

DigiCell



01/01/2024
START DATE



36 Months
DURATION



6 Mil €
BUDGET

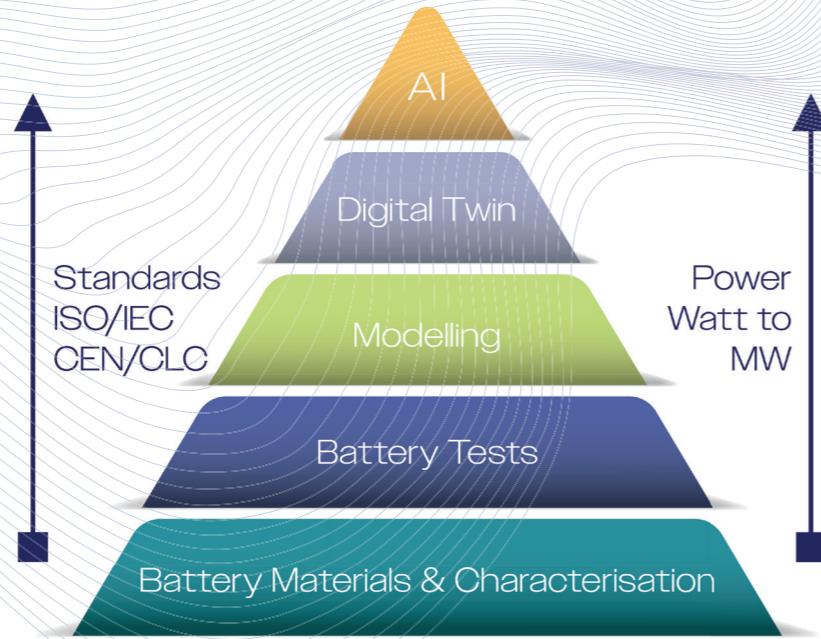


13 Partners
7 COUNTRIES

EU Research Project Transforming Battery
Cell & Pack Manufacturing through Digital
Processes and AI-based Data Analytics

About DigiCell

Digicell is an EU-funded research project that aims to revolutionise the battery value chain by transforming the manufacturing and testing processes of battery cells and packs. DigiCell seeks to make these processes more efficient, reliable, and sustainable using advanced modelling and machine learning techniques.

