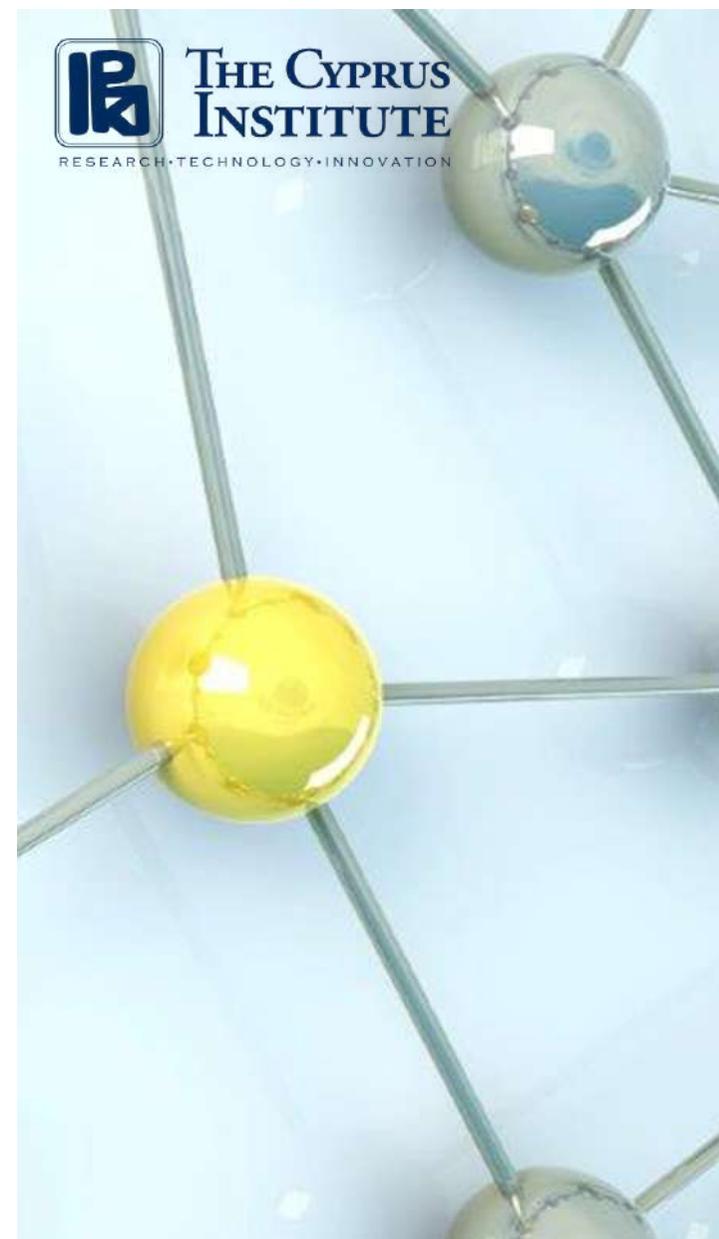




## National Initiatives for Open Science in Europe

### NI4OS-Europe and the NI4OS-Europe service catalogue

Dr. Andreas Athenodorou,  
The Cyprus Institute,  
NI4OS-Europe WP6 leader  
 0000-0003-4600-4245



# European Open Science Cloud



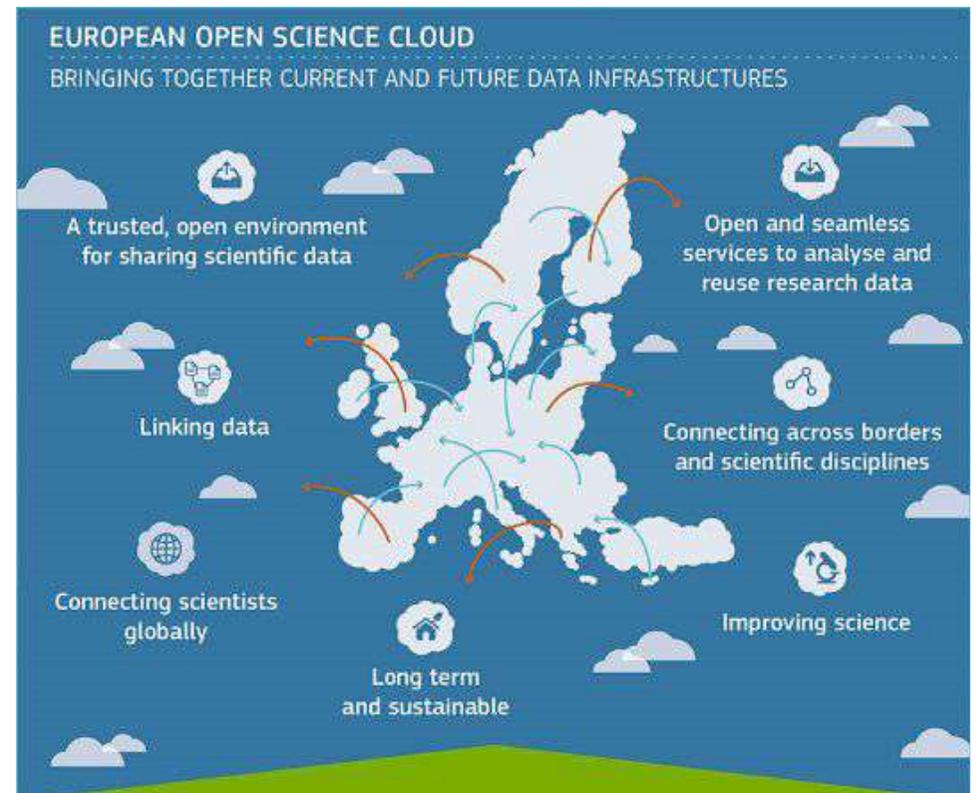
EUROPEAN OPEN  
SCIENCE CLOUD



## Vision

To ensure that European scientists enjoy the full benefits of data-driven science, by offering “1.7 million European researchers and 70 million professionals in science and technology a virtual environment with free at the point of use, open and seamless services for storage, management, analysis and re-use of research data, across borders and scientific disciplines”

