RTmedes® 1.5

User guide

Welcome

Dear customer! This user guide introduces you to RTmedes, a software which helps you get the overview of your DICOM RT data collection. If you miss any information, please have a look at our web page (www.rtmedes.com), where we have collected the answers to frequently asked questions. If you need further assistance, do not hesitate to contact us.

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RTmedes is a computer software system providing *overview of DICOM radiotherapy data collection and graphical preview of radiotherapy plans for the purpose of data selection.*

RTmedes is a class I medical device according to Medical Devices Directive 93/42/EEC. TatraMed Software s.r.o. is certified according to ISO 13485, Medical devices -- Quality management systems -- Requirements for regulatory purposes.

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⚠️ **Caution:** Indicates that not paying attention to the instruction or explanation, or not complying with the instruction, may result in damage to the equipment or discomfort or injury to the operator or the patient.

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Launching RTmedes

After the installation, RTmedes icon is placed on your desktop and in your Start menu. Use either of them to launch RTmedes.

Choosing folders

For RTmedes to show any data, you need to set up at least one folder containing RT data. To do that:

1. Select ✿ *Settings* in the bottom toolbar. *Folder Setup* window appears.

2. Click *Add* button to add a new folder.

3. Browse to the desired folder.

4. You can add as many folders as you like. Each folder can be named symbolically, so that you can easily manage them later.

5. When done, click *Apply* button.

Locking folders

To prevent RTmedes from tracking changes, any of the pre-configured folders can be locked. This saves the resources (computing power, disk drive, network) when some folders do not change (archive folders, for example).

To lock or unlock folders:

1. Select ✿ *Settings* in the bottom toolbar. *Folder Setup* window appears.

2. Click 🔓 or 🔒 next to the folder, which you wish to lock or unlock.

3. The icon indicates the new state; the actual state is not changed until you click *Apply*.

4. To see more information about a folder's lock state, including time when the folder was locked, move the mouse over the locking icon. A tooltip will show more information.

When the system detects DICOM data, it provides plan-oriented information about the data.
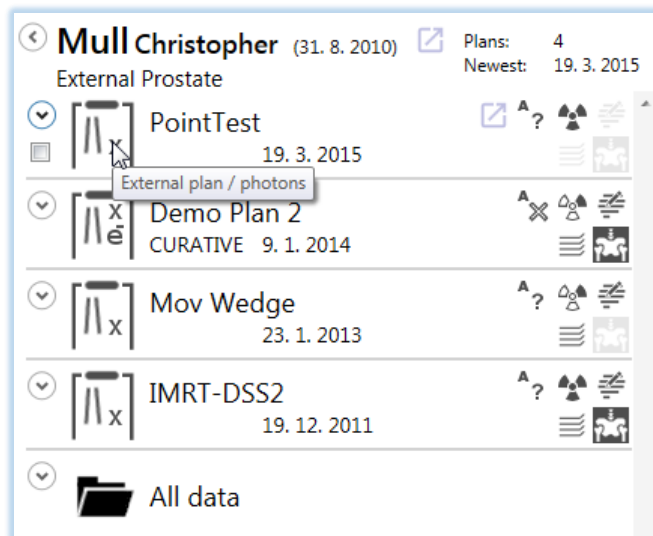
The information is shown in a hierarchical manner organized into patient, plan and beam/application setup levels. The information is shown as a text or as an icon; in addition, tooltips are displayed over icons, providing more detailed explanation of the icon meaning.

1. On patient level, patient's name, ID and date of birth are displayed. If plans are available for the patient, the total number of plans is shown, as well as the date of the newest plan. If no plans are available, the date of newest images or structure set is shown.

2. Click ⊙ (arrow) next to the patient's name to display patient's plans. On plan level, plan name, plan intent and plan date are shown. The plan icon indicates the plan type; additional icons indicate the plan approval status, dose, structure set, planning images and RT images availability.

3. Click ⊙ (arrow) next to a plan to see more details – external radiotherapy plans display beam list; brachytherapy plans show application setup information.

4. 📁 *All data* contains all image series and structure sets belonging to the patient.

RTmedes is keeping track of any changes in the folders set up to be processed. If, for any reason, the list does not display the latest changes, you can refresh the list content. To do so:

1. Press `F5` to refresh the content of the plan list.

2. The list will be refreshed; all the pre-processed data will be re-read from the cache and the folders will be scanned for changes.

The cache of pre-processed data can become corrupted as well. In that case, all the pre-processed information can be discarded and all the data files can be processed again. To do so:

1. Press `Ctrl+Alt+F5` to discard the cached data and initialize re-loading.

2. RTmedes will start re-reading the content of the configured folders from the beginning, discarding all the pre-processed data.

