

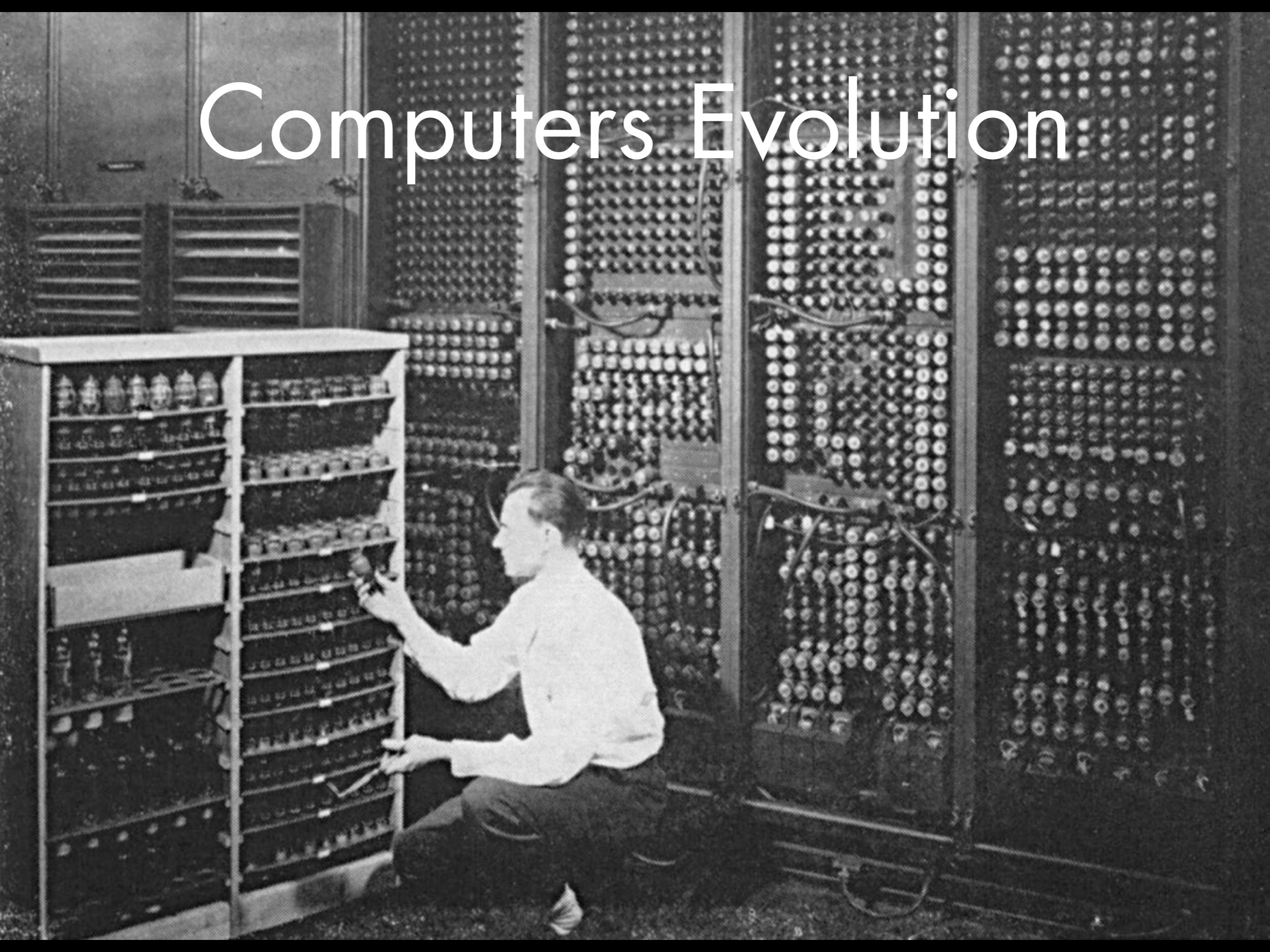
PERVASIVE COMPUTING WORKSHOP

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imanolgomez.net
13 Nov 2015

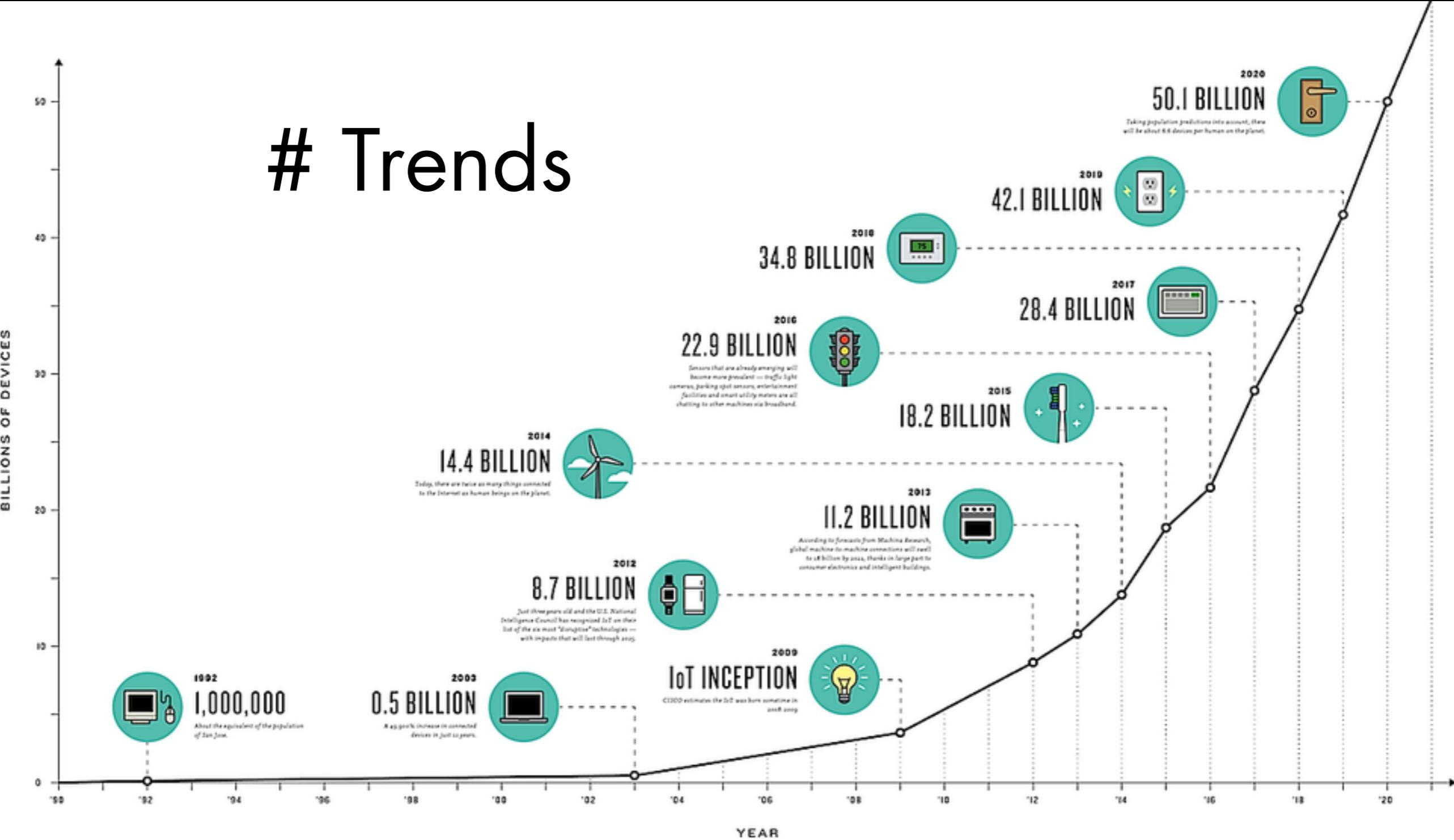
hfg
OF_MAIN

Introduction

Computers Evolution



Trends



Ubiquitous





Paradigm

"In theory, theory and practice are the same. In practice, they are not."

- Albert Einstein -

Challenges

Anything
Any Device



Anytime
Any Context



Anyone
Anybody



Any Place
Anywhere



Any Service
Any Business



Any Path
Any Network



OBEY

PROPAGANDA-SERVICES

RETINAL DELIVERY



100% GUARANTEED



PROP MFG.

