ZHAW-Template for the SNSF Data Management Plan

# Introductory Remarks

Please note that the data management plan (DMP) is a requirement for the release of funds for your approved application.

**What is this template for?** The filled-in template is your data management plan (DMP) that you can submit to the SNSF.

**In which cases does the SNSF require a DMP?** Generally, the SNSF requires a DMP only for approved applications. However, for certain calls, a DMP is not required at all. Here is a tip on how to find out whether a DMP is required or not in your particular case: Register for a corresponding call on [mySNF](https://www.mysnf.ch/login.aspx?returnurl=%2fdefault.aspx). If in the main navigation bar on the left, there is no section “Data management plan (DMP)”, a DMP is not required.

**Why does the SNSF require a DMP?** When asking to provide a DMP, the SNSF generally aims to ensure that researchers handle collected, generated, and processed data in compliance with the [FAIR principles](https://www.snf.ch/media/en/s1eRHVxx1Y41S5le/FAIR_principles_translation_SNSF_logo.pdf) as well as with data security and data protection standards. For applicants, this means the following: The DMP should demonstrate that activities related to research data are planned in such a way as to make the data findable, accessible, interoperable, and reusable upon the completion of the project. Added to this, it should show that you carefully planned all measures to protect your data from unauthorized access, use, or disclosure, particularly when it comes to sensitive or confidential data.

**How is this ZHAW-template built?** The ZHAW-template contains a set of questions, by answering which, you outline the strategies to manage research data collected, observed, produced, or reused during the project for which you have been awarded an SNSF grant. This template is developed in accordance with the [SNSF guidelines](https://www.snf.ch/en/FAiWVH4WvpKvohw9/topic/research-policies) on preparing data management plans. The list of questions (including “Questions you might consider”) included in the ZHAW-template corresponds to that of [mySNF form](https://www.snf.ch/media/en/4i9AE5YEIf7tqhGz/DMP_content_mySNF-form_en.pdf) provided by the SNSF. However, this template contains additional recommendations and examples that are not provided in that form in mySNF form.

**How and where should I submit my DMP?** Grantees who receive funding will be invited to submit their DMP on the [mySNF](https://www.mysnf.ch/) platform. The DMP must be written in the same language as the research plan. If you are satisfied with the answers you have written in the ZHAW-template, simply copy and paste them into the corresponding text boxes in mySNF. Please note that it is not possible to create tables in mySNF, but you can integrate them by copying and pasting from a text document (e.g., from your filled-in Word-template). However, it is not necessary to include your answers in the tables. You can provide them as continuous text or in bullet points, for example.

**Who will assess my DMP?** The SNSF Administrative Offices will assess the plausibility of the submitted DMP. Any missing or inaccurate information must be added or revised before the second instalment payment is released. Researchers are required to update their DMP at the end of the grant.

**How should I proceed if my data management plan has changed since the grant was awarded?** The SNSF considers the DMP a “living document”. It means that you are encouraged to edit your DMP during the entire duration of the project. In any case, a definitive and updated version of the DMP must be provided by the end of the project grant.

**How should I proceed if I am not able to answer all the questions required in the template?** It might be the case that some of the questions are irrelevant to you. For example, you do not plan to share your data with other researchers due to some legal or ethical restrictions. In such a case, you are not required to describe the process of data sharing and reuse. However, you are required to explain specific constraints that would hinder you from doing so. Furthermore, if some required information cannot be provided at the time of application, note “not yet known” or “not yet decided” and add the reasons (e.g., “The fact XY can only be decided in the course of the project”). Where possible, however, at least estimate (e.g., “The expected size of data files cannot be predicted at this stage, but it is reasonable to assume that it will hit the n° of Gigabyte range”). As soon as the missing information comes to light, update your DMP accordingly.

