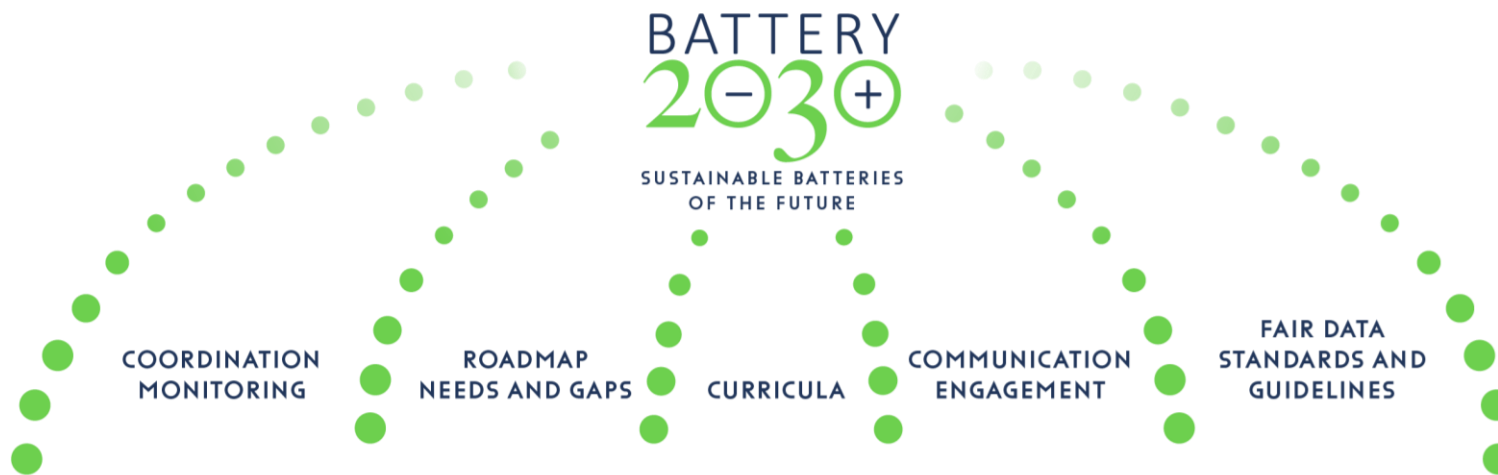


BATTERY 2030+, energy storage and the need for advance characterisation



LARGE-SCALE RESEARCH INITIATIVE



INSTABAT

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SPARTACUS

BATTERY 2030PLUS CSA
UU, SWEDEN

HIDDEN

BAT4EVER

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www.battery2030.eu

Twitter: 2030battery



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 957213.

High priority on EU agenda

- Green Deal and Horizon Europe proposals
- Europe Battery Alliance led by Vice President Šefčovič since 2017
- Strategic Action Plan on Batteries COM(2018) 293 - May 2018



A coordinated response to EU challenges

- **Accelerate battery manufacturing and capacity deployment in EU**
- **Supportive framework : ecosystem, finance, regulations, standards..**
- **Strengthen research on advanced battery technologies**
 - ✓ Foresee a 'large-scale and long-term research initiative on future battery technologies'

