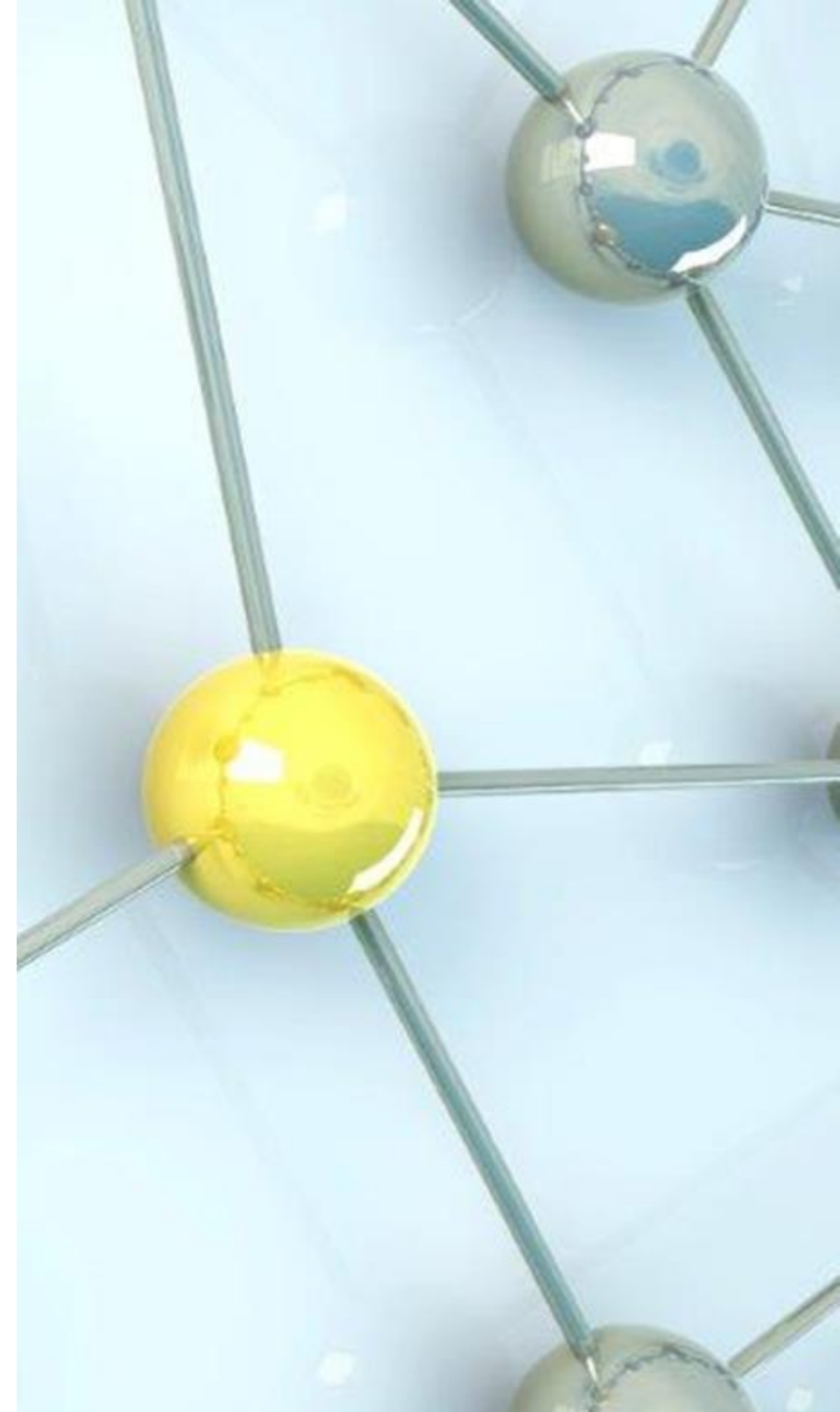




# NI4OS-Europe Open Science Cloud platform

**Dr Ognjen Prnjat**

Director of European Infrastructures and Projects, GRNET  
NI4OS-Europe coordinator



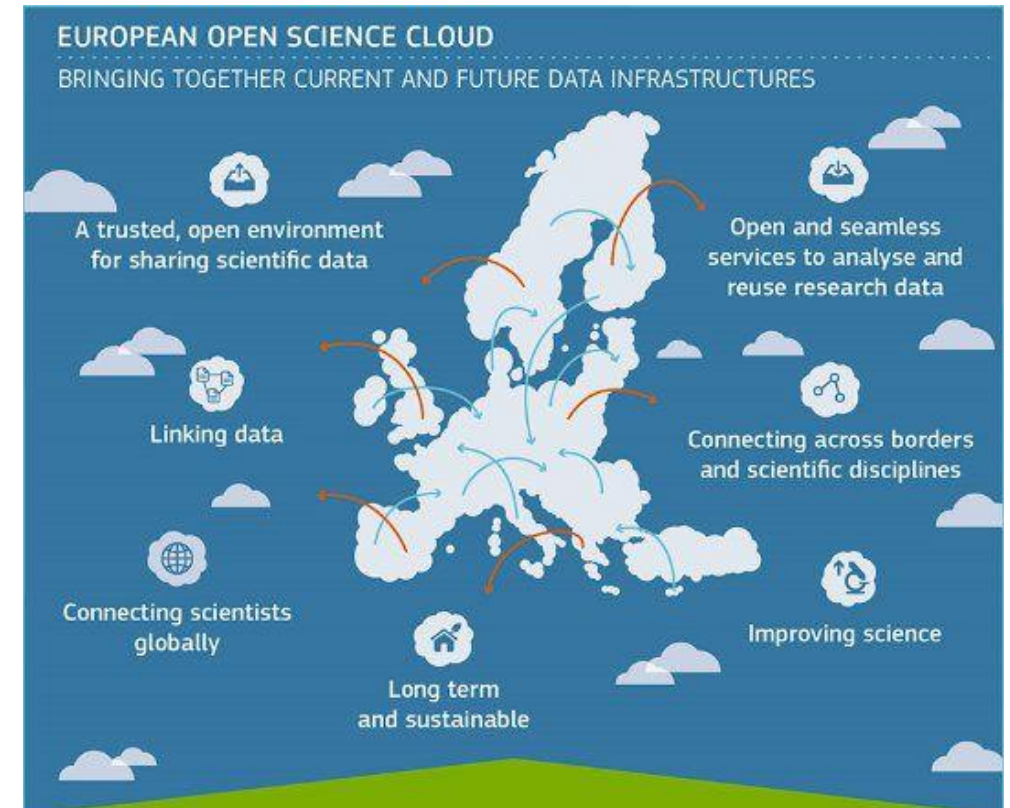
# European Open Science Cloud

## Vision

- Virtual environment for Europe's 2 million researchers and 70 million science and technology professionals from every research, innovation and educational area.
- Provide researchers an environment with open services for data storage, management, analysis and re-use across disciplines.
- Join existing thematic data Infrastructures.
- Add value and leverage past infrastructure investment.

