

EOSC Academy - Course 2: Applying the EOSC Federation Handbook

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for the **EOSC Academy**

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eosc EOSC Association

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EOSC Federation Handbook

EOSC Association (Editor)

The EOSC Federation Handbook provides an overview of the organisational and operational structure and technical characteristics of the EOSC Federation. It aims to serve as a practical guideline for organisations that are interested in making their resources available within and across the EOSC Federation. Such organisations can achieve this objective by creating and operating an "EOSC Node", and "enrolling" it as part of the EOSC Federation, and/or by "onboarding" their resources in one or more EOSC Nodes operated by other organisations.

The intended users of the Handbook include primarily facility managers, policy makers and technical staff of research performing and funding organisations, research infrastructures, providers of scientific services and other resources, and e-infrastructures.

The "end-users" of the resources accessible through the EOSC Federation, i.e. the researchers, are not directly targeted by the Handbook, but they may still find useful information about the scope and organisation of the EOSC Federation. It is important to build the EOSC Federation in the most transparent manner and with the understanding of the research community.

Files

EOSC_Federation_Handbook_V2_20260130.pdf

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Version 2.0 10.5281/zenodo.18454649	Jan 30, 2026
Version 1.0 10.5281/zenodo.14999577	Mar 27, 2025

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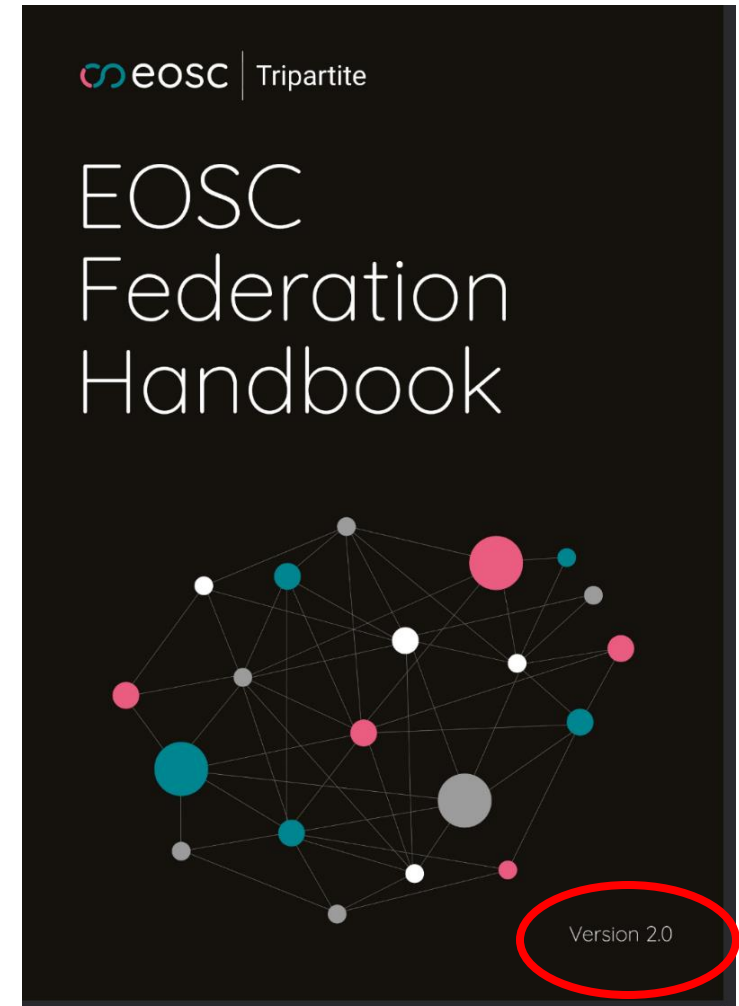
Cite all versions? You can cite all versions by using the DOI 10.5281/zenodo.14999576. This DOI represents all versions, and will always resolve to the latest one. Read more.

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- **Module 1**

- Introduction to the EOSC Federation Handbook

- **Module 2**

- Expected outcomes of the EOSC Federation

- **Module 3**

- Governance of the EOSC Federation

- **Module 4**

- Architecture of the EOSC Federation

- **Module 5**

- Research Resources for the EOSC Federation

- **Module 6**

- Applying to become a Node + On-boarding services

- **Module 1 – Ex. 1**

- Write down the Motivation and Vision for your Node

- **Module 2 – Ex. 2**

- Write down how the expected outcomes will be achieved by your Node

- **Module 3 – Ex. 3**

- Describe how your node will interact with the governance of the EOOSC Federation

- **Module 4 – Ex. 4**

- Describe how your node plans to implement the mandatory Federating Capabilities of the EOOSC Federation

- **Module 5 – Ex. 5**

- List what Research Resources your Node will provide to the EOOSC Federation

- **Module 6 – Ex. 6**

- Describe how you plan to prepare your node's application to become an EOOSC Node

Module 1

Introduction to the EOSC Federation Handbook

GOAL = BE THE REFERENCE document which describes the EOSC Federation and Nodes

1. It should be kept relatively short (~50 pages)
2. It should link to official documents which describe technical details
3. It should capture the common understanding of the Federation
4. It should be written by the community and reviewed by the Tripartite Group
5. It should be updated regularly



[Image](#) by Ross Sneddon | [Unsplash](#)

The EOSC Federation is still under development and many decisions on the implementation have yet to be taken, however ...

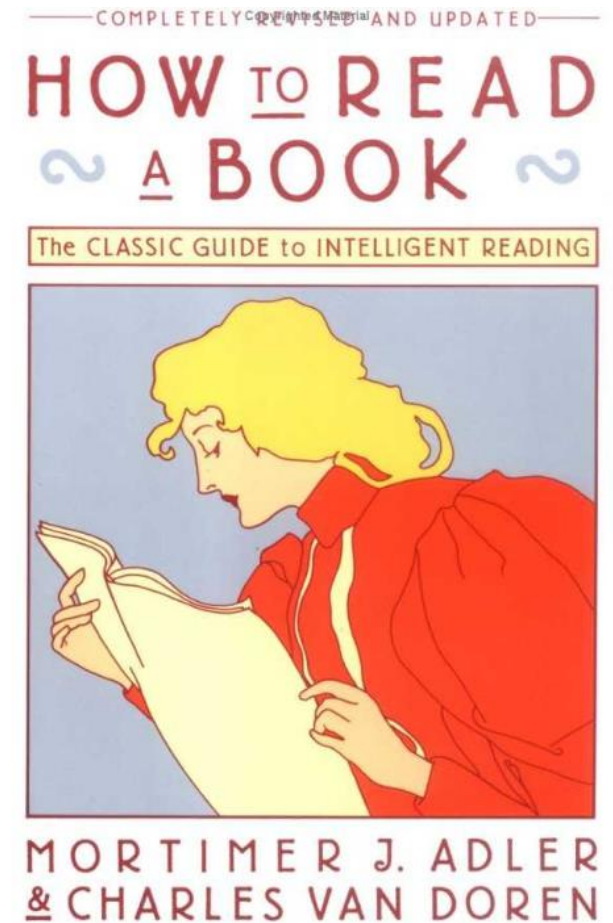
1. **The basic concept is clear**
2. There is **enough information in V2 of the Handbook to build a Node satisfying the current requirements**
3. Additional confusion comes from :
 1. Not reading the Handbook carefully
 2. Not understanding the Handbook
 3. Not agreeing with the Handbook



[Image](#) by Rodion Kutsaiev | [Unsplash](#)

From beginning to end, page by page!

1. Read the original text (not an AI summary!)
2. Read it carefully
3. Reflect on the meaning
4. Read it on paper
5. Send feedback / questions





V1 (03/2025)
V2 (12/2025)

9K
VIEWS

7K
DOWNLOADS

- ✓ **Handbook V1** written collectively by **volunteers**, it was published in March 2025
- ✓ Responding to the need to have a clear manual on how to build the Federation for Nodes
- ✓ It accompanied the EOSC Federation Build-up phase in 2025 which led to Handbook V2
- ✓ **V2** was written by more **volunteers** with input from a survey of Nodes, Projects + TFs + WGs

- The Handbook aims to serve as a practical guide for **organisations** that are interested in **making their resources available** within and across the EOSC Federation.
- Such organisations can achieve this objective by **creating and operating an EOSC Node**, and enrolling it as part of the EOSC Federation, alternatively they can **onboard their resources** in one or more EOSC Nodes operated by other organisations.
- The intended **users of the Handbook** include primarily **facility managers, policy makers and technical staff** of research performing and funding organisations, research infrastructures, **providers of scientific services and other resources**, and e-infrastructures.

Large variety in the Nodes services, construction + management

1st Wave

- **Thematic Nodes**
 - **PaNOSC** – photon and neutron science
 - **Life Science Connect** – life sciences
 - **Digital Twin of the Ocean** - marine
 - **Data Terra** – environment
 - **CERN** – particle physics
 - **BBMRI** – biobanks
- **National Nodes**
 - **Finland, Netherlands, Germany, Italy, Poland, Slovakia**
- **Infrastructure Nodes**
 - **EU Node, EUDAT**

2nd Wave

- **Thematic Nodes**
 - **METROFOOD-RI** – food quality + safety
 - **EBRAINS RI** – brains research
 - **ENVRI** - environment
- **National Nodes**
 - **Czechia, Croatia, Latvia, North Macedonia, Sweden, Slovenia, Switzerland, Turkey**
- **Infrastructure Nodes**
 - **GÉANT, EGI, Scholarly Commons**



1. **PaN community is 18+ large Research Infrastructures** in Europe
 2. Working **together for over 20 years** on data and other topics
 3. Producing **petabytes of high quality unique data** e.g. Human Organ Atlas
 4. Some domains produce **FAIR AI-ready data** e.g. **protein crystallography**
data from synchrotrons represent 80% of Protein Data Bank
 5. For many other domains data are **not FAIR nor AI ready**
- **Combining our efforts around FAIR and Services for Open Science we will increase the quality and scientific impact of data**

Multi-partner Nodes – PaNOSC example

Currently 11 PaN RIs are partners



Elettra Sincrotrone Trieste



PaNOSC

Physical Sciences & Engineering





The vision for PaNOSC is to put in place a **system in Europe** to **find and access data and services from European Photon and Neutron Facilities** for research and innovation, and to help researchers **store, share, process, analyse and reuse FAIR research outputs** within and across disciplines and borders.

The ***system in Europe*** is the **PaNOSC Node** of the EOSC Federation



The CERN node's value proposition is a **two-phase contribution** to the EOSC Federation: (1) enhancing the **EU Node by integrating CERN's key services (Zenodo, REANA, Indico, data repositories)** and testing the virtual credit system, then (2) **establishing the CERN Node with controlled, quota-managed access to HEP data and tools for researchers in any field.**

It will make **high-value HEP data discoverable and reusable across disciplines**, widen access to high-TRL tools originally built for HEP, and lets **non-HEP researchers run scalable, reproducible analyses directly where the data resides**—in a secure, science-focused environment, without large downloads.

The NFDI node's contribution is **interdisciplinary FAIR data access, federated AAI connectivity** to ease onboarding, and bottom-up **specialized services** (notably terminology / semantic artefact services) that improve **cross-domain interoperability**—all framed around **digital sovereignty** and **European strategic autonomy**.



Photo by Leeloo The First on Pexels

Flashcards

Question 1.1: Who is the Handbook for?

Question 1.2: What is the difference between the first and second wave Nodes?

