

New Industrial Revolution: Market Strategies and Forecasts, Worldwide, 2017-2023

Table of Contents

New Industrial Revolution: Executive Summary

The study is designed to give a comprehensive overview of the New Industrial Revolution market segment. Research represents a selection from the mountains of data available of the most relevant and cogent market materials, with selections made by the most senior analysts. Commentary on every aspect of the market from independent analysts creates an independent perspective in the evaluation of the market. In this manner the study presents a comprehensive overview of what is going on in this market, assisting managers with designing market strategies likely to succeed.

Table of Contents

New Industrial Revolution	1
New Industrial Revolution Executive Summary	23
New Industrial Revolution	23
New Industrial Revolution Market Driving Forces	24
1. New Industrial Revolution Market Description and Market Dynamics	26
1.1 New Industrial Revolution Market Dynamics	26
1.1.1 History	27
1.1.2 Billions Of People Connected By Mobile Devices	28
1.1.3 Artificial Intelligence (AI)	28
1.2 New Industrial Revolution Challenges And Opportunities	29
1.3 Labor Unions Embrace Participation In Returns To Capital	30

New Industrial Revolution: Table of Contents
and List of Tables and Figures

1.3.1	Not a Government Function	30
1.3.2	Net Increase In Safe And Rewarding Jobs?	31
1.3.3	Disruption of The Existing Value Chain And The Velocity Of Disruption	32
1.4	Trillion Dollar Markets	33
2.	New Industrial Revolution Market Shares and Forecasts	35
2.1	New Industrial Revolution	35
2.1.1	New Industrial Revolution Market Driving Forces	36
2.2	Smart Manufacturing, Industry 4.0	37
2.2.1	Industry 4.0 Smart Manufacturing Market Forecast	42
2.2.2	Additive Manufacturing	44
2.2.3	Additive Manufacturing for Aerospace Market Shares	45
2.2.4	Additive Manufacturing for Aerospace Market Forecasts	47
2.2.5	Additive Manufacturing	49
2.3	Internet of Things (IoT)	49
2.3.1	IoT Technology Market Driving Forces	52
2.3.2	IoT Technology Market Challenges	53
2.3.3	Internet of Things (IoT) Market Shares	55
2.3.4	Internet of Things (IoT) Market Forecasts	57
2.3.5	IoT Market Opportunity Huge	57
2.3.6	SoftBank CEO Masayoshi Son Sees 1 Trillion Devices for Internet of Things	59
2.3.7	Compared IoT to the Cambrian explosion	59
2.3.8	IoT Depends on Micro-Electro Mechanical Sensors (MEMs) Sensors	62

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

2.3.9	MEMs Market Is Ripe for Consolidation	63
2.3.10	Micro-Electro Mechanical Sensor Market Shares	64
2.3.11	MEMs Sensors Market Forecasts	65
2.4	Tablets, Apps, and Smart Phones	66
2.4.1	Wireless Connectivity Transforms The World Opening New Trillion Dollar Markets :	68
2.4.2	Tablet Apps Congruent Technology For All Robots	70
2.5	Self-Driving Cars	71
2.5.1	Self-Driving Cars, Light Trucks, SUVs	74
2.5.2	Self-Driving Car and Light Truck Market Shares	77
2.5.3	Adaptive Cruise Control Step One to Self-Driving	84
2.5.4	Waymo / Google Self-Driving Car	88
2.5.5	Google Self-Driving Car	89
2.5.6	Google Self-Driving Car from Auto Components	90
2.5.7	BMW	90
2.5.8	BMW And Intel To Bring A Fleet Of Self-Driving Cars To The Road By The End Of 2017	91
2.5.9	MIT and BMW	93
2.5.10	Daimler AG / Mercedes-Benz Self Driving Car	94
2.6	Electric Vehicles	96
2.6.1	\$20 Trillion To Replace 1.2 Billion ICE-Powered Vehicles With Electric Vehicles	96
2.6.2	Tesla	97
2.6.3	Tesla Autonomous Driving	97
2.6.4	Tesla Premium Electric Vehicles	98
2.6.5	Tesla Dual Motor Model S	100

