EOSC-SYNERGY

Landscaping Country Report Slovakia

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Abstract:

This landscape analysis report aims to provide an overview of the policies, practices, roadmaps, and strategies around funding, procuring, providing, accessing, and sharing of services and resources in the EOSC scope in Slovakia.

! DISCLAIMER : this document is a work in progress !

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1 Introduction

1.1 Aim and scope of this landscape analysis

This landscape analysis aims to provide an overview of the Slovak policies, practices, roadmaps and strategies around funding, procuring, providing, accessing and sharing of services and resources in the EOSC scope. This SK country report was compiled between February and May 2020 in the first phase of the work of EOSC-Synergy project Task 5.1 using the EOSC-Synergy Task 5.1 shared survey spreadsheet as a guide; the report was compiled without conducting a dedicated survey. It relied instead on numerous existing sources of information and results of survey conducted by the Slovak Centre of Scientific and Technical Information (SCSTI)[1] in 2018.

1.2 Definition/delimitation of "EOSC compliant resources"

1.2.1 e-infrastructure / ICT infrastructure, including partnerships in EGI/EUDAT/PRACE/other

In the Slovak Landscape on Research Infrastructures and e-Infrastructures, we identify two main categories:

- RIs as producers and consumers of Computing and Data processing services. In this category we can find some included in the ESFRI Roadmap (e.g. LifeWatch) and the other RIs are covered by SCSTI which provides national scientific repositories.
- RIs as Computing and Data services providers, in which we identify three main categories: the Slovak Infrastructure for High Performance Computing (SIVVP)[2], a distributed virtual infrastructure of one supercomputer and seven computing clusters; the Slovak National Grid Initiative (NGI-SK)[3] which federates and operates distributed computing and data resources across the Slovakia, integrated to the EGI (two of them not included in SIVVP); and SCSTI acting also as a computing and storage provider.

Current e-infrastructure landscape:

e-infrastructure of the Slovak Centre of Scientific and Technical Information (SCSTI). The R&D Data Center established within SCSTI is equipped with the latest ICT infrastructure. It´s core mission is

[1] https://www.cvtisr.sk/en.html

[2] http://www.sivvp.sk/en/

[3] http://www.slovakgrid.sk/index_en.php

to store and process information needed for R&D organizations in the Slovak Republic. It provides and stores data needed for researchers under conditions of high availability and security. Data Center implements orchestration technology for cloud computing according to pre-selected parameters. IBM Cloud Orchestrator provides template creation, automatic deployment, resource sharing, and private infrastructure capabilities. BigData technology is implemented using IBM Hadoop and BigSQL and the technology can be used on 16 physical servers and 16 virtual servers.

e-infrastructure of the Slovak Academy of Sciences. Two centers of the Slovak Infrastructure for High Performance Computing (SIVVP) with total capacity of 812 computing cores are connected to European Grid Infrastructue (EGI) which is registered in EOSC portal as "EGI High-Throughput compute" service. One center (160 cores and 14976 GPU cores) is connected to EGI Federated Cloud Infrastructure which is registered in EOSC portal as "EGI Cloud Compute" service.

The National Telepresentation Infrastructure. The National Telepresentation Infrastructure provides high-quality videoconferencing (VC) meetings with high efficiency (based on Telepresence Centers at Public universities, The Ministry of Education, Science, Research and Sport of the Slovak Republic and directly managed organizations, as well as SAS institutes) - more than 200 communication points. This infrastructure also allows to organize online streaming for a wide community from remote presentation sites (conferences, workshops, etc.) as part of its link to international broadband communication infrastructures. Part of the infrastructure is the Central Management Department and the central management components of the infrastructure located at the joint workplace of University Science Park TECHNICOM and SCSTI.

Research Center for Technology of Internet of Things (RCITT) and Data Center with a complete cloud solution, both built as part of the project of the University Science Park of the Slovak University of Technology (Regional Center eSMART University Science Park STU) in 2013-2015, and Network Technology Laboratories. In view of the available scientific and research capacities of RIS3 SK, this research infrastructure can be primarily assigned to the fields of information and communication technology.

The Data Center and Grid Cluster with Peripherals (University of Zilina) has access to a high-performance data intensive computing (HPC) infrastructure built at the University Science Park. The system is easy to manage for various types of computational tasks, not optimized for one specific type of tasks. The data storage has a capacity of 4 PB. The infrastructure is primarily intended for scientific computing with a view to requiring rapid change of the computing environment to another type of task.

