

# Bluetooth market update

2018

# table of contents

1.0	A Le	tter from the Executive Director
2.0	Wha	t is Bluetooth SIG, Inc.?
3.0	Wha	t is the Bluetooth Market Update?5
4.0	Com	nmunity6
	4.1	Membership
	4.2	Specifications
	4.3	Bluetooth 5
	4.4	Bluetooth mesh10
	4.5	Shipments
5.0	Tech	nnology12
	5.1	Expanding to Meet the Needs of the IoT
	5.2	Audio Streaming14
	5.3	Data Transfer
	5.4	Location Services
	5.5	Device Networks
	5.6	Shipments by Solution Area18
	5.7	Shipments by Radio Version19

.0	Mar	kets
	6.1	Phone, Tablet, and PC
	6.2	Audio & Entertainment24
	6.3	Automotive
	6.4	Connected Device
	6.5	Smart Buildling
	6.6	Smart Industry
	6.7	Smart City39
	6.8	Smart Home



# a letter from the executive director

In 2018, nearly 4 billion devices will ship with *Bluetooth*® technology. Thanks to Bluetooth mesh networking and the momentum of Bluetooth 5, Bluetooth is now poised as an industrial-grade connectivity solution that will be the wireless constant in the Internet of Things (IoT) for decades to come.

Since its inception 20 years ago, Bluetooth has continuously evolved, expanding the universe of innovative ways for things to connect — driving innovation and creating new markets. Whether it is a connection for wireless audio, wearable devices, tracking assets, or automating buildings, Bluetooth is the innovative force creating new consumer, commercial, and industrial markets.

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

Mark Powell | Executive Director | Bluetooth SIG, Inc.

20 years of blue.

# what is Bluetooth SIG, Inc.?

Formed in 1998, the Bluetooth Special Interest Group (SIG), Inc. is the organization at the heart of Bluetooth technology, serving industry-leading member companies across the globe.

Based in Kirkland, Washington, USA, we operate as a nonprofit trade association that works with its member companies to perfect and advance a flexible, reliable, and secure wireless communication solution that solves market challenges and helps realize a better future.

#### 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\*, the Bluetooth Market Update examines:

- The growth and health of the Bluetooth SIG member community
- The trajectory of Bluetooth **technology**, including trends and forecasts for each radio version and 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 identified in the Bluetooth Market Update highlight the direction of the Bluetooth member community and technology as Bluetooth continues its expansion from a personal communication solution to an industrial-grade connectivity engine.

Over the last 20 years,
Bluetooth has been pivotal in enabling
compelling customer experiences. It has been
one of the key technologies underpinning the
consumer wireless revolution. The Bluetooth
community continues to grow and extend as the
technology enhances its specification in order
to retain its prominent position in
future markets.

Stuart Carlaw
Chief Research Officer,
ABI Research

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

An incredible community of more than 33,000 member companies driven to continually advance wireless connectivity to create a better world.

# community

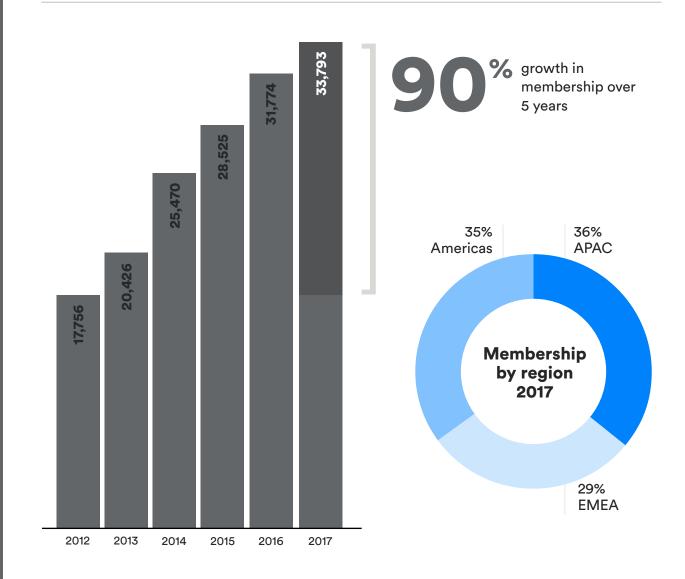
growing collaborating embracing advancing delivering

#### membership

Membership at the Bluetooth SIG continues to experience strong growth. By the end of 2017, the community grew to over 33,000 companies spread evenly across all regions of the world, highlighting the true global footprint of Bluetooth technology.

Learn more about membership

#### **Total Membership**



growing collaborating embracing advancing delivering

## specifications

The hard work and commitment of our working groups and committees deliver continuous innovation. With the help of 2,004 new group and committee participants in 2017, the Bluetooth SIG working groups delivered nearly one new or updated specification each month.

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

Learn more about working groups

# Working Groups are the backbone of the Bluetooth SIG, bringing specifications to life.

15
Working
Groups

Active
Specification
Projects

New/Updated Specifications in 2017

2,004

New group and committee members in 2017

growing

collaborating

embracing

advancing

delivering

#### **Bluetooth 5**

Only nine months after the release of the latest version of the Bluetooth core specification, many of its new features became commercially available in products from the world's leading smartphone vendors. This sets the stage for the widespread adoption of those features in peripherals, beacons, and other key IoT enabling devices.

