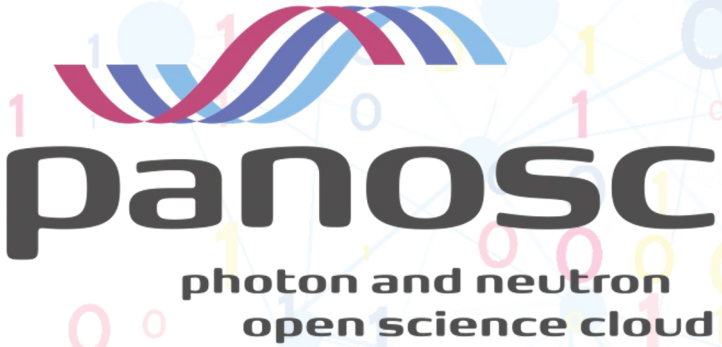

ExPaNDS
European Open Science Cloud Photon and Neutron Data Services

PaN remains!

(an extremely personal view)

For the PaNOSC Finale

Patrick Fuhrmann (DESY, ExPaNDS coordinator)

on behalf of the project teams with contributions from Juliane, Lisa from DAPHNE4NFDI, Oliver, Thibaud and Kat.

PaNOSC and ExPaNDS projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements 823852 and 857641, respectively.

Continuous support for the PaN community

2010 2015 2018 2021

European Open Science Cloud — EOSC Future — EOSC INFRA 23 01 01 eosc

2019	2020	2021	2022
ExPaNDS European Open Science Cloud Photon and Neutron Data Services		panosc photon and neutron open science cloud	

Policies Common data policy **FAIR** data policy Data Management Plans

Analysis Software Catalogue Remote analysis Jupyter

AAI UmbrellaID AARC Blueprint eduTeams

Training e-neutron Training platform

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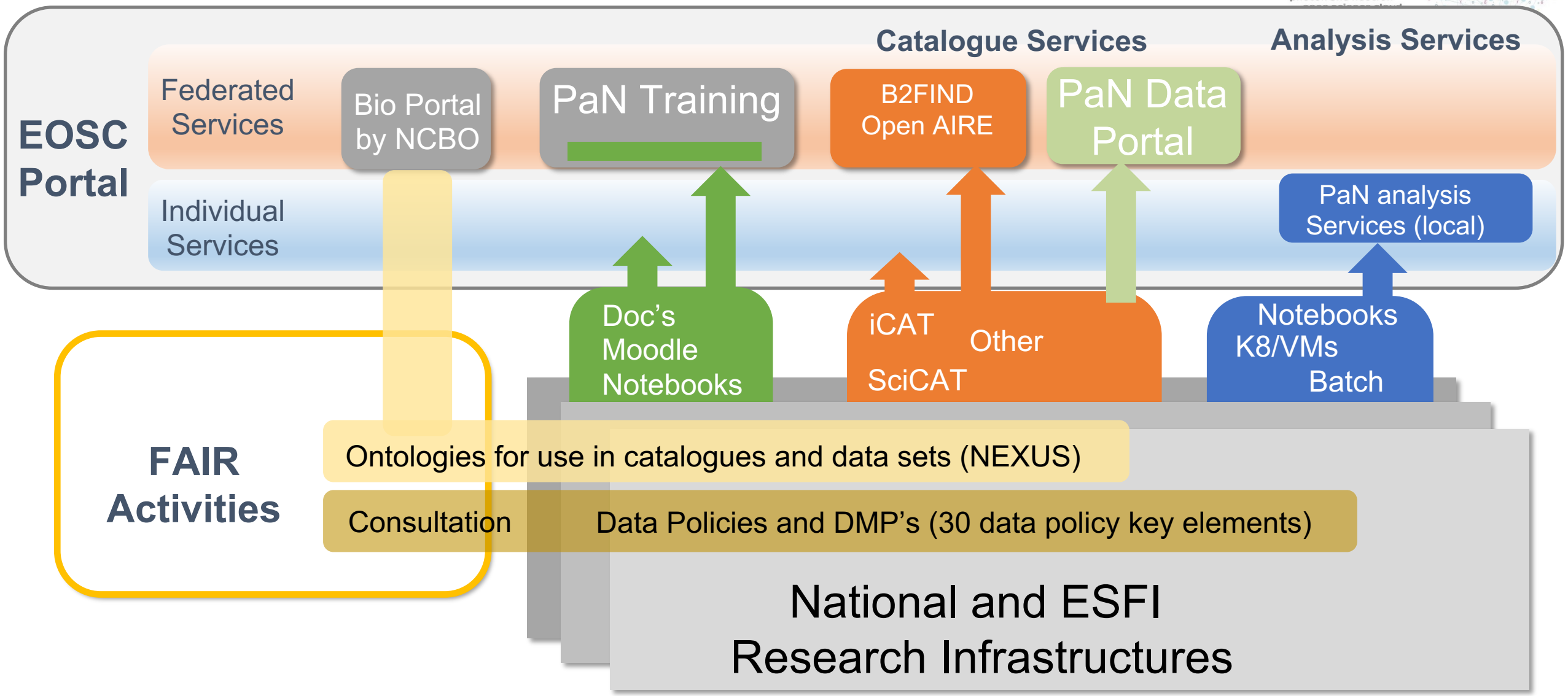
The Architecture



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Focused outreach

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Target-oriented outreach to different classes of PaN groups (and friendly communities).

