



2021 Market Update



Table of Contents

A Letter From the CEO	3	Location Services	18
Executive Summary	4	Drivers for Today	19
Total Shipments	5	Drivers for Tomorrow	21
Shipments by Radio Version	6	Device Networks	23
The Impact of COVID-19	7	Drivers for Today	24
Solution Areas	8	Drivers for Tomorrow	26
Audio Streaming	11	Who is the Bluetooth SIG?	28
Drivers for Today	12	Bluetooth® Market Research	29
Drivers for Tomorrow	13		
Data Transfer	15		
Drivers for Today	16		
Drivers for Tomorrow	17		

Unless otherwise noted, stats without a specified source are from ABI Research. Data files referenced from ABI Research include Bluetooth Data Set (4Q20), Wireless Connectivity (4Q20), Mobile Accessories and Wearables (4Q20), Indoor Positioning and RTLS (4Q20), Connected Car (2Q20), Commercial Building Automation (4Q20), Smart Home (4Q20), Internet of Everything (4Q20). Forecasts do not constitute a promise to ship.



The COVID-19 pandemic has resulted in a global health crisis like no other and continues to impact all aspects of our work and lives. Through it all, the Bluetooth Special Interest Group (SIG) and its member community have persevered and continued to innovate. From wireless audio and wearable devices to location services and device networking solutions, Bluetooth SIG member companies continue to meet the needs of consumer, commercial, and industrial use cases.

Thanks to their efforts, Bluetooth® technology has secured its place in tomorrow's homes, buildings, and factories. Recent advancements in Bluetooth audio, including the upcoming adoption of LE Audio, are influencing wireless audio device markets, while industry leaders are making the strategic choice to integrate Bluetooth mesh networking into their commercial connected lighting and home automation solutions.

We are very proud of how the Bluetooth member community rose to the challenges of 2020, and we appreciate that so many members are working tirelessly to develop innovations that help manage the pandemic. This rally to help is the latest example of our community bringing innovators together for a common cause — to develop technology advancements that create a safer, more connected world.

It is an honor to be part of such an incredible community.

A handwritten signature in black ink that reads "Mark". The signature is fluid and cursive, with a long horizontal line extending from the bottom of the "k" to the left.

Mark Powell | CEO | Bluetooth SIG, Inc.



Few industries were untouched by COVID-19, and analysts could not have predicted the full impact the pandemic would have on market forecasts. Some markets remained resilient while others are just beginning to recover. Overall, previously expected growth in Bluetooth® annual device shipments effectively shifted out one year. Despite this shift, recovery and growth forecasts predict that more than six billion Bluetooth enabled devices will ship annually by 2025.

LE Audio will drive significant volume and use case growth for the future

The anticipated completion of the LE Audio specifications in 2021 will further strengthen the Bluetooth ecosystem and drive greater demand for Bluetooth® earbuds, speakers, and hearing accessibility devices, resulting in 1.5x growth in annual Bluetooth® Audio Streaming device shipments from 2021 through 2025.

Annual shipments of Bluetooth® wearables and PC accessories will outpace pre-pandemic forecasts

More IoT devices rely on Bluetooth® technology than any other wireless solution, making it the #1 technology for the IoT. Analysts predict that — due to a greater focus on health and wellness and the shift to working from home — wearables and PC accessories will see a significant boost in annual device shipment forecasts.

Growth of Bluetooth® Location Services devices will rebound and trend upward over the next five years

The onset of COVID-19 lockdowns led to a reduction in Bluetooth® Location Services deployments — a 25 percent decrease in implementations compared to previous forecasts. However, thanks to continued interest in asset tracking and indoor positioning use cases, analysts expect Bluetooth Location Services growth to rebound by the end of 2021 and achieve a 32 percent CAGR through 2025.

Bluetooth® commercial connected lighting gains mainstream traction

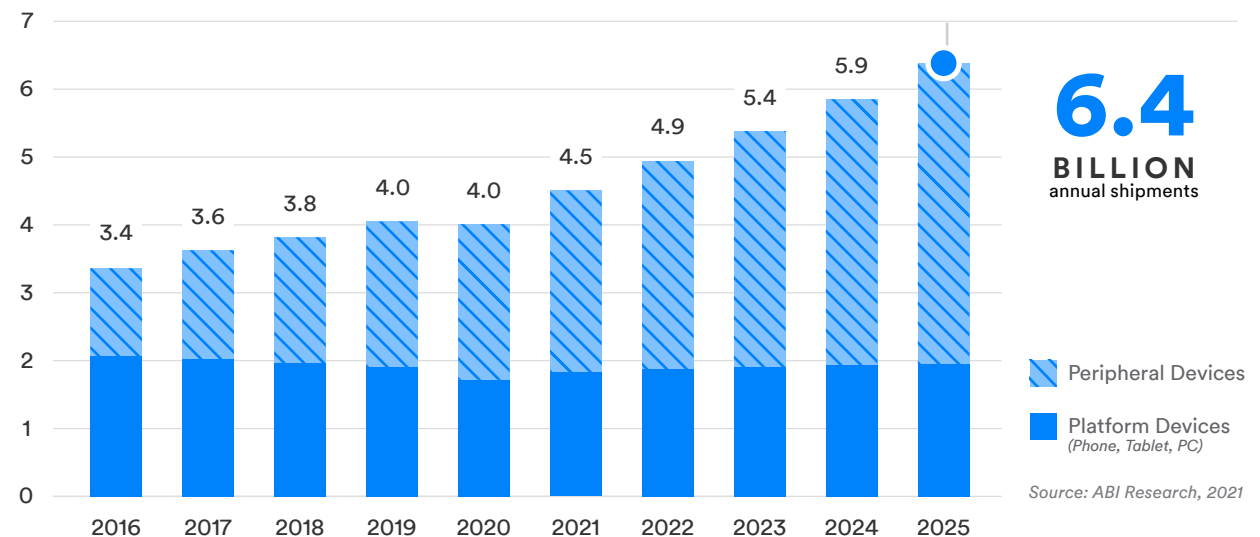
Primarily focused on supporting building automation, control, and operational efficiency, Bluetooth® Device Networks remained largely resilient during the pandemic. Many facilities are still eager to reap the cost benefits provided by commercial connected lighting systems. Analysts at Guidehouse Insights predict that by 2029, commercial connected lighting will generate \$19.1 billion in global revenue.



Total Annual Bluetooth® Device Shipments

NUMBERS IN BILLIONS

With the support of a committed member community, Bluetooth® technology has met growing wireless innovation demands for more than 20 years. Despite a one-year shift in forecasts due to the pandemic, annual shipments of Bluetooth enabled devices prove to be resilient and continue to grow. By 2025, annual Bluetooth enabled device shipments will exceed six billion.



10% CAGR

for Bluetooth® enabled device shipments from 2021 through 2025

Strong global growth will continue through 2025

Despite a slowdown in market expansion caused by the COVID-19 pandemic, strong demand for connectivity and positioning solutions will accelerate global device shipment growth over the next five years.