**How detailed should a DMP be?** Write as much as you know in as few words as possible.

**Key to Colors:**

|  |
| --- |
| **General Information** (taken from [mySNF form](https://www.snf.ch/media/en/4i9AE5YEIf7tqhGz/DMP_content_mySNF-form_en.pdf)) |
| **Recommendations & Guidelines** (provided by the SNSF & ZHAW) |
| **How could your answer look like?** – Examples of Answers (provided by the ZHAW) |

# Contents

[ZHAW-Template for the SNSF Data Management Plan 1](#_Toc118714217)

[Introductory Remarks 1](#_Toc118714218)

[Contents 3](#_Toc118714219)

[1. Data collection and documentation 4](#_Toc118714220)

[1.1 What data will you collect, observe, generate and reuse? 4](#_Toc118714221)

[1.2 How will the data be collected, observed or generated? 6](#_Toc118714222)

[1.3 What documentation and metadata will you provide with the data? 8](#_Toc118714223)

[2. Ethics, legal and security issues 10](#_Toc118714224)

[2.1 How will ethical issues be addressed and handled? 10](#_Toc118714225)

[2.2 How will data access and security be managed? 13](#_Toc118714226)

[2.3 How will you handle copyright and Intellectual Property Rights issues? 14](#_Toc118714227)

[3. Data storage and preservation 17](#_Toc118714228)

[3.1 How will your data be stored and backed-up during the research? 17](#_Toc118714229)

[3.2 What is your data preservation plan? 20](#_Toc118714230)

[4. Data sharing and reuse 22](#_Toc118714231)

[4.1 How and where will the data be shared? 22](#_Toc118714232)

[4.2 Are there any necessary limitations to protect sensitive data? 24](#_Toc118714233)

[4.3 All digital repositories I will choose are conform to the FAIR Data Principles 25](#_Toc118714234)

[4.4 I will choose digital repositories maintained by a non-profit organization. 26](#_Toc118714235)

[5. Regulation documentation 27](#_Toc118714236)

[5.1 Regulation metadata 27](#_Toc118714237)

[5.2 Regulation version history 27](#_Toc118714238)

* 1. Data collection and documentation
     1. What data will you collect, observe, generate and reuse?

|  |
| --- |
| **General Information:** |
| Briefly describe the data you will collect, observe or generate. Also mention any existing data that will be (re)used. The descriptions should include the type, format and content of each dataset. Furthermore, provide an estimation of the volume of the generated data sets.  ***Questions you might consider:***   * *What type, format and volume of data will you collect, observe, generate and reuse?* * *Which existing data (yours or third-party) will you reuse?* |

**New Data / ´Primary´ Data Collection**

*Do you plan to produce new data? If yes, fill in the table below.*

*List all the datasets you plan to produce. Create a new row for each dataset.*

|  |  |  |
| --- | --- | --- |
| **Description of dataset** | **Data format** | **Estimated data volume** |
| Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. |

**Existing Dataset / ´Secondary´ Data Collection**

*Do you plan to reuse existing data (yours or third-party)? If yes, fill in the table below. List all the datasets you plan to reuse. Create a new row for each dataset.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Description of dataset** | **Source from which the dataset will be obtained** | **Data format** | **Estimated data volume** |
| Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. |

|  |
| --- |
| **Recommendations & Guidelines:** |
| ***Data description:*** There are no predefined terms, you must simply name your data in a way that fits most appropriately.  ***Estimation of data volume:*** Example of how to estimate the volume of a dataset (use case: a project with video recordings of therapy sessions):   * Determine file type, image resolution, frame rate, audio compression technique; duration and frequency of therapy sessions, and number of participants * produce or find any video file with desired parameter values * determine file size and multiply according to study design.   ***Data format:*** Where possible use file formats recommended for long-term storage. Examples: text (PDF/A, txt, xml), spreadsheet (csv), images (TIFF, PNG, JPEG 2000), vector graphics (SVG without JavaScript binding), CAD (.dwg, .dxf, .x3db), audio (WAV), video (Motion JPEG 2000, .avi,.mov), databases (SQL Dump). |
|  |

* + 1. How will the data be collected, observed or generated?

|  |
| --- |
| **General Information:** |
| Explain how the data will be collected, observed, or generated. Describe how you plan to control and document the consistency and quality of the collected data.  ***Questions you might consider:***   * *What standards, methodologies or quality assurance processes will you use?* * *How will you organize your files and handle versioning?* |

*Describe methods and tools you plan to use for data collection, production, and quality assurance. Create a new row for each dataset.*

|  |  |  |
| --- | --- | --- |
| **Description of dataset** | **Which methods and tools do you aim to use to collect, observe, or produce data?** | **Which methods and tools do you aim to use to guarantee the quality of this dataset?** |
| Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. |

*Describe any naming- or hierarchy structures you aim to use to organize your files:*

Click or tap to enter text.

