Regional Projects towards a Minimum Viable Ecosystem

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\+ **EOSC-Pillar**, **EOSC-Nordic** and **NI4OS-Europe**

EOSC Symposium 2022
November 15th, Prague

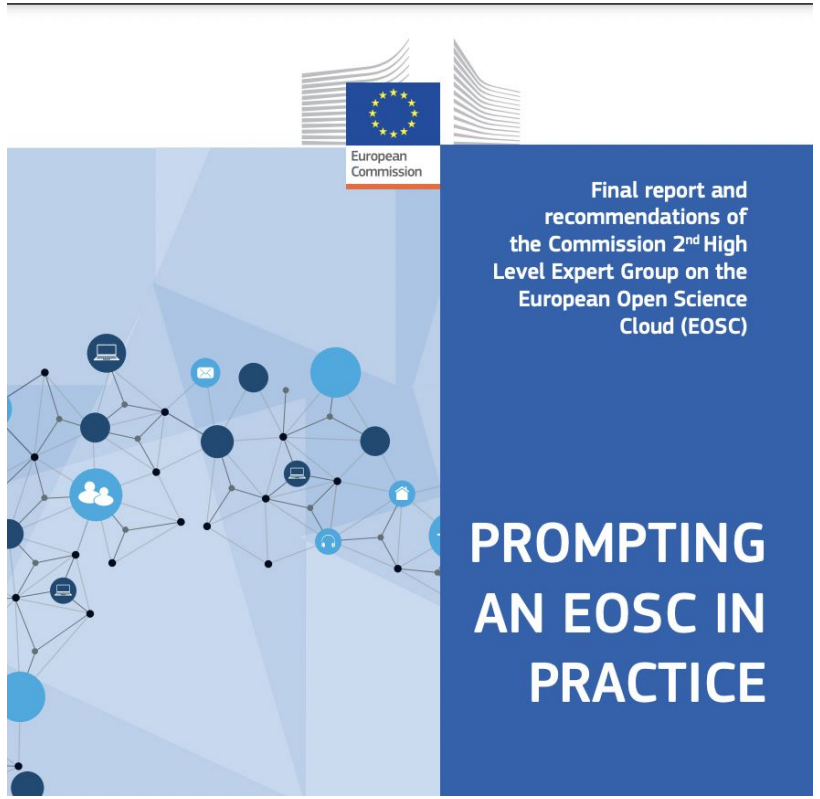
Horizon 2020 Research and Innovation Programme
Grant Agreement # 857647

EOSC Minimum Viable Ecosystem: background

- The concept of an **EOSC MVE** was introduced as **recommendation of the 2nd EOSC HLEG(*)**

- Based on the recognition that the provision of infrastructures, technology development, and human resources to support EOSC will take place in a **very heterogeneous landscape**.

- Addressing this challenge requires the definition of a **smallest common denominator**: the EOSC **Minimum Viable Ecosystem (MVE)**



(*) See https://ec.europa.eu/info/sites/default/files/prompting_an_eosc_in_practice.pdf

Final report and recommendations of the Commission 2nd High Level Expert Group [2017-2018] on the European Open Science Cloud (EOSC)

Three + On€ key stakeholder groups were identified in charge of: **Bootstraping EOSC by cooperating** in a constructive way

