Horizon Europe funding opportunities for the PaN community in EOSC

PaNOSC + ExPaNDS Prague meeting @ ELI-Beamlines 14+15/6/2022
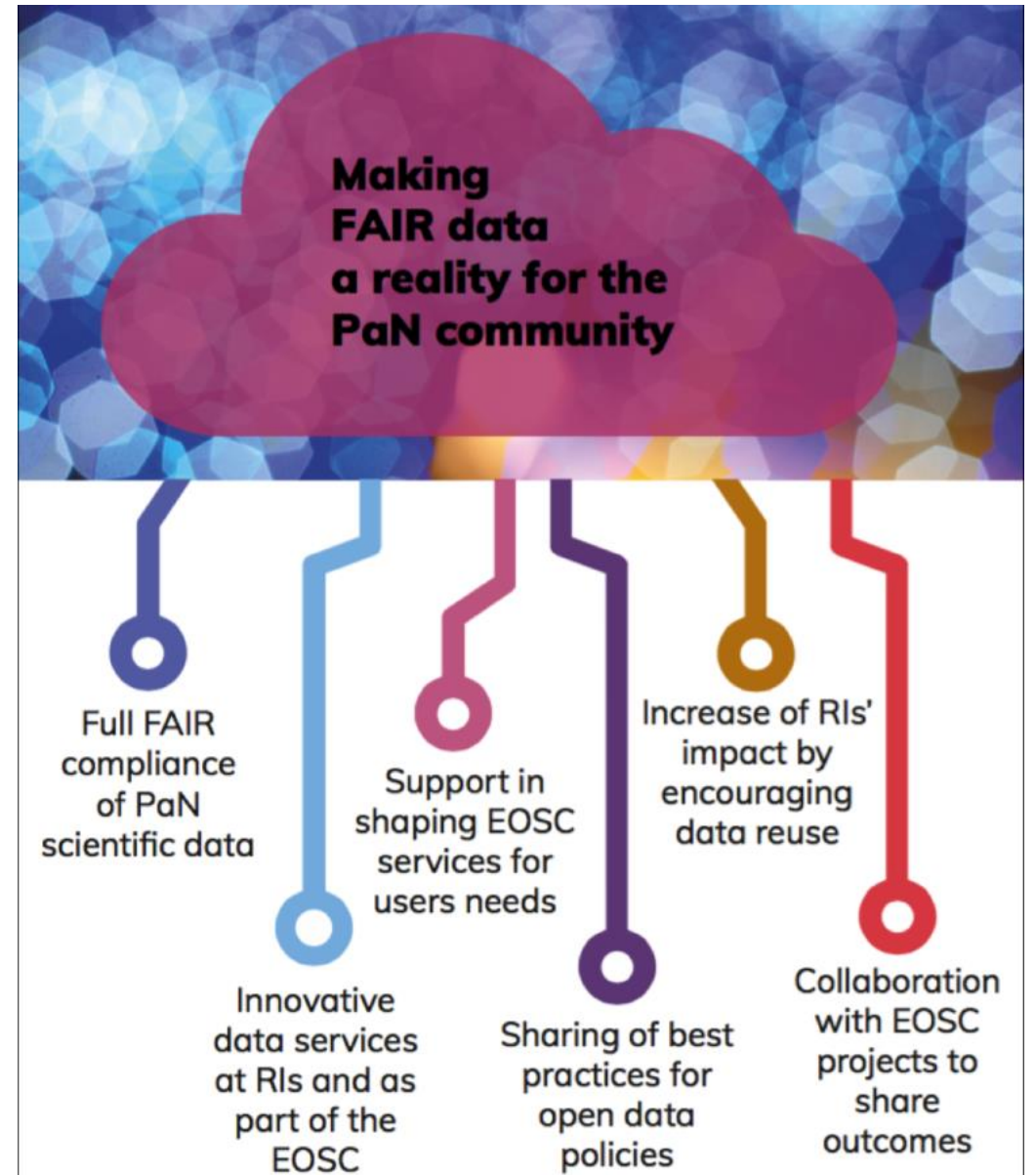
What next?

1. Initial objectives are still valid
2. Strong need to consolidate + sustain the solutions put in place
3. Connect with scientists to adopt Open Science practices and promote data re-use
4. Work with LEAPS+LENS communities

Q: How can EOSC + HE help?

