



MATTER SERIES

tech **talks** UPCOMING SESSIONS

FEB 9TH | Matter: Evaluation to Certification

MAR 9TH | Certifying a Matter Device: Thread and Wi-Fi

APR 6TH | Getting Started: Matter Over Wi-Fi

MAY 4TH | Start Your Matter Development Journey

JUN 1ST | What's New in Matter?

2023



WEBINAR SERIES

Welcome

Matter: Evaluation to Certification

Matt Maupin



MATTER SERIES

Agenda

- 01** Matter Overview
- 02** Matter Ecosystems
- 03** Silicon Labs Matter Evaluation and Development
- 04** Matter Testing and Certification
- 05** Summary and Q&A

Matter Overview

Smart Home Dilemma – Connected Lock Example



○ Zigbee ○ Z-Wave ○ Bluetooth ○ Wi-Fi

■ Smart Home Dilemma

- Multiple Ecosystems available
- Devices often tied to one Ecosystem
- Requires different products, apps and hubs

■ Manufacturers

- Manufacturers are forced to pick ecosystem(s)
- Need to ship multiple SKUs for connectivity standards
- Need to learn different IoT technologies and ecosystems

■ Retailers

- Leads to duplicate products on the shelf
- Difficult to provide expert advice to consumer questions
- High return rates due to interoperability or incompatibility

■ Consumers

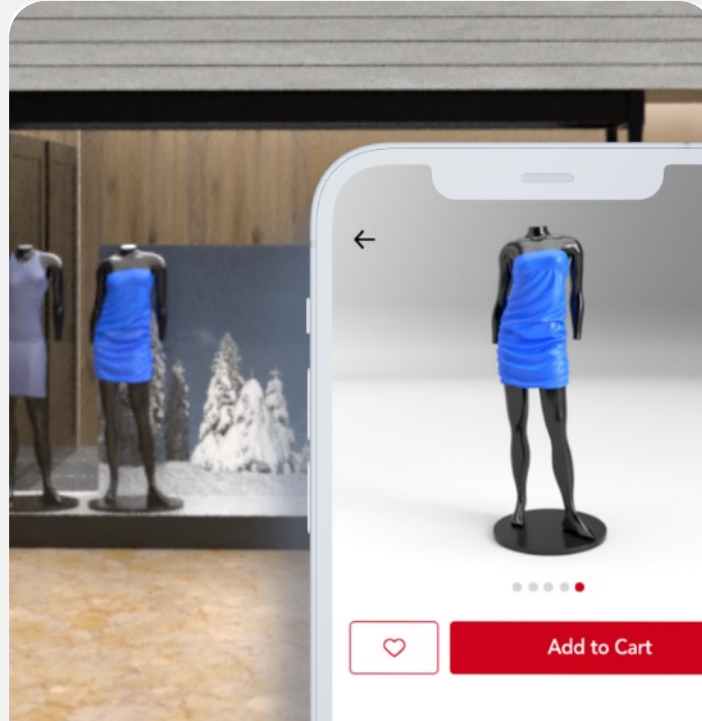
- Purchasing confusion
- Hard to mix and match the products they want
- Difficult to change Ecosystems

Matter - Simplifying IoT Connectivity



DEVELOPER/MANUFACTURE

- Single SKU
- Lower development & operational cost
- More time for innovation



RETAILER

- Requires less shelf space
- Lowers inventory cost
- Minimizes returns



CONSUMER

- Works with multiple ecosystems
- Simplifies purchasing experience
- Provides better user experience

What is Matter?



