Power of IoT Turnkey Solution

June 21, 2016

Thundersoft Overview

- ❖ Founded in 2008
- ❖ **Smart Device OS & Platform**
- ❖ **3000+** SW/HW Engineers
- ❖ **IPO** in 2015
- ❖ **Worldwide** Presence

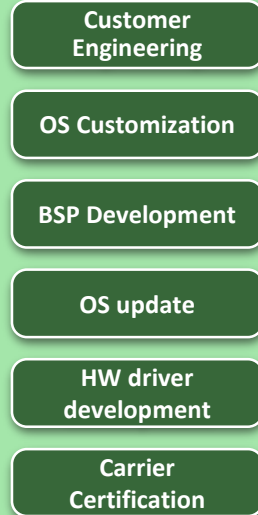## Multi-OS and Multi-Platform Support

Key Market

Mobile   IoT

Automotive   Security & Enterprise

Product, Solution & Capabilities

OS Software Technology

- HTML5
- Validation tools
- Multi-window Multi-screen
- Camera technology and Algorithm
- Security
- Power Saving
- Slim Android
- Fast boot & performance tuning
- OS customization
- Mobile OS kernel
- Protocol stack 3GPP/WiFi/BT

+

Software Products

- SmartDroid
- ThunderSec
- BigDroid
- ThunderEMM
- ThunderIVI
- UCAM Series

+

Services

- Customer Engineering
- OS Customization
- BSP Development
- OS update
- HW driver development
- Carrier Certification

Mobile Smartphone / Tablet

Automotive

IoT & Smart Devices Drone / IPCamera / VR / Wearable

Security / MDM

Hardware

System on Module

QUALCOMM (intel)

SAMSUNG Rockchip 瑞芯微电子
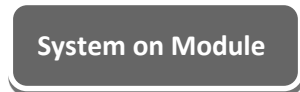
Drone SOM   **IPC SOM**   **VR SOM**   **Robot SOM**