Making FAIR data a reality for the PaN community

Full FAIR compliance of PaN scientific data

Innovative data services at RIs and as part of the EOSC

Support in shaping EOSC services for users needs

Sharing of best practices for open data policies

Increase of RIs' impact by encouraging data reuse

Collaboration with EOSC projects to share outcomes

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photon and neutron open science cloud

ExPaNDS
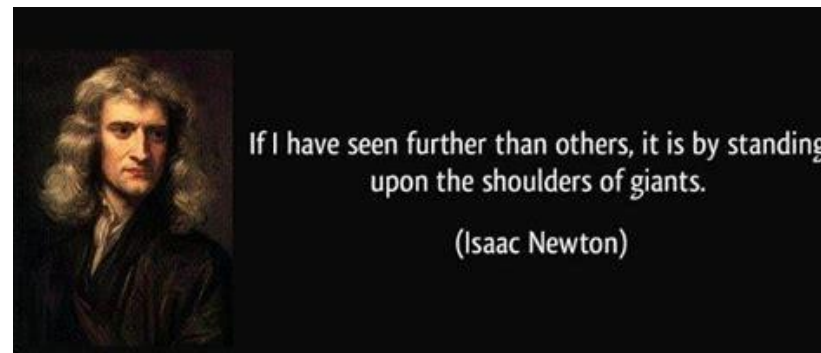European Open Science Cloud Photon and Neutron Data Services

10 Primary outcomes [of 42 in total]

1. FAIR data policy and DMPs
2. (FAIR assessment and common PID framework)
3. Standardised metadata (Nexus/HDF5, PaN ontologies)
4. Federated search API for PaN data catalogues
5. Open Data portal for searching + downloading data
6. Community AAI UmbrellaId
7. JupyterLab notebooks and HDF5/NeXus files visualisation
8. Remote data analysis with VISA + interoperable pipelines
9. Simulation software for simulating experimental data (SIMEX)
10. PaN-learning platform (pan-learning.org + pan-training.org)

Build on the outcomes of PaNOSC + ExPaNDS

1. PaNOSC and ExPaNDS have tried as much as possible to build on outcomes from previous EU projects viz. EUCALL, CALIPSOPLUS, PaNData-Europe, PaNData-ODI

1. Future projects must BUILD UPON the data repositories, DMPs, e-logbooks, visualisation, simulation software, remote tools, training platform etc.

2. Future projects MUST avoid starting from scratch wherever possible e.g. AI4SI, Resilience, BigMap 2.0 …

If I have seen further than others, it is by standing upon the shoulders of giants.

(Isaac Newton)

Recycling is the way to Sustainability

1. **Recycle** the outcomes of PaNOSC and ExPaNDS

1. **Integrate** them into your operational workflows

1. **Contribute** to them to improve them

1. **Change** from "**not invented here**"syndrome with "**use the community solution**"

Open Science

Open Science is becoming the new **norm for science**

European Commission requires **Open Science** be part of **Horizon Europe** proposal**s**

NOW is the time for an **Open Science Data Commons** for **Photons and Neutrons**

Open Science means**:**

   FAIR data = standard metadata (Nexus/HDF5)

   Open Data = searchable open data repositories (PaN search API)

   PIDs = DOI for data, metadata + instruments

   Publish = text + notebooks, workflows, software

   Open Hardware + Open Education Resources + Citizen Science

Photon and Neutron Open Data Commons

Photon and Neutron Open Data Commons

- Next step is Open Data portals for FAIR Data from PaN sources:
  - Searchable
  - Accessible
  - Downloadable
  - Re-usable

The PaN Open Data Commons will enable new user communities to access and exploit the unique data being produced at the LEAPS facilities to do new science e.g. the Human Organ Atlas is revolutionizing digital histology and medical research with high resolution 3D volumes of complete human organs.

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European Photon and Neutron Open Data Search Portal

Type a query to search for open data from photon and neutron sources – e.g. data

diffraction 🔍

The European Photon and Neutron sources are working together in the PaNOSC and ExPaNDS projects financed by the European Commission to build the **European Open Science Cloud**. One of the main objectives of the EOSC is to make **Open Data** from these facilities FAIR. This portal implements the F(indable) part of FAIR via a **federated search engine** from the following facilities:

- European Spallation Source
- Institut Laue Langevin
- MAX IV

Additional facilities will be included in the federated search as their search engines come online locally. The goal is to include all photon and neutron facilites who provide open data by the end of the two projects PaNOSC and ExPaNDS.