Computing Centre of the SAS - Slovak infrastructure for high-performance computing. Since 2015 it has been a member of PRACE - The Partnership for Advanced Computing in Europe - in the context of the structures of ESFRI, which provide new research infrastructure (RI) of pan-European interest, corresponding to long-term requirements of European research communities, including all scientific areas regardless of location. In this way the SAS takes its place among the EU's notable computer workplaces

as a virtual centre for computer modelling and simulation in technologies related to physical chemistry, biology and materials science. At the same time, the Centre's workplaces function as training places at the level of H2020 PRACE-4IP projects.

The National Network of Seismic Stations (NNSS SR), Earth Science Institute of the SAS. In 2015 the Memorandum CE3RN (Central and Eastern European Earthquake Research Network) was signed to secure status for entry into H2020 and ERI between the SAS Earth Sciences Institute and CE3RN members from 7 EU countries. Since 2015 there has been the preparation of a memorandum for the Slovak Republic (SR) and SAS, through the National Network of Seismic Stations (NSSS SR), to join EPOS - the European Plate Observing System - within ESFRI structures (the European Plate Observing System is planned infrastructure for research in the field of earth sciences, integrating existing structures for innovative multidisciplinary research into the earth).

The Slovak National Corpus – Ludovit Stur Institute of Linguistics Slovak Academy of Sciences. This is a specific collection of language data that has been constructed in electronic form. In the Corpus's data it is possible to locate language information for the purposes of research or education, or other exclusively non-commercial purposes. It cooperates with over 50 national corpuses of Slavonic and other languages.

The Slovak database of the oldest musical transcripts - Cantus Planus in Slovacia - Institute of Musicology SAS. This enables free and universal access to a great number of manuscripts of music notation written before 1600. Its aim is to make accessible the oldest manuscripts and fragmentary sources from Slovakia in the form of a full-text database in English. It is part of the supranational Cantus INDEX. Cantus Index is a central catalogue of chant texts and melodies covering a number of European countries and Canada.

Slovakia is a **member in the following Research Infrastructures and associations** which endorsed the EOSC declaration:

- EMBL – European Molecular Biology Laboratory
- GÉANT Association
- LIBER – Association of European Research Libraries
- EuroCRIS – Current Research Information Systems
- ECRIN – European Clinical Research Infrastructure Network (Observer)
- DiSSCo – Distributed System of Scientific Collections
- European XFEL – European X-Ray Free-Electron Laser Facility
- ILL – Institut Max von Laue – Paul Langevin
- CESSDA ERIC – Consortium of European Social Science Data Archives

- ESS ERIC – European Social Survey (Prospective Member Country)
- ESRF UPGRADES – Phase II: Extremely Brilliant Source

1.2.2 research-infrastructures

Slovakia is a member in several Research Infrastructures related to EOSC:

- eLTER – Integrated European Long-Term Ecosystem, critical zone and socio-ecological system Research Infrastructure (Prospective Member Country)
- INSTRUCT ERIC – Integrated Structural Biology Infrastructure
- HL-LHC – High-Luminosity Large Hadron Collider
- PRACE – Partnership for Advanced Computing in Europe
- EST – European Solar Telescope (member of the European Association for Solar Telescopes (EAST))
- EPOS – European Plate Observing System (Associate partner)
- Euro-BioImaging – European Research Infrastructure for Imaging Technologies in Biological and Biomedical Sciences (Prospective Member Country)
- LifeWatch – e-infrastructure for Biodiversity and Ecosystem Research (Observer)

1.2.3 large-scale research facilities

Slovakia is participating in the many EU and world large-scale research facilities and provides own facilites for international cooperation, e.g. scientific parks: University Science Park for Biomedicine (SAS, Comenius University in Bratislava and the University of Economics in Bratislava.), University Science Park TECHNICOM (Technical University of Košice), Research centre for progressive materials and technologies for present and future applications - PROMATECH (IEP SAS Košice), University Science Park Žilina, UNIPOLAB (Prešov), and centres of excellences: Centre of Excellence for advanced materials application SAS (CEMEA, Bratislava), etc.

1.2.4 repositories

SCSTI is in preparation phase of a national digital repository of open access and also closed scientific information resources. The repository will allow self-archiving, storing, indexing and searching of content. Gradually, the FAIR principles will be implemented and repository will work with other applications to exchange data and metadata. The projected date of implementation is 2020.

