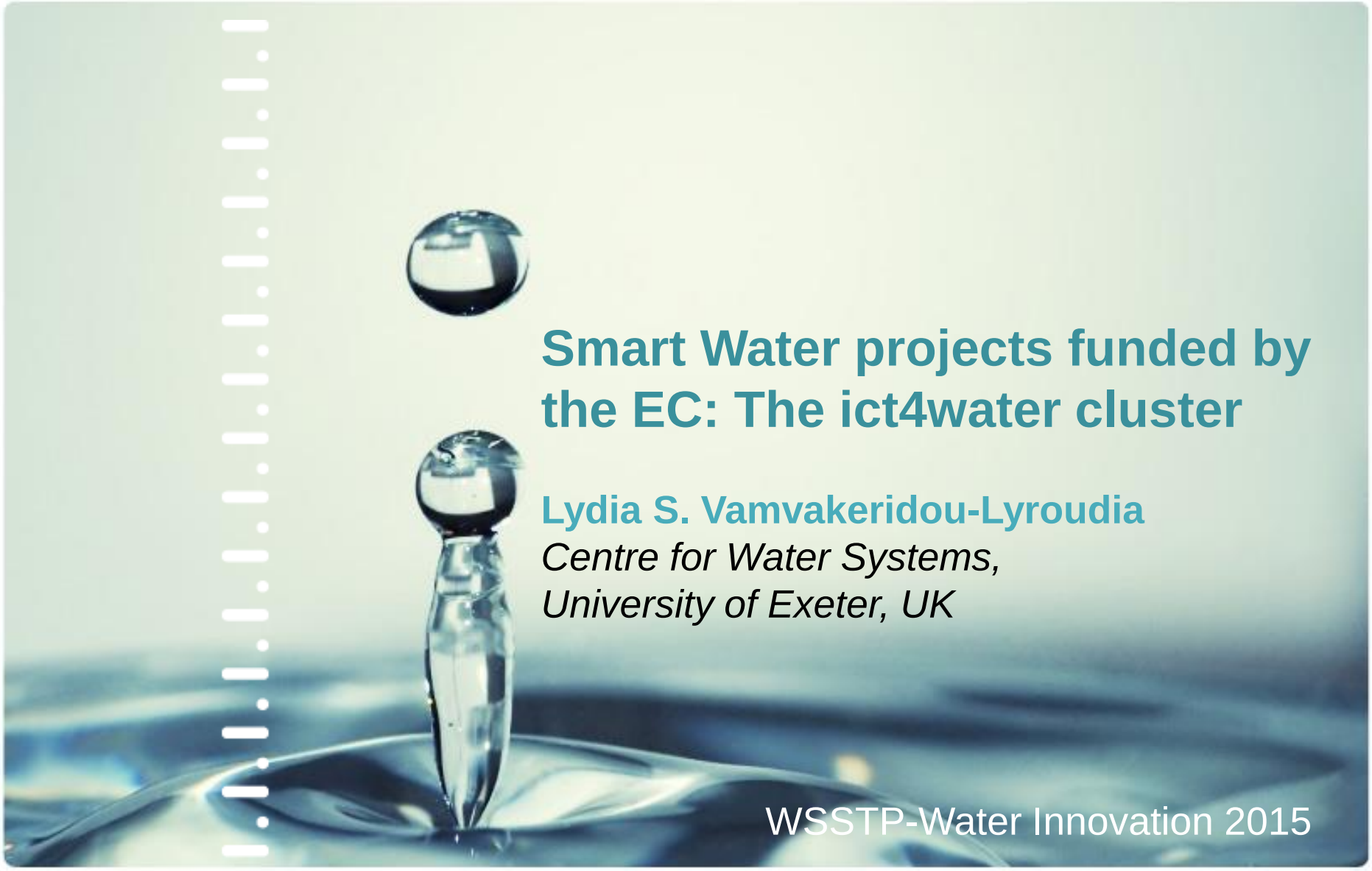

Smart Water projects funded by the EC: The ict4water cluster

Lydia S. Vamvakeridou-Lyroudia
Centre for Water Systems,
University of Exeter, UK

WSSTP-Water Innovation 2015

SEVENTH FRAMEWORK PROGRAMME

UNIVERSITY OF EXETER Centre for Water Systems

ICT for Water Management- EC perspective

- Smart technology and ICT related to smart technology is a major current research and investment field internationally
- Part of the "**smart city**" grid and initiatives
- **Smart energy** starting first
  - Pioneers in smart technology applications for domestic and industrial users
  - Legislation related to smart energy meters already exists in some EU countries (e.g. France, UK)
- **Smart water** follows, especially research around **smart water AND energy**, a major research issue for the EC

