

Educational experiences with open source hardware and Snap!

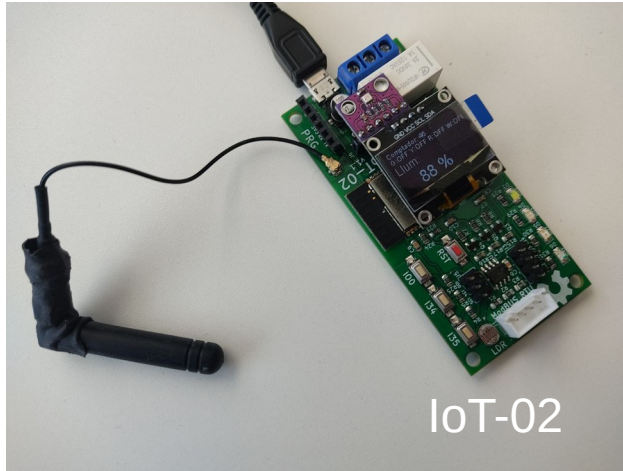


Jordi Binefa

Direct access to the wiki page with this presentation: <https://ja.cat/4Qlcf>

Educational experiences with open source hardware and Snap!

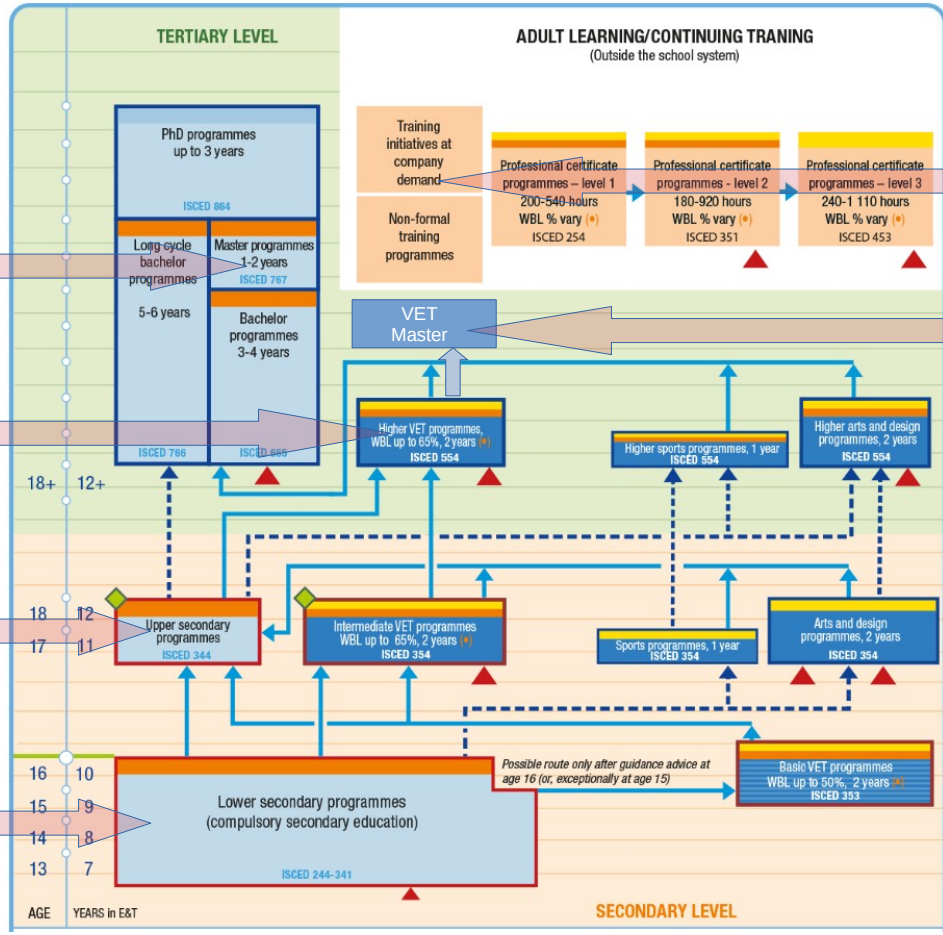
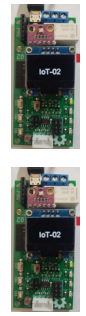
IoT-02



