UNIVERSITY OF EXETER | Centre for Water Systems

European Commission
EASME
Executive Agency for SMEs

ict4water.eu

"Boosting Research and Innovation in the Water Sector: The Impact of EU-funded actions"

The ICT4Water Cluster

Dr Lydia S. Vamvakeridou-Lyroudia
Centre for Water Systems- University of Exeter UK
ICT4Water Cluster
L.S.Vamvakeridou-Lyroudia@ex.ac.uk

The ICT4Water Cluster

2012

Five (5) Collaborative EU projects

2013

Ten (10) Collaborative EU projects

2015

Ten (10) Collaborative EU project

Five (5) Coordination and Support Actions

CURRENT

30 EU projects ↑

300 Organizations ↑

The ICT4WATER cluster is a hub for innovative activities contributing to strategic views, organizing and participating at major exhibitions and scientific events, and disseminating results through major channels.

Multiple two way benefits

Stakeholders

- Cities & Regions
- Industry
- Research
- Associations
- etc. …

H2020 and FP9

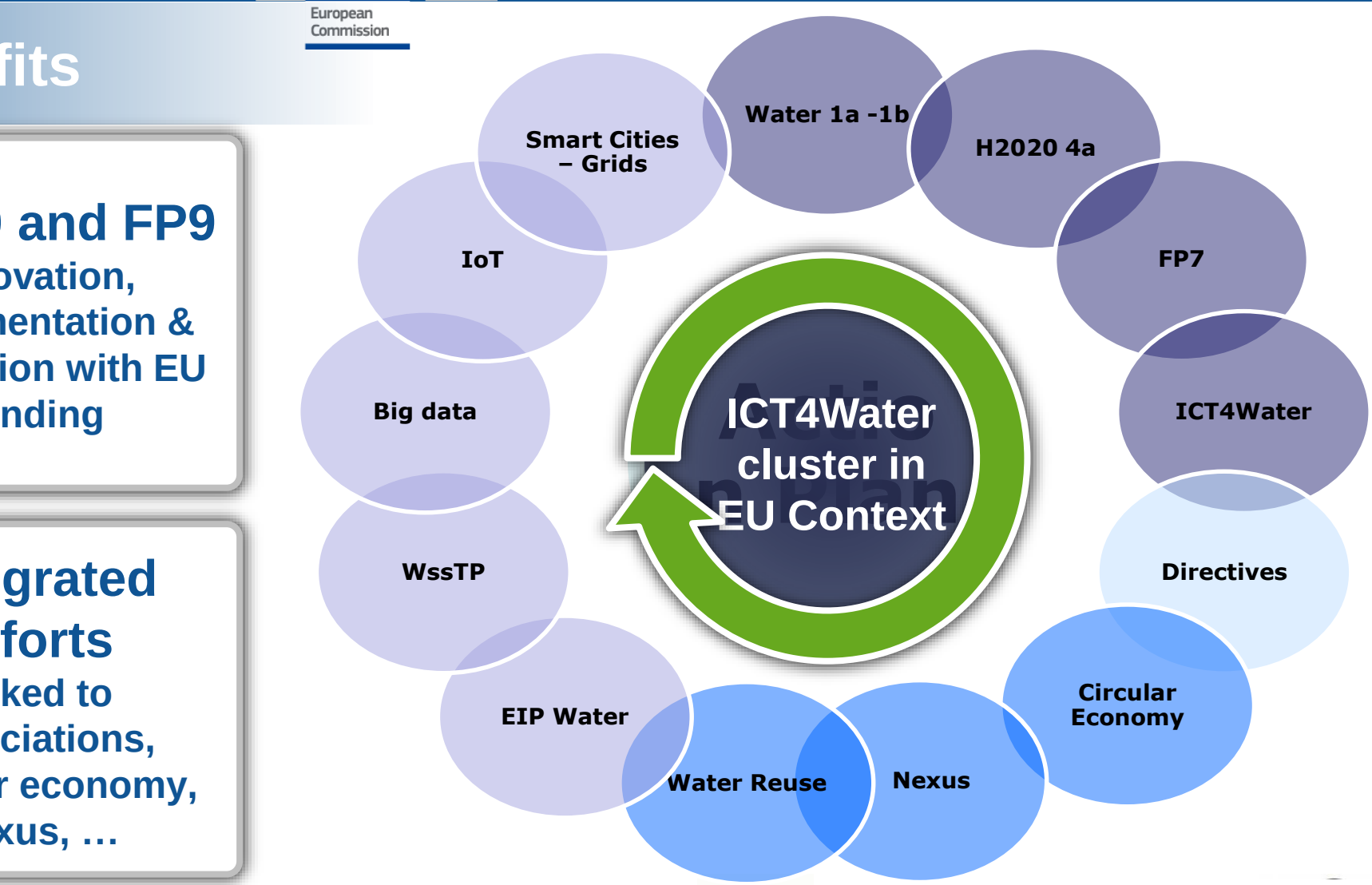
Innovation, Implementation & replication with EU funding

