



# arm

Mbed Silicon Partner Workshop

## Mbed OS Collaboration and Working Models

Silicon partner workshop

Paris France

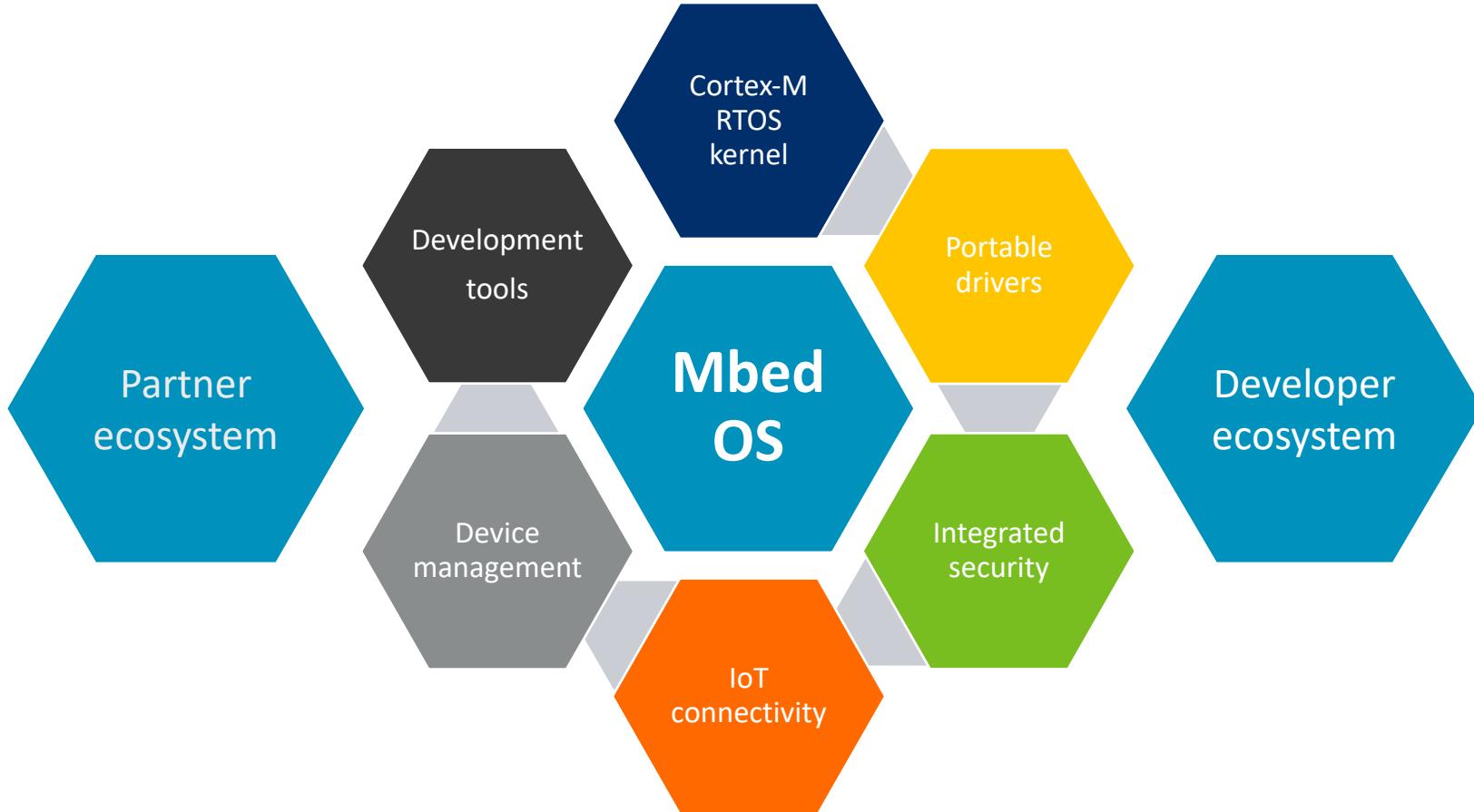
# Agenda

- Mbed OS and ecosystem overview
- Development model
- HAL improvements
- Contribution workflow

# Mbed OS overview

# Mbed OS

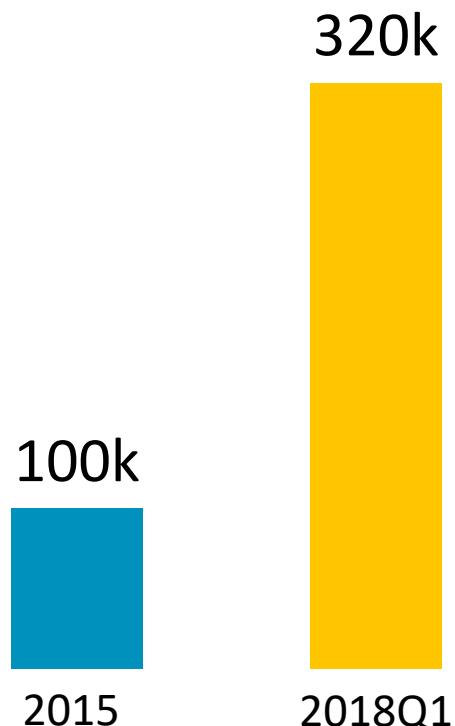
A free, open source Platform OS targeting IoT end node devices