## NI4OS-Europe

- One of 4 regional/geographical projects
- Call INFRAEOSC-05 "Supporting EOSC Governance"
  - Coordination of EOSC-relevant national initiatives
  - Support to prospective EOSC service providers



# NI4OS-Europe

15 Member States and Associated Countries | 22 Partners



Participating countries

Greece	Hungary	Albania	Republic of Moldova
Cyprus	Romania	Bosnia-Herzegovina	Armenia
Bulgaria	Slovenia	North Macedonia	Georgia
Croatia	Serbia	Montenegro	



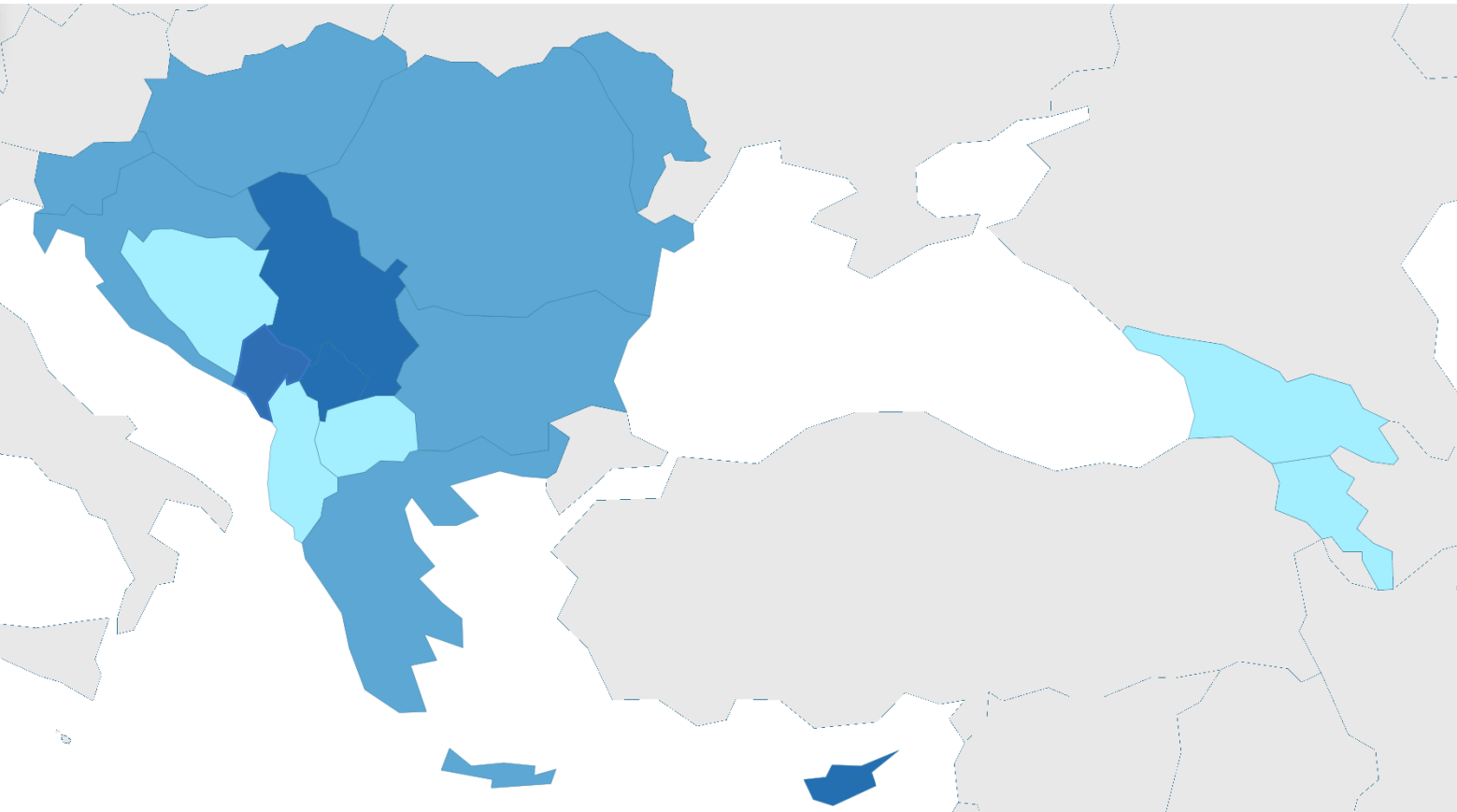
# Lines of action (1)



Support the development and inclusion of the **National Open Science Cloud Initiatives** in 15 Member States and Associated Countries in the overall scheme of **EOSC governance**

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# Landscaping: National Open Science policies



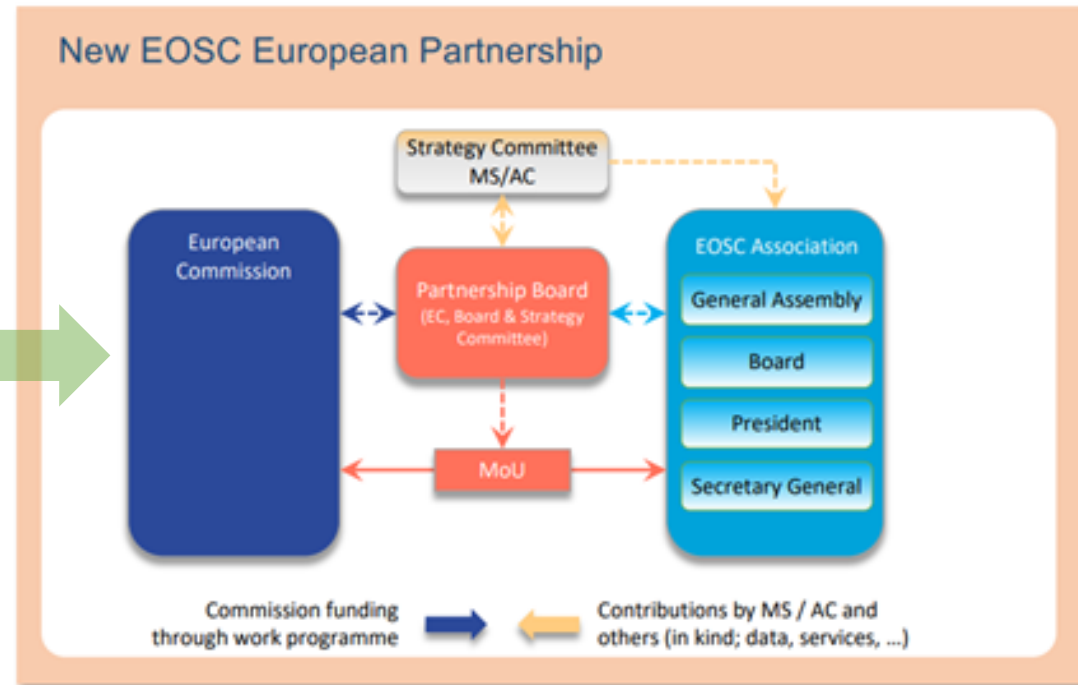
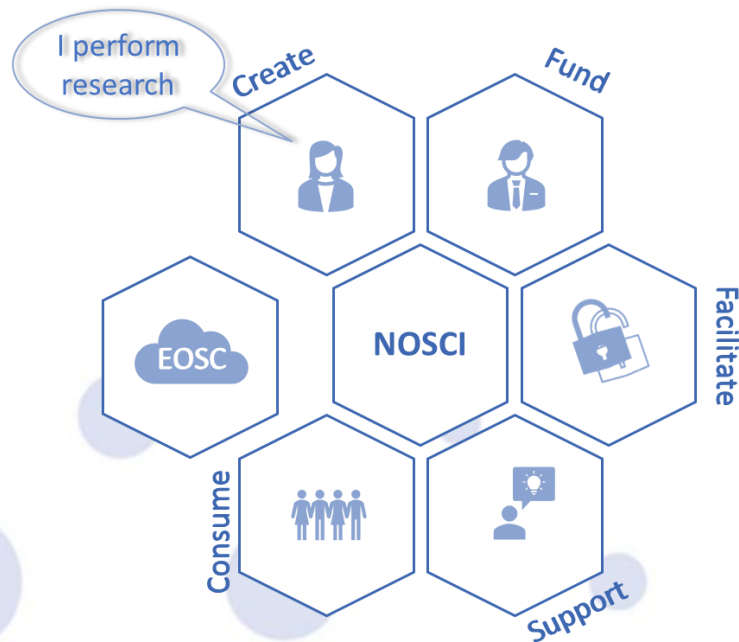
■ No national OS policy   ■ National OS strategy/plan   ■ National OS policy

