



Ss. Cyril and Methodius University

Faculty of computer science and

engineering

Project Charter

EOSC Node North Macedonia

1. PROJECT SUMMARY

EOSC Node North Macedonia will strengthen the EOSC Federation by making national open science capabilities available as federated, interoperable services to researchers. The primary purpose of participation is to deliver a reliable national entry point combining trusted access, FAIR-aligned exposure of research outputs, data-intensive computing, and structured capacity building to accelerate adoption of EOSC practices and reproducible research.

The Faculty of Computer Science and Engineering (FCSE) at Ss. Cyril and Methodius University in Skopje acts as the national operator under two mandates from the Ministry of Education and Science: (i) to represent North Macedonia in the EOSC Association as the mandated organisation, and (ii) to build and coordinate the national EOSC Node. The Node is implemented through the [Open Science Lab](#) and delivers a mature service portfolio at TRL 8–9.

A distinctive characteristic is the Node's operational integration with the University Open Science Centre ([OSC](#)), providing a stable coordination layer for training, community engagement, and adoption support. The OSC gains a national dimension through strong ties with the National Open Science Cloud Initiative ([NOSCI.mk](#)), enabling coordination and uptake beyond a single institution.

The geographic scope is the national research community, with cross-disciplinary broad thematic coverage. Technically, the Node provides core federation functions via MK-AAI-Proxy, enables exchange through Repo-MK for national outputs and supporting controlled access where required, delivers the human and operational layer through OSC-Skills-Hub training services, and contributes exchange capacity through OSC-Cloud with quota-based IaaS and GPU-enabled compute.

Cross-Node validation with EOSC Node Poland is delivered in two tracks: an operational track focused on sustainable operations through joint capacity building led by the University OSC and the Polish Open Science Centre (members of Skills4EOSC Competence Centres network), and a scientific track implementing FUMD-AI, with a published FAIR dataset and AI training and evaluation supported by FCSE's GPU resources.

2. VALUE PROPOSITION

EOSC Node North Macedonia joins the EOSC Federation to address a persistent gap in the European Open Science landscape: many research communities still lack a coherent operational pathway that combines trusted access, discoverability of research outputs, specialised computing, and capacity building for adoption. The value proposition of the Node is twofold: (i) to provide a reliable national entry point that makes North Macedonia's services and outputs interoperable and discoverable within EOSC, and (ii) to enable North Macedonian researchers to access EOSC services provided by other Nodes through a trusted, identity-enabled gateway.

The Node responds to concrete ecosystem needs. First, federated access and identity integration remain a barrier for cross-infrastructure use. EOSC Node North Macedonia contributes a production-grade national identity layer through MK-AAI-Proxy (AAIEDU.mk/eduGAIN), lowering onboarding friction and supporting single sign-on for access to services across the Federation. Second, the EOSC ecosystem benefits from consistent exposure of research outputs through open metadata and controlled access patterns where needed. Repo-MK integrates national publication and data repositories, prioritising open metadata and supporting controlled access to sensitive or restricted data in line with the "as

open as possible, as closed as necessary” principle. Third, modern open science increasingly depends on scalable computing, particularly for AI-driven research. OSC-Cloud contributes quota-based IaaS and GPU-enabled resources, enabling data-intensive workflows and evaluation. Finally, technical federation alone does not guarantee uptake. OSC-Skills-Hub, together with the UKIM Open Science Centre, provides the adoption layer through reusable training materials, onboarding guidance, and support for both researchers and Node operators.

A distinctive differentiator of EOSC Node North Macedonia is how it couples production-ready federation services with a national skills and adoption mechanism. The Node combines the Open Science Lab and TRL 8–9 services with structured capacity building delivered through the UKIM Open Science Centre and its national outreach via NOSCI.mk, helping close the “last-mile” gap between technical availability and real uptake.

