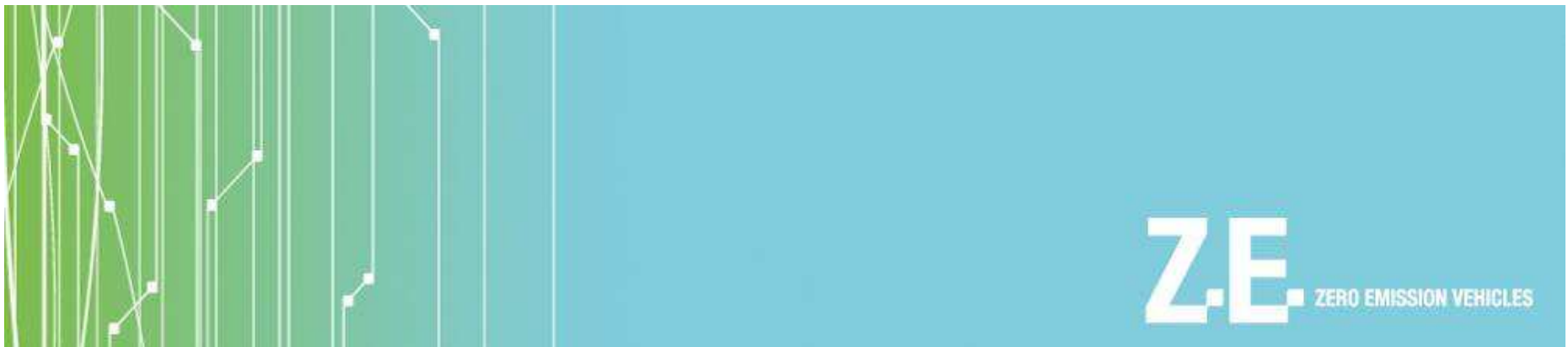


**ELIBAMA**

European Li-Ion Battery Advanced MAnufacturing

**Jerome PEYRARD**

Project coordinator - RENAULT SAS



J. PEYRARD – RENAULT SAS

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# Content

- **ELIBAMA project presentation :**
  - *Project general information*
  - *Partnership*
  - *Technological challenges and Objectives*
- **Main technical activities**
- **Overall progress and next steps**
- **Exploitation potential**
- **Cooperation within the cluster**
- **Conclusion**



