

Microscopy Data Management Plan (DMP)

File Formats and Acquisition Software

Format	Acquisition Software	Device
CZI	ZEN (black / blue)	Zeiss microscopes
ND2	NIS Elements	Nikon microscopes
LIF	LAS	Leica microscopes
OBF / MSR	Inspector / Lightbox	Abberior microscopes
QPTIFF	PIF Fusion	Akoya PhenoCycler-Fusion

All of these formats can be opened in supported tools and viewers (see software page):

- Fiji / ImageJ
- Imaris
- Huygens
- Napari
- NIS elements (after converting to `.tiff`)
- `.msr` needs to be converted to `.tiff`

These tools provide capabilities for visualization, analysis, deconvolution, and format conversion.

Data Analysis and Processing

Typical microscopy data processing involves several steps, which can be performed in different specialized software tools depending on the analysis type and dataset size. In case of IMCF analysis tools not being sufficient because of lacking RAM, computing power, software licences or modules, it is possible to use GLOBUS to tranfer data to IMG Virtual Desktop Infrastructure and process data there.

Procedure	Description	Recommended software
Deconvolution / Denoising	Improves image resolution and contrast by reversing optical distortions caused by the microscope system.	Huygens, NIS
Drift Correction / Chromatic correction	Compensates for sample or stage movement during time-lapse imaging. Objective chromatic abberations.	Fiji (StackReg, MultiStackReg), Imaris, Huygens
Segmentation	Identifies and isolates structures of interest (cells, nuclei, organelles) within image volumes.	Fiji (Ilastik plugin), Imaris, Napari, NIS
3D Rendering and Visualization	Generates volumetric views for qualitative inspection or presentation of 3D datasets.	Imaris, Napari, Fiji (3D Viewer), NIS
Quantitative Analysis	Extracts measurements such as intensity profiles, co-localization, object counts, or motion tracking.	Imaris, Fiji, Huygens, Napari, NIS
Format Conversion	Converts proprietary formats (<code>.czi</code> , <code>.lif</code> , <code>.nd2</code> , <code>.msr</code> , <code>.obf</code>) into open standards (<code>.tiff</code>).	Acquisition software

Storage, Sharing, and Accessibility

Stage	Location	Access	Storage duration	Data safety	Notes
Raw data	Microscope PC	All trained users	3 months - 2 years (users will be notified)	RAID	
Data transfer	Scratch drive (accessible from all acquisition control computers and analysis workstations)	All imcf users and staff	7 days	No protection	USB disks SHOULD NOT be used for data transfer
	File sender (CESNET service)	Upload: edu id / Download: anyone with link	up to 1 month	CEPH	Data are safely saved in CR, and file size is unlimited
Temporary analysis storage	OA / WS	All imcf users and staff	3 months - 2 years (users will be notified)	RAID	
Long-term storage	Client's own storage infrastructure	Client	Unlimited	Users responsibility	Each user is responsible for archiving their data after analysis

All important data should be transferred to long-term storage to prevent data loss. The infrastructure provides no guarantee for permanent storage on local analysis machines.

Estimated files size ranges from **1MB - 10GB** per dataset, depending on acquisition parameters.