

# **Radboud University Guidelines for Research Data Management**

**Established by the Executive Board on 11 July 2023**

## **1. Preamble**

Good research data management (RDM) is important for several reasons. To begin with, ensuring **research integrity** requires that research results are verifiable. This verifiability requires the findability and accessibility of research data.

Secondly, findable and accessible research data enable other researchers to reproduce or replicate research, where possible. This, in turn, contributes to the **quality** of scientific research.

Thirdly, the effective management of research data contributes to the potential of its **reuse**. Making research data findable, accessible and understandable to other researchers contributes to the possibility of using these research data again, in other research. This encourages the efficient and effective use of research resources.

The fourth reason why research data should be properly managed is that it improves the prospects for the **recognition and accountability** of research. Datasets are increasingly being recognised as stand-alone research outputs, and when properly archived and registered this information can be more adequately considered in the assessment and evaluation of research.

A fifth aspect of importance is **privacy**. The effective management of research data is necessary for ensuring that any privacy-sensitive information that is collected in the context of scientific research is adequately processed, stored and archived. In this respect, RDM also contributes to ethically responsible research.

Finally, there is also the fact that RDM is becoming more and more important in national and international research policy, and that research funding bodies and scientific journals are increasingly imposing requirements with respect to the archiving and accessibility of research data. This is another reason why the archiving and registration of research data needs to be organised properly.

## **2. Legal and policy frameworks**

These guidelines elaborate on, or supplement, the following legal and policy frameworks:

- Radboud University's general strategy on research and impact, and more specifically, its strategy on open science
- The Netherlands Code of Conduct for Research Integrity
- The General Data Protection Regulation (GDPR)
- Radboud University's Doctorate Regulations
- Radboud University's Knowledge Security Guidelines
- The requirements from research funding bodies and scientific journals with respect to research data management.

### **3. General principles for research data management at Radboud University**

The following general principles apply to research data management at Radboud University:

1. It is recommended that a data management plan (DMP) is written prior to any study in which research data are to be collected. In their RDM policies, research institutes are free to determine whether, and if so in which cases, a data management plan must be written. This potential obligation is then supplementary to the requirements of the research funding bodies with regard to Data Management Plans.
2. Research data that are collected and processed while research is being carried out should be stored at a facility that is adequate in terms of availability (the data may not inadvertently be lost), integrity (the data may not inadvertently be modified) and confidentiality (the data may not inadvertently be made available to unauthorised persons).
3. Research data should be archived as open as possible, as closed as necessary. The starting point is that research data should be made publicly available. The only reasons for deviating from this starting point include those that are necessary due to privacy, knowledge security, or other serious grounds. In their RDM policies, research institutes should specify the conditions for open or closed archiving of research data, if relevant.
4. Research data that pertain to scientific publications should meet both the findability and accessibility requirements. In the case of scientific publications that are based on research data, of which one or more Radboud University researchers are authors, it should be evident how the corresponding data can be found and the access management should be well-organised. These requirements should be met within as short a reasonable time as possible once the data collection has been completed, and no later than the moment that the first scientific publication that is based on the research data is available. Further explanation of this has been provided in Appendix 1.
5. The minimum retention period for research data that is required for checking or verifying scientific publications is ten years from the time that the scientific publication is available.

### **4. Systems and support for research data**

Radboud University provides systems and support for the processing, storage, archiving, publishing and registration of research data. Research institutes are free to make choices about the systems that they use to manage their research data, as long as these systems allow them to comply with the present guidelines.

Radboud University provides researchers with support, knowledge and advice on research data management.

### **5. Responsibilities of the research institutes**

Each research institute at Radboud University has its own research data management policy. The research institute's RDM policy is a further elaboration of the present guidelines, which is consistent with the research areas in which the research institute is involved.

The researcher and the project manager are primarily responsible for the effective management of research data, and consequently adhere to the policy of the research institute and, in the case of PhD research, the Doctorate Regulations. The Director of Research is responsible for the

development, establishment and possible modification of the research institute's RDM policy, and for ensuring its implementation and compliance.

Each research institute has one or more data stewards. Data stewards advise researchers and the research institute's board on research data management and the implementation of and compliance with the research institute's RDM policy. They also inform researchers about the facilities that are available for research data and privacy. A detailed description of the data stewards' tasks and responsibilities can be found in Appendix 2.

## **6. Research data management within the context of PhD research**

Additional requirements apply to the management of research data within the context of PhD research. These requirements have been included in Radboud University's Doctorate Regulations.

## **7. Research data management in education**

Research data pertaining to Bachelor's or Master's theses are stored at a facility that is adequate in terms of availability (the data may not inadvertently be lost), integrity (the data may not inadvertently be modified) and confidentiality (the data may not inadvertently be made available to unauthorised persons). Radboud University provides a system that is suitable for this purpose. Education institutes are free to use this system at their own discretion.

The retention period for research data pertaining to Bachelor's and Master's theses is equivalent to the legal retention period for theses, i.e., seven years.

Within the Bachelor's and Master's programmes, attention is paid to RDM in a manner that is appropriate to the discipline and the phase of the study programme. Bachelor's and Master's theses include a statement on the management of the research data pertaining to the thesis.