*Describe how you will handle the version control of your files:*

Click or tap to enter text.

|  |
| --- |
| **Recommendations & Guidelines:** |
| ***Methods of data collection:***This might, for example, include instruments, hardware, and software used to collect the data, digitization or transcription methods, data collection protocols, sampling design and procedure, target population, units of observation, etc.  ***Assurance of data quality:***Quality of data can, for example, be guaranteed through calibration procedures, repetition of experiments, data entry validation, data peer review, checks and corrections of transcripts, etc. If you are working with personal data, confirm that all identifiable and traceable links to an individual are removed (data anonymization).  ***Organization of file formats:***Consider the following:   * ***Establish a logical folder structure:*** group your files into categories; start with broad categories, and then create more specific folders within these; avoid too many layers in your hierarchy. * ***Establish naming conventions:***use naming conventions consistently, document the established naming conventions, and use names that reflect the file content. Possible elements or metadata, respectively, to include in file names are the description of the content, name of the creator, date of creation, collection method, version number, etc.   ***Handling versioning:***A simple way to control file versioning is to manually save copies of a file once some significant changes are made. A manual approach may be sufficient if not many different versions are expected to be produced or if only one person works on the files. Otherwise, version control systems – such as Git or an Electronic Laboratory Notebook – are recommended. Those systems automatically create copies when a change was made. Moreover, they record who made that change. Earlier versions can still be accessed. |
|  |

* + 1. What documentation and metadata will you provide with the data?

|  |
| --- |
| **General Information:** |
| Describe all types of documentation you will provide to help secondary users to understand and reuse your data.  ***Questions you might consider:***   * What information is required for computers or humans to read and interpret the data in the future? * How will you generate this documentation? * What community standards (if any) will be used to annotate the (meta)data? |

*Describe each type of documentation in detail. Create a new row for each documentation method.*

|  |  |  |
| --- | --- | --- |
| **Documentation Method** | **Description** | **A dataset that will be documented by this method** |
| Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. |

|  |
| --- |
| **Recommendations & Guidelines:** |
| Documentation should at least include basic details allowing other users to understand the data. This might include, for example, a name and a persistent identifier for each file, the name of the person who collected or contributed to the data, the date of collection, and the conditions under which the data can be accessed. Furthermore, the documentation might include details on the methodology used, information about the performed processing and analytical steps, variable definitions, references to vocabularies used, as well as units of measurement. Wherever possible, the documentation should follow existing community standards and guidelines.  ***You might, for example, rely on the following methods to document your data:***   * ***Metadata*** is the descriptive information about the data. This includes, for example, information about the title, creator, time and date of creation, keywords, file format, version, etc. To ensure that data are described as uniformly as possible, there are metadata standards or schemas that establish a common way of describing and understanding data. Examples of metadata standards are Dublin Core (DC)**,** Data Cite Metadata Scheme (DCM)**,** Data Documentation Initiative (DDI)**,** Resource Description Framework (RDF) * ***README-Files*** are used to document software code. Usually, they are part of a software package. They have the same function as metadata standards. * ***Codebooks*** are used to code and decode data in tables, usually with numbers for better clarity. * ***E-lab notebooks & field books*** are used as journals to document the whole process your data go through. * ***List with naming conventions*** |

* 1. Ethics, legal and security issues
     1. How will ethical issues be addressed and handled?

|  |
| --- |
| **General Information:** |
| Ethical issues in research projects demand for an adaptation of research data management practices, e.g., how data is stored, who can access/reuse the data and how long the data is stored. Methods to manage ethical concerns may include anonymization of data; gain approval by ethics committees; formal consent agreements. You should outline that all ethical issues in your project have been identified, including the corresponding measures in data management.  ***Questions you might consider:***   * What is the relevant protection standard for your data? Are you bound by a confidentiality agreement? * Do you have the necessary permission to obtain, process, preserve and share the data? Have the people, whose data you are using, been informed or did they give their consent? * What methods will you use to ensure the protection of personal or other sensitive data? |