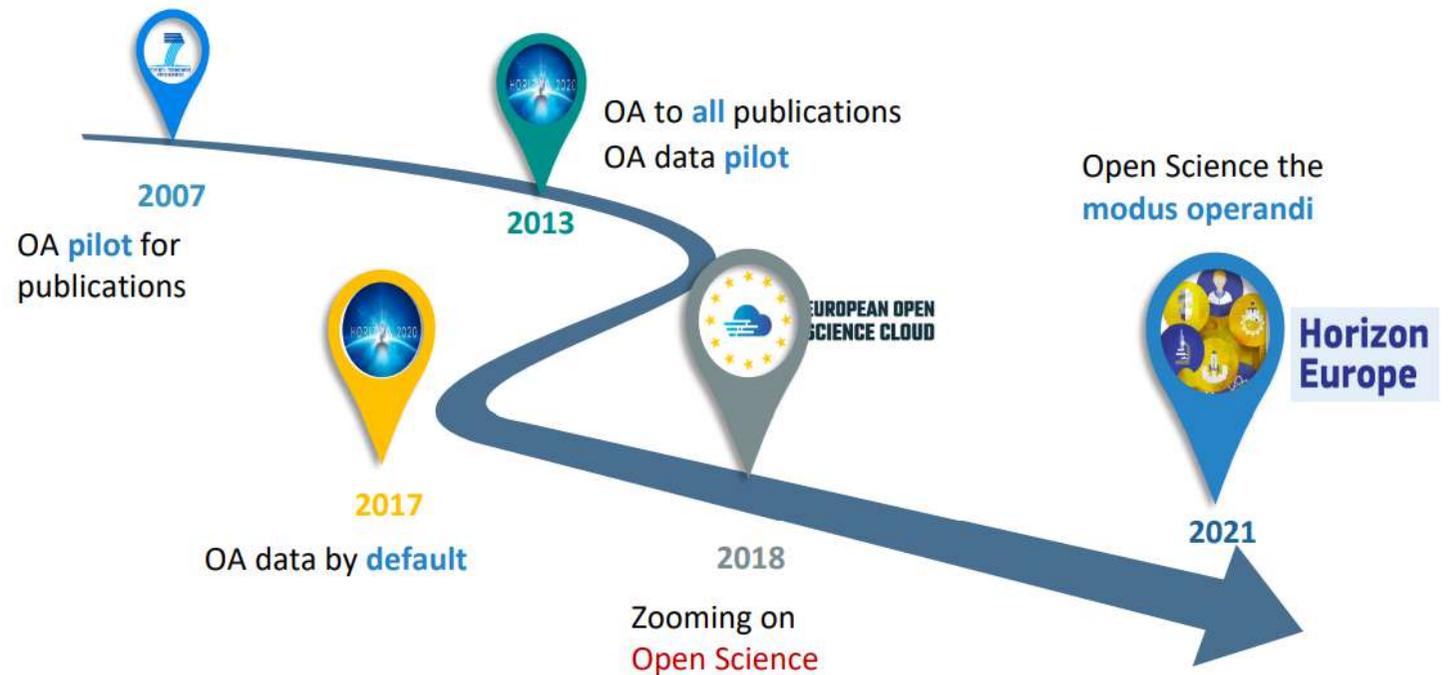
2016 Communication on the “European Cloud Initiative”



# The route to Open Science



“As open as possible, as closed as necessary”, following the FAIR principles and well-documented processes of data handling and reuse



# NI4OS-Europe



15 Member States and Associated Countries | 22 Partners



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

Participating countries



# Partnership building blocks



# Mission of NI4OS-Europe

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**Support** the **development and inclusion** of the national Open Science Cloud (OSC) initiatives in 15 Member States and Associated Countries in the overall scheme of EOSC governance



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



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

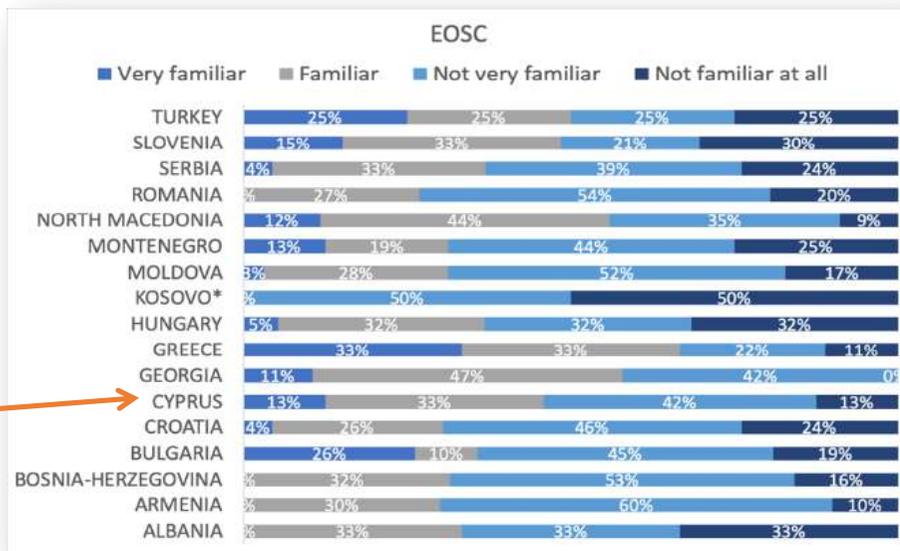
## Lines of action



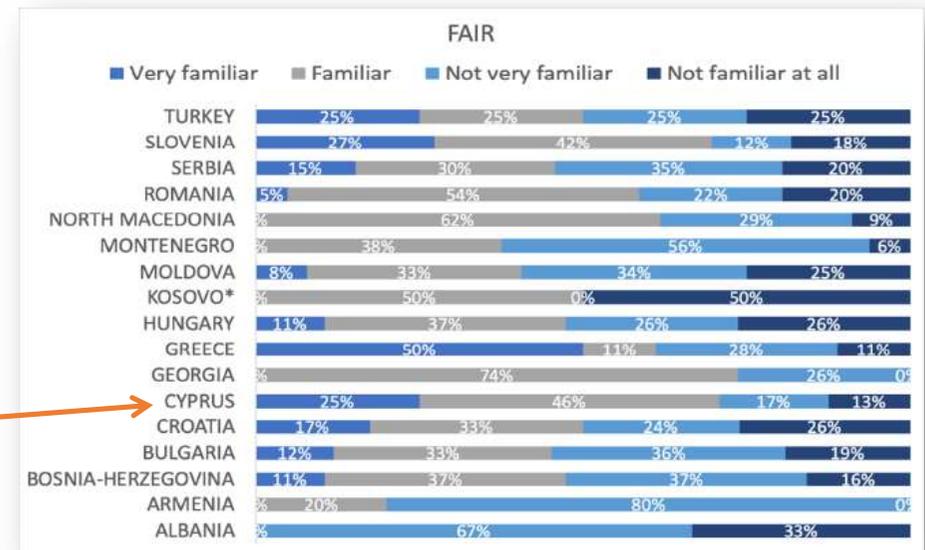
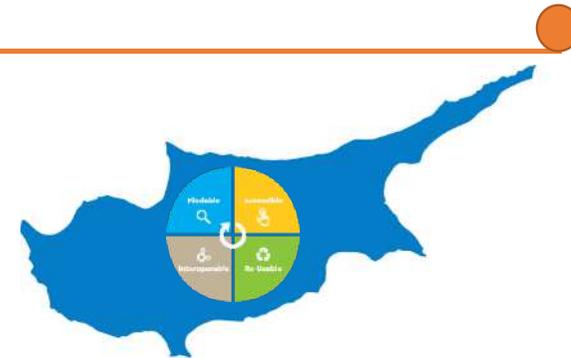
Support the development and inclusion of the **National Open Science Cloud Initiatives** in 15 Member States and Associated Countries in the overall scheme of **EOSC governance**

