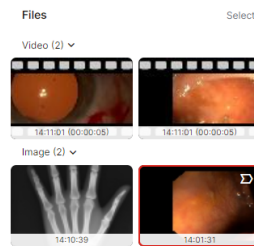
- Onemocnění**
  - CN
  - UC
  - Neoplázie
  - Malignita
  - Divertikulóza
  - Celiakie
  - Ischemie
  - Barrett
  - Esofagitida
  - Infekce
- Lokalizace**
  - jícen
  - žaludek
  - duodenum
  - jejunum
  - ileum
  - colon
  - rektum
  - perineum
  - pouch
  - term. ileum
- Komplikace**
  - stenóza
  - absces
  - píštěl
  - vřed
  - krvácení
  - skin tags
  - dilatace
  - fisura
  - perforace
- Morfologie**
  - R 10
  - R 11
  - R 12
  - R 13
  - R 14
  - Mayo 0
  - Mayo 1
  - Mayo 2
  - Mayo 3
  - sessilní
  - stopkatý
  - LST
  - angiodysplázie
  - poradiační
- Terapie**
  - EBD
  - EPE
  - EMR
  - ST
  - stent
  - FTR
  - APC

At the bottom of the dialog, there are two buttons: "Cancel" (with a red 'X' icon) and "Save" (with a green checkmark icon).


**Figure 159:** img

Warning: Labels may vary depending on DICOM viewer configuration. If you cannot find the label you are looking for, please contact your administrator for this product.

After choosing a label and saving it to a selected file, this file will be marked with a label:




**Figure 160:** img

- “Selected”  - this action moves the selected files from the “Working set” to the “Unprocessed items” tab. The files moved in this way will not be subsequently stored in the PACS archive and it will be possible to work with these files in the future.

### 6.5.1 Unprocessed items



**Figure 161:** img

“Unprocessed items” are those files that have been moved from the “Working set” tab using the “Select” action  or have been moved automatically, according to a configurable time limit by the product administrator DPGW.


After selecting the selected files, these files can be moved to the “Working set” or deleted. After moving these files to the “Working set”, they can be assigned to the required patient and then stored in the PACS.

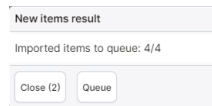
## 6.6 Saving, deleting data

The last step for saving/deleting acquired data in to the PACS archive is located in the “Save, delete data” area, in the lower left part of the screen.



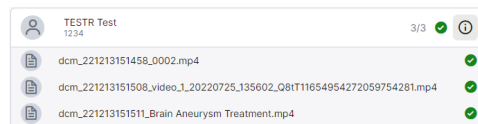
The following functions are located in the data storage/deletion section:

- “Save”  - action for saving acquired data in the PACS archive. By choosing this action, you will display the informative table “Result of saving records”:



**Figure 162:** img

Select the “Queue” action to display the details of the import of stored data. If all the data has been saved correctly, you will be informed about this with a green check mark to the right of the name of the saved record:




**Figure 163:** img

- “Cancel”  - removal of all records and patient demographic data

DPGW allows the user, if necessary, to leave a job in the “Digitization” category with the possibility to return to this job later. The entered data is saved and the user can switch between categories or launch the DICOM viewer. Even if the user logs out of the system, the data entered in the “Patient” and “Working Set” areas are kept or moved to the “Unprocessed Records” tab, depending on the configuration and the time since the last logout.

## 7 Temporary data

Tab “Temporary data”  is used for managing temporarily stored DICOM data that has not been properly stored in the PACS archive or has been marked for deletion.

Warning: The “Temporary data” tab is dependent on the assigned user role. If you do not have access to the folder, contact your system administrator.

## 7.1 Types of temporary data

### 7.1.1 Cache



**Figure 164:** img

- Missed data - This is data that could not be stored in the archive due to invalid or inconsistent data. You can correct the data in this area and have it saved again, or download the data in dicomdir format.
- Recycle Bin - The area where data deleted by the user from the web interface is moved so that it can be restored in case of erroneous deletion. To enable this feature, you must first configure it.

### 7.1.2 External processing queue



**Figure 165:** img

This is data that has been sent for processing by third-party applications, e.g. artificial intelligence, a queue of individual processing requests is created here, which can be managed.

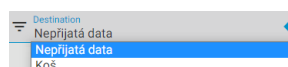
## 7.2 Viewing

To facilitate work, lists of data can be sorted and filtered in the tab “Temporary data”, using text boxes and drop-down bars which are described below:



**Figure 166:** img

- UID study - allows user to enter a unique study number
- Identification - allows user to enter patient’s birth certificate number
- Patient name - allows user to enter patient’s name
- Destination - viewing data lists in individual areas






**Figure 167:** img

- Status - displaying of a list of active or inactive data






**Figure 168:** img

o update the list, you can use the “Reload” button .


The found list of temporary data is sorted into individual columns which can be sorted by clicking on the name of the selected column. The symbol is then displayed next to this column  / .



**Figure 169:** img

- Patient name - a column containing patients’ names
- Identification - a column containing patients’ birth certificate numbers
- Date of examination - a column containing the date when examination took place
- Modality - a column containing modality which was used for examination
- Information - a column containing information why the study was put in “Temporary data” tab
- Actions - a column containing functions for working with temporary data
  - Edit  - data editing
  - Export to DICOMDIR  - saves selected date to local folder on the workstation (PC) in DICOMDIR format
  - Delete  - deletes data from temporary storage


### 7.3 Editing

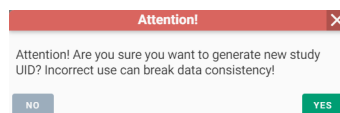
Individual data in the list of “Temporary data” tab can be edited using the “Edit” function  located in the “Actions” column. Select this function to open data editing table.

First name sync1	Last name	Middle name
Prefix	Suffix	
Identification* 1346546546	Date of birth 2022-08-08	Gender Female
Accession number 11013917		
Last known error org.medoro.dpgw.dicom.CStoreException: org.medoro.dpgw.dicom.lib.DataValidationException: Empty patient Last Name!		
Incoming data from DWTEST8 (DWTEST8@127.0.0.1:5380) DW cache AE	Modality MR	Study description MR L patere
Date of examination 2022-02-11	Study UID 1.3.6.1.4.1.20744.3.1.2.12.1328101243577.37892002	Creation date and time 2022-06-24 11:51
<input checked="" type="checkbox"/> Save change as rule		
<input type="button" value="BACK"/> <input type="button" value="SAVE"/>		<input type="button" value="SAVE &amp; SEND"/>

**Figure 170:** img




The data editing table contains:

- First name - option to edit patient's name
- Last name - option to edit patient's surname
- Middle name - option to edit patient's middle name
- Prefix - option to edit academic title before patient's name
- Suffix - option to edit academic title after patient's name
- Identification - option to modify patient's birth certificate number
- Date of birth - option to edit patient's date of birth by text field or selection
- Gender - option to edit the patient's gender (male, female, other)
- Last known error - informative message about the error which occurred during saving to the PACS archive
- Incoming data from - AETitle name of the specific modality from which the data was sent
- Modality - types of modality which the data was sent from
- Study description - name of the examination
- Date of examination - date of performed examination
- Study UID - unique study number with the possibility to create new study using the "Generate new UID studies" function . When you select this function, you will be notified by a pop-up window:




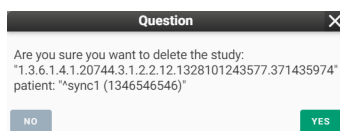
**Figure 171:** img

- Creation date and time - date and time of adding of the study in the tab “Temporary data”
- Save change as rule - remembers currently performed correction. If other studies of the same patient are stored in the temporary data, the correction will be performed automatically. (Applies only to patient demographic data. For example, it is not possible to automate generating of a new UID study.)

After finishing editing of selected parameters, made changes can be undone clicking the “Back” button , saved and returned to later by clicking the “Save” button  or these changes can be saved and sent to PACS archive by clicking “Save&send” .

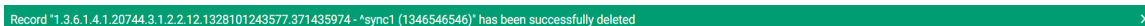
## 7.4 Deleting

If you no longer want to keep the selected data in the temporary data store, you can delete it using the “Remove” action . If you use this function, you will be notified by a “Question” pop-up window where you need to confirm the deleting:




**Figure 172:** img


In case the study was successfully deleted from temporary data, the system notifies you at the bottom of the screen:



**Figure 173:** img

## 8 Viewer

This chapter describes the second main part of DPGW which is a dialog box of DICOM viewer with tools for working with visual data. This dialog box can be opened by opening the patient/study or by action “Back to the exam” , which is located in the upper right hand corner of the basic dialog box for working with registries.

If you need to return to the basic dialog for working with registers from the DICOM viewer dialog, use the action  located in the upper left corner of the DICOM viewer.

The DICOM viewer dialog with image data tools contains several main areas which will be described below in this user manual. These are: - Image data display window - desktop with open series display - Viewer working set - this set is located in the left column of the DICOM viewer dialog. It contains previews of individual series of examinations and work with image documentation, or tracing of studies of the selected patient - Viewer tools - the tools are displayed in the top bar of the DICOM viewer dialog and they include currently selected tools on individual mouse buttons, fixed tools, a user-configurable toolbar and tabs with all available tools:

- Display tools
- Measurement tools
- Action tools for series
- Volume operations, 3D displaying
- Online consultation
- Viewer settings



**Figure 174:** img

In case you are working on a diagnostic station equipped with multiple monitors, it is possible to set the DICOM viewer desktop - PRODUCT-SHORT-NAME- to individual monitors. DPGW allows you to automatically distribute desktops to individual monitors. For this function it is necessary to install the “DICOM viewer extension” add-on in the used internet browser. You can find more about the settings of the multi-monitor station in the chapter “Settings”, section “Display settings”.

## 8.1 Image data display window



**Figure 175:** img

The main workspace of the DICOM viewer dialog is the actual display of the selected patient series/image. The individual parts of this area are:

1. Image - this section displays all images, videos, and documents.
2. OSD Labels (On Screen Display) - information about the currently displayed image/series. In “Viewer settings” information to be displayed can be defined. This setting is applicable to the user/station.
3. Key images marking - actions for tagging images in the series . The marked image has a green background on the button  (the opposite indicates unmarked). For description of the marking and its overview, see the section “Action tools for series”.
4. Brightness display scale - the scale shows the range of the selected brightness window. The brightness window settings are affected by two parameters: “center” and “width”. Current values of these parameters can be monitored in the lower right corner of the desktop while adjusting the brightness window. (OSD labels, item 6.)
5. Scroll bar - this bar contains a scroll bar that shows the current scroll position within the series. The behavior of the toolbar is affected by many parameters. These affect several key things:
  - initial position of cursor - it is possible to parametrically set whether the cursor or the whole

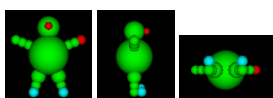
series, open on the first frame or in the middle so that the user can scroll smoothly forward or backward.

- surroundings loading - you can parametrically set the number of frames which are automatically loaded around the cursor position. DPGW automatically loads the cursor area because it expects the user to view images while moving around the position of the cursor. If the user jumps to another position within the series, the loading of images from the vicinity of the previous position is automatically interrupted and the loading of the vicinity of the new cursor position begins. This ensures smooth viewing of the series even if it is not fully loaded. However, all images are loaded gradually in the background.
- range of automatically loaded images - the user can view images without having to load the entire series. If the series has a lot of frames, the cursor area is loaded and then the frames are always loaded automatically, omitting the defined number of frames. For example, if all 10 frames are loaded and the user then starts moving around the series, the preloaded images make it easier for him to move around and reduce the time the user would have to wait for all the images to load.

Warning: Thus, the behavior of images loading in a series is fully changeable and it depends on the type of modalities and the number of images that the user usually works with.

The control of the shift by one image within the series is enabled by using the mouse wheel or the PgDown/PgUp keys. If you require faster scrolling, you can use the scroll bar, or the Shift + PgDown/PgUp keyboard shortcut to scroll 10 frames in a series.

6. OSD Labels (On Screen Display) - Eposcopic parameters of the modality on which the study was taken. In “Browser settings” you can define what information is to be displayed. This setting is applicable to the user / station.
  7. Vertical scale - indicates the size of the image and its parts horizontally and vertically. If the image is originally DICOM format, it carries information about the actual distance and it is possible to use scales or measuring tools to measure the distance. However, in the case of digitized images, they usually do not carry this information and it is first necessary to calibrate the image = determine the known distance. Based on this data, all measured distances are then recalculated.
  8. Pictogram - shows the orientation of the image with respect to the position of the patient’s body. The pictogram can be displayed in two modes. Schematic figure or cube with lettering on the sides. The displaying can be changed in the “Label layout” settings.
- Schematic figure





- The cube is marked with letters according to orientation.



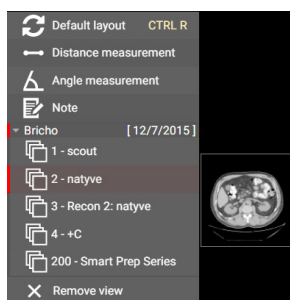
The letters can take the following values: - A (anterior) - P (posterior) - R (right) - L (left) - H (head) - F (foot)

The largest letter in the middle indicates the current direction. The lower case letters on each edge indicate the direction the view would be if the patient's cube (orientation) rotated in that direction.

- Horizontal scale - indicates the size of the image and its parts horizontally and vertically. If the image is originally DICOM format, it carries information about the actual distance and it is possible to use scales or measuring tools to measure the distance. However, in the case of digitized images, they usually do not carry this information and it is first necessary to calibrate the image = determine the known distance. Based on this data, all measured distances are then recalculated.
- OSD labels (On Screen Display) - information about the patient's and study demographic data (name, surname, date and time of creating of study, etc.) In "Browser settings", it is possible to define what information is to be displayed. This setting is applicable to the user/station.

### 8.1.1 Context menu


In this area, in addition to working on selected data, it is also possible to open the context menu by pressing the right mouse button:



**Figure 176:** img


The floating panel contains: - Viewer tools - these tools can be set according to user's preference using the settings of individual areas of the viewer tools. For more information on configuring tools in the floating panel, see the section "Configuring tools display" - Series view - allows the user to open selected series of the open study. These series are listed under the date of the examination - Remove view - closes the open series

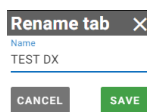
## 8.2 DICOM viewer tabs

If you display the desired studies using the “Add to new tab” or “Show patients in tabs” action  from the “Archives” dialog, a DICOM viewer dialog opens with individual tabs in its footer:




**Figure 177:** img


Each tab contains an action for editing the name of the tab , selecting which opens the “Rename Tab” table:




**Figure 178:** img

In this table, it is possible to change the name of the tab using a text field. If you want to restore the name of the tab according to the original text, choose the action . With the “CANCEL” action, you cancel the action being performed. Use the “SAVE” action to rename tab according to the text in the text field.

Individual tabs can be closed using the cross  located to the right of the tab name.

The action “Create a copy of the tab”  copies the currently open tab and creates a new tab with its contents.

The “Remove tab” action  closes all open tabs. Before closing all tabs, it is necessary to agree to close them:





**Figure 179:** img

## 8.3 Viewer working set

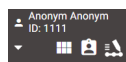
Viewer working set is located, by default, in the left column of the DICOM viewer dialog, it contains previews of individual series of examinations and work with image documentation, or finding studies of the selected patient.




**Figure 180:** img

Viewer working set is sorted according to the sequence of categories (“Patient” and “Study” categories can be hidden/shown using the icons:  ):

1. Patient - Displays the patient’s name, surname and ID number (the functions of the action icons are described in the article “Workset display options”).



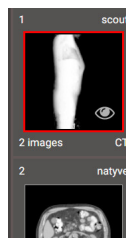
**Figure 181:** img

2. Study - Displays the date and time of the examination. The anchor icon  indicates “Reference Study Flag”, i.e. the study determining the primary examination to which the timeline and other operations will relate.




**Figure 182:** img

3. Series - Displays previews of the series in the selected patient study



**Figure 183:** img

Warning: If the warning icon  is displayed in viewer working set, there are patient studies open in the viewer with the same ID number, but different in name, gender, or date of birth. Use extra caution.

The selected series can be displayed by double-clicking on the preview of the series in the viewer working set, or by drag&drop style into the window for displaying image data. A preview of an open active series is highlighted with a red border and marked with an eye icon:




**Figure 184:** img

If the workstation has multiple monitors set up, when dragging the series, the user will be offered the choice of monitor to view:





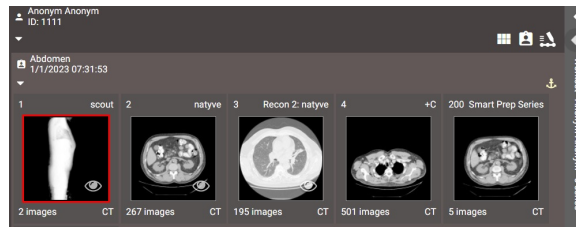
**Figure 185:** img

If the selected study contains more series than can be displayed in the monitor's resolution, the user is allowed to move in the viewer working set using the mouse wheel or icons for moving .

The viewer working set can be configured in "Display settings" to the left or right side of the monitor. In case you are working on a multi-monitor workstation, the viewer working set can be displayed on each monitor. However, this set is mandatory on the primary monitor.




### 8.3.1 Working set display options

The viewer working set is possible using the "Hide/Show workset" action  shrink to the edge, or expand it to a larger size, using the action "Normal/wide view of the workset"  for the option to display multiple series:



**Figure 186:** img

By dragging the selected series into the image data display window, the wide view of the workset will be replaced by the normal view.

The browser workset allows the user to perform the    actions found in the workset header below the patient's initials:



**Figure 187:** img

**8.3.1.1 View working set** The “View Working Set” action allows the user to toggle between the default and optimal view of the workset:



**Figure 188:** img

**8.3.1.1.1 Default working set view** The default view is the standard workset view and allows the user to work more advanced on the image data, such as Fusion, Volumes, RT Struct, etc.

It is possible to have multiple patients/studies open in this default view.



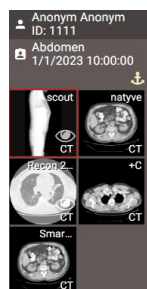
**Figure 189:** img

The default display follows the display level sequence: patient -> study -> series -> subseries -> instance -> volumes -> fusion -> RTStruct.



**Figure 190:** img

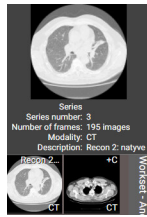
**8.3.1.1.2 Optimal display of the working set** By choosing the action “Optimal display of the working set” only the study of the selected patient will be displayed and the previews of the series will be adapted to the monitor resolution. The action icons will be moved to the right part of the working set:



**Figure 191:** img

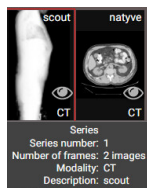
This feature of the DICOM viewer serves to better orient the user within the display of one or more studies of one patient.

To view information about a specific series, move the mouse over the series preview. In the case of low monitor resolution, the preview will be enlarged with information about the series number, number of frames, modality and description of the series:




**Figure 192:** img

If the monitor resolution is sufficient, the preview size will be preserved and only the series information will be displayed:



**Figure 193:** img

You can return to the default working set view using the action “Default working set view .



**Figure 194:** img

**8.3.1.2 Function All patient studies** By selecting the “All patient studies” function, you will call up a table at the bottom of the screen displaying all the performed examinations of the selected patient:

Full name	Identification	Study ID	Date of birth	Modality	Date of examination	Accession number	Description
> <input checked="" type="checkbox"/> TEST DX (7)	1234			DX	2023-01-01 10:00	111122223333	C,Th
> <input type="checkbox"/> TEST DX 1 (2)	1234			DX, XC	2023-01-01 10:00	111122223333	Ankle

Displayed 2 from 2

**Figure 195:** img

The “All Patient Studies” functions is listed in this table:

Icon	Function	Description
	Replace and display	display of selected studies with replacement of the last displayed ones
	Add to new tab	display of selected studies in a new DICOM viewer tab
	Add and view	display of selected studies with addition to the last ones displayed (double-clicking on the selected study line also works)
	Back to examination	Closes the “All Patient Studies” table

The “All patient studies” table contains all studies of the selected patient stored in the PACS archive and is divided into columns with individual values. You can search and sort in these columns, see more in the “Search results” chapter.

After hovering the mouse over a specific line of the patient study, a floating panel containing the following actions can be used:

Icon	Function	Description
	View in DICOM viewer	display of selected studies with replacement of currently displayed
	Add to new tab	display of selected studies in a new DICOM viewer tab
	Add and view	display of selected studies with addition to the last ones displayed



**Figure 196:** img





**8.3.1.3 Timeline** A timeline is used for a simple overview of the patient’s examination history. After the display, the history of all examinations is clearly shown. You can open the required historical examination by double-clicking or dragging.

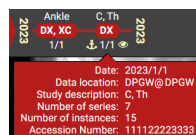


**Figure 197:** img



In the left part of the timeline, there is information about the name and ID number of the selected patient.

In the middle part is the timeline itself, containing information about the saved studies/examinations of the selected patient. This timeline is divided into individual years showing the type of examination/modality on which the examination was performed, with the date of the examination. The anchor icon  means “Symptom of the reference study”, i.e. the study determining the primary examination. The eye icon  indicates the displayed study in the “Image data display window”. In the event that the patient has too many studies, so that all of them can be displayed in the timeline of the monitor resolution, the user is allowed to move in the timeline with the help of the scroll bar or the arrows for moving to end , or by part . More detailed information about the study in the timeline can be obtained by hovering the mouse over the study:





**Figure 198:** img

Warning: If patient studies with the same ID number are open in the DICOM viewer, but differ in name, gender, or date of birth, you will be alerted to this by information in the study label located in the timeline. Take extra caution:



**Figure 199:** img

In the right part of the timeline are the “Filter” actions  and “Hide Timeline”  used to close the timeline.

The “Filter” action brings up a table with options for displaying results in a timeline.

**Timeline** [X]

Sort order

Filter

ECG  CR  CT  DS  DX  ES  IO  KO  
 MG  MR  NM  OP  OT  PR  PT  PX  
 RF  SC  ST  SR  US  XA  XC

Custom modality

Keywords

Max. study age  
12,000 months

Disable filters on patient change


















**Figure 200:** img


The timeline filtering table includes the following options:

1. Sorting direction - by clicking the sorting direction arrow, you determine the order in which the study will be displayed in the timeline according to the examination date
2. Filter - action to activate/deactivate timeline filtering, if unchecked, does not allow the user to enter values for filtering
3. Modalities - this section contains checkboxes to specify the modalities to be displayed in the timeline, for easy work there is the option of “Mark all”, “Unmark all” and “Invert” actions to flip marked/unmarked modalities
4. Custom modality/modalities - text field to type shortcut of the modality
5. Keywords - text field for entering, for example, the name of the study, etc.
6. Max. examination age - text field for specifying the display of studies in a timeline bordering the age period in months
7. Turn off filters when changing patient - option to turn off/keep the timeline filter when another patient is displayed
8. Cancel, Save - the “Cancel” action cancels the performed filtering, the “Save” action saves and applies the applied filter to the timeline

### 8.3.2 Workset Floating Panel

The viewer’s working set allows you to perform actions, above the open patient examination, contained in a floating panel that can be called up by pressing the right mouse button in the patient/study/series area. The actions of the floating panel may be differ depending on the call from a specific area and includes the following functions:

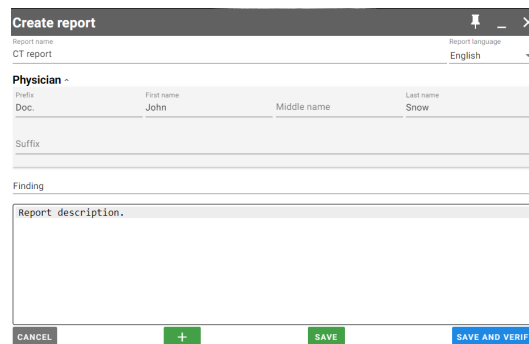
Icon	Function	Description
	View	Displays the images in the “Image data display window”
	View connected	Displays the images in all open panes in the “Image data display window” and synchronizes the passage through the series
	Create report	Action to call up a table to create a “Structured Report”, i.e. a description of the examination
	Record voice note	Allows you to record an audio track, e.g. a spoken note for the selected study
	All studies of patient	Actions to call up the table “All patient studies” see article above
	Revers item order	Actions for changing the order of images, e.g. for CT axial section, changing the direction of scanning a series of images from craniocaudal to caudocranial.
	Create volume	Actions to create multiplanar planes and 3D volume
	Create fusion	Action to merge two series with overlay
	Forward data	Actions for sending image documentation to another DICOM device, see article “Forward selected”
	Export	Action to export data to local storage, or print
	Share the study	Action for sharing a study to an external user
	Add to worksheet	Selecting the action will add the study to the working list, see article “Add to worklist”
	Create RT Struct	Action to display RT Struct objects used as planar points in radiotherapy
	Show segmentations	Action to display the segmentation, used to cut out a part of the image
	Split the series	Devide series into subseries, for example, in dual scans of MR examination
	Edit tags	Allows you to assign a label in the selected series, see article “Labels”
	Watch study for changes	Automatic update of images in the study (automatic updating of the examination in the DICOM viewer during its archiving in the PACS archive)

Icon	Function	Description
	Remove	Removes a patient/study/series from the DICOM viewer workset



**Figure 201:** img

**8.3.2.1 Create report** By selecting the “Create report” action from the floating panel, you will call up a table with the option of creating a description of the examination.



**Create report**

Report name: CT report | Report language: English

**Physician -**

Prefix	First name	Middle name	Last name
Doc.	John		Snow

Suffix:

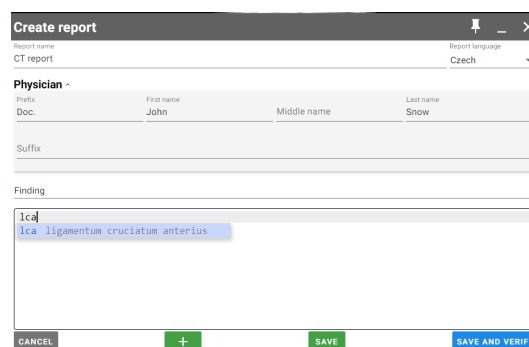
Finding:

Report description:

CANCEL + SAVE SAVE AND VERIFY

**Figure 202:** img

When describing the examination, the user is allowed to enter keywords using default shortcuts and then call them up with the shortcut key “ctrl+spacebar”:



**Create report**

Report name: CT report | Report language: Czech

**Physician -**

Prefix	First name	Middle name	Last name
Doc.	John		Snow

Suffix:

Finding:

Report description:


CANCEL + SAVE SAVE AND VERIFY

**Figure 203:** img

Adding and editing keyboard shortcuts can be done in the “Settings” dialog window, using the “Macro editor for messages” tool.

Warning: Access to the “Macro editor for messages” is controlled by user roles. In case you do not have access to this editor, please contact your DPGW system administrator.

The “Create report” table contains actions for display options in the header:

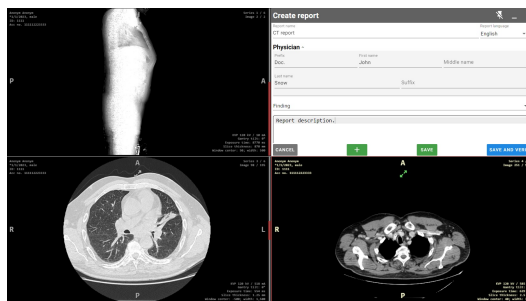
1. Pin to DICOM viewer window/pane 

By choosing this action, the user will be prompted to indicate the window to which this table should be attached:



**Figure 204:** img

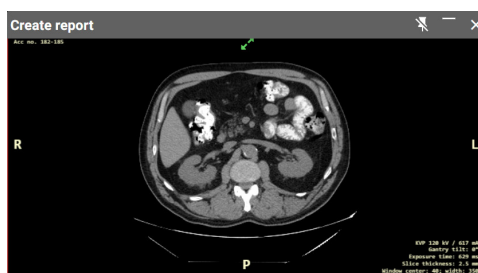
After selecting the DICOM viewer window, the “Create report” table switches to the display in the window:



**Figure 205:** img

2. Minimizing the “Create report” table 

By choosing this action, you will minimize the “Create report” table, the table will be displayed only with the header. If this table is pinned to a specific window, it will allow the user to continue working in that window:



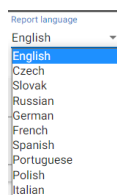
**Figure 206:** img

3. Close the table

By selecting this action, you close the “Create report” table without saving the entered values.

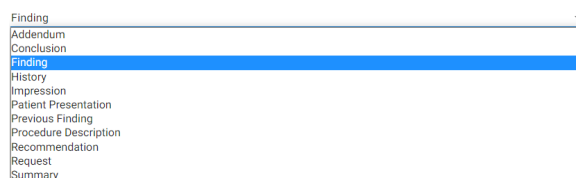
The “Create report” table contains the following text fields and drop-down menus:

- Report name - name of the examination description
- Language of the report - determination of the language in which the description of the examination is written, Czech is selected by default for Czech users, but the following languages can be selected from the drop-down menu:





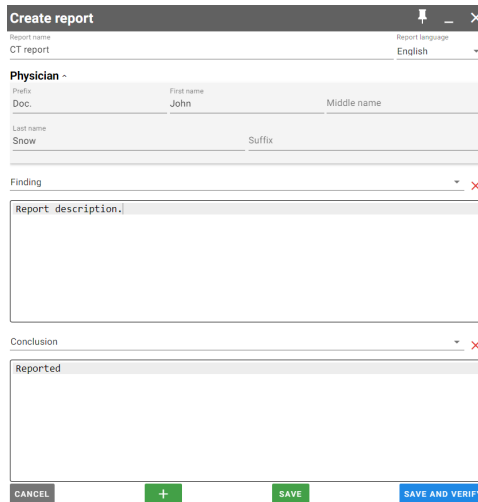
**Figure 207:** img

- Physician - by clicking on the “Physician” area, you can specify the doctor who creates the description of the examination, by default the doctor is determined according to the logged-in user, but when changing these values can be filled in the text fields
- Area for reporting information - when the table is opened, the name of the area “Finding” is selected, but the user has the option of selecting an area from the drop-down menu, which contains:



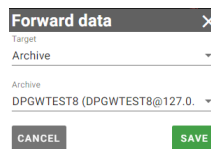
**Figure 208:** img

It is also possible to add other message areas with the “Add” action , or to remove them with the close action :



**Figure 209:** img

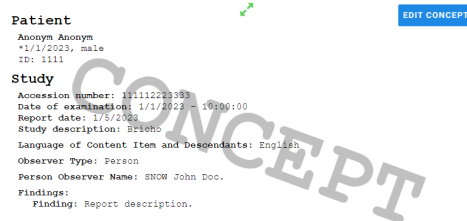
To save the created examination description, use the “Save”/“Save and close” action, this will bring up the table specifying the storage location:



**Figure 210:** img

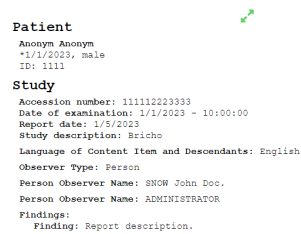
In this table, it is possible to determine whether the created description should be saved to the PACS archive with its selection, or to the user or to the station. To cancel the action, choose “Cancel”, to save the description, choose “Save”.

