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MedDream DICOM Viewer

USER'S MANUAL

(version 5.4.3)

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Specifications due to technical developments are subject to change. This user`s manual is not subject to the revision service. Please contact the manufacturer or authorized dealer to request the latest edition of the manual.

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Notes on the user's manual

Purpose and availability of documentation

This user`s manual describes the operation with MedDream DICOM Viewer (hereinafter – MedDream).

Correct operation of the system is imperative for its safe and successful functioning. You should therefore ensure that you are thoroughly familiar with the user manual before setting up and using MedDream for the first time.

The user manuals and other documentation enclosed with MedDream should be kept accessible to users at all times to ensure that the information required for the use of MedDream is readily available.

- write an e-mail support@softneta.com

Indications for Use:

MedDream is as software medical imaging system used to receive DICOM images, scheduling information and textual reports, organize and store them in an internal format, and to make that information available across a network via web and customizesd user interfaces. Software is intended for use as a diagnostic, review and analysis tool by trained professionals such as radiologists, physicians, clinicians.

Contraindications:

The MedDream is not intended for the acquisition of mammographic image data and is meant to be used by qualified medical personnel only who are qualified to create and diagnose medical image data.

Clinical performance is implemented during the:

- - post market clinical follow -up studies
- - summary of preclinical study results
- - clinical trials
- - competitor analysis and literature review
- - risk management
- - complaints and problems management
- - vigilance system records

Benefit for direct user and for patient: a simpler and better medical image data necessary for diagnosis understanding.

- Servicing Manual is added as a separate document to this manual.

Questions and comments

If you have any questions or comments regarding this user`s manual, please contact Softneta UAB Customer support: support@softneta.com.

Frequently asked questions (F.A.Q.)

Please visit our FAQs page to search through our database of known questions and issues, or even contact our support team if you can’t find what you are looking for.

Explanation of symbols used

The symbols used in this daily workflow refer to important safety information which warn against possible health risks or fatal injuries and contain useful notes. Whenever you see these symbols, read the accompanying information carefully and observe all safety notes and information in the user manual, daily workflow and on the device labels.

WARNING
Indicates a hazardous situation which may result in a fatal or serious bodily injury if the appropriate safety precautions are not heeded.

CAUTION
Indicates a hazardous situation which may result in a minor injury if the appropriate safety precautions are not heeded.

CAUTION
Indicates possible damage if the appropriate safety precautions are not heeded.

☞ Information, hints and advice for a better understanding of the instructions to be observed in the operation of the instrument.

Introduction

MedDream DICOM Viewer is a Flash/HTML based package for PACS server which is designed to aid professionals in every day's decision making process, connecting all the medical data into a unified and fast performing network. MedDream ensures a fast and reliable way to search, present and analyze the medical data (images and video files) on various devices: computers, smart phones, tablets and so forth.

MedDream covers: radiology, cardiology, oncology, gastroenterology and many other fields of medical application. It seamlessly integrates with various medical imaging devices, such as: ultrasound (US), magnetic resonance (MRI), positron emission tomography (PET), computed tomography (CT), endoscopy (ES), mammography (MG), digital radiography (DR), computed radiography (CR) ophthalmology, and so forth.

Core MedDream DICOM Viewer uses are:

- Replacement of hard copies, e.g. film archives, paper documents, etc.
- Remote access. MedDream provides a possibility to be mobile and work from any place in the world where the Internet is accessible. More than one person can access and view medical records at one time. Such functionality speeds up the collaboration among the professionals. So that a doctor in the hospital and a doctor that is in the different location may view the medical data and discuss about it simultaneously. The patient's medical history, various studies and images are found much faster comparing to the conventional paper-based methods.
- MedDream can be used as a standalone WEB Viewer or integrated into PacsOne PACS, dcm4chee Archive, Conquest PACS, ClearCanvas PACS systems. Moreover, MedDream can be adapted to client's PACS system and easily integrated into RIS/HIS workflow.
- MedDream has multiple functions such as search of studies, viewing, analyzing, saving, exporting, forwarding images and videos, etc.

MedDream cannot guarantee the accuracy of calibration data received from the modality. Moreover, Softneta cannot guarantee that the manual calibration which is performed by users is done accurately.

Measuring function is approximate.

Minimal requirements

Minimal hardware requirements

Parameter	Requirement
Processor	2.33GHz or higher x86-compatible
Memory	2 GB
Hard drive	10 GB (RAID 1, RAID 5, RAID 10)
Network Interface	100 Mbit/s

Minimal software requirements

- Windows Server 2008 (32 bit and 64 bit), Windows 7 (32 and 64 bit), Linux (32 bit and 64 bit, with glibc version >= 2.5).
- Internet Explorer 10.0 or later, Mozilla Firefox 25 or later, Google Chrome 40 or later.

Minimal memory requirements

Minimal memory requirements for the best performance of the software:

- 6 GB of RAM if you plan to open more than 800 images (CT & MRI, PET-CT).
- 8 GB of RAM for more than 1500 images (multi-slice CT & PET-CT).
- 12 GB of RAM for more than 3000 images (cardiac or functional imaging).

Installing MedDream for PacsOne Quick Install

Under Windows, a thread-safe (TS) 32-bit PHP build is required. The DLLs included won't work with a 64-bit PHP, like in 64-bit builds of WampServer. The 64-bit build of PacsOne which appeared recently also requires a 64-bit version of MySQL (and consequently PHP and Apache), therefore it is incompatible with MedDream.

Under Linux, a non-TS PHP build is required. This is related to a more common build of Apache, the "prefork". The "worker" build is incompatible.

PHP 5.3 is built for Windows either with VC6 or VC9 runtime. Take note which version you have, and use a corresponding .dll during installation as explained below. Otherwise you'll get an error message like this one:

```
Module compiled with build ID=API20090626,TS,VC6
PHP    compiled with build ID=API20090626,TS,VC9
These options need to match
```

Under Linux, the .so file requires glibc 2.5 or later.

Under Linux, PacsOne's custom libjpeg conflicts with standard libjpeg needed by the GD2 extension on which MedDream depends heavily at the moment. You will need to disable the antispam image in order to log in to PacsOne web interface (to do that, place an empty file "no.antispam.code" near PacsOne.exe). You also won't be able to view DICOM images in PacsOne; on the other hand, MedDream adds a Show button to the web interface and thus can be used instead of the built-in viewer.

During an upgrade it's recommended to use the included config.sample-pacsone.php as a template and then update the resulting config.php according to the old one. This will prevent misunderstandings like variable names which were suddenly changed.

Since 3.06.1103.3003, a DICOMDIR viewer in the subdirectory "DICOMDIR" is automatically included on export. However, an alternative way is to use PacsOne's "Include external viewer" functionality. If you use the latter, and still keep the viewer in the subdirectory "DICOMDIR", MedDream Export function might fail due to same files included twice. The solution is to rename the subdirectory, or move it somewhere outside the MedDream directory tree.

MySQL from XAMPP 1.8 for Windows: if MedDream or PacsOne web interface connects to the database very slowly (each attempt takes about 1 second), then try adding "bind-address = ::" to my.ini.

While still in demo mode, you *must* remove the existing meddream.lic after changing computer's host name (any OS), reinstalling the OS (Windows) or changing the MAC of any network card (Linux). A correct file will be created automatically. Otherwise a commercial license generated from your meddream.lic will not work. This also means that Windows must be activated in advance!

PacsOne doesn't have an index on series.modality. If searches with a particular modality are unacceptably slow compared to the default set of checkboxes, then you'll need to use the following MySQL command:

```
ALTER TABLE series ADD INDEX (modality);
```

Windows installation

1. Copy meddream folder to C:\Program Files\PacsOne\php

   (the result: C:\Program Files\PacsOne\php\meddream)

   If you are updating older version of MedDream:

   a) Please back up the old version (so you can go back any time).
   b) Please do not replace files you changed in last version. You must carefully synchronize the new version.

2. (optional) From C:\Program Files\PacsOne\php\meddream Copy and Replace applet.php to C:\Program Files\PacsOne\php.

   It is advised to make a backup beforehand in case you'll need to uninstall MedDream later.

3. From C:\Program Files\PacsOne\php\meddream

copy php5.3_meddream-VC6.dll to PHP_INSTALL_DIR\ext (if you are using PHP 5.3.x, VC6 build)
copy php5.3_meddream-VC9.dll to PHP_INSTALL_DIR\ext (if you are using PHP 5.3.x, VC9 build)
copy php5.4_meddream.dll to PHP_INSTALL_DIR\ext (if you are using PHP 5.4.x)
copy php5.5_meddream.dll to PHP_INSTALL_DIR\ext (if you are using PHP 5.5.x)
copy php5.6_meddream.dll to PHP_INSTALL_DIR\ext (if you are using PHP 5.6.x)

4. Add to php.ini file

   "extension=php5.3_meddream-VC6.dll" (if you are using PHP 5.3.x, VC6 build)
   "extension=php5.3_meddream-VC9.dll" (if you are using PHP 5.3.x, VC9 build)
   "extension=php5.4_meddream.dll" (if you are using PHP 5.4.x)
   "extension=php5.5_meddream.dll" (if you are using PHP 5.5.x)
   "extension=php5.6_meddream.dll" (if you are using PHP 5.6.x)

5. Specify date.timezone in php.ini:

```
[Date]
; Defines the default timezone used by the date functions
date.timezone = "America/Chicago"
```

   (the list of possible values is at http://www.php.net/manual/en/timezones.php)

6. Edit APACHE_HTDOCS_DIR/meddream/config.php file. Use config.sample-pacsone.php as a template. The file contains basic instructions.

7. Restart Apache

8. 8. Navigate to http://127.0.0.1/pacsone/meddream/home.php (use PacsOne users to log in) or use "Show" button in PacsOne web interface.

Linux installation

1. Copy the "meddream" directory to PACSONE_INSTALL_DIR/php

   (so that the result is PACSONE_INSTALL_DIR/php/meddream; for example, in our machines it usually is /home/pacsone/php/meddream.)

   Adjust permissions: no less than

   0777 for PACSONE_INSTALL_DIR/php/meddream
   0777 for PACSONE_INSTALL_DIR/php/meddream/log
   0777 for PACSONE_INSTALL_DIR/php/meddream/temp

   If you are updating an older version of MedDream:

   a) Please back up the old version (so you can go back any time).
   b) Please do not replace files you changed in last version. You must carefully synchronize the new version.

2. From PACSONE_INSTALL_DIR/php/meddream Copy and Replace applet.php to PACSONE_INSTALL_DIR/php

3. From PACSONE_INSTALL_DIR/php/meddream

   copy php5.3_meddream.so to /usr/lib/php/modules (if you are using PHP 5.3.x)
   copy php5.4_meddream.so to /usr/lib/php/modules (if you are using PHP 5.4.x)
   copy php5.5_meddream.so to /usr/lib/php/modules (if you are using PHP 5.5.x)
   copy php5.6_meddream.so to /usr/lib/php/modules (if you are using PHP 5.6.x)
   copy php5.3_meddream-x86_64.so to /usr/lib64/php/modules (if you are using PHP 5.3.x under a 64-bit OS)
   copy php5.4_meddream-x86_64.so to /usr/lib64/php/modules (if you are using PHP 5.4.x under a 64-bit OS)
   copy php5.5_meddream-x86_64.so to /usr/lib64/php/modules (if you are using PHP 5.5.x under a 64-bit OS)
   copy php5.6_meddream-x86_64.so to /usr/lib64/php/modules (if you are using PHP 5.6.x under a 64-bit OS)

4. Add to /etc/php.ini file

   "extension=php5.3_meddream.so" (if you are using PHP 5.3.x)
   "extension=php5.4_meddream.so" (if you are using PHP 5.4.x)
   "extension=php5.5_meddream.so" (if you are using PHP 5.5.x)
   "extension=php5.6_meddream.so" (if you are using PHP 5.6.x)

"extension=php5.3_meddream-x86_64.so" (if you are using PHP 5.3.x under a 64-bit OS)
"extension=php5.4_meddream-x86_64.so" (if you are using PHP 5.4.x under a 64-bit OS)
"extension=php5.5_meddream-x86_64.so" (if you are using PHP 5.5.x under a 64-bit OS)
"extension=php5.6_meddream-x86_64.so" (if you are using PHP 5.6.x under a 64-bit OS)

5. Specify date.timezone in php.ini:

```
[Date]
; Defines the default timezone used by the date functions
date.timezone = "America/Chicago"
```

(the list of possible values is at http://www.php.net/manual/en/timezones.php)

6. PacsOne and Apache must run as the same user because newer versions of PacsOne create subdirectories with permissions too strict for different users.

7. Edit APACHE_HTDOCS_DIR/meddream/config.php file. Use config.sample-pacsone.php as a template. The file contains basic instructions.

8. Restart Apache

9. Navigate to http://127.0.0.1/pacsone/meddream/home.php (use PacsOne users to log in) or use the "Show" button in the PacsOne web system.

10. FFmpeg is required in order to display thumbnails of MPEG2 DICOM files. It is expected at /usr/bin/ffmpeg .

    Not every distribution has it. Sometimes it is possible to download separate dependencies from sites like rpmfind.net and install these manually.

11. mkisofs is required for the Export command. If your distribution has only genisoimage, then you need to create a symlink to it named "mkisofs".

12. To display SR files, we are using a prebuilt binary meddream/dcmtk/dsr2html from DCMTK 3.6.0. If your distribution provides another version of it that works better, then you'll need to replace "dsr2html" and "dicom.dic" with symlinks to your copies.

13. To display non-BD-compatible MPEG4 videos (Transfer Syntax UID 1.2.840.10008.1.2.4.102), latest version of FFmpeg might be required.

Logging on to MedDream

To log on to MedDream, please do the following:

- Enter the address given by your administrator in your Internet Browser. The following screen will appear:

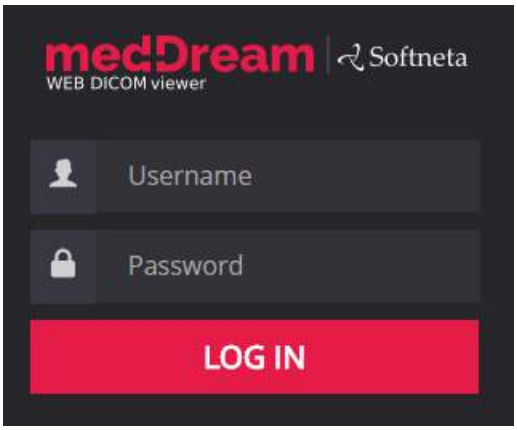


Figure 1. Logging in.

- Enter the username you were given in the field "**Username**"
- Enter the password in the field "**Password**". If you forgot your password, please contact your system administrator.

☞ Please note! On the right upper corner of the login window you can change the language: LT (Lithuanian), RU (Russian) and EN (English).

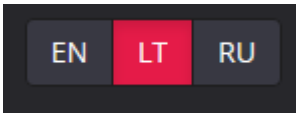


Figure 2. Language selection in a Log in window.

Once you will click on "Log in" button, the following End User License Agreement (EULA) will appear on the screen. The following window will only be shown once during your first log in:

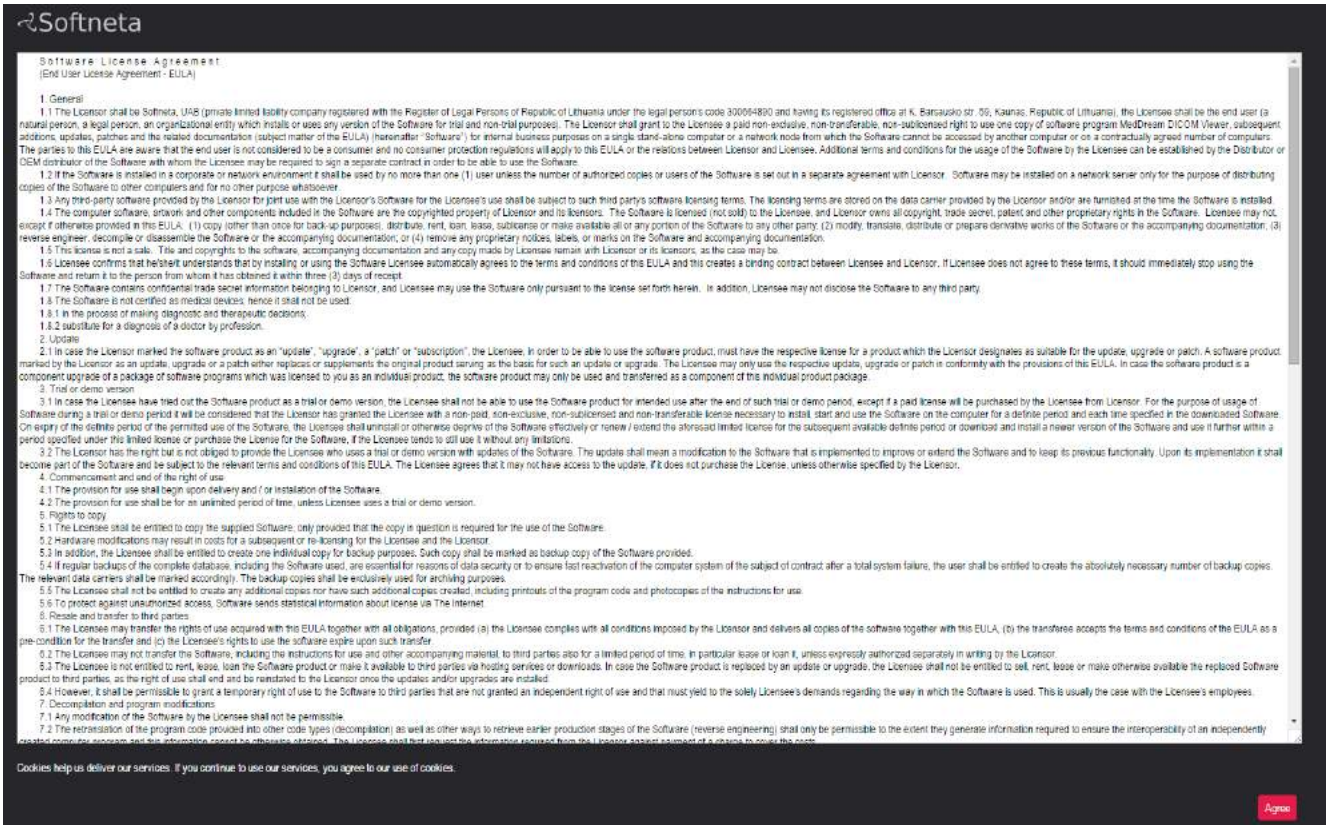
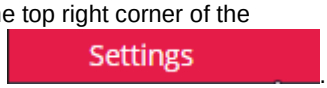


Figure 3.End User License Agreement.

Please read the End User License Agreement (EULA) and click “**Agree**” button in order to be able to proceed.

Default Settings

To change MedDream viewer's settings, click button  on the main search window at the top right corner of the screen. This button is displayed for the database administrator only. Then follow to the button 

.

The **"Settings"** window will pop-up:

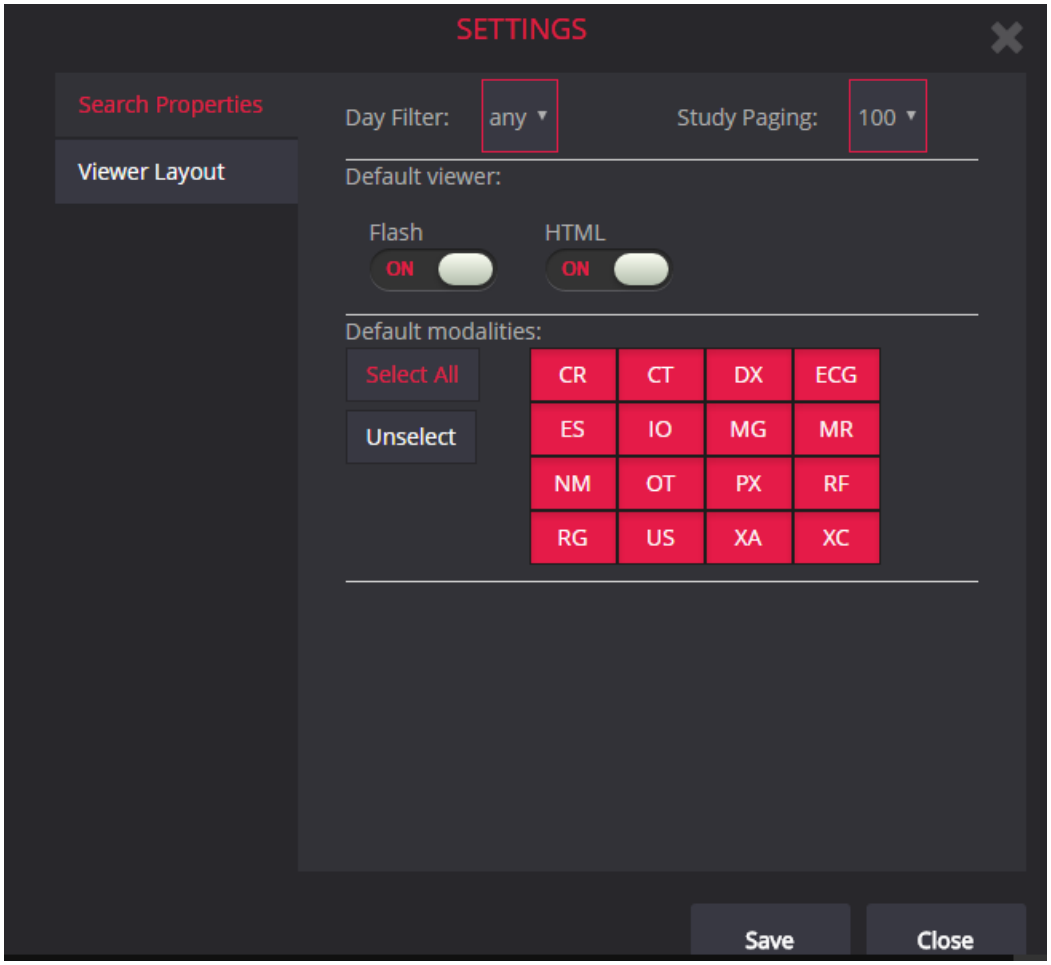


Figure 4. Settings window.

There will be two sections of **"Search Properties"** and **"Viewer Layout".**

On "**Search Properties**" tab you can modify the look of your main search window, such as:

- **"Day Filter"** – you can create your own day filter by using this option on the „Search Properties" tab. Select the day filter („**any", „1d", „3d", „1w", „1m", „1y**") that you wish to be your default day filter.

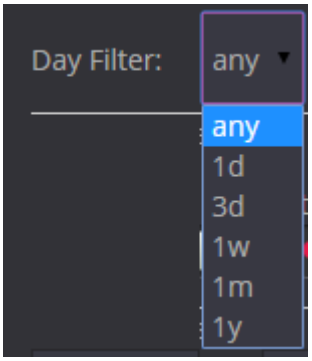


Figure 5. Day Filter.

- **"Study paging"** – you can add a default filter of studies shown on the main search window. Select the studies per page ("10", "20", "30", "40", "50", "100") that you wish to be shown as a default setting.

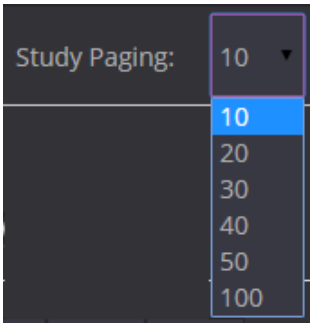


Figure 6. Study paging.

- **"Default Viewer"** – you can select your default view: either **"HTML5"**, either "**Flash**" or both by clicking "On" or "Off".

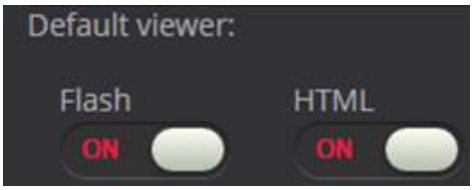


Figure 7. Default viewer

- **"Default modalities"** – you can select default modalities which will be shown on the main search window as default modalities.

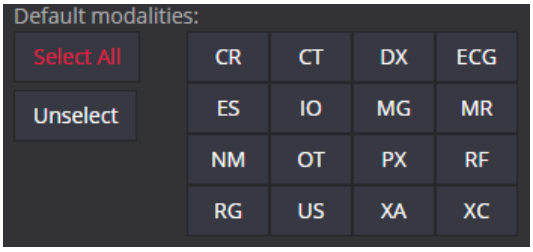


Figure 8. Default modalities.

On "**Viewer layout**" tab you can modify position of thumbnails with two possible options:

- position the thumbnails to the left of the screen by clicking on the  icon;

- position the thumbnails bottom of the screen by clicking on the  icon.

Figure 9. Thumbnails position.

MedDream WEB DICOM Viewer on Flash platform

Search of studies on Flash platform

Please note! “Default view” must be set for Flash platform on the setting menu of the main search window as in the following figure in order to see only Flash version:

Figure 10. Default Flash viewer.

Search menu will help you quickly find the studies you need. We recommend using all possible search menu options in order to get the most accurate search results and save your time.

To find a study, please follow these steps:

1. Once you login such window appears on the screen.

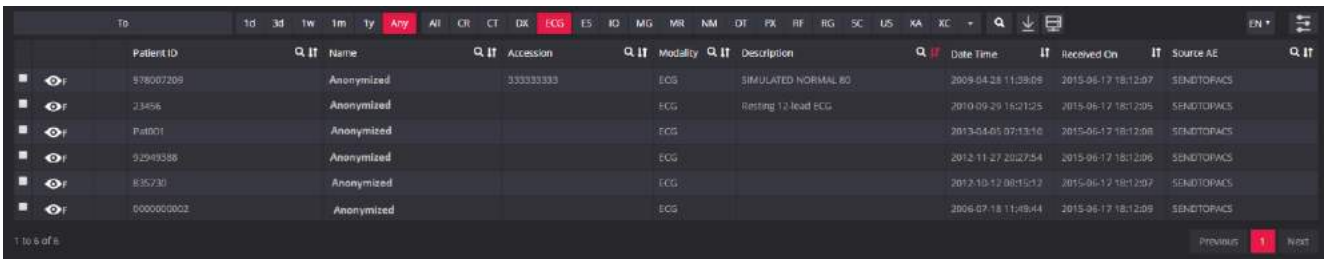


Figure 11. "Search" window

2. Enter **search criteria** (Patient ID, Patient Name, Accession Number, Study Description, Source AE). Type the information in according fields.

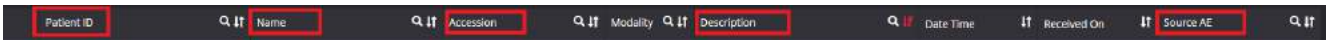


Figure 12. Search filters.

The criteria are as following:

- **“Patient ID”** - enter patient's ID number in the search field
- **“Patient Name” -** enter the patient's name or surname in the search field

☞ It is not possible to search for Ideographic and Phonetic versions of patient names. The search is performed only against the basic version (Alphabetic), even if the image contains the other two versions and the PACS supports them.

- **“Accession”** – enter the number of accession
- **“Description”** – enter few keywords from the study description
- **“Source AE”** – “Application Entity” - title of the device from where the study was sent to the PACS.

Each field has button. You can arrange each of them in ascending or descending order. Click once and the order of the selected field will change from ascending to descending and vice versa.

- Ascending – arranged from smallest to largest (increasing);

- Descending – arranged from largest to smallest (decreasing).

3. To specialize the search, please select **the date interval** when the study could have been done. This can be done using **two different date interval search criteria**.

→To select the study date you can choose from the super quick pick list (*Figure 13*) accordingly to the date interval you need your studies to be from: "**1d"** (current day), "**3d"** (3 days interval), "**1w"** (1 week interval), "**1m"** (1 month interval), "**1y**" (1 year interval) or "**Any"** (no specific date interval):

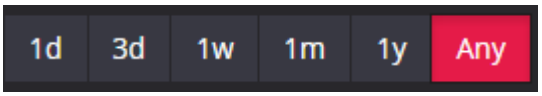


Figure 13. Search according to dates.

→ To specify the study dates click on left top corner and choose the date interval from the pop-up window (*Figure 14*).

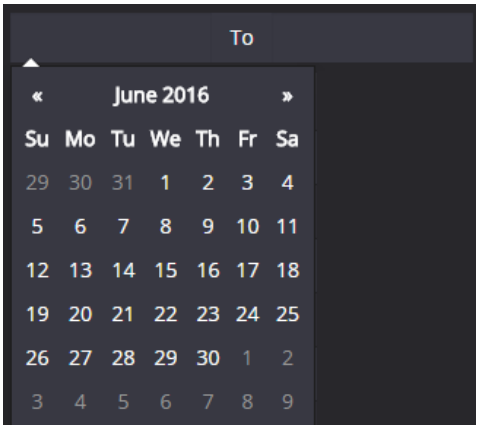


Figure 14. Date search options.

4. The search can also be specified by selecting the method which was used to obtain the study images (modalities):

- Tick the field next to one or more methods (devices) that were used in the required study (please look below for the meaning of the abbreviations)

→ CR, CT, DX, ECG, ES, IO, MG, MR, NM, OT, PX, RF, RG, SC, US, XA, XC, All. The system allows to select a few image modalities by default. Click the "triangle" icon marked in red (*Figure 15*) and now you can add all possible methods by clicking on the modality you want to be added to the search.

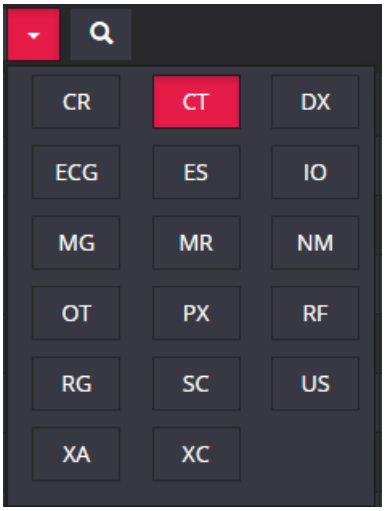


Figure 15. Search according to modalities.

If you are searching for some rare modality that has no corresponding button here, try to enter its abbreviation directly into the name of "Modality" column.

Moreover, you can select all possible methods by clicking the “All” button:

Figure 16. Modalities search: All.

Abbreviations:

CR – *Computed Radiography*

CT – *Computed Tomography*

DX – *Digital Radiography*

ES – *Endoscopy*

IO – *Ultra-Oral Radiography*

MG – *Mammography*

MR – *Magnetic Resonance*

NM – *Nuclear Medicine*

OT – *Other*

PX – *Panoramic X-Ray*

RF – *Radio Fluoroscopy*

RG – *Radiographic Imaging*

SC – *Secondary Capture*

US – *Ultra Sound*

XA – *X-Ray Angiography*

XC – *External camera photography*

ECG - *Electrocardiography*

5. After you have selected your search criteria, start the search by clicking “**Search**” icon  .

6. Click on the  icon so you could see the image you want to analyze on Flash platform (*Figure 17*) and a new browser tab will pop-up (marked in red).

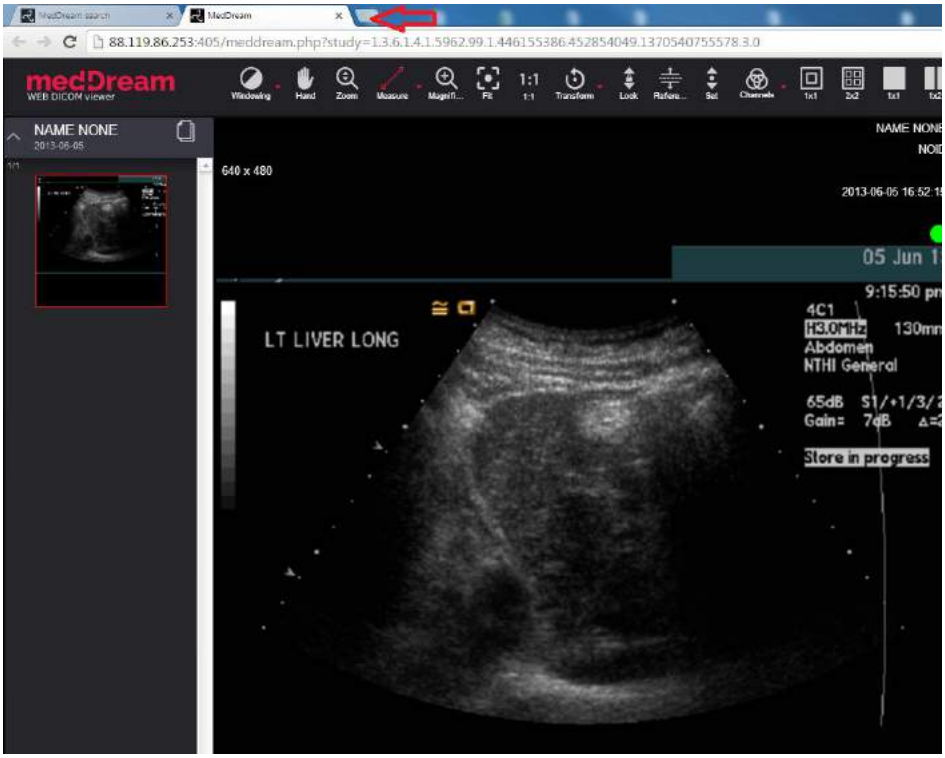


Figure 17. Image display on Flash platform.

