INTERNET OF THINGS

I am Salman Faris

KSUM Technology Innovation Fellow

Fab Academy Instructor at **Fablab Kochi**

Seeed Studio Ranger

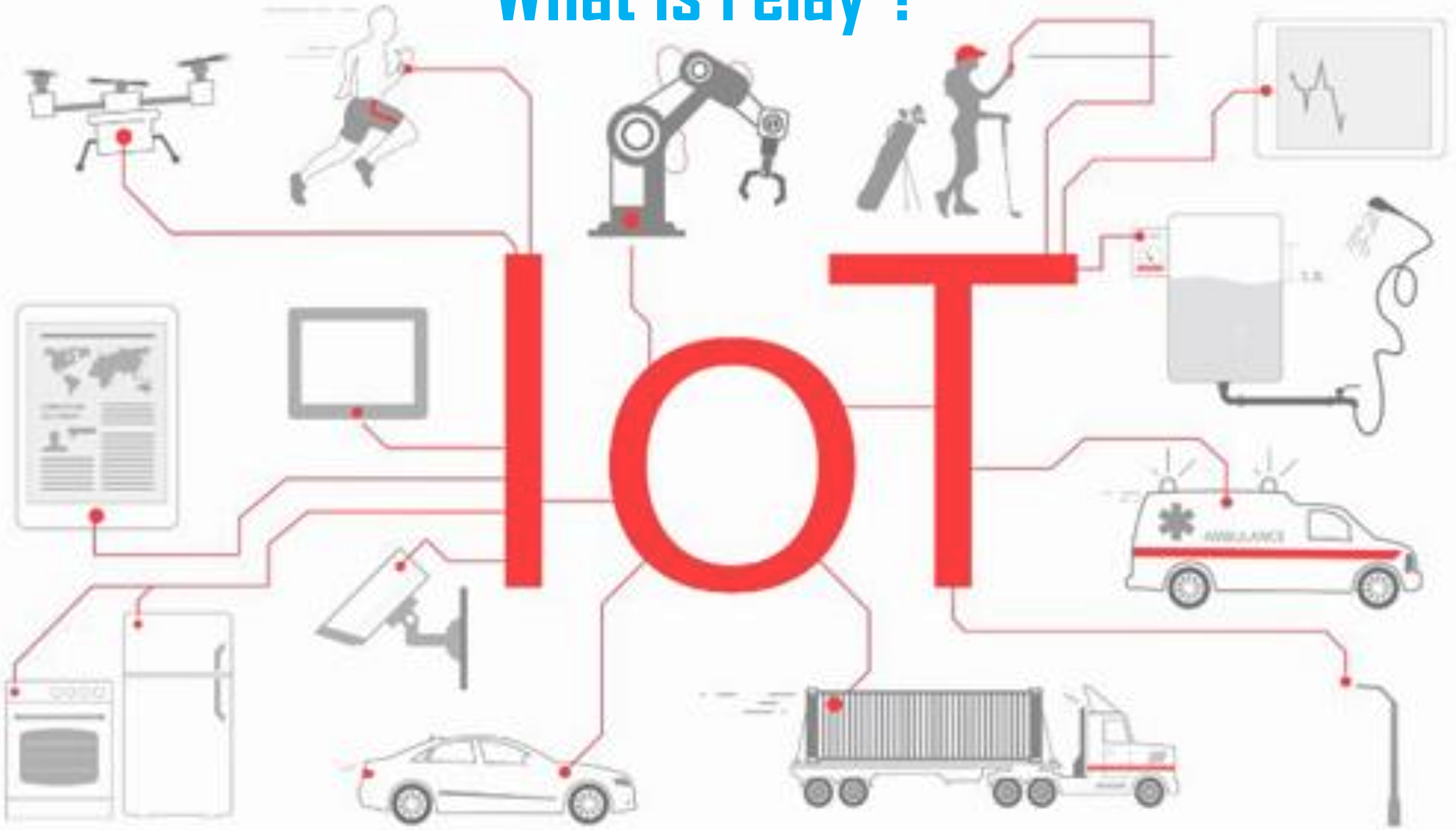
Hackster.io Ambassador

You can find me at **0xsalfar**

Internet of Things

“Network of physical objects with embedded electronics , software , connectivity , and people to enable connectivity to exchange data , for intelligent application and services”

What is relay ?

