

# GROWTH OPPORTUNITIES IN TECHVISION 2018 STRATEGIC INSIGHTS

# GLOBAL GROWTH OPPORTUNITIES

Frost & Sullivan's premier offering, TechVision, identifies and evaluates the most essential, innovative, emerging and disruptive technologies on the market today while providing a variety of technology based alerts, newsletters, syndicated research and growth consulting services. A unique feature of the TechVision program is an annual selection of 50 technologies that can generate convergence scenarios, possibly disrupt the innovation landscape and drive transformational growth.

View a summary of our TechVision program by clicking here.

The following table of contents showcases our recently published and prospective studies.

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# ENERGY & UTILITY TECHNOLOGY

We provide global insights and intelligence on a wide variety of disruptive and emerging technologies ranging from energy storage, advanced batteries, solar and wind energy, to unconventional oil, bioenergy, geothermal energy and energy transmission.

#### **RECENT RESEARCH**

D874	Emerging innovations in India
D80F	Nanotechnology Innovations Transforming Energy Generation and Storage
D868	Next-gen Solar Cells: Innovations and Impact Analysis
D86D	Technologies Enabling Smart Water Grid
D876	Emerging Opportunities for Materials Derived from Crude Oil in a Decarbonized and Circular World
D80E	Emerging Technologies in E-Waste and Battery Recycling
D858	Breakthrough Innovations in Power Semiconductors
D873	Technologies Enabling Low Carbon Economy
D877	Sensors and Advanced Material Technologies Driving Opportunities in Energy Industry
D878	Unblocking the Blockchain: Innovations Revolutionizing the Energy and Industrial Sectors
D86C	Breakthrough Innovations in Energy Storage
D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
D82A	Battery and Power Train Technologies for Electric Vehicles
D85A	Advancements in Marine Propulsion Technologies
D7F9	Innovations in Solid State Battery
D78F	FEW (Food, Energy and Water) Nexus
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D82B	Material Technologies Shaping the Future of Electric Vehicles
D83C	2018 Top Technologies in Energy and Utilities
D81E	ICT Technologies Transfoming the Future of Automotive Sector
D7F4	Technologies Impacting the Future of Tight Oil Extraction
D7FD	Innovations in Structural Electronics
D7FE	Intelligent Sensors for Connected Home Appliances

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# ENERGY & UTILITY TECHNOLOGY

#### **RECENT RESEARCH**

D805	Technologies Enabling Prosumerism in Energy Sector
D7F8	Technologies Impacting the Future of Korea
D7D8	Technologies Impacting the Future of Cybersecurity
D7E2	Alternate Feedstocks And Process Technologies For Conversion Of Gas To Chemicals
D7F5	Innovations in Computer Vision Applications Powered by AI
D7FI	Unraveling The Chinese Innovation Puzzle
D74D	Innovations in Smart Glazing
D7DB	Innovations Impacting Industrial Sensing
D7F3	Technologies Impacting the Future of Smart Cities
D78C	Emerging Opportunities for Self-Healing Materials
D7E0	Technologies Enabling Zero Energy Buildings
D7DA	Advanced Analytics: Disruptive Opportunities
D7E4	R&D Focus Areas for Battery Anode and Cathode
D78D	Advances in Anti Fouling Coatings
D7D5	Rapid Charging Technology Empowering Small-Scale Electronics
D7DC	Power Infrastructure Technologies of the Future
D7DD	Technologies Enabling the Virtual Power Plant
D7D1	Emerging Technologies for Defense
D7D7	Innovations in Smart Sensors
D7BA	Vehicle-to-Everything Technologies for Connected Cars
D7AB	Securing the Power Grid - Innovations in Energy Cybersecurity
D7B8	Post Li-ion Battery R&D Trends
D7B9	Emerging Innovations in Battery Management Systems
D6EB	Future of Thermoelectric Energy Harvesting
D79A	Climate Change Technologies for the Oil & Gas Sector
D7AC	Decentralized Wastewater and Solid Waste Treatment Technologies

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# ENERGY & UTILITY TECHNOLOGY

- Emerging Opportunities for Conductive CNT
- Technologies for Monitoring and Control of NOx in Automobiles
- Distributed Energy: Impact of Blockchain on Energy Trading
- Alternate to Plastics: Emerging Technology Assessment
- Breakthrough Innovations in Radioactive Waste Management
- Technology Convergence Enabling Agriculture 2.0

# **ENVIRONMENT & SUSTAINABLE TECHNOLOGY**

Frost & Sullivan tracks all development and market trends within technology industries that contribute to the protection and sustainability of the environment.

