

NI4OS-Europe activities
to support partner's countries enabling EOSC

Workshop

**“Internationalization of the Armenian Science:
Challenges and Solutions”**

CSIT-2021

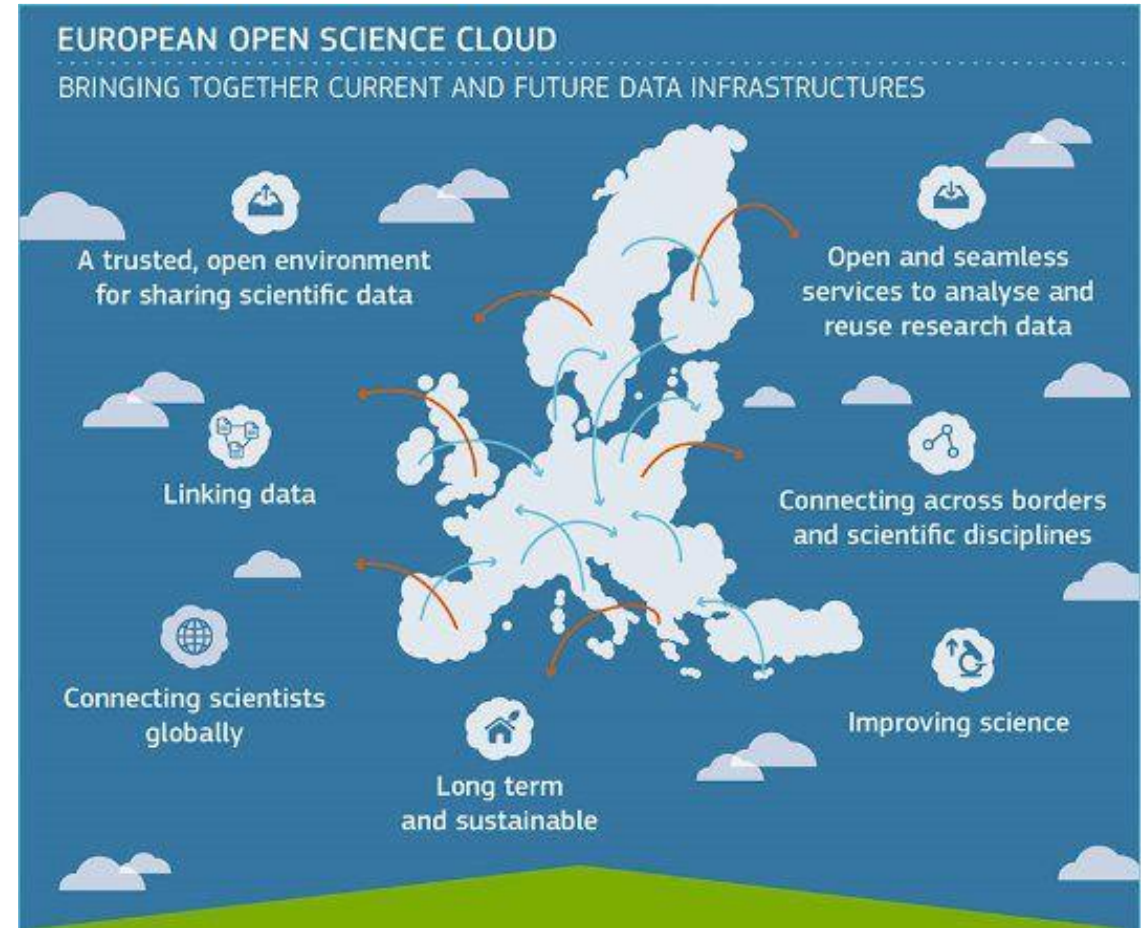
Dr. Ilias Papastamatiou

GRNET – National Infrastructures for Research and Technology



EOSC Vision

To ensure that European scientists reap 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.

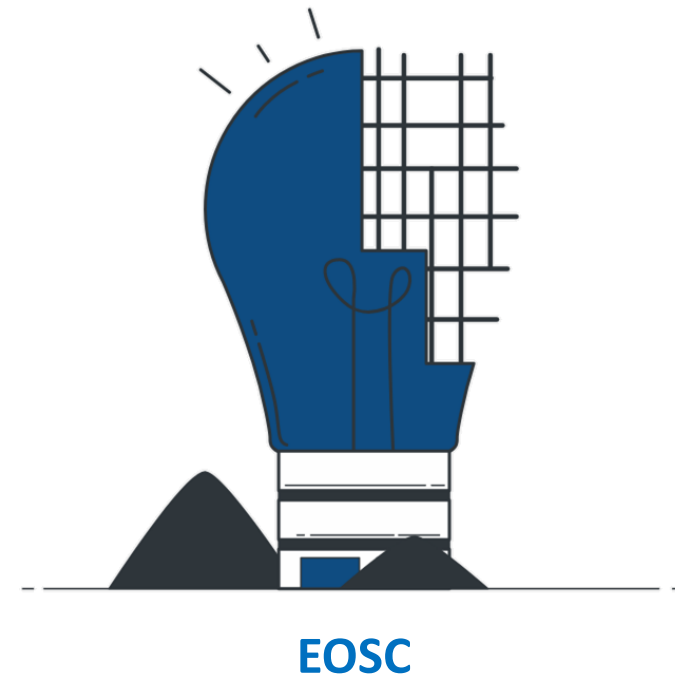


How to engage:

