

Index

Table of Contents

Table of Contents.....	i
List of Figures.....	viii
Executive summary.....	1
1 The global passenger car market.....	1
1.1 Introduction.....	1
1.1.1 Passenger cars in use by region.....	2
1.1.2 New passenger car registration trends.....	4
1.2 Car manufacturers.....	7
1.2.1 Toyota Motor Corporation.....	7
1.2.2 Renault-Nissan-Mitsubishi Alliance.....	7
1.2.3 Volkswagen Group.....	8
1.2.4 Ford Motor Company.....	8
1.2.5 General Motors.....	8
1.2.6 Fiat Chrysler Automobiles.....	12
1.2.7 Daimler Group.....	12
1.2.8 BMW Group.....	12
1.2.9 Honda Motor.....	15
1.2.10 Hyundai Motor Group.....	15
1.3 Overview of car OEM telematics services.....	15
1.3.1 Embedded and hybrid telematics systems.....	16
1.3.2 Car OEM telematics services in North America.....	18
1.3.3 Car OEM telematics services in Europe.....	20
1.3.4 Car OEM telematics services in Asia-Pacific.....	22
1.3.5 Business models.....	24
1.4 Regulatory compliance.....	25
1.4.1 Vehicle security, safety and emergency call regulations.....	26
1.4.2 Vehicle emissions.....	29
1.5 Market trends.....	31

1.5.1	Hybrid electric, plug-in hybrid electric and all-electric vehicles.....	31
1.5.2	Carsharing and personal transportation as a service	37
1.5.3	ADAS and autonomous driving technologies.....	42
1.5.4	Vehicle-to-Everything (V2X) communication.....	44
2	Car telematics solutions	47
2.1	Car telematics infrastructure.....	47
2.1.1	Vehicle segment.....	48
2.1.2	Tracking segment.....	48
2.1.3	Network segment	49
2.1.4	Service segment.....	52
2.2	Car telematics applications	53
2.2.1	eCall and roadside assistance	54
2.2.2	Stolen vehicle tracking	55
2.2.3	Motor insurance telematics	56
2.2.4	Vehicle diagnostics and maintenance	58
2.2.5	Over-the-air updates.....	58
2.2.6	Leasing and rental fleet management.....	59
2.2.7	Electronic toll collection and congestion charging.....	59
2.2.8	Remote control and convenience services.....	61
2.2.9	Connected navigation and infotainment	61
2.2.10	Connected in-vehicle payments.....	63
2.2.11	Wi-Fi hotspot	63
2.3	Connectivity options	64
2.3.1	Tethered devices.....	65
2.3.2	Integrated smartphone solutions	65
2.3.3	Embedded connectivity solutions.....	67
2.3.4	SIM solutions and embedded UICC	67
3	OEM telematics propositions.....	71
3.1	BMW	72
3.1.1	Overview of BMW group passenger car models	72
3.1.2	BMW ConnectedDrive infotainment and mobility services.....	73
3.1.3	BMW CarData.....	78

- 3.1.4 The MINI Connected smartphone integration system 79
- 3.2 Changan Motors 80
 - 3.2.1 Overview of Changan Motors passenger car models 81
 - 3.2.2 Overview of Changan Motors InCall 81
- 3.3 Daimler Group 82
 - 3.3.1 Overview of Mercedes-Benz passenger car models 83
 - 3.3.2 Overview of Mercedes-Benz telematics services 83
 - 3.3.3 The COMAND Online infotainment system 84
 - 3.3.4 MBUX – Mercedes-Benz User Experience infotainment system 84
 - 3.3.5 Mercedes Me services in Europe and Asia 85
 - 3.3.6 Mbrace: Mercedes-Benz’ connected service platform in the US 87
- 3.4 Fiat Chrysler Automobiles 89
 - 3.4.1 Overview of Fiat Chrysler Automobiles passenger car models 90
 - 3.4.2 The Uconnect infotainment systems 91
 - 3.4.3 Uconnect connected services 93
 - 3.4.4 Mopar Connect in Europe 95
- 3.5 Ford Motor Company 96
 - 3.5.1 Overview of Ford passenger car models 97
 - 3.5.2 The Ford SYNC infotainment system 98
 - 3.5.3 Ford SYNC Connect 99
 - 3.5.4 Ford SYNC connected services 100
- 3.6 Geely 102
 - 3.6.1 Overview of Geely passenger car models 103
 - 3.6.2 The Geely G-Link, Geely G-Netlink 3.0 and GKUI 103
- 3.7 General Motors 105
 - 3.7.1 Overview of the main GM passenger car brands 106
 - 3.7.2 GM OnStar telematics services 107
 - 3.7.3 Connected infotainment systems and apps 113
- 3.8 Great Wall Motors 114
 - 3.8.1 Overview of Great Wall Motors passenger car models 114
 - 3.8.2 The GWM Haval Connected telematics system 114
- 3.9 Honda Motor Company 116

