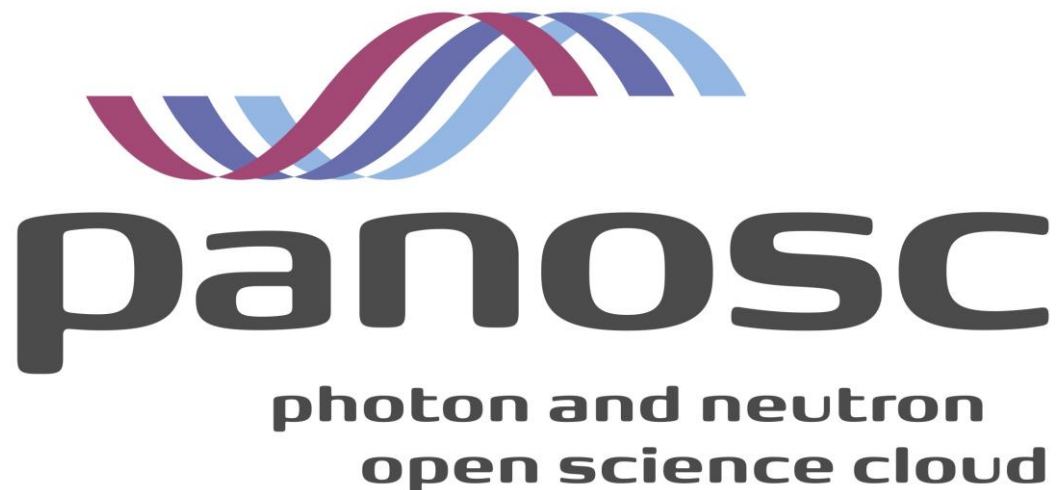# PaNOSC

Photon and Neutron Open Science Cloud

H2020-INFRAEOSC-04-2018

Grant Agreement Number: 823852

Deliverable: D1.8 Report of annual workshop 3

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	Contributors: Andrew Gotz, Tobias Richter, Fabio Dall'Antonia, Carsten Fortmann-Grotte, Jean-François Perrin, Teodor Ivanonica, Ornela De Giacomo, Thomas Holm Rod, Nicoletta Carboni
	Reviewed by: Andy Gotz, Rudolf Dimper, Jayesh Wagh
	Approved: Jordi Bodera Sempere

List of participants

Participant No.	Participant organisation name	Country
1	European Synchrotron Radiation Facility (ESRF)	France
2	Institut Laue-Langevin (ILL)	France
3	European XFEL (XFEL.EU)	Germany
4	The European Spallation Source (ESS)	Sweden
5	Extreme Light Infrastructure Delivery Consortium (ELI-DC)	Belgium
6	Central European Research Infrastructure Consortium (CERIC-ERIC)	Italy
7	EGI Foundation (EGI.eu)	The Netherlands

Table of Content

Executive Summary

PaNOSC is funded by the H2020-INFRAEOSC-04-2018 call with Grant Agreement Number: 823852. The project started on 1st December 2018 and has therefore been running for three years.

Overall, the project is advancing according to plan with only minor deviations. Partners and stakeholders are meeting regularly to move the project forward and deliverables are being submitted on time. As the project matures, outcomes from the deliverables are being made available in production environments, helping make FAIR data a reality for the facility users and the EOSC.

Cooperation with ExPaNDS has continued as foreseen and the joint annual event is a testimony of this. During the event, scientists presented use cases and the LEAPS chair explained that LEAPS members are considering the suggestions from PaNOSC and ExPaNDS regarding sustainability and will bring the subject forward at the next General Assembly.

Introduction

This document summarises the PaNOSC[1] and ExPaNDS[2] Symposium hosted by PSI[3] that took place on the 26th of October 2021. The management boards of both projects decided to organise a fully remote joint event due to the travel and health restrictions in place at national level and at the partner organisations because of the ongoing COVID-19 pandemic. Furthermore, it was decided to postpone the annual meeting until the end of spring 2022 hoping a face-to-face event will be possible. As a consequence, this report covers the Symposium as opposed to the Annual Meeting.

