Smart Water :
European Commission:
The broader context. Strategy since 2012

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

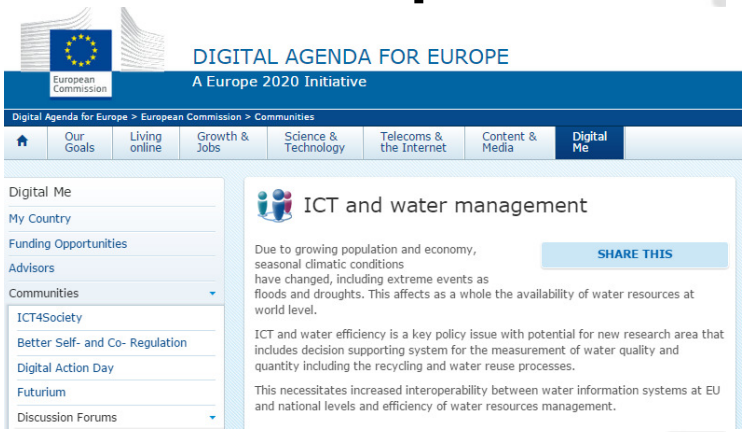
SIM4NEXUS
iWIDGET
Smart meters
Smart water
Smart societies
WIDEST
ict4water.eu
UNIVERSITY OF EXETER
Centre for Water Systems

EC broader context: ICT for Water Management

- 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
- Multitude of related issues added gradually (standardisation, big data, safety and security, IoT, serious gaming…)

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 ≈ 50-55M € for research in smart water since 2012)
  - **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. More projects joining in 2016

