# WE ARE SPARTACUS

- 4 research organizations
- 1 university
- 2 industrials

Covering relevant expertise from materials and battery knowledge to battery pilot production, sensor development with various approaches and impedance analysis to the implementation of management systems.



The European Union is funding SPARTACUS as part of the BATTERY 2030+ research initiative.



## WE'RE READY WHEN YOU ARE



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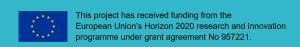
**SPA**tially **R**esolved acous**T**ic, mech**A**ni**C**al and **U**ltra**S**onic sensing for smart batteries

Meet us in person and learn more about the SPARTACUS opportunities for battery sensing!

WORKSHOP

Smart sensor batteries and the future battery generation

San Sebastiàn, June 21-22 2023 More information: www.spartacus-battery.eu



### SPARTACUS (

#### MISSION

Faster charging, longer stability of performance not only for electric vehicles but also for other battery powered products – that's what SPARTACUS research project wants to achieve.

The project focuses on mechanical and acoustic sensors complemented by temperature sensors and electrochemical impedance spectroscopy. The sensor data will feed an advanced battery management system, which compares real data with battery data models to gain a comprehensive analysis of the real battery condition.

#### VISION

- Reduce charging times by up to 20 % without compromising the reliability and service life of batteries by utilizing advanced sensors and cell management systems.
- Optimize detection of battery health and battery function to recharge in a safe but fast way.
- A safer and more ecological and economical operation of batteries.
- A deeper understanding of the processes in the battery.
- Integrated sensor technology, data acquisition and processing contributes to "big data" approaches and provides interfaces for the use of artificial intelligence.

#### **OBJECTIVES**

- 1. Development of new sensors design for smart batteries.
- 2. Integration of the sensors according to industrial constraints.
- 3. Data acquisition and data preprocessing for BMS integration.
- 4. Modelling of failure mechanisms and correlation with SoX.
- 5. Development of an advanced BMS and standardization procedures.
- 6. Economic and environmental assessment.

# WP 2: sensor development CSEM WP 3: Integration and assembly technology - CEA WP 7: Validation / demonstration - CIDETEC WP 1: Modelling (SoX) VUB Online Sox estimation for advanced BMS WP 6: Environmental sustainability VUB

#### KEY APPLICATION AREAS

- Electric mobility (auto, e-bus)
- Industrial applications
- Portable electronic devices
- Others (medical devices, power tools, gardening tools, e-bikes, etc.)