Beneficiaries include the research communities and institutions connected through AAIEDU.mk/eduGAIN, notably the four public universities in North Macedonia, as well as researchers and service operators supported through the UKIM Open Science Centre and the broader NOSCI.mk community (100+ researchers endorsing the national Open Science declaration). MARnet (the national NREN) benefits through strengthened national integration with EOSC-aligned access and federation practices. Public sector stakeholders, including the Ministry of Education and Science, benefit through improved visibility and reuse of publicly funded research outputs via open metadata exposure and controlled-access mechanisms where required. The integration of Node operations with the Open Science Centre also supports evidence-based governance by providing aggregated indicators on service onboarding and use, training uptake, and exposure of research outputs (at metadata level), informing institutional planning and national coordination. Wider society benefits indirectly through more accessible research results, improved reproducibility, and faster translation of research into innovation enabled by FAIR and Open Science practices.

A further strategic benefit is the collaboration with EOSC Node Poland through two validation tracks: an operational track focused on capacity building led by the two Open Science Centres and a scientific track (FUMD-AI) demonstrating reproducible cross-border workflows combining Polish notebook and repository capabilities with North Macedonian GPU-enabled training and evaluation, submitted as a scientific use-case on the EOSC Gravity inter-project call.

3. REPOSITORIES AND SERVICES DELIVERED

EOSC Node North Macedonia will deliver a mature and interoperable service portfolio that covers the essential layers required for effective participation in the EOSC Federation: trusted access, exposure of research outputs, compute for data-intensive research, and the human/operational layer that enables adoption. The services are operated by FCSE through the Open Science Lab, in operational integration with the University OSC to ensure that service delivery is paired with training, onboarding guidance, and community uptake support. The portfolio services address both the technical and operational requirements for EOSC participation, while enabling North Macedonian researchers to both contribute to and consume EOSC services beyond national borders. All services are production-ready or close-to-production (TRL 8–9), with clear access policies and defined contributions to the Federation either as Node core functions (identity and skills) or as exchanges (repository and compute). The portfolio is intentionally focused to ensure sustainability, operational quality, and measurable uptake within the national research community.

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Service ID	Service Description	Access Policies	Federation Contributions	TRL
MK-AAI-Proxy	The national IdP proxy managed by FCSE as coordinator of AAIEDU.mk , connected to eduGAIN.	Federated access for eligible users via AAIEDU.mk/eduGAIN (research community); supports access to national and EOSC services.	Core Function: Provides the trusted identity layer for the Node, enabling compliant AAI integration and cross-Node access to EOSC services.	9
Repo-MK	A localized repository access service integrating national publications and data.	Open metadata; controlled access to data where required (e.g., sensitive/restricted).	Exchange: Exposes national outputs via open metadata to improve EOSC discoverability.	8
OSC-Skills-Hub	A training registry and learning platform managed by OSC	Public: Open training materials.	Core Function: Delivers the “human layer” of the Node (training, onboarding guidance, operator support)	8
OSC-Cloud	IaaS compute resources (OpenStack) for data-intensive processing.	Controlled: quota-based allocations for researchers/projects	Exchange: Provides scalable compute (including GPUs) to support federated scientific workflows, training, and evaluation.	8

4. USE CASES

EOSC Node North Macedonia will deliver two complementary use cases that demonstrate the added value of the EOSC Federation. The first is a scientific multi-Node use case that validates cross-border execution of a reproducible workflow using complementary capabilities provided by different Nodes. The second is an operational/federating-capability use case that strengthens federation readiness by building shared operational capacity, reusable training assets, and aligned onboarding practices across Nodes. Together, they demonstrate both scientific impact and sustainable federation operations, while remaining high-level and focused on required capabilities rather than implementation details.

Use Case 1: Scientific multi-Node use case — Federated Urban Mobility Datasets and AI-based Handover Prediction (FUMD-AI)

FUMD-AI demonstrates how the EOSC Federation enables cross-Node scientific workflows by combining notebook-centric experimentation and repository publication from one Node with specialised GPU-enabled compute from another. It addresses the need for reproducible AI pipelines that can be executed and validated across infrastructures, improving reusability and transparency of results.