3.9.1	Overview of Honda and Acura passenger car models	116
3.9.2	Overview of Honda and Acura telematics solutions	117
3.9.3	The HondaLink in-car connectivity system	117
3.9.4	The AcuraLink connected car systems and services.....	120
3.10	Hyundai Motor Group.....	122
3.10.1	Overview of Hyundai and Kia passenger car models	123
3.10.2	Overview of the Hyundai Motor Group's telematics solutions.....	124
3.10.3	The Hyundai Blue Link telematics service in the US.....	125
3.10.4	The Kia UVO infotainment system and UVO telematics services	128
3.11	Jaguar Land Rover Automotive	129
3.11.1	Overview of Jaguar Land Rover passenger car models.....	130
3.11.2	Jaguar Land Rover InControl telematics services	131
3.12	Mazda Motor Corporation	134
3.12.1	Overview of Mazda passenger car models.....	135
3.12.2	The Mazda Connect infotainment system.....	135
3.12.3	Mazda Mobile Start	137
3.13	Nissan Motor Company.....	137
3.13.1	Overview of Nissan and Infiniti passenger car models	138
3.13.2	Nissan and Infiniti connected car services.....	139
3.13.3	NissanConnect Services	139
3.13.4	Infiniti Connection.....	142
3.13.5	NissanConnect and Infiniti InTouch infotainment systems	144
3.14	PSA Group.....	145
3.14.1	Overview of Peugeot, Citroën and Opel passenger car models	146
3.14.2	PSA Group telematics services	146
3.15	Renault Group	149
3.15.1	Overview of Renault, Dacia and Lada passenger car models	150
3.15.2	Renault R-Link and telematics services	150
3.15.3	Renault Easy Connect.....	152
3.16	SAIC Motors.....	153
3.16.1	Overview of SAIC Motors passenger car models	153
3.16.2	The SAIC connected car programmes	154

- 3.17 Subaru 156
 - 3.17.1 Overview of Subaru passenger car models 156
 - 3.17.2 The Subaru STARLINK infotainment and smartphone connectivity system..... 157
 - 3.17.3 G-BOOK telematics services in Japan 159
- 3.18 Tesla 159
 - 3.18.1 Overview of Tesla passenger car models 160
 - 3.18.2 Tesla telematics and infotainment services 161
- 3.19 Toyota Motor Corporation 161
 - 3.19.1 Overview of Toyota and Lexus passenger car models 162
 - 3.19.2 Overview of Toyota and Lexus telematics services 163
 - 3.19.3 The T-Connect and G-LINK telematics services for the Japanese market 165
 - 3.19.4 Entune/Enform and Safety Connect telematics services in North America..... 166
 - 3.19.5 The Toyota T-Connect telematics services in the Middle East 169
 - 3.19.6 Toyota and Lexus connected infotainment systems in Europe 169
- 3.20 Volkswagen Group 170
 - 3.20.1 Overview of Volkswagen Group passenger car brands and models 171
 - 3.20.2 The Audi Connect telematics service 172
 - 3.20.3 The Porsche Car Connect telematics service 175
 - 3.20.4 The Volkswagen Car-Net telematics services 178
- 3.21 Volvo Car Group 180
 - 3.21.1 Overview of Volvo passenger car models 181
 - 3.21.2 The Volvo On Call telematics service 182
 - 3.21.3 The Volvo Sensus Connect infotainment system 183
 - 3.21.4 Volvo In-car Delivery, Concierge Services and Car sharing 184
- 4 Telematics solution providers 187
 - 4.1 Telematics service providers 187
 - 4.1.1 Airbiquity 188
 - 4.1.2 Aeris 190
 - 4.1.3 Beijing Yesway Information Technology 191
 - 4.1.4 Bright Box 192
 - 4.1.5 Nuance Communications 193
 - 4.1.6 Octo Telematics 194