3 different levels in the region:

- Initial actions within the country
- OS policy documents exist
- National OS strategy/plan or officially established initiative exists

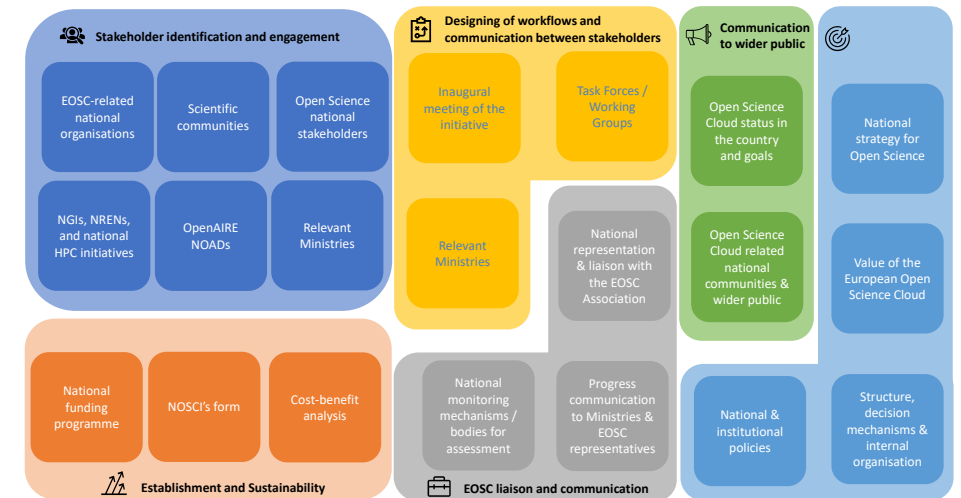
# National structures supporting EOSC

**National Open Science Cloud Initiatives – NOSCI:** living national OS ecosystems that support EOSC Governance and embrace diversity and OS maturity of countries

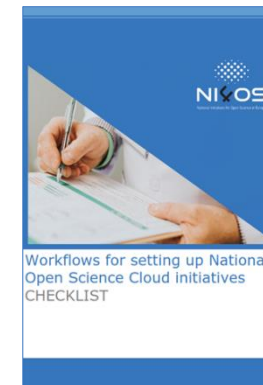
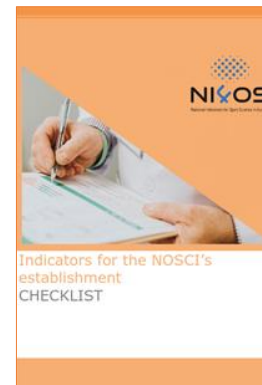


# NI4OS-Europe Toolbox for supporting NOSCI

## Setting up options



- Modular methodologies & workflows
- Assessment & monitoring
- Operational aspects & sustainability
- Explanatory video
- Workshops, trainings, checklists



# Supporting the NOSCI's' setup: the five-steps methodology

Communicate/engage with relevant government officials

Put effort that NOSCI becomes the mandated organisation



Invite Stakeholders or restart stale groups or discussions

Discuss how the NOSCI will operate and draft the MoU

Spread the know-how. Share knowledge within and outside the consortium



# NOSCI: tangible outcomes & EOSC-A representation

## Set-up approach

### Top-down



Cyprus  
Slovenia

### Bottom-up



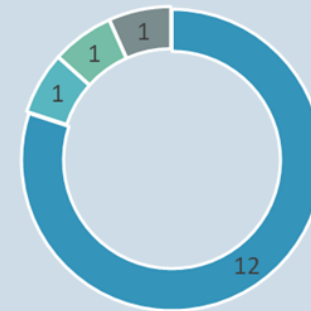
Armenia, Georgia  
Greece, Montenegro

### Hybrid



Albania, Bosnia-Herzegovina,  
Bulgaria, Croatia, Hungary, Moldova,  
North Macedonia, Romania, Serbia

## Governance model

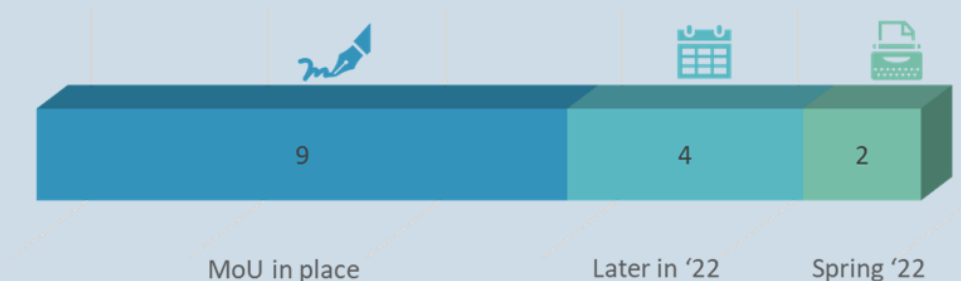


■ Consortium ■ Single organisation ■ Other ■ N/A

> 150 official members (organisations)

