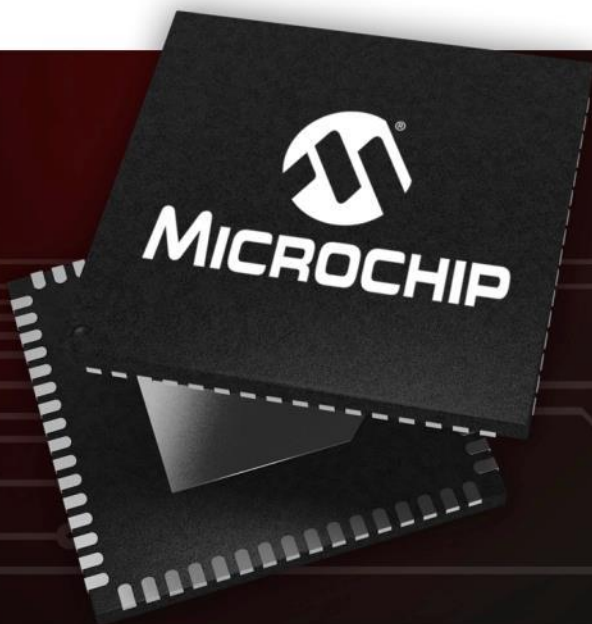




MICROCHIP



A Leading Provider of Microcontroller,
Mixed-Signal, Analog & Flash-IP Solutions



Microchip's Solutions for IoT Applications
Tommy Hsu - Marketing Manager
8 December, 2017

Why Microchip for IoT?

Software Solutions

Software framework
Software stacks
Operating systems
OS support (Linux®, etc.)

**Value Proposition:
Total Solution Provider**

IoT Hardware

Broad range of MCU solutions
8-, 16- and 32-bit families
MPUs with OS support
Extensive connectivity with
Wi-Fi®, Bluetooth®, LoRa,
Sub-ghz and more
Scalable security solutions








Reliability

Financially stable
High quality standards
Long-term supply
Customer-driven
obsolescence policy

Design Support

Evaluation boards
Integrated tools with IDE
Compilers
Training
Application notes

Microchip's Wireless Offering

Technology	Standard	Freq.	Network Stack	Topology	HW	Chip down	Module	More information
 Bluetooth®	IEEE 802.15.1	2.4 GHz	Bluetooth v2.1 Bluetooth Audio BLE 4.0, 4.1 and 4.2	Stand-alone Companion Link Controller	MCU	✓	✓	www.microchip.com/ Bluetooth
 Wi-Fi®	IEEE 802.11 b, g, n Optional BLE	2.4 GHz	TCP/IP / TLS1.2	Stand-alone Network Controller Link Controller	MCU MPU	✓	✓	www.microchip.com/ Wifi
 ZigBee®	IEEE 802.15.4	2.4 GHz	ZigBee® 3.0 (Pro with GP option)	Stand-alone Link Controller	MCU	✓	✓	www.microchip.com/ Zigbee
 MiWi™	Proprietary Mesh networking (Mesh/ P2P / Star)	Sub-GHz & 2.4 GHz	MiWi™ networking protocol	Stand-alone Link Controller	MCU	✓	✓	www.microchip.com/ miwi
 LoRa™	LoRaWAN™	Sub-GHz	LoRaWAN™ Protocol	Stand-alone Network Controller	MCU	EA Only	✓	www.microchip.com/ Lora

SAMB11 & BTLC1000

Small & low power BLE SoC

Low Power



Provides 2-3x battery life compared to other BLE solutions available today

Rx: <4 mA @3.6V,
Tx: <3 mA @3.6V

Small Size



Package enables up to 3x smaller designs vs. current solutions

Die Size: 2.15 mm x 2.25 mm

Certified Solutions



Certified modules and silicon



IoT Solutions



Easy to develop IoT solutions with multiple sample examples

BTLC1000 and SAMB11 ZR Modules

Fully certified modules

- Small size 7.5 x 10 mm
 - 70% smaller footprint than MR module
- Integrates all BOM components
- Including chip antenna except 32kHz XTAL
- Based on XR SiP with castellated pins
- SiP is 4.5x5.5mm ultra small LGA package
 - 34pin + GND paddle
- FCC/CE/IC certified
- New SDK (v6.1) is available on ASF



www.microchip.com/wwwproducts/en/atbtlc1000-zr
www.microchip.com/wwwproducts/en/atsamb11-zr

