CESAER

conference of european schools
for advanced engineering education
and research

Digital / data skills at engineering universities

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CESAER vision and mission

- To be the main European point of reference for engineering education, research and innovation

- Serving as a network for mutual learning of universities of technology committed to excellence

- Contributing to European developments by dialogue with EU institutions

- Inspiring reflections and fostering understanding of the role of engineering in modern knowledge-based societies supporting sustainable development.

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CESAER and skills for data and e-infra

Task Force **'Openness of Science and Technology'** works on:

Open science: The focus is on Research Data Management (RDM), advancement of the European Open Science Cloud (EOSC), FAIR Data and Open access.

Knowledge safety and security: Taking no measure would be naive. We need to prevent too many and the wrong measures which would reduce scientific integrity, academic freedom and institutional autonomy

Citizen science: This task force explores effective two-way engagement (outreach and engagement) between our Members and society at large.

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In 2019, TU Delft library and the Faculty Data Stewards drafted and started implementing a '*Vision for Research Data and Software Management training*' based on seven principles (five are listed here)

https://doi.org/10.5281/zenodo.3516874

TUDelft

1. Data and software management training should be built upon the existing courses were possible
2. New courses are also necessary to deal with the fast-changing demand in research data and software management
3. Researchers should receive the proper incentives to take part and contribute to the training.
4. The library and graduate schools should continuously engage in consultation processes with PhD students and researchers
5. All material produced for the courses described in this vision will be published and made available under a Creative Commons – Attribution License (CC-BY 4.0)