D80F	Nanotechnology Innovations Transforming Energy Generation and Storage
D868	Next-gen Solar Cells: Innovations and Impact Analysis
D86D	Technologies Enabling Smart Water Grid
D876	Emerging Opportunities for Materials Derived from Crude Oil in a Decarbonized and Circular World
D80E	Emerging Technologies in E-Waste and Battery Recycling
D873	Technologies Enabling Low Carbon Economy
D86C	Breakthrough Innovations in Energy Storage
D82A	Battery and Power Train Technologies for Electric Vehicles
D85A	Advancements in Marine Propulsion Technologies
D847	Functional Coatings for Flexible Packaging: Technology Impact Assessment
D7F9	Innovations in Solid State Battery
D78F	FEW (Food, Energy and Water) Nexus
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D83D	2018 Top Technologies in Environment and Sustainability
D7F7	Efficient Hazardous Waste Recycling Technologies for Developing Nations
D7FD	Innovations in Structural Electronics
D7F6	Industrial Waste Water Recovery and Reuse Technologies
D7D2	Emission Control Technologies In Automotive & Transportation
D7EC	Technology Breakthroughs Enabling Low-VOC Coatings
D7FI	Unraveling The Chinese Innovation Puzzle
D74D	Innovations in Smart Glazing
D7E3	Manufacturing Technologies Empowering Automotive Lightweighting
D7F3	Technologies Impacting the Future of Smart Cities
D7E0	Technologies Enabling Zero Energy Buildings
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# **ENVIRONMENT & SUSTAINABLE TECHNOLOGY**

D7EE	Innovations in Wastewater Nutrient Recovery
D78D	Advances in Anti Fouling Coatings
D7CF	Innovations in Urban Farming
D7D7	Innovations in Smart Sensors
D7AE	Air Pollution Control And Mitigation Technologies
D6EB	Future of Thermoelectric Energy Harvesting
D79A	Climate Change Technologies for the Oil & Gas Sector
D7AC	Decentralized Wastewater and Solid Waste Treatment Technologies
D7BE	Water Conservation Technologies In Agriculture
D7C3	Top Technologies in Environment and Sustainability, 2017
D72A	Emerging Technologies Stimulating the Future of Agriculture
D6D0	IoT: R&D Cluster Benchmarking
D77C	Technologies Impacting the Future of the Aerospace and Defense Sector
D70C	Technologies Impacting the Future of the Energy Sector
D70B	Disruptive Technologies Powering New Age Consumer Electronics
D72C	Application Assessment of Carbon Fibers
D73E	Capacitive Deionization - Industry Landscape and Emerging Innovations
D72B	Point Source Carbon Dioxide (CO2) Management
D73D	Innovations in Smart Lighting
D6F4	Climate Change Adaptation in the Residential and Commercial Sectors
D6D2	Atomic Electronics Transforming Consumer Electronics Sector
D6F3	Disaster Response Technologies
D6E4	Capacitive Sensing: Disruptive Opportunities in Key Sectors
D6F9	Key Technologies Impacting the Future of Healthcare Industry
D6FI	Top 10 Technologies Impacting the Future of Automotive Market
D6DF	Emerging Applications of Nanocellulose Technology

# **ENVIRONMENT & SUSTAINABLE TECHNOLOGY**

- Advancements in Wireless Communications and Emerging Applications
- · Distributed Energy: Impact of Blockchain on Energy Trading
- Alternate to Plastics: Emerging Technology Assessment
- Breakthrough Innovations in Radioactive Waste Management
- Technology Convergence Enabling Agriculture 2.0
- · Innovations in Noise Reduction

# CHEMICALS & ADVANCED MATERIALS TECHNOLOGY

Frost & Sullivan's expert analyst track both research and innovation trends within a multitude of industries. Our studies will include data as it pertains to the impact and/or application of chemicals, bio-chemicals, specialty chemicals, plastics, polymers, metals, coatings, thinfilms, surface treatments, composites, alloys, oil & gas, fuel additives and fibers to name a few

D874	Emerging innovations in India
D80F	Nanotechnology Innovations Transforming Energy Generation and Storage
D84F	Emerging Technologies in Printing
D865	Self-healing Coatings: Opportunity Analysis
D876	Emerging Opportunities for Materials Derived from Crude Oil in a Decarbonized and Circular World
D877	Sensors and Advanced Material Technologies Driving Opportunities in Energy Industry
D86C	Breakthrough Innovations in Energy Storage
D845	3D Printing Revolutionizing Medical Device Manufacturing
D848	Breakthrough Innovations in Natural Flavors
D857	Future of Lightweight Metals in the Automotive Sector
D819	Novel Therapies for Rare and Genetic Diseases
D81F	Micro-LED R&D Portfolio Analysis and Roadmapping
D847	Functional Coatings for Flexible Packaging: Technology Impact Assessment
D7F9	Innovations in Solid State Battery
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D849	Technologies Enabling Food Safety
D7EF	Technologies Enabling Nuclear Medicine Imaging
D82B	Material Technologies Shaping the Future of Electric Vehicles
D83B	2018 Top Technologies In Chemicals And Materials
D830	High Performance Polymers in Automotive and Aerospace Sectors
D7F4	Technologies Impacting the Future of Tight Oil Extraction