4.1.7	PATEO	195
4.1.8	SiriusXM Connected Vehicle Services	196
4.1.9	WirelessCar	198
4.2	Mobile operators.....	200
4.2.1	AT&T.....	201
4.2.2	Deutsche Telekom	204
4.2.3	Sprint	206
4.2.4	Telefónica Group.....	208
4.2.5	Verizon Communications and Verizon Connect	209
4.2.6	Vodafone and Vodafone Automotive	212
5	Market forecasts and trends	215
5.1	Car telematics market forecasts.....	215
5.1.1	Car sales forecast.....	215
5.1.2	Car telematics forecast.....	216
5.1.3	Car telematics in the EU28+EFTA and Eastern Europe.....	217
5.1.4	Car telematics in North America	219
5.1.5	Car telematics in Latin America.....	220
5.1.6	Car telematics in Asia-Pacific	221
5.1.7	Car telematics in the Middle East and Africa	223
5.1.8	Hardware and service revenue forecast	224
5.1.9	Data modem chipset shipments by technology	227
5.2	Application trends.....	229
5.2.1	Mass market safety services driven by regional mandates	229
5.2.2	OEM SVT services compete with aftermarket services in many countries.....	230
5.2.3	Connected navigation faces competition from free smartphone apps.....	230
5.2.4	Handset based infotainment services complements embedded solutions.....	231
5.2.5	Remote control features become standard	232
5.2.6	CRM solutions and vehicle diagnostics enable improved customer care.....	233
5.2.7	Usage-based insurance to remain an aftermarket service in most countries ..	233
5.2.8	Privacy concerns may block satellite tracking systems for road charging.....	234
5.2.9	Wi-Fi hotspots enable convenient connectivity for passengers	235
5.2.10	Over-the-air (OTA) updates reduce recall expenses.....	235

- 5.2.11 Call centre convenience services become less common..... 236
- 5.2.12 Concierge services change form to services delivered to the vehicle..... 237
- 5.2.13 Apple CarPlay and Android Auto drives uptake of smartphone integration..... 237
- 5.2.14 Data exchanges to make OEM data available for third party providers 238
- 5.2.15 In-vehicle commerce platforms are emerging on mature markets..... 238
- 5.3 Value chain analysis 239
 - 5.3.1 Automotive suppliers..... 239
 - 5.3.2 Telematics service providers..... 240
 - 5.3.3 Car manufacturers..... 241
 - 5.3.4 Telecom industry players 243
 - 5.3.5 Software, application and content suppliers..... 245
- 5.4 Mergers and acquisitions 246
- Glossary 251

