Netherlands eScience Center Research Data Management Protocol

Responsible data management is part of good research, and an important prerequisite for Open Science. To promote the practice of Open Science, and the principles of FAIR data and software, the Netherlands eScience Center actively participates in the National Platform Open Science[1].

In line with this initiative, the eScience Center strives to make the research data collected or generated in the projects it participates in to become freely and sustainably available, as much as possible, for reuse by other researchers.

Furthermore, the Netherlands eScience Center aims to raise awareness among researchers that responsible data management is an essential requirement for reproducibility of scientific results, and for enhancement of the correctness and transparency thereof.

For these reasons, projects (co-)funded by the Netherlands eScience Center should satisfy the data management protocol of the Netherlands eScience Center. The protocol, based on the protocol defined by the Netherlands Organization for Scientific Research (NWO), consists of two steps:

1. All proposals submitted in calls published by the Netherlands eScience Center should contain a *data management section*. Researchers should answer the following questions about data management within their proposed research project:
    a. Is data generated or collected during the research that is appropriate for reuse?
    b. Where will these data be stored during the research, also keeping in mind long-term storage and use?
    c. After the project has been completed, will the data be stored for long-term use, will the data be made available for use by third parties, and to whom will the data be accessible?
    d. Do you have in mind which service(s) (e.g. SURFsara Data Archive, DANS, Zenodo, etcetera) will be used for data storage during or after the research? If some of these services are not available to you, which facilities (ICT, (secure) archive, legal expertise, etcetera) will be needed, and are these facilities available?
   Researchers can indicate which research data they consider to be relevant for storage and reuse.

2. After a proposal has been granted the researcher should elaborate the data management section into a concrete *data management plan*. In the plan the researcher describes whether existing data will be used, or whether a new data collection will be generated. Also, the researcher should indicate *how* the data collection will be made FAIR: Findable, Accessible, Interoperable, Reusable[2]. The plan should be submitted within 4 months after the project has been awarded funding. The eScience Center will approve the plan as soon as possible thereafter. Approval of the data management plan by the eScience Center is a condition for disbursement of the funding. The data management plan can be adjusted during the research.

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[1] https://www.openscience.nl
[2] https://www.go-fair.org/fair-principles

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Certified Data Management Plan templates

For submission of the Data Management Plan it is required to fill out a 'certified' Data Management Plan template. The Netherlands eScience Center does not provide a Data Management Plan template itself. This is because many such templates have been made available already, most of which are tailored to specific research disciplines, or specific (local) institutional circumstances. Also, the Netherlands eScience Center is acutely aware of the fact that many universities and research institutes explicitly require their own (local) Data Management Plan template to be used.

To avoid researchers having to fill out multiple forms, the eScience Center accepts submission of any 'certified' template. The eScience Center considers a template to be 'certified' in case it is included in the list as published by the Landelijk Coördinatiepunt Research Data Management (LCRDM) and covers at least the core requirements for Data Management Plans defined by Science Europe[3] (see Appendix A). The LCRDM list is accessible via the following link:

> https://www.lcrdm.nl/rdm-handreikingen/datamanagementplannen/index

The Netherlands eScience Center considers several templates in this list as 'strongly preferred', in particular the templates provided by:

- DANS, see:
  https://dans.knaw.nl/nl/over/organisatie-beleid/informatiemateriaal/informatiemateriaal

- H2020, see:
  http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf

- ZonMW, see:
  https://www.zonmw.nl/nl/over-zonmw/toegang-tot-data/datamanagementplan-dmp/

The template provided by DANS is short and concise but should suffice in the vast majority of research projects. The templates provided by H2020 and ZonMW on the other hand are much more extensive, and are especially relevant in cases where ethical, juridical or privacy issues play a role.

In case you wish to (or need to) make use of a Data Management Plan template which is not included in the list provided by LCRDM, please contact the eScience Center before submitting your form. It is the responsibility of the Principal Investigator to make sure that the Data Management Plan template used covers the needs of the project.

We encourage you to use an online tool for filling out your Data Management Plan template. The tool as provided by DMPonline (UK) may prove useful:

> https://dmponline.dcc.ac.uk/

Contact, Submission, Review and Publication

For more information on the contents of your Research Data Management Plan, please contact the eScience Coordinator or eScience Research Engineer(s) as part of your research team.

For submitting your Research Data Management Plan, please send it by email to the eScience Coordinator in your project team. After submission, the eScience Coordinator will ask the data management experts in the eScience Center to review your Research Data Management Plan. They will either approve it, or propose adaptations, if necessary. The final approved Research Data Management Plan will be included in the set of

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[3] https://www.scienceeurope.org

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project deliverables, and kept with all project administration. It will also be used as a reference in the Annual Project Review.

The eScience Center stimulates and strongly advocates the publishing of the approved Research Data Management Plan, also on the project pages part the eScience Center website. Making the Research Data Management Plan publicly available is the responsibility of the Principal Investigator.

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Appendix A

Core Requirements for Data Management Plans (defined by Science Europe)

Core Requirement	Guiding questions
1. Data description and collection or re-use of existing data	a. What is the type, format and volume of the data? b. How will data be collected, created or re-used?
2. Documentation and data quality	a. What metadata and documentation will accompany data? b. What data quality control measures do you use?
3. Storage and backup during research process	a. How will data be stored and backed up during the research? b. How will you take care of data security and protection of sensitive data during the research?
4. Legal and ethical requirements, codes of conduct	a. If personal data is involved how will you manage compliance with legislation on personal data and on security? b. How will you manage legal issues, such as IPR and ownership? Which legislations are applicable? c. Which ethical issues and codes of conduct are there and how are they taken into account?
5. Data sharing and long-term preservation	a. How and when will you share data (possible restrictions to data or embargo reasons)? b. How do you select data for preservation and where data will be preserved long-time (e.g. data repository or archive)? c. What methods or software tools are needed to access data? d. How will you make sure that a unique and persistent identifier is applied to each data set (e.g. DOI)?
6. Data management responsibilities and costs	a. Who will be responsible for data management (i.e. data steward)? b. What are the financial, other resources and time needed for data management and making data FAIR?