

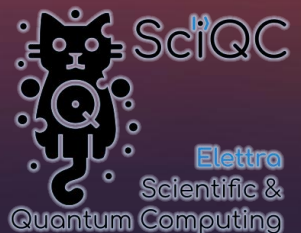
Data@Elettra: A Comprehensive Scientific Data Lake Architecture for Light Sources

Matteo Billè

**Elettra Sincrotrone Trieste
Scientific & Quantum Computing Unit**



Elettra Sincrotrone Trieste



Elettra
Scientific &
Quantum Computing

Synchrotron and Free Electron Laser source



Elettra Sincrotrone Trieste



32 years of operation

30+ beamlines

12 support Laboratories

900+ proposals per year

~ 1500 guest scientists per year from

~ 50 Countries

~ 650 scientific publications per year

36 National and International running projects

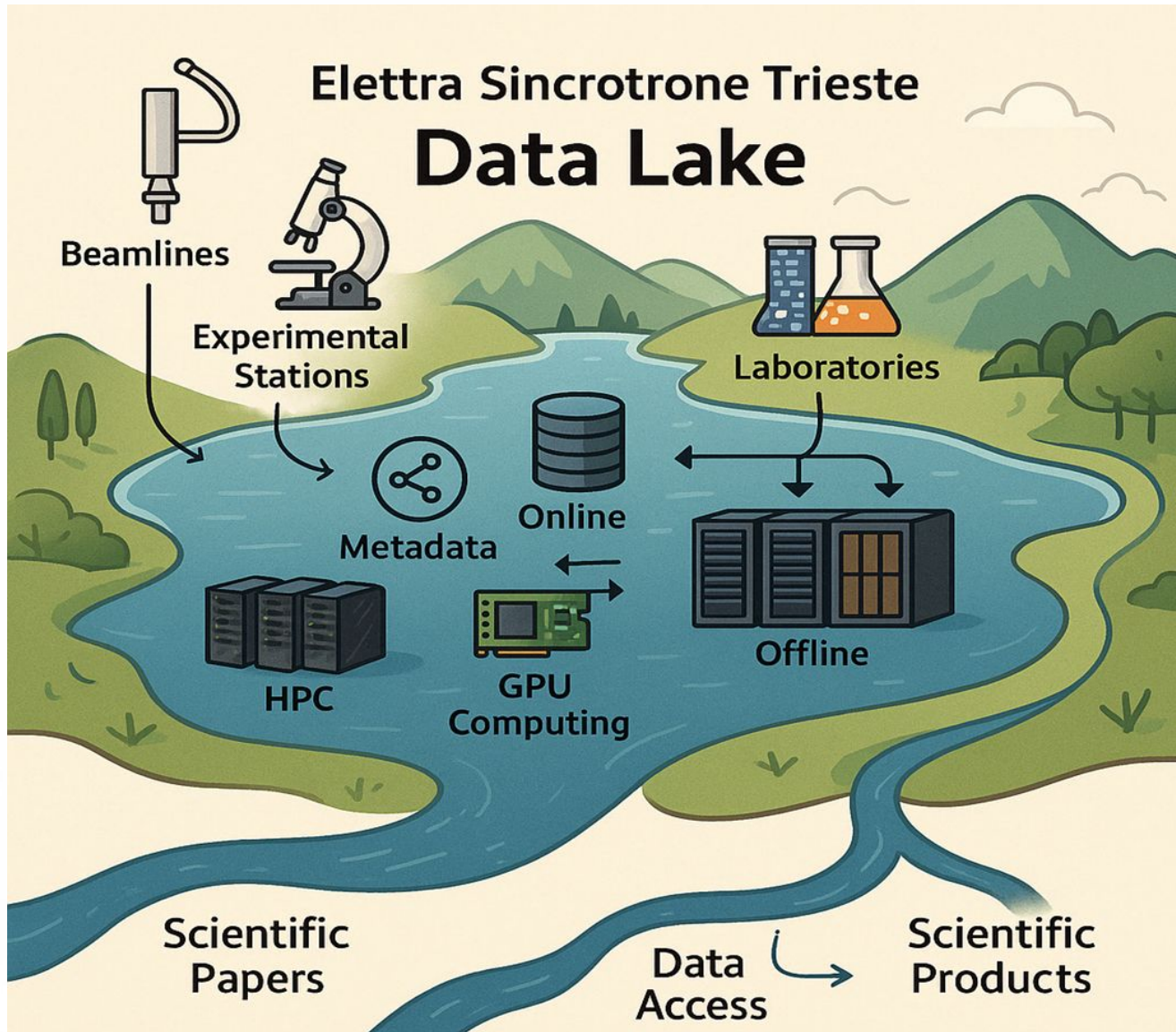
Elettra 2.0 Upgrade



Data@Elettra : Data Lake for Scientific unstructured data



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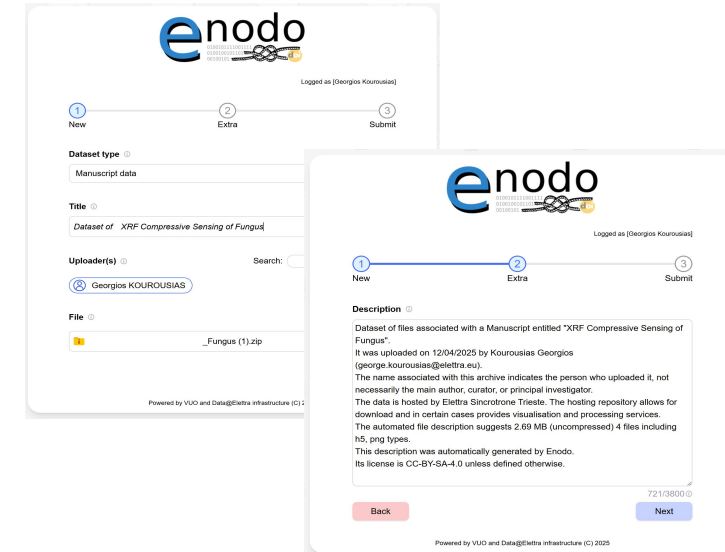
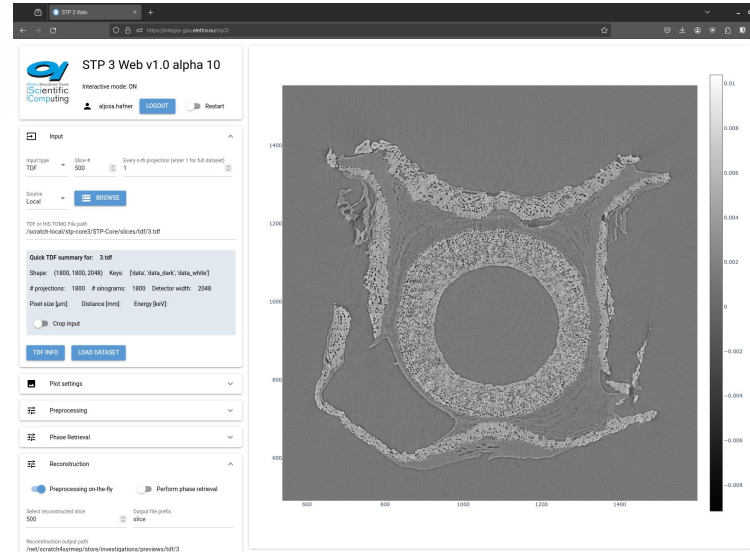
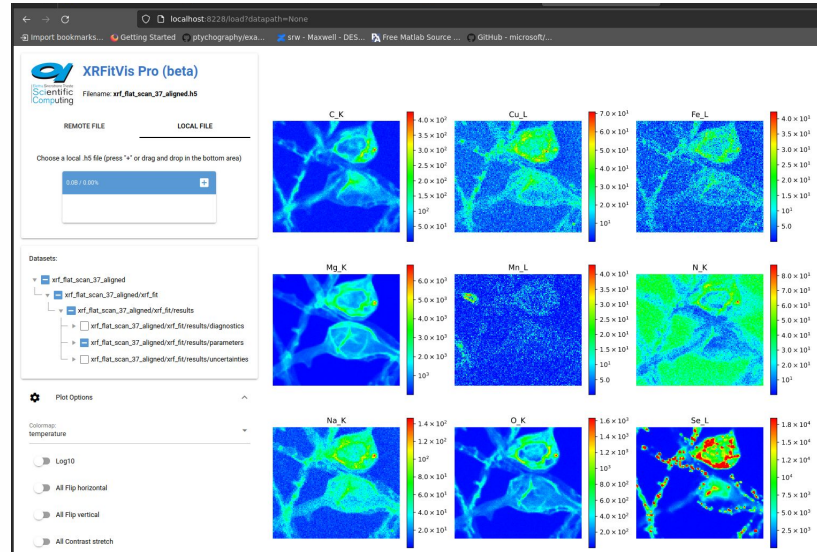
- Centralized Repository for Heterogeneous Data (Data@Elettra - VUO)
- Support for Multi-Modal and Multi-Scale Experiments
- Flexible Schema and Format Agnostic
- Interoperability with HPC and Edge Workflows
