

## SENSORS FOR THE INTERNET OF THINGS (IOT): GLOBAL MARKETS



**IFT130A**  
**March 2017**

Michael Sullivan  
***Project Analyst***

ISBN: 1-62296-462-4



**BCC Research**  
**49 Walnut Park, Building 2**  
**Wellesley, MA 02481 USA**  
**866-285-7215 (toll-free within the USA),**  
**or (+1) 781-489-7301**  
**[www.bccresearch.com](http://www.bccresearch.com)**  
**[info@bccresearch.com](mailto:info@bccresearch.com)**

**TABLE OF CONTENTS**

<b>TOPIC</b>	<b>PAGE NO.</b>
CHAPTER 1 INTRODUCTION	2
STUDY GOALS AND OBJECTIVES	2
REASONS FOR DOING THE STUDY	2
INTENDED AUDIENCE	2
SCOPE AND FORMAT	3
METHODOLOGY	3
INFORMATION SOURCES	3
RELATED BCC RESEARCH REPORTS	3
ANALYST'S CREDENTIALS	4
BCC RESEARCH WEBSITE	4
DISCLAIMER	4
CHAPTER 2 SUMMARY	6
<i>SUMMARY TABLE GLOBAL MARKET FOR IOT SENSORS, BY REGION, THROUGH 2021 (\$ BILLIONS)</i>	7
<i>SUMMARY FIGURE GLOBAL MARKET FOR IOT SENSORS, BY REGION, 2015-2021 (\$ BILLIONS)</i>	7
CHAPTER 3 OVERVIEW	10
DEFINITION OF IOT AND THE SENSOR MARKET	10
<i>FIGURE 1 AN IOT SYSTEM AT A GLANCE</i>	10
<i>TABLE 1 SENSORS USED IN VARIOUS APPLICATIONS</i>	12
DESCRIPTION OF SEVERAL POPULAR SENSOR TYPES	13
Proximity Sensors	13
Accelerometers	13
Temperature Sensors	13
Light Sensors	14
NETWORKING IOT SENSORS	14
WIRED NETWORKS	14
WIRELESS NETWORKS	14
<i>TABLE 2 COMPUTER NETWORK TYPES</i>	15
Types of Wireless Networks	15
Wireless PANs	15
Wireless LANs	15
Wireless Mesh Networks	16
Wireless MANs	16
Wireless WANs	16
Cellular Networks	16
CHOOSING WIRED VERSUS WIRELESS	16
Convenience	17
Interference, Absorption and Fading	17
Capacity	17
Power	17
POPULAR WIRELESS PROTOCOL STANDARDS FOR IOT SENSORS	17
ZigBee	17
Bluetooth	18

<b>TOPIC</b>	<b>PAGE NO.</b>
Wi-Fi	18
Cellular Networks	19
Z-Wave	19
Bluetooth Smart	20
<i>TABLE 3 POPULAR WIRELESS PROTOCOLS FOR IOT SENSORS</i>	21
REGULATION OF WIRELESS SENSOR NETWORKS	21
CHAPTER 4 KEY REQUIREMENTS OF IOT SENSORS	23
CONNECTIVITY	23
APPLICATIONS	23
FORM FACTOR	23
POWER MANAGEMENT	24
BATTERY LIFE	24
INTELLIGENCE	25
OUTLOOK	25
ISSUES AND CHALLENGES	25
PRIVACY, AUTONOMY AND CONTROL	25
SECURITY	26
CHAPTER 5 IOT SENSORS BY APPLICATION	28
<i>TABLE 4 GLOBAL MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)</i>	28
<i>FIGURE 2 GLOBAL MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)</i>	28
<i>TABLE 5 NORTH AMERICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)</i>	29
<i>FIGURE 3 NORTH AMERICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)</i>	30
<i>TABLE 6 LATIN AMERICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)</i>	30
<i>FIGURE 4 LATIN AMERICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)</i>	31
<i>TABLE 7 EUROPE MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)</i>	31
<i>FIGURE 5 EUROPE MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)</i>	32
<i>TABLE 8 MIDDLE EAST AND AFRICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)</i>	33
<i>FIGURE 6 MIDDLE EAST AND AFRICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)</i>	33
<i>TABLE 9 ASIA-PACIFIC MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)</i>	34
<i>FIGURE 7 ASIA-PACIFIC MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)</i>	34
CHAPTER 6 IOT SENSORS BY REGION	37
<i>TABLE 10 GLOBAL MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	37
<i>FIGURE 8 GLOBAL MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	37
TEMPERATURE SENSORS	38

