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EOSC CZ and the National Repository Platform

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Conference on Digital Transformation of Universities

University of Pardubice

2025-09-10

Spolufinancováno Evropskou unií

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Contents

- EOSC & EOSC CZ Projects
- Research & FAIR Data as Scientific Results
- Related Communities and Working Groups
- National Data Infrastructure
  - Overview of selected components

European Open Science Cloud (EOSC)

- Initiative to **support data management** – the entire data life cycle
  - Since 2016, mainly at the EU level, the search for a suitable setting through a series of projects
  - Currently the concept of EOSC Federation, de facto a large meta-infrastructure
- The key concept is data management
  - Not just any data, but **FAIR data** – i.e. well managed, described, reliably stored and reusable
  - FAIR data is not necessarily Open data – support for data access management is included
- Ecosystem of data and related services
  - Built on existing foundations, i.e. mainly large research infrastructures and e-infrastructures

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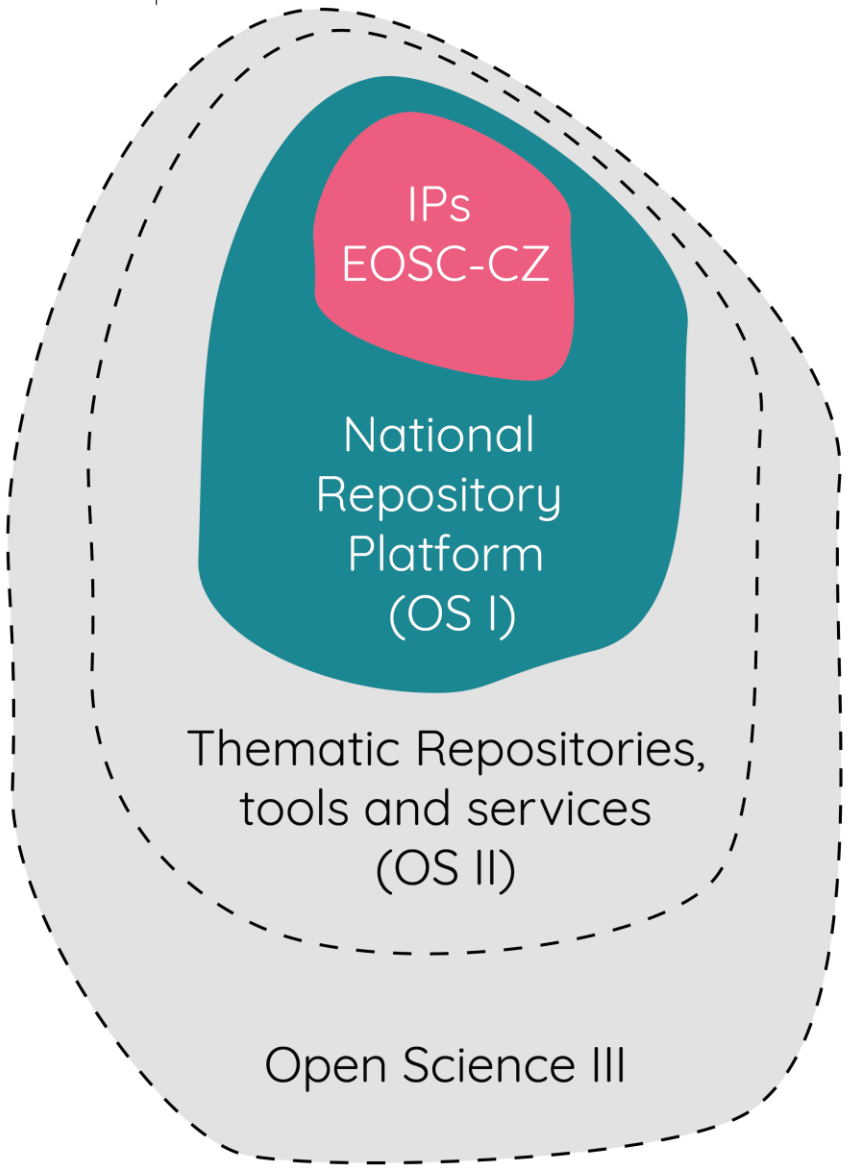
EOSC CZ

- Supported through OP JAK (MEYS)
- Series of projects:
  - EOSC-CZ, CARDS, NRP, partly Research Environments, OS II (submitted), OS III (planned)
- Related to Data Management Plans (DMPs)
- Supports objectives:
  - Create an environment for working with **FAIR research data**
  - Primarily **Preserve, Share, Reuse**
  - **Plan and collect** is a matter of research
  - **Process and Analyse** are related to (e-)infrastructures

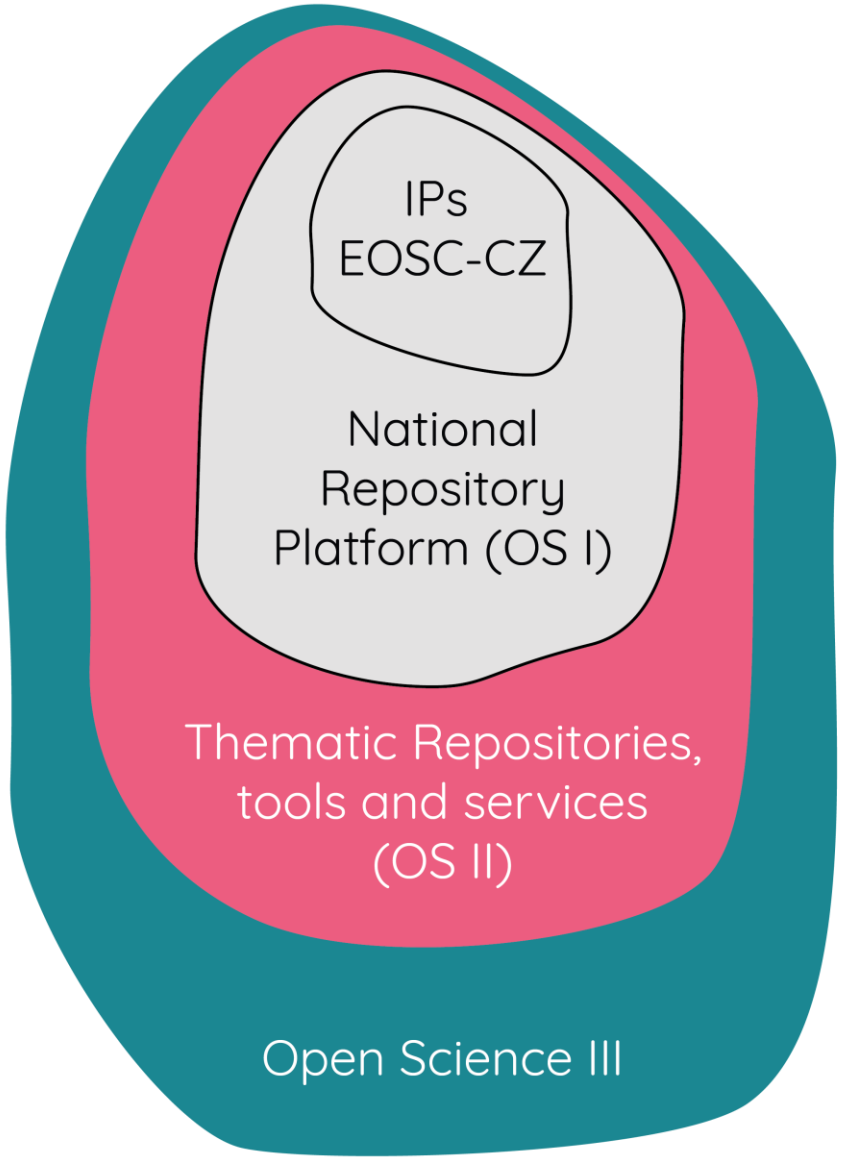


IPs EOSC-CZ – fundamentals for EOSC implementation in CZ

- Organizational (**Secretariat**) – https://www.eosc.cz/en/about-eosc-cz/secretariat-eosc-cz
- Technical (**National Metadata Directory**) – https://nma.eosc.cz/
- Educational (**Training Centre**) – https://www.eosc.cz/en/training

