



# Workshop: “EOSC, un atout pour la recherche”

## Training and learning platform

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With contributions by Patrick FUHRMANN (DESY, ExPaNDS), Andy GÖTZ (ESRF, PaNOSC) and Antoine PADOVANI (SOLEIL, ExPaNDS)

For the Project teams!



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.

# ExPaNDS and PaNOSC in the PaN EU project landscape



2010

2015

2018

2021

European Open Science Cloud (EOSC)



2019

2020

2021

2022

**ExPaNDS**  
European Open Science Cloud Photon  
and Neutron Data Services



**Policies  
Analysis**

Common data policy

Software Catalogue

**FAIR** data policy

Remote analysis

Data Management Plans

Jupyter

**AAI**

UmbrellaID

AARC Blueprint

eduTeams

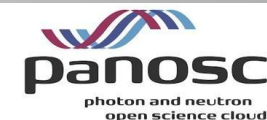
**Training**

e-neutron

Training platform

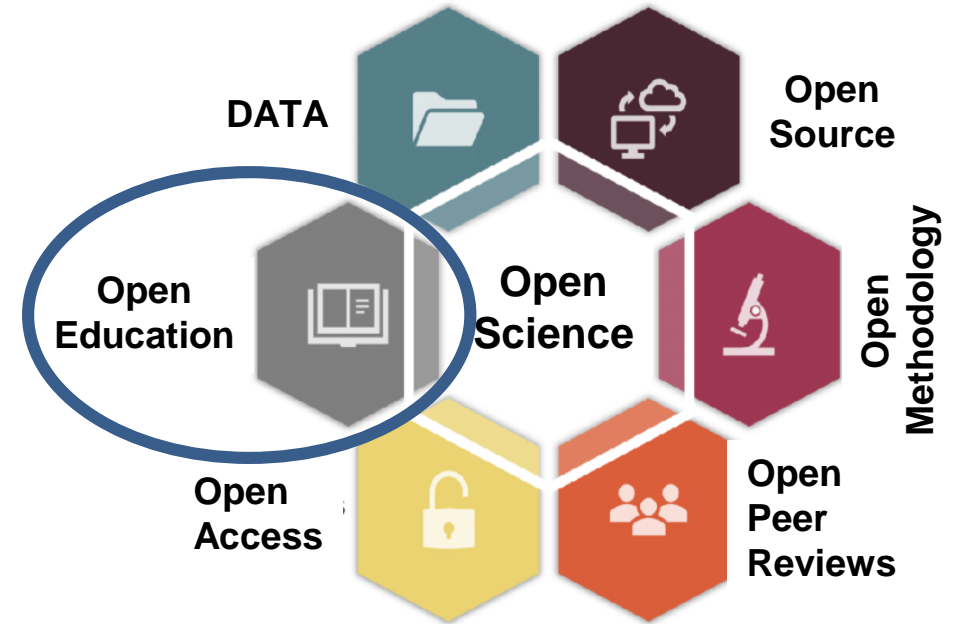


PaNOSC and ExPaNDS projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements 823852 and 857641, respectively.

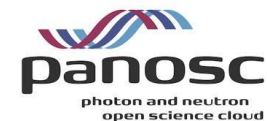


# Highlights from PaNOSC and ExPaNDS

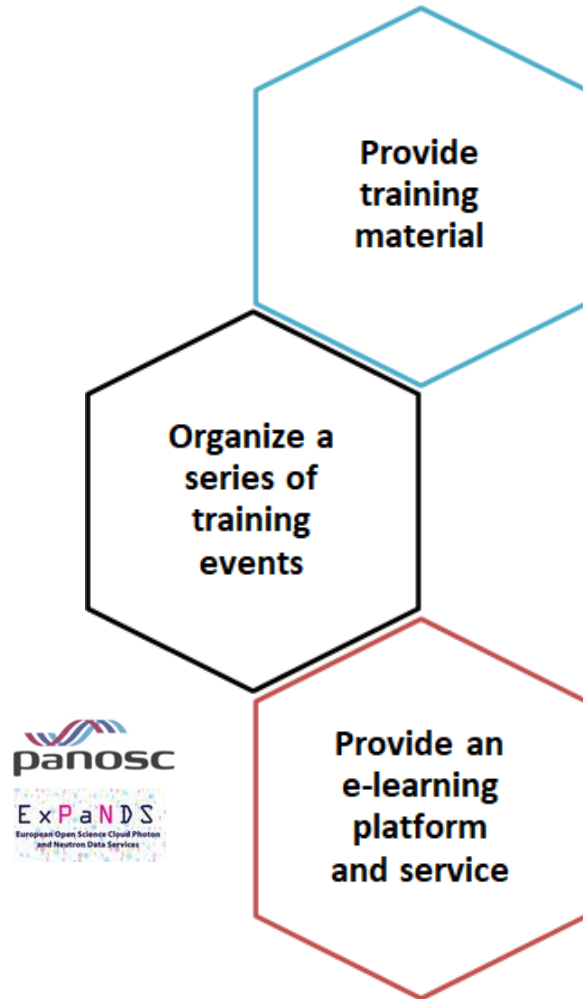
- FAIR Data Policy and SMPs
- FAIR assessment and common SID generation framework
- Standardized metadata (Nexus/HDF5, PaN ontologies)
- Federated search API for PaN data catalogs
- Open Data portal for searching and downloading data
- AAI: UmbrellaId eduTeams [GEANT service]
- Jupyter notebooks and visualization of HDF5/NeXus files
- VISA remote analysis platform + data analysis pipelines
- Software for simulation of experimental data (SIMEX)
- **PaN-training.eu platform**