2.6.6	Tesla Motors Computer-Assisted Mode Car Involved in Fatal Crash while Driving Autonomously	106
2.6.7	Tesla Attention to Security	107
2.6.8	Tesla Hardware Safety Features	107
2.6.9	Tesla Software Safety Features	108
2.6.10	Tesla Driverless Car Features	109
2.6.11	Jaguar Driverless Cars	110
2.6.12	IBM	110
2.7	Ride Hailing Services	111
2.7.1	Peer-to-Peer Services	112
2.7.2	Tesla	112
2.7.3	Uber	113
2.7.4	Uber Autonomous Trucks Developed by Otto	115
2.7.5	Uber / Carnegie Mellon Partnership	116
2.7.6	Uber Endorses Self-Driving Cars for Its Business	116
2.7.7	Uber Ride Sharing App	117
2.7.8	Uber Purchases AI Startup, Creates Machine Learning Lab	118
2.7.9	Uber	119
2.7.10	Uber	119
2.7.11	Uber Revenue	120
2.7.12	Lyft	122
2.7.13	Autonomous Car and Light Truck / SUV Market Forecasts, Units, Worldwide, 2017-2023	123
2.7.14	Apple	124
2.7.15	Softbank	124
2.7.16	Softbank Arm Processor Has Protections Against Random Errors	126

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

2.7.17	Softbank Arm Self Driving Bus	127
2.7.18	Softbank IoT Addresses Self-Driving	129
2.7.19	SoftBank ARM Acquisition Brings Internet of Things	129
2.7.20	Multiple Cars Per Person	131
2.8	Robots	131
2.8.1	Robot Market Driving Forces	133
2.8.2	Robots Set To Bring A New Industrial Revolution	134
2.8.3	Robots Poised To Change Market Segment Economics	135
2.8.4	First Wave Of Automated Process	138
2.8.5	Robots Third Wave Of Automated Process	138
2.8.6	Robot Target Markets	144
2.8.7	Robot Forecasts	146
2.8.8	Robots And Drones To Become a \$45Bn Industry by 2038	150
2.8.8	Robotic Vision Processes Become Massively More Productive	150
2.9	Drones	153
2.9.1	Drone Challenges	166
2.9.2	Drone Fleet Systems	167
2.9.3	Smart Drone Infrastructure Standards	168
2.9.4	Drone Market Shares	169
2.9.5	Drone Market Forecasts	171
2.10	Smart Cities	173
2.10.1	Smart City Market Shares	176
2.10.2	IBM Market Leader in Smart City Revenue	176
2.10.3	IBM Watson Smart City Leadership	177
2.10.4	Smart Building Technologies Market	178
2.10.5	IBM Improving the Quality Of Urban Services	178

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

2.10.1 Bill Gates Invests in Smart City	179
2.11 Online Retail: \$17 Trillion Opportunity by 2024	180
2.12 Health and Wellness	182
2.12.1 Wellness Market Forecasts Dollars, Worldwide, 2018-2024	182
2.13 BioMaterials	184
2.14 Augmented Reality	186
2.14.1 Augmented Reality Step By Step Procedure Manuals	189
2.14.2 AR Evolving A Presence In Communication And Collaboration	191
2.14.3 Augmented Reality Market Driving Forces	192
2.14.4 AR Game Program Development	193
2.14.5 Augmented Reality Market Shares	194
2.14.6 Augmented Reality Market Forecasts	196
2.15 Cloud and Data Center Spending	198
2.15.1 Scalable Data Center Wired Adapter Processor Market Driving Forces	199
2.15.2 Scalable IT Infrastructure Data Center Processor Market Driving Forces	201
2.15.3 Suppliers of Intelligent Interconnect Solutions	202
2.15.4 Data Growth Continues to Drive Infrastructure Scalability	203
2.15.5 Scalable Infrastructure Data Center Processor Adapter Market Shares:	206
2.15.6 Scalable Wired Infrastructure Adapter Market Forecasts:	207
2.15.7 Critical Challenge Of Handling Exponentially Expanding Volumes Of Transactions And Data	209
2.15.8 Mega Data Centers	209