---

# NI4OS-Europe Survey



Cyprus



Cyprus

# EOSC national initiatives & policy support

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Support the EOSC Governance structure by forming in partner countries

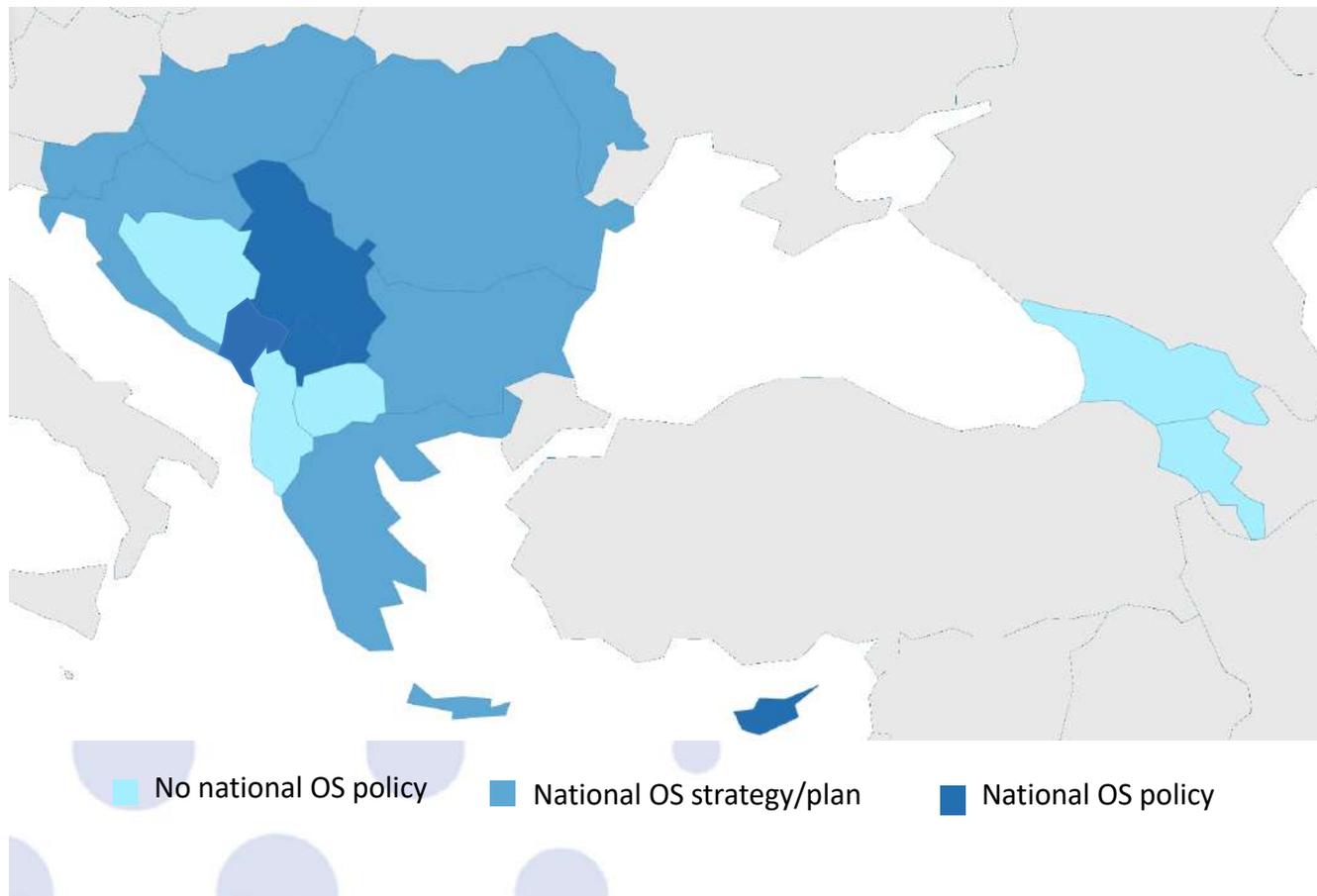
Support the building of sustainable governance by engaging the national initiatives

Provide **support and interface** to other EOSC-relevant bodies

Reduce **fragmentation** and promote federation on national level

Prepare the ground for EOSC **on-boarding**

# Landscaping: National Open Science policies

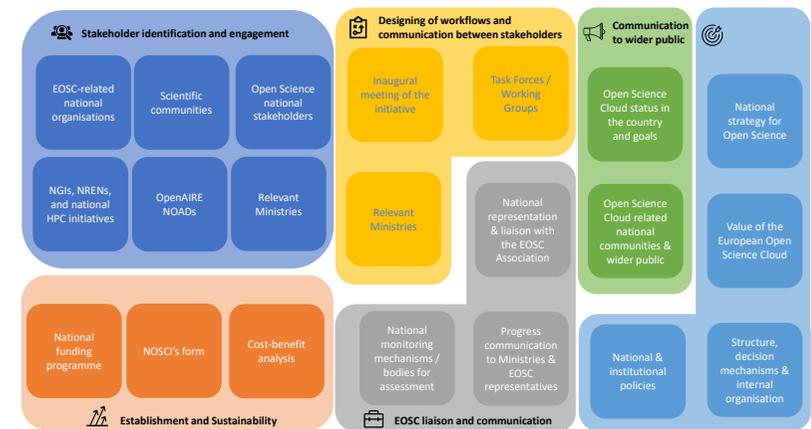
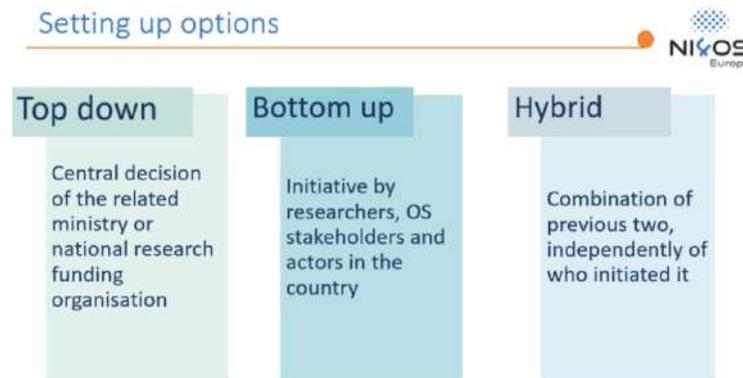