Other repositories/archives:

- Digital repository of Department of Mediamatics and Cultural Heritage
- Digital repository of Slovak Academy of Science

- The Slovak Archive of Social Data

1.3 Information sources on services, repositories, facilities and infrastructures

1.3.1 Large-scale Scientific Infrastructure / research facilities / National Roadmaps

The Slovak Centre of Scientific and Technical Information has a unique position in the Slovak Republic since it is responsible for building and operating the national ICT research infrastructure.

R&D Data Center established within SCSTI (since 2009) is equipped with modern ICT infrastructure. Its core mission is to store and process information needed for R&D organizations in the Slovak Republic. R&D Data Center contributes to increasing the capacity of Slovak research institutions by using high-quality infrastructure. It provides ICT infrastructure to store and provide the data needed for researchers under conditions of high availability and security. The infrastructure also includes ensuring fast access through broadband networks and implementing solutions enabling the efficient use of information resources. At the time of construction, the data center infrastructure met all requirements for computing power, storage capacity, safety and security of operation, availability and operating environment. R&D Data Center currently has an architecture suitable for large-volume data processing as well as sufficient storage capacity.

With regard to the integration of the scientific and research infrastructure of the Slovak Republic into the EOSC, since 2017 SCSTI has been building a comprehensive ecosystem of R&D infrastructure consisting of selected ICT research infrastructures built by universities and the Slovak Academy of Sciences. Each R&D institution operates its own infrastructure. The aim is to integrate these ICT infrastructures so that in the future there will be no duplication of research infrastructures at Slovak research institutions. Together, these research infrastructures, under the leadership of SCSTI, will gradually create a coherent ecosystem of ICT research infrastructures that will serve the entire scientific community. This current initiative develops and modernizes the infrastructure that was built between 2007-2013 and introduces and builds new components for the comprehensive operation of the data center to meet the needs of the research community and fully serve as a R&D infrastructure for a wide range of research areas. This national roadmap covers the 5 years.

1.4 Between projects and national institutions

Slovak institutions consider strategic to have some positioning in EOSC. For this purpose, Slovakia has a partner in EOSC-hub, EOSC-Synergy and OpenAire projects (https://www.eosc-synergy.eu/), which aims at expanding the capacity of EOSC in Slovakia.

Slovakia has a participation in European Organizations related to Research Infrastructures. In particular, Slovakia participates in EGI through the Institute of Informatics, Slovak Academy of Sciences. Slovakia acts in EGI as the National Grid Initiative since 2008, with 6 institutions. The leader of the NGI_SK is participating in some RI projects, such as the EGI-InSPIRE or EGI-ENGAGE.

Slovakia is a member in PRACE. Through Computing Centre of the SAS[4], Slovakia has been participating in PRACE pan-European HPC infrastructure since 2015.

Currently, the CC SAS is also a member of the EuroHPC Joint Undertaking, aiming to coordinate the efforts and sharing of resources to deploy in Europe a world-class supercomputing infrastructure and innovation ecosystem in supercomputing technologies, applications and skills.

[4] https://csc.sav.sk/

2 National policies and frameworks for open science support and collaboration

In order to support competitiveness, employment and quality of life, the Slovak Republic has focused its attention on stimulating an overall change in the economy based on innovative development and research excellence. The creation of the Research and Innovation Strategy for Intelligent Specialization of the Slovak Republic (RIS3 SK) was also based on these foundations, which, taking into account the current potential, prioritizes limited resources for the most potential areas of competitive advantage. At the heart of the strategy is targeted support and stimulation of public-private R&D and innovation cooperation, freeing up growth opportunities for all stakeholders.

RIS3 SK, approved by the Resolution of the Government of the Slovak Republic no. 665/2013 on 13 November 2013, sets out investment and structural measures for research, development and innovation policy. The Managing Authority of the RIS3 SK implementation is the Council of the Government of the Slovak Republic for Science, Technology and Innovation, whose cross-sectional, working, coordinating and communication body is the Permanent Commission of the Government Council for Science, Technology and Innovation for RIS3 implementation.

Operational Programme Research and Innovation is the main implementation tool of RIS3 SK and the first joint programming document of the Ministry of Education, Science, Research and Sport of the Slovak Republic and the Ministry of Economy of the Slovak Republic connecting and defining support for research, development and innovation from European Structural and Investment Funds (ESIF). Some ESI Funds programs and programs financed from the state budget participate in the fulfillment of the objectives of RIS3 SK on a smaller scale.