Company History

Automotive / IoT

2016

2015

Thundercomm
Linaro
IoT Turnkey

THE **LINUX** FOUNDATION

Camera Turnkey

2014

2012

QRD
Android Mobile

HTML5 H5OS

ThunderSec

Mobile Security

2011

Midinux
Embedded Linux

2009

Linux Server
Linux Desktop
Embedded Linux

2008

2007

Thundersoft-Qualcomm
Joint Lab

Mobile Turnkey

NEC
Linux Server

1996

1999

ThunderSoft®
中科创达

Mobile Linux
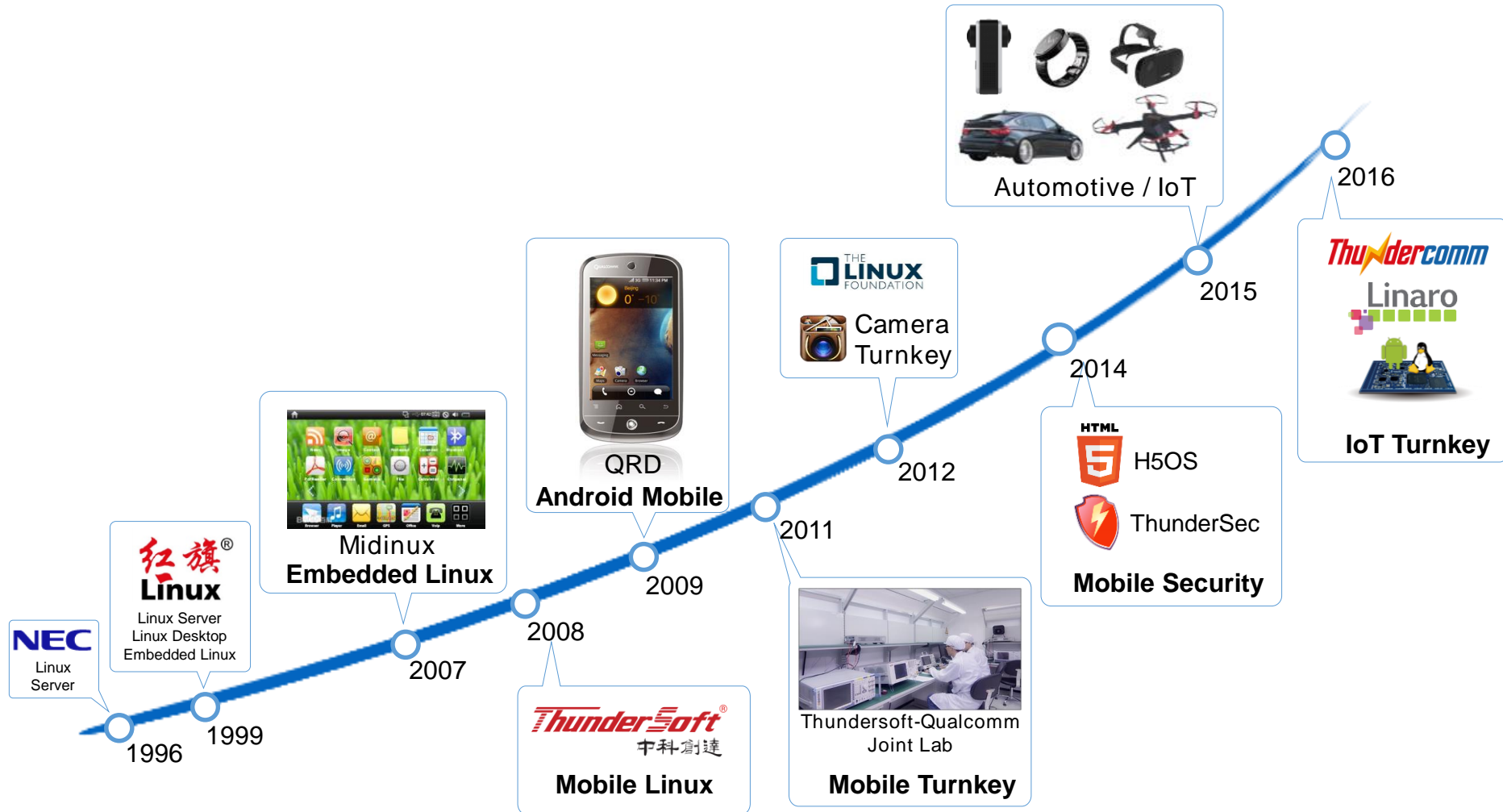
the IoT Mess

IoT设备

芯片平台

软件算法

人眼识别互动
畸变校正　图像矫正　表情识别　智能避障
语音识别　位置跟踪　　　　强光消除
飞控算法　3D手势　人眼识别　全景音频
图像识别　路线规划　自动返航　物体检测

元器件

A Typical IoT Team

IoT Team

driver
SCM
graphics
USB
security
application
FOTA
Tool
ME
upgrade
camera
display
cloud
video
multimedia
RF
hardware
EE
audio
testing
BB
sensor
power
kernel
optimization
Thermal
Wi-Fi
bring-up