- Originally planned as replacement for the Zoom-only or cancelled community events and conferences (required by the workplan)
- Presentations and lectures for students
  - Planting the spark of ‘Open Science’ in young scientists
- Consultations of Facility employees especially Beamline Scientists
  - These are the actual beneficiaries but also our victims.
  - Used as Multiplicators
- Senior Management Interviews
  - Sneaky way to Introduce our projects to our management
  - Important to publicly committing to our FAIR ideas

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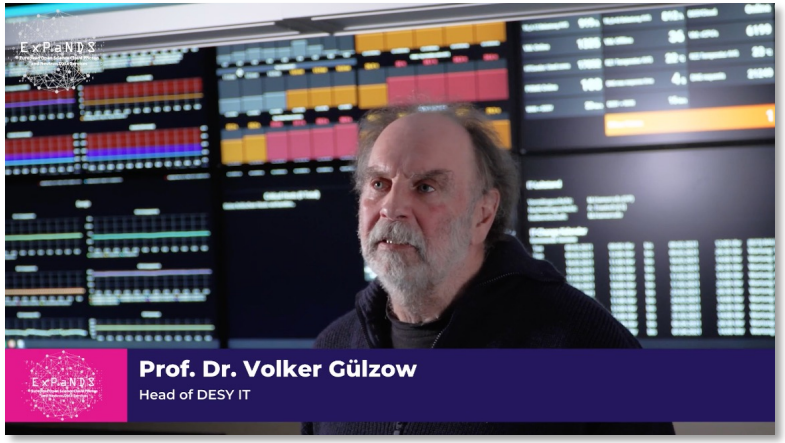
Facility Beamline and IT staff



The Photon and Neutron communities are represented by mechanisms like LEAPS for Photon and LENS for Neutron. Through those organizations, being connected to the European Open Science Cloud we can achieve sustainability.

... and I'm sure that also from the MX user community these wishes are coming that all of the synchrotrons should use the same kind of portals ... and the same kind of archiving systems ... And the same kind of download systems.

One example [of interdisciplinarity collaboration] is showing the extremes .. were we have scientists from the humanities interpreting old artefacts that were analyzed by X-Rays.

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Senior Level Engagement

We are increasingly seeing in some communities, the **recognition that by sharing the data** on an appropriate timescale, ideally as soon as possible, there are some **real benefits** to be had. So, I think the challenge, the cultural challenge is to demonstrate to the science community at large that actually the **benefits greatly overwhelm the risks**.

To get optimum value out of having open data ... we need to be inclusive, we need to actually involve as many different facilities and research establishments as possible and that is a **really big coordination job**. What the **ExPaNDS** and **PaNOSC** grants provided is an **excellent basis** for continuing this work on open data and being able to share data.

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Senior Level Engagement

Data collection is not enough, advances only come through the interpretation of data.

There was always an understandable sense of data ownership from the scientists who conducted the experiments but the interdisciplinary research of today requires a new way of thinking.

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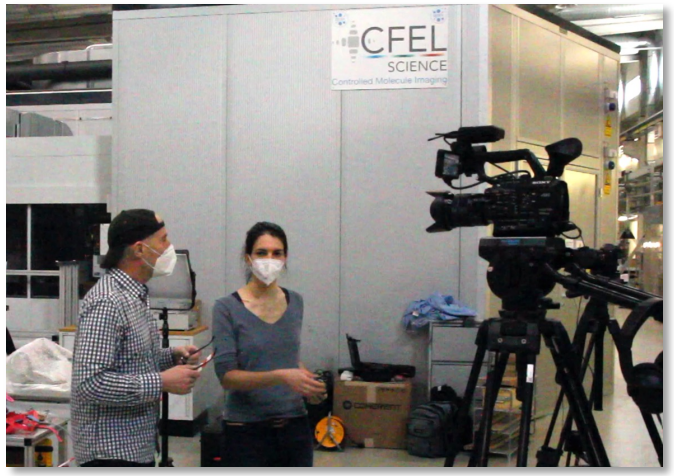
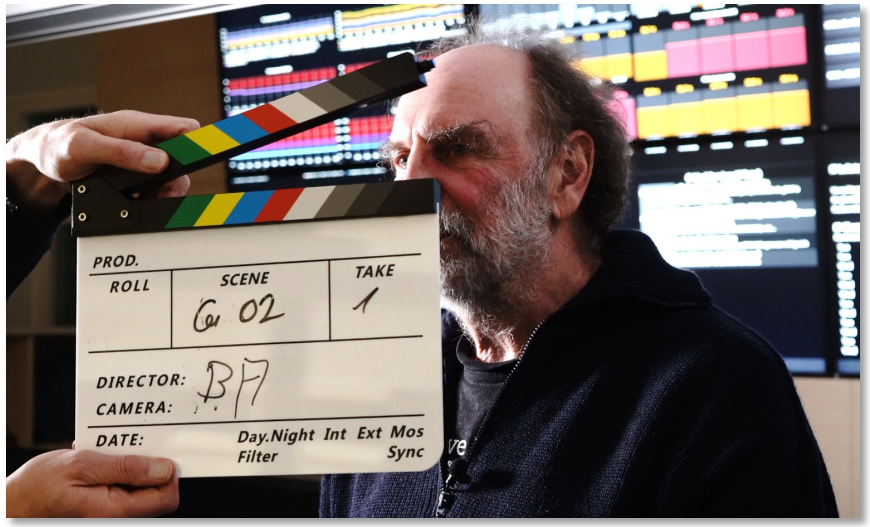
And a lots of fun ....





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Presenting our experience in FAIR Data to other communities.

Oscar (ALBA) and myself were invited to present the results of ExPaNDS at the IBERGRID conference.

Lattice NET Summer School

DZA

The adaption of Data Lakes for future Large Scale Facilities

Based on the requirement of Photon Science.

PaNOSC and ExPaNDS projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements 823852 and 857641, respectively.

