

# ARM, IoT & mbed

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# Why are we here?



# About ARM....

- The World's leading processor design company

**ARM<sup>®</sup>TRUSTZONE<sup>®</sup>**

System Security

**ARM<sup>®</sup>ARTISAN<sup>®</sup>**

Physical IP

**ARM<sup>®</sup>MALI<sup>™</sup>**

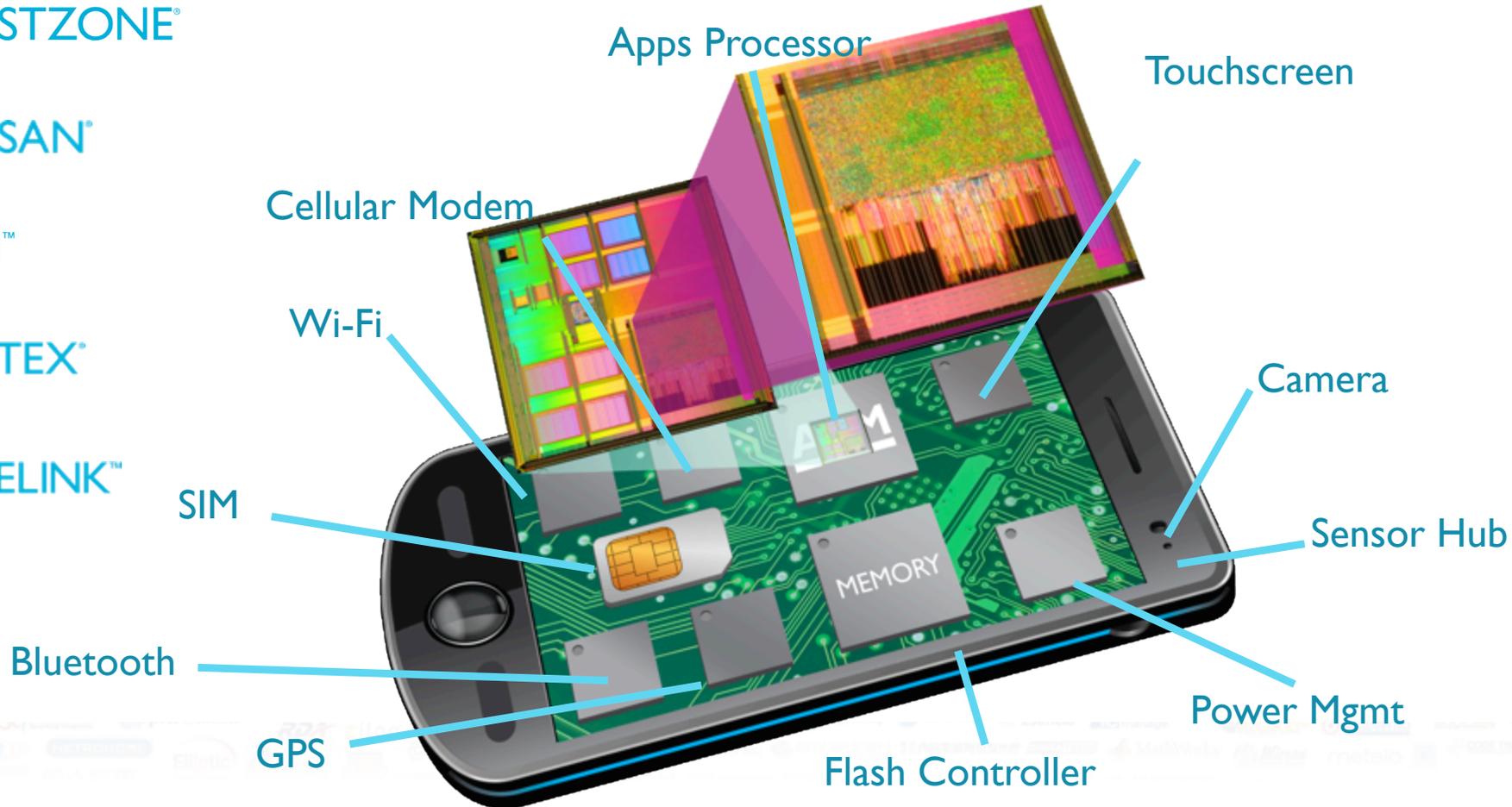
Visual Technology

**ARM<sup>®</sup>CORTEX<sup>®</sup>**

Processor Technology

