Mbed OS の 最新状況と展望

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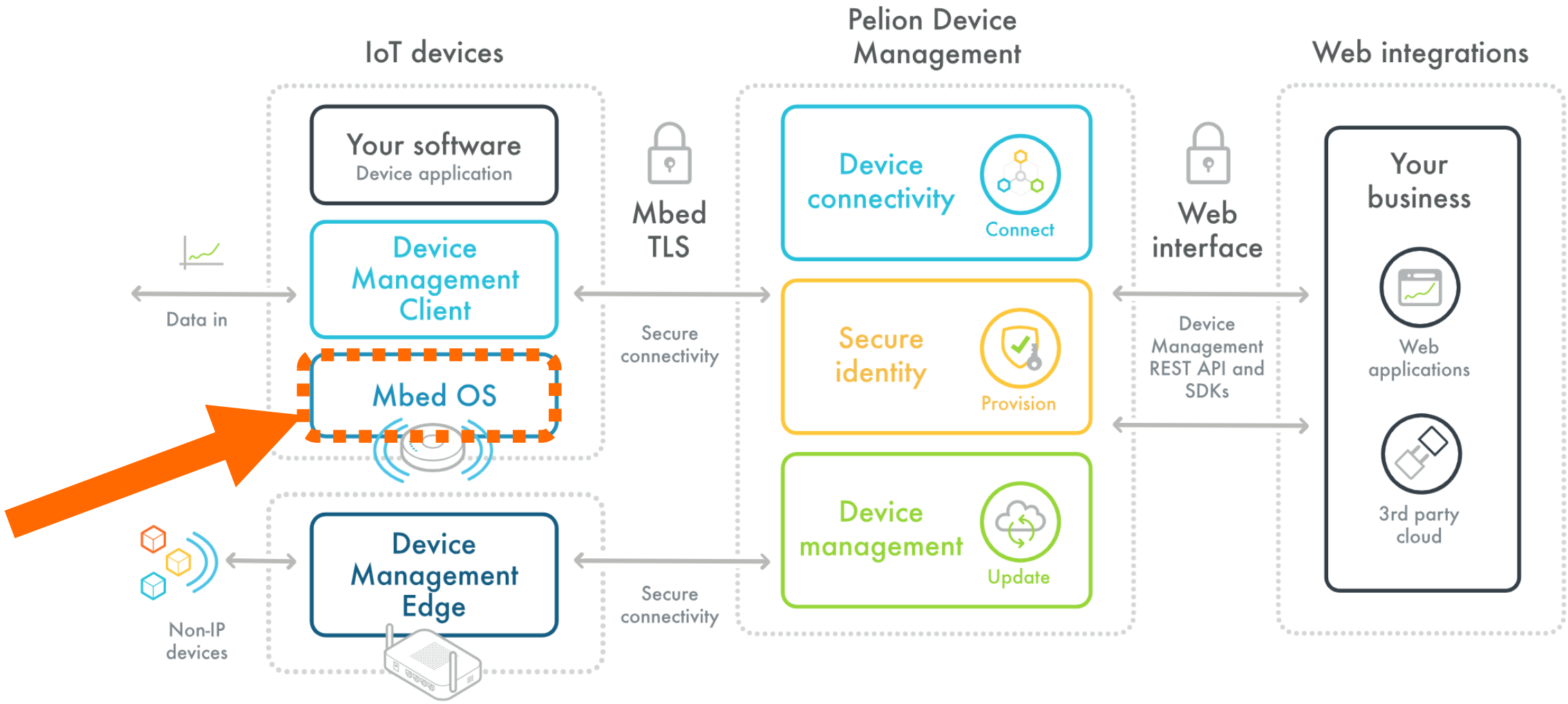
Arm

#Arm The Symposia

Mbed OS?



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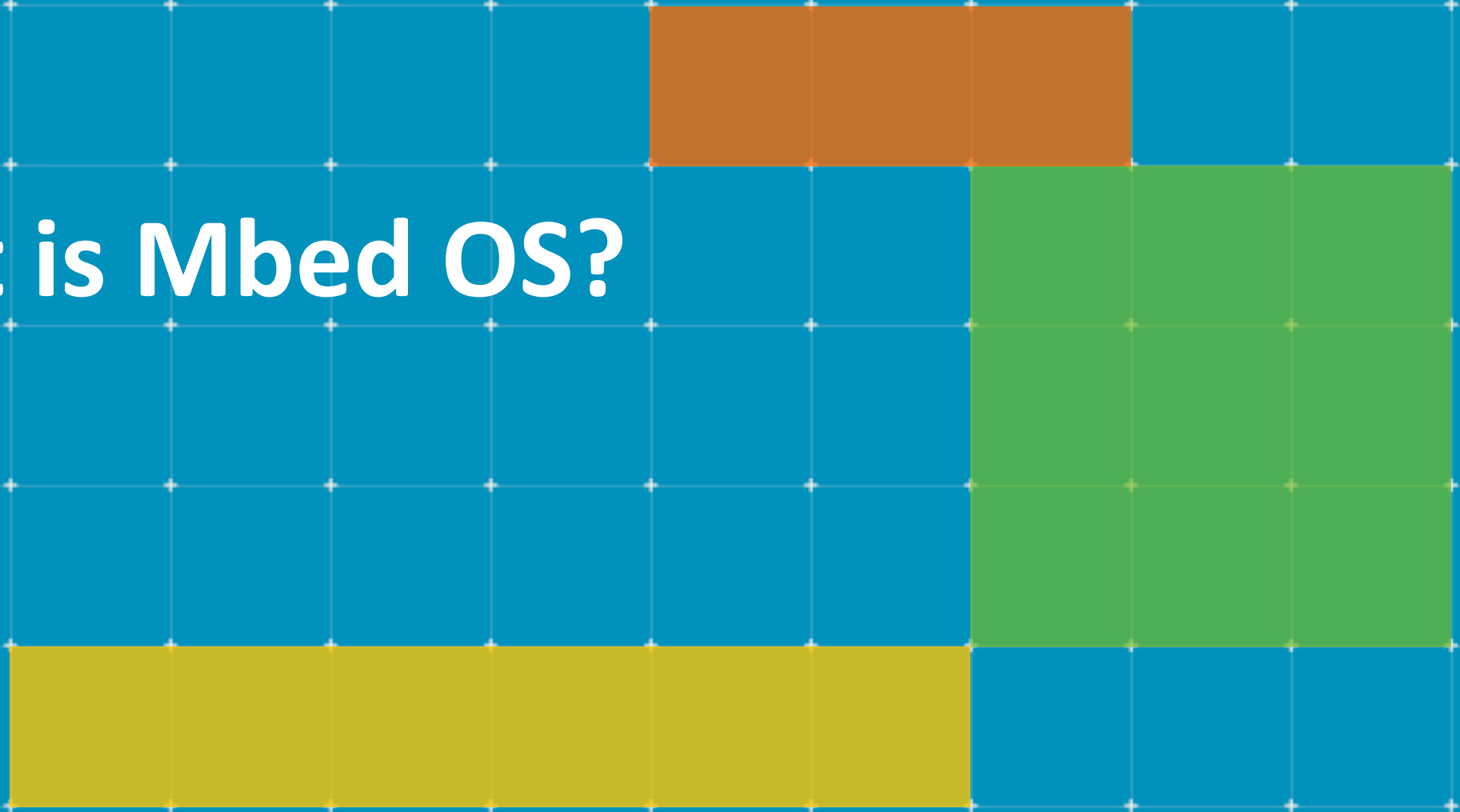
What is Mbed OS?



