FREEWAT
Free and Open Source Software Tools for Water Resource Management
EU HORIZON 2020 Project

ict4water.eu

Emerging topics and technology roadmap for ICT for Water Management

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AMFM Automated Mapping Facilities Management Geographic Information Systems Italia

Conferenza Nazionale AMFM GIS Italia 2015
LIvorno – July 1st 2015

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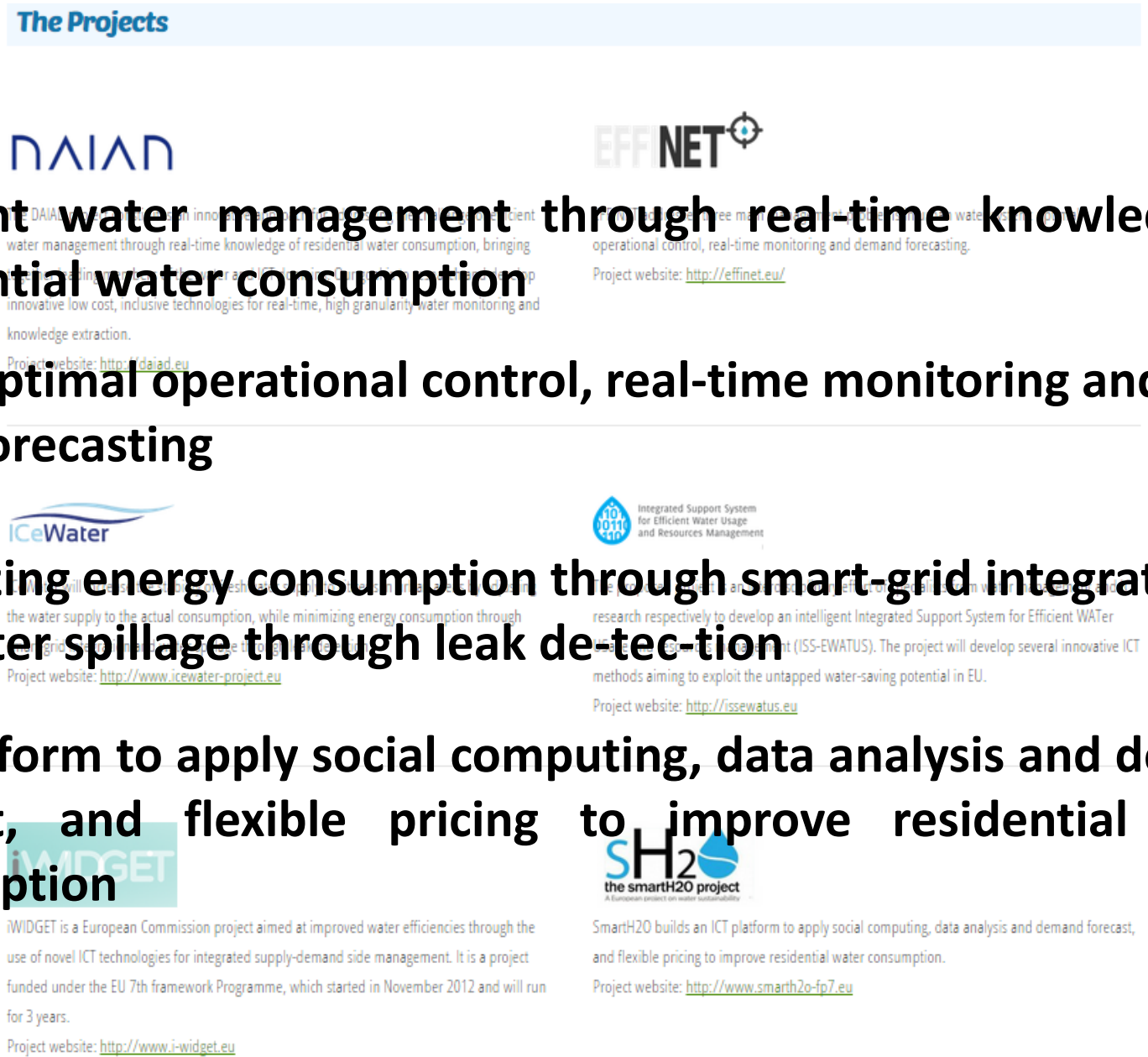
The EU ICT for Water Cluster

A hub for 10 EU FP7 projects and 5 Horizon 2020 projects whose main objective is introducing ICT in the sector of water management

Ricerca



efficient water management through real-time knowledge of residential water consumption

optimal operational control, real-time monitoring and demand forecasting

minimizing energy consumption through smart-grid integration and water spillage through leak de-tec-tion

ICT platform to apply social computing, data analysis and demand forecast, and flexible pricing to improve residential water consumption

The H2020 FREEWAT project
FREE and open source software tools for WATer management

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www.freewat.eu

Open source and public domain GIS integrated modelling environment for simulation of water quantity and quality in surface- and ground-water with an integrated water management and planning module.