- Data Governance and FAIR Principles
- Metadata-Rich and Searchable (vuo.elettra.eu/go/dataportal)
- Foundation for Provenance and Remote Experimentation

Data@Elettra : Services built on top

XRFITVIS Pro

STP3 Web

Enodo



- XRF map visualisation
- HDF5 PyMCA output
- Available at: vuo.elettra.eu/go/xrfitvis
- Access to remote(Data@Elettra) and local files
- VUO authentication

- CT analysis
- SYRMEP beamline
- Based on an in-house architecture
- **MAPI**: Modular Adaptive Processing Infrastructure (to appear)
- Access to remote(Data@Elettra) and local files
- VUO authentication

- Zenodo alternative!
- Upload publication data
- Binding between data and DOI
- Store data at Data@Elettra
- try it: enodo.elettra.eu
- VUO authentication (free account)

Thank you

CONFERENZA GARR 2025
FRONTIERE DIGITALI

We are:

- looking for EU project partners
- open to shared developments

Please contact us - introduce yourself: quantum@elettra.eu

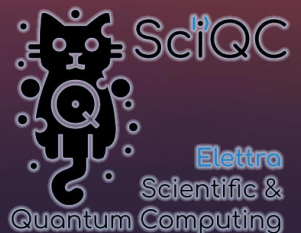
For HW-infrastructure details you can ask to Iztok Gregori! (iztok.gregori@elettra.eu)

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