S4A PLB



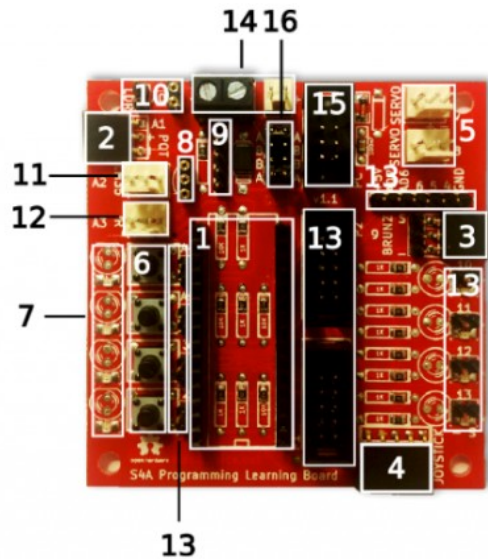
Educational experiences with open source hardware and Snap!



Source: <https://www.cedefop.europa.eu/en/tools/vet-in-europe/systems/spain-2019>

S4A PLB (Scratch for Arduino – Programming Learning Board)

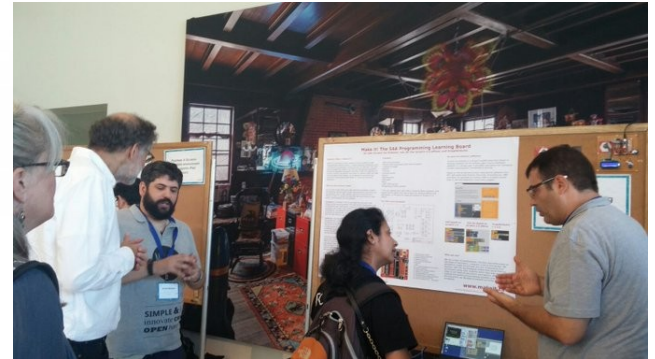
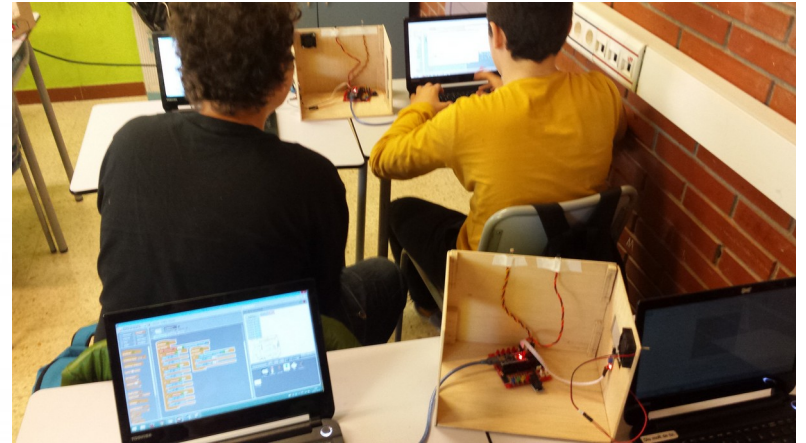
The S4A Learning Board



