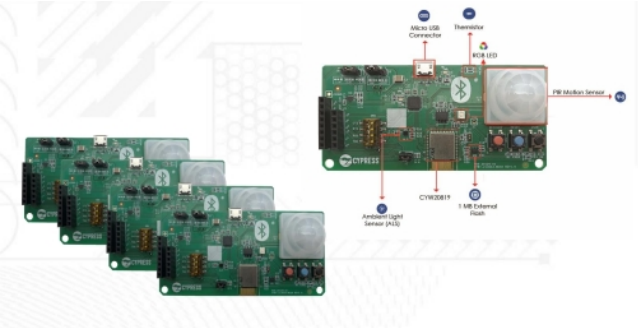
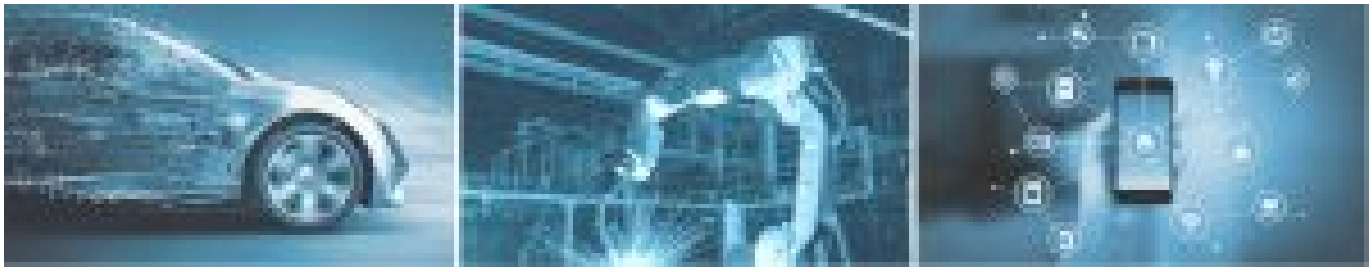
Manuals+ — User Manuals Simplified.



Cypress Bluetooth MESH Solution Datasheet

Cypress Bluetooth MESH Solution



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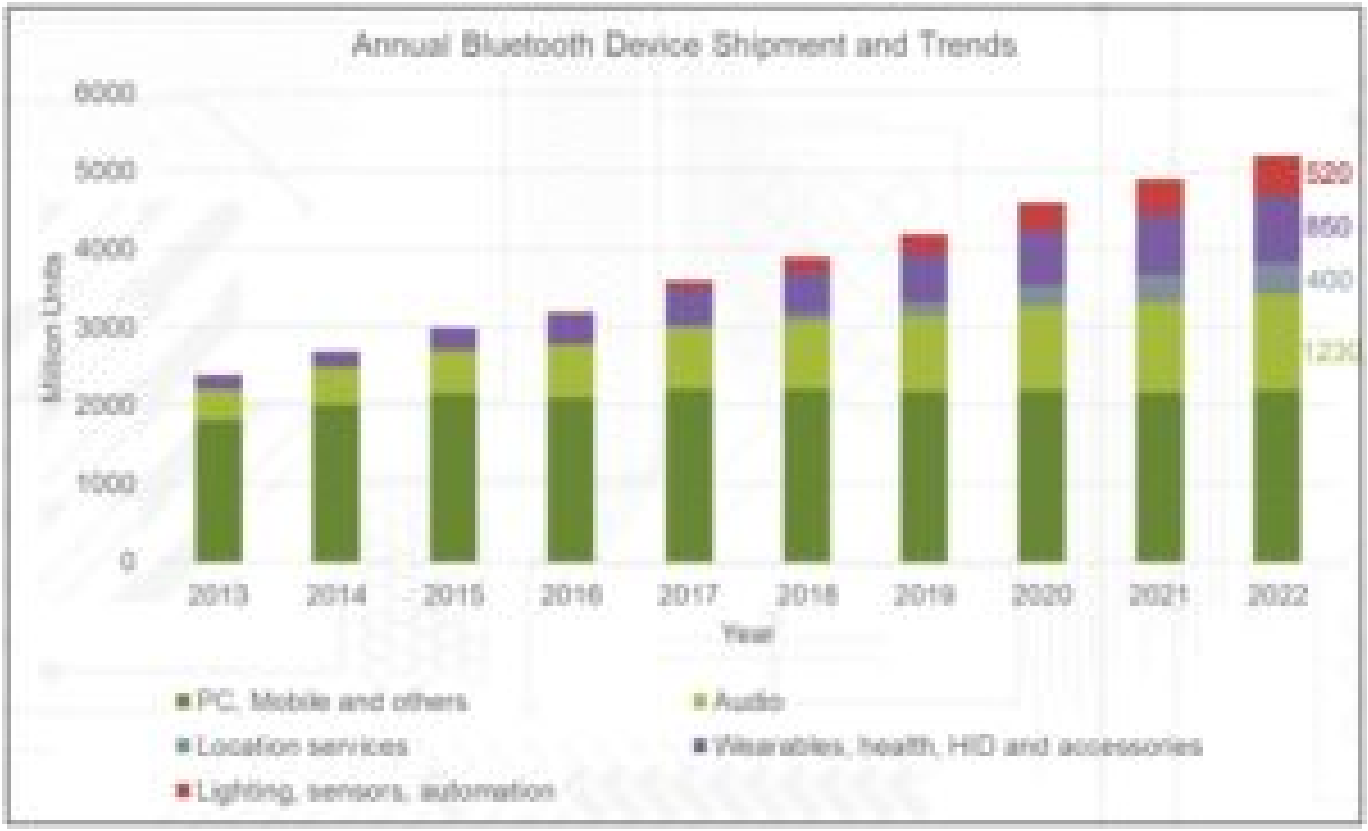
Agenda