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

2.15.9	Mega Data Centers Have Stepped In To Do The Job Of Automated Process	210
2.15.10	Cloud 2.0 Mega Data Center Fabric Implementation	212
2.15.11	Cloud 2.0 Mega Data Center Different from the Hyperscale Cloud	214
2.15.12	Cloud 2.0 Mega Data Center Automatic Rules and Push-Button Actions	217
2.15.13	Making Individual Circuits And Devices Unimportant Is A Primary Aim Of Fabric Architecture	218
2.15.14	Digital Data Expanding Exponentially, Global IP Traffic Passes Zettabyte (1000 Exabytes) Threshold	220
2.15.15	Google Kubernetes Open Source Container Control System	221
2.15.16	Google Kubernetes a Defacto Standard Container Management System	222
2.15.17	Google Shift from Bare Metal To Container Controllers	223
2.15.18	Cloud 2.0 Mega Data Center Market Driving Forces	223
2.15.19	Mega Data Center Market Shares	227
2.15.20	Cloud Datacenter, Co-Location, and Social Media Cloud, Revenue Market Shares, Dollars, Worldwide, 2016	228
2.15.21	Cloud 2.0 Mega Data Center Market Forecasts	229
2.15.22	Data Center Manager Not Career Track for CEO	231
2.15.23	IT is Everything for the Business	232
2.16	Blockchain and Cryptocurrency Market Driving Forces	234
2.16.1	Blockchain Leverages Artificial Intelligence (AI)	238
2.16.2	Blockchain Market Shares, Dollars, Worldwide, 2017	239
2.16.3	Blockchain Market Forecasts	240
2.16.4	Blockchain Market Description and Market Dynamics	242

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

2.16.5	Blockchains: Cryptographically Secured Distributed Ledgers	243
2.17	5G Communications	243
2.17.1	Small Cells Bring Transformational 5G	243
2.17.2	Small Cells Definition	244
2.17.3	Small Cells Set To Be Major Enabler for 5G	245
2.17.4	Vision for 5G	245
2.17.5	Outdoor Small Cell Market Is in The Beginning Stages Of Deployment	247
2.17.6	5G Brings IoT Communications Trillion Dollar Markets	248
2.18	Artificial Intelligence	248
2.18.1	Artificial Intelligence AI Economic Impact	249
2.18.2	Artificial Intelligence (AI) Car and Light Truck Market Driving Forces	255
2.18.3	Artificial Intelligence (AI) Cars, Light Trucks, SUVs	258
2.18.4	Artificial Intelligence (AI) Cars / Connected Cars / Transportation	258
2.18.5	Artificial Intelligence (AI) Car and Light Truck Market Shares	261
2.18.6	Artificial Intelligence (AI) Software Market Share of Companies in The Computer and Auto Industries	263
2.18.7	Companies in The Tech Industries Building Auto Artificial Intelligence (AI) Processors	267
2.18.8	Artificial Intelligence (AI) Car and Light Truck Software, Component, and Vehicle Auto Market Forecasts	272
2.18.9	Artificial Intelligence Integrated Software Systems Auto Market	272
2.18.10	Artificial Intelligence (AI) Car and Light Truck Market Forecasts	273
2.18.11	Artificial Intelligence (AI) Car Forecasts	274
2.18.12	Artificial Intelligence (AI) in Cars	276
2.18.13	Auto Processors	277

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

Auto Processor	277
2.18.14 Autonomous Car and Autonomous Light Truck / SUV Shipments and Installed Base 283	
2.18.15 Autonomous Luxury Car Market Forecasts	287
2.18.16 Autonomous Mid-Size Car Market Forecasts	288
2.18.17 Autonomous Light Car Shipments Market Forecasts	289
2.18.18 Autonomous Light Truck / SUV Shipments Market Forecasts	290
2.18.19 Autonomous Personal Vehicles: Car and Autonomous Light Truck / SUV Shipments Market Forecasts, Level 2 and Level 4	291
2.18.20 “All-Purpose” Vehicles	292
2.18.21 Multiple Cars Per Person	293
2.18.22 Autonomous Vehicle Software	293
3 New Industrial Revolution Broadband Description	298
3.1 Wireless Broadband	298
3.2 Education	305
4 New Industrial Revolution: Trillion Dollar Markets Bring Time for Fairness and Integrity	306
4.1 Robots Do More Work	306
4.1.1 Nature Of Labor Changes	307
4.1.2 Now Is The Time To Pull The Workers Into The Same Capitalist System Enjoyed By The Rich Guys	308
5 New Industrial Revolution Selected Company Profiles 310	
5.1 ABB: Continuing growth	310
5.2 Amazon	311
5.2.1 Amazon Business	311
5.2.2 Amazon Competition	312

