Presentation Will Begin Shortly

4:00

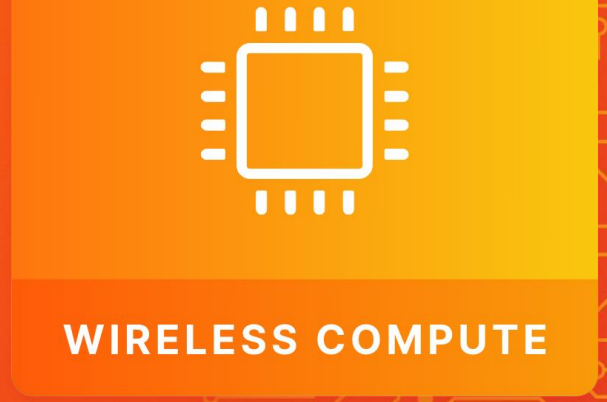
WIRELESS COMPUTE

FEB 22ND	Choosing the Best MCU Platform for Your IoT Devices
MAR 28TH	EFR and EFM: An Optimized Platform for AI/ML at the Edge
MAY 2ND	Unboxing our New 32-bit Microcontroller
JUN 6TH	Simplicity Software and Tools

xG26 Product Overview

April 2024

tech talks



Agenda

- xG26 Portfolio Overview and Key Features
- PG26 Introduction and Overview
- PG26 Differentiating Features
- Hardware and Software Development Tools
- Demo

xG26 – The Most Complete Series 2 Family

32-Bit MCU

- 8x8 QFN68 (48 GPIO)
- 7x7 BGA136 (64 GPIO)

matter THREAD Bluetooth® zigbee

2.4GHz Proprietary

- 6x6 QFN48 (28 or 32 GPIO)
- 8x8 QFN68 (49 GPIO)
- 7x7 BGA136 (64 GPIO + 4 AIN)

Bluetooth®

2.4GHz Proprietary

- 6x6 QFN48 (28 GPIO)
- 8x8 QFN68 (45 GPIO)
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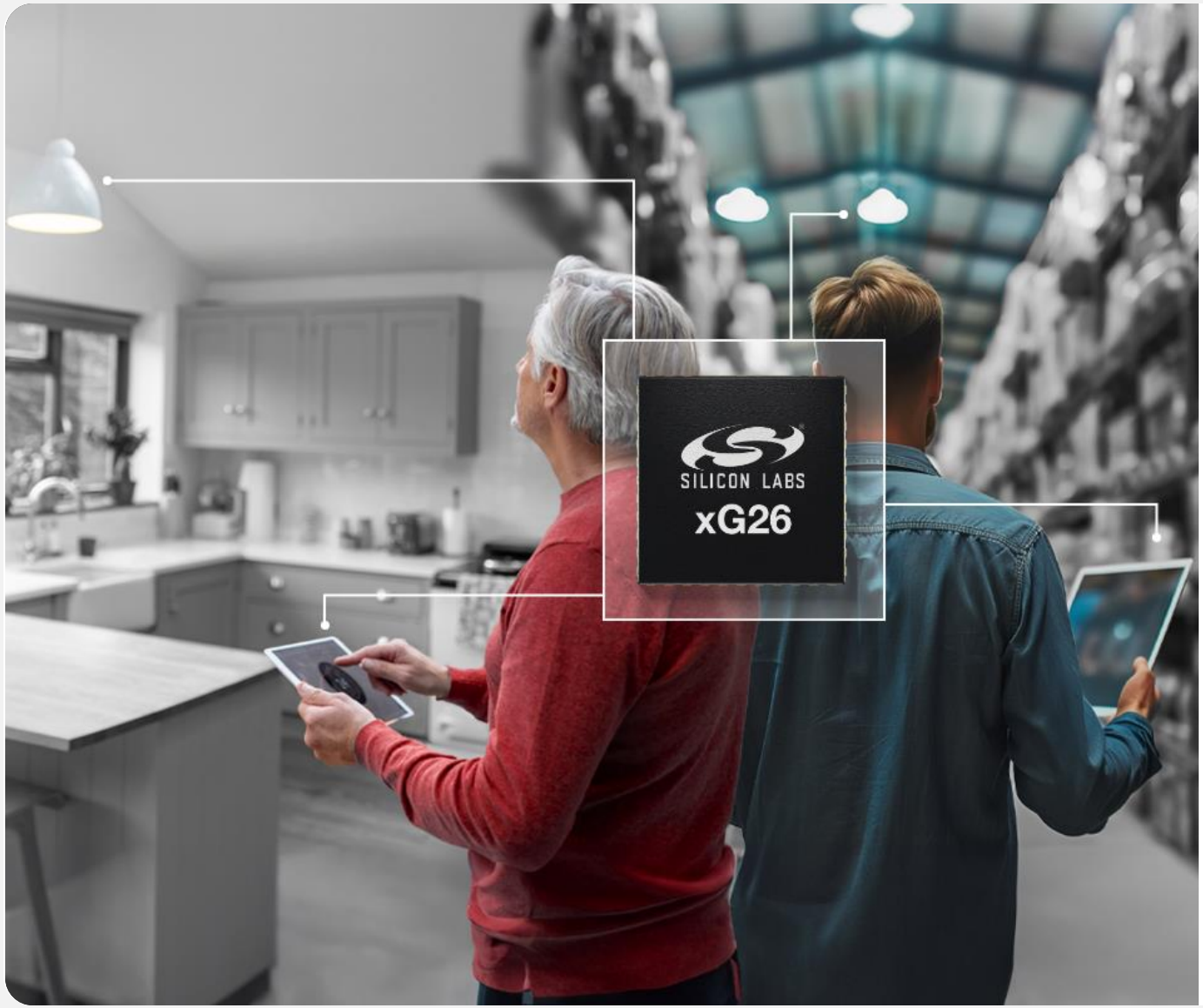
xG26 Key Features