IoT Barriers

Product **Service** **Integration** **Tools** **Docs** **Price** **Mindset**
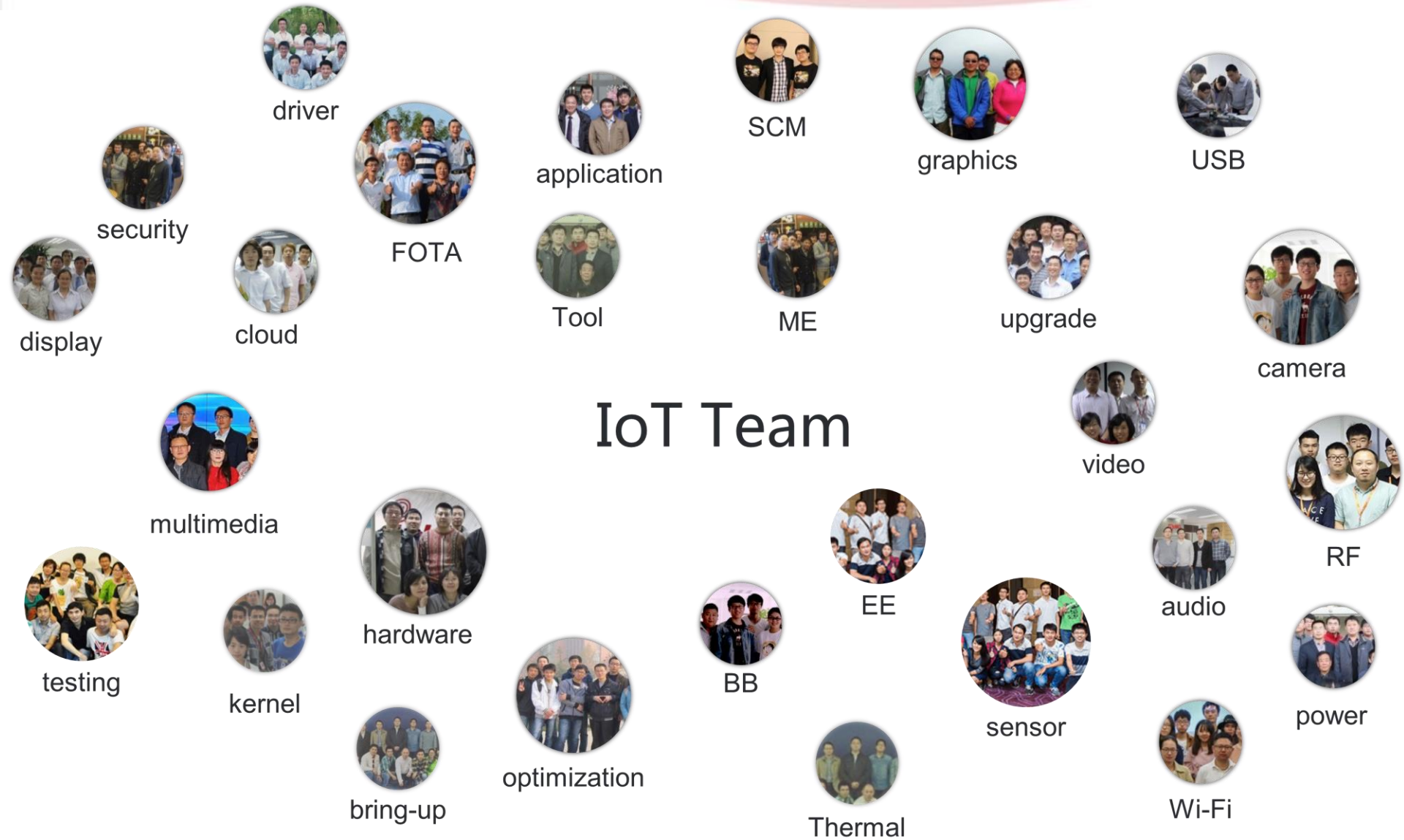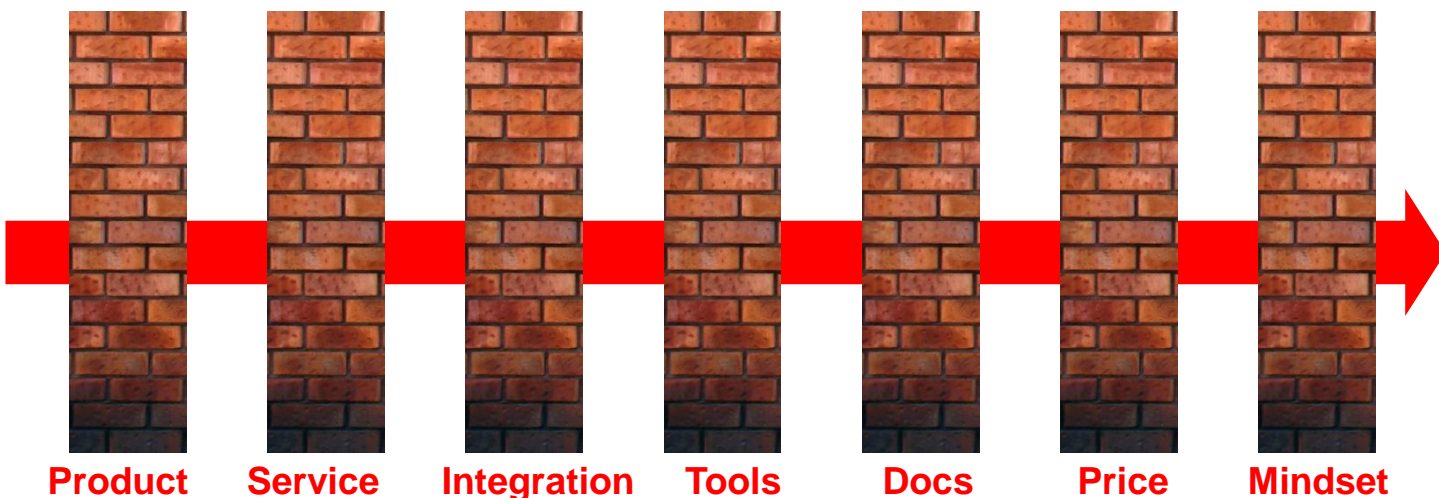
Customers