FREEWAT aims at promoting water management and planning by simplifying the application of the WFD and EU water related Directives.

Emerging topics and technology roadmap for Information and Communication Technologies for Water Management

June 1st, 2015

The ICT for Water Management roadmap describes the main gaps and challenges that need to be addressed in the future of the ICT for water management sector, including water providers, customers and policy makers.

An activity within the Digital Agenda of the EU.
It is managed by the European Commission Directorate General for Communications Networks, Content & Technology (**DG Connect)**.

Quali stakeholder sono interessati in EU?

- Water utilities (approvvigionamento, distribuzione, trattamento)
- Enti di Governo
  - Autorità con competenze nel settore della gestione della risorsa
  - Agenzie di protezione ambientale
  - Comuni
- Tutti coloro che usufruiscono della risorsa:
  - Singoli individui/ agglomerati
  - End-users industriali
  - End-users del settore agricolo

I principali temi a livello EU

- Uso efficiente della risorsa (gestione perdite/riuso dei reflui)
- Come affrontare il costo dell'introduzione dell'ICT

  (*smart metering*)
- Nesso acqua / energia (quanta energia / quando e perchè)
- Gestione e condivisione dei dati (privacy)
- Condivisione degli standard (formati, vocabolari, quali?)
- Sistemi di supporto alle decisioni
- Consapevolezza negli utilizzatori

Data use and sharing:

REAL TIME DATA

Need for vast number of data for water consumption, quality and energy … smart metering could provide up to 8-10% water savings

(Exp. Cons. on ICT for Wat. Man., Brussels, 2013)

Real-time data, even if desirable, are not always available because of different factors (device characteristics, manual measurement processes, data privacy, no-data by utilities, etc.).

Need to find a balance with real-time and non-real-time data.

Emerging technological issues

- **Increasing number of meters**
- **Increasing types and numbers of sensors**
- **Communication**
- **Power supply**

GAPS

- **Different communications standards**
- **Difficulty to access raw measurements**
- **Measurement frequency vs. power consumption and device lifetime**
- **Power harvesting, sustainable devices**
- **Real-time and near real-time measurements**
- **Methods for efficient collection of real-time data**

Real Challenges for metering in the forthcoming period:

Real-time

- Real-time data collection and connection to utility services through standardized communication protocols and interfaces.
- Multi-parameter real-time monitoring (discharge, precipitation, quality) for networks where current technologies are not viable.
- Anywhere real-time monitoring for small networks and plants not able to invest in big licenses or infrastructure (mobile, multi-platform, Internet based).