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

5.2.3	Amazon Description	313
5.2.4	Amazon Revenue	317
5.3	b+m Surface Systems GmbH Painting Robots	319
5.4	Facebook	319
5.4.1	Facebook Technology	320
5.4.2	Facebook Sales and Operations	320
5.4.3	Facebook Management Discussion	320
5.4.4	Facebook Revenue	322
5.4.5	Facebook	323
5.4.6	Facebook App Draining Smart Phone Batteries	324
5.4.7	Facebook Messaging Provides Access to User Behavioral Data	324
5.4.8	Facebook Creating Better Ads	325
5.4.9	Facebook Next Generation Services	326
5.4.10	Facebook Platform	326
5.4.11	Facebook Free Basics	327
5.4.12	Facebook AI	327
5.4.13	Facebook Revenue	328
5.4.14	Facebook Revenue Growth Priorities:	329
5.4.15	Facebook Average Revenue Per User ARPU	330
5.4.16	Facebook Geographical Information	331
5.4.17	Facebook WhatsApp	331
5.4.18	Facebook WhatsApp Focusing on Growth	332
5.5	Goldman Sachs	332
5.6	Google	334
5.6.1	Google Revenue	334
5.6.2	Google	336

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

5.6.3	Google Search Technology	336
5.6.4	Google Recognizes World Is Increasingly Mobile	337
5.6.5	Google Nest	337
5.7	IBM	338
5.7.1	IBM Blockchain	339
5.7.2	IBM Batavia	339
5.8	Intel	340
5.8.1	Intel Security Issues	342
5.9	JP Morgan Chase	343
5.10	Lincoln Electronics	344
5.10.1	Lincoln Electric / Wolf Robotics	344
5.11	Mellanox Technologies	347
5.11.1	Mellanox Interconnect Solutions Increase Data Center Efficiency	351
5.11.2	Mellanox High Performance Solutions	351
5.11.3	HPE Chooses Mellanox Spectrum™ To Power StoreFabric M-series	
Switches	352	
5.11.4	Mellanox Converged Ethernet Storage Fabric	353
5.11.5	Mellanox Technologies Revenue	354
5.11.6	Mellanox Acquisition of EZchip	361
5.12	Microsoft	362
5.13	Nvidia	362
5.13.1	NVIDIA	363
5.14	Softbank	364
5.14.1	SoftBank CEO Masayoshi Son Sees 1 Trillion Devices for Internet of	
Things	366	
5.15	Thales	366

WinterGreen Research,	367
WinterGreen Research Methodology	367
WinterGreen Research Process	369
Market Research Study	369
WinterGreen Research Global Market Intelligence Company	370
Report Description: Youth League Sports Software and Revenue Models Matter	
371	
New Industrial Revolution	1
Figure 1. New Industrial Revolution Market Driving Forces	25
Figure 2. Change in the Industrial Landscape	26
Figure 3. New Industrial Revolution Market Driving Forces	37
Figure 4. Smart Manufacturing Automated Systems Advantages	38
Figure 5. Smart Manufacturing Transformative Technologies	39
Figure 6. Smart Manufacturing Market Segments	40
Figure 7. Smart Manufacturing Market: By End-User	40
Figure 8. Selected Market Leaders in Smart Manufacturing	41
Figure 9. Industry 4.0 Smart Manufacturing Market Forecasts Dollars, Worldwide, 2018-2024	42
Figure 10. Industry 4.0 Smart Manufacturing Market Forecast, Dollars, Worldwide, 2018-2024	43
Figure 11. Manufacturers Unlock Supply Chain Capabilities:	44
Figure 12. Metallurgy Additive Manufacturing Aerospace Market Shares, Dollars, Worldwide, First Three Quarters 2017	46
Figure 13. Metallurgy Additive Manufacturing Aerospace Market Shipments Forecasts Dollars, Worldwide, 2017-2023	48
Figure 14. Internet of Things (IoT) Market Driving Forces	51