7. To view the image move the mouse cursor on the small image on the left, click the left mouse button and drag the image to the field on the right. Now you should be able to view your image.

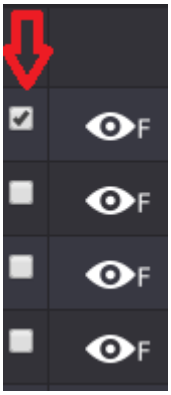


Figure 18. Tick box on Flash platform.

In order to save or export desired images there is a **"Tick box"** on the main Search window for your convenience.

- move your mouse cursor to the left side of the screen, next to the eye icon.
- click the left mouse button on the "Tick box": 
- keep repeating the above mentioned steps and tick as many studies as you want.
- once you have done this, you will be able to either save  or forward  the selected images.

 Button allows you to save the selected images. Click on the icon and the selected images will be saved.

- click on the icon and the pop-up window will appear:

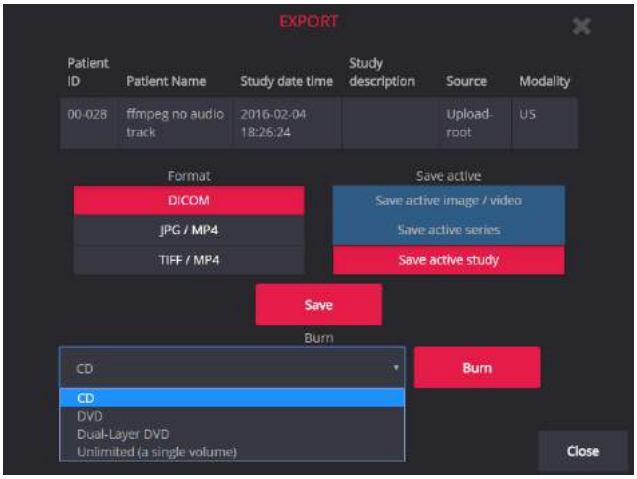


Figure 19. Export function on Flash platform.

To export the study (to burn it on a CD):

- choose CD, DVD or other volume size. (Splitting into volumes is currently supported only under PacsOne.)
- click "**Burn**".

After a while two buttons "Download ISO" and "Burn ISO" will appear for every created volume. Click "Download ISO" in order to download a disk image with the .iso file extension, and burn it with your favorite CD/DVD burner software. Click

"Burn ISO" if you have installed a corresponding product by Softneta, MedDreamBurn; then a third–party CD/DVD burner will start automatically.

To export the study (to save it):

- choose the format, then select to save an image, a series of images or an active study;
- click "**Save**" and choose a folder where you prefer to save the images in your computer. Click **"Save"** again.

 Button allows you to forward the selected images. Click on the icon and the selected images will be exported.

- click on the icon and the pop-up window will appear:

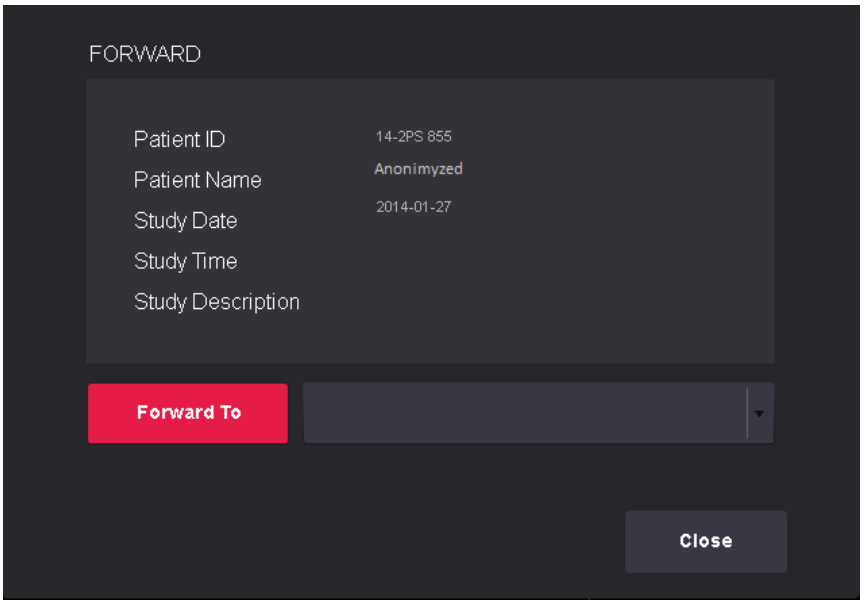


Figure 20. Forward function on Flash platform.

- choose a device from the list where you want to forward your study or type it in a search box to make it easier and faster.
- click **Forward** to initiate the process.

Annotations and **Reports** in the main search window have an indication icon accordingly:

 - Annotation icon on the main search window.

 - Report icon on the main search window.

☞ Please note! Editing and review of **Annotations** are available on HTML5 and Flash platforms. Editing and review of **Reports** are only available on Flash platform.

☞ Under PacsOne, all unread studies are marked in white bold font on the main search window.

Opening multiple studies

If you need to open more than one study (e.g. to compare them), please do the following:

1. Select one of the studies you want to add with one mouse click;

2. Click on the  icon which appears next to the study in the main search result window and a new browser tab will pop up:

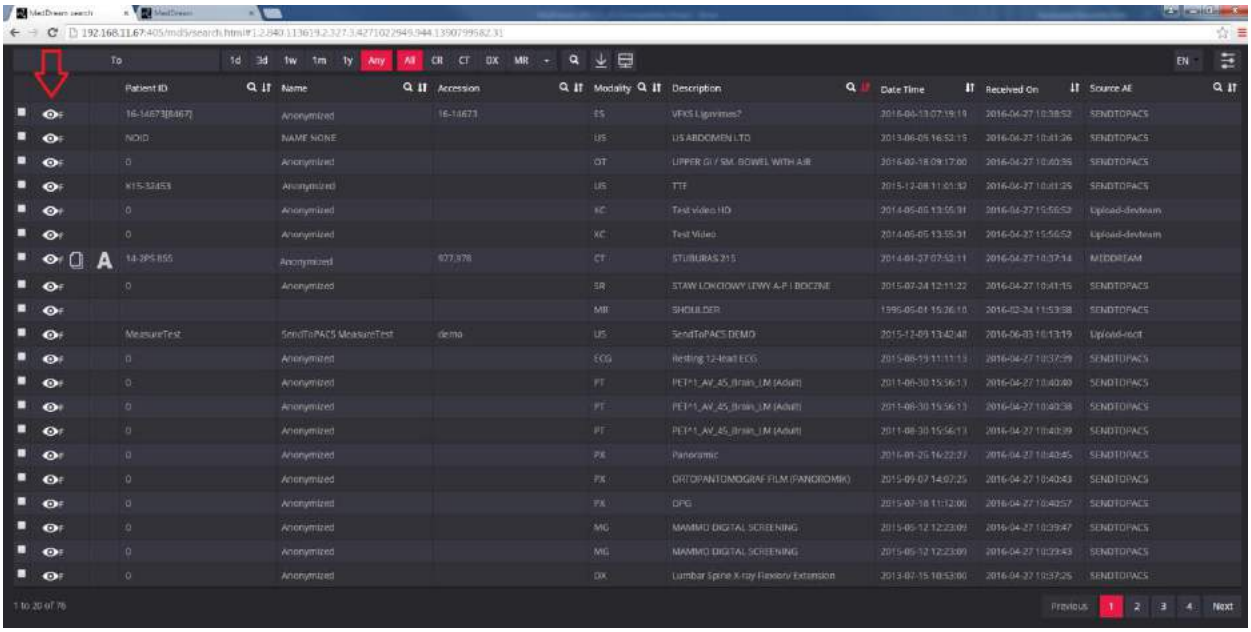


Figure 21. Study selection on Flash platform.

3. Go back to the search result window.

4. Click the  icon again and the added study appears on the same search result pop-up window as the previous search did.

5. Information table will pop up on the right bottom corner of the main search result window stating the following (only on the main search of HTML5 platform ):

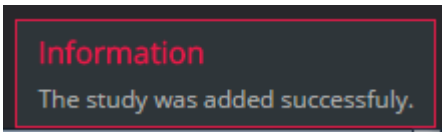


Figure 22. Information table on HTML platform.

6. Go back to the search result window.

7. Select the next study you want to add and repeat steps 1 – 3 that were mentioned above. Keep doing this till you open enough studies that you need for your analyses and comparison.

After selecting all the studies, you will see all study series displayed in the pane on the left. When you select the study and click on it, you will see the image icons of the study series:

Figure 23. Opened multiple studies on Flash platform.

In order to navigate through the study series, just click on the header  to activate it and see the image icons.

Reading and editing study reports

In the study pop-up window you can notice that some of the studies have reports. This is indicated by the “Report” icon, which appears on the top left corner next to the study.

Figure 24. Study Report icon location on Flash platform.

To read a report:

- select a study with the “Report” icon:

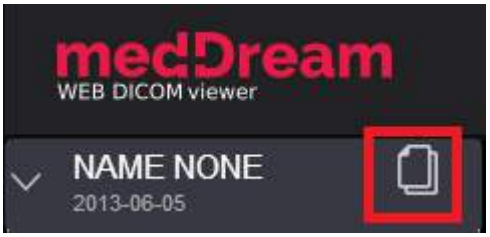


Figure 25. Report icon on the study file on Flash platform.

- click the “Report” button once to open the report. A report window will appear:

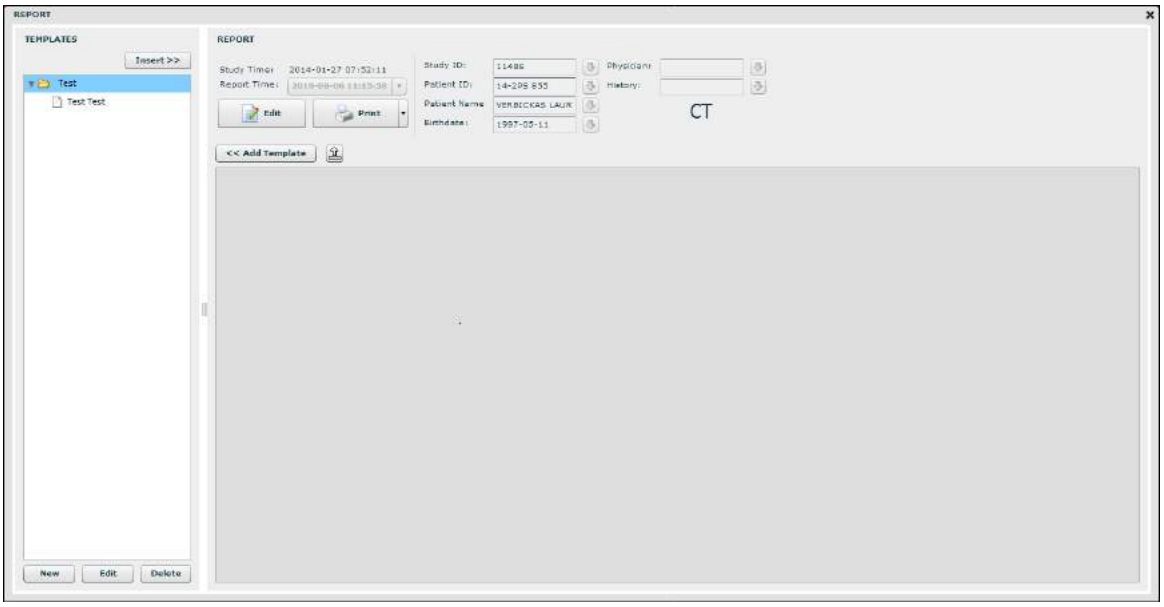


Figure 26. Study report on Flash platform.

- it opens a separate Report window, which can fully employ Report functions — edit and print the study reports.

A legacy product, MedReport, integrates into MedDream identically. It is superseded by the Report module. However, even after installing the license that enables this module, MedReport will still be called if it is integrated into MedDream. You will need to disable the integration (`$medreport_root_link` in config.php) in order to use the Report module instead.

The report of the study may be indicated by two different buttons:

If the “Report” button is "empty", the report itself is also empty - **single** report icon (the doctor can fill it).

If the “Report” button appears "full" - the **double** report icon (the doctor can read, edit or print it).

- click the button  on the top right corner to exit the report window.

Text can be entered by clicking on “Measure”, then follow to “Text” and the following screen will appear where you can enter the text:

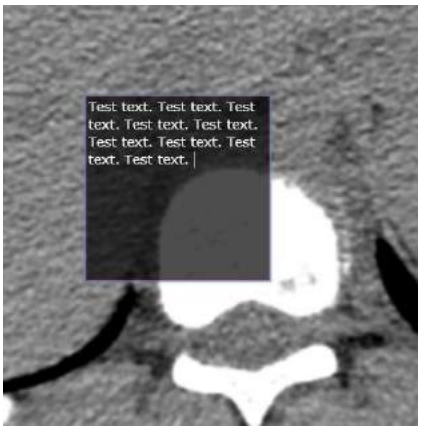


Figure 27. Study text on Flash platform.

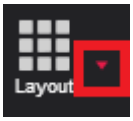
Viewing and analyzing images on Flash platform

Viewing one or multiple studies

After opening one of the study series, you can rearrange the preview window as you prefer. First of all, you can choose on which side of the screen - left or bottom - you want to see reduced study images. Just click the 

button on the menu bar and change the preview window as you prefer.

Secondly, you can choose how many panes with study images there will be in the window. You can choose from one to nine panes with different images. If you want to open more panes do the following:

- click “Layout” on the menu bar: 

- choose from the list how many panes you want. For example, if you need to see 4 screens with different images, select „2x2 Screen layout”. There are two possible ways to select screen layout:
  1. from the list,
  2. from the toolbar: 1x1, 1x2, 2x2.

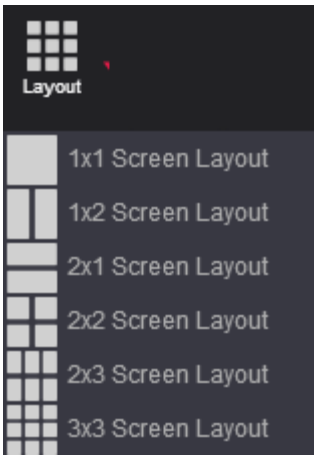


Figure 28. Screen layout. Option No.1.

Figure 29. Screen layout. Option No.2.

After selecting how many screens you want to see in the window, move the images into them. There are two methods to do this:

First method:

- select the image icon from the study series that are displayed on the left (or on the bottom, depending on how you have rearranged the display)
- drag-and-drop the image into the pane where you want the image to be:

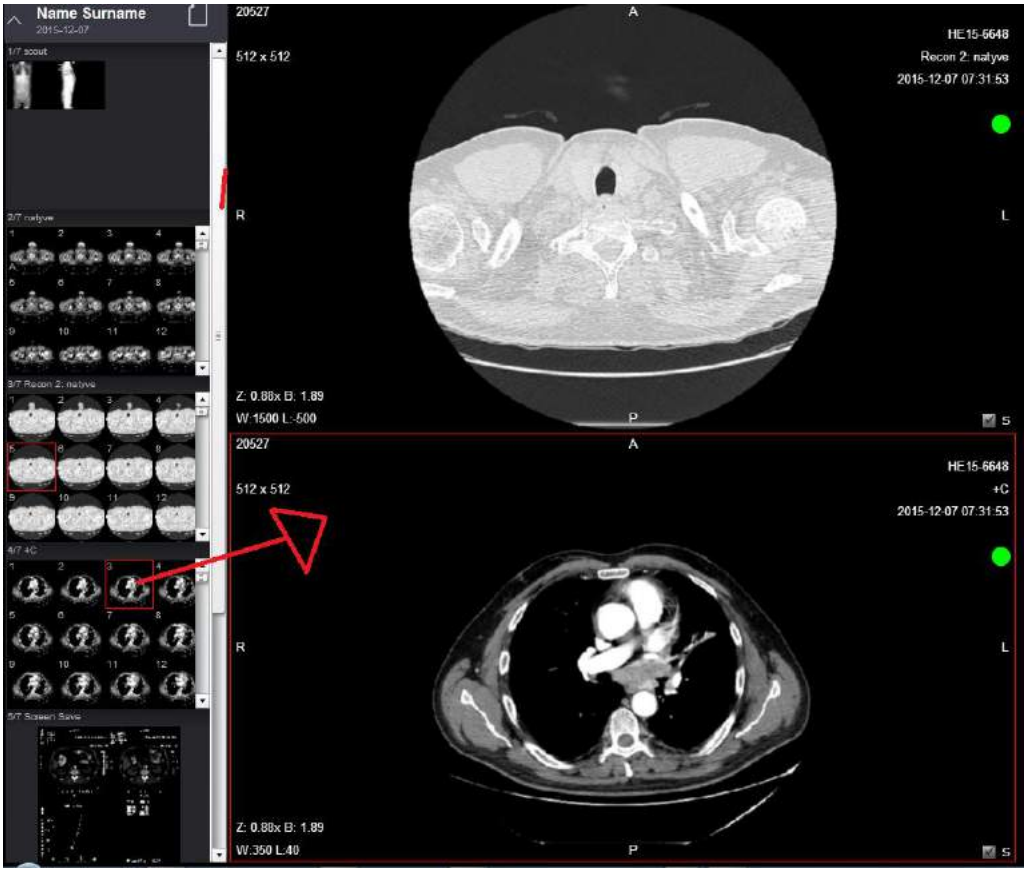


Figure 30. Drag-and-drop the image into the pane.

Second method:

- select the pane where you want to move the image with one mouse click. The active pane will be outlined in red.
- select the image icon from the study series that are displayed on the left (or in the bottom, depending on how you have rearranged the display)
- double click on the image that you want to move into the pane.
- the image will appear in the selected pane.

These are the ways how you can move the images from the series into the main window. You can select and compare images not only from one study, but from multiple studies as well.

Also you can choose the button which divides the selected section into several sections. Once you have selected **Multiple viewport** button drag the studies to the field. The study and all the following images that you want will appear on the selected field.

Figure 31 Multiple layout: 1x1 and 2x2.

Note! All the image manipulation functions affect the entire set of images opened in a multiple viewports mode (such as "Scroll", "Brightness/Contrast", "Rotate", "Pan", "Reset"). For example, if you select "Bone" contrast mode it will apply the "Bone" mode to all images that are viewed through the multiple viewports mode though the changes does not apply to the image which is not viewed via multiple viewports.

Comparing multiple studies

To compare multiple studies you can use the **“Lock Scroll”** button. It allows you to either move through images one at a time or easily scroll though the images of a series:

- Select the studies that you want to compare.
- From each study select and move the first images into the viewing panes
- Click **„Lock Scroll“**. 

- When this button is active (is outlined in red 

), you will change the active image in all viewing panes simultaneously (scroll through the images of a series) by scrolling the mouse wheel.
- If the button is inactive, you will move through images one at a time by scrolling the mouse wheel.

*NOTE: when the **“Lock scroll”** button is active, you can move through images with the help of keyboard arrow keys, not only by scrolling the mouse wheel.*

Image localization on Flash platform

Overlaying reference lines allow you to indicate the location of an image slice on another image of an intersecting plane.

- Select the images that you want to compare and move them into the panes:
- Select one of the image you want to know the location of in regard to other images.
- Click the button **„Reference Line“:** 

- yellow lines appear in the images, indicating the location of the selected image:

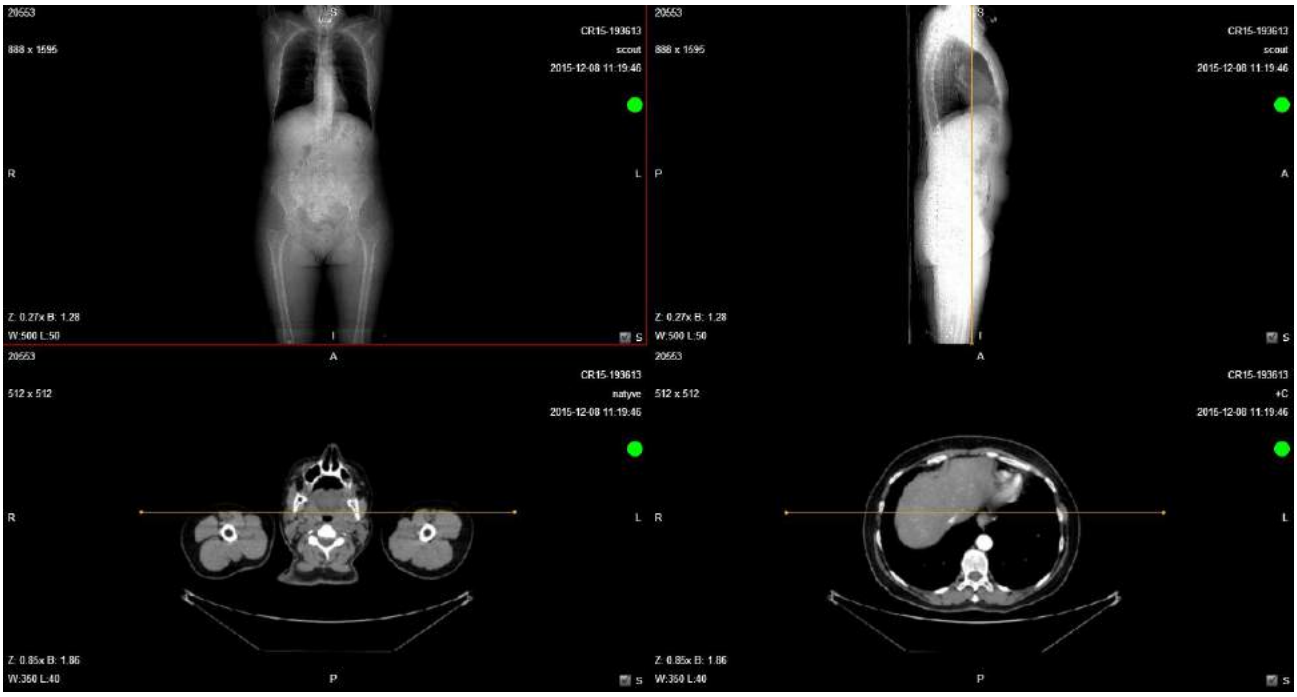


Figure 32. Reference line option on Flash platform.

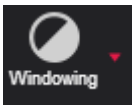
Manipulating images on Flash platform

You can manage and analyze the study images according to the criteria you need. The following buttons are used for this:

Figure 33. Image manipulation tools.

☞ All manipulation buttons are deactivated for video view.

More about each of them:



Button is used to adjust the Level/Window (contrast and brightness) of the image. A pop-up menu appears:

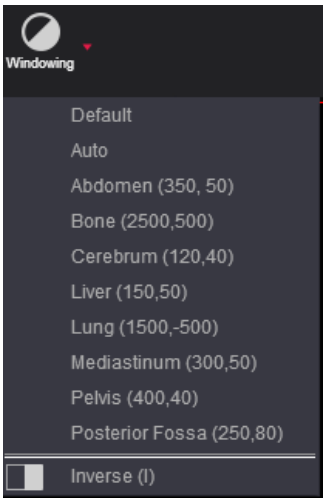
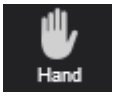


Figure 34. Level/Window button options.

You can select one of the standard contrast settings:

Default *– a preset setting from the image itself (if available).*
Auto *– the system analyses the image and adjusts the brightness and contrast automatically.*
Abdomen *– a preset setting for abdomen studies.*
Bone *– a preset setting for bone studies.*
Cerebrum *– a preset setting for cerebrum studies.*
Liver *- a preset setting for the liver studies.*
Lung *– a preset setting used for studying the images of the lungs.*
Mediastinum *- a preset setting for mediastinum studies.*
Pelvis *– a preset setting for pelvis studies.*
Posterior Fossa *- a preset setting for Posterior Fossa studies.*
Inverse *– the user can inverse the image.*



"**Hand**" button allows you to position images within the pane. This feature is especially useful when the image is larger than the pane, as it usually is after zooming in.

To move an image within the pane:

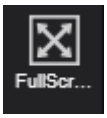
- On the Tools menu, click "**Hand**"
- Position the cursor over the image you want to move and click-and-drag the cursor around the pane to move the image.
- Release the mouse button to leave the image in its new position.

"Zoom" button is used to increase and decrease the selected image.

There are two ways to zoom in and zoom out an image:

Click on the Keyboard **+** to **Zoom In** and **–** to **Zoom Out;** click the left button on your mouse and drag it upwards to zoom in and downwards to zoom out.

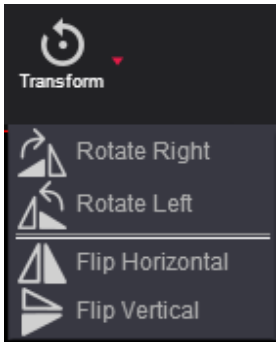
“Fit to Screen” button**.** When you click this button, the size of the image is automatically adjusted so that the image would fill the entire screen. For example, if only part of the image is visible on the screen, choose this button to see the whole image displayed on the entire screen.



“Full Screen” button. Move your mouse cursor to the upper right corner of the screen. Click on the Full Screen icon and the Full Screen mode will be enabled. Click either the icon once again or ESC button at your keyboard in order to exit the Full Screen Mode.

“1:1 Resolution” button allows you to restore the original image size.

“**Transform**” button allows you to rotate the image. Click the arrow to the immediate right of the “Transform” and select one of the options from the pop-up menu:



- Rotate Right – to rotate the image 90° clockwise;
- Rotate Left – to rotate the image 90° counter-clockwise;
- Flip Horizontal – to flip an image 180° about the horizontal axis;
- Flip Vertical – to flip an image 180° about the vertical axis.

Figure 35. Transformation possibilities.

“**Inverse**”. This button is used to invert the image. To invert the image, click the button once. If you click the button second time, the image returns to the previous state:

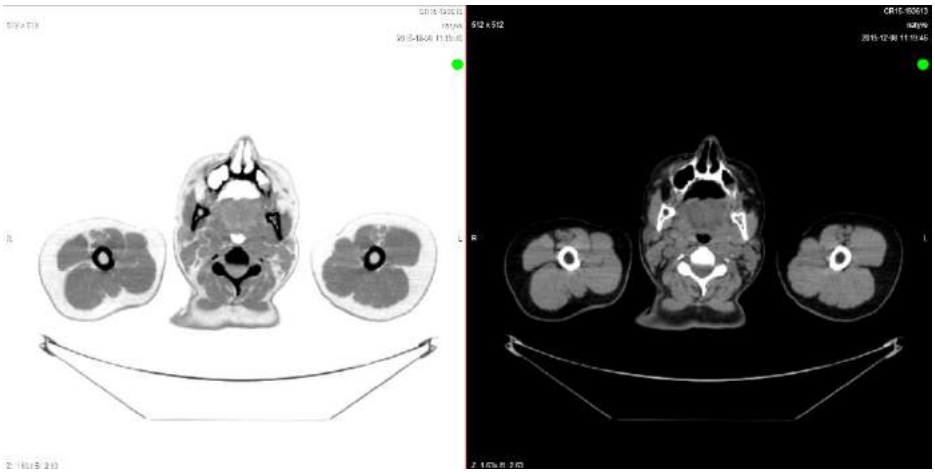


Figure 36. Inverted image.

“Channels” Highlight a color component or a combination of them in the image by showing selected color in white shades and other colors in black. This tool is enabled for image view. Click the red arrow in order to choose from the list.

“Set scroll” enables to scroll images by draging mouse on the image from one side to the other. Button functions as a mouse wheel. Only in this case you need to click the left mouse button and drag it to the left or right to change the image view.

“Magnifier” button is used to magnify (enlarge) the certain area of the image. Click the icon once in order to enable the function, click the icon once more and the mode will be disabled.

“Thumbnails” button is used to position the thumbnails to the left or bottom of the screen.

“Reset” button restores the study image to the previous original state.

Cine mode on Flash platform

Using **"Cine mode"** you may put all images into one movie. Just click on the Cine mode icon and the process will start.

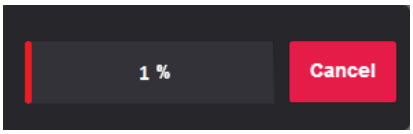


Figure 37. Opening Cine mode function on Flash platform.

This function allows you to play images as one movie (one image – one frame).

Figure 38. Playing images as one movie.

To turn the Cine mode off, just open one of the images again.

Multi-planar reconstruction (MPR) on Flash platform

Multi-planar reconstruction (MPR) is the simplest method of reconstruction. A volume is built by stacking the axial slices. The software then cuts slices through the volume in a different plane.

In order to open this function you have to click on the 

button. A pop-up window appears. There you have to fill two input boxes:

- Start Frame – number of the first frame of selected series;
- End Frame – number of the last frame of selected series.

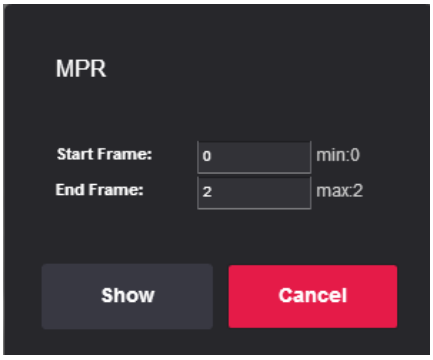


Figure 39. MPR frame selection on Flash platform.

User can input the range from which MPR will be calculated. After you enter the frame range, click "**Show**" and the loading will start. It might take some time to load all frames. This will be indicated by the following progress window:

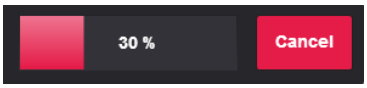


Figure 40. Loading MPR on Flash platform.

Once the loading MPR process has been finished, the **Warning message** may appear stating that the "*Image slice can be incorrect, due to different images*".

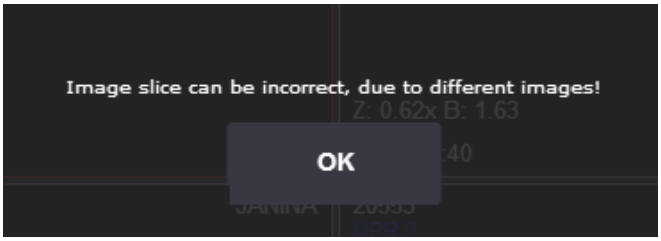


Figure 41. Warning message on Flash platform.

After the loading is finished, the MPR window appears:

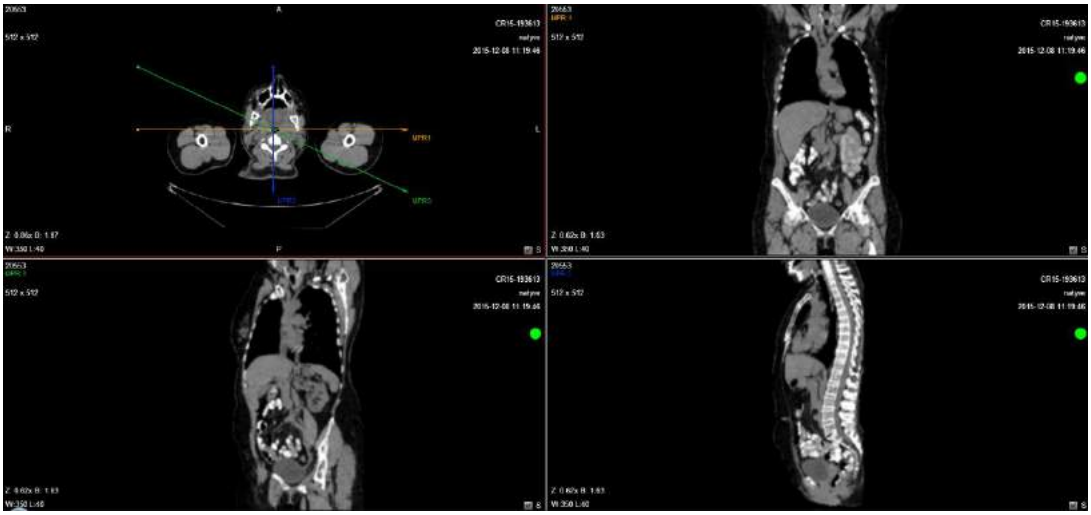


Figure 42. MPR on Flash platform.

The top picture on the left is the main one. You can see three arrows which can be moved in order to see different planes and the optimal plane can be chosen to display an anatomical structure. This may be particularly useful for visualizing the structure of the selected organ.