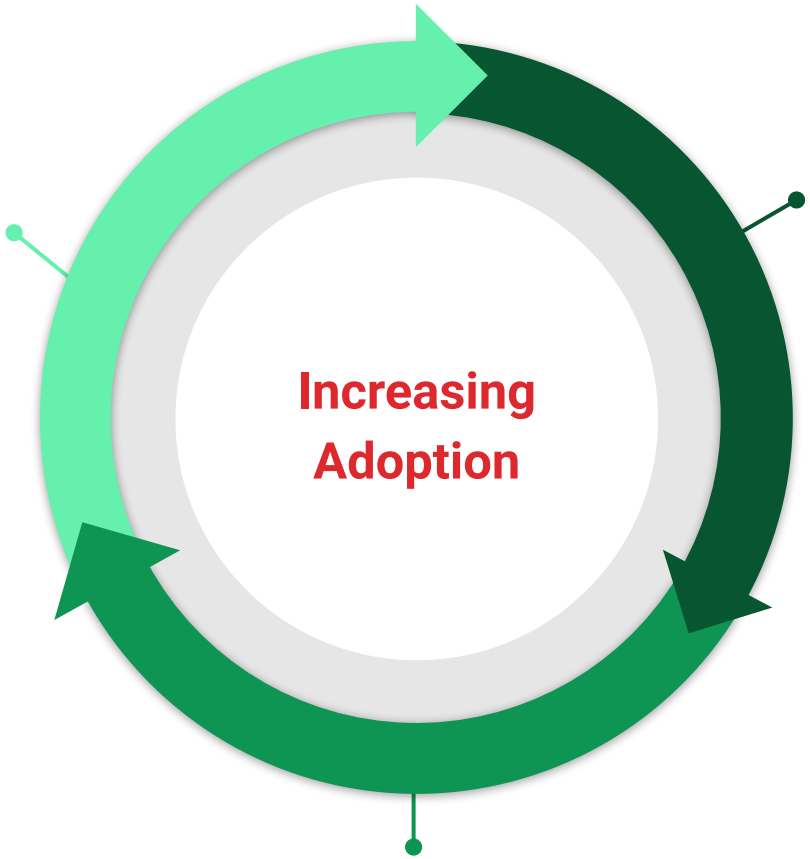
- **Researchers**
  - they are the customer and **the customer is king**
- **Software Developers**
  - they are the **makers of the whole thing**
  - they make the ecosystem rich or poor
- **Infrastructure Providers**
  - they get an **opportunity for new businesses** on their platforms
- **Research funding organizations**
  - they **foot the bill**
  - they need to care for the efficiencies of the system

Implementation of the MVE rests on a Virtuous Cycle

Improved Software Quality

1-Developers/Integrators

Increase software quality
Adhere to software development best practices



2-Providers/Operators

Increase service quality
Adhere to service delivery best practices

Increased Usage

Improved Services Quality

3-Users/Researchers

More aware of EOSC services quality
Build trust and increase adoption

EOSC Synergy for Researchers

Thematic services constitute an essential part of EOSC-SYNERGY and are the final layer exposed to final users. We have selected ten thematic services that are grouped into four categories: Earth Observation, Environment, Biomedicine, and Astrophysics.

Earth Observation

More

Environment

More

Biomedicine

More

Astrophysics

More

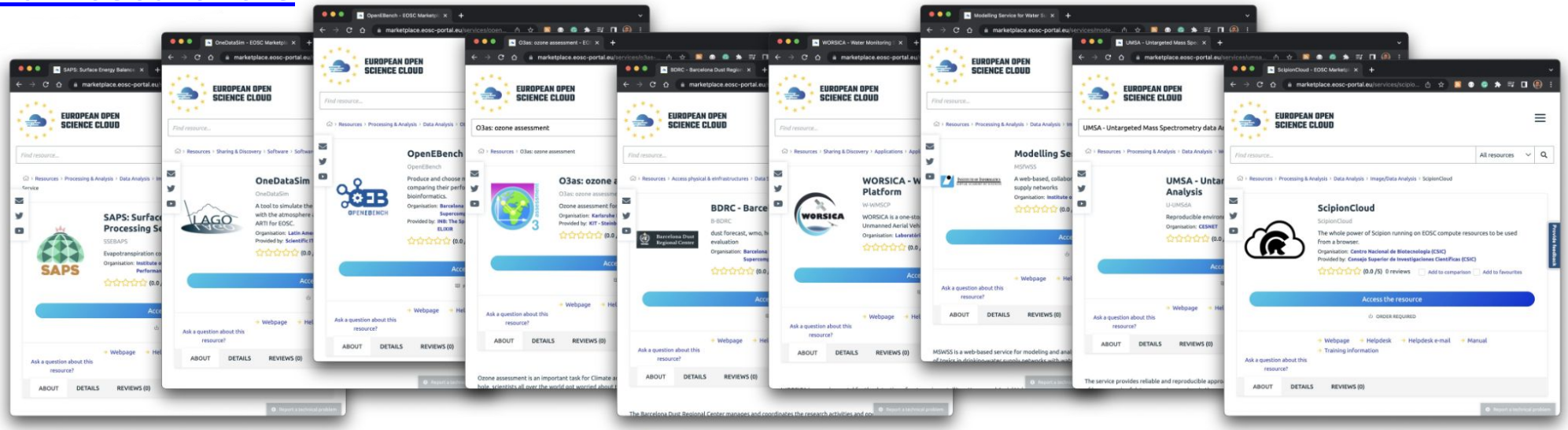
https://www.eosc-synergy.eu/thematic-services-brochure/