See https://www.opvai.sk/ris3/

2.1 Formal regulations or publicly available policies that address

In the Slovak Republic, the elaboration of the National Open Access Strategy is one of the tasks of the Open Government Initiative Action Plan set for 2019-2021 (currently presented for approval by the Government of the Slovak Republic). The aim of the National Strategy is to improve the real-time application of research results, to improve scientific literacy (the public will have easier access to scientific outputs and methods) and to increase the economic and social impact of research results.

The National Open Access Strategy will include the definition of the whole process from research planning, research activities (storage, management and analysis of research data), research results

(publishing and long-term preservation), financing the costs of open access publishing. As regards the infrastructure national R&D evaluation systems and scientific data storage systems are envisaged. The provisional date for government adoption of the National Open Access Strategy is December 2020.

> The national project COMIS is focused on the development and use of ICT to support Open Science in Slovakia (Komplexný informačný systém získavania, spracovávania, uchovávania a sprístupňovania vedeckých a bibliometrických dát a publikácií a zabezpečenie prístupu k nástrojom a aplikáciám pre podporu vedy a výskumu - KOMIS - Comprehensive information system for acquiring, processing, preservation and provision research and bibliometric information and publications and providing access to tools and applications for support of science and research).

The aim will be data exchange between systems through compatible open formats, their transfer, cleaning, transforming, linking and presentation via recommended secure protocols, formats and standardized presentation interfaces also in the context of a cooperative policy of designated partners with similar services in the international space. Technologically, the project focuses on quality (data management), interconnection and linking of data and metadata (open data and semantic web), existing de facto standards and data credibility. The presentation platform will take into account the integration platform solutions with regard to a comprehensive and flexible user interface for accessing various kinds of textual and structured information and providing a mechanism for managing communication with users.

At the national level, the Slovak Centre of Scientific and Technical Information (SCSTI) is a national information centre and specialised scientific library of the Slovak Republic focused on natural, technical, economic and social sciences. SCSTI provides several information systems supporting R&D on national level funded by the Ministry, i.e. Central Registry of Publication Activities, Central Registry of Theses and Dissertations, Central Information Portal for Research, Development and Innovation and Slovak Current Research Information System (SK CRIS).

The Slovak Centre of Scientific and Technical Information is a national key OA stakeholder.

- Since 2013 SCSTI serves as the National point of reference for the policy of “Open Access and preservation of scientific information”.
- In 2015 SCSTI became member of the OpenAIRE 2020 project and became NOAD for Slovakia.
- In 2016 was established Contact Office for Open Access at SCSTI – based on the Action Plan of the Initiative for Open Governance in the Slovak Republic 2017 – 2019 adopted by the Government in 2017.
- In October 2016 was established Open Access working group. It has 27 members from libraries, ministries and the Slovak Academy of Sciences.
- There are 3 Open Access repositories in Slovakia.
- Since 2019 has been initiated a national project on setting up national Open Access repository:

The Comprehensive Information System for acquiring, processing, preservation and provision research and bibliometric information and publications (COMIS) (2019 – 2023)

2.2 Strategies and policies for funding infrastructure services and resources

Research infrastructures and e-Infrastructures are funded in Slovakia through agencies - Research Agency established by the Ministry of Education, Science, Research and Sport of the Slovak Republic. according the RIS3 strategy (ERDF) or directly by the Government (EuroHPC).

Strategies and policies emerged when the Slovak Government issued calls through Research Agency and proposals for scientific parks and centers of excellences were submitted. The bearer of the strategy and policy is the Research Agency, which also prepares calls for research organizations in Slovakia taking into account ERA space.

The promotion of open science, open access and the strengthening of Research Infrastructures are covered in the Open Government Action Plan (https://bit.ly/2Rh7LlH), the Office of Government Plenipotentiary for the Development of Civil Society operating under the Government of the Slovak Republic is responsible for it. One of the tasks of the current OG Action Plan (2020-2021) is the development and adoption of the National Open Science Strategy by the end of 2020. Currently, there is no official policy on FAIR data on the national level implemented, however, we are aiming to introduce and implement such national policy with respect to specifics of Slovak republic and overlapping general rules for the open science and FAIR data policy adapted by the EU.

