The “magic” of things

starting in 5:00

Dr. Goran Soldar
Dr. Khuong An Nguyen

Fastest time to memorise and recall a deck of playing cards

Who
ZOU LUJIAN

What
13.96 SECOND(S)

Where
CHINA (SHENZHEN)

When
08 DECEMBER 2017

The fastest time to memorize and recall a deck of playing cards is 13.96 seconds, achieved by Zou Lujian (China) at the 2017 World Memory Championships held in Shenzhen, Guangdong Province, China, on 6-8 December 2017.

Contestants have a maximum of five minutes to memorize their deck, and then another five minutes to recall.

What

Why

How

1 | What is the Internet of Things ?

2 | Why do we need it ?

3 | How to build one ?

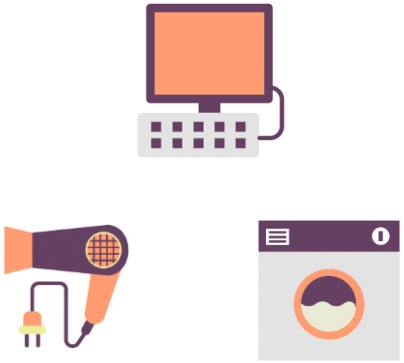
What

Why

How

Innovations

The internet



Electronic devices

Big data

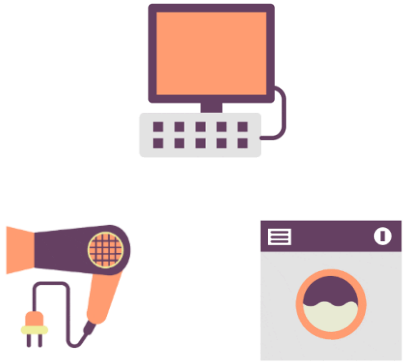
What

Why

How

Innovations

The internet



Electronic devices

Big data

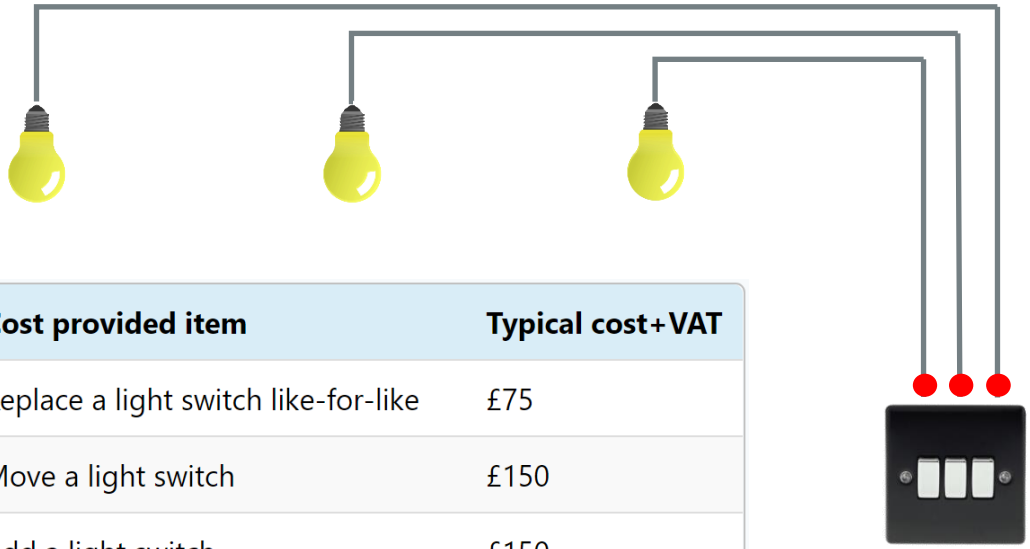
Internet of Things (IoT)

What

Why

How

Light & Switch example



Cost provided item	Typical cost+VAT
Replace a light switch like-for-like	£75
Move a light switch	£150
Add a light switch	£150
Replace 5 light switches like-for-like	£100
Add 5 light switches	£250

What

Why

How

Light & Switch example

Home > Electrical & Lighting > Wireless Systems & Modules > Communications & Networking Modules > WLAN Modules

Spotted an Error? Print Page

WiFi Module 2.4GHz with UFL Connector - ESP-07S

Add to compare

Image is for illustrative purposes only. Please refer to product description.