WINC1500 Wi-Fi® Key Strengths

Low Power



Low-power radio with best-in-class sleep current enabling battery powered applications for over a year

Small Size



Very small package for space constrained applications, such as wearable devices

Competitive Price



High-quality certified module and silicon offered at competitive pricing, suitable for consumer market

IoT Solutions



Easy-to-develop IoT solutions with multiple sample examples, offered with secure connection to the cloud



● Features

- Compact small size: 21.7 x 14.7 x 2.1 mm
- 28-pins with SPI interface
- Operating temperature range: -40°C to +85°C
- Operating voltage VBAT: 3.0V to 4.2V
- PCB antenna and u.FL connector options
- Transmitter @ 3.3V, 25C
 - 802.11b: 17.5dBm
 - 802.11n MCS7: 14.5dBm
- Receiver @ 3.3V, 25C
 - 802.11b: -95dBm
 - 802.11n MCS7: -70.5dBm



Firmware v19.5.x	Throughput
UDP Downlink	11.2 Mbps
UDP Uplink	12 Mbps
TCP Downlink	7.5 Mbps
TCP Uplink	9.5 Mbps

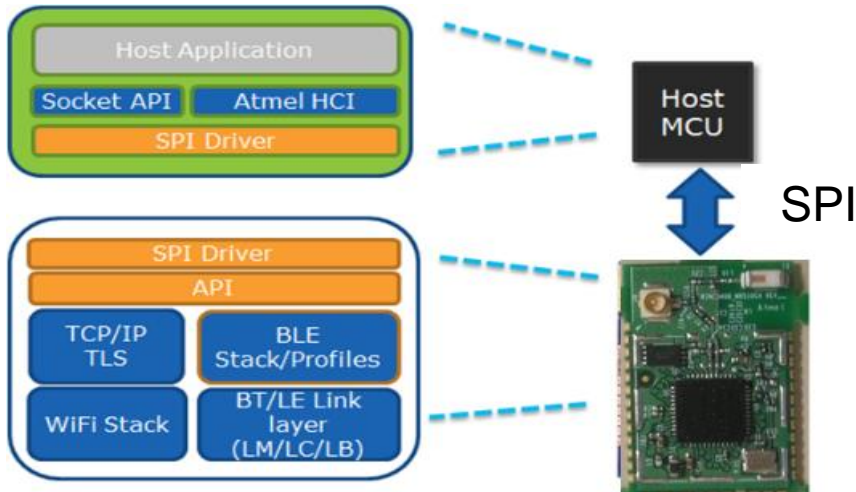
● Certification

- FCC, IC, Anatel, and CE certified
- Planned (Calendar Year 2018) : KCC, NCC, SRRC, MIC
- Wi-Fi Alliance® certified



Wi-Fi + BLE network controller:

- Single antenna with hardware-based co-existence between Wi-Fi & BLE
- Minimize host MCU requirements:
 - Integrated TCP/IP stack
 - Built-in TLS 1.2 stack
 - Integrated BLE stack
- Fully certified modules (FCC / IC / CE)



	WINC3400
Wi-Fi SoC	802.11 b/g/n
BLE SoC	BT 4.0
Host Interface	SPI
WPS, WPA/WPA2	✓
TCP/UDP, DNS, HTTP/HTTPS	✓
SSL/TLS	✓
Antenna Design	Chip / uFL
Flash	8Mb serial flash
OTA Upgrade	✓
Dimensions	15x22
Certification	FCC, IC, CE
Availability	Now

KRACK

Wi-Fi® WPA2 Vulnerability



What is KRACK (Key Reinstallation Attack) VU#228519?

- WPA2 (Wi-Fi Protected Access II) protocol, the standard Wi-Fi security mechanism, has critical security vulnerabilities. WPA2 is widely used in Home Access Point.
- The vulnerabilities are in the standard definition and not in a specific implementation – almost all implementations are affected

What is the risk?

- While Exploiting the vulnerability, hackers can perform:
 - Packet decryption
 - Packet replay
 - TCP connection hijacking
 - HTTP content injection and etc.





