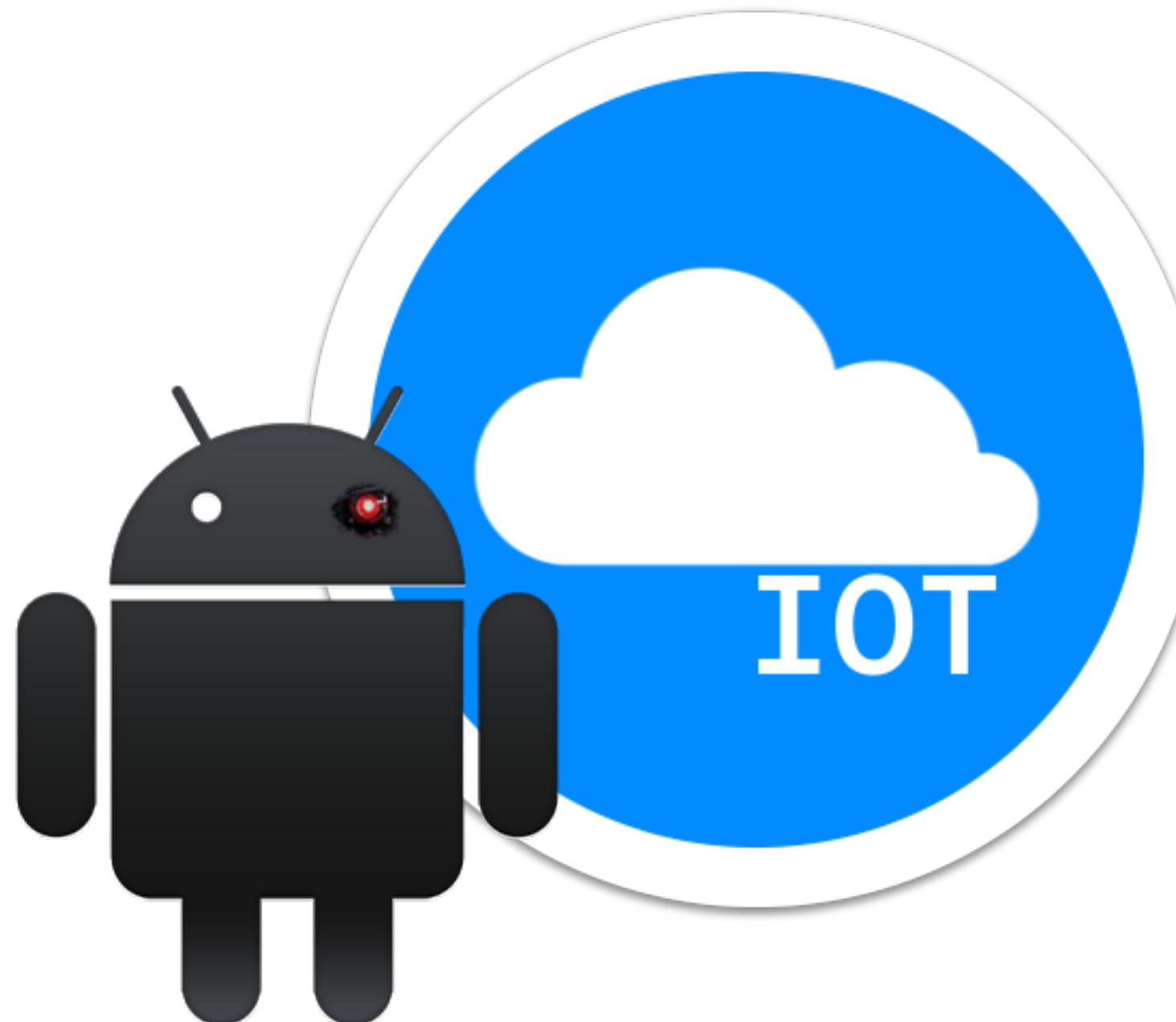


Something about android things

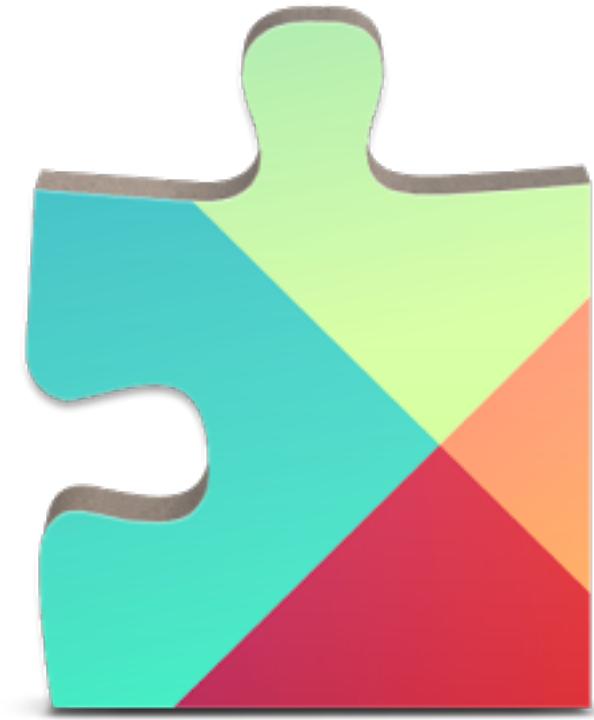
What is AndroidThings?

