

SPINMATE

Scalable and Sustainable Pilot Line based on innovative manufacturing technologies towards the industrialisation of Solid-State Batteries for the automotive sector

D1.1 Management Handbook

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Glossary and Abbreviations	
AB	Advisory Board
CA	Consortium Agreement
DM	Dissemination Manager
EC	European Commission
GA	Grant Agreement
IM	Innovation Manager
PC	Project Coordinator
PM	Project Manager
QM	Quality Manager
SC	Steering Committee
SO	Specific Objectives
WP	Work Package
WPL	Work Package Leader

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Executive Summary

The Management Handbook is intended to support partners in the effective and efficient administrative and financial management of the project while ensuring the quality of the project outcomes. It presents the procedures, structures and coordination defined to the project implementation and sets out key responsibilities for partners. It is intended to support the achievement of project objectives, the compliance with project scheduling and the timely delivery of project results.

SPINMATE project will be ruled by the following principles for a successful project management:

- ✓ Good communication between partners will be paramount to the success of the project.
- ✓ Ensure that more than one person in each partner organization is aware of what is going on in each of the specific tasks.
- ✓ Elaborate drafts before the deadlines and follow up of all the deliverables.
- ✓ Flexible assignments, parallel tasks, full time persons can adapt fast to changes in project workload.
- ✓ Promote the project and its interest to the right stakeholders to initiate the collaboration and have more easily access to information.

The Handbook will be updated and changed according to the evolution of procedures and progress during the lifetime of the project.

1. Essential Documents

The fundamental binding rules that apply to the SPINMATE project are set out in the following documents, signed by all consortium partners:

- Grant Agreement (and its Annexes);
- Consortium Agreement.

1.1 Grant Agreement

A Grant Agreement (GA) was signed between the Project Coordinator (PC) and the European Commission (EC) before the project's start and by project partners through the Accession Form A. The GA is the legal document through which partners are made legally liable for carrying out the activities described in the Annex I of the GA, also called Technical Annex or Description of the Action.

The GA includes of the following parts:

- **Terms and Conditions:** contains specific information like the subject of the agreement, start date, project duration, grant and budget, rights and obligations of the parties, division of beneficiary's roles and responsibilities, among others. ***It is strongly recommended that partners read this document carefully.***
- Annex 1 (includes Part A and B): also called Description of the Action, is the main reference document for carrying out the agreed work. It is based on information from Part B of the original proposal, and it is specific for every project. ***It is strongly recommended that partners read this document carefully to understand the overall work programme and their specific role in the project.***
- Annex 2: Estimated budget for the action, including some additional information on the estimated budget, namely some specific unit's costs calculations. ***For your information.***
- Annex 3: Accession Form for Beneficiaries to the Grant Agreement, signed by partners. ***For your information.***
- Annex 4: Model for Financial Statement for Reporting Period. ***For your information.***
- Annex 5: Model for the certificate on the financial statements (CFS). ***Not expected to be used.***
- Annex 6: Model for the certificate on the methodology. ***Not expected to be used.***

1.2 Consortium Agreement

The Consortium Agreement (CA) elaborated using the latest version of the DESCA (Development of a Simplified Consortium Agreement) model, which is a simple and comprehensive model CA, stripped of all unnecessary complexity in both content and language. This document establishes the rules that govern the relations between partners (for example: management structures and decision-making processes within the project, distribution of the Community financial contribution, rules on dissemination, use and access rights, settlement of internal disputes, etc.).

The CA is a legally binding document signed by all project partners. The European Commission is not a contracting partner to the CA, as the legal provisions which regulate the EC relations with the project coordinator and partners are laid down in the GA. The Grant Agreement's regulations take priority over those of the Consortium Agreement.

During the project, the CA may “evolve” and may be changed by agreement of all partners, e.g., to take into account changes in the project structure, additional rules for exploitation or protection of generated knowledge, etc. Final decisions on the CA are taken by the Steering Committee (see section 2).

SPINMATE's CA has entered into force on the 1st of August 2022 (the Effective start date) and will last for the whole duration of the GA (1st August 2021 – 31st July 2026). It is strongly recommended that partners read this document carefully and follow the agreed rules.

2. Project Management Structure

The overall management structure of SPINMATE project (Figure 1) has been designed to endorse links between partners, build and strengthen new interactions, especially by enabling and fostering the transfer of complementary expertise between the involved organisations, players, and countries. Within the SPINMATE Consortium, each participant will take an active part in the efficient implementation of the project, and will cooperate, perform, and fulfil, promptly and on time, all of its obligations as foreseen in the GA.

