

EOOSC 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



MUNI
ICS



Contents

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

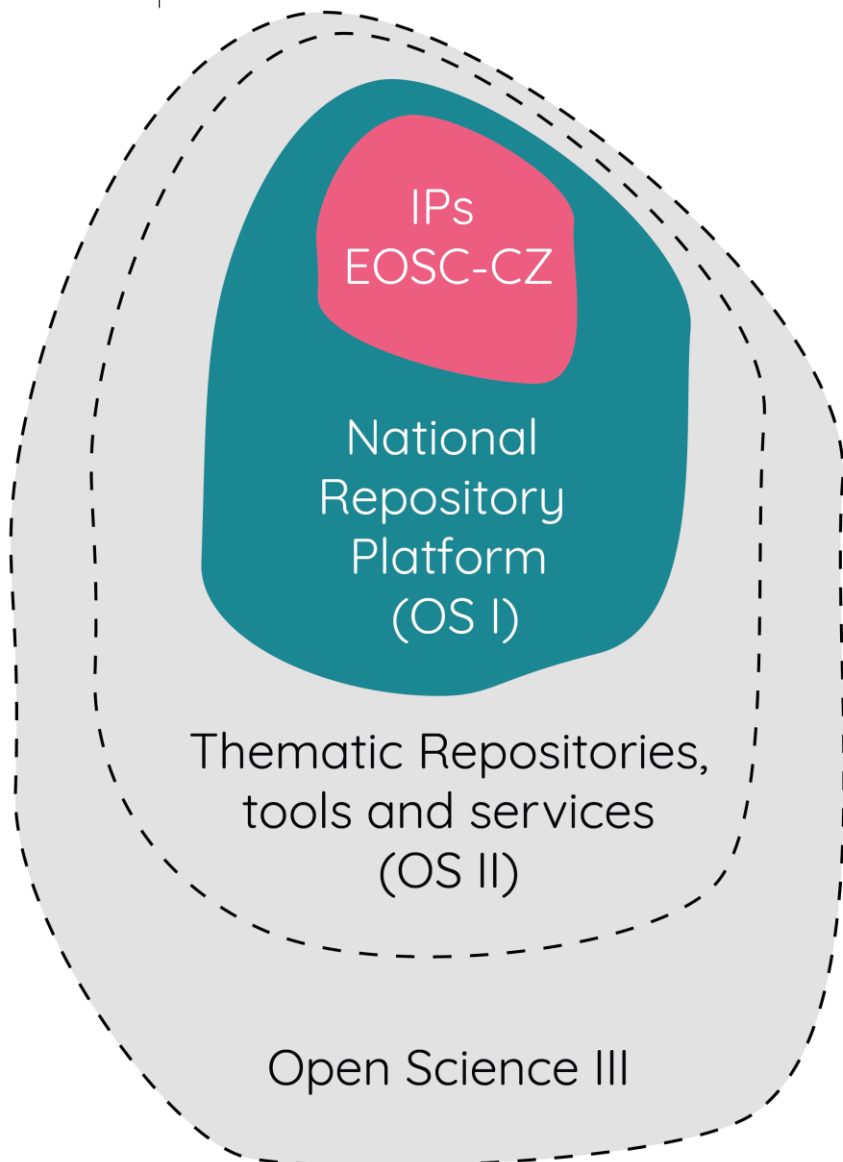
European Open Science Cloud (EOSC)