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

Figure 15. Key Areas Of The IoT Market	52
Figure 16. IoT Technology Market Driving Forces	53
Figure 17. IoT Technology Market Challenges	54
Figure 18. Internet of Things (IoT) Market Shares, Dollars, 2016	56
Figure 19. Internet of Things (IoT) Market Forecast, Dollars, Worldwide, 2017-2024	58
Figure 20. Softbank Arm Performance Technology	60
Figure 21. Softbank Embraces Technology Trends That Will Redefine All Industries	61
Figure 22. Softbank Positioning for the New Industrial Revolution	62
Figure 23. Micro-Electro Mechanical Sensor Market Shares, Dollars, Worldwide, First Three Quarters 2017	64
Figure 24. Micro-Electro Mechanical (MEMs) Sensors Forecasts, Dollars, Worldwide, 2018-2024	65
Figure 25. Smart Phones, Tablets, and Apps Market Forecasts, Dollars, Worldwide, 2018-2024	67
Figure 26. Wireless Connectivity Transforms The World Opening New Trillion Dollar Markets :	69
Figure 27. Sensor and Computing Configurations for Cars Driving Themselves	73
Figure 28. Self-Driving Cars and Trucks Market Driving Forces	75
Figure 29. Autonomous Vehicle Safety Features Used in Self-Driving Cars	76
Figure 30. Self-Driving Cars and Light Trucks on the Road, Worldwide, 2016 Chart	78
Figure 31. Self-Driving Cars and Light Trucks on the Road, Worldwide, 2016	79
Figure 32. Self-Driving Car Level 2 Autonomous Vehicle Market Shares, Number of Vehicles on Road, Worldwide, 2016 and 2017	80
Figure 33. Car and Driver Semi-Autonomy Test Results	84
Figure 34. List of Cars with Collision Avoidance Features	85
Figure 35. Collision Avoidance Systems Market Shares, Units, Installed Worldwide, 2016	86

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

Figure 36. Selected Leaders in Development of Self-Driving Cars and Trucks	87
Figure 37. Google Self-Driving Car	88
Figure 38. Google Driverless Car	89
Figure 39. BMW Self-Driving Car	93
Figure 40. Mercedes Intelligent Drive Level 2 Autonomous Car	95
Figure 41. Tesla Electric Vehicle	99
Figure 42. Tesla Dual Motor Model S and Autopilot	100
Figure 43. 2016 Tesla Model S Advantages	101
Figure 44. 2016 Tesla Model S Challenges	102
Figure 45. Tesla Model S	104
Figure 46. Tesla Model S All-Wheel Drive Dual Motor	105
Figure 47. Tesla Hardware Safety Features	108
Figure 48. Tesla Software Safety Features	109
Figure 49. Uber Self-Driving Car Crash Photo	114
Figure 50. Autonomous Car and Light Truck / SUV Market Forecasts, Units, Worldwide, 2017-2023	123
Figure 51. Softbank Self Driving Bus	128
Figure 52. Strawberry Picker	133
Figure 53. Robots Poised To Change Market Segment Economics	135
Figure 54. Robots Bring A New Industrial Revolution	136
Figure 55. Robotic Market Opportunity	139
Figure 56. Robotic Market Challenges	140
Figure 57. Robotic Technical Challenges	141
Figure 58. Robot Market Driving Forces	143
Figure 59. Robot Target Markets	144
Figure 60. Robot Market Segments, Industrial, Warehouse Logistics, Cargo Unloading, Military, Medical, Surgical, Rehabilitation, Agricultural, Cleaning, Unmanned Aircraft, and other Forecasts, Dollars, Worldwide, 2014-2020	146