Module 2

Expected outcomes of the EOSC Federation

HB-V2 - Ch 1. Purpose and expected outcomes – pg 12+13

1. Enhanced access to and use of digital resources
2. Facilitated research reproducibility
3. Increased collaboration, community and knowledge sharing
4. Improved efficiency and higher impact of investment in research
5. Increased standardisation and interoperability
6. Increased robustness and trustworthiness
7. Increased data sovereignty



- ✓ Enhanced access to and use of digital resources (**data and services**)
- ✓ Facilitated research reproducibility (**FAIR data**)
- ✓ Increased collaboration, community and knowledge sharing (**building the node and OSCARS projects**)
- ✓ Improved efficiency and higher impact of investment in research (**reuse of FAIR data by a larger community**)
- ✓ Increased standardisation and interoperability (**metadata**)
- ✓ Increased robustness and trustworthiness (**trustworthy repositories**)
- ✓ Increased data sovereignty (**data stored in facility repositories in Europe**)

PaNOSC project (2018-2022) was funded by INFRA-EOSC-2018-04



- ✓ FAIR data policy and DMPs – **90% of PaN RIs (15)**
- ✓ Standardised metadata (Nexus/HDF5) – **ALL PaN RIs (18)**
- ✓ Federated search API for PaN data catalogues – **8 PaN RIs**
- ✓ Open Data portal for FAIR data – **8 PaNs RIs**
- ✓ Community AAI UmbrellaId – **90% PaN RIs (15)**
- ✓ JupyterLab notebooks service - **90% PaN RIs, 100s users daily**
- ✓ Nexus/HDF5 web visualization – **ALL PaN RIs, 100000 worldwide**
- ✓ Remote data analysis with VISA – **8 PaN RIs, 100s users monthly**
- ✓ Simulation software (ViNYL+McStasScript) – **4 PaN RIs, 100s users monthly**
- ✓ PaN-training platform (pan-training.org) – **100s users monthly**



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Flashcards

Question 2.1: List at least three of the expected outcomes of the Federation

Question 2.2: Who represents a multi-partner Node?

Module 3

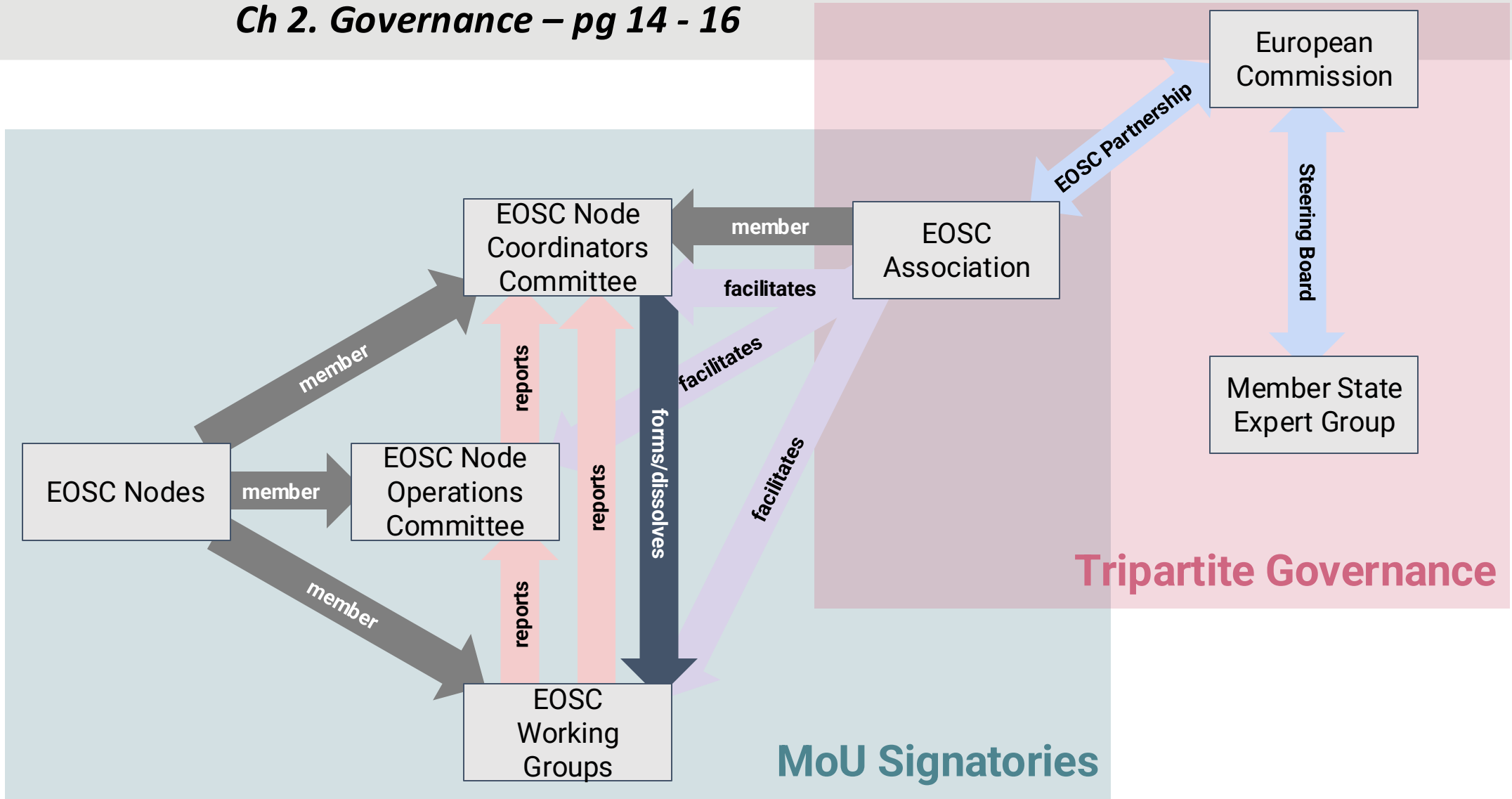
Governance of the EOSC Federation

Ch 2. Governance – pg 14 - 16

- **EOSC Tripartite Governance** is made up of:
 - European Commission
 - Steering Board representing Member States
 - EOSC Association representing the community
- **EOSC Federation governance** is made up of:
 - Memorandum of Understanding + [Framework Agreement (WIP)]
 - Node Coordinators Committee
 - Node Operations Committee
 - Working Groups

Memorandum of Understanding

Ch 2. Governance – pg 14 - 16



PaNOSC Node (2025-) being developed by 11 Research Institutes



- Signed legally non-binding MoU with EOSC Association
- Developing a legally binding MoU between the PaNOSC partners
- Next step: Sign legally binding Framework Agreement with the EOSC Association (2027?)

Memorandum of Understanding on Preparing Operational Integration within the Envisaged EOSC Federation

This MoU is a statement of mutual understanding and intent.
It is not legally binding and does not create enforceable rights or obligations.



ESRF Reference: CLXXX

Consortium Agreement for the creation and implementation of the PaNOSC Node

Between

THE EUROPEAN SYNCHROTRON RADIATION FACILITY (ESRF),

hereinafter referred to as the **ESRF**,
located at 71 Avenue des Martyrs, CS 40220, 38043 GRENOBLE CEDEX 9, France,
represented by XXX, Director General
and YYY, Director of Administration,

AND

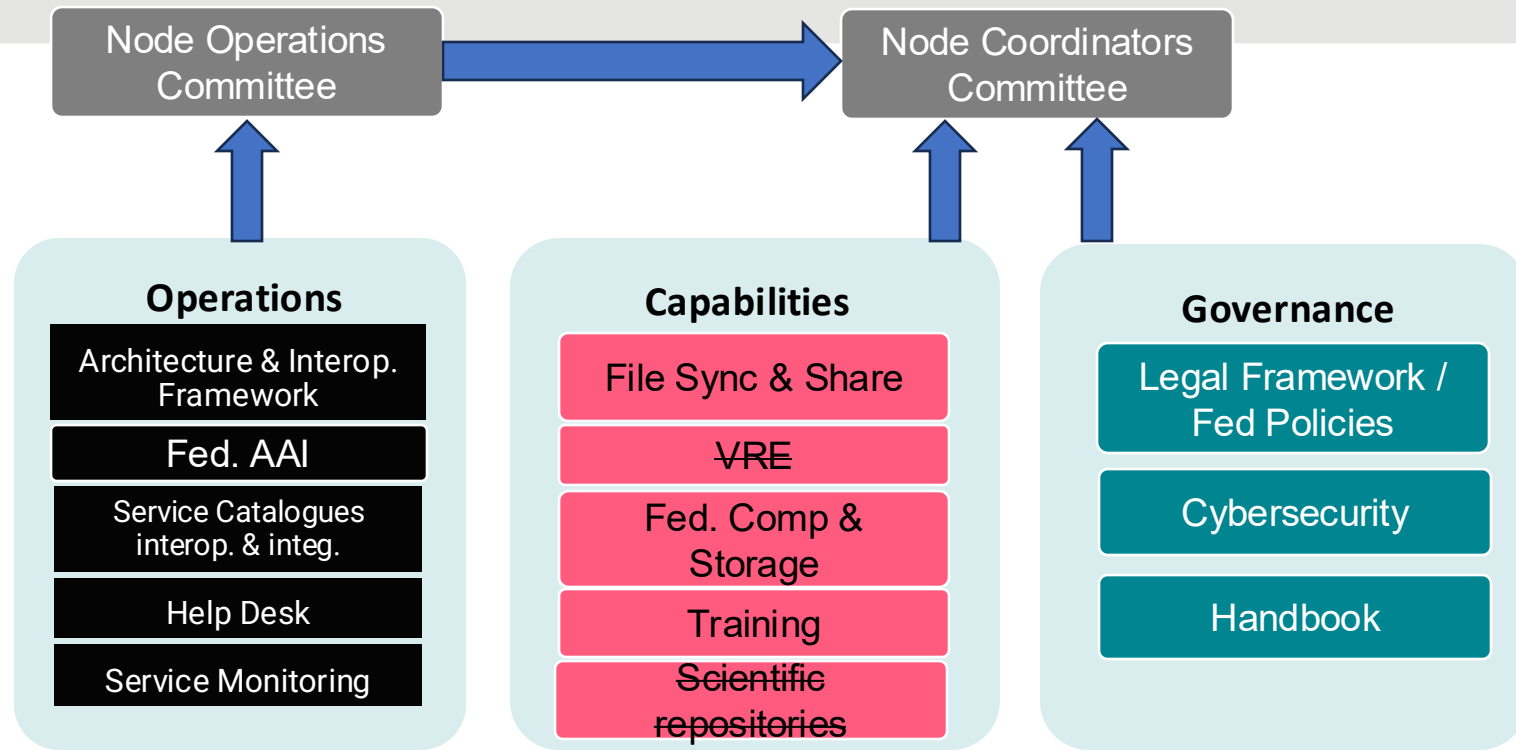
Module 3.2

Operation of the EOSC Federation

Ch 3. Operational structure and responsibilities – pgs 19 - 20

- **The EOSC Federation is not in Operation yet !**
 - Only the EU Node is officially in Operation
 - 1st wave Nodes are planned to be officially in Operation in October 2026
 - At which point the Federation will be officially in Operation
- In Operational means Nodes will need to monitor a number of performance and reliability indicators
- The **Node Operations Committee** has been created and is tasked with defining what is Operational mode
- The **FitSM standard** (<https://www.fitsm.eu/>) will be used for **Service Management**

1. **Coordinator** – represents the Node in the Federation.
2. **Operations Manager** – the contact person with the Operations Team of the Federation on operations
3. **Cybersecurity Officer** – the contact person for all cybersecurity related issues.
4. **Legal/Privacy Officer** – for legal issues
5. **Communication Officer** – for dissemination activities



- Working Groups composed of node representatives and invited experts (e.g. Task Force / project representatives)
- Decisions based on consensus by the nodes

- Each working group will have an objective that directly contributes to the **production goal by Sept'26**
- Mandate, objective and co-chairs of each working group to be endorsed by the Node Coord. Committee
- Co-Chairs for new Working Groups must be representatives of nodes that have signed the MoU
- New Working Groups can be proposed if at least 5 nodes are willing to participate

PaNOSC Node (2025-) being developed by 11 Research Institutes



1. **Coordinator** – ~25% of an FTE @ ESRF
2. **Operations Manager** – ~25% of an FTE @ HZDR
3. **Cybersecurity Officer** – ~10% of an FTE @ ESRF
4. **Legal/Privacy Officer** – ~2% of an FTE @ ESRF
5. **Communication Officer** – ~2% of an FTE @ CERIC ERIC
6. **Data Managers** – ~20 FTEs (!) @ ALL PaNs
7. **Service Providers** – ~10 FTEs (!) @ ALL PaNs

Not required
by MoU but
needed for
Data + Service
Providers

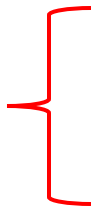




Photo by Leeloo The First on Pexels

Flashcards

Question 3.1: What are the elements of the EOSC Federation Governance?

