



Bluetooth Market Update

2019

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A Letter from the Executive Director

For more than two decades, the *Bluetooth*® member community has been proving the value of wireless connectivity. From wireless audio and wearable devices to location services and automation solutions, Bluetooth member companies continue to meet the needs of new consumer, commercial, and industrial markets.

Thanks to the ongoing efforts of a devoted member community, Bluetooth is securing its place in tomorrow's smart buildings, smart homes, and smart cities. Key market leaders are making the strategic choice to integrate Bluetooth mesh networking into their home and commercial automation solutions. Recent advancements in Bluetooth location services, including the launch of direction finding capabilities, are further solidifying the role of Bluetooth in new markets.

It's an honor to be part of such an incredible community.

Mark Powell | Executive Director | Bluetooth SIG, Inc.



What is Bluetooth SIG, Inc.?

Formed in 1998, the Bluetooth Special Interest Group (SIG) is the not-for-profit trade association that oversees Bluetooth technology, serving industry-leading member companies across the globe.

Based in Kirkland, Washington, USA, we work with our member companies to perfect and advance a simple, flexible, and secure wireless communication solution that helps create a connected world, free from wires.

The Bluetooth SIG manages three charter programs:



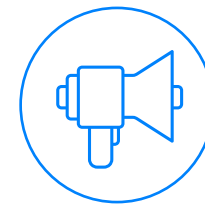
Specification

We expand the capabilities of Bluetooth technology by facilitating the collaboration of our member companies to create new and enhanced Bluetooth specifications.



Qualification

We drive Bluetooth interoperability through a world-class member product qualification program that includes access to the Bluetooth technology and trademark license agreements.



Promotion

We grow the Bluetooth brand by increasing the awareness, understanding, and adoption of Bluetooth technology.

What is the Bluetooth Market Update?




The Bluetooth community continually expands the technology to solve new connectivity challenges and address new market opportunities.

Supported by updated forecasts from ABI Research and insights from several other analyst firms, the Bluetooth Market Update examines:

- The growth and health of the Bluetooth SIG member **community**
- Trends and forecasts for each of the key Bluetooth **solution** areas
- New trends in traditional Bluetooth **markets** as well as forecasts in emerging markets in which Bluetooth is taking on an expanded role

The Bluetooth Market Update is intended to help global IoT decision makers stay up to date on the role Bluetooth technology can play in their technical roadmaps and markets.

The trends in the Bluetooth Market Update highlight the direction of the Bluetooth member community and technology as Bluetooth continues its expansion from a personal communications solution to a commercial and industrial-grade connectivity engine.



**Bluetooth is more than a technology.
It's also a community.**

Bluetooth is an incredible community of 35,000
member companies committed to creating a
connected world, free from wires.

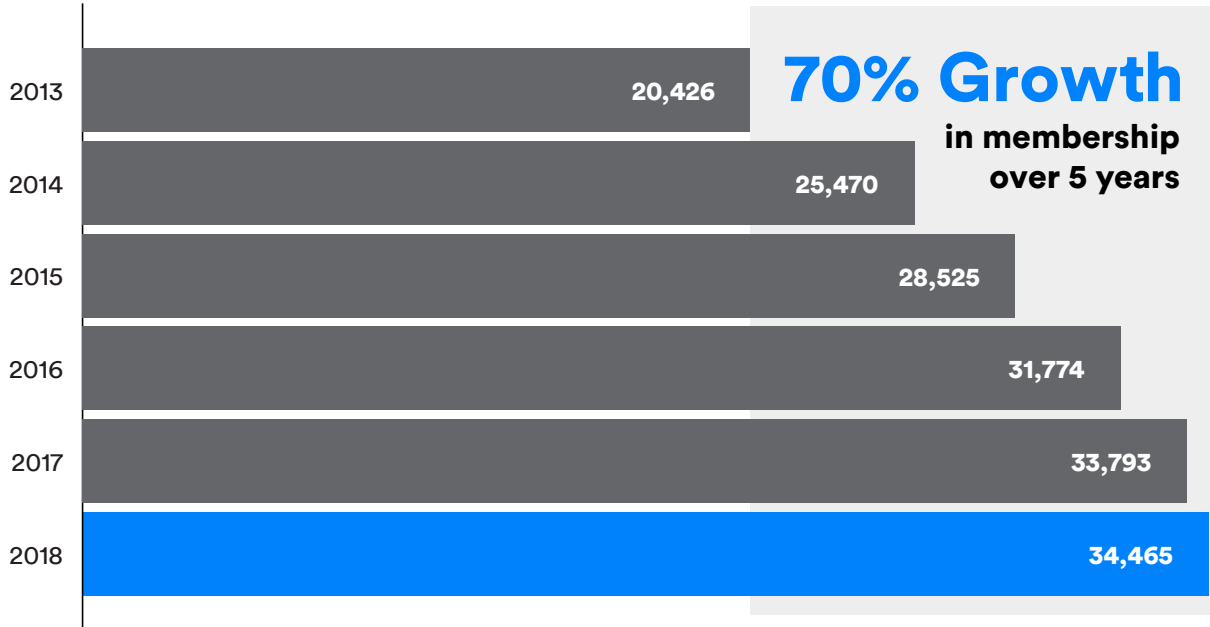
Community

Membership

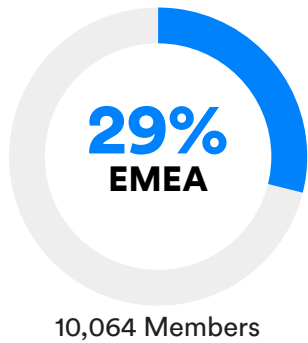
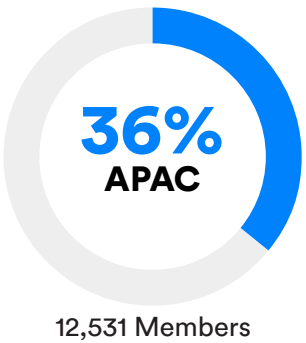
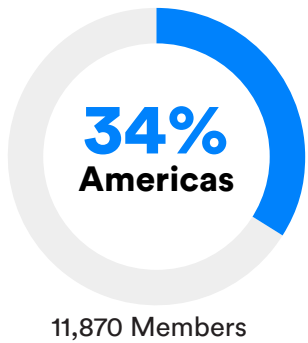
The Bluetooth member community continues to experience strong growth and now has 35,000 companies spread evenly across all regions of the world, highlighting the true global footprint of Bluetooth technology.

Learn more about membership

Total Bluetooth Membership



Bluetooth Membership by Region in 2018



Source: Bluetooth SIG, as of 31 Dec 2018

Specifications

The Bluetooth SIG working groups and committees are the reason Bluetooth technology is the global wireless standard powering the Internet of Things.

The hard work and commitment of our working groups and committees are what drive the continuous innovation of the technology.

