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TUBITAK ULAKBIM

Project Charter

Building the Turkish National EOSC Node

Last update: 10/10/2025

1. PROJECT SUMMARY

With this proposal, TUBITAK ULAKBIM submits its clear intention to form and operate the Turkish National EOSC node as a part of the EOSC's Second Wave Call for nodes.

As detailed further throughout the proposal, TUBITAK ULAKBIM is Türkiye's academic network operator (NREN – National Research Network), the institution responsible for ensuring open access to publications by major scientific publishers, home to the largest scientific high-performance computing centre (TRUBA, Turkish Science eInfrastructure), which houses two Top500 certified systems and is used by more than 8000 users, and is responsible for promoting open science in the whole Turkish research ecosystem.

As part of its open science leadership, TUBITAK ULAKBIM operates Türkiye's Open Archive Aperta, a harvester/indexer called Harman that indexes open archives operated by Turkish universities, and officially supports the development of InvenioRDM, the software stack powering both Aperta and Zenodo, amongst many other open archives around Europe and the world. TUBITAK ULAKBIM is also the primary participant of the EOSC Association and one of the primary contact points between EOSC and Türkiye.

With these roles, EOSC-A membership, expertise, and knowledge, TUBITAK ULAKBIM wants to build a Turkish National EOSC node, integrate Aperta and Harman to EOSC as data sources, and assist DataTerra in verifying and validating their ARGO floats' data streams with additional computational resources via the EGI node as a cross-node scientific use case.

With all its roles, expertise, and participation in the European research landscape through HORIZON calls and other projects, TUBITAK ULAKBIM is looking forward to sharing high-quality FAIR data sources and compute resources and to bringing the Turkish research ecosystem closer to EOSC by lowering barriers to participation and building bridges for collaboration.

2. VALUE PROPOSITION

Main Goals

- Building a bridge between European and Turkish research landscapes and researcher ecosystems.
- Creating a central entry point to the EOSC ecosystem for the Turkish researchers.
- Building a national EOSC node which can interoperate with rest of the federation both in technical and governance levels.
- Creating joint research capabilities via technical interoperability and cross-node collaborations.

Needs Addressed

- Need for integrating Turkish open science resources to European research ecosystem and making them accessible.
- Need for fostering more communication and collaboration between Turkish and European research landscapes.
- Need for lowering the barriers between Turkish and European research ecosystem integration.
- Need for creating a more resilient and better interconnected EOSC network via federation capabilities.

Key Benefits

- Increasing visibility and availability of Turkish research output and datasets.
- Showing the value of a national node for both the EOSC federation and Türkiye.
- Increasing cross-node and international collaboration via cross-node scientific use cases.

- Furthering open science via integrating Türkiye's open science efforts with EOSC's wider efforts.
- Increasing the total computing capacity of the federation by adding new resources which will readily be used by other nodes in the federation.

Who Benefits

- European researchers who will be able to access Turkish research data from a central point.
- European researchers who are part of the cross-node collaboration and can access federated computing resources.
- Turkish researchers who will be able to access to EOSC ecosystem and related resources.

3. REPOSITORIES AND SERVICES DELIVERED

Service ID	Service Description	Access Policies to the Service	Federation Contributions & Value to Users	TRL
EOSC TR-SRV001	**Integration of Aperta to EOSC Catalogue.** Aperta is the central open science archive of Türkiye and allows Turkish researchers to submit and access all kinds of research outputs. The archive is powered by InvenioRDM and is completely standards compliant, allowing it to be searched, indexed and accessed via standardized APIs. The service is currently in stable state and being improved constantly.	Europe-wide, open-access.	**Federation Contribution:** Extends the data pool of the whole EOSC federation. **Value to the users:** Make research outputs generated by Turkish researchers seamlessly available. Help Turkish researchers to integrate with EOSC, incentivize them to share their research outputs.	TRL 7+
EOSC TR-SRV002	**Integration of Harman to EOSC Catalogue.** Türkiye's open science repository harvester and indexer Harman another service complementing Aperta. It harvests open science archives operated by Turkish universities to make them accessible from a central hub. Harman makes research outputs of Turkish universities discoverable and contains more than 3 million records. Harman is standards compliant, and in stable state.	Europe-wide, open-access.	**Federation Contribution:** Extends the data pool of the whole EOSC federation. **Value to the users:** Make research outputs generated by Turkish researchers seamlessly available. Help Turkish researchers to integrate with EOSC, incentivize them to share their research outputs.	TRL 7+

EOSCTR-SRV003	**Integration with EU Node** This service will contain the required integration work with the EU Node AAI and federated catalogue.	Europe-wide, open-access.	**Federation Contribution:** Enables discovery and access to data and services provided by Turkish node. **Value to the users:** Allows access to Turkish node's services and data in a homogeneous and seamless way.	