CE F/W Cases

- AOB
- QRD
- QCT
- Customer
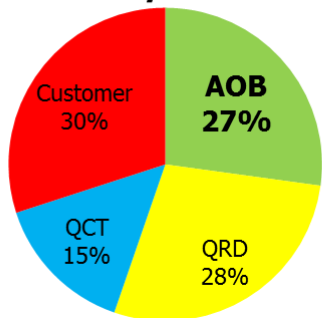
Customer 30%
AOB 27%
QCT 15%
QRD 28%

AOB Cases Breakdown
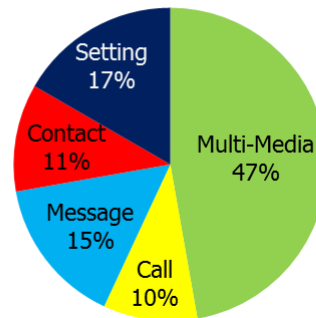
- Multi-Media
- Call
- Message
- Contact
- Setting

Setting 17%
Contact 11%
Message 15%
Call 10%
Multi-Media 47%

How To Enable - Turnkey Model
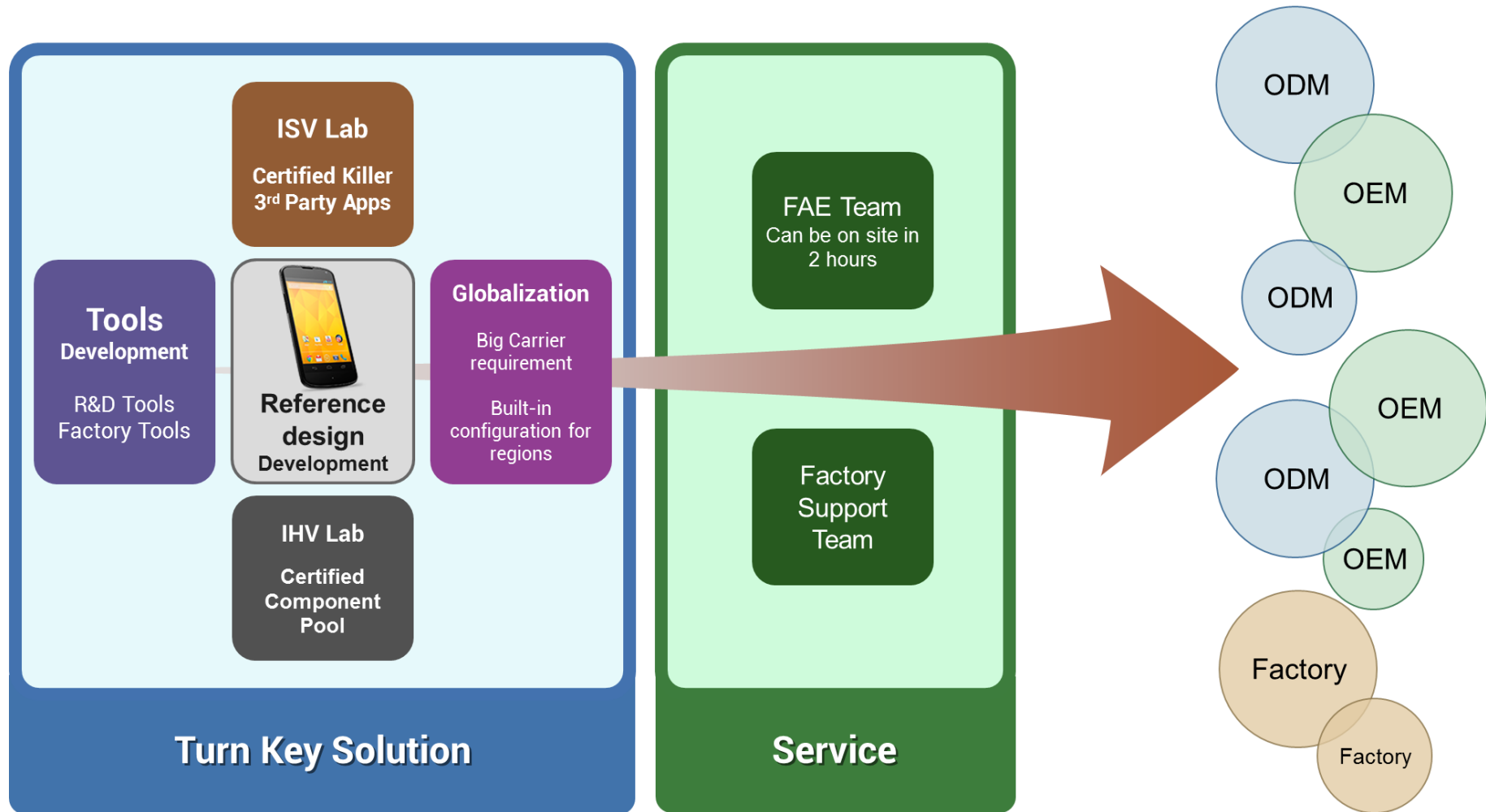
Thundersoft & mbed