- Bluetooth market overview
- Bluetooth MESH and applications
- CYPRESS Bluetooth MESH solution

Bluetooth Shipments and Trends



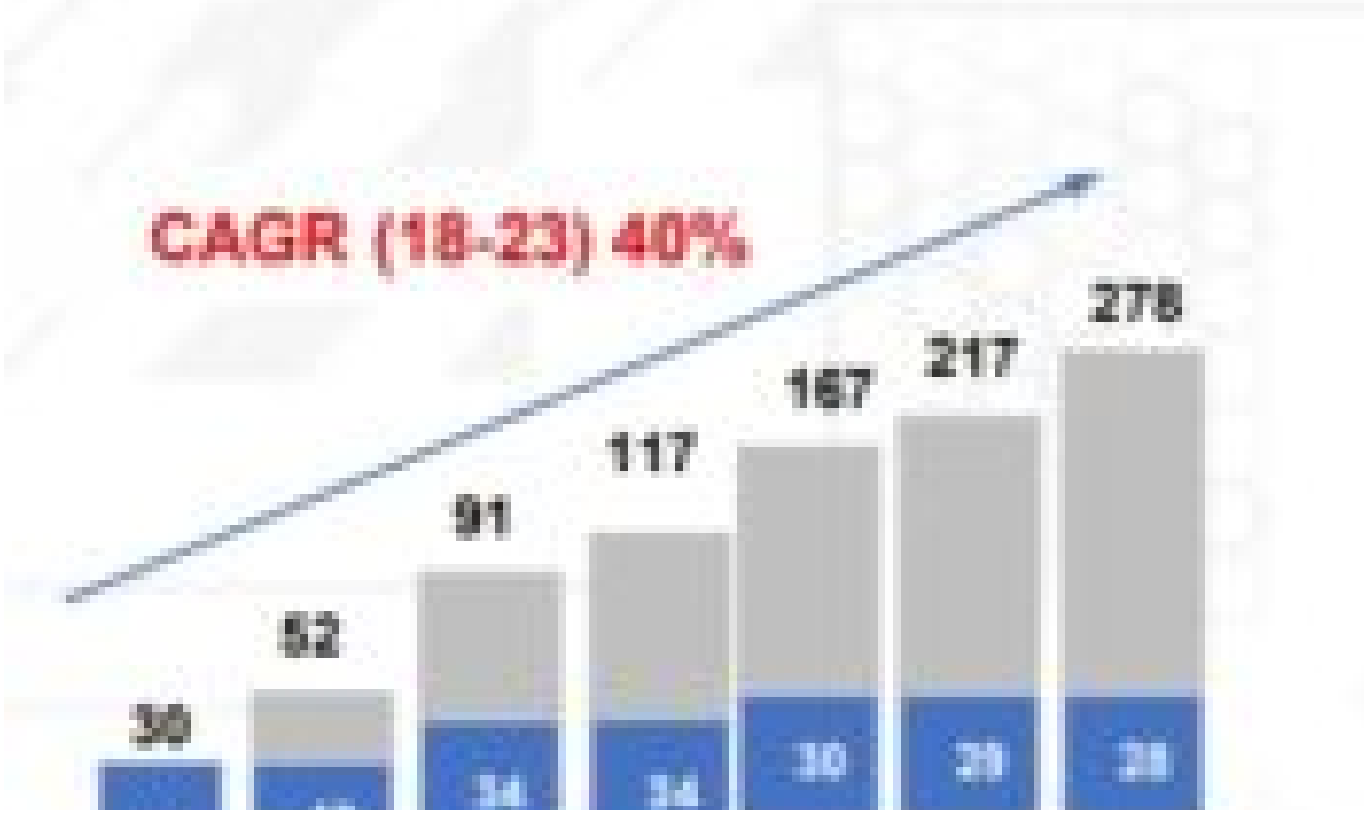
Lighting and automation are the fastest growing emerging markets

