Designing and Deploying Low-Cost IoT in Africa

ITU World Summit on the Information Society (WSIS)
April 8-12th, 2019
ITU Headquarters, Geneva, Switzerland

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Université de Pau, France

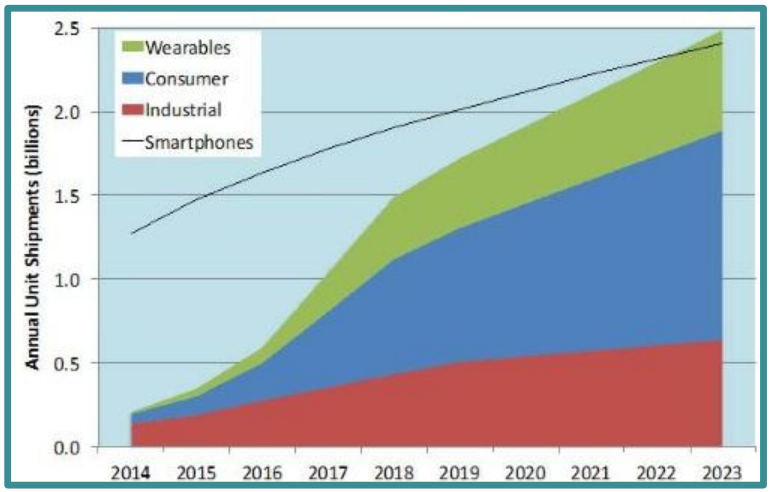
IVERSITÉ DE PAU ET DES PAYS DE L'ADOUR

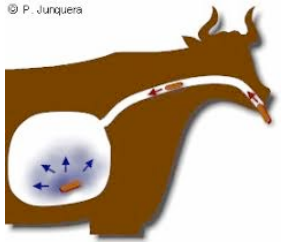
LIUPPA T2I team T2i

HORIZON 2020

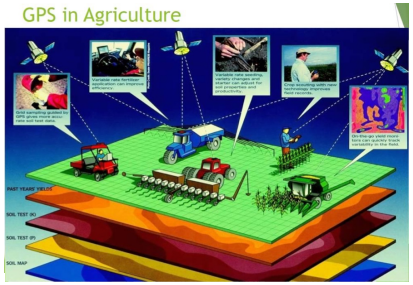
WAZIUP
IoT – from idea to reality
WAZIHUB

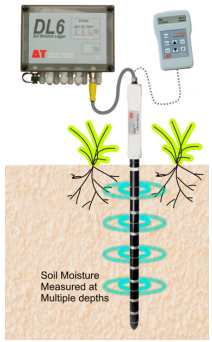
Maturation of the IoT ecosystem





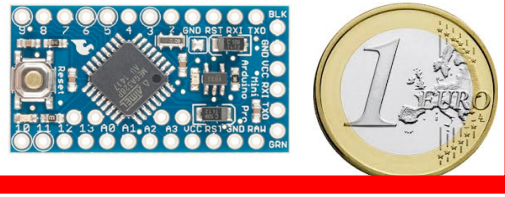
MOST of existing system are not adapted for small holders in rural areas!



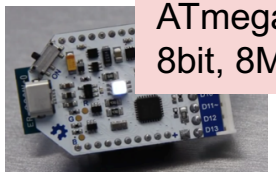


Low cost hardware

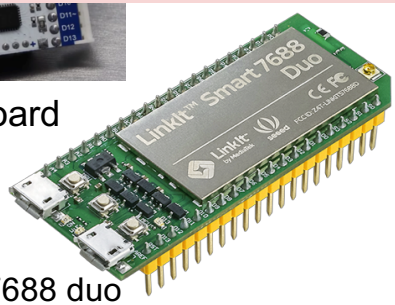
Arduino Pro Mini



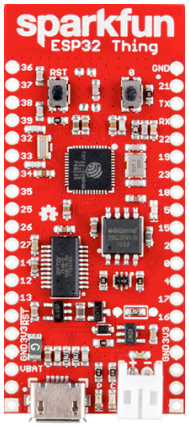
ATmega328P 3.3v
8bit, 8MHz, 32K flash, 2K RAM



Theairboard



LinkIt
Smart7688 duo



Sparkfun ESP32
Thing

Adafruit Feather

LoPy

http://blog.atmel.com/2015/12/16/rewind-50-of-the-best-boards-from-2015/

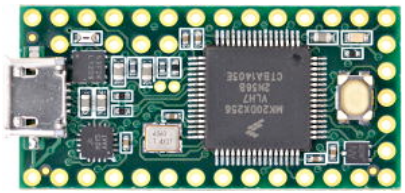
http://blog.atmel.com/2015/04/09/25-dev-boards-to-help-you-get-started-on-your-next-iot-project/

