Preface

Green vehicles that provide a high degree of energy efficiency and are powered by electricity or other alternative fuels have been on the agenda of politicians and industry alike since many years now. Public funding of research and innovation in electric vehicles in the European Green Vehicles PPP for example has triggered the development of products, which have been launched successfully to the market recently. At the same time, the topic of automated driving is increasingly raising public attention: highly automated driving, providing yet unsurpassed levels of road safety, efficiency, productivity and social inclusion, seems to be feasible on motorways by the year 2020.

Smart systems combining sensing, cognitive processing and actuation are essential not just for the electrification but also for the automation of the automobile and will remain a subject of research and innovation for quite a while. Particularly for applications in complex environments like city traffic and at higher levels of automation on the way to self-driving capabilities, perception of the driving environment is a challenging task to be addressed, e.g. by multi-sensor systems and sensor data fusion. Furthermore, connectivity and eventually a certain level of artificial intelligence will be needed to ensure the safety of the system. Thus, new links between the smart systems, the Internet of Things and the robotics communities should be created in order to fully embrace the research and innovation needs for the years to come. A first attempt for this has been made earlier in 2015 when the European Technology Platform on Smart Systems Integration (EPoSS) presented a "European Roadmap on Smart Systems for Automated Driving" and contributed to an even broader roadmap activity as a member of the core team of the connectivity and automation task force of the European Road Transport Research Advisory Council (ERTRAC).

The key enabling technologies for the automobile of the future have always been the topic at the International Forum on Advanced Microsystems for Automotive Applications (AMAA) at an early stage. Thus, the topic of the 19th AMAA 2015, held in Berlin on 7–8 July 2015, is "Smart Systems for Green and Automated Driving". The AMAA organisers, VDI/VDE Innovation + Technik GmbH together with EPoSS, greatly acknowledge the support given for this conference, particularly

from the European Union through the Coordination Action "Global Opportunities for Small and Medium Sized Enterprises in Electric Mobility" (GO4SEM).

The papers in this book, a volume of the Lecture Notes in Mobility book series by Springer, were written by leading engineers and researchers who have attended the AMAA 2015 conference to report their recent progress in research and innovation. The papers were peer-reviewed by the members of the AMAA Steering Committee and are made accessible worldwide. As the organisers and the chairman of the AMAA 2015, we would like to express our great appreciation to all the authors for their high-quality contributions to the conference and also to this book. We would also like to gratefully acknowledge the tremendous support we have received from our colleagues at VDI/VDE-IT.

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