- **Largest combination of Flash and RAM enables more complex applications and ML capabilities**
  - Future proofs deployed devices as specifications like Matter evolve over time
  - Eliminates the need for external flash for OTA updates
- **High performance compute**
  - Tri-core architecture gives more processing power to customer applications
  - AI/ML accelerator further offloads compute intensive tasks for machine learning
- **Robust RF performance provides long-range and reliable communication**
  - Output power of +19.5 dBm and Rx Sensitivity of up to -105.4 dB provides best in class range without the need for external front end module.
- **Robust security protects the data and the device**
  - Common architecture across all Silicon Labs devices allows for simplified security architectures and speeds time to market
- **Rich peripheral set with large number of GPIOs enables better system integration**
  - Up to 64 GPIOs and 4 dedicated analog pins allows for more complex single chip architectures
- **Low power capability enables smaller batteries and provides longer battery life**
  - Low active and sleep current allow for more flexible power architectures

PG26 – High Performance and More GPIOs for More Complex Applications

32-Bit MCU

- 8x8 QFN68 (48 GPIO)
- 7x7 BGA136 (64 GPIO)

DIFFERENTIATED FEATURES

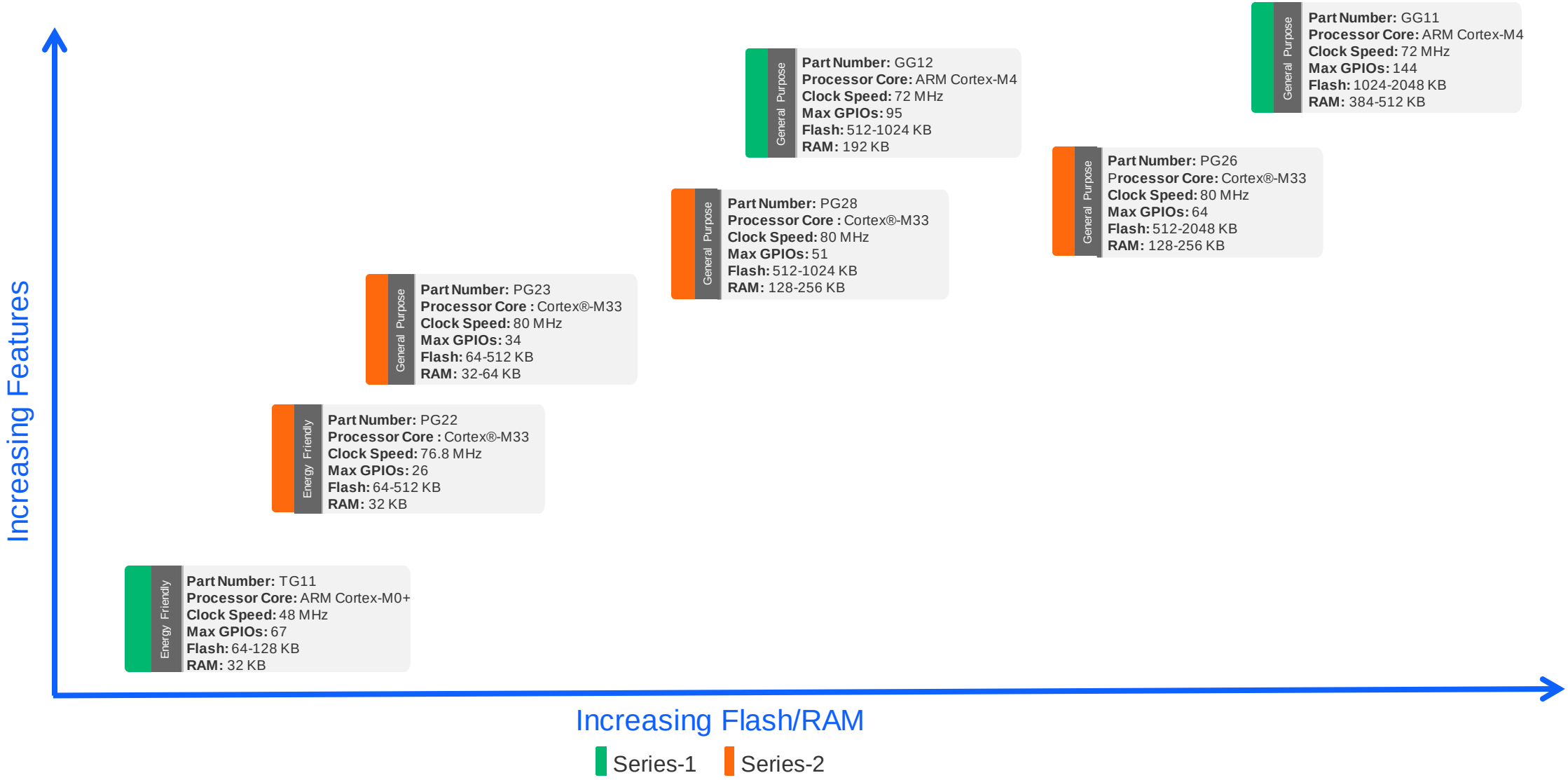
- **Software Compatible with xG26 Wireless SoC**
  - Easily upgrade to add wireless support in the future
- **More GPIOs**
  - Allows for better system integration into a single MCU
- **AI/ML Accelerator**
  - Faster inferencing with lower power
- **LCD Driver**
  - Simplified UI design and BOM consolidation
- **Secure Vault™ Mid and High**
  - Upgraded security over Series 0 and Series 1 MCUs
  - Consistent security approach across both wired and wireless platforms
- **Package and Firmware Compatible with PG28 (QFN68)**
  - Migration path for customers who need more memory or better analog performance