Expressif ESP32

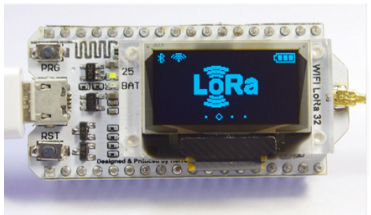
STM32
Nucleo-32

Tessel

SodaqOnev2



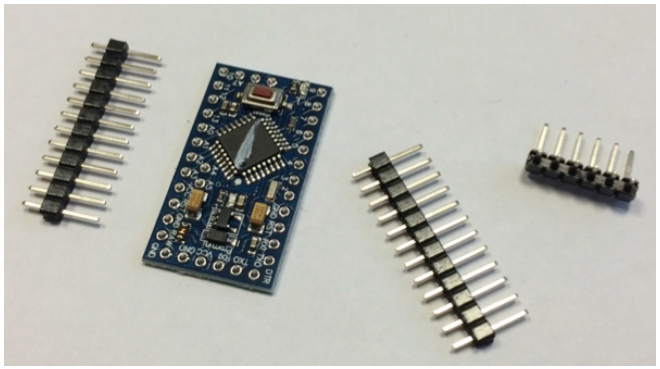
Teensy 3.2

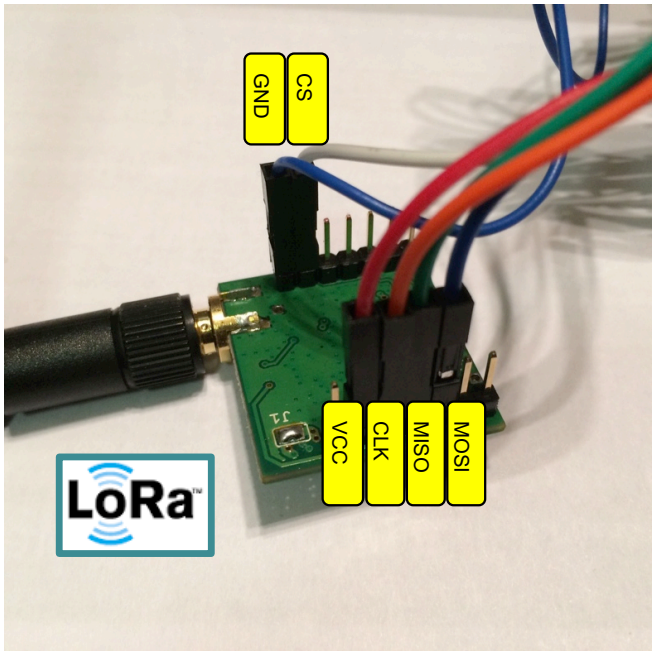


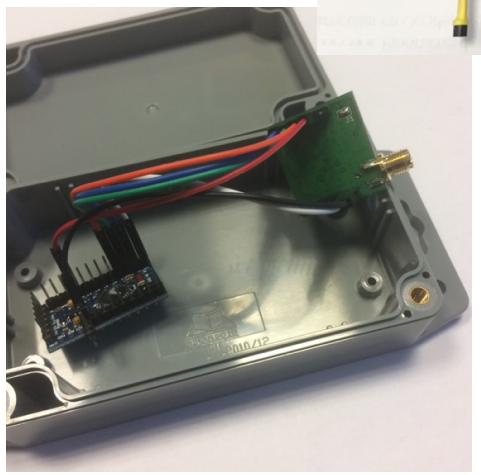
Heltec ESP32 + OLED

Tinyduino

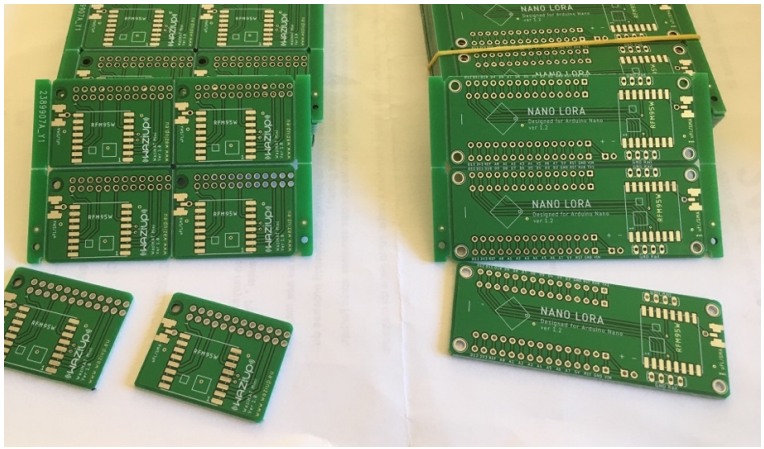
From full Do-It-Yourself approach

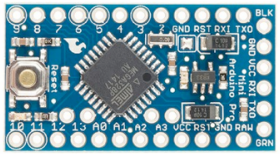






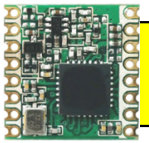
To simple PCB for easy integration



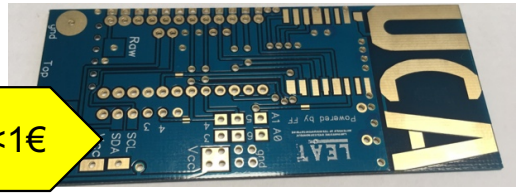


1.5€

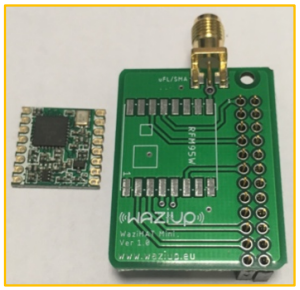
https://github.com/FabienFerrero/UCA_Board