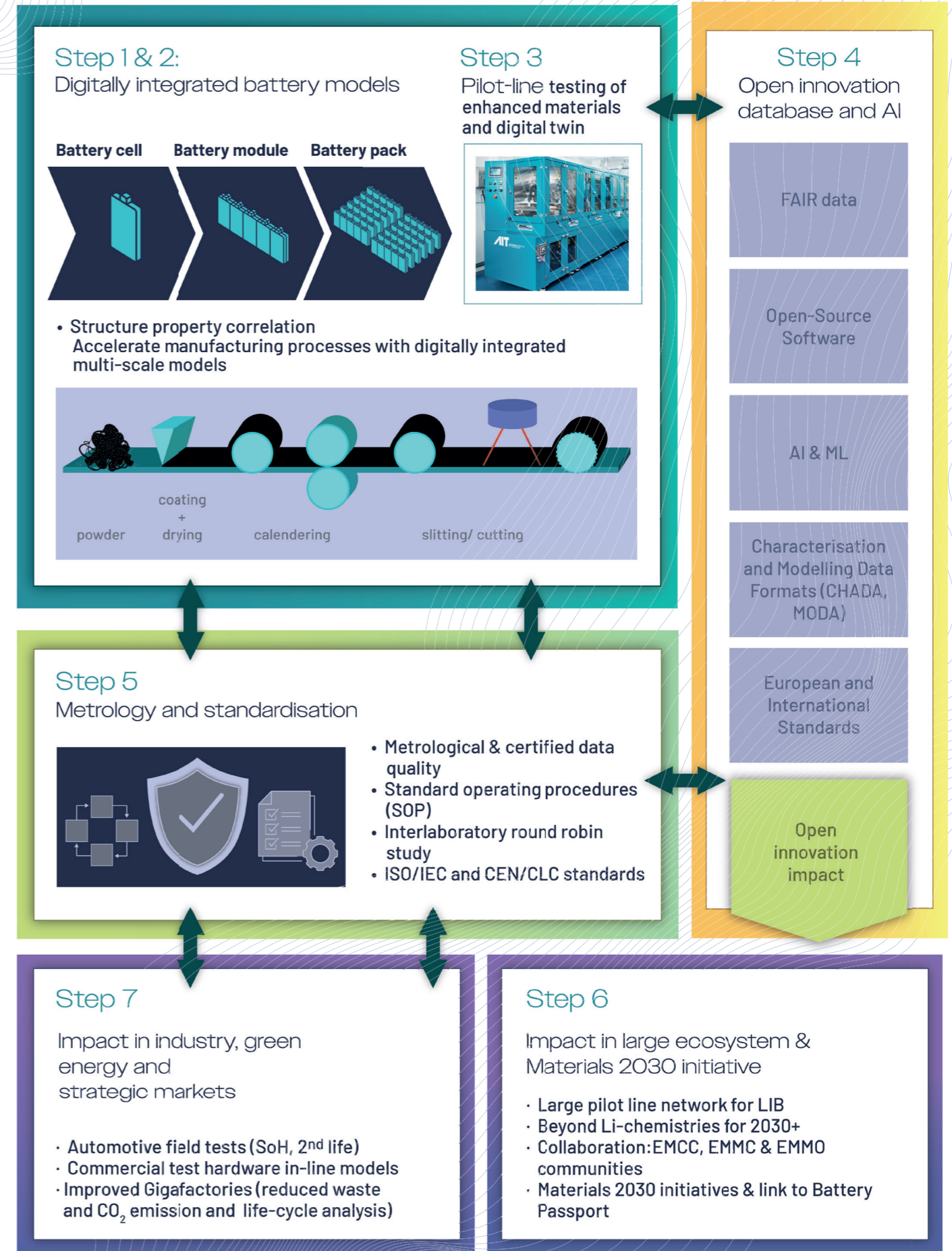


DigiCell Key Activities & Goals

- Develop an interoperable database interfaced with an Open Innovation Platform being set up in DigiCell
- Systematically varying process and formulation parameters on a large scale to build a database for AI-driven predictive modelling for life cycle and SoH
- Develop pilotline hybrid models for predictive modelling with optimisation methods
- Faster pack test methods lead to energy savings
- Transfer metrics from science into Gigafactories



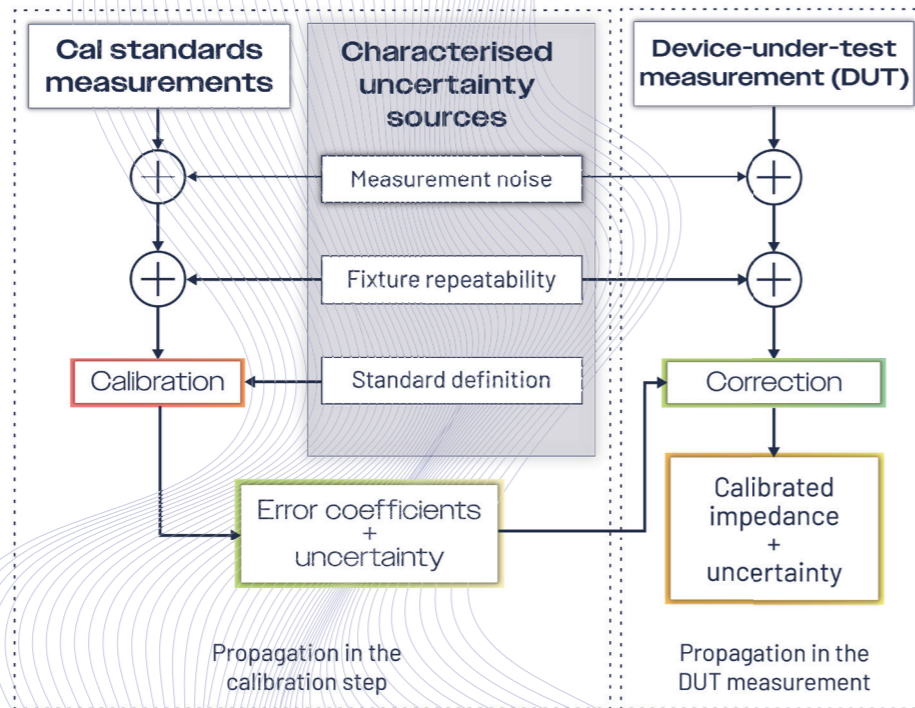
DigiCell Value Chain



DigiCell Key Technologies

Characterisation, Modelling & AI

- Metrology grade cell-to-pack characterisation and test uncertainty
- Integration of nanomechanics and nano-electrochemistry to enhance cell performance
- AI-driven multiscale methodologies for enhanced battery safety and State of Health (SoH) assessment
- Multi-physics models combined with high-throughput industrial testing



Standardisation and Data Management

- Advancing battery test metrology across materials and packs & inter-lab comparisons
- Developing battery test standards
- Engaging in technical committees (CEN/CLC)
- Identifying key control characteristics and developing standardised test procedures
- Implementing traceable cell test methods



Pilotline, Digital Twin & Open Innovation

- Enhancing quality control for automotive module/stack in electric vehicles (EVs)
- Module safety assessments, SoH Monitoring and temperature analysis
- Validating pilot line models & inline testing
- Digital Twin for LIB manufacturing compatible with adjacent software suites
- Applications to beyond lithium chemistry (LiS/K/Mg)

DigiCell Main Impacts

- Advancing cell manufacturing processes through new materials tests and multi-scale models integrated with AI
- Establishing standardised quality control models and methods to foster sustainable battery production
- Implementing metrology-based methods for inline testing with superior false positive and false negative rates
- Driving efficiency gains: reducing production costs, minimising material waste, and lowering CO₂ emissions

DigiCell Partners





Funded by the
European Union

DigiCell

www.digicell-project.eu



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