National repository platform – „technical core"

- **Repository systems** (DSpace, CESNET Invenio, ASEP-ARL)
- **Pilot repositories**
- **Core services** (PIDs, DSW, licenses, …)
- **Compliance** and UX (Cybersecurity, ServiceDesk, …)
- **Training** – technical aspects



OS II – “domain-specific outputs”

Based on the inputs from 8 thematic working groups

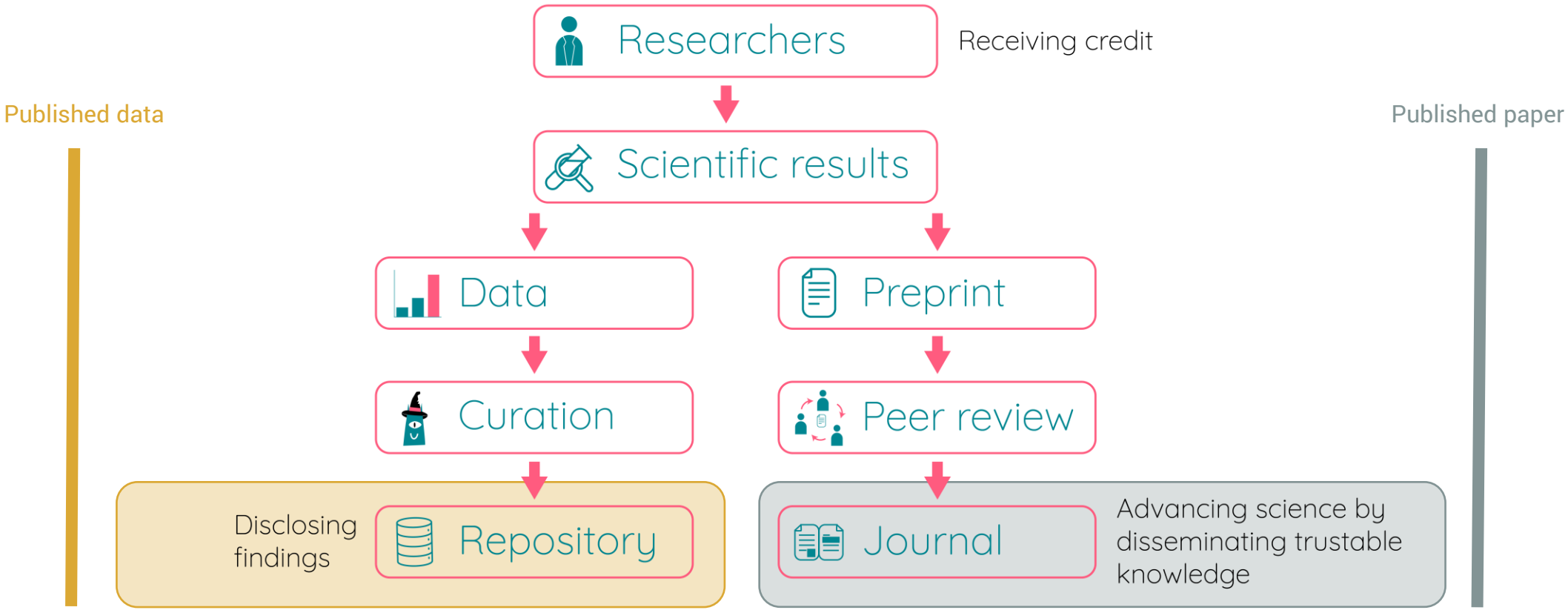
- Domain-specific and interdisciplinary activities
- Development of thematic repositories and tools for FAIR data management
- Bio/Health/Food, Matech, AI & ML, Social Sciences, Physics, Humanities & Arts, Environmental Sciences, Sensitive Data
- https://www.eosc.cz/en/working-groups

OS III – “development of knowledge and skills”

Development of human resources and competencies in research data management

- Involvement of institutions where the topic of data management is in early stages
- Communication and educational activities
- Establishing institutional support for FAIR data management
- Funded through mini-projects