1.0 NOW AVAILABLE

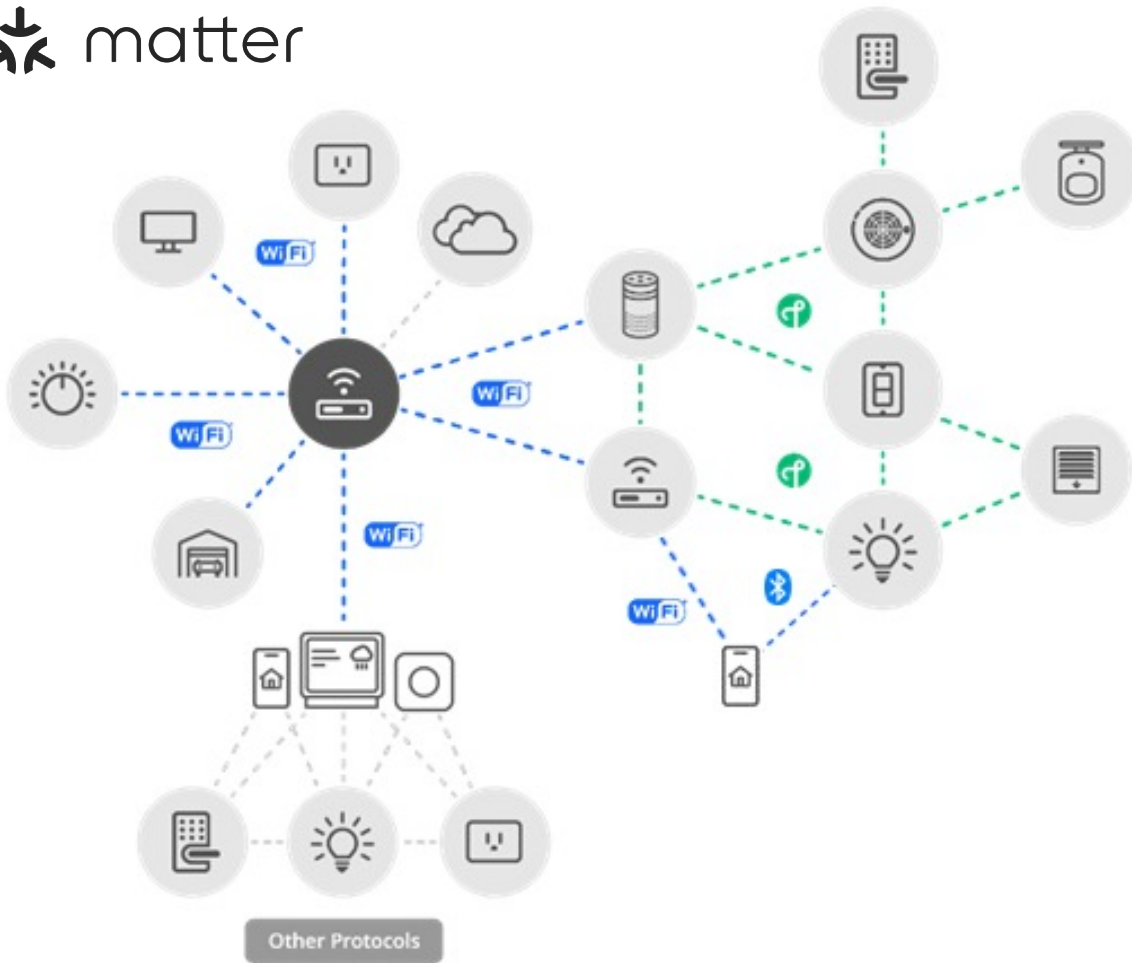
Driving the Matter Standard



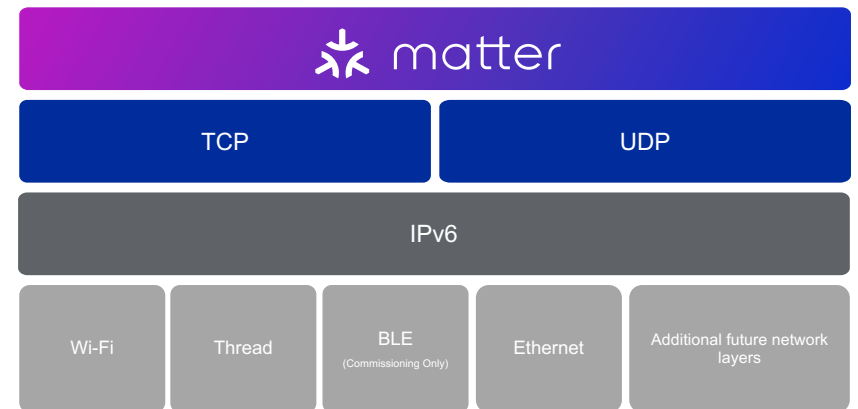
"Members represented are a small sample of the companies supporting Matter."

