« 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

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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 3/4

Security Matters & How it is Now so *Easy*

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Johan Pauvert,
Wireless BU Marketing

Markus Austermayer,
EMEA IoT Evangelist

Tibor Szarka,
Security Expert

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Session 4 (17 Sept, 2pm CET) : « Scale your Business : from Easy Prototyping to Fast Time to Market »

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The Challenge We Will Resolve Today

How to Overcome Complexity of Security

- **How to build a secure Low Power IoT sensor?**
  - Regulations and requirements?
  - What threats and enemies are out there?
  - Are all IoT cloud providers using the same methodology?
  - How to deal with security software complexity?
  - What keys do I need? Unique keys per device?
  - Where can I store device keys? Are they safe?
  - Do I need a secure factory to produce a secured device?
  - How do I respect the low power budget I have?

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

Why Security for IoT?

Save Costs, Reduce Risk, Increase Revenue

Preserve brand quality

Safety, Liability and Regulation

Revenue stream protection

Enable service revenue streams

IoT Security – Main Challenges

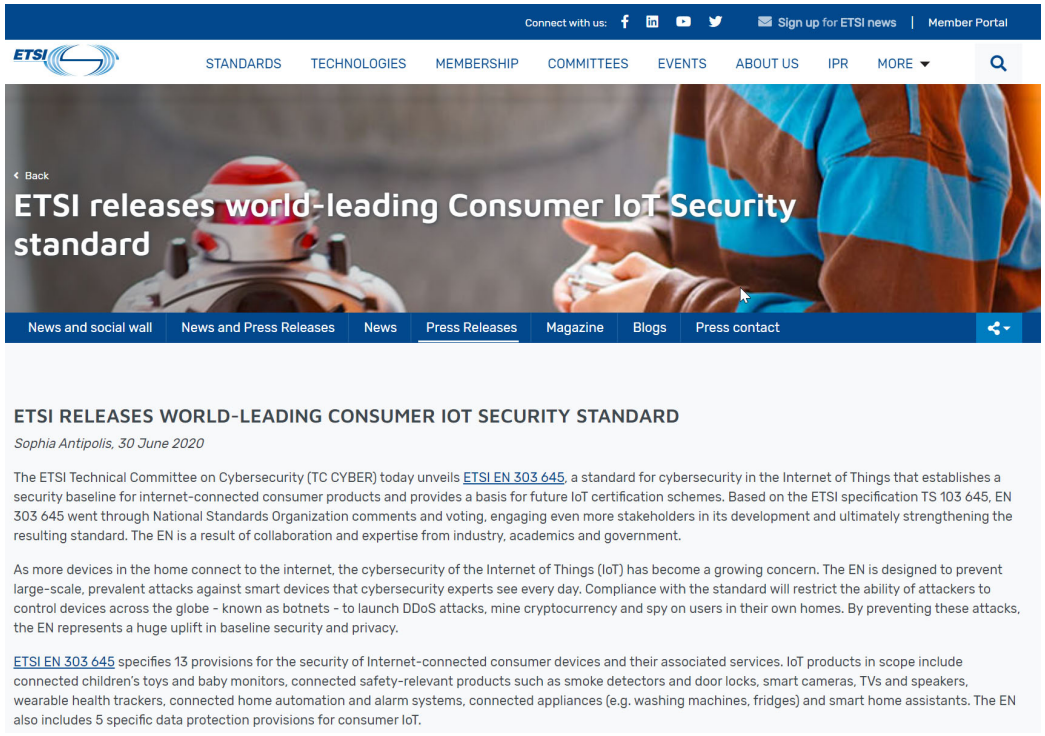
Seen from YOUR perspective

- Very large attack surface and widespread deployment
- Security for safety (especially for critical sectors)
- Interoperability, increased connectivity & cascading effects
- Security & privacy (by design) not a top priority
- Lack of expertise
- Applying security updates
- Lack of secure development practices
- Fragmentation of good practices & standards
- Unclear liabilities

enisa
EUROPEAN UNION AGENCY FOR CYBERSECURITY
www.enisa.europa.eu

European Standard

EN 303 645 is NOW Published!