DEVICE SPECIFICATIONS

- **Ultra Low Power**
  - 44.6 µA/MHz EM0 @ 80 Mhz[1]
  - 1.4 µA EM2 with 16 kB RAM
- **Efficient ARM® Cortex®-M33**
  - Operating Frequency: Up to 80 MHz
  - 2048 kB Flash, 256 kB RAM
- **Low Power Peripherals**
  - 4 x EUSART, 3 x USART (7 x UART), 4 x I2C
  - 16-bit ADC
  - 2x 12-bit VDAC, 2x ACMP
  - Temperature sensor +/- 1.5°C
- **Wide Operating Range**
  - 1.71 to 3.8 volts
  - +125ºC operating temperature

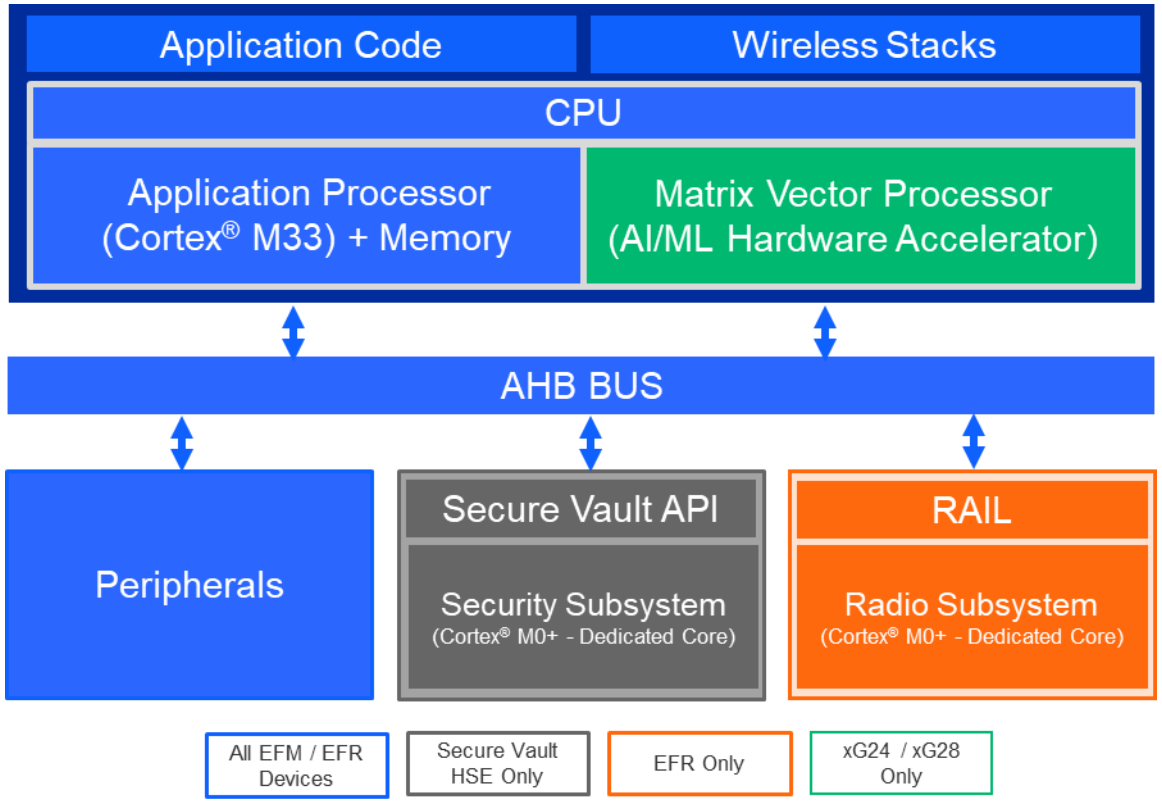
1 - 80 MHz HFRCO, CPU running CoreMark loop from Flash

