EVOLVE FROM TRADITIONAL NETWORK MANAGEMENT TO SMART MANAGEMENT
AGENDA

P3 INTRODUCTION TO AQUADVANCED™

P8 GENERAL FEATURES OF AQUADVANCED™

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INTRODUCTION TO AQUADAVANCED™
NETWORKS BECOME SMARTER
Every day more and more...

→ Sensors are installed (density, accuracy)
→ Parameters are measured (quality, flow, pressure)
→ Data are collected (volume, reliability)

Smart network

Need to analyze the information considering
→ business process
→ network structure
→ timescale and space

in order to make the data valuable
AQUADVANCED™

To evolve from traditional network management to smart management

AQUADVANCED™ is an innovative solution developed to support water distribution operations with a double objective:

→ As Operation Support System, to help monitor, act and control the water supply
→ As Decision Support System to provide dashboard and optimization tools to help in decision making

Federating multiple IT systems, AQUADVANCED™ provides analyses dedicated to support at all times the different users involved in water networks’ operations.
WHY AQUADVANCED?
Main benefits

- Get the *needed information* to manage the network
- Reduce time and concentrate on what is really important
- Save water resources
- Unify information from various systems

WHAT WE HAVE TO DO?
COMBINE OUR OPERATIONAL EXPERIENCE AND NEW TECHNOLOGIES
HOW DOES IT WORK?

Connected to most commonly used systems

- SCADA
- Geographical Information System
- Data historian
- Simulation tool based on hydraulic model
- AMR system
- Laboratory Information Management System
- Enterprise Asset Management
- Workforce management
- Customer Information System
GENERAL FEATURES OF AQUADVANCED™
GENERAL FEATURES OF AQUADVANCED™

A unique IT platform to meet multiple needs

The different available features of AQUADVANCED™ are embedded in a unique IT platform dedicated to drinking water operations’ performance including:

- Easy setting of key parameters
- Predefined groups of users for easy configuration
- Multiple language set-ups
- Customizable themes and graphics
- Query function
- Mobile device compatibility
- Contextual Dashboard
- Geographical view
- Event Management for detection and life cycle of a detected dysfunction
- Support to analysis & reporting functions
## GENERAL FEATURES OF AQUADAVANCED™

A unique IT platform to meet multiple needs

<table>
<thead>
<tr>
<th>CONTEXTUAL DASHBOARD</th>
<th>GEOGRAPHICAL VIEW</th>
<th>EVENT MANAGEMENT</th>
<th>SUPPORT TO ANALYSIS &amp; REPORTING</th>
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<tbody>
<tr>
<td>- Set of KPIs displayed to give a synthetic view of main information to be considered by the operator</td>
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<td>- Interactive content depending on the position in the navigation, activated functions or chosen filters</td>
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<td>- Displays of different types of data, (tables of sensor values, graph carousels…)</td>
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<td>- Cartographic scalable view of the monitored perimeter (distribution network with DMAs, transportation network, consumption areas…)</td>
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<td>- Read-only link to GIS with real time synchronization</td>
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<tr>
<td>- Display of localised data from multiple sources (assets, sensors, complaints, consumptions, interventions …)</td>
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<td>- Automatic detection of anomalies in real time through mathematical modelling (hydraulic, data reconstruction,…)</td>
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<td>- Localization of dysfunctions</td>
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<td>- Event life cycle process</td>
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<td>- Free workspace to perform personal analysis</td>
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<td>- Open analysis to cross data</td>
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<td>- Customizable reports available in standard formats</td>
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GENERAL FEATURES OF AQUADAVANCED™
A unique IT platform to meet multiple needs

CONTEXTUAL DASHBOARD
GENERAL FEATURES OF AQUADVANCED™
A unique IT platform to meet multiple needs

DETAILED CARTOGRAPHIC VIEW
GENERAL FEATURES OF AQUADAVANCED™

A unique IT platform to meet multiple needs

DISPLAY OF DATA FROM MULTIPLE SOURCES (ACOUSTIC DATA LOGGERS)
GENERAL FEATURES OF AQUADVANCED™

A unique IT platform to meet multiple needs

EVENT MANAGEMENT
GENERAL FEATURES OF AQUADAVANCED™
A unique IT platform to meet multiple needs

SUPPORT TO ANALYSIS & REPORTING
AQUADAVANCED™ FULL VERSION

- **HYDRAULIC**
  - ADVANCED LOCALIZATION
  - PRESSURE MAP

- **QUALITY**
  - EVENT DETECTION
  - LAB ANALYSIS DISPLAY

- **ENERGY**
  - PERFORMANCE
  - EVENT DETECTION

**OPTIMIZATION STRATEGIES**

- HYDRAULIC SIMULATION
- WATER TRACEABILITY
- OPTIM & CONTROL

**BUSINESS PROCESSES INTEGRATION**

- INTEGRATION WITH SMART METERING
- INTEGRATION WITH CUSTOMER RELATIONSHIP MANAGEMENT
- INTEGRATION WITH INTERVENTION MANAGEMENT
- PORTAL FOR DATA PUBLICATION (CLIENT, CITIZEN)

- UNIQUE IT PLATFORM TO MEET SEVERAL NEEDS
REFERENCES &
CASE STUDY
AQUADVANCED™ IN OPERATION

Main références

BARCELONA & CASTELLDEFELS, Spain
→ 4,600 km of network, 3.9 millions inhabitants supplied with drinking water
→ 200 millions m³/year of water delivered to the network

VERSAILLES, France
→ 1,000 km of network, 360,000 inhabitants supplied with drinking water
→ 20 millions m³/an of water delivered to the network

DREUX, France
→ 253 km of network, 38,000 inhabitants supplied with drinking water
→ 1.7 million m³/year of water delivered

MACAO, China
→ 513 km of network, 9.5% NRW, 624,000 inhabitants supplied with drinking water
→ 88 million m³/year of water delivered

CASABLANCA, Morocco
→ 4,800 km of network, 1 million inhabitants supplied with drinking water
→ 190 millions m³/year of water delivered to the network

WESCHESTER, NY, USA
→ 270 km of network, 200,000 inhabitants supplied with drinking water
→ 8 millions m³/year of water delivered to the network
BARCELONA CASE STUDY

Network characteristics

4,300 km, 200 Mm3 delivered water, 5 management zones - 240 DMA

- Very optimized network
- Changes in sectors, at least 7 since the start of the pilot
- Almost no AMR data
- Pilot from May to September 2014
BARCELONA CASE STUDY

Outcomes

192 Events detected in over 5 months (1-2 events per day)

After the analysis some categories were created to clearly qualify the events. Take into account that some events were uncertain (i.e. the feedback was “Leak or maneuver”):

**Confirmed events**
- 36% Meter related fail (wrong pulse weight or change, damaged,...)
- 27% Leak
- 25% Maneuver
- 4% Short peak (uncertain)
- 2% Platform configuration
- 4% Network reconfiguration

**Discarded events**
- 94% Short peak of demand
- 4% Seasonal peak of demand
- 2% Normal behavior (wrong detection)