# Tech Talks LIVE Schedule – Presentation will begin shortly

**tech t▶lks**

## Wireless Connectivity Tech Talks

| | |
|---|---|
| **Wednesday, April 7th** | **Unboxing the BGM220 Explorer Kit** |
| Wednesday, May 26th | Optimize Your Battery Power with BG22 |

Recording and slides will be posted to:
www.silabs.com/training

We will begin in  3:00

# Speaker

水谷章成（Aki Mizutani）

Sr. FAE, Japan

![Silicon Labs logo]

tech talks

# WELCOME

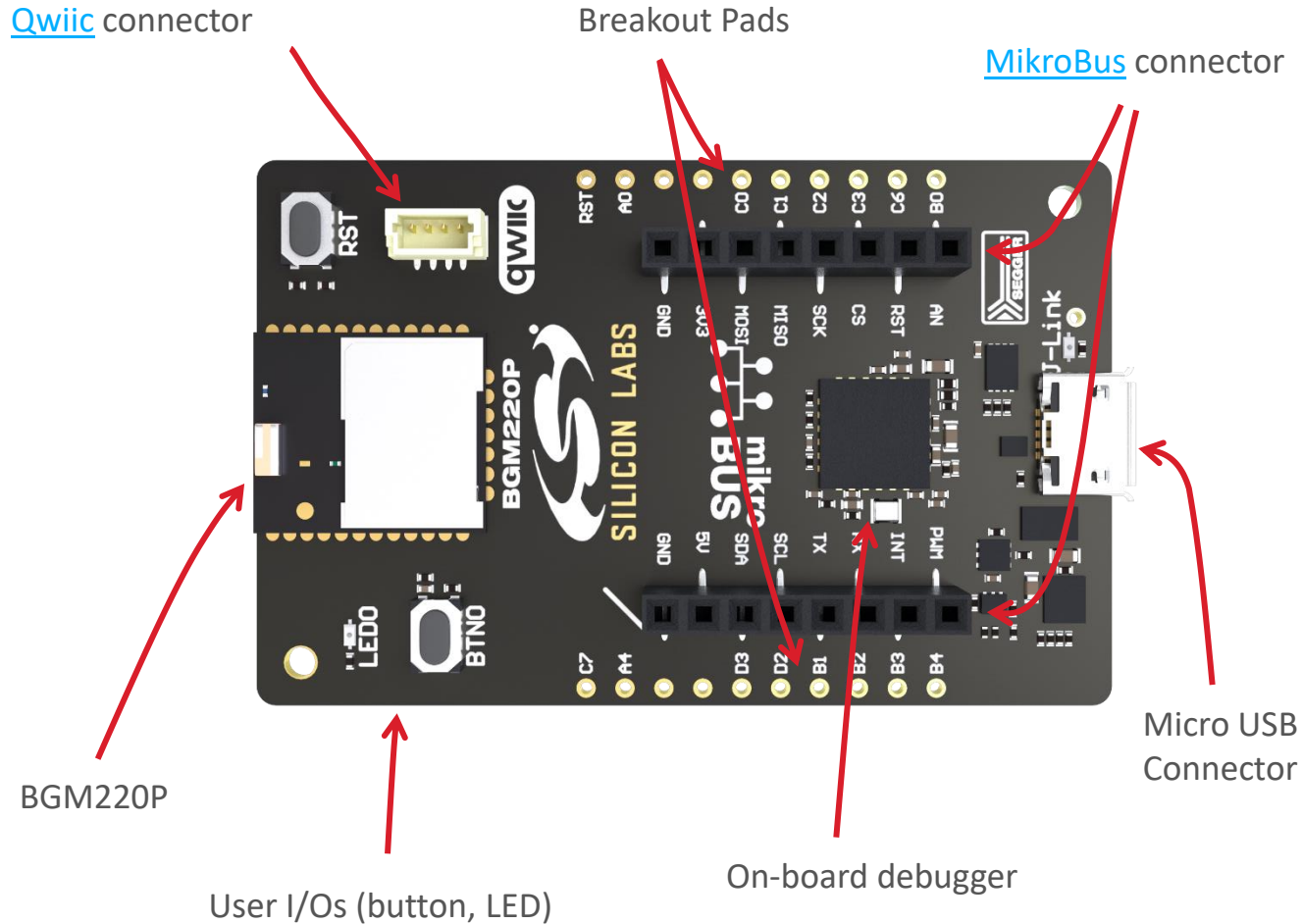## Unboxing the BG220 Explorer Kit

Aki Mizutani

# Agenda

- Introduce BGM220 Explorer Kit (BGM220-EK4314A)

