SLOVAK CENTRE OF SCIENTIFIC AND TECHNICAL INFORMATION (CVTI SR)

Project Charter

(Version 2026.06.10)

Building the national EOSC Node Slovakia

1. Project Summary [1]

The Slovak Centre of Scientific and Technical Information (CVTI SR) with selected national stakeholders aims to establish national EOSC Node Slovakia, enabling seamless access to national research data, computing resources, and specialised services. With a history spanning over 86 years as Slovakia's national information centre for science, technology, innovation, and education, CVTI SR with the network of national stakeholders brings stability, sustainability, and experience in data management and technical infrastructure to the EOSC ecosystem.

As the main Datacentre for research and development in Slovakia, the National EOSC SK Secretariat and National Office for Open Science, CVTI SR will leverage its substantial infrastructure (Data repositories, computing resources, analytical capabilities and research services) to contribute to the EOSC Federation's objective of enabling open science and FAIR data practices across Europe. The project's scope includes piloting the services, integrating CVTI SR's systems related to Interoperable Platform (KOMIS with related national repository SVD) and involving multiple Slovak research organisations, universities, with their data services and repositories. Our key contributions will include data hosting and provision, technical infrastructure, resource allocation systems for researchers, and contributing to national and cross-border use cases with transition to the dedicated EOSC services.

The initially envisaged approach of temporarily onboarding selected Slovak (during 2025) research resources into the EOSC EU Node has been replaced by the approach of building a dedicated, enrolled national node from the outset. Accordingly, the project charter has been significantly re-phased, use case redesigned, and milestones/deliverables reformulated that reflect the real maturity path of the node:

- Prototyping — initial experiments with the core node building blocks (federated AAI, research products catalogues and integrations, service catalogue, entry point, piloting services) in test and prototype environments.
- Transition to Production — promoting validated building blocks to production, registering the node and its service catalogue in the EOSC Federation, and adding federated monitoring, helpdesk and FitSM-based service management.
- Scaling — broadening the node with additional institutional repositories, integrated services from more Slovak providers, bringing more cross-node use cases with EOSC Federation members.

2. Value Proposition[1]

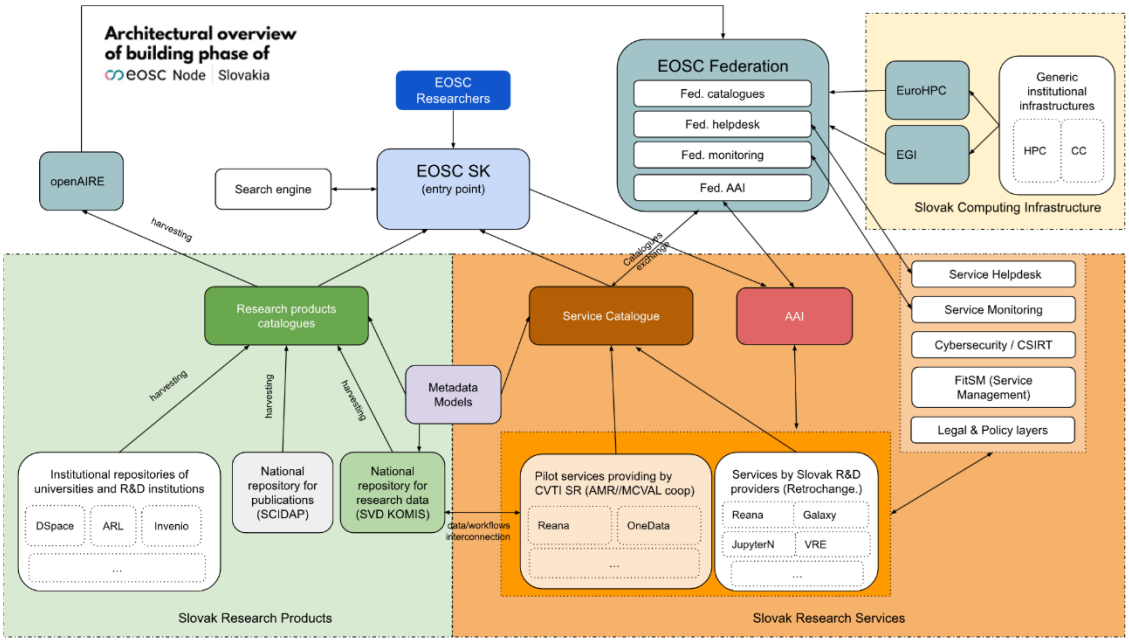
- **Main Goal:** Establish integral National EOSC Node | Slovakia that enhances Slovakia's research capabilities while contributing resources and expertise to the European research data ecosystem.
- **Needs addressed:**
    - *Fragmentation of Slovak research data* by resolving the dispersion of research data across Slovak institutions, enabling unified access within the European research ecosystem.
    - *Interoperability limitations* strengthening connectivity between Slovak and European research infrastructures through standardised protocols, AAI and interfaces that enable cross-border and interdisciplinary research.
    - *Data accessibility barriers* by improving cross-border access to specialised Slovak research datasets that were previously isolated or difficult to discover.
    - *Lack of Slovak research services with compatibility with EOSC ecosystem*