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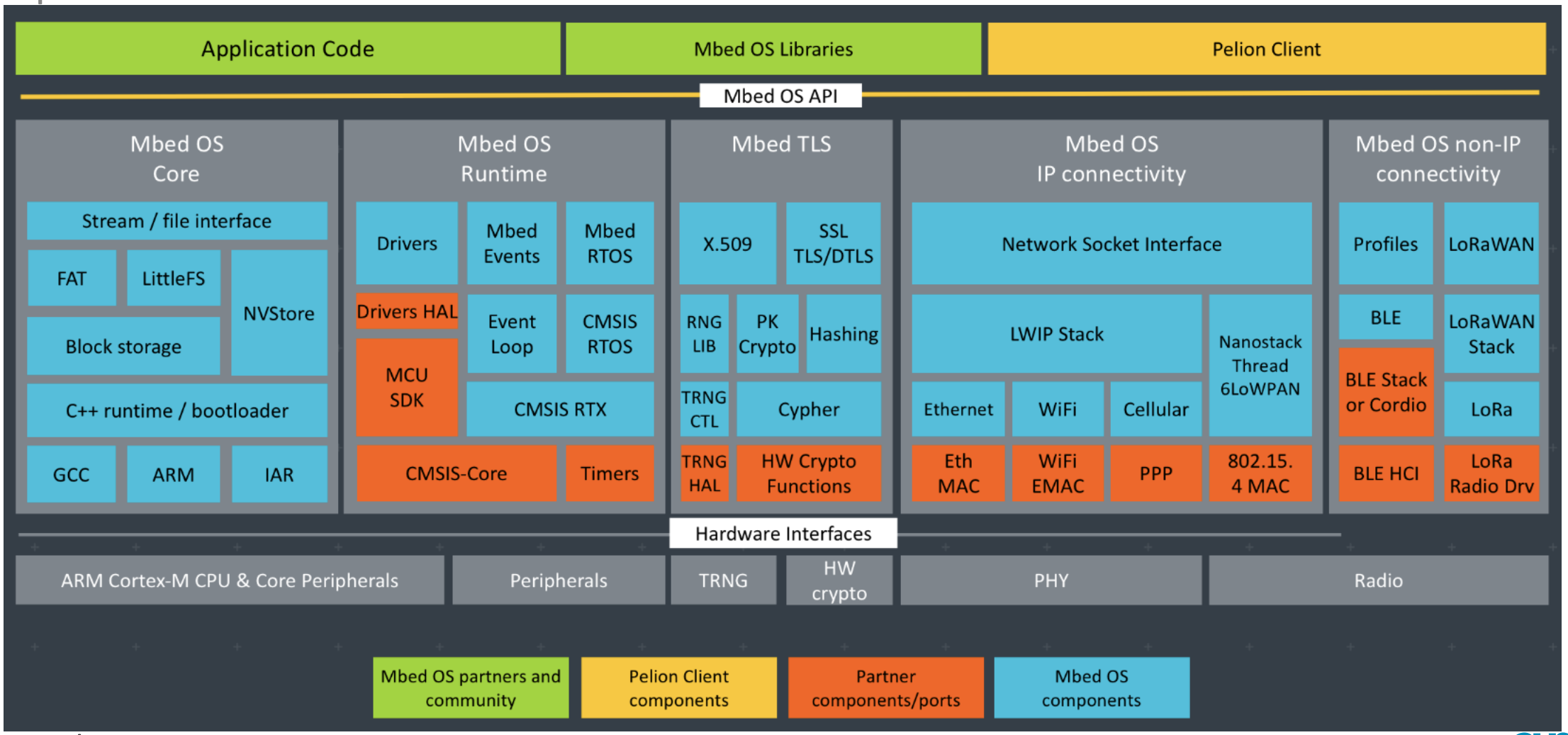
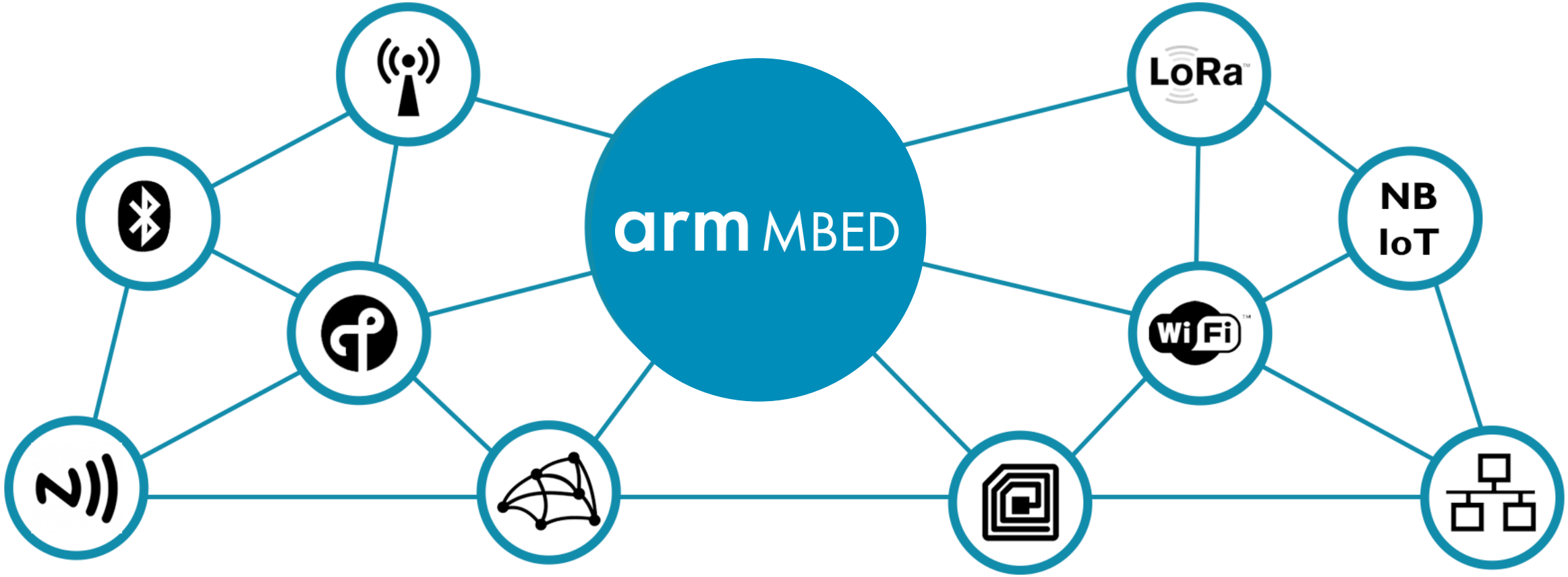
What is Mbed OS?

