



UTILITY CONNECT  
smart dedicated network

## Public Telco Partnerships

showcasing new utility telco business models aimed at the long term reliability requirements of electric utilities, in particular through using networks in the 450 MHz frequency band

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# Utility Connect's 450 MHz network aimed at the requirements of utilities

# Telecom for utilities

Need for telecom for utilities: different challenges for energy grid operators

## Energy Transition

Supply & demand of energy are becoming more flexible

Societal dependency on energy increases

Increasing digitalization and intelligent management of grid:  
**Smart Grids**

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End of life of telecom solutions

Legal obligations (i.e. Smart meter roll-out)

Growing need for performance information & remote operation: **Good reliable and secure data communication is necessary**



# Utility requirements

For decentralised applications (smart meters, sensors, RTUs, street lighting, etc.)

## Various **technical** requirements:

- Availability, reliability (redundancy, power autonomy, etc.)
- Bandwidth
- Average data volume
- Latency
- Coverage (indoors)
- Frequency of communication
- Etc.

## Various **telecom solutions available**

(GPRS, CDMA, UMTS, 4G, RF Mesh, PLC, etc.)

## **Strategic** considerations and requirements:

- Cost of the total solution (total design)
- Lock-in effects
- Life cycle & eco-system of technology
- Future-proof
- Standardised & proven technology
- Privacy & security

## **Need for control**

# A dedicated wireless network (450 MHz)

## Typical specific utility telecom requirements

- Guaranteed longevity and supply over long period
- Guaranteed low cost per asset
- A-typical functional specifications
- High level of control on quality and security applications
- Mission critical



## Typical commercial offers

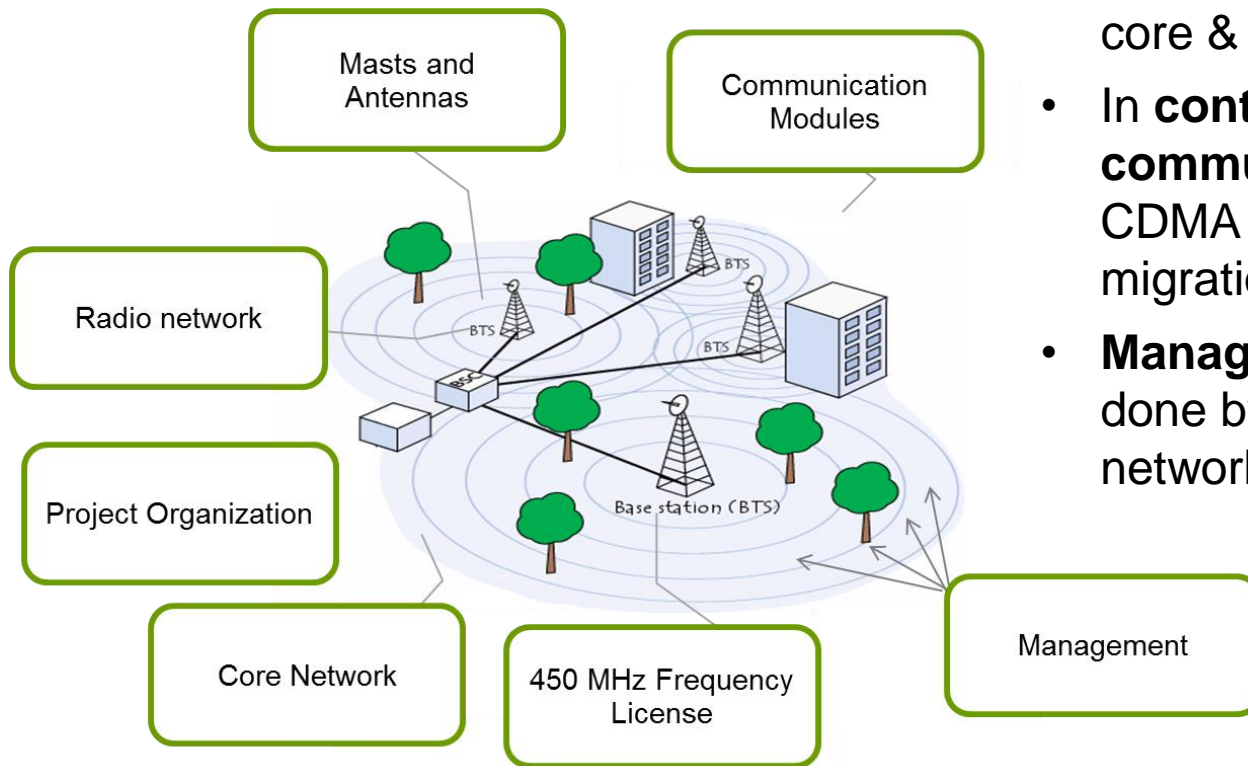
- Fast changing technologies
- Standard products and service aimed at smartphone mass market
- Utilities are relatively small customers

## Control is needed

- Communication is becoming (mission) critical for utilities so control is needed;
- A (private) dedicated telecom solution is needed (reliable, safe and secure)
- Make vs. Buy? or **Co-create!**

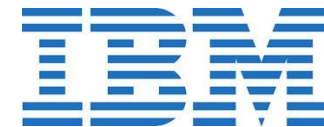
**Conclusion: Dedicated wireless 450 MHz network**

# The set-up of the wireless network (450 MHz)



- **Ownership** of 450 MHz spectrum license;
- **Ownership** of masts & antennas and equipment (radio, core & modules);
- In **control of mobile communication technology**: CDMA 450, researching migration to LTE 450;
- **Management & operation** is done by specialists (mobile network operator).

# The partners: a new business model





# The 450 MHz band



# Advantages of the 450 MHz band

- **Propagation characteristics of the 450 MHz band**
- **Possibility to roll out a network at a relatively low cost**
- **450 MHz already part of ITU global mobile spectrum assignments**
- **Mass market, proven technology available**

# The 450 MHz band in Europe

- **Networks active in:**
  - **Netherlands, Germany, Hungary & Austria** (oriented towards critical/M2M communications focused on utilities)
  - **Finland, Sweden, Norway, Denmark, Poland, Czech Republic, etc.**
- **Possibilities:**
  - **Portugal, Romania, Ireland, etc.**

# Growing industry interest in the 450 MHz band

- **Technology availability: in addition to CDMA also LTE available for 450 MHz band**
  - **Major network vendors active with LTE in 450 MHz band (Huawei, ZTE, Nokia, Ericsson)**
  - **Growing availability of products as chipsets, modules, devices, etc. (ATEL, Intelliport, Robustel, etc.)**
- **Specific LTE developments in 450 MHz band:**
  - **Standardisation (LTE-M, NB IoT)**
  - **Extension of Band 31 (3GPP activity)**





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