[1]() Refer to Guidance Material Page 3

- **Key Benefits:**
  - *Integration of Slovak research repositories and data systems* into the European ecosystem and enhance discoverability of Slovak research outputs through standardised methods.
  - *Leveraging Slovak infrastructure resources* with interconnected services (e.g. replicable workflows)
  - *Enhanced data interoperability* via unified standards for research data management and exchange, increasing FAIR compliance across Slovak research repositories.
  - *Regional integration expertise* by bridging Central European research infrastructures with the broader European research ecosystem, providing regional integration knowledge and connections.
- **Who Benefits:**
  - *Research Community:* Slovak and European researchers across disciplines gain seamless access to previously fragmented datasets and computing resources.
  - *Academic Institutions:* Universities and research organisations throughout Slovakia and the EU benefit from resource sharing through our federated infrastructure.
  - *Public Sector Bodies:* Government agencies requiring scientific information for evidence-based policymaking access standardised research outputs.
  - *Industry Partners and research infrastructure operators:* Private sector entities engaged in research and innovation activities benefit from standardised interfaces to research innovations.
  - *Citizens and Society:* The broader public gains through enhanced open science practices, improved transparency, and more accessible research processes.

3. Use Case(s) [1]

Depicted architectural overview demonstrates the planned evolution of Slovakia's EOSC participation:



Use Case ID	*Use Case Description*	*Federation Contributions & Value to Users*
SK-UC1 ***(MCVAL SK part)***	**Multicentric Validation of AI-Based Tumour Tissue Characterization: A Cross-Node Collaboration Between EOSC Node Slovakia and EOSC Node BBMRI** **(Related to multi-node use case: MCVAL: A prostate cancer screening tool that employs multi-centric validation of AI models)** (scientific use case) **Description**: This use case contributes to validation of AI-based system (by EOSC Node BBMRI) for tumour tissue characterization in pathology images, in initial phase specifically focusing on prostate tissue slides. The system analyses medical images to identify and distinguish tumour regions from healthy tissue, potentially providing information about tumour stage and appropriate treatment options. The collaboration connects EOSC Node BBMRI's established AI characterization method with datasets from other EOSC nodes (including Slovak) to enable robust multicentric validation. The workflow involves EOSC Node Slovakia contributing to a FAIR-compliant data pipeline of anonymised tissue images gathered by affiliated medical institutions (In first phase cooperation between CVTI SR and Faculty of Medicine – Comenius University, Bratislava). These images will be distributed and processed through BBMRI's AI characterization service, with results subsequently evaluated by medical professionals at EOSC Node Slovakia. This creates a validation feedback loop where BBMRI receives validation metrics while participating doctors gain access to clinical annotations from AI-assisted image analysis. **Access Policy:** This cross-node AI-based tumour characterization use case will implement a tiered access structure mirroring the EOSC EU Node access policy, with the initial phase considering utilising only pseudonymised prostate tissue slide images and in the next phase dealing with the DPA and restricted access only for relevant parties. This approach ensures appropriate data governance and resource allocation while demonstrating how cross-node collaboration can maintain data sovereignty and enable effective multicentric validation of AI methodologies.	**Federation Contributions:** This cross-node collaboration exemplifies EOSC's federation model by integrating specialised capabilities from different nodes—BBMRI's AI expertise and CVTI SR's data management infrastructure. By implementing a tiered access structure mirroring the EOSC EU Node access policy, the use case demonstrates practical application of EOSC governance principles while facilitating secure cross-border data sharing. This use case establishes a replicable pattern for multicentric validation methodologies that can be applied beyond biomedical domains, addressing the broader challenge of validation across heterogeneous datasets from multiple sources—a fundamental requirement for scientific reproducibility in EOSC Federation. **Value to Users:** For medical researchers and clinicians, this use case delivers validated AI-assisted tumour characterization tools that have been rigorously tested across multiple centers, enhancing confidence in diagnostic applications. Participating doctors receive advanced image evaluation capabilities without needing IT expertise, potentially improving diagnostic accuracy and treatment selection. For data providers and medical institutions, the platform offers a structured framework to contribute to and benefit from collective validation efforts while maintaining appropriate data governance. The broader research community gains a practical model for implementing multicentric validation protocols that can strengthen the robustness of computational methods across domains. By demonstrating how cross-node collaboration enables systematic validation of AI methodologies, this use case addresses a critical challenge for EU research groups: finding and utilising diverse datasets for thorough validation, ultimately accelerating the responsible implementation of AI in healthcare and beyond.
SK-UC2 ***(AMR SK part)***	**Cross-border Federated analysis of pathogen genomes Through EOSC Node Slovakia and EOSC Node Poland**	**Federation Contributions:** Cross-node collaboration exemplifies the EOSC federation model by integrating complementary capacities from different European research nodes,

