

# EBV & Infineon

## EBV-IoT – Infineon & Avnet IoTConnect Secure Cloud connected solution

prepared by  
Uros Mali, Director Segment Smart Sensing & Connectivity

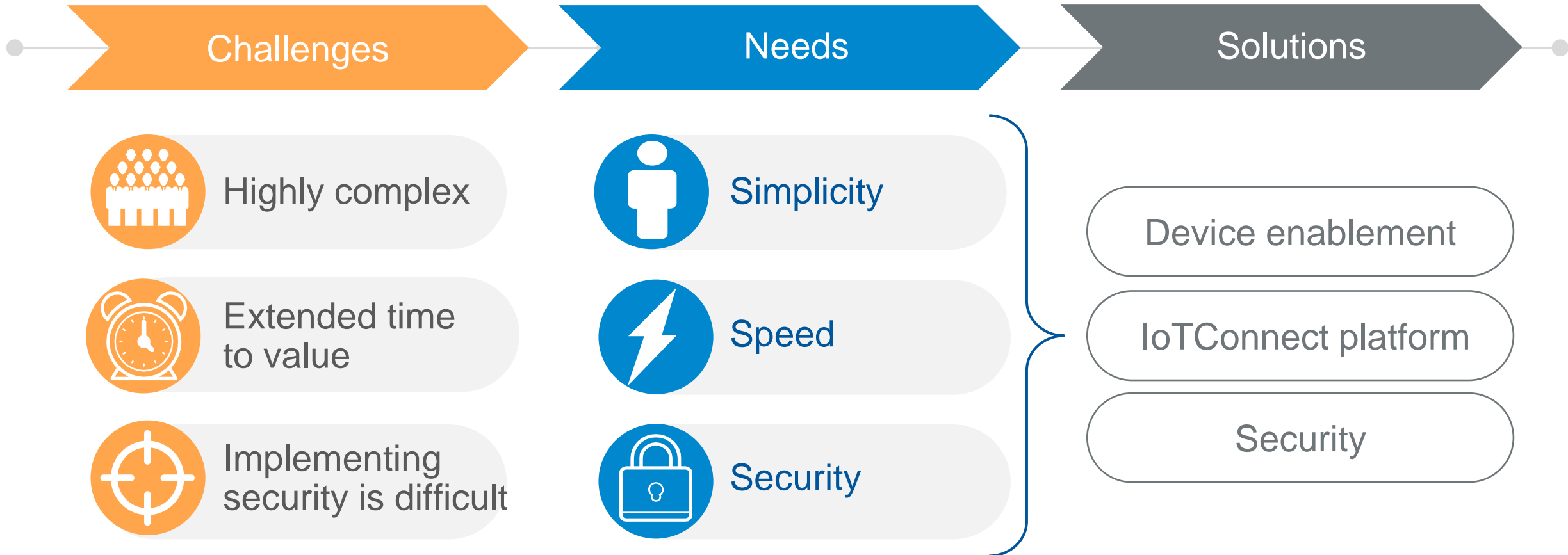
September 2023



# Overview



## IoTConnect – „keep it simple“ cloud connectivity

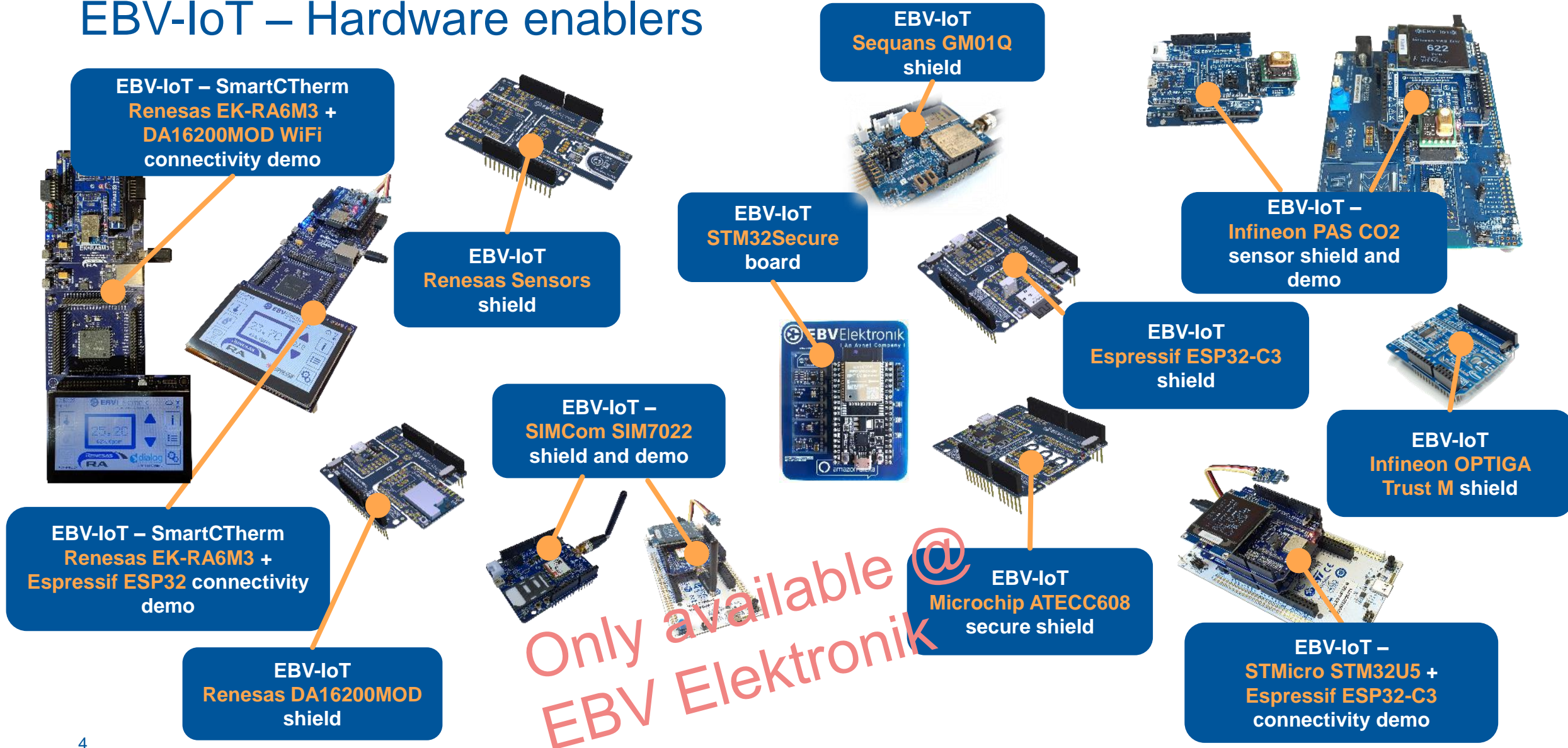


/ **IOT**CONNECT®  
Platform

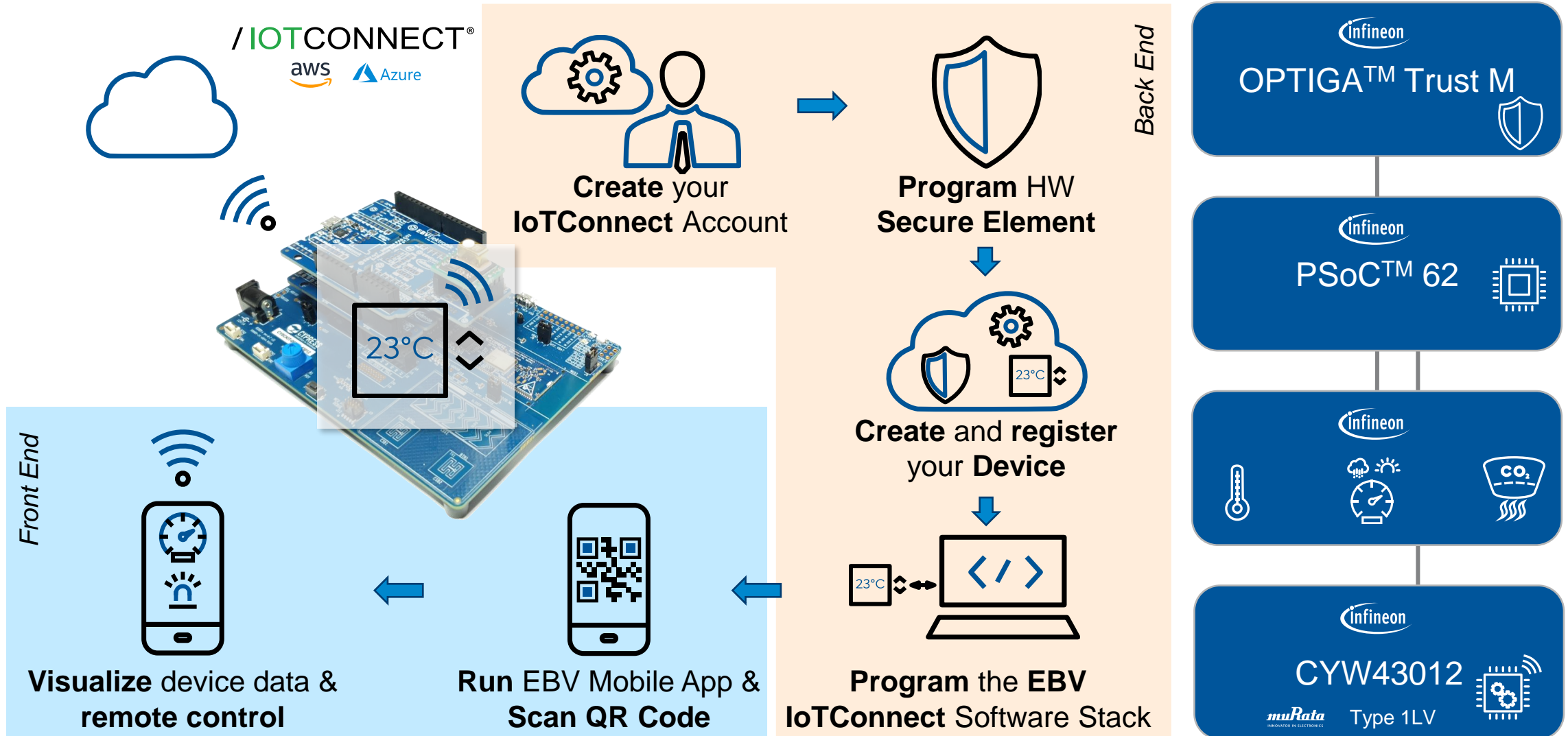
**The IoT Solution Accelerator  
for EBV customers**



# EBV-IoT – Hardware enablers



# IoT device lifecycle



# Hands-on: Tasks

## Full version

- Task 1: PSoC programming and debugging – Hello world
- Task 2: PSoC programming and debugging – Adding sensors
- Task 3: OPTIGA provisioning for IoTConnect Cloud
- Task 4: Create a device in IoTConnect Cloud
- Task 5: Getting hardware ready for IoTConnect cloud
- Task 7: Accessing the device through serial terminal
- Task 8: Connecting the demo to IoTConnect Cloud
- Task 7: Remote access from EBV Mobile App

## Quick Start

- Task 3: OPTIGA provisioning for IoTConnect Cloud
- Task 4: Create a device in IoTConnect Cloud
- Task 5: Getting hardware ready for IoTConnect cloud
- Task 6: Flashing device firmware