To complement the report on the Symposium, a brief report from the Executive Board meeting, which took place in September, and the progress reports from all work packages is also included.

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[1] Photon and Neutron Open Science Cloud: https://www.panosc.eu
[2] European Open Science Cloud Photon and Neutron Data Service: https://expands.eu
[3] Paul Scherrer Institute: https://www.psi.ch/en

Summary of the Symposium

The European Photon and Neutron EOSC[4] Symposium open event took place on 26th of October 2021.

Figure 1: Joint event banner

Originally PaNOSC and ExPaNDS planned to hold a Symposium (open to everybody) followed by an Annual Meeting for the project's participants, however, the ongoing COVID-19 pandemic and travel restrictions forced the organisers to move to an online only event.

While online events on one hand made informal communication and joint work sessions more difficult, on the other hand they allowed more participants to attend, especially external stakeholders. . Therefore, the Annual Meeting has been scheduled in spring 2022 as a face-to-face event and the Symposium was organized virtually.

The online Symposium contained news and status reports from both projects, presented the vision from the LEAPS and LENS associations on FAIR data and showcased scientific use cases made possible by PaNOSC and ExPaNDS.

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[4] European Open Science Cloud

All the presentations are available on the PaNOSC GitHub repository and zenodo:

https://bit.ly/PaN-EOSC-Symposium-2021-presentations
https://doi.org/10.5281/zenodo.5636331

The Symposium was an open half-day event that took place during the morning of Tuesday, 26th of October 2021. The event was open to anyone that would register (at no cost) and attracted approximately 120 attendees.
The agenda was as follows:

Topic	Speakers	Schedule
Welcome	Alun Ashton	09:30-09:35
Projects' overview	Patrick Fuhrmann	09:35-10:00
Describe data by scripts for future reuse	Petr Čermák	10:00-10:15
Tomography case study	Kamei Madi	10:15-10:30
Neutron diffraction from Boro-carbon for efficient structural analysis and defect detection	Mousumi Upadhyay Kahaly	10:30-10:45
TELBE Data Analysis workflow and the PaN training platform UX	Jan-Christoph Deinert	10:45-11:00
Break		11:00-11:15
Machine learning-based Spectra Classification	Yue Sun	11:15-11:30
DOI, FAIR, an MX Covid-19 use case	Frank von Delft	11:30-11:45
Introduction to the survey on the projects' outcome adoption	Andy Götz	11:45-12:00
LEAPS perspective on projects outcome and sustainability	Caterina Biscari	12:00-12:20
LENS perspective on projects outcome and sustainability	Robert McGreevy	12:20-12:40
Questions and discussion, wrap-up	Andy Götz	12:40-13:00

The event started at 09:30 with the initial welcome address and explanations about how to interact with the panelists and organisers via the chat (for technical problems) or the Q&A area (for questions related to the presentations) or by hand-raising (and requesting to speak).

The first presentation was made by Patrick Fuhrmann (ExPaNDS coordinator) covered the progress made over the years in terms of data policies and opening scientific data, focusing on the main areas covered by both projects, their landscape and the results achieved (and to be achieved before both projects end). Patrick showed how these results are elements that create synergies in Photon and Neutron sources, enabling them to produce FAIR data.

Patrick finished his presentation introducing the talks that would follow during the symposium.

The first use case of the event was presented by Petr Čermák (scientific researcher at Charles University), focusing on what can be done to ensure that data is truly FAIR and trustworthy. Petr showed several tools and services (PyPI, binder, GitHub, figshare, etc.) that can make data reusable.

The second use case was presented by Kamel Madi (co-founder and CEO at 3Dmagination Ltd) and explained the Athena software and how it manage imaging data, make this data FAIR.