Question 3.2: What are the roles each Node has to nominate?

Module 4

Architecture of the EOSC Federation

The architecture of the EOSC Federation

How to get to this architecture ?

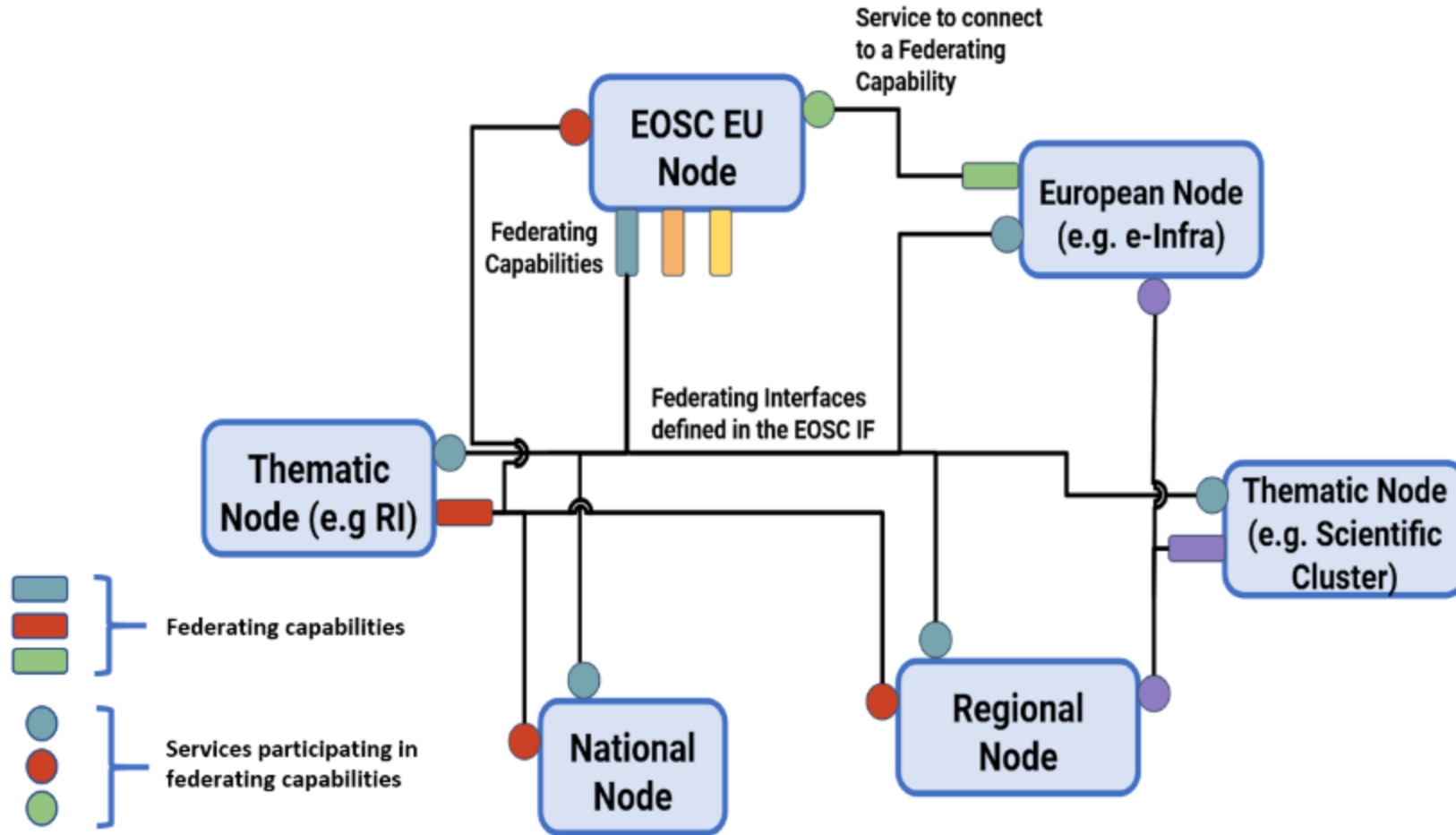


Figure 4.1 - Schematic (or **conceptual**) view of the EOSC Federation Architecture

Typical architecture

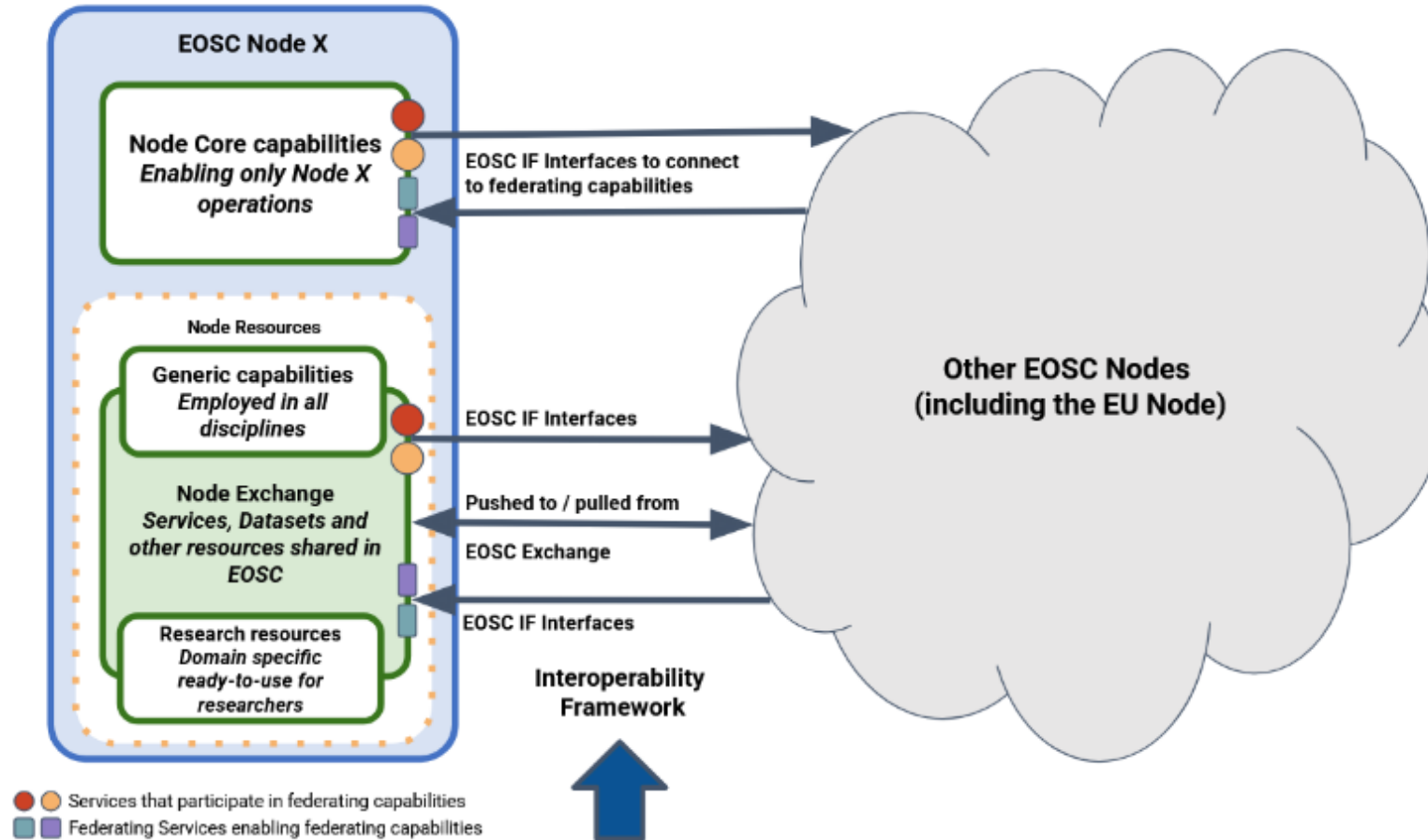
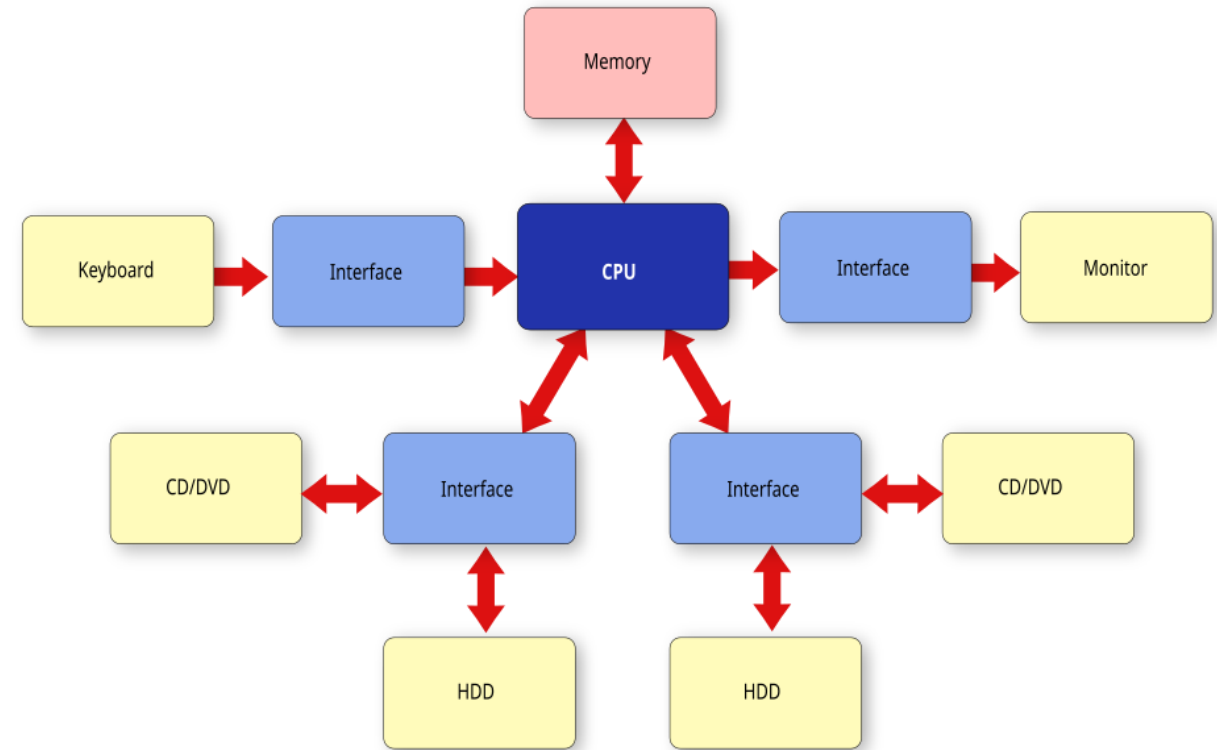


Figure 4.2: EOSC Node Architecture

→ [Systems Architecture](#):

A **system architecture** is the [conceptual model](#) that defines the [structure](#), [behavior](#), and [views](#) of a [system](#).^[1] An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the [structures](#) and [behaviors](#) of the system.