	(Related to multi-node use case AMR: Federated analysis of pathogen genomes) (scientific use case) **Description**: This use case establishes a collaborative framework for genomic sequence analysis of antimicrobial resistant (AMR) pathogens between EOSC Node Slovakia and EOSC Node Poland with potential of expanding to other EOSC Node. The initiative combines resources and expertise of both parties with relevant research and technological stakeholders or research stakeholders (Slovak – National Centre for Bioinformatics CVTI SR and University Science Park of Comenius University Bratislava, Poland – Cyfronet AGH and National Science Centre) to create a cross-border federated analysis system for AMR research. The use case involves collecting, processing, and analysing genomic sequences from various AMR pathogen samples to identify resistance patterns, track their spread of human pathogens across domains and national borders EOSC Node Slovakia will provide: ● Specialized tools for genomic data management and Slovak AMR genomic datasets ● Genomic data, including AMR bacteria, Salmonella strains, Campylobacter strains and respiratory viruses ● Bioinformatics workflows for genotyping and characterizing respiratory viruses and AMR bacteria, currently utilised in Slovakia ● Infrastructure for sharing data and running computational workflows EOSC Node Poland will contribute: ● By facilitating access to Polish AMR genomic datasets ● By providing support for utilization of opensource OneData solution created by PL Cyfronet. ● In case of sensitive national PL data creating scenario of running SK AMR workflows on PL infrastructure with PL data The system will combine cross-border AMR genomic dataset with cross-validation and incorporate prediction models to identify novel resistance mechanisms and correlate genomic markers with clinical outcomes. **Access Policy:** cross-node AMR genomic analysis use case will implement a tiered access structure aligned with the EOSC EU Node access policy, with the initial phase	contributing their extensive collection of genomic sequences from clinical isolates, and sharing specialised bioinformatic workflows developed by EOSC researchers. This collaborative, multinational analysis of pathogens demonstrates how the EOSC federation can address transnational public health challenges that require coordinated actions and data sharing across borders and multiple research infrastructures. This demonstration of EOSC potential could facilitate more formal agreements with national public authorities, which would be necessary to expand the range of exchanged data. Technical details regarding optimal methods for sharing and exchanging data, workflows, and infrastructure will be addressed in later development stages. **Value to Users:** For microbiologists and infectious disease researchers, this use case provides access to diverse AMR genomic datasets spanning multiple neighbouring European regions, enabling more comprehensive analysis of resistance patterns and evolutionary trends. Healthcare institutions benefit from improved federated analysis capabilities and early warning systems for emerging resistant pathogens, potentially informing more effective infection control strategies. Public health authorities gain valuable cross-border insights into AMR transmission dynamics that transcend national boundaries, supporting evidence-based policy decisions. For bioinformaticians, the platform offers standardised workflows and valuable AMR related datasets.

	utilising de-identified pathogen genomic sequences with minimal epidemiological metadata. Access to the collaborative analysis platform will be structured according to EOSC principles, with primary non-sensitive genomic datasets with access to aggregated resistance patterns and anonymised genomic markers.	
SK-UC3	**Cross-border reproducible analysis workflows using REANA with EOSC Slovenia** **(Related to multi-node use case : UC-007-04 Cross-border SI-SK-PL reproducible analysis workflows pilot)** (scientific use case) **Description:** This use case represents a newly established cross-node cooperation between EOSC Node Slovakia and EOSC Node Slovenia (originating in the second phase), with interconnections to an existing partnership with EOSC Node Poland. Building on the prototypes of REANA-based federated workflow pattern developed for the AMR use case, the participating nodes are designing shared scientific workflows and establishing reciprocal access to data and execution environments across a broader range of scientific domains **Access Policy:** This cross-node pilot will implement a tiered access structure aligned with the EOSC EU Node access policy. The initial phase relies on non-sensitive, openly shareable datasets and workflows, granting reciprocal execution environment access to authenticated researchers from the participating nodes. Restricted resources may be added under institutional access groups in later phases as nodes matures.	**Federation Contributions:** This initiative strengthens the Central European regional federation by demonstrating repeatable cross-node workflows. It provides the participating research communities with shared analytical capacity and serves as a template for further multilateral cooperation within EOSC. Furthermore, the use case validates EOSC Node Slovakia's ability to federate with additional peer nodes beyond its established collaborations, actively testing policy and AAI interoperability between them. **Value to Users:** For scientific researchers across various domains, this use case provides seamless, reciprocal access to data and execution environments in Slovakia, Slovenia, and Poland. This enables researchers to execute complex, reproducible analyses on a transnational scale.
SK-UC4	**Participation in RETROCHANGE use case – Retrospective forest and landscape change analysis from historical satellite imagery.** **(Related to EOSC Gravity inter-project grant received by Technical University of Zvolen)** (scientific use case) **Description:** RETROCHANGE produces an EOSC-ready historical satellite-imagery package for Slovakia based on declassified high-resolution CORONA/HEXAGON-era data (approx. 1960–1985). Selected imagery is processed into analysis-ready geospatial products and published through interoperable access mechanisms (documented metadata and provenance, OGC WMS access, downloadable GeoTIFF/COG where feasible) together with reproducible Jupyter-based workflows. Scientific value is demonstrated through two	**Federation Contributions:** This initiative demonstrates how a Slovak thematic research capability can become a reusable, FAIR EOSC use case and be transformed into a potential service. It utilizes the node's execution environment end-to-end and delivers EOSC-Academy-style training materials alongside a showcasing event. **Value to Users:** For forestry, landscape ecology, and conservation researchers, this use case provides ready-to-use historical imagery and executable notebooks, removing the technical barriers associated with heterogeneous, poorly georeferenced archive data. Conservation managers and geoinformatics practitioners across the Carpathian region gain reproducible, long-term change baselines, while the broader EOSC community gains a reusable template for publishing thematic national datasets as FAIR services.