ICT and Water Management- EC perspective

- Part of the H2020 **Digital Perspective for Europe**
- **Smart technologies**:
- To increase **water efficiency**
- To improve **water management**
- To manage **water demand**
- To reduce **leakage**
- To reduce **energy** for water utilities and households
- To increase **end user awareness**
- To affect **end user behavioural change**
- with (near) **real time** surveillance and feedback

ICT and Water Management under FP7 and H2020

- **Targets**

  - Assets management
  - Business models
  - Decision support system and monitoring
  - End-user awareness
  - Geographic Information Systems (GIS), OGC, Sensors
  - Modelling, real-time process, knowledge extraction, stream data mining
  - Ontologies, semantics, interoperability, standards
  - Water regulation

FP7/H2020: Funding on ICT and Water Management

- Funding (Budget 2 x 15M € + 5M € = 35M €)
  - **2012-2013**: Five (5) Collaborative EU projects
  - **2013-2014**: Five (5) more Collaborative EU projects
  - **2015**: Five (5) Coordination and Support Actions (CSA)
- All the projects:
  - **Similar themes and targets**: All targeting water utilities and end users (customers)
  - 1st group: Emphasis (rather) on water utilities
  - 2nd group: Emphasis (rather) on end users and their behavior
  - 3rd group: Horizontal actions, dissemination
  - **Interdisciplinary** approach
  - **Partnerships** between ICT equipment providers, software companies and water authorities
- The 15 projects have been "**clustered**" for coordinated actions and cooperation

The cluster: www.ict4water.eu

Partners in ict4water.eu

The ict4water cluster : Case Studies

Projects funded in 2012-13	Case studies
EFFINET	Barcelona , Limassol (Cyprus).
ICeWater	Timisoara, Milan
iWIDGET	Barcelos (Portugal), UK, Athens
WatERP	Barcelona, Karlsruhe
UrbanWater	Portugal, Czech republic
Projects funded in 2012-13	
DAIAD	Portugal, UK
ISS-EWATUS	Skiathos (Greece), Sosnowiec(Poland)
SmartH20	London, Locarno (CH)
WATERNOMICS	Poland, Thermi (Greece), Milan
WISDOM	Cardiff (UK), La Spezia (Italy)

Coordination and clustering – **ICT4Water**

- Development of the Roadmap " ***Emerging Topics and Technology Roadmap for Information and Communication Technologies for Water Management***" May 2014/March 2015
- Actions
  - Exchange of information- Common **website**-Contacts
  - **Special sessions** in Conferences/Publications (WDSA, IAHR, CCWI)
  - Common development of **standards and standardisation**
  - Common papers
  - Links with/participation in Water EIP relevant **action groups**

Mature projects: Results

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EFFINET	Barcelona , Limassol (Cyprus).
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H2020 project WIDEST: Coordination and Support Action (2015-2017)

Projects funded in 2012-13
EFFINET
ICeWater
iWIDGET
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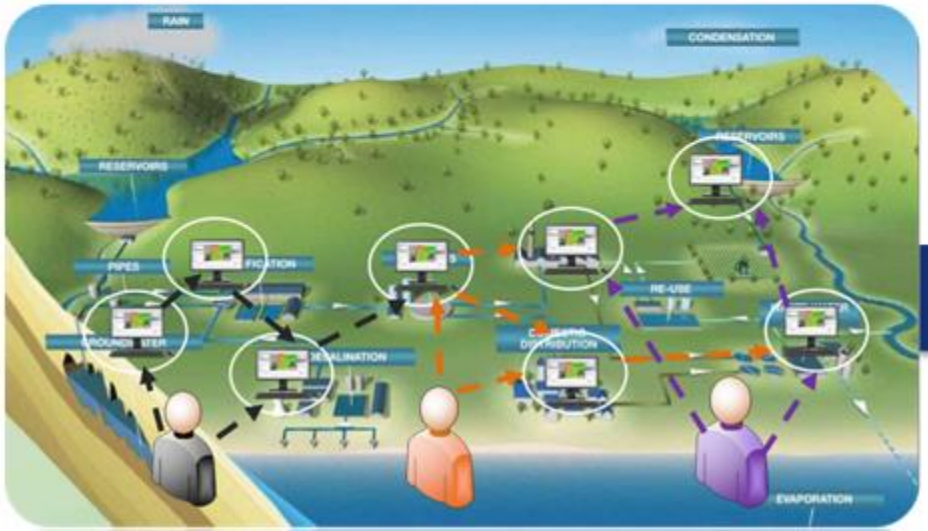
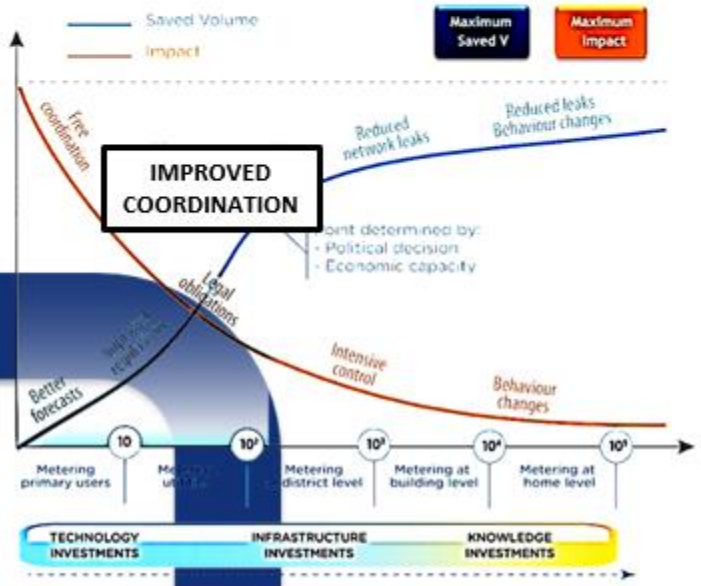
UrbanWater