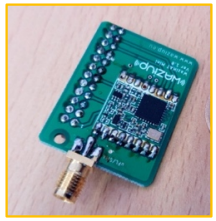


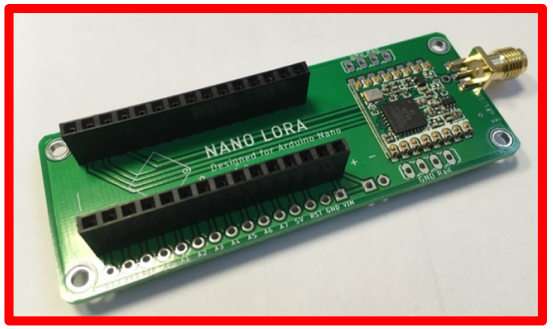
5€

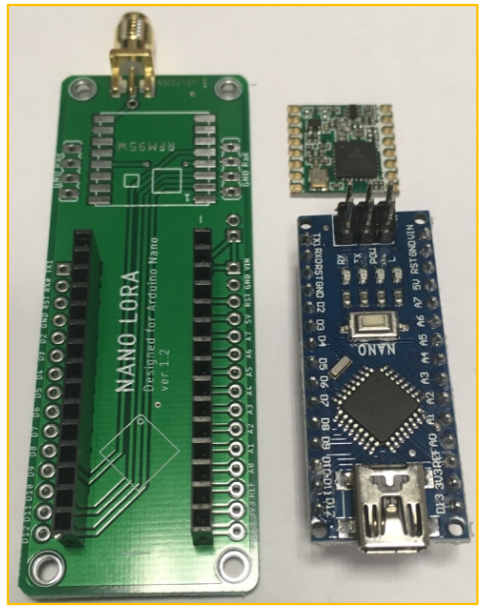


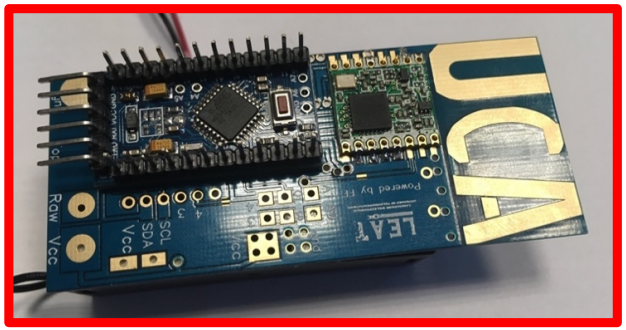
<1€

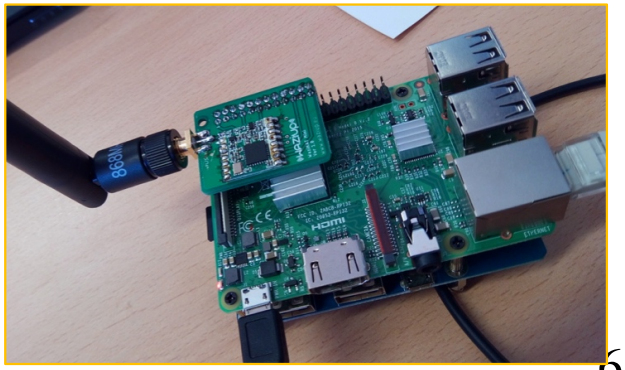












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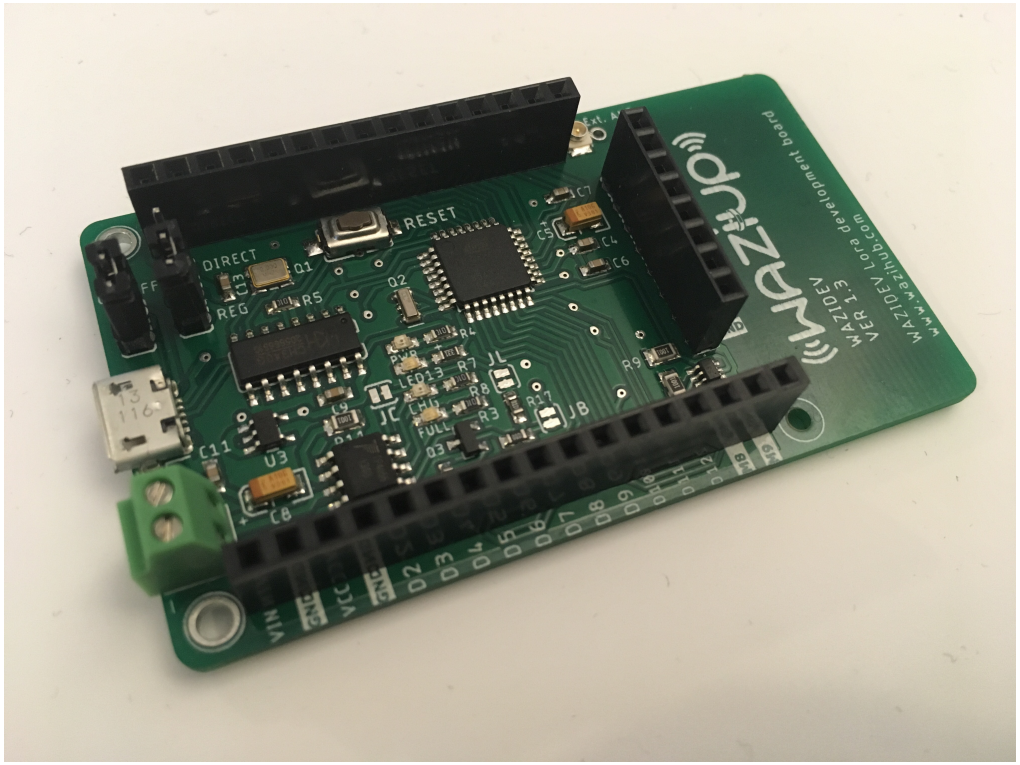
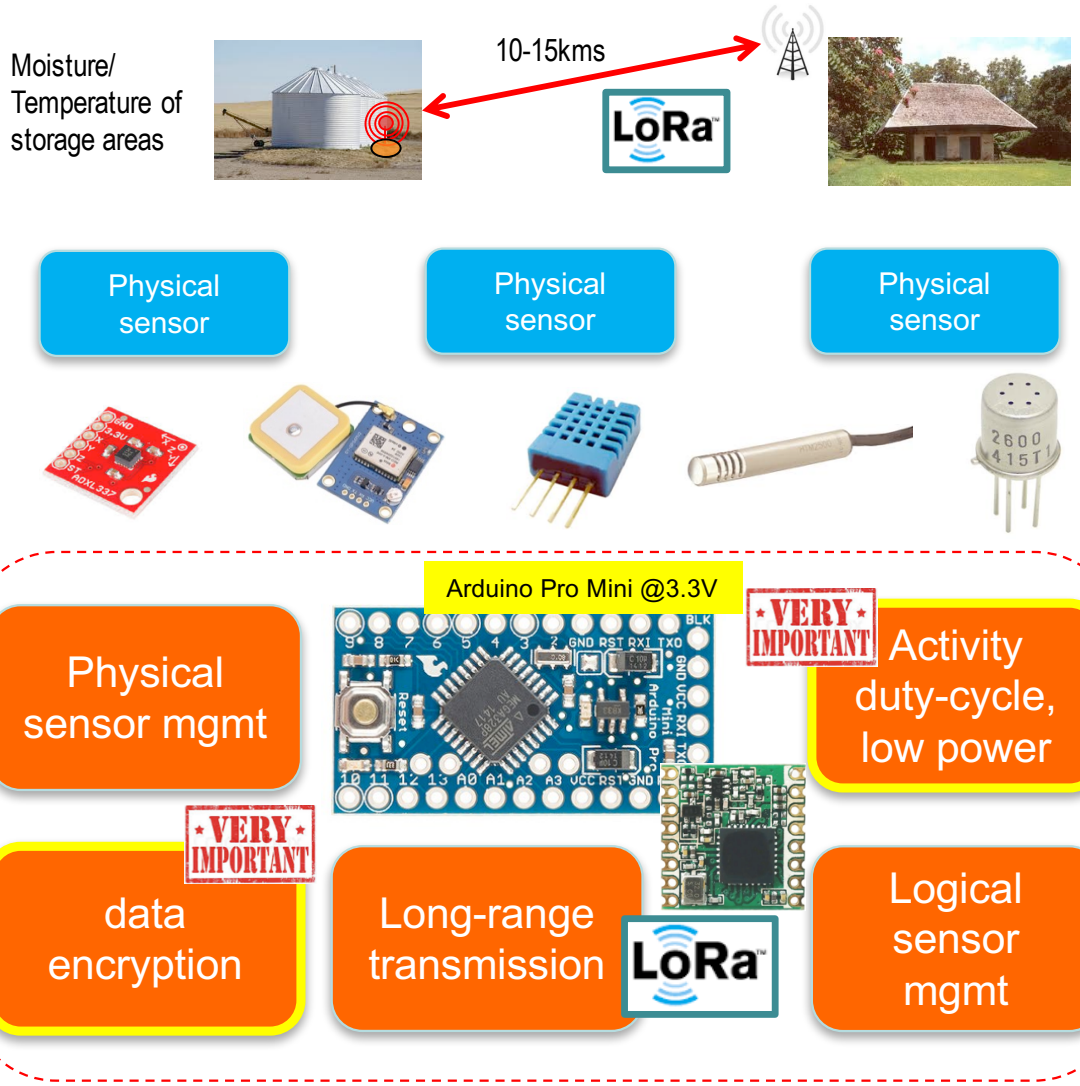
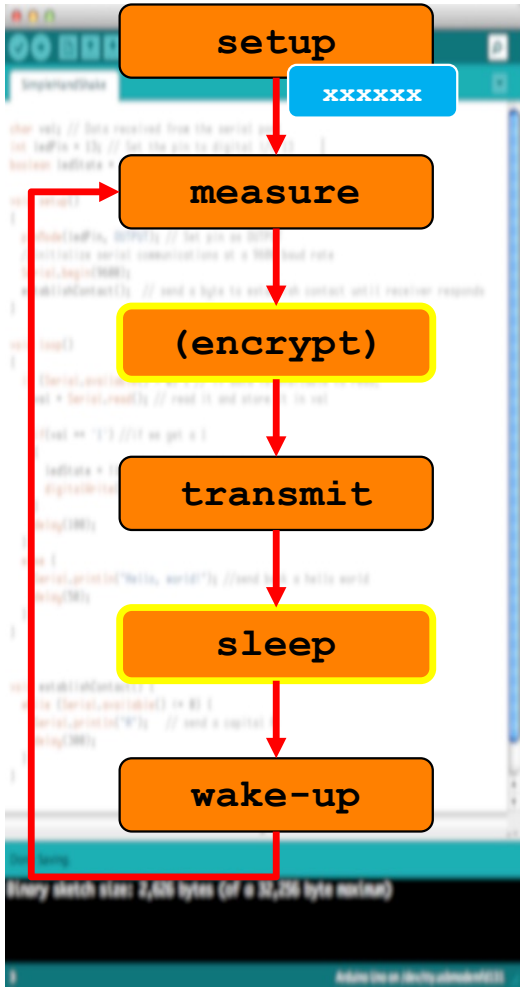
To close-to-market integration