- 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

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



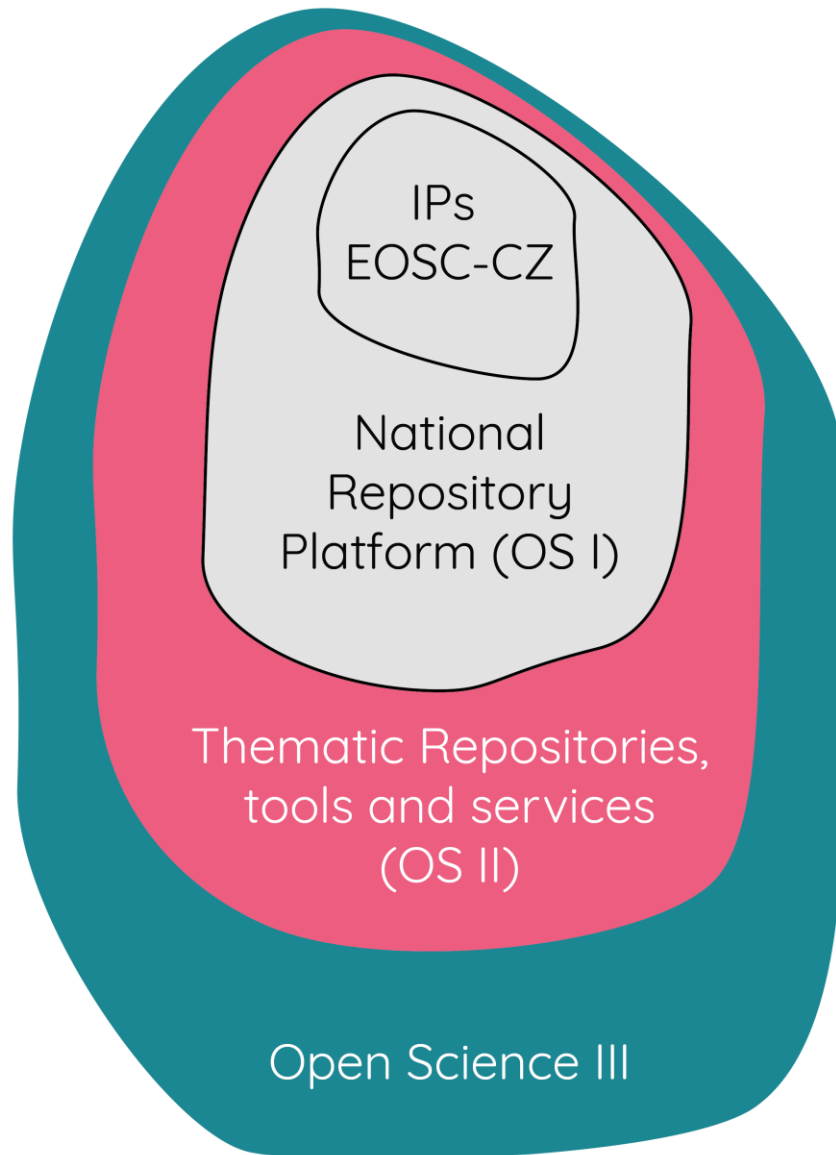


IPs EOSC-CZ – fundamentals for EOSC implementation in CZ

- 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

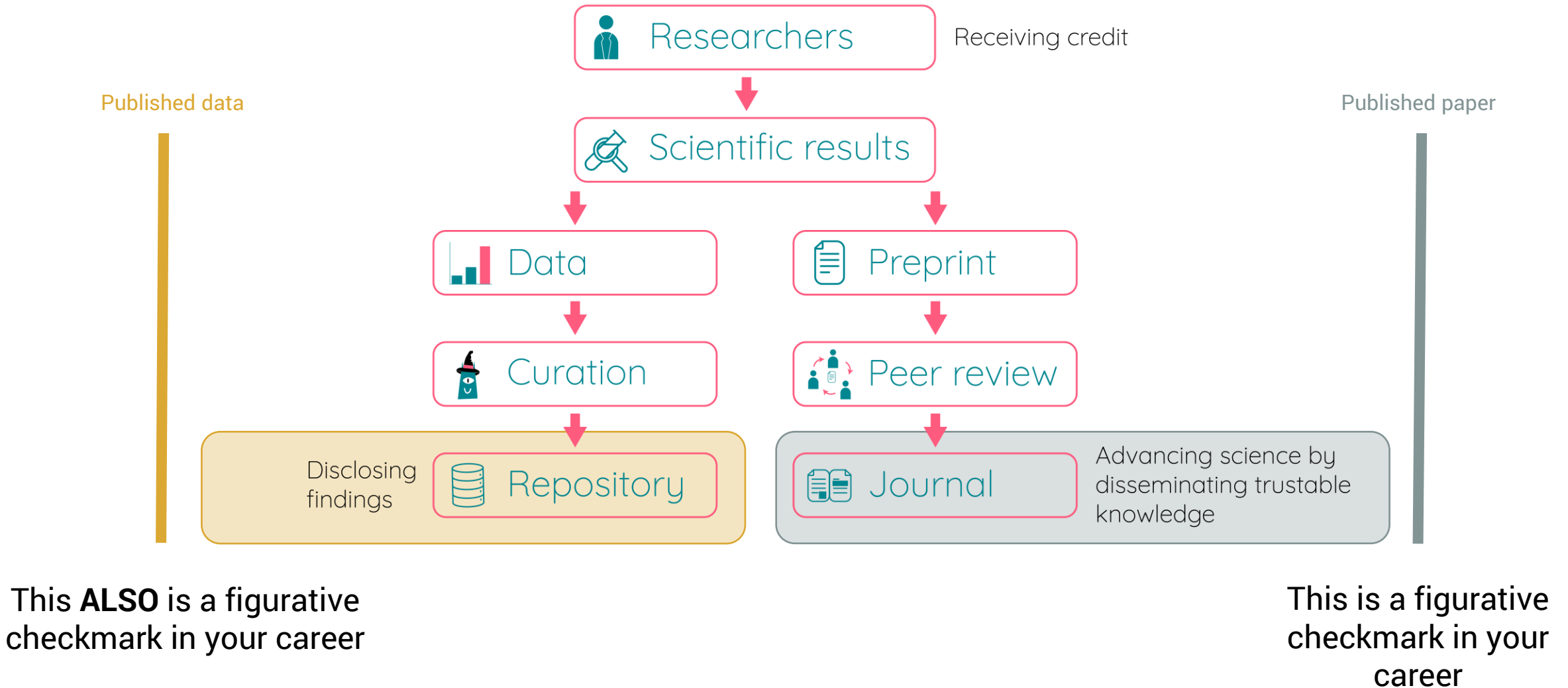
- Domain-specific and interdisciplinary activities
- Development of thematic repositories and tools for FAIR data management
- Bio/Health/Food, Motech, AI & ML, Social Sciences, Physics, Humanities & Arts, Environmental Sciences, Sensitive Data
- <https://www.eosc.cz/en/working-groups>