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# Our training objectives



## Provide training material

- accessible to staff and users from national and ESFRI RIs
- using EOSC data websites and e-learning platforms
- to use the e-learning platform
- to develop courses, and train staff at relevant RIs at specific workshops
- to promote the FAIR principles and best practices
- to promote services and capabilities of PaN facilities

## Organize a series of training events

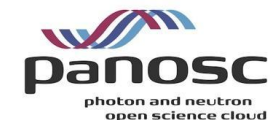
- data FAIR principles
- data stewardship
- data management
- data analysis services integrated into the EOSC services
- staff training on e-learning platform

## Provide an e-learning platform and services

- to provide training to staff and users



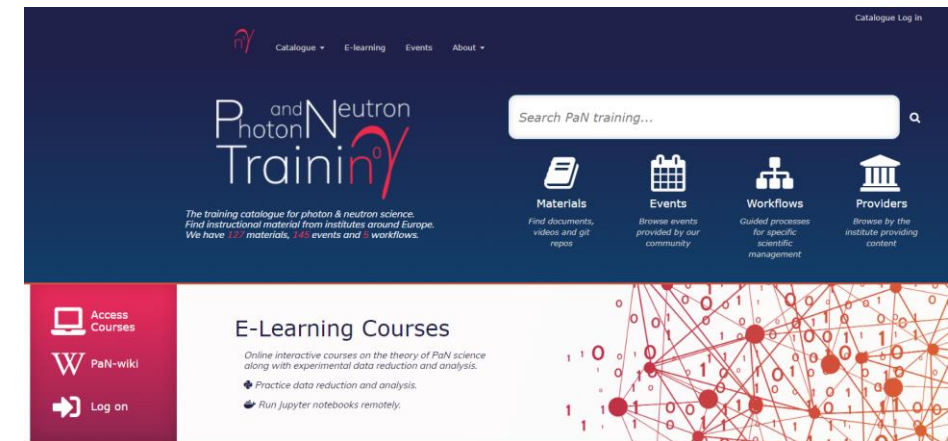
PaNOSC and ExPaNDS projects have received funding from the European Union's Horizon 2020 research and innovation programme under grant agreements 823852 and 857641, respectively.



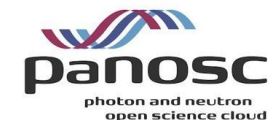
# Our contribution to the training and learning platform

- The **lack of a central platform for PaN Teaching and Learning** has been identified by the facilities
- We evaluated available, **state of the art technologies for teaching and data collection platforms**
- We introduced a PaN training platform
  - **to create/store** courses and
  - **to collect** existing material
- We are **re-using** successful projects developed by
  - Elixir (TeSS)
  - SINE2020 e-neutrons and
  - AAI UmbrellaID/eduTeams

<https://pan-training.eu/>



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# Training and Learning Platform

## E-learning platform

Tool available to create and store training material

- Moodle with Jupyter integration
- Simulation tools (Neutrons, ViNYL)
- Mediawiki

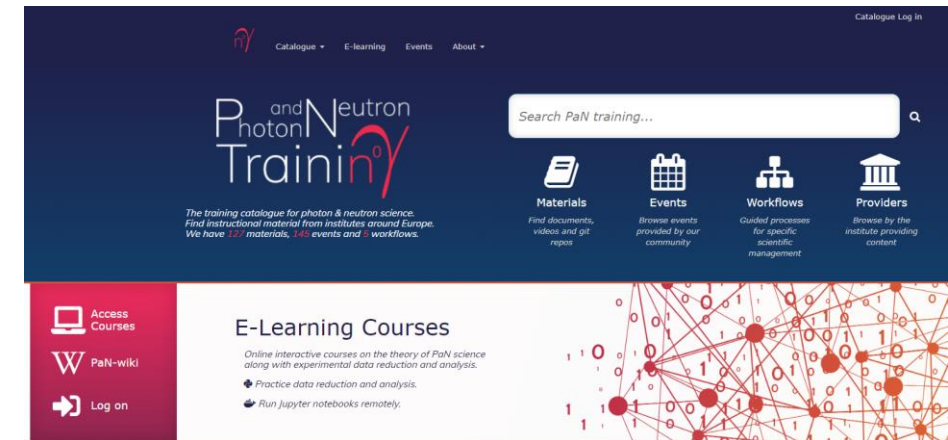
## Training materials/events

Central place to add external training resources, or create training workflows to guide the scientists

