智能互联推动嵌入式系统创新

March 2015

ARM®

The Architecture for the Digital World®

ARM® is a Semiconductor IP Company

IDM

Foundry

Silicon Partners

Equipment Manufacturer

Software Platforms

Operators + Developers

ARM

Financial

Tools/Technology

CPU

GPU

Networking

Video

RF

Security

DSP
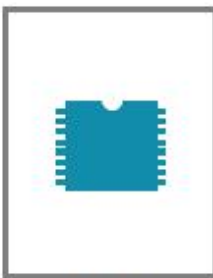
Other IP
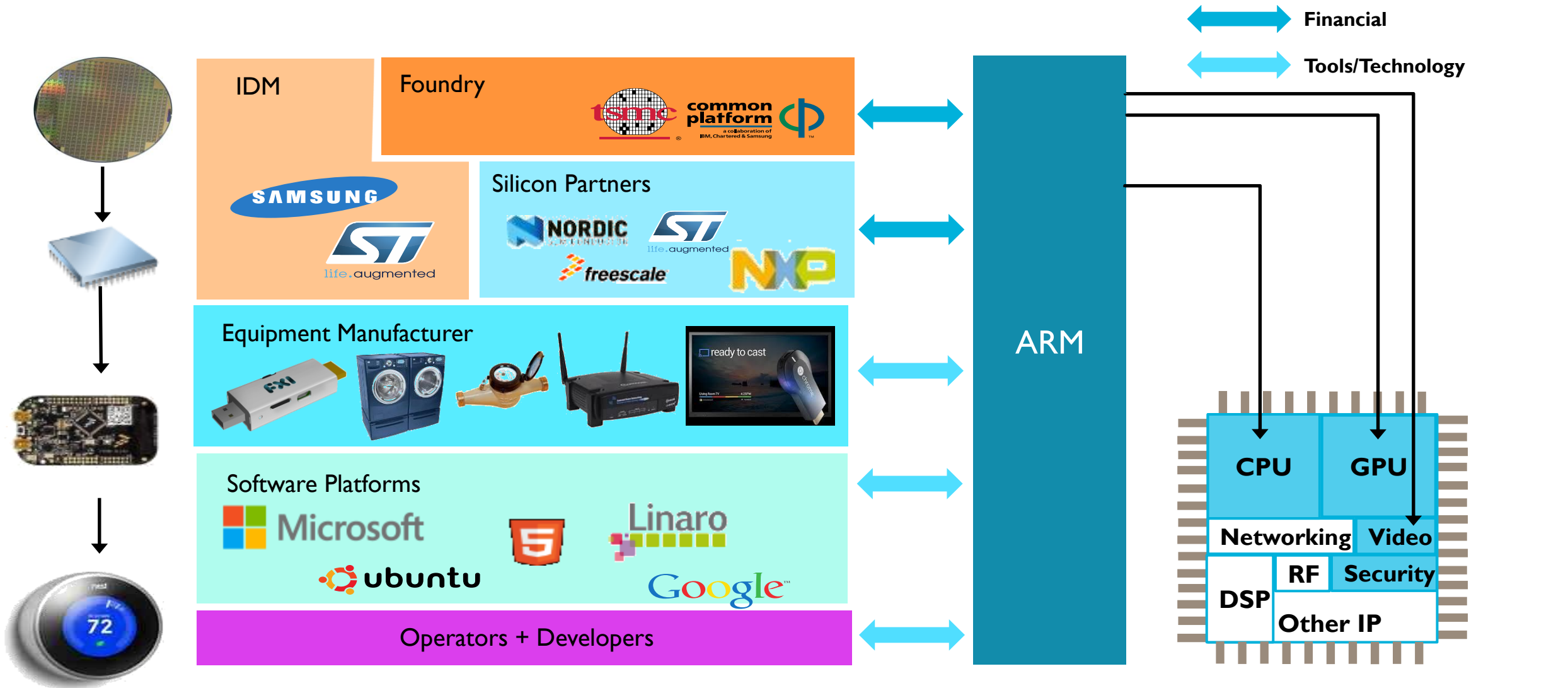
ARM's Opportunity in Embedded Intelligence