3 different levels in the region:

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

# NI4OS Toolbox for supporting NOSCI

## Setting up options



## NOSCI setup toolbox

- Modular methodologies & workflows
- Assessment & monitoring
- Operational aspects & sustainability
- Explanatory video guiding through the different setup options
- Workshops, trainings, checklists



## Lines of action

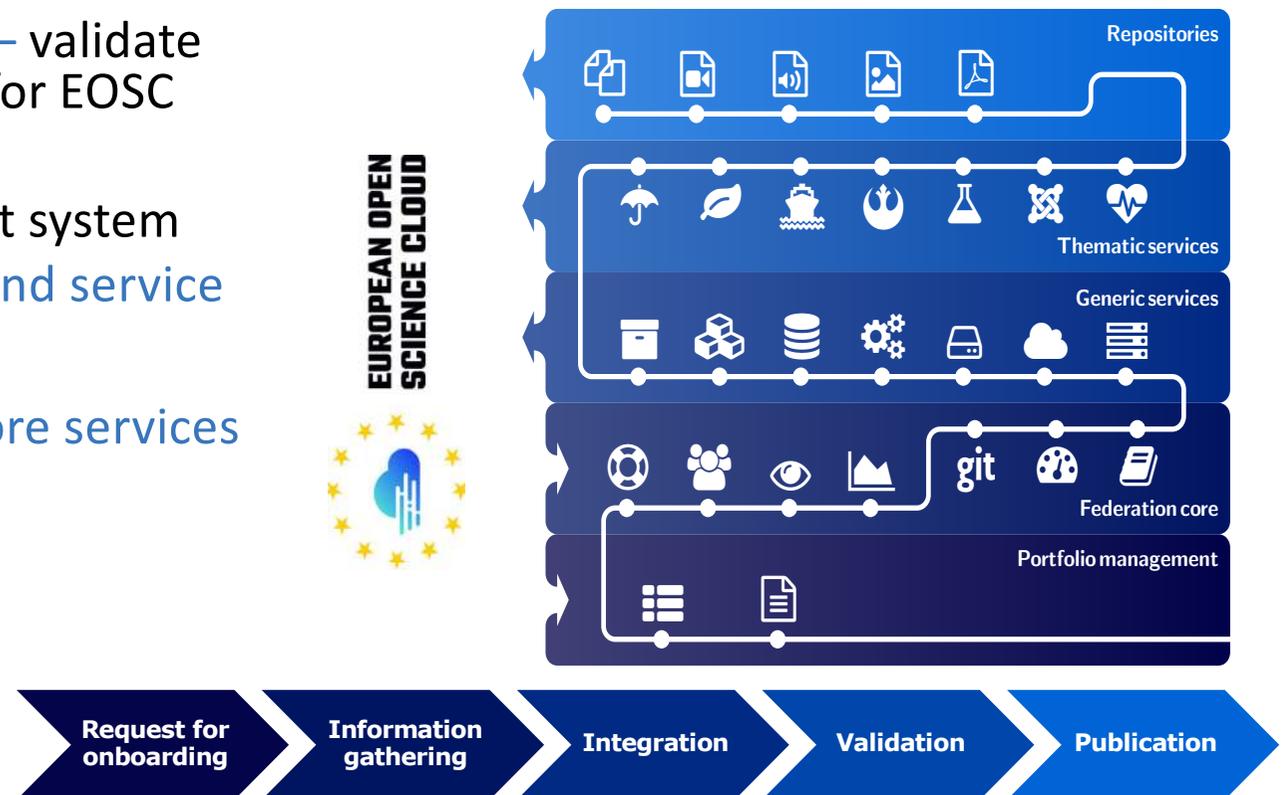


Provide **technical and policy support** in **on-boarding** of the existing and future service providers **into EOOSC**

