



PaNOSC Closing Event

Paving the way towards the PaN FAIR Data Commons

29-30 November 2022

Grenoble - France

ELI ERIC Scientific Data Management System & PaNOSC Data Commons

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ELI ERIC

Nov 29-30 2022



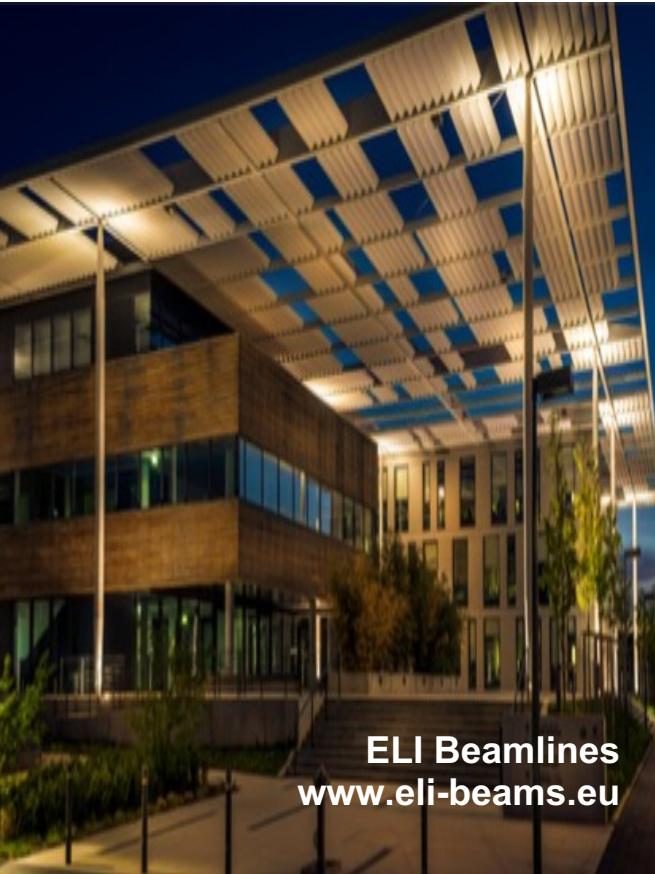
PaNOSC has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 823852

Outline

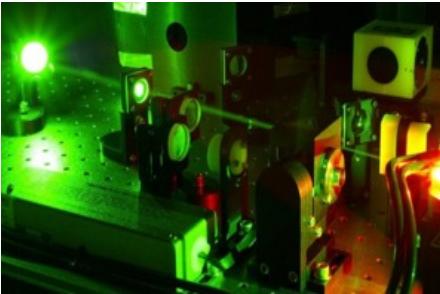
- The ELI ERIC Data Policy and Data Management Plan
- Development of Scientific Data Management Practices
- Development of FAIR Services
- Promoting Open Science by building meaningful Scientific Use Cases
- FAIR data services @ELI ERIC supporting EOSC



ELI Attosecond Light
Pulse Source
www.eli-alps.hu



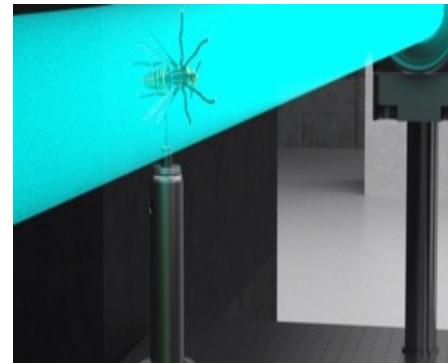
ELI Beamlines
www.eli-beams.eu



Laser Development



Plasma Physics and High Energy Density,
Astrophysics, Nuclear Photonics



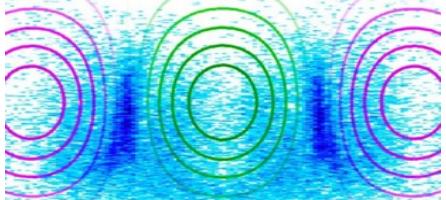
Radiation Physics and Electron
Acceleration
Soft to hard x-rays, GeV electrons