- WAZIdev board allows for further integration

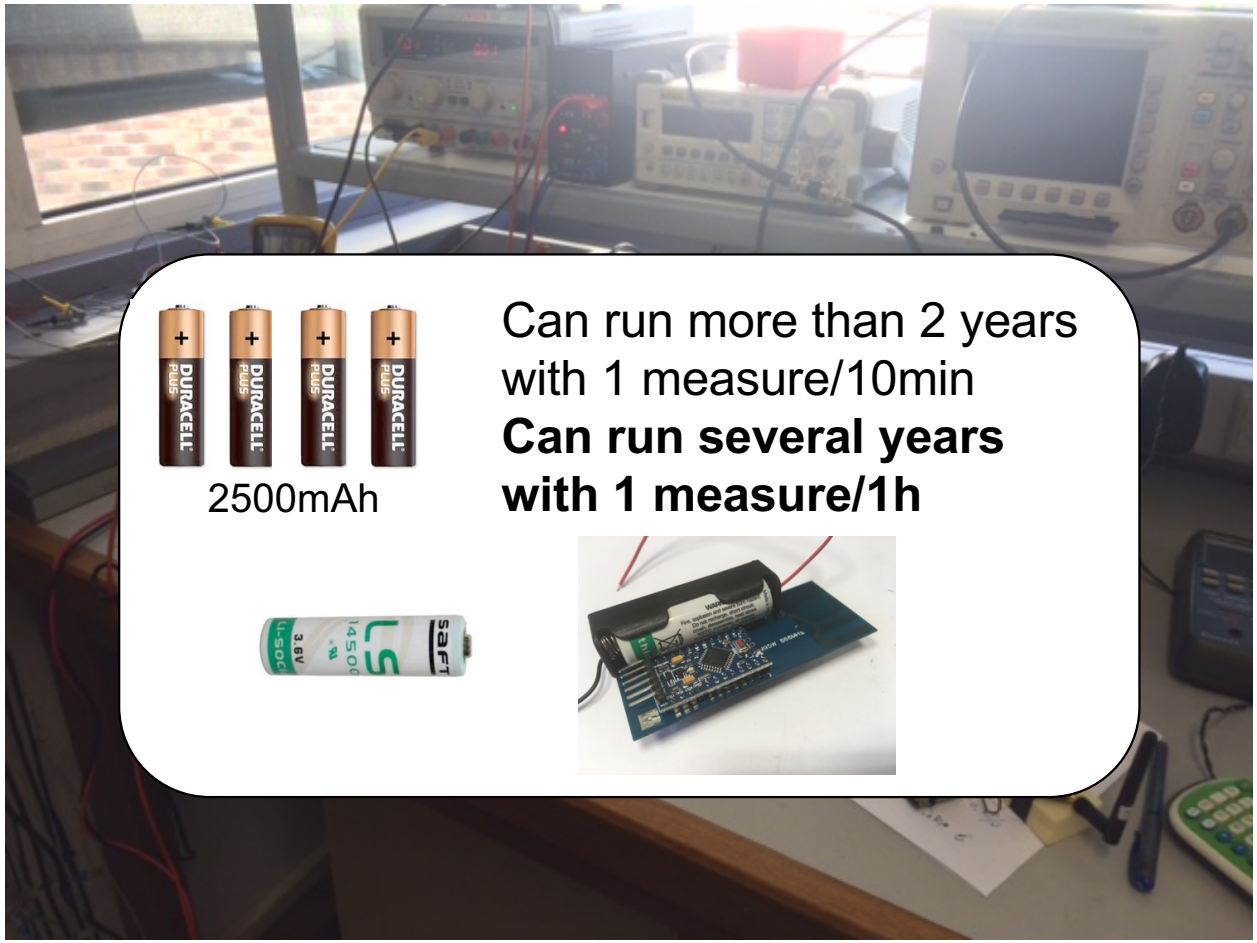


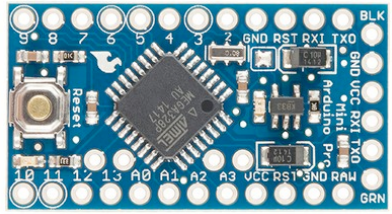
Reduce development cost & time



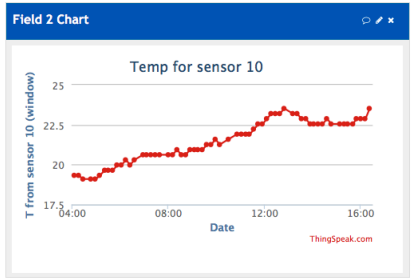


Achieving several years of operation!