- ✓ Generic service providers
- ✓ Thematic services
- ✓ Repository operators
- ✓ Data providers
- ✓ Scientists and researchers

How to ensure:

- ✓ Geographical coverage
- ✓ Inclusion of less-developed regions





INFRAEOSC 5b
EOSC Projects
Collaboration Agreement

NI4OS-Europe

National Initiatives for
Open Science in Europe

Project website	https://ni4os.eu
Start date	01-09-2019
End date	31-08-2022
Countries	Albania, Armenia, Bosnia-Herzegovina, Bulgaria, Croatia, Cyprus, Georgia, Greece, Hungary, Moldova, Montenegro, North Macedonia, Romania, Serbia, Slovenia
Coordinator	GRNET S.A. – National Infrastructures for Research and Technology S.A. (Greece)
Contact e-mail	ni4os-europe-po@ni4os-europe.eu
Size	22 Partners
Social Media	Twitter: @ni4os_eu Facebook: @NI4OS Instagram: @ni4os.eu



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

Participating countries

























15 Member States and Associated Countries | 22 Partners

Commit to **EOSC governance**

Be a core contributor to the **EOSC service portfolio**

Ensure **inclusiveness** on the European level

Partnership

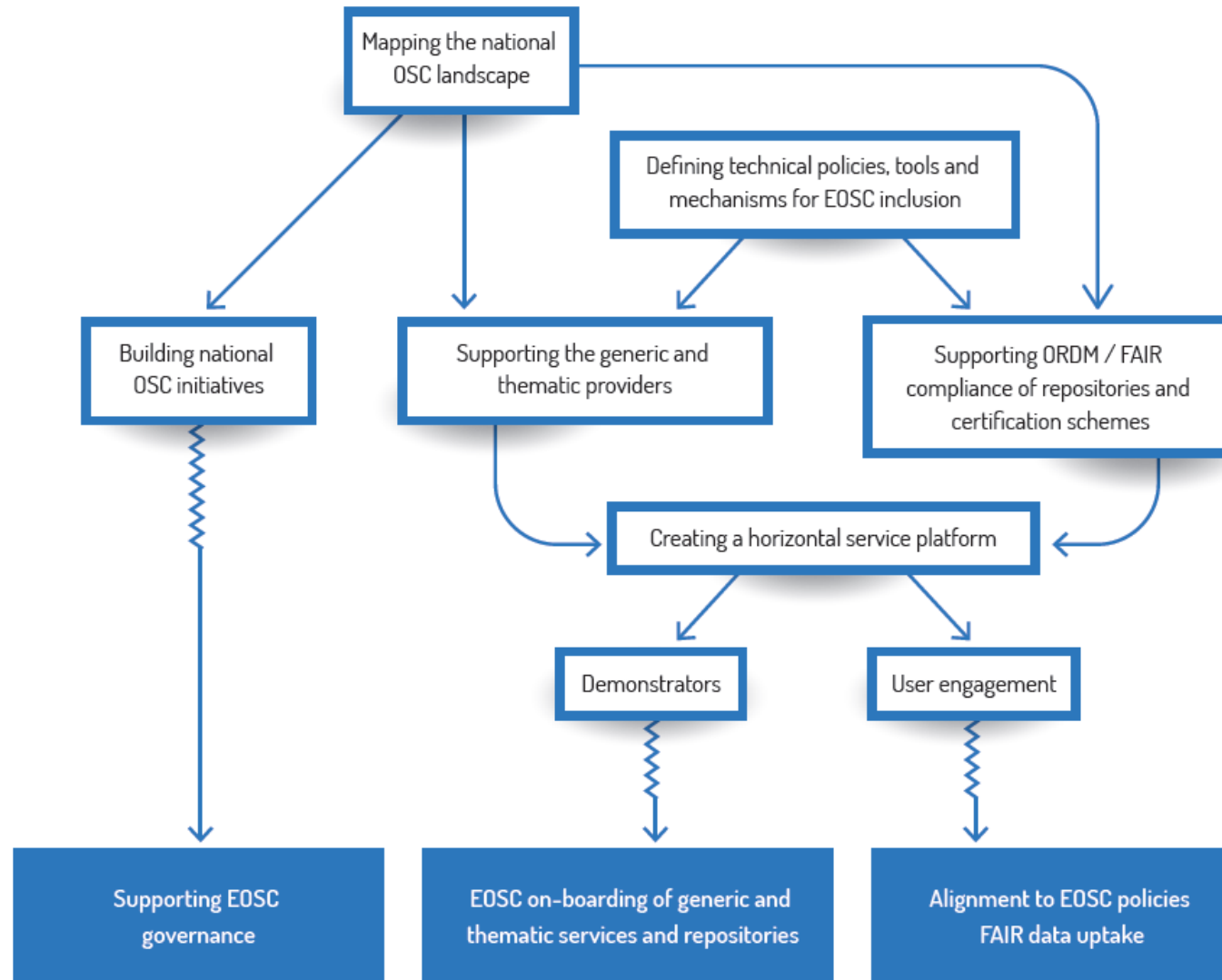
1	National Infrastructures for Research and Technology SA	GRNET	Greece				
2	Athena Research & Innovation Center	ATHENA	Greece				
3	The Cyprus Institute	CYI	Cyprus				
4	University of Cyprus	UCY	Cyprus				
5	Institute of Information and Communication Technologies	IICT	Bulgaria				
6	SRCE – University of Zagreb, University Computing Centre	SRCE	Croatia				
7	Ruđer Bošković Institute	RBI	Croatia				
8	Governmental Agency for IT Development	KIFU	Hungary				
9	University of Debrecen	UD	Hungary				
10	National Institute for Research and Development	ICI	Romania				
11	Executive Agency for Higher Education, Research, Development & Innovation Funding	UEFISCDI	Romania				
12	Academic and Research Network of Slovenia	ARNES	Slovenia				
13	University of Maribor Library	UMUKM	Slovenia				
14	Institute of Physics Belgrade	IPB	Serbia				
15	University of Belgrade	UOB	Serbia				
16	Albanian Academic Network – Interinstitutional ICT Research Centre	RASH	Albania				
17	University of Banja Luka	UNI BL	Bosnia-Herzegovina				
18	Ss. Cyril and Methodius University in Skopje	UKIM	North Macedonia				
19	University of Montenegro, Faculty of Electrical Engineering	UOM	Montenegro				
20	Research and Educational Networking Association of Moldova	RENAM	Republic of Moldova				
21	Institute for Informatics and Automation of the Academy of Sciences of Armenia	IIAP	Armenia				
22	Georgian Research and Educational Networking Association	GRENA	Georgia				

