« IoT Made Easy » Webinars

Solutions From Sensors to Cloud

- **4 Sessions with end to end System approach**

Session 1 (14 Sept, 2pm CET)
« Power Efficient Solutions for your IoT Applications »
Keywords : Low Power, Analog, Mixed Signals, Power Management, MCU

Session 2 (15 Sept, 2pm CET)
« Connectivity Made Easy and Scalable for your IoT Application »
Keywords : Wireless and how to comply to Regulations & Certification, Chip down or module, Wired Solutions and Ethernet, Security and Robustness

SMART | CONNECTED | SECURE

Session 3 (16 Sept, 2pm CET)
« Security Matters… and How it is now so Easy »
Keywords : EN 303-645 from ETSI, Secure Element, Keys and how to protect them, Pre-provisionning, easy on-boarding, MOQ

Session 4 (17 Sept, 2pm CET)
« Scale your Business : from Easy Prototyping to Production »
Keywords : Software Development Framework, Applications drivers, Turnkey Solutions and Reference Designs, Github

- **6 Local Experts from Microchip Europe**

Johan (Connectivity) Tarek (MCU) Markus (IoT)
Miroslaw (Firmware) Tibor (Security) Thierry (Analog)

Contact details of our 6 experts will be available at the end of this presentation

IoT Made Easy – Session 4/4

Scale your Business : from *Easy* Prototyping to Production

SMART | CONNECTED | SECURE

Johan Pauvert,
Wireless BU Marketing

Markus Austermayer,
EMEA IoT Evangelist

Tarek Alchaaer,
MCU BU Marketing

Session 1 (14 Sept, 2pm CET) : « Power Efficient Solutions for your IoT Applications »
Session 2 (15 Sept, 2pm CET) : « Connectivity Made Easy and Scalable for your IoT Application »
Session 3 (16 Sept, 2pm CET) : « Security matters… and How it is Now so Easy »
Session 4 (17 Sept, 2pm CET) : « Scale your Business : from Easy Prototyping to Fast Time to Market »

MICROCHIP

The Challenge We Will Resolve Today

Solutions for Fast and Continuous Revenue Stream in IoT

- **What are the challenges in IoT ? Where to focus on in order to match your customer needs, ensure fast time to market and profitability ?**

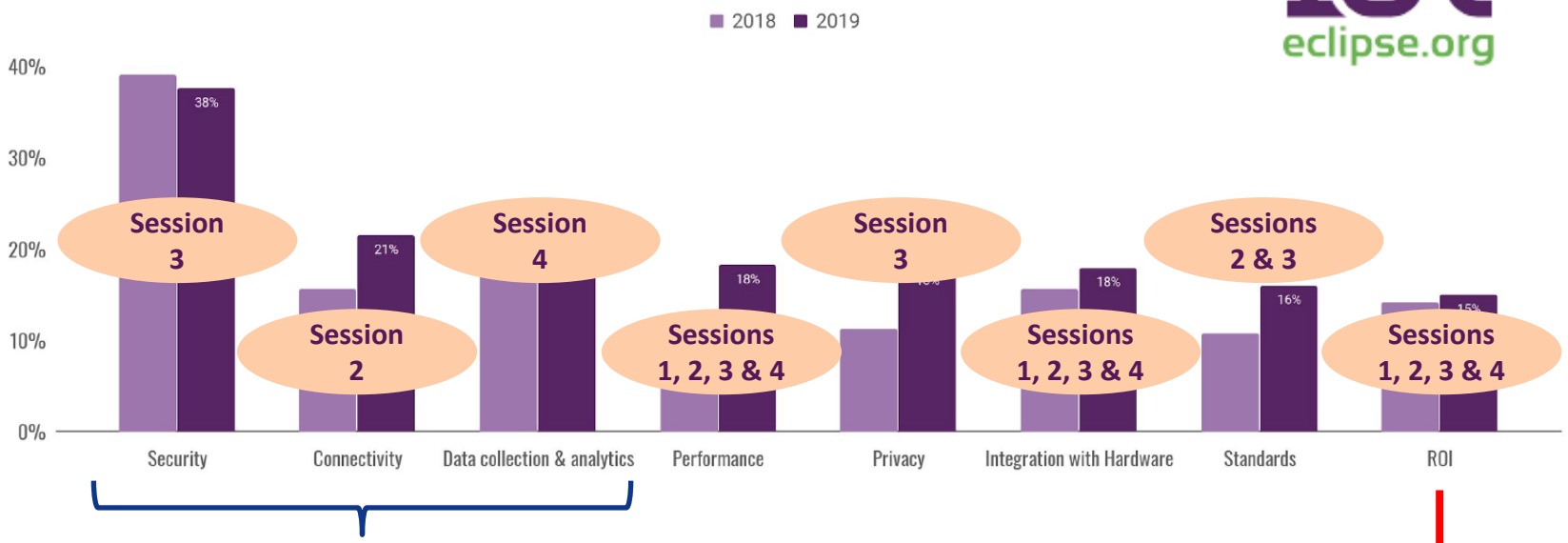
- **How to gain agility to enable innovation and test new concepts ? While shorten design cycle, mitigate risks and have the highest robustness and ROI ?**

- **Don’t worry, we've got you covered with this session!**

Top Concerns in Embedded Development

Security, Connectivity and Data Collection & Analytics

Top developer concerns over time



Top three concerns remain the same as last year, with Connectivity moving into second place

https://blogs.eclipse.org/post/jameka-woodberry/2019-iot-developer-survey-results-are-now-available