Initiatives

- Video
- Discussion Platform
- Website
- Roadmap
- Action Plan

Integrated efforts

linked to associations, circular economy, nexus, …

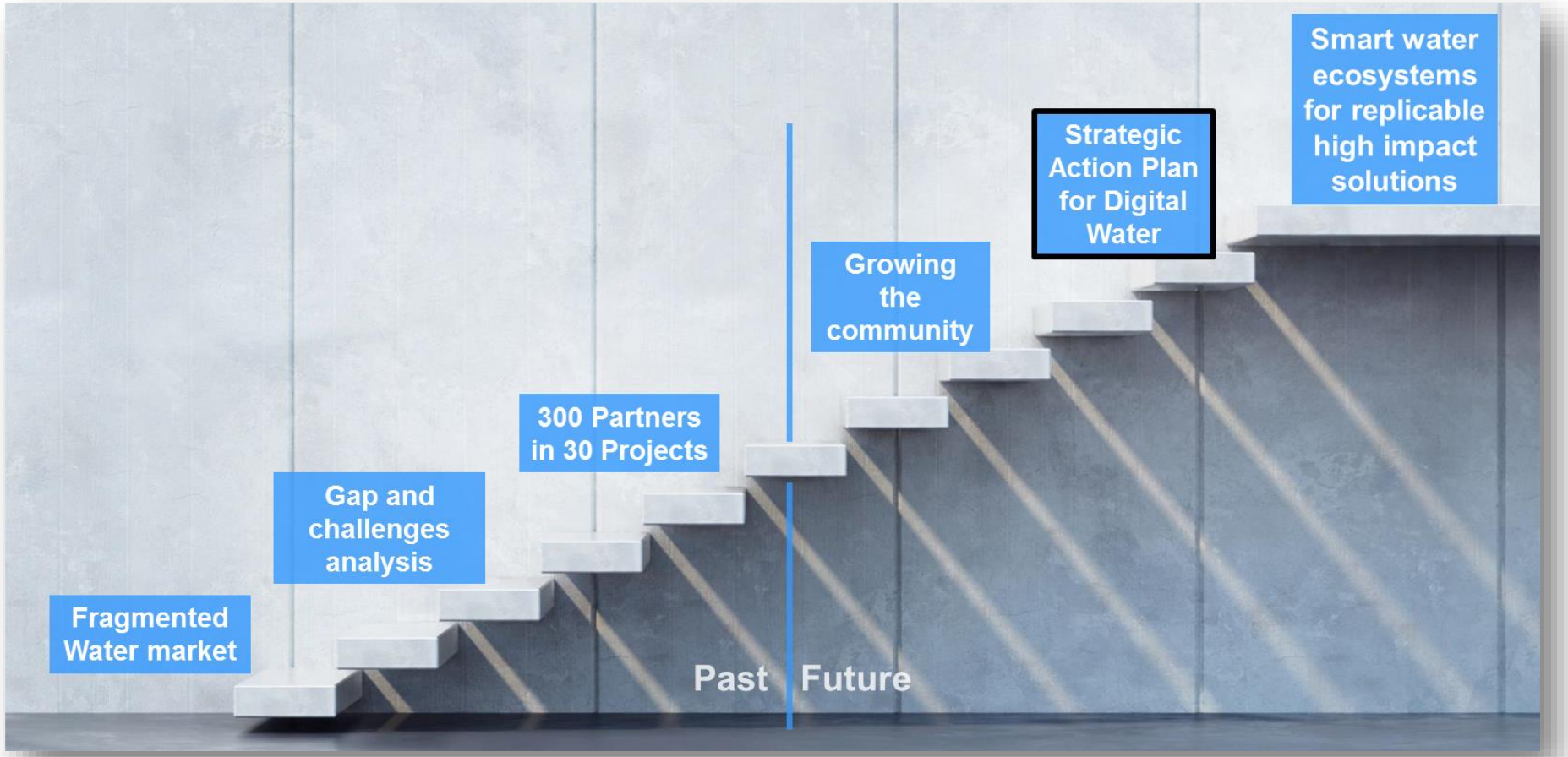


Synergies

- **Exchange of information- Experience** in common issues
- **Maximize dissemination & Exploitation**
  Special sessions in Conferences/Publications contact with relevant stakeholders
- **Common development of guidelines, strategies, procedures and standards**
- **Joint papers among projects**
- **Links with/participation in Water** (EIP/WssTP/IWA…) and ICT (AIOTI/BDVA…) relevant action groups (**Ctrl+SWAN**)
- **Building New opportunities**

- **EVERYONE CAN LEAD INITIATIVES!!!**

Evolution


Fragmented Water market
Gap and challenges analysis
300 Partners in 30 Projects
Growing the community
Strategic Action Plan for Digital Water
Smart water ecosystems for replicable high impact solutions