Mousumi Upadhyay Kahaly (senior researcher at ELI-ALPS) presented the third use case focusing on simulations, enabled through PaNOSC's WP5, which helps making better and more efficient experiments by investigating feasibility, range of parameters to be used, and help with instrumentation design.

Jan-Christoph Deinert (scientists at the Institute of Radiation Physics, HZDR) introduced the ultrafast experiments conducted, and the workflows used to enable experimental data to be FAIR.

The fifth use case was presented by Yue Sun (PhD student at the University of Szeged doing research at the European XFEL), showing the progress being made towards machine learning-based spectra classification and how the metadata enable the FAIR principles.

The last use case was presented by Frank Von Delft (principal beamline scientist at Diamond Light Source, University of Oxford) who showcased the MX Covid-19 experiments done and the use of Fragalysis to enable quick sharing of the data, which complements other existing tools (Protein Data Bank and Zenodo).

These use cases were followed by a presentation from Andy Götz (PaNOSC coordinator, ESRF) which focused on the main goals of PaNOSC and ExPaNDS (a common space for FAIR data from PaN facilities and enabling remote access for users) and how these goals are possible by defining policies and delivering services. Andy then showed what is the position of LEAPS partners towards these outputs and the fact that the PaN community must collectively work together to maintain and operate these services once the PaNOSC and ExPaNDS projects come to an end.

Caterina Biscari (LEAPS Chair and director of ALBA) presented the LEAPS perspective on sustainability of the projects' outcomes. She explained that LEAPS and LENS cover many of the partners involved in PaNOSC and ExPaNDS and LEAPS has a working group focused on IT. She finished her presentation by saying that LEAPS members are considering the suggestions from PaNOSC and ExPaNDS regarding sustainability and will bring the subject forward at the next General Assembly.

Robert McGreevy (LENS Chair and director of ISIS) presented the LENS perspective, which is that neutrons and photon facilities should collaborate, focusing on the priorities for science, and not on techniques, and keeping in mind that not all facilities are in the same position regarding budget/schedule/available resources. He encouraged the project coordinators to come forward with a detailed proposal detailing what it means to make the project outcomes sustainable.

The symposium finished with a questions and answer session, allowing a constructive discussion. A more detailed summary of the symposium is available on:

https://www.panosc.eu/news/overview-2nd-panosc-expands-pan-eosc-symposium/

PaNOSC status

Summary of progress

PaNOSC is soon entering the last year. The project has been submitting deliverables on time, and soon will complete the Periodic Report covering progress until month 36 of the project.

As the project approaches completion, it is important that all partners and contributors remain focused to ensure a successful delivery of the services, work package (WPs) deliverables and milestones. On top of these, and to ensure a truly successful project, it is essential to release into each of the facility's production environments the project outcomes and to secure the resources necessary for the sustainability of these outcomes in the years to come.

WP1 - Management

The WP1 has continued to organise bi-weekly Project Management Committee (PMC) meetings, the agenda and minutes of which are available in GitHub[5]. Additional meetings have been conducted to review each of the WPs, its outcomes and the progress towards achieving them.

Furthermore, the WP initiated a review of the project expenditure per partner and WP, the findings of which were presented during a PMC meeting and an Executive Board meeting. The WP1 will continue to monitor the engagement of partners and will produce an internal report to prepare the last year of project execution.

WP2 - Data Policy and Stewardship

WP2 has continued progressing with the updating / adoption of Data Policies in accordance with the PaNOSC Data Policy Framework. Each of the PaNOSC partner facilities has modified their existing data policies and presented / discussed the changes with their lab management. The partners are in different stages of the approval process. The changes are presented in D2.3 while the current state of the process is presented in D2.4. In both the cases of a new data policy or updating an existing one the process has proven to be longer than planned due to the many competing high priority tasks each RI is dealing with. Data Policies are considered important but updating them is considered not as urgent. ELI ERIC has set a good example by adopting a FAIR data policy from the beginning. CERIC-ERIC has likewise adopted a common data policy, however, the implementation is more complex due to the many partners and their need to follow national policies on data. So far ELETTRA is the only CERIC-ERIC partner implementing the new data policy. Data from other facilities will be centralised at ELETTRA using a data transfer tool developed by CERIC-ERIC. In the case of the other PaNOSC partners, who already had a data policy, i.e. ESRF, ESS, EuXFEL and ILL, they have proposed changes but not had them approved at the management level yet. Their approval is planned before the end of PaNOSC.