70%

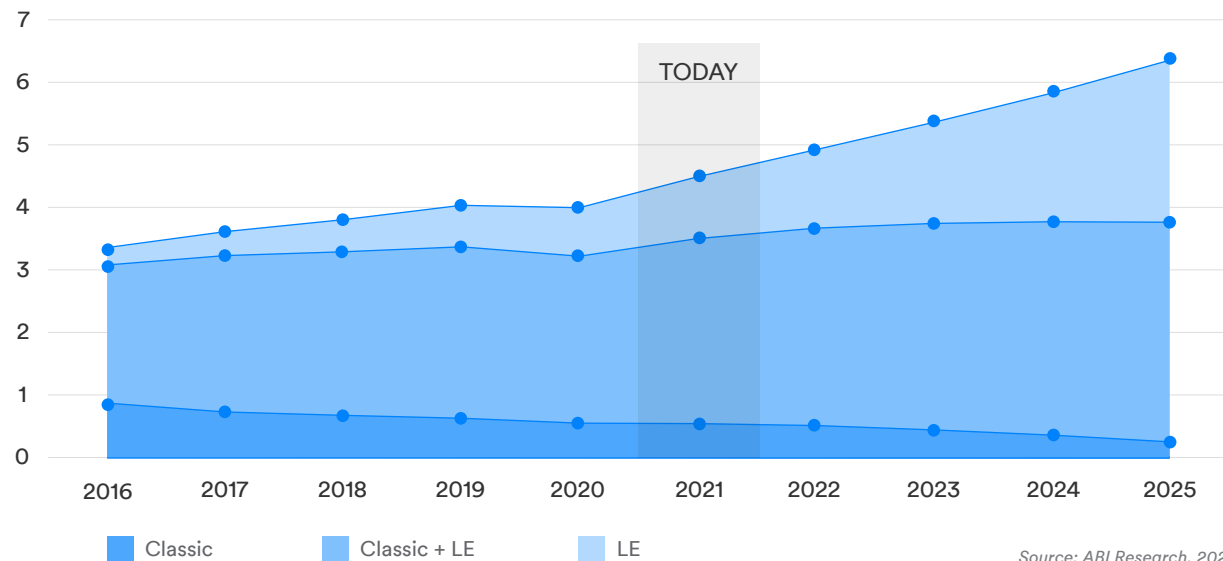
of Bluetooth® enabled device shipments in 2025 will be peripheral devices

Peripheral devices lead annual device shipment growth

Market growth continues to shift towards peripheral devices (earbuds, wearables, sensors, smart lights, etc.) as they outpace platform device shipments by more than two to one, rising to three to one by 2025.

Bluetooth® Enabled Device Shipments by Radio Version

NUMBERS IN BILLIONS



Bluetooth® Low Energy (LE), Bluetooth® Classic, and dual-mode (Bluetooth LE + Bluetooth Classic) radios are designed to satisfy the wide variety of developer connectivity requirements worldwide.

3x
GROWTH
in annual shipments
of single-mode
Bluetooth® LE devices
from 2021 through 2025

The influence of Bluetooth® LE will have a sizable impact on the market

Bluetooth® LE single-mode device shipments are forecasted to more than triple over the next five years. Bluetooth LE will continue to have a decisive impact on the market with 96% of all Bluetooth enabled devices forecast to include Low Energy by 2025.

100%
of key new platform
devices support
dual-mode (Bluetooth®
Classic + Bluetooth® LE)

Support for Bluetooth® Classic is reaching a plateau

Bluetooth® LE supports a range of new features, from Bluetooth® Direction Finding to LE Audio, leading to its saturation in platform devices. With Bluetooth LE in 100 percent of phones, tablets, and PCs, the number of devices supported by Bluetooth Classic is reaching a plateau.

2020 was a turbulent year. The COVID-19 pandemic resulted in a global health crisis like no other and continues to impact all aspects of our work and lives. As a result, delayed growth across all Bluetooth® markets was expected. And while 2020 resulted in a year of delayed growth, analysts expect to see annual growth resume as we move through 2021.

One-Year Shift in Forecasts

Warehouse closures, factory shutdowns, and worldwide shipping delays reduced the availability of device supplies.

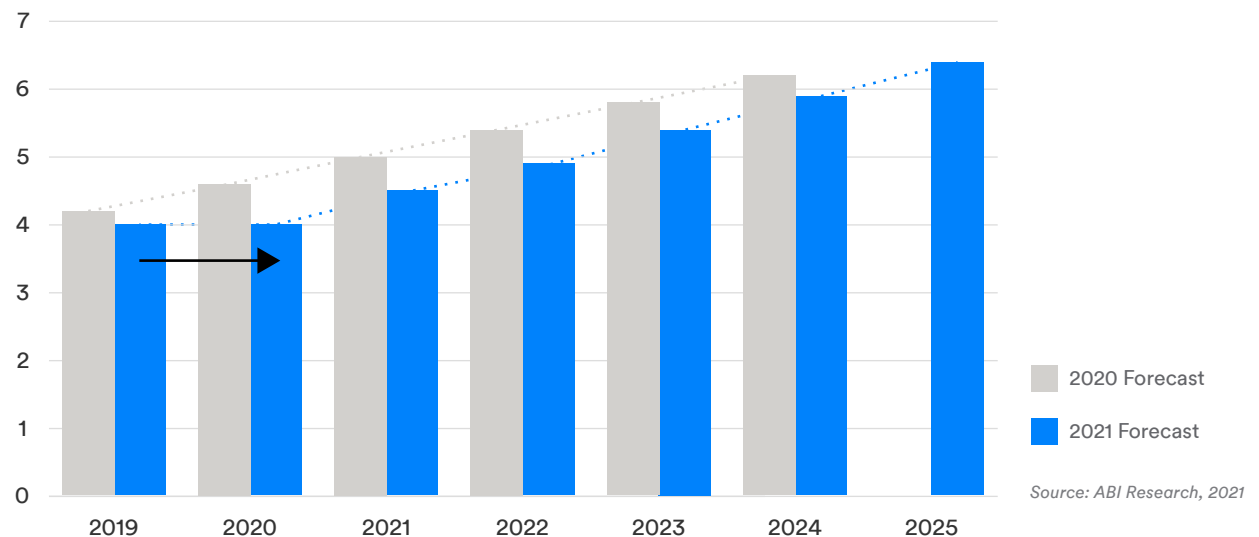
Consumer spending slowed to a trickle as the phone, tablet, and PC market saw a significant delay in purchases with minimal recovery in shipment volumes.

Markets like automotive bounced back quickly while location services markets flattened as COVID-19 delayed implementations around the globe. These and similar factors in other markets caused growth in annual Bluetooth® global device shipment forecasts to shift out one year.

During this challenging time, some Bluetooth markets found opportunities to thrive. The global shift to work from home drove growth in Bluetooth PC accessories. An increased focus on health and wellness grew demand for Bluetooth wearables. Additionally, due to strong interest in safe return solutions, we expect to see a sizeable increase in Bluetooth real-time locating system (RTLS) deployments.

Impact of COVID-19 on Bluetooth® Device Shipments

NUMBERS IN BILLIONS



“Most markets are expected to recover close to previous projections by 2024, but much will also depend on the longer-term economic impact of COVID-19 across different regions and specific device market trends.”

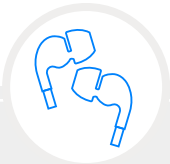
– ABI Research



Bluetooth® Solution Areas

Solutions to Meet Market Needs

Bluetooth® technology provides full-stack, fit-for-purpose solutions to meet the ever-expanding needs for wireless device connectivity and positioning. After first addressing audio streaming, Bluetooth technology expanded into low-power data transfer. Now, Bluetooth technology is meeting the market demand for indoor location services and reliable, large-scale device networks.



Audio Streaming

Stripping away the hassle of wires on headphones, speakers, and more, Bluetooth® technology revolutionized audio and has forever changed the way we consume media and experience the world.



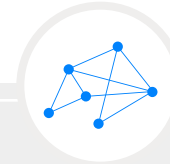
Data Transfer

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



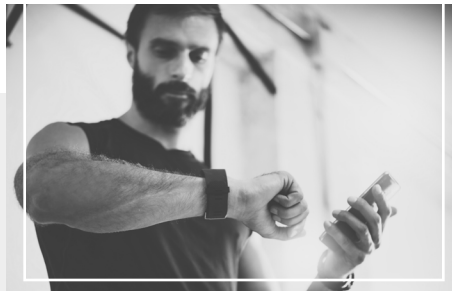
Location Services

Bluetooth® technology is the standard for creating proximity solutions used for point of interest information and item finding as well as positioning systems such as real-time locating systems (RTLS) for asset tracking and indoor positioning systems (IPS) for wayfinding.