Learn more about Bluetooth 5

**2**x speed

more performant devices

4x

whole building coverage

8x

richer location services

Bluetooth 5 found its way into high-volume consumer products faster than any of our previous technology releases. Now, less than a year after its initial release, Bluetooth 5 is available from all the leading smartphone vendors on the planet.

Mark Powell

Executive Director | Bluetooth SIG

growing

collaborating

embracing

advancing

# Bluetooth mesh

In 2017, the Bluetooth SIG added mesh networking capability to Bluetooth.

The mesh topology, now available on Bluetooth Low Energy, enables the creation of large-scale device networks and is ideally suited for control, monitoring, and automation systems where tens, hundreds, or thousands of devices need to reliably and securely communicate with one another.

Learn more about Bluetooth mesh



industrial-grade solution



proven, global interoperability



mature, trusted technology

We feel like we are changing the world. We feel very strongly that we've just delivered a third Bluetooth revolution... I think we've taken a significant part of the world by surprise because Bluetooth has always been considered a small personal system. And suddenly we are coming out with something that's so complete, so well-performing, and addressing completely new territories.

Szymon Slupik Silvair CTO and Bluetooth SIG Mesh Working Group Chair growing

collaborating

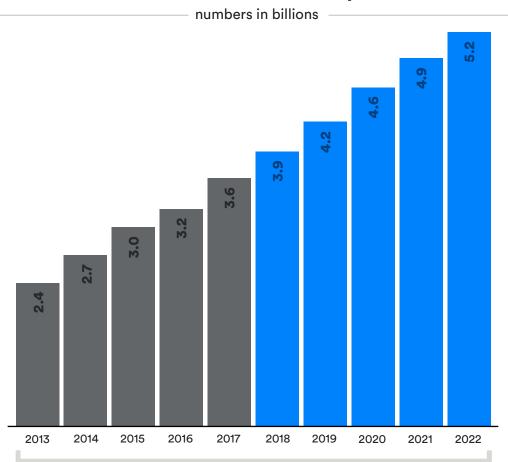
embracing

advancing

## shipments

Thanks to a membership community driven to expand the technology's capabilities to address new markets, Bluetooth shipments have maintained uncommonly consistent growth, and show no signs of slowing down.

#### **Total Bluetooth Device Shipments**



compound annual growth rate (CAGR) over 10 years

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

# technology

# expanding to meet the needs of the IoT

As the demands of the IoT continue to grow, so does Bluetooth. After first addressing point-to-point connectivity, Bluetooth expanded into broadcast communications to enable indoor positioning and location services. Now, Bluetooth mesh networking has propelled Bluetooth into emerging markets in need of a reliable wireless solution to establish large-scale device networks.

# topology

radio

#### audio streaming



wireless headsets wireless speakers in-car infotainment

point-to-point

Bluetooth Basic Rate/ Enhanced Data Rate (BR/EDR)

#### data transfer



sports & fitness devices health & wellness devices peripherals & accessories

point-to-point

#### location services



point of interest information navigation & way finding item & asset tracking

broadcast

#### device networks



control systems monitoring systems automation systems

mesh

Bluetooth Low Energy

#### audio streaming

The point-to-point topology available on Bluetooth BR/EDR is optimized for audio streaming, making it the standard-bearer in wireless audio.



Wireless headsets - The original device of the wireless audio market, Bluetooth headsets are now a must-have accessory for mobile phones.

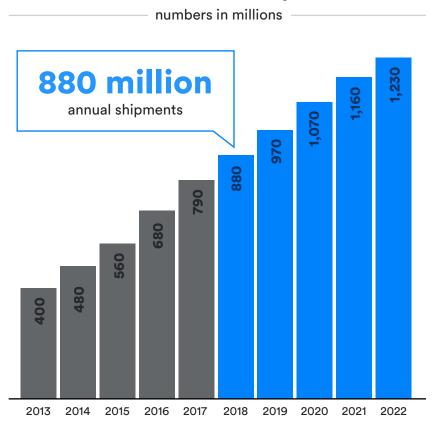


Wireless speakers - Whether it's a highfidelity entertainment system in the home or a portable option for the beach or park, there's a speaker for any occasion in every imaginable shape and size.



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.

#### **Bluetooth Device Shipments**



# data transfer

The Bluetooth Low Energy point-to-point topology is optimized for very low-power data transfer, making it ideal for connected device products.



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



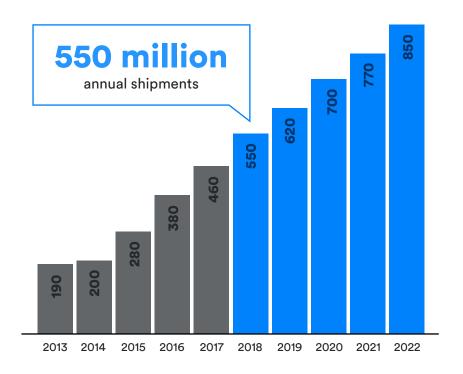
Health & wellness - From blood pressure monitors to portable ultrasound and x-ray imaging systems, Bluetooth technology helps people track and improve their overall wellbeing, while making it easier for healthcare professionals to provide quality care.