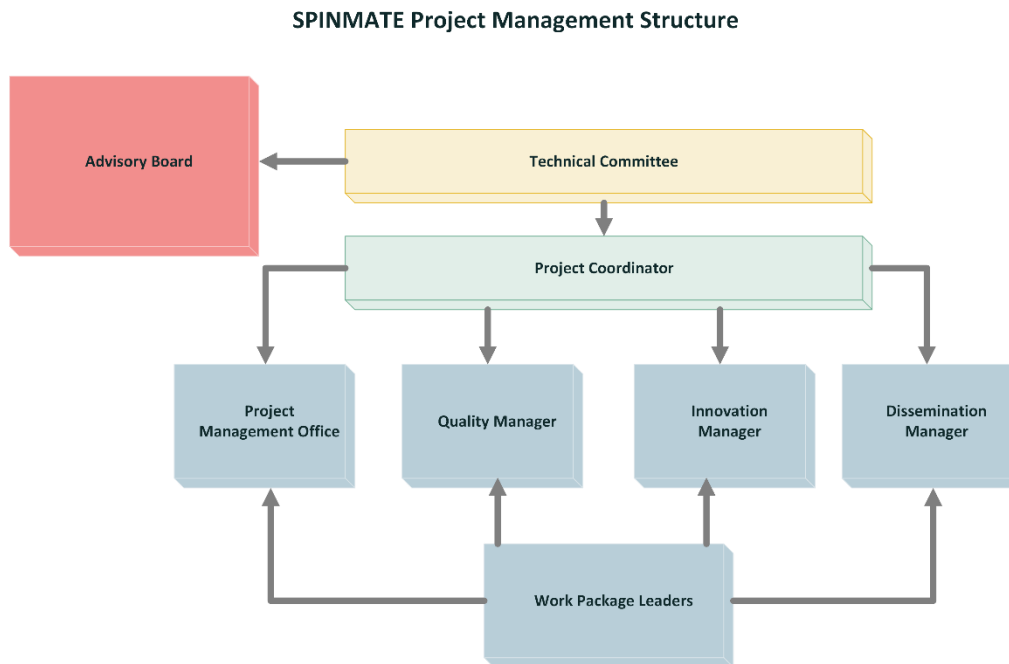


Figure 1 – SPINMATE Management Structure

Each of the specific roles and responsibilities are described next.

2.1 Technical Committee (Steering Committee)

The Steering Committee (SC) consists of *one representative per partner* and is the formal decision-making body of the project dealing with all key strategic project decisions. Individually, SC members are responsible for the on-time delivery of results on behalf of the partner they represent, assure the quality of the work executed, monitor budgetary and technical results, and gather input for internal and external reporting and documentation. Finally, the SC also coordinates and manages items affecting the contractual terms with the EC. Virtual meetings will be also scheduled in M6, M18, M30 and M42 for a six-month basis follow-up, if needed.

Table 1 – Members of the Steering Committee

Partner	Representative of the Partner	Partner	Representative of the Partner
ABEE	Noshin Omar	ISCF	Andreas Fleger
COMAU	Daniela Fontana	TUBS	Arno Kwade
TME	Laurent Castro	CEA	Anh-Linh BUI VAN
CID	Oihane García	CICe	Nicola Boaretto
ARKEMA	Anthony Bonnet	INEGI	Luis Oliveira
IREC	Jordi Jacas	CPT	Anne Dalager Dyrli
INOVA+	Ana Solange Leal		

2.2 Project Coordinator

The Project Coordinator (PC) is **Noshin Omar** from ABEE, who has extensive experience in managing research and innovation-related European and international projects serves as the chairman for the Steering Committee (central decision-making body of the project – see below) and he is responsible for coordinating the project’s activities. The PC coordinates and manages those items that affect the contractual terms with the EC, as well as the technical and scientific activities of the consortium. The mandate of the PC is outlined (but not limited) to the following:

- Accomplishment of project objectives within time schedule & budget constraints.
- Overall project planning and scheduling.
- Co-ordination of partners and organization of project meetings.
- Internal (among the consortium partners) and external (to the EC) reporting, documentation, and financial management (with the support of the Project Management Office).
- Representation of SPINMATE project and consortium to external stakeholders and initiatives.
- Communication with the EC.

2.3 Project Management Office

The Project Management Office (PMO) provides administrative and financial assistance to the PC to effectively coordinate the partnership and ensure the delivery of the expected results. This office is led by **Ana Solange Leal** from INOVA+ who has more than fifteen years of experience in running and managing European projects, including H2020 and Horizon Europe actions. **Vera Alves** from INOVA+ also - linked to the Financial Reporting of co-financed projects, counting with experience in programmes such as Erasmus+, Eurostars, 7th Framework Programme, H2020, INTERREG and PT 2020, Tenders and Horizon Europe - will be also supporting the PMO on financial issues.

