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THE INTERNET OF THINGS

WHAT IS IOT?

- A network of devices collecting and reacting on events from the physical world
 - Home Automation
 - Manufacturing
 - Transportation
 - Utilities

COMPONENTS OF THE IOT

DEVICES

GATEWAY

CLOUD

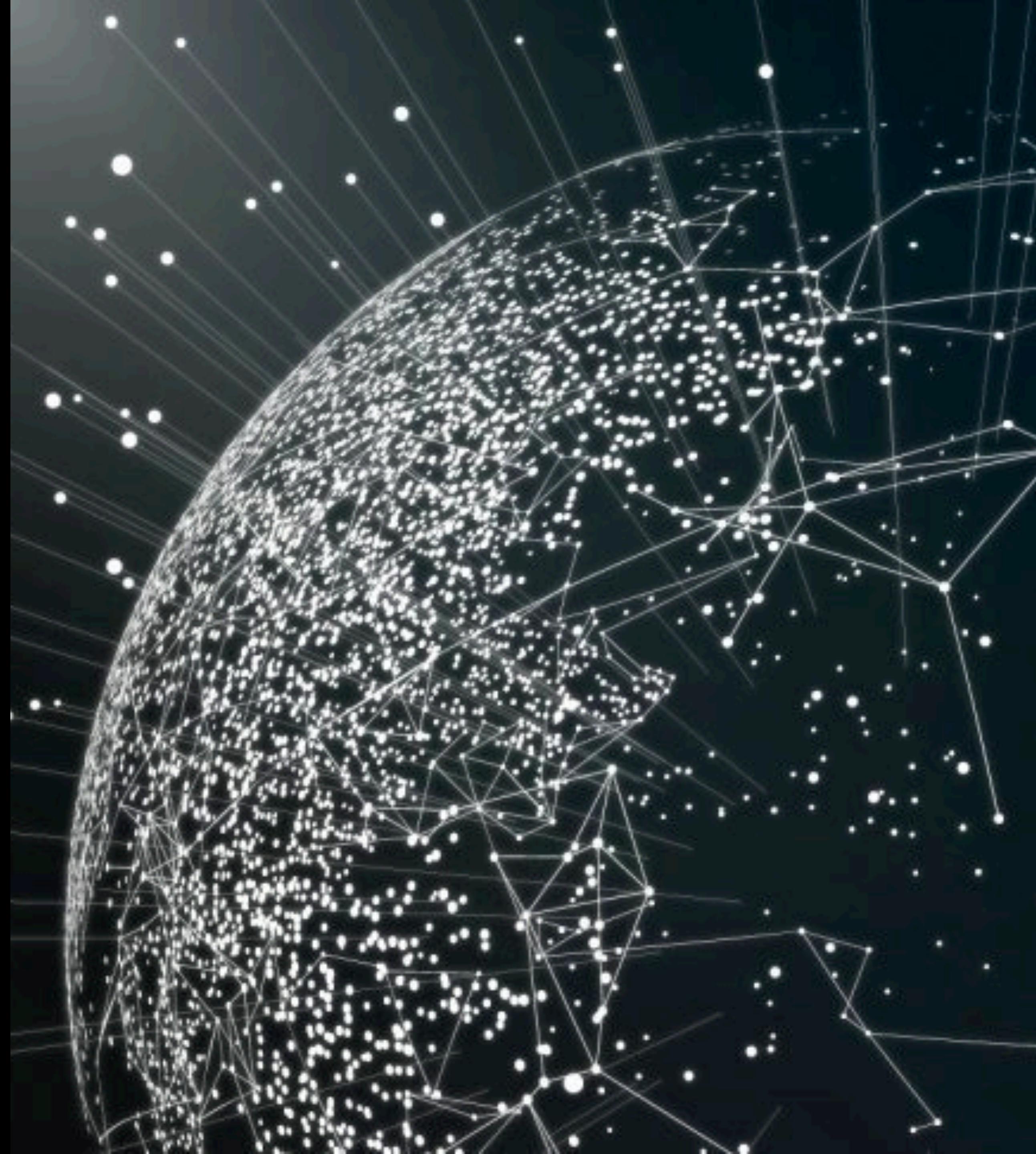
DEVICES

- The physical 'things' of the Internet of **Things**
 - Lights
 - Motors
 - Relays
 - Sensors
 - Switches