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

#### **Bluetooth Device Shipments**

numbers in millions

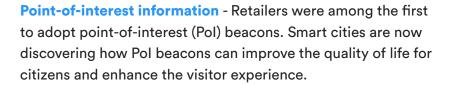


#### location services

The broadcast topology available on Bluetooth Low Energy is ideally suited for enabling indoor positioning and location services.

data transfer







Indoor navigation - Bluetooth beacon-based indoor navigation and way-finding solutions have quickly become the standard way to overcome indoor coverage challenges that GPS can't address.



Asset and item tracking - Bluetooth beacons power the rapidly growing asset tracking and item finding markets, from inexpensive personal item tracking solutions to large-scale asset tracking solutions found in hospitals and factory floors.

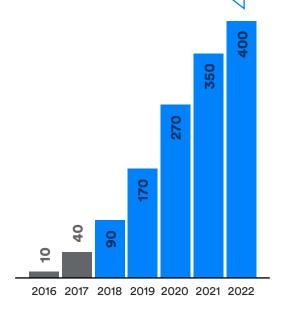


Space utilization - Bluetooth beacon solutions are being deployed within office buildings, airports, exhibition centers, and even on city streets around the world to enable building owners and city planners to better understand how space is being used.

#### **Bluetooth Device Shipments**

numbers in millions

400 million annual shipments



The mesh topology on Bluetooth Low Energy is optimized for creating large-scale device networks.



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

Monitoring systems - Bluetooth wireless sensor networks (WSN) are monitoring light, temperature, humidity, and

requirements of production equipment to reduce

unplanned downtime.

occupancy to improve employee productivity, lower building operating costs, or better meet condition and maintenance

audio streaming



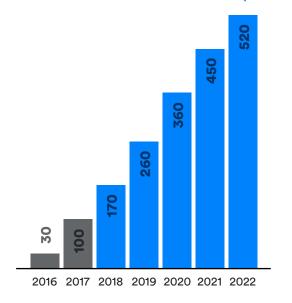
Automation systems - Bluetooth enables the automatic, centralized control of a building's essential systems, including heating, ventilation and air conditioning (HVAC), lighting, and security to harness energy savings, lower operating costs, and improve the life span of a building's core systems.



#### **Bluetooth Device Shipments**

numbers in millions

520 million annual shipments



# shipments by solution area

2x

growth in annual volume of audio streaming and data transfer solutions by 2022

#### Point-to-point is still on the rise

Despite Bluetooth technology's expansion to support a wider range of topologies and emerging use cases, the use of Bluetooth for audio streaming and data transfer continues to grow, with annual shipments expected to double in the next five years.

# Location services have the steepest 5-year growth forecast

Bluetooth indoor positioning and location services are poised to be the fastest growing solution area. Bluetooth based location solutions are increasingly deployed by smart buildings and venues around the world to enable point-of-interest solutions, way finding, asset tracking, and space utilization.

# **10**x

growth in annual volume of Bluetooth location services devices by 2022

# 5X

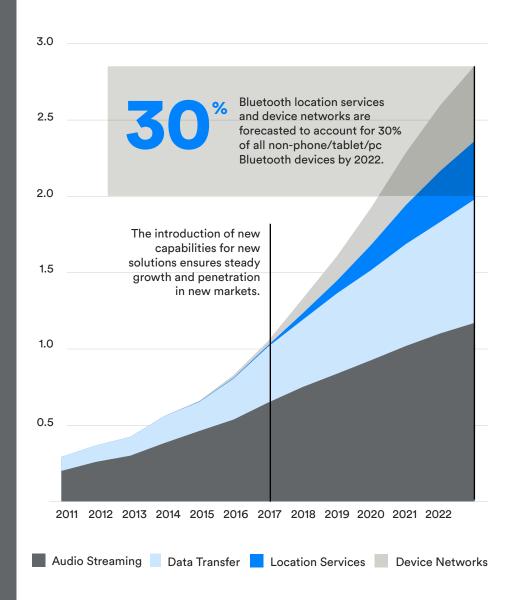
growth in annual volume of Bluetooth device network products by 2022

## Device network solutions are predicted to grow rapidly

The launch of Bluetooth mesh has accelerated the growth of device network solutions. Lighting control systems and wireless sensor networks are two use cases driving the increase in device network implementations.

#### **Bluetooth Device Shipments**

numbers in billions



<sup>\*</sup>Phone, tablet, and PC devices not included

# shipments by radio version

1/3

Bluetooth Low Energy (LE) single-mode chips are forecasted to account for more than 1/3 of all shipments by the end of 2022



The rapid adoption of connected device solutions across multiple markets and the accelerated deployment of location services are driving swift momentum in Bluetooth Low Energy single-mode chip solutions.



Since the 2010 release of Bluetooth Low Energy, shipments of dual-mode Bluetooth chips have followed a steep growth trajectory. By 2022, 97% of all Bluetooth chips are expected to contain Low Energy technology.

The wireless audio community continues to leverage the streaming capabilities of Bluetooth BR/EDR, and increasingly turns to dual-mode chips to accommodate multiple use cases within audio devices.



