Android Things
The "Google way" IOT platform.

Democratizing the IOT development

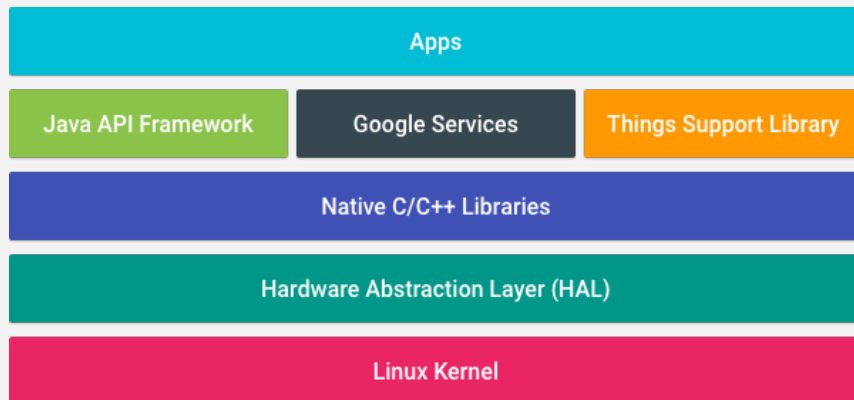JORDI BRUÑA BUGES
Poliglot firmware developer
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Android Things Overview 1/2

Apps

Java API Framework | Google Services | Things Support Library

Native C/C++ Libraries

Hardware Abstraction Layer (HAL)

Linux Kernel

Things support Library
1. GPIO abstraction library
2. PWM abstraction library
3. Intent android system forbidden.
4. Only one app launch by the zigotte.
5. Display and Input interface is optional
6. Same UI Toolkit as Android Nougat
7. Needs 32Mbs to run.

source: https://developer.android.com/things/sdk/index.html

Android Things Overview

1. Launched in google IO 2015 (First project name Brillo)

2. It's integrate with Wave protocol from Google to create a peer to peer communication Network.

3. BSP provided by Google.

   a. Partner site: https://iotpartnerkit.withgoogle.com/

4. Main source of examples from google: https://github.com/androidthings

5. Arduino code can't use, but there is a wrapper to use the Arduino board by the UART interface.

source: https://developer.android.com/things/sdk/index.html

HW Platform supported

Platform	Intel® Edison	Intel® Joule	NXP Pico i.MX7D	NXP Pico i.MX6UL	NXP Argon i.MX6UL	Raspberry Pi 3
	Learn More Where to buy Get Started	Learn More Where to buy Get Started	Learn More Where to buy Get Started	Learn More Where to buy Get Started	Learn More Where to buy Get Started	Learn More Where to buy Get Started
CPU & Memory	• Intel® Atom™ • 500MHz dual-core x86 • 1GB RAM	• Intel® Atom™ • 1.5GHz/1.7GHz quad-core x86 • 3GB/4GB RAM	• NXP i.MX7D • 1GHz dual-core ARM Cortex A7 • 512MB RAM	• NXP i.MX6Ultralite • 500MHz ARM Cortex A7 • 512MB RAM	• NXP i.MX6Ultralite • 500MHz ARM Cortex A7 • 512MB RAM	• Broadcom BCM2837 • 1.2GHz quad-core ARM Cortex A53 • 1GB RAM
Storage	4GB eMMC	8GB/16GB eMMC	4GB eMMC	4GB eMMC	4GB eMMC	MicroSD card slot
Display	No	HDMI	DSI	No	No	HDMI
Camera	No	CSI-2	CSI-2	No	No	CSI-2
Audio	USB 2.0	USB 2.0	3.5mm Analog	3.5mm Analog	3.5mm Analog Output	USB 2.0 3.5mm Analog Output
Networking	Wi-Fi 802.11n Bluetooth® 4.0	Wi-Fi 802.11ac Bluetooth® 4.2	10/100/1000 Ethernet Wi-Fi 802.11ac Bluetooth® 4.1	10/100 Ethernet Wi-Fi 802.11n Bluetooth® 4.1	10/100 Ethernet Wi-Fi 802.11n Bluetooth® 4.1	10/100 Ethernet Wi-Fi 802.11n Bluetooth® 4.1
USB	1x USB 2.0 OTG	2x USB 2.0 Host 1x USB 3.0 OTG	1x USB 2.0 Host 1x USB 2.0 OTG	1x USB 2.0 Host 1x USB 2.0 OTG	1x USB 2.0 Host 1x USB 2.0 OTG	4x USB 2.0 Host