- **Developed by over 280 industry-leading companies**
- **Simple:** Makes it easy to setup and control your smart devices with multiple ecosystems
- **Interoperable:** Devices and ecosystems with the Matter logo are interoperable by design
- **Reliable:** Consistent and responsive local connectivity that still works even if internet is down
- **Secure:** Authenticated before joining the network, encrypted data transfer, consumers manage privacy
- **Open:** IP based, universal standard for the smart home, running on **Wi-Fi, Thread and Ethernet**

Network Protocol and Topology



- **Based on Internet Protocol v6**
- **Native support for Wi-Fi and Thread**
- **Thread devices require border routers**
- **Devices use Bluetooth for commissioning**
- **Bridges can link to other protocols**
 - Zigbee and Z-Wave



Devices supported by Matter 1.0

▪ Line Powered Devices

- Lighting and Electrical
- Controllers and Bridges
- Media Devices

▪ Battery Powered Devices

- HVAC Controls
- Door Locks
- Window Coverings and Shades
- Sensors

▪ Matter Network Components

- Platform
- Mesh Extender
- Border Router
- Home Gateway

▪ Matter Device Roles

- Device
- Commissioner
- Controller
- Bridge

▪ Support for other devices has already begun

- Cameras, home appliances, robot vacuums, Electric Vehicle charging, and energy management.

Line Powered

Lighting and Electrical



Controllers & Bridges



Media Devices



Matter Network Components

- Platform
- Mesh Extender
- Border Router
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Matter Device Roles

- Device
- Commissioner
- Controller
- Bridge

Battery Powered

HVAC Controls



Door Locks



Window Coverings & Shades



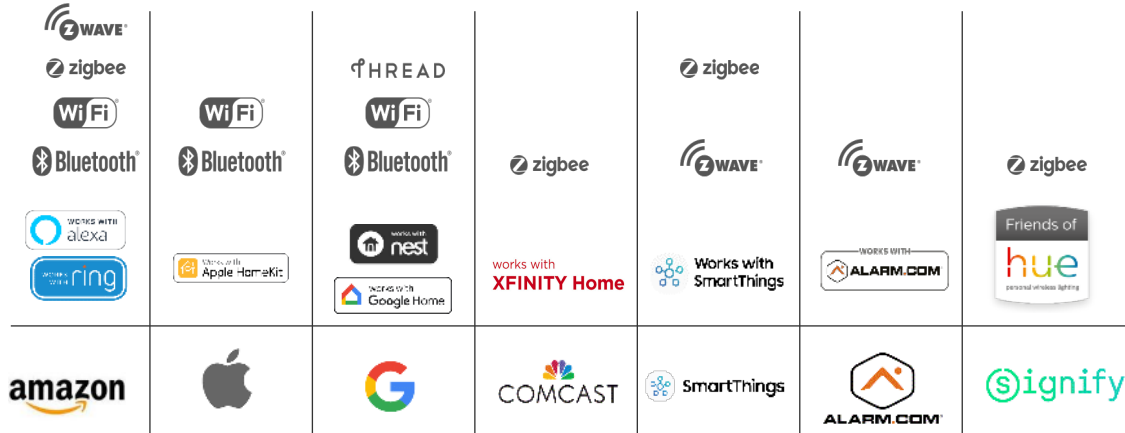
Sensors



Matter Ecosystems

Siloed Ecosystem Challenges & Benefits of Unification

SILOED ECOSYSTEM DEVICES & CHALLENGES



Fragmentation

DEVICE MAKER CHALLENGES:

- **Fragmented user base**
 - Multiple SKUs to address the users of all ecosystems
 - Long time to market, higher costs
 - Lack of interoperability across ecosystems
 - Limits automation capabilities
 - Reduces user satisfaction
 - Confusion slows down adoption

MATTER UNIFIED CONNECTIVITY AND BENEFITS











Unification

BENEFITS OF UNIFICATION:

- **Enhanced user experience**
 - Increased buyer confidence with ensured device interoperability
 - Control their smart home devices of any brand with the ecosystem App of choice when Matter is enabled.
- **Matter-enabled Simplicity for Device Makers**
 - One SKU for all ecosystems
 - Gateway-less smart home alternative
 - A Single solution to reach every smart home ecosystem user base

Ecosystem Support to Date (January 2023)

