



NEXTRVA!



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List of Acronyms and abbreviations

AE	Affiliate Entity
AP	Associated Partner
BEN	Beneficiary
BMS	Battery Management Systems
COO	Coordinator
DMP	Data Management Plan
EC	European Commission
EOSC	European Open Science Cloud
EU	European Union
FAIR	Findable, Accessible, Interoperable and Reusable
GA	Grant Agreement
GenA	General Assembly
HE	Horizon Europe
OA	Open Access
PID	Persistent Identifier
SME	Small and Medium sized Enterprise
SoH	State-of-Health
TRL	Technology readiness level
WP	Work Package

1. Executive Summary

This deliverable is the Initial Data Management Plan of NEXTBAT

The main goal of the NEXTBAT project (<https://nextbat.eu/>) is to provide the safest, interoperable, and sustainable battery system ever designed based on multi-physical safety design (electrical, thermal and mechanical). The project will contribute to develop a new framework for the standardization of next generation battery system production chain in the European Union.

The NEXTBAT project has received funding from the Horizon Europe Framework Programme under Grant Agreement No 101103983.

This document D8.2 - *Initial Data Management Plan* (DMP) is an initial version about data management procedures and activities of the NEXTBAT project and it will be updated by each periodic report (D8.3; D8.4). The DMP will follow the EU (European Union) guidelines according to the FAIR (Findable, Accessible, Interoperable and Reusable) principles ensuring knowledge is integrated and available for re-use in future research and projects. It is intended primarily for the use of the NEXTBAT consortium and for external stakeholders interested in evaluating the data management procedures of the project.

This deliverable first describes the NEXTBAT project and summarises the data to be collected / generated in the project lifetime. The deliverable describes the methodology applied in the NEXTBAT framework to ensure effective data management across the entire life cycle, making it FAIR, and presents the principles for allocating the NEXTBAT project's data management resources, including the partner responsibilities. In addition, the data security strategy and ethical aspects are discussed.

2. Introduction

2.1. General project information

NEXTBAT will significantly contribute to decrease the carbon footprint of the innovative battery system, e.g. thanks to the high recyclability capacity of both hardware and cells components introduced along the production chain, as well as to improve battery system safety, performance and reduce lifecycle cost. The experience and expertise of renowned research centres, large enterprises and SMEs (Small and Medium sized Enterprises) will allow the development of innovative safe-by-design battery systems with increased performances, recyclability and interoperability that will reach TRL5 by the end of the project.

The electrification of transport and mobile applications requires high-performance and safe battery system. Thanks to the innovative technologies developed within the NEXTBAT framework, the battery system performances will be enhanced (energy/power density increase by 30-50%) with decreasing battery weight by 25% using a newly developed lightweight material. Battery management systems (BMS) will be incorporated at the cell and system unit allowing to increase battery lifetime by 20% at a state-of-health (SoH) of 80% at cell level with innovative electronic sensing/actuating systems. Two interoperable prototypes will be manufactured, and safety guidelines and methodologies will be established as a result of safety testing campaigns performed by certified laboratories and the end users, whereas dismantling and reuse of BMS parts will be assessed alongside with life cycle analysis.

The NEXTBAT consortium brings together 11 beneficiaries (BEN), one affiliate entity (AE) and one associated partner (AP) presenting six EU member states, namely Finland, France, Germany, Greece, Spain, Sweden and Switzerland. The partners are listed in Table 1. All partners adhere to sound data management principles to ensure that the meaningful data collected, processed, and/or generated throughout the project's duration are well-managed, archived, and preserved, in line with the Guidelines on Data Management in earlier Horizon 2020¹. The NEXTBAT consortium is also committed to promoting open science. All the scientific articles, conference papers, public deliverables, and project reports are published according to the open access principles in a publicly available and stored repository. All publishing partners have budgeted funding to cover open access costs, and all generated

¹ [Data management - H2020 Online Manual \(europa.eu\)](https://ec.europa.eu/info/data-portal/data-open-access/data-management-guidelines-horizon-2020_en)

public research outputs will be published through public portals openly without delay and stored in a public repository.