	sub use cases: High Tatras cross-border (Slovakia-Poland) region (TANAP–TPN) for long-term forest/non-forest and landscape-structure change, and Poloniny–Bieszczady region for high-nature-value Carpathian landscapes. Following a conservative MVP approach, workflows will be piloted on EOSC Node Slovakia, with the potential for a new research service to be integrated into the service catalogue. **Access Policy:** This thematic geospatial service will implement an open-access structure aligned with EOSC EU Node principles. The analysis-ready imagery products, metadata, and reproducible notebooks will be openly discoverable and downloadable through standard EOSC and OGC interfaces. However, execution environments for workflows with high compute and storage dependencies may be restricted to authenticated institutional access groups.	
SK-UC5	**Slovak research products catalogues integrations: onboarding national KOMIS and selected institutional research repositories.** **Description:** This use case focuses on onboarding selected repositories and catalogues that act as subsystems of the national CVTI SR platform, KOMIS (Comprehensive Research Information Management System). The initiative will primarily integrate one critical KOMIS subsystem—SVD (Research Data Objects Repository)—making its content discoverable and accessible through the EOSC Federation to encourage researchers to deposit a wider variety of data objects, such as datasets and reusable workflow elements. This aims to shift the current paradigm away from exclusively sharing published research papers. The core technical objective involves harmonizing with EOSC standards by developing adapter layers and a data transformation pipeline. This includes ensuring OAI-PMH compatibility and its validation through OpenAIRE. The process entails standardizing metadata schemas to align with EOSC guidelines and enhancing the implementation of persistent identifier (PID) systems that comply with global standards (e.g., DOI, ORCID, ROR). Beyond CVTI SR resources, this use case will integrate emerging, heterogeneous institutional repositories (e.g., DSpace, Invenio) and catalogues from multiple Slovak research institutions and citizen science initiatives, establishing them as recognizable sources within the EOSC Federation.	**Federation Contributions:** This approach strengthens the EOSC federation by integrating Slovak research resources that were previously isolated within national information systems. The metadata standardization efforts contribute directly to EOSC's goal of creating consistent, machine-actionable research descriptions across Europe. Furthermore, the implementation of globally recognized PID systems enhances the discoverability and citability of Slovak research outputs in international contexts. **Value to Users:** For researchers across Europe, this use case unlocks direct access to previously difficult-to-discover Slovak research publications and data objects via the EOSC Federation. This enriches the pool of available scientific resources and enables new collaborative possibilities. Slovak researchers benefit from the increased visibility of their work within the European research community, potentially leading to more citations, collaborations, and funding opportunities. Additionally, citizen scientists and smaller research institutions gain a pathway to make their contributions discoverable within the broader European research ecosystem through external catalogue integration mechanisms. Finally, the open-access approach in this initial phase minimizes socioeconomic barriers to information, democratizing knowledge availability.

	Access Policy: This resource integration use case will implement an open-access structure fully aligned with EOSC EU Node principles. In this initial phase, selected research data objects from SVD will be made openly discoverable and accessible without authentication requirements, promoting maximum visibility for Slovak research outputs throughout the European research community. More complex access management protocols will be introduced in future phases as additional resources with varying sensitivity levels are integrated into the EOSC Node Slovakia..	
SK-UC6	**Building EOSC Node Slovakia Service Catalogue & pilot services (including monitoring, helpdesk, FitSM)** **Description:** This use case focuses on building the EOSC Slovakia (EOSC SK) Service Catalogue (https://sc.eosc.sk) and piloting the services it exposes. Core technical activities include harmonizing the API with standard metadata models and vocabularies, managing PIDs, creating a registry section for new services, and experimenting with catalogue harvesting and exchange with other EOSC nodes. Additionally, the use case covers the incremental integration of monitoring and helpdesk systems into the EOSC Federation, along with the adoption of FitSM-based service management aligned with cybersecurity standards. **Access Policy:** The Service Catalogue itself is openly accessible, with service descriptions and the catalogue API being publicly discoverable and harvestable. Access to individual pilot services is governed by their respective access policies, whereas monitoring and helpdesk back-office functions are restricted to authorized operators.	**Federation Contributions:** This initiative provides the node with a single, discoverable catalogue and the operational backbone (catalogue API, monitoring, helpdesk, and FitSM) required for production-level Federation membership. Simultaneously, it transforms Slovak research capabilities into reusable EOSC services. As a result, the EOSC Federation gains its first batch of harvestable, standards-compliant Slovak services within the central catalogue. **Value to Users:** For researchers, the catalogue serves as a single, discoverable part of EOSC EU nodeto the node's services—as well as resources from other harvested nodes—all accessible through familiar EOSC interfaces. For service providers, the integration of monitoring, helpdesk, and FitSM management processes provides the operational assurance necessary for reliable, production-level use.
SK-UC7	**Enrolling the EOSC Node Slovakia with production readiness** **Description:** This use case outlines the comprehensive transformation of developing pilot building blocks to establish Slovakia's official, production-ready National EOSC Node. This involves replacing the current entry point (https://eosc.sk) with a production node portal that integrates service catalogues, search engines, and the original CVTI SR KOMIS solutions into a unified framework. Technical enhancements will include integrating services with the production EOSC AAI, developing standardized API gateways for all subsystems, establishing automated metadata harvesting pipelines, upgrading the	**Federation Contributions:** This initiative strengthens the EOSC federation by establishing a fully operational national node for Slovakia, thereby extending EOSC's geographical coverage and research domain diversity. Furthermore, the comprehensive integration of multiple information systems (e.g., SVD KOMIS) under a unified framework demonstrates how complex national research landscapes can be harmonized with EOSC standards while maintaining local governance. **Value to Users:** For researchers, this transformed infrastructure eliminates fragmentation by providing a single, unified entry point to Slovak and European research resources, significantly simplifying data discovery. Automated data flows between systems reduce the administrative

