Optimized Energy Management
Via IoT Integration

Implementation of automated metering for Munich Airport

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June 2018

Q-loud - Who We Are

- IoT pure-player, providing a full-stack offering including hardware, software, IoT platform, system integration, custom development and operations
- Subsidiary of stock-listed QSC AG
- Partnership on technical- and management level with Huawei & Telefonica

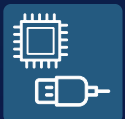Concept & Consulting | Software Development | Hardware Retrofit | System Integration | Secure Connectivity

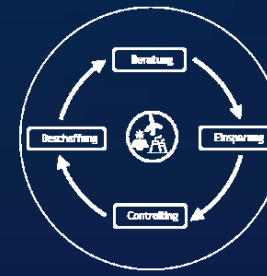IoT Plattform | Standardized Hardware | Hardware Development | Hardware Production | Eco-System

SMARTIFICATION

IoT Full-Stack Solutions for Connected Products

ENERGY EFFICIENCY

Produkts for enterprises and residentials

IoT CLOUD ENABLING

Consulting and Support for set-up and operations

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Digitization of mechanical energy meters and connection with central IT for Munich Airport
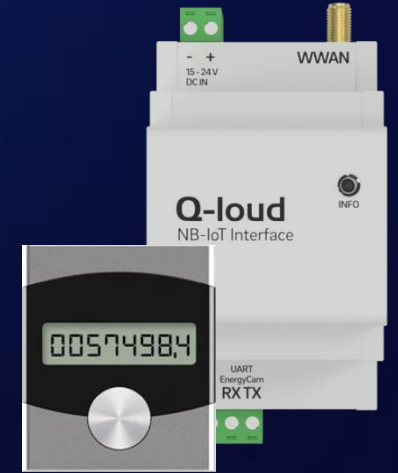
- Munich Airport want's to become a model for other smart cities
- Increase efficiency and enable new services
- Generated data should be available via central software interface for IT department
- Meters are widely installed on airport premises and in surrounding areas
- Meters are located in the basement or other sites with poor network coverage & accessibility

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Solution

Retrofit of analog power meters and integration into new IoT Infrastructure

- **Automatic readout** of mechanical meters via Q-loud EneryCam
- **Transmission** of digitized metering and device data via Telefonica NB-IoT
- **Recording and consolidation** of all data on OceanConnect platform of Huawei
- **Export** of metering and device data via a standard software interface (CSV)
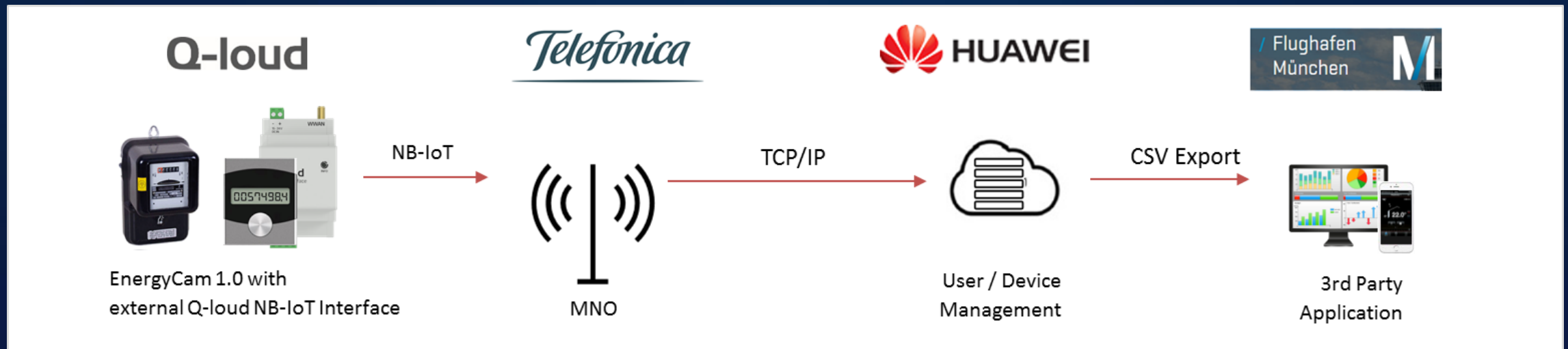
Telefonica
NB-IoT Network

OceanConnect

Solution – System Sketch

Hardware & Integration	Connectivity	OceanConnect	Application

EnergyCam 1.0 with external Q-loud NB-IoT Interface — NB-IoT → MNO — TCP/IP → User / Device Management — CSV Export → 3rd Party Application