EUROPEAN OPEN SCIENCE CLOUD

Marketplace

EOSC EXCHANGE

www.eosc-synergy.eu/for-researchers



EOSC Synergy for Software Developers

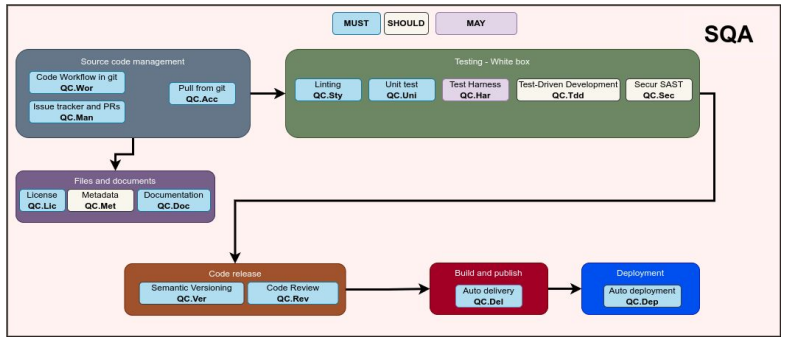
Software is the enabler of computing technology. In EOSC-Synergy we develop software to support the deployment of quality services for Software and FAIR Data. We develop tools to streamline access to e-infrastructures, and we integrate scientific services in EOSC-enabled

Quality Assurance as a Service

Developing software to foster a quality approach to EOSC is one of our core activities. Here follows a list of our main products.

Software Quality Baseline	*Minimum viable set of quality requirements* that shall be covered when tackling any software development project. The work started in the framework of the H2020 project INDIGO-DataCloud , and has been continuous evolved via an open collaboration framework.
Service Quality Baseline	The *common Service Quality Assurance Baseline Criteria establishes the minimum viable set of quality requirements provides an initial approach to Service Quality Assurance, meant to be applied in the integration process of services which will be accessible* through EOSC.
SQAaaS	Software Quality Assurance as a Service: is the EOSC-Synergy framework to ensure Quality. Includes JePL library, badges implementation, web service, etc...
JePL	A library to implement Software Quality Assurance (SQA) checks using Jenkins CI/CD pipelines. JePL can be used with the SQAaaS or standalone.
FAIR Evaluator	Implementation of an evaluator for the fulfilment of FAIR data quality based on the Research Data Alliance (RDA) criteria .

SQAaaS for Software, Services & Data



Badges to Reward Quality

RDA

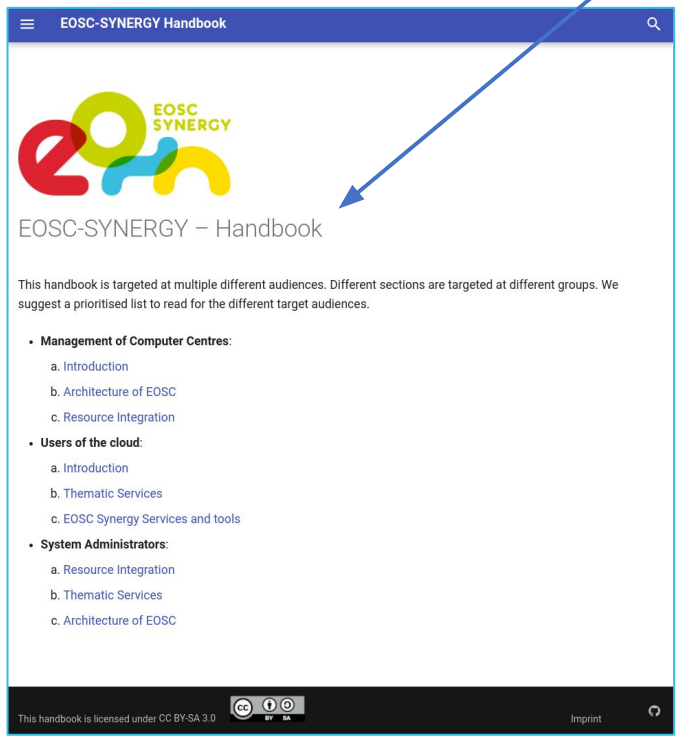
www.eosc-synergy.eu/for-developers/

- **PROMOTING A SOFTWARE DEVELOPMENT ECOSYSTEM**
- **INCENTIVIZING THE DEVELOPERS**
- **FOSTERING EOSC UPTAKE BY QUALITY SERVICES RECOGNITION**