2.4 Quality Manager

The Quality Manager (QM) – QM Expert – **Ana Solange Leal**, member of INOVA+ will be responsible for quality assurance processes outlined in this Management Handbook. Both the PMO and the QMs support and are managed by the PC.

2.5 Innovation Manager

The Innovation Manager (IM) of the project will be **Rahul Gopalakrishnan** from ABEE. He has more than 9 years of experience in participating in national and international projects from technical and management aspects. He is currently acting as innovation manager for 4 ongoing EU projects. The IM will be responsible for managing all innovation related activities of the project, with a special attention of capturing and assessing how new ideas developed in the

project can be translated into new products, services and processes that will satisfy the needs of the different stakeholders. It should be noted that the IM will also take care of the project's Innovation and IPR Management Strategy, in close relation with the PC and PMO, and ensure that all background and foreground intellectual property of the project is meticulously managed.

2.6 Dissemination Manager

The Dissemination Manager (DM) of the project will be **Marco Duarte** – MSc in Project Management and counting more than 9 years of expertise in managing and participating in national and international projects - from INOVA+. The DM will be responsible for the design and implementation of the “Dissemination and Communication Plan” targeting to create awareness on the scope and activities of the project, coordinate the dissemination and sharing of ideas with external stakeholders, and ensure the widest possible diffusion of SPINMATE outcomes to its target groups.

2.7 Work Packages Leaders

The Work Package Leaders (WPL – Table 2) will be responsible for the coordination of the partners collaborating under their specific work package to ensure the quality of executed work. The WPL will also be responsible for:

- a. resolving day-to-day administrative, technical and resource problems within their work package;
- b. disseminating information relating to all aspects of the work to the other WPL ensuring smooth coordination of WP activities; and
- c. reporting to the upper levels of project management (PC, SC).

Table 2 – Work Packages Leaders

WP	WPL	Entity
WP1: Project Coordination and Management	<i>Noshin Omar</i>	ABEE
WP2: Specification Requirements and standardisation for new SSBs	<i>Laurent Castro</i>	TME
WP3: Development and optimisation of cell components	<i>Nicola Boaretto</i>	CICe
WP4: Process modelling, digitalisation, and scalability	<i>Daniela Fontana</i>	COMAU
WP5: Equipment development and pilot line assembly	<i>Andrea Martinez</i>	ABEE
WP6: Cell manufacturing at the digital-driven pilot line	<i>Arno Kwade</i>	TUBS
WP7: SSB cells performances and ageing, and SSB cells and pilot line safety	<i>Anh-Linh BUI VAN</i>	CEA
WP8: Environmental and cost impact assessment through the value chain	<i>Luis Oliveira</i>	INEGI
WP9: Communication, dissemination, and exploitation	<i>Ana Solange Leal</i>	INOVA+

The responsibility of the deliverables to be developed under each of the WP, throughout the project duration, lies with the different partners as clearly defined in the Grant Agreement.

2.8 International Advisory Board

The SPINMATE International Advisory Board (IAB) will be comprised of five leading experts in the field of policy making for the battery field, battery technologies and recycling. IAB members



will provide us with their expertise on the needs and problems of stakeholder groups as well as with meaningful feedback on our views and project outcomes. Besides, IAB members are expected to support the consortium accessing additional important stakeholder groups across Europe and drive the sustainable uptake of our results. As such, the following prestigious experts compose the SPINMATE Advisory Board:

- **EMIRI - The Energy Materials Industrial Research Initiative**
- **AVERE - The European Association for Electromobility**
- **MORROW Batteries**
- **Haldor TOPSOE**
- **SNAM Groupe**

3. Internal Communication

Appropriate communication measures will be taken to ensure that the flow of information and sharing among partners is consistent, regular, and efficient. Considering the geographical dispersion of partners and different time zones, several channels will be used in the communication process, namely:

- i. mainstream electronic communication (e.g., emails, phone, Teams, SharePoint, etc.);
- ii. virtual and/or physical technical/management meetings;
- iii. semester progress reporting (from partners to PC);
- iv. project workshops and other events.

3.1 SharePoint

A working online space has been set up within MStTeams for enabling communication and documents management and exchange within the SPINMATE partners. This SharePoint is accessible only to those invited and granted access and permissions are provided by the coordinator team members.

The SharePoint is composed by several folder with specific purposes (Figure 2). The “Management” folder is intended to formal and contractual documents, such as the GA and the CA. The “Meetings” folder is to keep the agendas, presentations, and minutes from all meetings (physical and online). A folder per WP is created to organise the information concerning the specific activities and tasks of that WP, including deliverables. Other folders may be created during the implementation of the action, as needed.

