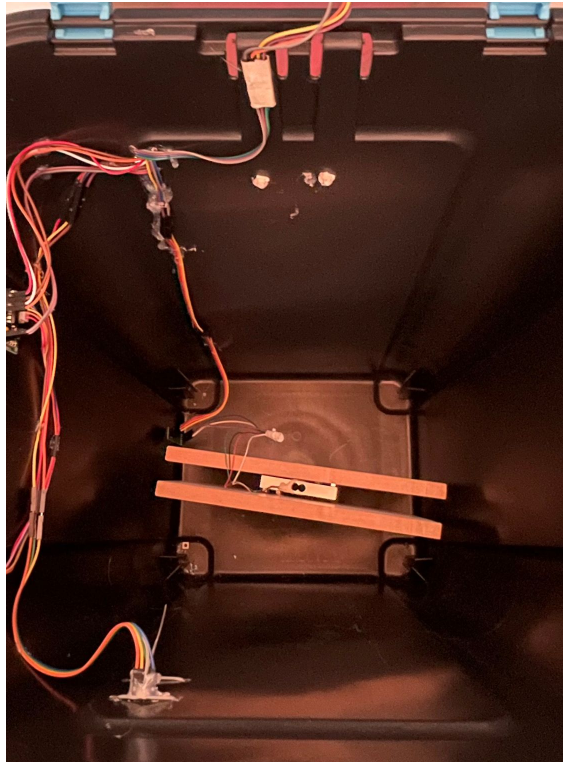
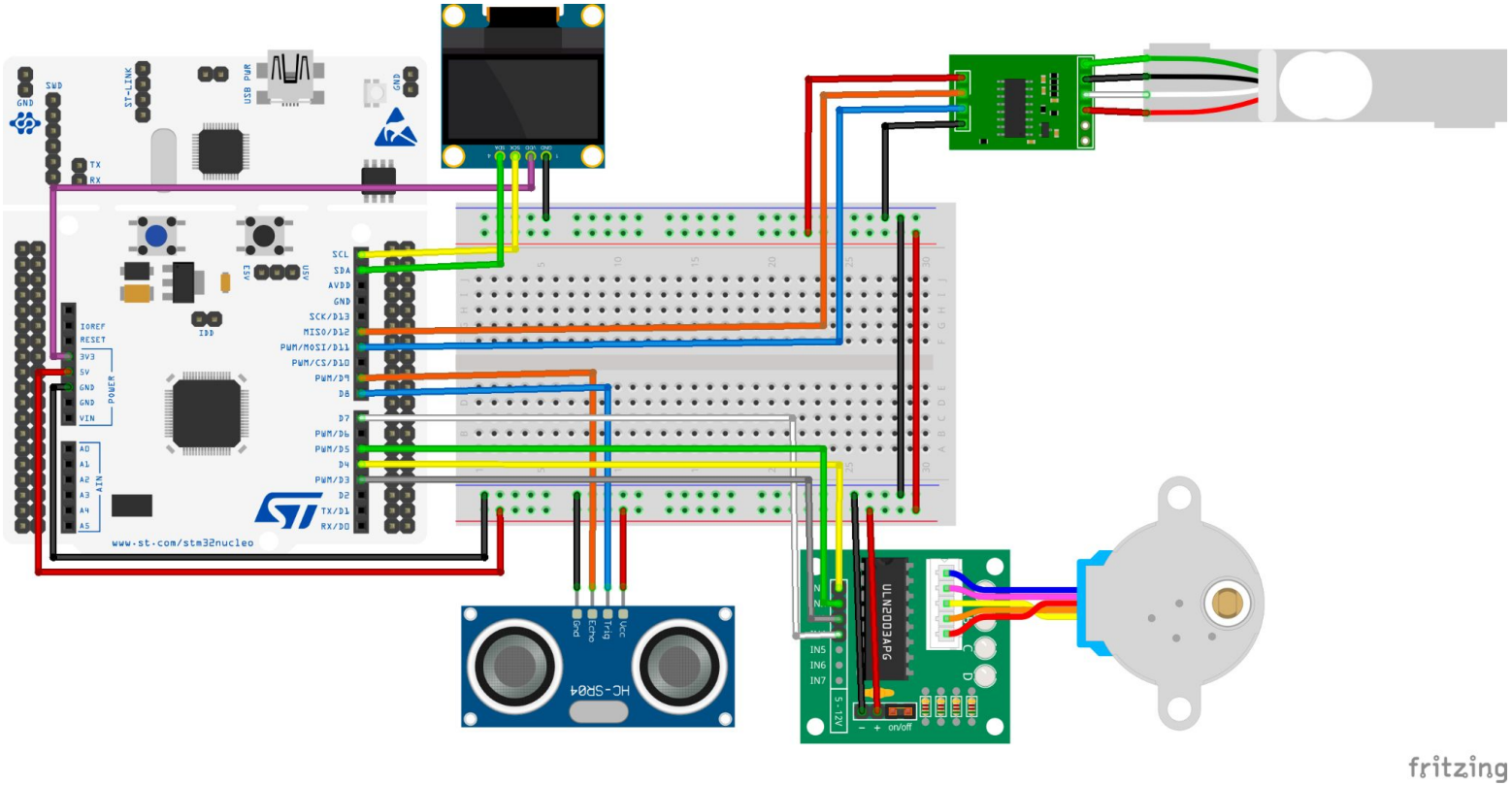
checkBin - Technical details

