

Internet of Things

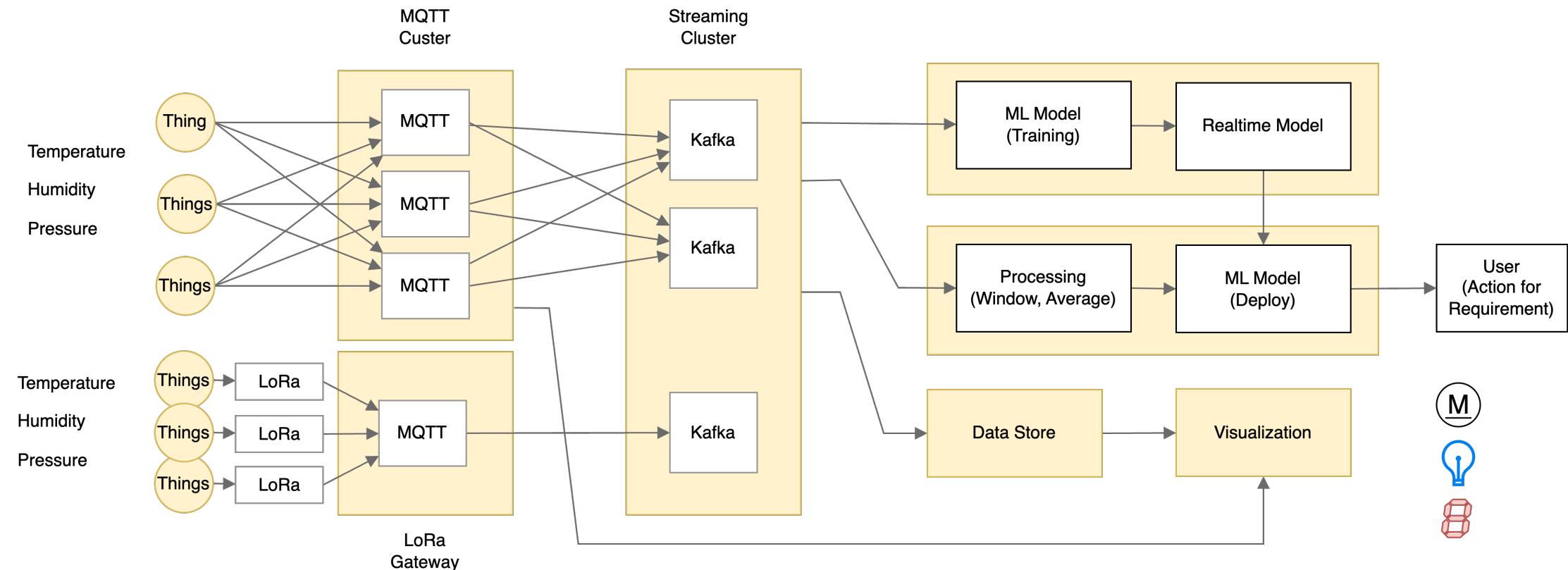
Machine Learning IoT

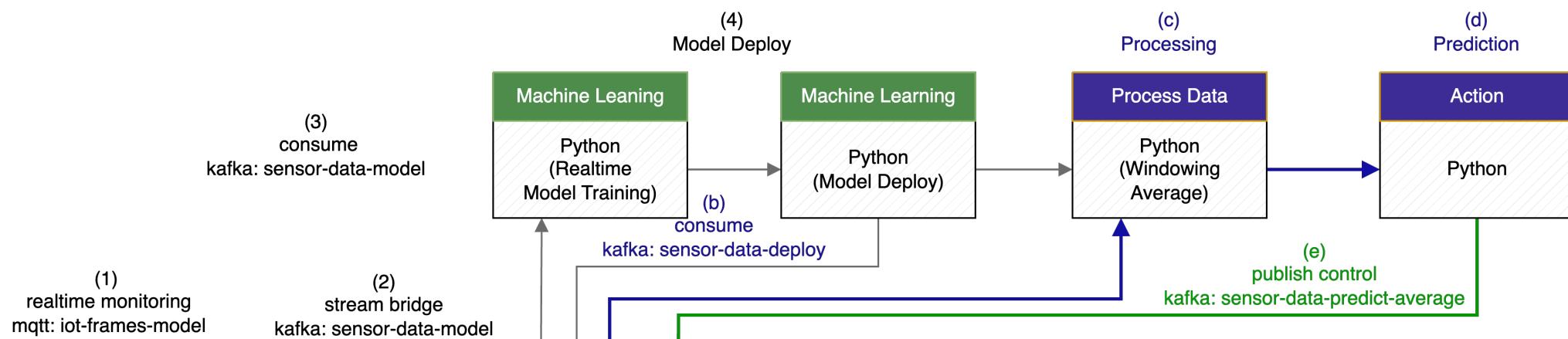
Topic

- Devices
- Gateway
- Communication
- Platform
- Application

Platform

Machine Learning For IoT : MIoT