Robustness and Portability

Development Tool Ecosystem

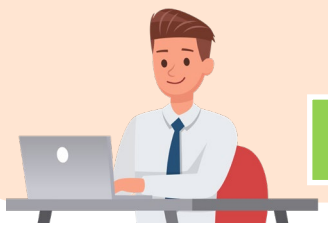
End to End Approach from Microchip

Discover

Feature
Application
Software

Embedded Software Center

Atmel START



Configure

System init
Device init
Peripheral init

MPLAB CODE CONFIGURATOR

MPLAB HARMONY

Develop

IDEs, Compilers
Example code
Software Stacks

MPLAB X IDE

MPLAB XPRESS IDE

MPLAB XC COMPILER

GCC

Debug

Eval boards
Debuggers
Data Visualizer

MPLAB SNAP IN-CIRCUIT DEBUGGER

MPLAB DATA VISUALIZER

MPLAB PICkit 4 IN-CIRCUIT DEBUGGER

MPLAB ICD4

Qualify

Code coverage
Code profiling
Functional safety

TÜV SÜD

MPLAB CODE COVERAGE

Production

Programmers
Prog Center
3rd Party

MPLAB IPE

Softlog Systems

XELTEK
HOME OF AUTOMATED PROGRAMMERS

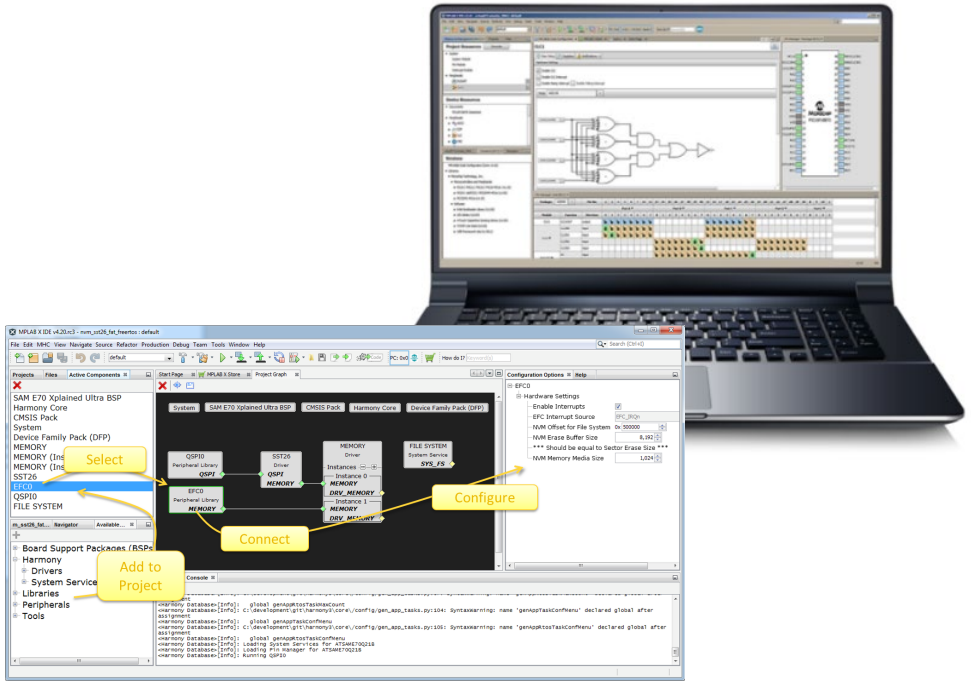
Support you from Product Concept through its Release

www.microchip.com/development-tools

MICROCHIP

“Discover” And “Configure”

Easy and Fast GUI Configuration Tools



- **Configure <u>any MCU and any Peripherals</u> in minutes!**
  - Atmel START supports 8-bit AVR MCUs
  - MCC Code Configurator supports 8-bit and 16-bit PIC along new 8-bit AVR MCUs
  - Harmony supports 32-bit PIC and SAM MCUs & MPUs
- **Generates optimized and pretested C code** PROVEN
- **Minimizes reliance on datasheet** EASY

Atmel | START

https://start.atmel.com/

MPLAB® CODE CONFIGURATOR

www.microchip.com/mcc

MPLAB® HARMONY

www.microchip.com/harmony

MICROCHIP

“Discover” And “Configure”

Harmony: be Agile, Save Time with no Compromise on Robustness

- **Core Agnostic implementation which supports both MIPS® and ARM® Cortex® cores**
- **Code Portability with consistent APIs that can be used across 32-bit PIC® (MIPS-based) and SAM (ARM Cortex-based) MCU along MPU device families**

- **Proven and Robust**
  - Layered, self-contained and MIRSA-C:2012 Mandatory Standards-compliant framework includes:
    - Peripheral libraries – Hardware Abstraction Layer
    - Drivers and services
    - Reusable middleware
  - Validated across 32-bit PIC MCU, 32-bit SAM MCU and MPU device families

