

EOSC CZ for Researchers

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Masaryk University | CERIT-SC

CEITEC MAFIL FAIR Data Management Workshop

2026-05-11



Co-funded by
the European Union



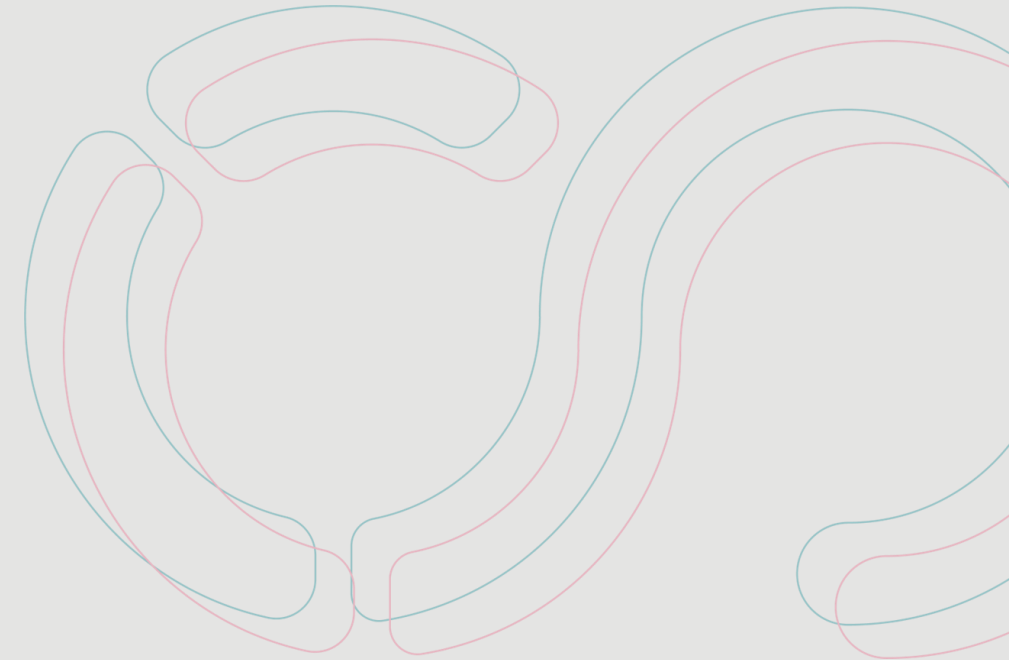
About Me

- Leader of end-user-services oriented work packages in the NRP project.
 - <https://www.eosc.cz/en/projects/national-repository-platform-for-research-data-os-i-nrp/national-repository-platform>
- Open Science support team member at CERIT-SC | ICS MU
 - Focus on data management and FAIR data support.
 - Including sensitive data (SensitiveCloud).
- Good coffee and tea lover.

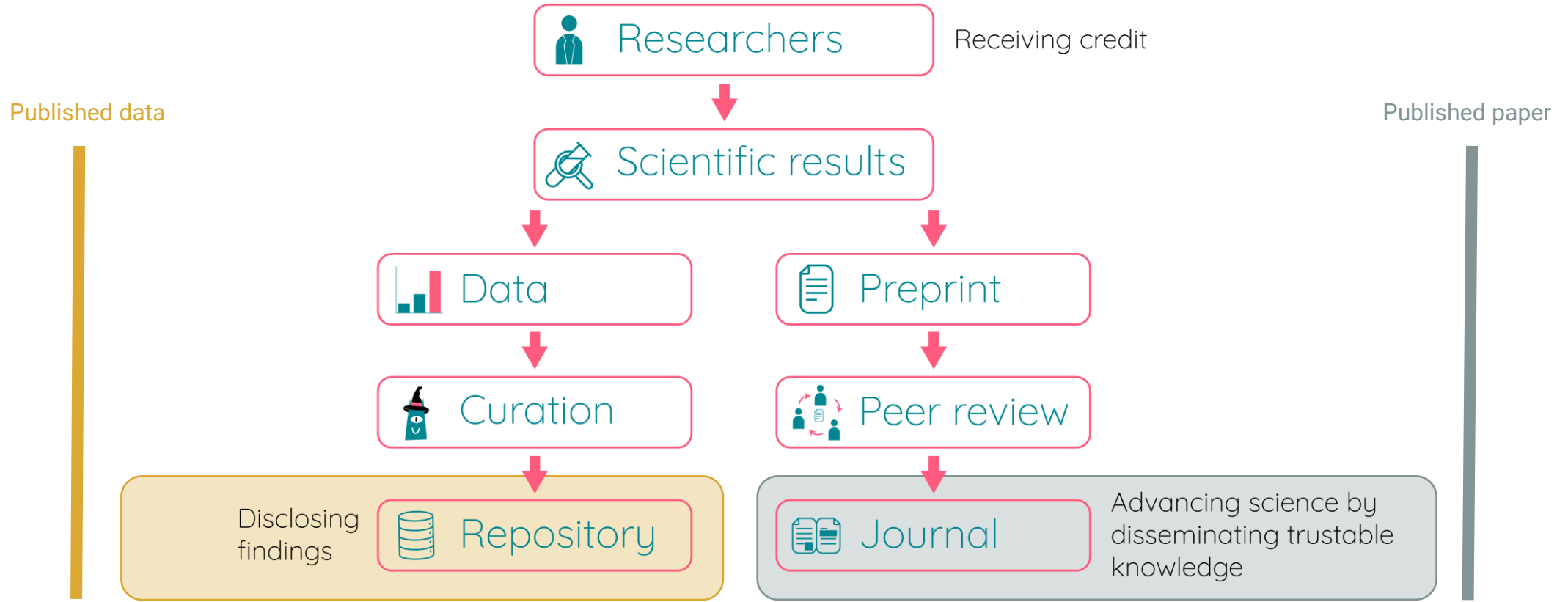




European Open Science Cloud (EOSC)