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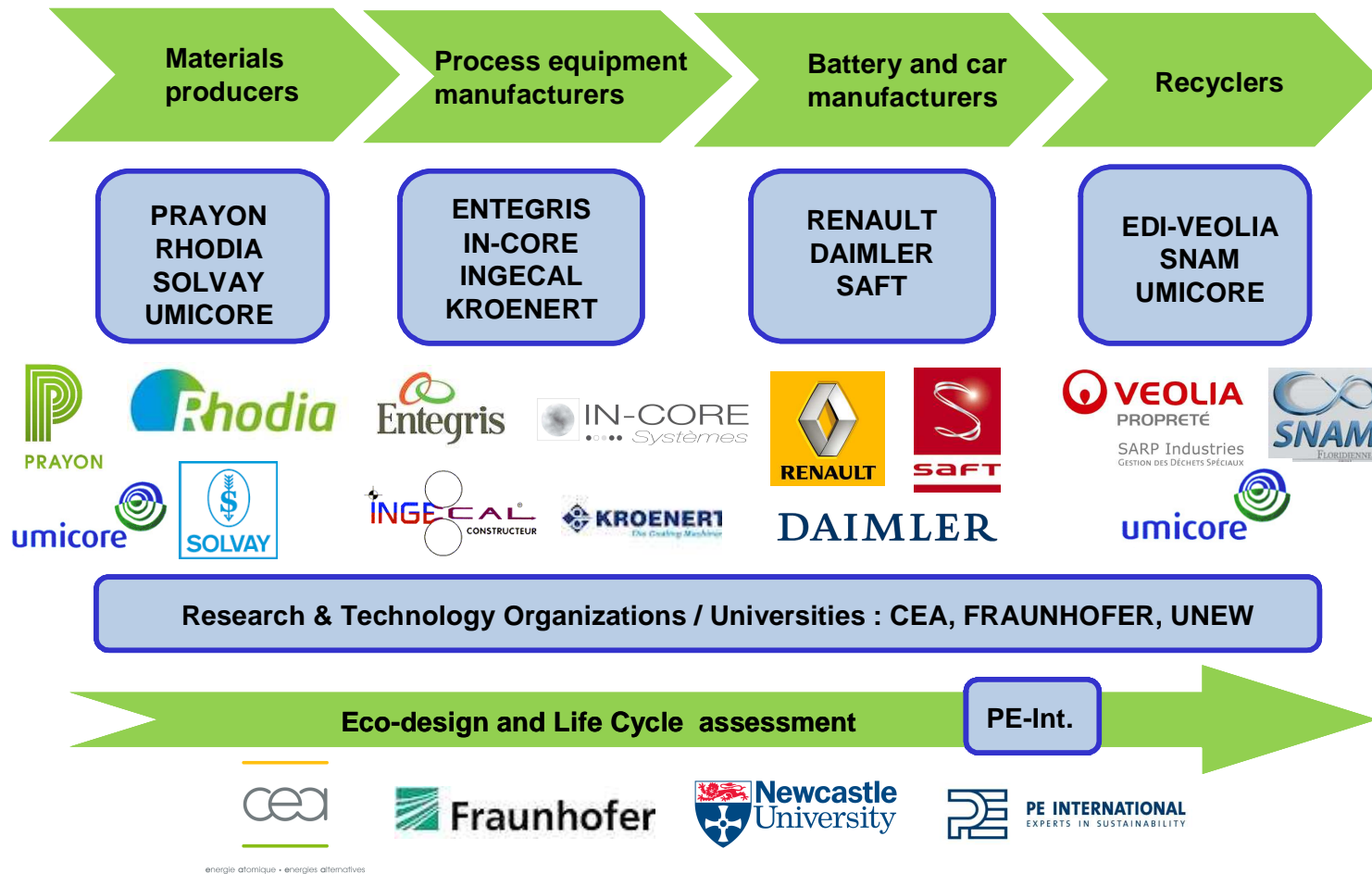
# Project general information

<b>Project full title:</b>	European <b>L</b> ithium-Ion <b>B</b> attery <b>A</b> dvanced <b>M</b> anufacturing
<b>Coordinator:</b>	Jérôme PEYRARD (Renault SAS)
<b>Starting Date:</b>	1st November, 2011
<b>Ending Date:</b>	31th October, 2014
<b>Budget Total/Funding:</b>	15.4 MEUR / 9.0 MEUR.
<b>Type of project:</b>	Collaborative Projects (CP) Large scale Integrating Projects (IP)



