



Proximeter: CERN's detecting device for personnel

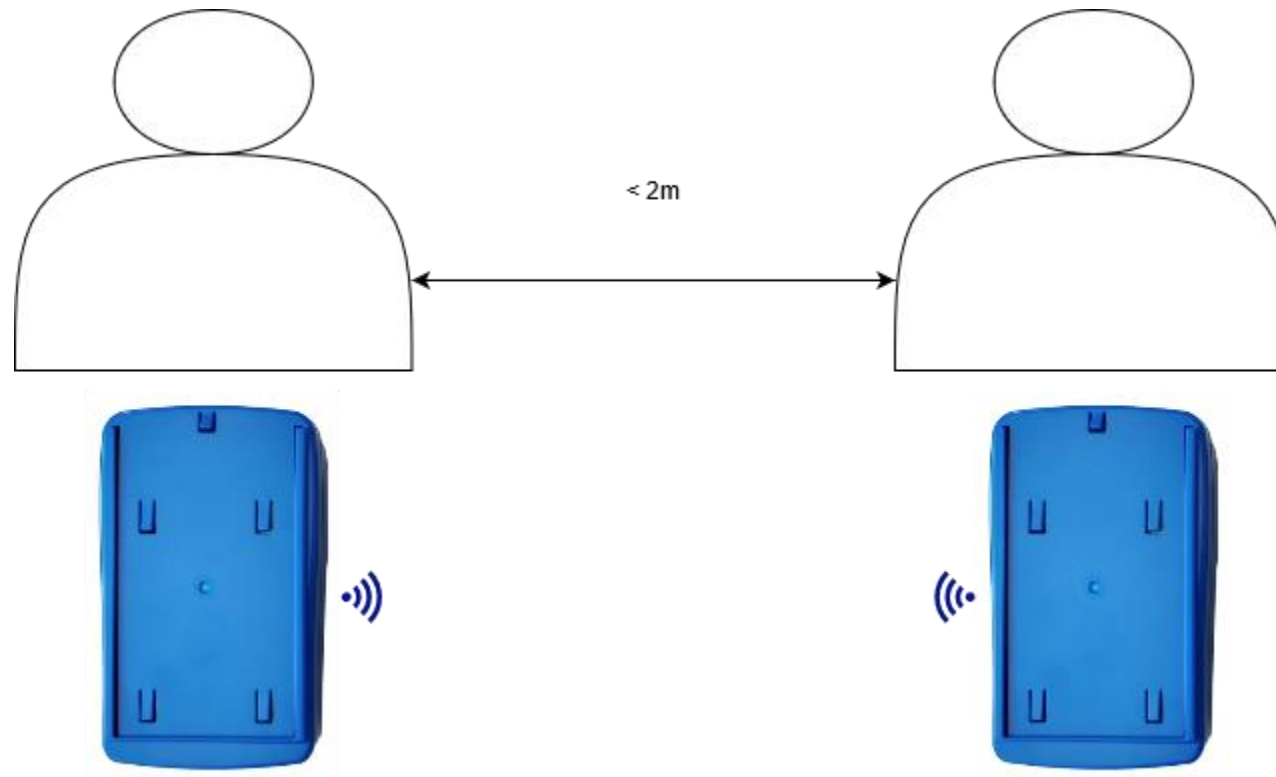
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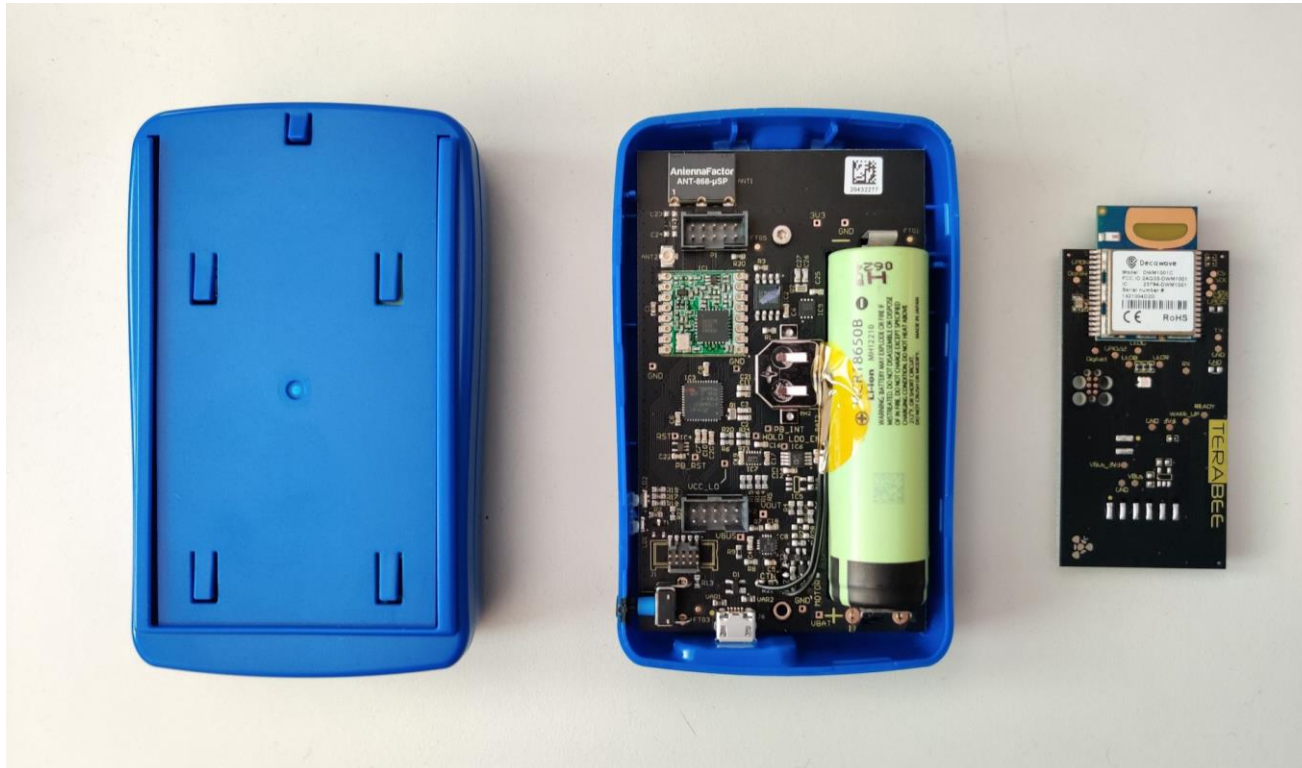
Why is this project necessary ?