Capabilities required for this use case include: trusted federated access (AAI), compute resources for AI training and evaluation (including GPUs), notebook-based environments for workflow execution and documentation, storage for intermediate artefacts, and repository publication for FAIR outputs. The workflow will follow FAIR principles by publishing a dataset with appropriate metadata and documentation, alongside reusable code and configuration artefacts. EOSC Node Poland will provide virtual machines, Jupyter notebook environments, storage, and repository publication of the FAIR dataset. EOSC Node North Macedonia provides quota-based GPU-enabled resources for AI training, evaluation, and benchmarking. Both Nodes contribute training and user support actions to ensure researchers and Node operators can reuse and operate the workflow.

The expected output of this use case is a complete reusable package comprising workflow source code and configuration for each step, AI model code, evaluation artefacts, documentation enabling repeatability, a published FAIR dataset and a public presentation demonstrating cross-Node execution.

Use Case 2: Federating-capability use case — Embedding Open Science Competence Centres into EOSC Nodes

This use case develops and validates a practical methodology for embedding Open Science Competence Centre functions into national EOSC Node operations. It addresses a common federation gap: technical Node capabilities often exist without a structured mechanism for training delivery, onboarding, and sustained community uptake. The methodology will define how competence-centre functions (skills development, guidance, community coordination) are integrated into Node governance and day-to-day operations, creating a repeatable model that improves adoption and operational sustainability. The intended outcomes are a set of standards and practical guidance for competence-centre integration into Node operations, complemented by a reusable Competence Integration Toolkit that can be adopted by other Nodes and competence centres.

Capabilities required for this use case include: training and learning delivery mechanisms (training registry/learning platform), reusable learning materials, role-specific onboarding guidance for Node operators, and coordination mechanisms across Nodes and competence centres.

The work is anchored in the collaboration between the UKIM Open Science Centre and the Polish Open Science Centre, both members of the Skills4EOSC Competence Centres network. EOSC Node North Macedonia and EOSC Node Poland jointly develop, test, and refine the methodology, supported by their Open Science Centres. Both Nodes contribute to pilot implementation through training delivery and operational alignment activities, ensuring that the resulting approach is transferable beyond a single national context.

The expected output of this use case is a reusable package comprising (i) standards and practical guidance for embedding competence-centre functions into Node governance and operations, (ii) a Competence Integration Toolkit (templates, role descriptions, onboarding and training blueprints, and minimum practices), (iii) open training materials for researchers and

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Node operators published via the Skills Hub, and (iv) a dissemination action presenting the validated approach and lessons learned.

Use Case ID	Use Case Description	Federation Contributions	Participating Orgs	Other Nodes	Timeline
UC-SKILL-01	Embedding Open Science Competence Centres into EOSC Nodes: develop and validate a methodology for embedding competence-centre functions into Node governance and operations, including capacity building.	Strengthens federating capabilities by delivering reusable standards and practical guidance for competence-centre integration into Nodes, plus a Competence Integration Toolkit and open training assets that can be reused by other Node/centres.	FCSE (MK), PG (PL)	EOSC Poland	14 months: M1–2 design and alignment; M3–8 pilot implementation; M9–12 refinement and toolkit consolidation; M13–14 final release and dissemination.
UC-Mobility-01	Federated Urban Mobility Datasets and AI-based Handover Prediction (FUMD-AI): a scientific multi-Node workflow demonstrating cross-Node execution by combining Poland's with	Demonstrates added value of federation through a reproducible multi-Node scientific workflow, cross-Node use of complementary capabilities, FAIR dataset publishing, and public demonstration.	FCSE (MK), UMH (ES), AGH (PL)	EOSC Poland	6 months: M1–2 alignment and workflow packaging plan; M3–4 cross-Node execution and evaluation; M5–6 final package and public demo. (depending on the EOSC Gravity grant)