- Task 7: Accessing the device through serial terminal
- Task 8: Connecting the demo to IoTConnect Cloud
- Task 7: Remote access from EBV Mobile App



EBV & Infineon

Security Deep Dive -  
IoT Threats & Countermeasures



prepared by  
Uros Mali, Director Segment Smart Sensing & Control

October 2023

**Check provided  
material**



# EBV SmartSensing&Control

amun OSRAM

Infineon

NXP

RENESAS

 life.augmented

 BROADCOM

 MICROCHIP

onsemi

ScioSense®

EBV IoT – Environmental Sensing

**Check provided material**



prepared by  
Uros Mali, Director Segment Smart Sensing & Control

November 2023



## Your feedback matters

Please scan or click on the following QR code access the survey:



# EBV-IoT – Infineon + IoTConnect Cloud connected solution

## Infineon – PSoC™ 62S2 Wi-Fi BT Pioneer Kit (CY8CKIT-062S2-43012)

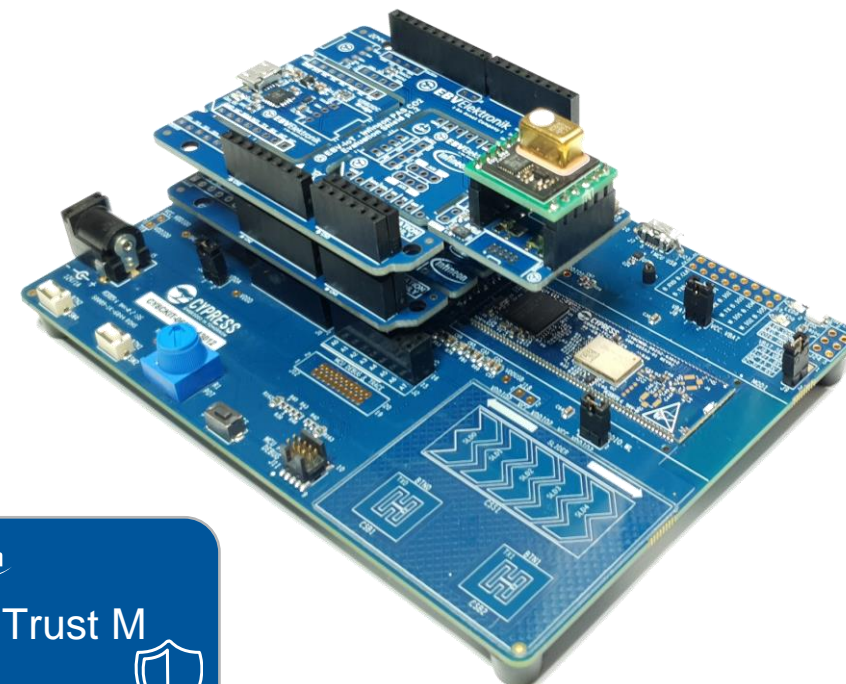
- MCU: **Infineon PSoC™ 62**, Arm® Cortex®-M4/M0+, 150/100MHz, 2MB/1MB
- **muRata Type 1LV module (AIROC™ CYW43012** Wi-Fi + BT Combo Chip)

## EBV-IoT – Infineon PAS CO2 Evaluation Shield

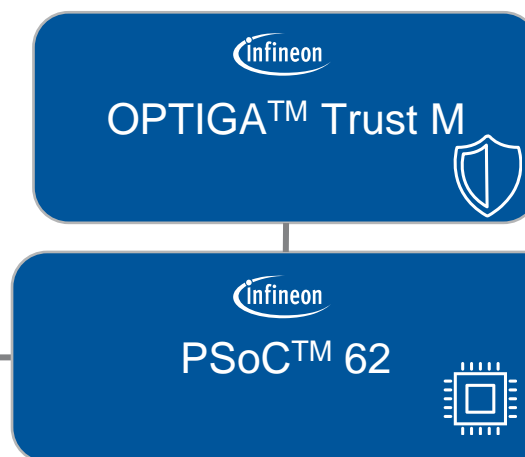
- Infineon **XENSIV™ PAS CO2** sensor
- Infineon **XENSIV™ DPS310** barometric pressure sensor