4. USE CASES

Use Case ID	Use Case Description	Federation Contributions & Value to Users	List of the participating organisations	List any other Nodes involved	Timeline of realisation of the use case
EOSCTR-UC01	**Cross-Node workflows for consistent validation of sensor data from Biogeochemical ARGO floats** ARGO is an international programme for researching the ocean. It uses profiling floats to observe ocean carbon uptake, acidification, deoxygenation, and marine ecosystem health. However, the quality control and validation process for data generated by Argo floats remains a critical and resource-intensive step, often relying on	**Federation Contribution:** International scientific collaboration inside EOSC federation and formation of new connections for future collaboration. **Value for Users:** Provides additional computational resources enabling ARGO researchers to verify their observations and increase confidence in their research and monitoring effort via accessible, reproducible, and scalable platform to control, qualify,	- TUBITAK ULAKBIM - EGI - DataTerra	-EGI Node - Data Terra Node	**Prototype phase:** October 2026 **Production phase:** March 2027

	local scripts, heterogeneous workflows, and limited computational resources. This situation makes it difficult to ensure consistency, traceability, and reproducibility across the network.	and validate the biogeochemical profiles from ARGO floats.			
EOSCTR-UC02	**Imaging Data Workflows on Galaxy:** Galaxy is an open source, free and sophisticated system for analysing data using tools and complex workflows utilizing these tools. This system is used throughout EOSC Federation by researchers for many disciplines including but not limited to life sciences, climate science, astrophysics and marine sciences. Image processing, due to its nature requires a lot of processing power, and TUBITAK ULAKBIM wants to increase available computing capacity by adding its own Pulsar	**Federation Contribution:** Additional computational power will increase the total capacity of the federation, allowing more image analysis in lesser time. **Value for users:** This additional capacity make EOSC federation and Galaxy infrastructure more attractive for researchers due to increased capacity and reduced waiting times. Also, it can motivate Turkish researchers to work on the platform since the Pulsar endpoint brings computing closer to data, reducing transfer times.	- TUBITAK ULAKBIM - ELIXIR Europe	Life Sciences Connect Node	**Prototype Phase:** November 2026 **Production Phase:** March 2027

	endpoint into the processing capacity.				

EOSCTR-UC01: Cross-Node workflows for consistent validation of sensor data from Biogeochemical ARGO floats

In Scope

- **Stakeholder Support:** EOSCTR-UC01 will support DataTerra & EGI via the processing of data generated with Argo floats using Galaxy.
- **Integration:** Turkish National EOSC Node will integrate compute and storage resources with the Galaxy platform to ensure seamless cross-node execution of workflows. Integration will also involve authentication and authorization activities to ensure single sign-on to the services. Some of the data analysis requires usage of HPC resources that will be integrated with the Galaxy platform for a seamless access. It's important to note that TUBITAK ULAKBIM already operates a Galaxy Pulsar endpoint and the endpoint is in production.

Out of Scope

- **Excluded Activities:** EOSCTR-UC01 will focus on the implementation of the workflows but will not contemplate the development of third-party libraries.
- **Limitations:** Workflows written for workflow management systems other than Galaxy will not be supported.
- **Dependencies:** The successful outcome of EOSCTR-UC01 depends on the availability of data generated by Argo floats.

Role of the involved Nodes

- **DataTerra Node:** Deliver and operate the ARGO platform.
- **EGI Node:** Offer Galaxy integrated with the ARGO platform and with the EGI Infrastructure.
- **Turkish Node:** Federate with Data Terra and EGI Nodes and provide HPC resources that will be made accessible via Galaxy.

EOSCTR-UC02: Imaging Data Workflows on Galaxy

In Scope

- **Stakeholder Support:** EOSCTR-UC02 will support Life Sciences Connect Node via the processing of image data on Turkish Galaxy Pulsar instance by adding compute capacity to the pool.
- **Integration:** Turkish National EOSC Node will integrate compute and storage resources with the Galaxy platform to ensure seamless cross-node execution of workflows. Integration will also involve authentication and authorization activities to ensure single sign-on to the services. Some of the data analysis requires usage of HPC resources that will be integrated with the Galaxy platform for a seamless access. It's important to note that TUBITAK ULAKBIM already operates a Galaxy Pulsar endpoint and the endpoint is in production.

