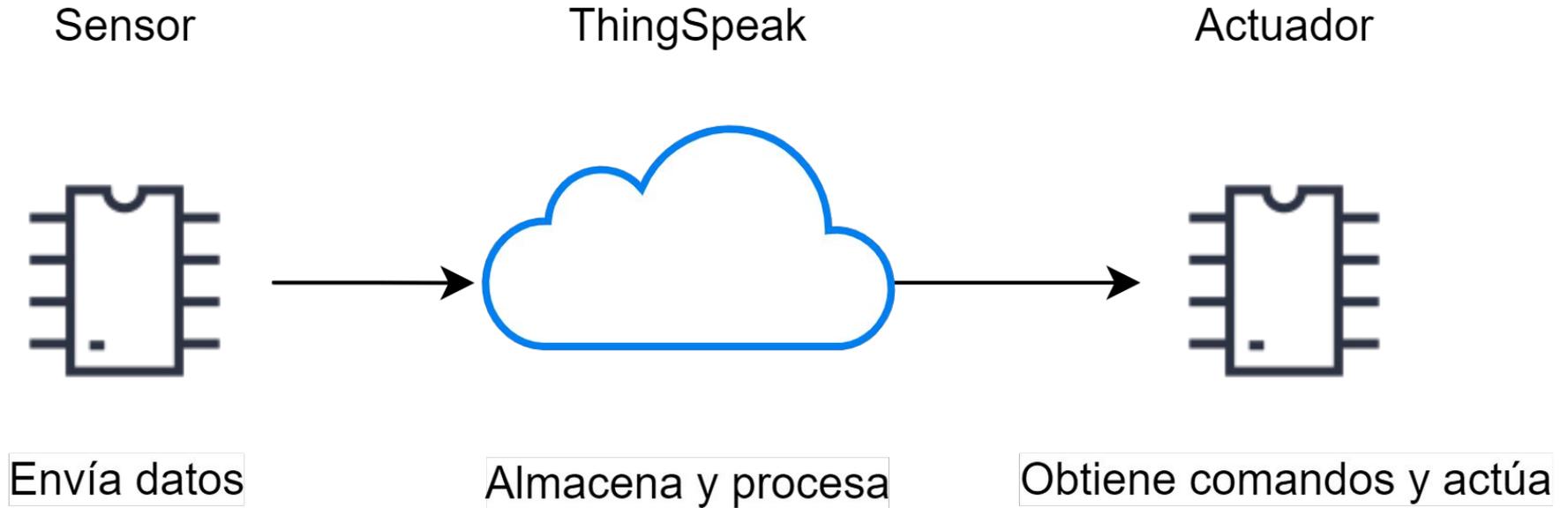


Presentación de plataforma

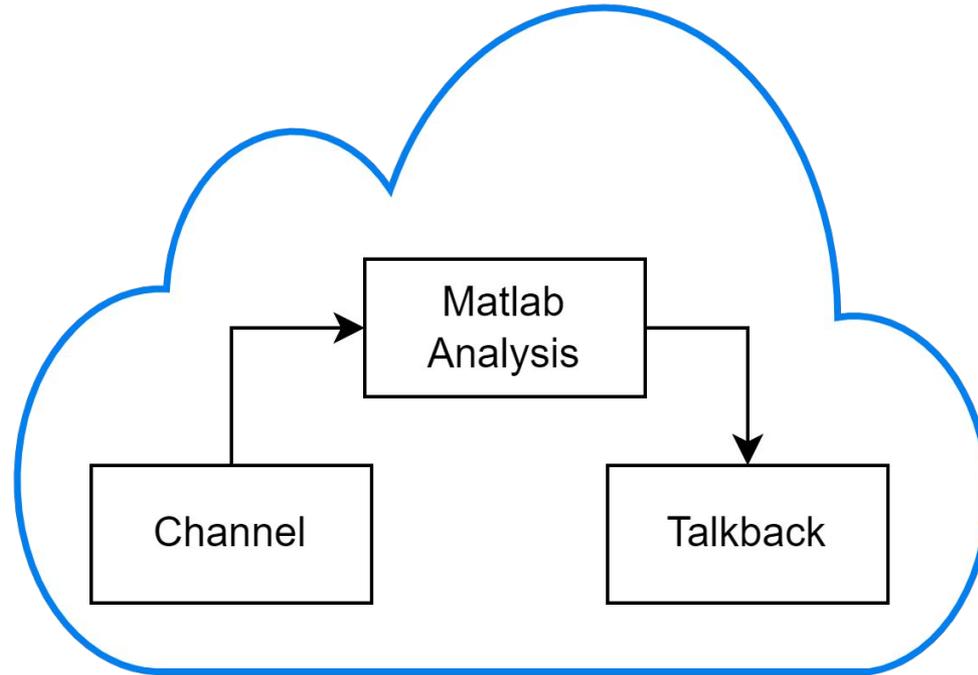
ThingSpeak

TISCF - 2024

# Flujo general



# Flujo de datos dentro de ThingSpeak



# **Análisis de datos con MATLAB**

## **MATLAB Analysis**

Es una aplicación que se utiliza para procesar y analizar datos, permite realizar múltiples operaciones sobre estos que facilitan el análisis.

Es posible operar sobre uno o varios datos, permitiendo además, combinar datos de distintos canales.

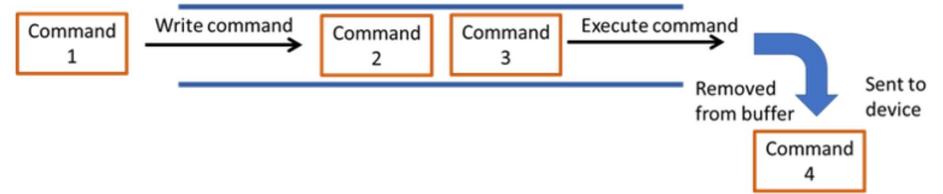
[https://thingspeak.com/apps/matlab\\_analyses](https://thingspeak.com/apps/matlab_analyses)

# Actuación

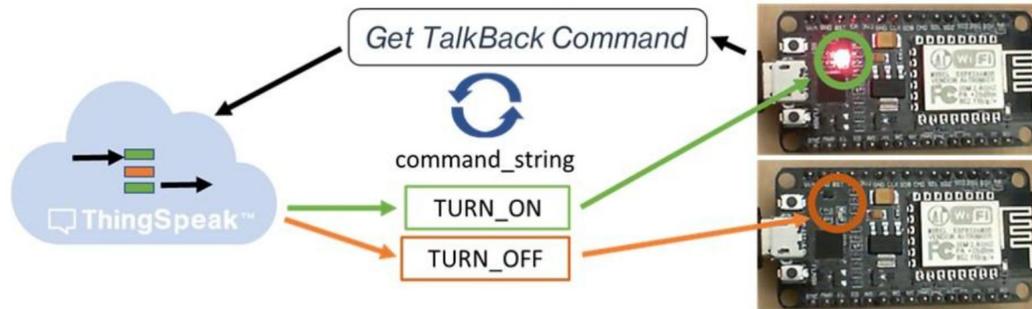
## TalkBack App

Permite que cualquier dispositivo actúe según los comandos en cola.

## TalkBack Queue (FIFO Buffer)



## Flujo de actuación



# Extracción de datos de un canal con MATLAB Analysis

Name

Calculate and display average humidity 1

MATLAB Code

```
1 % Read humidity over the past hour from a ThingSpeak channel and write
2 % the average to another ThingSpeak channel.
3
4 % Channel ID to read data from
5 readChannelID = 2466993;
6 % Humidity Field ID
7 humidityFieldID = 2;
8
9 % Channel Read API Key
10 % If your channel is private, then enter the read API Key between the '' below:
11 readAPIKey = '3DVTYAFTS3RF4E5E';
12
13 % Get humidity data for the last 60 minutes from the MathWorks weather
14 % station channel. Learn more about the THINGSPEAKREAD function by going to
15 % the Documentation tab on the right side pane of this page.
16
17 humidity = thingSpeakRead(readChannelID,'Fields',humidityFieldID,'NumMinutes',60,'ReadKey',readAPIKey);
```

New Channel

Most recent channels

Name: Dew Point Measurement

Channel ID: 2466993

Access: Private

Read API Key: 3DVTYAFTS3RF4E5E

Write API Key: VD7W0RYAN5NN22XN

Fields:

1: Temperature (F)