Peer reviewed research

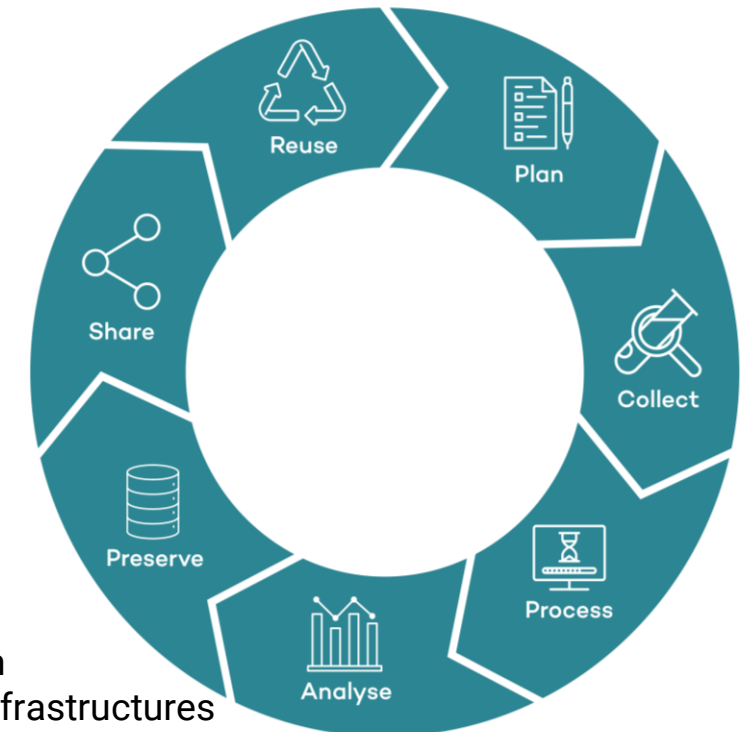
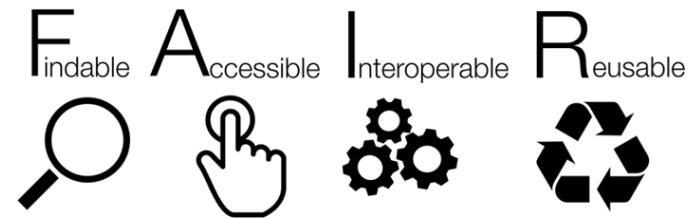


This **ALSO** is a figurative checkmark in your career

This is a figurative checkmark in your career

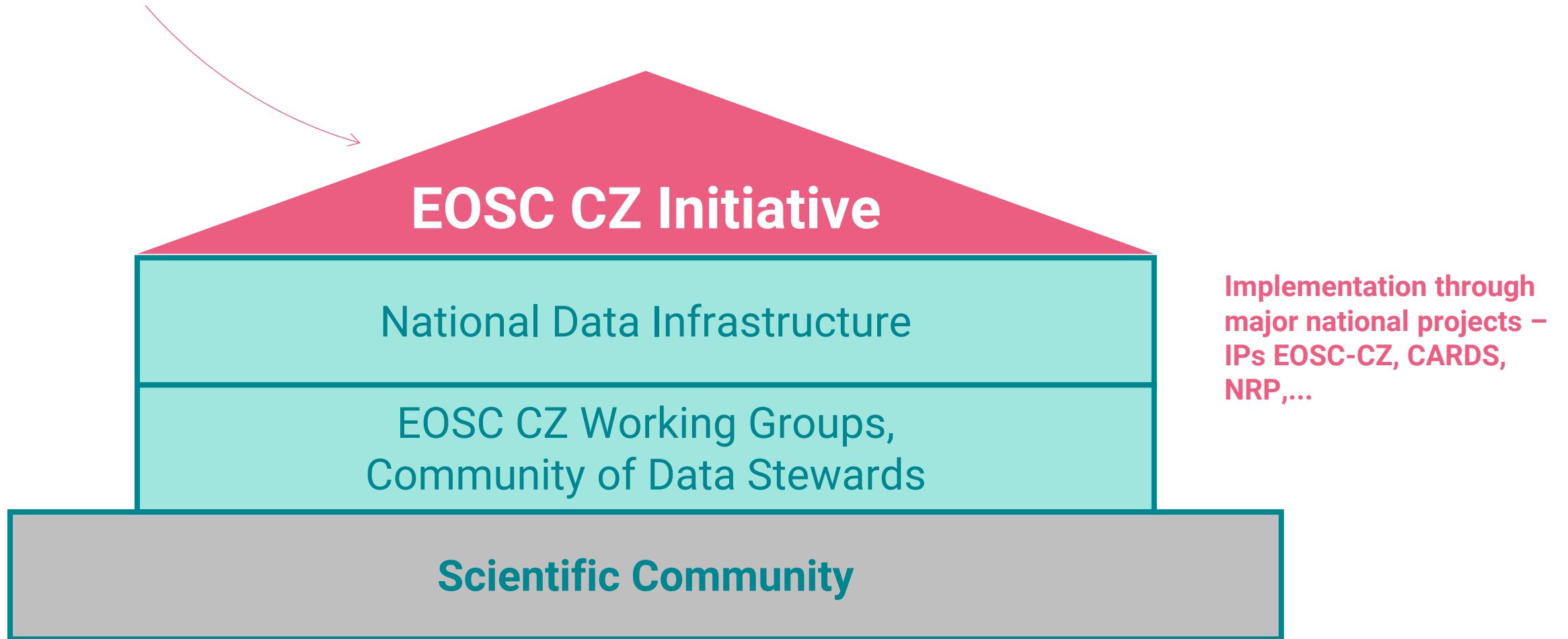
EOSC Initiative in the Czech Republic

- The main output is the **National Data Infrastructure**.
 - A common platform for sharing, managing and accessing data and computing resources.
 - Support of scientific and multidisciplinary research activities across scientific disciplines and disciplines.

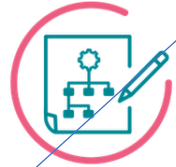


- Primarily **Preserve, Share, Reuse**
- **Plan** and **Collect** is a matter of research
- **Process** and **Analyse** is related to (e-)infrastructures

FAIR Data Support in Czech Republic



Researchers Are Building Facilities for Researchers



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



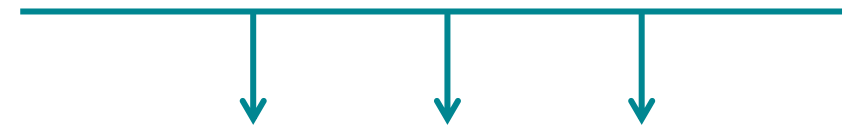
Environmental Sciences



Sensitive Data

EOSC CZ Working Groups

- EOSC main community
- 4 cross-cutting: inputs to the NRP
- 8 sectoral: prerequisites for OS II
- open to anyone interested (accepts new members at any time)



An open platform for implementing EOSC

Researchers Are Building Facilities for Researchers



Controlled Vocabularies and Ontologies in the NRP/NDI

The Task Force on Controlled Vocabularies in the NRP/NDI originated from an initiative of the National Technical Library – specifically the Centre for Repositories and Metadata Management. The aim of the Task Force is to develop a methodology for working with controlled vocabularies and ontologies within the NRP/NDI, describing the process from the selection of a controlled vocabulary by a domain repository to its registration in the National Repository Catalogue.

