



Cross-Sector Battery Showcase - Advancing Innovation Across Industries

26 March | 9 am - 4 pm, Leicester



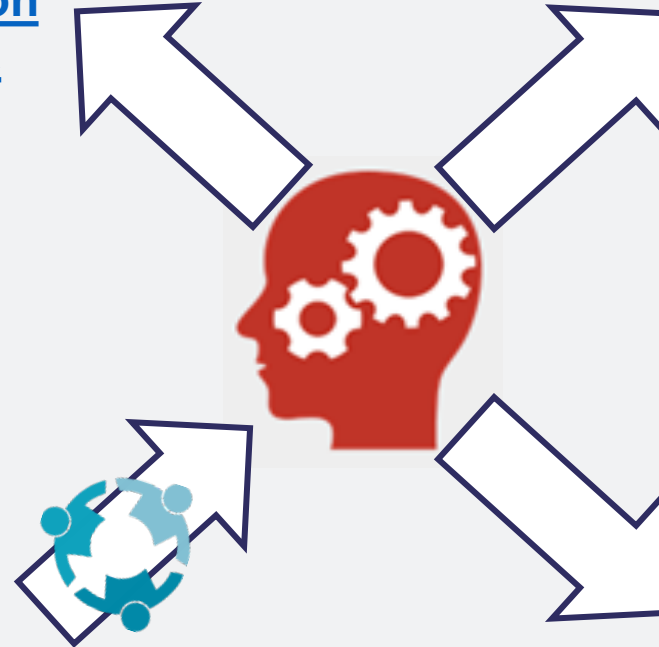
Innovate
UK

Increasing Talent and Skills across the ecosystem

National Electrification
Skills Framework &
Forum (NESFF)

No Limits

<https://nolimits.ukri.org>



<https://ershub.co.uk>



<https://iuk.ktn-uk.org/programme/workforce-foresighting/>

Faraday Battery Challenge

Cross-Sector Battery Showcase 26.03.24

Tony Harper, Challenge Director



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Innovate UK

www.ukri.org/councils/innovate-uk/

[Faraday battery challenge – UKRI](#)