## EBV-IoT – Infineon OPTIGA™ Trust M Evaluation Shield

- Infineon **OPTIGA™ Trust M** embedded security solution



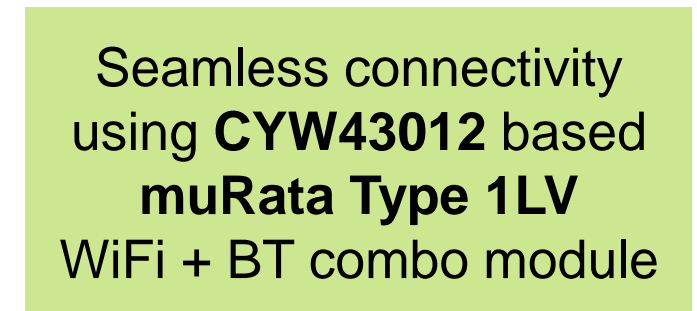
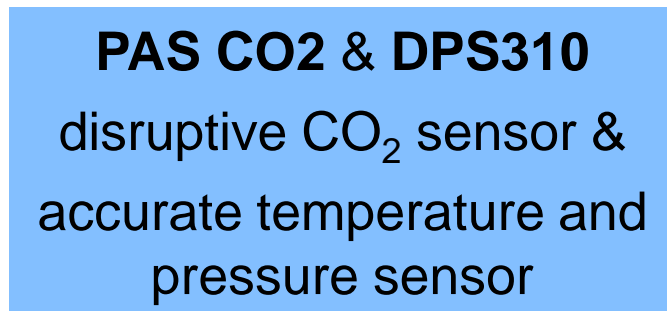
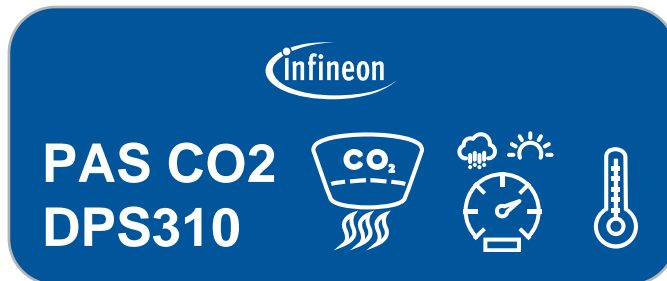
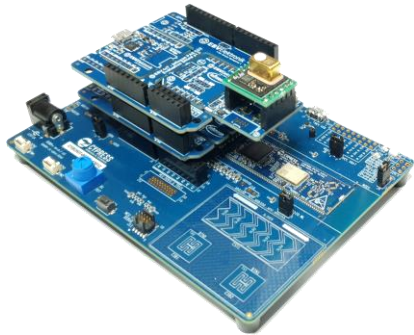
**/IOTCONNECT®**





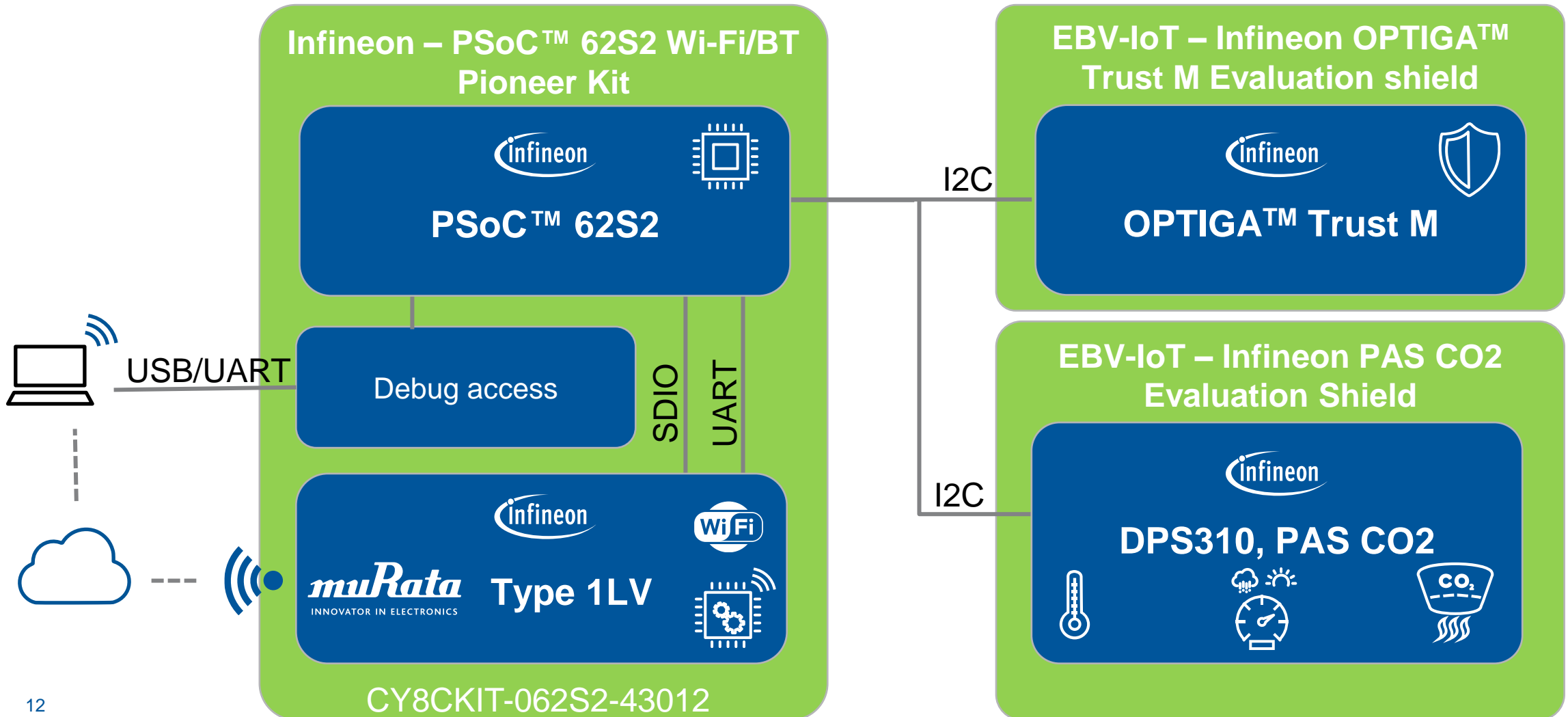
# EBV-IoT – Infineon + IoTConnect Cloud connected solution