- An **extension** of Android platform for **IoT** and **embedded** devices
- It is *ideal* for powerful, intelligent devices that need to be secure



Pros

Easy integration with Google services



Google Cloud Platform

Pros

Easy to start



Swift is like Kotlin

Swift

```
var movieCount = 0
var songCount = 0

for item in library {
    if item is Movie {
        movieCount += 1
    } else if item is Song {
        songCount += 1
    }
}
```

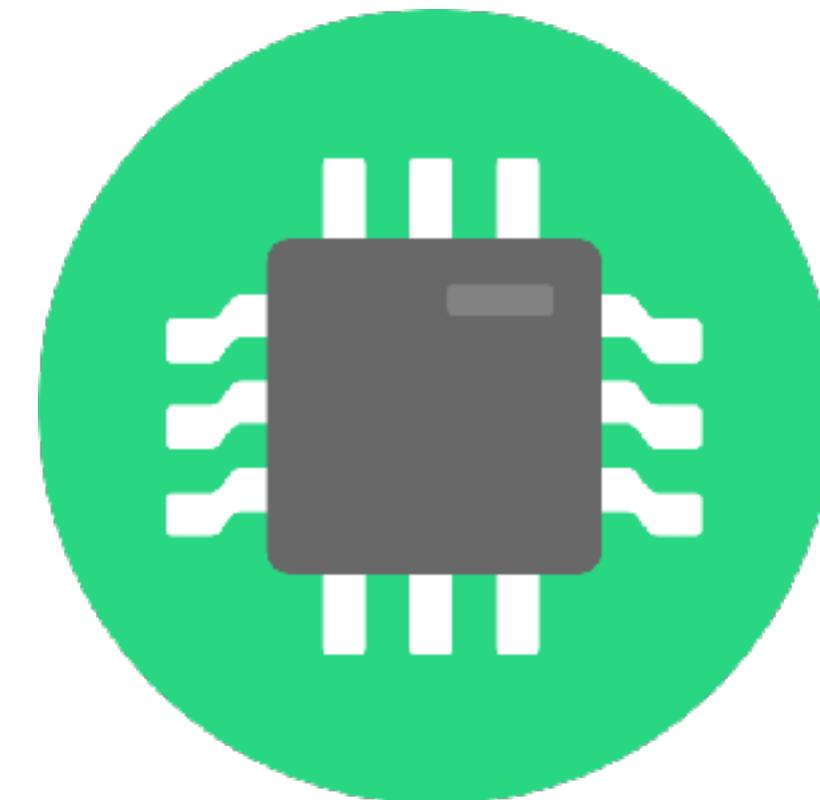
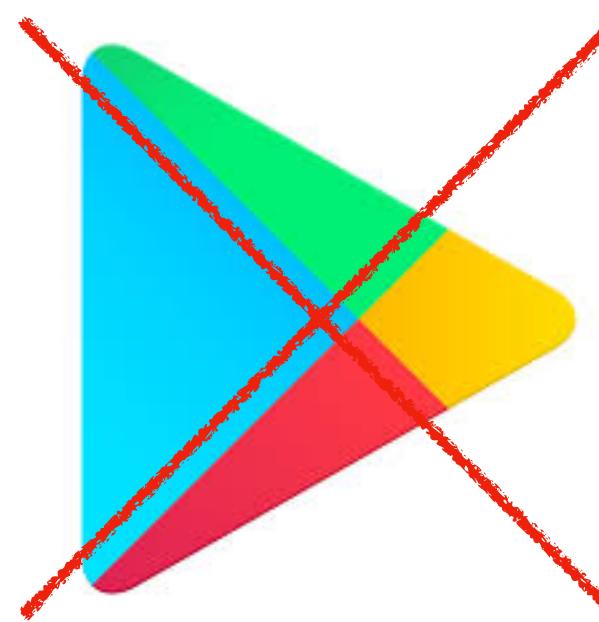
Kotlin

```
var movieCount = 0
var songCount = 0

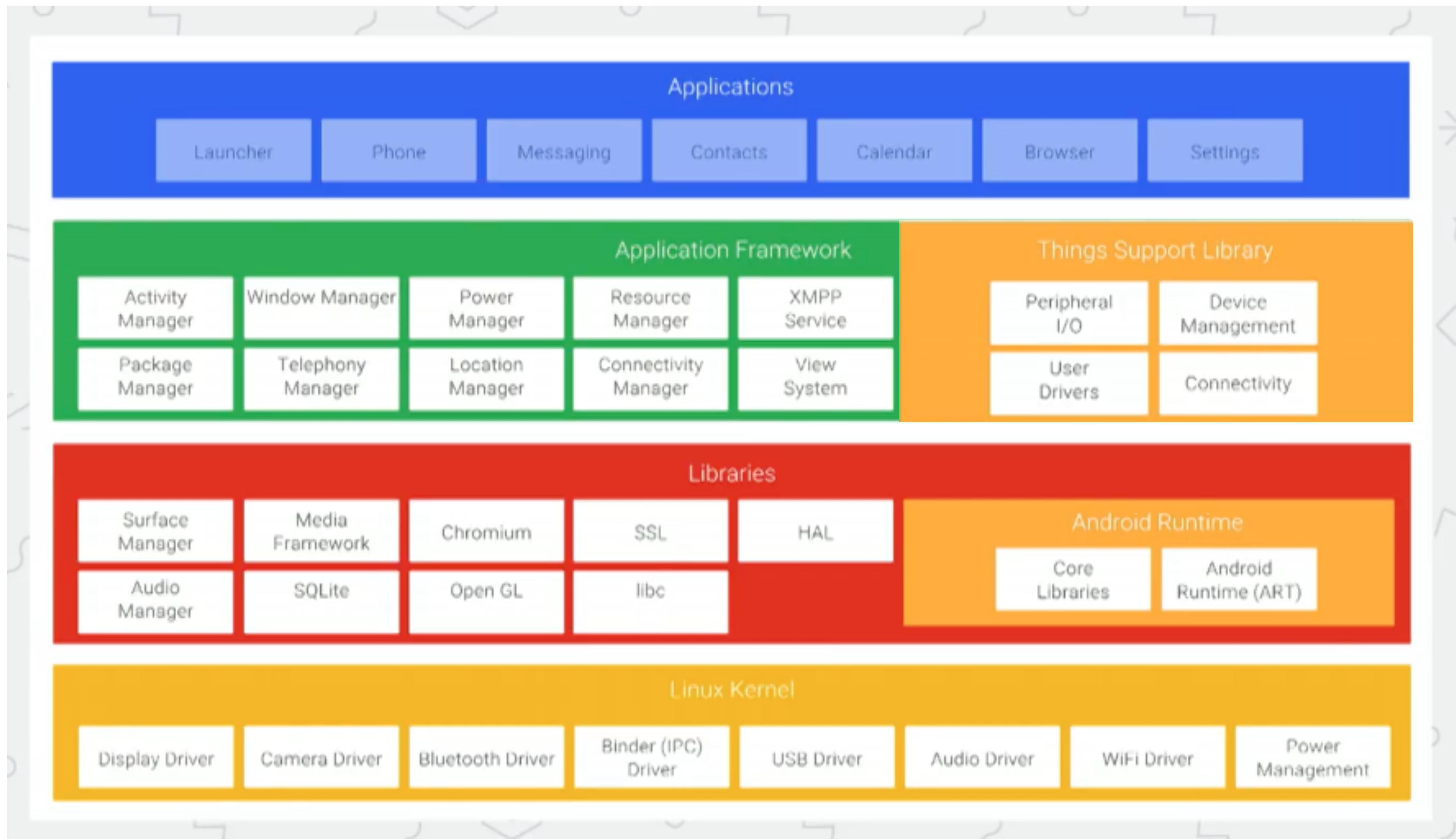
for (item in library) {
    if (item is Movie) {
        ++movieCount
    } else if (item is Song) {
        ++songCount
    }
}
```

