

# AQUADVANCED

Leading Edge Water Networks Performance Tool



EVOLVE FROM TRADITIONAL NETWORK  
MANAGEMENT TO SMART  
MANAGEMENT



March 2015

# AGENDA

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**P3 INTRODUCTION TO AQUADVANCED™**

**P8 GENERAL FEATURES OF AQUADVANCED™**

**P16 REFERENCES & CASE STUDY**



# INTRODUCTION TO AQUADVANCED™

**TECHNOLOGIE  
INNOVANTE  
POUR L'EAU**

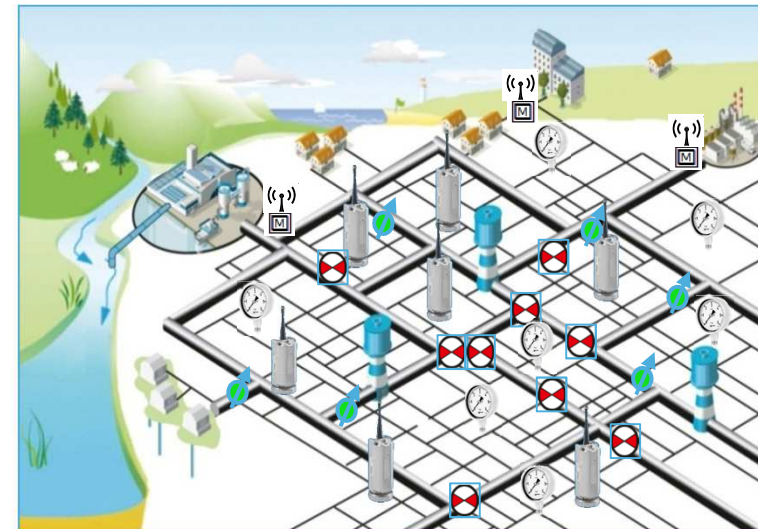
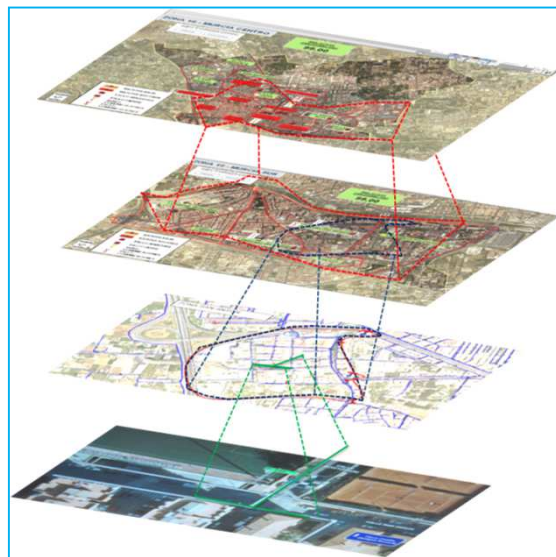