EOSC Synergy for Infrastructure Managers

The Synergy Infrastructure is distributed across multiple countries and different resource providers. Find out how to organize a Federated Cloud and what it offers.

https://handbook.eosc-synergy.eu/



Support to System administrators

If you are a system administrator this is the information for you

Openstack / Cloud (Computing and Storage)

HPC Access

Infrastructure tools — **EOSC CORE**

SSH-OIDC	Access toolset based on OpenID Connect to be used in HPC-like cluster environments
EOSC Performance and monitoring tool	Web application to host, search, compare and analyze benchmark results from Federated Clouds in EOSC.
EGI Swift Finder	Discover and use OpenStack Swift endpoints for storage provided by the EGI Federated Cloud Infrastructure.
FedCloud Client	FedCloud client is a high-level Python package for a command-line client designed for interaction with the OpenStack services in the EGI Federated Cloud . See this link for full documentation.
Dynamic DNS Allocation	in Federated Cloud Environments. It supports use cases in which VMs are started at different sites, but need to be reachable via the same hostname.
ESOD	The EOSC-SYNERGY Openstack Dashboard (ESOD) allows the graphical navigation to one of the available Openstack instances in Federated Clouds.
SLAmon	The Service Level Agreement monitor queries the infrastructure for the amount of resources available at a given site part of a Federated Cloud.

www.eosc-synergy.eu/for-infrastructure-managers

Policy Harmonization

Cross-country harmonisation and development of policies, best practices for resour
EOSC. EOSC Synergy provides recommendations on policy developments to bridge
Netherlands, Slovakia, Spain, Poland, Portugal and The United Kingdom. An initial
about the measures for alignment and harmonisation of policies to facilitate the imp

- Recommendations for the alignment of national policies related to EOSC.
- Aimed at policy makers, EOSC Bodies, research funders, research performing organisations

https://www.eosc-synergy.eu/policy-harmonization/

EOSC Synergy for Trainers

EOSC Synergy supports trainers from across the EOSC ecosystem to develop and deliver effective online training, through providing guidance and infrastructure.

For details see **Helen Clare´s presentation tomorrow** in the session:

EOSC engagement at regional level

Thursday 17th November 2022 - 11.00 am - 12.30am | Room: **Zenit** | **EOSC ecosystem sessions**

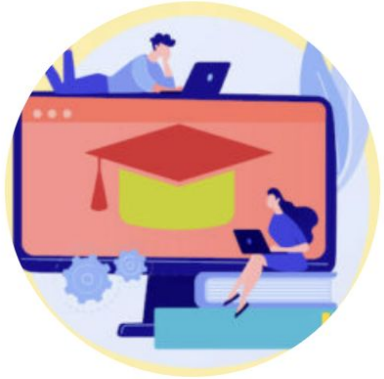
www.eosc-synergy.eu/for-trainers

EOSC EXCHANGE

Reusable courses & materials

A set of free tutorials and training materials covering EOSC Synergy related topics, services, procedures and thematic services.

Courses



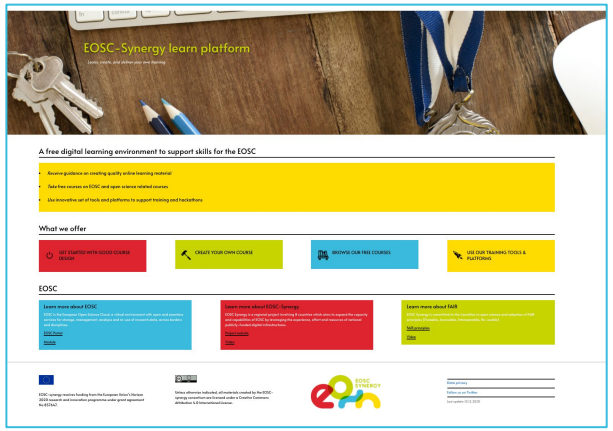
Guidance on creating high quality online training

A practical course and handbook with guidelines and templates for designing, creating and delivering online training, with a focus on EOSC, FAIR and open science.

