

A hand holding a battery, with glowing blue lines swirling around it, set against a dark blue background. The battery has a blue '+' sign on its positive terminal.

DELIVERABLE 1.4
COLLABORATION RESULTS
WITHIN BATTERY 2030+
INITIATIVE, M34
BATTERY 2030+ CSA3

Document Classification

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TABLE OF CONTENTS

1	Introduction.....	5
2	Methodology	6
2.1	Short background	6
2.2	To collaborate and monitor the progress towards the achievements we have arranged:.....	7
2.2.1	The Collaboration board.....	7
2.2.2	Excellence seminars.....	8
2.2.3	Innovation uptake	8
2.2.4	Knowledge base and best practises	9
2.2.5	Ripple effects.....	9
3	Wider collaboration.....	11
4	Conclusion	12
5	Appendix A	13
6	Appendix B.....	15

1 INTRODUCTION

The Battery 2030+ large-scale research initiative builds a European collaborative battery research community. The collaboration between the projects and with the wider battery ecosystem in Europe is orchestrated by The CSA (the Communication and Support Action) with 21 partners and two associated partners. Uppsala University is main responsible. The results of the collaboration spans over several research areas, and related fields. Among the major advantages we would like to mention:

- The research projects get access to a much larger arena and spectrum than they would otherwise. By being part of the Battery 2030+ initiative and working together, the research projects also cover important areas like standards and ontology, educational activities, excellence seminars, best practises etc. By disseminating science results, events and alike via Battery 2030+ social media channels such as Linked In (more than 15 000 followers), Youtube and X, the projects reach a wider audience than they would as stand-alone projects. We have also built an interactive [Battery Knowledge Base](#), an educational Youtube-channel with excellence seminars, MOOCS etc. All areas are part of the Battery 2030+s' different work packages (WPs).
- The CSA is an active part of and provides easy access to the wider European battery landscape. Battery 2030+ co-organise [Battery innovation Days](#) (BID) together with BEPA and the 1st and 2nd IPCEIs. B 2030+ keeps ongoing work and discussions with BEPA, Batt4EU, the IPCEIS etc. The knowledge and discussions are brought back to the Battery 2030+ community.
- The CSA provides a platform for mutual exchange of knowledge, of common concerns and related research specific problems. Many of the researchers working on similar problems get together, it can be interface specific problems, material issues, educational aspects, scaling from lab to industry, or IPR-questions. The easy access to other researchers' knowledge by structured meetings concerning common issues of pure science or related issues have been much appreciated.

2 METHODOLOGY

Under the first objective **Implementation and monitoring of the research activities contributing to the BATTERY 2030+ initiative** in the Grant Agreement and its Annex A part B, it says “Battery 2030+ CSA3 will ensure collaboration between the Battery 2030+ projects with a memorandum of understanding to deliver research results aligned to the roadmap and to the specific actions in the call text (curricula, modelling and data sharing, standardization, etc.). The collaboration will contain items ensuring common communication and reporting on progress of each project in relation to the roadmap. Regular meetings ensure increased synergies and strengthen the Battery 2030+ initiative identity. All WP leaders and thematic leaders are to work together with the Battery 2030+ projects to achieve this goal”.

The **collaboration board (CB) meetings** have been the base for coordinating and monitoring the research in the R&I projects towards the goals as outlined in the Battery 2030+ [Roadmap](#). In all 42 CB meetings have been held of whom several have covered specific topics like “Sensing and selfhealing”, “Raw Materials and Recycling”, and “Interfaces”. The collaboration has also enhanced mutual knowledge and hence accelerated results and avoided double efforts. The collaborations and interactions between the projects are based on an agreement, a Memorandum of Understanding (MoU) The participation and collaboration with the wider European battery landscape is of equal importance and executed in several ways (see below).

Worth mentioning is also the General Assembly meetings, gathering all partners in Battery 2030+ and the Executive Board with decision power.

