Constructing tomorrow with data

NFDI4ING
Research data management
in engineering sciences

NFDI4ING Conference 2025

September 15th + 16th 2025
[Lunch to lunch]

Georg-Christoph-Lichtenberg-Haus
Technical University of Darmstadt

Welcome to Darmstadt!

The NFDI4ING Conference 2025 will take place as an on-site event for the first time since the start of NFDI4ING, offering an opportunity to connect, collaborate, and exchange ideas in person. We are excited to invite you to Darmstadt on 15 and 16 September, 2025.

The conference is aimed at researchers as well as contributors to NFDI consortia who have close links to the engineering sciences (i.e. are active in DFG subject areas 41-45).

The conference programme features panels and round tables. It is designed to provide a forum for discussing plans for the second funding period of NFDI4ING and to help deepen the cross-consortia and community dialog. The aim of the conference is to jointly develop solutions in key topics, e.g. on data literacy in the engineering curriculum, FAIR industry applications or federated infrastructures for FAIR digital objects, data products and knowledge graphs. Guests from Germany and abroad as well as industry representatives will be specifically included in the dialog. We welcome your contributions!

Agenda NFDI4ING Conference 2025

Monday, 15.09.25

11:30 **Registration & Lunch**
[Georg-Christoph-Lichtenberg-Haus, Dieburger Straße 241, Darmstadt]

13:00 **Opening Session: FAIR digital objects, data products and digital twins** [Hall]

[coffee]

15:00 **Parallel sessions**

Policies for best practice – RFCs & Subject-specific DFG recommendations [Hall]

[coffee]

Federated infrastructure, data meshes and knowledge graphs [Library]

17:00 **Parallel sessions**

FAIR4AI – AI4FAIR
[Hall]

Research data management for the built environment [Library]

20:00 **Keynote & Dinner**
[Weststadt Bar, Mainzer Straße 106, Darmstadt]

Agenda NFDI4ING Conference 2025

Tuesday, 16.09.25

8:45 **Welcome**
[Georg-Christoph-Lichtenberg-Haus, Dieburger Straße 241, Darmstadt]

9:00 **Parallel sessions**

Data literacy in the engineering curriculum
[Hall]

FAIR industry applications
[Library]

[coffee]

11:00 **Poster Session**
Closing Session: Prospects for NFDI4ING 2.0
[Hall]

12:30 **Lunch**
[Library]

14:00 **Round tour: Park Rosenhöhe, UNESCO World Heritage Site Mathildenhöhe Darmstadt**
[End ca. 16:00 at Georg-Christoph-Lichtenberg-Haus]

Registration & call for contributions

The event is designed as a “lunch-to-lunch” format from 15 to 16 September 2025 at Georg-Christoph-Lichtenberg-Haus in Darmstadt, with a conference dinner on the first evening. The registration and call for contributions is open until August 31st. The registration fee includes lunch on both days and the dinner. Please note that the room contingents are available only until August 18th.

Registration and abstract submission:

https://nfdi4ing.de/conference_2025/#participate

We look forward to welcoming you in person in Darmstadt in September.

Session description

[Opening Session] **FAIR Digital Objects, Data Products and Digital Twins**

Scientists and engineers who document their research processes comprehensively and transparently produce large amounts of heterogeneous data. Interdisciplinary research on complex designs, production processes or product chains also deal with heterogeneous and compound data artifacts. This poses challenges regarding data re-use, AI integration, automation of research processes and efficient research practice.

This necessitates simultaneous consideration not only of the interoperability of data, metadata and research tools, but also compliance with standardised data governance rules and data curation guidelines. FAIR Digital Objects, Data Products and Digital Twins offer solutions, though these concepts, advanced as they may be, require further adaptation and tailoring to the specific requirements of the engineering community.

Target Audience:

Contributors and communities of NFDI engineering consortia

Expected Contributions:

Modular standards, technical solutions and governance examples fostering interoperability and integration

[Panel Discussion] **Policies for best practice – RFCs & subject-specific DFG recommendations**

Currently, there are no subject-specific DFG recommendations for research data management in the engineering sciences, with the exception of "Materials Science“. As knowledge and experience of RDM grow in engineering sub-disciplines, as do the number of RDM services and standards. Governance instruments and quality assurance of data management have to grow equally. Data management policies and recommendations are means of influencing the development, but need to be tailored to the specific needs of the respective sub-disciplines. This session provides a platform for communities and funding organisations to discuss subject-specific recommendations and how they relate to other policy initiatives.