Ecosystem	Matter / Thread		Matter / Wi-Fi		Additional Info
	Supported Devices	Mobile App Support	Supported Devices	Mobile App Support	
	Echo Gen 4 Eero 5	Q1' 2023 (target)	Echo Gen 4 Echo Dot 5th gen Echo Studio Echo Show 8 Echo Flex and Plus Eero 5		Amazon Link
	HomePod Mini Apple TV 4K HomePod (Gen 2)	iOS	HomePod Mini Apple TV 4K HomePod (Gen 1 & 2)	iOS	Apple Link
	Nest Hub (2 nd Gen and Max) Nest WiFi	 iOS support 2023	Google Mini Nest Mini & Audio Nest Hub (1 st Gen, 2 nd Gen, and Max) Nest WiFi	 iOS support 2023	Google Link
 SmartThings	Aeotec SmartThings Hub Hub Everywhere Samsung branded: <ul style="list-style-type: none"> • TVs • Charging hubs • Refrigerators 	 iOS	Aeotec SmartThings Hub Hub Everywhere Samsung branded: <ul style="list-style-type: none"> • TVs • Charging hubs • Refrigerators 	 iOS	Samsung Link

Silicon Labs Matter Evaluation and Development

Silicon Labs Matter Solutions – More Than Just Silicon

THREAD

Bluetooth®

WiFi®



HARDWARE

- Field-proven SoCs and modules for Wi-Fi, 15.4 with Bluetooth
- Best-in-class radio performance, low power, and wireless co-ex
- Vault security and AI/ML



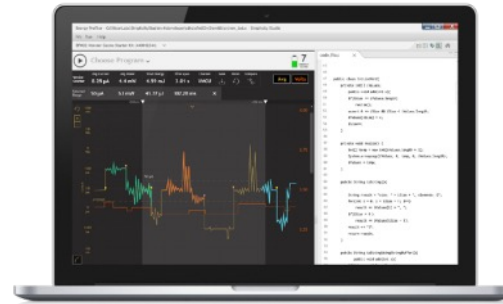
matter



SOFTWARE

- Support for all Matter device types, including border routers and bridges
- GitHub-based multiprotocol software platform with OTA

14
Simplicity
Silicon
28.000
Studio 5



TOOLS

- Advanced development hardware, reference designs, and tools
- Ease of use through Simplicity Studio & GSDK integration
- Windows Development Support



CERTIFICATION

- Inheritance for Thread and Wi-Fi certification
- Proven Matter certification
- Ecosystems certification

Recommended Matter Solutions



High-performance Low-power SoC

- Feature Rich End Devices
- SoCs and Modules
- Thread + BLE
- Low Power
- Large Flash/RAM
- Robust peripheral set
- AI/ML accelerator
- Secure Vault High



Low-cost RCP / RCP Solution

- Optimized for Hubs/Bridges
- ICs
- Thread
- Radio Coprocessor
- Requires Host MCU/MPU
- Concurrent Zigbee / Thread
- Lowest BOM count
- Secure Vault High



Lowest Power Best Security Wi-Fi 6 SoC

- Wi-Fi 6 End Devices
- ICs and Modules
- Wi-Fi 6 + BLE
- Ultra Low power
- SoC (internal ARM MCU)
- Secure (PSA L2)
- AI/ML accelerator
- SRAM/pSRAM/Flash



Lowest Power Wi-Fi 4 NCP Solution

- Wi-Fi 4 End Devices
- ICs and Modules
- Wi-Fi 4 + BT/BLE
- Ultra Low Power
- Requires external Host MCU/MPU

SoC and Module Selection Guidelines for Matter

Matter Over Thread				
Use Case	Protocols	OTA Image Storage	MG24 MGM240	MG21
Border Router	Single Protocol RCP Mode	External Flash (Host)	✓	✓
Border Router & Zigbee Gateway	Concurrent Zigbee / Thread Dynamic 802.15.4 / BLE ¹	External Flash (Host)	✓	✓
End Device	Dynamic 802.15.4 / Bluetooth LE SoC Mode ²	External Flash	✓	
End Device	Dynamic 802.15.4 / Bluetooth LE SoC Mode ²	Internal Flash	✓	

¹ Zigbee to Matter bridges (Unify SDK) will require Concurrent and Dynamic Multiprotocol on the RCP

Matter Over Wi-Fi					
Use Case	Protocols	Mode	WF200	RS9116W	SiWx917
End Device	Wi-Fi 4	RCP ²	✓		
End Device	Wi-Fi 4, Bluetooth LE	NCP ²		✓	
End Device	Wi-Fi 6, Bluetooth LE	NCP ²			✓
End Device	Wi-Fi 6, Bluetooth LE	SoC			✓