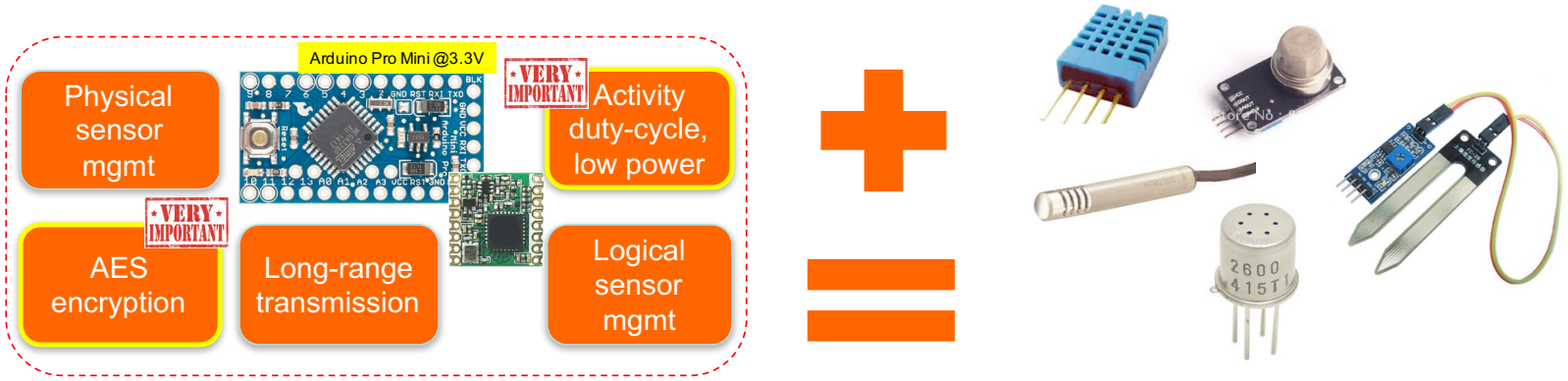
wakes-up every 10min, take a measure and send to GW



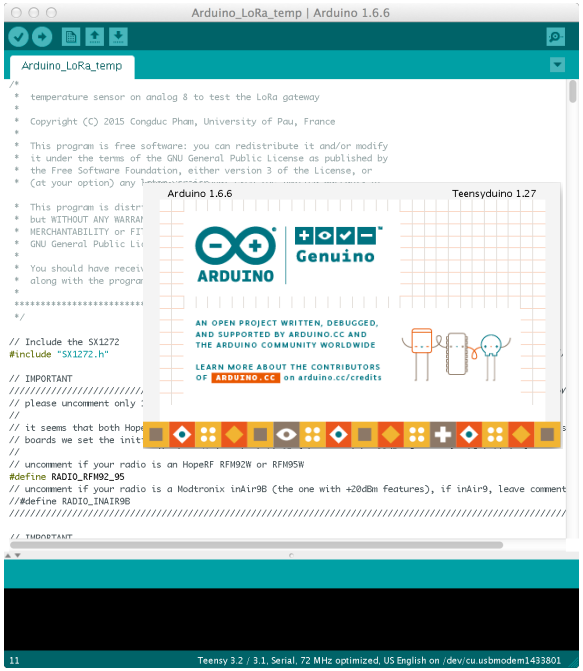
5µA in deep sleep mode, about 40mA when active and sending!

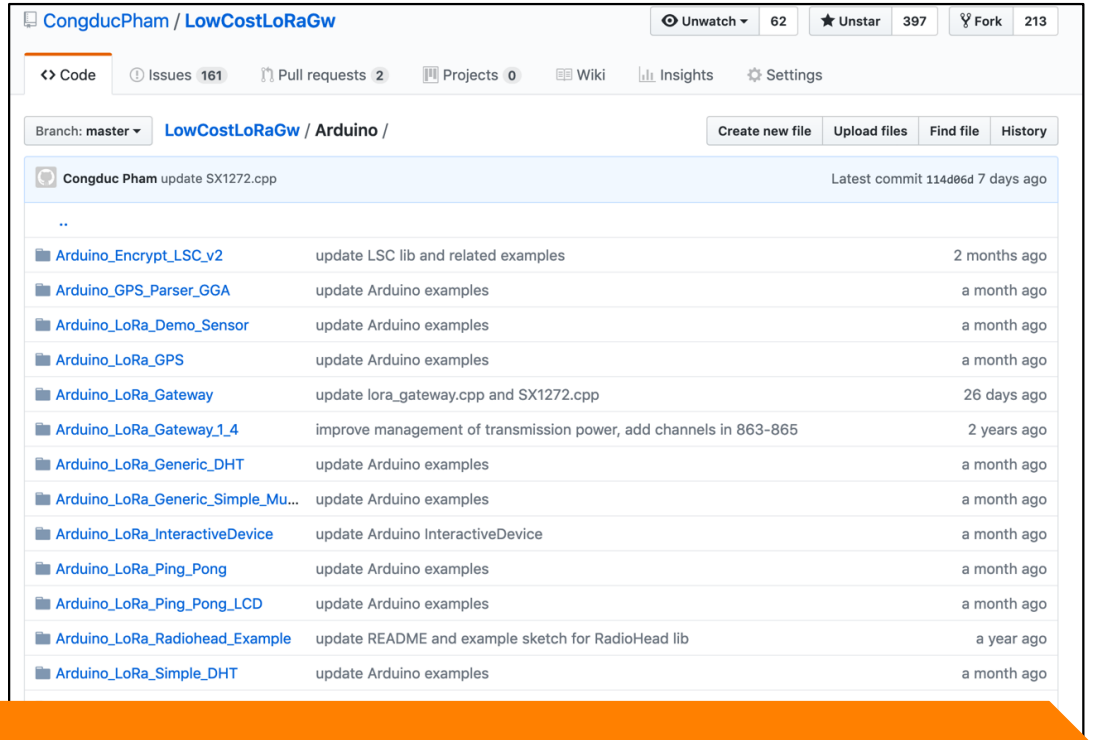
Generic IoT v.s. highly specialized

- Build low-cost, low-power, generic IoT platform
- Methodology for low-cost platform design
- Technology transfers to user communities, economic actors, stakeholders,...



100% open-source code templates

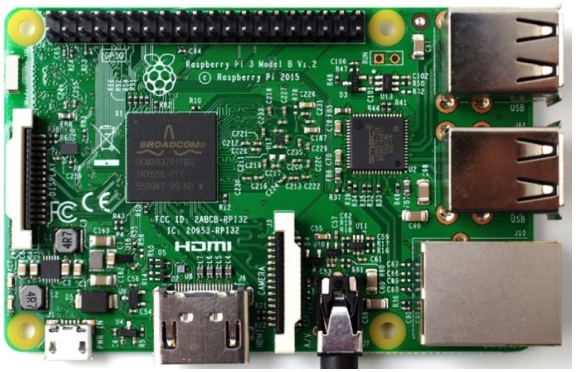




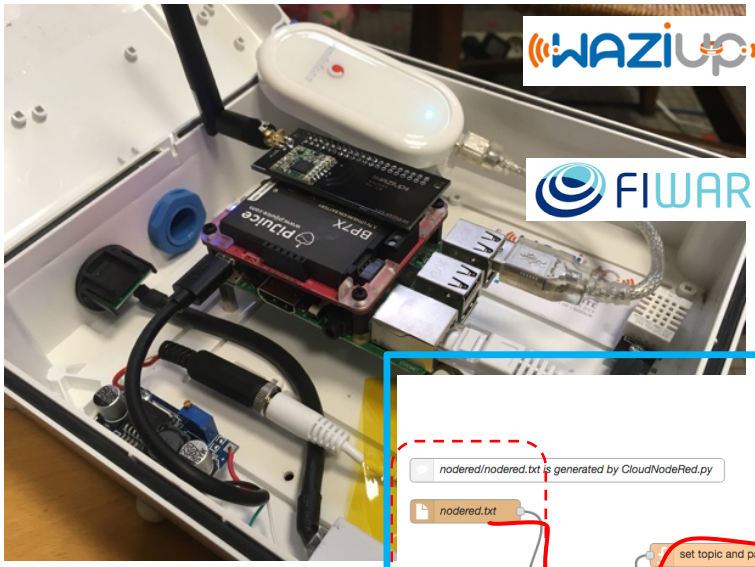
LowCostLoRaGw github has latest general distribution:
https://github.com/CongducPham/LowCostLoRaGw
Many examples using various temp/hum sensors
https://github.com/CongducPham/LowCostLoRaGw/tree/master/Arduino