PROVEN

PROVEN

- **Offers 1000+ demo/application examples**

- **Fully Integrated with many third-party solutions**

25 YEARS MISRA

MISRA : Motor Industry Software Reliability Association
Aims safety, security, portability and reliability for Embedded Systems
www.misra.org.uk/

www.microchip.com/harmony

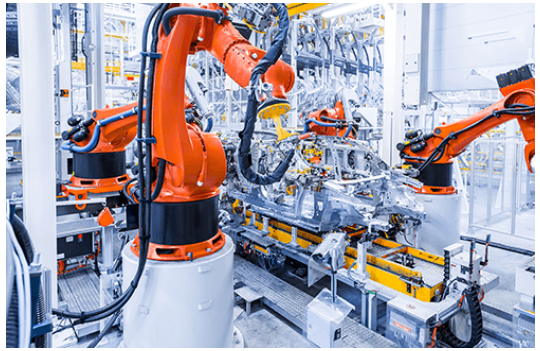
MICROCHIP

“Develop”, “Debug” And “Qualify”

Going the Extra Mile on Robustness

- **Functional Safety matters ! and depends on the targeted market**

ISO 26262 (ASIL)
Functional Safety for Automotive Applications



IEC 61508 (SIL)
Functional Safety for Industrial Applications

IEC 60730
Functional Safety Standard for Appliances

IEC 62304
Functional Safety for Medical Devices

- **Functional Safety Ready Solutions from Microchip**
  - Products with specialized hardware safety features. AEC-Q100-qualified silicon products
  - Firmware libraries supporting above ISO/IEC standards. AUTOSAR/MCAL
  - Failure Modes, Effects, and Diagnostic Analysis (FMEDA) report to quantify the device’s fault modes via Failure-In-Time (FIT) rate distribution
  - Functional Safety Manual providing recommendations for the safest operation
  - TÜV SÜD-certified MPLAB® XC compilers and third-party certified compiler support for a fully qualified and complete development environment
  - Code Coverage Tools (MPLAB)

www.microchip.com/functional-safety

“Develop”, “Debug” And “Qualify”

Going the Extra Mile on Robustness

- **TÜV SÜD-certified MPLAB® XC compilers for standards ISO 26262, IEC 61505, IEC 62304, IEC 60730**
  - TÜV SÜD Certificate
  - Functional Safety Manual
  - Safety Plan
  - Tools classification and Qualification report for MPLAB® XC compilers, MPLAB X IDE, MPLAB debuggers/programmers

www.microchip.com/compilers

- **MPLAB® Code Coverage**
  - Easily visualize which code has been executed
    - Run tests untethered
    - Minimal impact to program memory and execution speed
      - Typical addition to code size is <1%
  - Create custom reports and configurable summary views
  - Works with any MPLAB XC C Compiler