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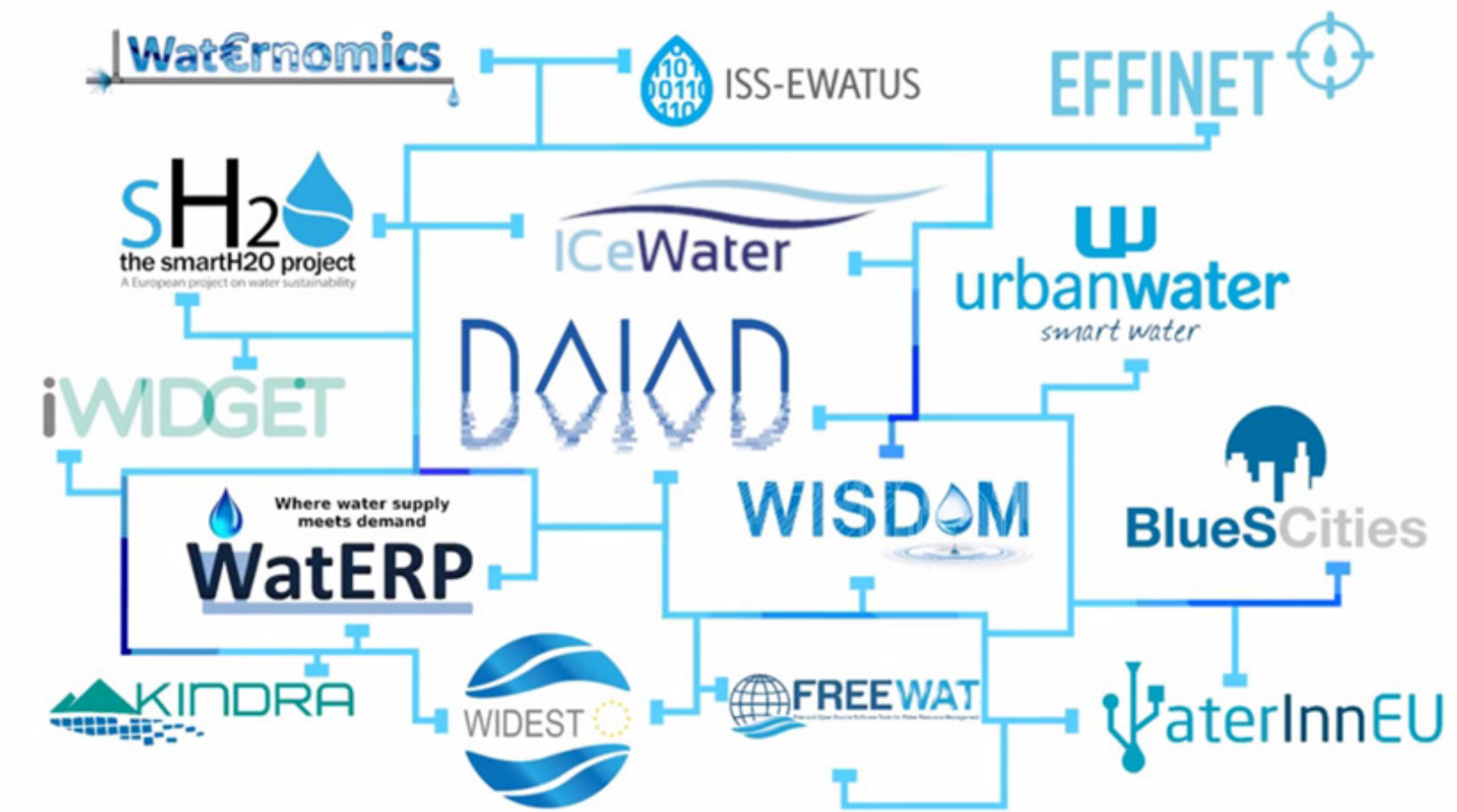
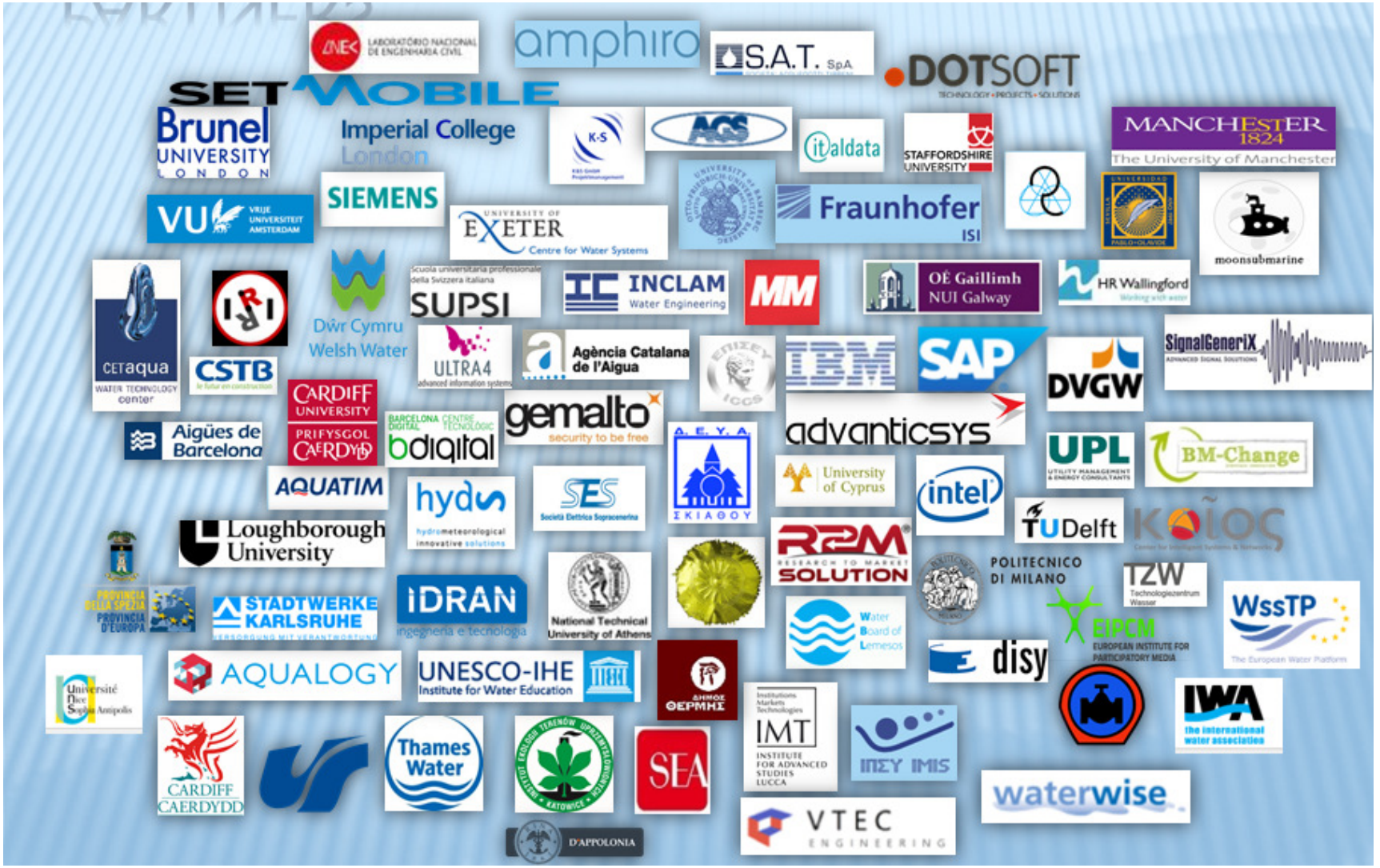
  - 2015: One EIPWater Action Group added: Ctrl+SWAN
  - 2016-2017: More projects joining from other "water and ICT" related calls/themes, targeting additional fields:
    - Advanced smart water quality sensors
    - Water safety and security
    - Serious gaming for decision making
    - IoT issues related to water management
    - Big data (across several projects)
  - Updated list at www.ict4water.eu