<b>TOPIC</b>	<b>PAGE NO.</b>
FLOW SENSORS	38
LEVEL SENSORS	40
PRESSURE SENSORS	41
TYPES OF PRESSURE SENSORS BASED ON CONSTRUCTION	42
POSITION SENSORS	42
DISPLACEMENT POSITION SENSORS	43
Linear-Position Sensors	43
Rotary Position Sensors	43
Hall Effect Rotary Position Sensors	43
PROXIMITY SENSORS	44
Types of Proximity Sensors	44
REGIONAL MARKETS	45
NORTH AMERICA	45
<i>TABLE 11 NORTH AMERICA MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	45
<i>FIGURE 9 NORTH AMERICA MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	45
LATIN AMERICA	46
<i>TABLE 12 LATIN AMERICA MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	46
<i>FIGURE 10 LATIN AMERICA MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	47
EUROPE	47
<i>TABLE 13 EUROPE MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	47
<i>FIGURE 11 EUROPE MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	48
MIDDLE EAST AND AFRICA	49
<i>TABLE 14 MIDDLE EAST AND AFRICA MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	49
<i>FIGURE 12 MIDDLE EAST AND AFRICA MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	49
ASIA-PACIFIC	50
<i>TABLE 15 ASIA-PACIFIC MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	50
<i>FIGURE 13 ASIA-PACIFIC MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	51
CHAPTER 7 IOT SENSORS BY TYPE	53
AGRICULTURE AND FARMING	53
<i>TABLE 16 AGRICULTURE AND FARMING MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	53
<i>FIGURE 14 AGRICULTURE AND FARMING MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	53
PRODUCTIVITY	54
PEST CONTROL	54
WATER CONSERVATION	54
REAL-TIME ANALYSIS OF DATA FOR FARMERS	55
AUTOMOTIVE	55
<i>TABLE 17 AUTOMOTIVE MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	55

<b>TOPIC</b>	<b>PAGE NO.</b>
<i>FIGURE 15 AUTOMOTIVE MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	55
IOT IN TRANSPORTATION	56
CONNECTED CARS	57
ANDROID AUTO	57
ENVIRONMENTAL IMPACT ASSESSMENT	58
<i>TABLE 18 ENVIRONMENTAL IMPACT ASSESSMENT MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	58
<i>FIGURE 16 ENVIRONMENTAL IMPACT ASSESSMENT MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	58
HOME AUTOMATION	59
<i>TABLE 19 HOME AUTOMATION MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	59
<i>FIGURE 17 HOME AUTOMATION MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	59
SMART-HOME DEVICES: TECHNOLOGY AND ARCHITECTURE	61
IOT APPLICATIONS FOR SMART HOME	61
Electronic Lock	61
Connected Bulb	61
Connected Switch	61
Air Conditioning	62
Smart Smoke Detectors	62
Connected Sprinkler Systems	63
Smart Kettle	63
Security Camera	63
Smart Toothbrush	63
Smart Vent	63
Smart Appliances	64
CHALLENGES WITH THE CONNECTED HOME	64
Installation	64
Value Proposition Less than Compelling	64
Incompatibility	64
Multiple Networks	64
Exposure to Radio Frequencies	65
User Interface	65
Sensors	65
APPLE, GOOGLE AND SAMSUNG	65
Apple HomeKit	66
Google Nest Platform	66
Samsung and SmartThings	66
HEALTHCARE	67
<i>TABLE 20 HEALTHCARE MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	67
<i>FIGURE 18 HEALTHCARE MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	67
IOT IN HEALTHCARE	69
FDA and IoT Devices	69
Fertility Tracking	69
Personal Meditation Assistant	70