Manufacturer:	RF SOLUTIONS
Manufacturer Part No:	ESP-07S
Order Code:	RF00814

Due to the impact of coronavirus outbreaks, some lead times may be subject to change.

2 In stock

2 in stock ready for despatch (UK stock)

Check Stock & Lead Times

£3.49 (£4.19 Inc. VAT)

Price for: **Each**

Multiple: **1** Minimum: **1**

Quantity	Price
1+	**£3.49 (£4.19)**
5+	**£2.99 (£3.59)**

Request a quote for higher quantities

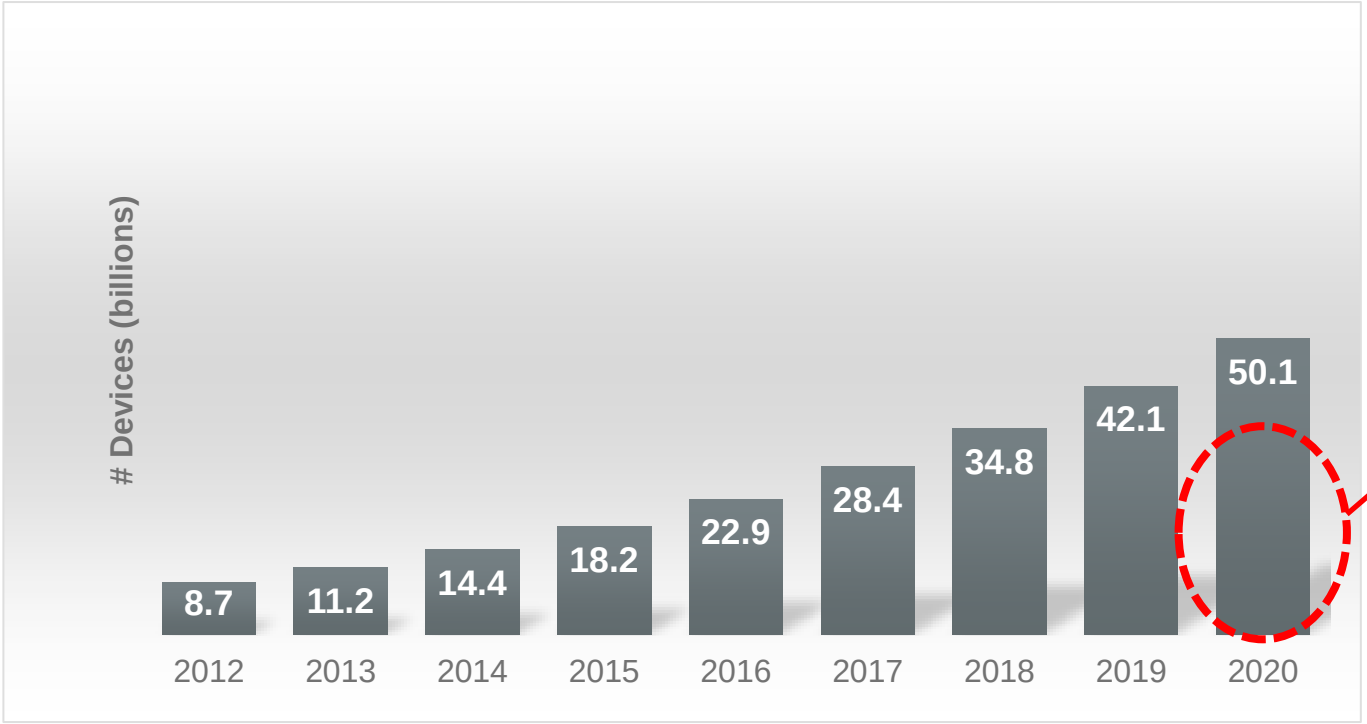
Product Overview

What

Why

How

Internet of Things



Number of connected devices

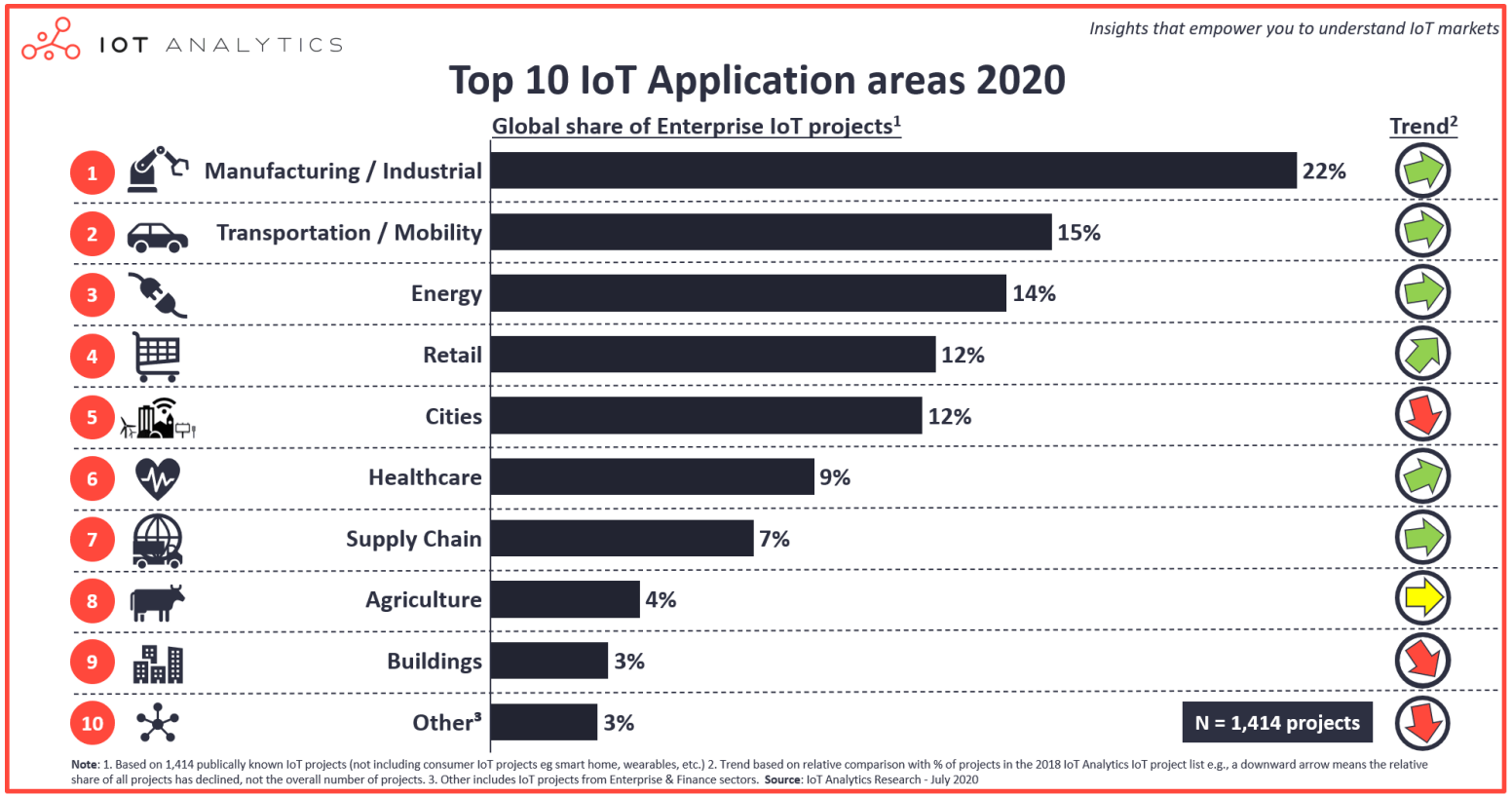
(Burhan, M., Rehman, R.A., Khan, B. and Kim, B.S., IoT elements, layered architectures and security issues: A comprehensive survey. Sensors, 18(9), p.2796)