❖ ThunderSoft become an mbed Ecosystem partner in 2014

❖ 30+ Development Boards

❖ 3 Solutions: Wearable Solution, Gateway Solution, Security Solution

❖ 5 Projects: smart belt, smart light, trusted gateway,

❖ Key Technology

▶ E2E Solution, Security, Connectivity, Sensor/HAL, Hardware Boards

Case Study #1 - Smart Belt

❖ **Overview**

▶ A clip-like BLE wearable device, measure biological information such as physical activity information, heart rate information, stress level, sleep information

▶ Transfer the sensor data from device to Gateway and IOT cloud.

- Cortext M4 + BLE Module
- Accelerometer + Pressure Sensors
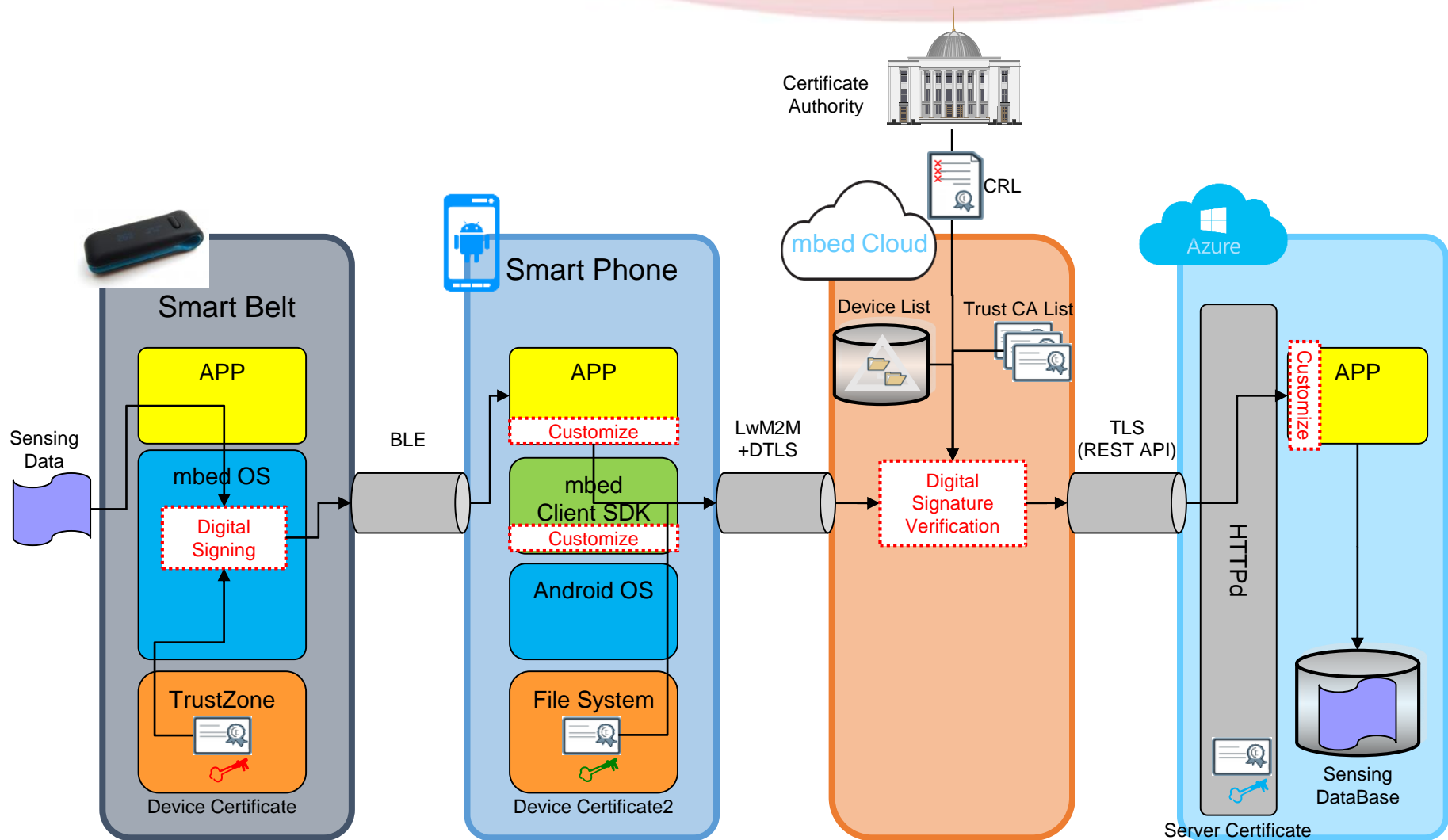- mbed OS 5.4
- Algorithms

❖ **Use Scenario**

▶ wear on the belt, gather and process the the sensor data from the devices