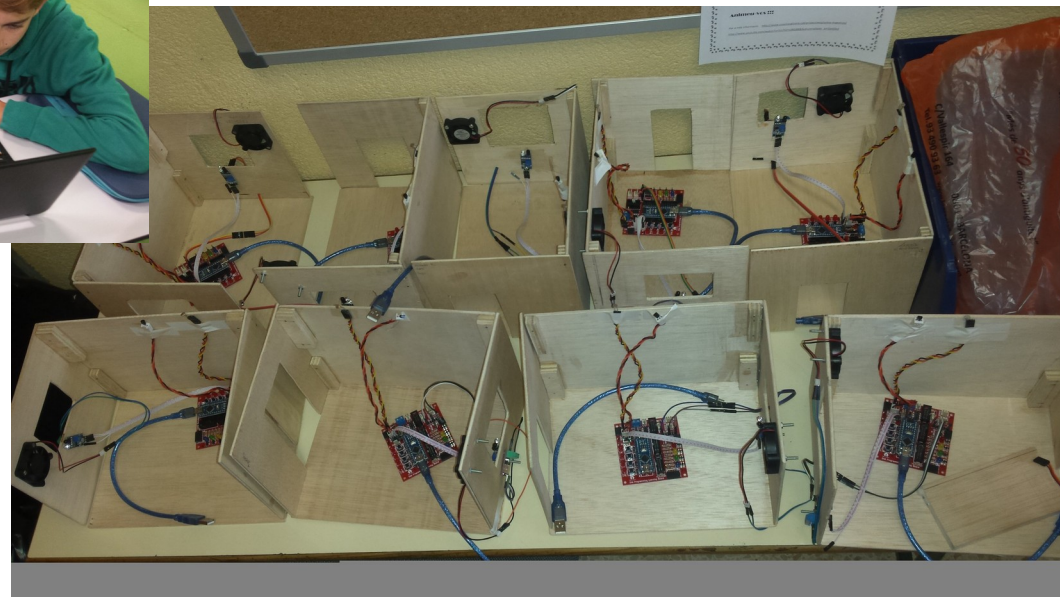
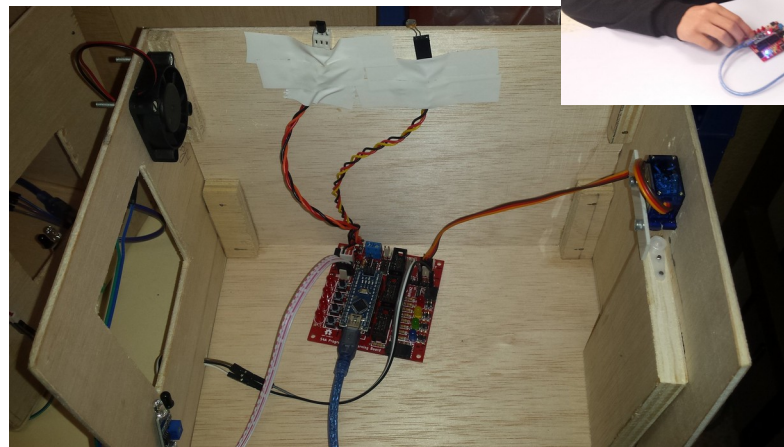
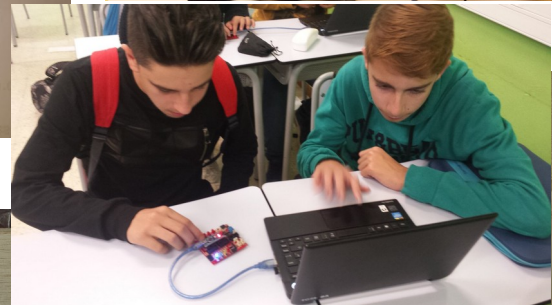
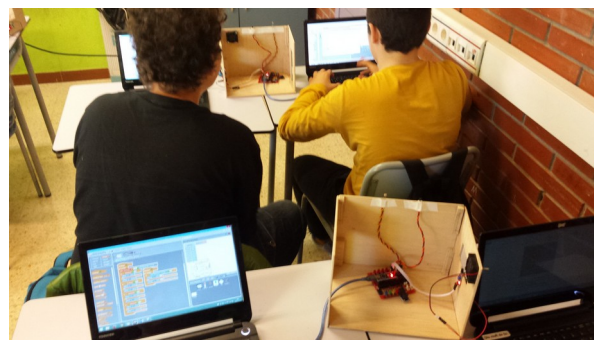
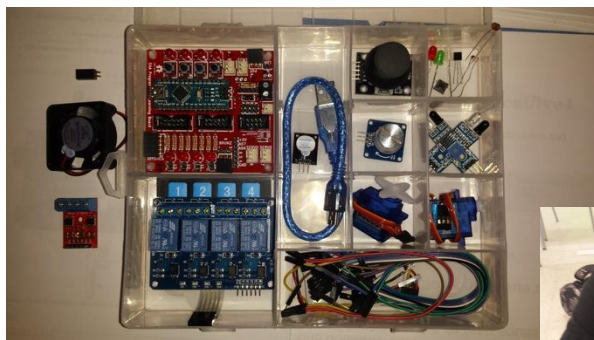
- 1.Arduino Nano socket
- 2.Potentiometer connector
- 3.Buzzer connector
- 4.Joystick connector
- 5.Servo motors connectors
- 6.Buttons
- 7.Leds
- 8.LM35 temperature socket
- 9.Keypad connector
- 10.Light sensor (LDR) connector
- 11.LM35 temperature plug
- 12.IR sensor connector
- 13.Standard devices connector
- 14.External power supply connectors
- 15.Communications interface
- 16.Communications setup jumpers