# CHEMICALS & ADVANCED MATERIALS TECHNOLOGY

Innovations in Transdermal Drug Delivery
Antimicrobial Technologies for Enhanced Consumer Health
Technologies Impacting the Future of Korea
Technologies Impacting the Future of Cybersecurity
Alternate Feedstocks And Process Technologies For Conversion Of Gas To Chemicals
Innovations in Computer Vision Applications Powered by Al
Future of Transistor Technology
Technology Breakthroughs Enabling Low-VOC Coatings
Unraveling The Chinese Innovation Puzzle
Innovations in Smart Glazing
Manufacturing Technologies Empowering Automotive Lightweighting
Technology Roadmapping of Micro-LED Displays
Breakthrough Delivery Technologies For Flavors And Fragrances
Emerging Opportunities for Self-Healing Materials
Emerging Innovations in Adhesive Technologies
Materials Replacing Steel in Oil & Gas Industry
Data Storage Technologies of the Future
Advanced Analytics: Disruptive Opportunities
Technologies Enabling Intelligent Robotics
Materials Innovations Transforming 3D Printing
R&D Focus Areas for Battery Anode and Cathode
Advances in Anti Fouling Coatings
Innovations in Urban Farming
Emerging Technologies for Defense
Innovations in Smart Sensors

# CHEMICALS & ADVANCED MATERIALS TECHNOLOGY

- Emerging Opportunities for Conductive Polymers
- Technology Breakthroughs in Zero-Friction Coatings
- Emerging Opportunities for Conductive CNT
- Micro- and Nano- encapsulation: Technology Impact Analysis
- Technologies for Monitoring and Control of NOx in Automobiles
- Disruptive Innovations Redesigning Orthopedic Devices and Procedures
- Metal 3D Printing Revolutionizing Modern Manufacturing
- · Hybrid Manufacturing: Technology Roadmapping and Opportunities
- Big Area Additive Manufacturing: Technology Adoption Assessment
- Technology Convergence Transforming E-Textiles
- Emerging Opportunities for Quantum Dots
- Alternate to Plastics: Emerging Technology Assessment

# **SENSORS & INSTRUMENTATION TECHNOLOGY**

The need for low power, smaller, lighter sensors with enhanced performance attributes and minimal false alarms is driving innovations within the sensors space.

D874	Emerging innovations in India
D846	Digital Innovations Creating an Immersive Environment for Health Monitoring
D86B	Technology Innovations Enabling Precision Robotic Surgery
D86D	Technologies Enabling Smart Water Grid
D86E	Technology Convergence Enabling Future of Digital Work
D872	Emerging Sensor Technologies Impacting the Marine Sector
D879	Disruptive Opportunities for Intelligent Home Automation in India
D877	Sensors and Advanced Material Technologies Driving Opportunities in Energy Industry
D855	Sensor Innovations Driving Future of Aerospace and Defense
D84C	Disruptive Technologies Transforming Digital Oil Field
D84D	Disruptive Opportunities for Cobots in Manufacturing
D854	Technology Convergence Enabling Homes of the Future
D843	Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement
D84A	Organ-on-a-chip Innovations Fueling Drug Screening Applications
D85A	Advancements in Marine Propulsion Technologies
D81A	Internet of Medical Things Enabling Hospitals of the Future
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D81C	Digital Twin Transforming Manufacturing
D829	Emerging Technologies to Detect Freshness of Produce
D817	Breakthrough Innovations in PoC Diagnostics for Smart Healthcare
D82D	2018 Top Technologies in Sensors & Instrumentation
D81E	ICT Technologies Transfoming the Future of Automotive Sector
D831	Healthcare Innovations in Emerging Economies

# SENSORS & INSTRUMENTATION TECHNOLOGY

D7E5	Sensor Innovations Transforming Industry 4.0
D7FC	Robotic Technologies for Defense
D7FD	Innovations in Structural Electronics
D7FE	Intelligent Sensors for Connected Home Appliances
D7FF	Emerging Sensor Technologies Transforming Medical Diagnostics
D80C	Technology Convergence Enabling Retail Process Automation
D7F8	Technologies Impacting the Future of Korea
D7D8	Technologies Impacting the Future of Cybersecurity
D7FB	Future of Transistor Technology
D7FI	Unraveling The Chinese Innovation Puzzle
D7DB	Innovations Impacting Industrial Sensing
D7E6	Technology Roadmapping of Micro-LED Displays
D7E9	Innovations Empowering Social Robots
D7EB	Future Wearables in Healthcare - R&D Portfolio Areas and Technology Roadmapping
D7F3	Technologies Impacting the Future of Smart Cities
D7E7	Impact of Visible Light Communication (VLC) Technology
D7BD	Al and Big Data Technologies Transforming Financial Services
D7DE	Emerging Innovations in Adhesive Technologies
D7EI	Image Guidance and Navigation Technologies for Robotic Surgery
D7D6	Data Storage Technologies of the Future
D7E8	Advanced Safety Technologies Empowering Mobility
D7ED	Technologies Enabling Intelligent Robotics
D7D4	IIoT Driving Manufacturing Innovations
D7D5	Rapid Charging Technology Empowering Small-Scale Electronics
D7D3	Emerging Robotic Technologies for Marine Applications