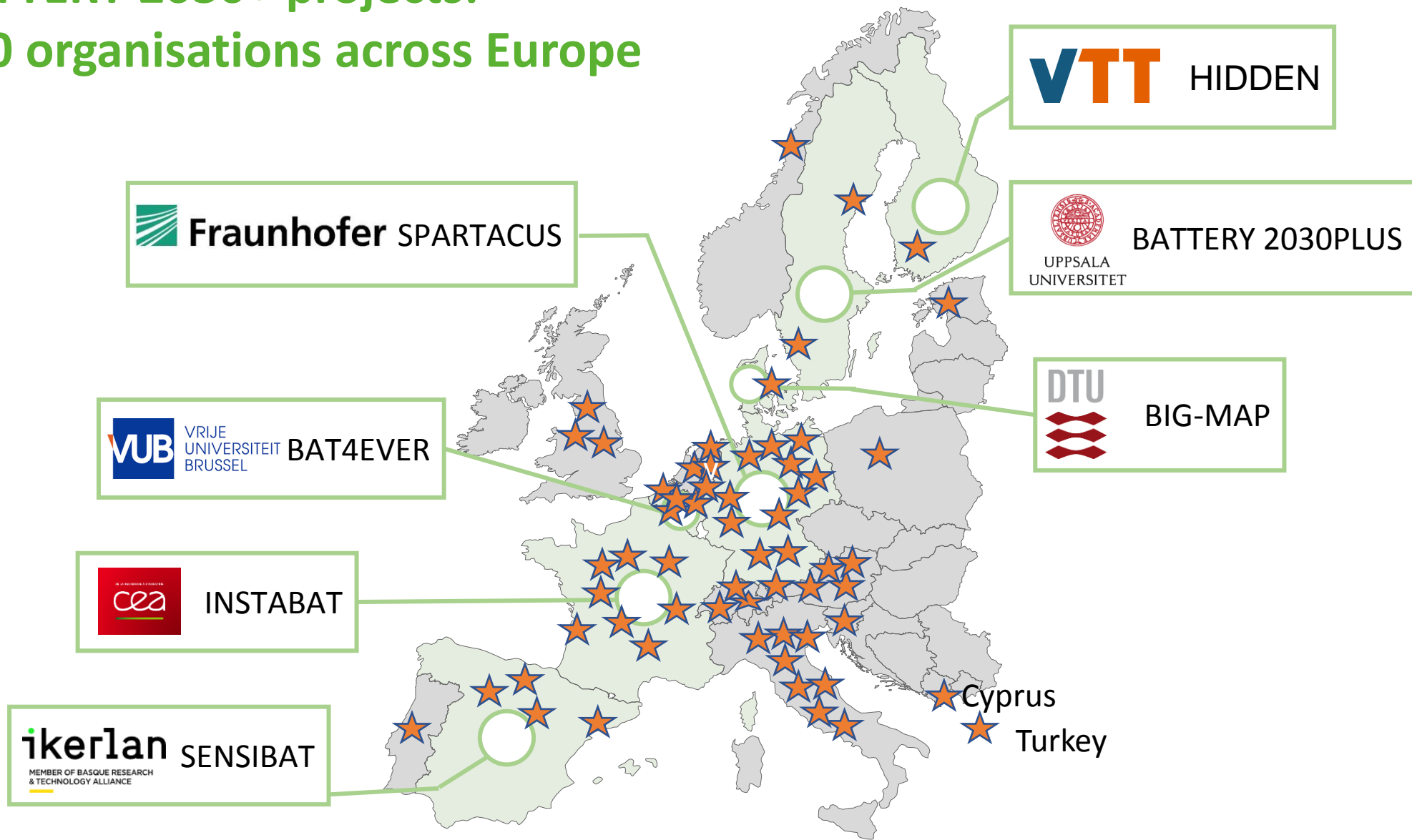
European Green Deal by
2050

Fossil-free society 2050



BATTERY 2030+ projects: 100 organisations across Europe

Starting
configuration
of the
BATTERY
2030+
initiative!

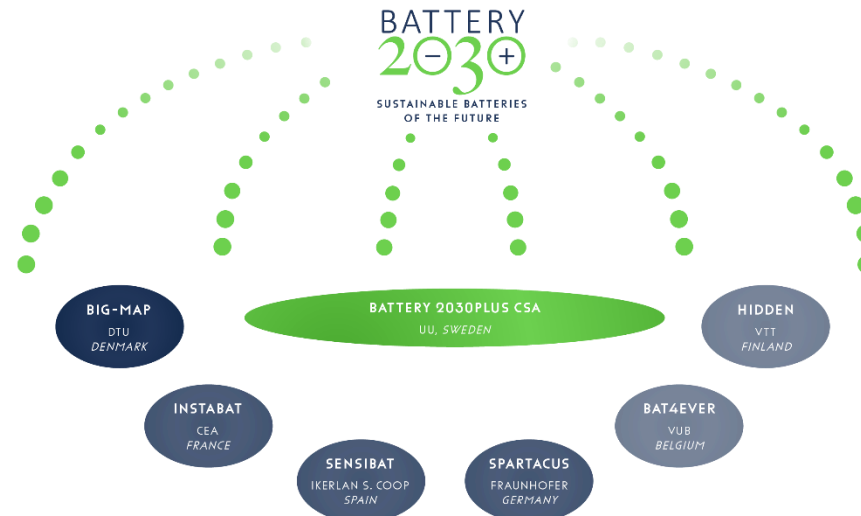


An ambitious roadmap

The BATTERY 2030+ roadmap presents three overarching research themes and six research areas needed to invent the sustainable batteries of the future.