**ARM<sup>®</sup>CORELINK<sup>™</sup>**

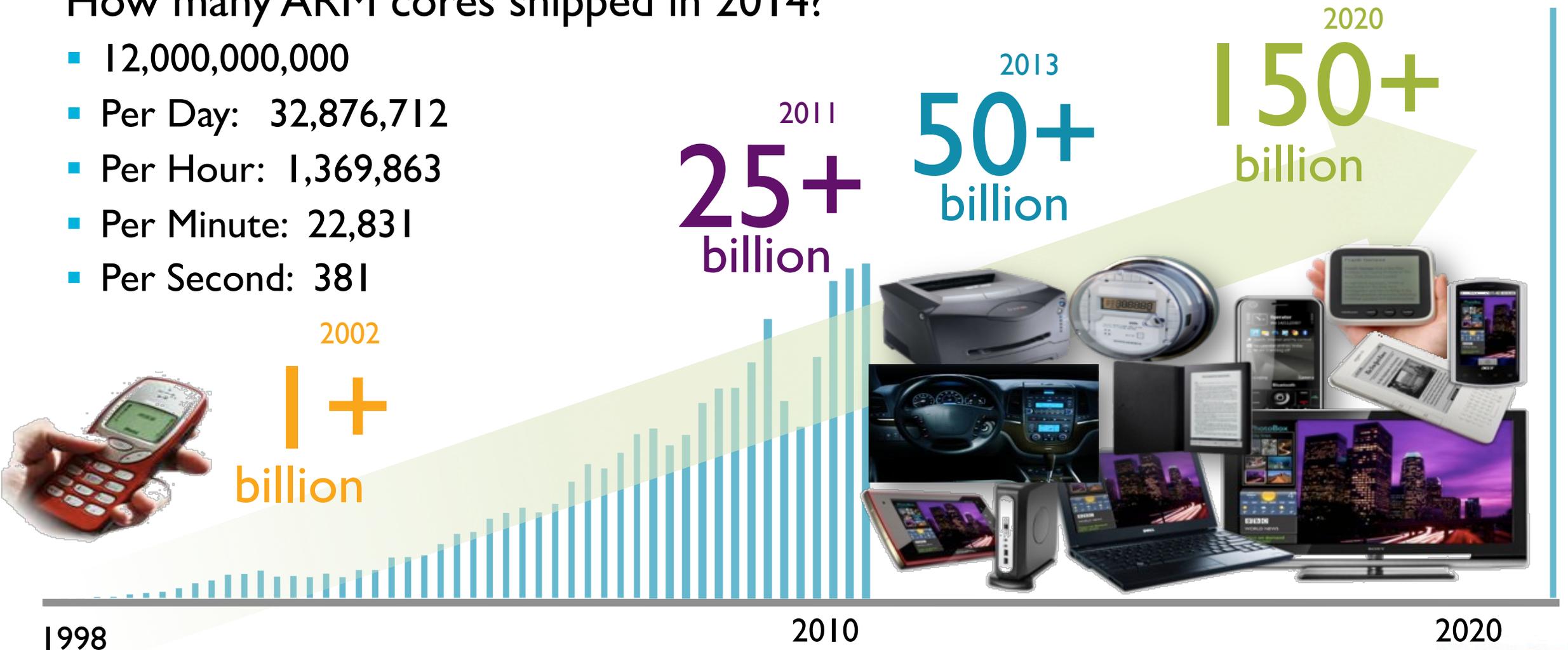
Processor System IP



# Which results in:

How many ARM cores shipped in 2014?

- 12,000,000,000
- Per Day: 32,876,712
- Per Hour: 1,369,863
- Per Minute: 22,831
- Per Second: 381



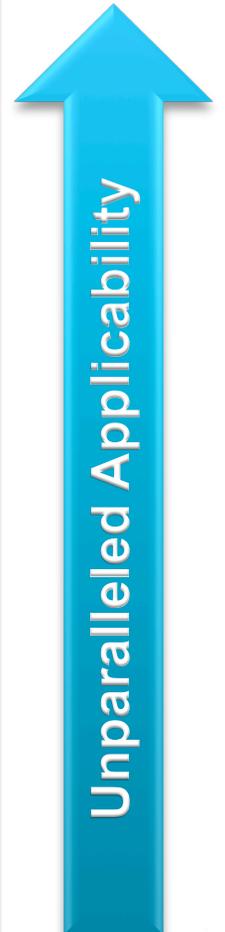
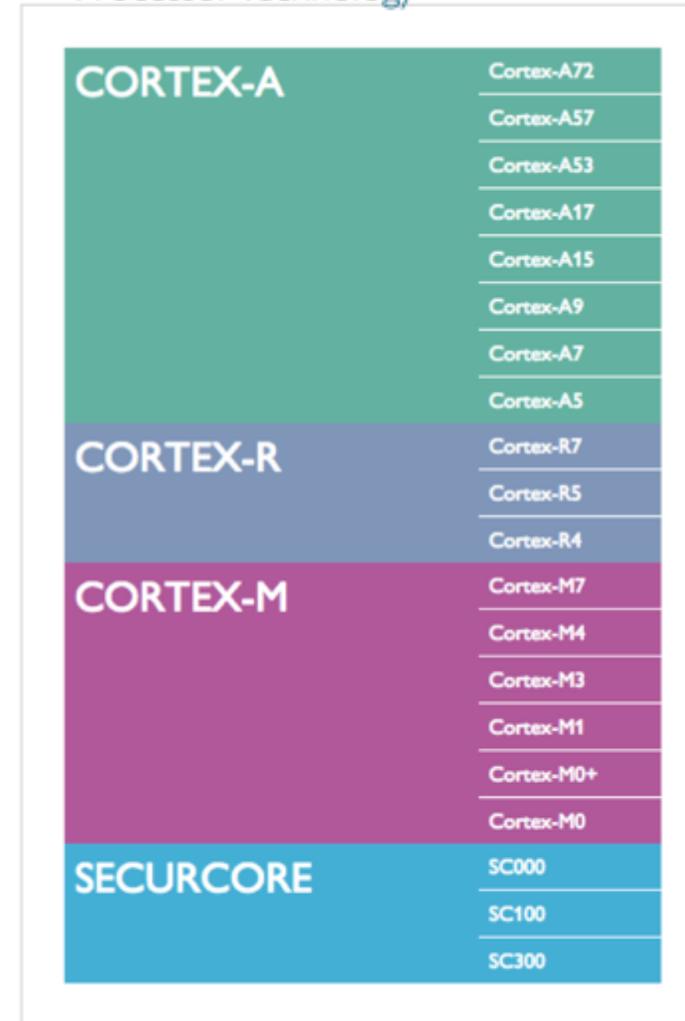
# ARM Cortex Advanced Processors