[S4A PLB GitHub webpage](#)

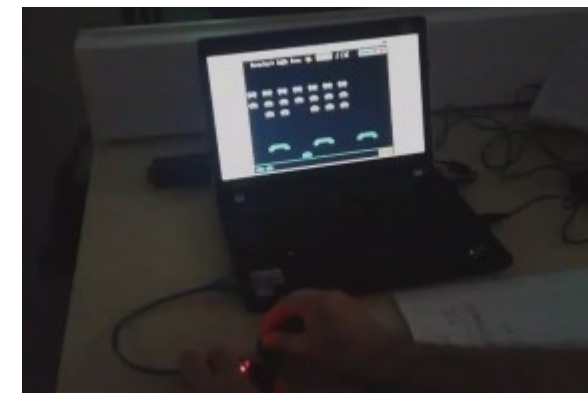
Using S4A with peripherals



S4A PLB



S4A PLB using Snap4Arduino

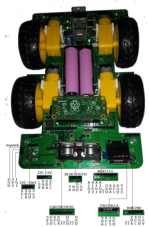


Space invaders using S4A-PLB as a gaming console

Exercises of Snap4Arduino on S4A board (1st part) (In Catalan)
Exercises of Snap4Arduino on S4A board (2nd part) (In Catalan)

Robots using S4A PLB

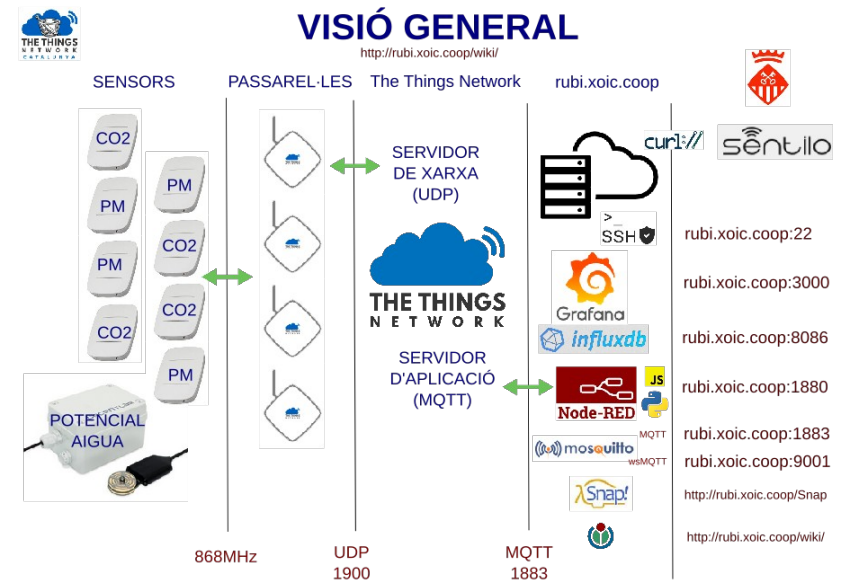
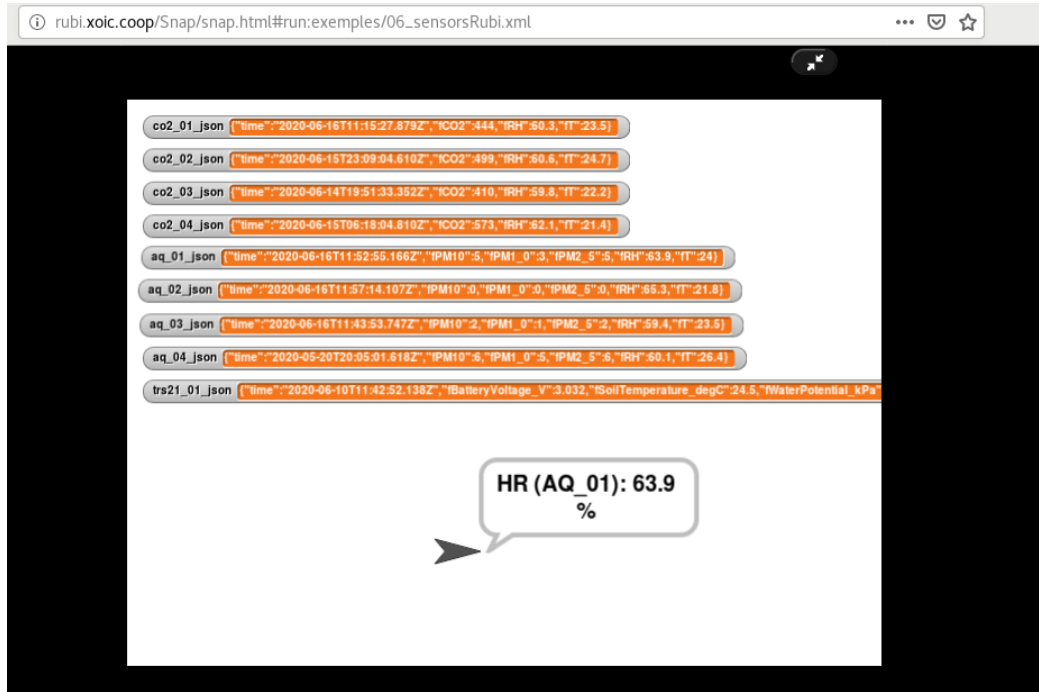
