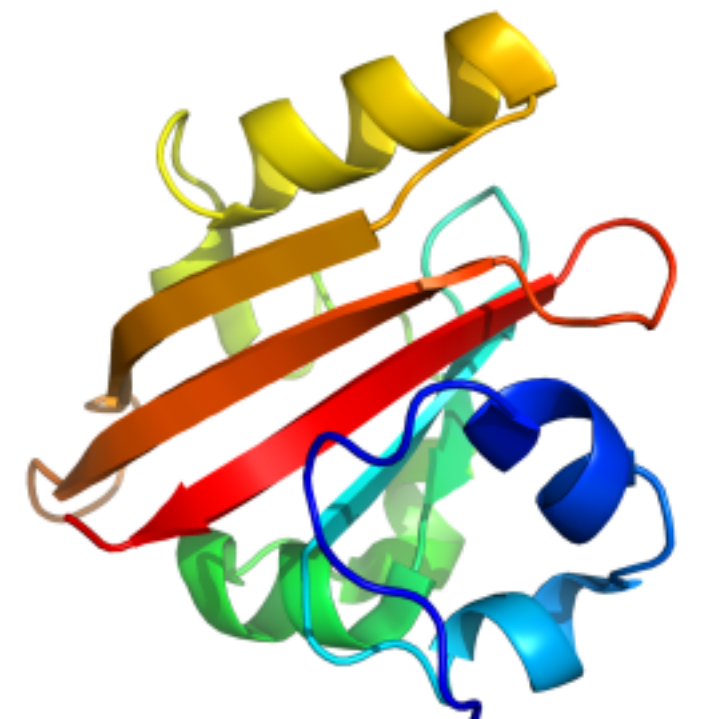
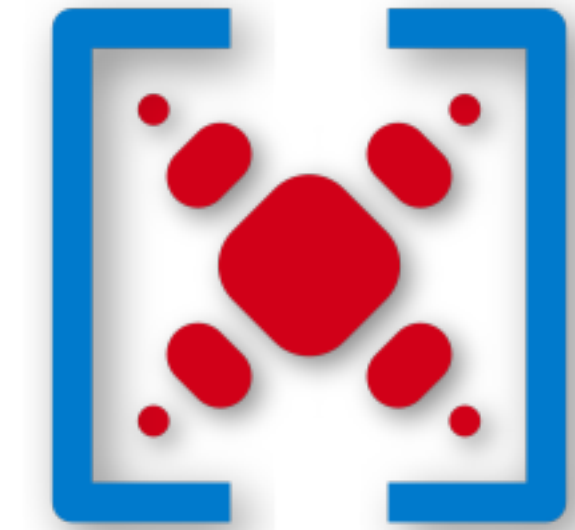
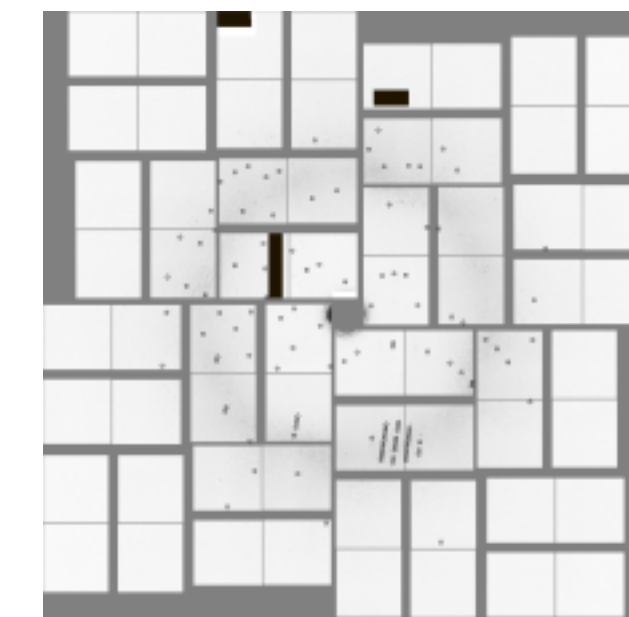