*Describe all ethical issues that you expect to occur during the project and how you plan to handle them. Specify all data that might be affected by these issues. Create a new row for each ethical issue.*

|  |  |  |
| --- | --- | --- |
| **Ethical issue** | **Affected Data** | **Strategies for handling the mentioned ethical issue** |
| Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. |

|  |
| --- |
| **Recommendations & Guidelines:** |
| ***Ethical Issues***: Check if your project involves one of the following (or some other) ethical issues.   * Human participants (this includes all kinds of human participation, incl. non-medical research, e.g., surveys, observations, tracking the location of people), Human cells/tissues, Human embryonic stem cells, Clinical trial * Collection of personal/private data * Third countries (access and benefit-sharing) / export law issues * Animal experimentation * Environmental and/or health and safety issues (for example, a negative impact on the environment and/or on the health and safety of the researchers)   ***Handling of ethical Issues:*** Note that handling of ethical issues is commonly regulated by [laws](https://forschungsdaten.info/fdm-im-deutschsprachigen-raum/schweiz/legal-ethical-issues/protection-of-data-privacy/) such as personal data protection – e.g., the Swiss Federal Act on Data Protection, cantonal data protection laws, or the General Data Protection Regulation  ***Research Ethics at the ZHAW:*** The Zurich University of Applied Sciences (ZHAW) is committed to the highest of ethical principles in its scholarly endeavors. The ZHAW believes that compliance with ethical principles is a prerequisite for academic credibility and that such compliance underpins academic freedom. Researchers at the ZHAW comply with the [Code of Conduct for Scientific Integrity](https://akademien-schweiz.ch/en/themen/wissenschaftskultur/wissenschaftliche-integritat-1/) by the Swiss Academies of Arts and Sciences.  ***The ZHAW ethics panel:*** Some research data projects must be approved by an ethics committee before starting the research. For this reason, an ethics panel was set up at the ZHAW. Please use [this checklist](https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fgpmpublic.zhaw.ch%2FGPMDocProdDPublic%2FVorgabedokumente_ZHAW%2FZ_CL_Checkliste_Ethikantraege.docx&wdOrigin=BROWSELINK) to assess whether your project must be approved by the ZHAW ethical panel or not. |
| **How could answers look like? – Examples of Answers:** |
| ***No ethical Issues; research on anonymized data:*** There are no ethical issues in the generation of results from this project. Research in this project will be carried out based on fully anonymized human biological material and health-related personal data. Therefore, it is not subject to the Human Research Act (HRA).  ***Human Participants*** (not subject to Federal Act on Research involving Human Beings): The research plan will be reviewed and approved by the ZHAW ethics panel  ***Personal / Private Data:*** The project will respect all the rules and regulations laid down in the Swiss Federal Act on Data Protection. In cases where individuals living in the European Union are involved, regulations of the General Data Protection Regulation (GDPR) will be likewise carefully considered. Only data from individuals who have given their explicit consent will be used within the project. All data will be anonymized.  ***Access and Benefit Sharing (Nagoya):*** The project will include research on genetic resources or traditional knowledge associated with them. The ZHAW complies with national legislation (Nagoya Ordinance, Federal Act on the Protection of Nature and Cultural Heritage). In the case of the export or import of genetic resources, Material Transfer Agreements will be implemented, and national and international legislation will be followed.  ***Animal Experiments:*** The research team will work in conformity with all applicable rules, guidelines, and principles such as the EU directive 2010/63/EU on the protection of animals used for scientific purposes, the Swiss federal law on animal protection (RS 455), the federal ordinance on animal protection (RS 455.1), and the federal ordinance on animal experimentation, production, and housing (RS 455.163). All animal experiments will only be initiated after having received the approval of the Cantonal and Federal authorities. In performing the experiments, the research team will strive to strictly adhere to the 3Rs principle of Replacement, Refinement, and Reduction.  ***Environmental and/or Health and safety issues:*** The ZHAW assures that appropriate health and safety procedures conforming to relevant local and national guidelines and legislation are followed for staff involved in this project. Work with hazardous chemicals (solvents, reagents) will be performed in a way to minimize any pollution of the environment by employing a professional waste management system and to reduce the exposure of the researchers involved in conducting the experiments by working in state-of-the-art laboratories with fume hoods and personal safety equipment. |

* + 1. How will data access and security be managed?