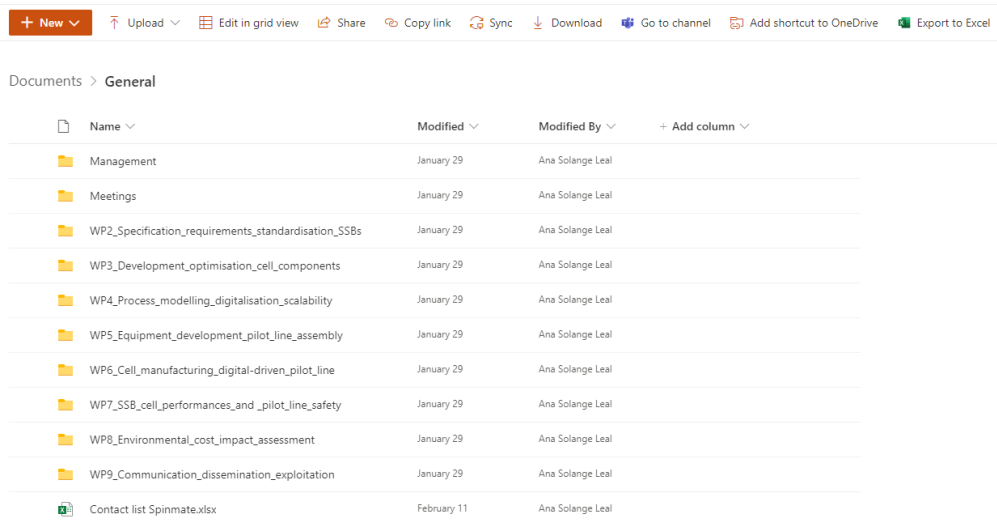


Figure 2 – SPINMATE SharePoint at MS Teams

Naming and numbering the project documents should be made in a consistent manner so as to identify the project, document type and the version. To identify a document version, the date should be used, with the format YYYYMMDD.

Name segments should be separated by “_” and the acronym of the project that identifies the project should be included. For example, the draft version of Deliverable D1.1 produced on 31st

August 2022 would be: **SPINMATE_D1.1_20220831_V01.doc**. When sharing a revised version of the document, the partner that has provided suggestions and inputs, should include its acronym before sending the new version to the remaining partners: **SPINMATE_D1.1_20220831_V01_ABEE.doc**. When the document is in its final version, then the naming should be **SPINMATE_D1.1_YYYYMMDD_INOVA+.doc**

3.2 Meetings

Three consortium physical meetings (Progress face-to-face meetings) are scheduled to take place on a yearly basis rotating location (when possible, considering the current pandemic situation). The dates of meetings are sent per e-mail by the coordinator to the Project Technical Committee/Consortium members as soon as agreed. Meetings, whenever possible, should be organised together with other physical events of the project.

These meetings will constitute major milestones for planning, exchanging information among partners, assessing project progress and success (financial and technical) and for taking major decisions about project execution. Project milestones (Table 3) and risks (Table 6) will be monitored during these meetings, and whenever required, adjustment measures/planning will be decided.

Table 3 – SPINMATE Project Milestones

No	Milestone name	WP	Partner	Estimated date	Means of verification
MS1	Quality assurance guidelines and procedures for the management of the project	1	INOVA+	M2	Delivery of D1.1
MS2	KPIs and technical targets for battery cells	2	TME	M12	Delivery of D2.1
MS3	Pilot line requirements towards project targets and eco-design needs	2	COMAU	M24	Delivery of D2.2
MS4	Collaboration established with other projects/initiatives	3	ABEE	M3	MoU signed between parties; list of collaboration partners listed on the website
MS5	Fabrication of at least 50 monolayer cells to be delivered to WP7	3	CICe	M22	Delivery of D3.1
MS6	Digital twin processes developed and validated	4	TUBS	M36	Delivery of D4.2
MS7	Data-driven models for the whole cell production process	4	COMAU	M48	Delivery of D4.3
MS8	Tools and systems for SSB cell assembly developed	5	ABEE	M28	Delivery of D5.1
MS9	Electrodes and electrolyte layers delivery for manufacturing	6	TUBS	M39	Delivery of D6.2
MS10	40 units of 10 Ah pouch cell available for testing	6	ABEE	M42	Delivery of D6.3
MS11	Validation of cell specifications as defined in WP2	7	CEA	M48	Delivery of D7.2, D7.3
MS12	Recycling process flow established	8	ABEE	M18	Deliverable D8.2

No	Milestone name	WP	Partner	Estimated date	Means of verification
MS13	Life cycle environmental impacts and recycling process established	8	INEGI	M24	Delivery of D8.1

Also, **Monthly Monitoring Online Meetings** will be scheduled with **WPL** to observe and verify the work progress made in each of the WPs/Tasks. These meetings will help update project status on a regular basis, as well as having the opportunity to discuss operational and administrative issues on a timely fashion.