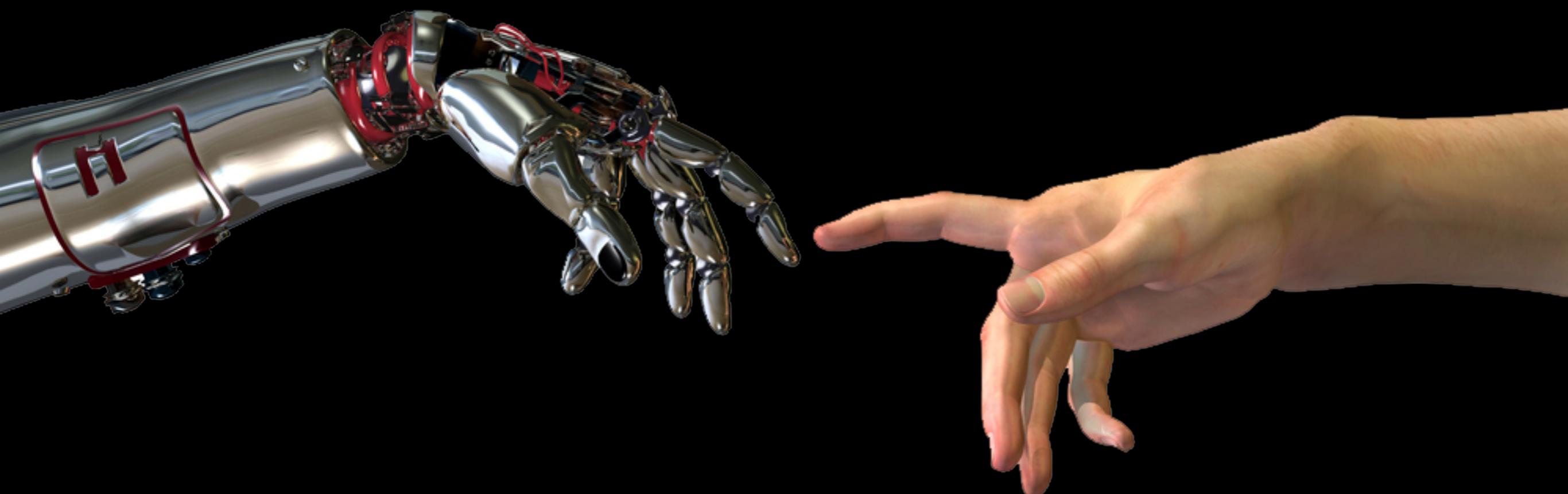
MANUFACTURING DISSENT

PERSUASION SINCE 89

Security

SEVENFEETFOURINCHESFIVEHUNDREDTWENTYPOUNDS

Transdisciplinary Approach



Related Technologies



Internet of Things



Wearable Technology

Ambient Intelligence



Examples

Products



SMART THERMOSTATS

nest



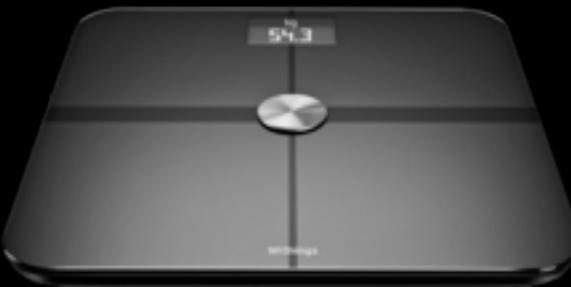
ACTIVITY TRACKERS

NIKE



SMART LIGHTS

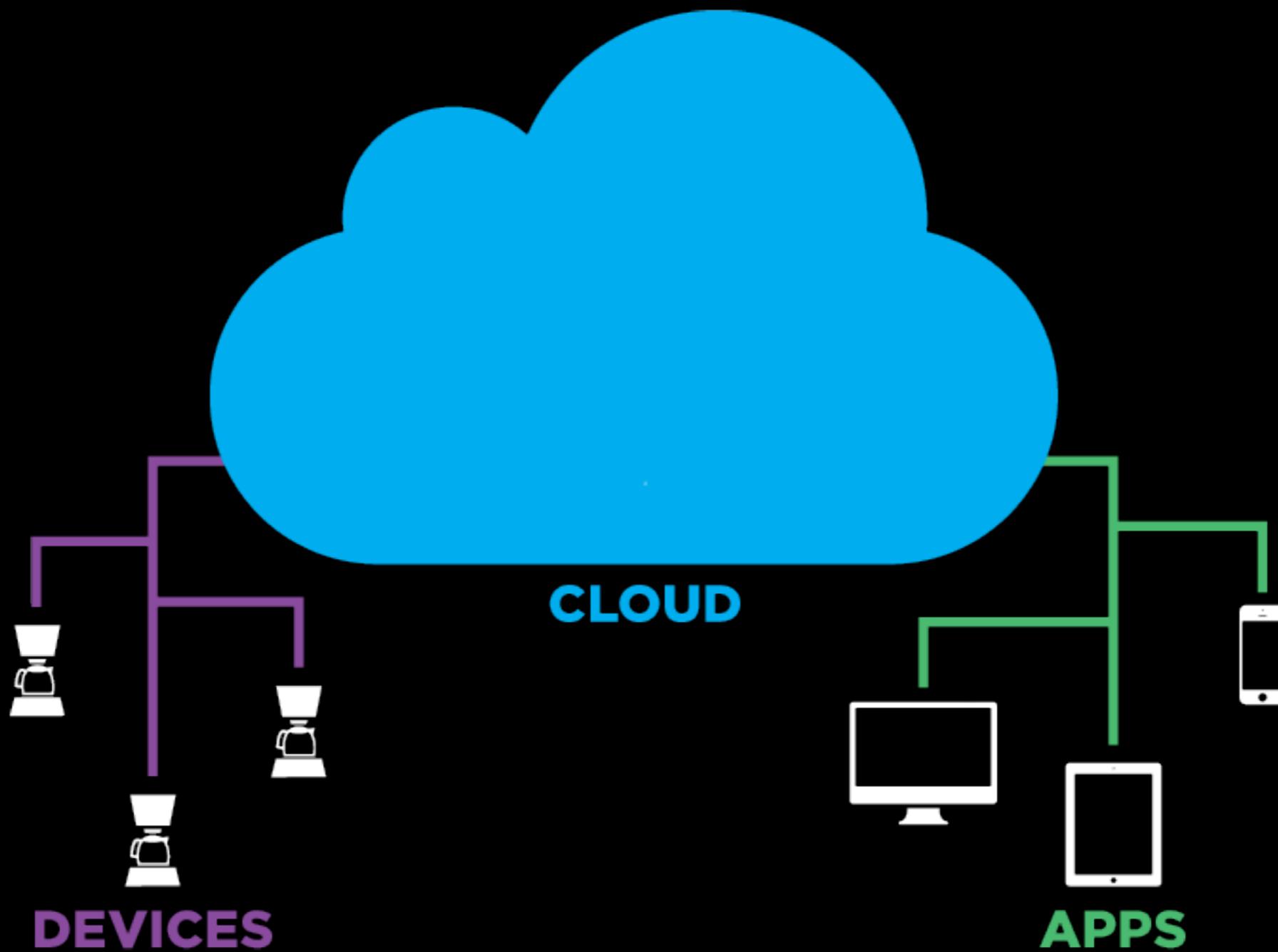
PHILIPS



CONNECTED SCALE

Withings

How does it work?