² Requires an external host MCU or MPU

Info available at: <https://www.silabs.com/wireless/matter>

Getting Started with Silicon Labs Matter over Thread

- **Dev Kit**

- ▶ Low-cost development board
- ▶ On-board debugger
- ▶ Signal breakouts
- ▶ On-board sensors

- **Explorer Kit**

- ▶ Low-cost board
- ▶ mikroBus socket
- ▶ Qwiic connector

- **Kit contents**

- ▶ 1 x board

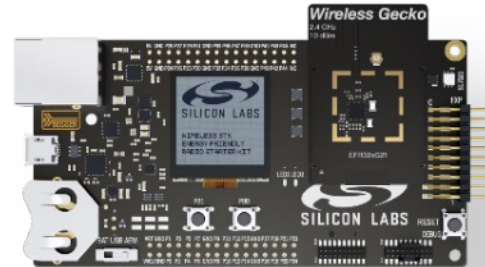


- **Starter Kit / Pro Kit**

- ▶ Modular development platform
- ▶ Advanced development
- ▶ RF measurements
- ▶ Energy profiling
- ▶ External device debug
- ▶ Ethernet for large network test

- **Kit contents**

- ▶ WSTK main board(s)
- ▶ Radio board(s)



- **Radio Board**

- ▶ Radio board
- ▶ Optimized RF layout and performance
- ▶ Ideal for RF measurements
- ▶ SoC, PCB modules and SiPs
- ▶ Uses existing WSTK boards
- ▶ Uses existing software tools

- **Kit contents**

- ▶ 1 x Radio board



<https://www.silabs.com/wireless/matter?tab=kits>

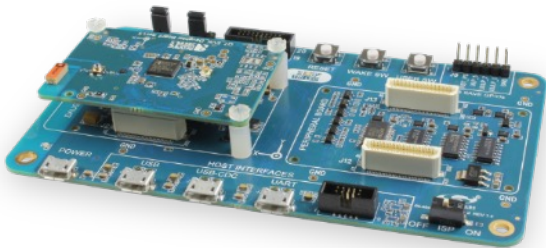
Getting Started with Silicon Labs Matter over Wi-Fi

▪ RS9116 Kits

- Modular development platform
- Advanced development
- RF measurements
- Current measurements
- Serial interface to host

▪ Kit contents

- Baseboard
- Wireless daughter card



<https://www.silabs.com/wireless/matter?tab=kits>

▪ SiWx917 Kits - Announced

- EXP and Radio board options
- Optimized RF layout and performance
- Ideal for RF measurements

▪ Kit contents

- Radio Board Kit (SoC Mode)
 - ▶ 1 x Radio board
 - ▶ 1 x Main Board
- EXP Kit (NCP Mode)
 - ▶ 1 x EXP board



Contact Sales for availability

<https://www.silabs.com/about-us/contact-sales>

Matter GitHub and GSDK Offerings

	 For Cutting Edge Matter Protocol Developers	 Stable Silicon Labs Matter Source on GitHub	 Silicon Labs Simplicity Studio and GSDK support	
	Item			
Development	Thread Part Support	Yes	Yes	
	Wi-Fi Part Support	Yes	Yes (Studio)	
	Developer Platforms	MacOS, Linux	MacOS, Linux	Windows, MacOS Linux
	Studio Tools Support		Limited	Full
	Memory Optimizations		Limited	Full
	Core Protocol Stack	Source Code	Source Code	Pre-built Compliant Library
QA	Production Testing		Yes	Yes
	Performance Testing		Limited	Yes
Certification	Thread Certified Libraries	Yes	Yes	Yes
	Matter Compliance Testing		Yes	Yes
Support	Application Engineering Support	Limited	Full	Full

Matter over Wi-Fi and Matter over Thread

Wi-Fi Support

- **Hardware**
 - RS9116W NCP + MG24
 - SiWx917 NCP + MG24
 - SiWx917 SoC
- **Sample apps**
 - Thermostat
 - Lock
 - Shade
 - On/Off Plug
- **Extensive testing for a robust solution**
 - Stress and interoperability testing with multiple access points
 - Testing with multiple hubs / controllers
 - Reliability testing for network disconnect and power cycling
 - Interop testing with Wi-Fi and OpenThread end devices
- **Wi-Fi 4 Certified**
 - RS9116 SoC Wi-Fi certification can be leveraged
- https://github.com/SiliconLabs/matter/blob/latest/docs/silabs/wifi/DEMO_OVERVIEW.md