> 300 attendees in national events

## MoU status



## NI4OS-Europe region in EOSC-A

6 Mandated organisations

12 Members

6 Observers

## Lines of action (2)

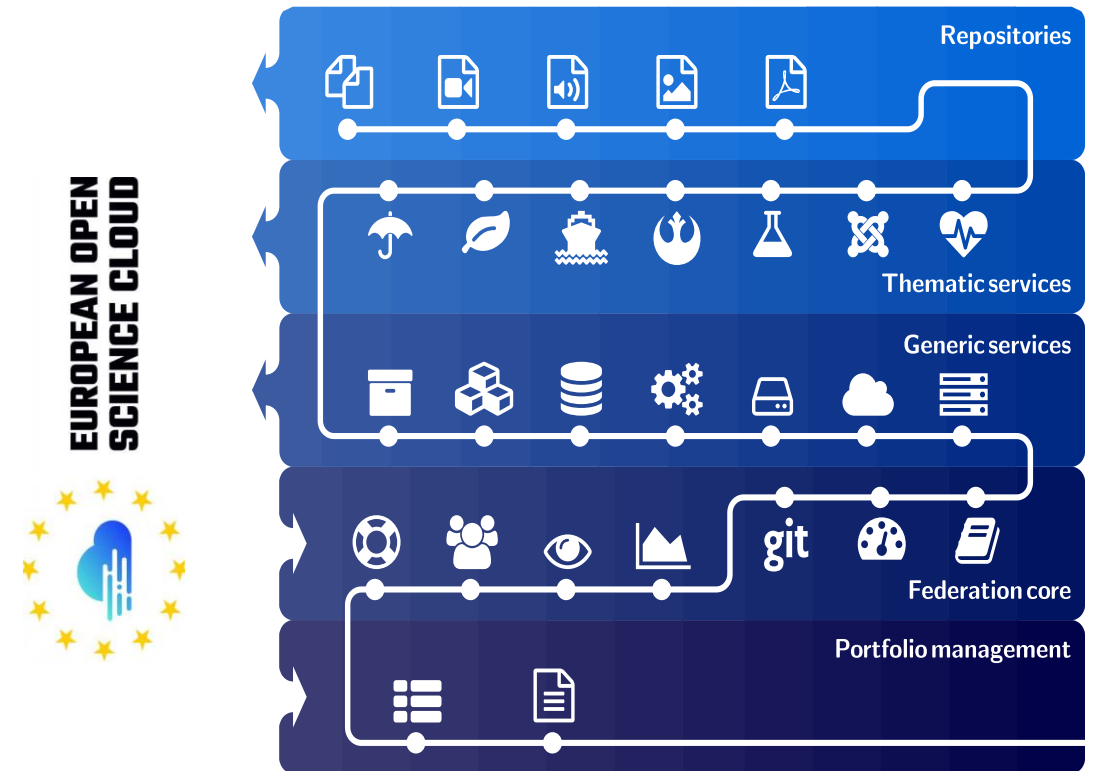


Provide technical and policy support in on-boarding of the existing and future service providers into EOOSC

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# Service integration and onboarding

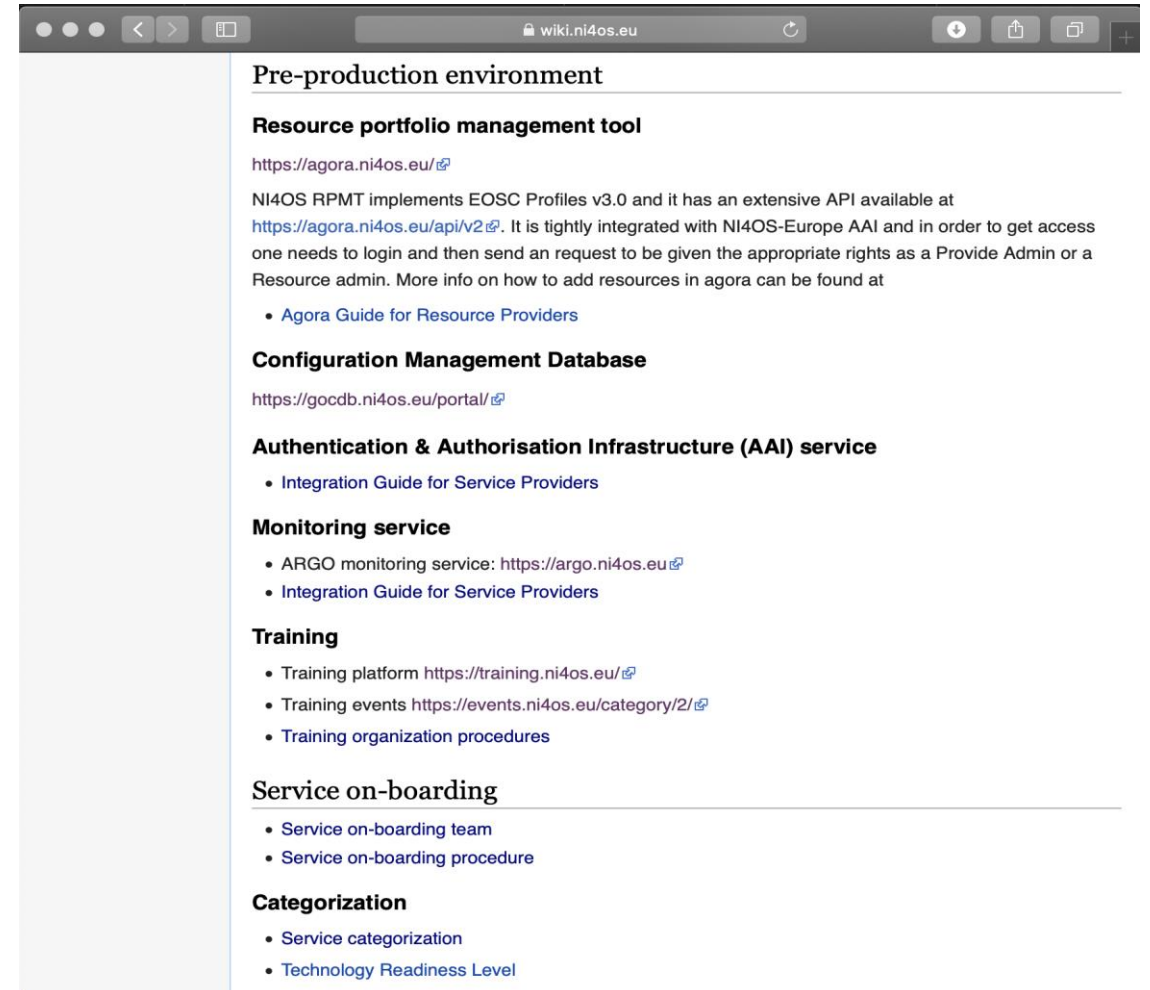
- Pre-production environment – validate readiness and maturity level for EOSC onboarding
- Service portfolio management system based on the EOSC provider and service profile
- Integration with federation core services
- Service categorization
- Onboarding of
  - generic services
  - thematic services
  - repositories