|  |
| --- |
| **General Information:** |
| If you work with personal or other sensitive data you should outline the security measures in order to protect the data. List formal standards which will be adopted in your study. An example is ISO 27001-Information security management. Furthermore, describe the main processes or facilities for storage and processing of personal or other sensitive data.  ***Questions you might consider:***   * What are the main concerns regarding data security, what are the levels of risk, and what measures are in place to handle security risks? * How will you regulate data access rights/permissions to ensure the security of the data? * How will personal or other sensitive data be handled to ensure safe data storage and -transfer? |

*List all datasets that require special protection. Describe how you aim to safeguard those data. Create a new row for each dataset.*

|  |  |
| --- | --- |
| **A dataset that requires a special protection** | **Methods to safeguard the mentioned dataset** |
| Click or tap to enter text. | Click or tap to enter text. |

|  |
| --- |
| **Recommendations & Guidelines:** |
| To ensure data security, ZHAW implements technical and organizational measures [TOMs](https://servicedesk.zhaw.ch/tas/public/ssp/content/detail/knowledgeitem?unid=551d66a924ab47eebee9df43ea4fb74d) (this document is accessible via the self-service portal). |

* + 1. How will you handle copyright and Intellectual Property Rights issues?

|  |
| --- |
| **General Information:** |
| Outline the owners of the copyright and Intellectual Property Right (IPR) of all data that will be collected and generated, including the licence(s). For consortia, an IPR ownership agreement might be necessary. You should comply with relevant funder, institutional, departmental or group policies on copyright or IPR. Furthermore, clarify what permissions are required should third-party data be reused.  ***Questions you might consider:***   * Who will be the owner of the data? * Which licenses will be applied to the data? |

*Create a new row for each dataset. If the copyright owner and license are valid for all datasets, you can summarize them in one row.*

|  |  |  |
| --- | --- | --- |
| **Dataset** | **Copyright owner (or other Intellectual Property Right owner)** | **Licenses or restrictions on use of the data** |
| Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. |

|  |
| --- |
| **Recommendations & Guidelines:** |
| 1. ***Intellectual Property Rights (IPR)*** include – but are not limited to – copyrighted works [urheberrechtlich geschützte Werke], patents [Patente], trademarks [Marken], and trade secrets [Betriebs- und Geschäftsgeheimnisse]. 2. ***Works protected by copyright:*** The Federal Act on Copyright and Neighboring Rights (Copyright Act, CopA [Bundesgesetz über das Urheberrecht und verwandte Schutzrechte]) defines works protected by copyright law as “literary and artistic intellectual creations with individual character, irrespective of their value or purpose.” (Art. 2 [CopA](https://www.fedlex.admin.ch/eli/cc/1993/1798_1798_1798/en)) 3. Whether a dataset is protected by copyright or not must be verified on a case-by-case basis. Raw or primary scientific data, for example, are commonly not subject to copyright law. The data showing a degree of originality and creativity (e.g., graphics, images, or texts) are, instead, frequently copyrighted. 4. Note that even if an individual dataset is not protected by copyright, the organization of data [Datensammlung] in a database may fall under intellectual property protection if they are intellectual creations of individual character with respect to selection or arrangement. 5. **Rights protected by copyright:** Copyright protects two types of right:  * ***Moral rights [Urheberpersönlichkeitsrechte]****:* e.g., “The author has the exclusive right to his own work and the right to recognition of his authorship” (Art. 9, [CopA](https://www.fedlex.admin.ch/eli/cc/1993/1798_1798_1798/en)). It is impossible to transfer author´s moral rights to a third party. * ***Rights of Use [Nutzungsrechte]****:* “The author has the exclusive right to decide whether, when and how his work is used” (Art. 10, [CopA](https://www.fedlex.admin.ch/eli/cc/1993/1798_1798_1798/en)). In contrast to moral rights, authors can transfer property rights to a third party. Property rights are usually regulated by contracts and agreements made between the author of the data and a third party (e.g., a project partner, a publisher, or an institution at which the data author conducts the research, etc.).  1. **Copyright & the ZHAW:** The ZHAW holds the rights of usage or economic rights of the works that are created by staff as part of their employment at ZHAW or by students within the context of their studies at ZHAW (§16 Para. 1 and § 22 Para. 2 Fachhochschulgesetz (FaHG) (University of Applied Sciences Act). Nevertheless, the moral rights of copyrighted works remain with the authors. 2. **External Parties:** If research is planned to be conducted in collaboration with partners outside of the ZHAW, ownership of copyright or other IPR must be clarified by the parties in an agreement. 3. **Licenses:** The copyright owner may grant permission for the use of copyrighted material under certain conditions. Those conditions are generally clarified through a license. Since the ZHAW supports the open science movement and actively promotes a sharing- and re-use- culture, it is highly recommended to use [Creative Commons licenses](https://creativecommons.org/licenses/?lang=en) (CCL) for your data, if the data is not subjected to a contract, will not be patented and no other legal restrictions apply. Note that CCL are not recommended for software. Here, [open source licenses](https://choosealicense.com/) are most commonly used. Note that the publication under an open science license needs to be approved by your supervisor. |
| **How could your answers look like? – Examples of Answers:** |
| ***Legal Issues – no IPR planned, no external partner:*** This project will be carried out by the ZHAW alone without any collaboration partners and is not expected to lead to patents. However, if inventions or new technologies will be made in connection with data, access to data will be restricted until invention disclosures and/or provisional patent filings will be made with the institutional Technology Transfer Office (TTO).  ***Legal Issues – Confidentiality and IPR Clause:*** A collaboration agreement will be signed by the research partners that will include a confidentiality clause and an agreement on the ownership of project results (Intellectual Property Rights - IPR). If inventions or new technologies will be made in connection with data, access to data will be restricted until invention disclosures and/or provisional patent filings will be made. The owner of the IPR will define the use of data for exploitation or its publication in a scientific journal).  ***Legal Issues – Confidentiality and IPR Clause with Industry Partner:*** This project will be carried out in collaboration with an industry partner. The intellectual property rights will be set out in the collaboration agreement. If inventions or new technologies will be made in connection with data, access to data will be restricted until invention disclosures and/or provisional patent filings will be made. The intellectual property generated from this project will be fully exploited by the industry partner as per agreement. The owner of the IPR (Intellectual Property Rights) will define the use of data for exploitation or its publication in a research journal. The aim is to patent the final procedure and then publish the work in a research journal and to publish the supporting data under an open Creative Commons Attribution (CC BY) license. |
|  |