Short-, mid- and long-term goals for each area are identified.

- I. Accelerated discovery of battery interfaces and materials – Battery Interface Genome (BIG) Materials Acceleration Platform (MAP)
- II. Integration of smart functionalities – sensing and self-healing
- III. Cross-cutting areas – manufacturability and recyclability



www.battery2030.eu



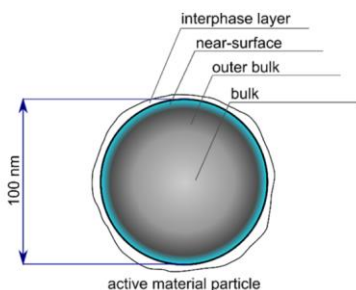
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Enabling the
development of
battery materials
for a circular
economy

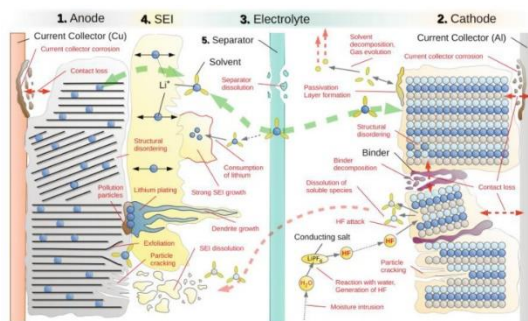
Advanced characterisation techniques are relevant from particles to battery systems

Reactions in a battery take place at different time-scales and dimensions:
New operando characterisation techniques are needed to understand what is happening in a battery