At the regional dimension, the less-developed regions can get funding mainly leveraging European Regional Development Funds. The institutions in the Slovak RI have also received funds in the scope of these calls. One of the instruments that has been intensively used is the RIS3 (Research and Innovation Smart Specialisation Strategy).

All the funds have been allocated according to a selection based on a competitive process involving external evaluation agencies. Depending on the funding call, different concepts are eligible for funding. Infrastructure grant calls only fund equipment and installation costs, which excludes staff for operation and user support. Funding for user support must be obtained through other research calls or institutional funding.

Funding to RIs in Slovakia comes from multiple sources (by the Government, ERDF, APVV[5], VEGA[6], H2020 etc.). The user support, development of service layers is also funded through research projects, mainly through the calls of the HORIZON 2020 - 1.4. (Excellent Science - European Research

[5] https://www.apvv.sk/?lang=en

[6] https://www.vega.sav.sk/

Infrastructures)[7]. Up to March 2020, 376 projects[8] under this call have Slovak partners (1.3% of all the projects funded), although this figure does not include only partners which are part of a RI. At the national level, funds to support the open science and FAIR data are not covered by any official funding mechanisms on national level. Currently, the financial cover is based on individual activity of the researchers using part of the financial support from scientific projects (grants) provided by the grant agencies in Slovakia (VEGA, APVV) or EU. Our plan is elaboration and implementation of such funding mechanism via grant agencies VEGA and APVV (as eligible financial costs in project proposals) and governmental institutions (Ministry of education of Slovak republic and Slovak Academy of Sciences).

2.2.1 Description of main funding streams/organisations/ policies/ instruments/ rules

Funding organisations fund human resources, hardware, software, capital and operational expenditure, project based resources. The rules for granting funds for e-infrastructures or research infrastructures are based on geographical location of the infrastructure's users (e.g. less/more developed regions) and selection is made by a competitive process.

2.2.2 Types of funding

2.2.2.1 Criteria and rules for funding (F13/F15/F16 – 8, 10,11) of infrastructures

No encouraged regulation but optional for: open access publications, open research data, long-term availability of research data, compliance of data to the FAIR principles, publication of data in a repository and for publication of data in a certified repository.

2.2.2.2 Criteria and rules for funding (F13/F15/F16 – 8, 10, 11) of researchers/grant recipients

For some grants, funding organisations require infrastructures to provide the cost information about the services they offer. No user support is allowed in receiving grants. No encouraged regulation but optional for: data management plans.

[7] https://cordis.europa.eu/programme/id/H2020-EU.1.4

[8] https://cordis.europa.eu/search/en?q=contenttype%3D%27project%27%20AND%20(programme%2Fcode%3D%27EU.1.4.%27%20OR%20programme%2Fcode%3D%27H2020%27)%20AND%20relatedRegion%2Fregion%2FeuCode%3D%27SK%27&p=1&num=100&srt=Relevance:decreasing

2.3 Present status with regard to Commission Recommendation (EU) 2018/790 on access to and preservation of scientific information (NI4OS 14_mc)

Since 2013 SCSTI serves as the National point of reference for the policy of "Open Access and preservation of scientific information". In 2015 SCSTI became member of the OpenAIRE 2020 project and became NOAD for Slovakia. In 2016 was established Contact Office for Open Access at SCSTI - based on the Action Plan of the Initiative for Open Governance in the Slovak Republic 2017 - 2019 adopted by the Government in 2017. In October 2016 was established Open Access working group. It has 27 members from libraries, ministries and the Slovak Academy of Sciences.Since 2019 has been initiated a national project on setting up national Open Access repository.

3 EOSC compliant resources

3.1 Characteristics of services/resources

3.1.1 Types of services (R5/E1 – 17, 18)

More services are provided to the research community, i.e. knowledge-based resources such as collections, archives or research data, data and computing systems, and communication networks. But no major scientific equipment or sets of instruments.

Data infrastructures which store and manage research data (e.g. archive and disseminate data) are offered.

3.1.2 Services according to domain (U13/R11/E18 – 70, 72, 21)

It seems that Social Sciences, and Humanities will benefit from EOSC less than Natural Sciences, Engineering and Technology, Medical and Health Sciences, Agricultural Sciences. However services are provided for all of them.

3.1.3 Services to become part of EOSC (E83 – 19)

More services are planned to become part of EOSC, like Digital repository for scientific and scholarly publications, Digital repository for scientific data, Open Access publication platform.