(1)
realtime monitoring
mqtt: iot-frames-model

(2)
stream bridge
kafka: sensor-data-model

(3)
consume
kafka: sensor-data-model

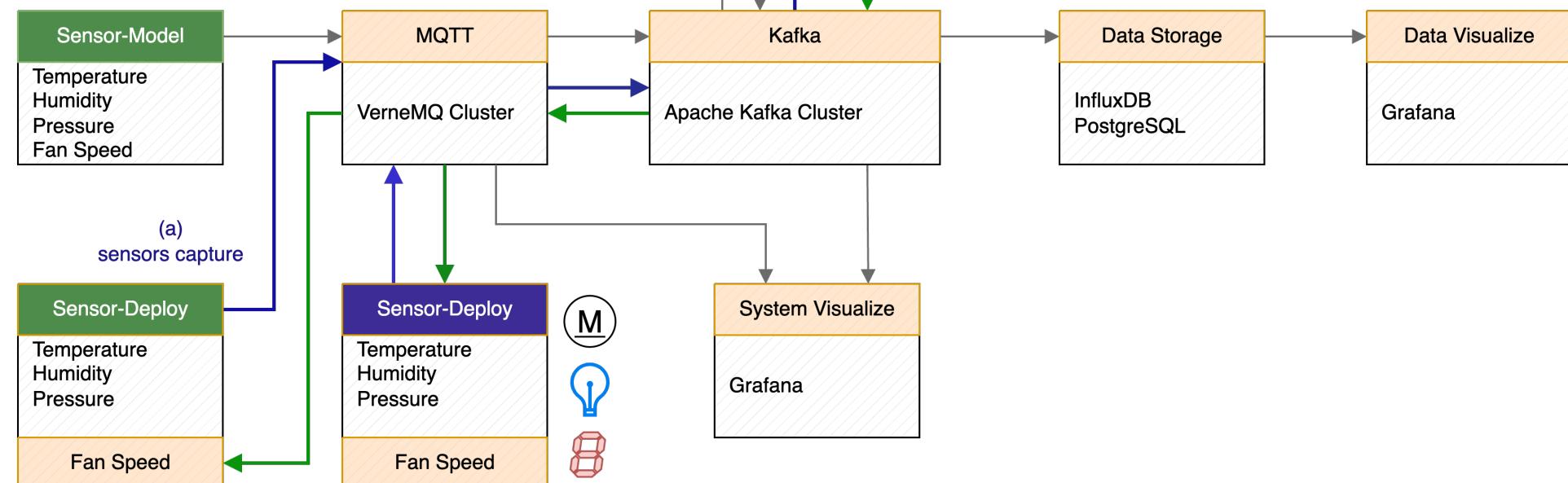
(4)
Model Deploy

(c)
Processing

(d)
Prediction

(b)
consume
