PaNOSC Node

EOSC France Tripartite Event 2025/09/11

Photon and Neutron Open Science Cluster

A few photon & neutron sources…

European Synchrotron Radiation Facility ESRF - France
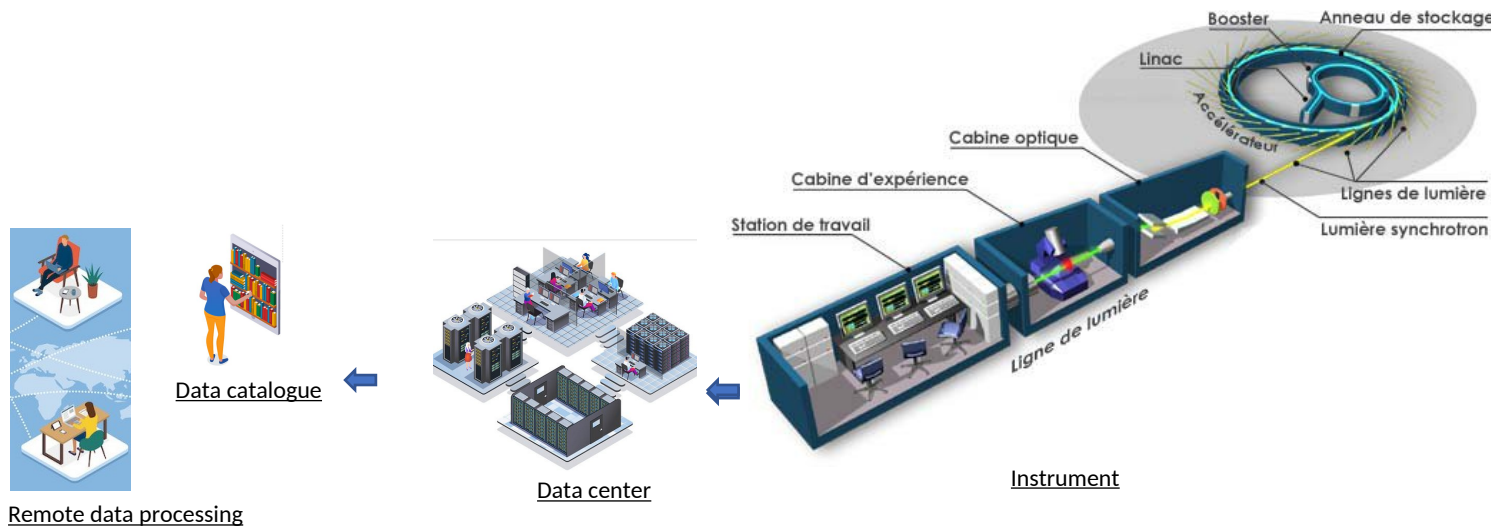
Institut Laue Langevin ILL - France