Thread Support

- **Hardware**
 - MG21
 - MG24
- **Pre-built Border Router Raspi image**
- **Pre-built demos in Studio**
- **Sample apps**
 - Switch
 - Light
 - Shade
 - Lock
 - Sensor
- **Extensive testing for a robust solution**
 - Regular and Extensive testing by QA
- **Thread 1.3 Certified**
 - Customers must apply for Thread Certified Products but can skip ATL testing by inheriting the Silicon Labs module
- https://github.com/SiliconLabs/matter/blob/latest/docs/silabs/thread/DEMO_OVERVIEW.md

Getting Started Today



DOWNLOAD STUDIO

Silicon Labs' comprehensive development tool

<https://www.silabs.com/developers/simplicity-studio>



INSTALL EXTENSION

Get ready with Silicon Labs Matter for Wi-Fi and Thread

<https://github.com/SiliconLabs/matter>



BUILD

Build and configure sample apps for a variety of device types

 SILICON LABS | SUPPORT & COMMUNITY

Matter

 Search this Topic...

JOIN THE COMMUNITY

Join the Community Building Matter devices

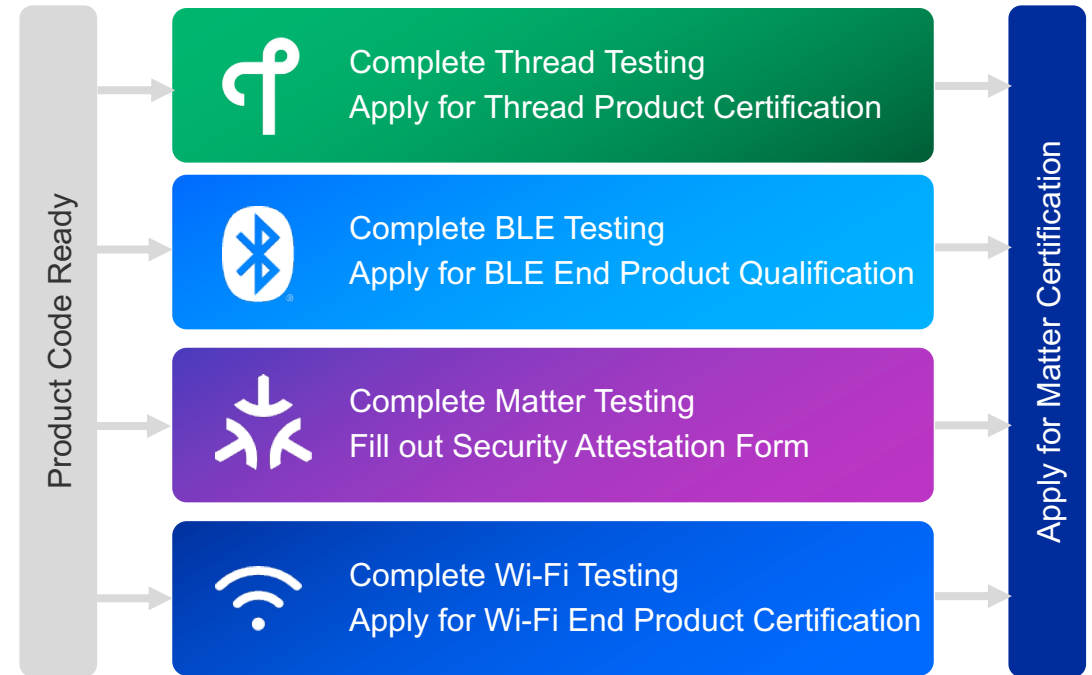
<https://community.silabs.com/>

For more information on getting started, go to <https://docs.silabs.com/>

Matter Testing and Certification

Matter Certification Summary

Area	Certification Body	Testing Requirement	Certification Requirements
Matter	CSA	Full Matter End Product Testing	<ul style="list-style-type: none"> CSA Membership Matter Testing completed Certification ID for each transport CSA Security Attestation completed Pay CSA Certification fee
Thread	Thread Group	<p>No Testing required if using Silicon Labs Certified Libraries for SOC</p> <p>Authorized Test Lab Testing needed for RCP</p>	<ul style="list-style-type: none"> Thread Group Membership required (even for inheritance) Thread testing completed Apply for Thread Product Certification Pay Thread Certification Fee