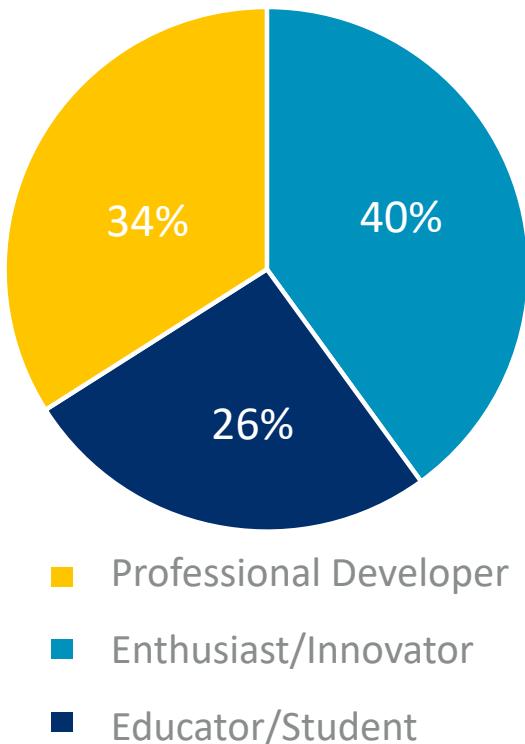
# Developer ecosystem

Growing a powerful channel to IoT product developers

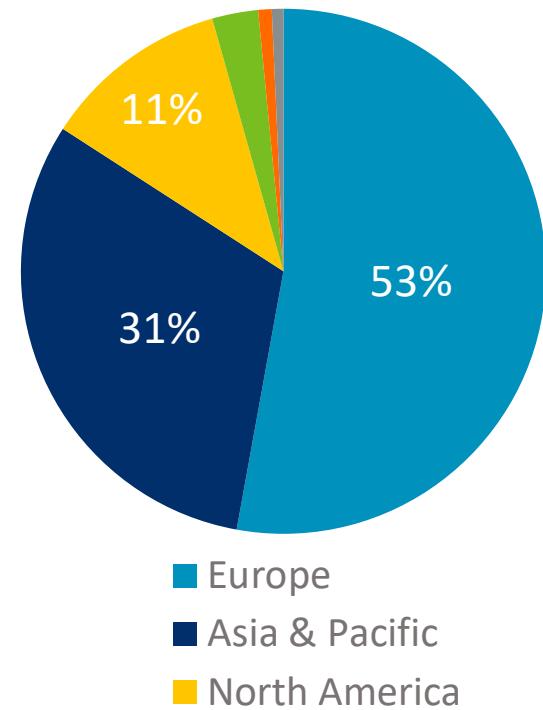
## Accelerating developer ecosystem growth