Silicon Labs MCU Portfolio



Differentiating Features

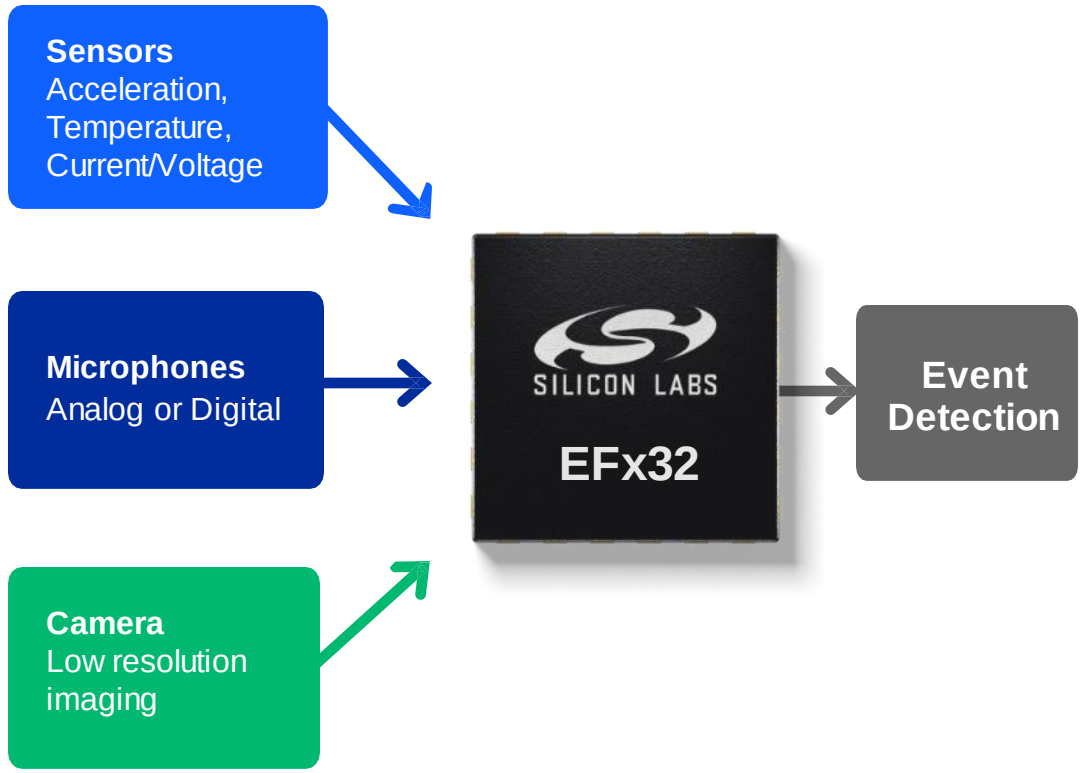
Multi-Core, Low Power Architecture



- **Multi-core architecture**
  - Cortex® M33 application core and dedicated Cortex® M0+ cores for radio and security sub-systems simplifies product architectures and increases design re-use
- **Optimized energy modes and peripherals**
  - Allows for more efficient operation to increase battery life and improve system performance
- **Peripheral Reflex System optimizes performance**
  - Autonomous peripheral operation frees up more CPU bandwidth for application needs
- **AI/ML Hardware Accelerator improves calculation efficiency for edge devices**
  - Faster, lower power inferencing at the edge decreases reliance on connectivity and processor resources

