
Contents

1	Introduction	1
	Markus Maurer	
2	Use Cases for Autonomous Driving	9
	Walther Wachenfeld, Hermann Winner, J. Chris Gerdes, Barbara Lenz, Markus Maurer, Sven Beiker, Eva Fraedrich and Thomas Winkle	
Part I Man and Machine		
3	Automated Driving in Its Social, Historical and Cultural Contexts	41
	Fabian Kröger	
4	Why Ethics Matters for Autonomous Cars	69
	Patrick Lin	
5	Implementable Ethics for Autonomous Vehicles	87
	J. Christian Gerdes and Sarah M. Thornton	
6	The Interaction Between Humans and Autonomous Agents	103
	Ingo Wolf	
7	Communication and Communication Problems Between Autonomous Vehicles and Human Drivers	125
	Berthold Färber	
Part II Mobility		
8	Autonomous Driving—Political, Legal, Social, and Sustainability Dimensions	149
	Miranda A. Schreurs and Sibyl D. Steuwer	
9	New Mobility Concepts and Autonomous Driving: The Potential for Change	173
	Barbara Lenz and Eva Fraedrich	

10	Deployment Scenarios for Vehicles with Higher-Order Automation. . . .	193
	Sven Beiker	
11	Autonomous Driving and Urban Land Use	213
	Dirk Heinrichs	
12	Automated Vehicles and Automated Driving from a Demand Modeling Perspective	233
	Rita Cyganski	
13	Effects of Autonomous Driving on the Vehicle Concept	255
	Hermann Winner and Walther Wachenfeld	
14	Implementation of an Automated Mobility-on-Demand System	277
	Sven Beiker	
Part III Traffic		
15	Traffic Control and Traffic Management in a Transportation System with Autonomous Vehicles.	301
	Peter Wagner	
16	The Effect of Autonomous Vehicles on Traffic	317
	Bernhard Friedrich	
17	Safety Benefits of Automated Vehicles: Extended Findings from Accident Research for Development, Validation and Testing	335
	Thomas Winkle	
18	Autonomous Vehicles and Autonomous Driving in Freight Transport.	365
	Heike Flämig	
19	Autonomous Mobility-on-Demand Systems for Future Urban Mobility.	387
	Marco Pavone	
Part IV Safety and Security		
20	Predicting of Machine Perception for Automated Driving.	407
	Klaus Dietmayer	
21	The Release of Autonomous Vehicles.	425
	Walther Wachenfeld and Hermann Winner	
22	Do Autonomous Vehicles Learn?	451
	Walther Wachenfeld and Hermann Winner	
23	Safety Concept for Autonomous Vehicles.	473
	Andreas Reschka	

24 Opportunities and Risks Associated with Collecting and Making Usable Additional Data	497
Kai Rannenberg	
 Part V Law and Liability	
25 Fundamental and Special Legal Questions for Autonomous Vehicles	523
Tom Michael Gasser	
26 Product Liability Issues in the U.S. and Associated Risk Management.	553
Stephen S. Wu	
27 Regulation and the Risk of Inaction.	571
Bryant Walker Smith	
28 Development and Approval of Automated Vehicles: Considerations of Technical, Legal, and Economic Risks	589
Thomas Winkle	
 Part VI Acceptance	
29 Societal and Individual Acceptance of Autonomous Driving	621
Eva Fraedrich and Barbara Lenz	
30 Societal Risk Constellations for Autonomous Driving. Analysis, Historical Context and Assessment	641
Armin Grunwald	
31 Taking a Drive, Hitching a Ride: Autonomous Driving and Car Usage	665
Eva Fraedrich and Barbara Lenz	
32 Consumer Perceptions of Automated Driving Technologies: An Examination of Use Cases and Branding Strategies	687
David M. Woisetschläger	

Autonomous Driving

Technical, Legal and Social Aspects

Maurer, M.; Gerdes, J.C.; Lenz, B.; Winner, H. (Eds.)

2016, XV, 706 p. 130 illus., 27 illus. in color., Hardcover

ISBN: 978-3-662-48845-4