ict4water.eu

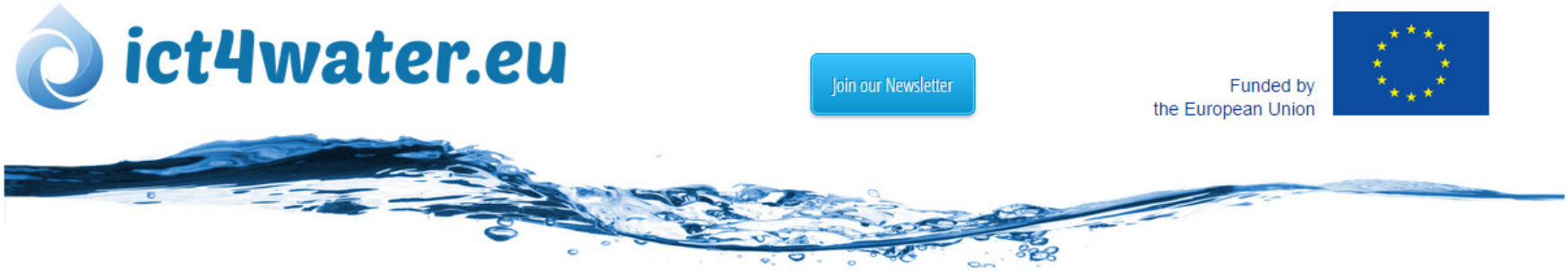
FP7/H2020: The cluster ict4water.eu



155 partners in ict4water.eu



www.ict4water.eu



About the Cluster

Due to growing population and economy, seasonal climatic conditions have changed, including extreme events as floods and droughts. This affects as a whole the availability of water resources at world level. ICT and water efficiency is a key policy issue with potential for new research area that includes decision supporting system for the measurement of water quality and quantity including the recycling and water reuse processes. This necessitates increased interoperability between water information systems at EU and national levels and efficiency of water resources management. This site is a hub for the 10 sister projects on ICT and Water Management. Read more

ict4water.eu

Funded by the European Union

HOME MEMBERS NEWS RESULTS CONTACT

Contact

For more information on ICT4water please contact one of our contact persons below.

Dr Lydia S. Vamvakeridou-Lyroudia
Address: University of Exeter, Harrison Building, North Park Road, Exeter UK EX4 4QF
Phone: +44 1392 723634
Email : L.S.Vamvakeridou-Lyroudia@exeter.ac.uk

Mr. Gabriel Anzaldi Varas
Address: Eurecat, Eurecat Lleida, TIC Building, 25003 – Lleida, Spain
Phone: +34 97319 3660
Email : gabriel.anzaldi@eurecat.org

Mr. Sander Smit
Address: BM-Change, Torenallee 20, 5617 BC, Eindhoven, the Netherlands
Phone: +31 6 2904 7206
Email: sander@bm-change.nu

Mrs. Aude Glénisson
European Commission, DG CONNECT, Smart Mobility and Living, BU25-2/068
Phone: +32 2 296 84 22
Email: Aude.GLENISSON@ec.europa.eu

ict4water.eu

Coordination and clustering – **ICT4Water**

- **Activities**
  - Work with the EC (DG-CONNECT mostly). Development of Roadmap (more to follow…)
  - Exchange of information- Common **website**-Contacts
  - Participation in WSSTP working groups/documents
  - **Special sessions** in Conferences/Publications (WDSA, IAHR, CCWI-EIP Water Conferences, Waterlink…)
  - Common development of **standards and standardisation (through WIDEST project)**
  - Common papers
  - Links with/participation in Water EIP relevant **action groups**

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

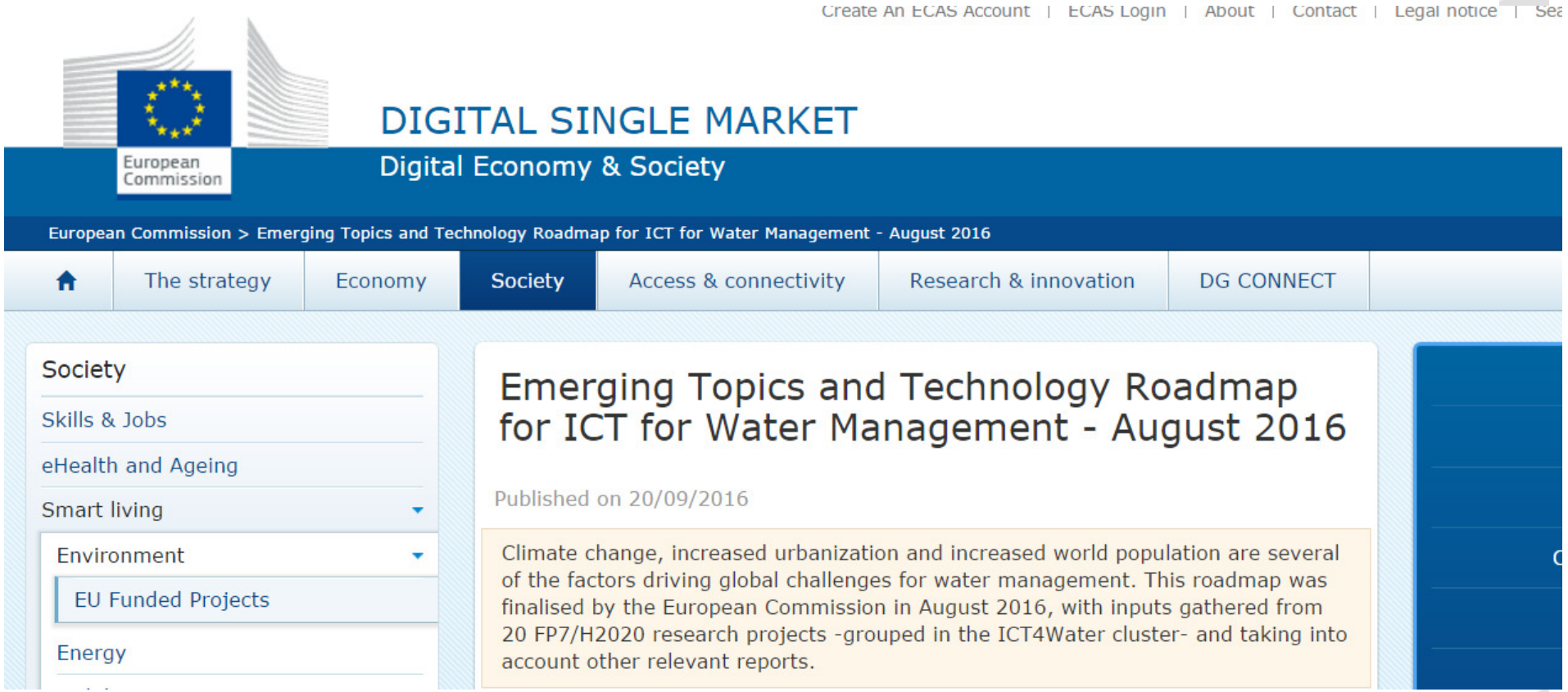
Ctrl+Swan Action Group will be devoted to the further development of innovative sensor systems' technologies to be integrated and implemented in the design of an innovative approach to the water distribution networks management, with the broaden goal to introduce our concept of Smart WAter