- ***Water Innovation through Dissemination Exploitation of Smart Technologies***
- **Water observatory, Roadmaps, Standards, EIP Water Action Group involvement**

"Water Enhanced Resource Planning"





8% Water Saving

Scarcity Regions

5% Energy Saving

Abundance Regions

Where water supply meets demand

WatERP

"Water Enhanced Resource Planning"

Where water supply meets demand

WatERP

CALL FP7-ICT-2011-8. Topic 6.3. (ICT for efficient water resources management). Challenge 6: ICT for a low carbon economy.
STREP (Small or Medium Scale Focused Research Projects)
PERIOD: 36 Month (2012-2015)
BUDGET: CONSORTIUM: 4.350.653 €
FUNDING: CONSORTIUM: 3.304.802€
COORDINATOR eurecat 4 Companies (3 SMEs), 3 Research Centres, 1 Association, 1 Public administration

BDigital eurecat Centre Tecnològic de Catalunya

www.waterp-fp7.eu/index.php/partners

in a few Words

1) **Facilities multiple-scalable decisions**

2) **Water matching, from user to sources**

3) **Project validation in two opposite situations (scarcity – abundance)**

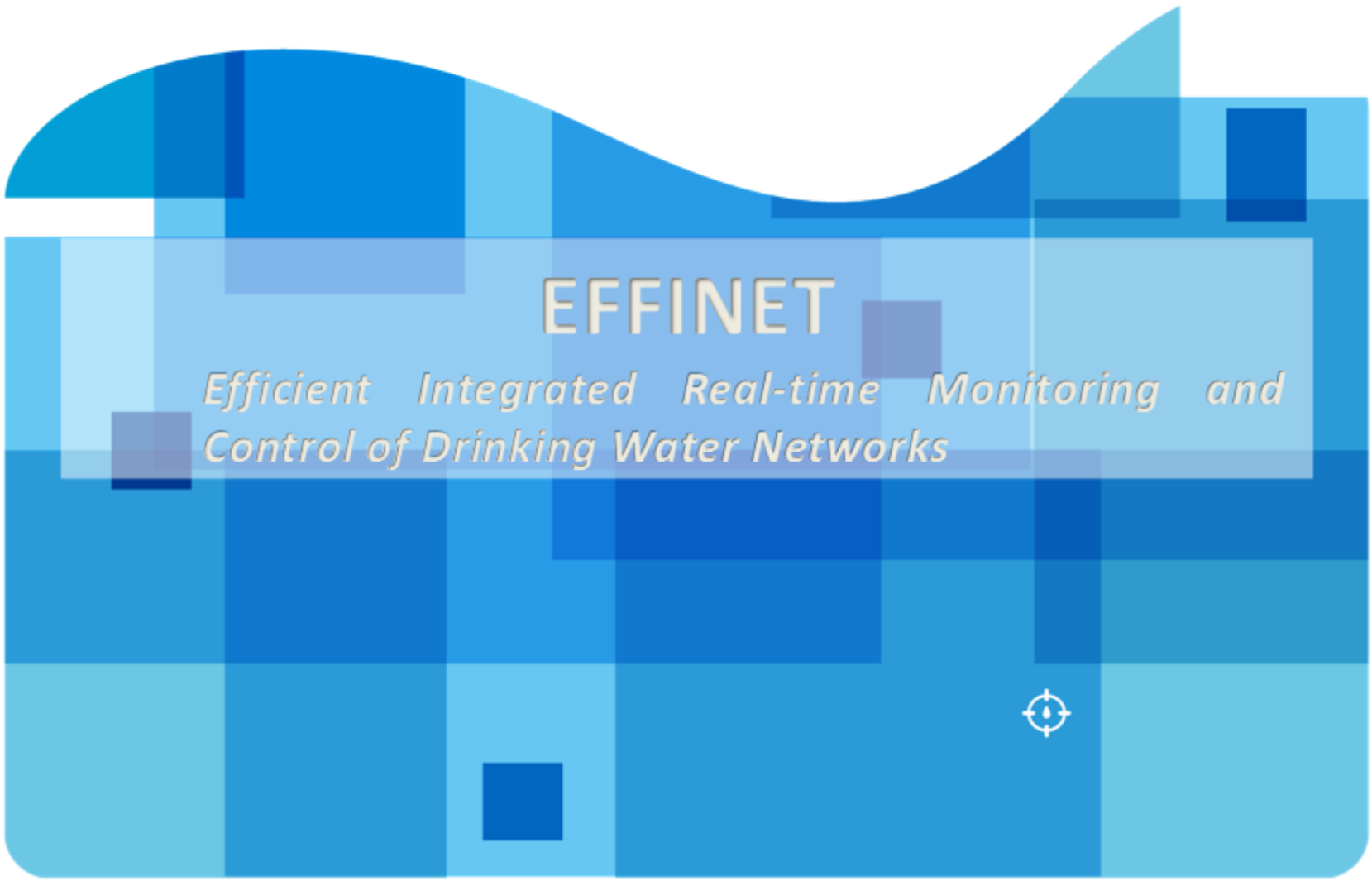
4) **IWRM & Data Accessibility**

Outcomes

1. **Domain definition including management actions**
2. **Interoperability framework based in open standards (OCG®)**
3. **Intelligent & efficient Water Data Warehouse for large amount of data**
4. **Hourly & daily Demand Management System**
5. **Decision Support Systems for water allocation and pumps management (20% of energy saving by improving pumping schedule)**
6. **Open Management Platform, an information hub to support decision making at different stages**

Smart Management Platform