Cons

- No Play Store available
- Custom HW -> Need ship HW & SW together
- Single purpose device



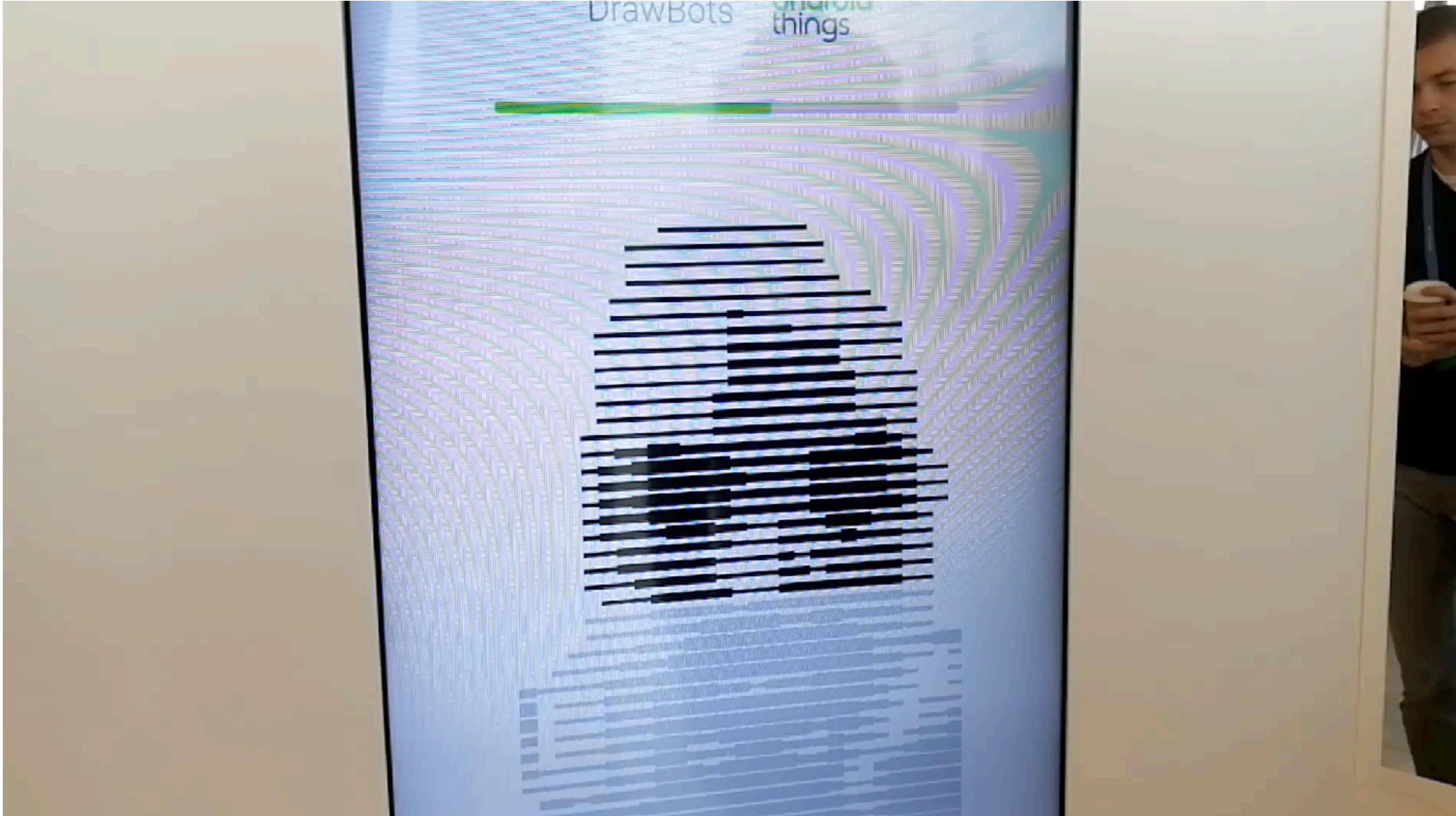
Changes in platform



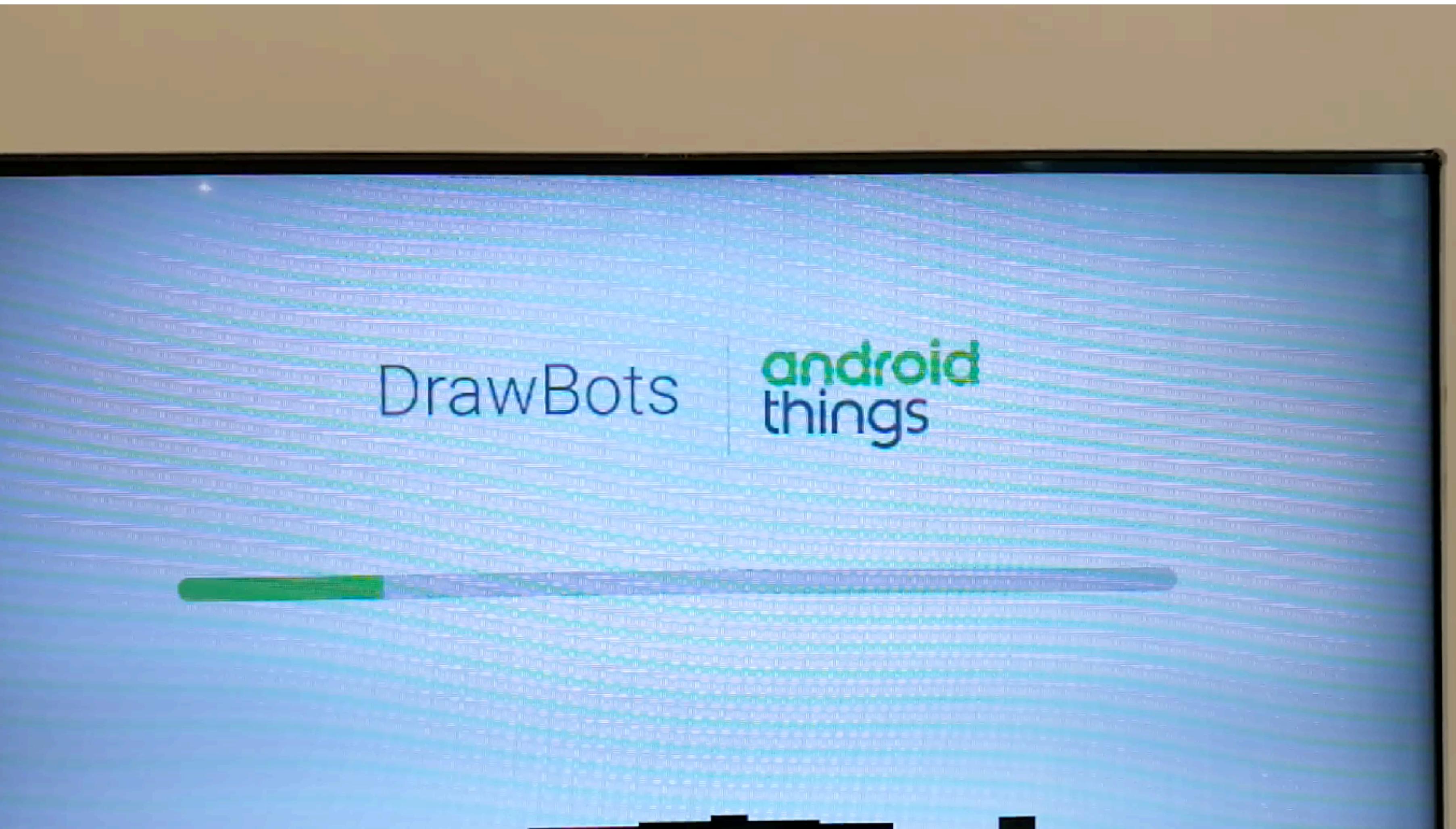
Enough with the theory