Wikipedia

- EOSC Nodes
- Capabilities
- Federating Capabilities
- Interfaces
- Interoperability Framework
- Node Core Capabilities
- Node Resources
- Node Generic Capabilities
- Node Research Resources
- Node Exchange
- Node Capability

Node Core Capabilities

Node Core Capabilities	Description
Resource Catalogue and Registry services	Catalogue of resources that can be accessed through the EOSC Node with a search engine to discover, access and order them
AAI	AAI (AARC Blueprint compliant) enabling access to Node resources (Core and Exchange) via federated credentials (i.e. community AAI and Infrastructure Proxy)
Helpdesk	Support incident response and service requests for services and other integrated resources
Service Monitoring	Monitor the availability and quality of the Node services
Service and Research Product Accounting	Track and record usage of resources
Order Management	A framework for providers to define offers and a unique interface for end-users to request access to resources
Configuration Management System	Shared space to store information on Node capabilities and on how services are provided through the node to ensure consistent service delivery (only for internal use)
User space	Dynamic customisable dashboard, where the node user logs-in, offering easy access to the Node resources
Application Deployment Management	Automated deployment and execution of services on the underlying Node provisioned infrastructure
Resource provisioning	Support users in identifying all available resources for a project and then assign a subset of them to the project

Table 4.1: EOSC Node Core Capabilities

The EOSC Federating Capabilities can be:

- **Mandatory:** Federated Capabilities which all EOSC Nodes must implement in order to join the EOSC Federation;
- **Recommended:** Federated Capabilities which EOSC Nodes should consider to federate with (i.e. connect to), but which are optional for EOSC Nodes joining the EOSC Federation

EOSC Nodes can contribute to the delivery of a Federating Capability by either:

- A. Enabling a Federating Capability** that can be used by other EOSC Nodes (e.g. act as a federator, a Node enabling a federation of cloud resources); or
- B. Participating in the delivery of a Federating Capability** by integrating one or more services provided by the Node in a Federating Capability enabled by another Node (e.g. for example a Node participating in the federated AAI by integrating its AAI proxy with the AAI Federation enabled by the EOSC EU Node).

Identified by the research communities to perform everyday research data management tasks, and **are therefore expected to be offered by all EOSC Nodes to allow users to manage and process research data from the Node where they access the Federation.**

Node Capabilities	Description
Data Management and Transfer	Management of data between storage locations
Interactive Notebooks	Support for data analysis
Compute and storage resources (including middleware)	Support for data analysis with relevant middleware (e.g. support for containers)
File Sync & Share	Syncing automatically data across devices (e.g. PCs, tablets, or smartphones) and securely sharing them within research teams

Table 4.2: EOSC Node Generic capabilities

EOSC Federating Capabilities

ID	Federating Capability	Description	Classification
FC-1	AAI	Ensures the AAI interoperability across the EOSC Nodes	Mandatory ²⁹
FC-2	Resource Catalogues and Registry services	Enables the discovery and access of resources (e.g. Services and Research Products) provided through EOSC Nodes within the EOSC Federation.	Mandatory ^{30,31}
FC-3	Helpdesk	Integrates the helpdesks of EOSC Nodes within the EOSC Federation to provide a federated support channel between users and providers from nodes.	Recommended (Will become Mandatory in 2026)
FC-4	Service Monitoring	Provide information about the quality and availability of services and resources made available through EOSC Nodes into the EOSC Federation.	Recommended (Will become Mandatory in 2026)
FC-5	Service Management System	EOSC Federation FitSM-based Service Management System, defining the essential processes between EOSC Nodes to enable efficient IT service management within the EOSC Federation. It also includes Security Coordination between Nodes.	Recommended (Will become Mandatory in 2026)

ID	Federating Capability	Description	Classification
FC-6	Service Accounting	Provide information about the usage of services offered by eOSC Nodes within the eOSC Federation.	Recommended
FC-7	Research Product Accounting	Provide information about the usage of research products made available through eOSC Nodes in the eOSC Federation.	Recommended
FC-8	Order Management	Provides a framework that allows providers and users to manage the full lifecycle of service and resources requests and access granting across federated Nodes.	Recommended
FC-9	Application Deployment Management	Automated deployment and execution of services across multiple federated nodes.	Recommended

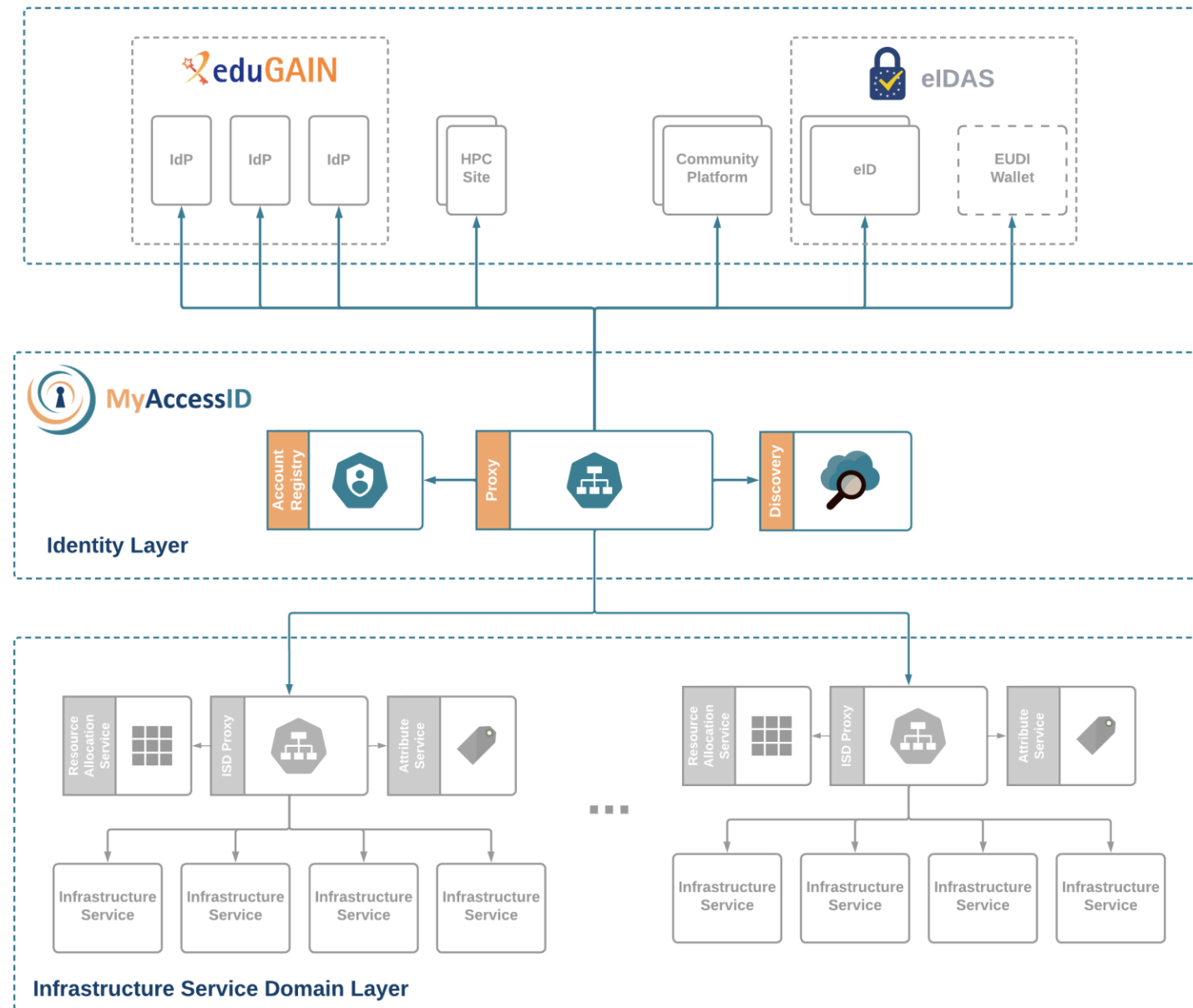
Table 4.3: Federating Capabilities identified during the interim phase

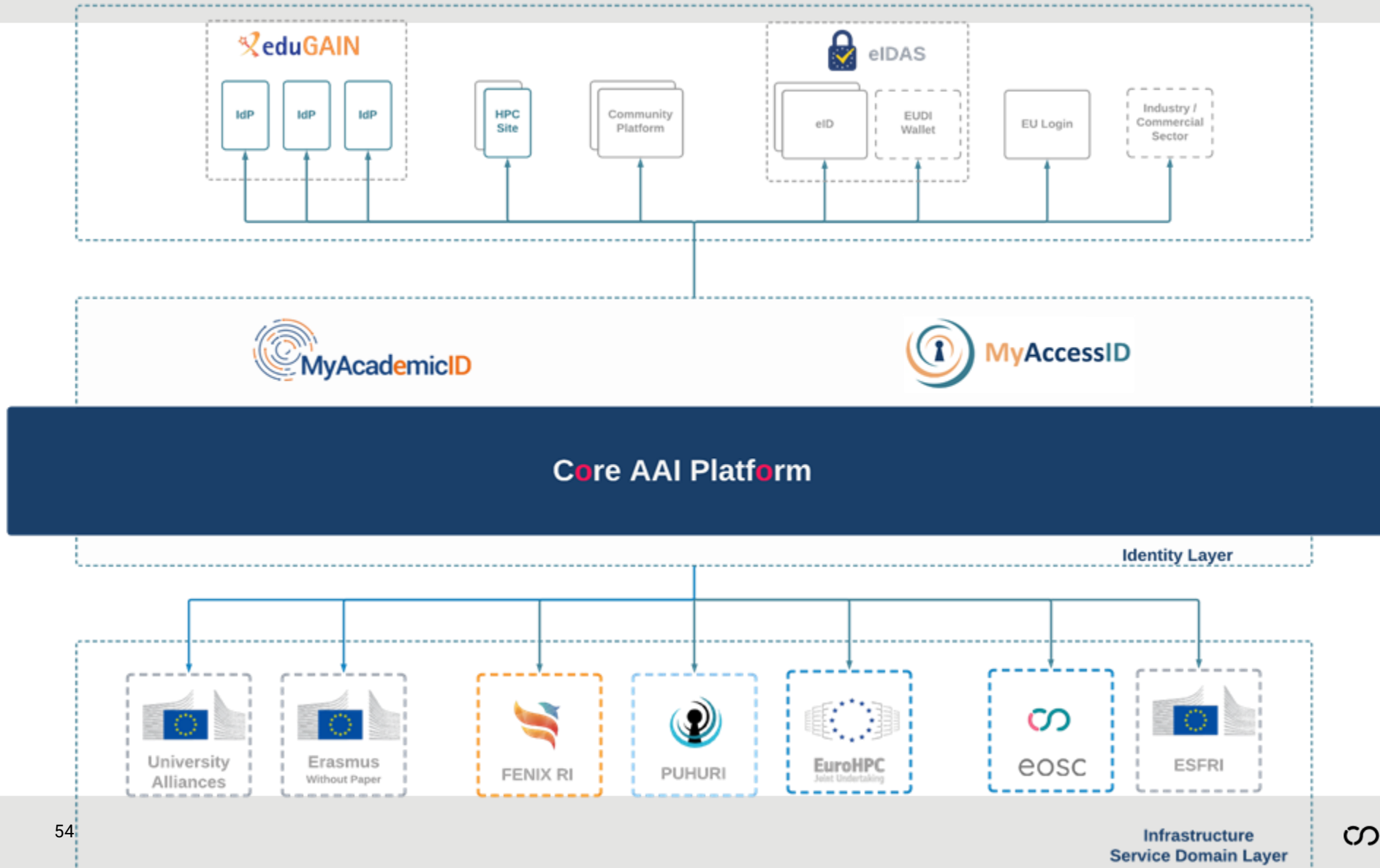
Needs specialist knowledge of AAI

AAI is a Mandatory FC

Goal: allow Researchers to login with their institute login and also move transparently between Nodes while staying authenticated via SSO

