IoTLabs: Projects Proposal

-. Global Outcomes

- Analyze the constraints of an LPWAN based on LoRaWAN
- Deploy an end-to-end IoT service over LoRaWAN
- Design the different components of an end-to-end IoT chain
    - Physical interface of an IoT device
    - Control and actuation
    - Data storage, visualization, and analytics

-. Requirements and Constraints

- Use the ESIB LoRaWAN platform
- Provide working code and proof of concepts
- Provide technical documentation

-. [CO] Connecting the Platform

- Describe and analyze the basic steps for sending and receiving data over LoRaWAN: IoTLabs: Exploring LoRaWAN

-. [PO] Projects Proposal

-. LoRaGreen: Smart Classroom

- Design and implement an end-to-end IoT service
    - Detect, transmit, store, and visualize
        - Classroom occupancy
        - Classroom lighting and temperature
- Analyze and correlate occupancy and lighting

-. LoRaMarathon: Live GPS Tracking

- Design and implement an end-to-end IoT service
    - Detect, transmit, store, and visualize
        - GPS position of device
        - RSSI level
- Track device on a dynamic map

-. LoRaBot: Device Configuration via Messenger

- Design and implement an end-to-end IoT service
  - Tune radio parameters (SF, transmit period, sleep, etc.)
- Use a messenger robot to interact with device

-. LoRaPark: Parking Counters

- Detect, transmit, store, and visualize
  - Car entrance and exit of parking
- Make data available on a messenger robot

-. Available Resources

- Devices
  - Arduino Mega with LoRa Dragino Shields
  - Raspberry Pi with LoRa and GPS shield (GPS shield, LoRa on Raspberry Pi)
- Sensors: Temperature, light, Infrared (PIR), moisture
- Scripts: MQTT python client
- Visualisation: emoncms

-. Assessment and Grading

- Assessment
  - 1 Common outcome
  - 1 Personal outcome
- Technical tutorial on Wiki
- Oral presentation of achievements
  - Accomplished
  - Exceeded