What

Why

How

Internet of Things



What

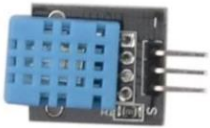
Why

How

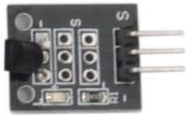
Sensors

sound

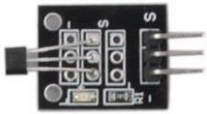
accelerometer



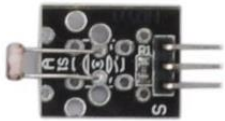
humidity



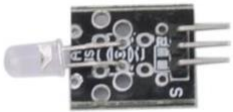
temperature



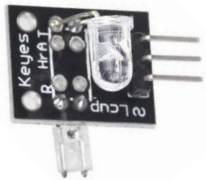
magnetometer



photo

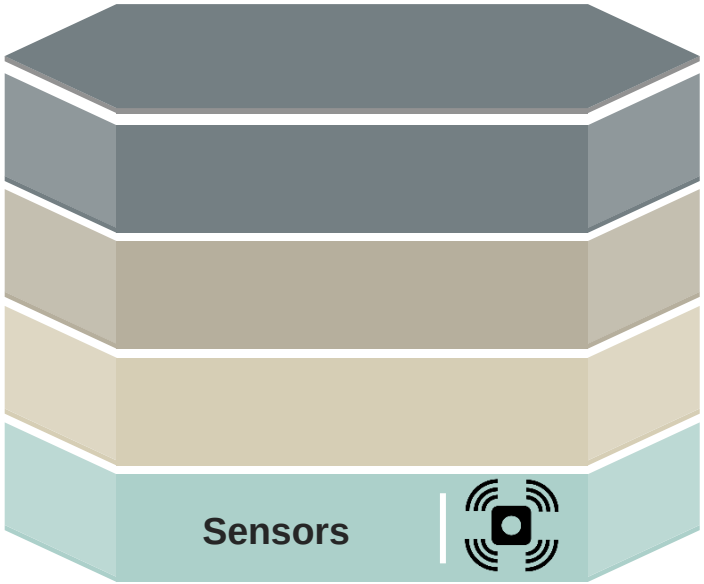


infrared transmitter



heart rate

1. Collecting the raw data from the environment.
2. Is very low power.
3. Sending data to the processing unit.



What

Why

How

Sensor example

1. Measures a specific attribute of the environment.
2. Presenting the data in visual or numeric format.

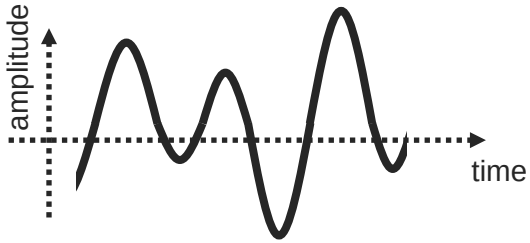
What

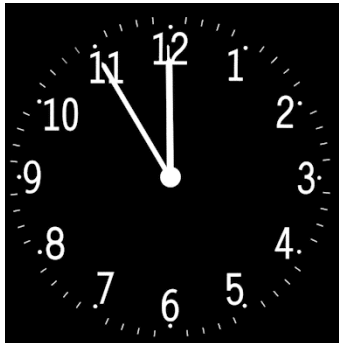
Why

How

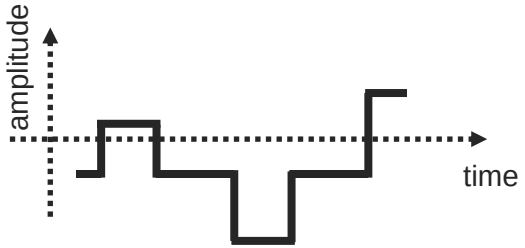
Analog vs Digital

Analog signal





Digital signal



What

Why

How

Analog vs Digital

	Analog	Digital
Precision	Capturing the data in full.	Taking a snapshot of the environment.
Convenience	Harder to read.	Easier to interpret.
Replication	Very challenging to replicate.	Easy to duplicate with perfect quality.
Noise	Very susceptible to interference.	More robust to interference.