# SENSORS & INSTRUMENTATION TECHNOLOGY

- · Advancements in Wireless Communications and Emerging Applications
- Future of Experience: Al is the new UI
- Digitization in Chemical Industry: Technology Impact Assessment
- Internet of Transformation: Advancements in IoT
- Emerging Opportunities for Conductive Polymers
- Technology Breakthroughs in Zero-Friction Coatings
- Technologies for Monitoring and Control of NOx in Automobiles
- Incisionless Surgeries: Envisioning The Future of Surgical Technology
- · Robotic Exoskeletons: Roadmapping and Impact Analysis
- Digitization in the Manufacturing Industry
- Technology Convergence Transforming E-Textiles
- Emerging Opportunities for Quantum Dots
- Automotive Sensors Innovation Impact and Roadmapping
- Breakthrough Sensor Innovations in Food and Beverage Sector
- Technology Convergence Enabling Agriculture 2.0

# INFORMATION AND COMMUNICATION TECHNOLOGY

Frost & Sullivan's global team of industry experts continuously monitor game-changing technology areas such as big data, cloud computing, communication services, mobile & wireless communication space, IT applications & services, network security and unified communications markets.

D874	Emerging innovations in India
D80F	Nanotechnology Innovations Transforming Energy Generation and Storage
D846	Digital Innovations Creating an Immersive Environment for Health Monitoring
D86B	Technology Innovations Enabling Precision Robotic Surgery
D86D	Technologies Enabling Smart Water Grid
D86E	Technology Convergence Enabling Future of Digital Work
D86F	Future of 3Rs: Impact of Visualization Technologies in Manufacturing
D872	Emerging Sensor Technologies Impacting the Marine Sector
D879	Disruptive Opportunities for Intelligent Home Automation in India
D878	Unblocking the Blockchain: Innovations Revolutionizing the Energy and Industrial Sectors
D855	Sensor Innovations Driving Future of Aerospace and Defense
D86C	Breakthrough Innovations in Energy Storage
D84C	Disruptive Technologies Transforming Digital Oil Field
D84D	Disruptive Opportunities for Cobots in Manufacturing
D854	Technology Convergence Enabling Homes of the Future
D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
D8ID	Securing Connected and Autonomous Cars for a Smarter World
D827	Artificial Intelligence: Global Investment Analysis
D82A	Battery and Power Train Technologies for Electric Vehicles
D843	Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement
D84A	Organ-on-a-chip Innovations Fueling Drug Screening Applications
D8IA	Internet of Medical Things Enabling Hospitals of the Future

# INFORMATION AND COMMUNICATION TECHNOLOGY

	D8IC	Digital Twin Transforming Manufacturing
	D829	Emerging Technologies to Detect Freshness of Produce
	D83A	2018 Top Information and Communication Technologies
	D81E	ICT Technologies Transfoming the Future of Automotive Sector
	D831	Healthcare Innovations in Emerging Economies
	D7E5	Sensor Innovations Transforming Industry 4.0
	D7FC	Robotic Technologies for Defense
	D7FE	Intelligent Sensors for Connected Home Appliances
	D80B	Al Innovations in Future of Manufacturing
	D80C	Technology Convergence Enabling Retail Process Automation
	D7F8	Technologies Impacting the Future of Korea
	D7D8	Technologies Impacting the Future of Cybersecurity
	D7F5	Innovations in Computer Vision Applications Powered by AI
	D7FI	Unraveling The Chinese Innovation Puzzle
	D7DB	Innovations Impacting Industrial Sensing
	D7DF	Artificial Intelligence and Advanced Analytics in Healthcare
	D7E9	Innovations Empowering Social Robots
	D7F2	Technologies Impacting the Future of Education
	D7F3	Technologies Impacting the Future of Smart Cities
	D7BD	Al and Big Data Technologies Transforming Financial Services
	D7E7	Impact of Visible Light Communication (VLC) Technology
	D7CE	Technologies Transforming Digital Media and Advertising
	D7D6	Data Storage Technologies of the Future
	D7DA	Advanced Analytics: Disruptive Opportunities
	D7E8	Advanced Safety Technologies Empowering Mobility

# INFORMATION AND COMMUNICATION TECHNOLOGY

- Incisionless Surgeries: Envisioning The Future of Surgical Technology
- Hybrid Manufacturing: Technology Roadmapping and Opportunities
- Robotic Exoskeletons: Roadmapping and Impact Analysis
- Digitization in the Manufacturing Industry
- Artificial Intelligence Revolutionizing the Pharmaceutical Industry
- Technologies Enabling Large Scale Human Genetics in Drug Discovery Applications
- Future of Data Storage: Disruptive Opportunities Driven by Cloud Computing
- Quantum Computing R&D Portfolio Analysis and Roadmapping
- Advancements in Wireless Communications for Transportation
- · Automotive Sensors Innovation Impact and Roadmapping
- Breakthrough Sensor Innovations in Food and Beverage Sector
- Distributed Energy: Impact of Blockchain on Energy Trading
- Technology Convergence Enabling Agriculture 2.0
- Crypto Currency: New Economy for the Future
- Conversational Platforms for Customer Engagement
- Advancements in Wireless Communications and Emerging Applications
- Future of Experience: Al is the new UI
- Digitization in Chemical Industry: Technology Impact Assessment
- Internet of Transformation: Advancements in IoT

# MICROELECTRONICS TECHNOLOGY

Miniaturization, is a movement toward lower power consumption and the need for enhanced features that are driving innovations within the electronics sector.