SOLEIL Synchrotron - France

Swiss Light Source – Switzerland

European Spallation Source ESS - Sweden/Denmark

Remote data processing

Data catalogue

Data center

Instrument

Booster

Anneau de stockage

Linac

Accélérateur

Cabine optique

Cabine d'expérience

Lignes de lumière

Station de travail

Lumière synchrotron

Ligne de lumière

Photon and Neutron sources are cross-domain research centres i.e. PaN research is cross-domain by nature
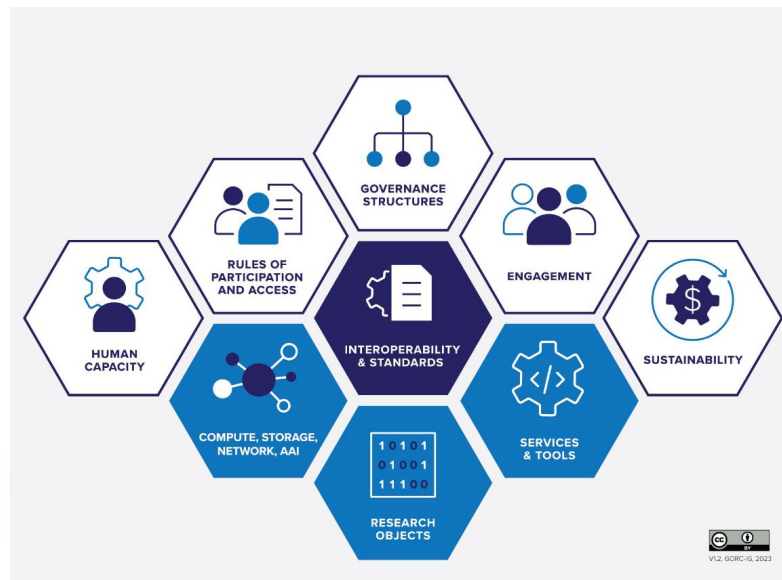
Cross-domain research examples

- Health innovation, overcoming diseases and pandemics
- Materials for innovative and sustainable industry
- Clean energy transition, sustainable energy storage and clean hydrogen technologies
- Planetary research and geoscience
- Environmental and climate challenges
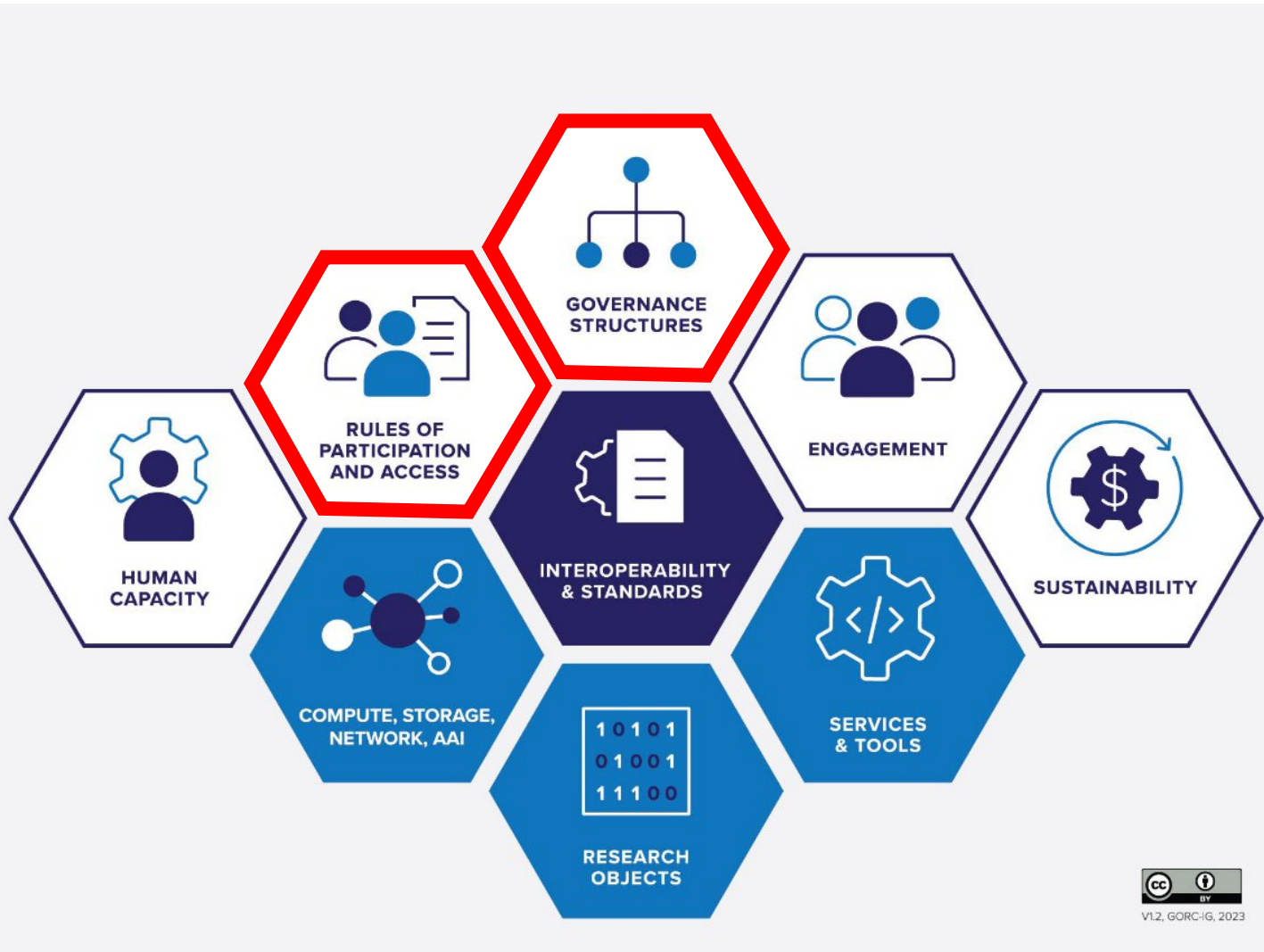- Bio-based economy and food security
- Humanity and world cultural heritage