To reach a broad audience for extended collaboration sharing on social media like Linked In, Youtube and X is significant. The CSA3 has therefore formed a special **communication group** led by UU that works with communication and dissemination, and meets on-line about once a month. It can be hints and tips on social media coverage and outreach, press-release and media training etc. By catching up communicational activities done by the projects and share theme on Battery 2030+ web and social media channels we all reach a wider audience. It is also a complementary and good way to stay tuned on what is going on in the different projects, apart from the pure scientific aspects, like who is giving a talk at what conference, interesting seminars in the near future and alike.

2.1 Short background

A first report at M14 described the monitoring and the collaboration process (Task 1). It included the KPIs the specific project aimed for at an aggregated level; (pure and detailed scientific ones have been handled by each project). The KPIs were followed up by D1.2 at M32.

The main document explaining the research activities and the scientific aim for the Battery 2030+ initiative is the roadmap (WP2), with Karlsruher Institut für Technologie (KIT) as WP-leader, but written and updated in collaboration with all projects. B 2030+ is also aligned with the SET-plan, a key stepping-stone in transition towards a climate-neutral energy system. (The SET-plan has since shifted gears and is now incorporated in the Net Zero Industry Act).

2.2 To collaborate and monitor the progress towards the achievements we have arranged:

- Collaboration board meetings regularly, often with specific themes under the umbrella “Technical discussions”
- the Battery 2030+ Annual Conference gathering all projects and a broad group of researchers and industry leaders,
- other conferences and workshops in cooperation with players in the EU battery ecosystem, primarily Battery Innovation Days held annually at different cities,
- conferences, workshops and seminars with subsets of projects, like:
 - Revitalise Workshop, Aveiro Portugal May 2026,
 - Renovate clustering workshop Circular batteries, Milano Italy May 2026,
 - Li4LIFE: Workshop on Social Acceptance in Lithium Exploration and Mining, Brno the Czech Republic Nov 2025,
 - Sustainable Places 2025-FULL-MAP Workshop: Cross-Project Synergies for Next-Generation Batteries, On-line October 2025,
 - European Workshop on Battery Interfaces: High-Resolution Techniques and Multiscale Modelling, Cordoba Spain April 2025
- the Excellence seminars (many of them held by researchers outside Battery 2030+),
- the Connect to Power Up – four seminars covering the battery research (also national) in different countries in EU,
- Young Scientists Events (YSE) to provide a platform for young researchers to reach a wider audience and foster collaboration,
- different communication and dissemination activities,
- MOOCs like [Five Star Battery Data](#) and other tutorial videos.

See also appendix A and B.

2.2.1 The Collaboration board

On a regular base the collaboration meetings have a special topic discussed more in detail. An appointed expert is in charge of the session; it can be an expert within Battery 2030+ research projects, or partner, or an external person. Topics can be detailed science, like battery interfaces, or IPR-matters, manufacturability, standards and protocols, recyclability, educational activities etc (Task 1.2). The CSA furthermore follow up on the project’s alignment to the Roadmap.

