

# Preface

The objectives of sustainable road mobility, i.e. energy efficiency, climate protection and zero emissions, imply a paradigm shift in the concept of the automobile regarding its architecture, design, materials and propulsion technology. The electric vehicle (EV) is seen as the most viable option. However, it is still facing a multitude of challenges in terms of product maturity and user acceptance. Moreover, the growing market share of EVs inevitably leads to a renovation of the classical automotive value chain and will result in a shift in the creation of added value in the supply chain.

The Coordination and Support Action “Smart Electric Vehicle Value Chains (Smart EV-VC)” funded in the Seventh European Framework Programme, analysed these novel smart EV supply chains and possible supporting measures for their strengthening in Europe. This analysis was based on the identification of the unique selling propositions (USP) of the European smart EV which should be served by the adapted value chains. These USPs have been found to be: affordability, smartness and connectivity, adaptation to mobility needs and use patterns and safety and reliability. On technology level, most of these USPs are related to overcoming today’s drawbacks of EV batteries that lack energy density, lifetime and affordability.

In a smart approach range extension may be reached in an intelligent way by enabling battery downsizing through implementing ICT and smart systems and components, since integrating a high degree of electronic control, adaptive capabilities and intelligence to the system may raise energy efficiency significantly. Especially, since in EVs most mechanical control functions can easily be replaced by electronic means and are supported digitally by embedded software, these synergies present a parallel path to innovations in cell technology or use of light-weight materials. Hence, they may greatly support the removal of barriers to the wide implementation of the electric vehicle.

Experience with comparable transitions from mechanically via electrically to electronically and digitally controlled systems (e.g. from the typewriter to the computer) tells that a significant cost reduction can be achieved when a complete redesign of the platform is undertaken. Hence, for the future generation EVs that

conform to the aforementioned USPs, a real paradigm shift can be foreseen: a complete redesign of the electric, electronic and ICT architecture of the fully electric vehicle.

Several research projects of the European Green Vehicles Initiative Public Private Partnership (EGVI PPP) are already addressing topics connected to the USPs and the development of new vehicle architectures and ICT platforms. Some of them were reviewed within a workshop of the EGVI PPP on the topic of electrical and electronic architecture of EVs and EV standardization needs which took place on 23 October 2013 in Brussels. The workshop strived to evaluate the research activities within the EGVI PPP and also to directly gather feedback from the stakeholder groups regarding R&I strategies and funding policies. The scientific talks were complemented by talks on the strategic topics of standardization and support of SMEs. Both topics are important when discussing measures for strengthening the European smart EV value chain. Papers of selected presentations of this workshop are collected in this book.

The EGVI PPP was established as European Green Cars Initiative PPP within the scope of the 7th Framework Programme. In Horizon 2020, the EGVI PPP focuses on energy efficiency and alternative powertrains. Through the duration of the Public Private Partnership in FP7, a close dialogue between the stakeholders of the industry, research institutes and European Commission has been constituted. Among other things, this is expressed in the continuously held expert workshops which are a collaborative activity of the European Commission and the industry platforms European Technology Platform on Smart Systems Integration (EPoSS) and European Road Transport Research Advisory Council (ERTRAC). These workshops were organized by the Coordination Actions “Implementation for Road Transport Electrification” (CAPIRE) and Smart EV-VC.

The aim of this volume of the “Reports of the PPP European Green Vehicles Initiative” is to disseminate the results of the European Green Vehicles Initiative PPP to a wider stakeholder community and to further reinforce the dialogue among the stakeholders as well as with policy makers.

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