kafka: sensor-data-deploy

(e)
publish control
kafka: sensor-data-predict-average

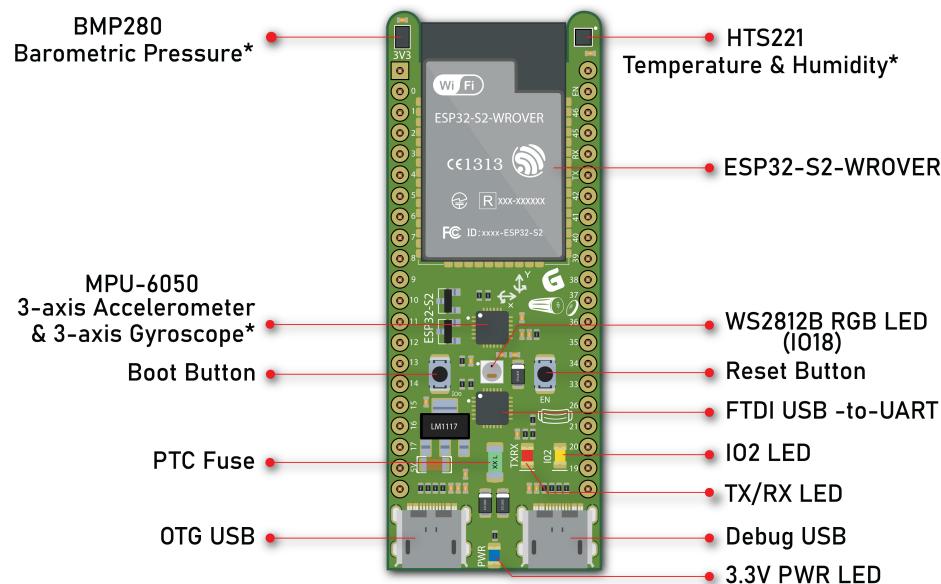


(a)
sensors capture

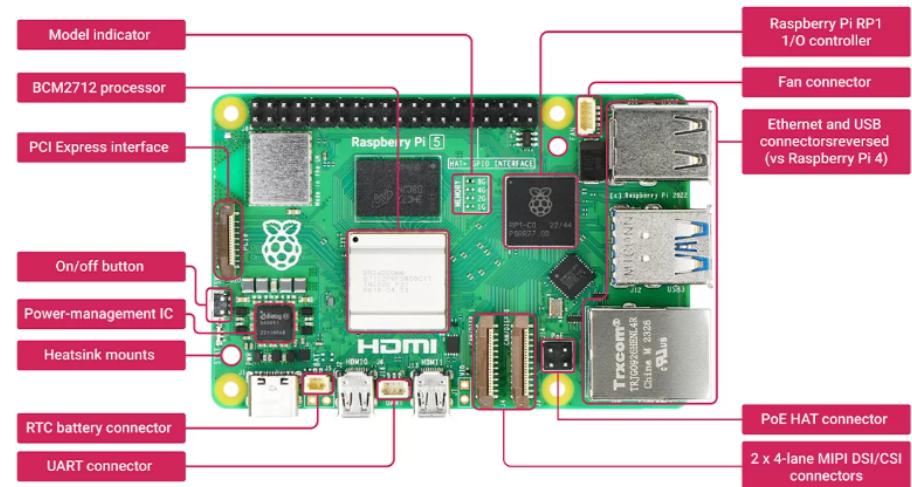
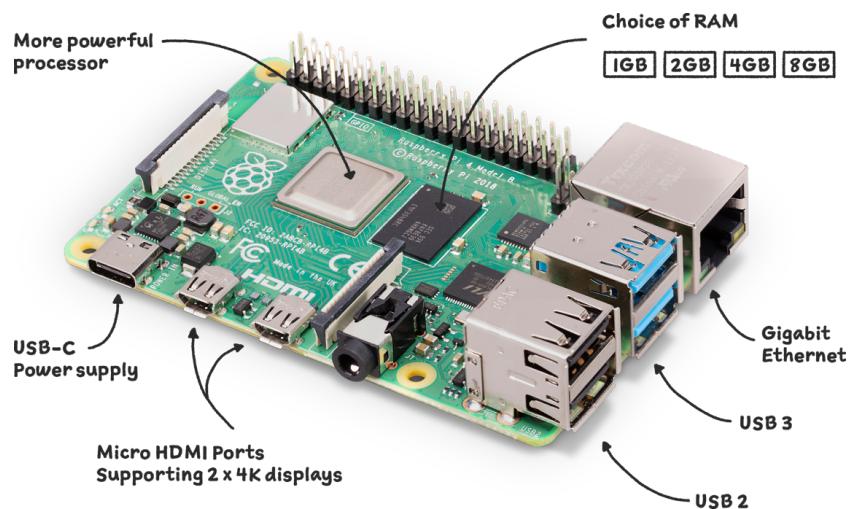
Components