The Cloud



Applications



FASHION
LIFESTYLE

TRANSPORT
MOBILITY/TRAFFIC

RETAIL
INVENTORY

near-field connect for your apps
Developer Preview Kit
10 Bluetooth Low Energy Beacons



LOGISTICS
REAL TIME



MANUFACTURING
M2M



HEALTH
BODY



ENVIRONMENT
PREVENTION



BUILDING
INFRASTRUCTURE




AGRICULTURE
CONTROL



SECURITY
DETECTION

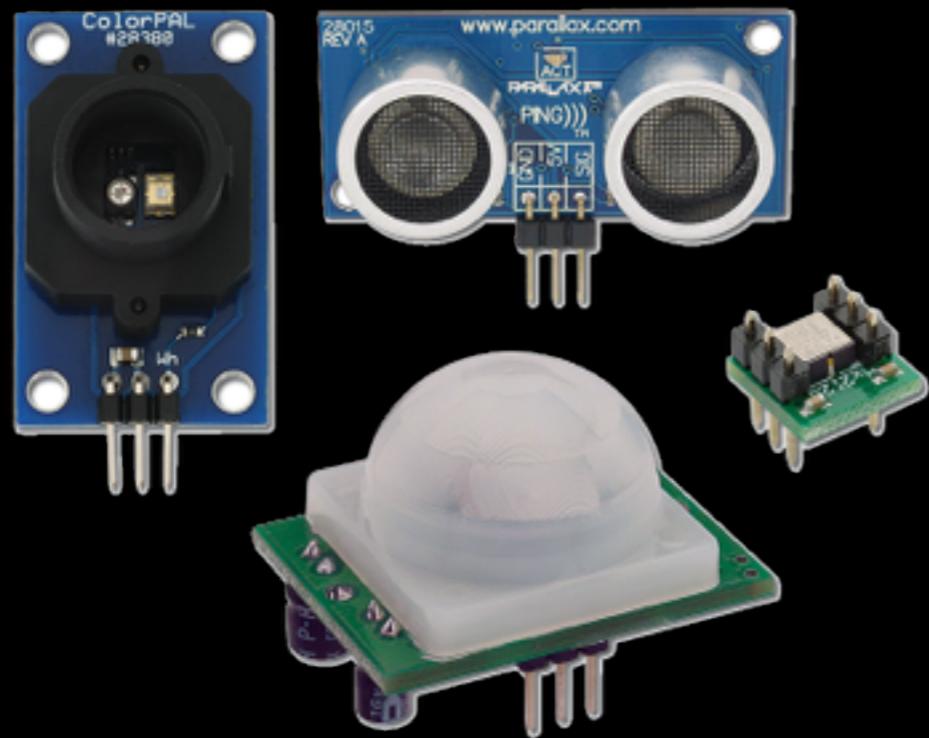
"Technology should create calm"

Mark Weiser, father of pervasive computing

Prototyping

Discussion

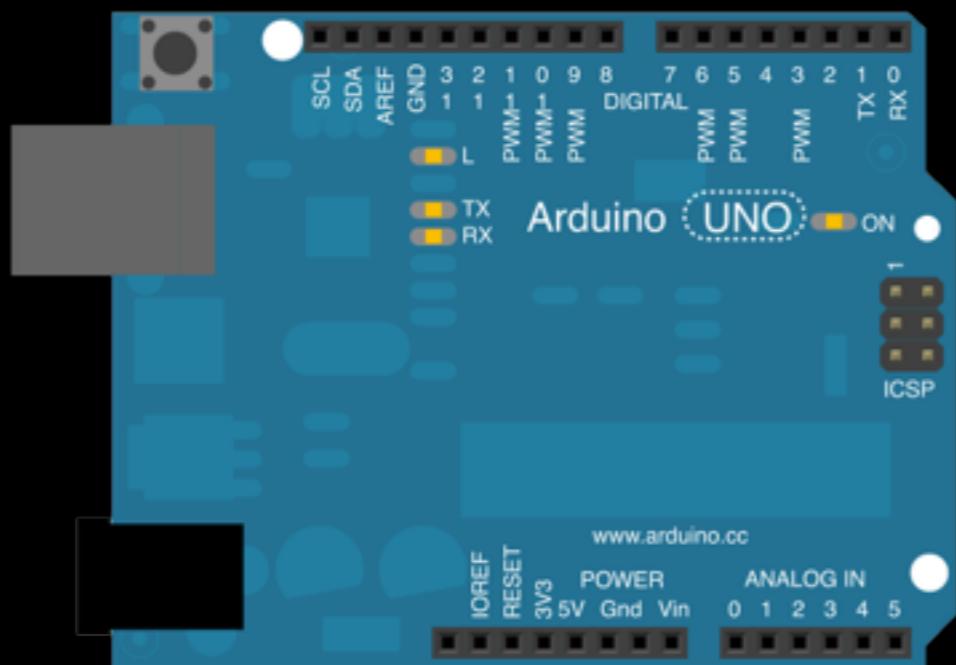
Sensors



Temperature sensor
Infrared sensor
Microphone
Humidity sensor
Touch sensor
Heartbeat sensor
Tilt switch
Vibration switch
Photo resistor
Hunt sensor
Hit sensor

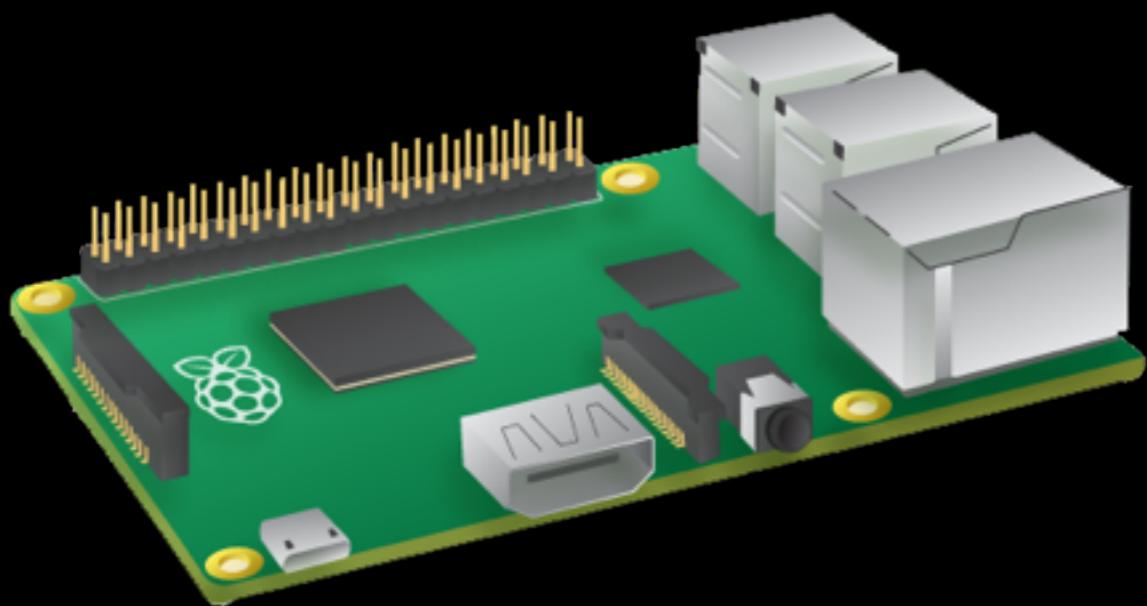
...

Microcontrollers



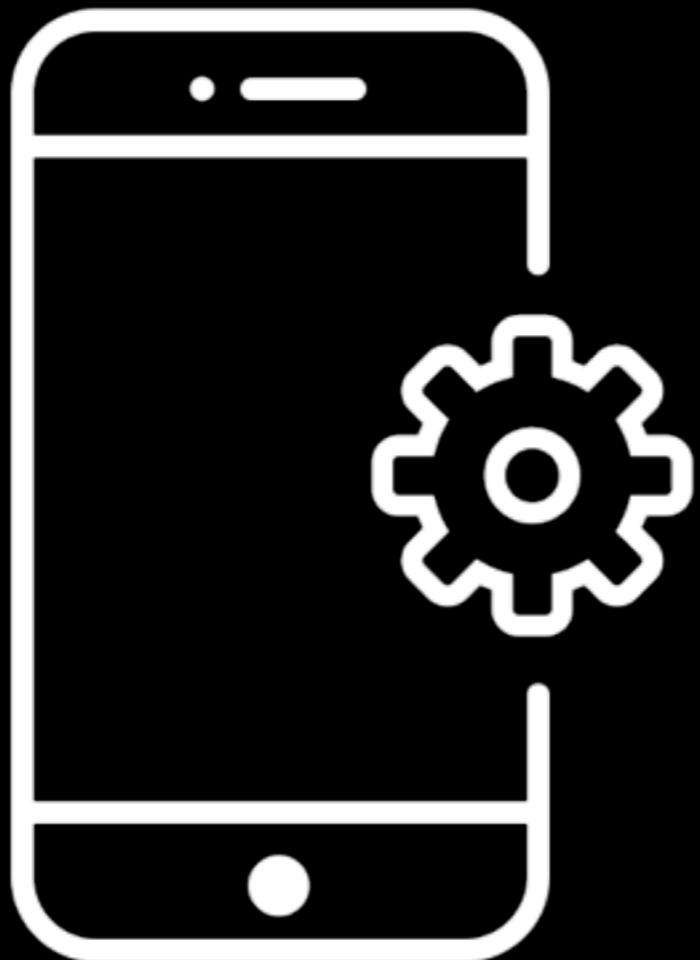
- Arduino
 - Uno, Pro, Mega, Leonardo, nano
- Teensy
- Little Bits
- MSP430 LaunchPad
- ...

