

# Lattice Light Sheet (LLS)

## Overview

Lattice Light Sheet (LLS) microscopy generates exceptionally large, high-dimensional datasets, typically exceeding **1 TB per experiment**. Data are acquired using **ZEN** software and stored in the `.czi` format. The plan below describes acquisition, preprocessing, analysis, storage, sharing, and long-term preservation.

## Data Acquisition

- **Instrument:** Zeiss Lattice Light Sheet microscope
- **Acquisition software:** ZEN
- **File format:** `.czi`

## Analysis

Prior to analysis in any software, data should\* be processed in **ZEN**. Subsequent analysis can be performed in **Fiji**, **Huygens**, **Imaris**, **ZEN** itself or **NIS** (after format conversion). After acquisition, move data to **WS5** using the direct connection, to disk labeled **BigData**. It is recommended to cut data to blocks of maximum size 100GB and process these blocks individually.

\* Deconvolution is heavily recommended but not mandatory. Deskewing is mandatory in most cases.

## Data Storage and Transfer

Stage	Location	Typical Size	Access	Storage duration	Data safety	Notes
<b>Raw data</b>	Microscope workstation	1-5TB	All trained users	1 week - 6 months (users will be notified)	RAID	Immediately post-acquisition
<b>Data transfer</b>	Direct connection to WS5	1-5TB	All imcf users and staff	None	No protection	Recommended due to higher speed of transfer (10Gbps)
	File sender (CESNET service)		Anyone with upload link and Charles University login	up to 1 month	CEPH	Data are safely saved in CR, and file size is unlimited
	Scratch drive (accessible from all acquisition control computers and analysis workstations)		All imcf users and staff	7 days	No protection	USB disks <b>SHOULD NOT</b> be used for data transfer
<b>Temporary analysis storage</b>	Local workstation (WS5) /BigData	Processing usually means ~10% increase in data size	All imcf users and staff	1 week - 6 months (users will be notified)	RAID	
<b>Long-term storage</b>	Data tapes	Variable	TBD	TBD	TBD	As disk storage for datasets of this size, a permanent tape-based solution is currently being implemented.
	Client's own storage infrastructure		Client	Unlimited	Users responsibility	Each user is responsible for archiving their data after analysis

# Typical LLS Workflow

