

FWO DMP Template

Project supervisors (from application round 2018 onwards) and fellows (from application round 2020 onwards) will, upon being awarded their project or fellowship, be invited to develop their answers to the data management related questions into a DMP. The FWO expects a **completed DMP no later than 6 months after the official start date** of the project or fellowship. The DMP should not be submitted to FWO but to the research co-ordination office of the host institute; FWO may request the DMP in a random check.

At the end of the project, the **final version of the DMP** has to be added to the final report of the project; this should be submitted to FWO by the supervisor-spokesperson through FWO's e-portal. This DMP may of course have been updated since its first version. The DMP is an element in the final evaluation of the project by the relevant expert panel. Both the DMP submitted within the first 6 months after the start date and the final DMP may use this template.

1. General Information	
Name applicant	André Vantomme
FWO Project Number & Title	G089622N – Quantum color centers in diamond: unraveling the link between the atomic-scale structure and functionality
Affiliation	<input checked="" type="checkbox"/> KU Leuven <input type="checkbox"/> Universiteit Antwerpen <input type="checkbox"/> Universiteit Gent <input type="checkbox"/> Universiteit Hasselt <input type="checkbox"/> Vrije Universiteit Brussel <input type="checkbox"/> Other:
2. Data description	
Will you generate/collect new data and/or make use of existing data?	<input checked="" type="checkbox"/> Generate new data <input type="checkbox"/> Reuse existing data

<p>Describe the origin, type and format of the data (per dataset) and its (estimated) volume</p> <p><i>If you reuse existing data, specify the source of these data.</i></p> <p><i>Distinguish data types (the kind of content) from data formats (the technical format).</i></p>	<p>Primary data (generated by researcher and research group):</p> <p>1) <u>Analogue data</u>:</p> <p>1.1) Samples (bulk solids).</p> <p>1.2) Laboratory logbooks.</p> <p>1.3) Researchers' notebooks.</p> <p>2) <u>Digital data</u> (total estimated volume of the order of GB/year):</p> <p>2.1) Experimental data (as directly measured): data files in an output format dictated by the specific software, containing numerical data (measurement output) and text metadata (describing experimental/instrumental parameters). Different formats, depending on instrument used for the measurements.</p> <p>2.2) Electronic laboratory logbooks containing detailed information on the samples, sample treatment, implantation conditions and specifications, technical problems, main results... Such electronic logbooks are set up both for emission channeling and photo luminescence measurements.</p> <p>2.3) Processed and analysed experimental data: text documents, spreadsheets and graphical representation of data, used for (or resulting from) data analysis.</p>
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3. Ethical and legal issues

<p>Will you use personal data? If so, shortly describe the kind of personal data you will use AND add the reference to your file in your host institution's privacy register.</p> <p><i>In case your host institution does not (yet) have a privacy register, a reference is not yet required of course; please add the reference once the privacy register is in place in your host institution.</i></p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If yes:</p> <ul style="list-style-type: none"> - Privacy Registry Reference: - Short description of the kind of personal data that will be used:
<p>Are there any ethical issues concerning the creation and/or use of the data (e.g. experiments on humans or animals, dual use)? If so, add the reference to the formal approval by the relevant ethical review committee(s).</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If yes:</p> <ul style="list-style-type: none"> - Reference to ethical committee approval:
<p>Does your work possibly result in research data with potential for tech transfer and valorisation? Will IP restrictions be claimed for the data you created? If so, for what data and which restrictions will be asserted?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, please comment:</p> <p>Although tech transfer and valorisation are not direct goals of this project, such opportunities may emerge. In that case, IP related matters will be discussed among the staff involved in the project. The outcome of that discussion will be appended to this data management plan.</p>
<p>Do existing 3rd party agreements restrict dissemination or exploitation of the data you (re)use? If so, to what data do they relate and what restrictions are in place?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>If yes, please comment:</p>

4. Documentation and metadata

<p>What documentation will be provided to enable understanding and reuse of the data collected/generated in this project?</p>	<p>During each experiment, a detailed logbook will be used (different logbooks for the different experimental setups). These logbooks will contain the date, a brief description of the performed experiment, the parameters used for each measurement, as well as the names of all the saved files.</p> <p>The names of the files will be structured in a comprehensible way: <i>system studied/date/main parameters used</i></p> <p>In addition, data will be stored in a folder per experimental setup, the type of investigated system and the corresponding date. In this way, by tracking the corresponding logbook notes, each file can be easily found on the local computers controlling the setup and on the server of the laboratory.</p> <p>The analysis files will contain notes describing the analysis procedure and mention which original data files are included. A readme file describing the goal of the experiment and the analysis procedure will be stored in the folder where the data are saved.</p>
<p>Will a metadata standard be used? If so, describe in detail which standard will be used. If not, state in detail which metadata will be created to make the data easy/easier to find and reuse.</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, please specify:</p> <p>There is no formal metadata standard in the research field of this project. However, we will “metadata” according to published examples in our field, and will make sure that the accompanying readme file will explain the structure of the data.</p>

