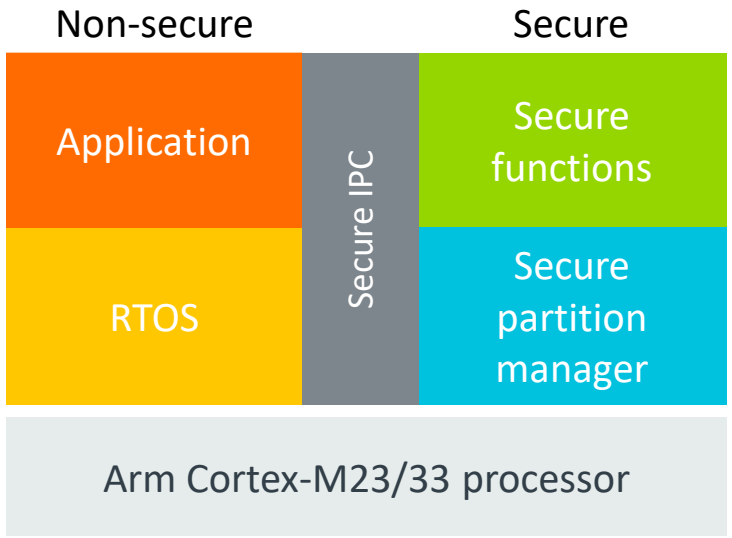
Secure, Optimized Software

For battery-powered applications

Solutions for IoT end-node software development challenges

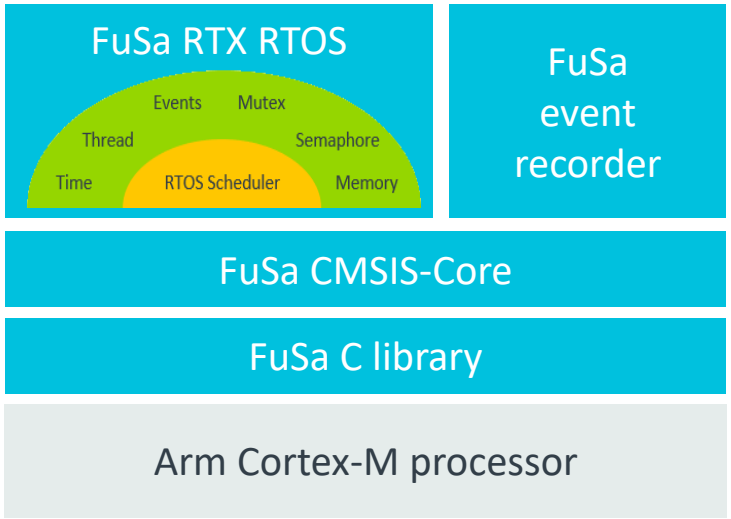
Security

TF-M: Trusted firmware implements Arm PSA for Armv8-M



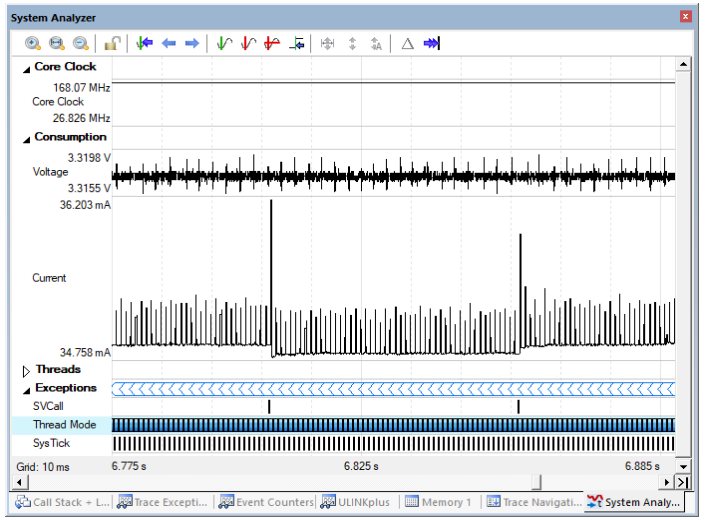