Hardware & Platform Integration – NB-IoT EnergyCam

Automatic readout of analogue meters via Q-loud EneryCam

- Easy to install retrofit solution
- Capture counter reading with built-in camera (OCR recognition)
- LED flash enables readout even in dark environments
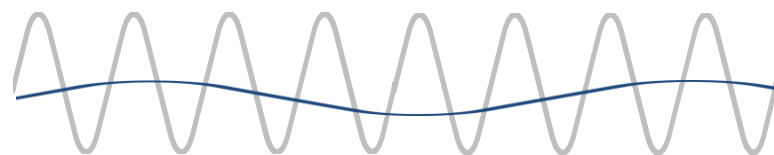- Pairing of NB-IoT Modul with OceanConnect via SSID of Telefonica SIM card

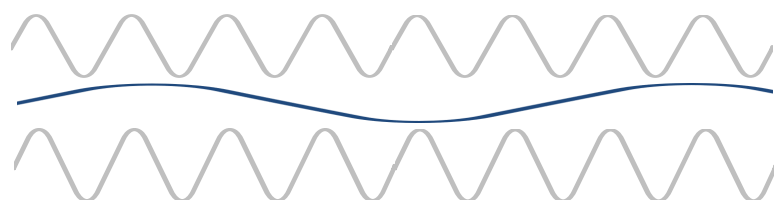# Connectivity – NB-IoT Network by Telefonica Germany

Transmission of digitized data via Narrow Band IoT (NB-IoT)

New standardized wireless technology for the Internet of Things, which uses existing mobile networks meaning faster time to market

Within GSM Carrierwave

Unused LTE Guard Band

Billions of Devices

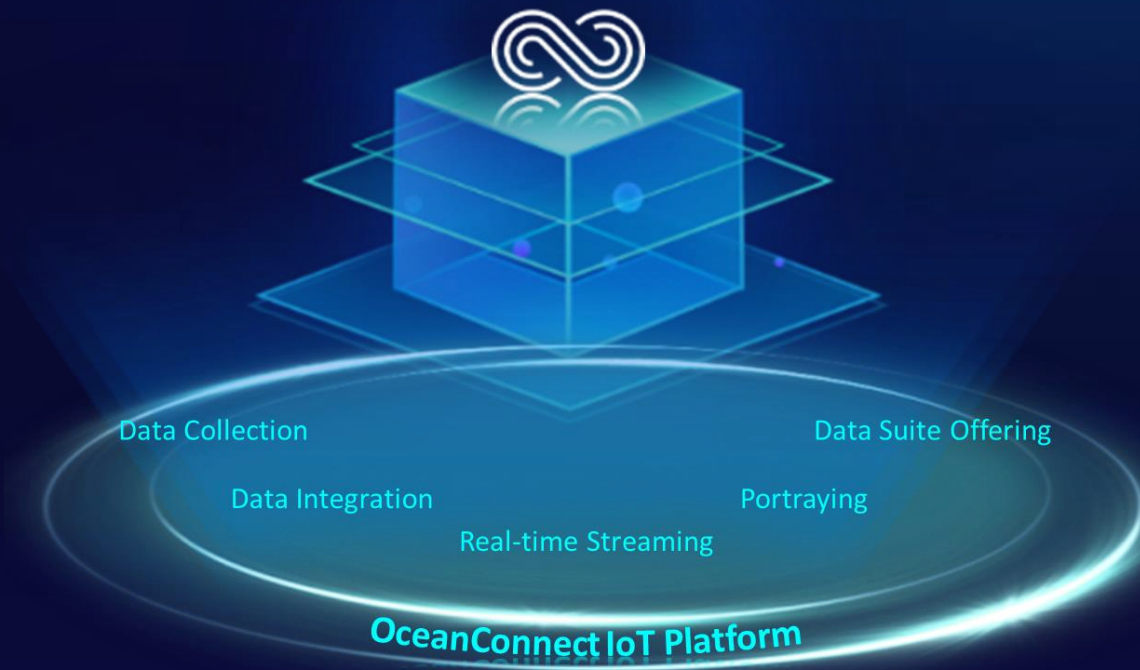Low Cost

Deep Indoor Penetration

Certified and Secure

Low Energy Consumption

World Wide Standard

IoT Plattform – OceanConnect by Huawei

Data Collection

Data Suite Offering

Data Integration

Portraying

Real-time Streaming

OceanConnect IoT Platform

- Collecting and recording data such as
  - date and time of measurement
  - meter reading
  - signal strength
  - battery status
- Consolidation of all data on the OceanConnect platform
- Export of metering and device data via standard software interface (CSV)

Results

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Integrated End-to-End Energy Management Solution for Munich Airport

- **Cost saving:** No need to replace existing infrastructure

- **Availability of consumption data** for Airports IT Department

- **Transparency** of energy consumption

- **Data** for benchmarking of energy efficiency activities

- **Prompt intervention** in the event of unplanned changes in consumption

- **Scalability:** Easy to add additional EnergyCams

- **Future proof:** Ability to add other NB-IoT devices to infrastructure

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THANK YOU

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