Agenda

01 **Matter Overview**

02 **Matter Ecosystems**

03 **Developer Journey**

04 **Getting Started**

05 **Matter Certification and Certification Cost**

06 **Summary and Q&A**

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Matter Overview

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Smart Home Dilemma – Connected Lock Example

Zigbee ⭕ (red) **Z-Wave** ⭕ (yellow) **Bluetooth** ⭕ (blue) **Wi-Fi** ⭕ (green)

- **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

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What is Matter?

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1.0 NOW AVAILABLE
Driving the Matter Standard

amazon · Apple · Aqara · arlo · ASSA ABLOY
Ayla · belkin · BOSCH · COMCAST · eve.
Google · IKEA · Infineon · legrand · LG
Midea · nanoleaf · NORDIC SEMICONDUCTOR · NXP · resideo
SmartThings · Schneider Electric · sengled · Signify · SILICON LABS
somfy · TEXAS INSTRUMENTS · tuya · Wulian
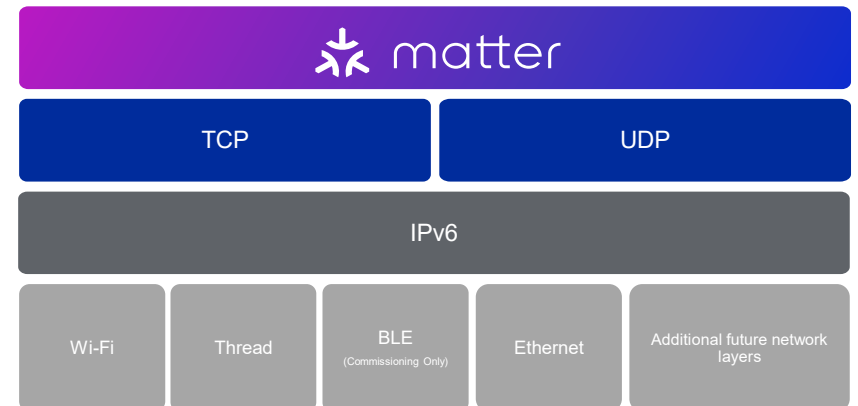
"Members represented are a small sample of the companies supporting Matter."

- **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**

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Network Protocol and Topology
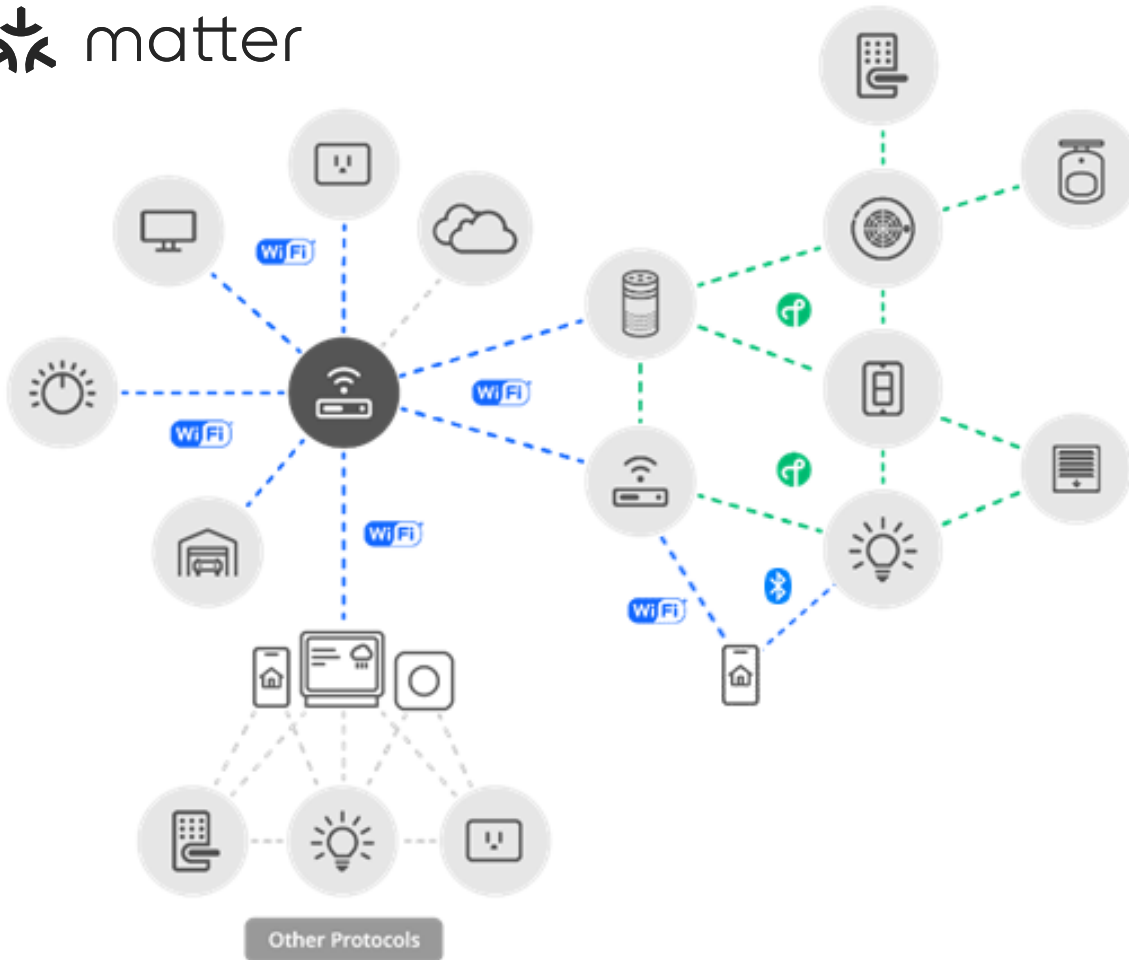
- **Based on Internet Protocol v6**