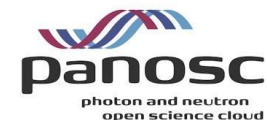
- Github/Gitlab
- Zenodo
- OpenAire
- Video

A common place to advertise events of interest for the PaN community

<https://pan-training.eu/>

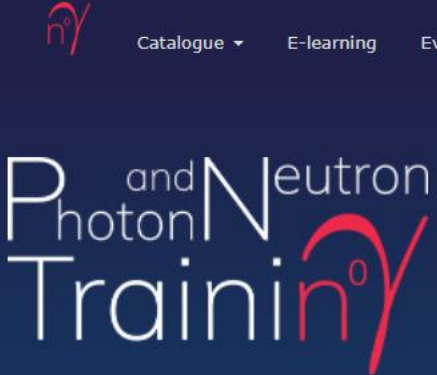


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# Training and Learning Platform


<https://pan-training.eu/>



The training catalogue for photon & neutron science.  
Find instructional material from institutes around Europe.  
We have **127** materials, **145** events and **5** workflows.

Catalogue ▾ E-learning Events About ▾

Search PaN

  
**Materials**  
Find documents, videos and git repos

## Photon and Neutron eLearnin<sup>γ</sup>

Username


Password

☐ Remember username


[Forgotten your username or password?](#)


Cookies must be enabled in your browser [?](#)


Log in using your account on:


 Federated Log in

**Log in**

 Access Courses


 Practice data reduction and analysis.


 Run Jupyter notebooks remotely.

 Log on

## Learning Courses


Take interactive courses on the theory of PaN science  
working with experimental data reduction and analysis.

 Practice data reduction and analysis.

 Run Jupyter notebooks remotely.

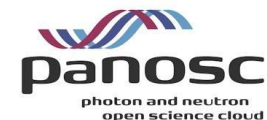
## Is this your first time here?

If you do not have an account [please request one here.](#)





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# Training and Learning Platform

<https://pan-training.eu/>

The screenshot displays the Photon and Neutron eLearning Training platform interface. The top navigation bar includes 'Catalogue' and 'Log in'. The main header features the 'Photon and Neutron eLearning Training' logo. A yellow callout box highlights the 'Search courses on the Moodle platform' search bar. The 'Available courses' section lists: 'Introduction to Neutron Reflectometry Fitting', 'Neutron Scattering Library', 'Introduction to Neutron Scattering', 'Advanced Topics in Neutron Scattering', 'Quasi-Elastic Neutron Scattering', 'Swedness Online 2021', and 'Neutrons, X-rays and Positrons for studying microscopic structures and dynamics'. A yellow callout box indicates '681 users'. The bottom left sidebar contains 'Access Courses' (circled in red), 'PaN-Wiki', and 'Log on'. The bottom right sidebar includes 'Login' fields, 'First time here?' link, 'PaN-Wiki' link, and 'Contact' link.

Catalogue Log in

Photon and Neutron eLearning Training

Welcome to the Photon and Neutron eLearning Training platform. This e-Learning platform is designed for students. Below you will find courses covering various topics in neutron science and how to use python.

Search courses

Available courses

- Introduction to Neutron Reflectometry Fitting
- Neutron Scattering Library
- Introduction to Neutron Scattering
- Advanced Topics in Neutron Scattering
- Quasi-Elastic Neutron Scattering
- Swedness Online 2021
- Neutrons, X-rays and Positrons for studying microscopic structures and dynamics

681 users

Login

Username

Password

☐ Remember username

Log in

Lost password?

Log in using your account on:

Federated Log in

First time here?

Click to request an account.

PaN-Wiki

Find Wikipedia-style articles on neutron science along with example problems and solutions.

Contact

Access Courses

PaN-Wiki

Log on

E-Learning

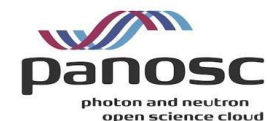
Online interactive learning along with experienced experts.

Practice data

Run Jupyter




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# Training and Learning Platform

<https://pan-training.eu/>

 Access Courses

 PaN Wiki

 Log on

intro-ns

Participants

Grades

Welcome to the world of neutron scattering

Basics of neutron scattering

Neutron sources and instrumentation

Introduction to small-angle neutron scattering (SANS)

Introduction to neutron reflectivity

Introduction to diffraction from crystalline materials

Imaging

Inelastic scattering from lattice vibrations

Magnetic neutron scattering


Inelastic magnetic neutron scattering


e-Learning

Dashboard


## Welcome to the world of neutron scattering


Course photo by Ulli Koester courtesy of the ILL

 Wiki Textbook - Main Page

 Developer and teachers news forum

Hidden from students

 Forum for error reports


 Discussion Forum

## Basics of neutron scattering

In this first course module, you will learn about the neutron and consider when neutron scattering is an appropriate technique to pursue.


