eosc | Tripartite

e-INFRA CZ Consortium

Project Charter

EOSC CZ Node

Last update: 10/10/2025

1. PROJECT SUMMARY

Maximum 300 words.

This section should clearly articulate the primary purpose of your organisation's participation in the EOSC Federation. Highlight how your organisation's activities will support the Federation's overarching mission to enable Open Science, foster collaboration, and facilitate seamless access to FAIR data and services across disciplines and borders. Define the project scope, main goal, needs addressed and key benefits. Include specific outputs and describe which resources will be made available to the Federation, Node core functions and exchanges.

Clarify the geographic, thematic, disciplinary, or technical scope of your organisation's activities. Describe how your organisation will contribute to the EOSC ecosystem, such as by providing high-value FAIR data, EOSC interoperability framework development, technical infrastructure, research services, supporting training programs or developing standards, and community coordination.

The **e-INFRA CZ consortium**—comprising CESNET, CERIT-Scientific Cloud (CERIT-SC), and IT4Innovations (IT4I)—is the Czech Republic's provider of the national e-infrastructure. Represented legally by CESNET, the consortium leverages its extensive expertise in federated services to operate the **EOSC CZ Node**. Supported by the national e-INFRA RI and EOSC CZ projects, this national node provides researchers with compute and storage services (OpenStack, Kubernetes, Jupyter Notebooks, Galaxy) and a robust suite of locally developed services, including the **SensitiveCloud** Trusted Research Environment, the **Data Stewardship Wizard**, and sovereign **LLM (Large Language Models)-as-a-Service** capabilities.

The Node implements all **Core Services** mandated by the EOSC Handbook, including the national e-INFRA CZ AAI (based on Perun technology), the National Metadata Directory, and comprehensive monitoring and accounting. Beyond core operations, the Node leads three strategic **multi-node use cases** and two **federated capabilities**:

1. **MCVAL:** Multi-centric validation of AI models for cancer screening in collaboration with the BBMRI and ICSC Nodes.
2. **AI-Enhanced Galaxy:** Integration of the national Galaxy instance with federated LLM services to provide advanced analytical pipelines for the ELIXIR and NFDI communities.
3. **Federated analysis of Sensitive Data**: A federated analysis of sensitive data from the Czech Republic and Switzerland in trusted research environments and subsequent aggregation of the data to improve current research.
4. **Cross-Node LLM:** Establishing a federated, OpenAI-compatible API for secure AI inference across European nodes.
5. **Federated File Sync & Share** service: Join a federated network of providers, allowing sharing and synchronisation of data across multiple nodes.

Finally, the Node hosts a **service incubator** to onboard emerging national services as they reach maturity. By establishing this comprehensive federated platform, the consortium aims to empower Czech researchers with state-of-the-art resources while significantly expanding the country's technical leadership within the European Open Science Cloud.

2. VALUE PROPOSITION

Maximum 1 page.

What is the value proposition of your organisation to the EOSC Federation? Identify specific challenges or gaps in the EOSC ecosystem that your organisation aims to address by joining the Federation (e.g., lack of data hosting, integrating federating capabilities, need for specialised computing capabilities, interoperability framework development, cross-discipline scientific use cases/workflows). Who are the beneficiaries of your

organisation's contribution to the EOSC Federation such as Research Institutions and Universities, public sector bodies, research user community, citizens and society.

Clearly define the needs addressed, key benefits, target user audiences (e.g., researchers, institutions, policymakers, private sector) and how your organisation will better meet their needs as part of the Federation. What unique capabilities does your organisation offer? Highlight specialised infrastructure, tools, expertise, or geographical focus that differentiates your organisation from others. Any links to other European Common Data Spaces should be mentioned.

The EOSC CZ Node, operated by the **e-INFRA CZ consortium**, explicitly connects the Czech research ecosystem with the European Open Science Cloud. By federating high-performance resources, specialized domain knowledge, and robust security frameworks, the Node delivers a value proposition based on four strategic pillars:

I. Seamless Integration of National e-Infrastructure

The Node provides a direct gateway to the Czech Republic's core computational and storage power. By aligning **e-INFRA CZ** resources with the EOSC Federation model, the project ensures that advanced compute capacities and national data repositories—such as the **Molecular Biophysics Database (MBDB)** and **GENASIS**—are not isolated silos but interoperable European assets. This integration enhances cross-border data reuse and provides the European research community with high-availability infrastructure backed by institutional stability and years of operational excellence.

II. Proven Expertise in Federated Trust and Professional Operations

Security and professional service management are the foundations of the EOSC CZ contribution:

- **Certified Security:** The Node leverages **CESNET's organization-wide ISO/IEC 27001 certification and the same certification of SensitiveCloud service, as well as AAI**, ensuring that all federated operations meet the highest international standards for information security management.
- **EU Node Experience:** As a member of the consortium currently delivering **Lot 3 (Exchange Application Services)** for the **EOSC EU Node**, CESNET brings direct, hands-on experience in operating production-grade services within the central EOSC environment, as well as experience with FitSM service management approach.
- The Node provides seamless authentication through the **e-INFRA CZ AAI**, which is built on **Perun**—the same core technology developed by the consortium to power the **Life Science AAI (LS AAI)**, supported by ELIXIR. Because the **LSRN** and **BBMRI** Nodes are already successfully integrated into the EOSC Federation using this platform, the EOSC CZ Node offers a pre-validated, low-risk path to full interoperability. Furthermore, as a member in the **EOSC Beyond** project, CESNET is actively piloting the **OIDC Federation** prototype, ensuring the Node remains at the forefront of secure, scalable research access.

III. Advanced Environments for Sensitive and Complex Data

The Czech Node offers high-value, specialized tools that address the most modern challenges in research:

- **SensitiveCloud:** An ELIXIR supported Trusted Research Environment (TRE) with **ISO 27001 certification**. Already a cornerstone for the BBMRI-ERIC EOSC Node, it provides a secure, audited environment for handling sensitive datasets in multi-node use cases (e.g., MCVAL).
- **Data Stewardship Wizard (DSW):** A premier tool for data management planning, primary developed within ELIXIR ecosystem. DSW automates compliance with complex funding requirements (e.g., Horizon Europe), ensuring data is FAIR (Findable, Accessible, Interoperable, Reusable) from its inception.

- **Sovereign LLM Capabilities:** Addressing the demand for AI, the Node provides transparent and secure **LLM** services. Unlike commercial alternatives, these ensure data sovereignty and compliance with European data processing standards within a federated environment.
- **Lexis platform** – On-line platform that enables the execution of complex computational workflows. LEXIS provides easy and secure access to connected supercomputers and computing infrastructures.