Architectural innovation, compatibility across diverse application spectrum

- ARM Cortex-**A** Series
  - Applications processors for feature-rich OS and 3<sup>rd</sup> party applications
- ARM Cortex-**R** Series
  - Embedded processors for real-time signal processing, control applications
- ARM Cortex-**M** Series
  - Microcontroller-oriented processors for MCU, ASSP, and SoC applications
- ARM **SecureCore**<sup>TM</sup>
  - Tamper-resistant security

## ARM CORTEX<sup>®</sup>

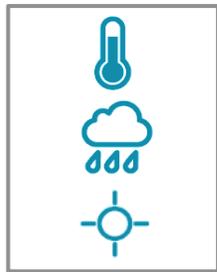
Processor Technology



# ARM

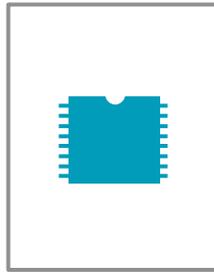
# ARM's is Enabling IoT & Embedded Intelligence

## ARM Technology is at the Heart of IoT

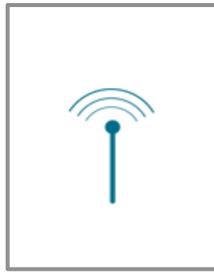


Sensor

**ARM Share: 26%**



MCU



Radio

**>50%**

Common software,  
low-power platform

## ARM Community Enabling the Developer



Low cost platforms,  
free software and tools

## Huge and Growing Opportunity

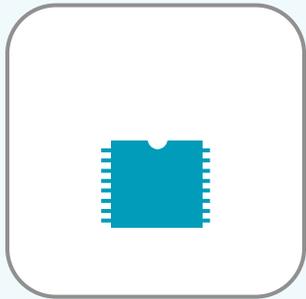


Embedded market forecast:  
\$25bn in 2020

# ARM Cortex-M: Ultra Low Power, Size, Ultra Low-Cost(¢'s) + Internet Connected → this is how to get to 10s of Billions

## 4.3 billion

ARM Cortex-M devices shipped in 2014  
Up from 3.0b in 2012 → 30% YoY Growth



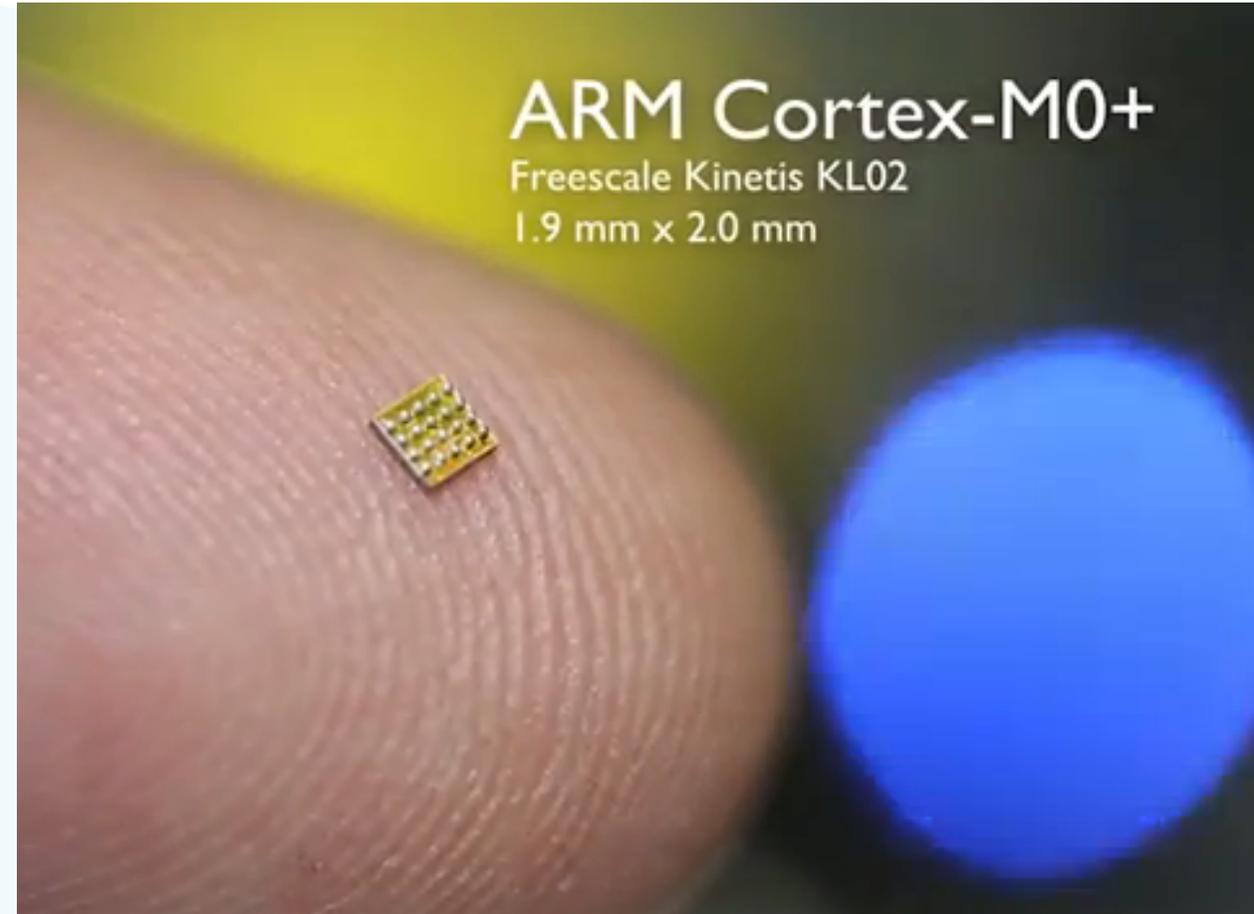
MCUs



radios

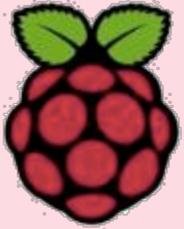


sensors



*Think Powered by Watch Batteries & Energy Harvesting*

# IoT Is Disruptive



## Raspberry Pi

Launched in February 2012  
Sold over **two million boards**  
Broadcom / ARM1176



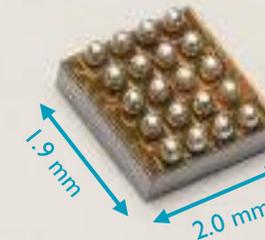
## Electric Imp

Launched May 2012  
Innovative SD form-factor IoT development kit  
Broadcom / ARM Cortex-M3

“By 2018, 50% of IoT solutions will be from start-ups less than 3 years old” - Gartner

## ARM<sup>®</sup>mbed<sup>™</sup>

Cloud Based Development Tool for  
ARM Cortex-M SoCs



## Arduino Due & Arduino Tre

Official Arduino boards are ARM-based  
Atmel / ARM Cortex-M3 & TI / ARM Cortex-A8