www.microchip.com/SW006026-COV

www.microchip.com/functional-safety

Adaptability, Scalability & System Approach

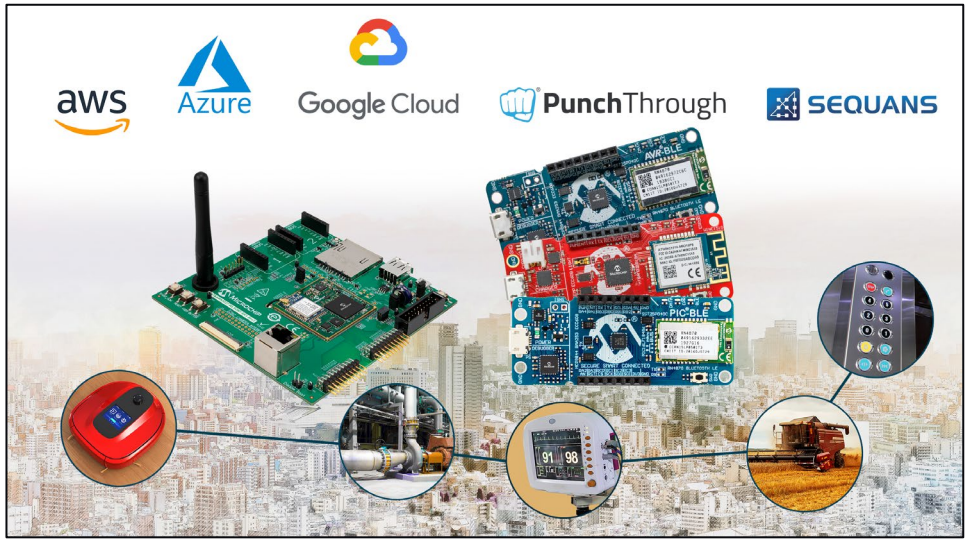
Cloud Agnostic Turnkey Solutions

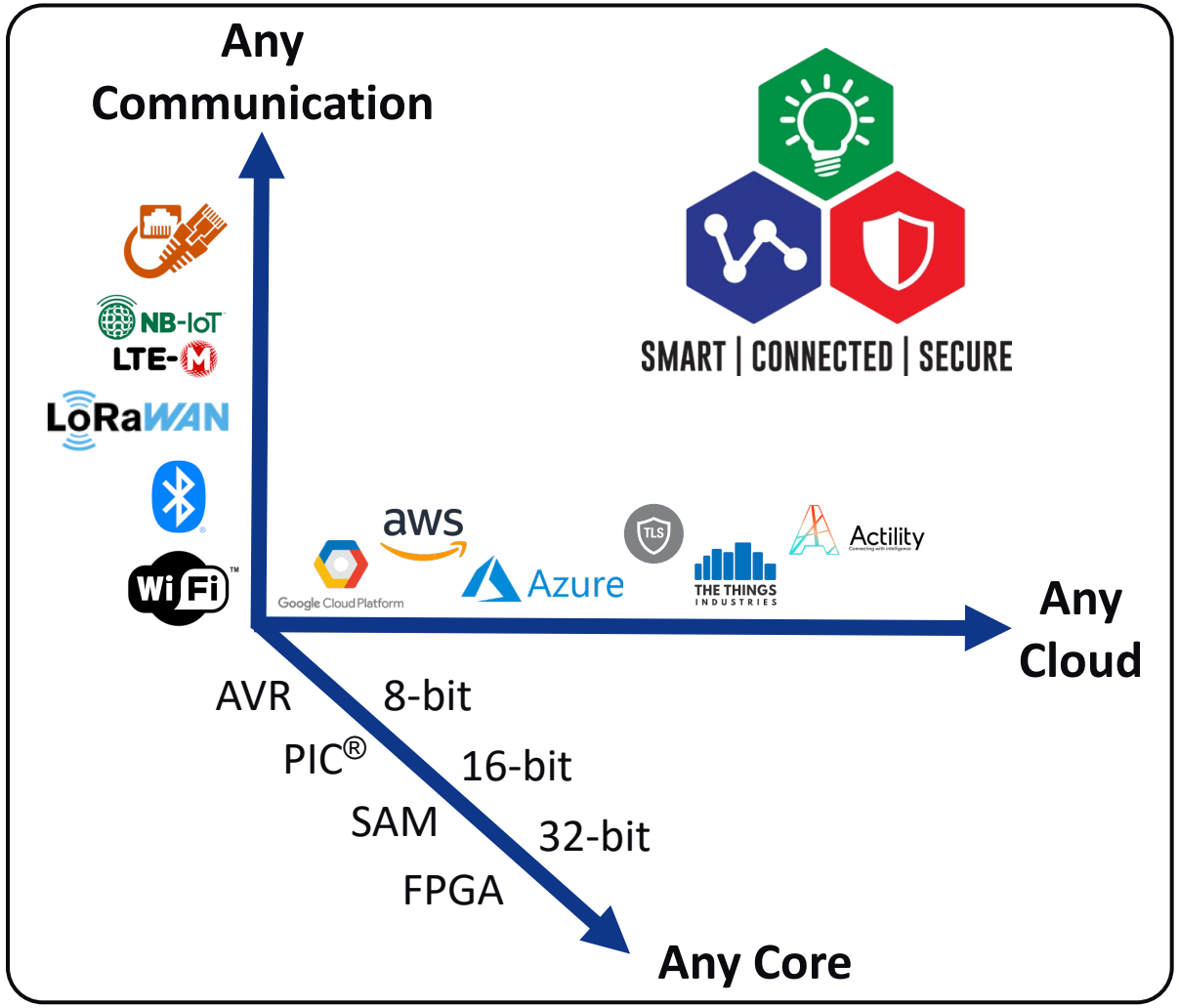
Key Strengths from Microchip Turnkey Solutions

Security | **Scalability** | **Code Reusability**

MPLAB HARMONY

MPLAB CODE CONFIGURATOR



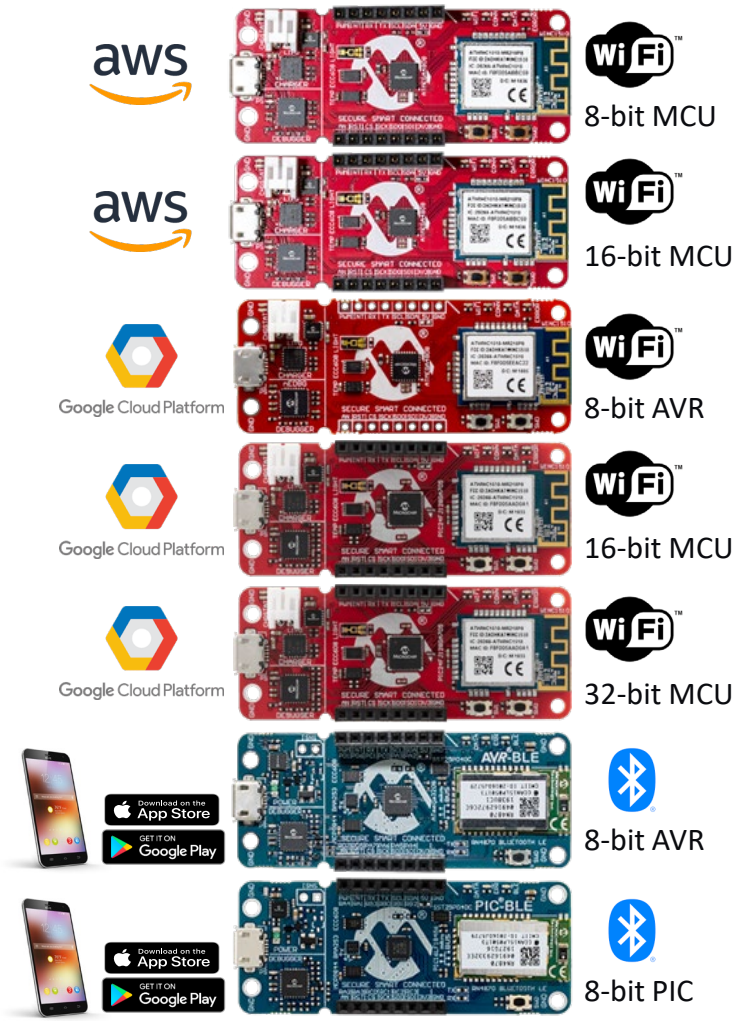


www.microchip.com/en/pressreleasepage/enabling-cloud-connectivity-to-all-mcus-and-mpus