3.1.4 Expected innovations of services in next five years (E82 – 20)

In the near future (next 5 years) we plan the following services to be introduced:

- Digital repository for scientific and scholarly publications,
- Digital repository for scientific data,
- Open Access publication platform,
- Analysis module for science evaluation,
- ERM system for management of electronic information sources,
- Discovery system for electronic information sources,
- System for remote access to electronic information sources,
- Central register of publications activity,
- Central register of art works and performance,
- SK CRIS - Current research information system,
- Central register of graduation and qualification works with the antiplagiarism control,

- ISS SCSTI - Integrated System of Services of the SCSTI,
- Central management of ISS users,
- Central components for the integration platform,
- Common presentation platform.

3.1.5 Funding of research infrastructures (budgets at the receiving end): (E19 - 22), including “revenues other than funding” (E20 - 23; see E201 – 24 for categories).

Organizations are funded by state (ministry), European funds, funding agencies/funding bodies. Other funding possibilities like research institution(s), university, region/town, research communities, industry/small and medium-sized enterprises (SMEs) are not available.

Some own revenues are aquired via consultancy or training, but other possibilities like managed online services (software as a service, applications, storage, computing), and hosting (hardware and services for third parties) are less used.

3.1.6 Role and type of SLA’s and potential issues/barriers (E28/E29/E31/E32 – 25, 83, 27, 26)

Service Level Agreements (SLAs) are offered. Organizations are participating in a transnational organisation or federation that offers Service Level Agreements (SLAs) or similar contracts that are also binding for them.

3.2 Data Services

3.2.1 Data management, curation and (long-term) preservation

3.2.1.1 Documentation and metadata standards (including provenance, metadata languages - E71/E72/E67 – 51, 52, 58)

No measures for ensuring documentation about the origin and the changes made in data (i.e. data provenance) are implemented yet, but are planned.

3.2.1.2 Regulations and policies (E56 – 54)

All informal or formal regulations (regarding research data management (RDM), open research data, long-term availability of research data, compliance of data to the FAIR principles, publication of data in a repository, publication of data in a certified repository) are in preparatory phase.

3.2.1.3 Use of standardized/ controlled vocabularies for metadata (E66/E661 – 56, 57)

The use of standardized/ controlled vocabularies for metadata is analysed and planned.

3.2.1.4 Certified repositories (E73 – 59)

No certifications or audits between 2015-2019 were completed, the content is distributed as deposited.

3.2.1.5 Compliance with FAIR principles (E63 – 62)

Are considered.

3.2.1.6 Machine readable data catalogues (E57 – 63)

Working on or have a theoretical concept for this feature.

3.2.1.7 Implementation of PIDs and researcher identifiers (E70 – 65)

Not yet, but we want to use ORCID in a near future.

3.2.1.8 Types of data archived (E93 – 66)

Numeric, Text, Still image, Video, Software, 3D. Not yet: Geospatial, Audio, Interactive resource.

3.2.1.9 Number of datasets accessible online (E67 – 58) (E76 –67)

N/A

3.2.1.10Reuse of datasets (E77- 68)

N/A

3.2.2 Data Sharing and Access

3.2.2.1 Access policies, restrictions and licenses (E21/E38/E39 – 29, 35, 36)

Some organisations grant all users access to their services, some limit access to their services for national users. Organisations have a publicly available access policy for services or data, or a publicly available access policy is planned in 1 to 2 years.

3.2.2.2 Impediments to data sharing (E69 – 64)

Some researchers or organisations are reluctant to share and/ or publish data, mostly due to lack of control over the usage of data, and due to data protection.

3.2.2.3 Policies and limits to expansion of access for other groups (E22 – 30)

Many organisations provide services only to national users due to the national funding (structural funds), and second limitation: they can not generate income from their infrastructure.

3.2.2.4 User charges (E25 – 32)

Organisations do not charge users/ clients for services.

3.2.2.5 User characteristics and frequency of use (E78 - 34)

The following user groups use organisation's services (frequency not provided): researchers based at universities, researchers of non-university research institutions, researchers of private, commercial institutions, governmental institutions (e.g. census bureaus), students, professionals, but no citizen scientists.

3.2.2.6 Data search tools (E64/E65 – 50, 55)

Organisation are working on or have a theoretical concept for providing a search feature for research data and metadata.