- **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

matter	
TCP	UDP
IPv6	

Wi-Fi	Thread	BLE (Commissioning Only)	Ethernet	Additional future network layers

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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
- Home Gateway

Matter Device Roles
- Device
- Commissioner
- Controller
- Bridge

Battery Powered

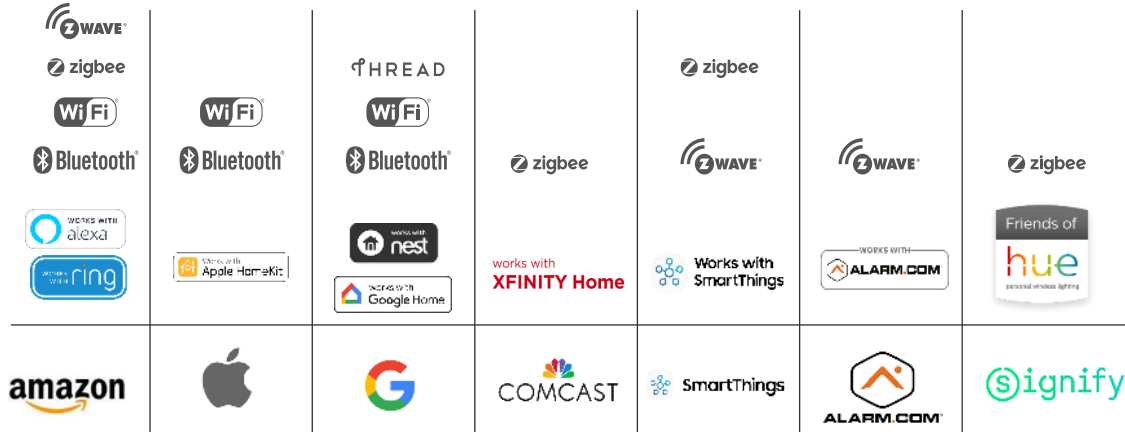### HVAC Controls

Door Locks

Window Coverings & Shades

Sensors

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Matter Ecosystems

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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
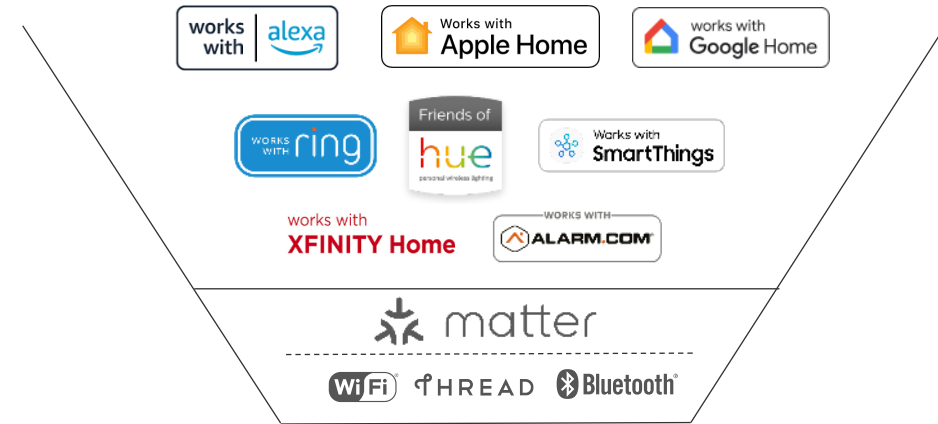
Unification

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

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# Matter & The Ecosystems – Promises of Interoperability

- **A key promise of Matter is that a certified device should be able to interoperate with any other certified Matter device**
  - Any end device should work with all of the major smart home ecosystems
- **All devices, controllers, and bridges use the same interaction, system, and application cluster models – a common application language**
- **Any member company can contribute new features to the spec and codebase**

Matter & The Ecosystems – Defining how Matter is used

- **Matter gives us a common application language, but ecosystems define how that language is used.**

- **The ecosystems define the experiences that the end consumer will have with Matter.**

- **Ecosystems are the primary way that users will interact with matter devices.**