The saved study will be displayed in the DICOM viewer workset as another patient study. If the “Save” action is selected in the “Create report” table, it is still possible for the user to edit the draft description of the examination:



**Figure 211:** img

If the “Save and close” action is selected in the “Create report” table, it is no longer possible to edit the examination description:



**Figure 212:** img

If you do not want to save the created examination description, choose the “Cancel” action, this will cancel the “Create report” table.



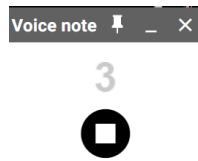
**Figure 213:** img

**8.3.2.2 Record voice note** The “Record voice note” function is used to record and archive an audio track, e.g. a spoken note for a selected study.

To record an audio track, follow these steps:

- select the function “Record voice note”, which will bring up the table “Voice note” with the countdown of the start of audio recording:






**Figure 214:** img

- after the end of the countdown, it is possible to record the audio track:



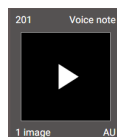
**Figure 215:** img

- to complete the audio recording, select the “stop” icon , which will bring up the “Send data” table:

 A screenshot of a 'Forward data' dialog box. It has a title bar with 'Forward data' and a close 'X' icon. The fields are: 'Target' with a dropdown menu showing 'Archive'; 'Archive' with a dropdown menu showing 'DPGW@DPGW (CLOUDPACS@127.0.0.1)'; and 'Series description' with a text field containing 'Voice note'. At the bottom, there are two buttons: 'CANCEL' and 'SAVE'.

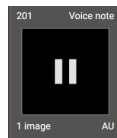
**Figure 216:** img

- select “Target” (archive, station, user), if you select an archive target, select the “Archive” and name the saved voice note in “Series description”
- by selecting “CANCEL” you cancel the performed action, by selecting “SAVE” a new series will be created in the selected study containing the AU voice note:



**Figure 217:** img

- playback of the audio track is enabled directly from the “Viewer working set” by clicking on the play arrow:



**Figure 218:** img

- playback is also enabled after moving the audio track from the “Viewer working set” to the “Image data display window”:

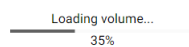


**Figure 219:** img



**Figure 220:** img

**8.3.2.3 Create volume** The function “Create volume” is used for the spatial reconstruction of series data with multiple images, e.g. CT, MR with the creation of MPR planes and 3D volume. By selecting this function and if both license and hardware resources are available, volume = new series will be created. The volume loading speed depends on the size of the given series of images, you will be informed about the loading progress by the “Loading volume...” progress window:



**Figure 221:** img



After the volume has been successfully loaded, a new volume series will be created with a cube label in the corner of the preview, which is intended for spatial processing:

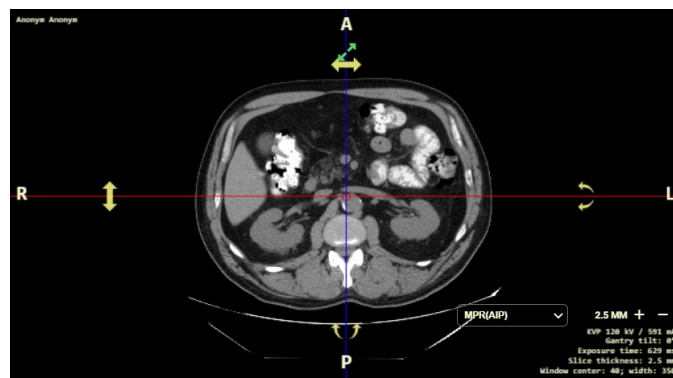


**Figure 222:** img

It can be opened in two ways, by double-clicking or by dragging it into the viewing window. Each of these methods will cause a different response from the DICOM viewer:

1. Double-click to open

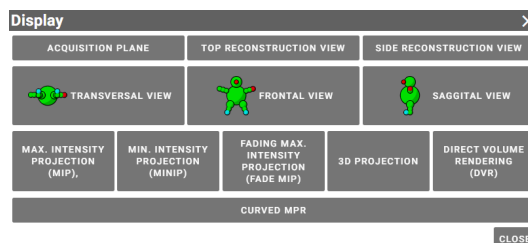
After opening the volume series, marked with a red cube by double-clicking, it opens in a three-window MPR display. Each window corresponds to a different point of view. Each window displays axes with which it is possible to move , or rotate by gripping the rotated arrows . Changing the position of any axis cross automatically changes the image in the remaining two windows.



**Figure 223:** img

2. Drag and drop to open

When opened by dragging a volume series into the “Image data display window”, you call up the “Display” table:



**Figure 224:** img

By choosing a specific action in this menu, it is possible to display only the required volume data reconstruction. In all these views, it is possible to change the thickness of the section of the reconstructed plane with the up and down arrows.

The “Display” table contains the following functions:

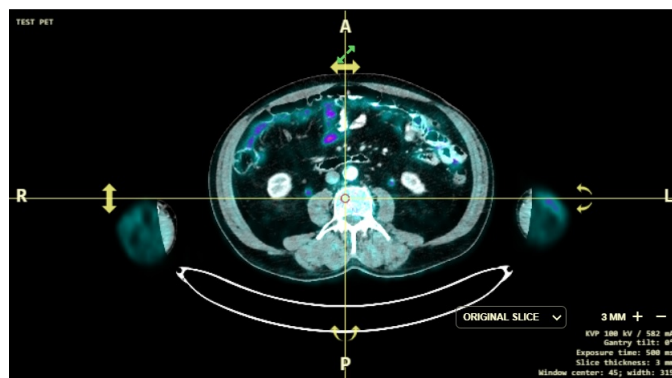
- Acquisition plane - the volume will be displayed in the same plane as the original collection.
- Top reconstruction view - the volume will be displayed in the plane that is the top view of the patient. It varies according to the original orientation of the patient (if he was lying, standing, ...)
- Side reconstruction view - the volume will be displayed in the plane that is the side view
- Transversal, frontal, sagittal view
- MIP - maximum intensity projection
- MinIP - minimum intensity projection
- FADE MIP - fading maximum intensity projection
- 3D projection - 3D projection, it is possible to change the displayed structures with the windowing tool. The image can also be changed by changing slice thickness
- DVR - more advanced 3D display, the displayed structures can be changed with the “Transfer function” tool
- Curved MPR

You can find more about displaying and working with volumes in the paragraph “Volume operations, 3D display”.



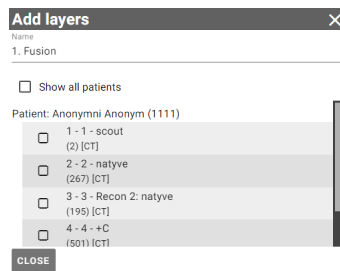
**Figure 225:** img

#### 8.3.2.4 Create fusion An example of a created fusion:



**Figure 226:** img

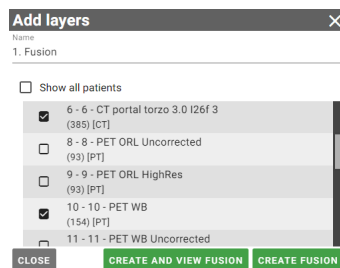
The function “Create fusion” is used to merge two series of the patient with an overlap on top of each other. This function can be used, for example, in PET examinations in nuclear medicine, when it is necessary to display accumulated radiopharmaceuticals on a CT examination. By selecting the “Create fusion” action, you will see a table for selecting series to merge:



**Figure 227:** img

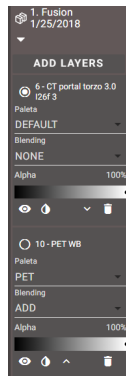
This table includes: - Name - name of the created fusion - Show all patients - if you have several patients open, this will show their series as well, if this box is not checked, only the series of the patient whose series you chose the “Create fusion” action will be displayed - Patient’s name and the option to select series for fusion - this area allows the selection of selected series to be merged, scrolling in this area is enabled with the mouse wheel or the scroll bar located to the right of the series area

If you have selected specific series to merge, additional actions will appear at the bottom of the table:



**Figure 228:** img

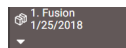
- Close - cancels the performed action
- Create and display fusion - by choosing this action, you will create a fusion of the selected series with a display in the “Image data display window” with a three-window display for each of the MPR planes, also the fusion toolbar will be displayed in the “Viewer Workset”
- Create fusion - choosing this action will create a fusion of the selected series and display it only using the fusion toolbar in the “Viewer Workset” without changing the “Image data display window”



**Figure 229:** img

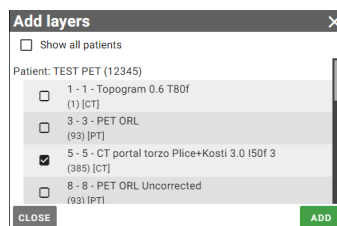
The fusion toolbar includes:

- Toolbar header - this area contains the name of the created fusion, the examination date, an arrow to expand and, if necessary, an eye icon, in case the fusion is displayed in the “Image data display window”:



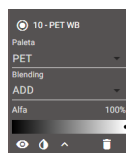
**Figure 230:** img

- Add Layers **ADD LAYERS** - choosing this action will bring up the table for the possibility of adding additional series for the fusion:





**Figure 231:** img

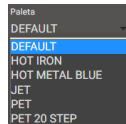
- Fused layer tab - this tab is used for working with a fused layer/series



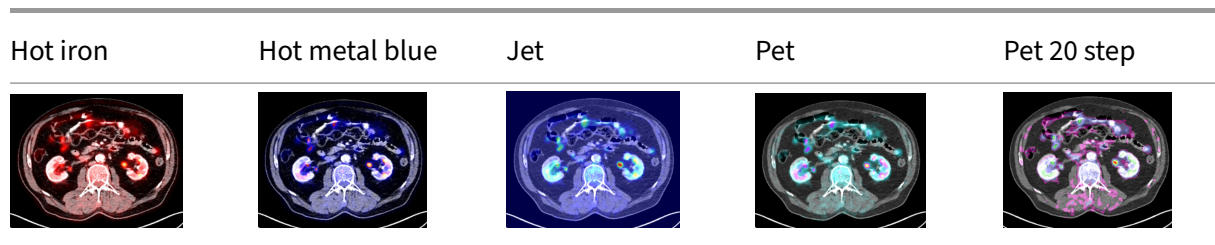
**Figure 232:** img

The fused layer tab contains: 1. Marking the active layer - by marking the layer as active, the user is enabled to work with a specific layer in the fused image in the “Image data display window”. The designation of the active layer is shown by a filled circle to the right of the series name  10-PET WB, the designation of the inactive layer then by an empty circle  10-PET WB.

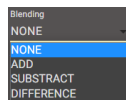
2. Palette - the color palette allows the user to change the color display of the fused layer, you can change it by selecting from the scrolling menu:



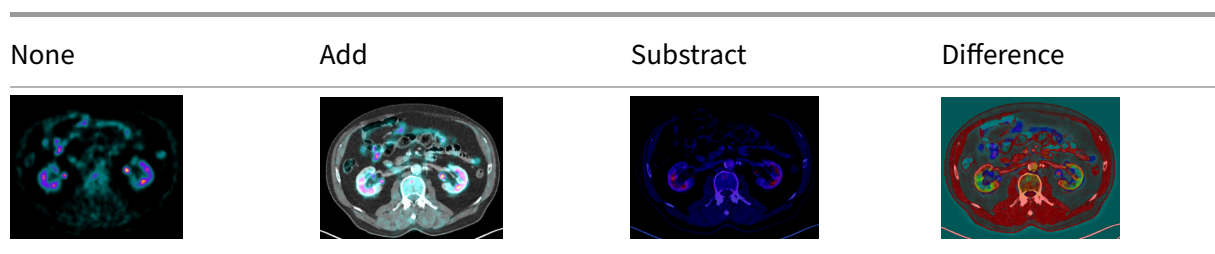
**Figure 233:** img



3. Blending - the choice of how the final fusion is calculated, if individual series are simply laid over each other, added, subtracted or projected where there is a difference:



**Figure 234:** img







4. Alpha - selection of the display strength of the given layer/series, determining its transparency

This option can be changed using the scroll wheel on the bar with the % display:



**Figure 235:** img

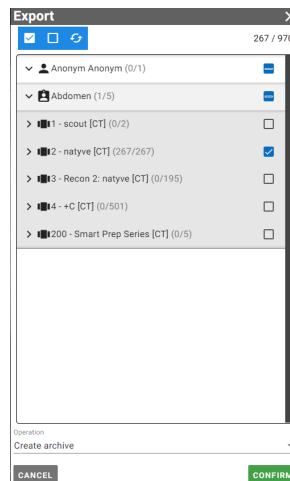
5. Layer display - option to display and hide the selected layer/series using the “Layer Display” action .
6. Invert - option to invert the display of the selected layer/series using the “Invert” action .
7. Move Down/Up - option to change the layer/series order in the “Fusion Toolbar” using the “Move Down/Up” action .
8. Remove - option to remove the selected layer/series from the “Fusion Toolbar” using the “Remove” action .



**Figure 236:** img

**8.3.2.5 Export** The “Export” function allows the user to download selected image data to the workstation’s local storage. If you have edited the image in the “Image data display window”, these changes will be reflected in the export.

By selecting the “Export” action, you will call up the “Export” table:



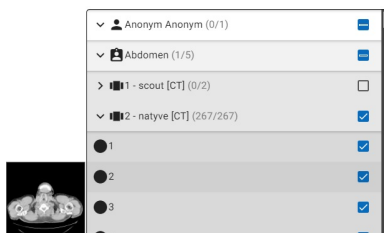
**Figure 237:** img

The “Export” table header action allows the user to “Tag All”, “Untag All” and “Invert tags” to flip tagged/untagged exam series . To the right of these actions is the number of currently selected images



from the total amount marked for export. In this case, 501 images are tagged out of a total of 971 images in the entire study <sup>501 / 971</sup> .

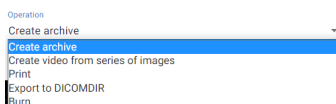
The middle part of this table allows the user to select data for export by checking the  / to the right of the selected area (patient, study, series, image). Individual areas can be downloaded or expanded using the arrow to the left of the area name, up to individual images. By hovering the mouse over the selected area for export, a preview will be displayed to the user, to simplify the work:



**Figure 238:** img

If the study contains more items than can be displayed simultaneously in the “Export” table, the user is allowed to scroll in this table using the scroll bar located to the right of the middle part, or by moving the mouse wheel.

The lower part of the “Export” table allows the user to choose the method for exporting the “Operation” data using the drop-down menu:

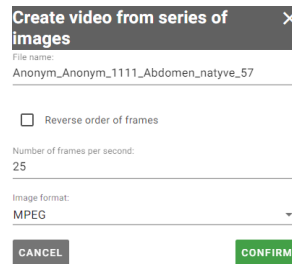


**Figure 239:** img

By selecting the desired operation and confirming the “Confirm” action, you will invoke one of the selected actions described below. By choosing the “Cancel” action, you cancel the export action.

If you do not select any data, the item “Not selected” will be displayed in the export operations.

**8.3.2.5.1 Create a video from a series of images** Selecting this action will display a table with options for creating a video from the selected series of images:



**Figure 240:** img

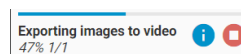
This table includes: - File name - allows the user to choose the name of the saved file - Reverse order of frames - checking this box will invert the position of the frames in the video - Number of frames per second - option to choose video playback speed - Image format - allows you to choose the format of the saved file, namely MPEG or AVI

With the action “Confirm” you will start the export process, you will be informed about this fact by a window:





**Figure 241:** img

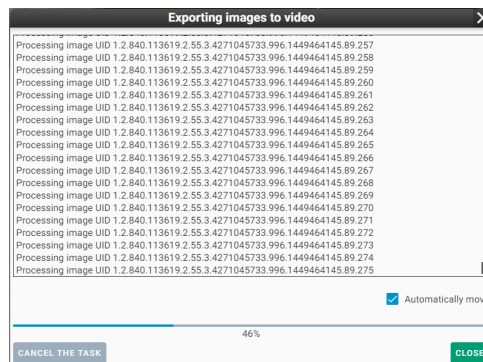
In the lower right corner, an informative window about the progress of uploading the export for download will then be launched:



**Figure 242:** img

By choosing the action “Stop”  you cancel the action being performed.

By choosing the “Info” action , you can call up a detailed table to preview the export progress:

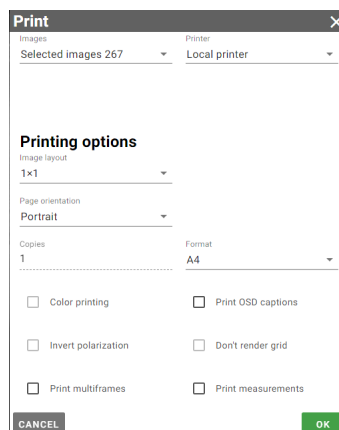


**Figure 243:** img

After a successful export for download, the exported data is automatically downloaded to the workstation's local storage.

**8.3.2.5.2 Create Archive** See more in the article “Export selected images”.

**8.3.2.5.3 Print** The “Print” function allows the user to print the selected images on a printer. To be able to print, you only need to mark one series or specific images from one series. Selecting this action brings up a table with options for printing:



**Figure 244:** img

This table includes: - Images - number of selected images to print - Printer - option to choose one of the available, configured printers - Image layout - option to choose the layout of images on the page 1x1, up to 10x10 - Page orientation - the option to choose the orientation of the image on the page when printing, i.e. Automatic, Portrait or Landscape - Copies - option to choose the number of printed

copies - Format - option to choose the page size print format: A3, A4, A5, A6, PHOTO 10x15, LETTER - Color printing - Invert polarization - Print multiframe - Print OSD captions - Don't render grid - Print measurements

By choosing "OK" you go to the printer settings for printing and then start printing, or by choosing "Cancel" you cancel the action.

**8.3.2.5.4 Export to DICOMDIR** See more in the article "Export selected to DICOMDIR".

**8.3.2.5.5 Burn** See more in the "Burn selected" article.



**Figure 245:** img

**8.3.2.6 Share study** The "Share study" function is used to create a one-time URL web link for sharing the study to an external user. Right-click on the name of the study, choose the "Share study" function, which brings up the "Create an external link to share data" table:

Remaining external share links: 100

Name of the recipient or description of the shared link\*

TEST DX - C, Th

PIN\*

4090

Number of days the link is valid\*

30

CANCEL CREATE

**Figure 246:** img

The called table contains a pre-filled text field that can be edited:

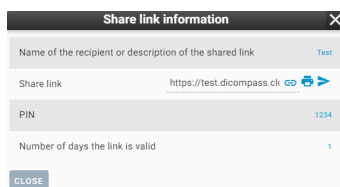
- Name of the recipient or description of the shared link - enter the name of the designated user or a short description of the study being sent
- PIN - enter the password for possible opening of the external link (alphanumeric characters can be entered)

Warning: Do not send the shared URL link together with the PIN in one communication due to the security of the data being sent. Always use two types of communication, e.g. email and SMS.



- Number of days of validity of the link - determines the period for which the link will be active (the default maximum validity period is 30 days, this value can be configured by the administrator),

by selecting the arrows to the right of the set validity period, you select the maximum possible validity period

- Use the “CANCEL” button to cancel the action, use the “CREATE” button to create a URL link to share the selected study, you will be informed about this by the “Share link” table:



**Figure 247:** img

- “Save to Clipboard” icon  copies the created URL link for possible pasting using keyboard shortcut ctrl+v
- The “Print link” icon  will create a document with the appropriate data to access the shared study with the option to print it:



**Figure 248:** img



**Figure 249:** img

**8.3.2.7 Create RT Struct** The “Create RT Struct” function is used for drawing contours and subsequent calculation of values in the selected volume of the examination series. To determine the volume, proceed as follows:

1. From the Viewer working set, select the required examination series and after clicking the right mouse button select the “Create RT Struct” function, you will be informed about its creation:

RT Struct has been successfully loaded.

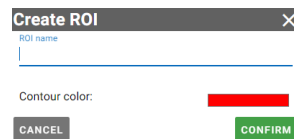
**Figure 250:** img

- a toolbar for working with RT Struct has been created in the header of the Viewer working set:



**Figure 251:** img

- This panel includes:
    - The name of the created RT Struct
    - arrow for expanding the tool panel for working with RT Struct
    - the “DEFAULT” button is used for the default display of drawn contours
    - the “SHOW ALL” button is used to display all drawn contours, in case you have all contours displayed, the button changes to “HIDE ALL” to hide all drawn contours
    - the “CREATE ROI” button is used to create parameters for drawing contours in the area
2. Choose “CREATE ROI” for possible drawing of contours in the area, this will bring up the table for determining the parameters of the contours:



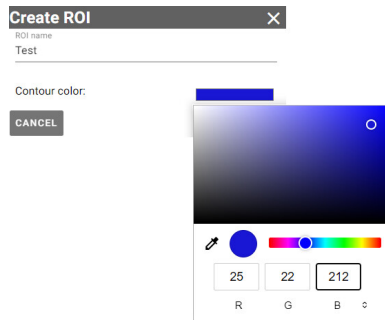
**Figure 252:** img

- Select the required parameters in this table:
  - enter the name of the ROI in the text field



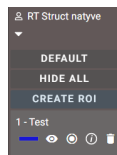
**Figure 253:** img

- choose the color of contours to draw by clicking on the color in the table








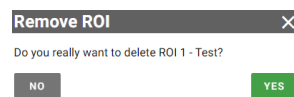
**Figure 254:** img

- a created ROI has been added to the toolbar for working with RT Struct:



**Figure 255:** img

- added ROI panel contains:
  - The name of the created ROI
  - The color of the selected contour
  - The “Display” button  is used to hide or display the drawn contour in the area
  - The button “Selected”  is used to select the active ROI, in case of creating multiple ROIs, the other icons are empty 
  - The button “ROI information”  is used to display a table with measured values of the drawn area
  - The button “Remove ROI”  is used to remove the created ROI, after selecting the button “Remove ROI” you will call up the table for confirmation:



**Figure 256:** img

- to add another ROI, repeat the action of point 2 of this article
3. Draw ROI contours in the selected area of the volume, see more in the article “Tools for volumes”

- If you have drawn contours in the desired area, it is possible to call up the table with the values of the measured area with the “ROI information” button, which will start the process of calculating the values, about which you will be informed:

Calculating ROI properties...  
0%

**Figure 257:** img

- After the system recalculates the measurements, the “ROI Information” table will be called up:



ROI Information	
ROI	1 - Test
Surface	377.39 cm <sup>2</sup>
Volume	528.60 cm <sup>3</sup>
Density min.	-991 HU
Density avg.	-18 HU
Density max.	945 HU

**Figure 258:** img

- This table contains:
  - The name and color of the selected ROI, in case you have created multiple ROIs, you can use the arrow to expand the drop-down menu and select a specific ROI to display information:



**Figure 259:** img

- The value recalculation button  is used to recalculate the changed contours in the area
  - Individual measured values of the drawn area
- In case you want to remove the created RT Struct, right-click on the name of the toolbar for working with RT Struct and choose “Remove” .

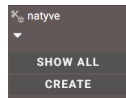


**Figure 260:** img

**8.3.2.8 Show segmentations** The “Show segmentation” function is used to cut out objects in the created volume of a series of images. For a possible cutout, follow these steps:



1. Create a volume from the selected series of images (for more see the article “Create a volume”)
2. Right-click on the created volume to invoke the floating panel actions and select “Show segmentations”, this will create a new tab for the possibility of inserting a segmentation:



**Figure 261:** img

3. Select the “CREATE” button to call up the “Create” table

**Figure 262:** img

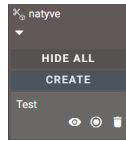
Name the new segmentation in the “Segmentation name” text field. If the “Use threshold” field is marked, this table will be expanded with the option to choose a threshold value:

**Figure 263:** img





By selecting the required threshold value, including its deviation, and confirming with the “CREATE” button, all points of the created volume containing the optical density according to the selected threshold value will be deleted.

With the “Cancel” action, you cancel the task being performed.

If the threshold value was not used, after acceptance with the “CREATE” button, a new segmentation will be added in the “Show segmentation” tab:



**Figure 264:** img

Segmentation includes - The name of the created segmentation - The “View” button  is used to hide or display the segmentation - The “Selected” button  is used to select a segmentation, in case of creating multiple segmentations, the other icons are empty  - The “Remove segmentation” button  is used to remove the created segmentation, after selecting the “Remove ROI” button, you will call up the table for confirmation:



**Figure 265:** img

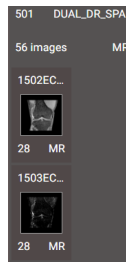
- to add another segmentation, repeat the action of point 3 of this article
4. Draw the contours of the segmentation in the selected area of the volume, see more in the article “Tools for volumes”

The cut-out areas will not be displayed in other planes or 3D views.



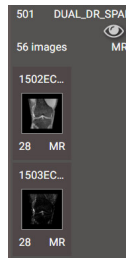
**Figure 266:** img

**8.3.2.9 Split series** The “Split series” function is used to separate a series into two or more subseries. This function can be used, for example, with MR dual protocol, when the series contains two series with different sequence parameters. By choosing this action, you will create a new series in the “Viewer working set”:



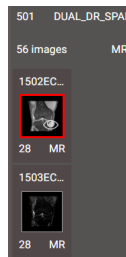
**Figure 267:** img

By dragging or double-clicking on the name of the series, you will see a composite series of images in the “Window for displaying image data” and the eye icon for this series will appear:



**Figure 268:** img

By dragging or double-clicking on a sub-series, you can display one of the parts of a series of images in the “Window for displaying image data”, it will be highlighted with a red frame and the eye icon for this series will appear:



**Figure 269:** img

### 8.4 DICOM viewer tools



**Figure 270:** img

The DICOM viewer tools are used to work with the examination displayed in the “Window for displaying image data” and is divided into several areas:

1. Icon to **return to main dialog** for searching and managing registries.



**Figure 271:** img

2. Currently **selected tools on individual mouse buttons**. It changes according to the configuration of the DICOM viewer and the configuration saved by the user.




**Figure 272:** img

Tools, can be set to left, middle, right and left+right mouse buttons.


If a tool is selected from the “User configurable toolbar” or from the “Tab with tools”, the active tool on the mouse button will change, according to the mouse button used when selecting the tool.



The configuration of the tools on the mouse buttons after opening the study can be found in the “DICOM viewer settings” chapter.


3. **Configure the layout of the panels** in the current window/monitor . - By selecting this action, the user is enabled to distribute the “Window for displaying image data” into individual panels, according to this configuration:



**Figure 273:** img

If you work at a workstation with multiple monitors, the selected layout can be applied to all DICOM viewer windows simultaneously using the “Change layout on all monitors” action if this feature is active, it will appear on a blue background .

If you have multiple panels displayed in the “Window for displaying image data”, the selected panel can be maximized into one panel with the  icon located in upper part of the window, without losing the work in progress on the other panels. To return to the original layout of the panels, then minimize this panel with the icon .

- Selecting the Hanging protocol**  - action for selecting the Hanging protocol, i.e. displaying the study, according to the parameters set in the “Window for displaying image data”, such as the number of panels, selected windowing, display size, etc.

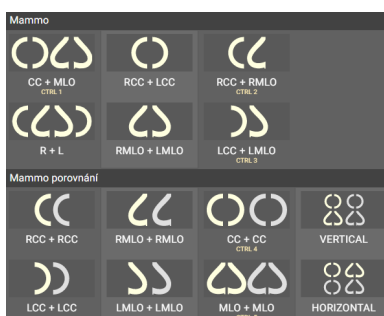
By selecting this action, you will call up a window for selecting a specific Hanging protocol:



**Figure 274:** img

This action is made available on the condition that the user has multiple Hanging protocols set for a specific type of study. The names and number of Hanging protocols may differ, depending on the set values.

If the mammography study (MG) is opened, the Hanging protocols are already prepared. “Hanging protocol selection” thus contains the following window layouts:



**Figure 275:** img

## 5. User configurable toolbar



**Figure 276:** img


Available tools depend on DICOM viewer configuration and user settings. If the user changes and saves the tools configuration, the tools will be loaded at the next login. They may vary between users and stations.

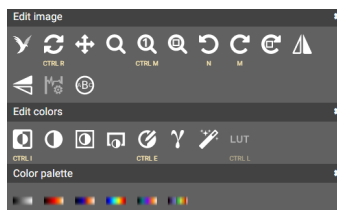
- Tabs** with all the tools for working with image documentation and their settings



**Figure 277:** img

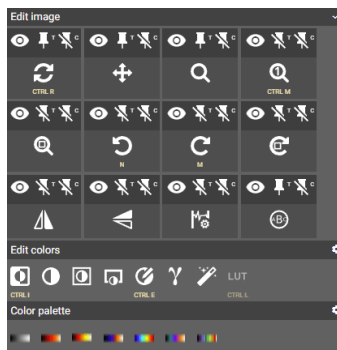
Individual tabs with tools will be detailed in the following chapters: - Display tools - Measurement tools - Action tools for series - Volume operations, 3D visualization - Online consultation - DICOM viewer settings

**8.4.0.1 Configuring the tool display** The display of tools for working with image documentation can be configured with the “Settings” action  located to the right of the tool group name in individual tabs with tools:




**Figure 278:** img

Selecting this action displays the tools for configuring the tool display:





**Figure 279:** img

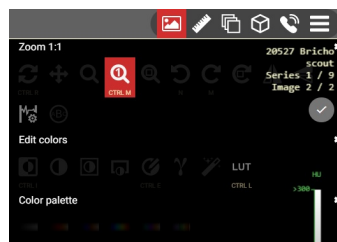
The following actions appear above each tool in the tool group: - Hide/show action  / - choosing this action hides / restores the tool of the tool group in the selected tool tab



**Figure 280:** img

- Unpin/pin from top bar  / - choosing this action will hide / restore the tool in the “User Configurable Toolbar”
- Unpin/pin from context menu  / - choosing this action hides / restores the tool in the “Context menu” called by the right mouse button in the “Window for displaying image data”

In case you want to display the image that is hidden behind the opened tools of the selected tab, you can do so by pressing the ctrl keyboard key, the tab will become transparent:



**Figure 281:** img

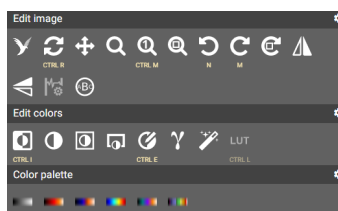
### 8.4.1 Display tools



**Figure 282:** img

The tab “Display tools” is used primarily for editing the display of image data, i.e. as post-processing of the image. If you want to reset the image adjustments to their original state, you can do by double-clicking on a specific tool located in the currently selected tools on individual mouse buttons (paragraph 2 of the “DICOM viewer tools” chapter).