- Rapid Prototyping Eco Systems

- Demonstration
  - BGM220 EK Documentation and Tools
  - Demo 1) iBeacon
  - Demo 2) Heartrate & SpO2 sensor

- Q & A

# BGM220 Explorer Kit – Features Overview

## Simplified features but endless possibilities

Qwiic connector

Breakout Pads

MikroBus connector

BGM220P

User I/Os (button, LED)

On-board debugger

Micro USB Connector

### Features

- BGM220P module
  - ARM Cortex M33 – 76.8MHz, 512kB Flash, 32kB RAM
  - Bluetooth 5.2, 1.4uA EM2 with Full RAM Retention
- On-board debugger
  - USB for power and communication
  - J-Link, VCOM (with hardware flow control), PTI
  - Seamless DX experience in SS
- Simple user I/O for basic peripheral usage
  - Reset button, 1 user button, 1 user LED
- Standard HW expansion connectors
  - Rapid prototyping with off-the-shelf boards
  - mikroBus and qwiic (compatible with Groove and Stemma QT)
- Breakout pads for additional hardware customization
  - Aligned with breadboard dimensions
- Kit contains USB cable

# IoT Rapid Prototyping
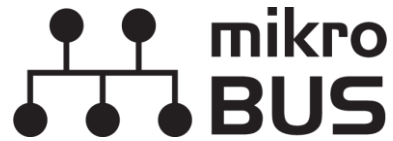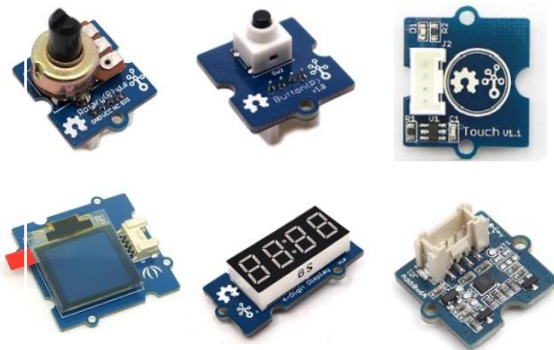


**Focusing on simple periperal expansions**

- 3rd party ecosystems (shields, hats, click-boards) allows development based on off-the-shelf expansion hardware

- Widely used for quick prototyping, especially within hobbyist and maker communities

- MikroE (mikroBUS), Seed Studios (Grove), SparkFun (Qwiic) and adafruit(STEMMA/STEMMA QT) offer a wide variety of small and modular options for IoT end nodes, which typically revolve around sensors, UI and actuators

- Grove, qwiic and STEMMA QT are pin compatible
  - One connector can support multiple ecosystems
  - Only requires adapter cable or board

- MikroE alone offers
  - **250** sensor boards
  - **40** display and LED boards
  - ...all with 3.3V input voltage support
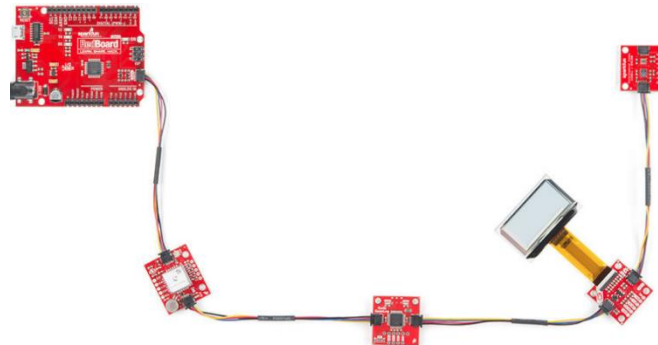
# Rapid Prototyping System Comparisons