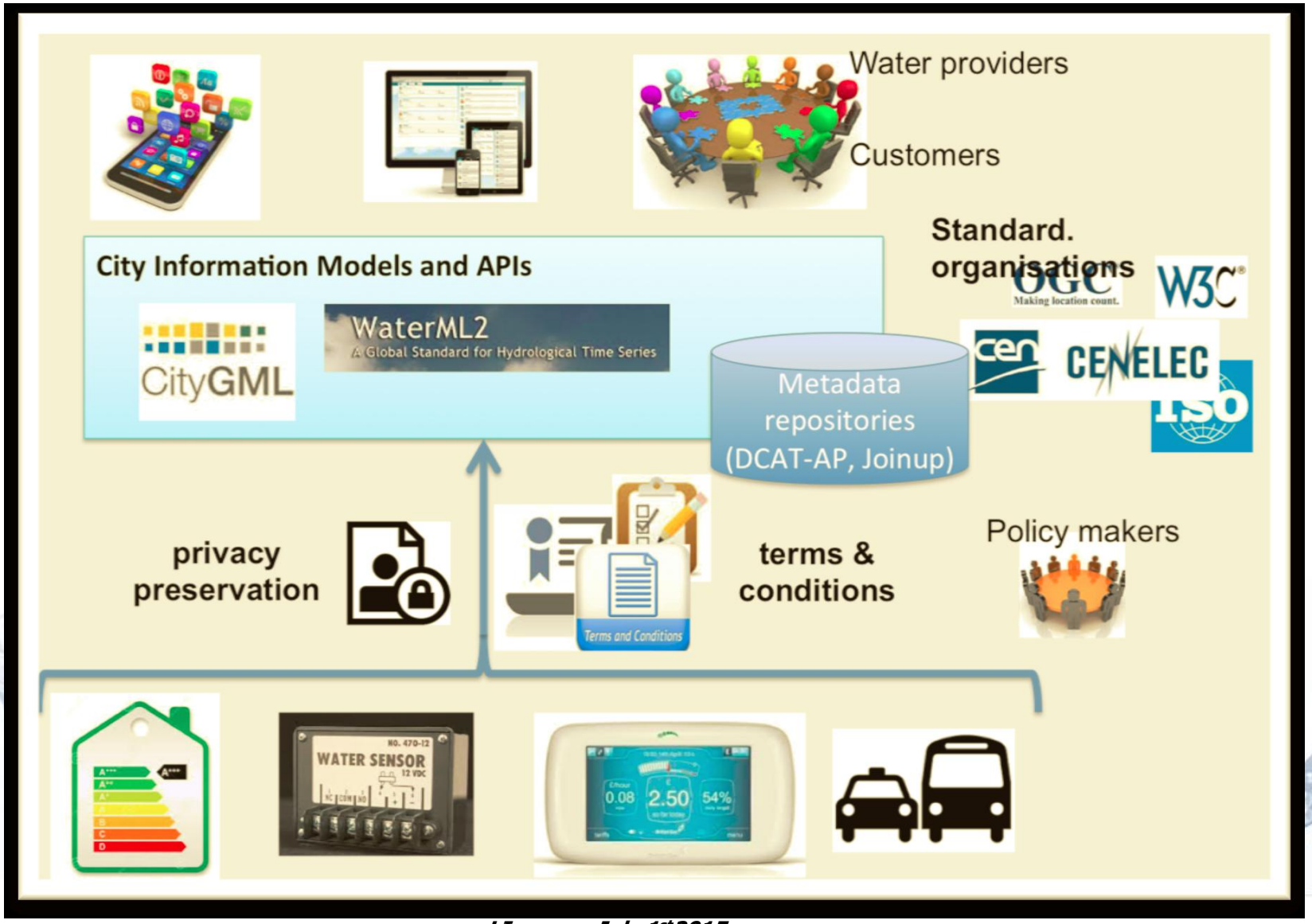
Event management

- Improvement in early events detection and early warning systems for water, also linked to other sectors' assets data/alarms (electricity, gas, oil, hydro-meteorological).

Security in water networks

- Unattended systems for continuous measurement (real-time?) of microbiological, hydrocarbons and emerging contaminants.

Data sharing, interoperability and standardisation challenges



EIP RTWQM - Real Time Water Quality Monitoring (AG100)

The AG "RTWQM" addresses specifically developments that strengthen the interaction between "sensor technologies" and "data analyses & monitoring tools" to safeguard or improve water quality aspects in the different water using sectors following the smart water concept described under 4.7 and 4.9 of the EIP on Water SIP.

Included are all sensors and analyzers that can measure water quality parameters (physical, chemical or biological) within a reasonable time and are working in an autonomous way with low maintenance requirements. The RTWQM concept includes the retrieval, transmission, processing and validation of raw data, to convert it into useful information.

CTRL+SWAN - Cloud Technologies & ReaL time monitoring + Smart WAter Network (AG126)

Ctrl + SWAN

EIP Water Action Group

Pooling resources – Innovating water

Ctrl+Swan Action Group will be devoted to the further development of innovative sensor systems' technologies to be integrated and implemented in the design of an innovative approach to the water distribution networks management.

Broaden goal to introduce our concept of Smart WAter Network (SWAN) as a key subsystem of the notion of Smart City, as it has been recently recognised in the scientific and technical international community.

To tackle the above mentioned issues, we will therefore focus on techniques and technologies for water quality monitoring via innovative sensors and devices, in order to design and implement enlarged data models in a reliable early warning system for a more efficient water distribution network management, and …

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Grazie per l'attenzione!

The FREEWAT project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 642224
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