VISA portal deployment and the ESCAPE Data Lake

ExPaNDS
European Open Science Cloud Photon and Neutron Data Services

panosc
photon and neutron open science cloud

meets

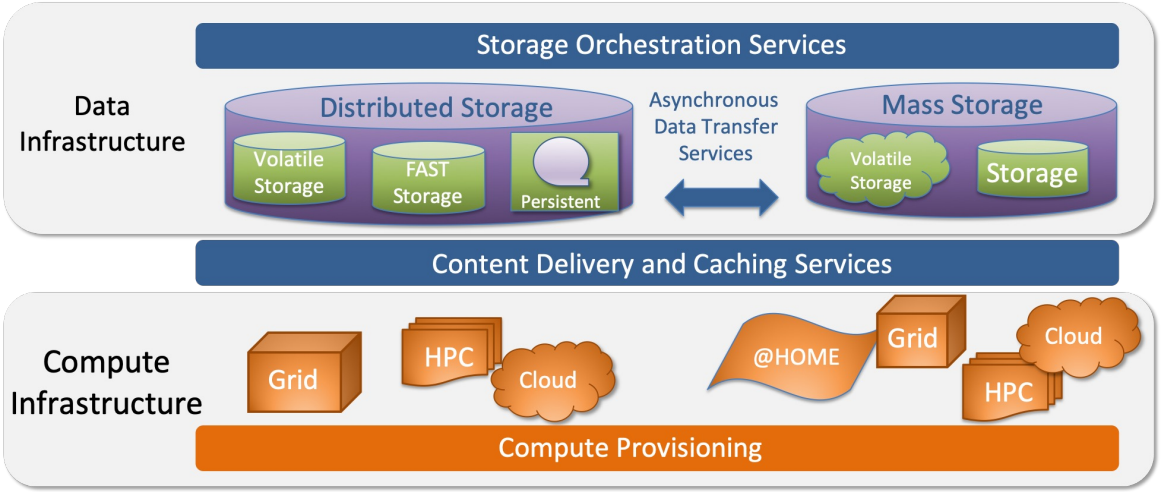
ESCAPE
European Science Cluster of Astronomy & Particle physics ESFRI research infrastructures

VISA

meets

The Data Lake: World wide data management

Outcome of the ESCAPE (HEP and Astro) Cluster



Courtesy : ESCAPE

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The common analysis portal... Deployment at DESY for PETRA III and European XFEL

Local Proposal Portal

DOOR
DESY Online Office for Research with Photons

VISA

Local Data and Compute Infrastructure

kubernetes

openstack

slurm
workload manager

jupyter

ESCAPE

Data Lakes

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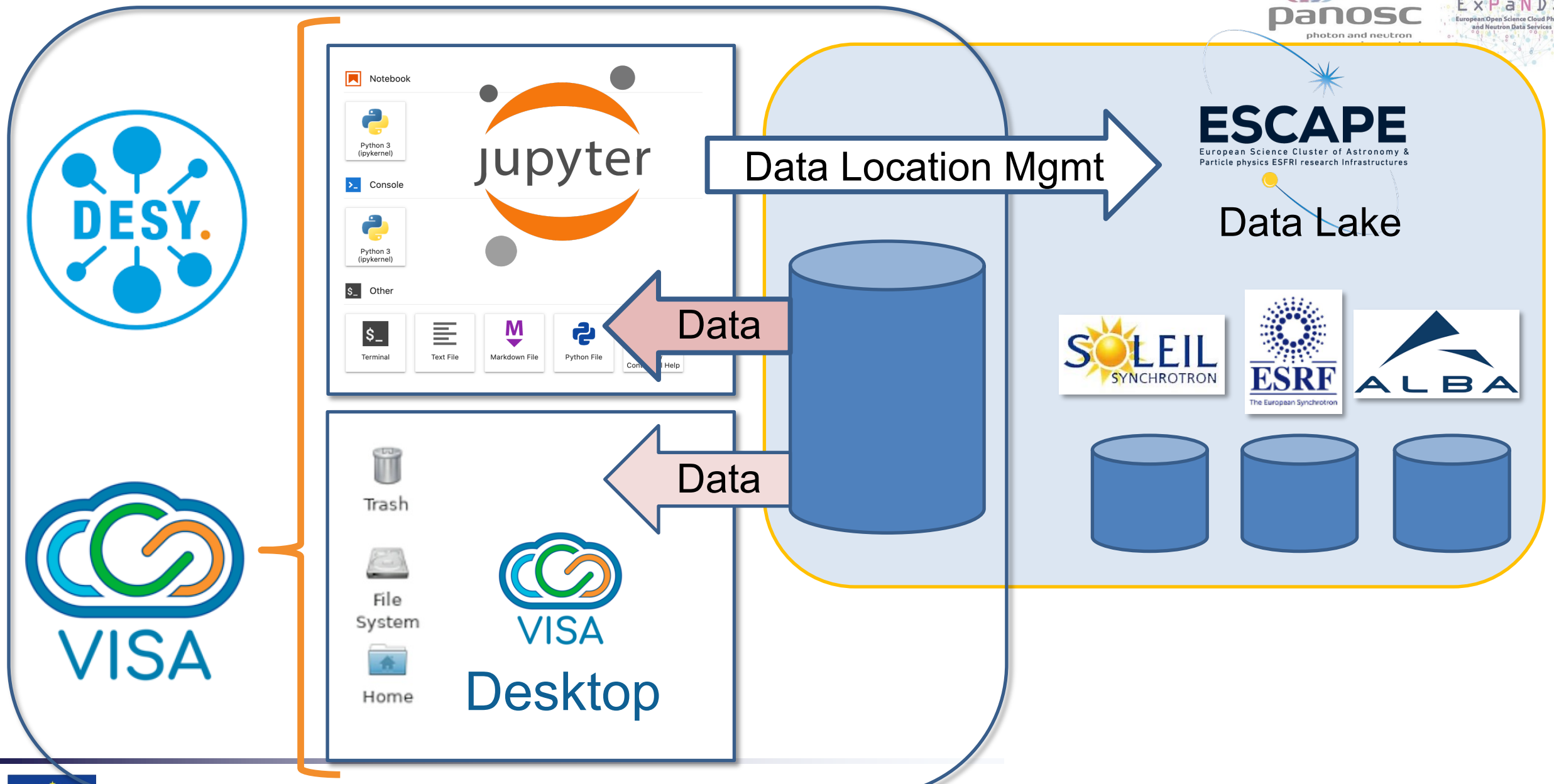
Connecting facilities