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# Matter & The Ecosystems – The primary interface to the user
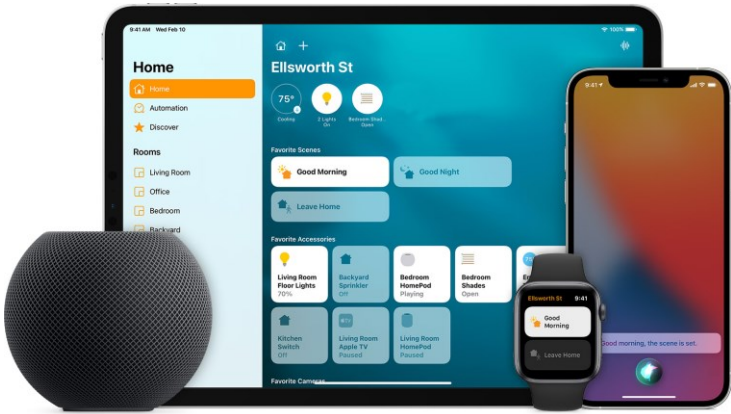
Developer Journey

Matter Challenges

- **Getting started with Matter development can be time-consuming and complex.**
  - Lots of initial setup and configuration – CHIP Tool and OpenThread Border Router needed to start testing Thread end devices
  - Extra hardware such as Raspberry Pi is often required
  - Setting up the development environment can be very tricky
- **High learning curve to start on Thread**
  - Need to understand the Thread models for Border Routers, Router devices, and End Devices
  - Need to learn the command line interface (CLI) commands to start up Thread network
  - Need to learn how the CHIP Tool interacts with Thread Border Router application
- **Proof of concepts can be hard to create**
  - Creating your own smart phone app is expensive and difficult
  - CHIP Tool is not the best for demo purposes in real world scenario

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Developer Journey – How can Silicon Labs help?
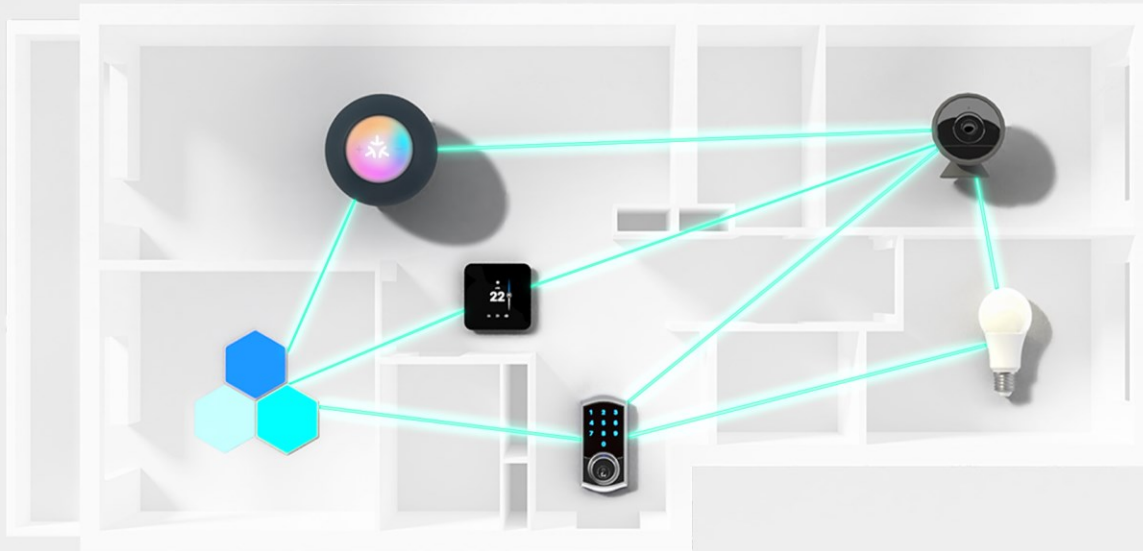
- **How to solve this confusion and leverage the ecosystems?**
  - Silicon Labs is working to simplify the development experience and accelerate time-to-market for our customers
  - Silicon Labs wants to educate developers on the benefits of adopting Thread and Low Power Wi-Fi for Matter devices
- **What do our customers need?**
  - A clear, step-by-step guide on how to get started with Matter
  - Education materials on Matter, Thread, Wi-Fi, and how it all works with the Ecosystems
  - Scripts, tooling, and tutorials to support them as they begin development
  - Software delivery that meets them where they are at in their development and software updates to pick up critical changes and fixes
  - Sample apps to help get started that work well with ecosystems
- **Where do we start and how to do the ecosystems come into play?**

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Coming Soon: Matter Developer Journey

Start Your Matter Development Journey with Silicon Labs

Unmatched Silicon, Software, and Tools for Matter Development

Learn & Explore → Matter Development & SiLabs HW → Test & Iterate → Matter Certification → Ecosystem Certification → Launch, Monitor, & Update