Table 1. NEXTBAT Partners

#	Role	Short name	Legal name	Country	PIC #
1	COO	VTT	TEKNOLOGIAN TUTKIMUSKESKUS VTT OY	FI	932760440
2	BEN	RISE	RISE RESEARCH INSTITUTE OF SWEDEN AB	SE	999613422
3	BEN	APPLUS	LGAI TECHNOLOGICAL CENTRE SA	ES	986282130
4	BEN	CEA	COMMISARIT A L'ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	FR	999992401
5	BEN	FHG	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG EV	DE	999984059
6	BEN	BSC CNS	BARCELONA SUPERCOMPUTING CENTER – CENTRO NACIONAL DE SUPERCOMPUTACION	ES	999655520
7	BEN	VA	VALMET AUTOMOTIVE EV POWER OY	FI	887120291
7.1	AE	VA Sol	VALMET AUTOMOTIVE SOLUTIONS GMBH	DE	885318904
8	BEN	IDNEO SAU	IDNEO TECHNOLOGIES SAU	ES	956234440
9	BEN	SUNLIGHT GROUP	SUNLIGHT GROUP SYSTMATA APOTHIKEFSIS ENERGEIAS VIOMICHANIKI KAI EMRORIKI ANONYMI ETARIA	EL	987516067
10	BEN	HEART	HEART AEROSPACE AB	SE	894212155
11	BEN	ZABALA	GBA ZABALA CONSEIL EN INNOVATION SA	FR	910085817
12	AP	CSEM	CSEM CENTRE SUISSE D'ELECTRONIQUE ET DE MICROTECHNIQUE SA – RESERCHE ET DEVELOPPMENT	CH	999958839

The NEXTBAT consortium has identified the importance to implement citizen, civil society and end-user engagement as key to increase societal awareness in the outcomes of the project. Cooperation and clustering with projects funded under the same topic and additionally with topic HORIZON-CL5-2022-D2-01-08 (*Coordination of large-scale initiative on future battery technologies, Batteries Partnership*) will also ensure that the technological, economic and societal needs of main stakeholders of the battery industry are included as considerations for the project's results development from the very beginning of NEXTBAT. Co-creation

workshops involving Policy Makers will be included to reduce time-to-market of the NEXTBAT innovations. Research data and output management are well covered in NEXTBAT.

2.2. Objectives of WP8

The objectives of the WP8 - *Project management* are to monitor activities and ensure that the anticipated project outcomes will be in time and in-line with the expected results; comply with the legal, contractual, financial, and reporting requirements of Horizon Europe (HE) and European Commission (EC), and organise and assist to coordination meetings, and adequately manage the partners funds.

Task 8.3 - *Data & risk management & contingency plan monitoring*, will supervise the project's technical progress concerning risk management, including identification of additional risks beyond those identified during proposal preparation, and efficient implementation of contingency measures, coordinating with Work Package (WP) leaders. The DMP will be generated to ensure that FAIR data principles (see below Ch 4) are implemented and will be updated at M36 and M48.

2.3. Scope of the deliverable

Here is the initial version of the DMP of the NEXTBAT project. This initial version of the DMP is structured in eight distinct chapters, as follows:

- Chapter 1 provides an Executive summary of this document.
- Chapter 2 presents introductory information about the project, the WP that this document belongs to, and the scope of the DMP.
- Chapter 3 gives a summary of the data to be collected/generated during the activities of NEXTBAT.
- Chapter 4 describes the methodology applied in the NEXTBAT framework to ensure effective data management across the entire life cycle, making it FAIR.
- Chapter 5 presents the principles for allocating the NEXTBAT project's data management resources, including the partner responsibilities.
- Chapter 6 outlines the data security strategy applied within the context of NEXTBAT and the respective secure storage solutions employed.
- Chapter 7 addresses ethical aspects and other relevant considerations regarding the data collected/generated during the project implementation.
- Chapter 8 concludes with the further steps foreseen in the framework of the project concerning its data management plan.