The module is estimated to take 7-8 hours including reading and exercises.

**Prerequisites:** You will benefit from having experience with quantum mechanics. Also, you will need mathematics on the college level - including complex numbers.


 Learning goals

Spend some time reading them. When you have read them, a new activity will pop up on this page.

### Introduction to neutron scattering


 Reading: Introduction to Neutron Scattering


First reading on the wiki-text book. You will need to log in to the website to gain access to the reading material.

 Quiz: Neutron Properties

In this activity you will primarily work with applying information about neutron to make estimates and judgements related to neutron scattering experiments.

### Neutron scattering basic theory

 Reading: The neutron cross sections



PaNOSC and E  
and innovation

# Training and Learning Platform

<https://pan-training.eu/>



**Date Added**

Anytime

**Scientific topic**

- powder diffraction 2
- absorption spectroscopy 1
- crystallography 1
- extended x-ray absorption f... 1
- imaging 1
- inelastic scattering 1
- macromolecular crystallography 1
- neutron diffraction 1
- neutron scattering 1

**Show more scientific topics**

**Target audience**

- PaN Community 51
- PhD students 38
- PaN users 33
- scientists 14
- ExPaNDS and PanOSC project ... 12
- researchers 10
- beamline users 8
- data curator 6

**Register training material** **Subscribe**

What are materials in this catalogue?

Search materials...

127 materials found

← Previous 1 2 3 4 5 Next →

Report on status, gap analysis and roadmap towards harmonised and federated metadata catalogues for EU national Photon and Neutron RIs

Report on status, gap analysis and roadmap towards harmonised and federated metadata catalogues for EU national Photon and Neutron RIs

**Keywords:** expands

**Resource type:** Document

PaNOSC search scoring

It illustrates how the Scoring service is designed, how to deploy it and integrate it with the local data catalogue system and the PaN Search api

**Keywords:** expands, PaNOSC, scoring

**Resource type:** github

ExPaNDS mid-term review

Slides of the presentations done during the ExPaNDS midterm review.

**Keywords:** expands

**Resource type:** slides

Search PaN training...

**Materials**  
Find documents, videos and git repos

**Events**  
Browse events provided by our community

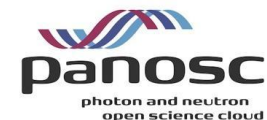
**Workflows**  
Guided processes for specific scientific management

**Providers**  
Browse by the institute providing content

Access catalogue materials at any time without logging on



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.



# Training and Learning Platform

<https://pan-training.eu/>

Apply filters

Add your own materials

Search by keyword

Subscribe to mail alerts

127 materials found

Report on status, gap analysis and roadmap towards harmonised and federated metadata catalogues for EU national Photon and Neutron RIs

**Keywords:** expands

**Resource type:** Document

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# Training and Learning Platform

<https://pan-training.eu/>

Catalogue

## New material

\* Title

\* URL


\* Short description

Long description

This field supports markdown, click here for a reference on markdown syntax.

Catalogue Log in

UmbrellaID Log in



umbrellaID: Confidentiality for a lifetime

Log in with UmbrellaID

Create a new UmbrellaID account

Direct Catalog Log in

Email or username

Password

☐ Remember me

Log in

Register

Forgot your password?

Didn't receive confirmation instructions?

a single online training material sourced by a content provider (such as a text on a Web page, presentation, video, etc.) along with description and other meta information (e.g. ontological categorization, keywords, etc.).

The training portal for the photon & neutron community harvests materials automatically from our E-learning platform, including descriptions and other relevant meta-data made available by providers. Materials can also be registered manually.

If your website contains training materials that you wish to include in our training portal for the photon

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# Training and Learning Platform

<https://pan-training.eu/>

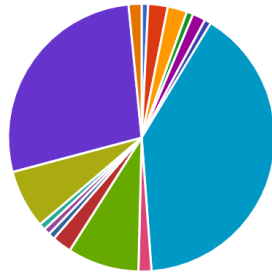
Home pie chart resource\_type

Edit Fork Download

```
select resource_type, count(*) as pie from materials group by 1;
```

16 rows

{git,github,"Git Project"} {} {git,tool} {github} {slides} {software,git} {video} {Poster} {Document} {tool} {docker,docker-compose,software,git} {git,tutorial,slides,e-learning} {tutorial} {video,slides} {"Moodle course",e-learning} {wiki}



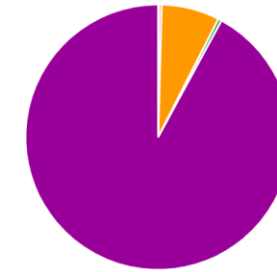
Home Device types (pie chart, no admins)