https://www.esrf.fr/about/synchrotron-science

PaNOSC Node

https://www.panosc.eu/

Photons (LEAPS)

Neutrons (LENS)

Governance structures

- **ESRF** host organisation
- 9 partners (**HZDR, ESS, ILL, DESY, ALBA, ELETTRA, MAXIV, EUXFEL, PSI**)

PaNOSC Node Governance & Roles

- Project charter converted to work plan. Follow up on weekly basis.

- Definition of PaNOSC Node roles
  - **Coordinator** (Andy Götz - ESRF)
  - **Operation Manager** (Oliver Knodel - HZDR)
  - **Technical Coordinator** (Erwan Le-Gall - ILL)
  - **Security Officer** (Jean-Francois Perrin - ESRF)
  - **Scientific Officer** (Zdenek Matej - MAX IV)
  - **Communications Officer** (Nicoletta Carboni - CERIC)
  - **Legal Officer** (Renata Gibson - ESRF)

- Letter of Intent of each institute sent to ESRF (PaNOSC Node host organisation)

Next steps :
- Formal agreement will all PaNOSC Node partners.
- ESRF will sign the EOSC Federation MoU on behalf of the PaNOSC Node

Research Objects, Services & Tools
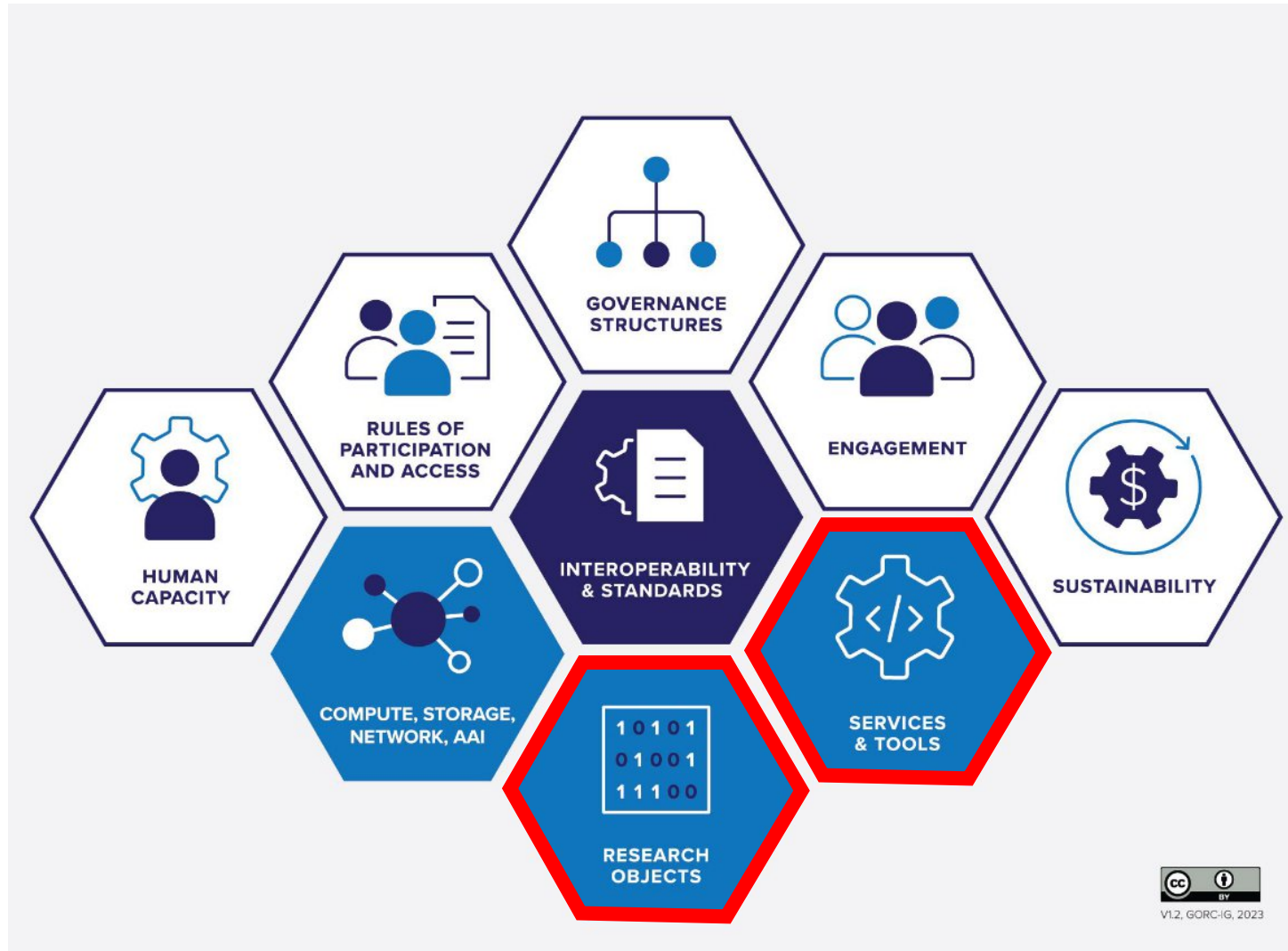
PaNOSC Node Resource

Data catalogues

- Datasets of all PaN facilities catalogues are indexed by the EOSC Resource Hub (via DataCite)

Next steps :
- Associate the data catalogues to the PaNOSC Node (via OAI_PMH protocol)
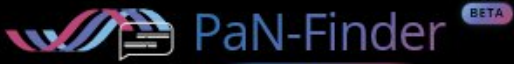- Link datasets to other community catalogues

PaNOSC Node Resource

- AI-enabled search engine PaN-Finder.
- Federated PaN dataset database

Next steps :

- Integration of EOSC AAI
- Open to other community databases
- PaN-Finder - TRL9

PaNOSC Node Resource

PaNOSC training catalogue:

- Common PaN training resources
- Based on TeSS platform from Elixir

Next steps

- Federation with other TeSS catalogues

https://pan-training.eu/ ,
https://tesshub.hzdr.de
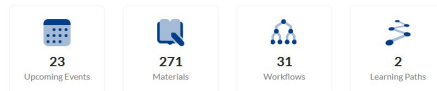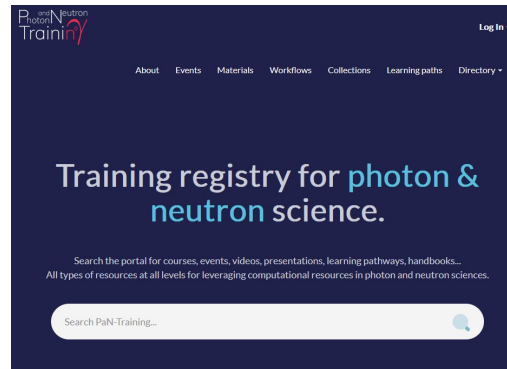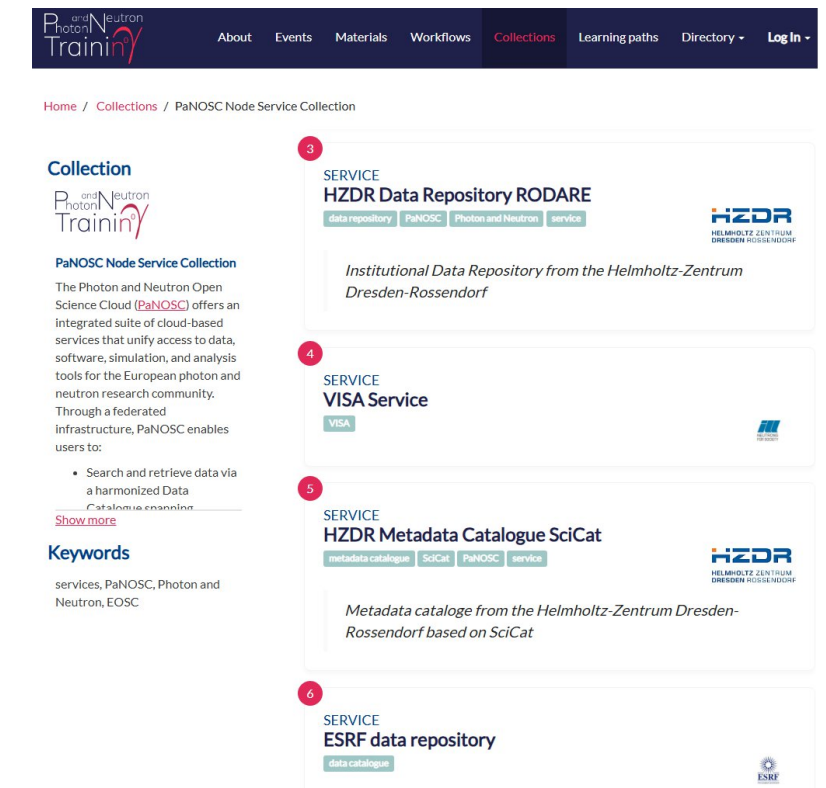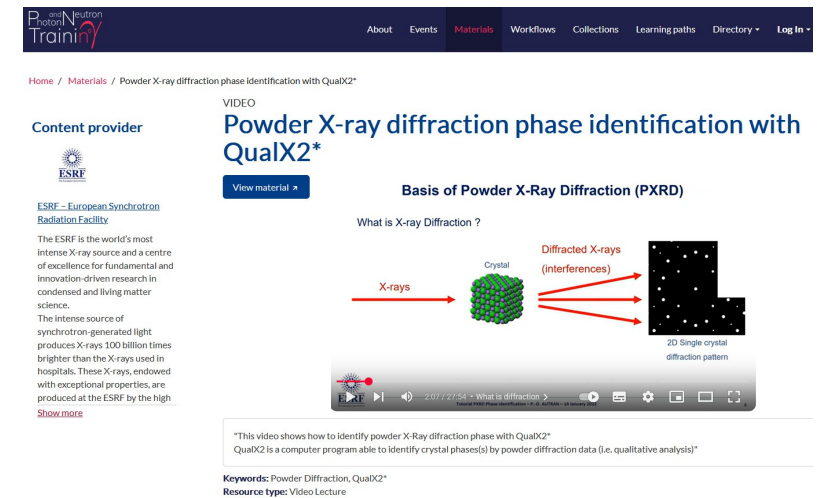
Compute, Storage, Network, AAI
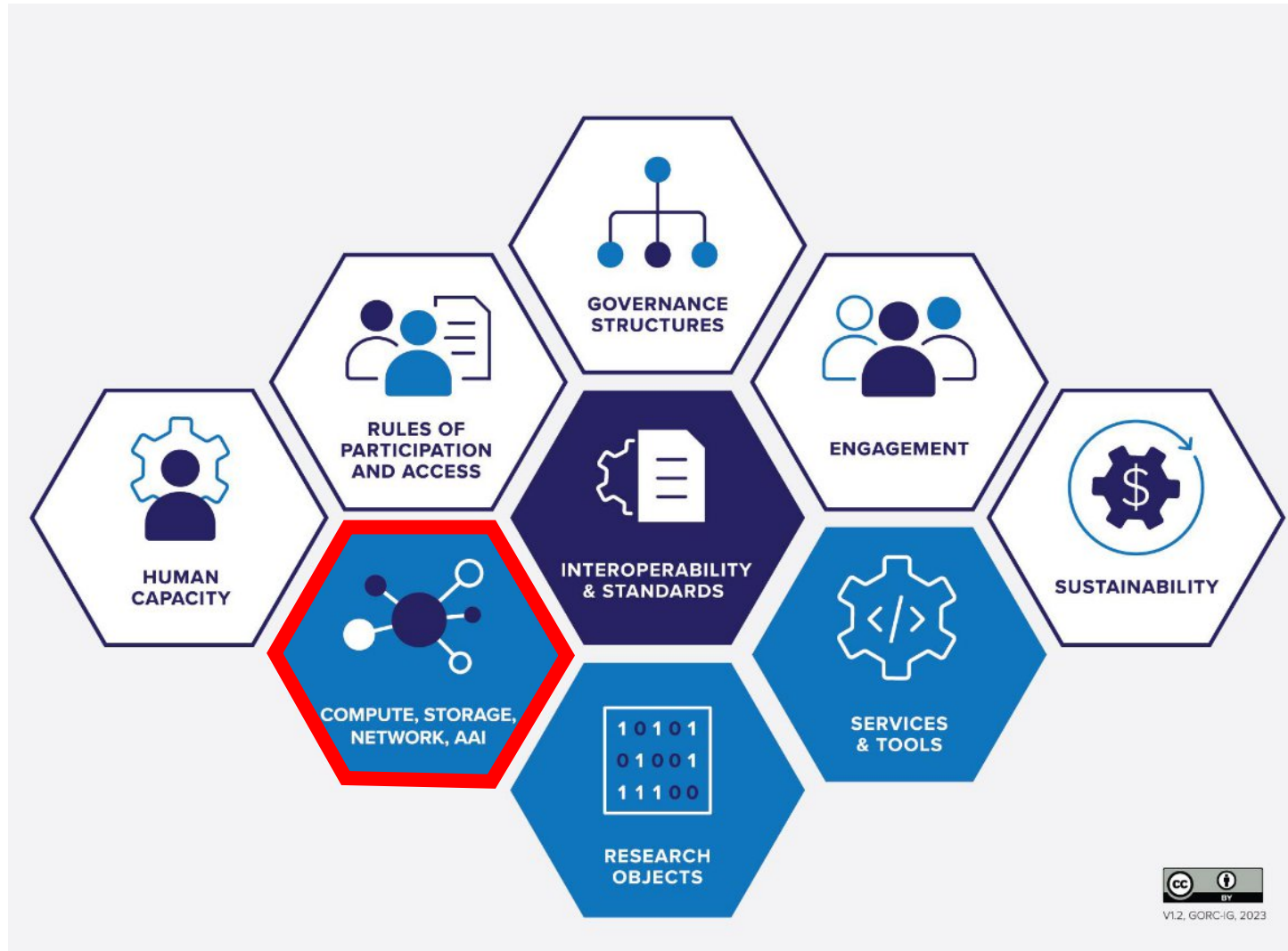
PaNOSC Node capability - AAI