The other pictures correspond to different cross-sections:

- MPR1 – horizontal cross-section;
- MPR2 – vertical cross-section;
- MPR3 – diagonal cross-section;

You can manage and analyze the study images according to the criteria you need. The following buttons are used for this:

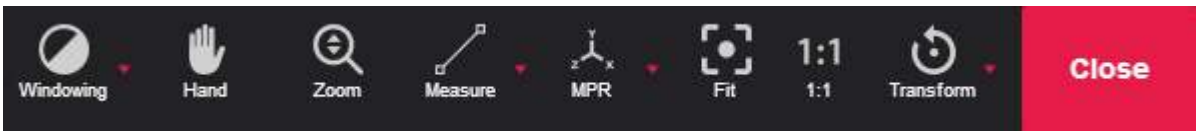
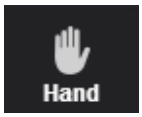
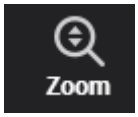


Figure 43. MPR toolbar on Flash platform.

„**Default**“ button is used to adjust the Level/Window (contrast and brightness) of the image.



Hand button allows you to position images within the pane.



The button is used to increase and decrease the selected image: click on the Keyboard **+** to **Zoom In** and **–** to **Zoom Out;** click left button on your mouse and drag it upwards to zoom in and downwards to zoom out.

Measure button allows you to measure the images in number of ways.

Slice button allows you to make a cross-section. There are two possible options:

Line – three arrows will automatically appear that make a vertical, horizontal and diagonal cross-section;

Curve - MPR calculation from the curve drawn on the original slice:

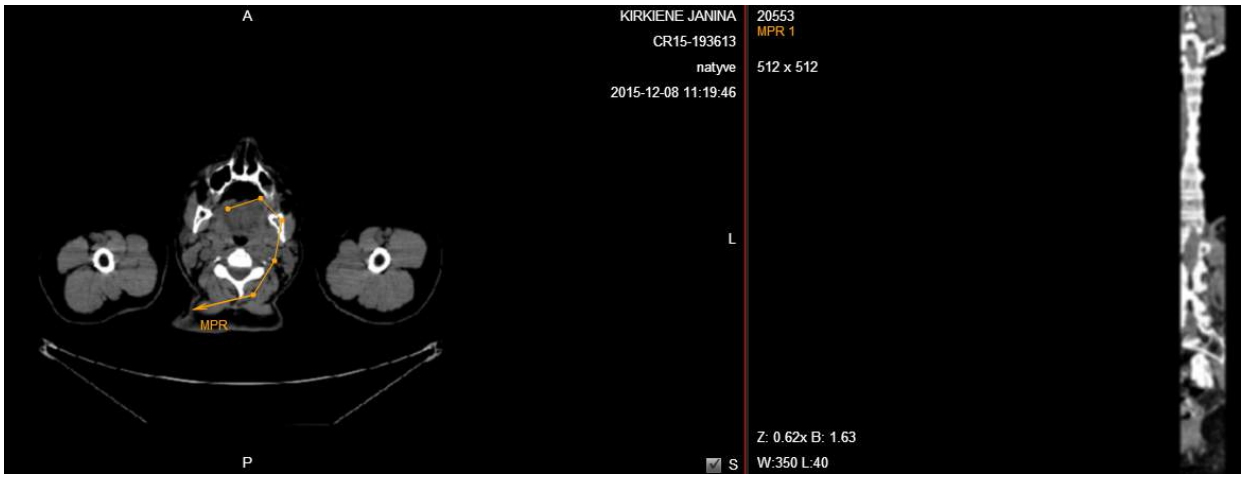
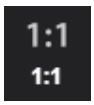


Figure 44. Curve measurement.

The curve is always shown on the "MPR1" picture.

Delete curve – by pushing this option you will delete the curve.

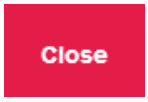
Fit to Screen button**.** When you click this button, the size of the image is automatically adjusted so that the image would fill the entire screen. For example, if only part of the image is visible on the screen, choose this button to see the whole image displayed in the entire screen.



1:1 Resolution button allows you to restore the original image size.

"**Transform**" button allows you to rotate the image. Options:

- Rotate Right – to rotate the image 90° clockwise;
- Rotate Left – to rotate the image 90° counter-clockwise;
- Flip Horizontal – to flip an image 180° over the horizontal axis;
- Flip Vertical – to flip an image 180° over the vertical axis.



This button closes MPR and the main screen opens again.

Measuring Images on Flash platform

Measuring function is approximate and cannot be used for diagnostic purposes.

Allows you to measure the images in number of ways. The main measurement button is “**Measure**”:

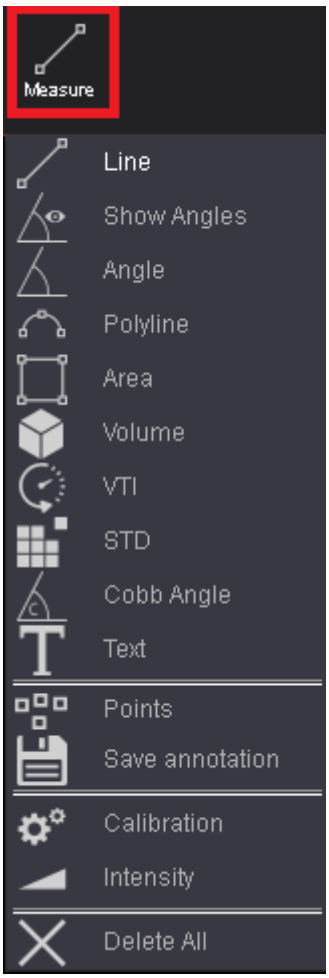


Figure 45. Measurement tools.

The “**Intensity**” button is used to measure the density of a CT image.

To measure the density:

- select “**Intensity**” once.
- move the mouse cursor over the point you want.
- the density of the point and its coordinates should be visible next to the cursor (expressed in Hounsfield units, HU):

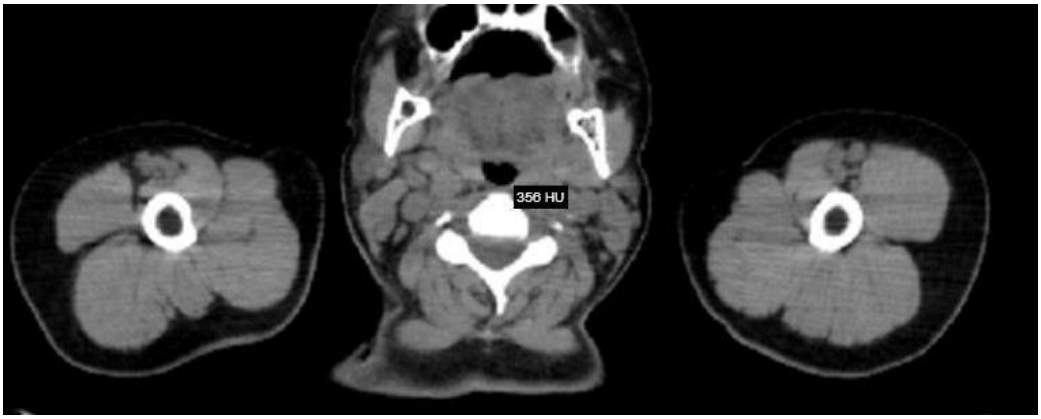


Figure 46. Intensity measurement.

To measure the distance:

- click on the „**Measure**“ button and choose „**Line**“ from the list
- place the mouse cursor on the starting point from which you want to measure the distance.
- click the left mouse button. Move the cursor to the end point and click the left mouse button once more.
- the distance (in millimeters, or pixels in some images) will be displayed in yellow:

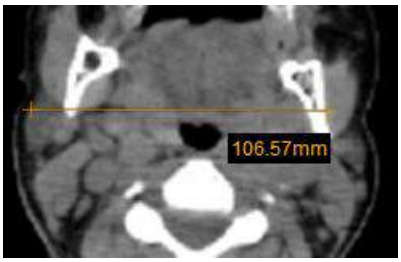


Figure 47. Line measurement.

Angle measurement.

To measure an angle:

- Position the mouse pointer on the point from which you want to measure the angle. Then click the left mouse button.
- Move the pointer to the second point (the intersection point) and click the left mouse button again.
- Then move the pointer to the end point and click the left mouse button once more.

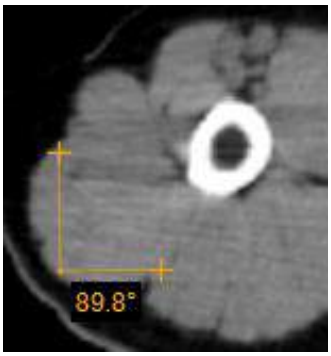


Figure 48. Angle measurement.

The **“Show Angles”** button is used to measure an angle between intersecting lines.

To display the angle measurements:

- draw intersecting lines on the image using the "Line" measurement,
- on the Tools menu, click „**Measure**“ button,
- tick “**Show Angles**”:

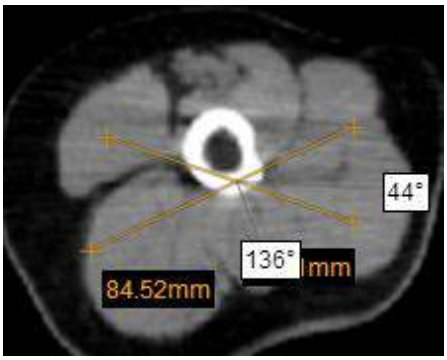


Figure 49. Angle measurement between intersecting lines.

The “**Polyline”** button is used to measure the perimeter of a region of interest.

To measure the perimeter:

- Position the mouse pointer on the point from which you want to measure the perimeter. Then click the left mouse button.
- Move the cursor to the second point (the intersection point) and click the left mouse button again.
- Then move the cursor to the third, fourth, etc. points and each time click the left mouse button again.
- Double-click once finished in order to see the result.

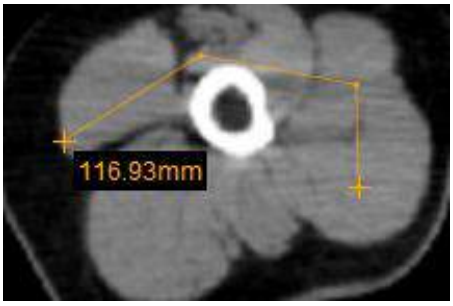


Figure 50. Polyline measurement.

The “**Area**“ button is used to measure the perimeter and the area of a region of interest.

To measure the area:

- Place the mouse cursor on the point from which you want to select the region of interest. Then click the left mouse button.
- Move the cursor to the second point (the intersection point) and click the left mouse button again.
- Then move the cursor to the third, fourth, etc. points and each time click the left mouse button again.
- When you reach the last point, click the left mouse button twice.

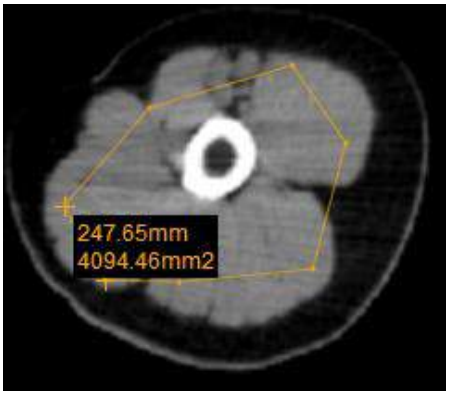


Figure 51. Area measurement.

- The area (in square millimeters) and the perimeter (in millimeters) will be displayed in yellow

The "**Volume**" button is used to measure the volume of the object.

In the illustration below, the object can be imagined as the following solid of revolution: the vertical line is the rotation axis, around which the left and the right curves are rotated half of the circle.

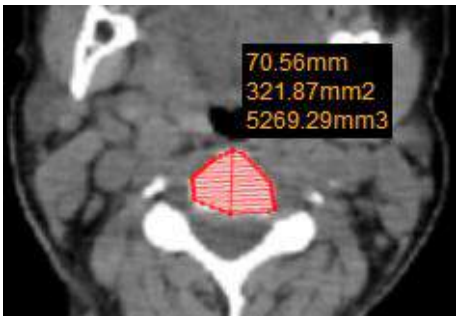


Figure 52. Volume measurement.

- Place the mouse cursor on the starting point of the rotation axis.
- then click the left mouse button (do not hold it) and move the cursor to the second point and click the left mouse button again.
- then move the cursor to the third, fourth, etc. points of one side curve and each time click the left mouse button again.
- when you reach the end point of the rotation axis, click the left mouse button **twice** in order to specify the height of the object.
- move cursor to the second, third, etc. points of another side curve and each time click the left mouse button again.
- when you reach the last point of the side curve, click the left mouse button **twice** in order finish the measurement.

The "**VTI"** *(Velocity Time Integral)* button is used to measure the distance over which the blood was ejected per interval of time.

- Place the mouse cursor on the point from which you want to measure the velocity time integral.
- Then click the left mouse button (do not hold it) and click the cursor to the second point and click the left mouse button again.
- Then move the cursor to the third, fourth, etc. points and each time click the left mouse button again.

- When you reach the last point, click the left mouse button **twice** in order to end the measurement.

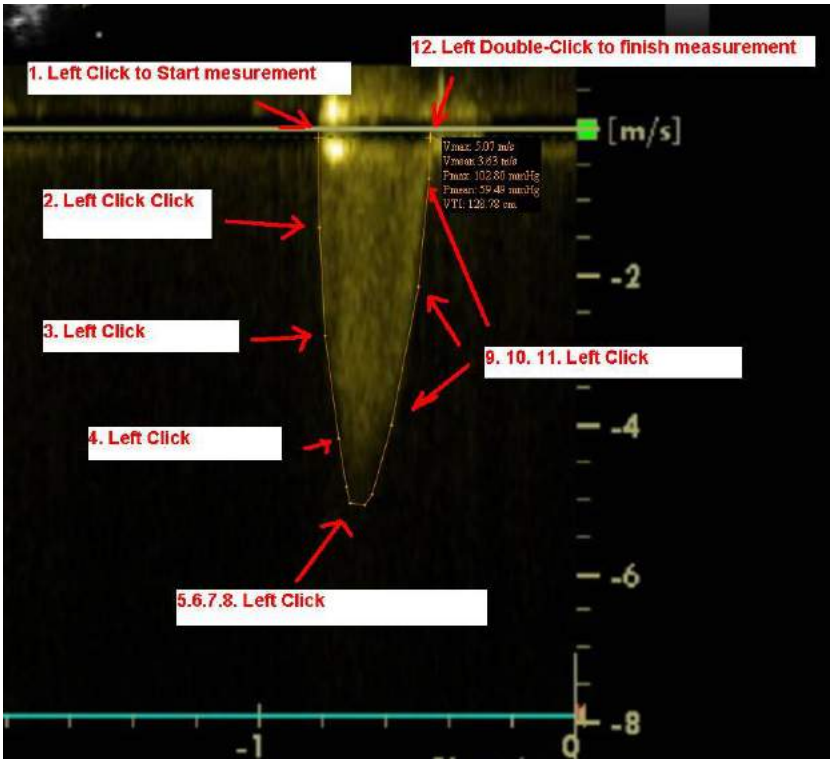


Figure 53.VTI measurement.

- The velocity time integral is measured in centimeters.

NOTE: this button is active only for the images of "US" modality.

The "**STD"** (*standard deviation*) button is used to measure average value and standard deviation of pixels in a square area of 10 by 10 mm.

- Place the mouse cursor on the place that you would like to measure STD.

Figure 54. STD measurement.

The "**Calibration"** button is used to change the scale of measurement.

- Click the Calibration button and pop-up window will appear:

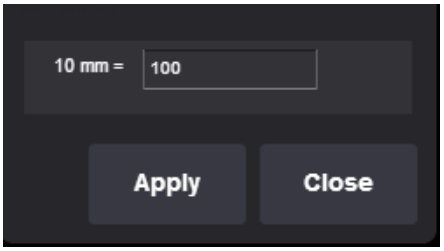


Figure 55. Calibration function.

- In this case 10mm corresponds to 100 pixels, if 0 will be left in the empty space the initial settings will be shown.

The **"Cobb angle"** button is used to measure angle between lines.

To measure angle:

- select "**Cobb angle**" measurement,
- select the image,
- click on image and lines will appear in the middle of image,
- You can drag lines, line points and move all lines simultaneously by moving the white–dotted line.

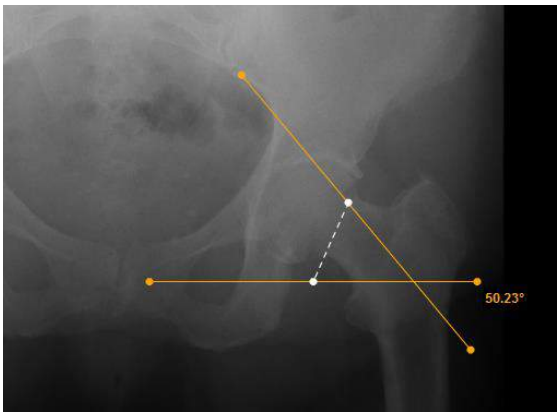


Figure 56. Cobb angle measurement.

The **"Points"** button is used to mark certain points on the image.

- Place the mouse cursor on the point where you want to make a mark. Then click the left mouse button.

- Move the mouse cursor to the next point and click the left mouse button again.
- Keep repeating this until you have the desired number of marked points (up to 18 points are possible).

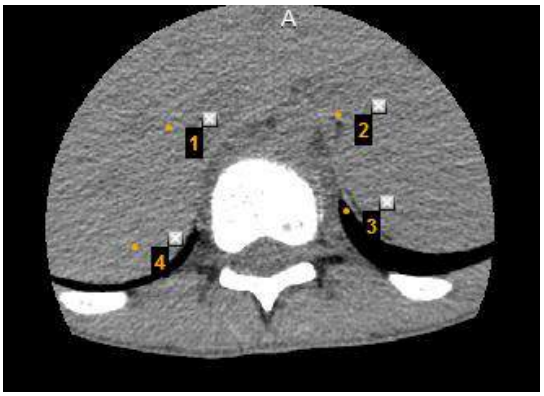


Figure 57. Points measurement.

The “**Save Annotation”** button is used to save the annotations of the measurements.

- Click the “Measure” icon and choose “Save Annotation” from the list.
- The following window will appear on the screen.

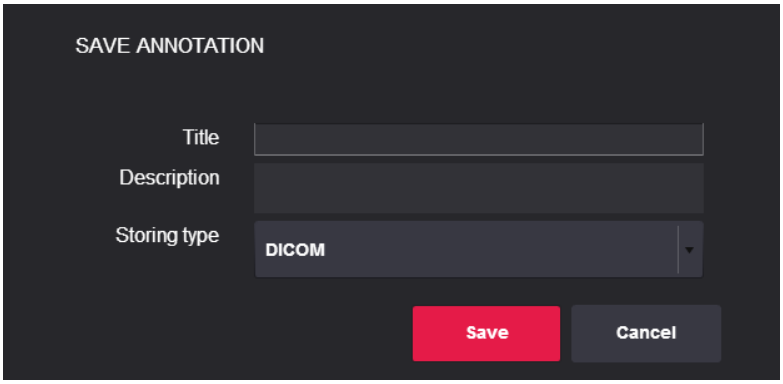


Figure 58. Save annotation.

- Enter the title, description and choose storing type (DICOM or JPEG) of your annotation.
- Click “Save

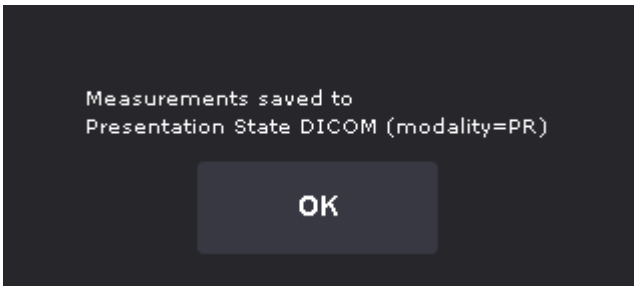


Figure 59. Saved annotation notice.

The “**VHS**“(Vertebral Heart Scale) button is used to measure heart size and provide an accurate assessment of true cardiac enlargement. This measurement is available only with VET license.

To perform a VHS:

- select “**VHS**” measurement,
- place the mouse cursor and click the left mouse button on the point from which you want to start measuring Long Axis Point (L),
- move the cursor to the second point along the area and click the left mouse button again,
- the Long Axis Point Line will appear,
- place the mouse cursor and click the left mouse button on the point from which you want to start measuring Short Axis Point (S),
- move the cursor to the second point across the area and click the left mouse button again,
- Short Axis Point Line will appear,

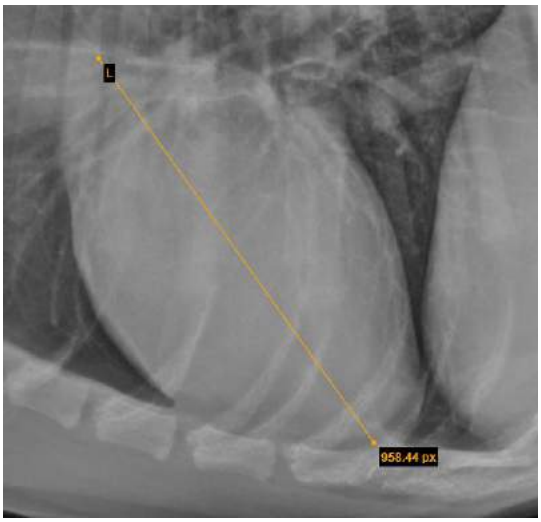


Figure 60. Long axis points.

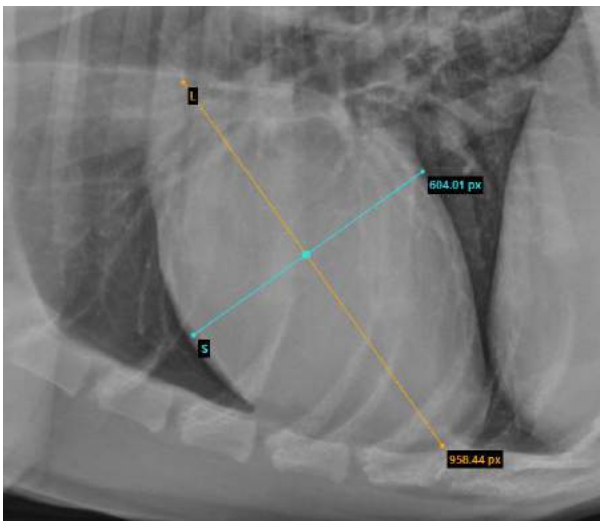


Figure 61. Short Axis points.

- In order to define SL point, place your mouse cursor and click the left mouse button on the point from which you want to measure S and L lines,
- S and L lines will appear (*Figure 62*).

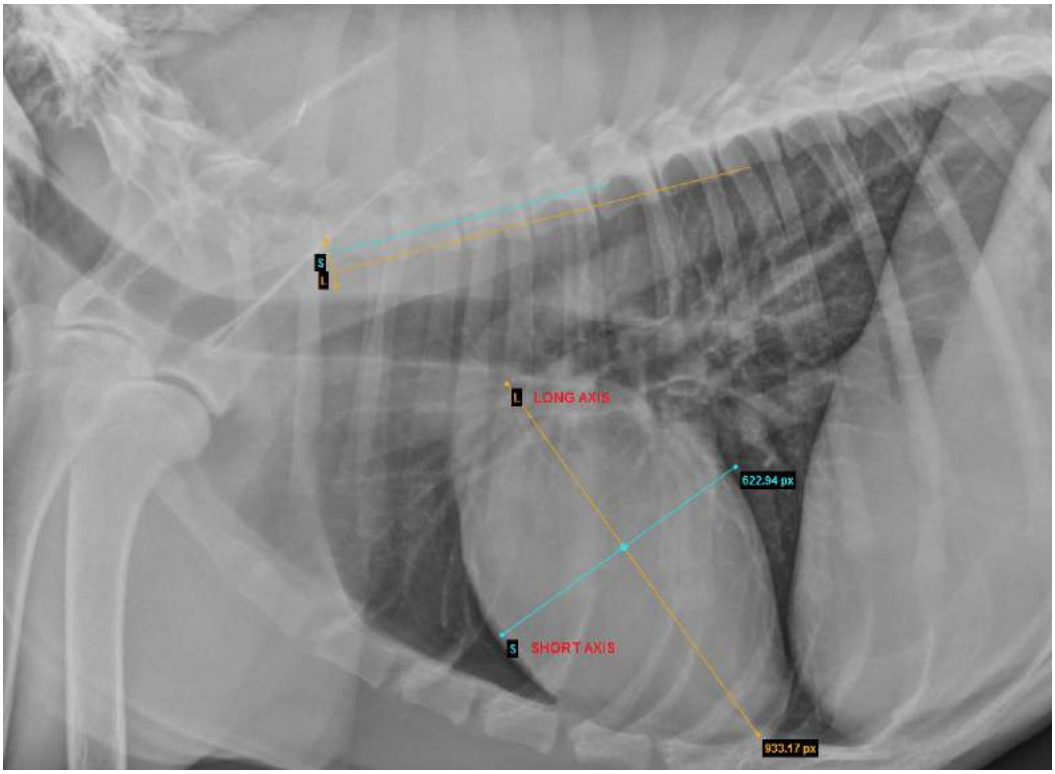


Figure 62. Demonstration of VHS measurement.

☞

- You can rotate lines by dragging the end of the lines (dots) according to your needs. Click the left mouse button on the yellow dot (highlighted in red) and drag the line into a position where you want it to be (*Figure 63*). Middle dot (S and L line intersection point) allows to move S and L lines at the same time.

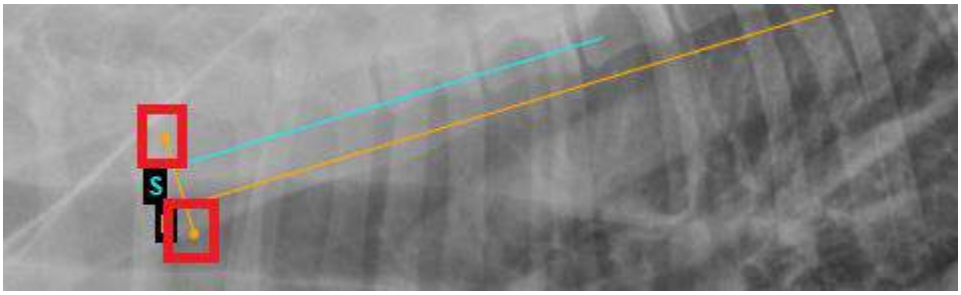


Figure 63. Rotation demonstration.

The "**Norberg Angle"** button is used to evaluate canine hips. This measurement is available only with VET license.

To measure the angle:

- Zoom in the selected image and select Norberg Angle measurement,
- Click the left mouse button over the selected image and the measurement will appear,

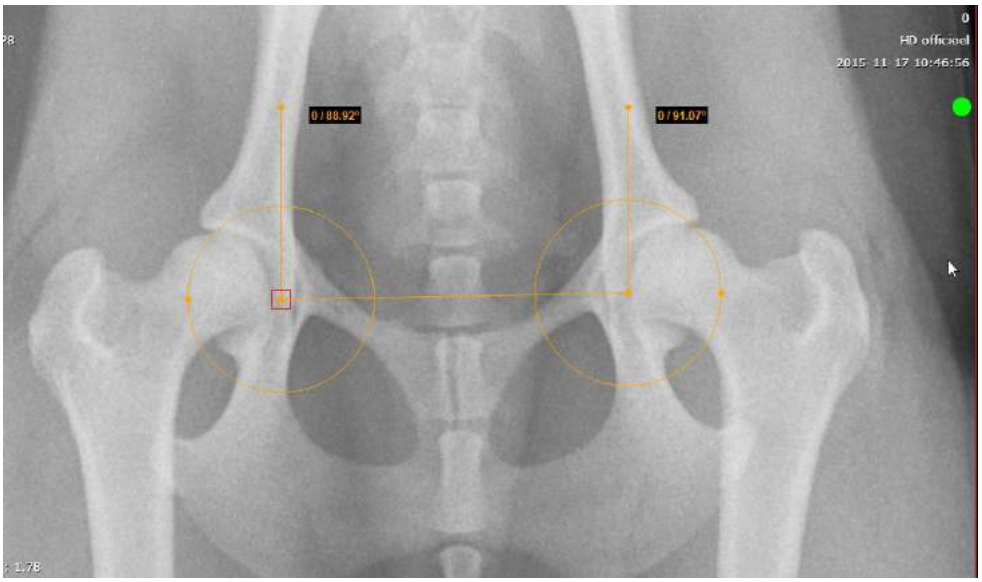


Figure 64. Norberg angle measurement.

- Move mouse cursor on the circle (or circle center) and drag to change position as you need (*Figure 65*),
- Repeat the same process with the other circle,

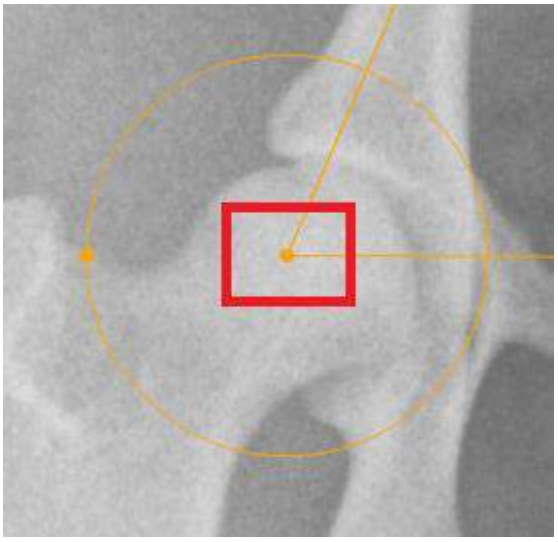


Figure 65. Center of the circle.

- In order to adjust the circle size, move your mouse cursor to the dot on the outer circle and drag it (*Figure 66*),

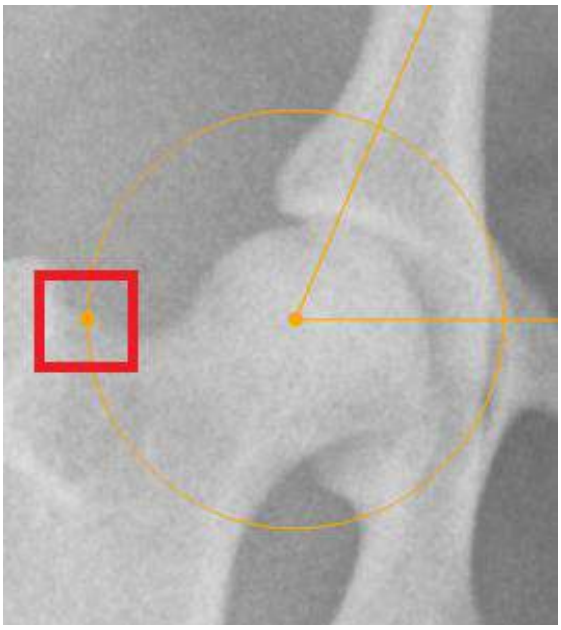


Figure 66. The outer part of the circle.

- To adjust the angles – move mouse cursor at the end of line (on the dot) and drag it,
- The angles will be calculated (*Figure 67*).

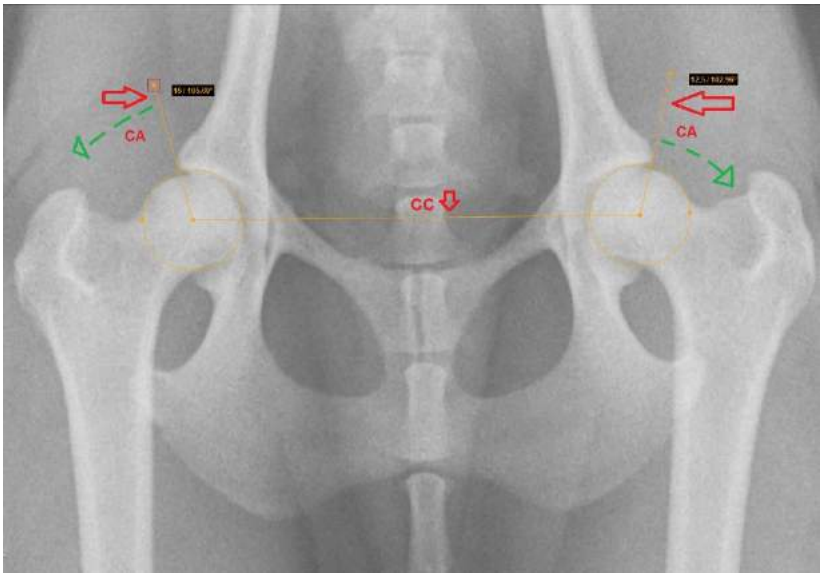


Figure 67. Demonstration of the Norberg Angle measurement.