Peer reviewed research



This **ALSO** is a figurative checkmark in your career

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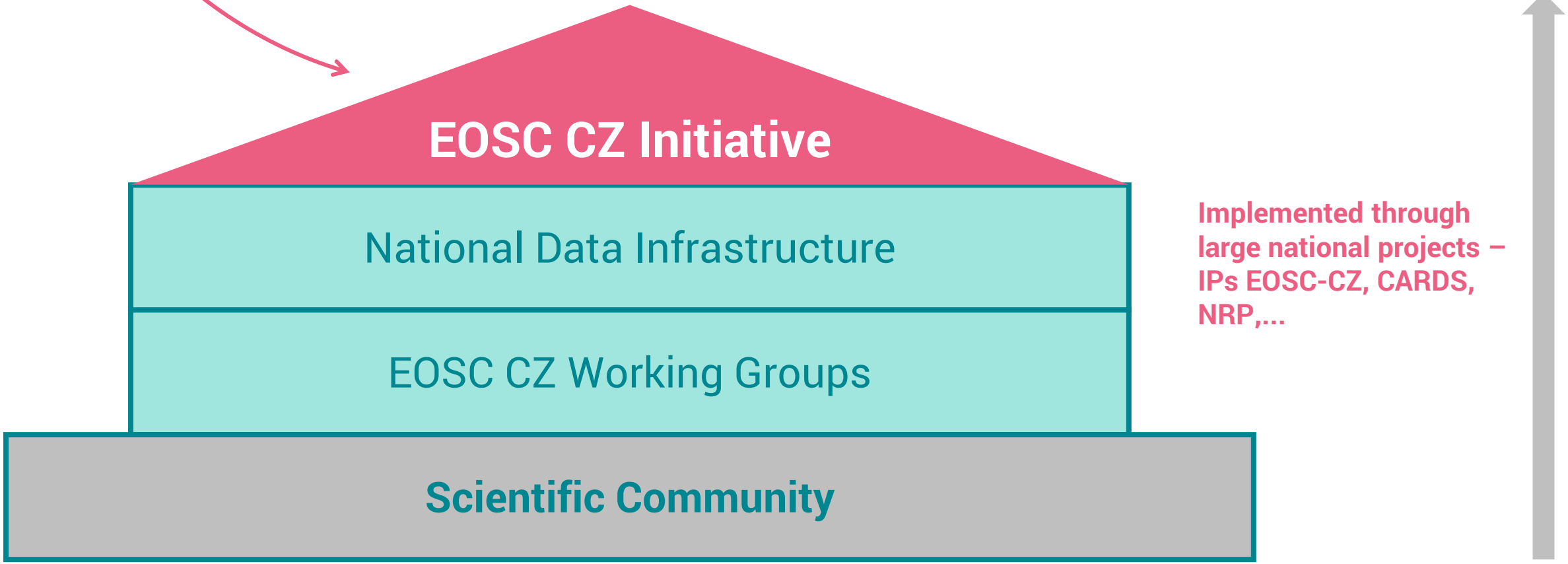
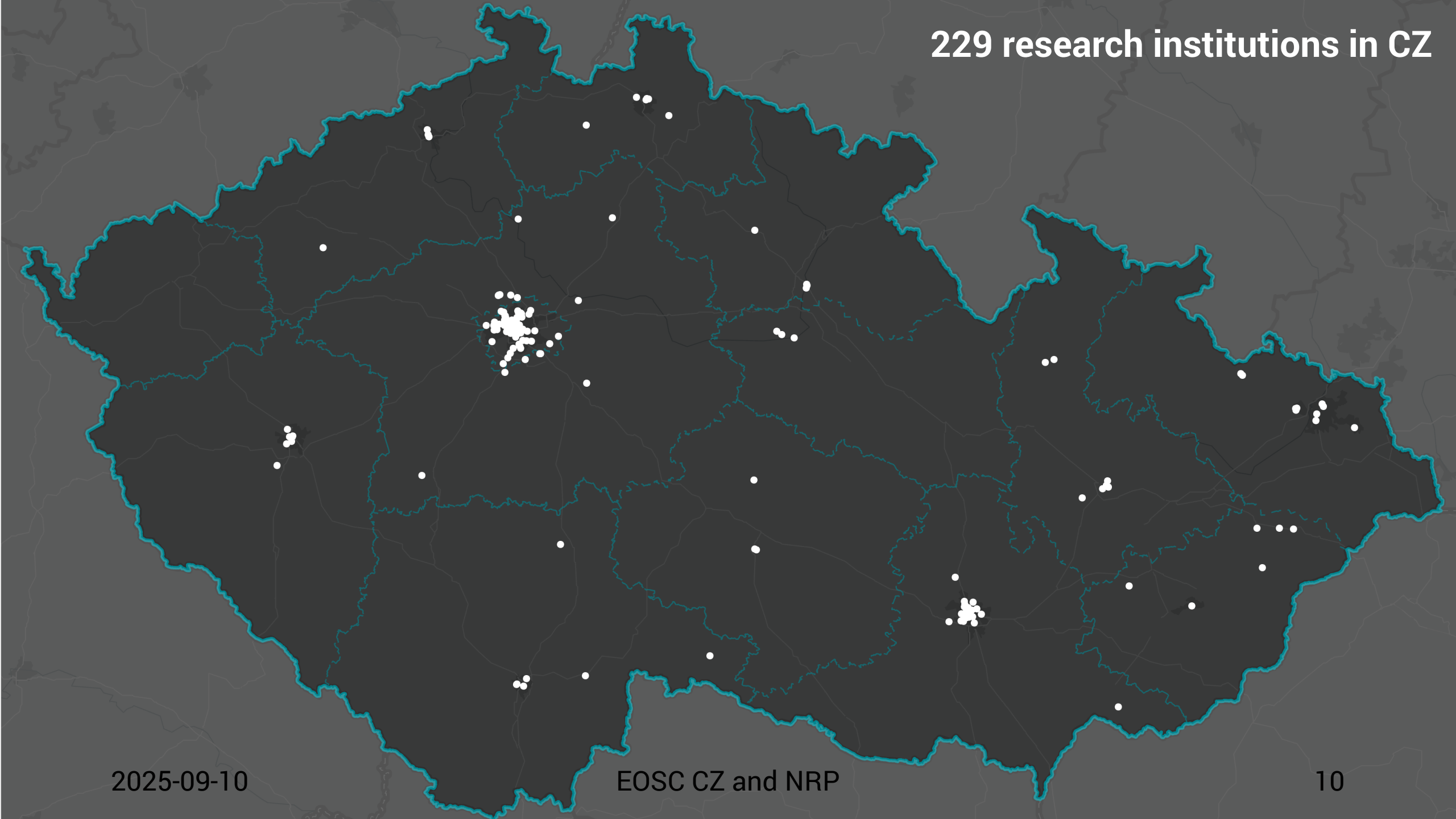
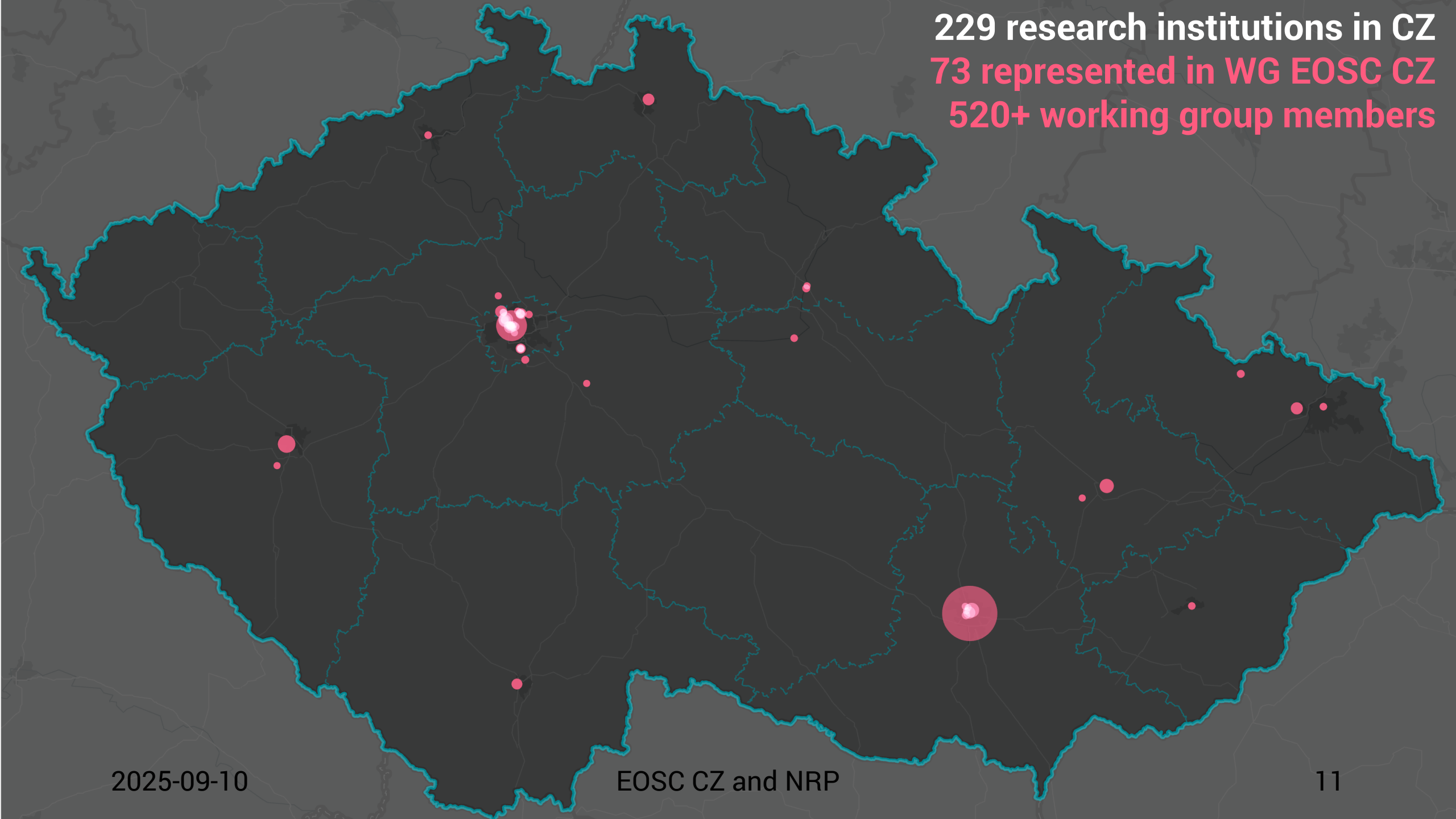
FAIR Support in Czechia