What

Why

How

Analog vs Digital

Analog signal

Digital signal

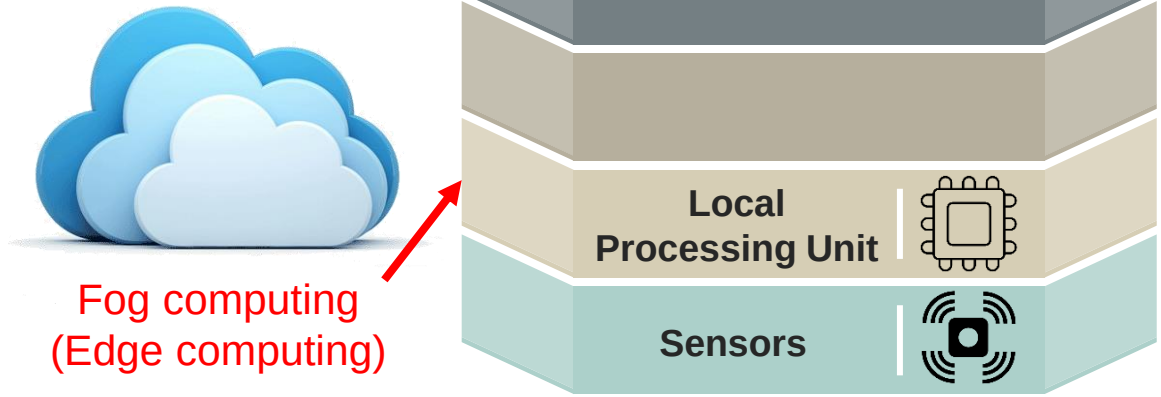
What

Why

How

Local processing unit

1. Receiving the raw data from sensors.
2. Processing (e.g. filtering) the data.
3. Passing the processed data onto the Cloud.



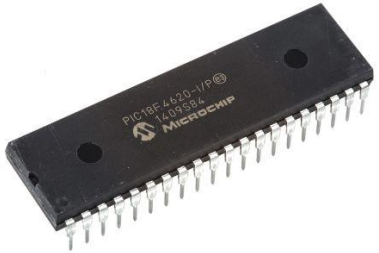
How it began

What

Why

How

Microcontroller



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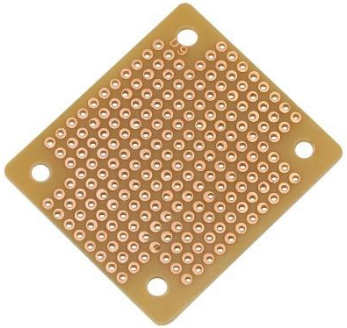

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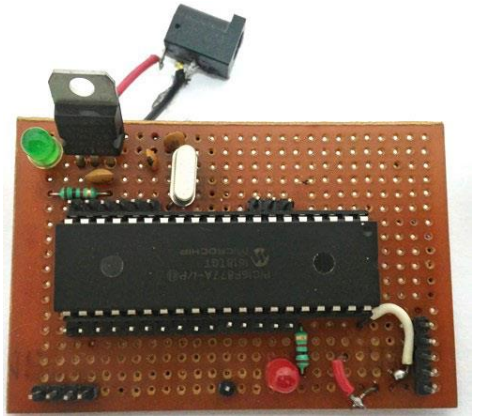
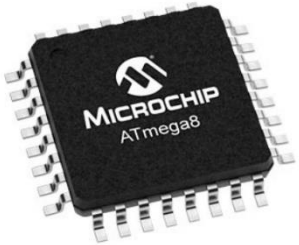




What

Why

How

Arduino

1. Programmable devices.
2. Modular.
3. Open source hardware.

Uno

Nano

What

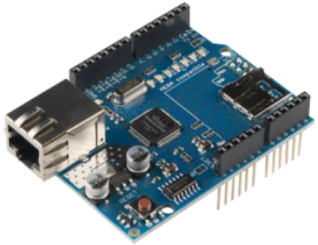
Why

How

Arduino (expandable)