IV. Innovation Pipeline via the Service Incubator

The EOSC CZ Node is designed for long-term growth also through its **Service Incubator**. This initiative provides technical, operational, and organizational support to help emerging research tools mature from low Technology Readiness Levels (TRL) to sustainable, EOSC-accepted services. One of the planned contributions is the addition of select **RECETOX RI/EIRENE** services, including mass spectrometry analysis via Galaxy. The Service Incubator thus ensures that the Czech contribution to EOSC remains dynamic and continuously evolving with new scientific breakthroughs.

3. REPOSITORIES AND SERVICES DELIVERED

Maximum 1 page.

Describe the repositories/services (core functions, exchanges) to be made available by the new Node. Include the access policies for these repositories/services (e.g., specify the type of users who can access them: are they from your organisation only or from your country/discipline only or European-wide?).

Describe whether you intend to use or complement already existing federated capabilities or whether these services are a new addition to the Federation capabilities. See the EOSC Federation Handbook for details.

The resources made available to EOSC users via an EOSC Node must operate at minimum at Technical Readiness Level (TRL) 7 (self-assessment). (General criteria #4)

Service ID	Service Description	Access Policies to the Service	Federation Contributions & Value to Users	TRL
1	**Data Stewardship Wizard (DSW)**	Open access for all researchers; premium instances via institutional agreements.	An ELIXIR-recommended resource providing machine-actionable DMPs (maDMPs). It simplifies compliance with Horizon Europe requirements and fosters data FAIRness.	8
2	**Federated Enterprise File Sync-and-Share (EFSS)**	Authenticated access via e-INFRA CZ AAI. Federated sharing via OpenCloudMesh.	Provides secure, cross-border data exchange. Enhances **data sovereignty** by keeping research data on trusted national infrastructure rather than commercial clouds.	8
3	**Jupyter Notebooks**	Authenticated access via e-INFRA CZ AAI and LS AAI for Czech and international collaborators.	Offers interactive, reproducible research environments. Fully integrated with national storage and compatible with the EOSC EU Node for seamless scaling of analysis.	8
4	**Kubernetes (CaaS)**	Authenticated access via e-INFRA CZ AAI and LS AAI. Project-based quota management.	Managed container orchestration for scientific workloads. Implements **Kubernetes Federation v2** to enable multi-cluster orchestration across the EOSC Federation.	8

5	**SensitiveCloud**	Subject to project-specific security agreements and ISO 27001 compliance auditing.	A certified **Trusted Research Environment (TRE)**. It provides a secure, audited pipeline for sensitive data (genomics, health) meeting strict GDPR and multi-node compliance.	9
6	**Galaxy (including UMSA)**	Authenticated access via e-INFRA CZ AAI and LS AAI. Open to international collaborations.	Part of the European Galaxy Network. Provides accessible, no-code analytical pipelines; includes Untargeted Mass Spectrometry Analysis Galaxy (UMSA) instance, which provides Mass Spectrometry analytical pipelines as a service.	8
7	**OpenStack (IaaS)**	Authenticated access via e-INFRA CZ AAI and LS AAI. Integrated with EGI FedCloud.	Foundational Cloud IaaS. Its long-standing integration with **EGI FedCloud** ensures immediate interoperability with established European federated computing workflows.	8
8	**LLM-as-a-Service**	Authenticated access via e-INFRA CZ AAI. Quotas managed per research project.	Provides OpenAI-compatible APIs for Large Language Models. Ensures **data sovereignty** by keeping data processing within a secure, non-commercial federated environment.	7
9	**LS AAI / Perun**	Community-based authentication following AARC Blueprint Architecture.	The technical backbone of the Node's trust fabric. Based on **Perun**, it ensures "plug-and-play" identity federation across EOSC with a proven, production-ready codebase.	9
10	**LEXIS Platform**	Open to authenticated users through MyAccessID or e-INFRA CZ AAI, leveraging access policies of the connected infrastructures.	On-line platform providing easy and secure access to connected supercomputers and computing infrastructures with features like distributed data management and computing workflow orchestration.	9
11	**Service Incubator**	Open to national research projects and thematic RIs (e.g., RECETOX RI) by application.	A sandbox and onboarding environment for emerging services. It increases the **visibility of early-stage tools**, providing technical support to mature them for future EOSC Federation.	4-6
12-19	**Data Repositories**	Discovery is open; authenticated upload/download via e-INFRA CZ AAI and LS AAI.	Includes **MBDB, GENASIS, LINDAT**, and others. These provide high-quality, curated thematic data to the federation, increasing the volume of FAIR-compliant resources. (See appendix for the full list of repositories.)	7

4. USE CASES

Maximum 3 pages.

Propose the development of at least one scientific multi-Node use case or one use case realising a concrete

contribution to the federating capabilities. (General criteria #6)

This section should define the expected use cases that will be delivered to the users and to the organisations participating in building the EOSC Federation. Use cases represent the high-level capabilities that are critical to delivering the expected benefits to stakeholders and users. Use cases should demonstrate the added value of the EOSC Federation, for example developing multi-node scientific workflows, scaling service provision, sharing common capabilities, etc.

At this stage, use case descriptions should remain high-level, focusing on the capabilities required and their purpose, rather than the technical details of implementation. These features will be further detailed as the project progresses, with a focus on how they will be implemented by the project team. A use case may also involve more than one participating organisation. Identify any other Nodes involved in the use case.

Include a timeline of realisation of the use cases, that is agreed upon with the involved organisations. In addition, for each of the Nodes listed in column "List any other Nodes involved", include an email from the corresponding Node coordinator (as an appendix to the project charter), where each of the Nodes' coordinators involved confirms the intended scope, objective, and timeline of the use case.

Use Case ID	Use Case Description	Federation Contributions & Value to Users	Participating Organisations	Other Nodes Involved	Timeline
1	**SensitiveCloud for Multi-centric Validation (MCVAL)**	Enables cross-border validation of medical AI models on real-world sensitive data. It demonstrates a secure pathway for research while ensuring GDPR compliance via a certified TRE.	Masaryk University (CERIT-SC)	BBMRI Node, ICSC Node	Months 1–12
2	**AI-Enhanced Federated Galaxy Workflows**	Integrates **usegalaxy.cz** into the international network and introduces a novel **Galaxy-LLM integration**, allowing all federated Galaxy servers to leverage sovereign AI for automated analysis.	Masaryk University, CESNET	NFDI Node, Life Science Node (ELIXIR)	Months 1–12
3	**Cross-Node Federated LLM-as-a-Service**	Provides scalable access to open-source LLMs via OpenAI-compatible APIs. Supports federated inference, allowing nodes to share GPU capacity while maintaining data sovereignty.	Masaryk University, CESNET	EGI Node	Months 1–12
4	**Federated Enterprise File Sync-and-Share Services (EFSS)**	Federated EFFS enables users to easily share data among various EFSS instances operated in the federation. Federated EFSS's support sharing the data while maintaining strict data sovereignty. The service is enabled by operating the federating components and APIs.	CESNET	SURF Node	Months 1–12
5	**Federated analysis of Sensitive Data in trusted research environments**	A federated analysis of sensitive data for research building on national achievements in TREs, work with EOSC Entrust, and bilateral work with other nodes. This analysis includes life science	Masaryk University, CESNET	Swiss Node	Months 11–20

		data as well as sensitive data from the social sciences.			