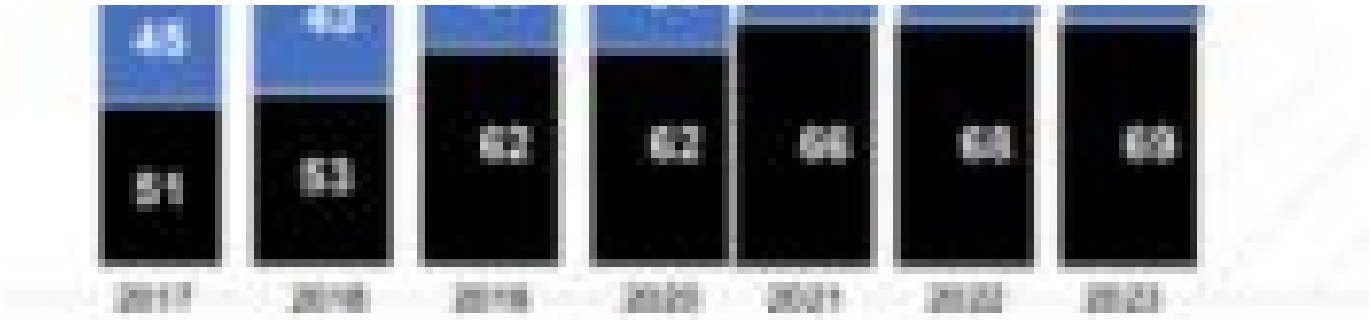
HID, health and medical, and wearable market is expanding

Location service market emerged in 2016. Although small, it is growing fast

Audio market will maintain its size

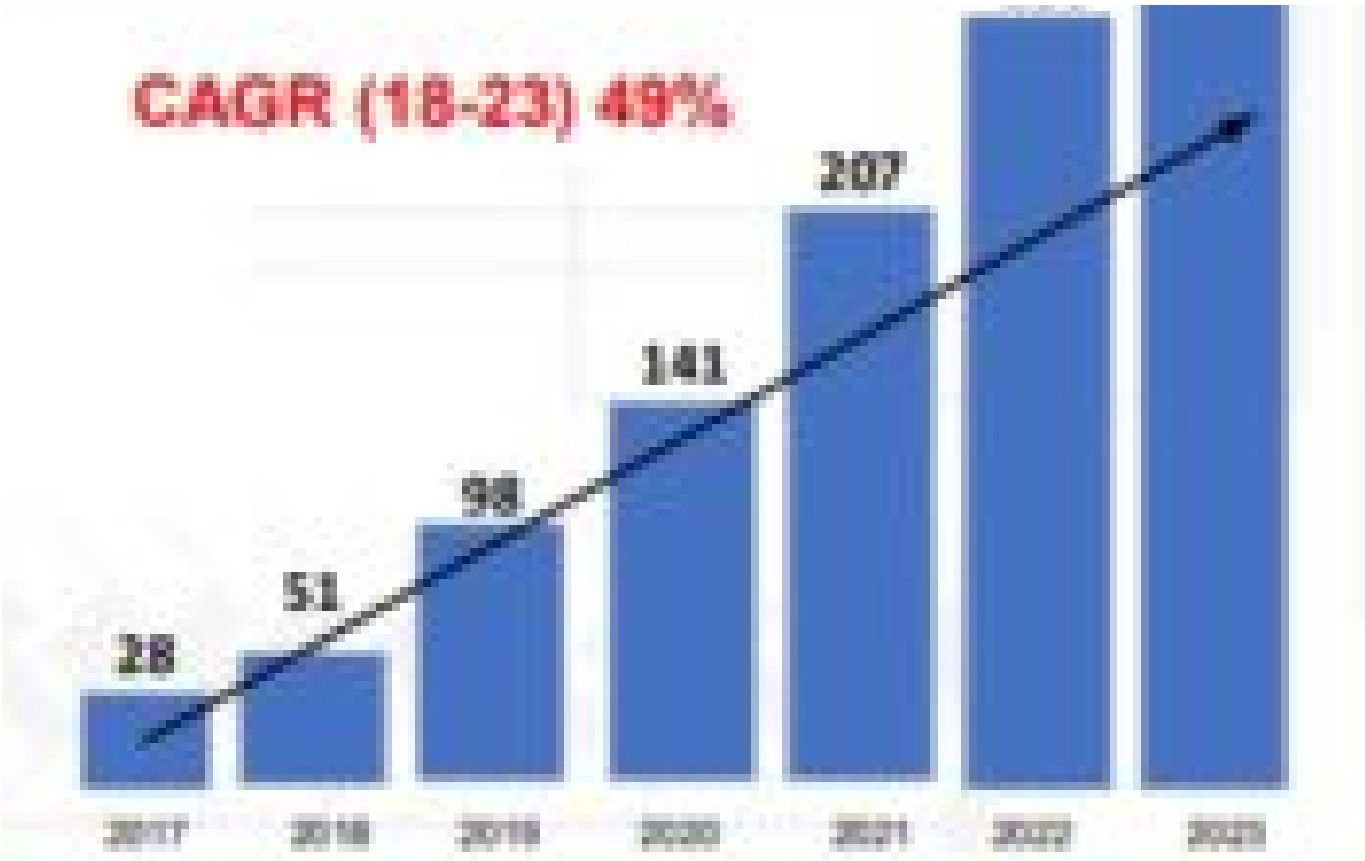
Emerging Applications Will Leverage Bluetooth Mesh