UK Battery Strategy

26th Nov 2023

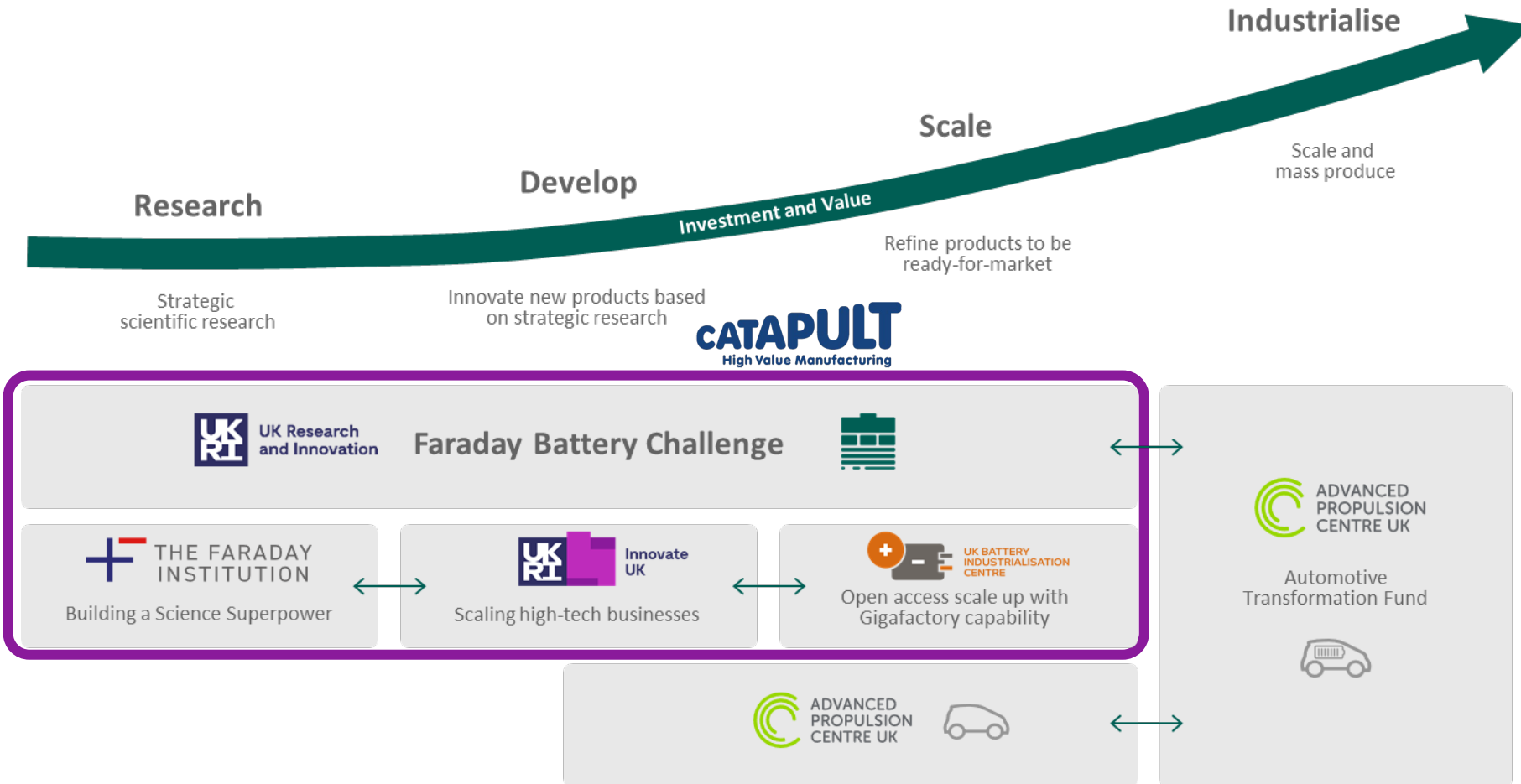
Our Vision

The Government's 2030 vision is for the UK to have a globally competitive battery supply chain that supports economic prosperity and the net zero transition. The UK will be a world leader in sustainable design, manufacture, and use, underpinned by a thriving battery innovation ecosystem.



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Battery Eco-System: Where are we today?



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Today's cell production capacity (announced) vs projected 2030 demand


