5G & MOBILE NETWORK INFRASTRUCTURE

0.98 Zettabyte
mobile data during 2023

352M
5G subscribers during end-2023

$6.3B USD
CAPEX spent on 5G eMBB cellular deployments during 2023

$35B USD
5G eMBB mobile service provider revenues during 2023

ABI Research's 5G and Mobile Network Infrastructure market intelligence delivers end-to-end coverage on access networks and enabling technologies, as well as the data traffic flowing across these networks. Our extensive coverage, which includes data, trend, and forecast reports, focuses on cellular network components ranging from antennas, base stations, and access points to front-haul and back-haul. We aim to provide technology implementers with authoritative insight into the innovative technology deployments for indoor and outdoor networks operating under both licensed and unlicensed spectrums, including 4G, 5G, massive MIMO, distributed antenna systems, carrier aggregation, new waveforms, and modulation schemes. Our research coverage also addresses the migration to software-driven, virtualized and open network architectures.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- When and how will 5G be deployed? Will it create new business opportunities, or will it offer higher speeds?
- What does 4G still have to offer? Will Gigabit LTE change this?
- When will mobile service providers spend more CAPEX on 5G vs 4G?
- Which world region will lead 5G deployments, and why?
- How can vendors sell carrier grade equipment to verticals directly? What are immediate opportunities?
- How will next-generation networks scale to accommodate new use cases?
- How will the heterogeneous nature of tomorrow's telco networks affect my business operations?
- What parts of existing networks can support 5G, and what needs to be upgraded?
- What will fixed wireless access deployments look like, and what are their business cases?
- What barriers face 5G indoor deployments, including alternatives of Wi-Fi and WiGig?
- How can telcos survive by building capacity with inexpensive small cells and distributed antenna systems (DAS)?
- How can my company best leverage 5G for competitive advantages?
- What is the best way to wirelessly connect my company's enterprise locations?
- What opportunities should I target beyond the traditional mobile operator circle?
- What does 5G bring for IoT that NB-IoT and CAT-M cannot?

COVERAGE AREAS

- Mobile telecom trackers with 4G and 5G focus
- Outdoor and indoor networks including macrocells and small cells
- Advanced RAN technologies such as massive MIMO, virtual RAN slicing, multi-connectivity
- 5G issues including economic, substitutes, regulatory, new business models
- In-building systems including DAS (Distributed Antenna Systems)
- RF power semiconductors for pulsed applications
- Detailed spectrum analysis for 5G networks, sub-6G to mmWave, including regional disparities

KEYWORDS

- Mobile network infrastructure
- 5G
- 4G
- LTE
- Mobile telecom
- Data traffic
- Indoor networks
- Outdoor networks
- IoT networks
- Spectrum analysis
- Sub-6G
- mmWave
- cmWave
- Multi-connectivity solutions
- In-building systems
- Advanced RAN technologies
- MIMO
- Beamforming
- 256QAM
- TDD and FDD duplexes
- Fronthaul/backhaul
- SDN (software-defined networking)
- Latency
- Bandwidth
- Connection density
- eMBB
- URLLC
- mMTC

Industrial Solution

ABIresearch for visionaries

18 Transformative Technologies to Digitize Operations and Create Better Quality Products at Lower Costs

The Challenges

There are major challenges facing today's industrial market. It can no longer scale manufacturing operations using the same methods by simply adding more workforce, more shifts, expanding factory floors or dropping prices. Why? Because of global competition, lack of energy, an insufficient labor pool, a convoluted supply chain and global sourcing environment, as well as high amounts of customization put pressure on tooling and reconfiguration. Furthermore, batch runs are getting smaller, thereby manufacturers are getting less lift out of every order.

There are dire consequences if the same traditional methods are used: companywide layoffs across all levels as well as lack of innovation and relevancy. Furthermore, new manufacturing opportunities will be available to small-to-medium shops in the future. At the present, they are generally specialized or focused on finishing. In the future, technologies, such as low-cost robotics and data platforms, will give these small shops the opportunity to compete for more complex manufacturing jobs.

To overcome these challenges, manufacturers need to first understand the technologies, invest in them as a key transformation agent and then digitize their operations to become more efficient and remain competitive 10-15 years from now.

The Solution

ABI Research's Industrial Solution encompasses 18 modules that are composed of the most compelling transformative technologies. Our solution's main goal is to help companies digitize their operations, thus enabling them to become profitable by creating better quality products at lower costs, resulting in better margins and better competitive positioning.

All the modules will be released during the next 18 months from January 2019 to June 2020, and each module will include four main Research Deliverables that are released methodically throughout a three-month period, providing quantitative and qualitative reports so you have a clear strategic direction:

1. **Research Analysis reports:** Provide a thematic understanding of the market and a solid grounding within a specific technological development; available as Application Analysis and Technology Analysis reports.
2. **Market Data spreadsheets:** Deep quantitative research focusing on what market sizes look like to provide legitimate spin around perspectives and ammunition to make a meaningful difference to business models.
3. **Competitive Assessment reports:** Rate individual manufacturers' performances against their competitors and help answer strategic partnership questions: Whom should my company partner with? Whom should we be aware of? Whom should we avoid?
4. **Total Lifetime Value Calculator spreadsheets:** Allow companies to personalize their own perspectives and make business cases that are bounded in a project that is relevant to what they are specifically accomplishing. They also provide a long-tail investment model because technologies are continuously being built on top of one another, creating value across tens of years — it's not just about efficiency in short term.

