MIC
Molecular Imaging Center

TRANSFERRING MRI DATA FROM THE WORKSTATION

There are various ways transferring your data from the MR workstation onto your computer or home directory on the network. Which way you choose will depend on what the data will be used for:

1. <u>Screenshots</u>
Can be used when you need a quick and easy way to generate MRI pictures for presentations or emails.

2. <u>DICOM data</u>
Can be used when you need to perform simple image processing such as calculating tumor/fat volume, perfusion time course, etc. Most of today's image processing software handles DICOM format.

3. <u>RAW data</u>
This is the most important data as it includes ALL the information of the scan. If you would like to have a safe and complete backup of your work, you should export the RAW data (maybe in addition to DICOM data). Raw data can be used when you need to perform a more elaborate analysis using external software (e.g. Matlab) or when you need to re-process the data using ParaVision (e.g., to perform a new reconstruction of the data).

To transfer the data, use one of the following options:

4. <u>Copying files onto a memory stick or external hard drive</u>
How to copy files onto your own external storage device.

5. <u>Copying files via network onto a home directory on the university server</u>
a. Transfer files using 'vedlegg'
How to send files via the university's temporary storage service '**vedlegg**' ('attachment').
b. Transfer files via command line
How to transfer files via a command line

More details on the different types of data and how to transfer them are available below.

1. Screenshots

Screenshots are literally *snapshots* of the screen. They can be of single viewport displays or of the whole Viewing Card. You do not need to open the images in the Image Display and Processing program.

a. Preparing Display Before Export

The export function exports everything you see in the viewport/Viewing Card, including text overlay and ROIs. You can modify how the images are displayed, Viewing Card layout etc. by using the Palette for Viewing. The overlaying parameters in the viewport can be activated/deactivated like this:
- right click in the relevant viewport
- check or uncheck the option "Parameter Overlay"

For more information, see p. 133 in the Paravision 6.0.1 manual.

Modifying the image display obviously has to be done before you export the pictures.

b. Exporting Screenshots

Select the viewport you are interested in by left clicking it. In the Palette, access the Analysis Tools and click on the tab with the camera symbol (Figure 1, upper left arrow). Adjust image size, then click "Capture". In the export dialog that appears, chose target location, file name and file format (Figure 1, lower right arrow).

Format:
For presentations, you should select TIFF or PNG, as these are lossless formats.

✓ Press *Save*.

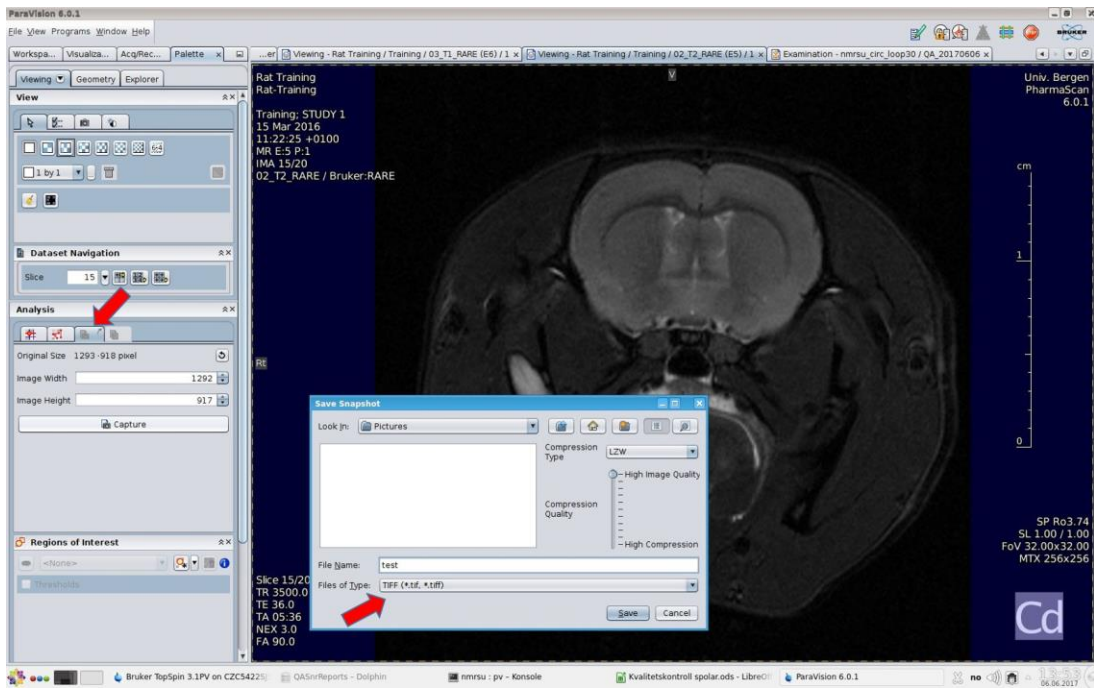**Your pictures are now stored in the chosen folder.**