## System overview



# EBV-IoT – Infineon + IoTConnect Cloud connected solution

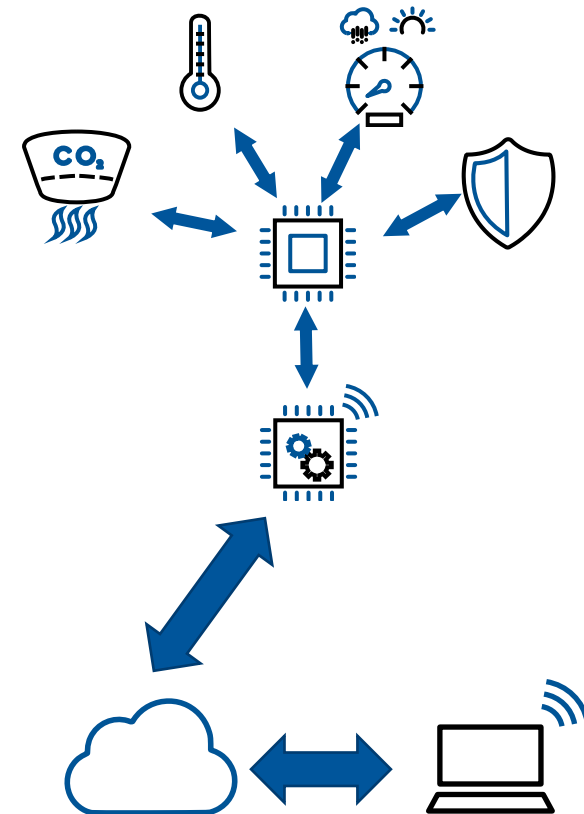
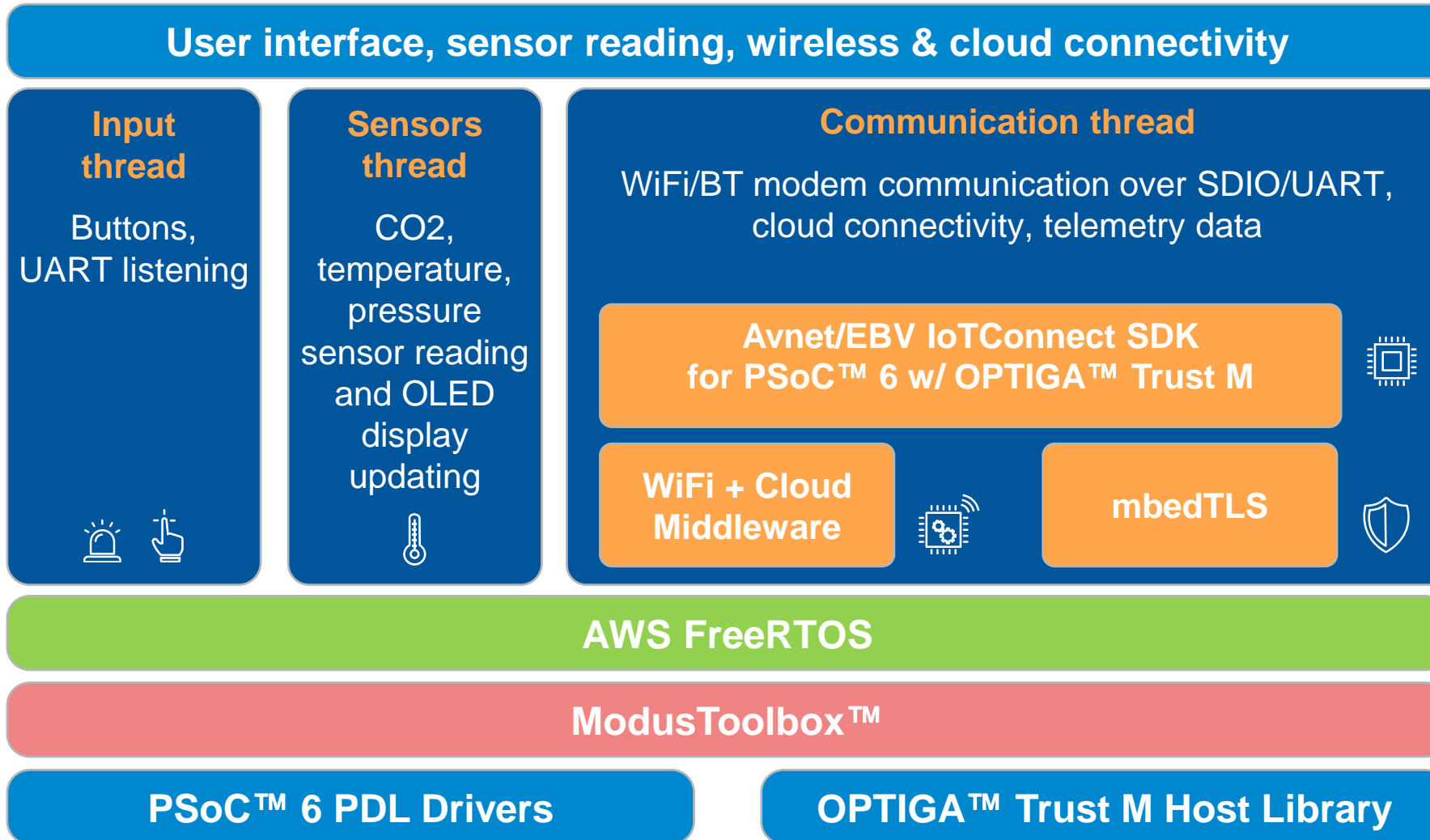
## Hardware overview





# EBV-IoT – Infineon + IoTConnect Cloud connected solution

## Software overview



# EBV-IoT – Infineon + IoTConnect Cloud connected solution

## Dashboard





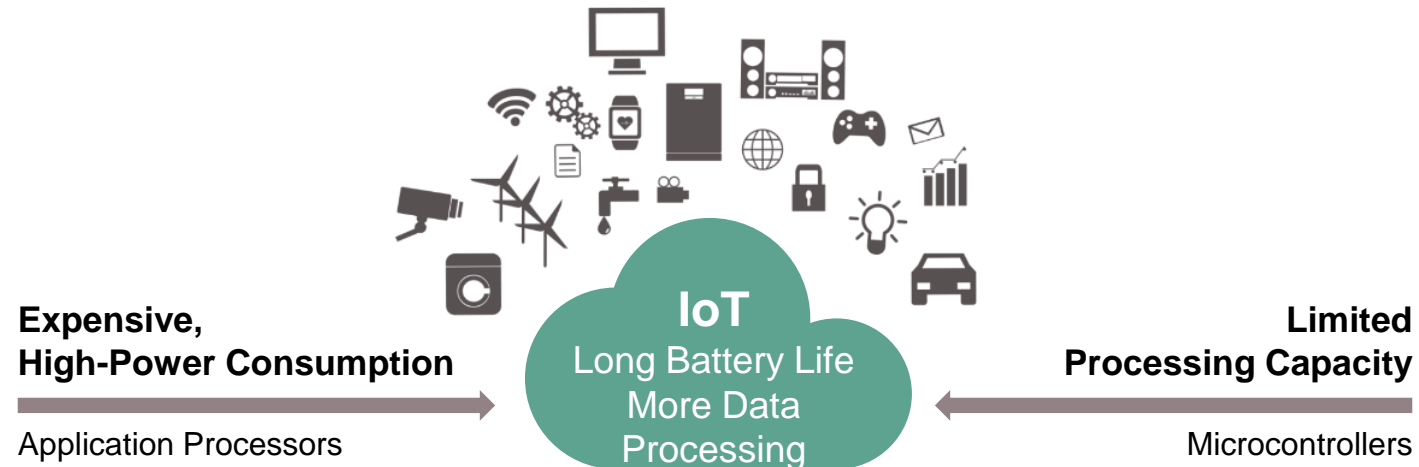


# Infineon PSoC™ 62 Microcontroller Connected Intelligence on the Edge



# Infineon PSoC™ 62 MCUs: Purpose-Built for the IoT

IoT devices require increased processing and security without power or cost penalty