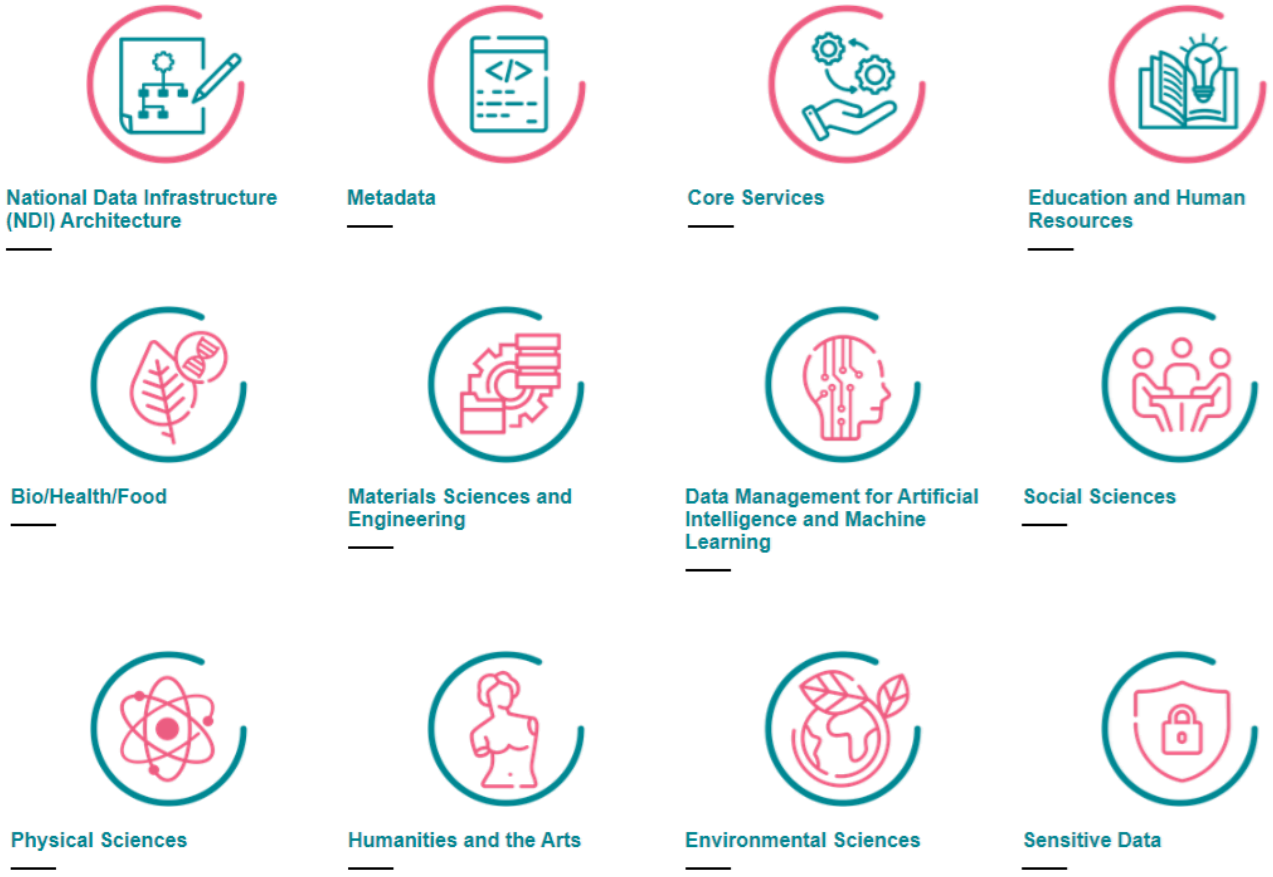



Events:
Conferences
Community meetups
Workshops
EOSC CZ Networking at the Technical University of Liberec
Meeting of the MATECH WG
EOSC Roadshow Prague
Meeting of the Metadata WG
Meeting of the editorial teams of the NRP project
National EOSC Tripartite Event and Czech Open Science Day
Meeting of EOSC CZ WG leaders
Meeting of the Data Stewards Community
Meeting with representatives from the Czech Academy of Sciences
Meeting of the HUMA WG
Meeting of EOSC CZ WG leaders
Meeting of the SENSI WG
EOSC-CZ: Project Introduction
Open Science Week 2023
Meeting of the SOC WG
Meeting of EOSC CZ WG leaders
Meeting of the Metadata WG
Internal kick-off of the NRP project
e-INFRA CZ Conference
National EOSC CZ Conference 2024
Meeting of the MATECH WG
Meeting of the SENSI WG
Meeting of the AI WG and EOSC members
EOSC Roadshow Ostrava
EOSC CZ Networking at the Palacký University in Olomouc
EOSC CZ Networking at the Tomas Bata University in Zlín
EOSC Roadshow Brno
Metacentrum Seminar
EOSC CZ Networking at the University of South Bohemia
Meeting of the MATECH WG
Workshop of the SENSI WG


229 research institutions in CZ


229 research institutions in CZ
73 represented in WG EOSC CZ
520+ working group members

EOSC CZ Working Groups



Open Platform for EOSC CZ Implementation

- Main EOSC CZ Building Blocks (scientists for scientists)
- 4 cross-sectional and 8 field-specific groups
- Open to new members at any time
- Operating throughout the duration of the initiative

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EOSC CZ Working Groups

How do WGs work?

- Regular meetings
- Notes and recordings
- Open membership on a voluntary basis

Why get involved?

- Expertise and awareness
- Building connections
- Opportunity to make an impact

Are you interested in becoming a member?

https://www.eosc.cz/en/working-groups

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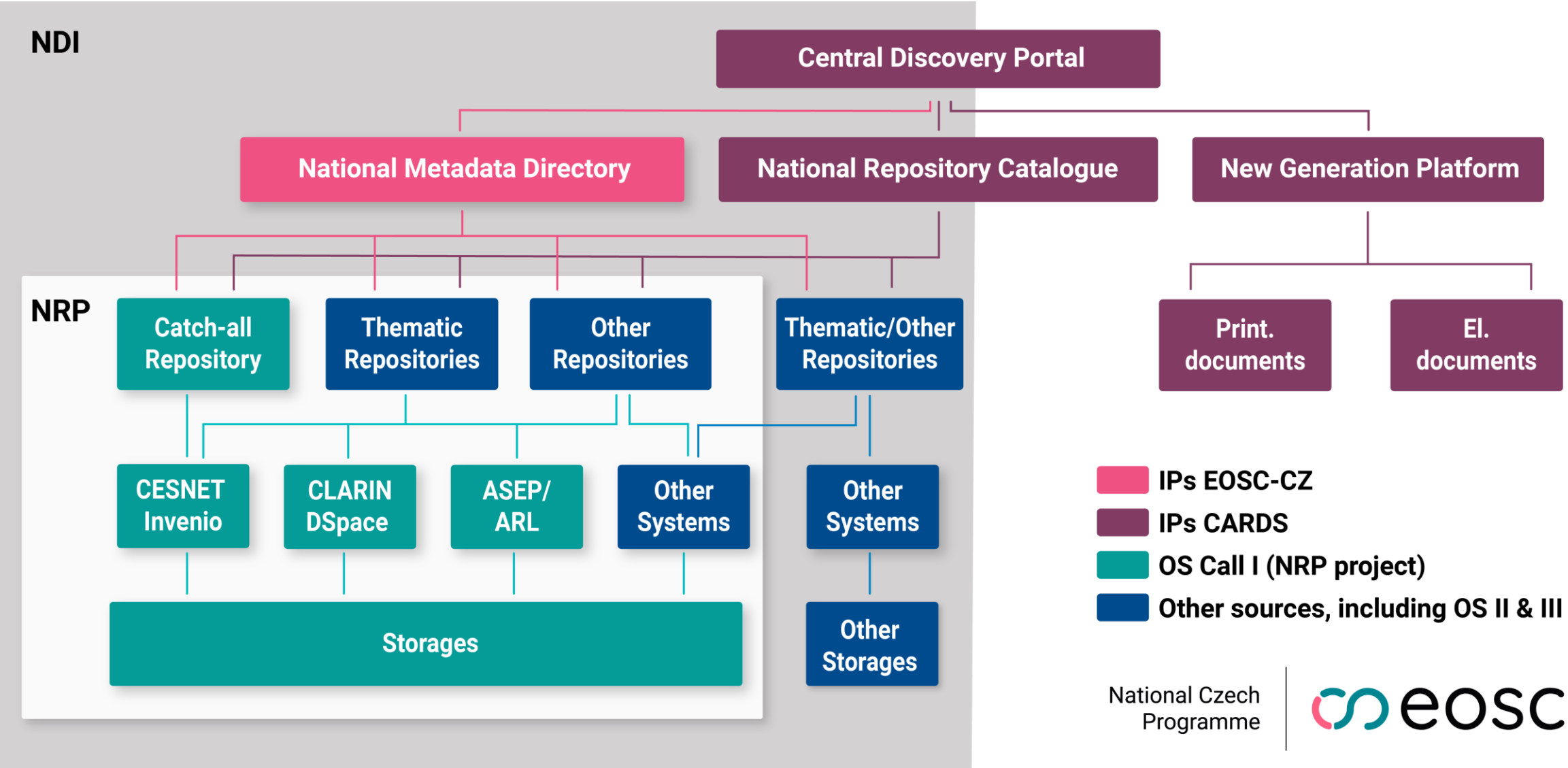
National Data Infrastructure (NDI)



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NDI Outputs: Storage Capacities