After each meeting, written minutes will be produced and circulated among partners with conclusions of discussions held and information about the next steps in the project.

3.3 E-Mail communication

To facilitate the recognition of electronic messages related with the project, a standard subject title is proposed, as follows: acronym of the project + subject [**SPINMATE | Meeting Notes**].

Partners are encouraged to use a MStTeams SharePoint to store files and preferably send emails only with link. E-mails should be sent with knowledge of the coordinator/management partners.

3.4 Reporting

In order for the Commission/Agency to verify that the project is implemented properly, the beneficiaries must submit any information requested, and in particular the deliverables and reports detailed in the GA. In this sense, two levels of reporting are to be implemented during the action.

Internal Reporting

Every twelve months, partners shall report to the PC the progress made in that specific period, namely regarding main achievements, financial execution, deviations from plans and anticipated actions for the following period. The timing for this internal reporting is as follows:

- M1 – M12 – 1st Internal Report
- M13 – M24 – 2nd Internal Report
- M25 – M36 – 3rd Internal Report
- M37 – M48 – 4th Internal Report

External Reporting

SPINMATE project has two Official Reporting Periods when a periodic report (technical + financial) must be submitted to the EC via the Funding & Tenders Portal:

- M1 – M24 – Interim Report (Aug.2022-Jul.2024)
- M25 – M48 – Final Report (Aug.2024-Jul.2026)

The technical report shall include an explanation of the work carried out, an overview of the progress and a summary for publication. Report on work progress is to be collected by WPL and provided to the PC, who will be responsible for integrating all inputs and produce the final report. Before submission to the EC, the report is to be validated by all partners.

The Periodic Financial report will include the Individual financial statement (Annex 4 to the GA), an explanation on the use of resources and a Periodic summary financial statement. It will be filled in by each participant in the Funding & Tenders Portal and signed by the Financial Statement Authorised Signatory (FSIGN).

3.5 Conflict Resolution

Conflict resolution procedures are included in the Consortium Agreement, in line with responsibilities defined within the organisational structure of the project. Conflicts will be solved at the lowest level possible, and preferably amicably. If an agreement cannot be reached at a task or WP level, then the Project Coordinator will mediate. If that does not work, then the Steering Committee will take a decision.

Negotiation and decisions taken by consensus will be the main tools to resolve conflicts. Should this approach and a majority decision not be achievable by the parties involved and the rest of the Consortium, an independent referee shall be appointed by the Project Coordinator. These conflict resolution procedures will be carried out in accordance with Article 11.8 of the CA.

4. Quality Procedures

4.1 Performance Indicators

For each of the Specific Objectives (SO) of the project, Key Performance Indicators (KPIs) have been elaborated (Table 4) and shall be monitored closely to ensure the quantification of the outcomes of the project. To be noted that this preliminary list of KPIs shall be improved to cover all relevant aspects of each WP and proposed tasks.

Table 4 – SPINMATE Key Performance Indicators

Specific Objectives	KPI Description	Means of verification
SO1: To identify and define the specifications and standards required to manufacture Gen 4b SSB cells (i.e., in particular for the EV sector), and to develop an innovative and sustainable pilot line.	Ah and 10 Ah pouch SSB cells requirements and components; proof-of-concept pilot line with a capacity of 16 MWh/year;	Tailored test protocols to test and validate the manufactured SSB cells.
SO2: To develop, optimize and produce new solid electrolytes at large scale to be combined with Li metal based anodes and high Nickel content oxides as cathodes, leading to enhanced energy densities.	Solid electrolyte: ionic conductivity of around 10 ⁻³ S cm ⁻¹ at RT, performances kept up to 80 °C and no flammability under 130 °C, electrochemical stability > 4.4 V, and no dendrite formation during plating/stripping experiments in Li symmetric cells;	Electrode and electrolyte components for the large-scale manufacturing of SSB cells
	Li metal anode (on Cu with a protection layer): specific capacity of 3860 mAhg ⁻¹ , Coulombic efficiency > 99.5 %, cycling of > 500 cycles at C rates >1C, and ΔV < 100-200 mV and current density > 1mA cm ⁻² during stripping and plating;	
	NMC811-based cathode: discharge capacity of 200 mAhg ⁻¹ , average operating voltage of 3.6 V vs Li/Li ⁺ and loading capacity of > 4 mAhcm ⁻² .	
SO3: To create and employ digital solutions to optimise the SPINMATE manufacturing processes, focusing on the safety, performance, sustainability and production costs, and to contribute to the positioning of Europe as leader in the industrial production of Gen 4b SSB technologies by addressing the whole value chain.	Gravimetric and volume energy density of at least 450 Wh/kg and 1,200 Wh/l, respectively, Cycle life up to 3,000 (70%DoD); ability to operate at charging rate of 0.5 C-1 C (continuous) and 3- 5C for 5 seconds; and Low-cost configuration <75 euro/kWh by the end of the project based on mass production assumptions and raw materials global markets.	Gen 4b SSB cells and larger battery modules/packs, certified according to the standards required by the battery industry and Market readiness
SO4: develop indigenous and new technologies and improve manufacturing processes to assembly an innovative digital driven pilot line towards the production of Gen 4b SSB cells, as well as their components, while increasing mass production costs and reducing environmental impacts.	Increase 20% safety (cell); decrease 10% energy consumption. New ML algorithms that will decrease 30% manufacturing time; decrease 20 % manufacturing costs, decrease 10% energy consumption, increase 12 % manufacturing efficiency; decrease 10% Processing footprint	Gen 4b pilot line demonstration

