European workshop on nanotechnologies & advanced materials for batteries

23rd February 2017, Brussels, Belgium

Presentation of the Project

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 685716.

Excellence / Objectives

- According to the European Energy Storage Technology Development Roadmap towards 2030 (EASE/EERA) energy storage will be of greatest importance
- Storage of energy in electrochemical cells is a promising way, but need to be improved (performance, aging)

Table 1: system based on 26650 cells current performances and expected improvements at the end of Sintbat

Criteria	Current performance*	Project Sintbat**	Improvements by Sintbat [%]
Life time [number of cycles]	8,000***	10,000***	+25
CAPEX [€·kWh^{-1}]	1,700	< 400	-76
OPEX [€·kWh^{-1}]	0.25	< 0.09	-64
Capacity [Ah]	3.0	6	+100
Nominal voltage [V]	3.2	3.6	+13
Specific energy [Wh·kg^{-1}]	115	260	+126
Energy density [Wh·L^{-1}]	275	660	+140

* values based on current performance of 26650 cells ($LiFePO_4$/Graphite) currently used in the Engion© energy storage system.
** values based on Sintbat 26650 cells (NCM/Si-C)
*** at 70 % DOD

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Partners

No	Name	Short name	Country	Project entry month[8]	Project exit month
1	VARTA MICROBATTERY GMBH	VMB	Germany	1	48
2	COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES	CEA	France	1	48
3	THE UNIVERSITY OF WARWICK	UoW	United Kingdom	1	48
4	VARTA MICRO INNOVATION GMBH	VMI	Austria	1	48
5	EURA-CONSULT AG	EURA	Germany	1	48
6	UPPSALA UNIVERSITET	UU	Sweden	1	48
7	MATERIALS CENTER LEOBEN FORSCHUNG GMBH	MCL	Austria	1	48
8	VARTA STORAGE GMBH	VS	Germany	1	48
9	UNIWERSYTET WARSZAWSKI	UW	Poland	1	48

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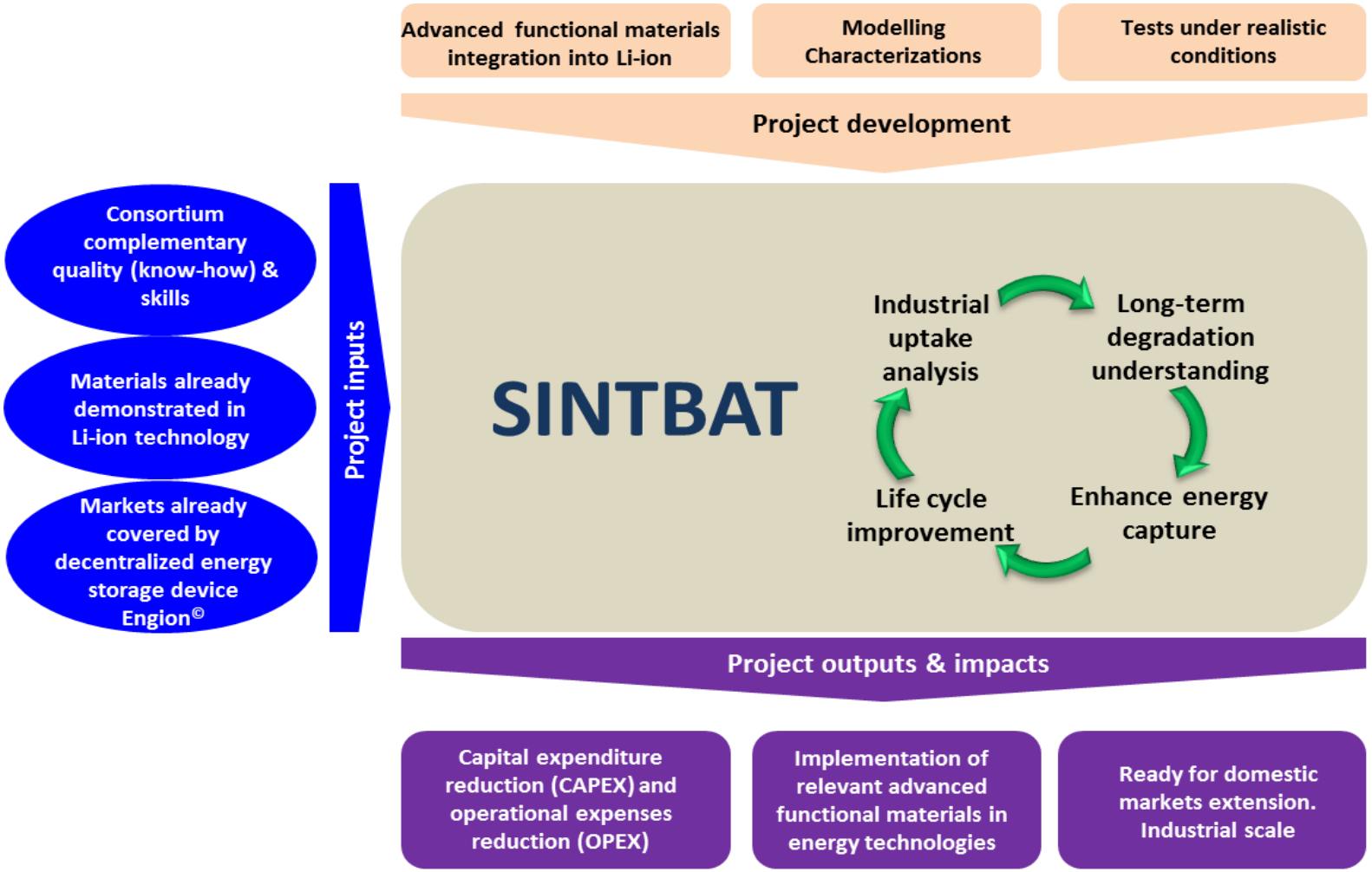
Concept and Approach