---

# Service integration and onboarding

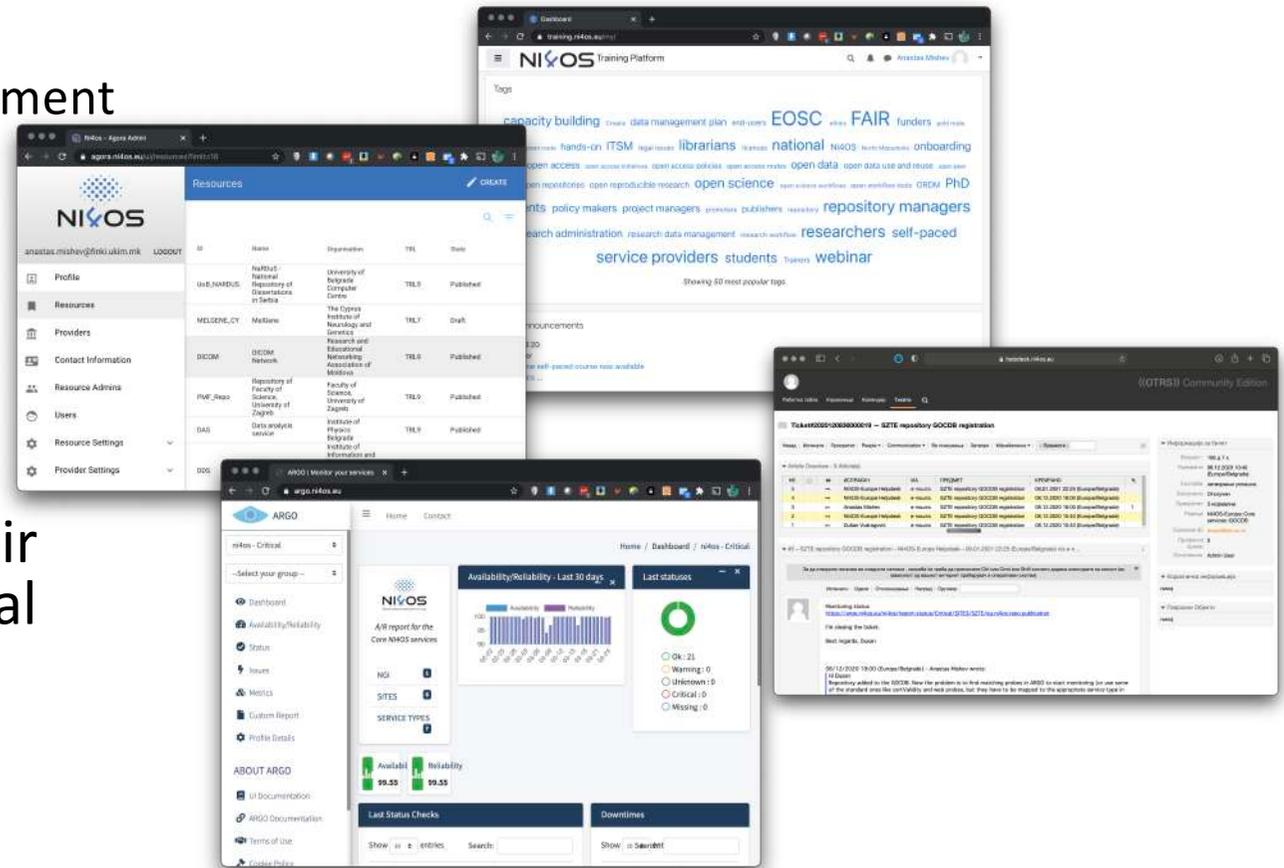
- Pre-production environment – validate readiness and maturity level for EOSC onboarding
- Service portfolio management system based on the EOSC provider and service profile
- Integration with federation core services
- Service categorization
- Onboarding of
  - generic services
  - thematic services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



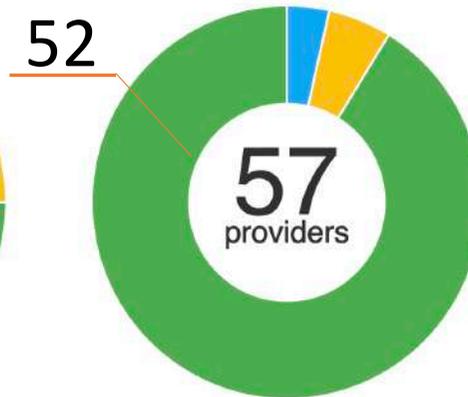
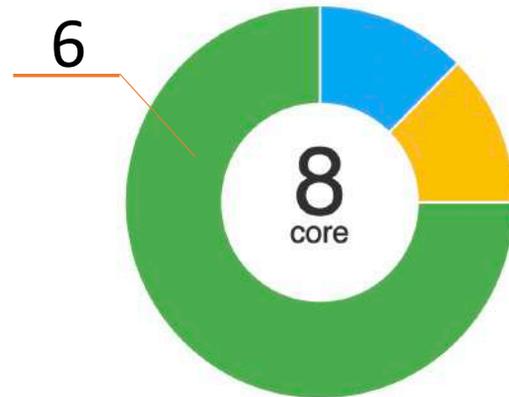
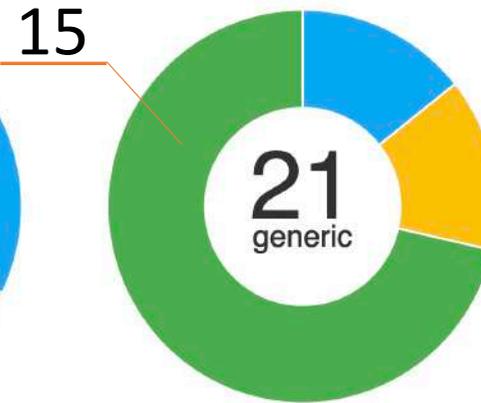
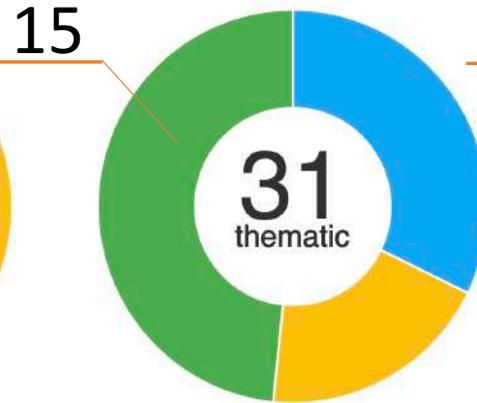
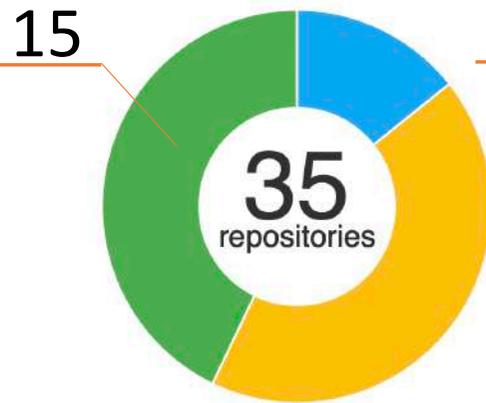
# NI4OS-Europe pre-production environment



- Federating core
  - Service catalogue management system (AGORA)
  - AAI
  - Helpdesk
  - Monitoring
  - Accounting
- Enabling regional service providers to integrate their resources through regional support



# On-boarded resources/providers



# The NI4OS-Europe Service Catalogue

- EOSC-compatible on-boarding procedure
- Fully compatible with the latest EOSC profile specification
- Technical integration with the central EOSC catalogue achieved
- Monitoring of the on-boarding process



# NI4OS-Europe generic services

## □ HPC Resources

□ CPU



□ GPU



□ Xeon Phi



## □ Cloud Virtual Machines



## □ Generic Storage



□ Data management services (Archival, Repository, Data discovery, Hadoop on-demand, Data analysis service, Simple storage)