Out of Scope

- **Excluded Activities:** EOSCTR-UC02 will focus on the implementation of the workflows but will not contemplate the development of third-party libraries.
- **Limitations:** Workflows written for workflow management systems other than Galaxy will not be supported.
- **Dependencies:** The successful outcome of EOSCTR-UC02 depends on the

availability of data and jobs generated by Life Science Connect Node.

Role of the involved Nodes

- **Life Sciences Connect Node:** Will generate the workflows and jobs required for their image processing needs.
- **Turkish Node:** Federate with Life Sciences Connect Node and provide HPC resources that will be made accessible via Galaxy.

5. COMPLIANCE WITH TECHNICAL REQUIREMENTS

The Turkish National EOSC Node will comply with all mandatory technical requirements of the EOSC federation for integration and implement them to the highest standards, including integration with the federated catalogues, federated AAI, and any other technical requirement to ensure full and seamless interoperability within the EOSC Federation.

TUBITAK ULAKBIM, the institution that will operate the node, plays many important roles in the Turkish open science and research ecosystem, making it a suitable steward of the node. The Turkish national EOSC node is a valuable addition to the EOSC Federation, and vice versa.

First and foremost, TUBITAK is a member of the EOSC association and the leading institution in Türkiye for open science and related subjects. The offered services, Aperta and Harman, are built on this leadership and are positioned to push forward open science in the country. TUBITAK ULAKBIM also manages publication access in the country and has open access agreements with all major publishers, further lowering barriers. It's also worth noting that TUBITAK ULAKBIM is one of the institutions helping to organize events and prepare training materials on open science and research data management.

On the technical side, TUBITAK ULAKBIM hosts the country's most powerful publicly accessible computing infrastructure supporting academia, SMBs and others, including two Top500-certified systems and various smaller clusters serving more than 8,000 national researchers. This infrastructure is complemented by cloud, HTC, and HPC systems offered to European researchers through projects undertaken in collaboration with the EGI Foundation. This collaboration enables TUBITAK ULAKBIM to work with international communities involved in open science, furthering experience in both international collaboration and open science. This collaboration also brings experience in technical cooperation and coordination, such as the integration of federated computing and AAI systems with larger parties. TUBITAK ULAKBIM also operates the Turkish part of the EduGAIN authentication infrastructure as a member of the federation, acting as the national academic network provider and its sole operator.

It's also worth noting that some members of the technical team operating the HPC and cloud infrastructure are also members of EOSC's AAI working group and collaborate with members of that group on other European projects, again on AAI-related matters, both in the design and implementation phases.

As detailed in the previous sections, TUBITAK ULAKBIM will offer two data services to the federation. Aperta and Harman, which are built on the latest technologies, will enable seamless integration with EOSC services due to their already standards-compliant nature, at both the technical and design levels. Aperta, Türkiye's open archive, is built upon InvenioRDM, which also powers Zenodo and countless other open repositories around the world, and is designed for this kind of integration from the ground up. Harman, which indexes Turkish universities' open archives, also supports the relevant integration technologies from the first day. TUBITAK ULAKBIM is also an InvenioRDM partner and contributes to the software in various ways during its development.

As a result of this experience in both technical and governance matters, TUBITAK

ULAKBIM will apply this knowledge corpus during integration with the EOSC Federation, at both the governance and technical levels.

On the technical side, a detailed analysis will be conducted for both AAI and catalogue integration requirements. After the analysis, a detailed roadmap for integration will be prepared. As the final step, this roadmap will be executed briskly to complete integration with the federation.

The governance and operation of the node will again be undertaken by individuals working on these international collaboration projects and will bring their knowledge and experience in international collaboration, open science, and community building & engagement.

6. EXTERNAL DEPENDENCIES & KEY RISKS

As every project, Turkish National EOSC node operations come with some risks and uncertainty because of involvement of multiple actors with different workloads and tasks to realize. As a result, every plan must be flexible and be able to absorb, handle and workaround these risks and hits their targets with minimum deviation.

In Turkish National EOSC node's case, these risks are mostly rooted in inter-node tasks due to fast-moving nature of the EOSC ecosystem. On the other hand, there are usual and expected risks rooted in technical reasons, yet TUBITAK ULAKBIM can handle all these risks because of its institutional experience in European projects.