It is possible to create your own task force

If you are interested, please contact

info@eossc.cz

Task Forces EOSC CZ

- Topics relevant to a wide range of research communities.
- Specific goals, max. 1 year.
- Membership is subject to the approval of the TF leader.
- The condition is membership in a PS.

Infrastructure for Research Data in the Czech Republic

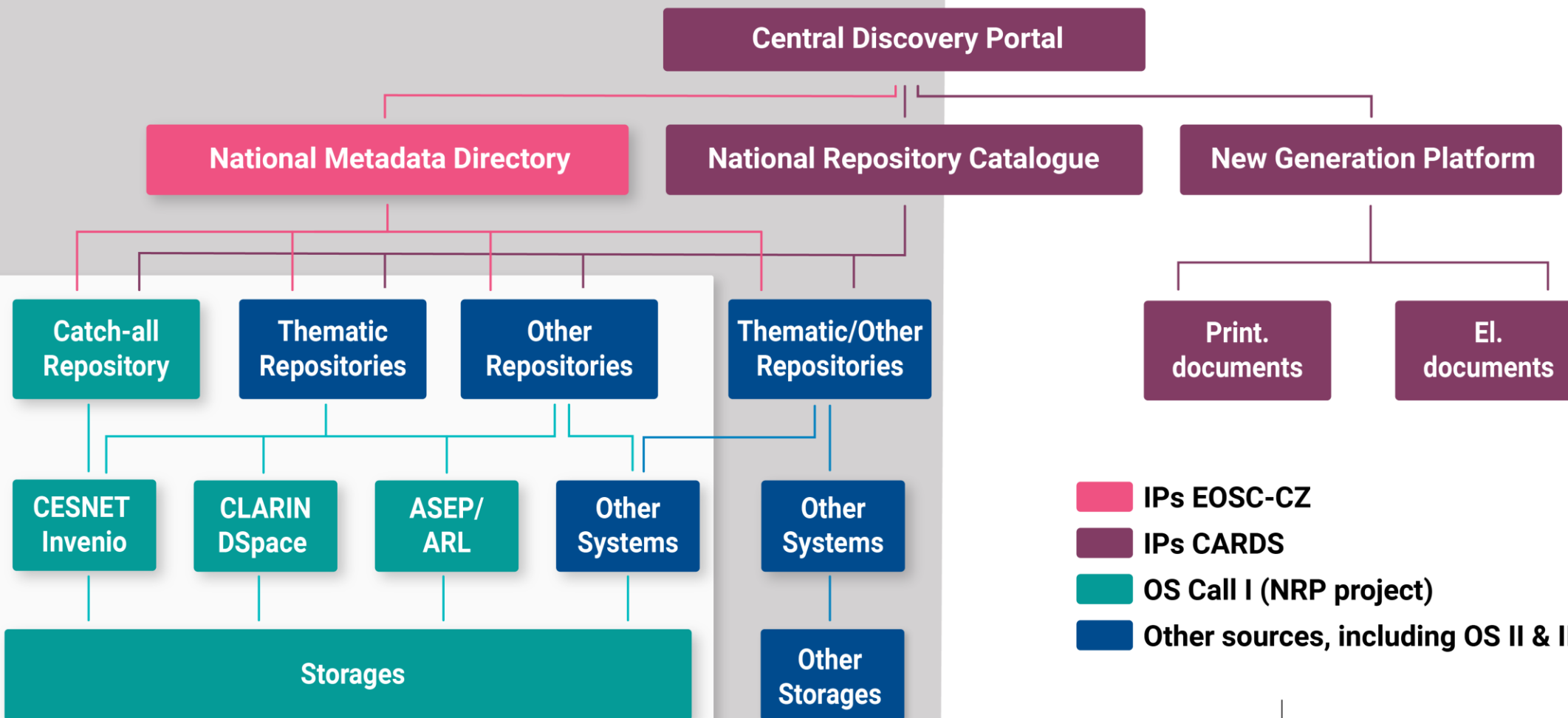
Available today (or very soon) free of charge for all scientists in the Czech Republic:

1. National Data Infrastructure (NDI)
2. Data repositories
3. Data management tools and services
4. Training and materials for research data management
5. Professional support in the form of a data steward and other professional roles
(also with the support of OS III)

National Data Infrastructure (NDI)

NDI

NRP



- IPs EOSC-CZ
- IPs CARDS
- OS Call I (NRP project)
- Other sources, including OS II & III

CZECH DATA REPOSITORIES

ARTS



AGROFOOD



AI



CORPUS



GENESIS



OMICS



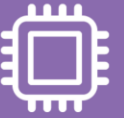
ZOOLOGY



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



Examples of Repositories

Nová datová sada 

Datová sada

Název datové sady *

CS +

Toto pole je vyžadováno

 PŘIDAT PODNÁZEV

Jazyk *

Abstrakt *

CS +     


Prostor pro detailní popis metodologie a techn

Licence


Pokud se k datové sadě váže licence Creative
Doporučujeme výběr nejnovějších verzí a to 3.


Upozornění: Ujistěte se o tom, že datová s


Vydavatelé *


 VYBRAT POJMY


POKRAČOVAT

 Tvůrci

 Popis datové sady

 Datace

 Informace o financování

 Vytvoření draftového záznamu

 Upload dat

<http://datarepo.eosc.cz/>

MBDB

Documentation

Tutorials

Deposit

sign in with 



Molecular Biophysics Database

Search



All records

Example: Lysozyme, NaCl, K_D, homo sapiens, xyhds-adj3t (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/>

NDI Outputs: Storage Capacities

Repositories

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

Repository systems

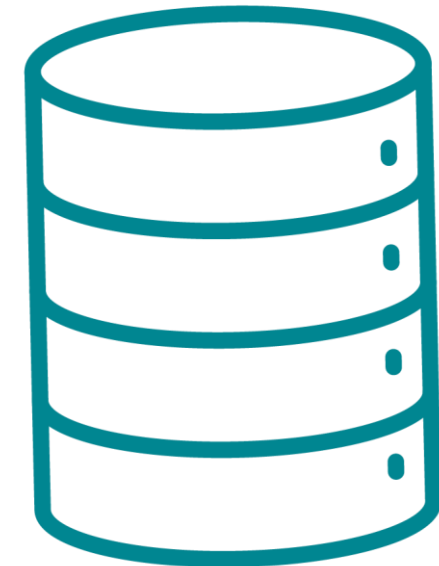
- CESNET Invenio, CLARIN-DSpace, ASEP-ARL

Hardware

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



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




* 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:
DOI: [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: [nanofibers](#) [electrospinning](#) [polycaprolactone](#) [tissue engineering](#) [scaffold](#) [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, poly(lactic 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

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](#).