# NI4OS-Europe generic services



CYI Cyclone ~600 TFlop/s

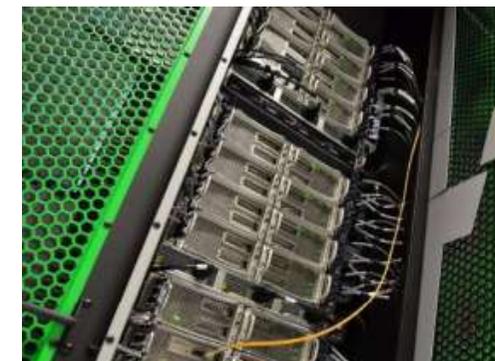


ARIS GRNET ~400 TFlop/s

IICT-BAS AVITOHOL ~ 400 TFlop/s



IPB PARADOX IV ~100 TFlop/s



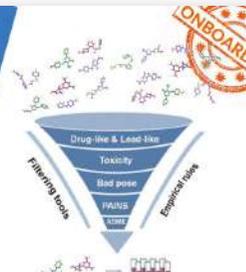
LEO(KIFU) ~250 TFlop/s

# On-boarded life Science thematic services

**EXPLORE**  
NIXOS Europe  
NI4OS-Europe Catalogue

**Thematic services**

ChemBioServer is a publicly available web application for effectively **filtering and clustering chemical compounds** used in drug discovery.



**ONBOARDED**

**EXPLORE**  
NIXOS Europe  
NI4OS-Europe Catalogue

**Thematic services**

NanoCrystal is a novel web-based **crystallographic tool** for the construction of nanoparticles from any material crystal structure.



**ONBOARDED**

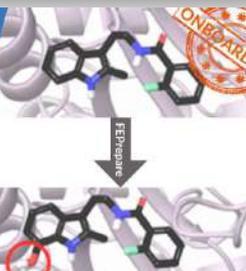
# REVIGO

reduce + visualize Gene ontology

**EXPLORE**  
NIXOS Europe  
NI4OS-Europe Catalogue

**Thematic services**

FEPPrepare is a webserver, which automates the set-up procedure for performing **NAMD/FEP simulations**.



**ONBOARDED**

Unique proprietary scientific algorithms & scoring function

**Ingredio**

Level of hazard per ingredient\*



\* Information sourced from institutional databases

PubChem, OpenAPIE, CASREACT

**EEGHUB**

Normal and pathological brainwave electrical activity recording, registered with the background activity and functional samples of EEG

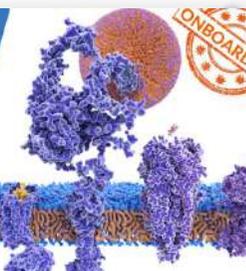
Manual Contact EDPbrowser (teuniz.net)

GEO

**EXPLORE**  
NIXOS Europe  
NI4OS-Europe Catalogue

**Thematic services**

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



**ONBOARDED**

**DICOM Network**



**ON-BOARDED**

**OpenBioMaps Consortium**

Egyetem tér 1. , 4032 Debrecen, Hungary (HU)

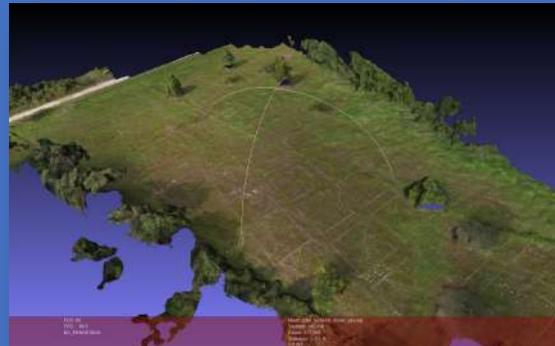


**The MelGene Database**

Field Synopsis of Genetic Association Studies in Cutaneous Melanoma

# On-boarded DCH thematic services

## CHERE



## SexEst

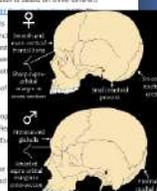


**SexEst: A sex estimation web-application (beta)**

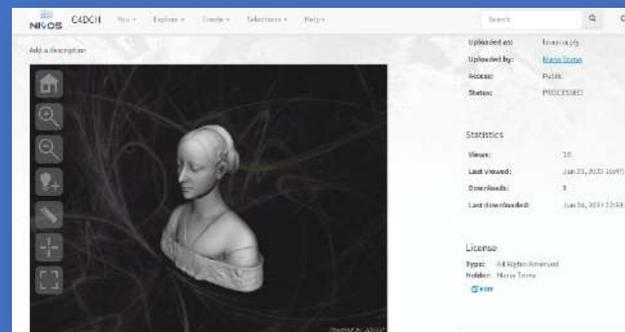
Welcome to SexEst, a free, interactive, web-application designed to estimate sex using cranial (postcranial) linear measurements. Users can either upload manually the measurements for single skeletons or upload data for multiple skeletons stored in a CSV file. Sex estimation is based on three different machine learning classification algorithms: [Linear Discriminant Analysis \(LDA\)](#), [Linear Support Vector Machine \(SVM\)](#) and [Logit](#) (using [LogitBoost](#)). Used in these machine learning classifiers are the William W. Howells craniofacial dataset (Howells measurements and the Smithsonian dataset, Uwebach and Pfeil 2004, 2006) for postcranial measurements. Both datasets are from various geographic locations during throughout the Holocene, hence they represent several broad geographic areas and for interpopulation variability in sexual dimorphism. SexEst can generate a prediction even when a single variable is given on highly fragmented results or scenarios where not all measurements can be accurately obtained due to pathological or of instructions on how to use SexEst can be found by pressing the **How to** button, while the contact details of the creators of producing the **Contact** button.

SexEst was supported by the NIVOS Europe project, funded by the European Commission under the Horizon 2020 European grant agreement no. 803845. Its development was co-funded by the Compton Regional Development Fund and the He Research and Innovation Foundation (Project: EXCELLENCE1203023). This project has also received funding from the ES Research and Innovation Program under the grant agreement no. 811066.

**Disclaimer:** This application is freely provided as an aid for skeletal sex estimation. The authors hold no responsibility for the creation we try to ensure that the software is theoretically grounded and statistically accurate, we provide no warranty and the user must be aware of the limitations of the software.