Get started

A portfolio of training tools and platforms

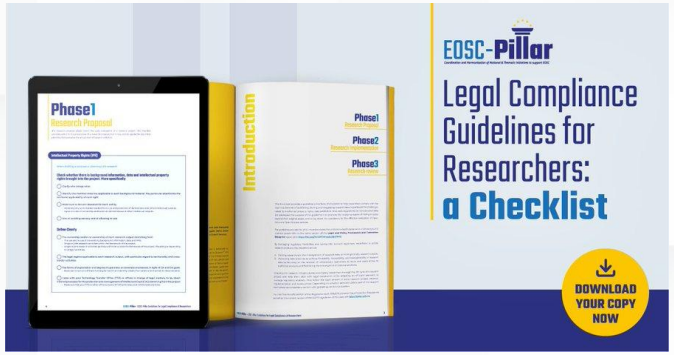
A next generation digital learning environment for EOSC which includes online platforms for content creation/hosting of training material and running hackathons, collaboration and coding tools and a self deployable training infrastructure.



learn.eosc-synergy.eu

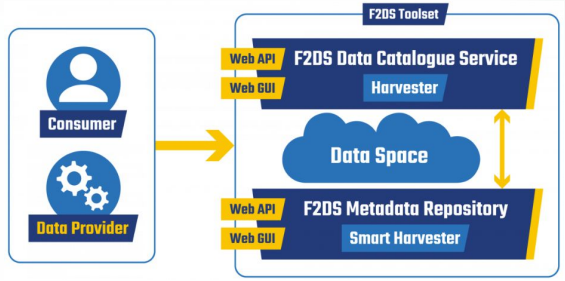
EOSC-Pillar non-technical contribution

- Landscape mapping and coordination among National Initiatives
  - Gain insights into OpenScience and FAIR data, awareness, gaps, policies, challenges for sustainability
- D4.6: Legal and Policy framework and federation blueprint
  - Provides a framework for IPR and data protection legislation in Europe
  - Also “distilled” as 1) checklist for Researchers and 2) recommendations for harmonization, aimed at policy makers
- Contribution to definition of indicators (PoC via EOSCsecretariat call)
- Supporting activities, training
  - Training catalogue, support and training for data stewards
- Ambassadors Programme
  - Communication material (in national languages), video and podcasts to raise awareness



EOSC-Pillar technical contribution

- Recommendations and support for onboarding services into an EOSC catalogue (D7.1)
- EOSC Catalogue enriched with WP6 services
  - Cross-border and trans-community services,
- National catalogue prototype, interoperable with central EOSC one
- Federated FAIR Data Space
  - Aggregate and enrich datasets from multiple repositories, enhance FAIRness of datasets
  - Leveraging FAIRsFAIR implementation of the “Federated Data Point”



Challenges and future expectations

- Extend activities on EOSC readiness assessment
- Finalize model for delegation, e.g. onboarding services into national catalogues
- Stakeholder involvement at national level: funders, RPOs
- Researchers' engagement

NI4OS-Europe contribution to the EOSC Core

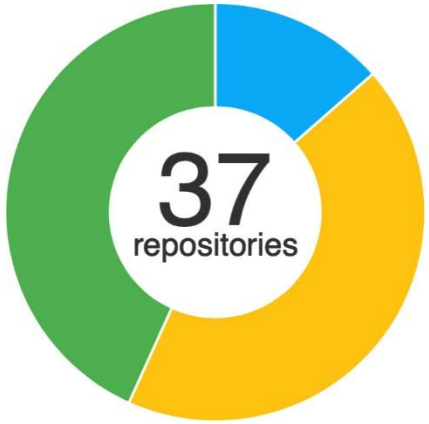
- NI4OS-Europe **pre-production environment** fully compatible with EOSC core
- **Incubator / testbed environment** for Exchange services
- On-boarding procedure implies integration with:
  - Helpdesk system
  - Monitoring system
  - Accounting
  - AAI
  - Training portal
- Integration guidelines https://wiki.ni4os.eu/

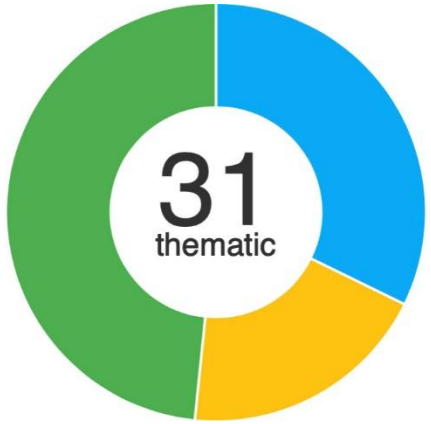
NI4OS-Europe contribution to the EOSC Exchange

