



Robert Huber & Anusuriya Devaraju

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The bigger picture

In recent years, there has been a strong recommendation from funders, publishers, and research organizations on adopting the Findable, Accessible, Interoperable, and Reusable (FAIR) principles to maximize scientific data availability and reuse. However, measuring the FAIRness of research data in practice is challenging. The number of datasets has proliferated in scientific research, and new datasets are emerging from various sources. This paper aims to contribute to the FAIR data assessment through a set of core metrics elaborating the principles and an automated tool that supports FAIR evaluation based on the metrics. The metrics are built on established work and consider standard data practices. The tool development is collaborative and iterative. The consultative process has motivated the repositories to refine their data services. Further pilots are planned with the repositories in the European Open Science Cloud. The broader goal is to adapt the solution to assess other digital objects such as vocabularies and software.

Summary

With a rising number of scientific datasets published and the need to test their Findable, Accessible, Interoperable, and Reusable (FAIR) compliance repeatedly, data stakeholders have recognized the importance of an automated FAIR assessment. This paper presents a programmatic solution for assessing the FAIRness of research data. We describe the translation of the FAIR data principles into measurable metrics and the application of the metrics in evaluating FAIR compliance of research data through an open-source tool we developed. For each metric, we conceptualized and implemented practical tests drawn upon prevailing data curation and sharing practices, and the paper discusses their rationales. We demonstrate the work by evaluating multidisciplinary datasets from trustworthy repositories, followed by recommendations and improvements. We believe our experience in developing and applying the metrics in practice and the lessons we learned from it will provide helpful information to others developing similar approaches to assess different types of digital objects and services.



Keywords

[FAIR data principles](#) | [research objects](#) | [metrics](#) | [automated assessment](#) | [trustworthy digital repository](#) | [data reuse](#) | [data discovery](#)

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