Repositories

- Catch-all repository (2025)
- **Thematic (domain-specific) repositories**

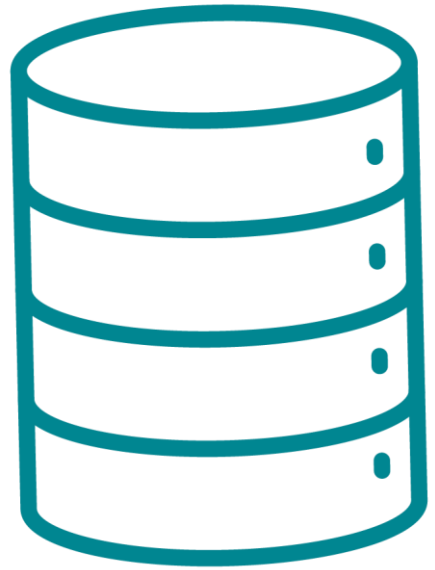
  4 pilots: Molecular Biophysics Database*, National Repository for Biodiversity Data, Repository for Biological Imaging Data, ArchaeoVault (end of 2025)
  - Others from 2025/2026
- National Metadata Directory

Repository systems

- CESNET Invenio, CLARIN-DSpace, ASEP-ARL

Hardware

- Physical, distributed storage infrastructure
- Total of 50+ PB of user data storage capacity



* in production mode already

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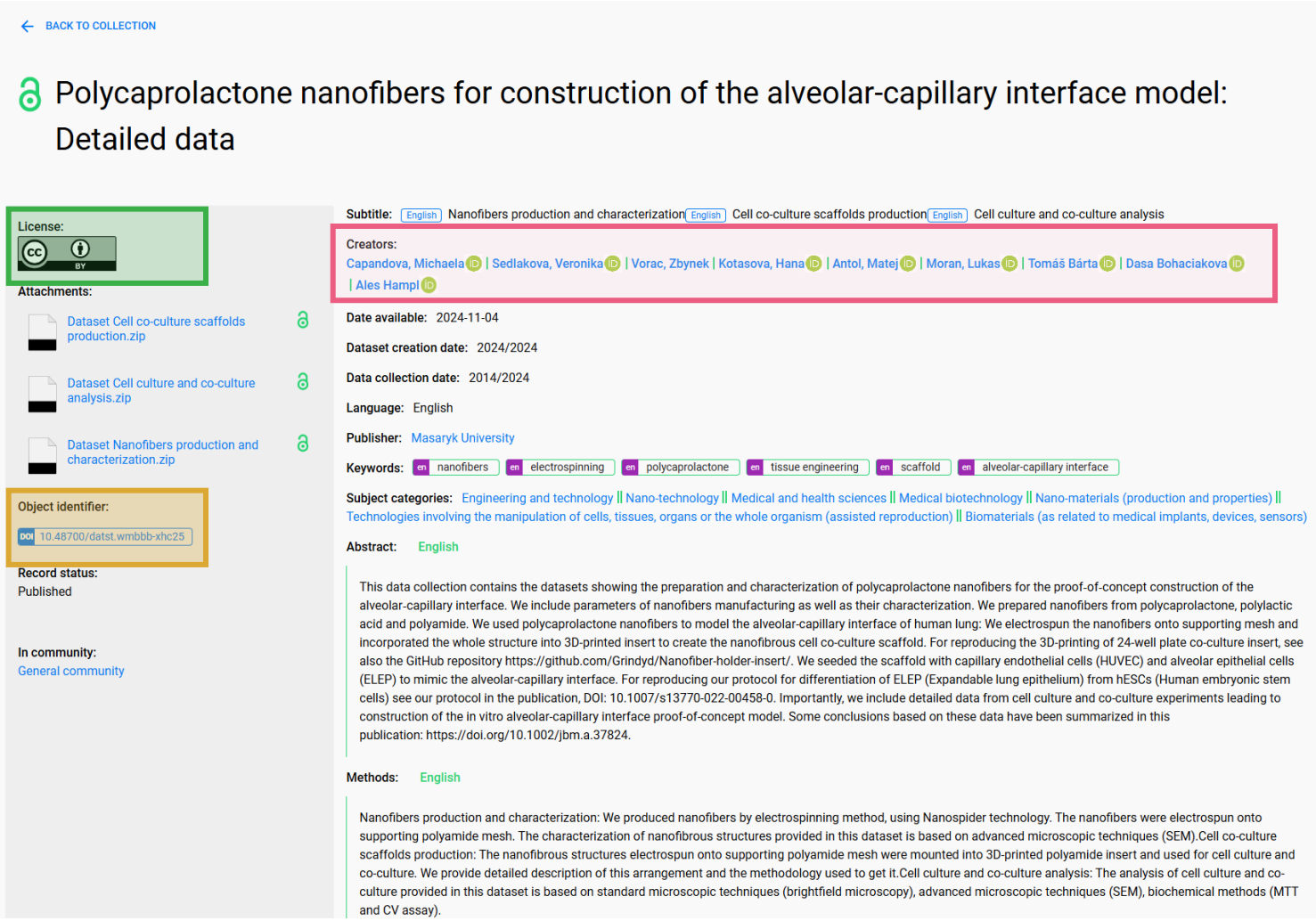
AI-ready (Valuable) Data



BACK TO COLLECTION

Polycaprolactone nanofibers for construction of the alveolar-capillary interface model: Detailed data

License:

Attachments:

- Dataset Cell co-culture scaffolds production.zip
- Dataset Cell culture and co-culture analysis.zip
- Dataset Nanofibers production and characterization.zip

Object identifier:

DOI 10.48700/datst.wmbbb-xhc25

Record status:
Published

In community:
General community

Subtitle: English Nanofibers production and characterization English Cell co-culture scaffolds production English Cell culture and co-culture analysis

Creators:
Capandova, Michaela | Sedlakova, Veronika | Vorac, Zbynek | Kotasova, Hana | Antol, Matej | Moran, Lukas | Tomáš Bárta | Dasa Bohaciakova | Ales Hampl

Date available: 2024-11-04

Dataset creation date: 2024/2024

Data collection date: 2014/2024

Language: English

Publisher: Masaryk University

Keywords: en nanofibers en electrospinning en polycaprolactone en tissue engineering en scaffold en alveolar-capillary interface

Subject categories: Engineering and technology || Nano-technology || Medical and health sciences || Medical biotechnology || Nano-materials (production and properties) || Technologies involving the manipulation of cells, tissues, organs or the whole organism (assisted reproduction) || Biomaterials (as related to medical implants, devices, sensors)

Abstract: English

This data collection contains the datasets showing the preparation and characterization of polycaprolactone nanofibers for the proof-of-concept construction of the alveolar-capillary interface. We include parameters of nanofibers manufacturing as well as their characterization. We prepared nanofibers from polycaprolactone, polylactic acid and polyamide. We used polycaprolactone nanofibers to model the alveolar-capillary interface of human lung: We electrospun the nanofibers onto supporting mesh and incorporated the whole structure into 3D-printed insert to create the nanofibrous cell co-culture scaffold. For reproducing the 3D-printing of 24-well plate co-culture insert, see also the GitHub repository https://github.com/Grindyd/Nanofiber-holder-insert/. We seeded the scaffold with capillary endothelial cells (HUVEC) and alveolar epithelial cells (ELEP) to mimic the alveolar-capillary interface. For reproducing our protocol for differentiation of ELEP (Expandable lung epithelium) from hESCs (Human embryonic stem cells) see our protocol in the publication, DOI: 10.1007/s13770-022-00458-0. Importantly, we include detailed data from cell culture and co-culture experiments leading to construction of the in vitro alveolar-capillary interface proof-of-concept model. Some conclusions based on these data have been summarized in this publication: https://doi.org/10.1002/jbm.a.37824.

Methods: English

Nanofibers production and characterization: We produced nanofibers by electrospinning method, using Nanospider technology. The nanofibers were electrospun onto supporting polyamide mesh. The characterization of nanofibrous structures provided in this dataset is based on advanced microscopic techniques (SEM).Cell co-culture scaffolds production: The nanofibrous structures electrospun onto supporting polyamide mesh were mounted into 3D-printed polyamide insert and used for cell culture and co-culture. We provide detailed description of this arrangement and the methodology used to get it.Cell culture and co-culture analysis: The analysis of cell culture and co-culture provided in this dataset is based on standard microscopic techniques (brightfield microscopy), advanced microscopic techniques (SEM), biochemical methods (MTT and CV assay).