In Scope

This section should identify what it is considered as in scope for the project, i.e., the outputs that the project WILL deliver and which form the solution which addresses the current situation (problem, need or opportunity).

Clearly define the activities, services, and deliverables that are included by your contribution to the EOSC Federation. Focus on what your organisation will actively deliver and support.

The resources made available to EOSC users via an EOSC Node must operate at minimum at TRL 7 (self-assessment).

***Stakeholder Support**: Detail the types of users and stakeholders your Node is designed to support (e.g., specific research domains, universities, or SMEs).*

***Integration**: Highlight integration efforts with EOSC services and other Nodes, including interoperability standards and FAIR principles.*

Out of Scope

This section should identify what it is considered as out of scope for the project, i.e., that the project will NOT deliver during the build-up phase (and beyond).

Specify what your Node will not include to avoid confusion and manage stakeholder expectations. This is essential to prevent scope creep.

Examples include:

***Excluded Activities**: Identify specific services, activities, or tools that your organisation will not be responsible for.*

***Limitations**: Highlight any limitations in the scope of support, geographic reach, or target audiences.*

***Dependencies**: Identify activities that are expected to be handled by other EOSC Nodes or external partners.*

Summary of Interdependencies

The EOSC CZ Node use cases are designed as an integrated ecosystem rather than isolated pilots. **Use Case 3 (LLMaaS)** provides the foundational AI infrastructure and OpenAI-compatible APIs that serve as the “intelligence engine” for the other cases. **Use Case 2 (Galaxy)** consumes these LLM services to provide automated metadata enrichment and analytical assistance within a user-friendly, no-code environment. Meanwhile, **Use Case 1 (SensitiveCloud)** provides a secure environment where these AI models can be validated against highly protected medical datasets. **Use Case 5 (Federated Analysis of Sensitive Data in TRE) builds upon the capabilities of SensitiveCloud and, in cooperation with the emerging Swiss EOSC Node, performs an analysis on sensitive data in TREs.** Together, they demonstrate a complete lifecycle: from foundational infrastructure and user-accessible workflows to secure, real-world clinical applications.

Use Case 1: SensitiveCloud for Multi-centric Validation of AI Models

Description

MCVAL (Multi-centric Validation of AI models for prostate cancer screening) validates an existing prostate cancer detection model developed using data from the Czech BBMRI node (MMCI and RationAI at Masaryk University). This model is independently validated using external data from the Austrian BBMRI node (Medical University Graz), with the option to extend to additional EOSC nodes. The validation utilizes histopathological Whole Slide Images (WSIs)—with core needle biopsies being mandatory and resected tissue optional—alongside slide-level labels (carcinoma present/absent) and optional spatial annotations. Data are pseudonymized at the source institutions and processed securely within the SensitiveCloud environment. Datasets are partitioned into training, validation, and testing sets, with the possibility of further training on combined multi-site data.

Value Proposition

Clinically Meaningful Robustness: Independent, multi-site validation reduces single-site bias and increases confidence for downstream clinical translation and broader adoption.

- **EOSC Federation Demonstrator for Sensitive Data:** This use case demonstrates how to combine federated data providers with federated compute while maintaining GDPR-aligned safeguards, helping to operationalize European Health Data Space (EHDS) concepts in practice.
- **Clear Value to Stakeholders:**
  - **Medical Researchers:** Provides a repeatable pathway to validate and retrain models on diverse cohorts.
  - **AI Companies:** Offers a structured validation route with explicit data quality requirements and documented workflow outputs.
- **Scalable Participation Model:** Enables expansion to further EOSC nodes as either data contributors or compute providers, accelerating reuse beyond a single pilot.

In Scope

SensitiveCloud: The EOSC CZ Node supports this use case through Masaryk University (CERIT-SC) by providing the SensitiveCloud environment. **Life Science AAI Integration:** The EOSC CZ Node team will ensure the seamless connection of SensitiveCloud to LS AAI to provide a smooth user experience and secure cross-border authentication for data and resources.

Out of Scope

Development of AI Models or Methods: The Czech Node's contribution is at the infrastructure level. While technical support for development, operation, and compliance is provided, active contribution to processing methods or AI architecture is excluded.

Milestones and Deliverables

- **Milestone 1 (M4) –** Data Preparation and Cross-Site Validation Setup
- **Deliverable 1 (M5) –** Documentation of data harmonization, pseudonymization procedures, and TRE access workflows for cross-border validation within SensitiveCloud
- **Milestone 2 (M9) –** Completed independent validation of the prostate cancer detection model on external Austrian BBMRI data with reproducible evaluation metrics.
- **Deliverable 2 (M12)** – Validated demonstrator repost and reproducible analysis pipeline showing model performance, bias assessment and secure multi-site execution in SensitiveCloud

Use Case 2: AI-Enhanced Federated Galaxy Workflows

Description

This use case builds upon the established European Galaxy network, integrating the Czech **usegalaxy.cz** instance with the wider multi-node network (including **usegalaxy.eu** operated by the NFDI node). As a pioneer in the second wave of EOSC Nodes, the Czech Node will introduce a new feature: the integration of Galaxy workflow systems with the **Federated LLM-as-a-Service (LLMaaS)**. Building on an existing successful prototype between the .cz and .eu instances, this project will mature the integration to production quality. This allows researchers to utilize Large Language Models directly within their scientific pipelines for tasks such as automated data annotation, metadata enrichment, and code generation for custom analytical steps.

Value Proposition

Enhanced Scientific Productivity: By integrating LLMs into Galaxy, researchers can automate complex interpretive tasks that previously required manual intervention, significantly accelerating the research lifecycle.

- **Inter-Node Synergy:** Demonstrates high-level service composition by linking a specialized tool from one node (Czech LLM service) with a thematic service from another (NFDI Galaxy instance).
- **Lowering Entry Barriers:** Provides a no-code/low-code interface for AI-enhanced research, making advanced Large Language Models accessible to bench scientists through the familiar Galaxy interface.
- **Sovereign AI for Open Science:** Ensures that AI-assisted analysis remains within the EOSC Federation's secure infrastructure, maintaining data privacy and reproducibility.

In Scope

Production Maturation: Transitioning the current integration prototype between usegalaxy.cz and usegalaxy.eu into a stable, production-ready feature.

- **API and Plugin Development:** Developing and maintaining the Galaxy tools and wrappers required to communicate securely with the Federated LLM service via OpenAI-compatible APIs.
- **Cross-Node Authentication:** Ensuring that e-INFRA CZ AAI and LS AAI credentials pass seamlessly between the Galaxy frontend and the LLM backend for a unified user experience.
- **Documentation and Training:** Providing specialized tutorials and Galaxy Training Network (GTN) materials for AI-enhanced workflows.

