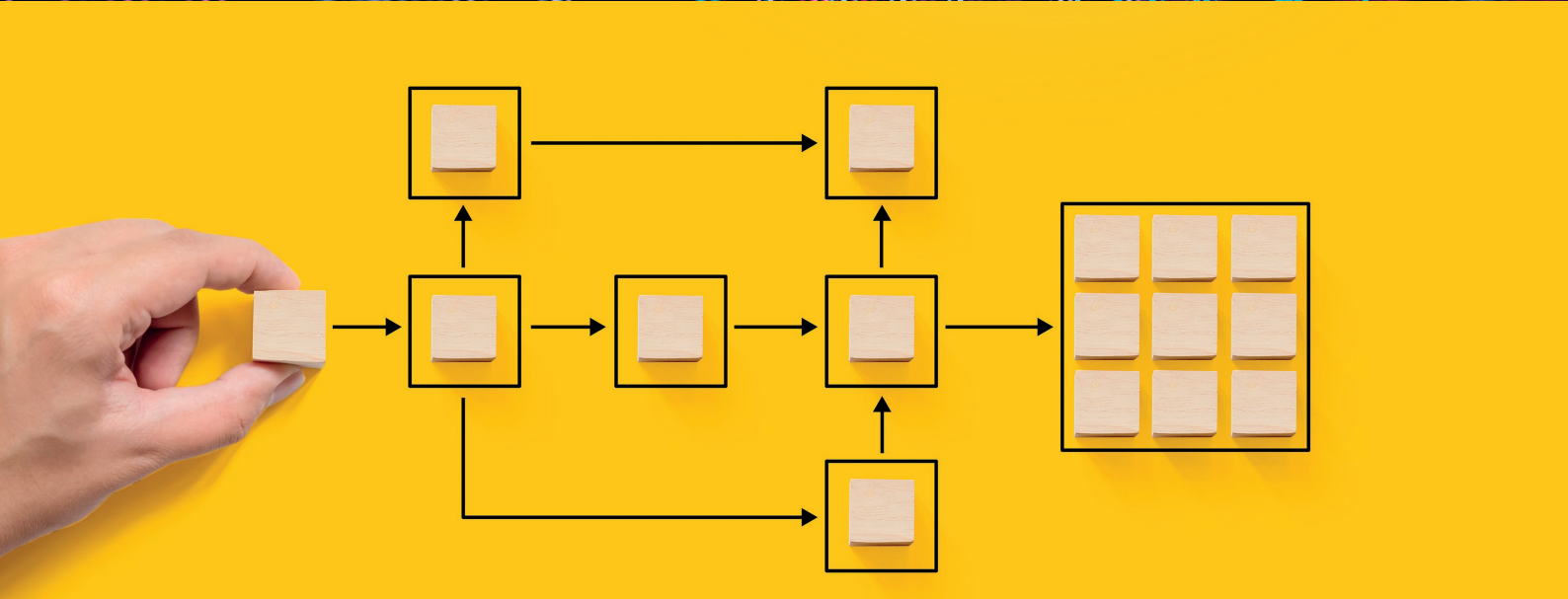# Navigating FAIR Waters: A Journey of Transformation for Radboud University's Data Repository

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## Support action:

FAIRness Assessment Challenge. During the 3 month challenge participants took part in three virtual workshops to self-assess and incrementally improve the FAIRness of their selected outputs. During the support action, participants benefited from interacting with a group of mentors representing the various FAIRness assessment tools and methods.

## Keywords:

FDMM, F-UJI, institutional research data repository

## Summary:

A team from Radboud University's Research Data Repository used FDMM and F-UJI to assess the FAIRness of their service and as a starting point to create an action plan to improve it.

# Introduction

The FAIRness Assessment Challenge appeared to us as an ideal opportunity to improve the FAIRness of Radboud University's (Nijmegen, the Netherlands) institutional research data repository: the Radboud Data Repository (RDR; https://data.ru.nl/). As the central data steward and product owner, the goal was clear: to integrate FAIR-enabling features into the repository for improved discoverability, accessibility, interoperability and reusability of the research data we host. The tools we chose to use, FAIR Data Maturity Model (FDMM)[1] and F-UJI[2], emerged as instrumental companions on this journey.