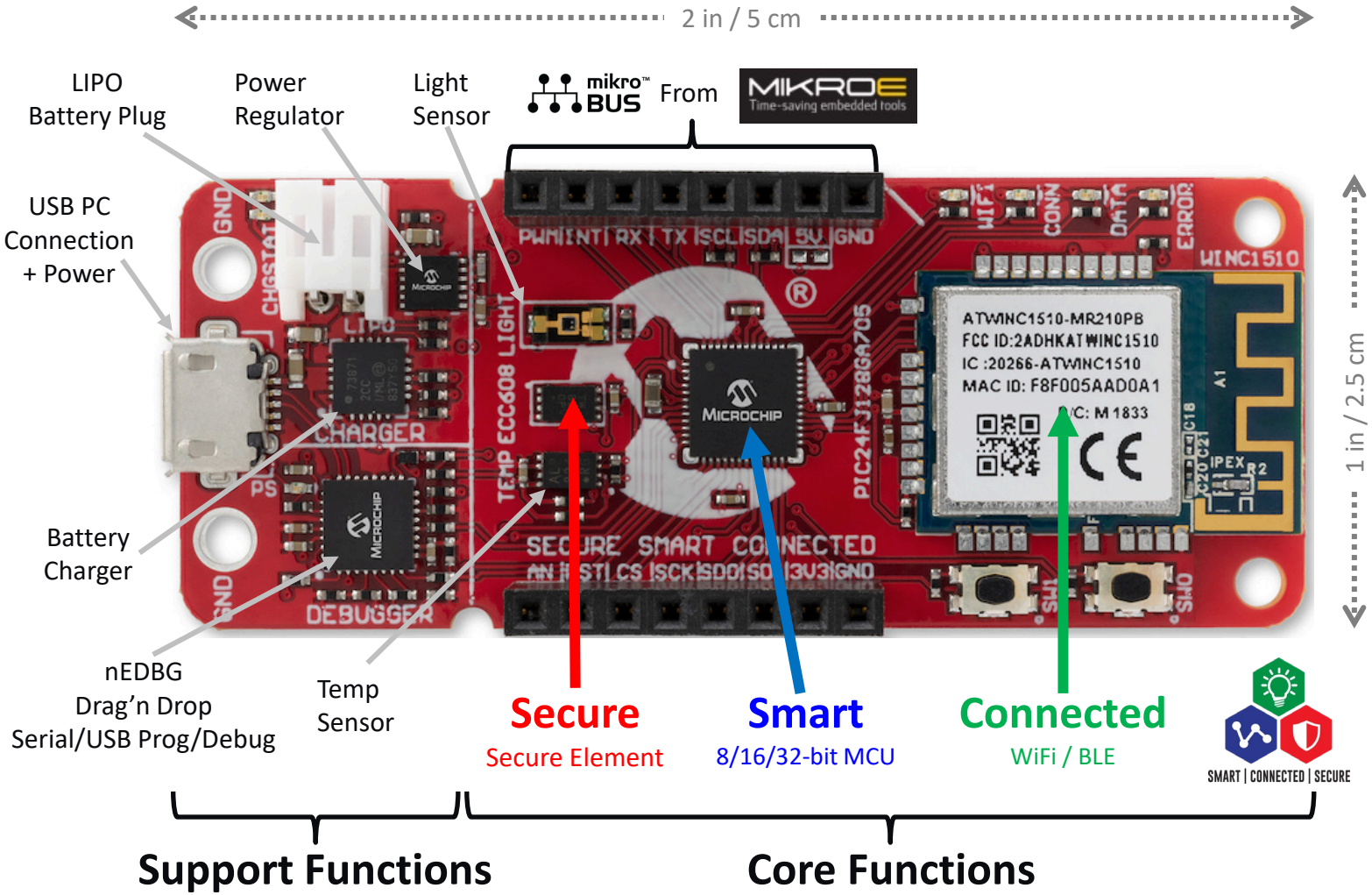
MICROCHIP

Adaptability, Scalability & System Approach

Agile and Fast Prototyping with “IoT Dev Kits” for Sensor Nodes



7 flavours and more to come…



www.microchip.com/iot-dev-kits

www.microchip.com/security - www.microchip.com/mcu - www.microchip.com/wireless

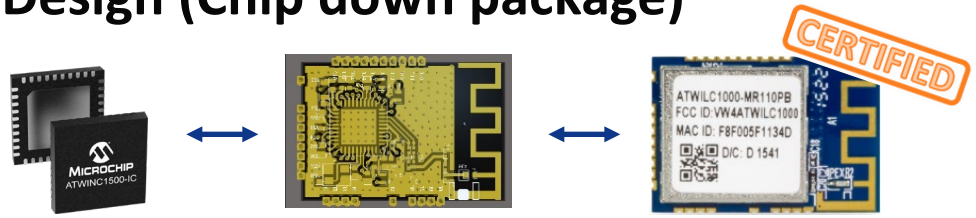
MICROCHIP

Adaptability, Scalability & System Approach

Agile and Fast Prototyping with "IoT Dev Kits" for Sensor Nodes

- **Thorough documentation with User Guide, Getting Started, Firmware libraries, BOM, Schematics, Gerber, CAD…**