	PID management system, and implementing robust monitoring and helpdesk systems. This transformation will establish seamless data flows across all subsystems, ensuring the real-time synchronization of research information while providing native EOSC connectivity via standardized protocols. **Access Policy:** The EOSC Node Slovakia will implement an open-access structure during its initial phase, ensuring that all core metadata records and public research outputs are freely accessible. In subsequent phases, access to compute-intensive execution environments, sensitive data, and restricted resources will be managed through secure authentication protocols, fully aligned with EOSC EU Node access principles.	burden, allowing researchers to focus on science rather than data management tasks. European researchers gain streamlined access to previously isolated Slovak research outputs through familiar EOSC interfaces, unlocking new collaborative opportunities. Policymakers receive improved visibility into national research activities and their integration with European initiatives, supporting the strategic alignment of national and EU priorities. Finally, industry partners benefit from easier discovery of potential academic collaborators and innovations through the unified system.
SK-UC8	**EOSC Node Slovakia Expansion: Onboarding additional Slovak R&D Institutions in to EOSC Node Slovakia and Resource Harmonization** **Description:** This use case establishes standardized procedures for integrating external Slovak R&D institutions and stakeholders into the operational EOSC Node Slovakia. CVTI SR will collaborate with stakeholders to implement onboarding tools equipped with metadata converters, API harmonization layers, and validation services. This process accommodates diverse institutional repositories, infrastructural resources, and reproducible workflows, while ensuring strict EOSC compatibility through consistent metadata schemas and the implementation of PIDs. **Access Policy**: The onboarding framework supports all EOSC access tiers. Resource owners retain the authority to define their applicable access policies during the onboarding process, while simultaneously benefiting from standardized authentication mechanisms provided by the federated EOSC SK identity system	**Federation Contributions:** This expansion strengthens the EOSC ecosystem by incorporating a diverse array of Slovak research assets through a coordinated national approach. By harmonizing resources from universities, research institutes, and specialized facilities, this use case demonstrates how national nodes can effectively aggregate distributed resources while preserving local institutional autonomy. **Value to Users:** Smaller Slovak institutions and R&D stakeholders gain enhanced visibility within the European research ecosystem without the technical burden of developing independent, EOSC-compliant infrastructures. Researchers gain access to a comprehensive national research portfolio through consistent interfaces, regardless of institutional boundaries. Furthermore, resource providers maintain governance and control over their assets while benefiting from broader usage, impact, and recognition.

- **In-scope:**
    - **Data management systems and national repositories/catalogues**
        - Integrating the KOMIS system for the acquisition, processing, storage, and access of research data.
        - Managing a network of repositories, including: the Discovery System for Electronic Information Resources, the Central Repository for Research Data Management (SVD), the Central Repository for Scientific and Professional Publications Management (SCIDAP), and the Current Research Information System for R&D (SK CRIS).

- **Piloting use cases and adapting services**
  - Identifying and adapting existing services from Slovak providers for EOSC integration.
  - Creating new pilot services by CVTI SR or by R&D partners with and prototyping new solutions based on specific use cases.
- **Integration and interoperability**
  - Ensuring OAI-PMH compatibility for selected Slovak research data repositories.
  - Establishing API, PID, and metadata compatibility for service catalogues and exchanges.
  - Implementing EOSC AAI and accounting.
  - Aligning with EOSC's interoperability frameworks.
- **Core infrastructure and resources**
  - Continuously maintaining and developing the national data infrastructure.
  - Providing HPC infrastructure (via CVTI SR and selected Slovak stakeholders) for R&D data processing, aggregation, visualization, and retrieval.
  - Allocating dedicated capacity within the CVTI SR Datacentre specifically for EOSC use cases and services.
  - Providing technical expertise through dedicated CVTI SR staff specialized in IT, data processing, and management.
- **Monitoring, helpdesk, and service management**
  - Integrating federated monitoring and helpdesk services.
  - Implementing FitSM-based service management aligned with cybersecurity standards.
- **Bioinformatics software and computing resources**
  - Providing a specialized bioinformatics software environment and complex computational infrastructure for biomedical data analysis.
  - Establishing secure storage, management, and access systems for large-scale genomic data within the EOSC Federation.
  - Integrating CVTI SR's bioinformatics tools with EOSC computational services.
- **Stakeholder support**
  - Facilitating mutual support among Slovak universities and R&D institutions.
  - Facilitating data sharing across the European Research Area (ERA).
  - Running active campaigns to encourage institutional participation in the EOSC Federation and to connect researchers through an interoperable data platform.
  - Connecting with broader European research initiatives.

