



**Presentation
Will Begin
Shortly**

tech **t▶lks** UPCOMING SESSIONS

FEB 16TH | Amazon Sidewalk: Using Battery-Powered Sensors

MAR 16TH | Getting Started with Amazon Sidewalk

APR 13TH | Introducing FG25 and EFF01 for Wi-SUN FAN 1.1

MAY 11TH | Optimizing FG23 for Battery Life & Performance

JUN 8TH | Designing Long Range Devices with Amazon Sidewalk

We will begin in: **0:00**

2023



Welcome

Amazon Sidewalk:
Using Battery-Powered Sensors

Chad Steider
Fritz Werder



LPWAN SERIES

What is Amazon Sidewalk?

amazon sidewalk

A unique secure network designed to

- Make devices work better beyond the front door
- Simplify device setup
- Keep devices up-to-date even if they are outside the range of home Wi-Fi

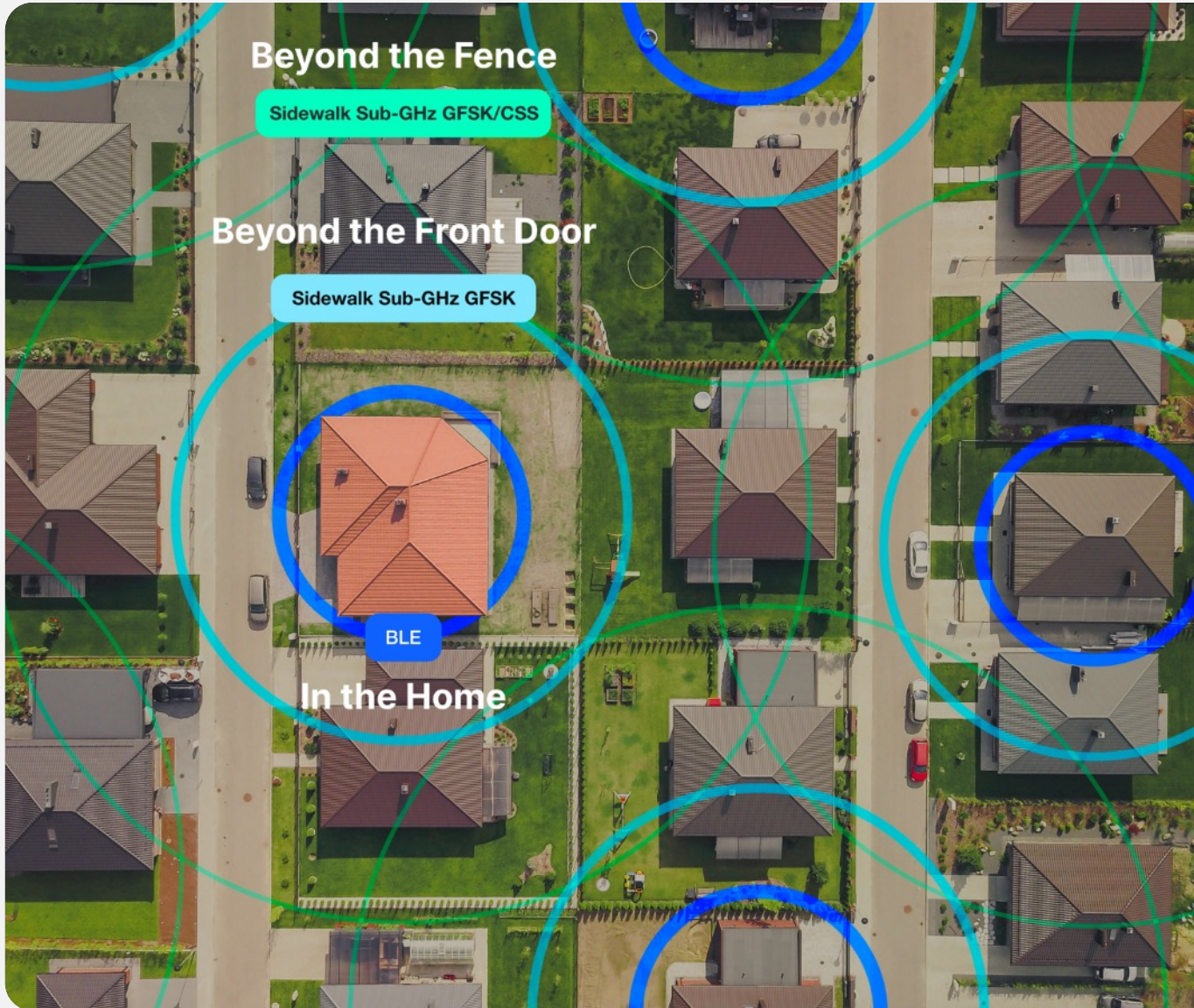
Operated by Amazon at no charge to end-customers

Amazon Sidewalk consists of:

- Protocol stack
- Application layer
- Standard physical layer (BLE, FSK, CSS)

Launch US Only (First), Global (Later)