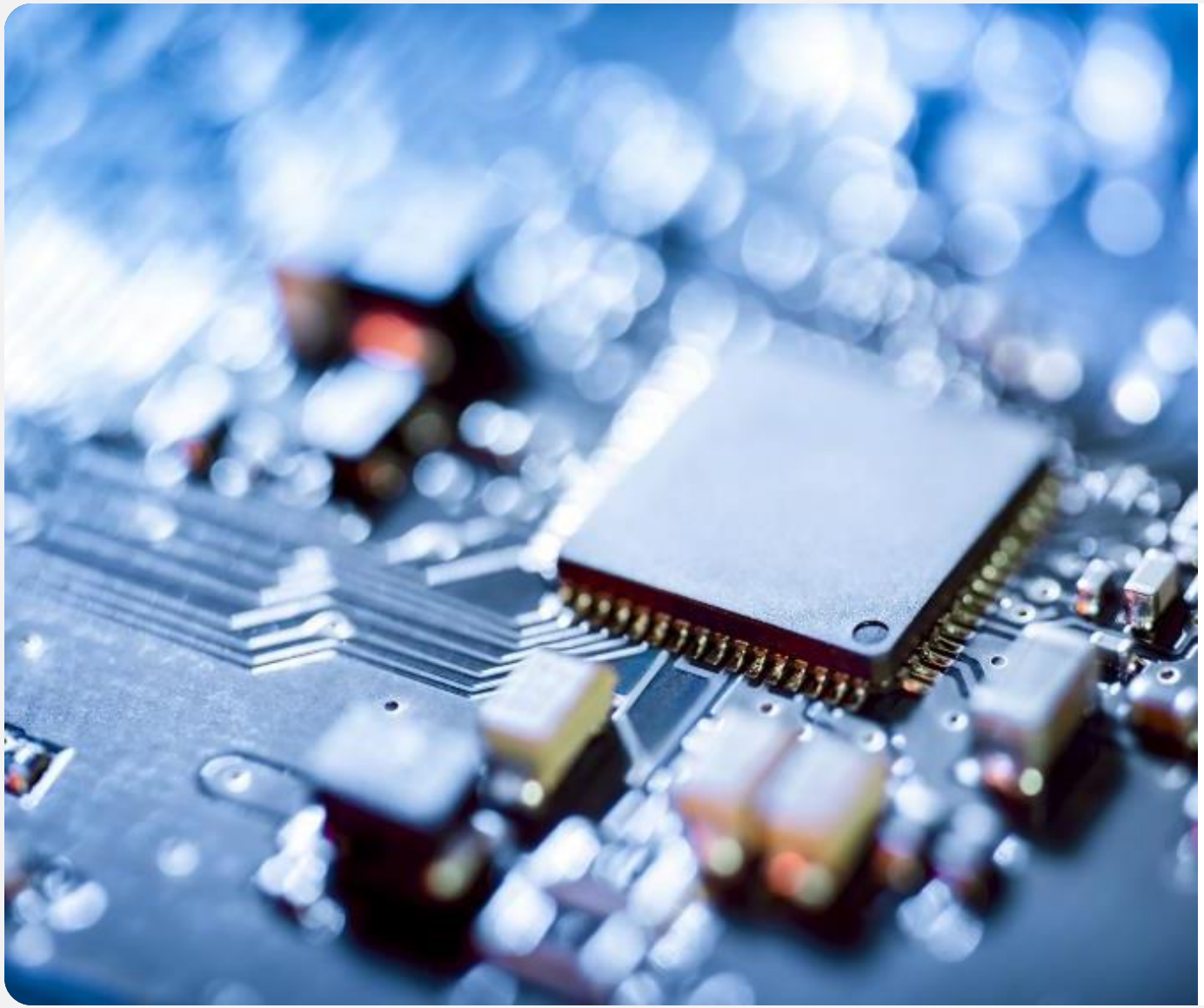
AI/ML Hardware Accelerator

- **Matrix processor accelerates ML inferencing**
  - Complete multi-dimensional array operations without burdening application core
  - Handles real and complex data
- **Up to 8x faster inferencing over firmware based solutions**
  - Lowers latency for better real time decision making
- **Up to 6x lower power than firmware based solutions**
  - Simplifies overall system design and allows for longer battery life
- **Math Libraries for non-ML applications**
  - Silicon Labs provided math libraries allow applications to take advantage of matrix processor in non-ML implementations



