



DISCIPLINARY CASE STUDY: DATA MANAGEMENT SUPPORT AT TU DELFT

Research Data Management (RDM) support for the design, engineering and technical sciences at TU Delft, the Netherlands.

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1 Introduction

Which discipline is the focus? The focus of data management support at the Delft University of Technology (TU Delft) is on disciplines in design, engineering and technical sciences. This includes both the data management during the active research phase and routes for data publishing as the research closes.

What questions do researchers ask? Only around 25% of researchers at TU Delft have heard of the FAIR principles, and researchers initially need help with data management plans and paragraphs (for funding proposals). However, this often develops into requests on how to create FAIR datasets in an easy and relevant way. This means, for example, creating datasets that have sufficient metadata, a persistent identifier, and a suitable license which can be different for each discipline on campus.

In the context of FAIR, achieving findability and accessibility for datasets is already a big leap forward for some research communities, such as our faculty of Architecture and Built Environment. Others are considering questions of how to improve reproducibility and re-usability in an easy and relevant way. of their data output (e.g. in Civil Engineering and Geosciences). A survey of data management needs was undertaken in 2017.¹

Which services or types of support do they expect? Detailed advice: best-practice examples, existing standards for metadata, how to get persistent links, and how to compose useful documentation about their research output in data form. If there are more complex questions, our data stewards forward these questions to the relevant expertise around the university (e.g., legal services). Questions about publishing data are usually handled by the data archive: the 4TU.Centre for Research Data.²

Institutional Services

What types of discipline-focused services are offered by TU Delft? The library hosts a dedicated research data support service, which includes the data archive 4TU.Centre for Research Data and support staff to help with research data management.

4TU.ResearchData is open not only to Delft researchers but any scientist who wishes to publish their data.³ The data archive staff will also help with providing metadata, in order to create a FAIR-compliant dataset.



1. <https://openworking.wordpress.com/2018/02/07/do-as-you-preach-results-of-2017-data-management-survey-now-published>
2. <https://data.4tu.nl>
3. <https://researchdata.4tu.nl/en/publishing-research/uploading-data>



To provide further disciplinary support, every faculty is equipped with an embedded Data Steward⁴. These Data Stewards provide the faculties with subject specific knowledge. By providing both central and local data support, we ensure a balance between expertise in data management and archiving with methodological knowledge of discipline-specific subjects.

Is this activity included in the library's annual plan? Yes. More broadly, setting up FAIR data guidance is part of the implementation of the research data framework policy (which requests all data is published according to FAIR guidelines).

2 Needs Assessment

What are the main needs and challenges in terms of RDM support? TU Delft participates in the Open Science Task Force of the conference of European schools for advanced engineering education and research (CESAER).⁵ Together with colleagues across Europe, researchers from technical and engineering sciences were interviewed about their FAIR data habits.⁶

The following summaries are drawn from interviews with three disciplines at TU Delft: Aerospace Engineering, Technology, Policy and Management, and Industrial Design.

On Findability: Usually data is found via its reference in a publication, if there is no data with the publication, it may not be easy to find. However, sharing data via project websites does sometimes occur.

On Accessibility: The accessibility of the findable data is strongly related to the infrastructure by a project (e.g. publisher's database of datasets; a project's own database or a project website). The accessed data usually is not explicitly assigned to a specific author or any usage license

On Interoperability: None of the interviewed research communities at TU Delft commonly use ontologies, controlled vocabularies, or universally agreed parameters. Moreover, the metadata and other information are created by default in the tool used.

On Reusability: The publication-related data published on official platforms are equipped with metadata and licenses in relation to the publication. Other than that no community standards are applied to enable universal re-use

What additional needs and gaps have been identified?

A finding of these interviews was that there is need for discipline-specific guidance. Achieving even the high-level principles of FAIR data for every single community is already a huge challenge, never mind the detailed implementation of every sub-facet of each principle.

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Providing discipline-specific interpretation and guidance on how to increase the data FAIRness for each research discipline at TU Delft is a key priority for the upcoming years.

⁴. <https://www.tudelft.nl/en/library/current-topics/research-data-management/research-data-management/data-stewardship>

⁵. <https://www.cesaer.org/task-forces/task-force?id=34>

⁶. <https://rdm.engineering>



3 Policy Context

Is there a data policy in place at the faculty or research group level? The TU Delft Research Data Framework Policy⁷ was published in 2018. The framework policy contains a clarification of roles and responsibilities regarding research data management at the university and faculty levels. The Framework requires that all researchers make their data available according to the FAIR principles.

Is there any disciplinary policy in place (e.g., from a research funder, scholarly society or e-Infrastructure)? The Framework Policy requests that each faculty develops its own research data policy.

Which general policies play a role? The research data policy framework directly references the FAIR data principles and states that all data must be made available according to these principles. The policy does not explicitly mention EU or other funder policies but their existence greatly helps with advocacy.

4 Implementation of Data Management

What data and support services are currently tailored to disciplines, and who provides these services? 4TU.ResearchData provides support for publishing data from any format. It also provides specific functionality for researchers using the NetCDF format⁸ - a format for numerical data in three dimensions (e.g. charting the movement of an ash cloud). This helps researchers in the meteorology, geosciences, amongst other disciplines. The university's IT department also provides tools, services and infrastructure for active research data tailored to disciplines.

Is there a strategy or work plan in place to sustain or expand these activities? The 4TU.ResearchData, the Data Stewards project and the centralised library support are all ongoing pieces of work. They are also embedded in a larger Open Science programme at TU Delft.

How do these link up to disciplinary infrastructures at the national/international level? 4TU.ResearchData is part of RDNL (Research Data Netherlands): an alliance of the three major data archives in the Netherlands.⁹ It also contributes to the National Platform for Open Science¹⁰, the National Coordination Point for Research Data¹¹, and the CESAER task force on Open Science.

This case study was carried out by LIBER's Research Data Management Working Group¹².

⁷ <https://openworking.wordpress.com/2018/05/08/draft-working-version-of-tu-delft-research-data-framework-policy>

⁸ <https://researchdata.4tu.nl/en/publishing-research/data-description-and-formats>

⁹ <https://researchdata.nl/en>

¹⁰ <https://www.openscience.nl/en/national-platform-open-science>

¹¹ <https://www.lcrdm.nl/en>

¹² <https://libereurope.eu/strategy/research-infrastructures/rdm>