NETWORK OPERATOR PANEL

**Moderator:** Remi Lorrain, Semtech

**Marcus Kirchdörfer**, Minol Zenner Group

**Wolfgang Krüger**, Netzikon

**Matthias Emmerman**, Unitymedia

**Arnaud Vandererven**, Objenious

**Ronan Le Bras**, Orange

**Steve Dyett**, BT
Minol ZENNER Connect – what we do

- Operating and building a Germany wide customer owned LoRaWAN® network
- Planning and Installation support
- LoRaWAN Coverage estimation/simulation
- On Site evaluation
- Compatibility Testing
- Gateway- and Backhaul Monitoring
- Network Performance and Fraud Prevention
- Fault Clearance and Incident Reporting
- Hosting and IT Infrastructure
Minol ZENNER Connect – use cases that drive the rollout

**Productive Use Cases**
1. Sub Metering: 400,000 devices (online)
2. Security: 250,000 devices (online)
3. Utility Metering: 50,000 devices (online)

**P.o.C Phase**
1. Smart City Use Cases: P.o.C Phase 2,000 devices (online)
2. Smart Home/Building: P.o.C Phase 500 devices (online)
3. Industrial Use Cases: P.o.C Phase 500 devices (online)

**Not yet in P.o.C Phase**
1. Logistics Tracking
2. Asset Management and localization
3. Smart Agriculture
Minol ZENNER Connect – where we are

- 3,000 Gateways Live (Indoor and Outdoor)
  - 80% Indoor Gateways
  - 20% Outdoor Gateway
- Plan for 5,000 New Gateways in 2019
- Live Operation in Germany, Sweden, Austria, Italy
- Live this Month: Poland, Denmark
- Live in 2019: China, Asia/Pacific, Americas
NETZIKON, GERMANY’S PUBLIC LORAWAN® NETWORK
Netzikon - Who we are

• Nationwide public LoRaWAN® network operator in Germany
• LoRa Alliance™ Member since 2015
• Founded in 11/2016
• 100% subsidiary of telent GmbH
Netzikon – Our pretension

- E2E data security for privacy and confidentiality
  - Own LRC in own premises, hardened GW interfaces, GW-VPN, AS-Security, HSM
- High network availability and reliability
  - HW + geo-redundant Tier3 computing center, 24/7/365 NOC, own field force
- High network quality
  - Demanding certified devices, tool-based coverage & network planning, HW testing
- Roaming (national, international)
  - National with strategic roaming partners > to enhance and densify our network
  - International > demand for border-free international use cases
  - Roaming Hub > time to market, reduced effort and costs, many roaming partners
Our strategy

- Progressively set up a full-coverage LoRaWAN® network all over Germany
  - Target: Nation-wide full-coverage LoRaWAN network by the end of 2020
  - Main Rollout: Concentration in the beginning on larger cities in Germany
  - Flexible Rollout on customer demand
- Secure, reliable, highly efficient, intelligent and innovative LoRaWAN Services
  - LoRaWAN is global! Large business customers are global!
  - LoRaWAN works thinking big with regard to volume of devices!
  - Use cases like tracking and localization require internationally connected networks with many roaming partners!

Therefore we go for a future-proof public network approach!
We bring your IoT to the edge

Digital IoT Infrastructure for Germany

Netzikon GmbH
Gerberstraße 34 • 71522 Backnang
www.netzikon.de
info@netzikon.de
IoT bei Unitymedia Business

Matthias Emmerman

Not transferred without prior consent by the Alliance
Creating Valuable IoT Connections | lora-alliance.org

Our Footprint

The Americas
More than 20 countries

Europe
12 countries

Revenue is presented as annualized results for the six months ended June 30, 2016. All other facts & figures as of June 30,

LoRaWAN

Not to be shared without prior consent by the LoRa Alliance.
LoRaWAN® by Unitymedia: Network, just the Network
Creating Valuable IoT Connections | lora-alliance.org