External Dependencies & Risks	Actions / mitigations measures	Deadline
Underestimation of required work for a deliverable. Unplanned workloads arise during the process.	Work replanning and rescheduling to eliminate or minimize possible delays.	Whole project.
Delays from other nodes' side during cross-node integration.	Revision of the roadmap, using available slack time to absorb delays', regular meetings.	Whole project.
Possible hardware/operational problems in cross-node use case.	Have spare capacity to handle interruptions or problems during project lifetime to solve these problems transparently.	Whole project.
Delays in integration of Harman & Aperta with catalogues.	Start investigating required technical requirements as soon as node starts operating, do small tests during investigation of integration	April 2027 (within first year of node operations)

	requirements, take corrective action if necessary.	
Other delays during integration with EU node.	Revision of the roadmap, using available slack time to absorb delays' effects where possible.	Whole project.

7. CONTRIBUTIONS [DELIVERABLES (INCLUDING DOCUMENTATION)]

Contributions

- Integration of Aperta to EOSC federated catalogue.
  - Current entrypoint: https://aperta.ulakbim.gov.tr
  - More detailed information: https://aperta.ulakbim.gov.tr/about/
- Integration of Harman to EOSC federated catalogue.
  - Current entrypoint: https://harman.ulakbim.gov.tr
  - More detailed information: https://harman.ulakbim.gov.tr/aboutUs
- HPC capacity for DataTerra via EGI for verifying Argo float data.

Contributions

Deliverable ID	Deliverable Name	Responsible	Deadline
EOSCTR-D01	Project Charter	TUBITAK ULAKBIM	June 2026
EOSCTR-D02	Integration analysis and plan	TUBITAK ULAKBIM	July 2026
EOSCTR-D03	Aperta Integration Report	TUBITAK ULAKBIM	October 2026
EOSCTR-D04	Harman Integration Report	TUBITAK ULAKBIM	January 2027
EOSCTR-D05	Community Engement Strategy Document	TUBITAK ULAKBIM	February 2027
EOSCTR-D06	EOSCTR-UC01 integration report.	TUBITAK ULAKBIM	April 2027
EOSCTR-D07	EOSCTR-UC01 integration report.	TUBITAK ULAKBIM	April 2027
EOSCTR-D08	EOSCTR-UC01 Prototype	TUBITAK ULAKBIM	October 2026

EOSCTR-D09	EOSCTR-UC01 Production	TUBITAK ULAKBIM	March 2027
EOSCTR-D10	EOSCTR-UC02 Prototype	TUBITAK ULAKBIM	November 2026
EOSCTR-D11	EOSCTR-UC02 Production	TUBITAK ULAKBIM	March 2027

Deliverable Descriptions

1. **Project charter:** Contains the details of the purpose, use cases and the value added by Turkish National EOSC node.
2. **Integration analysis and plan:** Contains an analysis of EOSC Federation's technical requirements for integration (contains but not limited to AAI and catalogue integration), and lays out the plans for integration at the technical level. This document will contain the integration plans for Aperta & Harman, and will also contain the integration plan and details for AAI.
3. **Aperta Integration Report:** Contains the process of integrating Aperta into EOSC Federation's central catalogue and lessons learnt during the process.
4. **Harman Integration Report:** Contains the process of integrating Harman into EOSC Federation's central catalogue and lessons learnt during the process.
5. **Community Engagement Strategy Document:** Lays out the plan and path for making national research integrate and interact with EOSC in a sustainable, effective and efficient way.
6. **Cross-Node use case integration report:** The report will detail the process of integration of DataTerra's ARGO floats' computational pipeline and enhancing capacity of DataTerra via EGI node with TUBITAK ULAKBIM's Galaxy Pulsar infrastructure.
7. **EOSCTR-UC01 - Prototype:** At this stage, the integration between DataTerra, EGI node and Turkish National EOSC node for offloading DataTerra's Argo floats' computational workloads reaches prototype level maturity, proving that the integration can work as planned.
8. **EOSCTR-UC01 - Production:** At this stage, the integration between DataTerra, EGI node and Turkish National EOSC node for offloading DataTerra's Argo floats' computational workloads reaches production level maturity.
9. **EOSCTR-UC02 - Prototype:** At this stage, the integration between Life Sciences Connect node and Turkish National EOSC node for offloading Life Science Connect's computational workloads reaches prototype level maturity, proving that the integration can work as planned.
10. **EOSCTR-UC02 - Production:** At this stage, the integration between Life Sciences Connect node and Turkish National EOSC node for offloading Life Science Connect's computational workloads reaches production level maturity.