Components



What is Mbed OS?

Connectivity



What is Mbed OS?

Security

Partition Management

Separate partitions communicating through limited secure channels

Good for information hiding

Good for damage control

Crypto Features

All crypto hardware is abstracted

Guarantee that crypto hardware is automatically used where present

All crypto functions are easily accessible for developers

Transport Layer Security

Protect data in transit: authentication, integrity, confidentiality

Use TLS, a battle-tested protocol for secure communication

Library is lightweight, modular, and documented

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What is Mbed OS?

Tools

Free core tools provide compilation, test and collaboration workflows.

3rd party partner industry tools support.

Active Developer Website: os.mbed.com

Mbed OS IDEs and toolchains

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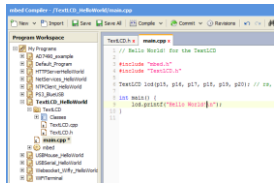
IAR SYSTEMS

GCC

Mbed OS core tools

Mbed CLI
Command Line Interface



Mbed Compiler
Free Online IDE

Mbed Greentea
Porting Testsuite and CI

Mbed pyOCD
CMSIS-DAP Debug Library

Mbed DAPLink
CMSIS-DAP Debug Firmware

Mbed OS DVCS support

git

mercurial

GitHub

Atlassian Bitbucket

GitLab

os.mbed.com/code

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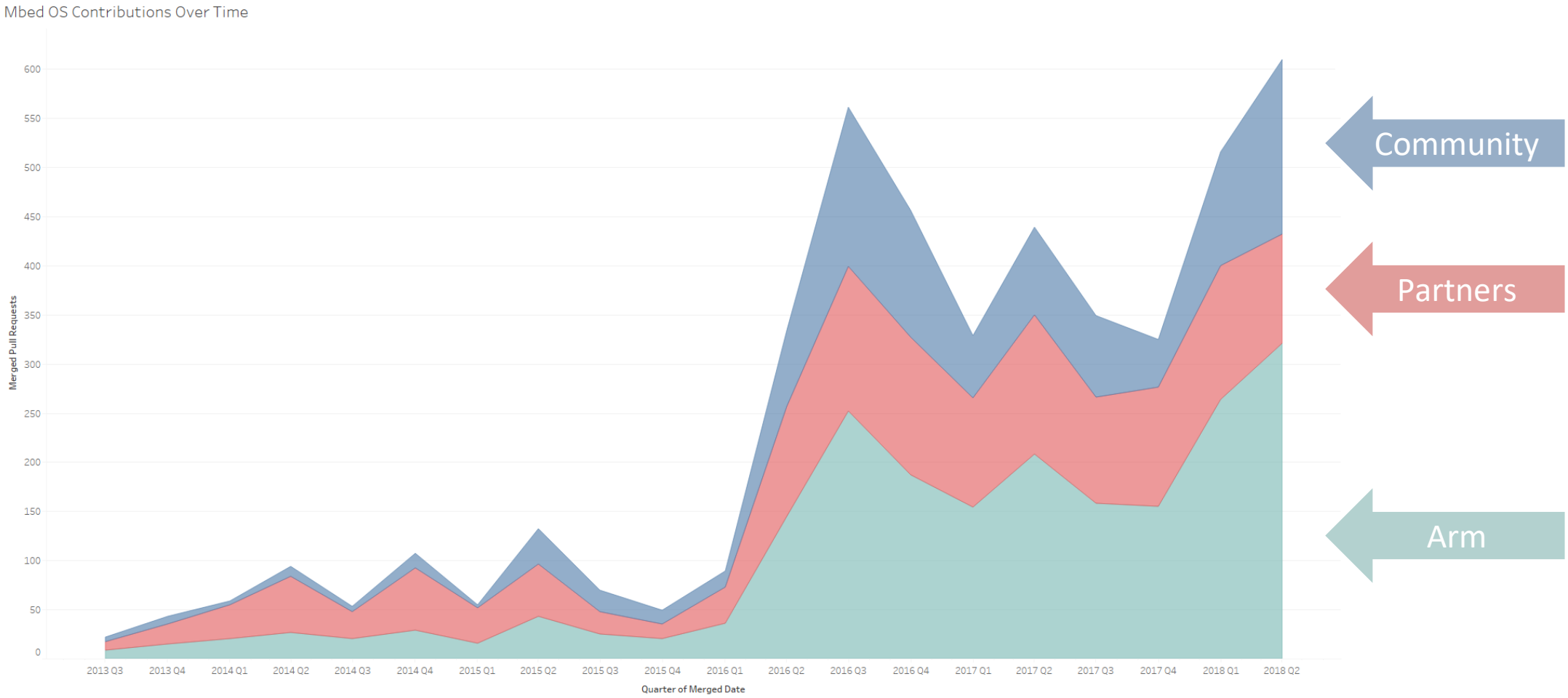
Who is Mbed OS?