As stated in the official project documentation, this deliverable is a living document and sets the scene and scope for the NEXBAT data management procedures and their development during the life cycle of the project and beyond. Thus, in this deliverable, there are brief descriptions of future progressions of the scope and procedures, so called ‘place holders’ for various parts of the data management that will be addressed and finalised in the future volumes of DMP (i.e., D8.3, D8.4).

3. Data summary

Today, data is everywhere. You may work as data scientist, data analyst, researcher, or you are in any other profession, and you need to process and/or experiment with raw or structured data. This data is vital for us, even so important that it becomes a necessity to handle and store it properly, with no errors. While working on these data, it is important to recognise and appreciate the types of data to process them and get the right results.

During the NEXBAT project, various types of research data related to batteries and their use are produced:

- **Application data:** Application related data such as application-specific requirements for the battery pack, application-specific test protocols, or typical duty cycles in different use cases.
- **Cell characterisation data:** Data produced in battery cell characterization tests such as Open Circuit Voltage (OCV) or Electrochemical Impedance Spectroscopy (EIS) measurement results.
- **Cell testing data:** Battery cells will be tested by multiple project partners in their battery testing laboratories. Battery cell level experimental tests will include cell performance tests and safety tests, where the measurement data is collected by a battery cycler and other testing devices, typically as time series data sets.
- **Pack validation data:** Prototype battery packs / modules manufactured in the project will be tested by multiple project partners in their battery testing laboratories. The tests will include performance validation tests as well as abuse tests, where the data is collected by the utilized test equipment and/or the BMS of the prototype. Also, the sensor data (voltage, current, temperature or EIS) from the prototypes will be controlled (i.e., are the measured values correct, are the sampling rates etc. as expected) and BMS algorithms tested (i.e., are the algorithms performing as expected).
- **Simulated battery data:** Different types of electrical, mechanical and thermal battery models will be developed in the NEXBAT project. These battery models will produce simulated battery data.
- **Experimental data:** Physical parameters to perform the simulations and be able to validate against the experiments (electrochemistry, thermal runaway, battery efficiency or immersion cooling).

3.1. Defining generated data

The NEXTBAT project will generate a significant amount of data and research outputs. Table 2 presents the preliminary list of different types of data generated. The consortium will fill in a separate detailed table related to generated data, that document will remain available for internal use only due to sensitive detailed information and it will be updated iteratively during the project.

Definition of dataset units to be produced during the project life span is part of overall data management activities. Each dataset will contain, at least the WP to which it belongs and data typology, with a short description and information of the origin of the data, expected size and purpose of the data collected generating a unique persistent identifier (PID).

Table 2. Preliminary list of type of data generated in NEXTBAT

WP	DATASET TYPOLOGY (see above)	DATA DESCRIPTION	ORIGIN OF DATA	SIZE	PURPOSE
WP1 (T1.1)	Application data	Application requirements data	Collected from project partners	<10 MB	Support prototype development and validation
WP1 (T1.2)	Application data	Cell requirement, specification and sourcing related data	Generated by project partners	<10 MB	Support prototype development and validation
WP1 (T1.3)	Cell testing data	Cell electrochemical and safety validation test data	Generated by project partners	5 GB	Understanding physical process
WP1 (T1.3)	Cell characterization data	OCV, EIS at different SoC	Generated by project partners	<10MB	Cell validation, initial modelling
WP1 (T1.4)	Application data	Test Protocols	Official standards and internal procedures	50 MB	WP6 tests organization
WP1 (T1.5)	Application data, Cell testing data	Cell technology roadmap	Collected from project partners	1 GB	User case-specific needs
WP2 (T2.1)	-	-	-	-	-
WP2 (T2.2)	Simulated battery data	Simulated data from conceptual design tool	Generated by project partners	To be defined	Conceptual pack design development