**Learn more about
working groups**

**Working groups are the backbone of the Bluetooth SIG,
bringing specifications to life.**

15

**Working
Groups**

70

**Active
Specification Projects**

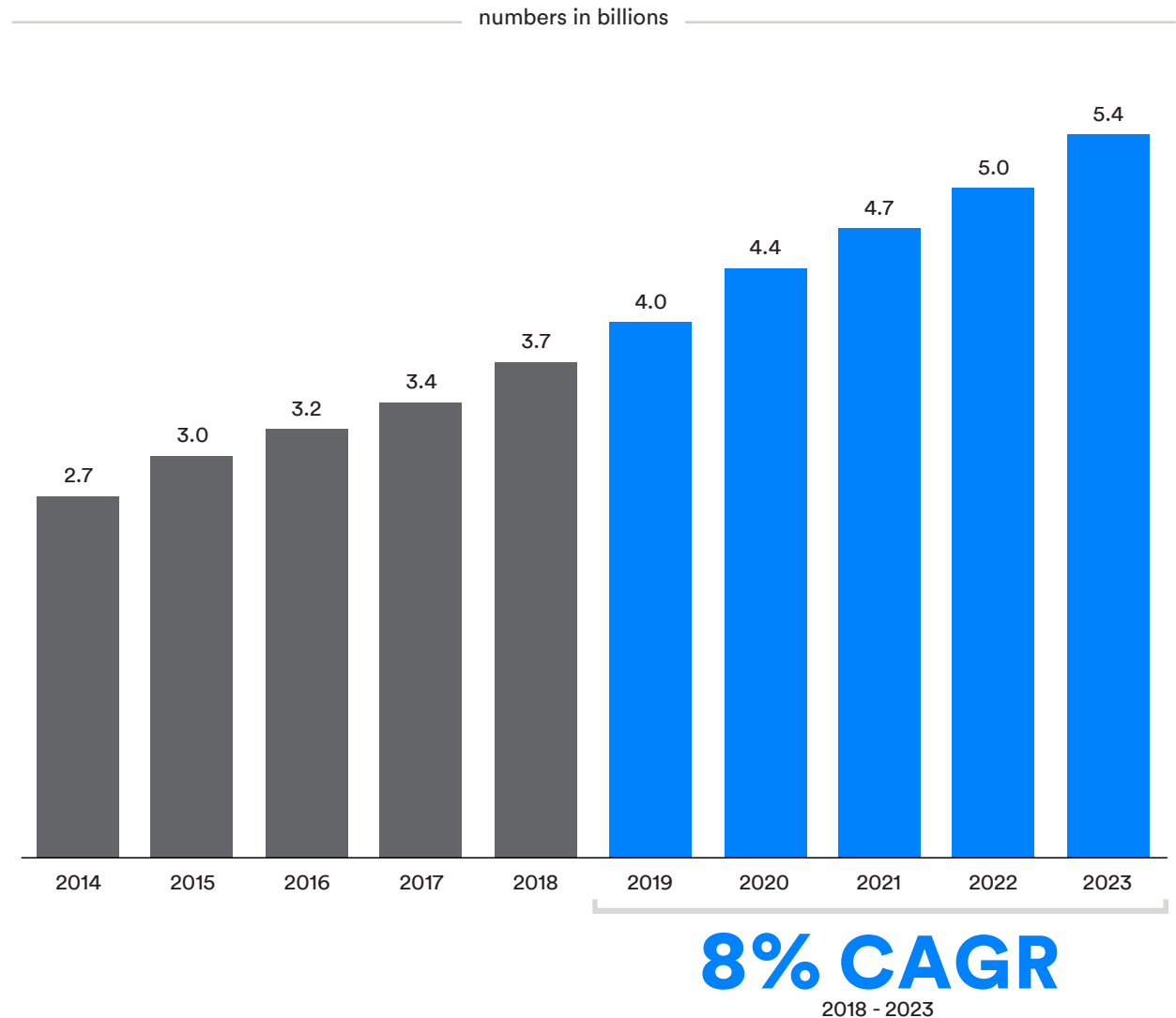
2,012

**New Group and Committee
Members in 2018**

Shipments

With the support of a committed member community, Bluetooth technology has met the growing demands for wireless innovation for more than 20 years. Since its introduction in 1998, Bluetooth device shipments continue to increase with no sign of slowing down.

Total Annual Bluetooth Device Shipments



Source: ABI Research, 2019

Shipments by Radio Version

90%

of all Bluetooth devices will include Bluetooth Low Energy by 2023

**2.7
BILLION**

Bluetooth devices will ship with both BR/EDR and Bluetooth Low Energy in 2019

1/3

of all shipments will be Bluetooth Low Energy single-mode devices by 2023

Bluetooth Low Energy is the common thread across the IoT

As Bluetooth Low Energy continues its rapid growth, it provides a common thread in combo chips, powering connectivity across multiple wireless technologies.

Bluetooth BR/EDR is not going away

Dual-mode radios are rapidly replacing single-mode BR/EDR radios, ensuring the greatest advantage and availability of Bluetooth technology for developers.

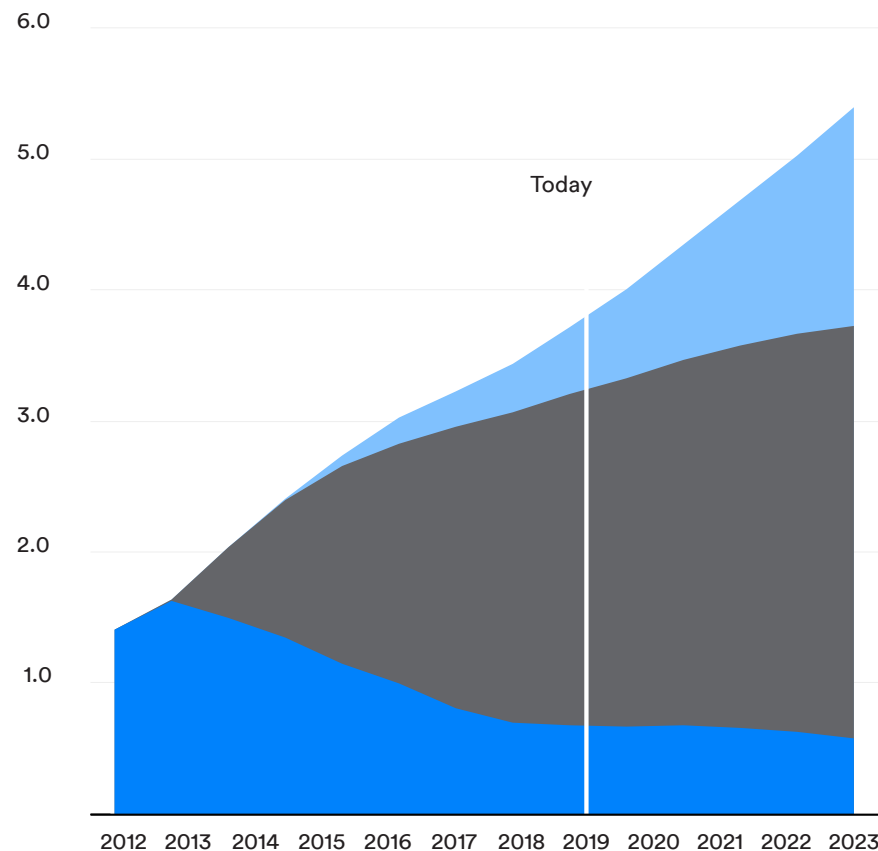
Annual Bluetooth Low Energy single-mode shipments set to triple by 2023

By 2023, more than 1.6 billion Bluetooth Low Energy devices will ship each year, and 90% of all Bluetooth devices will include Bluetooth Low Energy technology.

Bluetooth Device Shipments by Radio Version

numbers in billions

BR/EDR BR/EDR + LE LE



Source: ABI Research, 2019



**Bluetooth proves the power of connection.
It expands to meet market needs.**

More than just a radio technology, Bluetooth provides full-stack, fit-for-purpose solutions aimed at addressing specific connectivity needs.

Solutions

Solutions to Meet Market Needs

The Bluetooth community continues to meet the ever-expanding needs for wireless connectivity. After first addressing audio streaming, Bluetooth expanded into low-power data transfer. Now, Bluetooth is meeting the market demand for indoor location services and reliable, large-scale device networks.



Audio Streaming

Stripping away the hassle of wires on headsets, speakers, and home entertainment devices, Bluetooth has revolutionized wireless audio streaming.



Data Transfer

From fitness trackers and health & wellness monitors to toys and tools, millions of new Bluetooth low-power, data-transferring devices free consumers from wires every year.



Location Services

New advancements in Bluetooth technology are enabling powerful, low-cost indoor positioning and location services solutions.



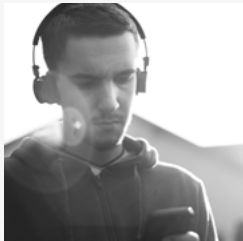
Device Networks

The release of Bluetooth mesh networking has paved the way for the creation of large-scale device networks capable of controlling, monitoring, and automating tens, hundreds, or thousands of connected devices.

Learn more about the
Bluetooth Solution Areas

Audio Streaming

Solution Area



Wireless Headsets - The original wireless audio device, from padded earphones to true wireless earbuds, Bluetooth headsets are now a must-have accessory for mobile phones.



Wireless Speakers - Whether it's a high-fidelity entertainment system in the home or a portable option for the beach or park, there's a speaker for any occasion in every imaginable shape and size.

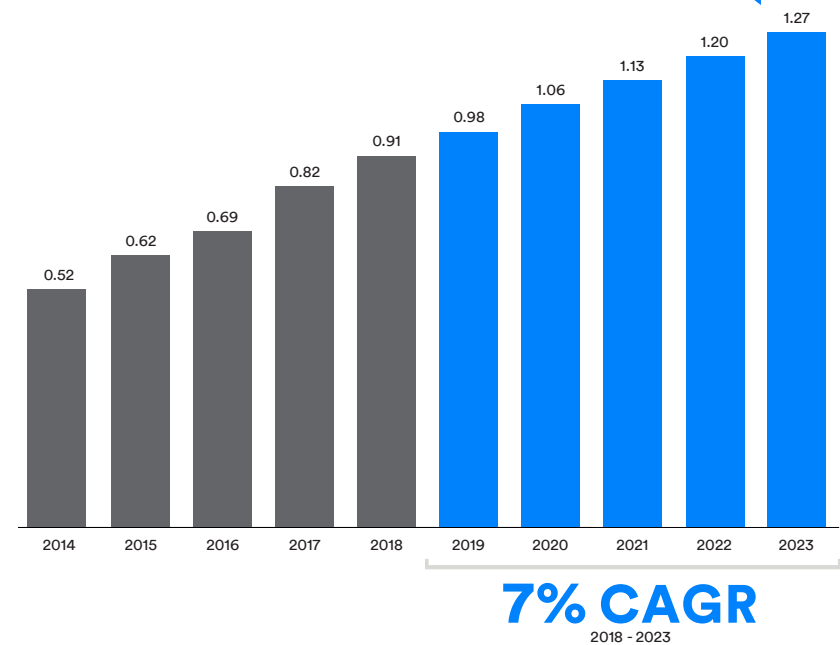


In-Car Systems - Bluetooth in-car infotainment systems pair with driver smartphones to enable hands-free audio streaming and calling, allowing drivers to keep their focus on what matters most.