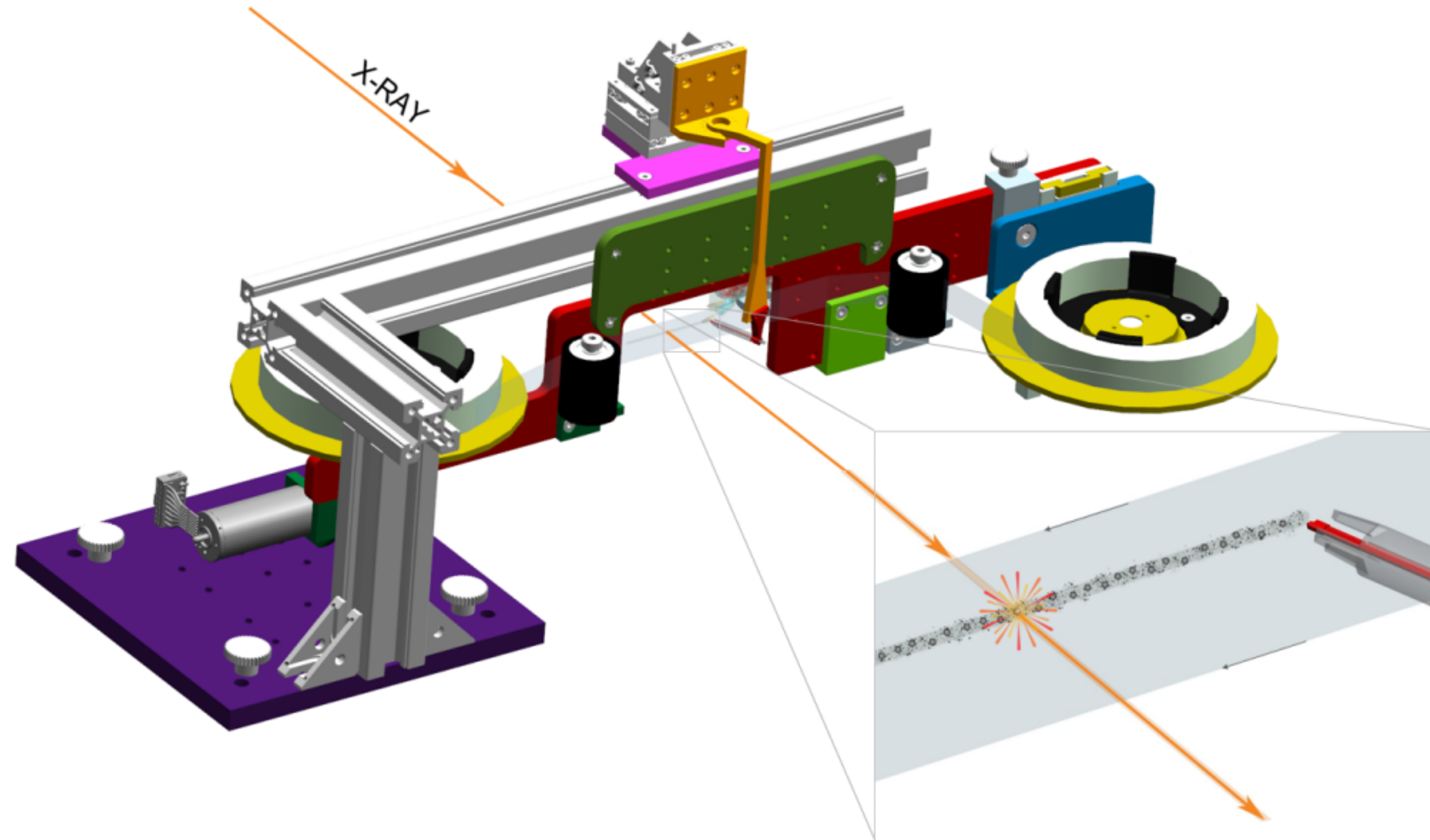
Serial crystallography

Real-time data processing for serial crystallography at P11