PaNOSC AAI service

- Provides user with an SSO experience with EOSC AAI

- User Group management

- Collaboration with GEANT (AAI provider for EOSC EU Node)

- UmbrellaID integrated succesfully summer 2025 with EOSC AAI (acceptance environment)

Next steps

- Move the Community User ID to the *Subject Identifier* provided by the EOSC AAI

- Move to MyAccessId
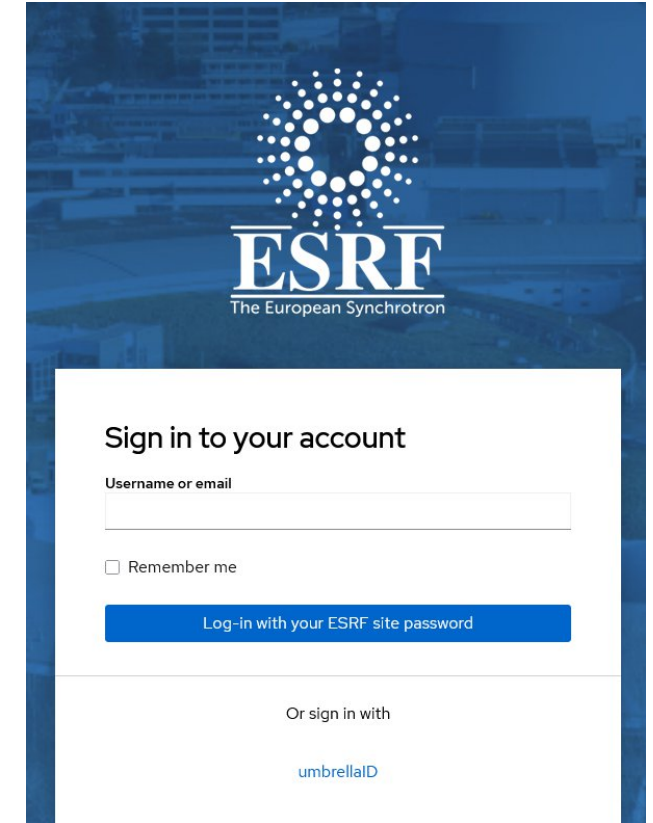
EOSC AAI Architecture 2025
https://zenodo.org/records/15388270

tech lead

PaNOSC Node capability – Computing

PaNOSC VISA - Virtual Research Environment:

- Developed at ILL, runs on OpenStack (same as EU Node)
- Provides VM for remote data analysis with access to **(huge) experimental data**
- Provides VM with desktop and pre-installed software.
- Partners have signed an MoU to collaborate.
- Help desk provided by each facility like for most community services

https://visa.esrf.fr

Next steps :

- Integration of EOSC AAI
- Define a common access policy for EOSC Users.
- Interest in the Integration of the federation credits system

PaNOSC Node Resource

PaNOSC CVMFS service:

- PaNOSC **packages software** for CVMFS (CERN Virtual Machine File System) as containers or modules
- ~100 software packages already
- Shared with other PaN facilities

Vision:

- Share software packages with other EOSC Federation nodes
- Provide CVMFS as a transversal service in the Federation
- Integrate in SW catalogue
- Establish a trust framework.

CernVM-FS
CernVM File System

- Download
- Documentation
- GitHub
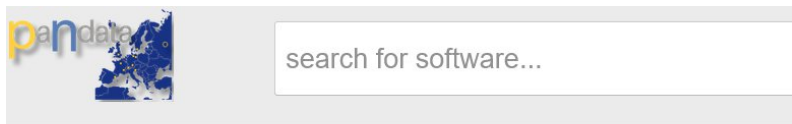
PaNdata Software Catalogue

search for software...

NEUTRONS FOR SOCIETY

ALBA

ESRF
The European Synchrotron

SOLEIL
SYNCHROTRON

Conclusion

The **EOSC Federation is a unique opportunity for PaNOSC** to continue the work started over a decade ago on **FAIR data** and **Open Science** and which has changed the way researchers work

Impact of creating the PaNOSC Node:

1. **Significantly increase the scientific impact of data from PaNs**
2. **Improve the IT infrastructure services by adopting common standards**
3. **Increase the collaborations between PaNs, clusters, communities, world-wide**
4. **Change the culture of PaN RIs + researchers by preserving FAIR data for the future**

PaNOSC brings **scientific resource objects** into the **EOSC Federation** and the EOSC Federation provides the **Open Science community!**