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TUBITAK ULAKBIM

Project Charter

Building the Turkish National EOSC Node

Last update: 31/10/2026

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 e-Infrastructure), 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
EOSCTR-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. **Related Milestone:** EOSCTR-M05 **Related Delivarable:** EOSCTR-D08	TRL7+
EOSCTR-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	Europe-wide, open-access.	**Federation Contribution:** Extends the data pool of the whole EOSC federation. **Value to the users:** Make research	TRL7+

	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.		outputs generated by Turkish researchers seamlessly available. Help Turkish researchers to integrate with EOSC, incentivize them to share their research outputs. **Related Milestone:** EOSCTR-M05 **Related Deliverable:** EOSCTR-D09	
EOSCTR-SRV003	**Integration with EU Node** This service will contain the required integration work with the EU Node AAI, federated Catalogue, helpdesk and monitoring.	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. **Related Milestone 1:** EOSCTR-M02 **Related Deliverables:** EOSCTR-D04 EOSCTR-D06 **Related Milestone 2:** EOSCTR-M03 **Related Delivarable:** EOSCTR-D05 **Related Milestone 3:** EOSCTR-M04 **Related Deliverable:** EOSCTR-D07	

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 local scripts, heterogeneous workflows, and limited computational resources. This situation makes it difficult to ensure	**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, and validate the biogeochemica	- TUBITAK ULAKBIM - EGI - DataTerra	-EGI Node - Data Terra Node	**Prototype phase:** M5 **Production phase:** M6

	consistency, traceability, and reproducibility across the network.	l 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 endpoint into the processing	**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:** M5 **Production Phase:** M6

	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.

Related Milestones and Deliverables

- **Milestone 1: (EOSCTR-M06)** Prototype implementation for the use case
  - **Deliverable 1: (EOSCTR-D10)** At this stage, the integration between DataTerra, the EGI node, and the Turkish National EOSC node has achieved prototype-level maturity.
- **Milestone 2: (EOSCTR-M07) Final implementation of the use case in the EOSC Federation.**
  - **Deliverable 2: (EOSCTR-D11)** The integration of DataTerra with the EGI and Turkish National EOSC nodes has reached full production maturity for offloading Argo float computational workloads, fulfilling the operational requirements of this use case.

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.

Related Milestones and Deliverables

- **Milestone 1: (EOSCTR-M08)** Prototype implementation for the use case
  - **Deliverable 1: (EOSCTR-D12)** The integration of the Life Sciences Connect node with the Turkish National EOSC node has reached prototype maturity for offloading computational workloads, successfully demonstrating proof-of-concept and alignment with planned deliverable targets.
- **Milestone 2: (EOSCTR-M09) Final implementation of the use case in the EOSC Federation.**
  - **Deliverable 2: (EOSCTR-D13)** The integration of the Life Sciences Connect node with the Turkish National EOSC node has reached full production maturity for offloading computational workloads, fulfilling the operational requirements of this milestone.

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.

On the Service Management System Side, the coordinator of the node already has FitSM Advanced (Service Operation and Control, Service Planning and Delivery) certificates. This will allow Turkish National EOSC node to implement Service Management System initially. During the node operation, more people will be enrolled to the FitSM trainings to expand the knowledge pool and improve the capabilities of the node. These expansion actions will be completed as soon as trainings are available.

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	Risk Owner	Deadline
Underestimation of required work for a deliverable. Unplanned workloads arise during the process.	• Weekly short progress-checking meetings • Work re-planning and rescheduling to eliminate or minimize potential delays	TUBITAK ULAKBIM	Whole project.
Delays from other nodes' side during cross-node integration.	• Biweekly synchronization and progress tracking meetings • Regular roadmap revisions • Utilizing available slack time to absorb delays	The node being integrated with.	Whole project.
Possible hardware/operational problems in cross-node use case.	• Establishing infrastructure monitoring • Maintaining spare capacity to resolve interruptions and issues transparently throughout the project duration	TUBITAK ULAKBIM	Whole project.
Delays in integration of Harman & Aperta with catalogues.	• Biweekly meetings with Harman & Aperta teams to ensure early alignment, understand requirements, and check progress • Utilizing slack time, re-planning, and rescheduling to	TUBITAK ULAKBIM	M06

	prevent or minimize delays		
Other delays during integration with EU node.	• Regular progress evaluations via biweekly meetings • Roadmap revisions, utilizing available slack time to absorb the effects of delays where possible	TUBITAK ULAKBIM	Whole project.