Past
Future

Sucess stories

Summer School

Smart Systems for Water Management

Modelling, Simulation, Analytics and ICT for Behavioural Change

WatERP

sH2O the smart H2O project
A European project on water sustainability

WIDEST

iWIDGET

Project Events

KINDRA

BlueSCities

ISS-EWATUS

EFFINET

WISDOM

urbanwater

WaterInnEU

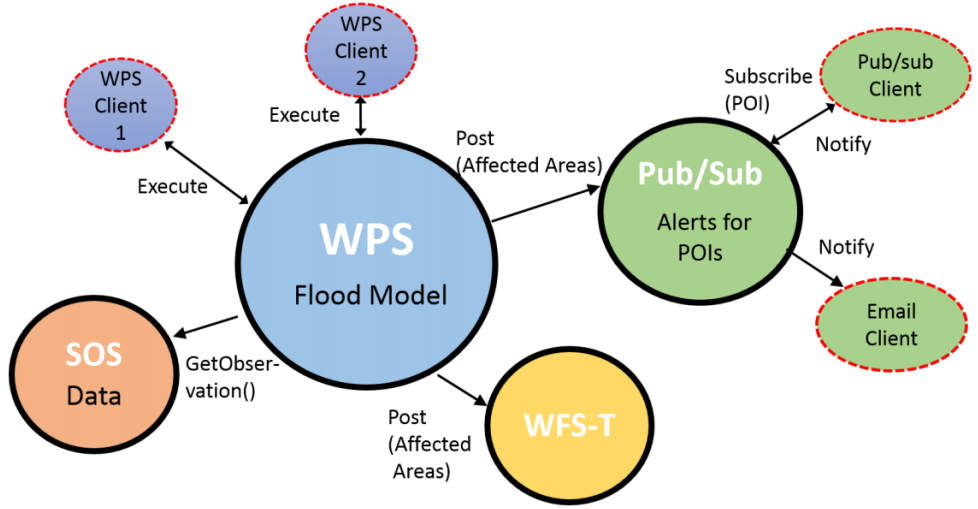
FREEWAT
Free and Open Source Software Tools for Water Resource Management
EU HORIZON 2020 Project

Interoperability pilot

WIDEST

WaterInnEU

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



UNIVERSITY OF EXETER | Centre for Water Systems

EASME

ict4water.eu

Outcomes

Roadmap 2015

Focused on Water Management

Technological, social and organizational challenges:

- Cost/Benefit analysis of ICT
- Synergies across sectors
- Data sharing
- interoperability
- Standardization
- Indicators