This tab contains the following groups of tools: - Edit image - Edit colors - Color palette














**Figure 283:** img

If a keyboard shortcut is displayed under the tool icon, it can be used to perform the action of the given tool.

#### 8.4.1.1 Edit image

The “Edit image” tool group contains the following tools:

Icon	Function	Description
	Default Layout	Resets the display - window size, center and width, offset, pseudo-color palette
	Move	Enables moving the image within the displayed window
	Zoom	After pressing and holding the selected mouse button, scrolling up and down increases and decreases the image
	Zoom 1:1	Selects the image size so that the image is displayed pixel by pixel on the monitor. There is no recalculation
	Optimal zoom	Magnifies and shifts the image so that the maximum of the work area designated for displaying the image is used
	Rotate 90° CCW	Rotates the image 90° counterclockwise
	Rotate 90° CW	Rotates the image 90° clockwise
	Free rotation	Allows you to rotate the image by a free angle, smoothly scrolling with
	Flip vertically	Flips the image along the vertical axis
	Flip horizontally	Flips the image along the horizontal axis
	Waveform config	Allows changing the layout of the ECG waveforms in the display window





Icon	Function	Description
	Magnify glass	After pressing and holding the selected mouse button, a circle will appear with an enlarged area under the mouse cursor. This tool is also available without the need to select a tool. After pressing and holding the SHIFT keyboard key, the same tool will appear. In this case, it is possible to gradually and cyclically increase the magnification in 5 steps by clicking the left mouse button.
	Artificial Intelligence	Submitting a Study to Evaluate Abnormalities Using Artificial Intelligence



Figure 284: img

**8.4.1.1.1 Waveform config** By selecting this tool, you can call up a table for changing and displaying individual ECG waveforms:

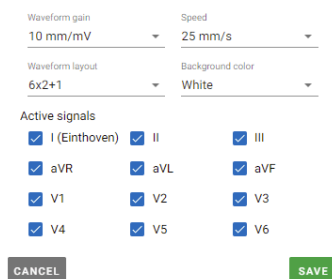
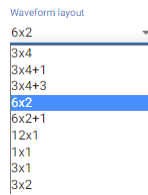


Figure 285: img

This table includes: - Waveform gain - allows changing the strength of the waveform signal from 5mm/mV to 40mm/mV - Speed - allows you to change the speed of the curve shift between 25mm/s and 50mm/s - Waveform layout - allows you to change the distribution of individual curves, using the drop-down bar:



**Figure 286:** img

- Background color - allows the user to choose between dark and light background of the ECG study
- Active signals - display and hide individual curve signals

Use the “Cancel” button to cancel the work you are doing. The “Save” button will apply the selected changes.




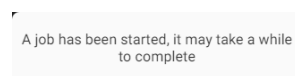
**Figure 287:** img

**8.4.1.1.2 Artificial Intelligence** The “Artificial Intelligence” tool is used to submit a study to evaluate abnormalities using artificial intelligence (AI).

Warning: This tool is only available if you have purchased and installed an AI license and this AI is integrated in the DPGW system.

To submit a study for AI evaluation, follow these steps:

- Open the desired study in a DICOM viewer window
- Select the “Artificial Intelligence” tool  from the “Edit image” tool group
- You will be informed about the initiation of the AI submission and evaluation process:

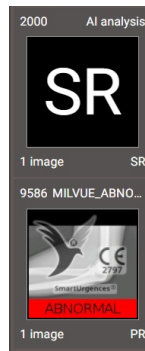


**Figure 288:** img

- To update the “Viewer Worksets” sidebar items, we recommend turning on the “Watch study for changes” function, see the “Workset Floating Panel” chapter

### Example of X-ray study evaluation

Evaluation of the study using AI, this study will be supplemented with PR (Presentation state) and SR (Structured report) items:



**Figure 289:** img

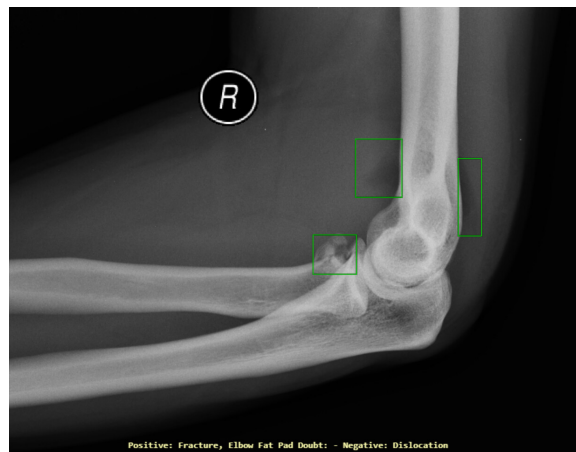


In the case of a positive abnormality finding, PR  will be marked, in the case of a negative




abnormality finding, PR  will be marked.

When the image is displayed in the DICOM viewer window, abnormalities will be marked, including text describing the abnormality:



**Figure 290:** img

To hide the AI evaluation, select the function , located under the upper right OSD label. Selecting this action brings up a drop-down menu for selecting a view:



**Figure 291:** img

The created SR contains the text of the conclusion evaluated by artificial intelligence.

```
Patient
TEST AI 1
*8/2/2022, male
ID: 7788

Study
Accession number: RDO1016977
Date of examination: 7/13/2015 - 23:33:28
Study description: PRAVY LOKET
Language of Content Item and Descendants: English
Observer Type: Device
Device Observer Manufacturer: Milvue
Device Observer Name: SmartUrgences@
Device Observer Model Name: v1.23.2

Findings:
Finding

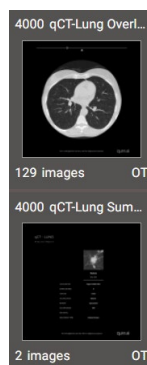
elbow radiography

Fracture
Elbow joint effusion is seen on the profil view.
No other traumatic bone injury.
Bone density is normal.
```

**Figure 292:** img

### Example of CT study evaluation

Evaluation of the study using AI, this study will be supplemented with OT (Other) items:



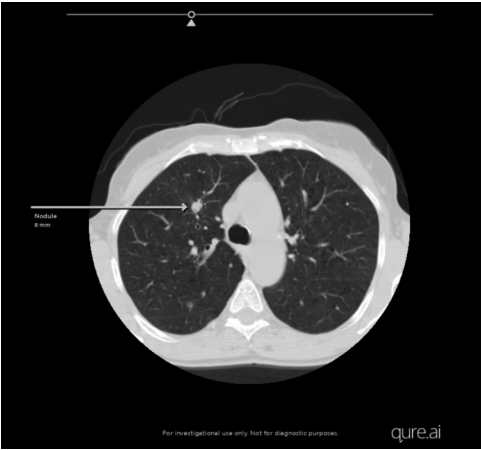
**Figure 293:** img

The first OT entry contains a series of CT images, including a display of the abnormality marked in the series progress bar:

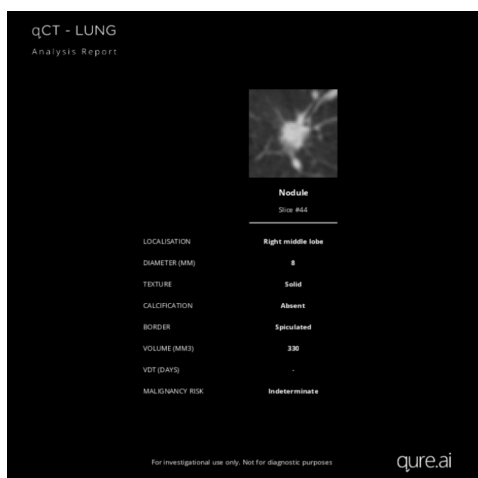


**Figure 294:** img

The second OT item contains the displayed abnormality finding and the detected finding:



**Figure 295:** img








**Figure 296:** img

Warning: The artificial intelligence function serves as a supporting tool for evaluating data from RDG modalities, so it does not replace the expert work of a radiologist. The performing physician is responsible for the final report of the examination evaluation.

#### 8.4.1.2 Edit colors

The “Edit colors” tool group contains the following tools:

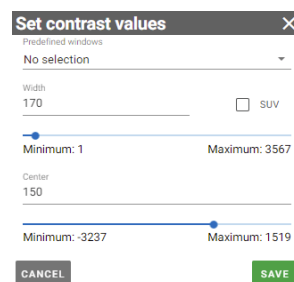
Icon	Function	Description
	Invert	displays the image in reverse. If the image is black and white, the black/white display will be inverted to white/black. In the case of choosing a color palette, the image is inverted within the given color representation
	Windowing	after pressing and holding the selected mouse button, it is possible to change the width and center of the brightness window by moving the mouse up/down and left/right to improve the readability of the image or highlight the given structures. If the OSD labels are not changed, the values of the window can be read in the lower right corner, or on the brightness axis (standardly located at the right edge of the image). If you use this tool in a 3D projection, you can change the display of volume structures
	Reset contrast according image values	this tool will select a brightness window calculated from the entire image

Icon	Function	Description
	Area windowing	after selection, it is possible to mark the area with a rectangle. From this, the optimal window for displaying all structures will be calculated
	Set contrast values	allows manually enter the brightness window through its values
	Gamma correction	allows change the gamma correction using a displayed table with a sliding bar of gamma values from 0.1 to 5
	Image Filters	for more detailed image processing, smoothing, edge detection and sharpening filters are available
	Toggle VOI LUT	for some images it is possible to switch the VOI LUT (The Value Of Interest lookup table). It is basically a curve that in a way transforms the display of the given image in a different presentation of contrast, shades of gray, ... Very often this function is used to switch the display between the display set on the modality and the display using a standard DICOM curve



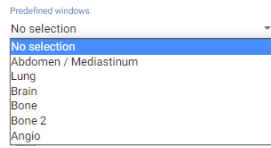
**Figure 297:** img

**8.4.1.2.1 Set contrast values** By selecting this tool, you will call up a table for changing the contrast values:



**Figure 298:** img

This table includes: - Predefined windows - allows the user to select predefined values of the window from the scroll bar (the values of the table will subsequently be adjusted according to the selected window of values):



**Figure 299:** img

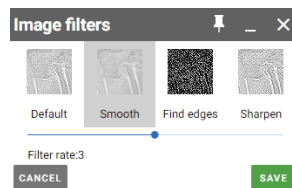
- Width - the possibility of choosing the width of the brightness window using a text field or a sliding bar
- SUV - option to choose SUV (Standardized uptake value)
- Center - option to choose the center of the brightness window using a text field or a slider bar

Use the “Cancel” button to cancel the action. The “Save” button will apply the selected changes.




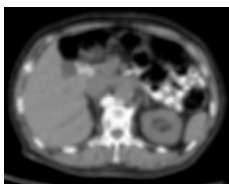
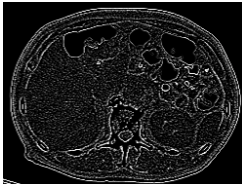
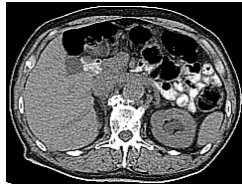
**Figure 300:** img

**8.4.1.2.2 Image filters** By selecting this tool, you will call up a table for defining image filters:



**Figure 301:** img

The “Image filters” table contains the following filters:

Default	Smooth	Find edges	Sharpen
			

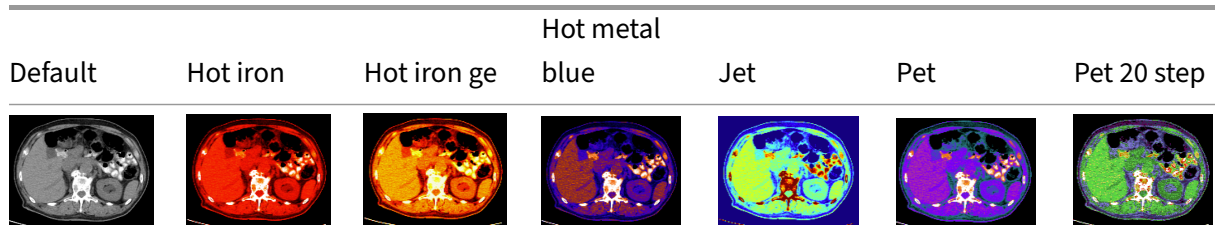
The “Smooth” and “Sharpen” image filters include the ability to choose the strength of the filter using a slider.





**Figure 302:** img

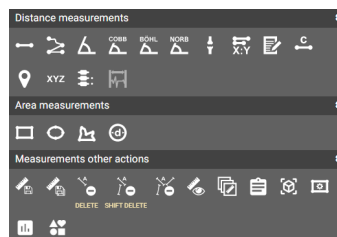
**8.4.1.3 Color palette** The group of tools “Color palette” contains palettes according to the standard, converting gray levels to a fixed color palette. The tool group contains the following palettes:



### 8.5 Measurement tools

The “Measurement tools” tab is used for measuring, labeling and editing measurements, including saving them in an image data frame. In case you want to use the measurement tool, assign the measurement functions to the selected mouse button. This function will then be displayed in the currently selected tools on individual mouse buttons (paragraph 2 of the “DICOM viewer Tools” chapter) and become active.














This tab contains the following groups of tools: - Distance measurement - Area measurement - Measurement other actions



**Figure 303:** img

#### 8.5.1 Distance measurement

The “Distance measurement” tool group contains the following tools:

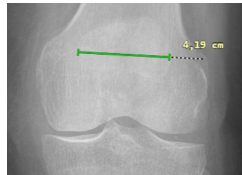
Icon	Function	Description
	Distance measurement	Measuring the distance between two points in the image
	Freehand	Distance measurement using multiple points, or to measure the perimeter of an object in the image
	Angle measurement	Angle measurement in the image
	Cobb angle	Measuring the angle between two line segments in the image
	Böhler angle	Measurement of the angle of intersection of line segments in the image
	Norberg angle	Measurement of the angle of the femur heads and their distance
	Lower limb angles	Measurement of individual angles of the lower limb in the image
	Distance ratio	Measuring the size difference of two line segments in the image
	Note	Inserting text with a directional arrow into the image
	Calibration	Calibration of the measured values in the image, by changing the values of the measurement range
	Optical density	Informative function to display the blackening value of the photographic layer in units of HU
	Coordinates	Informative function for determining the position of the point of interest, relative to the image
	Vertebra note	Marking of individual vertebrae in the image
	Waveform measurement	ECG display measurement



**Figure 304:** img

**8.5.1.1 Distance measurement** The “Distance measurement” tool measures the distance between two points in the image: - Select the “Distance measurement” tool with the selected mouse button in

the “Distance measurement” tool group - hover the mouse over the point of interest, press and hold the selected mouse button with the tool - move the mouse to the end point of interest and release the selected mouse button with the tool - in the image, the distance will be drawn with a line, with the measured value in cm

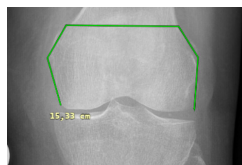


**Figure 305:** img



**Figure 306:** img

**8.5.1.2 Freehand** The “Freehand” tool measures distance using multiple points, or to measure the perimeter of an object in the image: - Select the “Freehand” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest and click on the selected mouse button with the tool - move the mouse to the next point of interest and click on the selected mouse button with the tool - if you want to complete the measurement, move the mouse to the end point of interest and double-click the selected mouse button with the tool to complete the measurement - the measured distance will be drawn in the picture, with the value in cm



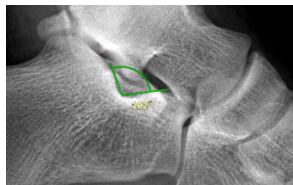
**Figure 307:** img



**Figure 308:** img

**8.5.1.3 Angle measurement** The “Angle measurement” tool measures an angle in an image: - Select the “Angle measurement” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest and click on the selected mouse button with the tool - move the mouse to the next point of interest (vertex) and click on the selected mouse button

with the tool - move the mouse to the end point of interest and click on the selected mouse button with the tool - an angle will be drawn in the image, with the specified value in degrees

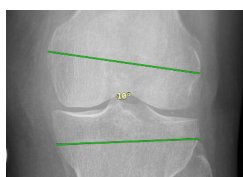


**Figure 309:** img



**Figure 310:** img

**8.5.1.4 Cobb angle** The “Cobb angle” tool measures the angle between two line segments in the image: - Select the “Cobb angle” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest, press and hold the selected mouse button with the tool - move the mouse to the end point of interest and release the selected mouse button with the tool - this will create the first segment, proceed in the same way for the second segment - the angle between two line segments will be drawn in the image, with the specified value in degrees



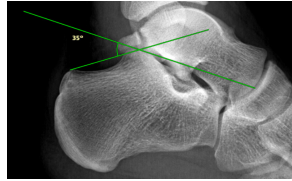
**Figure 311:** img



**Figure 312:** img

**8.5.1.5 Böhler angle** The “Böhler angle” tool measures the angle of intersection of line segments in the image: - Select the “Böhler angle” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest and click on the selected mouse button with the tool - hover the mouse over the next point of interest (intersection of line segments) and click on the selected mouse button with the tool - move the mouse to the end point of interest and click on

the selected mouse button with the tool - the angle at the intersection of the line segments will be drawn in the image, with the specified value in degrees

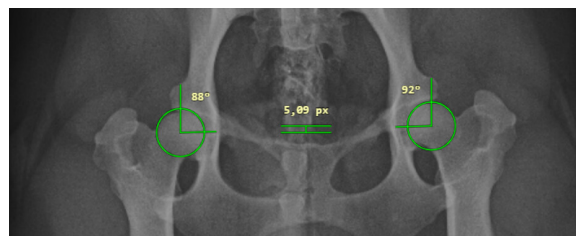


**Figure 313:** img



**Figure 314:** img

**8.5.1.6 Norberg angle** The “Norberg angle” tool measures the angle of the femur heads and their distance: - Select the “Norberg angle” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest and click and hold the selected mouse button with the tool to create a circle corresponding to the left femoral head - this circle will be copied for possible placement on the right femoral head, click the mouse to confirm - the measurement will be drawn in the image



**Figure 315:** img

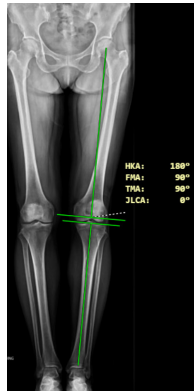
Warning: Use the “Norberg angle” only for veterinary purposes.



**Figure 316:** img

**8.5.1.7 Lower limb angles** The “Lower limb angles” tool measures the individual angles of the lower limb in the image: - Select the “Lower limb angles” tool with the selected mouse button in the

“Distance measurement” tool group - hover the mouse over the point of interest, press and hold the selected mouse button with the tool - move the mouse to the end point of interest and release the selected mouse button with the tool - this will create the first segment, proceed in the same way for the second segment - the angles of the lower limb will be drawn in the image, with the values in degrees: - HKA - hip-knee-ankle angle - FMA - femoral mechanical angle - TMA - tibial mechanical angle - JLCA - joint line convergence angle

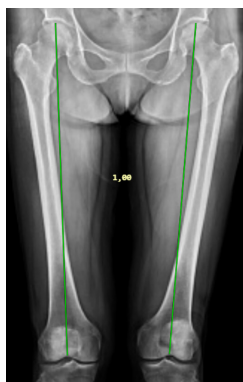


**Figure 317:** img



**Figure 318:** img

**8.5.1.8 Distance ratio** The “Distance ratio” tool measures the size difference between two line segments in the image: - Select the “Distance ratio” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest, press and hold the selected mouse button with the tool - move the mouse to the end point of interest and release the selected mouse button with the tool - this will create the first segment, proceed in the same way for the second segment - the measurement of the ratio of lengths will be drawn in the image, with the specified value of the difference



**Figure 319:** img



**Figure 320:** img

**8.5.1.9 Note** The “Note” tool is used to insert text with a directional arrow into the image: - Select the “Note” tool with the selected mouse button in the “Distance measurement” tool group - move the mouse to the point of interest where the text of the note will be placed, press and hold the selected mouse button with the tool - hover the mouse over the point to which the note will point and release the selected mouse button with the tool - a table will be displayed with the possibility to insert the text note



**Figure 321:** img

- click the cancel button to cancel the action, the save button will insert the selected text into the image
- an arrow with a text note will be drawn in the image

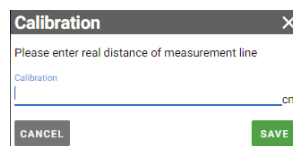


**Figure 322:** img



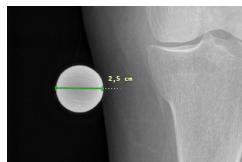
**Figure 323:** img

**8.5.1.10 Calibration** The “Calibration” tool is used to calibrate the measured values in the image by changing the values of the measurement range: - Select the “Calibration” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest, press and hold the selected mouse button with the tool - move the mouse to the end point of interest and release the selected mouse button with the tool - a table will be displayed with the possibility of entering a numerical value in cm for calibration



**Figure 324:** img

- click the cancel button to cancel the action, by clicking the save button, the measurement will be calibrated according to the specified value
- the distance will be drawn in the image with a line segment, with a calibrated value in cm



**Figure 325:** img



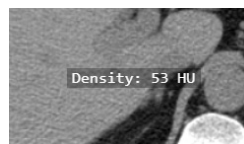
**Figure 326:** img

**8.5.1.11 Optical density** The “Optical density” tool serves as an informative function to determine the measure for the blackening value of the photographic layer in HU “Hounsfield unit” value. It expresses the radiation absorption of a given voxel relative to the absorption of water radiation (for water HU = 0) from different radiation directions. Examples of values are shown in the following table:



Tissue	CT number, HU density
air	-1000
fat	-50 - -100
water	0
liquor	5
cerebral white matter	30
cerebral gray matter	34
blood	47
liver	40-60
muscles	35-75
fibrous tissue	60-90
cartilage	80-130
bone	1000-3000

To view optical density in a CT series: - Select the “Optical density” tool with the selected mouse button in the “Distance measurement” tool group - this makes the tool active and you can dynamically display the HU in the image by moving the mouse over the area of interest



**Figure 327:** img

- if you want to record a static point of optical density in the image, hover the mouse over the area of interest and click on the selected mouse button with the tool
- a point with a displayed optical density value will be drawn in the image



**Figure 328:** img

- to end the optical density display, select another tool from the “Distance measurement” tab

Warning: The optical density measurement value on the X-ray image, i.e. from the CR, DX modality, is expressed using the US unit “Unspecified”.



**Figure 329:** img

**8.5.1.12 Coordinates** The “Coordinates” tool serves as an informative function for determining the position of the point of interest, relative to the image, these coordinates of the patient are recalculated according to the DICOM tag “PatientImagePosition”: - Select the “Coordinates” tool with the selected mouse button in the “Distance measurement” tool group - this makes the tool active and you can dynamically display the position in the image by moving the mouse over the area of interest



**Figure 330:** img

- if you want to record a static point of coordinate in the image, hover the mouse over the area of interest and click on the selected mouse button with the tool
- a point with the displayed coordinate value will be drawn in the image



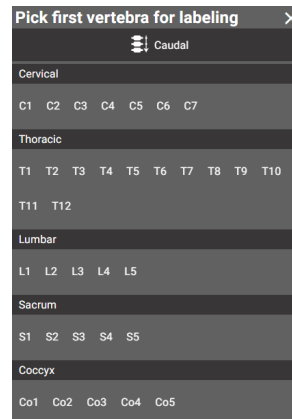
**Figure 331:** img

- to end the display of coordinates, select another tool from the “Distance measurement” tab



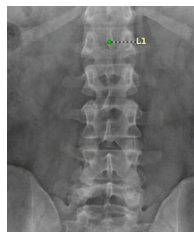
**Figure 332:** img

**8.5.1.13 Vertebra note** The “Vertebra note” tool is used to marking individual vertebrae in the image: - Select the “Vertebra note” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the vertebra to mark and click on the selected mouse button with the tool - a table will be displayed with the option to select the marked vertebra:



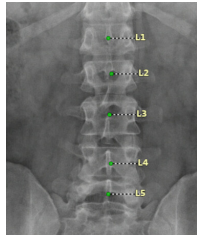
**Figure 333:** img

- select the direction of marking the vertebrae Caudal/Cranial
- select the name of the vertebrae to label
- the vertebra will be marked in the image:



**Figure 334:** img

- to mark more vertebrae, just click on the other vertebrae in the image, they will be marked according to the sequence:



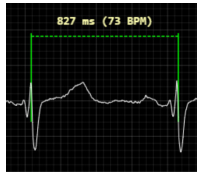
**Figure 335:** img

- to cancel the marking of vertebrae, select another tool from the “Distance measurement” tab, the marking will also be inactive if you mark a whole series of vertebrae in a sequence



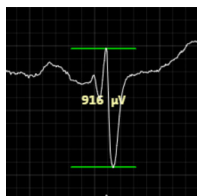
**Figure 336:** img

**8.5.1.14 Waveform measurement** By selecting the “Waveform measurement” tool, it is possible to measure ECG values: - Select the “Waveform measurement” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest, press and hold the selected mouse button with the tool - move the mouse to the end point of interest and release the selected mouse button with the tool - in case of dragging the mouse horizontally between two points on the curve, the time will be measured in ms:



**Figure 337:** img





- in case of dragging the mouse vertically between two points on the curve, the magnitude of the signal will be measured in  $\mu\text{V}$ :



**Figure 338:** img

## 8.5.2 Area measurement

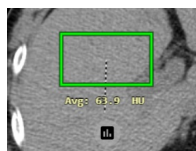
The “Area measurement” tool group contains the following tools:

Icon	Function	Description
	Rectangle	Measurement of the value contained in the rectangle
	Ellipse	Measuring the value contained in the ellipse
	Freehand area	Measurement of the value contained in the polygon
	Shape	Measurement of the value contained in the object selected by the user




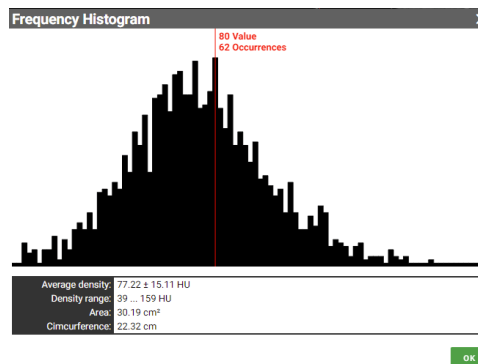
**Figure 339:** img

**8.5.2.1 Rectangle** The “Rectangle” tool measures the values contained in the user-created rectangle drawn in the image: - Select the “Rectangle” tool with the selected mouse button in the “Distance measurement” tool group - move the mouse to the point of interest, press and hold the selected mouse button with the tool, this will start recording the rectangle from the corner and expand it by dragging - move the mouse to the end point of interest and release the selected mouse button with the tool - the rectangle area and the measured value of the HU diameter will be drawn in the image



**Figure 340:** img

- to get more information about the measured values, you can use the icon located below the measured value of the HU average , which will display the “Frequency Histogram” table:



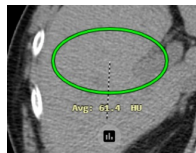
**Figure 341:** img

- close the table by selecting the “OK” button



**Figure 342:** img

**8.5.2.2 Ellipse** The “Ellipse” tool measures the values contained in a user-created ellipse drawn in the image. To create an ellipse, follow the same procedure as when creating a rectangle. This creates an ellipse with the measured values in the image:



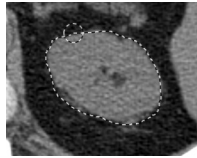
**Figure 343:** img



**Figure 344:** img

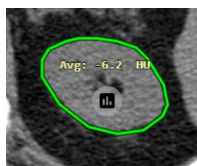
**8.5.2.3 Freehand area** The “Freehand area” tool measures the values contained in a user-created polygon drawn in the image: - Select the “Freehand area” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest and click on the selected mouse button with the tool - move the mouse to the next point of interest and click on the selected mouse button with the tool - if you want to complete the measurement, move the mouse to

the first point of the free contour, highlighted by a circle, and click the selected mouse button with the tool to complete the measurement



**Figure 345:** img

- the area of the polygon and the measured value of the HU diameter will be drawn in the image



**Figure 346:** img

- for more information about the measured values, use the icon to display the “Frequency histogram” table, see section “Rectangle”



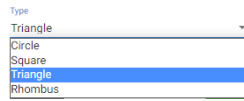
**Figure 347:** img

**8.5.2.4 Shape** The “Shape” tool is used to define the shape and size of the area, using a selection and a text field by the user: - Select the “Shape” tool with the selected mouse button in the “Distance measurement” tool group - hover the mouse over the point of interest and click on the selected mouse button with the tool to display the “Shape” table:



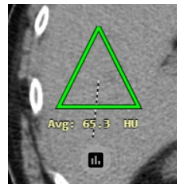
**Figure 348:** img

- choose the type of shape formed by the area of interest from the drop-down menu:



**Figure 349:** img

- enter the numerical value of the size of the area in cm in the scale field
- use the cancel button to cancel the performed action, the save button will insert the shape of the area into the image
- the chosen shape of the area and the measured value of the HU diameter will be drawn in the image



**Figure 350:** img







- for more information about the measured values, use the icon to display the “Frequency histogram” table, see section “Rectangle”

### 8.5.3 Measurement other actions

The group of tools “Measurement other actions” contains the following tools:

Icon	Function	Description
	Save measurement to image	Create presentation state with saved measurement for selected image
	Save all measurements	Create a presentation state with embedded measurements taken over the entire patient study
	Remove measurement	Remove the selected measurement from the image
	Remove all measurements	Remove all measurements from the displayed image
	Remove all measurements from current session	Remove all measurements from all series and all open studies
	Hide measurement	Hides all measurements from the image

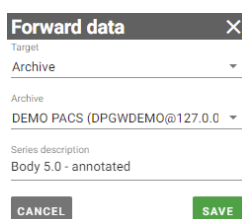


Icon	Function	Description
	Common measurement for images in series	Keeping of all measured objects in the displayed window for all images in the series
	Copy to clipboard	Allows you to copy the value of the last measurement
	Volume of measurements in series	Volume measurement in cm <sup>3</sup> between individual areas marked “Area measurement”
	ROI measurements config	Specifying the display of the primary value “Area measurement” in the image
	Frequency histogram	Displaying information about the measured values of the measured and selected area
	Display PR after study opened	Enable/disable automatic display of saved measurements in the image after opening the study



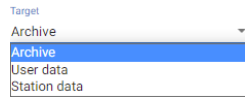
**Figure 351:** img

**8.5.3.1 Save measurement to image** The “Save measurement to image” tool is used to create a presentation state with saved measurement for the selected image. This saving does not change the original series of images saved in the PACS archive, but only adds information about the measurement in DICOM PR format. To save the measurement to the image, proceed as follows: - Select the “Save measurement to image” tool with the left mouse button in the “Distance measurement” tool group, which will display the “Forward data” table



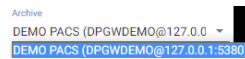
**Figure 352:** img

- select the save destination (Target) from the drop-down menu



**Figure 353:** img

- in case you have chosen the storage destination “Archive” and you have configured multiple PACS destinations, select the selected PACS archive for saving (If the user destination is selected, this window will be inactive)



**Figure 354:** img

- name the saved series with measurements in the image



**Figure 355:** img

- use the cancel button to cancel the performed action, use the save button to create a presentation state with measurement in the image
- the created presentation state will be added to the “Viewer Working set”



**Figure 356:** img



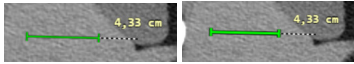
**Figure 357:** img

**8.5.3.2 Save all measurements** The “Save all measurements” tool is used to create a presentation state with all measurements performed in the entire patient study. To save all measurements, proceed similarly to the paragraph “Save measurement to image”.