# Approach taken:

We selected two open access datasets from the RDR's collection for the assessment. We prioritised open access datasets as we consider it is more important to make those FAIR.

We got a moderate score for both datasets in F-UJI (62%). Findable (full score) and Accessible (moderate score) were good, Interoperable and Reusable appeared as less well developed, which makes sense because we are a generalist repository, and it is difficult to focus on the interoperability and reusability aspects. We got some feedback from the mentor on how to improve those aspects. Some points highlighted were that we need to complete the information in our metadata export via schema.org[3] in the html header of our dataset's landing page, and in our DataCite[4] metadata export, which we do by registering the DOI via DataCite.

Our FDMM results showed that for some metrics we were in the implementation phase, while others were "fully implemented" or "not being considered yet". The metrics that were in the implementation phase were a logical first step to improve upon.

# Challenges encountered and addressed:

FDMM posed some interpretation challenges: do I understand the metrics well enough to provide correct answers? Choosing between the possible answers to the metrics was hard at times - especially the distinction between "in the implementation phase" and "fully implemented". However, working with the mentor brought clarity to the metric nuances, helping to make the assessment an extremely useful exercise. The fact that FDMM is open to interpretation can actually be an advantage if the goal is to come up with a broader strategy to implement the FAIR principles. The idea of developing such a broad strategy resulted from an email exchange with the mentor about standards for metadata schemes, metadata exposure, vocabularies, etc. The mentor's insights on how to prioritise the standards were extremely valuable to me as a product owner of a data repository navigating a landscape with numerous standards, since the decision of which ones to choose or how to prioritise their implementation is not straightforward.

F-UJI, with its quantitative objectivity, was the perfect complement to FDMM. It allowed me to come up with very specific improvement steps. Yet it also brought challenges, mainly in understanding how exactly to format metadata so that F-UJI recognises them. For example, the way we provide a link to associated publications in our schema.org

1   FAIR Data Maturity Model Working Group. (2020). FAIR Data Maturity Model. Specification and Guidelines (1.0). Zenodo. https://doi.org/10.15497/rda00050
2   https://www.f-uji.net/
3   https://schema.org/
4   https://datacite.org/

metadata is using type PublicationEvent, which F-UJI did not recognise. We considered using "citation" instead, but F-UJI does not recognise that either. We learnt from the mentor that the solution was to use @reverse[5] isBasedOn. Aligning metadata formatting to the requirements would have been difficult to figure out without the direct line to the mentoring team.

Another issue we ran into when using F-UJI was that it did not test for the quality of the metadata. For example, there was a bug in the provenance information in the metadata in our system, with "date created" and "date published" entries being identical. However, F-UJI did not detect the issue as it only checks that we provide provenance information on dates, but not whether the information added makes sense.

The tool's binary pass-or-fail system, while effective, underscores the need for holistic assessment. We may expose our metadata well enough for F-UJI to recognize them, but there are things we could optimise (for example, by also exposing our metadata via OAI-PMH), which would not be reflected in the score. As a result, it is not easy to figure out what to prioritise based on F-UJI's output.

The lesson from this experience is the importance of diversity in tools. Because of the limitations and benefits of FDMM and F-UJI, it was very useful to combine the two methods to come up with an improvement plan.

# Impact:

While the support action did not immediately turn around daily practices, it did provide answers on what standards to select to make our repository's datasets more FAIR, and based on that we developed a well-defined action plan. Developers implemented an improvement of the schema.org metadata in the HTML header as well as the DataCite metadata, resulting in an improved F-UJI score of 75%. In the future, we want to expose the RDR's metadata via OAI-PMH and signposting.

Moreover, the support action has increased the collective knowledge within Radboud University's central data stewards' team on FAIR data, which enables the team to offer better support to researchers.

# Key message:

Use various tools and not just one. That helps to get a broader perspective and prevents you from spending a lot of time or energy on something small that may improve your FAIR score in one tool only but does not really make your dataset more FAIR.

Try not to reinvent the wheel. The support action was useful because we got to ask all our questions to experts in the field, but you can - albeit with some more time investment - learn about standards in a similar way by checking what others do. Find some "FAIR" datasets in a variety of repositories and check how they made their datasets FAIR.

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5    https://www.w3.org/wiki/WebSchemas/InverseProperties