Out of Scope

General Galaxy Maintenance: Core development of the Galaxy platform itself (handled by the global Galaxy community).

- **Hardware Provisioning for Other Nodes:** The Czech Node provides the LLM inference and the .cz Galaxy instance but does not provide hardware for external Galaxy servers.
- **Model Training:** This use case focuses on the *integration* and *inference* of LLMs within workflows, not the initial training of the models.

Milestones and Deliverables

- **Deliverable 1 (M4) –** Initial demonstration of the functionality of the use case, during which most features are expected to be working
- **Milestone 1 (M6) –** Production-ready version of Federated LLM-as-a-service in Galaxy
- **Milestone 2 (M12) –** Finished multi-node use case with complete functionality and documentation

Use Case 3: Cross-Node Federated LLM Service

Description

This use case provides secure, high-quality access to LLMs through a unified web interface and an OpenAI-compatible API. The service enables researchers and developers to integrate LLM capabilities into applications and scientific workflows. It supports authentication and authorization through existing federated identity systems (e-INFRA CZ AAI / LS AAI and eventually LEXIS).

Value Proposition

This service offers transparent and secure access to LLM services within a federated environment, ensuring control over data processing and compliance with data sovereignty requirements. It enables the creation and deployment of domain-specific AI assistants using open-source models, reducing dependency on proprietary, external AI services.

In Scope

Stakeholder Support: Support for researchers, service providers, and operators in integrating LLM capabilities into their workflows through documentation, reference implementations, and onboarding support.

- **Integration:** Participating nodes will integrate their LLM inference frameworks into the federated service to enable seamless cross-node operation. This includes authentication and authorization activities to ensure single sign-on (SSO) across the services.

Out of Scope

Excluded Activities: Development of entirely new LLMs or inference frameworks, as well as the initial large-scale training or fine-tuning of base LLMs.

- **Limitations:** Integration of additional LLMs beyond the pilot phase is subject to evaluation and not guaranteed.
- **Dependencies:** The service depends on the availability of state-of-the-art open-source or license-permissive LLMs.

Milestones and Deliverables

- **Milestone 1 (M5) –** Prototype implementations of the use case
- **Deliverable 1 (M6) –** Report: Use cases - Lessons learnt and next steps v1 EGI Foundation
  Deliverable 2 (M7) – Report: Use cases - Lessons learnt and next steps v2
- **Milestone 2 (M10) –** Final implementation of the use case in the EOSC Federation.

Use Case 4: Federated Enterprise File Sync-and-Share Services (EFSS)

Description

Enterprise File Sync-and-Share services represent a highly demanded service to synchronise data across multiple user devices and a server providing a web interface. They also support easy data sharing within an instance of the system. CESNET's EFSS has been running for many years as a production service. This use case will be handled in tight cooperation with the group of EOSC nodes organised by SURF (see attached mail communication with Dr. Trompert).

Value Proposition

Federating EFSS enables users to easily share data across various instances of EFSS installations. Sharing data in the federation requires the users to know neither the other user's system, nor their identity in the target system, the sharing is initiated by simply sending an email invitation. User's data is retained locally (maintaining strict data sovereignty), the federation enables establishing access to the files and folders.

In Scope

- Federation Setup and Operation: Integrating CESNET EFSS service into the federation and operating services enabling the functionality.
- User Support: Support for end users of the local service.

Out of Scope

- Development of Federating Technologies: No development is expected to setup the federation.
- Operation of the national EFSS service itself: The proposal covers just federating an existing EFSS service.

Milestones and Deliverables

- **Milestone 1 (M7) –** Prototype implementation of federated sharing
- **Milestone 2 (M12) --** Production implementation of federated sharing in sync-and-share

Use Case 5: Federated analysis of Sensitive Data in trusted research environments

Description

This Use Case advances federated analysis for sensitive data by bridging national TRE achievements with the EOSC Entrust framework; the initial stage will be demonstrated in collaboration with EOSC Node Switzerland). Centered on population genomics and the European Genomic Data Infrastructure (GDI) efforts, the proposal focuses on conducting Genome-wide association study (GWAS) analysis across EOSC nodes to develop population-specific polygenic risk scores. Based on data from Genome of Europe contributors, this approach ensures data sovereignty while enabling cross-border comparisons of disease susceptibility. Ultimately, the project serves as a scalable model for bringing federated access to sensitive data, ensuring alignment with early-adopter ~~nodes~~ and proving applicability across various research disciplines.

Value Proposition

Multi-Centric Analysis and Validation: By analyzing data across different nodes, this use-case mitigates single-cohort bias. It also supports statistically robust approach applicable to diverse genetic backgrounds.

- Population-Specific Precision: Analysis tailored to specific populations significantly improves the accuracy of specific research goals (e.g. disease susceptibility predictions and personalized medicine).
- Data sovereignty-oriented architecture: Solution demonstrates a high-level research use-case where sensitive genomic data remains securely behind national firewalls while federated analysis is executed.
- Sensitive data interoperability: demonstrate how TREs located within different countries can cooperate, creating and validating blueprint for other sensitive data types.

In Scope

SensitiveCloud: The Czech EOSC Node supports this use case through Masaryk University (CERIT-SC) by providing the SensitiveCloud environment.

Life Science AAI Integration: The Czech EOSC CZ Node team will ensure the seamless connection of SensitiveCloud to LS AAI to provide a smooth user experience and secure cross-border authentication for data and resources.

Out of Scope

- Data provisioning: Data and related legal issues will be provided by those running the analysis.

Milestones and Deliverables

- **Milestone 1 (M13) –** Verified connection between AAI of hosting TRE (SensitiveCloud) and participating EOSC nodes (ESC Node Switzerland, EOSC Node Czech Republic).
- **Deliverable 1 (M15) –** Document/Report: Specifications of APIs, security protocols, and data flows between national TREs and the EOSC nodes.
- **Milestone 2 (M19) –** Successful distributed execution of the GWAS algorithm across two participating nodes using synthetic or real genomic data.
- **Deliverable 2 (M21)** – Demonstrator – fully documented software stack (e.g., Nextflow/Snakemake workflows, Docker containers) enabling federated analysis while ensuring data sovereignty.

5. COMPLIANCE WITH TECHNICAL REQUIREMENTS

Maximum 2 pages.

Show how the organisation or consortium plans to meet the minimum requirements to become a Node, including governance and technical readiness, in particular integration in the EOSC Federated AAI and exposure of their resources through the common EOSC catalogue. Explain how the Node Core Capabilities will be implemented. Please start with a sentence confirming to agree to comply with the mandatory technical specifications regarding integration in the EOSC Federation. (General criteria #3, 50 words.)