**Figure 358:** img

**8.5.3.3 Remove measurement** The “Remove measurement” tool is used to remove the selected measurement from the image: - Mark the selected measurement for deletion by clicking on it with the left mouse button, it will be highlighted



- select the “Remove measurement” tool with the left mouse button in the “Distance measurement” tool group, or press the DELETE keyboard key
- the selected measurement has been removed



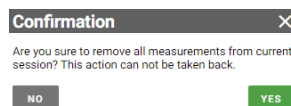
**Figure 359:** img

**8.5.3.4 Remove all measurements** The “Remove all measurements” tool is used to remove all measurements from the displayed image: - Select the “Remove all measurements” tool with the left mouse button in the “Distance measurement” tool group, or press the keyboard shortcut SHIFT+DELETE - this removed all measurements from a specific image in the series



**Figure 360:** img

**8.5.3.5 Remove all measurements from current session** The “Remove all measurements from current session” tool is used to remove all measurements from all series and all open studies: - Select the “Remove all measurements from current session” tool with the left mouse button in the “Distance measurement” tool group, which will display the action confirmation table:




**Figure 361:** img

- press the “NO” button to cancel the action, press the “YES” button to delete all the measurements



**Figure 362:** img

**8.5.3.6 Hide measurement** In the event that the measured objects prevent work with image documentation, they can be temporarily hidden, without the need to remove them with the “Hide measurement” tool: - Select the “Hide measurement” tool with the left mouse button in the “Distance measurement” tool group - this will hide all measurements, the “Hide measurement” icon in the “Distance measurement” tool group will be marked with a red background  and you will be notified of this information

Show measurements: No

**Figure 363:** img

- in case you want to display the measurement again, select the “Hide measurement” tool again with the left mouse button in the “Distance measurement” tool group, by choosing this action you will be notified of information

Show measurements: Yes

**Figure 364:** img



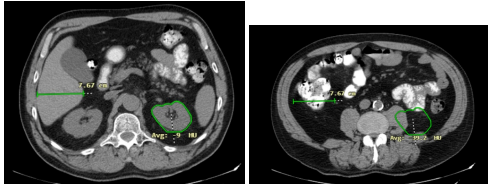
**Figure 365:** img

**8.5.3.7 Common measurement for images in series** The tool “Common measurement for images in series” is used to keeping all measured objects in the displayed image for all images in a series. When moving to the next images in the series, the measurement remains unchanged and will be displayed on the next images as well: - If all the required measurements in the image have been created, select the tool “Common measurement for images in series” with the left mouse button in the group of tools “Distance measurement” - this will keep the measurement from a specific image for the entire series, the “Common measurement for images in series” icon in the “Distance measurement” tool group will be marked with a red background and you will be notified of this information

Common measurements  
for images in the series:  
Yes

**Figure 366:** img

- when moving to the next images in the series, the measurement objects remain unchanged



- in case you no longer want to use this action, select the “Common measurement for images in series” tool again with the left mouse button in the “Distance measurement” tool group, by choosing this action you will be notified of information

Common measurements  
for images in the series:  
No

**Figure 367:** img



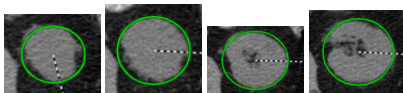
**Figure 368:** img

**8.5.3.8 Copy to clipboard** The “Copy to clipboard” tool is used to copy the value of the last measurement to the clipboard. To paste the copied value into a text file, use the keyboard shortcuts ctrl+v.

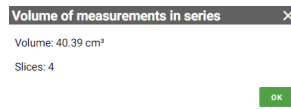


**Figure 369:** img

**8.5.3.9 Volume of measurements in series** The “Volume of measurements in series” tool measures the volume in  $\text{cm}^3$  between individual areas marked with “Area measurement”: - Mark the area of interest by “Area measurement” in individual consecutive images in a series e.g.:



- if you have marked all the interests areas in the series, select the “Volume of measurements in series” tool with the left mouse button in the “Distance measurement” tool group, which will display the “Volume of measurements in series” table



**Figure 370:** img

- this table contains information about the measured volume value in cm<sup>3</sup> and the number of images from which this value was created
- click the “OK” button to close the table



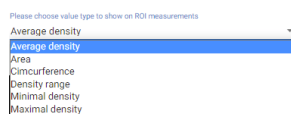
**Figure 371:** img

**8.5.3.10 ROI measurements config** The “ROI measurements config” tool is used to determine the display of the primary “Area measurement” value in the image: - Select the “ROI measurements config” tool with the left mouse button in the “Distance measurement” tool group to display the “ROI measurements config” table



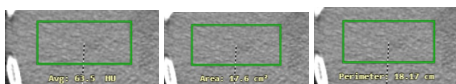
**Figure 372:** img

- in this table, choose the interest primary value for display in the area measurement in the scrolling menu




**Figure 373:** img

- use the cancel button to cancel the performed action, use the save button to select the value that will be displayed when measuring the area






**Figure 374:** img

**8.5.3.11 Frequency histogram** The “Frequency Histogram” tool is used to obtain more information about the measured values of the measured and selected area. By choosing this action, you will display the “Frequency Histogram” table. This table can also be displayed with an icon  displayed for the measured area. For more info, see the paragraph “Rectangle”.




**Figure 375:** img

**8.5.3.12 Display PR after study opened** The tool “Display PR after study opened” is used to turn on/off the automatic display of saved measurements in the image, in PR (Presentation state) format, after opening the study.

By choosing this tool, the icon will be highlighted in red  and you will be informed about the activation of the function:

Display PR after study  
opened: Yes

**Figure 376:** img

To disable this feature, select this tool again, the icon will no longer be highlighted  and you will be informed of the disabling:

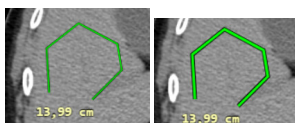
Display PR after study  
opened: No

**Figure 377:** img

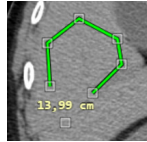
## 8.5.4 Editing measurement

Individual measured objects can be edited or the measured value can be moved by editing them.

To edit a measurement: - mark the selected measurement object by clicking the left button on it, which will highlight its outline

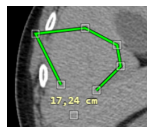


- hover the mouse over the selected measurement object, the individual measurement points will be displayed



**Figure 378:** img

- by clicking and holding the selected point, you can move the point to the place of interest



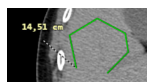
**Figure 379:** img

- the measured value can also be moved, you can do so by moving the point with the value to the place of interest



**Figure 380:** img

- by clicking outside the measured object, or by creating a new measurement object, the modified measurement object will be unmarked with a display of the modifications made



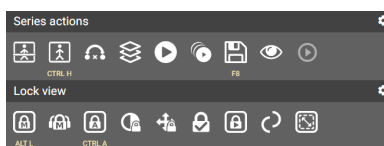
**Figure 381:** img

## 8.6 Series action tools

The tab “Series action tools” is used for working with the displayed series, locating the position in the series and synchronizing series.

This tab contains the following groups of tools: - Series actions - Lock view














**Figure 382:** img

### 8.6.1 Series actions


The “Series actions” tool group contains the following tools:

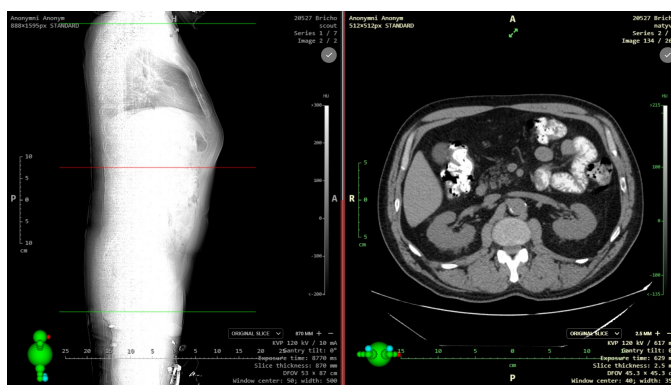
Icon	Function	Description
	Localizer lines	Display of locating lines, between two mutually perpendicular series
	Hide reconstruction localizer lines	Hiding localization lines, between reconstructed mutually perpendicular series, during volume operations
	Browse selected images only	Browsing only tagged key images in the series
	Stacking	Browse through the series with the selected mouse button
	Toggle Player	Display or hide the player for automatic browse through the series
	Play/Pause in all windows	Shows the video player in all panels “Windows for displaying image data”
	Save key images	Save the marked key images to the new created series
	Display series in empty panels	Automatic series display, when changing the number of panels to display in the “Image data display window”
	Video player tool	Tool for playing and working with video in DICOM format



**Figure 383:** img

**8.6.1.1 Localizer lines** The “Localizer lines” tool is used to display localization lines between two mutually perpendicular series and displays the current position of the image in the series.

To display “Localizer lines” proceed as follows: - Split the “Windows for displaying image data” into two panels by “Configure the layout of the panels”  - in these panels display two series whose reconstructions are perpendicular to each other - select the “Localizer lines” tool in the “Series actions” tool group - in the series that is perpendicular to the currently selected series, the localization lines are displayed




**Figure 384:** img

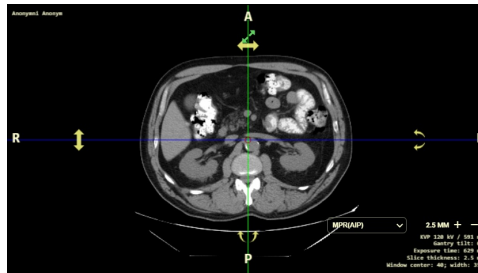
- to hide the localization lines, select the “Localizer lines” tool again in the “Series actions” tool group



**Figure 385:** img

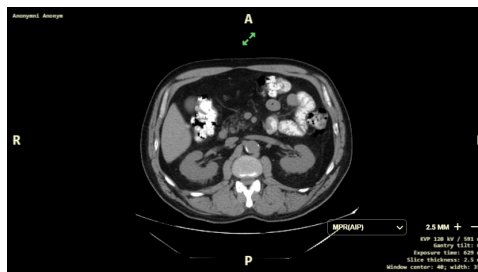
**8.6.1.2 Hide reconstruction localizer lines** The “Hide reconstruction localizer lines” tool is used to hide localization lines, between reconstructed mutually perpendicular series, during volume operations.

To hide the “Localizer lines for reconstruction” proceed as follows: - Split the “Image data display window” into the selected panel layout “Configure the layout of the panels”  and display the individual series of the reconstructed images in the panels. They will be displayed with localization lines for the reconstructed series



**Figure 386:** img

- to hide the localization lines for reconstructed series, choose the “Hide reconstruction localizer lines” tool in the “Series actions” tool group
- localization lines for reconstructed series were hidden



**Figure 387:** img

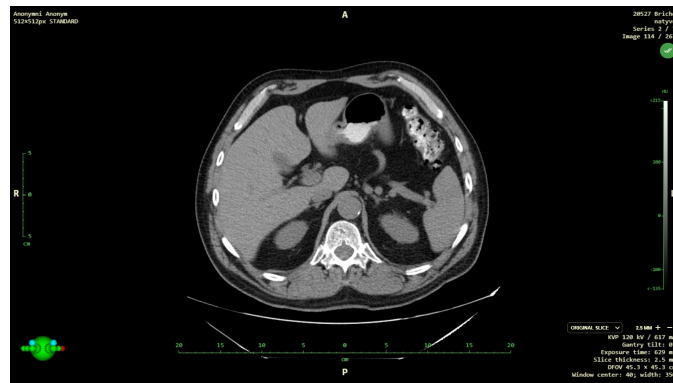
- to display the localizer lines for reconstructed series again, select the “Hide reconstruction localizer lines” tool in the “Series actions” tool group



**Figure 388:** img

**8.6.1.3 Browse selected images only** The tool “Browse selected images only” is used for browsing only marked key images in a series with standard tools (mouse wheel, keyboard shortcuts).

To tag and browse key images, follow these steps: - In the “Windows for displaying image data”, display the selected series - when going through the series, you can mark individual images with an area of interest as a so-called key image with the check icon  located in the upper right corner of the “Windows for display image data”. Marking will turn the check icon green . Individual key images will also be displayed in the scroll bar for going through the series on the right side of the screen. The icon for marking key images is displayed only if you have only one panel displayed in the “Windows for display image data” or if you have selected a series maximized to one panel with the .



**Figure 389:** img

- to browse only marked key images, select the tool “Browse selected images only” in the “Series actions” tool group, the system will notify you of this information:

Browse selected images  
only: Yes

**Figure 390:** img

- this way, when going through the series, you will only skip over marked key images
- to go through the entire series, select the “Browse selected images only” tool again in the “Series actions” tool group, by selecting the action, the system will notify you of this information:

Browse selected images  
only: No

**Figure 391:** img



**Figure 392:** img

**8.6.1.4 Stacking** The “Stacking” tool is used to scroll through the series with the selected mouse button and thus complements the possibility of scrolling through the series with the mouse wheel or arrow keys.

To browse the series with the “Stacking” tool, proceed as follows: - Select the “Stacking” tool with the selected mouse button in the “Series actions” tool group - hover the mouse over the selected display panel with the series - by clicking the selected mouse button and dragging at the same time, you will go through the series - to cancel “Stacking”, choose another tool on the selected mouse button




**Figure 393:** img

**8.6.1.5 Toggle Player** The “Toggle Player” tool is used to display or hide the player for automatic browse through the series as with a classic video player.



**Figure 394:** img

The player includes the following tools:

Icon	Function	Description
	First frame	Displays the first frame in the series
	Previous frame	Moves back one frame in the series
	Play	Starts an automatic browse through the series
	Pause	Stops the automatic browse through the series
	Next frame	Advances one frame in the series
	Last frame	Displays the last frame in the series
	Previous in series	Displays the previous series of images
	Next in series	It will display the following series of images
	Loop	Repetitive automatic browse through series
	Loop back and forth	Autoplay through series will continuously play from beginning to end and backwards
	Playback speed	Ability to choose the speed of autoplay using the sliding point bar  the speed value is expressed in frames per second

The player also allows automatic browse of only parts of the series. The bar above the player is used to select the playback section:



**Figure 395:** img

The numerical values above the arrows in this bar indicate the frame numbers in the series. By dragging these numbers on the bar, we can select the playback section:

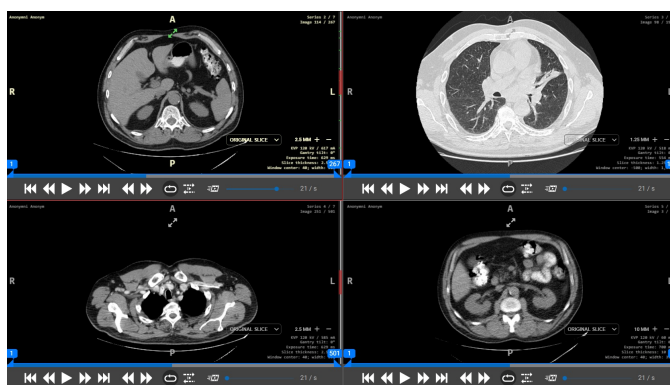


**Figure 396:** img



**Figure 397:** img

**8.6.1.6 Play/Pause in all windows** The “Play/Pause in all windows” tool will display the player in all “Windows for displaying image data” panels in which a series of images is displayed and automatically start browsing them.



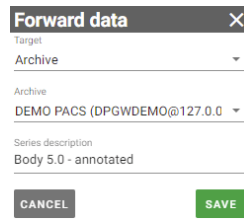
**Figure 398:** img



**Figure 399:** img

**8.6.1.7 Save key images** The “Save key images” tool is used to save marked key images into the new created KO series.

- Select the “Save key images” tool in the “Series actions” tool group to display the “Forward Data” table



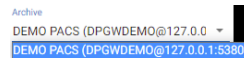
**Figure 400:** img

- select the save destination from the drop-down menu



**Figure 401:** img

- in case you have chosen the storage destination “Archive” and you have configured multiple PACS destinations, select the selected PACS archive for saving (If the user destination is selected, this window will be inactive)



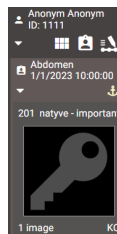
**Figure 402:** img

- name the new saved key images series



**Figure 403:** img

- the cancel button cancels the action, the save button creates a new series with key images
- the new created series will be added to the “Viewer Working Set”



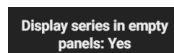
**Figure 404:** img



**Figure 405:** img

**8.6.1.8 Display series in empty panels** The tool “Display series in empty panels” is used for automatic display of series, when changing the number of panels for display in the “Window for displaying image data”. The series are added to the panels according to the order in the study, skipping already displayed series. If this action is not turned on, when other panels are displayed, they remain empty.

By selecting the “Display series in empty panels” tool, you will be notified by the system:



**Figure 406:** img

To turn it off, select the “Display series in empty panels” tool again, you will be notified by the system:

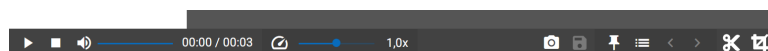


**Figure 407:** img



**Figure 408:** img


**8.6.1.9 Video player tool** “Video player tool” is used for playing and working with video in DICOM format



**Figure 409:** img

#### 1. Video playback

To play the video, use the “Play” icon , or left-click on the displayed video.

To stop the video, use the “Stop” icon , or click the left mouse button on the running, displayed video.


To scroll through the video loop, click in the video location bar above each player tool. You can also scroll through the video by clicking and dragging the mouse at the same time.







**Figure 410:** img

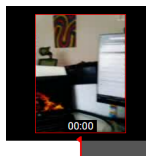
To change the audio volume of the video, select it using the sliding dot on the bar .

To change the video playback speed, select it using the slider on the playback speed bar . The speed can be chosen from 0.1x to 8x.


2. Editing and working with video


**Marking images in video**


To mark the image of interest in the video, display the selected image using the player’s scroll bar and then mark it with the “Tags” icon . When clicked, the icon will turn red  and a red flag will showed on the player scroll bar with a preview of the image:

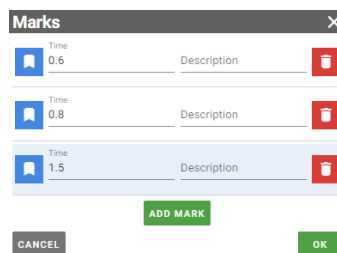


**Figure 411:** img



You can switch between marked images by clicking on the flag icons in the player’s scroll bar, or by using the arrow icons  located in the player’s toolbar.

If you click the  icon again, the selected image will be unmarked.

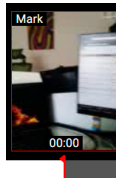
Marked images can be managed in the table displayed by an icon  :





**Figure 412:** img

In this table, individual marks parameters can be edited: - “Show” icon  - displays the marked frame in the video with this mark - “Time” field  - allows to define the placed marker of the marked frame

in the video using a value in seconds - “Description” field Description Mark - allows you to define the name of the placed tag, the following description will be shown in the preview of the marked video frame:



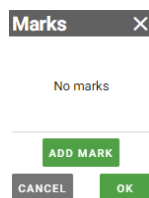
**Figure 413:** img

- “Remove” icon  - select this action to remove the placed tag
- “Add mark” button  - by selecting this action, you add a new line of the tag to the table with the possibility of defining it:




**Figure 414:** img

- Use the “Cancel” button to cancel the performed action, use the “OK” button to confirm the changes made
- In case you don’t have any tags in your video, start with the “Add mark” button:

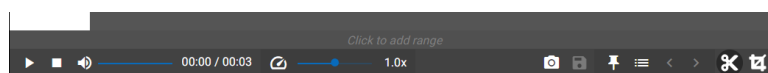


**Figure 415:** img

## Video Editing

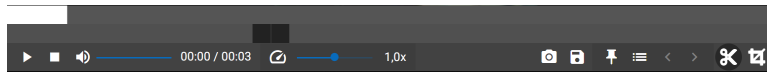
If you want to cut only part of the video, choose the “Cut” icon  from the player toolbar.

This will display the bar for marking a part of the video, located between the player toolbar and the scroll bar:



**Figure 416:** img

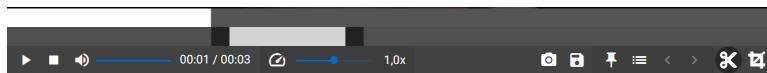
To mark the selected section of the video, click in the approximate position of interest:



**Figure 417:** img


Added sliding points to mark the section of the video for editing.

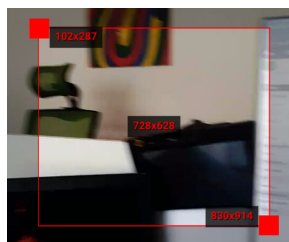
To mark the section of interest, click on one of the points and at the same time drag it along the bar to select its position. The left point then determines the start of the video section and the right point its end. When you drag one of the points, a video image will always be displayed at the specific location of this point. The selected section then looks, for example, like this:



**Figure 418:** img

### Video area viewport


By selecting the “Cutout” tool  in the player toolbar, you can change the size of the video cutout by dragging the red squares located in the upper left and lower right corner of the viewport. When hovering the mouse over the crop field, these squares have numerical values of their location in pixels, relative to the clipped image in the video. The numerical value in the middle of the cutouted field indicates the resolution size of the image after it has been cutouted.




**Figure 419:** img

## 3. Archiving of edited video and images

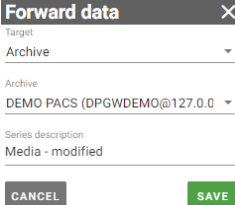
### Export Image

The “Capture image” tool  located in the player’s toolbar, is used to export a video image section to the user’s local storage in .jpg format . This exported image does not contain OSD labels and only displays the cutouted part of the image with the “Cutout” tool.

## Save edited video

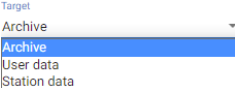
The “Save edited video” tool  located in the player’s toolbar is used for archiving the edited video.

In case you want to save the selected cut and cutout of the video, including tags, choose the “Save edited video” tool, the “Forward data” table will be displayed:



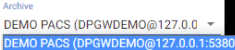
**Figure 420:** img

- select the save destination from the drop-down menu



**Figure 421:** img

- in case you have chosen the storage destination “Archive” and you have configured multiple PACS destinations, select the PACS archive for saving (If the user destination is selected, this window will be inactive)



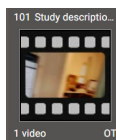
**Figure 422:** img

- name the edited video to save




**Figure 423:** img

- use the cancel button to cancel the action, the save button to create a new video
- a new video will be added as another patient study to the “Viewer Working Set”












**Figure 424:** img

- if the video is not edited, the save icon remains inactive , edit the video to activate it.

### 8.6.2 Lock view

If you want to browse or work with two or more series synchronously, you can use one of the offered “Lock view” tools:

Icon	Function	Description
	Lock view	Synchronous multi-panels series scrolling from the current image position in the series
	Lock to separate groups	Section into groups of individual panels “Windows for displaying image data” for possible manual or automatic synchronization of series according to the level of data acquisition of the series, or by manual entry
	Automatic lock	Synchronous browsing of series in multiple panels with automatic finding of the corresponding image position in the series
	Lock windowing	When using the sync feature, the windowing adjustment will be applied to all sync series simultaneously
	Lock transformations	When the sync function is used, the image adjustment will be applied to all the sync series simultaneously
	Display panel synchronizability	Displaying the option to lock individual panels in the “Window for displaying image data”
	Lock videos	Synchronous browsing of synchronously recorded videos
	Mammography Image Alignment	Automatic zooming and placement of mammographic images, according to the ideal parameters of the unfolded panels in the “Image data display window”

Icon	Function	Description
	Synchronize viewer size between windows	Synchronization size of displayed studies in individual panels on a multi-monitor workstation



**Figure 425:** img

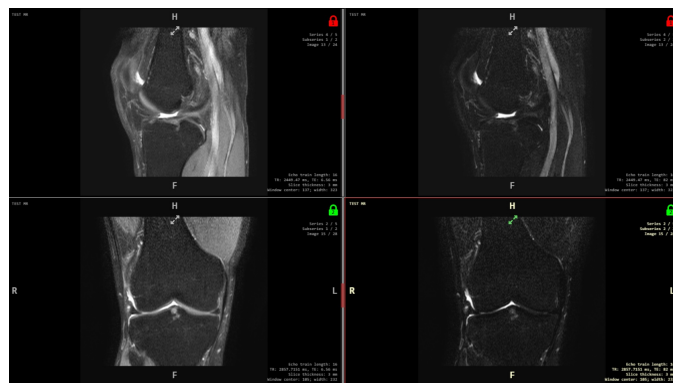
**8.6.2.1 Lock view** The “Lock view” tool is used for synchronous browsing of series in multiple panels. Selecting this tool will cycle through all series starting from the current image position in the series. Synchronization will be applied to all series in the same data acquisition plane.



**Figure 426:** img

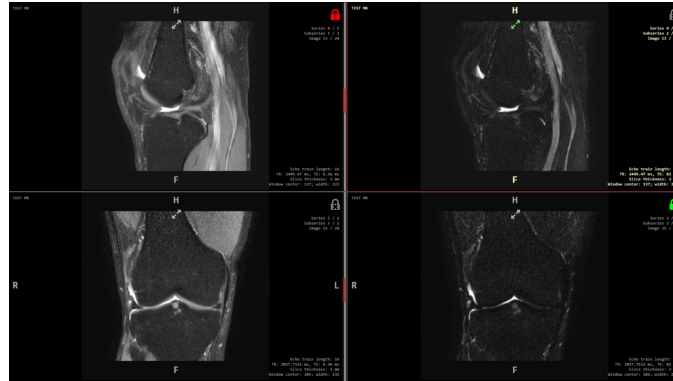
**8.6.2.2 Lock to separate groups** The tool “Lock to separate groups” is used to divide individual panels into groups “Windows for displaying image data” for possible manual or automatic synchronization of series according to the data collection level of the series, or by manual entry.

In the event that you have placed and displayed series of studies in several “Windows for displaying image data” panels, by selecting the “Lock to separate groups” tool and then selecting automatic or manual synchronization, they will be marked into individual groups according to the level of data collection:



**Figure 427:** img

If the “Display panel synchronizability” tool is selected (see below), it is possible to manually mark and unmark individual “Windows for displaying image data” panels for their synchronization in groups:



**Figure 428:** img



**Figure 429:** img

**8.6.2.3 Automatic lock** The “Automatic lock” tool is used for synchronous browsing of series in multiple panels. Automatic synchronization automatically finds the same patient positions according to the data in the DICOM file, aligns the series to the same image place, and then locks their simultaneous browsing. Synchronization will be applied to all series in the same data acquisition plane.



**Figure 430:** img

**8.6.2.4 Lock windowing** The “Lock windowing” tool can be applied to manual or automatic synchronization and allows the user to synchronously edit the image, in all synchronized series, using the “Windowing” tool, see paragraph “Display tools”.





**Figure 431:** img

**8.6.2.5 Lock transformations** The “Lock transformations” tool can be applied to manual or automatic synchronizations and allows the user to synchronously edit the image, in all synchronized series,

using the tools in the “Display tools” and “Measurement tools” group, except for the “Windowing” tool, see paragraph “Edit image”.



**Figure 432:** img

**8.6.2.6 Display panel synchronizability** The “Display panel synchronizability” tool is used for the possible locking of individual “Windows for displaying image data” panels and their subsequent manual or automatic synchronization. Selecting this tool will display a lock icon in the upper right corner of the “Windows for displaying image data” panel. Left click on the lock icon to lock this panel for sync , clicking the lock icon again will unlock this panel .



**Figure 433:** img

**8.6.2.7 Lock videos {#viewer\_Sync videos}** The “Lock videos” tool is used for synchronous playback of synchronously recorded videos. This tool is thus applicable to videos obtained using “Capture” (the digitization tool of this product), which enables the so-called synchronous recording of multiple video inputs, when the videos are of the same length. If the videos were not taken by synchronous recording, you will be warned about this with the information “Not enough synchronizable videos from the same group”.



**Figure 434:** img

**8.6.2.8 Mammography Image Alignment** The tool “Aligning mammographic images” is used for automatic zooming and placement of mammographic images, according to the ideal parameters of the expanded panels in the “Windows for displaying image data”.



**Figure 435:** img

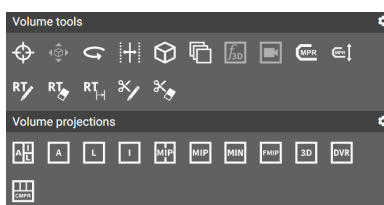


**8.6.2.9 Synchronize viewer size between windows {#viewer\_Sync sizes in panels}** The tool “Synchronize viewer size between windows” is used for automatic synchronous adjustment of the display size of studies in individual panels on a multi-monitor workstation. This tool preserves the display size of the series in the panels, in the case when only one monitor is displayed “Viewer Working set” on a multi-monitor workstation and the panel sizes are thus different.