8. COMMUNITY ENGAGEMENT

The operator of the national node, TUBITAK ULAKBIM, is connected to the national researcher ecosystem through its roles in the Turkish research landscape. As a result of these connections, TUBITAK ULAKBIM can reach national researchers and help them interact effectively and efficiently with the EOSC federation.

TUBITAK ULAKBIM organizes regular webinars, trainings, seminars and workshops for researchers on various topics related to computational science, both general and specific. EOSC and national node operations can be integrated into these webinars as

small sections. Also, dedicated webinars and online events can be organized to increase the reach of the EOSC ecosystem inside the country. These events and webinars will be organized by the same team that handles the other outreach events and webinars; hence, the relevant experience and capacity are already in place.

TUBITAK ULAKBIM also plays a major role in the country's open science conferences and related events by both participating in the organization process and giving talks and presentations. This reach can also be used to increase awareness of EOSC and the services provided by the Turkish National node, to pull national researchers into the EOSC ecosystem, and supercharge their research capabilities and collaboration opportunities.

In addition to events, a dedicated site for the Turkish National EOSC Node will be established as an entry point to the country's EOSC ecosystem. This site will contain basic information, along with more detailed documentation on node services, the EOSC ecosystem, and ways to interact with it. These documentation efforts have been ongoing for a long time for the computing resources available under TUBITAK ULAKBIM, and the technical capacity and experience to build high-quality documentation are already present in the relevant teams.

Due to TUBITAK ULAKBIM's interconnected nature with the international research ecosystem, relations with many institutions that also run National and Thematic nodes are already well established. This will allow TUBITAK ULAKBIM to connect with these nodes, exchange operational experience, and transfer lessons learnt during the first wave without significant effort. Communications with these institutions already occur regularly through various past and current projects undertaken together, making TUBITAK ULAKBIM a good fit as a National node that can readily interoperate and collaborate with other established nodes.

While the Turkish National EOSC node is going to implement a single cross-node collaboration from other nodes during its first bring-up phase, the door is always open to federate and onboard additional services to the National node from other nodes to increase the interconnectedness of the federation and provide more resources and opportunities to the Turkish research ecosystem.

9. TIMING AND MILESTONES

- **Operations start date:** 1 May 2026 (as foreseen by the call document).
- **Operation duration:** 2 years, at minimum.

ID	Milestone Description	Target Delivery Date
EOSCTR-M01	Complete analysis for interoperability and integration, write the documentation, and finalize the plan.	31 July 2026
EOSCTR-M02	First version of community engagement plan.	28 February 2027
EOSCTR-M03	Integration of Aperta to EOSC catalogues.	30 September 2026
EOSCTR-M04	Create documentation related to Aperta integration.	31 October 2026

EOSCTR-M05	Integration of Harman to EOSC catalogues.	31 December 2026
EOSCTR-M06	Create documentation related to Harman integration.	31 January 2027
EOSCTR-M07	Integrate Galaxy endpoint for EOSCTR-UC01 workloads at prototype level.	31 October 2026
EOSCTR-M08	Integrate Galaxy endpoint for EOSCTR-UC01 workloads at production level.	31 March 2027
EOSCTR-M09	Integrate Galaxy endpoint for EOSCTR-UC02 workloads at prototype level.	30 November 2026
EOSCTR-M10	Integrate Galaxy endpoint for EOSCTR-UC02 workloads at production level.	31 March 2027
EOSCTR-M11	Create documentation related to cross-node integration EOSCTR-UC01.	30 April 2027
EOSCTR-M12	Create documentation related to cross-node integration EOSCTR-UC02	30 April 2027

10. CONTACTS

The team of 5 individuals which will be managing Turkish National EOSC node and handling day to day duties are set of individuals who have significant experience in both working internationally and the areas of their responsibility. While the members of the team have joined in different times, the group has a history more than 20 years, and this brings a well-refined culture of responsibility and collaboration to the team as a whole.

The members of the team are working in or managing European Commission project calls (i.e. HORIZON) and has longstanding bonds with some of the institutions which are also happening to run their own EOSC nodes. This communication and collaboration also put TUBITAK ULAKBIM and the team working for the node in an advantageous position in both bring-up and operation phase of the node.

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