We confirm that the e-INFRA CZ consortium agrees to comply with all mandatory technical specifications regarding integration into the EOSC Federation, specifically concerning the EOSC Federated AAI, resource exposure through the common EOSC Catalogue, and the implementation of Node Core Capabilities.

I. Integration with the EOSC Federated AAI

The e-INFRA CZ consortium is uniquely positioned to meet EOSC AAI requirements due to our extensive track record in architecting and operating production-grade federated identity systems. Our national AAI is built on **Perun**, the same technological foundation as the **Life Science AAI (LS AAI)**, which is already a cornerstone of the EOSC Federation.

- **Proven Integration:** Masaryk University (CERIT-SC) and CESNET operate the national AAI in full alignment with EOSC principles, co-operating with GÉANT and EGI.
- **Domain Expertise:** Our team manages the AAI for major European RIs, including **ELIXIR** and **BBMRI-ERIC**. This ensures that our transition to the EOSC Federated AAI will be seamless, leveraging existing trust frameworks and interoperability protocols (OIDC/SAML) already validated in the EOSC ecosystem.

II. Resource Exposure and Metadata Management

We are committed to making our resources discoverable through the common EOSC Catalogue by aligning our national service descriptions with the EOSC Profiles standard.

- **National Metadata Directory (NMA):** We will leverage the NMA to act as the primary bridge for harvesting metadata from Czech research infrastructures.
- **National Service Catalogue** will be deployed based on the EOSC Beyond Sandbox Catalogue service, which already provide integration features required for interoperability with EOSC Catalogue.

Through our partnership in the **EOSC Beyond** project, we have **direct experience operating service catalogues** and defining service lifecycles. This ensures that our national services—including data repositories and compute resources—will be exposed to the federation with high-quality, machine-actionable descriptions.

III. Implementation of Node Core Capabilities

The EOSC CZ Node already operates a mature suite of core capabilities at the national level, which are ready for federation-wide integration:

- **Monitoring and Accounting:** Our systems are currently integrated with **EGI and EOSC Sandbox** (from EOSC Beyond project) environments. We will provide standardized accounting

records for compute and storage usage, ensuring transparency and compatibility with EOSC Federation reporting.

- **Helpdesk and Support:** We maintain a multi-tier support system already synchronized with international infrastructures (EGI, ELIXIR). We will establish a seamless interface between the National Helpdesk and the EOSC Central Helpdesk.
- **Operational Readiness:** Our involvement in the **EOSC EU Node** and the **EOSC Focus** initiatives has provided our team with the governance and operational coordination expertise required to maintain high service-level agreements (SLAs) within a distributed European environment and experience with FitSM service management approach.

IV. Technical Readiness and Security Compliance

Our technical readiness is exemplified by two flagship components of our infrastructure:

- **SensitiveCloud:** Operating at **TRL 9**, this Kubernetes-based environment has been in production since 2022. It achieved **ISO/IEC 27001 certification** in 2023. Critically, the scope of this certification includes the AAI team responsible for the EOSC Federated AAI connector, ensuring the highest level of organizational security and reliability.
- **Galaxy Integration:** Building on our success in the **EuroScience Gateway** project and the ongoing **ESG4Stars** initiative, we have established a clear, standards-compliant pathway for integrating complex workflow services into EOSC-aligned environments.

In conclusion, e-INFRA CZ possesses the technical maturity, the certified infrastructure, and the proven operational experience to serve as a high-performing National Node within the EOSC Federation.

V. Governance and National Coordination

The EOSC CZ Node is underpinned by a mature governance framework established through the **e-INFRA CZ Consortium Agreement**, which has been signed by all core partners (CESNET, CERIT-SC, and IT4I). This agreement specifically covers the provision and operation of EOSC-aligned services.

- **Legal Representation: CESNET** serves as the consortium coordinator and is legally mandated to act on behalf of the partners. This includes the authority to sign the Memorandum of Understanding (MoU) for the EOSC Federation and other binding operational agreements.
- **Inclusive Federation Model:** While the core infrastructure is managed by the consortium, the Node is designed as an open platform for the entire Czech research landscape. We are currently finalizing formal agreements with major national Research Infrastructures—specifically **ELIXIR-CZ** and **RECETOX RI**—to integrate their thematic services into the Node.
- **The National Entry Point:** The EOSC CZ Node will act as the official gateway for any Czech research entity wishing to offer services to the EOSC Federation. We will provide the necessary technical and administrative support to facilitate this onboarding.
- **Service Incubator for Fast-Tracking:** To ensure a continuous pipeline of innovation, we have established a **Service Incubator**. This initiative is specifically designed to mentor and support emerging national services in reaching the required maturity (TRL) for EOSC federation, providing a faster and more structured route to European-level visibility.

6. EXTERNAL DEPENDENCIES & KEY RISKS

Maximum 1 page.

This section should describe any limitations, risks or restrictions that affect how the project can be managed and executed. These constraints could come from various sources — internal organisational factors, external environments, or specific project requirements such as EOSC EU Node dependencies — and may influence decisions on resources, timeline, technology, and scope. Identifying these constraints early on ensures that the project team can plan accordingly and address potential challenges proactively. Also list decisions and compliance related risks. Mention risks that arise both from the organisation as well as from the external (to the project or/and organisation) environments.

In the case where a separate document does not exist, then you can also include information related to security risks, document management risks, data protection risks, or other.

External Dependencies & Risks	Actions / Mitigation Measures	Deadline
Ambiguity in EOSC EU Node Integration: The technical protocols and exact onboarding procedures for integrating national resources (e.g., Jupyter Notebooks and OpenStack) into the central EOSC EU Node remain in flux. This may affect the precise timing of service exposure.	We will maintain active participation in the **EOSC Beyond** and **EOSC Mesh** projects to influence and adapt to emerging standards in real-time. We will prioritize a "federation-ready" API-first approach to ensure flexibility regardless of the final EU Node requirements.	**M4** (Initial integration plan review)
Overlapping Access Routes (User Confusion): Offering resources simultaneously through the **National Node, EGI FedCloud, and the EOSC EU Node** may confuse researchers regarding where to apply for resources, potentially leading to fragmented accounting and redundant support tickets.	We will implement a "Unified User Front-end" strategy at the national level. We will provide clear documentation and a centralized helpdesk routing system that hides back-end complexity from the user, ensuring a "single-entry point" experience for Czech researchers.	**M6** (Portal & Helpdesk launch)
Inter-Project Synchronization: The timelines and specific technical deliverables of external projects (e.g., **EOSC Mesh**) are still being finalized. Delays in these external projects could impact the internal roadmap for specific Czech Node features.	By **M3**, we will conduct a detailed synchronization workshop with partner projects to align milestones. We will maintain a modular project structure where Node Core Capabilities can proceed independently of specific external project results.	**M3** (Milestone synchronization)
Evolution of the EOSC Governance & MoU: The final legal and operational framework of the EOSC Federation (and the associated MoU) is still evolving. Requirements for Node compliance may change mid-project.	CESNET, as the legal coordinator, will engage directly in the EOSC Association governance bodies. We have built "compliance buffers" into our work plan to allow for rapid administrative adjustments should the mandatory specifications be updated.	**M6** (MoU signing phase)
Data Sovereignty and Federated Analysis: In Multi-Node use cases (like MCVAL), changes in national interpretations of **GDPR or the emerging EHDS** regulations could restrict data movement or remote access, impacting the use case timeline.	We will leverage our **ISO 27001-certified SensitiveCloud** environment as the baseline. Our primary operational model is based on "Data visiting" approach, practically removing the need for actual data transfers. We will use privacy-preserving technologies (e.g., local validation without raw data transfer) to ensure compliance even under more restrictive legal interpretations.	**M1–M12** (Ongoing monitoring)
Third-party Preparedness and Onboarding: The Node will support onboarding of services in earlier stages of the production preparedness (lower TRLs). It will create a Service Incubator and define conditions under which lower TRL services can be onboarded in the Incubator environment and made thus available even in their early stages to the EOSC Federation.	Within EOSC Federation we plan to negotiate conditions under which a lower TRL services or services in early stages of life-cycle (e.g. newly established research data repositories) can be also onboarded in an EOSC Node and made available through the EOSC Federation. We plan to establish a clear tagging of Incubator services to make sure users can easily distinguish between regular and incubator-based ones.	**M6 Rules** **M12 full operation**