| Controller/Device | mikroBUS Click MIKROE | STEMMA adafruit | STEMMA QT adafruit | Grove Seeed | Qwiic SparkFun | Gravity DFRobot |
|---|---|---|---|---|---|---|
| Connection | Proprietary mikroBUS Socket (16 Pin) | JST PH 3 or 4 Pin (2.0mm pitch) | JST SH 4 Pin (1.0mm pitch) | Proprietary 4 Pin (2.0mm pitch) | JST SH 4 Pin (1.0mm pitch) | JST PH 3 or 4 Pin (2.0mm pitch) |
| Power Supply Rails | 3-5V DC | 3-5V DC | 3-5V DC | 3-5VDC | 3V DC | 3-5V DC |
| GPIO Voltage | 3-5V DC | 3-5V DC | 3-5V DC | 3-5V DC | 3V DC | 3-5V DC |
| Supported Interfaces | I2C/SPI/UART/ Analog/Digital/PWM | I2C only on 4 pin. Analog/Digital/PWM on 3 pin. | I2C only | I2C/Analog/Digital/PWM on 4 pin | I2C only | I2C or UART on 4 pin. Analog/Digital/PWM on 3 pin. |
| Website | https://www.mikroe.com/click-boards | https://learn.adafruit.com/introducing-adafruit-stemma-qt/what-is-stemma | https://learn.adafruit.com/introducing-adafruit-stemma-qt/what-is-stemma-qt | https://www.seeedstudio.com/grove.html | https://www.sparkfun.com/qwiic | https://www.dfrobot.com/topic-282.html |

# BGM220 Explorer Kit – Collateral

- User Guide: https://www.silabs.com/documents/public/user-guides/ug465-brd4314a.pdf

- Getting Started Guide: https://docs.silabs.com/bluetooth/latest/general/getting-started#getting-started-with-bgm220-explorer-kit
  - Porting Code from mikroSDK and Arduino

- GitHub Repository
  - Available Now: Barometer, HRM, and I2C Accelerometer
  - Coming in the next 2-3 weeks: OLED Display,  7 Segment Display + Joystick
  - Coming in the next 2 Months: Contactless Temperature Sensor, Combo Environment Sensor, and SPI Accelerometer
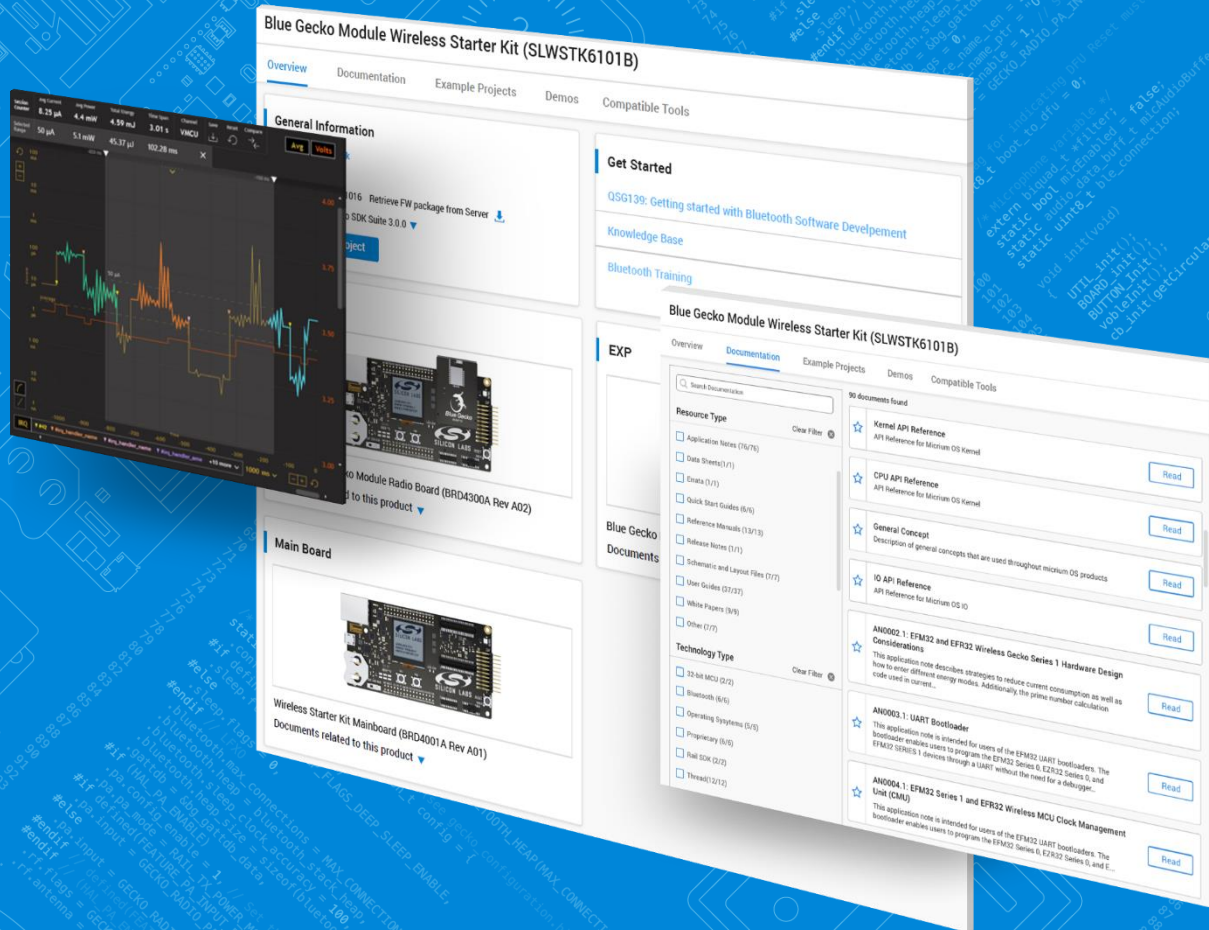
# Simplified Developer Experience

