

Memorandum: Research Standards and Guidelines

Preface

BATTERY 2030+ is the large-scale and long-term European research initiative with the vision of inventing the sustainable batteries of the future, providing European industry with disruptive technologies and a competitive edge throughout the battery value chain and enabling Europe to reach the goals of a climate-neutral society envisaged in the European Green Deal.

Making Battery 2030+ a success story requires an unprecedented level of coordination, collaboration and exchange of scientific data on the European level, involving a large number of project partners. To date, the initiative comprises a core group of 23 organisations and more than 100 additional partners active in six international collaborative research projects which are part of the Initiative.

For BATTERY 2030+ being able to achieve the ambitious goals laid out in its roadmap, research within the initiative – and hopefully beyond – should meet the highest standards in terms of data generation, data processing, data storage, data exchange and metadata treatment. It is therefore one of the tasks of the initiative to help the battery research community develop powerful research data management (RDM) strategies and tools as well as consensus-based standards and guidelines for experimental and theoretical research on batteries.

Combined, RDM tools and standardisation will not only improve the general quality of research within BATTERY 2030+ and enable the FAIR data principles. More importantly, collaboration will be possible on entirely new levels, allowing for novel, autonomous research approaches, accelerated materials discovery, and data-based research in a field that has thus far mostly adhered to classical trial and error research.

Strategy

The implementation of collaborative RDM and standardisation is a step-by-step process. BATTERY 2030+ is taking action by:

- Developing ontologies and unified but nonetheless dynamic and “living” data management plans
- Identifying needs for standardisation and working on consensus-processes for their definition and implementation
- Interfacing with existing initiatives such as Batteries Europe which pursue similar goals in regards to standardisation
- Providing resources and information, e.g., white papers, guidelines and a dedicated website on RDM and standardisation-related topics
- Planning further steps to use RDM and standardisation as tools to connect the battery community in Europe.

Vision

From atomic-scale simulations to AI-accelerated materials discovery to smart batteries: The BATTERY 2030+ Initiative covers a wide range of disciplines and topics in the field of battery research. Collaborating under the umbrella of the initiative requires researchers across Europe to exchange ideas, information, and data in new ways. Unified ontologies, data management strategies and tools, as well as standardisation of protocols for data generation, processing, sharing, and reporting will create a more connected European battery community that will be well-positioned to develop the sustainable and powerful battery technology of the future.

Commitment

We, the members of the BATTERY 2030+ Core Group, the coordinators of the participating projects, and undersigned researchers are committed to working with the battery research community on developing a unified framework for research data management and standardisation of protocols for experimental and theoretical research. We understand that establishing consensus-based standards for data generation, processing, storage, and exchange is a key to the success of the initiative, and we encourage all participating researchers to actively support the efforts of BATTERY 2030+ in RDM and standardisation.