Example: Implementing a smart manufacturing platform to eliminate machine downtime, then adding a visualization and simulation package to optimize real-time processes and simulation to optimize real-time processes and to bring more machines online by retooling them quickly.

Also included in the solution:

- ***Executive Foresights:*** One- to two-page executive summaries driven mostly by recent, noteworthy news events and often include technology forecasts
- ***Analyst Inquiry:*** 30-minute phone calls with an analyst to address market dynamics, forecasts and competitive landscapes

18 Modules Composed Of The Most Compelling Transformative Technologies Include:

- 5G for Industrial Applications
- Additive Manufacturing in Industrial Applications
- Artificial Intelligence in Industrial Applications
- Augmented Reality in Industrial Applications
- Autonomous Material Handling in Industrial Applications
- Blockchain in Industrial Applications
- Bluetooth and Wi-Fi for Industrial Applications
- Collaborative Robots in Industrial Applications
- Data Management in Industrial Applications
- The Future of Reductive Manufacturing and Casting
- Generative Design in Industrial Applications
- Industrial IoT
- LPWA in Industrial Applications
- Machine Vision in Industrial Applications
- Next Generation Metrology and Inspection in Industrial Applications
- Next Generation Positioning & Location for Industrial Applications
- Smart Manufacturing Platforms
- Virtualization, Visualization and Simulation in Industrial Applications

4B
AI / ML enabled consumer devices globally by 2022

28%
of AI capable devices will rely on edge AI engines by 2022

AI technologies are moving fast into new areas, including machine learning, deep learning and augmented intelligence. Developments in these areas are opening new opportunities across different market sectors and use cases. ABI Research's AI and Machine Learning (ML) market intelligence service assesses the market opportunity created by AI related technology, while at the same time providing thought leadership for the industry. Our extensive coverage of these areas includes data, trends, forecast, benchmark and analysis reports, that asses the key technical and business factors that are essential for shaping AI and ML market activity and business models — including ML as a service, technology and platform as a service, software licensing, edge AI hardware and applications. We aim to provide technology implementers with visionary and authoritative insight into the various AI and ML applications and use cases they should leverage to best streamline industrial and business processes as AI technology becomes accessible. Our approach to market coverage is use-case centric as it looks at technology implementation for each use case studied. Aside from verticals that have existing AI implementation, such as consumer electronics and robotics, we also track AI and ML deployment in retail, manufacturing, energy, automotive, public safety and telecommunications. Special attention is dedicated to AI edge solutions.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

Technology Suppliers

- How are the different ML hardware and algorithms are mapped against requirements of the different use cases addressed?
- What are the key verticals that will drive AI and ML applications?
- Should I create my own AI frameworks and solutions or should I adopt existing open frameworks?
- Who are competitors I should watch and who are those I should partner with?
- What emerging verticals should my organization target? How big is the revenue opportunity?
- What major challenges will the industry face when managing a myriad of data generated by billions of connected devices?
- Who are the companies and organizations my company should partner with to create adequate solutions for the verticals are targeting?
- Where does my company fit in the AI/ML competitive landscape?
- How can my organization productize open source code? How can we stream value from it?
- What are the most successful open-source communities and frameworks for my company to rely on?
- Do I have any benefit from contributing and using open source and what are the risks?
- What are the most invested in AI R&D projects and frameworks?
- What impact will the move from cloud-based to edge based have on the market dynamics and supplier positioning?

Implementers

- How can I implement AI in my current business activities?
- How will AI create new market opportunities in my sector?
- What is the realistic time to maturity of different AI components?
- What is the best approach for integrating AI into my company's ecosystem?
- What criteria should I consider when choosing an AI partner?
- What advanced analytics techniques should my company consider adopting?
- What are the main types of algorithms used in ML today and how this is going to evolve in the future?
- How can my company utilize AI to simplify our business and operation processes?
- What is the difference between predictive and prescriptive analytics, and what is the best course of action for my company to take to effectively keep tabs on all our generated data?
- What can my company discern from our generated data through advanced analytics?
- Are there any security concerns my company should be made aware of when relying on advanced analytics?
- How can my company protect our data and our customers' data?
- What is the value of edge computing versus cloud computing?
- Should I be using an open-source AI framework to develop models, and which one would suit my needs?

COVERAGE AREAS

- Machine learning
- Artificial intelligence
- Augmented Intelligence
- Deep Learning
- Data analytics
- Predictive analytics
- Prescriptive analytics
- Algorithms and hardware technologies segmentation
- Analysis of AI Tools and SDKs
- AI and ML hot technology innovators
- Edge AI and ML
- Market segmentation and taxonomy of AI and ML use cases and applications
- Different implementation approaches of AI and ML
- AI and ML business models
- AI and ML use cases in the telecoms industry
- AI and ML use cases in the manufacturing industry
- AI and ML use cases in the consumer market
- AI and ML use cases in the IoT market
- The role of open source in shaping new applications and business models
- Emerging trends in speech and image recognition, machine vision, natural language processing, touch/haptics, Generative and Creative Adversarial Networks, automated reasoning and security applications
- Analysis of edge AI versus cloud AI