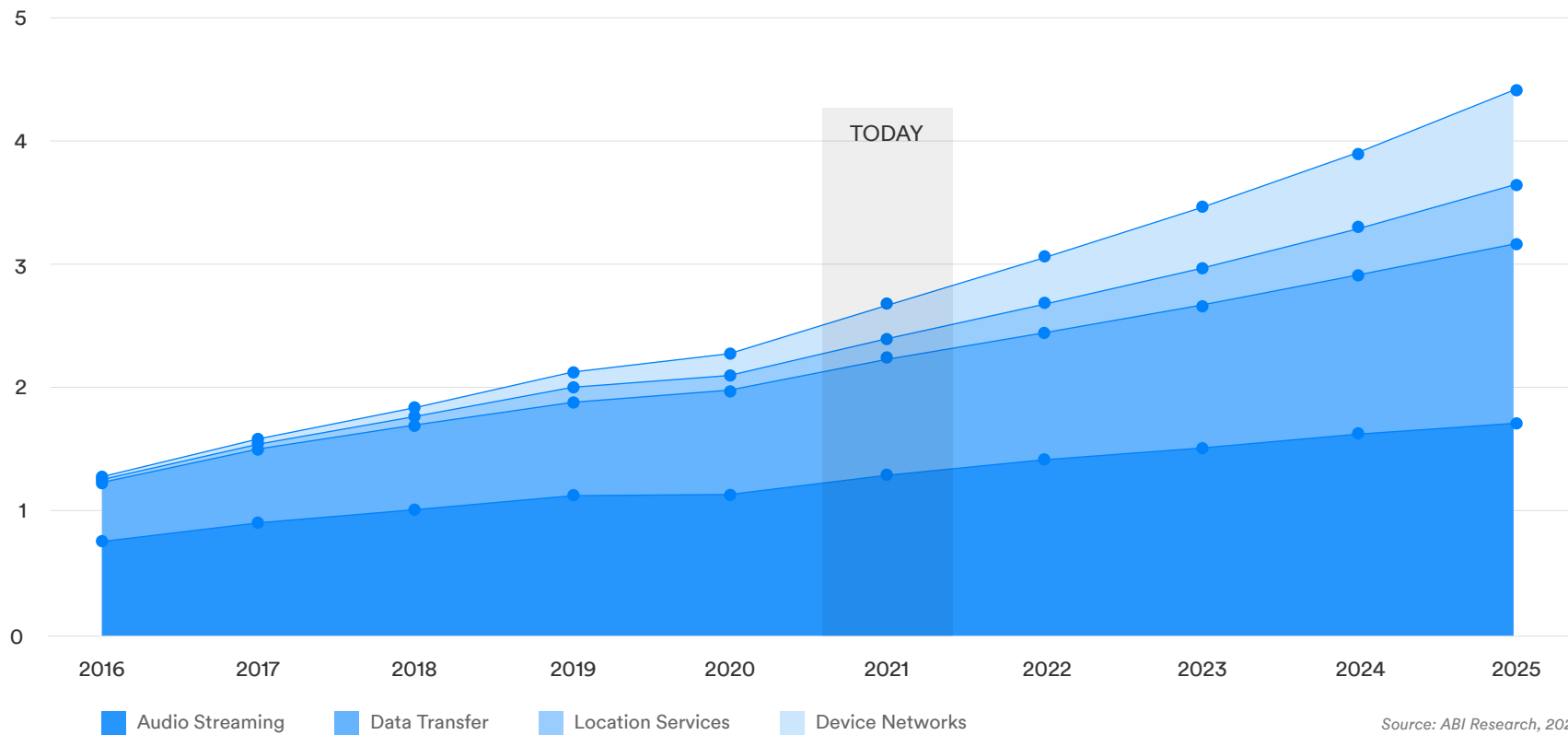
Device Networks

Bluetooth® mesh networking is ideally suited for creating control, monitoring, and automation systems where tens, hundreds, or thousands of devices need to reliably and securely communicate with one another.



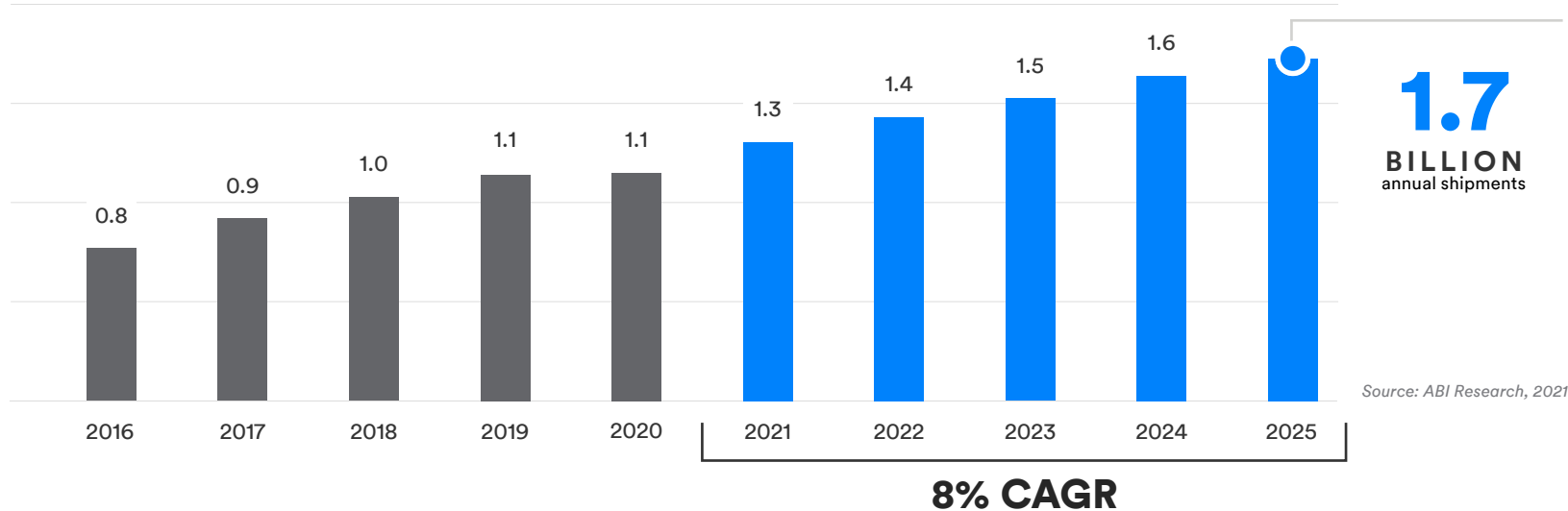
Bluetooth® Peripheral Device Shipments by Solution Area

NUMBERS IN BILLIONS



Annual Bluetooth® Audio Streaming Device Shipments

NUMBERS IN BILLIONS



8% CAGR

1.3
BILLION

Bluetooth® Audio
Streaming devices will
ship in 2021

Largest Bluetooth® technology solution area

Driven by demand for wireless headphones and speakers, more Bluetooth® Audio Streaming devices will ship annually than any other Bluetooth solution area.

1.5x
GROWTH
in annual Bluetooth®
Audio Streaming device
shipments from
2021 through 2025

Growth remains strong despite forecasts shifting out one year

While audio streaming device shipments were impacted by slowdowns associated with COVID-19, the market will see substantial growth and recovery.

Bluetooth® headphones lead the audio streaming category

Wireless headphones, including earbuds, are the leading audio streaming device category. 152 million Bluetooth® earbuds shipped in 2020 alone and will climb to 521 million annual device shipments by 2025.