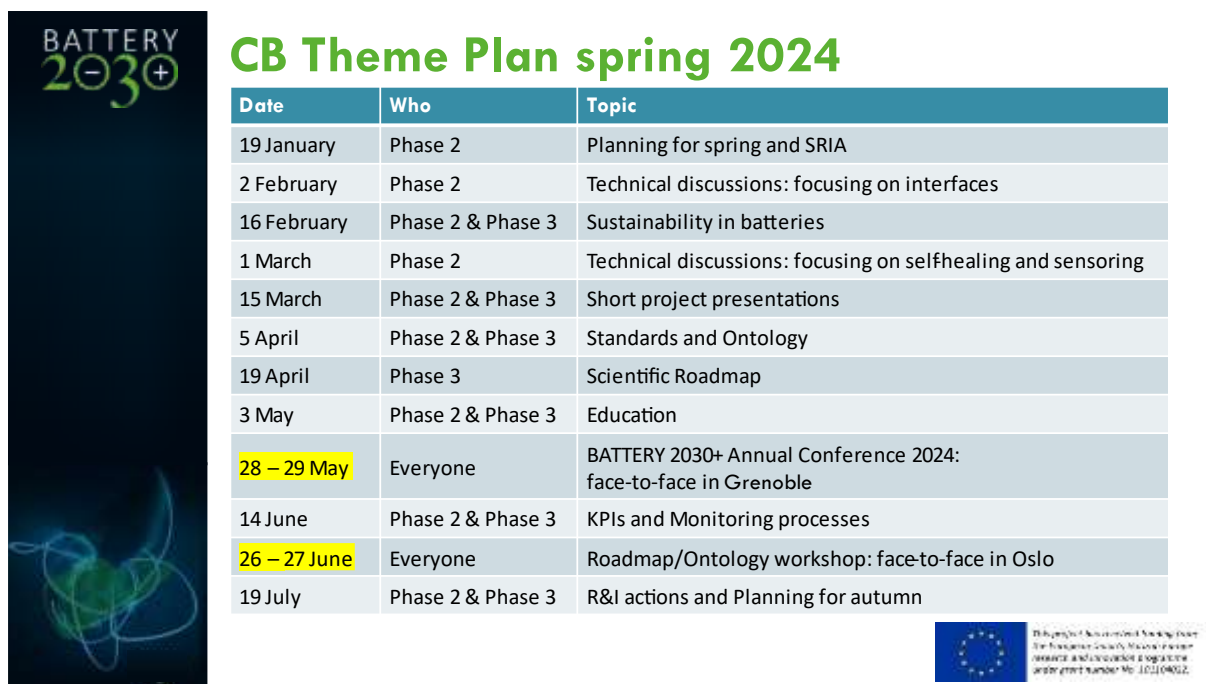


Figure 1: An example of planning for the Collaboration board meetings

2.2.2 Excellence seminars

The [Excellence seminars](#) held by prominent battery researchers, not only from Battery 2030+, disseminate excellent research and gives a platform for further collaboration among the scientists. It can be about operando insights, new materials for Li-ion batteries, metal anodes, sodium-ion batteries, solid electrolytes for solid batteries or material, cells and safety considerations. Among the researchers are Dorthe Ravensbaek, Aarhus University; Hugh Geaney, University of Limerick; Betar M. Gallant, MIT (Massachusetts Institute of Technology); Dirk Uwe Sauer, RWTH Aachen University; Linda Nazar, University of Waterloo; and Martin Winter, Universität Münster. The Excellence seminars are uploaded on the Battery 2030+ [Youtube-channel](#).

2.2.3 Innovation uptake

Innovation uptake (Task 1.3) has Fraunhofer as task leader. To embrace new projects and to stimulate a rather diverse group of battery projects has been challenging, but an approach to develop joint strategies for dissemination and innovation management was elaborated. One of the major outcomes was to form thematic subclusters to account for the size and thematic diversity of the Battery2030+ cluster (see also below). Preferably, free-of-charge services from the EU Commission has been suggested and used to create a project results portfolio, conduct stakeholder mapping and identify common ground for future joint activities and strategies. In addition, IP-courses and pitch training has been offered the young scientist community at the annual conferences and BID.



Figure 2: The winners of a pitch competition at the annual conference 2026 in Turin, Italy. Second from left are Silvan Stuckenberg, Emanuel Glans, Natalia Kwiatek-Maroszek, Luciana Morel and Daniele Callegari. Their awarded ideas range from predicting battery ageing, developing self-healing materials, to bioinspired solutions for cathode materials.

2.2.4 Knowledge base and best practises

Best practises, to define how to share data and common ontology is a prerequisite to support knowledge building. By using common protocols of data, standards and battery ontology the results are able not only to share, but also to evaluate. With input from the Battery 2030+ consortium WP3 created the **“BATTERY 2030+ Knowledge base for standards and protocols in battery research & development”**. The first version had a graphical interface to navigate the process chain and a second, interactive [Battery Knowledge Base](#) is based on Open Semantic Lab connected to BattINFO Ontology. This gives an open access overview on over 100 Key Performance Indicators (KPIs) and over 110 Process Parameters (PPs) that are involved in the battery research and development process chain. The knowledge base will be further improved in an iterative and ongoing process.