# Leverage Crowdsourcing + Community



# ARM mbed IoT Platform

# Connected, Secure and Simple to Use IoT Products

# ARM<sup>®</sup>mbed<sup>™</sup>

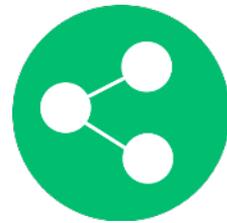
## IoT Device Platform



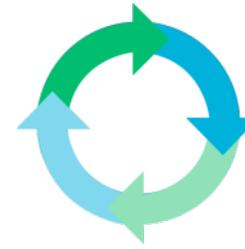
Productivity



Security



Connectivity

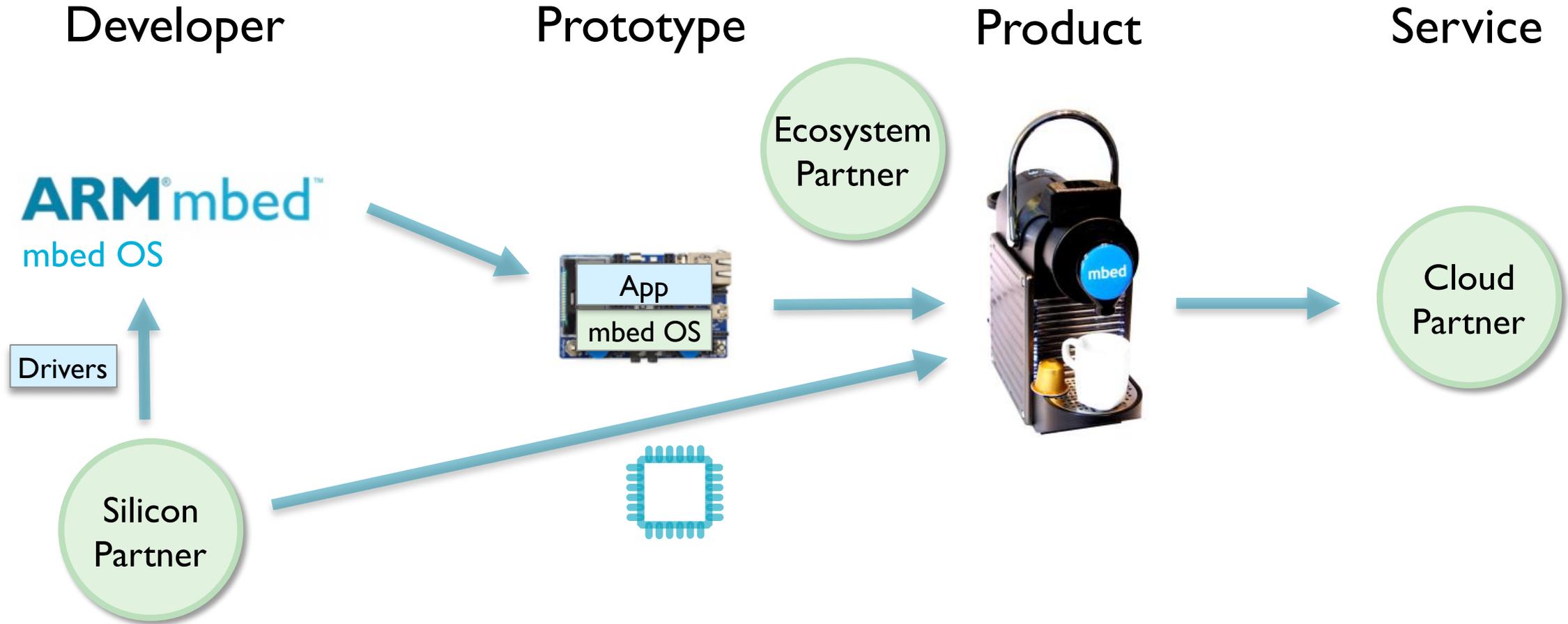


Management



Efficiency

# From Idea to Product



## mbed Ecosystem

- Partners
- Developers
- Enabled Services
- Enabled Products

## mbed Device Server

- Freemium model to enable startups
- Application data and device management
- Growth market access for cloud platforms and operators

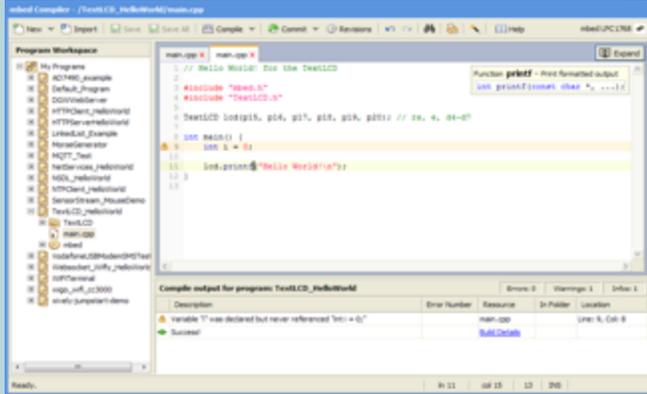
## mbed OS

- Free for use on ARM architecture
- Leading connectivity standards
- Productivity, minimized costs
  - Built-in management
  - Security