# NETWORKS BECOME SMARTER

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**

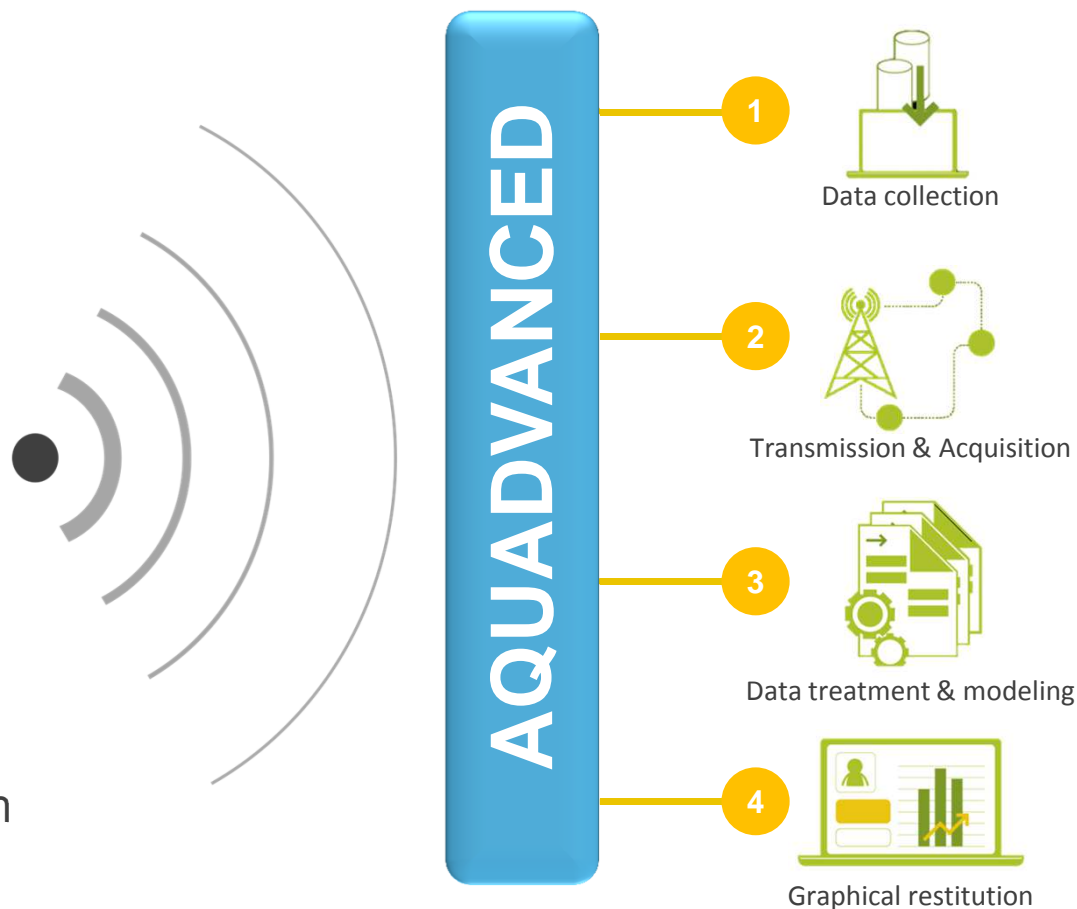


**WHAT WE HAVE TO DO ?  
COMBINE OUR OPERATIONAL EXPERIENCE  
AND NEW TECHNOLOGIES**

# 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™

**TECHNOLOGIE  
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# GENERAL FEATURES OF AQUADVANCED™

A unique IT platform to meet multiple needs

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**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 AQUADVANCED™

A unique IT platform to meet multiple needs

## CONTEXTUAL DASHBOARD

- Set of KPIs displayed to give a synthetic view of main information to be considered by the operator
- Interactive content depending on the position in the navigation, activated functions or chosen filters
- Displays of different types of data, (tables of sensor values, graph carousels...)

## GEOGRAPHICAL VIEW

- Cartographic scalable view of the monitored perimeter (distribution network with DMAs, transportation network, consumption areas...)
- Read-only link to GIS with real time synchronization
- Display of localised data from multiple sources (assets, sensors, complaints, consumptions, interventions ...)