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	North Macedonia's Node services.				
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In scope

EOSC Node North Macedonia will operate and support a focused service portfolio at TRL ≥ 7 through the Open Science Lab, including MK-AAI-Proxy, Repo-MK, OSC-Skills-Hub, and OSC-Cloud (including GPU-enabled capacity). The Node will provide federated access to national and EOSC services via AAIEDU.mk/eduGAIN, expose national research outputs through open metadata with controlled-access mechanisms where required, offer quota-based compute resources for data-intensive research, and deliver training and onboarding support through the UKIM Open Science Centre and its national outreach via NOSCI.mk.

Within the build-up phase, the Node will deliver two use cases. The scientific multi-Node use case (FUMD-AI) will be implemented in a 6-month execution window and will result in a reusable workflow package (code, configurations, documentation, model artefacts and evaluation results), with the FAIR dataset published via EOSC Node Poland's repository services. The federating-capability use case (Embedding Open Science Competence Centres into EOSC Nodes) will run for 24 months and will deliver standards and practical guidance for competence-centre integration into Node operations, including a Competence Integration Toolkit (templates, role descriptions, onboarding and training blueprints, and minimum practices), jointly validated with EOSC Node Poland and the two Open Science Centres.

The Node will support stakeholders including researchers, research institutions and universities connected through AAIEDU.mk/eduGAIN, Node operators, and national coordination communities engaged through the UKIM Open Science Centre and NOSCI.mk. Integration efforts will follow FAIR principles for published outputs and will leverage federation mechanisms such as AAI and service discoverability through catalogues, aligned with EOSC interoperability expectations.

Out of scope

EOSC Node North Macedonia will not develop or commission new node services from scratch as part of this build-up phase. The focus is on federating and integrating existing national repositories and services, improving their interoperability and exposure (e.g., open metadata with controlled access where required).

In addition, the services operated and made available through EOSC Node North Macedonia during the build-up phase are intended strictly for non-profit research use. Commercial use, commercial service provision, and use by for-profit entities outside research-oriented, non-profit contexts are out of scope for this phase.

5. COMPLIANCE WITH TECHNICAL REQUIREMENTS

Compliance statement

EOSC Node North Macedonia confirms its commitment to comply with the mandatory technical specifications for integration in the EOSC Federation, including integration with the EOSC Federated AAI, exposure of Node resources through the common EOSC catalogue,

and implementation of the required Node Core Capabilities in line with EOSC interoperability and security expectations.

Governance and technical readiness

EOSC Node North Macedonia is operated by the Faculty of Computer Science and Engineering (FCSE), Ss. Cyril and Methodius University in Skopje, and is implemented through the Open Science Lab. Governance roles are in place to ensure operational continuity and compliance, including a Coordinator, Operations Officer, Cybersecurity Officer, Legal Officer, Communications Officer, IT support, and a Capacity Building Officer. This structure ensures decision-making for onboarding, operational change control, incident handling, legal and policy compliance, and community support and training.

The Node service portfolio operates at TRL 8–9 and is designed to provide a stable foundation for federation participation: MK-AAI-Proxy (AAIEDU.mk/eduGAIN), Repo-MK (federation-facing access to national repositories with open metadata and controlled data access), OSC-Skills-Hub (training registry and learning platform), and OSC-Cloud (OpenStack-based IaaS including GPU-enabled capacity).

Integration in EOSC Federated AAI

The Node will meet the Federated AAI requirement through MK-AAI-Proxy, the national IdP proxy managed by FCSE as coordinator of AAIEDU.mk and connected to eduGAIN. This provides a trusted identity layer for the Node and enables federated authentication and authorisation workflows for access to Node services and, where applicable, consumption of EOSC services beyond national borders. The Node will maintain operational procedures for identity federation integration, including role-based access management for controlled services (e.g., quota-based compute), and security monitoring and incident handling aligned with federation expectations.