Nor to be shared without prior consent by the LoRa Alliance® Group
Building up the Network with Infrastructure Partners
Gaining Revenue via EcoSystem Partners

**EcoSystem Partners**
- Today’s lack of connectivity in sales pitch is solved
- End user contract with direct payment between partner and end user
- Use the Unitymedia network to offer their use case to customers
- Pay Unitymedia for using connectivity

- Use Unitymedia network to offer their e2e solution to their customers
- Hold the end user contract

**Infrastructure Partners**
- Utilizing the partners’ infrastructure (buildings, internet access, power) for gateway locations
- Partner approach allows Unitymedia to rapidly build up the network nation-wide
- The infrastructure partner receives a revenue share, based on the connectivity revenue being generated via its gateway locations

- Providing their infrastructure to build up network
- Asking for a massive number of use cases themselves
WHAT IS OBJENIOUS

- Objenious is the Bouygues Telecom brand focused on IoT
- Co-founder of the LoRa Alliance™ in 2015
- A LoRaWAN® nationwide network in France since 2016
  - 4200+ antennas on air
  - 93% coverage of the French population (outdoor)
  - A carrier grade operator SLA & State of the art security level
- Home made IoT platform SPOT (Smart Portal of Things)
- 150k devices which generate 5 million messages / day
- Capability to roll out dedicated LoRaWAN infrastructure
- Some big customers
What is the main competitor of Objenious in France?
Orange IoT Network LoRaWAN®

The Internet of Things is going to change the world. For everyone.

Ronan Le Bras
To address variety of use cases, Orange deploys a portfolio of complementary technologies.
Orange selected LoRaWAN® beginning 2015 as first LPWA solution to address B2B customer connectivity needs.

LoRaWAN, an unlicensed LPWA technology...
- Non-cellular technology based on a new network
  - Available now
  - Easy to deploy, anywhere in the world on-demand
  - National deployment in France
  - World Wide Eco-system

LoRaWAN Model
- Specifications of LoRaWan MAC by LoRa Alliance
- Regional Specific Band 433 / 868 / 915 MHz
- Private and Public operators deployment
- Certification program by LoRa Alliance and Orange to ensure interoperability
- Roaming under definition by LoRa Alliance

LoRaWAN Key Strengths
- Low cost modules available now
- Proven Low power consumption
- Long Range: Deep Indoor
- Bi-Directionnal Geolocation
- Small size Gateway and Nano-gateway
- Light Backhaul (LTE / Ethernet)
Orange IoT LoRaWAN® network deployments

- France: Nationwide coverage in 2018.
- 95% population coverage, 30,000 cities
- 4,900 Gateways deployed on mobile site
- Densify our networks on demand depending on customers needs

(1) Figures as of early July 2018

A targeted LoRaWAN coverage in other countries, in cities, airports, ports or industrial sites for B2B Market
**LoRaWAN® technology: the first LPWA (Low Power Wide Area) network dedicated to the Internet of Things**

Nova Veolia - Birdz

**Connected sensors to predict water consumption and detect atypical consumption**

3,000,000 intelligent water meters in France over the next 10 years

70%

Their goal is to read more than 70% of their meters remotely by 2027.

LoRaWAN is the maturity and sustainable technology for Water Smart Metering for the next 10 years: Deep Indoor and long life without battery change

“Birdz has chosen Orange Business Services to help it make a strategic shift from a technology requiring deployment of a radio network infrastructure to a solution that is open, interoperable and reversible and also a solution which meets the needs of our customers.”

Xavier Mathieu
CEO of Birdz

City of Alba Iulia

Alba Iulia Smart City 2018 project, in Romania.

The smart lighting solution is connected to the LoRaWAN network. The use of smart lighting, whereby streetlights are dimmed when there is no one around, has reduced related energy consumption by 50-70%.

Not to be shared without prior consent by the LoRa Alliance