OS III – “development of knowledge and skills”

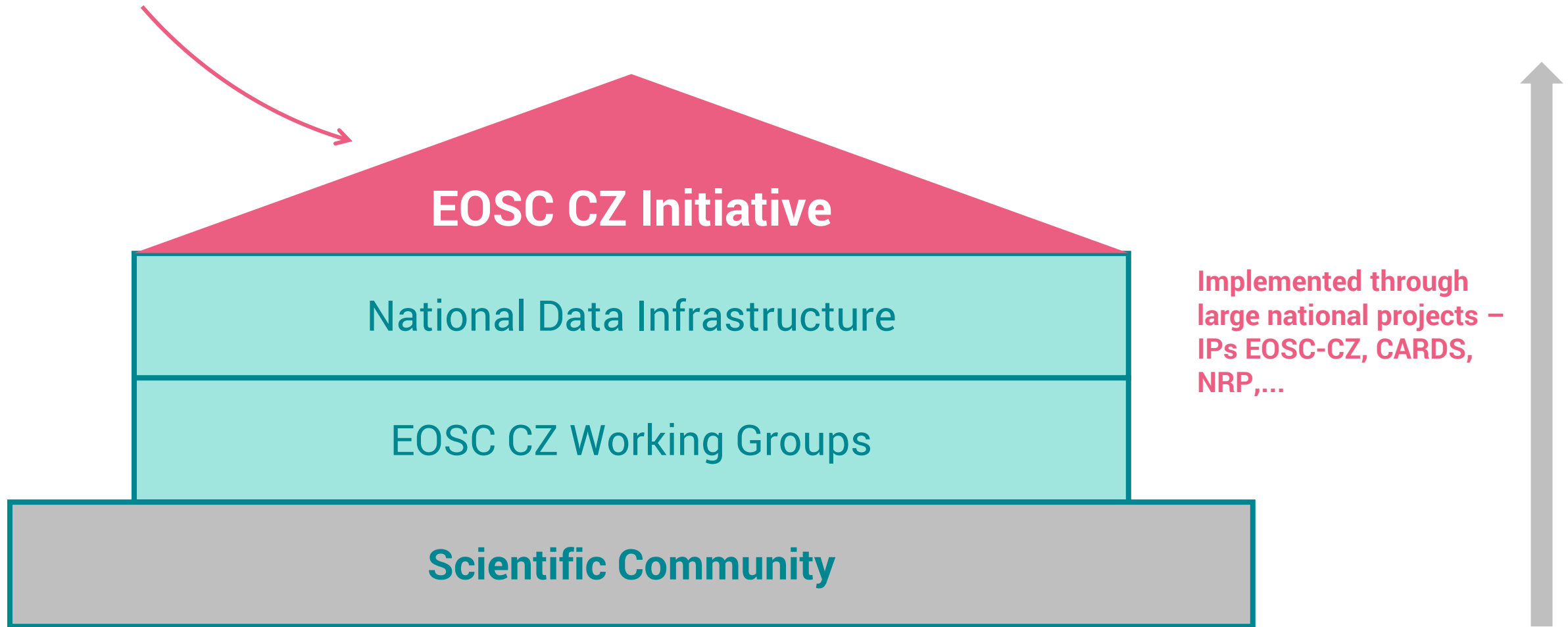
Development of human resources and competencies in research data management