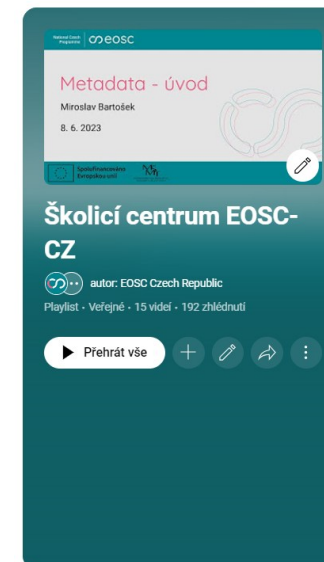
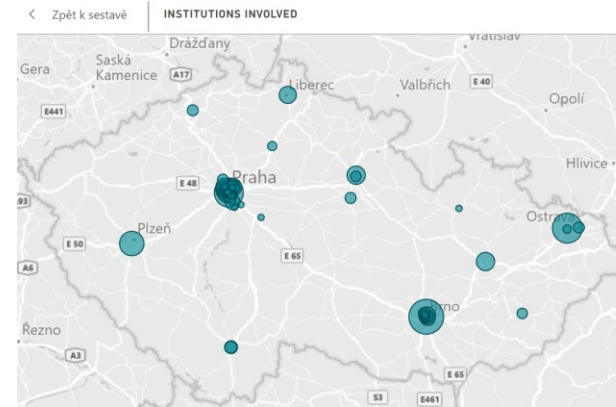
Education – EOSC CZ Training Center

In total since the beginning of the project:

- **40 training sessions – 4000 participants**
- **4 conferences – 509 (on-site) participants**

The training is attended by scientists and academics from all parts of the country...

More at <https://www.eosc.cz/skoleni>, including [recordings of passed trainings](#).



Video Title	Views	Time
Metadata - úvod	450 zhlédnutí	1:56:32
Úvod do metadat II - metadata v kontextu NRP	221 zhlédnutí	2:20:57
Úvod do organizace znalostí: řízené slovníky, ontologie	166 zhlédnutí	1:28:10
Systémy pro Národní repozitářovou platformu (NRP)	254 zhlédnutí	1:46:11
Pilotování 'Data Stewardship' kurzu pro doktorandy	119 zhlédnutí	2:38:36

Expert Support: Data Stewards

- Positions at research institutions focused on **supporting research data management**.
- Responsibility for setting up and following **best practices when working with data**.
- Ensuring data **integrity and security** and compliance with **FAIR principles**.
- **The link** between research, infrastructure and data management.
- IPs EOSC CZ can, among other things, help with the **promotion of open jobs**.
- [More about data stewards on the eossc.cz website](#).

Data Access Control

- FAIR Data, “As open as possible, as closed as necessary”.
 - We need precise access control to data, metadata, services.
- Federative system – use your institutional identity, your well-known authentication web page.
 - Effective collaboration across institutions, individuals, ...

Log in with

Masar



Masaryk Memorial Cancer Institute (MMCI)



Masaryk Public Library



Masaryk University

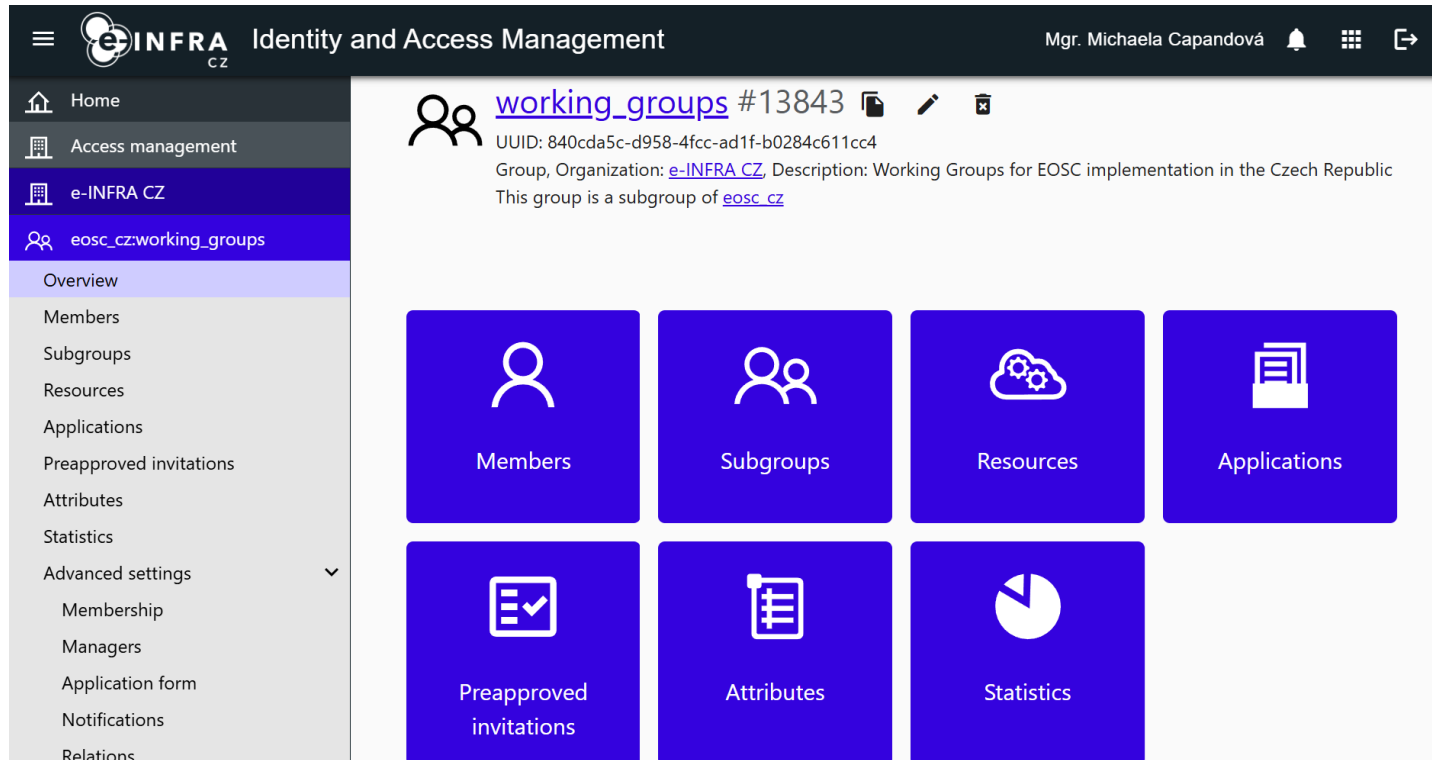


Municipal library T.G. Masaryk Sumperk

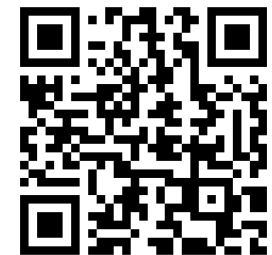


Authentication and Authorization Infrastructure

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.