# Procedures and policies

- NI4OS-Europe [wiki page](#)
  - Policies
  - Policy templates
  - Procedures for service integration with the pre-production environment

**Role:** to guide service providers toward seamless EOSC integration

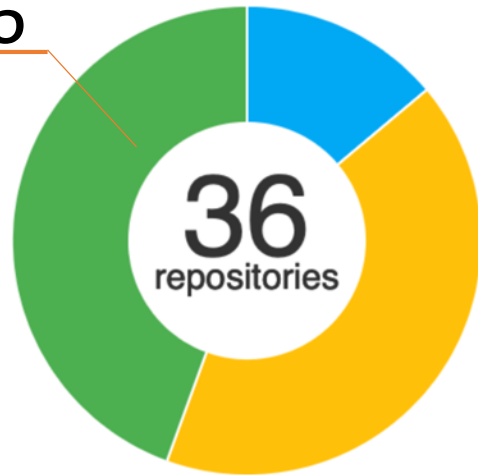


The screenshot shows a web browser window displaying the NI4OS Europe wiki page. The page title is "Pre-production environment". The content is organized into several sections:

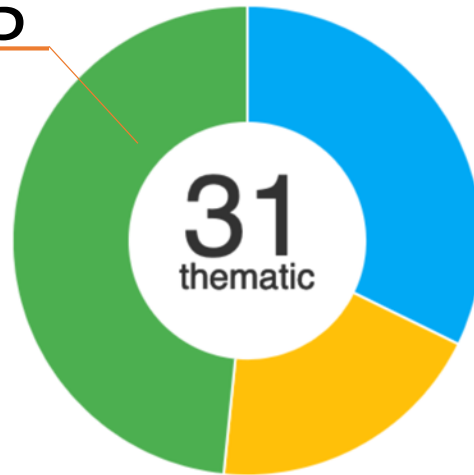
- Resource portfolio management tool**
  - <https://agora.ni4os.eu/>
  - NI4OS RPMT implements EOSC Profiles v3.0 and it has an extensive API available at <https://agora.ni4os.eu/api/v2/>. It is tightly integrated with NI4OS-Europe AAI and in order to get access one needs to login and then send a request to be given the appropriate rights as a Provide Admin or a Resource admin. More info on how to add resources in agora can be found at
    - [Agora Guide for Resource Providers](#)
- Configuration Management Database**
  - <https://gocdb.ni4os.eu/portal/>
- Authentication & Authorisation Infrastructure (AAI) service**
  - [Integration Guide for Service Providers](#)
- Monitoring service**
  - ARGO monitoring service: <https://argo.ni4os.eu/>
  - [Integration Guide for Service Providers](#)
- Training**
  - Training platform <https://training.ni4os.eu/>
  - Training events <https://events.ni4os.eu/category/2/>
  - [Training organization procedures](#)
- Service on-boarding**
  - [Service on-boarding team](#)
  - [Service on-boarding procedure](#)
- Categorization**
  - [Service categorization](#)
  - [Technology Readiness Level](#)

# On-boarded resources/providers

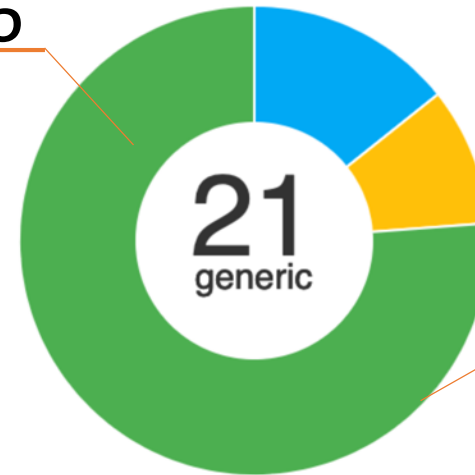
16



15

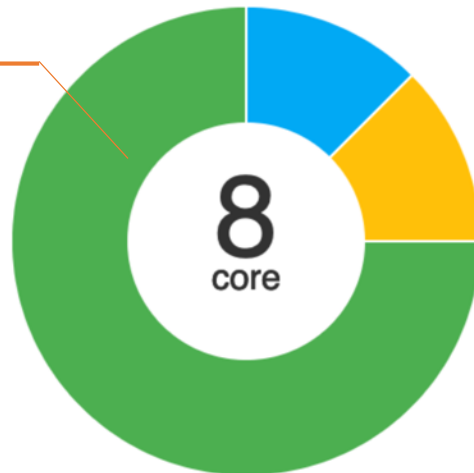


16

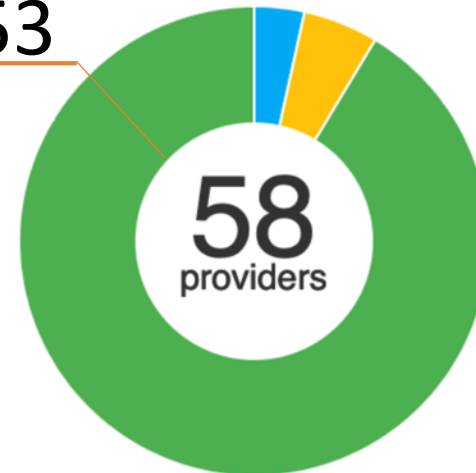


- HPC resources: CPU, GPU, Xeon Phi
- Cloud Virtual Machines
- Generic Storage
- Data management services

6



53

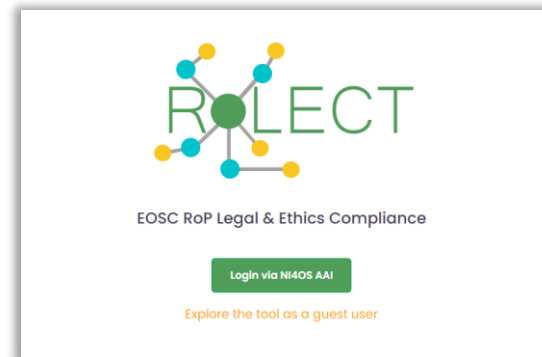


# ORDM / FAIR tools and certification schemes

- Implementation and adoption of **tools, standards** and **guidelines**
- **Analysis of guidelines** for OS and fostering of ORDM and FAIR
- Analysis and **categorization of existing tools** supporting FAIR and ORDM
- Selection and delivery of new tools
- **Harmonization and interoperability** across communities and with core initiatives
- Development and application of **certification schemes**
- **Analysis of the incentives** and **rewards** that can be employed to improve the uptake of ORDM and FAIR (also summarized in a brochure)
- Examining the relationship and synergy between open science and open source

# NI4OS-Europe tools for addressing legal concerns in ORDM and FAIR

- LCT - License Clearance Tool: An intuitive tool for content license clearance  
➔ <https://lct.ni4os.eu/>
- RoLECT - EOSC RoP Legal & Ethics Compliance: Guided compliance check for legal and ethics EOSC RoP  
➔ <https://rolect.ni4os.eu>
- RePol - Repository Policy Generator: Greatly simplifies creation of repository and privacy policies  
➔ <https://repol.ni4os.eu>