https://www.etsi.org/newsroom/press-releases/1789-2020-06-etsi-releases-world-leading-consumer-iot-security-standard#:~:text=The%20ETSI%20Technical%20Committee%20on,for%20future%20IoT%20certification%20schemes.

https://www.etsi.org/deliver/etsi_en/303600_303699/303645/02.01.01_60/en_303645v020101p.pdf

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Other Regulations and Specifications

Available for Different Market Segments

www.isa.org

www.iotsecurityfoundation.org/tag/iot-security-compliance-framework/

www.ul.com/offerings/cybersecurity-assurance-and-compliance

https://csrc.nist.gov/publications/detail/nistir/8259a/final

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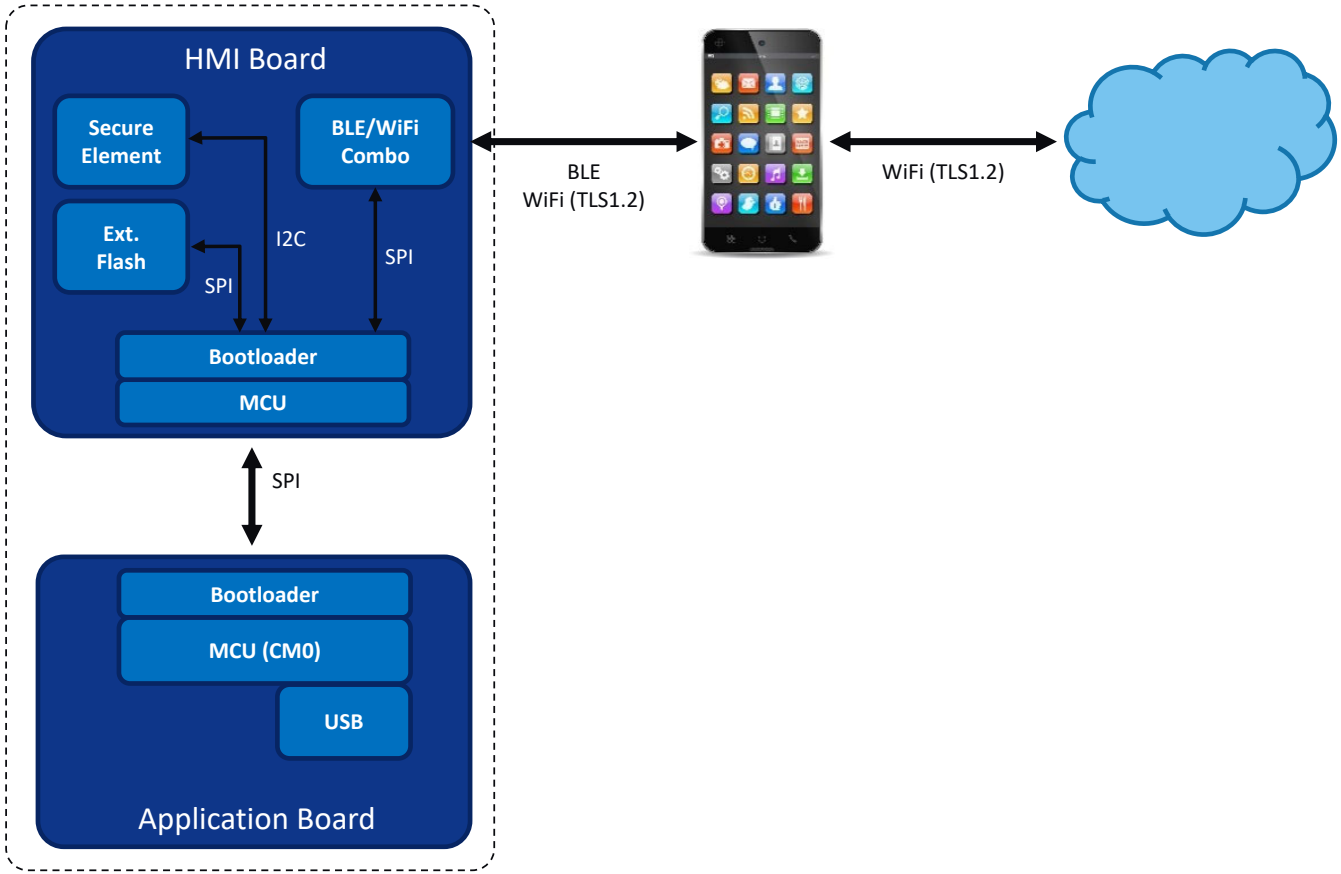
Real Life Use Case in Europe