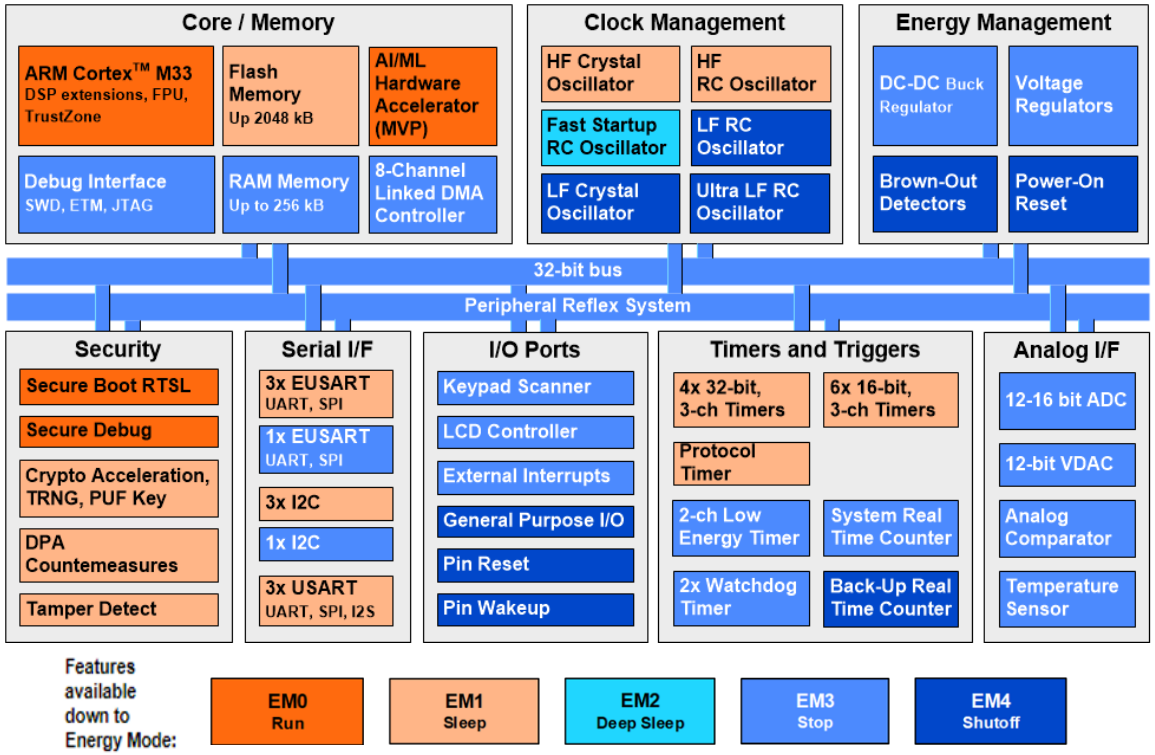
AI/ML Hardware Accelerator enables efficient Edge ML inferencing

Common Security and AI/ML subsystems



- **EFM32 and EFR32 maintain consistent security and AI/ML subsystems**
  - Allow developers to maintain security and AI/ML consistency for connected and non-connected products
- **Provides migration path as security needs evolve with Secure Vault™ subsystem**
  - Mid and High options in both EFM and EFR provide drop-in migration path as security needs evolve
- **Silicon Labs offers ML development tools and solutions for explorers to experts for faster application development:**
  - Rich set of tools and partners supporting end-to-end development with multiple platform options
- **Availability of programming tools like Silicon Labs CPMS for secure programming and certificate injection**
  - Can maintain secure programming chain for connected or non-connected products

Optimized for Better System Integration



- **Up to 64 General Purpose I/O pins with output state retention and asynchronous interrupts**
  - Most GPIO of any Series 2 device allows for better system integration for more complex applications
  - Output state retention feature is beneficial for applications where quick system recovery is essential after power-down scenarios
- **Integrated Low-Energy LCD Controller supporting up to 4 x 40 segments (LCD)**
  - Supports alphanumeric, icon, or graphical elements for diverse visual representations
  - Ability to control individual segments allows you to create custom icons, progress bars, status indicators, and more
- **Keypad scanner supporting up to 6 x 8 matrix (KEYSCAN)**
  - Supports large number of keys with minimal number of GPIOs freeing up pins for other functional needs
  - Allows for better GPIO usage in space constrained applications
- **20 Channel Peripheral Reflex System (PRS)**
  - Peripheral modules can communicate autonomously, freeing up the CPU for other tasks and reducing workload
  - Improves overall system efficiency by allowing the application core to remain asleep longer

Hardware and Software Development Tools

IoT Hardware Development Tools – Feature Comparison

	Explorer Kit	Dev Kit	Pro Kit
Debug Speed	1.6MHz	1.6MHz	8MHz
Debug USB	Full Speed	Full Speed	High Speed
Packet Trace Interface (PTI)	✓	✓	✓ 2x
Breakout Pads	✓	✓	✓
Pushbutton s & User LEDs	✓	✓	✓
Virtual COM	✓	✓	✓
Coin cell battery holder	–	✓	✓
On-board Sensors	–	✓	✓
Battery Pack Connector	–	✓	✓
Radio Board Connectors	–	–	✓
EXP Connector	–	–	✓
Display	–	–	✓
Debug OUT	–	–	EFM8/32, EFR32, EZR32
Debug Ethernet	–	–	100 Mbit/s
Energy Monitor (AEM)	–	–	✓
3rd Party Hardware addons	✓	–	–

✓ Supported ✓ Optional or not mounted – Not Supported

Explorer Kit

- Lowest price point
- On-board debugger and signal breakouts
- Minimal on-board features
- 3rd party hardware support

Dev Kit

- Single device development board
- On-board debugger and signal breakouts
- On-board sensors
- Impressive out-of-the-box demos

Pro Kit

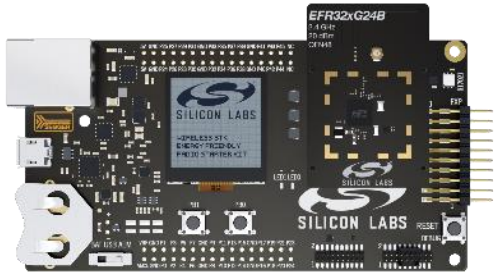
- Modular development platform
- Advanced development use cases
- Energy profiling and external device debug
- Ethernet for large network test
- Designed to maximize reuse of EFR32 devices

