

Objective GC-ICT-2013.6.7 Electro-mobility  
a) Advanced System Architecture for FEV

## **Integration and optimization of range extenders on Electric Vehicles (INCOREX)**

Company Information: Virtual Vehicle – Research and Test Center  
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- **Independent Research Platform**  
(not tied to specific bodies or corporations)
- **Applied Research and Scientific Services**
- **Driven by the demand of leading companies**  
(> 70 industry partners)
- **Comprehensive international Research Network**  
(> 30 scientific partners and university institutes)
- **Extensive financial funding programs available**  
(no overhead as in customary funded projects)

Founded: **Juli 2002**  
Employees: **197** (05/2012)  
Turnover 2011: **EUR 19 Mio.**



## Area A System Design & Optimisation

- ▶ Integrative Development Aspects
- ▶ Development System Support
- ▶ Information Management



## Area B Thermodynamics

- ▶ Aerodynamics & 3D Simulation
- ▶ Thermal Management & 1D Simulation
- ▶ Mobile Air Conditioning
- ▶ Exhaust Gas Aftertreatment
- ▶ Coupling & Thermal Radiation



## Area C NVH & Friction

- ▶ NVH Material and Technology
- ▶ Friction Loss & Vibration Reduction
- ▶ Vehicle Noise Reduction
- ▶ Flow Acoustics
- ▶ Testing and Measurement



## Area D Mechanics & Materials

- ▶ Vehicle Safety
- ▶ Materials & Forming Technologies
- ▶ Vehicle Dynamics - Automotive
- ▶ Vehicle Dynamics – Rail Systems
- ▶ Composite Mat. & Lightweight Structures



## Area E Vehicle E/E & SW

- ▶ Vehicle Electrical System Design
- ▶ Advanced Modelling and Validation
- ▶ New Processes and Methodology
- ▶ Embedded Systems



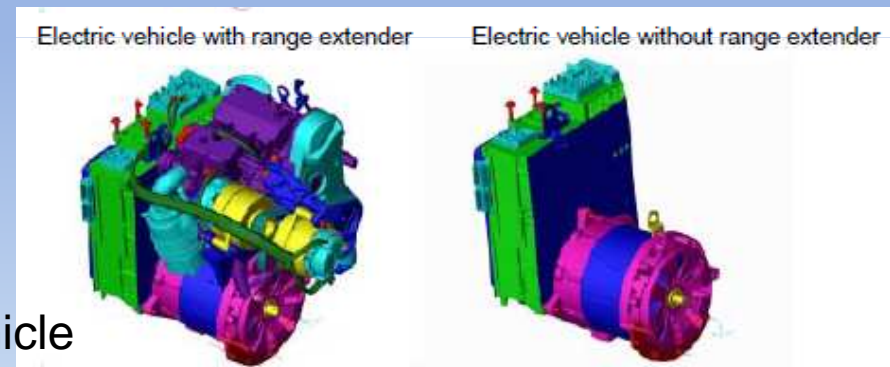
## Integration and optimization of range extenders on Electric Vehicles (INCOREX)

### Expected Impact:

- **re-design** of the electric and electronic architecture
- assessment of implication of **electric power train operation** for safety, security, reliability and robustness (including EMC)
- usage of **low power consuming cooperative systems** for cost efficient, real-time and safe operation of the vehicle.

### Innovations:

- Verification of **generic range extender concept** for passenger car & light duty vehicle
- **Rightsizing** of components to reduce production cost and weight while remaining high efficiency of electric powertrain
- Optimized concept including **reduction of components and modular integration**



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## GC.NMP.2013-1 Improved materials for innovative ageing resistant batteries

Development of novel SOLid MAterials for high power Lithium polymer BATteries  
**(SOMABAT II)**



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## Development of novel SOLid MAterials for high power Lithium polymer BATteries (SOMABAT II)

### Expected Impact:

- Battery System (Cells, Module and BMS) for EV application with **low ageing and low environmental impact.**

### Innovations:

- Development of ageing-resistant lithium polymer batteries for EVs using graphite/polymer/iron phosphate materials coming from organic waste or from recycling  $\longleftrightarrow$  Optimization of the materials as well as the operation strategy.

### Main aspects:

- synthesis of advanced materials of **high reliability and stability**
- characterisation of materials before & after ageing tests to determine **dominant ageing mechanisms**
- experimental prove of **applicability of raw materials produced from waste & recycled resources**
- development of operation strategy for optimized battery ageing

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Please provide feedback for the respective project ideas until  
August 3, 2012:

- 1) Short description of your view (i.e. main objectives to be addressed) on the project proposal
- 2) The specific contribution foreseen from your side
- 3) Your competences for your role in the proposed project
- 4) Point of contact in your organisation

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