CAGR (18-23) 40%
30
52
91
117
167
217
278

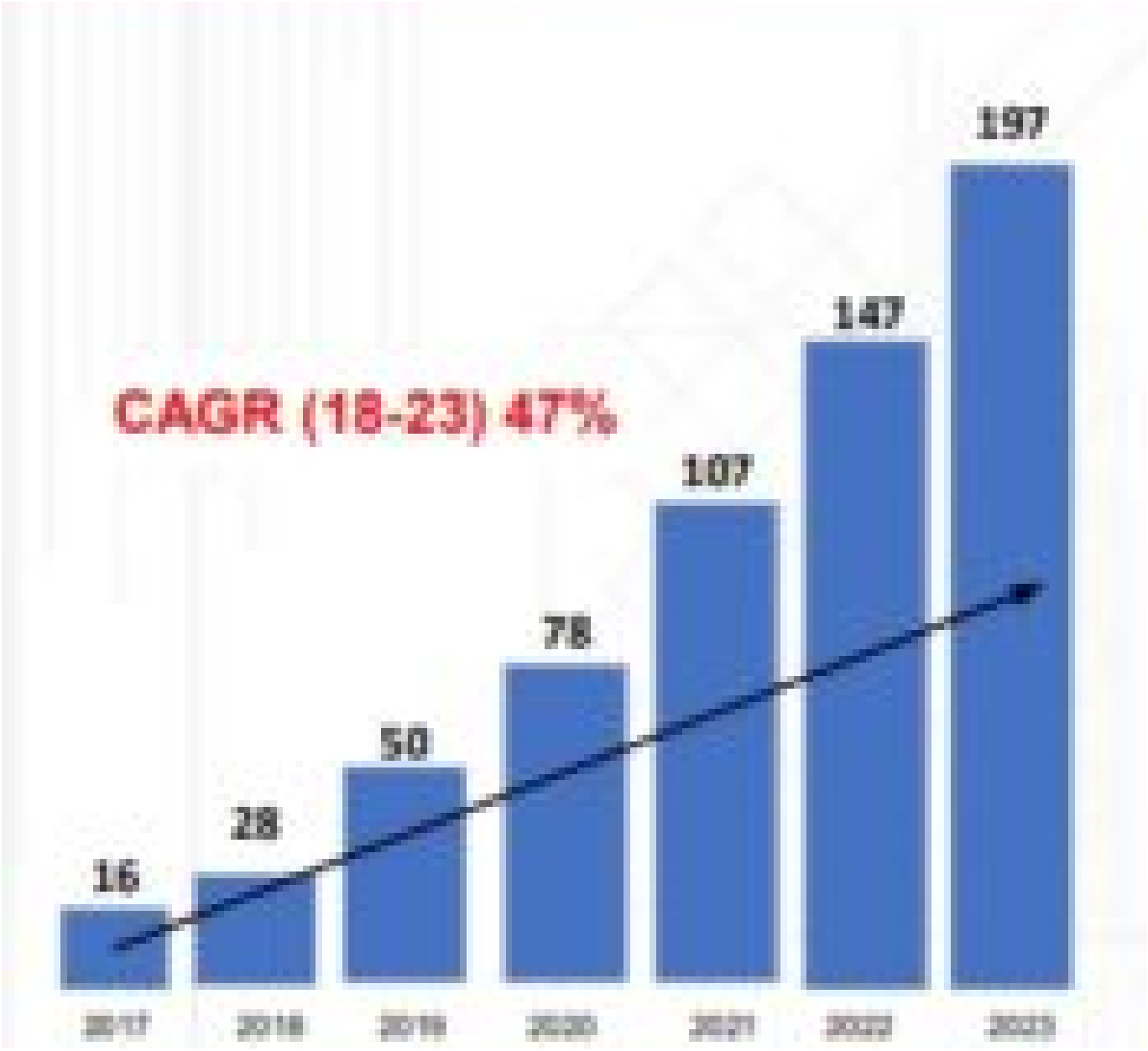


Inventory + other tracking
Enterprise wearables
Others

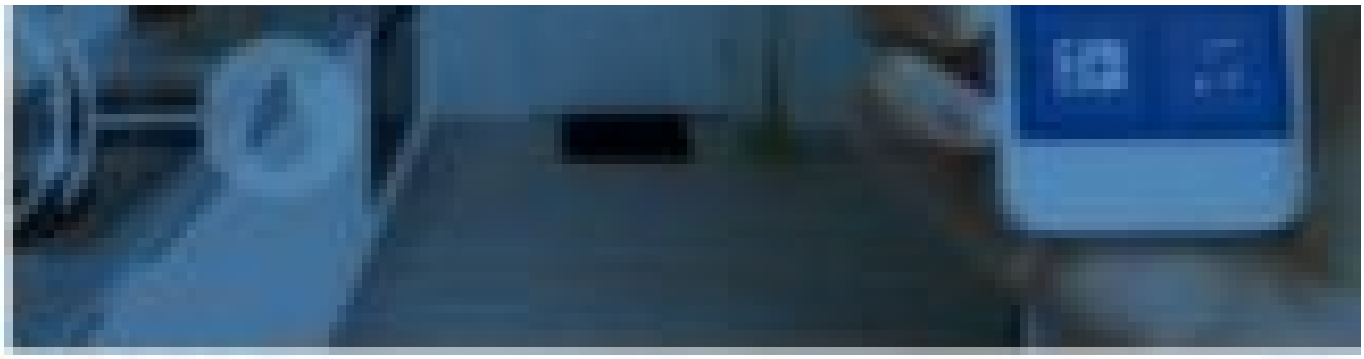
Smart Building



Smart City



Smart Home

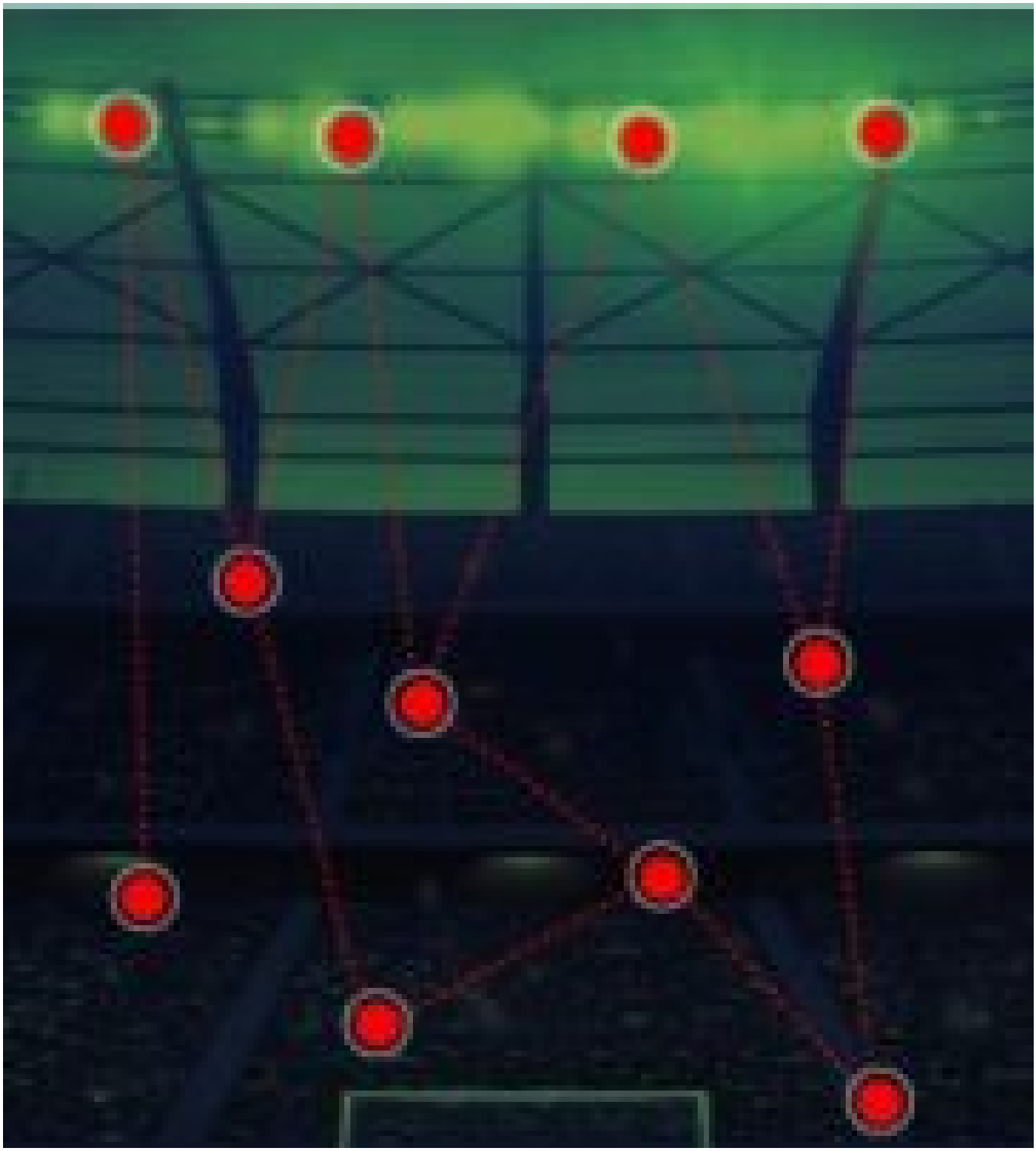


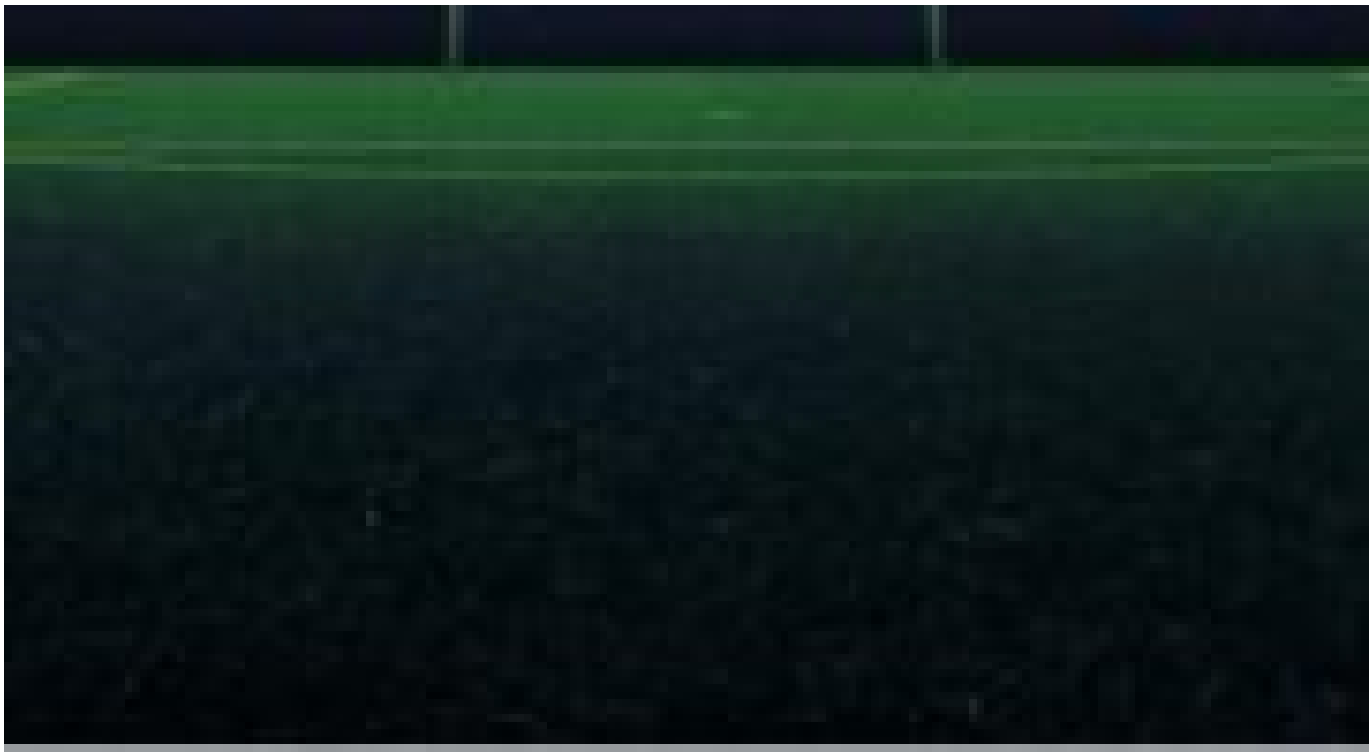
Bluetooth Mesh Use Cases

Smart Industry
Asset Tracking

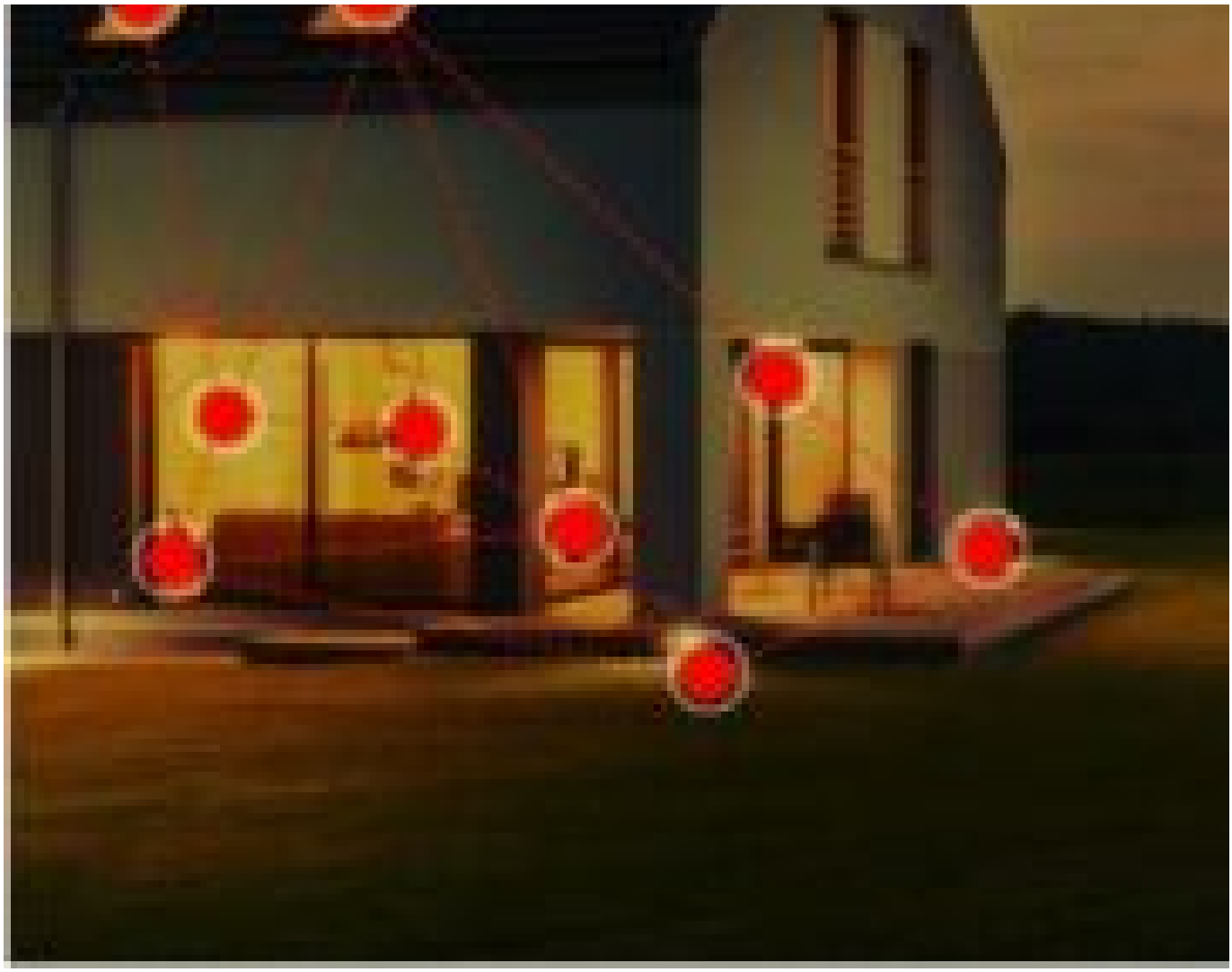
Smart Building
Location, sensors

Smart City
Beacons





Smart Home
Lighting Automation



Bluetooth Mesh Use Cases – Smart Home

- MESH Server and Client into Platforms: Linux, RTOS, Android, IOS etc.

Design Problems Engineers Face