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How did we get here?

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Mbed OS releases

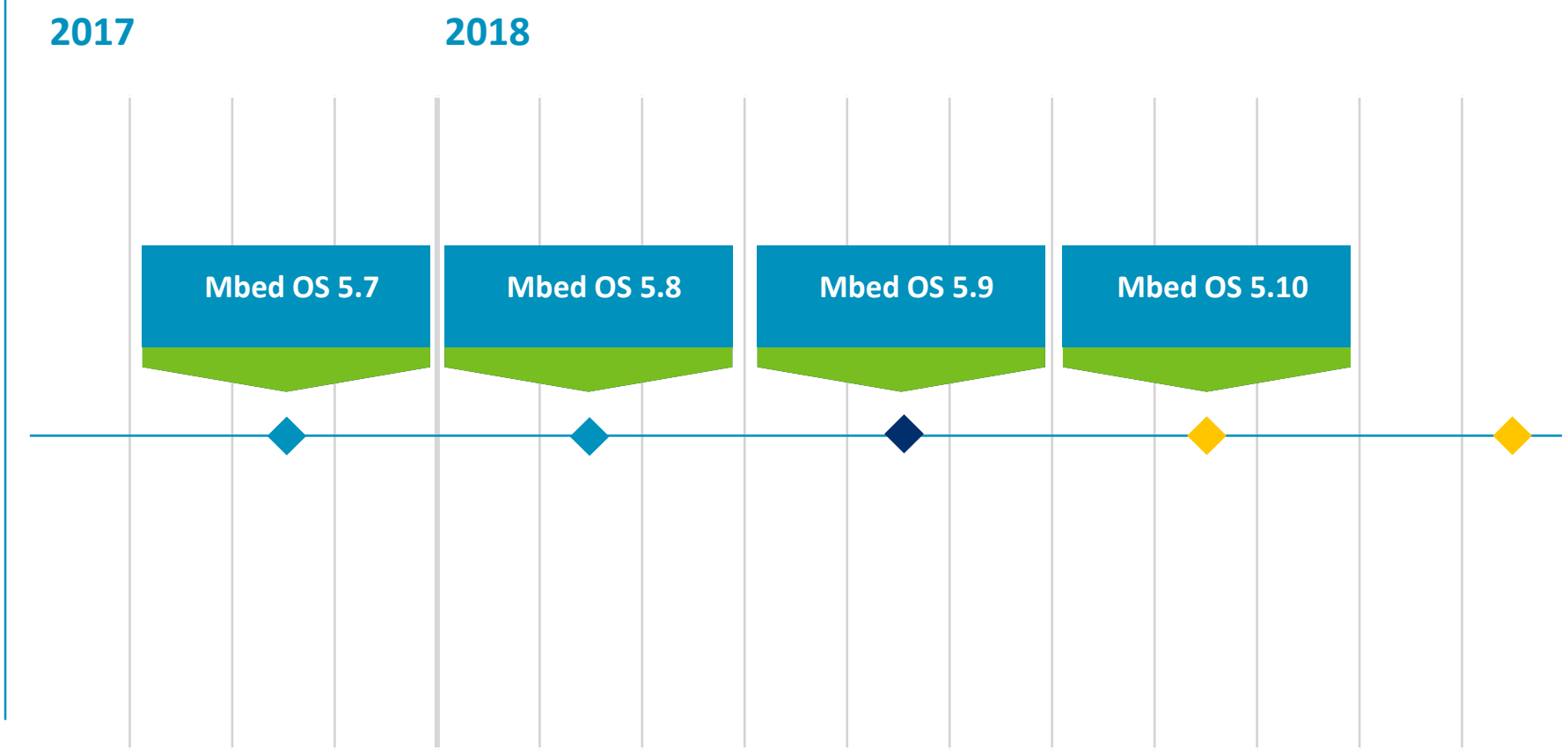
A regular release train for effectively supporting developers and partners

