

Sensor Node 1  
(ESP + DHT)

Sensor Node 2  
(ESP + DHT)

Start Loop

Medidas:  
Read Temperature,  
Humidity and Timestamp

Dispositivos:  
Get GPS Data and Device ID

Construct Payload  
(id, lat, long, temperatura,  
umidade, timestamp)

Transmit via LoRa WAN

LoRa Radio Wave

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Central ESP Controller

Receive LoRa Packet

Data Integrity  
OK?

No

Discard Packet

Yes

Parse Data & ID Device

Wi-Fi  
Connected?

No

Reconnect Wi-Fi

Yes

Process Data

Format for MQTT

MQTT Connected?

No

Reconnect Mosquitto

Yes

Publish to Broker

Format for HTTPS API

Send HTTPS POST Request  
to Google Script URL

TCP Port 1883

HTTPS Port 443

Cloud Services

Mosquitto Broker

Google Sheets  
via Apps Script

Subscriber: Dashboard