#### **RECENT RESEARCH**

D874	Emerging innovations in India
D846	Digital Innovations Creating an Immersive Environment for Health Monitoring
D84F	Emerging Technologies in Printing
D86E	Technology Convergence Enabling Future of Digital Work
D86F	Future of 3Rs: Impact of Visualization Technologies in Manufacturing
D858	Breakthrough Innovations in Power Semiconductors
D855	Sensor Innovations Driving Future of Aerospace and Defense
D84D	Disruptive Opportunities for Cobots in Manufacturing
D81F	Micro-LED R&D Portfolio Analysis and Roadmapping
D843	Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement
D84A	Organ-on-a-chip Innovations Fueling Drug Screening Applications
D8IA	Internet of Medical Things Enabling Hospitals of the Future
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D81B	Developments in Photonic Integrated Circuits
D817	Breakthrough Innovations in PoC Diagnostics for Smart Healthcare
D82E	2018 Top Technologies in Microelectronics
D81E	ICT Technologies Transfoming the Future of Automotive Sector
D831	Healthcare Innovations in Emerging Economies
D7E5	Sensor Innovations Transforming Industry 4.0
D7FC	Robotic Technologies for Defense
D7FD	Innovations in Structural Electronics
D7FE	Intelligent Sensors for Connected Home Appliances
D7FF	Emerging Sensor Technologies Transforming Medical Diagnostics
D80C	Technology Convergence Enabling Retail Process Automation

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# MICROELECTRONICS TECHNOLOGY

D7F8	Technologies Impacting the Future of Korea
D7D8	Technologies Impacting the Future of Cybersecurity
D7FB	Future of Transistor Technology
D7FI	Unraveling The Chinese Innovation Puzzle
D7B5	Technologies Enabling Super-resolution Biomedical Imaging
D7DB	Innovations Impacting Industrial Sensing
D7E6	Technology Roadmapping of Micro-LED Displays
D7E9	Innovations Empowering Social Robots
D7EB	Future Wearables in Healthcare - R&D Portfolio Areas and Technology Roadmapping
D7F3	Technologies Impacting the Future of Smart Cities
D78C	Emerging Opportunities for Self-Healing Materials
D7BD	Al and Big Data Technologies Transforming Financial Services
D7DE	Emerging Innovations in Adhesive Technologies
D7EI	Image Guidance and Navigation Technologies for Robotic Surgery
D7E7	Impact of Visible Light Communication (VLC) Technology
D7D6	Data Storage Technologies of the Future
D7E8	Advanced Safety Technologies Empowering Mobility
D7ED	Technologies Enabling Intelligent Robotics
D7D4	IIoT Driving Manufacturing Innovations
D7D5	Rapid Charging Technology Empowering Small-Scale Electronics
D7D3	Emerging Robotic Technologies for Marine Applications
D7D1	Emerging Technologies for Defense
D7D7	Innovations in Smart Sensors
D7BA	Vehicle-to-Everything Technologies for Connected Cars
D7CD	The Emerging Global Marketplace for Intellectual Property (IP)

# MICROELECTRONICS TECHNOLOGY

- Digitization in Chemical Industry: Technology Impact Assessment
- Internet of Transformation: Advancements in IoT
- Emerging Opportunities for Conductive Polymers
- Technology Breakthroughs in Zero-Friction Coatings
- Incisionless Surgeries: Envisioning The Future of Surgical Technology
- Metal 3D Printing Revolutionizing Modern Manufacturing
- Big Area Additive Manufacturing: Technology Adoption Assessment
- · Robotic Exoskeletons: Roadmapping and Impact Analysis
- Future of Data Storage: Disruptive Opportunities Driven by Cloud Computing
- · Quantum Computing R&D Portfolio Analysis and Roadmapping
- Technology Convergence Transforming E-Textiles
- Advancements in Wireless Communications for Transportation
- Emerging Opportunities for Quantum Dots

# HEALTH & WELLNESS TECHNOLOGY

Frost & Sullivan provides an abundance of studies within a multitude of areas including genetic engineering, regenerative medicine, drug discovery and development, nanomedicine, nutrition, cosmetic procedures, pain and disease management and therapies, drug delivery, personalized medicine, and smart healthcare.

#### RECENT RESEARCH

D874	Emerging innovations in India
D85E	Gene Editing and Gene Therapy Breakthroughs Propelling Mainstream Treatments
D845	3D Printing Revolutionizing Medical Device Manufacturing
D848	Breakthrough Innovations in Natural Flavors
D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
D819	Novel Therapies for Rare and Genetic Diseases
D843	Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement
D84A	Organ-on-a-chip Innovations Fueling Drug Screening Applications
D8IA	Internet of Medical Things Enabling Hospitals of the Future
D849	Technologies Enabling Food Safety
D817	Breakthrough Innovations in PoC Diagnostics for Smart Healthcare
D80A	2018 Top Technologies in Health & Wellness
D81E	ICT Technologies Transfoming the Future of Automotive Sector
D831	Healthcare Innovations in Emerging Economies
D7FF	Emerging Sensor Technologies Transforming Medical Diagnostics
D807	Innovations in Transdermal Drug Delivery
D80D	Antimicrobial Technologies for Enhanced Consumer Health
D7D8	Technologies Impacting the Future of Cybersecurity
D7F5	Innovations in Computer Vision Applications Powered by AI
D7FI	Unraveling The Chinese Innovation Puzzle
D7B5	Technologies Enabling Super-resolution Biomedical Imaging
D7DF	Artificial Intelligence and Advanced Analytics in Healthcare
D7EA	Breakthrough Delivery Technologies For Flavors And Fragrances