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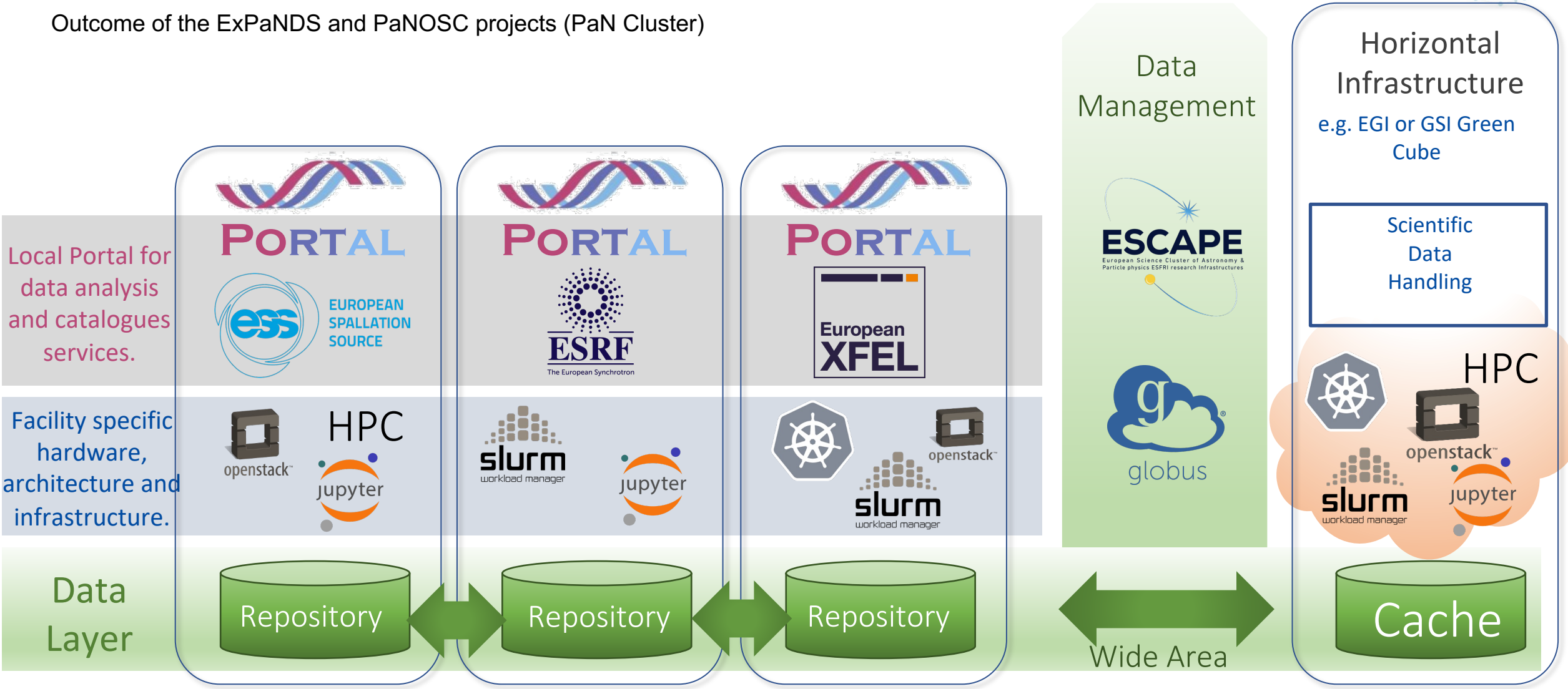
Use Case : The PaN Data Commons

Outcome of the ExPaNDS and PaNOSC projects (PaN Cluster)



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Further collaborative work with VISA

- For some RI's there is no plan B in terms of Portal
  - So they rely on VISA becoming a success in terms of
    - Development
    - Deployment
  - Puts some pressure of ILL, who don't have the resources to support the entire community.
- So, Majid is trying to compose a small group, initially targeting an MoU (only), supporting ILL with Portal development and deployment.
  - Can become a very challenging process
  - So he really needs your support.
  - E.g. ALBA and VISA Kubernetes integration.

Here you see Majid ,
taking Arms against a Sea of legal troubles, and by opposing end them.

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The training, catalogue and workflows

As already completely covered by Andrew M.!

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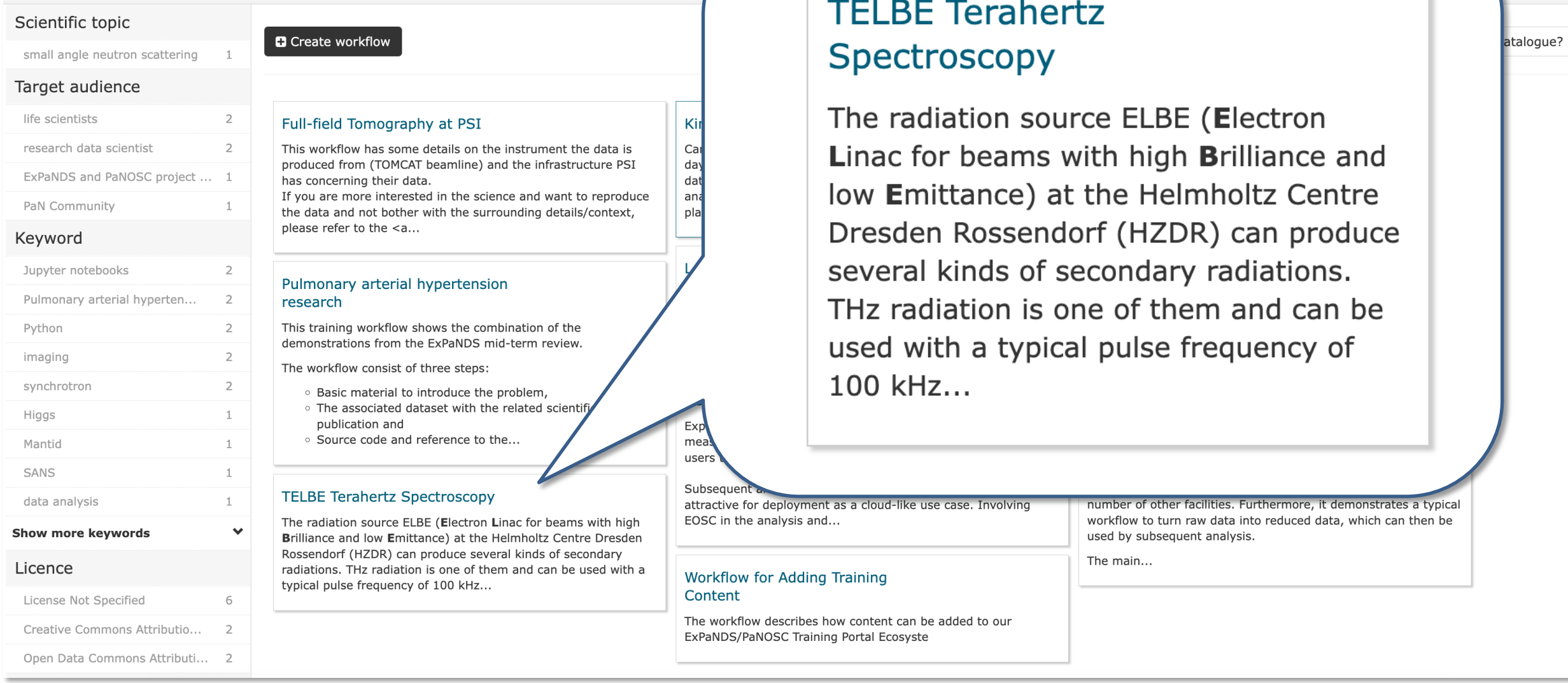
Pan-training.eu/workflows