7. CONTRIBUTIONS [DELIVERABLES (INCLUDING DOCUMENTATION)]

Maximum 2 pages.

This section should identify the deliverables of the project and their respective contributors (where there is more than one) within the organisation. Deliverables can be tangible (such as documentation, software code, APIs) or intangible outputs created during the project. These deliverables are intended to be delivered to the project owner organisation. It is important to note that the deliverables may be produced by different partners within the organisation, each contributing specific components or outputs as part of the overall project.

Deliverable ID	Deliverable Name	Responsible	Deadline
CZ.1	**Basic services deployment – lessons learned**	**Miroslav Ruda, Lukáš Hejtmánek**	**M3**
CZ.2.1	**Galaxy use case – Initial Demonstration**	**Miroslav Ruda**	**M4**
CZ.3.1	**BBMRI use case – report/documentation of data harmonization, pseudonymization, and TRE workflows**	**Michal Růžička**	**M6**
CZ.4	**Incubator rules and conditions**	**Jaroslav Juráček**	**M6**
CZ.5.1	**LLM use case – Report – lessons learnt and next steps**	**Lukáš Hejtmánek**	**M6**
CZ.5.2	**LLM use case – Report – lessons learnt and next steps (revision)**	**Lukáš Hejtmánek**	**M7**
CZ.6	**Use case deployment/first wave**	**Antonín Zita**	**M9**
CZ.7	**Node 1st Year Status**	**Luděk Matyska, Miroslav Ruda**	**M12**
CZ.3.2	**BBMRI use case – Validated demonstrator**	**Michal Růžička**	**M12**
CZ.8.1	**Swiss use case – Report – Specification of requirements**	**Jaroslav Juráček**	**M15**
CZ.8.2	**Swiss use case – Demonstrator**	**Jaroslav Juráček**	**M21**

The table above mentions only the directly responsible persons, while the deliverables will usually be result of a larger teamwork, with members coming from different partners of the consortium.

The first deliverable, *Basic services deployment – lessons learned*, will describe processes and adaptations that were needed to deploy the planned EOSC CZ Node e-infrastructure related services into the EOSC Federation. The document will focus on lessons learnt, specifically targeting unexpected problems that will emerge as part of services onboarding. The deliverable will also reflect the actual state of the EOSC CZ Node implementation, serving as an anchor for the CZ.4 deliverable. Possible modifications and proposed updates to the EOSC Federation handbook may also be included. The deliverable could also serve as a guide to new nodes what to expect and how to prepare for becoming a member of EOSC Federation.

Second deliverable, *Galaxy use case – Initial Demonstration*, will be a demonstration of the current development on the Galaxy-LLM as-a-service – in which the vital features of the use case will be already functional.

The third deliverable, *BBMRI use case – report/documentation of data harmonization, pseudonymization, and TRE workflows* – will consist of documentation of data harmonization, pseudonymization procedures, and TRE access workflows for cross-border validation within SensitiveCloud. Later, the use case will also have another deliverable – *Model Validation and Demonstrator Execution***.** This deliverable will include a completed independent validation of the prostate cancer detection model on external Austrian BBMRI data with reproducible evaluation metrics.

The fourth deliverable, *Incubator rules and conditions*, will define and formalise the Incubator framework and will contain the set of rules for onboarding in the Incubator, for moving into a standard production service and also for removing a service from the Incubator. The aim of this deliverable to provide a guide for those interested in use of the Incubator to deploy not yet fully production-level services on the ESOC CZ Node, conditions to be fulfilled (rules of engagement) and the life cycle of incubated services. We plan to make this deliverable available for the other EOSC Nodes interested in incubating not yet production-level services within their Node.

The fifth deliverable is a report discussing the lessons learned and necessary next steps to be taken in deployment of our LLM use case. A later revision of the report is another standalone deliverable of the use case.

The sixth deliverable*, Use case deployment/first wave*, will document the actual use cases deployed with support/involvement of the EOSC CZ Node. It will complement the first deliverable in collecting experience of using EOSC Node in a real-world deployment, as defined by the individual use case. It will also serve as a guide to the second wave of use case and any future support of complex multi-node use of ESOC CZ Node within the EOSC Federation.

The seventh deliverable, *Node 1st Year Status*, will summarize and reflect on the experience gained during the first year of EOSC CZ Node implementation, including not only lessons learned, but also basic statistics of the node services use, eventual experiments with capacity allocations (e.g. experimenting with a credit system similar to the one currently in use at EOSC EU Node) etc. This deliverable will also serve as an input to the EOSC CZ Node Consortium management to plan for the next steps in the EOSC CZ Node implementation.

Finally, the eighth deliverable concerns our multi-node use case with the Swiss node. The deliverable will be a report containing specifications of APIs, security protocols, and data flows between national TREs and the EOSC nodes. The use case will later lead to another deliverable – a demonstrator with a fully documented software stack (e.g., Nextflow/Snakemake workflows, Docker containers) enabling federated analysis while ensuring data sovereignty.

8. COMMUNITY ENGAGEMENT

Maximum 1 page.

Describe how the organisation/consortium operating an EOSC Node intends to implement activities that enable the represented community to engage and participate in the EOSC Federation, which may include offering the capacity to onboard third-party resources. Define how the project will use the lessons learned from the current wave of Nodes.

Please start with a short paragraph confirming the capacity or the clear plan to develop the capacity to implement activities that enable the broader represented community to engage and participate in the EOSC Federation. (General criteria #2, 100 words.)