# Project consortium

**17 partners** (FR (9) , DE (4) , BE (2) , UK (1) , IT (1)) ...  
 ... from raw material producers till recyclers.



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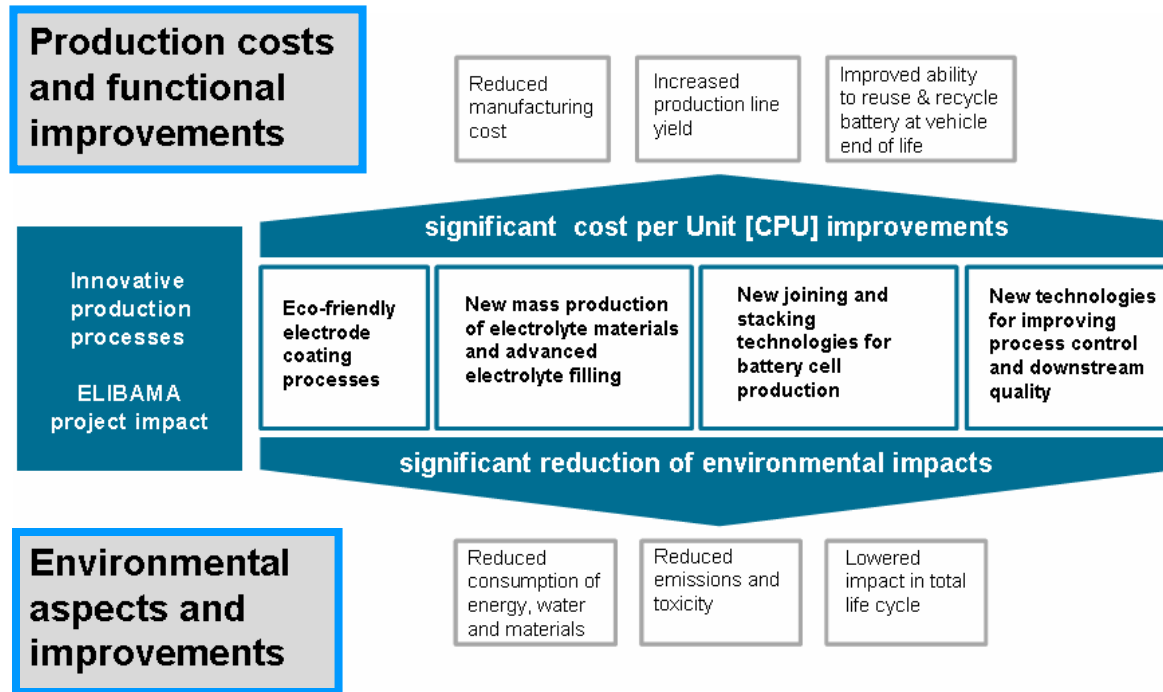
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# Technological challenges / Objectives

## Technological challenges



## Objectives

- ❑ *Feasibility demonstration of cost-effective, environmentally reliable and high-yield pilot industrial production units;*
- ❑ *Production of 20 to 40 Ah cell prototypes.*

# Main technical activities

- Electrodes manufacturing (WP1 – Fraunhofer)

Dry blend cathode coating process (electro-deposition)

FRAUNHOFER  
DAIMLER  
KROENERT  
UMICORE



Aqueous based anode coating process (Titanate material)

RENAULT  
SOLVAY  
CEA  
PRAYON

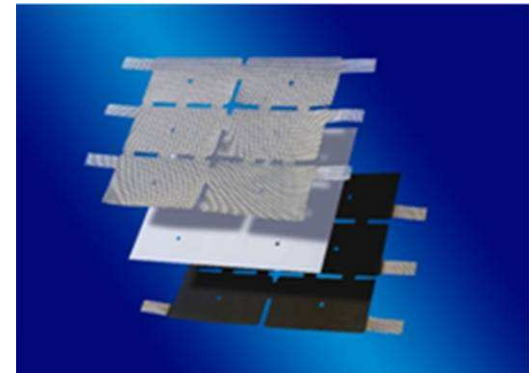
Semi dry cathode coating process (NMP free or extrusion)

SAFT  
INGECAL

Eco-design and Life Cycle Assessment (WP5 – PE international)

# Main technical activities

- Cells manufacturing (WP2 – Daimler)



Manufacturing process  
and Recycling  
of LiTFSi electrolyte

RHODIA

Surface and 3D  
structured  
collector foils

DAIMLER  
FRAUNHOFER

Stacking and Joining

DAIMLER  
FRAUNHOFER

Filling process  
adaptation

SAFT

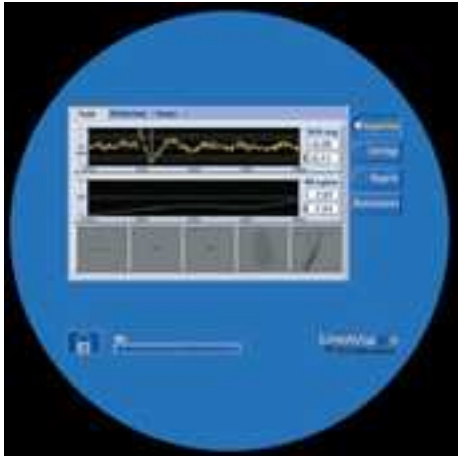
Eco-design and Life Cycle Assessment (WP5 – PE international)

# Main technical activities

- Process control (WP3 – Newcastle Univ.)