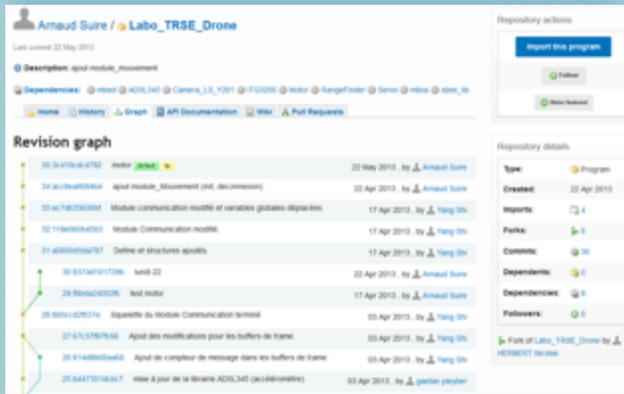
ARM Cortex<sup>®</sup>-M  
-based MCU

# mbed Developer Tools

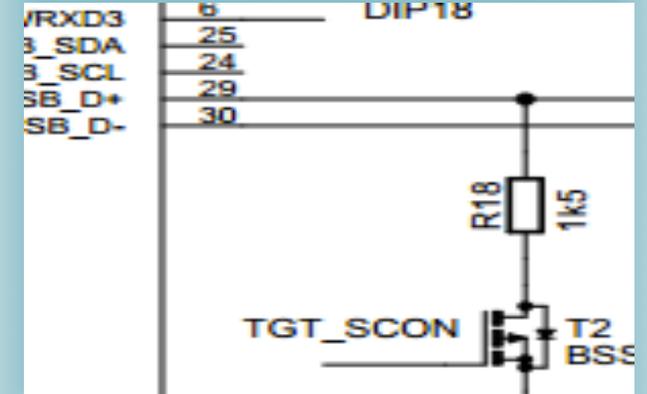
Web IDE



Online Collaboration Tools



HDK



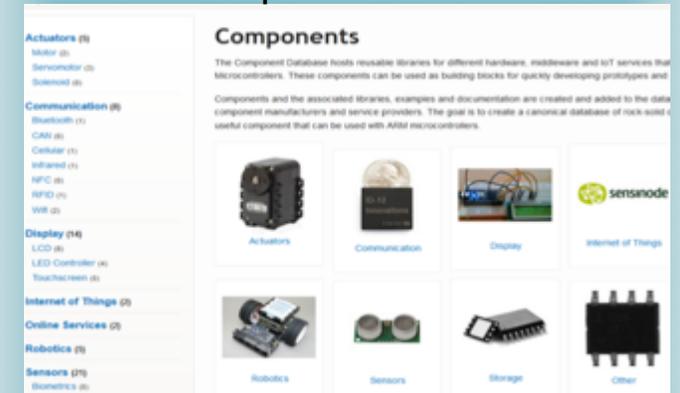
60+ Hardware Platforms



110K+ Developers Word wide



Component database



# mbed OS Overview



Minimize time-to-market



Low-power by design