Example: Silicon Labs' Developer Journey for Google Home

1. Learn & Explore

Google Home Developer Center (GHDC) Resources

- [Use Cases](#)

- [Documentation](#)

- [Business Resources](#)

Matter Specific Resources

- [Get Started for Device Developers](#)

- [Matter Primer 101 Documentation](#)

- [Matter Code Labs](#)

- [Phone and Web App Developer Matter Code labs and docs](#)

- [Google Home and Away Intelligence Clusters](#)

GitHub
- [Silicon Labs Matter Github (SMG) Docs](#)

Webpages
- [Silicon Labs Matter](#)
- [Ecosystems](#)
- [Silicon Labs Community Matter Resources](#)

Developer

[Join Connectivity Standards Alliance](#)

- Explore working groups and tiger teams

[Explore Silicon Lab's Content](#)

- Getting started

- Demos

- Hardware

- Kits & Boards

- About Matter

4. Test and Iterate

Google Home

- **After creating the image test pairing and controlling the device (Use an Android phone and supported Google device)**
  - Pair - Silicon Labs Mighty Gecko
  - Or Wi-Fi device once instructions are added
- **Test all device functionality through:**
  - Google Virtual Assistant
  - Nest Hub UI
  - Google Home App
- **Use GHDC and the Google Home VS Code Extension**
- **Test the application layer functionality and interoperability with the Google Home cloud backend.**
- **Google Home Test Suite has specific tests for each device type and will be used for Works with Google Home Certification**
- **Use the Google Home Cloud Logging and Analytics to quickly discover, diagnose, and address issues.**
  - https://console.cloud.google.com/logs/
  - https://console.cloud.google.com/monitoring/dashboards
  - **Note:** these will be blank unless you have created a project and integration and have active data coming in

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- Add documentation to SMG to point to Google Home Developer Console Test Suite and Google Home Cloud Logging and Analytics
- Apps & FAEs help provide support when issues arise with our platform
- Add Ecosystem devices to CI/CD QA pipelines using the Automated Test Suite with Pigweed RPC
- Continue to add new features, sample apps, and cluster and device type support based on updates to the Matter spec

Developer

Use CSA Matter Test Harness to prepare for Matter certification and go through test cases

- Why Certify (CSA)

- Certification Tools (CSA)

Use Google Home Test Suite from Google Home Developer Console to test device functionality

- Specific tests available per device type

Getting Started

Recommended Matter Solutions

High-performance Low-power SoC	Low-cost RCP / RCP Solution	Lowest Power Best Security Wi-Fi 6 SoC	Lowest Power Wi-Fi 4 NCP Solution
MG24	MG21	SiW917	RS9116
• Feature Rich End Devices • SoCs and Modules • Thread + BLE • Low Power • Large Flash/RAM • Robust peripheral set • AI/ML accelerator • Secure Vault High	• Optimized for Hubs/Bridges • ICs • Thread • Radio Coprocessor • Requires Host MCU/MPU • Concurrent Zigbee / Thread • Lowest BOM count • Secure Vault High	• 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	• Wi-Fi 4 End Devices • ICs and Modules • Wi-Fi 4 + BT/BLE • Ultra Low Power • Requires external Host MCU/MPU

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Silicon Labs Matter Solutions – More Than Just Silicon

HARDWARE

- **Field-proven SoCs and modules for Thread and Wi-Fi with Bluetooth**
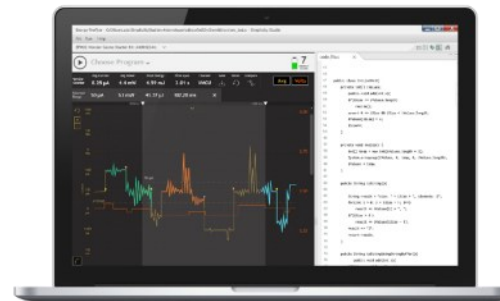- **Robust and reliable wireless foundation for Matter devices**

CERTIFICATION

- **Support for Wi-Fi and 802.15.4 end product certification**
- **Participation in all CSA Matter test events**
- **Matter certification**