## EVENT MANAGEMENT

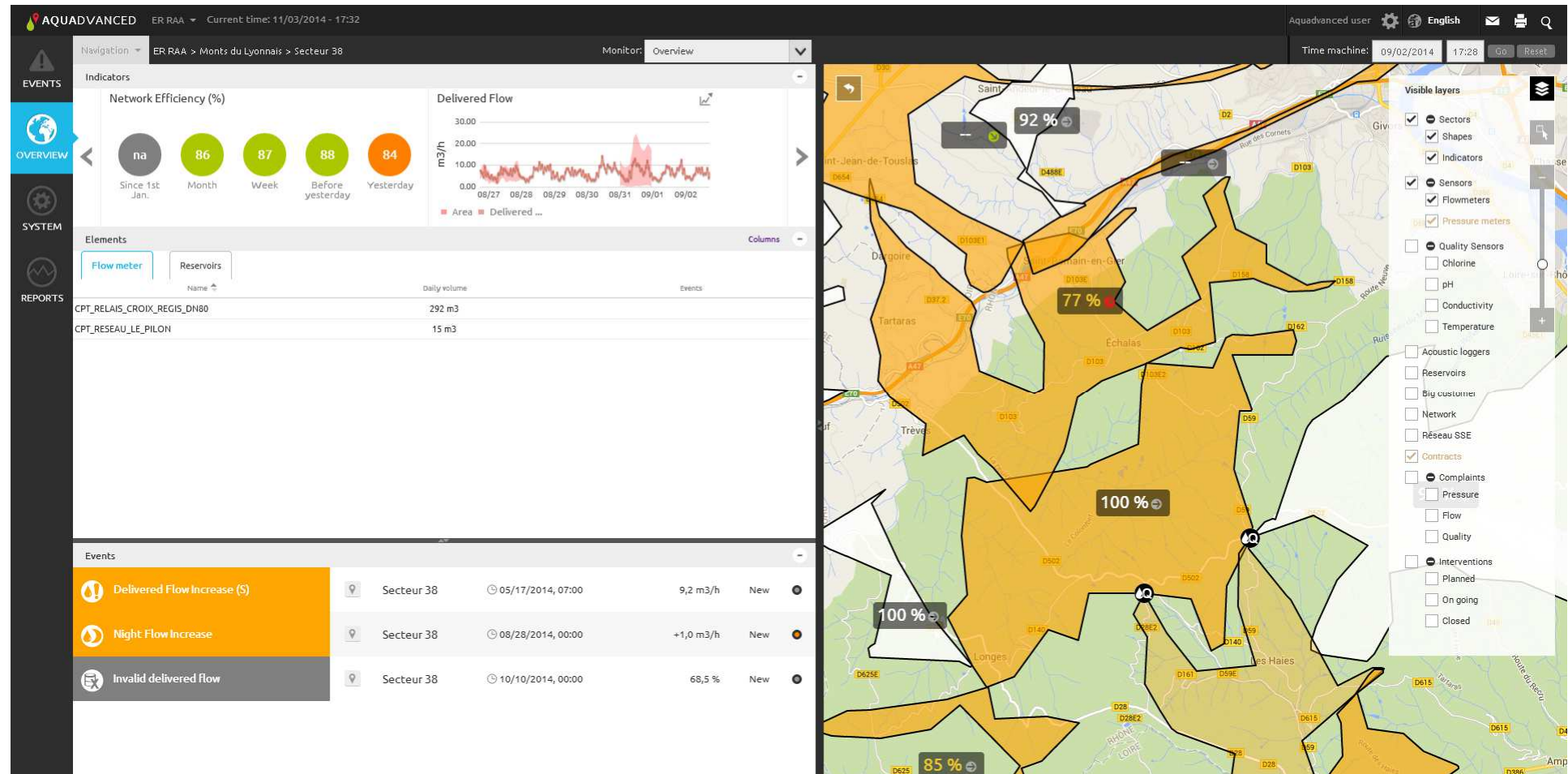
- Automatic detection of anomalies in real time through mathematical modelling (hydraulic, data reconstruction,...)
- Localization of dysfunctions
- Event life cycle process

## SUPPORT TO ANALYSIS & REPORTING

- Free workspace to perform personal analysis
- Open analysis to cross data
- Customizable reports available in standard formats