The mission of the PaN data search portal is to contribute to the realization of a data commons for Neutron and Photon science. The search results provide a link to the landing page of the data DOIs through which the other data services provided by PaNOSC and ExPaNDS for data downloading, analysis, notebooks and simulation can be accessed. The aim of the portal is to facilitate using data from photon and neutron sources for the many scientists from existing and future disciplines. 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.
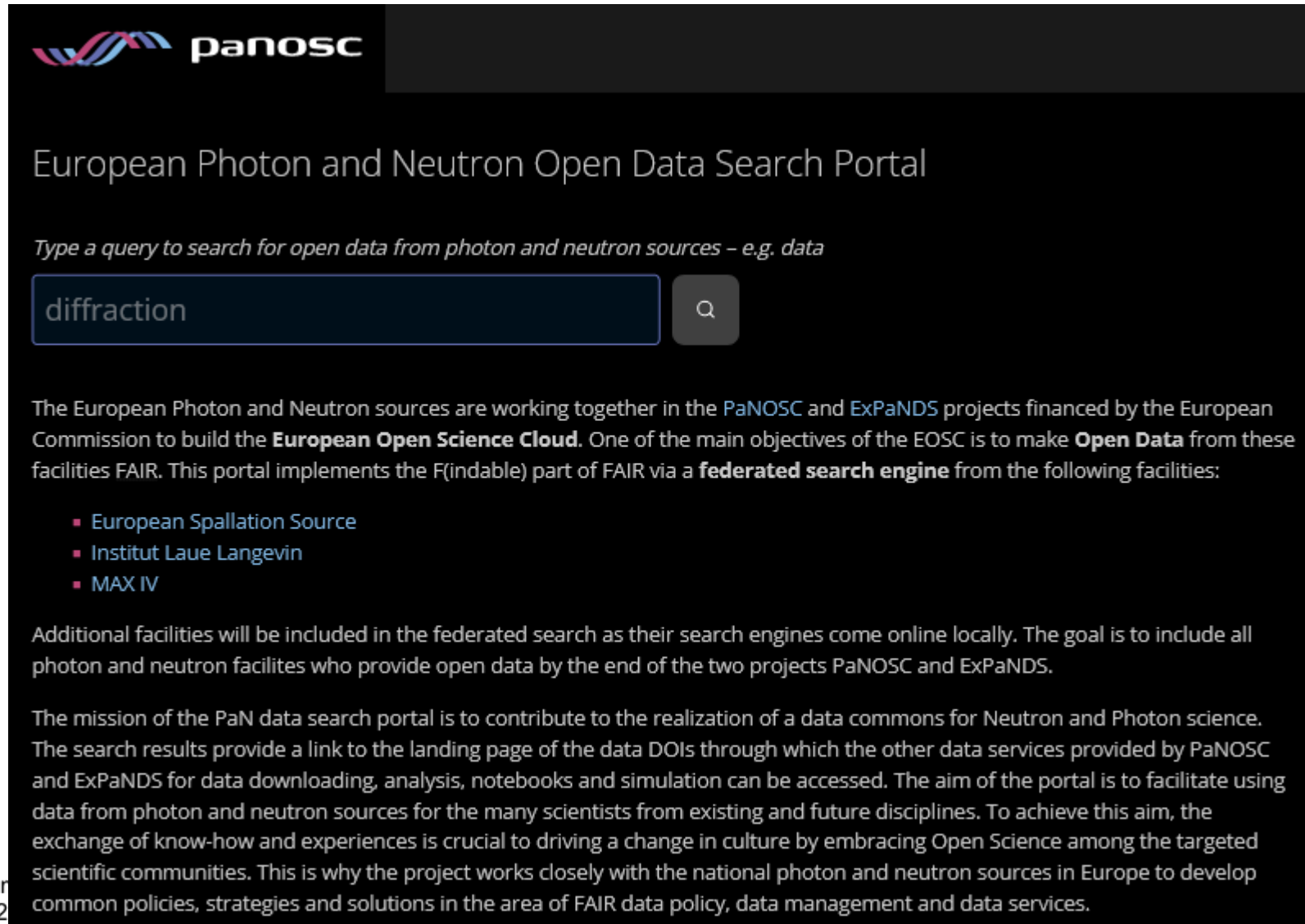
HORIZON-INFRA-2023-EOSC-01-01

Build on the science cluster approach to ensure the uptake of EOSC by research infrastructures and research communities