WP	DATASET TYPOLOGY (see above)	DATA DESCRIPTION	ORIGIN OF DATA	SIZE	PURPOSE
WP2 (T2.3)	-	-	-	-	-
WP2 (T2.4)	Simulated battery data	Simulated operational data of virtual prototypes	Models developed in WP3	To be defined	Virtual prototyping and design validation
WP3 (T3.1)	High-fidelity simulated battery data.	Set of simulated data.	Source for needed data: WP1 - WP2	To be defined	Validate the conducted high-fidelity simulations to ensure the accuracy of the numerical approximations and feed the artificial intelligence algorithms.
WP3 (T3.2)	Low-order models of the battery system (ECM, surrogate models).	Multiphysical thermo-electrochemistry models will be reduced.	Source needed data: WP1, WP2 and WP3	To be define	Provide a tool for the conceptual design activity in WP2
WP3 (T3.3)	Data models and data driven control policies.	Artificial intelligence methods based on machine learning algorithms.	Source needed data: WP3 from BMS tasks (T3.2 and T3.5)	To be defined	To provide tools to support the BMS algorithms. Predicting SoX of the battery and optimize the electrochemical models.
WP3 (T3.4)	DT for the battery modules.	Digital twin based on Matlab / Simulink that includes all the physics	Source needed data: WP1, WP2 and WP3.	To be define	To support actively the design activity of WP2
WP3 (T3.5)	Application data (algorithm)	Code for BMS algorithms with SoX algorithms for the prototypes.	Data generated within T3.5.	<5MB	To provide the algorithms and software that is going to be used in the demonstrator P2.
WP3 (T3.6)	Application data	Battery passport attributes	Generated by / collected from project partners (T1.3, T5.3, T6.1) + T3.6 algorithms	<5MB	The battery Passport is a requirement of the new EU battery regulation

WP	DATASET TYPOLOGY (see above)	DATA DESCRIPTION	ORIGIN OF DATA	SIZE	PURPOSE
WP4 (T4.1)	Pack validation data (before transferring to WP6)	Data measured at pack level (processed: SOC..., non-processed: I, V, EIS, T., ...)	Generated by project partners	<100MB	Data to assess pack functionality before testing in WP6.
WP4 (T4.2)	-	-	-	-	-
WP5 (T5.1)	Application data	Process parameter for the laser-based manufacturing of modules or packs	Data generated within T5.1	< 100 MB	Documentation for the publication and T5.3
WP5 (T5.2)	Cell characterization data, Application data	Cell characterization after the dismantling process, Process parameter for the laser-based repair or dismantling of modules or packs	Data generated within T5.2	< 100 MB	To compare the cell characterizations before and after the dismantling process, Documentation for the publication and T5.3
WP5 (T5.3)	Application data	Data acquisition for the LCC and LCA	Collected data from T5.1, T5.2 and literature	To be define	To utilize the data for the LCC and LCA
WP6	Pack testing data, Application data	Experimental battery test data and technology roadmap	Electrochemical and safety tests.	10 GB	Validate the technology developed and user- case specific needs
WP7	Application data, Simulated battery data	Datasets used for dissemination and on exploitation	Prepared within the consortium	10 GB	Collect the open access datasets

The project builds upon pre-existing knowledge, methodologies, and outputs of other projects, initiatives, and relevant institutions. The consortium partners' internal knowledge, experience, and expertise from their participation in other projects and initiatives also support the implementation of activities throughout the project directly and indirectly.

In the separate internal table, the data resulting from the data-generating activities are defined including details about the data in general (such as scope, date of creation responsible and collaborating partners and origin), content of the data (such as description of the data, list of variables and metadata schema used), technical description (such as format and file size), and information related to sharing and preservation (such as rights to use the data by

third parties, restrictions, repository used). Together, the collected and generated data will provide the necessary basis to cover the main subject areas of the research.

3.2. Managing data during and post-project

3.2.1. Data management during the project

Data management is a process within the research life cycle that includes the organisation, storage, preservation, security, quality assurance, allocation of persistent identifiers (PIDs) and rules and procedures for sharing of data including licensing.

Coordinator (COO) will oversee data management process, while content and quality control of each dataset is the responsibility of the WP leader in question. Procedures for long-term preservation of datasets during the project will be considered as well as informed consent in data collection and information protection in data storage and access. All WP leaders will design a suitable tested backup strategy to allow full recovery of the locally stored data.