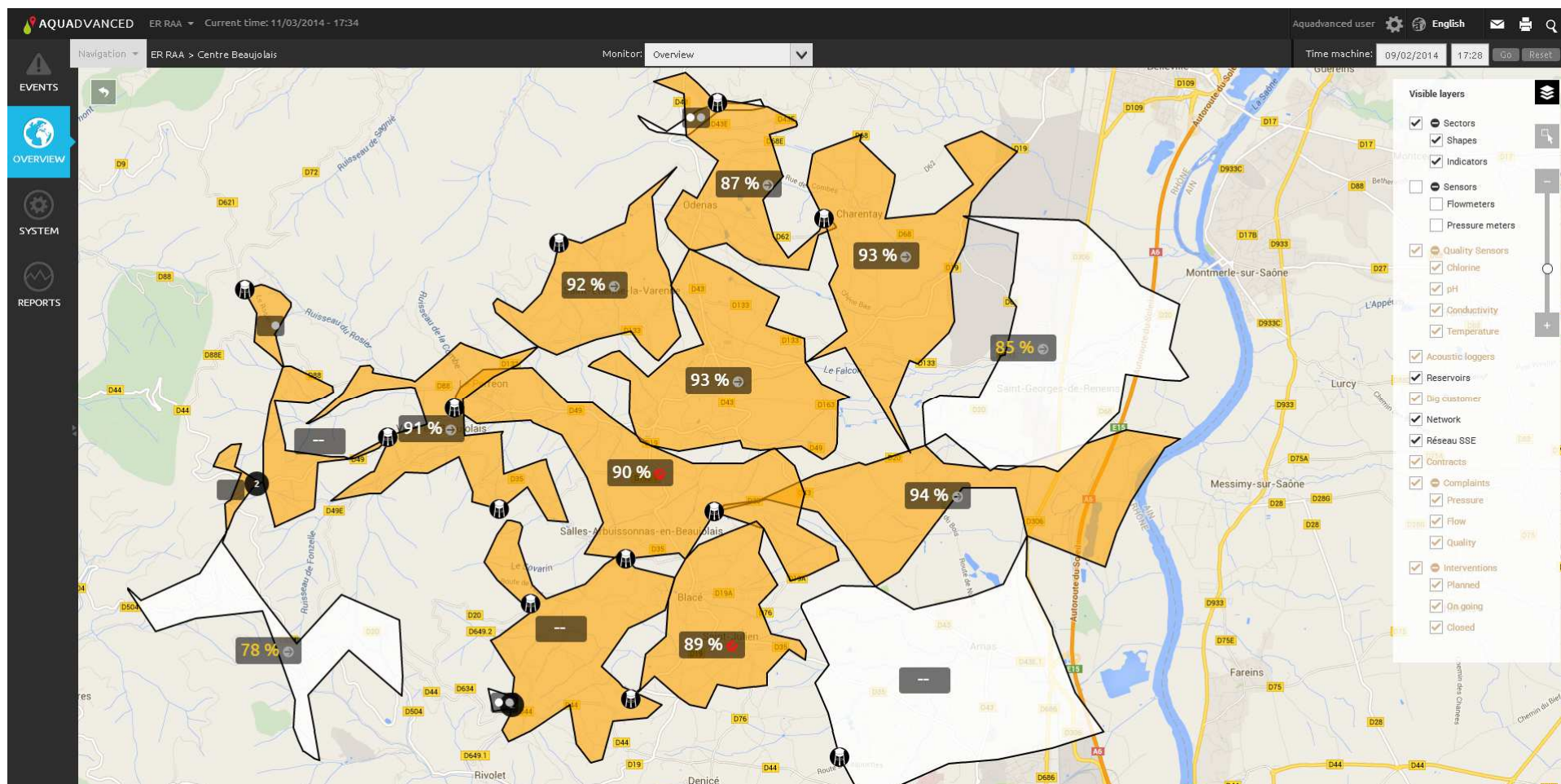
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A unique IT platform to meet multiple needs