Sector

-  Demand
-  AESC Capacity
-  Agratas Capacity

 Light duty automotive

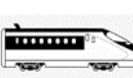
 Heavy duty automotive

 Energy storage

 Off highway

 Aerospace

 Maritime




 Rail

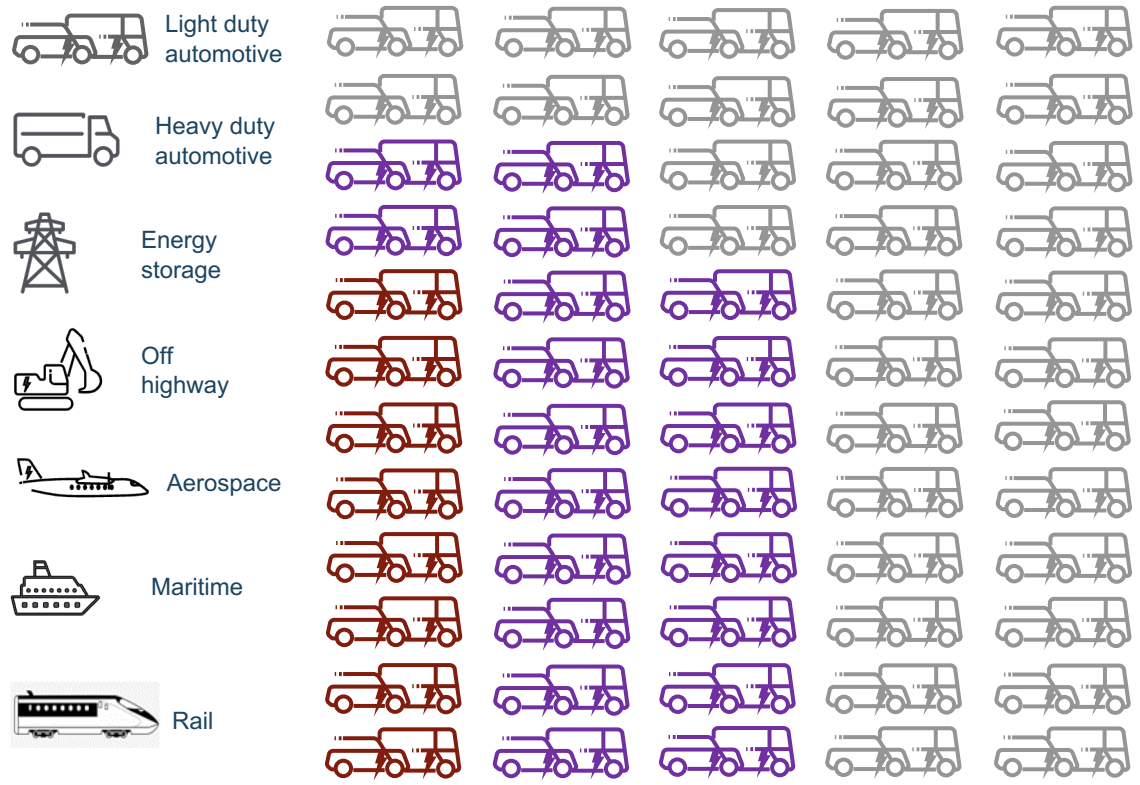


2030 Demand

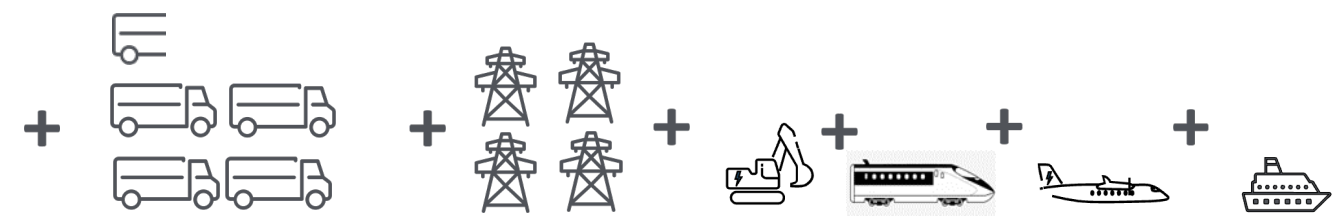
Today's cell production capacity (announced) vs projected 2035 demand

Sector

 Demand
 AESC Capacity
 Agratas Capacity



120 GWh



9 GWh

4-8 GWh

<2 GWh

<2 GWh

<2 GWh

<2 GWh



2035 Demand

Future Challenges & Opportunities

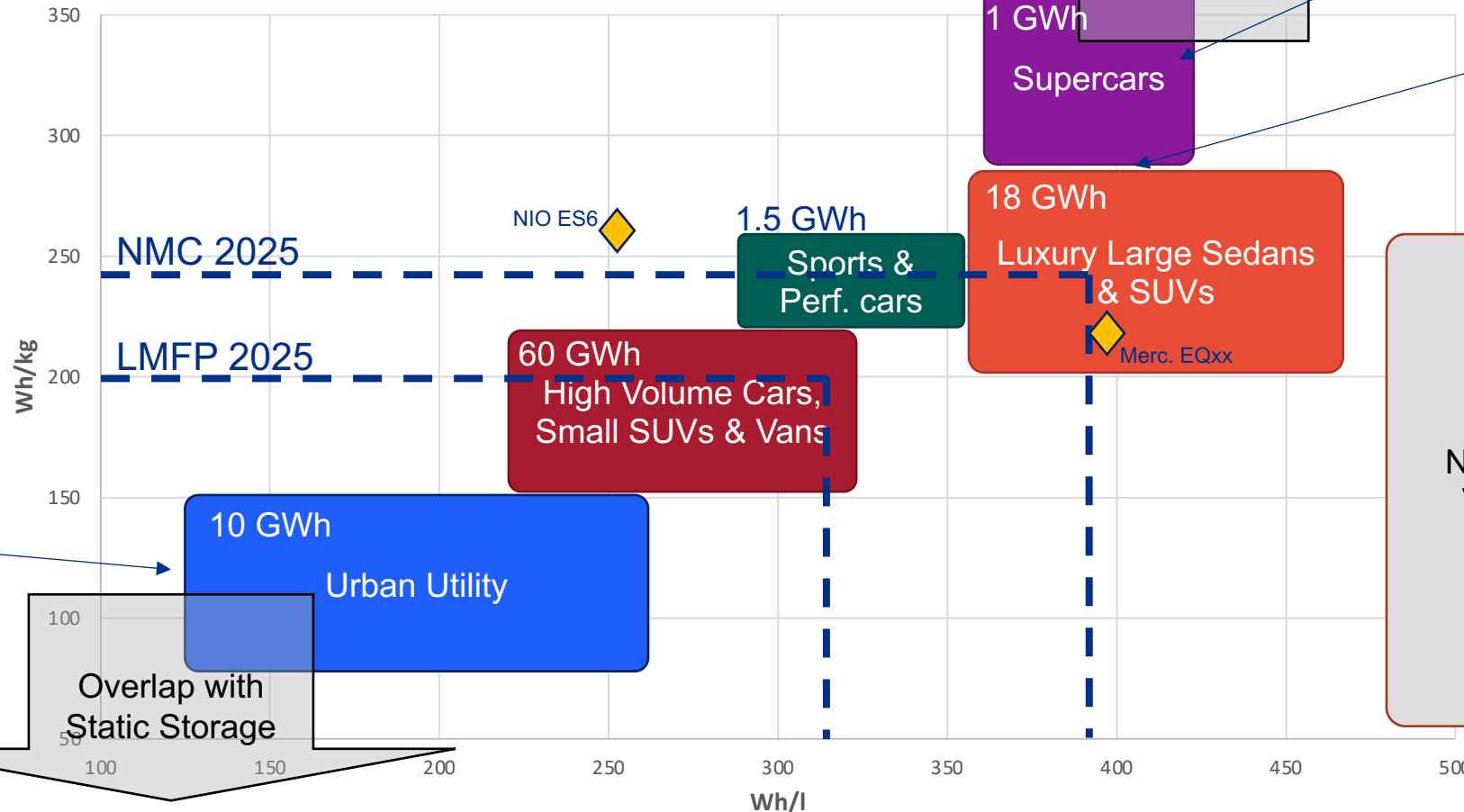
Circa. 90GWh annual production required by 2030