* 1. Data storage and preservation
     1. How will your data be stored and backed-up during the research?

|  |
| --- |
| **General Information:** |
| Mention what the needs are in terms of data storage and where the data will be stored. Please specify your back-up procedure (frequency of updates, responsibilities, automatic/manual process, security measures, etc.).  ***Questions you might consider:***   * What is your storage capacity and where the data will be stored? * What are the back-up procedures? |

*Describe your storage and back-up strategies. Create a new row for each dataset. If storage and back-up strategies are valid for all datasets, you can summarize them in one row.*

|  |  |  |
| --- | --- | --- |
| **Dataset** | **Storage system** | **Back-up strategy** |
| Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. |

|  |
| --- |
| **Recommendations & Guidelines:** |
| ***Data storage*** means saving data on storage devices for short-term security while the research project is still ongoing. Where possible, use maintained storage services such as those provided by your research institution. It is not recommended to store data on portable devices (e.g., USB sticks, laptops) or commercial cloud services. Note that when storing sensitive data, it is required to ensure that only authorized users can access these data.  ***Backup*,** that is, the generation of additional copies of your data – should be as automatic as possible, be carried out regularly, copy data and store it on different storage media than the original location. |
| **How could your answers look like? – Examples of Answers:** |
| ***Laboratory Notebook & Hard Copies:*** All laboratory experimental details and data as well as standard operating procedures will be dated and recorded regularly in dedicated laboratory notebooks and scrutinized in regulator lab meetings. Original notebooks and hardcopies will be stored in the PI’s laboratory.  ***Lab computers, external hard disks that are not connected to the Internet and managed by ZHAW´s IT:*** Data in laboratory computers (isolated, no internet connection) and external hard disks will be regularly backed up in the electronic form to secure against loss or damage.  ***Data in Analytical Instruments:*** Analytical data will be collected by the instruments that will generate them; they will be processed by the native programs associated with the instruments. The data will be regularly downloaded and stored as <.csv> <SQL Dump> <scan> <tiff> with reference in the laboratory notebook.  ***ZHAW computer connected to LAN:*** Data will be processed on computers managed by ZHAW’s IT department. They will be patched monthly, have a local firewall enabled, and be configured with automatically updated malware protection.  ***Pool / Secure Pool:*** Data will be stored on centralized storage, with data redundancy across ZHAW’s two data centers, daily full backups, and anti-ransomware measures. A centralized anti-malware solution will continuously scan files for malicious content. Individual files/folders will be restorable by users from hourly (up to 2 days), daily (up to 9 days) and weekly snapshots (up to two months).  ***SharePoint Online:*** Data will be stored on centralized storage, with data redundancy across ZHAW’s two data centers and daily full backups. Files will be versioned, with the ability to restore earlier versions.  ***HPC-Archive:*** Data will be stored in a three-tier active archive with redundant system components. SSD and disk storage tiers will employ redundant failover servers and RAID configurations that protect from server and disk failures. All data will be synchronously written as a copy on two LTO tape libraries: The two libraries will be in different buildings to protect data from severe events like building fire.  ***REDCap:*** A backup of the data will take place once a day at 5 pm by automated standard processes of the ZHAW. The retention period is 180 days, i.e., it will be possible to restore data that is up to 180 days old. The data will be backed up on an internally hosted ZHAW server. |