7. CONTRIBUTIONS [DELIVERABLES (INCLUDING DOCUMENTATION)]

Contributions

- Integration of Aperta to EOSC federated catalogue.
  - Current entry point: https://aperta.ulakbim.gov.tr
  - More detailed information: https://aperta.ulakbim.gov.tr/about/
- Integration of Harman to EOSC federated catalogue.
  - Current entry point: 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	30 October 2026
EOSCTR-D02	Integration analysis	TUBITAK ULAKBIM	M01
EOSCTR-D03	Integration plan	TUBITAK ULAKBIM	M02
EOSCTR-D04	Integration with federated AAI	TUBITAK ULAKBIM	M04
EOSCTR-D05	Installation of node helpdesk	TUBITAK ULAKBIM	M06
EOSCTR-D06	Installation of federated catalogue	TUBITAK ULAKBIM	M04
EOSCTR-D07	Integration with monitoring	TUBITAK ULAKBIM	M06
EOSCTR-D08	Aperta Integration with Federated	TUBITAK ULAKBIM	M05

	Catalogue		
EOSCTR-D09	Harman Integration with Federated Catalogue	TUBITAK ULAKBIM	M05
EOSCTR-D10	EOSCTR-UC01 Prototype	TUBITAK ULAKBIM	M05
EOSCTR-D11	EOSCTR-UC01 Production	TUBITAK ULAKBIM	M06
EOSCTR-D12	EOSCTR-UC02 Prototype	TUBITAK ULAKBIM	M05
EOSCTR-D13	EOSCTR-UC02 Production	TUBITAK ULAKBIM	M06

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:** Contains an analysis of EOSC Federation's technical requirements for integration for inter-node integration services and services provided by the Turkish National EOSC Node at the technical level.
3. **Integration plan:** This document will lay out the plan for integrating all cross-node services and services provided by the Turkish National EOSC Node at technical level.
4. **Integration with federated AAI:** This deliverable completes the integration of node's AAI with the EOSC Federation's AAI. At this point node AAI will be interoperable with federated AAI.
5. **Installation of node helpdesk:** This deliverable completes the installation and integration of node's own helpdesk system. At this point it shall be operational, and federated completely depending on the state of the greater helpdesk federation.
6. **Installation of federated catalogue:** This deliverable completes the installation of federated catalogue instance for the node. This instance will interface with Aperta and Harman and export them to central EU repository. Integrations will be handled in their own deliverables.
7. **Integration of Monitoring:** This deliverable completes integration of already present monitoring systems in Turkish National EOSC Node with Federation's own monitoring systems to allow federation-wide monitoring of the Node's infrastructure and services.
8. **Aperta Integration with Federated Catalogue:** This deliverable completes the integration of Aperta to the node's own federated catalogue instance. Aperta will be exported to central catalogue via the federated catalogue of the node.
9. **Harman Integration with Federated Catalogue:** This deliverable completes the integration of Harman to the node's own federated catalogue instance. Harman will be exported to central catalogue via the federated catalogue of the node.
10. **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.
11. **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.

12. **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.
13. **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.

These reach out efforts will be integrated into both events already being organized by TUBITAK ULAKBIM, as well as independent EOSC themed webinars and other materials. While it's expected that these events take place after the node becomes operational, setting a strict timeline is not possible due to next events are not being fixed in time. However, these events can be expected after Q2 2027.

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.

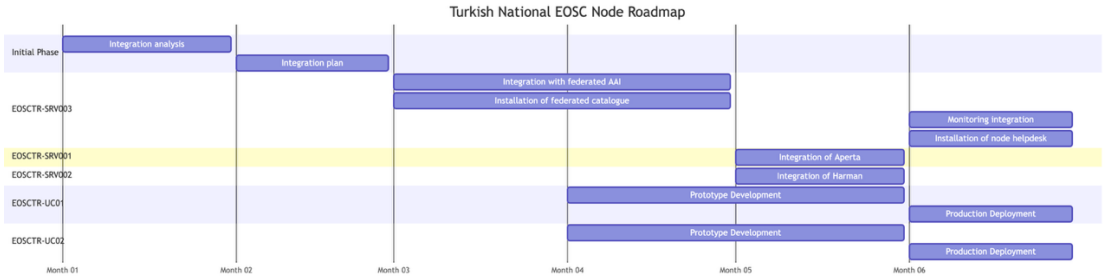
Due to TUBITAK ULAKBIM's interconnected nature with the international research ecosystem, relations with many institutions that also run National and Thematic nodes are already well established. This will allow TUBITAK ULAKBIM to connect with these nodes, exchange operational experience, and transfer 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 November 2026 (as foreseen by the call document, also considered M1 in planning).
- **Operation duration:** 2 years, at minimum.



ID	Milestone Description	Target Delivery Date
EOSCTR-M01	Complete analysis for interoperability and integration, write the documentation detailing the plan.	M2
EOSCTR-M02	Installation and integration of AAI and Federated Catalogue is completed.	M4
EOSCTR-M03	Installation of node helpdesk and integration to federation.	M6
EOSCTR-M04	Integration of monitoring systems to EOSC federation.	M6
EOSCTR-M05	Integration of Aperta and Harman to node's federated catalogues.	M5
EOSCTR-M06	Prototype-level integration of EOSCTR-UC01 workloads with high-performance compute resources.	M5
EOSCTR-M07	Switching to production for EOSCTR-UC01's workloads.	M6
EOSCTR-M08	Prototype-level integration of EOSCTR-UC02 workloads with high-performance compute resources.	M5
EOSCTR-M09	Switching to production for EOSCTR-UC02's workloads.	M6

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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