Mesh nodes need low-power capabilities as well as extended range

- Battery-powered applications, such as sensors and door locks, need ultra-low-power mesh node operation
- Depending on the application, mesh nodes may be far away from neighboring nodes

Bluetooth hardware design is complex with high certification costs

- Low volumes along with lack of RF experience make chip-on-board designs difficult
- Regulatory certification of Bluetooth designs are costly and very time consuming

Proper implementation of mesh requires extensive resources for software, firmware, and mobile development

- Standard Bluetooth Mesh implementation is needed for interoperability
- Mobile applications are a must for configuration and management of mesh nodes

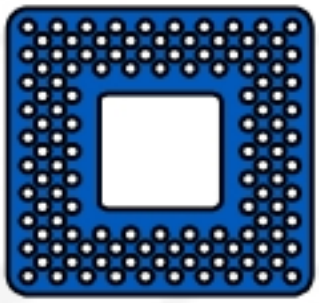
Solution: Cypress' Bluetooth 5 MCUs Enabled with Bluetooth Mesh

- Full portfolio of Mesh-compliant silicon and pre-certified module solutions
- Low-power radio options available along with up to 10-dBm Tx power capabilities to reach longer distances
- Best-in-class Bluetooth Mesh implementation that is SIG Compliant, with example projects and reference mobile apps

Cypress Bluetooth Mesh System-Level Solution

Cypress Cypress BT Mesh Solution Value

Hardware



- Broad silicon portfolio
- Fully certified modules
- Development kits

Software/Firmware

- Easy-to-use software
- Several code examples
- Full support of Mesh Profiles

Mobile Applications

- Reference application source code and mesh libraries for Windows, iOS, and Android

Cypress Bluetooth Mesh System-Level Solution

All Bluetooth MESH 1.0 mandatory & optional features
OTA-over-mesh (pre spec)
Remote provisioning (pre spec)
Mesh controller app including JSON provisioning database
Mesh libraries (Windows/Android/Linux)
Reference application for dimmable light, switch, dimmer, motion sensor, and temperature sensor
Reference iOS app
Reference Android app
Reference Linux mesh stack (BSA)