Amazon Sidewalk Enables a Distributed Network Beyond the Front Door

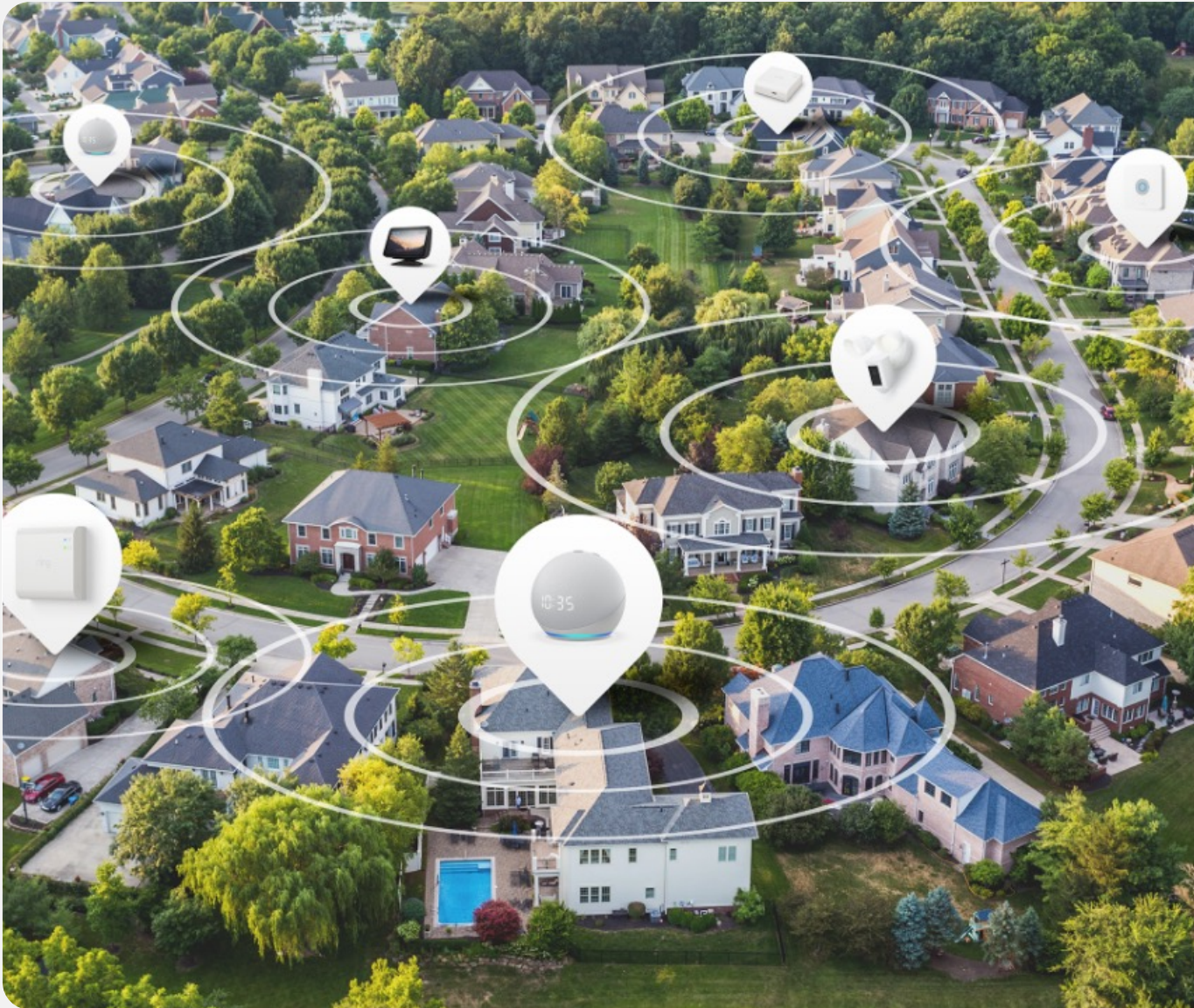


Amazon Sidewalk is a new ecosystem for creating shared wireless networks connecting IoT devices at homes, and beyond the front door, across the entire neighborhood, and even the city.

Silicon Labs can accelerate the development of Amazon Sidewalk devices by making it possible for manufacturers to focus more of their resources on innovation and less on testing and integration.

We have in-depth expertise in the underlying wireless protocols utilized by Amazon Sidewalk including Bluetooth and sub-GHz protocols.

Amazon Sidewalk Delivers Significant Value

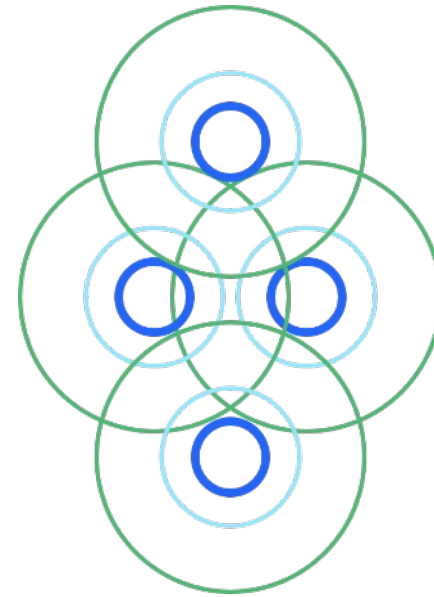


- Range extension
- Frustration free setup / automatic connection
- Remove need for proprietary gateway
- Reliable connectivity where otherwise isn't present today
- Free alternative to transport data to the cloud
- Transcend home ownership while device remains connected