Your (author)

Citable (DOI) + **F**indable

Accessible + **I**nteroperable

Reusable (licence)

Machine actionable (metadata)

= AI-ready record (dataset)

VALUABLE SCIENTIFIC RESULT

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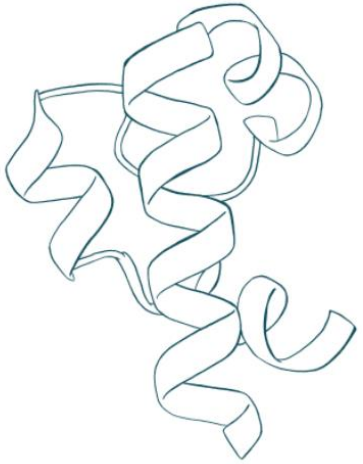
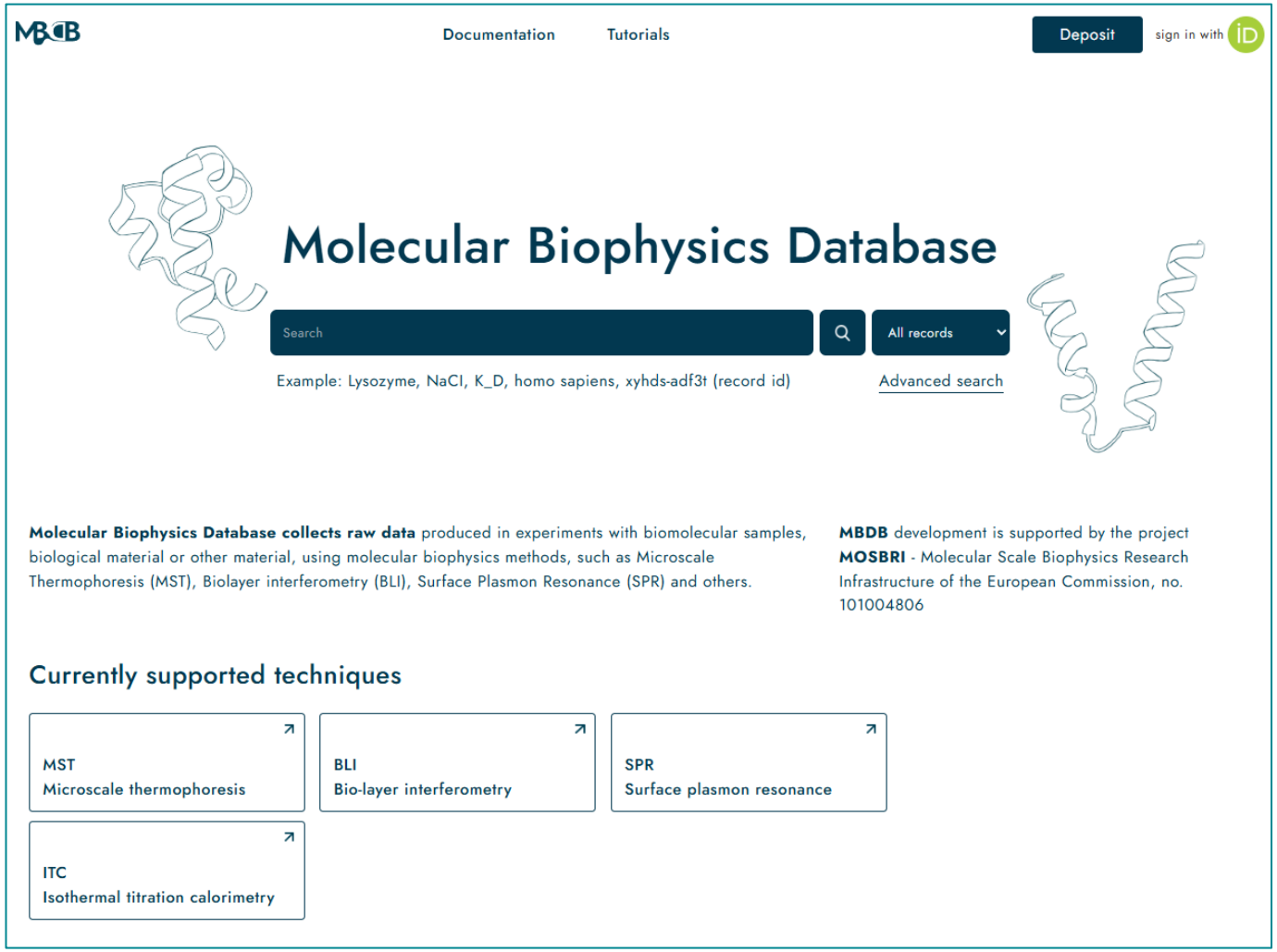
Molecular Biophysics Database





https://mbdb-data.org/

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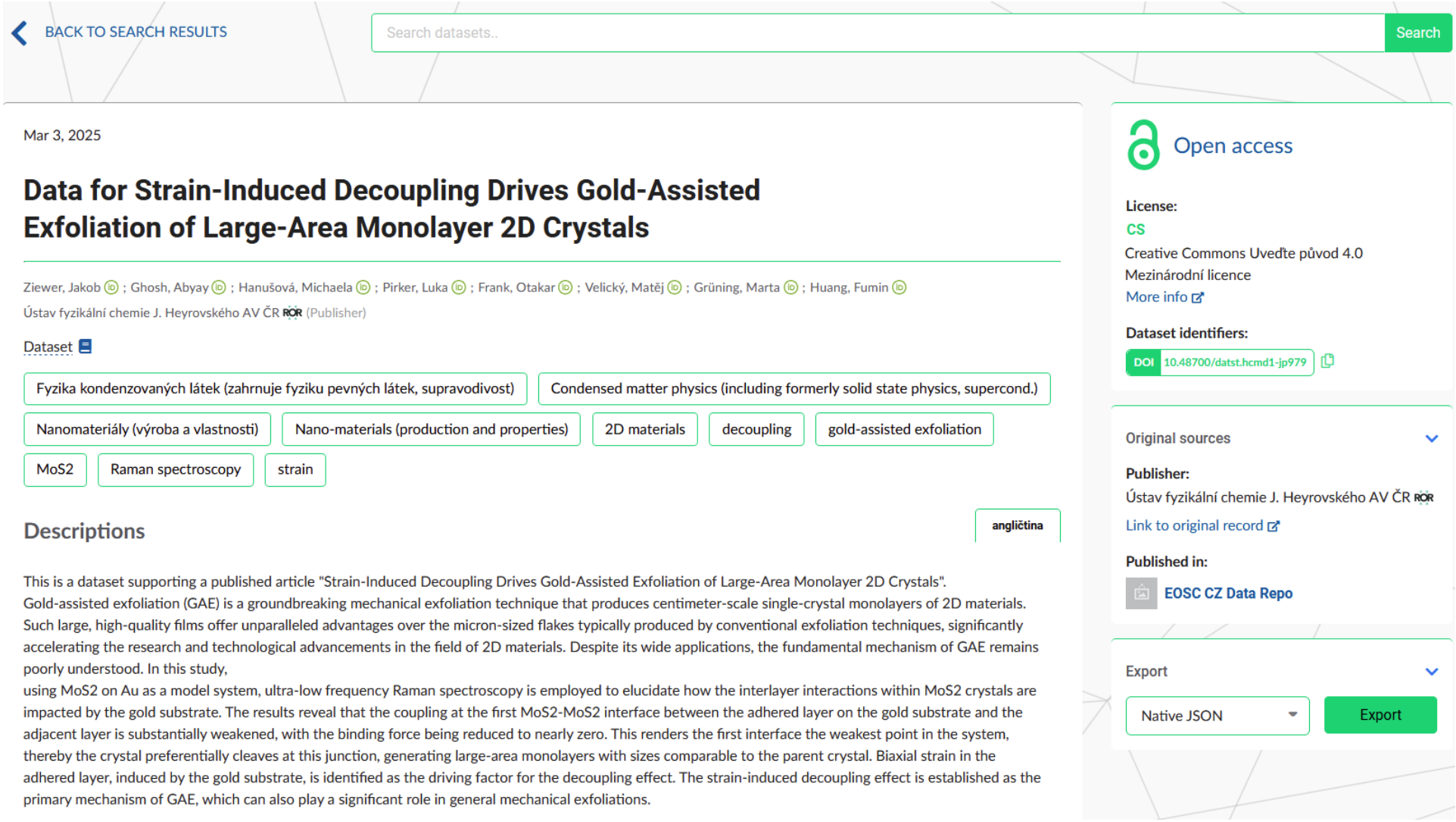
National Metadata Directory