Prototype build

Prototype build



Wiring


SWD
GND
ST-LINK
USB PWR
TX
RX
SCL
SDA
AVDD
GND
SCK/D13
MISO/D12
PWM/MOSI/D11
PWM/CS/D10
PWM/D9
D8
D7
PWM/D6
PWM/D5
D4
PWM/D3
D2
TX/D1
RX/D0
IOREF
RESET
3V3
5V
GND
GND
VIN
POWER
A0
A1
A2
A3
A4
A5
ANALOG
www.st.com/stm32nucleo
HC-SR04
Gnd
Echo
Trig
Vcc
ULN2003AFG
IN5
IN6
IN7
5-12V
on/off
fritzing

Code on the Board

Functions necessary to:

- read values from the sensors
- act using the actuators
- send data using LoRa

Moreover we wrote all the logic that governs the system using the above functions.

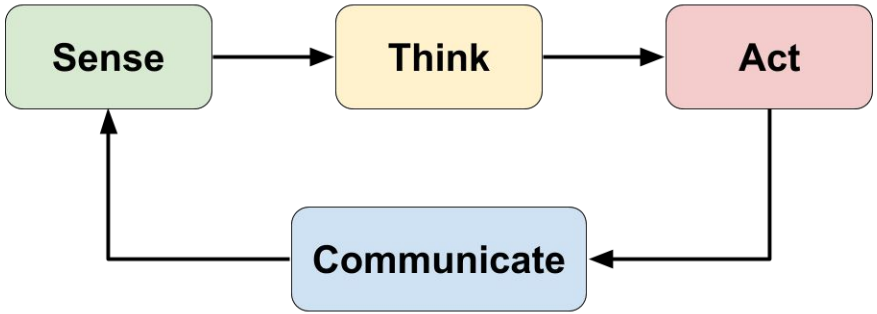
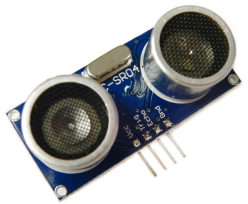
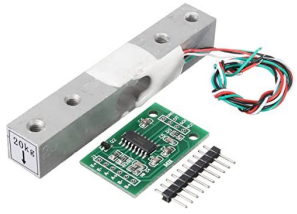