ARM Technology is at the Heart of IoT

Sensor — MCU — Radio

ARM Share: 26% >50%

Common software, low-power platform

ARM Community Enabling the Developer

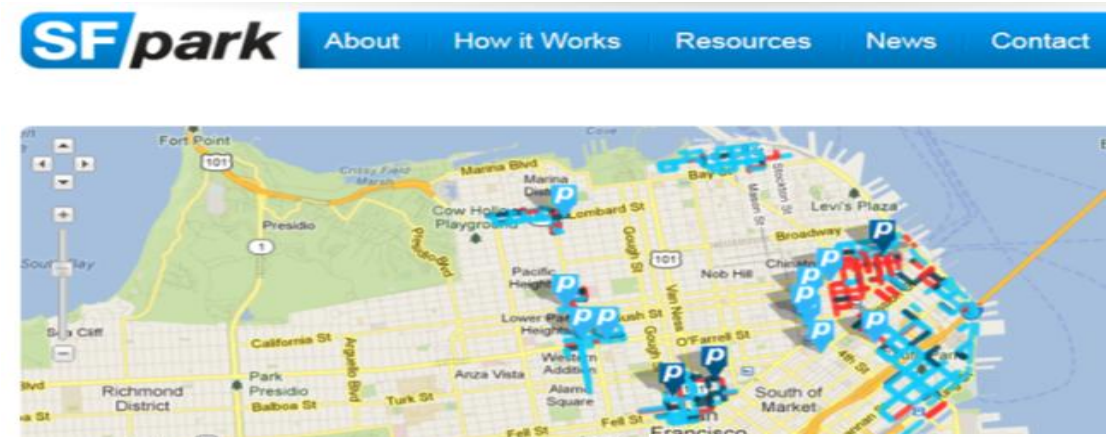Low cost platforms, free software and tools

Huge and Growing Opportunity

Embedded market forecast: $25bn in 2020
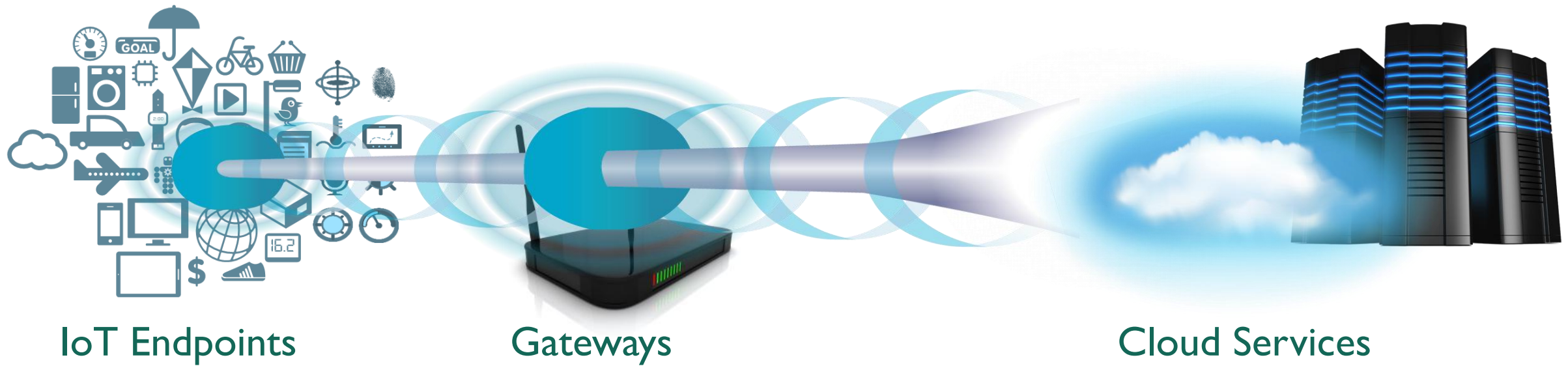
ARM