Appliance with Multiple Boards & Connectivities



www.microchip.com/iot

www.microchip.com/security

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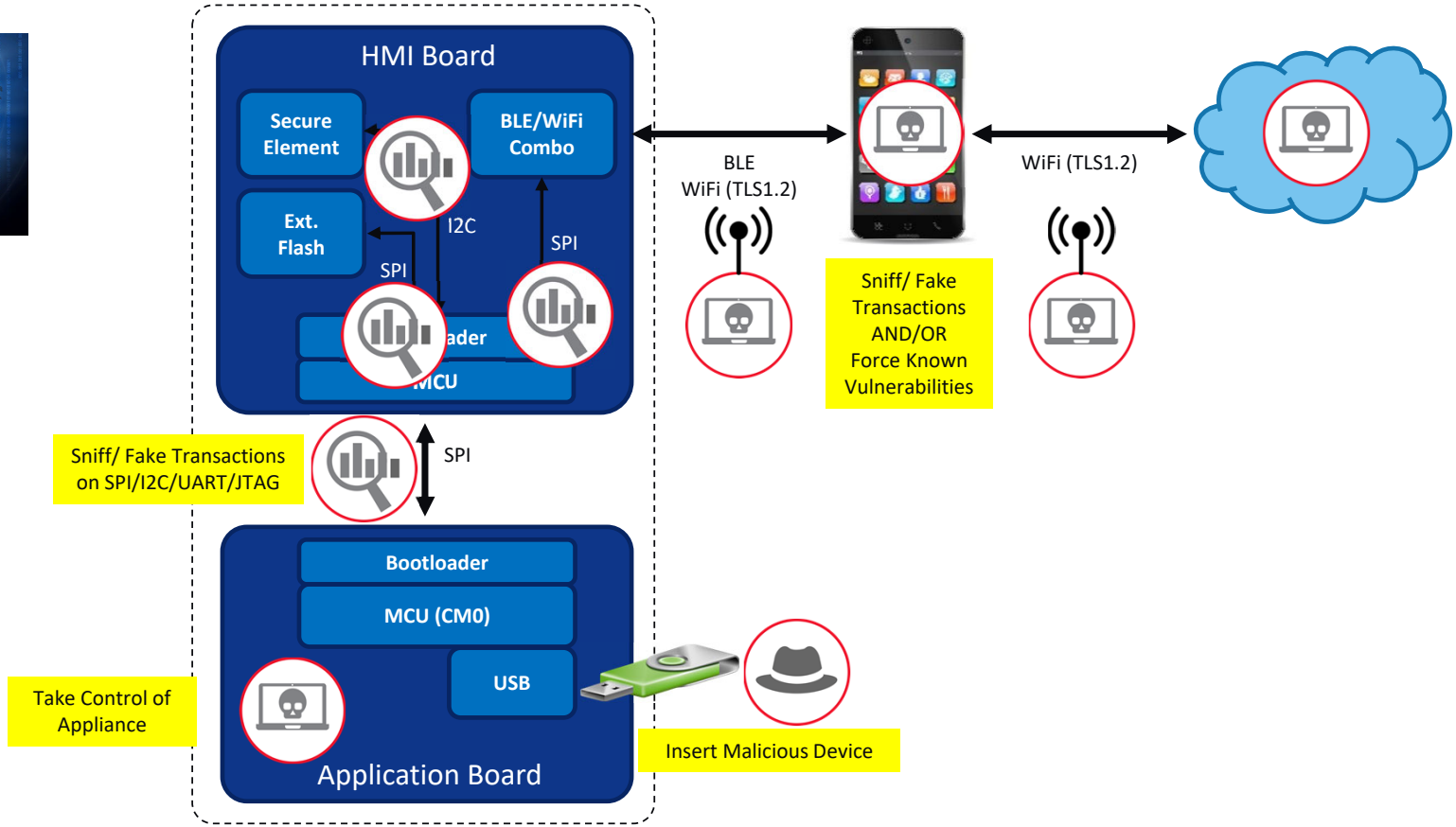
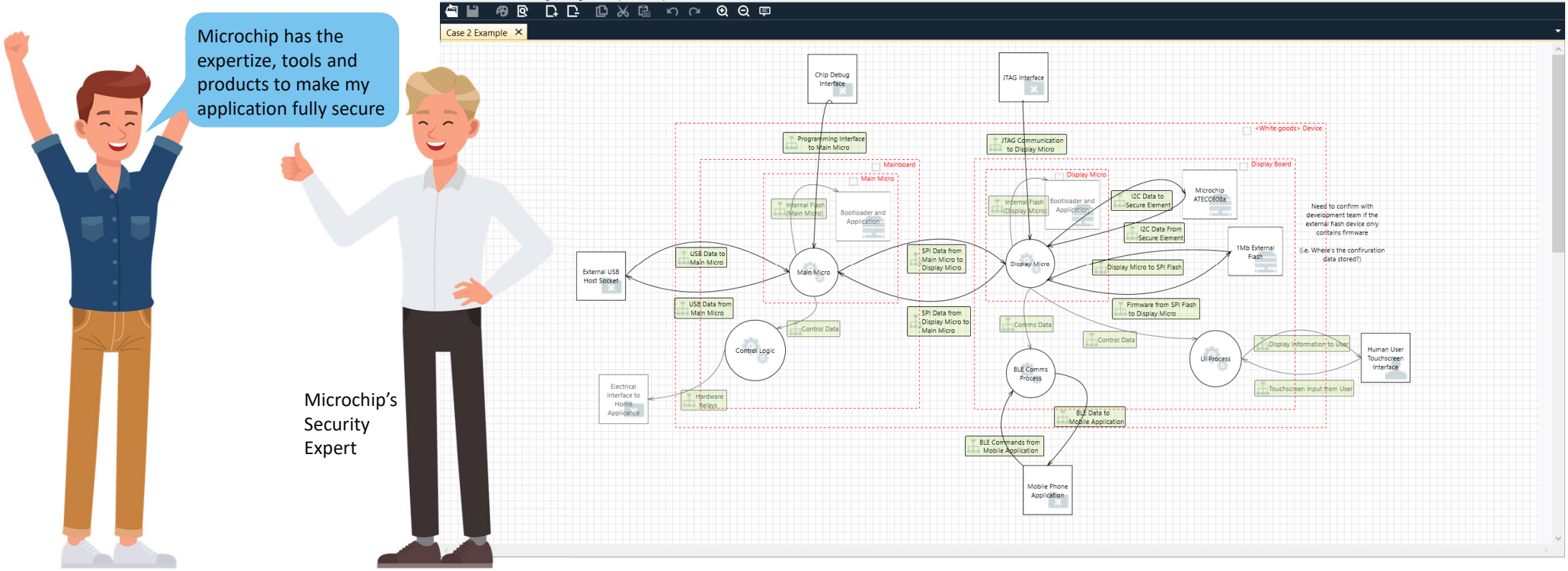
Real Life Use Case in Europe