KEYWORDS

- Machine learning
- Artificial Intelligence
- Assisted Intelligence
- Augmented Intelligence
- Autonomous Intelligence
- Automated Reasoning
- Inference
- Training
- Convolutional Neural Networks (CNNs)
- Recurrent Neural Networks (RNN)
- Generative Adversarial Network (GAN)
- Creative Adversarial Network (CAN)
- Meta-learning
- Self-learning
- Deep Learning
- Collective Intelligence
- Ambient Intelligence
- Natural Language Processing (NLP)
- Data training
- Supervised learning
- Unsupervised learning
- Rule-based learning
- Edge Artificial Intelligence
- Cloud based Artificial Intelligence
- Distributed Artificial Intelligence
- Data Analytics
- Advanced analytics
- Predictive analytics
- Prescriptive analytics
- Preventive analytics
- Platform as a service
- Technology as a service
- Solution as a Service
- Software licensing
- AI Algorithms
- AI and ML processors
- Parallel processing
- Neural processing
- Cognitive computing
- Open source
- Crowdsourcing
- Speech recognition
- Machine vision
- Voice recognition
- Virtual Digital Assistant
- Vector-based data processing
- Haptics/Touch recognition
- Intelligent User Interfaces
- Automation
- Robotics
- Digital Transformation
- FPGA
- NPU
- ASICs
- GPU
- CPU
- DPU
- DSP
- AI Graphs

29M
Augmented and Mixed Reality device shipments by 2023

$120B USD
total AR market value by 2023

75M
Virtual Reality HMD shipments by 2023

The Augmented and Virtual Reality (AR/VR) service covers enterprise and consumer applications, services, hardware, and platforms relating to digital visualization. It focuses on technologies and use cases that provide value through data visualization and immersive experiences. It quantifies market opportunities across the value chain for both AR and VR, head-worn and handheld form factors, while identifying enabling technologies within and across markets such as smart industry, edge compute, machine learning, and 5G. The service supports quantitative data with qualitative analysis and insight, and special attention is paid to forward-looking use cases and technologies, realistic value to users, and return on investment for customers.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- What are the basic principles of Augmented and Mixed Reality?
- What are the primary differences between VR HMD device types?
- What are the primary differences between mobile device AR and head-worn AR?
- What is the current state of the AR and VR markets?
- What kind of ROI is associated with AR and VR?
- What impact will AR/MR have on my industry over the next 5 years?
- What does the future AR and VR rollout timeline look like?
- What will the effects be of mobile AR SDKs, like Apple ARKit and Google ARCore?
- How are my competitors integrating AR and VR into their business models?
- What are the potential AR/VR regulations to watch for?
- What does a mobile device to head-worn AR shift look like in terms of time, investment, and usage?
- What security risks are unique to AR/VR?
- What does the competitive landscape look like for specific verticals and use cases?
- How will AR and VR transform enterprise training?
- What are the expectations for tethered, mobile, and standalone VR devices?
- Which companies represent promising acquisition or partnership targets?
- What associated markets should my company be monitoring and investing in?
- How do smart glasses devices differ? What are the strengths/weaknesses?
- What does the end-to-end AR and VR value chain look like?
- How does the connectivity landscape with 5G and LPWA impact the AR/VR market?

COVERAGE AREAS

- Hardware and software value chain development
- Mobile Device AR/MR
- AR monocular versus binocular devices
- Tethered, standalone, and mobile VR Head-mounted displays (HMDs)
- Applications, Use Cases, and Verticals
- Connectivity
- Sensors and processing
- Device shipments by device type, region, and vertical
- Software types, development, and distribution
- Device usage support platforms
- Systems integration
- Return on investment
- Cloud AR/VR
- Edge Streaming

KEYWORDS

- Mixed Reality
- Head-mounted display (HMD)
- Monocular smart glasses
- Binocular smart glasses
- Tethered
- Standalone
- Mobile
- ARKit
- ARCore
- Sensor arrays
- Inside-out tracking
- M2D interaction
- Machine vision
- SLAM processing
- Voice input
- Sensor fusion
- Waveguide displays
- Gaze tracking
- Gesture input
- Six degrees of freedom
- Edge Computing
- ROI
- Field maintenance
- Step-by-step instruction
- Data visualization
- Remote Expertise
- Training
- Scaling implementations

ABIresearch for visionaries

BLOCKCHAIN & DISTRIBUTED LEDGER TECHNOLOGIES

$1.5B
VC investment

$3.3B USD
raised for non-financial services related Initial Coin Offerings

3,000
blockchain startups

Blockchain is a foundational technology that has the potential to disrupt and transform existing business models by significantly altering the underlying digital infrastructure and rules of engagement. The Blockchain & Distributed Ledger Technologies (DLT) service looks at blockchain applications and other DLT beyond digital currencies and financial services. The aim is to focus on the use of DLT in areas such as supply chain and manufacturing; smart spaces (factories, utilities and cities); identity, privacy and security; governance structures; analytics and data management; database and network services; healthcare; and transportation.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- What is blockchain?
- What is the difference between blockchain and cryptocurrencies?
- Why all the hype about blockchain?
- How are blockchain and distributed ledger technologies related?
- What are the privacy and security implications of blockchain?
- Is blockchain vulnerable and what are the barriers to adoption?
- Is blockchain a foundational or disruptive technology?
- What is the opportunity for blockchain-as-a-service?
- How can blockchain be used in Industry 4.0 advancement and smart factories?
- Can blockchain enable better industrial manufacturing and supply chain logistics?
- How can blockchain streamline identity and ownership?
- Is there a role for blockchain in the healthcare industry?
- What is the potential of smart contracts for corporate governance?
- Is blockchain a viable technology for energy management and distribution?
- How can blockchain be leveraged in smart spaces such as cities and buildings?