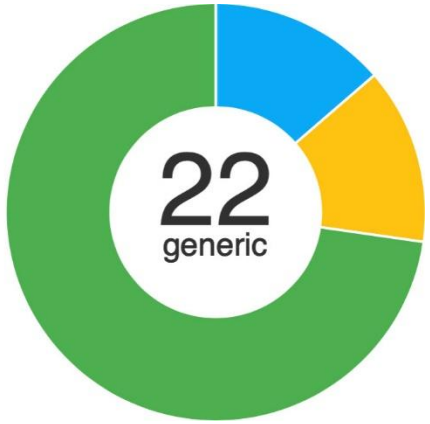
- NI4OS-Europe onboarded services
  - Generic services (22)
  - Thematic services (31)
  - Repositories (37)

https://catalogue.ni4os.eu/

- Used in NI4OS-Europe Open call:
  - 5 in Life sciences
  - 2 in Climate research
  - 3 in Digital cultural heritage
  - 8 in Computational physics
  - 2 in other fields







NI4OS-Europe contribution to the data federation

- 37 repositories in total
- Important data repositories on-boarded via NI4OS-Europe
  - NI4OS-Europe repository service – regional data repository https://repo.ni4os.eu/
  - HELIX Data - Hellenic data service https://data.hellenicdataservice.gr/
- NI4OS-Europe Metadata/Ontologies/Semantics WG
  - Development of metadata schemas for the four flagship communities
  - Contribute to the EOSC FAIR TF and EOSC FAIR Metrics and Data Quality TF
- NI4OS-Europe tools

RePol - Repository Policy Generator

Tool for creation of repository and privacy policies

EOSC RoP Legal & Ethics Compliance Tool (RoLECT)

Guided self-assessment for EOSC Rules of Participation focusing on legal and ethical aspects of compliance

License Clearance Tool (LCT)

Automatic license clearance of derivative works

The European Open Science Cloud

Revisiting the questions from the very start of EOSC-Nordic

How will EOSC change:

- The way we do science?
- Our legislation?
- Our way of collaboration?
- And ultimately our society?

Knowledge Hub

Welcome to EOSC-Nordic Knowledge Hub! We invite you to explore our knowledge base.

We have collected all our useful resources and information into this Knowledge Hub. Content and materials are constantly evolving and updating throughout the project. Here's a short description of each section to help you find what you're looking for.

Materials

Key documents of the project (Reports, recommendations & guidelines)

Read more

Users and organisations

Find out what EOSC-Nordic can offer you, and explore the use cases.