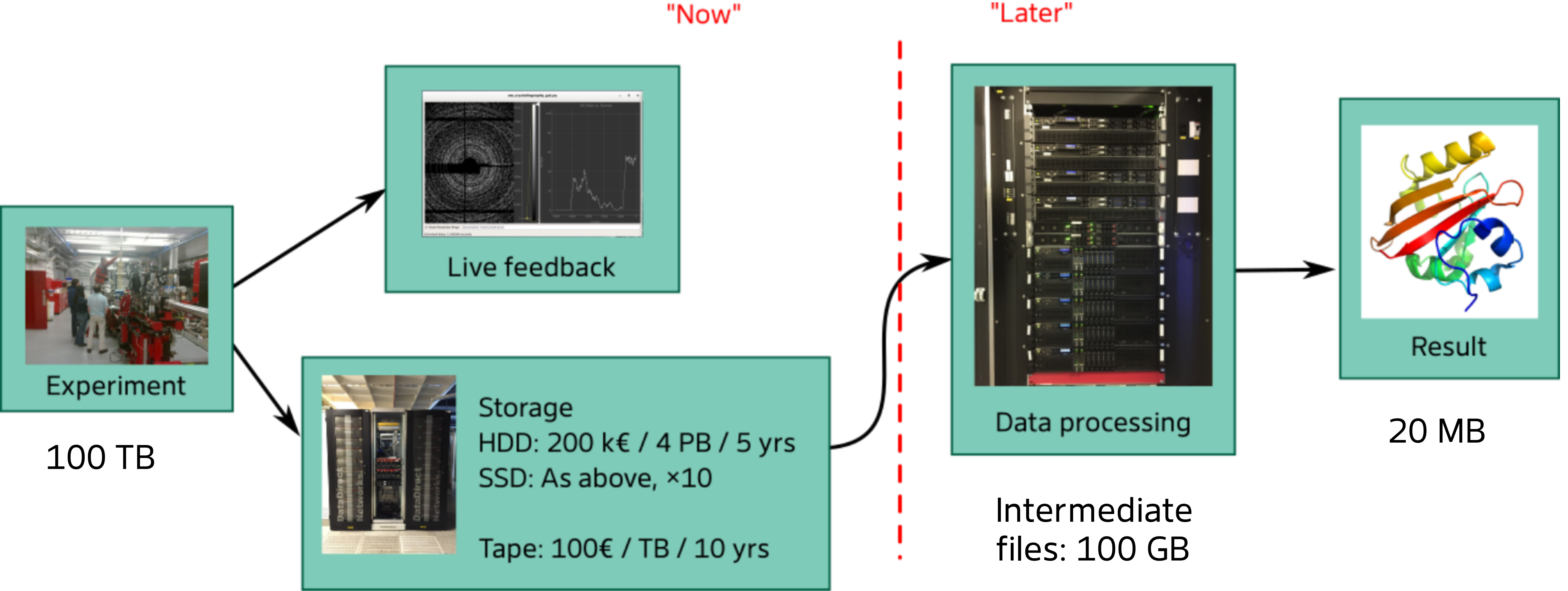
Thomas White and Tim Schoof
DESY Photon Science Computing Workshop
10 Nov 2023