The research data will be firstly available only for internal purposes in each WP using an internal repository (e.g., OneDrive or TEAMS SharePoint). Datasets identified for sharing will be stored on open platforms, where possible on [Zenodo](#), automatically becoming part of [OpenAIRE](#). Each dataset shall be assigned a unique identifier. Accessibility of data/research outputs shall consider the confidentiality level of each data, considering IPR (use restrictions and licensing information), setting up a standardized access protocol and specifying the data access during and after the project.

3.2.2. Open access policy

Open Access will be implemented for peer-reviewed publications, conference proceedings and workshop presentations. The right to access and reuse digital research data under the terms set out in the other relevant project documentation (e.g., Grant Agreement, D8.1 - *Project Management Handbook*) will be ensured.

The leading and basic principle to follow during the life cycle of the project is to allow access to any public material through the project website. To allow deeper protection of knowledge and means to protect IPR and other relevant rights is to place any confidential (sensitive) material in an internal data repository.

3.2.3. Data curation and preservation procedures post-project

During the project, the consortium partners will be responsible for managing and curating datasets at their possession. After the project ending, the partners have committed themselves to enable access to NEXTBAT data repository, to maintain the dataset in the repository, and to extend the maintenance procedures at minimum for 5 years after the project has finished. For this purpose, the partners will assign the responsible entity for data repository curation to act as a trustee on the partners' behalf.

3.2.4. Data protection and intellectual property management

Confidentiality level of each data generated in NEXTBAT will be defined, considering intellectual property rights (IPR) (e.g., use restrictions and licensing information), setting up a standardized access protocol and specifying the data access during and after the project. Decisions concerning the sharing of (selected) datasets will be taken by General Assembly (GenA). COO in collaboration with project partners will take all the appropriate measures to make relevant data openly available and usable for third parties for study, teaching, and research purposes.

If, after project closure, permission to re-use the data is required, all requests for further use of data will be considered carefully and whenever possible approved by the COO or the person mandated with the task. Permission for data use will be granted providing there are no IPR, or confidentiality issues involved or any direct overlap of research questions with the primary research. Permission will be provided by contacting COO. Contact information and appropriate procedure will be provided in connection with other metadata.

3.3. Open science practices

To guarantee a successful progression of the project, the NEXTBAT consortium will implement a holistic approach to open science that includes:

- open sharing of research, using the preregistration repository to make available the research development work (WP1-6) from an early stage, making possible to present research hypothesis prior to outputs.

- establishing an open cooperative framework where key knowledge precursor of future publications is identified and managed by sharing tools/ protocols that will boost the efficient cooperation and encourage the joint publication.
- employing preprint servers, such as OpenAIRE or Zenodo, to upload and share the scientific manuscripts produced prior to peer-review Open Access publication.
- making open science the default principle.

Undoubtedly, the potential data that could affect the future commercialisation of the exploitable results will be managed by the legal IP (Intellectual Property) WP8 leader. All the future exploitable activities of the research outputs will be done under fair and reasonable conditions and will commit to exploit the resulting products and services rapidly and broadly, as described in WP7.

In this regard, NEXTBAT will ensure immediate Open Access (OA) to all scientific publications expected to be produced related to relevant project results, while ensuring intellectual property rights (IPR) are maintained by the consortium. Thus, journals specified in the Impact section (section 2.2.1) of the proposal have been selected not only according to their area of research, but because they have been identified on a search in the Directory of Open Access Journals. Besides, authors of all peer-reviewed scientific publications will ensure that they are stored in OA trusted repositories (Zenodo, OSF), as well as share them in specific webpages for researchers (e.g., ResearchGate and Academia.edu) during and after the project's life following Art. 17 and Annex 5 of the Grant Agreement (GA). The consortium is fully supportive and well aware of the benefits of publishing in the new dedicated Open Research Europe platform², and commit to deliver some of the expected publications, where open peer review publication would be selected.

To endorse the European Open Science Cloud (EOSC), the consortium will monitor the incorporation of EOSC resources and services to be used in the data and outputs management activities of the project.