The Director of Education is responsible for implementing and enforcing the RDM policy, insofar as it relates to academic higher education.

It is also possible that research data pertaining to Bachelor's or Master's theses are part of the research that has been carried out by a researcher or Project Manager. In this case, the general principles for research data management within scientific research, as described in the previous sections, apply.

## Appendix 1: Findability, accessibility, interoperability and reusability (FAIR)

The findability and accessibility of research data are requirements in Radboud University's research data management (RDM) policy. The definitions of these requirements are based on the common definitions of the FAIR principles (findable, accessible, interoperable, reusable). These can be found in the influential paper by Wilkinson and colleagues (2016)<sup>1</sup> and on the GO FAIR initiative website<sup>2</sup>. An explanation of FAIR can also be found on Radboud University's RDM website.

**Findability** means that research data can be found in a simple, unambiguous and sustainable manner, both within and outside the organisation, also by persons other than the researcher him or herself. Internal findability refers to the idea that data can be found by colleagues, for instance, and that data can be found for the purpose of gathering management information on RDM and research output. External findability refers to the idea that data can be found by peers who are interested in research data associated with a publication, for instance, and that datasets can be found by search engines. This is made possible in the following way:

- Datasets are assigned a persistent identifier (PID). A PID is a permanent and unique reference that is independent of the data storage location. A well-known example of a PID is a DOI (Digital Object Identifier).
- Data are accompanied by rich metadata. Metadata is defined as the data that describe the properties of data or a dataset, e.g., title, author, date, descriptive notes and applicable access restrictions. Comprehensive and detailed metadata enhance the findability of a dataset. Rich metadata also include descriptions of the context, content and properties of the data, as part of the documentation of a dataset.
- The PID of the dataset is part of the metadata that describe the data.
- Data and/or metadata are registered or indexed in a searchable information source. The registration or indexing makes it possible to find the chosen archive and its subsequent content via common search engines such as Google Scholar.

**Accessibility** is not about making research data accessible to everyone at all times, but about the proper regulation and registration of the conditions under which it is possible to access the data and how this can be done (effective access management). This is made possible in the following way:

- Access to data and/or metadata is regulated through a standardised protocol and, if necessary, an access procedure is also used.
- The metadata are preserved, even when the full dataset is no longer available.<sup>3</sup> This makes it possible to find researchers, organisations and publications that relate to the original research, even at a later date.

Radboud University seeks to ensure the **interoperability** and **reusability** of research data. However, these are not current requirements in Radboud University's RDM policy. Interoperability requires that data can be interpreted and combined, both by people and through

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<sup>1</sup> Wilkinson, M.D. *et al.* (2016) The FAIR Guiding Principles for scientific data management and stewardship, *Scientific Data* 3, Article number: 160018. <https://doi.org/10.1038/sdata.2016.18>

<sup>2</sup> [www.go-fair.org](http://www.go-fair.org)

<sup>3</sup> For more information about metadata, please see: <https://www.go-fair.org/fair-principles/f2-data-described-rich-metadata/>

automation. Reusability requires that data and metadata are accompanied by explanatory information and that they are accurately described to the point that it is possible to reuse, replicate and combine the data in different contexts and situations.

## **Appendix 2: Tasks and responsibilities of the data stewards**

Each of Radboud University's research institutes has one or more data stewards. The summary shown below outlines their work activities, distinguishing between their essential tasks and responsibilities and optional activities. The essential tasks and responsibilities apply to all Radboud University data stewards, while optional tasks or responsibilities may be carried out or borne by some data stewards.

*Essential tasks: What do Radboud University data stewards do at any rate?*

- Advise researchers on the management and storage of research data during a research study and for the longer term, which includes the possible publication of data.
- Actively contribute to the implementation and subsequent improvement of RDM within their own institute.
- Actively contribute to the implementation of the institute's RDM policy and, if necessary, make suggestions for updating this policy.
- Assist in the compliance with the RDM policy within the institute and have a basic understanding of such compliance.
- Are familiar with the ethical and legal issues that relate to the research data within their own discipline, and are able to refer researchers to the relevant advisors and committees in this field.
- Inform the research institute's board about the implementation of and compliance with the research institute's RDM policy.
- Stay abreast of new developments and take part in the activities and initiatives within Radboud University that pertain to RDM.

*Optional tasks: Which tasks may be part of a data steward's job, but are not part of the standard range of tasks?*

- Provide feedback on data management plans and sections on data management.
- Provide advice on data collection, which includes providing advice on the reuse of existing data.
- Develop RDM work processes.
- Organise RDM training programmes or courses.
- Develop and update products that support RDM, such as websites, manuals, course materials, demos and e-learning modules.
- Check to see whether data management plans are being written.
- Monitor compliance with the FAIR principles.
- Oversee long-term archiving of data.
- Check to see whether data are being managed by active staff members; make sure that the transition is smooth when staff members leave their job.
- Identify potential privacy and security risks, including those risks associated with the GDPR.
- Provide the board of the faculty with advice on RDM.
- Facilitate project registration.