<b>TOPIC</b>	<b>PAGE NO.</b>
INDUSTRIAL CONTROLS	70
<i>TABLE 21 INDUSTRIAL CONTROLS MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	70
<i>FIGURE 19 INDUSTRIAL CONTROLS MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	70
INDUSTRIAL IOT SENSORS	71
APPLICATIONS OF IOT IN INDUSTRIES	72
User Notification	72
Predictive Warnings	72
Device Tampering	72
Messaging	72
Robotics	73
Automated Buildings	73
Railroad Industry	73
Air Conditioning, Heating, and Refrigeration	73
CHALLENGES IN INDUSTRIAL IOT	73
Educating Manufacturing Industry Workers in IoT	73
Planning Networks	74
Communication in Industrial Environments	74
ROBOTS IN INDUSTRY	74
Qualcomm's Robotics Platform	75
LOGISTICS AND RETAILING	75
<i>TABLE 22 LOGISTICS AND RETAILING MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	75
<i>FIGURE 20 LOGISTICS AND RETAILING MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	75
IOT IN RETAIL	76
Inventory Management	76
Fleet Management	76
Maintenance	76
Real-Time Promotions	76
SECURITY AND EMERGENCY	77
<i>TABLE 23 SECURITY AND EMERGENCY MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	77
<i>FIGURE 21 SECURITY AND EMERGENCY MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	77
WATER AND WASTE MANAGEMENT	78
<i>TABLE 24 WATER AND WASTE MANAGEMENT MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	78
<i>FIGURE 22 WATER AND WASTE MANAGEMENT MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	79
UTILITY METERING	79
<i>TABLE 25 UTILITY METERING MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)</i>	80
<i>FIGURE 23 UTILITY METERING MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)</i>	80
CHAPTER 8 IOT SENSORS INDUSTRY STRUCTURE	82
MARKET DRIVERS	82

<b>TOPIC</b>	<b>PAGE NO.</b>
FACTORS INFLUENCING SENSOR PRICE TRENDS	82
CHALLENGES IN THE SENSOR INDUSTRY	84
COMPETITIVE FACTORS IN SENSOR INDUSTRY	84
MERGERS, ACQUISITIONS, AND JOINT VENTURES IN THE SENSOR INDUSTRY	84
CHAPTER 9 IOT SENSOR COMPANY PROFILES	87
AUTOMOTIVE AND INDUSTRIAL	87
AB ELEKTRONIK	87
ACCEL AB	87
ALEPH AMERICA	88
ALLEGRO MICROSYSTEMS INC.	88
ALPS ELECTRIC CO. LTD.	89
AMERICAN ELECTRONIC COMPONENTS INC.	90
AMERICAN SENSOR TECHNOLOGIES INC.	90
AMETEK INC.	91
AMS AG	91
ANALOG DEVICES INC.	92
APPLIED TECHNOLOGY ASSOCIATES	93
APTINA IMAGING CORP.	93
ATI INDUSTRIAL AUTOMATION	93
AUTOLIV INC.	94
AUTOMOTIVE TECHNOLOGIES INTERNATIONAL INC.	95
BANNER ENGINEERING CORP.	95
BAUMER HOLDINGS AG	96
BEI SENSORS	96
BINSFELD ENGINEERING INC.	97
BOKAM ENGINEERING INC.	98
BORGWARNER BERU SYSTEMS GMBH	98
BOSCH SENSORTEC GMBH	99
BOURNS SENSORS GMBH	100
CAMBRIDGE CMOS SENSORS LTD.	100
CASCO PRODUCTS CORP.	101
CITY TECHNOLOGY LTD.	102
COGNEX CORP.	102
COLIBRYS SA	103
COMUS INTERNATIONAL BVBA	103
CONAX TECHNOLOGIES	104
CONTELEC AG	104
CONTI TEMIC MICROELECTRONIC GMBH	105
CONTINENTAL AG	105
COOPER INSTRUMENTS & SYSTEMS	106
CORRSYS-DATRON SENSORSYSTEME GMBH	107
CTS CORP.	108
CUSTOM SENSORS & TECHNOLOGIES (CST)	108
CYBEROPTICS CORP.	109
CYNERGY3 COMPONENTS LTD.	110
D&R TECHNOLOGY LLC	110