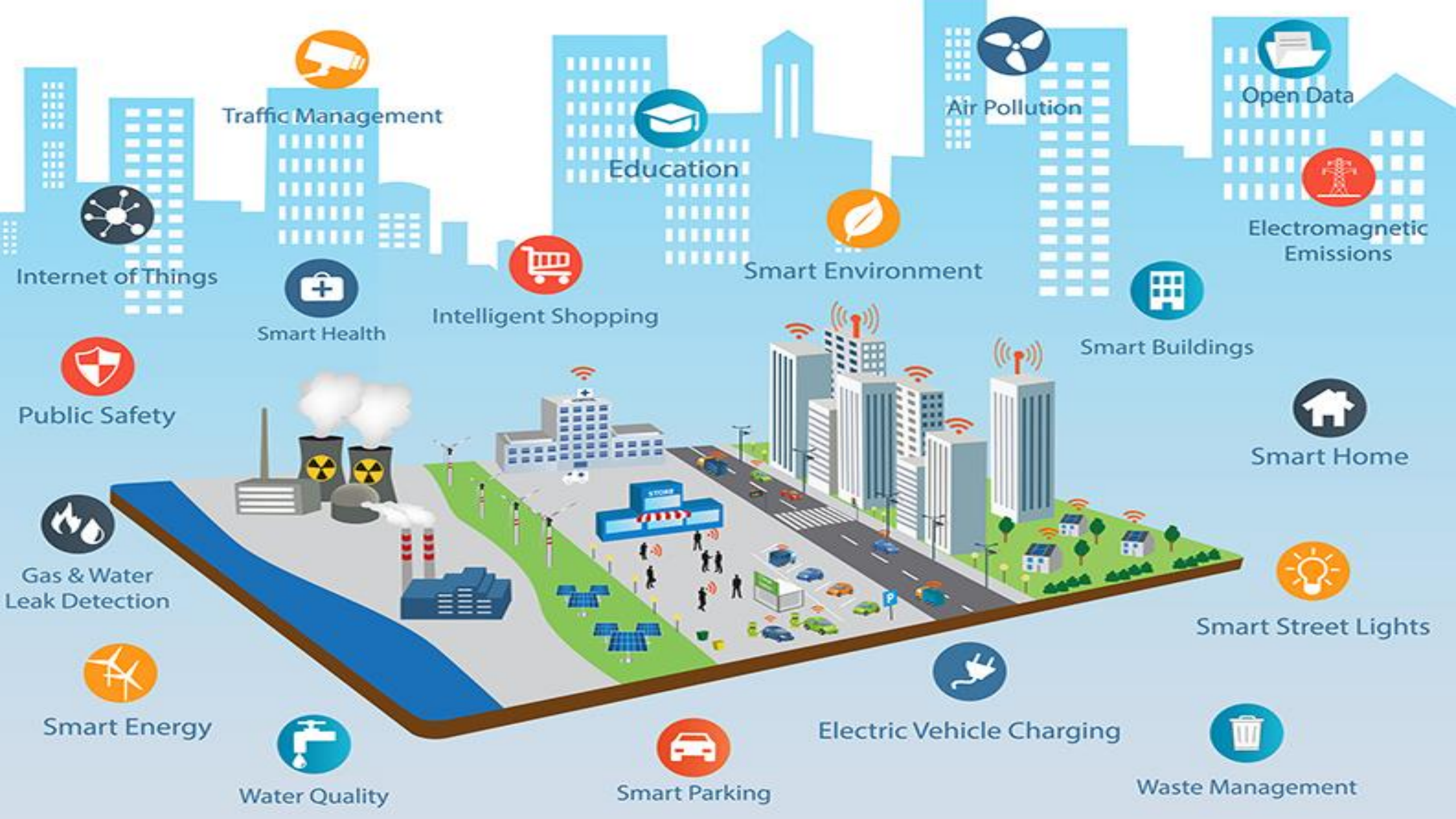



INTERNET OF THINGS
IoT
edureka!