The e-INFRA CZ consortium that will operate the EOSC CZ Node possesses the organizational, technical, and coordination capacity to implement EOSC CZ Node as described in the proposal. As the national large research e-infrastructure both primarily responsible for projects aimed to support EOSC implementation in Czechia and also widely involved in HEU and DE EOSC-related projects, it already extensively works with the national research communities. The EOSC CZ Node proposal, with three key partner and several repositories onboarded from other institutions demonstrate the willingness and capacity to provide much wider onboarding support.
Also, EOSC CZ Node consortium plans to create an Incubator, a framework that will allow provisional onboarding of not yet production-level services, supporting thus wider exposure of new services in the EOSC Federation and motivation their early engagement with EOSC.

I. A Bottom-Up Governance Model

Community engagement will be driven primarily through the **EOSC CZ Working Groups (WGs)**. This bottom-up approach utilizes 12 specialized WGs (including Metadata, Architecture, and Bio/Health/Food) as structured platforms for dialogue and co-creation. These groups ensure that national service development remains aligned with EOSC policies and interoperability standards. By maintaining this continuous feedback loop, the Node ensures that its technical evolution directly addresses the real-world needs of Czech researchers.

II. Onboarding Pathways and Third-Party Integration

The Czech EOSC Node will implement a gradual onboarding pathway for third-party resources.

- **Early Adopters:** From the outset, the Node will integrate services from **national EOSC ecosystem** and also from **RECETOX RI**, both providing onboarding support as well as a potential to serve as a blueprint for other thematic infrastructures.
- **The Service Incubator:** A critical feature of our engagement strategy is the **Service Incubator** for resources with a TRL lower than 7. This provides a “supported sandbox” where emerging services receive technical and organizational mentoring to align with FAIR requirements before full federation. This will motivate even services and repositories in early stages of their implementation to be directly involved in the EOSC ecosystem, getting early visibility and feedback.
- **Advisory Support:** We will provide structured guidance and technical “onboarding clinics” to help institutional repositories and smaller research groups meet the mandatory EOSC specifications.

III. Lessons Learned from the First Wave

The Czech Node has actively monitored the development of the First Wave (2024–2025) and will implement three key lessons learned to ensure a smoother Second Wave deployment:

1. **Standardized Interoperability:** Recognizing that early nodes faced challenges with metadata consistency, we are prioritizing alignment with the **EOSC Federation Handbook (2nd Edition)** and following state-of-the-art metadata and interoperability standards by design.
2. **Governance:** We recognize necessity of coordination across EOSC nodes. Node members will be active in corresponding working groups, established by EOSC Federation. We expect our active participation in Federated AAI, VRE, File Sync&Share, and Federated Computing and Storage working groups. Our representative is co-chairing the EOSC Association Interoperability Workgroup and is involved in the relevant EOSC Federation Task Force, AAI Manager recently became deputy chair of the AAI Task force; other people are population the Workgroups and are prepared to join the relevant EOSC Federation Task Forces.
3. **Maturity:** We have shifted from a “project-based view” to a sustainable service view, ensuring that our governance model (led by CESNET) provides the long-term stability required for third-party providers to trust the Node as their gateway to Europe.

Through these activities, the Czech EOSC Node will ensure an inclusive, scalable, and sustainable environment that empowers the national community to become an active contributor to the European Open Science Cloud.

9. TIMING AND MILESTONES

Maximum 1 page.

This section should list the important project points in time of the project lifecycle (i.e., milestones) for events or project deliverables. The list can include an indication regarding the foreseen timing of the repositories/services made available, the major project phases (e.g., the PM phases of Initiating, Planning, Executing, Closing), as well as both project and project management deliverables (e.g., the Project Work Plan and the date it's expected to be finalised).

After deployment of a service, indicate when documentation explaining the service to users and or administrators will be made available.

ID	Milestone Description	Target Delivery Date
1	**Basic integration of AAI and Federated Catalogue**	**M3**
2.1	**BBMRI use case – Data Preparation and Cross-Site Validation Setup**	**M4**
3.1	**LLM use case – Prototype implementation**	**M5**
4	**Service Incubator rules and description**	**M6**
5.1	**Galaxy use case – Production-ready implementation**	**M6**
6.1	**EFSS use case – Prototype implementation of federated sharing**	**M7**
7	**Integration of other EOSC Node Core services (Monitoring and HelpDesk)**	**M9**
2.2	**BBMRI use case – Completed independent validation of the prostate cancer detection model**	**M10**
3.2	**LLM use case – Final implementation of the use case**	**M10**
5.2	**Galaxy use case – final implementation**	**M12**
6.2	**EFSS use case – Production implementation of federated sharing in sync-and-share**	**M12**
8+	Integration of field-specific repositories into the EOSC Federation: - M6: **LINDAT/CLARIAH-CZ, MBDB, Czech BioImaging,** - M12: **Archaeological Map of the Czech Republic, Czech Social Science Data, DataHub, GENASIS, RECETOX RI Mass Spectrum Reference Repository**	**M6–M12**
9.1	**Swiss node use case – Verified connection of AAI**	**M13**
9.2	**Swiss node use case – Successful distributed execution of the GWAS algorithm**	**M19**

The EOSC CZ Node will follow a structured 12-month implementation plan to ensure full technical alignment and operational readiness within the EOSC Federation. By M3, we expect full AAI integration into the Federation, as all the core services (items 1-10 in Section 3) already support e-INFRA AAI and LS AAI that are already being connected to the EOSC AAI Federation. We will also integrate our catalogue into the Federation Catalogue. The core ESOC CZ Node should thus be operational already in M3. By M6, the prototype solution of our LLM use case will be implemented, and our first milestones use case with BBMRI will be reached; in addition, the Galaxy use case will reach its final development phase, and we will also publish Service incubator rules for onboarding. By M12, the implementation of nearly all use-cases, including necessary documentation, will be completed; the only use case to be done later is our cooperation with the Swiss node, as their enrolment support window starts in January 2027. In addition, we plan on integrating additional EOSC Node Core services as well as connecting all remaining initial repositories to the EOSC Federation.

M3: Technical Integration and Visibility
The first quarter focuses on establishing the core “bridge” between the national and European infrastructures.

- **AAI Federation:** We will finalise the integration of the **e-INFRA CZ AAI** into the EOSC Federated AAI. This will enable researchers across the federation to access Czech resources using their home institutional credentials.
- **Catalogue Harvesting:** We will activate the metadata exchange between the **National Metadata Directory (NMA)** and Service Catalogue and the central EOSC Catalogue. This automated propagation ensures that all national services and repositories become immediately discoverable to the European research community.
- **Service Accessibility:** As all proposed services (items 1-10 in Section 3) already support the e-INFRA or LS AAI frameworks, they will become technically “federation-ready” at this milestone.

M6: Developmental Demonstrations
The mid-project milestone will focus on the functional validation of our primary multi-node collaborations.

