


WiSNet – A full OEM IoT solution: a case study on air quality monitoring

Electronic design and engineering department:

Activities:

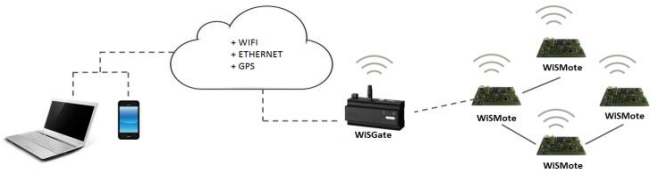
- Design,
- Development,
- Certification,
- Industrialization.

Markets:

- Wireless Sensor Networks (WSN),
- **Internet of Things (IoT),**
- Machine-to-Machine (M2M).

Keywords: IPv6, 6LoWPAN, SigFox, LoRa, M2M, IEEE802.15.4, RF 2.4GHz, 868MHz, Contiki OS, FreeRTOS.

WiSNet (full OEM IoT solution)



WiSGate

Main features:

CPU: ARM926EJ-S (64MB RAM)
RF IEEE 802.15.4 :
- 2.4GHz compatible 6LoWPAN/Zigbee/WirelessHart
- 868/915 MHz

Interfaces:
- Ethernet (IPv6)
- GSM/GPRS (IPv6)

Data Log : 1 to 8 MB FLASH
Software:
- Linux 3.1 OS open source
- Web Server
- Alarm notification mail/SMS
- Protocols MODBus, CANopen

Alimentation: 110-220v (AC) /12v

WiSMote

Main features:

CPU: TI MSP430 5 s(16 bits)
- FLASH 256KB - SRAM 16KB

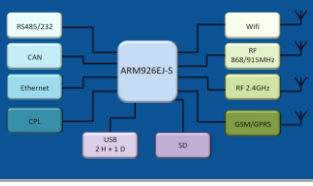
RF:
- TI CC2520 2.4GHz IEEE 802.15.4

Data Log : 1 to 8 MB FLASH
Embedded Sensors:
- Accelerometer 3 axes
- Luminosity, Temperature **Connecters:**
- 8 ANA entries , 16 NUM
- UART, I2C, Phidgets

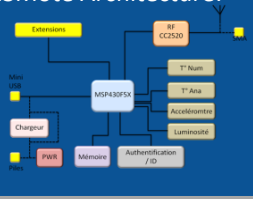
Software:
- Open source Contiki OS

Alimentation: USB, AAA Batteries or Li-ion accumulator

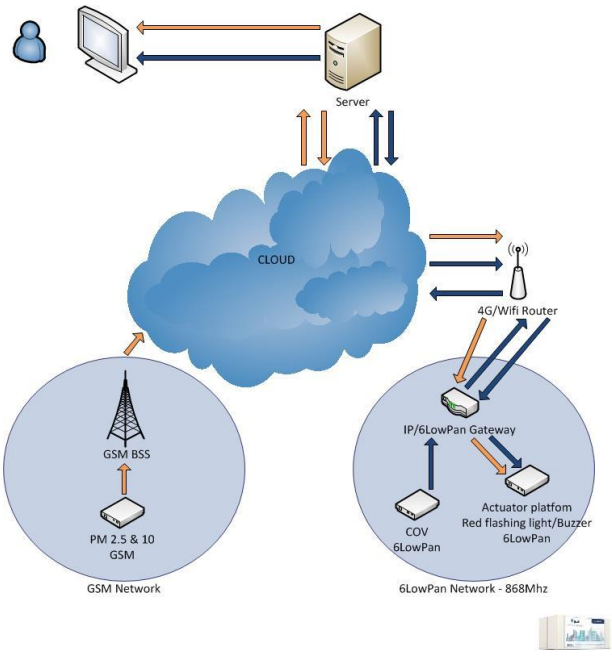
WiSGate Architecture :



WiSMote Architecture:



Smart city (air quality)



- **Acquisition** of air quality indicators: PM2.5 & PM10
- Data transfert towards the cloud: GPRS/6LoWPAN/IPv6.
- Frequency: 868MHz
- Mesh network: IEEE 802.15.4
- Rise **alerts (Red flashing light, Buzzer)**

Research Topics:

- ***Lightweight Cryptography (FUI23) :*** Confidentiality, Integrity, Authentification
- *Mobility*
- *Radio link stability – IEEE 892.15.4e*
- *Long range radio communication*

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