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National Initiatives for Open Science in Europe

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Intermediate report on liaison activities

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List of Acronyms

DoA	Description of Action
COAR	Coalition of OA Repositories
EB	Executive Board
EOSC	European Open Science Cloud
EU	European Union
FAIR	Findable, Accessible, Interoperable and Reusable
GB	Governance Board
HPC	High-Performance Computers
IG	Interest Group
MoU	Memorandum of Understanding
MVE	Minimum Viable EOSC
NOAD	National Open Access Desk
NOSCI	National Open Science Cloud Initiative
NREN	National Research and Education Networks
OA	Open Access
OS	Open Science
OSC	Open Science Cloud
RDA	Research Data Alliance
RDM	Research Data Management
PID	Persistent Identifier
SEE	South East Europe
SRIA	Strategic Research and Innovation Agenda
WG	Working Group
WP2	NI4OS-Europe Work Package 2: EOSC national initiatives and policy support
WP3	NI4OS-Europe Work Package 3: Federation and on-boarding operational mechanisms and tools
WP5	NI4OS-Europe Work Package 5: Service provider integration, onboarding and horizontal service maintenance
WP7	NI4OS-Europe Work Package 7: Communication, marketing, sustainability and innovation

Executive summary

What is the focus of this Deliverable?

The D2.3 – Intermediate report on liaison activities represents the first report of the NI4OS-Europe liaison activities. The focus of this deliverable is to provide a detailed overview of the liaison activities results during the first half of the NI4OS-Europe project. It includes activities in EOSC Governance, EOSC working groups, INFRAEOSC-05a/b/c projects, cooperation established with other regions and liaison via dissemination of the project's outputs to target stakeholders.

What is next in the process to deliver the NI4OS-Europe results?

The conclusions and recommendations from this deliverable will help improve the future liaison activities during the second project period. The target initiatives for liaison activities will be re-visited to include new initiatives and projects, including newly established EOSC Association and the flagship EOSC-Future project. Deliverable D2.7 "Final report on liaison activities" will present the liaison activities during the second half of the project.

What are the deliverable contents?

The contents of this deliverable are organized as following structure:

- liaison methodology;
- EOSC Governance activities, including EOSC core documentation, FAIR Lady report, SRIA, EOSC partnership proposal, EOSC Governance Board, EOSC Executive Board and EOSC Association;
- liaison activities with EOSC working groups;
- liaison with INFRAEOSC-05a/b/c projects, including collaboration agreement, task forces and EOSC secretariat;
- liaison with other EOSC related initiatives, that is EOSC Enhance, EOSC-hub, eInfraCentral, FREYA, OpenAIRE, RDA Europe, CODATA and WDS;
- liaison with other regions and global initiatives: Arab/ENP states, WACREN, Ubuntunet, RedCLARA, RDA, COAR, etc;
- Dissemination of the project's outputs to different target stakeholders and other liaison activities.

The document finishes with the conclusion which summarizes the results of this deliverable.

Conclusions and recommendations

The presented liaison activities reported for the first 18 months of the project are in-line with the Annex-I - Description of Work [1]. These initial plans are further updated according to the EOSC ecosystem evolution and the needs of the project. NI4OS-Europe participated in the development of the EOSC core documentation (FAIR Lady report, the SRIA and the EOSC partnership proposal), provided recommendations and advice to the EOSC GB representatives from the region, NI4OS-Europe representatives participated actively in the Task Forces, Working Groups, and the EOSC Executive Board. NI4OS-Europe members, in contact with their regional EOSC GB Members, participated in the

development and drafting of the EOSC Association Statutes and to the EOSC Association Bylaws. The liaison with other INFRAEOSC-05a/b/c projects funded under the same topic was a formal obligation in the DoA of the projects. Liaison with other EOSC related initiatives (EOSC Enhance, EOSC-hub, eInfraCentral, FREYA, OpenAIRE, RDA Europe, CODATA, WDS) allows close exchange of information and best practices in a number of policy and technical topics. Close cooperation has been established with regional and global initiatives also, such as Arab/ENP states, WACREN and Ubuntunet, RedCLARA, RDA (Research Data Alliance) and COAR (Coalition of OA Repositories). NI4OS-Europe has promoted EOSC, Open Science and FAIR related events within the projects' social media channels and was involved in various workshops, trainings, conferences and workshops which provided more opportunities for liaison. In the upcoming period, close liaison should be established with the upcoming EOSC-Future project.

1. Introduction

Deliverable D2.3 “Intermediate report on liaison activities” is the fourth deliverable in the framework of the NI4OS-Europe activity WP2 “EOSC national initiatives and policy support”. Within a specific sub-activity, it aims to provide direct liaison and support to the rest of the EOSC governance ecosystem as well as relations with the wider EOSC landscape, by providing support to overall EOSC roadmap updates, collaborating with EOSC bodies (EOSC governance board, EOSC executive board), and other INFRAEOSC-05 projects, and maintaining relationships with other initiatives (such as GEANT, EGI, EUDAT, RDA and NOAD nodes). The work in WP2 has started from the first day of project lifetime and some of the accomplishments are already documented in the following deliverables: D2.1 “Stakeholder map, inventory, policy matrix”, D2.2 “National OSC initiatives models” and D2.8 “Collaboration Agreements”.

The overall ambition of the WP2 activity is to support the target countries in maturing all aspects of Open Science and trigger Open Science developments in the region. Liaison with the EOSC governance ecosystem is necessary for streamlining the policy making with the EOSC roadmap developed by the European Commission and enabling the harmonization with EOSC related initiatives. Our aim is to speed up significantly the establishment of the NOSCI in SEE countries and their connection to EOSC. NI4OS-Europe partners are actively representing the project perceptions in EOSC working groups, co-shaping core EOSC documentation.

The deliverable D2.3 “Intermediate report on liaison activities” represents the first report on NI4OS-Europe liaison activities during the first half of the NI4OS-Europe project regarding EOSC landscape and FAIR principles. D2.3 also presents liaison activities with other EOSC initiatives and other regions. The document is organized as follows: After a short introduction and a description of the liaison methodology and plan, a summary of EOSC Governance activities is presented which includes overview of the EOSC core documentation, FAIR Lady report, SRIA, EOSC partnership proposal, EOSC Governance Board, EOSC Executive Board and EOSC Association. The next chapter presents liaison activities with EOSC working groups. Chapter 5 presents liaison with INFRAEOSC-05a/b/c projects, including collaboration agreement, task forces and EOSC secretariat. Chapter 6 presents liaison with other EOSC related initiatives, that is EOSC Enhance, EOSC-hub, eInfraCentral, FREYA, OpenAIRE, RDA Europe, CODATA and WDS. Chapter 7 describes the cooperation established with other regions. Chapter 8 briefly reports on the dissemination of the project’s outputs to different target stakeholders and contains overview of multiple liaison activities that are seen as support to liaison from the perspective of wider dissemination. The document ends with conclusions and gives recommendations for the coming project period.

2. Liaison methodology

WP2 is responsible for organizing and monitoring the liaison within the EOSC landscape. For this purpose, a liaison plan has been drafted in the first quarter of the project and a project internal information and collaboration space has been set up, within the broader intra-project collaboration platform.

2.1. Liaison plan

The liaison plan presented a concrete methodology with necessary mechanisms with the aim to facilitate close collaboration between national actors and EOSC governance and relevant initiatives. It served as a roadmap describing specific cooperation activities to facilitate communication and engagement links. Liaison and engagement with EOSC are a continuous and dynamic process for NI4OS-Europe, which designates three interlinked and occasionally overlapping phases:

- Define & Map,
- Align & Connect and
- Assess & Calibrate.

The basic idea behind this methodology is to establish connections through a number of activities and adjust over time, allowing NI4OS-Europe partners and local entities to be informed on any EOSC related developments, get involved in relevant activities at national and European levels, transfer within the project and use any knowledge gained and lessons learned and make any necessary adaptations to changing scenery, as the aim of the liaison is twofold: to better contribute to the discussions about setting up the EOSC, but also to serve more efficient the project objectives (onboarding, policy development, capacity building).

