GREEN VEHICLES
H2020-GV-8-2015
Electric vehicles: enhanced performance and integration into the transport system and the grid

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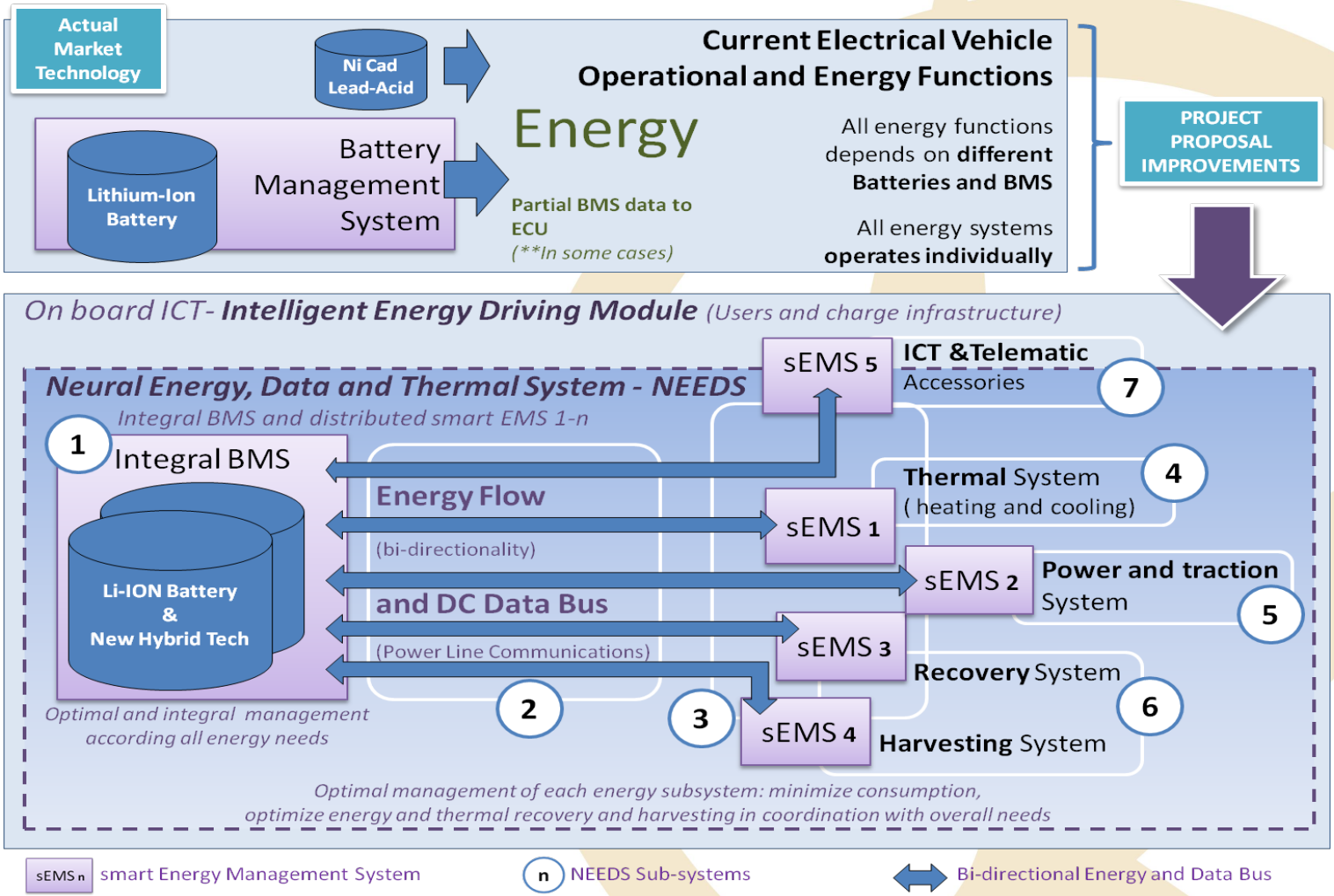
- **INTRODUCTION** Electrical Vehicles currently are equipped with several types of batteries technologies acting in a separately way, moreover the performance of them is tightly linked to meteorological conditions, consequently, it affects to the EV thermal situation. According to this, all functional EV systems operate with multiple energy deficiencies, as well as in each energy and thermal subsystems.

Project Proposal: Neural Energy, Data and Thermal System in Electrical Vehicles(NEEDS in EV)



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- The project pursues the development of an integral and distributed energy, thermal and information management technology, “Neural Energy, Data and Thermal System – NEEDS-EV”, to optimize the overall energy performance and each functional subsystem that compose the operation of the EVs. The main improvements are oriented to deploy the components of NEEDS-EV, including new thermal, traction, and recovering technologies, by integrating their management on “energy ICT system” with an intelligent energy driving module *(see in the previous figure and the below description)*. The proposed system is composed by:

- An **integral BMS technology** oriented to active balancing and optimal battery management at cell level, including the possibility of hybridization technologies in combination with the optimal thermal cell conditioning control, and at last in harmonized way with Thermal System.
- A combined **Energy and Data Bus**, including bi-directionality of data and energy flows, and Power Line Communications by means of DC bus.
- Distributed **specialized Energy Management Systems**, sEMS, which increase the individual energy performance of each subsystems and acts in coordination with BMS in order to achieve the overall goals playing a key role in optimizing batteries in terms of endurance, performance and reliability.
- **Thermal technology** that optimize the energy performance of thermal, heating and cooling, user conditions. Besides it includes the control of thermal conditioning of batteries reusing thermal surpluses.
- Technology and control strategies to improve the **Power and Traction system** according to achieve the energy efficiency goals without affect the traction and main functions.
- **Recovering technology** that allows the electrical and thermal energy reuse. The system will be ready to integrate and manage **harvesting technologies**.
- An on-board ICT system that acts like user interface of NEEDS-EV and integrates an **Intelligent Energy Driving Module** that suggest to the user the best driving way according NEEDS-EV technologies. This system besides take into account Business Intelligence with relevant external information: weather and traffic conditions and EV charge infrastructure according Smart Grid improvements.

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- **We are looking for:**
- Expert on modelling and simulations technologies of energy and operation functions of vehicles
- EV Battery Management System
- EV battery technology manufacturer or integrator of them
- Micro electronics manufacturer for the automotive sector
- Expert / Manufacturer of automotive thermal solutions (systems or components)
- Manufacturer of thermal insulation solutions
- Expert or manufacturer of power and traction solutions for the automotive sector
- Electronic components manufacturer for power and traction system
- Expert, developer or manufacturer of energy recovery solutions for the automotive sector (electric and / or thermal)
- EV / hybrid car manufacturer or integrator
- Grid agents (traders, distributors, etc.)
- Intelligent charge Infrastructures
- Developer automotive components (not necessary EV vehicles)
- Manufacturer of vehicles (not necessary EV vehicles)

THANK YOU FOR YOUR ATTENTION

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