- Budget
  - 24 million + 5 clusters + 1 project
  - 18 million for funding third parties
  - 100k – 250k for 12 to 18 months

  Align with HORIZON-INFRA-2021-SERV-01, HORIZON-INFRA-2022-EOSC-01-06, HORIZON-INFRA-2022-EOSC-01-03

- Requirements
  - Data must be deposited in an EOSC federated repository
  - Services to link up with EOSC Exchange
  - Re-use of data and services already on-boarded
  - Targeting communities outside EOSC clusters e.g. Human Organ Atlas, Big Map
- Ideas – sustain and enhance PaN Data Commons, PaN RIs to be 3rd parties

HORIZON-INFRA-2023-EOSC-01-02

Development of community-based approaches for ensuring and improving the quality of scientific software and code

- Budget
  - 8 million + 1 project
- Requirements

Align with EOSC-Synergy Software Quality as a Service, HORIZON-INFRA-2023-EOSC-01-03 and HORIZON-INFRA-2024-EOSC-01-04, HORIZON-INFRA-2021-EOSC-01-05

  - Improve software in general
  - Develop or align pre-existing training materials for software development Re-use of data and services already on-boarded
  - Address software best practices, curation, versioning, CI/CD, incubation, etc.
- Ideas
  - Develop software quality trainings + schools + carpentries
  - Improve the PaN Software Catalog e.g. linking to DMPs, VISA etc.

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European Open Science Cloud Photon
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HORIZON-INFRA-2023-EOSC-01-03

Planning, tracking, and assessing scientific knowledge production

- Budget
  - 10 million + 1 project
- Requirements

Align with EOSC-Synergy Software Quality as a Service, HORIZON-INFRA-2023-EOSC-01-03 and HORIZON-INFRA-2024-EOSC-01-04, HORIZON-INFRA-2021-EOSC-01-05

  - Standardisation of DMPs, develop use cases for machine actionability
  - Generation of Scientific Knowledge Graphs + linking to Digital Objects
  - Develop metrics of FAIRness
- Ideas
  - Extend the use of DMPs + PIDs to more domains at more facilities
  - Define and implement FAIRness metrics

HORIZON-INFRA-2023-EOSC-01-04

Next generation services for operational and sustainable EOSC Core Infrastructure

- Budget
  - 10 million + 1 project

- Requirements
  - Infrastructure and services for EOSC Core, beyond the current Minimum Viable EOSC platform

- Ideas
  - NOT for PaN community ?

HORIZON-INFRA-2024-EOSC-01-03

Enabling a network of EOSC federated and trustworthy repositories and enhancing the framework of generic and discipline specific services for data and other research digital objects

- Budget
  - 5 million + 1 project

- Requirements
  - Infrastructure and services for EOSC Core, beyond the current Minimum Viable EOSC platform
  - Use ontologies to facilitate cross-discipline data interoperability
  - Support custom-made front-end portal development

- Ideas
  - Opportunity for PaNET?

HORIZON-INFRA-2024-EOSC-01-02

Supporting the EOSC Partnership in further consolidating the coordination and sustainability of the EOSC ecosystem

- Budget
  - 4 million + 1 project
  - 2.5 million for 3rd party grants up to 100k

- Requirements
  - Supporting additional collaborative activities
  - Implementation of clear financial models

- Ideas
  - LEAPS+LENS could promote EOSC related actions via this

HORIZON-INFRA-2024-EOSC-01-04

Long-term access and preservation infrastructure development for EOSC, including data quality aspects

- Budget
  - 8 million + 1 project

- Requirements
  - Establish a minimum set of practices and a general framework to identify what data is candidate to long term preservation
  - Creation of long-term preservation and access strategies
  - Build on the ARCHIVER project outcomes

- Ideas
  - One or more PaN Ris could participate to improve long term archiving practices
  - PaN Data Commons could create an Open Data "EOSC archive"

Conclusion

- **PaNOSC + ExPaNDS were a unique chance for the PaN community** – we will not get another large project like this, we now have to build on the results with internal funding and collaborating with proposals that need FAIR data management e.g. BigMap for battery research

- **New calls offer small but significant opportunities to work with the other clusters on EOSC** – PaN community will participate with a few partners (1/2) with other clusters, majority of PaN Ris will be able to get 3rd party funding

- **We need to identify active partners and the topics they are interested in** – cluster coordinators will meet tomorrow in Brussels, we need to know who can contribute to which proposals

Thank you