- 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



FAIR Support in Czechia

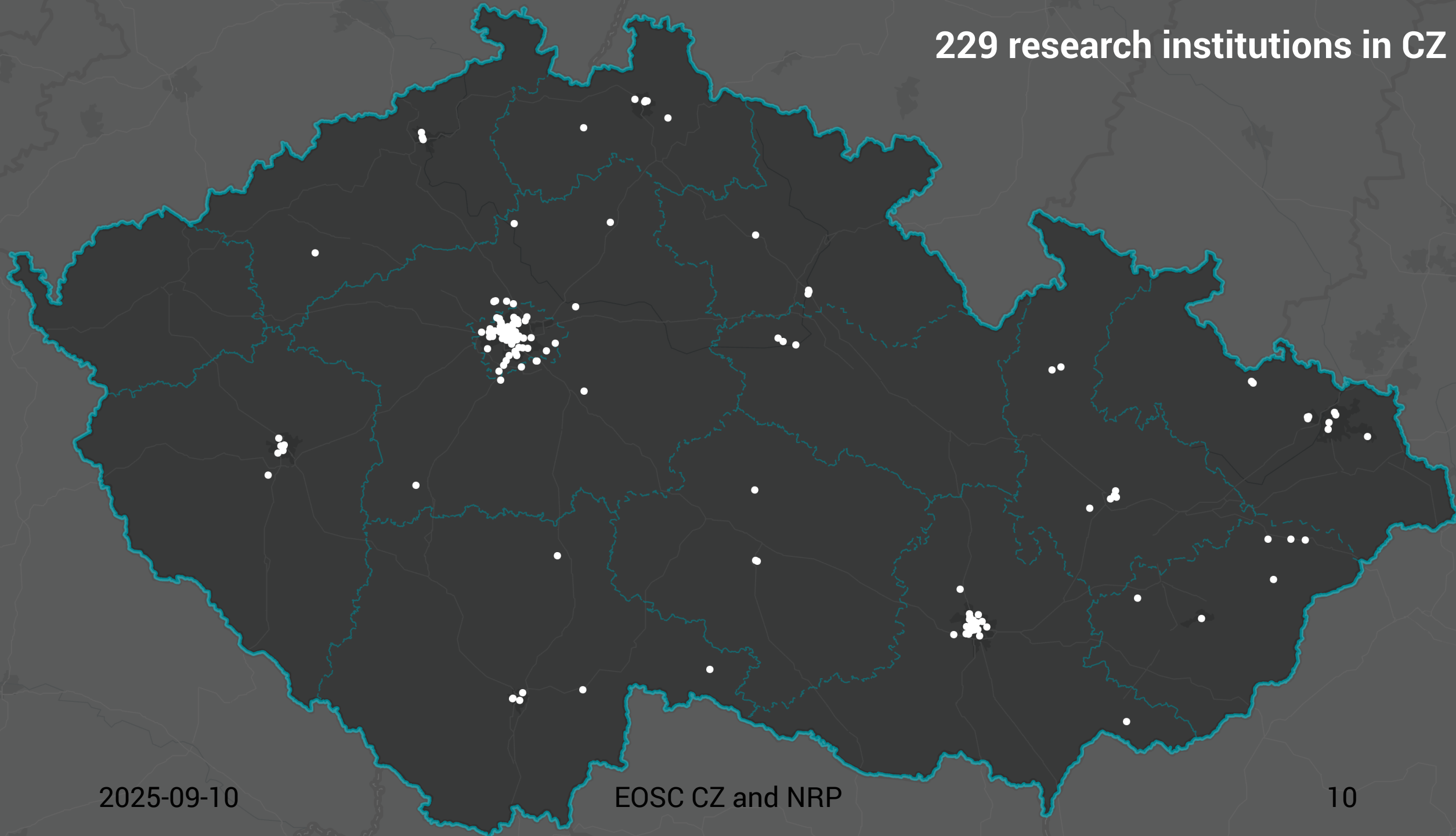


Events:

- Conferences
- Community meetups
- Workshops



229 research institutions in CZ

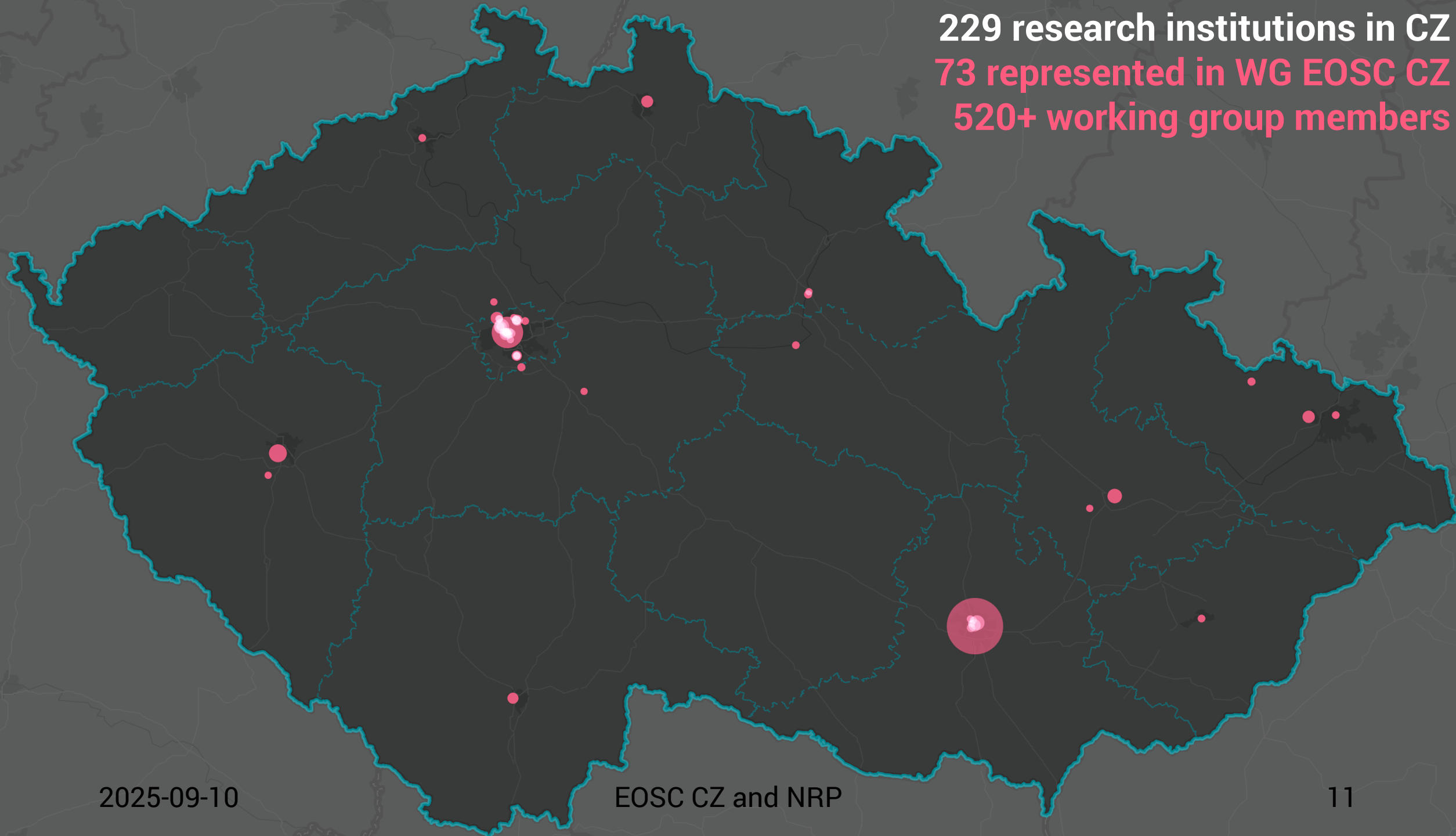


2025-09-10

EOSC CZ and NRP

10

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



EOSC CZ Working Groups



National Data Infrastructure
(NDI) Architecture



Metadata



Core Services



Education and Human
Resources



Bio/Health/Food



Materials Sciences and
Engineering



Data Management for Artificial
Intelligence and Machine
Learning



Social Sciences



Physical Sciences



Humanities and the Arts



Environmental Sciences



Sensitive Data

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

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?