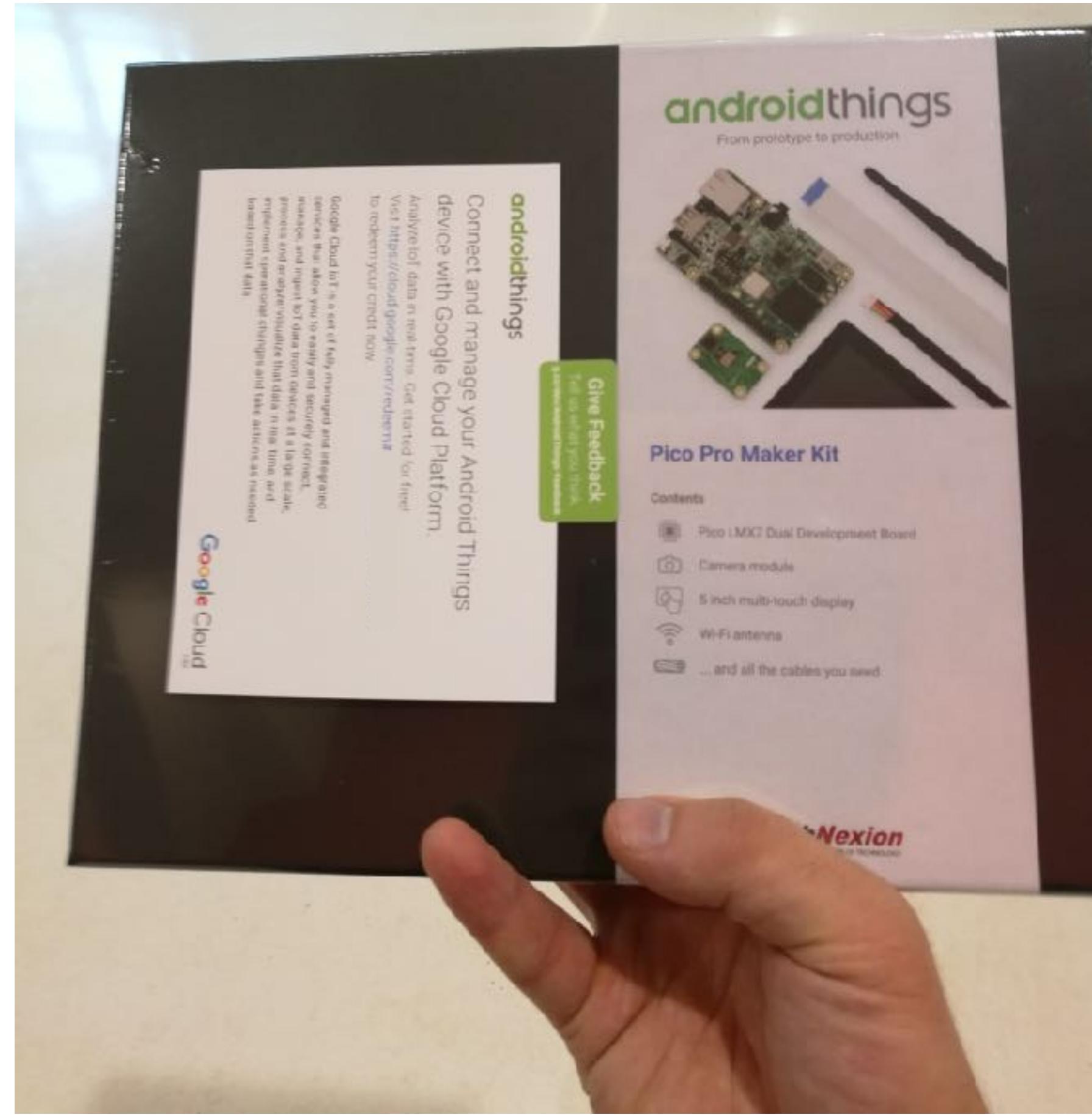
Drawing bot



One more drawing bot



Let's start building things



Supported hardware



NXP Pico i.MX7D



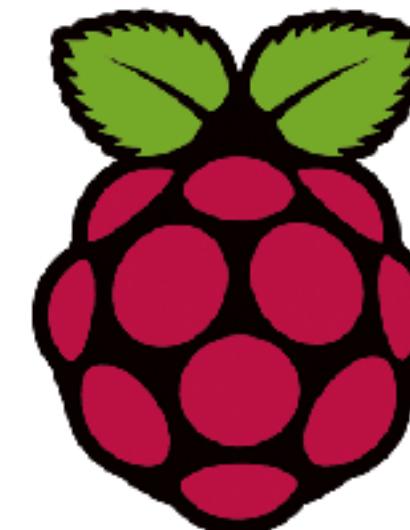
NXP Pico i.MX6UL



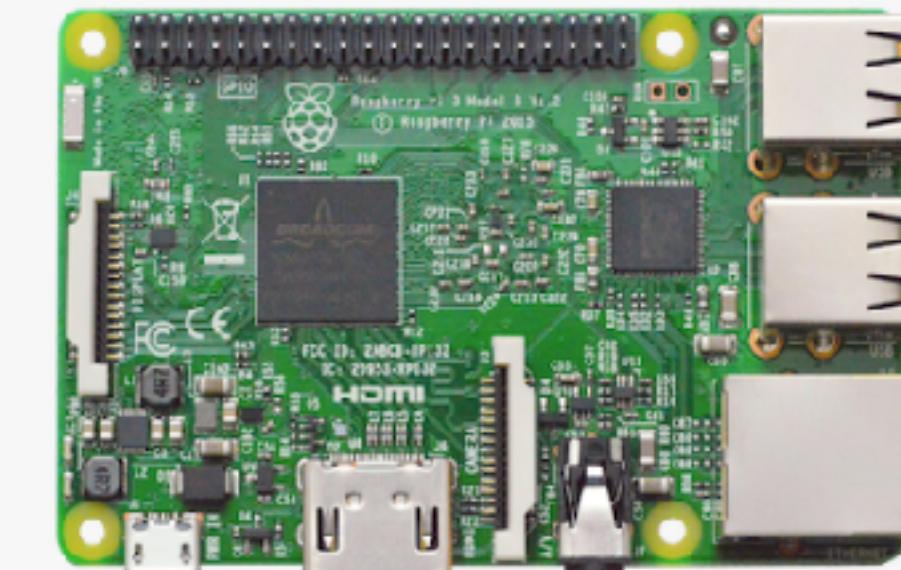