Unique Opportunity - Build the Device, Not the Network



Focus on building the end device



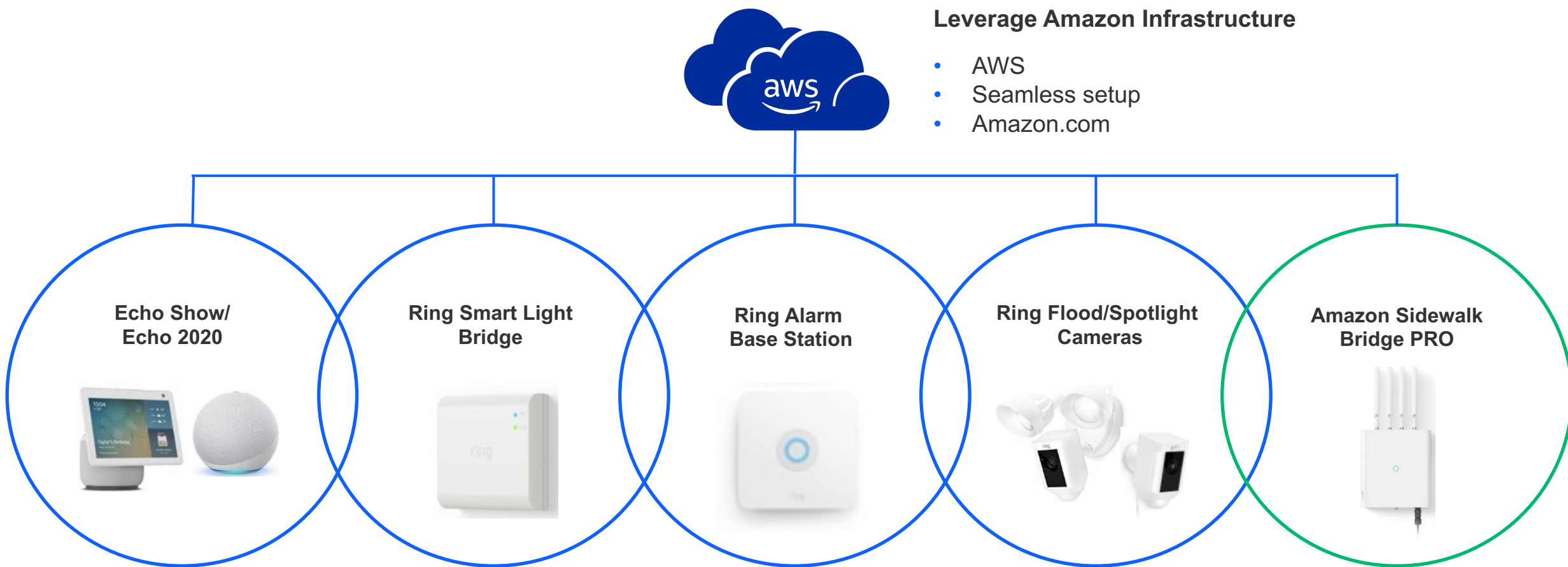
Connect IoT Devices to an existing large network eliminating the need for a traditional gateway



amazon.com[®]

Access the data in the cloud and leverage Amazon sales channel

Products Enabling the Amazon Sidewalk Infrastructure



Only Amazon 1P products can be used for hubs, 3P hubs will be allowed later.

Silicon Labs and Amazon Sidewalk



Silicon Labs is a Leader in Intelligent Wireless Connectivity Solutions for IoT

- Highest level security through Secure Vault™
- Holds a market leading position through its Bluetooth LE, Sub-GHz and multi-protocol solutions
- Proven experience driving complex IoT solutions from concept to product launch

Silicon Labs is a Lead Scaling Partner for Amazon Sidewalk

- Works with leading device makers
- Makes it easy to build a device for Amazon Sidewalk through fully integrated tools and services
- Drives the full developer journey from concept to launch
- Continuously innovates with Amazon for long term success via HW and SW roadmaps

Amazon Sidewalk Applications Ideas

In Home / Beyond the Front Door



BLUETOOTH LE

Tracking
Theft Prevention

BLUETOOTH LE/FSK

Outdoor Lighting
Access Control
Water Mitigation and Control
Energy Conservation
Appliance Predictive Maintenance