Exposure through the common EOSC catalogue

EOSC Node North Macedonia will ensure that Node resources are exposed and maintained through the common EOSC catalogue. The Node will publish and keep up to date service descriptions, access policies, and relevant operational information for the services delivered (AAI proxy, repository access service, skills hub, and cloud/GPU compute), ensuring that EOSC users can discover and understand the conditions of access and reuse. Catalogue entries will reflect the “as open as possible, as closed as necessary” approach by clearly distinguishing open metadata from controlled-access resources and by documenting eligibility and access pathways for quota-based services.

Implementation of Node Core Capabilities

EOSC Node North Macedonia will implement the required Node Core Capabilities through an integrated operational model combining technical service delivery (Open Science Lab) with adoption support (UKIM Open Science Centre and NOSCI.mk outreach). Core capabilities will be implemented as follows:

- AAI integration (Core capability): delivered through MK-AAI-Proxy (AAIEDU.mk/eduGAIN) to enable trusted federation access.
- Resource and service exposure (Core capability): delivered through consistent catalogue publication and lifecycle management of service entries, including change management for updates to policies, endpoints, and user-facing documentation.
- Operational readiness and support (Core capability): delivered through defined roles for operations, security, legal compliance, communications, and IT support, with procedures for onboarding, incident response, and service continuity.

- User enablement and capacity building (Core capability): delivered through OSC-Skills-Hub and the Capacity Building Officer role, including training materials and onboarding guidance for researchers and Node operators.

Security, policy and controlled access

The Node will apply security and compliance practices appropriate for federated operations, including defined incident response responsibilities, risk management overseen by the Cybersecurity Officer, and legal/policy oversight by the Legal Officer. FCSE operates its own CSIRT, providing an established organisational capability for incident triage, coordination, and response in support of Node services and users. The CSIRT will act as the technical escalation and coordination point for security events affecting Node services, supporting timely containment, communication, and lessons-learned improvements. Access to controlled services (Repo-MK controlled data access and OSC-Cloud quota-based resources) will follow transparent access policies and role-based controls, while open resources (metadata and training materials) will remain publicly accessible.

Technical compliance commitments (AAI, monitoring, catalogue/metadata)

As the main technical coordinator of AAIEDU.mk, FCSE guarantees compliance with the EOSC Federated AAI requirements. EOSC Node North Macedonia will leverage the existing eduGAIN membership to act as a bridge between the national identity federation and EOSC. The Node will operate a compliant proxy (SAML/OIDC) that accepts credentials from all AAIEDU.mk members and translates them for access to EOSC Core services, supporting trusted cross-Node access for researchers and service operators.

To support operational readiness and transparency, EOSC Node North Macedonia will deploy ARGO-compatible monitoring probes on the Open Science Lab (OSC-Lab) infrastructure in order to report availability and service health metrics to the central EOSC monitoring capability. For resource exposure and interoperability, the Node will implement the latest EOSC Profile metadata standards for service/resource descriptions, ensuring that Node services are described consistently and are harvestable via the national catalogue and exposable through the common EOSC catalogue.

Legal and policy compliance

EOSC Node North Macedonia will maintain clear access policies and terms of use for all services, with legal oversight ensuring alignment with applicable data protection requirements and institutional procedures. Repo-MK will follow an “open metadata / controlled access” model, while controlled resources such as OSC-Cloud will apply transparent eligibility criteria, quota policies, and role-based access.