Training program – Research Data & Software Management

https://www.tudelft.nl/en/library/research-data-management/r/training-events/training-for-researchers
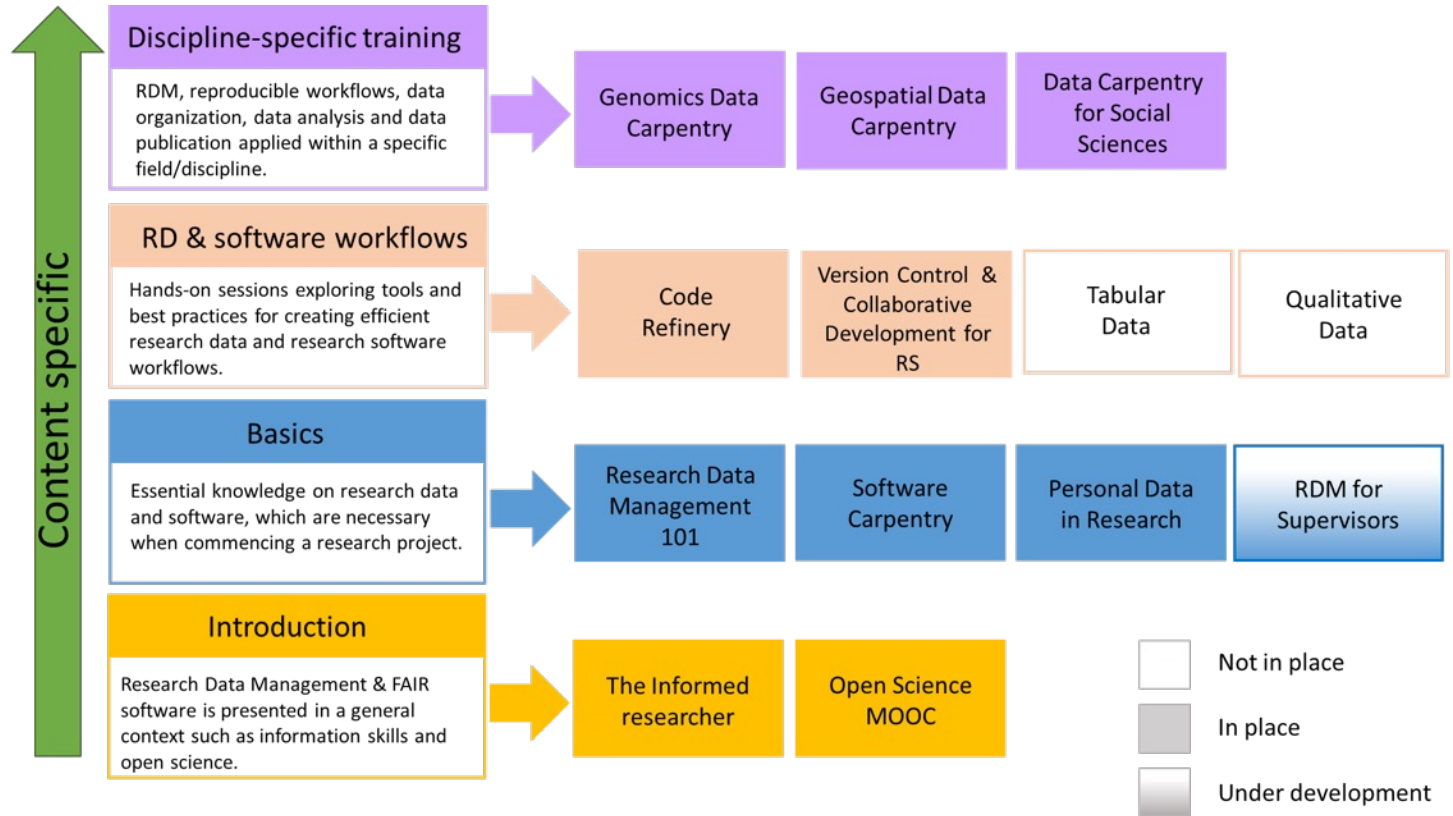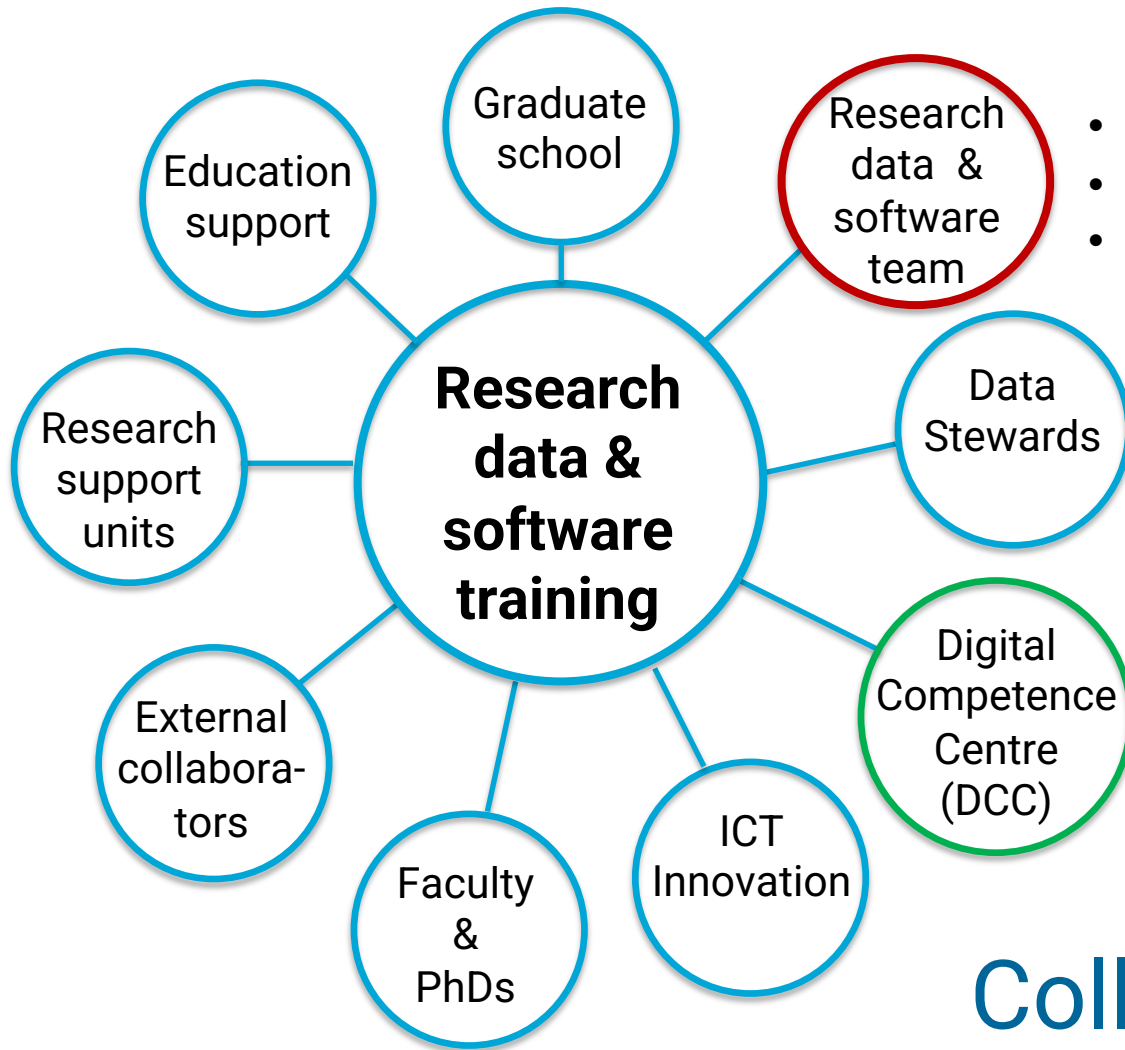
- **Creation**
- **Provision**
- **Coordination**