Roadmap 2016

Focused in Water Management

Main Gaps and Challenges to be addressed:

- Big Data
- Data infrastructures
- Link with Smart Cities
- Nexus, Water–Food-Energy
- Standardization
- Lack of reliable field trials

Digital Water Action Plan 2017

Wider approach, Water Management, Treatment, Reuse, Circular Economy, every field where ICT can contribute

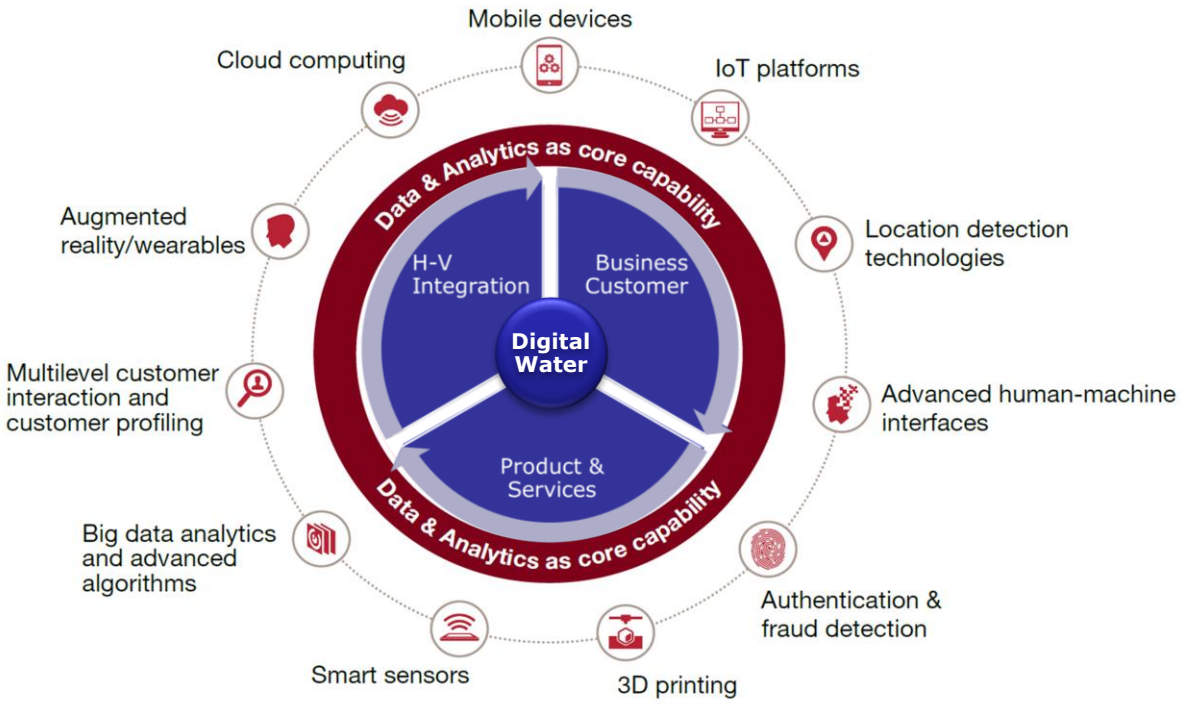
Creation of a **borderless Digital single market for water services** should be reinforced by creation of multi-stakeholders platform that should **Foster standardization and reliable field trials**