Appliance with Multiple Boards & Connectivities



Real Life Use Case in Europe

Appliance with Multiple Boards & Connectivities



Importance of Keys in Security

Security: It's All About The Key

- **"A cryptosystem should be secure if everything about the system – except the key – is public knowledge"**
  - Kerckhoff's Principle

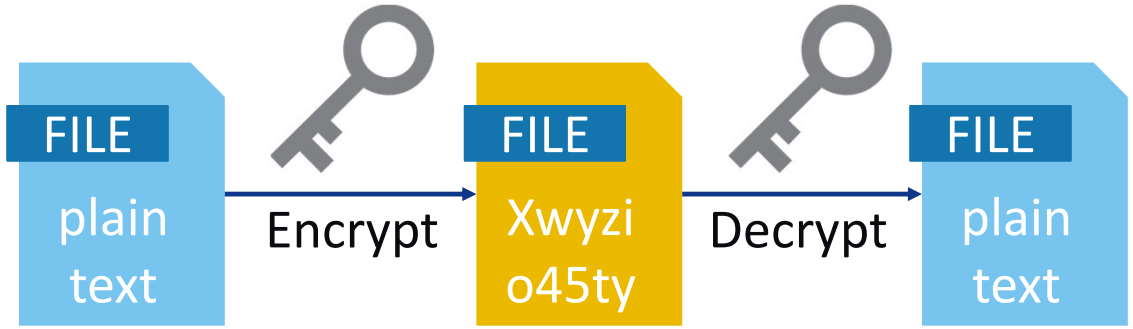
What a private key really looks like:
JVFDvdfvJvfdnjvjk543524cds9ics9cCDSCcs0dcw8eidpciswsn8934XSCDS