NXP Argon i.MX6UL



NXP SprIoT i.MX6UL



Raspberry Pi 3



Supported hardware



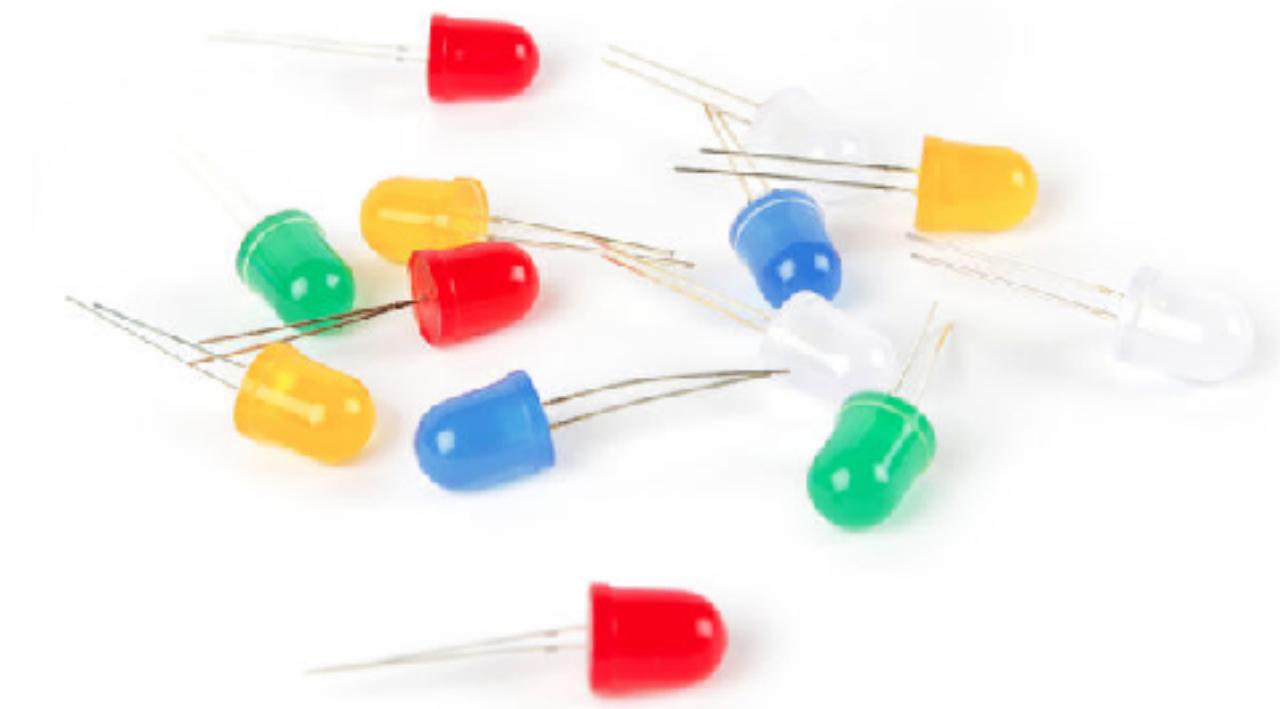
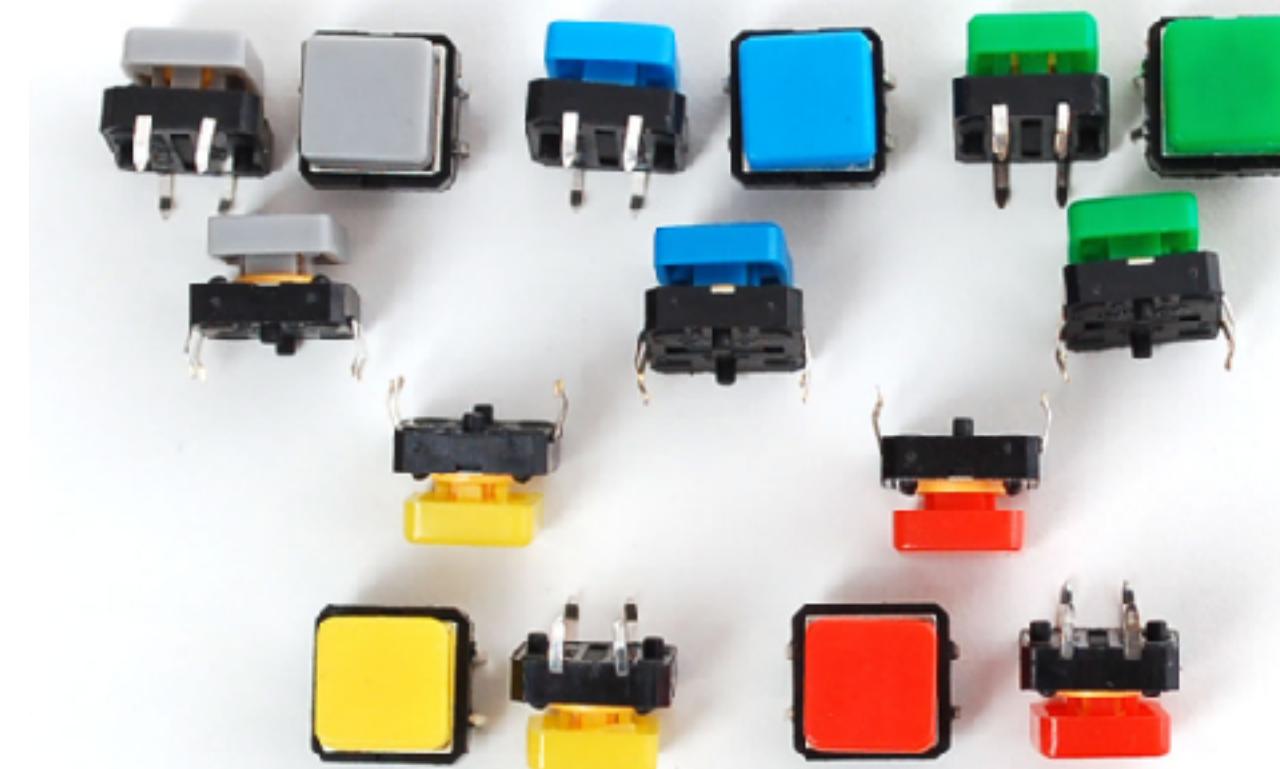
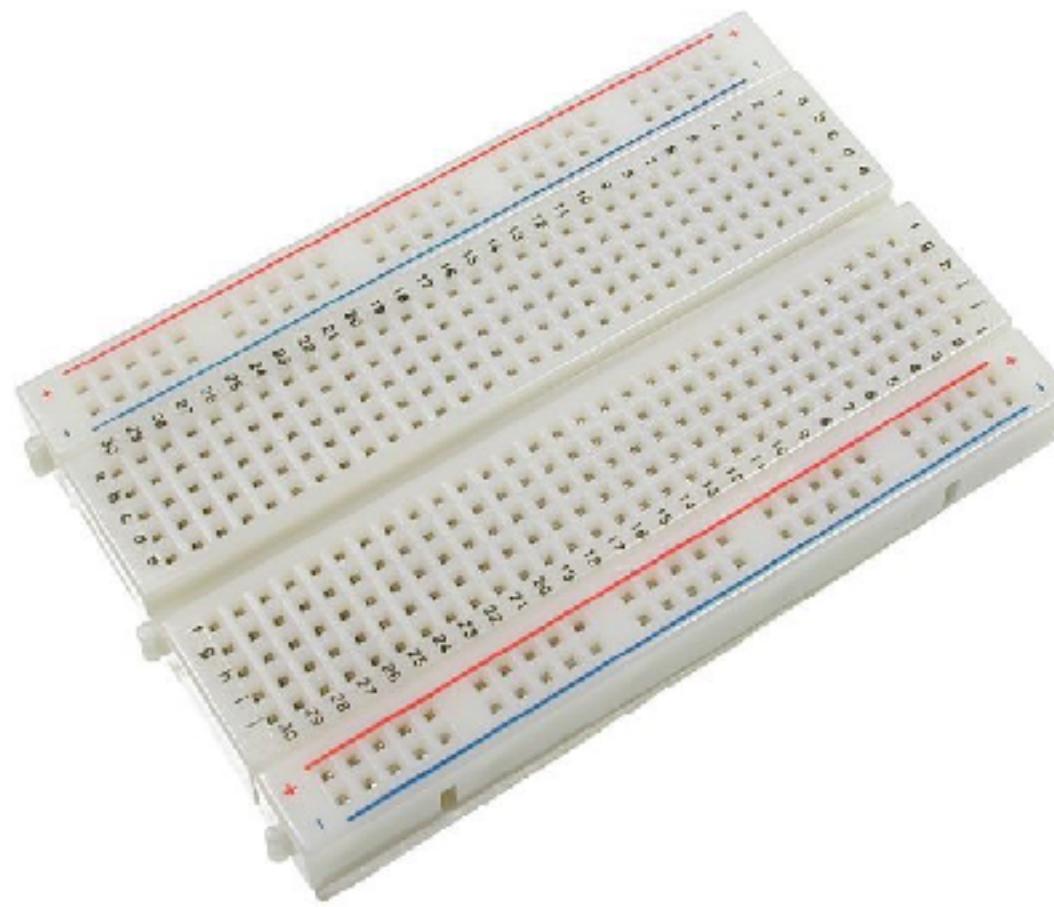
**Pico i.MX6UL/7D SOM and
Development Platform**

- i.MX 6UltraLite Processor ARM® Cortex®-A7 Core
- i.MX7 Dual Processor dual ARM® Cortex®-A7 cores and Cortex-M4 core
- Memory: 512MB DDR3L
- Onboard Storage: 4GB
- Wi-Fi: Pico 6UL 802.11n & Bluetooth 4.1
- Wi-Fi: Pico 7D 802.11 ac & Bluetooth 4.1