Annual Bluetooth Audio Streaming Device Shipments

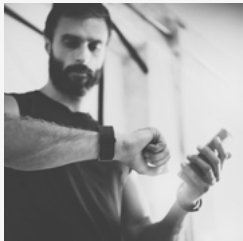
numbers in billions

1.27 billion
annual shipments



Data Transfer

Solution Area



Sports & Fitness - Bluetooth powers wearable devices like fitness trackers and smart watches that are showing up on wrists everywhere to monitor steps, exercise, activity, and sleep.



Health & Wellness - From blood pressure monitors to portable ultrasound and x-ray imaging systems, Bluetooth technology helps people track and improve their overall wellbeing while making it easier for healthcare professionals to provide quality care.



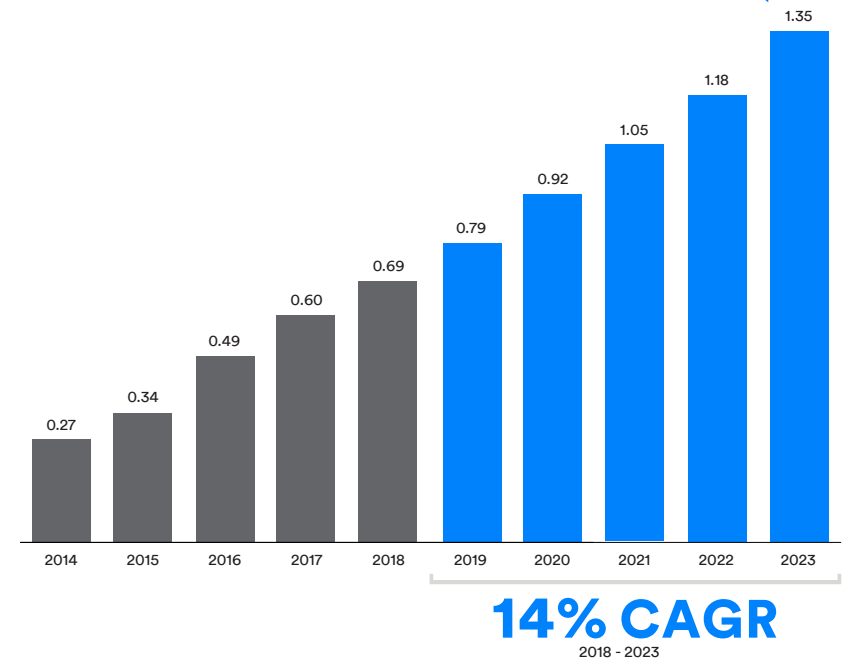
PC Peripherals & Accessories - A driving force behind Bluetooth is freedom from wires. Whether it's a keyboard, trackpad, or mouse, computers no longer need wires to stay connected.

Annual Bluetooth Data Transfer Device Shipments

numbers in billions

1.35 billion

annual shipments



Source: ABI Research, 2019

Location Services

Solution Area



Point of Interest Information - Retailers adopted point of interest (PoI) information beacons early, but smart buildings, smart industry, and smart cities are now discovering how beacons can improve the quality of life for citizens and enhance the visitor experience.



Item Finding - A growing number of consumers are attaching Bluetooth tags to keys, wallets, purses, and other personal property. When an item with a tag is misplaced, the user simply launches an application on their smartphone to locate it.



Asset Tracking - Bluetooth is powering rapid growth in real-time location services (RTLS) solutions used for tracking assets and people, whether that's locating tools and workers in a warehouse or medical devices and patients in a hospital.

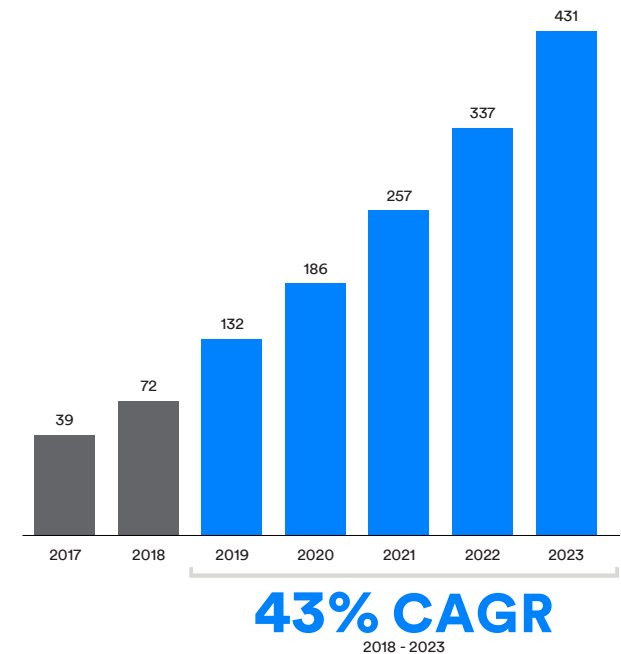


Wayfinding - From airports and train stations to museums and stadiums, Bluetooth indoor positioning systems (IPS) have quickly become the standard for overcoming the indoor coverage challenges of GPS, helping visitors navigate their way through complex facilities.

Annual Bluetooth Location Services Device Shipments

numbers in millions

431 million
annual shipments



Source: ABI Research, 2019

Device Networks

Solution Area



Control Systems - Bluetooth mesh networking is quickly being adopted as the wireless communications platform of choice in a number of control systems, including advanced lighting solutions for the smart building and smart industry markets.



Monitoring Systems - Bluetooth wireless sensor networks (WSN) monitor light, temperature, humidity, and occupancy to improve employee productivity, lower building operating costs, or better meet condition and maintenance requirements of production equipment to reduce unplanned downtime.

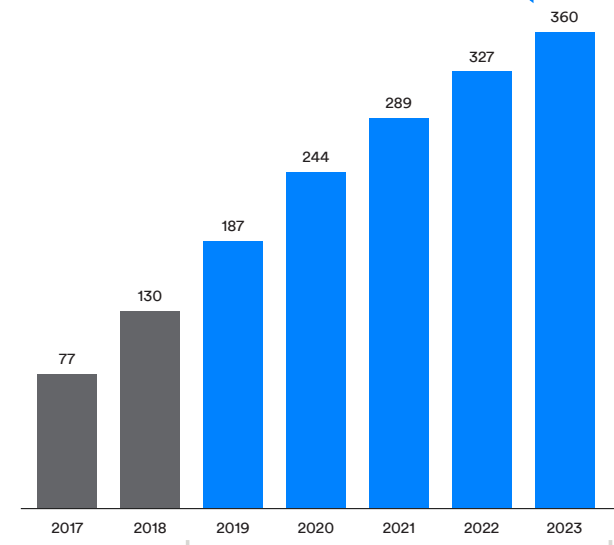


Automation Systems - Bluetooth enables the automation of a building's essential systems, including HVAC (heating, ventilation and air conditioning), lighting, and security to harness energy savings, lower operating costs, and improve the life span of a building's core systems.

Annual Bluetooth Device Networks Device Shipments

numbers in millions

360 million
annual shipments



23% CAGR
2018 - 2023

Shipments by Solution Area

#1

Data transfer will be the leading Bluetooth solution area by volume in 2023

39%

of all Bluetooth peripheral devices shipped in 2023 will support audio streaming*

300 MILLION

Bluetooth tags are projected to ship each year by 2023

A connected world, free from wires, is quickly becoming a reality

The wide application of Bluetooth technology shows us that anything can be a connected device. Simple data transfer solutions are forecasted to double from 690 million shipped annually in 2018 to 1.3 billion annual shipments in 2023.

Audio streaming will see steady growth

Even while Bluetooth is expanding into new markets and use cases, Bluetooth wireless audio solutions are still on the rise with annual shipments expecting to see a 7% CAGR over the next five years.