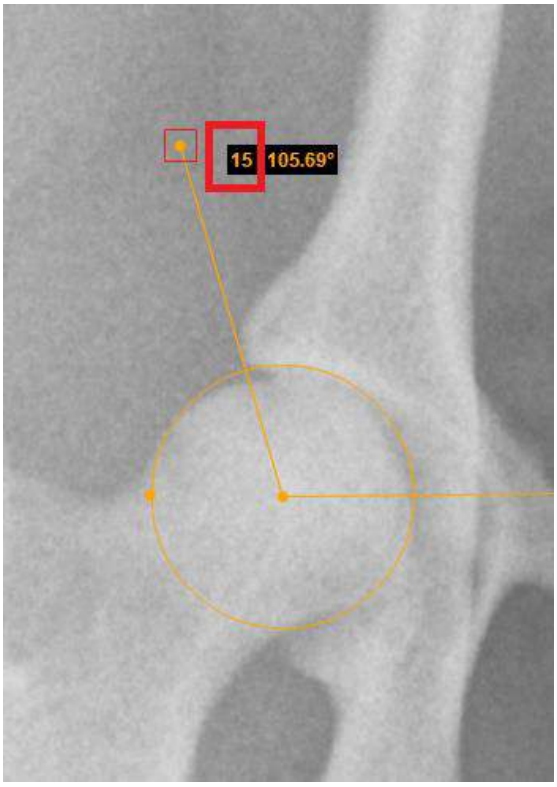


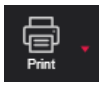
Figure 68. Norberg Angle.

The **"Delete All"** button is used to remove all measurements at once.

To remove the measurements:

- select the image from which you want to remove all measurements
- click "**Measure**"
- select **"Delete All"**

Printing images and series on Flash platform

To print images/series, click “Print” button, which is in the middle of the Menu bar 

(enabled for images). There are two options of printing:

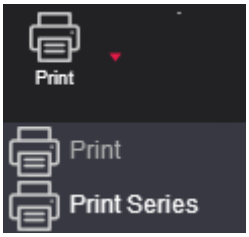


Figure 69. Printing options.

Click “Print” option to print the selected image area view.

Click “Print Series” to print whole series (images only). Then choose the number of images per page: one, two or four.

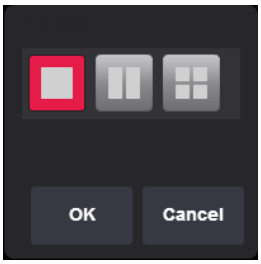


Figure 70. Selection of number of images on a page.

Saving images on Flash platform

Click 

and select a preferred format in the pop-up menu: JPG, DICOM or TIFF. Then select to save an image, a series of images or an active study.

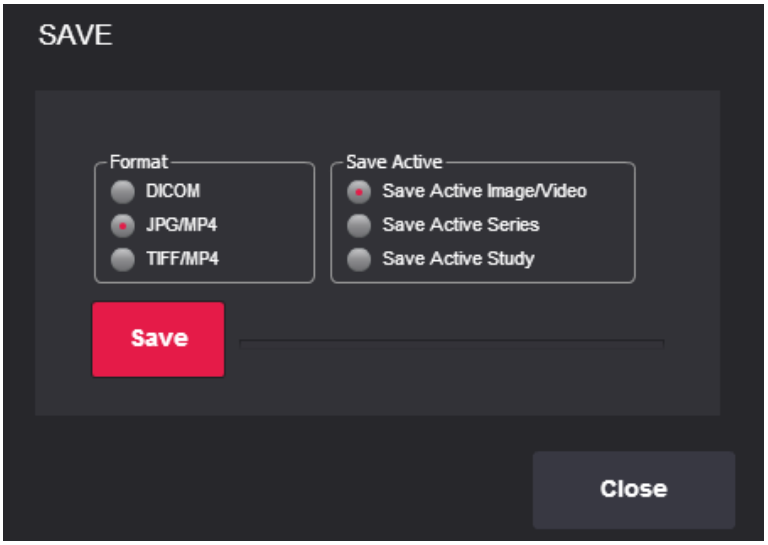


Figure 71. Saving images.

Click "**Save**" and choose a folder where you prefer to save the images in your computer. Click "Save" again.

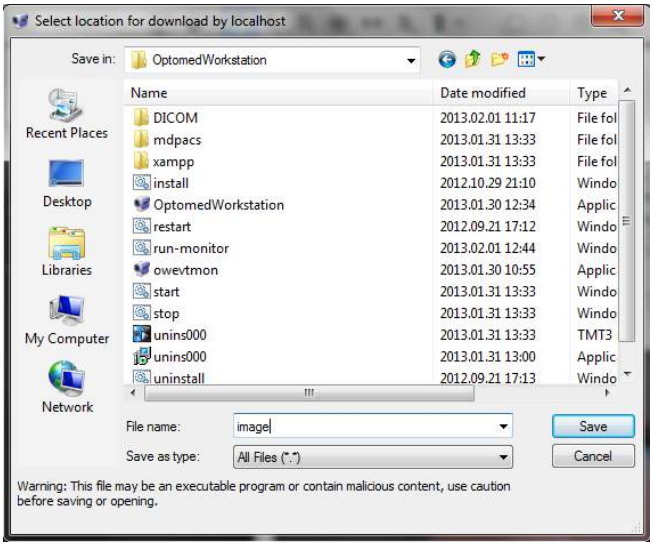


Figure 72. Saving location selection.

Click 

in order to close the window.

Export and forward study on Flash platform

The button “**Forward**” is used to send the selected study to the remote device, while the button “**Burn**” will save the study to a CD.

To forward the study:

- open the study you would like to send and click “**Forward**” 

- the forwarding window appears:

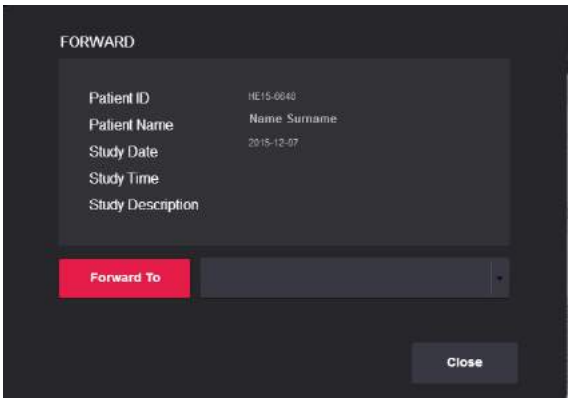


Figure 73. Study forwarding.

- choose a device from the list;
- click “Forward To”.

To export the study (to save it on a CD):

- select the study that you want to write on the CD or DVD and click “**Burn**”: 

- the export window appears.
- choose CD, DVD or Unlimited. (Splitting into volumes is implemented only under PacsOne.)

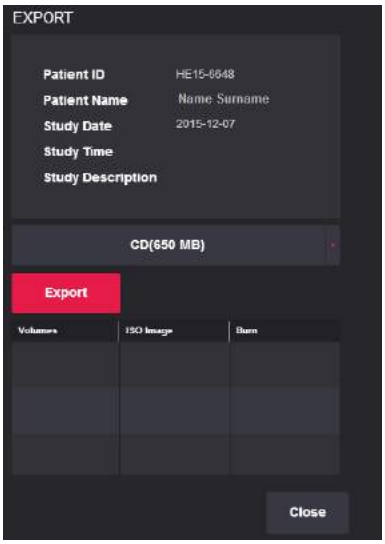


Figure 74. CD burning.

- Click the button “Export” in the export window. After a while, two additional buttons will appear in the list below

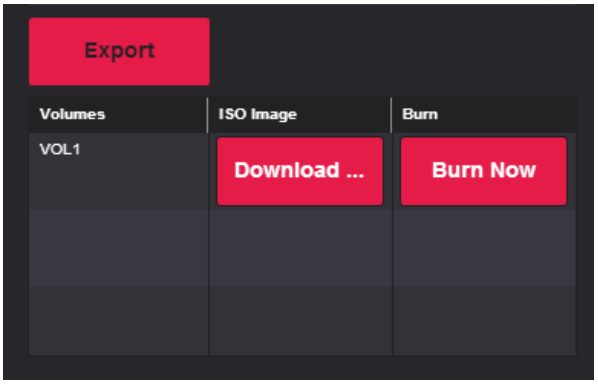


Figure 75. Export menu.

- You can choose one of two options in this window:

1. „Download ISO“ - this option is used to download a CD image which can be burned to the disc later;

2. „Burn Now“ - this option is used to write the file to a CD automatically. (You will need to install additional software, MedDreamBurn and Active ISO Burner, on each workplace.)

CAUTION

MedDream is incompatible with the CD Viewer from Softneta ("DICOMDIR Viewer"). Both Viewer and MedDream may encounter licensing errors if CD Viewer runs ***on the same computer*** *where MedDream is hosted. Use a different machine to test the Viewer on a burned CD or temporarily shut down the webserver that hosts MedDream.*

ECG module on Flash platform

This module allows you to view DICOM ECG wave data.

☞ This module can be used while MedDream is in demo mode; in the commercial mode it is licensed separately, therefore existing customers will need an updated license.

Figure 76. ECG view.

For ECG viewer's behavior is different:

- Measurement tools are changed into ECG measurement tools.

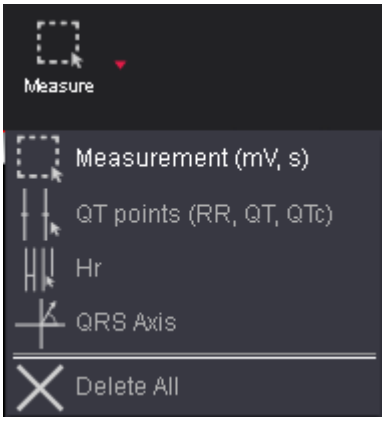


Figure 77. ECG measurements.

- Image manipulation buttons are disabled.

The “**Measurement**” button is used to measure fragment length in seconds, mV and calculate BPM.

To measure:

- Select “Measurements”.
- Move the mouse cursor on the point you want.
- Click down and move mouse over an ECG wave.

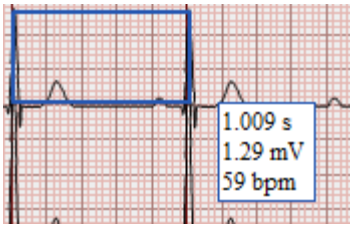


Figure 78. Measurements

The „**QT points**“ button is used to measure wave QT points: RR, QT and QTc.

To measure:

- Select “QT points”.
- Move the mouse cursor on the point you want to set Q point and click.
- Move the mouse cursor on the point you want to set T point and click.

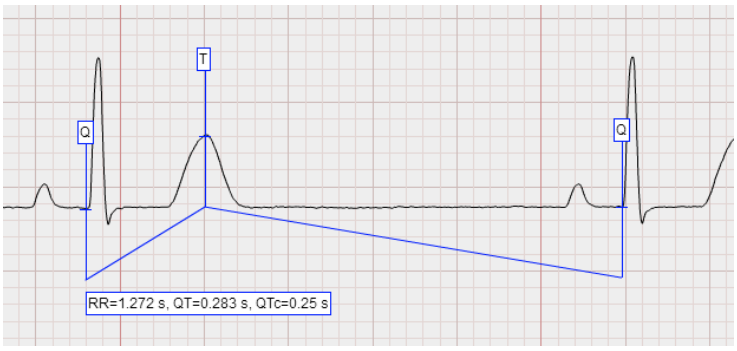


Figure 79. QT points.

- Move the mouse cursor on the point you want to set last Q point and click (double click also works).

The button “**HR**“ is designated to measure heart rate:

Figure 80. HR measurment tool.

- Select “HR“ measurment tool;
- Move the mouse cursor on the point you want to set R point –click once left mouse button;
- Move the mouse cursor on the point you want to set next R point – click once left mouse button;
- Now you can compare given interval with other R points.

The „**QRS Axis**“ is used to measure cardiac interventricular partition and ventricular depolarization spreading.

Figure 81. QRS Axis measurement tool.

- Select „QRS axis“ measurement tool;
- Move the mouse cursor on the point you want to start your “QRS” point, “Q” - click once left mouse button;
- Move the mouse cursor on the point you want to end your “QRS” point, „S“ point - click once left mouse button;

Change horizontal scale (mm per second).

Change vertical scale (mm per mV).

Display ECG annotation data.

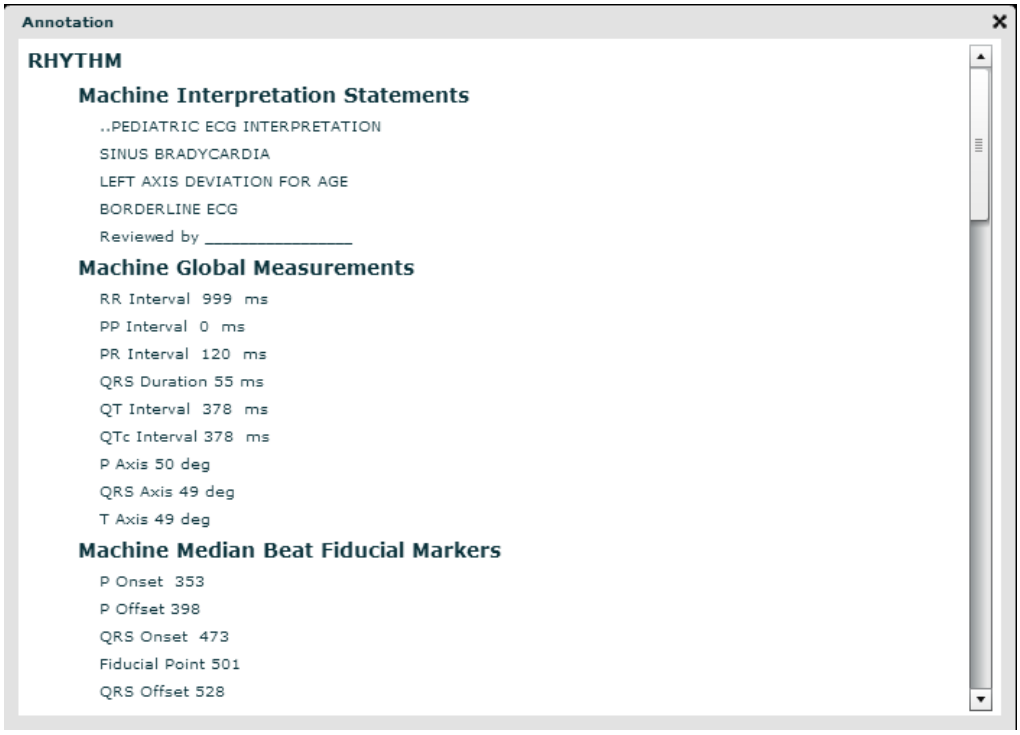


Figure 82. ECG annotation.

Button to adjust ECG data position.

Button to adjust ECG data zoom.

Is used to display remaining data. By default first 5 seconds of ECG wave data is visible.

It is used to “**Compare ECG data**”. In order to compare follow the steps indicated below:

- Open the first ECG study;
- Go back to the main search window and select as many studies as you want (see section “Opening Multiple Studies”);
- Select an image layout (see page 21);

- Tick the check-box next to the ECG studies that you want to compare:

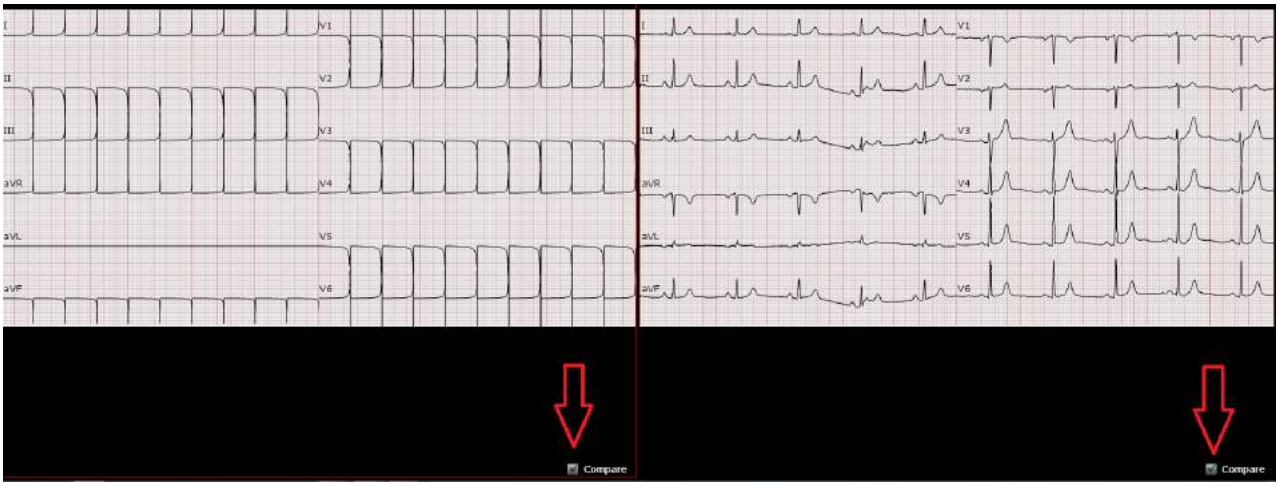


Figure 83. Compare tick-box.

Once you have done this, click on a 

button and the following window will appear on the screen:

Figure 84. ECG comparison.

There will be possible to manipulate the image with the following tools:


"**Hand**" button allows you to position images within the pane. This feature is especially useful when the image is larger than the pane, as it usually is after zooming in.

To move an image within the pane:

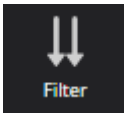
- On the Tools menu, click "**Hand**"

- Position the cursor over the image you want to move and click-and-drag the cursor around the pane to move the image.
- Release the mouse button to leave the image in its new position.


“Zoom +/-” button is used to increase and decrease the selected image. Click the left button on your mouse and drag it upwards to zoom in and downwards to zoom out.

Click 

button in order to close ECG comparison window.

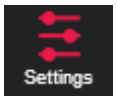


“**Filter**” function is used for the following:

- trims the edges of unnecessary points (points to the first spike that has no importance).
- trims high and low frequency signals applying low-pass and high-pass frequency filters under the “Filter Low Frequency“ (003A,0220) and “Filter High Frequency“ (003A,0221) tags.
- Eliminates baseline wandering interference.
- filters out specified frequency signals adjusting band-stop filter by “Notch Filter Frequency” (003A, 0222) tag.

“**Original**” function is used to reset and clear ECG to the previous original state.

Settings on Flash platform

To change settings of MedDream's Flash viewer, click "Settings" button 

in the toolbar. This button is displayed for the database administrator only. In MySQL it's "root", in Microsoft SQL Server — "sa", with DCM4CHEE 2.x it's also possible to use the internal user account "admin". In some configurations like "SQLite3", "DICOM", "WADO" and "FileSystem", where any login or password is accepted, you will need to use "root", too.

The Settings window will open.

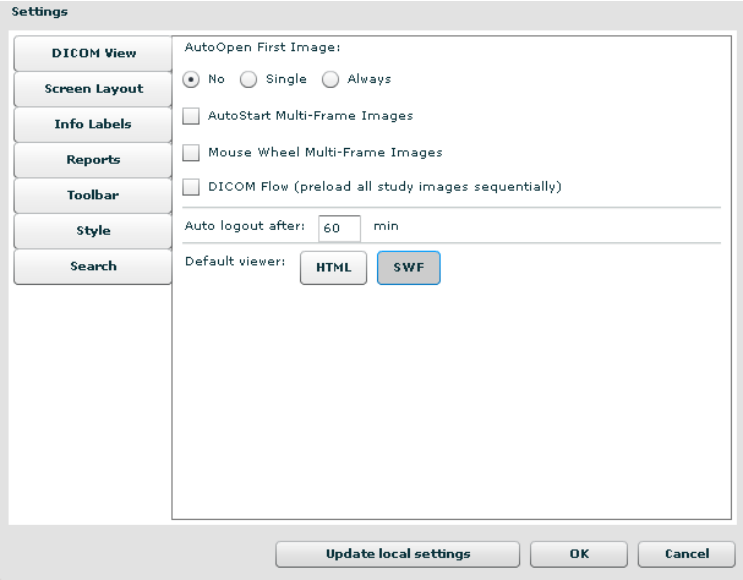


Figure 85. DICOM View settings.

In the "DICOM View" tab the following parameters are indicated:

No	The image does not open automatically when the study is opened.
Single	Is opened only if the study consists of one image.
Always	The first image is always opened automatically.
AutoStart Multi-Frame Images	Automatically start playing multi-frame images.
Mouse Wheel Multi-Frame Images	Allow to scroll multi-frame images with mouse wheel.
Auto logout after: 60 min	Automatically Logs you out of all logged in accounts in case you forget to sign out. (Not available while in DEMO mode.)
DICOM Flow (preload all study images sequentially)	Cache all images in advance. After an image is cached, scrolling through adjacent images takes very little time. But, the entire study must fit into browser's memory.

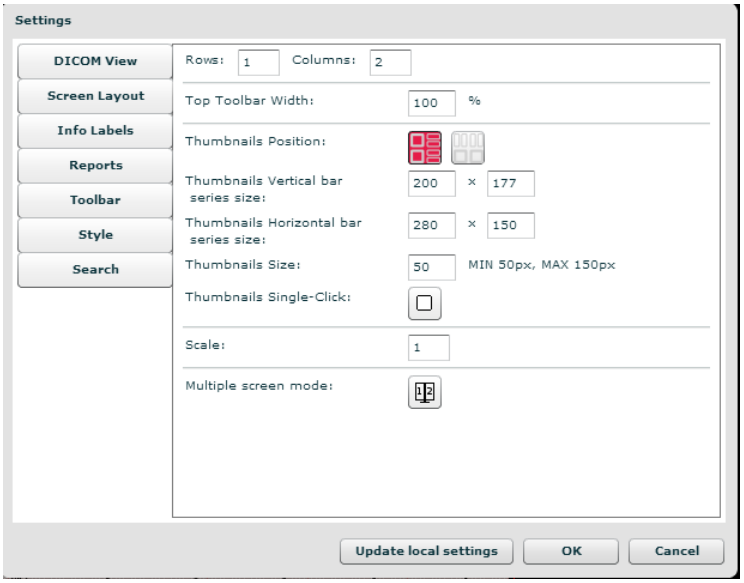


Figure 86. Screen layout settings.

In the “Screen layout” tab the following parameters are indicated:

Rows: 1	Indicates the layout`s number of rows (maximum 3);
Columns: 1	Indicates the layout`s number of columns (maximum 3);
Thumbnails Vertical bar series size: 200 × 177 Thumbnails Horizontal bar series size: 280 × 150	Indicates the size of vertical and horizontal thumbnails` series bar
Thumbnails Size:	Indicates the size of the thumbnail (minimum size is 50px, maximum size 150px).
Thumbnails Position:	Set position of the thumbnail bar: vertical, left or horizontal, bottom.
Thumbnails Single-Click:	Once the button is activated, a single click on an image icon will open the image (otherwise a double click is required).
Multiple screen mode:	Once the button is activated, the appearance is optimized for two physical display devices (such as monitors) of the same resolution.
Scale:	Set scale of toolbar buttons.

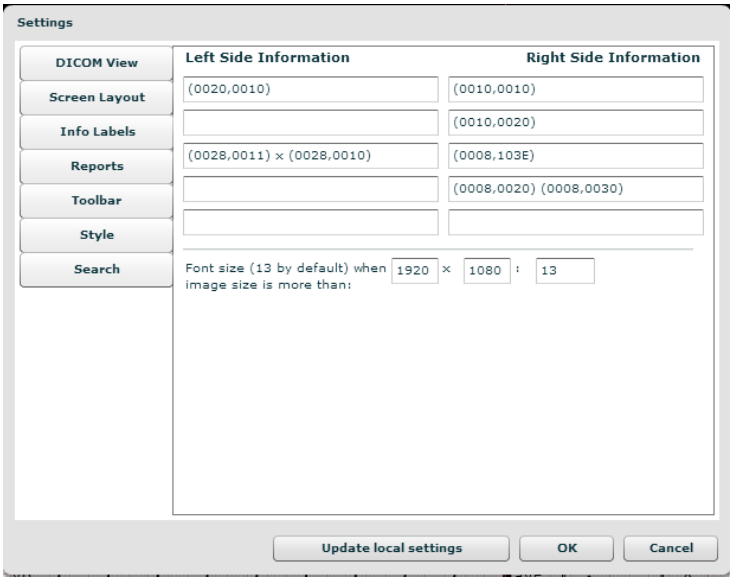
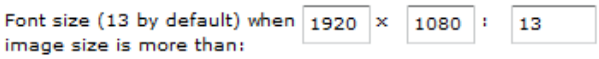


Figure 87. Info labels settings.

The “Info Labels” tab is used to indicate information (from tags of a DICOM file) that is shown over the image.



Set font size of info labels and other labels in the image view when **this view** is larger than defined dimensions. By default the size is 13.

When using a high–resolution (5 megapixels etc) monitor as an addition to an ordinary monitor, you might need a larger font, which also might be too large for the smaller monitor. After adjusting the text size, do not forget to adjust view dimensions so that on a smaller monitor the default size is still chosen.

This setting can be saved on a particular workplace among *local settings* (a feature of the Web browser). It can't be applied globally. Therefore you will need to click the “Update local settings” button and log into MedDream anew.

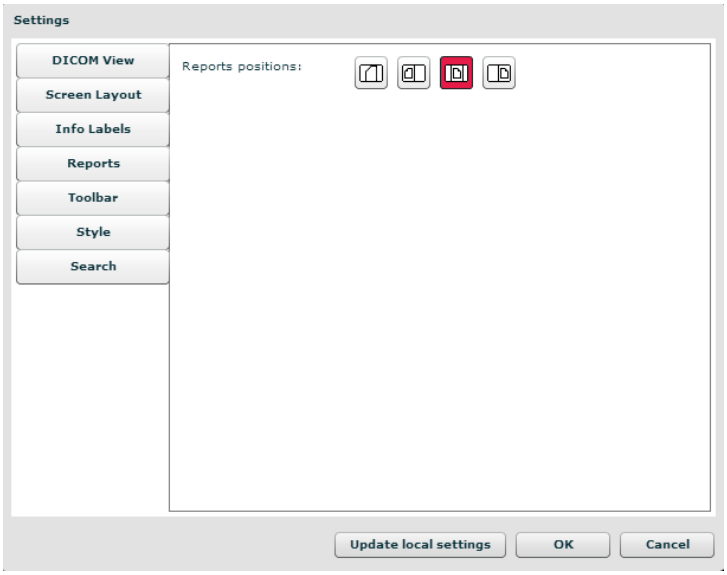


Figure 88. Reports setting.

Reports positions:

 - the report is shown over the main layout.

 - the report is shown on the left side of the main layout.

 - the report is shown on the center of the main layout.

 - the report is shown on the right side of the main layout.

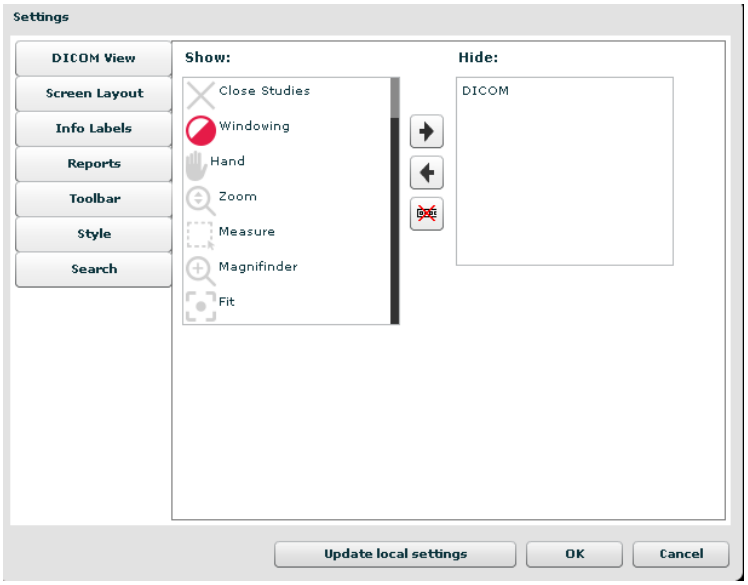


Figure 89. Toolbar settings.

The “Toolbar” tab enables user to show the most commonly used buttons on the toolbar, while the rarely used tools can be hidden. Use arrows and to manage the shown and hidden tools; you can also drag buttons with the mouse. The button hides the whole toolbar.

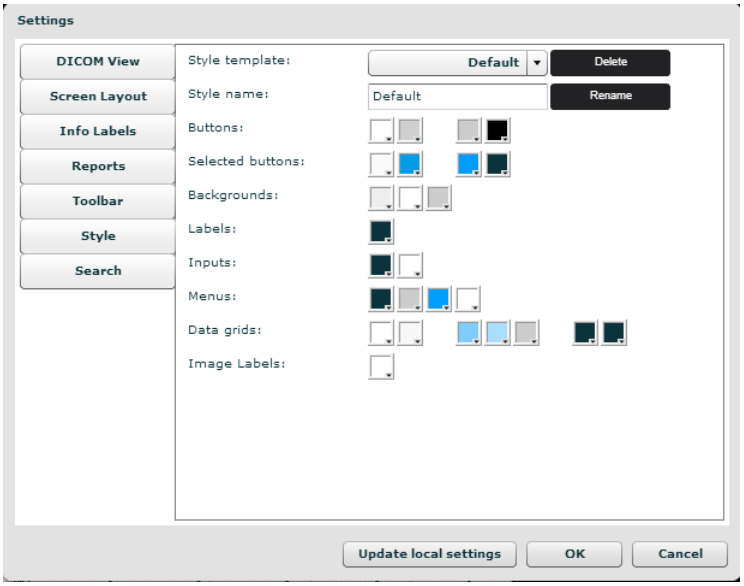


Figure 90. Style settings.

The „Style“ tab serves to set the style (color of backgrounds, buttons, etc.) for visualization on the desktop or for printout, respectively. It contains a list of variables that correspond to individual data input regimes.

OK	Save global settings.
Cancel	Close window. On style change – need to restart application in order to return to previous style.
Update local settings	Update/save local settings. This option enables a particular workplace to have its own settings. The browser must support local storage.

The „Search” tab serves to set which fields will be seen on search menu.

The “Search” tab enables user to show the most commonly used buttons on the toolbar, while the rarely used tools can be hidden.

Use arrows and to manage the shown and hidden tools; you can also drag buttons with the mouse.

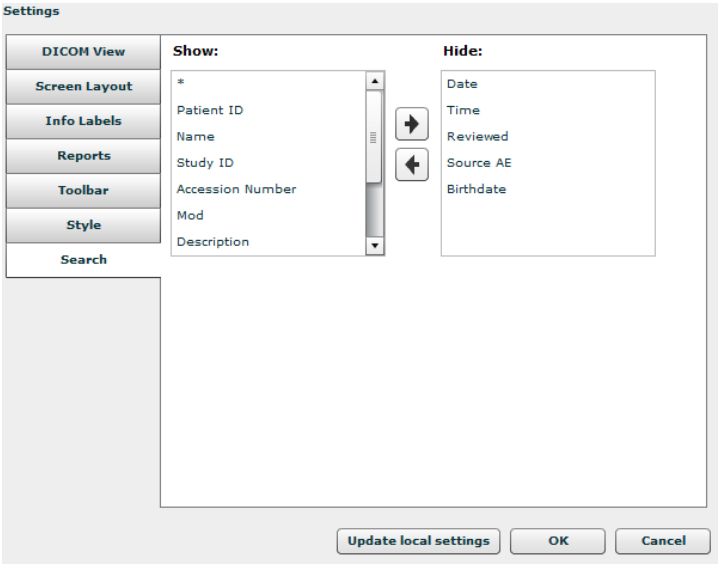


Figure 91. Search settings.

Default Viewer

By default, MedDream Web DICOM Viewer opens in SWF (Flash) view. However, there is HTML5 option available. If necessary to make changes, contact your system administrator because he is the only one who can see the “Settings” window and make changes.

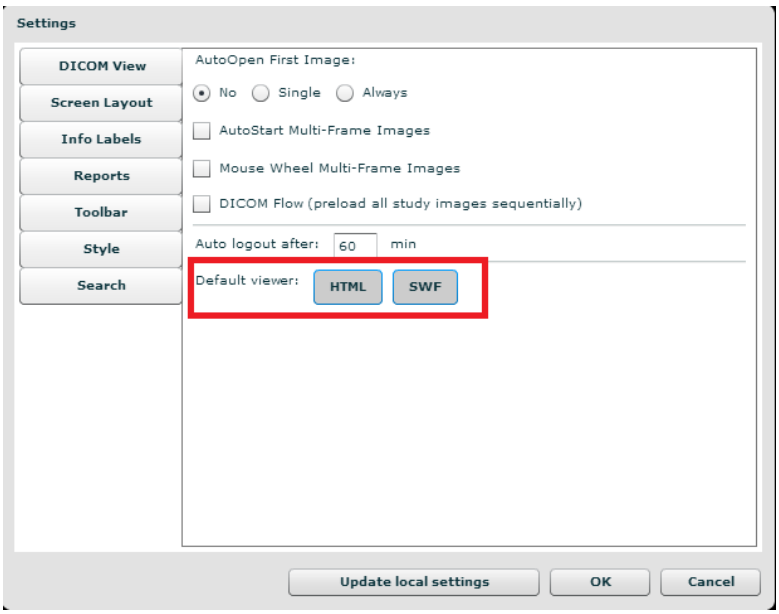


Figure 92. Default Viewer settings.