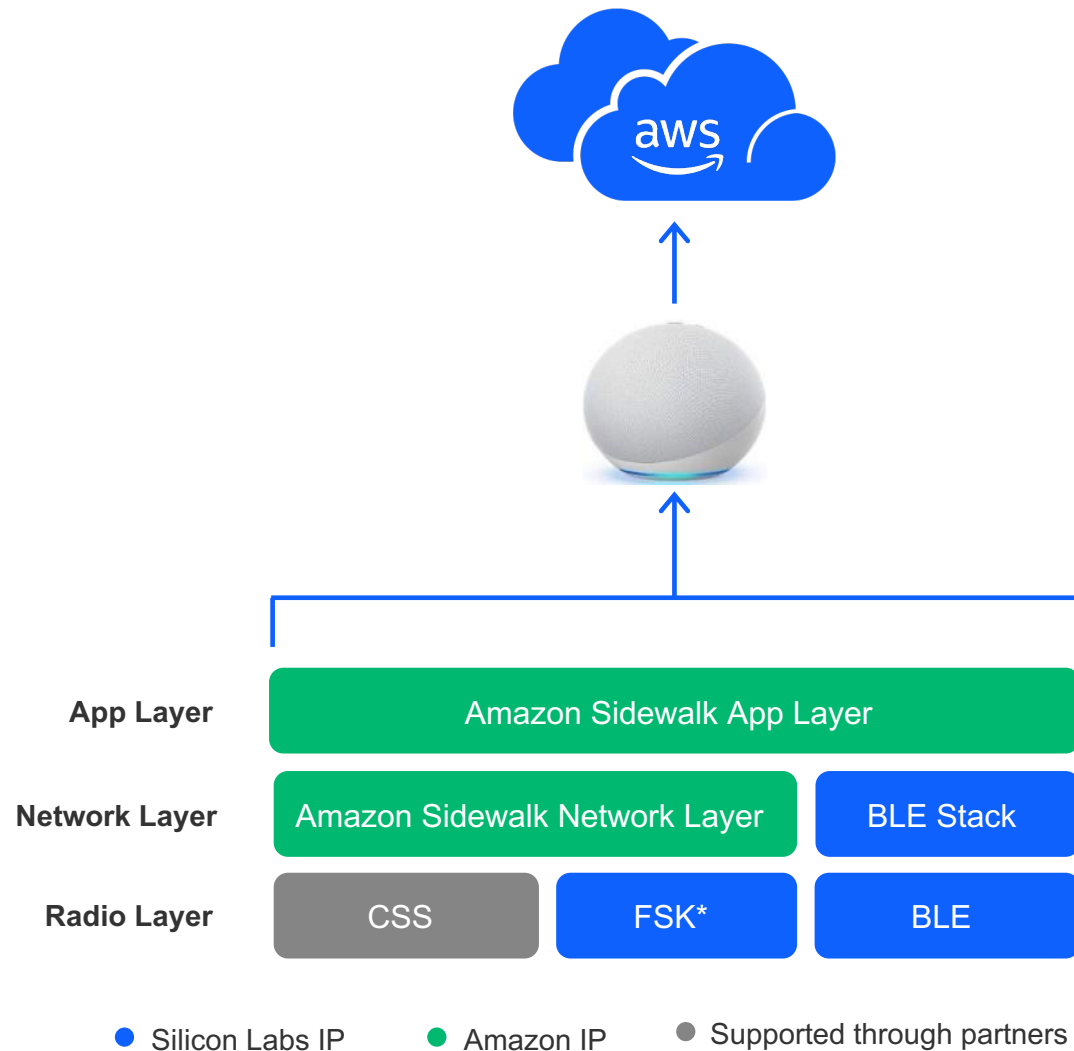
Beyond the Fence



BLUETOOTH LE/FSK/CSS

Parks Management
Environmental Management
Forest, Agriculture and Farms
Building and Campus Management
Airports