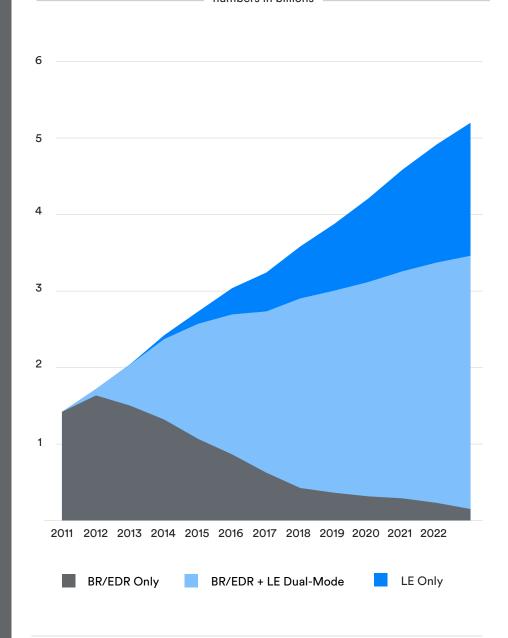
of all Bluetooth chips shipped in 2022 will contain Low Energy technology



of all Bluetooth chips shipped in 2022 will contain BR/EDR technology

#### **Bluetooth Device Shipments**

numbers in billions



# Connection drives innovation. Innovation creates markets.

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

# markets



## phone, tablet & PC

market numbers





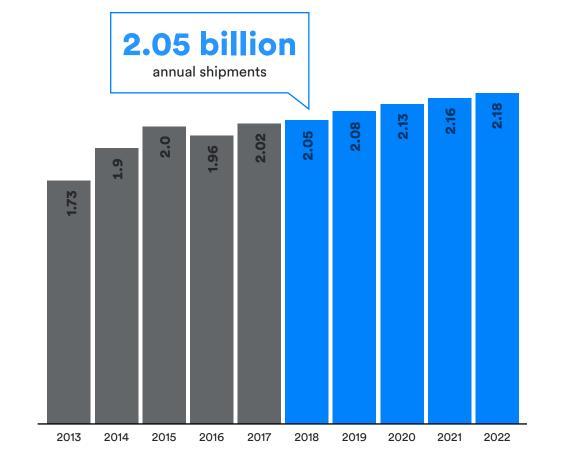


100%

of smartphones, tablets, and laptops shipped in 2018 will include Bluetooth



numbers in billions



#### phone, tablet & PC

market insights

home



# Rapid adoption of Bluetooth 5 in smartphones

The latest version of the Bluetooth core specification found its way into its first smartphone faster than any previous release, further accelerating the widespread deployment of connected devices, beacons, and key IoT enabling solutions.



### The trend to design out the audio jack continues

The proven reliability of Bluetooth audio has inspired smartphone manufacturers to design the audio jack out of the phone.

This trend signals increased confidence in Bluetooth as a complete wire replacement and positions Bluetooth as the default way to listen to audio.



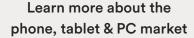
# Smartphones become central in industrial and commercial use cases

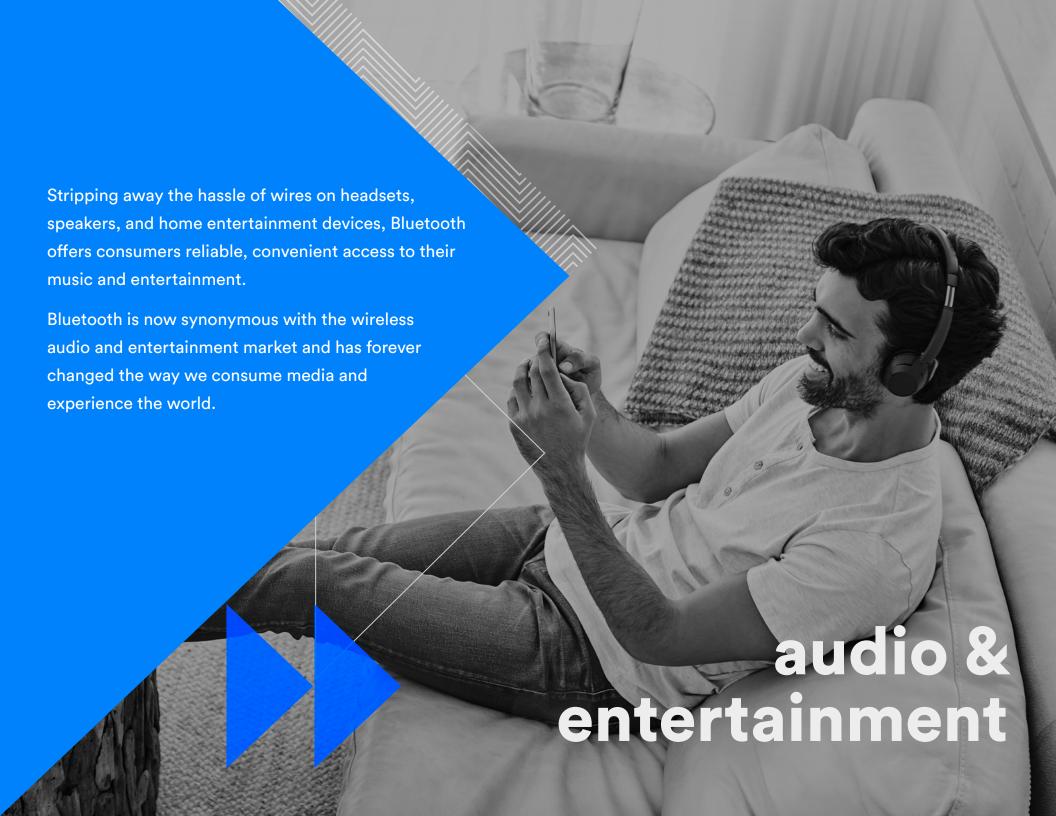
The phone is emerging as a provisioner and central tool for new commercial and industrial use cases such as location services and building automation, making Bluetooth even more essential in mobile devices.