- **"The enemy knows the system"**
  - Claude Shannon

- **Why are the Keys important ?**
  - With the possession of the key, critical transactions can be impersonated

How to Look at Security

Don’t Forget the Key!



- **FW/SW engineers (often the lead architects) focus on algorithms (the maths) forgetting the importance of keys (the secret)**
- **“I encrypted data with the key, so I am secure … ”**
  - Yes but you need a key to encrypt
  - Is this key protected ?
- **Ok, I recognise the need to secure the key**
  But how do I implement that ?

Check our “Security” Playlist on www.youtube.com/user/MicrochipTechnology

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Security Solutions from Microchip

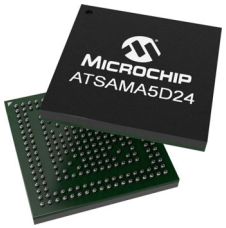
Full Portfolio of Secure Solutions for IoT

Hardware

Microcontrollers 32/16/8-bit

www.microchip.com/mcu

Microprocessors



www.microchip.com/mpu

Secure Elements
Common Criteria (JIL) Rated HIGH

www.microchip.com/security

Wired & Wireless Solutions

www.microchip.com/wireless
www.microchip.com/ethernet

FPGA

www.microchip.com/fpgas-and-plds

Firmware

www.microchip.com/aws

www.microchip.com/azure

www.microchip.com/gcp

www.microchip.com/TrustGOLoRa

www.microchip.com/iot

Join Session 4 to learn how we make all of this super easy for you

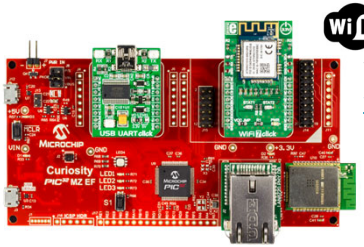
Tarek, MCU BU Marketing and IoT Expert

Security Solutions from Microchip

A few Examples…

IoT Gateway

- Get started Now with DM320104-BNDL Board
  www.microchip.com/DM320104-BNDL



WINC1500 Wifi Controller
www.microchip.com/winc1500

LAN8720A Ethernet PHY
www.microchip.com/lan8720a

PIC32MZ EF 32-bit MCU
www.microchip.com/pic32mzef

AWS IoT Cloud Authentication

- Get started Now with 32-bit MCU Wifi, embedding Trust&Go and enhanced security including WPA3

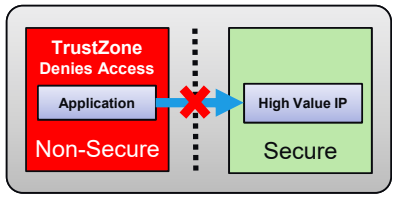
32-bit MCU Wifi with Trust&Go Secure Element
www.microchip.com/wifi

KSZ8091 Ethernet PHY
www.microchip.com/ksz8091

IP Protection & anti-cloning

- Get started Now with SAML11 family and Chip-Level Security plus arm® TrustZone® Technology

ATSAML11 32-bit MCU
www.microchip.com/saml11



Microchip's Unique Value Proposition

Provisioning IoT Devices…

- **Who generates the identity for your IoT product ?**

- **Provisioned devices are easier to use and…**
  - More efficient: You save money from an efficient production flow
  - Minimize risk: You control overbuilds
  - More secure: Your IoT product enjoys a world class level of embedded security

www.microchip.com/design-centers/security-ics/trust-platform

www.microchip.com/wireless

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Microchip Unique Value Proposition