Infineon's PSoC™ 6 MCUs deliver



+ Best-in-class Wi-Fi connectivity options enabled in ModusToolbox™

# Infineon PSoC™ 6 Wi-Fi MCU – Purpose-Built for the IoT

## Ultra-low Power

- › 22-μA/MHz in active power mode
- › Built on 40nm ULP technology
- › Dynamic voltage frequency scaling

## Easy To Use

### ModusToolbox™ IDE

- › Tools, IDEs, and Configurators
- › Middleware and the ecosystem
- › Board support packages
- › Cloud connectivity AWS, Google, Microsoft® Azure
- › Matter 1.0 over Wi-Fi



## Connected

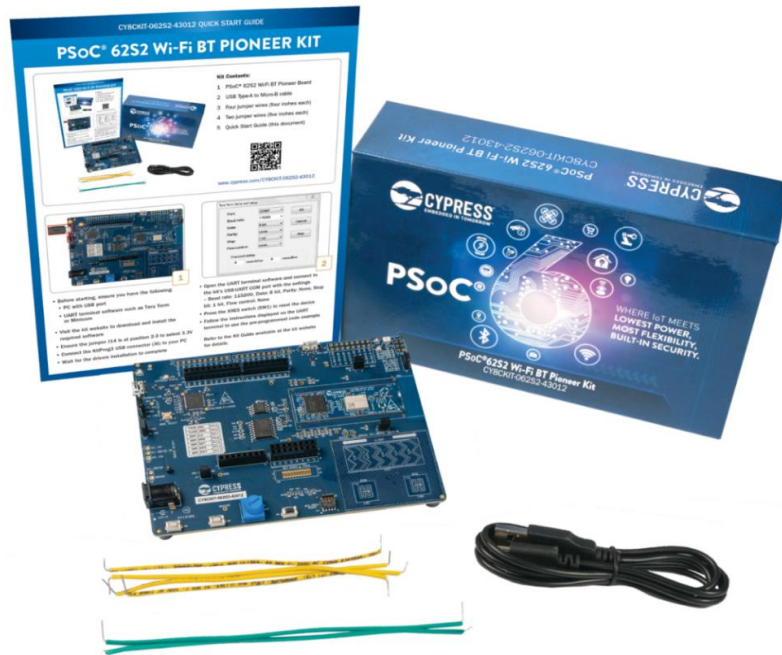
- › Wired connectivity options
  - USB FS
  - CAN-FD
- › Wireless connectivity via AIROC™ Wi-Fi, Bluetooth® combo

## Security

- › OPTIGA™ Trust M turnkey solution
- › Library in ModusToolbox™
- › RSA® 2K, AES 256 & ECC 521
- › -25°C to 85°C and -40 to 105°C
- › Up to 20 years Lifetime



# Cloud connected, secured IoT applications



**CY8CKIT-062S2-43012**

## PSoC™ 62 MCU

- › High performance dual-core Arm® MCU
- › Power optimized for battery operated products
- › Industry leading CAPSENSE™ for touch user interface

## Seamless Integration with AIROC™ Connectivity

- › Runs the PHY, MAC layers of Wi-Fi, Bluetooth®
- › Kit includes AIROC™ CYW43012 from Murata

## Hardware expansion capabilities

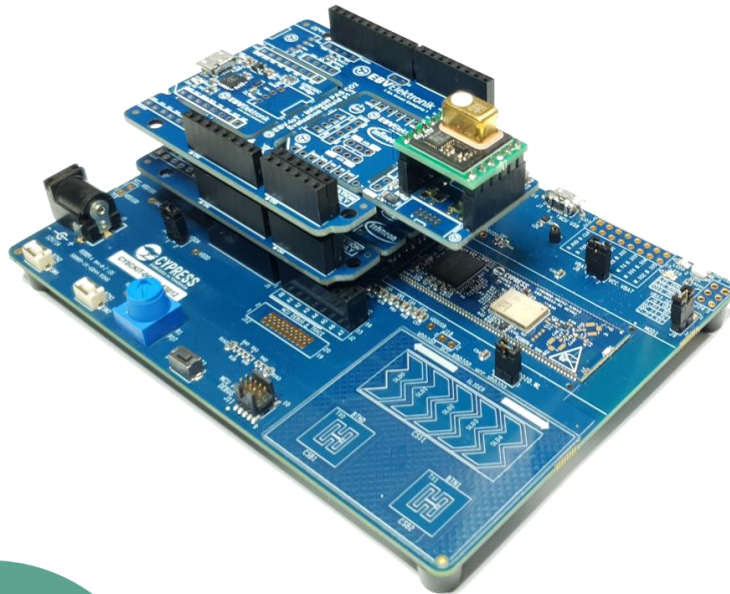
- › Arduino Uno R3 headers
- › Compatible third party Arduino shields for driving displays, sensor interfaces, motor control etc.

## Made simple with ModusToolbox™ software

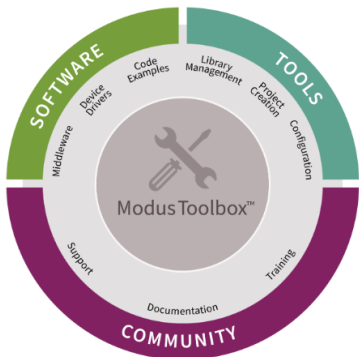
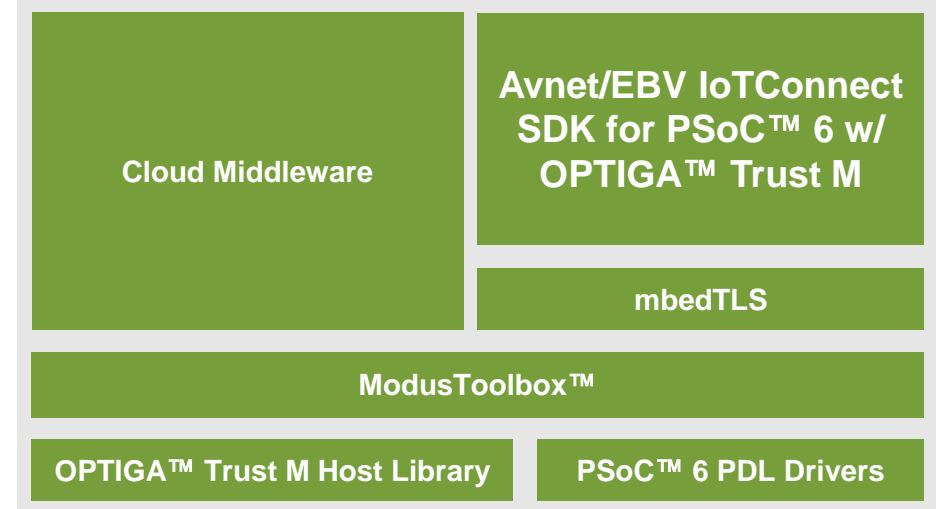
- › Complete set of libraries. Tested code examples out of the box.
- › Cloud connectivity with AWS, Google, Microsoft® Azure
- › Matter 1.0 over Wi-Fi

# Infineon PSoC™ 62 + OPTIGA™ Trust M Reference Kit

## PSoC™ 62 + OPTIGA™ Trust M Reference Kit

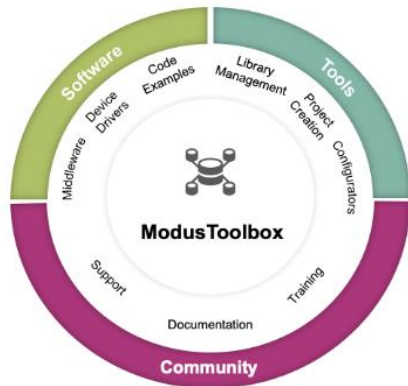


## Software Stack



- › Reference Kit with PSoC™ 62, AIROC™ Wi-Fi combo module, OPTIGA™ Trust M and CO2 and pressure sensor
- › ModusToolbox™ SDK and middleware with PSoC™ 6 HAL and PDL drivers
- › EBV developed SW stack including OPTIGA™ Trust M Host Library built into mbedTLS
- › Flash partitioning for AWS over-the-air update via MQTTS