² [Open Research Europe platform.](#)

4. Findable, accessible, interoperable, and reusable data

4.1. Making data findable, including provisions for metadata

The research data created in the NEXTBAT project will follow the FAIR data principles (Findable, Accessible, Interoperable, Reusable). The data will be made firstly available only for partners' internal purposes in each WP using an internal repository (e.g., OneDrive or TEAMS SharePoint). Then, datasets identified for sharing will be stored on open platforms, where possible on Zenodo, automatically becoming part of OpenAIRE³, the EC-funded initiative supporting the Open Access policy. Each will be assigned a unique identifier.

Quality control measures will be taken to maintain the accuracy of data during the project. Discipline compliant metadata elements will be used describing the data to aid data discovery and potential re-use. List of metadata elements and metadata standards used are provided in the internal data table. Metadata of opened data will be made available for research and re-use after project closure.

4.2. Making data openly accessible

The focus in data sharing will be on the data underlying prospective scientific publications ensuring the validation of results presented in publications. Published and FAIR-compatible data will be archived in a common and open data repository. Recommended generic and certified repository services, either CSC's IDA⁴ or CERN's Zenodo⁵, will be used to enhance long-term accessibility and re-usability of the data.

³ [How to make your data FAIR, OpenAIRE.](#)

⁴ [IDA - Store and organize your research data before publishing it, Fairdata.](#)

⁵ [Zenodo.](#)

4.3. Making data interoperable

The NEXTBAT project will strive for optimal interoperability by making the data available in standardized and well-known formats. Proper metadata facilitates the use of the data by others, makes it easier to combine information from various sources and ensures transparency.

Variables and value names will be constructed following general data processing conventions common to the research subject. List of value names and used vocabulary will be provided in a separate list. Examples of vocabulary information to be managed within the project will be e.g., number of variables / units of observation, list of variables with the name and label of each variable as well as its values and value labels, frequency distribution of each variable, information on the classifications used and meanings of abbreviations used.

4.4. Increasing data re-use

The right to access and reuse digital research data under the terms set out in the GA will be ensured. Moreover, “.txt” files with relevant information such as methodology, units or acronyms will be provided to facilitate the reuse of the data. Partners will include information on licensing of data, their availability, re-use of data, duration of data for re-use, reproducibility of research outputs, location of the data and a summary of the plans, even discarded ones, to reuse the data, among other issues.

Ownership of datasets will belong to project consortium after the project completion. Creative Commons licence CC-BY-SA or CC-BY will be used for any opened datasets, unless there are compelling reasons to select more restricted type of CC-licence. Creative commons licences will by default include also a disclaimer of liability for the re-use of opened data.

No definite period or time limit is planned for access or re-use of the data. Justification for possible case-specific embargo for published data will be decided by project consortium. Embargo will be sought primarily in connection with any potential patent application based on project results.

5. Allocation of resources and data management responsibilities

5.1. Resource allocations

Cost allocation is based on the resources needed to make research data quality-controlled, FAIR-compliant, and as open as possible. The resources are integrated into the relevant WP and for the responsible partners. In case there would be a request to change the resource allocations, this will be done following the procedures described in the relevant official project documentation.

5.2. Data management responsibilities

The responsible partner for the DMP versions is VTT. This DMP is generated to manage the life cycle of datasets collected, processed, or created throughout the project duration. DMP will be a dynamic tool that is updated regularly throughout the project duration. It will include a description of the methodology and used standards, and finally at the end of the project, which datasets will be made accessible for verification and re-use after project closure.

The partner to monitor and report on the dataset is the WP leader in question.

The initial data management and collection, dataset management and data use responsibility are invested in the partner producing and/or collecting the dataset in question. The actual deployment responsibility of the dataset is with the partner creating the dataset and/or collecting the relevant data.

Sufficient resourcing is ensured through a nominated data manager and dedicated data management task.

6. Data security

6.1. Roles, responsibilities, and rights related to data

At the beginning of the project, the research consortium decides and agrees on the specific tasks, roles, responsibilities, and rights relating to data security.

VTT has been provisionally designated as Open Access Coordinator to implement Open Science during the project (as WP8 Task leader for 8.3 - *Data Management*). During the project research datasets will be available only to those project partners or project consortium members, who have been accredited by and their data usage has been approved by COO or authorized project consortium member. Project partners will be responsible for curating, preserving, disseminating, and deleting in appropriate manner the datasets in their possession. Retention time for curated datasets will be the same as for other project results at the project consortium partners.