Particle Acceleration
250 MeV ions Acceleration by lasers



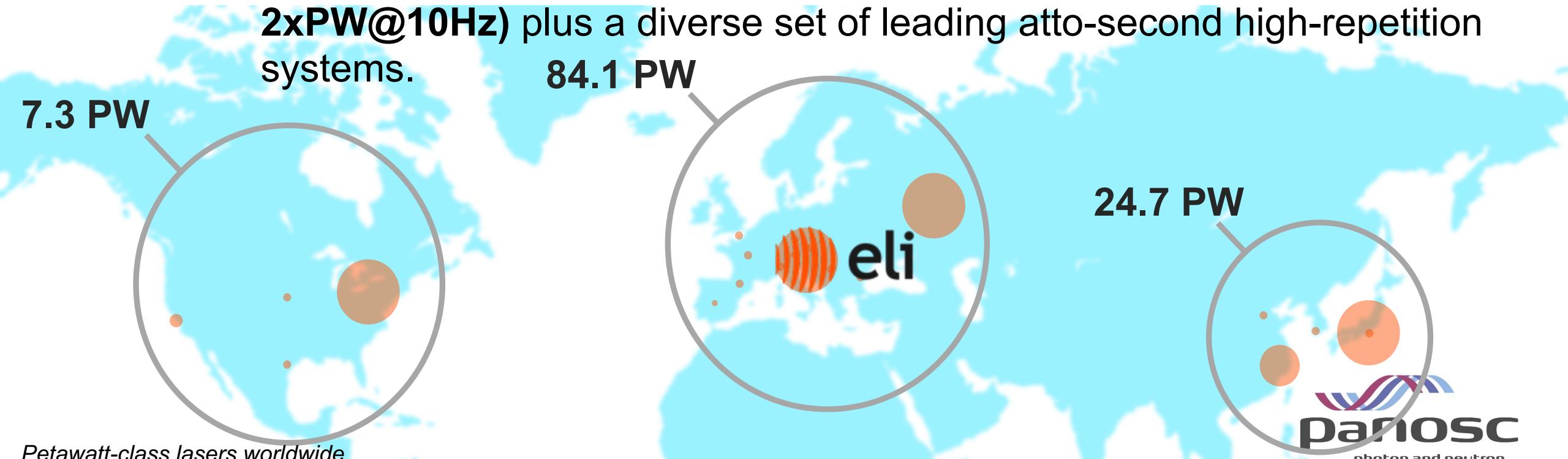
Applications in Material
Science and Biology



Ultra High Intensity Interactions
High-field physics and theory

Europe leads the world in laser production and installation, especially state-of-the-art systems.

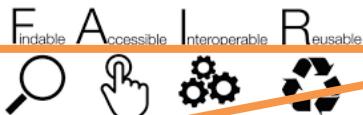
- **Investment** in high-power laser systems in Europe is connected to a **strong and relatively consolidated** community in Laserlab Europe beginning in 2001.
- The **ELI Facilities** are introducing **5 PW+ lasers**, (**3x10PW** and **2xPW@10Hz**) plus a diverse set of leading atto-second high-repetition systems.



ELI ERIC Data Policy and DMP Strategy

ELI ERIC Scientific Data Policy

PaNOSC FAIR Research Data Policy Framework¹



ELI ERIC Scientific Research Data Policy²

PaNOSC Guidelines on best practices implementing a research data policy³

First ELI ERIC call for proposals
ELI ERIC data Policy presented and accepted by first users
Data Practices presented and accepted by users

Mission statement:

- Embargo of data and exclusive access for the PI – 3 years (can be extended, if justified/approved by a scientific board or reduced if the PI asks)
- Aim at storing the data for 10 years and metadata forever
- Develop FAIR-by-Design tools and services
- Establish ELI-wide Data and Metadata standards and support their implementation
- Share data as Open Data after the embargo period (3 years)
- Multi-stage DMP – 1st stage via User Portal, second during the experiment preparation, only for approved proposals