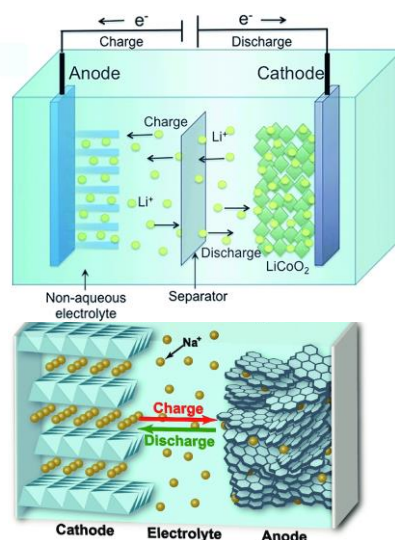
Particles



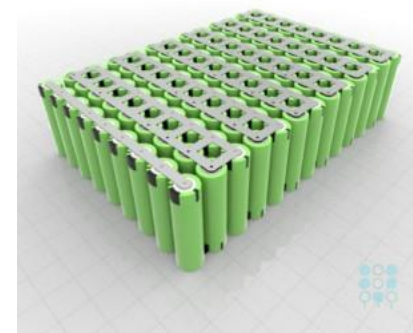
Cell- chemistries and mechanisms



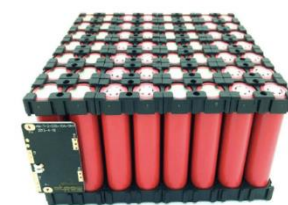
Commercial cells



Modules/Packs



Systems



We need to accelerate the finding of new battery materials

We need access to high throughput experiments at synchrotrons

We need to take part in development of new methods

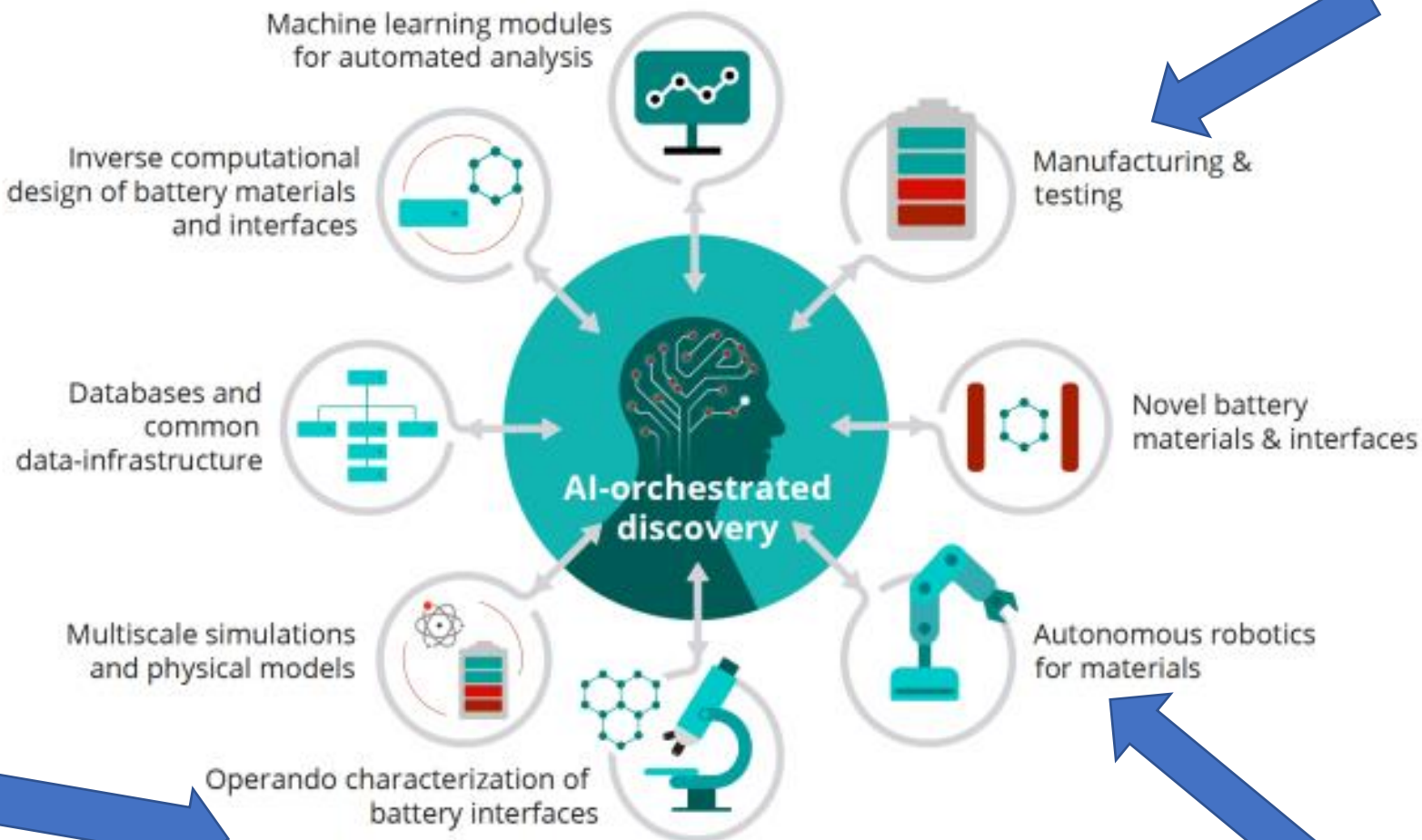
We need industry involvement



BIG-MAP

High
throughput
experiments
are needed

- **Mission:** Enabling automated data acquisition, analysis, prediction and utilization



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Do not make silos!