Pack Level energy density requirements 2030 UK vehicle production.

Overlap with All-Electric Flight

Requirement for high gravimetric energy density solution e.g. LiS

Likely market entry point for SSB



No obvious High-Volume Market

Opportunity for low-cost, highly sustainable "good enough" performance solutions e.g. Na Ion



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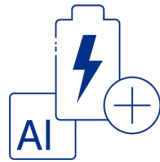
Future Challenges & Opportunities



Anode

Scale up and industrialise sustainable UK Anode capacity. (Gr & Si/Gr)

Research & Develop Bio-based electrode materials



Cathode

Research & Develop Cost effective UK manufacture of low/intermediate volume specialist CAM



Cell Manufacture

Research & Develop Cost effective UK manufacture of low GWh/Pa battery cell volume

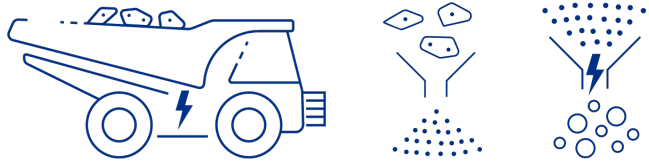
Research & Develop “Design to cost” chemistries and manufacturing processes.

Research, Develop & Scale up Decarbonising cell manufacture



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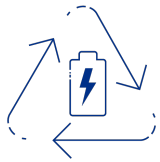
Future Challenges & Opportunities



Mining & Processing

Scale up & Industrialise UK Li Extraction and Processing

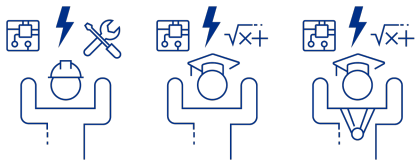
Research, Develop & Scale-up Decarbonising upstream Material Processing



Recycling

Research & Develop Recycling Processes for Next-gen Chemistries.

Exploit the UK's "Mass Balance" Advantage



Skills

New Skill, Re-skill, Up-skill Programmes at Scale



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Future Challenges & Opportunities



Sodium Ion

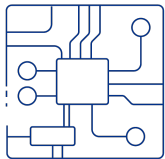
Research, Develop, Scale-up UK upstream supply chain for Sodium Ion



Li Metal

Research & Develop sustainable, cost effective , high throughput production processes for Li metal anodes.

Research & Develop and scale-up Lithium Sulfur batteries.