https://nma.eosc.cz/

CZECH DATA REPOSITORIES

ARTS

AGROFOOD

AI

CORPUS

GENASIS

OMICS

ZOOLOGY

SIMULATIONS

SENSORS

DUNE

ARCHAEO-LOGY

BIOIMAGING

SOLAR

PLANTS

MAPS AND DATA

LINGUISTICS

ISOARCH

SOCIAL

FUNGI

SENSITIVE SOCIAL DATA

MOLECULAR BIOPHYSICS

BIO/CHEM

OBSERVA-TORY

ARCHAEO-VAULT

IMAGING

ARCHAEO-MAPS

BIODIVER-SITY

CRYSTALO-GRAPHY

PLASMA

PHENOTYPE

LASER PHYSICS

LAUEDB

MATERIALS

EXPOSOME

TELESCOPE

BIBLIO-GRAPHY

BIOPHYSICS

BIOMONI-TORING

REPO CZ

NDI Outputs: Tools and Services

- Support for data management planning (DMP)
- **Metadata profile** management
- Support for **license handling**
- Support for working with persistent identifiers
- Support for **FAIRification of research data**
- Automation of data collection
- Electronic laboratory notebooks
- Overall cybersecurity and system compliance

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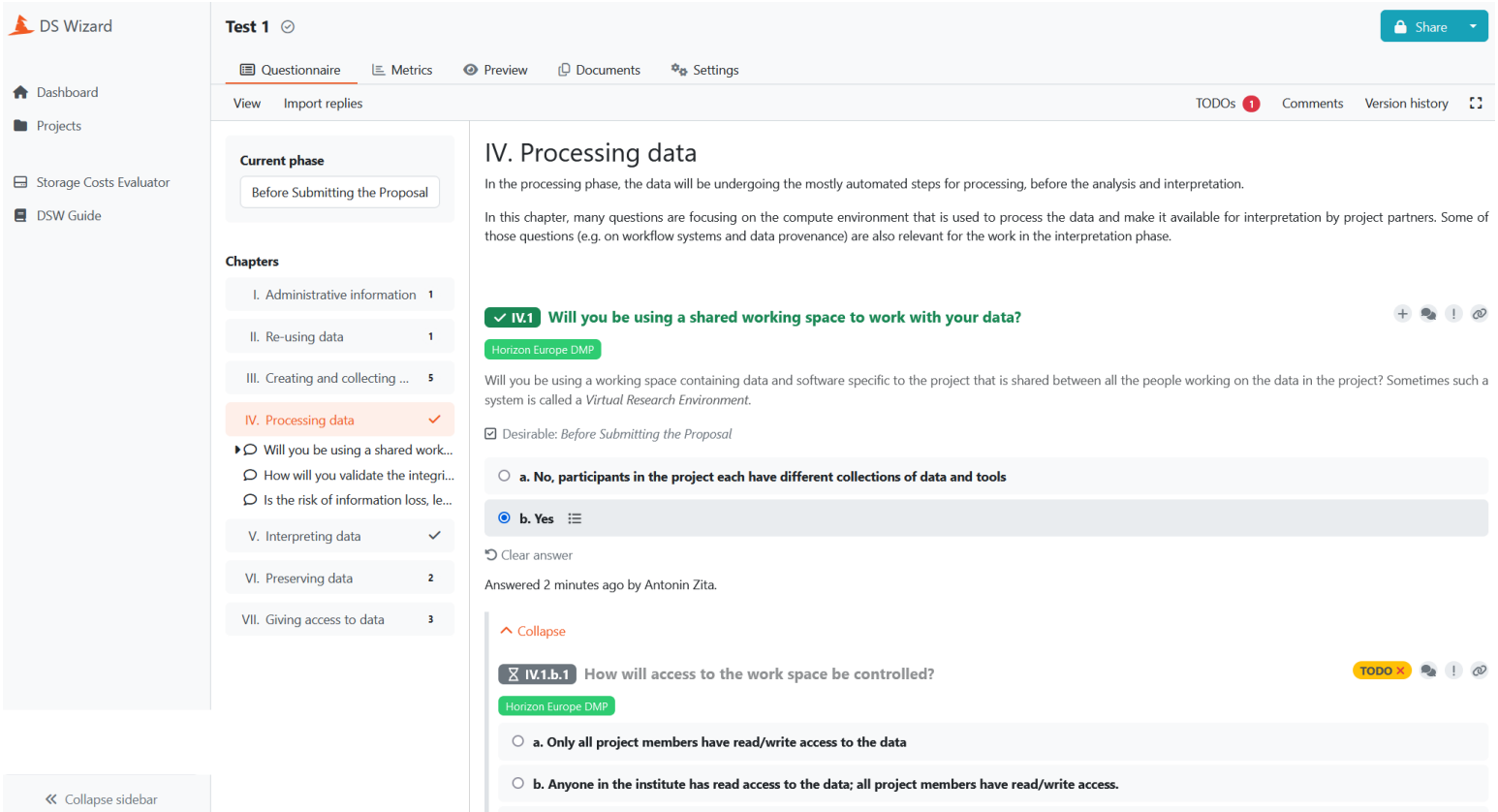
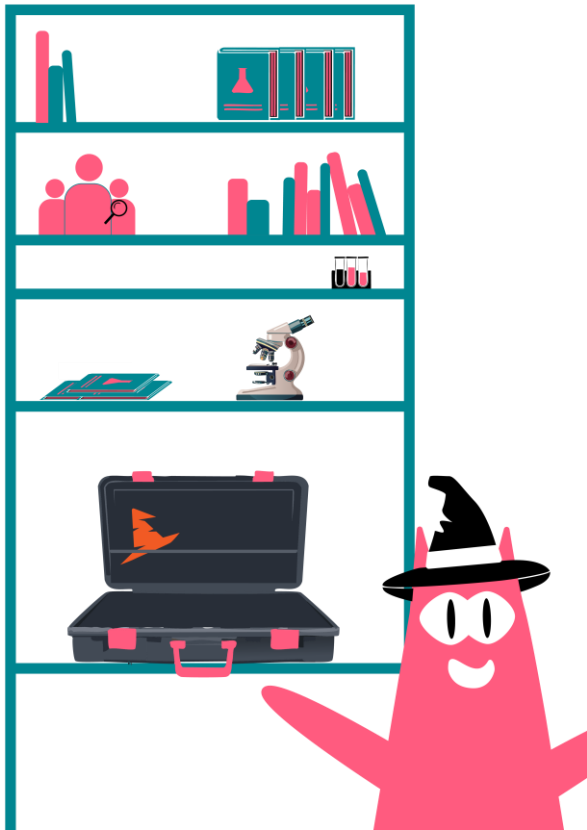
https://ds-wizard.org/

