MOLECUBES
MODULAR
BENCHTOP
IMAGING

Meet REMI – our Reconstruction Engine for Molecular Imaging

REMI, MOLECUBES' stand alone reconstruction engine, has been developed for those users in a higher need of centralized imaging data management. Facilities that perform significant large cohorts of longitudinal sans, dynamic scans, multi-mouse scans - often on a daily basis - many find increased parallelized reconstruction and extended data storage useful. Also, if systems are operated by multiple users within a lab an off line way to access and process/reconstruct data might become highly relevant.

Completing the standard integrated acquisition and reconstruction servers embedded in every CUBE, our stand alone workstation solution fullfils exactly these needs. Reconstruction capabilities **allow simultaneous reconstruction of up to 4 datasets** with an extensive **storage capacity of 32 TB** in raid configuration enabling automated data offloading. In addition, users are able to **set up batch reconstruction protocols** for large studies requiring an extensive number of reconstructions with similar parameters. Finally, the workstation **allows web-based server access** from any terminal with network access to the workstation as well as a connection to preclincial PACS systems if available.

Functionality

REMI is facilitating browser-based access. Having set up and connected the hardware to your individual scanner set-up, no local software needs to be installed. Reconstructions can hence be started and accessed from any space, even outside of the preclinical lab, at any convenient time. An intuitive and user-oriented lay-out, similar to **MOLECUBES' CUBEFLOW suite**, holds 3 basic menus, simplify the workflow: SCANS, RECON and SERVERS.

SCANS connects to an overview of all acquisitions stored on **all systems' acquisition servers** as well as those on the workstation. Data can be synced and removed at any time from this page. Filters can be set by modality, principal investigator, Study ID, Series ID, Animal ID en scan period. Data off-loading ensuring maximum space available on the local CUBE server for dynamic acquisitions.

	Modality	Researcher	Study	Series	Animal	Acquisition Date	Server
☐	SPECT	Sara Neyt	111in	20190918	dilution	09/18/2019 12:45:38	Y-CUBE
☐	SPECT	Sara Neyt	111in	20190918	dilution	09/18/2019 12:16:55	Y-CUBE
☐	SPECT	Sean	install	test1	1	09/13/2019 13:51:20	Y-CUBE
☐	CT	Bert	test	test	test	09/12/2019 16:57:15	X-CUBE
☐	SPECT	Karel Deprez	spuit_f18	1	1	09/12/2019 12:54:24	Y-CUBE
☐	CT	Bert	deleteme	test	test	09/12/2019 12:19:02	Workstation

RECON allows you to start new reconstructions both on any system, in which case the data will stay there, **as well as on REMI locally in which case the data will be moved**. In addition, users are able to set up batch reconstruction protocols for large studies requiring an extensive number of reconstructions with similar parameters. The screen shot below shows the option of selecting, moving and reconstructing data on REMI according to chosen protocols.

SERVERS finally presents you an overview of all the servers that are connected to the workstation and also the serial number of each device.

	Modality	Researcher	Study	Series	Animal	Acquisition Date	Reconstruction Date	Algorithm	progress
☑	CT	Bert	deleteme	test	test	08/30/2019 12:01:40	09/19/2019 08:46:04	ISRA	FINISHED
☑	SPECT	Karel Deprez	derenzo_gpmouse	1	1	09/11/2019 16:15:01	09/19/2019 08:46:00	—	FINISHED
☑	SPECT	Karel Deprez	derenzo_gpmouse	1	1	09/11/2019 16:15:01	09/19/2019 08:45:04	—	FINISHED
☑	CT	Bert	deleteme	test	test	08/30/2019 12:01:40	09/19/2019 08:41:02	ISRA	FINISHED
☐	SPECT	Karel Deprez	derenzo_gpmouse	1	1	09/11/2019 16:15:01	09/19/2019 08:37:00	—	FINISHED

Site planning guide and specs

REMI comes as a stand-alone hardware engine, placed on a flat surface it should fit beneath any lab table your current set-up is placed. 2 standard power plugs and an ethernet cable connecting to the MOLECUBES router and ready to go.
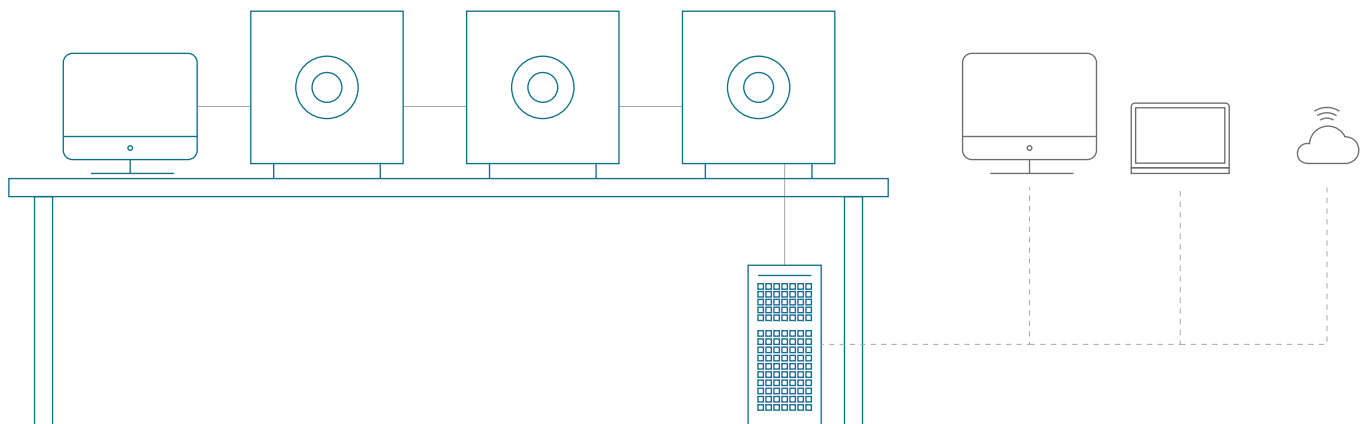
Technical features

4U tower design	Small footprint: 19" x 7" x 17.8" 19" x 7" x 26.4"
dual 10-gigabit ethernet	Fast data transfer allowing sync between CUBES and LIMS
128 TB RAM	Reconstruct in record time
32 TB storage in RAID 5	Transfer data automatically from each CUBE to the ERS, freeing up space for your
configuration	next acquisition and simplifying your workflow
4 NVIDIA GPUs	Accelerate reconstructions and run them in parallel
Ubuntu 18.04 LTS or higher	Latest operating software ensuring compliance with latest safety standards.