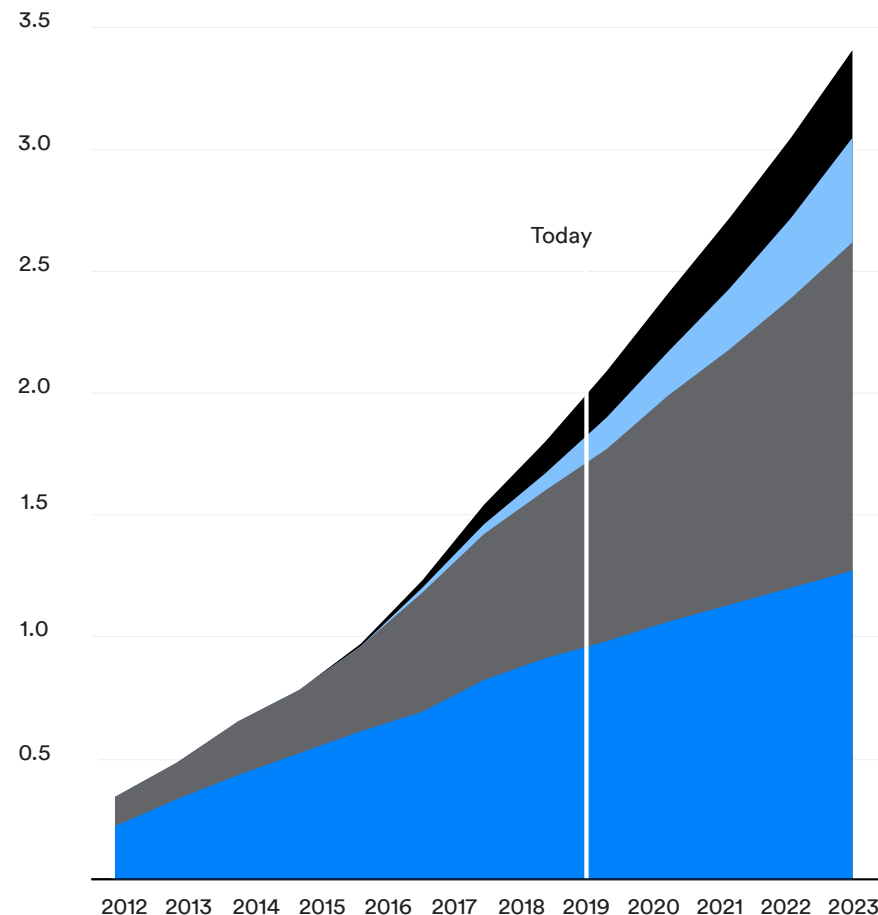
At 43% CAGR, location services is the fastest growing Bluetooth solution area

Increasing demand for location services is powering a surge in Bluetooth wayfinding, asset tracking, and item finding solutions. By 2023, there will be 1.7 billion active handsets engaged in Bluetooth location services.

Bluetooth Device Shipments by Solution Area*

numbers in billions

Audio Streaming Data Transfer Location Services Device Networks




*Phone, tablet, and PC devices not included
Source: ABI Research, 2019



**Connection drives innovation.
Innovation creates markets.**

For two decades, Bluetooth has created connections that power innovation, establish new markets, and push the limits of wireless communication worldwide.

Markets

A black and white photograph of a woman with dark hair, wearing a dark sleeveless top, looking down at a smartphone in her hands. She is standing on a balcony or walkway with a railing. A large blue geometric shape, consisting of a large triangle and two smaller triangles at the bottom, is overlaid on the left side of the image. A series of white lines radiate from the top right corner of the blue shape towards the woman's head.

Bluetooth continues to shape how we interact with and navigate the world.

Now included in all new smartphones, tablets, and laptops, Bluetooth has become the standard for personal wireless connections.

**Phone, Tablet
& PC**

Phone, Tablet & PC

Market Numbers

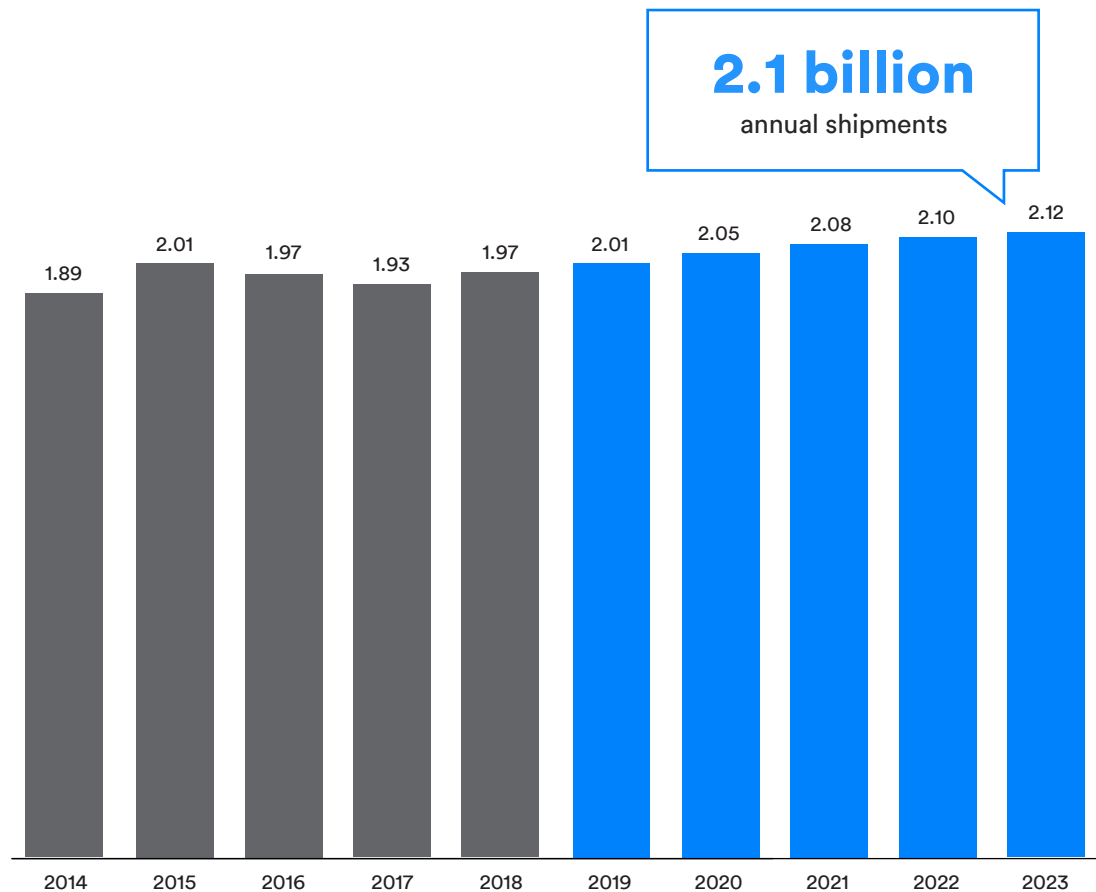


100%

of smartphones, tablets, and
laptops include Bluetooth

Annual Bluetooth Phone, Tablet & PC Device Shipments

numbers in billions



Source: ABI Research, 2019

Phone, Tablet & PC

Market Insights



Platform ubiquity maximizes developer opportunities

With Bluetooth included in 100% of new smartphones, tablets, and PCs, developers can be assured the technology will be available for their applications and solutions.



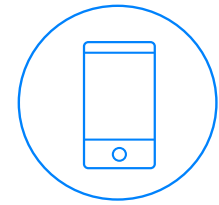
Bluetooth is responsible for the trend to design out the audio jack

When purchasing headphones, half of all consumers now choose Bluetooth over wired. In addition, by 2023, 90% of all speakers will include Bluetooth.



Smartphones are driving rapid adoption of location services

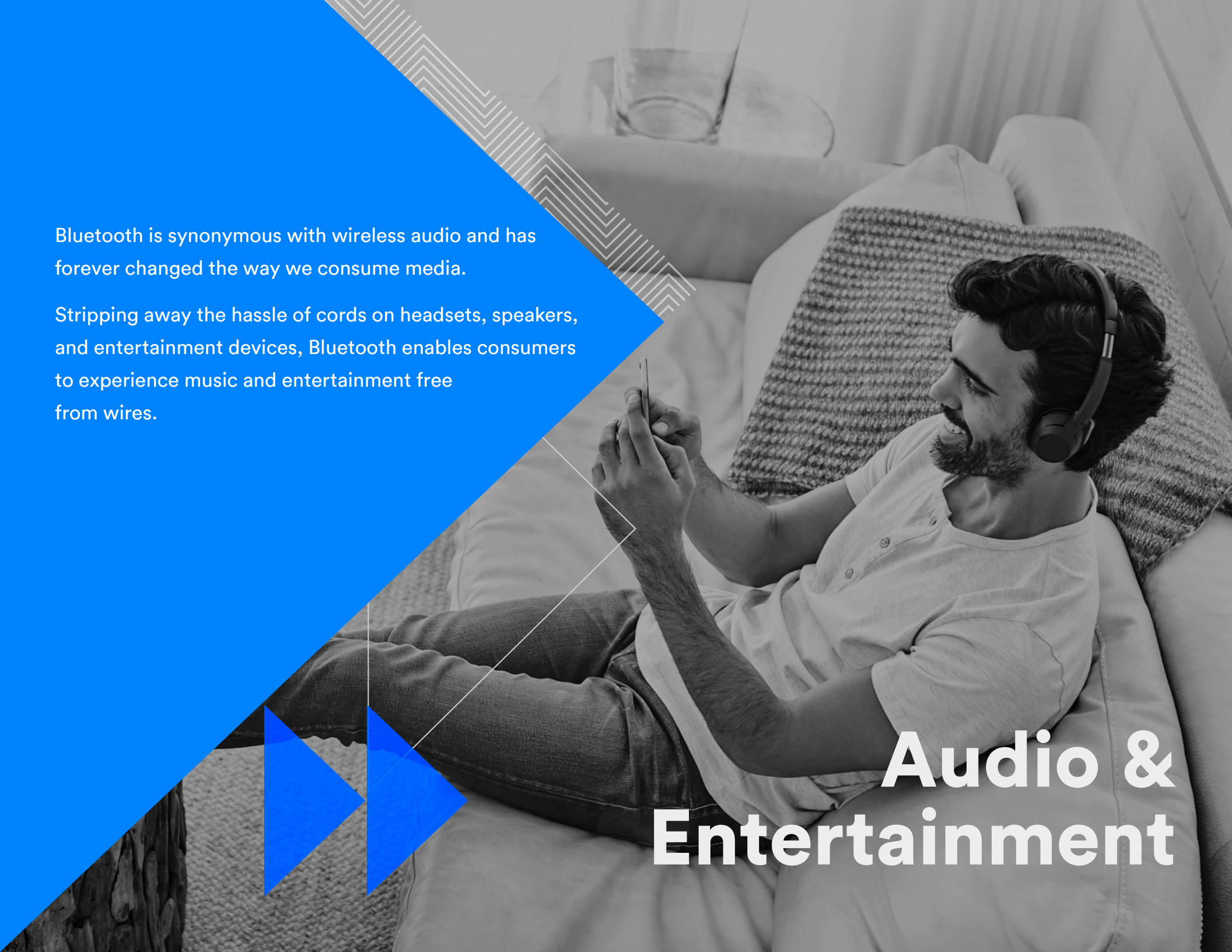
Smartphones have become the go-to tool for location services, including indoor navigation, item finding, and point of interest information solutions. With more than 474 million handsets actively engaged, Bluetooth location services are now an integral part of the smartphone experience.