Ctrl + SWAN

EIP Water Action Group
Pooling resources – Innovating water

EC DG Connect and the ICT4Water cluster

- Development of the Roadmap “ ***Emerging Topics and Technology Roadmap for Information and Communication Technologies for Water Management***” May 2014/March 2015/August 2016
- ***https://ec.europa.eu/digital-single-market/en/news/emerging-topics-and-technology-roadmap-ict-water-management-august-2016***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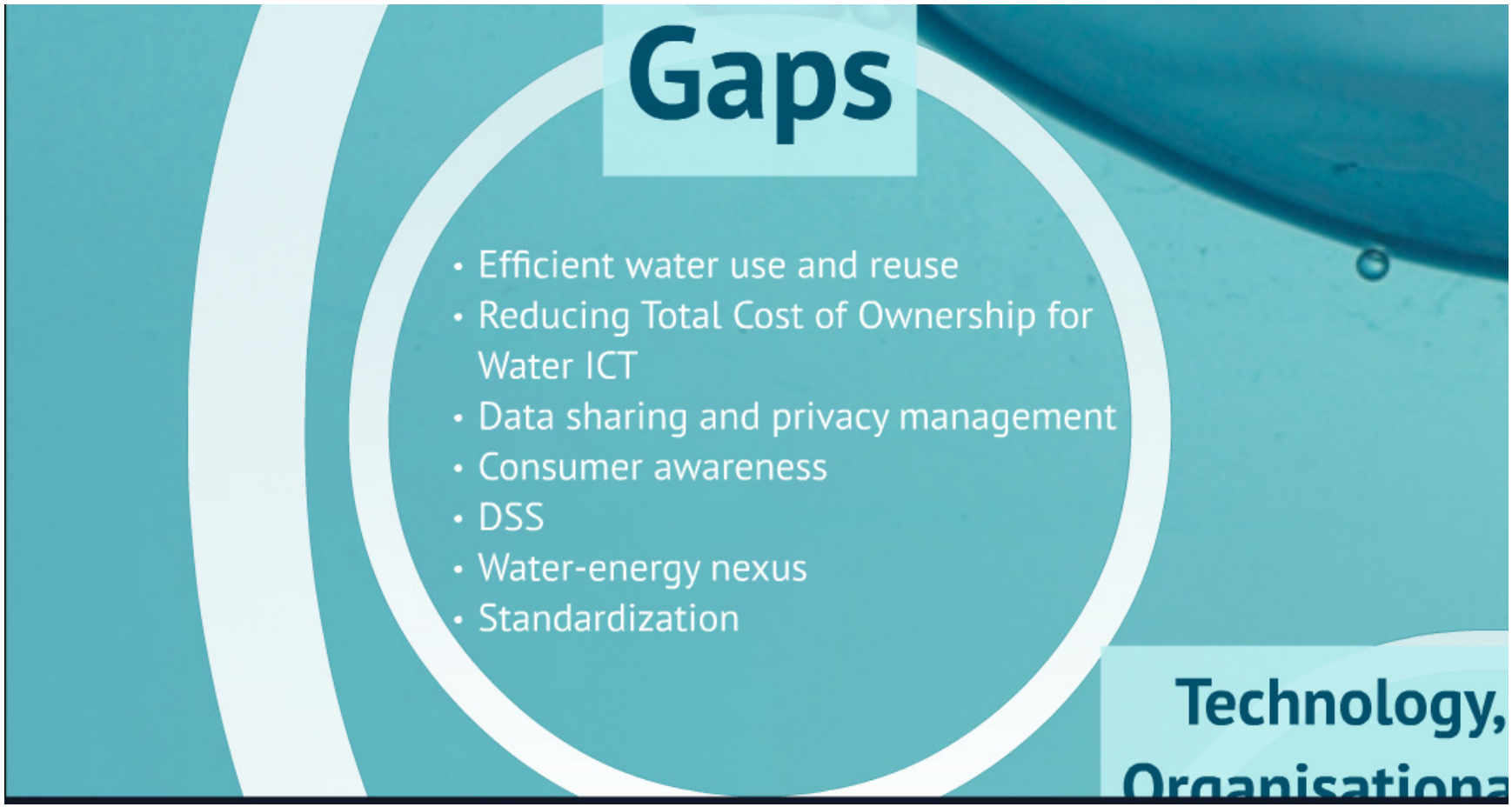
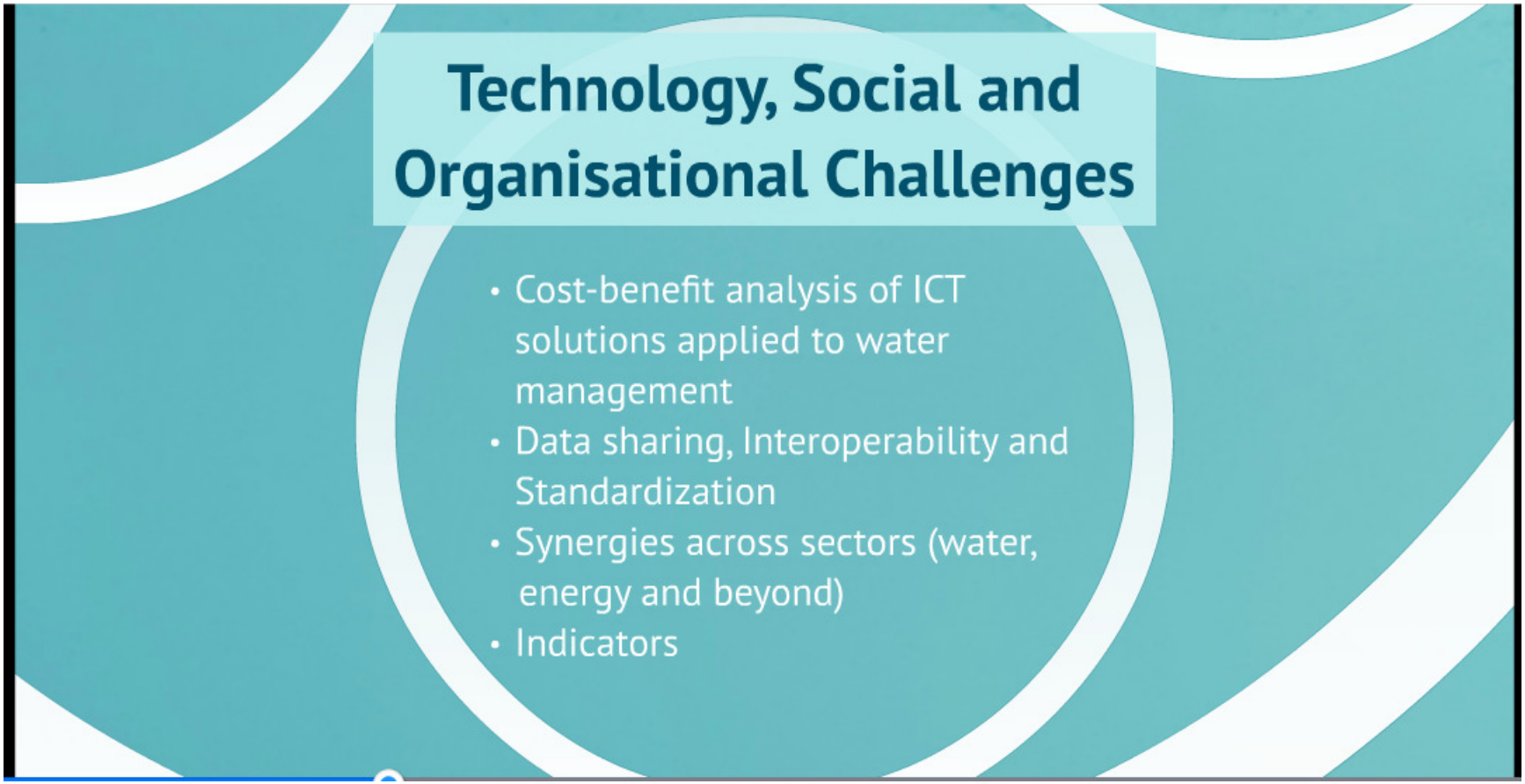
European Commission
DIGITAL SINGLE MARKET
Digital Economy & Society
European Commission > Emerging Topics and Technology Roadmap for ICT for Water Management - August 2016
The strategy
Economy
Society
Access & connectivity
Research & innovation
DG CONNECT
Society
Skills & Jobs
eHealth and Ageing
Smart living
Environment
EU Funded Projects
Energy
Emerging Topics and Technology Roadmap for ICT for Water Management - August 2016
Published on 20/09/2016
Climate change, increased urbanization and increased world population are several of the factors driving global challenges for water management. This roadmap was finalised by the European Commission in August 2016, with inputs gathered from 20 FP7/H2020 research projects -grouped in the ICT4Water cluster- and taking into account other relevant reports.