Feature Releases

- Bringing new and enhanced features **every 3 months**

Patch Releases

- Adding new partner target support and delivering bug fixes **every 2 weeks**



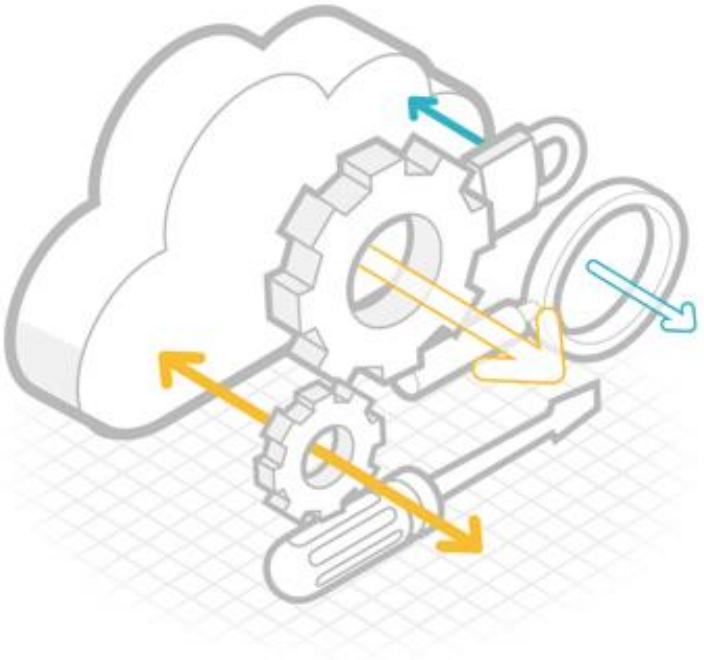
Mbed OS 5.7

Headline features

LittleFS

Mesh networking stack

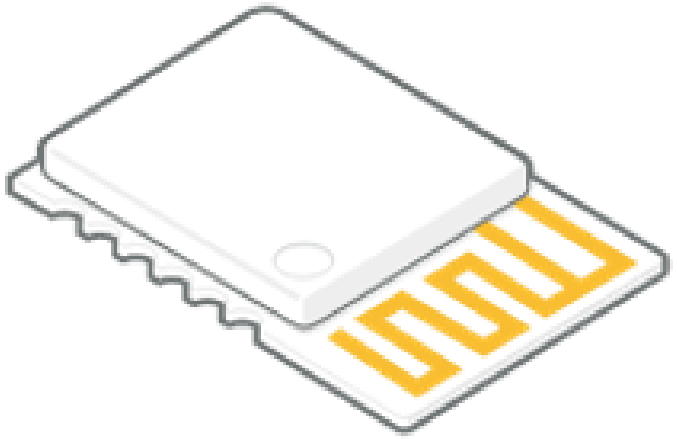
Cortex-A support



Mbed OS 5.8

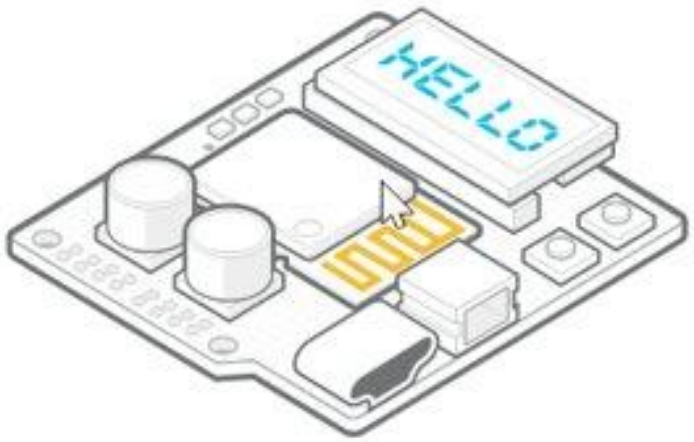
Headline features

Mbed Enabled modules



NB-IoT and CAT-M1

Debug features



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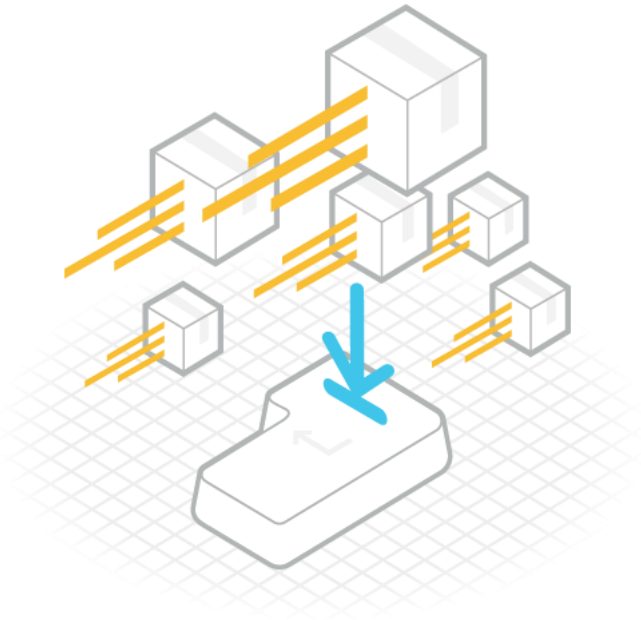
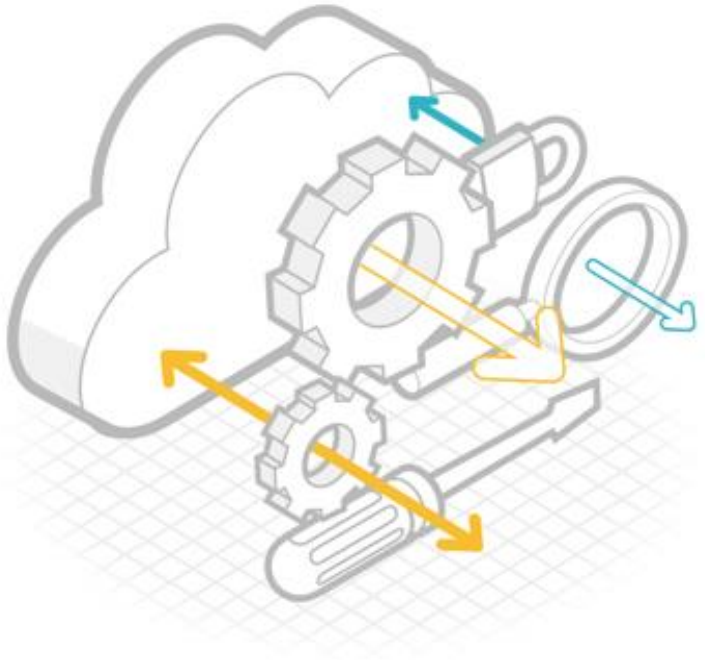
Mbed OS 5.9