Part of the initiative is furthermore to disseminate the research results for the education of the next generation of workers and scientists, as outlined in WP4. One example is the interactive recycling workshop held on March 6th 2025 with the afternoon dedicated to a Young Scientist’s hackathon.

The young scientists in the Battery 2030+ community have had several workshops at different universities around Europe work together to elaborate a manifesto, [Batteries of the Future – A Perspective from Young Scientists in Europe](#)

As a part of the Battery 2030+ initiative on data standardization, the Technical University of Denmark (DTU) and Sintef in Norway have developed an online course (MOOC) as mentioned above called the “Five Star Battery Data”. This course provides a practical guideline on how to publish standardized data decorated with complete and machine-readable metadata. DTU and Sintef are presently finalizing a paper about the MOOC by the end of June.

2.2.5 Ripple effects

The Battery 2030+ project has served as a meeting platform for various battery-related initiatives, which in turn has enabled these projects—often in smaller group constellations—to organize their own seminars, conferences, and workshops. In this way, Battery 2030+ has created a ripple effect, generating activities that have been initiated or inspired by the interactions and ideas fostered within the program.

This type of impact is a key objective of a Coordination and Support Action (CSA), where an important role is to stimulate collaboration, bring stakeholders together, and encourage independent initiatives beyond the project itself. By enabling actors to connect and take ownership of new activities, the effects of the CSA extend well beyond the concrete actions directly implemented within Battery 2030+, contributing to a broader and more lasting ecosystem development.

3 WIDER COLLABORATION

The coordinators of the research projects are furthermore expected to present their research at the Battery 2030+ annual conferences and at specific meetings such as the Battery Innovation Days which are co-organised between the BEPA, Battery 2030+ and the two battery IPCEIs. Apart from presenting state of the art for each project these conferences also cover scientific progress in the field, data sharing, ontology, communication and education talks and workshops. Over time the industry participation has been stronger, both as participants but also as speakers giving insightful talks. Additionally, the CB-members arrange meetings in between themselves to discuss research challenges and possibilities of mutual interest, like meetings arranged between the interface's projects.

Battery 2030+ is also heavily involved at the European level primarily contributing the Battery Partnership (BAT4EU) and the ETIP Batteries Europe, M-ERA-NET etc. The ideas for new R&I topics are challenged into the Battery Partnership and the joint working groups with Batteries Europe.

4 CONCLUSION

The CSA for Battery 2030+ has managed to build a strong community, with members feeling valued and connected. We have seen that all Battery 2030+ projects are interested in collaboration at different levels. We have grasped the extended value of pan-European cooperation, as compared to research projects carried out in silos. This is the result of a number of activities as explained in this deliverable.

To meet, in person and online, to cooperate, to reach out both builds knowledge and fosters trust, a prerequisite to be successful. The projects get a bigger tool box and colleagues all over Europe to ask, explain, share, and investigate different aspects of their research. In this work the Annual Conferences, BID and the CB-meetings are the most important.

There has been a surprising willingness to share and solve research problems, to exchange research findings and data, to contribute and participate. In the previous text there are a number of activities that materialise the collaboration. Many more can be found in the lists in Appendix A and Appendix B.

The results from the collaboration are a wider perspective, access to a larger knowledge base, peers to discuss and solve common issues, education and much more. A number of results and benefits from the research projects and the CSA efforts can also be expected to be realized further down the road, after the projects have ended. When Battery 2030+ now is reaching its end, BATT-BRIDGE is ready to take over.