Target Audience:

DFG Review Board members Engineering sciences, Contributors and communities of NFDI engineering consortia

Expected Contributions:

Policy related concepts and governance practices, domain specific recommendations, views of communities and funding organisations on regulations and recommendations

[Round table] **Federated infrastructure, Data Meshes and knowledge graphs**

In current concepts such as Data Meshes, Data Products or Tim Berners-Lee's Solid Project, the aim is to build a decentralised but federated data infrastructure. How can such concepts help to relate research data from different fields or NFDI consortia? How can they foster the goal of „One NFDI" and connect knowledge graphs and storage infrastructure of different consortia and institutions? What unites and distinguishes these concepts and what suits our goals regarding FAIR research data and its costs and value?

Target Audience:

NFDI service providers, including Base4NFDI contributers, contributors and communities of NFDI engineering consortia

Expected Contributions:

Ideas, examples and domain specific solutions for federated infrastructures in NFDI and NFDI consortia

[Panel Discussion] **FAIR4AI – AI4FAIR**

FAIR principles stress that data and metadata are readable and accessible for both humans and machines. Rapidly developing AI tools such as LLMs are the potential consumers of such data, relying on their quality and FAIRness in order to produce reasonable results as newly emphasized by the DFG fund “Data Corpora for Artificial Intelligence (AI)” and the evaluation report of the NFDI. Linked and semantically augmented research data could enable reasoning across disciplinary boundaries. AI could, moreover, actively support researchers and industry with their data management workflows as well as with data curation, retro-digitisation and tagging. The roundtable aims to provide space for a discussion towards a common strategy for the development of AI solutions within the consortia related to engineering sciences.

Target Audience:

AI developers, contributors and communities of NFDI engineering consortia

Expected Contributions:

Copilots for NFDI services, AI augmented search solutions and AI applications in need of research data

[Round table] **Research data management for the built environment**

Understanding and designing the built environment requires a plethora of actors: While it is studied by civil engineers, architects, art historians, archaeologists and conservators, industry and society also play a crucial role. Simultaneously, some of the biggest challenges of our time, such as climate change adaptation and mitigation, the housing crisis and infrastructure resilience, relate to the built environment and can only be addressed through interdisciplinary cooperation. This necessitates common data and metadata standards as well as cross-consortial exchange within the NFDI. This roundtable session will provide a platform for addressing these challenges by zooming in on the topic of standardisation, while including perspectives from various NFDI consortia. Moreover, the role of data for sustainable development will be discussed.

Target Audience:

Contributors and communities of NFDI engineering consortia, particularly NFDI4Culture & NFDI4Objects, researchers from Excellence Clusters, Collaborative Research Centres (CRC/SFB) and Transregios (TRR)

Expected Contributions:

Cross consortial standards and transfer e.g. BIM and hBIM, perspectives on built environment and collaboration from NFDI Consortia and initiatives and the role of data for sustainable development

Poster Session

The poster session is open for all kind of contributions. You can present ideas and examples to be picked up in the second funding period in archetypes, overarching solutions or outreach.

Target Audience:

All guests and NFDI4ING contributors

Expected Contributions:

Services, new developments and updates for the next founding period of NFDI4ING

[Panel Discussion] **Data literacy in the engineering curriculum**

Data competency right from the start! Adequate research data management and modern scientific methods place high demands on data literacy. NFDI4ING fosters the incorporation of data literacy in engineering curricula as early as possible and supports engineering scientists in acquiring RDM skills throughout their careers with various services and formats. This session is dedicated to innovative approaches & concepts, lessons learned and best-practice to teach data literacy.

Target Audience:

Deans of studies, education and training providers within NFDI consortia, data stewards and local institutions

Expected Contributions:

Research data services in teaching, experiences and suggestions for best practice, examples of examination regulations and curricula, platforms and infrastructure for learning materials

[Round table] **FAIR industry applications**

Can academia and industry learn from one-another how to manage data well? Research data management requires technical solutions, infrastructure and methods that are not dissimilar from those envisioned by concepts as Industry 4.0, Digital Twins, Digital Product Passport, and Data Meshes. This session is dedicated to discussing the potential of a coordinated development that saves resources and facilitates cooperation in research. Contributions on relevant concepts, applications, use-cases and best-practices are welcome.

Target Audience:

Industry partners, personnel of regulatory bodies, contributors and communities of NFDI engineering consortia

Expected Contributions:

Examples for collaboration, technology transfer and data needs for research

[Concluding session] **Prospects for NFDI4ING 2.0**

To conclude the conference, this session will address the following questions:

- What awaits the NFDI4ING in the second funding period?
- How will NFDI4ING interact with the other NFDIconsortia, BASE4NFDI, NFDI sections, and EOSC?
- What have we learned in our sessions and how can we integrate it into the program of NFDI4ING 2.0?

Target Audience:

All guests, contributors and communities of NFDI engineering consortia

Expected Contributions:

Perspectives for the future of NFDI4ING from communities, partner consortia, NFDI e.V. and contributors of NFDI4ING