1. Introduction

The multitude of data being generated and collected worldwide offers researchers enormous potential for new inventions, perspectives and innovative solutions. The condition is that this data is findable, accessible and useable. Responsible data management contributes to the transparency and reliability of scientific conclusions, has a positive influence on public confidence in science and increases the social impact of research. The University of Groningen wants to contribute to science and society and therefore endorses the principles of Open Science and FAIR data.

This memorandum sets out the UG-wide starting points for dealing with research data and data management. This concerns a general framework setting out basic principles and responsibilities for dealing with data that is useable for research that can be published or exploited. Firstly, the UG Research Data Management Policy includes the standards and principles for good data management, for the purpose of verification and to encourage reuse (FAIR data), and for the software and scripts that are developed for the collection, analysing or representation of data.

There is joint responsibility for research data management within the UG and the general framework permits tailor-made arrangements within institutes and faculties. Secondly, therefore, the UG Research Data Management Policy therefore formulates the responsibilities and duties of individual researchers, graduate schools, research institutes and faculties, as well as the Board of the University. The faculties and research institutes must update their data policies and data management plans in line with this policy.

Given the developments regarding research data and data management, there will be a continuous need to update the principles and responsibilities at different levels within the UG. Policies will therefore need to be evaluated and adjusted regularly in the coming years.

2. Background and context update

The first version of the UG’s data management policy was published in 2015, as one of the results of the three-tier approach started by the Board of the University in 2013. This focus on data management was prompted by a 2012 advisory report from the Royal Netherlands Academy of Arts and Sciences’ Schuyt Committee, entitled Zorgvuldig en integer omgaan met wetenschappelijke onderzoeksgegevens. The approach consisted of:

1. adjustment of the UG’s protocol for quality assurance related to research data and data management and, if necessary, of UG-wide regulations for dealing with research data;
2. the setting up of a research data office for the provision of support services of the University Library and Center for Information Technology (CIT);
3. proactive focus on the legal aspects of research data.

The faculty boards and the directors of the SEP institutes were requested to develop a data management plan for the research institute, aligned to the best practices in the curriculum area concerned.

On the basis of the audit conducted in 2018 and 2019 of research data policy in faculties and research institutes, it can be stated that, with some exceptions, the three-tier approach of 2013 has been broadly translated into concrete progress. The audit made clear that an update of the research data policy should address a number of topics explicitly. As a result, the following four points of attention are now
an integral part of the updated policy:
1. the monitoring of data management plans;
2. the training of researchers and those providing support to the research;
3. research data in education;
4. sharing good practices.

In addition, updating the research data policy is necessary against the background of UG, national and international developments (cf. Appendix 1). Furthermore, this update reflects the UG-policy of the implementation of the principles of Open Science. In the Strategic Plan (2021-2026) the UG commits to stimulating and facilitating transparency in research and teaching by implementing and complying with the principles of Open Science. This results for research data policy in elaborating on and applying FAIR- (Findable, Accessible, Interoperable, Reproducible) principles for research data: open where possible and protected where necessary.

3. Principles of data management

Research data are codified and recorded facts and observations ensuing from scientific research. There is a large variety of research data. The data can be of a numerical, descriptive, or audio-visual nature. Research processes generate useable raw data, processed and analysed data of a dynamic nature, and lastly data of a statistical nature, to be archived and curated. Artefacts, objects or collections that cannot be digitalised fall outside the scope of these frameworks.

In principle, the processing of research data should be in accordance with the relevant legislation, the requirements of ethically responsible research, the arrangements set out in cooperation agreements, and the research conditions of funders. The Netherlands Code of Conduct for Research Integrity includes – in keeping with all stages of the research process – standards and principles for good data management, for the purpose of verification and to encourage reuse (FAIR data). Also, the software and scripts that are developed for the collection, analysing or representation of data are relevant in this context.

The UG permits tailor-made data storage and management, within the general frameworks. Thus, research institutes are granted a certain degree of latitude when formulating their data management plans, provided that these plans enhance the value and impact of their data and specify the principles involved. The institute’s guidelines must suit the organisation as well as the discipline and have to be in accordance with the principles below.

