



ESFRI Open Forum

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Synchrotron SOLEIL

LEAPS is the largest consortium of analytical facilities world-wide and further expanding its service to an interdisciplinary European user community

19 facilities - 16 institutions - 10 countries

- > **300** operating End Stations
- > **1.000.000** h beamtime /year
- > **35.000** users from all EU & beyond
researchers from all research area
- > **5.000** publications/year
- > **15** spin off companies



Photon and Neutron Facilities : a long joint history

Results of the collaboration

Common data policy	FAIR data policy	Data Management Plans	
Software Catalogue	Remote analysis	Jupyter	
UmbrellaID	AARC Blueprint	eduTeams	
e-neutron	Training platform		



pandata_{europa}

pandata_{ODI}

SINE
2020

EUCALL

CALIPSOplus

panosc
photon and neutron
open science cloud

ExPaNDS
European Open Science Cloud Photon
and Neutron Data Services

EOSC Future

LEAPS
INNOVATION

DAPHNE
4NF01

LEAPS
League of European
Accelerator-based
Photon Sources

Challenges and goals

- Very large increase in data production resulting in issues (data storage, transfer and processing) and opportunities (use of A.I.)
- Compliance with F.A.I.R. principles
- Integration is the EOSC

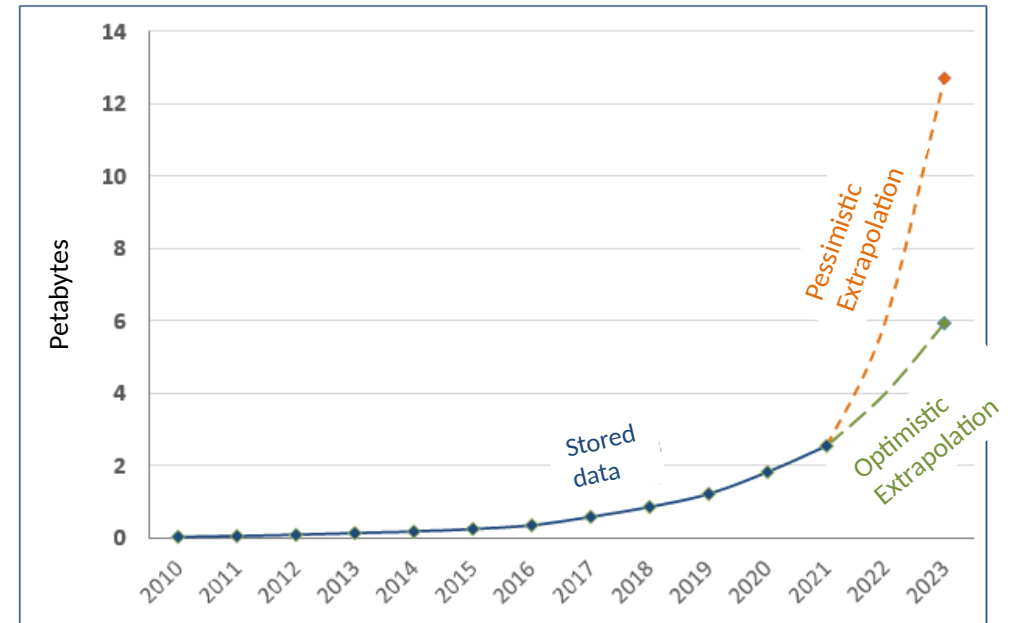
This implies:

- Offering remote services, requiring appropriate infrastructures: performance of the transfer, storage/processing infrastructure. Likely using national or research organization infrastructures
- Reducing the volume of data without sacrificing their quality, in a way that is as transparent as possible for users (compression/decompression)
- Implementation as close as possible to the data source
- Human and computing resources

8 LEAPS facilities are members of EOSC



Example: SOLEIL



2010-2020: Quantity of stored data

2021-2023: Projection based on responses to a survey at SOLEIL's *de SOLEIL a une enquete*