GATEWAY

- Enable devices to connect to the Internet
 - Home automation hubs
 - Internet 'bridges'
 - Cellular connection
 - AWS Greengrass
 - Direct Internet connection on the device

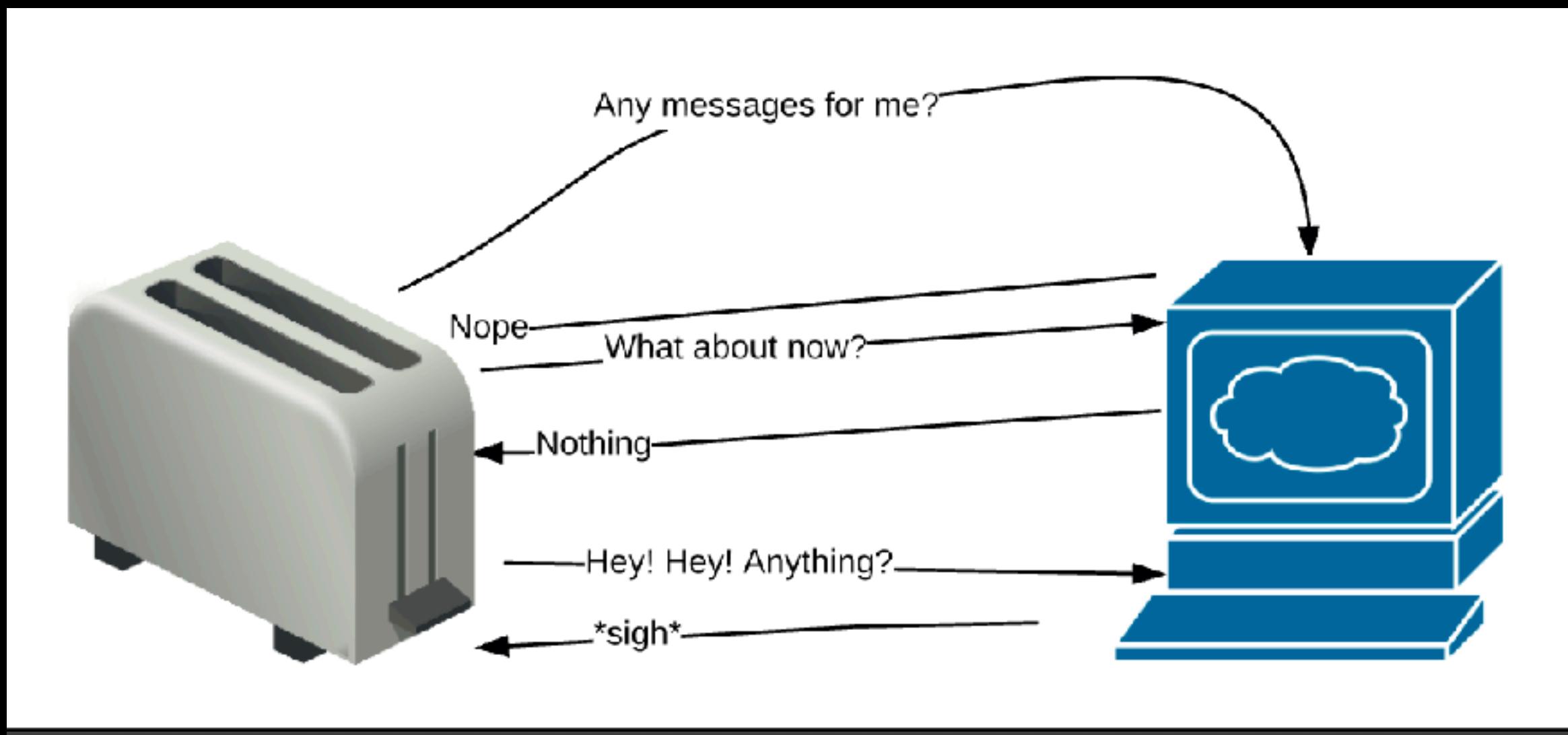