Edit Fork Download

```
SELECT device_type as geraet, COUNT(*) AS pie
FROM "ahoy_visits"
WHERE user_id IS NULL OR user_id NOT IN (SELECT id FROM users WHERE role_id=2 OR role_id=4)
GROUP BY 1
```

5 rows

null Phablet Mobile Tablet Desktop

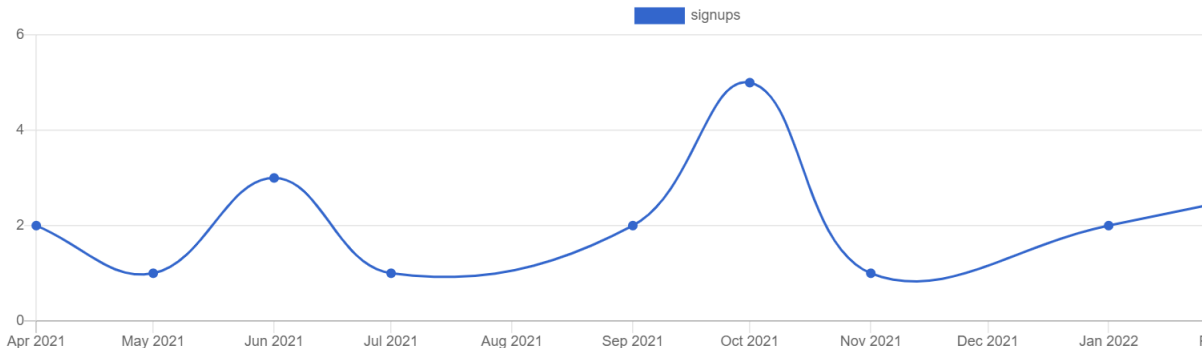


pie

Home Signups

```
SELECT date_trunc('month', created_at)::date AS month, COUNT(*) AS signups FROM users GROUP BY month ORDER BY month
```

9 rows

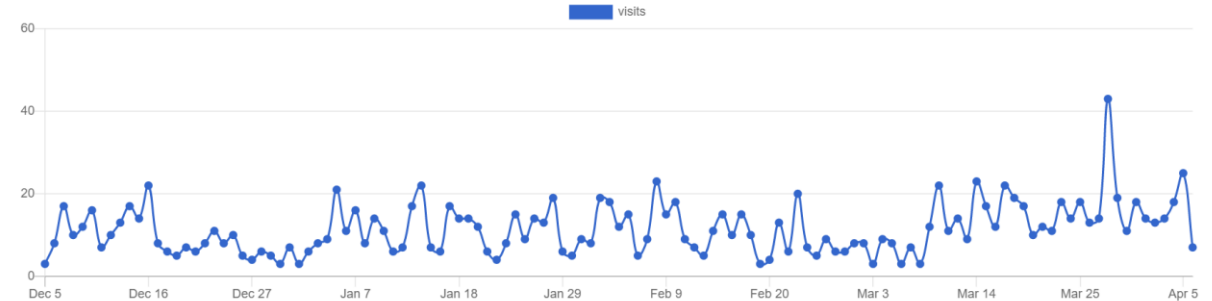


unique (anonymized) ips - (to be continued)

Edit Fork Download

```
SELECT date_trunc('day', started_at)::date AS day, COUNT(distinct ip) AS visits FROM ahoy_visits AS visits GROUP BY day ORDER BY day
```

123 rows



GDPR compliant !!!



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# Training and Learning Platform

<https://pan-training.eu/>

Date Added

Anytime

Event type

Workshops and courses 83

Meetings and conferences 8

Online

☐ Only show online events

Target audience

future users of EOSC 1

scientists 1

Keyword

DMP 1

EOSC 1

FAIR 1

LEAPS 1

PaNOSC 1

VISA 1

expands 1

Content provider

Laserlab-Europe 62

Lightsources.org 13

League of European Accelerators 12

PaNOSC 3

Register

Show page 1 of 1

91 events

Grid Map

What are events in this catalogue?

Search events...

← Previous 1 2 3 4 Next →

Earliest

MAX IV Scientific seminar series

17 January - 26 December 2022

SSHOC Final Conference

6 April 2022

Workshop (in French): EOSC, a resource for research

8 April 2022

2022 Workshop on Experimental Environments for Coherent Diffractive Imaging (CDI)

18 - 20 April 2022

HZB Photon School 2022

4 - 14 April 2022

IWXM 2022

5 - 7 April 2022

Workshop (in French): EOSC, a resource for research

8 April 2022

Introduction to Synchrotron and XFEL Radiation - Techniques and Applications

11 - 30 April 2024

5-8 April 2022, Nanometa - International Topical Meeting on Nanophotonics and Metamaterials, Seefeld, Austria

5 - 9 April 2022

High Pressure Structural Biology and Extreme Biophysics Workshop

7 - 10 April 2022

MOOC Introduction to Synchrotron and XFEL Radiation - Techniques and Applications

11 - 12 April 2022

24-27 April 2022, ...