Legacy hardware



Other hardware



Android Things Console

The screenshot shows the 'PRODUCT SETTINGS' tab selected in the navigation bar. The main area displays the following configuration:

- Product name:** hands-on-test
- SOM type:** NXP Picc i.MX7D
- CREATE STARTER BUILD** button
- OEM partition size:** 32 MB
- Include these Google services:** Google Play Services

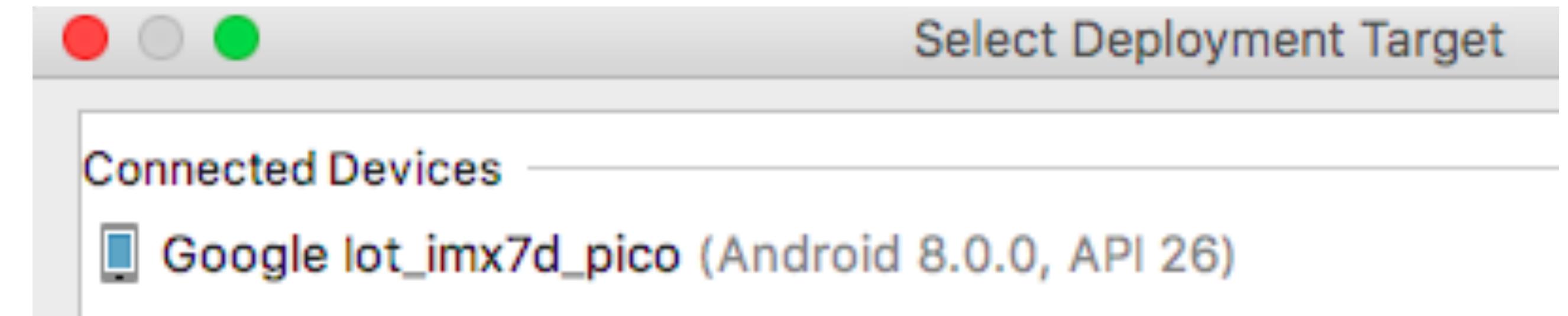
The screenshot shows the 'FACTORY IMAGES' tab selected in the navigation bar. The main area displays the following information:

- A large button labeled 'CREATE STARTER BUILD' with a note: 'To create a starter build, upload a bundle or use an empty bundle'.
- Android Things versions** table:

OS build	OS version	Date uploaded
OIR1.170720.017	0.5.1-devpreview(latest)	Aug 24, 2017
OIR1.170720.015	0.5.0-devpreview	Aug 10, 2017
NIH40K	0.4.1-devpreview	Jun 15, 2017
- CREATE BUILD** button at the bottom right.

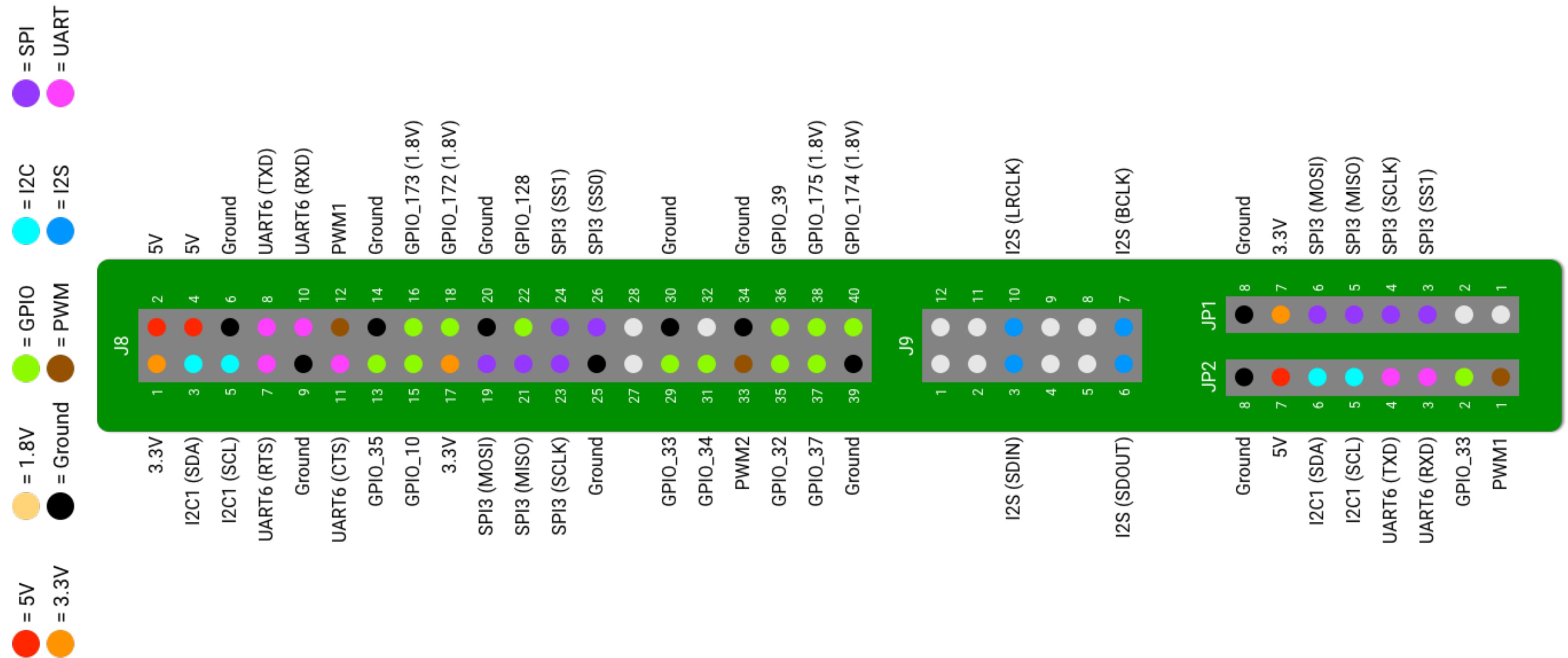
Flash and configure

- Flash image on the device
- Configure WiFi
- Start developing



```
adb shell am startservice \
-n com.google.wifisetup/.WifiSetupService \
-a WifiSetupService.Connect \
-e ssid <Network_SSID> \
-e passphrase <Network_Passcode>
```