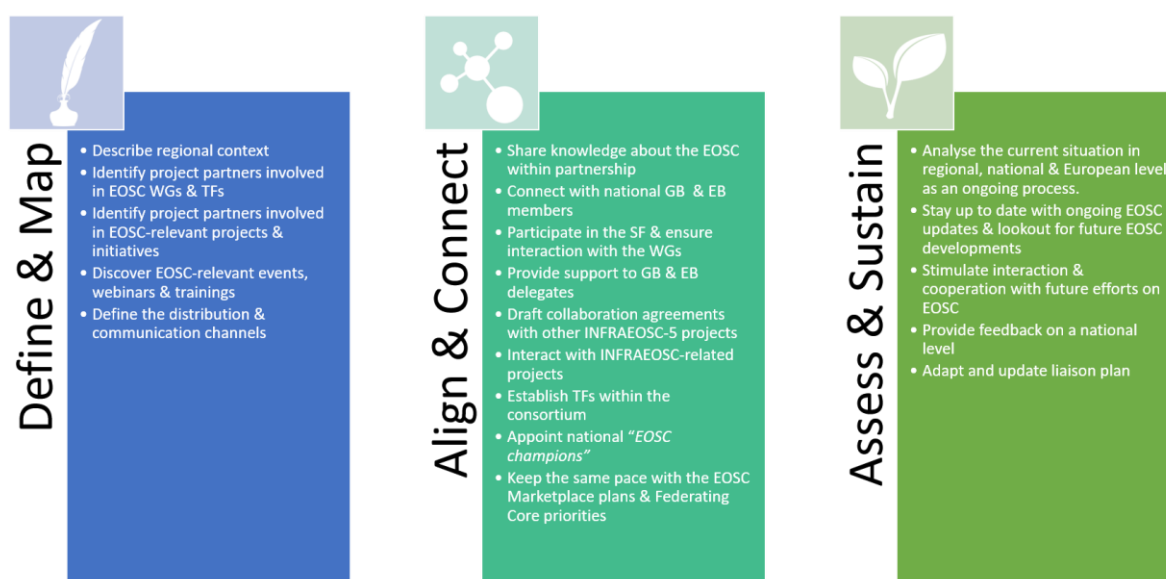


Figure 1: NI4OS-Europe liaison methodology and related actions

1. Define & Map: This phase consists of all necessary and (in a way) preparatory activities for creating links with EOSC and EOSC-related initiatives. It involved actions of introspection on the dynamics of the consortium (internal environment) and mapping the current European status quo (external environment). It took place during the first months of the project with an intense cartography of actors and initiatives.

2. Align & Connect: This stage reflects the core efforts that are undertaken by the project partners as foundational work for connecting with EOSC. The relevant set of activities is based on the following quadruple-helix approach: communicate - consult - involve - collaborate. It has been deployed mainly through the participation in the Working Groups and Task Forces, but also in the various events, conferences, webinars and meetings.

3. Assess & Calibrate: A very useful stage of the liaison methodology is the evaluation procedure of the undertaken activities, which serves as performance feedback and ensures a successful engagement rate. It involves a group of activities of analysing the current situation, adapting to the latest developments and steering liaison activities accordingly in aim to ensure the efficacy, productivity, and sustainability of project's outputs. This is a continuous process that allowed for example project results to be put in the right context and inputted appropriately during the various consultation phases for EOSC.

2.2. Organisation and sharing of relevant information

In parallel, on the project collaboration platform a section dedicated to EOSC-related information has been created. This is both, a project-internal "EOSC Digital Library", and an index of NI4OS-Europe personnel involved in any EOSC groups and initiatives. The content is clustered according to following topics:

- Consultation versions and final versions of EB, GB, WG documents
- Lists with Governance Board delegates
- NI4OS-Europe input to consultations and surveys
- NI4OS-Europe partners who are members in the Governance Board, the Working Groups, the Task Forces, the Interest Groups, other EOSC-related projects and initiatives
- Presentation and material related to EOSC conferences and events
- Calendar with EOSC-related events

The content and information on the collaboration space is frequently updated.

Sharing of any updates and reporting about the work and progress especially of the Task Forces, takes also place during the monthly NI4OS-Europe Activity Management Board calls and is captured in the related minutes.

3. Liaison with EOSC Governance

3.1. EOSC core documentation

NI4OS-Europe contributed to the development of the EOSC core documentation by supporting the members of the EOSC Governance Board, Executive Board, EOSC working groups and individual partners.

Specifically, NI4OS-Europe supported inputs for the FAIR Lady (olim Iron Lady) report, the Strategic Research and Innovation Agenda (SRIA) and the EOSC partnership proposal.

Through the support for development of these three key documents for the EOSC Ecosystem, NI4OS-Europe project contributed to supporting EOSC governance and ensuring inclusiveness on the European level. Below, a short description of the EOSC core documentation is given, where NI4OS-Europe partners participated and provided their feedback.

3.1.1. FAIR Lady (olim Iron Lady) report

NI4OS-Europe partners provided inputs to Strawman, Tinman and Iron Lady versions of the [FAIR Lady \(olim Iron Lady\)](#) report of the EOSC Sustainability Working Group. The EOSC Sustainability Working Group provided a set of recommendations concerning the implementation of an operational, scalable and sustainable EOSC federation after 2020.

Briefly, the Fair Lady document explores possible means for sustaining the European Open Science Cloud beyond its initial phase which terminated at the end of 2020.

This independent document builds on earlier strawman and tinman versions and the feedback received from the EOSC Executive Board, Governance Board as well as the European Commission (EC), and the stakeholder community on each version. Specifically, from December through to February, more than 30 projects -including NI4OS-Europe organisations and individuals provided written feedback to all the versions of the document.

FAIR Lady report also takes into account the progress towards the EOSC goals as well as the outputs of commissioned studies. It considers the financing model, legal vehicle, governance structure under the planned European Partnership with the EC as well as the regulatory and policy environment of the EOSC.

It recommends beginning with a first iteration to establish a Minimum Viable EOSC (MVE) addressing the needs of publicly funded researchers exploiting openly available data. Subsequent iterations expand the EOSC to address usage beyond openly available FAIR data and engage a wider user base including the public sector and the private sector.

The objective of the first iteration is to establish a Minimum Viable EOSC (MVE) such that it will enable the federation of existing and planned research data infrastructures for the benefit of publicly funded researchers accessing openly available FAIR data. The MVE is necessary in order to establish an initial implementation of EOSC that brings value to users beyond their current use of infrastructures.

The main focus and value of the MVE is to connect disciplinary infrastructures and research data to enhance disciplinary, cross-disciplinary and transnational research, leading to new scientific discoveries and new insights for society. Hence, the federation of research data infrastructures via the thematic clustering of Research Infrastructures, e-Infrastructures and regional projects is seen as a critical first step to promote early successes for EOSC, and as an enabler to help address society's current and future global challenges.

The EOSC-Core provides the functionality that is required to enable open science practices to occur across domains and countries according to the EOSC interoperability framework. Its contents promote the adoption of an open research culture and must be maintained over the long term. EOSC-Exchange is a digital marketplace that builds on the EOSC-Core to offer a progressively growing set of services exploiting FAIR data and encouraging its reuse by publicly funded researchers. It is expected that services, such as those that store, preserve or transfer research data as well as those that compute against it, will be made available via EOSC-Exchange.

NI4OS-Europe partners participated in all versions of the document (strawman, tinman, iron lady) providing useful feedback and input from the SEE region, improving the overall quality and taking into account the SEE region.

3.1.2. Strategic Research and Innovation Agenda (SRIA)

The [EOSC Strategic Research and Innovation Agenda \(SRIA\)](#) builds upon the outputs of the EOSC Executive Board Working Groups and the results from the Open Consultation on the EOSC SRIA. The SRIA indicates a roadmap for realising EOSC and will support the European Commission in developing the next work programme Horizon Europe (2021-2027).