After knowing how S4A PLB works on Snap4Arduino, students learn how to use Arduino IDE. There was a robot competition using S4A PLB as main controller.



Nowadays we are using robot v6 (link to robot 6 description). Students are focusing in programming instead of electronics. It can run on Arduino Nano or Raspberry Pi Zero W.

Using Snap! reading commercial LoRaWAN sensors

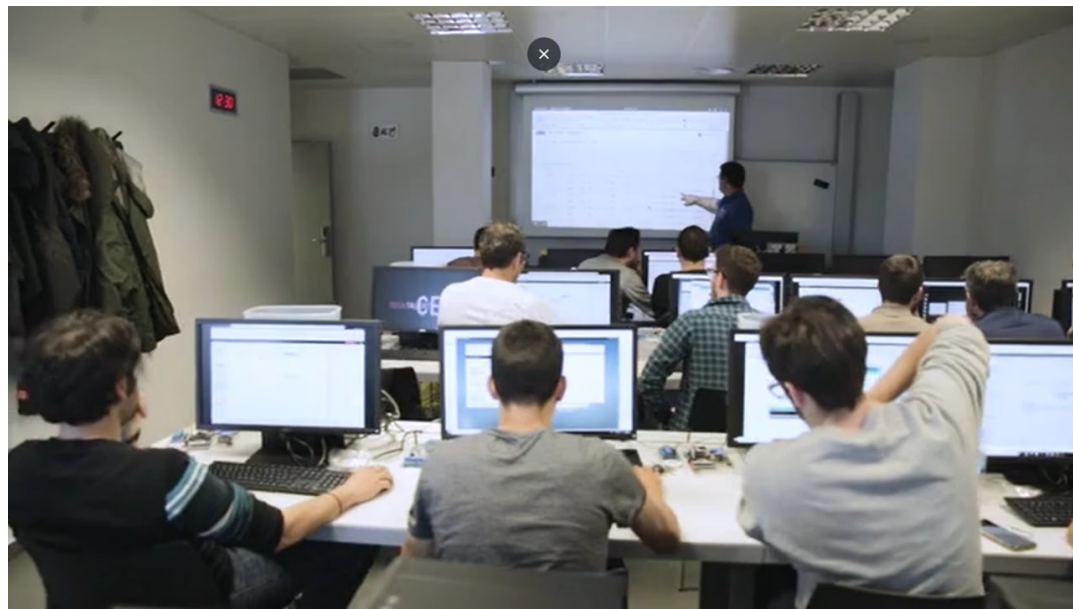
The goal of this project is to get sensor data using LoRaWAN. These data are available to secondary education students through Snap!