#### Device pairing becomes even easier

Major device vendors are enhancing the discovery and pairing experience and making a simple process even easier.





#### audio & entertainment

market numbers

8 out 10

speakers will include Bluetooth by the end of 2022

100%

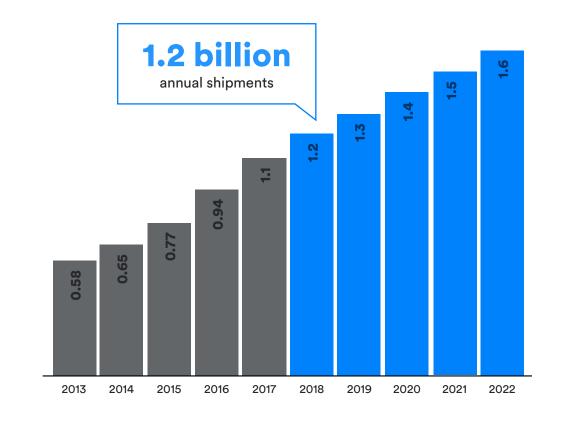
of wireless game controllers shipped in 2018 will include Bluetooth

**3**x

growth in annual volume in the smart speaker market by the end of 2022

#### **Bluetooth Device Shipments**

numbers in billions



#### audio & entertainment

market insights



# The transition to wireless speakers is almost complete

Steady growth in portable speakers, soundbars, and home theaters signal confidence in Bluetooth quality and reliability. By 2022, 80% of all speakers will include Bluetooth technology.



#### Headsets, headphones, and earbuds lead market growth

Wireless headsets, headphones, and earbuds account for over 80% of the overall audio market. Notably, earbuds are starting to assert their dominance in the market.



#### Bluetooth is now dominant in game controllers, with TV remotes following the trend

The transition away from proprietary solutions to Bluetooth is underway in remote controls. Bluetooth is now the dominant wireless technology within game controllers, with TV remotes on a similar trajectory.



# Smart speakers emerge in the connected home

A new category of speaker has emerged. The smart speaker market will double in annual volume by the end of 2018 and is forecasted to grow 3x by the end of 2022.



# Hearing aids begin the transition to Bluetooth

2017 saw a steady stream of announcements from hearing aid manufacturers, trusting Bluetooth to provide medical-grade audio quality to the hearing-impaired community.

Learn more about the audio & entertainment market



#### automotive

market numbers

86%

of new cars, trucks, and SUVs shipped worldwide in 2018 will come standard with Bluetooth

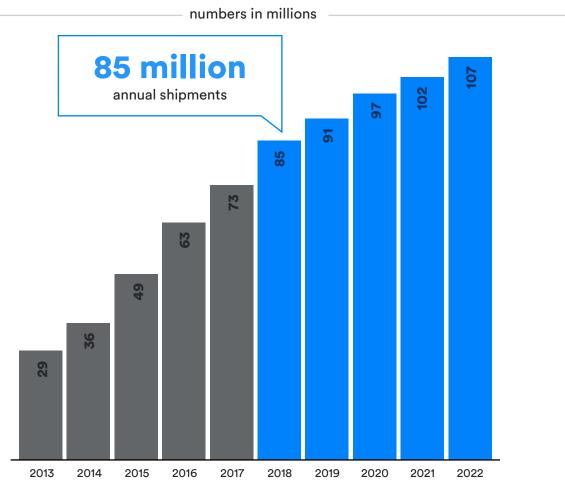
4.5x

growth in annual volume of under-the-hood Bluetooth devices shipped by 2022

**85**%

of Bluetooth automotive device shipments will be in-car infotainment systems in 2018

#### **Bluetooth Device Shipments**



#### automotive

market insights



# Bluetooth is now standard equipment in most new cars

In 2018, 86% of all new vehicles will include Bluetooth connectivity.

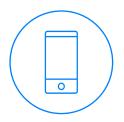
In-car infotainment systems will account for 85% of Bluetooth automotive device shipments in 2018.



# Wearables are becoming part of the automotive market

Bluetooth is powering in-vehicle wearables that monitor blood pressure, heart rate, and activity levels, triggering driver alerts when detecting signs of sleep or fatigue.

In-vehicle wearables will show strong growth in volume over the forecast period.



# Smartphones are becoming the new key fob and more

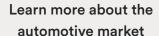
The key fob migrating into the smartphone will enable a wider variety of convenience features, including proximity detection for automatic locking and unlocking, custom seat positioning, and the transfer of virtual keys to additional drivers.