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



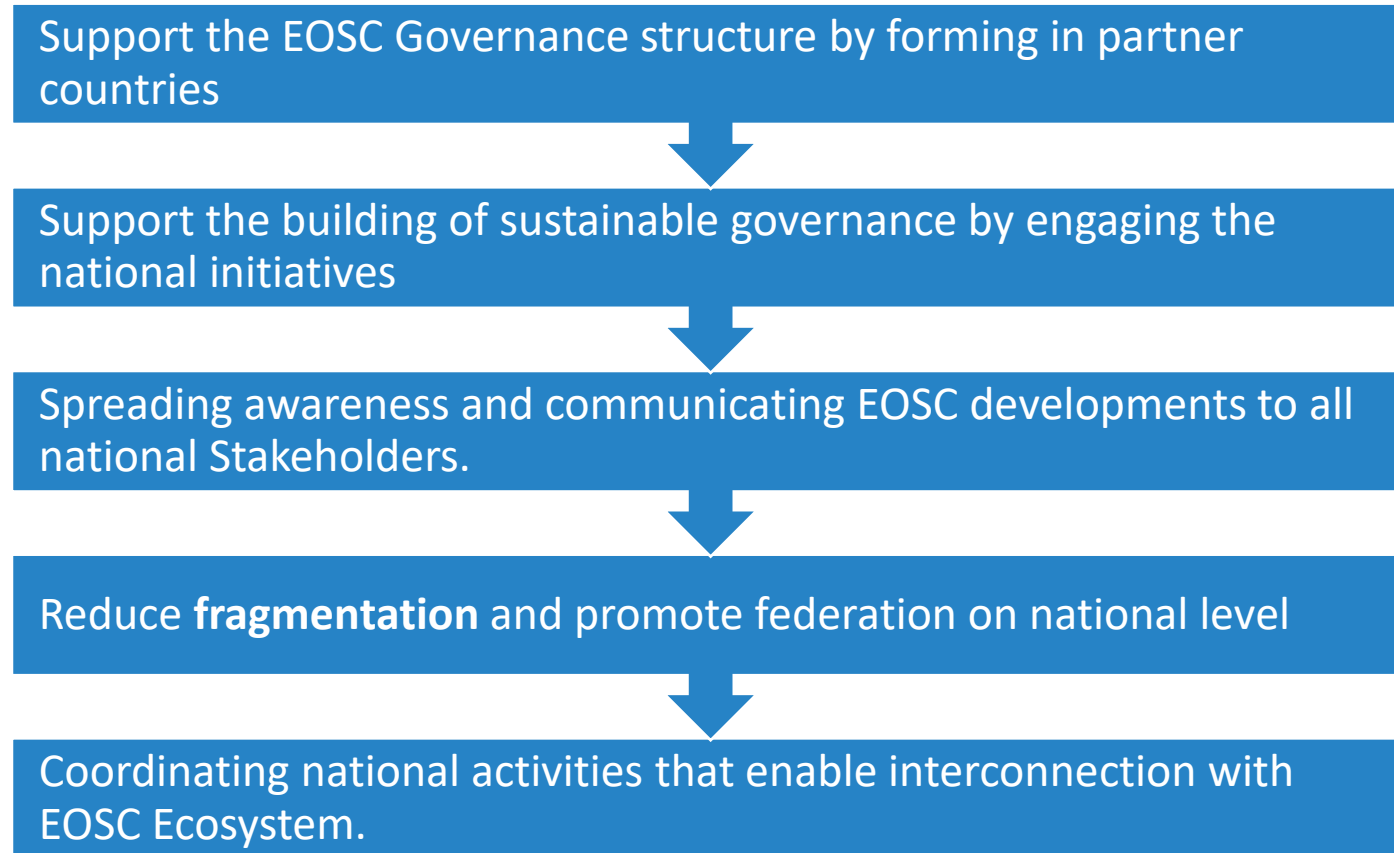
Support the **development and inclusion** of the NOSCIs in 15 Member States and Associated Countries of the SEE in the overall scheme of EOSC governance

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





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



NOSCIs can be a key element to support the development of the EOSC ecosystem, and develop into a cornerstone on which to build its long-term sustainability.

