

Bring your meter data into the cloud

iOKE868 Smart Metering Kit

Introduction: Smart Metering Kits

❑ iOKE868 LoRaWAN Smart Metering Kit

- ❑ iO881A optical reading unit
- ❑ Magnetically adhesive antenna including 2m cable
- ❑ USB cable (1.8m, male A to male B micro)



iOKE868 Smart Metering Kit

❑ Accessories

- ❑ USB Battery Pack for iO881A
- ❑ Lite Gateway for TTN
- ❑ Power Supply Unit for Lite Gateway and iO881A
- ❑ SMA Antenna for Lite Gateway



Accessories

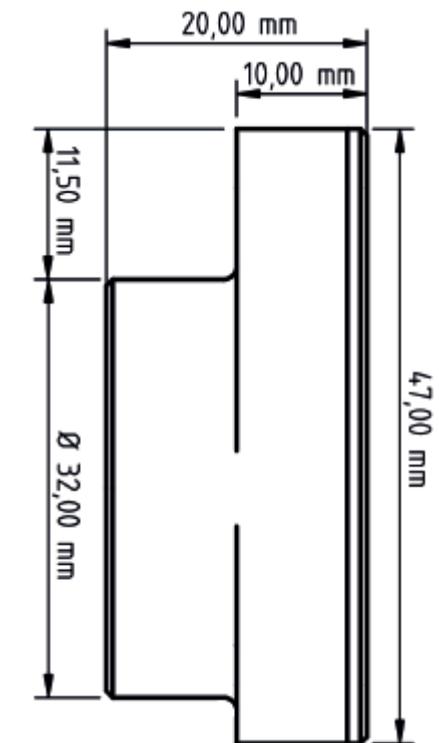
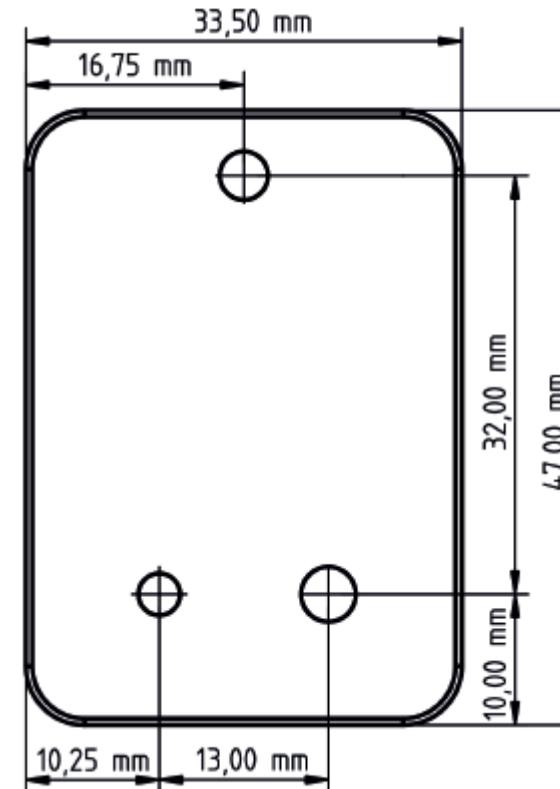
Tools and Documentation comming with the Kit

- ❑ WS-Configurator Tool for Windows
- ❑ WSConfigurator_UserManual_iO881A_V1_1.pdf
- ❑ iOKE868_LoRaWAN_UserManual_V1_0.pdf
- ❑ iOKE868_LoRaWAN_AN029_PowerConsumption_V1_0.pdf
- ❑ iOKE868_LoRaWAN_AN031_QuickStartGuide_V1_0.pdf
- ❑ iOKE868_LoRaWAN_AN035_RadioProtocol_V1.0.pdf
- ❑ iOKE868_LoRaWAN_AN033_Integration_with_TTN_and_TagIO_V1_0.pdf
- ❑ iOKE868_LoRaWAN_Chirpstack_Decoder_V1_10.js
- ❑ iOKE868_LoRaWAN_TagIO_Decoder_V1_7.js
- ❑ iOKE868_LoRaWAN_TTN_Decoder_V1_10.js