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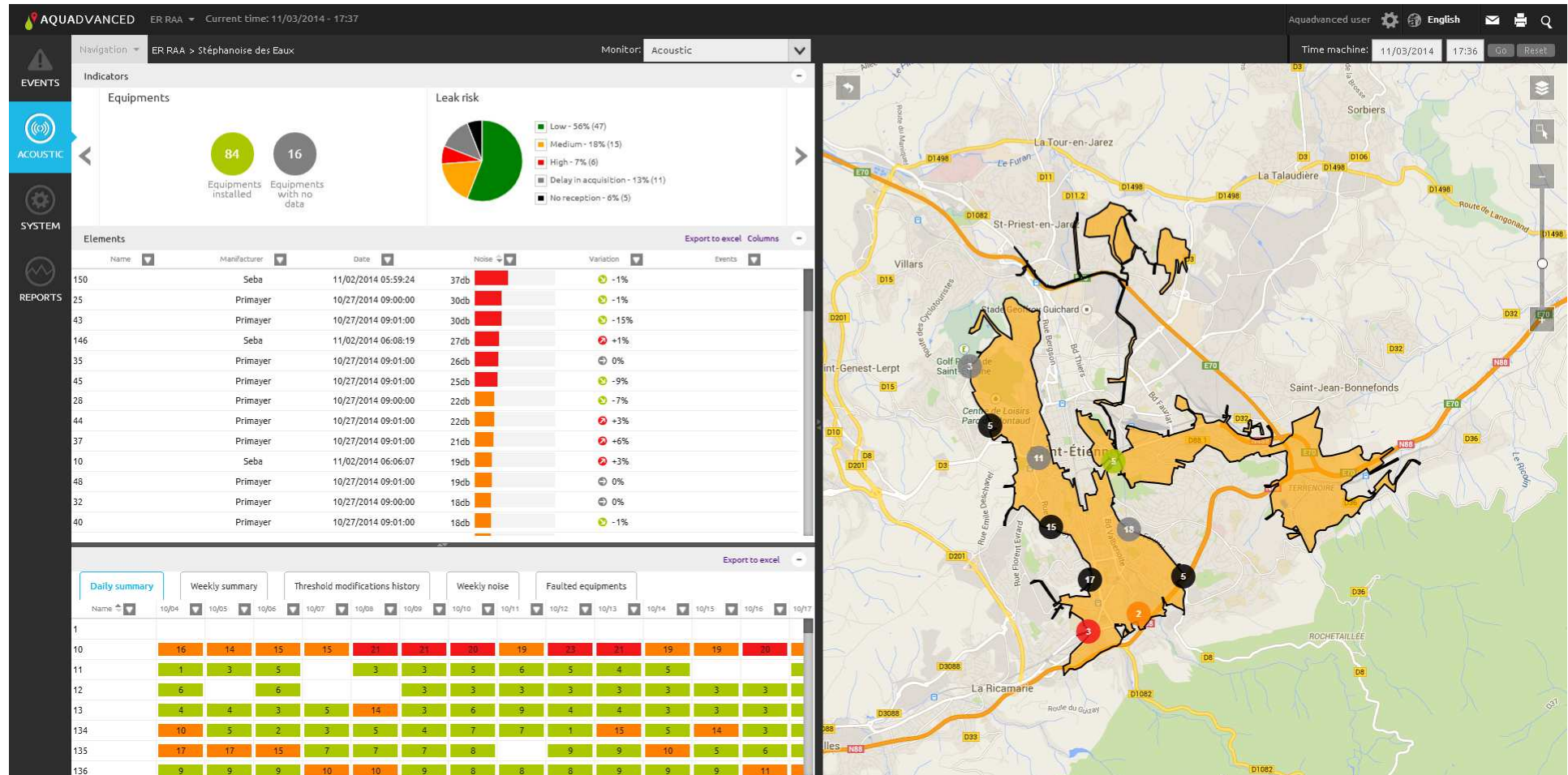
A unique IT platform to meet multiple needs





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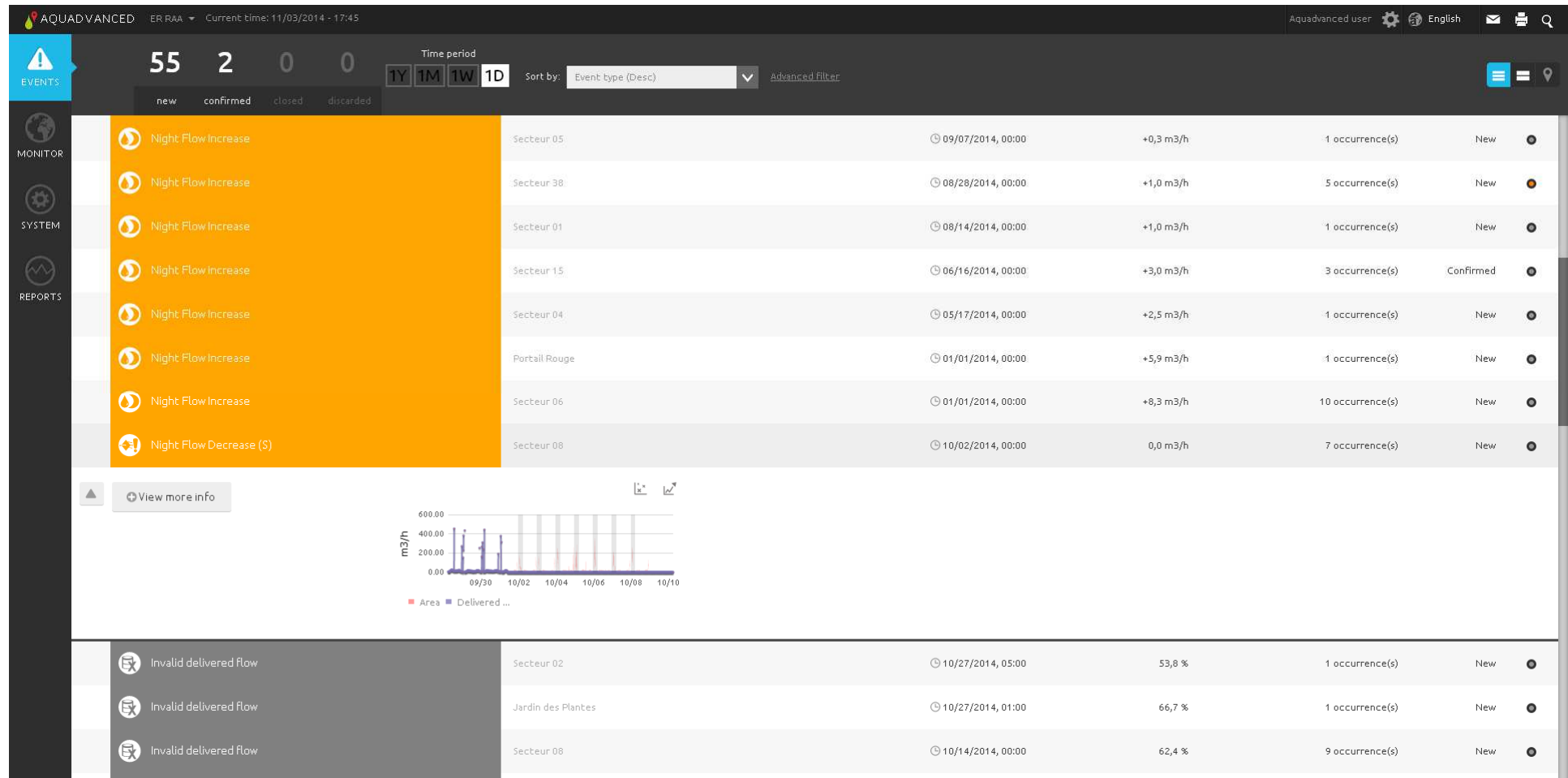
A unique IT platform to meet multiple needs