## 8.7 Volume operations, 3D visualization

The “Volume operations, 3D visualization” tab is used for working with created volumes or fusions from a series of images. To create a volume, proceed according to the paragraph “Create volume”, to create merged series, proceed according to the paragraph “Create fusion”.






This tab contains the following groups of tools: - Volume tools - Volume projections













**Figure 436:** img

### 8.7.1 Volume tools

The “Volume Tools” tool group contains the following tools:

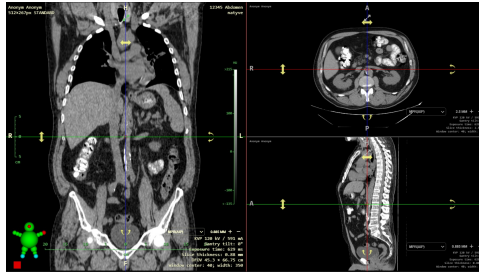
Icon	Function	Description
	3D Cursor	Localization of the point of interest in mutually perpendicular planes of the created series volume
	Fusion active layer move	Manual adjustment of the overlay of layers in the created fused series of volume
	Rotate volume	Free rotate of planes in the created series volume
	Interactive slab thickness change	Change thickness of the volume slice
	Change slice thickness	Changing the thickness of the volume slice, by entering values

Icon	Function	Description
	Create new series with the actual orientation	Creation of a new reconstructed series, according to the selected direction of the MPR projection of the patient
	Select transfer function	Changing the display of the DVR volume, according to the default options
	Video from volume	Creating a video from the DVR volume by rotating it by 180° or 360°
	Set curve of Curved MPR	Create and display a curved surface created from the series volume
	Curved MPR Height	Specify the display size of the curved MPR volume
	Contour drawing	Draw a area in the created RT Struct
	Contour cutting	Erasing part or all of the created surface of the RT Struct area
	Contour interpolation	Automatic finishing of individual surfaces of the area in the RT Struct volume in the selected number of frames in the series
	Segmentation drawing	Draw a cutting area in the created segmentation
	Segmentation cutting	Undrawing the cutting area in the created segmentation



**Figure 437:** img

**8.7.1.1 3D Cursor** The “3D cursor” tool is used to locate a specific point of interest in mutually perpendicular planes of the created volume of the series. To locate a point, select this tool from the “Volume Tools” group of tools with the selected mouse button and then apply to the point of interest in the plane of the displayed series.



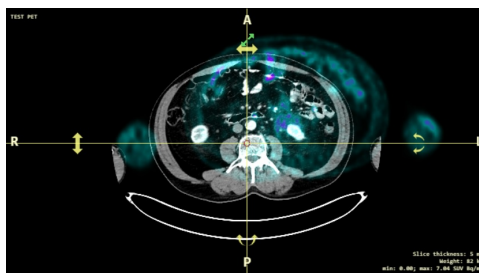
**Figure 438:** img



**Figure 439:** img

**8.7.1.2 Fusion active layer move** The “Fusion active layer move” tool is used for manual adjustment of layer overlap in created fused volume series. To adjust the overlay of layers, follow these steps:

- Create and display the merged layers according to the paragraph “Create fusion”
- select the “Fusion active layer move” tool in the “Volume Tools” tool group with the selected mouse button
- mark the active layer, see paragraph “Create fusion”
- hover the mouse over the view of the fusion plane
- press and hold the selected mouse button with the tool, then move the active layer to the position of interest by moving the mouse



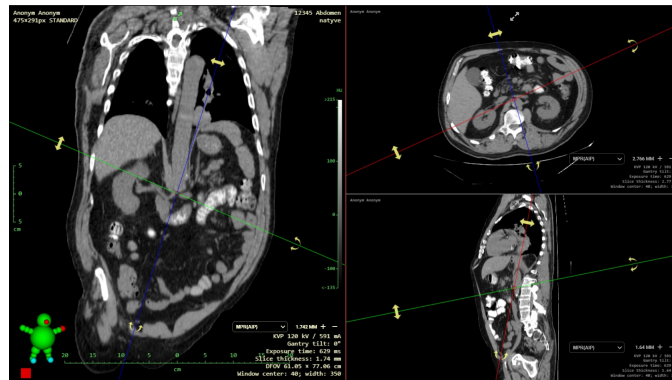
**Figure 440:** img



**Figure 441:** img

**8.7.1.3 Rotate volume** The “Rotate volume” tool is used to rotate planes in the created volume. To rotate a plane, proceed as follows:

- Create and view series volume, see “Create volume”
- select the “Rotate volume” tool in the “Volume Tools” tool group with the selected mouse button
- hover the mouse over the view of the volume plane
- press and hold the selected mouse button with the tool, move the mouse to rotate the created volume



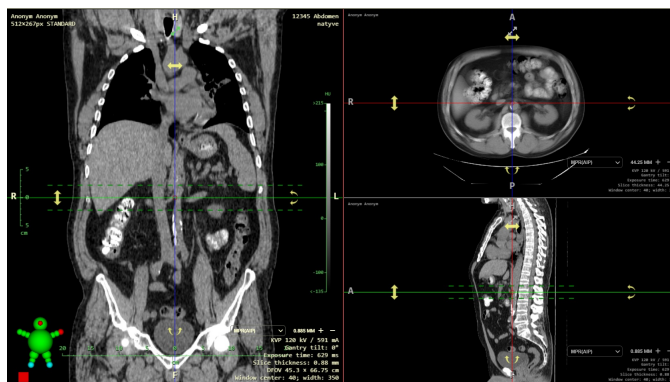
**Figure 442:** img



**Figure 443:** img

**8.7.1.4 Interactive slab thickness change** The “Interactive slab thickness change” tool is used to change the thickness of the displayed slice. To change the slice thickness, proceed as follows:

- Create and view series volume, see paragraph “Create volume”
- select the tool “Interactive slab thickness change” in the tools group “Volume Tools” with the selected mouse button
- hover the mouse over the view of the volume plane
- press and hold the selected mouse button with the tool, move the mouse up and down to change the slice thickness to the required size
- the current size of the slice thickness is displayed in the OSD label of the displayed image, the location of the OSD label is configured by the user, or is set by default in the lower right corner of the display window, e.g.: **slice thickness: 1.41 mm**
- the current size of the slice thickness is also visually displayed using the dashed lines of the volume localizer lines:



**Figure 444:** img



**Figure 445:** img

**8.7.1.5 Change slice thickness** The “Change slice thickness” tool is used to change the thickness of the displayed slice by entering values into the text field. To change the slice thickness, proceed as follows:

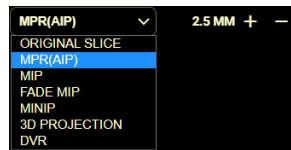
- Create and view series volume, see paragraph “Create volume”
- select the “Change section thickness” tool in the “Volume Tools” tools group, this will display the “Slice thickness” table:



**Figure 446:** img

- enter the required slice thickness in mm in the text field, or use the arrows to adjust the thickness by 1 mm, by selecting the “For all views” check box, you can adjust the slice thickness for all displayed planes in the “Window for displaying image data”
- any change will be automatically applied to the volume display

**8.7.1.5.1 Quick switching of slice thickness** To change the slice thickness, you can use quick actions directly from the location of the OSD label:



**Figure 447:** img

Changing the slice thickness can be selected using the + - buttons. If you use this action in 2D view mode, the volume from the series of images will be loaded and then the slice thickness will be changed. This function also allows you to switch between individual volume reconstructions using a drop-down menu.

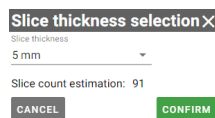
Warning: This function is hidden by default, to display it, you must set this function using “Profile editor” located in the “DICOM viewer Settings” tab.



**Figure 448:** img

**8.7.1.6 Create new series with the actual orientation** The “Create new series with the actual orientation” tool is used to create a new reconstructed series, according to the selected direction of the patient’s MPR projection and the selected slice thickness. To create a new reconstructed series, proceed as follows:

- Create and view series volume, see paragraph “Create volume”
- Drag the created volume into the selected display panel and select the reconstruction plane from the “Display” table
- Select the “Create new series with the actual orientation” tool in the “Volume Tools” tools group to display the “Slice thickness selection” table:



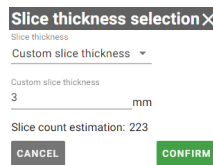
**Figure 449:** img

- In this table, select the slice thickness using the scrolling menu:



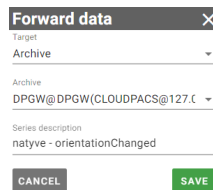
**Figure 450:** img

- In the case of selecting “Custom slice thickness”, enter the required thickness in mm in the “Custom slice thickness” text field:



**Figure 451:** img

- The line “Slice count estimation” in the table serves as an informative message about the number of images in the new created series.
- By selecting the action “Cancel” you cancel the action being performed, in case of selecting “Confirm” you display the “Forward data” table:



**Figure 452:** img

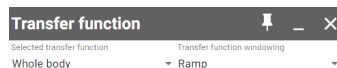
- in this table, select the storage destination of the reconstructed series from the “Target” drop-down menu and enter the name of the series in the “Series description” text field.
- use the cancel button to cancel the performed action, use the save button to create a new reconstructed series, the system will notify you of this with information about the start of series creation
- the new created reconstructed series will be added to the “Viewer Working Set”



**Figure 453:** img

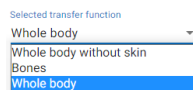
**8.7.1.7 Select transfer function** The “Select transfer function” tool is used to change the DVR volume display, according to the default options. To change the DVR view, proceed as follows:

- Create and view series volume, see paragraph “Create volume”
- Drag the created volume to the selected view panel and select “Direct volume rendering (DVR)” from the “Display” table
- Select the “Select transfer function” tool in the “Volume tools” tools group to display the “Transfer function” table:



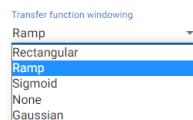
**Figure 454:** img

- select the display area using the “Selected transfer function” scrolling menu:



**Figure 455:** img

- use the scrolling menu “Transfer functions windowing” to select the display change:



**Figure 456:** img

The DVR display change will be visible immediately after selecting the display change from the scrolling menu.



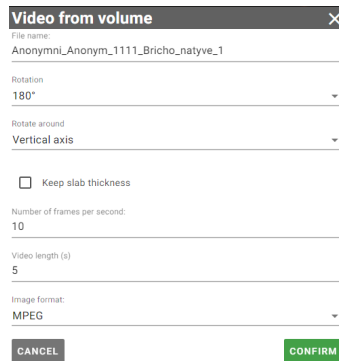
**Figure 457:** img

**8.7.1.8 Video from volume** The “Video from volume” tool is used to create and then export video from the created DVR volume. To create a video, follow these steps:

- Create and view series volume, see paragraph “Create volume”



- Drag the created volume to the selected view panel and select “Direct volume rendering (DVR)” from the “Display” table
- Select the “Video from volume” tool in the “Volume tools” tools group to display the “Video from volume” table:

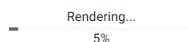


**Figure 458:** img

- fill in the required data in the displayed table:

Field	Description
Filename	Naming the exported video
Rotation	Option to choose rotation by 180° or 360°
Rotate around	Option to choose rotation horizontally / vertically
Keep slab thickness	
Number of frames per second	Selection of playback speed
Video length	Choice of video duration in seconds
Image Format	Choice of video export format in .MPEG and .AVI

- the action “CANCEL” cancels the performed action, the action “CONFIRM” starts the process of exporting the video to the local PC user, you will be informed about the start of the export:




**Figure 459:** img

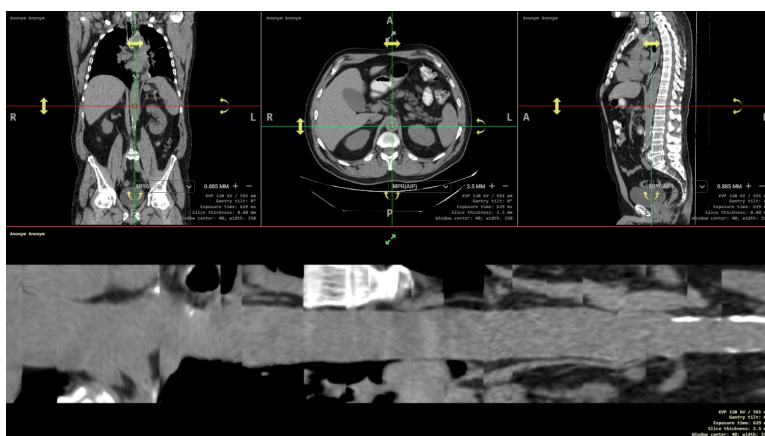
- then the table “Video from volume” will be displayed with a queue of export requests, and if the video is created successfully, the download to the user’s local PC will start.



**Figure 460:** img

**8.7.1.9 Set curve of Curved MPR** The “Set curve of Curved MPR” tool is used to create and display a curved surface created from the volume of the selected series, thus allowing the user to, for example, display the stretched course of a vessel or intestine. To determine the curved MPR curve, proceed as follows:

- Create and view series volume, see paragraph “Create volume”
- select the “Curved MPR” display in the “Volume projections” tools group
- to facilitate work, maximize the panel with the display of the selected plane across the entire window with the  icon located at the top of the panel
- select the “Set curve of Curved MPR” tool in the “Volume tools” tools group with the selected mouse button
- locate the location of the first point by scrolling through the series and then click the selected button with the tool to place this point
- as you go through the series, click to place more points
- individual points can be moved by dragging the mouse, or by hovering the mouse over a selected point and pressing the DELETE key to delete this point, then using the keyboard shortcut key SHIFT+DELETE to delete all points
- in case you have placed all the required points, minimize the panel, a curved MPR will be displayed, e.g.:



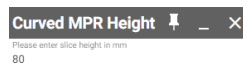
**Figure 461:** img



**Figure 462:** img

**8.7.1.10 Curved MPR Height** The “Curved MPR Height” tool is used to determine the display size of the curved MPR. To determine the size, follow these steps:

- create a curved MPR according to the process of the previous paragraph
- select the “Curved MPR Height” tool in the “Volume tools” tools group, this will display the “Curved MPR Height” table:



**Figure 463:** img

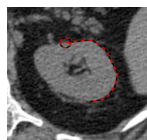
- enter the size value in mm in the text field, to display the size of the range of surrounding structures from specific points of the curved MPR, the size will be adjusted automatically after entering the value



**Figure 464:** img

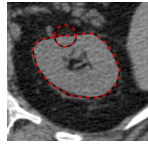
**8.7.1.11 Contour drawing** The tool “Contour drawing” is used to draw an area in the created RT Struct. To draw an area, proceed as follows:

- Create RT Struct and ROI areas from the selected series of images, see more paragraph “Create RT Struct”
- select the tool “Contour drawing” in the tools group “Volume toolss” with the selected mouse button
- move the mouse to the starting point in the selected plane of the volume image
- by clicking, or by clicking and holding the selected mouse button with the tool, draw the surface of the area of interest:



**Figure 465:** img

- complete drawing of the surface by clicking in the circle of the first point:



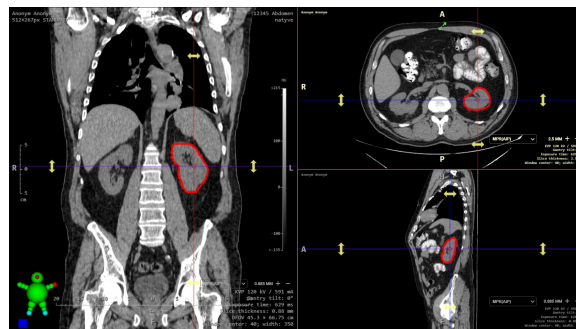
**Figure 466:** img

- the contour of the surface of the area of interest was created



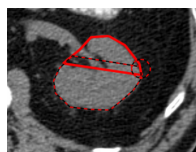
**Figure 467:** img

- to create a contour in the volume, go through the individual images of the series and draw individual surfaces in turn (contours can only be drawn in one plane), the drawn volume can then look like this, for example:



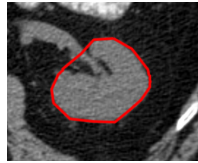
**Figure 468:** img

- the tool “Contour drawing” is used to add an area to plane, if you want to expand the area of the drawed area, click in the drawn area with the selected mouse button with the tool and draw the missing area:



**Figure 469:** img

- after finishing drawing the missing surface area, this area will be added and merged to the already created one:



**Figure 470:** img



**Figure 471:** img

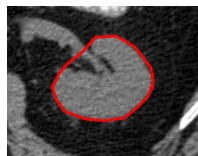
**8.7.1.12 Contour cutting** The “Contour cutting” tool is used to erase part or all of the created surface of the RT Struct area. To clear the area, proceed as follows:

- Display the image in series with the created contoured ROI area, which you want to edit
- select the tool “Contour cutting” in the tools group “Volume tools” with the selected mouse button
- move the mouse to the starting point in the selected plane of the volume image
- by clicking, or by clicking and holding the selected mouse button with the tool, draw the area you want to remove:



**Figure 472:** img

- complete the cutting by clicking the selected mouse button with the tool on the starting point, the selected area will be removed:



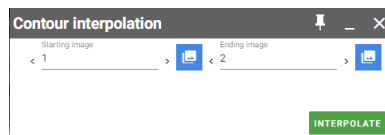
**Figure 473:** img





**Figure 474:** img

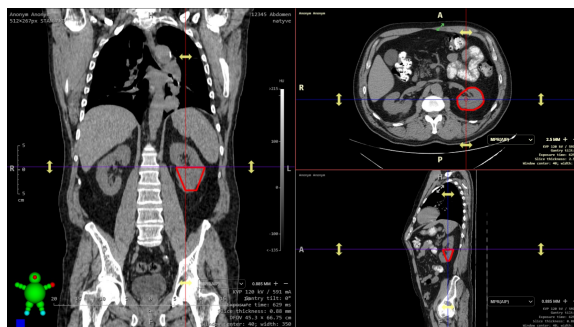
**8.7.1.13 Contour interpolation** The “Contour interpolation” tool is used for automatic drawing of individual surfaces of the area in the RT Struct volume in the selected number of images in the series. To automatically plot the volume, proceed as follows:

- Create an ROI surface in the selected series, see more in the paragraph “Drawing contours”
- select the “Contour Interpolation” tool in the “Volume Tools” tools group, this will display the “Contour interpolation” table:



**Figure 475:** img

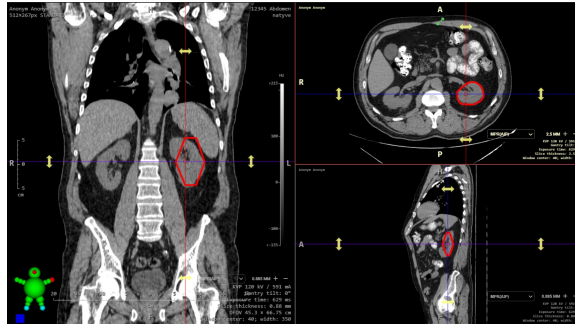
- in this table, specify the image with the drawn contour and the final image using the text field or arrows, the icon “Select actual slice”  selects the currently displayed image of the series, the minimum value is 2 images, if you select the same image in the series, you will be warned about this in the table “Cannot interpolate within one slice” and it will not be possible to start interpolation
- if you have selected a slice with a drawn contour and the ending slice, start the interpolation with the button 
- a conical shape of the ROI volume was created in the selected series in the craniocaudal direction (it may differ depending on the direction of data collection)



**Figure 476:** img

- to complete the volume in the caudocranial direction, select the initial image in the “Contour

interpolation” table and select the image with the initially created contour area in the field of the ending image



**Figure 477:** img

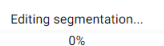
- ROI volume was created in the RT Struct series using the “Contour Interpolation” tool



**Figure 478:** img

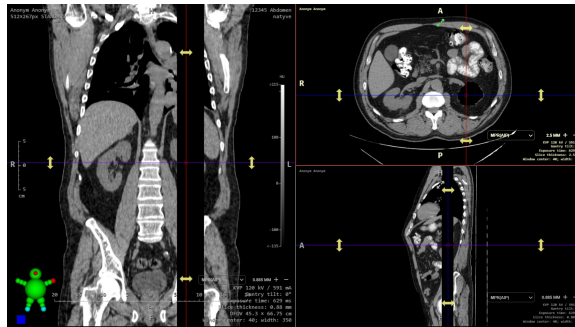
**8.7.1.14 Segmentation drawing** The “Segmentation drawing” tool is used to draw the area in the created segmentation. To draw an area, proceed as follows:

- Create a segmentation of the area from the selected volume of the series of images, see more paragraph “Display segmentations”
- select the “Segmentation drawing” tool in the “Volume tools” tools group with the selected mouse button
- move the mouse to the starting point in the selected plane of the volume image
- by clicking, or by clicking and holding the selected mouse button with the tool, draw the surface of the area of interest (see paragraph “Contour drawing”)
- by completing the drawing of the segmentation area, the volume will be recalculated:



**Figure 479:** img

- the result is cutting out part of the volume:



**Figure 480:** img



**Figure 481:** img

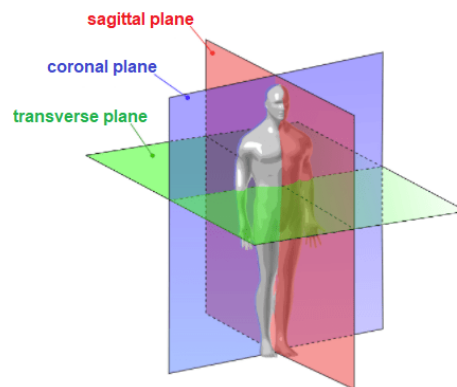
**8.7.1.15 Segmentation cutting** The “Segmentation cutting” tool is used to delete part or all of the created segmentation. To remove segmentation, proceed as follows:

- Display the volume with the segmentation created that you want to edit
- select the “Segmentation cutting” tool in the “Volume tools” tools group with the selected mouse button
- move the mouse to the starting point in the selected plane of the volume image
- by clicking, or by clicking and holding the selected mouse button with the tool, draw the area you want to cut out (see paragraph “Contour cutting”)
- The result is the cuted out part or all of the created segmentation.

## 8.8 Volume projections

The group of tools “Volume projections” is used to display the projections and planes of the created volume. For more on the possibility of creating volumes, see the paragraph “Create volume”. Measurement and post-processing tools of the DICOM viewer can be used in the created volumes, e.g. the “Windowing” tool, 3D volume structures, or MIP, etc. can be added or removed.





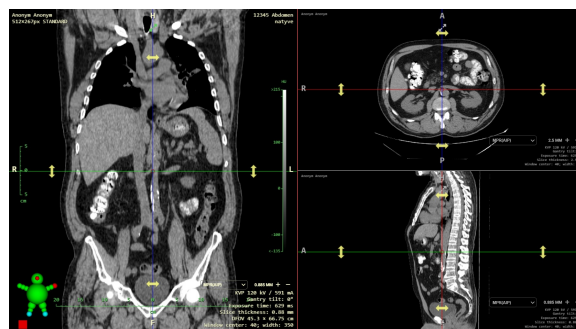
**Figure 482:** img

### 8.8.1 Multiplanar reconstruction (MPR)



**Figure 483:** img

The “Multiplanar reconstruction (MPR)” tool is used to display the reconstructed planes in three panels “Window for displaying image data”:



**Figure 484:** img

### 8.8.2 Frontal view



**Figure 485:** img

The “Frontal view” tool is used to display the reconstructed coronal plane in one “Window for displaying image data” panel:

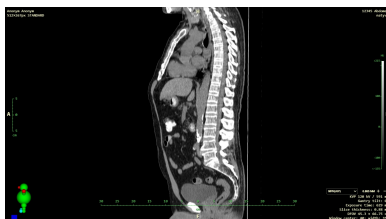


**Figure 486:** img



**Figure 487:** img

**8.8.2.1 Sagittal view** The “Sagittal view” tool is used to display the reconstructed sagittal plane in one “Window for displaying image data” panel:



**Figure 488:** img



**Figure 489:** img

**8.8.2.2 Transverse view** The “Transverse view” tool is used to display the reconstructed transverse plane in one “Window for displaying image data” panel:

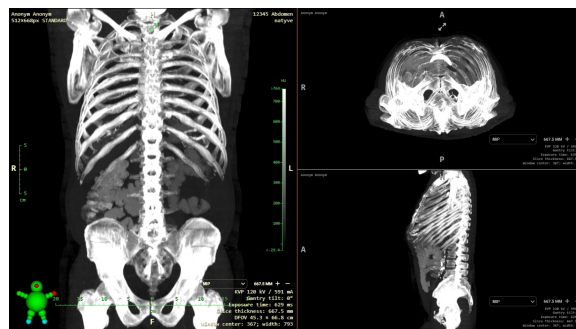


**Figure 490:** img



**Figure 491:** img

**8.8.2.3 Max. intensity projection (3 views)** The “Max. Intensity Projection (3 Views)” tool serves as a 3D rendering technique that examines each voxel and selects the one with the highest intensity. This is subsequently used in the displayed volume. The others are ignored. (90% of the acquired information will be lost). With this method, calcifications and surgical staples can be better differentiated. Another advantage can be considered greater visibility of bright objects. Disadvantages include a lack of depth information, high-intensity materials (calcifications) can obscure the desired organs. By choosing this tool, the reconstructed MIP planes will be displayed in three panels “Window for displaying image data”:

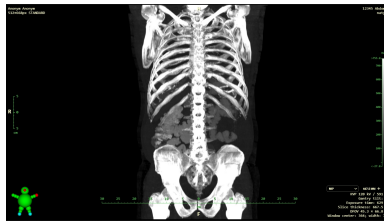


**Figure 492:** img



**Figure 493:** img

**8.8.2.4 Max. intensity projection (MIP)** The “Max. Intensity Projection (MIP)” tool is similar to the previous tool, but displays the reconstructed MIP in the currently selected plane in one “Window for displaying image data” panel:

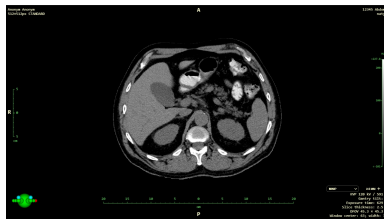


**Figure 494:** img



**Figure 495:** img

**8.8.2.5 Min. Intensity projection (MinIP)** The “Min. Intensity projection (MinIP)” tool is used to reconstruct the projection with the display of only the area with the lowest attenuation coefficient in the given area. It is used, for example, in the description of the bile ducts and pancreatic duct, diagnosis of lung diseases. Generally for very weak signal areas. The tool displays the reconstructed MinIP in the currently selected plane in one panel “Window for displaying image data”:

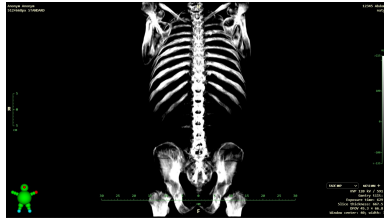


**Figure 496:** img



**Figure 497:** img

**8.8.2.6 Fading max. Intensity Projection (Fade MIP)** The “Fading max. Intensity Projection (Fade MIP)” tool differs from the MIP tool, which displays the highest density from the volume in each projection beam, in that a linear attenuation is also applied to the displayed density according to the distance from the beginning of the displayed section of the volume (slab). The tool displays the reconstructed FMIP in the currently selected plane in one panel “Window for displaying image data”:

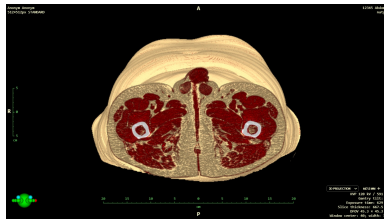


**Figure 498:** img



**Figure 499:** img

**8.8.2.7 3D projection** The “3D projection” tool is used to reconstruct a three-dimensional image of the created volume. The tool displays the 3D reconstruction in the currently selected plane in one panel “Window for displaying image data”:

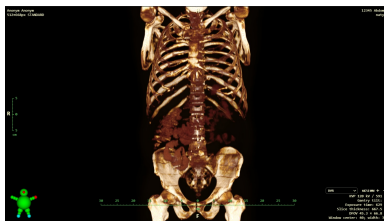


**Figure 500:** img



**Figure 501:** img

**8.8.2.8 Direct volume rendering (DVR)** The “Direct volume rendering (DVR)” tool is used for the complete reconstruction of a three-dimensional image of the created volume, where color intensity = object density. The tool will display the DVR in the currently selected plane in one panel “Window for displaying image data”:



**Figure 502:** img



**Figure 503:** img

**8.8.2.9 Curved MPR** The “Curved MPR” tool is used to display the created MPR curve in the volume in the four panels of “Window for displaying image data”, to create a curve, see the paragraph “Set curve of Curved MPR”.





## 8.9 Online consultation



Action DWShare enables online consultations. This is the online transfer of the image and mouse cursor between connected users.



**Figure 504:** img

The DWshare tab contains the following tools:

Icon	Function	Description
	Share cursor	switch to share / unshare cursor position during remote session
	Share actions	switch to share / unshare actions performed during a remote session
	Create session	creating a new session, defining the name and users who can connect
	Connect	if the user wants to join an existing session to which he is invited, he uses this option

Icon	Function	Description
	Manage session users	option to manage users with session access. Users can be added, removed or external users can be added
	Hang up	if connected to a session, it is possible to end this session with this tool

### 8.9.1 Setting up a new online consultation

The master user creates a session using the “Create session” tool.



Figure 505: img

This will display the “Create new session” table, in the “Description” text field, choose the name of the online consultation and choose the “Create” action. The “Cancel” action cancels the action being performed.