CLOUD

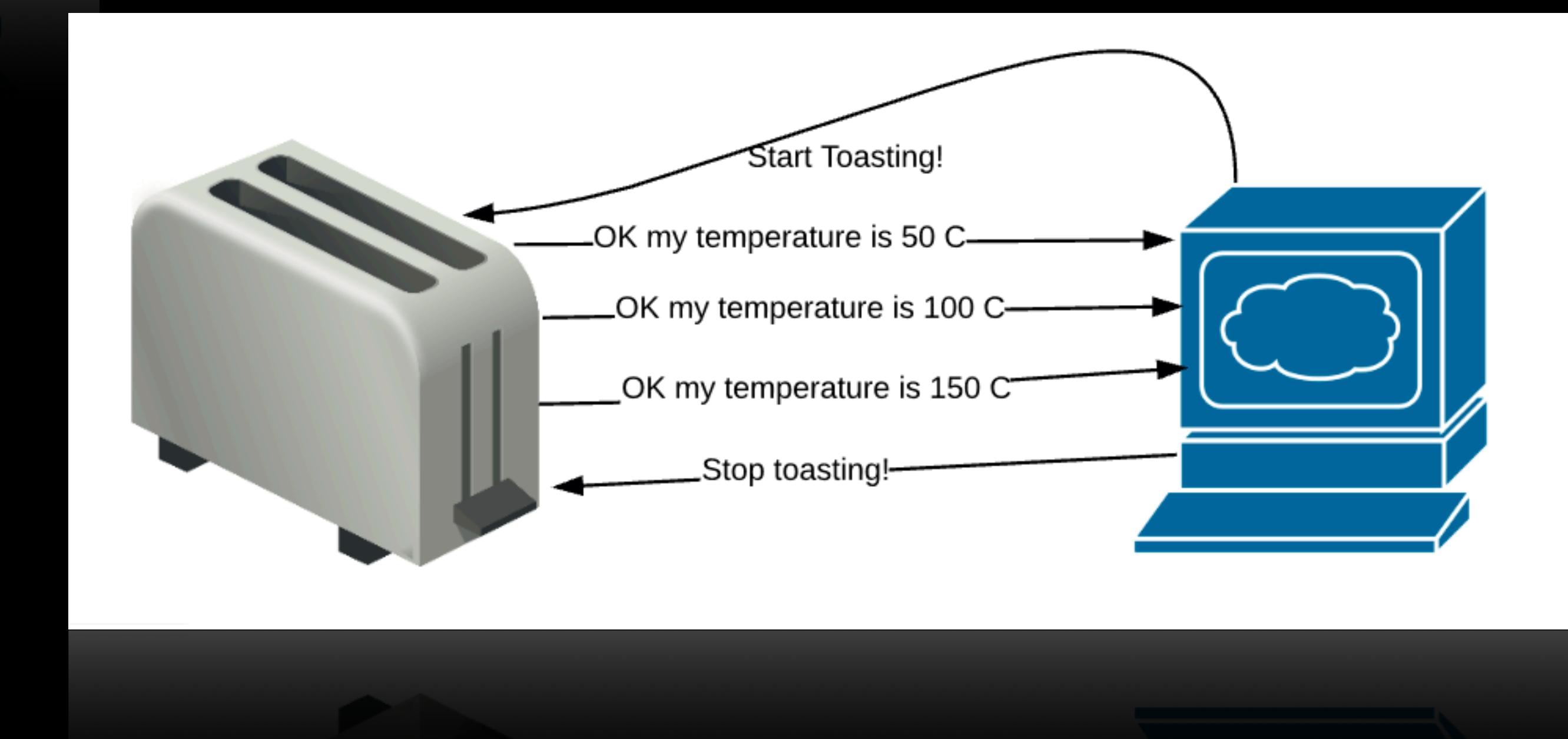
- Collect and exchange data from the gateway
 - AWS IoT
 - Google Cloud IoT
 - Azure IoT
 - Adafruit IO
 - Custom HTTP or MQTT server implementation