# Jumpstart your IoT development



1

Download ModusToolbox™  
Software and Tools

[www.infineon.com/modustoolbox](http://www.infineon.com/modustoolbox)

2

Order a PSoC™ 6  
Wi-Fi BT Pioneer Kit  
(CY8CKIT-062S2-43012)

3

Discover how to integrate  
connectivity into your next  
IoT design

[www.infineon.com/matter](http://www.infineon.com/matter)

4

Connect with us on our  
Developer Community for  
technical support from  
Infineon engineers

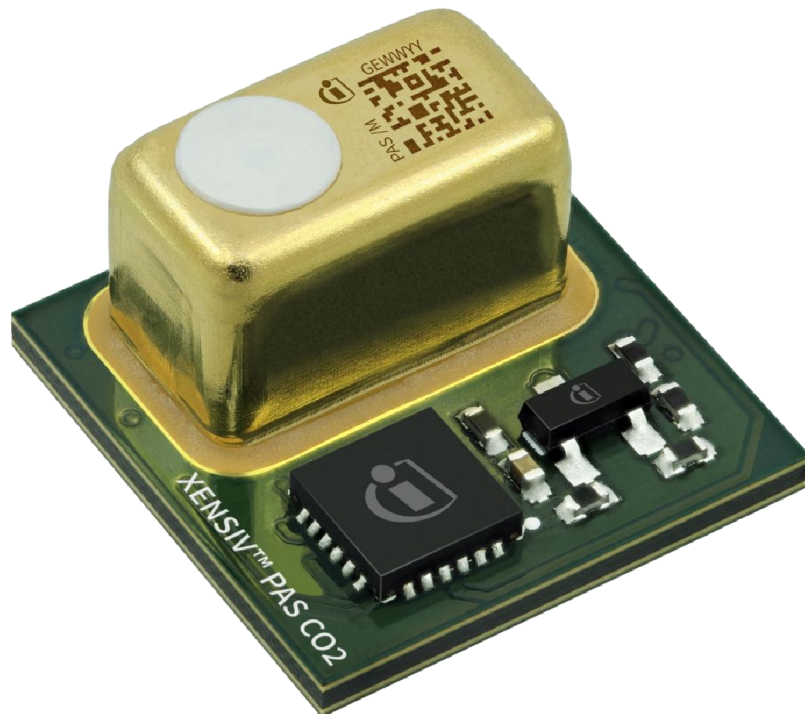
For more information go to [www.infineon.com/psoc6](http://www.infineon.com/psoc6)



# Introducing a disruptive real CO<sub>2</sub> sensor based on the photoacoustic spectroscopy (PAS) principle

Measure what matters – XENSIV™ PAS CO<sub>2</sub>

## XENSIV™ PAS CO<sub>2</sub>



**Real CO<sub>2</sub> sensor ensuring high data quality**



**Small form factor in SMD package for easier assembly**



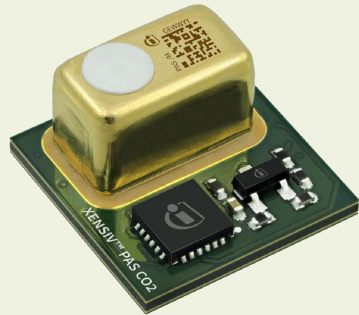
**Plug & Play for fast customer design-to-market**



**Infineon's quality and supply guarantee**

# XENSIV™ PAS CO2 value proposition

## XENSIV™ PAS CO2



## Value Proposition



Space saving

Meeting the **accuracy & stability of high-end** NDIR CO2 sensors in a four times **smaller size**



Cost saving

Reliable CO2 data as base for demand controlled ventilation leading to **optimized energy consumption costs**



Highest standards

**Compliance with major standards and regulations** for indoor air quality (e.g.: WELL, LEED and ASHRAE 62.1)



Highly efficient assembly

Suitable for high volume standard assembly process **without the need of a post calibration**



Customer flexibility

Variety of **configuration options**



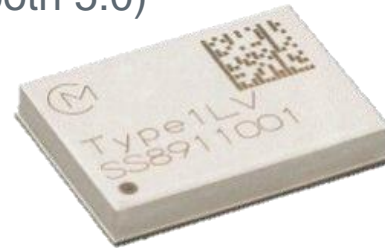
Product lifetime

**10 years product lifetime**

# muRata – 1LV Module

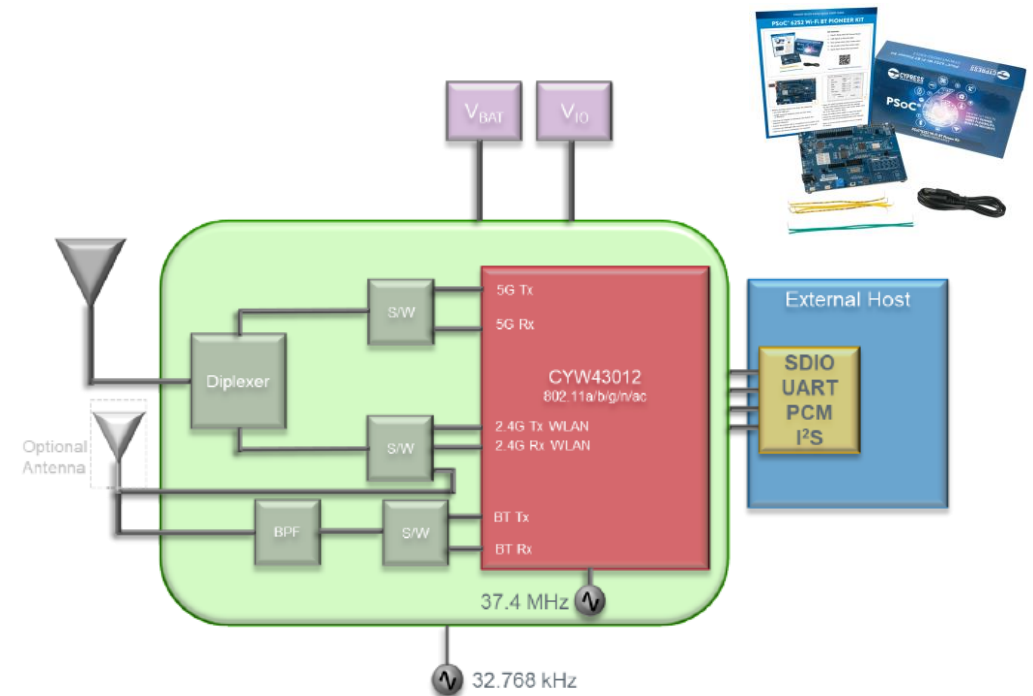
## Features

- 5GHz & 2.4GHz IEEE 802.11a/b/g/n radio technology
- 5GHz “11ac friendly” based on 20MHz channel
- Bluetooth LE and BR/EDR support (Bluetooth 5.0)
- RF Chip – Cypress CYW43012
- Dimension – 10.0 x 7.2 x 1.4max mm
- Package – LGA (106 pads)
- External Antenna(s)
- WiFi Transmit power – +19dBm max (11b)
- BT Class 1 power – +13dBm
- Host interface – SDIO, UART/PCM/I2S
- Operating temperature range – -20°C to +70°C
- Low power consumption IC
- FCC/IC Certified, EN compliant by Reference Antenna design
- Supported for ModusToolbox, CubeMX, i.MX and STM32M
- Mass market