* + 1. What is your data preservation plan?

|  |
| --- |
| **General Information:** |
| 1. Specify which data will be retained, shared and archived after the completion of the project and the corresponding data selection procedure (e.g., long-term value, potential value for reuse, obligations to destroy some data, etc.). Please outline a long-term preservation plan for the datasets beyond the lifetime of the project. In particular, comment on the choice of file formats and the use of community standards.   ***Questions you might consider:***   * What procedures would be used to select data to be preserved * How will potential users find out about your data? |

*Create a new row for each dataset you plan to preserve.*

|  |  |  |
| --- | --- | --- |
| **A dataset that will be preserved** | **Why have you decided to preserve this dataset?** | **What preservation strategies do you plan to implement?** |
| Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. |

|  |
| --- |
| **Recommendations & Guidelines:** |
| 1. **Data Preservation** does not necessarily mean that data will be publicly shared. Rather, it refers to procedures aimed at keeping and maintaining datasets over a long period of time, beyond the lifetime of the project. Those procedures might involve format migration or media refreshment. Preservation typically refers to data from finished research projects. 2. **A data preservation plan** describes how the data will be preserved after the project ends so that its reliability can be ensured over a long period. Such a description includes information about what data, and how the data will be kept and archived over the long term. Furthermore, it outlines strategies applied to preserve data. Those strategies might refer to choosing a location for the dataset (e.g., a repository that is committed to long-term preservation) or selecting appropriate data formats (i.e., open formats or formats that will not become obsolete soon). 3. **What data to preserve?** Note that there is no need to preserve all the data your produced and collected during your research project. You should preserve your dataset If data has a high potential to be reused, if data is unique or/and cannot be easily reproduced, if data is needed to reconstruct or justify your research findings, or if there are contractual or regulatory obligations to do so (e.g., requirements of the funder or the institutional policy). 4. **How long to preserve?** The SNSF does not define a specific timeframe since this can vary between disciplines or research topics. As a general rule, the SNSF recommends preserving research data for 10 years. |

* 1. Data sharing and reuse
     1. How and where will the data be shared?

|  |
| --- |
| **General Information:** |
| Consider how and on which repository the data will be made available. The methods applied to data sharing will depend on several factors such as the type, size, complexity and sensitivity of data. Please also consider how the reuse of your data will be valued and acknowledged by other researchers  ***Questions you might consider:***   * On which repository do you plan to share your data? * How will potential users find out about your data? |

*List all datasets you plan to publish. Create a new row for each dataset.*

|  |  |  |
| --- | --- | --- |
| **A dataset that will be published** | **Where will the data be published?** | **How the reuse of your data will be acknowledged by other researchers?** |
| Click or tap to enter text. | Click or tap to enter text. | Click or tap to enter text. |

|  |
| --- |
| **Recommendations & Guidelines:** |
| ***Where to publish?*** You can publish your data either in a generic, or discipline-specific or an institutional repository. It is recommended to choose a discipline specific repository. Such repositories provide discipline-specific metadata to describe your data. Furthermore, they frequently offer services of data curation.  In [re3data](https://www.re3data.org/), a global registry of research data repositories, various repositories are listed.  ***What to publish?*** The SNSF expects its funded researchers to share at least all data underlying a publication, meaning that these data have to be directly and freely available and deposited on a FAIR data repository. Shared data must enable other researchers to reproduce the published study.  If a dataset cannot be published (e.g., due to ethical restrictions), at least its metadata should be openly available. There are repositories that can handle sensitive data. |