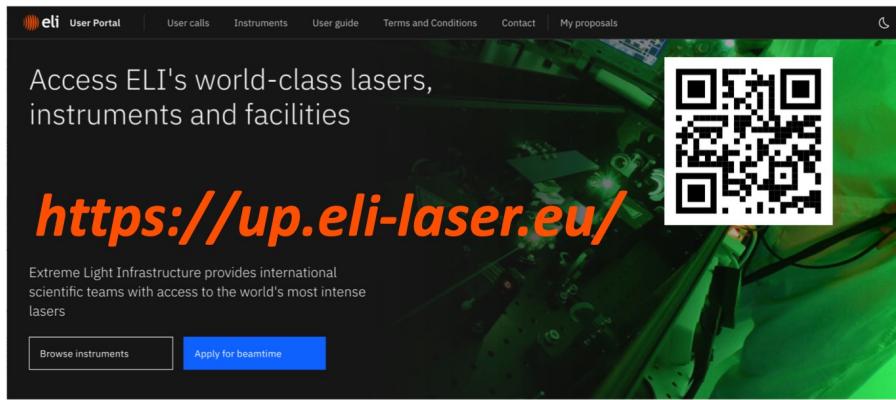
1. PaNOSC FAIR Research Data Policy Framework: <https://zenodo.org/record/3862701#.Y4SQaOzMLso>

2. ELI ERIC Scientific Data Policy: <https://zenodo.org/record/6515903#.Y4SRR-zMLso>

3. Guidelines and best practices on implementing a Research data Policy: <https://zenodo.org/record/4899344#.Y4SS7-zMLso>

DMP and a DMP strategy

ELI ERIC 1st ELI ERIC Call



- High-level metadata collection
- A multi stage Data Management Approach
 - Stage 1 DMP during proposal submission
 - Stage 2 DMP during the experiment setup (after proposal is approved)
- Initiates and defines Data Lifecycle
- Closes the experiment and enables initiates embargo period

A screenshot of the ELI Data catalogue homepage. The header features the "eli" logo, "Communities", and "My dashboard". A central orange box lists three key features:

- Data (best) practices – FAIR – from PaNOSC&ExPaNDS to reality, demonstrate compliance
- DMP – Laser Experiments Data Management Plan – documenting the data to ensuring reproducibility to support interoperability and interdisciplinary research
- Common data portal – Federated Search API - deployed

The URL "https://data.eli-laser.eu/" is shown at the bottom left, along with a QR code. On the right, the "ELI Data catalogue" and "panosc" logos are displayed. A search bar with a magnifying glass icon is at the bottom right.