iO881A Facts

- ❑ 863 MHz to 870 MHz frequency range
- ❑ +14 dBm max. RF output power
- ❑ LoRaWAN V1.0.2 certified
- ❑ 8 Mbit internal flash
- ❑ 5 V supply via Micro USB
- ❑ Peak current consumption < 100 mA
- ❑ Sleep mode current ~4 μ A
- ❑ Support for SML 1.04 and IEC62056-21
- ❑ MMCX RF connector
- ❑ Micro USB connector for power supply, configuration and direct USB mode
- ❑ Powerful ARM cortex M0+ microcontroller with 192 kB internal flash, 20kB RAM and 6kB EEPROM

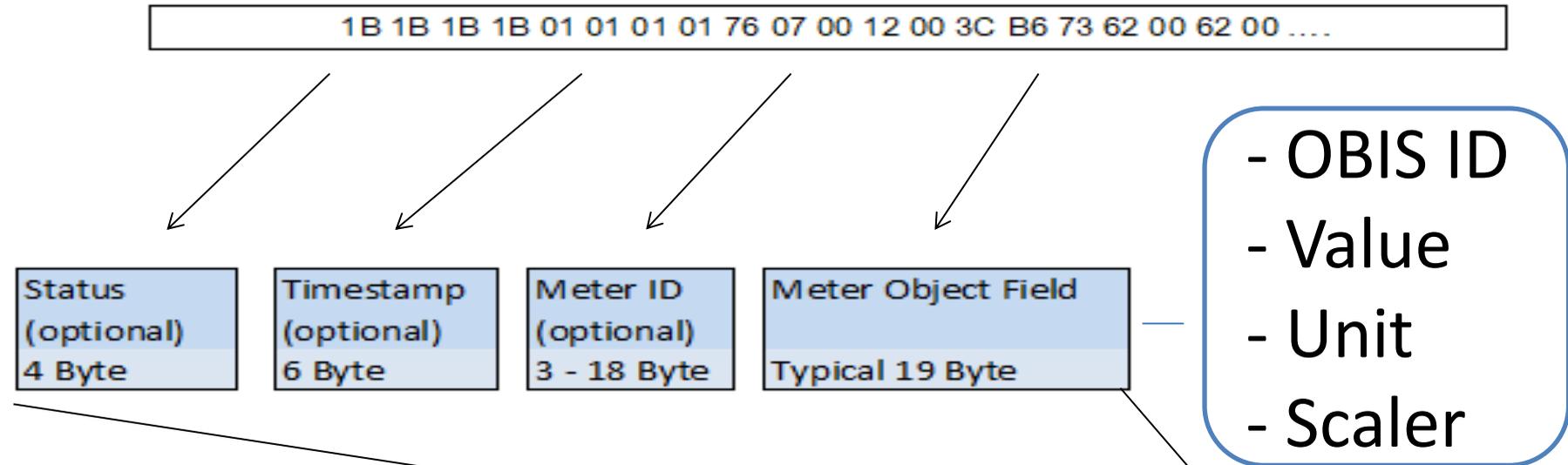


How does it work

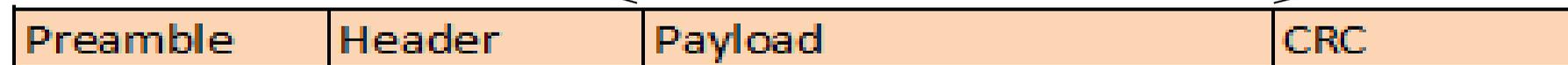
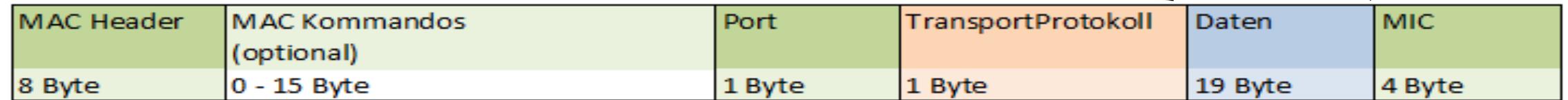
- 1) Meter data on the infrared interface (SML, IEC) are read by the optical reading unit iO881A.
- 2) Selected OBIS values are transmitted via LoRaWAN



Infrared Interface



Radio Packet



LoRa Physical Layer

Examples of Packet Airtimes and Packet Repetitions

Meter Data (Payload Size)	SF 7 Airtime/Repetition every		SF 9 Airtime/Repetition every		SF 12 Airtime/Repetition every	
Elect. Power (33 Byte)	72 ms	3,6 s	247 ms	12,4 s	1,8 s	91 s
Elect. Power + Meter ID (43 Byte)	87 ms	4,4 s	288 ms	14,4 s	2,1s	107 s
Elect. Power + elect. Energy (62 Byte + 14 Byte)	118 ms + 46 ms	8,2 s	370 ms + 165 ms	26,7 s	2,8 s + 1,2 s	197 s
Elect. Power + elect. Energy + Meter ID (SF7/9: 72 Byte + 14 Byte) (SF12: 64 Byte + 22 Byte)	133 ms + 46 ms	9,0 s	431 ms + 165 ms	29,8 s	2,8 s + 1,5 s	214 s

