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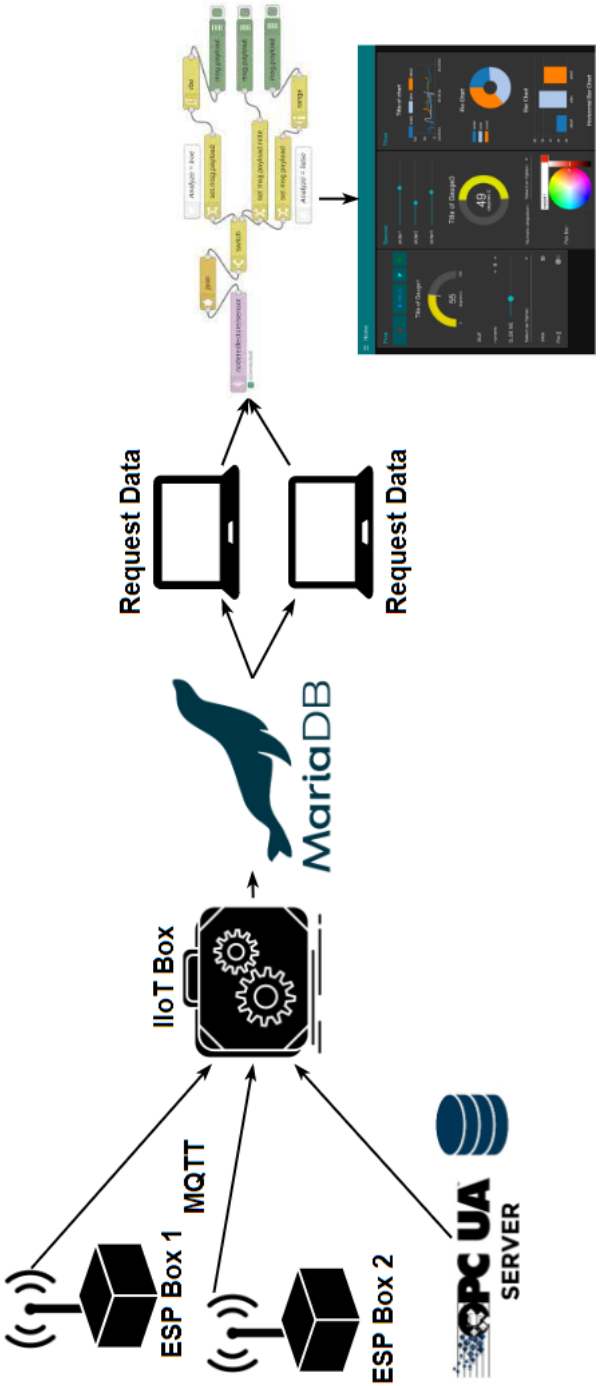
Links

Link to Documentation:
https://github.com/AAUSmartProductionLab/data-driven-decisions/

Link to IFN Homepage:
https://www.ifn.aau.dk/

The link to the documentation can also be found scanning the QR code here:



Industrial Internet of Things Box Manual

IFN Demonstrator 7

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Overview

The IIoT Box is created as a part of an Innovation Factory North(IFN) Demonstrator. The general purpose of the box is to help Small and Medium sized Enterprises(SMEs) try out different sensor solutions in their production, to see what data creates value in their companies.

This manual will contain some of the essential information in order to get the IIoT Box up and running as well as links and references to more in depth documentation and guides etc.

Getting Started

- Power up the box using the barrel plug power cable provided in the box. (Wait a few minutes for the Box to properly boot up).
- Once the IIoT Box is booted up, connect to the WiFi Access Point with that has the same name as the IIoT Box (e.g. iiot_box_2 or iiot_box_3).
- Once connected, the status of the raspberry pi can be check visiting: **10.3.141.1** URL in the browser. The credentials are: username: **admin** and password: **robotlab**.
- From the dashboard it can be seen what devices are connected to the IIoT Box this could for example be the sensor boxes. These will appear with the host name ESPBox1 or ESPBox2. If these two are connected the IIoT Box should be receiving data from ESP Boxes.
- If everything is up and running Node-RED can be accessed through port 1880. So go to the address **10.3.141.1:1880** in the browser.
- In Node-RED data can be accessed, analyzed and formatted such that it can be used in a dashboard or for storing. For a more in depth guide on Node-RED check the documentation found in the links in this manual.
- The data is sent through MQTT from the ESP Boxes and the data can be checked through the debug window in Node-RED.
- The IIoT Box also has the capabilities of collecting data from an OPC-UA server. However this requires some integration at the specific site in order to work. The ethernet port on the box can be used for this purpose.

Contents of the box

A list of the contents of the box is listed. The list shows the content of both the IIoT Box and the ESP Boxes that are contained within the IIoT Box.

- IIoT Box:
  - 7-inch Touchscreen Joy-it RB-LCD7.2
  - Raspberry Pi 3B/3B+
  - 1 × Goobay USB-C Cable (For charging battery)
  - 1 × Goobay Micro USB (For programming the ESP Boxes)
  - ESP Box 1:
    - Wemos D1 Mini Pro ESP8266
    - Carlo Gavazzi Photoelectric sensor PH18CND10PAM1SA
    - Joy-it MPU6050 IMU
    - Cellularline Powerbank 3000 mAh
    - 1 × Micro USB (Power from battery to ESP8266)
  - ESP Box 2:
    - Wemos D1 Mini Pro ESP8266
    - Joy-it SEN-KY015TF DHT 11
    - Seeed Studio Grove-125KHz RFID Reader
    - Cellularline Powerbank 3000 mAh
    - 1 × Micro USB (Power from battery to ESP8266)

Usernames and Passwords

A table, of the commonly used usernames and passwords that is used to connect to the various interfaces of the IIoT Box, can be found in Table 1.

Credentials	Username	Password
Linux	pi	robotlab
WiFi Credentials	IIoT_case_n*	robotlab
Raspap Dashboard	admin	robotlab

Table 1: Table of usernames and passwords (* n is the number of the box)

Miscellaneous Information

The IIoT Box has some additional features and information provided here.

The IIoT Box can be connected directly to the internet and this creates options for storing the data in the cloud for wider access to the data.

The ESP Boxes can also be expanded with additional sensors, however this requires some programming of the ESP8266 within the ESP Box.

The range between the IIoT Box and the ESP Boxes is approximately 15 meters. This can range can be increased in the future with the addition of a long range WiFi modem and antenna.

The ESP Boxes has a battery life of approximately +48 hours for the ESP Box 1 and 36 hours for the ESP Box 2.

A simplified architecture of the IIoT Box solution can be found on the back of this manual.