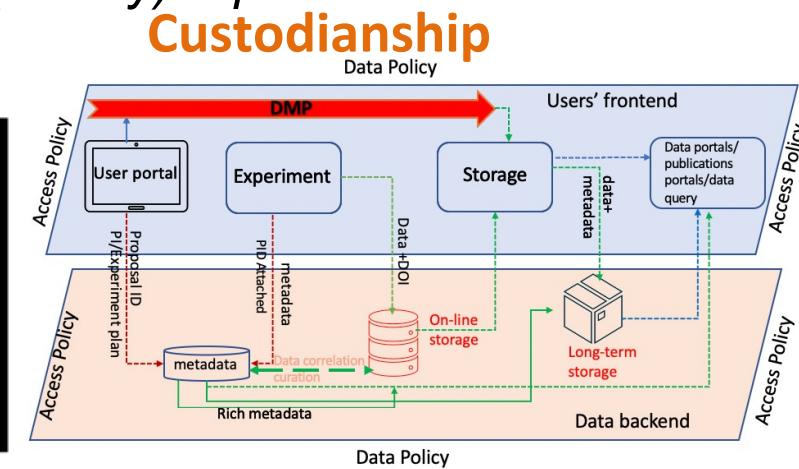
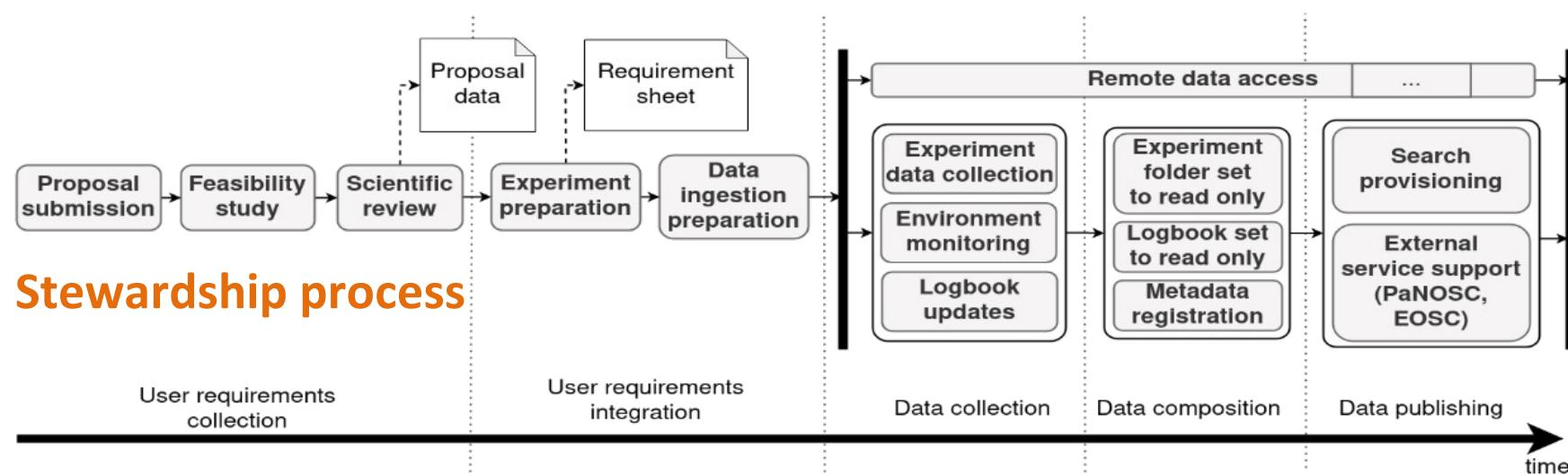
Data Stewardship wizard has also been deployed and will be tested for future calls.



Scientific Data Management Practices

ELI ERIC 1st ELI ERIC Call

1. **Data Custodianship** - “*ELI ERIC shall be the custodian of the Data, with the responsibility to collect, secure, archive and provide access to the Data*”¹
2. **Data Stewardship** – using the already existing practices to demonstrate compliance
 - *Common data structure has been agreed with each facility*
 - *Data will be made accessible to users via ELI ERIC Data Portal*
 - *Each user will have his data stored at the level of ELI ERIC, local (facility) replicas of the data sets can also be stored*

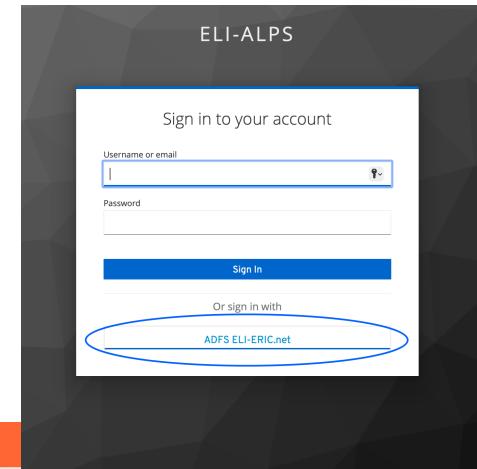


Development of FAIR Services Ready for the 1st ELI Call

Invenio RDM – searchable MetaData

The screenshot shows the Invenio RDM interface. On the left, a sidebar provides filters for Versions, Access status, Status, Resource types, Help, and a QR code. The main area displays a search results page with 234 results found, filtered by 'Recently updated'. It includes a table with columns for title, date, and type. Below this is a detailed view of a document titled 'XUV spectroscopy with PG2 at 60.0 mm' by Bago, Balazs, dated February 2, 2022. The view includes sections for Citation, Additional details, and Export options.