KRACK

Wi-Fi® WPA2 Vulnerability



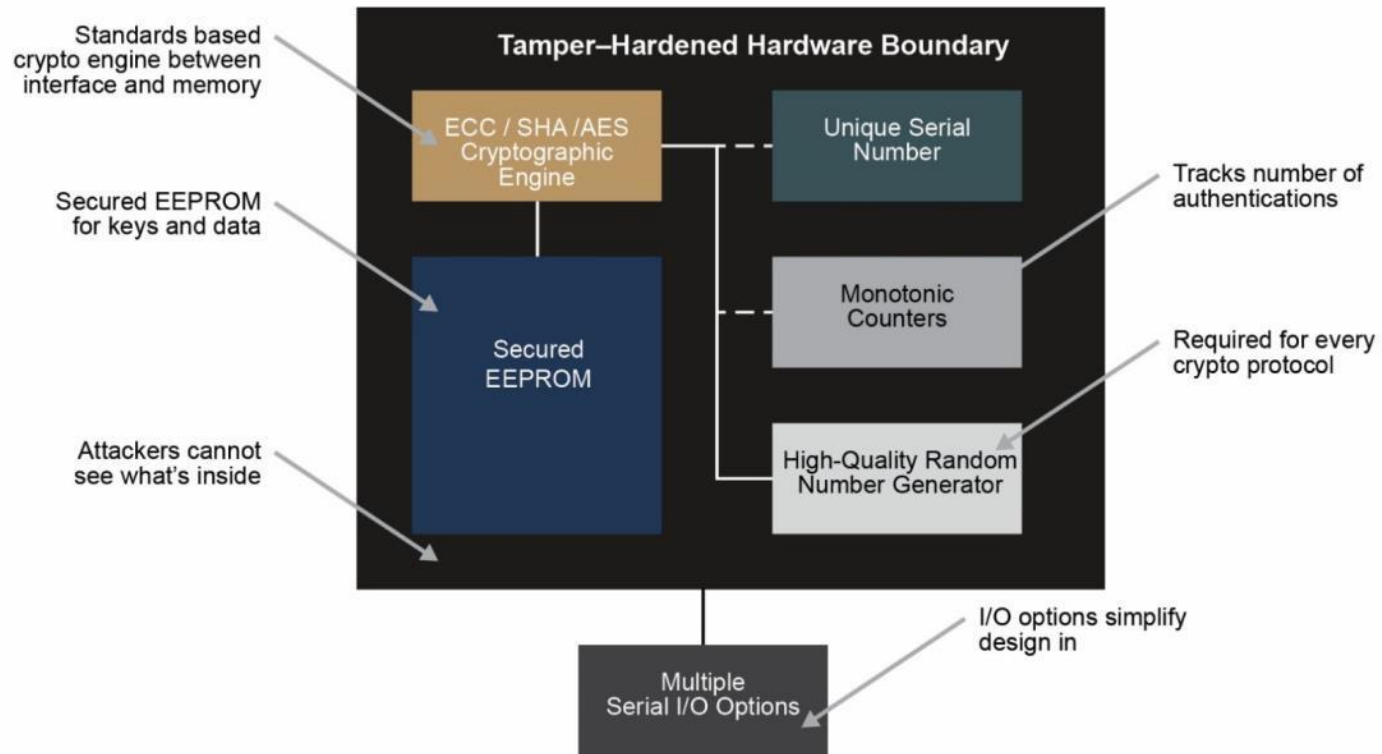
Microchip is highly responsive security needs

- Microchip was one of the first vendors to issue a patch
- Updated firmware for the following families
 - ATWINC15x0
 - RN171/131
 - RN1723
 - More in development