Mini Computers



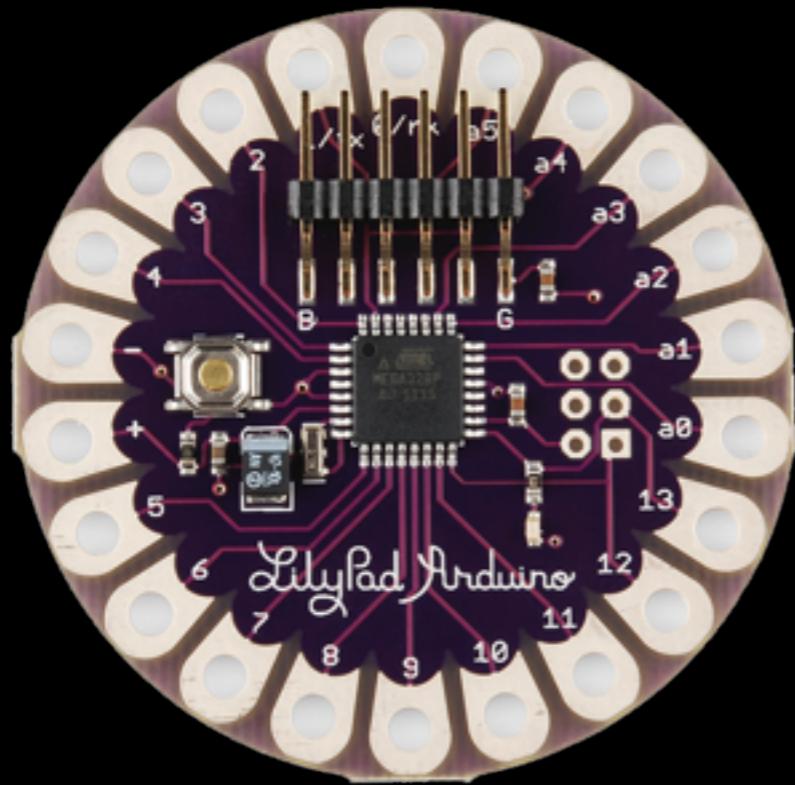
- Raspberry Pi
- Odroid
- BeagleBone
- pcDuino
- Intel Edison
- Acadia
- ...

Smartphone



- Motion Sensors
- Environmental Sensors
- Position sensors
- Camera
- Microphone
- Touchscreen
- WiFi
- Bluetooth
- ...

Wearables



- Arduino Lilypad
- Arduino Gemma
- Teensy
- Metawear

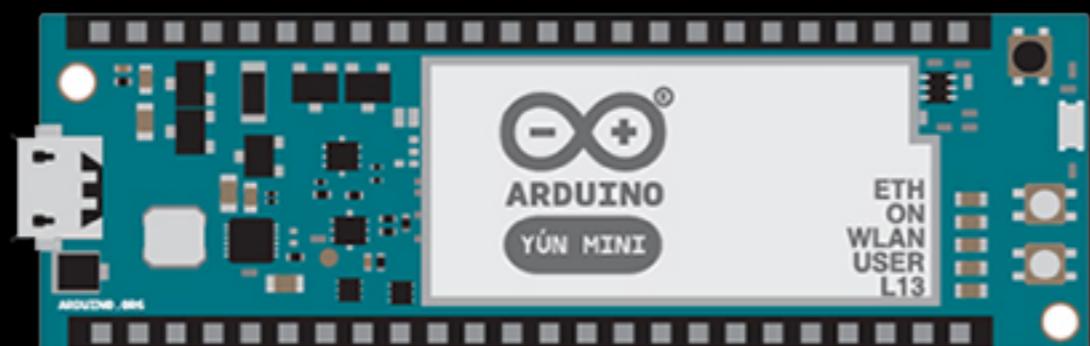
Internet of Things



- Particle
- lotivity
- Arduino Yún
- PanStamp
- ...

Workshop

Arduino Yún Mini

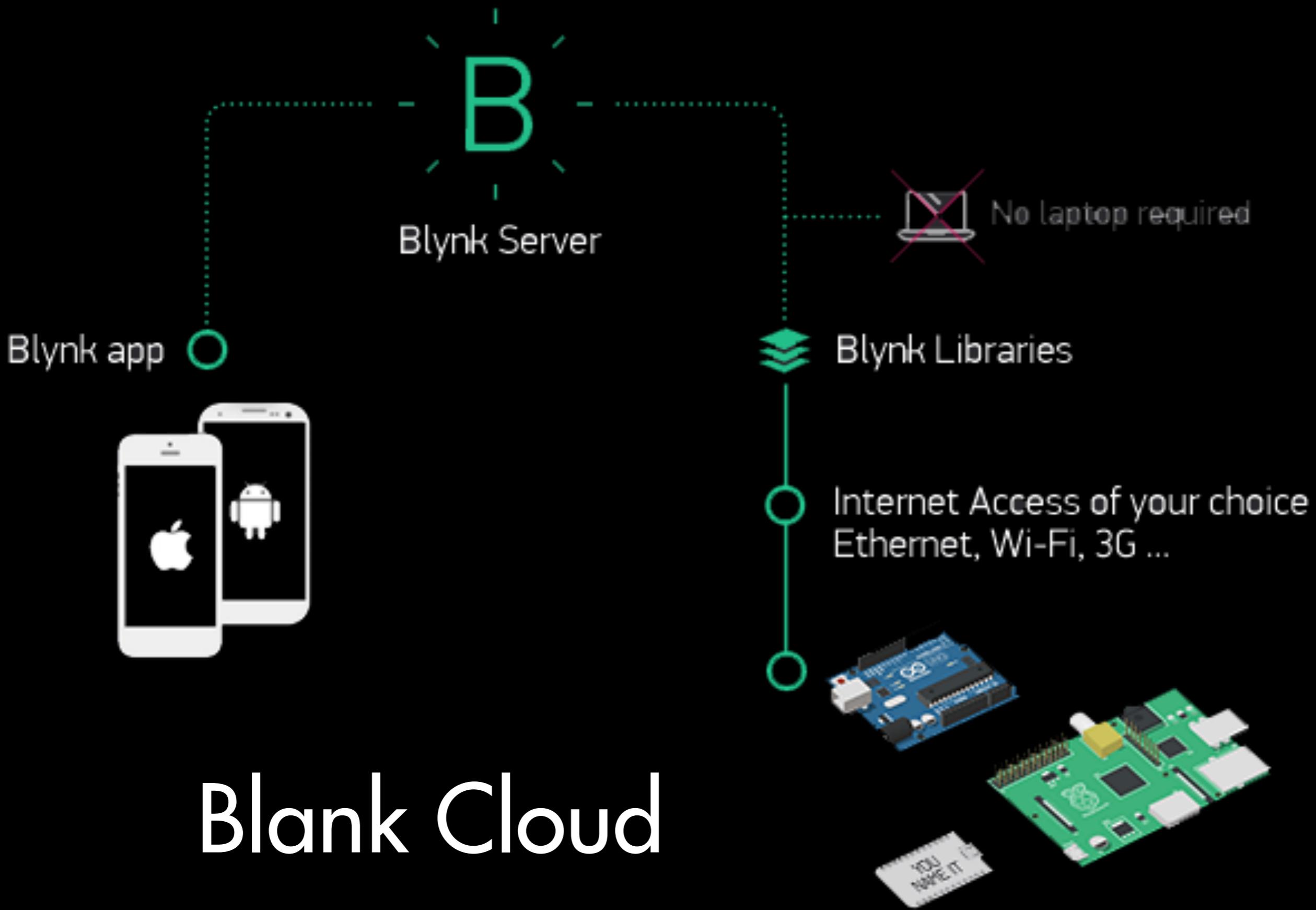


- Arduino with WiFi built in
- Linux with Python preinstalled
- <https://www.arduino.cc/en/Main/ArduinoBoardYun>
- Download Software: <https://www.arduino.cc/en/Main/Software>

Blynk



- iOS and Android apps to control Arduino.
- <http://www.blynk.cc/>
- Getting Started: <http://www.blynk.cc/getting-started/>