The roadmap: Emerging topics and technologies for ICT for Water Management



Credits: Marcin Stachura


Technology, Social and Organisational Challenges
• Cost-benefit analysis of ICT solutions applied to water management
• Data sharing, Interoperability and Standardization
• Synergies across sectors (water, energy and beyond)
• Indicators

Roadmap

	Short-term	Medium-term	Long-term
Cost/benefit analysis	Data simulation and field surveys to be used widely	Methodology for calculating the true cost of water business models definition Real--time vs non--real--time data	Synergies with energy for cost--effective water consumption/demand management
Indicators	Selection of existing indicators	Development of new indicators Evaluation methodology Guidance and education to stakeholders EC guidelines	Certification processes and bodies
Synergies across sectors	Studies on total cost of energy associated to water	Studies on the transferability of adaptive pricing for water Exploring the applicability of energy tools for water Explore technical and business synergies with energy, smart home, and cleanweb industries	Joint analysis of water and energy data onsumption / demand Implementation of smart water as a component of the smart city.
Data Sharing, Interoperability and Standardisation	Metadata profiles Evaluation of existing data models/structures Terms and conditions for data sharing Study of privacy risks	Regional/National/EU Metadata catalogues Selection/development of new data models/structures Privacy--- preservation techniques and guidelines	Regional/National/EU watedata catalogues Common Open APIs Adaptation of energy tools/standards to water.