Identity Management



ELI ERIC Identity Management System towards implementing SSO services:

- AD (operational)
- ORCID and UmbrellaID (tested)

Data Portal for download

The screenshot shows a file sharing interface. It includes a sidebar with 'Shares' (Shared with others, Shared with you, Shared by link, Deleted shares, Pending shares), 'Tags', and 'External storage'. The main area lists files and folders, such as 'All files', 'Recent', 'Favorites', and a folder named 'NanoESCA_DataPilot'.

Open science services

ELI ERIC and ELI ALPS already supporting:

- PaNOSC Search API support
- OAI-PMH endpoint

The screenshot shows the LoopBack API Explorer interface. The URL is https://panosc-search.elilaser.eu/explorer/#/. The main area displays the search API documentation for the 'search-api' endpoint. It includes sections for 'Dataset', 'Document', 'Instrument', 'Parameter', and 'Technique', each with 'Show/Hide', 'List Operations', and 'Expand Operations' buttons.

search-api

PaN search REST api

Dataset : Information about an experimental run, including optional File, Sample, Instrument and Technique.

Document : Represents a scientific proposal or publication.

Instrument : Beam line where experiment took place.

Parameter

Technique

[BASE URL: /api , API VERSION: 1.0.0]

REPOSITORY	VALIDATION TYPE	STATUS	SCORE	STARTED	GUIDELINES	ACTIONS
https://data.elilaser.eu/oai2d	OAI Content OAI Usage	finished finished	85 100	2022-06-29 13:45:53	For Data Archives (2.0)	View Results > Resubmit Job

ELI Eric EOSC Data sharing

OpenAIRE | EXPLORE

Search

Organization
ELI ERIC
EXTREME LIGHT INFRASTRUCTURE ERIC

Funding / Projects (5)

Project . 2018 - 2022

PaNOSC (Photon and Neutron Open Science Cloud)