Functional Becomes Real Time Service

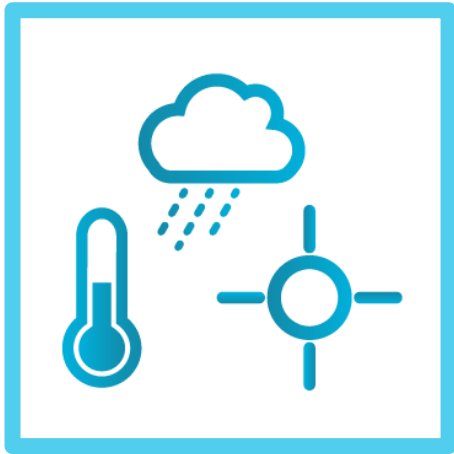Functional

Streetline
Linear LTC5800

Data becomes a Service

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Big Data begins with Little Data

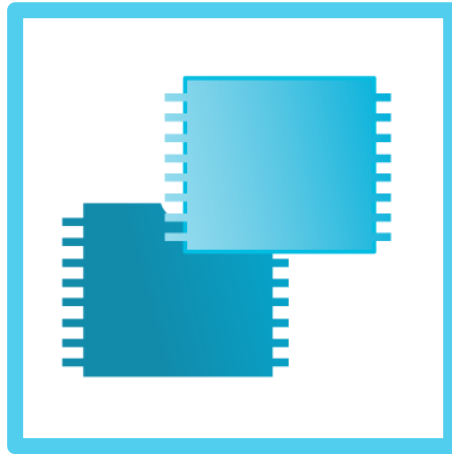**IoT Endpoints**   **Gateways**   **Cloud Services**

Data collection and control:
- Improved operational efficiency
- New services and applications
- New business models and revenue streams

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Building the Blocks for Success

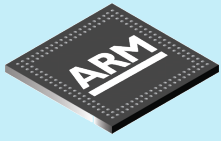Sense   Compute   Control   Communicate

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ARM Cortex Processors across the Embedded Market
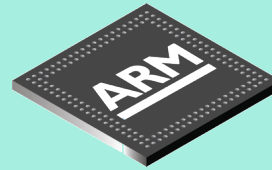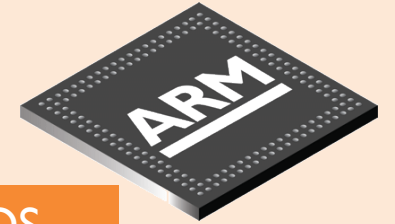
Cortex®-M processors

MCU + DSP

RTOS

Smallest footprint / lowest power

Cortex-R processors

Highest performance / real-time

Cortex-A processors

Rich OS

Highest performance

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ARM Cortex-M: Trusted Choice for Embedded Intelligence

8 Billion
Units shipped to date

ARM
Cortex-M

3000+
Catalog Parts

240+
Licenses

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ARM Cortex-M Processors – proven success

240+ licensees of Cortex-M processors

Over 3,000 Cortex-M based MCU types

Tens of thousands Cortex-M based applications

Tele-parking

Intelligent toys

Utility Meters

Wearables

IR Fire Detectors

Exercise Machines

Energy Efficient Appliances

Intelligent Vending

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ARM mbed
IoT Device Platform

www.mbed.org

The Architecture for the Digital World®

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The Internet of Things Today