The overall purpose of this Strategic Research and Innovation Agenda (SRIA) is to define the general framework for future strategic research, development and innovation activities in relation to the EOSC. This framework will be developed and further defined in the context of the EOSC Partnership proposed under the Horizon Europe programme.

The SRIA begins by describing the developments leading to conditions favourable for creating EOSC. It outlines the history of the digitisation of research, and the EC/EU policy context for Open Science and Open Data, together with the development and governance structures of the EOSC initiative. The SRIA goes on to explain the three overarching objectives that are driving EOSC, the guiding principles that are shaping it, and the challenges and prerequisites to implementing the EOSC ecosystem. It discusses the anticipated benefits of EOSC, and the critical success factors, before presenting a roadmap, priorities and key performance indicators for the near future.

SRIA sets clear goals to develop EOSC and build a research environment that promotes Open Science and increases trust in and reproducibility of research outcomes. The overall impact is a pan-European research landscape that offers significantly improved discovery, access, interoperability and exploitation of research outputs for researchers and for research and innovation stakeholders.

The Horizon Europe funding periods are mirrored in the SRIA implementation stages. Each stage defines a high-level objective for the period, aligned with the vision of enabling trusted, virtual, federated environment in Europe to store, share and reuse research outputs across borders and scientific disciplines. For each stage, priority areas are defined,

their prioritisation and scheduling reflecting community feedback from the open consultation process.

- Stage 1 (2021–2022): Development towards added value from a functional federation of Infrastructures Enabling the European Open Science Cloud operations (the EOSC-Core) to provide necessary core functions of the Minimum Viable EOSC (MVE) that allow federation of existing and future infrastructures, with associated rules of engagement and governance that provision growth and expansion in the following stages.
- Stage 2 (2023–2024): Expansion to production that generates added value Expanding and building the core data infrastructure to support the full cycle of workflows for scientific research in key thematic areas. During this period, work to build on pilots/demonstrators and to link EOSC beyond the research communities to the wider public sector and the private sector will begin.
- Stage 3 (2025–2027 and beyond): Expansion to develop impact from Open Science Deployment of federated research infrastructures for European researchers with functionality that provisions actors from multiple communities to deliver impactful Open Science. In addition to European infrastructures, the national research infrastructures delivered from the Member States and Associated Countries in particular will help in this expansion phase.

NI4OS-Europe project, except from the support offered to the members of the EOSC Executive and Governance Boards, also informed its consortium for participating into the SRIA consultation which took place in August 2020. The majority of the partners participated in the consultation phase and their inputs supported the development of the document.

3.1.3. EOSC partnership proposal

The [EOSC partnership proposal](#), one of the proposed European Partnerships under Horizon Europe, aims to accelerate the deployment and consolidation of an open, trusted, virtual, federated environment in Europe to store, share and re-use research data across borders and scientific disciplines and provide access to rich array of related services.

The Partnership brings together institutional, national and European initiatives and engages all relevant stakeholders to jointly develop a science commons where data are Findable, Accessible, Interoperable, Reusable (FAIR) and where research-enabling and other services are made available throughout Europe. This European contribution to a “Web of FAIR Data and Related Services for Science” will enhance the possibilities for researchers to find, share and reuse publications, data, and software leading to new insights and innovations, higher research productivity and improved reproducibility in science.

Three objectives set the foundations for the EOSC partnership:

- Objective 1: Open science practices and skills are rewarded and taught, becoming the “new normal”, where the main milestone is that EOSC ecosystem underpins the reward of open science practices and data stewardship that improve trust, quality, and productivity in science.

- Objective 2: Standards, tools and services allow researchers to find, access and reuse results, where the main milestone is that EOSC provides a trusted platform supporting the development of innovative services and products.
- Objective 3: Sustainable and federated infrastructures enable open sharing of scientific results, where the main milestone is that EOSC infrastructure is in operation, providing a web of FAIR data and related services underpinning research addressing major societal challenges.

EOSC partnership will be set up between the EOSC Association and the EU represented by the Commission. A Steering Board will be set up outside of the EOSC Association. It will be composed of representatives of Member States and Associated Countries. The Steering Board will provide advice to the EOSC Association at policy and strategy level.

The Commission and the EOSC Association will establish a Partnership Board as the main mechanism for dialogue in order to reach the objectives of the Partnership. The Steering Board will be invited to appoint representatives who will attend the meetings of the Partnership Board, in order to ensure that the EOSC partnership is implemented taking due account of the policies decided and the activities implemented at national level. The Commission, in its role of safeguarding public interest, will act as an honest broker among the participants in the Partnership Board and will aim at catalysing consensus.

NI4OS-Europe participated in the development of the EOSC Partnership Proposal and provided recommendations and advice to the EOSC GB representatives from the region.

3.2. EOSC Governance Board (GB)

NI4OS-Europe project supported the multi-layered, interim governance structure of EOSC that was set up from November 2018 to steer and oversee the implementation of the EOSC from 2019-2020 until the establishment of the EOSC Association. The EOSC Governance Board (GB) included representatives from EU countries, countries associated with Horizon 2020 and the Commission to ensure effective supervision of the EOSC implementation.

NI4OS-Europe provided recommendations and advice to the EOSC GB representatives from the region, for all their activities including briefings and discussions. Over these years, the EOSC GB supervised the activities of the EOSC Executive Board Working Groups, which have produced several reports on the six key areas identified for their mandate: Architecture, FAIR, Landscape, Rules of Participation, Skills & Training, and Sustainability.

NI4OS-Europe representatives participated actively at the Landscape, Architecture, Skills & Training and Sustainability Working Groups and at the Landscape, Service On Boarding (chair), National Policies (chair), FAIR data and Infrastructures, Dissemination & Events, Training and skills Task Forces. NI4OS-Europe supported the development of numerous reports and participating directly to the EOSC Working Groups, either advising the EOSC GB Members.

Crucially, on the 8th of July 2020, NI4OS-Europe project organized an [online workshop](#) to discuss future aspects of the management and sustainability of the European Open Science Cloud (EOSC). The workshop, brought together the NI4OS-Europe partners and EOSC GB delegates in the SEE region (Montenegro, Romania, Bulgaria, Slovenia, Hungary, Croatia, Greece, North Macedonia and Serbia) to facilitate fruitful dialogue and information

exchange, including the role and contribution of NI4OS-Europe to EOSC via the establishment of National Open Science Cloud Initiatives in the target region, which is in progress. The first part of the workshop focused on presentations providing insights on the present and future of EOSC Governance and the role of the National OS initiatives, followed by short position statements by the key stakeholders of the NI4OS-Europe partner countries. The workshop concluded with a Q&A session during which, the participants had the opportunity to discuss with the EOSC GB members from the region on the collaboration aspects in the EOSC framework.

3.3. EOSC Executive Board (EB)

The aim of the Executive Board has been to assist the Commission in the first phase of development of the EOSC until end of 2020. This high-level group of experts was responsible for aspects related to strategy, implementation, monitoring and reporting on the progress of the implementation of the EOSC.

The EOSC Executive Board has been comprised by representatives from the research and e-Infrastructures communities and has been appointed by the European Commission, based on the selection performed by an independent Identification Committee. All members had been appointed in a personal capacity, representing pan-European organisations of relevance for the EOSC implementation. As such, it was not within the mandate of the EB to liaise directly and one-to-one with the INFRAEOSC-05 projects. The participation in the EB, however, of the NI4OS-Europe partner Natalia Manola, representing OpenAIRE, has been an important asset for the project. It allowed for further elaborating on the EB outcomes within the project and adjusting the related activities.

In parallel the EB developed the EOSC EB Workplan 2020 [2], which included all activities and outputs that would lead to the new governance structure after 2020, as well as activities that would be undertaken by the INFRAEOSC-05 projects.