Headline features

Device statistics



Updates to HAL

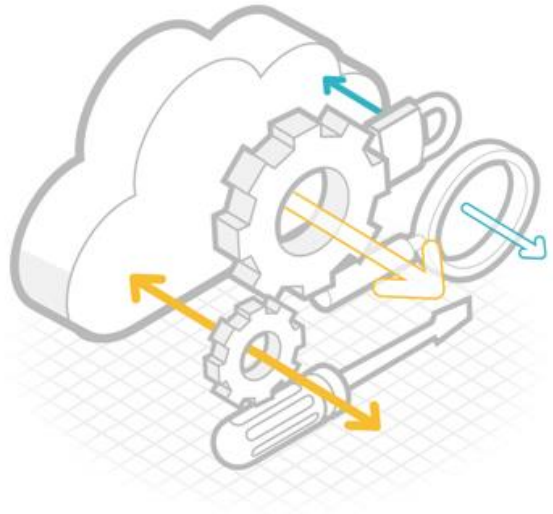


Ethernet MAC API

Mbed OS 5.10

Headline features

ARMv8-M



NFC

Arm Mbed Cordio BLE stack

Progress

Quality and maturity

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Continuous integration

Tests

Mbed OS 5.6

~500 functional tests

System tests

Mbed OS 5.10

~1150 functional tests

System tests

Host unit tests

Fast model

More than 100,000 tests cases run per day

Farm of over 800 devices

~40,000 hours of testing for Mbed OS 5.10 release

Documentation

Changes during the past year

Added 51 new API references

Architecture background on 7 networking technologies

Extended porting guide

Improvements after UX user study:

- Quadrupled success rate in finding information
- Halved the time to find information
- Reduced the number of clicks by 30%
- Raised positive feedback on our documentation from 48% to 82%

Plans for the future

Adding tutorials requested by the community, including end-to-end tutorials that cover the Arm ecosystem

Improve porting content

Updating and standardizing our examples, including our quick start guide

Continued improvements across the content

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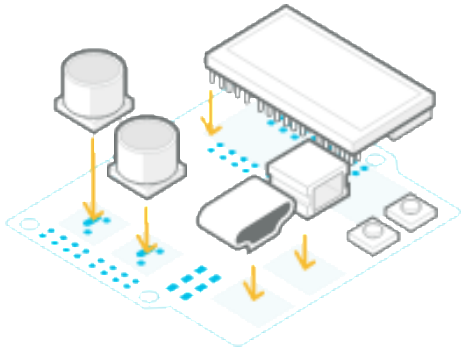
Hardware abstraction layer specifications