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# HEALTH & WELLNESS TECHNOLOGY

D7EB	Future Wearables in Healthcare - R&D Portfolio Areas and Technology Roadmapping
D7F3	Technologies Impacting the Future of Smart Cities
D78C	Emerging Opportunities for Self-Healing Materials
D7DA	Advanced Analytics: Disruptive Opportunities
D7ED	Technologies Enabling Intelligent Robotics
D7F0	Materials Innovations Transforming 3D Printing
D7CB	Technologies Driving Precision Medicine
D7B2	Breakthroughs in Leveraging Biomarkers for Oncology
D7D0	Technology Innovations for Patient Engagement
D7D7	Innovations in Smart Sensors
D7BA	Vehicle-to-Everything Technologies for Connected Cars
D7CC	Innovations in Liquid Biopsy Techniques for Cancer Management
D7CD	The Emerging Global Marketplace for Intellectual Property (IP)
D7CA	Technologies Driving Clinical Trial Management
D7D9	Novel Biomaterials for Medical Applications
D7A5	Breakthrough Technologies Enabling Food Safety in Dairy Industry
D7B6	Technology Advancements Shaping Big Data Progress
D7B7	Blockchain Technology Powering Emerging Applications
D7B3	Microbiome Technologies Energizing Pharma and Life Sciences
D7C9	Top Technologies in Health and Wellness, 2017
D7AF	Emerging Woundcare Technologies
D7B0	Internet of Medical Things (IoMT) Revolutionizing Healthcare
D7B4	Therapeutic Breakthroughs in Alzheimer's and Parkinson's Diseases
D78B	Innovations in Big Data Analytics for Healthcare

# HEALTH & WELLNESS TECHNOLOGY

- Advancements in Wireless Communications and Emerging Applications
- Internet of Transformation: Advancements in IoT
- Micro- and Nano- encapsulation: Technology Impact Analysis
- · Digital Pathology: Roadmap to the Future of Medical Diagnosis
- Disruptive Innovations Redesigning Orthopedic Devices and Procedures
- Artificial Intelligence Revolutionizing the Pharmaceutical Industry
- Companion Diagnostics: Biomarker Platforms Enabling Precision Medicine
- Emerging Microbiome Technologies Fueling Skincare Applications
- Technologies Enabling Large Scale Human Genetics in Drug Discovery Applications

# MEDICAL DEVICES AND IMAGING TECHNOLOGY

Frost & Sullivan's research covers cutting-edge global developments within the medical devices and imaging sectors. Industry divisions such as biosensors, biomaterials, biomechanics, microtechnologies, nanotechnologies, assistive technologies, imaging technologies and platforms.