TOOLS

- **Advanced development hardware, reference designs, and tools**
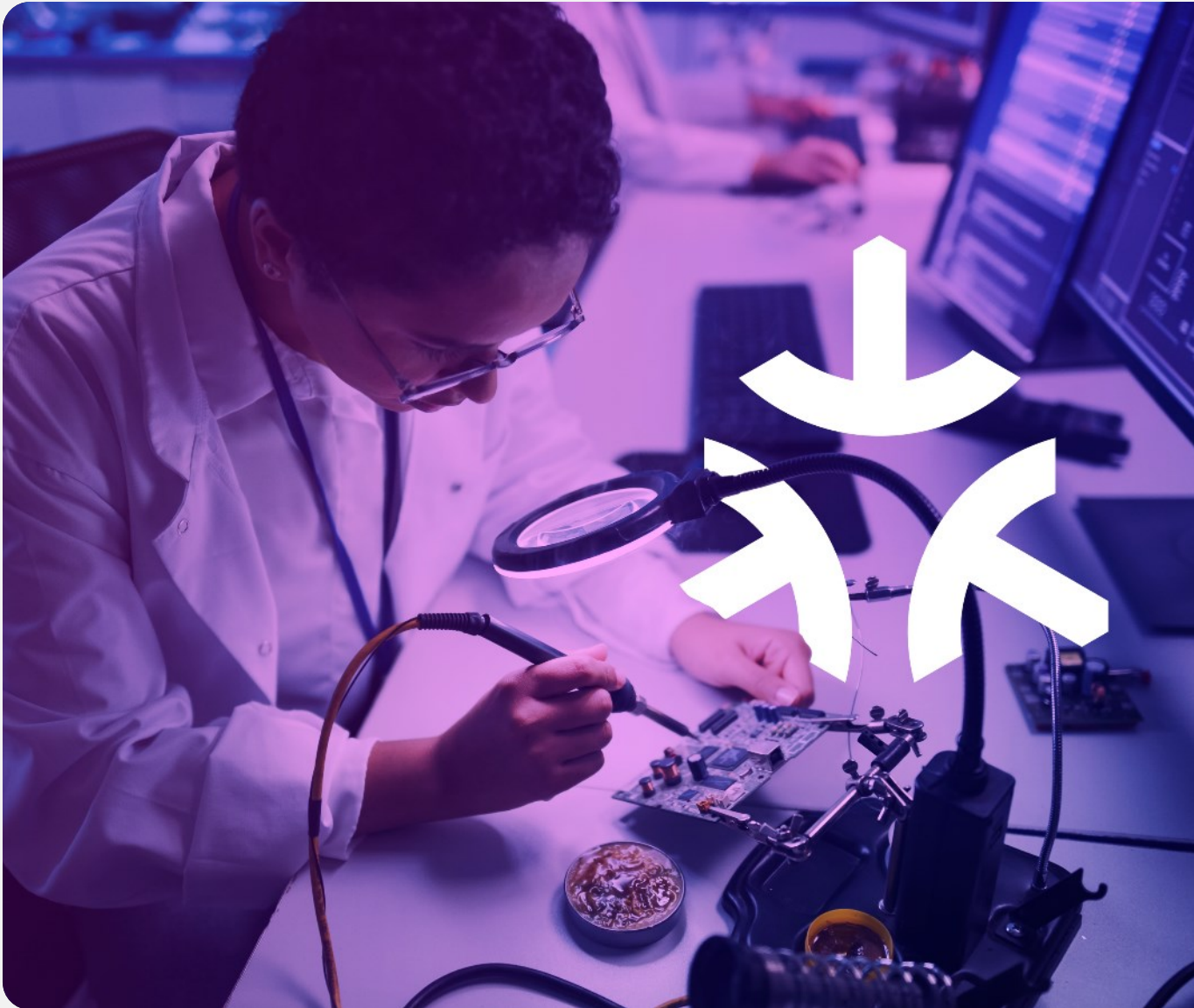- **Simplifies development and speeds time-to-market**

SOFTWARE

- **Support for all Matter devices including border routers, and bridges**
- **The largest semiconductor contributor to Matter GitHub**

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Matter Certification

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Matter Certification Steps

1. **Become a member of the CSA**

2. **Request a Vendor ID code (VID) from CSA Certification**

3. **Select applicable network transports used in your product**

4. **Certification from relevant standards organization**

5. **Matter Product testing**

   a. If product will be Certification by Similarity (CbS) or Certification Transfer Program (CTP) – go directly to step 6

   b. Choose an authorized test provider and submit testing

   c. OR ensure final SVE results are uploaded in TEDS

6. **Submit certification application to the CSA via the Certification Web Tool**

7. **Application review by CSA Certification**

8. **Approval – Certificate of Compliance, CSA website listing, certified logos, Certification Declaration (CD)**

9. **Distributed Compliance Ledger (DCL) compliance record**

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Step 1 – CSA Membership

- **Select a membership level**
  - Adopter or higher needed to develop, test and certify
  - Associate members can only participate in Certification Transfer Program
  - Membership benefits and comparison available on CSA website
- **Ready to join?**
  - Follow three-step process under "How to Become a Member": https://csa-iot.org/become-member/
- **Questions about choosing a membership level? Contact CSA Member Services: help@csa-iot.org**

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Step 2 – Obtain a Vendor ID code (VID) and determine your Product ID (PID)

- **To request a Vendor ID code (also called a Manufacturer ID code), email certification@csa-iot.org**
  - A code will be assigned to your company and sent to you via reply email

- **The Manufacturer Code database is published monthly on for CSA members**
  - https://groups.csa-iot.org/wg/members-all/document/10905

- **VID codes are valid immediately upon assignment**
  - Will appear in the database in the next published update