Improvements

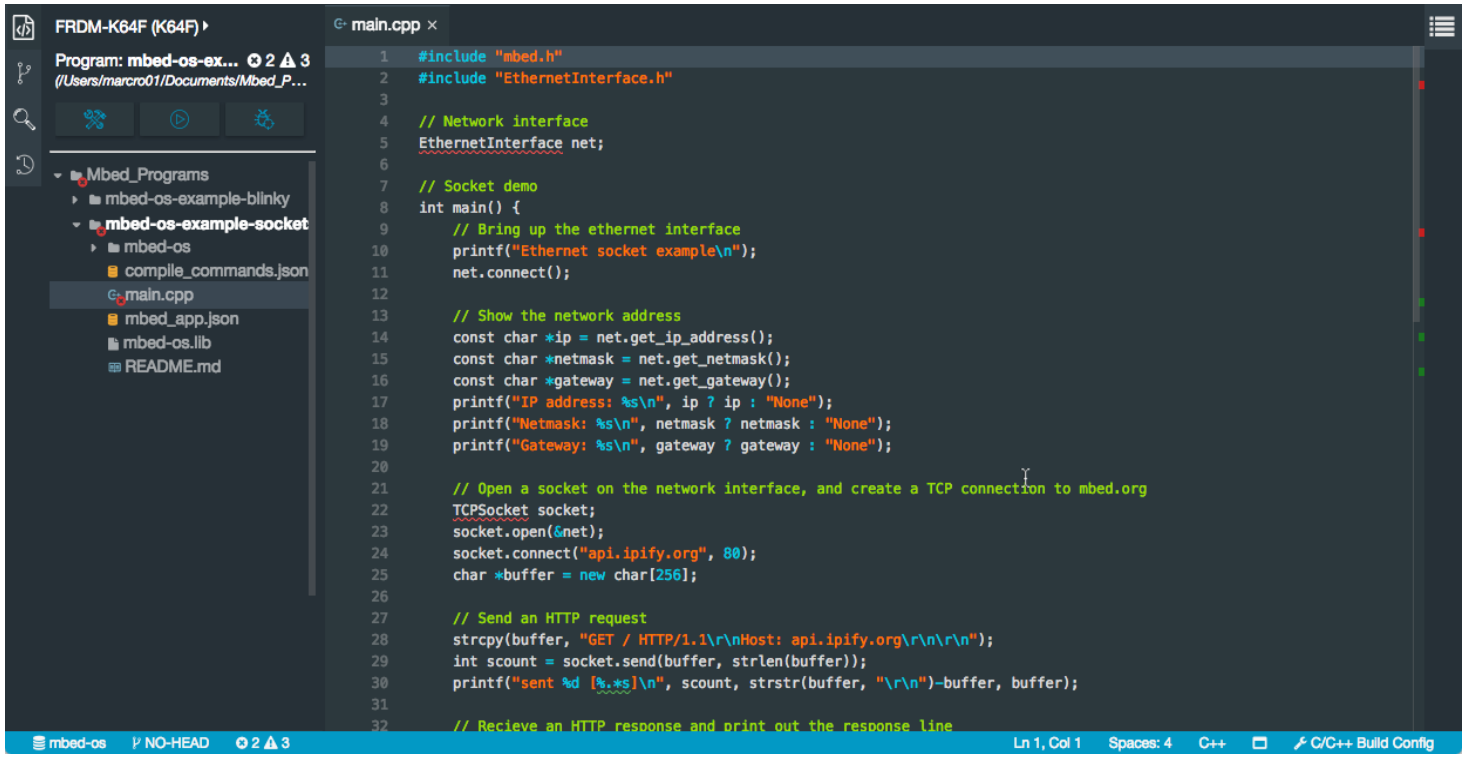


Porting guide → Specification → API → Implementation → Tests

Mbed Studio

A desktop IDE designed for Mbed OS, suitable for professionals and hobbyists alike.

- ✓ Arm Compiler 6
- ✓ Import Mbed programs from os.mbed.com and GitHub
- ✓ C/C++ code completion and inspection
- ✓ Mbed library management
- ✓ Build, run and debug connected platforms
- ✓ Support for Windows, Linux and Mac OS
- ✓ Updated online IDE based on the same framework



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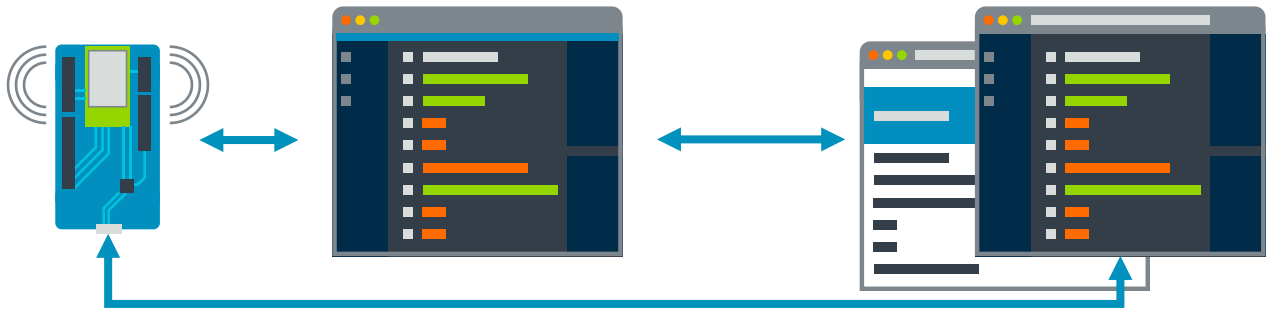
User Experience

5 minute quick start guide

Improvements to end-to-end workflow:

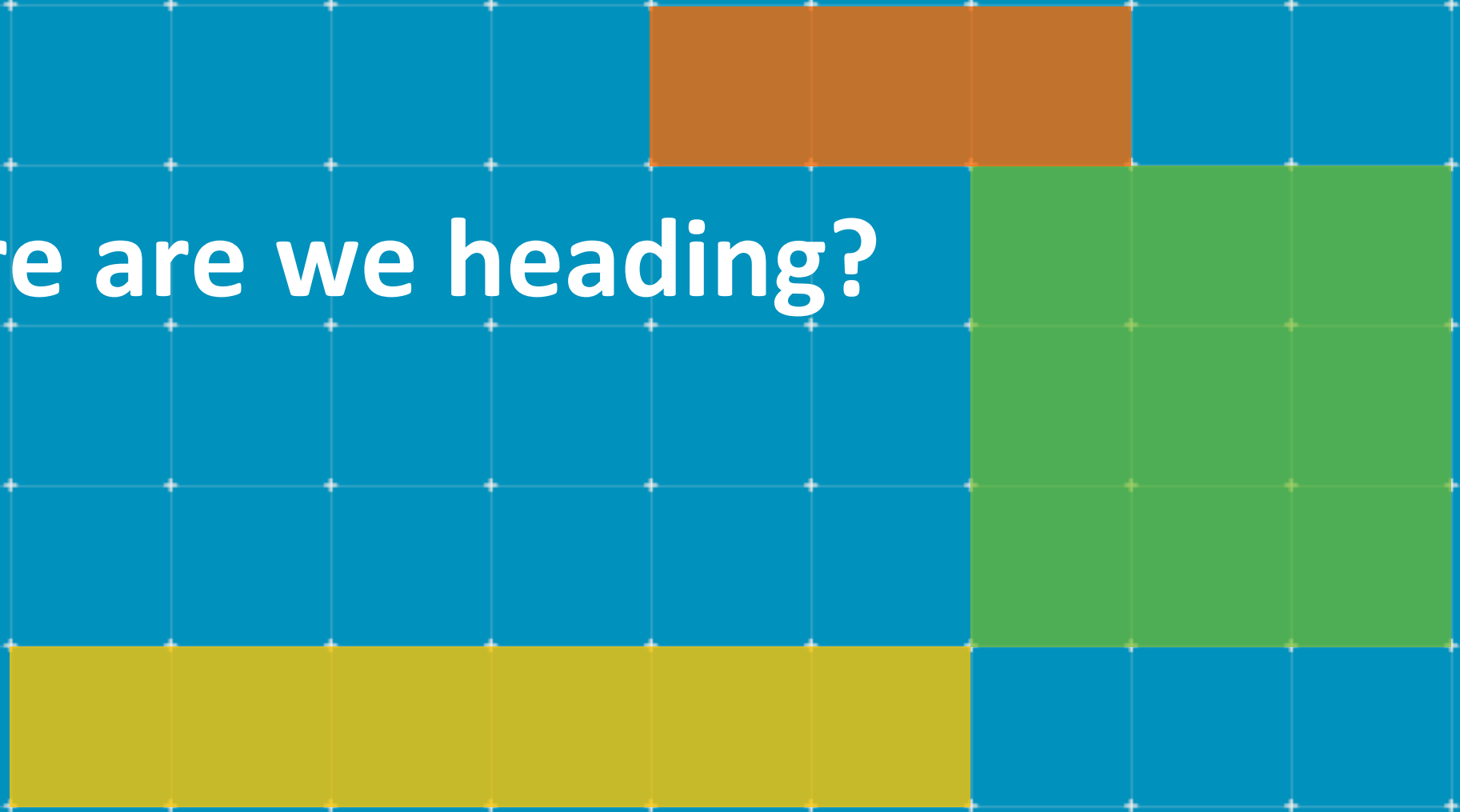
Mbed CLI extended to support:

- Bootloader
- Pelion integration



Offline and Online IDE integration with Pelion

Where are we heading?



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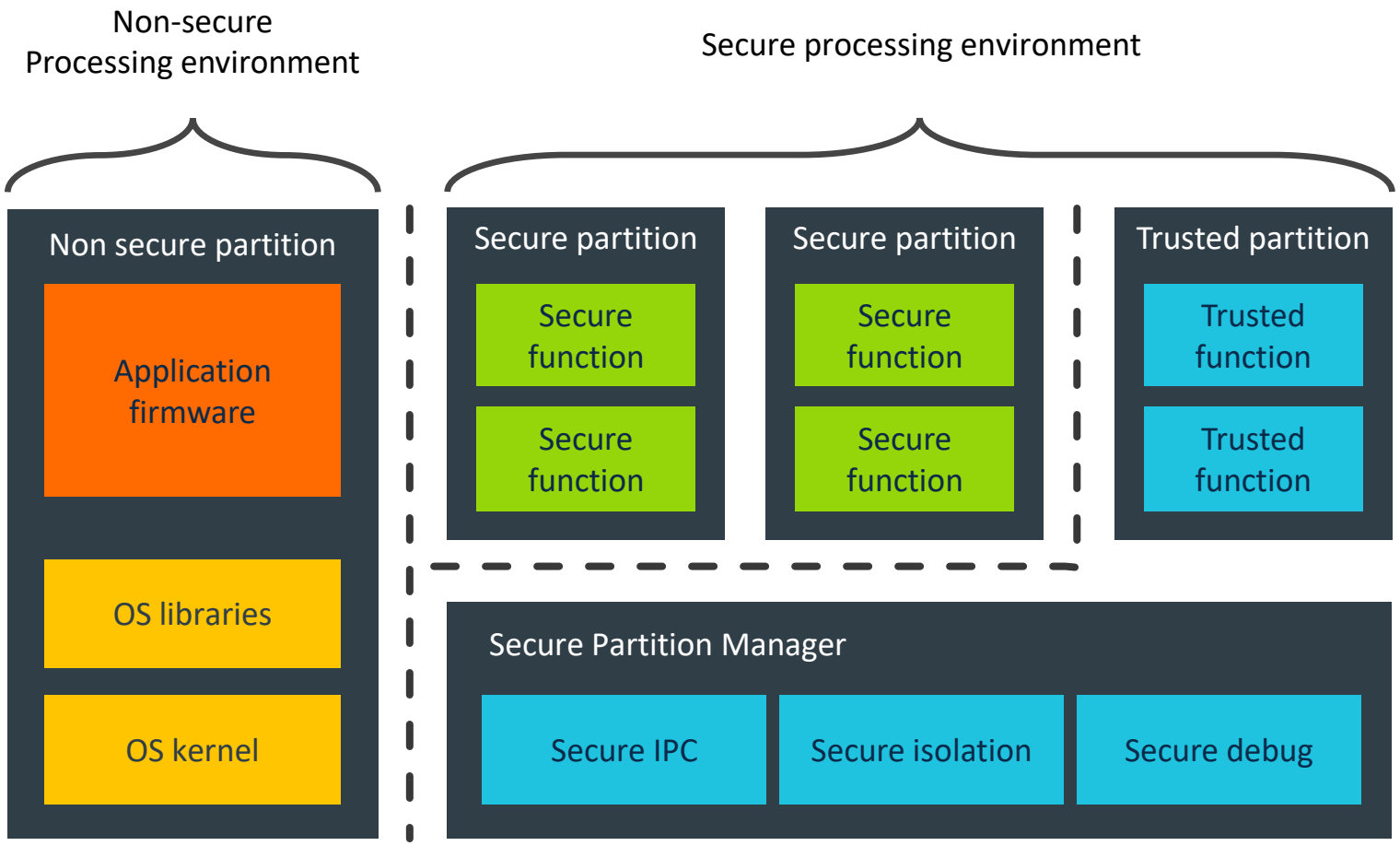
Platform Security Architecture

Features

- Crypto APIs
- Secure storage
- Attestation

Secure Partition Management

- Single-V7M + Secure Element
- Dual-core V7M
- V8M



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Bluetooth Low Energy 5 and Mesh

BLE 5 Mbed APIs

- Improved speed – x 2 times faster
- Improved range – 4 x further
- Extended advertising – 8 x broader

Introduction of Mbed OS Mesh APIs

- Provide BLE Mesh APIs for developers
- Give partners preview of upcoming open source Mesh implementation

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Thank You!

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