Read more

Training Library

All sorts of training events and materials

Read more

Services

The services available and a guidance how to register a service

Read more

Support

Browse FAQs or send over your request via our Service Desk

Read more

Community

Connect with peers and learn from others in your field

Read more

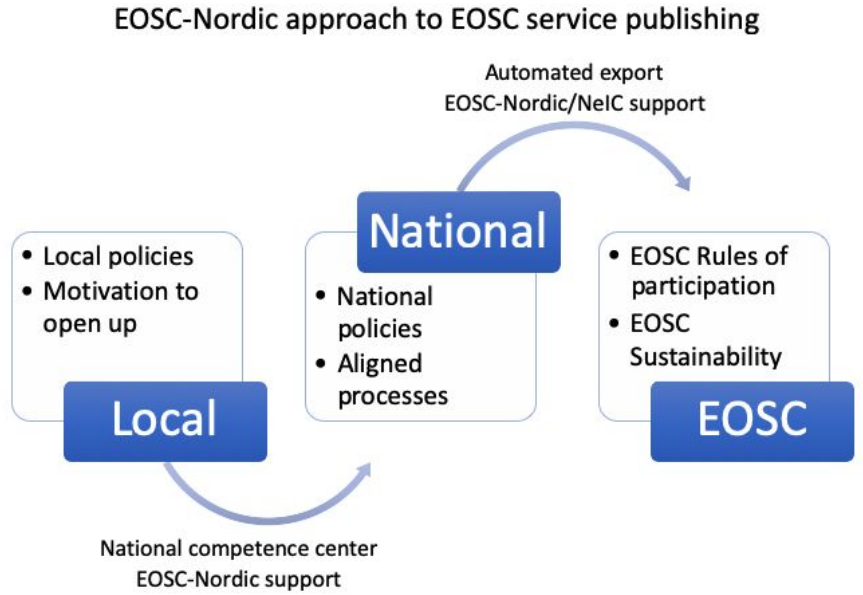
www.eosc-nordic.eu

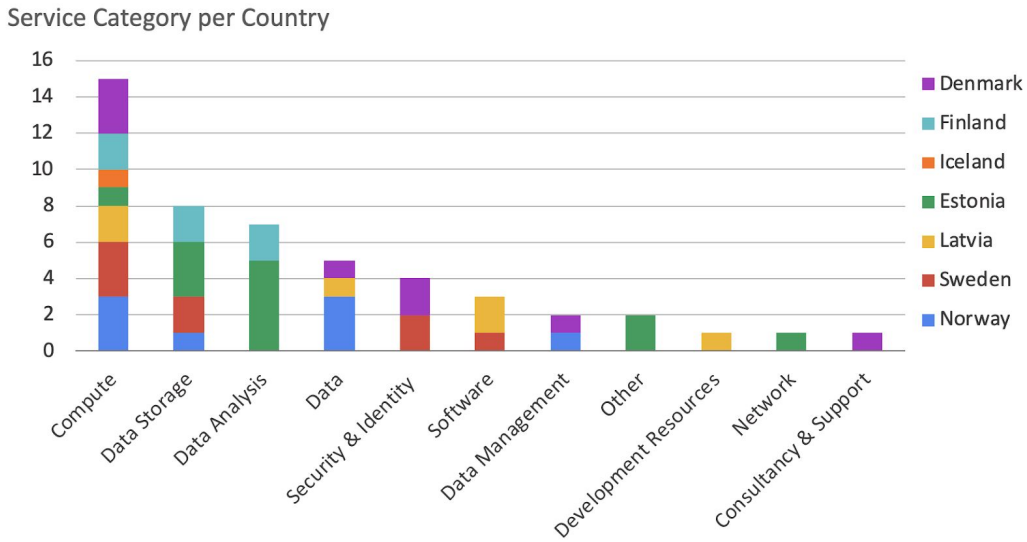
Discovery and analysis of regional services

Developed a service compliance and maturity model Nordic and Baltic services aiming to become EOSC services in EOSC Exchange

Discovery and mapping of service providers in the region. Analysis from the perspective of service compliance and maturity.

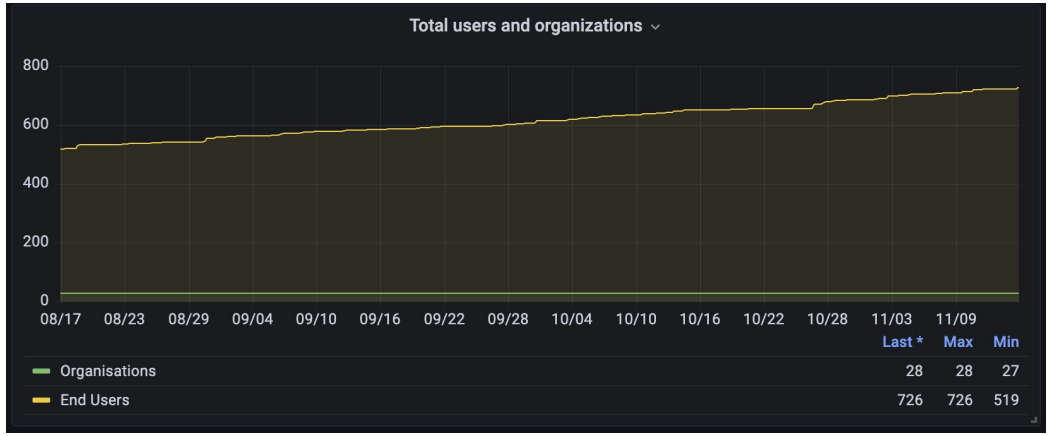
Establishing an EOSC support network for each EOSC-Nordic country along with support tools. Participation in 5b on-boarding Task Force.