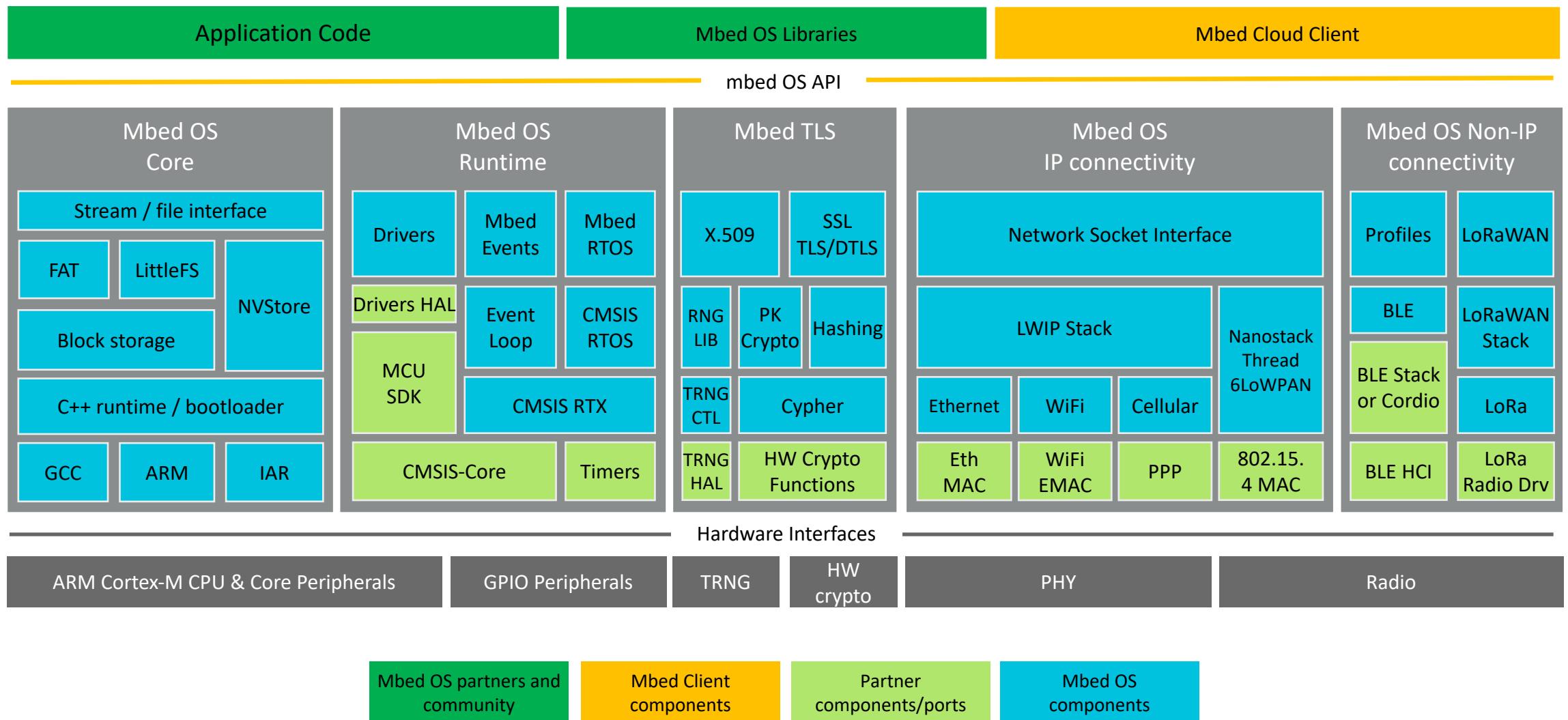
A third of developers are professionals



A global footprint



# Mbed OS architecture components



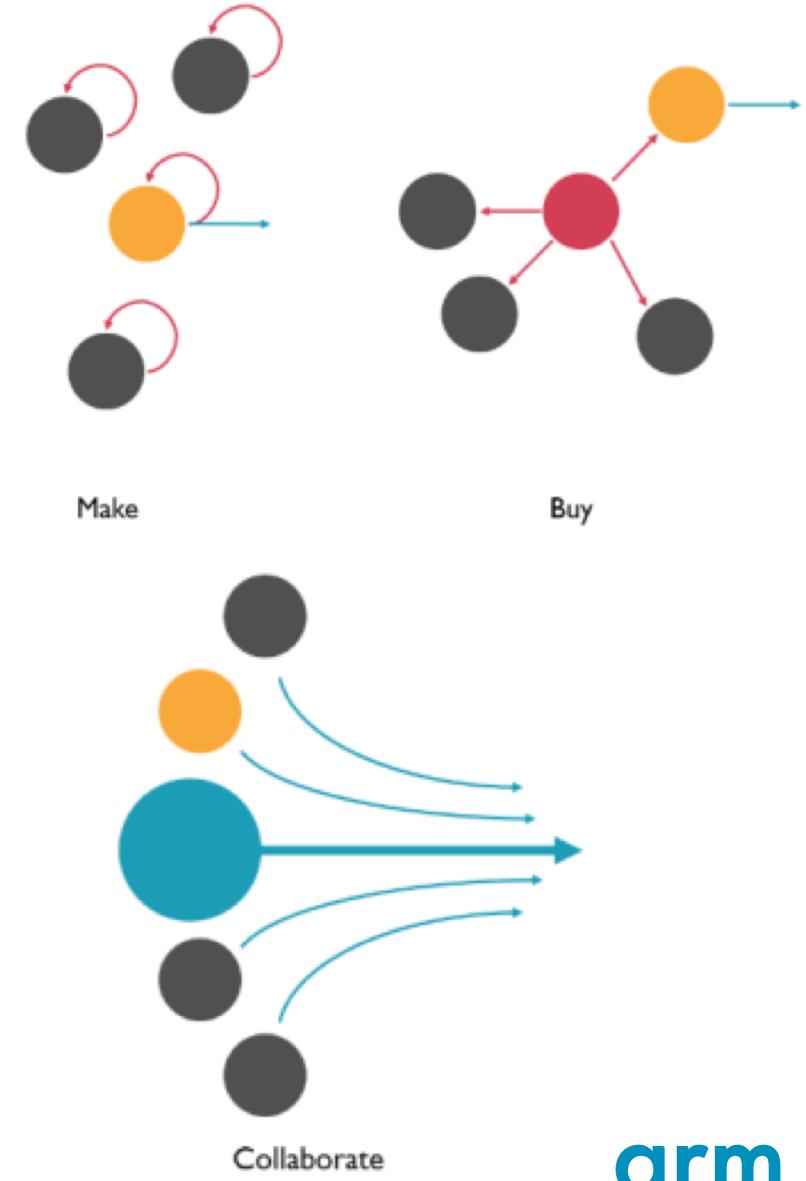
# Development Model

# Development model

Mbed OS is an open source project developed by Arm, Partners, and a worldwide developer community.