Requests From Our Users

Good (meta)data + logbooks

Performant Download services

Digital Object Identifiers for Data

Remote data analysis

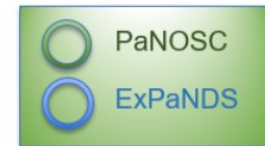
Access to Open Data

Credit for Data re-use

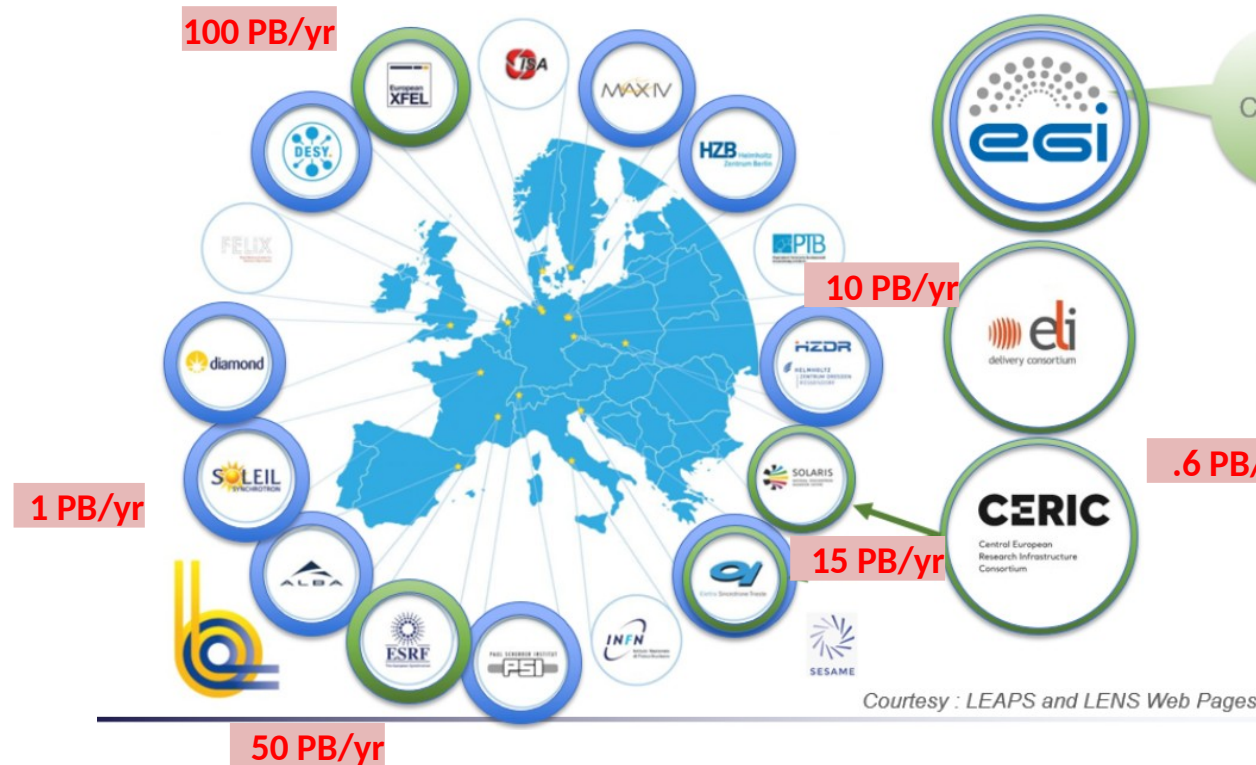
Data Management

LEAPS in Open Science H2020 Projects

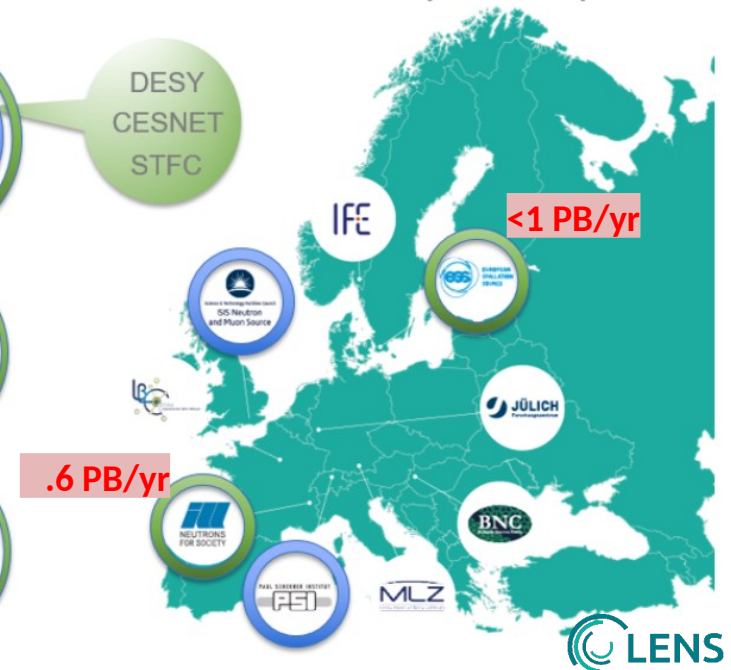
What is PaNOSC and ExPaNDS



Photon (LEAPS)



Neutron (LENS)