Provisioning IoT Devices : The Solution - Trust Platform

aws Azure TLS Google Cloud Platform LoRaWAN

TRUST&GO TRUST FLEX TRUST CUSTOM

		TRUST&GO	TRUST FLEX	TRUST CUSTOM
Pre-configured		YES	YES	NO
Pre-provisioned		YES	YES (flexible)	NO
MOQ	**Low MOQ flow**	10 units	2 000 units	4 000 units
	High Volume flow*	30 000 units	30 000 units	30 000 units
Development time		Lowest	Lower	Custom
Complexity		Lowest	Lower	Custom
Secure key Storage		JIL High	JIL High	JIL High
Devices		ATECC608	ATECC608 ATSHA204A (w/o RBH) – Q4/2020	ATECC608 ATSHA204A (w/o RBH) – Q3/2020

1 2 3

* MOQ depending on Package / Silicon – showing here the lowest MOQ through the whole product portfolio – **Minimum Annual Business of 100ku**

www.microchip.com/trust-platform

www.microchip.com/ATECC608A

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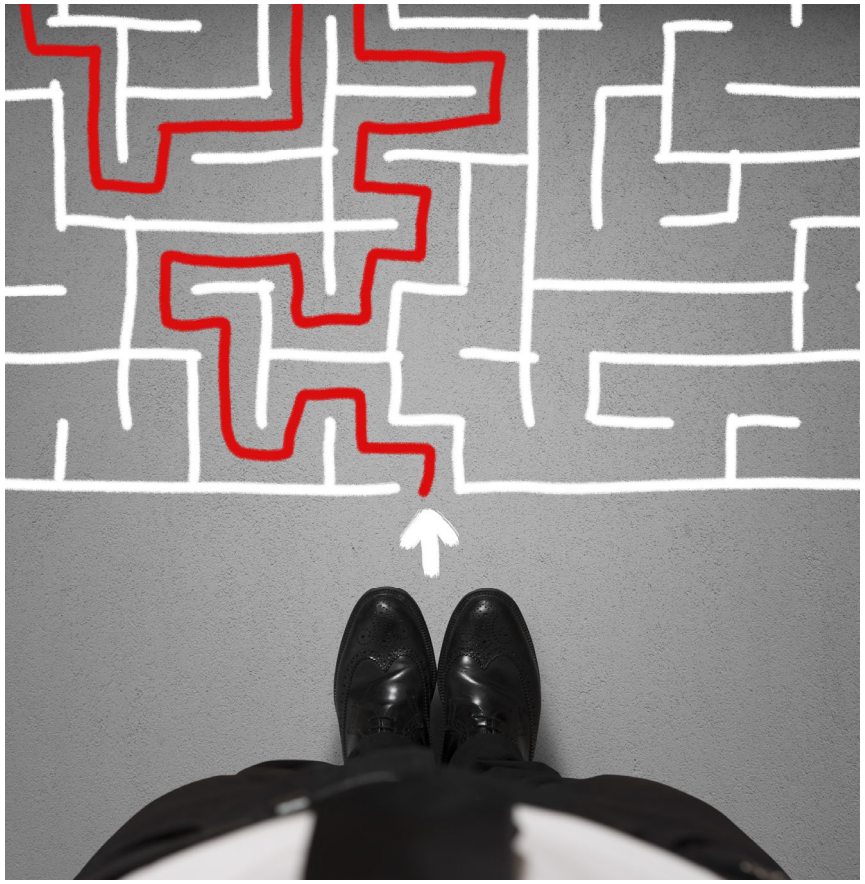
What about Power Efficiency ?

How to Optimize Power Consumption for my Device ?

- **Use Elliptic Curve Cryptography (ECC)**
  - Smaller key size than RSA for the same security bit level
- **Crypto-Hardware acceleration reduce code size**
- **Use crypto-companion to off load main MCU**
  - Reduce firmware validation time during boot and updates
  - Reduce TLS communication setup time
  - Dedicate your MCU core to the application logic
- **Crypto-Hardware acceleration save time and power!**