Serial crystallography experiment setup

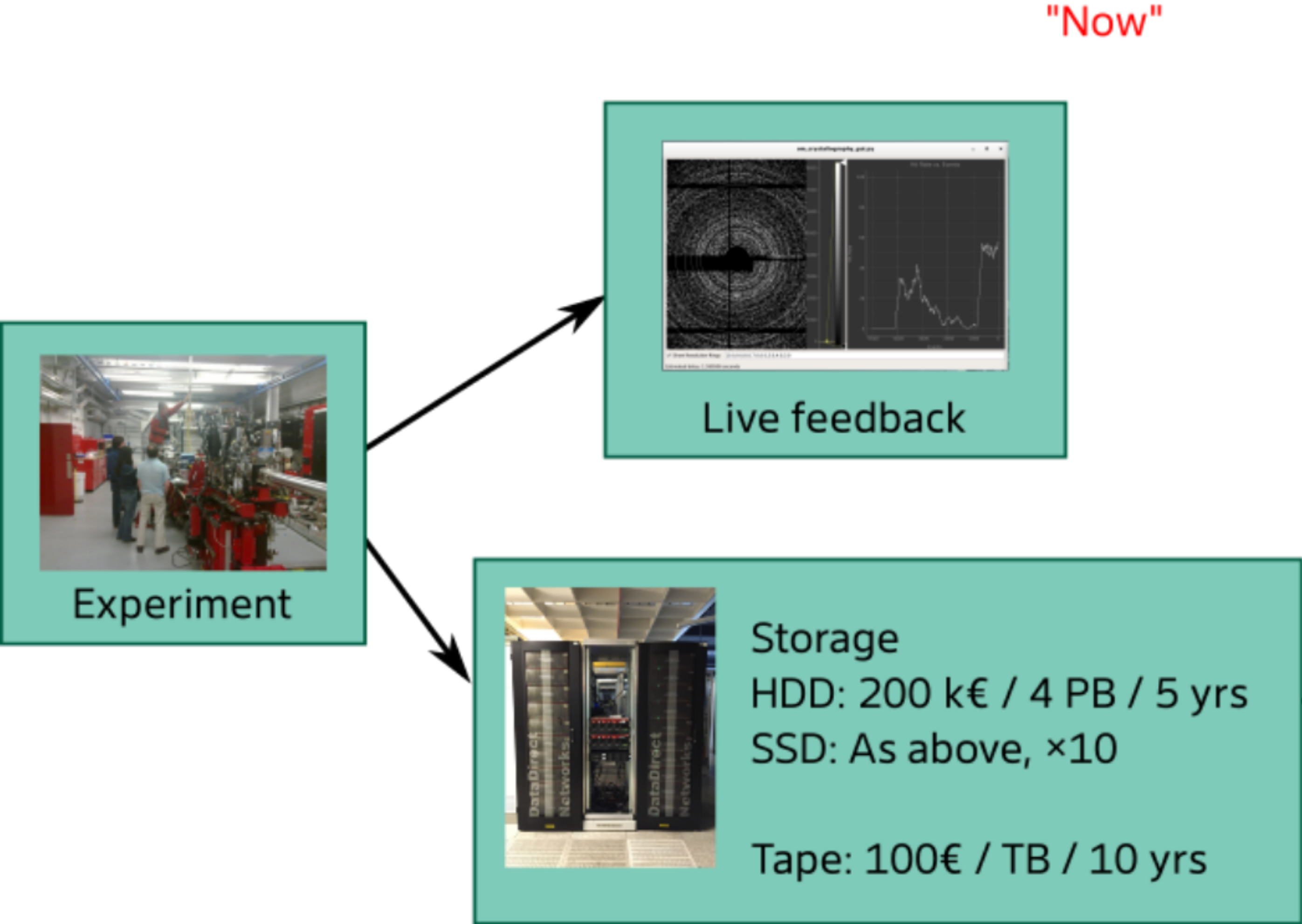


- One exposure per crystal
- Steady stream of crystals
- Each image processed independently
- A lot of images (millions)
(5 GB / sec, 100 TB per expt)
- Data processing after experiment
(months, even years!)