TELBE Terahertz Spectroscopy

The radiation source ELBE (**E**lectron **L**inac for beams with high **B**rilliance and low **E**mittance) at the Helmholtz Centre Dresden Rossendorf (HZDR) can produce several kinds of secondary radiations. THz radiation is one of them and can be used with a typical pulse frequency of 100 kHz...

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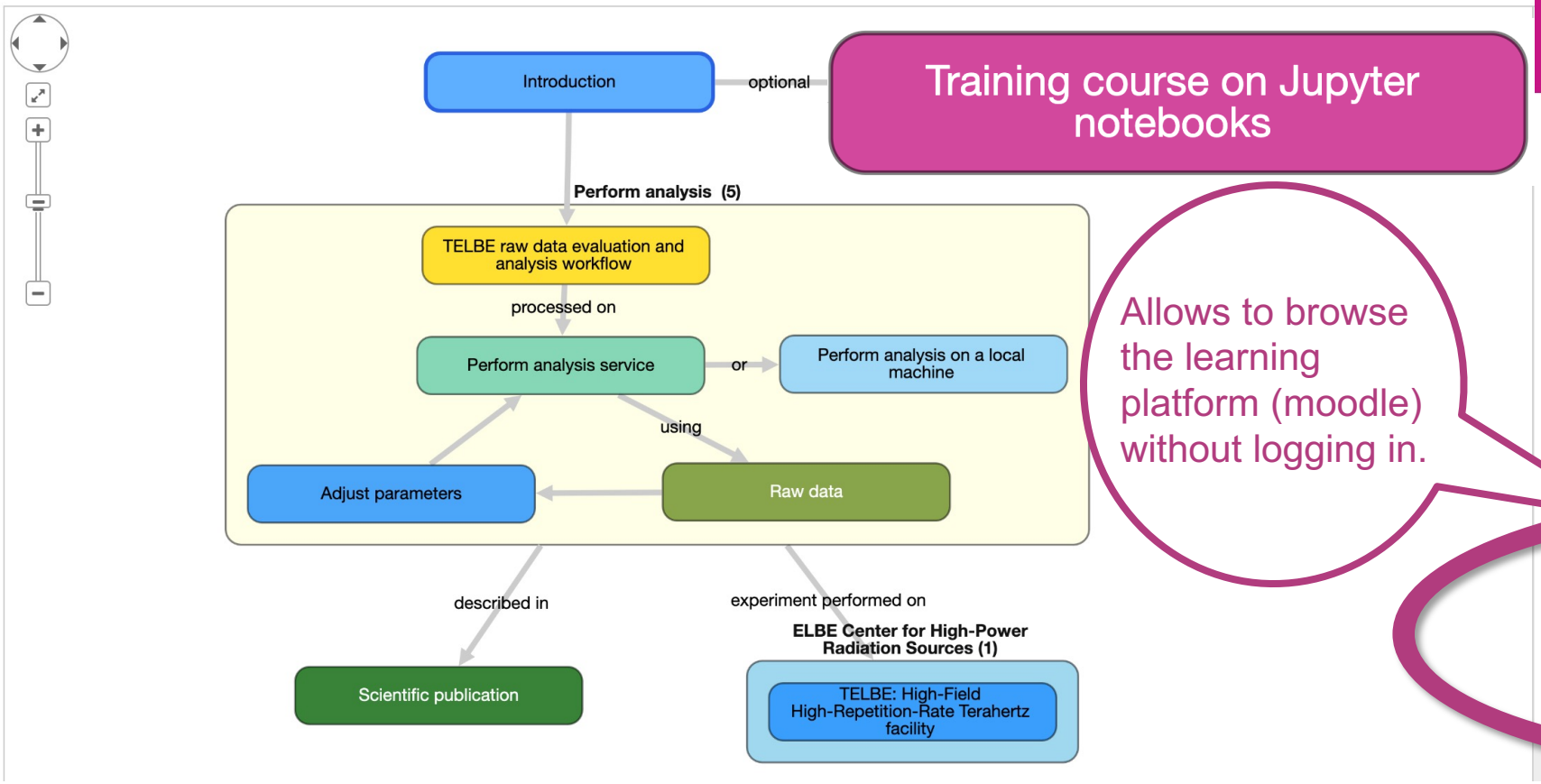
HZDR Terahertz Workflow Example

TELBE Terahertz Spectroscopy



Allows to browse the learning platform (moodle) without logging in.

Training course on Jupyter notebooks

In this workflow we will focus on Jupyter notebooks. Additional Python basics and an introduction to Jupyter notebooks can be found in the blended learning course Illumidesk: Python Course provided by our integrated e-learning platform PAN-learning.