Image: https://docs.idew.org/project-internet-of-things/project-instructions/2-design-and-build-solution/2.2-system-model

Logic

SENSE

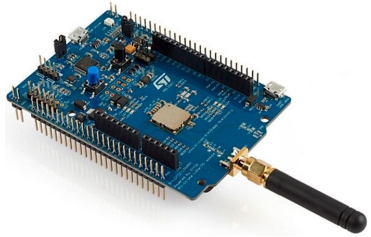




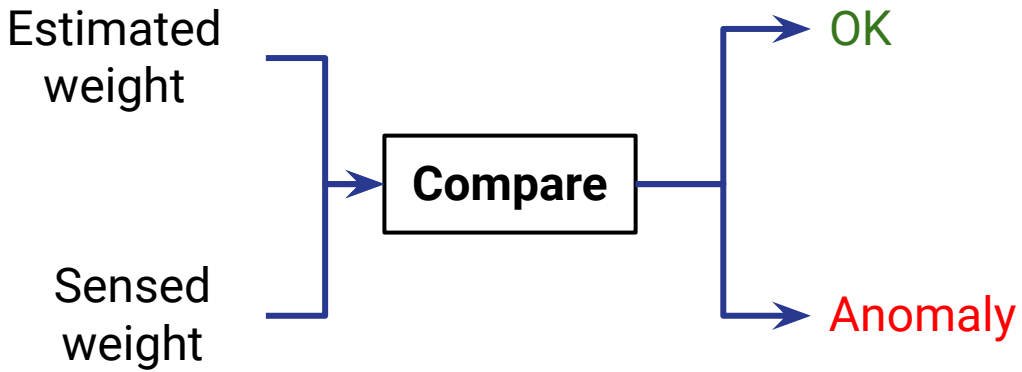
