OAK RIDGE National Laboratory

SNS First Target Station Architecture

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Overall system architecture breakout session

ORNL is managed by UT-Battelle, LLC
for the US Department of Energy

U.S. DEPARTMENT OF ENERGY

What software is supplied by the facility (e.g. data management, analysis)

Through Data Acquisition

- IPTS – Integrated Proposal Tracking System
- User training - site access, rad worker basic, etc
- ESS – Experiment Sample Safety
- ITEMS – sample tracking
- ADARA/ned - current gen data acquisition
- Event NeXus
- ONcat – metadata catalog

Reduction and Analysis

- Mantid
- monitor.sns.gov / autoreduction
- Facility produced interfaces – web reduction, drtsans, pyrs, addie, etc
- jupyter.sns.gov
- LDRDs

What software is configured/installed by the facility high level (not developed in-house)

Through Data Acquisition

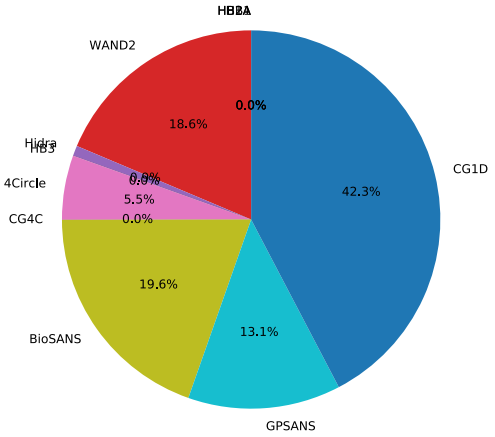
- ActiveMQ
- EPICS

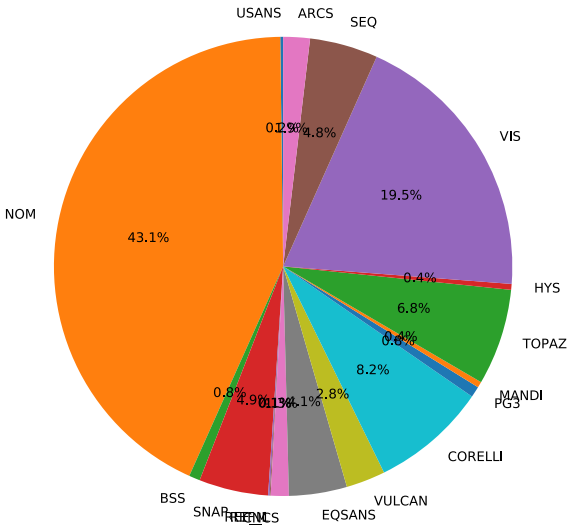
Reduction and Analysis

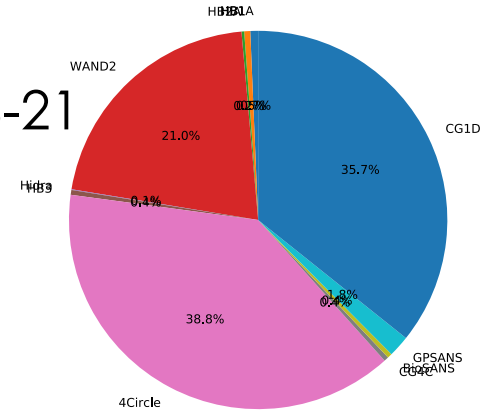
- conda apps
- jupyter.sns.gov apps
- Hosted applications – GSAS-II, ICEMAN, SASview, TOPAS, etc

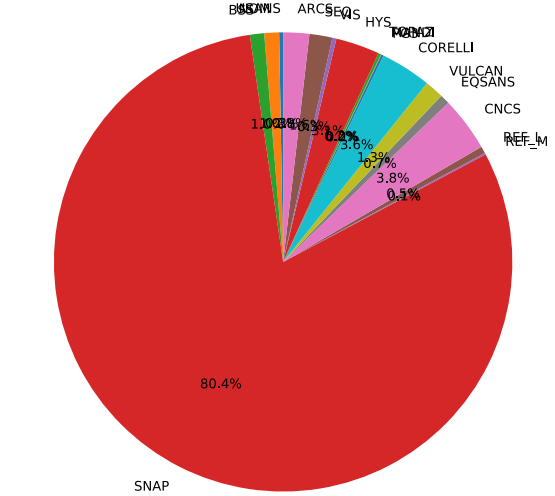
Current/expected raw data rates – last 12 months

- 1.4MW beam on target
- 122TiB/year (upper)
  - 108TiB SNS
  - 14TiB HFIR
- 3.3Mfiles/year (lower)
  - 1.8Mfiles SNS
  - 1.5Mfiles HFIR
- 2021-06-21 to 2022-06-21









Data storage methods / high level policy (e.g. keep forever or rolling storage)

- Data is kept "forever"

- Recent files (<4 Years) is on StorNext (previous were lustre and nfs)
- Other data on tape on main campus