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

Figure 61. Robotic Market Opportunity	147
Figure 62. Robotic Market Challenges	148
Figure 63. DJI - Phantom 4 Pro Quadcopter - White	154
Figure 64. US Military Drone Reaper	155
Figure 65. US Military Drone Predator	156
Figure 66. Parrot S.A. Bebop Commercial Drone	157
Figure 67. Parrot S.A. Bebop Commercial Drone Controller	157
Figure 68. Smart Commercial Drone Aircraft Benefits	159
Figure 69. Smart Commercial Drone Unmanned Aerial Systems Functions	162
Figure 70. Smart Commercial Drone Aerial Systems Features	163
Figure 71. Drone Unmanned Aerial Systems Mission Tasks	164
Figure 72. Smart Commercial Drone Challenges	166
Figure 73. Drone Systems Market Shares, 2015	170
Figure 74. Drone Aerial Systems Forecasts, Dollars, Worldwide, 2016-2022	172
Figure 75. Smart City Market Forecasts Dollars, Worldwide, 2018-2024	174
Figure 76. Smart Cities Market Forecasts, Dollars, Worldwide, 2018-2024	175
Figure 77. On-line Retail E Commerce Market Forecasts Dollars, Worldwide, 2018-2024	181
Figure 78. Retail Online E-Commerce Market Forecasts, Dollars, Worldwide, 2018-2024	182
Figure 79. Wellness Market Forecasts Dollars, Worldwide, 2018-2024	183
Figure 80. Wellness Market Forecasts Dollars, Worldwide, 2018-2024	184
Figure 81. Biomaterials Market Forecasts Dollars, Worldwide, 2018-2024	185
Figure 82. Biomaterials Market Forecasts, Dollars, Worldwide, 2018-2024	186
Figure 83. Digital Augmented Reality Holds The Promise Of Providing Context To Database Information	187
Figure 84. Augmented Reality Workflow Market Driving Forces	193

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

Figure 85. Augmented Reality and Smart Phone Augmented Reality Game Market Shares, Dollars, Worldwide, Third Quarter 2016	195
Figure 86. Augmented Reality (AR) Forecasts, Dollars, Worldwide, 2016-2022	197
Figure 87. Scalable IT Infrastructure Data Center Processor Market Driving Forces	201
Figure 88. Data Growth Continues to Drive Infrastructure Scalability	203
Figure 89. Scalable Data Center Wired Adapter Processor Market Shares, Dollars, 2016	206
Figure 90. Scalable Infrastructure Adapter Market Forecast, Dollars, Worldwide, 2017-2023	208
Figure 91. Cloud 2.0 Mega Data Center Market Driving Forces	225
Figure 92. Cloud Datacenter, Co-Location, and Social Media Revenue Market Shares, Dollars, Worldwide, 2016, Image	228
Figure 93. Cloud 2.0 Mega Datacenter Market Forecast, Dollars, Worldwide, 2017-2023	230
Figure 94. Real Time Data Center Functions	232
Figure 95. IT Interconnect Solutions Trends	233
Figure 96. Blockchain Ledger Market Driving Forces	236
Figure 97. Major Growth Drivers Of The Blockchain Market	236
Figure 98. Blockchain Market Shares, Dollars, Worldwide, 2017	239
Figure 99. Blockchain, Market Forecasts Dollars, Worldwide, 2018-2024	241
Figure 100. Vision for 5G	246
Figure 101. Small Cells Amplify Cellular Phone Signals Making Possible Use Of A Mobile Phone Indoors	247
Figure 102. AI Impact on CRM Activities:	250
Figure 103. Artificial Intelligence Market Forecasts Dollars, Worldwide, 2018-2024	251
Figure 104. Artificial Intelligence Market Forecasts Dollars, Worldwide, 2018-2024	252
Figure 105. McKinsey Assessment of Selected AI Segments	253