3.1 FAIR data

Below, the requirements that the data (and software and scripts) must meet at the UG are integrated into the presently accepted terminology of the FAIR principles. The data are:

Findable:
- Data is sustainably stored and curated;
- Data is provided with metadata, including affiliation and, if possible, with a persistent identifier;
- Data is registered on the basis of metadata in the research database of the university.

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2 Taken from [http://www.rug.nl/about-us/where-do-we-stand/quality-works/research-ethics](http://www.rug.nl/about-us/where-do-we-stand/quality-works/research-ethics) [accessed March 18, 2021].
3 Cf: [https://www.vsnu.nl/wetenschappelijke_integriteit.html](https://www.vsnu.nl/wetenschappelijke_integriteit.html) [accessed March 18, 2021].
Accessible:
- Data is accurate, complete, reliable, authentic and provided with metadata and, if possible, with a persistent identifier;
- Data is available for checking and further research after completion of the research and/or the departure of the researcher;
- Data is openly available, unless valid reasons\(^4\) prevent this.

Interoperable:
- Data is stored in sustainable file formats;
- The discipline specific standards for the enrichment of data are applied;
- Data (and metadata) is provided with references to other relevant material.

Reusable:
- The origin of the data and the affiliation of the researcher involved is clear (Provenance);
- The discipline specific standards for data management are applied;
- The conditions for reuse are clearly described.

### 3.2 Retention periods

For the retention period regarding research, distinction is made between research data (and software) and the documentation of the process that is being carried out. If the project plan does not specify a retention period for data, software and processes, this period should be determined retroactively, in consultation with all parties involved.

In general, raw data and the processed version at the UG must be saved for at least 10 years. In the event of research (or secondary research) data with personal data, the principle of data minimisation (conform GDPR regulation) must be applied as soon as possible. The Netherlands Code of Conduct for Research Integrity offers options to deviate from the retention period of 10 years. However, in that case the raw data and the processed version must be saved for a period suitable for the discipline and the methodology. The following could be taken into consideration when deciding on the retention period:

- the nature (and especially the privacy sensitivity) of the data;
- the need for source material to substantiate the results;
- the applied scientific value of the research results;
- the effort to make the data available for re-use;
- the efforts of long term preservation;
- the usefulness of source material for follow-up research.

The retention period of data management plans and data management protocols of projects, faculties and research institutes is at least 10 years, but not shorter than the retention period of the dataset.\(^5\) These documents primarily relate to policy making, execution and financing of research, and quality assessment. Also included here are the (legal) advices of ethical committees and agreements, evaluations and further agreements with research partners.

### 3.3 Funding

\(^4\) Valid reasons, including confidentiality, can be found in: European Council, conclusions of the Council: The transition towards an Open Science system, paragraph 14 (Brussel, 27/05/2016, 9526/16, via: data.consilium.europa.eu/doc/document/ST-9526-2016-INIT/en/pdf) [accessed March 18, 2021]. The considerations for this are detailed in the section regarding Retention period.

The Board of the University and the faculties fund the general facilities for the purpose of research data management. For specific facilities, the costs are charged to the faculty.

The funding of data management costs, including archiving, are included in each initial research proposal chargeable to the research funder. When determining a suitable budget, the costs of data management throughout the entire lifecycle and any additional costs for the necessary protective measures if processing sensitive research data must be taken into consideration.

4. Responsibilities

Responsible data management requires collaboration between research and support services. There is joint responsibility for research data management within the UG. The guiding principle here is the Higher Education and Research Act and the elaboration thereof in the Administration and Management Regulations UG which allocates the responsibility at different levels.

The central departments, as well as the various faculties and institutes, are responsible for providing service for the purpose of research data management. Although, the Administration and Management Regulations UG do not make specific mention of central services being tasked with research support, in recent years, however, the exchange of knowledge by means of short lines between faculties, and the provision of services have clearly borne fruit. Adequate support for – and the central coordination of – training courses will ensure that tailor-made solutions can be more widely used by the faculties.