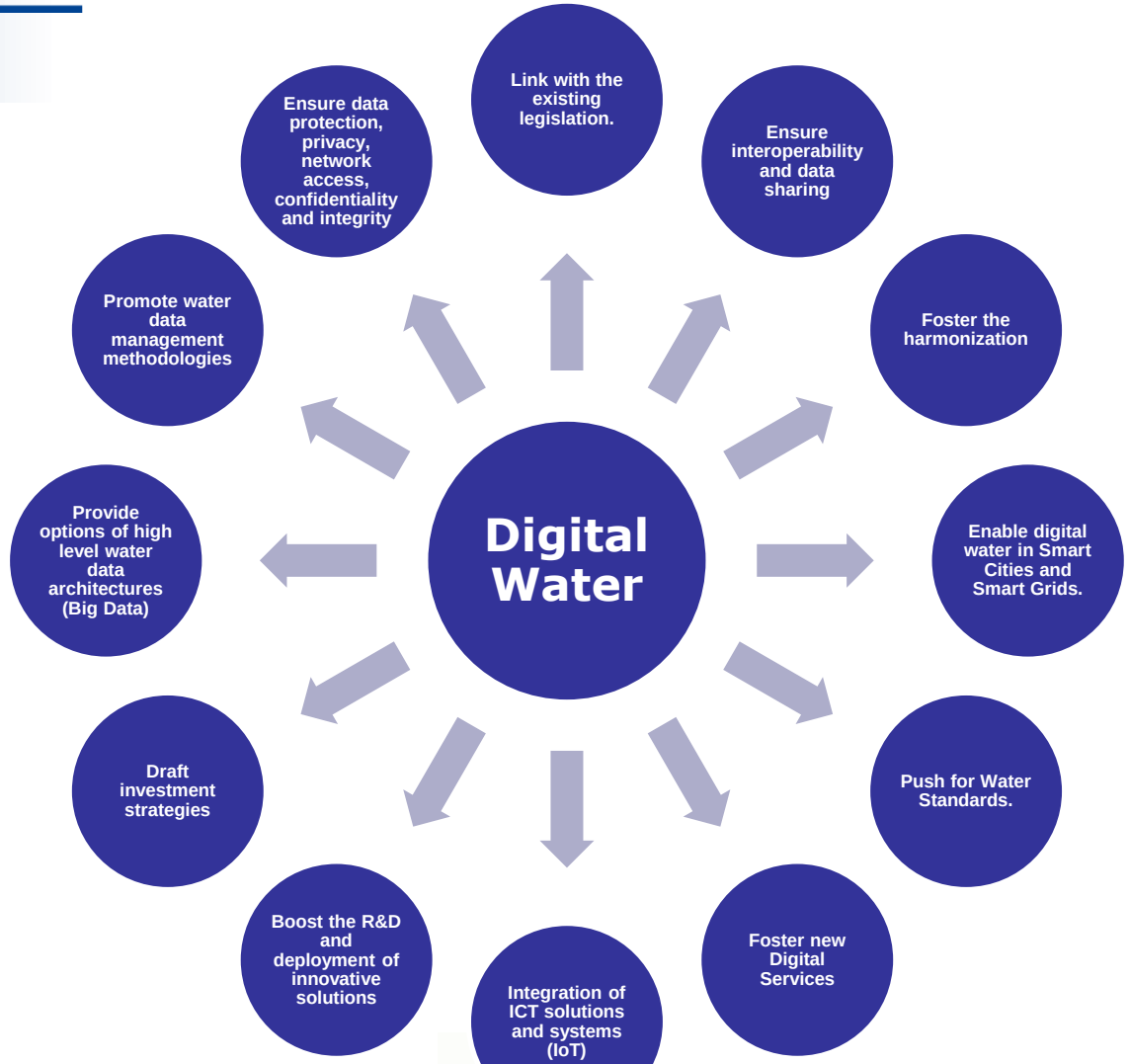
Scope

- Digitalization
- Big Data
- IoT
- Standardization
- Interoperability
- Data Science (AI & ML)
- Smartness
- …