COVERAGE AREAS

- Industry 4.0
- Supply chain and manufacturing
- Smart spaces (including factories, utilities and cities)
- Identity, privacy, and security
- Governance structures
- Decentralized autonomous organizations
- Analytics and data management
- Database and network services
- Healthcare
- Transportation

KEYWORDS

- Blockchain
- Distributed ledger technologies
- Decentralization
- Cryptography
- Hashing
- Digital signatures
- Consensus
- Immutability
- Transparency
- Autonomy
- Machine learning
- Trustless trust
- Permissioned
- Public
- Cryptocurrency
- Smart contracts
- Governance structures
- Data storage
- Database & network services
- Infrastructure
- As-a-service
- Identification
- Ownership
- Management
- IoT
- Industry 4.0
- Supply chain
- Logistics
- Retail
- Energy
- Healthcare
- Transportation
- Smart spaces

$4B USD
EMV payment cards to ship in 2022

4B
global embedded security shipments by 2021

ABI Research's Digital Security market intelligence offers end-to-end market coverage from information and communication technologies to operational control processes. Our research focuses on: Chip to Cloud – from an end to end perspective, Trusted Hardware – smart card and secure IC Cybersecurity and Critical Infrastructure Protection Biometric Technologies. This includes data, trend, and forecast reports, examines leading-edge security technologies that mitigate complex risks including hardware, packaging, devices, appliances, software, platforms, networks, and services. We aim to provide organizations within the finance, government, defense, healthcare, energy, transport, and telecommunications industries with the information necessary to help them anticipate, preemptively prepare for, and proactively combat the growing proliferation of cyber threats.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- How will AI and Automation affect the future of Digital Security?
- How is security applied across the value chain?
- What is the opportunity for embedded IoT security?
- Which end markets and regions present the best future volume and revenue opportunity within the smart card and secure IC market?
- How will the future vendor landscape evolve within the smart card and secure IC market?
- How can vendors differentiate in a well-established smart card market?
- What is the best strategy to pivot security revenues from hardware to reoccurring software, platforms and services?
- How can existing technologies be repurposed and remarketed for the IoT?
- When will the eSIM proliferate into the handset market?
- How will the eSIM impact the traditional SIM card market?
- What will be the next transformative technologies and business models which will revolutionize the hardware security market?

COVERAGE AREAS

- Discovering the true potential of AI in cybersecurity
- Investigating digital security automation
- Examining Smart Home security
- IoT embedded secure ICs
- Government ID credentials
- Payment cards
- Mobile & wearable payments
- Blockchain Technologies
- Quantum Safe Cryptography

KEYWORDS

- Critical infrastructure
- Security orchestration
- Machine learning
- DLP
- Shadow IT
- MFA
- Post Quantum Cryptography
- Quantum Key Distribution
- Secure ICs
- TPM
- TEE
- Embedded security
- Identity
- IoT Security
- Digitization
- Payment Cards
- EMV
- POS

$23.6B USD
revenues in Robotics-as-a-Service worldwide by 2025

$5.6B USD
revenues in global collaborative robotics hardware shipments by 2025

3.1 Million
annual shipments of autonomous mobile robots to grow from 14,000 in 2018 to 3.1 million in 2027

The robotic technologies service covers industrial, collaborative, commercial robots, exoskeletons, and unmanned systems. It focuses on technologies that interact and augment human workforce in line with ongoing industrial transformation. Special focus is dedicated to innovation spanning the entire technology supply chain from discrete advances in mechatronics, sensors, processing, and robotic software to the long-term impact of strategic technologies like machine learning, machine vision, 5G, AR/VR, edge computing, and distributed computing. The service assesses key market transformations and maps spheres of influence within the value chain. It quantifies market opportunities of robotics and enabling technologies across various end-markets and use-cases.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- How can my company increase profitability and become more competitive through robotics automation?
- Which companies in the robotics intelligence space should my company consider acquiring or making investments in?
- What are the disruptive and emerging robotics technologies my company should be aware of?
- What are the innovative, new robotics solutions for SMB manufacturing, and how can they transform my business operations?
- How can mobile robots benefit enterprise?
- What is the competitive landscape of the robotics industry?
- What are the 5G use cases in robotics?
- How can we use robotics technologies to develop new products and services, enhance existing products and services, and enter new markets?
- How can my company increase its levels of high-value manufacturing with robotics?
- How can my regional economic development group develop a robotics innovation economy?