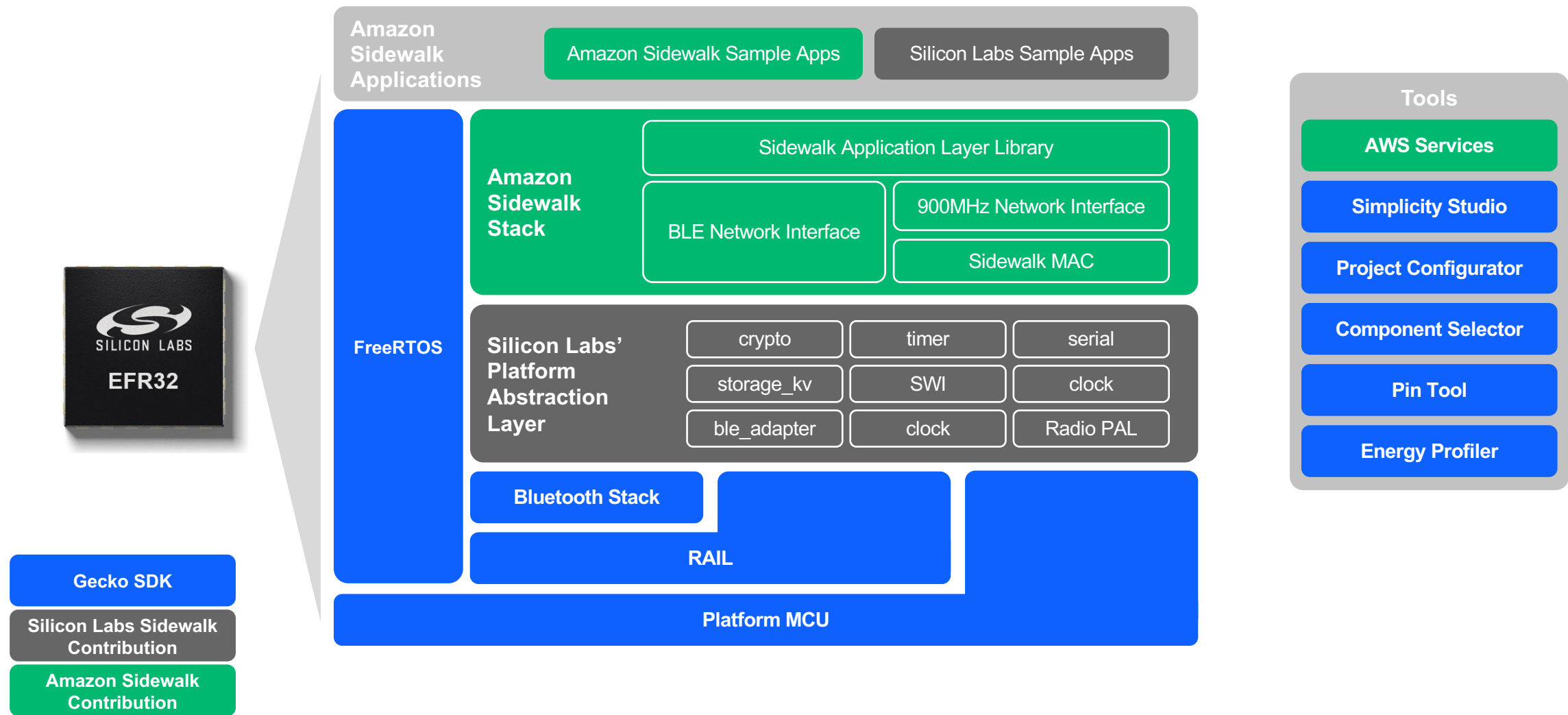
Amazon Sidewalk Software Details



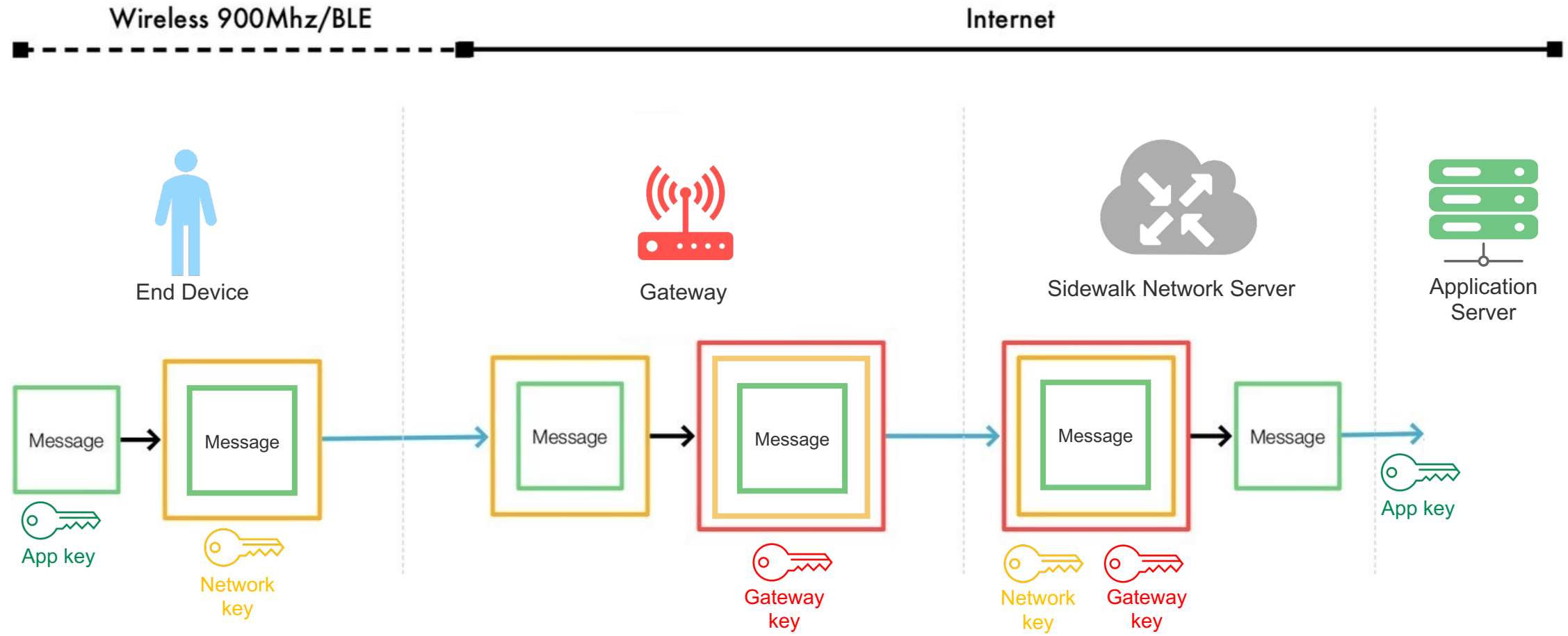
**supported in roadmap products*

- Protocol stack and application layer
- Must connect to cloud through AWS
- Data accessed through AWS IoT core
- Bridging to other clouds possible
- Using standard PHYs
- Vault level security required
- Will be governed by qualification program
- Currently available on GitHub for initial customers
- Silicon Labs will integrate Amazon Sidewalk in GSDK and Simplicity Studio