## DCH Clowder



NIVOS Clowder

Uploaded as: [bust-18.jpg](#)

Uploaded by: [Emanuele](#)

Access: Public

Status: PROCESSED

Statistics

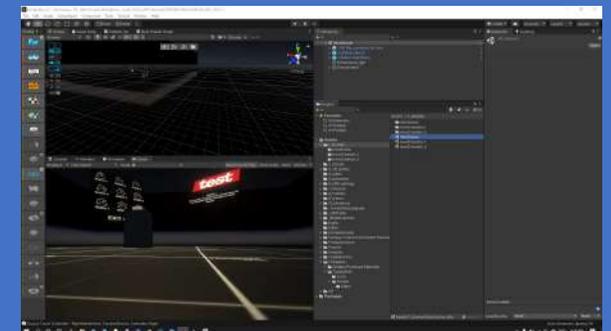
Views:	10
Last viewed:	Jan 23, 2022 10:07:46
Downloads:	3
Last downloaded:	Jan 24, 2022 12:53:56

License

Type: All Rights Reserved

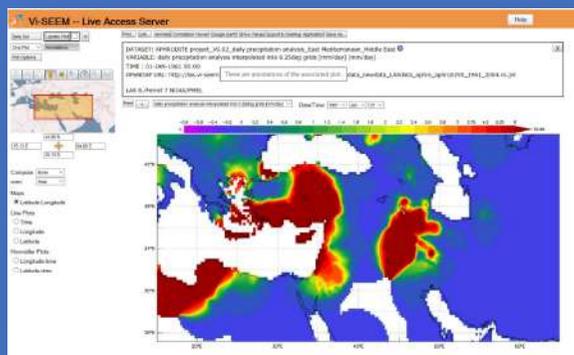
Hidden:  Hide Terms

RII

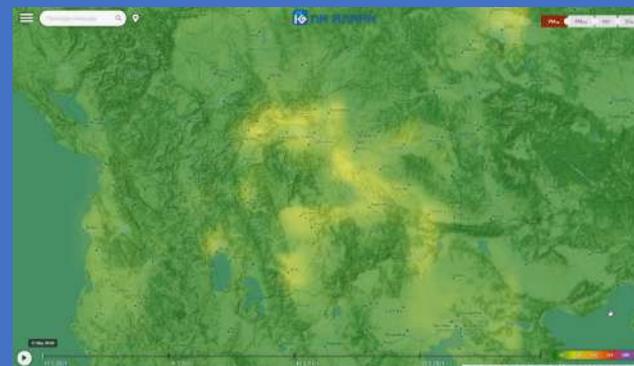


# On-boarded Climate thematic services

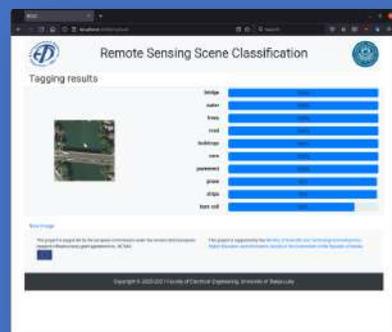
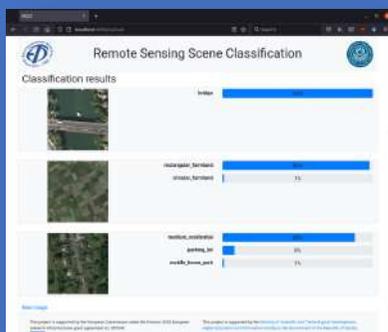
## Live Access Server



## Airquality



## Remote Sensing Scene Classification



## OMApp

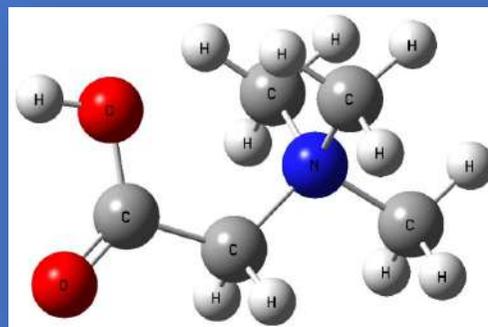


# On-boarded Computational Physics thematic services

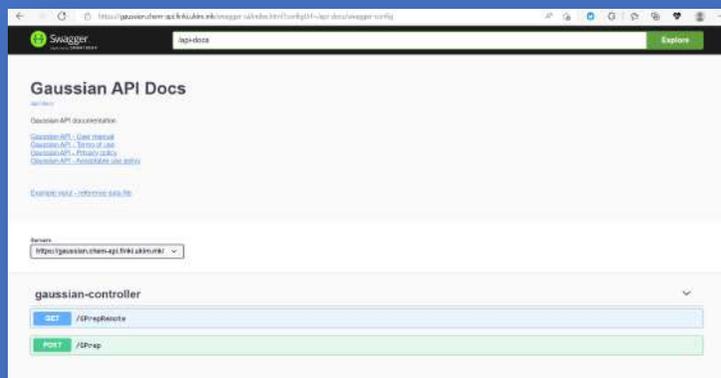
## Schrödinger API



The screenshot shows the Swagger UI for the Schrödinger API. The page title is "Schrödinger API Docs". Below the title, there is a "Server" dropdown menu set to "https://schrodinger.com/api/19k/uk/en/". Underneath, the "schrodinger-controller" is listed with two endpoints: a GET request to "/api/remote" and a GET request to "/api/remote/force".



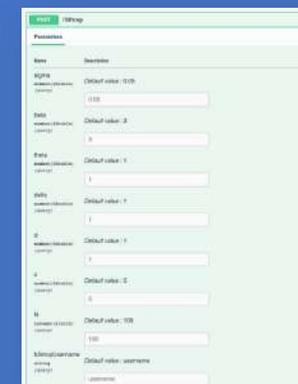
## Gaussian API



The screenshot shows the Swagger UI for the Gaussian API. The page title is "Gaussian API Docs". Below the title, there is a "Server" dropdown menu set to "https://gaussian.com/api/19k/uk/en/". Underneath, the "gaussian-controller" is listed with two endpoints: a GET request to "/api/remote" and a POST request to "/api/remote".



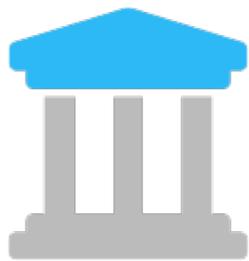
The screenshot shows the execution interface for the Gaussian API. It features a "file" input field with the value "reference\_data3.xyz" and a "Choose File" button. Below the input field is a "Send empty value" checkbox. A blue "Execute" button is positioned below the input field. The "Server response" section shows a "Code" of 200 and a "Response body" containing the text "Files were successfully uploaded to b2drop."