COVERAGE AREAS

- Industrial, collaborative, and commercial robotics market sizing, trends, and forecasts
- Small unmanned aerial systems (drones) market sizing, trends, and forecasts
- Robotics innovation for manufacturing, heavy industry, logistics, agriculture and B2B markets
- Robotics investments and acquisitions
- Cloud and Edge Computing for robotics
- Robotics enabled by strategic technologies (AI, Machine Learning, AR, VR etc.)
- Robot operating systems (ROS), open source robotics and proprietary OS providers
- Exoskeletons
- Communications, IoT, asset tracking, localization and navigation
- Sensors, computing architectures, end-effectors and motors

KEYWORDS

- Robotics
- Automation
- Industrial robots
- Collaborative robots
- Service robots
- Mobile robots
- Soft robotics
- Agile robotics
- Exoskeletons
- Manipulators and end-effectors
- Cloud robotics
- Drones
- Machine learning
- Deep learning
- Unmanned aerial vehicle
- Unmanned aerial systems (UAS)
- Industry 4.0
- Industrial IoT
- Sensors
- Robotics-as-a-Service (RaaS)
- Intelligent systems
- Autonomy
- Actuators
- Manufacturing
- Sensors
- Drives
- Motors
- Autonomous Mobile Robots (AMRs)
- Automated Guided Vehicles (AGVs)
- Simultaneous Localization & Mapping (SLAM)

475M
cellular M2M module shipments in 2021

4B
IoT devices to rely on LPWAN technologies by 2025

64M
IoT gateway shipments in 2021

$30B USD
of global revenues from integration, storage, analysis, and presentation of IoT data by 2021

ABI Research's M2M, IoT & IoE market intelligence provides a 360-degree view of the IoT value chain across devices, connectivity, and services. Our extensive research, which includes data, trend, and forecast reports, uncovers emerging trends and predictions for market growth across connections (fixed, satellite, cellular, short-range wireless), connection management, IoT platforms, data and analytics, security, and professional services. We explore go-to-market strategies and leading business models expected to transform IoT product and service consumptions, as well as internal organizational structures and partner relationships, to help technology implementers best navigate the connected world.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- How can we improve our go-to-market plan for our IoE initiatives?
- What is the end-to-end value chain view of the connections and revenues generated by suppliers in the IoT value chain?
- Where does my company fit on the IoT value chain?
- How can my company better bridge the OT/IT divide with our IoT solutions?
- How does my company utilize big data and analytics services? Where is there room for improvement?
- Do my company's current and upcoming products fit into the IoE ecosystem?
- Should my company be engaging in an IoT partner program?
- What companies should we consider acquiring with superior or complementary IoE technologies?
- Which companies would offer my organization the best benefits in an IoT partner program?
- Benchmarking: Where do I sit relative to other competitors in my application segment, industry vertical or service market?
- Partnerships: Who are the IoT leaders in each value chain segment; who are IoT leaders in each vertical market?
- Should my company use an IoT platform to build applications, or should my company DIY the applications by leveraging our local system integrators (SIs) and value-added-resellers (VARs)?
- What are the key differentiators for suppliers offering IoT analytics services?
- What organizational challenges should my company expect when switching from a product-led to a service-led model?
- What IoT application segments should my company target?
- How should my organization assess IoT opportunities? How can we build an IoT strategy aligning internal resources, suppliers, and customers?
- Should my company use cellular or LoRA wireless connectivity, or should we wait until 5G instead?

COVERAGE AREAS

- IoT Market Tracker
- IoT gateways
- IoT ecosystem
- IoT data services
- IoT data governance
- IoT marketplaces
- IoT cellular module vendors
- Big data and IoT analytics
- Cloud services
- Industrial Internet
- IoT SIs, VARs and partner programs
- IoT partner programs
- Sensor network platforms and services
- M2M
- Edge analytics
- IoT application markets
- IoT business models and best practices

KEYWORDS

- IoT
- IoT gateways
- IoT ecosystem
- IoT data services
- IoE
- Industrial Internet
- M2M
- Cellular module
- Partner program
- Thing identity
- IoT Platforms
- Sensor networks
- Big data
- IoT analytics
- Cloud services
- IoT data ingestion
- IoT data streaming
- IoT integration
- IoT visualization
- Edge analytics
- Predictive analytics
- Prescriptive analytics
- SI/VAR
- Mobile operators
- Enterprise software vendors
- Enterprise service vendors
- Application enablement services
- Internet of digital
- Predictive maintenance
- Operational awareness
- Contextual awareness

$1.4T USD
global smart cities technology market value in 2019

180M
global installed base of smart water meters by 2022

$580B USD
global cost saving opportunity for smart city governments

148M
smart street lights globally by 2026

ABI Research's Smart Cities & Smart Spaces market intelligence examines the applications, services, and opportunities in the smart city arena, including street lighting, trash collection, utilities, cooperative mobility, and intelligent transportation. Our extensive coverage, which includes data, trend, and forecast reports, focuses on key smart city enabling technologies and paradigms such as big data and analytics, open platforms, citizen participation, and community crowdsourcing. We aim to offer telecom service providers, networking solution providers, and IT solutions providers with authoritative insight to help fuel their future funding and deployment strategies.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- What are the benefits of smart city technologies?
- What opportunities does my company have to enable smart city implementations?
- Can you help my company define the new and emerging smart city IT/OT architectures and closed loop system approaches?
- What role will artificial intelligence play in smart cities of the future?
- Is there a use case for cross smart city cooperation?
- What are the next-generation smart city community services that should be on my company's radar?
- Can you help my company define our acquisition opportunities within the smart city segment?
- Which technologies, verticals, and uses cases yield the fastest ROI? How can smart city fragmentation be addressed?
- What is the best way to implement sharing practices between cities?
- Which regions and countries have the most smart city projects? Which attract the most funding?
- Which connectivity standards offer the most potential to a smart city?