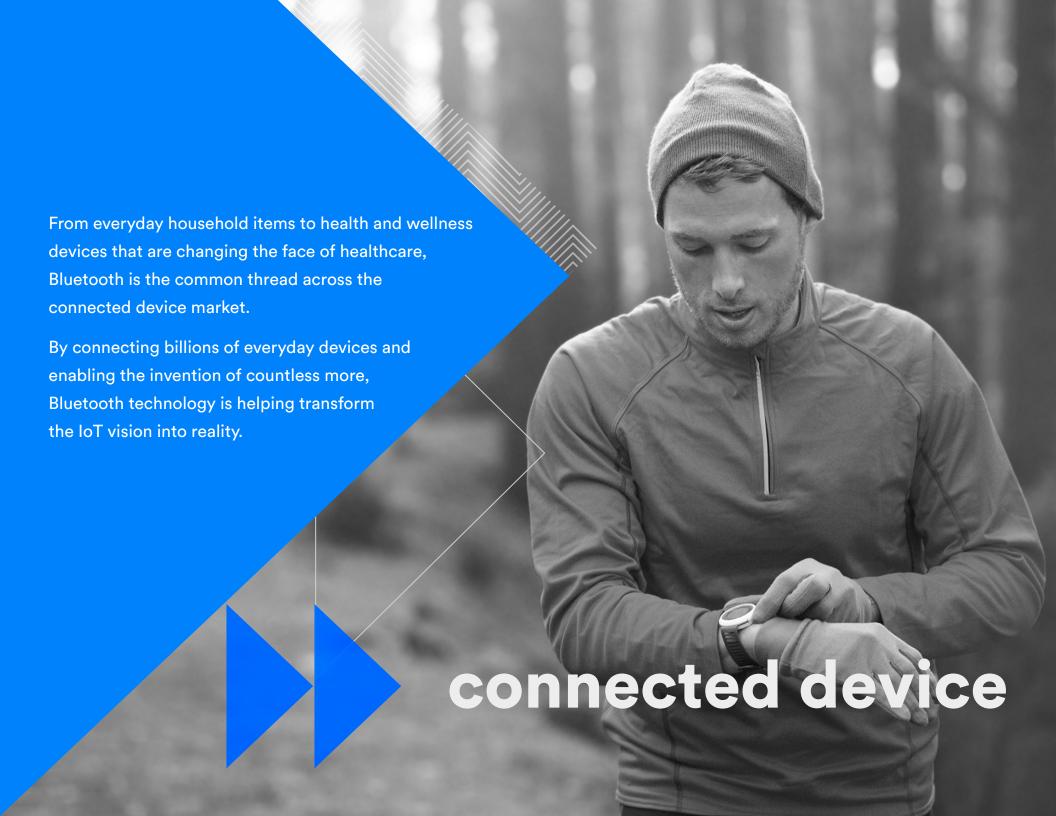


# Bluetooth is being adopted for under-the-hood solutions

Bluetooth wireless sensor systems simplify maintenance in both commercial fleets and consumer vehicles by transferring diagnostic information and alerts to service management solutions.

The volume of under-the-hood devices shipped each year is forecasted to grow 4.5x by 2022.





#### connected device

market numbers

**4**x

growth in annual smartwatch shipments over the next 5 years

102m

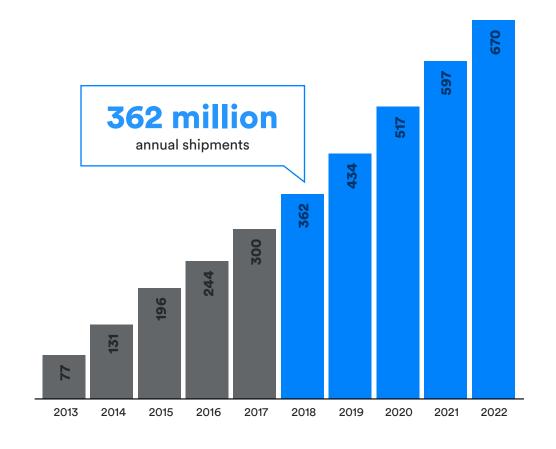
Bluetooth enterprise wearables forecasted to ship in 2022

80m

Bluetooth consumer robots forecasted to ship in 2022

#### **Bluetooth Device Shipments**

numbers in millions



#### connected device

market insights

home



# Consumer wearables are getting more sophisticated

A new breed of fitness devices that offer more specialized, multi-purpose functionality have emerged and will continue to experience consistent growth.

The smartwatch market has also become more diverse and will maintain its steady growth trajectory.



#### Medical grade devices are on a steady climb

Demand for healthcare providers to better administer medication, diagnose injuries, and receive critical updates on their patients' conditions is driving a 28% CAGR in Bluetooth healthcare wearables over the next 5 years.



## **Enterprise wearables gain significant traction**

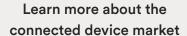
New enterprise use cases are driving a rapid growth in wearables in the workforce, including smart glasses and wearable scanners. With 102 million Bluetooth enterprise wearables forecasted to ship in 2022, enterprise wearables represent one of the fastest growing segments in the connected device market.



#### Consumer robotics are emerging in the home

Home helpers that vacuum, clean gutters, and even mow the lawn are here to stay.

Bluetooth consumer robots are forecasted to grow from 29M shipments annually in 2017 to just shy of 80M in 2022.