HTTP



MQTT

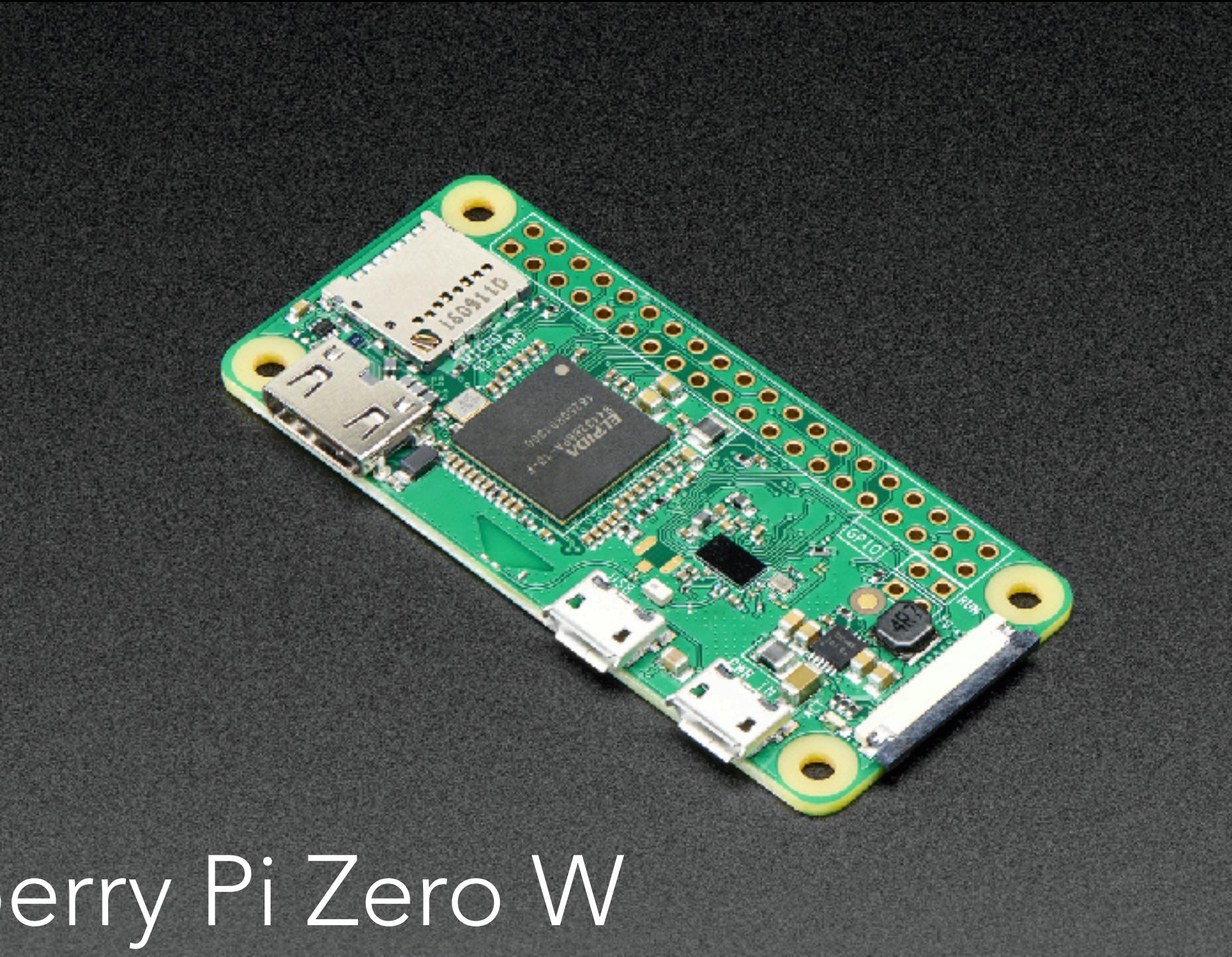


CONSUMER PRODUCTS

- Amazon Dash Buttons
- Motion sensors
- Nest Thermostat
- Philips Hue
- Smart locks/garage doors
- Wi-Fi outlets
- Window shades



