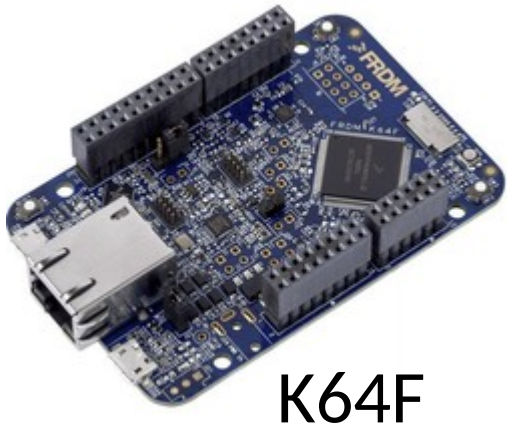
Firmware Updates for Internet of Things Devices (SUIT)

Hackathon @ IETF#101

Hackathon Group

Our Goal

- **Input to the recently formed SUIT WG**
- Creating signed manifest
  - Encoded in CBOR
  - COSE signed with ECDSA.
- Manifest & firmware transport to IoT board via UART.
- Bootloader verifies received manifest and installs new firmware.



K64F

Firmware + Manifest

Via UART

Who participated?

- Markus Gueller (Infineon) *
- Max Groening (Texas Instruments) *
- Hannes Tschofenig (Arm)
- Brendan Moran (Arm) – remote *
- Jaime Jiménez (Ericsson)
- Alexander Pelov (Acklio)

*: New participants

What was accomplished?

- Got development environments working (online IDE, desktop IDE, CLI) on different OSs.
- Running code:
  - Code for manifest generation (in Python) working.
  - Pseudo-bootloader running on IoT board
  - UART communication to load firmware working
- Keys and example manifests created.
- Code for manifest verification (C) in progress.
- LoRa-based firmware update in progress.
- Walkthrough on Etherpad and formatted version.

Lessons Learned

- Low level IoT development is hard:
  - Setup of development environment & Python took some time.
  - UART communication setup
  - Debugging is more complex
- COSE C library was difficult to use for embedded environment.
  - We needed a C implementation that uses the embedded crypto (instead of OpenSSL).
- Basic manifest functionality worked fine.