D86B Technology Innovations Enabling Precision Robotic Surgery  D845 3D Printing Revolutionizing Medical Device Manufacturing  D75F Artificial Intelligence- led Disruptions Powering the Future of Media  D843 Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement  D844 Innovations in Pain Management: A Technology Blueprint to Counter Opiod Addiction  D84A Organ-on-a-chip Innovations Fueling Drug Screening Applications  D81A Internet of Medical Things Enabling Hospitals of the Future  D7FA Technology Impact Assessment of Micro Energy Harvesting  D7EF Technologies Enabling Nuclear Medicine Imaging  D817 Breakthrough Innovations in PoC Diagnostics for Smart Healthcare  D821 2018 Top Technologies in Medical Devices & Imaging  D831 Healthcare Innovations in Emerging Economies  D7FF Emerging Sensor Technologies Transforming Medical Diagnostics  D807 Innovations in Transdermal Drug Delivery  D80D Antimicrobial Technologies for Enhanced Consumer Health  D7D8 Technologies Impacting the Future of Cybersecurity  D7FB Future of Transistor Technology  D7F1 Unraveling The Chinese Innovation Puzzle  D7B5 Technologies Enabling Super-resolution Biomedical Imaging	D846	Digital Innovations Creating an Immersive Environment for Health Monitoring
D75F Artificial Intelligence- led Disruptions Powering the Future of Media D843 Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement D844 Innovations in Pain Management: A Technology Blueprint to Counter Opiod Addiction D84A Organ-on-a-chip Innovations Fueling Drug Screening Applications D81A Internet of Medical Things Enabling Hospitals of the Future D7FA Technology Impact Assessment of Micro Energy Harvesting D7EF Technologies Enabling Nuclear Medicine Imaging D817 Breakthrough Innovations in PoC Diagnostics for Smart Healthcare D821 2018 Top Technologies in Medical Devices & Imaging D831 Healthcare Innovations in Emerging Economies D7FF Emerging Sensor Technologies Transforming Medical Diagnostics D807 Innovations in Transdermal Drug Delivery D80D Antimicrobial Technologies for Enhanced Consumer Health D7D8 Technologies Impacting the Future of Cybersecurity D7FB Future of Transistor Technology D7F1 Unraveling The Chinese Innovation Puzzle	D86B	Technology Innovations Enabling Precision Robotic Surgery
Reimagining Healthcare Delivery: Impact of Gamification and Patient Engagement D844 Innovations in Pain Management: A Technology Blueprint to Counter Opiod Addiction D84A Organ-on-a-chip Innovations Fueling Drug Screening Applications D81A Internet of Medical Things Enabling Hospitals of the Future D7FA Technology Impact Assessment of Micro Energy Harvesting D7EF Technologies Enabling Nuclear Medicine Imaging D817 Breakthrough Innovations in PoC Diagnostics for Smart Healthcare D821 2018 Top Technologies in Medical Devices & Imaging D831 Healthcare Innovations in Emerging Economies D7FF Emerging Sensor Technologies Transforming Medical Diagnostics D807 Innovations in Transdermal Drug Delivery D80D Antimicrobial Technologies for Enhanced Consumer Health D7D8 Technologies Impacting the Future of Cybersecurity D7FB Future of Transistor Technology D7F1 Unraveling The Chinese Innovation Puzzle	D845	3D Printing Revolutionizing Medical Device Manufacturing
D844 Innovations in Pain Management: A Technology Blueprint to Counter Opiod Addiction D84A Organ-on-a-chip Innovations Fueling Drug Screening Applications D81A Internet of Medical Things Enabling Hospitals of the Future D7FA Technology Impact Assessment of Micro Energy Harvesting D7EF Technologies Enabling Nuclear Medicine Imaging D817 Breakthrough Innovations in PoC Diagnostics for Smart Healthcare D821 2018 Top Technologies in Medical Devices & Imaging D831 Healthcare Innovations in Emerging Economies D7FF Emerging Sensor Technologies Transforming Medical Diagnostics D807 Innovations in Transdermal Drug Delivery D80D Antimicrobial Technologies for Enhanced Consumer Health D7D8 Technologies Impacting the Future of Cybersecurity D7FB Future of Transistor Technology D7F1 Unraveling The Chinese Innovation Puzzle	D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
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D807 Innovations in Transdermal Drug Delivery D80D Antimicrobial Technologies for Enhanced Consumer Health D7D8 Technologies Impacting the Future of Cybersecurity D7FB Future of Transistor Technology D7FI Unraveling The Chinese Innovation Puzzle	D831	Healthcare Innovations in Emerging Economies
D80D Antimicrobial Technologies for Enhanced Consumer Health D7D8 Technologies Impacting the Future of Cybersecurity D7FB Future of Transistor Technology D7FI Unraveling The Chinese Innovation Puzzle	D7FF	Emerging Sensor Technologies Transforming Medical Diagnostics
D7D8 Technologies Impacting the Future of Cybersecurity D7FB Future of Transistor Technology D7FI Unraveling The Chinese Innovation Puzzle	D807	Innovations in Transdermal Drug Delivery
D7FB Future of Transistor Technology D7FI Unraveling The Chinese Innovation Puzzle	D80D	Antimicrobial Technologies for Enhanced Consumer Health
D7FI Unraveling The Chinese Innovation Puzzle	D7D8	Technologies Impacting the Future of Cybersecurity
	D7FB	Future of Transistor Technology
D7B5 Technologies Enabling Super-resolution Biomedical Imaging	D7FI	Unraveling The Chinese Innovation Puzzle
	D7B5	Technologies Enabling Super-resolution Biomedical Imaging
D7DF Artificial Intelligence and Advanced Analytics in Healthcare	D7DF	Artificial Intelligence and Advanced Analytics in Healthcare
D7E9 Innovations Empowering Social Robots	D7E9	Innovations Empowering Social Robots

# MEDICAL DEVICES AND IMAGING TECHNOLOGY

	D7EB	Future Wearables in Healthcare - R&D Portfolio Areas and Technology Roadmapping
	D78C	Emerging Opportunities for Self-Healing Materials
	D7E1	Image Guidance and Navigation Technologies for Robotic Surgery
	D7D6	Data Storage Technologies of the Future
	D7CB	Technologies Driving Precision Medicine
	D78D	Advances in Anti Fouling Coatings
	D7B2	Breakthroughs in Leveraging Biomarkers for Oncology
	D7D0	Technology Innovations for Patient Engagement
	D7D5	Rapid Charging Technology Empowering Small-Scale Electronics
	D7D7	Innovations in Smart Sensors
	D7BA	Vehicle-to-Everything Technologies for Connected Cars
	D7CC	Innovations in Liquid Biopsy Techniques for Cancer Management
	D7CA	Technologies Driving Clinical Trial Management
	D7D9	Novel Biomaterials for Medical Applications
	D6EB	Future of Thermoelectric Energy Harvesting
	D7B3	Microbiome Technologies Energizing Pharma and Life Sciences
	D7AD	Cyber Security Innovations in the Connected World
	D7C8	Top Technologies in Medical Devices & Imaging, 2017
	D7AF	Emerging Woundcare Technologies
	D7B1	The Future of Bionics
	D7B0	Internet of Medical Things (IoMT) Revolutionizing Healthcare
	D79C	Developments in Screenless Displays
	D7B4	Therapeutic Breakthroughs in Alzheimer's and Parkinson's Diseases
	D7A2	Emerging Robotic Exoskeleton Technologies