The second main topic of WP2 over the last 12 months has been the preparation and implementation of the Data Management Plans (DMP). With the increasing data volumes and

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[5] https://github.com/panosc-
eu/panosc/tree/master/Work%20Packages/WP1%20Management/Meetings/Project%20Management%20Committee

complexity of data, it is becoming increasingly important for facilities to inform and ensure that users can handle the data they will receive. This is done through a Data Management Plan. The task of implementing DMPs is being carried out as a joint activity together with ExPaNDS WP2. After the preparatory work which started 12 months ago, the last 6 months have concentrated on discussing the contents of the DMPs and selecting a tool to implement them. Two tools will be used - DS Wizard for the DMP template and RDMO for managing the knowledge database. The DS Wizard integration in the user portals and workflow is being carried out by ESS with the other PaNOSC and ExPaNDS partners, applying the results to their case. The RDMO database is being implemented by HZB from ExPaNDS. The outcome is already quite advanced thanks to the choice of a mature tool and could be deployed in production during the following year. The next step is to work with beamline scientists to fill in the knowledge base for each beamline.

WP3 - Data Catalog Services

In the reporting period Deliverable D3.2, the initial version of the federated PaNOSC domain specific search service has been completed and submitted. The release followed a series of preparation meetings that included a wide representation from ExPaNDS facilities that committed to the same goals of implementing that API at their institutions. At the moment ESS is hosting a demonstrator service at https://federated.scicat.ess.eu/explorer/. Half of the partner facilities (ESS, ILL and ESRF) are currently making data findable through that service. CERIC ERIC and ELI are still in the process of setting up a local data catalogue or in the process of selecting a data catalogue to deploy, respectively.

A user facing frontend to the federated search service is being developed in close collaboration with WP4 and technically led by ELI. In this process, a number of practical use cases have been explored which, together with testing at partner sites, provided useful feedback that will result in revisions to the search API and clarifications in the documentation. For example, a common set of shared experimental parameters has been defined and the roles for personnel associated with datasets have been agreed. To map and curate these definitions onto the locally held datasets will be an ongoing task.

Significant progress has been made on how to appropriately label and query the experimental technique that forms the basis of a dataset. PSI (ExPaNDS) and ESS are jointly leading the effort on this activity. A reference specification and implementation is in preparation, following the submission of a related ontology deliverable in ExPaNDS.

Besides these filtering options (by technique, by person, by presence or value of a specific parameter) the search must also rank the results by relevance based on the text search terms. Since the federated service does not (necessarily) have all the information that underpin a match, this ranking metric has to be calculated locally and agreed . A reference implementation of how this has to be done has been developed by ESS and been demonstrated to partners. In the next months, we should be able to see results from ILL with the same ranking to verify the approach.

WP4 - Data Analysis Services

WP4 has seen a change of the work package coordinator to replace the previous WP leader who left EuXFEL, as well as a new development-, deployment- and usage strategy for the PaN portal as a

central platform for remote (cloud-based) data analysis services. As a result, the concept of a PaN portal is based on the existing ILL cloud-software solution VISA, currently at version 2.0.2. The ILL developers have brought VISA into a state that is deployable and adaptable at PaNOSC and ExPaNDS partner RIs, in particular by adding

- a cloud provider interface to the VISA API service, so that user instances can be run also on cloud infrastructures other than OpenStack (default), such as ProxMox, VMware, AWS etc.
- Readthedocs pages for documentation[6], for which installation guides are continuously extended
- the VISA demo project for a self-contained deployment to familiarize web administrators with the deployment process

From the project coordination side, structures for a more efficient information exchange concerning the VISA deployment phase have been established in terms of a

- regular schedule of progress reports at the WP4 meetings
- Github (sub)repository to collect various material: progress reports, links to documentation etc.
- dedicated Slack channel to discuss encountered problems and solutions to them

Good deployment progress was already made at CERIC and EuXFEL (with help of DESY experts) who succeeded with proof-of-concept VISA deployments. Other partner RIs have set up or are on the way to set up OpenStack and start with exploring the VISA demo.