Uno

+



Ethernet shield

=

Uno

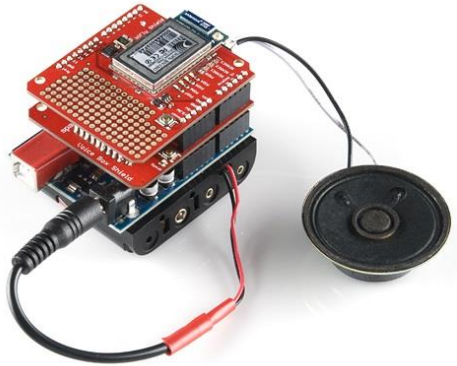
+

WiFi shield

+

Voice shield

=

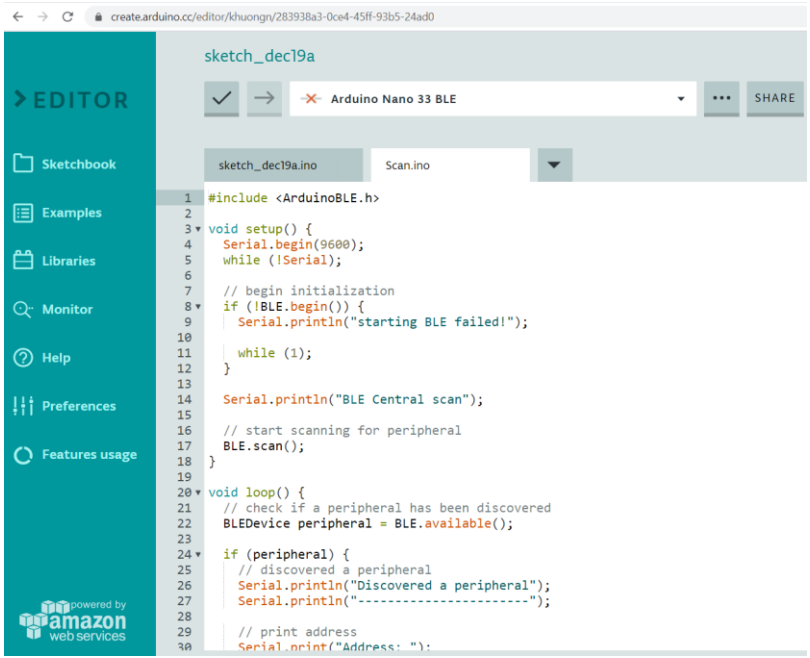


What

Why

How

Arduino (IDE)