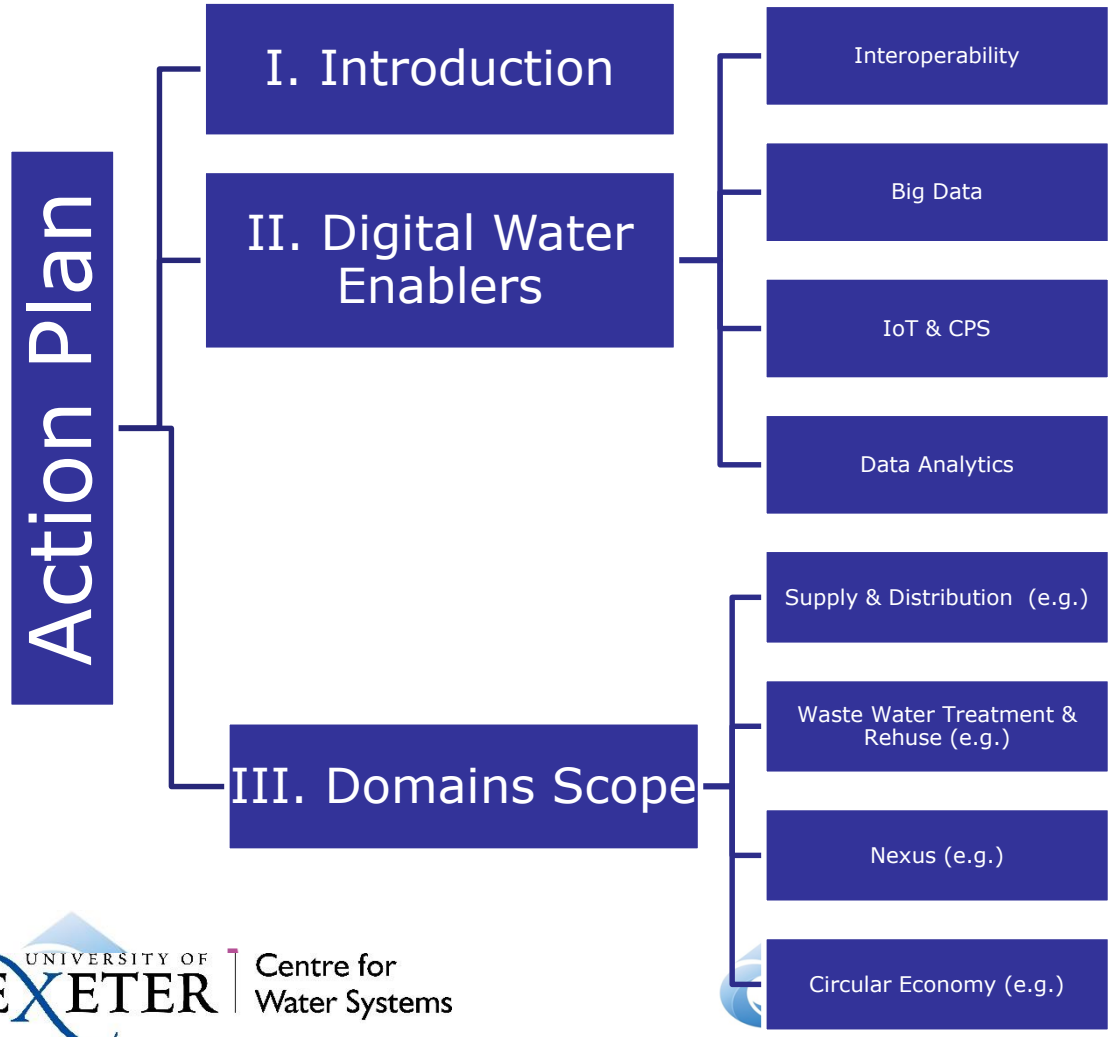
- Water management
- Waste Water Systems
- Water Recovery
- Circular Economy
- Nexus
- Smart City
- Smart Agriculture
- …