Photon and Neutron eLearning

Training materials

e-leraning course on Python basics

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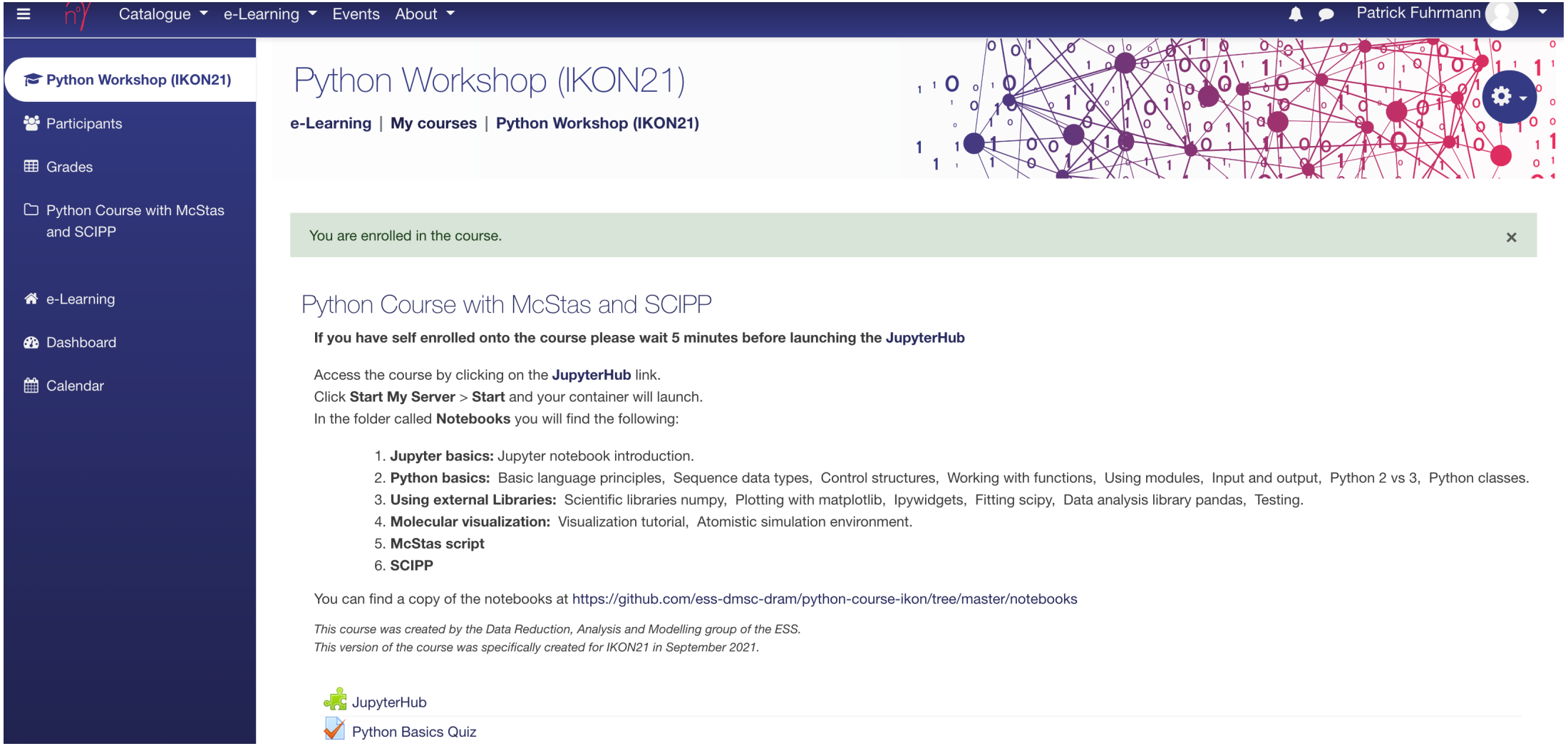
Link to : e-learning.pan-training.eu -> moodle



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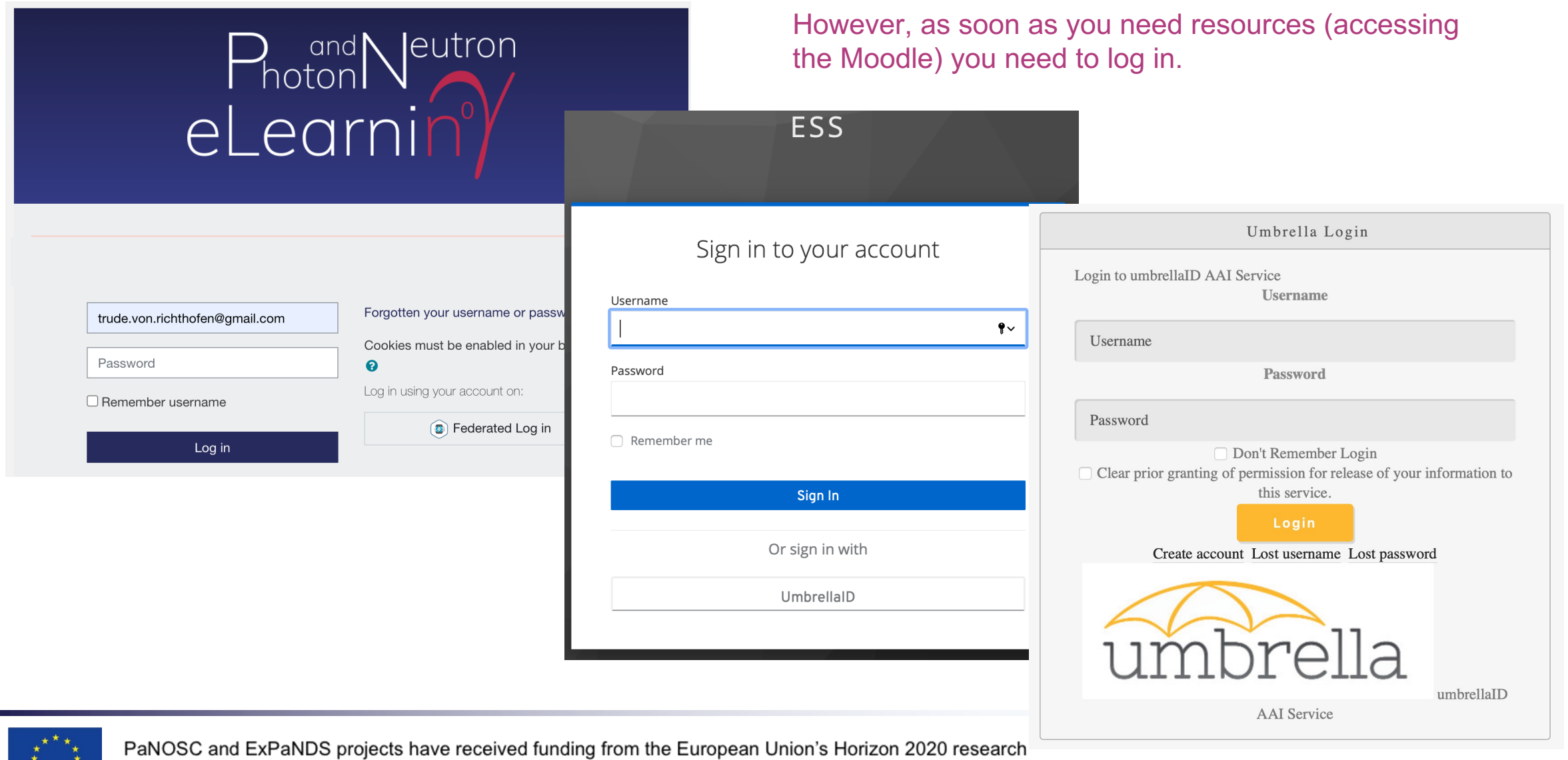
Umbrelle (eduTeams) login