COVERAGE AREAS

- Smart city funding, financing, deployment strategies, and business models
- Smart city market data, industry sizing, and surveys
- Smart city IT/OT architectures and closed loop system approaches
- Smart cities and the sharing economy
- Smart city tech startups
- Smart cities and IoT
- Smart City as a Service
- Smart cities and cybersecurity
- Smart cities and big data
- The case for cross smart city cooperation
- Smart city citizen participation and community crowdsourcing
- The role of smart cities in a virtualizing environment
- The use of artificial intelligence (AI) in smart cities
- Smart energy and management
- Multimodal electric urban transportation
- Next-generation smart city community services

KEYWORDS

- Intelligent transportation
- Smart city parking
- Waste management
- Smart parking
- Smart street lighting
- Metering solutions
- Video surveillance
- Smart cities
- Smart communities
- LTE
- Trash collection
- Smart city funding
- Cooperative mobility
- Smart utilities
- Citizen participation
- Community crowdsourcing
- Smart city as a service
- IoT
- Smart city governance
- Emergency response systems
- Urbanization and mega cities
- Multimodal transportation
- Data crowdsourcing

ABIresearch for visionaries | SMART HOME

617M
smart home device shipments in 2021

29M
smart appliance shipments in 2021

130M
smart home gateways in 2021

1M
homes with DC microgrids in 2021

ABI Research's Smart Home market intelligence dives deep into the range of new hardware, services, and platforms infiltrating the consumer IoT space. Our extensive research, which includes data, trend, and forecast reports, examines how next-generation homes influence, and are impacted by, adjacent sectors, including energy, automotive, mobile and OTT services, robotics, and healthcare. We inherently look at friction points and the drivers in a competitive market to provide technology implementers with authoritative insight to help them navigate through the insurance, consumer convenience, infotainment, well-being, sustainability, energy efficiency, and housing challenges of today's smart homes.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- What challenges and opportunities will mobile integration present in the smart home?
- How can my company best equip our new products to seamlessly integrate with our clients' existing smart home devices?
- What are the availability, value, and access restrictions of smart home data?
- Which wireless technologies should my company consider implementing in its devices?
- What types of devices need connectivity? What level of connectivity?
- What kinds of partnerships need to be established to effectively integrated connected devices into a wider smart home system?
- What kinds of partnerships need to be established to bring connectivity into my company's existing devices?
- What are the smart home revenue opportunities for my company?
- What friction points exist in the smart home industry?
- What cybersecurity risks does a connected smart home pose?
- What are the core revenue streams in the smart home market?
- How do existing home service providers adapt, integrate, and benefit from smart home development?
- What are the regional disparities in incentives and infrastructure for smart home development?
- What are the long-term revenue drivers for the smart home?

COVERAGE AREAS

- Smart home device shipments and forecasts
- Market segmentation and system shipments by installer, managed, and DIY smart home market
- The battle for smart home RF connectivity and data integration through ZigBee, Bluetooth, Z-Wave, Wi-Fi, Thread, OCF, AllSeen, HomeKit, Thread, and others
- Smart home and mobile integration
- Smart home and the smart car
- Integrating smart home and entertainment services
- Smart home healthcare integration
- Smart home connectivity and management
- Smart homes and the sharing economy
- Smart homes and smart cities
- Smart homes and zero emission housing
- Retailer strategies for smart homes and services
- Big data and analytics in the smart home
- Installer strategies for smart homes and services
- Next-generation services, including energy management
- Smart home network security

KEYWORDS

- Smart home
- Home automation
- Wireless connectivity
- Wi-Fi
- Bluetooth
- Thread
- ZigBee
- Z-Wave
- Platform management
- Healthcare
- Energy management
- Sensors
- Voice control
- Speech recognition
- Mesh networking
- Cloud versus in-home integration
- Residential change
- Retail and service disintermediation
- Security monitoring
- Smart appliances
- HomeKit
- AllSeen
- OCF
- Brillo
- Consumer IoT

SMART MOBILITY AND AUTOMOTIVE

$1T USD
in global mobility as a service revenues by 2030

11.4M
number of fully driverless cars on the road by 2025

$87B USD
in value of the connected car market by 2022

$58B USD
in global electric vehicles revenue in 2021

ABI Research is the leading source of next-generation Smart Mobility and Automotive technology market intelligence. Our extensive coverage examines ADAS, active safety, autonomous driving, connected infotainment, and consumer telematics solutions. We aim to provide technology implementers with authoritative insight to help future-proof their automotive business models by examining industry trends in automotive semiconductors, sensors, mapping, deep-learning-based machine vision, AR, HMI, and 5G.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- How can OEMs develop smart mobility subsidiaries?
- Why should automotive OEMs shift their business models from product-centric to service-centric?
- How can car sharing companies pursue automation and connectivity to achieve more sustainable business models?
- Can legacy car sharing services survive, and what will they need to do to innovate?
- How can cloud content vendors capitalize on growing market opportunities?
- What role will digital maps and location intelligence play in future personal mobility?
- How can insurance companies transform their business strategies as liabilities shift?
- How can the Car as a Service be integrated into a wider Mobility as a Service framework?
- How do we deliver a personalized, dynamic experience in shared autonomous vehicles?
- How will automation transform the ridesharing industry?