▶ place on the cradle, detect the pressure data by connecting a close soft tube which placed under-the-bed

❖ **Gateway Type**

▶ Proxy on smart phone

▶ Dedicated smart gateway
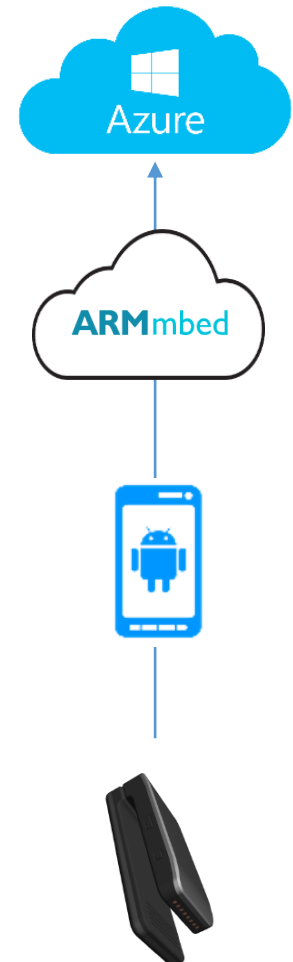
Smart Belt Overview

Benefits of mbed OS

❖ Open Source
  ► Apache 2.0 license, mbed OS in commercial and personal projects with confidence.

❖ Complete IoT Platform
  ► Reduce complexity of software, hardware and connectivity ecosystem.
  ► Maker can focus in its core value of device differentiation feature and web application

❖ Rich Drivers and support libraries
  ► Digital and analog IO, interrupts, port and bus IO, PWM, I2C, SPI and serial , a wide range of standard MCU peripherals ready in mbed OS

❖ More Communication Protocol Support
  ► The modularity of mbed OS enables it to run on Cortex-M0 to Cortex-M4 based devices, with a variety of communications protocols.