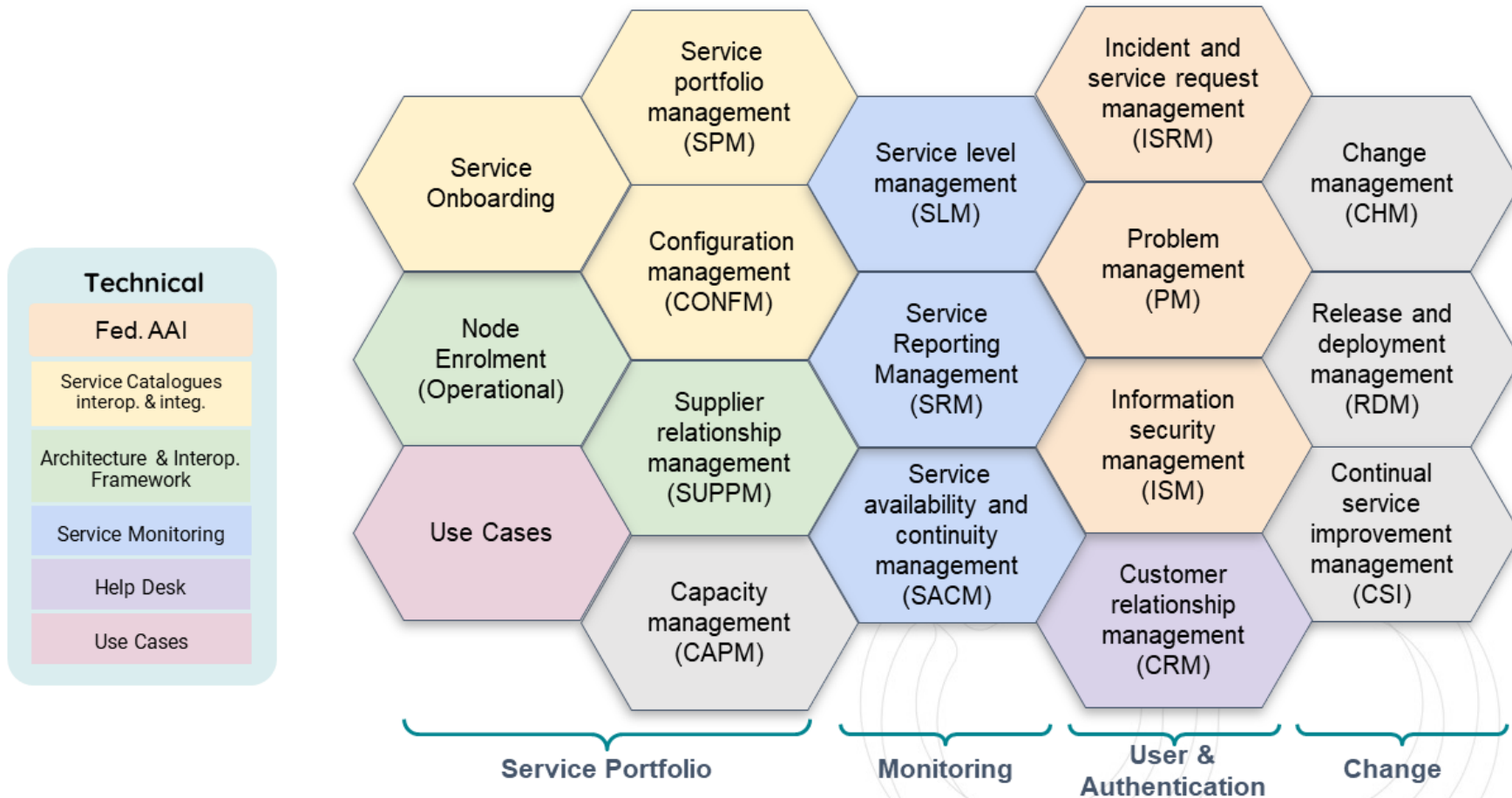
Implication: Researchers can login any node and then navigate to another node without having to authenticate again





- Both are **mandatory** in **2026**
- Every Node has an **Operations Manager**
- Meet in the **Node Operations Committee**
- Use **FitSM** for Service Management
- Training in FitSM is being provided by EGI

Preliminary FitSM mapping to EOSC interim WGs



- **Mandatory FC in 2026**
- **Goal:** be able to pass helpdesk issues between Nodes to the persons who can deal with them
- First phase will exchange issues via email (probably)
- Some Nodes are using Zammad e.g. EU Node, Germany

Helpdesk

Whether you are troubleshooting or seeking guidance, our support team is here to assist you. If your question is not already addressed in the [Frequently Asked Questions](#) get in touch directly for personalised assistance.

Full name *

Email *

Subject

Your message *

5000 character(s) remaining

[Privacy Statement](#)