Searching

While browsing the data:

1. Start typing any text.

2. The patient list is automatically filtered by patient's names and patient's IDs containing the text entered.

3. To cancel the filter, press `Esc` or click × (cross icon) in the *Search bar*.

4. Alternatively, you can also use *Search bar* to enter or modify the text.

When you start RTmedes, the list is sorted by the newest plan date. Patients having the most recent plans are at the top of the list. To change the order:

1. Select the desired order using *Arrange by* selection in the top bar.

2. To toggle between ascending and descending order, re-select the same criteria in *Arrange by* selection.

The selection marks the data which you wish to export.

Use check boxes next to patient, plan or individual objects in 📁 *All data*:

1. Toggle the check box next to a patient to select or unselect all the patient data available.

2. Toggle the check box next to a plan to select the plan.

3. Click ⬚ *Clear selection* in the top bar to unselect all available data.

1. Select the data you wish to export.

2. Click ↦ *Export*.

3. Select a folder to which you wish to export the data.

4. The data is exported to the selected folder. For each patient, a separate subfolder is created using the patient's name and the export date and time.

Quick guide - Viewer

A preview of a plan or an image series can be shown.

1. Find the plan or the image series under 📁 *All data* which you would like to see. If a patient has only a single plan, the plan can be opened directly from the patient header.

2. Click ⧉ *Open* on the desired patient, plan or series.

3. An image viewing window appears, showing an image from the plan or series selected.

4. To finish working with the preview, click ✖ *Close.*

There are multiple controls which you can use while previewing images, plans and doses:

1. 🖱 Scroll in the image series using the mouse wheel, or using the toolbar at the bottom of the image.

2. Click ◐ Grayscale to activate/deactivate Window center and width tool. Then adjust the window center and window width by moving the mouse while holding the left mouse button.

3. Ctrl+🖱 Adjust zoom using the mouse wheel while holding Ctrl key.

4. Ctrl+🖱✛ Move the image around by pressing down Ctrl key and the left mouse button and moving the mouse around.

5. Ctrl+²ˣ🖱 Double click the left mouse button while holding Ctrl key to reset the view.

> ⚠️ **Caution:** If geometrical planes, at which the dose distribution is calculated, do not coincide with the image planes, the dose distribution calculated at the closest dose plane is shown. If the closest dose plane is further away than 3 mm (or, when outside of the dose volume, 0.1 mm), the dose is not displayed. Whenever dose is displayed, the distance between the image plane and the dose plane is shown as *Distance to dose* information in the view.

1. Click ⊡ *Dose* to toggle the dose display mode. Available modes are: off, isolines, isolines and isoshades, isoshades.

2. Click ⊹ Live dose to activate/deactivate live dose tool. Move the mouse over the image to see the dose information and isoline through the mouse point.

Defining
isolines

To add a certain isoline level:

1. Click ⊟ *Add isoline* to enter a new value.

2. Enter the desired dose value in the current dose unit and press Enter (or click anywhere with the mouse).

3. The isoline of the newly entered value is shown in the view. The isoline is also shown in the isoline legend, which is visible whenever at least one isoline is defined.

The isoline legend always shows units, in which the dose is currently shown. For each isoline level, its color and value are displayed.

Please note that the defined isoline values are valid for the current plan only. When opening another plan, isoline values have to be entered again.

To remove a previously defined isoline:

1. Place the mouse over the value you wish to remove

2. Click ✖ next to the isoline value. The value is removed and no longer shown in the view.

> ⚠️ **Caution:** Only ROI contours which are geometrically very close to the slices of the image set are shown. Structure set may contain other contours, which are not displayed in RTmedes.

When there is an RT Structure set associated with the plan and ROIs are available:

1. Toggle •• *ROIs* to turn the ROI display on or off.

To manage individual ROIs:

1. Click ≡ *Manage* to display the list of ROIs available in the RT Structure Set.

2. To highlight ROI's contours, place the mouse over any of the ROIs in the list, or over a contour directly.

3. In the ROI list, toggle the checkboxes next to the individual ROIs to change their visibilities.

The ROIs' visibility can be toggled on or off by their type:

1. To control the visibility of target or avoidance ROIs, use the *Targets* and *Avoidance* checkboxes at the top of the ROI list.

2. To quickly hide or show all ROIs, toggle *All* checkbox.

Note that the individual ROIs in the list are colored and grouped by their respective types.

> ⚠️ **Caution:** DVH chart displays warning if the whole volume of at least one ROI is not fully covered by dose grid.

> ⚠️ **Caution:** Chart displays warning if DVH has not been calculated for every ROI covered by dose grid.

For any plan containing ROIs and dose, DVH can be displayed.

1. Click 📊 *DVH* to display DVH.

2. Place mouse cursor over DVH of specific ROI in the chart and hold left mouse button to display absolute dose as well as relative and absolute volume covered by this dose.

Note: you can zoom and pan DVH exactly as you do with standard images.