Smartphones and tablets are becoming the machine interface in emerging markets

Commercial manufacturing and industrial automation are adopting smartphones and tablets as mobile displays for managing and monitoring critical equipment in day-to-day operations.

Learn more about the
phone, tablet & PC market



Bluetooth is synonymous with wireless audio and has forever changed the way we consume media.

Stripping away the hassle of cords on headsets, speakers, and entertainment devices, Bluetooth enables consumers to experience music and entertainment free from wires.

Audio & Entertainment

Audio & Entertainment

Market Numbers

9 OUT OF 10

speakers will include
Bluetooth by 2023

50%

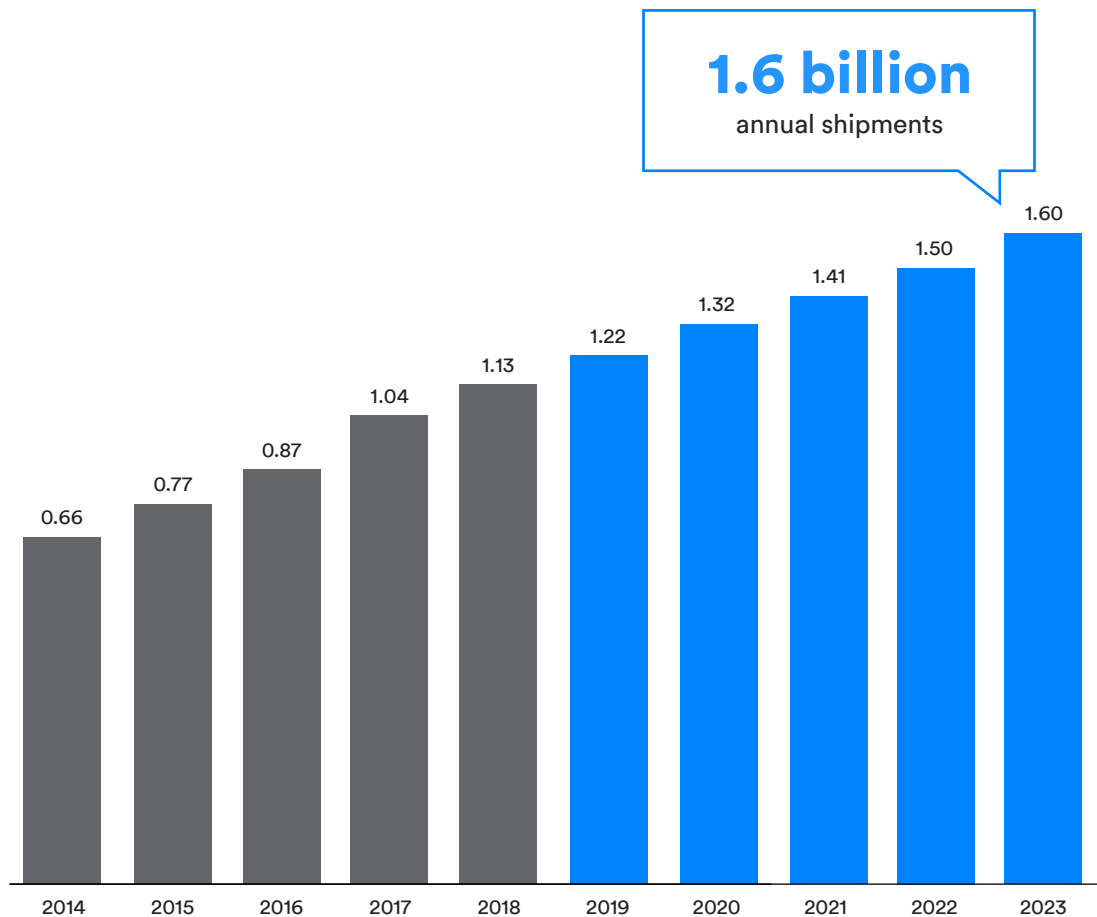
of all headphones sold today
include Bluetooth

**300
MILLION**

Bluetooth remote controls
will ship annually by 2023

Annual Bluetooth Audio & Entertainment Device Shipments

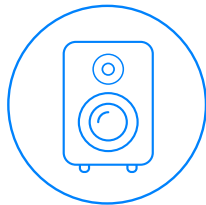
numbers in billions



Source: ABI Research, 2019

Audio & Entertainment

Market Insights



Market transition to wireless speakers is nearly complete

Rapid growth in wireless portable speakers and soundbars confirms consumer preference for and confidence in wireless audio. Nearly 90% of all speakers are forecasted to include Bluetooth by 2023.



Consumer demand for Bluetooth headsets continues to grow


With over 720 million shipping per year by 2023, Bluetooth headsets and headphones remain the most popular device category for audio and entertainment.



Over half of all TVs sold by 2023 will include Bluetooth

Driven by the desire for a better sound experience, more than half of new TVs around the world will include Bluetooth as a standard connectivity option by 2023. In addition, Bluetooth remote control shipments will double in the next five years.

Learn more about the
audio & entertainment market



A mainstay in the automotive market, Bluetooth technology has created connections between car and driver that have brought new levels of safety to our roads while enhancing the in-car experience.

Automotive

Automotive

Market Numbers

93%

of new cars, trucks, and SUVs shipped in 2023 will come standard with Bluetooth

5.5x

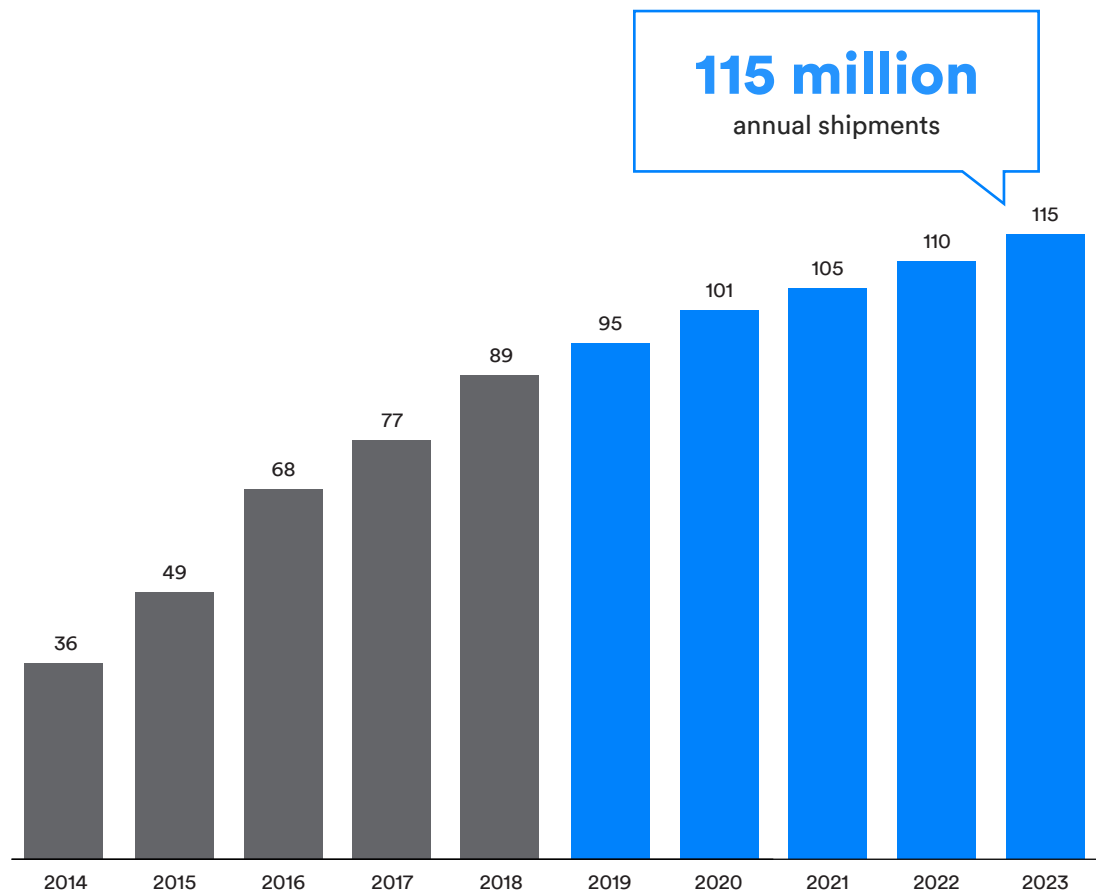
growth in annual volume of other in-car Bluetooth applications from 2018 to 2023