Courtesy : LEAPS and LENS Web Pages

LEAPS in Open Science H2020 Projects



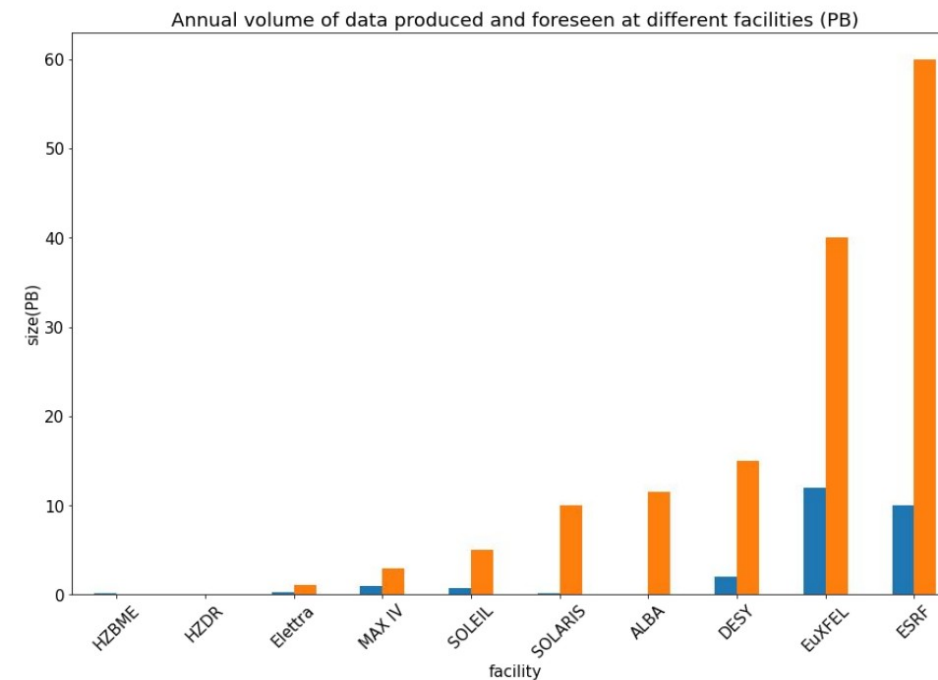
- Policy and Stewardship
- Catalog Services
- Analysis Services
- Virtual Neutron and X-ray Laboratory
- EOSC integration
- Sustainability
- Staff and User Training
- Outreach / Communication and Dissemination / Impact



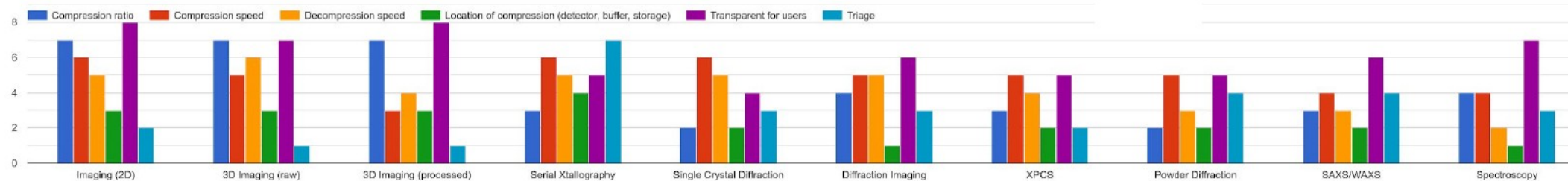
- Management and Sustainability
- Enabling FAIR data for PaN national RIs
- EOSC data catalogue services for PaN national RIs
- EOSC data analysis services for PaN national RIs
- Training activities through EOSC platforms
- Dissemination and Outreach

LEAPS in H2020 Innovation Pilots

Data Reduction and Compression



Data Compression



Highlights from PaNOSC and ExPaNDS

1. FAIR data policy and DMPs
2. FAIR assessment and common framework for generating PIDs
3. Standardized metadata (Nexus/HDF5, PaN ontologies)
4. Federated Search API for PaN Data Catalogs
5. Open Data portal for searching and downloading data
6. AAI: UmbrellaId eduTeams [GEANT service]
7. Jupyter notebooks and viewing of HDF5/NeXus files
8. VISA remote analytics platform + data analytics pipelines
9. Software for the simulation of experimental data
10. PaN-training.eu platform

PaNOSC/ExPaNDS per Photon installation

FACILITY	FAIR data policy	DMPs	DOIs	Nexus HDF5	Search API	Open Data Portal	AAI	JupyterLab	VISA	SIMEX	Pan-learning/training
ALBA	P	P	WIP	WIP	P	P	U	P	U	U	U
DESY	WIP	P	P	Y	WIP	P	WIP	Y	U	N	WIP
DIAMOND											
ELETTRA	Y	WIP	Y	Y	WIP	WIP	Y	Y	WIP	Y	WIP
ESRF	Y	WIP	Y	Y	WIP	WIP	Y	Y	WIP	Y	WIP
EuXFEL	WIP	WIP	Y	WIP	WIP	WIP	WIP	Y	WIP	Y	WIP
FELIX	Y	P	WIP	U	U	WIP	U	U	N	N	U
HZB	Y, N, P ¹	P	WIP ²	Y	P	Y	P	U	U	U	U
HZDR	WIP	WIP	Y	N	N	WIP	WIP	WIP	P	N	Y
INFN	U	U	U	U	U	U	U	U	U	U	U
ISA*	U	U	U	U	U	U	U	U	U	U	
MAX IV											
PSI	WIP	WIP	Y	WIP	Y	Y	WIP	WIP	N	N	N
PTB	Y	WIP	Y	WIP	N	Y	N	N	N	N	N
SOLARIS #											
SOLEIL	U	P	WIP	Y	P	P	WIP	U	WIP	U	Y

Status as per October 2021

Yes, already adopted (Y)
Not Planning to be adopted (N)
In progress of being adopted (WIP)
Planned to be adopted (P)
Under evaluation (U)

Thank you !