Building Mbed OS in collaboration allows:

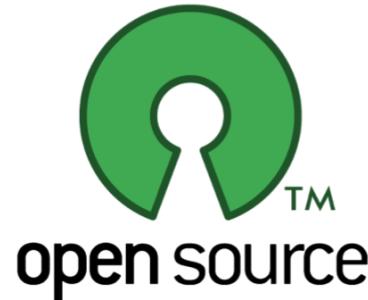
- Increased effect of the effort put into it
- Increased overall developing power
- Increased reach and network effects
- Focus on individual core capabilities



# Progress

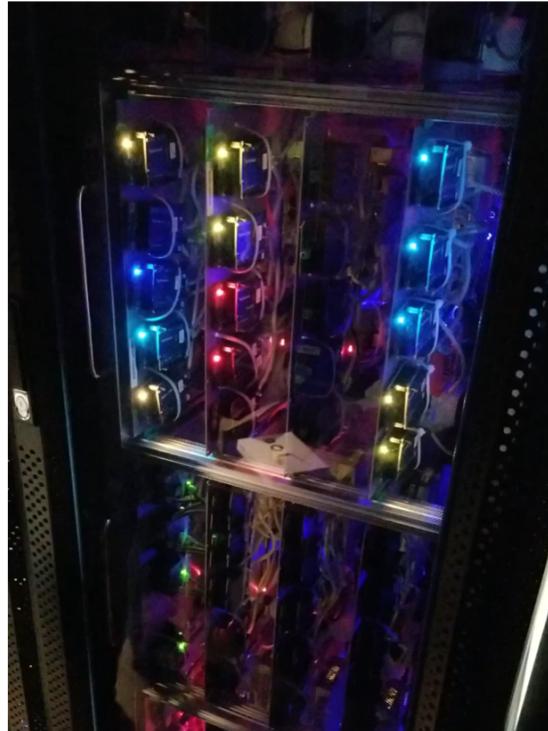
The benefits of open source plus the security of commercial development

## Open source development



Mbed OS code developed publicly on GitHub

## Continuous integration



Automated testing of every enhancement

Every year...

4 Feature releases and 26 Patch releases

100% of releases made on time (+/- 2 days)