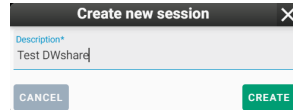



Figure 506: img

By selecting the “Create” action, you will display the following table “Manage users in session” for adding users and managing them (after the session is established, this table can be displayed with the “Manage session users” tool ):

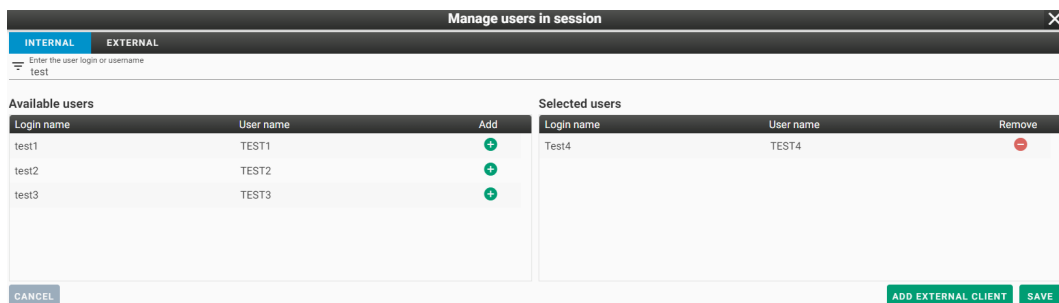


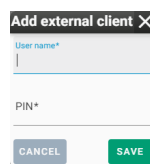


Figure 507: img

This table contains two tabs “Internal” and “External”. Internal users are users who are connected to the same server within the internal network. External users are users who are connecting from an external environment, outside of the medical facility.

Internal users can be searched using the “Enter the user login or username” text field in the header of the “Internal” tab. You can find the selected user in the “Available users” field and add it with the icon  in the “Add” column. The user added to the session will appear in the “Selected users” field and you can remove it if necessary using the  icon.

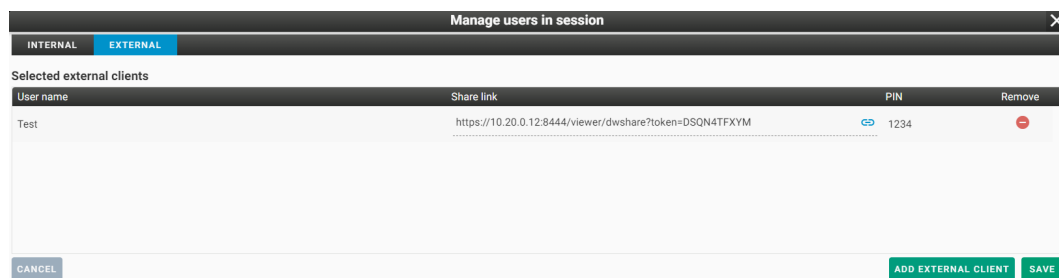
External users can be added using the “Add external user” action, which displays the “Add external client” table:




**Figure 508:** img



In this table, enter the user name “User name” and password “PIN” in the text fields, then choose the “Save” action, the “Cancel” action cancels the action being performed.

After creating a new external user, it will be displayed in the “External” tab, in the “Manage users in session” table:




User name	Share link	PIN	Remove
Test	<a href="https://10.20.0.12:8444/viewer/dwshare?token=DSQN4TFXYM">https://10.20.0.12:8444/viewer/dwshare?token=DSQN4TFXYM</a>	1234	

**Figure 509:** img

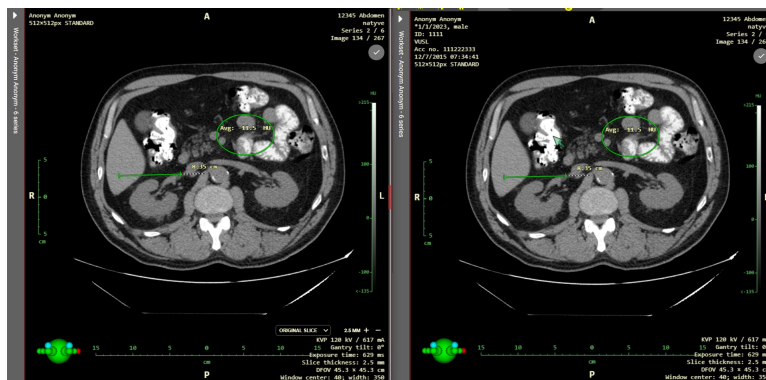
Then send the “Share Link” to the external user, for copying you can use the icon  and the selected password. To maintain security, we recommend choosing a different way of communicating link and password information. This will create one-time access for an external user, without access to search in the PACS archive. To remove a user, use the icon .

After finishing adding users, choose the “Save” action, this will start a new online consultation. “Cancel” action cancels the action being performed.



In case of user login in the created online consultation, you will be informed about the number of logged users by the number displayed next to the icon of the “DWshare” tab .

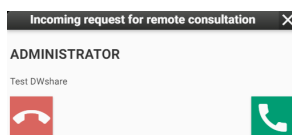
To connected users, the shared examination study will be displayed by the master of the consultation, including the mouse cursor and work on it:



**Figure 510:** img


### 8.9.2 Login to the online consultation as an internal user

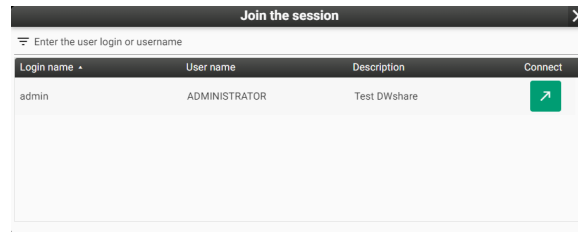
You have two options for logging in to the online consultation as an internal user, if you are working in DICOM viewer and you are added to the online consultation, the “Incoming request for remote consultation” table will be displayed:



**Figure 511:** img

If you choose “Accept remote consultation”, the examination study of the master remote consultation and the shared work on it will be displayed.

If you choose “Reject remote consultation” or you are not working on image documentation in DICOM viewer, you can connect to the created online consultation to which you are added using the “Connect” tool . Select the tool to display the “Join the session” table:



**Figure 512:** img

Select online consultation and choose the “Connect” action, the examination study of the master remote consultation and the shared work on it will be displayed.

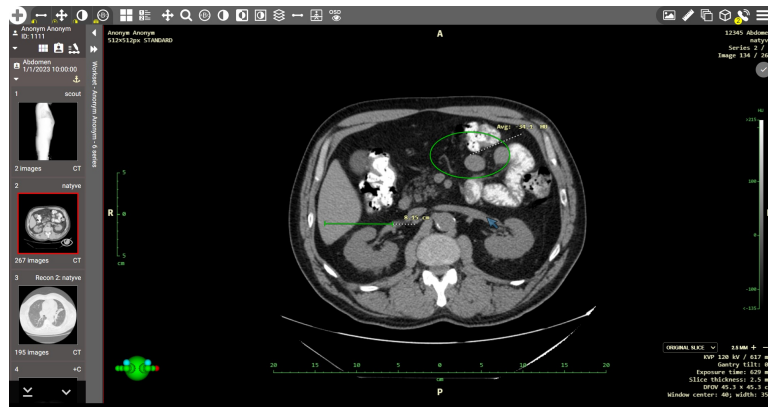
### 8.9.3 Login to the online consultation as an external user

To log in to the online consultation as an external user, enter the obtained url of the “Share link” into the Internet browser, this will display the login page of the Dicompass Gateway DICOM viewer:



**Figure 513:** img

Enter the “PIN” and select the “Sign in” action. You will be connected to the online consultation:

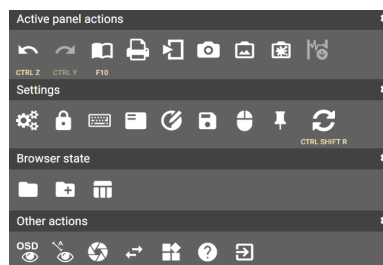


**Figure 514:** img

As an external user, you can use the following tools for DWshare: - Share cursor - Share actions - Hang up

## 8.10 DICOM viewer settings

The “DICOM viewer settings” tab contains general tools for managing DICOM viewer settings and preferences.












**Figure 515:** img

This tab contains the following groups of tools: - Active panel actions - Settings - Browser state - Other actions

### 8.10.1 Active panel actions

The group of tools “Active panel actions” contains the following tools:

Icon	Function	Description
	Previous Action	allows you to undo the action taken
	Next action	allows you to perform the returned action
	DICOM tags viewer	viewer of DICOM tags that are stored in the displayed image
	Print	enables you to print the displayed study, see more chapter “Viewer Working set” paragraph “Print”
	Export	allows you to export the displayed study, see more chapter “Viewer working set” paragraph “Export”
	Secondary capture	allows the user to archive the currently displayed image without editing
	Capture active viewer	allows the user to archive the currently displayed image of the active panel, including its measurements and OSD labels
	Capture desktop	allows the user to archive the currently displayed screenshots of the desktop, including its layout
	Export ECG	allows the user to export ECG examination results



**Figure 516:** img

**8.10.1.1 DICOM tags viewer** The “DICOM tag viewer” tool is used to display DICOM tag information about the selected image/series of the selected study. By selecting this tool, you will display the “DICOM tags viewer” table:

ID	Group	Group, Tag	Name	Value
	All tags		dwid	C_35942
0002	Meta data	(0002,0010)	Transfer Syntax UID	1.2.840.10008.1.2
0008	Study	(0008,0005)	Specific Character Set	ISO_IR 100
0009	Private group	(0008,0008)	Image Type	ORIGINAL, PRIMARY, LOCALIZER
0010	Patient	(0008,0012)	Instance Creation Date	12/7/2015
0018	Acquisition	(0008,0013)	Instance Creation Time	07:33:00
0019	Private group	(0008,0016)	SOPClass UID	1.2.840.10008.5.1.4.1.1.2
0020	Relations	(0008,0018)	SOPInstance UID	1.2.840.113619.2.55.3.4271045733.996.1449464144.600.2
0021	Private group	(0008,0020)	Study Date	1/1/2023
0023	Private group	(0008,0021)	Series Date	12/7/2015
0027	Private group	(0008,0022)	Acquisition Date	12/7/2015
0028	Image representation	(0008,0023)	Content Date	12/7/2015
0032	Group	(0008,0030)	Study Time	10:00:00
0040	Group	(0008,0031)	Series Time	07:31:53
0042	Private group	(0008,0032)	Acquisition Time	07:32:51

Figure 517: img

To search, you can enter the required parameter in the “Filter” text field, e.g.:

ID	Group	Group, Tag	Name	Value
	All tags	(0010,0010)	Patient Name	Anonym Anonym

Figure 518: img

The left column shows groups of DICOM tags, and the right column shows individual DICOM tags of the selected group.

The “Text dumb” action is used to display all DICOM tags in text form:

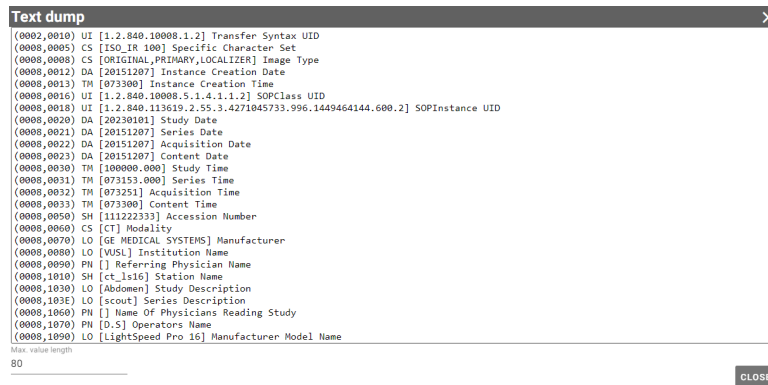


Figure 519: img

The “Close” action allows you to close the “DICOM tags viewer” table.



Figure 520: img

**8.10.1.2 Secondary capture** The “Secondary capture” tool is used to save the currently displayed image in the marked window “Window for displaying image data” without editing and measuring in the image. Selecting this tool display the “Forward data” table:

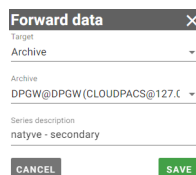
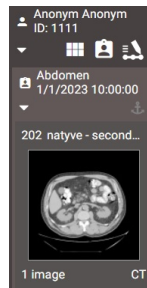


Figure 521: img

This table contains the following fields: - Target - the option to choose the destination of archiving the image to “Archive”, “User data” or “Station data” - Archive - in the case of configured multiple PACS archives, you can choose selected archive for saving, the field is active if you have selected “Target” - “Archive” - Series description - allows you to name the saved picture - The “Save” action archives the selected image, the “Cancel” action cancels the performed action

If you have saved the selected image, it will be added to the “Viewer Working Set” and saved to the selected “Target”:



**Figure 522:** img



**Figure 523:** img

**8.10.1.3 Capture active viewer {#viewsettings\_Archive active panel}** The “Capture active viewer” tool is used to save the currently displayed image in the marked window “Window for displaying image data”, including its measurements and OSD labels. To save, proceed similarly according to the paragraph “Secondary capture”.



**Figure 524:** img

**8.10.1.4 Capture desktop {#viewsettings\_Archive workscreen}** The “Capture desktop” tool is used to save the currently displayed images in all “Windows for displaying image data” panels, including measurements and OSD labels. To save, proceed similarly according to the paragraph “Secondary capture”.












**Figure 525:** img

**8.10.1.5 Export ECG {#viewsettings\_Epxort ECG}** The “Export ECG” tool is used to export the currently displayed ECG series in the active panel “Window for displaying image data” to a text file with ECG examination parameters. Select this tool to start automatic file download.

### 8.10.2 Settings

The “Settings” tools group includes the following tools:

Icon	Function	Description
	Global configuration	Open system configuration Dicompass Gateway
	Change password	Changing the password of the currently logged in user
	Shortcuts	Displaying or defining new keyboard shortcuts
	Profile editor	Editor for display and location of OSD labels in panels “Windows for displaying image data”
	Preset windows management	Defining windowing profiles
	Save viewer configuration	Defining “Active Tools” on mouse buttons after opening a browser Dicompass Gateway
	Tool Selection	Adding and editing saved DICOM viewer configurations
	Position of pinned actions	Determining the display order of tools in “User configurable toolbar” and “Context menu”
	Restart windows layout	Reloading the displayed images/series in the “Windows for displaying image data”



**Figure 526:** img

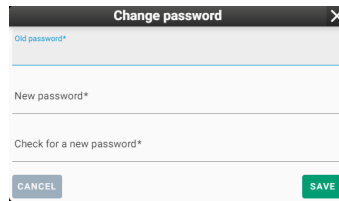
**8.10.2.1 Global configuration** The “Global configuration” tool is used to display the configuration of the Dicompass Gateway system. See more chapter “Viewer settings”



**Figure 527:** img

**8.10.2.2 Change password** The “Change password” tool is used to change the password of the currently logged-in user. To change the password, select the “Change password” tool, which display the “Change password” table:





A dialog box titled "Change password" with a close button (X) in the top right corner. It contains three text input fields: "Old password\*", "New password\*", and "Check for a new password\*". At the bottom, there are two buttons: "CANCEL" and "SAVE".

**Figure 528:** img

To change your password, follow these steps: - enter the currently selected password in the “Old password” text field - enter new password in the “New password” text field - in the “Check for a new password” text field, re-enter the choosed new password to check it - use the “Save” action to change the password, the “Cancel” action cancels the action

You will be informed about a successful password change with information in the DICOM viewer footer:

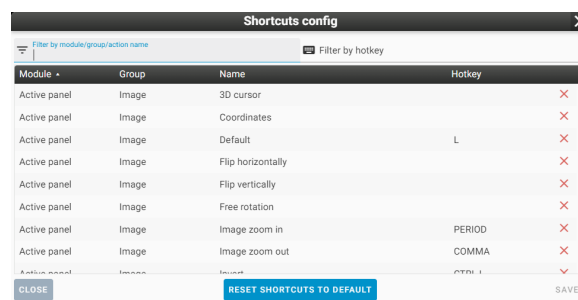


**Figure 529:** img



**Figure 530:** img

**8.10.2.3 Shortcuts** The “Shortcuts” tool is used to display or define new DICOM viewer keyboard shortcuts. By selecting this tool, you will display the “Shortcuts config” table:




A dialog box titled "Shortcuts config" with a close button (X) in the top right corner. It features two filter fields: "Filter by module/group/action name" and "Filter by hotkey". Below the filters is a table with columns: Module, Group, Name, and Hotkey. The table lists various actions and their hotkeys. At the bottom, there are three buttons: "CLOSE", "RESET SHORTCUTS TO DEFAULT", and "SAVE".

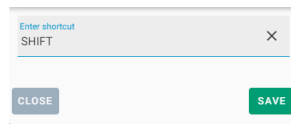
Module	Group	Name	Hotkey
Active panel	Image	3D cursor	
Active panel	Image	Coordinates	
Active panel	Image	Default	L
Active panel	Image	Flip horizontally	
Active panel	Image	Flip vertically	
Active panel	Image	Free rotation	
Active panel	Image	Image zoom in	PERIOD
Active panel	Image	Image zoom out	COMMA
Active panel	Image	Image zoom reset	CTRL + L

**Figure 531:** img

To find a specific tool for assigning or modifying a new keyboard shortcut, use the “Filter by module/group/action name” or “Filter by hotkey” text fields.

The individual tools in the table are arranged in columns with the sequence Module -> Group -> Name, in the column “Hotkey”, the currently selected keyboard shortcut is displayed. To remove a shortcut, click the  icon in the selected line of the tool.

To change or edit a keyboard shortcut, click on the line of the selected tool, which will display the table for entering a new keyboard shortcut:



**Figure 532:** img

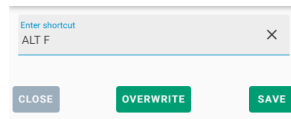
Use the “Save” action to insert a new keyboard shortcut for the selected tool, the “Cancel” action cancels the performed action.

If the keyboard shortcut is already in use, when you select the “Save” button, you will see warning information in the footer of the browser:



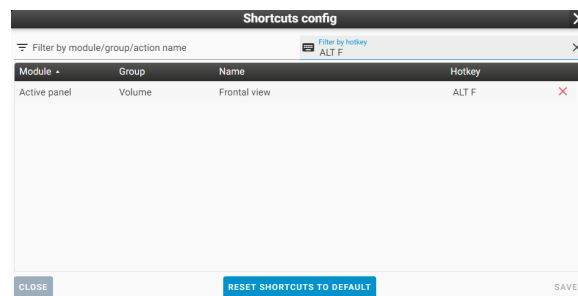
**Figure 533:** img

The “Overwrite” action will be added to the table for defining the keyboard shortcut, which allows you to transfer the keyboard shortcut to a new tool:



**Figure 534:** img

Example - Filtered “Frontal view” tool with new assigned keyboard shortcut ALT+F:



**Figure 535:** img

With the “Save” action in the “Shortcuts config” table, you save new selected keyboard shortcuts to logged-in user. You will be informed of this fact by the information in the footer of the page:

Shortcuts config saved successfully

**Figure 536:** img

Use the “Cancel” action to cancel the action.

The “Reset shortcuts to default” action restores the original layout of the keyboard shortcuts. To restore the original settings, select the “Reset shortcuts to default” action and then the “Save” action. You will be informed about the return to the original settings by the information in the footer of the page:

Shortcuts successfully resets to default

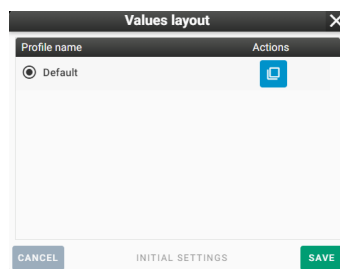
**Figure 537:** img




**Figure 538:** img

**8.10.2.4 Profile editor** The “Profile editor” tool is used to display and position OSD labels in the individual panels of the “Windows for displaying image data”. OSD labels (On Screen Display) represent information about the given images (their acquisition, date, names, etc.) and the content of the information displayed in the image (size, measurements, etc.).

To change the layout of the OSD labels, select the “Profile editor” tool, which display the “Values layout” table



**Figure 539:** img

Select the action “Duplicate”  from the selected profile row. If you are performing this action for the first time, only the “Default” profile will be displayed. By selecting the “Duplicate” action, you will display the “Profile editor” table:

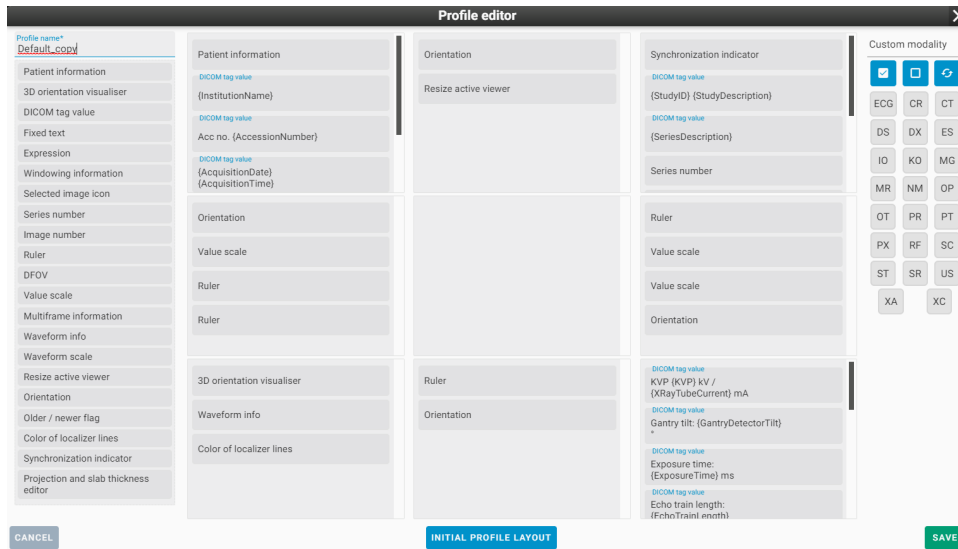


Figure 540: img

In this table, it is possible to edit the profile for displaying selected OSD labels under certain conditions:

- **Profile name**

The “Profile name” text field allows you to name the new created profile. To name it, enter the text in this text field:

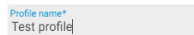
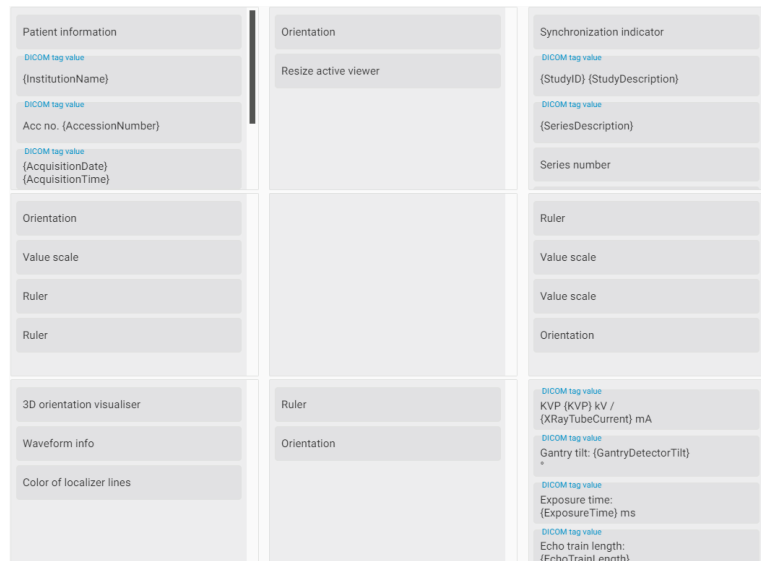


Figure 541: img

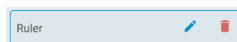
- **Layout of OSD labels in the image**

This part of the table clearly shows the distribution of the OSD labels in the image into 9 parts:



**Figure 542:** img

Individual assigned OSD labels can be “Edited” or “Removed” by hovering the mouse over the selected OSD label and selecting one of the icons:



**Figure 543:** img

By selecting the “Edit” action, you will display table for editing the OSD label.

**8.10.2.4.1 OSD label: DICOM tag value** Text field `Value caption` specifies the template into which the values of the tags listed in the item `Codename values` are added. The position in which the value is replaced is written as empty braces `{}`. Tag names are entered as an 8-digit hexadecimal number. E.g. we write the Patient’s Name tag (0010,0010) as `00100010`. The individual values are then separated by a comma. The format `sequence_tag[index]/tag` is used to enter the sequence. An integer (numbering starts from 0) or an asterisk (\*) can be used as an index, which means that we want to use all the descendants of the sequence and connect the values with a comma.

For example, the template can look like this: `Name: {}, sex: {}` and values `00100010,00100040`

If we would like to list all patient identifiers from the sequence, the following settings can be used:  
 Template: `Additional patient identifiers: {}, values: 00101002[*]/00100020`

**8.10.2.4.2 OSD label: Expression** The <https://pub.dev/packages/expressions> library is used to process expressions. You can also find syntax information on this page.

In addition to the basic syntax, the following features are supported:

- `string(value)` - converts `value` to a string
- `replace(value, pattern, replacement)` - replaces all matches of the regular expression `pattern` with `replacement` in `value`
- `digits(value, digits)` - converts the `value` number to a string with a fixed number of decimal places specified in the `digits` parameter
- `nonNull(a, b, c)` - supports 2-3 parameters and returns the first one that has a non-null value
- `time(value)` - converts the timestamp to a time in the format corresponding to the language setting
- `date(value)` - converts the timestamp to a date in a format corresponding to the language setting
- `dateTime(value)` - converts the timestamp to a datetime in a format that matches the language setting
- **Modalities**

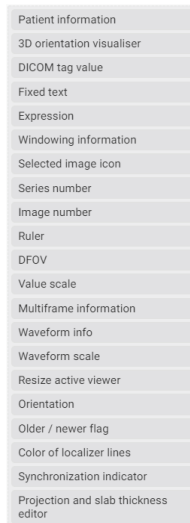
This part of the table allows you to select the modalities for which this OSD label profile will be displayed:



**Figure 544:** img

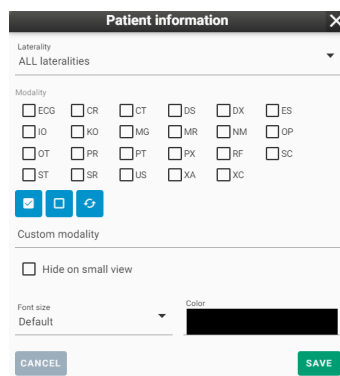
- **OSD label items**

This part of the table contains individual OSD labels for assignment to “Layout of OSD labels in the image”:



**Figure 545:** img

To add an OSD label, click the left mouse button on the selected OSD label and hold and drag to move it to the selected part “Layout of OSD labels in the image”, releasing the mouse button will place the OSD label in the selected part and the editing table will be display (this table may differ according to the selected OSD label):

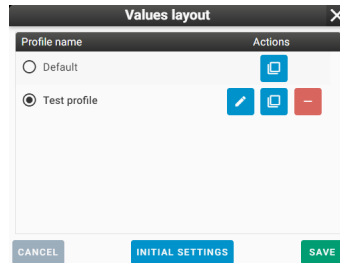


**Figure 546:** img

In this table, edit the parameters of the OSD label. After finishing, press the “Save” action to insert the OSD label into the selected section “Layout of OSD labels in the image”, press the “Cancel” button to cancel the action.

- Use the “Cancel” button in the “Profile editor” table to cancel the action
- The action “Initial profile layout” will remove the changes made to the OSD labels
- The “Save” action will save the changed “Profile editor” profile

If you have saved a new profile, it will be displayed in the “Values layout” table and it can be edited using the “Edit”, “Duplicate”, “Remove” tools:















**Figure 547:** img

In this table, you now have the option to choose a profile for displaying OSD labels in the image. Use the “Save” action to save the edited profiles, use the “Cancel” action to cancel the action. The “Initial settings” action restores the original profiles.



**Figure 548:** img

**8.10.2.5 Preset windows management** The “Preset windows management” tool is used to define the windowing profiles of selected windows. By selecting this tool, you will display the “Windowing preset” table:

Name	Modality	Center	Width	Hotkey	Actions
Abdomen / Mediastinum	*	0	350	F2	 
Angio	CT, MR	250	800	F7	 
Bone	*	480	2500	F5	 
Bone 2	*	400	4000	F6	 
Brain	*	40	80	F4	 
Lung	CT, MR	-500	2000	F3	 

**Figure 549:** img

This table shows the individual created profiles. The columns contain information about presets:

- Name - windowing name
- Modality - selected modalities for which the predefined windowing can be used



- Center - windowing preset center value
- Width - windowing preset width value
- Hotkey - selected keyboard shortcut for applying the windowing preset
- Actions - contains actions for “Edit” and “Remove” the predefined windowing preset

The “Cancel” action cancels the action being performed.

The “Save” action saves the changes made in the “Windowing preset” table.

The “Add” action allows you to create a new predefined windowing preset. Select this action to display the “Edit” table:

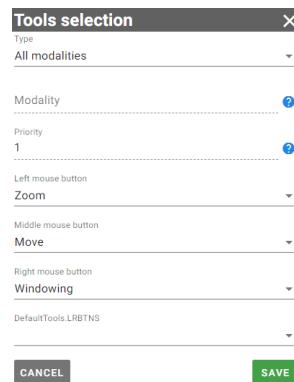
**Figure 550:** img

In this table, edit parameters of the new predefined windowing preset and then select the “Save” action, the new predefined windowing preset will be added to the “Windowing preset” table. The “Cancel” action cancels the action being performed. To facilitate work, in the table, the windowing values of the window are selected according to the currently displayed image.



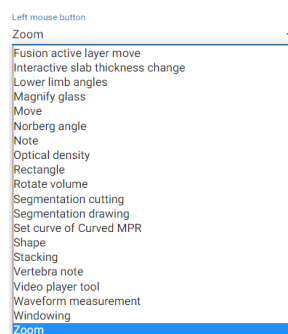
**Figure 551:** img

**8.10.2.6 Save viewer configuration** The “Save viewer configuration” tool is used to define “Active tools” on the mouse buttons after opening the Dicompass Gateway DICOM viewer. Select this tool to display the “Tools selection” table:



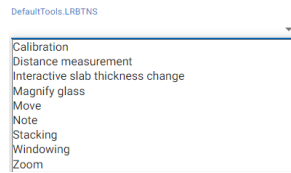
**Figure 552:** img

This table contains: - Type - option to choose for which modality the configuration will be set, you can choose from: - All modalities - List of modalities - Modality - text field for entering individual modalities, this window is active if you have chosen “List of modalities”, enter modalities in this window and separate them with a comma, e.g. CT, MR, PT, etc. - Priority - The priority determines the order in which the tools will be selected. Tools with a priority of 10 will be selected before those with a priority of 1 - Left, Middle, Right mouse buttons - drop-down menu for defining the selected tool on the mouse button, in this line, after expanding the menu, click on the selected tool for assignment, move in this menu with the mouse wheel:



**Figure 553:** img

- Left + right mouse button - drop-down menu for defining the selected tool when the left + right mouse button is pressed at the same time, this menu contains only some tools:



**Figure 554:** img

- Use the “Save” action to save the defined DICOM viewer configuration, use the “Cancel” action to cancel the action

The changes will be applied the next time you log into the Dicompass Gateway system.