*Web-based **"Open Management Platform"** supported by an **standardized ICT framework** which provides **real-time decision knowledge** on water supply and demand, enabling the **entire water distribution system** to be viewed in an integrated and customized way, and contributing to **improve matching of water supply and demand** from a holistic point of view.*


EFFINET
Efficient Integrated Real-time Monitoring and Control of Drinking Water Networks

EFFINET

Consortium

Efficient Integrated Real-time Monitoring and Control of Drinking Water Networks

Efficient Integrated Real-time Monitoring and Control of Drinking Water Networks

European Collaborative Project co-funded by the European Commission under the 7th Framework Programme (FP7-ICT-2011-8.Objective 6.3-ICT for efficient water management)

- **10 participants** from **4 countries. 2 real-life pilots** in Barcelona and Limassol.
- Duration **01/10/2012 – 30/09/2015** (36 months)

What is EFFINET?

Optimal sensor placement

Water contamination detection

Operation optimization at transport level

Data Validation and reconstruction

Leakage detection

Demand forecasting and management. Pricing strategy

Integrated software environment interacting with client's data (SCADA, GIS, models, AMR)

Real-life validation in Barcelona (ES) and Limassol (CY)

EFFINET

Efficient Integrated Real-time Monitoring and Control of Drinking Water Networks

Project goals

1. Operational management of drinking water networks to control pumping and valve operations in real time.

Operational control.

2. Early and systematic detection of leaks for the minimization of non-revenue water. Detection of contamination to avoid risk of inadequate water quality.

Network monitoring.

3. Understanding consumer demands to promote more efficient demand patterns.

Demand forecasting and management.