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www.microchip.com/ATECC608A

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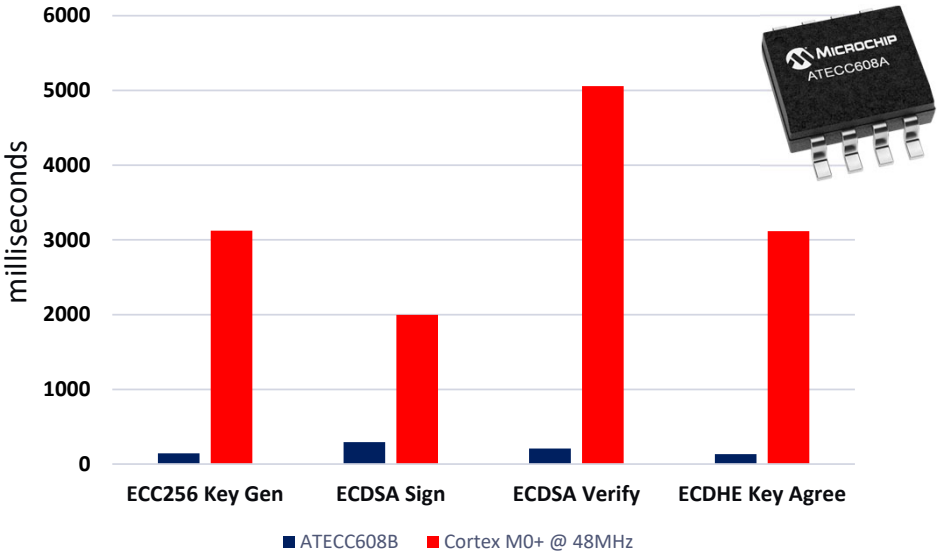
What about Power Efficiency ?

Efficiency Proven !

	Cortex M0+ 32-bit MCU @48MHz	Cortex M0+ 32-bit MCU @48MHz plus ATECC608B Secure Element
TLS connection setup time [ms]	3000 - 5000	**less than 500**
Firmware signature validation [ms]	5000	**210**

- Spend less resources and power to build secure system
- Sleep current down to 30nA!
- “2 Chip Hardened Solutions” from Slide 14 is then not only more secure but is also more power efficient and offers greater performance

Idle Power Supply Current	I_{IDLE}	—	800	—	µA	When device is in idle mode, V_{SDA} and V_{SCL} < 0.4V or > V_{CC} – 0.4
Sleep Current	I_{SLEEP}	—	30	150	nA	When device is in sleep mode, V_{CC} ≤ 3.6V, V_{SDA} and V_{SCL} < 0.4V or > V_{CC} – 0.4, T_A ≤ 55°C
		—	—	2	µA	When device is in sleep mode. Over full V_{CC} and temperature range.



www.microchip.com/design-centers/security-ics/trust-platform

www.microchip.com/ATECC608A

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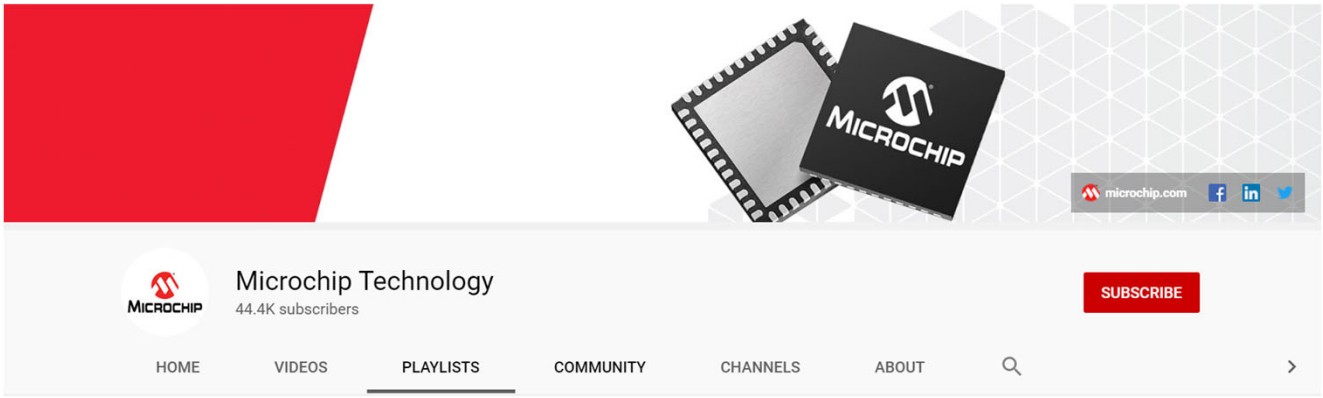
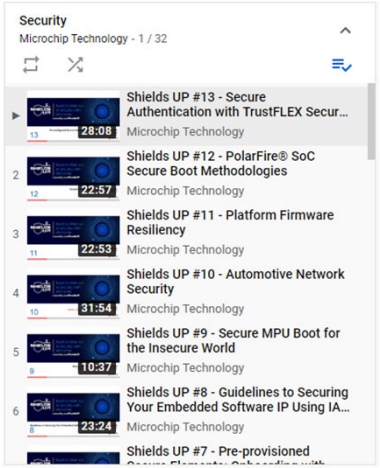
For the Curious Ones… and Geeks Like Me