Information window on Flash platform

In the main window, click the “Information window” button: 

Information window will display:

1. Full product name;
2. Version;
3. GUI version;
4. Release date;
5. Medical device class;
6. ID of the notified body;
7. License to;
8. Concurrent connections;
9. Modules – Report, ECG, Video;
10. Valid to – "-" if there is no termination in time;
11. Update to – date till the technical support and updates are provided;
12. Contacts – Softneta UAB contacts.

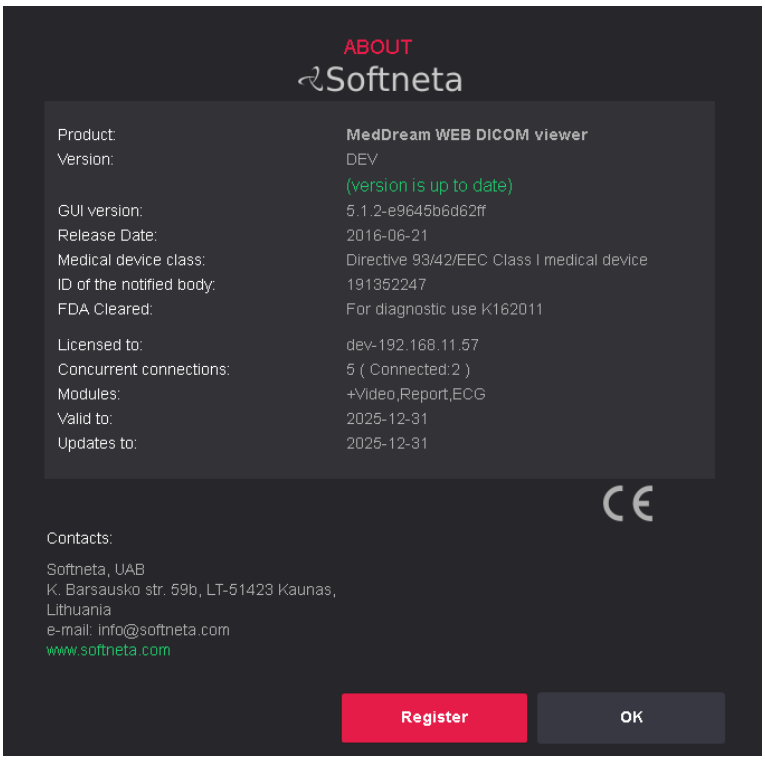
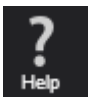


Figure 93. MedDream information window on Flash platform.



button forwards you to online user manual.

MedDream DICOM Viewer Mobile Version

Logging on to MedDream Mobile

To log on to MedDream Mobile version, please do the following:

- Enter the address given by your administrator in your Internet Browser. The following screen will appear:

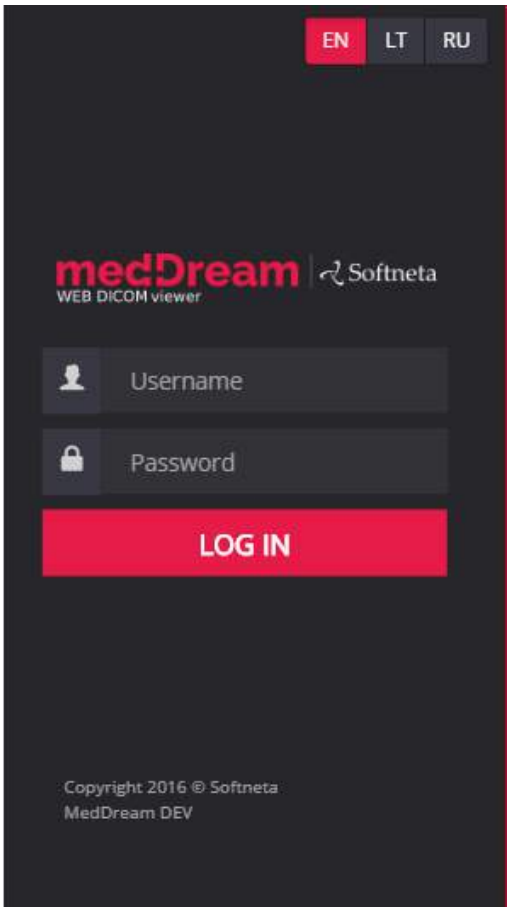


Figure 94. Logging in.

- Enter the username you were given in the field “**Username**”
- Enter the password in the field “**Password**”. If you forgot your password, please contact your system administrator.
- Tap "**Login**" on the screen.

Search of studies on Mobile Version

Search menu will help you to quickly find the studies you need. We recommend using all possible search menu options in order to get the most accurate search results and save your time.

To find a study, please follow these steps:

1. Once you login in to Mobile version "**Search**" window appears on the screen.

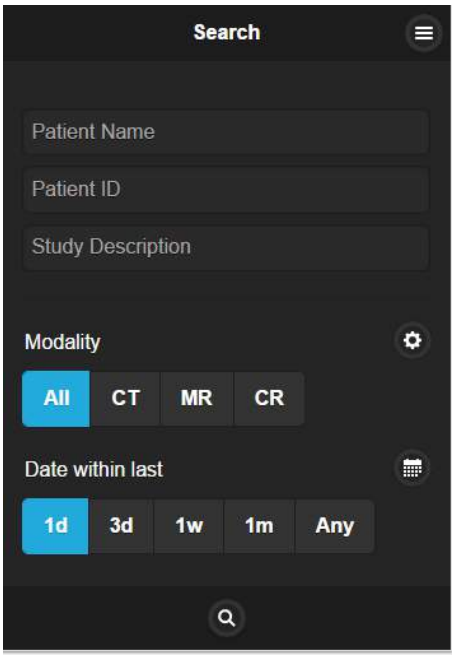


Figure 95. Search window

2. Enter **search criteria** (Patient ID, Patient Name and Study Description).

3. To specialize the search further, please select **the date interval** when the study could have be done. This can be done using **two different date interval search criteria**.

→To select the study date you can choose from the super quick pick list "**Date within last**" accordingly to the date interval you need your studies to be from: "**1d"** (current day), "**3d"** (3 days interval), "**1w"** (1 week interval), "**1m"** (1 month interval) or "**Any"** (no specific date).

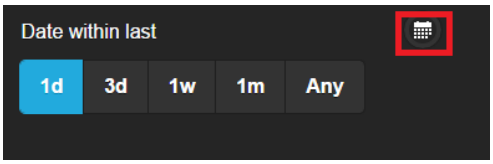


Figure 96. Search according to dates.

→To specify the study date date interval tap the icon marked in red (*Figure 95*) and the following window will show up:

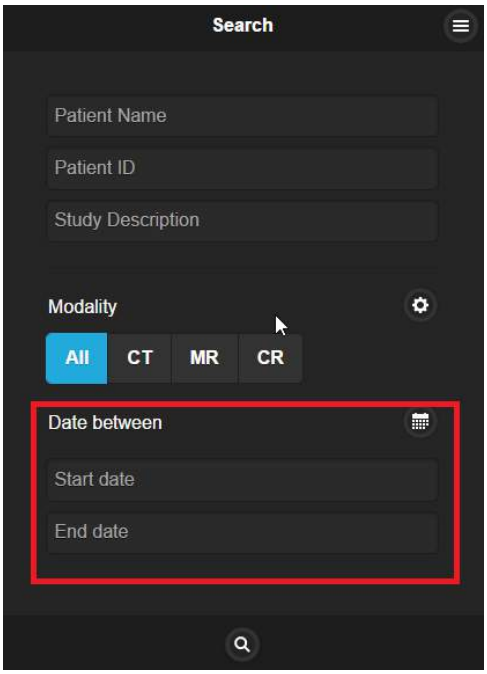


Figure 97. Date search options

4. The search can also be specified by selecting the method which was used to obtain the study images (modalities):

→ CR, CT, DX, ECG, ES, IO, MG, MR, NM, OT, PX, RF, RG, SC, US, XA, XC, All. The system allows to select a few image modalities. Tap the icon marked in red (*Figure 98*).

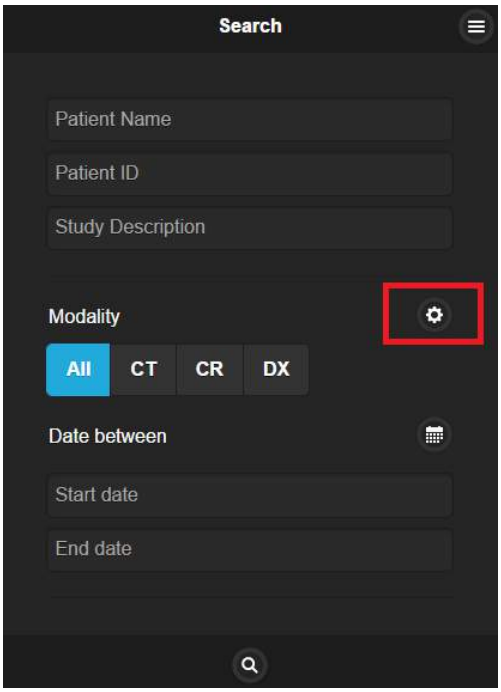


Figure 98. Search according to modalities.

Now you can add all possible methods by tapping on the modality you want to be added to the search (*Figure 99*).

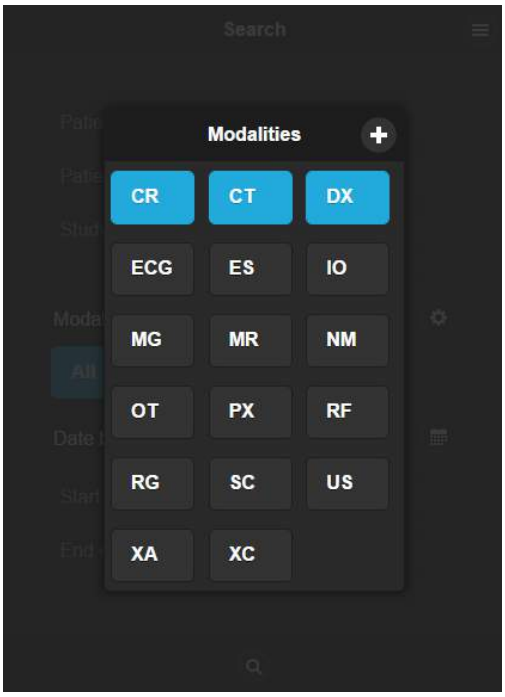


Figure 99. Modalities search

* Abbreviations:

CR – *Computed Radiography*

CT – *Computed Tomography*

DX – *Digital Radiography*

ES – *Endoscopy*

IO – *Ultra-Oral Radiography*

MG – *Mammography*

MR – *Magnetic Resonance*

NM – *Nuclear Medicine*

OT – *Other*

PX – *Panoramic X-Ray*

RF – *Radio Fluoroscopy*

RG – *Radiographic Imaging*

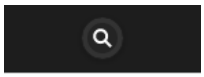
SC – *Secondary Capture*

US – *Ultra Sound*

XA – *X-Ray Angiography*

XC – *External camera photography*

ECG - *Electrocardiography*

5. After you have selected your search criteria, start the search by tapping "**Search**" icon 

6. You will see the following window with the search results.

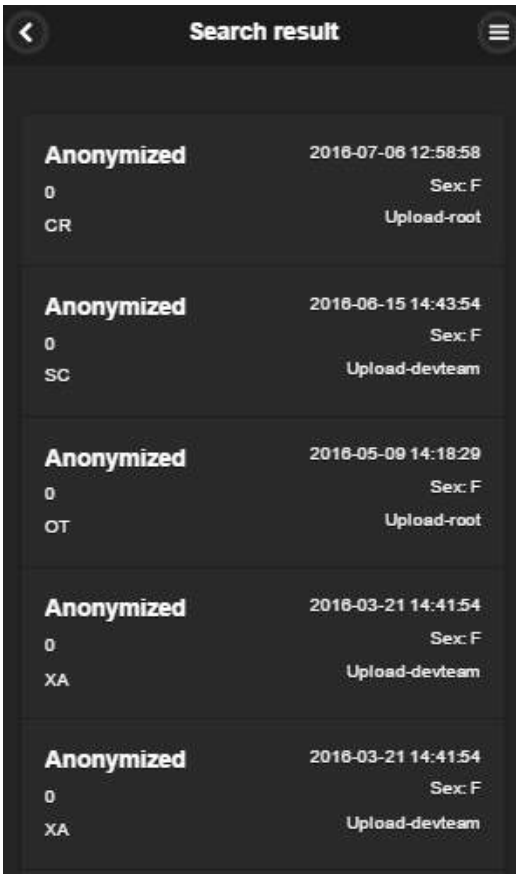


Figure 100. Search results.

7. Tap on the specific study so you could see the image you want to analyze (*Figure 101*).

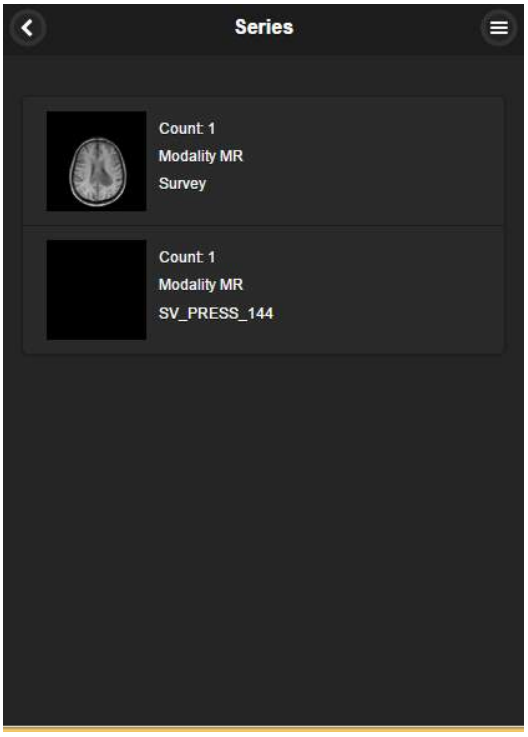


Figure 101. Select image

Manipulating images on Mobile Version

You can manage and analyze the study images according to the criteria you need. Image manipulation tool bar is marked in red below (*Figure 102*):

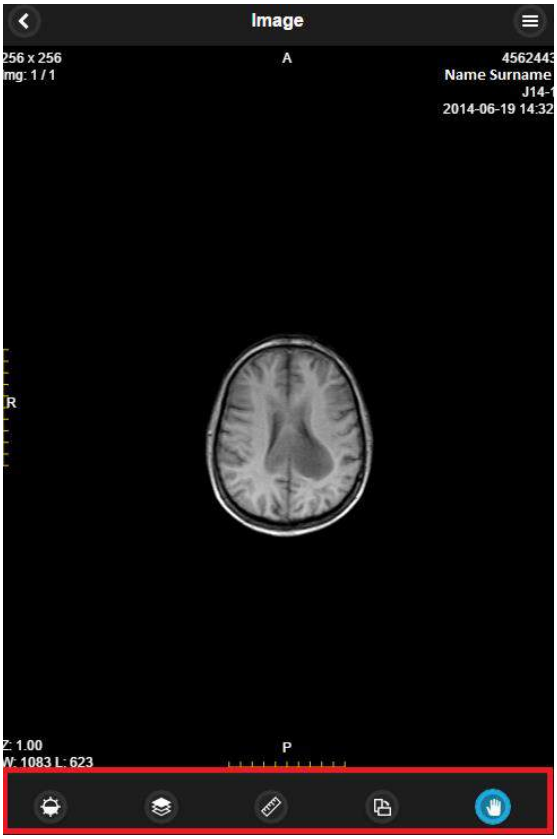


Figure 102. Image manipulation tools.

More about each of them:

 Button is used to adjust the Level/Window (contrast and brightness) of the image. Put your finger on the screen and pan up and down to control the brightness of the image.

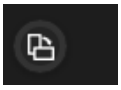
 Button functions as a scroll bar. Once tapped it enables you to scroll through the series of images by dragging the image sideways.

 If you want to zoom in or zoom out you just need to pinch and stretch. It zooms gradually an image out or in.


“**Hand**” button allows you to position images within the pane. This feature is especially useful when the image is larger than the pane, as it usually is after zooming.

To move an image within the screen:

- On the Tools menu, tap “**Hand**”
- Tap the image you want to move and flick the image around the screen to drag it to the position needed.
- Release the image to leave it in its new position.


“**Transform**” button allows you to rotate the image. Tap the button and select one of the options from the pop-up menu. Tap the “X” button to exit the pop-up window.

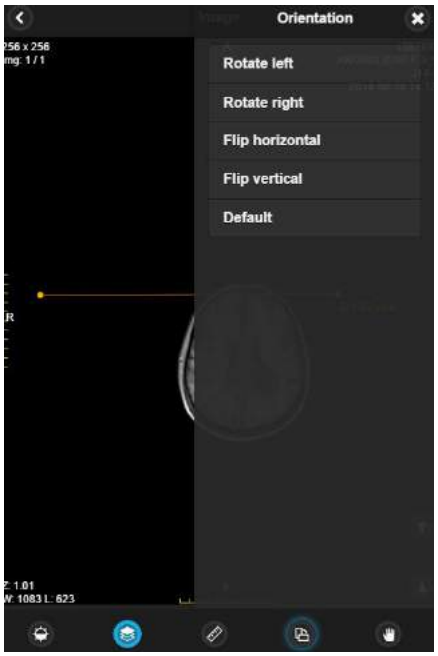


Figure 103. Transformation possibilities.

- Rotate Right – to rotate the image 90° clockwise;
- Rotate Left – to rotate the image 90° counter-clockwise;
- Flip Horizontal – to flip an image 180° about the horizontal axis;
- Flip Vertical – to flip an image 180° about the vertical axis.
- Default – revert to preselected automatic option.

Measuring Images on Mobile Version

Measuring function is approximate and cannot be used for diagnostic purposes.

 Allows to measure the images in number of ways. Once tapped it calls out  measurement tool menu (marked in red). Tap the button and select one of the options from the pop-up menu. Tap the “X” button to exit the pop-up window.

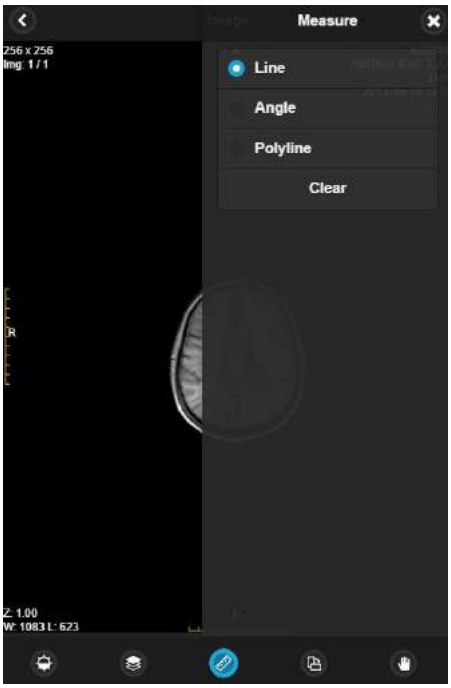


Figure 104. Measurement tools.

- Line – to measure the distance;
- Angle – allows you to display the angles;
- Polyline - to measure the perimeter of more than one line;
- Clear – deletes all measurements you have made so far.

- Tap on the measure button “**Line**“ from the list;
- Tap on the starting point from which you want to measure the distance;
- Tap on the ending point where you want to end measuring the distance;
- The distance (in millimeters, or pixels in some images) will be displayed in yellow:

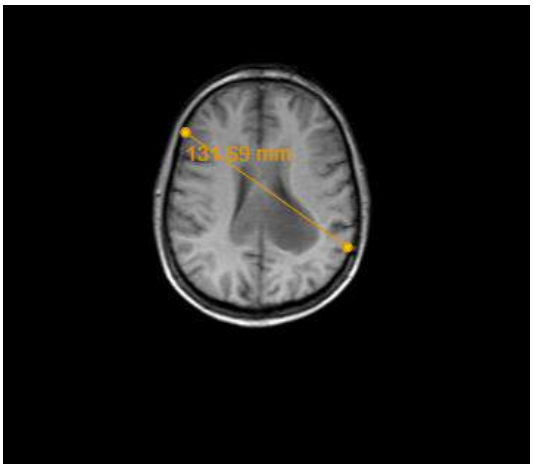
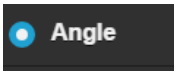
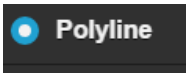


Figure 105. Line measurement.



- Tap on the measure button “**Angle**“ from the list;
- Draw intersecting lines on the image;
- Tap on the starting point where you want to start one of your lines and tap on the end of each line where you want to end your measuring;
- The result will be displayed in yellow:

Figure 106. Angle measurement.



- Tap on the measure button “Polyline“ from the list;
- Tap on the point where you want to start measuring your perimeter and move along;
- Then tap to the second, third, fourth, etc. points till you reach the last point – use double-click in order to see the result;
- The perimeter (in millimeters, or pixels in some images) will be displayed in yellow:

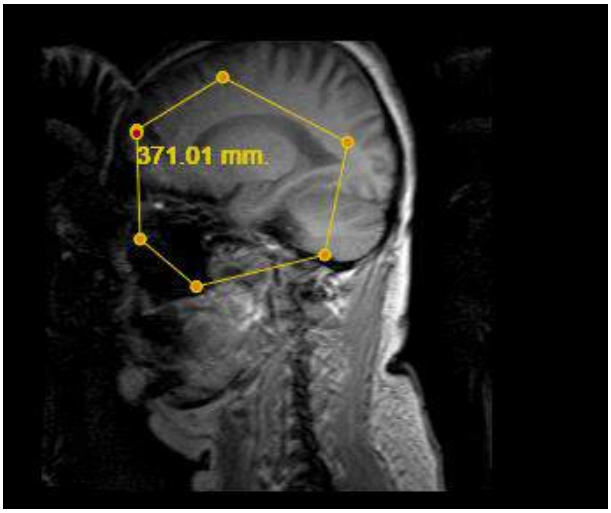


Figure 107. Polyline measurement.

To remove the measurements:

- select the image from which you want to remove all measurements
- click “**Measure**” buton
- select **“Clear”** from the pop-up window.

System menu functions on Mobile Version

You can open a system menu with functions “User settings”, “About”, “Search” and “Log out” by tapping on the right top corner icon marked in red and choose functions from the pop-up window (*Figure 108*):

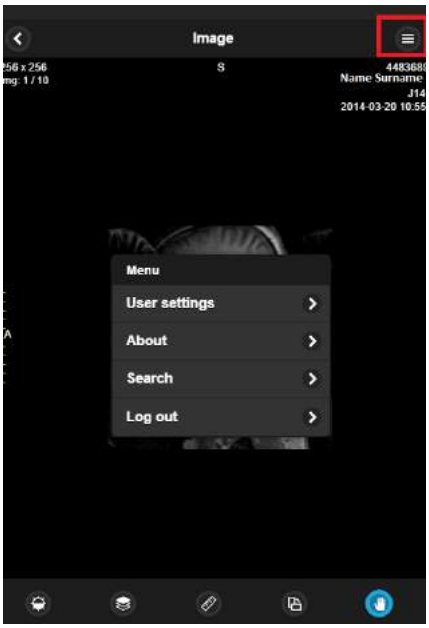


Figure 108. System menu.

Allows you to choose **view mode** (8 or 16 bit):

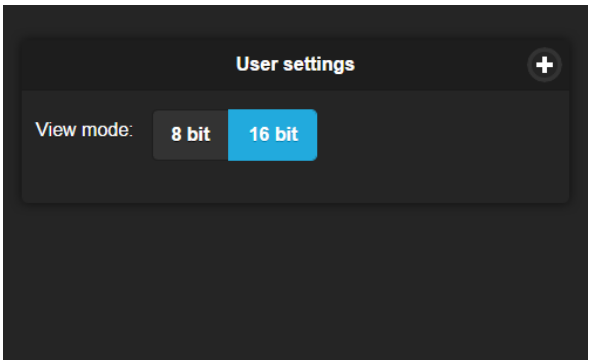


Figure 109. View mode.

Information window will display with the following information.

Information window will display:

1. Full product name;
2. Version;
3. Build date;
4. Medical device class;
5. Licensed to;

6. Concurrent connections;
7. Modules;
8. Valid to – empty if there is no termination in time;
9. Update to – date till the technical support and updates are provided;
10. Contacts – Softneta UAB contacts.

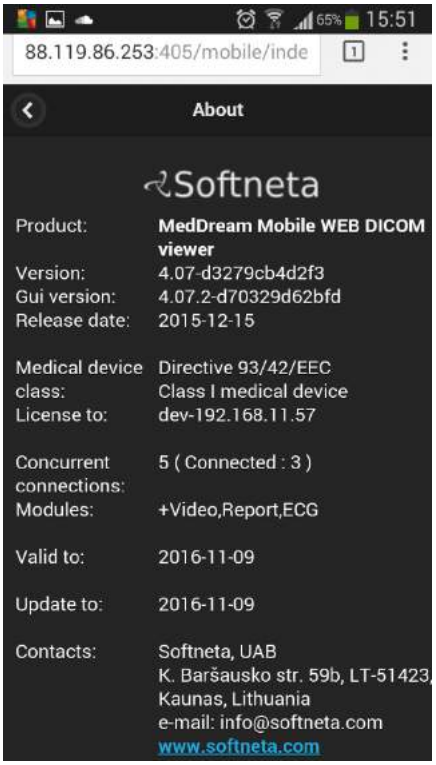


Figure 110. Information window.

Forwards you to the search window.

Log out when access is no longer needed.


Button on the left top corner enables you to return to the previous page or screen.

MedDream DICOM Viewer on HTML5 platform

Please note! “Default view” must be set for HTML platform on the setting menu of the main search window as in the following figure in order to see only HTML version:

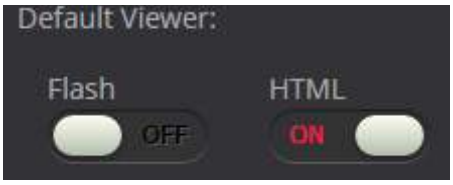


Figure 111. Default HTML viewer.

Search of studies on HTML5 platform

Search menu will help you to quickly find the studies you need. We recommend using all possible search menu options in order to get the most accurate search results and save your time.

To find a study, please follow these steps:

1. Once you login such window appears on the screen.

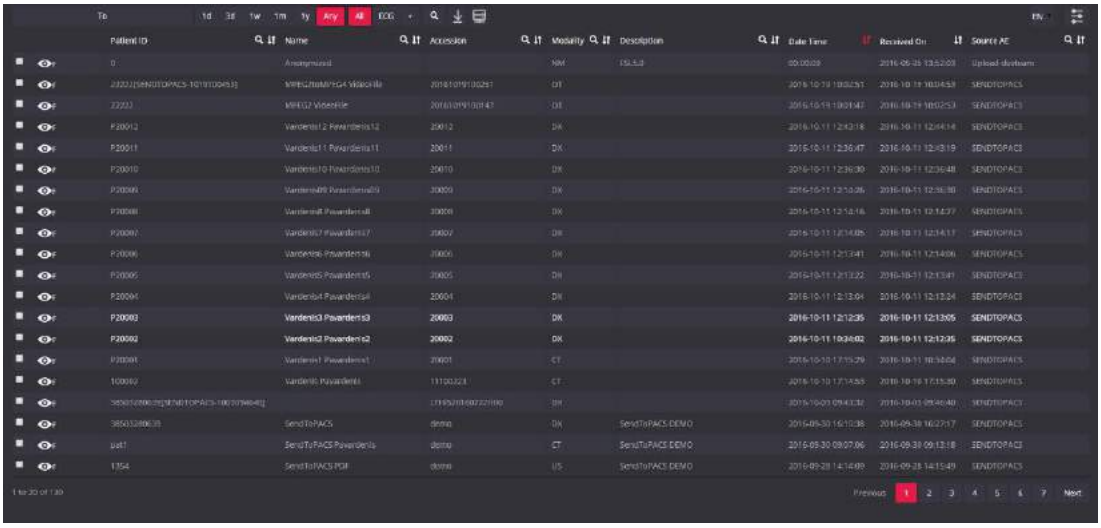


Figure 112. "Search" window on HTML5 platform.

2. Enter **search criteria** (Patient ID, Patient Name, Accession Number and Study Description). Type the information in according fields.

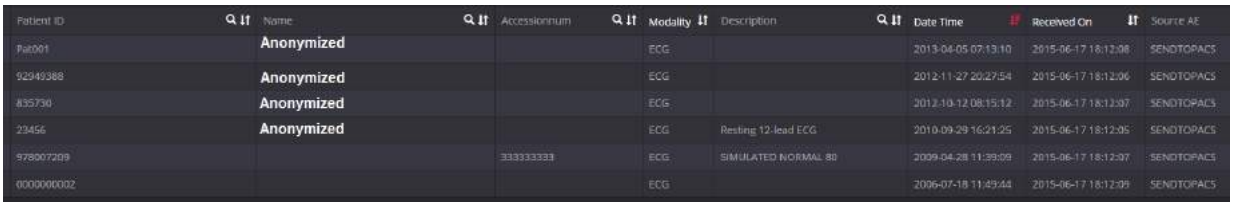


Figure 113. Search filters on HTML5 platform.

The criteria are as following:

- **“Patient ID”** - enter patient's ID number in the search field
- **“Name” -** enter the patient's name or surname in the search field

☞ It is not possible to search for Ideographic and Phonetic versions of patient names. The search is performed only against the basic version (Alphabetic), even if the image contains the other two versions and the PACS supports them.

- **"Accession"** – enter the number of accession
- **"Description"** - enter few keywords from the study description
- **"Source AE"** – application entity.

Each of the field has button. You can arrange each of them in ascending or descending order. Click once and the order of the selected field will change from ascending to descending and vice versa.

- Ascending – arranged from smallest to largest (increasing);
- Descending – arranged from largest to smallest (decreasing).

3. To specialize the search, please select **the date interval** when the study could have be done. This can be done using **two different date interval search criteria**.

→To select the study date you can choose from the super quick pick list (*Figure 114*) accordingly to the date you need your studies to be from: "**1d"** (current day), "**3d"** (3 days interval), "**1w"** (1 week interval), "**1m"** (1 month interval), "**1y**" (1 year) or "**Any"** (no specific date interval)

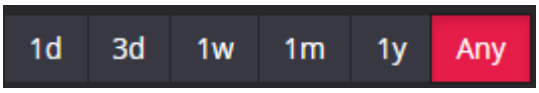


Figure 114. Search according to dates on HTML5 platform.

→ To specify the study dates click on left top corner and choose the date interval from the pop-up window (*Figure 115*).

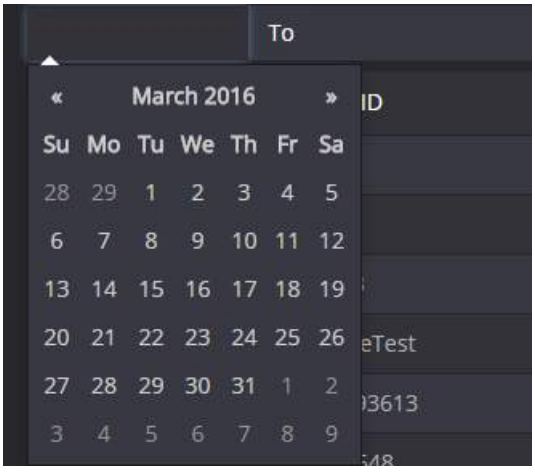


Figure 115. Date search options on HTML5 platform.

4. The search can also be specified by selecting the method which was used to obtain the study images (modalities):

- Tick the field next to one or more methods (devices) that were used in the required study (please look below for the meaning of the abbreviations)

→ CR, CT, DX, ECG, ES, IO, MG, MR, NM, OT, PX, RF, RG, SC, US, XA, XC, All. The system allows to select a few image modalities. Click the icon marked in red (*Figure 116*) and now you can add all possible methods by clicking on the modality you want to be added to the search.

Figure 116. Search according to modalities on HTML5 platform.

If you are searching for some rare modality that has no corresponding button here, try to enter its abbreviation directly into the name of "Modality" column.

Moreover, you can select all possible methods by clicking the “All” button:

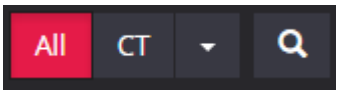


Figure 117. Modalities search: All.

Abbreviations:

CR – *Computed Radiography*

CT – *Computed Tomography*

DX – *Digital Radiography*

ES – *Endoscopy*

IO – *Ultra-Oral Radiography*

MG – *Mammography*

MR – *Magnetic Resonance*

NM – *Nuclear Medicine*

OT – *Other*

PX – *Panoramic X-Ray*

RF – *Radio Fluoroscopy*

RG – *Radiographic Imaging*

SC – *Secondary Capture*

US – *Ultra Sound*

XA – *X-Ray Angiography*

XC – *External camera photography*

ECG - *Electrocardiography*

5. After you have selected your search criteria, start the search by clicking “**Search**” icon 

6. Click on 

icon so you could see the image you want to analyze the image on HTML platform (*Figure 118*) and a new browser tab will pop up (marked in red).