Repository

<https://github.com/lmanolGo/PervasiveMediaWorkshop>

Steps Arduino

1. Install Arduino Software

<http://www.arduino.org/software>

2. Download Blynk Library

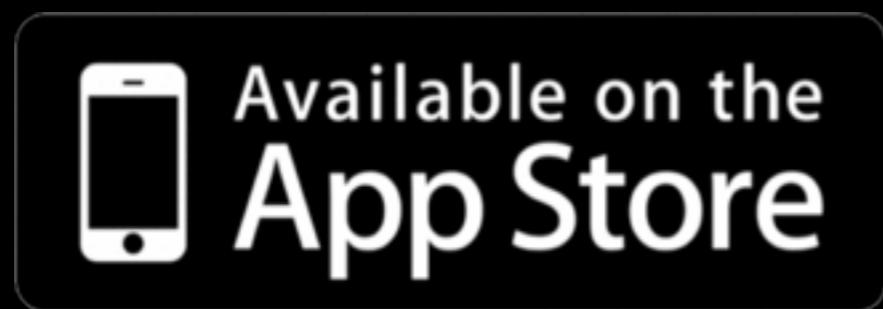
[https://github.com/blynkkk/blynk-library/releases/
latest](https://github.com/blynkkk/blynk-library/releases/latest)

3. Install Library

<http://www.arduino.cc/en/guide/libraries>

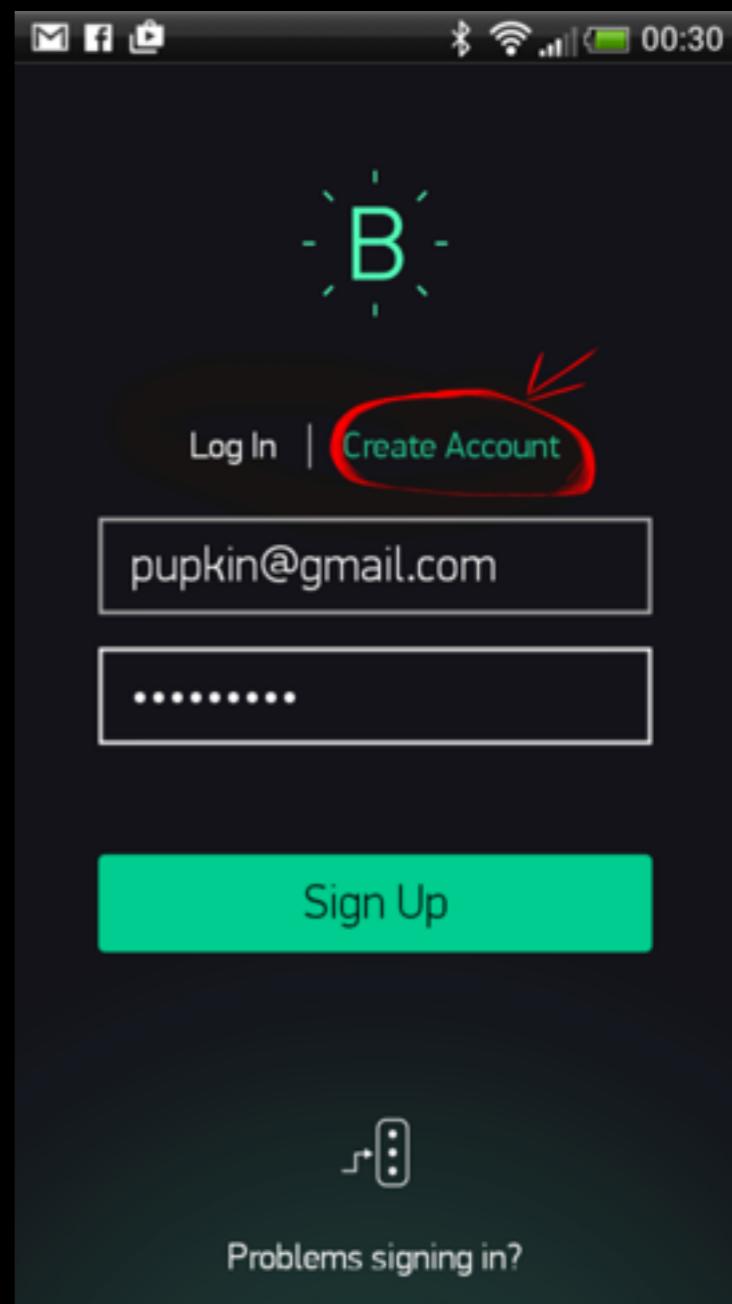
Steps Blynk

- 1 . Install Blynk Apps for iOS or Android.