Data Stewardship Wizard

Research data management planning tool





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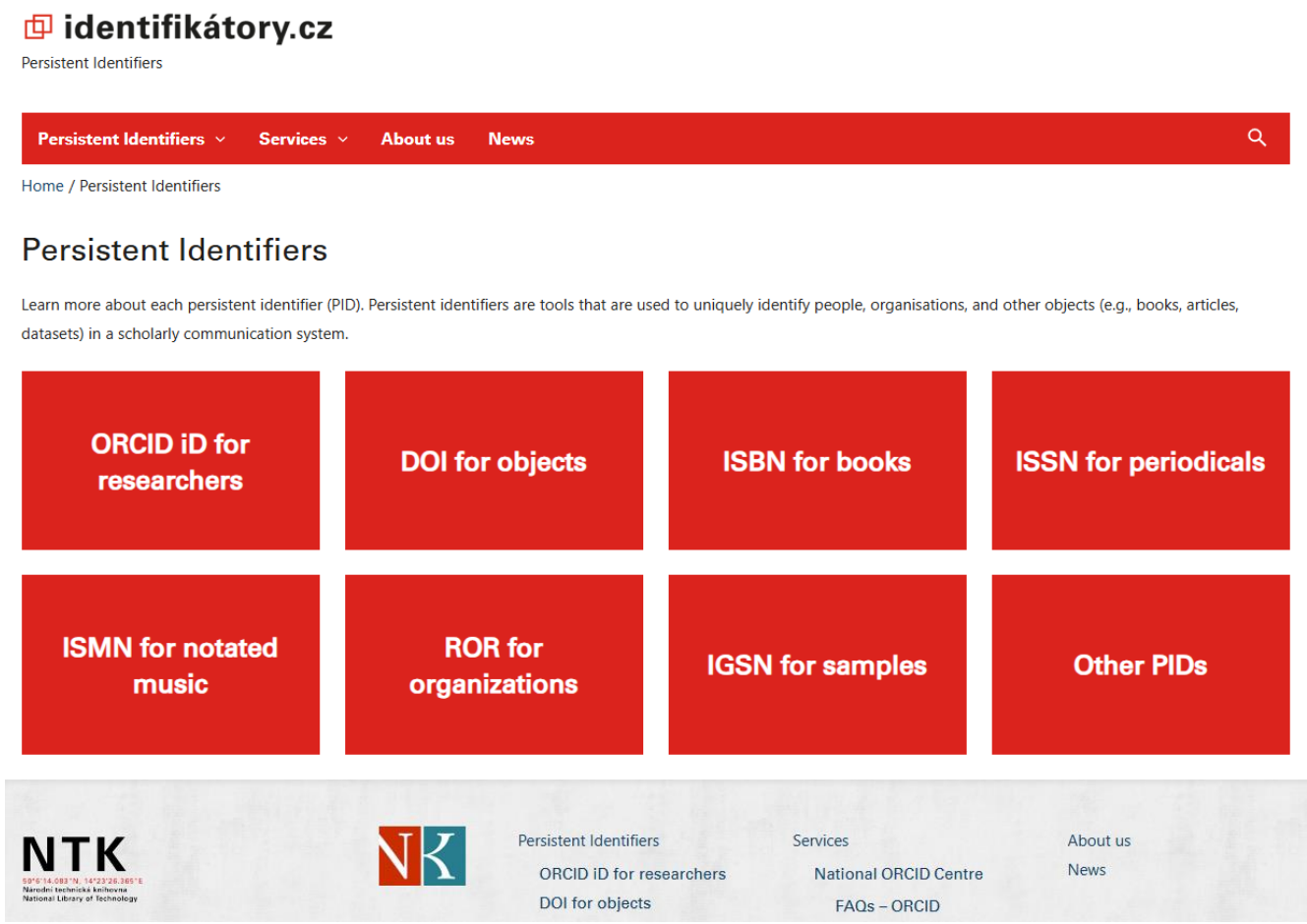
Persistent Identifiers



https://identifikatory.cz/en/

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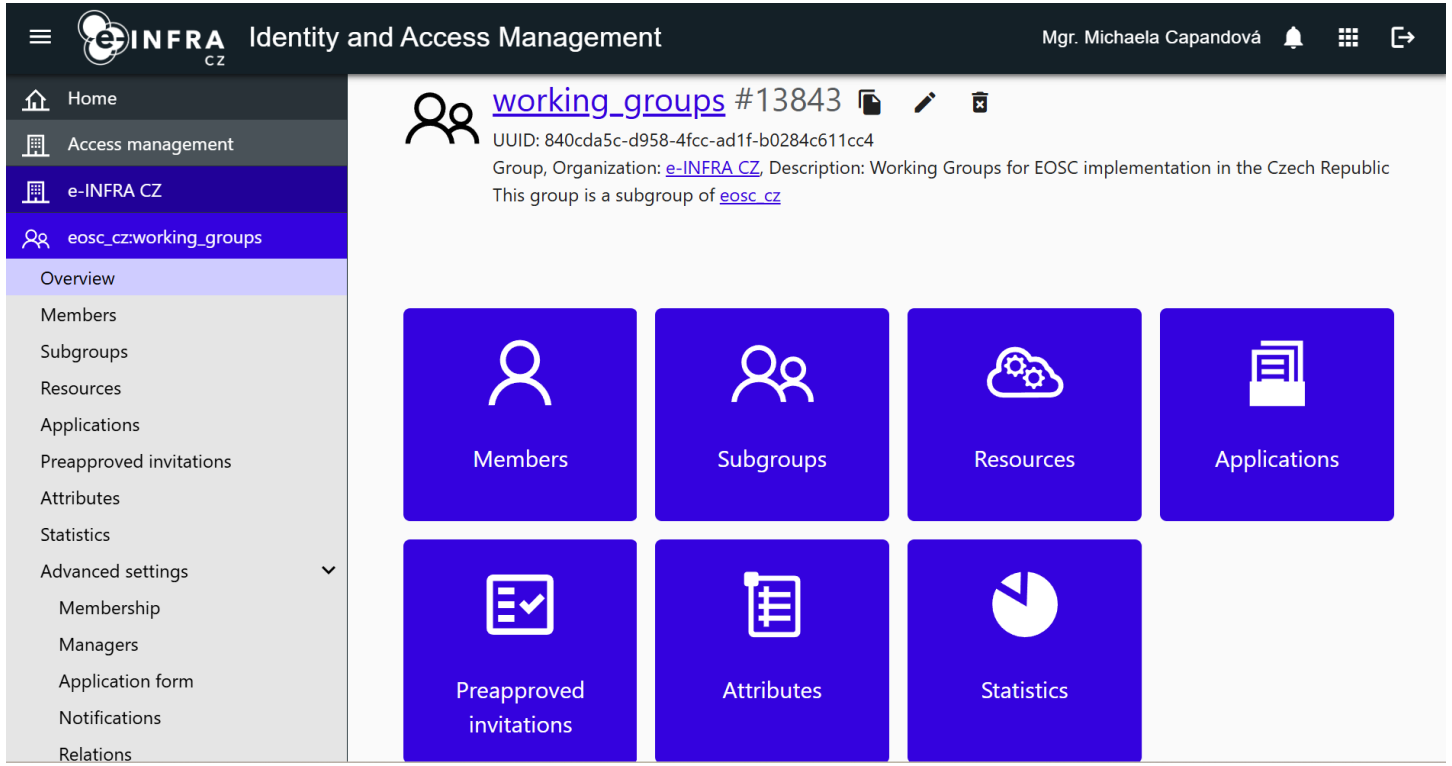
Authentication and Authorization Infrastructure

Enabling users from different institutions to easily access data and services.



- Access and identity management
- Group and role management
- Permission assignment

https://perun-aai.org/

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SensitiveCloud

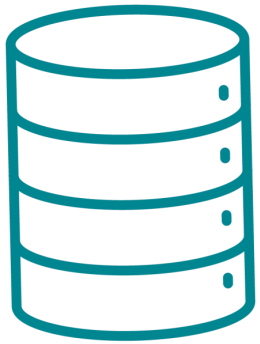
SensitiveCloud

Secure environment for storing, sharing and processing sensitive data

- Primarily designed for work with your own sensitive data
- Gradually extended to support controlled data sharing
  - Main technical component for handling sensitive data within NDI
- Includes storage, computing resources and support for ready-to-use web applications

R jupyter PostgreSQL

NDI Outputs: Summary



Storage capacities

Tools and services

Computing capacities

Useful Links and Contacts

EOSC CZ Website

EOSC CZ Newsletter

- Any questions?
  - info@eosc.cz
- Ideas for a lecture or a training?
  - events@eosc.cz
- Get in touch with our PR
  - pr@eosc.cz

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@eosccz.bsky.social

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Thank you for your attention

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