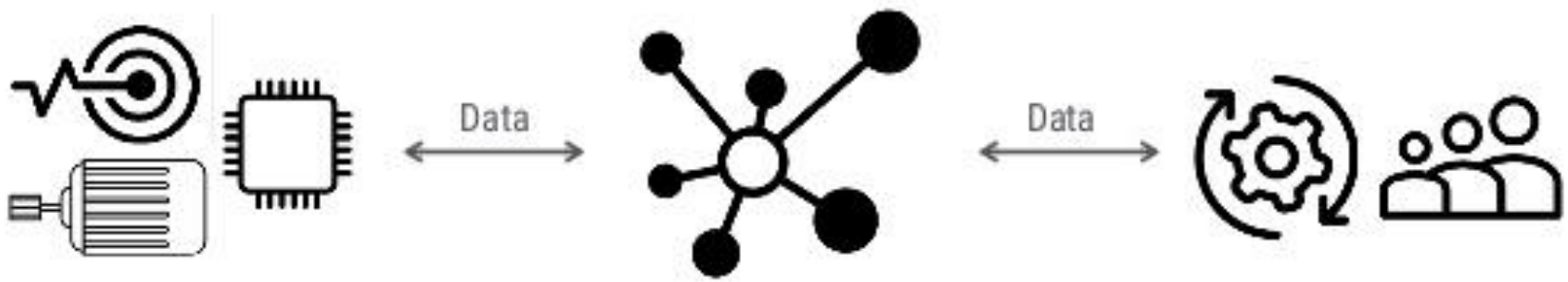
Internet of Things

just a FEW example!


Lighting
Baby & Pet Monitoring
Health & Wellness
Energy & Utilities
Safety & Security
Media & Entertainment
Yard & Garden
Home Appliances


Traffic Management
Education
Air Pollution
Open Data
Internet of Things
Smart Health
Intelligent Shopping
Smart Environment
Electromagnetic Emissions
Smart Buildings
Public Safety
Smart Home
Gas & Water Leak Detection
Smart Street Lights
Smart Energy
Electric Vehicle Charging
Water Quality
Smart Parking
Waste Management

Internet of Things



Things

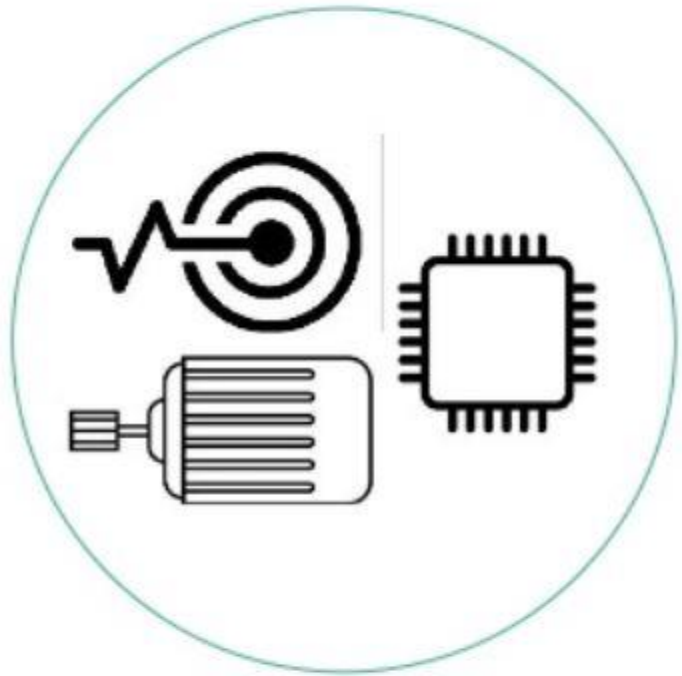
(Sensors, actuators, MCU/MPU, network, energy, firmware)