<b>TOPIC</b>	<b>PAGE NO.</b>
DELPHI AUTOMOTIVE PLC	111
DELPHI CORP.	111
DENSO CORP.	113
DER EE ELECTRICAL INSTRUMENT CO. LTD.	114
E2V TECHNOLOGIES PLC	114
ELECTRICFIL AUTOMOTIVE	115
ELECTRO-SENSORS INC.	115
ELMOS SEMICONDUCTOR AG	116
EMERSON PROCESS MANAGEMENT	116
ENDRESS+HAUSER INSTRUMENTS INTERNATIONAL AG	117
EPCOS AG	118
ESI ENVIRONMENTAL SENSORS INC.	118
EXERGEN CORP.	118
FIGARO ENGINEERING	119
FINGERPRINT CARDS AB	119
FIRST SENSOR AG	120
FLEXPOINT SENSOR SYSTEMS INC.	121
FLINTEC GMBH	121
FLIR SYSTEMS INC.	122
FLOWLINE INC.	123
FLOW TECHNOLOGY INC.	124
FREESCALE SEMICONDUCTOR INC.	124
GALAXYCORE INC.	125
GE MEASUREMENT & CONTROL	126
GEMS SENSORS & CONTROLS	127
GENTECH INTERNATIONAL LTD.	127
GEORGE FISCHER CORP.	128
GPIXEL INC.	128
HAMAMATSU PHOTONICS KK	129
HAMLIN ELECTRONICS	130
HANS TURCK GMBH & CO. KG	130
HELLA KGAA HUECK & CO.	131
HITACHI AUTOMOTIVE SYSTEMS	132
HONEYWELL SENSING & CONTROL	132
IFM ELECTRONIC GMBH	134
IG BAUERHIN GMBH	134
INFINEON TECHNOLOGIES AG	134
INTEGRATED SENSING SYSTEMS INC.	136
INTERFACE INC.	137
INTERLINK ELECTRONICS INC.	137
INTERNATIONAL SENSOR TECHNOLOGY	138
INTERSEMA SENSORIC SA	138
INVENSENSE	139
INVISAGE TECHNOLOGIES INC.	139
IR-TEC INTERNATIONAL LTD.	140
ISORG	140
JEWELL INSTRUMENTS LLC	141



TOPIC	PAGE NO.
JOHNSON CONTROLS INC.	141
J-TEC ASSOCIATES INC.	142
JUMO GMBH & CO. KG	143
KAVLICO	143
KEIHIN CORP.	144
KEY SAFETY SYSTEMS INC.	145
KEYENCE CORP.	145
KISTLER INSTRUMENTE GMBH	146
LEDDARTECH INC.	146
LITTELFUSE INC.	147
LORD MICROSTRAIN SENSING SYSTEMS	148
LTI HOLDING GMBH & CO. KG	148
MAGNA INTERNATIONAL INC.	149
MAXIMA TECHNOLOGIES	149
MEASUREMENT SPECIALTIES INC.	150
MEGGITT SENSING SYSTEMS	152
MELEXIS MICROELECTRONIC SYSTEMS	153
MEMSIC INC.	154
METHODE ELECTRONICS INC.	154
MICROE SYSTEMS INC.	155
MICRONAS SEMICONDUCTOR HOLDING AG	156
MICROSTRAIN INC.	156
MIDORI PRECISIONS CO. LTD.	157
MINDA STONERIDGE INSTRUMENTS LTD.	157
mitsubishi electric corp.	158
MOOG CROSSBOW	159
MOTION SENSORS INC.	159
MTS SYSTEMS CORP.	160
MURATA ELECTRONICS OY	160
MURATA MANUFACTURING CO. LTD.	161
NEXT BIOMETRICS GROUP ASA	162
NGK SPARK PLUG CO. LTD.	162
NIDEC ELESYS AMERICAS CORP.	163
NIPPON ALEPH CORP.	163
NIPPON CERAMIC CO. LTD.	164
NOVA BIOMEDICAL CORP.	164
NOVOTECHNIK U.S. INC.	165
NXP SEMICONDUCTORS	165
OCEAN OPTICS INC.	166
OMRON CORP.	166
OMRON SCIENTIFIC TECHNOLOGIES INC.	167
ONCQUE CORP.	168
OPTEK TECHNOLOGY INC.	169
OPTEX CO. LTD.	169
OSRAM OPTO SEMICONDUCTORS GMBH	170
PANASONIC ELECTRIC WORKS	170
PCB PIEZOTRONICS INC.	171