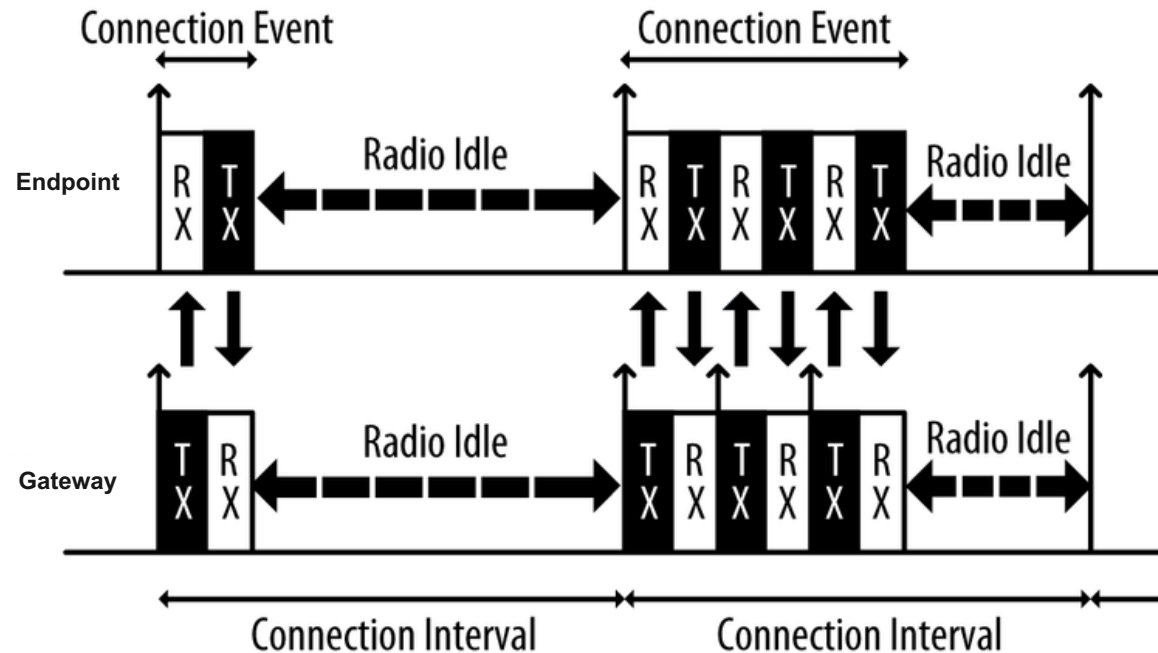
Software Solution



End-to-End Security



Amazon Sidewalk Bluetooth

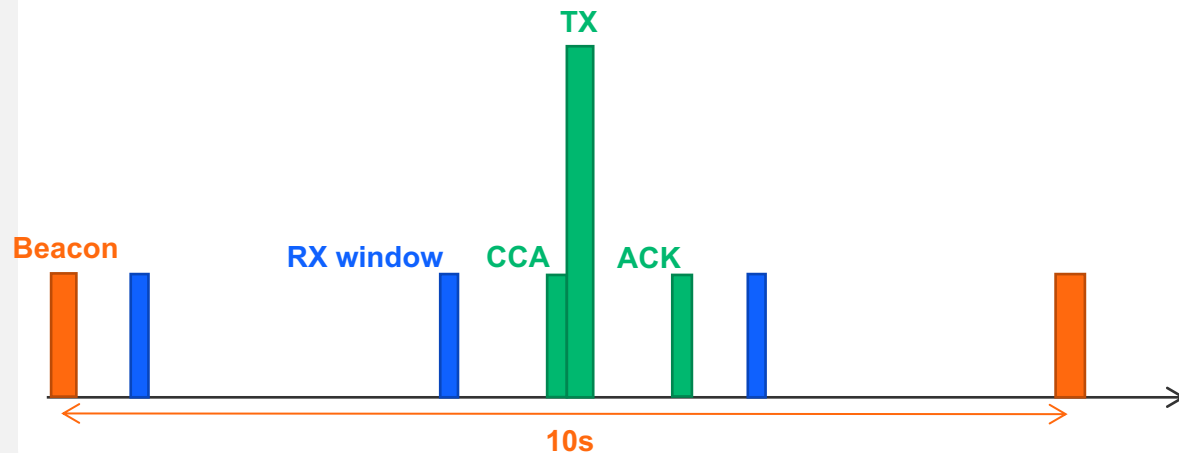


- Amazon Sidewalk leverages the Bluetooth connected mode between the endpoint and the Amazon Sidewalk gateway.
- Used for devices that want to connect to the Sidewalk network typically within or very near the home
- Provides ease of device OTA that is not as intuitive on other protocols