Microchip web site: www.microchip.com/krack

KRACK Detailed information: www.kb.cert.org/vuls/id/228519/

ATECC508A / ATECC608A Security ICs



ATECC508A / ATECC608A Security ICs

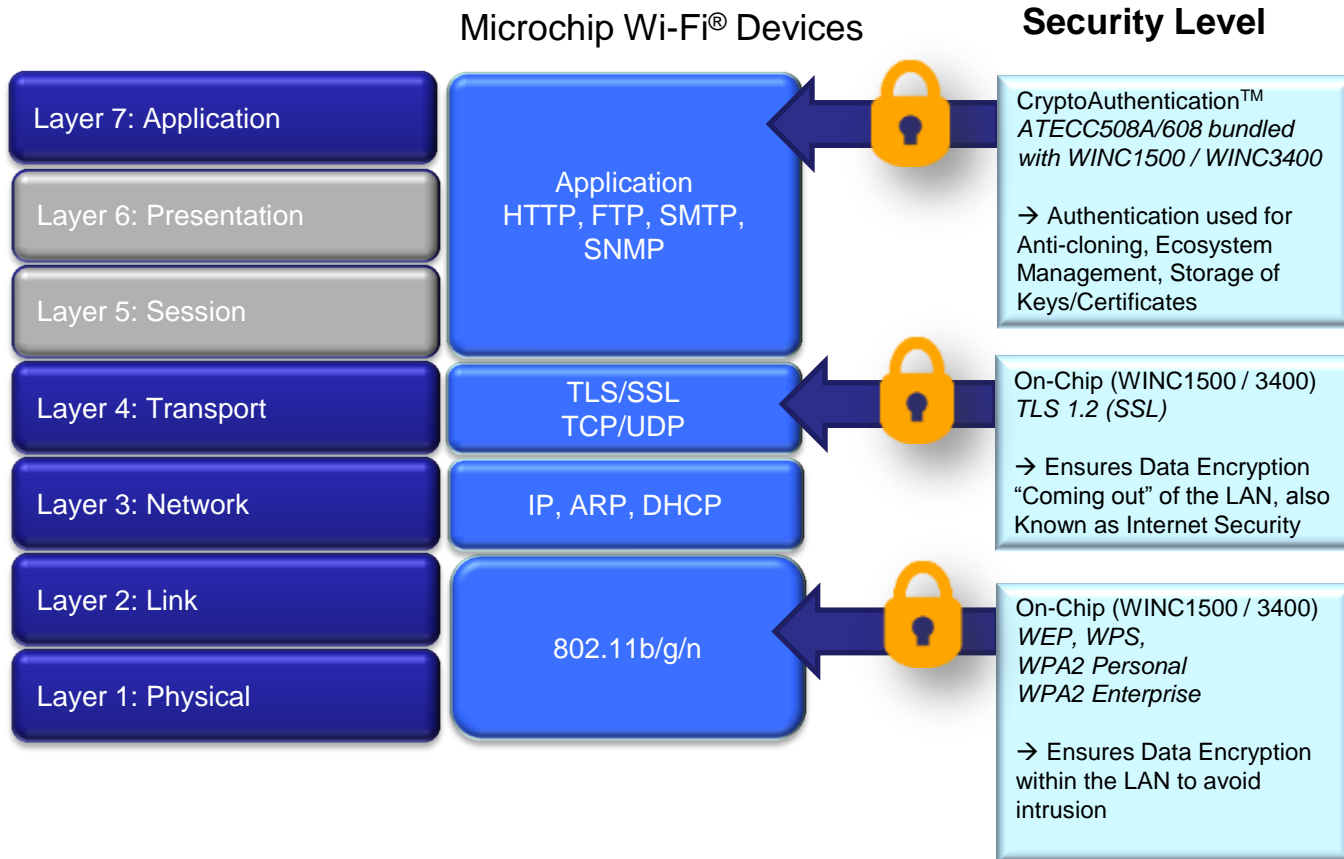


	ECC508A	ECC608
Key Features & Use Cases	Node / Accessory Authentication Network Security Node to Cloud Authentication and On-Boarding Key Provisioning	Node / Accessory Authentication Network Security Node to Cloud Authentication and On-Boarding Key Provisioning Support minimum TLS1.2 cryptography Secure Boot LoRa™ Security
Crypto Algorithms	NIST SHA256; ECC P256	NIST SHA256; ECC P256, AES
Non Volatile Memory	8.5 Kbits	8.5 Kbits
I/O Interface	I ² C, Single Wire	I ² C, Single Wire
Packages	UDFN8, SOIC8, SOT23-3 Package and pin to pin compatible	UDFN8, SOIC8, SOT23-3 Package and pin to pin compatible
Availability	Production	Production