5 APPENDIX A

The table below is a pure and straight forward calendar list of events during the Battery 2030+ period

Titel	Year	År
FME Battery Academy	27 May 2026–29 May 2026	2026
NordBatt 2026 Conference in Espoo	22 Sep 2026–24 Sep 2026	2026
Electrobatt 2026 Conference	4 Nov 2026–6 Nov 2026	2026
REVITALISE Workshop on Battery Research and Innovation	21 May 2026	2026
Battery 2030+ Annual Conference 2026	7 May 2026–8 May 2026	2026
Circular batteries: Pathways for an integrated value chain in Europe	5 May 2026	2026
Generation 5 Batteries for Mobility: Advancing Europe's Post-Lithium Energy	30 Apr 2026	2026
DESTINY Webinar on Battery Research	29 Apr 2026	2026
Battery 2030+ Excellence Seminar April 28th	28 Apr 2026	2026
Advanced Battery Manufacturing Workshop	16 Apr 2026–17 Apr 2026	2026
Podcast RAW MATTERS – Battery Innovation Discussion	15 Apr 2026	2026
Webinar – Can computational modelling reveal what experiments can't?	26 Mar 2026	2026
DESTINY MSCA Webinar Series	19 Mar 2026	2026
Battery 2030+ Excellence Seminar March 18th	18 Mar 2026	2026
CBV Investors Forum – Accelerating EU Circular Battery Investments for a Sustainable Future	17 Mar 2026	2026
Webinar: From Molecule to Market – Application-driven Polymer Electrolyte Design	10 Mar 2026	2026
Call for Abstracts for the Battery 2030+ Annual Conference 2026	2 Mar 2026	2026
Webinar – Time and Length-Scale Operando Bridging Techniques to Study Battery Interfaces	19 Feb 2026	2026
Deep Dive Talk by the Young Scientist Community	17 Feb 2026	2026
Battery 2030+ Excellence Seminar – February Edition	10 Feb 2026	2026
LFP Battery Recycling Workshop (side event to Conference on Battery Direct Recycling 2026)	3 Feb 2026	2026
Conference on Battery Direct Recycling (DRC) 2026	3 Feb 2026–5 Feb 2026	2026
Webinar – How nanoconfinement shapes electrochemical interfaces: insights from operando characterization	22 Jan 2026	2026
This was my DESTINY – Webinar Session 4	21 Jan 2026	2026
Battery 2030+ Excellence Seminar January 13th	13 Jan 2026	2026
Battery Innovation Days 2025	2 Dec 2025–3 Dec 2025	2025
Webinar Advances in Circular Hydrometallurgy (CICERO project)	28 Nov 2025	2025
Young Scientist Community – Deep Dive Talks Webinar	26 Nov 2025	2025
Li4LIFE Workshop on Social Acceptance in Lithium Exploration and Mining	26 Nov 2025	2025
The Swedish Battery Reboot Event	25 Nov 2025	2025
Cluster Hub Annual Meeting	20 Nov 2025	2025
Battery Material Characterisation and Digital Twins for Cell-to-Pack Performance in Agile Development	18 Nov 2025	2025
Connect to Power Up! A Series of Regional R&D Ecosystem Workshops	5 Nov 2025	2025
Webinar Series – Time and Length-Scale Operando Bridging Techniques to Study Battery Interfaces	23 Oct 2025	2025
Battery 2030+ Young Scientist Community Deep Dive Talks	21 Oct 2025	2025
Powering the Future: UK–EU Battery Research, Development & Innovation Partnerships	15 Oct 2025	2025
Sustainable Places 2025 – FULL-MAP Workshop: Cross-Project Synergies for Next-Generation Batteries	9 Oct 2025	2025
NanoInnovation 2025 Conference	17 Sep 2025–19 Sep 2025	2025
Battery 2030+ Excellence Seminar September 16th	16 Sep 2025	2025
ELLIPSE Conference 2025	15 Sep 2025–16 Sep 2025	2025
Summer Academy for Modelling Batteries 2025	1 Sep 2025–5 Sep 2025	2025
Swiss Battery Days 2025	25 Aug 2025–27 Aug 2025	2025
Battery Young Researcher Award (BID)	1 Aug 2025	2025
EASE Student Award – Energy Storage Sector	18 Jul 2025	2025
GS-EES Summer School on Energy Storage	14 Jul 2025–18 Jul 2025	2025
Power Our Future (POF) International Forum	8 Jul 2025–11 Jul 2025	2025