The collaboration activities at the EB level could be split in two main categories:

- **Input in consultations and reports**

Throughout 2020 several consultation processes took place and input to reports has been asked (Strawman and Tinman reports, RoP, Metrics & Certification, Iron Lady, SRIA, Landscape report, Country Sheets Analysis, EOSC Assessment Survey). The aim was to gather input by the research communities and actors with regards the development of strategic elements of EOSC. Consultations have been initiated by the WGs addressing relevant topics, and have resulted in the publishing of the reports or proposals by the EB and/or related WGs. As the project activities cover the full range of WG topics, NI4OS-Europe participated in all consultation processes and provided input in all documents.

- **Participation in symposia**

The two EOSC Symposia that have been organized in the period the current report is covering, offered a forum for exchanging on Governance aspects and related progress. Many NI4OS-Europe partners attended both events. The EOSC Symposium in November 2019 was the last major EOSC event with physical presence and Ivan Maric, the Croatian partner and EOSC GB delegate, chaired the opening plenary of it and delivered a keynote presentation. Other NI4OS-Europe partners have been panelists in plenary or parallel

sessions. Due to the COVID-19 outbreak, the EOSC Symposium in October 2020 has been organized in an online format. NI4OS-Europe partner Anastas Mishev has been one of the speakers in the session on “An equitable EOSC: EOSC challenges & opportunities in South Eastern & Eastern Europe”.

In all the above, the role of EOSC-Secretariat was important, as the project that would support the EB in terms of the operational aspects of the EOSC, but also as the facilitator of the collaboration among the INFRAEOSC-05 projects and between them and the EB, by providing the necessary collaboration tools and platforms.

NI4OS-Europe has been involved in this exchange since the very beginning. It has to be mentioned, that the planning of the liaison activities started before the official launch of NI4OS-Europe and the majority of the INFRAEOSC-05 projects. The first meeting was organized as a parallel closed event of the INFRAEOSC-05 projects during the EOSC-hub Week in April 2019. This meeting set the frame for the overall liaison and collaboration activities. One major topic has been the focus and type of MoU that should be signed among the projects, but also the exchange on specific priorities, as they had been formulated by the EB through the setting up of the six Working Groups. Two NI4OS-Europe representatives participated in the meeting, the coordinator and project director.

An important gathering of the EOSC community has been the workshop organized by the EC on the 9th and 10th of September 2019 “Building together the future of the European Open Science Cloud” and which has been attended by three NI4OS-Europe representatives. In it the INFRAEOSC-05 projects had the opportunity to liaise with members of the EOSC Executive and Governance boards and to discuss about synergies, improvements, joint activities and next steps for EOSC. In addition to the interesting agenda, the workshop has been successful in engaging EB members, GB members, INFRAEOSC-05 and ESFRI projects representatives in direct exchange.

3.4. EOSC Association

The interim EOSC Governance concluded its mandate at the end of 2020, after two years of work on the development of the European Open Science Cloud framework.

The permanent EOSC Governance structure begun from 2021 and includes a tripartite cooperation between the European Commission, the EOSC Association and a Steering Board which will include representatives of the Member States and the Associated countries.

The EOSC Association was established as a legal entity on 29th July 2020. Its core tasks are the coordination and alignment (SRIA), monitoring and reporting, EOSC technical guidance, FAIR training and communication. The Association signed a Memorandum of Understanding in February 2021 with the European Commission to progress the EOSC partnership, bring together all relevant stakeholders to co-design and deploy a European Research Data Commons where data are findable, accessible, interoperable and reusable (FAIR), and also as open as possible.

NI4OS-Europe has greatly facilitated the establishment of the EOSC Association from the procedural point of view. Since the EOSC Association’s first steps, NI4OS-Europe members from GRNET were taking part in the development and drafting of the EOSC Association

[Statutes](#). The Statutes cover the minimum required legally for the setting up of the EOSC Association.

After the signature of the Statutes, NI4OS-Europe representatives from GRNET S.A. and ATHENA RC participated officially to the EOSC Association Bylaws Working Group (WG). The Bylaws WG formed by candidate members organisations to the EOSC Association, which has set itself up into the following five sub-groups Sub-group 1: Memberships provisions (Article 2); Sub-group 2: Financing (Article 7); Sub-group 3: Bodies of EOSC Association (GA, Board, Secretariat) (Articles 3, 4, 5); Sub-group 4: Adding specific counsels - or determining rules when special groups/counsels that might be created by GA, who can lead WG (members or/and observers) (Article 6); Sub-group 5: General terms and provisions of Bylaws (Articles 0, 1, 8 & 9) and adding list of Policies - how introduced, discussed, accepted & general idea behind policies. GRNET and ATHENA RC contributed to the drafting of the articles of all sub-groups and especially to the works of Sub-groups 1 and 3. The draft Bylaws text went into public consultation, from 10 October until 21 October. NI4OS-Europe supported as well the procedure and urged the partners to participate in the consultation. The final draft version of Bylaws presented at the first constitutional Assembly of EOSC Association which took place on the 17th of December 2021.

Moreover, NI4OS-Europe participated and communicated to the SEE region the "[EOSC Governance Symposium 2020](#)" which took place end of October 2020. During the event, the progress of EOSC after two years from its official launch has been analyzed focusing on the added value of EOSC for the European scientific community. The main objectives of the Symposium were to show the value of EOSC to research performing organisations and research funders; to onboard new members into the EOSC Association; to engage the EOSC providers explaining how and why federate the services with the objectives. The feedback from the EOSC Symposium 2020 has been used in the process of further building the SRIA.

In addition, in order to support EOSC Association and address the questions of the organizations in the SEE region and give incentives, NI4OS-Europe organized webinars and training events that included the aspects of the development of the EOSC Association. For example, NI4OS-Europe organized the online training event "[Developing FAIR and EOSC skills](#)", which took place on the 28-29 January 2021 and the online webinar "[Tools & examples for the establishment of the NOSCIs and connecting them to EOSC](#)", which took place on the 3rd February 2021. The presentations included, among other, the EOSC Governance and EOSC Association elements and provided information and relevant updates. Also, NI4OS-Europe provided clarifications on different membership categories, the way to apply and become member of the Association and incentives to participate.

The close cooperation of the NI4OS-Europe project and the EOSC Governance Core including the sharing of information, trainings, webinars, related activities, and the frequent contacts with the partners, has resulted to the participation of already 12 Organizations as full Members, and 3 organizations as Observers, from the NI4OS-Europe consortium, to the EOSC Association. Specifically, there are NI4OS-Europe partners as members in the EOSC Association from Greece, Bulgaria, Croatia, Romania, Slovenia, Serbia, North Macedonia, Montenegro, Armenia and Georgia. Moreover, there are NI4OS-Europe partners from Croatia, Hungary, Romania, Slovenia and Moldova that are already Mandated Members in the EOSC Association.

Also, NI4OS-Europe mobilized and urged its partners, that are Members and Observers of the EOSC Association, to participate at the webinars of EOSC Association (22/2/2021 and 25/2/2021) for the formation of the EOSC Advisory Groups that replace the EOSC Working Groups.

4. Liaison with EOSC working groups

EOSC Working Groups have been an essential element of the first phase of the EOSC Governance. They provided the means to connect community and stakeholders' knowledge with the strategic priorities for designing and setting up the EOSC. Again here, as it was the case with the EB, it was not within the scope of the Working Groups to involve directly the INFRAEOSC projects. Members of the WGs had been nominated by the Governance Board of EOSC. An exception had been the Architecture WG, where also projects could nominate a representative, in addition to the GB nominated members. NI4OS-Europe has participated, through its project partners, in four out of the six Working Groups: Architecture WG, Landscape WG, Skills & Training WG, and Sustainability WG.