❖ Large Community
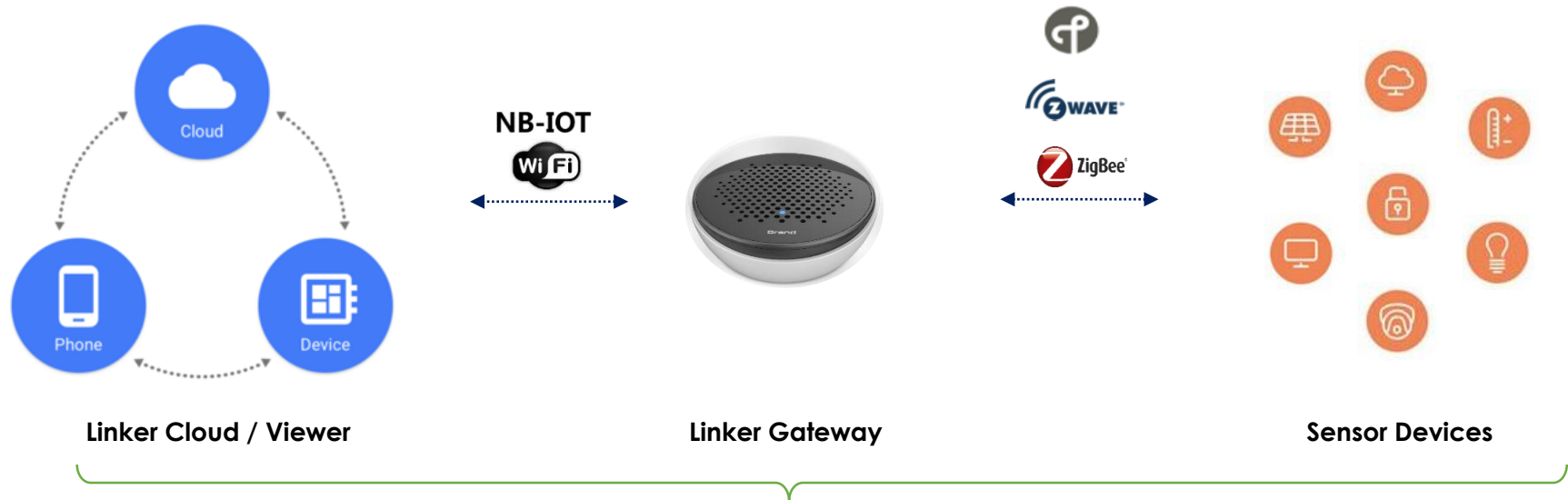 ► Many of our components and projects have been contributed by the community

❖ Ease of Use
  ► Huge range of code examples, demonstrating how to use each of the APIs.
  ► Application code can remain clean, portable and simple, while taking advantage of security and communications.
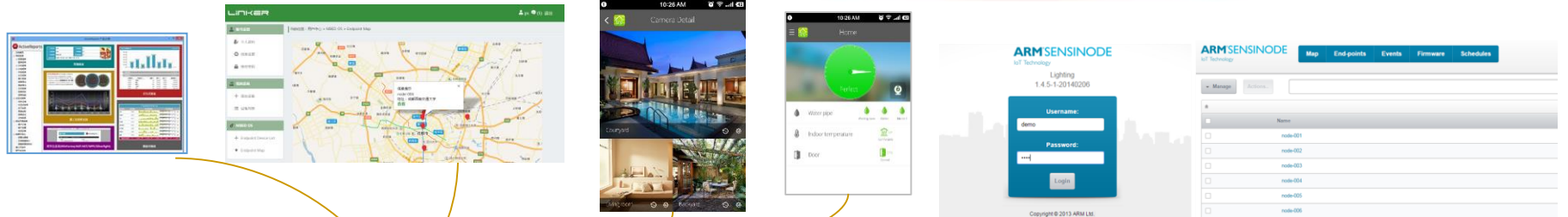 ► IDE and Tools are cross-platform,