Software developments outside the portal context were also achieved, and presented within the work package meeting, as well as in the form of use cases: CERIC have developed the FidViewer (presented at WP4 meeting) and XrfFitVis to explore and visualize specific domain data such as NMR data. They are currently re-factoring h5nuvola as a framework to flexibly support data extraction and handling from files for various application purposes. ESRF have further developed the h5web tool including a JupyterLab plug-in for it, and will extend front- and back-end components of h5web to be used with the diffraction viewer Braggy and as a generic HDF5 web viewer as part of the ESRF data portal. They have developed the Human Organs Atlas[7] data portal based on the web-UI code from ELI (PaN portal demonstrator) and search API. The experience gained with this exercise will improve these two outcomes of PaNOSC.

KPIs:
- all partners provide a Jupyter notebooks service and/or a remote desktop service
- numbers of unique users and techniques both increased overall: from 269 to 1288 and from 49 to 72, respectively
- a new KPI, number of returning unique users, has been introduced in May, counting 657.

Finally, the coordination with other work-packages, in particular WP3, WP5 and WP6, as well as with ExPaNDS WP4 was intensified. The idea of a federated PaN search portal to find, access and interoperate with open data is foreseen as a consequence of the more encapsulated VISA platform. ELI developed an API adapter layer between web-UI and federated search API (ESS, WP3). The current plan and shared efforts between WP3 and WP4 are to re-activate and improve the PaN-

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[6] https://visa.readthedocs.io

[7] https://human-organ-atlas.esrf.eu

portal demonstrator front-end (as of end 2020) and integrate it with adapter layer and search API. A new aspect of the search portal aimed at for a coming internal milestone of WP4 (due date to be defined) is the URL-based redirection by means of meta-data containing PIDs - ideally DOI links - pointing to landing pages for existing local facility services, such as for metadata inspection, data download and computation services. The collaboration between WP4 and WP5 shall enable the integration of simulation software with data analysis pipelines. The field of serial femtosecond crystallography, as per example of EuXFEL data, could be a first use case of such integration.

WP5 - Virtual Neutron and X-ray Laboratory

Work has proceeded according to plan. Besides advancing the three simulation libraries Simex, McStasScript and Oasys, WP5 continued to work on the implementation of instrument parameters in libpyvinyl (Task 5.1) in combination with setting up an instrument database (Task 5.3) and deposition of documented example simulations in a simulations database (Task 5.2). Furthermore, we made preparatory steps towards deployment of our simulation services and we are currently finalizing the protocol for comparison of raw simulated to raw experimental data (Task 5.4).

The instrument database is implemented as a collection of json files that define the physical properties of beamline and instrument components and their allowed ranges, as well as numerical parameters relevant for the simulation codes. The python simulation API libpyvinyl has been modified to reflect this structure of parameters and their hierarchies. libpyvinyl now exposes methods to query parameters, their defaults and permissible ranges from the database e.g. upon configuration of simulation workflows in McStasScript, Simex, and Oasys.

Oasys workspaces can now be downloaded from a dedicated repository through a special Oasys widget and then opened in the user's Oasys installation. Numerous x-ray beamlines are deposited in the repository, mainly for synchrotron RIs where the majority of Oasys users are based. In a similar way, beamline, instrument, and experiment simulation notebooks are collected under the umbrella of our Github project at https://github.com/PaNOSC-ViNYL. As a first step towards service deployment, we have implemented recipes for the creation of docker containers that bundle the simulation code, the example notebooks and the jupyter lab. These containers can be run in a standalone mode or from within jupyter hub as a cloud service.