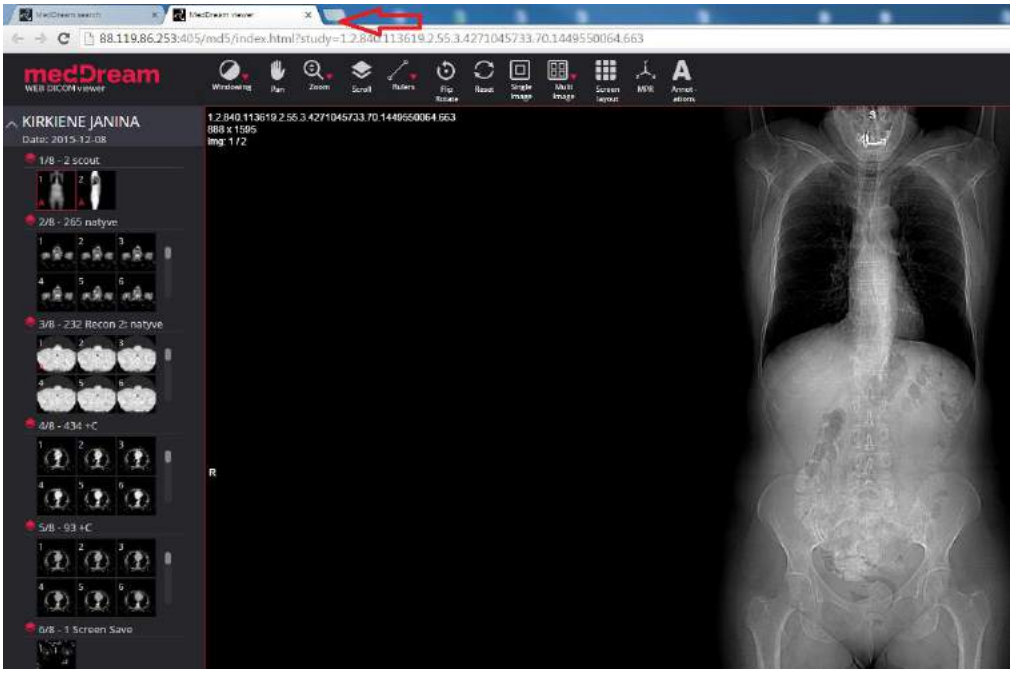


Figure 118. Image display on HTML5 platform.

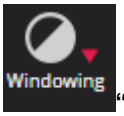
7. To view the image move the mouse cursor on the small image on the left, click the left mouse button and drag the image to the field on the right. Now you should be able to view your image.

Manipulating and analyzing images on HTML5 platform

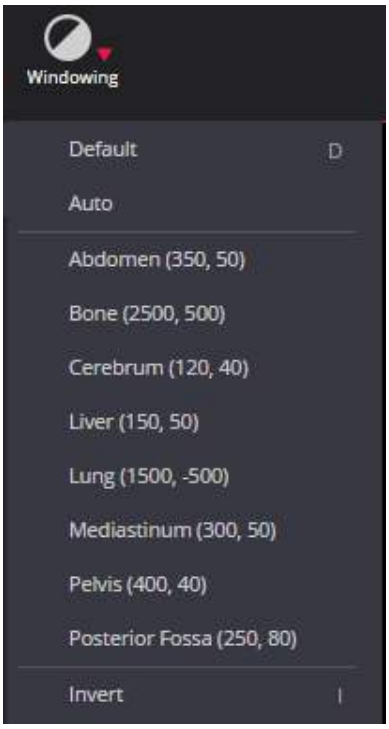
You can manage and analyze the study images according to the criteria you need:

Figure 119. Image manipulation tools on HTML5 platform.

More about each of them:



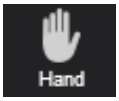
"Windowing" button is used to adjust the Level/Window (contrast and brightness) of the image. Put your finger on the screen and pan up and down to control the brightness of the image. A pop-up window appears:



You can select one of the standard contrast settings:

Default *– a preset setting with values from the image itself (if available).*
Auto *– the system analyses the image and adjusts the brightness and contrast automatically.*
Abdomen *– a preset setting for abdomen studies.*
Bone *– a preset setting for bone studies.*
Cerebrum *– a preset setting for cerebrum studies.*
Liver *- a preset setting for the liver studies.*
Lung *– a preset setting used for studying the images of the lungs.*
Mediastinum *- a preset setting for mediastinum studies.*
Pelvis *– a preset setting for pelvis studies.*
Posterior Fossa *- a preset setting for Posterior Fossa studies.*
Invert *– the user can inverse the image.*

Figure 120. Level/Window button options on HTML5 platform.



"**Hand**" button allows you to position images within the pane. This feature is especially useful when the image is larger than the pane, as it usually is after zooming in.

To move an image within the pane:

- On the Tools menu, click "**Hand**" icon
- Position the cursor over the image you want to move and click-and-drag the cursor around the pane to move the image.
- Release the mouse button to leave the image in its new position.

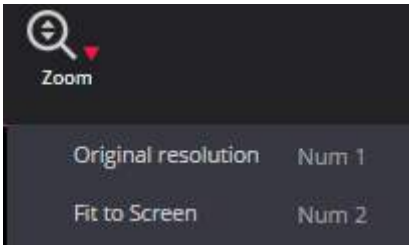
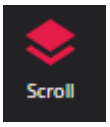


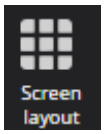
Figure 121. Resolution button options on HTML5 platform.

"Zoom" button is used to choose between **“Fit to Screen”** or **“Original resolution”** buttons**.**

- When you click **“Fit to Screen”** button, the size of the image is automatically adjusted so that the image would fill the entire screen. For example, if only part of the image is visible on the screen, choose this button to see the whole image displayed on the entire screen.
- When you click **“Original resolution”** button, the size of the image changes into original size.



Button functions as scroll bar. Once tapped it enables you to scroll through the series of images by using a vertical mouse drag gesture.



Button divides the screen into sections and allows you to drag as many images as you want to the right side of the screen. It helps in comparing images (*Figure 122*).

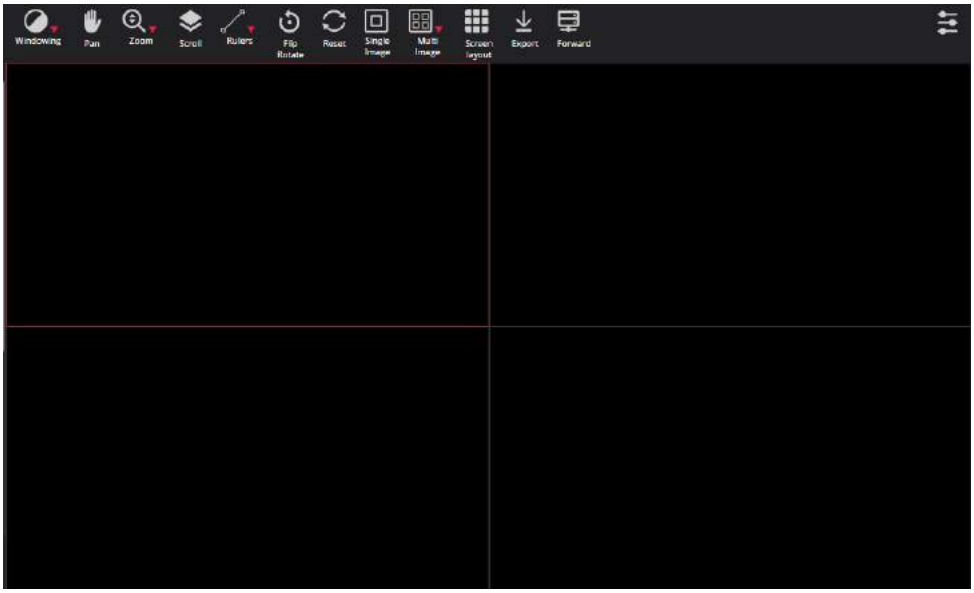
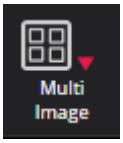


Figure 122. Comparison possibilities on HTML5 platform.



Button divides the selected section into several subsections. Once you have selected this button drag the studies to the field. The study and all the following images that you want will appear on the selected field.

Note! All the image manipulation functions affect the entire set of images opened in a multiple viewports mode (such as "Scroll", "Brightness/Contrast", "Rotate", "Pan", "Reset"). For example, if you select "Bone" contrast mode it will apply the "Bone" mode to all images that are viewed through the multiple viewports mode though the changes does not apply to the image which is not viewed via multiple viewports.

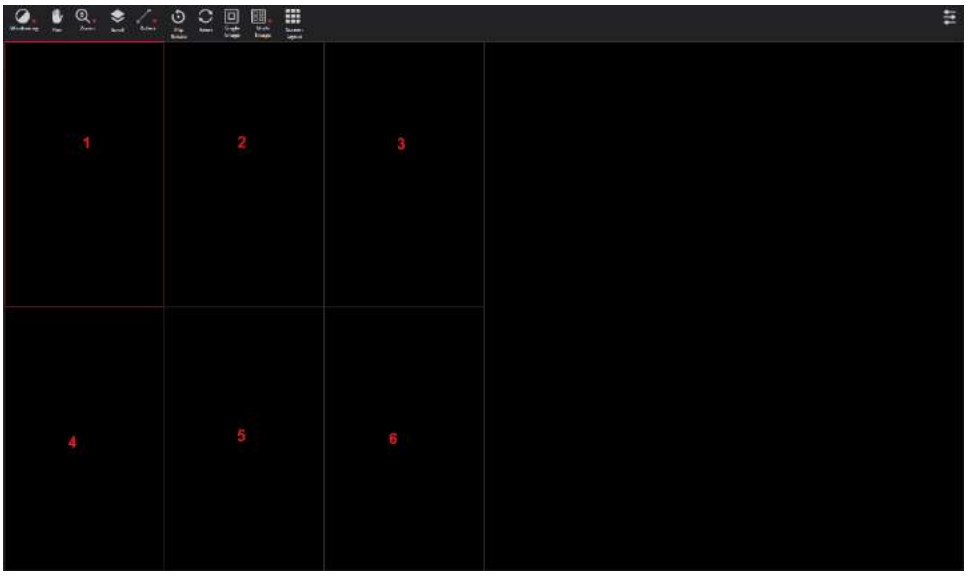
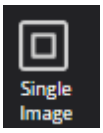
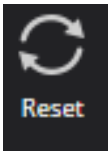


Figure 123. Multiple viewports on HTML5 platform.



Button returns the selected section to the default stage with single image on the selected screen.

Figure 124. Multiple viewports (Mediastinum view mode) on HTML5 platform.



“Reset” button is used to reset and clear any data that you have been working on.

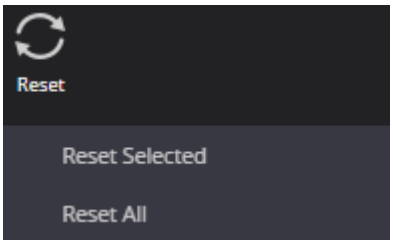
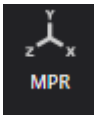


Figure 125. Reset selection on HTML5 platform.



Selecting the **MPR** view is done by clicking the MPR button in the views panel. It contains three different panels:

- Axial
- Sagittal
- Coronal
- Oblique

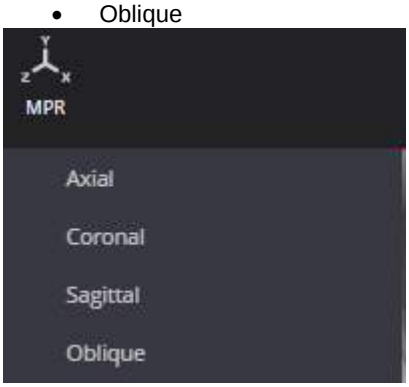


Figure 126. MPR selection on HTML5 platform.

Once you have clicked on one of the options, the pop-up window will appear. There you have to fill two input boxes:

- Start Frame: – number of the first frame of selected series;
- End Frame – number of the last frame of selected series.

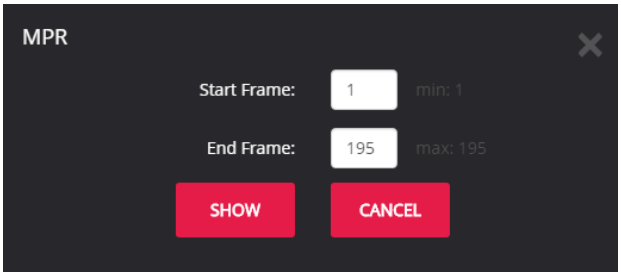
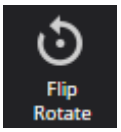


Figure 127. MPR frame selection on HTML5 platform.

User can input the range from which MPR will be calculated. After you enter the frame range, click “**Show**” and the loading will start.

Figure 128. MPR download process on HTML5 platform.

Once the loading process is done, you will be able to scroll the mouse wheel up and down over the image and see the view (axial, sagittal, coronal) you have selected.



“**Transform**” button allows you to rotate the image. Tap the button and select one of the options from the pop-up menu. Tap the “X” button to exit the pop-up window.

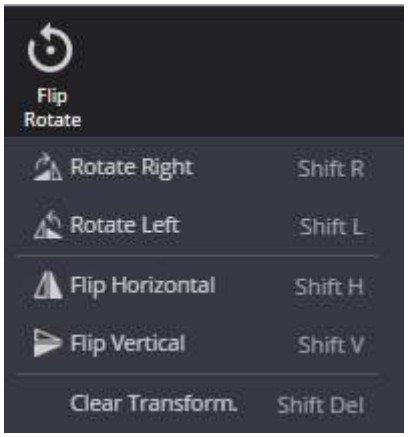
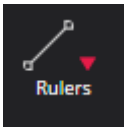


Figure 129. Transformation possibilities on HTML5 platform.

- Rotate Right – to rotate the image 90° clockwise;
- Rotate Left – to rotate the image 90° counter-clockwise;
- Flip Horizontal – to flip an image 180° about the horizontal axis;
- Flip Vertical – to flip an image 180° about the vertical axis.
- Clear Transform – revert to preselected automatic option.

Measuring images on HTML5 platform

Measuring function is approximate and cannot be used for diagnostic purposes.



Button allows you to measure the images in number of ways. The main measurement button is “**Rulers**”:

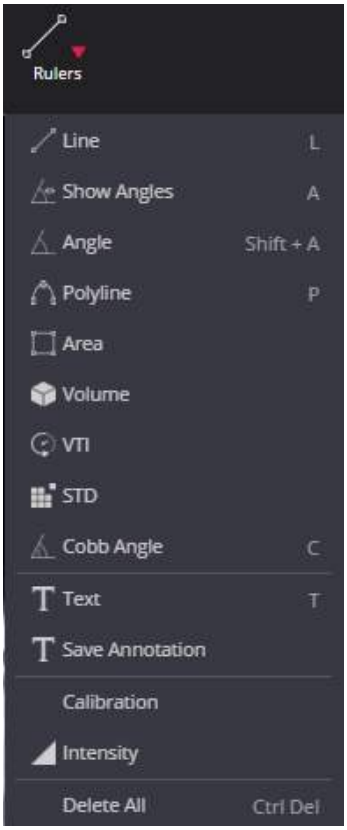


Figure 130. Measurement tools.

To measure the distance:

- click on the „**Rulers**“ button and choose „**Line**“ from the list
- place the mouse cursor on the starting point from which you want to measure the distance.
- click the left mouse button. Move the cursor to the end point and click the left mouse button once more.
- the distance (in millimeters, or pixels in some images) will be displayed in yellow:

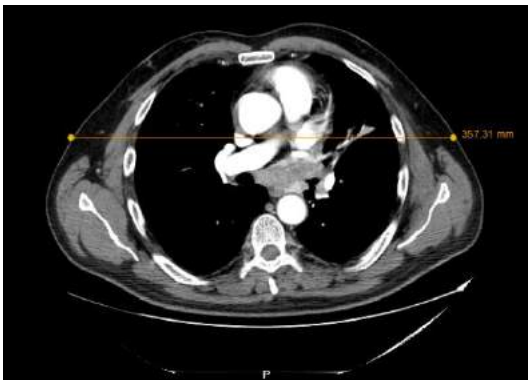


Figure 131. Line measurement.

Angle measurement.

To measure an angle:

- Position the mouse pointer on the point from which you want to measure the angle. Then click the left mouse button.
- Move the pointer to the second point (the intersection point) and click the left mouse button again.
- Then move the pointer to the end point and click the left mouse button once more.

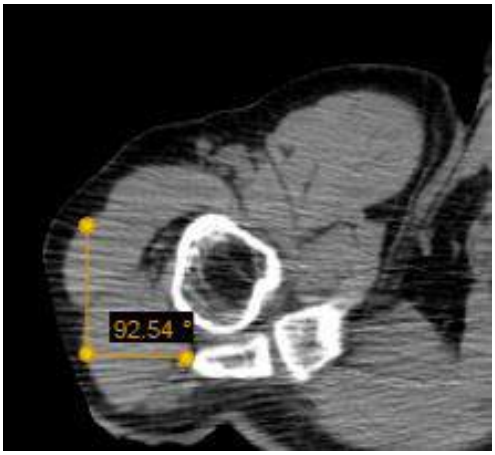


Figure 132. Angle measurement.

The **“Angle”** button is also used to measure an angle between any intersecting lines.

To display the angle measurements:

- draw intersecting lines on the image using the "Line" measurement,
- on the Tools menu, click „**Rulers**“ button,
- tick “**Show Angles**”:

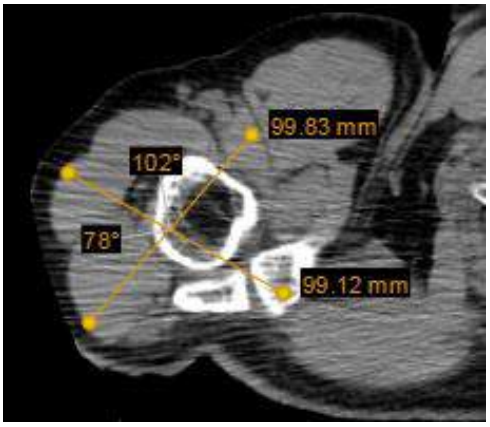


Figure 133. Angle measurement between intersecting lines.

The “**Polyline”** button is used to measure the perimeter of a region of interest.

To measure the perimeter:

- Position the mouse pointer on the point from which you want to measure the perimeter. Then click the left mouse button.
- Move the cursor to the second point (the intersection point) and click the left mouse button again.

- Then move the cursor to the third, fourth, etc. points and each time click the left mouse button again.
- Double-click once finished in order to see the result.

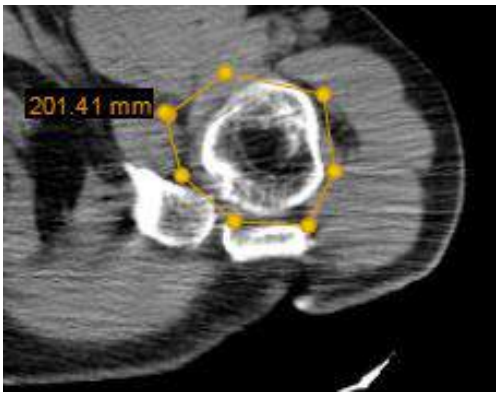


Figure 134. Polyline measurement.

The "**Intensity**" button is used to measure the density of a CT image.

To measure the density:

- select "**Intensity**" once.
- move the mouse cursor over the point you want.
- the density of the point and its coordinates should be visible next to the cursor (expressed in Hounsfield units, HU):

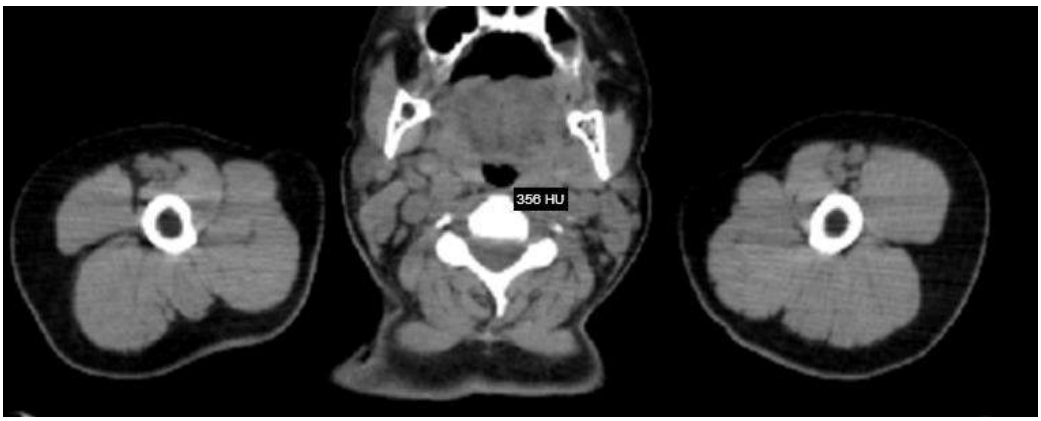


Figure 135. Intensity measurement.

The "**Area**" button is used to measure the perimeter and the area of a region of interest.

To measure the area:

- Place the mouse cursor on the point from which you want to select the region of interest. Then click the left mouse button.
- Move the cursor to the second point (the intersection point) and click the left mouse button again.
- Then move the cursor to the third, fourth, etc. points and each time click the left mouse button again.
- When you reach the last point, click the left mouse button twice.

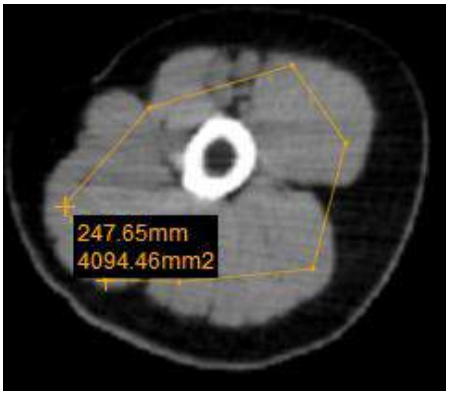


Figure 136. Area measurement.

- The area (in square millimeters) and the perimeter (in millimeters) will be displayed in yellow

The "**Volume**" button is used to measure the volume of the object.

In the illustration below, the object can be imagined as the following solid of revolution: the vertical line is the rotation axis, around which the left and the right curves are rotated half of the circle.

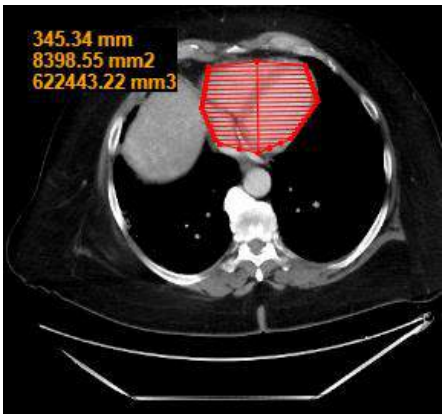


Figure 137. Volume measurement.

- Place the mouse cursor on the starting point of the rotation axis.
- then click the left mouse button (do not hold it) and move the cursor to the second point and click the left mouse button again.
- then move the cursor to the third, fourth, etc. points of one side curve and each time click the left mouse button again.
- when you reach the end point of the rotation axis, click the left mouse button **twice** in order to specify the height of the object.
- move cursor to the second, third, etc. points of another side curve and each time click the left mouse button again.
- when you reach the last point of the side curve, click the left mouse button **twice** in order finish the measurement.

The "**VTI"** *(Velocity Time Integral)* button is used to measure the distance over which the blood was ejected per interval of time.

- Place the mouse cursor on the point from which you want to measure the velocity time integral.

- Then click the left mouse button (do not hold it) and click the cursor to the second point and click the left mouse button again.
- Then move the cursor to the third, fourth, etc. points and each time click the left mouse button again.
- When you reach the last point, click the left mouse button **twice** in order to end the measurement.

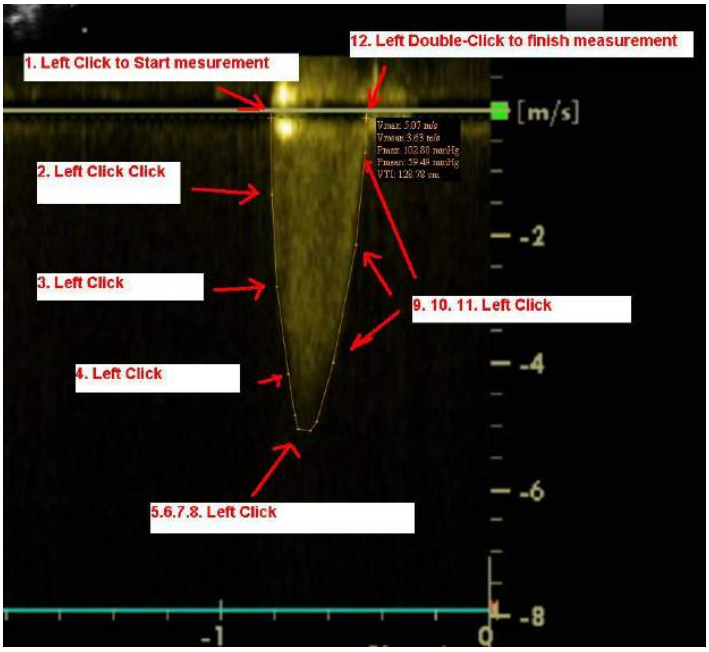


Figure 138.VTI measurement.

- The velocity time integral is measured in centimeters.

NOTE: this button is active only for the images of "US" modality.

The "**STD"** (*standard deviation*) button is used to measure average value and standard deviation of pixels in a square area of 10 by 10 mm.

- Place the mouse cursor on the place that you would like to measure STD.

Figure 139. STD measurement.

The "**Calibration"** button is used to change the scale of measurement.

- Click the Calibration button and pop-up window will appear:

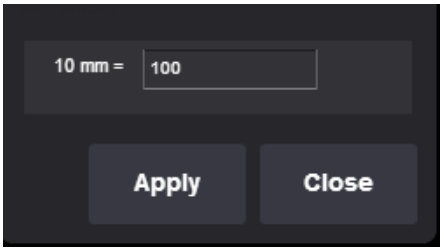


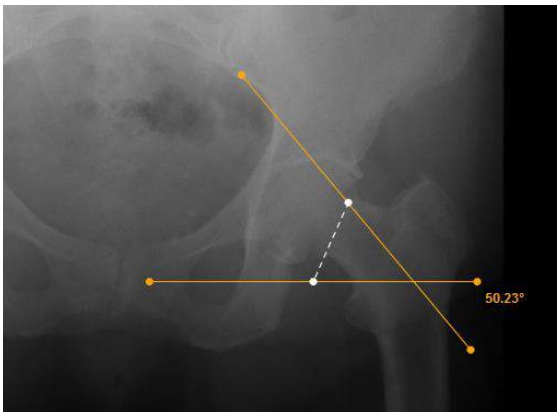
Figure 140. Calibration function.

- In this case 10mm corresponds to 100 pixels, if 0 will be left in the empty space the initial settings will be used.

The **"Cobb angle"** button is used to measure angle between lines.

To measure angle:

- select "**Cobb angle**" measurement,
- select the image,
- click on image and lines will appear in the middle of image,
- You can drag lines, line points and move all lines simultaneously by moving the white–dotted line.



The "**Save Annotation"** button is used to save the annotations of the measurements.

- Click the "Measure" icon and choose "Save Annotation" from the list.

- The following window will appear on the screen.

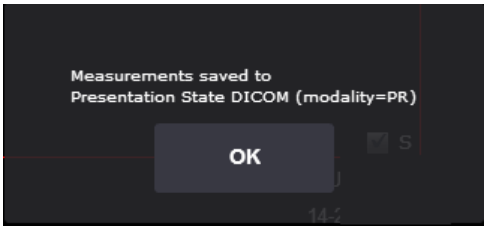


Figure 141. Save annotation.

The "**VHS**"(Vertebral Heart Scale) button is used to measure heart size and provide an accurate assessment of true cardiac enlargement. This measurement is available only with VET license.

To perform a VHS:

- select "**VHS**" measurement,
- place the mouse cursor and click the left mouse button on the point from which you want to start measuring Long Axis Point (L),
- move the cursor to the second point along the area and click the left mouse button again,
- the Long Axis Point Line will appear,
- place the mouse cursor and click the left mouse button on the point from which you want to start measuring Short Axis Point (S),
- move the cursor to the second point across the area and click the left mouse button again,
- Short Axis Point Line will appear,

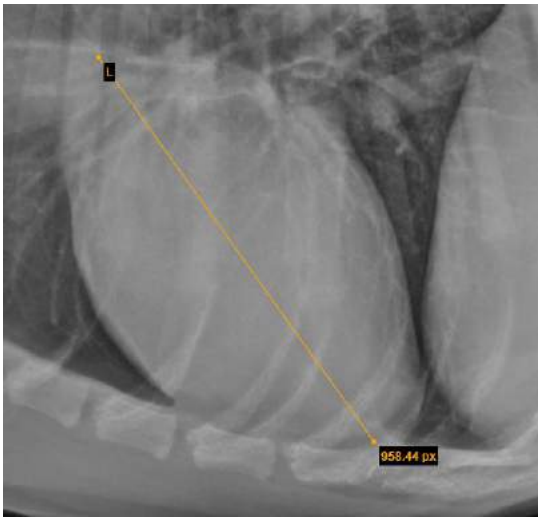


Figure 142. Long axis points.

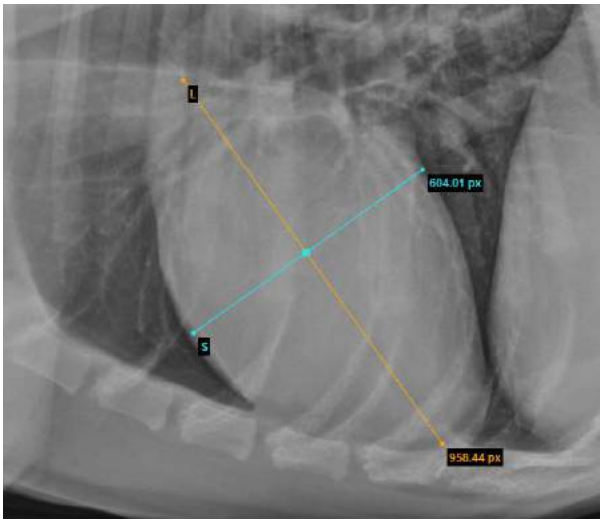


Figure 143. Short Axis points.

- In order to define SL point, place your mouse cursor and click the left mouse button on the point from which you want to measure S and L lines,
- S and L lines will appear (*Figure 144*).

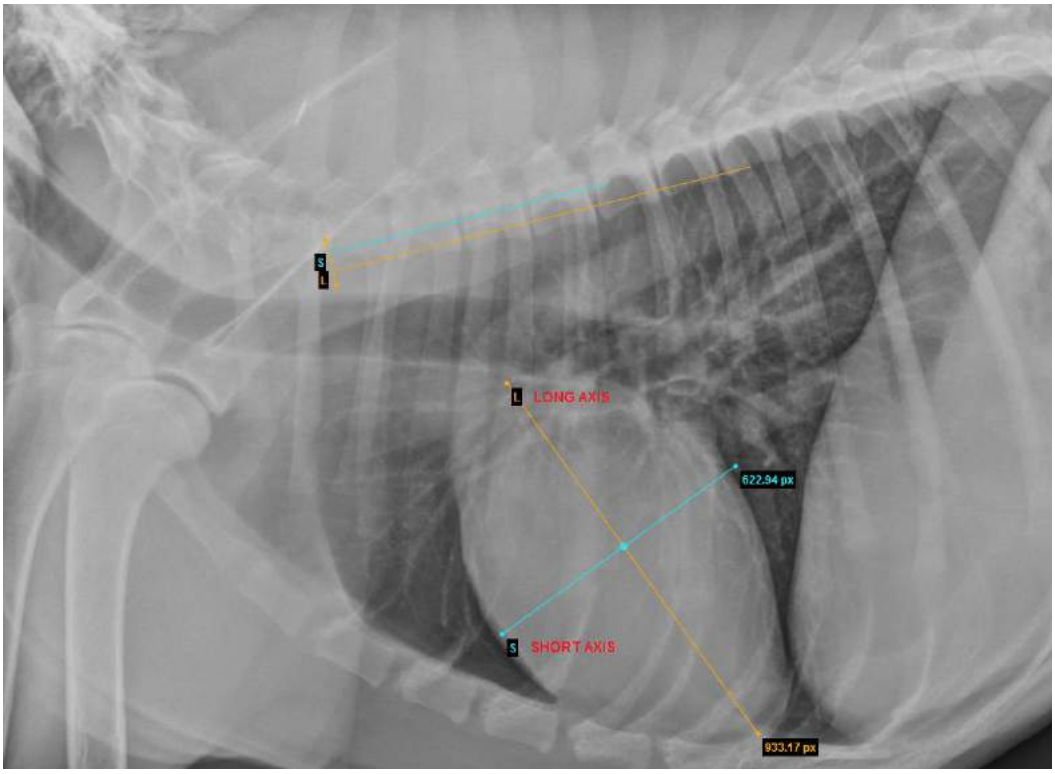


Figure 144. Demonstration of VHS measurement.