# MEDICAL DEVICES AND IMAGING TECHNOLOGY

- Advancements in Wireless Communications and Emerging Applications
- Technology Breakthroughs in Zero-Friction Coatings
- Digital Pathology: Roadmap to the Future of Medical Diagnosis
- Incisionless Surgeries: Envisioning The Future of Surgical Technology
- Disruptive Innovations Redesigning Orthopedic Devices and Procedures
- Robotic Exoskeletons: Roadmapping and Impact Analysis

# ADVANCED MANUFACTURING AND AUTOMATION TECHNOLOGY

The Advanced Manufacturing & Automation (AMA) cluster covers technologies that enable clean, lean and flexible manufacturing and industrial automation.

D874	Emerging innovations in India
D84F	Emerging Technologies in Printing
D86B	Technology Innovations Enabling Precision Robotic Surgery
D86F	Future of 3Rs: Impact of Visualization Technologies in Manufacturing
D879	Disruptive Opportunities for Intelligent Home Automation in India
D878	Unblocking the Blockchain: Innovations Revolutionizing the Energy and Industrial Sectors
D845	3D Printing Revolutionizing Medical Device Manufacturing
D84D	Disruptive Opportunities for Cobots in Manufacturing
D75F	Artificial Intelligence- led Disruptions Powering the Future of Media
D7FA	Technology Impact Assessment of Micro Energy Harvesting
D81C	Digital Twin Transforming Manufacturing
D82C	2018 Top Technologies in Advanced Manufacturing and Automation
D7E5	Sensor Innovations Transforming Industry 4.0
D7FC	Robotic Technologies for Defense
D7FD	Innovations in Structural Electronics
D80B	Al Innovations in Future of Manufacturing
D7D8	Technologies Impacting the Future of Cybersecurity
D7F5	Innovations in Computer Vision Applications Powered by AI
D7F6	Industrial Waste Water Recovery and Reuse Technologies
D7FB	Future of Transistor Technology
D7D2	Emission Control Technologies In Automotive & Transportation
D7EC	Technology Breakthroughs Enabling Low-VOC Coatings
D7FI	Unraveling The Chinese Innovation Puzzle
D74D	Innovations in Smart Glazing

# ADVANCED MANUFACTURING AND AUTOMATION TECHNOLOGY

D7DB	Innovations Impacting Industrial Sensing
D7E3	Manufacturing Technologies Empowering Automotive Lightweighting
D7F3	Technologies Impacting the Future of Smart Cities
D7DE	Emerging Innovations in Adhesive Technologies
D7D6	Data Storage Technologies of the Future
D7DA	Advanced Analytics: Disruptive Opportunities
D7E8	Advanced Safety Technologies Empowering Mobility
D7ED	Technologies Enabling Intelligent Robotics
D7F0	Materials Innovations Transforming 3D Printing
D7D4	IIoT Driving Manufacturing Innovations
D7DC	Power Infrastructure Technologies of the Future
D7D3	Emerging Robotic Technologies for Marine Applications
D7D1	Emerging Technologies for Defense
D7D7	Innovations in Smart Sensors
D7BA	Vehicle-to-Everything Technologies for Connected Cars
D7BC	Disruptive Manufacturing Technologies for Consumer Goods
D6EB	Future of Thermoelectric Energy Harvesting
D7A7	Wearable Technologies for Industrial Applications
D7B6	Technology Advancements Shaping Big Data Progress
D7AD	Cyber Security Innovations in the Connected World
D7C0	Top Technologies in Advanced Manufacturing and Automation, 2017
D7AF	Emerging Woundcare Technologies
D7B1	The Future of Bionics
D7BE	Water Conservation Technologies In Agriculture
D79E	Manufacturing Innovations for Flexible Electronics

# ADVANCED MANUFACTURING AND AUTOMATION TECHNOLOGY

- Metal 3D Printing Revolutionizing Modern Manufacturing
- Hybrid Manufacturing: Technology Roadmapping and Opportunities
- Big Area Additive Manufacturing: Technology Adoption Assessment
- Robotic Exoskeletons: Roadmapping and Impact Analysis
- Digitization in the Manufacturing Industry

# GLOBAL GROWTH OPPORTUNITIES

Frost & Sullivan, the Growth Partnership Company, works in collaboration with clients to leverage visionary innovation that addresses the global challenges and related growth opportunities that will make or break today's market participants. For more than 50 years, we have been developing growth strategies for the Global 1000, emerging businesses, the public sector and the investment community. Is your organization prepared for the next profound wave of industry convergence, disruptive technologies, increasing competitive intensity, Mega Trends, breakthrough best practices, changing customer dynamics and emerging economies?

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