High resolution imaging system

INCORE  
DAIMLER  
FRAUNHOFER



Cells Non Destructive Test

UNEW

Clean manufacturing

ENTEGRIS  
SAFT  
RENAULT  
FRAUNHOFER

Eco-design and Life Cycle Assessment (WP5 – PE international)



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# Main technical activities

- Demonstration (WP4 – Saft)

**Electrode coatings**

DAIMLER  
FRAUNHOFER  
KROENERT  
SAFT  
RENAULT  
PRAYON



**Structured collector foils**

FRAUNHOFER  
DAIMLER

**Clean manufacturing**

SAFT

**Eco-design and Life Cycle Assessment (WP5 – PE international)**

# Main technical activities

- Battery end of life management (WP6 – CEA)

Logistic models  
and safe take back

FRAUNHOFER  
SNAM  
UMICORE  
EDI  
RENAULT

Diagnostic and  
Discharge

EDI  
SNAM



Refurbishment and  
Reuse

RENAULT  
SNAM  
DAIMLER  
CEA

Cost efficient  
Recycling process

FRAUNHOFER  
SNAM  
UMICORE  
EDI

Eco-design and Life Cycle Assessment (WP5 – PE international)

# Overall progress

- **M6 first interim report submitted end of may 2012.**
  - *No delay in the different workshops*
- **7 deliverables (on 7) submitted on time.**
- **First milestones agreed :**
  - *Choice of the Titanate active material for anode aqueous process;*
  - *Decision to continue the research on Impedance analysis for cells Non Destructive Tests;*
  - *...*
- **Performance indicators and base-line for cost assessment and LCA defined.**



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# Next steps, future activities

- **Develop and validate the new processes at lab-scale:**
  - *Electrodes coating;*
  - *Cells manufacturing;*
  - *Recycling ...*
- **Prepare the pilot scale phase:**
  - *Equipments specifications;*
  - *Layout.*
- **Evaluate the environmental impacts of the base line processes.**
- **Refine the “Plan of Use and Dissemination of Knowledge” of the project.**



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# Exploitation potential

***“ ELIBAMA will propose cost-effective and eco-friendly manufacturing processes of electrodes and cells, already validated at a pilot level, ready to be scaled up. “***

- **Therefore, the partners will be able to integrate the improvements developed in ELIBAMA from 2015 :**
  - *In the electrodes or cells manufacturing lines (for OEMs and batteries manufacturers)*
  - *In the material offer for Li-ion batteries (for material manufacturers)*
  - *In the manufacturing equipments proposal (for equipments manufacturers)*
  - *In the Li-ion batteries recycling market (for recyclers).*
  
- **Moreover, as European leaders of the industries covered by ELIBAMA have joined the consortium, the project will be part of a global strategy of the battery industry.**
  
- **Finally, ELIBAMA will help enhancing and accelerating the creation of a strong European automotive battery industry.**



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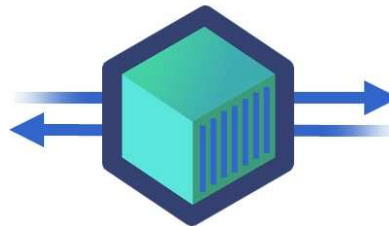
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# Cooperation within the cluster



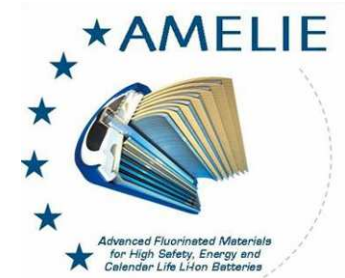
Similar scope



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Binders



Battery LCA std

Battery LCA std

Testing procedures



**Helios**



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# Conclusions

- **After 7 months, ELIBAMA project is on track :**
  - *The project consortium is fully structured and organized;*
  - *The technical workshops are operational;*
  - *The first results are in line with the expectations;*
  - *Cooperation and dissemination activities have begun.*
  
- **For additional information,**
  - [www.elibama.eu](http://www.elibama.eu)
  - [jerome.peyrard@renault.com](mailto:jerome.peyrard@renault.com)  
**+33 (0)6 19 20 05 22**



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# THANK YOU !



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