Safety

FuSA RTS: Run-time system certified for functional safety

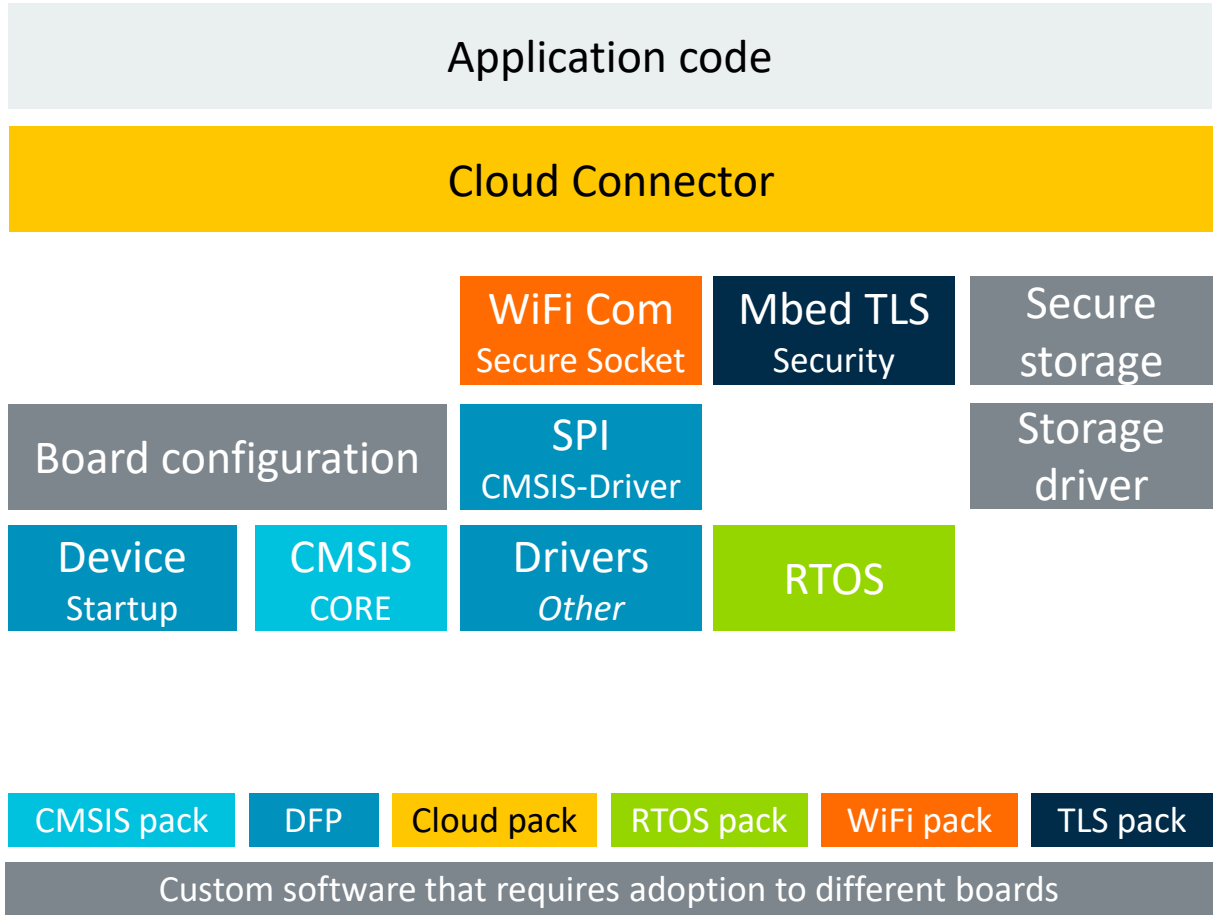


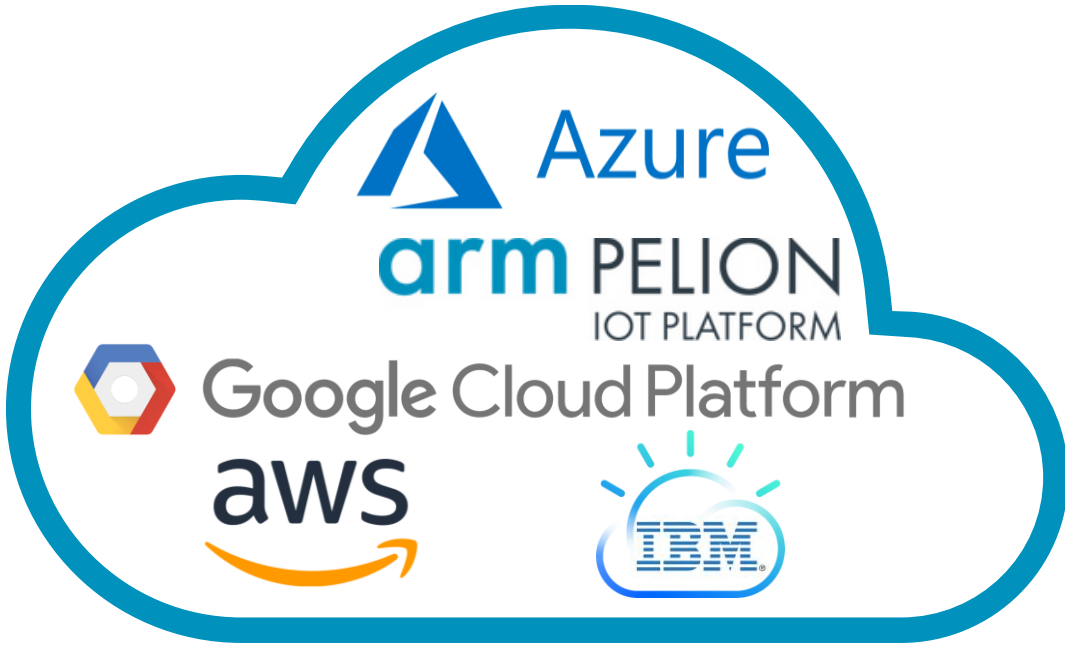
Power consumption

ULINKplus: Debug & power analysis synchronized with program events



Cloud connectivity stack on Cortex-M4 (no PSA/TF-M)