Case Study #2 – Linker
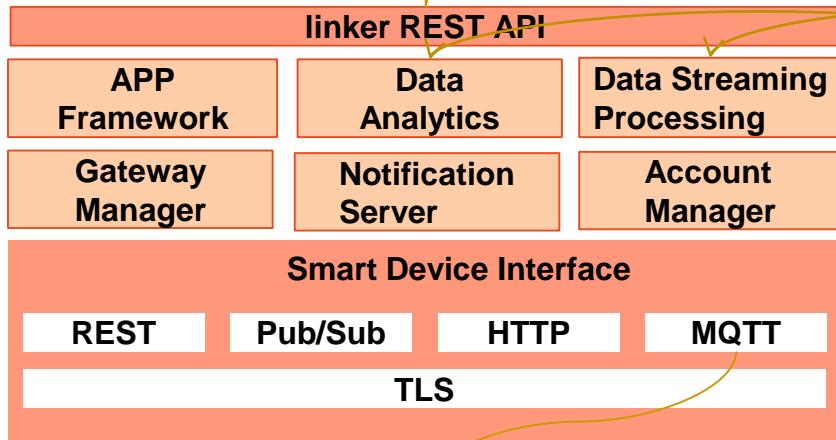
❖ Linker – E2E Sensor Network Solution

► Sensors devices, Gateway device, and cloud based device management services.
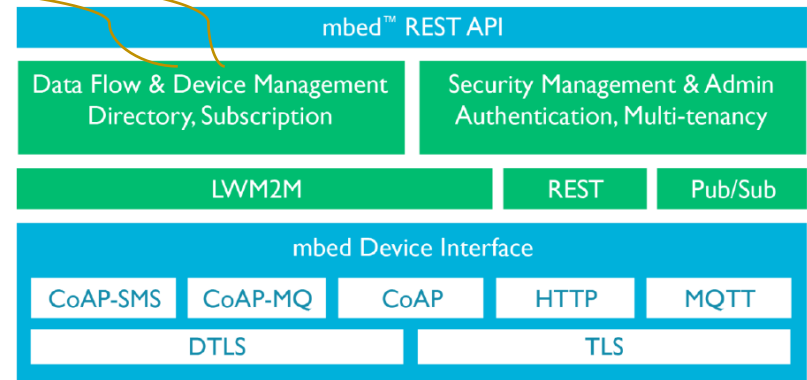
► make it simple to move data from sensor to server.

Linker Cloud / Viewer **Linker Gateway** **Sensor Devices**

Linker Smart Gateway Overview

Application Server

linker REST API

APP Framework	Data Analytics	Data Streaming Processing
Gateway Manager	Notification Server	Account Manager

Smart Device Interface

REST	Pub/Sub	HTTP	MQTT

TLS

mbed Device Server

mbed™ REST API

Data Flow & Device Management Directory, Subscription	Security Management & Admin Authentication, Multi-tenancy

LWM2M	REST	Pub/Sub

mbed Device Interface

CoAP-SMS	CoAP-MQ	CoAP	HTTP	MQTT

DTLS	TLS

Smart Device
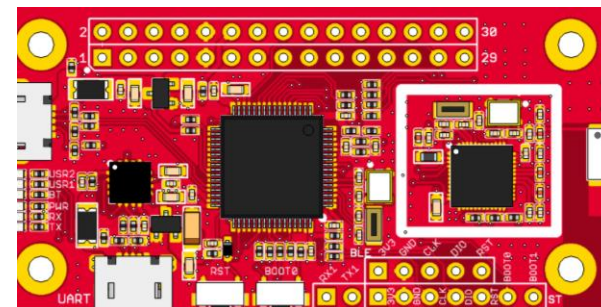
Linker Gateway

Gateway
Linux + Thread

Sensor Device

Future of Thundersoft with mbed

- ❖ NB-IoT + mbed
  - ▶ Low Power
  - ▶ Always Connect
  - ▶ 1st NB-IoT Development Board
- ❖ Security + mbed
  - ▶ Trust Execution Environment
  - ▶ Secure App, Secure Update
  - ▶ Secure Connection
- ❖ Customers + mbed
  - ▶ Health Care
  - ▶ Smart Home
  - ▶ Smart Factory
  - ▶ …

Thanks

Website:
http://www.thundersoft.com/

Contact us:
biz@thundersoft.com
+86-10-62662686

Address:
4th floor, Taixiang Building 1A#, Longxiang Road, Haidian District Beijing, China, 100191