633
MILLION

Bluetooth® headphones will ship in 2021

Bluetooth® TVs gain momentum

TVs increasingly rely on Bluetooth® connectivity to deliver premium home audio and entertainment experiences, contributing to an anticipated 150 million annual shipments by 2025.

103
MILLION

Bluetooth® TVs will ship in 2021

Demand for Bluetooth® speakers continues to rise

94% of all speakers include Bluetooth® technology, demonstrating high consumer confidence in wireless audio. Close to 350 million Bluetooth speakers will ship this year, increasing to 423 million annual shipments by 2025.

1.5x
GROWTH

in annual Bluetooth® speaker shipments from 2021 through 2025



Individuals own multiple Bluetooth® Audio Streaming devices

Demand for specialized Bluetooth® audio devices that support different needs and wants for work, entertainment, and fitness is increasing.

“Wireless headset products tend to be more customized in order to meet specific use cases — such as sports/exercise suitability, gaming and entertainment, professional usage, and medical assistance — and different consumer groups, from casual listeners to travelers to professionals.”

– ABI Research



**3.4x
GROWTH**

in annual Bluetooth®
earbuds shipments from
2021 through 2025

**521
MILLION**

Bluetooth® earbuds will
ship annually by 2025

**92+
MILLION**

Bluetooth® hearing
assistance devices will
ship annually by 2024

Source: Juniper Research

The Next Generation of Bluetooth® Audio

Building on 20 years of innovation, LE Audio will enhance the performance of Bluetooth® audio, add support for Bluetooth hearing aids, and introduce Bluetooth® Audio Sharing, an innovative new use case with the potential to once again change the way we experience audio and connect with the world around us.

LE Audio will help expand the Bluetooth® earbuds market

With its new low-power, high-quality codec and support for true multi-stream audio, LE Audio is expected to boost Bluetooth® earbuds shipments even further.

LE Audio will accelerate the adoption of Bluetooth® hearing assistance devices

According to the World Health Organization, 1.5 billion people around the world live with some form of hearing loss, and the gap between those who need hearing assistance and those who use hearing devices continues to grow. LE Audio will play an important role in closing that gap, supporting more choice, greater accessibility, and true global interoperability of hearing assistance devices for people with hearing loss.

71%

of Bluetooth®
hearing assistance
devices are expected
to be sold over the
counter by 2024

Source: Juniper Research

Bluetooth® Audio Sharing will become the next-generation assistive listening system

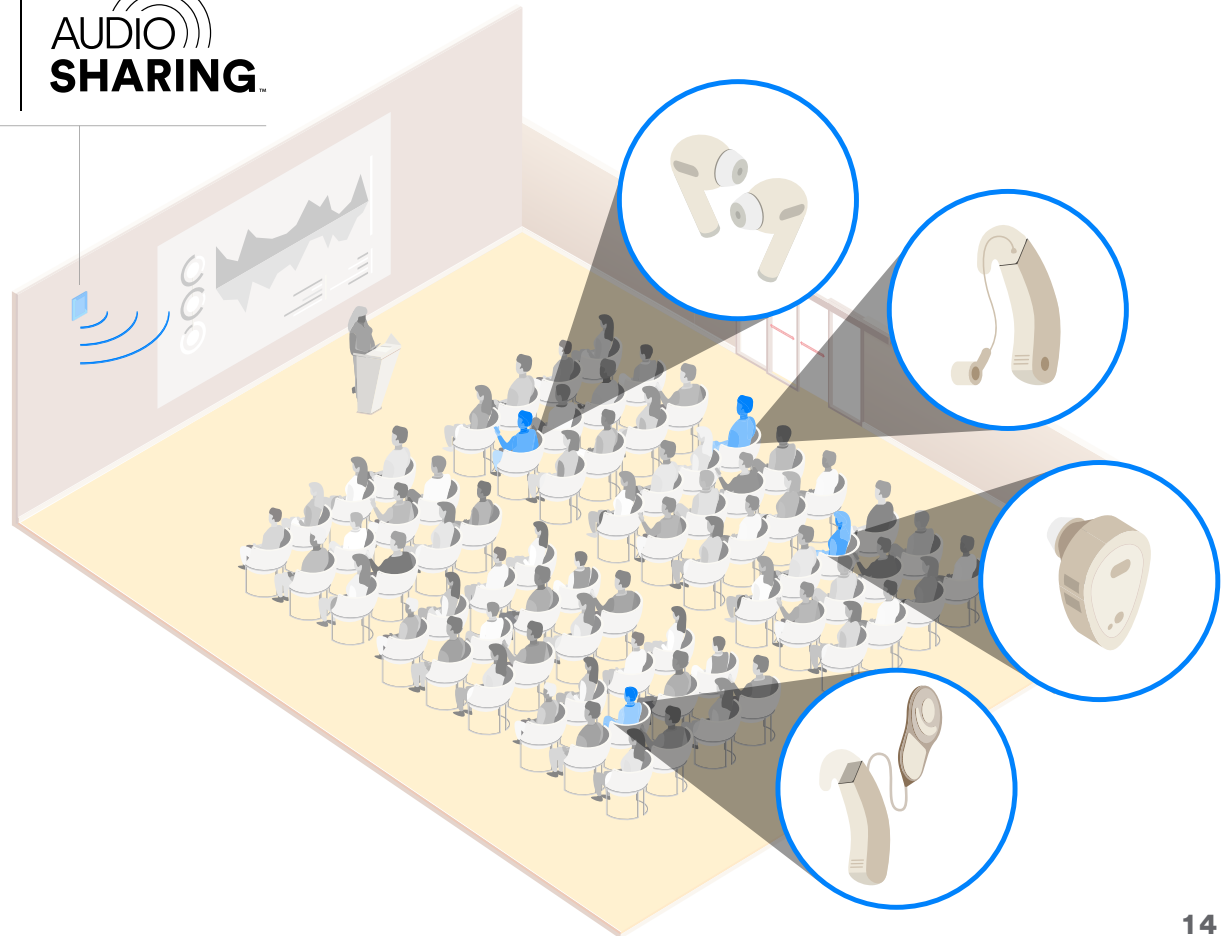
Bluetooth® technology is driving audio accessibility for all. Public gathering spaces – including conference centers, movie theaters, airports, places of worship, and more – will deploy Bluetooth® Audio Sharing to increase accessibility for people with hearing loss. Bluetooth® Audio Sharing will become the modern, high-quality, low-cost assistive listening system (ALS).