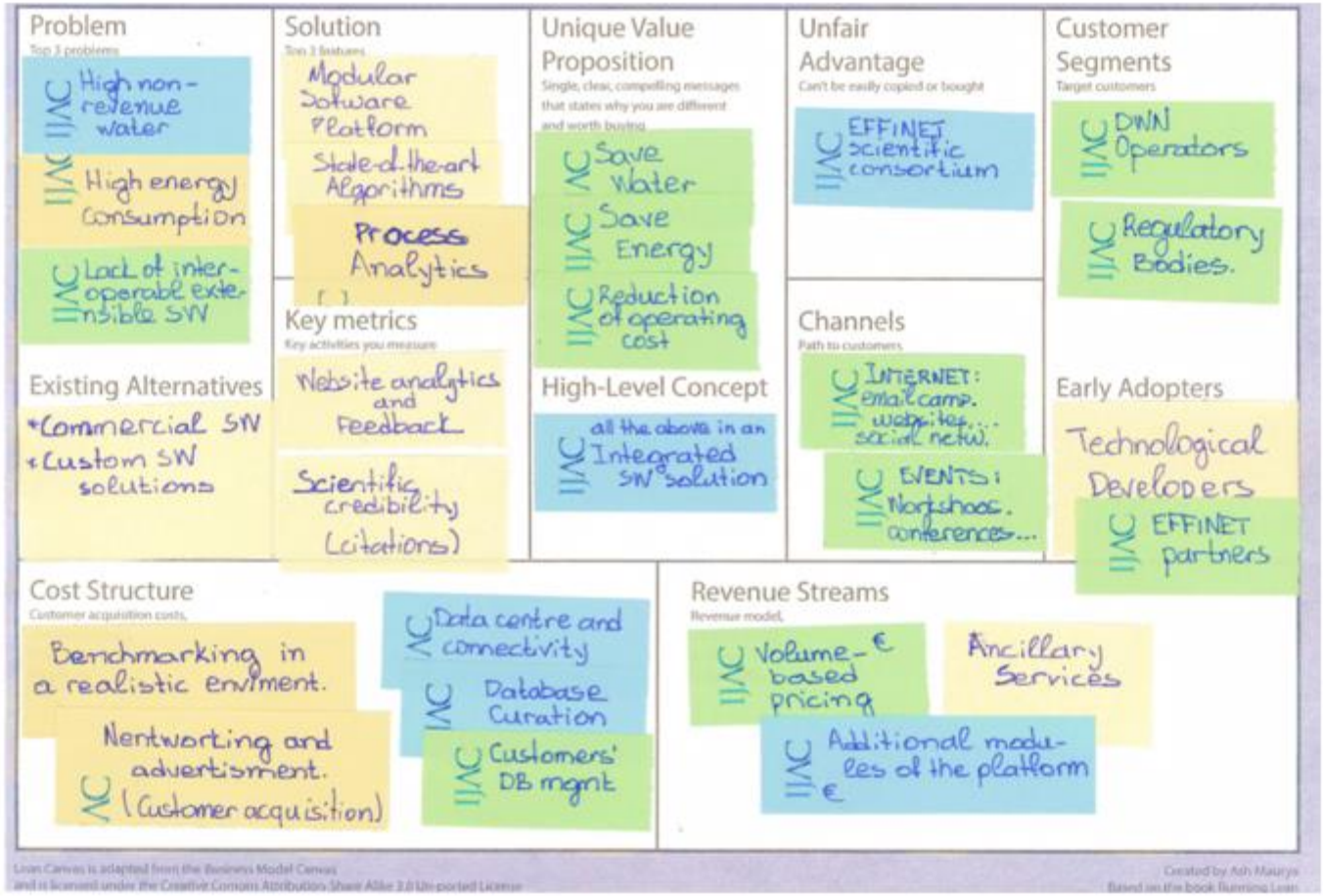
4. Integrated SW environment connecting utility systems (SCADA, AMR, telemetry) and computing modules.

EFFINET Software Platform.

5. Transferability of results in real-life demonstrations.

Barcelona (ES) and Limassol (CY) Demos.

Lean Canvas


Problem
Top 3 problems
High non-revenue water
High energy consumption
Lack of inter-operable extensible SW
Existing Alternatives
•Commercial SW
•Custom SW solutions
Solution
Top 3 features
Modular Software Platform
State-of-the-art Algorithms
Process Analytics
Key metrics
Key activities you measure
Website analytics and Feedback
Scientific credibility (citations)
Unique Value Proposition
Single, clear, compelling messages that states why you are different and worth buying
Save Water
Save Energy
Reduction of operating cost
High-Level Concept
all the above in an Integrated SW solution
Unfair Advantage
Can't be easily copied or bought
EFFINET scientific consortium
Channels
Path to customers
INTERNET: email camp. website,... social netw.
EVENTS: Workshops. conferences...
Customer Segments
Target customers
DWN Operators
Regulatory Bodies.
Early Adopters
Technological Developers
EFFINET partners
Cost Structure
Customer acquisition costs
Benchmarking in a realistic enviment.
Networking and advertisment. (Customer acquisition)
Data centre and connectivity
Database Curation
Customers' DB mgmt
Revenue Streams
Revenue model
Volume-based pricing
Ancillary Services
Additional modules of the platform

iWIDGET

Smart meters
Smart water
Smart societies

Smart Meters, Smart Water, Smart Societies: The iWIDGET project

SEVENTH FRAMEWORK PROGRAMME

The research leading to these results has received funding from the European Union Seventh Framework Programme (FP7/2007-2013), under grant agreement no. 318272.