Connectivity

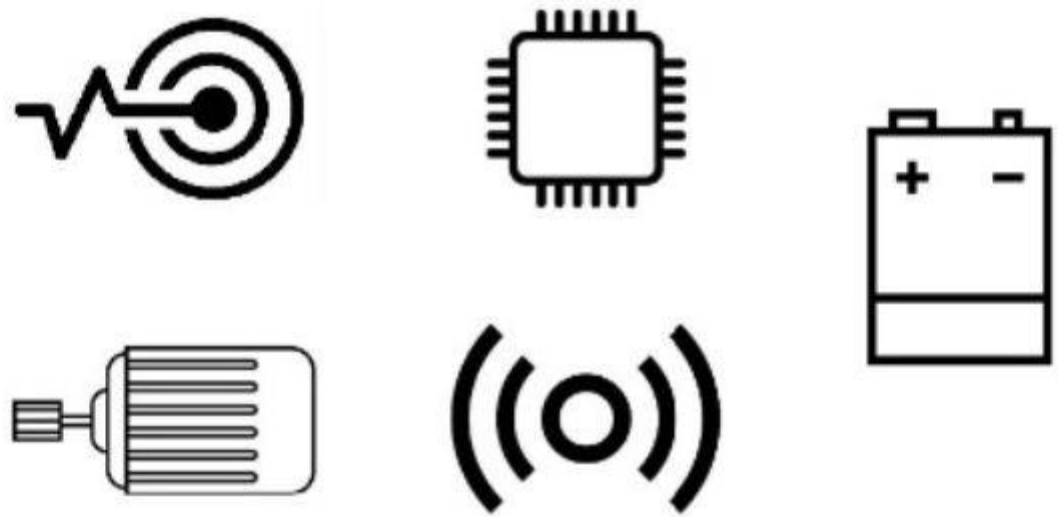
(PAN, LPWAN, Cellular)

People & Processes

(IoT Cloud, Machine Learning, AI)



Things



Things

(Sensors, actuators, microcontrollers, network, energy source)