Furthermore, the Netherlands Code of Conduct for Research Integrity imposes a duty of care on the institute in terms of education in research integrity, research culture and data management, as well as the exchange of knowledge between ethics boards when assessing whether data can be made openly available. These lines converge in the Groningen Digital Competence Center (GDCC).

4.1 Researchers

The researcher is responsible for drawing and implementing a data management plan (or having it implemented) for all her or his ongoing research during which research data is processed. If a plan is drawn up for each individual project, then each participating researcher will endorse this plan and will add any supplementary details that apply specifically to her or him. The research institute or faculty, as the case may be, will provide the frameworks for the data management plan. The following is requested from the researcher:

1. To act in accordance with the General Data Protection Regulation, the General Policy for the protection of personal data of the UG and other statutory and ethical rules;
2. To record the arrangements made regarding data management during a (joint) research project or research contract in accordance with the Research Data Policy of the institute and the Netherlands Code of Conduct for Research Integrity. Appendix 2 indicates in which cases the researcher must record agreements in writing and which points have the attention of the General Administrative and Legal Affairs Service (ABJZ);
3. To safeguard the integrity and security of the data in accordance with the security baseline developed by the CIT;
4. To submit proposals for the destruction of research data, in advance, to the Research Director and/or the ethics boards;
5. To assure the access, reuse and storing of research data after the end of the research project, in accordance with the research institute’s data management plan;
6. To assure the storing and access to data management plans and data management protocols
(incl. agreements with research partners);
7. To estimate the costs of – and investment of time in – data management during the research project and thereafter;
8. To familiarise oneself with new developments in the field of data management in the relevant discipline;
9. The co-development and documentation of the procedures and processes (suitable for the research) used for the collection, storage, processing, use and access of the research data;
10. To provide students and young researchers with guidance concerning good data management.

4.2 Graduate Schools

The Graduate Schools will embed the topic of data management in the early stages of researcher’s careers, as an integrated part of scientific practice.
1. The Graduate Schools will provide mandatory courses for Research Master’s students and PhD students and can make use of central services to this end;
2. The Graduate Schools will ensure that arrangements are made with PhD students regarding data management and the recording of such arrangements in these students’ training and supervision plans.
3. The Graduate Schools will ensure that PhD thesis supervisors and the daily supervisors of the PhD students make arrangements, together with the PhD student, for the PhD student’s research data to be made available for further research after the PhD programme has concluded (Regulations of the conferral of a doctorate (PhD regulations) Art. 4.1.5.).
4. The Graduate Schools will ensure – with support from the GDCC – that best practices in the field of data management education are shared.

4.3 Faculties and research institutes

The faculty boards and research directors are responsible for setting up and maintaining responsible data management policy in accordance with the UG Research Data Policy. The faculty and institute policy need to contain the following elements:
1. The research institute will maintain the Institute’s Research Data Management plan in accordance with the principles formulated in the Science Europe guidance and will make this data management plan available to its researchers. The plan contains the following elements:
   - Data description and collection or re-use of existing data;
   - Documentation and data quality;
   - Storage and backup during the research process;
   - Legal and ethical requirements, codes of conduct;
   - Data sharing and long-term preservation;
   - Data management responsibilities and resources;
2. The Faculty Board will adopt the Institute’s Research Data Management Plans, after testing these against the stipulated frameworks. The plans will be published on the website of the GDCC;
3. In the event of an externally funded research project, the institute will verify, in a timely manner, whether that research project’s data management plan is in keeping with the research institute’s data management plan.
4. At faculty level, the Faculty Board will maintain oversight and will supervise the enforcement

of the rules related to data storage and management within the individual disciplines and/or the institutes;

5. The Faculty Board will be responsible for ensuring that the data files, data management plans and research protocols can be verified, on the instructions of the Board of the University, if there is cause to do so (in the event of an alleged breach of integrity, for example);

6. Decision-making regarding the destruction of research data will be in the hands of the research institute, based on the protocols and/or the data management plan, where necessary in consultation with the ethics boards;

7. Both will cooperate with the periodical internal audits carried out to verify actual and ongoing compliance with the relevant rules and procedures;