Figure 1: Create snapshot of single viewport

You can also export the whole Viewing Card by right clicking the tab you would like to export (Figure 2, upper arrow), click Export tab… in the context menu, and then, as for single viewports, choose target location, file name and file format (Figure 2, lower arrow).
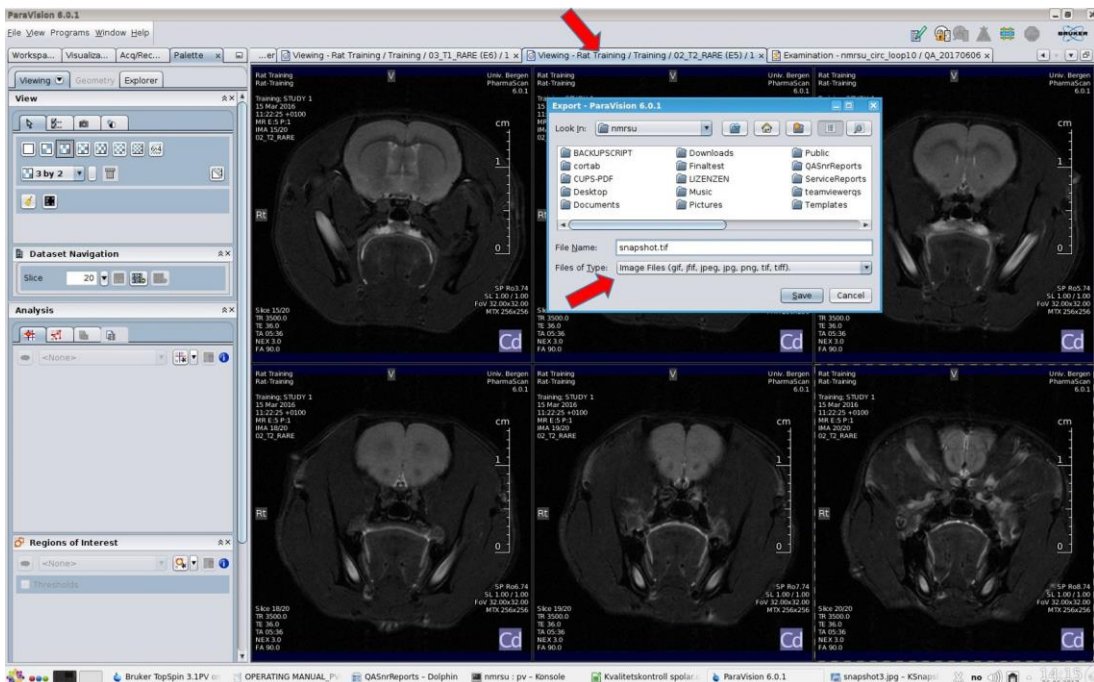

Figure 2: Create snapshot of whole Viewing Card

For more information on creating snapshots, see p. 162 in the Paravision 6.0.1 manual.

The files can now be transferred to a memory stick or transferred via network (see below).

2. **DICOM Data**

DICOM stands for "Digital Imaging and Communications in Medicine" and is a standard for handling, storing, printing, and transmitting information in medical imaging. It includes a file format definition and a network communications protocol. DICOM files can be exchanged between two entities that are capable of receiving image and patient data in DICOM format.

Included in the DICOM header you can find information on patient ID, scan attributes, parameters etc.

The Vivarium does not have a picture archiving and communication system (PACS), so all file transfers have do be done manually.

DICOM export is possible for Subjects, Studies, Examinations, or Image Series. Each image series contained in the selected subjects, studies, examinations is exported separately. All exported image series must be succeeded, i.e. image data must exist.