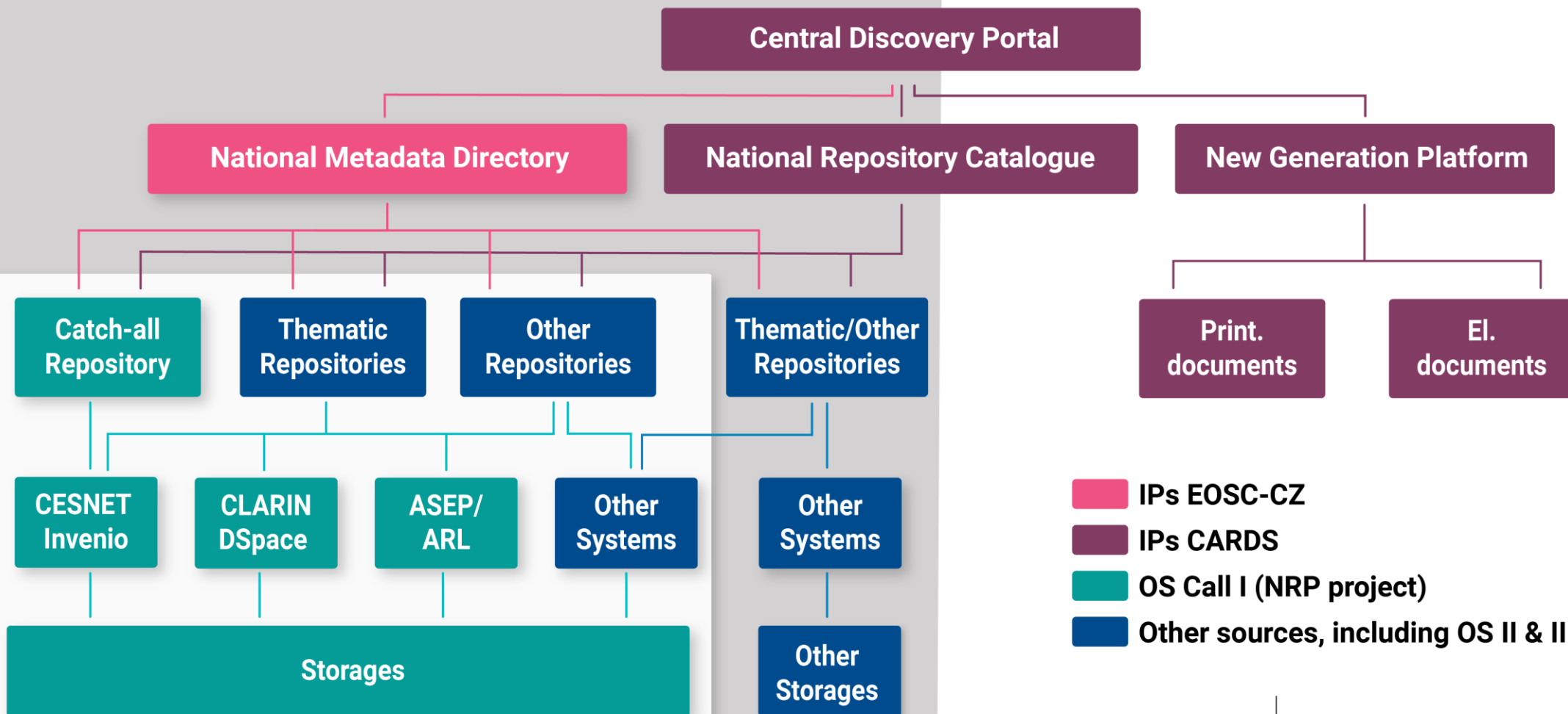


<https://www.eosc.cz/en/working-groups>

National Data Infrastructure (NDI)

NDI

NRP



NDI Outputs: Storage Capacities

Repositories

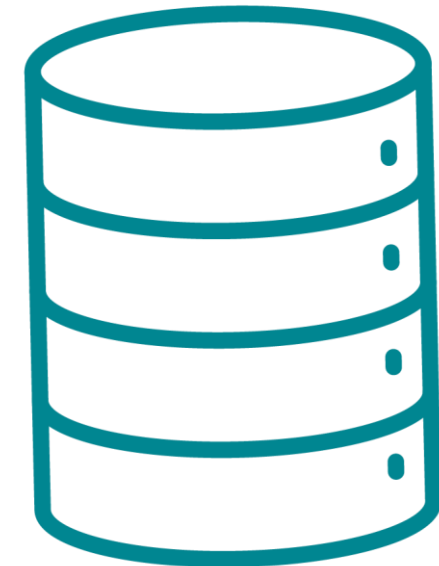
- [Catch-all repository](#) (2025)
- **Thematic (domain-specific) repositories**
4 pilots: Molecular Biophysics Database*, National Repository for Biodiversity Data, Repository for Biological Imaging Data, ArchaeoVault (end of 2025)
 - Others from 2025/2026
- [National Metadata Directory](#)

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




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:
 [10.48700/datst.wmbbb-xhc25](https://doi.org/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 Hampel](#) 

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) + Findable

Accessible + Interoperable

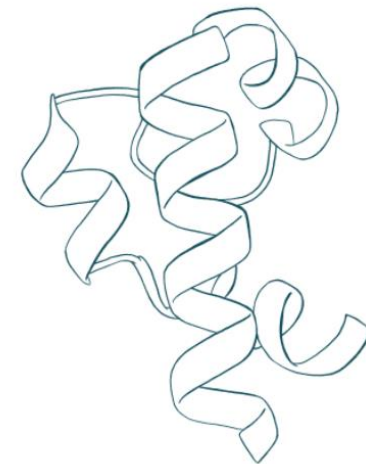
Reusable (licence)


Machine actionable (metadata)


= AI-ready record (dataset)

VALUABLE SCIENTIFIC RESULT



Molecular Biophysics Database




 Documentation Tutorials [Deposit](#) [sign in with ID](#)



Molecular Biophysics Database

 [All records](#) 

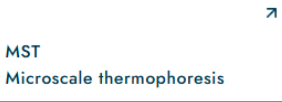
Example: Lysozyme, NaCl, K_D, homo sapiens, xyhds-adf3t (record id) [Advanced search](#)




Molecular Biophysics Database collects raw data produced in experiments with biomolecular samples, biological material or other material, using molecular biophysics methods, such as Microscale Thermophoresis (MST), Biolayer interferometry (BLI), Surface Plasmon Resonance (SPR) and others.