iWIDGET: Smart Meters, Smart Water, Smart Societies

- Collaborative, three year EU FP7 project (2012-2015)- 5M €

- **Aim**: to advance knowledge and understanding about **smart metering technologies** ***(smart meters, smart water, smart societies)***

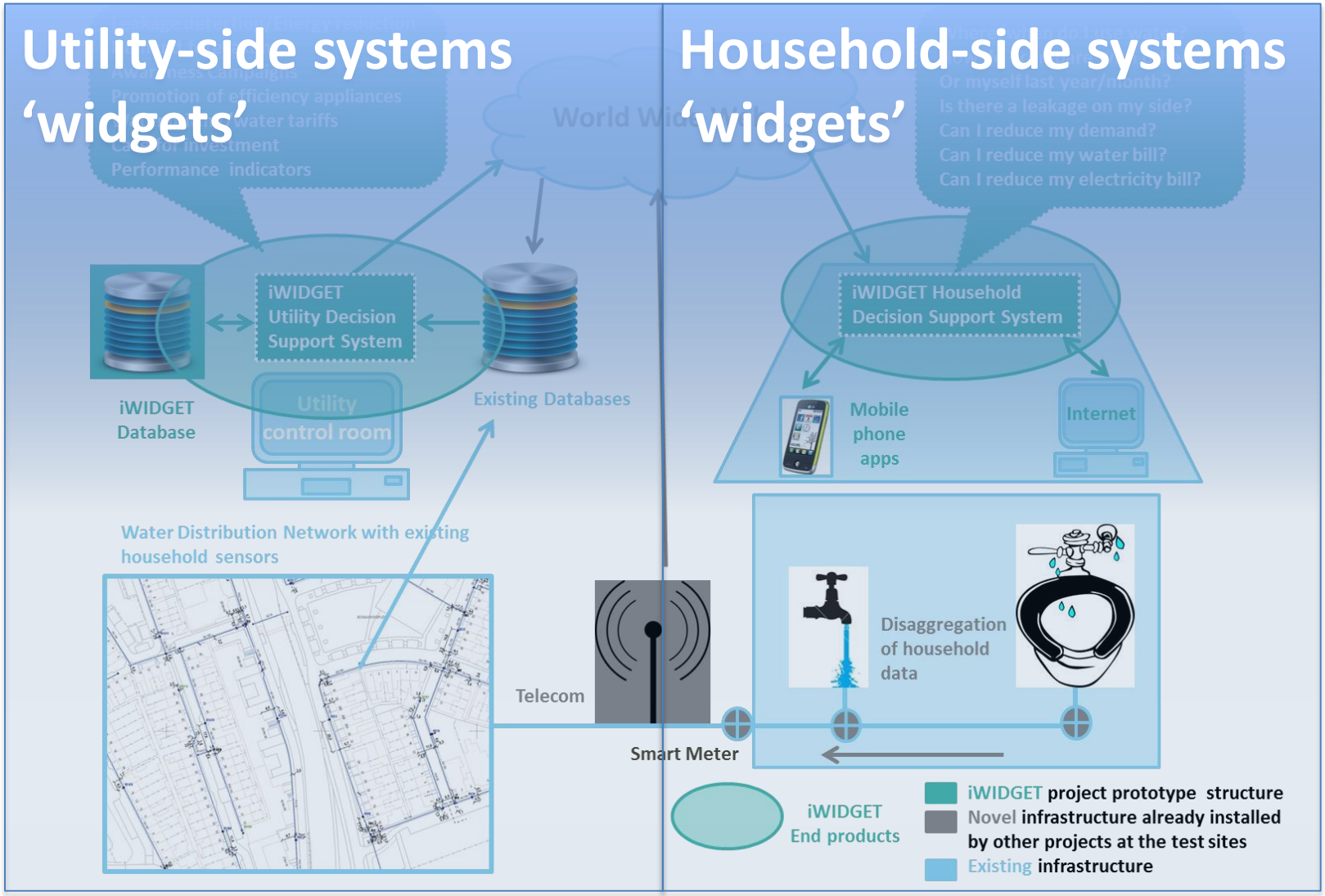
- **Main scientific challenges:**
  - **management** and extraction of useful information from vast amounts of high-resolution ***water and energy*** consumption **data,**
  - development of customised **intervention and awareness** campaigns to influence behavioural change,
  - the integration of iWIDGET concepts into a set of **decision-support tools (**called **"widgets")** for ***water utilities and consumers***, applicable in differing local conditions.