- **Out of scope:**
  - Unlimited resources: Providing unlimited computing resources or storage for individual research projects, including unlimited storage for raw genomic sequences.
  - Custom development: Developing custom solutions for individual research groups that fall outside the standard interoperability framework.
  - Legacy Systems: Maintaining legacy systems that are incompatible with EOSC standards.
  - Out-of-bounds expertise/infrastructure: Implementing services that require technologies, expertise, or infrastructure beyond the core competencies of CVTI SR or EOSC Node Slovakia partners.

- Excessive financial scope: Supporting initiatives that require financial investment beyond the planned infrastructure budget.
- Domain-specific tools: Directly providing domain-specific research tools outside the core competencies of CVTI SR or EOSC Node Slovakia partners.

4. External Dependencies & Key Risks[2]

External Dependencies & Risks	Actions
Governance Alignment: Need to align CVTI SR governance structures with EOSC governance framework	Establish a dedicated EOSC coordination team within CVTI SR to ensure alignment and representation in relevant EOSC governance bodies
Stakeholder Engagement: Potential resistance or low participation from Slovak research institutions	Implement targeted communication strategy and conduct workshops to demonstrate benefits of EOSC participation
Technical Integration Challenges: Potential interoperability issues between CVTI SR, Slovak stakeholders s and cross-node providers with EOSC technical requirements	Conduct comprehensive gap analysis and develop a phased technical integration roadmap with clear milestones
Metadata standardization Challenges: Existing repositories may use different metadata standards than EOSC requirements	Conduct metadata mapping exercises and implement standardization procedures
Intellectual Property and Licensing Issues: Ensuring proper rights management for shared resources	Develop comprehensive IP policy for EOSC-shared resources and provide training to stakeholders
Language and Cultural Barriers: Multi-language support needs for integration in European context	Implement multi-language support for key services and documentation
Resource Allocation Conflicts: Competition between national priorities and EOSC commitments for limited infrastructure resources	Develop and implement transparent resource allocation policies with dedicated quotas for EOSC activities
Data Protection and GDPR Compliance: Ensuring cross-border data sharing adheres to EU and national regulations	Conduct legal assessment and develop data management protocols aligned with GDPR and national legislation
Cybersecurity Vulnerabilities: Increased attack surface due to federation with external systems	Implement enhanced security framework with regular penetration testing and security audits
Skills and Expertise Gap: Limited specialised personnel for managing advanced EOSC services	Develop training program for staff and initiate targeted recruitment for critical roles
Dependency on National IT Projects related to enhancing KOMIS or Datacentres: Central elements of contribution can be partially tied to successful implementation of projects of proposal or approval status.	Establish project interdependency mapping and contingency plans for potential delays
EU Funding Dependency: Reliance on EU funds for infrastructure development and EOSC integration	Consider a mixed funding strategy incorporating national budget allocation and explore sustainable funding models

[2]() Refer to Guidance Material Page 4

5. Contributions[3]

- **Role in Project:** Research Infrastructure & Data provider
- **Contributions and resources Provided:**
  - 10+ members of national EOSC node | Slovakia team
  - **KOMIS integrated solution** for acquisition, processing, storage and access to research data repositories (mainly SVD KOMIS) and information systems
  - Direct infrastructural contribution with sustainable infrastructure:
    - **Datacentre of CVTI SR** and relevant computing infrastructure (app. 1,600+ CPU cores, 16+ TB RAM, 1,650+ TB storage)
    - **HPC resources** of selected Slovak research stakeholders
  - Related potential **integration projects** of enhancing Datacentre and KOMIS subsystems
  - Dedicated facility space and networking infrastructure
  - Training programs related to open science or specific topics such as biomedical data processing and storing
  - Services related to intellectual property protection and technology transfer
  - National-wide popularisation of EOSC Federation and fortify involvements in EOSC in central Europe R&D with potential future bridge to Ukraine (involve R&D resources related to relocated Ukrainian scientist and projects residing temporary in Slovakia)
- **Main Cooperations:**
    - Cooperation EOSC Node Slovakia & **EOSC Node BBMRI-ERIC**
      - Developing a cross-node scientific use case with research data exchange for AI classification of tumour tissue images (initially tested with Prostate Tissue Slides) with multicentric validation.
      - exploring new use case potential following Slovakia's recent membership in BBMRI-ERIC.
    - Cooperation EOSC Node Slovakia & **EOSC Node Poland**
      - Developing a cross-node use case with leveraging federated pathogen analysis multi-node datasets of pathogens and workflows also related to research of Antimicrobial Resistance (AMR) phenomenon and demonstrating technical feasibility of federated analysis of genomic data.
    - Cooperation EOSC Node Slovakia & **EOSC Node Slovenia**
      - Collaborating during the 2nd build-up phase of the EOSC federation to develop use cases and services related to REANA adaptation.
    - Cooperation with Comenius University of Bratislava (Science Park, Faculty of Medicine) by developing and implementing use cases
    - Fostering cooperation with the Technical University in Zvolen on their RETROCHANGE project, utilizing satellite imagery for forest analysis (2026 EOSC Gravity - Inter-project grant).
    - Exploring joint efforts with HL7 Slovakia to build solutions for handling sensitive FAIR data between EOSC and EHDS.
    - Enhancing cooperation with ELIXIR Node Slovakia, represented by Comenius University of Bratislava and Pavol Jozef Šafárik University in Košice
    - Exploring the cooperations of Slovak research stakeholders involved in INFRAEOSC projects (e.g. Slovak Academy of Sciences) with relevant EOSC nodes (e.g. NFDI, EGI)