Arduino

Indonesia-made

Bluino

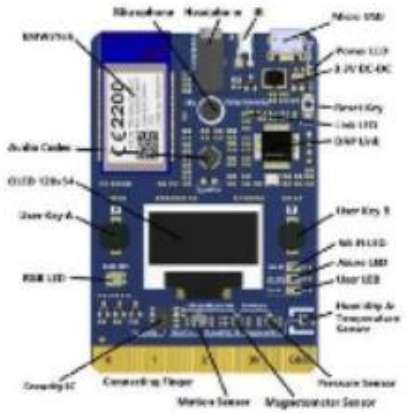
ESP8266

ESP32

Particle.io

Photon, Electron

Espruino

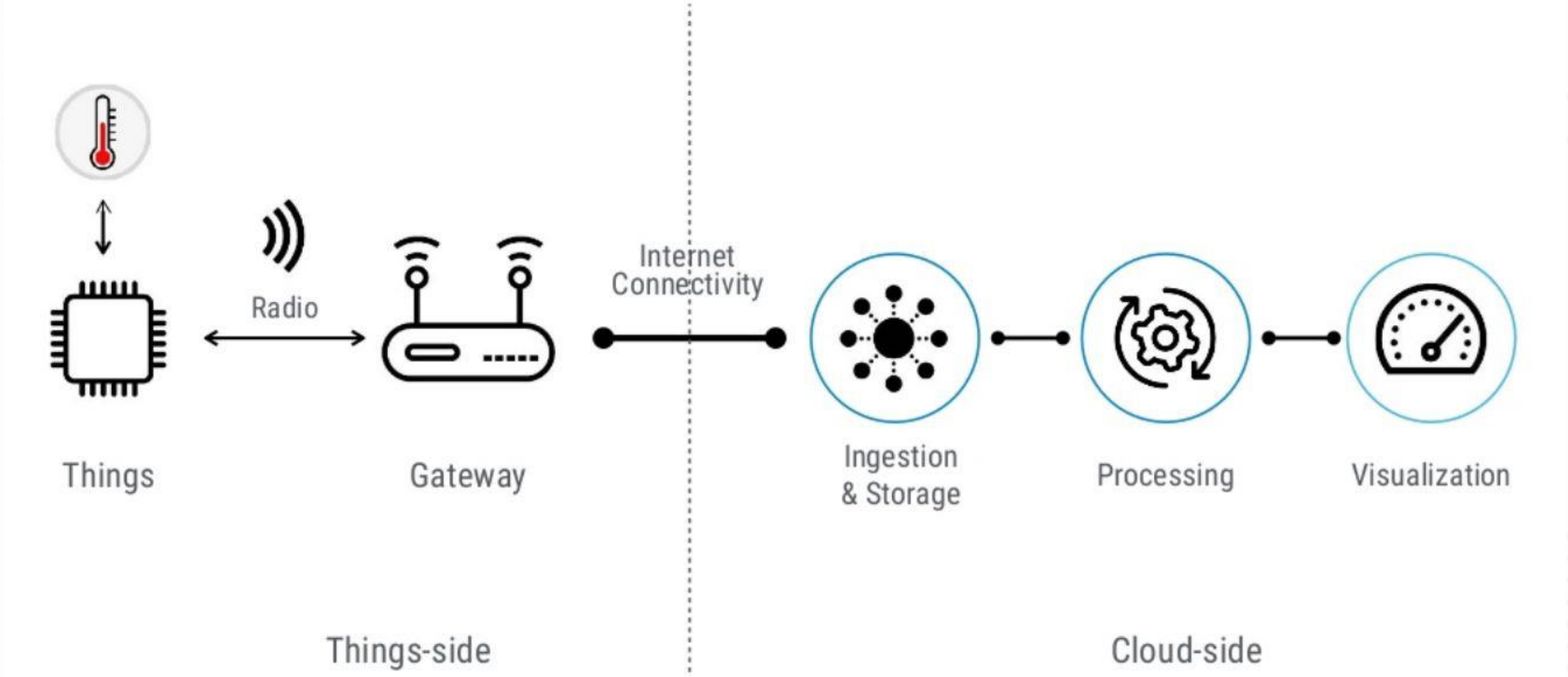


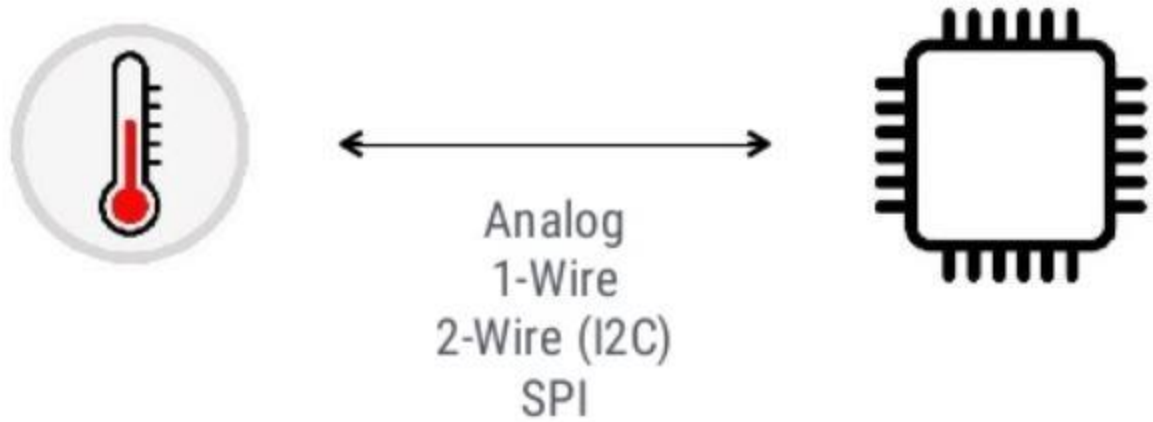
MXChip IoT DevKit

Raspberry Pi

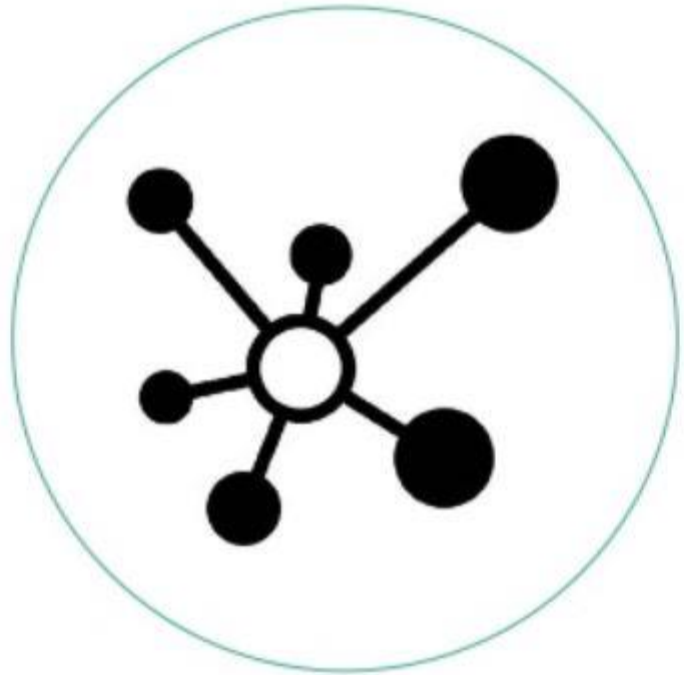
and many many more…

Architecture

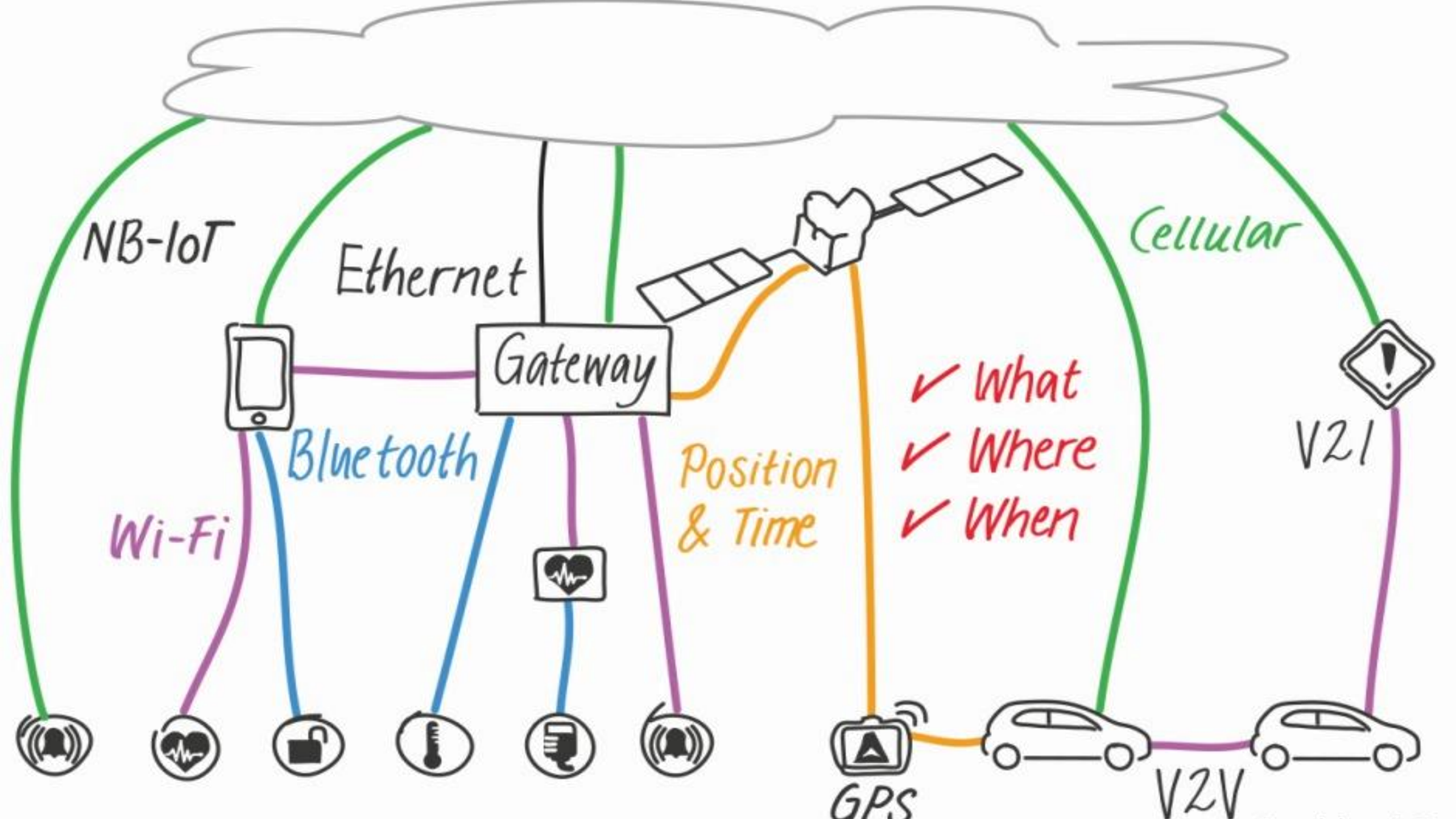


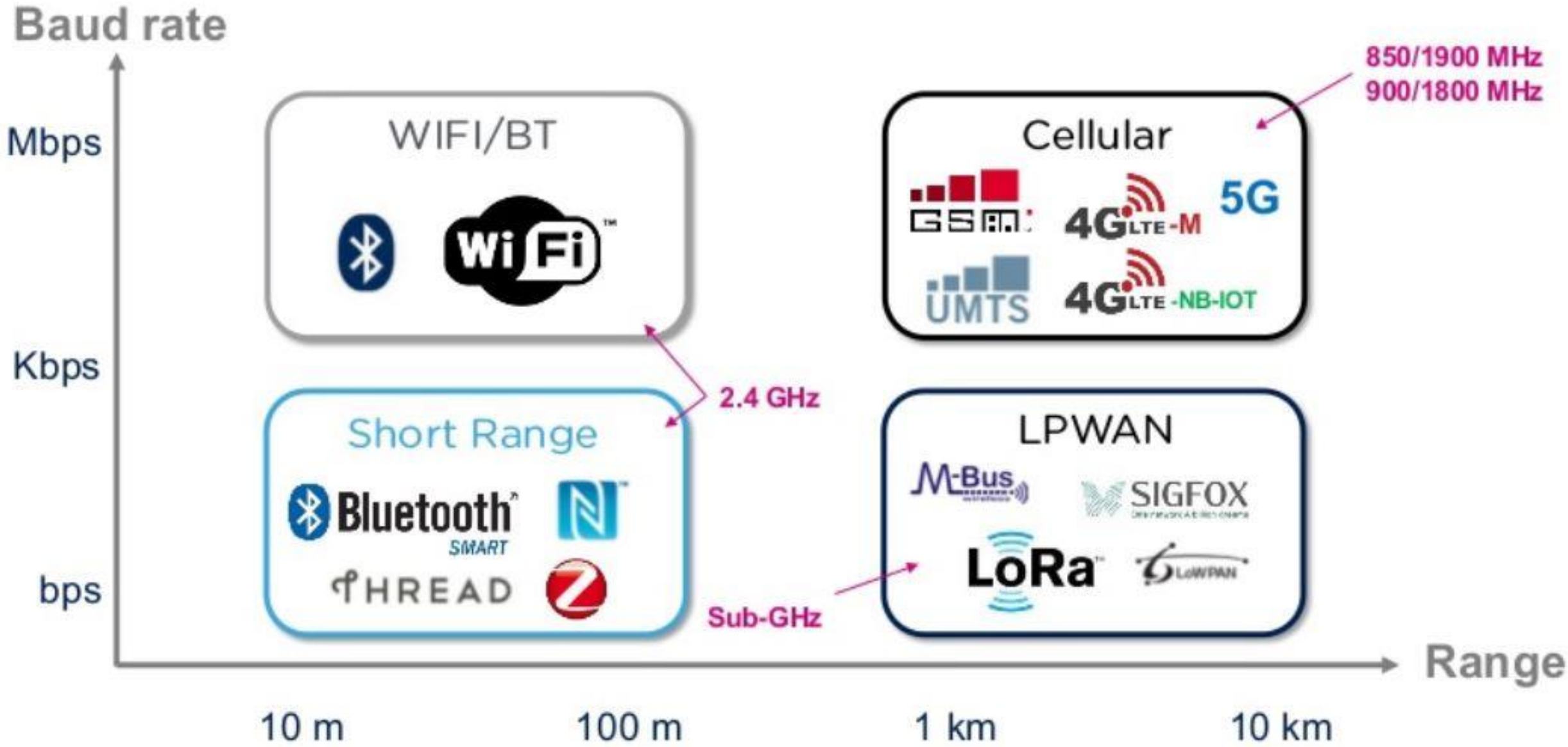


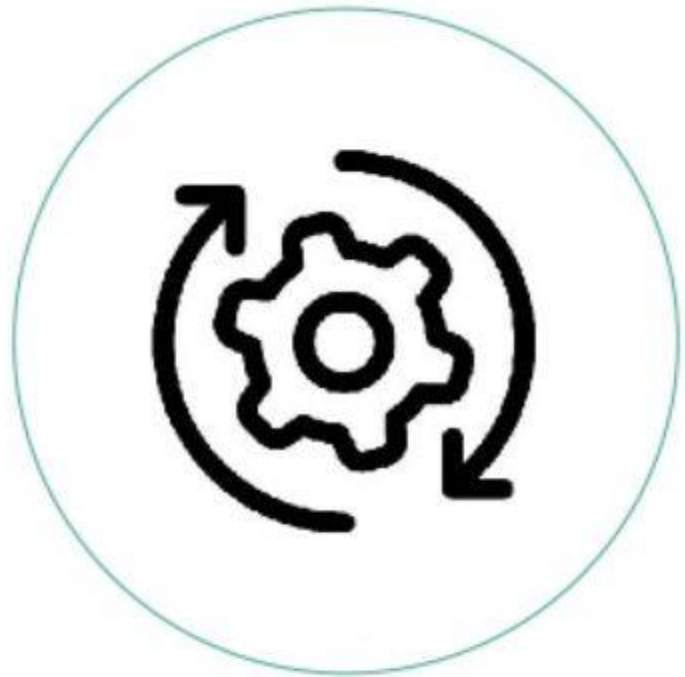
Things



Connectivity

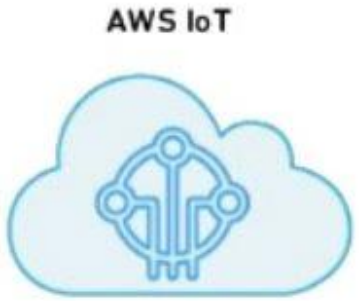

NB-IoT
Ethernet
Cellular
Gateway
Bluetooth
Wi-Fi
Position
& Time
✓ What