Collaborative effort

Research Data Management 101 (basics)

- RDM101 is a blended three-week course aimed at first-year PhD candidates (one meeting per week)

- After taking this course, participants should be able to:
  - Realise the importance of **good data management** for research
  - Identify different **data types** relevant for their projects
  - Recognise the **relevant regulations, policies, and legal requirements** for their data
  - List the main components of the **FAIR data** principles
  - Connect the FAIR data principles to their **own research workflow**
  - Use what they learned to design an efficient **RDM strategy**

Faculty Data Stewards

They contribute to central training according to the skills needed by researchers at their faculty and/or to their interests

They teach and help in software carpentry, data carpentry for social sciences, genomic data carpentry, CodeRefinery, Version control and collaborative software development.

They were the initiators of the software carpentry workshops and recommended to become members of The Carpentries.

Seven of them are certified instructors of The Carpentries (soon to be eight)

They encouraged the library to organise Data Carpentry for Social Sciences workshops (an LDEV collaboration)
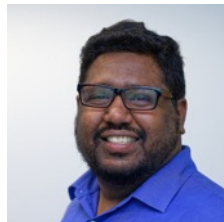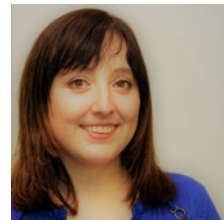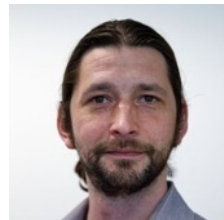
Digital Competence center (DCC)

They contribute to central training related to Research Software in voluntary basis. It is not well defined how much of their time should be dedicated to the central training.

They teach and/or help in software carpentry, CodeRefinery and Version control and collaborative software development
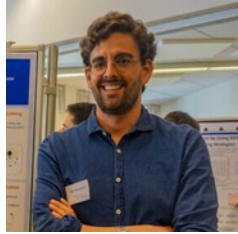
They were the initiators of the FAIR4RS mentoring programme in connection with the CodeRefinery workshops

Six of them are certified instructors of The Carpentries

They have recently updated the module on 'Making your research software FAIR' within the OS MOOC
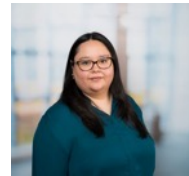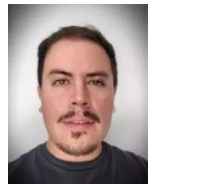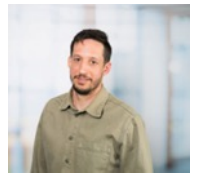
Research Data Management and digital skills trainers

Trainers

Training assistant

Educational advisor

Coordinator

TUDelft

Skills4EOSC

- Aims to **Map career profiles related to Open Science** and define, through co-creation the "**Minimum Viable Skillset**" (MVS) for each of them. One of the **Career Profiles** that is being focused on is **Data Stewards.**

- One of the project tasks is to develop a **European training curriculum for Data Stewards** that is based on the minimum viable skillset.

- The curriculum will focus on entry level Data Stewards (or other professionals who carry out data stewardship within their organisation i.e. data curators, data librarian, data managers, RDM coordinators).

- The final curriculum as well as material that will help trainers to use the curriculum will be available by the Summer of 2025.

The final The Minimum Viable Skillset for Data Stewards based on consultation can be found at Zenodo: https://zenodo.org/records/8101903

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Some conclusions

- The awareness of the need for data and digital skills is emerging but needs to be stimulated.
- These are new and partly discipline specific skills, so basis training (Minimal Viable Skillset) as well-advanced knowledge (data stewards) are important.
- Collaboration of all data/software support units in the provision of training allows scalability and sustainability of training. It is relevant that training provision is part of the roles.
- The data stewards from organisations can jointly form a 'Data Competence Centre' (local or thematic)
- Linking 'Data Competence Centres' in countries and across countries strengthens the back-bone
- In CESAER the research data management people form a network through the TF **'Openness of Science and Technology'**

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