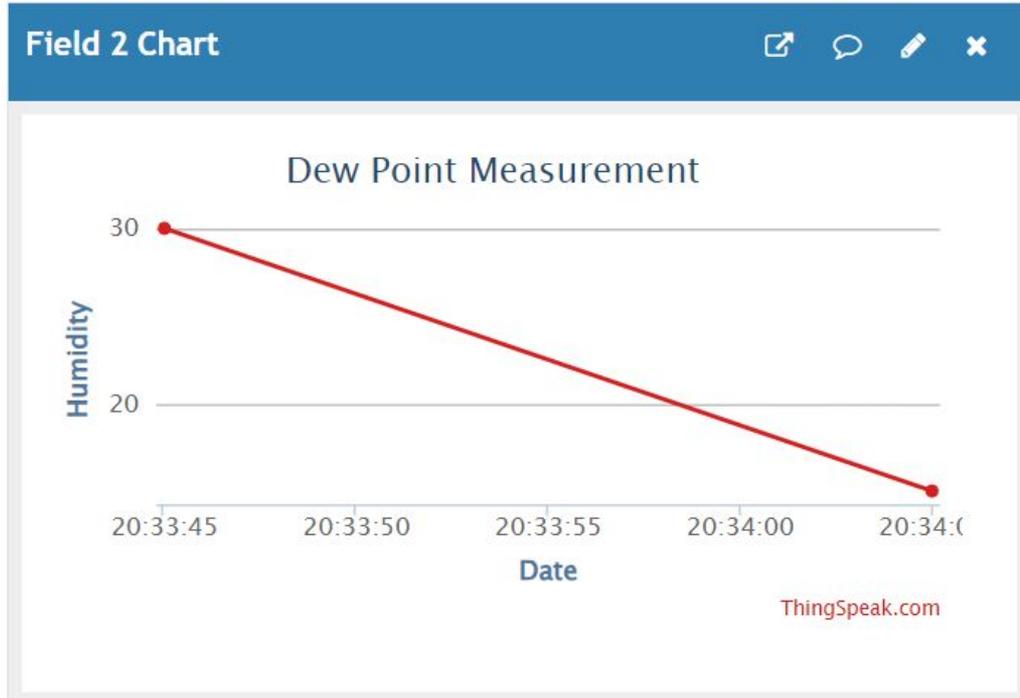
2: Humidity

3: Dew Point

> Analyze Data

> thingSpeakRead

# Canal de datos



# Análisis MATLAB y generación de comandos

```
14
15 % Calculate the average humidity
16 avgHumidity = mean(humidity);
17 display(avgHumidity,'Average Humidity');
18
19
20 % TalkBack app ID
21 TalkBack_ID = '52171';
22 % TalkBack app API key
23 TalkBack_apikey = 'ENIIPLY95DB5W1WA';
24 url = strcat('https://api.thingspeak.com/talkbacks/',TALKBACK_ID,'/commands.json');
25
26 if avgHumidity > 50
27     response = webwrite(url,'api_key',TALKBACK_APIKEY,'command_string','OPEN_DOOR');
28 else
29     response = webwrite(url,'api_key',TALKBACK_APIKEY,'command_string','CLOSE_DOOR');
30 end
31
32 display(response);
```

# Inserción de comandos en Talkback

## Output

Average Humidity =

30

response =

struct with fields:

```
      id: 41453006
command_string: 'CLOSE_DOOR'
  position: 2
executed_at: []
created_at: '2024-05-10T01:06:29Z'
```

Name: Canal de actuación

TalkBack ID: 52171

API Key: ENIIPLY95DB5W1WA

Regenerate API Key

Created: 2024-04-29 11:58 pm

Logged to Channel:

## Commands

Position	Command ID	Command string
1	41452923	CLOSE_DOOR
2	41453006	CLOSE_DOOR

# ¿Cómo accionar código en MATLAB Analysis?

Existen dos mecanismos para disparar la ejecución de código en la aplicación MATLAB Analysis dentro de la plataforma. Estos dos son: TimeControl y React.

- TimeControl permite ejecutar código cada un cierto intervalo de tiempo específico, pudiendo definir semanas, días, horas y minutos.
- React permite ejecutar código cada un cierto intervalo de tiempo pero además permite hacerlo al momento de insertar datos en un determinado canal en la plataforma. Además, para que el código sea disparado, se debe cumplir una determinada condición sobre el dato de entrada.

# TimeControl

Name

Time Zone UTC ([edit](#))

Frequency  One Time  Recurring

Recurrence  Week  Day  Hour  Minute

Every  minutes

Start Time 12:55 am

Fuzzy Time

Action

Code to execute

**DEMO**

# Referencias

<https://la.mathworks.com/help/thingspeak/talkback-app.html>

<https://la.mathworks.com/help/thingspeak/control-a-light-with-talkback-and-esp8266.html>

<https://www.mathworks.com/help/thingspeak/matlab-analysis-and-visualization.html>

<https://www.mathworks.com/help/thingspeak/calculate-average-humidity.html>