LoRa

5-ISS

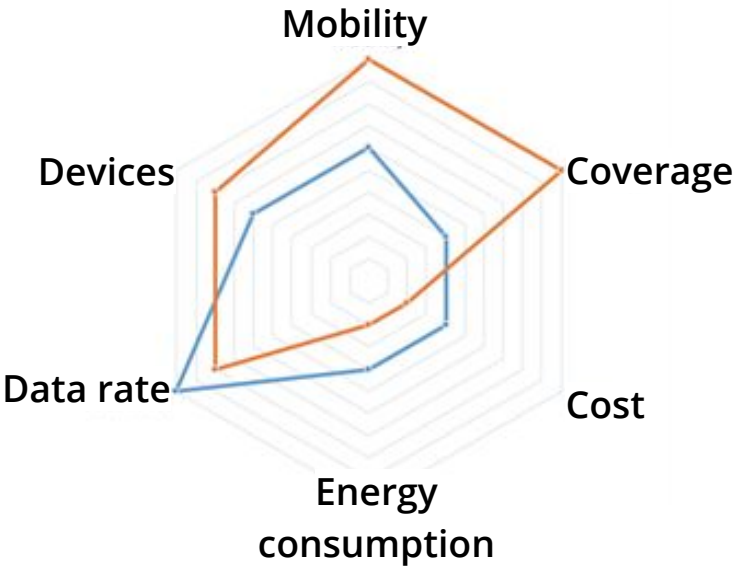
Alberti Johan
Fu Yimin
Saboret Romain

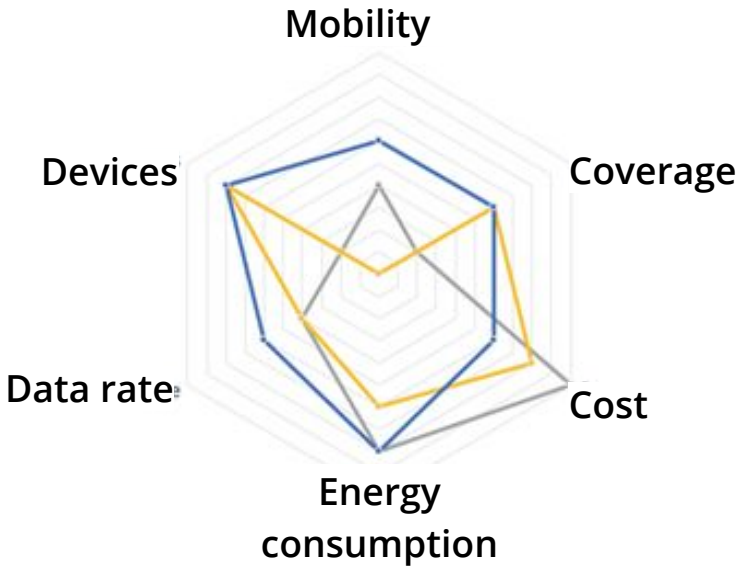
What is LoRa ?

- Emerging communication technology
- Long Range
- Large-scale network coverage

Why do we need it?