MBDB development is supported by the project **MOSBRI** - Molecular Scale Biophysics Research Infrastructure of the European Commission, no. 101004806


Currently supported techniques



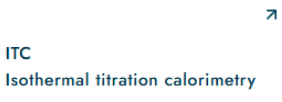
MST
Microscale thermophoresis



BLI
Bio-layer interferometry



SPR
Surface plasmon resonance



ITC
Isothermal titration calorimetry



<https://mbdb-data.org/>

National Metadata Directory


[← BACK TO SEARCH RESULTS](#)

Search datasets..

Search

Mar 3, 2025

Data for Strain-Induced Decoupling Drives Gold-Assisted Exfoliation of Large-Area Monolayer 2D Crystals

Ziewer, Jakob ; Ghosh, Abyay ; Hanušová, Michaela ; Pirker, Luka ; Frank, Otakar ; Velický, Matěj ; Grüning, Marta ; Huang, Fumin Ústav fyzikální chemie J. Heyrovského AV ČR  (Publisher)Dataset 

Fyzika kondenzovaných látek (zahrnuje fyziku pevných látek, supravodivost)

Condensed matter physics (including formerly solid state physics, supercond.)

Nanomateriály (výroba a vlastnosti)

Nano-materials (production and properties)

2D materials

decoupling

gold-assisted exfoliation

MoS2

Raman spectroscopy

strain

Descriptions

angličtina

This is a dataset supporting a published article "Strain-Induced Decoupling Drives Gold-Assisted Exfoliation of Large-Area Monolayer 2D Crystals". Gold-assisted exfoliation (GAE) is a groundbreaking mechanical exfoliation technique that produces centimeter-scale single-crystal monolayers of 2D materials. Such large, high-quality films offer unparalleled advantages over the micron-sized flakes typically produced by conventional exfoliation techniques, significantly accelerating the research and technological advancements in the field of 2D materials. Despite its wide applications, the fundamental mechanism of GAE remains poorly understood. In this study, using MoS2 on Au as a model system, ultra-low frequency Raman spectroscopy is employed to elucidate how the interlayer interactions within MoS2 crystals are impacted by the gold substrate. The results reveal that the coupling at the first MoS2-MoS2 interface between the adhered layer on the gold substrate and the adjacent layer is substantially weakened, with the binding force being reduced to nearly zero. This renders the first interface the weakest point in the system, thereby the crystal preferentially cleaves at this junction, generating large-area monolayers with sizes comparable to the parent crystal. Biaxial strain in the adhered layer, induced by the gold substrate, is identified as the driving factor for the decoupling effect. The strain-induced decoupling effect is established as the primary mechanism of GAE, which can also play a significant role in general mechanical exfoliations.



Open access

License:


CS

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Mezinárodní licence

[More info](#)

Dataset identifiers:

DOI [10.48700/datst.hcmd1-jp979](https://doi.org/10.48700/datst.hcmd1-jp979) Original sources 

Publisher:

Ústav fyzikální chemie J. Heyrovského AV ČR [Link to original record](#)

Published in:



EOSC CZ Data Repo

Export 

Native JSON

Export

<https://nma.eosc.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



Data Stewardship Wizard

Research data management planning tool



DS Wizard

Dashboard

Projects

Storage Costs Evaluator

DSW Guide

Test 1

Share

Questionnaire Metrics Preview Documents Settings

View Import replies

TODOs 1 Comments Version history

Current phase

Before Submitting the Proposal

Chapters

I. Administrative information 1

II. Re-using data 1

III. Creating and collecting ... 5

IV. Processing data ✓

V. Interpreting data ✓

VI. Preserving data 2

VII. Giving access to data 3

IV. Processing data

In the processing phase, the data will be undergoing the mostly automated steps for processing, before the analysis and interpretation.

In this chapter, many questions are focusing on the compute environment that is used to process the data and make it available for interpretation by project partners. Some of those questions (e.g. on workflow systems and data provenance) are also relevant for the work in the interpretation phase.

✓ IV.1 Will you be using a shared working space to work with your data?

Horizon Europe DMP

Will you be using a working space containing data and software specific to the project that is shared between all the people working on the data in the project? Sometimes such a system is called a *Virtual Research Environment*.

☒ Desirable: Before Submitting the Proposal

☐ a. No, participants in the project each have different collections of data and tools

☒ b. Yes

Clear answer

Answered 2 minutes ago by Antonin Zita.

^ Collapse

IV.1.b.1 How will access to the work space be controlled?

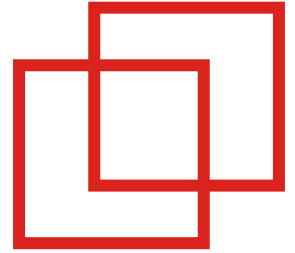
Horizon Europe DMP

☐ a. Only all project members have read/write access to the data

☐ b. Anyone in the institute has read access to the data; all project members have read/write access.



Persistent Identifiers



 **identifikatory.cz**

Persistent Identifiers

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Persistent Identifiers

Learn more about each persistent identifier (PID). Persistent identifiers are tools that are used to uniquely identify people, organisations, and other objects (e.g., books, articles, datasets) in a scholarly communication system.