Extensive Landscaping

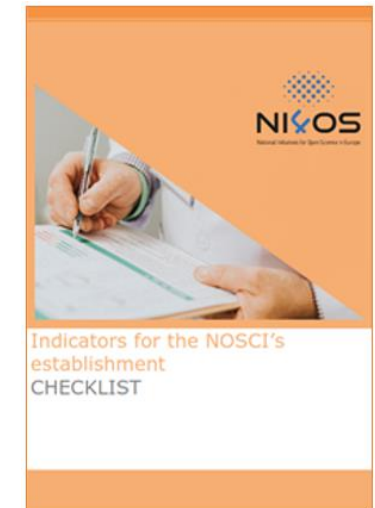
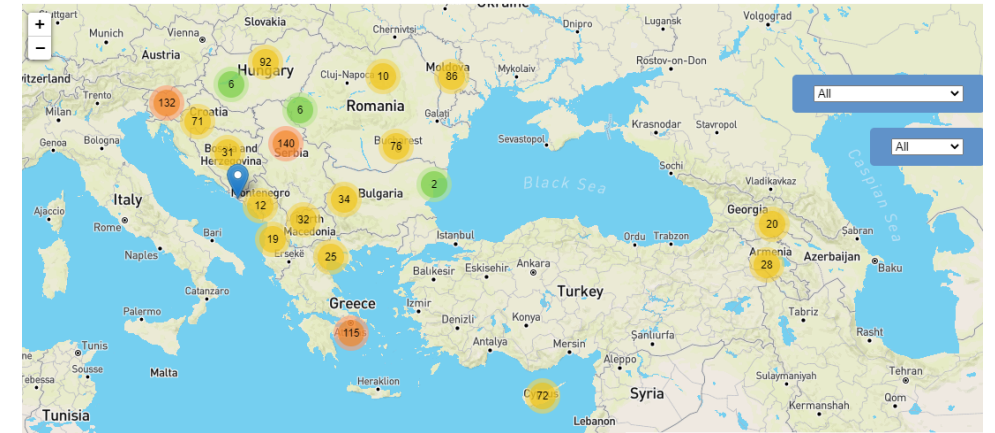
- [Visualization of results](#)
- [Creation of stakeholder map for SEE](#)
- [First set of data deposited in Zenodo under an open license](#)

Modelling & guiding the establishment of NOSCI

- [Blueprint \(NI4OS-Europe D2.2\)](#)
- [Checklist - Workflows for setting up NOSCI](#)
- [Checklist - Indicators for the NOSCI's establishment](#)
- [Training & support events](#)

Liaison & collaboration

- Support to national representatives in the EOSC GB & EB
- Input to all EOSC strategic documents (Fair Lady, SRIA, etc)
- EOSC inclusion beyond MS & AC: Kosovo and Ukraine
- Support EOSC internationalisation



Blueprint

Indicators | Main categories

1. Organisation of the NOSCI

- organizational and administrative aspects of the NOSCI

2. Infrastructure & Services

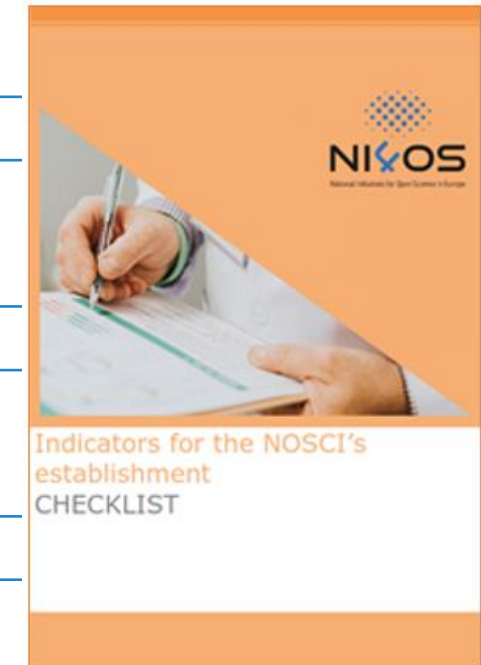
- core infrastructure aspects: the infrastructure itself and its operations

3. Training & Skills

- assess the nature and spread of the training activities

4. Sustainability & international collaboration

- financial issues related to sustainability & relationship with international organizations