In addition to the direct participation, several options existed, however, for interacting with and contributing to the WGs. The most substantial has been the contribution with relevant inputs, especially during structured processes for collecting this input. These have been for example the consultations on WG relevant aspects (Tinman and Iron Lady Reports by the Sustainability WG, EOSC Interoperability Report by the Architecture WG, PID Policies by FAIR and Architecture WGs).

The participation to events, workshops and webinars provided another liaison possibility. In the "EOSC Jam Session: Shaping the EOSC ecosystem synergies", organized on the 6th and 7th of June 2019 in Turin by the EOSC-Secretariat project participated the INFRAEOSC-05 projects, and representatives from the Commission and the WGs. ESFRI projects had been invited to participate as observers. The aim of the event was again twofold, to further discuss the planned MoU between the projects, but also the interaction with the EB and the WGs. The work of all WGs had been presented and discussed, however, the focus had been given on the Landscaping WG and the landscaping activities that would be undertaken by the projects, as this has been one of the first activities for the majority of the INFRAEOSC-05b projects. Special attention had been given to the fact that projects and WG should work complementary to each other and not duplicate efforts. The event had been attended by three NI4OS-Europe partners.

Also, in the next collaboration meeting which gathered more than 30 EOSC related projects and was organized in November 2019 back-to-back with the EOSC Symposium, the discussion about contributions and projects input to the WGs has been very central. It was in this meeting where it has been decided to also create four Interest Groups so as to align work and share results, contributing to the short and long-term objectives of the EOSC in general and the work of the EB WGs in particular. The Interest Groups have been 1. Service Onboarding & Catalogues of services and research results, 2. Researcher Engagement and Use cases, 3. EOSC Federating Core, and 4. EOSC Glossary. NI4OS-Europe participated in the "Researcher Engagement and Use Cases" and "Service Onboarding" IGs.

Almost all subsequent workshops and events either organized by or involving the WGs have been organized as online events, due to the COVID-19 outbreak. Collaboration highlights have been the two EOSC Landscape Validation workshops that took place in April and October 2020, and the EOSC-hub week in May 2020.

Moving closer to December 2020, the advancements in collaboration and the maturity of results become clear. This led to the timely elaboration and agreement on the principles for the operation of EOSC.

Working Group	NI4OS-Europe partner	Institution
Landscape	Biljana Kosanovic	University of Belgrade (UOB)
	Sylvia Koukounidou	University of Cyprus (UCY)
Architecture	Dusan Vudragovic	Institute of Physics Belgrade (IPB)
	Themis Zamani	National Infrastructures for Research and Technology (GRNET)
	Nicolas Liabotis	National Infrastructures for Research and Technology (GRNET)
Skills and Training	Judit Fazekas	The University of Debrecen (DE)
	Dunja Legat	University of Maribor, University of Maribor Library (UMUKM)
Sustainability	Stelios Sartzetakis	ATHENA Research & Innovation Information Technologies (ATHENA RC)

Table 1: NI4OS-Europe partners participating in WGs

5. Liaison with INFRAEOSC-05a/b/c projects

The liaison with the other projects funded under the same topic has been included as a formal obligation in the DoA of the projects. As already mentioned, the exchange between the projects about the specifics of the collaboration started already before the official kick-off of several of them. The meeting during the EOSC-hub week in April 2019 was the first gathering of all INFRAEOSC-05 projects in which a first list of shared topics and priorities has been identified. Although these have been largely following the WGs topics, to ensure seamless interaction and integration of project results, they have been in some cases further specified to better respond to the projects realities. All projects have agreed to share all relevant parts of their DoAs, in order to better understand which project is working on which topics and plan subsequent steps of collaboration.

Next stop has been the "EOSC Jam Session: Shaping the EOSC ecosystem synergies", organized on the 6th and 7th of June 2019 in Turin by the EOSC-Secretariat project. In addition to the WGs related discussions, this meeting set the ground for organizing the collaboration between the INFRAEOSC-05 projects and for running the Landscaping activities. Regarding collaboration, the projects agreed to create the Task Forces and the Cross Projects Collaboration Board, with the participation in it of two representatives from each project. For NI4OS-Europe these are the Project Coordinator and the Project Director. Participants in the meeting also clarified the scope of their landscaping surveys and the categories that should be mapped (actors, services, policies, initiatives, data...). All projects also agreed on adopting a common approach on landscaping, to the degree this would be possible, and on using as starting point the EOSC-Pillar questionnaire, as it had been the only 5b project that had already started by then, but also sharing all other questionnaires that would be drafted.

The last f2f meeting for the INFRAEOSC-05 projects has been the concertation meeting that took place after the closing of the EOSC Symposium 2019. This meeting was less oriented to organizational aspects of the collaboration; it rather focused on the research aspects and how to tackle them. A major decision that has been taken during this meeting was the formation of four Interest Groups. The creation of the Interest Groups aimed at covering the need to discuss in more depth facets of the broader EOSC topics. The four IG addressed following topics:

- Researcher Engagement and Use cases – it discusses current and future needs of researchers, being users of EOSC.
- Service and Research Product Catalogues – it discusses EOSC catalogues for Services, for Data sources and Research products.
- Federating Core – it discusses activities related to enhancing, adapting and connecting as well as developing and setting up the federating core.
- Glossary – it discusses the creation of a set of shared terms with their explanations in relation to EOSC.

Although IGs have started as an initiative of the INFRAEOSC-5 projects, they are open to all members of the EOSC community and EOSC-related projects, with no limit in the number of participants from a single project. Collaboration is established through the dedicated virtual collaboration space, provided by EOSC-Secretariat.

During this reporting period the Cross Projects Collaboration Board had several online meetings. In the first one that took place early November 2019 participants discussed the MoU between the projects and the policies regulating the operation of the TFs and set the means and frequency for the exchange with the EOSC Governance. The NI4OS-Europe representatives participated in all meetings of the CPCB.

Again, in all the above the support provided by the EOSC-Secretariat project has been particularly helpful, by taking the administrative and logistical burden of the projects' shoulders. EOSC-Secretariat sent out the meeting invitations, monitored replies, run the meeting and drafted the minutes afterwards. NI4OS-Europe partners have exploited the EOSC Liaison platform, the online environment set up and maintained by EOSC-Secretariat, for the exchange between the EOSC related projects, but also any other interested stakeholders.

5.1. Collaboration Agreement

In December 2019, the [Collaboration Agreement](#) has been signed by INFRAEOSC-05a/b/c complimentary EOSC projects: EOSC-Pillar, EOSC-synergy, EXPANDS, NI4OS-Europe, EOSC-Nordic, EOSCSecretariat.eu, and FAIRsFAIR. The agreement is a living document, evolving to meet the needs of the complementary projects and those of EOSC overall. The Collaboration Agreement is a multi-party one, covering all above projects, and has a form of a Memorandum of Understanding.

The purpose of the Collaboration Agreement is to create synergy in the mutual activities related to EOSC, to implement the provisions of the respective Complementary Grant Agreements for INFRAEOSC-05a/b/c projects concerning, among other things, Access Rights relating to Complementary Results and Complementary Background, to provide the framework for planning, implementing and monitoring the joint activities and to prepare and take action to incorporate other EOSC initiatives into this collaboration.

Briefly, the Joint activity Plan is divided in the following focus areas: 1. Identification of overlaps and complementarities between the INFRAEOSC-05 projects in order to jointly support the implementation of the EOSC and development of a synchronised plan of activities, 2. Formation and operation of Task Forces dedicated to address common activities of interest to multiple projects and 3. Development of a common strategy to synchronise activities of Collaborating Projects with the EOSC Working Groups.

5.2. Task Forces

The setting up of INFRAEOSC-05 Task Forces has been a decision taken at the Turin meeting in June 2019. Task Forces have been the means to implement the Joint Activity Plan, that has been part of the MoU signed between the projects.