* + 1. Are there any necessary limitations to protect sensitive data?

|  |
| --- |
| **General Information:** |
| Data have to be shared as soon as possible, but at the latest at the time of publication of the respective scientific output. Restrictions may be only due to legal, ethical, copyright, confidentiality or other clauses. Consider whether a non-disclosure agreement would give sufficient protection for confidential data  ***Question you might consider:***   * Under which conditions will the data be made available (timing of data release, reason for delay if applicable)? |

*List all dataset that cannot be available at all and describe the reason(s). Create a new row for each dataset.*

|  |  |
| --- | --- |
| **A dataset that will not be made available** | **For what reason(s)?** |
| Click or tap to enter text. | Click or tap to enter text. |

|  |
| --- |
| **Recommendations & Guidelines:** |
| The SNSF states that “[sensitive data does not preclude sharing, unless the rights and privacy of the subjects cannot be protected](https://www.snf.ch/en/dMILj9t4LNk8NwyR/topic/open-research-data)”. |

* + 1. All digital repositories I will choose are conform to the FAIR Data Principles

|  |
| --- |
| **General Information:** |
| The SNSF requires that repositories are conform to the [FAIR Data Principles](https://www.snf.ch/SiteCollectionDocuments/FAIR_principles_translation_SNSF_logo.pdf). If there are no repositories complying with these requirements in your research field, please deposit a copy of your data on a generic platform (see [examples](https://www.snf.ch/SiteCollectionDocuments/FAIR_data_repositories_examples.pdf)). If no data can be shared, this is a statement of principles. |

*Confirm that all chosen repositories will be conform to the FAIR Data Principles*

***Yes***

|  |
| --- |
| **Recommendations & Guidelines:** |
| The SNSF provides a checklist to identify repositories complying with the FAIR Data Principles. If all the questions listed below are answered with “yes”, the chosen repository is compatible with FAIR principles.   * Are datasets (or ideally single files in a dataset) given globally unique and persistent identifiers (e.g. DOI)? * Does the repository allow the upload of intrinsic (e.g. author's name, content of dataset, associated publication, etc.) and submitter-defined (e.g. definition of variable names, etc.) metadata? * Is it clear under which licence (e.g. CC0, CC BY, etc.) the data will be available, or can the user upload/choose a licence? * Are the citation information and metadata always (even in the case of datasets with restricted access) publicly accessible? * Does the repository provide a submission form requesting intrinsic metadata in a specific format (to ensure machine readability/interoperability)? * Does the repository have a long-term preservation plan for the archived data? |

* + 1. I will choose digital repositories maintained by a non-profit organization.

|  |
| --- |
| **General Information:** |
| The SNSF supports the use of non-commercial repositories for data sharing. Costs related to data upload are only covered for non-commercial repositories. |

*Do you plan to choose repositories maintained by a non-profit organization?*

***Yes***  **No**

*If “No”, explain why you cannot share your data on a non-commercial digital repository*

Click or tap to enter text.

|  |
| --- |
| **Recommendations & Guidelines:** |
| In [re3data](https://www.re3data.org/search?query=), you can set filters in such a way as to show only non-profit repositories. |

* 1. Regulation documentation
     1. Regulation metadata

|  |  |
| --- | --- |
| **Concerning** | **Details** |
| issued by | Servicestelle Forschungsdaten |
| decided by | Leiter:in Research & Infrastructure, HSB |
| archived in | 6.07.04 Schulung, Weiterbildung und Beratung |
| place of publication | Public |

* + 1. Regulation version history

|  |  |
| --- | --- |
| **version** | **description of change** |
| 1.0.0 | Originalversion |
| 2.0.0 | "Introductory Remarks" wurden gemäss den neuen Anforderungen des SNF angepasst. |