8. The Faculty Board will, in consultation with the research institute, determine which preconditions apply to the research institute's data management during research in which third parties have control (or joint control) over the data;

9. The Faculty Board will make further arrangements regarding oversight over the research data after completion of the research, and regarding oversight over research data ensuing from the research by researchers who have left the University of Groningen;

10. The Faculty Board will ensure that data management, in conjunction with a focus on research integrity and on dealing with personal data responsibly, is enshrined in the curriculum;

11. The Faculty Board will draw up a policy and procedures for research data that is generated and used in the context of teaching. These guidelines are expressed in the Teaching and Examination Regulation Models. The learning outcomes expressly stipulate that, during research assignments, students must adhere to the applicable (discipline-specific) standards, not only at the publication stage, but throughout the entire research process. This, therefore, also concerns standards related to ethics, research integrity when dealing with data, and data management. ABJZ provides an optional additional provision in the Teaching and Examination Regulation Models;

12. The Faculty Board acknowledges the contribution made by ethics boards, in terms of advice regarding responsible data management and open data; it also encourages the exchange of knowledge between ethics boards;

13. The Faculty Board and research director encourage the exchange of knowledge and good practices among researchers;

14. The Faculty Board decides, in consultation with its research institutes and its Graduate School, by mutual agreement, which central data management services it wishes to use, and which aspects it will provide itself.

4.4 Board of the University

The Board of the University supervises compliance with the legislation, the Netherlands Code of Conduct for Research Integrity and the Strategic Evaluation Protocol (SEP 2021-2027). The supervision and testing of faculty/institute plans and the arrangements made, as well as the implementation thereof, fall under the responsibility of the Board of the University. The Board of the University takes the position that, on the departure of employees, data must remain available for verification and further research.

1. The Board of the University will arrange for audits to be conducted on a regular and planned basis, and will be responsible for ensuring that this is funded.

2. The Board of the University will facilitate the required infrastructures, as well as arrangements with third parties concerning the associated infrastructural provisions. It will also be responsible for ensuring the development of the required expertise in the field of research data management.

3. The Board of the University contributes to the development of policies, at national and international level, which encourages researchers to contribute to open data and re-use of data
by the scientific community.

4. The Board of the University is responsible for ensuring access to the legal advice needed to regulate control over the research data and legal preconditions that play a part in the encouragement of open data and/or the reuse of data, while at the same time taking account of the importance of knowledge valorisation in public-private cooperation and of safeguarding research integrity. Appendix 2 indicates in which cases agreements regarding research integrity must be recorded and which points have the attention of ABJZ;

5. The Board of the University is responsible for drafting regulations and guidelines and for mandating responsibilities related to data management.

4.5 Central Support Service: Groningen Digital Competence Center

In the three-tier approach adopted by the Board of the University a start was made in connecting and further developing facilitating bodies and their expertise for the support of research data management. This has resulted in the creation of the Groningen Digital Competence Center, a fusion of the Research Data Office and the Data Federation Hub and several new services of the Center for information Technology. The GDCC brings together relevant expertise on FAIR research data management within the UG in one place. Researchers, lecturers and research support staff can make use of the expertise on research data, research software and computing and pose their questions. The GDCC offers consultancy services on data management plans, data protection, storage and archiving. It provides training courses and (digital) meetings. It manages an informative website, a web tool for research data management plans and platforms for archiving data in accordance with the FAIR data principles. It maintains national and international relationships concerning research data management and stays informed of any relevant developments, while sharing knowledge and insights with faculties, institutes and researchers and adopting its services accordingly.
Appendix 1: Overview of development influencing Research Data Management Policy

This updated research data policy takes the following developments into account:

1. In 2018 the General Data Protection Regulation (GDPR) came into effect in Europe. This is detailed at institute level in the General policy on protection of personal data UG. Researchers and institutes must meet the principles of the GDPR during research with personal data. In research cooperation (both at national and international level) the principles of accountability and transparency result in increased pressure to record arrangements regarding responsibility for the data in a transparent manner.

2. The Netherlands Code of Conduct for Research Integrity (2018) includes – in keeping with all stages of the research process – standards as well as principles for good data management and the encouragement of reuse (FAIR data), as well as the duty of care on the part of the institute to facilitate good data management.