**ORCID iD for
researchers**

DOI for objects

ISBN for books

ISSN for periodicals

**ISMN for notated
music**

**ROR for
organizations**

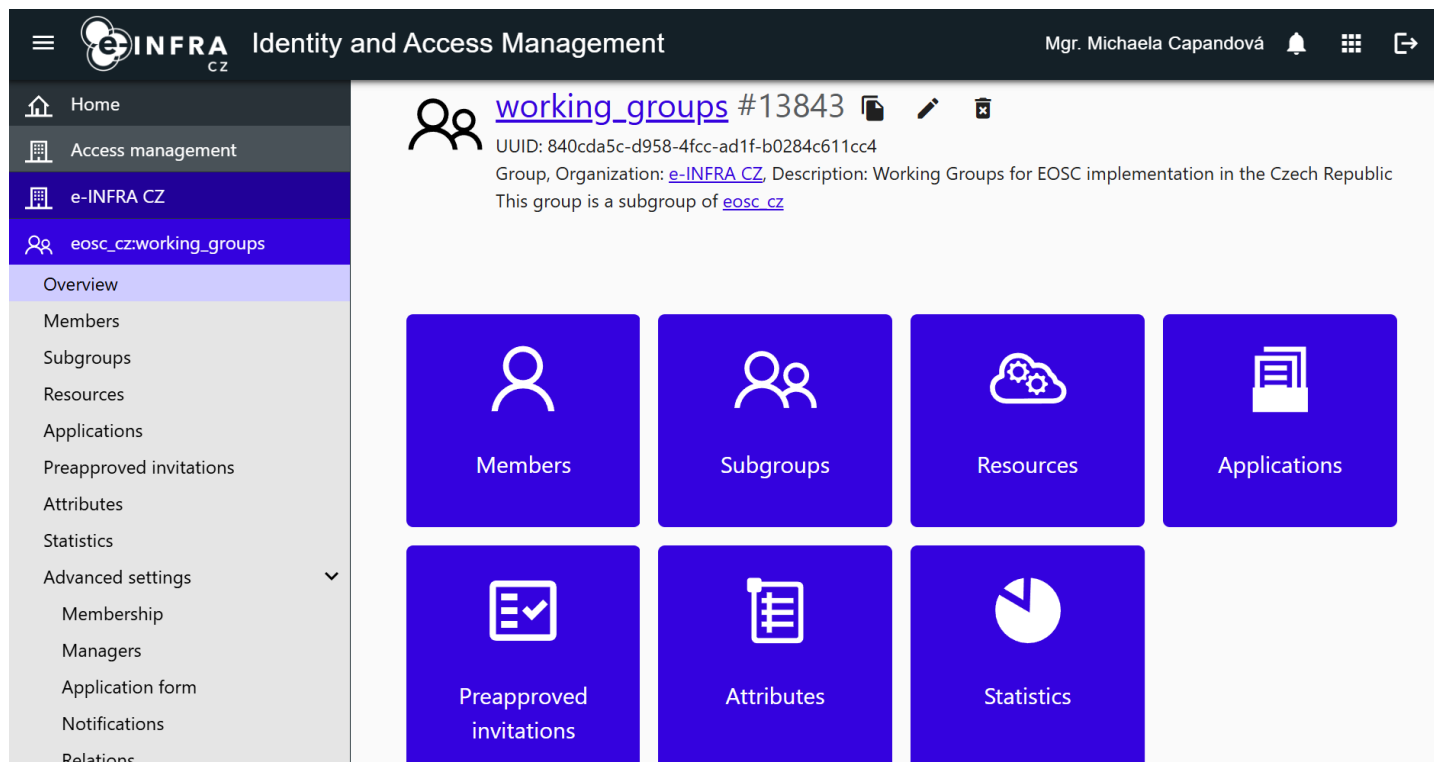
IGSN for samples

Other PIDs



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/>

SensitiveCloud

**Secure environment for storing, sharing
and processing sensitive data**

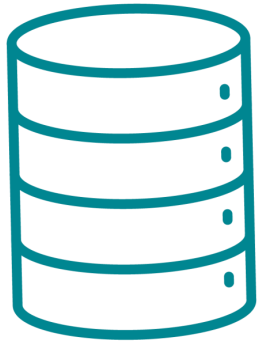
- Primarily designed for work with your own sensitive data
- Gradually extended to support controlled data sharing
 - Main technical component for handling sensitive data within NDI
- Includes storage, computing resources and support for ready-to-use web applications



[SensitiveCloud](#)



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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Thank you for your attention



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MLÁDEŽE A TĚLOVÝCHOVY

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UNIVERZITA
OSTRAVA

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NÁRODNÍ SUPERPOČÍTAČOVÉ
CENTRUM