- You can rotate lines by dragging the end of the lines (dots) according to your needs. Click the left mouse button on the yellow dot (highlighted in red) and drag the line into a position where you want it to be (*Figure 145*). Middle dot (S and L line intersection point) allows to move S and L lines at the same time.

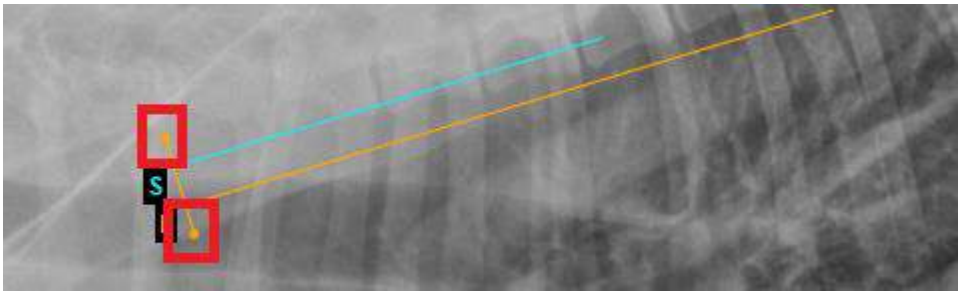


Figure 145. Rotation demonstration.

The "**Norberg Angle"** button is used to evaluate canine hips. This measurement is available only with VET license.

To measure the angle:

- Zoom in the selected image and select Norberg Angle measurement,
- Click the left mouse button over the selected image and the measurement will appear,

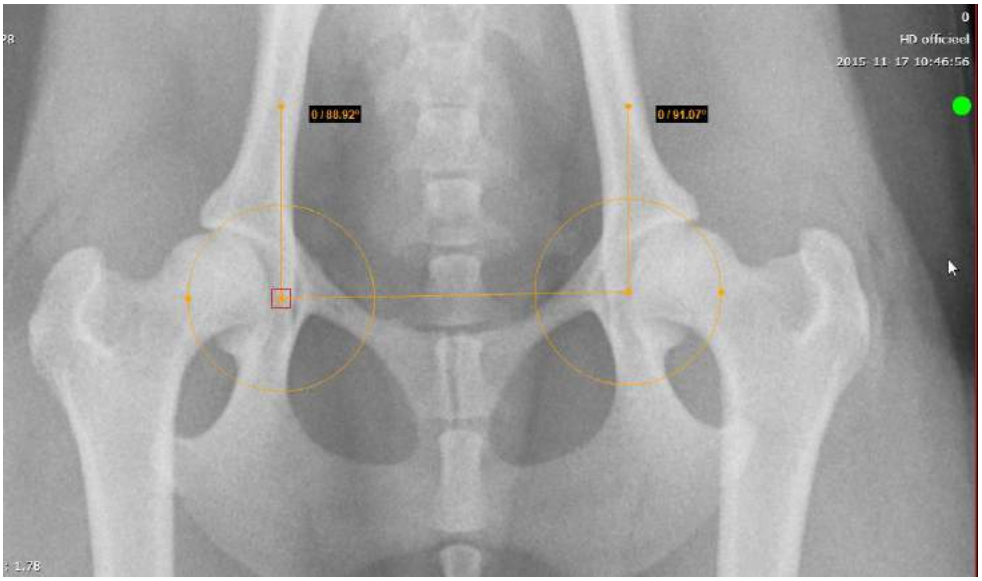


Figure 146. Norberg angle measurement.

- Move mouse cursor on the circle (or circle center) and drag to change position as you need (*Figure 147*),
- Repeat the same process with the other circle,

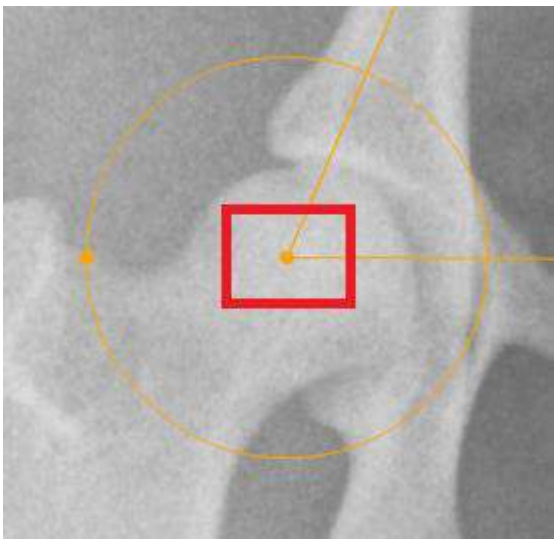


Figure 147. Center of the circle.

- In order to adjust the circle size – move your mouse cursor to the dot of the outer circle and drag it (*Figure 148*),

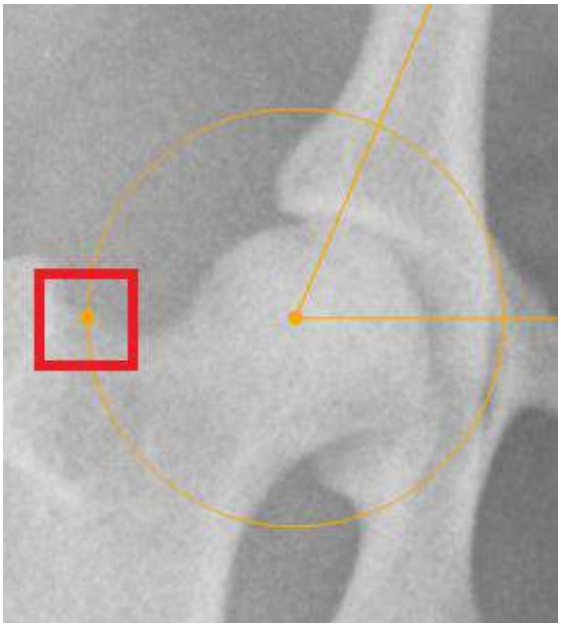


Figure 148. The outer part of the circle.

- To adjust the angles – move mouse cursor at the end of line (on the dot) and drag it,
- The angles will be calculated (*Figure 149*).

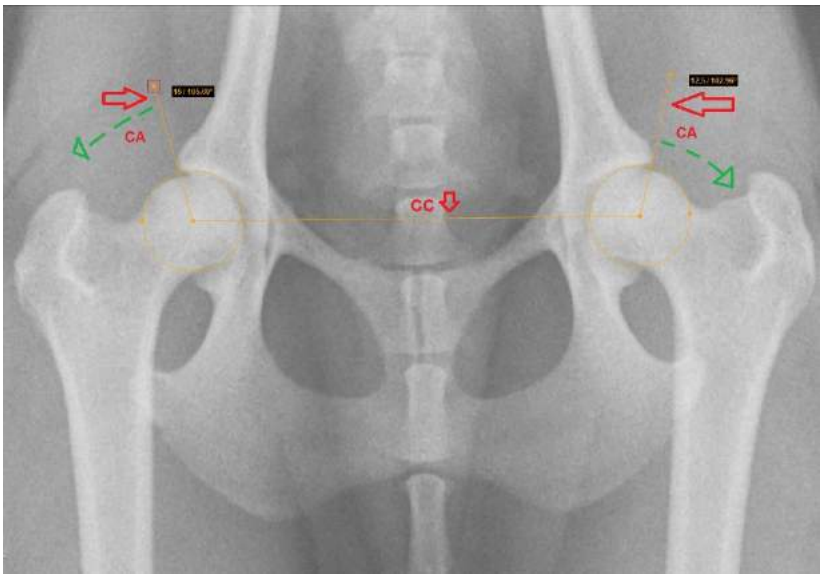


Figure 149. Demonstration of the Norberg Angle measurement.

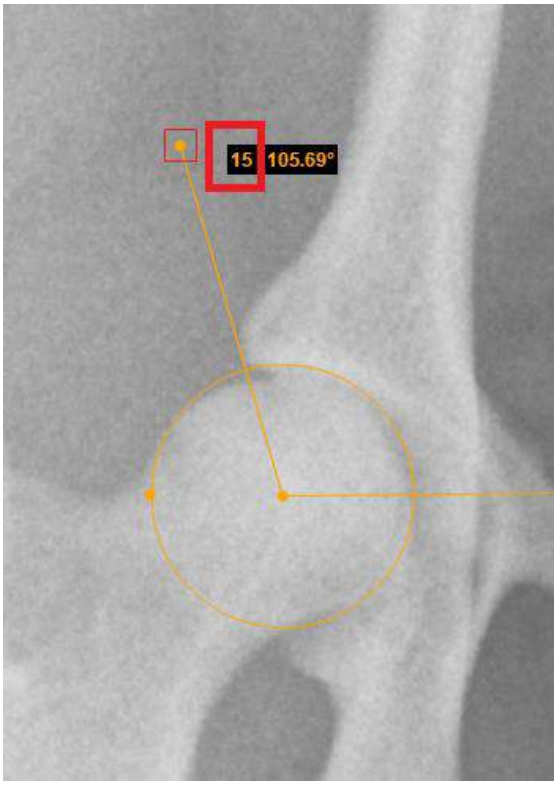


Figure 150. Norberg Angle.

The **"Delete All"** button is used to remove all measurements at once.

To remove the measurements:

- select the image from which you want to remove all measurements
- click "**Rulers**"
- select **"Delete All".**

Image localization on HTML5 platform

Overlaying reference lines allow you to indicate the location of an image slice on another image of an intersecting pane.

- Select the images that you want to compare and move them into the panes:
- Select one of the image you want to know the location of in regard to other images.
- Click the button **„Reference Line“:** 

- red lines appear in the images, indicating the location of the selected image:

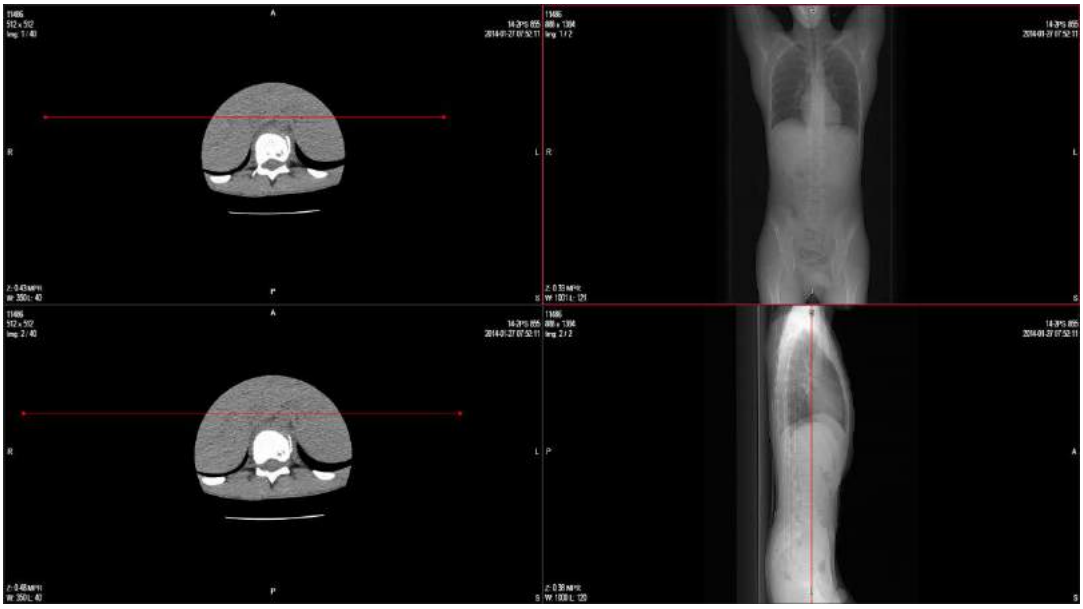


Figure 151. Reference line option on HTML5 platform.

Cine mode on HTML5 platform

Using **"Cine mode"** you may put all images into one movie. Just click on the Cine mode icon and the process will start.

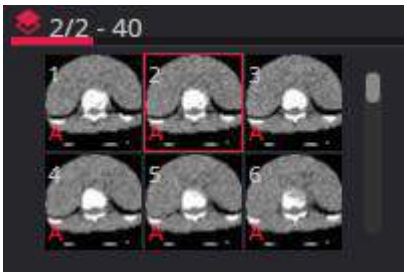


Figure 152. Converting to Cine mode on HTML5 platform.

This function allows you to play images as one movie (one image – one frame).

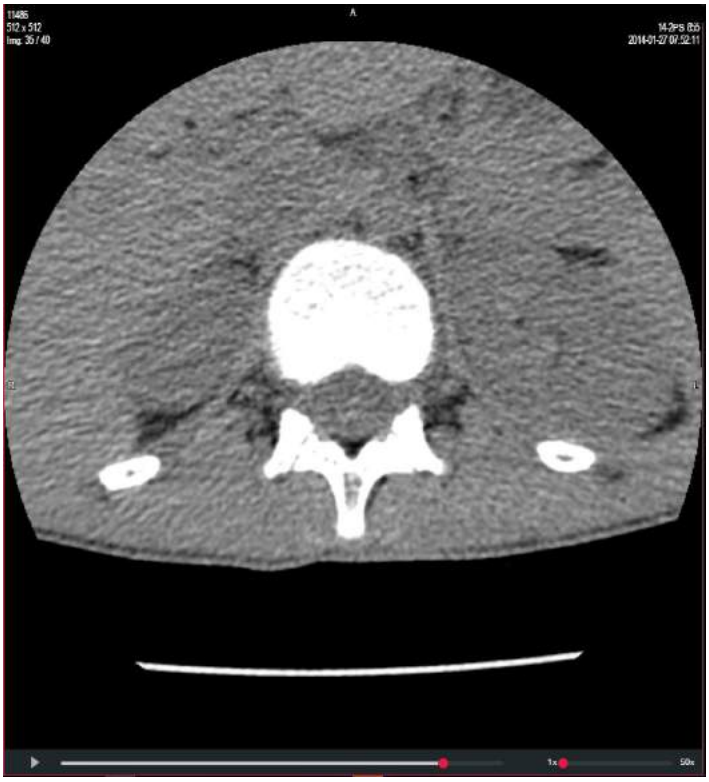


Figure 153. Playing images as one movie on HML5 platform.

To turn the Cine mode off, just open one of the images again.

Saving Annotations on HTML5 platform

Annotations can be written, viewed and saved.

Figure 154. Annotation mark.

To **write annotation**:

- once you have made any of the measurements or manipulations of the study image, you will be able to write an annotation.
- move your mouse cursor to the upper toolbar and select icon “Rulers”.
- click on the icon “Rulers”, then select **“Text”** from the list.
- select the point where you want to write an annotation text.
- click the left mouse button on the point you have selected.
- annotation text window will appear:

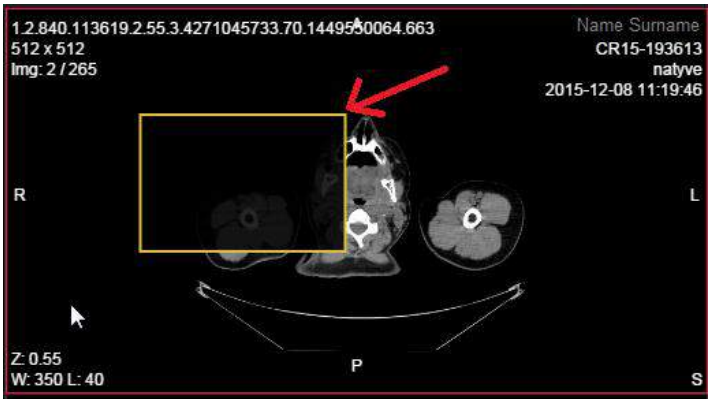


Figure 155. Annotation window.

- double-click the left mouse button on the annotation text window and now you should be able to write an annotation.
- write an annotation for your study image:

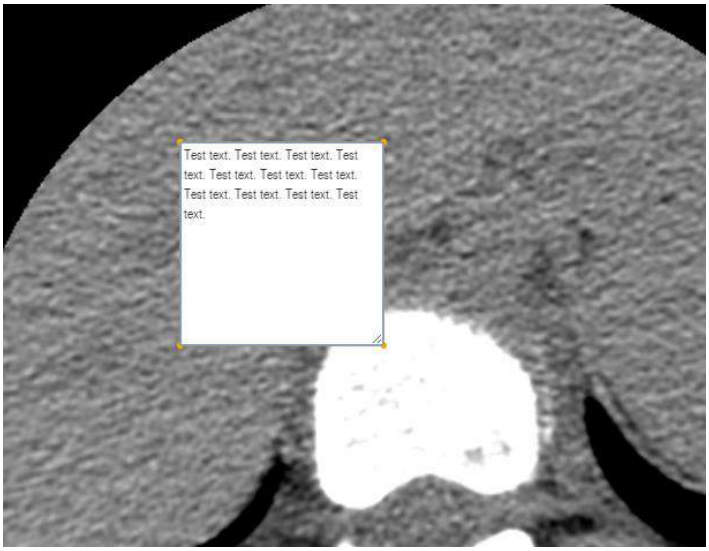


Figure 156. Annotation text.

To **save annotation:**

- once you have written an annotation text you will be able to save it.
- move your mouse cursor to the upper toolbar and select icon “Rulers”.
- click on the icon “Rulers”, then select **“Save Annotation”** from the list.
- annotation saving window will appear:

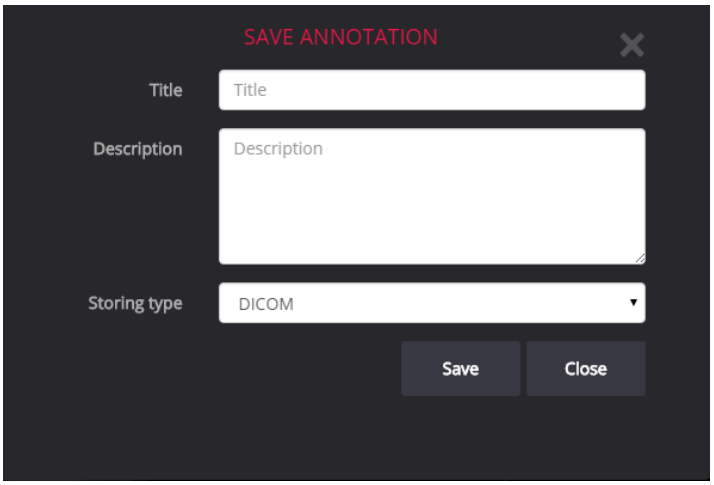


Figure 157. Save annotation window.

- system opens new annotation form. The following information can be filled:

  - title (required);

  - description;

  - storing type: DICOM, JPEG.
- enter the title and description if needed.
- click **“Save”** annotation.
- system saves annotation with the following information:

  - title;

- description;

- any drawn measurements;

- written text.

- once the annotation has been saved, the annotation mark will appear next to the study image (*see Figure 154*).

To view annotation:

- if there are several annotations, user can choose which one to review.
- in order to view the annotation, drag and drop the study image (the one that has the annotation mark) to the main screen and the annotation icon will appear on the toolbar:

Figure 158. Annotations icon on HTML5 platform.

- move your mouse cursor to the **"Annotations"** icon.
- click on the icon and choose an annotation from the list:

Figure 159. List of annotations on HTML5 platform.

- click on the annotation you have chosen to view and the saved annotation will appear on the screen with an information that has been saved previously (text and measurements in this case):

Figure 160. View annotation on HTML platform.

Export and Forward on HTML5 platform

The button “**Forward**” is used to send the selected study to the remote device.

To **Forward** the study:

- select or open the study you would like to send and click “**Forward**” 

- the forwarding window appears:

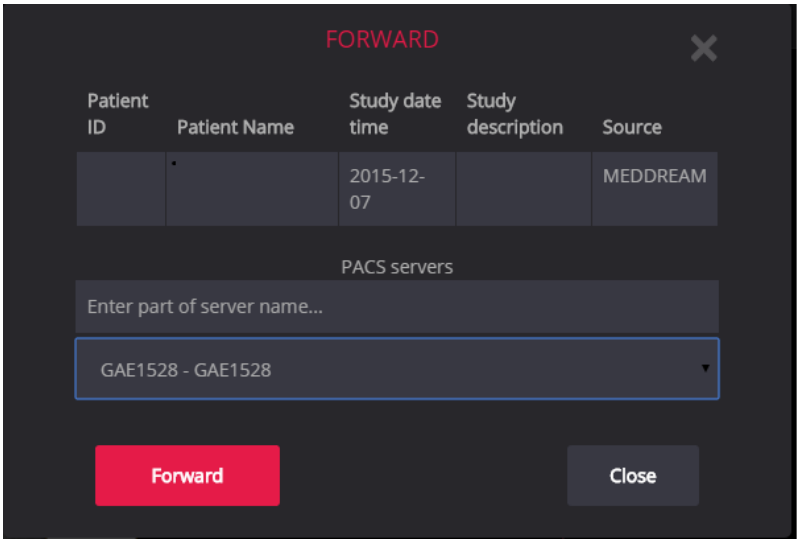
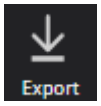


Figure 161. Study forwarding on HTML5 platform.

- choose a device from the list;
- click “Forward”.

To **Export** the study (to burn it on a CD/DVD or save it on your computer):

- select or open the study that you want to write on the CD or DVD and click “**Forward**”: 

- the export window appears (see next page):

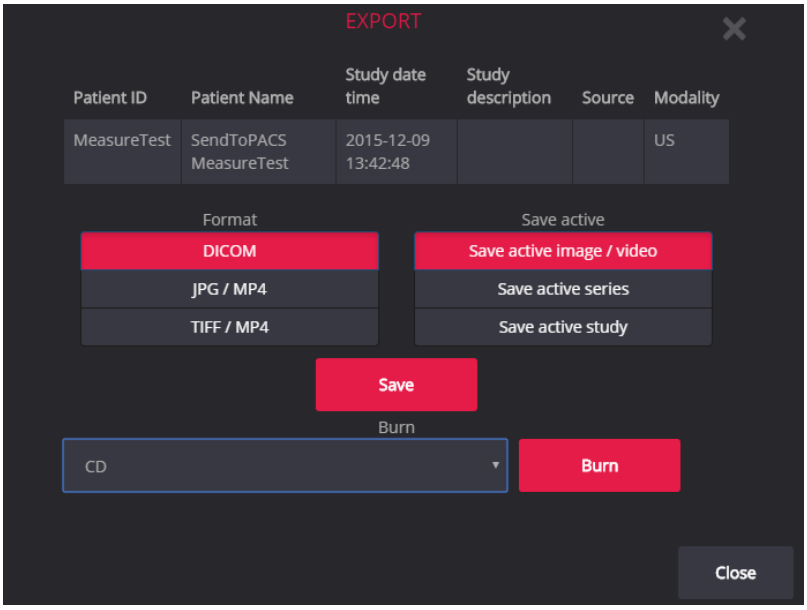


Figure 162. Export menu on HTML5 platform.

To **Export** the study (**to burn it on a CD**):

- choose CD, DVD or Unlimited. (Splitting into volumes is implemented only under PacsOne.)
- click “**Burn**”.

After a while two buttons "Download ISO" and "Burn Now" will appear for every created volume. Click "Download ISO" in order to download a disk image with the .iso file extension, and burn it with your favorite CD/DVD burner software. Click "Burn Now" if you have installed a corresponding product by Softneta, MedDreamBurn; then a third–party CD/DVD burner will start automatically.

To **Export** the study (**to save its archive**):

- choose the format, then select to save an image, a series of images or an active study.
- click “**Save**” and choose a folder where you prefer to save the images in your computer. Click **“Save”** again.

ECG module on HTML5 platform

This module allows you to view DICOM ECG wave data.

☞ This module can be used while MedDream is in demo mode; in the commercial mode it is licensed separately, therefore existing customers will need an updated license.

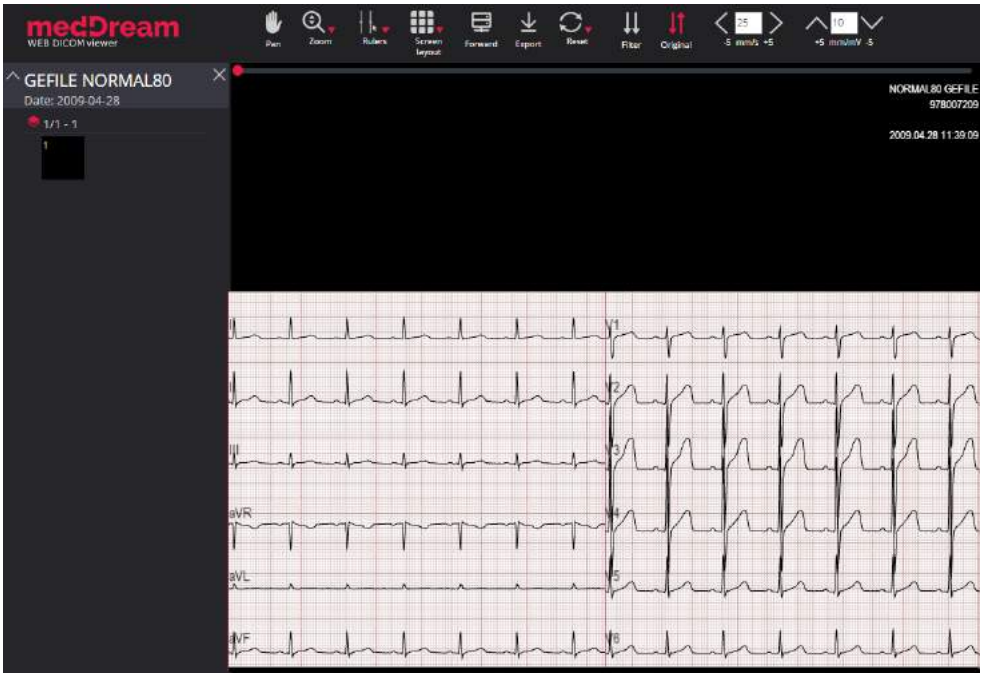


Figure 163. ECG view on HTML5.

ECG behavior is different. Measurement tools are changed into ECG measurement tools.

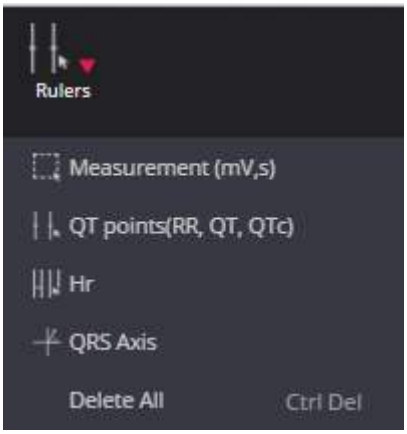


Figure 164. ECG measurements on HTML5.

- Image manipulation buttons are disabled.

The “**Measurement**” button is used to measure fragment length in seconds, mV and calculate BPM.

To measure:

- Select “Measurement”.
- Move the mouse cursor on the point you want.
- Click down and move mouse over an ECG wave.

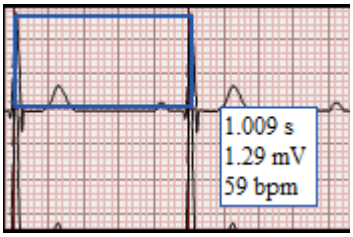


Figure 165. Measurements

The „**QT points**“ button is used to measure wave intervals RR, QT and QTc.

To measure:

- Select “QT points”.
- Move the mouse cursor on the point you want to set Q point and click.
- Move the mouse cursor on the point you want to set T point and click.

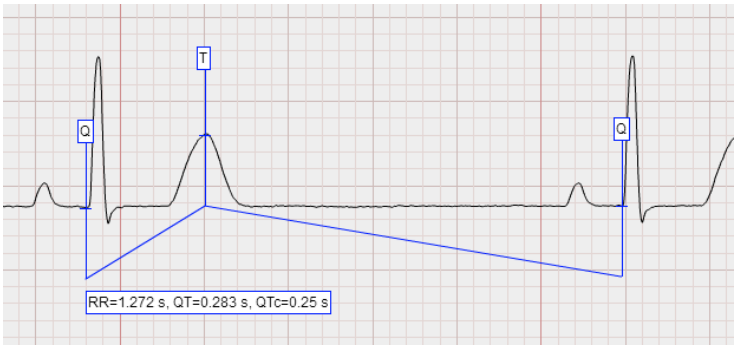


Figure 166. QT points.

- Move the mouse cursor on the point you want to set last Q point and click (double click also works).

The button “**HR**“ is designated to measure heart rate:

Figure 167. HR measurement tool.

- Select “HR“ measurment tool;
- Move the mouse cursor on the point you want to set R point – click once left mouse button;
- Move the mouse cursor on the point you want to set next R point –click once left mouse button;
- Now you can compare given interval with other R points.

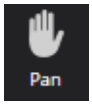
The „**QRS Axis**“ is used to measure cardiac interventricular partition and ventricular depolarization spreading.

Figure 168. QRS Axis measurement tool.

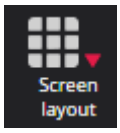
- Select „QRS axis“ measurement tool;
- Move the mouse cursor on the point you want to start your “QRS” point, “Q” - click once left mouse button;
- Move the mouse cursor on the point you want to end your “QRS” point, „S“ point - click once left mouse button;

Change horizontal scale (mm per second).

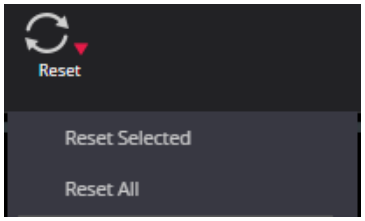
Change vertical scale (mm per mV).



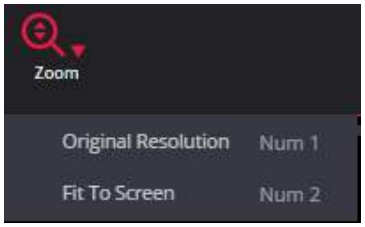
Button to adjust ECG data position.



You can choose how many panes with study images there will be in the window. You can choose from one to nine panes with different images.

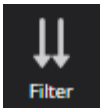


“Reset” button is used to reset and clear any data that you have been working on.



Button to adjust ECG data zoom.

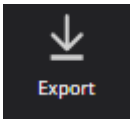
- When you click **“Fit to Screen”** button, the size of the image is automatically adjusted so that the image would fill the entire screen. For example, if only part of the plot is visible on the screen, choose this button to see the whole ECG plot displayed on the entire screen.
- When you click **“Original resolution”** button, the size of the image changes into original size.



“**Filter**” function is used for the following:

- trims the edges of unnecessary points (points to the first spike that has no importance).
- trims high and low frequency signals applying low-pass and high-pass frequency filters under the “Filter Low Frequency“ (003A,0220) and “Filter High Frequency“ (003A,0221) tags.
- Eliminates baseline wandering interference.
- filters out specified frequency signals adjusting band-stop filter by “Notch Filter Frequency” (003A, 0222) tag.

“**Original**” function is used to reset and clear ECG to the previous original state.



To export the study (to burn it on a CD):

- choose CD, DVD or other volume size. (Splitting into volumes is currently supported only under PacsOne.)
- click “**Burn**”.

After a while two buttons "Download ISO" and "Burn Now" will appear for every created volume. Click "Download ISO" in order to download a disk image with the .iso file extension, and burn it with your favorite CD/DVD burner software. Click "Burn Now" if you have installed a corresponding product by Softneta, MedDreamBurn; then a third–party CD/DVD burner will start automatically.

To export the study (to save it):

- choose the format, then select to save an image, a series of images or an active study;
- click “**Save**” and choose a folder where you prefer to save the images in your computer. Click **“Save”** again.

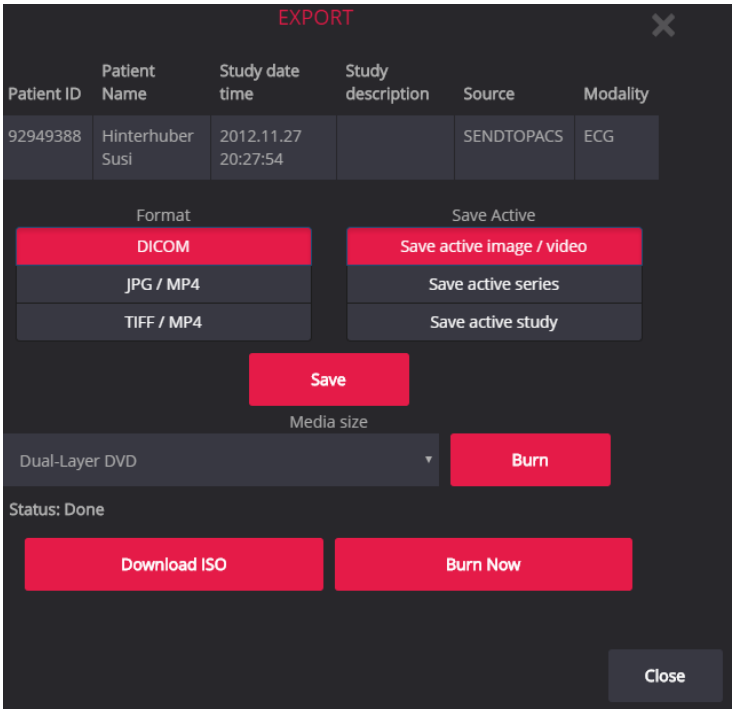


Figure 169. Export function.