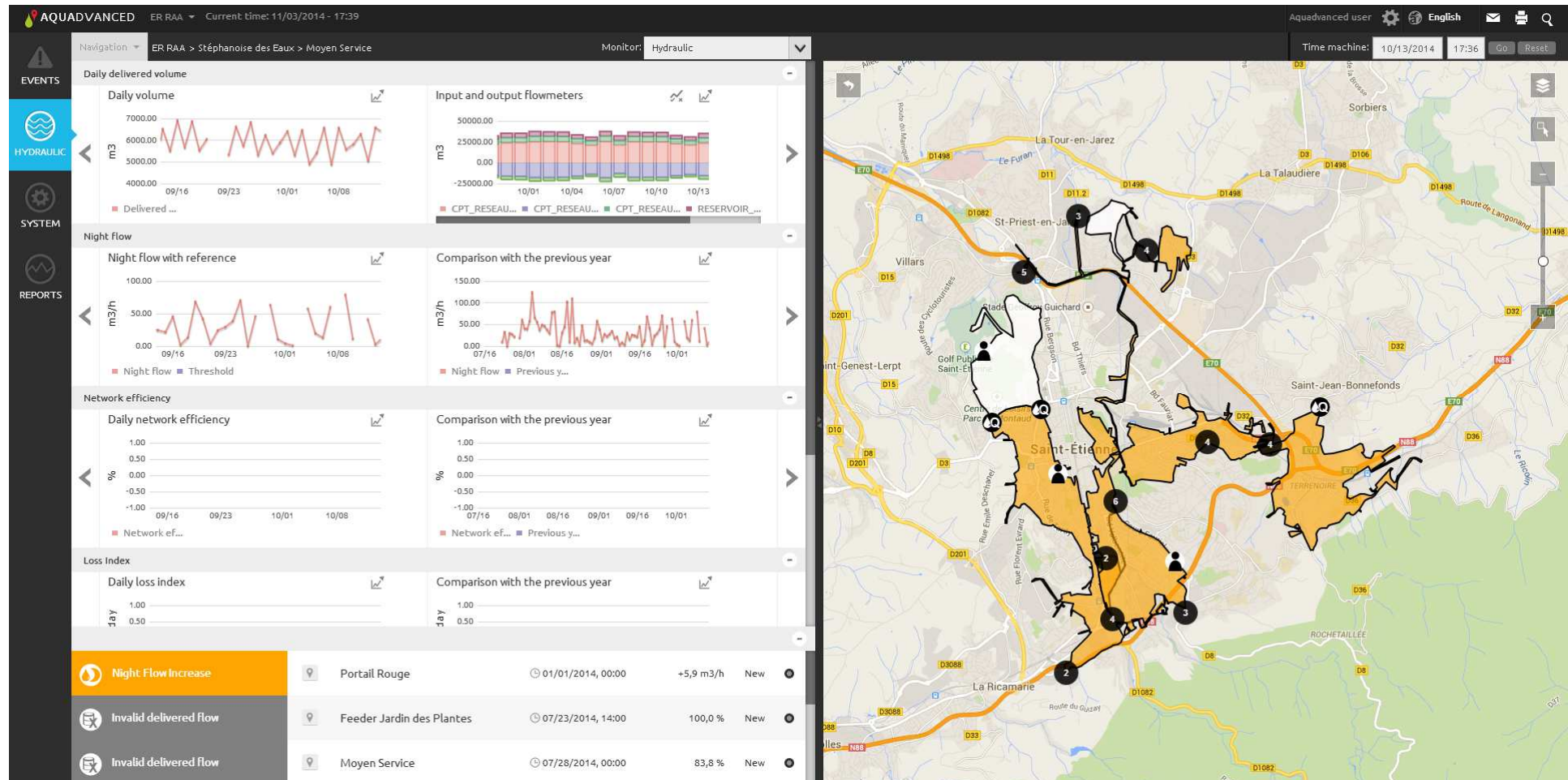
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# GENERAL FEATURES OF AQUADVANCED™