OPEN ACCESS MANDATE FOR PUBLICATIONS AND RESEARCH DATA

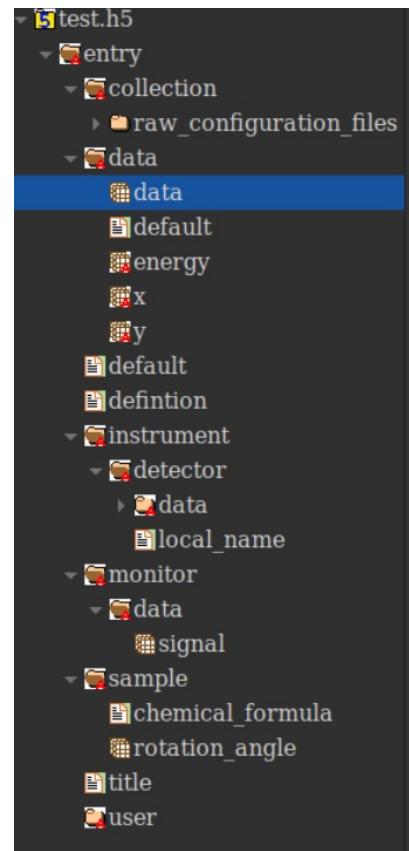
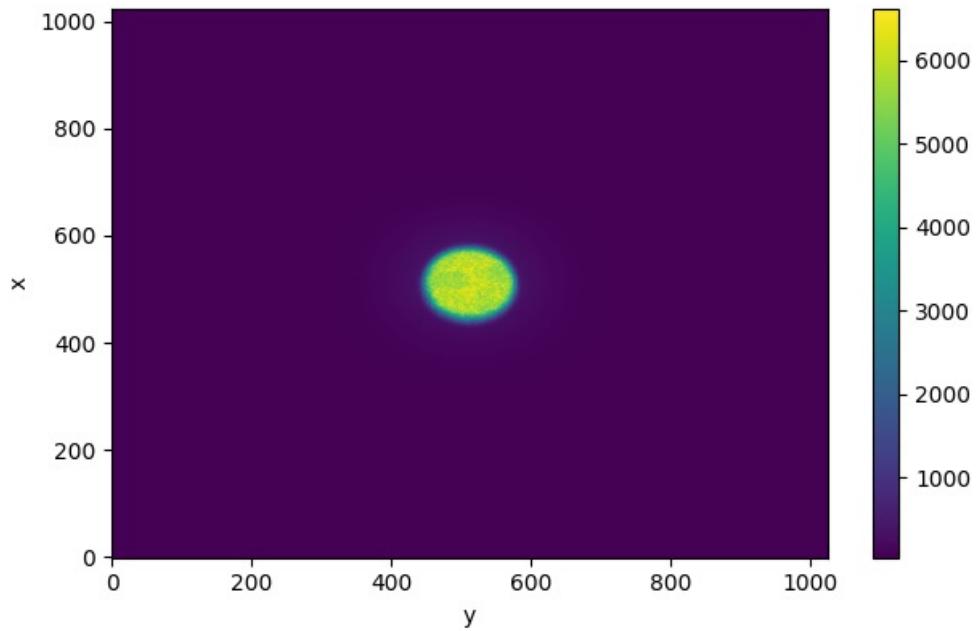
Search

The screenshot shows the re3data.org search results for 'eli eric'. A filter sidebar on the left lists categories like Subjects, Content Types, Countries, Data access, etc. The main results page shows one result: 'ELI ERIC Open Data Repository' under 'Extreme Light Infrastructure'. The result details include Subject(s) (Optics, Quantum Optics and Physics of Atoms, Molecules and Plasmas, Physics, Natural Sciences), Content type(s) (Software applications, other), and Country (European Union). Navigation buttons for 'Previous' and 'Next' are also visible.



Data and metadata standards (ELI ALPS)

- NanoESCA instrument @ELI Alps
 - NeXus Application Definition – NXScan
 - PaNET - Angle resolved photoemission spectroscopy (momentum microscopy)



Data Portal and remote data analysis

ELI Beamlines & WP4 activities

- The adapter/middleware software supporting the implementation of the PaNOSC Federated Search API is in production

The screenshot shows the PaNOSC website with a dark background. At the top left is the PaNOSC logo. Below it, the text "The Photon and Neutron Open Science Cloud" is displayed. A search bar with a magnifying glass icon is positioned below the text. To the right of the search bar, there is a list of partners. On the far right, there is orange text about remote data analysis services and the ELI Beams team's work.

The PaNOSC project brings together six strategic European research infrastructures and two e-infrastructures:

- European Synchrotron Radiation Facility
- Central European Research Infrastructure Consortium
- Extreme Light Infrastructure Delivery Consortium
- European Spallation Source
- European X-Ray Free-Electron Laser Facility
- Institut Laue Langevin
- European Grid Infrastructure
- GÉANT