- **Decide on Product ID(s)**
  - A Product ID is your own unique 16-bit number to identify distinct Matter products.
  - You may have as many product IDs as you want but each has their own unique certification ID

Steps 3-4 – Product Development & Network Transport Selection/Certification

- **Products with Thread, Wi-Fi, or Bluetooth need citification for relevant standards**
  - Must complete before finalizing your Matter certification

- **Network transports supported at launch:**
  - Ethernet (IEEE PMA Compliance Attestation required)
  - Wi-Fi (Wi-Fi 4/802.11n or later – requires WPA3)
  - Thread (1.3.0 or later)
  - Bluetooth to support Matter commissioning (LE v4.0 or later)

- **Complete the relevant CSA Attestation of Network Transport Protocol Conformance/Certification form(s)**
  - https://groups.csa-iot.org/wg/members-all/document/folder/31
  - Choose the appropriate form for your network transport(s)
  - You will need to upload the form(s) to your Matter application

- **Complete the CSA Security Attestation**
  - https://groups.csa-iot.org/wg/members-all/document/folder/2255
  - Includes security recommendations and requirements
  - Fill out based on how you have implemented your product

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Matter Wi-Fi Certification for Silicon Labs' Customers

Matter Wi-Fi Requirements

- **Must certify Bluetooth with Bluetooth SIG**
  - If using Silicon Labs certified part, can skip testing
    - ‣ Must still submit certification documents to BT SIG

- **May certify Wi-Fi with Wi-Fi Alliance**
  - If using the Wi-Fi Certified logo, you must test and certify

- **Must certify Matter with CSA**
  - Must test a qualified test house
  - Must submit documents to CSA
    - ‣ Bluetooth and Wi-Fi certification IDs
    - ‣ Can use Silicon Labs' Wi-Fi certification ID if not using Wi-Fi Certified logo

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Matter Thread Certification for Silicon Labs' Customers

Matter Thread Requirements

- **Must certify Bluetooth with Bluetooth SIG**
  - If using Silicon Labs certified part, can skip testing
    - ‣ Must still submit certification documents to BT SIG

- **Must certify Thread with Thread Group**
  - If using Silicon Labs certified part, can skip testing
    - ‣ Must still submit certification documents to Thread Group

- **Must certify Matter with CSA**
  - Must test a qualified test house
  - Must submit documents to CSA
    - ‣ Bluetooth and Thread certification IDs

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Step 5b – Matter Certification Testing

- **Generate Product PICS – Protocol Implementation Conformance Statement**
  - A list of all mandatory and optional features implemented
  - Use the CSA PICS Tool to generate/complete XML PICS

- **New product applications require compliance testing at a CSA Authorized Test Provider**
  - Usually done on your own timetable
  - Testing can also be done at a CSA sponsored event

- **A current list of Authorized Test Providers can be found on the CSA website**
  - https://csa-iot.org/certification/testing-providers/
  - Test provider must be validated to perform Matter testing

- **After testing is completed, your test provider will issue a final test report to the CSA**

- **Pre-testing can be completed on your own using the CSA provided Test Harness**
  - This same harness will be used by the testing provider

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Step 5c – Spec Validation Event (SVE) Certification

- **New device types are tested over multiple CSA test events and a final Spec Validation Event (SVE)**
  - Those participating in the SVE and pass all the testing *may be* eligible for a product certification
  - Must still wait for the CSA to announce and approve the new release of the specification
  - Timing, location, and number of events are dictated by the Matter Working Group within the CSA

- **Product is always only eligible for certification with successful completion of full phase testing**
  - Test results from SVE can be used to apply certification provided no software changes are made afterwards
  - If SVE involved running all tests then no additional tests are necessary.
  - If SVE is a subset of tests, remaining tests must undergo ATL testing using the same software version
    - ‣ The combined results can be used to apply for certification

- **Final SVE results must be uploaded in TEDS**
  - All submitted tests must have a passing result and be validated by the assigned authorized test lab (ATL)

- **SVEs occur infrequently, and most will be using the normal certification testing process.**
  - Unless you need new features or device types, recommend to use the normal certification testing process.

SVE – Specification Validation Event
ATL – Authorized Test Lab

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Step 6 – Submit Certification Application

- **Certification applications are submitted via the [Certification Web Tool](#)**
  - For instructions on requesting an account, using the tool, and submitting applications see: [Certification Tool User Guide](#)

Step 6 – Submit Certification Application

- **Required documents and information (tip: gather/prepare these in advance):**
- **Documents**
  - [Declaration of Conformity (DoC)](#)
  - PICS – Protocol Implementation Conformance Statement
  - [Network Transport Attestation](#) (not required for SW Component applications)
  - [Security Attestation](#)
- **Data**
  - Product ID (PID)
  - [Vendor ID](#) (VID) – assigned VID will appear in application
  - Device Type (for End Products, enter this in the "Technical Sub Categories" field of the application)
  - Device Role / Media Device Type (SW Component applications)
  - dac_origin_vendor_id (optional – see Matter specification)
  - dac_origin_product_id (optional – see Matter specification)
  - authorized_paa_list (optional – see Matter specification)