3.2.2.7 Authorization and access control (E50 – 37)

Access to datasets is authorized individually.

3.2.2.8 Access to and protection of personal data (E46/E47 – 38, 39)

No services that process personal data in research data are offered, nor for special categories of personal data in research data.

3.2.2.9 Access federation

3.2.2.9.1 authentication model used (E40 – 42)

Local authentication (etc/passwd).

3.2.2.9.2 implementation and need for support (E54 – 41)

No need for implementation support outside of the organisation to federate service to EOSC.

3.2.2.9.3 Plans for access federation (E41 – 43)

Not known if organisation plan to authenticate services through an Identity Provider (IdP).

3.2.2.9.4 proxy to eduGAIN (E43 – 44)

No, they use a different service provider-identity provider (SP-IdP) proxy.

3.2.2.9.5 management of authorisation information (E44 – 45)

Not known if the authorisation information for services are managed locally at the service level or received from an external attribute authority in order for services to become part of a federation.

3.2.2.9.6 use of REFEDS R&S entity category (E51 – 46)

Not known if they use the REFEDS R&S entity category.

4 Procurement of and transnational access to services and resources compatible with EOSC

4.1 Transnational access to national resources/services

All the services identified in this landscaping activity allow transnational access, via projects (EGI-Engage, EOSC-hub, DEEP, PROCESS, etc.).

4.2 Potential for harmonization of national policies for:

SCSTI has membership in EOSC-Secretariat, EOSC-Portal,

IISAS has membership in EOSC-Training&Skills WG, EOSC-National commission, EGI-Council

4.2.1 Joint Procurement

When procuring services, organizations are not collaborating with other organizations.

When procuring hardware, organizations are not collaborating with other organizations.

They do not have any experience with the international service tenders (e.g. cloud service provisioning).

The major obstacles are legal aspects and no clear benefit.

They are not offering services cross-border.

For services provided by organizations, there are differences in access rights or extent (e.g. capacity available) between national and international users, because international users are not accepted, the major reasons is the official national policy.

Organizations expect/want EOSC to help with providing funding to cover cost of international users and providing more trusted environment (e.g. identity vetting).

4.2.2 Coordinated service provisioning

N/A

4.2.3 Coordinated organisation models

N/A

4.3 Procuring services/resources

4.3.1 (National) regulatory frameworks for integrated procurement (79)

N/A

4.3.1.1 How do you buy supplies, resources or services? (E27 – 14)

Organizations do buy or rent supplies, resources or services with tender, or on pre-negotiated procurement/tender.

4.3.1.2 Unit cost of services? Level of granularity? (E30 – 15)

The unit cost of their services is not currently available, but could be calculated.

5 Conclusions

5.1 Perceived gaps in the landscape

In Slovakia, SCSTI is commissioned to create strategies and policies for e-infrastructures. CSTI representatives are members of EOSC GB and also EOSC Portal, thus strategies and policies are transferred to Slovakia in the framework of international cooperation and vice versa. SCSTI also coopeates with research infrastructures at home and abroad. SCSTI is one of the main recipients of financial funds for e-infrastructure, mainly from the resources of the Structural funds but also from the Ministry of Education, Science, Research and Sport. The infrastructure is provided to all researchers in Slovakia, who perform mostly scientific computing than use data repositories, scientific results and data are minimally shared if ever. This should be changed significantly in the future.

One of the gaps is the lack of dissemination of successful application examples that have already used the EOSC infrastructure and that clearly demonstrate the essential need for EOSC services.

The second of the gaps in Slovakia is the weak knowledge about the advantages of EOSC infrastructure, rather researchers in Slovakia provide their own computing resources than sharing a common infrastructure, resp. they are currently not interested in connecting to existing infrastructure. They see this as a complication with unclear sustainability of common infrastructure. The Slovak government is more closer to support rather Euro HPC than EOSC infrastructure.

5.2 Overlaps in the landscape

In Slovakia, the EOSC initiative is managed centrally, in cooperation with foreign projects and committees. The Slovak working committee for the EOSC was also appointed by the Minister of Education. So there is no presumption in Slovakia that there will be an overlap.

5.3 Harmonisations of the landscape

SCSTI's efforts are focused on making their infrastructure harmonized with the Pan-European EOSC infrastructure and made full use of their services. In this ambition, they could be supported by the IISAS as the only representative in EOSC projects in Slovakia.

Appendix A – Acronyms

Acronym	Description
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