THINK

ACT

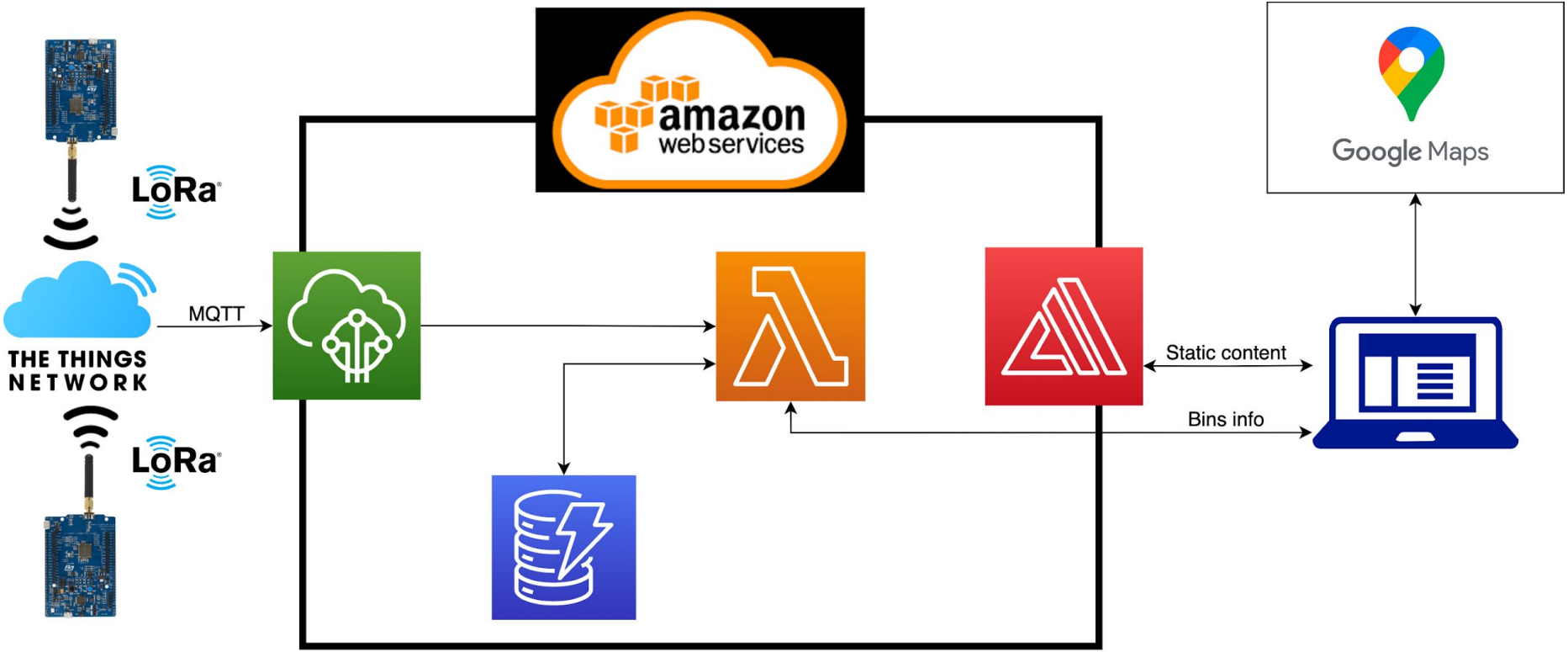
COMMUNICATE



Anomalies



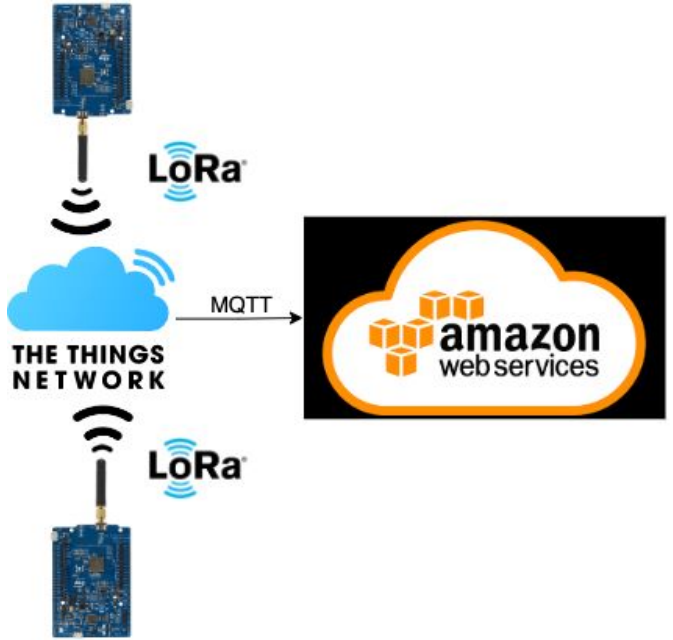
Cloud: Overview



The Things Network

We used Lora Gateways provided by The Things Network.