Since the very first INFRAEOSC-05 meeting, the projects tried to identify common working areas, complementarities, and even possible overlaps. The projects agreed to share information on a) overall objectives, b) landscape, c) FAIR, d) onboarding, e) national policies, f) training & skills, and g) dissemination and events. The information collected

has been analysed with respect the identification of synergies and differences. This can be actually considered as the “kick-off” of the coordination of activities, as it created a common understanding on how each project is addressing the aspects above. It also allowed for their synchronization with the EB Working Groups, a necessary activity for channelling input and contributions. Thus, the six Task Forces have been set up following at large the WG focus:

- **Communications and Events:** Aligning EOSC-related common messaging through information sharing between projects and mutual sharing of project news & results.
- **FAIR:** Reviewing and standardising FAIR policies and guidelines in order to enable FAIR-aligned services and repositories.
- **Landscaping:** Defining common targets and methodology for the National Initiatives landscaping activities.
- **National Policies and Governance:** Collating, discussing and engaging with policymakers and national policies to foster the uptake of Open Science OS practices.
- **Service Onboarding:** Discussing procedures and solutions to facilitate the flow of services stemming from involved projects into the EOSC Service Catalogue.
- **Training and Skills:** Synchronising information by establishing shared training resources and common training events [3].

The National Policies and Governance TF is the only one that does not have a one-to-one equivalent with a WG. Policies is, however, a topic that is addressed by all INFRAEOSC-05a/b/c projects and constitutes thus an important aspect of the collaboration. Moreover, it is quite horizontal, delivering input to more than one WG.

The EOSC-Secretariat project facilitated their creation and management, providing the logistical support. It created dedicated mailing lists and set up a Virtual Research Environment for each, for uploading documents and exchanging information and messages.

Participation in the TFs has been left to the projects to decide, applying two lightweight-criteria: (a) people appointed by the projects should be knowledgeable on the topic and (b) the balance among the projects regarding participation and representation should be kept.

In parallel a minimum set of operational policies for the TFs has been drafted and agreed among the projects. It also followed a lightweight format and took provisions on following aspects:

- **Task Force Official Delegate**

Each INFRAEOSC-05 project can nominate one official delegate to the Task Force work. The official delegate has the right to vote during specific Task Force activities that may require a common decision-making process or an official statement by the Task Forces, as stated in the relevant section below.

- **Task Force Participants**

In addition to the official TF delegate, the projects may nominate one or more participants to the Task Force. The participants will be included in the TF mailing list and may participate to specific calls/meeting depending on their expertise and role in the projects they belong to. As a guidance, we recommend two participants per project.

- **Task Force Chair**

During the first TF meeting, the project delegate must elect a Chair from a list of volunteers. The Chair is responsible for: drafting the TFs meeting agendas, ensuring the roadmap of the TF follows the agreed activities as indicated in the Collaboration Agreement.

- **Task Force Rapporteur**

The Task Force Rapporteur is a member of EOSC-Secretariat.eu within the TF. The TF Rapporteur is responsible for: facilitating the TF meeting, the meeting minutes, reporting to the Coordination Board periodically (once every 3 months or whenever needed), represent an official communication channel between the TF and the EOSC EB WGs

- **Decision making process**

Some activities may require a common decision taken by the TF official delegate. Decisions are taken on a majority basis with projects having one single vote each. Activities requiring a common decision are (not limited to) the following: Chair election, Common Activities definition, Minutes wrap up definition (to be forwarded to the Coordination Board periodically)

Apart from the above, the TF operation has been left to the TFs themselves. For example, some TFs decided to have a rotation of the chair, while in others the chair remained the same for the whole duration.

Landscaping	Biljana Kosanovic, UOB	Eleni Toli ATHENA RC	Ognjen Prnjat GRNET
FAIR data and Infrastructures	Andreas Athenodorou CYI	Elli Papadopoulou ATHENA RC	-
Service On Boarding	Dusan Vudragovic (chair) IPB	Anastas Mishev UKIM	-
National Policies and Governance	Eleni Toli (chair) ATHENA RC	-	-
Training and Skills	Sonja Filiposka UKIM	-	-
Dissemination and Events	Judit Fazekas DE	Dimitra Kotsokali GRNET	-

Table 2: NI4OS-Europe Task Forces participation

Once set up, Task Forces have organized the first online meeting to further specify aims, mandate, objectives, tasks and activities. As agreed within the MoU but also in the working documents of each TF, the objectives and plan of activities have been periodically updated. This was also related to the workflow and the outcomes of the projects. For example, for the National Policies and Governance TF the main work in the first months of operation has been a landscaping for the identification and collection of information related to national policies. After information was collected, the objectives of the TF have been adapted to reflect the new work priorities. The list for joint activities for 2021 is currently under development.

NI4OS-Europe is actively participating in all TF meetings and activities. The periodic reporting, to which all projects have agreed, captures the related contribution by each of them. The reporting for each TF covers three aspects:

- Status of related activities in projects
- Joint plans and actions
- Feedback to the EB and EOSC WGs

NI4OS-Europe provided detailed reporting for all TFs and in all periodic reports, as its activities cover the full range of the TFs [4] .

The role of the Task Forces has been substantial in making the collaboration between the projects working. The scheduled meetings, the joint drafting of statements and reports, the co-organisation of workshops, the exchange on research topics have built strong working relations between the projects.

Particularly successful examples of outcomes of the TF collaboration, are certainly the organization of a workshop by the Policies and Landscape TFs in the EOSC-hub week 2020 [5] the work and two publications on EOSC readiness indicators [6] , the submission of co-creation proposal for setting up an online platform for EOSC readiness, the recommendations to EOSC Governance included in the position papers on EOSC [7] .

Through all the above, the contribution of the Task Forces to the GB and EB Working Groups regarding EOSC implementation and evolvement has been essential, considering especially that they channeled the views of European researcher communities.

6. Liaison with other related EOSC initiatives

The following presents the collaborations with other initiatives (EOSC Enhance, EOSC-hub, eInfraCentral, FREYA, OpenAIRE, RDA Europe, CODATA, WDS), in various technical areas of interest.

The EOSC-hub Project is targeted to provide the 1st implementation of EOSC federation and core and is currently responsible for the process of **service onboarding** to EOSC. GRNET is a one of the core service providers of EOSC-hub as such it acts as a liaison for the NI4OS-Europe for the exchange of know-how and best practices. Similarly, EOSC Enhance aims to develop and improve the functionality of the current manifestation of EOSC - the EOSC Portal, further augmenting the **service catalogue** assembled to date, and connecting independent, thematic data clouds for the benefit of users and service providers across Europe. GRNET participates in EOSC Enhance and is trying to leverage its involvement also for NI4OS-Europe by acting as liaison to promote NI4OS-Europe project requirements for EOSC Profiles (Resource and Provider) and to integrate its resource portfolio management tool AGORA with the EOSC Portal. In support of building the project's pre-production system which will then feed to EOSC, the two major contributors to the development of entry points for EOSC portal resources had to be exploited. Hence, links with e-InfraCentral which was the first project to address major obstacles of, among other things, services' accessibility, interoperability and fragmentation in the e-infrastructure field, were made possible. EOSC-hub followed to expand on services included in the research infrastructures field. Their gateways as two separate assets, but also jointly, under the umbrella of EOSC, provide a huge interest for NI4OS-Europe WP3 and WP5.

The project puts efforts to promote best RDM practices, especially by certifying different steps in the process, such as legal aspects of data management. For repositories, in particular, it utilises the CoreTrustSeal **certification** which is a product of organizations, including the World Data System (WDS). It should be noted that the primary goal/objective of NI4OS-Europe is not to apply such certifications but to promote, inform and support research institutions and providers to apply them by liaising with WDS and FAIRsFAIR on the occasion that interest is expressed. New topics that are being explored in the context of the project, such as license clearance validation or policy repository, will be also communicated to those initiatives to inspire wider coverage and adoption of more Open Science and FAIR elements in existing endeavors.

In the name of the FAIR principles and their application by services so that FAIR data and outputs can be produced and stored in their spaces, **Persistent Identifiers (PIDs)** are given equivalent attention. Links with FREYA project help to understand the different systems available, their evolution through the PID Graph, and how they can be used by services. Complementary, the project contributes to the EOSC FAIR WG about PID policies.