[3]() Refer to Guidance Material Page 5

- **Deliverables[2]:**

ID	Deliverable Name	Deliverable Description	Deliverable Owner
D1	Stakeholders and community engagement strategy	Communications Plan; training materials; user guides; helpdesk setup	EOSC SK Secretariat
D2	Prototyping of Selected Pilot Services	Deployment and demonstration of pilot service prototypes (including RETROCHANGE, Federated Pathogen Analysis, and the MCVAL data pipeline) within a controlled test environment.	IT Team of CVTI SR, IT Teams of universities partners
D3	EOSC Federation MoU	Formal signing of the Memorandum of Understanding (MoU) with the EOSC Federation to officially establish the participation of EOSC Node Slovakia.	EOSC SK Secretariat
D4	Connection of Selected Data Repository Collections to EOSC Federation	Integration of selected internal (national SVD KOMIS) and external repositories, including successful validation of metadata harvesting by OpenAIRE.	IT Team / Data Management Team of CVTI SR
D5	AAI Interoperability Integration	Integration and comprehensive interoperability testing of the Authentication and Authorization Infrastructure (AAI) within the EOSC Federation.	IT Team of CVTI SR
D6	Publication of EOSC Slovakia Entry Point Prototype	Public launch and accessibility verification of the EOSC Slovakia entry point prototype (eosc.sk).	IT Team of CVTI SR
D7	Publication of Service Catalogue Prototype	Public launch of the EOSC Slovakia Service Catalogue prototype (sc.eosc.sk), featuring a fully functional catalogue API.	IT Team of CVTI SR
D8	Establishment of FitSM Compliance	Implementation of FitSM-based service management and attainment of formal cybersecurity compliance for EOSC Node Slovakia.	IT Team of CVTI SR
D9	Publication of Selected Production Services	Successful transition of designated services from pilot to production status, culminating in their publication within the Service Catalogue.	IT Team of CVTI SR

D10	Execution of EOSC Federation Framework Agreement	Formal signing of the framework agreement with the EOSC Federation, authorizing the production phase of EOSC Node Slovakia.	EOSC SK Secretariat
D11	Deployment Strategies for Cross-Node Resources	Delivery of integration and configuration plans for specialized EOSC cross-node services, detailing the pairing of research tools with cross-node infrastructure and data resources.	IT Team of CVTI SR
D12	Onboarding Policies for Third-Party National R&D Entities	Development of legal frameworks, including data processing agreements and risk registries, to govern the onboarding of external entities.	Open Science Department and Legal Department of CVTI SR

6. Timing and Milestones[4]

6.1 Prototyping phase (Initial pilot phase):

- **Start Date:** February 2025
- **Expected Duration:** 1 year (extended)
- **Relevant use cases:** SK-UC1, SK-UC2, SK-UC5
- **Key Milestones:**

ID	Milestone Description	Target Delivery Date	Status 06/2026
P1	**Project initiation and team formation**	**3/2025**	**Completed**
P2	**Technical requirements and plan completion** for enhancements of current CVTI SR resources	**5/2025**	**Completed**
P3	**Providing selected Slovak research products catalogue** (repository)	**7/2025**	**Completed** Selected institutional repository of Matej Bel University - rUMBa registered with OpenAIRE and compatible with EOSC.
P4	**Piloting national repository SVD KOMIS** (research data objects) filled with first batch of data objects (datasets) with compatible OAI-PMH validated by OpenAIRE	**12/2025 (extended)**	**Initial phase completed** Small batch of research data objects were curated to SVD repository. OAI-PMH tweaked to be compatible with EOSC standards.
P5	**Initial prototypes of cross-node use case with BBMRI mutually tested.** (Data exchange of WSI and results demonstrated in test environment, Data Provider Agreement between BBMRI, CVTI SR and their stakeholders processed)	**9/2025 (extended)**	**Initial phase completed** Testing environment with data exchange created, first batch of WSI from Slovak source analysed and validated, DPA signed.

[4]() Refer to Guidance Material Page 6

P6	**Initial prototypes of cross-node use case with EOSC PL mutually tested.** (OneProvider implementation, data exchange of SK/PL AMR pathogen relevant datasets samples. Workflows tested on external machines)	**9/2025 (extended)**	**Initial phase completed** – OneProvider and OneClient mounting are working, SK AMR data collected and uploaded - Salmonella / Campylobacter genomic data, workflows locally prepared, results processing demonstration and extending to Reana solution in progress.
P7	**Validation of the AAI in test environment.**	**9/2025 (extended)**	**Completed**
P8	**Launch of the pilot of EOSC Node Slovakia entry point** containing initial node information and service overviews.	**9/2025**	**Completed** Entry point published: https://eosc.sk