Index

List of Figures

Figure 1.1: Car parc by region (World 2009–2015)	3
Figure 1.2: Passenger car parc density by region (World 2015).....	4
Figure 1.3: New car registration data (World 2010–2017)	5
Figure 1.4: Top 10 countries by new passenger car and light truck registrations (2017).....	6
Figure 1.5: Top 20 passenger car manufacturers by revenues (World 2017).....	9
Figure 1.6: Passenger car registrations by manufacturer (EU28+EFTA 2017)	10
Figure 1.7: Passenger car registrations by manufacturer (North America 2017).....	11
Figure 1.8: Passenger car registrations by manufacturer (Japan 2017)	13
Figure 1.9: Passenger car registrations by manufacturer (China 2017).....	14
Figure 1.10: Telematics subscribers by carmaker (World 2016–2017)	17
Figure 1.11: Car OEM telematics availability in North America (June 2018).....	19
Figure 1.12: Car OEM telematics availability in the EU (June 2018)	21
Figure 1.13: Car OEM telematics availability in Asia-Pacific (June 2018)	23
Figure 1.14: CO2 limit value curve for passenger cars sold in the EU during 2020	30
Figure 1.15: Top selling highway capable all-electric cars (World 2017).....	34
Figure 1.16: Registered highway capable BEVs and PHEVs (World 2017)	35
Figure 1.17: New registrations of highway capable BEVs and PHEVs (World 2017)	36
Figure 1.18: Leading carsharing service companies (World Q4-2017).....	41
Figure 2.1: Cost comparison for IoT Technologies (2018).....	50
Figure 2.2: eCall application lifecycle	54
Figure 2.3: SVT application lifecycle.....	56
Figure 2.4: Motor insurance telematics application lifecycle.....	57
Figure 2.5: Vehicle diagnostics application lifecycle	58
Figure 2.6: Leasing and rental fleet management application lifecycle	59
Figure 2.7: Electronic toll collection application lifecycle	60
Figure 2.8: Convenience services and remote control application lifecycle	61
Figure 2.9: Connected navigation application lifecycle.....	63
Figure 2.10: Connectivity options	64

Figure 2.11: Comparison of SIM form factors..... 68

Figure 3.1: BMW ConnectedDrive services and prices (USA 2018) 75

Figure 3.2: BMW ConnectedDrive packages and prices (China 2018)..... 78

Figure 3.3: Mercedes-Benz Mbrace services and price plans (USA 2018)..... 88

Figure 3.4: Uconnect services and prices (USA 2018)..... 94

Figure 3.5: Ford SYNC features and services (2018) 99

Figure 3.6: GM OnStar services and price plans (North America 2018) 110

Figure 3.7: GM OnStar LTE Wi-Fi hotspot data plan prices (USA 2015–2017) 111

Figure 3.8: AcuraLink services and price plans (North America 2018) 121

Figure 3.9: Hyundai Blue Link services and price plans (USA 2018)..... 127

Figure 3.10: Jaguar Land Rover InControl services (Europe 2018) 133

Figure 3.11: NissanConnect Services subscription packages (USA 2018) 141

Figure 3.12: Infiniti Connection and Infiniti Intouch services (USA 2018) 143

Figure 3.13: Subaru STARLINK service packages for model year 2018 (USA 2018) 158

Figure 3.14: Toyota and Lexus telematics systems (2018) 164

Figure 3.15: Lexus Enform services and prices (USA 2018) 168

Figure 3.16: Audi North America Connect services and price plans (2018) 175

Figure 3.17: Porsche Car Connect services and price plans (2018)..... 176

Figure 3.18: VW Car-Net Security & Service (USA 2018) 179

Figure 4.1: M2M communication and managed service providers (Q2-2018)..... 201

Figure 5.1: New car sales, by region (World 2016–2023) 215

Figure 5.2: Telematics shipments and active subscribers (World 2016–2023)..... 216

Figure 5.3: Telematics shipments and active subscribers (EU28+EFTA 2016–2023)..... 217

Figure 5.4: Telematics shipments and active subscribers (Eastern Europe 2016–2023) 218

Figure 5.5: Telematics shipments and active subscribers (North America 2016–2023) 219

Figure 5.6: Telematics shipments and active subscribers (Latin America 2016–2023) 221

Figure 5.7: Telematics shipments and active subscribers (Asia-Pacific 2016–2023)..... 222

Figure 5.8: Telematics shipments and active subscribers (MEA 2016–2023)..... 223

Figure 5.9: Telematics hardware and service revenues (World 2016–2023) 224

Figure 5.10: Telematics hardware and service revenues (EU28+EFTA 2016–2023) 225

Figure 5.11: Telematics hardware and service revenues (North America 2016–2023)..... 226

Figure 5.12: Telematics hardware and service revenues (ROW 2016–2023) 227

Figure 5.13: Shipments of cellular data modems for embedded TCUs (World 2016–2023) . 228
Figure 5.14: SIM-cards managed by service providers by region (World 2016–2023)..... 244
Figure 5.15: Mergers and acquisitions in the connected car space (2012–2018) 249