The screenshot shows the parameters form for the Gaussian API. It contains a table of parameters with their respective default values and input fields. The parameters are:

Parameter	Default Value
alpha	0.05
beta	0
gamma	0
delta	0
epsilon	0
zeta	0
eta	0
theta	0
iota	0
kappa	0
lambda	0
mu	0
nu	0
xi	0
omega	0
psi	0
phi	0
chi	0
psi	0
omega	0
xi	0
eta	0
theta	0
iota	0
kappa	0
lambda	0
mu	0
nu	0
xi	0
omega	0
psi	0
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chi	0
psi	0
omega	0
xi	0
eta	0
theta	0
iota	0
kappa	0
lambda	0
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# EOSC candidate repositories: actions



## National

- Type of repository (CRIS, registry, database, etc)
- Maturity (in beta vs in production; maintenance, software versions)
- Types of content/ data (literature, data, OER, digitisations, etc)
- Services integrated (internal vs external; PIDs etc)
- Best practices adoption (Open & FAIR, policy, training)

- Enhance discoverability (indexed by registries)
- Contribute to OpenAIRE/ EOSC Research Graph (OpenAIRE compatibility; information contextualisation)
- Enrich collections (Broker)
- Certification (in collaboration with FAIRsFAIR)



## Institutional

45 candidates  
Certification  
NOADs cooperation

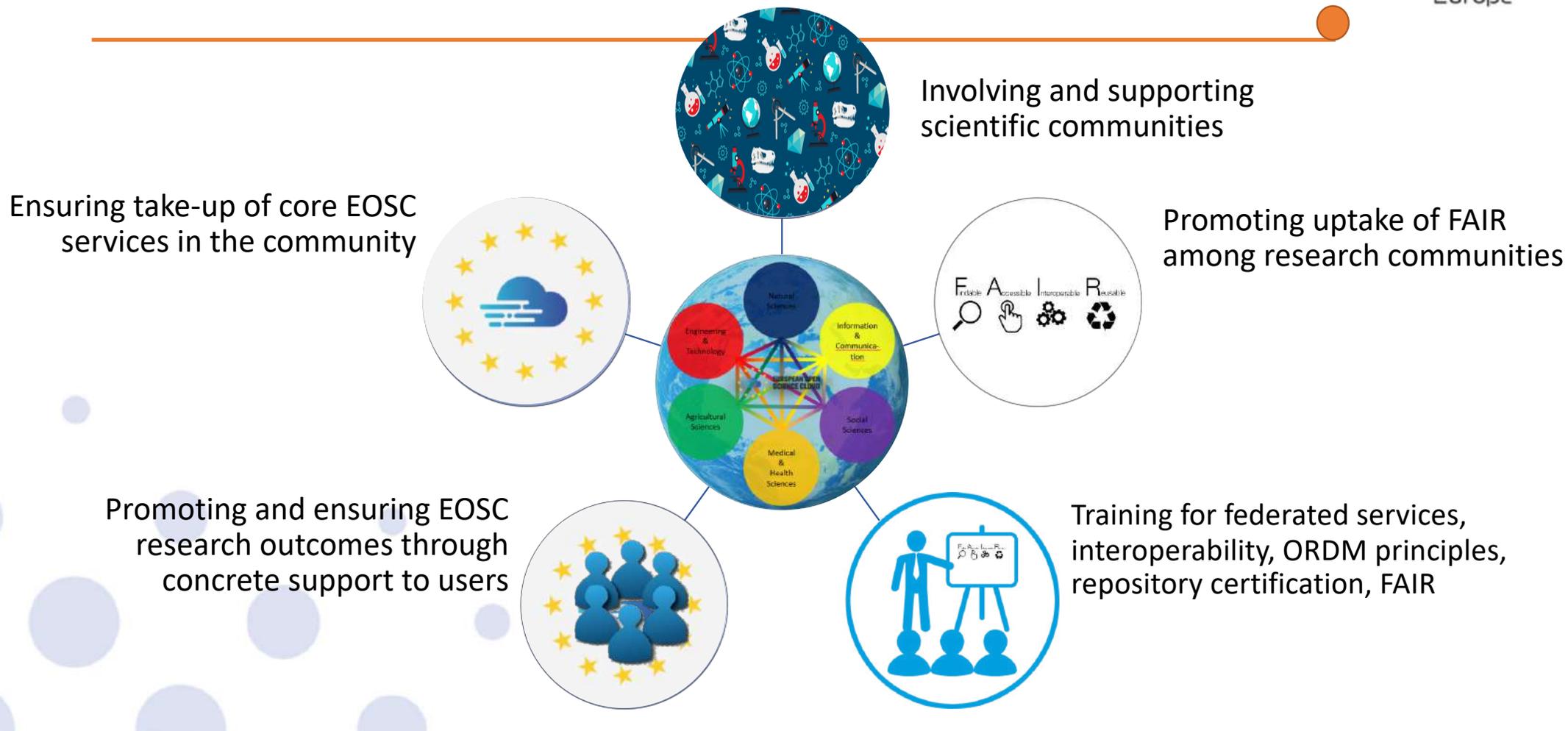
## Lines of action



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



# User engagement, training and demonstrators

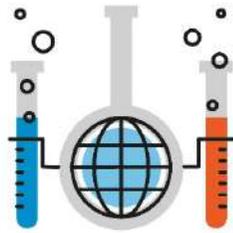


# User engagement, training and demonstrators

- Training materials available
- Definition of use cases in various scientific fields:



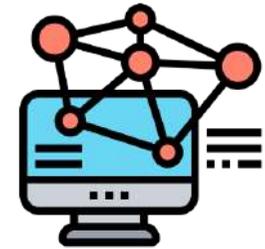
Digital  
Cultural Heritage



Life Sciences



Climate Science



Computational Physics

# Support to EOSC service & FAIR uptake in communities

- Ambassadors from each country assigned as **EOSC promoters**
- **Training** and dissemination **material** for **FAIR** and **EOSC** service uptake is available in all different languages of the NI4OS-Europe area
- **Webinars** for disseminating EOSC and FAIR principles in each country





# 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
  - Open Research Data Management (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

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



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...

# 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”](#)

# Support Researchers through Open Call



## OPEN CALL

**OPEN 11 April 2022**

**CLOSE 11 May 2022**

**GAIN ACCESS**

to EOSC on-boarded NI4OS-Europe services

APPLY



# Thanks!

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Join NI4OS-Europe Community:  
<https://ni4os.eu/contact-us>

National Initiatives for Open Science in Europe – H2020 Research and Innovation action – contract no. 857645