Software & AI

Large-scale deployment of AI for material discovery



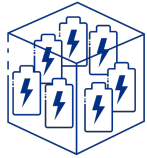
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Future Challenges & Opportunities



Production Equipment

Develop and Scale-Up a UK Battery Production equipment capability



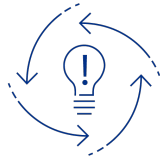
Battery Systems

Develop and Scale-up novel cell to pack/cell to vehicle concepts.



Access to finance

Interventions to catalyse scale-up investment



Large-scale R&D

Attract Global battery R&D centres in the UK



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Find out more about the Faraday Battery Challenge



Thank You!

Faraday Battery Challenge



Innovate
UK



THE FARADAY
INSTITUTION



UK BATTERY
INDUSTRIALISATION
CENTRE

The Cross-Sector Battery Systems Innovation Network



**Anna Wise –
Head of Strategy,
Nyobolt**

The LionVolt logo features the word "Lion" in a green, sans-serif font, followed by "Volt" in a purple, sans-serif font. A small white plus sign is positioned inside the letter 'o' of "Lion", and a small white minus sign is positioned inside the letter 'o' of "Volt".

Lion+ Volt-

**Kevin Brundish –
CEO, LionVolt**

CSBS Innovation Network

Mission

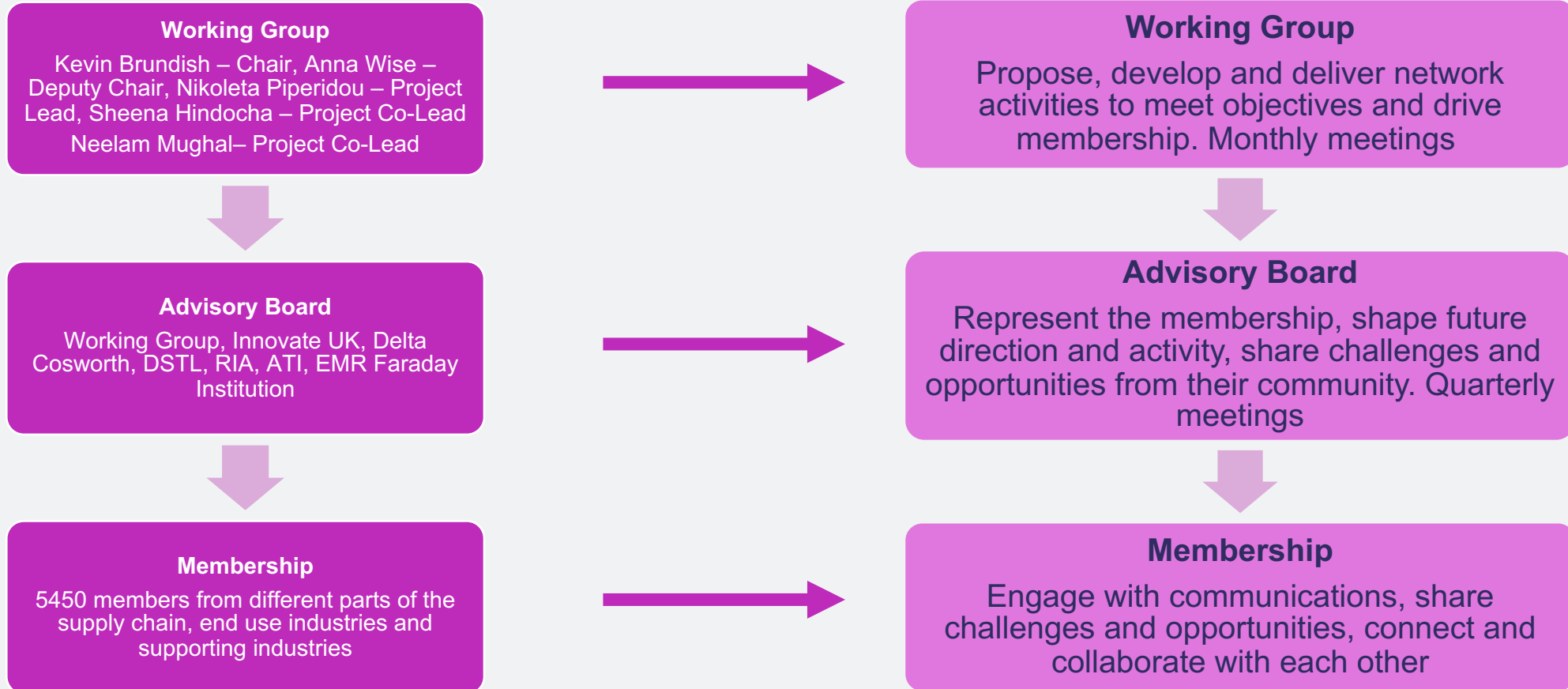
To create an open and collaborative cross-sectoral community for researchers and innovators in battery manufacturing (including next generation batteries), the related supply chain and end-users.