More details can be found in our bi-weekly meeting notes which are publicly available at https://github.com/PaNOSC-ViNYL/ViNYL-project/wiki/Weekly-Meeting-Notes.

WP6 - EOSC Integration

In the third year of the project WP6 efforts were focused on the UmbrellaID, Data Management strategies and the PaN software catalogue.

WP6 organized a Technical Training workshop https://indico.psi.ch/event/10773/ on UmbrellaID in February 2021. The aim of this workshop was to introduce and to share the recent technical and organizational developments. It also ensured that the IT professionals of the PaN community are at ease with the concepts, processes and technologies in use, and can eventually actively participate in the evolution of our community AAI. UmbrellaID was included as a key use case in the EOSC Future

work programme. In addition, WP6 delivered *D6.3 Integration of the PaN AAI into the EOSC*. This deliverable describes the current achievements of UmbrellaID in PaNOSC WP6 and the roadmap for its integration in EOSC.

A joint [PaN ESCAPE Data Management Workshop](#) was organised in January 2021. During this workshop ESCAPE Data Management experts introduced their data lake idea and its current status. PaN speakers shared their use case on federated data infrastructures, enabling large national research data centres to work together and build a robust cloud-like service.

WP6 also delivered the PaN software catalogue (D6.4), an important component for implementing FAIR data in all PaN RIs. This catalogue will be updated with additional software packages used for processing data from the PaN RI data catalogues. M6.3 Second release of PaNOSC services, data and resources was achieved by registering PaN community data portals on the EOSC portal.

WP7 - Sustainability

WP7 has focused on providing a cost estimation for all the activities involved in data management at RIs. This task was concluded with the preparation of D7.2 Photon and Neutron EOSC metrics and costs model that proved to be very challenging, especially for the costs model. All partners contributed to the cost collection and also EGI, initially not included in this task, contributed to enrich the deliverable providing cost estimates for some of their services of high interest for RIs, currently being tested in PaNOSC.

All partners are active and have attended the WP meetings, we have also increased the commitment of EGI since two partners, CERIC and ELI agreed to transfer part of their PMs to them so they could also contribute to the last two deliverables, 7.3 Photon and Neutron EOSC Business model reference document and 7.4 Photon and Neutron EOSC Sustainability plan.

The work on business models has progressed, although it was suspended temporarily after the summer due to the need to process the information from the costs collection, which was delivered in delay with respect to the original planning. This was due to the need to align on the costs included and their division into the cost lines agreed in the template, that required further discussion and also the involvement of larger teams at the facilities, beyond the partners' WP7 representative.

The WP continued its interaction with the ExPaNDS project, since many of the sustainability issues faced by PaNOSC are shared with ExPaNDS. With the constitution of the EOSC, we agreed to follow all developments closely, and actually the majority of PaNOSC partners are members of the association and participate in the decisional processes. Moreover, WP7 established a close link with the working groups of EOSC through the WP leader, who was one of the coordinators of the charter writing for the task force "Funding models for EOSC" and is currently a member of the same task force. This should ensure a clearer view of the interconnections between the EOSC and its business models, and how the PaNOSC fits into the picture.

Discussions with the LEAPS consortium have started to ensure the sustainability of the PaNOSC and ExPaNDS outcomes. The outcomes were presented at the LEAPS GA and Symposium and are being

actively discussed at the LEAPS GA meetings. The topic was also presented at the ERF- AISBL (the Association of European-Level Research Infrastructures Facilities) general assembly, to look for synergies with other kinds of facilities with similar issues. With the development of the business models, these interactions are expected to increase in the last year of the projects, when the business models will be consolidated.

