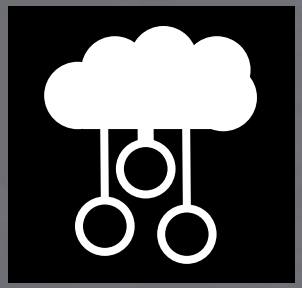

Internet of Things

architectures et technologies

janvier 2021 - master *Big Data* - Telecom Paristech

/_self

CHARLY HAMY

CTO cloud & mobile - Rtone Lyon
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avant toute chose....

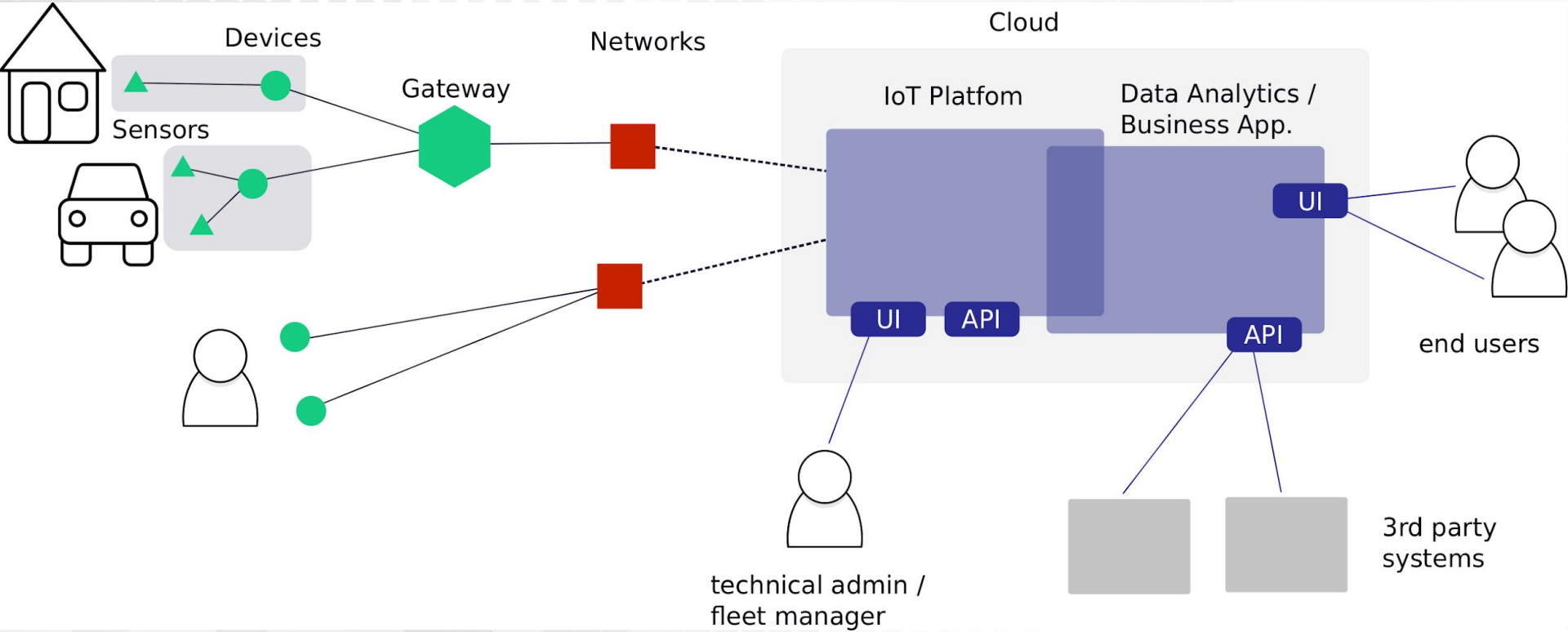
Que vous évoque ce cas concret en termes de technologies?

Cas concret

J’ajuste à distance la consigne de chauffage pour mon domicile.

Quelques repères

ANATOMIE D'UNE SOLUTION IOT



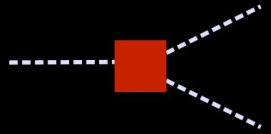
PLAN DU COURS

1. LES ÉQUIPEMENTS

(form factors, sensors, contraintes)

2. PROTOCOLES DE COMMUNICATION

(couches, PAN/LAN/WAN, protocoles applicatifs)



3. PLATEFORMES

(décomposition type, composants, solutions cloud)

4. ENJEUX ET PERSPECTIVES

(volumes/scalabilité, sécurité, contraintes légales, normalisation)

EN AVANT!