Consortium

SEVENTH FRAMEWORK PROGRAMME

		Country
1	University of Exeter (Coordinator)	UK
2	HR Wallingford	UK
3	IBM	Ireland
4	Laboratório Nacional de Engenharia Civil	Portugal
5	National Technical University of Athens	Greece
6	SAP AG	Germany/Switzerland
7	Utility Partnership Limited	UK
8	AGS (linked to Águas de Barcelos CS)	Portugal
9	Waterwise (linked to Southern Water CS)	UK

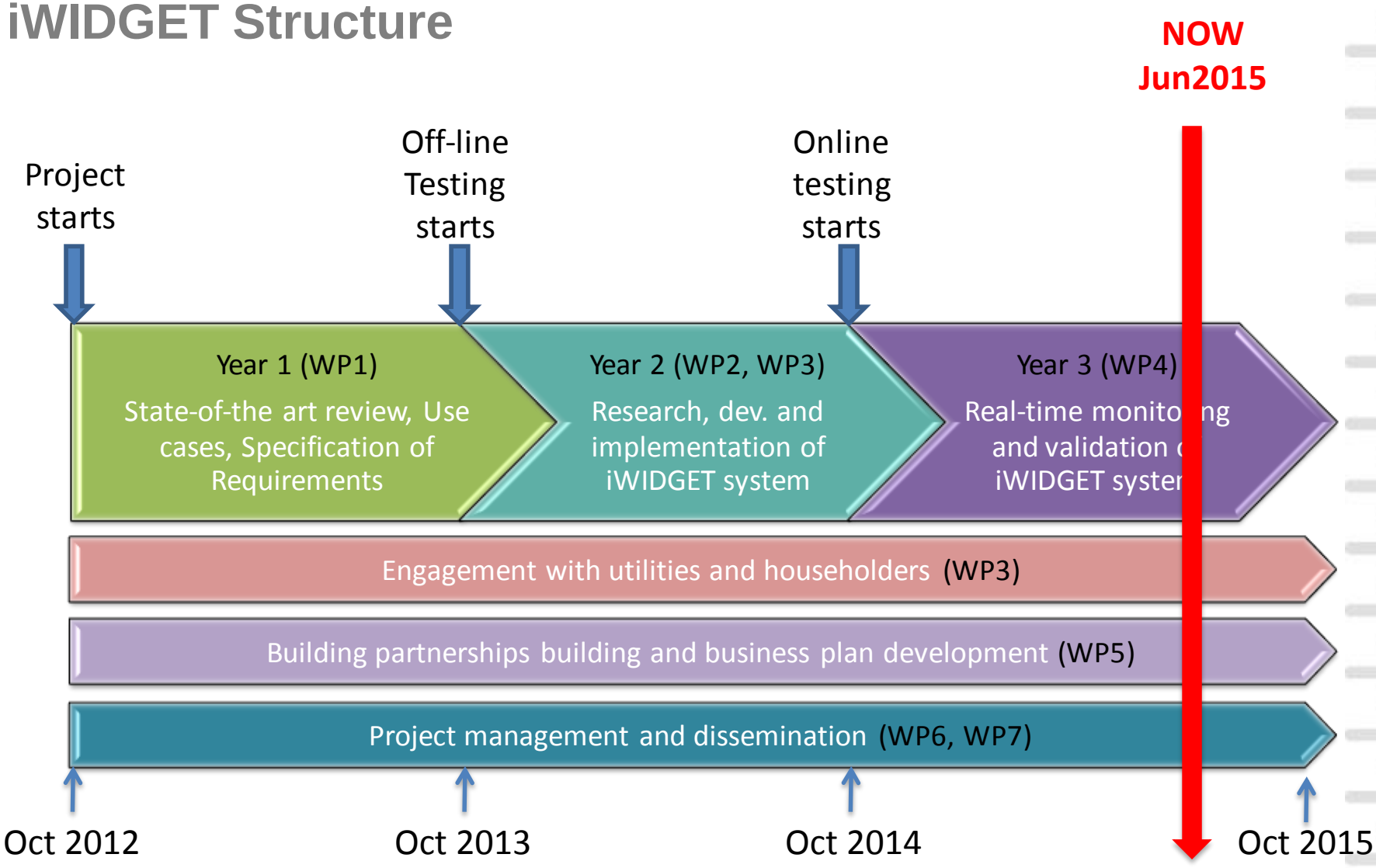
In short…


Utility-side systems ‘widgets’
Household-side systems ‘widgets’
Promotion of efficiency appliances
Performance indicators
iWIDGET Utility Decision Support System
iWIDGET Database
Utility control room
Existing Databases
Water Distribution Network with existing household sensors
Telecom
Smart Meter
Or myself last year/month?
Is there a leakage on my side?
Can I reduce my demand?
Can I reduce my water bill?
Can I reduce my electricity bill?
iWIDGET Household Decision Support System
Mobile phone apps
Internet
Disaggregation of household data
iWIDGET End products
iWIDGET project prototype structure
Novel infrastructure already installed by other projects at the test sites
Existing infrastructure