Enormous potential

- "Tens of billions of new devices"
- … but market growing slower than expected
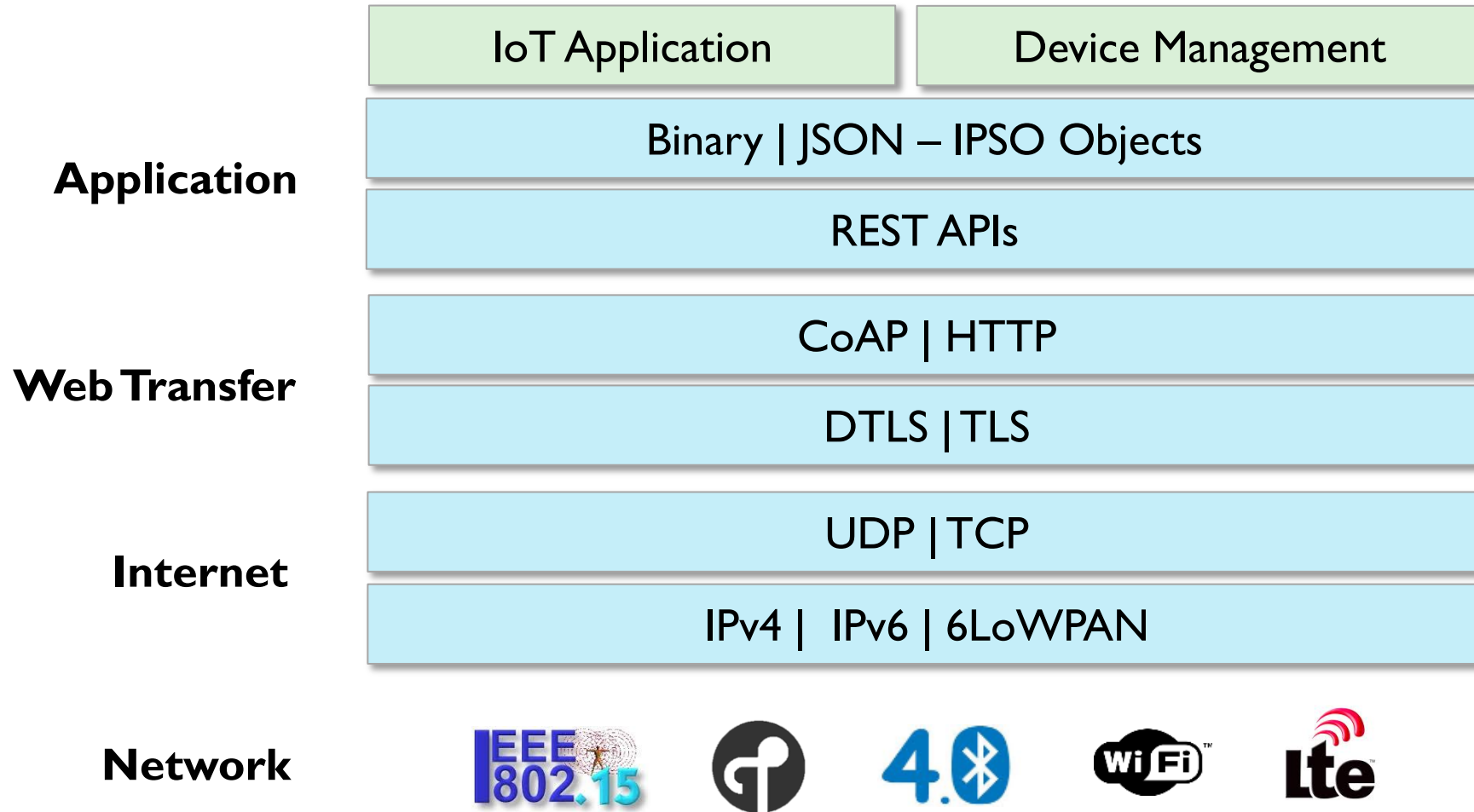
Embedded, but different

- IoT devices are often "embedded" but can have different requirements, constraints and goals compared to conventional embedded systems
- Often very strict energy or resource constraints

Complexity rapidly increasing

- Security, manageability, updates often underestimated
- More sophisticated hardware requires more software … and vice versa!