COVERAGE AREAS

- Personalizing and securing the shared, autonomous vehicle
- Car dealerships of the future
- Automotive electrication
- The car as a mobile living space
- Smart mobility
- ADAS and automation
- Connected and autonomous car maintenance
- Smart car and smart home integration
- Transformative vehicle cloud services
- New vehicle software approaches
- CaaS and MaaS integration techniques
- Disruptive vehicle architecture technologies
- Next-generation vehicle antenna solutions
- Vehicle- and infrastructure-based parking information services
- ADAS sensor use cases
- Wireless charging
- Cooperative transportation
- Ride share companies and paradigms
- Automotive wearables

KEYWORDS

- 5G
- Active safety
- ADAS
- AR, VR, and Mixed Reality
- Over-the-air (OTA) programming
- Semiconductors
- Sensors
- Wearables
- Autonomous driving
- Autonomous pods
- Car sharing
- Connected vehicle cloud platforms
- Consumer telematics
- Cooperative transport
- Electrification
- In-car navigation systems
- Last mile navigation
- Legacy ride sharing services
- Mobility as a Service
- Multimodal electric urban transportation
- Smart mobility
- Smart transportation
- Software-defined vehicles
- Wireless charging
- HD mapping
- Car-to-cloud-to-car
- Human-machine interfaces (HMI)
- In-vehicle networks
- Automotive cybersecurity
- Automotive grade
- Integrated infotainment
- Vehicle/car as a service
- V2X

SMARTPHONES, MOBILE BROADBAND & WEARABLES

710M
5G smartphones accounting for ~39% of total in 2023

1.2B
Smartphones with on-device AI inference by 2022

460M
Wearable shipments in 2023

The device technologies service covers smartphones, wearables, mobile broadband, accessories and new device form factors. It provides invaluable research and data synergies spanning these major sectors, including integral ecosystem analyses. Our coverage looks at new technologies and design concepts for all major product lines. This includes the most future-looking features and functionalities as well as key innovation across both hardware and software technologies. Special focus is given to technology innovation including application processing, next generation connectivity (including 5G), and sensor platforms. All coverage provides granular assessments of the most transformative technologies from the RF systems and modems to processing platforms to next generation functionalities, such as AI implementations, AR and VR use cases, imaging and display technologies, etc. The research also extends to strategic analyses of the key stakeholders and their market shares operating across this device ecosystem, plus a focus on relevant consumer and enterprise applications.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- Who are the major players in the vendor competitive landscape, and what pressures are they facing on their market share?
- What impact will changes to the network connectivity landscape, notably 5G and LPWA, have on the mobile devices market?
- How will key enabling technologies, including chipsets, sensors, UI innovations, flexible and curved screen technologies, impact the mobile devices and wearables markets?
- What RF challenges do 4.5G and 5G devices face, and how do these affect OEMs, suppliers and mobile carriers?
- What are the smartphone trends and forecasts my company needs to know? What new business models are evolving?
- In a saturating smartphone market, how do vendors differentiate their products and what opportunities are open to new entrants, such as local brands?
- What adjacent device segments should vendors consider to open new revenue streams?
- How does my company become a smartphone innovator?
- What are the IC market trends toward integration and fragmentation?
- What are the market opportunities for mobile device sensor technologies across various functions, application types and use cases?
- What are the top features to consider when designing smart mobile accessories?
- How are smart accessories set to transform the mobile experience?
- What new technologies will disrupt the mobile accessories market?
- What are the major wearable device types that my company should be aware of?
- How can wearable devices be used within different workplace areas?
- How can data from wearable devices be protected?

COVERAGE AREAS

- Mobile phone and smartphone shipments and forecasts
- 5G smartphones and chipset landscape
- RF Front End in smartphones vendor share and forecasts
- Smartphone ASPs and revenues
- Smartphone chipset shipments and market share
- Transformative & emergent consumer device technologies
- Tablets shipments and market update
- Flexible electronics for mobile device applications
- The future of mobile processing and modems
- Mobile IC platforms vendor share and forecasts
- Mobile broadband device shipments
- New device form-factors and technologies
- Devices vendor profiling and market shares
- Future of mobile image processing, sensors and software
- Mobile/smart accessories shipments, revenues and forecasts
- Wearables device market shares, revenues and shipment forecasts
- AI use cases transforming mobile and wearable device experiences
- Wearable enterprise and consumer forecasts
- Wearable data analytics
- Global, regional and country level data analysis

KEYWORDS

- 4G, Gigabit LTE, LTE-Advanced, LTE-Advanced Pro
- 4K displays
- 5G technologies
- Array/multiple camera systems
- Artificial intelligence
- Augmented reality
- Battery/charger accessories and technologies
- Brain-to-machine UIs
- Built in payments
- Connected notebook PCs
- Edge-to-edge displays
- Enhanced components
- Enterprise mobility management
- Facial Recognition
- Flexible/foldable displays
- Gesture control
- Hearables
- Headsets, form factors & technologies
- Healthcare devices
- Intelligent personal assistants
- Iris scanning
- Location services
- Machine vision
- Mobile accessories, in-box and aftermarket sales
- Mobile broadband modems (MBBs)
- Mobile components
- Mobile IC
- Mobile routers (MiFi)
- OLED displays
- Operating systems and platforms
- RF front end (RFFE) components
- Ruggedized products
- Screen technologies
- Semiconductors
- Sensors for mobile devices
- Smart accessories
- Smart biometrics
- Smart clothing
- Sports/fitness/wellness trackers
- Smartphones & featurephones
- Smartwatches
- Speech recognition
- Tablets & phablets
- Teardowns, mobile devices & wearables
- Ultrasound technology
- USB modems
- Virtual and mixed reality
- Voice recognition
- Waterproofing and dustproofing
- Wearable cameras & scanners
- Wireless charging