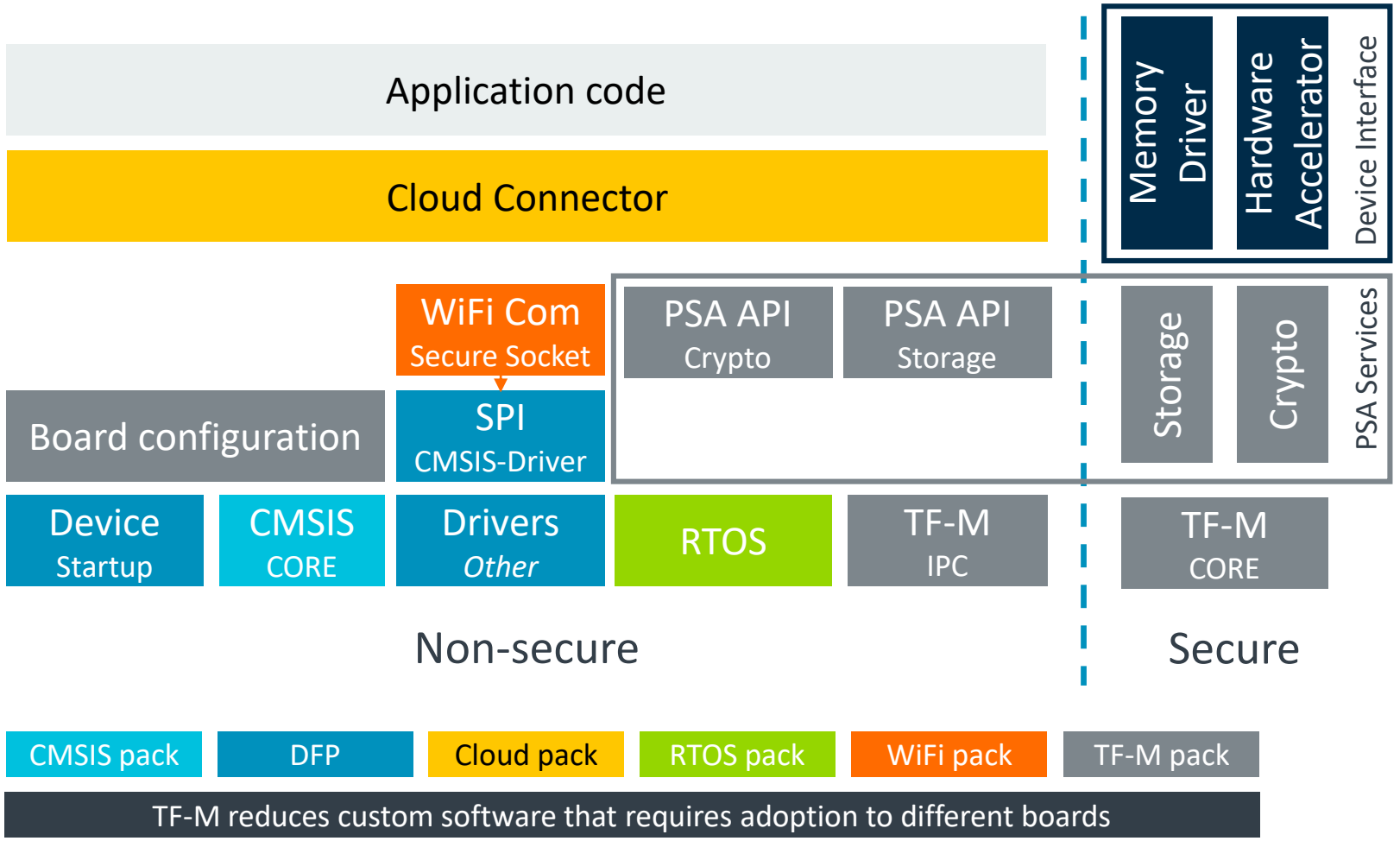




www.keil.com/iot

arm

Cloud connectivity stack on Cortex-M33 with PSA/TF-M

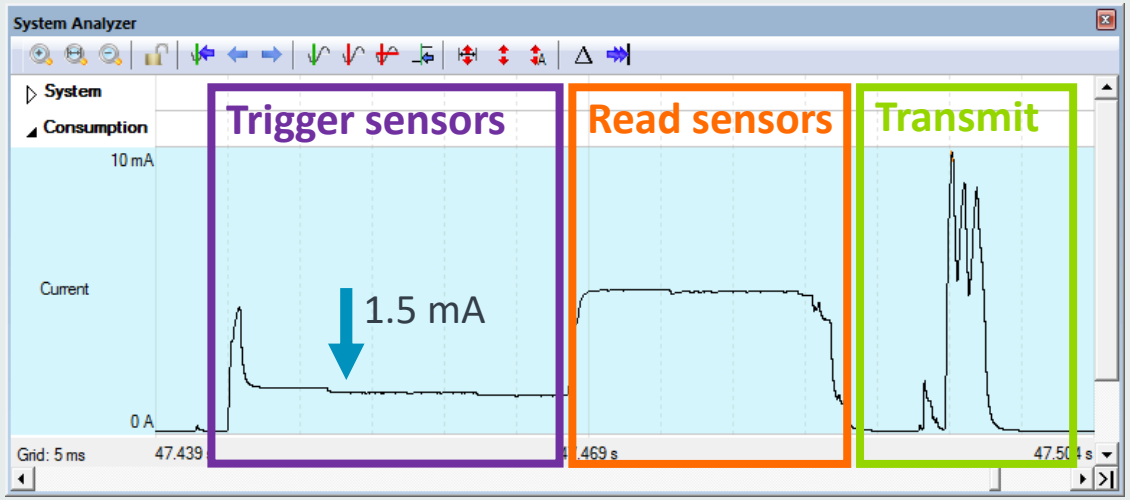


- Ads security for low-cost IoT devices
- Uses TrustZone to protect sensitive assets (credentials, keys, and firmware)
- Enables crypto services
- Software building blocks adopted to devices
- Trusted Firmware for Cortex-M (TF-M) is open-source: www.trustedfirmware.org

arm

Power use: analyzing and optimizing IoT sensor interface

original



Problems identified using ULINKplus:

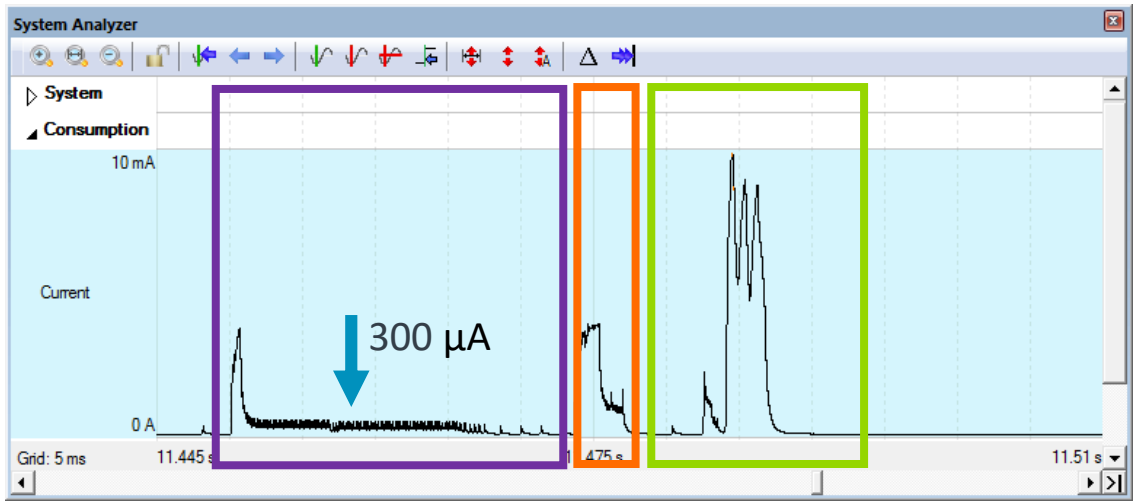
Trigger sensors for measurement

- Current: 300 µA expected, 1.5 mA measured
- Caused by additional I²C command

Read sensors in polling mode

- Read time: 3 ms expected, 19 ms measured
- Caused by polling and additional I²C command

optimized



Results after optimization

- Triggering sensors works with lower current
- Read sensors is faster (less MCU activity)

Overall 75% less energy consumed

arm

Analysis for software components

Check run-time status and dynamic software behavior

- Status information
- Dynamic operation with timing
- For every Arm Cortex-M
- Preconfigured for MDK-Middleware, Keil RTX5, and FreeRTOS
- Easy to add to custom components