Catalogue Log in

Catalogue E-learning Events About

Search PaN training...

Materials Events Workflows Providers

Find documents, videos and git repos Browse events provided by our community Guided processes for specific scientific management Browse by the institute providing content

science alysis.

panosc photon and neutron open science cloud

ExpANDS European Open Science Cloud Photon and Neutron Data Services

For F2F events a map is available

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.

# Training

# Platform

<https://pan-training.eu/>

<b>CERIC</b> Central European Research Infrastructure Consortium (CERIC-ERIC) CERIC-ERIC integrates and provides open access to some of the best facilities in Europe, to help... <b>10 training materials</b>	 <b>ExPaNDS</b> ExPaNDS is the European Open Science Cloud (EOSC) Photon and Neutron Data Service. The... <b>5 training materials</b> <b>1 upcoming event</b> (4 past events)	 <b>HZDR</b> HELMHOLTZ-ZENTRUM DRESDEN-ROSSENDORF Helmholtz-Zentrum Dresden-Rossendorf (HZDR) The HZDR is a member of the Helmholtz Association of German Research Centres. As registered,... <b>2 training materials</b>
 <b>SOLEIL</b> SOLEIL is located in France and is both an electromagnetic radiation source covering a wide range... <b>1 training material</b>	 <b>PaNOSC</b> The Photon and Neutron Open Science Cloud (PaNOSC) The Photon and Neutron Open Science Cloud... <b>1 training material</b>	 <b>Deutsches Elektronen-Synchrotron (DESY)</b> DESY is one of the world's leading accelerator centres based in Germany. Researchers use the... <b>1 training material</b> <b>0 upcoming events</b> (1 past event)
 <b>Paul Scherrer Institute (PSI)</b> The Paul Scherrer Institute PSI is the largest research institute for natural and engineering... <b>1 training material</b>	 <b>Diamond Light Source</b> Diamond Light Source is the UK's national synchrotron. It works like a giant microscope... <b>1 training material</b>	 <b>MAX IV</b> The MAX IV facility, based in Sweden, will have the highest quality of X-rays available to... <b>1 training material</b> <b>0 upcoming events</b> (1 past event)
 <b>ALBA</b> ALBA is a 3rd generation Synchrotron Light facility located in Spain near Barcelona, being the... <b>1 training material</b>	 <b>Elettra</b> Elettra Sincrotrone Trieste is a multidisciplinary international research center of excellence... <b>1 training material</b>	 <b>HZB</b> Helmholtz-Zentrum Berlin (HZB) HZB in Germany has existed since 2009. Its roots go much further into the past, given that HZB... <b>1 training material</b> <b>0 upcoming events</b> (1 past event)
 <b>Science and Technology Facilities Council (STFC)</b> STFC is part of UKRI, a non-departmental public body funded by a grant-in-aid from the UK... <b>1 training material</b>	 <b>UK Research and Innovation (UKRI)</b> UKRI works in partnership with universities, research organisations, businesses, charities, and... <b>1 training material</b>	 <b>ISIS Neutron and Muon Source</b> ISIS Neutron and Muon Source is based at the STFC Rutherford Appleton Laboratory in Oxfordshire... <b>1 training material</b> <b>0 upcoming events</b> (1 past event)
 <b>ESRF - European Synchrotron Radiation Facility</b> The ESRF is the world's most intense X-ray source and a centre of excellence for fundamental and... <b>1 training material</b>	 <b>European Grid Infrastructure Foundation (EGI)</b> EGI is a federated e-Infrastructure set up to provide advanced computing services for research... <b>1 training material</b>	 <b>ESS - European Spallation Source</b> The European Spallation Source (ESS) is a European Research Infrastructure Consortium (ERIC), a... <b>1 training material</b> <b>0 upcoming events</b> (1 past event)
 <b>Institut Laue-Langevin (ILL)</b> The Institut Laue-Langevin is an international research centre at the leading edge of neutron... <b>1 training material</b>	 <b>ELI Delivery Consortium</b> ELI-DC AISBL is an international non-profit association under Belgian law. It has been... <b>1 training material</b>	 <b>European XFEL</b> The European XFEL in the Hamburg area is a new international research facility of superlatives... <b>1 training material</b> <b>0 upcoming events</b> (1 past event)
 <b>League of European Accelerator-based Photon Sources (LEAPS)</b> LEAPS - the League of European Accelerator-based Photon Sources - is a strategic consortium... <b>1 training material</b>	 <b>League of advanced European Neutron Sources (LENS)</b> The League of advanced European Neutron Sources (LENS) has the not-for-profit purpose of... <b>1 training material</b>	

Catalogue Log in

Catalogue E-learning Events About

Search PaN training...

**Materials**  
Find documents, videos and git repos

**Events**  
Browse events provided by our community

**Workflows**  
Guided processes for specific scientific management

**Providers**  
Browse by the institute providing content

## E-Learning Courses

Online interactive courses on the theory of PaN science along with experimental data reduction and analysis.