4500+ commits

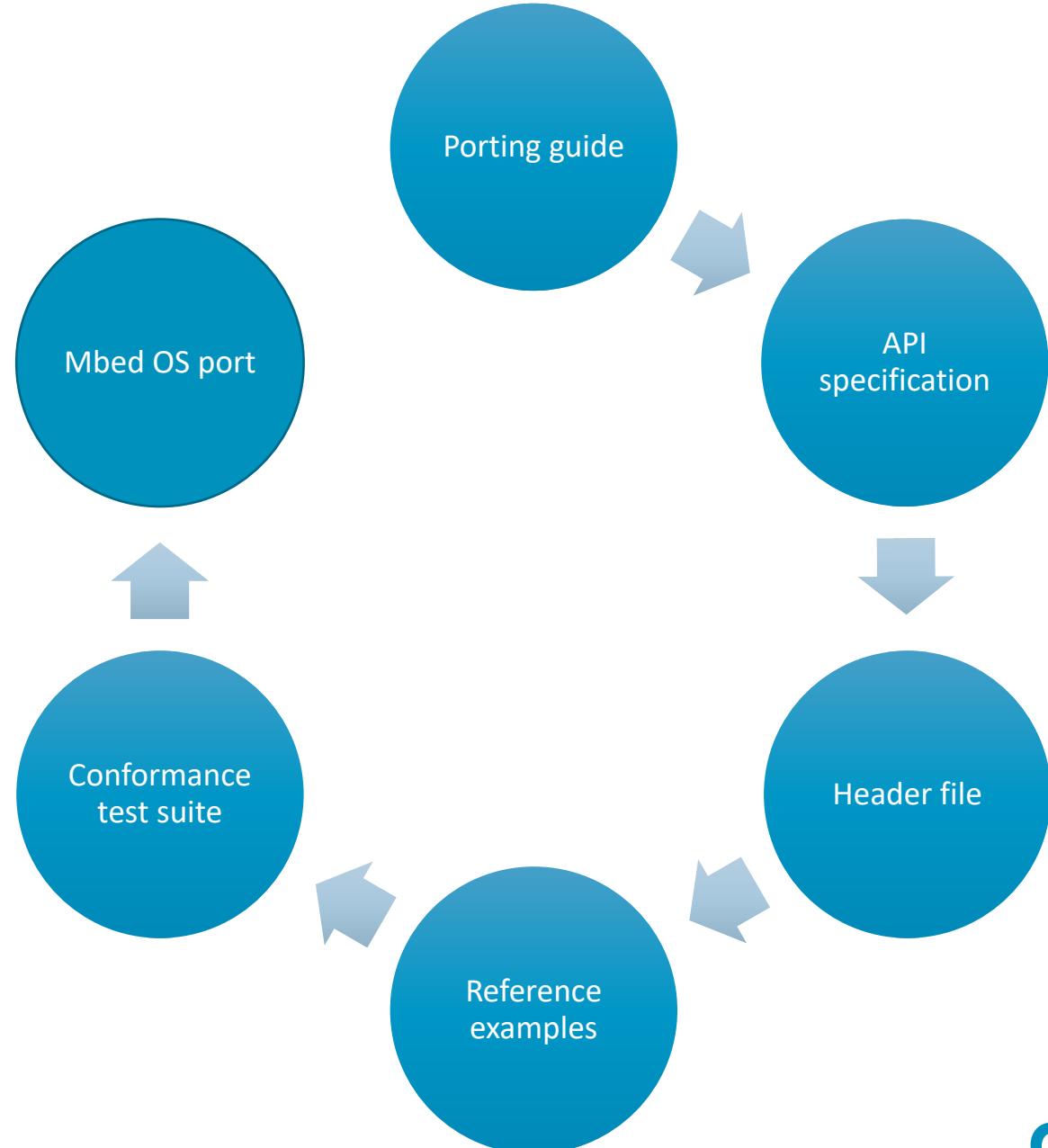
Contributions from 400+ engineers

**arm**

# HAL improvements

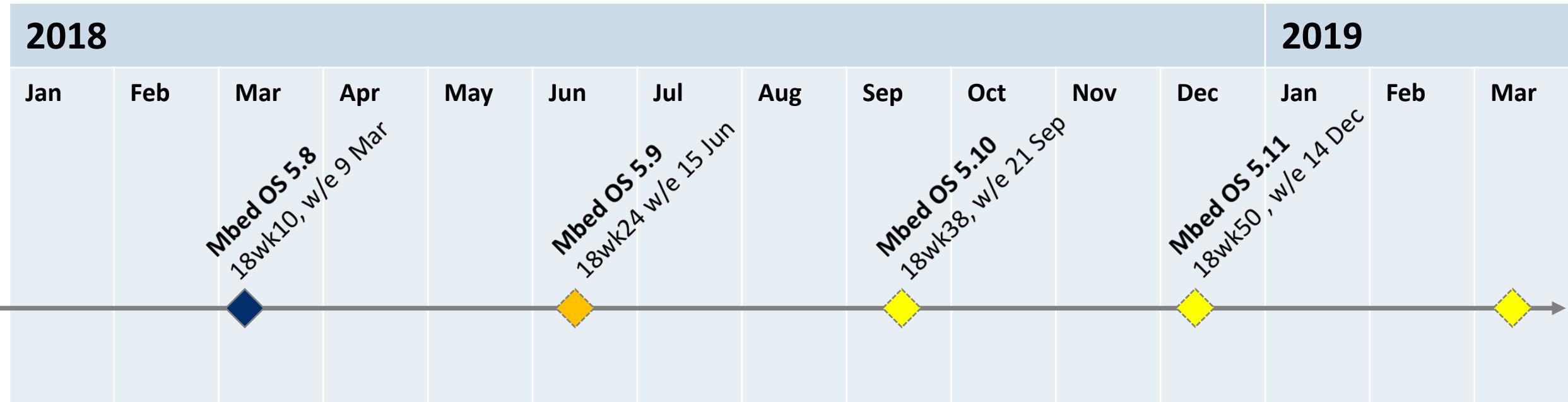
# Mbed OS HAL

- All Mbed OS HAL APIs will be improved over time
- Porting guide that leads vendors through the porting process
- Clear API specification, stating defined and undefined behaviors
- Reference implementation
- Conformance tests cases



# Mbed OS 5.9

Branch	Notes	Target release date
feature-hal-spec-rtc		5.9
feature-hal-spec-ticker		5.9
feature-hal-spec-sleep		5.9
feature-watchdog		5.9
feature-armc6		5.9



# Mbed OS 5.10 and beyond

Branch	Notes	Target release date
criticalsection		5.xx
feature-hal-spec-sai		5.xx
feature-qspi		5.xx
feature-cpuid		5.xx
feature-emac		5.xx
feature-spm		5.xx
feature-opaque-keys		5.xx



Forum » Upcoming Features

# Forum: Upcoming Features

Please [log in](#) to post a new topic.

Topic		Replies	Last post
<a href="#">[feature-nrf528xx] Nordic NRF52 series upgrade to SDK 14.2</a>	 feature, nrf52832, nRF52840	13	<a href="#">4 days ago</a> by Marcus Chang
<a href="#">[feature-hal-spec-sleep] Improvements to HAL Sleep API</a>	 feature, HAL, low power, Sleep	0	<a href="#">8 days ago</a> by Bartek Szatkowski
<a href="#">[feature-hal-spec-rtc] Improvements to RTC HAL API</a>	 feature, HAL, RTC, time	0	<a href="#">8 days ago</a> by Bartek Szatkowski

## Forum statistics

Topics: 3

Posts: 16

# Contribution workflow

# Master branch

All changes against master – gateway to a release

Features can land on master when ready

- Should come from a feature branch

Master is our development branch

- Protected
- Bleeding edge

Caution: regressions are possible

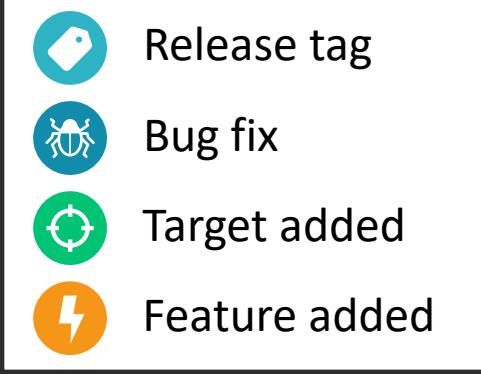
	Release tag
	Bug fix
	Target added
	Feature added