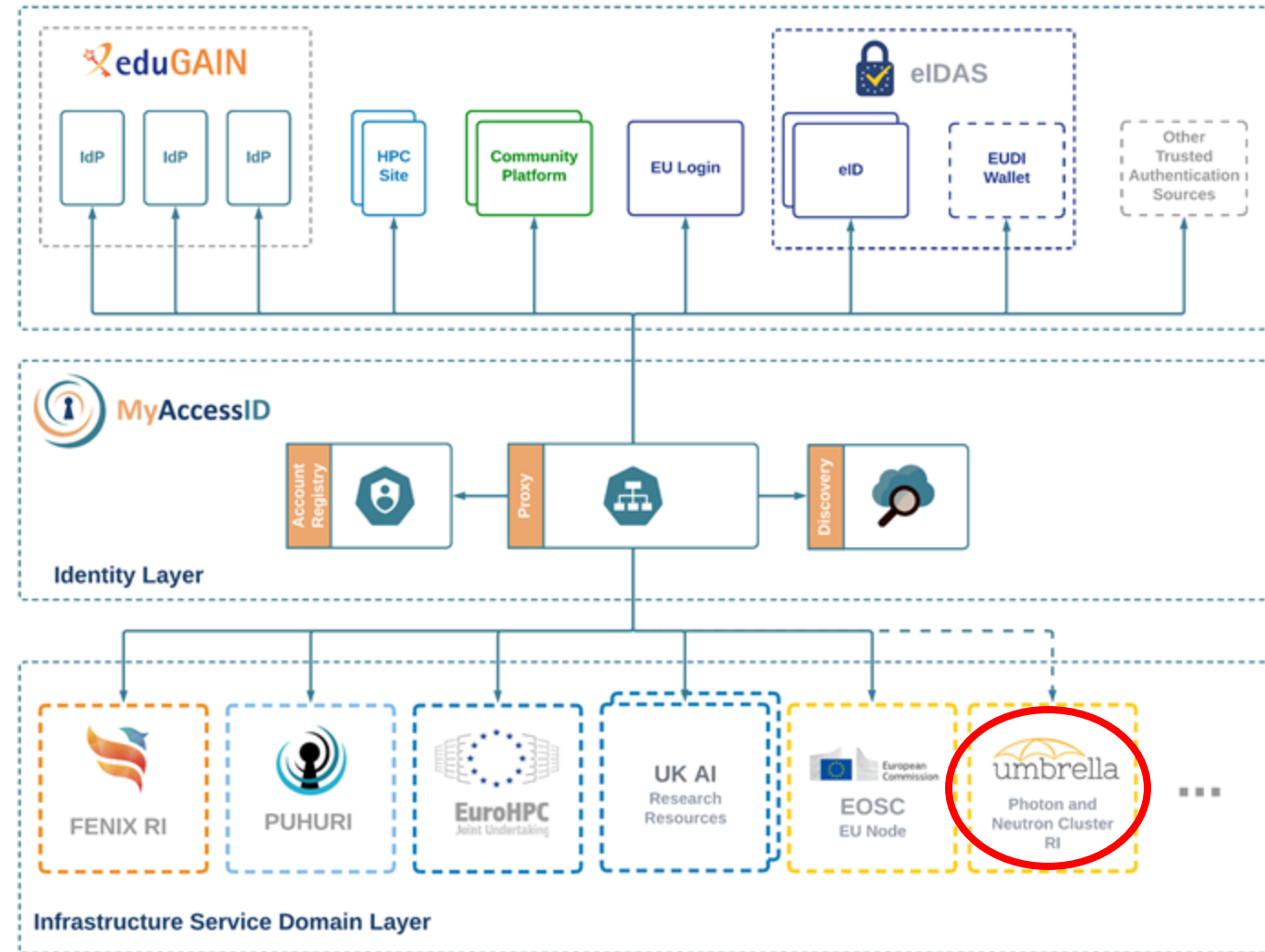
Send message

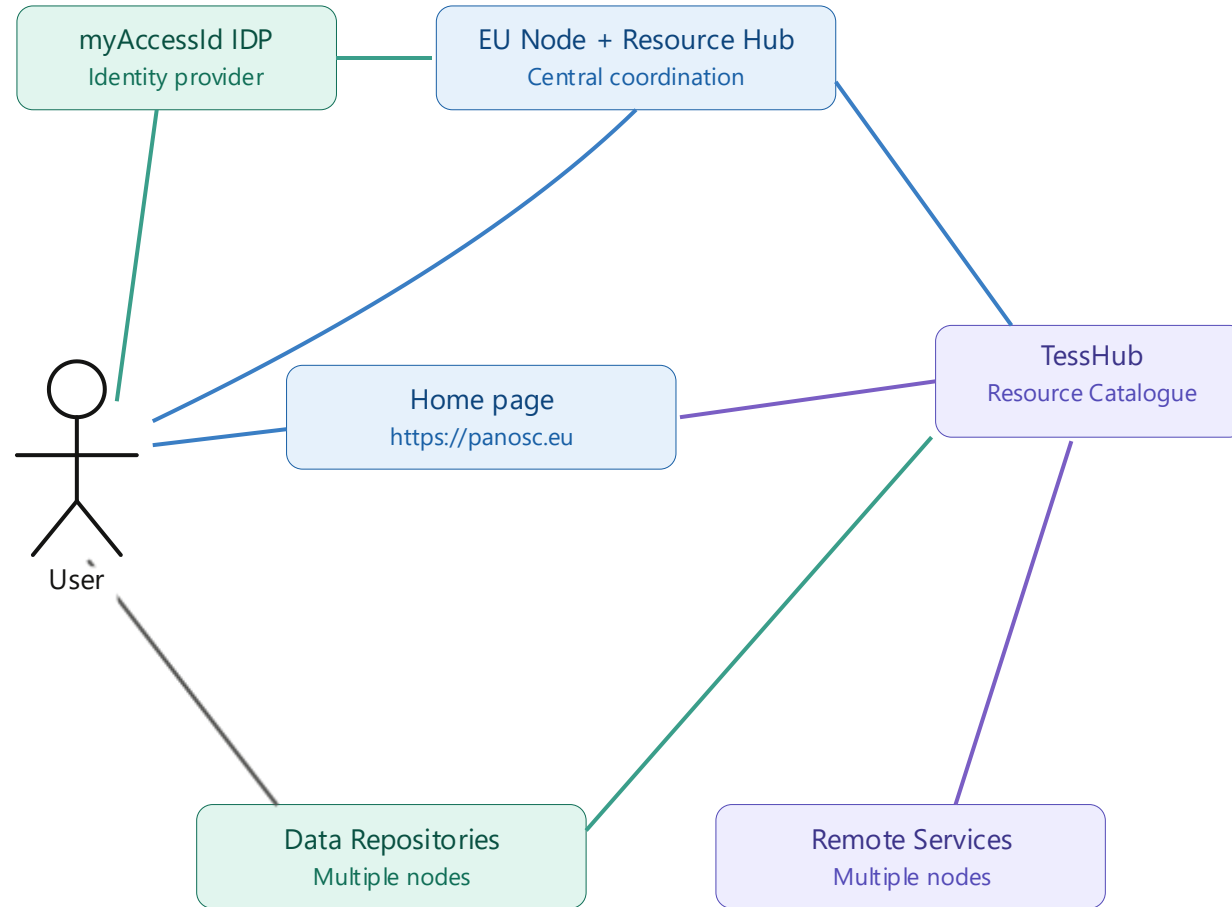


- **AAI** – switch UmbrellaID to myAccessID
- **Resource Catalogues and Registry** – TessHub
- **Helpdesk** – Zammad (planned)
- **Service Monitoring** – Not defined yet
- **Service Management** – FitSM (LITE!)



- PaN has a community AAI since ~2010 called **UmbrellaId** (umbrellaId.org)
- Work started in the PaNOSC EU project with GÉANT to replace Identity Proxy (IdP)
- Switching to **MyAccessID** will be straight forward

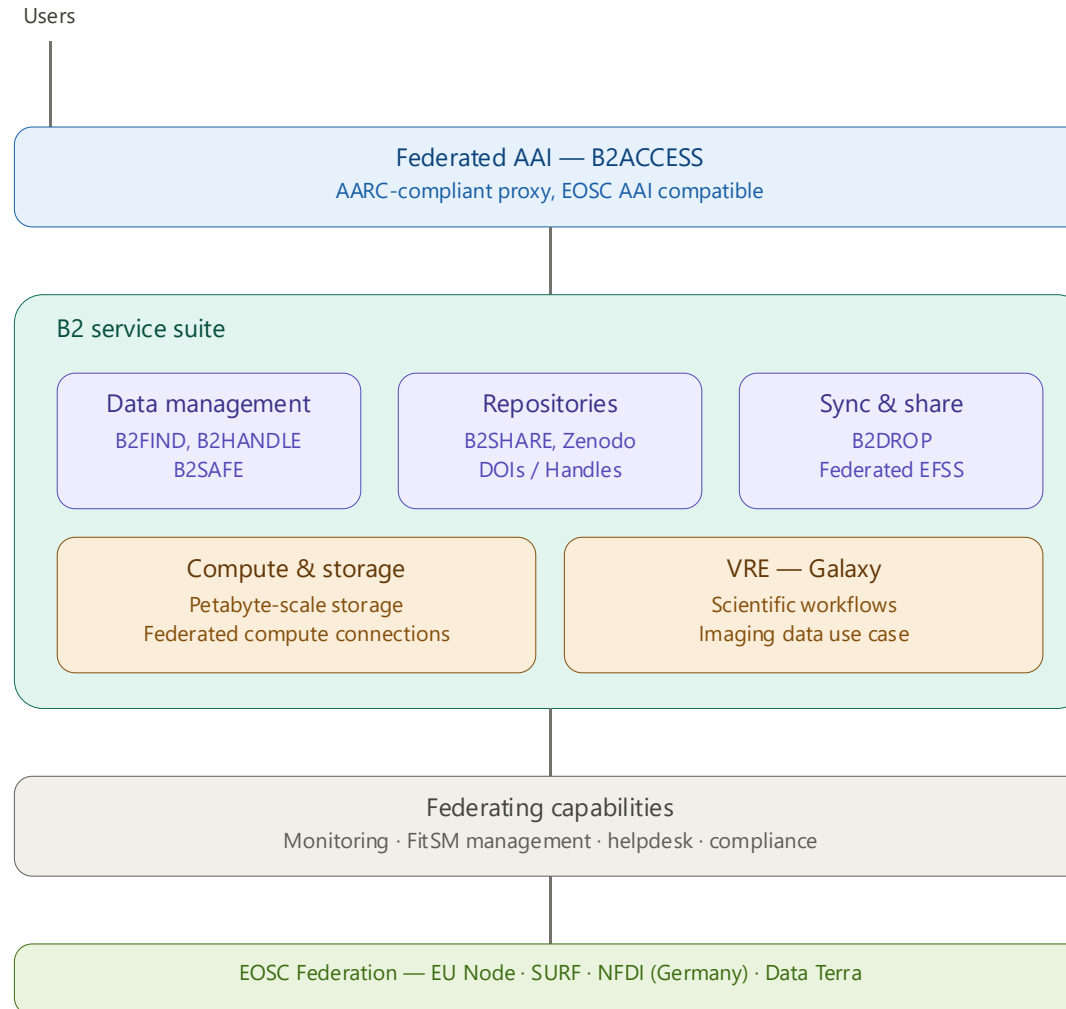






Conceptual Architecture

Generated by AI

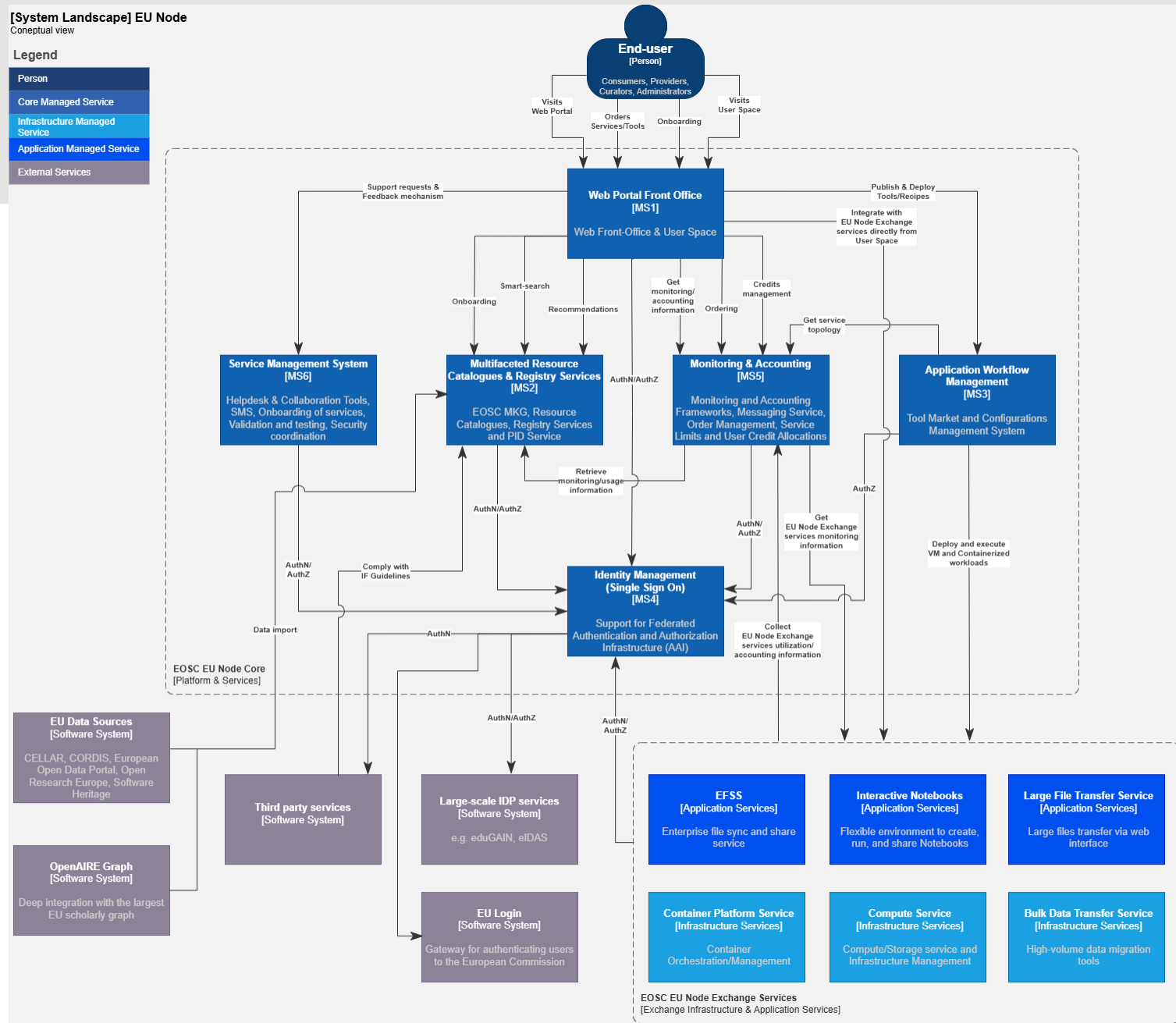


EU Node – Conceptual Architecture

[System Landscape] EU Node
Conceptual view

Legend

- Person
- Core Managed Service
- Infrastructure Managed Service
- Application Managed Service
- External Services