Specific Objectives	KPI Description	Means of verification
<p>SO5: To design, manufacture and validate Gen4b SSB cell prototypes, combining advanced materials and chemistries, while demonstrating the fulfilment of the EV sector’s requirements and standards, and achieving the KPIs directly linked with the technological competitiveness of the Gen 4b technology in a cost-efficient and sustainable way.</p>	<p>Gravimetric and volume energy density of at least 450 Wh/kg and 1,200 Wh/l, respectively; Cycle life up to 3,000 (70%DoD); ability to operate at charging rate of 0.5-1 C (continuous) and 3-5 C for 5 seconds; Low-cost configuration <75 euro/kWh by the end of the project based on mass production assumptions and raw materials global markets.</p>	<p>Manufacturing of 50 1 Ah and 40 10 Ah SSB cells; 24 V and 10 Ah battery module demonstrated in a commercial BMS; LCA along the Gen 4b value chain; cost assessment to demonstrate a cost-effective pilot line.</p>
<p>SO6: To create and establish a wide knowledge portfolio, engaging the key stakeholders and end users to expand the project’s scope towards new market opportunities to maximise its impact.</p>	<p>The social impact will be measured by increasing 360 share of upskilled workers; Creation of 308 multidisciplinary positions; Contribution to policymaking and EU priorities; +2 battery eco designs with lowering 20% carbon footprint.</p>	<p>Exploitation Strategy on the use of the project results for commercial purposes to tackle societal problems and/or in policy making</p>

The KPI defined for the project will be followed-up by the PC and WPL to ensure the implementation of tasks is made in most suitable manner to achieve these targets and the overall objectives, thus maximising the impact of the action.

4.2 Deliverables Revision

The deliverables are the products of the project. Deliverables are also the evidence of the project’s performance and enable the Commission to monitor the project’s progress, implementation, and impact. Deliverables are identified in the Annex 1 to the GA per WP and must be submitted according to the timetable specified in the table hereafter.

The SPINMATE project is built on a participatory and iterative approach to ensure the active involvement of all project partners in the development and production of the project’s deliverables. As a general principle, the responsibility for the content of each deliverable report is always with the author(s). This approach will serve as an internal quality review procedure to ensure technical value, accuracy and relevance of the reports developed.

The following process is proposed:

- Whenever relevant, draft deliverables are sent to all consortium members for feedback allowing them at least one week to reply.
- Each WP leader should ensure that the deliverable final draft is ready and circulated to the Steering Committee and with the assigned reviewers by the responsible partner **at least 2 weeks before due date** (see deliverable list – Table 5).
- Reviewer member should send their final comments to the partner responsible for the deliverable **within one week**.

- The partner responsible for the deliverable must then send the very final version of the deliverable **at least 3 working days before the due date** to the PC and PMO.
- The final decision on the deliverables is taken by the PC, and PMO is the person responsible for uploading the deliverable on the Funding & Tenders Portal at the **latest on the due date and informs the EC.**