6. EXTERNAL DEPENDENCIES & KEY RISKS

EOSC Node North Macedonia is implemented on mature services (TRL 8–9) operated through the Open Science Lab, which reduces delivery risk; however, several external dependencies and execution constraints remain relevant. The Node’s federation readiness depends on timely availability and stability of EOSC Federation core capabilities (e.g., EOSC Federated AAI integration points, catalogue onboarding and harvesting pipelines, and monitoring endpoints), including any changes in mandatory technical specifications during the build-up phase. Cross-Node use cases also depend on sustained coordination with EOSC Node Poland and the timely provision of the required coordinator endorsement email(s) confirming scope, objectives, and timelines.

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Key risks include compliance and governance risks (alignment with evolving EOSC policies and mandatory specifications), interoperability risks (metadata profile alignment and catalogue harvestability), and operational/security risks (federated access exposure, incident response coordination, and monitoring reliability). Data protection and access-control risks are addressed through an “open metadata / controlled data” approach, role-based access to quota-based compute, and legal oversight for policy alignment. Document management and continuity risks are mitigated by establishing a single authoritative repository for project documentation and operational procedures, with controlled access and versioning.

Decisions that may affect execution include prioritisation of service onboarding order, the final scope of repository integrations under Repo-MK, and the cadence of capacity-building releases under the competence-centre integration toolkit. The project will actively monitor these dependencies and risks through regular internal reviews, operational change control, and coordination meetings with the involved partner Node(s).

External Dependencies & Risks	Actions / Mitigation Measures	Deadline
Dependency: Partner engagement (risk of delays from EOSC Node Poland on the competence-centre integration methodology and joint capacity-building outputs)	Establish a Joint Working Group for the competence-centre embedding use case, agree cadence, owners, and acceptance criteria; run fixed monthly checkpoints and keep a shared backlog of deliverables.	Month 1 (working group active); then monthly
Risk: AAI divergence (changes in eduGAIN/EOSC AAI protocols or requirements impacting interoperability)	As AAIEDU.mk coordinators, participate in REFEDS/GÉANT fora; maintain the compliant SAML/OIDC proxy and adapt proactively via change control; re-test EOSC Core access after major updates.	Ongoing (review quarterly or on changes)
Dependency: EOSC catalogue onboarding & harvesting (delays or mismatch in service exposure/discoverability)	Implement latest EOSC Profile for service metadata; validate harvestability in the national catalogue; keep service entries (policies, endpoints, contacts) updated; perform early onboarding submissions.	Metadata readiness Month 2; harvestability validation Month 4
Dependency: EOSC monitoring integration (availability reporting not accepted/visible centrally)	Deploy ARGO-compatible monitoring probes on OSC-Lab; validate reporting to	Probe deployment Month 3;

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	central capability; define alert handling and ownership.	reporting validation Month 4
Risk: Security exposure through federation (public endpoints, federated access, incident handling)	Apply security monitoring and incident response procedures; FCSE CSIRT acts as escalation / coordination point; periodic review of access policies and endpoint hardening.	Procedures confirmed Month 2; first review Month 6, then every 6 months
Risk: Compliance & data protection for controlled services (Repo-MK controlled data access; OSC-Cloud quotas)	Enforce “open metadata / controlled data” approach; role-based access and logging; legal review of access policies/terms of use; periodic compliance checks.	Policies finalised Month 3; annual review or on major change
Risk: National visibility / uptake (lack of awareness in the Macedonian community reducing adoption)	Leverage UKIM OSC + NOSCI.mk community and university-to-university channels; publish practical guidance and training via Skills Hub; run regular dissemination/briefings.	Ongoing (first awareness push by Month 3)

7. CONTRIBUTIONS [DELIVERABLES (INCLUDING DOCUMENTATION)]

EOSC Node North Macedonia will deliver a focused set of tangible and intangible outputs that enable federation participation and demonstrate added value through the two agreed use cases. Deliverables are grouped into (i) federation integration and operational readiness (AAI, catalogue exposure, monitoring, security/compliance, operations), and (ii) use-case outputs (scientific workflow package and competence-centre integration methodology and toolkit). Delivery is coordinated by the Node Coordinator and Operations Officer, with defined contributions from security, legal, communications, IT support, and the Capacity Building Officer.

