Requirements of the Research Funding Organisations

In the past few years, more and more institutions offering research funding expect a plan how the produced or re-used research data will be handled during the project and after the end of the project. Thereby a data management plan not only facilitates handling of research data but also enhances the chance to get a promotion or is a mandatory deliverable at the beginning of the project. The expectations of the three funding institutions EU (Horizon 2020), DFG and BMBF are summarized here.

Horizon 2020

Detailed recommendations and rules exist in EU's Horizon 2020 funding programme. For Horizon 2020 projects the Open Research Data Pilot (ORD pilot, Guidelines on FAIR Data Mangement, FAIR for *Findable, Accessible, Interoperable and Reusable*) is prioritized. The ORD pilot follows the principle *as open as possible, as closed as necessary*. A data management plan and sharing of all research data that is allowed to be published is mandatory for all Horizon 2020 projects except for those using an opt-out. Of course, privacy concerns, intellectual property rights and obligations to third parties, e.g. for commercialization, also render the sharing of research data impossible under the ORD pilot.

Costs related to open access to research data can be reimbursed. Resource and budgetary planning should be added to the proposal for promotion.

The milestone plan of the proposed project has to contain a deliverable for an initial data management plan at month 6 at the latest. This data management plan...

> *...should include information on*
>
> - *the handling of research data during and after the end of the project*
> - *what data will be collected, processed and/or generated*
> - *which methodology and standards will be applied*
> - *whether data will be shared/made open access and*
> - *how data will be curated and preserved (including after the end of the project)*
>
> *[from http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-data-mgt_en.pdf]*

A longer and much more comprehensive list of questions can be found in the Horizon 2020 Data Management Plan Template [in the Annex of http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm]. This list has been evaluated and adjudged to be helpful [Marjan Grootveld; Ellen Leenarts; Sarah Jones; Emilie Hermans; Eliane Fankhauser; OpenAIRE and FAIR Data Expert Group survey about Horizon 2020 template for Data Management Plans; DOI: 10.5281/zenodo.1120245]. For Horizon 2020 ERC projects a shortened list of questions exists. The European Research Council (ERC) supports excellent research. Well-known researchers and research groups, even without an international consortium, may get a promotion here.

The data management plan of a Horizon 2020 project is a "living document".

> *The DMP needs to be updated over the course of the project whenever significant changes arise, such as (but not limited to):*
>
> - *new data*
> - *changes in consortium policies (e.g. new innovation potential, decision to file for a patent)*
> - *changes in consortium composition and external factors (e.g. new consortium members joining or old members leaving).*
>
> *The DMP should be updated as a minimum in time with the periodic evaluation/assessment of the project.*
>
> - *If there are no other periodic reviews foreseen within the grant agreement, then such an update needs to be made in time for the final review at the latest.*
> - *Furthermore, the consortium can define a timetable for review in the DMP itself*
>
> *[from http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm].*
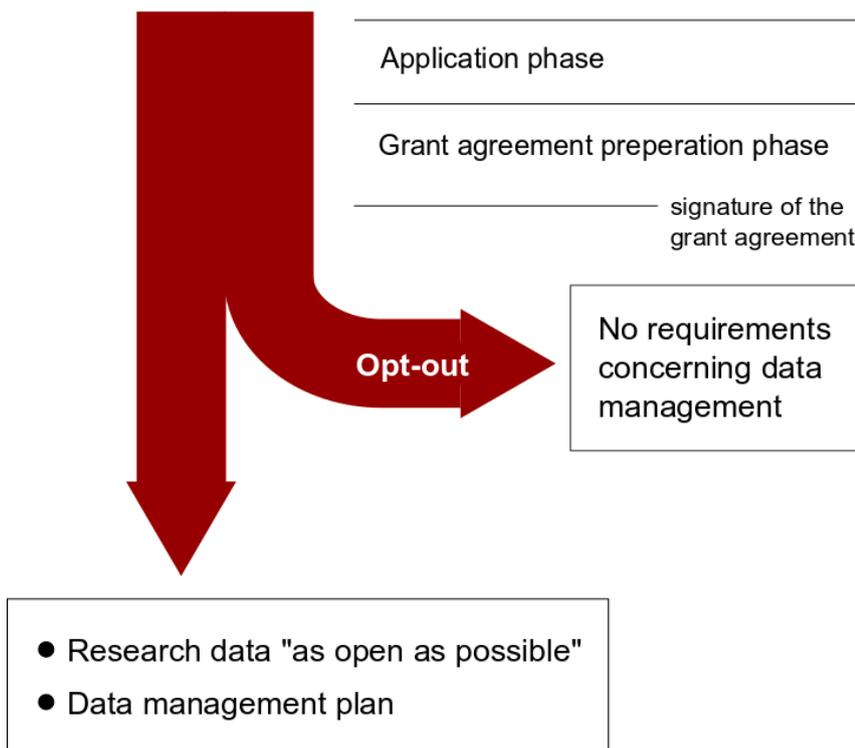
Nonetheless, an opt-out frees a Horizon 2020 project from both, research data sharing and a data management plan. The European Commission has acknowledged with this rule that there may be good reasons...