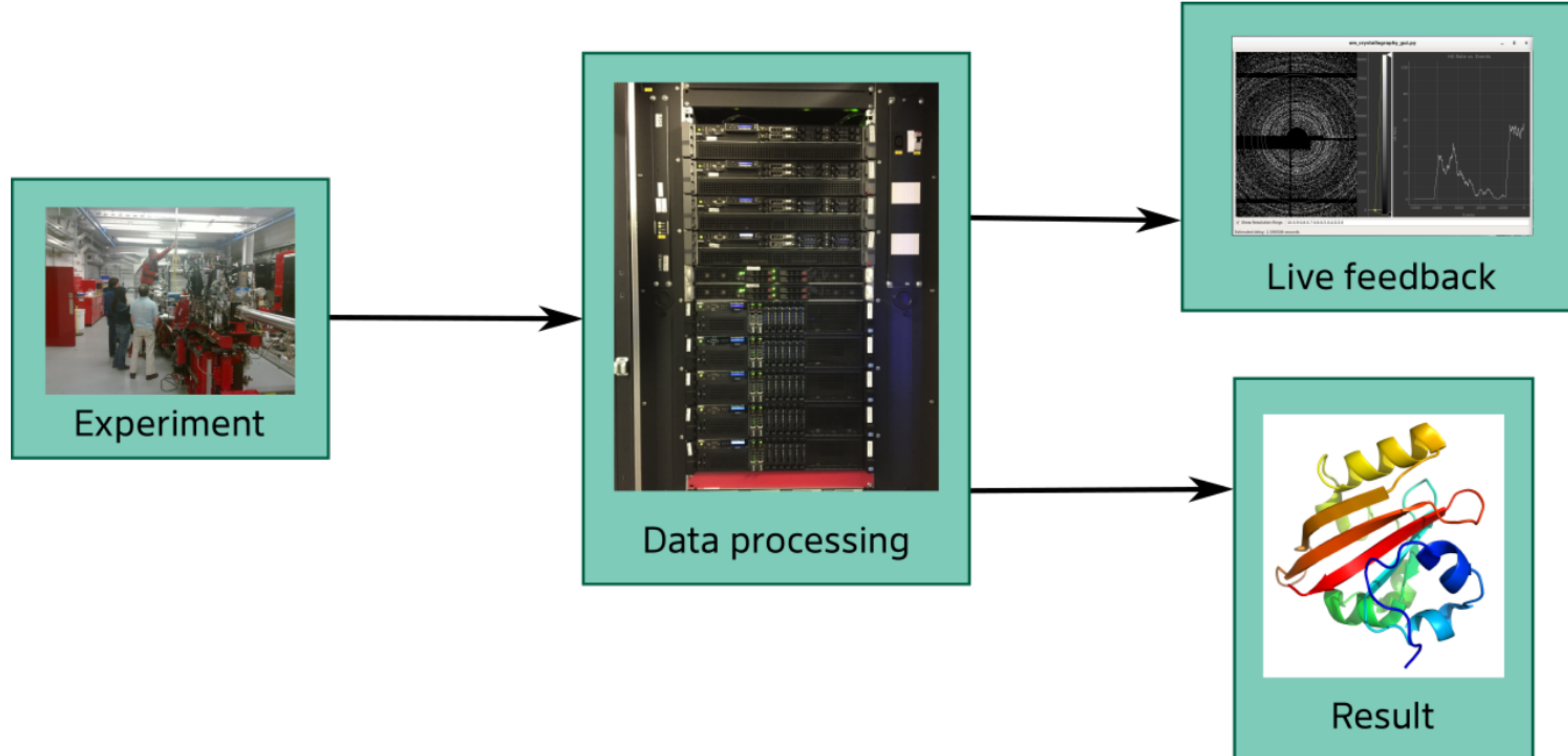
Processing pipeline



Processing pipeline



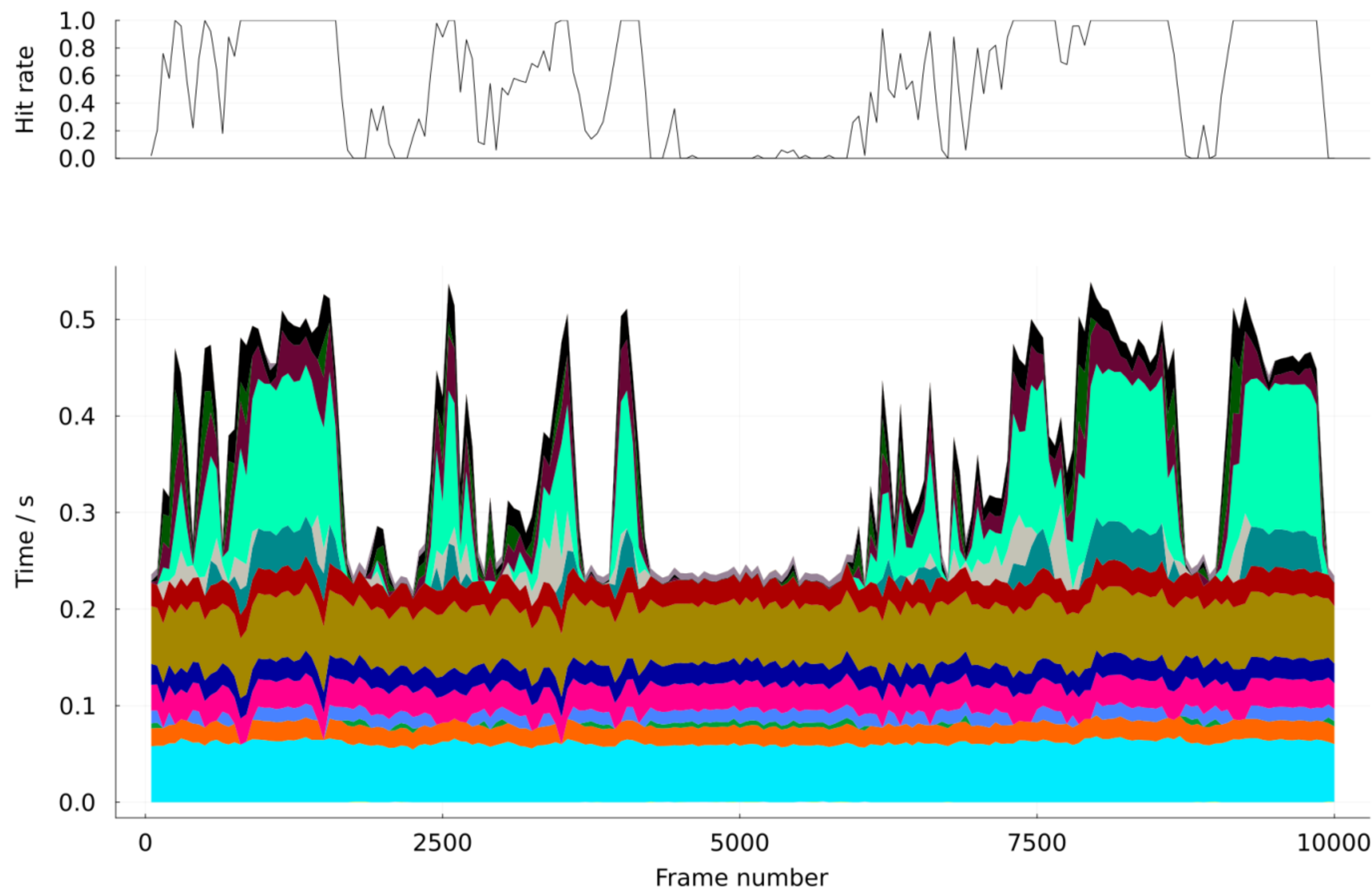
Processing pipeline



Benefits of real-time data processing

- Faster results and publication
- No need to store raw data (BIG cost reduction)
- Better situational awareness during experiment
- Faster diagnosis of experiment problems
- Less scope for self-delusion

Profiling graph



- asapo-get-next
- malloc-copy
- asapo-fetch
- seedee-deserialize
- seedee-panel
- load-image-data
- flag-values
- pf8-mask
- pf8-rstats
- pf8-search
- peak-search
- asdf-triplets
- asdf-findcell
- asdf-search
- prerefine-cell-check
- integration
- other
- zero-mask
- process-image
- root