Blueprint

Workflows | Options for setting-up a NOSCI

1. Top down

- Initiated by higher authority stakeholders

2. Bottom up

- Initiative by OSC stakeholders and relevant actors in the country

3. Hybrid

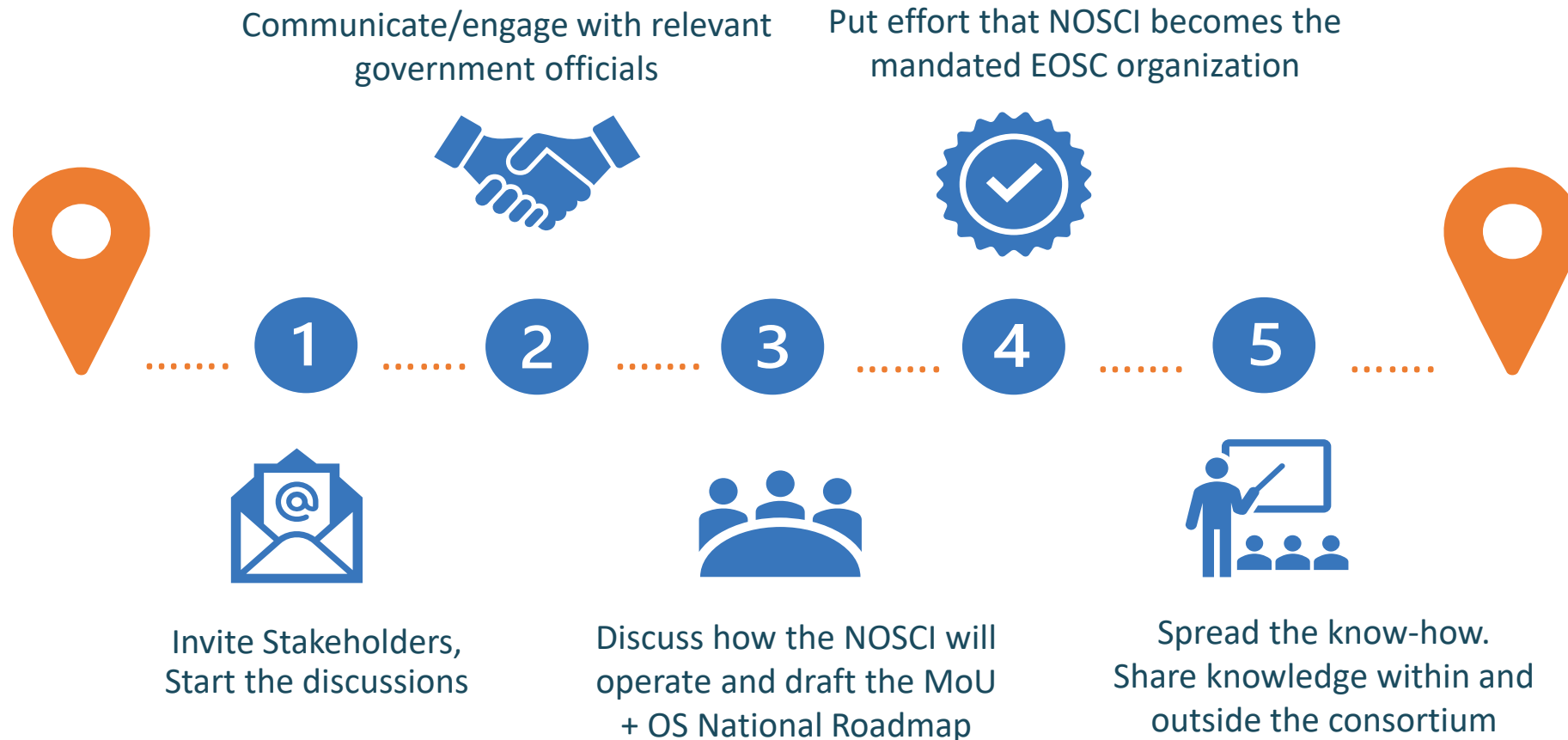
- Combination of previous two, independently of who initiated it

Blueprint



Blueprint

Workflows | The five-steps methodology



Achievements:

- ✓ All partner countries in the process of setting up a NOSCI
- ✓ 2 partner countries already established their NOSCI
- ✓ 6 MoUs drafted / 5 under development
- ✓ 6 NOSCI/OS websites (Albania, N. Macedonia, Bulgaria, Hungary, Serbia, Croatia)
- ✓ 2 contributions to national strategic documents (Greece, Montenegro)
- ✓ 17 Organizations from the region applied to join EOSC Association as Members and 4 Organizations as Observers
- ✓ Contributions to **all** strategic EOSC policy documents (SRIA, Iron Lady, Bylaws)
- ✓ Landscaping activity mapping **>1000** stakeholders
- ✓ Fruitful material for the establishment of NOSCI including Indicators and modular Workflows