TOPIC	PAGE NO.
PEPPERL+FUCHS	172
PHILIPS PHOTONICS	172
PIXART IMAGING INC.	173
PIXELPLUS CO. LTD.	173
PLK TECHNOLOGIES CO. LTD.	174
PREH GMBH	174
PROXIMITY CONTROLS	175
QUALTRE INC.	175
RAE SYSTEMS INC.	176
RAYTEK CORP.	176
RDP ELECTROSENSE INC.	177
RFMICRON INC.	177
ROBERT BOSCH GMBH	178
ROSEMOUNT INC.	178
SCHRADER INTERNATIONAL INC.	179
SENSANT CORP.	180
SENSATA TECHNOLOGIES BV	180
SENSEOR SAS	181
SENSIRION AG	181
SENSITEC GMBH	182
SENSOROR TECHNOLOGIES AS	182
SENSOR SCIENTIFIC INC.	183
SHANGHAI NICERA SENSOR CO. LTD.	183
SHANGHAI TM AUTOMATION INSTRUMENTS CO. LTD.	184
SILICON SENSING SYSTEMS LTD.	184
SIEMENS MILLTRONICS PROCESS INSTRUMENT INC.	185
SILICON MICROSTRUCTURES INC.	185
SMITHS DETECTION INC.	186
SSI TECHNOLOGIES INC.	186
STANDEX ELECTRONICS INC.	187
STANDEX-MEDER ELECTRONICS	187
STMICROELECTRONICS	188
STONERIDGE INC.	189
SUMITOMO ELECTRIC INDUSTRIES LTD.	190
TACTUAL LABS CO.	190
TAKATA CORP.	191
TDK-EPC CORP.	192
TE CONNECTIVITY LTD.	192
TEKSCAN INC.	193
TELEDYNE MONITOR LABS INC.	193
TEXAS INSTRUMENTS INC.	194
THERM-O-DISC INC.	194
TOWER SEMICONDUCTOR LTD.	195
TRANSDUCER TECHNIQUES INC.	195
TRW AUTOMOTIVE HOLDINGS CORP.	196
TT ELECTRONICS PLC	196
TURCK INC.	197

<b>TOPIC</b>	<b>PAGE NO.</b>
VALEO SA	197
VARIOHM EUROSSENSOR LTD.	198
VISHAY PRECISION GROUP	198
VISTEON CORP.	199
WABASH TECHNOLOGIES	200
WATLOW ELECTRIC MANUFACTURING CO.	200
XENSOR CORP.	201
CONSUMER AND HOME	201
APIGY INC.	201
APPLE COMPUTER	202
BELKIN INTERNATIONAL	202
CONTROL4 CO.	203
CRESTRON ELECTRONICS CO.	203
ECOBEE	204
GOOGLE	204
ISMARTALARM INC.	205
KWIKSET	205
LG ELECTRONICS INC.	206
NINJA BLOCKS	207
SAMSUNG	207
SAVANT SYSTEMS LLC	208
SIGMA DESIGNS INC.	208
SMARTTHINGS	209
WHIRLPOOL CORP.	209
WEARABLES	210
ADIDAS	210
FITBIT INC.	210
JAWBONE	211
NIKE INC.	212
PEBBLE TECHNOLOGY CORP.	212
SONY CORP.	213
WITHINGS USA	214
ROBOTICS AND GENERAL COMMERCIAL	215
3D ROBOTICS	215
AMAZON ROBOTICS LLC	215
ARDUINO	216
CISCO SYSTEMS INC.	217
DOUBLE ROBOTICS	218
ENLIGHTED INC.	218
GE INTELLIGENT PLATFORMS	219
HONEYWELL PROCESS SOLUTIONS	219
JASPER TECHNOLOGIES INC.	220
ROCKWELL AUTOMATION	221
SCHNEIDER ELECTRIC	221
SELECT COMPANY PROFILES: MEDICAL DEVICES	222
ALIVECOR	222
IHEALTHLABS	222