Bluetooth	Bluetooth SIG	Reduced Testing if using Silicon Labs Bluetooth Qualified Component	<ul style="list-style-type: none"> Bluetooth SIG Membership Completed BLE Testing Pay BLE Certification Fee
Wi-Fi	Wi-Fi Alliance	No Testing required if using Silicon Labs Certification	<ul style="list-style-type: none"> No separate certification at Wi-Fi Alliance required if using Silicon Labs Certified Stack.



Reduce Product Costs and Time-to-Revenue

- **Optional Ecosystem certification done after Matter certification**

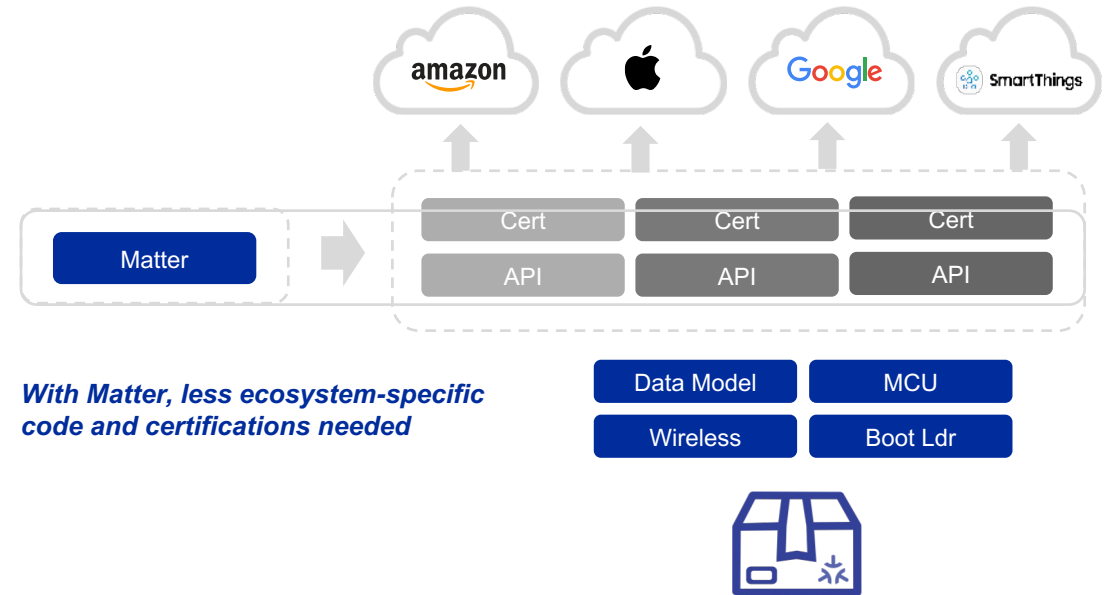
- Only light-effort ecosystem-specific interoperability testing for ecosystem specific features
 - i.e. Google Home and Away
 - i.e. Amazon Matter Simple Setup (MSS)

- **Why would device manufacture want it?**

- Allows badge to be included on packaging
- Inclusion in Ecosystem marketing
- Ensures smooth interoperability with Ecosystems
- Includes differentiated features with Ecosystems

- **Why do users want it?**

- Helps guide users to their Ecosystem
- Provides guarantee of working with their Ecosystem



Where do you get started?

- Amazon <https://developer.amazon.com/enUS/docs/alexa/smarthome/matter-support.html>
- Apple - <https://developer.apple.com/apple-home/matter/>
- Google - <https://developers.home.google.com/matter>
- SmartThings - <https://developer.samsung.com/smarthings>

Summary

Summary

- Smart Home today has been hindered by complexities for manufacturers, retailers, and consumers
- Matter brings 1.0 is released now to simplify the Smart Home
- Key Ecosystems are supporting Matter
- Wi-Fi and Thread are supported natively for Matter
- Bridging exist for other networks like ZigBee and Z-Wave
- Key features in Matter ensure interoperability and security
- Silicon Labs hardware, software, tools and certification experience helps speed your time to market



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Thank You



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