> *...to keep some or even all research data generated in a project closed. The Commission therefore provides robust opt-out possibilities at any stage, that is*
>
> - *during the application phase*
> - *during the grant agreement preparation (GAP) phase and*
> - *after the signature of the grant agreement*
>
> *[from http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues/open-access-data-management/data-management_en.htm].*

Horizon 2020 project

Application phase

Grant agreement preperation phase

signature of the grant agreement

Opt-out → No requirements concerning data management

- Research data "as open as possible"
- Data management plan

If a project decides to use this possibility, the opt-out has explicitly to be declared since the default is the Open Research Data pilot. Horizon 2020 projects will not be penalized for opting out [http://ec.europa.eu/research/participants/docs/h2020-funding-guide/cross-cutting-issues /open-access-data-management/data-management_en.htm].

DFG

The Deutsche Forschungsgemeinschaft (DFG) is the biggest research promoter in Germany. Strongly recommended for all DFG-promoted projects is the long-term storage of all primary data for at least ten years, which have been the basis of a publication [Safeguarding Good Scientific Practice, http://www.dfg.de/sites/flipbook/gwp/files/assets/basic-html/toc.html]. In its Guidelines on the Handling of Research Data, DFG additionally recommends to make available research data as soon as possible if this does not conflict with privacy concerns or other rights of third parties.

> *Data should be made accessible at a stage of processing that allows it to be usefully reused by third parties (raw data or structured data). To make sure this is the case, it must be ensured that access to the data is still guaranteed when, through publication, the rights of use relating to research data are transferred to a third party, usually a publishing house.*

A data management plan is not compulsory but for project planning and submission of proposals DFG has made the following recommendations:

> *Applicants should consider during the planning stage whether and how much of the research data resulting from a project could be relevant for other research contexts and how this data can be made available to other researchers for reuse. Applicants should therefore detail in the proposal what research data will be generated or evaluated during a scientific research project. Concepts and considerations appropriate to the specific discipline for quality assurance and the handling and long-term archiving of research data should be taken as a basis. The relevant explanations must contain information about data types, discipline-specific standards (if applicable) and the choice of suitable repositories, if these are available for a given research area or particular data types. Details should also be provided on any third-party rights affected and preliminary planning for the data publication schedule*
>
> *[from the DFG Guidelines on the Handling of Research Data].*

Details concerning these topics would enclose a first version of a data management plan. For some subjects DFG proposes to follow subject-specific recommendations:

- Biodiversity research
- Education research
- Social, behavioral and economic sciences
- Linguistics
- Literature
- Psychology

A list of links in English or German (more comprehensive) guides to these special recommendations.