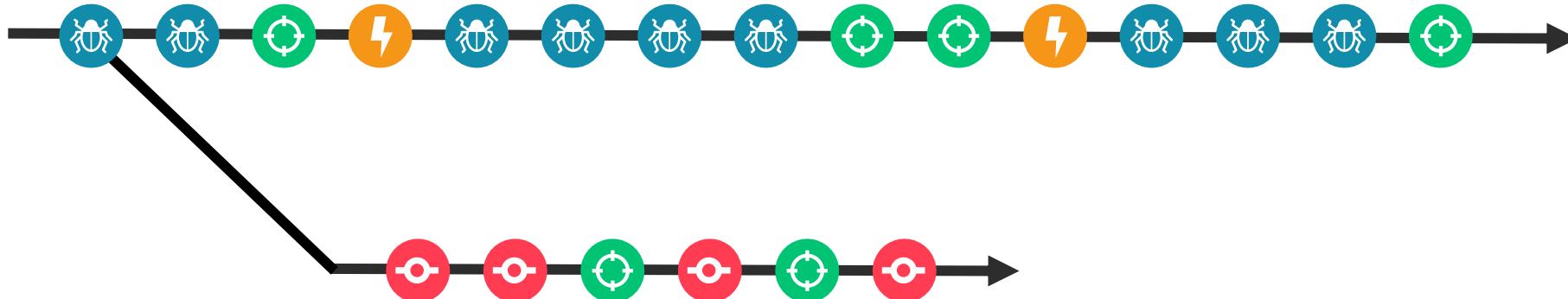
# Feature branch

Public development of something new

- Great place to collaborate
- Add new target support to a feature



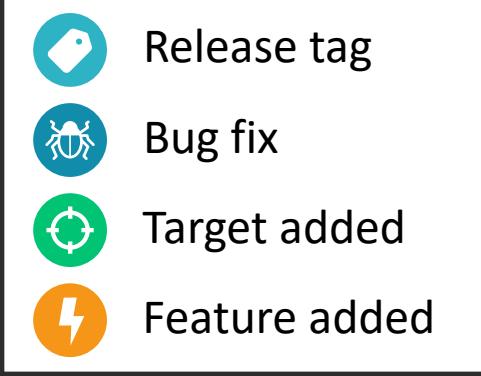
Feature owner responsible for branch maintenance



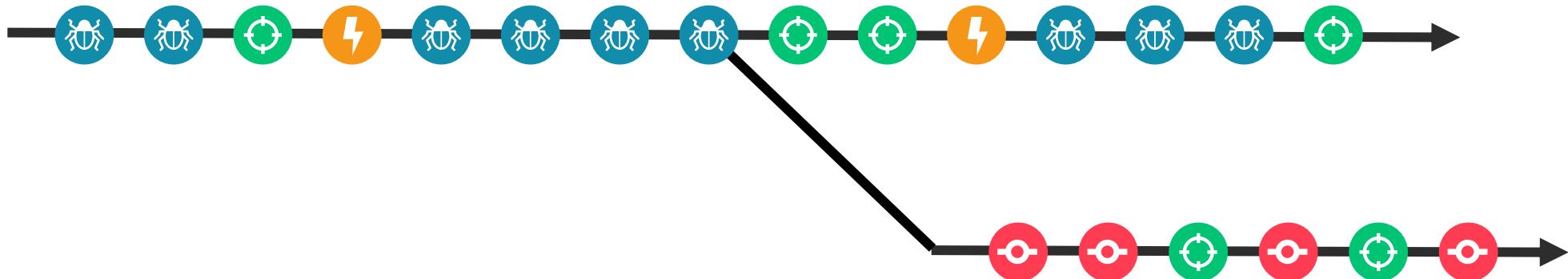
# Feature branch

Public development of something new

- Great place to collaborate
- Add new target support to a feature



Feature owner responsible for branch maintenance



Rebased against master to pull in fixes and features

- Also allows continuous testing to verify compatibility and ease integration

# Release branch

Only one release branch actively maintained

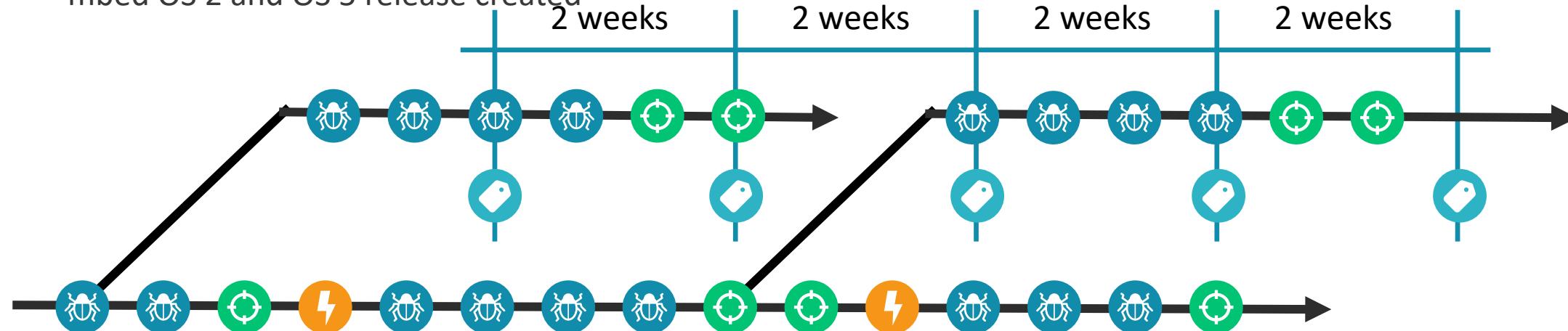
- Automated release process procures release branch