## smart building

market numbers

10x

growth in annual volume of Bluetooth location services devices by 2022

75% of top 20 retailers

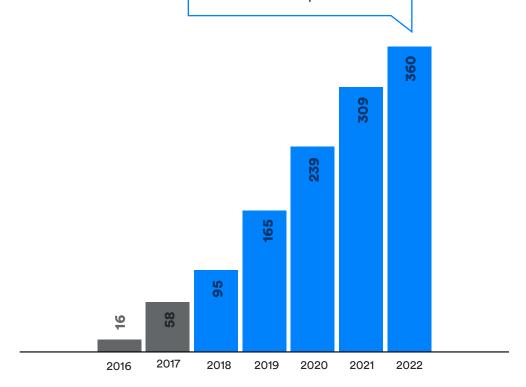
have deployed location services\*





annual shipments

360 million



#### smart building

market insights



#### Location services gain significant traction

Bluetooth technology is powering buildingwide networks of beacons that enable indoor positioning and location services, including point-of-interest information, indoor navigation, and asset tracking.

Space utilization is also gaining momentum, with smart offices using Bluetooth to enable sensor-based occupancy mapping.



### Connected lighting emerges as a key use case in automation

The ability to intelligently control lighting has a strong business case on its own. In addition, a wireless lighting solution can also function as a platform to further enable point-of-interest solutions, indoor navigation, asset tracking, and space utilization in the smart building.

The use of lighting as a platform to enable the creation of control, monitoring, and automation systems will continue to increase over the forecast period.

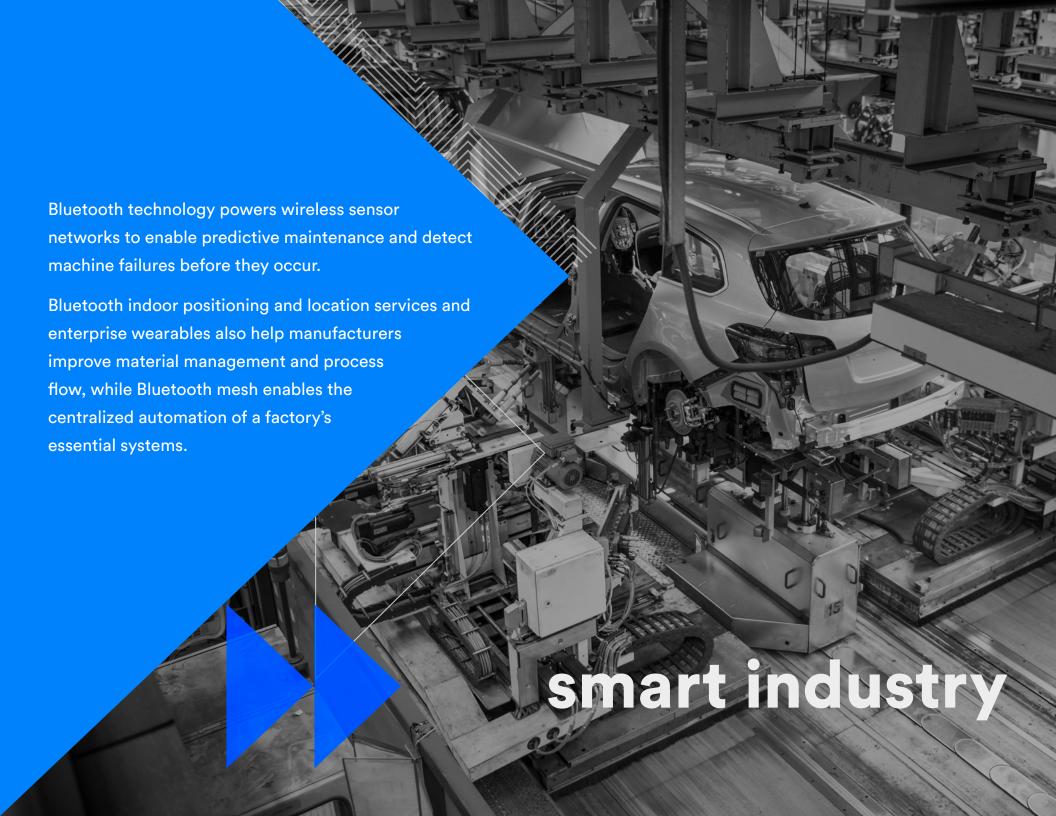


#### Retail and healthcare continue to be early proving grounds for smart building technologies

Retailers are among the early adopters to leverage Bluetooth to enable personalized promotions and way-finding services that connect shoppers to shelves, increase sales, and reduce operating costs.

In order to combat cost pressures, provide better patient care, and improve operational efficiencies, healthcare facilities are adopting Bluetooth technology to monitor patients, track assets, and advance emergency services. 100 million Bluetooth smart healthcare devices are forecasted to ship per year by 2022.