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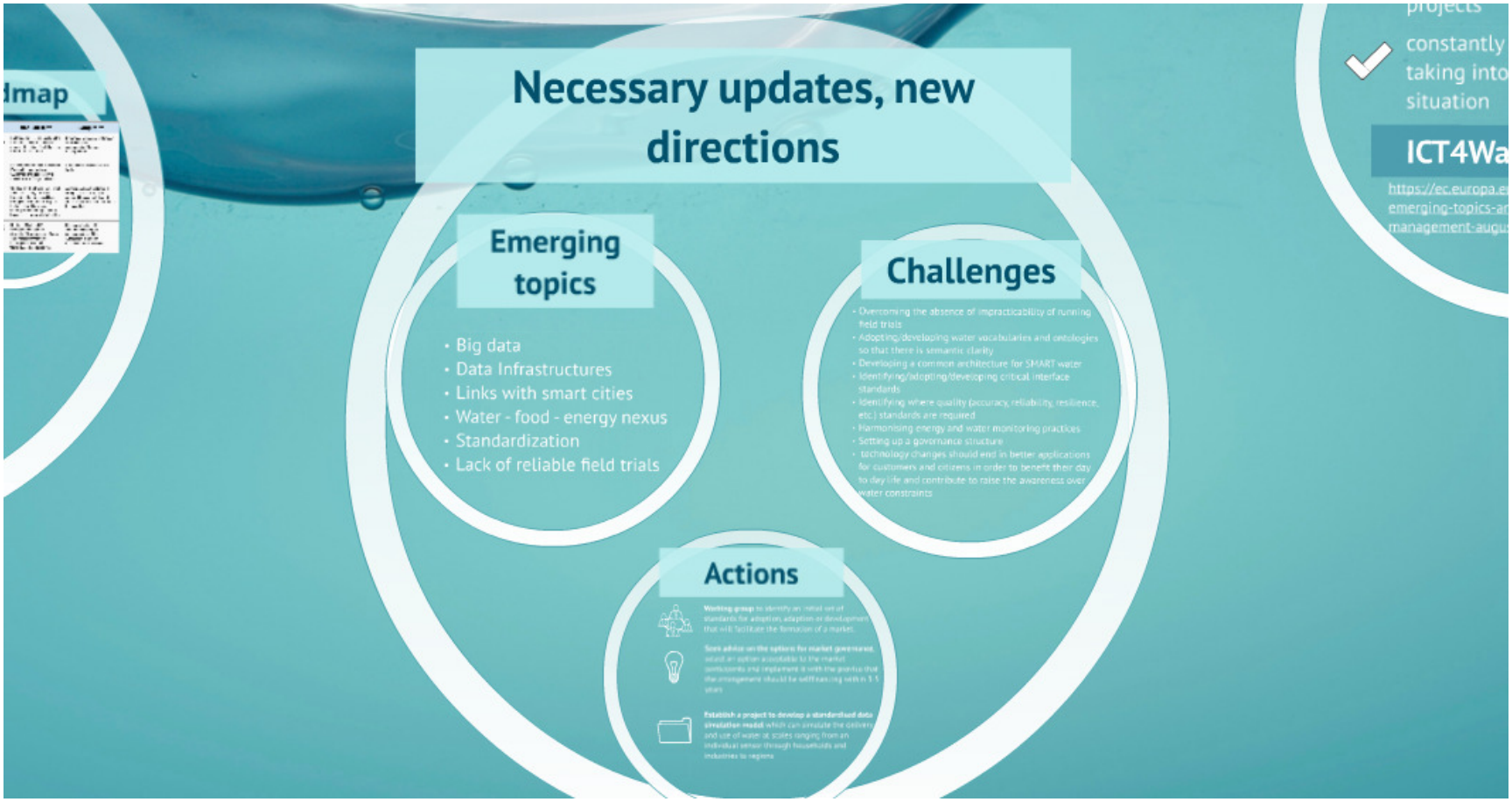
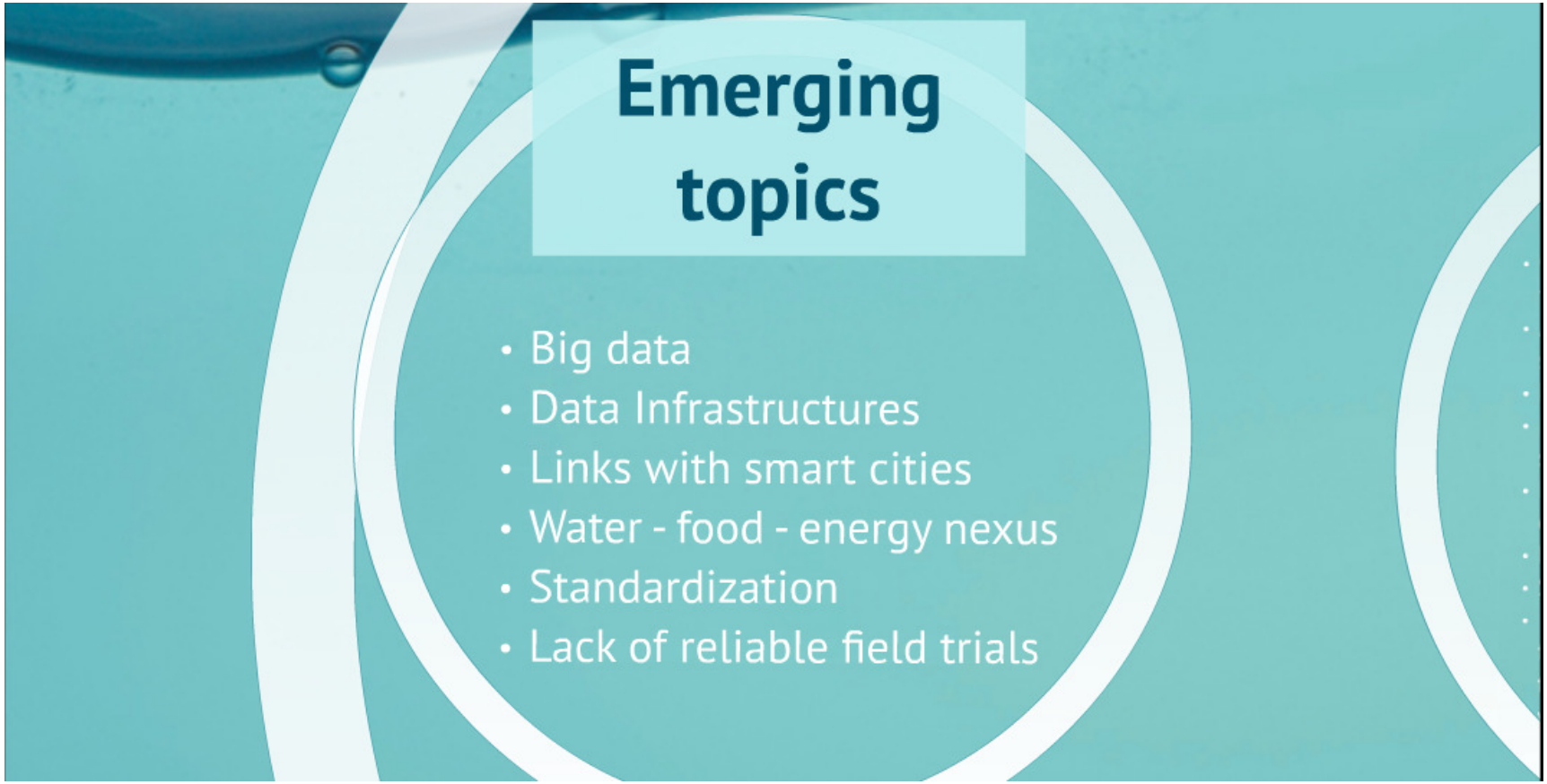

