Intelligent Water Network

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Management of water and wastewater services for municipal and industrial clients.

Key figures:
- **12.6 billion** € in revenue
- **96,651** employees in **69** countries
- Services provided to **176** million people:
  - **10 billion** cubic meters of wastewater collected in 2011
  - **103 million** people supplied with water in 2011
Veolia Water has invested in 2 *Smart Companies* during the last 3 years:

- **m2ocity** (founded in 2011) by Veolia Water (80%) and Orange to become the first smart network operator. m2ocity relies on a telecom operator business model: **Design Build Operate** own smart network infrastructure.

- **HomeRider Systems** (100% Veolia Water since 2009) provides an original solution for remote collection of a large variety of *Water Data* on a single radio network.
Homerider Systems

- High growth rate
- 60 employees
- Homerider® represents 16.7% of smart water metering European market in 2011
  - 2011: 600,000 of 3,600,000 AMR modules were sold by Homerider *
  - 2.2M AMR modules deployed in Europe

* Source: Frost & Sullivan
Smart Metering in France

- **300,000** smart electricity meters installed & operated by eRDF

- **100,000** smart gas meters installed & operated by GrDF

- **250,000** smart water meters installed & operated by Water utilities

- **2 M** intelligent meters (provided by Homerider systems):
  - **1,400,000** smart water meters in Walk By/Drive By
  - **600,000** smart water meters in Fixed Network (operated by m2ocity)

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**HOMERIDER SYSTEMS**

**VEOLIA WATER**
Technological choice: Low power radio

868 Mhz radio frequency is the most appropriate for low power smart metering

- ISM 868-870 Mhz Band is open and dedicated to metering by European regulation
- Frequency availability (limited risk of obstruction) and extension possibility
- Proven technology for bidirectional (i.e. emission mode/reception mode)
- Harmlessness for people’s health guaranteed by the very low ray power and reinforced by the short exposition time (ex: no effects on pacemakers)

Examples of ray power
Source: m2ocity 2011 study

<table>
<thead>
<tr>
<th>System</th>
<th>Emitted power (mW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remote control portal</td>
<td>10 mW</td>
</tr>
<tr>
<td>Module (868 MHz)</td>
<td>25 mW</td>
</tr>
<tr>
<td>Repeater (868 MHz)</td>
<td>25 mW</td>
</tr>
<tr>
<td>Home Wifi Network</td>
<td>100 mW</td>
</tr>
<tr>
<td>169 Mhz technology</td>
<td>250 mW</td>
</tr>
<tr>
<td>Radio control Model aircraft</td>
<td>500 mW</td>
</tr>
</tbody>
</table>

Emitted power (mW)
Many applications for a single Smart Network
Beaune – France

- 22,000 inhabitants
- 6,200 meters
- Mains length: 150 km

Smart Water Network – Case Study
Intelligent water meter
What do we expect from an intelligent meter?

- Not only the index, but all necessary information to provide a multitude of services as:
  ① Water billing flexibility
  ② Metering point management
  ③ Independent from meter’s manufacturers
  ④ Improve water network yield
Smart metering creates value for utilities & end users

Key benefits

- Daily information on water consumption
- Leak detection and email or SMS alerting
- New water tariffs and billing systems
- Metering point management
- Improve water network Yield
Multi mode technology

- A scalable solution: upgrade from a walk-by / Drive-by system to a fixed network and Long range using same radio modules
Smart Meter: Choice

→ Fixed Network

- A comprehensive range of radio modules (integrated, remote, sub metering...), battery life: up to 18 years
- An efficient multi-application FN (scalable, easy to deploy...)
  - Repeater able to hear up to 124 radio modules
  - Concentrator able to hear up to 25 000 radio modules per frequency
  - Bidirectional
- Secured & Normalized protocol: EN13.757 mode R2
Smart Water Network – Case Study

- Beaune – France
- 3 Call Riders
How improve the water network yield?

- Intelligent Water Network
What do we expect from a Smart Water Network?

- Protect Water Resources
  ① Increase network yield
  ② Detect leakage on Water Network
  ③ Supervise water quality
Protect Water Resources*:

- Reduce **water leakages** from distribution networks which represents **up to 50%** in certain areas of Europe.

- Anticipate water scarcity: **11%** of the European **population** and **17%** of its **territory** have already been affected by water scarcity

* Source: European Commission
Smart Water Network – Water network Yield

DMA
Smart Water Network – Water network Yield

- Beaune – France
- 15 district meters
Water Network Yield

- To provide Water Network efficiency:
  - Supplied volume
  - Consumed volume
  - Apparent loss
  - Night flows
- Water Network Yield
  - Leak Detection
    - Acoustic loggers

Smart Water Network – Water network Yield
Smart Water Network – Water network Yield

- Beaune – France
- 80 Acoustic loggers
Beaune – France

Benefits:
- Leak repair
- Water network maintenance (preventive)
- Water resource conservation

Results:
- **300 000 m³** saved in 2011 (13%)
- Network efficiency increased by **10 points** (to reach 77%)
Thank you!

@: xavier.mathieu@homeridersystems.com
Tel: +33 6 29 39 29 08
Stand F40