3. The 2015-2021 Standard Evaluation Protocol (SEP) prescribes that the SEP institute must report, on the basis of the protocol, regarding its handling of processed data. In addition, the next edition (SEP 2021-2027) will expressly request a focus on Open Science (including sharing data) and Research Culture (including integrity).

4. The doctoral degree regulation of the UG (2018) stipulates that data with an accompanying explanation must, in any event, be filed for verification of the research, for further scientific research in accordance with the guidelines of the Data Policy of the University of Groningen and the Data Policy of the research institute.

5. The interaction between education and research, and therefore responsible data management as well, is expressed in the Education and Examination Regulation Models. In education research data has growing importance. This increase requires further regulation of responsible data management in the curriculum. This update of the Teaching and Examination Regulation Models requires an updated research data policy.

6. In the new Horizon Europe (2021-2027) framework programme, the emphasis on Open Science and data management is strengthened by a focus on FAIR data, open access, research integrity and citizen science. In 2018, Science Europe made a guidance document available with a framework for discipline-specific data management and, in 2019, a guide for the international coordination of data management. In 2020, the Dutch Research Council (NWO) tightened up the requirements regarding responsible data management for all its funding lines, thereby aligning with Science Europe (the European umbrella organisation of research funders) has made data management one of its spearheads. In 2018, Science Europe made a guidance document available with a framework for discipline-specific data management and, in 2019, a guide for the international coordination of data management. In 2020, the Dutch Research Council (NWO) tightened up the requirements regarding responsible data management for all its funding lines, thereby aligning with Science Europe (the European umbrella organisation of research funders) has made data management one of its spearheads.


9. The European Research Infrastructure Consortia (ERICs) facilitates self-organising networks related to data infrastructure for an increasing number of disciplines. The tally has already reached 20. BBMRI and CLARIN are well-known examples. The encouragement of these infrastructure networks of member states symbolises the growing role of Europe in policy related to data, research and innovation.

10. The discussion paper Ruimte voor ieders talent; naar een nieuwe balans in het erkennen en waarderen van wetenschappers explicitly mentions sharing research data as one of the Open Science activities that ‘can have a large impact on society and science’.

11. Since 2018, a discipline-specific ethical code of conduct for research involving human subjects applies to social scientific research; this code specifically includes responsibility for dealing carefully with personal data, in line with the applicable regulations.

12. The new selection list, which is mandatory on the basis of the Public Records Act, has been extended for the research and valorisation policy fields.

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14 Tool for the selection (for destruction or permanent storage, as the case may be) of the administrative output of the processes of public and special universities, as well as those of university medical centres, from 2019, via: [https://www.nationaalarchief.nl/archiveren/kennisbank/vastgestelde-selectielijsten][accessed March 18, 2021].
Appendix 2: Checklist for researchers when collaborating externally – General Administrative and Legal Affairs (ABJZ), June 2020

The University of Groningen has signed up to the Netherlands Code of Conduct for Research Integrity (2018) (‘WI’ Code of Conduct). Joint research should also be conducted in accordance with this Code of Conduct. The Netherlands Code of Conduct for Research Integrity (3.9) expects researchers to make clear agreements about matters relating to research integrity and matters that may affect this, such as intellectual property rights, when conducting research with external partners, and to record these agreements in writing.

This checklist indicates the aspects for which a researcher must record agreements in writing and which points should be brought to the attention of the General Administrative and Legal Affairs Service (Dutch abbreviation ‘ABJZ’). Examples and model provisions have been provided where possible. This checklist is intended to be used independently by researchers at an early stage. The checklist contains a general assessment framework for collaboration agreements and a section specifically on agreements for the processing of personal data.

General assessment framework for collaboration agreements

**Action point for researchers:**
Only accept research tasks that can be performed in accordance with the standards in the WI Code of Conduct. Ensure that the tasks are agreed in writing.