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The I in IoT: Web (and IP) Protocols to the Edge

IoT Application	Device Management

Application

Binary	JSON – IPSO Objects
REST APIs

Web Transfer

CoAP	HTTP
DTLS	TLS

Internet

UDP	TCP
IPv4	IPv6	6LoWPAN

Network

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ARM® mbed™
IoT Device Platform

Productivity   Security   Connectivity   Management   Efficiency
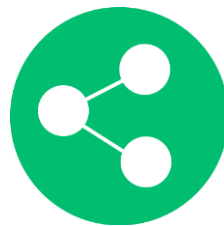
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ARM®mbed™

IoT Device Platform

mbed Device Server

- Free and commercial versions
- Application data and device management
- Growth market access for cloud platforms and operators

mbed Ecosystem

- Partners
- Developers
- Enabled Services
- Enabled Products

mbed OS

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

ARM Cortex-M -based MCU

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What is mbed OS?

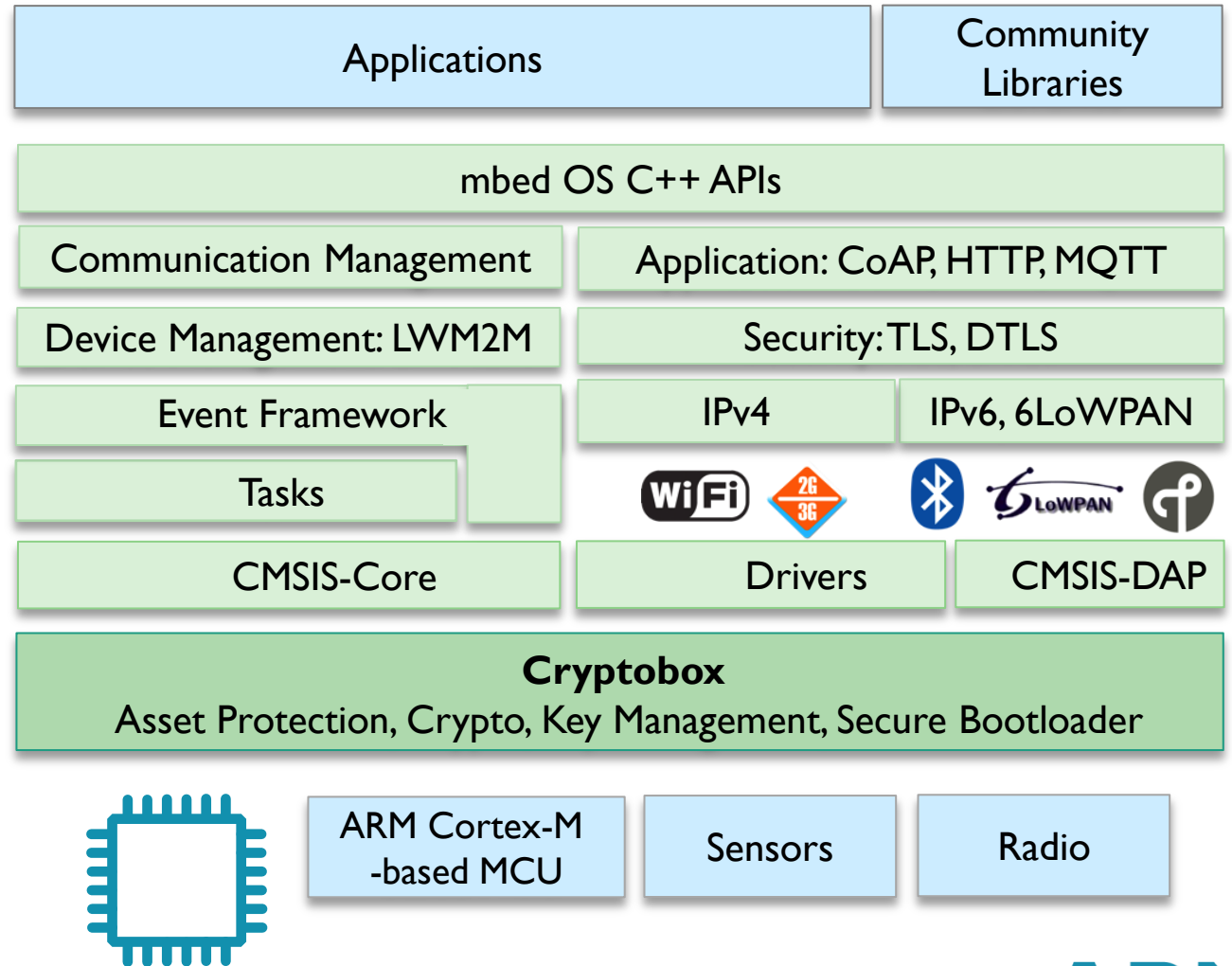Minimize time-to-market

Low-power by design

Complete security solution

Top connectivity standards