Practice data reduction and analysis.

Run Jupyter notebooks remotely.


**panosc**  
photon and neutron  
open science cloud

**ExPaNDS**  
European Open Science Cloud Photon  
and Neutron Data Services

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# Training and Learning Platform

<https://pan-training.eu/>



[Catalogue](#) ▾
 [E-learning](#)
[Events](#)
[About](#) ▾

[Catalogue Log in](#)

Target audience	
ExPaNDS and PaNOSC project ...	1
PaN Community	1
life scientists	1
research data scientist	1

Keyword	
Higgs	1
Jupyter notebooks	1
Pulmonary arterial hyperten...	1
Python	1
data analysis	1
dataset	1
imaging	1
synchrotron	1
terahertz	1

Licence	
Creative Commons Attributio...	2
License Not Specified	2
Open Data Commons Attributi...	1

Difficulty level	
Medium	2
Difficult	1
Not specified	1

+ Create workflow

? What are workflows in this catalogue?

**Kinetic SAXS, 2D Scanning SAXS (work in progress)**

Cartography or kinetic experiments can generate up to 3 TB per day of raw data saved at the measurement facility. Such large datasets are impractical for users to take home. Subsequent analysis needs to be performed remotely on a performant platform, making it attractive for deployment as a...

**Laser Image Visualization Training**

This training provides an introduction for the acceleration of intense ion pulses on a few micrometers to 10 MeV energies is possible when light pulses from a short-pulse laser and thin solid-state target interact. In this interaction, the laser primarily transferred relativistic...

**Pulmonary arterial hypertension research**

This training workflow shows the combination of the demonstrations from the ExPaNDS mid-term review.

- Source code and reference to the...

**TELBE Data Analysis**


The radiation source ELBE (Electron Linac for beams with high Brilliance and low Emittance) 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...

**Workflow for Adding Training Material**

The workflow describes how content can be added to our ExPaNDS/PaNOSC Training Catalogue.


Learn how to add new materials, events ...

Search PaN training... 🔍




**Materials**

*Find documents, videos and git repos*




**Events**

*Browse events provided by our community*



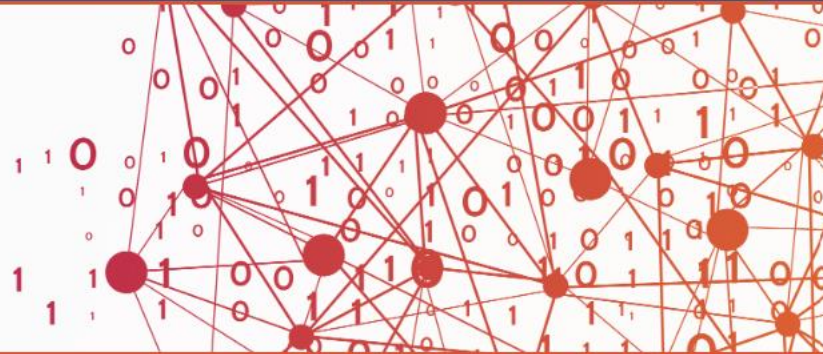
**Workflows**

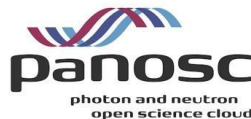

*Guided processes for specific scientific management*



**Providers**

*Browse by the institute providing content*



rch


and innovation programme under grant agreements 623652 and 657641, respectively.



# Training and Learning Platform

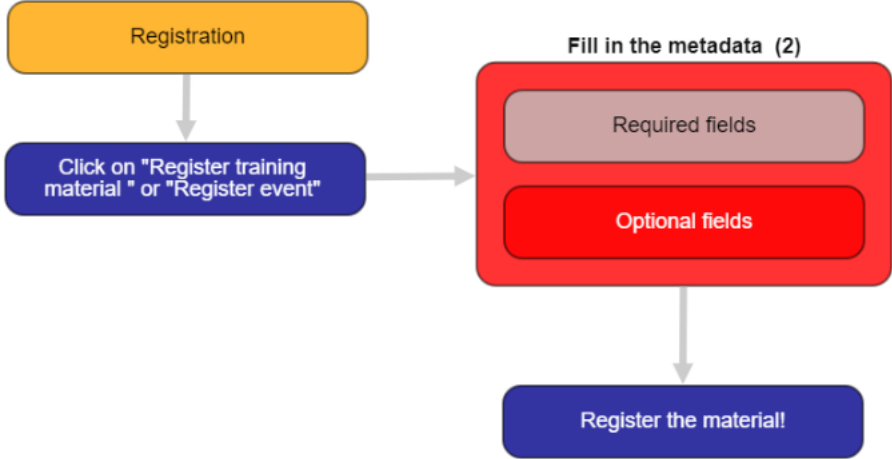
<https://pan-training.eu/>

Catalogue Log in

 Catalogue ▾ E-learning Events About ▾

Workflow Activity log

## Workflow for Adding Training Material



### Workflow for Adding Training Material

The workflow describes how content can be added to our ExPaNDS/PaNOSC Training Catalogue.