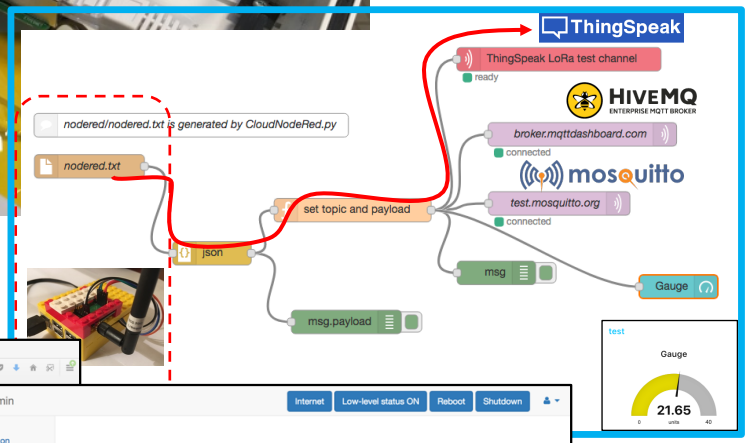
Open, versatile IoT gateway

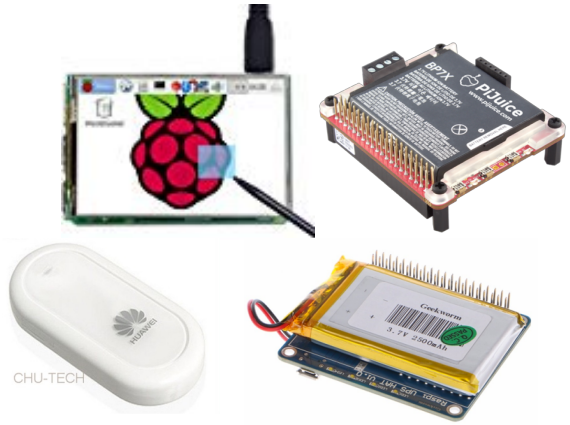
Large customization features

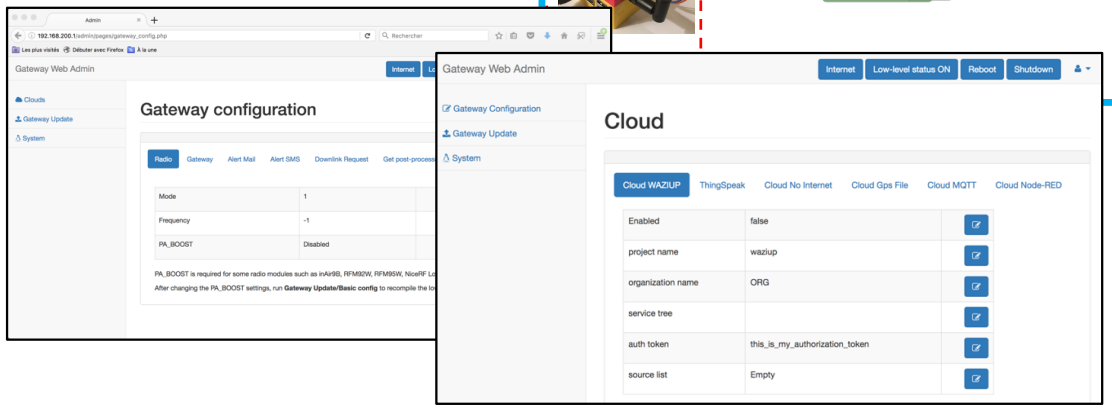


Raspberry PI: lots of libraries, lots of software, lots of hardware, lots of shields,…