If you want to return to the defined DICOM viewer configuration while working, you can use the “Select default tools” keyboard shortcut, this keyboard shortcut must first be defined, see the paragraph “Shortcuts”.



**Figure 555:** img

**8.10.2.7 Tool Selection** The “Tool Selection” tool is used to add and edit saved DICOM viewer configurations. Selecting this tool display the “Tool selection” table:

Tools selection							
Condition	Left mouse button	Middle mouse button	Right mouse button	DefaultTools.LRBTNS	Priority	Default	Actions
List of modalities: ECG	Waveform measurement	Move	Zoom		1		
All modalities	Zoom	Move	Windowing			<input checked="" type="checkbox"/>	

Reset selected tools after the anchor study has been changed **SAVE**

**Figure 556:** img

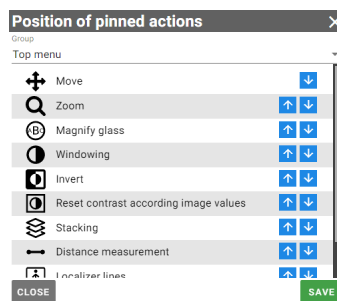
This table contains: - “Add” action - by selecting “Add” you will display a table for creating a new DICOM viewer configuration profile, follow this table according to the previous paragraph “Save viewer configuration” - Viewer configuration profiles - individual columns on the profile line contain the selected parameters, the “Actions” column contains the “Edit” action, which display the profile configuration table and the “Delete” action to remove the selected profile. - Check box “Reset selected tools

after the anchor study has been changed” - this action deactivates saved DICOM viewer configurations and only the default remains - “Save” action - saves the changes made



**Figure 557:** img

**8.10.2.8 Position of pinned actions** The “Position of pinned actions” tool are used to determine the display order of tools in the “User configurable toolbar” and “Context menu”. By selecting this tool, you will display the “Position of pinned actions” table:



**Figure 558:** img

In this table, use the drop-down menu “Group” to select area for changing the position of the tools: - Top menu - tools in “User configurable toolbar” - Context menu - tools in the “Context menu”

The position of the tool can be changed by clicking on the arrows located to the right of the selected tool.

After making the required changes, choose the “Save” action to save the changed state, the “Close” action cancels the action.

Tools in the “Position of pinned actions” table, you can choose the settings of the display of tools, see the chapter “DICOM viewer tools” paragraph “Display tools”.






**Figure 559:** img

**8.10.2.9 Restart windows layout** The “Restart windows layout” tool is used to reload the displayed images/series in the “Window for displaying image data”. It serves as a “refresh” DICOM viewer.

### 8.10.3 Restart windows layout

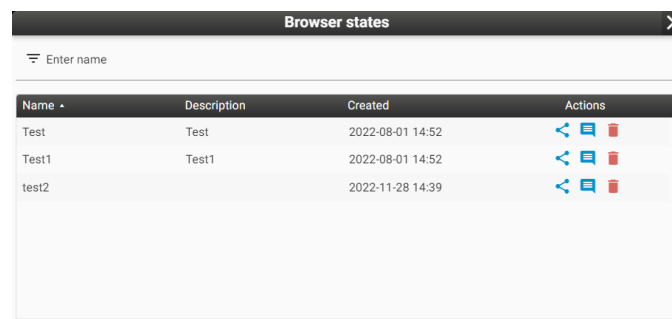
The “Settings” tools group includes the following tools:










Icon	Function	Description
	Load viewer state	View saved DICOM viewer states
	Save viewer state	Saving or sharing edited study, including its measurement, post-processing, localization, etc.
	Save state as hanging protocol	Takes the current view of the DICOM viewer state and inserts these parameters into the configuration of the new hanging protocol



**Figure 560:** img


**8.10.3.1 Load viewer state** The “Load viewer state” tool is used to work with and display saved DICOM viewer states. To create a DICOM viewer state, follow the “Save viewer state” paragraph. By selecting this tool, you will display the “Browser states” table:



Browser states			
Enter name			
Name	Description	Created	Actions
Test	Test	2022-08-01 14:52	  
Test1	Test1	2022-08-01 14:52	  
test2		2022-11-28 14:39	  

**Figure 561:** img

In this table, it is possible to filter individual saved DICOM viewer states using the “Enter name” text field.

This table contains saved DICOM viewer states and allows you to perform actions on them: - Share  - this action allows you to share the saved DICOM viewer state with other users logged into the Dicompass Gateway system. Selecting this action will display the “Manage users” table where you can add users to share the saved state. You can use the check boxes to assign them rights for further

sharing “Share” or for possible modification of the status “Edit”. The “Save” action activate sharing to users, the “Cancel” action cancels the action:

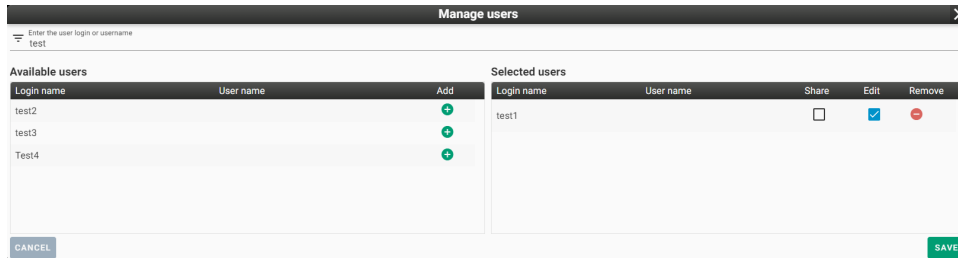


Figure 562: img

- Comments - the “Comments” action is used for sending messages and writing information about the saved state. By choosing this action, you will display the “Comments” table. Enter text in the “Comment” text field and press the “Add” action to add a comment. This comment will then be visible to shared users.

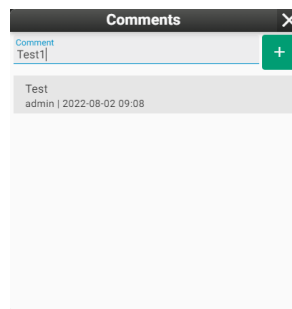


Figure 563: img

- Remove - removes the saved DICOM viewer state. By choosing this action, you will be asked to confirm or cancel by the YES/NO action, using the “Question” table. If you confirm the removal of the saved state, you will be informed about the successful removal of the state by information in the footer of the DICOM viewer:



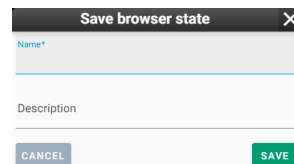
Figure 564: img



Figure 565: img

**8.10.3.2 Save viewer state** If the work in the browser must be finished and you want to continue it later, it is possible to save all the work for the possibility of reloading. The entire state of the windows, the studies in progress are saved. This status can still be shared with other users, who can add their comments to it. It is a so-called off-line consultation.

By selecting this tool, you will display the “Save browser state” table:



**Figure 566:** img

In this table, enter in the “Name” text field the name of the state and “Description” more detailed information about the state. Use the “Save” action to create a new saved DICOM viewer state, use the “Cancel” action to cancel the action. You will be informed about successful saving by information in the DICOM viewer footer:



**Figure 567:** img










**Figure 568:** img

**8.10.3.3 Save state as hanging protocol** The “Save state as hanging protocol” tool accepts the current display of the DICOM viewer status and inserts these parameters into the configuration of a new hanging protocol, opening the “Hanging protocol manage” window for possible specification of parameters. More detailed information about the creation of hanging logs can be found in the chapter “My hanging protocols”.

#### 8.10.4 Other actions

The “Other Actions” tool group contains the following tools:

Icon	Function	Description
	Hide OSD labels	Hiding/displaying OSD labels in individual windows “Windows for displaying image data”
	Hide overlay	Hide/show saved measurements in the image
	Display shutter	Allows you to hide all pixels that are outside the specified area
	Reverse windows order for HP	Reversing the order of applied hanging protocols on individual monitors
	Hanging protocols enabled	Disables/enables the option to display hanging protocols
	Help	Product label view and User Guide link
	Logout	Logging out and ending work in the Dicompass Gateway system



**Figure 569:** img

**8.10.4.1 Hide OSD labels** The “Hide OSD labels” tool is used to hide/display the OSD labels in individual windows “Window for displaying image data”. Select this tool to hide the OSD labels:



**Figure 570:** img

To display the OSD labels, select this tool again, the OSD labels will be displayed:





**Figure 571:** img



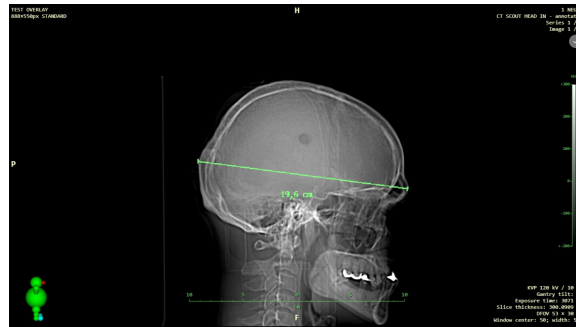
**Figure 572:** img

**8.10.4.2 Hide overlay** The “Hide overlay” tool allows you to hide/show saved measurements in the image. Selecting this will hide the saved measurements:



**Figure 573:** img

To display the overlaid measurements in the image, select this tool again, the saved measurements will be displayed:



**Figure 574:** img

Warning: The “Hide overlay” tool is used to hide measurements entered directly into the DICOM image information, the so-called overlay. This tool does not hide measurements saved as “PR” - presentation state.



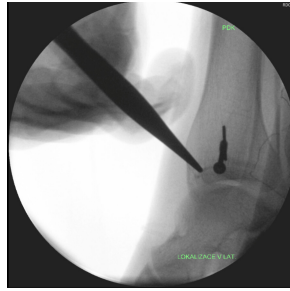
**Figure 575:** img

**8.10.4.3 Display shutter {#viewsettings\_Display shutter}** The “Display shutter” tool allows you to hide part of the image where appropriate. Turn on this function to hide part of the image:



**Figure 576:** img

Selecting this action again will disable this feature:



**Figure 577:** img




**Figure 578:** img

**8.10.4.4 Reverse windows order for HP** In case you have set hanging protocols for multiple monitors, the “Reverse windows order for HP” tool reverses the order of applied hanging protocols on the monitors, i.e. that the hanging protocol for the second monitor will be displayed on the first monitor and vice versa.

When you choose this tool, you will be notified by the system of the information: “Reverse windows order for HP: Yes/No”.



**Figure 579:** img

**8.10.4.5 Hanging protocols enabled** The “Hanging protocols enabled” tool disables/enables the option to display hanging protocols. In case of deactivation, the “Hanging protocols” icon will be inactive .

When you choose this tool, the system will alert you with the information: “Hanging protocols enabled: Yes/No”.



**Figure 580:** img

**8.10.4.6 Help** The “Help” tool is used to display a table containing basic information about the product, with the option of opening this “User guide”:



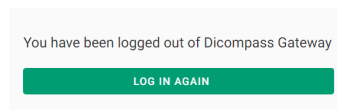
**Figure 581:** img



**Figure 582:** img

**8.10.4.7 Logout** The “Logout” tool is used for logging out and ending work in the Dicompass Gateway system.



Selecting this tool will display a page for a possible re-login:



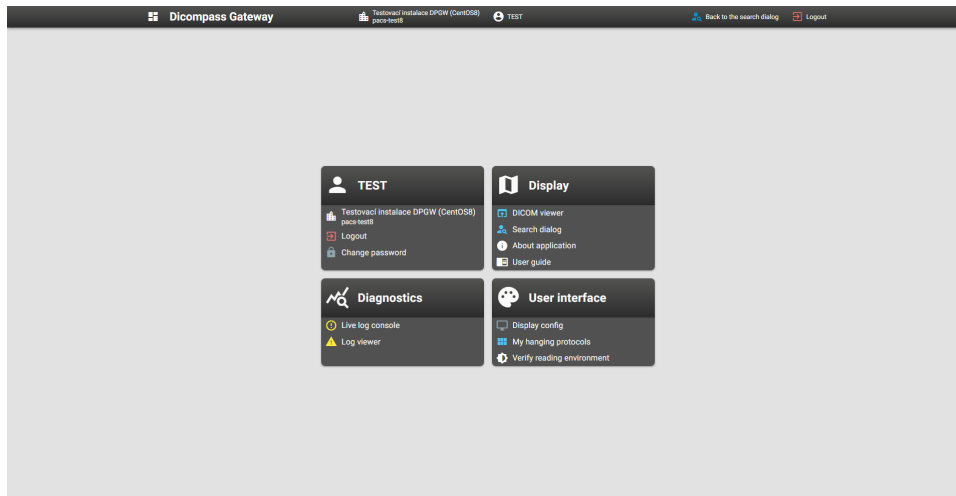
**Figure 583:** img

By selecting the “Log in again” action, you will be redirected to the Dicompass Gateway system login page.

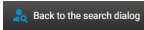
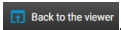
## 9 Settings


In this chapter, the third main part will be described, namely the Dicompass Gateway configuration. This dialog can be displayed from the main menu  by selecting the category “Settings” located in the upper right corner of the basic registry dialog. Another option for opening the “Settings” dialog is from the DICOM viewer dialog, from the “DICOM viewer settings” tools group and selecting the “Global configuration” tool .

Choose one of these actions to open the “Settings” dialog:







**Figure 584:** img

In case you opened “Settings” from the basic registry dialog and now want to close it, choose the icon , which you return to the previous work in the basic registry dialog. In case you opened “Settings” from the DICOM viewer dialog and now want to close it, select the icon by selecting this icon , which you return to the previous work of the DICOM viewer dialog.

If you want to return from the configuration tool dialog to the main “Settings” dialog, use the icon .

If you want to log out of the DPGW system, select the “Logout” icon .

The main dialog “Settings” contains configuration tools that are located in individual tabs, these are: - “User”  - “Display”  - “Diagnostics”  - “User interface” 

Warning: Individual configuration tools are displayed based on the rights assigned to the user. If you need advanced system configuration, contact your administrator. All configuration tools are described in the administrator’s manual.




Warning: In the case of a DPGW system located in the cloud, the main dialog “Settings” also contains the tab “Account statistics” . This tab contains: - Tariff name - Number of opened studies - Storage usage - Number of users - External share links

## 9.1 User



**Figure 585:** img

The “User” tool group contains the following tools:

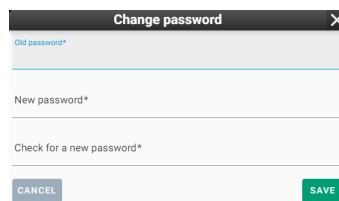
Icon	Function	Description
	Archive Name	Contains the name of the archive used DPGW
	Logout	Logging out of the system DPGW
	Change password	Changing the password of the currently logged in user

### 9.1.1 Change password



**Figure 586:** img

The “Change password” tool allows you to change the password of the currently logged-in user. By selecting this tool, you will display the “Change password” table:



**Figure 587:** img

By choosing the “CANCEL” action, you cancel the action being performed. By selecting the “SAVE” action, a new password will be applied, according to the specified parameters. You will be informed about a successful password change in the footer of the screen:







**Figure 588:** img

## 9.2 Display



**Figure 589:** img

The “Display” tool group includes the following tools:

Icon	Function	Description
	DICOM viewer	Returning to the DICOM viewer dialog
	Search dialog	Returning to the basic registry dialog
	About application	Display information of the DPGW system, including its label
	User guide	Display this user manual

### 9.2.1 About application



**Figure 590:** img

The “About application” tool is only informative, containing basic information and the system label DPGW. By selecting this tool, you will display “About application” table:



**Figure 591:** img

Close this table by selecting the “X” action.

### 9.2.2 User guide



**Figure 592:** img

The “User guide” tool is used to display this user manual. Selecting this tool will display a new web browser window containing this user manual.

### 9.3 Diagnostics



Figure 593: img

The “Diagnostics” tool group contains the following tools:

Icon	Function	Description
	Live log console	View the DPGW activity log in real time
	Log viewer	preview and search in already saved system log files DPGW

#### 9.3.1 Live log console



Figure 594: img



The “Live log console” configuration tool is used to display the DPGW activity log in real time. Using this configuration tool, it is possible to obtain detailed information about the processes performed by the system.

```

at org.eclipse.jetty.server.handler.ContextHandler.doHandle(ContextHandler.java:1388)
at org.eclipse.jetty.server.handler.ScopedHandler.nextScope(ScopedHandler.java:176)
at org.eclipse.jetty.server.servlet.ServletHandler.doScope(ServletHandler.java:485)
at org.eclipse.jetty.server.session.SessionHandler.doScope(SessionHandler.java:1544)
at org.eclipse.jetty.server.handler.ScopedHandler.nextScope(ScopedHandler.java:174)
at org.eclipse.jetty.server.handler.ContextHandler.doScope(ContextHandler.java:1382)
at org.eclipse.jetty.server.handler.ScopedHandler.handle(ScopedHandler.java:129)
at org.eclipse.jetty.server.handler.HandlerWrapper.handle(HandlerWrapper.java:122)
at org.eclipse.jetty.server.handler.HandlerWrapper.handle(HandlerWrapper.java:122)
at org.eclipse.jetty.server.handler.gzip.GzipHandler.handle(GzipHandler.java:822)
at org.eclipse.jetty.server.handler.HandlerWrapper.handle(HandlerWrapper.java:122)
at org.eclipse.jetty.server.handler.HandlerWrapper.handle(HandlerWrapper.java:122)
at org.eclipse.jetty.server.handler.HandlerCollection.handle(HandlerCollection.java:141)
at org.eclipse.jetty.server.handler.HandlerWrapper.handle(HandlerWrapper.java:122)
at org.eclipse.jetty.server.Server.handle(Server.java:552)
at org.eclipse.jetty.server.HttpChannel.lambda$handle$0(HttpChannel.java:595)
at org.eclipse.jetty.server.HttpChannel.dispatch(HttpChannel.java:762)
at org.eclipse.jetty.server.HttpChannel.handle(HttpChannel.java:497)
at org.eclipse.jetty.server.HttpConnection.onFillable(HttpConnection.java:282)
at org.eclipse.jetty.io.AbstractConnection$ReadCallback.succeeded(AbstractConnection.java:314)
at org.eclipse.jetty.io.FillInterest.fillable(FillInterest.java:108)
at org.eclipse.jetty.io.SelectableChannelEndPoint$1.run(SelectableChannelEndPoint.java:53)
at org.eclipse.jetty.util.thread.strategy.AdaptiveExecutionStrategy.runTask(AdaptiveExecutionStrategy.java:421)
at org.eclipse.jetty.util.thread.strategy.AdaptiveExecutionStrategy.consumeTask(AdaptiveExecutionStrategy.java:398)
at org.eclipse.jetty.util.thread.strategy.AdaptiveExecutionStrategy.tryProduce(AdaptiveExecutionStrategy.java:277)
at org.eclipse.jetty.util.thread.strategy.AdaptiveExecutionStrategy.lambda$add$0(AdaptiveExecutionStrategy.java:139)
at org.eclipse.jetty.util.thread.ReservedThreadExecutor$ReservedThread.run(ReservedThreadExecutor.java:411)
at org.eclipse.jetty.util.thread.QueuedThreadPool$Runner.run(QueuedThreadPool.java:933)
at java.base/java.lang.Thread.run(Thread.java:833)
Caused by: org.medoro.dpgw.dicom.lib.QRException: A-ASSOCIATE-RJ[result: 1 - rejected-permanent, source: 1 - service-user, reason: 1 - no-reason-given]
at org.medoro.dpgw.dicom.lib.RetrieveTool.openAssociation(Unknown Source)
at org.medoro.dpgw.dicom.lib.QueryTool.startQuery(Unknown Source)
at org.medoro.dpgw.web.plugin.dw.archiveSearch.SearchCallable.processQuery(Unknown Source)
at org.medoro.dpgw.web.plugin.dw.archiveSearch.SearchCallable.searchJob(Unknown Source)
at org.medoro.dpgw.web.plugin.dw.archiveSearch.SearchCallable.call(Unknown Source)
at org.medoro.dpgw.web.plugin.dw.archiveSearch.SearchCallable.call(Unknown Source)
at java.base/java.util.concurrent.FutureTask.run(FutureTask.java:264)
at java.base/java.util.concurrent.ThreadPoolExecutor.runWorker(ThreadPoolExecutor.java:1136)
at java.base/java.util.concurrent.ThreadPoolExecutor$Worker.run(ThreadPoolExecutor.java:635)
... 3 common frames omitted
Caused by: org.dcm4che3.net.pdu.AssociateR: A-ASSOCIATE-RJ[result: 1 - rejected-permanent, source: 1 - service-user, reason: 1 - no-reason-given]
at org.dcm4che3.net.PDUDecoder.nextPDU(PDUDecoder.java:182)
at org.dcm4che3.net.Association$.run(Association.java:566)
... 3 common frames omitted
2023-01-10 08:51:57.483 INFO [web-2366444] admin org.medoro.dpgw.web.plugin.dw.RelevantStudiesServlet: [0] relevant_studies_found: [1] errors
2023-01-10 08:51:57.637 INFO [web-2366444] admin org.medoro.dpgw.core.impl.LoginAndConfigPage: save user configuration request, but user configuration saving is disabled by role. [DISABLE_USER_CONFIG_SAVE]
2023-01-10 08:52:00.002 INFO [readErrorCache] org.medoro.dpgw.core.service.ServiceExecutor: Service name=[readErrorCache] is starting
2023-01-10 08:52:00.003 INFO [readErrorCache] org.medoro.dpgw.core.service.ServiceExecutor: Service name=[readErrorCache] has finished
    
```

Figure 595: img

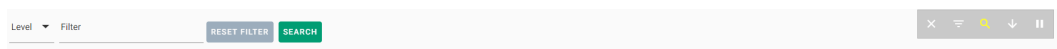


The configuration tool “Live log console” contains several tools to facilitate the work. These tools are located in the upper right corner of the dialog “Live log console”: - “Clear log console”  - with this tool it is possible to clear the console - “Set log filter”  - selecting this tool will display a line for possible console log filtering:





**Figure 596:** img

- “Log search”  - selecting this tool will display a line for a possible search in the console log:



**Figure 597:** img

- “Autoscroll”  - selecting this tool will always display the last line of information in the log console with autoscrolling
- Pause log events  - choose this tool to pause the information listing in the log console lines

## 9.4 Log viewer



**Figure 598:** img

The “Log viewer” configuration tool is used for previewing and searching in already saved log files and thus allows you to obtain more detailed information about the operation of the DPGW system. Selecting this tool display the “Log viewer” dialog:

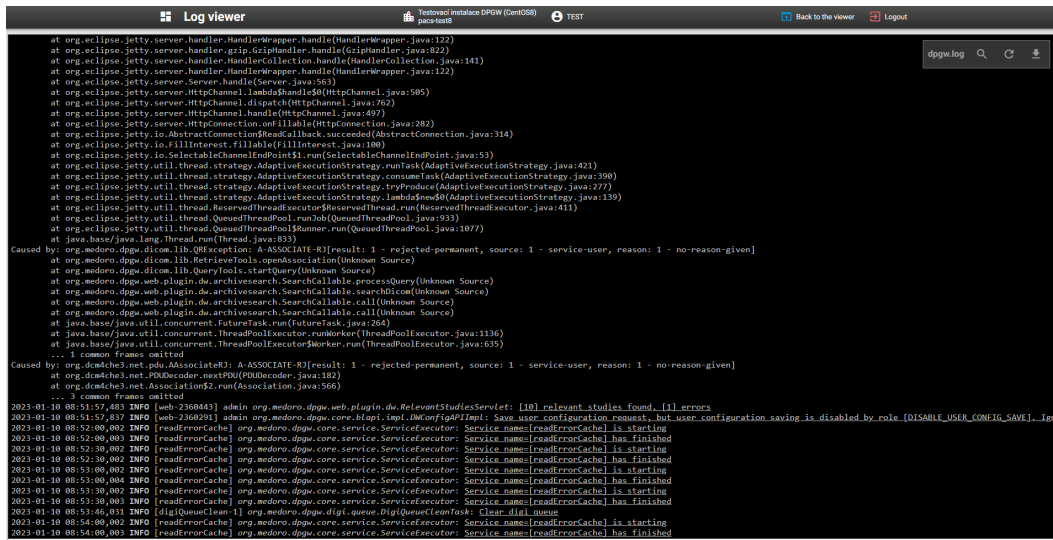


Figure 599: img

The configuration tool “Log viewer” contains several tools to facilitate the work. These tools are located in the upper right corner of the “Log viewer” dialog: - “Log file name” **dpgw.log** - by choosing this tool it is possible to open selected log file, e.g.:

- dpgw.log
- autorouting.log
- browser.log
- h7-in.log
- h7-out.log
- prefetch.log
- stdout.log
- dpgw.20220801\_0.log.gz
- dpgw.20220731\_0.log.gz
- dpgw.20220730\_0.log.gz
- dpgw.20220729\_0.log.gz
- dpgw.20220728\_0.log.gz
- dpgw.20220727\_0.log.gz
- dpgw.20220726\_0.log.gz
- dpgw.20220725\_0.log.gz
- dpgw.20220724\_0.log.gz
- dpgw.20220723\_0.log.gz
- dpgw.20220722\_0.log.gz
- dpgw.20220721\_0.log.gz
- dpgw.20220720\_0.log.gz
- browser.202207.log.gz

Figure 600: img

The text in the tool icon is displayed according to the name of the currently opened log file.

- “Log search” - selecting this tool will display a line for a possible search in the “Log viewer”:

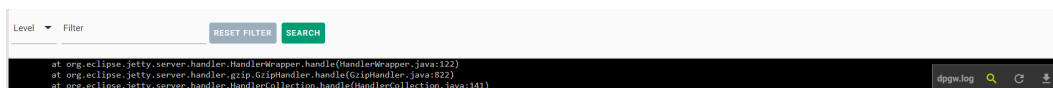



Figure 601: img

- “Refresh log file” - “Log viewer” does not display information in real time, it is only used for reading saved information, so use “Refresh log file” tool to obtain last informations




- “Download log”  - by selecting this tool, you will start downloading the open log in the “Log viewer” dialog to the station’s local storage in .log format, it is a text file with selected log

## 9.5 User interface



**Figure 602:** img

The “User interface” tools group contains the following tools:

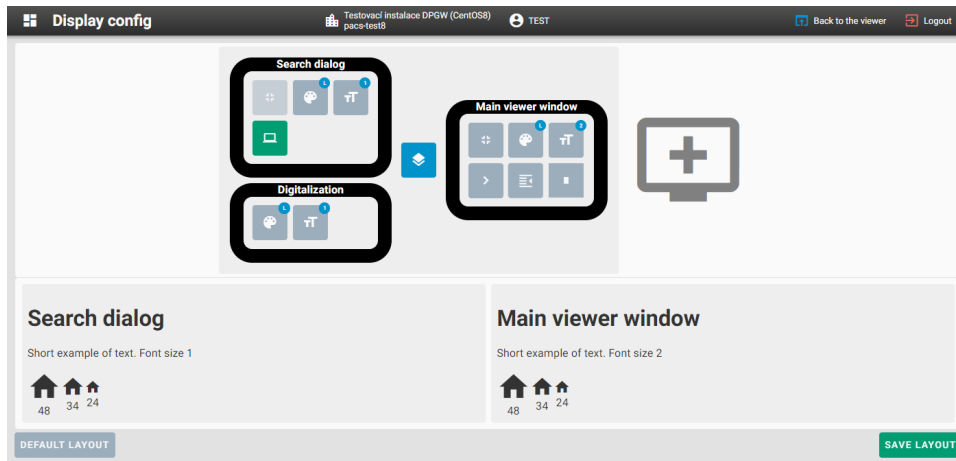
Icon	Function	Description
	Display config	Configuring display of DPGW on the monitors connected to the workstation
	My hanging protocols	Editing and management of hanging protocols stored on the logged in user
	Verify reading environment	Indicative verification of the suitability of the environment for the purpose of diagnosis

### 9.5.1 Display config



**Figure 603:** img

The configuration tool “Display config” is used to configure the display of DPGW monitors connected to the workstation. Select this tool to open the “Display config” dialog:





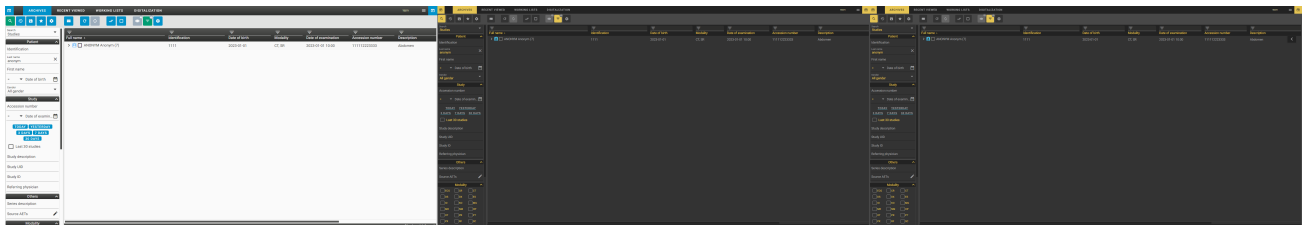
**Figure 604:** img

The “Display config” configuration tool contains the following areas:


### 1. Search dialog

The area of the search dialog contains tools to configure the display of the basic registry dialog:

- “Fullscreen”  - option to display in fullscreen mode, this tool can be used if the “Set from system default” tool is disabled
- “Display”  - option to choose Light, Dark, Grayscale display mode:




**Figure 605:** img

- “Font size”  - option to choose the displayed font size:




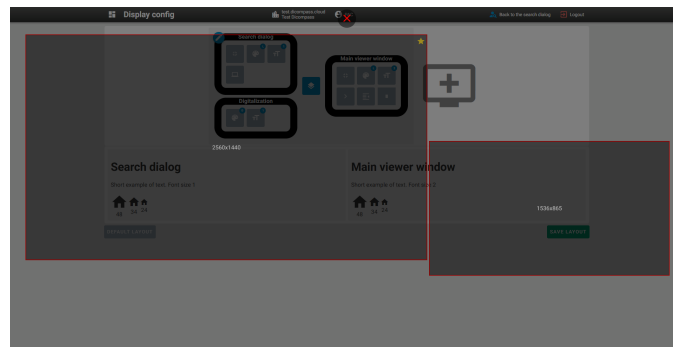
**Figure 606:** img

- “Set from system default”  - if this tool is active, it takes over the monitor screen resolution settings from the workstation operating system settings. By default, this tool is active, if you want to change the resolution and monitor position of the search dialog display, deactivate this tool. Deactivating the tool will display the “Edit” action:





**Figure 607:** img

Selecting the “Edit” action  will open the monitor selection window:

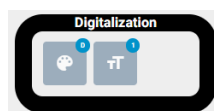


**Figure 608:** img



Select the selected monitor.