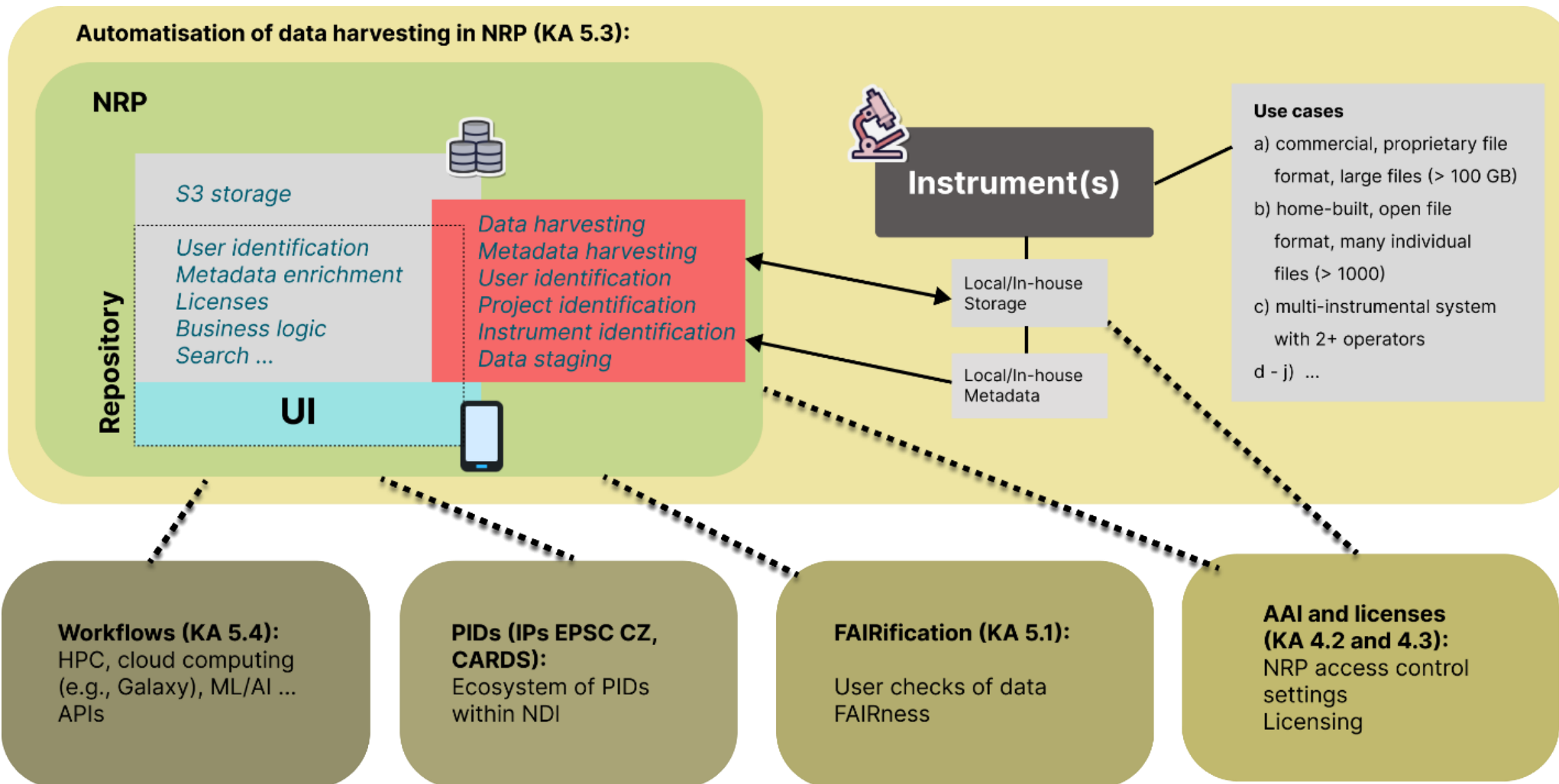
[SensitiveCloud](#)