Built-in device management

Applications	Community Libraries

mbed OS C++ APIs		
Communication Management	Application: CoAP, HTTP, MQTT	
Device Management: LWM2M	Security: TLS, DTLS	
Event Framework	IPv4	IPv6, 6LoWPAN
Tasks	WiFi 2G/3G Bluetooth 6LoWPAN	
CMSIS-Core	Drivers	CMSIS-DAP

Cryptobox
Asset Protection, Crypto, Key Management, Secure Bootloader

ARM Cortex-M -based MCU	Sensors	Radio

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What is mbed Device Server

- Straightforward integration

- Periodic connectivity support

- Complete managed security

- Leading open standards

- Lightweight management

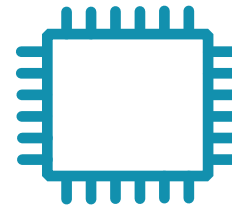| mbed Device Server API |
|---|

Directory and Subscription	Security, Admin and Multi-tenancy

Device Management and Data Flows - *RESTful and Publish/Subscribe*
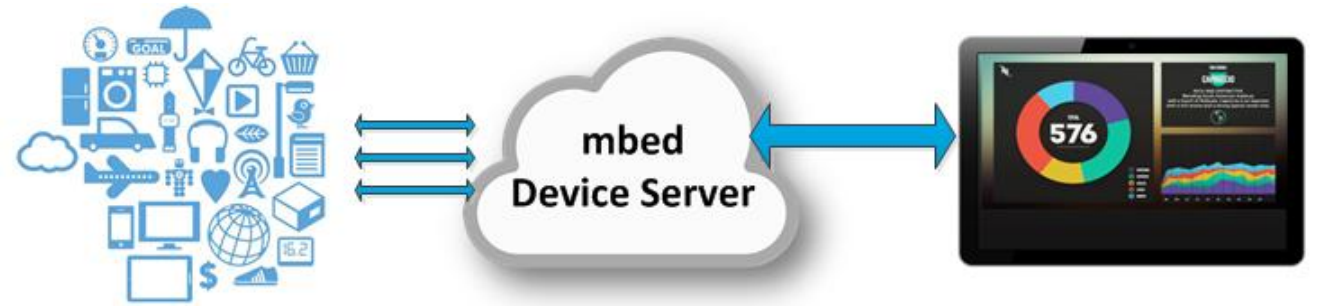
mbed Device Interface - *Open Web Standards*

Application Transfer Protocols – *CoAP, HTTP, MQTT*

Security Protocols – *DTLS, TLS*

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What does it do?