6.2 Transition to production phase (overlapping with prototyping phase):

- **Start Date:** January 2026
- **Expected Duration:** 2 years
- **Relevant use cases:** SK-UC1, SK-UC2, SK-UC3, SK-UC4, SK-UC5, SK-UC6, SK-UC7
- **Key Milestones:**

ID	Milestone Description	Target Delivery Date	Status 06/2026
T1	**Implementation and successful testing of AAI interoperability with the EOSC Federation for production environments.**	**Q2 2026**	**Initial phase completed** (AAI PROD environment prepared and validated in AAI WG, ready to integrate with future services)
T2	**Deployment of the Service Catalogue pilot,** encompassing service registry, PID generation, API exchange capabilities, metadata harmonization, and demonstrated harvesting from selected EOSC nodes	**Q2 2026**	**Initial phase completed** (Prototype of service catalogue published: https://sc.eosc.sk , ready to evolve and new services registrations)
T3	**Extension, formal registration to EOSC, and extensive population of the national repository** SVD KOMIS for research data objects.	**Q3 2026**	**Work in progress** (SVD Komis validated in OpenAIRE Provide, waiting to extensive population and register)
T4	**Curation and selection of eligible institutional repositories and catalogues (**from Slovak universities, R&D institutes, and citizen science groups) for EOSC onboarding.	**Q3 2026**	**Work in progress** Identifying and collecting sources with national R&D stakeholders.
T5	**Piloting of selected cross-node use case with adaptation to potential services** (e.g., SK-UC3 use case related to SK-SI-PL integration).	**Q3 2026**	**Starting**
T6	**Piloting of use cases from selected Slovak R&D providers identified as having high potential for service transition** (e.g., RETROCHANGE related to SK-UC4).	**Q3 2026**	**Work in progress**
T7	**Implementation of service monitoring basis,** including pilot parts for federated monitoring capabilities.	**Q4 2026**	**Starting**

T8	**Establishment of helpdesk infrastructure,** including pilot blocks for federated helpdesk integration.	**Q4 2026**	**Starting**
T9	**Achievement of FitSM compliance** and implementation of requisite cybersecurity standards.	**Q3 2027**	**Work in progress**
T10	**Adaptation and finalization of the policy and legal frameworks** required for the production stage.	**Q3 2027**	**Work in progress**
T11	**Successful transition of the pilot Federated Pathogen Analysis service** (related to SK-UC2) into a fully operational production state.	**Q3 2027**	**Not started**
T12	**Successful transition of selected onboarded services from Slovak R&D institutions** (e.g., RETROCHANGE related to SK-UC4) into a production state.	**Q3 2027**	**Not started**
T13	**Successful transition of designated cross-node pilot services** (e.g., MCVAL participation related to SK-UC1) into a production state.	**Q3 2027**	**Not started**
T14	**Establishment of a fully operational EOSC Node Slovakia featuring integrated production resources**, standardized data exchange, AAI, comprehensive monitoring, and helpdesk support.	**Q1 2028**	**Not started**

6.3 Scaling stream (after or partially during transition to production phase phase):

- **Start Date:** January 2028
- **Expected Duration:** continuous development
- **Relevant use cases:** SK-UC8
- **Key Milestones (long-term):**

ID	Milestone Description	Target Delivery Date
S1	**Onboarding more production services from relevant third-party national R&D entities into National EOSC Node Slovakia.**	**2028**
S2	**Technical integration of research tools with provided resources to deliver thematic research pairs** consisting of infrastructure capabilities (workflows, notebooks) and data assets.	**2028**
S3	**Advanced cross-node integration of research tools**, delivering orchestrated thematic research pairs utilizing both infrastructure and data resources from diverse EOSC nodes.	**2029**

7. Contact & Submission[4]

Role in EOSC Node Slovakia **(Role inside CVTI SR)**	**Name**	**Email**
Coordinator / temp. OpM (Researcher)	*David Cymbalak*	*david.cymbalak@cvtisr.sk*
Scientific Officer / Deputy Coor./ Deputy OpM / (Bioinformatics expert)	*Jaroslav Budis*	*jaroslav.budis@cvtisr.sk*
Communication officer (Head of Inter. Affairs and Projects Dep.)	*Ondrej Zachar*	*ondrej.zachar@cvtisr.sk*
IT Contributor (AAI,Reana) (IT Specialist)	*Miroslav Čapkovič*	*miroslav.capkovic@cvtisr.sk*
IT Contributor (Cloud,HPC) (IT Infrastructure specialist)	*Matej Žáry*	*matej.zary@cvtisr.sk*
Contributor (Repos./Catalog.) (Scientific library specialist)	*Rebeka Ivanová*	*rebeka.ivanova@cvtisr.sk*
Security Officer (Head of App. Software Support Department)	*Ladislav Turányi*	*ladislav.turanyi@cvtisr.sk*
Contributor (Director of Open Science Support Dep.)	*Jitka Dobbersteinova*	*jitka.dobbersteinova@cvtisr.sk*
Contributor (Genom. use cases) (Comenius University science park, researcher)	*Jozef Sitarčík*	*jozef.sitarcik@fmph.uniba.sk*
Contributor (Sat. imag. use cases) (Technical university of Zvolen, researcher)	*Milan Koreň*	*milan.koren@tuzvo.sk*