DigiBatt / IntelLiGent Symposium on Emerging and Digital Battery Technologies	11 Jun 2025–12 Jun 2025	2025
FUTURE4BATT – From Waste to Value: Building Europe's Circular Battery Ecosystem	5 Jun 2025	2025
The Second Young Scientist Event (YSE), June 3rd 2025	3 Jun 2025	2025
1st BriAS Conference on Battery Management and Future Technologies (BriAS Batteries2025)	22 May 2025–23 May 2025	2025
Battery 2030+ Annual Conference Münster, Germany 2025	6 May 2025–7 May 2025	2025
European Workshop on Battery Interfaces: High-Resolution Techniques and Multiscale Modelling	3 Apr 2025–4 Apr 2025	2025
Call for Abstracts for Battery 2030+ Annual Conference 2025	31 Mar 2025	2025
Battery 2030+ Excellence Seminar March 27th	27 Mar 2025	2025
Winter School Battery Manufacturing Industry	24 Mar 2025–27 Mar 2025	2025
The BMS Alliance Webinar – Data Access and Harmonization: Unlocking the Potential of BMS	20 Mar 2025	2025
Clustering Battery 2030+ & Cross Fertilisation Event	11 Mar 2025	2025
Battery 2030+ Workshop on Recycling and Young Scientists' Hackathon	6 Mar 2025	2025
Battery 2030+ Excellence Seminar February 27th	27 Feb 2025	2025
DTE & AICOMAS 2025 Conference	17 Feb 2025–21 Feb 2025	2025
Conference on Results from Road Transport Research (RTR 2025)	11 Feb 2025–13 Feb 2025	2025
GS-EES Block Course Materials, Functioning and Technology of Batteries 2025	26 Jan 2025	2025
Raw Materials Week 2024	9 Dec 2024–13 Dec 2024	2024
From Mining to Recycling: The R&I Journey of Battery Raw Materials in EU	12 Dec 2024	2024
Rethinking Raw Materials for the Promotion of EU Independence Conference	10 Dec 2024–11 Dec 2024	2024
Battery Innovation Days 2024	26 Nov 2024–27 Nov 2024	2024
EURICE Webinar: Intellectual Property & Open Science	21 Nov 2024	2024
Battery 2030+ Excellence Seminar October 29th	29 Oct 2024	2024
Conference on Battery Direct Recycling 2024	29 Oct 2024–30 Oct 2024	2024
Batteries Event 2024	16 Oct 2024–18 Oct 2024	2024
Workshop on the Creation of Circular Battery Valley	16 Oct 2024	2024
Battery 2030+ Excellence Seminar September 26th	26 Sep 2024	2024
5th International Symposium on Magnesium Batteries (MAGBATT V)	18 Sep 2024–20 Sep 2024	2024
Swiss Battery Days 2024	26 Aug 2024–28 Aug 2024	2024
Workshop on Emerging Battery Technologies	25 Jun 2024–26 Jun 2024	2024
European Sustainable Energy Week 2024	11 Jun 2024–13 Jun 2024	2024
GS-EES Summer School 2024	3 Jun 2024	2024
Battery 2030+ Annual Conference 2024	29 Mar 2024	2024
Battery 2030+ Excellence Seminar April 30th	30 Apr 2024	2024
Smart Systems Meet Batteries Workshop	20 Mar 2024	2024
The New Strategic Research & Innovation Agenda for Batteries Webinar	20 Mar 2024	2024
Battery 2030+ Excellence Seminar March 19th	19 Mar 2024	2024
Women in Battery Research – Pioneering Innovation and Equality	12 Feb 2024	2024
GS-EES Block Course Materials, Functioning and Technology of Batteries	4 Feb 2024	2024
Self-Healing Batteries: Where Are We Today? Final Event HIDDEN-BAT4EVER	31 Jan 2024	2024
BATTERY 2030+ and ERA-MIN Workshop	23 Jan 2024	2024
DEFACTO Final Conference	30 Nov 2023	2023
Scientific Symposium on Generation 3b Lithium-Ion Batteries	29 Nov 2023–30 Nov 2023	2023
Battery Innovation Days 2023	14 Nov 2023–15 Nov 2023	2023
Battery 2030+ Excellence Seminar November 2nd	2 Nov 2023	2023
BIG-MAP Workshop – Towards an EU Landscape for Battery Data	19 Oct 2023	2023
Battery 2030+ Course on Innovation and Entrepreneurship	29 Sep 2023	2023
ESPE23 – European Symposium & Workshop on Polymer Electrolytes for Battery Applications	25 Sep 2023–27 Sep 2023	2023