Deliverable ID	Deliverable Name	Responsible	Deadline
D1	Project Work Plan & Documentation Baseline (workspace, versioning, owners, reporting cadence)	Anastas Mishev (Coordinator)	Month 1

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D2	Security & Compliance Baseline (incl. FCSE CSIRT escalation path; access control principles; incident response workflow)	Vladislav Bidikov (Cybersecurity Officer)	Month 2
D3	EOSC Federated AAI Integration Package (AAIEDU.mk/eduGAIN bridge via compliant SAML/OIDC proxy; EOSC Core access procedures)	Anastas Mishev (Coordinator)	Month 3
D4	Catalogue & Metadata Compliance Package (EOSC Profile service descriptions; harvestable via national catalogue; ready for common EOSC catalogue)	Boro Jakimovski (Operations Officer)	Month 4
D5	Monitoring & Service Documentation Package (ARGO-compatible probes + user/admin docs + access policies/support channels for Node services)	Kiril Kjiroski & Goran Petkovski (FCSE Computing Centre)	Month 6
D6	UC-1 (FUMD-AI) Node operators package	Boro Jakimovski (Operations Officer)	Month 6
D7	UC-2 Outputs: Competence Centre Embedding Standards & Competence Integration Toolkit (practical guidance + reusable toolkit)	Sonja Filiposka (Capacity Building Officer)	Month 14
D8	Operational Roll-out Pack (third-party onboarding criteria/checklist + first onboarding cycle summary + catalogue refresh)	Boro Jakimovski (Operations Officer)	Month 16
D9	Training & Awareness Pack (role-based training for researchers + Node operators; OSC/NOSCI.mk awareness materials; lessons learned incorporated)	Bojana Koteska (Communications Officer)	Month 20
D10	Final Operations & Sustainability Package (ops handbook,	Anastas Mishev (Coordinator)	Month 24

	security/monitoring review summary, final catalogue status, sustainability)		
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8. COMMUNITY ENGAGEMENT

EOSC Node North Macedonia confirms that it has the capacity and a clear operational plan to implement community-engagement activities that enable the broader represented community to participate in the EOSC Federation. Community engagement will be delivered through an integrated model combining FCSE-operated Node services (Open Science Lab) with the UKIM Open Science Centre as the national coordination and skills layer, extended through NOSCI.mk and the AAIEDU.mk ecosystem. This setup supports structured outreach, onboarding guidance, and capacity building for both researchers and service operators, while providing identity-enabled pathways for Macedonian researchers to access EOSC services beyond the country. The Node will use these mechanisms to steadily expand participation, increase reuse of EOSC resources, and support sustainable adoption across institutions.

Engagement activities will focus on three channels. First, institutional engagement via AAIEDU.mk/eduGAIN will target the public universities and research units already connected through the national federation, with coordinated briefings and onboarding guidance for institutional contact points and research support staff. Second, community engagement will be delivered via the UKIM Open Science Centre and NOSCI.mk, using regular information sessions, targeted support for early adopters, and publication of open training materials through the OSC-Skills-Hub. Third, operational engagement will support Node operators and service owners through reusable guidance and the “Embedding Open Science Competence Centres into EOSC Nodes” use case, resulting in practical standards and a competence integration toolkit that can also be used to onboard additional stakeholders.

The Node will offer capacity to onboard third-party resources in a controlled manner through federation of existing national repositories (open metadata; controlled access where required) and by enabling access via federated AAI. Onboarding will prioritise readiness and interoperability (service description quality, access policy clarity, and metadata alignment) rather than expanding scope indiscriminately during the build-up phase.

Lessons learned from the current wave of EOSC Nodes will be applied in three ways: maintaining a focused, sustainable service portfolio (rather than broad but fragile offerings), using clear onboarding and change-control procedures with well-defined roles for operations, security and legal compliance, and embedding capacity building as a core operational capability (training, documentation and reusable guidance) rather than treating it as a one-off dissemination activity.