Table 5 – SPINMATE Deliverables List

No	Deliverable name	WP	Delivery date	Responsible partner	Reviewer partner
D1.1	Management Handbook	1	M1	INOVA+	ABEE
D1.2	Data Management Plan	1	M6	ABEE	INOVA+
D1.3	Gender Equality Action Plan	1	M6	ABEE	INOVA+
D2.1	Technical requirements for small (1Ah) and large (10Ah) battery cells and protocols for testing	2	M12	TME	TUBS, CEA
D2.2	Pilot line and eco-design regulation towards disassembly requirements	2	M24	COMAU	CID, ABEE
D3.1	Definition of cell components chemistry, validation of electrodes/electrolyte layers and monolayer cells manufacturing processing	3	M22	CICe	COMAU
D3.2	Report on the conclusions of the dedicated workshops	3	M12, M22	ABEE	INEGI, INOVA+
D4.1	Digital twin of processes	4	M36	ABEE	INEGI
D4.2	Data-driven models for the description of process-structure-property relations	4	M48	TUBS	ABEE
D4.3	Simulation of a large-scale production line and portability assessment from gen 4b to gen 4a	4	M48	COMAU	ISCF
D5.1	Equipment modification and development for cell components manufacturing & cell assembly	5	M28	ABEE	ISCF
D6.1	Large pouch cell and module prototypes design & assembly definitions	6	M25	TUBS	CICe, CID
D6.2	Electrodes, separator strips, and multilayer 1 Ah pouch cells manufacturing	6	M39	TUBS	CICe, IREC
D6.3	10 Ah cells and module prototypes manufacturing	6	M42	ABEE	TME, CID
D7.1	Formation protocol and performances of monolayer cells	7	M36	CICe	ABEE, TUBS
D7.2	1 Ah and large cells evaluation (performances, ageing and safety) and pilot line safety	7	M48	ISCF	TUBS, CICe
D7.3	Demonstration of battery cell and module performances in final application representative conditions	7	M48	CEA	TME, ARKEMA, CPT,
D8.1	Sustainability performance (LCA) and cost assessment	8	M24, M48	INEGI	ISCF, CEA
D8.2	Recycling process flow design	8	M18	ABEE	ISCF

No	Deliverable name	WP	Delivery date	Responsible partner	Reviewer partner
D8.3	Report on experimental recycling process	8	M44	ABEE	IREC, CEA
D9.1	Plan for Dissemination and Exploitation of Results - PDER	9	M6	INOVA+	ABEE
D9.2	Communication, Dissemination and Training Activities report	9	M15, M32, M48	INOVA+	ABEE
D9.3	Exploitation activities roadmap	9	M24	INOVA+	COMAU, ARKEMA
D9.4	Standardisation assessment report	9	M30, M47	INOVA+	INEGI, CPT
D9.5	Plan for Dissemination and Exploitation of Results beyond SPINMATE	9	M48	INOVA+	<i>ALL</i>

4.3 Publications

To guarantee coherence, integrity, and quality of information to be disseminated in public events, the presenters and responsible partners of the publications must share at **least 45 days** the Abstract and general guidelines of the material to all partners. The IM will be responsible to perform the sensitive check on scientific publications. All project publications must refer the funding conceded to SPINMATE project, identifying the European Commission and the respective Grant Agreement.

4.4 Project Templates

Partners will use provided templates for project documents and presentations to facilitate their production, guarantee the consistency and quality of SPINMATE image and ensure that all documents produced in the framework of the project carry the mention of EU funding in the requested format. The templates for reports and presentations are available for all partners on TEAMS folder.

5. Risk Management

An initial identification of risks and related mitigation measures can be found in Table 6 and this list will be updated on *ad hoc* basis, whenever new risks are identified. Risks will be assessed separately and will be reported at least on a semester basis in the project internal reports. To perform the analysis and monitoring of the identified risks, the consortium will use a Risk Register Template (*Annex 1*) that will be verified regularly at consortium meetings to ensure actions are run smoothly and risks can be prevented or at least detected early in process.

Table 6 – SPINMATE Potential Risks (MANAGEMENT (M), TECHNICAL (T), DEC(D))

Description of risk	WP	Proposed risk-mitigation measures
MR1: A partner leaves the project or underperforms either technically or financially	1	Two options will be considered: a) substitution of the partner with a similar profile; b) reallocation of resources and tasks among the remaining partners to assume the leaving Partner responsibilities and objectives.
MR2: Critical changes on the project's planned execution	1	Management structure will ensure flexibility during project implementation. PTC meetings will anticipate deviations.
MR3: Delay on progress performance, resulting in poor delivery and project outcomes	1	Further PM methods, tool and techniques will be included. Continuous and systematic processes to monitor & control project performance: requirements, changes, schedule, costs, risks, stakeholders, quality, decisions and acceptance.
MR4: Results of evaluation (EC review) are not the ones expected	1	Management structures will define corrective measures in case major failures are detected. Management procedures has been planned to implement corrective measures if needed.
MR5: Adverse situations (e.g., COVID-19) could disable to organise physical meetings	1	Technical readiness would be ensured to enable online workshops in an environment that is conducive for discussion and to get best results.
TR1: Difficulty to evaluate current situation in battery cells and modules requirements using solid electrolyte	2	Recent updates on SSB requirements, considering EU proposed directives, will be analysed.
TR2: Solid polymer electrolyte does not meet the expected KPI	3	Increase plasticizer concentration, change plasticizer chemistry to increase oxidative stability, add CEI-forming additives
TR3: Surface-treated Li metal anode does not ensure stable interface with the solid electrolyte and a reversible Li metal plating-stripping process	3	Change passivation layer chemistry, add SEI forming additives in the electrolyte formulation, add additional porous separator to enhance electrolyte mechanical properties and block dendrites
TR4: Surface-treated cathode has insufficient cycling stability and/or high surface reactivity	3	Change chemistry of the surface passivation layer, add CEI-forming additives in the electrolyte formulation
TR5: Aging of monolayer cells during shipment to partners in WP5	3	Electrode and electrolyte pieces will be also delivered to partners if required. New batch of cells will be manufactured.
TR6: Delay in or lack of raw material supply	3	Search for multiple offers and early order are planned.