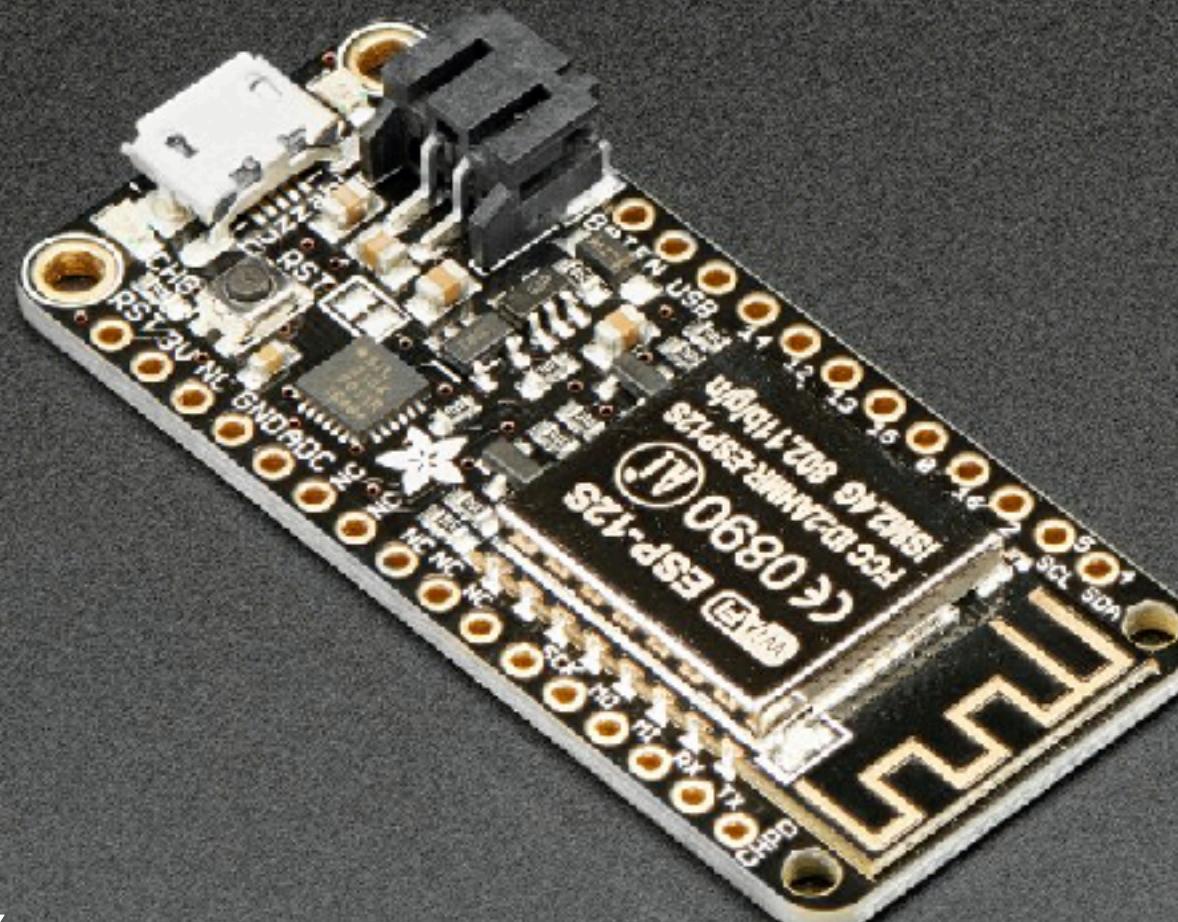
HARDWARE TO GET STARTED



Raspberry Pi Zero W



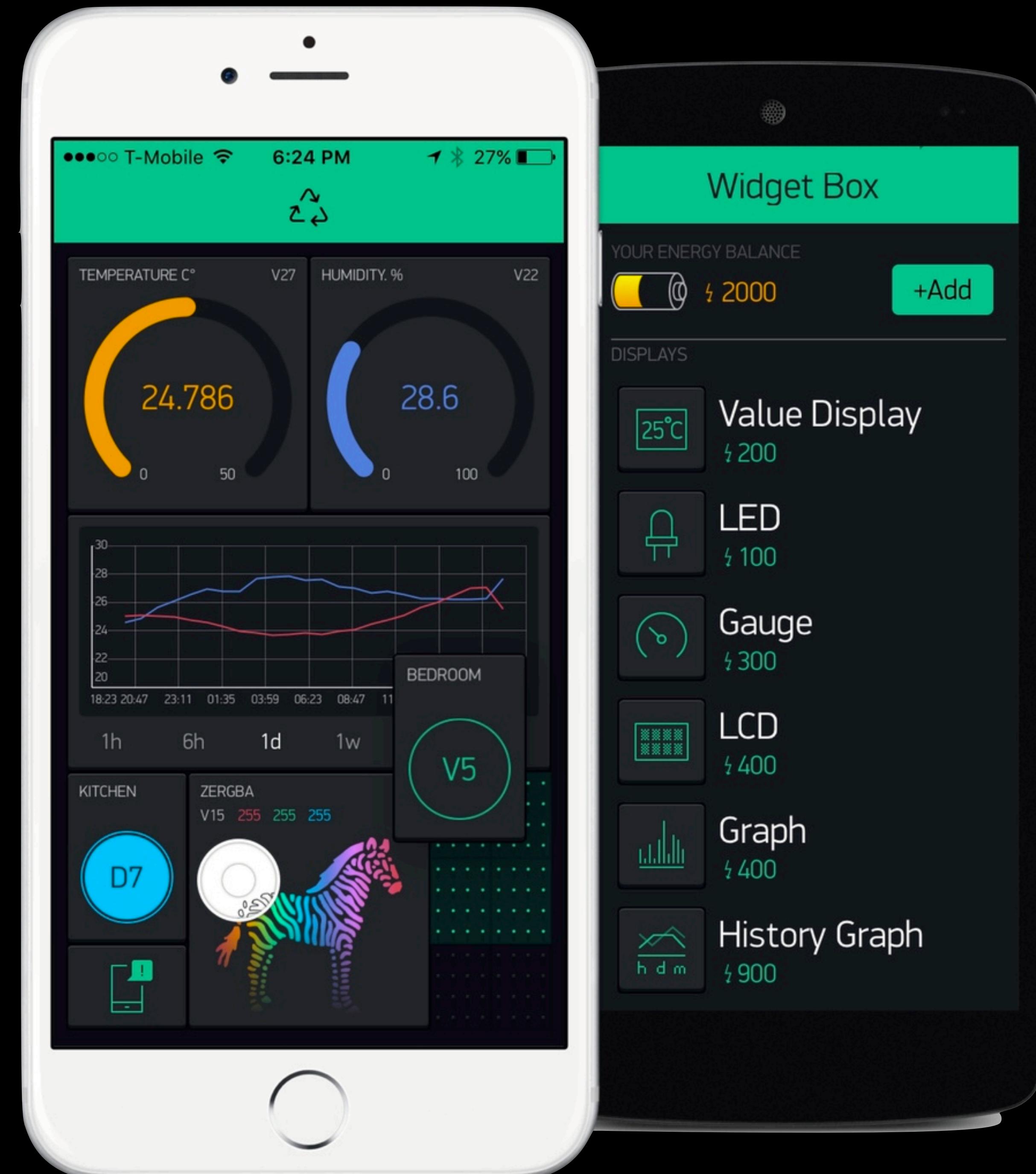
Raspberry Pi 3



ESP8266

SOFTWARE TO GET STARTED

- Blynk
 - Write no code
 - iOS and Android apps
- Mongoose OS
 - AWS and Google recommended



DEMOS

- <http://www.blynk.cc/>
- <https://mongoose-os.com/dashboard/#dashboard>
- [https://console.aws.amazon.com/iotv2/home?
region=us-east-1#/test](https://console.aws.amazon.com/iotv2/home?region=us-east-1#/test)

PUMPKIN CODE EXAMPLE

```
MQTT.sub('flames', function(conn, topic, msg) {  
    print('shooting flames!');  
    GPIO.write(firePin, 0);  
  
    Timer.set(100, false, function() {  
        ....  
        GPIO.write(firePin, 1);  
    }, null);  
  
}, null);
```

PROJECTS TO TRY

- Turn on the lights when you get home with motion sensors
- Open your garage door with your phone
- Send a text message when a water sensor triggers in your basement
- Keep a log of your sleep patterns using microphones
- Get a push notification when your washer/dryer is done
- Start your sprinklers when the ground gets dry
- Check if bathrooms are in use in your office using door sensors

THE INTERNET OF THINGS QUESTIONS?