- **Wireless choice is yours : Buy, Clone RF Module or make your own IC with Microchip's Reference Design (Chip down package)**



www.microchip.com/wifi and www.microchip.com/bluetooth

- **Security Made Easy with pre provisioned Cloud solutions and low MOQ**

TRUST GO · TRUST FLEX · TRUST CUSTOM

www.microchip.com/trust-platform

- **Comprehensive MCU offer. Select MCU and memory you need for your application**

8-bit · 16-bit · 32-bit

MPLAB CODE CONFIGURATOR · MPLAB HARMONY

www.microchip.com/mcu

- **Fast System Prototyping adding Mikroe Click Boards**
  - 700+ prototyping add-on boards, starting from 5USD
  - Sensors, wireless connectivity, displays, touch/gesture sensing, motor control, actuators and other common embedded system functions

MIKROE Time-saving embedded tools

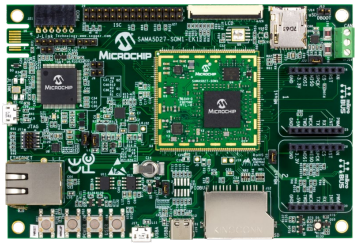
www.mikroe.com

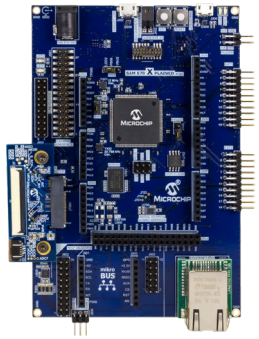
www.microchip.com/iot-dev-kits

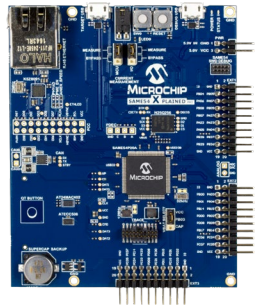
MICROCHIP

Adaptability, Scalability & System Approach

AWS IoT Development Boards



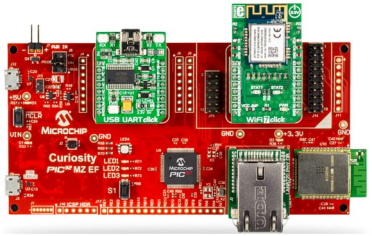
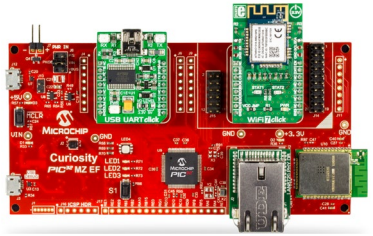
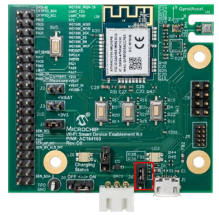
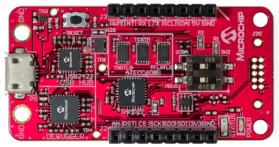


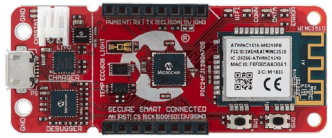


ATSAMA5D2C-XULT	ATSAMA5D27-WLSOM1	ATSAMA5D27-SOM1-EK1	DM320113	ATSAME54-XPRO	AT88CKECC-AWS-XSTK-B
AWS IoT	AWS IoT	AWS IoT	AWS IoT	AWS IoT	AWS IoT
Greengrass HSI (Linux)	Greengrass HSI (Linux)	Greengrass HSI (Linux)	FreeRTOS	FreeRTOS	FreeRTOS
OpenSSL via PKCS#11	OpenSSL via PKCS#11	OpenSSL via PKCS#11	mBed TLS	mBed TLS	Microchip TLS
SAMA5 MPU - Cortex® A5	WSOM - Cortex® A5	SOM - Cortex® A5	SAME70 MCU - Cortex® M7	SAME54 MCU - Cortex® M4	SAMG55 MCU - Cortex® M4
Ethernet KSZ8081	Ethernet KSZ8081 Wi-Fi/BLE WILC3000	Ethernet KSZ8081	Ethernet LAN8720	Ethernet KSZ8091	Wi-Fi WINC1500
ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO	ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO ATECC608-TrustFLEX
NOW	NOW	NOW	NOW	NOW	NOW

Adaptability, Scalability & System Approach

AWS IoT Development Boards

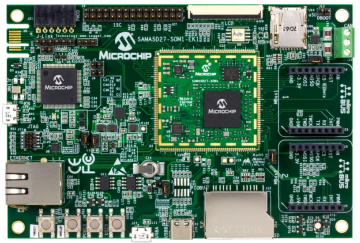





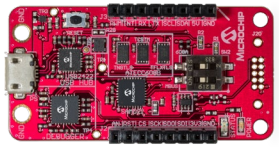


DM320104-BNDL	DM320104-BNDL	AC164165	DM320118	EV15R70A	EV54Y39A
AWS IoT	AWS IoT	AWS IoT	AWS IoT	AWS IoT	AWS IoT
FreeRTOS	FreeRTOS	Bare metal	Bare metal	No RTOS	No RTOS
Microchip TLS	mBed TLS	Microchip TLS	Microchip TLS	Microchip TLS	Microchip TLS
PIC32MZEF - MIPS	PIC32MZEF - MIPS	SAML21 - Cortex® M0+	SAMD21 - Cortex® M0+	ATmega4808 - 8-bit MCU	PIC24FJ128GA705 - 16-bit MCU
Wi-Fi WINC1510	Ethernet LAN8720A	Wi-Fi WINC1510	Wi-Fi WINC1510	Wi-Fi WINC1510	Wi-Fi WINC1510
ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO	ATECC608-Trust&GO
NOW	NOW	NOW	NOW	NOW	NOW