Allow security for small microcontrollers

Addition of AES accelerator

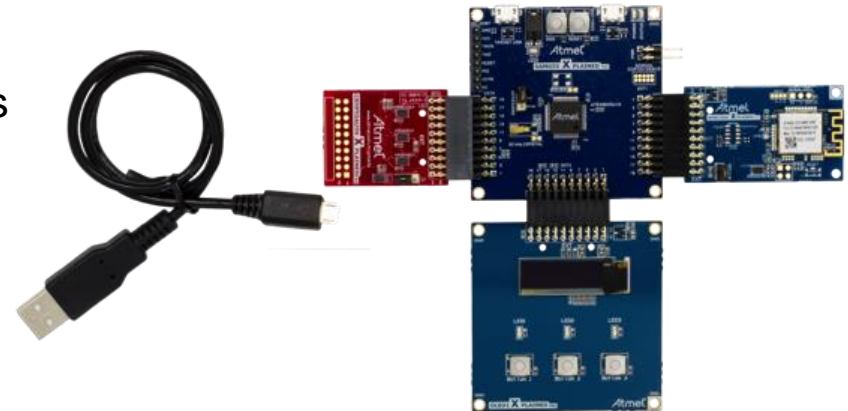
IoT Layered Security Solutions



Offering Best-in-Class Security for IoT Edge Nodes

Reference design

- ARM® Cortex®-M4 microcontroller
- ATWINC1500 Wi-Fi® connectivity with TLS stack
- ATECC508A pre-configured for AWS IoT
- I/O module
- Root CA & Intermediate CA demo dongles
- FreeRTOS
- MQTT client
- JSON library
- Example application with 6 I/Os
- CryptoAuthLib



Kit is available here:

www.microchipdirect.com/product/search/all/at88ckecc-aws-xstk-b



Afero Modulo-2™ Powered by Afero Cloud™ (AFERO-MOD2-XPRO)

Flexible Solution

- Xplained form factor
- Modular hardware configuration

Software

- TLS1.2
- CryptoAuthLib library
- Atmel Studio 7

Included with Kit

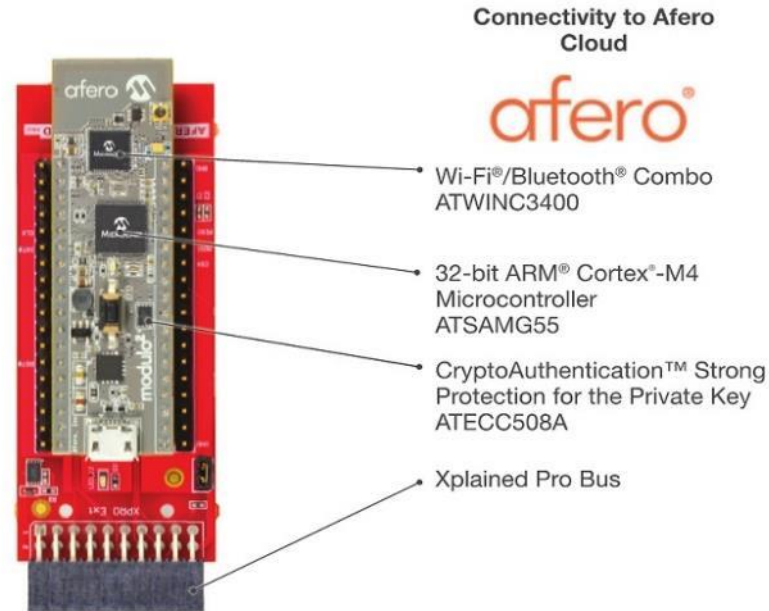
- USB cable
- Adapter board for Xplained Pro

Recommended Accessories Not Included:

- SAMD21 Xplained Pro Board (ATSAMD21-XPRO)
- mikroBUS™ adapter (ATMBUSADAPTER)
- MikroElektronika sensor shields

Afero Cloud

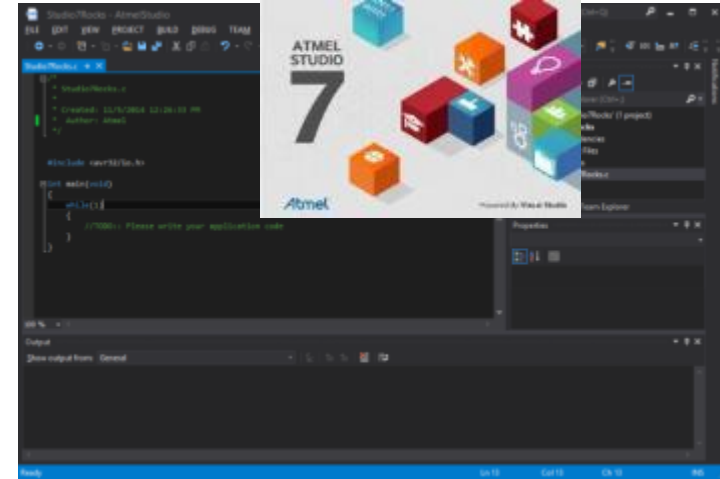
- Hardened edge-to-cloud security
- Easy device on-boarding
- Powerful OTA update management
- Tools and code for prototyping through production



