Plan Overview

A Data Management Plan created using DMPonline

Title: Transforming Research Equipment Connectivity

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Project abstract:
Laboratory data can be produced by various equipment, each representing a data silo. Users may have to extract and enrich their (meta)data which may lead to inconsistencies between users and labs. Or users may receive post-processed files from other lab users or technicians, increasing the time lag between data acquisition and use whilst also reducing the understanding of how the data was manipulated. This project aims to enhance scientific data collection by expanding the Lab Equipment Adapter Framework (LEAF) from a proof-of-concept to a fully functional, open-source IoT platform. LEAF overcomes limitations of proprietary research equipment by providing seamless, modular integration using open messaging protocols like MQTT. It supports real-time data processing and visualization, ensuring data accessibility and reliability. The project will develop additional device adapters, improve modularity, and optimize deployment for various scales, from local labs to large research infrastructures, fostering open science and collaborative research.

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Transforming Research Equipment Connectivity

General Information

Name applicant and project number

Jasper J. Koehorst, 500.040.2488

Name of data management support staff consulted during the preparation of this plan and date of consultation.

Bart Nijsse

1. What data will be collected or produced, and what existing data will be re-used?

1.1 Will you re-use existing data for this research?

If yes: explain which existing data you will re-use and under which terms of use.

- No

1.2 If new data will be produced: describe the data you expect your research will generate and the format and volumes to be collected or produced.

Question not answered.

1.3. How much data storage will your project require in total?

- 0 – 10 GB

2. What metadata and documentation will accompany the data?

2.1 Indicate what documentation will accompany the data.

Extensive documentation will be written and updated during the progress of this project. This will describe in detail the technical as well as the end-user side, explaining how to set up the software as a developer or end-user without going into too much technical depth. All links will be made available via a landing page where all information can be clearly found.

2.2 Indicate which metadata will be provided to help others identify and discover the data.

Data passing through this platform is enriched with device- and sensor-specific metadata. This ensures that measured values can always be traced back to how, what, and when the data was generated. Functionalities will be built in to enable mapping sensor information to known sensor standards to ensure FAIR compliance, including, for example, the Observations and Measurements standard.

3. How will data and metadata be stored and backed up during the research?

3.1 Describe where the data and metadata will be stored and backed up during the project.

* Other (please specify)

Because this involves real-time data, it must be possible to store 1-1,000 measurements per second very quickly. Standard network storage is not suitable for this, and specific databases will be set up to ensure that the data passing through this application is stored properly and can also be retrieved. However, storage is outside the focus of this project, but it will be taken into account where possible.

3.2 How will data security and protection of sensitive data be taken care of during the research?

* Additional security measures (please specify)

The system is configured so that user management can be set up to prevent just anyone from accessing the data. This is therefore in addition to the existing IT security layer within our organization. However, we will not store sensitive information.

4. How will you handle issues regarding the processing of personal information and intellectual property rights and ownership?

4.1 Will you process and/or store personal data during your project?

If yes, how will compliance with legislation and (institutional) regulation on personal data be ensured?

- No

4.2 How will ownership of the data and intellectual property rights to the data be managed?

The department where the data will be stored will always remain the owner of the data. This application only handles the data transformation.

5. How and when will data be shared and preserved for the long term?

5.1 How will data be selected for long-term preservation?

Question not answered.

5.2 Are there any (legal, IP, privacy related, security related) reasons to restrict access to the data once made publicly available, to limit which data will be made publicly available, or to not make part of the data publicly available?

If yes, please explain.

- No

5.3 What data will be made available for re-use?

- All data resulting from the project will be made available

5.4 When will the data be available for re-use, and for how long will the data be available?

- Data available as soon as article is published

The infrastructure code will be available even before publication. Data passing through the application and being transformed is project-dependent, but in principle, all data will be made available after publications appear.

5.5 In which repository will the data be archived and made available for re-use, and under which license?

The code developed in this project will be made available via a GIT repository on GitLab and will be publicly available during and after the project's lifespan. The license will be Apache License 2.0. The application will also be registered via Pypi, a standard distribution environment for Python applications, and with registration platforms such as bio.tools.

5.6 Describe your strategy for publishing the analysis software that will be generated in this project.

The code will be publicly available during development. Outreach through a publication will follow the standard procedures for publishing an article.

6. Data management costs

6.1 What resources (for example financial and time) will be dedicated to data management and ensuring that data will be FAIR (Findable, Accessible, Interoperable, Re-usable)?

This is part of the software development and is done during the project.