Installation

Requirements

RTmedes can be installed and used on 64bit operating systems Windows™ 7, 8 or 10.

Web-based installation

The easiest way to install RTmedes is via the web-based installation. Please navigate to *Download* section of rtmedes.com web page, and select *Online installer*. When asked, allow the computer to install the software.

Installing RTmedes via web-based installer ensures that all the necessary prerequisites are installed if needed.

Additionally, if RTmedes is installed in this way, it checks for a newer version on web on later launches if your computer is online. If there is an updated version available, it offers to install the new version.

Manual installation

When it is not possible to install RTmedes in this way, you need to download the standalone install kit and perform the necessary prerequisite installations manually. This can be the case if your computer is offline or behind a proxy server which does not allow direct HTTP connections.

Please navigate to *Download* section of rtmedes.com web page, and select *Stand-alone installer*. You are then navigated to a page from which you can download the installation kit which can be deployed on any computer. Prerequisites needed by RTmedes can also be downloaded from the same page.

Licenses

RTmedes requires a valid license to run. When you purchase the license, we will send you an *Activation key*, which you have to enter in the *License* window.

You can obtain a trial key using our web page.

To use the *Activation key*:

1. When RTmedes is launched for the first time, it requests the activation key automatically.

2. Alternatively, click **?** (*About*) in the bottom bar; then click *License* in the information window.

3. Enter the *Activation key* you received.

4. Click *Validate*. RTmedes will check whether the license is valid; if the validation fails, the reason will be displayed in the *License* window.

5. Now you can use RTmedes for the period of your license validity.

If the computer is not connected to the internet, is behind a proxy server, or there are other problems when contacting the license server, the system will not be able to validate the license automatically.

When this happens, RTmedes will provide an option to activate the license offline:
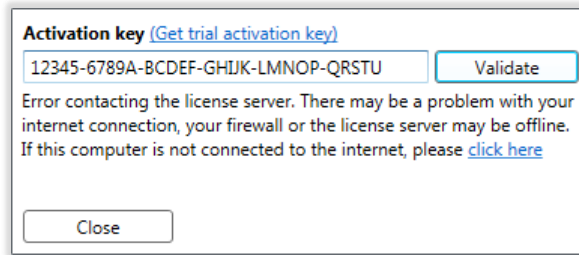
To activate the license offline:

1. Click on the *click here* link in the error message (see the picture above). This opens window with additional information which is needed for offline activation:
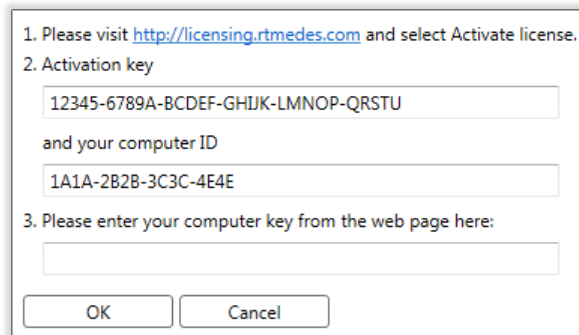
2. Visit licensing.rtmedes.com web page and select *Activate license*.

3. Enter the *Activation key* and *Computer ID* from the window in the picture above and select *Activate license*.

4. Copy the *Computer key* from the web page and enter it in the offline activation window in RTmedes. Then Click *OK*.

License expiration

The *About* window always shows the validity period of your current license. At the end of the validity period, you may need to enter a new *Activation key* or to re-activate your current key.

The validity period shown may be shorter than the period for which the license is purchased. In such a case, re-validating the license when the current validity expires is usually enough. If re-validation fails for any reason, please contact us.

Server-client setup

Server setup

RTmedes server mode is enabled automatically once proper license is provided. Enter valid server license key to enable server feature. To setup the server, perform the following:

1. Select ✿ *Settings* in the bottom toolbar.

2. In *Setup* window, select ▤ *Server setup* tab.

3. Define communication port.

4. Define communication protocol.

Note: The port configured in the server setup must be set up in a way the connection between server and client operates correctly. (i.e. it is not blocked by a firewall)

Note: To enable *http* communication protocol for RTmedes server, execute the following command from command prompt as administrator: *netsh http add urlacl url="http://*:**port**/"* *user=everyone* to register the URI.

To release URL registration run *netsh http delete urlacl url="http://*:**port**/" user=everyone* from command prompt as administrator.

Client setup

Every RTmedes installation without specified *Activation key* behaves as client by default.

5. Select ✿ *Settings* in the bottom toolbar.

6. Define server (host) name.

7. Define communication port.

8. Define communication protocol.

9. Optionally check connection by *Verify* in the bottom toolbar.

3rd party software

RTmedes uses some 3rd party software libraries for its functionality. This is the list of the libraries and accompanying license information.

FO-DICOM v.3.0.0

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NLog

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