Objectives

- **Open new markets for the battery industry**, by introducing this community to new sectors, thus support the growth of the UK economy;
- **Promote innovation in batteries** by identifying technical gaps for their introduction to various sectors;
- **Help decarbonise a wide range of end-users** from rail, maritime, aviation, construction etc. by enabling the adoption of batteries thus supporting the Net Zero agenda.



CSBS Innovation Network - Structure



Connect with the CSBS Innovation Network

Matthew Cliffe My dashboard Log out

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KTN

Charging the battery revolution network

Welcome to the UK Batteries Network

Register to join a growing, open and collaborative community - the Cross-Sector Battery Systems Innovation Network

Signing up today, you will:

- ✓ Receive our newsletter including the latest news, exclusive invites for members-only events, reports and funding updates
- ✓ Gain access to the networking hub of the platform where you will be able to post and view battery-related solutions and challenges

Ready to get started?
Enter the Networking hub [Dashboard](#)

About
The strategic objective of this Innovation Network is to create an open and collaborative cross-sectoral community for researchers and innovators.

'Battery Targets to 2035' Discussion Document
Battery Targets and priorities across sectors, 2020 to 2035: From Research and Manufacturing to Application and End of Life - Enabling Electrification Across Sectors.

Podcast Series: The Battery Caffè
A 5-episode series of short interviews with experts discussing a large range of battery-related topics from investment to recycling, fire safety and next-generation technologies.

Stay informed: Sign up to our newsletter for news, insights, funding opportunities and future sessions

Innovate UK
KTN

Charging the battery revolution network

Networking Hub

How it works

The networking hub platform is designed to share real world challenges, match suppliers and develop an eco system to breed innovation.

Simply navigate in the different sections and request to connect.

- 1 Create posts about your battery related challenges or solutions
- 2 View battery-related solutions and challenges that other members have posted
- 3 Start networking by clicking on 'Send an introduction request' at the bottom of each post
- 4 Check your [dashboard](#) to manage and engage with your new connections

Connect: Register to the platform and share your challenges and solutions with other members in the networking hub

The Cross-Sector Battery Systems Landscape Map

Click on the buttons to explore the maps

Explore the Battery Testing Map

Explore the Network Map

Explore the Battery Recycling Map

Innovate UK

Showcase your capabilities: Explore our landscape map and add your organization

Connect with the CSBS Innovation Network



The Battery Caffè
Episode 9: Anodes

UKRI Innovate UK
KTN

Battery Caffè Podcast Episode 9: Anodes

This podcast episode is hosted by [Debra Jones](#) and [Juan Maria Gonzalez Carballo](#) who are both Chemistry Knowledge Transfer Managers at Innovate UK KTN with special guest [Alex Groombridge](#), Chief Technology Officer & Co-founder at [Echlon Technologies](#).

This podcast discussion focuses on different chemistries for anodes and the challenges of scaling up manufacturing. Juan and Debra talk about the UK's battery anode and cathode capabilities, the desired properties of these materials and the production as well as commercialisation of this emerging technology to supply anode grade niobium oxides.

LISTEN TO THE PODCAST

Hear expert views: Listen to our Battery Caffè Podcast series



UKRI Innovate UK

The 2035 UK Battery Recycling Industry Vision

Sustainable thinking for the future

Nikola Ppandou, Knowledge Transfer Manager - Infrastructure & Energy
Sheena Hindocha, Knowledge Transfer Manager - Materials Chemistry

Read the Vision: Download the Battery Recycling Industry Vision

Cross-Sector Targets Work led by WMG

- Initial discussion and framing work as a result of the early CSBS group
- Martin Dowson at WMG and his team led the report
- First draft of the targets were validated through a workshop led by the CSBS group
- The launch of the report was held as part of the launch of the Innovation Network

Objective 1: open new markets for the battery industry

Objective 2: promote innovation in batteries

Objective 3: help decarbonise a wide range of end-users



Join the CSBS Innovation Network



linktr.ee/innovateuk