Power Consumption

❑ iO881A can be powered via the USB connector by

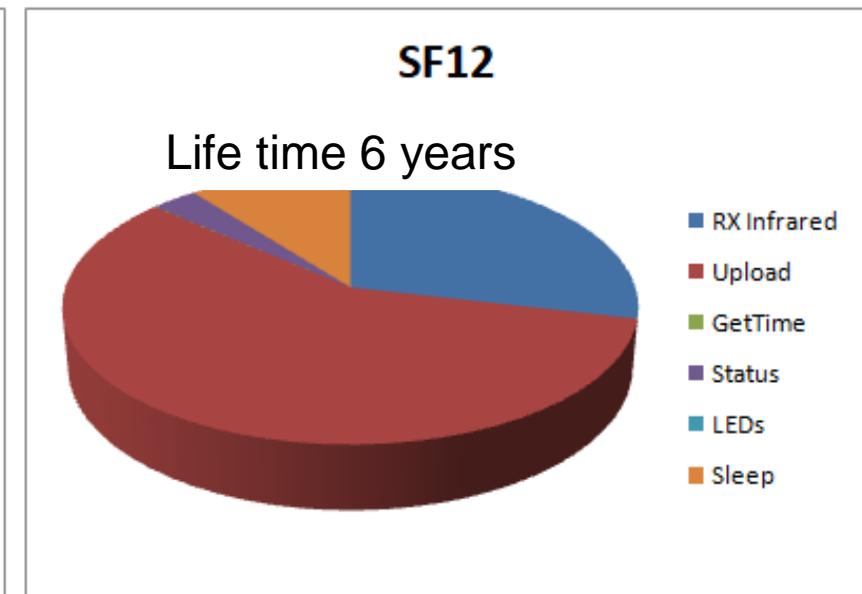
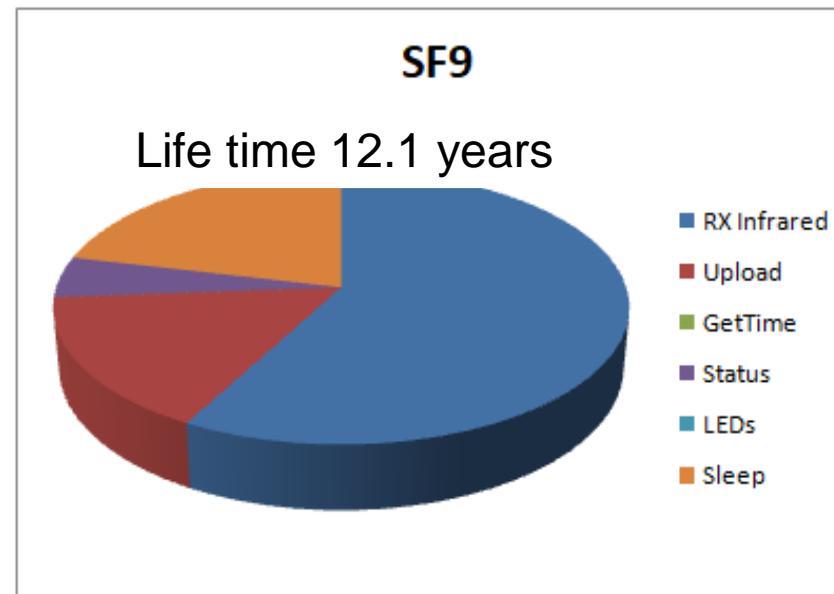
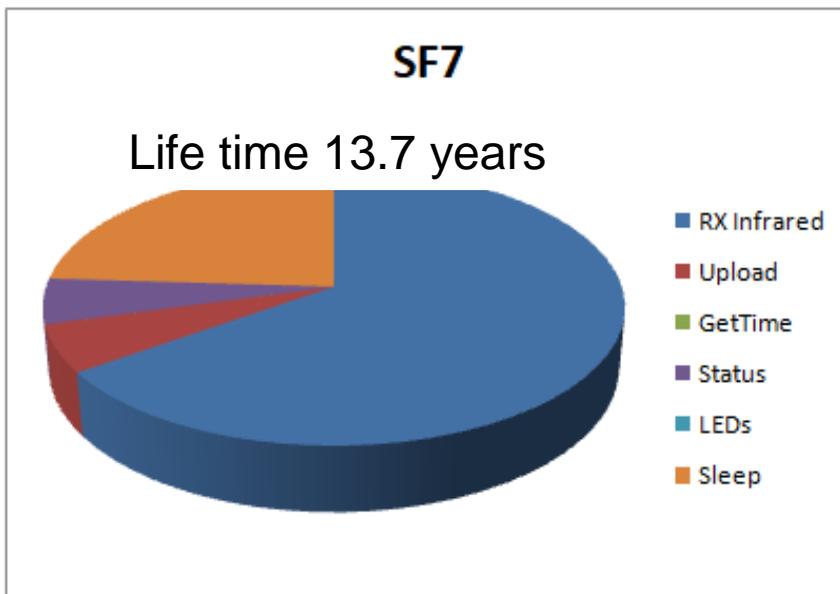
❑ an external USB power plug

❑ an external USB battery pack (AA standard mignons)