6.2. Repositories for data storage, backup, registration, deposit, and retention

Data collected or acquired within the project will be stored in a secure IT environment behind a firewall at VTT's premises or in secure cloud environment provided by VTT's IT service provider Fujitsu Ltd. Access to it will need registration and authentication. COO will check applications for the use of data, where access is granted to research data. This will be provided through a physically and virtually secure telecommunications network.

The project activities will be monitored and assessed during the whole project life cycle. The partners in the project will agree the procedures for data collection, storage, protection, retention, transfer, destruction, re-use, methods of storage and exchange, etc. All partners involved in the project commit themselves to not misuse the data collected during the project. In case any other partner requires this information, it will be adequately justified in an application form to be sent to the data owner who will decide whether to authorise or not the access to the files. Data not required for research purposes will not be collected.

Long-term and secure preservation of published research data will be ensured by using only certified and OpenAIRE guidelines compatible repositories.

7. Ethical and other aspects

7.1. Ethics

For all activities funded by the EU, ethics is an integral part of research from beginning to end, and ethical compliance is seen as pivotal to achieve real research excellence. Ethical research conduct implies the application of fundamental ethical principles and legislation to scientific research.

The partners in the project will agree the following procedures e.g., for data collection, storage, protection, retention, transfer, destruction or re-use, and methods of storage and exchange. A code of conduct referring ethics, data management, environment, and security at work will be developed. It could include sanctions within the project in case of misconduct. An informed consent will be signed by the participants in the project communication tools. The informed consent form will be written in an accessible and comprehensive language, being understandable by all the participants before their consent is given.

The consortium is fully aware of the principles concerning Ethic Research and Innovation in Horizon Europe and in this sense, the partners are committed with the ethical standards and the relevant EU Directives which need to be considered in the execution of the project. Research carried out will respect the fundamental ethical reflected in the Charter of Fundamental Rights and related regulations at European, national and local level.

Research integrity and ethical principles related to data collection and use are covered in detail in the ethics self-assessment section of the grant application.

7.2. Other research related procedures

The NEXTBAT implementation will *not* involve research with humans, animal nor the use of personal data. Data not required for research purposes will not be collected. Regarding dual-use items, materials and substances, the NEXTBAT consortium confirms that it does not intend to use any dual-use items, materials or substances listed in the Annex I and in Annex IV of [Council Regulation No 428/2009](#).

In case needed, partners' project staff have adequate training in storing, handling and disposing of chemicals and/or explosive substances. If new substances and/or formulations are developed, the project will provide adequate risk assessments. The handling of toxic materials and their use need to comply with international and European regulations, as Risks

related to chemical agents at work ([Directive 98/24/EC](#)), Risks from explosive atmospheres ([Directive 1999/92/EC](#)).

8. Conclusion

This document D8.2 - Initial Data Management Plan (DMP) is an initial version about data management procedures and activities of the NEXTBAT project. The NEXTBAT project will generate a significant amount of data and research outputs. Here, in D8.2, the data to be collected/generated during the activities of NEXTBAT has been categorised and estimated. The data categories include **application data, cell characterisation data and cell testing data, pack validation data, simulated battery data, and experimental data**. In addition, the methodology to ensure effective data management across the entire life cycle has been described in this document. During the project, the consortium will fill in a separate detailed table related to generated data. That document will remain available for internal use only due to sensitive detailed information and it will be updated iteratively during the project.

The DMP will follow the EU (European Union) guidelines according to the FAIR (Findable, Accessible, Interoperable and Reusable) principles ensuring knowledge is integrated and available for re-use in future research and projects. The research data will be firstly available only for internal purposes in each WP using an internal repository. Later, datasets identified for sharing will be stored on open platforms. In addition, the NEXTBAT project's data management resources, including the partner responsibilities, and the data security strategy have been discussed in this deliverable.

This document will be updated by each periodic report (D8.3; D8.4). It is intended primarily for the use of the NEXTBAT consortium and for external stakeholders interested in evaluating the data management procedures of the project.