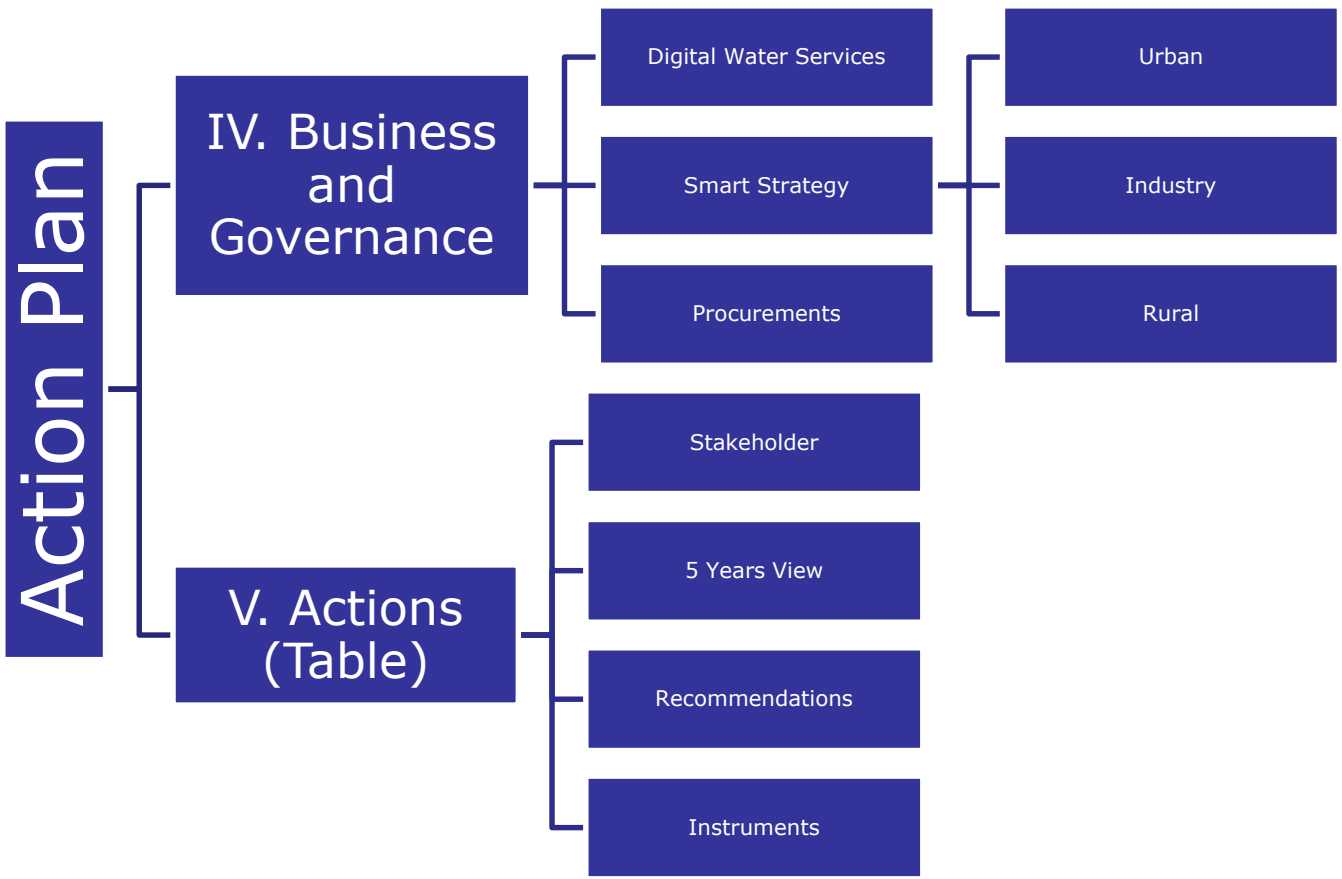
Objectives


Mobile devices
Cloud computing
IoT platforms
Augmented reality/wearables
Location detection technologies
Multilevel customer interaction and customer profiling
Advanced human-machine interfaces
Big data analytics and advanced algorithms
Authentication & fraud detection
Smart sensors
3D printing
Data & Analytics as core capability
H-V Integration
Business Customer
Digital Water
Product & Services
Data & Analytics as core capability


Digital Water
Link with the existing legislation.
Ensure interoperability and data sharing
Foster the harmonization
Enable digital water in Smart Cities and Smart Grids.
Push for Water Standards.
Foster new Digital Services
Integration of ICT solutions and systems (IoT)
Boost the R&D and deployment of innovative solutions
Draft investment strategies
Provide options of high level water data architectures (Big Data)
Promote water data management methodologies
Ensure data protection, privacy, network access, confidentiality and integrity

Structure


Action Plan
I. Introduction
II. Digital Water Enablers
III. Domains Scope
Interoperability
Big Data
IoT & CPS
Data Analytics
Supply & Distribution (e.g.)
Waste Water Treatment & Rehuse (e.g.)
Nexus (e.g.)
Circular Economy (e.g.)