- Data is stored per-proposal with LDAP groups and facl

/<facility>/<instrument>/<proposal>/

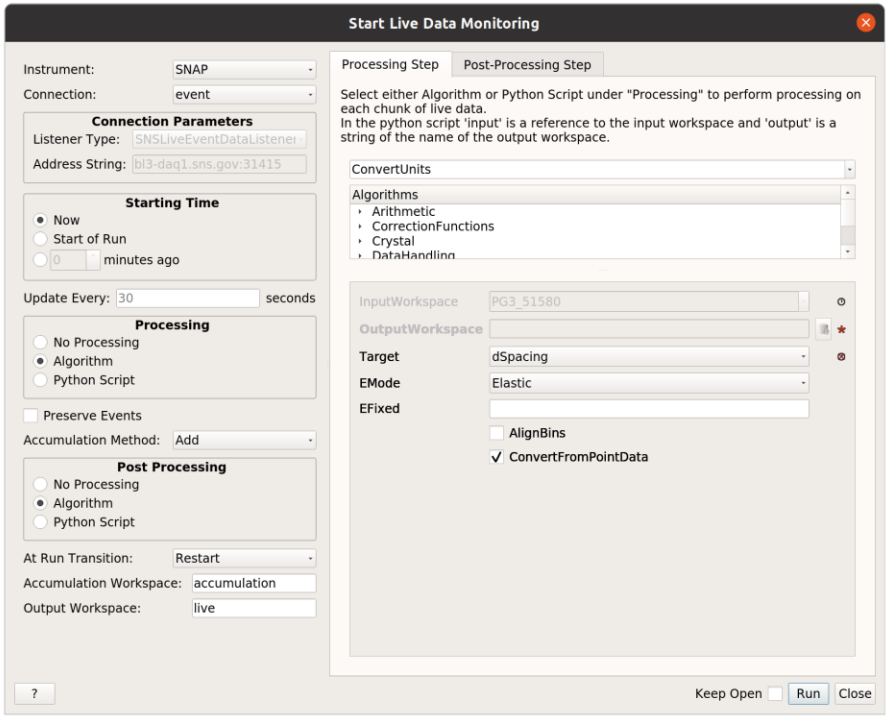
nexus

shared

shared/autoreduce

Data streaming

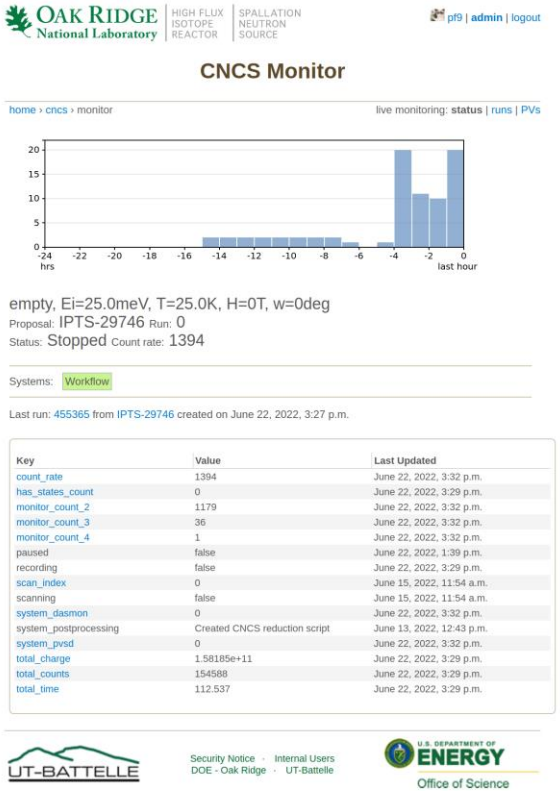
- ADARA stream
- Mantid is only current client
- Currently "for entertainment purposes only"



How is user office / sample safety integrated into experimental systems

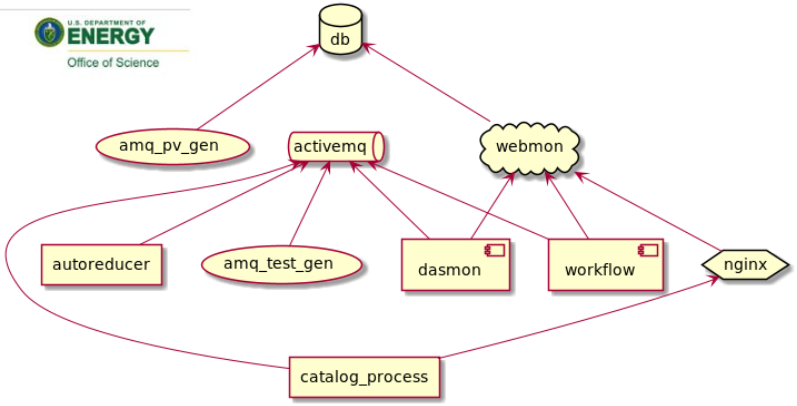
- ITEMS contains information about particular samples
- ITEMS identifier specified in DAS
- On NeXus creation ITEMS-id used to get information to populate fields
- Some reduction uses parameters for processing (e.g. absorption)

Interfaces between DAQ, DM, DR, DA



- Proprietary formats

NeXus



Computing for users

- Instrument computers
  - Dedicated resource for active experiment
  - Inside the hutch
- Autoreducer nodes
  - Controlled by monitor.sns.gov
  - Reduction only
- Analysis cluster
  - Available offsite through thinlinc
- Jupyter.sns.gov
- CADES and Other HPC?

How/what does the user walk away with

Connection Options

Mouse over one of the icons above for more information

For assistance connecting to the Analysis servers or accessing your data, please contact **Linux Support**: linux@support.sns.gov or call 865-309-4649 for urgent requests.