

**Unsettled Issues
Concerning Automated
Driving Services in the
Smart City Infrastructure**

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Unsettled Issues Concerning Automated Driving Services in the Smart City Infrastructure

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Printed in USA

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EPR2021030

ISSN 2640-3536

e-ISSN 2640-3531

ISBN 978-1-60066-020-7

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About the Editors



Courtesy: Jeroen Jazet

Serge Lambermont is a technical expert in automated driving, robotics, and vehicle electrification. He started his career in Europe and later moved to the Asia-Pacific region in 1997 where he took on a variety of global engineering management roles including Delphi Asia/Pacific Engineering Director of EV Power Electronics in Singapore and Delphi Japan Engineering Director of Electronics and Safety in Tokyo.

From 2013 to 2018, Serge served as Aptiv's Technical Director of Automated Driving (AD) based in Silicon Valley and Pittsburgh and was responsible for Delphi's global AD technology development. During this time, he initiated the acquisition and integration of Ottomatika, a Carnegie Mellon University start-up in AD robotics.

In 2015, he led Delphi's 3,500-mile San Francisco to New York City coast-to-coast automated drive and Aptiv's 2015 CES urban driving demos. Most recently, he has been leading the urban self-driving vehicle development platforms for the Singapore Automated Mobility on Demand Pilot and urban driving activities in Europe.

In 2018, Serge founded Autobotik, a consultancy and advisory firm for AD strategy, new mobility solutions, and vehicle electrification.

Serge has spent his time working with global teams to find and define opportunities to develop new features and innovation for future mobility ecosystems. Serge is a creative problem solver in complex technology and business concepts with vast experience in working, motivating, and connecting global teams—bridging Silicon Valley start-up culture with the highest-end original equipment manufacturer quality and volume requirements. Serge has a degree in Applied Physics from Hogeschool Eindhoven in the Netherlands and completed the University of Michigan's Ross School of Business Senior Executive Program in Hong Kong.



Courtesy: Nanyang Technological University

Niels de Boer joined Nanyang Technological University (NTU) as Principal Scientist in the Energy Research Institute (ERI). He is also the Program Director of the Centre of Excellence for Testing and Research of Autonomous Vehicles NTU (CETRAN) as well as for Future Mobility Solutions.

Niels' current research interests include autonomous systems with a focus on autonomous vehicles, automotive electric drivetrains, high power converters, and challenges relating to large-scale electrification of vehicle fleets.

Prior to joining NTU, Niels' long track record includes research and development projects in industry. His experience includes work on automotive powertrain development in Delphi Singapore, where he was responsible for software development, but also as part of the global core team that developed processes to ensure software quality. Subsequently, he was responsible for automotive infotainment platform development and research in automotive infotainment systems in Siemens-VDO/Continental.

After working in the automotive field, Niels moved to a research-based environment where he served as Research and Development Director for electric drivetrains at Vestas, and later was responsible for research on electrical systems, including wind turbine drivetrains, wind farms, and grid connectivity.

Prior to his current role, Niels was Technology Quality Manager at Lloyd's Register where he was responsible for ensuring the output of all global research relating to energy technology and business objectives. This included the development of certification requirements and assessment methodologies for new technologies. Niels has a master's degree in Applied Physics from the University of Twente in the Netherlands.

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Abstract

Information and communication technology is fundamentally changing the way we live and operate in cities. Citizens now enjoy continuous connectivity with the benefits of instant access to events, transportation, bookings, payments, and other services. At the same time, three “megatrends” in the automotive industry—self-driving, electrification, and advanced manufacturing technology—are enabling the design of innovative, application-specific vehicles that capitalize on city connectivity. These developments are targeting new transportation, utility, and logistics solutions often directly connected to a city’s digital ecosystem. Applications could be countless; however, they also need to be safe and securely integrated into a city’s physical and digital infrastructure, and into the overall urban ecosystem.

This report first looks at the current state of the industry, the developments in automated driving and robotics, and how these new urban, self-driving city applications are different. Three examples of applications with associated challenges are provided, and the importance of integration into the city ecosystem is reviewed. Lastly, higher level challenges for urban applications are further analyzed. Ultimately, this report includes several options for sharing lessons learned among different cities and the stakeholders.

NOTE: SAE EDGE Research Reports are intended to identify and illuminate key issues in emerging, but still unsettled, technologies of interest to the mobility industry. The goal of SAE EDGE Research Reports is to stimulate discussion and work in the hope of promoting and speeding resolution of identified issues. These reports are not intended to resolve the challenges they identify or close any topic to further scrutiny.

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ISSN 2640-3536