Users have different needs, so the DICOM export is set by default to a very simple export. For more detailed information on DICOM export, see p. 431 in the Paravision 6.0.1 manual.

In addition to DICOM transfer it is also possible to use FTP/SFTP, SCP, external hard drive, memory stick etc.

To export ParaVision datasets to DICOM:
1. Select Subjects, Studies, Examinations, Image Series to be exported to DICOM
   - ✓ in the Workspace Explorer below the Datasets node (Figure 3)
   - ✓ in the Palette Explorer (only Image Series - Figure 4)
   - ✓ or in the Dataset Browser in the different dataset views (Figure 5)
2. Export the datasets to DICOM by
   - ✓ clicking Export to DICOM... in the context menu of the selected datasets in the Workspace Explorer or Palette Explorer (right click)
   - ✓ or clicking the Export to DICOM... button in the action row below one of the dataset views in the Dataset Browser tab
     - • NB: In the Subject and Study views, all scans of a subject or study will be exported to DICOM. In the Examination and Image Series views, one or more individual scan(s) may be selected for exporting
3. If the DICOM files are exported to a directory, a directory selection dialog appears that requests a base directory to store the DICOM files. The files will be named automatically.
4. The actual export operation starts. A progress window may appear. Depending on the number of exported datasets and their size the export may be time consuming.
5. After the export is finished a dialog is displayed telling that 'DICOM Export Completed'.
By ticking the 'Show Details' box, it shows in detail which image series have been correctly converted to DICOM files and which have not.
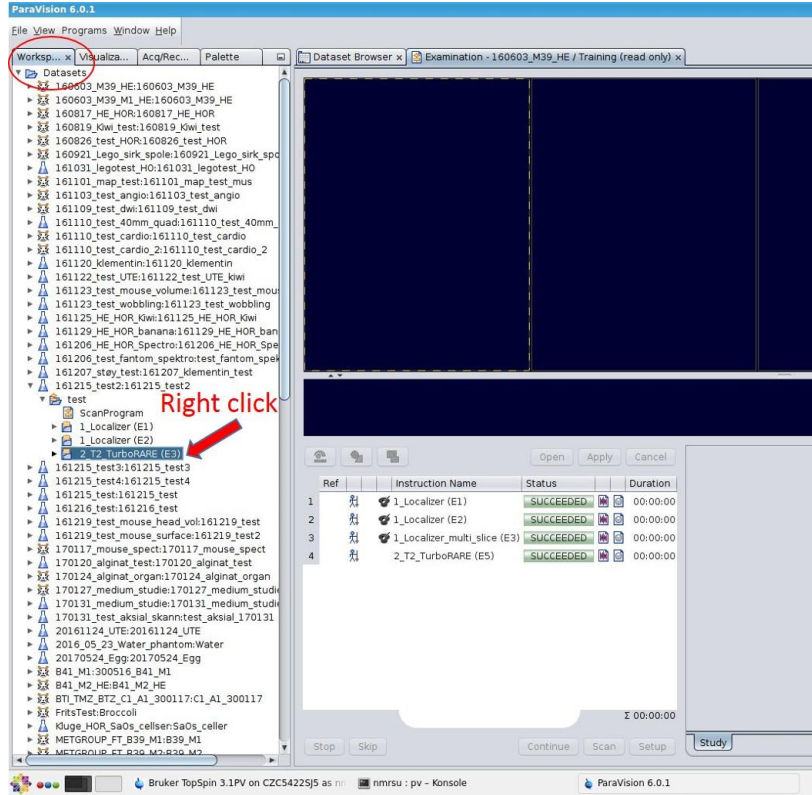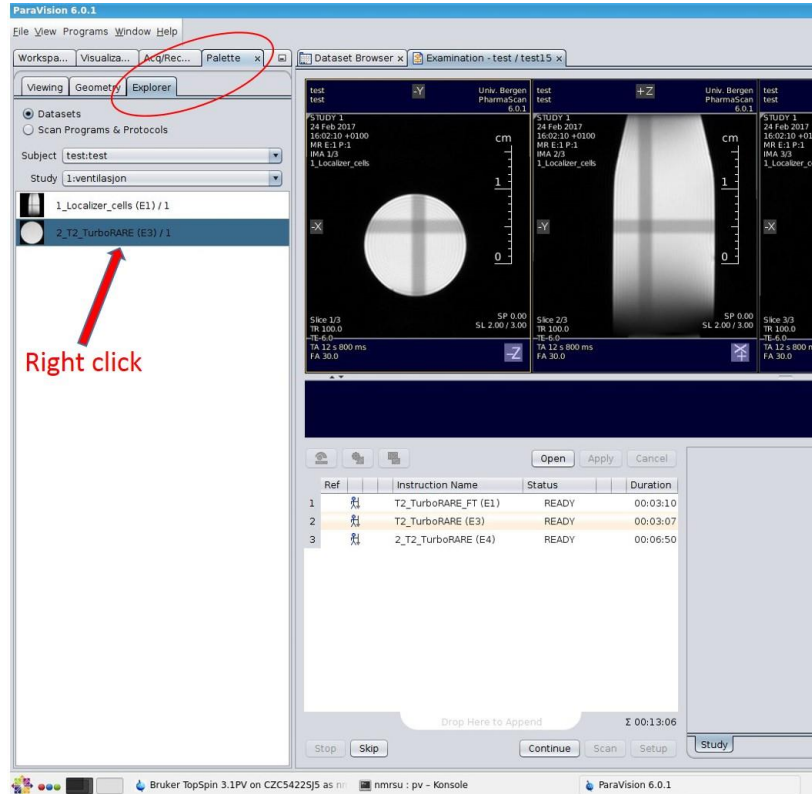
Figure 3: Workspace Explorer
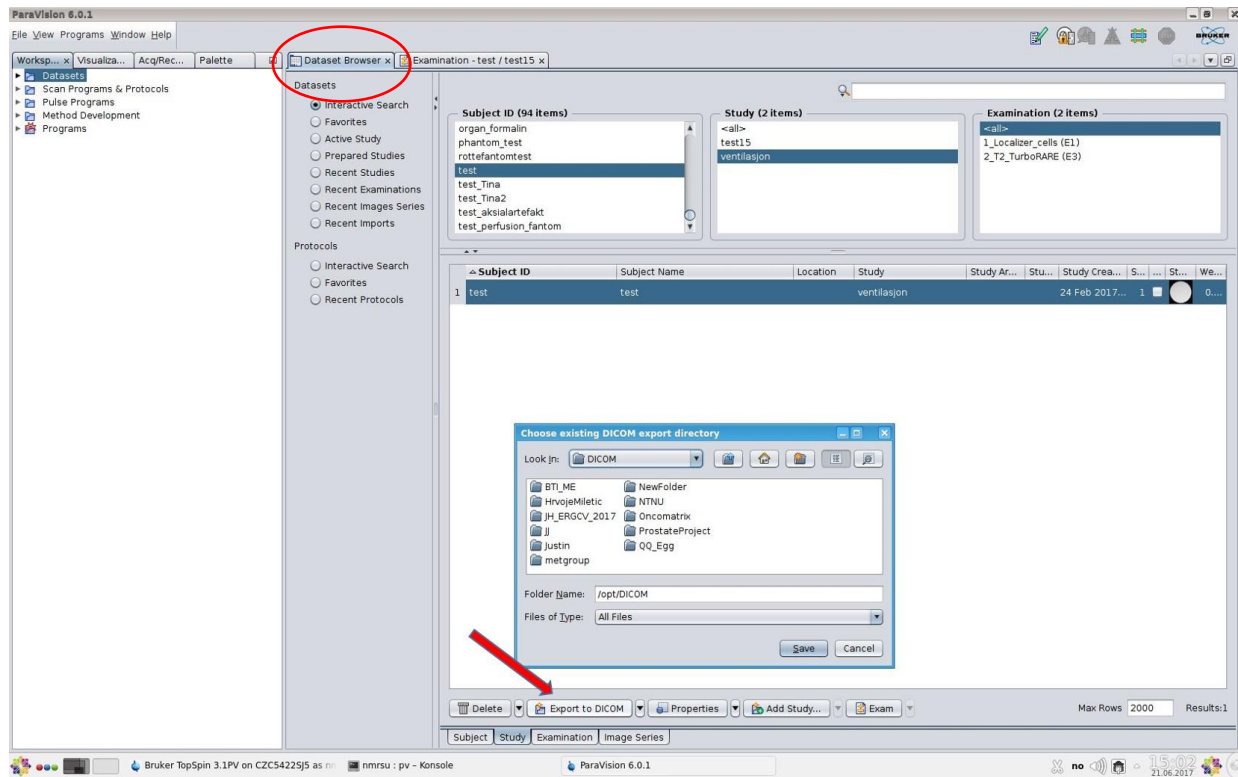

Figure 4: Palette Explorer

Figure 5: Dataset Browser

Your files are now stored in the folder you have chosen.