# Lines of action (3)

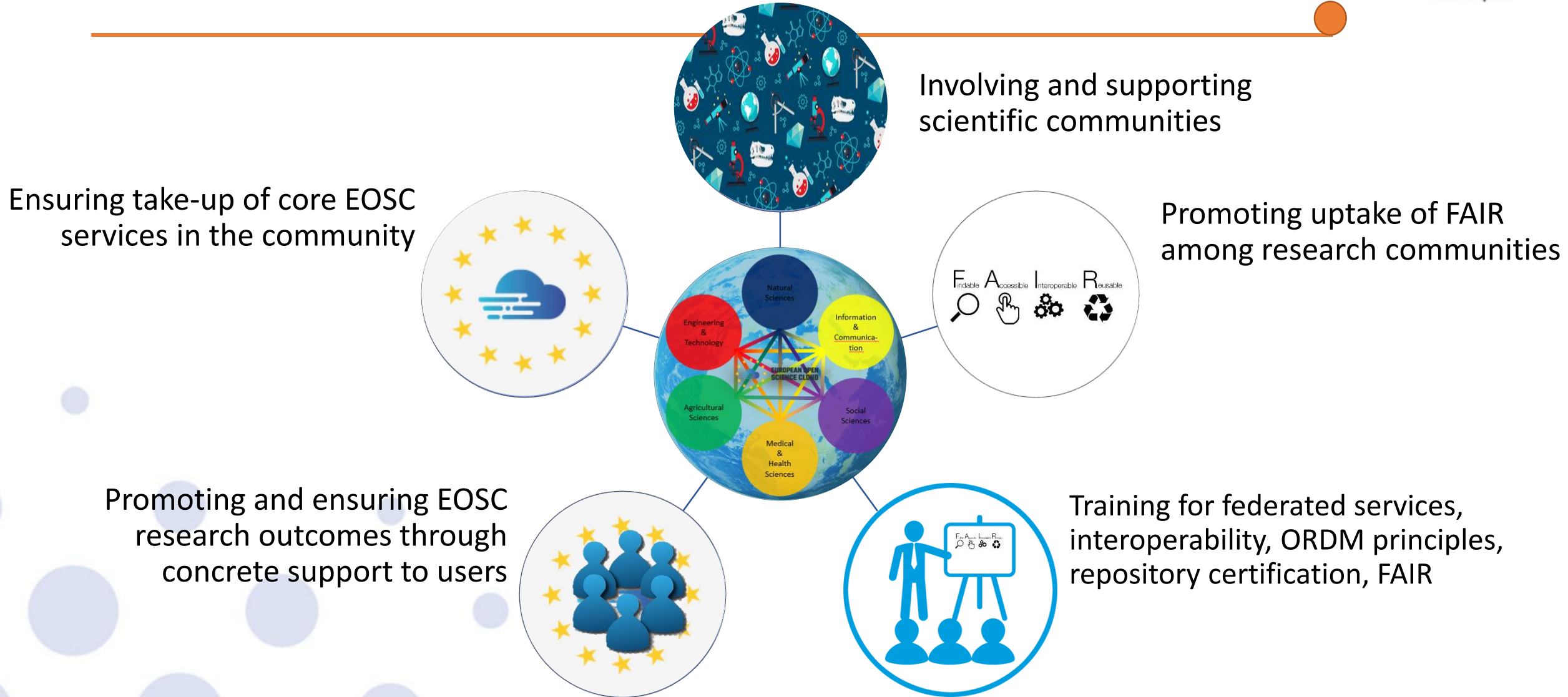


Spread the EOSC and FAIR  
principles in the community and  
train it



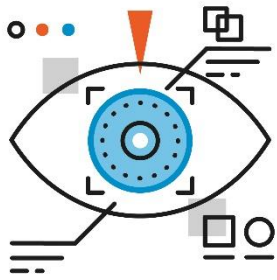


# User engagement, training and demonstrators

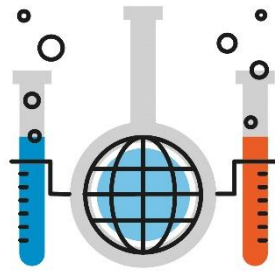


# User engagement, training and demonstrators

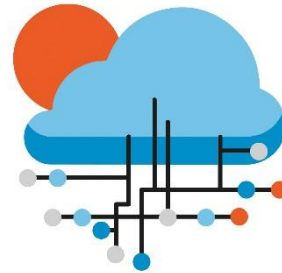
- Training and dissemination material on FAIR and EOSC is translated in all different languages of the NIXOS-Europe area
- Definition of use cases in various scientific fields:



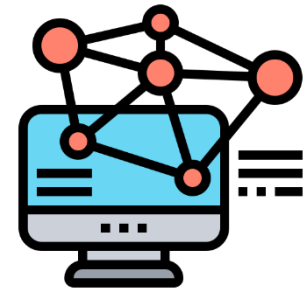
Digital  
Cultural Heritage



Life Sciences



Climate Science



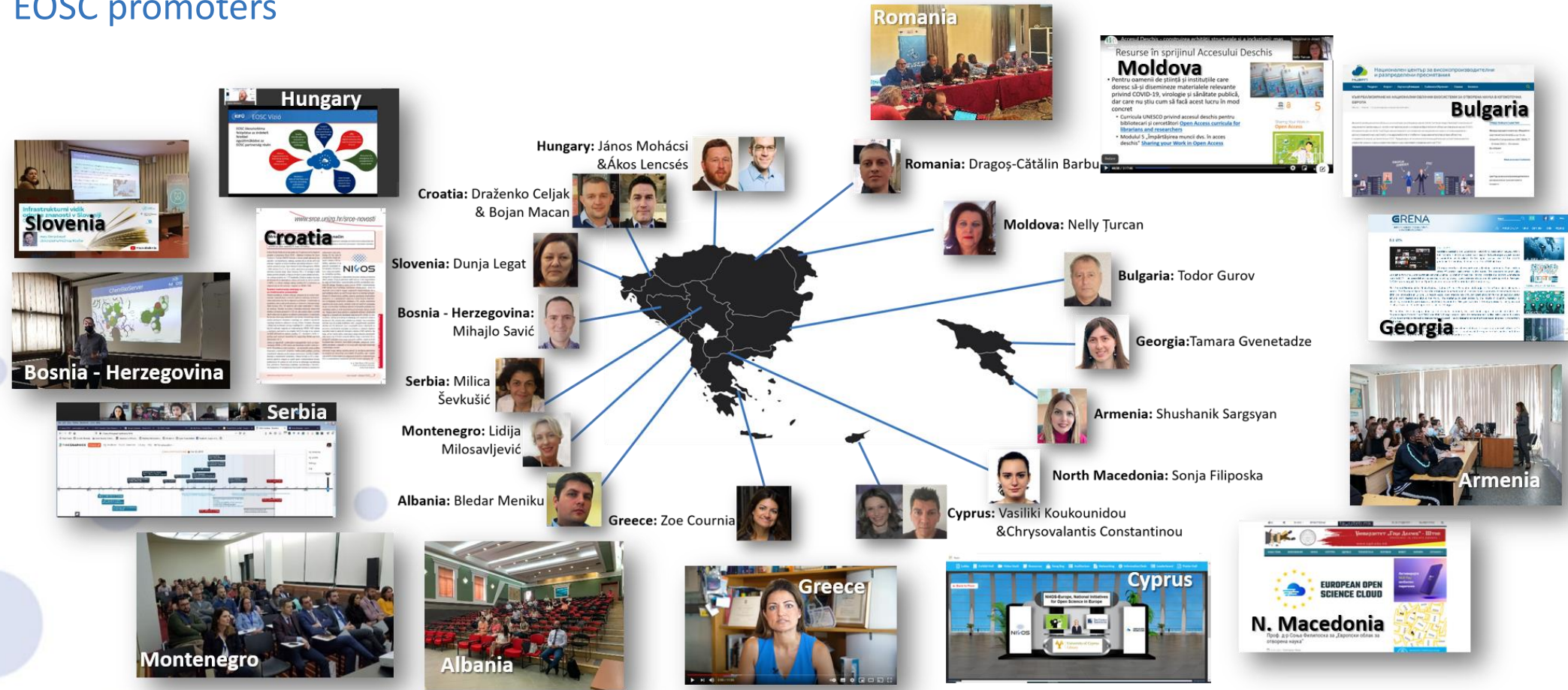
Computational Physics

# Open call for applications

- 
- 21 applications received / 20 applications accepted (after technical and scientific review)
  - Disciplines: Climate (2), Cultural Heritage (4), Computational Physics (8), Life Sciences (5), Other (2)
  - 14 countries including non-SEE Spain, Switzerland, Germany
  - Resource allocation: 3,2m CPU-hours, 115k GPU-hours, 50TB storage, 120 VM cores

# NI4OS-Europe EOOSC promoters

Ambassadors from each country assigned as EOOSC promoters



# NI4OS-Europe training

- Training events
  - 10 train-the-trainers
    - > 500 participants
  - 30 national capacity building and end-users training events
    - > 1500 participants
- Training topics
  - FAIR data principles
  - EOSC promotion
  - ORDM
  - On-boarding
  - IT Service Management



# NI4OS-Europe training platform

Training material on various FAIR & ORDM topics available on the training platform for self-paced learning



Over 800  
users



Over 100  
courses



5 Learning  
Paths



## Learning Paths



### Open Science Fundamentals

Learning path for Open Science Fundamentals that will take you on a training journey across the main topics related to Open Science. Complete the material and pass the final quiz to get the Open Science badge.



### EOOSC/FAIR promotion

This learning path is the starting point for anyone who is interested to understand what EOOSC is and how it can help researchers achieve their goals. It also provides all the necessary material for a better knowledge of FAIR principles.



### ITSM & Service On-boarding

Learning path that takes you through all the necessary information and topics related to IT Service Management and the process of service on-boarding so that you are able to understand how to successfully prepare for the on-boarding...

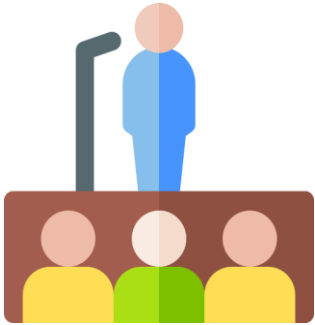
# Communication, marketing, sustainability, innovation

- Strong digital presence
  - [Website](#)
  - [Calendar](#)
  - [Agenda tool](#)
- Events and networking
  - Webinars
  - Workshops
  - Dissemination events
- [Collaboration](#) with the EOSC-5b projects
- [Support](#) the global efforts on [COVID-19](#)



- [Sustainability](#) and [innovation](#)
  - Find solutions for sustainable and long-term impact of project results
  - Manage knowledge and results so as to create added value for different stakeholders

# Dissemination events



23 national events in native language  
more than 1300 participants

Multiple other events held  
and planned

More than 70 presentations  
at national and international  
conferences on ORDM,  
FAIR, EOSC, OS

Reached ~7000 people

NOSCI events

EOSC Governance  
Workshop, Landscaping



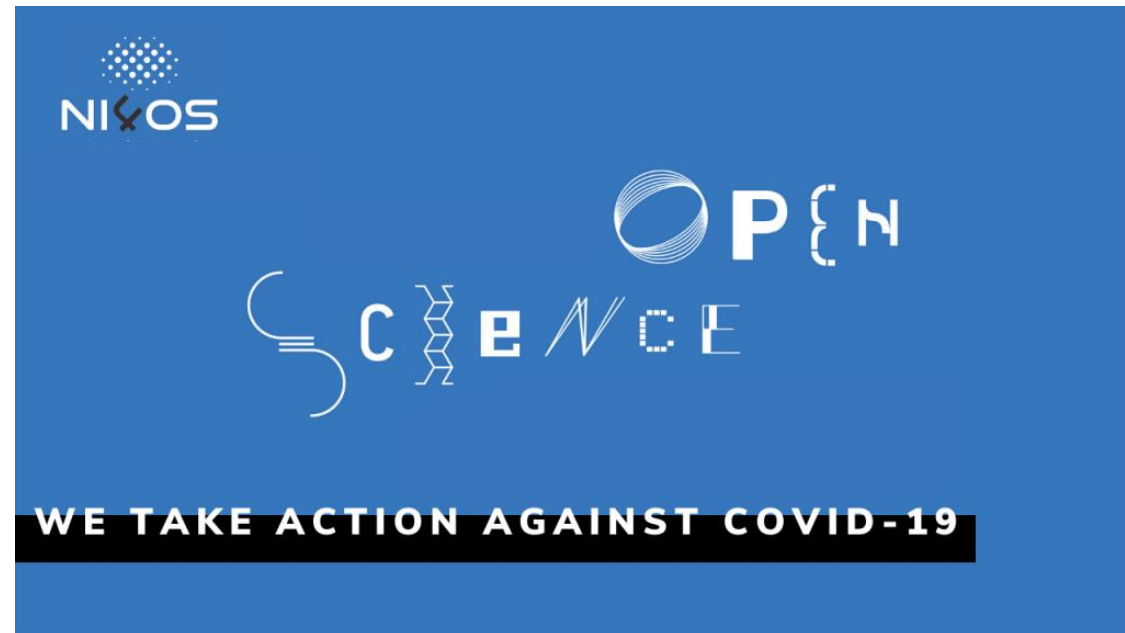


# Support the global efforts on COVID-19

- COVID-19 social media campaign
- [NI4OS-Europe vs COVID-19](#): providing fast track access to services, tools and software for the Scientific communities that perform extensive research to tackle COVID-19
- [NI4OS-Europe Covid19 Wiki](#) : Collection of joint resources in open science related to COVID-19 in SEE

Scientific results:

[“Multi-omics data integration and network-based analysis drives a multiplex drug repurposing approach to a shortlist of candidate drugs against COVID-19”](#)



# NI4OS-Europe brand identity and material



- Logo
- Video
- Brochures
- Presentations
- Newsletters
- Posters and Infographics
- Roll-up banners



# NI4OS-Europe social media campaigns



**EXPLORE**  
NI4OS-Europe Catalogue  
**Thematic Services**

DREAMM is a novel web-based tool that predicts protein-membrane interfaces of peripheral membrane proteins using ensemble machine learning.