eosc Automation of Data and Metadata Collection

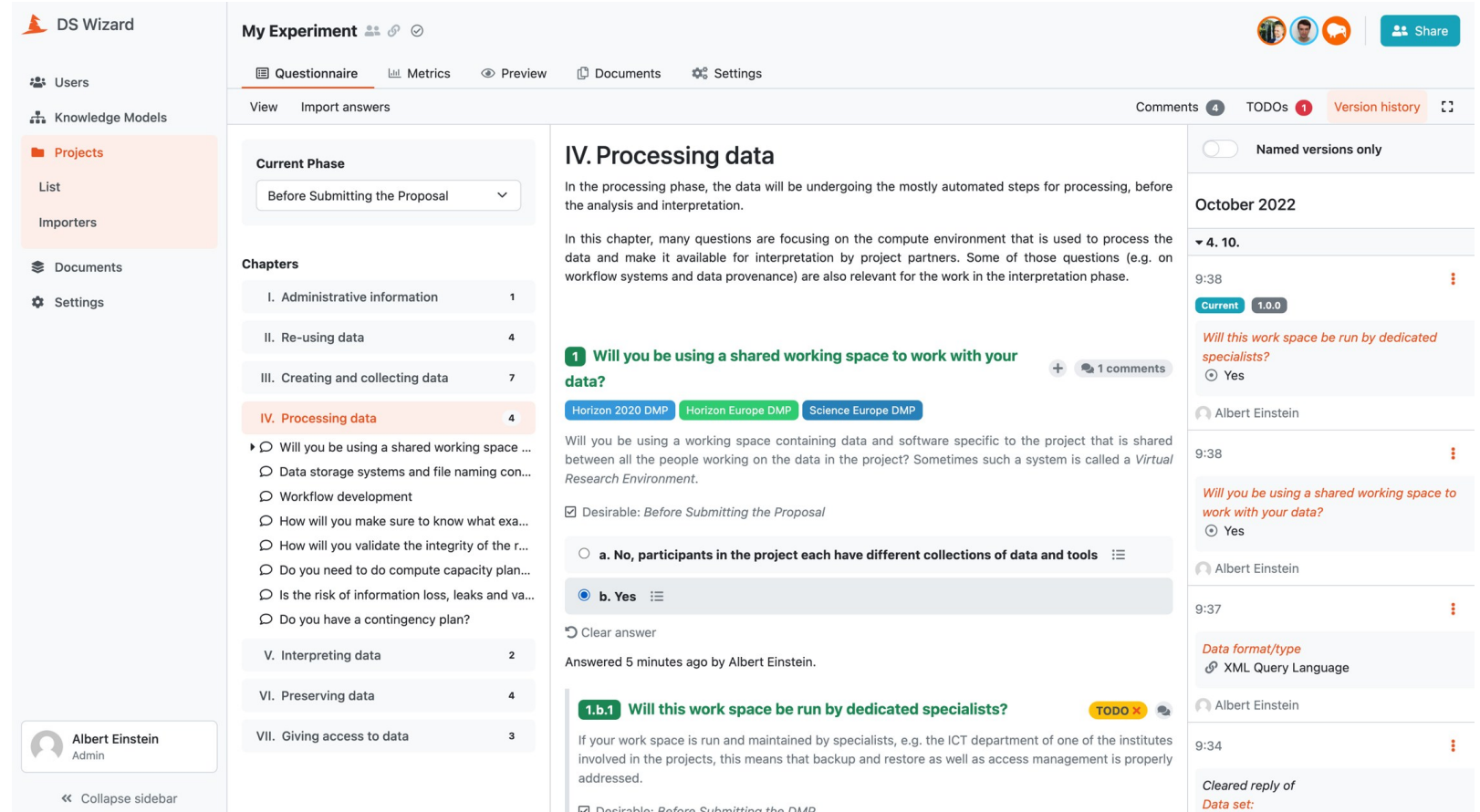
FAIR: Accessible, Interoperable, Reusable

Automatisation of data harvesting in NRP (KA 5.3):



Support for Data Management Planning

- We expect integration of tools like Data Stewardship Wizard (DSW) directly to the platform.
 - <https://dmp.eosc.cz/>
- Integration allows effective re-use of available (meta)data.

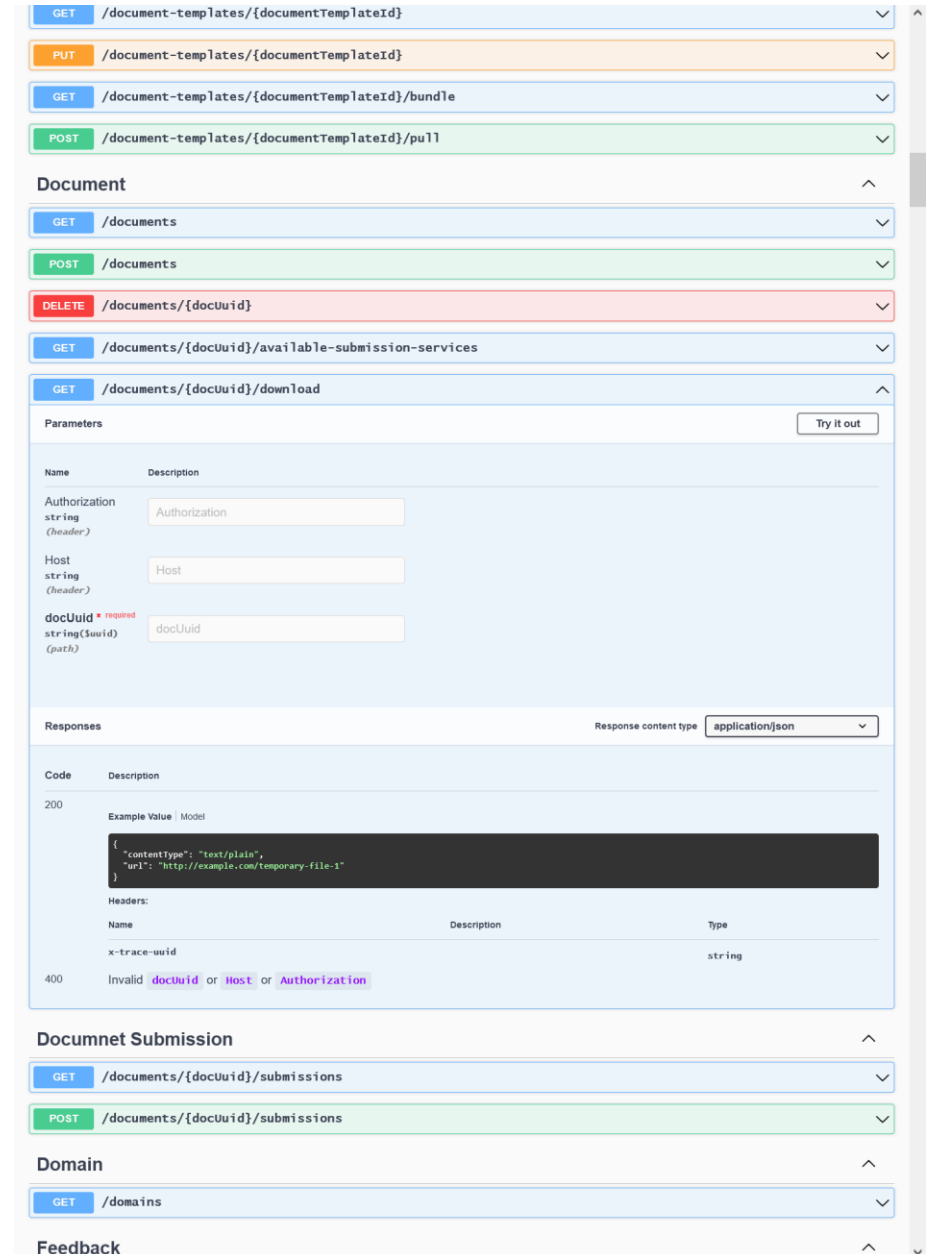


The screenshot displays the DS Wizard interface for a 'My Experiment'. The left sidebar shows navigation options: Users, Knowledge Models, Projects (List, Importers), Documents, and Settings. The main content area is titled 'My Experiment' and includes tabs for Questionnaire, Metrics, Preview, Documents, and Settings. The 'Questionnaire' tab is active, showing a 'Current Phase' dropdown set to 'Before Submitting the Proposal' and a list of 'Chapters' (I-VII). Chapter IV, 'Processing data', is selected and expanded, showing a question: '1 a. No, participants in the project each have different collections of data and tools'. The question has two radio button options: 'a. No, participants in the project each have different collections of data and tools' (unselected) and 'b. Yes' (selected). The question is marked as 'Desirable: Before Submitting the Proposal' and has '1 comment'. Below the question, there are tags for 'Horizon 2020 DMP', 'Horizon Europe DMP', and 'Science Europe DMP'. A comment by Albert Einstein is visible, dated 9:38, with the text: 'Will this work space be run by dedicated specialists?'. The comment has two radio button options: 'Yes' (selected) and 'No' (unselected). The comment is marked as 'Desirable: Before Submitting the DMP'. The right sidebar shows a 'Version history' section with a toggle for 'Named versions only' and a list of versions for 'October 2022', including '4. 10.' with a 'Current' tag and '1.0.0'.