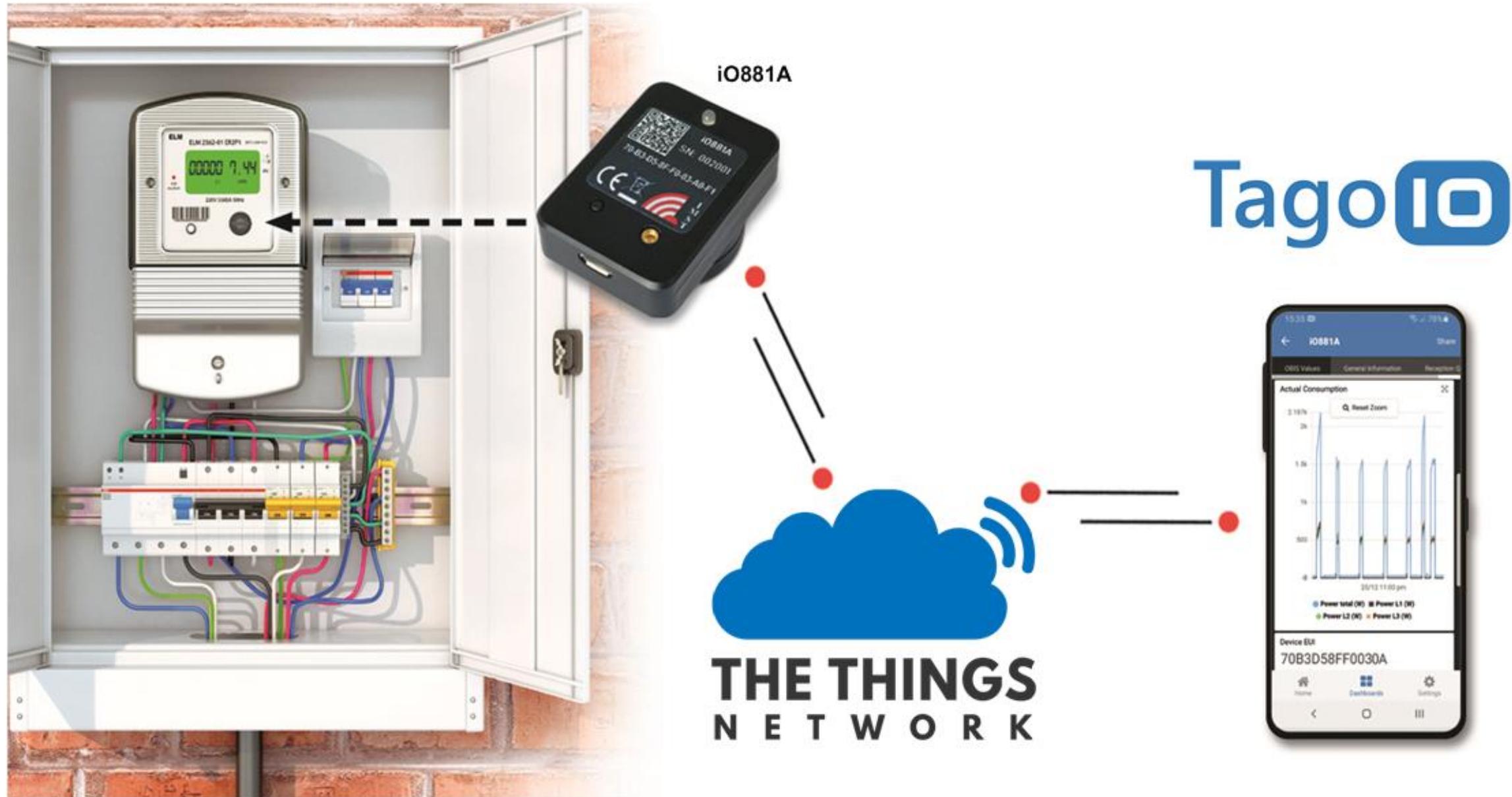


❑ From „iOKE868_LoRaWAN_AN029_PowerConsumption”

❑ Capacity 80% of 2.5 Ah, Infrared Interface Rx 5s/h, LoRa Tx 1/h, Payload 54 Byte