Getting Started with xG26

- **Dev Board**
  - 1x Development board
    - On-board debugger
    - Signal breakouts
    - On-board sensors
    - 20-bit ADC
    - AI/ML hardware accelerator
- **Explorer kit**
  - 1x Explorer board
    - mikroBUS socket
    - Qwiic connector

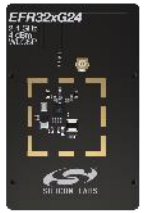
Part Number	Description
xG26-DK2608A	Dev Kit
PG26-EK2711A	PG26 Explorer Kit

- **Pro kits**
  - 1x radio board
  - 1 x WSTK main board
    - Modular development platform
    - Advanced development
    - RF measurements
    - Energy profiling
    - External device debug
    - Ethernet for large network test



Part Number	Description
xG26-PK6028A	xG26 +10 dBm Pro Kit
xG26-PK6029A	xG26 +19.5 dBm Pro Kit
PG26-PK2505A	PG26 MCU Pro Kit

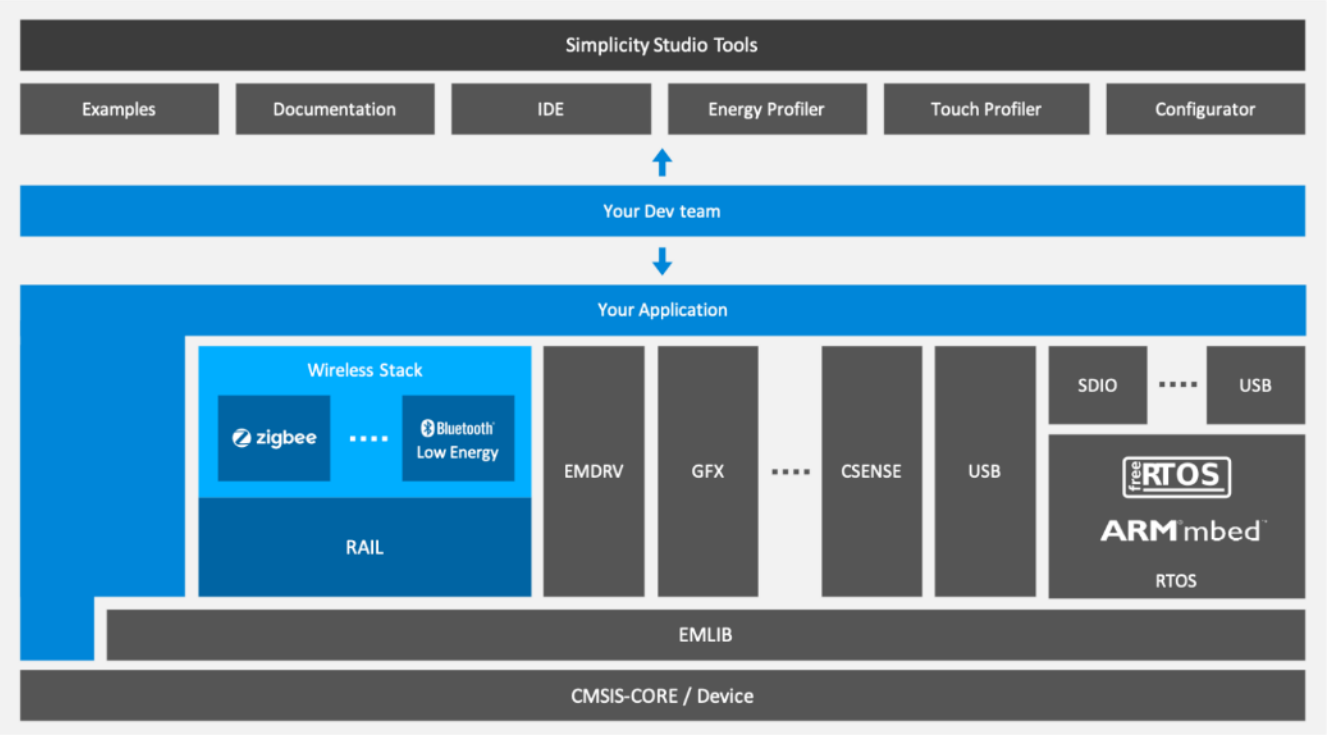
- **Radio Board kits**
  - 1x radio board
    - Uses existing WSTK boards
    - Uses existing software tools



Part Number	Description
XG26-RB4116A	6x6QFN48, +10 dBm Radio Board
XG26-RB4117A	6x6 QFN48, +20 dBm Radio Board
XG26-RB4118A	7x7 BGA136, +10 dBm Radio Board