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# AQUADVANCED™ FULL VERSION

## HYDRAULIC

## QUALITY

## ENERGY

### ADVANCED EVENT DETECTION

ADVANCED LOCALIZATION

EVENT DETECTION

PERFORMANCE

PRESSURE MAP

LAB ANALYSIS DISPLAY

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

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# AQUADVANCED™ IN OPERATION

## Main références

### BARCELONA & CASTELLDEFELS, Spain

- **4,600 km of network, 3.9 millions inhabitants** supplied with drinking water
- **200 millions m<sup>3</sup>/year** of water delivered to the network

### VERSAILLES, France

- **1,000 km of network , 360,000 inhabitants** supplied with drinking water
- **20 millions m<sup>3</sup>/an** of water delivered to the network

### DREUX, France

- **253 km of network , 38,000 inhabitants** supplied with drinking water
- **1.7 million m<sup>3</sup> /year** of water delivered

### MACAO, China

- **513 km of network, 9,5% NRW, 624,000 inhabitants** supplied with drinking water
- **88 million m<sup>3</sup> /year** of water delivered

### CASABLANCA, Morocco

- **4,800 km of network, 1 million inhabitants** supplied with drinking water
- **190 millions m<sup>3</sup>/year** of water delivered to the network

### WESCHESTER, NY, USA

- **270 km of network, 200,000 inhabitants** supplied with drinking water
- **8 millions m<sup>3</sup>/year** of water delivered to the network