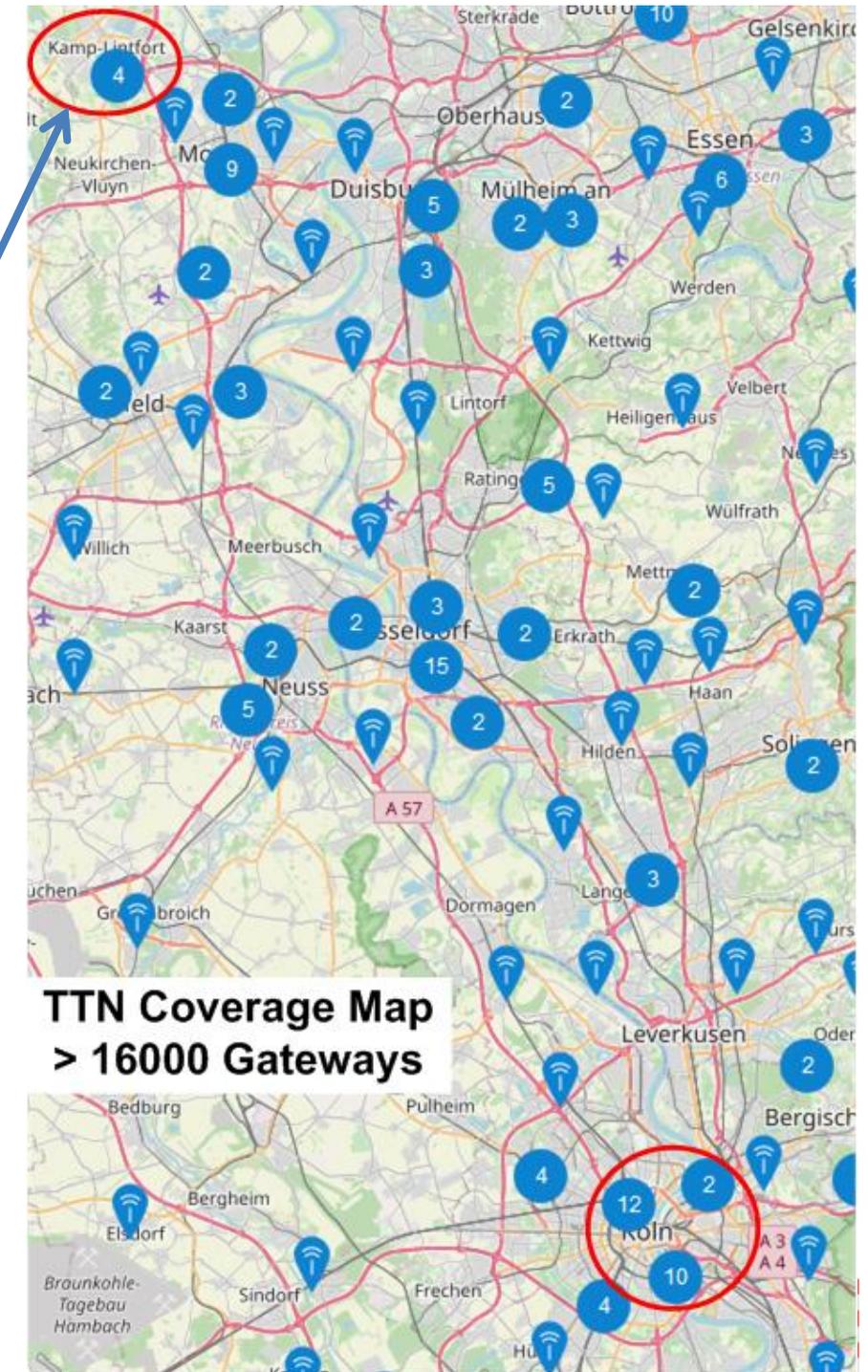


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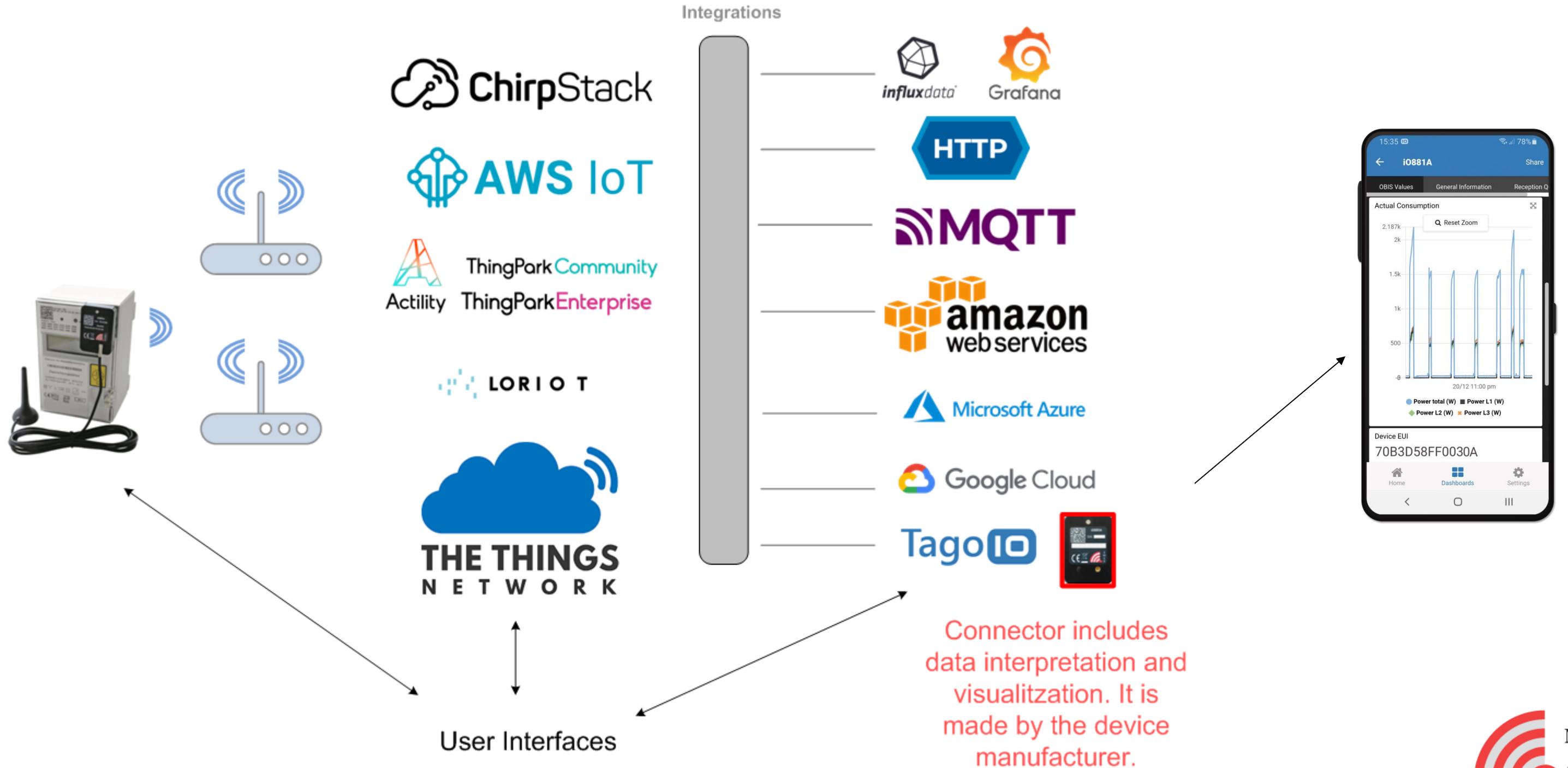


Network Coverage and Gateway

- ❑ You can use community gateways. Best case (,unlikely' in Germany)
- ❑ You can work with (pre-configured) [indoor gateways](#)
 - ❑ Cheap, easy to install and easy to register (2 minutes)
- ❑ You need outdoor gateways
 - ❑ 16 channels GW, Ethernet and LTE, lightning protection, POE
 - > 1750€ material costs
 - ❑ Installation location!
 - ❑ Power supply!
 - ❑ Lightning protection!
 - ❑ Administration & management!



What we are going to do ...



Overview on Configuration