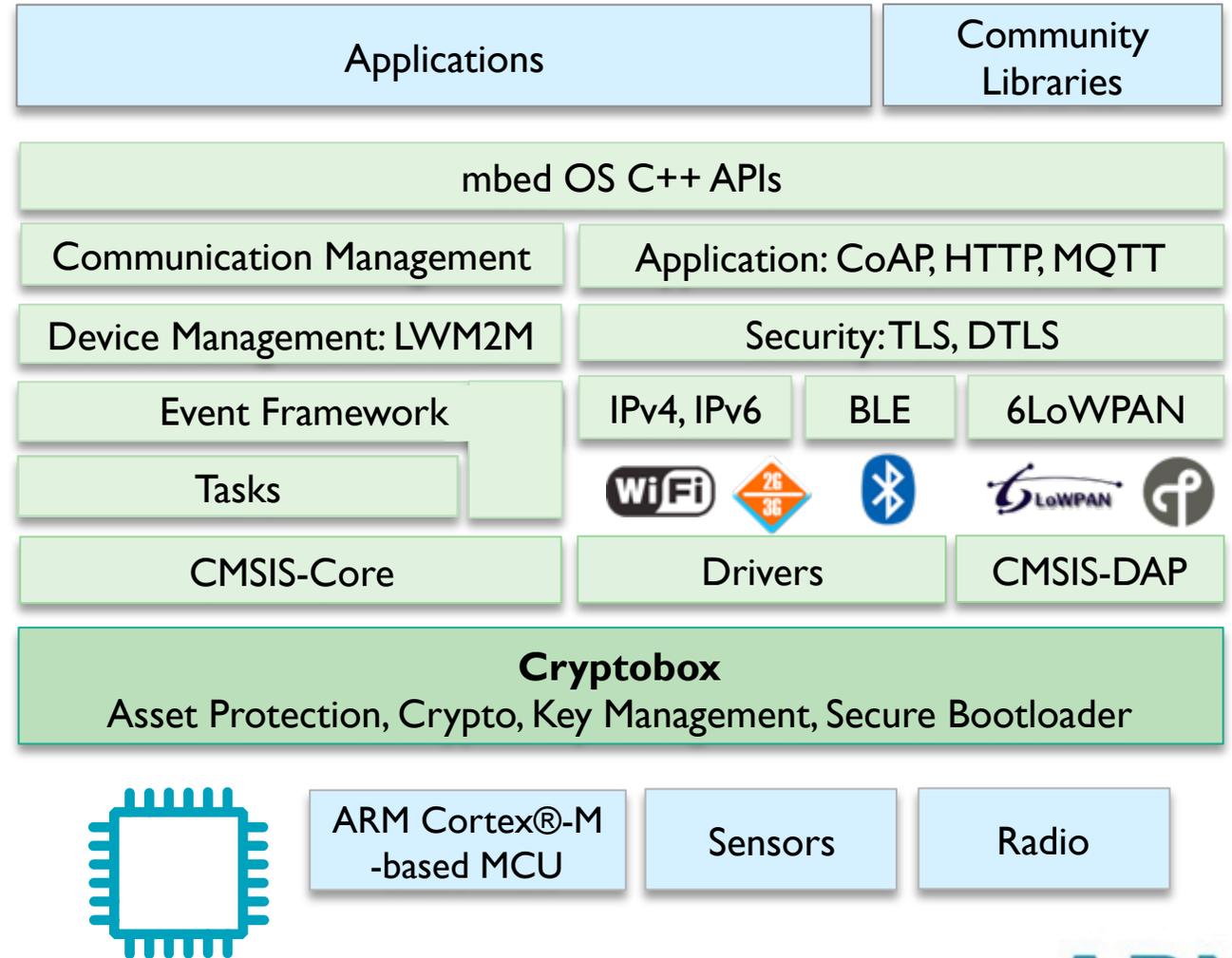
Complete security solution



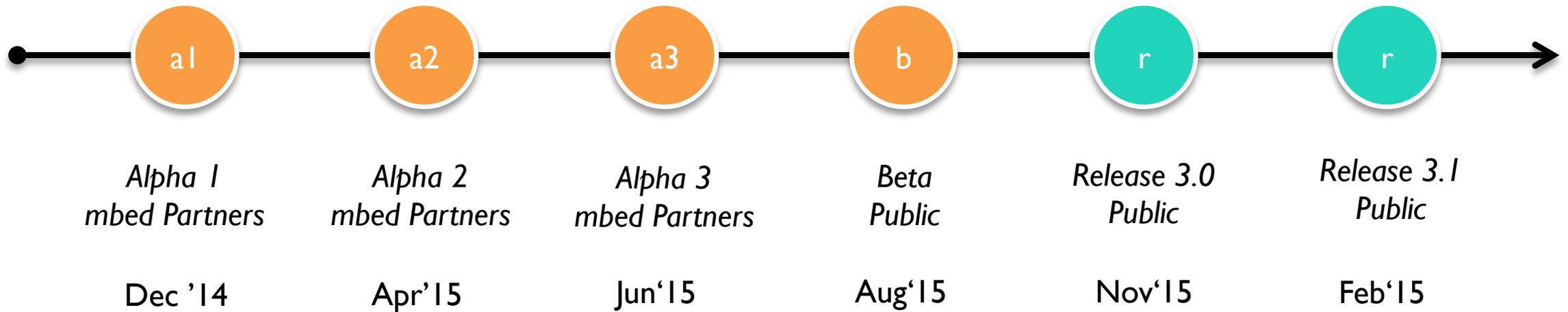
Top connectivity standards



Built-in device management



# mbed OS Release Schedule



# mbed Device Server



Straightforward integration



Periodic connectivity support



Complete managed security



Leading open standards



Lightweight management