1/2
BILLION
people need audio
accessibility today

Source: World Health Organization

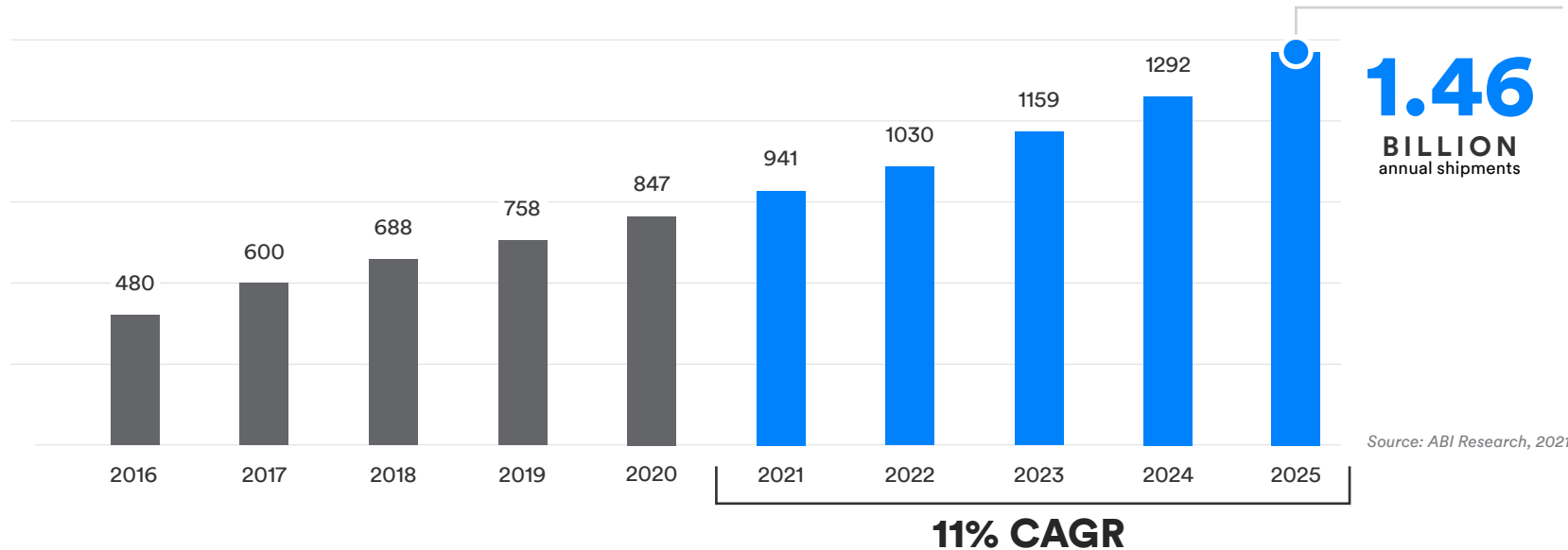


AUDIO
SHARING™



Annual Bluetooth® Data Transfer Device Shipments

NUMBERS IN MILLIONS



13

BILLION

Bluetooth® IoT devices will be in use in 2021

#1 Technology for the IoT

Bluetooth® technology is enabled in more IoT devices than any other technology, making it the go-to technology for the IoT.

1.7x

GROWTH

in annual Bluetooth® Data Transfer device shipments by 2025

Data transfer growth remains steady, keeping pace with changing consumer habits

A surge in the number of people spending more time at home led to a greater demand for connected home devices and peripherals. Combined with an increased focus on health and wellness wearables, the market is primed to see significant growth in annual device shipments from 2021 through 2025 – an 11 percent CAGR.

Bluetooth® OEM remote controls drive volume

With annual shipments forecasted to reach 350 million in 2025, OEM remote controls for TVs, fans, speakers, cameras, and more are the largest device category by volume within the Bluetooth® Data Transfer solution area.

242
MILLION

Bluetooth® OEM remote controls will ship in 2021

Bluetooth® PC accessories experience an unexpected surge in market growth

While other markets may have underperformed, PC accessory sales for 2020 outpaced original forecasts; 153 million Bluetooth® PC accessories shipped in 2020, far exceeding last year's forecast of 145 million.

168
MILLION

Bluetooth® PC accessories will ship in 2021

Bluetooth® technology connects a wider range of consumer electronics

From tools to toys to toothbrushes, the *Connected Everything* category of Bluetooth® enabled devices continues to broaden, ensuring Bluetooth technology remains the #1 technology for the IoT.

135
MILLION

other Bluetooth® consumer electronics shipping in 2021

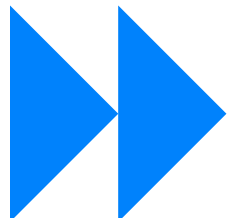


Expanding use cases for wearables is powering a steady increase in device shipments

According to the Center for Disease Control (CDC), telehealth saw a 50 percent increase in early 2020 (compared to 2019). Due to a greater need for remote monitoring and early detection of health related issues, sports and fitness devices, as well as smartwatches, are being used to monitor vital signs, track exposure, and allow integration with telehealth services.

205
MILLION

Bluetooth® wearables will ship in 2021



156
MILLION

annual Bluetooth®
smartwatch shipments
by 2025

100
MILLION

Bluetooth® fitness and
wellness trackers will
ship annually by 2025

17x
GROWTH

in annual Bluetooth®
smart glasses
shipments by 2025

8.5x
GROWTH

in annual Bluetooth®
VR headset shipments
by 2025



Bluetooth® Wearables Gain Momentum

Thanks to a heightened awareness of devices that monitor and track personal health and wellness, Bluetooth® enabled wearables have experienced greater demand and mainstream attention. Looking ahead to 2025, annual shipments of wearables will outpace pre-pandemic forecasts.

Wearables and the data they provide continue to gain mainstream acceptance

Greater awareness of personal health and wellness monitoring, combined with telehealth requirements during the pandemic, are driving the urgency and growth of wearable device shipments.

27%

of Bluetooth® Data
Transfer device
shipments in 2025 will
be wearables

Wearables are more than smartwatches and fitness trackers

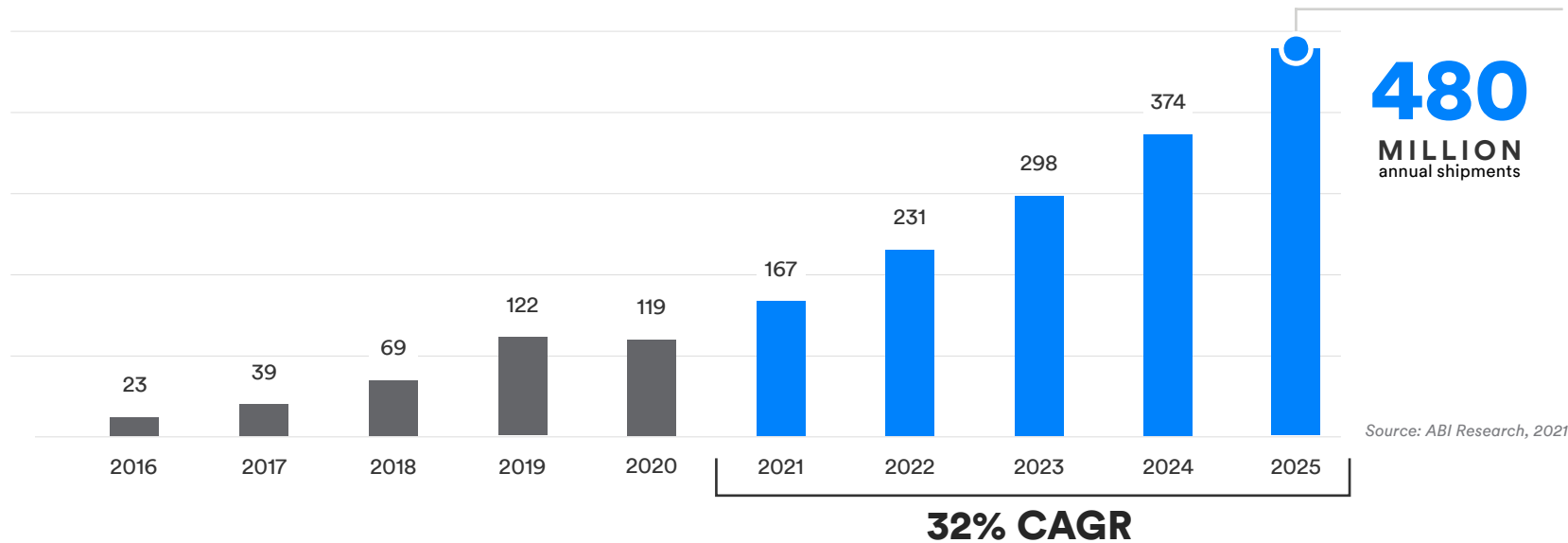
The definition behind wearables continues to expand. They come in many different forms and function to help deliver or augment other use cases; these include VR headsets for gaming and systems training, as well as smart glasses, scanners, and cameras for smart industrial manufacturing, warehousing, and asset tracking.

