

Data Matters – and Data Matter



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The world is changing

Modern research has undergone significant changes in recent years, driven by technological, cultural, and policy shifts

- Interdisciplinary collaboration
- Transparent and reproducible research → open science
- Data-intensive research
- New skills are necessary!
 - European Competence Framework for Researchers ([ResearchComp](#))





Advancing data skills

Why now?

- Data are central to modern research across disciplines
- Improving research quality and reproducibility
- Research funders and journals require data transparency
- We have the means
 - New technologies
 - Financial investment



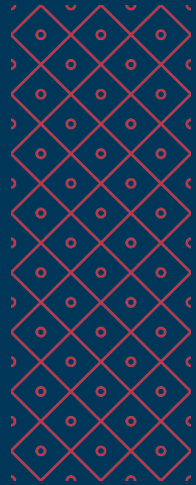
Advancing data skills

Challenges

- Increasing use of big data and complex datasets
- Effective use of new tools and technologies

What do researchers need?

- New skills
- Institutional support



Identifying new skills



Basic skills

- Relevant across research disciplines
- Required skill level might differ individually
- European Competence Framework for Researchers ([ResearchComp](#))
 - Research data management
 - FAIR data
 - Intellectual property rights
 - Research ethics and integrity principles
 - Artificial Intelligence

Individual needs

- Depending on individual researcher's needs
- Covering different aspects of data life-cycle
 - Survey design
 - Electronic laboratory notebooks (ELN)
 - Statistics, data visualisation
 - Programming, machine learning
 - High performance computing
 - Ethics, anonymisation



What could an institution do?

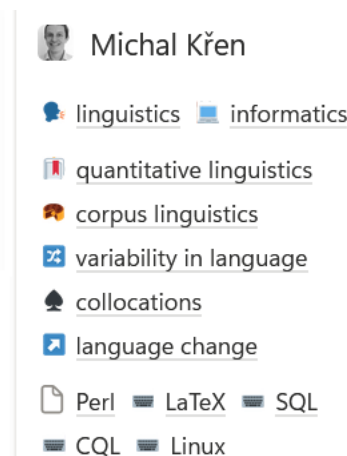
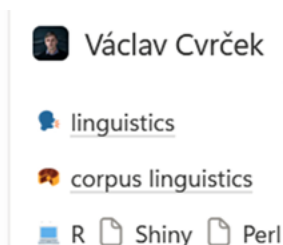
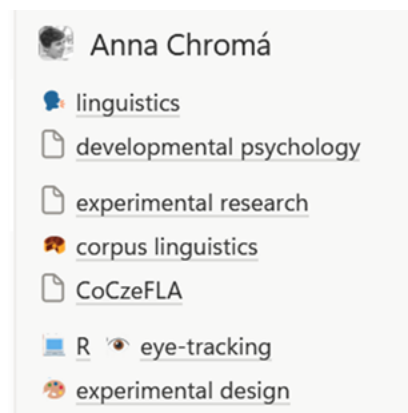
Provide training opportunities

- Utilise existing competence frameworks
- Identify individual needs
- Support the creation of new courses
- Provide trainings



Foster peer communities

- Peer support
- Knowledge exchange





Targetting training

Students

- BA, MA courses
- Research integrity training

Early career researchers

- PhD hub, Postdoc hub
- Central support for basic skills

Senior researchers

- New methods and tools in their field
- Lack of long-term structured courses

Doctoral Study Hub



Managing research



Working with others



Making an impact



Managing research tools



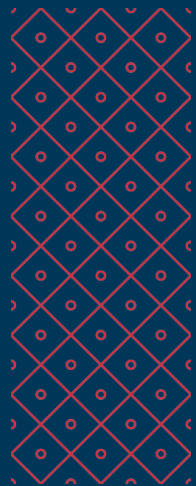
Self-management



Doing research



Cognitive abilities



Institutional support



Supporting researchers

- Researchers are busy **x** there is a lot to take in at once
- They are experts in their respective fields
- Need for trained support staff **x** researchers know their data best
- Central point of contact for help
- Facilitate access to tools and infrastructure
- Clear policies and guidelines



Open science support centre

- Central contact point
- Providing generic support to researchers on the central level
- Supporting the support at faculties
- Website – easily findable source of relevant information
- Ensuring researchers get access to infrastructure and support



Data stewards

Administrative role

- Generic advisory role
- Developing institutional policies
- Ensuring infrastructure and support are in place
- Building bridges between researchers and support services
- Designing and providing generic training

Research role

- Part of a research team
- Direct support to researchers
- Field specific knowledge
- Tailored advice and training
- Setting up workflows in the lab
- Developing a DMP



Data stewards



Institution

Faculty

Department

Research team

Generic and
advisory role

Field specific
knowledge and
hands-on support



...and where to find them

Czech community of data stewards

- 250+ members across institutions in Czechia
- Institutional DS, research team DS, people interested in RDM

[Map of data stewards in the Czech Republic](#)



Research software engineering

Researchers are experts in their field, they don't need to be expert programmers too

RSE support

- Accessing high performance computing, optimizing code
- Developing software for research
- Creating automated pipelines
- Training for researchers
- Help researchers articulate technical requirements for grant proposals



Ethics & legal issues

Ethics

- Research Ethics Committee
- Consulting and reviewing ethical aspects of research proposals
- Promoting research integrity

Legal support

- GDPR and legal compliance
- Intellectual property rights, copyright
- Data sharing agreements

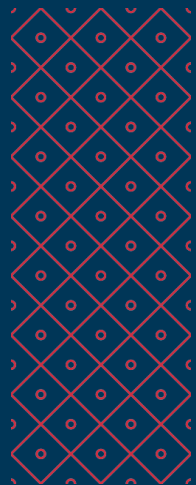


Guidelines and policies

Institutional research data policy

- Sets clear expectations of both researchers and the institution
- Provides guidelines for researchers
- Helps the institution plan further development
- Basic principles **x** NOT prescribing particular tools





Summary

**Data skills are crucial for
modern research**

**Researchers need both
skills and
institutional support**



Thank you



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