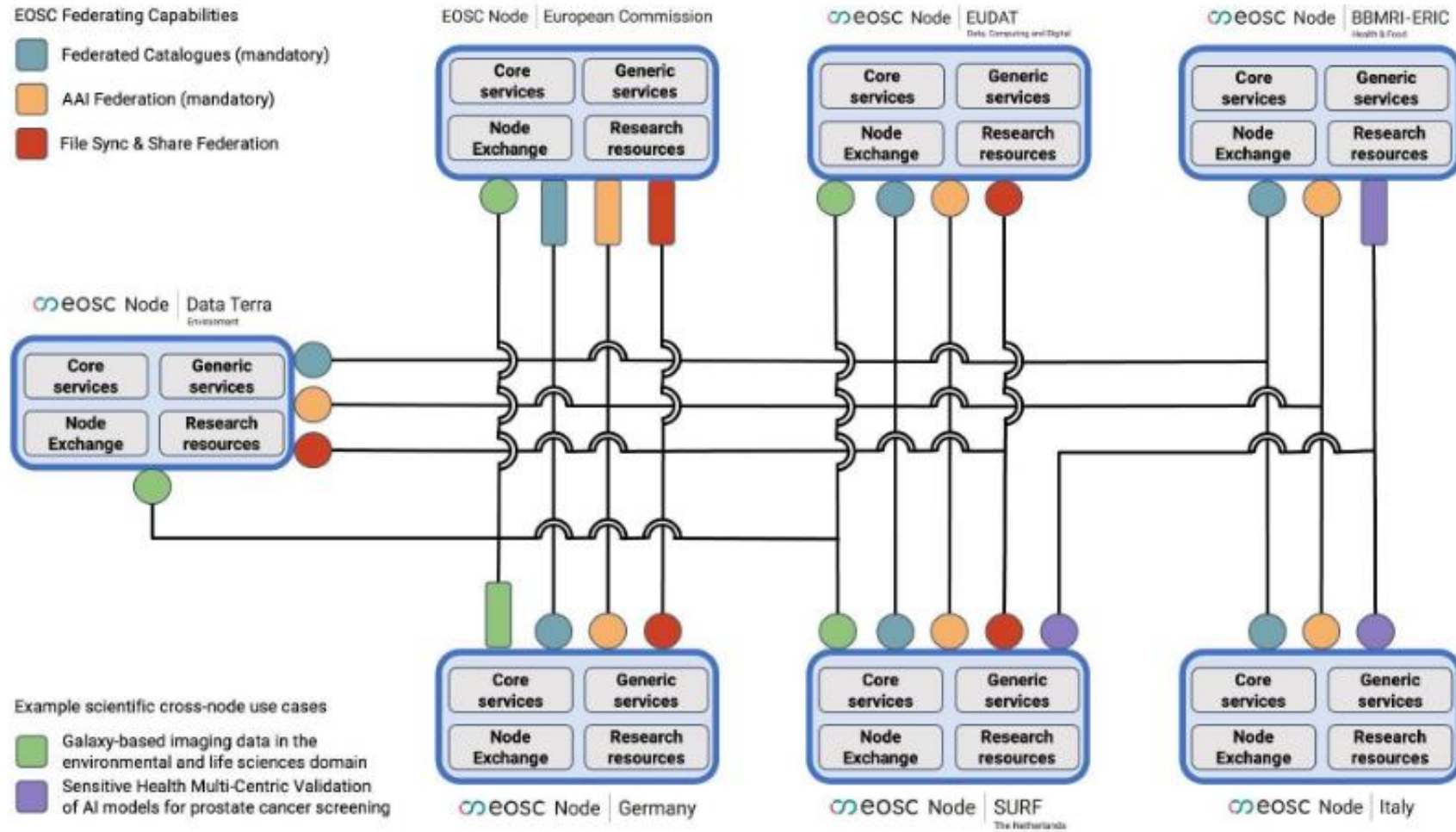


Figure 4.4: Schematic of eOSC Nodes interconnecting through Federating Capabilities to support two cross-node use case examples during the build-up phase.

Use case	Short description	Nodes involved
Marine microbiomes	Exploring the impact of marine microbiomes on carbon sequestration	EOSC-DTO, EOSC-LSC, EOSC-IT, EOSC-PL, EOSC-Data Terra
Reana	Cross-node workflow for the analysis of CERN's ATLAS/CMS experiment's open data on the REANA data platform.	EOSC-FI, EOSC-SURF(NL), EOSC-EU-Node, EOSC-IT, EOSC-PL, and CERN (nascent)
Galaxy*	Cross-node workflow for the processing of imaging data from the environmental and life sciences using the Galaxy platform	EOSC-CERN, EOSC-Data Terra, EOSC-EUDAT, EOSC EU Node, EOSC-PL, EOSC-LSC, EOSC-DE(nascent), EOSC-SURF(NL)
PaN-Finder	The Photon and Neutron federated knowledge finder, PaN-Finder, an AI-enabled data search tool for navigating the large data sets of European Research Infrastructures	EOSC-PaNOSC, EOSC-DE(nascent)
MCVAL*	A prostate cancer screening tool, MCVAL, that employs multi-centric validation of AI models	EOSC-IT, EOSC-SK, EOSC-PL, EOSC-SURF (NL), EOSC-FI
AMR	Federated analysis of pathogen genomes	EOSC-SK, EOSC-PL
* Cross-node use cases displayed in figure 4.4.		

Table 4.4: Overview cross-node use cases implemented during the first EOSC Federation build up phase

- **Data protection – GDPR compliance**
 - Nodes must clarify their specific role under the EU **General Data Protection Regulation (GDPR)**⁵¹ (e.g. Data Controller, Data Processor, or Third Party) for the services they offer and implement the corresponding legal requirements.
- **Cybersecurity**
 - EOSC Nodes must ensure that their operations, as well as those of their service providers, comply with all applicable cybersecurity regulations, policies, standards, and guidelines relevant to their activities, operations, and services
 - Any non-compliance with the Node security policy or relevant regulations must be promptly handled and reported to security@eudat.eu. Incidents must be promptly handled and reported to csirt@eudat.eu



- **Data Protection**

- GDPR is implemented by each partner
- Onboarded Services must agree to and implement GDPR



- **Cybersecurity**

- Has become a major topic in all our facilities
- PaN community has setup a Cybersecurity Forum which is very active, see [presentation](#) on cybersecurity at Symposium 2025

eOSC | Federation

Cybersecurity: An RI perspective

Jean-François Perrin (ESRF, PaNOSC Node)
EOSC Symposium Nov 4th, 2025

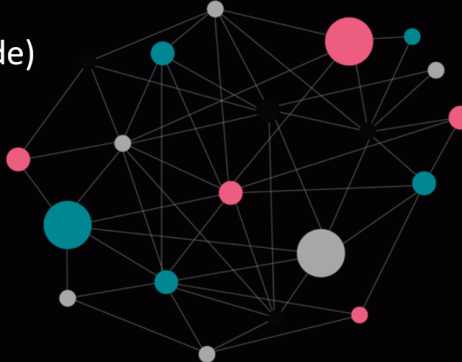




Photo by Leeloo The First on Pexels

Flashcards

Question 4.1: What resources does a Node have to make available to the EOSC Federation?

Question 4.2: Define what a Federating Capability is and give an example

Question 4.3: What Federating Capabilities will be mandatory in 2026?

Module 5

Research Resources for the EOSC Federation

Ch 5. Research Resources – pg 48 - 55**→ Create the Web of FAIR Data****Policy #1 on the ERA Policy Agenda is****^ Enabling open science via sharing and re-use of data, including through the European Open Science Cloud (EOSC)**

Open science is essential for increasing accessibility, transparency and collaboration in research. Therefore, this structural policy aims at making open science practices the 'new normal'. It seeks to create a better EU legal framework for **open sharing, seamless access and reliable re-use of research data and other digital research objects used and produced along the research life cycle.**

<https://european-research-area.ec.europa.eu/era-structural-policies-2025-2027>

- *EOSC Federation becomes fully operational*
- *Enrolment of new Nodes to the EOSC Federation*
- *EOSC Partnership phasing out strategy*
- *Proposal for new EOSC governance/financing model after 2027*
- *Expansion of EOSC Open Science Observatory to include assessment of impact of open science (implementing an open science policy intelligence platform)*
- *EOSC Open Science Observatory Annual report*
- *Finalisation of the economic study “Economic analysis of options for improving EU legislative and regulatory frameworks with impact on access and reuse of publicly funded R&I results and of publications and data for scientific purposes”: March/ April 2026*

Research Resources #1 to #6

Resource	Category	Description
Research Publications	Publications	Textual output of scientific research that enables to be used in new research or to verify research findings; it encompasses principally all peer reviewed publications in scientific journals, but includes other, non-peer reviewed cases such as preprints
Research Data sources	Sources	Sources where data can be found and retrieved, offering APIs or direct access to data searches across various query fields. Data repositories and archives, knowledge bases and scientific databases fall into this category
Research Data	Data	Data and associated metadata created or collected as a part of scientific research or of relevance to scientific research
Research Software	Software	Source code, algorithms, scripts, computational workflows, and executables that were created during the research process or for a research purpose
Research Tools	Software	Analytical, visualisation and other types of tools to aid in the interpretation, transformation and presentation of data. Tools may include dashboards, plotting software, data anonymization software and machine learning frameworks
Research Services	Services	Services that provide management, processing, and storage capabilities for research data and metadata. These may include DMPs, data cleaning, transformation, analytics, and computational power to support large-scale studies

Research Resources #7 to #10

Resource	Category	Description
Research Training	Mentoring	Educational resources designed to improve data literacy, technical skills, and knowledge of best practices in all aspects relevant to the EOSC. This includes structured courses and schools, webinars, and hands-on workshops
Research Interoperability guidelines	Documentation	Guidelines to ensure compatibility and seamless data exchange between systems. This category includes metadata standards, data-sharing protocols, and frameworks for harmonizing metadata and data formats
Research Competence Centres	Mentoring	A Competence Centre (CC) is a virtual hub dedicated to fostering research excellence through training and knowledge transfer. In Open Science, CCs are community-based initiatives supported by a collaborative network of people who provide expertise, best practices and services on relevant topics and promote cross-disciplinary collaboration
Research Resources and Services Discovery	Discovery	Search engine for research resources and services tuned for researchers

Table 5.1: Resource Categories



Research Resources #1 to #12

- 22 services registered so far: at <https://eosc.panosc.eu>
- Mostly **data repositories**
- But also Virtual Remote Environment (**VRE**) for remote analysis

Overview of PaNOSC Node Services

Content Provider	
ESRF – European Synchrotron ...	4
Deutsches Elektronen-Synchrot...	3
Helmholtz-Zentrum Dresden-R...	3
Paul Scherrer Institute (PSI)	3
ESS – European Spallation Sou...	2
MAX IV	2
ALBA	1
Elettra	1
Institut Laue-Langevin (ILL)	1
More...	

22 results found

Search

DESY Public Data Repository

Opendata Portal for data at DESY.

PETRA III Public Data Repository

Opendata Portal for experimental data produced at PETRA III, DESY.

SOLEIL VISA Service

The SOLEIL VISA (Virtual Infrastructure for Scientific Analysis) service makes it simple to create compute instances on the data analysis infrastructure to _____ (Show more)

MAX IV Open Data Repository

The MAX IV Open Data Repository provides access to scientific data generated at the MAX IV Laboratory. It connects datasets with rich metadata. (Show more)

MAX IV Metadata Catalogue SciCat

MAX IV SciCat is the metadata catalogue for managing and discovering scientific data from MAX IV Laboratory at the Lund University. It captures _____ (Show more)

AiiDALab Quantum ESPRESSO app

AiiDALab, a Jupyter-based web platform powered by the AiiDA workflow management system, offers lightweight web apps for running complex and _____ (Show more)

Materials Cloud Archive

Open repository for research data relevant to computational materials science.

ESRF VISA Service

The ESRF VISA (Virtual Infrastructure for Scientific Analysis) service makes it simple to create compute instances on the data analysis infrastructure to _____ (Show more)

Elettra Open Access Data Portal

Opendata Portal for the Elettra Sincrotrone Trieste synchrotron facility (<https://www.elettra.eu/>).

PSI Data Portal

Find, access, and reuse public data acquired at PSI

PaN-Finder

The PaN-Finder is a discovery portal that helps researchers locate and access data from European photon and neutron facilities. By connecting metadata from _____ (Show more)

PaN-Space

The PaNOSC User Space is an integrated online environment where researchers can access, analyze, and share data from photon and neutron _____ (Show more)

[View your results on the PaN-Services Catalogue](#)

Page: [Next](#) [Last](#)



Research Resources #13 to #22

- 22 services registered so far: at <https://eosc.panosc.eu>
- Mostly **data repositories**
- But also Virtual Remote Environment (**VRE**) for **remote analysis**

Overview of PaNOSC Node Services

Content Provider	
ESRF – European Synchrotron ...	4
Deutsches Elektronen-Synchrot...	3
Helmholtz-Zentrum Dresden-R...	3
Paul Scherrer Institute (PSI)	3
ESS – European Spallation Sou...	2
MAX IV	2
ALBA	1
Elettra	1
Institut Laue-Langevin (ILL)	1
More...	
Keywords	
PaNOSC	19
PaN	18
discovery	14
data management	12
Photon and Neutron	11
Data	8
SciCat	6
login required	5
Photon science	4
More...	