6 APPENDIX B

A collection of events in which the Battery 2030+ projects have participated, providing opportunities to initiate various forms of collaboration. Please note that this represents a selection of events, and reporting from the projects has been voluntary.

Project collaborations 2024	Battery 2	Angelic	BatCat	BATTwin	Big-Map	Cicero	Circubatt	FULL-MAI	Healingb	INERRAN	Li4life	Opera	Opinchar	Phoenix	Renovate	Revitalis	Reuse	Safeloop	SageLi	Salamanc	Stellar	Streams	Ultrabat
28-29 May Battery 2030+ Annual Conference	x		x	x	x	x			x			x	x	x	x	x	x			x		x	x
25-26 27 June Battery 2030+ Roadmap workshop	x		x		x							x		x	x					x			x
August - Summer School Madrid												x	x	x									
29-30 Oct Conference on Battery Direct Recycling	x									x					x		x						
26-27 Nov Battery Innovation Days	x			x					x	x					x								
29 - 30 Jan Workshop EUnified Battery Data Space									x														
Project collaborations 2025																							
6 March Battery 2030+ workshop on recycling and afternoon Young Scientists' Hackathon										x	x				x		x						
11 March CRM and batteries; cross fertilisation and clustering event	x						x								x								
19 March Battery 2030+ Roadmap Workshop				x						x													
3-4 April Interfaces workshop												x	x										
6-7 May Battery 2030+ Annual Conference			x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x		x	x
3 Jun YSE event															x								
1-5 Sept SAMBA Battery Modelling Summer School																							
9 October 1st FULL-MAP Clustering Event - Battery Ecosystem Summit: Fostering Cross-Project Collaboration				x			x		x					x			x	x	x	x			x
8-10 October FULL-MAP networking event Sustainable Places 2025			x											x									
10 November Semantic Materials Workshop 2025			x	x														x					
2 December Graz Battery Innovation Day	x		x	x		x								x	x							x	
Project collaborations 2026																							
February 3-5 Conference on Battery Direct Recycling	x																						
27 February Battery 2030+ Collaboration Workshop (internal)	x		x	x						x								x					
15-17 April Advanced Battery Manufacturing Workshop																							
Battwin BatCat Circubat Angelic Opera		x	x	x			x					x											
5 May 2026 RENOVATE clustering workshop: Circular Batteries: Pathways for an integrated value chain in Europe															x			x					
7-8 May Battery 2030+ Annual Conference	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
16-17 April 2026 Advanced Battery Manufacturing Workshop		x	x	x																			
CARE INNOVATION 2026 Clustering Event on "Sustainable Batteries - disruptive technologies and a competitive edge across the full value chain"				x																			
Joint Webinar Sister Projects				x										x	x								
28 June International Symposium on Beyond Lithium-Ion Batteries 2026 HealingBat Salamander Phoenix									x					x						x			