Pillar 1 Excellent Science



Pillar 2 Global Challenges and European Industrial Competitiveness



Pillar 3 Innovative Europe

European Innovation Council

European innovation
ecosystems

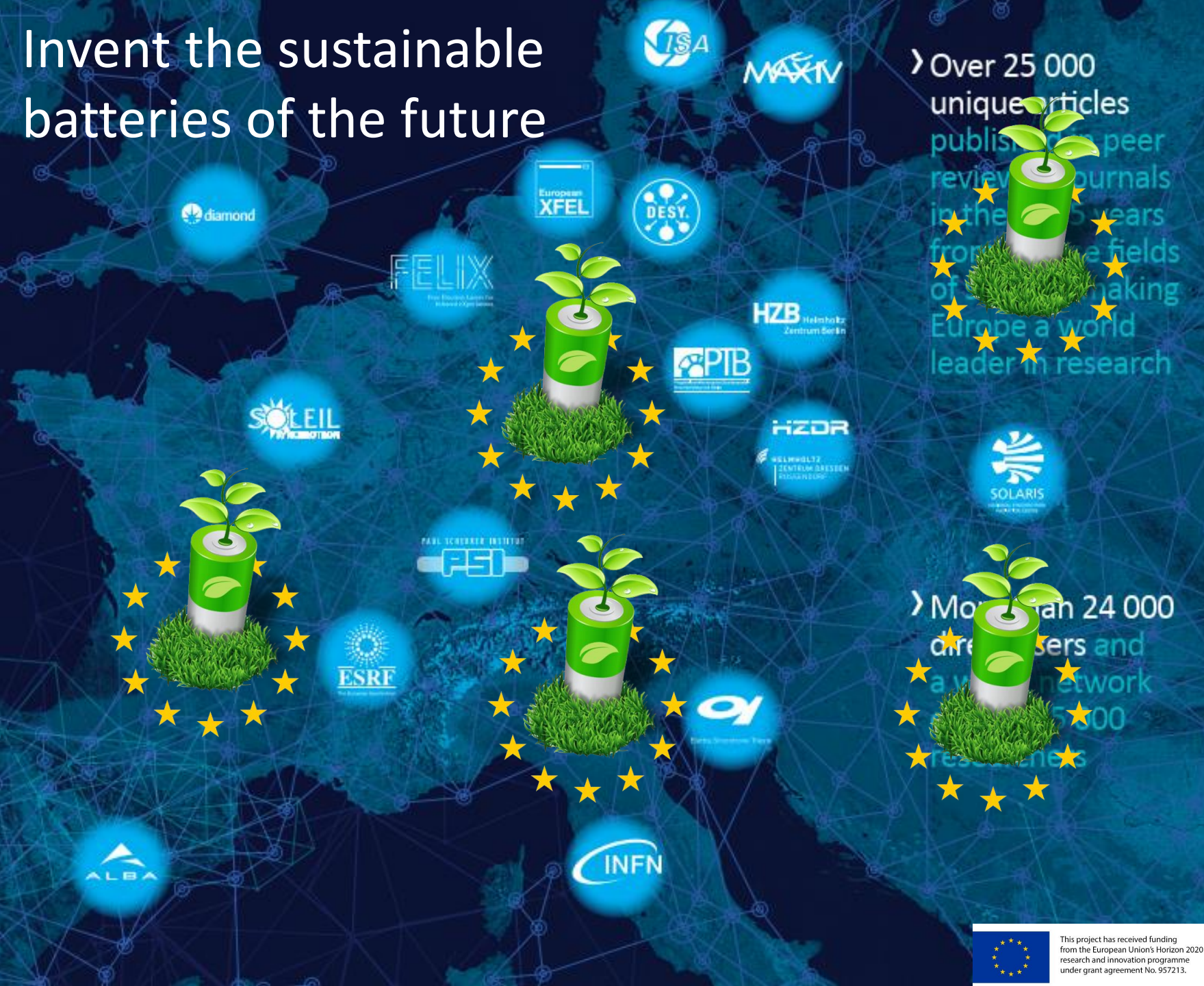
European Institute of
Innovation
and Technology

Widening Participation and Strengthening the European Research Area

Widening participation and spreading excellence

Reforming and Enhancing the European R&I system

Invent the sustainable batteries of the future



What can the European Parliament do to support LEAPS to be part of **solving key challenges for our future:**

- Synchrotrons are a gold mine for realizing the green deal
- BATTERY 2030+ can be a model system for an area where urgency is key and where large scale research infrastructure is a necessary tool for success
- **Need incentives for direct and fast access**

ARIE project