Action Plan
IV. Business and Governance
V. Actions (Table)
Digital Water Services
Smart Strategy
Procurements
Urban
Industry
Rural
Stakeholder
5 Years View
Recommendations
Instruments

Introduction

The value of Data

Both private and public entities can better understand the value of water if they maximize the potential of internal and external data to deliver insights to drive their decisions.
These insights then need to activate the ecosystem of stakeholders committed to addressing water quantity and quality issues to drive economic and business growth and social well-being. Simply put, better data for smart water strategies coupled with collective/aligned action to manage water risks and drive economic and business growth.

The Value of Water

- A flood of data…
- It is not just about the data – it is about the quality of decisions
- Better profit of opportunities that data-driven insights can bring to the water industry
- The water sector is only starting to discover the potential that data-driven insights can offer.
- Data-driven business intelligence has the potential to radically transform the way water and water infrastructure is understood, managed and used.

Needs

- Guarantee water
- Intelligent control of water flow
- Risk-minimization for assets in the water infrastructure.
- Energy efficiency
- Legacy adaptation & Infrastructures obsolescence
- Improve work force, asset and operational management
- Low-cost water monitoring solutions
- Timely inform consumers for their water consumption
- Sustainable behavioral changes (all actors)
- Synergies across sectors
- Real-time
- …

- Highly detailed water consumption data.
- Efficient and scalable data services
- Evolve Water Demand Management
- Improve pricing strategies
- Data sharing, Interoperability and Standardization
- Data privacy and security (CIP)
- Digital change management
- Low cost and reliable sensors/transducers
- Reduce water-wastewater sensors maintenance
- Include real time monitoring in policies
- Advance in self and remote sensors capabilities
- …

Challenges

The ICT challenge for the Water Sector

Connected Objects	Networks	Analytics	Platforms	Application
• Embedded Systems • Smart Water Sensors • Smart Pumps & valves • Virtual Water Objects	• Wireless networks • 5G Networks • Gateways	• Big Data adoption • Knowledge-driven approaches	• Water Device Management • Cloud Platforms integral water management • Risk Minimization tool	• Intelligent control of the water flow • Water consumers analytics • Energy Efficiency and nexus

Water Standards and Data Harmonization schemes

ICT4Water - Legislation

- Promote the **links with the existing and future water legislation;**
- Promote recommendations for **ensuring interoperability** and data sharing across services;
- **Harmonising energy and water monitoring practices through the smart metering;**
- **Push for Water Standards which could help the development of the European Digital Single Market for water services.**

ICT4Water - Legislation

- ICT4WATER use-case(s) for **INSPIRE** data models to develop 'building blocks' for re-use in other applications and improve current legislation;
- Create awareness of the **importance of Water Systems interoperability;**
- **Reduction of Stakeholders Fragmentation,** Water is a fragmented domain where decision-making legislative responsibilities in some cases are overlapped or unclear**;**
- **Smart water metering to encourage water conservation (e.g. dynamic water-pricing plans);**
- **Promote standardization and interoperability through the deployment and application of standards, e.g. SAREF**

More information

- ICT4Water website:
  - http://www.ict4water.eu/
- ICT4Water video
  - (To be published on YouTube on June 13) https://www.dropbox.com/s/jhyv8ygdp5rm2tg/ICT4WATER_20[illegible]0606.mp4?dl=0
- Roadmap 2016
  - https://ec.europa.eu/digital-single-market/en/news/emerging-topics-and-technology-roadmap-ict-water-management-august-2016
- Future Action Plan - Discussion Platform On Futurium
  https://ec.europa.eu/futurium/en/

Thank you !

Team

Lydia S. Vamvakeridou-Lyroudia
L.S.Vamvakeridou-Lyroudia@exeter.ac.uk

Aude Glénisson
aude.glenisson@ec.europa.eu

Gabriel Anzaldi
gabriel.anzaldi@eurecat.org

Evdokia Achilleos
Evdokia.ACHILLEOS@ec.europa.eu

Sander Smit
sander@bm-change.nu

Sotirios Kanellopoulos
Sotirios.KANELLOPOULOS@ec.europa.eu