Description of risk	WP	Proposed risk-mitigation measures
TR7: Material scale up manufacturing failure	3	Alternative manufacturing facilities will be identified.
TR8: Cell components do not meet the expected KPIs	3	Perform failure analysis and, as consequence, propose possible solutions based on consortium experience SoA analysis.
TR9: Up scaled 10 Ah cell does not meet project KPIs	3,4,5,6	Cell production processes and cell components design will be revised as soon as possible to address the upcoming issues.
TR10: Quality KPIs different each other and not completely coherent	4	Definition of linear combination of them.
TR11: Difficulty in combining data coming from different partners	4	Use different KPIs to define quality, one at each production step and coherent with the partners' capability.
TR12: Dataset not enough complete	4	Parameters to be monitored and experimental design agreed with the partners from the beginning of the project to ensure the capability to populate the dataset.
TR13: Difficulty in training the ML models with the available data	4	During ML models development and validation, further experiments to collect specific data to facilitate the elaboration will be planned.
TR14: Difficulty in developing the suitable tools for cell assembly equipment to produce SSB cells	5	Tests from the beginning of the project with the materials under development and deep analysis of ABEE's equipment will be performed.
TR15: Strip manufacturing (cathodes /electrolytes) does not result in consistently high quality	6	Manufacturing process, consider alternative smaller batches, will be optimised.
TR16: Low performance of large 10 Ah pouch cells	6	Assembly process will be revised and the design of cells design will be optimised
TR17: Ageing duration too long to conclude on cycling conditions effect	7	Protocols to accelerate degradation will be revise and optimised.
TR18: Degradation of materials upon storage or under analysis beam preventing from postmortem characterization	7	In situ analyses should be developed.
TR19: Difficulty to make disassembly of cells and to recover samples for post mortem analysis	7	Development of new methodology or techniques to prepare cross-section, make analyses without separation of components by subcontracting to large scale infrastructures.
TR20: Low-quality data for reliable environmental assessment and cost assessment	8	Work from the start with partners to ensure understanding of data requirements and develop action plans for measurements and data gathering through the DDP.
TR21: Limited availability of SSB cell materials for recycling experiments	8	Experimental process optimisation will be performed with simulated material provided by the project partners to reduce the material requirement.
DR1: Dissemination activities don't reach the targeted groups. Results	9	SPINMATE consortium will: (i) create a comprehensive Communication & Dissemination plan in WP9 aiming at the identification of further stakeholders and end user, and (ii) define

Description of risk	WP	Proposed risk-mitigation measures
don't have the identity visibility		clear strategies to reach each target group. Alternative action plans will be established for further project visibility.
DR2: Exploitable results have similar prioritization level within characterisation and assessment criteria	9	The exploitation plan in WP9 will describe and characterise Key Exploitable Results. A second prioritisation process will be carried out considering a priority map under risk assessment: partnership, technological, market, IPR, financial and sustainability risks factors will be considered.
DR3: IPR disagreement	9	IPR management and Business plans will be developed, defining the expected results and their owners. A CA will be signed by all partners before the start of the project, establishing the rules for the management of the IPR issues.

SPINMATE Risk Management Plan embraces the following activities:

- Identifying the key risks in delivering this project and anticipating how the risk will be managed within the project.
- Creating a risk reporting channel. Each partner should have the opportunity to identify perceived and/or real risks.
- Assigning who should be responsible for foreseeing potential project problems.
- Maintaining a risk database, recording emerging or potential risks and strategies taken to overcome these (Risk Register Template).
- Preparing mitigation plans for agreed risks. The purpose of the mitigation plan is to describe how the particular risk would be handled – what would be done, when, by who and how to avoid the risk or minimize the consequences if it becomes a liability.
- Balancing the costs of undertaking risk mitigation activities against the cost of exposure to the risk.



ANNEX 1 – Risk Register Template

Description of Risk	Probability			Impact			Risk Status	Mitigation Measure/Plan	Responsibility	Action Req'd	
	High	Medium	Low	High	Medium	Low				Yes	No