Figure 106. Sensor and Computing Configurations for Cars Driving Themselves	257
Figure 107. Artificial Intelligence (AI) Cars and Trucks Market Driving Forces	259
Figure 108. Autonomous Vehicle Safety Features Used in Artificial Intelligence (AI) Cars	260
Figure 109. IBM AI Systems for Automotive Applications Augment Human Capability	265
Figure 110. IBM AI Systems for Automotive Applications Augment Human Capability	266
Figure 111. Artificial Intelligence IC and Component Auto and ADAS Module Market Shares, Dollars, Worldwide, 2016	271
Figure 112. Artificial Intelligence Integrated Software Systems Auto Market Units and Dollars, Shipments, Worldwide, 2017-2023	273
Figure 113. Autonomous Car and Light Truck / SUV Market Forecasts, Units, Worldwide, 2017-2023	275
Figure 114. Total Manual and Autonomous Car and Light Truck Shipments, Market Forecasts, Units and Percent Autonomous of Total Shipments, Worldwide, 2017-2023	278
Figure 115. Autonomous Car and Autonomous Light Truck / SUV Shipments Base Market Forecasts Dollars, Worldwide, 2017-2023	280
Figure 116. Autonomous Car and Autonomous Light Truck / SUV Shipments Market Forecasts, Dollars, Worldwide, 2017-2023	281
Figure 117. Autonomous Car and Autonomous Light Truck / SUV Shipments Market Forecasts, Units, Worldwide, 2017-2023	282
Figure 118. Autonomous Car and Autonomous Light Truck / SUV Shipments and Installed Base, Market Forecasts Dollars and Units, Worldwide, 2017-2023	283
Figure 119. Autonomous Car and Autonomous Light Truck / SUV Shipments and on the Road, Small, Mid-Size, Luxury, and Light Truck / SUV Market Forecasts, Level 2 and Level 4 Autonomous Personal Vehicles, Units, Worldwide, 2017-2023	283
Figure 120. Autonomous Car and Autonomous Light Truck / SUV Shipments and on the Road, Small, Mid-Size, Luxury, and Light Truck / SUV Market Forecasts,	

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

Level 2 and Level 4 Autonomous Personal Vehicles, Dollars, Worldwide, 2017-2023	283
Figure 121. Autonomous Car and Autonomous Light Truck / SUV Shipments and Installed Base, Small, Mid-Size, Luxury, and Light Truck / SUV Market Forecasts, Percent, Worldwide, 2017-2023	286
Figure 122. Autonomous Luxury Car Market Forecasts, Dollars and Units, Worldwide, 2017-2023	287
Figure 123. Autonomous Mid-Size Car Market Forecasts, Dollars and Units, Worldwide, 2017-2023	288
Figure 124. Autonomous Light Car Shipments Market Forecasts, Dollars and Units, Worldwide, 2017-2023	289
Figure 125. Autonomous Light Truck / SUV Shipments Market Forecasts, Dollars and Units, Worldwide, 2017-2023	290
Figure 126. Autonomous Car and Autonomous Light Truck / SUV Shipments Market Forecasts, Level 2 and Level 4 Autonomous Personal Vehicles, Worldwide, 2017-2023	291
Figure 127. Selected Autonomous Vehicle Software Market Leaders	293
Figure 128. Artificial Intelligence (AI) Car and Truck Functions	297
Figure 129. Demand for Faster, Better Mobil Broadband	298
Figure 130. Mobile Broadband Market Driving Forces	299
Figure 131. Value of 5G	301
Figure 132. 5G Delivering Fiber-Like Performance	301
Figure 133. Regions With Gigabit LTE Operator Momentum	302
Figure 134. 5G Delivers New Levels of Capability and Efficiency	303
Figure 135. Mobilizing 5G mmWave in Real World Environments	304
Figure 136. Amazon Principal Competitive Factors In The Online Retail Business	313
Figure 137. Amazon Improving Customer Experience Functions	314
Figure 138. Amazon Ways To Achieve Efficiency In Technology For Operations	316
Figure 139. Intel Revenue	341

New Industrial Revolution: Table of Contents**and List of Tables and Figures**

Figure 140. Wolf Robotics Robotic System Applications	344
Figure 141. Wolf Robotics Industries Served:	345
Figure 142. Wolf Robotics Industrial Robot	346
Figure 143. Mellanox Product Scalability Real Time Improvements	347
Figure 144. Mellanox Go To Market Strategy	348
Figure 145. Mellanox Product Scalability Modeling Processing Improvements	349
Figure 146. Mellanox Image Recognition Benefits	350
Figure 147. Mellanox Supports Nvidia Deep Learning Supercomputer	350
Figure 148. Mellanox Interconnect Solutions Industry Market Penetration	360
Figure 149. Mellanox Cloud Applications	360
Figure 150. Mellanox Technologies Customer Base	361
Figure 151. NVIDIA Tesla V100 Accelerator World's Highest Performing Parallel Processor	363
Figure 152. Softbank ARM Bringing AI to Mobil Devices	365

New Industrial Revolution: Table of Contents

and List of Tables and Figures