mbed Device Server API – *HTTP REST*

Directory and Subscription

Security, Admin and Multi-tenancy

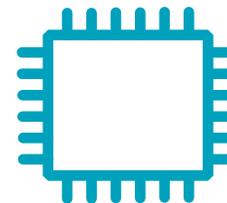
Data Flow Management – *RESTful and Publish/Subscribe*

Device Management – *Lightweight M2M (LWM2M)*

mbed Device Interface – *Open Web Standards*

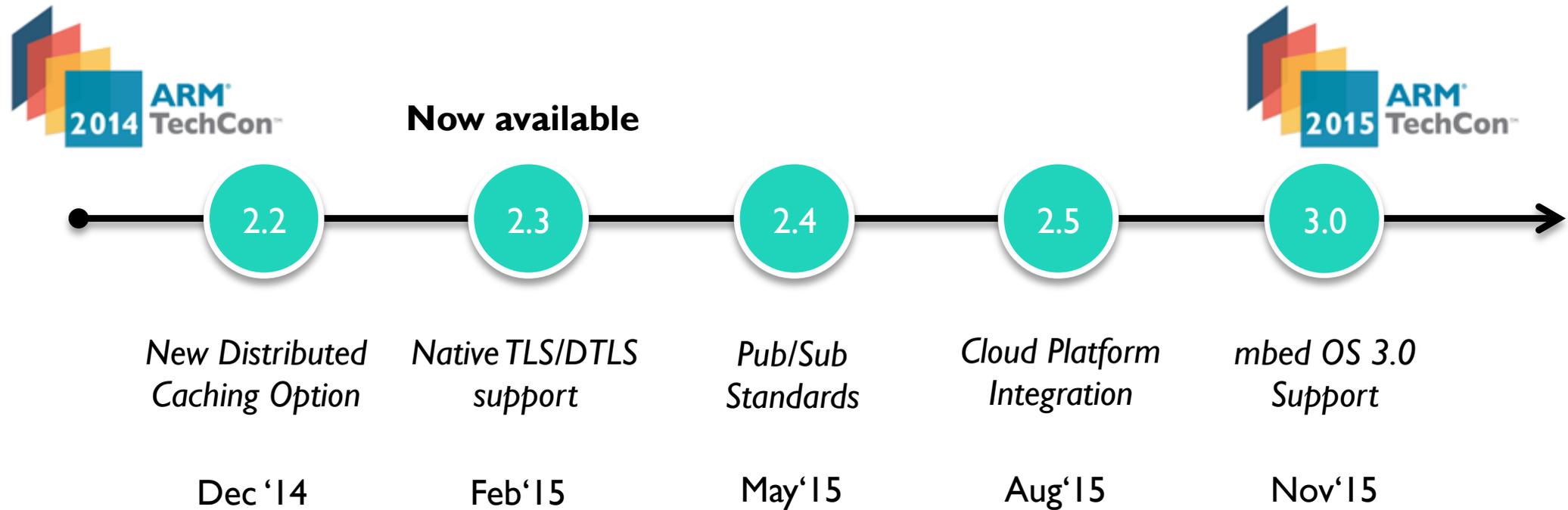
Application Transfer Protocols – *CoAP, HTTP, MQTT*