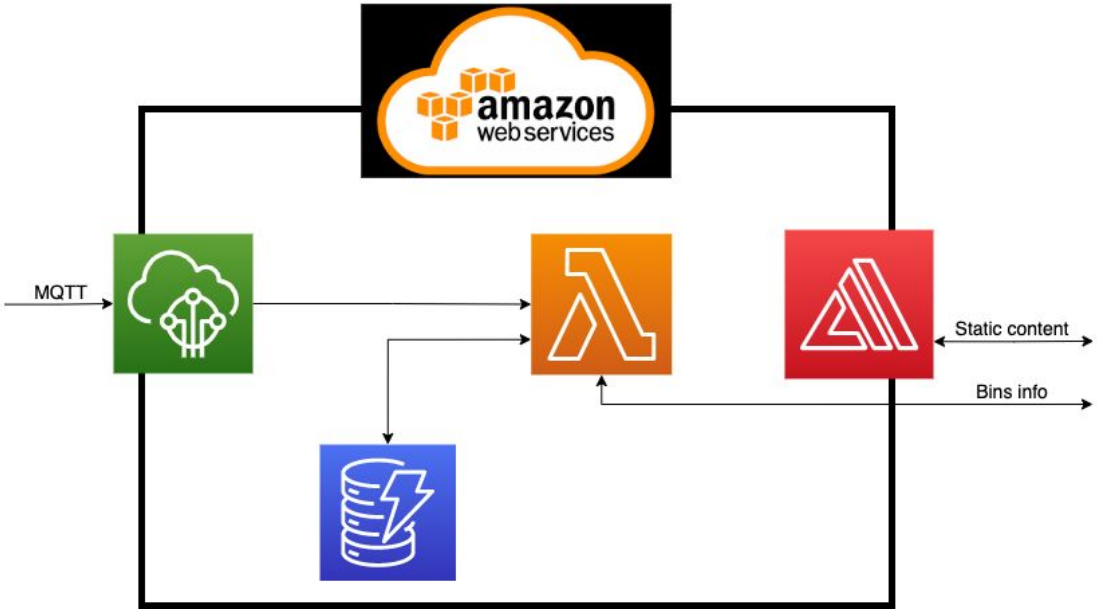
These gateways allow us to easily receive packets from the boards and immediately relay them to AWS IoTCore.



Amazon Web Services

The used AWS services are:

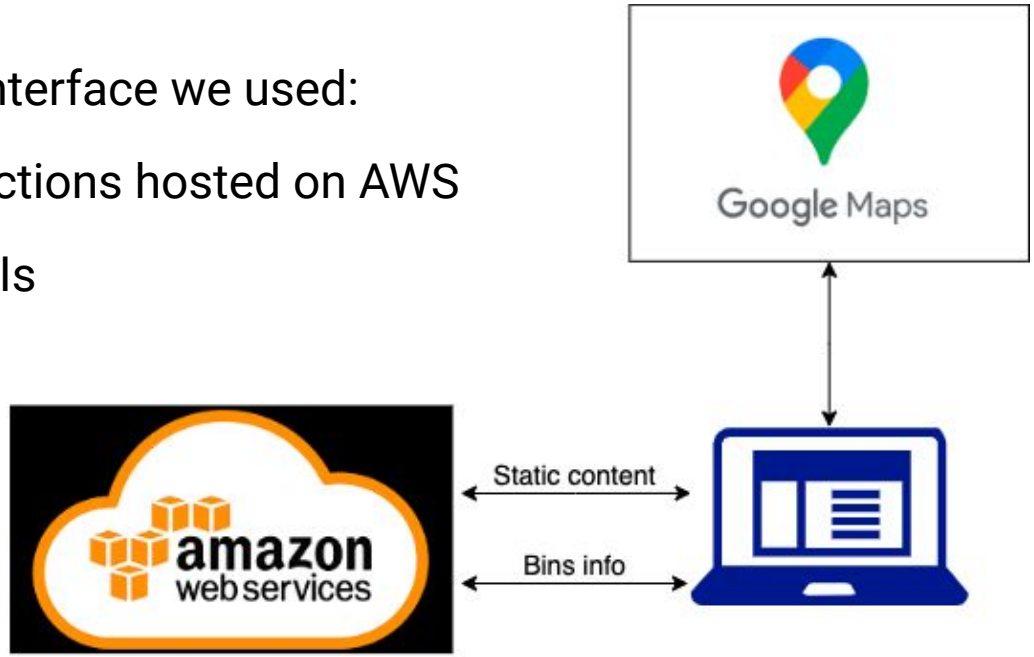
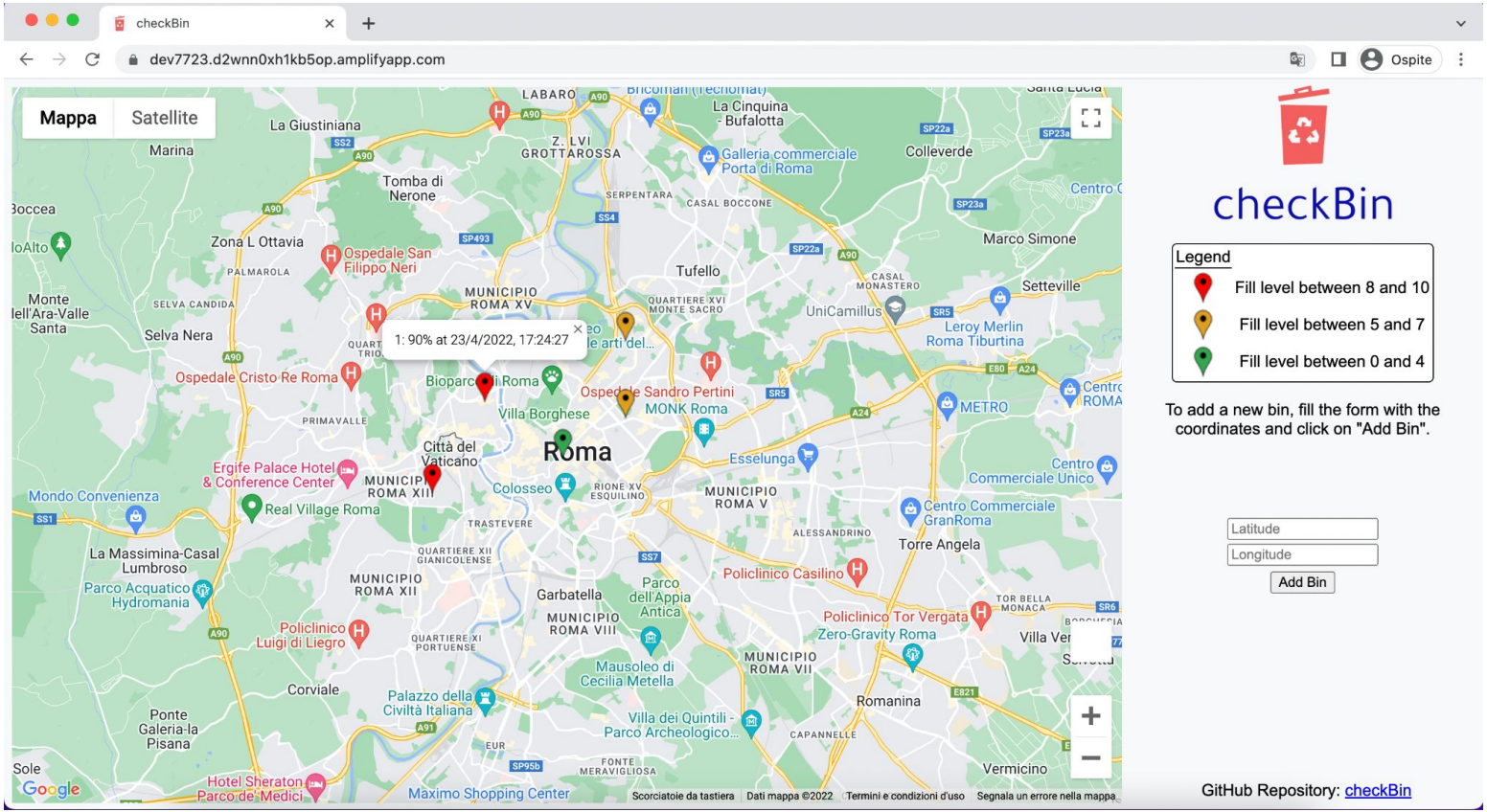
- IoT Core
- Lambda
- DynamoDB
- AWS Amplify



Web Interface

To develop the web interface we used:

- services and functions hosted on AWS
- Google Maps APIs



Web interface