Connected Bus Monitor

For Sustainable Mobility

DIPARTIMENTO DI INGEGNERIA INFORMATICA
AUTOMATICA E GESTIONALE ANTONIO RUBERTI

SAPIENZA
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FUTURE PLANS

Geolocation

X-NUCLEO-GNSS1A1

STM32CUBE (X-CUBE-GNSS1)

Data acquisition

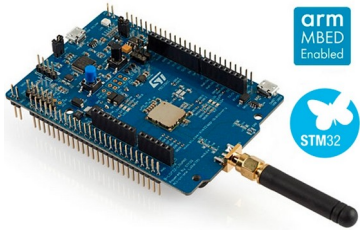
- Latitude and longitude
- Time (timestamp/elapsed)

Metrics

- Power consumption

LoRa Connectivity

Choose the LoRa Discovery kit over the expansion board



B-L072Z-LRWAN1

replaces

I-NUCLEO-LRWAN1

Metrics

- Latency
- Throughput
- Data trasmission rate

Power source

Our bus monitor devices are static devices installed inside the bus cabin.

A city bus company have to manage thousands of buses

the device needs to be autonomous as possible from the energy point of view

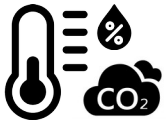
Ideas:

- **Connect the device to the grid of the bus (USB port)**
- **Optional** Use a rechargeable battery with a energy source
    - Small solar panel
    - Dynamo

Web dashboard

Provide indications of bus

 Location

 Air quality

Client side

 Angular

 OSM

 chart.js

 Amazon S3 (static resources)

Server side

 Amazon API Gateway (REST API)

 AWS Lambda (Lambda Functions)

 Amazon DynamoDB (Data Storage)