2nd Line of action: On-boarding of services



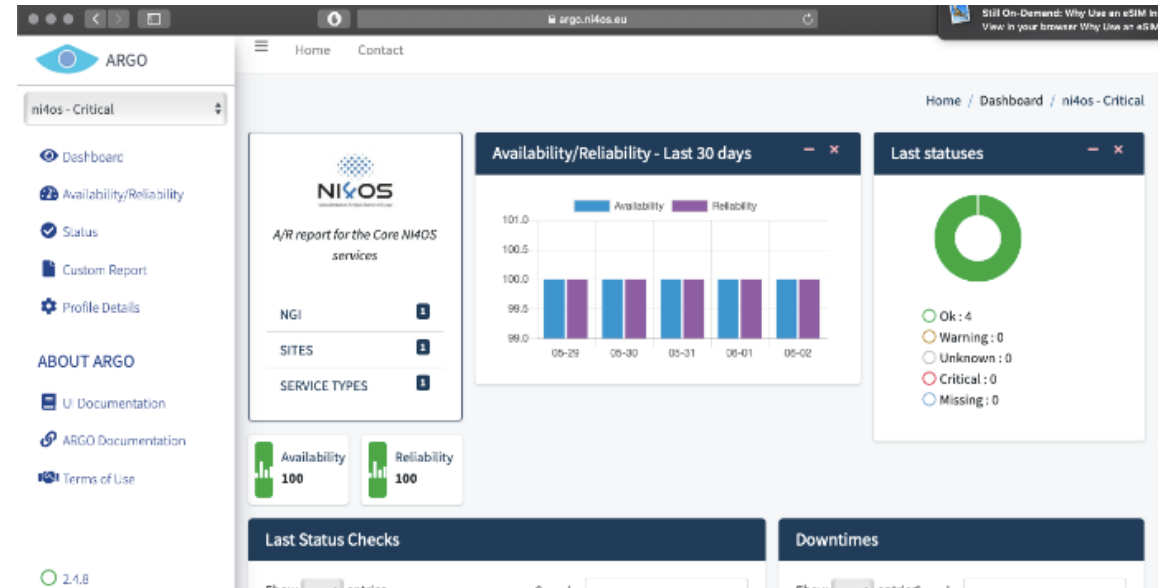
Provide technical and policy support in on-boarding of the existing and future service providers into EOSC

On-boarding support

- ✓ [Best practices and policies](#)
- ✓ [Identification of integration and readiness levels](#)
- ✓ [Technical recommendations for HPC](#)

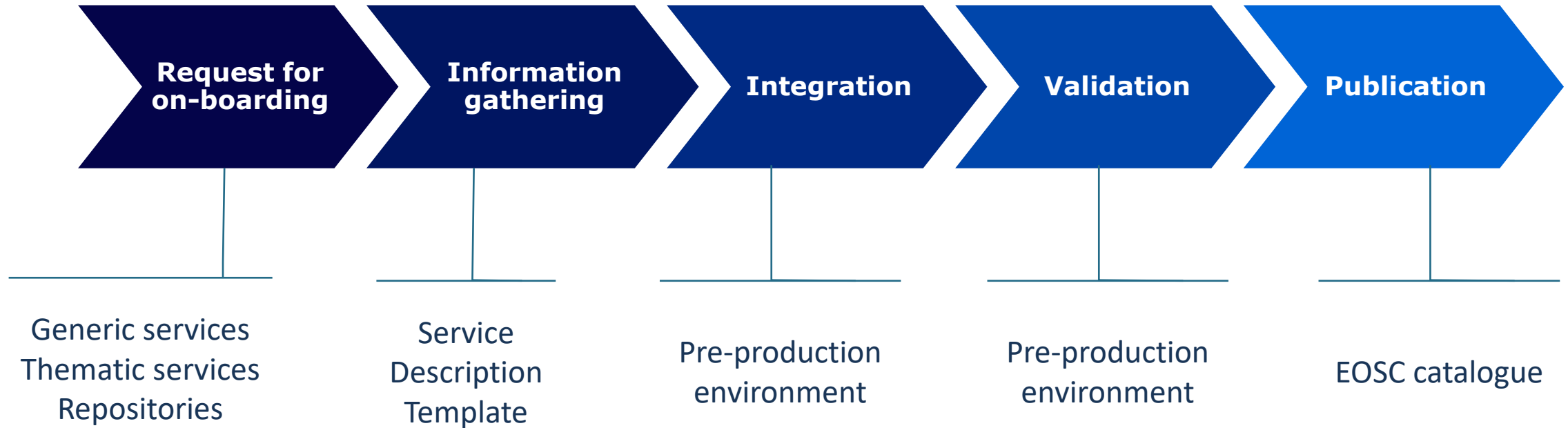
Pre-production environment

- ✓ [AGORA](#) – Resource portfolio management
- ✓ [ARGO](#) – Monitoring service
- ✓ [AAI](#) – Authentication & Authorization Infra
- ✓ [Accounting system](#)
- ✓ [Training Portal](#)
- ✓ [Wiki](#) – documentation



Pre-production component	Endpoint	Responsible partners
Service portfolio/catalogue	https://aqora.ni4os-europe.eu/	GRNET
AuthZ and AuthN infrastructure	https://aai.ni4os.eu/	GRNET
Configuration management DB	https://goodb.ni4os.eu/portal/	UKIM
Monitoring system	https://argo.ni4os.eu/	SRCE, GRNET
Accounting system	https://accounting.ni4os.eu/	IICT
Helpdesk	https://helpdesk.ni4os.eu/	IPB
Technical wiki	https://wiki.ni4os.eu/	IPB
Training portal	https://training.ni4os.eu/	UKIM