Use cases/Widgets-Examples

	Some consumer domain widgets
1	Compare water consumption with other consumers (e.g., neighbour in the same building or street)
2	Compare water consumption with standard profiles (consumers with the same socio-demographic factors)
3	Compare household water consumption with most efficient users
4	Compare energy pattern associated with water use in the same household
5	Receive information on specific and alternatives pricing schemes
6	Forecast the next water bill
7	Forecast the component of next energy bill associated with water consumption

iWIDGET Structure



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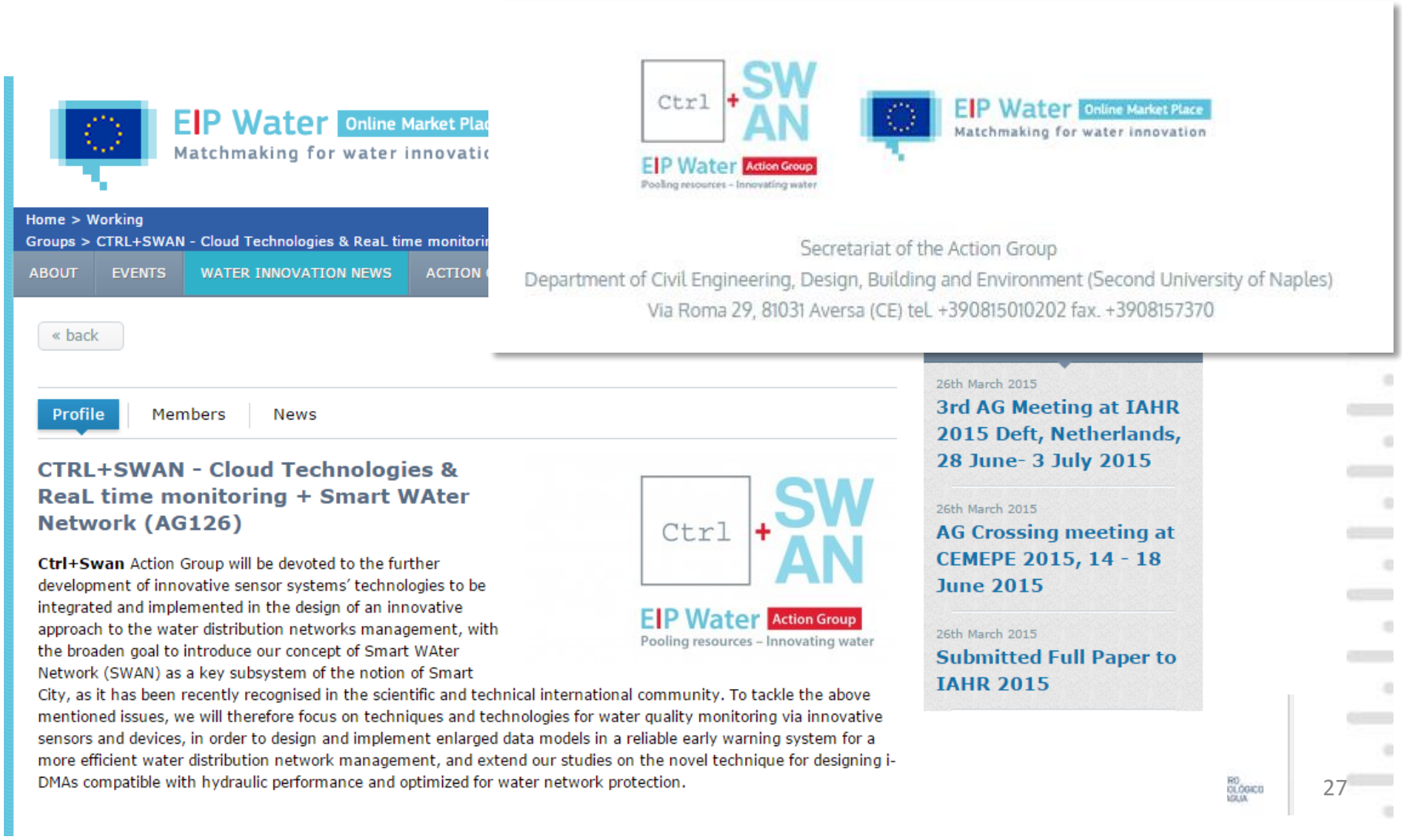
WIDEST: Water EIP Action Group involvement



Thank you

Visit us:

http://ict4water.eu/

SEVENTH FRAMEWORK PROGRAMME

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