- **Protect employees**
- **To counteract the spread of the COVID-19 virus as much as possible**

Detecting an encounter



The proximeter



- Developed at CERN

Why a Low Power Wide Area Network ?

Low Power Wide Area Network (LPWAN) especially aim to achieve:

- **Low power -> long battery live time**
- **Wide area**
- **Pilot network already establish**
- **Large coverage**
- **Low costs**

Proximeter meets LoRaWAN

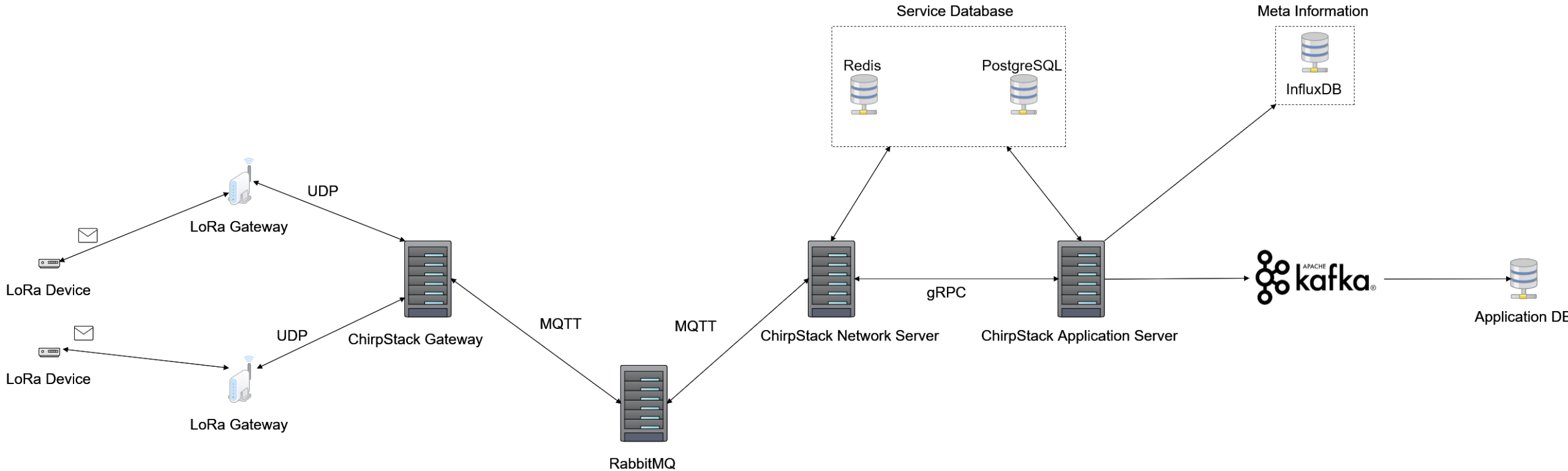
- **Devices are subject to the duty cycle**
- **LoRaWAN is not suited for real time data**
- **It is not advised to ACK packets**
- **Maximum packet size is 51 Bytes (due to the Spreading Factor)**

LoRa devices

| | | | |
|----------------|--------------------------------|--------------------------------|----------------------|
| Class A | Listen only after transmission | No latency constraints | Energy efficient |
| Class B | Listen at scheduled windows | Latency constraints of seconds | Energy optimized |
| Class C | Always listens | Strong latency constraints | No power constraints |

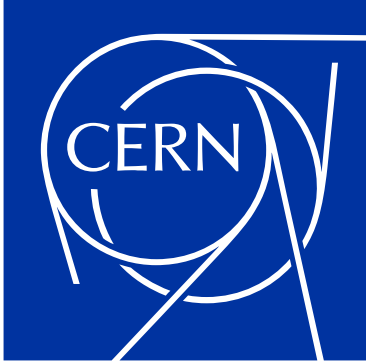
- Uplink messages can be sent at any time (randomly).
- Maximum duty cycle to be respected.

LoRaWAN Architecture at CERN



Conclusion

- **LoRaWAN network and the proximeter have been designed together to cope with the project requirements**
- **Makes it possible to trace who a person encountered**
- **Yet Anonymous**
- **Only medical service can see all information**
- **Have given visibility to the LoRaWAN project**



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