- “Show search dialog on same / another display”  /  - by deactivating this tool, the “Main viewer window” will be opened in a separate Internet browser window, disable this tool if the workstation has at least two monitors connected. Deactivate this tool to display the “Edit” action in the “Main viewer window”.

## 2. Digitalization



**Figure 609:** img











The “Digitization” contains tools to configure the display of the “Digitization” dialog: - “Display”  - “Font size” 

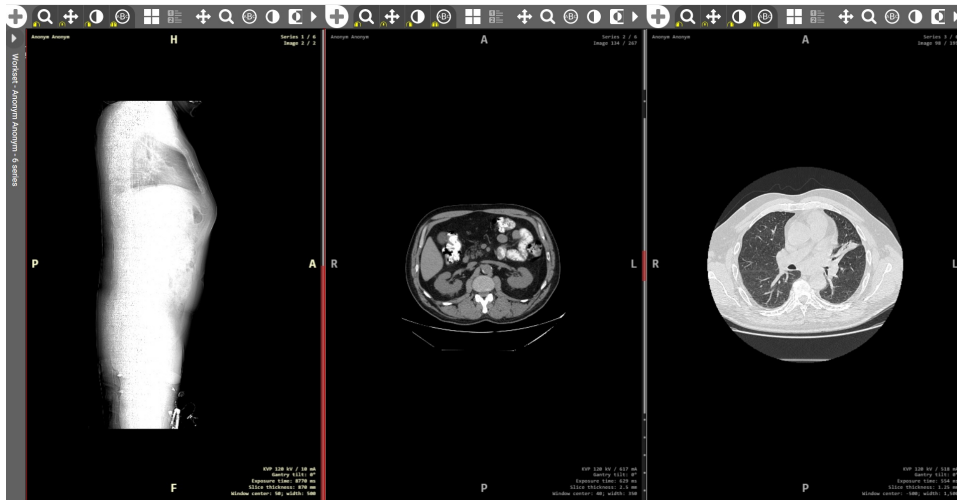
## 3. Main viewer window



**Figure 610:** img

The image of the main browser window contains tools to configure the display of the browser dialog:

- “Fullscreen” 
- “Display” 
- “Font size” 
- “Show viewer working set”  - by choosing this tool you specify the display of the “Viewer working set”, in three modes: normal , maximized  and minimized 
- “Working set on left / right side”  / - by choosing this tool, you choose the position of the “Viewer working set” panel on the left or right side of the DICOM viewer
- “Display multiplicity”  - by selecting this tool it is possible to divide the area of the “Window for displaying image data” into multiple windows, up to three :



**Figure 611:** img

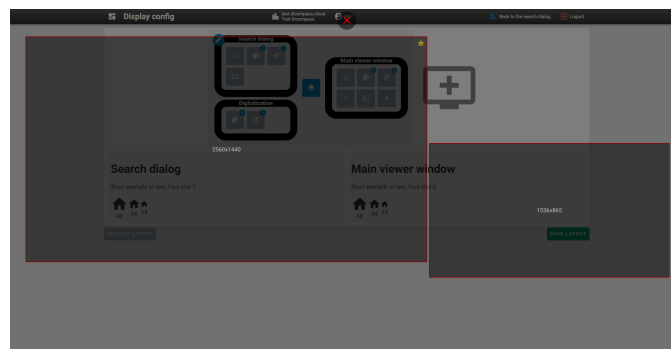
**4. Add display**

In the case of a multi-monitor workstation, it is possible to add separately opening DPGW system to individual monitors. To add another display, click on the “Add display” action:



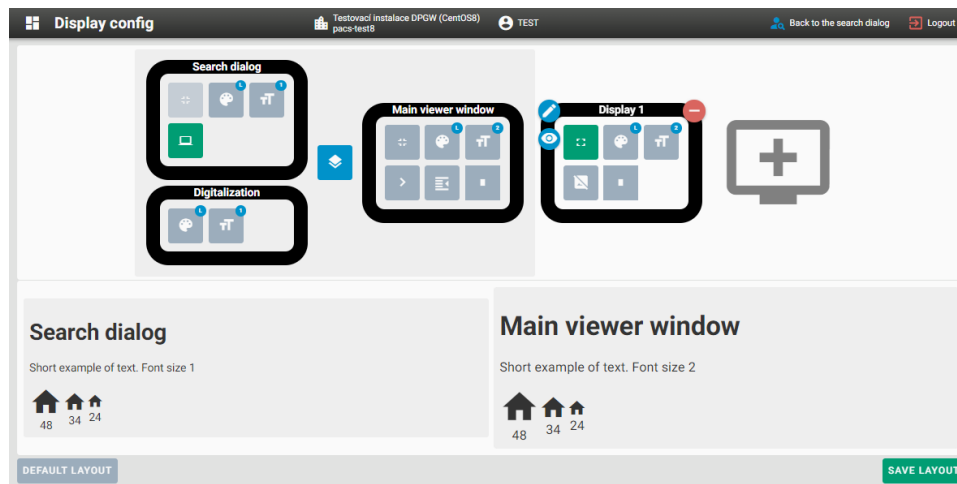
**Figure 612:** img

Selecting the “Add display” action will open a dialog for selecting a display:







**Figure 613:** img


Select the selected monitor. The “Display 1” display has been added to the “Display config” dialog:

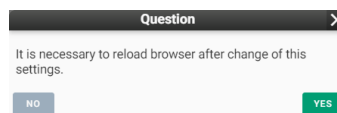


**Figure 614:** img


The “Display 1” display contains the following tools: - “Edit”  - display editor for configuring the display layout - “Preview font size”  - shows a preview of the text size - “Remove”  - select this tool to remove the set display - “Hide working set”  - “Viewer working set” will not be displayed on added display

### 5. Save layout

With the action “Save layout”  you save and apply the configured display settings of the displays. Select this action to display the “Question” table:



**Figure 615:** img

The action “Default layout”  will return to the default configuration of monitor display settings. By selecting this action, you will be notified of the information in the footer of the screen:

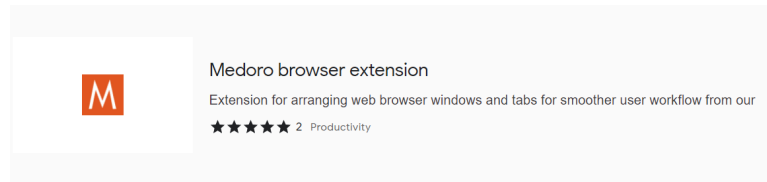


**Figure 616:** img

To make it easier and more comfortable to work with the DPGW system, use the “Medoro browser extension” add-on. This add-on ensures automatic placement of dialogs on individual set monitor display screens. If this add-on is not installed and you have multiple monitors set up, individual dialogs



will only open on one monitor and the user will then manually drag them to the selected monitors. You can find the add-on in the “Extension” of the Chrome internet browser, by opening the “Chrome Web Store” and typing “Medoro browser extension” into the search field:



**Figure 617:** img

### 9.5.2 My hanging protocols



**Figure 618:** img

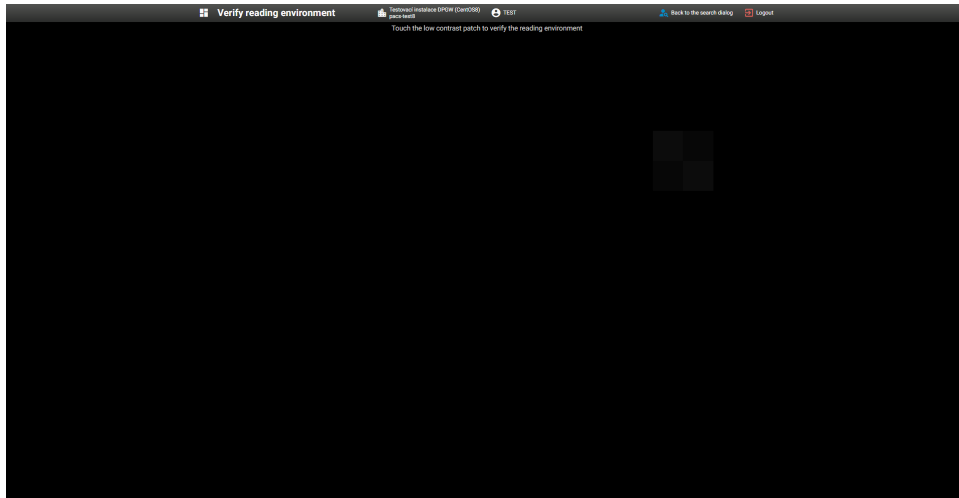
The “My hanging protocols” configuration tool is used for editing and managing hanging protocols stored on the logged in user. For more information about configuration hanging protocols, go to the chapter “Setting Hanging Protocols”.

### 9.5.3 Verify reading environment



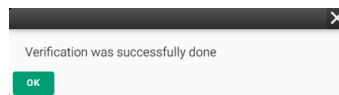
**Figure 619:** img

The configuration tool “Verify reading environment” is used for indicative verification of the suitability of the environment for the purpose of diagnostics. Select this tool to open the “Verify reading environment” dialog:



**Figure 620:** img

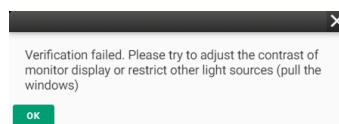
In this dialog, click the low-contrast check box to verify the suitability of the environment for diagnostic purposes. If you click on the low-contrast box, you will be notified of successful verification:



**Figure 621:** img

By selecting the “OK” action, you will be returned to the main “Settings” dialog.

If you click outside the low-contrast box, you will be notified of a failed verification:



**Figure 622:** img

After selecting the “OK” action, the configuration tool “Verify reading environment” will still be opened with the option of clicking on the low-contrast box.

**Warning:** Please note that this quality check is only indicative. To verify the quality and suitability of the environment for diagnosis, use safety technical checks and calibration of diagnostic monitors as medical devices.

If set by the administrator, periodically validation of diagnostic monitors can be used. You will be prompted for this validation by a pop-up table with the option to perform the verification, or the option

to postpone this verification with a certain number of postponements, after the completion of the postponement deduction, it will be necessary to perform the verification. Verification will be required every time Dicompass Gateway is run for the first time on a given station. The performed validations is recorded in the “Display device validation audit” tool and for individual stations in the administrator section “Settings”.

## 10 Setting Hanging Protocols

Hanging protocol (HP) is used to display images with parameters provided that the specified conditions are met.

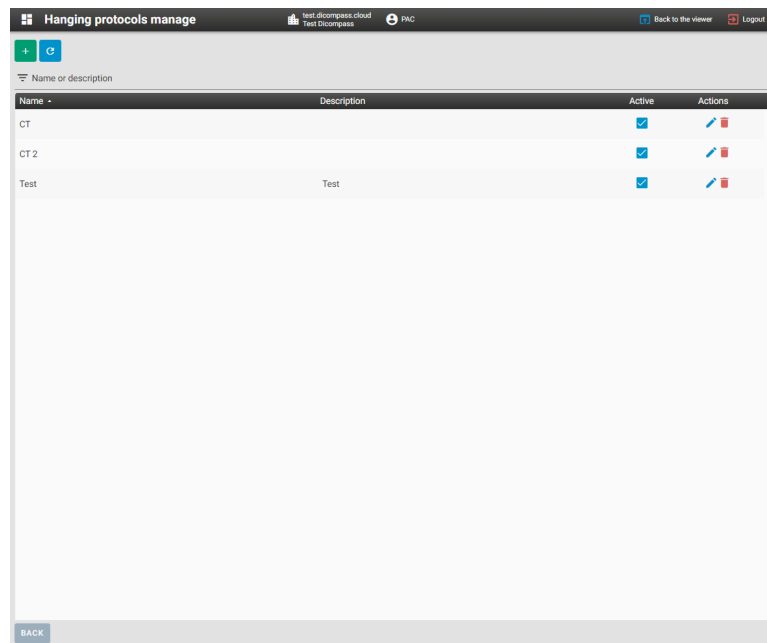
This user guide contains basic HP settings, created and saved per logged in user. If advanced HP configuration is required, contact your DPGW system administrator. Advanced HP configuration is described in the Administrator’s Guide.

To edit and manage HP, display “Hanging protocols manage” dialog using the configuration tool “My hanging protocols” located in the main “Settings” dialog:



**Figure 623:** img

Select this tool to open the “Hanging protocols manage” dialog:



**Figure 624:** img



The dialog “Hanging protocols manage” contains:

- “Add HP” action - by choosing this tool it is possible to create a new HP
- “Reload” action - selecting this tool will refresh opened dialog “Hanging protocols manage”, which serves similarly to the “refresh” of the Internet browser
- Text field “Name or description”  - this text field is used to search for selected created HP
- Field with created HPs - here you will find HPs created by the logged in user. This field contains:
  - HP name and description
  - Active - option to choose whether the given HP should be displayed/hidden in the DICOM viewer DPGW
  - Actions - the action column contains icons for editing HP “Edit” and icon for removing HP “Remove”

Name	Description	Active	Actions
CT		<input checked="" type="checkbox"/>	
CT 2		<input checked="" type="checkbox"/>	

**Figure 625:** img


- “Back” action - selecting this action will return you to the main “Settings” dialog

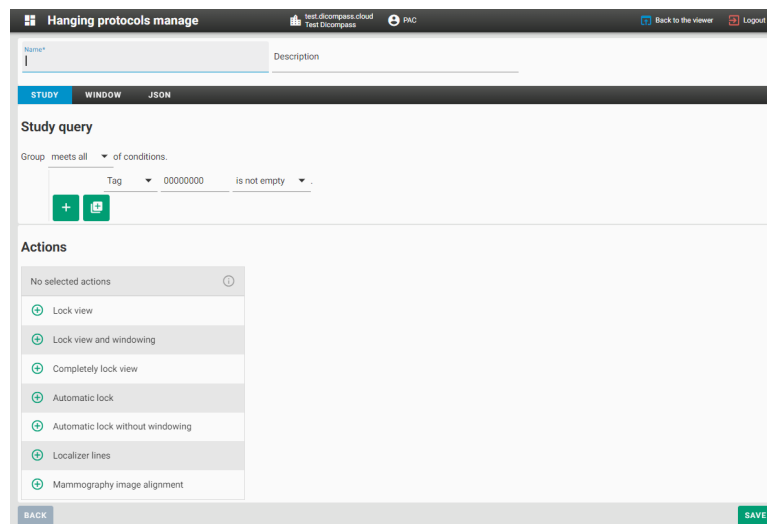
HP can be created in two ways, by clicking the “Add HP” action  from the “Hanging protocols manage” dialog, or by selecting the “Save state as hanging log”  from the “DICOM viewer settings” tools group tab in the DPGW DICOM viewer.

### 10.0.1 Creating a new HP “Add HP”



**Figure 626:** img

To create a new HP, select the “Add HP” action  from the “Hanging protocols manage” dialog. This will redirect you to the new HP dialog box:




**Figure 627:** img

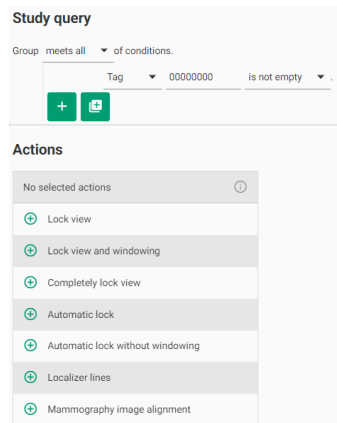
In the header of the dialog, it is possible to name the new HP using the “Name” text field and describe more detailed information about the HP in the “Description” text field.

The dialog contains three tabs for entering parameters: - “Study” - contains parameters for the HP application - “Window” - contains HP display parameters - “JSON” - configuration file in JSON format

“Back” action  - selecting this action will redirect you to the “Hanging protocols manage” dialog

The “Save” action  is used to save new HP to the logged-in user.

**10.0.1.1 Study tab** The “Study” tab contains parameters for the HP application according to the specified conditions:

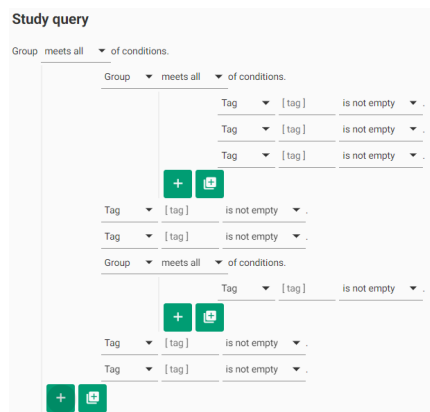


**Figure 628:** img

The study tab is divided into two areas:

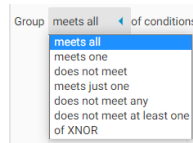
### 1. Study query

This area contains conditions for initiation HP and is organized into a tree of condition groups, think of it as a file system where each file is located in a specific folder. The tree of groups and conditions can look like this, for example:




**Figure 629:** img

The main group, or any subgroup, may have certain conditions for initiation HP. These conditions can be displayed by clicking on the text “meets all” in the text “Group meets all of conditions.”:

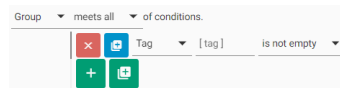


**Figure 630:** img

To add a new condition, select the “Add condition” action .

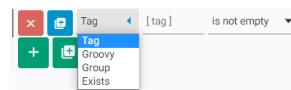
To add a new subgroup, select the “Add group” action .

By hovering the mouse over the added condition, it is possible to include it in a new group with the “Wrap with group” action, or remove it with the “Remove” action:



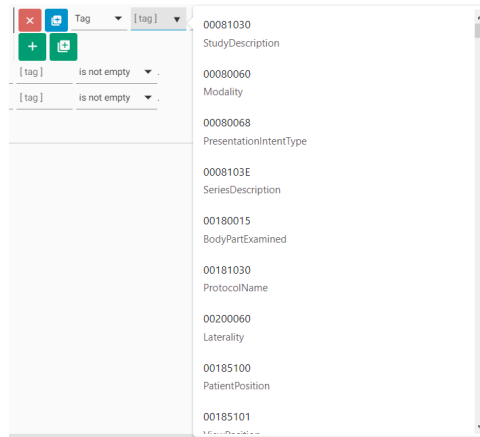
**Figure 631:** img

The value of the condition can be changed by clicking on the “Tag” field and choosing the selected range of values:



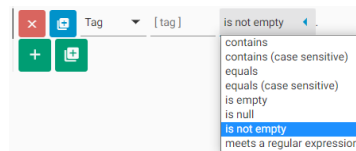
**Figure 632:** img

It contains the following areas: - Tag - the option to choose a value according to the selected DICOM tag of the study, by clicking in the second field [ tag ] you will display a scrolling menu for choosing the selected DICOM tag:



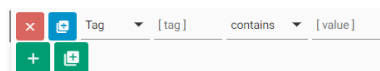
**Figure 633:** img

Click in the third field, in this case “is not empty” you can choose a value condition:



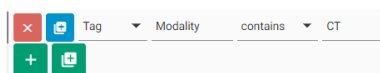
**Figure 634:** img

By choosing a value condition other than “is empty”, “is null” and “is not empty”, a fourth text field [ value ] will be displayed, in which you can enter the required parameter:



**Figure 635:** img

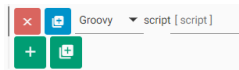
Here is an example of the selected HP display condition for the CT modality, according to the CT Modality DICOM tag:



**Figure 636:** img

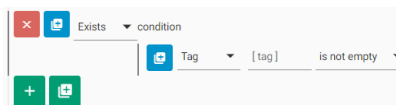
- Groovy - option to choose a value according to the Groovy script, enter the script value in the text field:





**Figure 637:** img

- Group - by selecting this area, you change the condition to a group
- Exists - by selecting this area, you will place the condition in the condition initiation state if it exists:

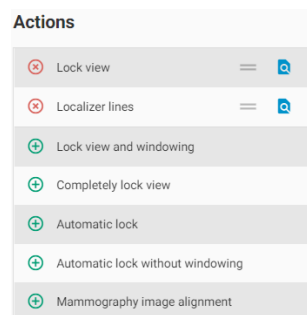


**Figure 638:** img

## 2. Actions

The second area in the create new HP dialog is the “Actions” area. This area contains the possible application of tools to the created HP. You can find a description of the individual tools in the “DICOM viewer tools” chapter.

The applicable tools are contained in this area and can be added by clicking on the row of the selected tool:



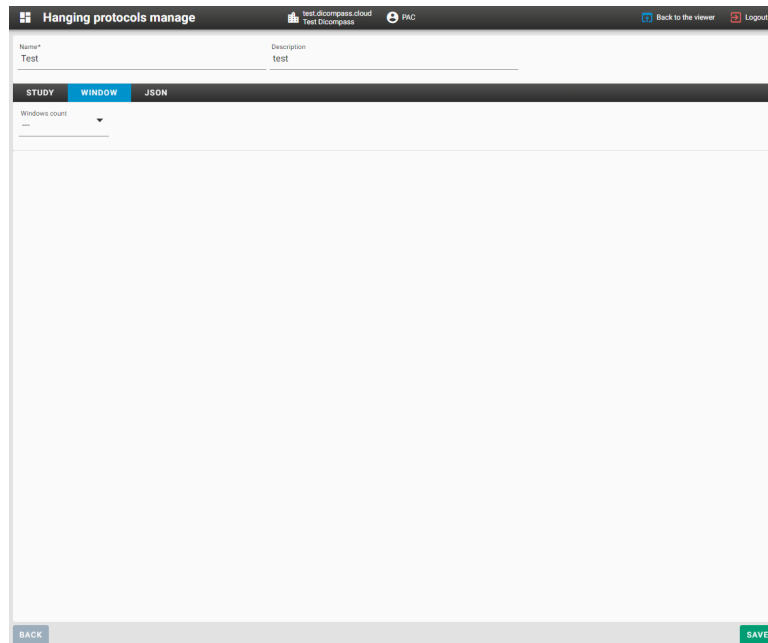
**Figure 639:** img

Click on the row of the added tool to remove this tool from the added list.

Click and drag the = icon to change the order of the tool in the added list.

Click the document icon to go to the “JSON” tab and view the selected tool.

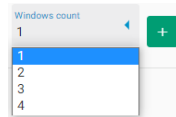
**10.0.1.2 Window tab** The “Window” tab contains tools for configuring the display of DICOM viewer layouts and assigning HP information. Go to this tab after completing the settings of the “Study” tab.



**Figure 640:** img

To set the HP display in this tab, proceed as follows:

- choose the number of monitor screens on which the DPGW DICOM viewer dialogs will be opened and press the “Add” icon:

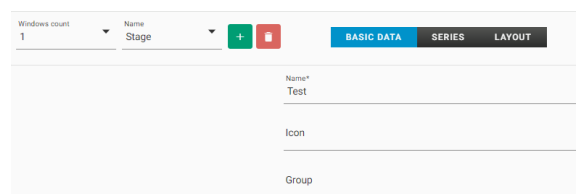


**Figure 641:** img

- this has created the HP display configuration and it is possible to continue working with it.

Now the “Window” tab now contains three subfolders “Basic data”, “Series”, “Layout”:

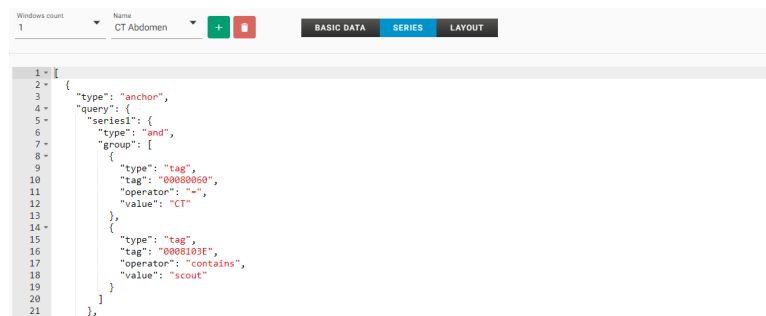
**1. Basic data**



**Figure 642:** img

In this subfolder, type in the text fields - Name - naming HP, the name will be displayed in the DICOM viewer DPGW - Icon - assignment of an icon to HP (icons correspond to Google fonts and can be found here: <https://fonts.google.com/icons>, after entering their name, the selected icon will appear) - Group - naming the HP group and then adding it to the HP groups displayed in the DICOM viewer DPGW

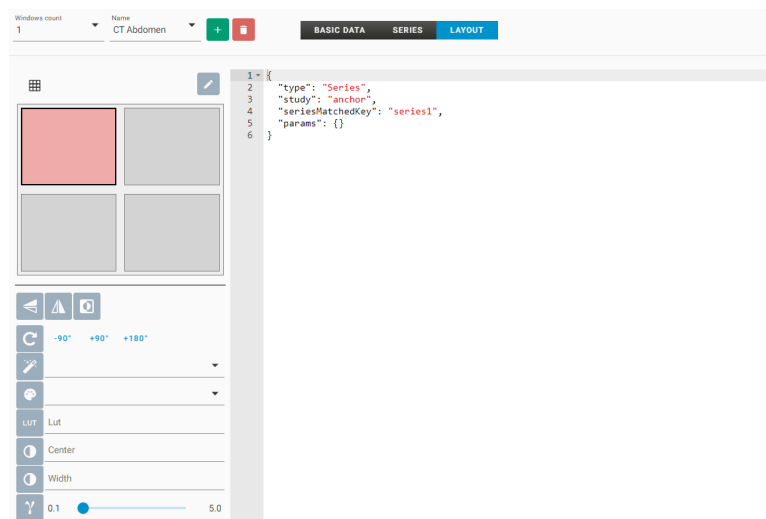
## 2. Series



**Figure 643:** img

The “Series” part of the JSON configuration file is displayed in this subfolder. This is an advanced settings management, please contact your administrator to configure it.


## 3. Layout

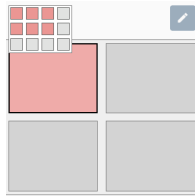


**Figure 644:** img


This subfolder contains tools for displaying series in a DPGW DICOM viewer dialog. This subfolder contains:

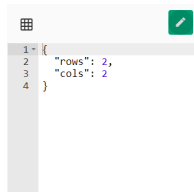
- Panels layout:

To layout panels, click the  icon and select the layout of the panels:



**Figure 645:** img

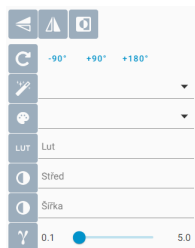
This layout can be entered manually by clicking the  icon and changing the number of “rows” and the number of “cols”:



**Figure 646:** img

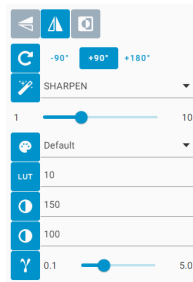
- Tool assignment:

By selecting a specific panel in “Panels layout”, it is possible to assign tools to it that will be applied to selected panel:



**Figure 647:** img

You assign a tool by clicking on the tool icon and assigning its value, e.g.:



**Figure 648:** img

Information on individual tools can be found in the “DICOM viewer tools” chapter.

- JSON config

In this area of the “Layout” subfolder, a section of the JSON configuration file containing the selected tools of the selected HP panel is displayed. This is an advanced settings management, please contact your administrator to configure it. Example:

```

1- {
2   "type": "Series",
3   "study": "anchor",
4   "seriesMatchedKey": "series1",
5   "params": {
6     "rotate": 90,
7     "flipVert": true,
8     "filter": "SHARPEN",
9     "filterRate": 1,
10    "windowCenter": 150,
11    "windowwidth": 100,
12    "gamma": 1.6,
13    "lut": 10
14  }
15 }

```

**Figure 649:** img

**10.0.1.3 JSON tab** The “JSON” tab contains the HP settings configuration file and allows its editing. This is an advanced settings management, please contact your administrator to configure it. Example:


```

1- {
2   "active": true,
3   "name": "Bricho",
4   "id": "00011",
5   "matcher": {
6     "anchorStudyQuery": {
7       "type": "and",
8       "group": [
9         {
10          "type": "tag",
11          "tag": "00081030",
12          "operator": "equals",
13          "value": "Bricho"
14        },
15        {
16          "type": "tag",
17          "tag": "00080060",
18          "operator": "equals",
19          "value": "C1"
20        }
21      ]
22    }
23  }

```

**Figure 650:** img

### 10.0.2 Creating a new HP “Save state as hanging log”

The second option to create a new HP is to select the “Save state as hanging protocol” tool  from the “DICOM viewer Settings” tools group tab in the DICOM viewer – PRODUCT-SHORT-NAME–.

To create a new HP using this tool, first edit the panel layout in the DICOM viewer DPGW and assign the selected series. Then select the “Save state as hanging protocol” tool. This will take you to the new HP configuration dialog. If you want to edit a new HP, proceed according to the paragraph “Creating a new HP”Add HP”, with the only difference being that the values are pre-filled according to the selected state of the DICOM viewer DPGW.

### 10.0.3 Error conditions

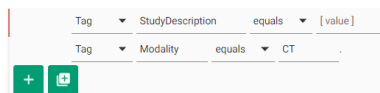
If the configuration was not set correctly, you will be warned about this by the information in the footer of the new HP configuration dialog, after pressing the “Save” action:



Invalid query

**Figure 651:** img

In this case, the invalid configuration area will also be highlighted, e.g.:



**Figure 652:** img

If all required fields are not filled in, these fields will be highlighted and new HP cannot be saved.

In the case that the HP modification using JSON is not valid, you will be warned about this by the information in the footer of the new HP configuration dialog, after pressing the “Save” action:



The configuration file is not a JSON!

**Figure 653:** img

For an invalid line of JSON code, it will be marked as:

```
1- {
2   "active": true,
3   "name": "Test",
4   "id": "uludulaj",
5   "matcher": {
6     "anchorStudyQuery": {
7       "type": "and",
8       "group": [
9         {
10          "type": "tag",
11          "tag": "00081030",
12          "operator": "equals",
13          "value": "Bricho"
14        },
15        {
16          "type": "tag",
17          "tag": "00080060",
18          "operator": "equals",
19          "value": "CT"
20        }
21      ]
22    }
23  },
24  "windowVariants": [
25    {
26      "numberOfWindows": 1,
27      "stages": [
28        {
29          "name": "CT Bricho",
30          "id": "ct-xsq",
31          "seriesQuery": [
32            {
33              "tune": "anchor"
```

**Figure 654:** img