37
MILLION

annual Bluetooth®
smart clothing
shipments by 2025

Annual Bluetooth® Location Services Device Shipments

NUMBERS IN MILLIONS



262
THOUSAND
total Bluetooth®
Location Services
implementations
by end of 2021

Growth of location services set to rebound

The impact of COVID-19 slowed location services implementations by 25% (compared to pre-pandemic 2020 forecasts), as mitigating the spread of the pandemic prohibited professionals from traveling and installing equipment within facilities. Growth is expected to return to pre-pandemic levels throughout 2021, rising to 550,000 implementations by 2025.

32%
CAGR
in annual shipments of
Bluetooth® Location
Services devices from
2021 through 2025

Bluetooth® Location Services device growth will trend upward over the next five years

Heightened awareness of Bluetooth® Location Services and resumption of solution implementations will continue to support an increase in market growth.

Retail use cases lead Bluetooth® Location Services implementations

Bluetooth® technology has seen strong implementation growth across a number of different verticals. While Bluetooth implementations will double over the next five years, 66% of Bluetooth implementations currently support retail use cases.

66%

of current Bluetooth® Location Services implementations support retail use cases

Indoor navigation will outshine other location services deployments in 2021

While location services solutions support many different use cases — from proximity services to asset tracking — indoor navigation is the common thread for location services deployments. Close to 80% of all Bluetooth® Location Services implementations include indoor navigation.

79%

of current Bluetooth® Location Services implementations include indoor navigation

Bluetooth® tracking tags account for the vast majority of all annual location services device shipments

Tags are an important part of location services solutions, enabling consumer applications as well as commercial and industrial applications to track materials, personnel, and fleets of vehicles. Nearly 40 percent of Bluetooth® tags in 2021 will support manufacturing and logistics.

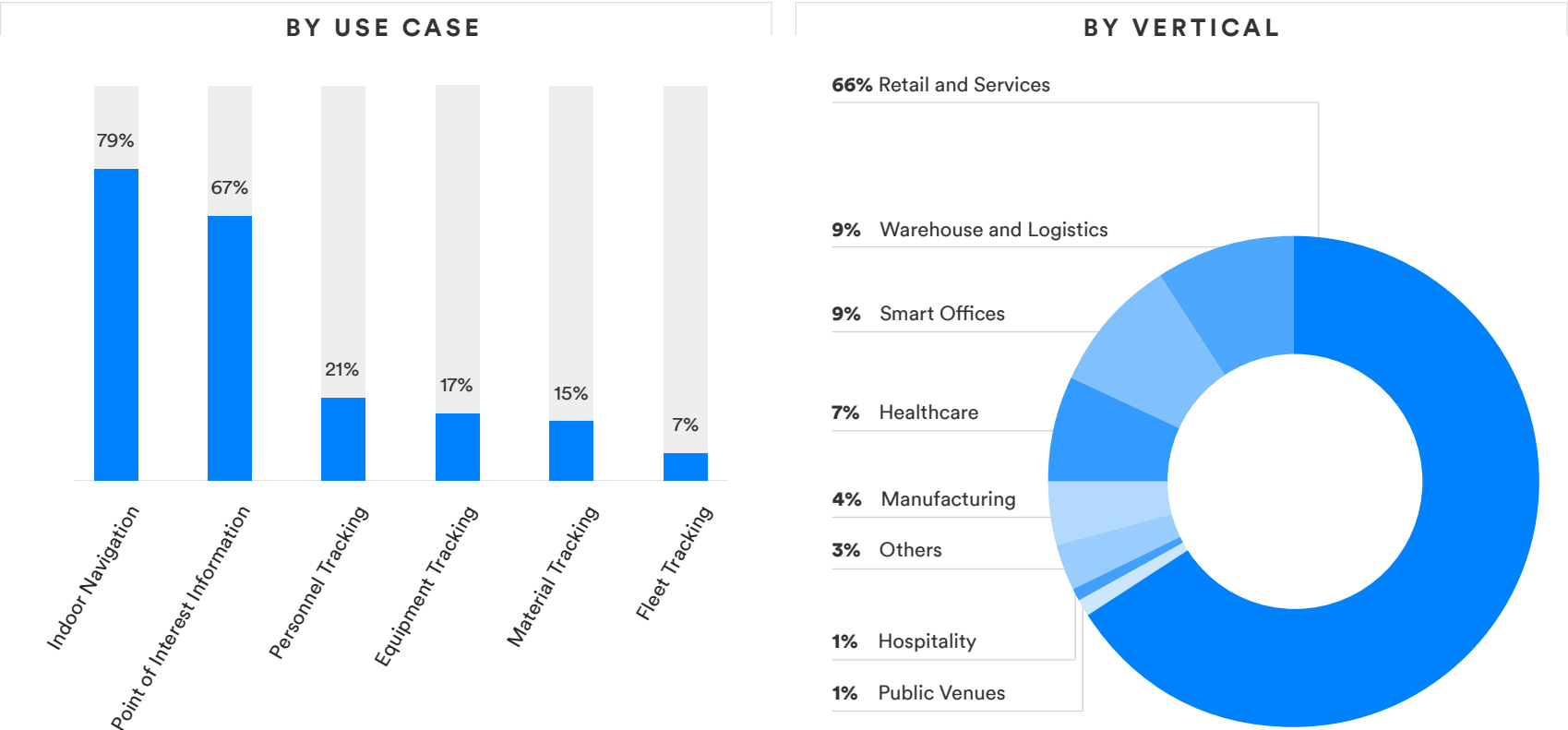
**136
MILLION**

Bluetooth® RTLS tags and personal trackers will ship in 2021



Total Bluetooth® Location Services Implementations

2021



Source: ABI Research, 2021

32%
CAGR

in Bluetooth® Location Services device shipments from 2021 through 2025

4x
GROWTH

in Bluetooth® asset tracking tag shipments from 2021 through 2025

2x
GROWTH

in Bluetooth® indoor positioning implementations in the next five years

5x
GROWTH

in Bluetooth® healthcare location services implementations by 2025



Bluetooth® Technology as a Positioning Radio

Powering rapid growth in real-time locating system (RTLS) solution shipments, Bluetooth® technology will help track assets and people, whether that is locating tools and workers in a warehouse or medical devices and patients in a hospital. Bluetooth indoor positioning systems (IPS) have also quickly become the standard for indoor navigation solutions, helping visitors find their way through complex facilities.

Bluetooth® asset tracking will be the leading use case for location services

Companies around the world are turning to Bluetooth® technology to enable asset tracking solutions. Bluetooth Location Services implementations rely on asset tracking to better locate personnel, materials, and equipment.

516
THOUSAND

implementations of Bluetooth® RTLS asset tracking use cases by 2025

Bluetooth® Direction Finding will accelerate indoor positioning

Thanks to new features that support higher accuracy, such as Bluetooth® Direction Finding, we will see significant growth in IPS solutions over the next five years.

70%

of all Bluetooth® Location Services implementations will include indoor navigation by 2025

Bluetooth® technology turns the smartphone into a digital key

After first becoming widely accepted as a digital wallet for mobile payments, the smartphone continues to expand its role in everyday life. Having achieved 100 percent penetration in smartphones, Bluetooth® technology is now enabling smartphones to be used as a convenient and secure digital key, unlocking doors and spaces as you approach your car, home, office building, and more.