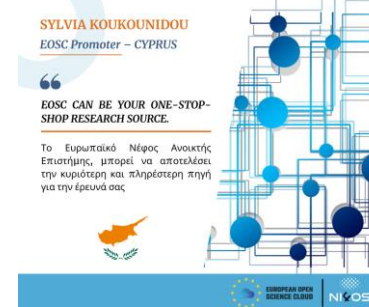
**EXPLORE**  
NI4OS-Europe Catalogue  
**Core Services**

NI4OS-Europe training portal contains material of the project's training events. It also offers self-paced courses on EOSC related topic.



**EXPLORE**  
NI4OS-Europe Catalogue  
**Core Services**

NI4OS-Europe accounting system collects, analyzes & provides information about the usage of services, e.g. IIPC usage, storage data, virtual machines data.



**SYLVIA KOURKOUNIDOU**  
EOSC Promoter – CYPRUS

“  
EOSC CAN BE YOUR ONE-STOP-SHOP RESEARCH SOURCE.”

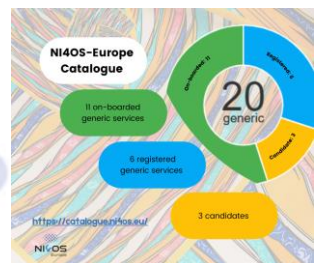
Το Ευρωπαϊκό Νέφος Ανακτής Επιστήμης, μπορεί να αποτελέσει την καλύτερη και πληθέστερη πηγή για την έρευνά σας



**MILICA ŠEVKUŠIĆ**  
EOSC Promoter – Serbia

“  
EOSC PROVIDES GUIDANCE AND FRAMEWORK FOR THE DEVELOPMENT AND INTEGRATION OF SOUND AND SUSTAINABLE INFRASTRUCTURE.”

EOSC nudi smernice i okvir za razvoj stabilne i održive infrastrukture.



**NI4OS-Europe Catalogue**

- 11 on-boarded generic services
- 9 registered generic services
- 3 candidates
- 20 generic

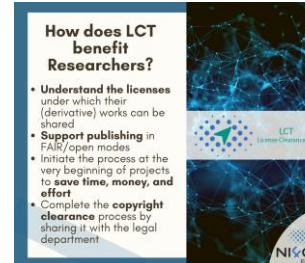
<https://catalogue.ni4os.eu/>



<https://catalogue.ni4os.eu/>

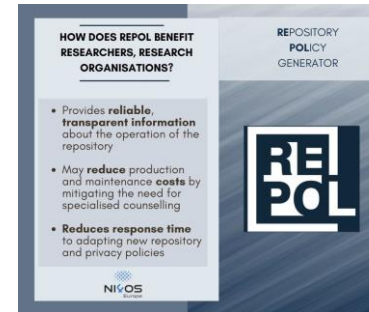
**VideoLectures.NET**

VideoLectures.NET is an award-winning free and open access educational video lectures repository. The lectures are given by distinguished scholars and scientists at the most important and prominent events like conferences, summer schools, workshops and science promotional events from many fields of science. All lectures, accompanying documents, information, and links are systematically selected and classified through the editorial process, taking users' comments into account.



**How does LCT benefit Researchers?**

- Understand the licenses under which their (derivative) works can be shared
- Support publishing in FAIR/open modes
- Initiate the process at the very beginning of projects to save time, money, and effort
- Complete the copyright clearance process by sharing it with the legal department



**HOW DOES REPOL BENEFIT RESEARCHERS, RESEARCH ORGANISATIONS?**

- Provides reliable, transparent information about the operation of the repository
- May reduce production and maintenance costs by mitigating the need for specialised counselling
- Reduces response time to adapting new repository and privacy policies

REPOSITORY POLICY GENERATOR

**REPOL**



**WHAT GAPS DOES ROLECT AIM TO ELIMINATE?**

The Rules of Participation (RoP) shall embrace the principles of openness, transparency, and inclusiveness. They shall guarantee an open, secure, and cost-effective federated EOSC with services of documented quality while leaving room for differentiating the rules to apply to different EOSC users. Based on this, NI4OS-Europe developed the RoLECT tool that allows the providers of different resources to the EOSC ecosystem to ensure their compliance with the key legal and ethical aspects of the respective RoP.



**16**  
REPOSITORIES

**14**  
HPC CLOUD, DATA STORAGE AND DATA PROCESSING SERVICES

**21**  
APPLICATION-SPECIFIC SERVICES FOR CLIMATE, DIGITAL CULTURAL HERITAGE, LIFE SCIENCES, COMPUTATIONAL PHYSICS AND OTHER DISCIPLINES

**APPLY for free access**  
NI4OS-Europe Open Call  
[ni4os.eu/access/opencall](https://ni4os.eu/access/opencall)



**OPEN CALL**  
powered by NI4OS-Europe

Are you having queries about your application?

**CONTACT US!**  
[service-access@ni4os-europe.eu](mailto:service-access@ni4os-europe.eu)



**OPEN CALL**  
powered by NI4OS-Europe

**TRAINING MATERIAL**  
Now available on NI4OS-Europe training platform

- Objectives | Generic services |
- Thematic services: Life Sciences, Climate Research, Digital Cultural Heritage, Computational Physics |
- Open science principles to comply with |
- How to fill in the application form |

# A continuing effort of regional development

- Regional service platform of different technologies built over the last 20 years with a number of projects, used by cross-border communities
- Springboard for joining wider EC initiatives + being more inclusive
- More focused and efficient for the region than large pan-EU initiatives where smaller countries lose their voice





# Conclusion

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- These initiatives are pieces of the puzzle to sustain regional R&D, R&E, ICT development
  - Increasing the retention of talented scientists and engineers in the region
  - Easing the digital divide between the region and rest of EC
  - Making available the benefits of Information Society and Open Science for all citizens
  - Pursuing joint R&D efforts among countries in the region
  - Regional political stability and cohesiveness

# Thanks!

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NI4OS



NI4OS\_eu



NI4OS.eu



Join NI4OS-Europe Community:

<https://ni4os.eu/contact-us>