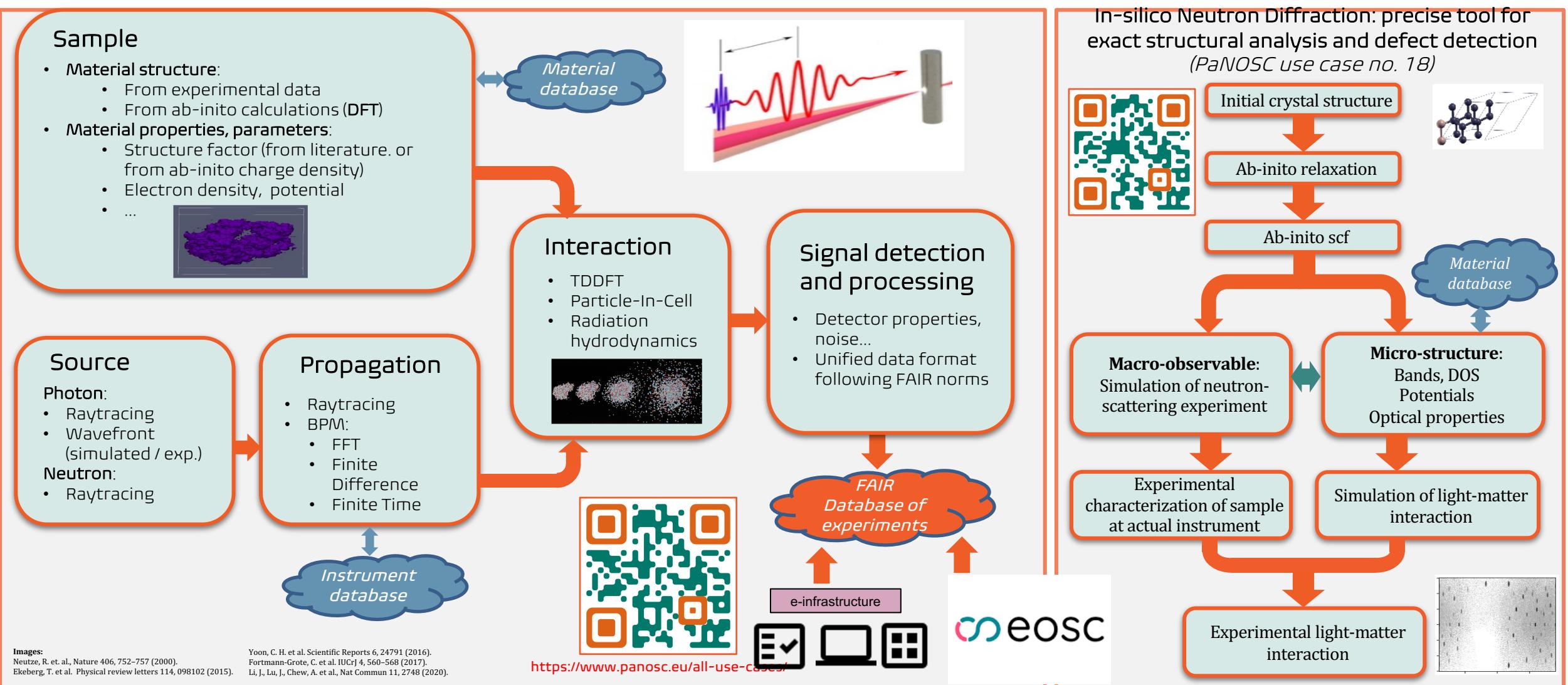
The mission is to contribute to the realization of a data commons for Neutron and Photon science, providing services and tools for data storage, analysis and simulation, for the many scientists from existing and future disciplines using data from photon and neutron sources. To achieve this aim, the exchange of know-how and experiences is crucial to driving a change in culture by embracing Open Science among the targeted scientific communities. This is why the project works closely with the national photon and neutron sources in Europe to develop common policies, strategies and solutions in the area of FAIR data policy, data management and data services.

