

Preface

2013 was an exceptional year for road vehicle automation: Public authorities around the world presented action plans to facilitate the development and introduction of automated vehicles. At the same time many announcements and demonstrations from automotive companies and research groups showed that the industry is moving closer to a scenario where the driving task will be gradually transferred from the human to the computer. In addition to these trends, several organizations proposed definitions for the different levels of such computer controlled vehicles and they all seemed to agree that the degree of “automation” is appropriate to describe what might otherwise be called “autonomous,” “driverless,” “self-driving” vehicles.

In July 2013, the U.S. Transportation Research Board (TRB), a private, non-profit institution that is committed to “provide leadership in transportation innovation and progress through research and information exchange,” hosted its second annual “Road Vehicle Automation Workshop” at Stanford University. The event was attended by over 200 participants from academia, industry, and public sector featuring talks by leading experts in the field and also offered breakout groups related to many different topics regarding vehicle automation. This very interdisciplinary setting did not only consider advancements in engineering but also covered legal, business, ethical, and administrative issues. The 2013 TRB Road Vehicle Automation Workshop at Stanford gave a great overview of the field that has the potential to transform road transportation as a whole and with that to redefine the way we drive.

The workshop also triggered this book project, which is to give a comprehensive overview of what is arguably—besides powertrain electrification—one of the most revolutionary trends in the automotive field at the moment. We are grateful that almost all presenters at the workshop volunteered to turn their presentations into technical papers for this book, which shows the commitment to bring this topic forward and to work together.

Collaboration is indeed needed in order to solve open questions regarding vehicle automation from various fields in a coherent manner, while also taking into account the different opportunities and challenges at regional level. In going forward, we hope that the field of vehicle communication will establish even closer ties with the vehicle automation field for safe, efficient, and convenient mobility in

the future. We also expect that the combination of power train electrification and vehicle automation will lead to synergies.

At this point we would like to acknowledge the TRB committees' role in organizing the workshop, developing the program, and inviting the speakers. Coordinating all this was done in accordance with the charters of the Transportation Research Board (TRB) and National Research Council (NRC) and in accordance with TRB's scope "to provide a focus and forum for road vehicle automation and to promote a better understanding within the transportation profession of these systems including their research, deployment, and operation." It is explicitly pointed out that the papers contained in this book are not official reports of NRC or NAS, though.

We would like to thank especially the Workshop Chairs Jane Lappin, Bryant Walker Smith, Steven Shladover, and Bob Denaro for their dedication and for their enthusiasm that led to an incredible gathering of experts at the workshop, and which also provided strong support for the idea for this book. We would also like to thank everyone who helped making this book possible, particularly, Zakia Soomauero and Sebastian Stagl at VDI/VDE-IT should be mentioned. And certainly we would like to express our deep gratitude to those who contributed with their papers to this publication, which to our knowledge is the first of its kind as a multidisciplinary discussion of vehicle automation in light of near-term deployment and future visions.

Finally, we would like to thank all of you who bought this book. We hope you will benefit from this comprehensive publication and that it will inspire you to seize the potential of vehicle automation for road safety, fuel economy, social inclusion, and productivity. We look forward to meeting, hopefully, many of you at the TRB Road Vehicle Automation Workshop 2014, or at another occasion to continue the exchange on such diverse topics regarding automated vehicles that this book is a great example for.

May 2014

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Road Vehicle Automation

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2014, XII, 261 p. 53 illus., Hardcover

ISBN: 978-3-319-05989-1