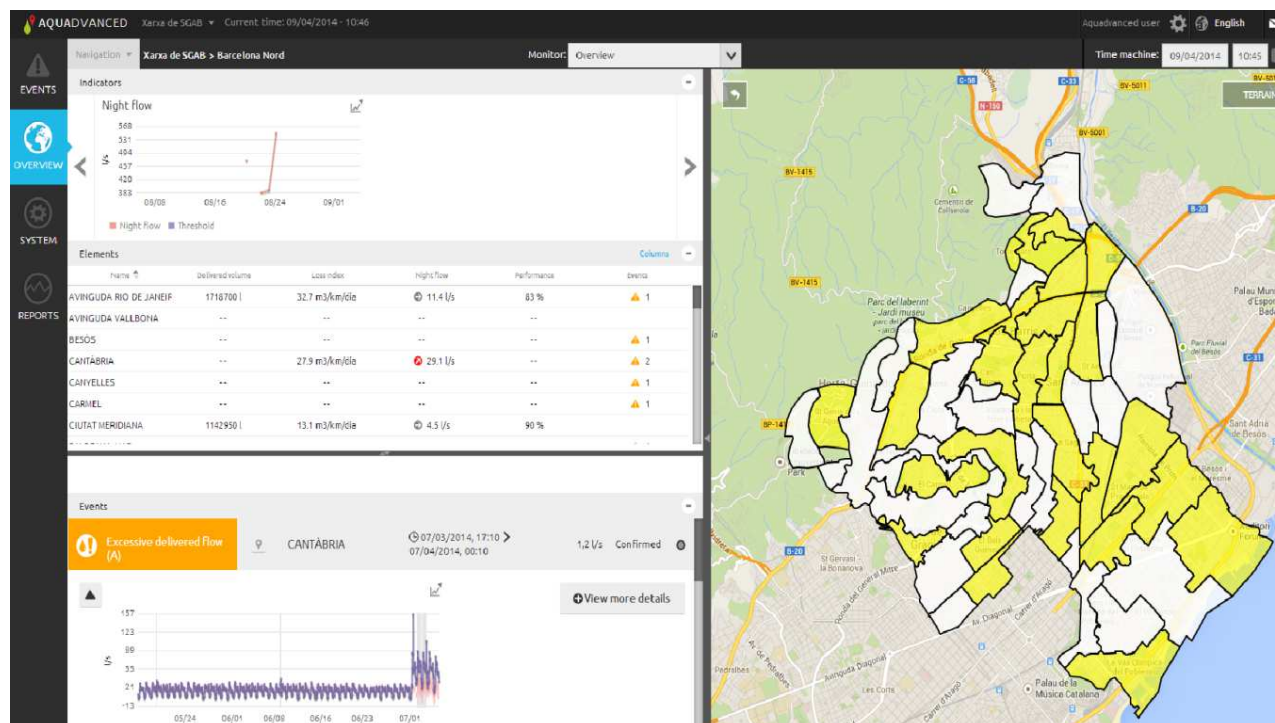


# BARCELONA CASE STUDY

## 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

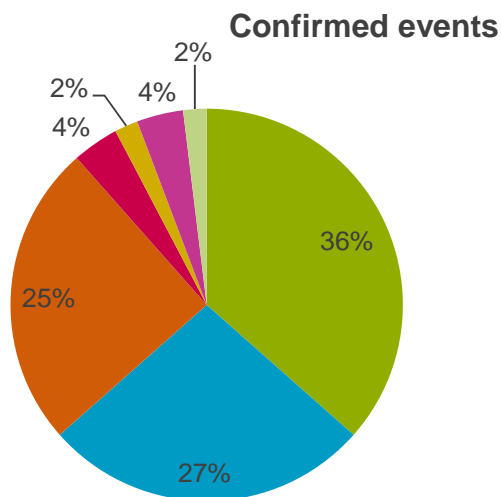


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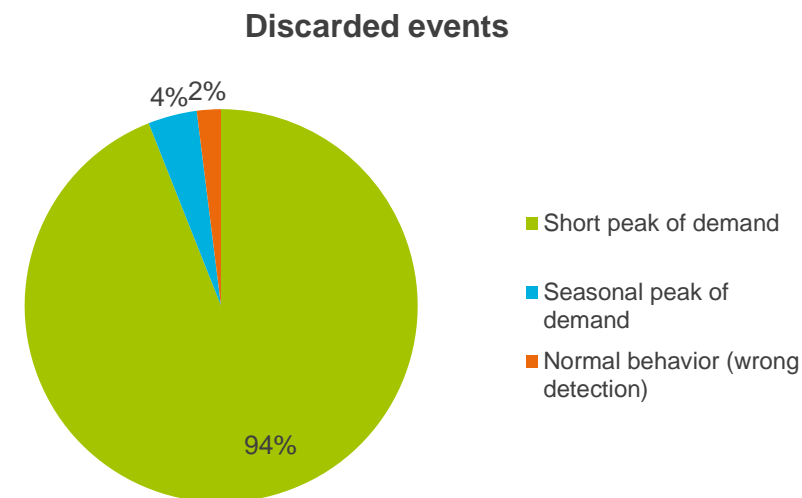
## Outcomes

### 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”):



- Meter related fail (wrong pulse weight or change, damaged,...)
- Leak
- Maneuver
- Short peak (uncertain)
- Platform configuration
- Network reconfiguration



**OPERATOR REALLY BENEFITS FROM THE UNIFIED NETWORK EXPERIENCE  
AND SEES THAT THE DATA EVENT SYSTEM IS RELIABLE**