54%

of all cars on the road in 2023 will include Bluetooth

Annual Bluetooth Automotive Device Shipments

numbers in millions



Source: ABI Research, 2019

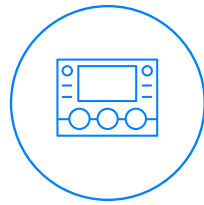
Automotive

Market Insights



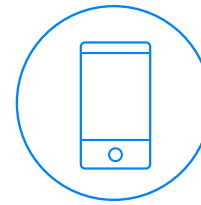
Bluetooth comes standard in nearly all new cars

In five years, 93% of all in-car infotainment systems worldwide will include Bluetooth as part of the in-car experience.



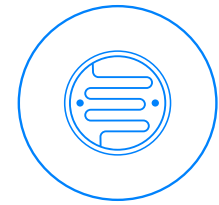
54% of all cars on the road will have Bluetooth on board by 2023

Bluetooth gained traction over the years with factory and after-market solutions and is reaching a tipping point in global market penetration. As a result, by 2023, more than half of all cars on the road worldwide will include Bluetooth.



Bluetooth helps drive keyless car entry


With 100% penetration of Bluetooth in smartphones, automotive manufacturers are increasingly looking towards the phone to replace the key.



Other use cases drive automotive growth prospects

While infotainment will continue to account for the majority of Bluetooth automotive shipments, other use cases like key fobs, sensors, and other in-car applications will grow to account for 24% of all shipments by 2023.

Learn more about the automotive market

A man wearing a grey beanie and a dark jacket is looking down at a smartwatch on his left wrist. He is standing in a forest with trees in the background. The image is partially covered by a large blue geometric shape on the left side, which contains text. There are also two smaller blue triangles at the bottom left, and the title 'Connected Device' is written in large white letters at the bottom right.

From household appliances and fitness trackers to health sensors and medical innovations, Bluetooth connects billions of everyday devices and enables the invention of countless more.

Connected Device

Connected Device

Market Numbers

3x

increase in annual shipments
of Bluetooth smart watches
by 2023

140%

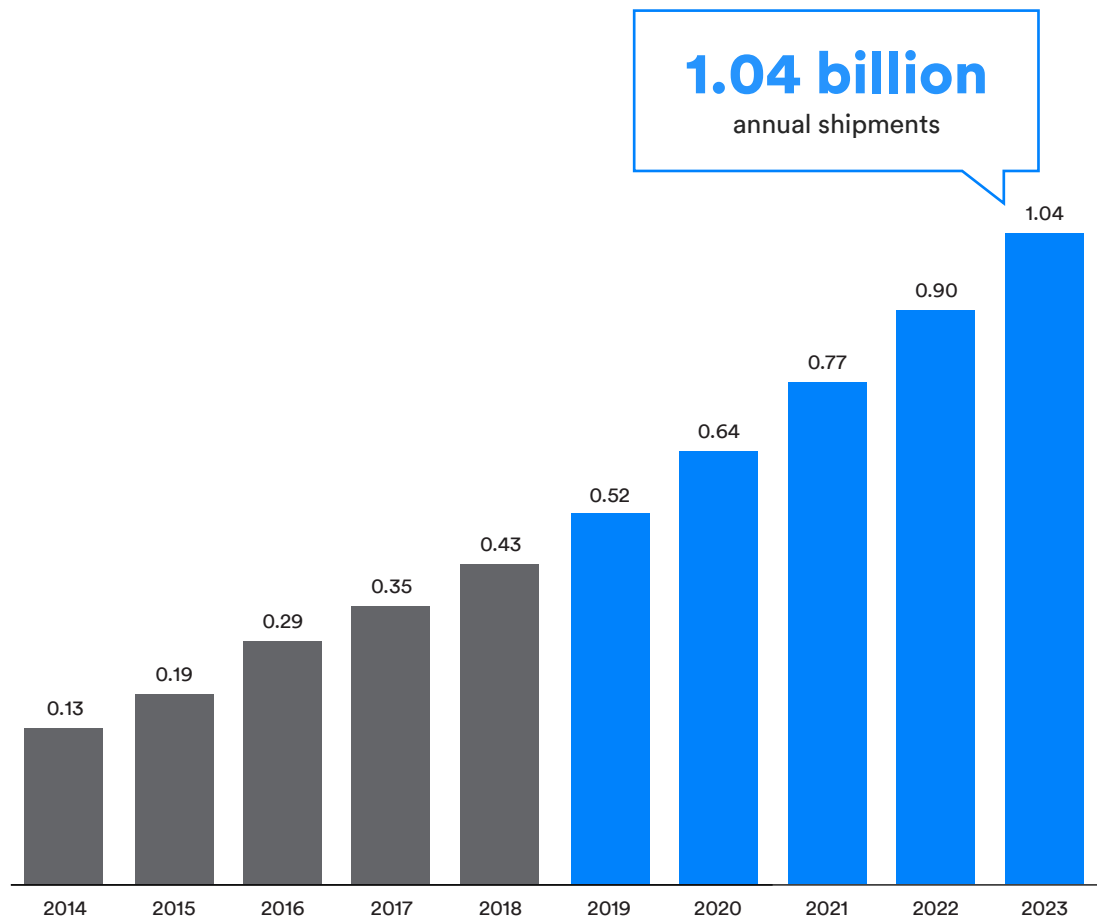
increase in annual shipments
of Bluetooth hearables
by 2023

40% CAGR

for Bluetooth connected
healthcare devices
through 2023

Annual Bluetooth Connected Device Shipments

numbers in billions



Source: ABI Research, 2019

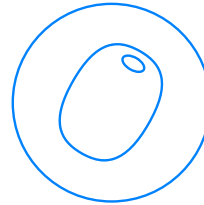
Connected Device

Market Insights



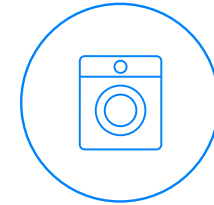
Demand for smart watches and hearables is growing

Multifunction devices like smart watches and hearables with health sensors will continue to take share from single-purpose devices over the next five years. Nearing a 3x increase in annual shipments by 2023, hearables will see a 19% CAGR from 2018-2023 while smart watches will see a 22% CAGR from 2018-2023.



Tags and trackers gain momentum


As location services become more pervasive in everyday life, use of tags for item finding and pet tracking is increasing in popularity. Item finding tags will near 10% of total volume in connected devices by 2023 with a 32% CAGR over the next five years.



Bluetooth connected devices expand beyond classification

The popularity of Bluetooth Low Energy for connecting data to applications and services is unquestioned. 14% of connected endpoints will fall outside traditional device category definitions by 2023, up from 7% in 2018.

Learn more about the
connected device market



Recent advancements in Bluetooth technology are expanding the definition of the smart building by enabling large-scale device networks and precise location services that enhance the visitor experience, increase occupant productivity, and optimize space utilization.