**Remote Data Analysis services
require dedicated IT Infra
(Computing + Storage)**

**ELI Beams team is continuing
the work, aiming at deploying a
VISA instance for users.**

**Production Environment will be
hosted by ELI ERIC IT
Infrastructure.**

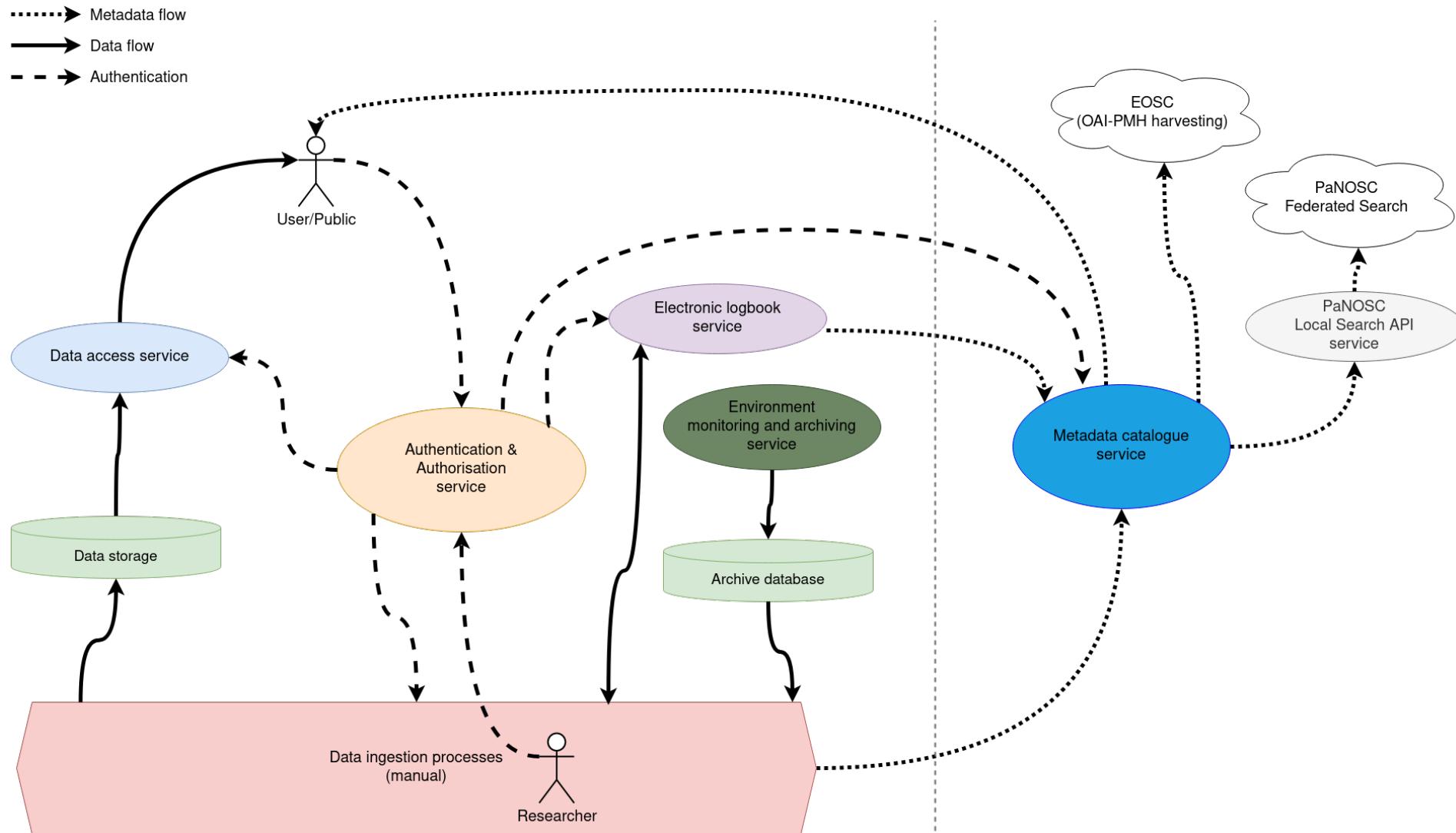
An ELI-EOSC Scientific Use Case and a PaNOSC training



Developed by Mousumi Kahaly and the Computational Material Science Team @ELI ALPS

ELI ERIC 1st Call Scientific Data Management

Demonstrating minimum compliance and provide functional use cases to our users





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On behalf of ELI ERIC Team,
Teodor Ivanoica
itservices@eli-laser.eu

Thank you



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