Devices / Sensors



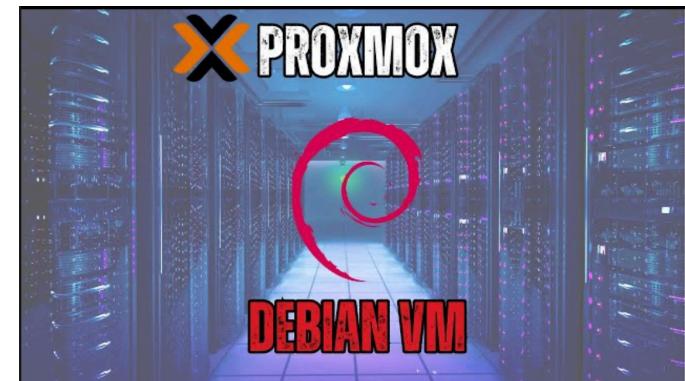
Gateway



Server



Collect, analyze, relay and act on Internet of Things data at the edge of the network with this IoT gateway purpose-built for Building and Industrial Automation.



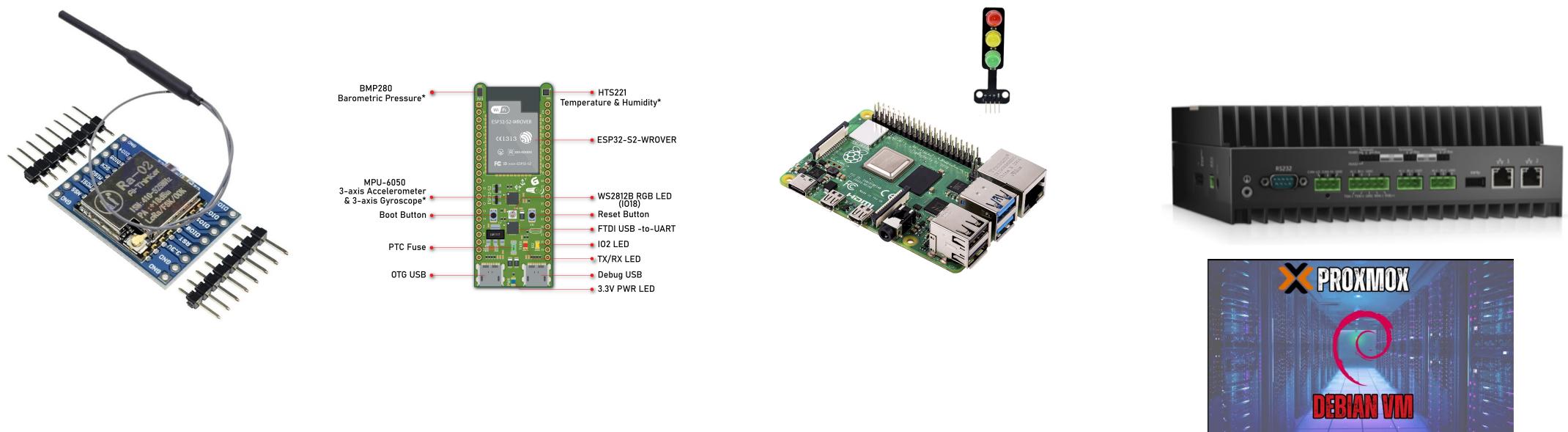
Communication



Application

- Containerization (Docker)
- MQTT (VerneMQ)
- KAFKA (Apache Kafka, Kafka-UI)
- Stream Processing (Quixstreams)
- Metric Monitoring (Prometheus)
- Visualization (Grafana)
- OS (Debian, Raspbian OS, FreeRTOS)
- IoT Simulator
- Arduino C
- Online Machine Learning
- Python

System components



Lab

- Gateway Installing OS
 - Debian OS + Docker + MQTT
 - Raspbian OS + Docker + MQTT
 - IoT Simulator
- Setting Device and Sensors
 - Cucumber
 - Cucumber + LoRa
- MQTT
 - LoRA Sensor
 - Cucumber Sensor

1st Lab

- Install OS on Dell , VM
 - Your Machine name: **FDT65XXXXXXXX**
 - Your Username with Sudoer:
u65XXXXXXXXXX
 - Your Machine IP: **172.30.15.xxx**
- Install OS on Raspberry Pi
 - Your Gateway name: **GW65XXXXXXXX**
 - Your Username with Sudoer:
u65XXXXXXXXXX
 - Your Gateway IP: **172.30.15.xxx**