The NI4OS-Europe 5-steps end-to-end on-boarding



On-boarded resources

Generic services

- ✓ HPC resources, Cloud Virtual Machines Generic Storage, Data management services
- 5 generic services are fully on-boarded

Thematic services

- 8 thematic services are fully on-boarded

Repositories

- ✓ Contribute to OpenAIRE/EOSC Research Graph
- ✓ Certification (in collaboration with FAIRsFAIR)
- 5 Repositories are fully on-boarded



NI4OS Europe

EXPLORE
NI4OS-Europe Catalogue

Generic services

The **PARADOX Hadoop cluster** is designed to **overlap computation & data storage operations**, i.e., to enable performing of computation on the same machine(s) that store the corresponding data.



NI4OS Europe

EXPLORE
NI4OS-Europe Catalogue

Thematic Services

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



NI4OS Europe

EXPLORE
NI4OS-Europe Catalogue

Repositories

NRS is the main **storage service** of a community that holds "**Regional Community Datasets**". It is integrated with a **Persistent Identifier** service as an assigned **PID** is required for each digital object.



NI4OS Europe

EXPLORE
NI4OS-Europe Catalogue

Generic services

AVITOHOL supercomputer provides 412 TFlops of performance for diverse scientific and industrial applications.



NI4OS Europe

EXPLORE
NI4OS-Europe Catalogue

Thematic Services

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



NI4OS Europe

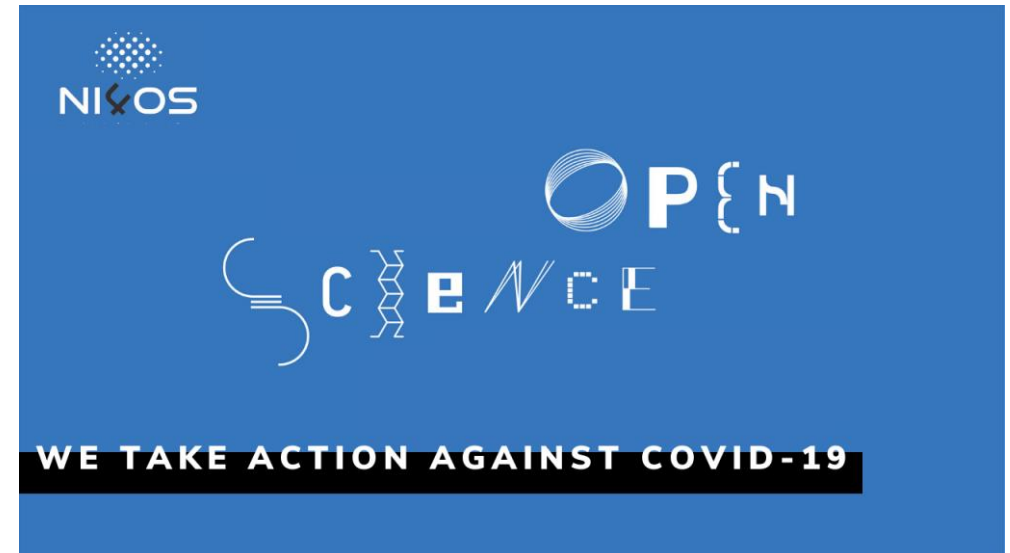
EXPLORE
NI4OS-Europe Catalogue

Repositories

Depositing works at **SZTE repository** of publications secures their **long term archiving** and can also increase their viewability and number of citations.

Achievements:

- ✓ 1 pre-production environment to help the services providers from the SEE area better integrate and on-board their services
- ✓ 75 registered users, 32 resource providers, and 75 resources fully on boarded
- ✓ 1 COVID-19 platform offering a fast-track access channel to its resources for the scientific communities that perform extensive research to tackle the COVID-19





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

Recommendations & guidelines

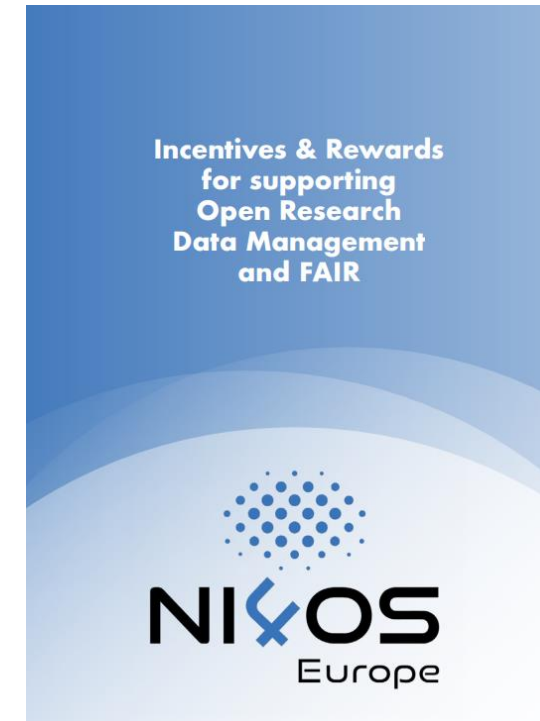
- Identification and analysis of existing guidelines

Incentives

- Analysis of current state, best practices and benefits
- Categorisation of: rewards and incentives → key actions & key actors
- Creation of supporting material brochure in several languages.