DES QUESTIONS?

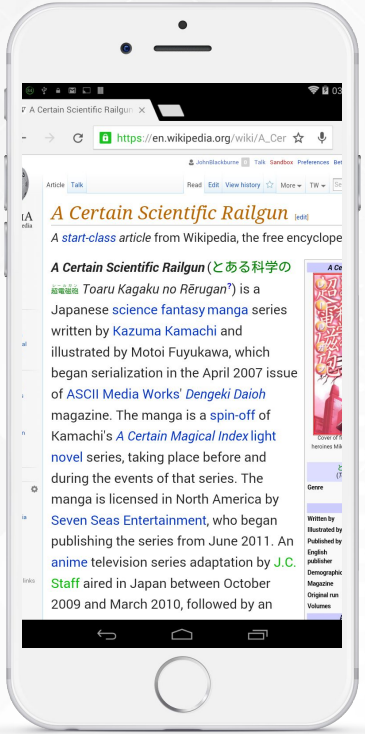
charly@rtone.fr

OLD/BACKUP

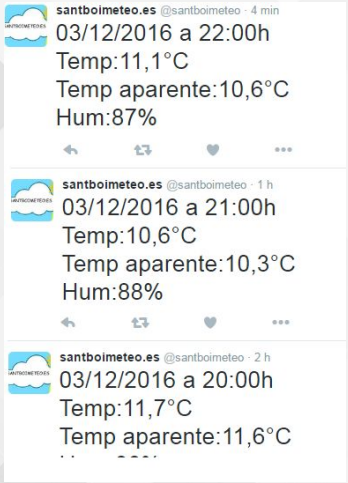
Cas concret #1

J’entre “https://httpbin.org/get” dans le navigateur web de mon smartphone…

… il m’affiche la page.



Cas concret #2



Cet équipement mesure et remonte périodiquement température et humidité…

… qui apparaît finalement dans un flux twitter.

APPLICATIONS

- HVAC (Heating, Ventilating and Air Conditioning)
- Building management
- Food cold chain traceability
- Logistic / storage
- Data center / IT server room

BENEFITS & KEY FEATURES

- LoRaWAN™, Class A
- Easy to use and deploy
- Self powered via solar cell harvesting energy
- Up to 3 month autonomy without any light energy
- Temperature and Humidity measure
  - ✓ Range : -40°C / +120°C ; 0%rH / 100%rH
  - ✓ Accuracy: <+/-0,5°C from 0°C to 65°C
    <3%rH from 20%rH to 80%rH
  - ✓ Resolution: 1/100°C ; 4%rH
- Ambient luminosity indicator
- Data compression for batch report

QUALITY & RELIABIITY

- RoHS compliant
- CE Compliant
- FCC Compliant

source: http://www.nke-watteco.fr/

TECHNICAL CARACTERISTICS

RF TRANSCEIVER	
Frequency (MHz)	EU: 863-870 ; US: 902-928
Transmit Power (dBm)	+14
Receiver Sensitivity (dBm)	-140
FIRMWARE	
Protocol	LoRaWAN™, Class A
Transmission cycles	10mn, 1h, 12h or defined by network
Activation method	Activation by Personalization (ABP) Over-The-Air Activation (OTAA)
Data encryption	AES128
TEMPERATURE MEASURE	
Accuracy (°C)	< +/-0.5 from 0° to +65°C < +/-1 from -30°C to 0°C and from +65°C to +90°C < +/-2 below -30°C and above +90°C
Resolution (°C)	1/100
Range (°C)	-40 / +120
HUMIDITY MEASURE	
Accuracy (%)	< +/- 3 from 20%rH to 80%rH < +/- 5 below 20%rH and above 80%rH
Resolution (%)	4
Range (%rH)	0 / 100
LUMINOSITY	
Indicator of luminosity level in %	
POWER	
Power supply	3,6V / 1100mAh lithium battery Solar cell energy harvesting
Autonomy within a +10°C to +25°C temperature range	3 month without any light and for 24 measurements & 1 transmission per day
INTERFACE	
LED Indicator	Network pairing & configuration
Switches	Reset, ON/OFF
MECHANICAL FEATURES	
Dimension (mm)	81x73x20
ENVIRONMENTAL	
Operating temperature (°C)	-20 / +50
Storage	-10°C / +30°C ; +20%rH / +60%rH
DIRECTIVES & STANDARD	

EN, 61000-4-2 EN 300-220-1 V2-4-1, EN 301 489 V1-6-1
CE, FCC part 15.247 subpart C, RoHS recommendation compliant