In the framework of **policy and repository networks**, the OpenAIRE e-infrastructure and experts network has been exploited in many ways, most important being the activities involving strategic planning for the development of NOSCI and similarly for more technical issues concerning repositories interoperability in EOSC. In addition, organisations of the consortium that are also part of the OpenAIRE experts groups (the National Open Access Desks – NOADs) take advantage of the national Open Science community that OpenAIRE has developed throughout the years in each country to co-organise training activities and discussions.

To keep up with new trends and ICT specifications [9] around data (metadata, active data management, etc) and in return to provide input about new demands identified in NI4OS-Europe project, there is good participation of partners in Plenary meetings and working groups of **Data Forums** such as the Global Research Data Alliance. NI4OS-Europe participation strengthens the RDA Europe region which is the European data forum for researchers and data stakeholders. It is a fact that European researchers stand higher in the regional representation chart of RDA and they actively contribute in the forum's activities, thus leading the way on a majority of data topics. It should be noted that at the beginning of the project, RDA Europe operated as a project under which some of NI4OS-Europe partners like ATHENA were the National Nodes for RDA in the European region. During that short period of time (appx. a year), the Nodes collaborated with partners in their efforts to link with national data communities and to promote the adoption of RDA outputs in the region. Also, ATHENA is owner of the RDA SEEMEDCAU list of RDA, which it maintains and frequently updates members for what is happening in the Southeast Europe, Mediterranean and Caucasus areas.

Links to global RDA initiative are presented in the following section.

7. Liaison with other regions

An important aspect characterising the project's work is alignment of practices not only with other European regions (see Section 6), but also with other regions of the world. The following initiatives have been/ are been contacted to ensure compliance on a global scale.

In this reporting period, close cooperation has been established with Arab/ENP states (via ASREN – Arab States Research and Educating Network), as well as WACREN and UbuntuNet (West and East African Research and Education Networks, respectively).

EOSC and FAIR principles as well as the overall status of EOSC in Europe and specifically in NI4OS-Europe area has been presented at the leading events in these 3 regions, namely eAGE (December 2020), UbuntuNetConnect (November 2019) and will be presented in the upcoming WACREN conference (March 2021). NI4OS-Europe was featured in the dedicated Open Science and International Cooperation sessions in these events. The project coordinator, as member of WACREN Programme Committee, has also steered the formulating and structure of a dedicated Open Science session at WACREN 2021.

The presentations are as follows:

- O. Prnjat, keynote speech "European Open Science Cloud: perspectives for the UbuntuNet region and beyond", UbuntuNetConnect 2019 conference, Antananarivo, 29 October – 1 November 2019.
- O. Prnjat, "NI4OS-Europe Open Science Cloud", e-AGE20, 10th International Platform on Integrating Arab e-Infrastructure in a Global Environment, 15-16 December 2020.
- (upcoming) O. Prnjat: "European Open Science Cloud in West Africa: opportunities for collaboration", WACREN 6th Annual Conference, 15-19 March 2021.

As stated in the eAGE conference press release: Open Science and Open Access were thoroughly discussed in the e-AGE20 conference through the high-level participation and presence of the European Open Science Cloud (EOSC) and the National Initiatives for Open Science in Europe (NI4OS-Europe). ASREN presented its plans towards deploying and implementing Open Science and Open Cloud services in the Arab region with the support of the EU co-funded project AfricaConnect3. National Open Access initiatives in the region were also discussed with examples in Palestine and regional activities under LIBSENSE initiative.

Moreover, the NI4OS-Europe Open Science Cloud survey and the data collection approach has been shared with AfricaConnect-3 project partnership, specifically with ASREN, UbuntuNet and WACREN. These 3 organizations had been encouraged to survey the state of Open Science Cloud in the 3 regions, following the NI4OS-Europe model.

ASREN has adapted the NI4OS-Europe survey (as well as data collection approach) and has conducted it in the Arab region, and advertised/solicited inputs also from the West and East Africa regions. The responses from 71 institutions have been received, showing high interest in open access repositories, cloud services and collaboration between EOSC and the region. ASREN is considering Open Science as a priority and has been making constant efforts during the past months on promoting Open Science in the Arab region. ASREN has also managed, in cooperation with regional partners, to include a component

in the [AfricaConenct3 project](#) that supports the efforts towards developing trusted and open environment for the scientific community. Furthermore, the AfricaConnect3 project supports the [LIBSENSE initiative](#), in collaboration with sister regional RENS (WACREN and UbuntuNet Alliance), which is considered as a great opportunity for us at ASREN and our members to understand and disseminate Open Access and Open Data.

Moreover, links have been established with RDA, which provides the largest global forum for knowledge exchange and collaboration on research data. NI4OS-Europe partners take part and co-chair RDA groups to enable a two-way communication with the SEE region. Apart from individual representation, NI4OS-Europe participates as a project by presenting posters (latest during P16 [10]) and communicating:

- Outputs of its work, such as tools that could be plugged into RDA groups activities. E.g. the LCT tool which could be beneficial for groups such as the legal interoperability.
- Ideas arisen from qualitative and quantitative methods followed by WPs that could inspire focused discussions.

NI4OS-Europe also contributed to the RDA Working Group for COVID-19, in the omics subgroup. Under this role, BRFAA participated in the working group webinars and contributed to the "RDA COVID-19 Guidelines and Recommendations" drafting "Guidelines for Structural data", released on May 28th 2020, <https://doi.org/10.15497/rda00052>. The guidelines/best practices for structural data were presented in workshops. Finally, a paper on "Fostering global data sharing: highlighting the recommendations of the Research Data Alliance COVID-19 working group" was submitted (October 2020) with NI4OS acknowledgement.

Since one of the main pillars of the NI4OS-Europe work is the onboarding of institutional and data repositories, to maximise access and interoperability, links with the Confederation of Open Access Repositories – COAR are exploited particularly regarding their COAR Controlled Vocabulary. Furthermore, the Next Generation Repositories initiative and Notify project are of interest as they could potentially assist repositories in the region with applying services on top of their repositories and allow linking with external resources all thanks to the common COAR technical model. In Latin America, LA Referencia places a good regional example of a strong repository network, also linked to COAR, which NI4OS-Europe can draw best practices from.

8. Dissemination of project outputs in the widest EOSC landscape

The NI4OS-Europe dissemination activities spread awareness of the NI4OS-Europe project outputs in the region and beyond, encourage human networking, promote NI4OS-Europe services, and disseminate the achieved scientific results. The target audiences are broad, and range from policy bodies, EOSC stakeholders, EOSC Governance to scientific communities, other interested R&E communities and researchers, data clusters, SMEs and industry. Dissemination is carried out through organizing training and dissemination events (national and international), setting up and maintaining communication channels and developing, updating and expanding content-rich web portals.

In addition to this, special care is given in disseminating the project outputs with other EOSC projects and initiatives, both by actively participating of NI4OS-Europe team members at events related to EOSC, Open Science and FAIR principles and RDA and by co-organizing events with other initiatives. NI4OS-Europe also uses social media to disseminate main results of the project, collaborating with other EOSC related platforms to reach even more potentially engaged stakeholders.

In the beginning of April 2020, NI4OS-Europe dissemination team took part in the European Commission's social media campaign on COVID-19, contributing to raise awareness on the necessity of open science research workflows and the use of FAIR infrastructures within the burdensome pandemic times. NI4OS-Europe collaborated in the joint effort of the fight against COVID-19 with fast access channels and information collected in the COVID-19 Wiki.