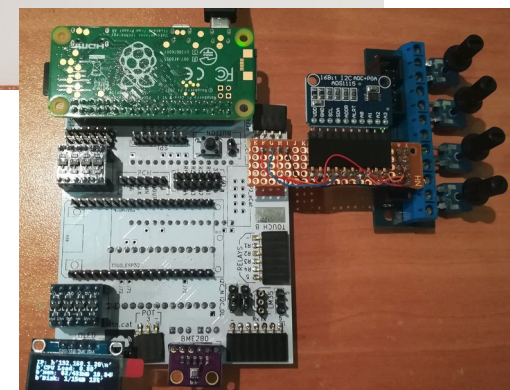
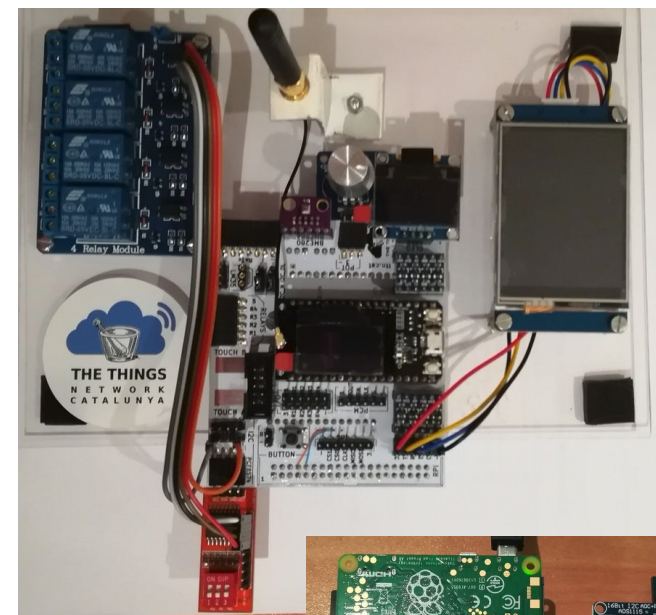
Web page description of this project (in Catalan). Direct access to Snap! reading last sensor values.

Using Snap! in Industry 4.0 Master at UPC School

Learning IoT concepts using MQTT(S) with Snap!

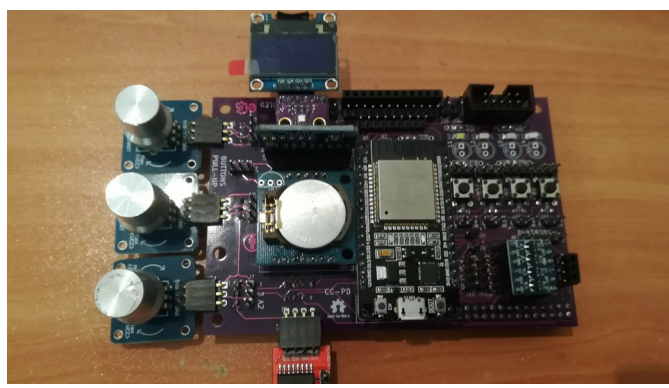
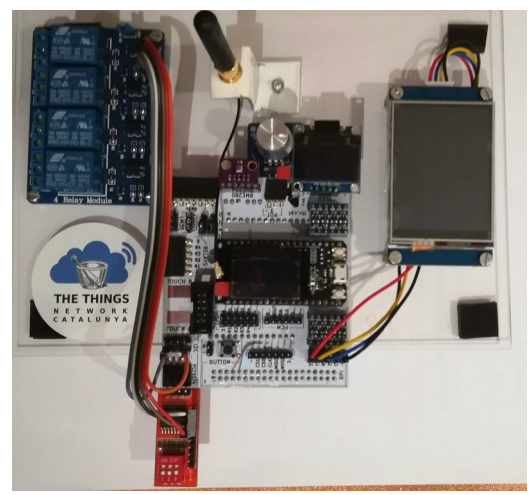


IoT-01 GitHub webpage



IoT-01 → PLB-IoT-I2C → IoT-02

In 2020's lockdown, IoT should be learned online.
20 IoT-02 boards were handmade on Easter.