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Step 7 – Application Review
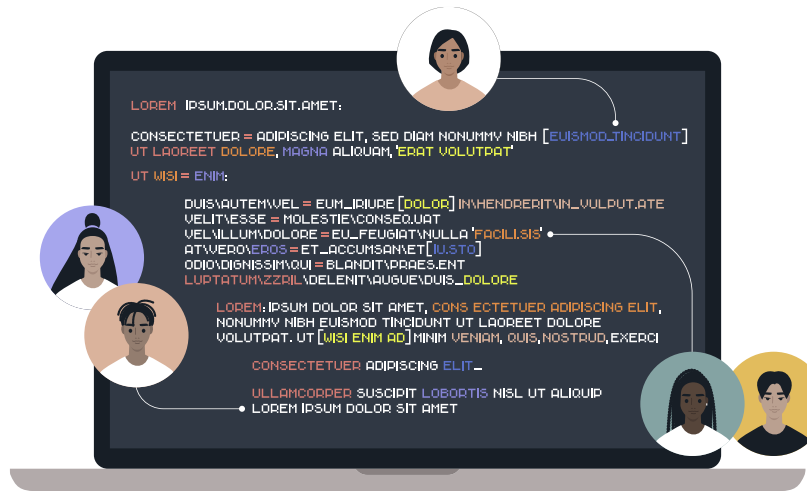
- **Submit your application**
  - It will enter the review queue
- **CSA Certification will review your application**
  - Issuance of a certificate of compliance (if there are no issues with the application after review)
  - Or an e-mail communication back with a list of items that need to be addressed to continue processing

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Step 8 - Approval

- **Certificate of Compliance**
  - PDF certificate document sent via email upon approval
- **Public listing of certified products**
  - Product listing posted to the [CSA Certified Products Database](#) at csa-iot.org
    - ‣ Unless otherwise requested
- **Matter certified logos**
  - Logos authorized for use with your certified products are located on your Certification Tool dashboard
- **Certification Declaration (CD) blob file**
  - A separate email notification will be sent with instructions for download when the CD file for the product is ready
    - ‣ It will be available in the Certification Tool from the account that submitted the application)

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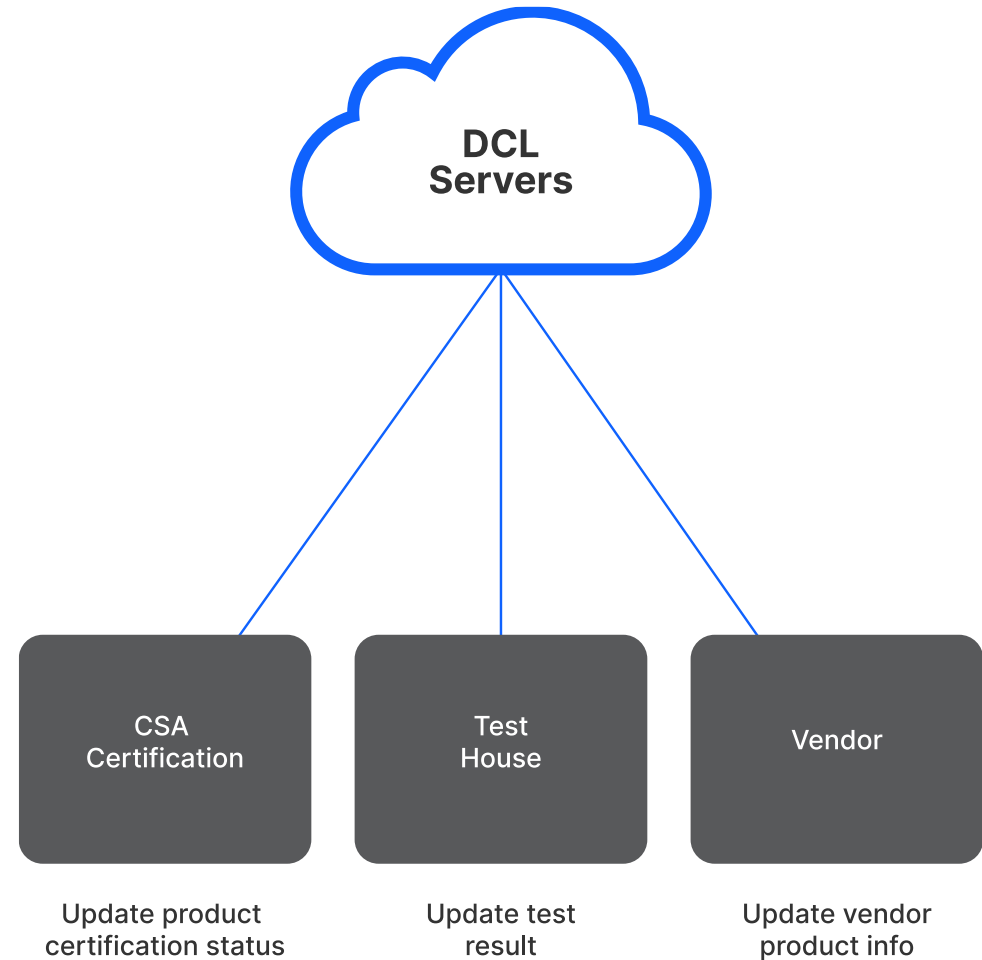# Step 9 – Distributed Compliance Ledger (DCL)