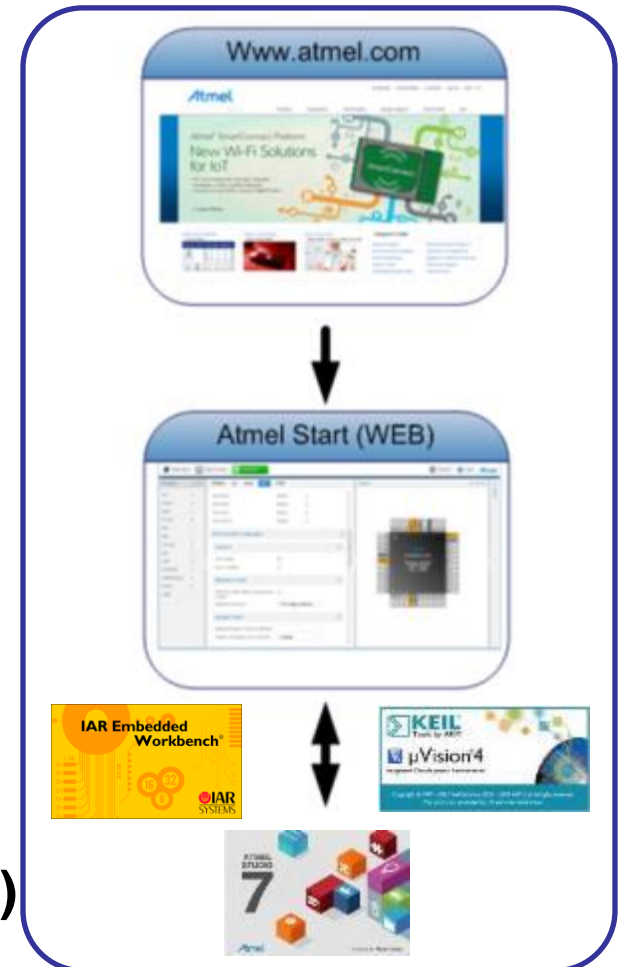
- Simple smartphone set-up & easy consumer provisioning
- Quick path to production
- Hardened edge-to-cloud security with a great user experience

Focus on performance & ease of use

- **Latest visual studio isolated shell**
 - Significantly improve IDE responsiveness and startup times
 - Modern user interface with improved editing and source code control features
 - Basic and advanced "skin" modes
- **Modularize installer to reduce size**
 - Goal is to reduce installer size by approx 50%. Download features on demand
 - Streamlining of IDE, Increase Ease-of-Use for 8-bit users
- **Arduino project import**
 - Ability to import Arduino sketches as C++ projects, creating a migration path for users that wish to go pro.
- **MCU support in Studio**
 - All project examples available for WINC1500/SAMW25
- **MPU support in Studio**
 - Support for SAMA5 devices (non MMU mode) will be added to Studio, as well as to the Atmel-ICE probe.
- **Higher performance and easier to use, especially for 8-bit users**
- **Realize the "Maker to Market" story**



- **Explore and configure software & devices**
 - Large repository of products
 - Supporting device drivers & software components
 - Select from Atmel, third party and open community software components
- **Visual software and device configuration**
 - Device pin mux & system clock
 - Peripheral software configuration
 - Middleware & example software configuration
 - Code generation & delivery
- **No installation – Web-based, central part of Atmel Open Development Platform**
- **Software package delivery to any Integrated Development Environment (IDE)**



What Makes Our Solutions Different... and Successful



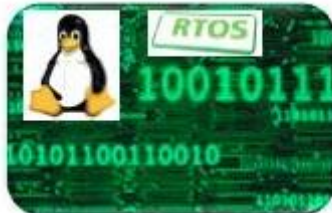
Robustness



Turn Key Solutions



Certified



Software



Full Documentation



Standards and Alliances



Scalability



IoT Security



Local Support



Thank You!

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