22 results found

Search

ALBA synchrotron Data Portal

Find, access, interact and reuse data acquired at ALBA

DAPHNE Public Data Portal

This catalogue allows users to access publicly available data and metadata from experiments and simulations provided by members of the scientific...
[\(Show more\)](#)

Paleontology data portal

The Paleontology database hosts data obtained from X-ray Computed Tomography experiments at ESRF. Started in 2011, it has helped the ESRF...
[\(Show more\)](#)

Human Organ Atlas

The Human Organ Atlas provides Hierarchical Phase-Contrast Tomography images of human anatomy from the micron to whole organ scale. Human...
[\(Show more\)](#)

ESRF data repository

The ESRF FAIR data catalog contains all raw data and processed data (for certain techniques)

ILL VISA Service

VISA (Virtual Infrastructure for Scientific Analysis) makes it simple to create compute instances on the data analysis infrastructure to analyse your...
[\(Show more\)](#)

PaNOSC Data Portal

The PaNOSC Data Portal provides unified access to experimental data from Europe's major photon and neutron facilities. It enables users to search...
[\(Show more\)](#)

HZDR Metadata Catalogue SciCat

SciCat is HZDR's metadata catalogue for managing and discovering experimental and simulation datasets. It captures detailed metadata throughout the...
[\(Show more\)](#)

HZDR Data Repository RODARE

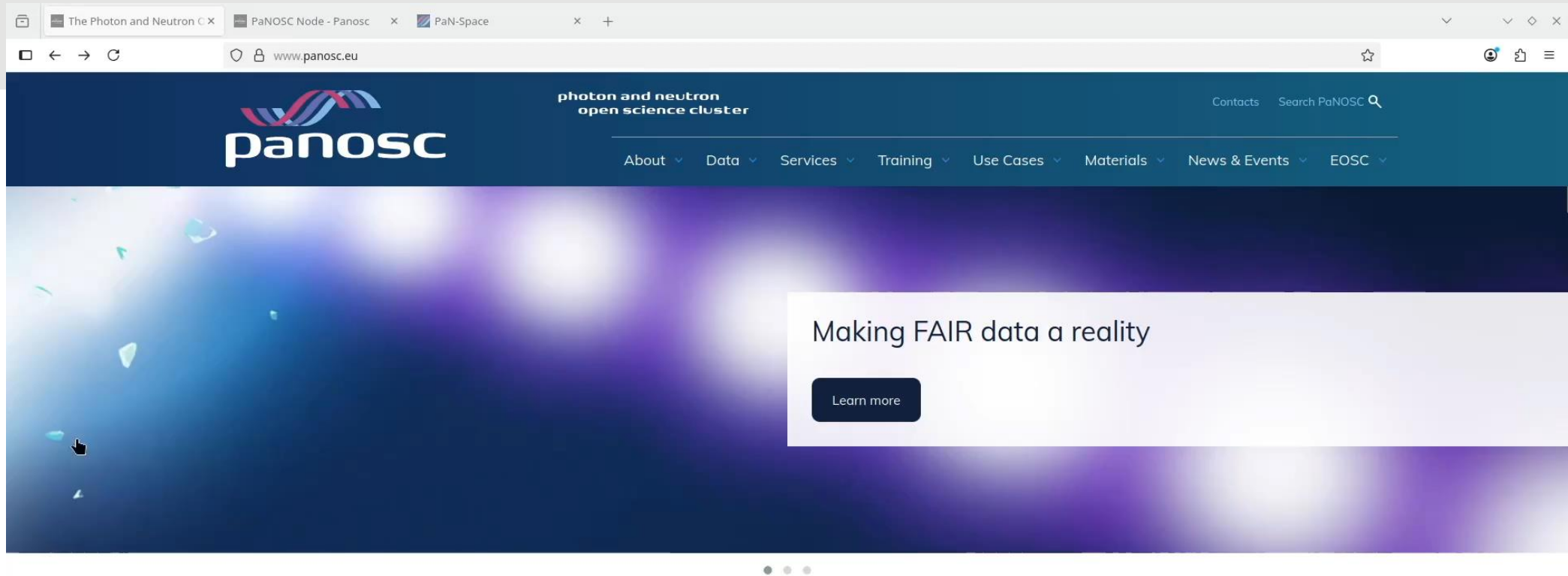
RODARE is the Helmholtz-Zentrum Dresden-Rossendorf's data repository for publishing, sharing, and preserving research data, software, and related...
[\(Show more\)](#)

PaN-Training

PaN-Training.eu is the central training catalogue for the Photon and Neutron (PaN) research community, providing descriptive metadata on courses...
[\(Show more\)](#)

[View your results on the PaN-Services Catalogue](#)

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The Photon and Neutron Open Science Cluster (PaNOSC)

The Photon and Neutron Open Science Cluster (PaNOSC) is the Science Cluster representing Photon and Neutron European Research Infrastructures (RIs), developing and providing services for its scientific community and connecting these to the European Open Science Cloud (EOSC).

Objectives

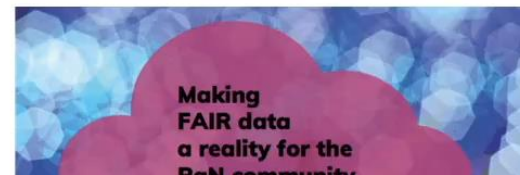




Photo by Leeloo The First on Pexels

Flashcards

Question 5.1: What is the role of a Research Data resource in the EOSC Federation and give an example?

Question 5.2: What is the role of Research Publications resources in the EOSC Federation ?

Question 5.3: What is the role of Research Software in the EOSC Federation?

Question 5.3: What is the role of Research Training in the EOSC Federation?

Module 6

Applying to become a Node + On-boarding services

Ch 6. Joining the Federation – pgs 56-57

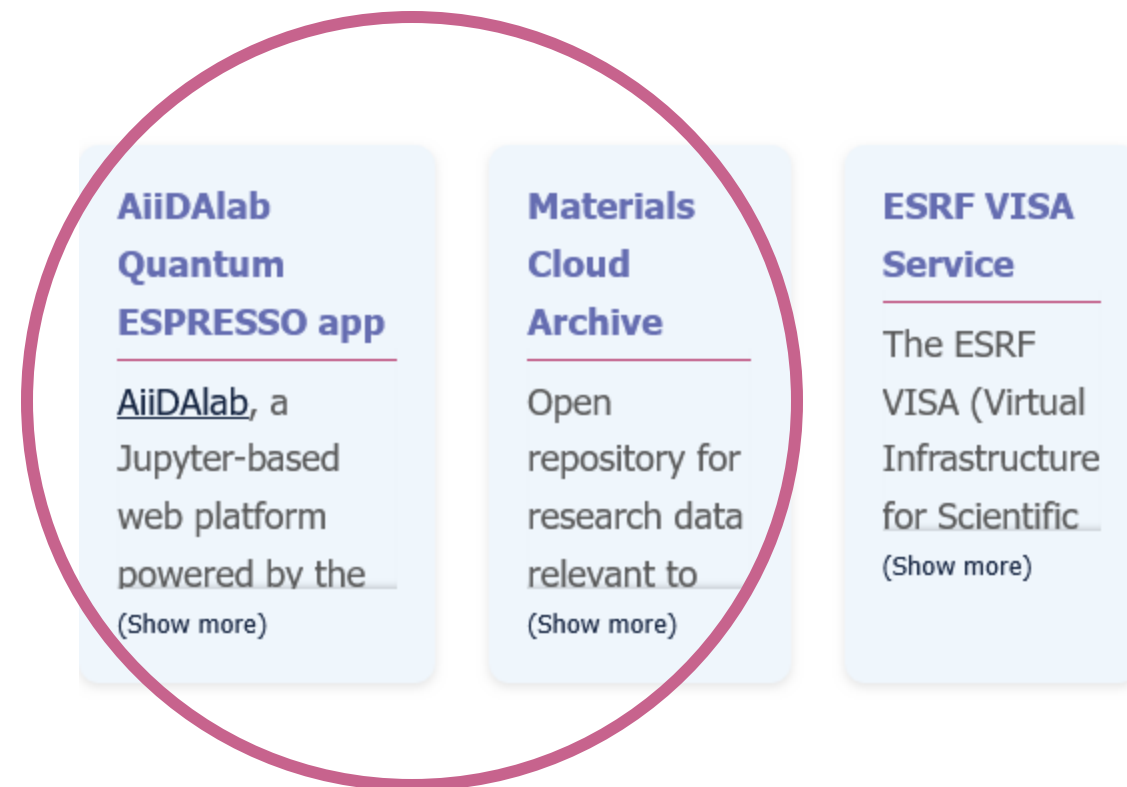
- Motivation
- Legal entity
- Project Charter
- Nominate Five roles
- Sustainable for 2 ideally 5 years
- Service monitoring and management
- Capacity to on-board or federate (not mandatory)
- Compliance with EOSC Federation rules e.g. MoU



Image by [Muhammad Afandi](#) on [Unsplash](#)



- Working on Onboarding Rules for production
- Draft rules:
 - Used by / Useful for the Photon and Neutron community
 - Compatible with the principles of Open Science
 - Well documented, mature (TRL7+),
 - Support provided by owner(s)
 - Supports MyAccessID AAI
 - Policies in place for:
 - Privacy of personal data
 - Rules of participation
 - Cybersecurity, ...



1. EOSC AAI Architecture 2025

1. <https://doi.org/10.5281/zenodo.15388270>

2. Registration of EOSC Research Product Catalogues in the EOSC EU Node

1. <https://doi.org/10.5281/zenodo.15516019>

3. Registration of EOSC Service Catalogues in the EOSC EU Node

1. <https://doi.org/10.5281/zenodo.17513487>

1. Framework Agreement –

- Legally binding version of the MoU

2. Node Registration Policy –

- Node Registration Policy for EU Node

3. Mandatory Federating Capabilities –

- Helpdesk and Service Management in 2026



Photo by Leeloo The First on Pexels

Flashcards

Question 6.1: What are the sustainability requirements for Nodes?

Question 6.2: What official guidelines of the EOOSC Federation exist already?

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→ Reviewers

- **Tripartite Group** i.e. European Commission, EOSC Association + Member States

→ Survey

- **EOSC Association Members, INFRA-EOSC Projects, Task Forces + Opportunity Area Groups**

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Claudia d'Onofrio**



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Q&A

Further Questions + Discussions on the EOSC Federation User Forum

<https://user-forum.eosc.eu/>



A screenshot of the EOSC Federation User Forum interface. The top left shows the EOSC logo and 'Federation'. Below it is a 'New Topic' button. A sidebar on the left contains navigation options: Topics, My posts, My messages, Review, Admin, Invite, and More. Under 'CATEGORIES', there are links for EOSC Academy, EU Projects, Federation Nodes, Federation Support, Research Communities, and All categories. Under 'CHANNELS', there are links for General and Staff. Under 'DMS', there is a link for Brina. The main content area shows a welcome message to 'andygotz!' and a search bar. Below the search bar are filters for 'Latest', 'New (1)', 'Hot', and 'Categories'. A list of forum posts follows, including 'EOSC Academy - Online sessions - May/June 2026', 'EU Node Technical Architecture Specifications', 'EOSC Federation onboarding of services', 'EOSC Node Open Source bundles', 'OSCARS project InViMOD', 'Code of Conduct - draft', 'Admin Guide: Getting Started', and 'Welcome to the EOSC Federation User Forum!'. A 'Pinned' button is visible on the right side of the forum posts.