However, as soon as you need resources (accessing the Moodle) you need to log in.

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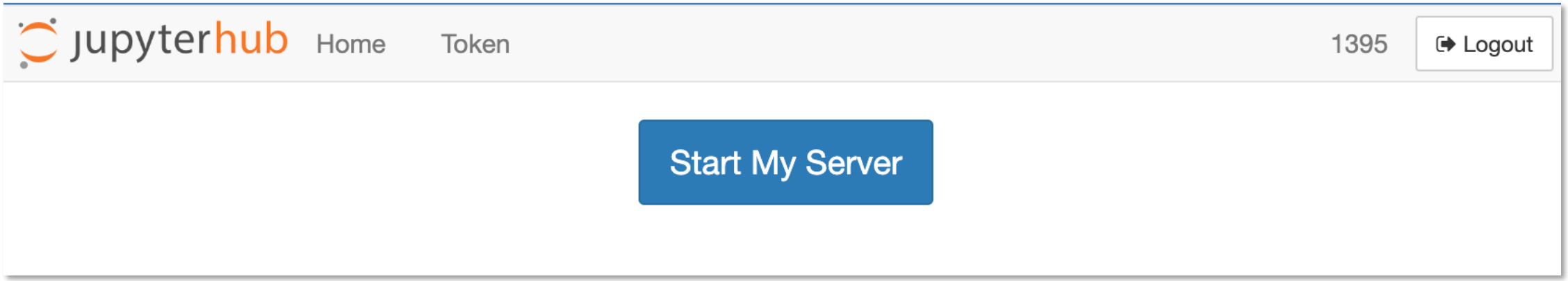
Link to the source ’github’ and Jupyterhub



master python-course-ikon / notebooks / Go to file

wpotrzebowski Added exercise description 9f8d594 19 days ago History

..		
1_jupyter_basics	Merge pull request #79 from moving-northwards/patch-4	14 months ago
2_python_basics	Corrections after review from Wojtek, thanks for the review!	3 years ago
3_using_external_libraries	matplotlib notebook -> widget, add scippneutron and ess to env file	7 months ago
4_molecular_visualization	Removed unneeded ASE notebook	14 months ago
5_McStas	Cleared notebooks.	14 months ago
6_scipp	Added exercise description	19 days ago

PaNOSC and ExPaNDS projects have received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreements 823852 and 857641, respectively.

FAIR policies and self assessment.

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Data Policies

Elements of the Data Policy Framework

DOI: 10.5281/zenodo.5205825

- Global Unique PIDs for data and instruments!
- Ontologies for PaN techniques (for catalogues and NeXuS)
- Open Access Protocols (Data, AAI)
- Human and machine readable access to data and meta data.
- Community standards for Contextual Metadata
- Standard File-Formats

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Self Assessment for sustained FAIRness

Deliverable D2.6 (on the way)

- Enabling the facilities to assess their FAIRness themselves:
- Finding a responsible person at each facility;
- Educate those individuals through workshops and individual; counseling in FAIR procedures;
- Providing a mechanism for measuring FAIRness;
- Executing a first supervised assessment.

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Continuous self assessment

Deliverable D2.6

Basic Principles

- Linking back to the FAIR Principles;
- Identifying and taking advantage of what existing FAIR evaluation frameworks have to offer ;
- taking account of the relationships between existing FAIR evaluation approaches ;
- Relating clearly to the processes and practices of PaN RI's

Topics covered (27 questions based on existing FAIRness tools)

- Existence, completeness and richness of metadata
- Search (Flexibility and Capability) ;
- Standardization;
- Indexing and harvesting of metadata my machines;
- PID's;
- Access to data by users and possibly my machines;
- Curation of data;
- Reflection of the assessment process.