 Button allows you to forward the selected images. Click on the icon and the selected images will be exported.

- click on the icon and the pop-up window will appear:

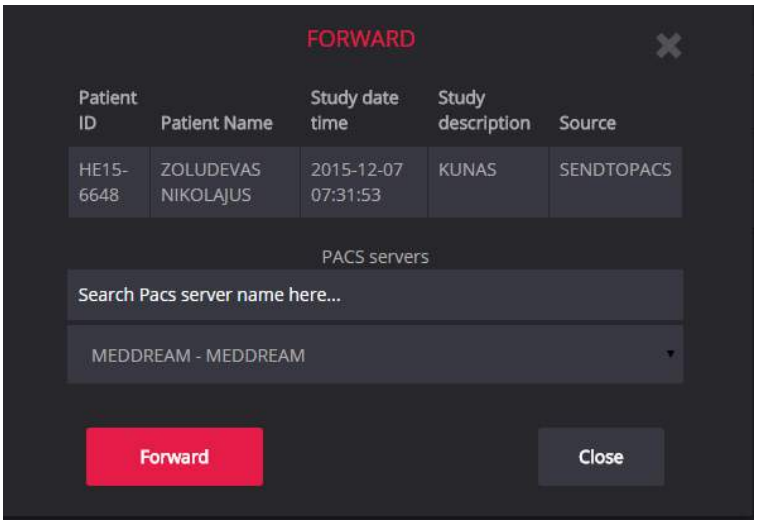


Figure 170. Forward function.

- choose a device from the list where you want to forward your study or type it in a search box to make it easier and faster.
- click **Forward** to initiate the process.
- possible status: failed or successful.

System menu functions on HTML5 platform

You can open a system menu with functions “About” and “Log out” by tapping on the right top corner icon marked in red and choose functions from the pop-up window (*Figure 171*):

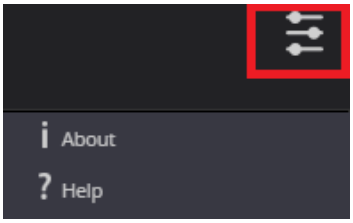
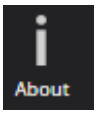


Figure 171. System menu.



Information window will display with the following information.

To close the window click on 

or  icons.

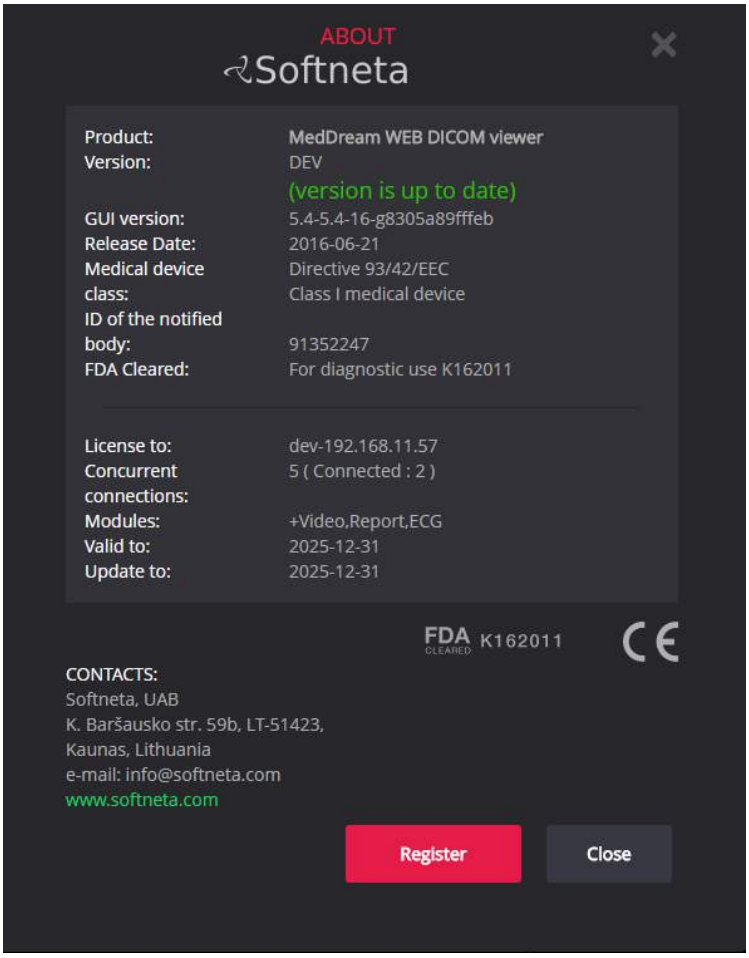
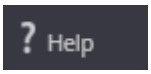


Figure 172. Information window on HTML5 platform.

Information window will display:

1. Full product name;
2. Version;
3. GUI version;
4. Release date;
5. Medical device class;
6. ID of the notified body;
7. License to;
8. Concurrent connections;
9. Modules;
10. Valid to – "-" if there is no termination in time;
11. Update to – date till the technical support and updates are provided;
12. Contacts – Softneta UAB contacts.



button forwards you to the user manual of MedDream WEB DICOM Viewer.

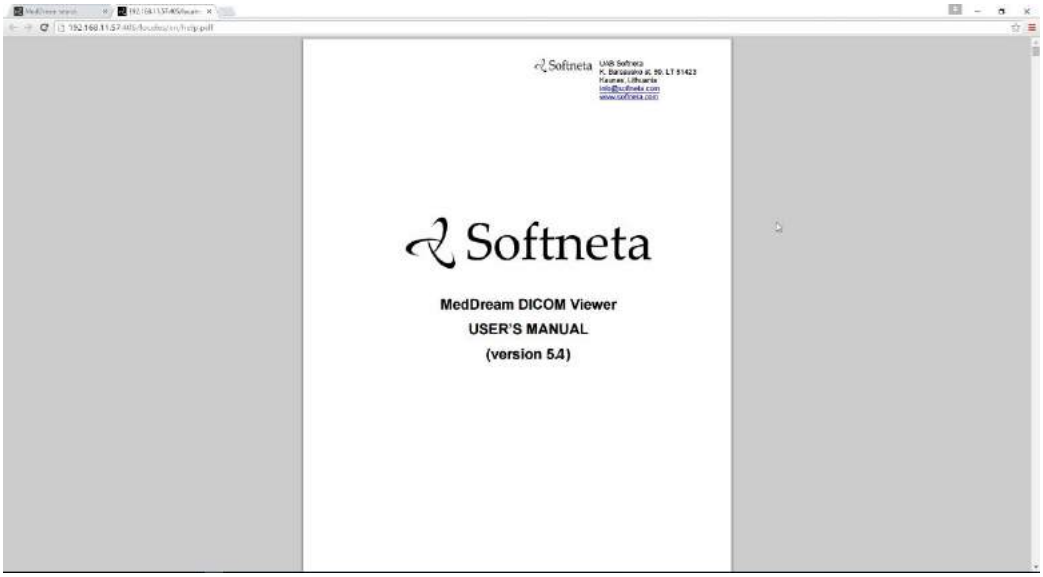


Figure 173. User manual.

Report module

Complete report editing or printing of the study are available by clicking the button on the study header in the Flash Viewer.

Note: This module can be used while MedDream is in demo mode; in the commercial mode it is licensed separately, therefore existing customers will need an updated license.

Figure 174. An icon of a filled report.

It will open a report window:

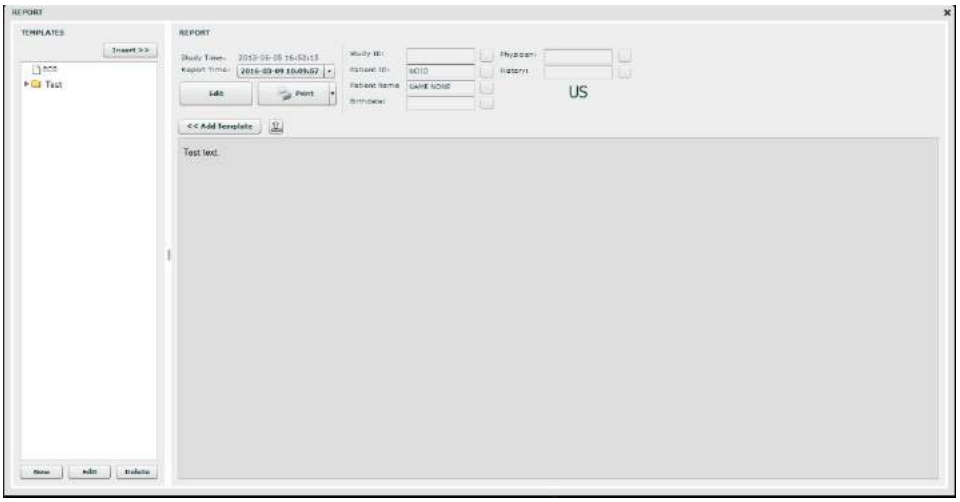


Figure 175. Filled report.

In the Report window you may edit and print the study report. The following buttons are used in order to:

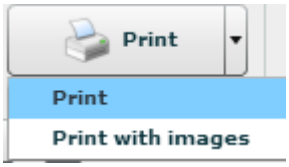
Insert a template. The button is active only in “Edit” mode. After clicking “Insert” button, you are asked to confirm the action as the entire text will be replaced.

Add a template to the list. Once you are satisfied with the content, you can save it as a template (either existing or new one).

Save a report. “Save” button changes to “Edit” button once the report has been saved.

Write a report (edit mode).

Insert the nearby information into the annotation.



Print just the text or including all images.

Open an empty form of a template.

Enable editing of a selected template.

Delete the selected template.

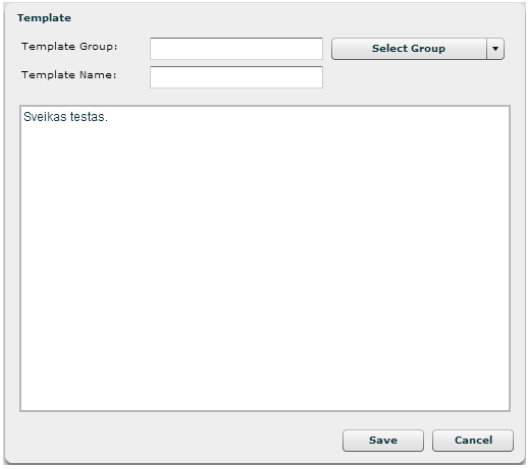


Figure 176. Template.

To close the Window.

SR view

SR view enables to view structured reports.

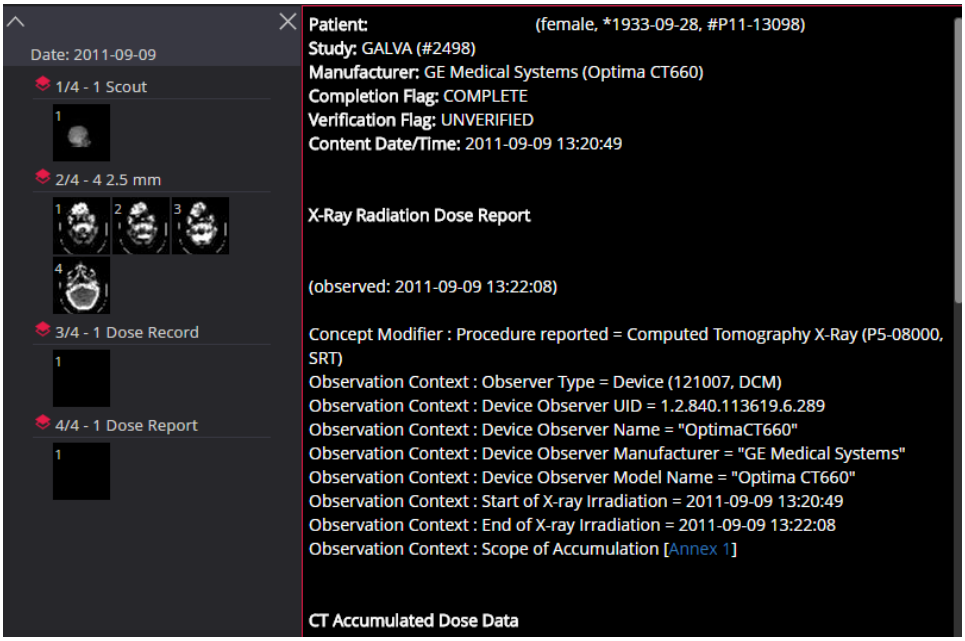


Figure 177. SR window on HTML5 platform.

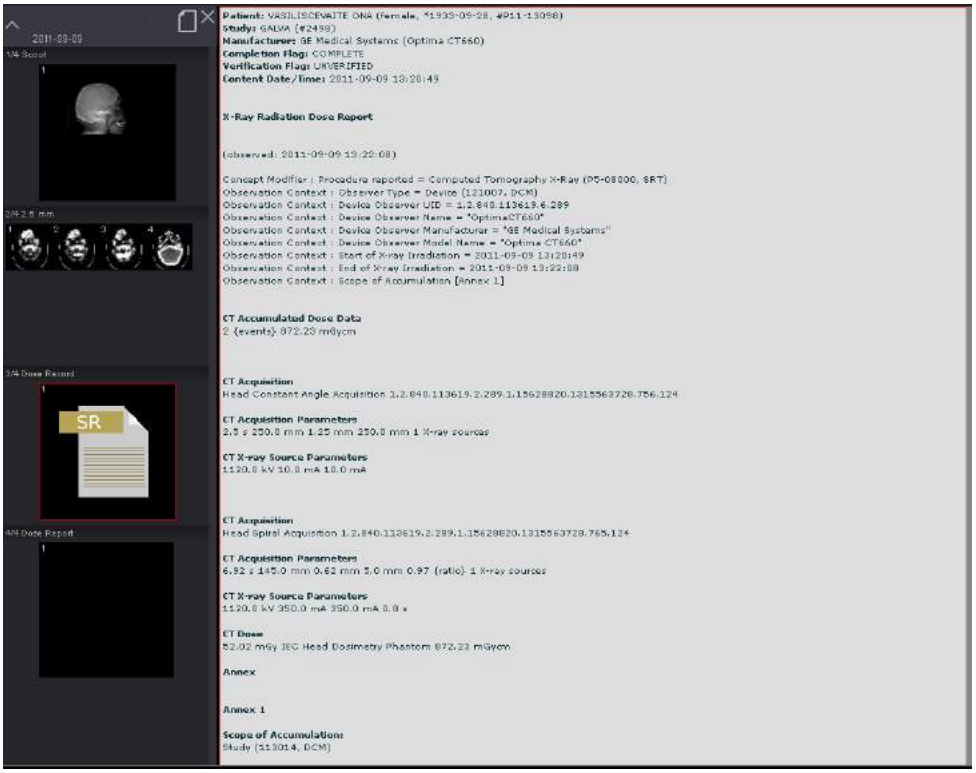


Figure 178. SR window on Flash platform.

SR window displays standard DICOM Structured Reports.

PDF view

PDF view enables to view PDF files encapsulated in DICOM format.

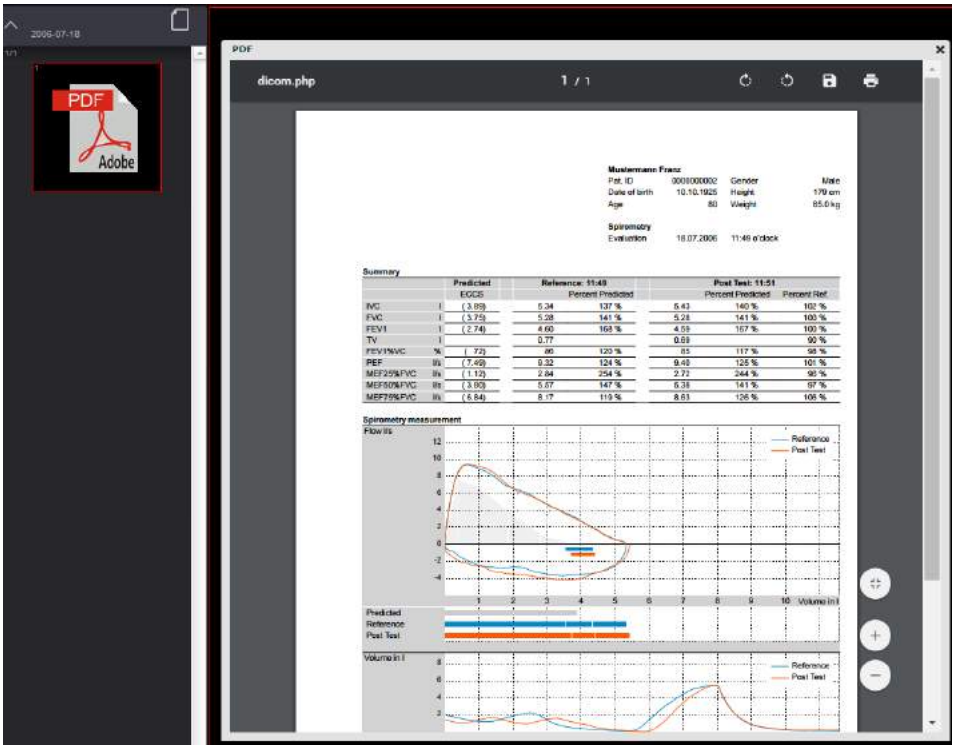


Figure 179. PDF window on Flash platform.

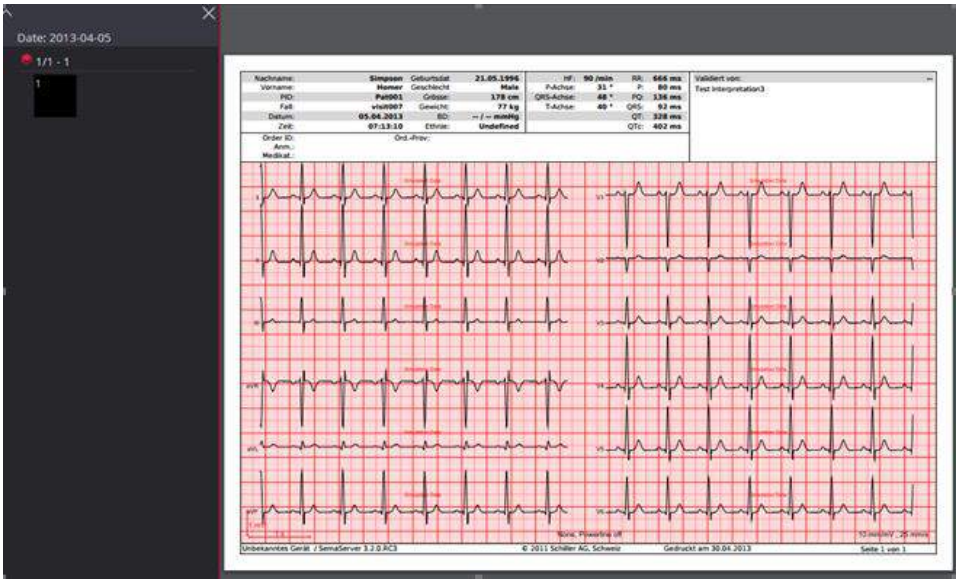


Figure 180. PDF window on HTML5 platform

PDF window displays a standard PDF reader. Some Web browsers have built-in readers, in other cases the workplace needs additional software like Adobe Acrobat Reader.

Video view

Software enables to view video files, MPEG2 and MPEG4 (H.264), encapsulated in DICOM format.

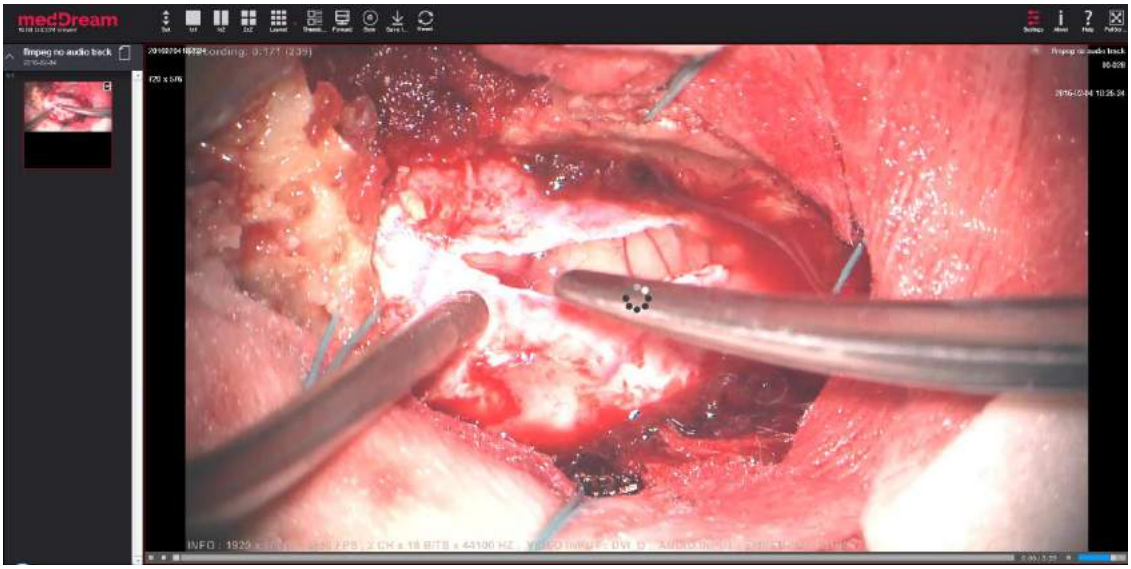


Figure 181. Video player.

Video is played with the standard video player available.

License registration

This allows activating the software for legal use.

As a notification about the DEMO version appears, click the “Register” button. The registration button also appears in the Information window. The button is displayed **only for administrators in the Search window and in the Flash viewer**.

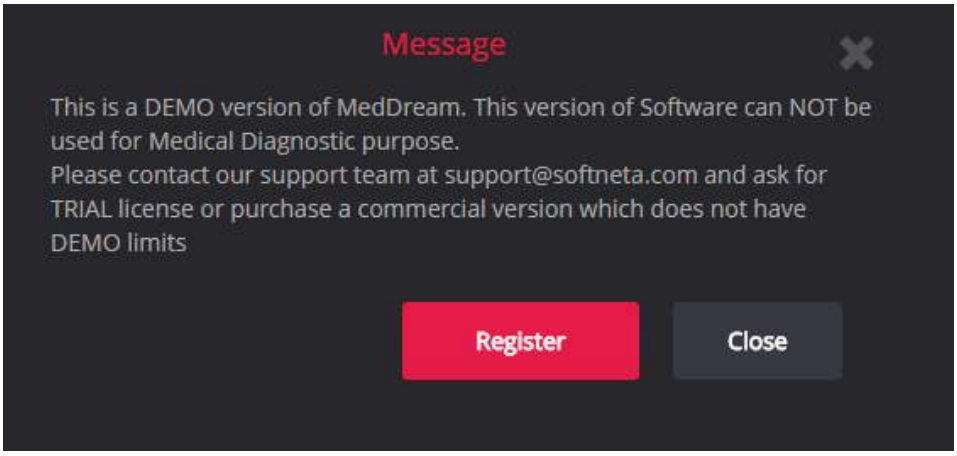


Figure 182. Demo notification on HTML5 platform.

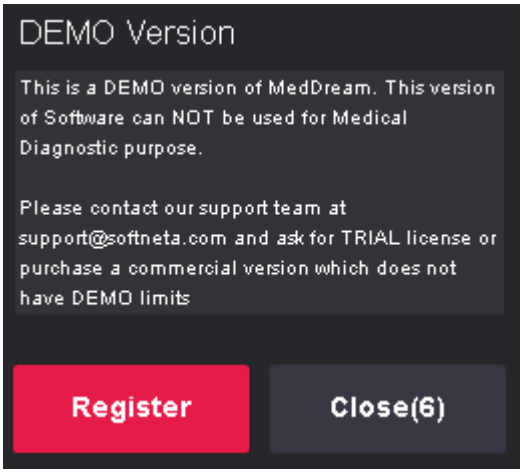


Figure 183. Demo notification on Flash platform.

The registration window will appear. Fill in the form and click the “Register” button.

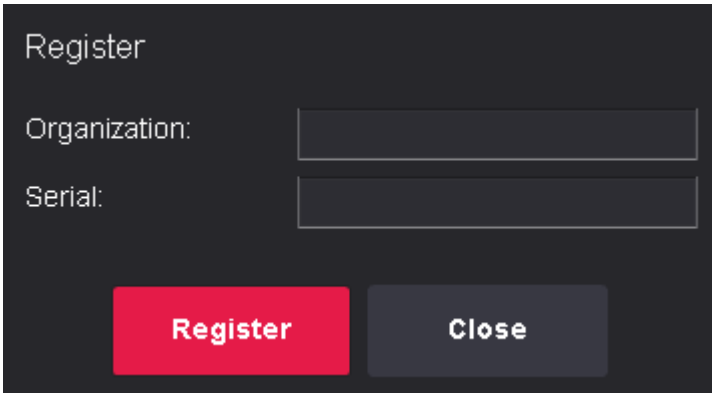


Figure 184. Registration window on Flash platform.

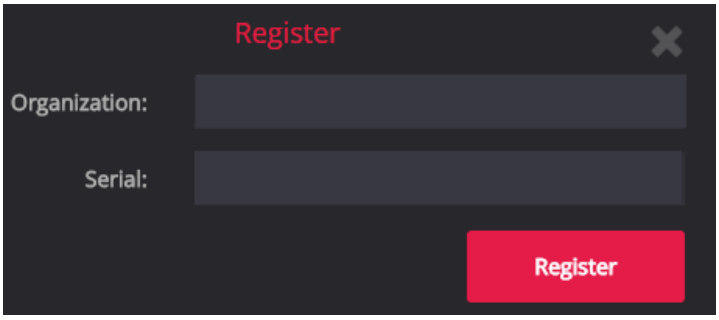


Figure 185. Registration window on HTML5 platform.

Keyboard hot-keys on Flash platform

A *keyboard shortcut* is a sequence or combination of keystrokes on a computer keyboard which invokes commands in a software. A full list of keyboard shortcuts on Flash platform has been provided below.

[Esc]	• remove started measurement (Line, Angle, Poliline, Area, Volume, VHS, Measurements(mV, s), QT points(RR, QT, QTc), HR, QRS Axis); • remove last measurement (STD, VHS, Norberg Angle, Measurements(mV, s), QT points(RR, QT, QTc), HR, QRS Axis)
[Tab]	• select next opened study.
Arrow [Left], Arrow [Up]	• select and opens previous series image
Arrow [Right], Arrow [Down]	• select and opens next series image
[W]	• Select Windowing (Default)
[I]	• Invert/Revert selected image
[H]	• Hand
[M]	• Add/remove Magnifier on selected image
[F1]	• Open User manual
Numpad [1]	• 1:1 Resolution selected image
Numpad [2]	• Fit to screen selected image
Numpad [-]	• Zoom Out selected image
Numpad [+]	• Zoom In selected image
[>]	• Increase selected image blur(B +1)
[<]	• Decrease selected image blur(B -1).

List of applicable standards

No.	Description
Regulatory / normative documents	
ISO 13485:2003	Medical devices - Quality management systems - Requirements for regulatory purposes
IEC 62304:2006	Medical device software - Software life-cycle processes
EN 62304:2006/AC:2008 EN 62366:2008	Medical devices - Application of usability engineering to medical devices
ISO 14971:2007	Medical devices – Application of risk management to medical devices
EN ISO 15223-1:2012	Medical devices - Symbols to be used with medical device labels, labelling and information to be supplied - Part 1: General requirements
EN ISO 12052:2011	Health informatics - Digital imaging and communication in medicine (DICOM) including workflow and data management (ISO 12052:2006)
EN ISO 14155:2011	Clinical investigation of medical devices for human subjects - Good clinical practice
EN 1041:2008	Information supplied by the manufacturer with medical devices;
MDD 93/42/EEC / ENTR/F/3/PBE/D(2009)19003	European Council Directive concerning medical devices. Interpretative document on the commission's services: Implementation of directive 2007/47/EC amending directives 90/385/EEC, 93/42/EEC and 98/8/EC
2002/58/EB	Directive concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications)
-	Manual on Borderline and Classification in the Community Regulatory Framework for Medical Devices
-	Basic Information about the European Directive 93/42*EEC on Medical Devices
Version 1.17 (09-2015)	Manual on Borderline and Classification in the Community Regulatory Framework for Medical Devices.
MEDDEV 2.1/1	Definition of "medical devices", definition of "accessory", definition of "manufacturer"
MEDDEV 2.1/4	Demarcation with other Directives: Directive 89/336/EEC relating to electromagnetic compatibility, Directive 89/686/EEC relating to Personal Protective Equipment
MEDDEV 2.1/5	Medical devices with a measuring function
MEDDEV 2.1/6	Qualification and Classification of stand-alone software
MEDDEV 2.2/1 Rev1	EMC requirements
MEDDEV 2.2/3 Rev3	"Use-by" date
MEDDEV 2.4/1 Rev9	Classification of medical devices
MEDDEV 2.5/3 Rev2	Subcontracting – Quality systems related
MEDDEV 2.5/2 Rev3	Translation procedure
MEDDEV 2.7.1/Rev3	Clinical evaluation: a guide for manufacturers and notified bodies
MEDDEV 2.7/3 Rev3	Clinical investigations: serious adverse event reporting under directives 90/385/EEC and 93/42/EEC

MEDDEV 2.7/4	Guidelines on clinical investigation: a guide for manufacturers and notified bodies
MEDDEV 2.12/1 Rev 8	Guidelines on a medical devices vigilance system
MEDDEV 2.12/1 Rev7	Report Form: Field Safety Corrective Action. Medical Devices Vigilance System
MEDDEV 2.12/1 Rev7	Report Form: Manufacturer's Incident Report. Medical Devices Vigilance System
MEDDEV 2.12/1 Rev7	Report Form: Manufacturer's Periodic Summary Report (PSR). Medical Devices Vigilance System
MEDDEV 2.12/1 Rev7	Report Form: Manufacturer's Trend Report. Medical Devices Vigilance System
MEDDEV 2.12/2 Rev2	Post market clinical follow-up studies
MEDDEV 2.14/2 Rev1	Research Use Only products: a guide for manufacturers and notified bodies
0.30.16-PROD	MIR additional information form
-	Template for a Field Safety Notice
207/2012 of 9 March 2012	Commission regulation on electronic instructions for use of medical devices
Directive 95/46/EC	Directive on the protection of individuals with regard to the processing of personal data and on the free movement of such data
DSVG 00	Guidance on the vigilance system for CE-marked medical devices
GHTF/SG1/N055:2009	Definitions of the Terms Manufacturer, Authorised Representative, Distributor and Importer
GHTF/SG1/N70:2011	Label and Instructions for Use for Medical Devices
GHTF/SG3/N15R8	Implementation of risk management principles and activities within a quality management system
GHTF/SG5/N4:2010	Post-Market Clinical Follow-Up Studies
ENTR/F/3/PBE/pdw D(2009)27251	Interpretative document Interpretation of the relation between the revised directive 93/42/EEC concerning medical devices and directive 89/686/EEC on personal protective equipment
ENTR/F/3/PBE/ D(2009)19003	Interpretative document of the commission's services Implementation of directive 2007/47/EC amending directives 90/385/EEC, 93/42/EEC and 98/8/EC
21 C.F.R. Part 801	U.S. FDA Medical Device Regulation: 21 C.F.R. Part 801 et seq. (Labeling)
21 C.F.R. section 814.9.	U.S. FDA MAF Regulation: 21 C.F.R. section 814.9. (Medical Device Master File)
21 C.F.R. section 814.9.	U.S. FDA 510(k) Regulation: 21 C.F.R. section 814.9. (Premarket approval of medical devices)
21 C.F.R. Part 820	U.S. FDA Medical Device Regulation: 21 C.F.R. Part 820 (Quality System regulation)
FDA	Current Good Manufacturing Practice Requirements for Combination Products
FDA	Overview of Regulatory Requirements: Medical Devices
FDA	Software related documentation
FDA	General Principles of Software Validation; Final Guidance for Industry and FDA Staff
FDA	FDA guidelines to User Manual

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MedDream DICOM Viewer is manufactured by Softneta UAB.

Medical device class: Directive 93/42/EEC

Class I medical device

ID of the notified body: 191352247

Softneta UAB
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LT-51423 Kaunas, Lithuania