Mapping of legal, technical and procedural tools

- Analysis and categorization of contemporary tools supporting FAIR and ORDM
- A tools catalogue with 139 items created



👉 Work is directly exploitable by the NOSCI!

Develop tools
that
enhance
RDM
ecosystems
and facilitate
EOSC
workflows

LCT – License Clearance Tool

➤ <https://lct.ni4os.eu/>

RePol – Repository Policy Generator

➤ <https://repol.ni4os.eu/>

RoLECT – EOSC RoP Legal & Ethics Compliance

➤ <https://rolect.ni4os.eu/>

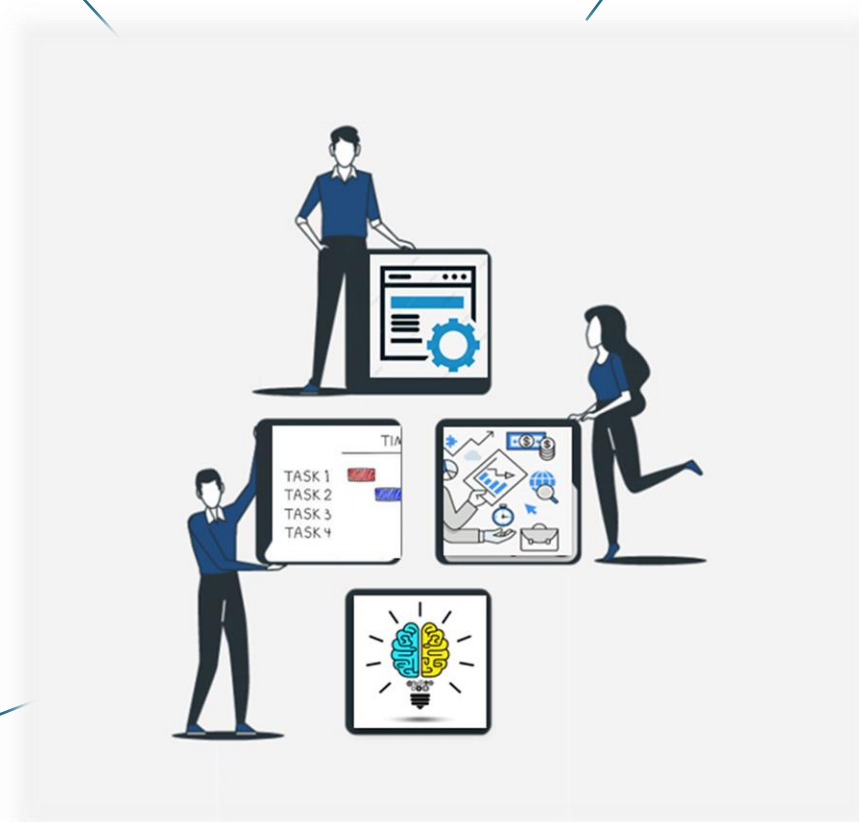


- Support Open & FAIR data in practice
- Contribute to the related EOSC offer and complement available services
- Provide technical solutions to address legal and policy aspects in FAIR and ORDM
- Web-applications with documentation, policies, manuals and individual branding

ORDM & FAIR: User engagement, training & demonstrators

EOSC promoters in all countries
 Webinars
 Brochure
 Multilingual production of material

Demonstrators:
 definition & operation in 4 scientific
 communities



Webinars
 Brochure
 Multilingual production of
 material

15 Translation Officers
 Multilingual production
 of material
 Incentives list for
 supporting EOSC

Training portal
 Training material
 9 Train-the-Trainer events
 15 Capacity building training
 21 End user training
 Webinars

Achievements:

- ✓ Analysis and categorization of **139** contemporary tools for supporting ORDM and FAIR
- ✓ 3 tools developed supporting FAIR and ORDM
- ✓ Incentives list for supporting ORDM and FAIR
- ✓ Creation of supporting material in **15** languages
- ✓ 8 NI4OS-Europe national dissemination events reaching **325** people
- ✓ 10 EOSC & OS European events, **63** regional events on OS, FAIR, EOSC reaching **~5.000** people
- ✓ National EOSC promoters in all countries
- ✓ 15 translation officers
- ✓ 7 train-the trainer events with **437** participants
- ✓ 14 training events with **1.008** participants



- Regional initiatives such as **NI4OS-Europe** and **National engagement** are important to keep the region aligned with EU efforts, to support countries on the path to EU accession and to prevent brain drain from the region.
- Continued EC funding for the region -matching the national funding- is crucial to keep the momentum and to prevent 2-speed Europe.
- These initiatives form 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 EU
 - ✓ Making available the benefits of Information Society and Open Science for all citizens
 - ✓ Pursuing joint scientific and R&D efforts among countries in the region
 - ✓ Regional political stability and cohesiveness

Thank you

Any Questions?



Dr. Ilias Papastamatiou

Project Manager

email: ipapastamatiou@admin.grnet.gr