✓ Where
✓ When
V2I
GPS
V2V


Baud rate
Mbps
Kbps
bps
WIFI/BT
Wi Fi
Cellular
GSM
4G LTE-M
5G
UMTS
4G LTE-NB-IOT
850/1900 MHz
900/1800 MHz
2.4 GHz
Short Range
Bluetooth SMART
THREAD
Sub-GHz
LPWAN
M-Bus
SIGFOX
LoRa
6LoWPAN
Range
10 m
100 m
1 km
10 km



Process

Cloud Platform



and a whole lot more…

DEMO

Prerequisite

- Internet connected Computer/laptop Installed Arduino IDE Installed
- NodeMCU board manager
- LED, LDR, DHT, Resistor , Jumper Wires , Breadboard
- Mydevice Cayenne account.

Arduino

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

BOARDS

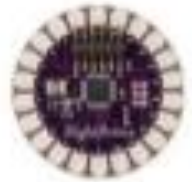
Arduino Uno

Arduino Leonardo

Arduino Mega ADK

Arduino Ethernet

LilyPad Arduino SimpleSnap

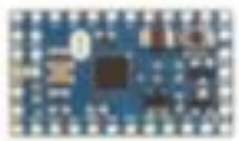


LilyPad Arduino

Arduino Due

Arduino Yún

Arduino Mega 2560



Arduino Mini

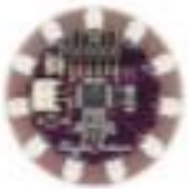
Arduino Nano

Arduino Pro Mini

Arduino Tre

Arduino Micro

LilyPad Arduino USB

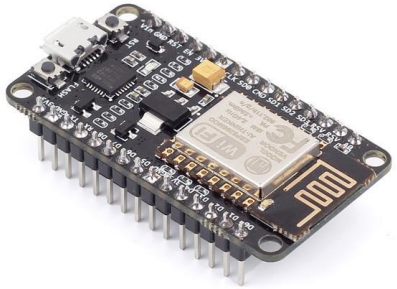


LilyPad Arduino Simple

Arduino Pro

Arduino Fio

Node MCU



NodeMCU is an open source IoT platform.It includes firmware which runs on the ESP8266 WiFi SoC from Espressif Systems, and hardware which is based on the ESP-12 module.The term "NodeMCU" by default refers to the firmware rather than the development kits. The firmware uses the Lua scripting language.

cayenne

Cayenne is the world's first drag and drop IoT project builder that empowers developers, designers and engineers to quickly prototype and share their connected device projects. Cayenne was designed to help users create Internet of Things prototypes and then bring them to production.

Cayenne Online Dashboard – Use customizable widgets to visualize data, set up rules, schedule events and more.

Let's hack