BMBF

The German ministry for education and research did not publish general guidelines concerning research data management in the Web so far. Instead, requirements and recommendations are given in the funding guidelines (in German) and depend on the support program. Many funding guidelines, predominantly those which shall support collaboration with private companies or shall foster bilateral or other political cooperation, do not mention research data management at all. Others bindingly stipulate submission of a data management strategy and expect an open-data policy. In some of these funding guidelines, applicants are refered to the FAIR guidelines, i.e. the same guidelines that are also authoritative in Horizon 2020. This is equivalent to sharing of all research data that is allowed to be published and, at least in this case, applicants should answer the questions in the annex of the FAIR guidelines. In any case, applicants should carefully read the funding guideline.

The diagram below shows the number of BMBF funding guidelines with conditions concerning research data management. It is a time series of blocks of ten funding guidelines, in sum 100. The older ones, beginning with publication date 26.05.2017, are on the left, the newer, ending with publication date 13.03.2018, are on the right.
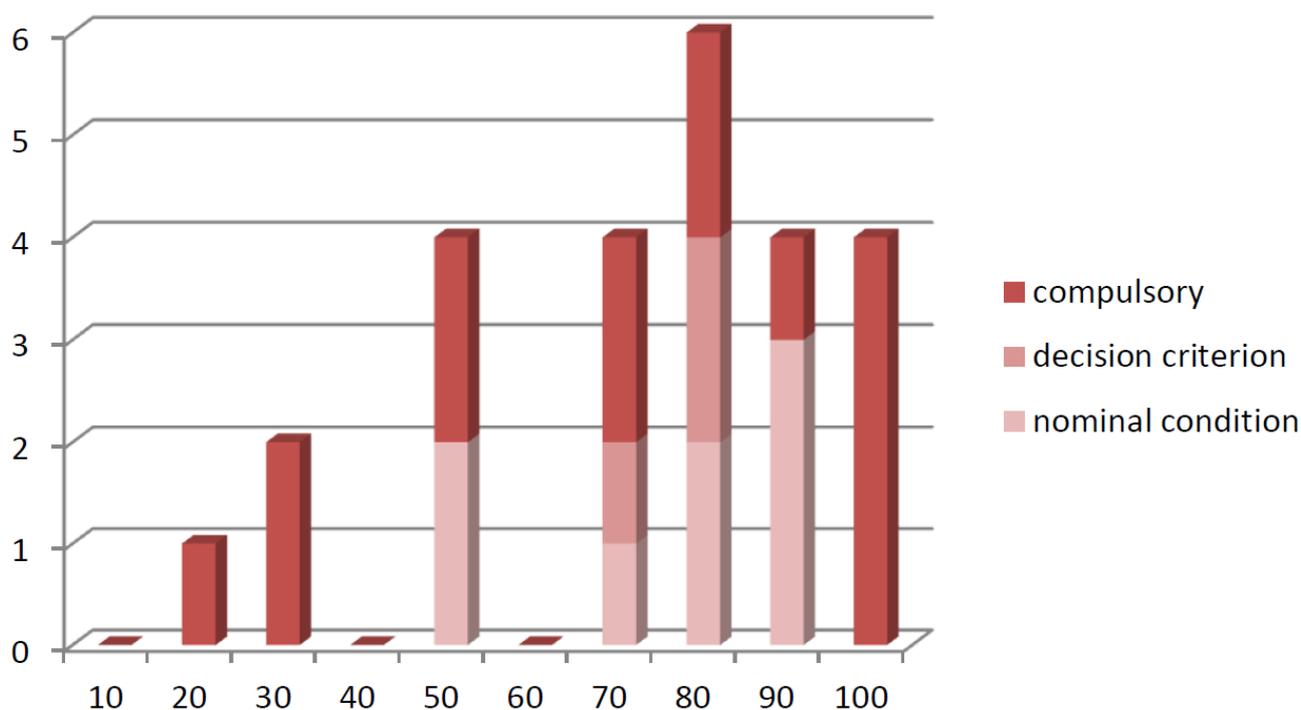
An increase of guidelines with data management rules is evident, in the total number of guidelines as well as in guidelines with compulsory conditions alone.