Smart Building

Smart Building

Market Numbers

7x

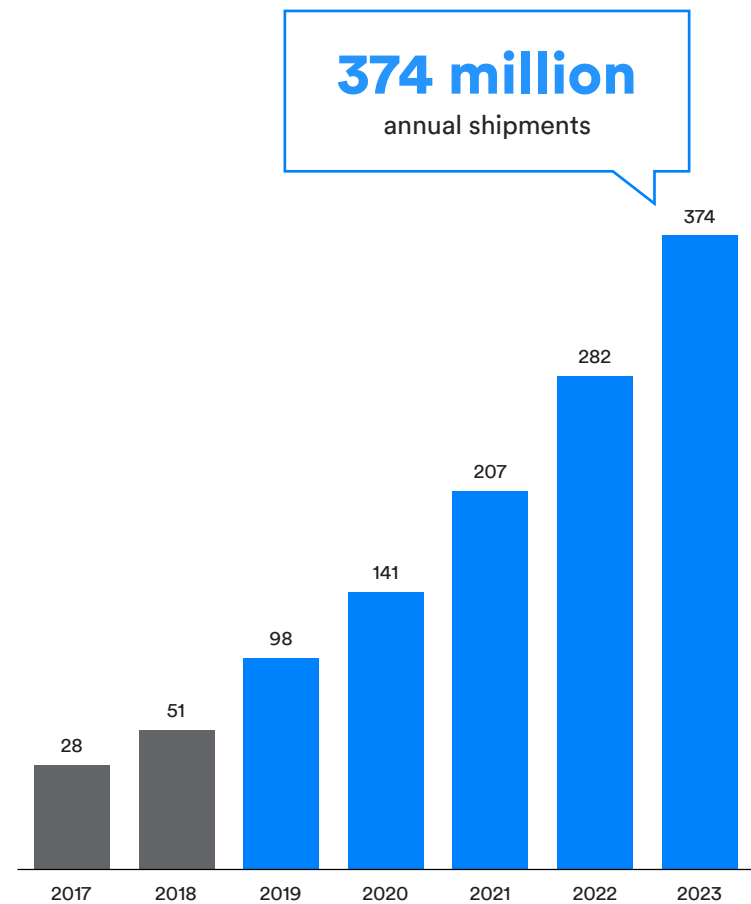
growth in Bluetooth smart
building location services
devices by 2023

46% CAGR

for Bluetooth
automation-related
smart building devices
through 2023

Annual Bluetooth Smart Building Device Shipments

numbers in millions



Source: ABI Research, 2019

Smart Building

Market Insights



Location services dominate smart building forecasts through 2023

Bluetooth is powering new location services capabilities in a variety of smart buildings. From wayfinding to space utilization, Bluetooth helps create operational efficiencies and improve the occupant experience.



Connected lighting solutions are on the rise

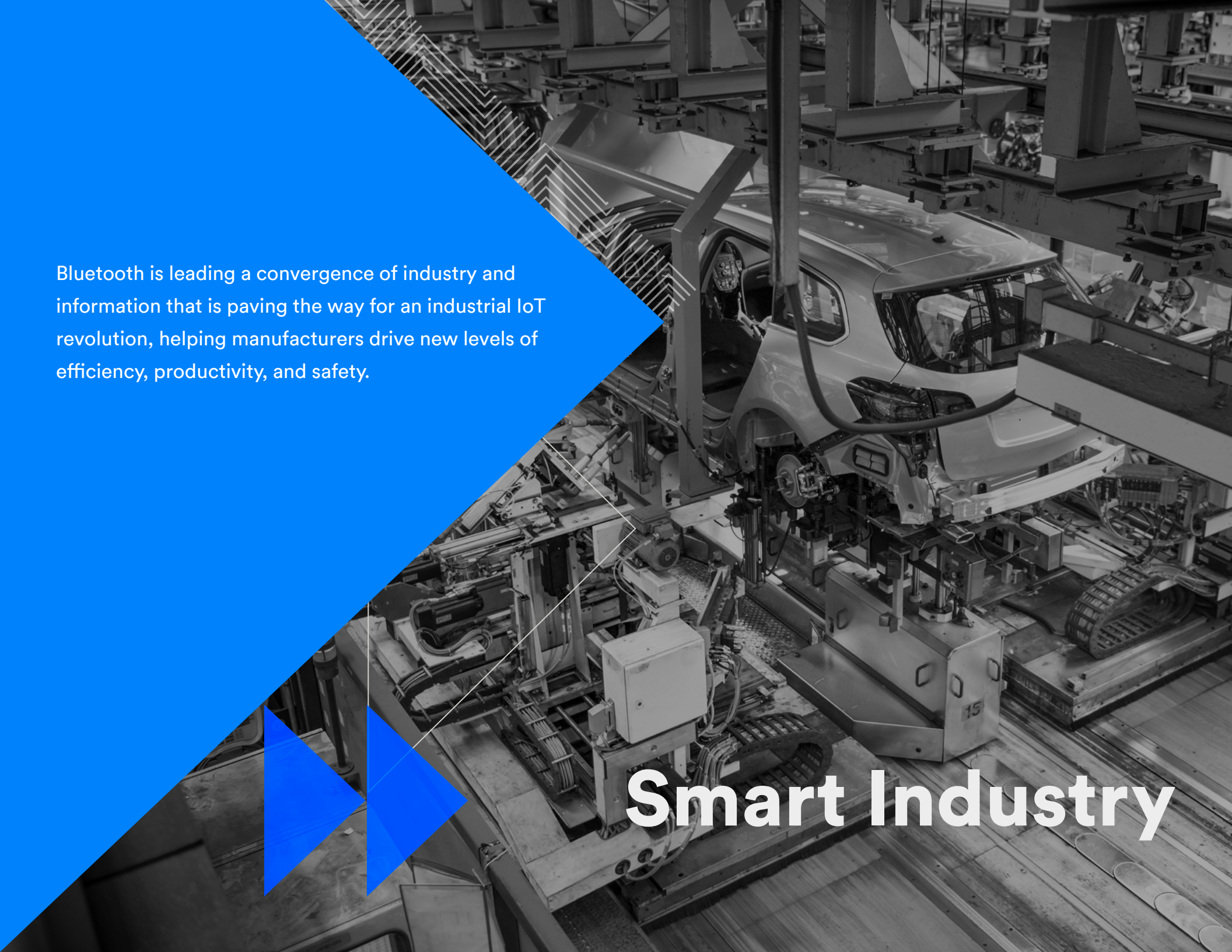
Leading manufacturers have announced long-term product plans for lighting automation and control systems. With a 6.5x projected increase in annual shipments and a 46% CAGR through 2023, commercial building automation and security solutions are well positioned to see continual growth.



Retail and healthcare continue to highlight the benefits of smart building solutions

Retailers use Bluetooth to enable personalized promotions and wayfinding services that create better shopper experiences, increase sales, and reduce operating costs. Healthcare facilities combat cost pressures, provide better patient care, and improve operational efficiencies by using Bluetooth to monitor patients, track assets, and advance emergency services.

Learn more about the
smart building market



Bluetooth is leading a convergence of industry and information that is paving the way for an industrial IoT revolution, helping manufacturers drive new levels of efficiency, productivity, and safety.

Smart Industry

Smart Industry

Market Numbers

40%
CAGR

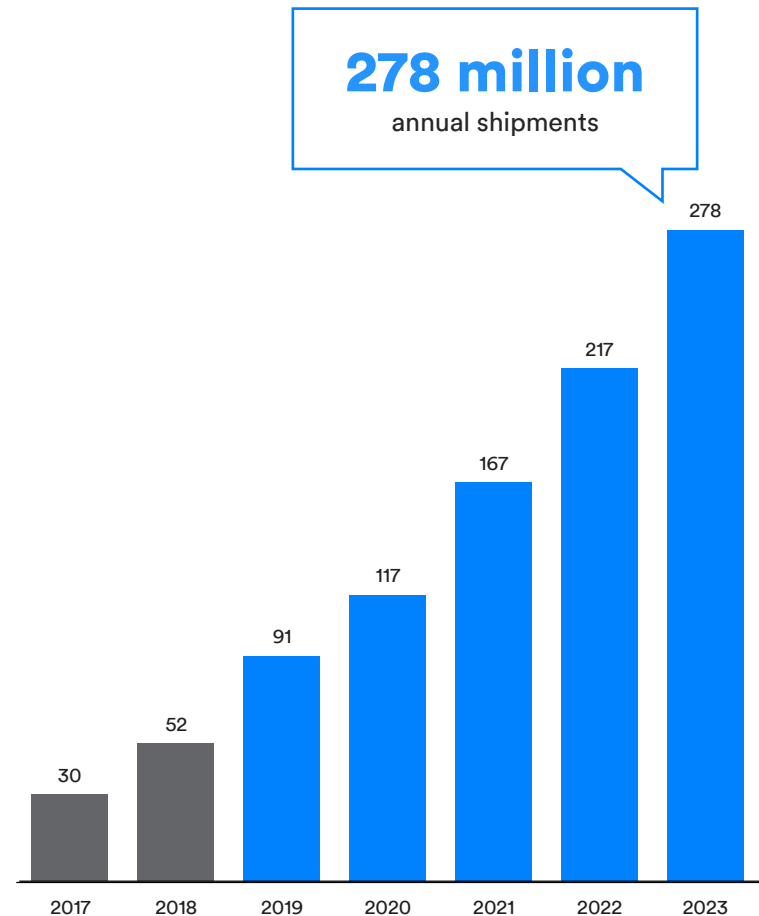
for Bluetooth industrial
devices through 2023

3.5x

increase in annual shipments
of Bluetooth enterprise
wearables for smart industry
use cases by 2023

Annual Bluetooth Smart Industry Device Shipments

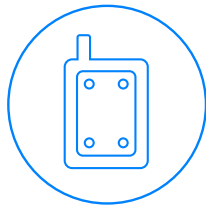
numbers in millions



Source: ABI Research, 2019

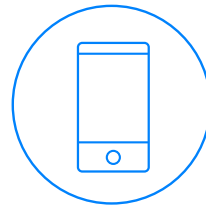
Smart Industry

Market Insights



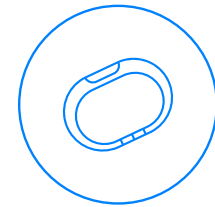
Asset and inventory management lead the forecast

Asset tracking and management solutions enable manufacturers and distributors to optimize inventory management and increase operational efficiencies. Growing at an annual rate of 47% and forecasted to account for 70% of market shipments in 2023, commercial deployments of Bluetooth asset tracking and management solutions are setting the pace for the smart industry.