Machine-Actionable

FAIR: Findable,
Accessible,
Interoperable

- Automate as much as possible.
 - API and machine-readability for data and metadata.
- As much as possible read from metadata of the datasets, from infrastructure configuration, ...

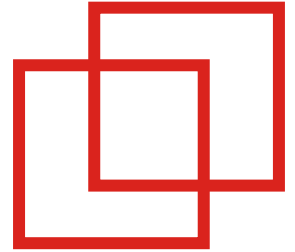


The screenshot displays an API documentation interface with the following sections:

- Document Templates:**
 - GET /document-templates/{documentTemplateId}
 - PUT /document-templates/{documentTemplateId}
 - GET /document-templates/{documentTemplateId}/bundle
 - POST /document-templates/{documentTemplateId}/pull
- Document:**
 - GET /documents
 - POST /documents
 - DELETE /documents/{docUuid}
 - GET /documents/{docUuid}/available-submission-services
 - GET /documents/{docUuid}/download
- Parameters:** A table for the /documents/{docUuid}/download endpoint:

Name	Description
Authorization <small>string (header)</small>	Authorization
Host <small>string (header)</small>	Host
docUuid * required <small>string(\$uuid) (path)</small>	docUuid
- Responses:** A table for the /documents/{docUuid}/download endpoint:

Code	Description
200	Example Value Model <pre>{ "contentType": "text/plain", "url": "http://example.com/temporary-file-1" }</pre>
400	Invalid <code>docUuid</code> or <code>Host</code> or <code>Authorization</code>
- Documnet Submission:**
 - GET /documents/{docUuid}/submissions
 - POST /documents/{docUuid}/submissions
- Domain:**
 - GET /domains
- Feedback:**



Persistent Identifiers

identifikatory.cz

Persistent Identifiers



Home / Persistent Identifiers

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



NTK <small>50°14.083'N, 14°23.26.365'E Mánesův technická knihovna National Library of Technology</small>	 Persistent Identifiers ORCID iD for researchers DOI for objects	Services National ORCID Centre FAQs – ORCID	About us News
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<https://identifikatory.cz/en/>

Support Work with Licenses

- Templates of **deposition licenses** governing the rules for upload of datasets to repositories.
- **License chooser** for users' datasets on upload.
- Framework for dataset's **license-based access control** to dataset with limited access.
- **Integration and machine actionability**.
 - Connection to data management, access control, ...

Choose a License

Answer the questions or use the search to find the license you want

[Start again](#) [←](#) [→](#)



Is your data within the scope of copyright and related rights?

[Yes](#) [No](#)

Search for a license...



Public Domain Dedication (CC Zero)

CC Zero enables scientists, educators, artists and other creators and owners of copyright- or database-protected content to waive those interests in their works and thereby place them as completely as possible in the public domain, so that others may freely build upon, enhance and reuse the works for any purposes without restriction under copyright or database law.

[Publicly Available](#)   [OPEN DATA](#)

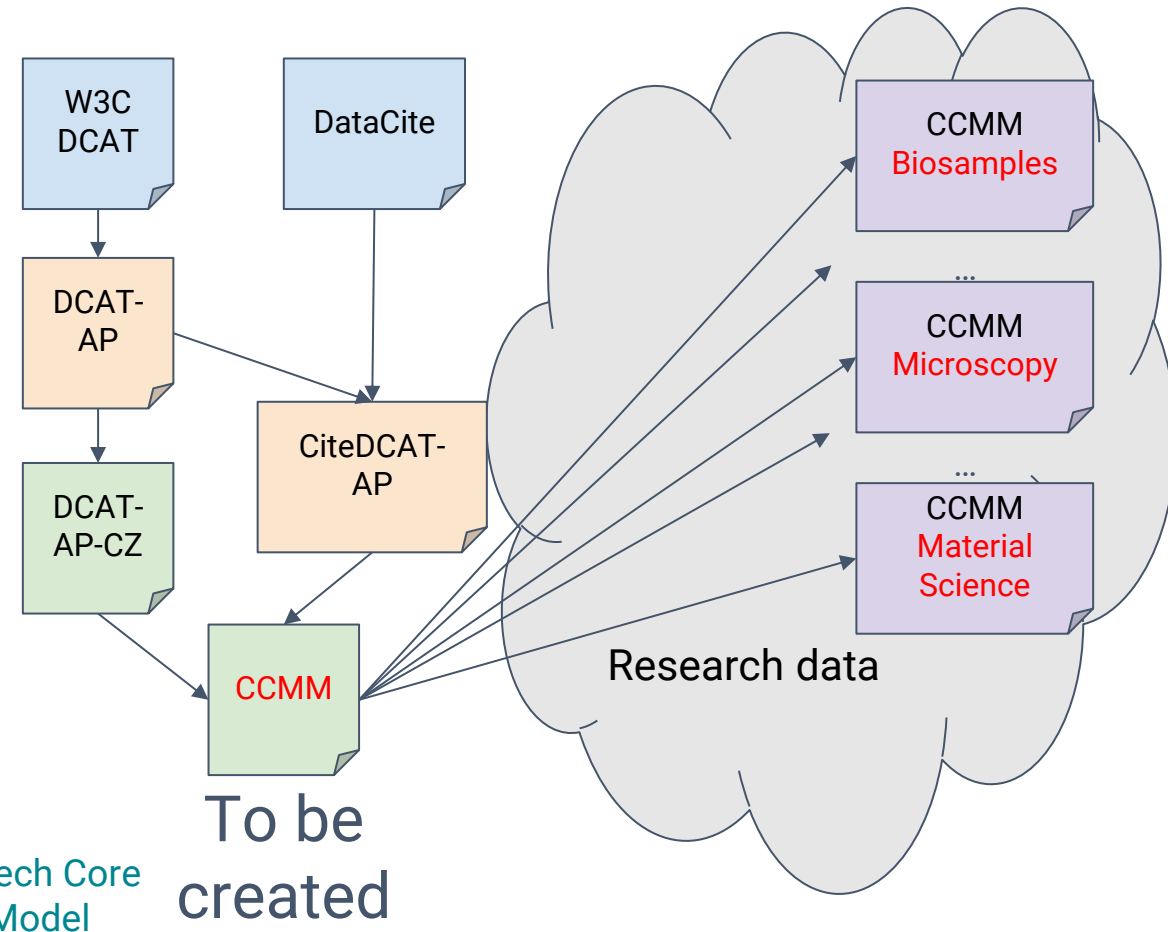
Creative Commons Attribution (CC-BY)

This is the standard creative commons license that gives others maximum freedom to do what they want with your work.