Sub-GHz Protocols Deep Dive

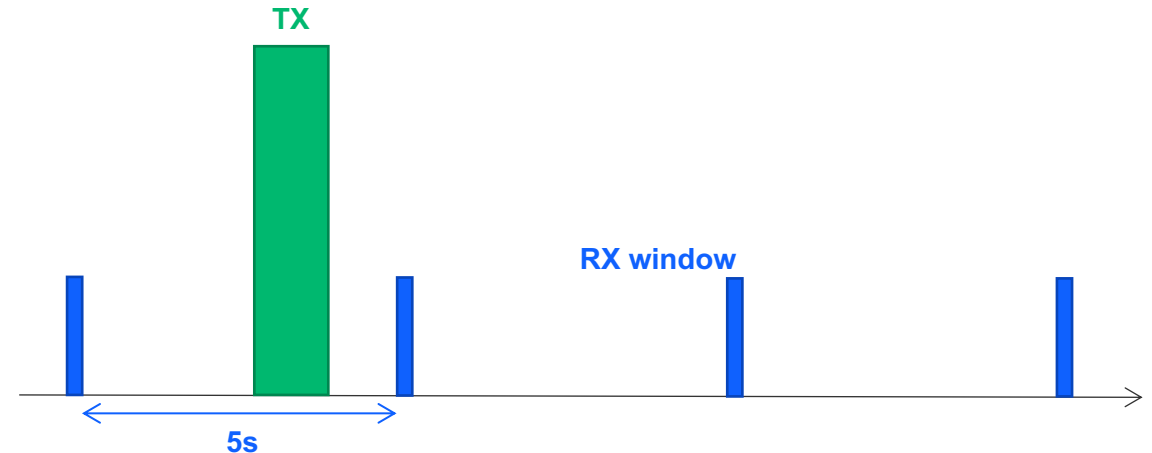
FSK (900 MHZ)

- **Synchronous protocol: always connected to GW**
- **Connected through beacons every 10 seconds**
- **Listening windows and transmission opportunities in between beacons**
- **Different power profiles are available**
 - Power profile A: Configuration chosen by gateway
 - Power profile B: Configuration chosen by the endpoint



CSS (900 MHZ)

- **Asynchronous protocol: connects when needed**
- **Periodic listening windows (every 5 seconds)**
- **Transmissions when needed**
- **Different power profiles available**
 - Power profile A: RX windows depend on TX
 - Power profile B: periodic RX



Gas Leak Detector – BG24

INTRODUCTION



- Battery-powered gas leak detector
- Detects and alarms homeowners to potentially dangerous gas leaks to prevent explosions or fires

CHALLENGES

Gas leak sensor needs to provide constant protection to homeowners and neighborhoods.

- Little control over where the sensor will be placed (basement, garage, etc.)
- Simplified device setup for a homeowner to manage
- Needs to be constantly connected and monitoring like a smoke or CO detector

Requirements:

- 7-year continuously connected battery life
- Had to integrate with the existing sensor due to speed time to market
- Needed readily available and reliable network
- Easy installation and setup due to ease burden on homeowners

