## **Contents**

1	Introduction: Mobility in Transition				
	1.1	Mobility Needs and Supply			
		1.1.1 Cars and the Automotive Industry	2		
		1.1.2 Public Mobility	4		
		1.1.3 Mobility Services	5		
	1.2	Strategic Framework	6		
2	Mobility Needs				
	2.1	2.1 Individual Mobility Needs			
	2.2	Collective Mobility Needs	14		
		2.2.1 Managing Collective Mobility Needs	15		
		2.2.2 Meeting Collective Mobility Needs	16		
	2.3	Shift in the Concept of "The Market"	17		
3	Mobility Spaces and Mobility Systems				
	3.1	Geographic and Demographic Context	20		
		3.1.1 Topography and Climate	20		
		3.1.2 Spatial Structure	21		
		3.1.3 Population Size and Density	22		
	3.2	3.2 General Traffic Conditions			
		3.2.1 Roads, Cycle Paths, Footpaths	23		
			vii		



viii		Content	ts	
		3.2.2	Parking Areas	24
		3.2.3	Traffic Control	24
		3.2.4	Mobility Services	25
4	Tecl	nnologio	cal Trends	27
	4.1	_	omobility	28
		4.1.1	The Return of the Electric Motor	28
		4.1.2	Types of Electric Vehicles	31
		4.1.3	Core Components of the Electric Drive System	48
		4.1.4	Charging	54
		4.1.5	Summary: Advantages of Electromobility	75
	4.2	Auton	omous Driving	81
		4.2.1	Technology	82
		4.2.2	Autonomous Vehicles	95
		4.2.3	Legal Aspects	103
		4.2.4	Autonomous Flying	106
	4.3	New \	Vehicle Concepts	109
		4.3.1	Classification of Passenger Car Concepts	109
		4.3.2	New Criteria for Classification	110
	4.4	Digita	llization	112
		4.4.1	The Five Stages of Digitalization	113
		4.4.2	Digitalization Among Vehicle Manufacturers	117
		4.4.3	Digitalization in Mobility Services	136
		4.4.4	Quality of Data-Based Services	141
		4.4.5	Legal Aspects of Data-Based Services	144
		4.4.6	Digital Culture: More than Just Full Beards and	
			Sneakers	148
5	Mobility as a Service			161
	5.1	· · · · · · · · · · · · · · · · · · ·		
		5.1.1	The Own Car as an End in Itself	161
		5.1.2	Alternatives to Owning a Car	162
	5.2 Car Sharing: Driving Yourself in a Borrowed Car		164	
		5.2.1	Offers and Business Models	165

Acceptance of Car Sharing

5.2.1 5.2.2

165

171

			Con	tents	ix
		5.2.3	Suitable Vehicle Concepts		176
			Two-Wheel Sharing		179
	5.3		haring Services: Getting Driven Instead of		
		Driving Yourself			191
			Offers and Business Models		191
			Acceptance of Ride Sharing Services		200
		5.3.3			206
	5.4	<b>→</b>			214
		5.4.1 What Does "Public" Mean Here?			214
		5.4.2	Local Public Transport		216
		5.4.3	Long-Distance Public Transport		220
		5.4.4	Regional Public Transport Services		221
			Business Models		222
		5.4.6	Acceptance and Potentials		224
			•		
6	Soci	al Treno	ls		229
	6.1	1 Megatrend Sustainability			231
		6.1.1	Meaning of Sustainability		231
		6.1.2	Sustainable Mobility		233
	6.2	Image	of Cars in Society		241
		6.2.1	Who Wants Which Car?		241
		6.2.2	Public Criticism of the Car		246
		6.2.3	Traffic Density and Safety		249
		6.2.4	Image of the Automotive Industry		252
		6.2.5	Giving Back		254
	6.3	Social	Acceptance of Mobility Services		255
	6.4		ntory Trends		257
		6.4.1	Regulation of Mobility-Related Environm	ental	
			Pollution		257
		6.4.2	Regulation of the Car Population		264
		6.4.3	Financial Support		266
7		king Ah			271
	7.1		Is No Turning Back		272
	7.2 Focus of the Change				273

## x Contents

	7.2.1	Reducing Mobility Needs	274
	7.2.2	Consistent Continuation of Electromobility	275
	7.2.3	Expansion of the Charging Infrastructure	277
	7.2.4	Fewer Private Cars	278
	7.2.5	Fewer Cars on the Roads	279
	7.2.6	Growing Importance of Social Sustainability	281
7.3	Five G	Frowth Areas: Where Is the Upward Trend?	282