## Part Number

Modules : LBEE59B1LV-278  
 Samples : LBEE59B1LV -TEMP  
 Murata EVK : LBEE0ZZ1WE-TEMP + **EAR00323**  
[CY8CKIT-062S2-43012](#)



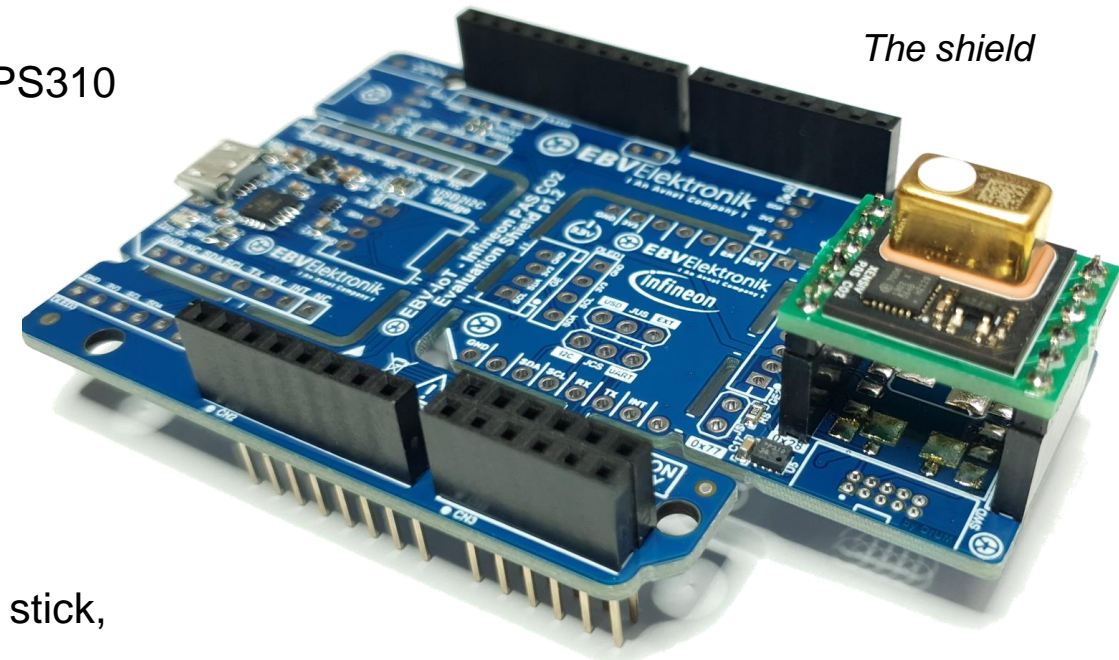
[WebLink](#)



# EBV-IoT – Infineon PAS CO2 Evaluation Shield

## Key Benefits:

- Easy to use and out-of-the-box ready Infineon PAS CO2 & DPS310 barometric pressure evaluation tool
- USB powered (No external battery or supply needed)
- Arduino header compatible
- Break-away sensor board (very small) for extension wires connection
- Grove system ready: 2x I2C Grove connector
- USB2I2C bridge
  - Direct sensor readings on PC (I2C or UART)
- PC application with executable (can be run directly from USB stick, no installation needed)
- Example running on PSoC 6 with WiFi connectivity
- XENSIV™ GUI application supported



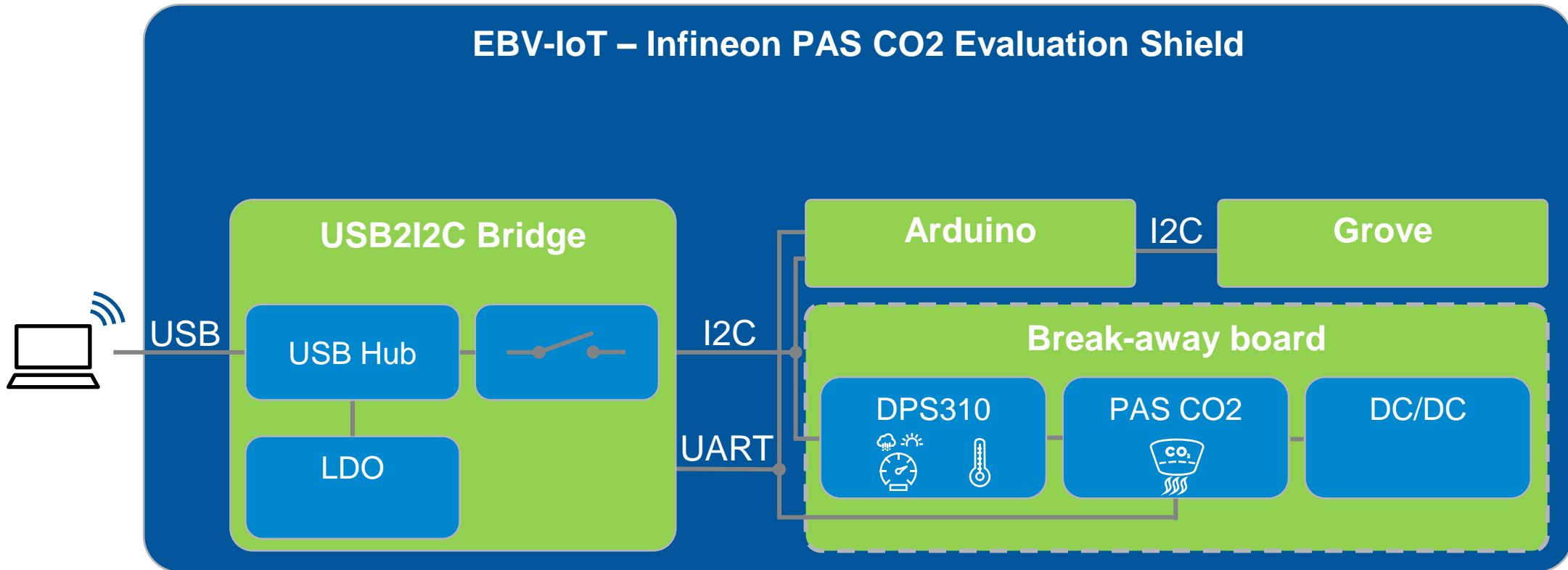
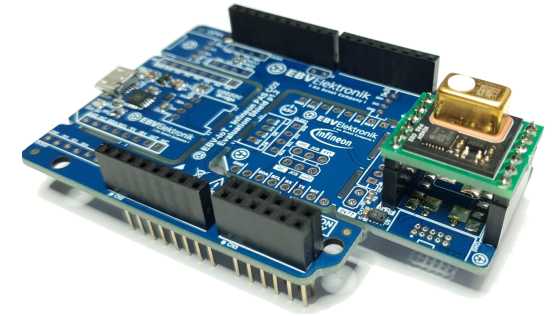
*The shield*