9. TIMING AND MILESTONES

The project will be delivered over 24 months with early emphasis on federation readiness (AAI, catalogue exposure, monitoring and security baseline), followed by the two use cases and consolidation of operational guidance and community uptake assets. Core Node services are already at TRL 8–9; therefore, milestones focus on EOSC integration, publication in catalogues, monitoring/operations baselines, and the packaging of user and administrator documentation shortly after each operational capability is deployed or updated.

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ID	Milestone Description	Target Date
M1	Project initiated and governance operational (work plan + documentation baseline in place)	Month 1
M2	Federation technical readiness baseline achieved (security baseline + federated AAI bridge operational)	Month 3
M3	Capacity Building Round 1 delivered (initial onboarding/training sessions for researchers and Node operators; baseline materials available)	Month 6
M4	Service exposure baseline achieved (EOSC Profile metadata validated; catalogue exposure ready; ARGO monitoring active; service documentation baseline published)	Month 6
M5	Federating-capability outputs released: competence-centre embedding standards + competence integration toolkit published	Month 14
M6	Capacity Building Round 2 delivered (training and awareness scale-up using toolkit; updated materials released)	Month 20
M7	Final consolidation and handover completed (operations & sustainability package, final catalogue status)	Month 24

10. CONTACTS

We commit eight (8) individuals for the full duration of the build-up phase, covering and exceeding the minimum required roles (Coordinator, Operations Officer, Legal Officer, Cybersecurity Officer, Communications Officer), complemented by dedicated Capacity Building office from the OSC and IT support roles from the FCSE Computing Centre.

The project team is structured to combine stable technical operations of the EOSC Node with governance, compliance, security, and community uptake. Anastas Mishev (Coordinator) provides overall leadership, alignment with EOSC governance, and coordination with other Nodes. Boro Jakimovski (Operations Officer) leads day-to-day service operations, onboarding and change control, catalogue exposure, and service continuity. Aneta Cekikj (Legal Officer) ensures policy alignment, access-policy clarity, and compliance for controlled services. Vladislav Bidikov (Cybersecurity Officer) oversees security risk management, incident response coordination, and escalation to the FCSE CSIRT. Bojana Koteska (Communications Officer) leads dissemination, community-facing materials, and awareness activities. Community enablement is embedded operationally through Sonja Filiposka (Capacity Building Officer), who coordinates training for researchers and Node operators, manages learning materials, and leads the competence-centre embedding methodology and toolkit outputs in

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collaboration with the UKIM Open Science Centre network and EOSC Node Poland. Technical service delivery is supported by the FCSE Computing Centre through Kiril Kjiroski and Goran Petkovski, who provide infrastructure operations, monitoring integration, platform reliability, and operational support for the Node services hosted in the Open Science Lab.

Together, this structure ensures that technical federation requirements (AAI, catalogue exposure, monitoring), operational readiness (support, change control), compliance (legal and security), and sustained community uptake (training and awareness) are managed continuously throughout the build-up phase.

Role	Name	Email
Coordinator	Anastas Mishev	anastas.mishev@finki.ukim.mk
Operations Officer	Boro Jakimovski	boro.jakimovski@finki.ukim.mk
Cybersecurity Officer	Vladislav Bidikov	vladislav.bidikov@finki.ukim.mk
Legal Officer	Aneta Cekikj	anetac@isppi.ukim.edu.mk
Communications Officer	Bojana Koteska	bojana.koteska@finki.ukim.mk
Capacity Building Officer	Sonja Filiposka	sonja.filiposka@finki.ukim.mk
IT support from FCSE Computing center	Kjiril Kjiroski	kiril.kjiroski@finki.ukim.mk
IT support from FCSE Computing center	Goran Petkovski	goran.petkovski@finki.ukim.mk