Tags are only on a release branch

- Floating tag named **latest** will move across branches

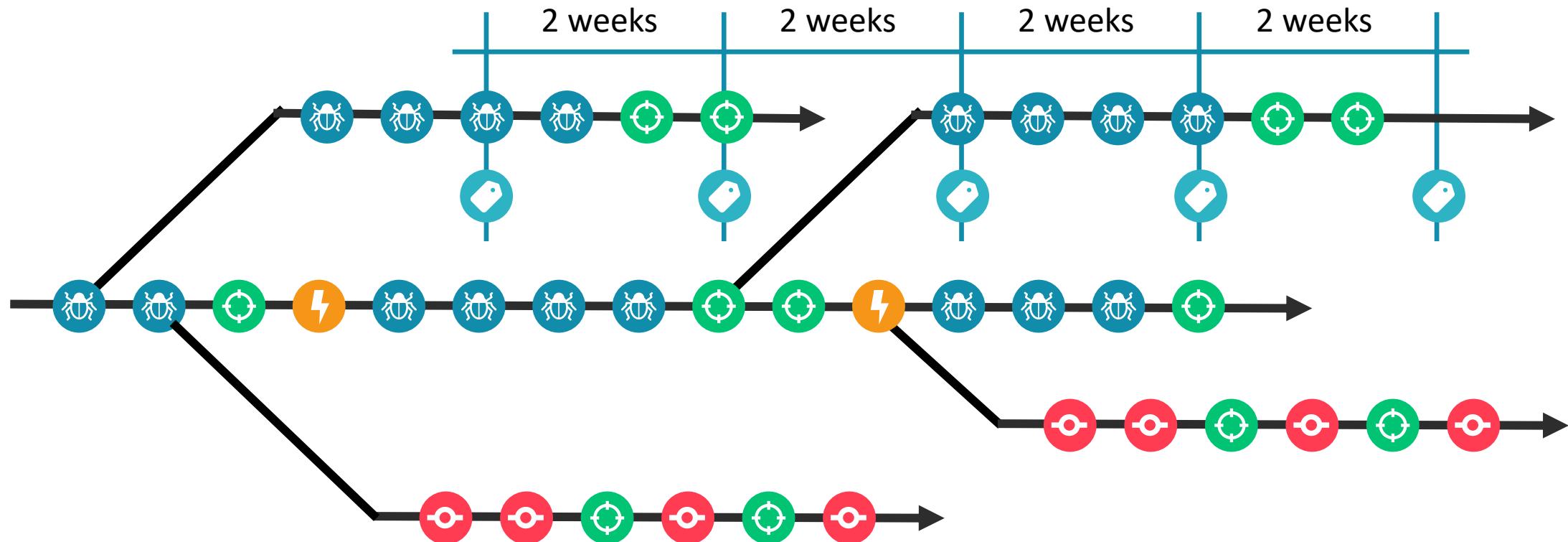
Patch level release every 2 weeks

- mbed OS 2 and OS 5 release created



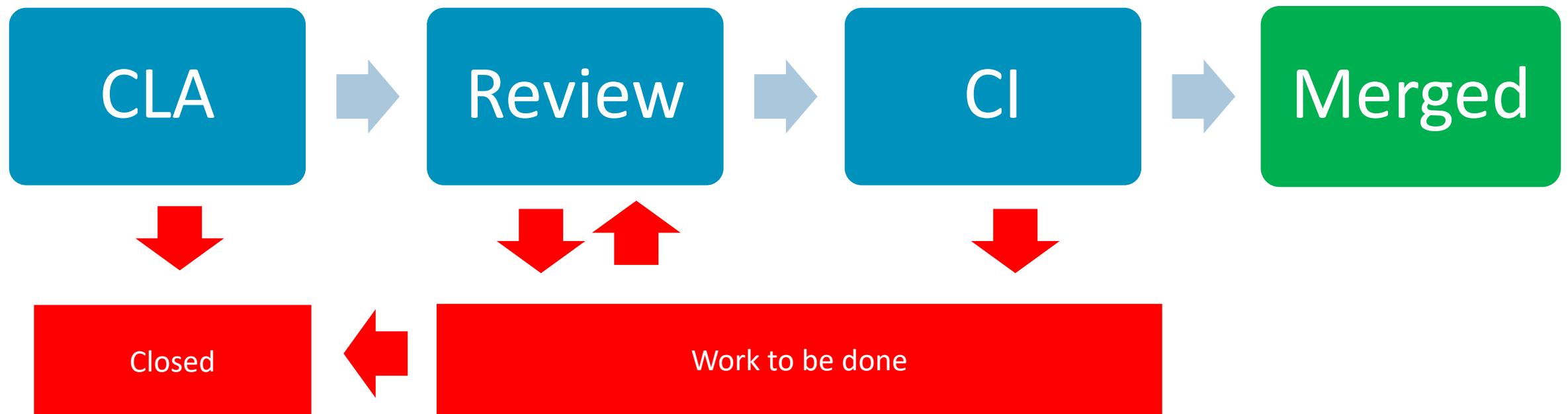
	Release tag
	Bug fix
	Target added
	Feature added