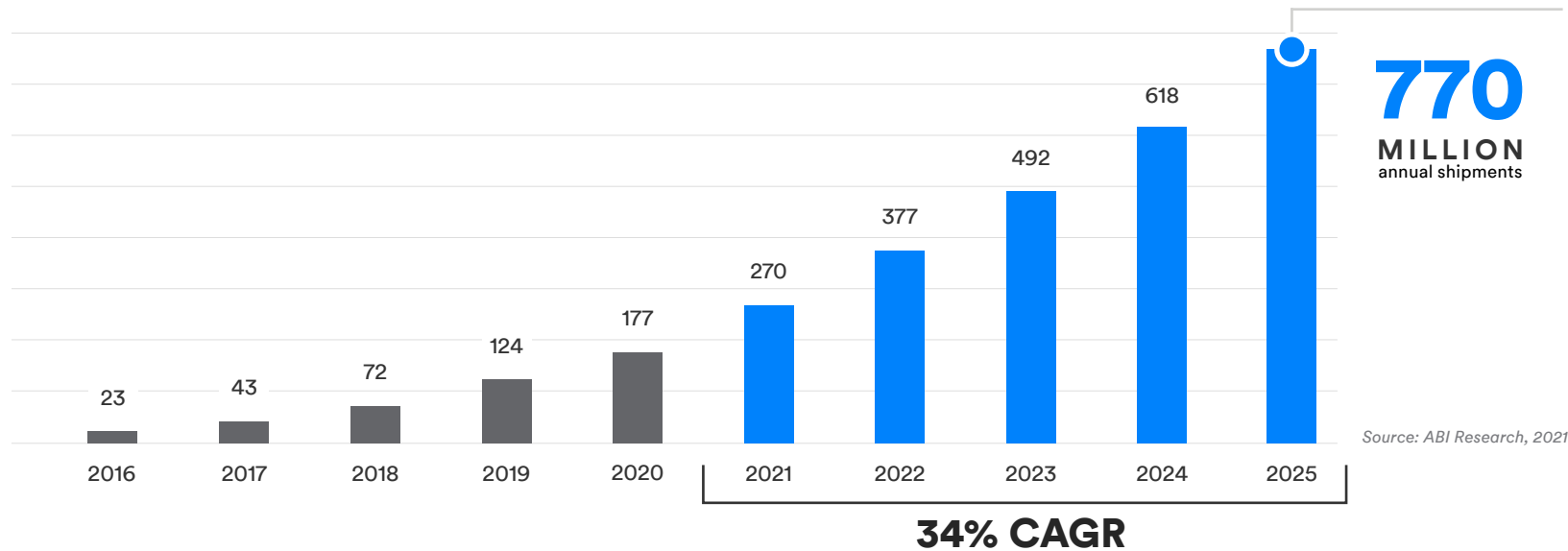
100%

of all smartphones
rely on Bluetooth®
technology today



Annual Bluetooth® Device Networks Device Shipments

NUMBERS IN MILLIONS



4.4x
GROWTH

in annual shipments
of Bluetooth® Device
Network devices
from 2021 to 2025

**Device networks is the
fastest-growing Bluetooth®
solution area**

Smart home and commercial lighting use cases are seeing exceptional growth, driving a 34% CAGR over the next five years for device network device forecasts.

270
MILLION

Bluetooth® Device
Network devices will
ship in 2021

**Device network solutions
experience minimal impact
from COVID-19**

With people spending more time at home, there is a greater demand for Bluetooth® home automation solutions that make our lives more convenient, safe, and connected.

Bluetooth® technology is now a fixture in the helpful home

222
MILLION

Bluetooth® smart home automation devices will ship in 2021

Annual smart home automation device shipments will triple by 2025, increasing to 670 million in just five years. Major devices driving forecasts for Bluetooth® Device Networks include smart home automation controllers, smart lighting, and smart appliances.

39
MILLION

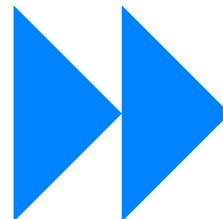
annual Bluetooth® residential smart lighting shipments in 2021

Convenience, including remote-control capabilities, has become top of mind, leading to an accelerated acceptance of voice-control smart speakers and displays that create new opportunities in smart lighting.

51
MILLION

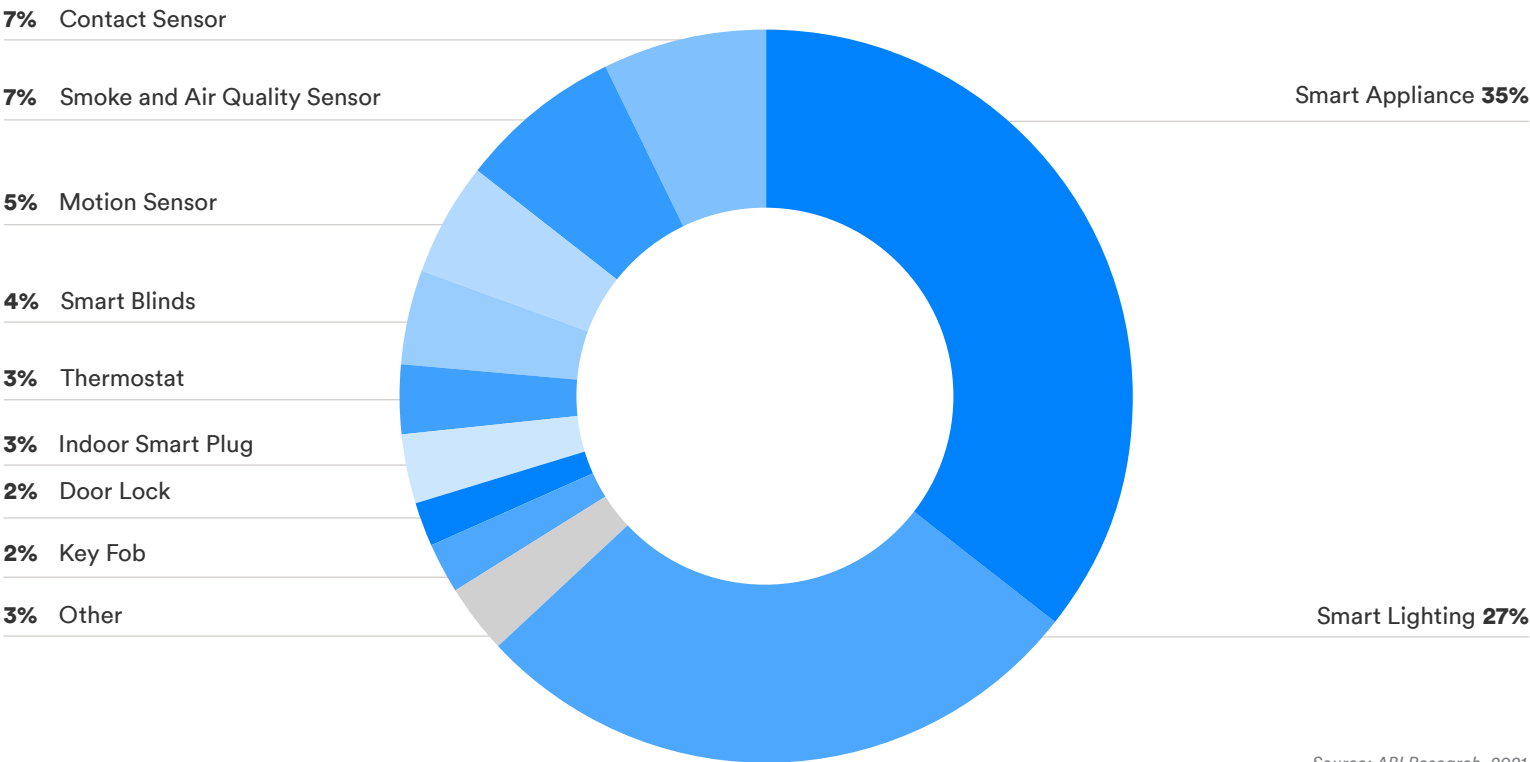
annual Bluetooth® enabled home appliance shipments in 2021

The demand for greater convenience, easier maintenance, and remote monitoring is driving the desire to connect appliances and other smart home devices.