$96B USD
in OTT revenue by 2022

$49B USD
Enterprise Video Solutions Market by 2023

The Video & Cloud Services research service covers the rapid transition of video consumption devices, services, business models, and technologies in the end-to-end video ecosystem. It focuses on the movement towards multiscreen, IP, on-demand, and unmanaged content delivery in an increasingly modular, cloud-based marketplace. It examines the impact of transformative technologies like AI, computer vision, edge compute, and 5G on the video ecosystem and resulting opportunities and considerations. Primary topics include the pay tv ecosystem, set top boxes, OTT, content protection (DRM, CAS, watermarking), CPE, streaming services, and advertising. Special focus is dedicated to the intersection of these mature video segments and newer transformative technologies, how business models are adapting, and what accelerators and barriers will be most prevalent over the next 5 years and beyond.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- How will 5G transform video?
- How can OTT services be a catalyst for new media growth?
- How does the industry keep video from breaking the network?
- How can mobile carriers in Asia capitalize on the video opportunity?
- How will analytics and AI change video services?
- How does my company ensure revenue continuity in a CapEx to OpEx migration?
- How are viewing habits shifting, and what impact does that have on the market?
- What is the market opportunity for live streaming and what are the technical hurdles to ensure a positive QOS and QOE?
- How is the STB market evolving in light of cloud DVR and a growing push to bring content direct to the consumer?
- How big is the ad tech market opportunity?
- How important is low latency viewing and how will companies deliver this experience?
- How are solutions transitioning between on premises, hybrid, and cloud?

COVERAGE AREAS

- Quantitative database of video and broadband services and devices, video infrastructure hardware and services
- Pay-TV and broadband subscribers
- Machine vision (capture and processing)
- Over-the-top (OTT) and multiscreen video and digital content
- Fixed-wireless convergence trends
- Analytics opportunities in video services
- Encoding/transcoding
- Content protection: CAS/DRM
- Middleware
- CDN delivery and balancing

KEYWORDS

- TV-as-a-Service (TVaaS)
- Set-top Box (STB)
- Multiscreen
- Advertising
- Video on Demand (VOD)
- OTT
- 5G
- 4K/UHD
- High dynamic range (HDR)
- Middleware
- Conditional access system (CAS)
- Digital rights management (DRM)
- Encoders and transcoders
- Enterprise video
- Online video platform (OVP)
- Adaptive bitrate (ABR)
- Content delivery network (CDN)
- Artificial Intelligence
- On-prem solutions
- Hybrid solutions
- Cloud solutions

WI-FI, BLUETOOTH & WIRELESS CONNECTIVITY

266M
Bluetooth Smart Home Devices by 2022

10B
Wireless IC Shipments by 2022

2.2B
802.11ax Wi-Fi Chipset Shipments by 2022

ABI Research's Wi-Fi, Bluetooth & Wireless Connectivity market intelligence uncovers and identifies key synergies between new connectivity solutions and standards long before they gain competitive traction. Our coverage, which includes data, trend, and forecast reports, examines major forthcoming innovations and disruptions across various IoT platforms, application layers, and consortiums that have the potential to affect companies across the supply chain. We aim to provide technology implementers with unparalleled insight into commercial and industrial applications, as well as emerging opportunities in the smart city, environmental sensing, and nascent IoT markets.

TOP QUESTIONS WE RECEIVE FROM INDUSTRY INNOVATORS

- What challenges will incoming new standards present to my company's current offerings?
- What are the benefits of wireless connectivity in industrial automation?
- What market opportunities for connectivity chipsets should my company capitalize on?
- How will WiGig and new connectivity technologies play a role in the VR space?
- What opportunities exist for low-power wireless connectivity in smart city applications?
- What is the future of the wireless connectivity landscape?
- What role will wireless connectivity play in future commercial and industrial applications?
- What impact will energy harvesting applications have on the wireless connectivity market?
- Where are the new opportunities for my company's chipsets?
- Are my company's devices futureproof in this fragmented market?
- What are the long-term challenges for semiconductor IP technologies?
- Is my company investing in the right semiconductor IP technologies?
- How will new technologies and IC developments impact my company's growth?
- How will multi-protocol ICs disrupt the connectivity market?

COVERAGE AREAS

- Wireless connectivity market forecasts and vendor shares
- Bluetooth, 802.15.4 (Thread, ZigBee), Wi-Fi, Z-Wave
- Near field communication opportunities
- Opportunities for 60GHz Wi-Fi Technologies
- Wi-Fi HaLow and low-power IoT connectivity technologies
- Bluetooth 5, Bluetooth Beacons, and Bluetooth Mesh, and beyond
- Future of wireless connectivity and technical evolution
- Wireless chipset integration and multi-protocol combinations

KEYWORDS

- Wireless Connectivity
- IoT
- Bluetooth
- BLE
- Beacons
- Wi-Fi
- ZigBee
- Thread
- Near field communication (NFC)
- Energy Harvesting
- Multi-protocol ICs
- HaLow
- 802.11ac
- 802.11ax
- 802.11ad
- 802.11ay
- 802.11ah
- 802.11z
- Mesh networking
- Z-Wave
- Next-generation positioning
- WiGig
- IPv6
- GNSS
- IoT gateways
- Smart home connectivity
- Wireless sensor networks (WSNs)