Adaptability, Scalability & System Approach

Microsoft Azure IoT Development Boards



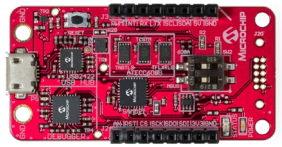
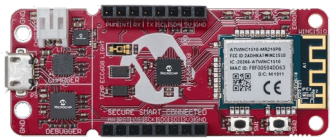


ATSAMA5D27-SOM1-EK1	DM320118
Microsoft IoT Hub	Microsoft IoT Hub
Linux IoT edge stack	Bare metal
OpenSSL	Microchip TLS
SOM - Cortex® A5	SAMD21 - Cortex® M0+
Ethernet KSZ8081	Wi-Fi WINC1510
ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO ATECC608-TrustFLEX
NOW	NOW

More Options Coming Soon!

Adaptability, Scalability & System Approach

Google IoT Core Development Boards

GCP Authentication Kit	DM320118	EV15R70A	EV54Y39A	EV75S95A
Google IoT	Google IoT	Google IoT	Google IoT	Google IoT
No RTOS	Bare metal	No RTOS	No RTOS	No RTOS
Microchip TLS	Microchip TLS	Microchip TLS	Microchip TLS	Microchip TLS
SAMD21 - Cortex® M0+	SAMD21 - Cortex® M0+	ATmega4808 - 8-bit MCU	PIC24FJ128GA705 - 16-bit MCU	SAMD21 - Cortex® M0+
Wi-Fi WINC1500	Wi-Fi WINC1510	Wi-Fi WINC1510	Wi-Fi WINC1510	Wi-Fi WINC1510
ATECC608-Trust&GO	ATECC608-Trust&GO ATECC608-TrustFLEX	ATECC608-Trust&GO	ATECC608-Trust&GO	ATECC608-Trust&GO
NOW	NOW	NOW	NOW	NOW

Adaptability, Scalability & System Approach

Other IoT Solutions with Development Boards

DM320111 or EV23M25A	DM320111 or EV23M25A	DM320111 or EV23M25A	DM320111 or EV23M25A	DT100111	DT100112
The Things Industries (TTI)	The Things Industries (TTI)	The Things Industries (TTI)	Actility	Smart Phone - Bluetooth	Smart Phone - Bluetooth
Bare metal	Bare metal	mBedOS	Bare metal	Bare metal AVR	Bare metal PIC
Microchip LoRaWAN stack	LoRaMac Node stack	ARM mBed stack	Microchip LoRaWAN stack	Bluetooth	Bluetooth
SAMR34 or WLR089U0 Module Cortex® M0+	SAMR34 or WLR089U0 Module Cortex® M0+	SAMR34 or WLR089U0 Module Cortex® M0+	SAMR34 or WLR089U0 Module Cortex® M0+	ATMega3208 - 8-bit MCU	PIC16LF18456 - 8-bit MCU
LoRa Radio embedded in SAMR34	LoRa Radio embedded in SAMR34	LoRa Radio embedded in SAMR34	LoRa Radio embedded in SAMR34	BLE RN4870	BLE RN4870
ATECC608-TNGLORA	ATECC608-TNGLORA	ATECC608-TNGLORA	ATECC608-TNGACT	ATECC608	ATECC608
NOW	NOW	NOW	NOW	NOW	NOW

www.microchip.com/trustgolora

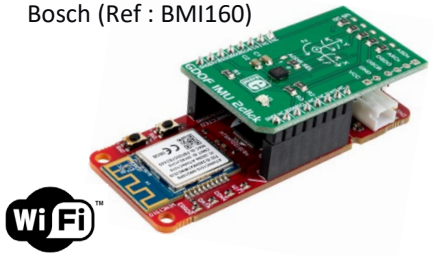
www.microchip.com/design-centers/internet-of-things/iot-dev-kits/avr-ble-and-pic-ble-development-boards

Artificial Intelligence and Machine Learning

Make your IoT Sensor Smarter

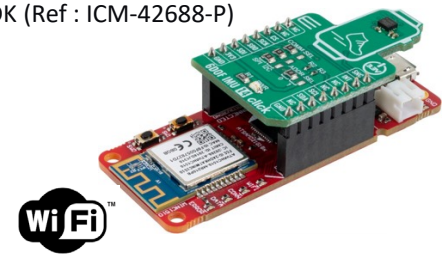
- **Easy to implement**
  - Partners integration within MPLAB
  - Complete flow from Data generation to Chip programming
  - No deep knowledge on ML needed
  - Any application with a Microchip's Arm® Cortex®-based 32-bit MCU/MPU
  - Any application with sensors/data
  - Evaluation Kits to get started in no time