- Handles constrained IoT devices:
  - Multi connectivity
  - Not always online (queuing)
  - Long latency
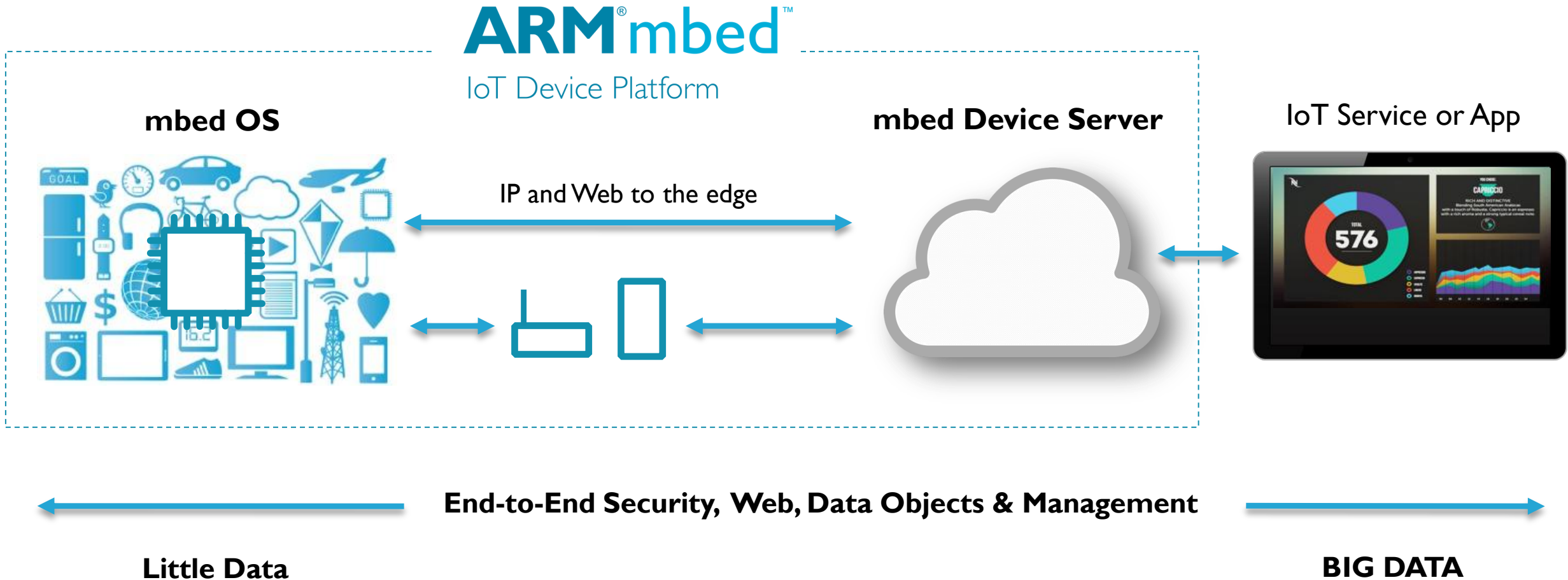 - (Very) limited throughput
- Security
  - End to End
- RESTful API

What it does not do:
- Store device data
- Analyze

Helps developers to create innovative IoT apps and services.

Little Data Enables Big Data

ARM®mbed™
IoT Device Platform

mbed OS

mbed Device Server

IoT Service or App

IP and Web to the edge

End-to-End Security, Web, Data Objects & Management

Little Data

BIG DATA

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The mbed Partner Ecosystem

Cloud Partner

Partner

Silicon Partner

Services

Tools

Technology

ARM®mbed™

IoT Device Platform

- Shared vision
- Commitment to openness & standards
- Enable scale
- Collaboration

Enable commercial deployment of IoT devices and services

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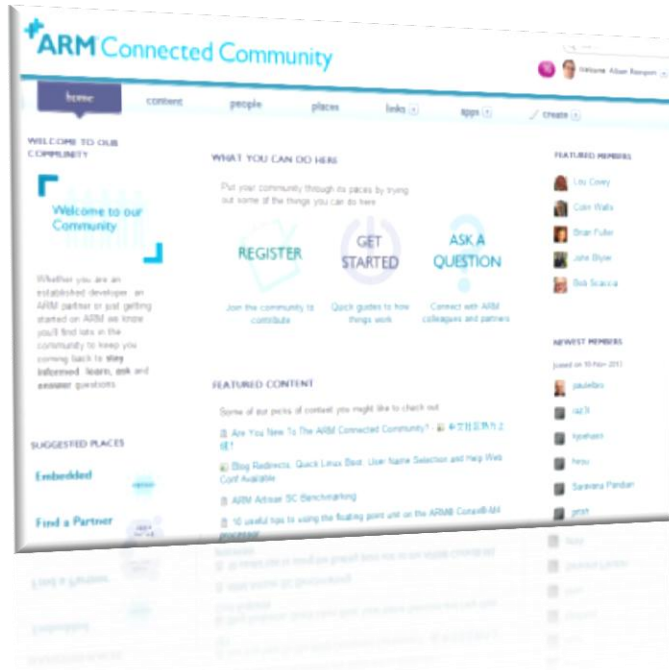
The new mbed Partner Ecosystem: Join Us!