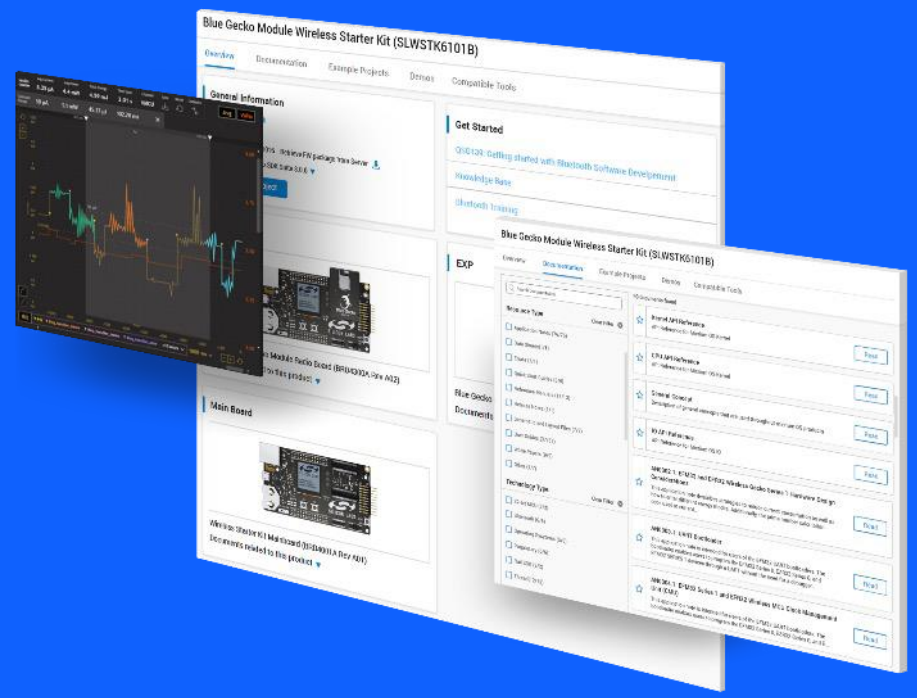
Simplifying through Software

A Well Organized MCU SDK



- Common platform allows software development to be leveraged across the entire product portfolio
- PG2x SW can be easily expanded to include wireless (xG2x)
- Shares code base with other products in portfolio (Series 2) for easy migration
- Universal platform features
  - Power manager
  - Command line interface
  - Rich library of examples

Simplified Developer Experience



Simplicity Studio 5

Simplicity Studio 5

- **Interface**
  - Fresh, new & simplified
  - Intuitive out-of-the-box experience
  - Fast access to developer resources
  - Linux, Mac & Windows
- **Tools**
  - Configuration utilities
  - Compiler
  - Error & validation
  - IDE & command line support
  - Graphical hardware configurator
  - Energy Profiler – visual energy analysis
  - Network Analyzer – packet capture & decode

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Demo

- Utilizing our Wireless Compute Platform
- Peripheral Reflex System (PRS)

v5.master.Staging_3100 - bt_soc_empty_prs_XG26_4117A/app.c - Simplicity Studio™

File Edit Source Refactor Navigate Search Project Run Window Help

Welcome Recent Tools Install Preferences

Launcher Simplicity IDE Debug Energy Profiler

Debug Adapters

EFR32xG26 2.4 GHz 20 dBm QFN48 RB (ID:440327395)

My Products

Enter product name

john.scaletta@silabs.com

EFR32xG26 2.4 GHz 20 dBm QFN48 RB, Wireless Pro Kit Mainboard (ID: 000440327395)

OVERVIEW | EXAMPLE PROJECTS & DEMOS | DOCUMENTATION | COMPATIBLE TOOLS

Create New Project

General Information

Connected Via: **J-Link Silicon Labs** Configure

Debug Mode: **Onboard Device (MCU)** Change

Adapter FW: **1v5p0b240** **Latest**

Secure FW: **Unknown**
No SE FW updates available, SE FW updates come from the preferred Gecko SDK

Preferred SDK:

Gecko SDK Suite v2024.6.0 Manage SDKs

Recommended Quick Start Guides

AN1255: Transitioning from the v2.x to the v3.x Bluetooth SDK

QSG168: Proprietary Flex SDK v3.x Quick Start Guide

QSG175: Silicon Labs' Direction Finding Solution Quick-Start Guide

AN1255: Transitioning from the v2.x to the v3.x Bluetooth SDK

All Quick Start Guides

Board

EFR32xG26 2.4 GHz 20 dBm QFN48 Radio Board (BRD4117A Rev A00)

View Documents

Board

Hardware Image

Wireless Pro Kit Mainboard (BRD4002A I

View Documents

Target Part

Useful Links

- XG26 Main Page
- Developer Documentation with Ask AI Search Tool

- Silabs Support Community
- Silabs github.com PRS Example
- Power Manager Notifications Example
- Energy Profiler

Backup Slides

Mouser Electronics

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Silicon Laboratories:

XG26-PK6028A PG26-PK2505A XG26-DK2608A PG26-EK2711A XG26-RB4118A