Inertial Measurement Unit from Bosch (Ref : BMI160)



www.microchip.com/EV45Y33A

6-axis MEMS Motion Tracking Device from TDK (Ref : ICM-42688-P)



www.microchip.com/EV18H79A

CARTESIAM.AI
ARTIFICIAL INTELLIGENCE AT THE EDGE

EDGE IMPULSE

MOTION GESTURES
the next wave of interaction

www.microchip.com/design-centers/machine-learning

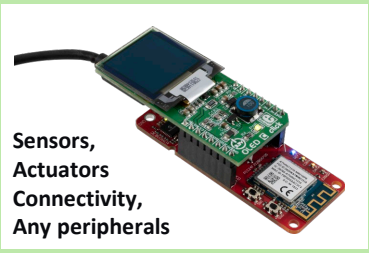
From Concept to Prototype in Minutes

Easy & Fast to industrialize a Robust application

1 Concept

2 IoT Board

3 Click



Sensors,
Actuators
Connectivity,
Any peripherals

4 Develop

Atmel START

MPLAB CODE CONFIGURATOR

MPLAB HARMONY

5 Production

Robustness
Agility
Time to Market
Long Term

Support

Firmware, Hardware, Reference Design, Turnkey Solutions

MICROCHIP

Check Services

Local Tech Support

IoT MICROCHIP DESIGN PARTNER

Fast and continuous stream of Revenue

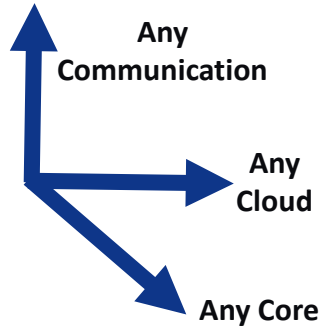
MICROCHIP

Conclusion

IoT Sensor Design is Complex… but Microchip has the Solutions Made Easy For You

- **Microchip facilitates your Success in IoT thanks to our unique 3D Scalability Approach, Proven Robust and Comprehensive solutions, and tireless Technical support**

- **This unique approach enables fast Innovation along with System Agility for your IoT designs NOW and in the FUTURE!**



Do You Want To Become An IoT Expert?

We've got you covered !

- **Design Check : Online Design Review Services**
  - Wireless, Ethernet LAN, PoE, MPU…
  - www.microchip.com/design-check-services

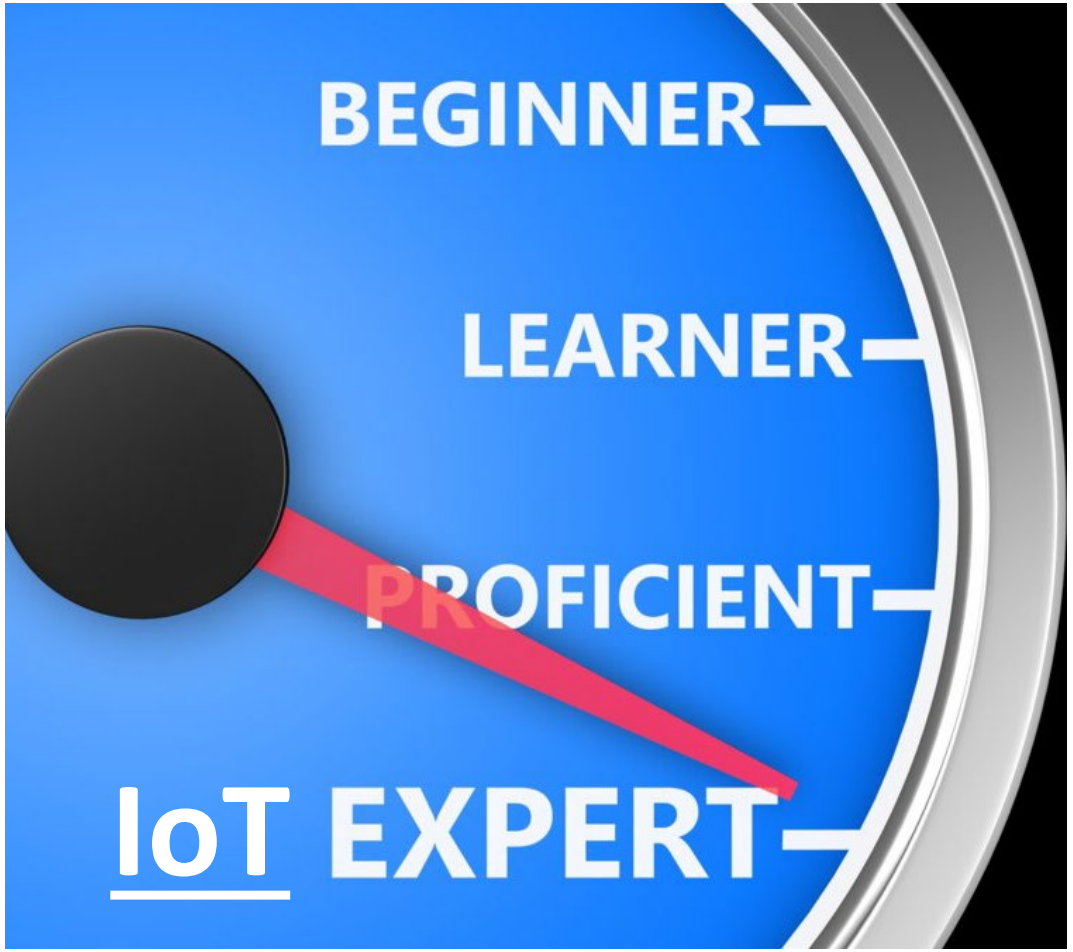
- **Microchip IoT Landing Page**
  - www.microchip.com/iot

- **Github**
  - https://github.com/MicrochipTech

- **Microchip YouTube Channel**
  - www.youtube.com/user/MicrochipTechnology

- **Design Partner:**
  - https://get.microchipdirect.com/design-partner-ecosystem/

- **And your friendly and Local Microchip team !**



Let’s Go For Q&A

Ask our Experts now !

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