Microchip YouTube Channel



YouTube



www.youtube.com/user/MicrochipTechnology/playlists

www.microchip.com/security

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Conclusion

Security is Complex… but Microchip has the Solutions made Easy for you

- **Security has a real value for all stakeholders, including for your end customers**
- **You must act NOW, as IoT regulation is NOW in place in Europe**
- **Microchip offers a comprehensive variety of solutions for IoT Security. With full System Approach**
- **Security does not conflict with Power Efficiency**
- **Last but not least, our Microchip Security Experts are available to support you. And we are Local !**

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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

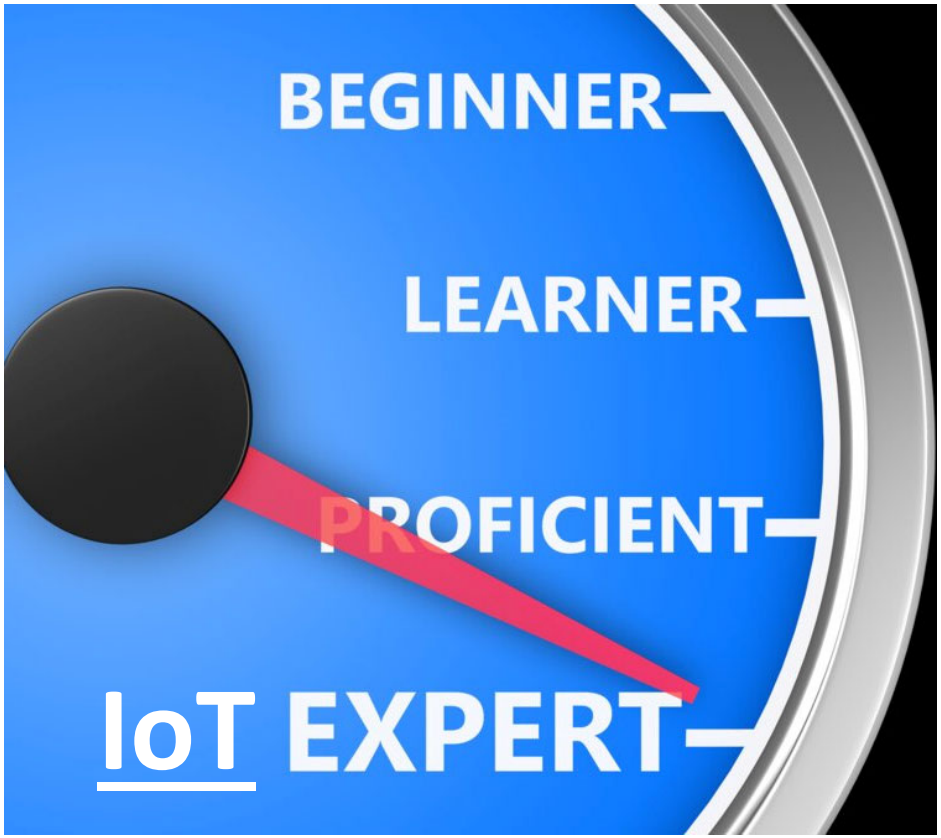
- **Microchip IoT Landing Page**
  - www.microchip.com/iot

- **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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www.microchip.com/security

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Join Us Tomorrow for Our Next Webinar

Our Technical Experts Are Here For You

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