[Publicly Available](#)   [OPEN DATA](#)

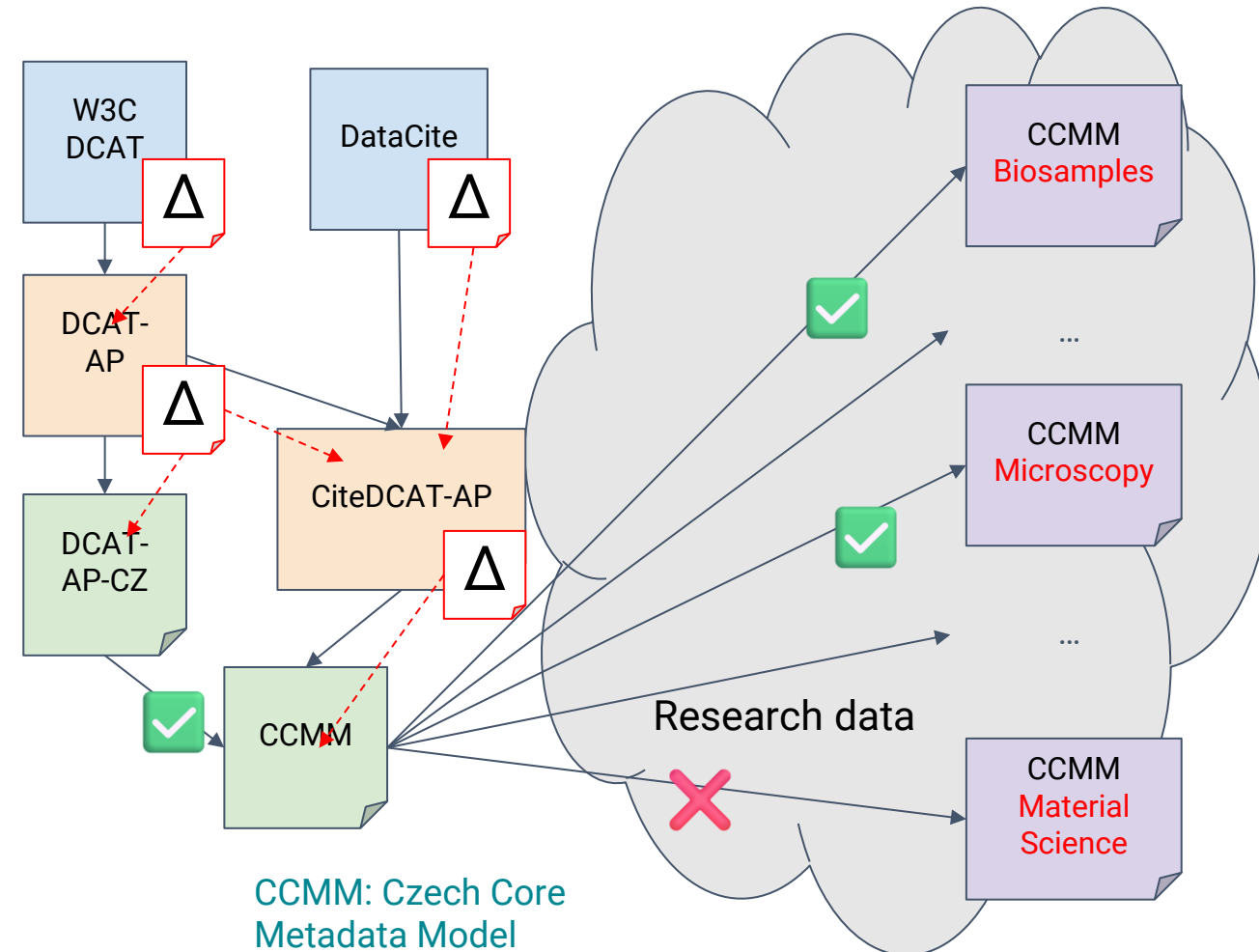
Managing Metadata Profiles in NRP

- <https://dataspecer.com/>
- Research data metadata profiles:
 - What happens, when
 - DCAT v2 → DCAT v3?
 - DCAT-AP v2.1.1 → DCAT-AP 3.0.1?
 - DataCite 4.4 → DataCite 4.5?
- We want changes to be propagated automatically.

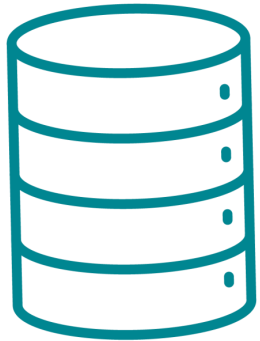


Managing Metadata Profiles in NRP

- <https://dataspecer.com/>
- But also
 - profile compliance validation (✓ ✗),
 - description of changes in specifications (Δ),
 - change propagation mechanism (----->),
 - implementation in tools.



NDI Outputs: Summary



Storage capacities



Tools and services



Computing capacities

Useful Links and Contacts

[EOSC CZ Website](#)



[EOSC CZ Newsletter](#)



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



@EOSC Czech Republic



@eosccz.bsky.social

Thank you for your attention

E: ruzicka@ics.muni.cz

E: info@eosc.cz W: www.eosc.cz/en



Source: Communicate_communication_conference_2028004 by OpenClipart-Vectors from Pixabay



Spolufinancováno
Evropskou unií



MINISTERSTVO ŠKOLSTVÍ,
MLÁDEŽE A TĚLOVÝCHOVY

MUNI
ICS

cesnet
.....

VŠB TECHNICKÁ
UNIVERZITA
OSTRAVA

IT4INNOVATIONS
NÁRODNÍ SUPERPOČÍTAČOVÉ
CENTRUM