5. Data storage & backup during the FWO project

Where will the data be stored?	<p>EC: ISOLDE and Lisbon? PL?</p> <p>All physical logbooks will be stored in a cabinet at the institute. Once each logbook is full, it will be stored in a central storage cabinet of the institute, for a period of 15 years after the last registered experiment. Parts of the physical logbooks will be regularly scanned and stored digitally.</p> <p>The electronic data, including the physical logbook scans, electronic logbooks, raw data and analysis files, as well as reports, will be saved on local computers. The data stored on these computers are backed-up daily on a central server. A mirror copy of this server is made on a back-up server located in a different building. All researchers involved in the project will have access to the corresponding folder.</p> <p>This project also involves experiments at an international large-scale facility (CERN). The setups, including the computers that control them and collect the data, are owned and managed by a consortium of collaborators that includes the PI of this project. The storage & backup policy applied to this data generated at CERN is the same as for the data generated at the KU Leuven.</p>
How will the data be backed up?	All data on the server are automatically backed-up on a daily basis, as implemented by the IT responsible.
Is there currently sufficient storage & backup capacity during the project? If yes, specify concisely. If no or insufficient storage or backup capacities are available, then explain how this will be taken care of.	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If no, please specify:</p> <p>The amount of data that will be generated in this project should not exceed a few hundred GBs, which is small enough to be stored on local computers and on central servers.</p>

<p>What are the expected costs for data storage and backup during the project? How will these costs be covered?</p> <p><i>Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of the allocated project budget to be used to cover the cost incurred.</i></p>	<p>The institutes involved have their own data servers and back-up systems. The cost for replacements of outdated infrastructure is shared by the staff members. Assuming a minimal lifetime of 5 years, the costs for this project are estimated to be at most a few hundred euros per year, and will be covered by the respective working budget.</p>
<p>Data security: how will you ensure that the data are securely stored and not accessed or modified by unauthorized persons?</p>	<p>Data servers and backups at KU Leuven can only be accessed via a password-protected central login, complemented by a personal authenticator (via mobile phone).</p>

6. Data preservation after the end of the FWO project

FWO expects that data generated during the project are retained for a period of minimally 5 years after the end of the project, in as far as legal and contractual agreements allow.

<p>Which data will be retained for the expected 5 year period after the end of the project? In case only a selection of the data can/will be preserved, clearly state the reasons for this (legal or contractual restrictions, physical preservation issues, ...).</p>	<p>All the generated data will be stored for at least 5 years after the project ends.</p>
<p>Where will these data be archived (= stored for the long term)?</p>	<p>All data will be stored on the central back-up servers owned by and located at the partner institutes.</p>

<p>What are the expected costs for data preservation during these 5 years? How will the costs be covered?</p> <p><i>Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of the allocated project budget to be used to cover the cost incurred.</i></p>	<p>The system and cost allocation mentioned under 5.4 will also be used for data preservation after the project ends. Costs are expected to be negligible (compared to personnel or consumable costs) and will be covered by other running projects from the involved groups (in case of no running projects, accumulated reserves will be used).</p>
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7. Data sharing and reuse

Are there any factors restricting or preventing the sharing of (some of) the data (e.g. as defined in an agreement with a 3 rd party, legal restrictions)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, please specify:
Which data will be made available after the end of the project?	All data can be made available on an open repository (RDR at KU Leuven), for example if requested by the editor or publisher of a scientific journal or via restricted access upon request of an individual (e.g., a researcher who intends to reproduce an experiment).
Where/how will the data be made available for reuse?	<input type="checkbox"/> In an Open Access repository <input checked="" type="checkbox"/> In a restricted access repository <input checked="" type="checkbox"/> Upon request by mail <input type="checkbox"/> Other (specify): Upon request and after the agreement of the partners of the collaboration, all data can be made available on a repository. If other researchers have an interest in data published in our scientific papers, they can contact the corresponding author of the publication in order to be pointed to the data sets.
When will the data be made available?	After the research results have been published and after agreement by the partners.

Who will be able to access the data and under what conditions?	All involved researchers will have access to all the data. Upon request and after agreement of the partners, access to the data can be granted to other individuals/parties.
<p>What are the expected costs for data sharing? How will these costs be covered?</p> <p><i>Although FWO has no earmarked budget at its disposal to support correct research data management, FWO allows for part of the allocated project budget to be used to cover the cost incurred.</i></p>	The data volume is sufficiently small, freeware can be used to transfer and share the data.

8. Responsibilities

Who will be responsible for the data documentation & metadata?	The partners involved in the project.
Who will be responsible for data storage & back up during the project?	The partners involved in the project, together with the IT responsible of the research group, who is responsible for the implementation of the storage and regular back up on the central server.
Who will be responsible for ensuring data preservation and sharing?	The partners involved in the project.
<p>Who bears the end responsibility for updating & implementing this DMP?</p> <p><i>Default response: The PI bears the overall responsibility for updating & implementing this DMP</i></p>	<p>Although all researchers involved in the project have their responsibility, the PI bears the overall responsibility for updating & implementing this DMP.</p> <p>It should be emphasized that this is a project involving external partners, i.e., besides KU Leuven also at ISOLDE, Lisbon, Diepenbeek and Torino. (Minor) differences in the overall philosophy and approach of the DMP may occur. Hereby, each partner is responsible for the DMP at her/his institute.</p>