WP8 - Staff and User Training

We have continued to improve the e-learning website, pan-learning.org. It is now possible to login with UmbrellaID and we have settled on our preferred solution for running Jupyter notebooks from the platform. A setup has been chosen whereby a Docker container is launched from a specific course which creates a JupyterHub instance with all the necessary software and modules installed (a move to JupyterLab will occur in the future). The container pulls notebooks directly from GitHub enabling a teacher to update their course by simply pushing changes to their repository. We are currently experimenting with solutions for running the Jupyter notebooks on compute resources from external providers such as EGI. This would provide teachers with sufficient resources for compute intensive courses. Moreover, it is now the plan to sunset the web-interface for performing instrument simulations in favour of Jupyter notebooks to make the web portal more maintainable and flexible. The pan-learning.org Jupyter solution has been used to run McStas training for staff at PNPI, Gatchina and MLZ, Garching (Use Case 20) as well as Python training at the ESS. Whilst McStas can be used for neutron instrument simulations, other software is needed for the photon sources (e.g. simex). Fortunately, most of that software can also be run through Jupyter notebooks. We are therefore in the process of creating and collecting notebooks representing all the PaNOSC partners in preparation for Milestone 8.5.

In parallel with the continuous development of pan-learning.org, a training catalogue has been developed in ExPaNDS based on ELIXIR's training portal, TeSS (https://tess.elixir-europe.org). This training catalogue is currently available from https://pan-training.hzdr.de. The training catalogue and pan-learning will be made accessible through a joint landing page that will run under the domain name https://pan-training.eu. A design for this new portal has been created and is currently under review (see https://pan-learning.org/moodle/customfiles/alllight and https://pan-learning.org/moodle/customfiles/alldark). To quell confusion over names, pan-learning will become the e-learning branch of pan-training (https://pan-training.eu/e-learning). However, a redirect will be created such that pan-learning.org still takes you to the platform.

Unfortunately, our first deliverable D8.1 is delayed but a solution for how to complete it has now been devised and we therefore expect it to be completed soon.

As part of Task 8.4, a Train-the-Trainer workshop took place over three days in February followed by two days in March (see https://indico.esss.lu.se/event/2499/) with teachers from the Department of Science Education, University of Copenhagen. The workshop has resulted in an increased interest in using pan-learning.org at photon and neutron sources and we are gradually seeing contributions from other facilities or organisations, e.g. from the Open Reflectometry Standards Organisation (ORSO, https://www.reflectometry.org).

WP9 - Outreach/Communication and Dissemination/Impact

In the frame of WP9, the [communication and dissemination plan](#) updated in January 2021 has been continuously implemented, through constant interaction with all WP leaders to promptly populate all project's online communication channels with relevant updates on the project's achievements, events, milestones, deliverables and publications (both on Zenodo and on OA peer-reviewed journals), also by distributing the information to partners, other EOSC cluster projects, PaN European initiatives and networks. Joint actions with PaNOSC sister project ExPaNDS has been strengthened, as well as the connection with the LENS and LEAPS initiatives to more widely promote the activities and disseminate the results of the project among the user community of photon and neutron facilities in Europe.

To better engage with the user community, and following the launch of a call for use cases at the end of 2020, [twenty-three use cases](#) of the use of the services being developed in the project have been collected and published, to showcase current practices in data stewardship, data transfer, (remote) data analysis, and data and experiments' simulation, as well as in the domain of e-learning. A selection of these were presented at a number of events (e.g., [ELISS 2021](#), [DanScatt Annual Meeting](#), [EGI Conference 2021](#)), and have been a major focus of the PaNOSC & ExPaNDS 2nd joint PaN EOSC Symposium held in October 2021.

User meetings at PaN facilities have been monitored and contributions by PaNOSC and ExPaNDS have been included in the programmes of the upcoming ELI Beamlines and ELI-ALPS user meeting, with the aim of increasing the knowledge among scientists and researchers, about the benefits of the EOSC and of the services and technologies developed in the projects.