- **MCVAL Beta Environment:** The **SensitiveCloud** environment will be prepared for the first round of multi-centric validation, demonstrating secure data processing workflows for the BBMRI and ICSC partners.
- **Galaxy use case:** Production-ready implementation of the Galaxy-LLM integration, showcasing cross-node analysis between the **usegalaxy.cz** and **usegalaxy.eu** (NFDI) instances and indicating our readiness to implement the use case on the Federation level.
- **LLM use case:** First prototype implementation and initial testing should be reached by this time.
- **BBMRI use case:** Defined common data schema, provenance rules, and secure transfer agreements for histopathology WSIs and slide-level labels between Czech and Austrian BBMRI nodes. This milestone is vital for determining future work, as reaching it shows that we have obtained common technological and provenance ground between two independent nodes.
- **Repositories:** selected EOSC-ready repositories will be onboarded into the EOSC Federation.

M12: Full Production and Sustainable Operation
The final phase ensures that all technical developments are translated into stable, documented services.

- **Use-Case Finalization:** Nearly all multi-node use cases will reach full production quality during this period. They will be supported by complete user documentation and onboarding guides.
- **Integration of other EOSC Node Core services (Monitoring and HelpDesk)**
- **Service Incubator Launch:** The framework for the service incubator will be fully operational, providing a permanent pathway for onboarding further Czech thematic resources into the federation.

M13+: Swiss Node use case
As the Swiss node is being onboarded from January 2027, we expect that by the end of winter we will establish a verified connection between AAI of hosting TRE (SensitiveCloud) and participating EOSC nodes (EOSC Node Switzerland, EOSC Node Czech Republic). Later the same year, a successful distributed execution of the GWAS algorithm across two participating nodes using synthetic or real genomic data will be established.

10. CONTACTS

Maximum 300 words.

Describe your organisational structure of the project team with roles and responsibilities, and resources involved.

Applicants must commit at least five individuals involved for the duration of the build-up phase, including the roles of coordinator, operations officer, a legal officer, a cybersecurity officer and a communications officer (General criteria #5). Please start with a sentence explaining how many individuals are involved and assign names to all roles in the subsequent table.

Currently we list nine individuals involved across the eight roles, albeit it is possible that the number of individuals will increase if necessary. All the individuals are part of the e-INFRA consortium, belonging either to CESNET or CERIT-SC, and most of them have extensive experience with multi-national research infrastructures. Luděk Matyska, senior researcher at CESNET and director of CERIT-SC at Masaryk University, is head of the Steering Board of the national strategic EOSC-CZ project, Principal Investigator of the National Repository Platform project, represents CESNET as the national EOSC Association Mandated organization and serves as an expert for EOSC SB, among other positions and responsibilities. . Miroslav Ruda, head of the Distributed Computing Department at CESNET, is responsible for computing services in national e-INFRA CZ infrastructure and represents CESNET in various EGI and EOSC-related projects, including EOSC Beyond and EOSC Mesh. Daniel Kouřil is senior security analyst and officer at CESNET, with experience in operational security at EOSC EU Node. Iva Huňková is the legal expert at the Advanced Data Management office of the Institute of Computer Science (ICS), MU. Dominika Králíková is the Head of the External Relations Department at the ICS MU. Jaroslav Juráček is the Head of EOSC CZ Secretariat. Michaela Capandová is the Head of Scientific Collaboration Department at the ICS MU. Finally, Antonín Zita is an EOSC CZ Secretary and a member of the Community and User Support Department at ICS MU.

Role	Name	Email
Coordinator	Luděk Matyska	Ludek.Matyska@cesnet.cz
Operations Officer	Miroslav Ruda	Miroslav.Ruda@cesnet.cz
AAI Officer	Peter Lenyi	Lenyi@ics.muni.cz
Cybersecurity Officer	Daniel Kouřil	Kouril@cesnet.cz
Legal Officer	Iva Huňková	hunkova@ics.muni.cz
Communications Officer	Dominika Králiková	kralikova@ics.muni.cz
Incubator Manager	Jaroslav Juráček Michaela Capandová	juracek@ics.muni.cz capandova@ics.muni.cz
Project Manager	Antonín Zita	zita@ics.muni.cz

Appendix A

REPOSITORIES (Appendix related to 3. REPOSITORIES AND SERVICES DELIVERED)

Service ID	Service Description	Federation Contributions & Value to Users
12	**LINDAT/CLARIAH-CZ**	The LINDAT/CLARIAH-CZ allows for an open-access to digitized data resources in the domain of humanities and arts, namely in linguistics, history and historical bibliography, culture and science on culture, history of arts, philosophy, film culture, visual arts, musicology and history of music, ethnology, folklore, archaeology and also in some cross-disciplinary domain disciplines for broad research community.
13	**Molecular Biophysics Database (MBDB)**	The Molecular Biophysics Database contains raw data produced in experiments with biomolecular samples, biological material or other material, using molecular biophysics methods, such as Microscale Thermophoresis (MST), Biolayer interferometry (BLI), Surface Plasmon Resonance (SPR) and others.
14	**Czech BioImaging**	The Czech BioImaging is a repository for biological and medical imaging covering all levels of imaging – from imaging of organisms, their tissues and cells to imaging of cell organelles, biomolecules, and their interactions in the healthy and pathological states.
15	**Archaeological Map of the Czech Republic (AMCR)**	The Archaeological Map of the Czech Republic is a repository of information on archaeological investigations, sites and finds. It contains individual archaeological documents (texts, field photographs, aerial photographs, maps and plans, digital data), projects, fieldwork events, archaeological sites, records of individual finds and a library of 3D models from archaeological fieldwork on the territory of the Czech Republic from 1919 to the present day.
16	**Czech Social Science Data**	The Czech Social Science Data repository acquires, stores, and makes available data from social science research projects and promotes their dissemination to make them widely available for secondary use in academic research and for educational purposes.
17	**DataHub**	The DataHub is a live platform for storing, sharing and presenting data from multiple categories: Biota, Boundaries, Cartography, Climatology, Meteorology And Atmosphere, Elevation, Environment, Forests, Health, History, Oceans, Population and Settlements.
18	**GENASIS**	The GENASIS repository provides comprehensive information on contamination of the environment by persistent organic pollutants (POPs). It contains validated data from multiple providers and input from environmental monitoring programmes.
19	**RECETOX RI Mass Spectrum**	The RECETOX RI Mass Spectrum Reference repository consists of MS spectra collected from authentic compounds. Each library comprises the spectra in MSP format and an accompanying SDF database of compounds. The Metabolome HR-[EI+]-MS library is a

	Reference repository	collection of mostly endogoenous compounds from MetaSci Human Metabolite Library.

Appendix B – Node Letters of Agreement

The following pages contain the letters of agreement from multi-node use cases Node Coordinators or from the contact persons from second-wave node applicants.