# Tree



# Pull request process

Link to [os.mbed.com/docs/workflow](http://os.mbed.com/docs/workflow)



Pull request progress

Add Issue

Filter Board

No Label 449

### Do not merge 4

- 5031 Tickless implementation 2
- 5019 Fix an incorrect comment in ticker API
- 4846 DRAFT: Integrate mbed OS RTC with mbed TLS
- 4719 mbed Enabled certificate for the VBLUno51 board

### Needs work 15

- 5108 Add simple change impact detection script for CI
- 5104 add support for SILICA\_SENSOR\_NODE platform
- 5097 Adi cog candidate
- 5060 BLE: Cordio port
- 5058 CircularBuffer(): get available transactions
- 5050 Extended CAN fix
- 5028 Add support for various ticker implementations
- 5022 Add JSON schema based validation to mbed config script
- 5006 Extends test set for Ticker class

### Pending review 29

- 5137 Added support for ADI EV-COG-AD3029LZ platform.  
Scope: new-target
- 5130 STM32: Freeze master timer on stop/breakpoint
- 5123 Extends test set for Thread signals
- 5113 STM: I2C: Configure pins in OpenDrainNoPull by default (no pullup)
- 5106 Timeout tests
- 5105 [Cortex-M33] Added RTX5 context switcher files
- 5100 Modify description of set\_time() function.
- 5099 Move clock() function from mbed\_RTC\_time.cpp to mbed\_retarget.cpp.
- 5088 Extends test set for Ticker class

### In testing 32

- 5140 Release candidate for mbed-os-5.6.0-rc2
- 5138 Fix redefinition of mbed TLS error codes
- 5098 Doxygen comment fix for Thread class
- 5096 Remove direct use of us and lp ticker from tests
- 5095 Release deep sleep lock in destructor of Timer class
- 5089 STM32 : Disable HSE XTAL choice from the default clock source
- 5084 Allow exporters for NUCLEO\_L486RG
- 5080 mbedTLS: Disable MD5, SHA1, SHA256 HW ACC for STM32F439xl  
component: tls release-version: 5.6.1
- 5077 Added interface version information to mbed detect

### Ready for merge 2

- 5061 Travis: Fix requirements install
- 4684 Add thread terminate hook

# Pull request verification

All green policy, even for feature branches

- /morph build – arm, iar, gnu
- /morph export-build – mdk, iar, make, eclipse
- /morph uvisor – uvisor testing
- /morph mbed2-build – mbed 2 testing
- travis-ci/docs – doxygen verification
- travis-ci/events – event loop profiling
- travis-ci/littlefs – filesystem profiling
- travis-ci/tools – unit testing for tools

Changes approved  
2 approving reviews by reviewers with write access. [Learn more.](#) [Show all reviewers](#)

All checks have passed  
11 successful checks [Hide all checks](#)

✓  ci-morph-build — build completed	Required <a href="#">Details</a>
✓  ci-morph-exporter — build completed	Required <a href="#">Details</a>
✓  ci-morph-mbed2-build — build completed	Required <a href="#">Details</a>
✓  ci-morph-test — test completed	Required <a href="#">Details</a>
✓  continuous-integration/jenkins/pr-head — This commit looks good	Required <a href="#">Details</a>
✓  continuous-integration/travis-ci/pr — The Travis CI build passed	Required <a href="#">Details</a>
✓  travis-ci/docs — Local docs testing has passed	<a href="#">Details</a>
✓  travis-ci/events — Passed, runtime is 10352 cycles (+1522 cycles)	<a href="#">Details</a>
✓  travis-ci/littlefs — Passed, code size is 10092B	<a href="#">Details</a>
✓  travis-ci/tools — Local tools testing has passed	<a href="#">Details</a>
✓ This branch has no conflicts with the base branch Merging can be performed automatically.	

# /morph test logs and results

[http://mbed-os.s3-website-eu-west-1.amazonaws.com/?prefix=](http://mbed-os.s3-website-eu-west-1.amazonaws.com/?prefix=builds/6441/)

mbed-ci commented 3 days ago

Member + 😊 ...

## Build : SUCCESS

Build number: 1549

Build artifacts/logs : <http://mbed-os.s3-website-eu-west-1.amazonaws.com/?prefix=builds/6441/>

### Triggering tests

/morph test  
/morph uvisor-test  
/morph export-build  
/morph mbed2-build

Thank You!

Danke!

Merci!

谢谢!

ありがとう!

Gracias!

Kiitos!

감사합니다

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arm