Learn more about the smart building market



## smart industry

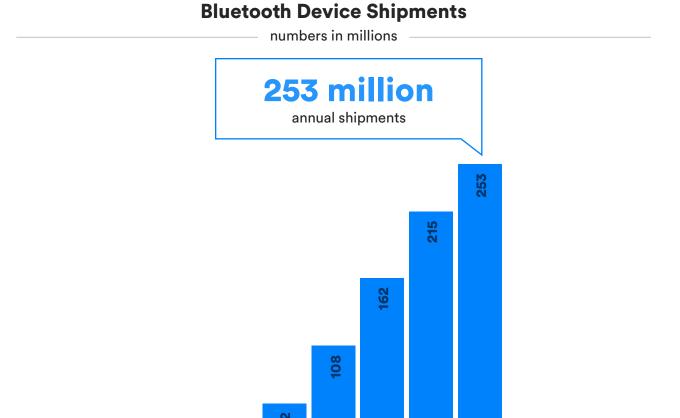
market numbers

**7**x

increase in annual shipments of Bluetooth smart industry devices from 2017-2022

**12**x

increase in annual volume of asset tracking and management solutions by 2022



36

2017

2018

2019

2020

2021

2022

2016

### smart industry

market insights



#### Significant growth expected in industrial wireless sensor networks

In a drive to improve production efficiencies, leading manufacturers are looking to dramatically increase their deployment of sensor networks across the factory floor. These large-scale sensor networks are capable of lowering overall machine downtime and increasing flexibility in the manufacturing line.



#### Smartphones and tablets are replacing the machine UI

Bluetooth smartphones and tablets are emerging as central control devices within factories and industrial settings, providing a better, safer interface for monitoring and controlling industrial machinery.



# Asset management provides transformational improvement to manufacturing

Automated asset tracking and monitoring enables manufacturers to better determine location, availability, and condition of equipment as well as track the overall output across the supply chain.

Industrial deployments of Bluetooth asset tracking and management solutions will continue to increase, allowing factories to achieve new levels of operational efficiency.





# smart city

market numbers

**5**x

growth in annual shipments of smart city enabling devices by 2022

84%

of global airports will be using location services by 2019\*

93%

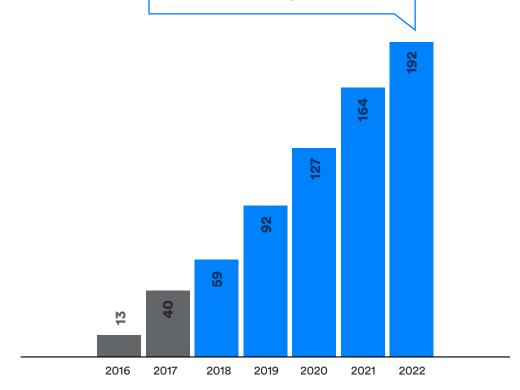
of US baseball stadiums will deploy location services by 2019\*



numbers in millions

192 million

annual shipments



\*Source: Unacast Proxbook

## smart city

market insights



#### Cities are adopting location services

Location services driven by Bluetooth beacons are on a rapid growth trajectory across all smart city segments. These smart city services are helping create rich, personalized experiences for concert goers, museum lovers, sports fans, travelers, and tourists.



#### New technologies are improving the transportation experience within city limits

Government officials and city managers are deploying Bluetooth smart city solutions to improve transportation services, including smart parking lots and meters as well as enhanced bus services.



## Bikes help power the sharing economy

Bluetooth is helping bring one of the main drivers of the sharing economy to life. Stationless bike sharing first caught the public's attention in 2016. In 2017, steady rollouts worldwide accelerated its growth, with notable expansion in APAC.



#### smart home

market numbers

home

650m

Bluetooth smart home devices will ship in 2018

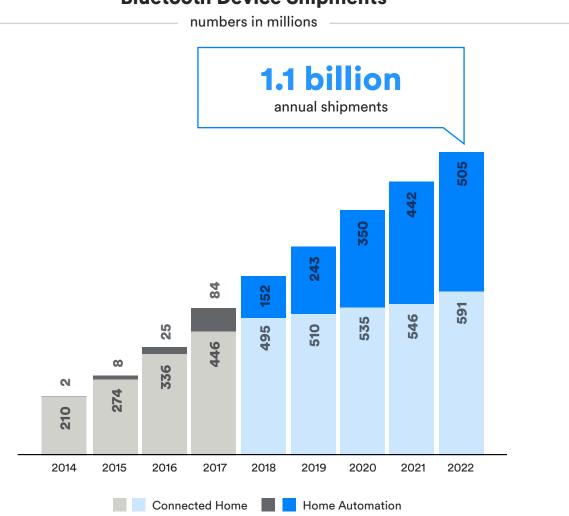
**6**x

growth in annual shipments of Bluetooth home automation devices by 2022

**54**%

compound annual growth rate of residential smart lighting devices over the next 5 years

#### **Bluetooth Device Shipments**



#### smart home

market insights

home



#### Bluetooth remains an integral component of the connected home

From TVs to toys to tools, more and more everyday household items are using Bluetooth technology to wirelessly connect.

Steady growth in connected home devices is predicted, with connected home entertainment devices continuing to account for over half the volume.



#### Home automation is now poised to scale

Two forces will continue to push smart home solutions forward.

2018 has already seen the launch of the first Bluetooth full-home automation systems. Bluetooth mesh will continue to provide a reliable wireless connectivity platform that enables automatic control of lights, thermostats, smoke detectors, cameras, door bells, locks, and more. Among those, lighting is expected to be a leading use case with a 54% CAGR predicted over the next five years.

Meanwhile, the smart speaker has emerged as a potential central control unit for the smart home. Smart speaker volume is forecasted to grow 3x by the end of 2022.



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