TETRA for Utilities

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8 July 2010

Agenda

- *Different Use Cases*

- *Why TETRA is the right technology*

- *Future Evolutions*

Different Operational Requirements

- ***Electricity / Gas & Water***
  - ❖ Production facilities
    - ❖ Optimizing / Monitoring Production
    - ❖ Critical Infrastructure Protection
  - ❖ Distribution
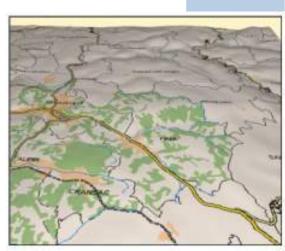 - ❖ Recycling

Coordinating / Supervising Teams

- ***Voice is a strong requirement***
  - ❖ Addressing Groups, Individuals…
  - ❖ Fast, reliable & secure communications

- ***Data allows smooth operations:***
  - ❖ Geo-localisation
  - ❖ Team members status
  - ❖ Exchanging data, e.g. maintenance files, sending pictures
  - ❖ Lone-worker

Optimizing operations: monitoring and controlling

Monitoring

    Pressure, Temperature…

    Gas output / Water flow / Power distribution

    Any other sensors / alarms

Controlling / Optimizing

    The production

    The distribution: controlling pumps, valves, switches

Critical Infrastructure Protection

Perimeter Protection
- CCTV System
- Sensors

Control Room
- Supervision
- Coordination

Access Control
- Automatic Plate Recognition
- Identity Check
- Remote Access to Databases

TETRA has been designed for professional users

- **TETRA offers the following services:**

  - Voice and Data (short-data message et low-speed packet data)

  - Group and Individual Call

  - Push-To-Talk

  - Emergency Call

  - Fast Call Setup (<300ms)

  - Direct Mode (DMO)

  - Dispatch

  ⇒ *TETRA offers access to a **fast**, **reliable** and **secure** network at all time especially during crisis situations*

TETRA offers incredible data capabilities

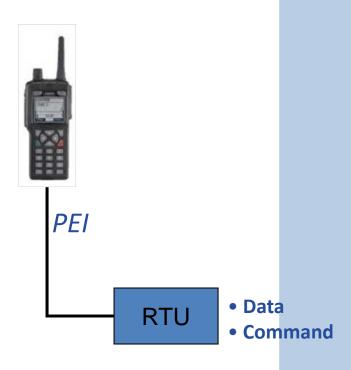- ## *Status Messages*
    - ❖ Reporting Users / Sensors (States) status

- ## *Short-Data Messages*
    - ❖ Different SDS Formats to report small amount of data (e.g. measurements)
    - ❖ Sending commands to automate in the field (e.g. switch control)

- ## *Packet Data*
    - ❖ 3.6kb/s useful information / Time Slot

PEI

RTU

- **Data**
- **Command**

Interfacing a TETRA Modem / Radio via the PEI Interface to send / receive data

TETRA offers capacity

- *1 TETRA carrier offers 4 time-slots*
  - ❖ 1 for signalling and 3 for traffic
- *Short-Data Messages are transmitted over the Signalling Traffic*
  - ❖ Opportunity to deploy Secondary Signalling channel to add capacity
- *Packet Data*
  - ❖ Multi-Slot packet data mode – up to 4 time slots per call
- *Adding up carriers on the same radio site to add capacity*

TETRA operates in hostile environment

- *Radio equipments protected against*
  - Dust
  - Gas
  - Water

Some TETRA handsets are ATEX certified

- *Protecting isolated professional:*
  - Man-down, Lone-worker

SONELGAZ

- *Main customer requirements*
  - Command, control and supervision of the electricity distribution system
  - Integration of voice & data on a unique network
  - High level of redundancy
- *THALES solution*
  - 32 radio sites (450MHz)
  - 256 traffic channels to allow the maximum data & voice traffic (avalanche mode)
  - 1 Main control centre, 3 secondary control centres
  - 4 PABX gateways / 4 SCADA gateways
  - 1 500 measurement points
  - Secondary control channels (SCCH).

Smart-grid: the Future of power management

To control appliances at consumers' homes to save energy, reduce cost and increase reliability and transparency

- ***Adapting Consumption to Production***
  - ❖ Remote control of home appliances to increase / decrease power consumption depending on current production
  - ❖ Smooth the fluctuation of renewable energy production (e.g. solar panel, wind farm)
  - ❖ Allow users to optimise their power consumption & cost

  $\Rightarrow$ *It requires a two-way communication systems, that allows the exchange of information as well as the ability to control remote appliances*

The need for more data

- *Smart-grid*

- *Files transfer (e.g. emails, maintenance files...)*

- *Video surveillance for critical infrastructure protection*

- *And Probably more...*

$\Rightarrow$ *TETRA 1 & 2, and in a near future TETRA 3 offer a full story to respond to those needs*

Thank you