A fruitful occasion to introduce the topics of FAIR data, Open Science and the EOSC to PhD students and early-stage researchers was that of the [Hercules Specialised Course](#) organised by CERIC-ERIC in the frame of the H2020 ACCELERATE project, where three sessions were dedicated to such topics, also involving PaNOSC contributors.

On social media, as at 14 October 2021, published videos reached over 3099 views.
A new [promotional video of VISA – the Virtual Infrastructure for Scientific Analysis](#) allowing academic and industrial researchers to access data and advanced analysis tools from anywhere they want – was produced throughout the summer 2021, and released in early September 2021, involving expert scientists and VISA developers at ILL. The video was widely promoted across all available channels, also thanks to the active contribution of PaNOSC partners.

Collaboration with other EOSC cluster projects has also been ongoing. Two examples are those of PaNOSC contribution to the June 2021 events "[ESFRI Science Clusters' Long-Term Commitments to Open Science](#)", aimed at addressing potential sustainable actions to consolidate the cluster work programmes, and the [EOSC Symposium 2021](#), where PaNOSC speakers contributed to 4 different sessions, on sustainability, AAI architecture, challenges for the EOSC Implementation phase, Research Infrastructures and EOSC, respectively.

The WP, in coordination with ExPaNDS, also contributed to the organisation and promotion of the 2nd PaN EOSC Symposium.

Finally, KPIs in WP9 have been continuously monitored, with the goal of further fine-tuning communication and dissemination actions within the project.

PaNOSC Executive Board Meeting - 31/08/2021

The Executive Board meeting took place on the afternoon of 31st of August 2021.

Ahead of the meeting, two reports were shared with the members of the Executive Committee: *Partner Commitments* and the *3rd Internal Financial Report*. The first document focuses on the activities and expected outcomes per WP, linking these two commitments the partners have made and the status of their work. The second document presented the financial situation of PaNOSC based on data collected until the end of March 2021.

The agenda was:

1. Approval of the agenda
2. Coordinator opening statement
3. 3rd Internal Financial Report
4. Engagement of partners in PaNOSC to achieve objectives
5. Use Cases
6. Sustainability
7. Election of the next Executive Board Chair
8. Date for the next EB meeting

The agenda was approved after adding an extra item entitled "Any Other Business (AOB)".

A presentation by the Coordinator covered the agenda items 2, 4 and 6 and explained the current situation of the project, the desired number of real use cases to be captured, the main challenges of PaNOSC for its last year of project execution, outstanding issues and a summary of the essential project outcomes:

1. Open data findable and accessible via a federated search API
2. Open data accessible from a common portal
3. UmbrellaID AAI deployed for authenticating external users
4. VISA remote analysis service for users

This was followed by a presentation on the financial status of PaNOSC and how the distribution of expenses per partner and work package compares with the initial forecasts. After careful consideration, the Executive Board requested a new Internal Financial Report to cover the first 3 years of project execution together with spending plans per partner for the last year of the project. The Executive Board decided that there is currently no strong reason to initiate a project extension.

A brief discussion on sustainability was followed by the AOB item during which the establishment of ELI-ERIC and the universal transfer of rights from ELI-DC to this new legal entity was announced.

The meeting ended with the election of Ornela De Giacomo as the new chair of the Executive Board, replacing at the same time Jana Kolar on the Executive Board because of her new role as chair of ESFRI, and the scheduling of a new meeting early 2022 to discuss the next internal financial report and project status at the start of the last year of PaNOSC.

Next steps

The very first step after submitting this deliverable will be the completion of the Periodic Report (due in January 2022 and covering the project execution until November 2021).

The last year of project execution will be challenging, as all the building blocks of PaNOSC have to come together, complementing each other to enable FAIR data. As services become available to users, the real impact of PaNOSC (and its sister-project ExPaNDS) will become visible.

Collaboration with ExPaNDS will continue with both projects working closely together.

As the project nears its completion, work will intensify in WP7-Sustainability to ensure there is a way to sustain all the outcomes from PaNOSC and that the project partners continue maintaining and operating services in the EOSC.