- **Simplicity Studio 5**
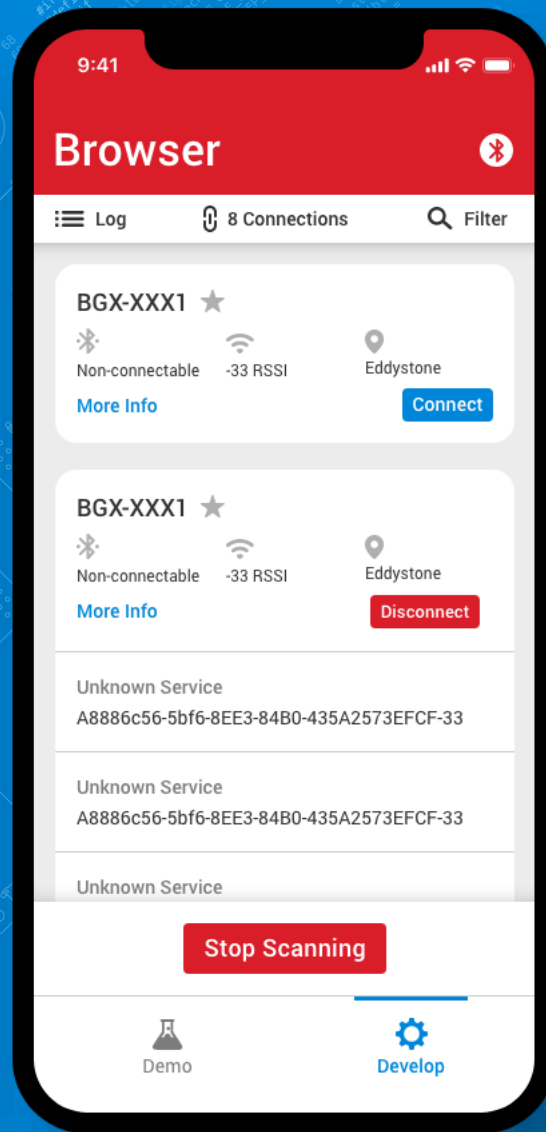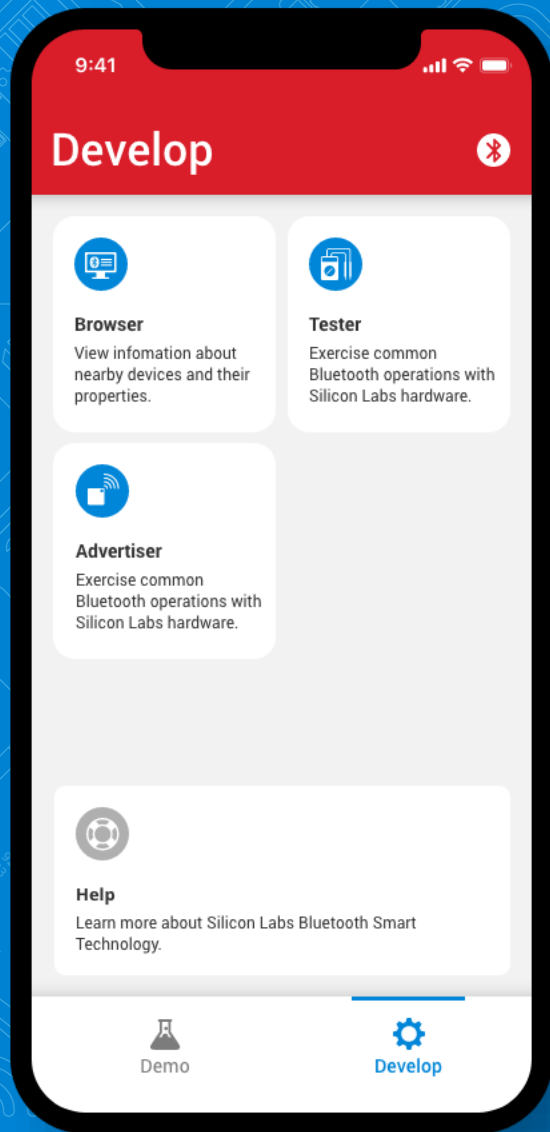  - **Interface**
    - Fresh, new & simplified
    - Intuitive out-of-the-box experience
    - Fast access to developer resources
    - Linux, Mac & Windows
  - **Tools**
    - Configuration utilities
    - Compiler
    - Error & validation
    - IDE & command line support
    - Graphical hardware configurator
    - Energy Profiler – visual energy analysis
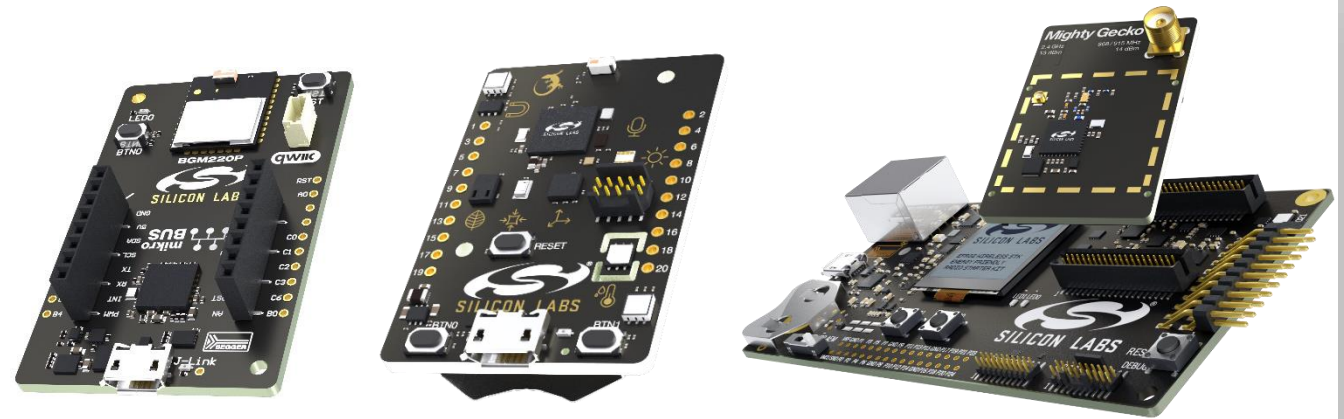    - Network Analyzer – packet capture & decode