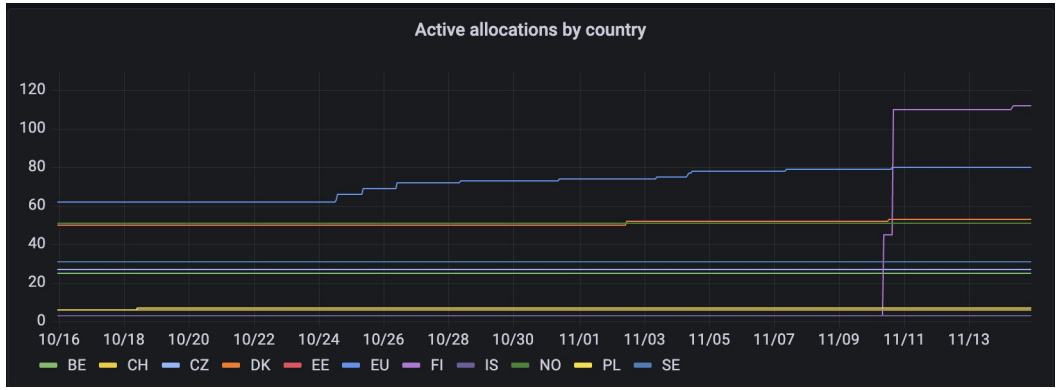




Setup of a platform for regional collaboration and integration with EOSC

- Sustainable platform built around NeIC Puhuri service and EOSC Interoperability Framework
- **GDPR-compliant** with SLAs and assured sustainability beyond EOSC Nordic
- Adopted by **EuroHPC** LUMI as well as national allocation portals
- Integrated with **EOSC Core** services - Catalogue, Marketplace, Helpdesk –

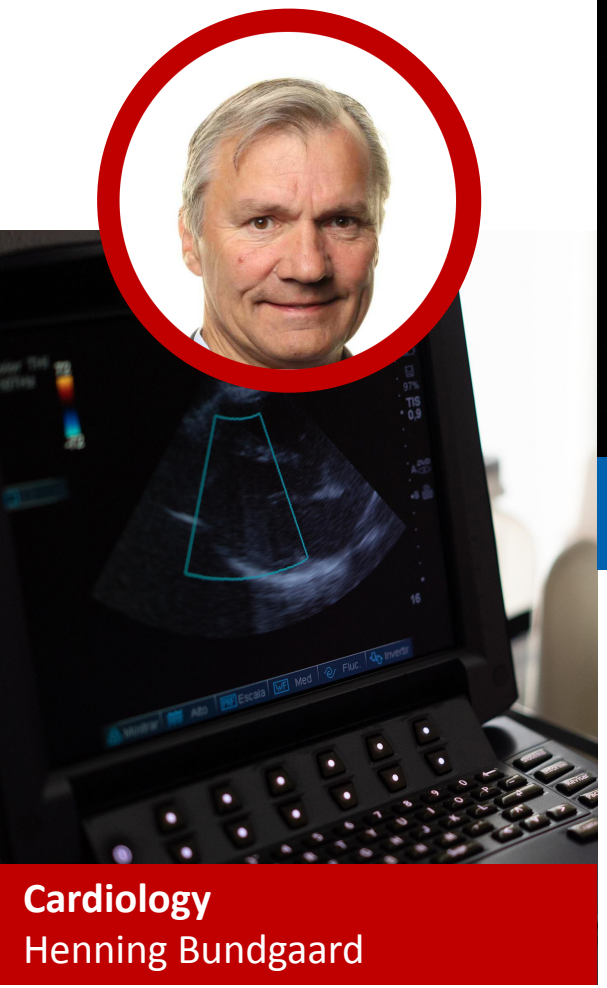




www.eosc-nordic.eu

EOSC PIONEERS

EOSC NORDIC



Cardiology
Henning Bundgaard

Climate Research
Anne Claire Fouilloux

Archaeology
Jens-Bjørn Riis Andresen

Natural Language processing
Stephan Oepen

Biodiversity
Matthias Obst

EOSC Nordic Key Results

- New Services & tools facilitating i) the integration with the EOSC Future catalogue, ii) FAIR assessment & iii) EOSC knowledge uptake

- Increased FAIR uptake in the region (FAIR score increased for 98 repositories & over 300 data stewards trained)

- EOSC alignment & discussion fora consolidated in the region

- Increased Cross country / disciplinary collaboration

Summary

- Rich contribution to the EOSC catalogue with generic and thematic services and repositories / data federation
- Expansion of EOSC catalogue dependent on these kinds of initiatives engaging all the European countries, with clear incentives for providers
- Increase in uptake of EOSC thanks to the tools and services developed in the regional projects at the national and regional levels
- Some of the tools and approaches already propagate through and contribute to foster EOSC Europe-wide
- It is important to signal that the conclusions of the country gap analysis where aligned (joint workshop 4th May 2022)