**Keywords:** training portal



**Target audience:** ExPaNDS and PaNOSC project members

**Difficulty level:** Very Easy

**Licence:** Creative Commons Attribution 4.0

Difficulty level	
Medium	2
Difficult	1
Not specified	1

and innovation programme under grant agreements 623652 and 657641, respectively.

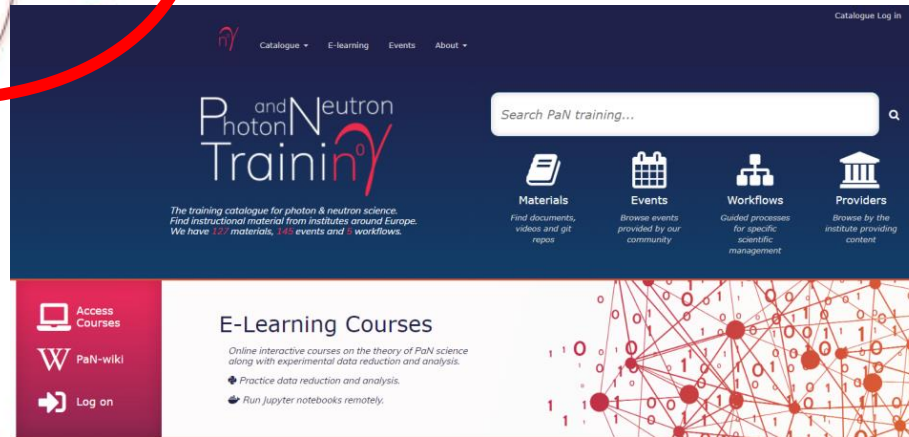


# Stakeholders and Sustainability

<https://pan-training.eu/>



Sharing of good practices



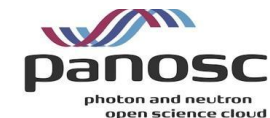
H2020 >> Horizon Europe



Promote adoption and sustainability



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.





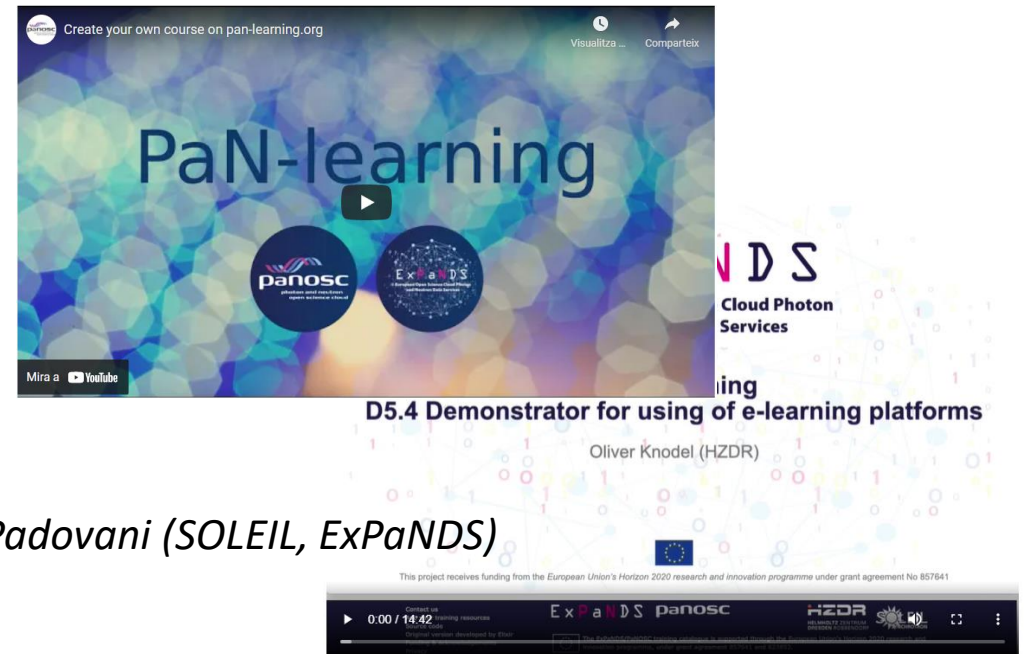
# Useful links

- ExPaNDS web site <https://expands.eu/>
- PaNOSC web site <https://www.panosc.eu/>
- Demonstrator for using the PaN training platform <https://pan-training.eu/about>
- PaN e-learning Help <https://docs.pan-training.eu/>

*If you would like to create a course in the e-learning Moodle platform please email [admin@pan-learning.org](mailto:admin@pan-learning.org)*

*For enquiries, information, or assistance; contact our support desk at [pan-training@hzdr.de](mailto:pan-training@hzdr.de)*

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and **ALL** Team members!*



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