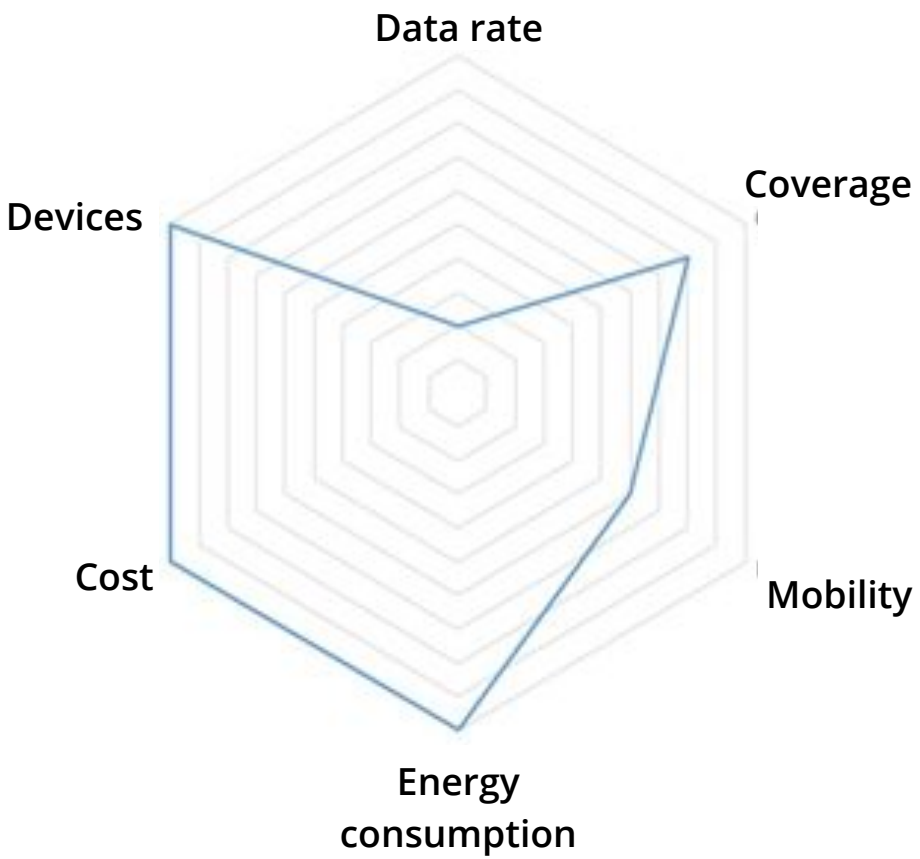
Common wireless technologies





So why is there LoRa again?

- Cover the widest possible range
- Tens or even hundreds of thousands of devices
- Extremely low energy consumption (batteries for years)
- Cheap large-scale deployment
- Send a few bytes a day



Nodes’ autonomy:

54.4 months on 950mAh

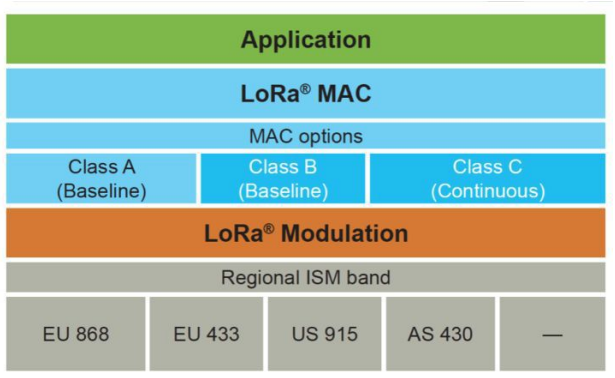
(Mode 3, Scenario 2) - "Energy consumption model for sensor nodes based on LoRa and LoRaWAN." - Sensors 18.7 (2018)

Design goals of LoRa :

- Wide coverage (5--10 km)
- Anti-interference
- Data rates ranging from 300bps to 50kbps (Europe)
- Low energy consumption (battery driven for 10 years)
- Two-way communication
- High network capacity

10 000s nodes per gateway

LoRa protocol stack



User's application

LoRaWAN link layer protocol developed by the LoRa

LoRa physical layer, belongs to Semtech's proprietary technology

ISM band, which is 868MHz or 433MHz in Europe, 915MHz in the United States and 430MHz in Asia

LoRa physical layer

- → private protocol
- → Semtech

LoRaWAN

- → link layer protocol
- → open standard
- → free to choose to use it

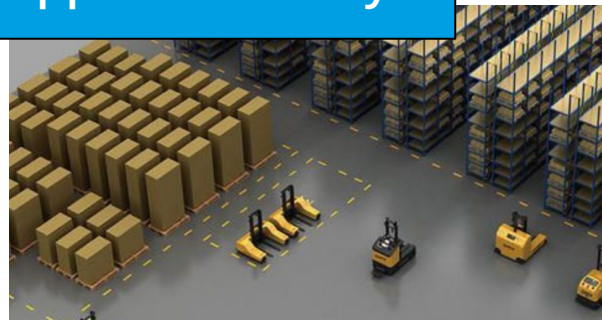
LoRa typical application

Intelligent Building

Bunch of sensors: temperature, gas, humidity…
Low data rate needed
A portable gateway can be useful

Locating: long battery life for beacons
Ready to use: beacons in warehouse and a portable station
LoRa Class A supports mobility

Logistics tracking



Thank You