The files can now be transferred to a memory stick or transferred to your computer via network (see below).

After the transfer of DICOM files:
✓ Delete your DICOM files from the MRI control PC to save disk space.

3. **RAW Data**

The raw data is automatically stored in the following folder:

For PV6.0.1 the folder is: /opt/PV6.0.1/data/<user>/.

RAW data is usually very big so an external hard drive or a memory stick is the easiest transferring method. You can also transfer data via network, but the transfer might take a while.

4. **Copying files into a memory stick or external hard drive**

✓ Connect your memory stick or external hard drive
✓ A pop up window titled 'Available devices' shows up in the bottom right corner of the screen – click 'Open with File Manager'

A new Dolphin file manager window opens. You now have access to the files on your memory stick or external hard drive.

✓ Open another File manager from the desktop

A new browser window opens. You now have access to the files in your home folder.

✓ Select the files you want to copy, right click and select *Copy*, or press Ctrl + C
✓ Move the files to your memory stick or hard drive window.
✓ Right click and select *Paste* or use Ctrl + V

   When copying is finished you have to unmount the volume (memory stick or external hard drive)
✓ Close the file manager
✓ Click on the USB Stick icon
✓ Click on the arrow next to the volume
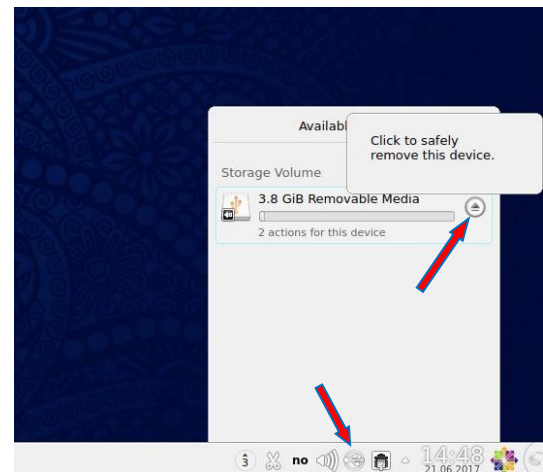
5. **Copying files via network onto a home directory on the university server**

 a. **Transfer using 'vedlegg'**

You can send files via the university's temporary storage service '**vedlegg**' ('attachment').

✓ Find the files you would like to transfer and archive them as a zip-file.
✓ On the MR computer, open an internet browser and go to http://tjinfo.uib.no/vedlegg.html
✓ log in with your university username and password (Figure 6)
      o click on 'logg inn' and then 'click to continue to normal log in'
✓ click on 'Browse…' to find the zip archive you created (Figure 7)
✓ choose how many days (between 14 and 365) the file should be available
✓ click 'lagre' to upload the file
✓ you will now get an email with a link to where you can download the zip-file