Web editor

Windows editor

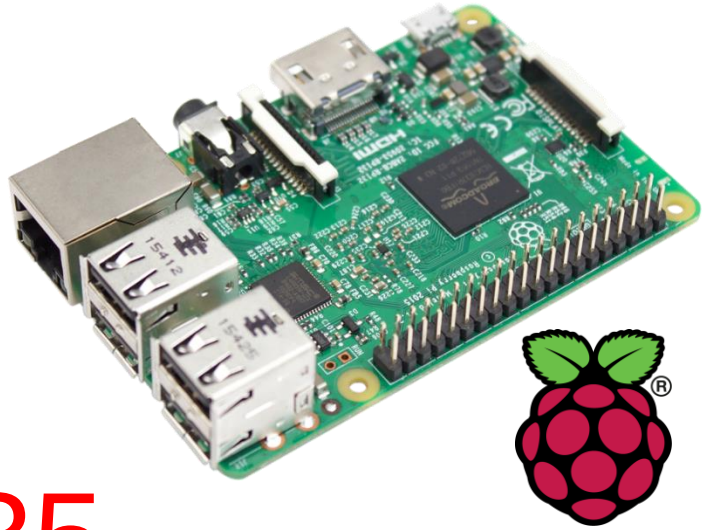
What

Why

How

Raspberry Pi

1. Runs Linux.
2. Full networking system.
3. Similar to a ‘computer’.



$35

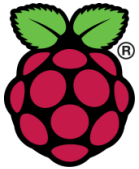
Microcontroller vs Embedded board

Microcontroller

Designed to control hardware
Low speed
Small memory

firmware

Embedded board



Designed to explore programming
Higher speed
Larger memory

software

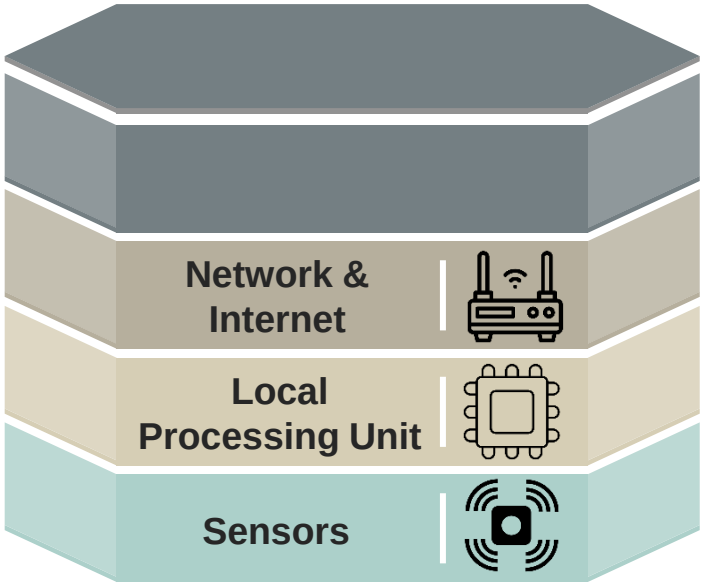
What

Why

How

Network and the Internet

1. Bridging the “things” and the “Internet”.
2. Receiving the processed sensor data.
3. Sending it to the Cloud.



What

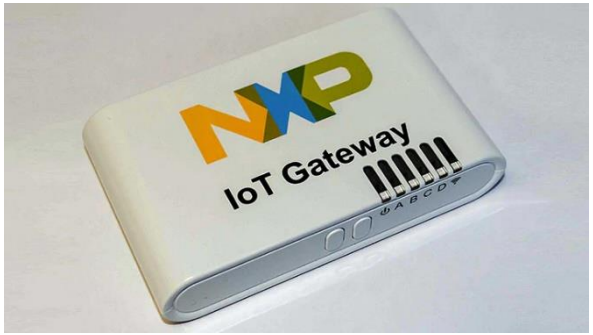
Why

How

Gateway

1. Similar to the WiFi router.

2. CoAP, MQTT — designed for small sensors and mobile devices
   HTTP
   XMPP



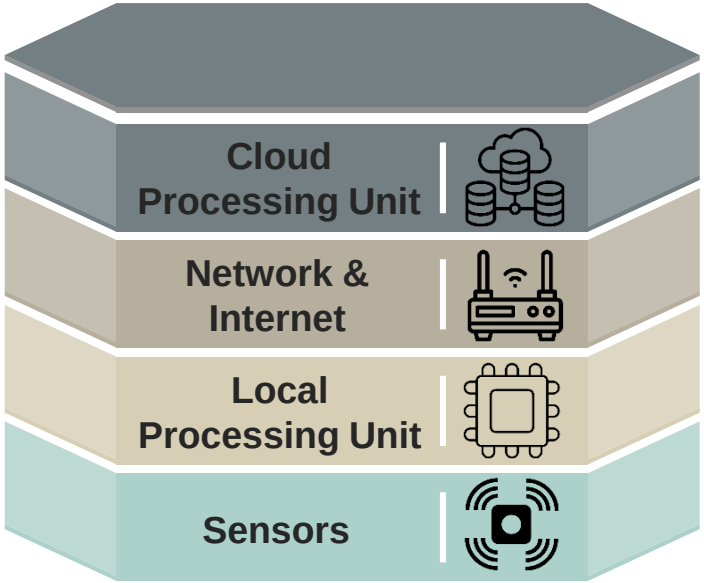
What

Why

How

Cloud processing unit

1. Aggregating the data.
2. Inferring the results to take action.
3. Storing the data.



Questions, feedback

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C537 (Goran)

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