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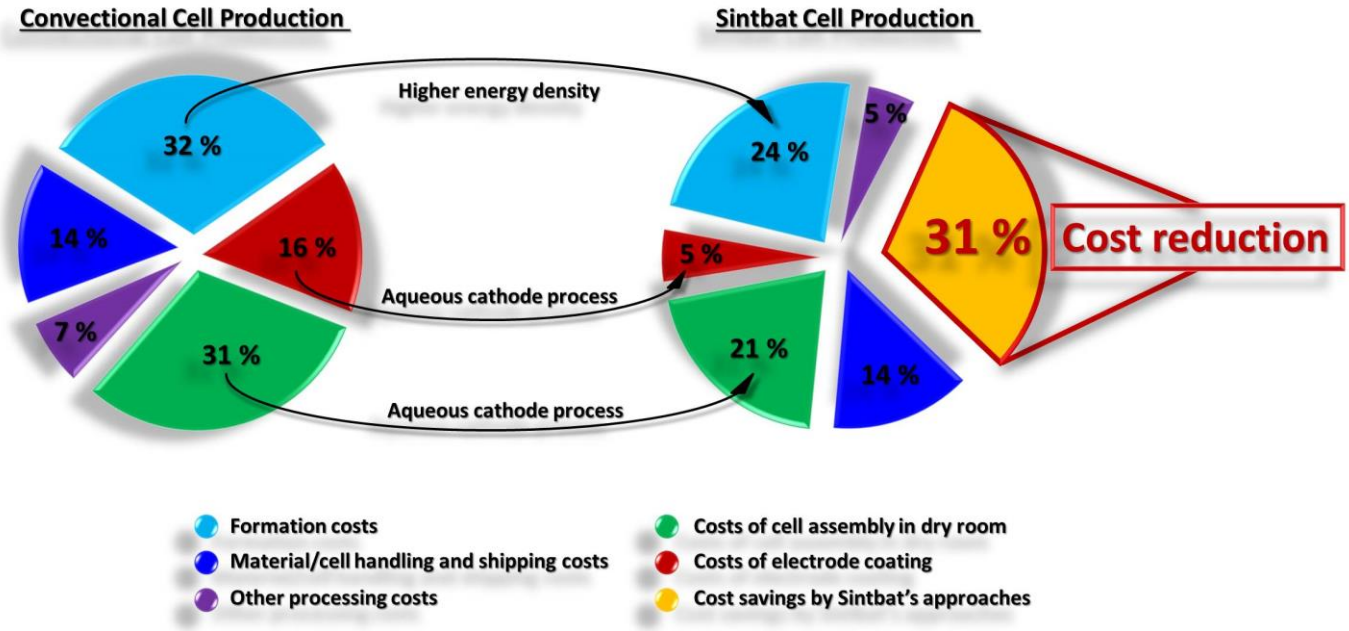
Costs for Energy Storage