During the given period NI4OS-Europe has actively promoted EOSC, Open Science and FAIR related events within social media channels to reach the different communities, and related projects and initiatives. NI4OS-Europe partners were also involved in various workshops and trainings:

- EOSC-hub week 2020: Online workshop on Policy landscape across Europe (<https://ni4os.eu/2020/05/21/eoschub-week-2020-online-workshop-on-policy-landscape-across-europe/>).
- EOSC-hub week 2020: Online workshop on Innovation from the EOSC regional projects (<https://www.eosc-hub.eu/eosc-hub-week-2020/agenda/innovation-eosc-regional-projects>).
- EOSC Governance and Sustainability Workshop (<https://ni4os.eu/2020/07/12/eosc-governance-and-sustainability-workshop/>).
- Synergies between Horizon and European structural and investment funds in EOSC Partnership (<https://ni4os.eu/2020/07/16/webinar-synergies-between-horizon-and-european-structural-and-investment-funds-in-eosc-partnership/>).
- NI4OS-Europe's participation in the EOSC Symposium 2020 (<https://ni4os.eu/2020/10/22/ni4os-europes-participation-in-the-eosc-symposium-2020/>).
- FAIR Assessment and certification of digital objects and data repositories (<https://www.fairsfair.eu/news/fair-assessment-and-certification-eosc-region-report-available>).

Partners were heavily involved in national and international conferences, workshops, trainings and meetups where they actively participated as presenters, facilitators and trainers. More detailed information is provided in D7.4 - 1st Dissemination and marketing report [11].

Apart from predefined targeted liaison activities with other EOSC initiatives, a lot of NI4OS-Europe partners have been in contact with various organizations and took part in related events to promote EOSC and FAIR principles, as well as mutual synergies. A list of presentations is given below:

- (GRNET) O. Prnjat, "NI4OS-Europe" presentation, GEANT South East Europe NREN Directors Workshop, 4th September, 2019, Athens.
- (ATHENA) Poster presentation, "NI4OS-Europe: Building National Initiatives for Open Science in Europe", OSFair2019, 16-18 September 2019, Porto, Portugal. <https://www.opensciencefair.eu/posters-2019/ni4os-europe-building-national-initiatives-for-open-science-in-europe>.
- (ATHENA) E. Papadopoulou, "The journey to EOSC preparing at national level", OSFair2019, 16-18 September 2019, Porto, Portugal.
- (GRNET) O. Prnjat, participation in panel on "EOSC Readiness" during EPOS Implementation Phase Project final event in Madrid, 25-27 September 2019.
- (ATHENA) E. Toli, presentation of NI4OS-Europe scope, objectives and partnership, the candidate generic & thematic services for on-boarding to EOSC, as well as the short-term roadmap of the project in the "EOSC as a Federation" plenary session, at the 1st EOSC Symposium in Budapest, Hungary, 26-28.11.2019.
- (ATHENA) Poster at RDA 16th Plenary Meeting - LCT: a license clearance tool for research outputs re-use <https://www.rd-alliance.org/rda-16th-plenary-meeting-poster-sessions>.
- (CYI) A. Athenodorou presented NI4OS-Europe in the OpenAIRE workshop "Open Science: From theory to practice" in Cyprus, 24th of October 2019.
- (UCY) V. Koukounidou, presented NI4OS-Europe in Open Access week event organized by Cyprus OpenAIRE NOAD on the 24th of October 2019. The title of the event was "Open Science: From theory to practice" Website program and pictures of the event: http://opensciencecy.ucy.ac.cy/?convert_event=national-oa-week-event-2019.
- (ARNES) Jan Jona Javoršek, Jožef Stefan Institute, Slovenian national supercomputing network and operation HPC RIVR, Conference Mreža znanja 2019, 4 December 2019: <https://video.arnes.si/portal/asset.zul?id=C1ITUGYOHLbgoWNIRHDfrxYm>.
- (RENAM) On December 12, 2019 RENAM in cooperation with the Information Society Development Institute, the Academy of Economic Studies of Moldova and Consortium REM co-organized Round table "Problems of Open Science in the Republic of Moldova", which took place in Chisinau, Moldova. At the event were discussed topics on Open Access, Open Science in Moldova and presented international projects in the area of Open Science and Open Access that were recently started Moldova. The event was attended by representatives of 45 organizations from the Republic of Moldova.
- (UMUKM) D. Legat, "Overview of Global Practices", RDA Node Slovenia Conference: Scientific Journals and Research Data, 28 January 2020: <https://www.rd->

alliance.org/system/files/documents/Legat_Pregled_zgledov.pdf

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- (UOB) The early results of the NI4OS-Europe project survey were presented at the first Regional Cooperation Council in Brussels, on January 21st, 2020.
- (IICT) T. Gurov "Possible joint activities of RDA BG Node with NI4OS-Europe project on a National Level", online Workshop on Data Management, ZOOM platform, 24th of July 2020.
- (GRNET) Ognjen Prnjat presented "Building National Initiatives for Open Science - NI4OS-Europe" during virtual session Advancing R&I ecosystems in the Western Balkans with regard to their ERA integration at ESOF 2020 (4 September 2020, Virtual Room 3 – 12:00 – 13:30).
- (IICT) Aneta Karaivanova, "Open data, open science and EOSC", webinar on Open Data, principles and ORDM, organized by CoE for Informatics and ICT, 26 November 2020.
- (IICT) Todor Gurov, "Data and FAIR principles", webinar on Open Data, principles and ORDM, organized by CoE for Informatics and ICT, 26 November 2020.
- (IICT) Emanouil Atanassov, "New Data Centre at IICT", webinar on Open Data, principles and ORDM, organized by CoE for Informatics and ICT, 26 November 2020.
- (IICT) Sofiya Ivanovska, "ORDM", webinar on Open Data, principles and ORDM, organized by CoE for Informatics and ICT, 26 November 2020.

9. Conclusions

The liaison activities during the first project period were based on the initial plans drafted in the first quarter of the project and the project internal information and collaboration space that has been set up within the broader intra-project collaboration platform. These initial plans are further updated according to the EOSC ecosystem evolution and the needs of the project.

NI4OS-Europe project partners participated in the development of the EOSC core documentation (FAIR Lady report, the SRIA and the EOSC partnership proposal), supporting EOSC governance and ensuring inclusiveness on the European level.

The project supported the multi-layered, interim governance structure of EOSC and provided recommendations and advices to the EOSC GB representatives from the region, for all their activities including briefings and discussions. NI4OS-Europe representatives participated actively at the Task Forces and Working Groups, supporting the development of numerous reports or advising the EOSC GB Members. The participation in the EOSC Executive Board of a NI4OS-Europe partner has been an important asset for the project, allowing for further elaboration on the EB outcomes within the project and adjusting the related activities.

NI4OS-Europe role was crucial for the establishment of the EOSC Association. Since the EOSC Association's first steps, NI4OS-Europe members were in close contact with their regional EOSC GB Members for the development and drafting of the EOSC Association Statutes and participated officially to the EOSC Association Bylaws Working Group (WG).

The liaison with other INFRAEOSC-05a/b/c projects funded under the same topic started before the official kick-off of several of them, setting the collaboration ground, adopting a common approach on the Landscaping activities, creating Task Forces, Interest Groups and the Cross Projects Collaboration Board.

NI4OS-Europe liaison with other EOSC related initiatives (EOSC Enhance, EOSC-hub, eInfraCentral, FREYA, OpenAIRE, RDA Europe, CODATA, 1WDS) allows to project the project requirements for EOSC Profiles (Resource and Provider), integrate its resource portfolio management tool with the EOSC Portal and the EOSC Catalogue, promote best RDM practices (certification processes), give attention to persistent identifiers – PIDs, exploit policy and repository networks and provide input about new demands identified around data (metadata, active data management, etc).

Close cooperation has been established with Arab/ENP states (via ASREN – Arab States Research and Educating Network), as well as WACREN and Ubuntunet (West and East African Research and Education Networks, respectively), RDA (Research Data Alliance) and COAR (Coalition of OA Repositories).

NI4OS-Europe has actively promoted and dissemination its developments in different events and fora, thus expanding and reaching out to ever wider liaison network.