[IoT-01 GitHub webpage](#)

[PLB-IoT-I2C GitHub webpage](#)

[IoT-02 GitHub webpage](#)

Find gerbers, BOMs and schematics into the respective boards Github repos

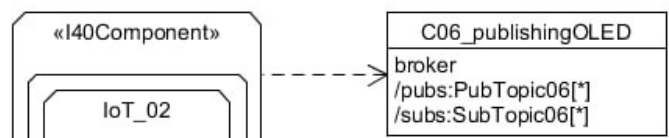
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Access to Snap! code (<https://ja.cat/RnG3S>)



06_publishingOLED



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«enumeration»
PubTopic06

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«enumeration»
SubTopic06

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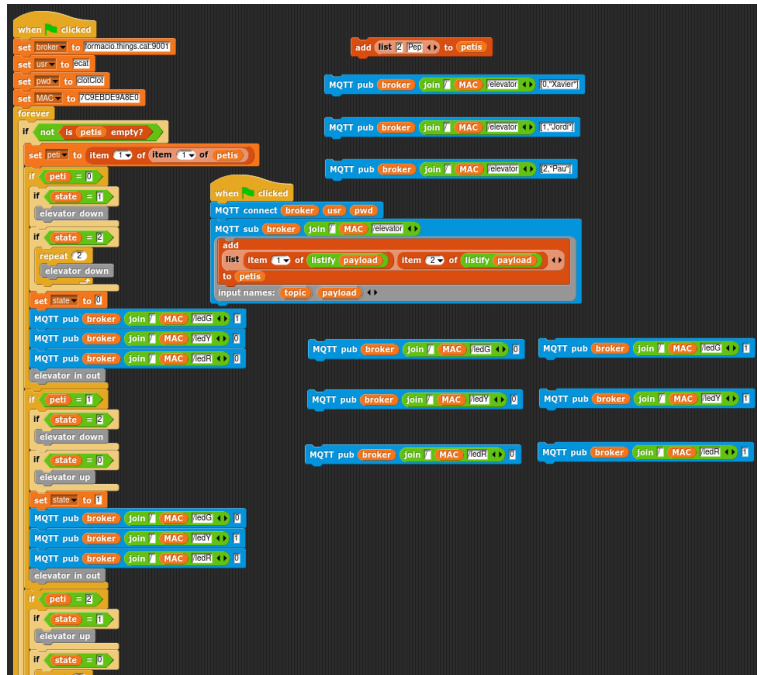


Connecting IoT-02 board and Snap! through MQTT (in Spanish)

IoT-02 GitHub webpage

Using Snap! in IoT classes

Learning IoT concepts using MQTT(S) with Snap!



MAC 7C9EBDE9A8E0



Access to elevator's Snap!

<https://ja.cat/tBldA>

IoT-02 GitHub webpage

VirKO, IoT-02 spin-off

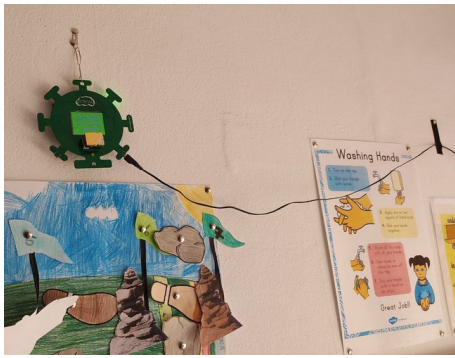


AirShield GitHub webpage



Access to VirKO data using Snap! v8

<https://ja.cat/jpVIH>



Question Time