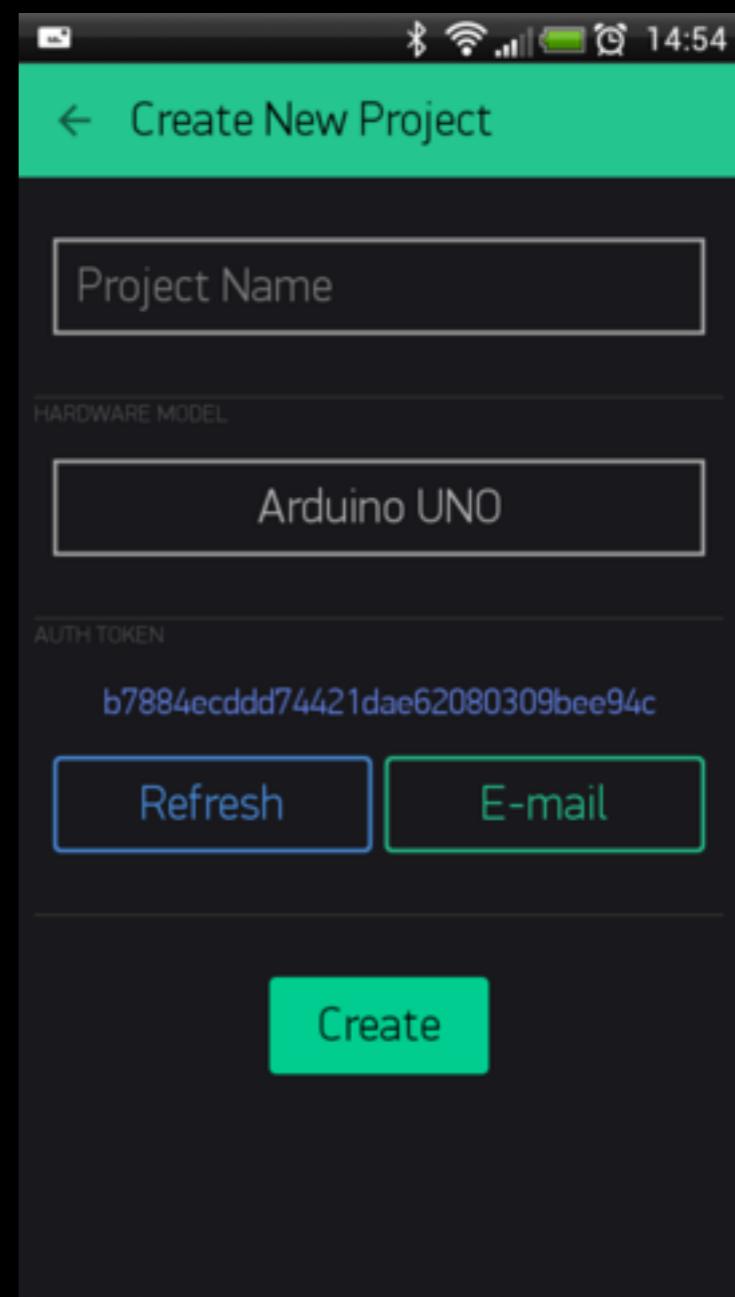
Steps Blynk

2 . Create Blynk Account



Steps Blynk

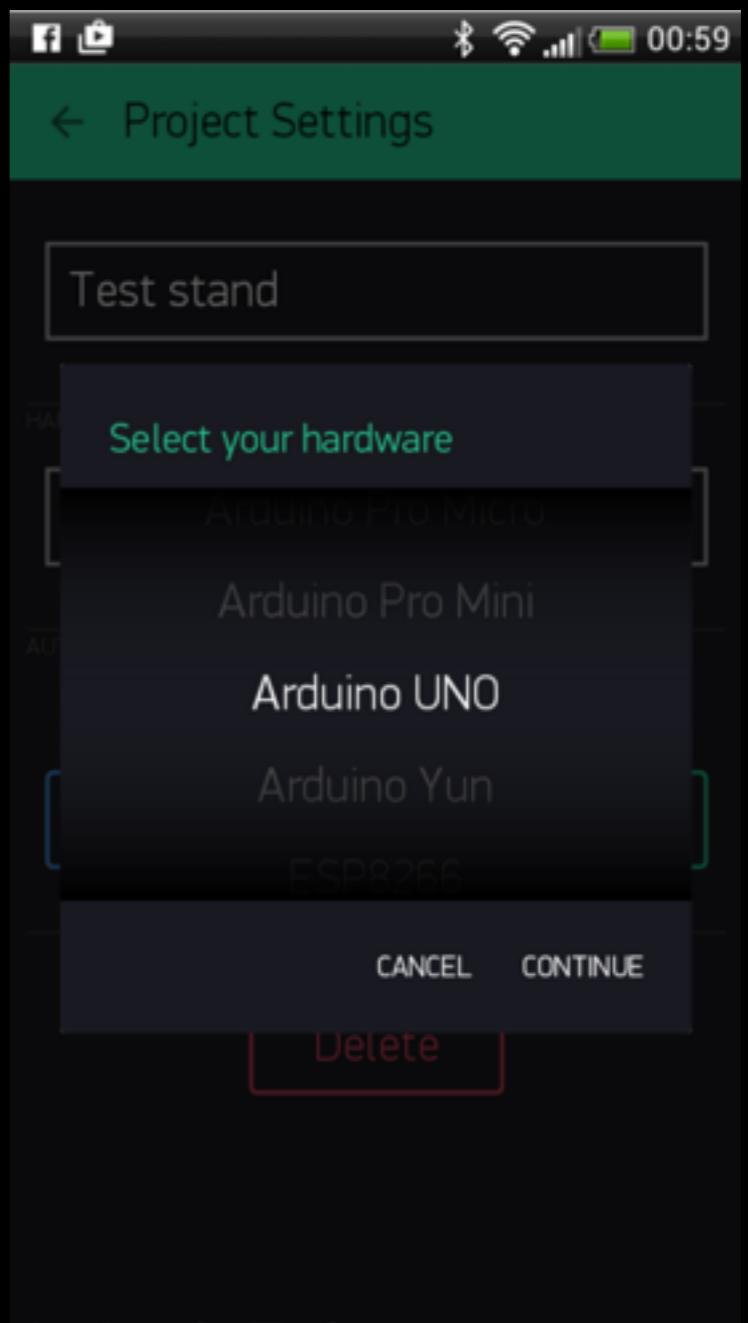
3 . Create new project



Steps Blynk

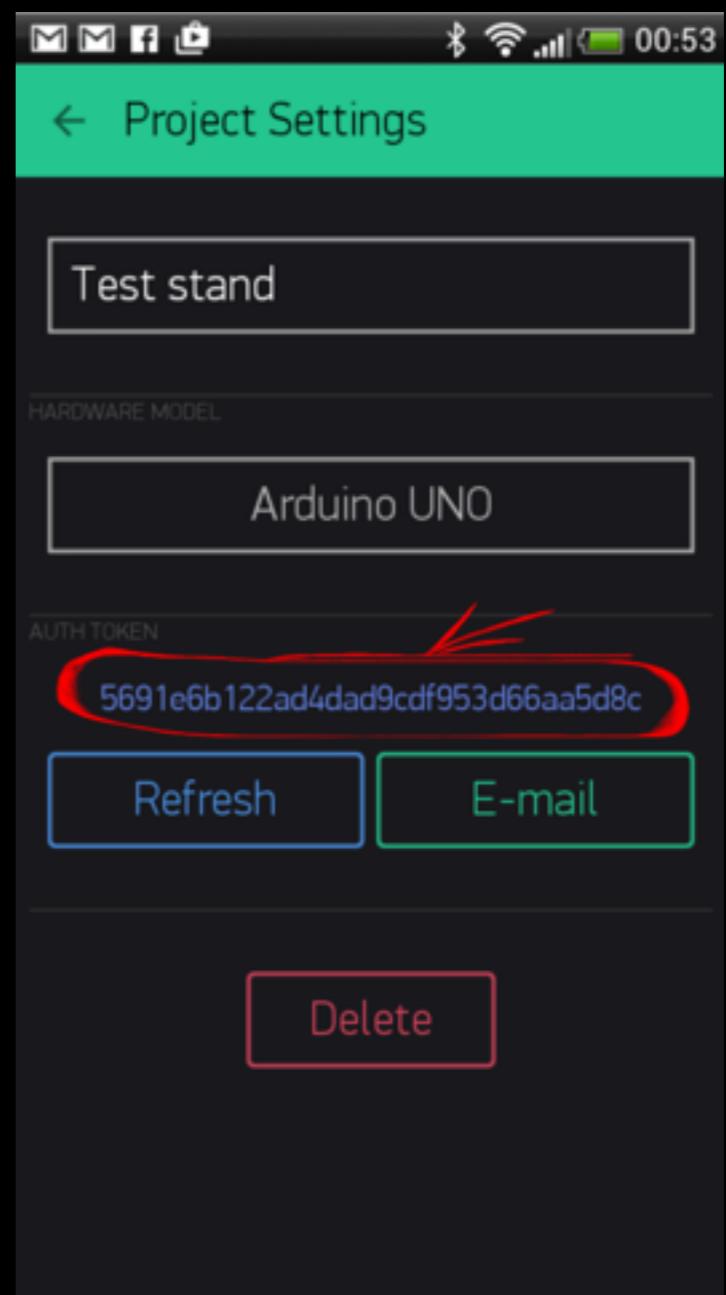
4 . Choose your hardware

1. Arduino Yun



Steps Blynk

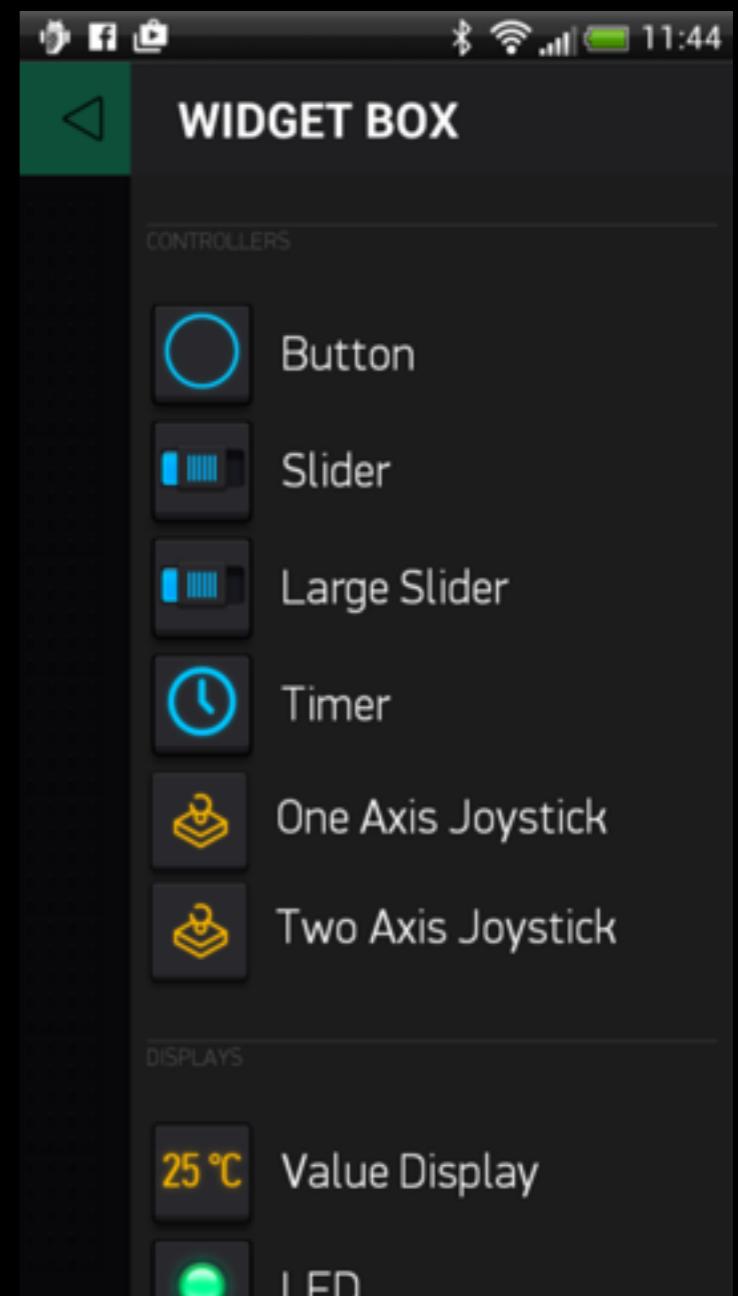
5 . Auth Token



Steps Blynk

7 . Add a Widget

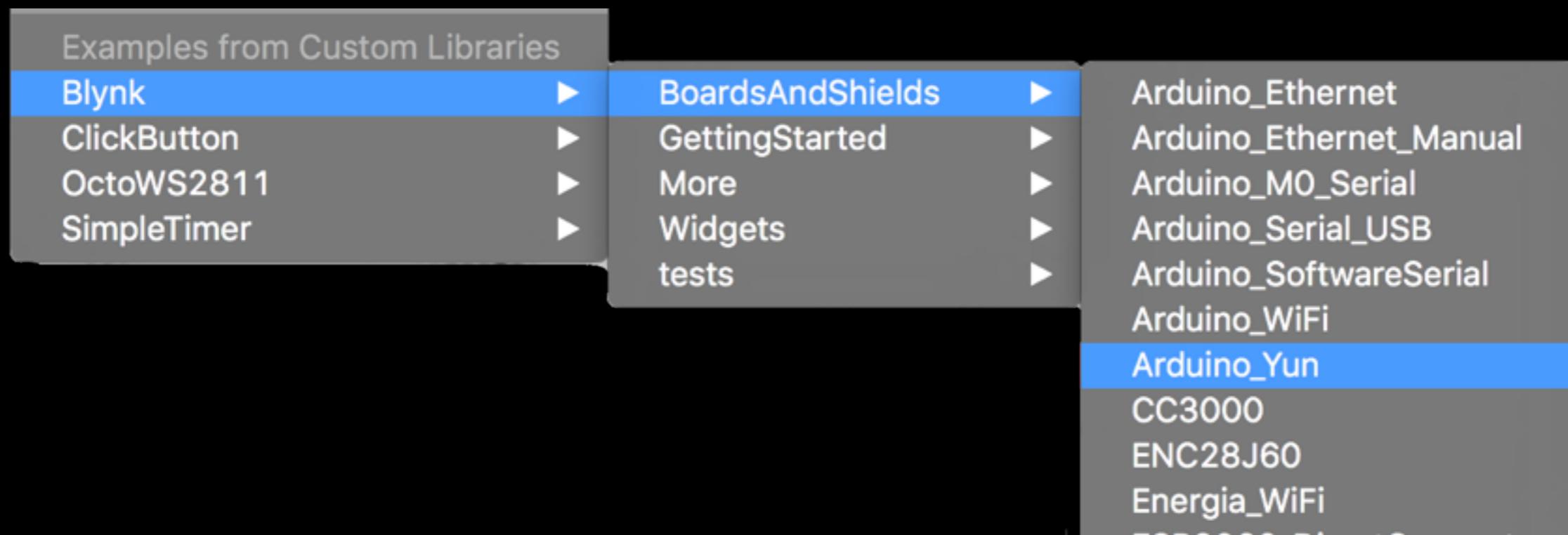
1. Drag-n-Drop Tap and hold the Button Widget to drag it to the new position.
2. Widget Settings Each Widget has it's own settings. Tap on the widget to get to them . Set D13



Steps Code

1 . Open the Arduino Blynk Arduino Yun Example

1. File >> Examples >> Blynk >> BoardsAndShields
>> Arduino_Yun



Steps Code

2 . Create new sketch

1. Copy example code

2. Auth Token



The screenshot shows the Arduino Yun software interface with the title bar "Arduino_Yun | Arduino 1.6.6". The main window displays the Blynk example code. The code includes comments explaining the Blynk platform, its features, and how to use it with the Arduino Yun Bridge. It defines the BLYNK_PRINT macro to Serial, includes the `<Bridge.h>` and `<BlynkSimpleYun.h>` headers, and sets an authentication token. The `setup()` and `loop()` functions are also shown.