Necessary updates, new directions
Emerging topics
Big data
Data Infrastructures
Links with smart cities
Water - food - energy nexus
Standardization
Lack of reliable field trials
Challenges
Actions
constantly
taking into
situation
ICT4Wa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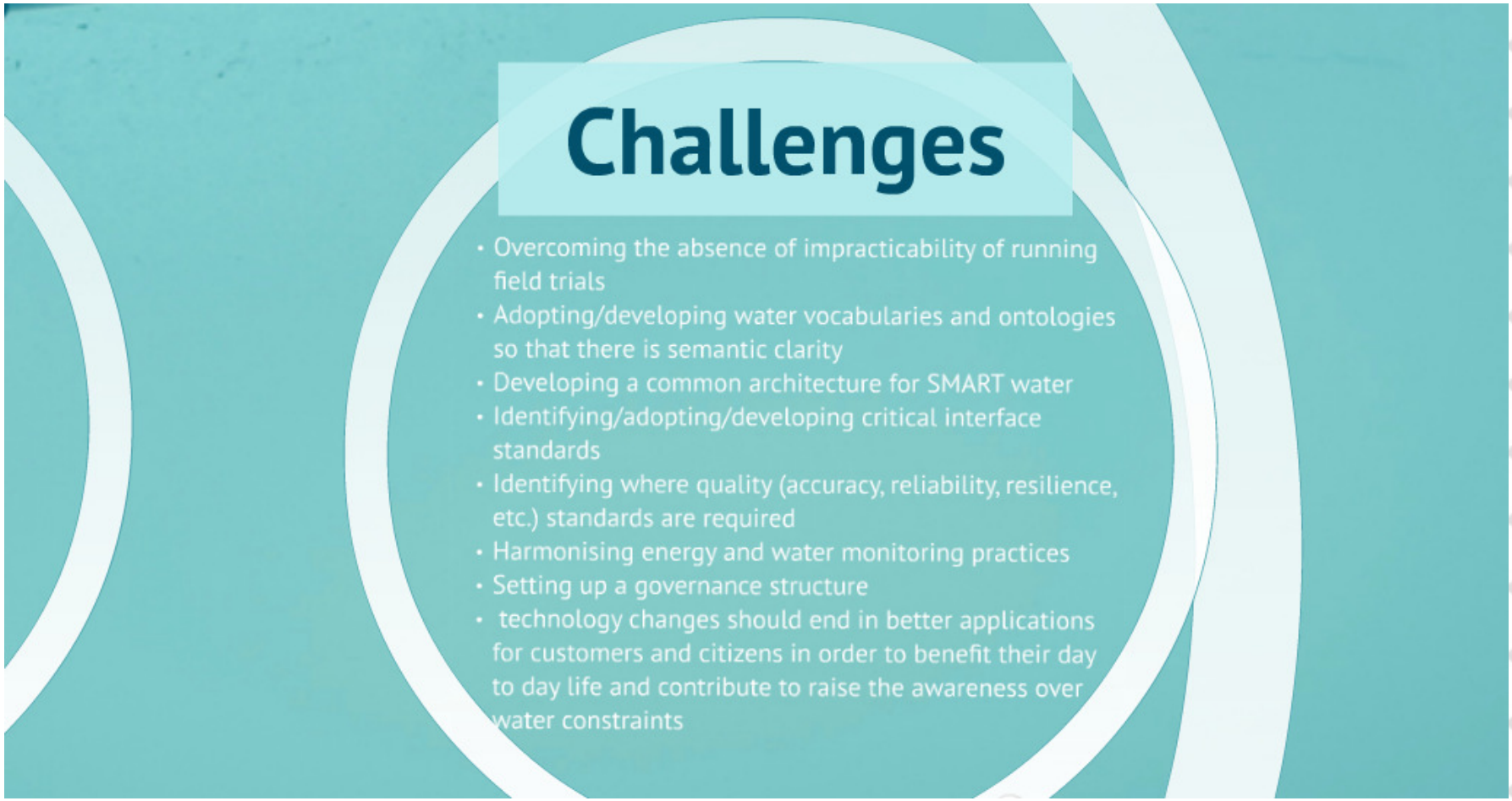
Challenges
• Overcoming the absence of impracticability of running field trials
• Adopting/developing water vocabularies and ontologies so that there is semantic clarity
• Developing a common architecture for SMART water
• Identifying/adopting/developing critical interface standards
• Identifying where quality (accuracy, reliability, resilience, etc.) standards are required
• Harmonising energy and water monitoring practices
• Setting up a governance structure
• technology changes should end in better applications for customers and citizens in order to benefit their day to day life and contribute to raise the awareness over water constraints

Actions

Working group to identify an initial set of standards for adoption, adaption or development that will facilitate the formation of a market.

Seek advice on the options for market governance, select an option acceptable to the market participants and implement it with the proviso that the arrangement should be selffinancing within 3-5 years

Establish a project to develop a standardised data simulation model which can simulate the delivery and use of water at scales ranging from an individual sensor through households and industries to regions


Next steps
to include the results of the ongoing projects
constantly update the roadmaps, taking into consideration the current situation
ICT4Water Roadmaps
https://ec.europa.eu/digital-single-market/en/news/emerging-topics-and-technology-roadmap-ict-water-management-august-2016

Thank you

Visit us:

http://ict4water.eu