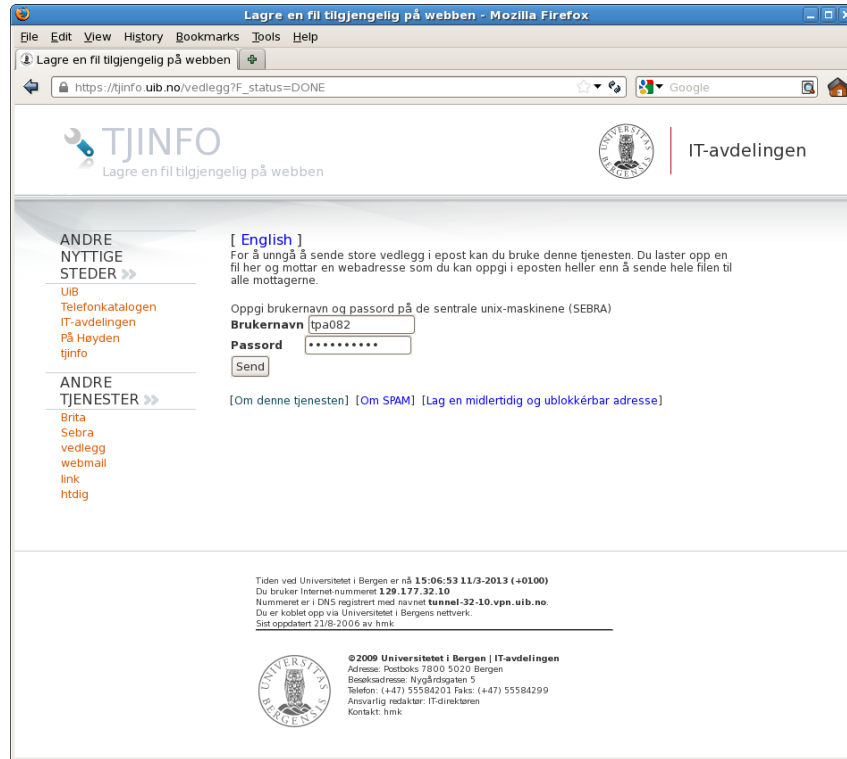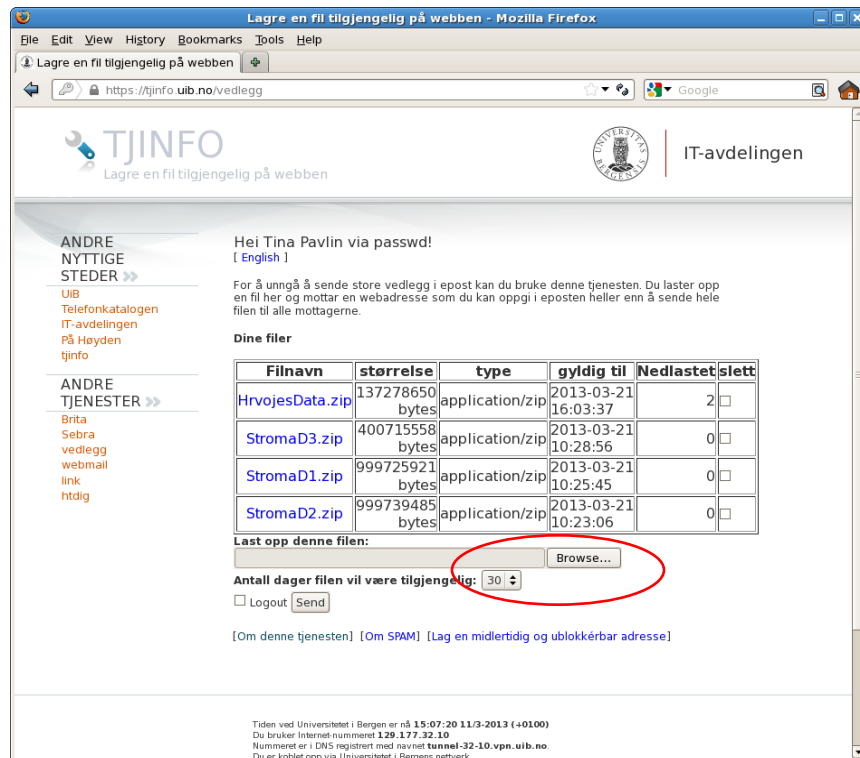*Figure 6: Log in at the university's 'vedlegg' service*

Figure 7: Find and upload the zipped files you would like to transfer

b. Transfer via command line

To transfer files from the MR computer to the server **via a command line**, you need to:

✓ Open a *Terminal* window (the icon for the *Terminal* is a black screen on your desktop)

✓ Use the *ls* command to see in which folder you are

✓ Write: *cd /<path to your DICOM folder>* if you would like to copy DICOM files or
cd /opt/PV6.0.1/data/<username>/<name of data folder> if you would like to transfer raw data
Write: "scp –r *<beginning>* <username>@<login.uib.no>*:"
where *beginning* is the beginning of the file/folder you would like to transfer, and *username* is your university user name. An example would be: scp –r StromaData* tpa082@login.uib.no:
NB: remember to put a space between the file/folder name and your username, and a colon at the end of the command.
The file/folder will be transferred to the disk called "W: Archive".