Are you a HW board designer? Ask google for BSP information

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https://iotpartnerkit.withgoogle.com/

source: https://developer.android.com/things/sdk/index.html

Demo with Android Things

Live demo with Intel Edison

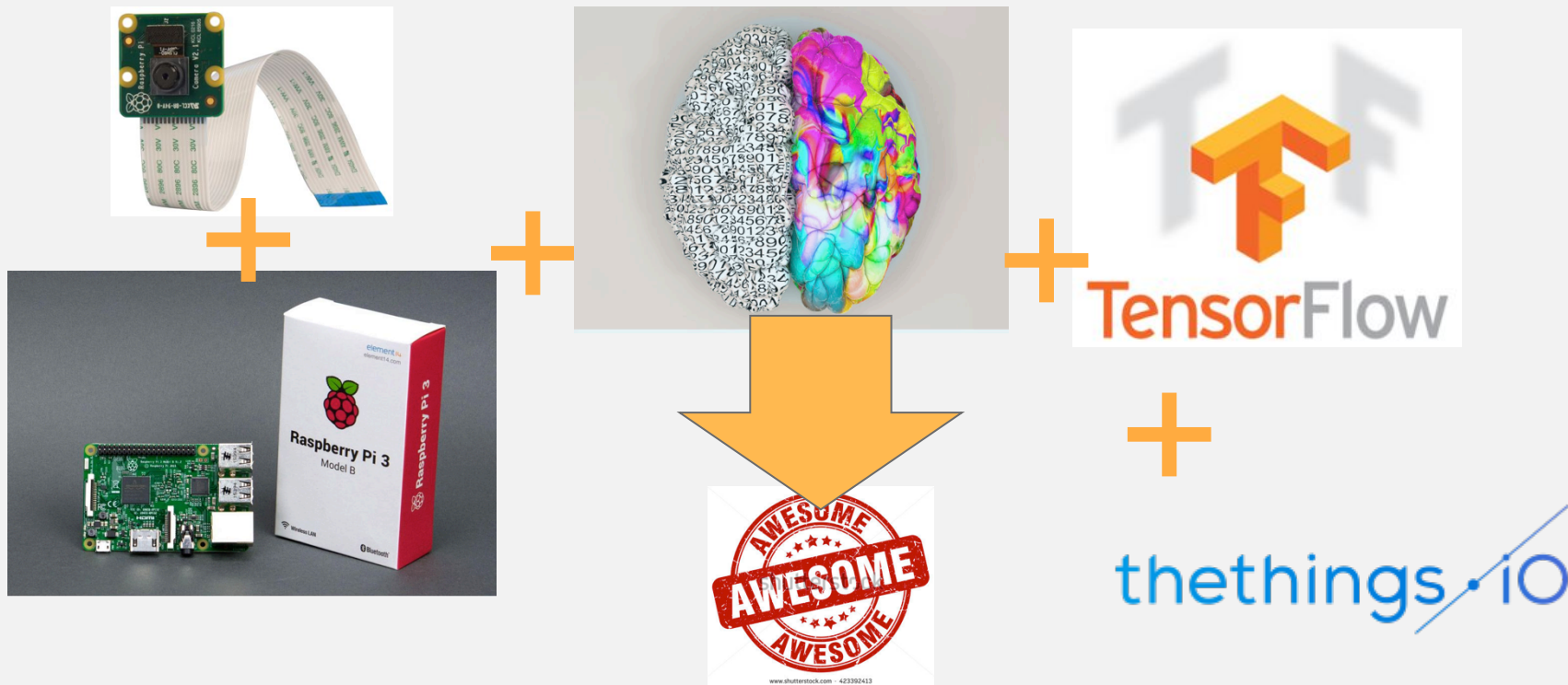source: https://developer.android.com/things/sdk/index.html

Pros / Cons Android Things

PROS	CONS
1. Supported by Google	1. At this moment a limited number of boards. It's not documented how to do a port of Android Things to a new platform.
2. The most popular board is supported Raspberry PI 3	2. At this moment. Google is the only supplier of BSP. Partnership with google for special BSPs.
3. Android Studio as developer platform	2. It's not designed for low resources system. Needs 32Mb RAM to execute.
4. Deployment and debugging its very easy	3. Very new in the IOT scene, very small community but start to grown. Main github source code from people from google.
5. Can reuse android java libraries.	4. In a lot of case use a not supported device you need to port the driver to peripherical IO.
6. Camera interface with java libraries	5. Not Real time OS
7. Same UI toolkit as Android Nougat	6. Only one application executing by the zigotte.
8. You need performance, you can program with NDK	7. The arduino code can't execute in android things.

Specials Use of Android Things   1/1

THANK YOU FOR YOUR ATTENTION

Nice resources

https://medium.com/@mojroid/the-quick-and-simple-guide-to-android-things-6592636e772f

https://github.com/bedomo/androidthings-meetup

http://nilhcem.com/android-things/discovering-the-GPIO-api-building-a-remote-car

https://github.com/amitshekhariitbhu/awesome-android-things

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