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Achieving a Photon and Neutron community federated cloud in EOSC

Using Photon and Neutron sources to investigate samples of matter at molecular or atomic level applies to very diverse science disciplines, ranging from chemistry and life science to palaeontology and art history. The scientific communities represented by **PaNOSC** for European Research Infrastructures (RIs) and **ExPaNDS** for national RIs is extremely wide ranging, as they embrace over 40,000 researchers, however due to the breadth of subjects it is extremely diverse in the data produced.
One of the shared high-level objectives of our projects is to give the means to scientists to make the most of this wealth of data, created every year by the PaN community and we identified the **EOSC** to be the perfect tool for achieving this goal.

During this session we will present our contributions to:

Enabling our facilities to produce FAIR data

Different tools and methods are required throughout the experiment lifecycle of facilities to maintain the FAIRness of the resulting data products. To support this, we will investigate how FAIR Data is reflected in Data Policies, within a **common PaN data policy Framework** and in **metadata** collected by the facility. Similarly, we will determine how the requirements of FAIR data are rendered in "Data Management"planning. We will further relate our work to activities within the Research Data Alliance (RDA), such as the "FAIR Data Maturity Model"and the recommendations of the EOSC FAIRsFAIR project.

Federating our data catalogues on the 'PaN portal'

To be able to link the data catalogues of all our PaN facilities and facilitate the life of the growing number of scientists working across several different RIs to perform their research, we will present our works toward a **common standard vocabulary and search API**. We also plan to demonstrate the use of a **PaN portal with a reference dataset** and the future possibilities to link to **EOSC data analysis services**, thus providing a holistic approach to delivering PaN science on the EOSC platform.

Enabling the transfer of large quantities of data

The actual **data distribution** and **data access** will then be addressed presenting the needs, current solutions and their limits for the data management services we investigated.

Sharing knowledge with the open PaN e-learning platform

PaNOSC and ExPaNDS decided to contribute to a **common e-learning platform for Photon and Neutron science**. Beside static material like documents or Video Tutorials, the platform will offer **Notebooks** to guide interested users through a typical PaN analysis. Within this session, we are planning to provide a brief introduction into the topics covered by this platform and a demonstration on how to efficiently use it.

Remote access to PaN facilities instruments and services

If time allows, we will elaborate on the possibilities of **remotely accessing and steering experiments**.

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