Cypress Bluetooth Mesh System-Level Solution

Cypress Cypress BT Mesh Solution Value

- Proxy Feature/Node

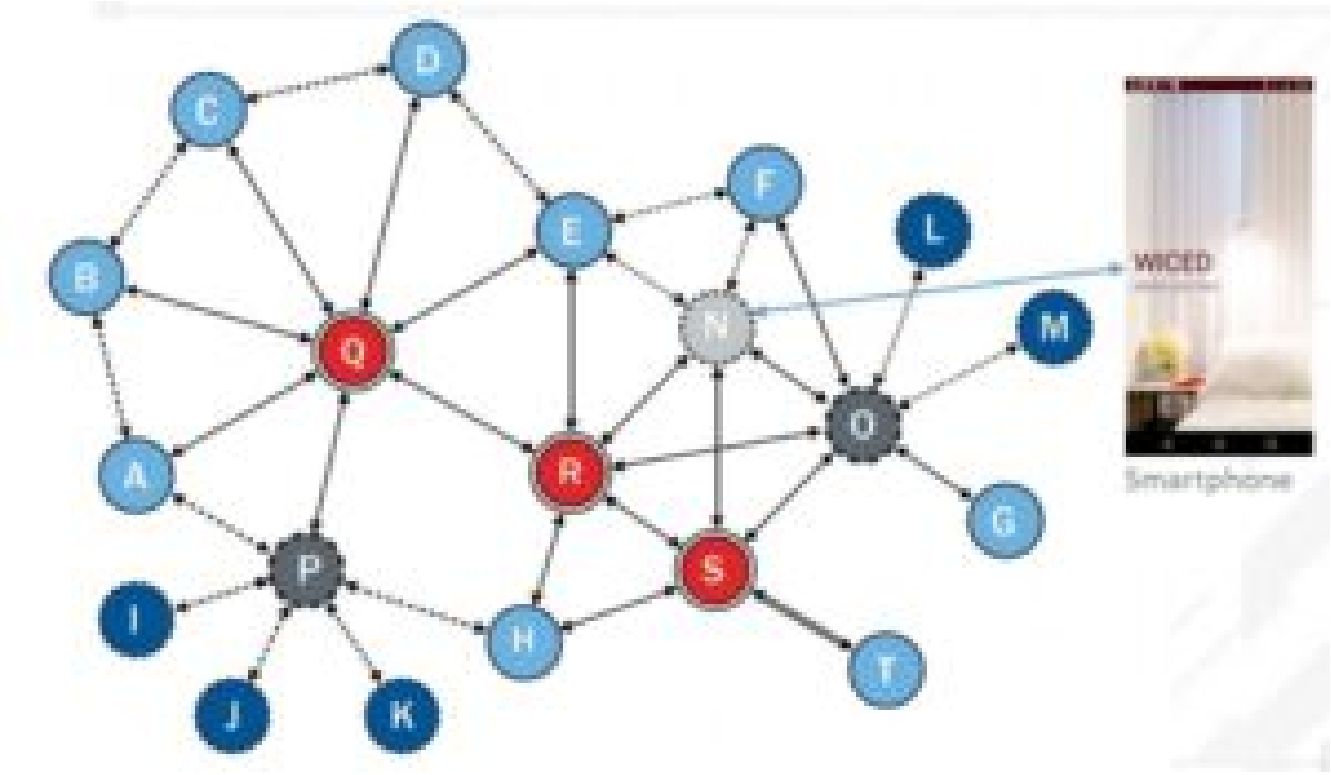
  * Allows smartphones to connect to the mesh over GATT bearer
- Relay Feature/Node

  * Provides the ability to Receive (RX) and Transmit (TX) Mesh messages over the advertising bearer
- Friend Feature/Node

  * Stores messages destined for an LPN device

* Delivers messages to LPN nodes when polled by the LPN device

- Low Power Feature/Node (LPN)
  * Provides the ability to operate at a significantly reduced RX duty cycle
  * Works in conjunction with a node that supports the Friend feature
  * LPNs can operate for multiple years on a coin cell battery



Bluetooth Mesh Node Types

SYLVANIA SMART+ Lighting Portfolio Adds World's First Bluetooth Mesh Qualified LED Products LEDVANCE Breaks New Ground with Industry First Technological Achievement January 6th, 2018

Wilmington, Mass. – Lighting leader LEDVANCE, maker of SYLVANIA general lighting products in North America, has developed the world's first LED lighting products that are Bluetooth® mesh qualified
… The new Bluetooth mesh networking technology allows a user to control devices, in another room because Bluetooth mesh qualified devices can speak to each other when within 300 meters and pass along command signals…The SYLVANIA SMART+ Bluetooth lighting products from LEDVANCE with Cypress' qualified interoperable Bluetooth mesh technology mark a significant step forward …

CYW20719
Inside

How To Get Started

1. Purchase a Cypress Bluetooth Mesh Evaluation Kit (CYBT-213043-MESH)
2. Download the ModusToolbox IDE
3. Join the Cypress Developer Community (CDC)
4. Start your Bluetooth Mesh application using the Mesh Kit User Guide and resources to the right

Resources

- Product Pages
  * Cypress Bluetooth Mesh Solutions
  * Cypress Bluetooth/BLE Solutions
- Cypress Developer Community (CDC)
  * ModusToolBox Bluetooth SDK
- App Notes/Datasheets/Technical Docs
  * Getting Started with Bluetooth Mesh Application Note
  * MeshClient and ClientControlMesh App User Guide
  * CYW20819 Ultra Low Power, BLE/BR/EDR BT 5.0 SoC Datasheet
  * CYBT-213043-02 EZ-BT Module Datasheet
  * CYW20819/20820 Hardware Design Guideline

Cypress Bluetooth MESH Solution Datasheet – **Optimized PDF**
Cypress Bluetooth MESH Solution Datasheet – **Original PDF**

Manuals+,