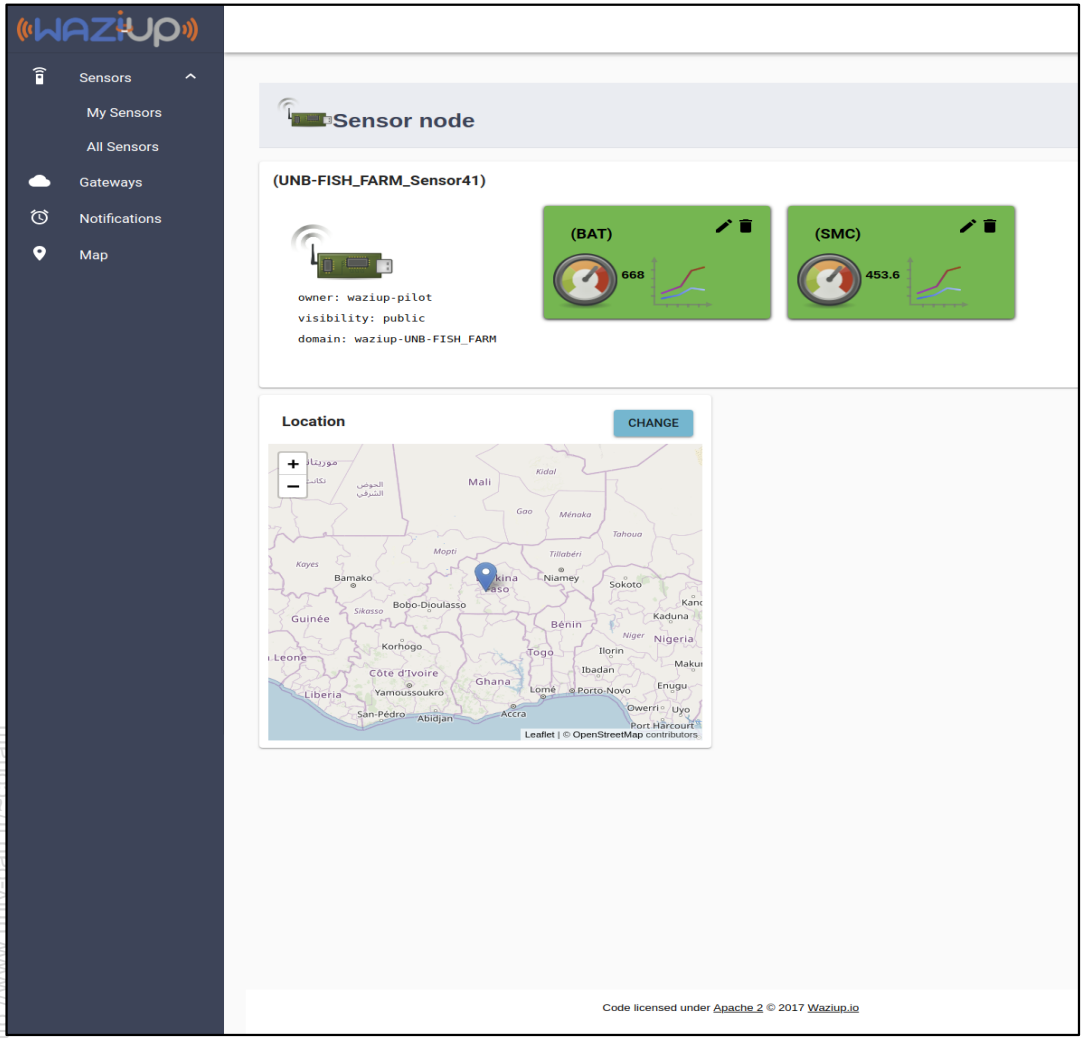


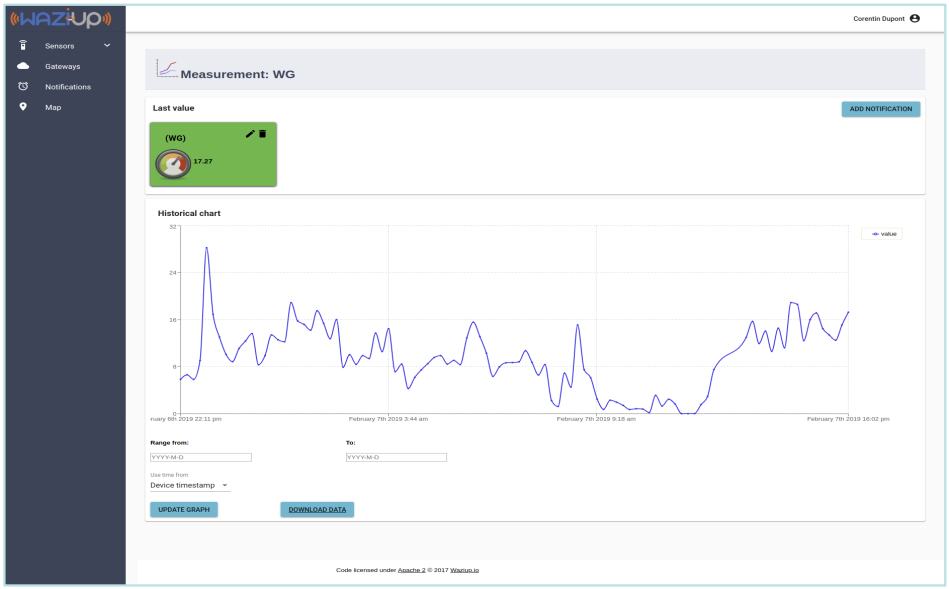




The WAZIUP cloud platform

https://dashboard.waziup.io





- Sensors data and context
- Gateway management
- Notifications
- User management
- Responsive design

Rural areas: no Internet ☹

- deploying IoT in very isolated areas…
- … where internet and electricity are not stable!

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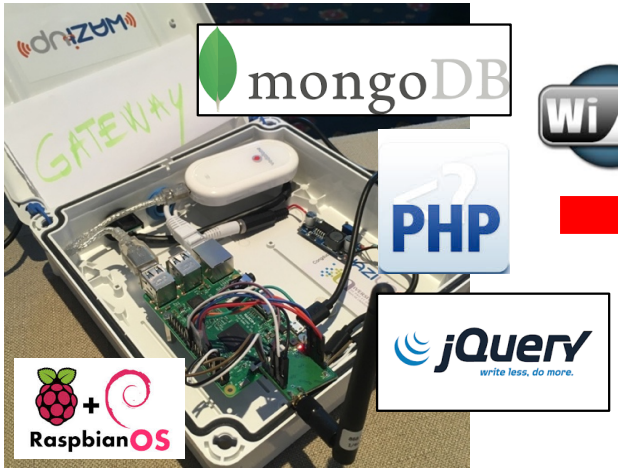
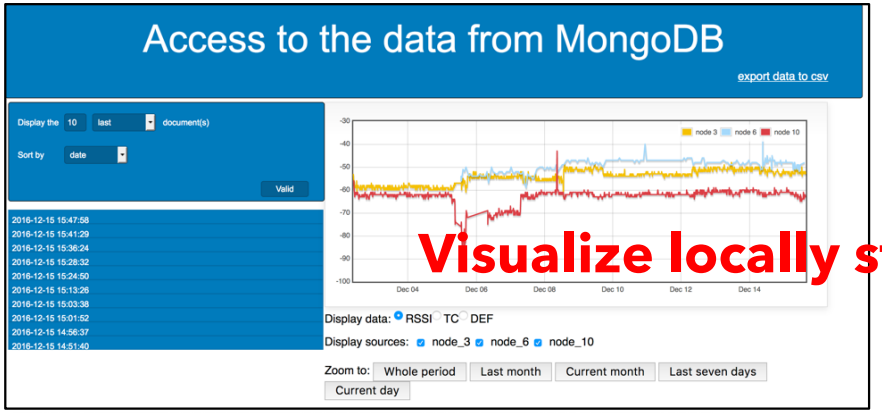
Autonomous gateway