Smartphones play a central role in HMI and condition monitoring


Whether it's enhancing mobility, protecting workers from harsh environments, or gaining access to remote equipment, the smartphone and tablet are increasingly replacing the traditional human-machine interface (HMI) for condition monitoring and remote control of equipment.



Enterprise wearables gain significant traction

Comprising 34% of smart industry device shipments in 2019, enterprise wearables like scanners, hearables, trackers, and other equipment will continue to see strong growth with a 28% CAGR over the next five years.

Learn more about the
smart industry market



Whether connecting TVs to soundbars or PCs to keyboards, Bluetooth technology has been at the heart of the connected home for years.

Now, Bluetooth dependability, security, and interoperability are poised to help the market realize the full potential of home automation.

Smart Home

Smart Home

Market Numbers

100%

of smart speakers
include Bluetooth

59% CAGR

for Bluetooth
smart appliances
through 2023

4.5x

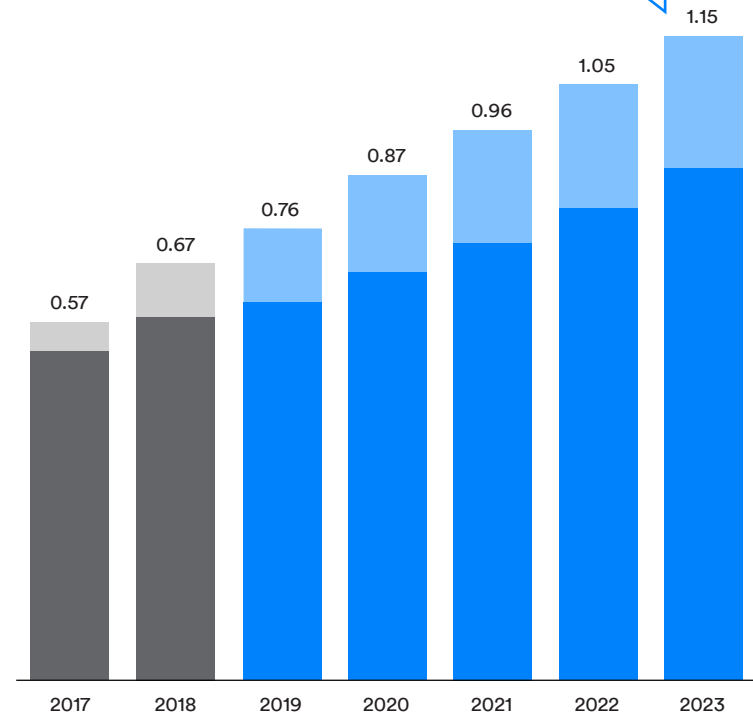
growth in annual shipments
of Bluetooth residential
lighting by 2023

Annual Bluetooth Smart Home Device Shipments

numbers in billions

■ Home Automation
■ Connected Home

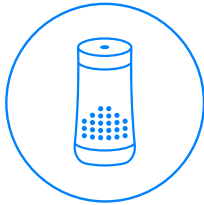
1.15 billion
annual shipments



Source: ABI Research, 2019

Smart Home

Market Insights



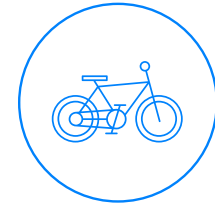
Connected home devices exceed home automation by more than 3:1

Bluetooth has been an integral part of the home for years. Even with home automation exceeding 21% CAGR through the next five years, annual shipments of connected home devices like tools, toys, gaming systems, and TVs will approach 900 million by 2023.



Major ecosystems are defining the home automation conversation


Major technology player ecosystems will drive the home automation market through the forecast period. This past year, leading companies like Alibaba and Xiaomi strategically chose Bluetooth to help define their home automation experience.



Smart appliance is the fastest growing home automation device category

While smart lighting is expected to see 4.5x growth, smart appliances show the strongest potential with a 59% CAGR over the next five years – reaching 54 million devices shipped each year by 2023.

Learn more about the
smart home market

An aerial photograph of a large airport terminal building with a central circular feature. Numerous commercial airplanes are parked at gates with jet bridges. The left side of the image is partially covered by a large, bright blue geometric shape consisting of several overlapping triangles and polygons. The text is positioned within the white space of this blue shape.

Bluetooth is connecting tomorrow's smart cities to enhance the visitor experience, improve the quality of life for citizens, and create a more business friendly environment.

Smart City

Smart City

Market Numbers

7x

growth in annual Bluetooth
smart city device shipments
by 2023

500%

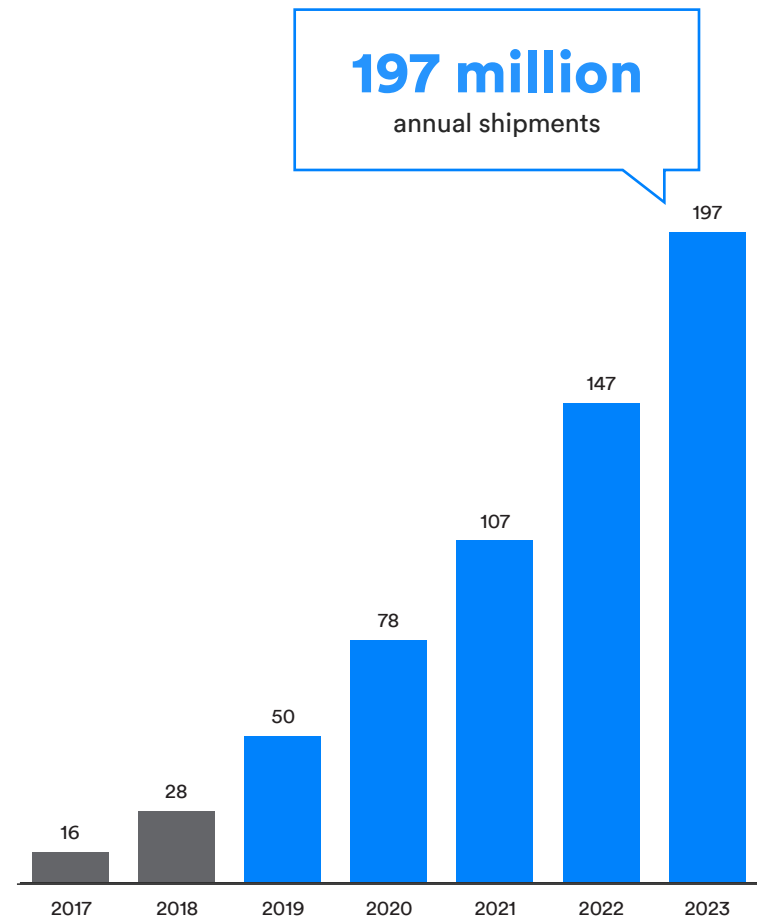
increase in Bluetooth RTLS
implementations in airports
by 2023

3x

growth in Bluetooth RTLS
implementations in sports
stadiums by 2023

Annual Bluetooth Smart City Device Shipments

numbers in millions



Source: ABI Research, 2019

Smart City

Market Insights



Bluetooth will connect tomorrow's smart cities

"Gartner is predicting that the revenue for IoT applications will be \$53.2 billion in 2023, growing at a 11% CAGR from 2018 through 2023."

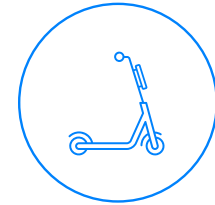
- Mar 2019, Gartner

Bluetooth enabled location services and connected device networks are well positioned to support a wide range of smart city use cases over the next five years.



Location services deployments in smart city venues lead the forecast

Bluetooth location services in airports, stadiums, hospitals, retail malls, tourism centers, and museums transform how visitors interact with a smart city. At the same time, asset management solutions increase utilization of smart city resources to help lower operational costs.



Bluetooth is powering the sharing economy

Bluetooth is helping to bring one of the main drivers of the sharing economy to life. Mobility as a Service (MaaS), including bikes and scooters, provides on-demand transport solutions. Steady rollouts continue worldwide with notable expansion in APAC.

Learn more about the
smart city market



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