Security Protocols – *DTLS, TLS*



**ARM**

# mbled DS Release Schedule



# mbed Client for non-Cortex M



TLS based security support



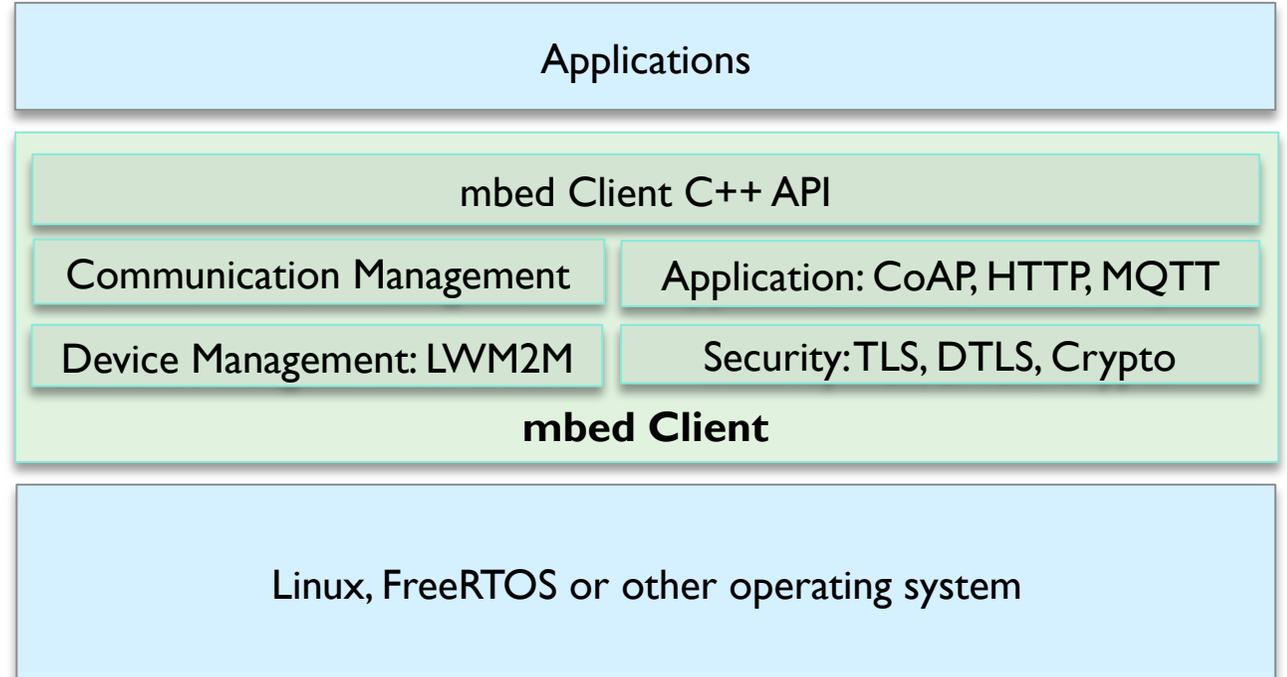
Easy mbed Device Server integration



Device management support



Use with existing platforms





wot.io™

SeeControl™

Alcatel-Lucent

telenor | connexion

salesforce

ZEBRA TECHNOLOGIES

Cloud

ERICSSON

stream

IBM

Telefonica

KDDI

MegaChips

MULTITECH

SmeshLink EXPERT OF IOT

110,000+ Developers

mbed OS Services

ADVANTECH

tete

Ecosystem

ATHOS



Farnell element14

ThunderSoft®

SEMTECH

mbed OS

ESPOTEL

ublox

Atmel

NXP

CAPTIVA

CSR

MARVELL

Silicon

ST life.augmented

maxim integrated™

freescale™ semiconductor

RENESAS

NORDIC SEMICONDUCTOR

SILICON LABS

ARM



# Thank You!

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