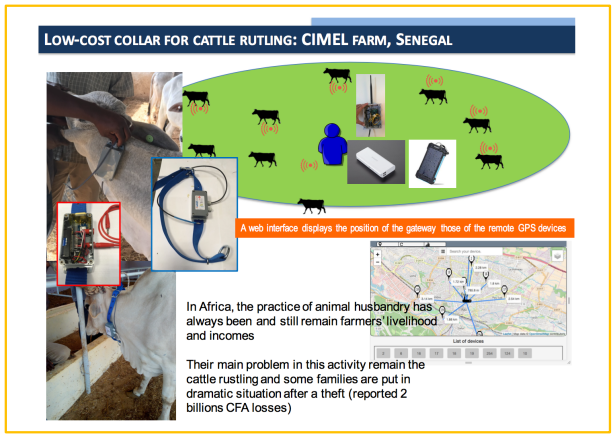
Embedding applications

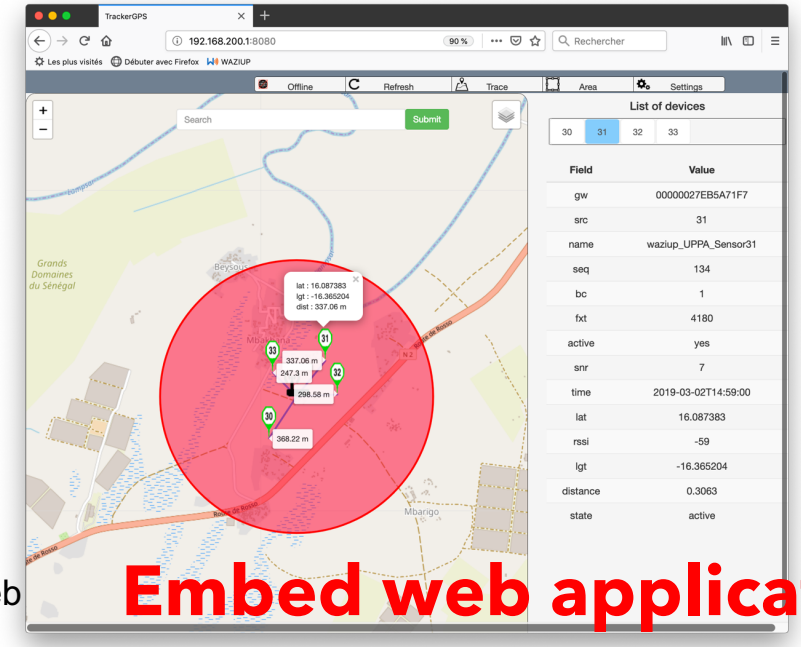


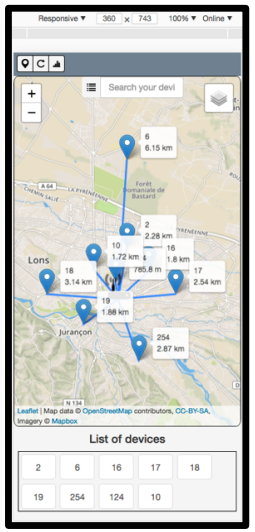
Wi Fi



Visualize locally stored data







Embed web applications

Link to a short demo video of the collar web interface: https://youtu.be/meFDav1SLPI

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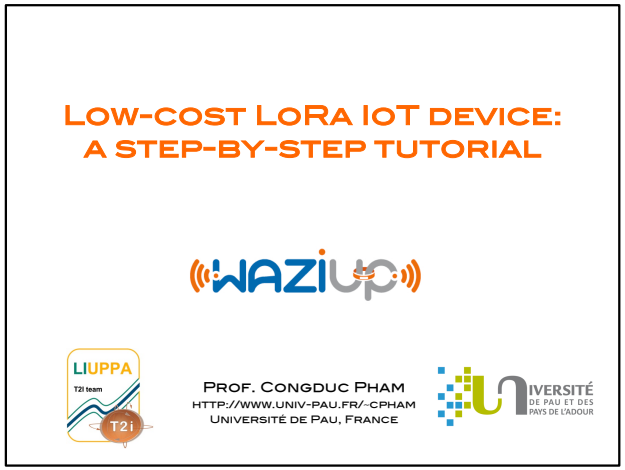
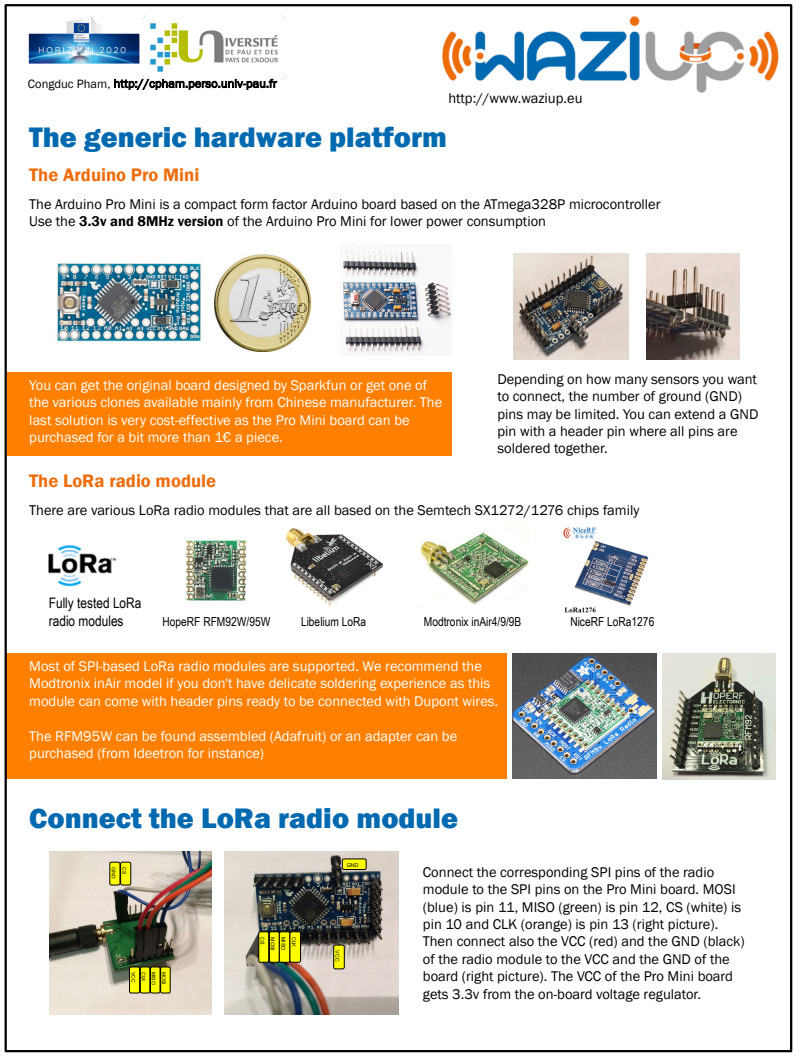
Tutorials/docs and videos





Come and discuss with us

Internet of Things – From idea to reality, making it happen in Africa

International Telecommunication Union Smart Incubator/WaziUp and WaziHub

Join us for a hands on practical workshop on how to design and deploy low-cost IoT across Africa. This workshop will focus on African user needs driven innovation in IoT, IoT training programmes and demos of real use cases of IoT deployment. This workshop is under the umbrella of the ITU Smart Incubator, a programme that supports technology oriented start-ups in the fields of AI, IoT and Blockchain. The workshop will be delivered in collaboration with the ITU Smart Incubator Knowledge Partners Waziup and Wazihub.

Line up:

1. Opening Remarks and Welcome Keynote
2. WaziUp IoT Initiative in Africa
3. IoT Capacity building and innovation ecosystem
4. Designing and deploying low-cost IoT in Africa (Senegal and Ghana pilots)
5. Case studies - IoT for fishing, cattle rustling and agriculture
6. Impact analysis

ITU SMART INCUBATOR

WAZIHUB WAZIUP

Session 254

16:30–18:15, Thursday, 11 April 2019

Room K2, ITU Montbrillant

Thematic Workshop