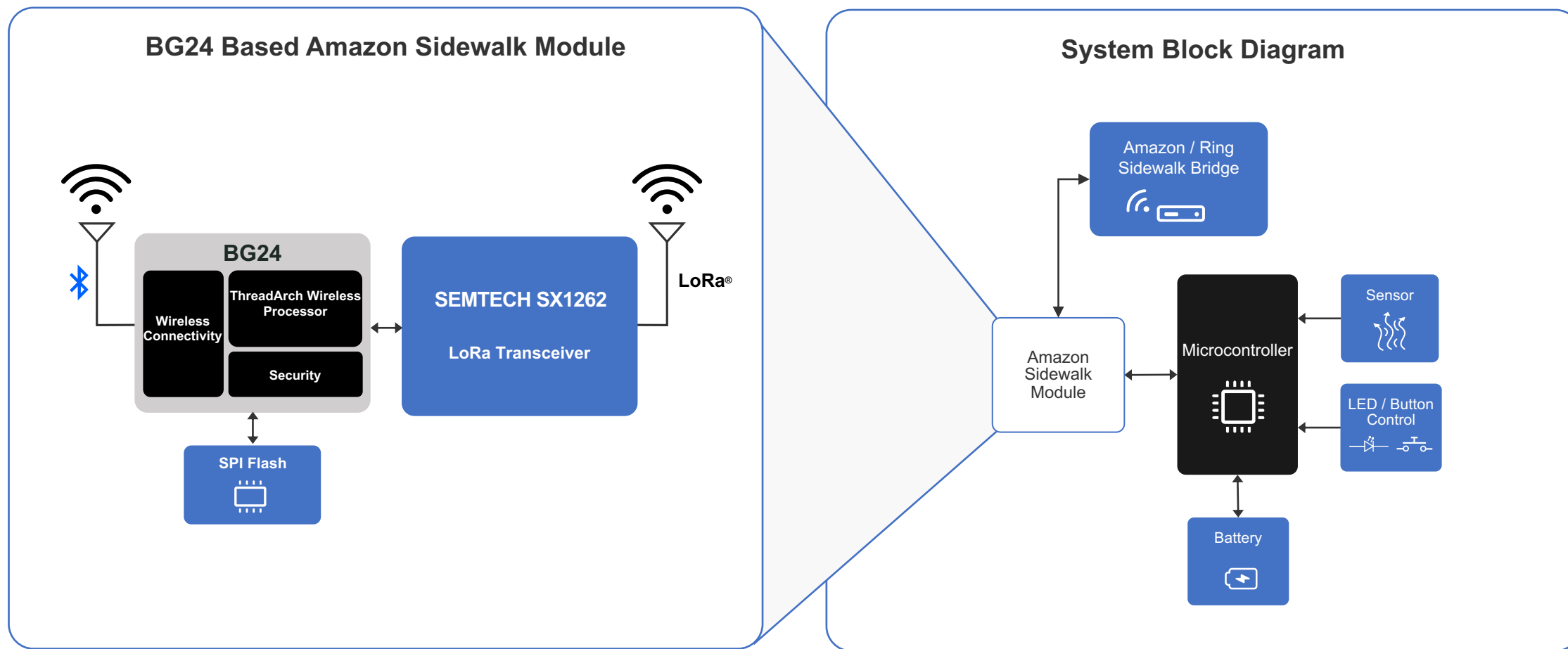
SOLUTIONS

- Silicon Labs BG24 + Semtech SX1262 for complete Amazon Sidewalk Solution

BENEFITS

- Ultra-low power of BG24 allows for the sensor to meet battery life requirements
- Silicon Labs provides an Amazon Sidewalk stack to speed up the development cycle
- Silicon Labs provides a reference design for support of all of Amazon Sidewalk protocols
- Amazon Sidewalk Frustration Free Network allows devices to easily connect and communicate with the device maker's cloud
- Amazon Sidewalk provided reliable, existing LPWAN infrastructure using devices already in neighborhoods
- Amazon Sidewalk provides native cloud integration with AWS to make access to data easy

BG24 Usage and System Block Diagram



OxTech Sidewalk Module



Oxbit's OxTech Sidewalk Module is designed to support network co-processor mode with the application on a host MCM or directly running on the module leveraging devices to get to market quickly with applications such as, automation sensors, gas and water leak detection, utility metering, and asset tracking.

The module enables low-bandwidth and long-range connections to the network leveraging a range of miles using Bluetooth® for short distance and LoRa® for a longer range.

Scalable

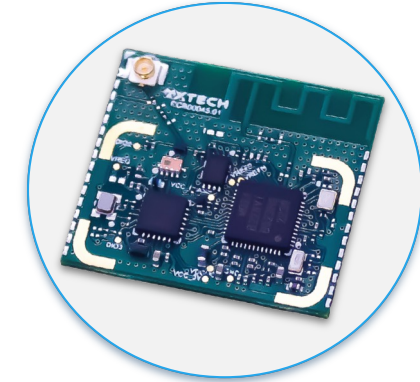
Connect millions of devices on Amazon Sidewalk and LoRaWAN Network with ease and FUOTA support.

Reliable

A dependable solution for users to stay connected on a large network between end devices up to a mile range

Simple

The Module comes pre-provisioned allowing painless onboarding for users



FEATURES

- Built-in SX1262 LoRa
- Microcontroller with 2.4GHz radio transceiver to support Bluetooth® Low Energy 5.3 standards
- 1024KB of Flash and 128KB of RAM
- 78MHz ARM Cortex-M33 processor 1.8V to 3.3V power supply (3.3V recommended for best RF performance)
- Digital interfaces: 4 configurable GPIOs, and configurable GPIOs for UART x 1, SWD x1 (for Jlink), Flash Memory SPI x1, Flow Control
- RF interfaces: 2.4GHz x1 and Sub1-GHz x1
- Full support for Amazon Sidewalk
- Full support for LoRaWAN
- Radio output power up to + 19.5dBm
- Secure vault and boot

Available Soon



Start Your Amazon Sidewalk Development Journey With Us

Let our ecosystem experts help you navigate the development journey, from concept to execution, with our Amazon Sidewalk SDK, hardware, and development kits.

Visit silabs.com/ecosystems/extend-iot-device-range-with-amazon-sidewalk

Amazon Sidewalk: A Neighborhood Network



Amazon Sidewalk:

- Is a new way to enable IoT
- Compliments existing IoT protocols
- Allows device makers to connect securely without the need for dedicated gateways
- Enables new types of applications
- Data is accessed through AWS
- Network coverage across most of the US and will continue to grow worldwide

Silicon Labs is an Amazon Key Scaling Partner

- Silicon Labs offers simple security compliance with additional security options using Secure Vault™
- Engaging with select device partners today
- HW and SW support through current SoCs/reference designs and tools
- Will continue to innovate through HW and SW
- Full GSDK launch with Amazon coming soon



Thank You



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Watch  ON DEMAND

silabs.com/training

Q&A



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Next Month**

tech **talks** UPCOMING SESSIONS

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