```
/*
 * Blynk is a platform with iOS and Android apps to control
 * Arduino, Raspberry Pi and the likes over the Internet.
 * You can easily build graphic interfaces for all your
 * projects by simply dragging and dropping widgets.
 *
 * Downloads, docs, tutorials: http://www.blynk.cc
 * Blynk community: http://community.blynk.cc
 * Social networks: http://www.fb.com/blynkapp
 * http://twitter.com/blynk\_app
 *
 * Blynk library is licensed under MIT license
 * This example code is in public domain.
 */
/*
 * This example shows how to use Arduino Yun Bridge
 * to connect your project to Blynk.
 * Feel free to apply it to any other example. It's simple!
 */
#define BLYNK_PRINT Serial // Comment this out to disable prints and save space
#include <Bridge.h>
#include <BlynkSimpleYun.h>

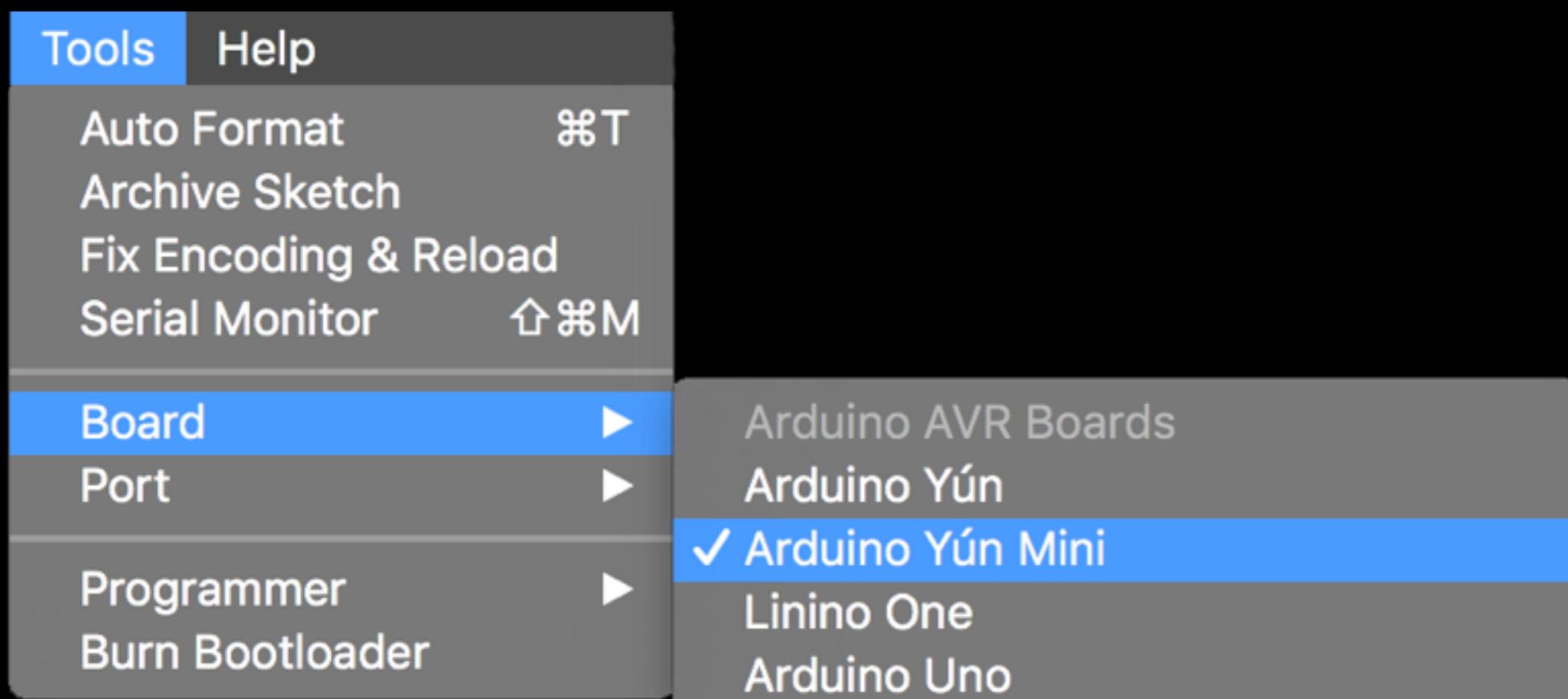
// You should get Auth Token in the Blynk App.
// Go to the Project Settings (nut icon).
char auth[] = "YourAuthToken";

void setup()
{
    Serial.begin(9600);
    Blynk.begin(auth);
    // Or specify server using one of those commands:
    //Blynk.begin(auth, "server.org", 8442);
    //Blynk.begin(auth, server_ip, port);
}

void loop()
{
    Blynk.run();
}
```