*Small sensor break-away board*

# EBV-IoT – Infineon PAS CO2 Evaluation Shield

## Hardware System Overview

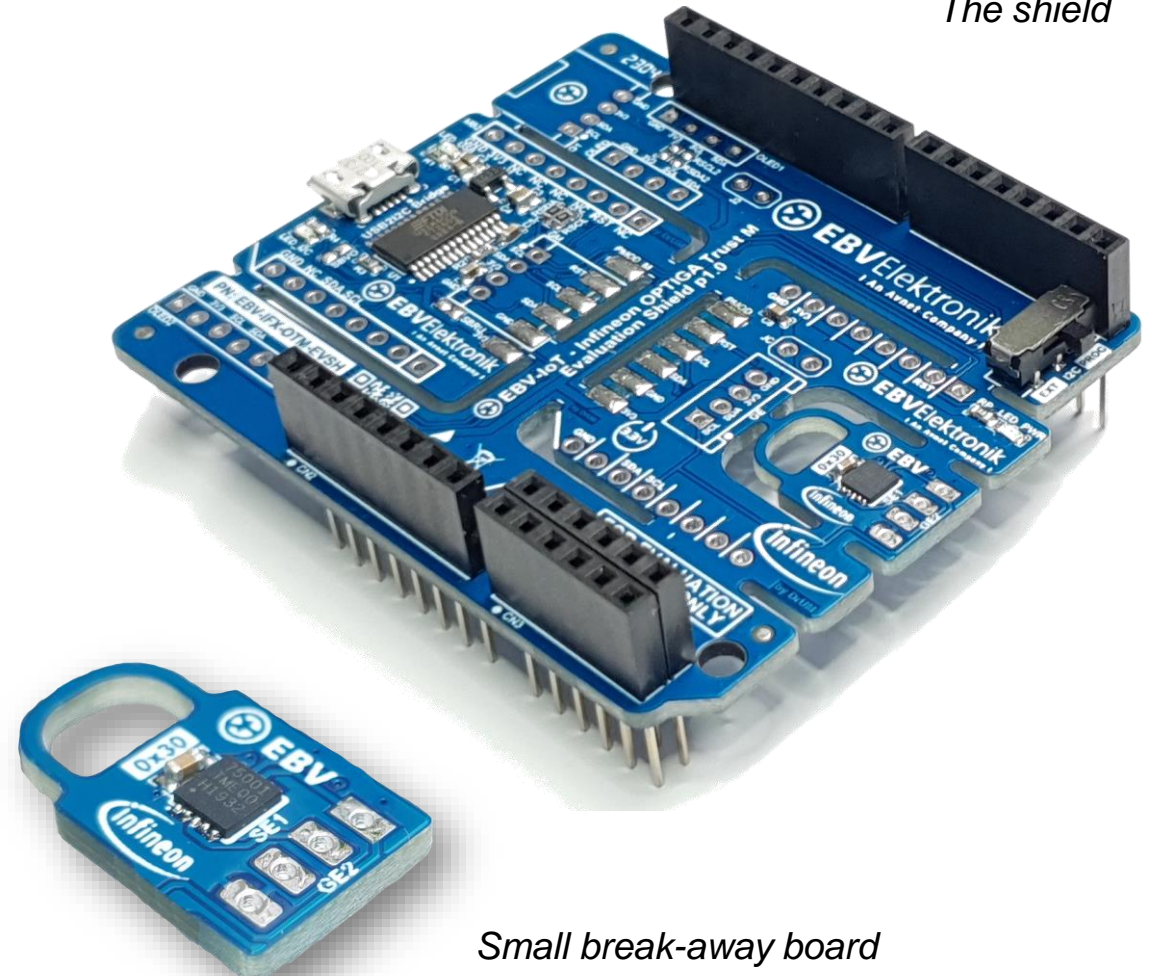


# EBV-IoT – Infineon OPTIGA™ Trust M Evaluation Shield

## Key Benefits:

- Easy to use and out-of-the-box ready Infineon OPTIGA™ Trust M evaluation tool
- USB powered (No external battery or supply needed)
- Arduino header compatible
- Break-away secure element board (very small) for extension wires connection
- Grove system ready: 2x I2C Grove connector
- USB2I2C bridge
  - Direct secure element access from PC to I2C
- Infineon Python scripts to provision OPTIGA™ Trust M
- Example running on PSoC™ 6 with sensors and WiFi connectivity including secure cloud connection

*The shield*

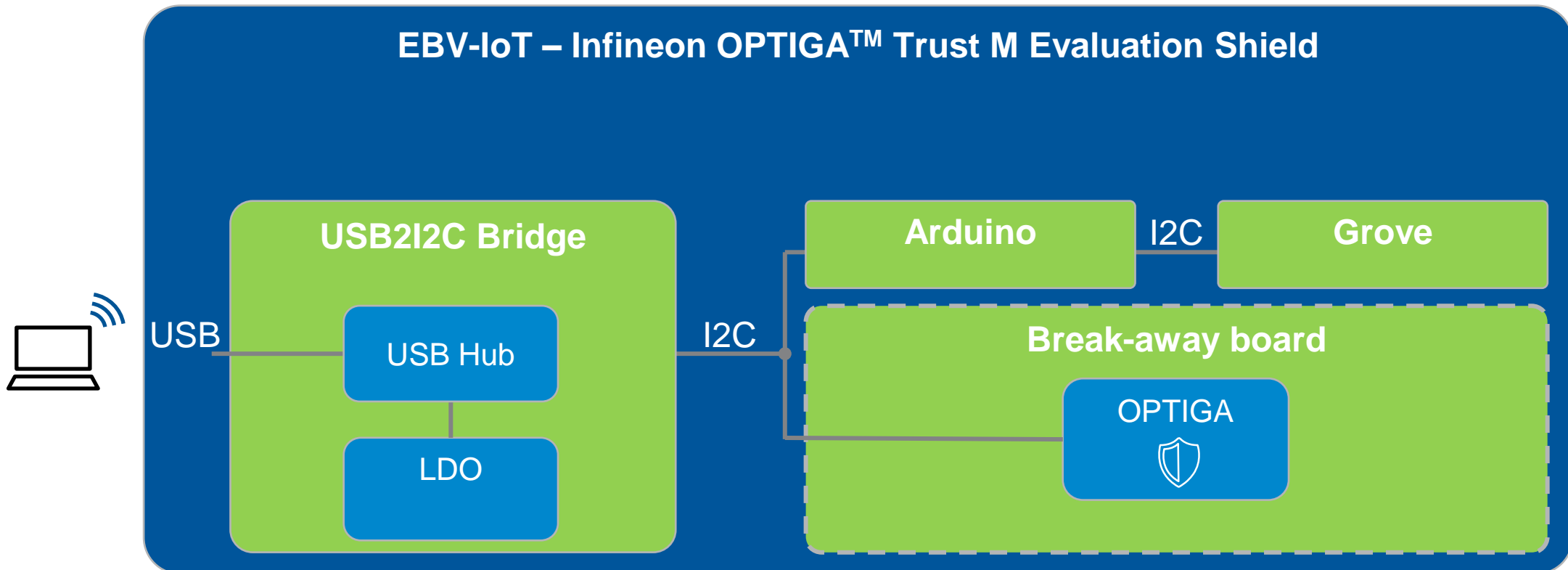
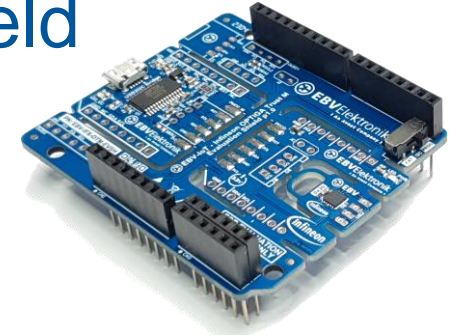


*Small break-away board*



# EBV-IoT – Infineon OPTIGA™ Trust M Evaluation Shield

## Hardware System Overview



**TECHNOLOGY.**

**PASSION.**

**EBV.**