**Commitment to the Code of Conduct for Research Integrity**
The University of Groningen will also encourage (private) partners to commit to the WI Code of Conduct (1.7). Collaboration with institutions that have not signed the WI Code of Conduct or a comparable code will only be agreed to if there is sufficient confidence that your own part of the research can be conducted in compliance with this Code and the joint research results meet generally accepted principles of integrity in research (1.8).

**Model provision for an agreement with a partner institution:**

“The Netherlands Code of Conduct for Research Integrity shall apply to the research envisaged.”

Collaboration agreements also contain provisions on asset valuation, based on the principles laid down in the valuation policy. These agreements are tailor-made.

When considering whether a code is comparable and the generally accepted principles of research integrity in collaboration contracts, the ABJZ will take into account:

a. other codes of conduct.

b. The declaration on Scientific Independence of the Royal Netherlands Academy of Arts and
It will also be ensured that research can be conducted in accordance with the WI Code of Conduct as regards proper and ethical scientific practice, with respect to influence from other parties (e.g. funding providers, journals, social partners).

**Agreements on making data and research material public and accessible**

The WI Code of Conduct provides a duty of care for institutions (4.16) to ensure that contracts with commissioning parties and funding bodies include fair agreements about access to and the publication of data and research material. The institution (4.13) must work with researchers (3.24) to ensure that all data, source code and research materials, published and unpublished, are managed and stored securely for a period appropriate to the discipline(s) and methodology. Researchers must also determine an appropriate retention period when collaborating. The Code of Conduct expects researchers (3.8) to be open about the role of external stakeholders and potential conflicts of interest. How the collected research data is ordered and categorized should also be described where necessary, so that it can be checked and reused (3.10). Data management plans are appropriate tools for this purpose. Researchers should, as far as possible, make research findings and research data public subsequent to completion of the research (3.11). If research data and/or information cannot be made publicly available, researchers should establish valid reasons for this.

**Model provision for an agreement with a partner institution:**

“The dataset will be retained for verification in accordance with the faculty Data Management Policy (annexed). The dataset will also be made available for reuse though a repository appropriate to the discipline.”

**Agreements on the processing of personal information**

It is possible that the University of Groningen will obtain a dataset containing personal data, but will not be responsible for processing this data itself, and must instead adhere to the instructions.

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of the data controller. In such cases, a data processor agreement must be concluded. A UG model agreement is available for this purpose. A checklist is also available from the ABJZ to assess the suitability of other models.

Collaborating research institutions will usually be jointly responsible. Article 26 GDPR requires the parties to determine their respective responsibilities for compliance with the obligations under the Regulation in a transparent manner. The arrangement shall duly reflect the respective roles and relationships of the joint controllers vis-à-vis the data subjects. The essence of the arrangement shall be made available to the data subject. How such an arrangement should be documented is not specified and can be arranged in a collaboration agreement. ‘SURF’ provides a model joint controller agreement.19

For low risk processing, the relevant arrangement can be set out in the data management plan attached to the collaboration agreement. In addition, when data subjects are informed, it must be ensured that the information about the arrangement is included in the consent form. For the processing of data with a high risk of impacting the rights of data subjects (see the data protection impact assessment (‘DPIA’) guidance on the Research Data Office (‘RDO’) website), research funders (ERC, Horizon 2020) require a DPIA to be carried out after a collaboration agreement has been signed, but before data collection.

Parties are advised to set out the plan for these arrangements and the party responsible for the arrangement in the collaboration agreement. The ethics boards must also be informed of this arrangement because the committee can require the reassessment of the information provided to the data subjects.

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**Action point for researchers:**

If several parties are involved in the processing of personal data, make sure that you agree on their respective responsibilities. Communicate this with the data subjects transparently. Check whether there are sufficient safeguards in place if you transfer data outside the European Economic Area (see below).

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**Collaboration outside the European Economic Area (‘EEA’)**

When cooperating outside the EEA, you must check whether the country where the partner institution is located benefits from an ‘adequacy decision’ from the EU.20 If not, then certain standard contractual clauses are necessary.21

In exceptional circumstances, Article 49 GDPR can be relied on for research purposes. In these cases, the participants in the research have to be asked for their explicit permission for the transfer of data to and from the Netherlands.

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21 op.cit.