<b>TOPIC</b>	<b>PAGE NO.</b>
JOHNSON & JOHNSON	223
MEDTRONIC INC.	223
SELECT COMPANY PROFILES: OTHER VERTICAL APPLICATIONS	224
BITPONICS	224
DASH LABS INC.	224
FITBARK INC.	224
FORD RESEARCH AND INNOVATION	225
NOMI	226
PLACEMETER	226
POLAR ELECTRO INC.	227
TELCARE	227
TRIMBLE NAVIGATION LTD.	228

**LIST OF TABLES**

<b>TABLE HEADING</b>	<b>PAGE NO.</b>
SUMMARY TABLE GLOBAL MARKET FOR IOT SENSORS, BY REGION, THROUGH 2021 (\$ BILLIONS)	7
TABLE 1 SENSORS USED IN VARIOUS APPLICATIONS	12
TABLE 2 COMPUTER NETWORK TYPES	15
TABLE 3 POPULAR WIRELESS PROTOCOLS FOR IOT SENSORS	21
TABLE 4 GLOBAL MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)	28
TABLE 5 NORTH AMERICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)	29
TABLE 6 LATIN AMERICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)	30
TABLE 7 EUROPE MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)	31
TABLE 8 MIDDLE EAST AND AFRICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)	33
TABLE 9 ASIA-PACIFIC MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, THROUGH 2021 (\$ BILLIONS)	34
TABLE 10 GLOBAL MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	37
TABLE 11 NORTH AMERICA MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	45
TABLE 12 LATIN AMERICA MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	46
TABLE 13 EUROPE MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	47
TABLE 14 MIDDLE EAST AND AFRICA MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	49
TABLE 15 ASIA-PACIFIC MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	50
TABLE 16 AGRICULTURE AND FARMING MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	53
TABLE 17 AUTOMOTIVE MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	55
TABLE 18 ENVIRONMENTAL IMPACT ASSESSMENT MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	58
TABLE 19 HOME AUTOMATION MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	59
TABLE 20 HEALTHCARE MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	67
TABLE 21 INDUSTRIAL CONTROLS MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	70
TABLE 22 LOGISTICS AND RETAILING MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	75
TABLE 23 SECURITY AND EMERGENCY MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	77
TABLE 24 WATER AND WASTE MANAGEMENT MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	78
TABLE 25 UTILITY METERING MARKET FOR IOT SENSORS, BY TYPE, THROUGH 2021 (\$ BILLIONS)	80

**LIST OF FIGURES**

<b>FIGURE TITLE</b>	<b>PAGE NO.</b>
SUMMARY FIGURE GLOBAL MARKET FOR IOT SENSORS, BY REGION, 2015-2021 (\$ BILLIONS)	7
FIGURE 1 AN IOT SYSTEM AT A GLANCE	10
FIGURE 2 GLOBAL MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)	28
FIGURE 3 NORTH AMERICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)	30
FIGURE 4 LATIN AMERICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)	31
FIGURE 5 EUROPE MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)	32
FIGURE 6 MIDDLE EAST AND AFRICA MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)	33
FIGURE 7 ASIA-PACIFIC MARKET FOR IOT SENSORS, BY APPLICATION SEGMENT, 2015-2021 (\$ BILLIONS)	34
FIGURE 8 GLOBAL MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	37
FIGURE 9 NORTH AMERICA MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	45
FIGURE 10 LATIN AMERICA MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	47
FIGURE 11 EUROPE MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	48
FIGURE 12 MIDDLE EAST AND AFRICA MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	49
FIGURE 13 ASIA-PACIFIC MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	51
FIGURE 14 AGRICULTURE AND FARMING MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	53
FIGURE 15 AUTOMOTIVE MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	55
FIGURE 16 ENVIRONMENTAL IMPACT ASSESSMENT MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	58
FIGURE 17 HOME AUTOMATION MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	59
FIGURE 18 HEALTHCARE MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	67
FIGURE 19 INDUSTRIAL CONTROLS MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	70
FIGURE 20 LOGISTICS AND RETAILING MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	75
FIGURE 21 SECURITY AND EMERGENCY MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	77
FIGURE 22 WATER AND WASTE MANAGEMENT MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	79
FIGURE 23 UTILITY METERING MARKET FOR IOT SENSORS, BY TYPE, 2015-2021 (\$ BILLIONS)	80