# Enhanced Development with EFR Connect

- **Redesigned and simplified developer app**
  - Redesigned UI to forefront key BLE device metrics
  - App-delivered tools support BLE code development
  - Improved stability and reliability
- **Developer-focused features**
  - Simultaneous connections for broader visibility
  - Log and export BLE activity
  - Powerful filtering options to identify devices
  - Save custom UUID to better organize a GATT
- **Try it today**
  - Replaces Silicon Labs Blue Gecko mobile app
  - Available on iOS and Android
  - Source code available on GitHub (Android, iOS)

# 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 | ✅ | – | – |



## Explorer Kit

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

## Dev Kit

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

## 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
- Evolution from WSTK

| ✅ Supported | ✅ Optional or not mounted | – Not Supported | NDA Required |
|---|---|---|---|

# MikroE - Silabs Click Shield



- Works with Silabs Development Boards:
  - WSTK – Wireless Starter Kit or Pro Kit
  - MCU Development Boards
  - Thunderboard or Dev Kit
- https://www.mikroe.com/silabs-click-shield
- Part Number: MIKROE-4464

# Demonstration

- Walk through docs.silabs.com, Github and Simplicity Studio 5

- Demo 1) iBeacon

- Demo 2) Heartrate & SpO2 sensor

SILICON LABS

# Demonstration

- Walk through docs.silabs.com, Github and Simplicity Studio 5

- Demo 1) iBeacon

- Demo 2) Heartrate & SpO2 sensor

SILICON LABS

Q&A

tech t►lks

| Facebook | Twitter | Community |

THANK YOU

Recording and slides will be posted to:
www.silabs.com/training