Steps Code

3 . Locate the Arduino Board

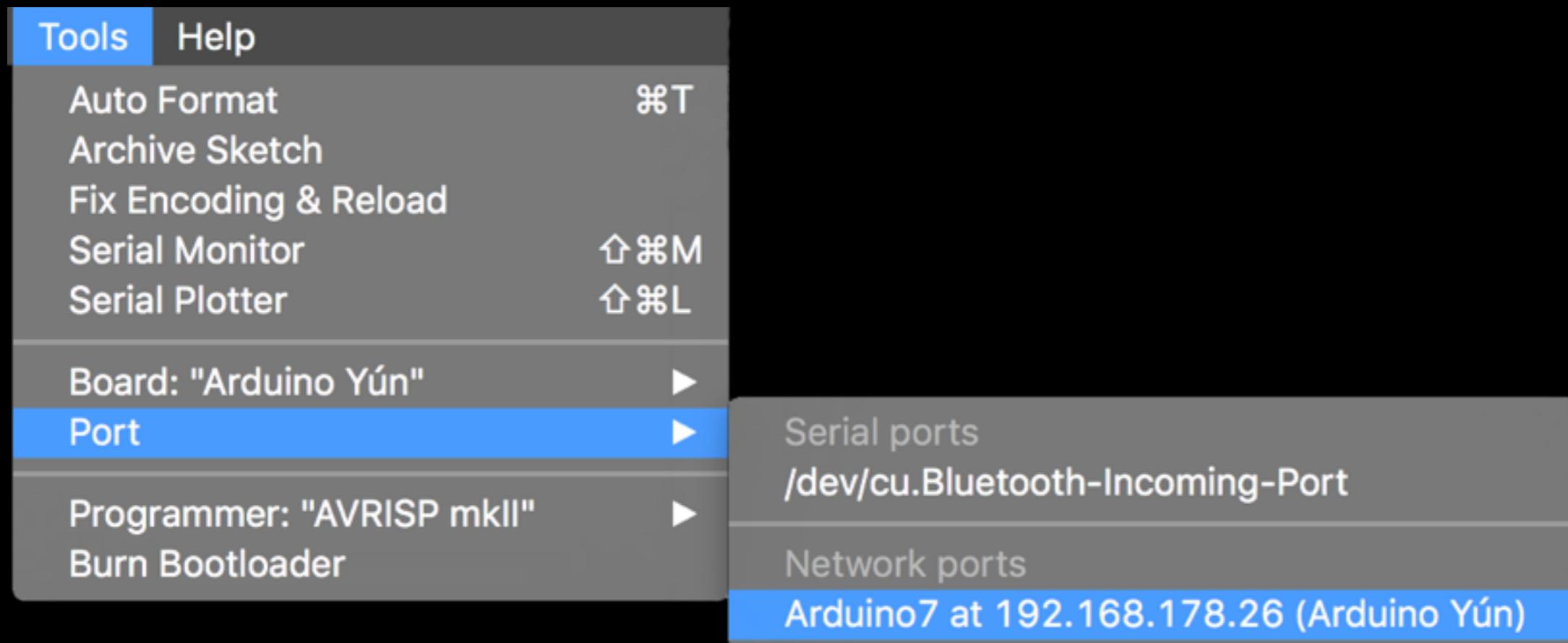


Steps Code

4 . Locate your Arduino.

Name = "ArduinoN"

Password = "doghunter"



Steps Code

5 . Upload Sketch

Arduino_Yun | Arduino 1.6.6

Arduino_Yun

```
* Blynk is a platform with iOS and Android apps to control
* Arduino, Raspberry Pi and the likes over the Internet.
* You can easily build graphic interfaces for all your
* projects by simply dragging and dropping widgets.
*
* Downloads, docs, tutorials: http://www.blynk.cc
* Blynk community: http://community.blynk.cc
* Social networks: http://www.fb.com/blynkkapp
* http://twitter.com/blynk\_app
*
* Blynk library is licensed under MIT license
* This example code is in public domain.
*
*****
* This example shows how to use Arduino Yun Bridge
* to connect your project to Blynk.
* Feel free to apply it to any other example. It's simple!
*
*****/
```

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#include <Bridge.h>
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    // Or specify server using one of those commands:
    //Blynk.begin(auth, "server.org", 8442);
    //Blynk.begin(auth, server_ip, port);
```

Uploading...

```
avrduke: 1000 data erase data from input file more:
avrduke: input file @xFB contains 1 bytes
avrduke: reading on-chip efuse data:
```

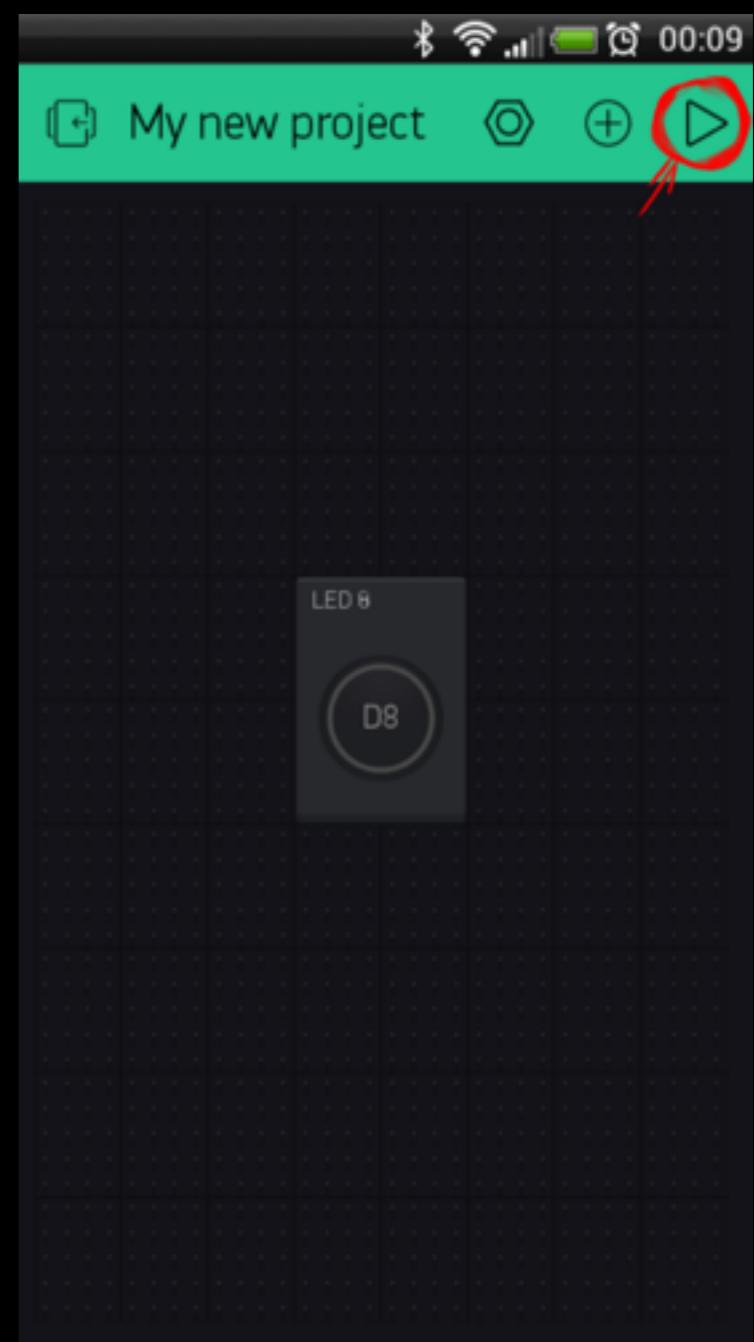
Reading I ████████████████████ | 100% 0.00s

```
avrduke: verifying ...
avrduke: 1 bytes of efuse verified
avrduke: reading input file "/tmp/sketch.hex"
avrduke: writing Flash (32748 bytes):
```

Writing I ████████████████████

Steps Code

6 . Run the Blynk project



Questions?

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yo@imanolgomez.net