- **What is it?**
  - Distributed database of all certified products
    - ‣ Certification status
    - ‣ Product name / description
    - ‣ Firmware Upgrade URI
- **What is the benefit?**
  - Commissioners can restrict access to only certified devices
  - Users can verify that a device is authentic
- **How is it managed?**
  - All Matter certified products are publicly available
    - ‣ https://webui.dcl.csa-iot.org
  - Write to the DCL is restricted to the following roles
    - ‣ CSA Certification role
    - ‣ Test House role
    - ‣ Vendor role
  - A certified product record is entered by the CSA Certification

DCL Servers

CSA Certification	Test House	Vendor
Update product certification status	Update test result	Update vendor product info

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Certification Cost

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Matter Certification Fee Schedule (as of Feb. 27, 2023)

	Associate	Adopter*	Participant*	Promoter*	
New Certification (by Testing)					
Application fee	N/A	3,000	2,000	2,000	**Normal Certification**
Authorized Test Provider Fee	Based on Test Provider				
Certification by Similarity (CbS)					
Application fee	N/A	2,500	1,500	1,500	**Certification by Similarity (CbS)**
Certification Transfer Program					
Application fee	2,500	2,500	1,500	1,500	
CTP listing (annually)**	500	FREE	FREE	FREE	
Family Certification Program					
New family application fee	N/A	8,000	4,000	4,000	**Family Certification**
Recertification (family update) application fee	N/A	8,000	4,000	4,000	
Family extension (adding variants) application fee	N/A	1,000	500	500	

Includes a yearly fee starting at 7000 USD/year

** CTP listing fees for any existing certified products are immediately removed upon upgrade to Adopter or a higher level membership.*

*** All fees are listed in US Dollars (USD).*

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BLE, Thread and Wi-Fi Fees (as of Feb. 27, 2023)

	Bluetooth SIG	Thread Group	Wi-Fi Alliance
Alliance Membership Levels			
Membership Fees	Adopter - $0		
	Associate* – $9000	Implementer - $7500	Implementer*** - $6000 (2024)
	Associate** – $42000	Contributor - $15000	Contributor - $20000 (2024)
Authorized Test Labs			
Testing Fee	Varies based on ATL	Varies based on ATL****	Varies based on ATL
Product Certifications			
Certification Fees (per Product).	Declaration Fee (Adopter) - $9600	Inheritance (Implementer) - $1500	FlexTrack (Contributor)- $5000
	Declaration Fee (Associate) - $4800	Inheritance (Contributor) - $1000	QuickTrack (Contributor)- $7500
		Certification at ATL**** - $2500	Derivative (Contributor)- $600
			Derivative (Implementer) - $4000

NOTE: The above info is for guidance only. Visit the respective alliance's website for the most up-to-date information and fees.
*For companies with annual revenue < $100M
**For companies with annual revenue >$100M
***Wi-Fi Alliance Implementer is for companies that are using unmodified Wi-Fi modules certified by another company and want to use the Wi-Fi Certified brand
**** If using an uncertified thread stack or an altered certified thread component

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Summary

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Silicon Labs Streamlining Ecosystem Integration

Product | Application / Stack / Radio | **Cloud**

1. Establish relationship
- Work with ecosystem partner

2. Connect product
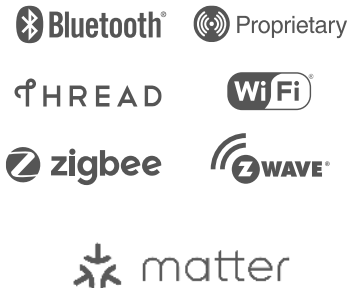- Embed wireless technology
- Wireless certification

3. Connect ecosystem
- Ecosystem integration
- Ecosystem specific tests

4. Launch
- Works With Badges
- Joint marketing

Making introductions

Supplying suite of developer and certification tools

Providing guidance

- 100% committed to IoT, actively engaged with eco-systems and partners
- Can assist customers at every step through the process

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

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/

Q&A

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Join the Rest Tech Talks Topics

BLUETOOTH

JUL 13TH

Unboxing: What's New With Bluetooth

Bluetooth Portfolio: What's Right for Your Application

The Latest in HADM With Bluetooth LE

WI-FI

AUG 3RD

Designing Low-Power Applications with Wi-Fi 6

Building Smart Home Devices with Always-On Wi-Fi 6

Developing Wi-Fi 6 Sensors Using SiWx917 and Matter

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