Check pinout

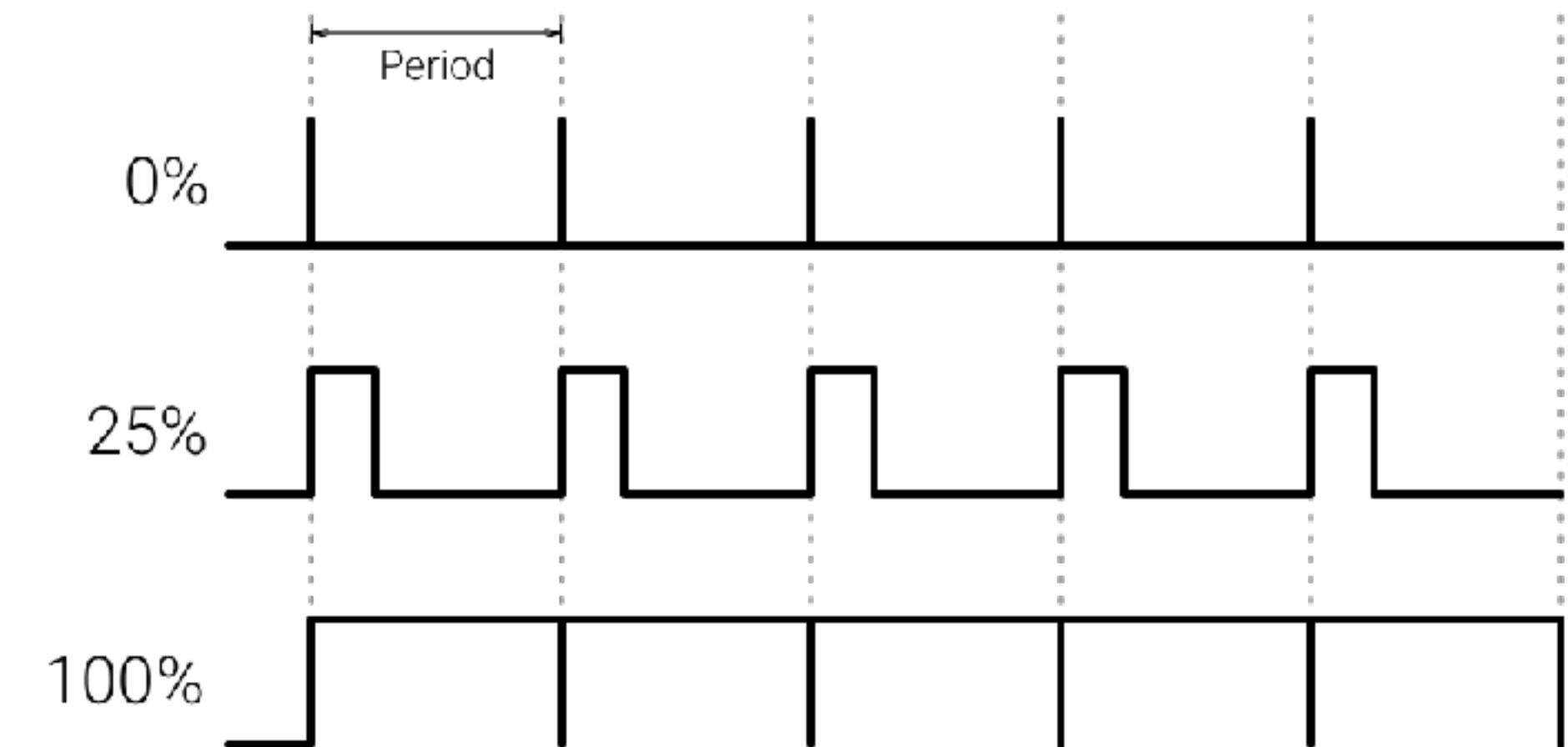
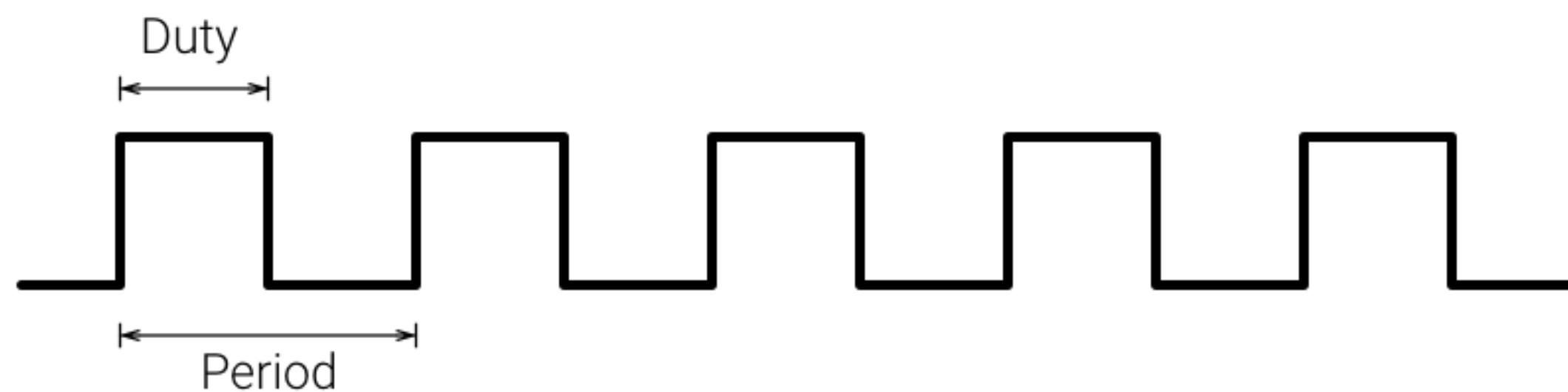


DEMO



PWM

- **Pulse Width Modulation** is a common method used to apply a proportional control signal to an external device using a digital output pin. For example, servo motors use the pulse width of an incoming PWM signal to determine their rotation angle. LCD displays adjust their brightness based on a PWM signal's average value.



Links

developer.android.com/things

github.com/amitshekhar/iitbhु/awesome-android-things

codelabs.developers.google.com/codelabs/androidthings-weatherstation

youtu.be/zpR_jQXc1fs

github.com/romstr/android-things-test