- Reduction of the costs of cell production



comparison of costs of a conventional (state of the art) lithium-ion battery and the Sintbat battery optimized by improved electrode processing and implementation of advanced functional materials, e.g. silicon based on €/kWh

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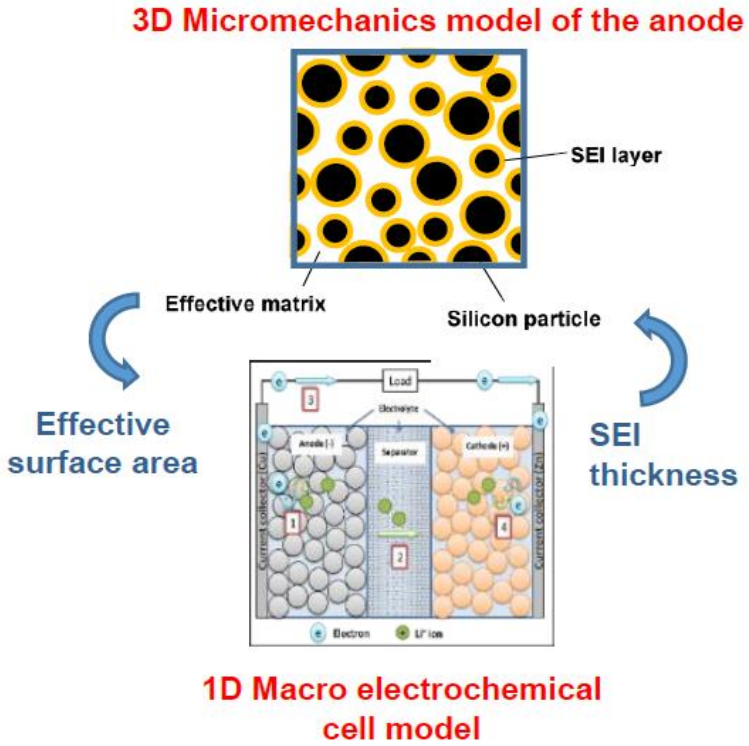
Study of aging mechanism

- By analysis of cells (CEA, MCL, UU, UW, VMI, VMB)
- By modeling and simulation (UoW, MCL, UW)
- Testing in cells and batteries (VS, VMB)

Figure 7: 7 centers of competences studying aging mechanisms (source: CEA).



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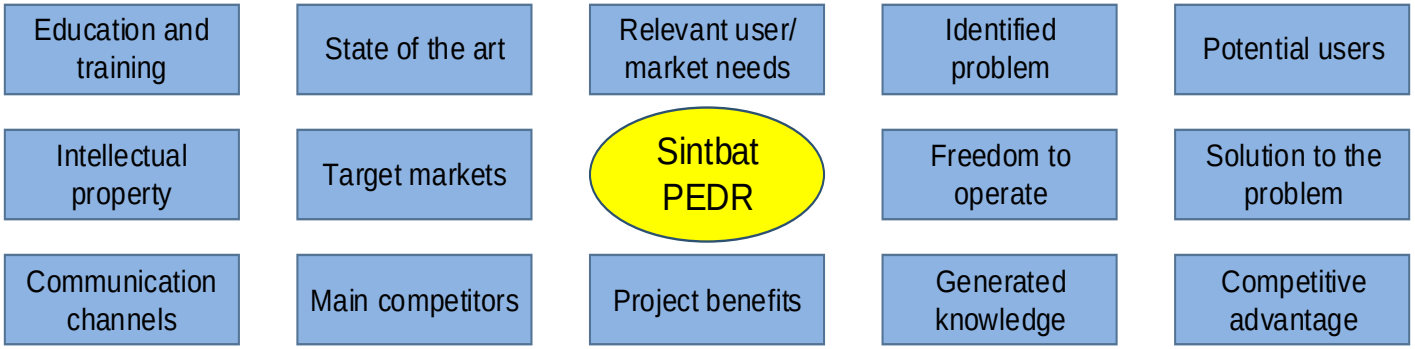
Dissemination, Exploitation Business plan (EURA)

- Involve potential users and interest groups
- Multiple Dissemination/Communication channels tailored to the corresponding target audience
- Raise awareness and spread innovation
- Collaborate with/involve other (European) projects
- create business opportunities and follow-up projects



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Conclusion

- A very promising project
- Covering important LIB aspects
- Contribution to the use of Green Energy
- **For more detailed information please contact the scientific partners**

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