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Together, let's drive the next embedded innovation

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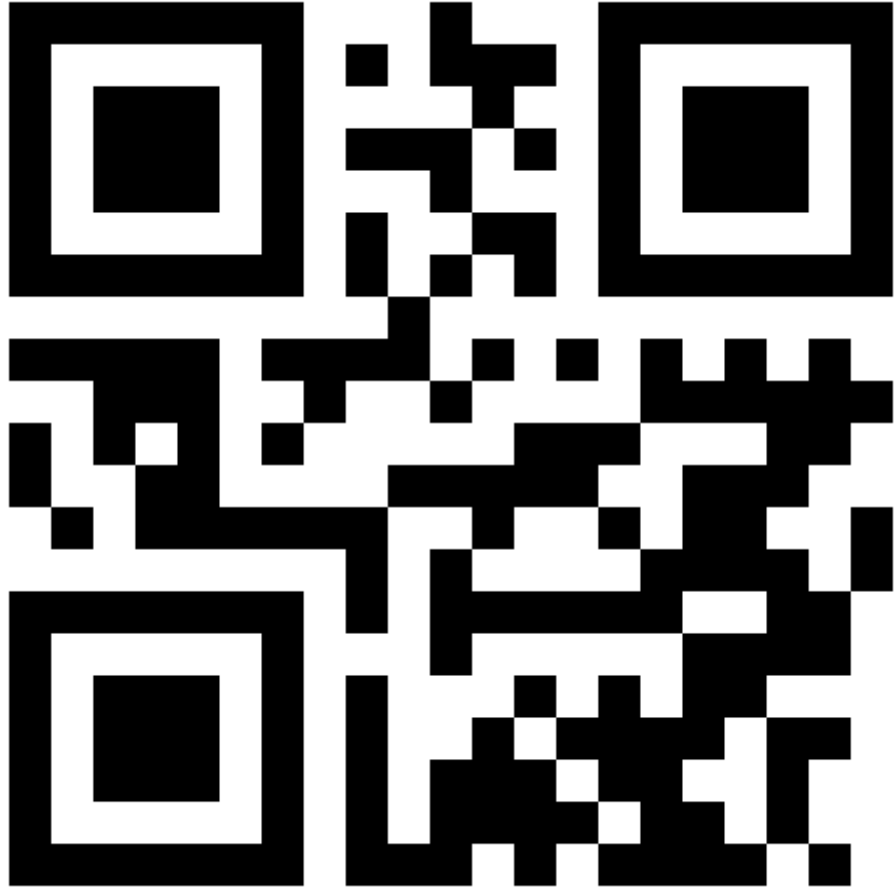# Next Generation ARM Connected Community (ACC)

New Interactive Platform for ARM Developers

- Participation is **FREE** for everyone!

- Find relevant information for your project
    - Documents, blogs, forums, code stubs, images, tutorial videos, and ARM partner directory

- Easy navigation of the ARM ecosystem
    - Connect with ARM Developers, ARM Partners and ARM Experts

- Participate in thought leadership discussions

- Launched at ARM TechCon, Oct 2013
- 中国用户可以使用中文社区

Register for Free at Community.ARM.com

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Join Now

Community.ARM.com

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Thank You

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