2021 Bluetooth® Smart Home Device Shipments

BY TYPE



Source: ABI Research, 2021



Commercial Connected Lighting Goes Mainstream

Commercial connected lighting systems are becoming the central nervous system for buildings, providing building managers with advanced control while helping to drive additional savings and efficiencies. These systems also establish a platform that enables advanced building services, such as indoor navigation and asset tracking.

Commercial connected lighting is gaining mainstream traction

Proliferation of LEDs, a desire for greater energy efficiency, faster deployment capabilities, and a higher quality occupant experience are driving the demand for commercial connected lighting solutions.

The benefits of Bluetooth® connected lighting go far beyond illumination

Building managers are demanding greater insight into buildings. A connected lighting system provides the infrastructure needed for sensors to feed building management solutions and provide data to increase efficiency of other systems like HVAC, better manage the occupant experience, and extend the life of core systems.

“As lighting suppliers move towards integration of value-added connected lighting services, this has the potential to open up significant new revenue streams. As much of the value in the IoT shifts away from hardware towards platform services, lighting vendors who can offer the most compelling connected lighting experience will better be able to retain customers and build long-term partnerships, ensuring a sustainable longer-term business model.”

– ABI Research

70-75%
REDUCTION

in energy costs achieved through connected lighting and advanced lighting controls

Source: Enterprise IoT Insights, 2020

\$19.1
BILLION

in global commercial connected lighting revenue by 2029

Source: Guidehouse Insights

57%

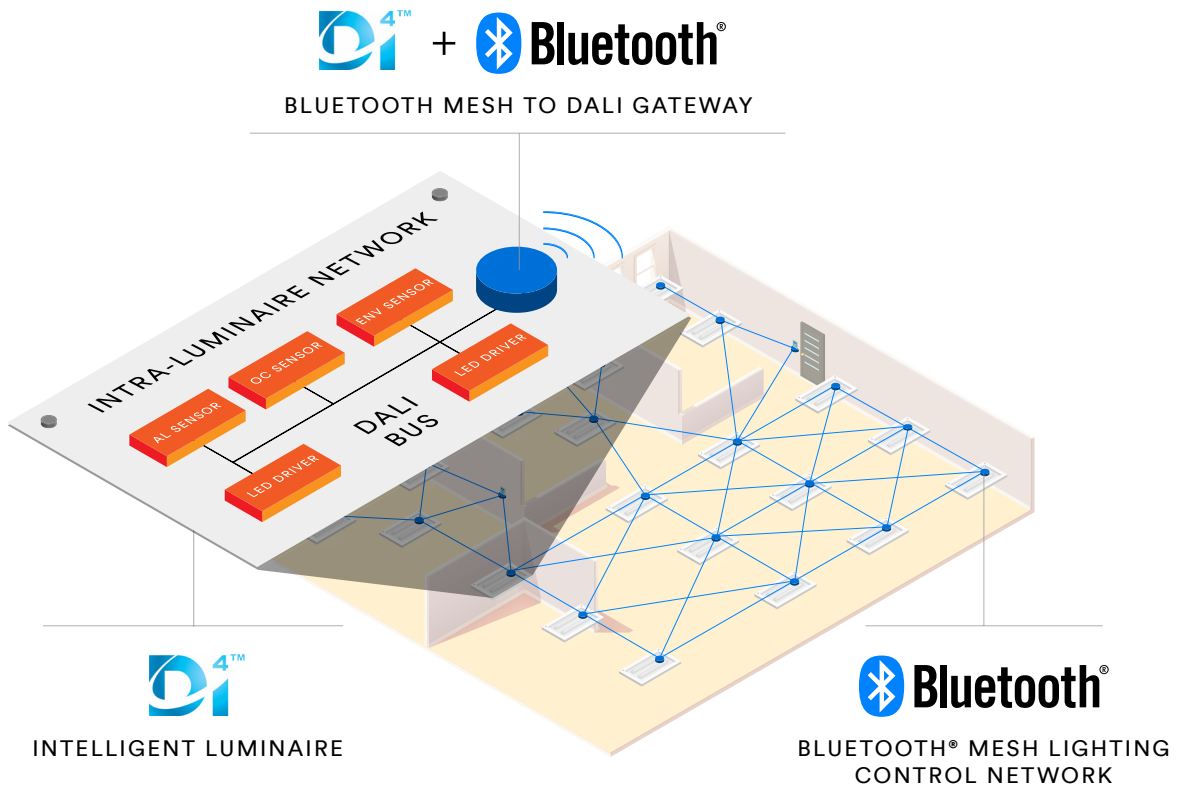
of annual connected lighting hardware shipments will be sensors by 2029

Source: Guidehouse Insights



The Bluetooth SIG collaborates with the DALI Alliance

The partnership of the Bluetooth SIG and the DALI Alliance is a prime example of how technology standards are powering market growth. This collaboration ensures that all commercial connected lighting system components, such as sensor-rich, intelligent luminaires and advanced lighting controls, understand each other and interoperate smoothly, benefiting everyone in the value chain, from manufacturers to end users.



Formed in 1998, the Bluetooth 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 member companies to perfect and advance a simple, flexible, and secure wireless communication solution that helps create a connected world, free from wires.



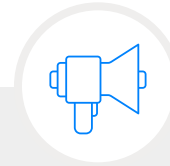
Specification

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 interoperability of Bluetooth® enabled devices through a world-class product qualification program that gives members access to Bluetooth technology and trademark license agreements.

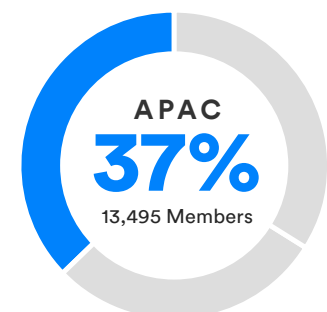
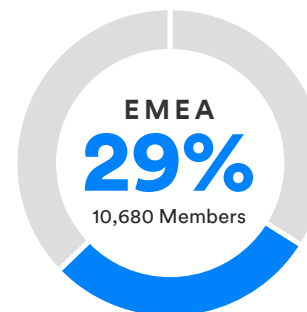
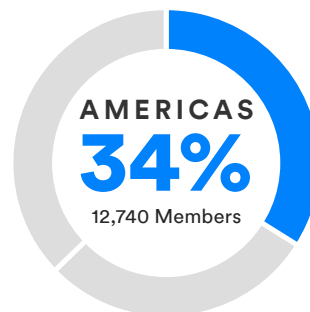


Promotion

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

Bluetooth SIG Membership by Region

36,645
BLUETOOTH SIG
MEMBERS



Source: Bluetooth SIG, as of 31 Dec 2020

Bluetooth Market Research Community

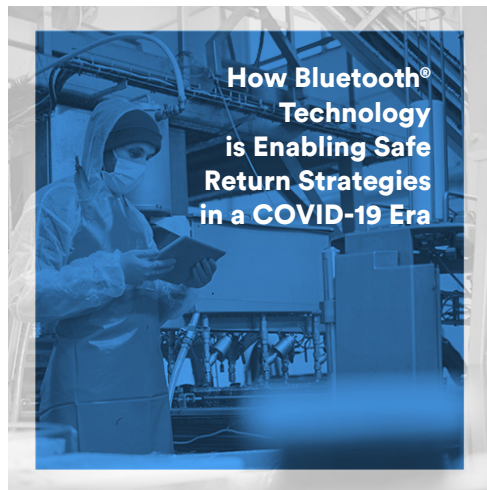
Receive early access to the latest Bluetooth® market trends and forecasts and weigh in on what data is collected and shared to ensure you receive the research that's most valuable to you and your business.

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Recent Research

Visit bluetooth.com/resources for a full library of Bluetooth technology resources.



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