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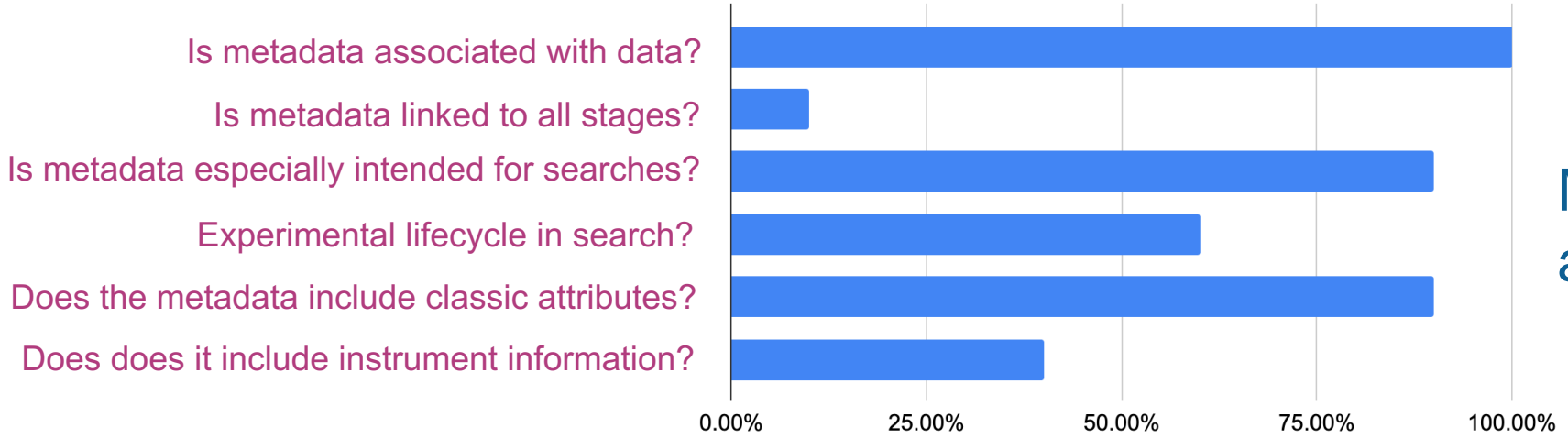
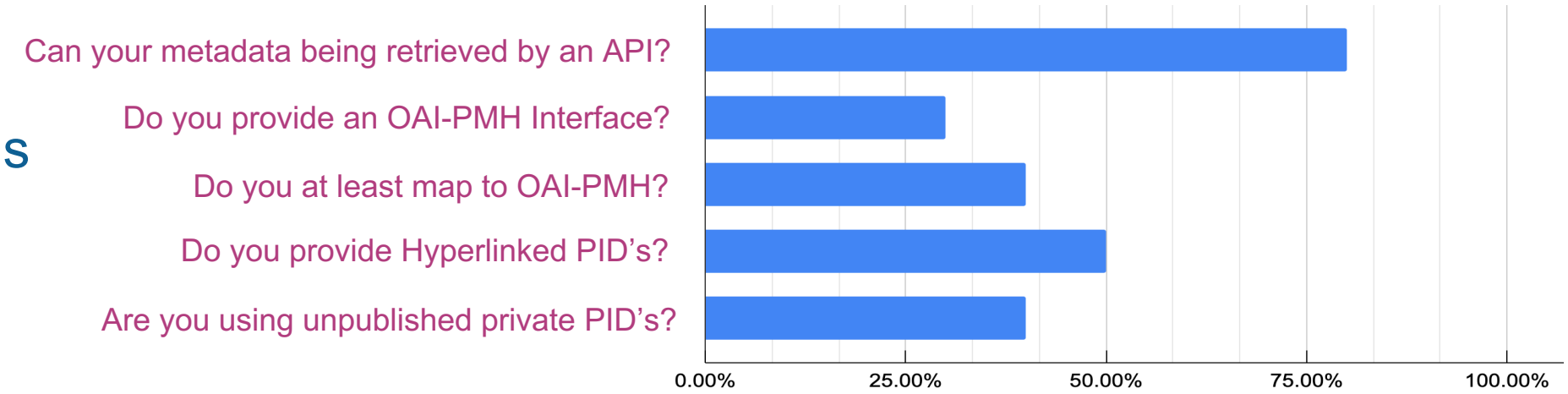
Diverse results of the first questionnaire and headroom for improvements!



Metadata, catalogues and searches

Indexing and PIDs



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And last but not least :

National Research Data Infrastructure
The aim of the national research data infrastructure (NFDI) is **to systematically manage scientific and research data, provide long-term data storage, backup and accessibility, and network the data both nationally and internationally**.

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Cooperation with DAPHNE4NFDI

- The main goal of DAPHNE is to make data from photon and neutron experiments "FAIR", thereby making scientific work more efficient and gaining more knowledge from the data
- DAPHNE4NFDI will help to secure the sustainability of ExPaNDS even beyond the project term
- Example:
  “The DAPHNE4NFDI Executive board recommends that the DAPHNE participants test and evaluate SciCat at their home labs in universities and at facilities - if possible.
  They should provide feedback and indicate where further collective development is required - including deployment and integration[…]”

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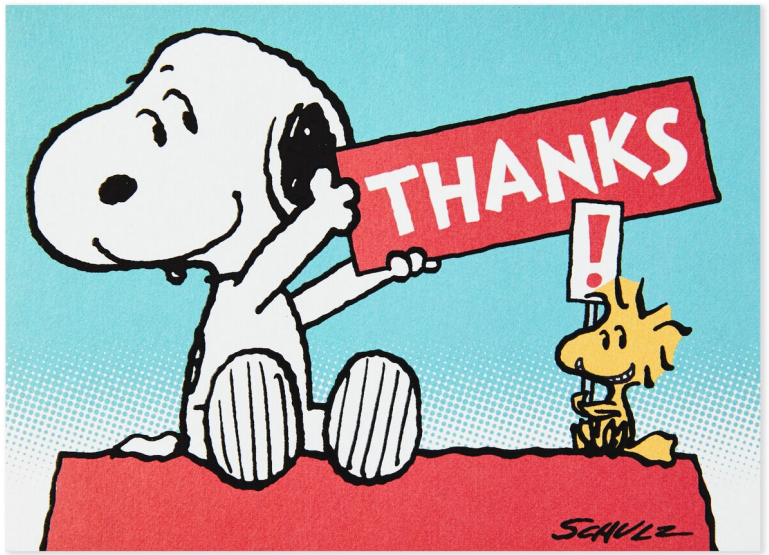

Finally, on behalf of ExPaNDS, let me thank you guys for this challenging but friendly collaboration with amazing results.

And particularly, from WP1 and my perspective, thanking Andy for allowing our WP1 and myself to participate in your management meetings and Nicoletta for our exciting common work in preparation of events and conference and the Symposiums.

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