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EIP Water
Boosting opportunities – Innovating water

European Commission

## Workshop SMART WATER MONITORING
## "What low-cost sensors solutions for high efficiency water monitoring networks"

# From water monitoring to data

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# Challenges

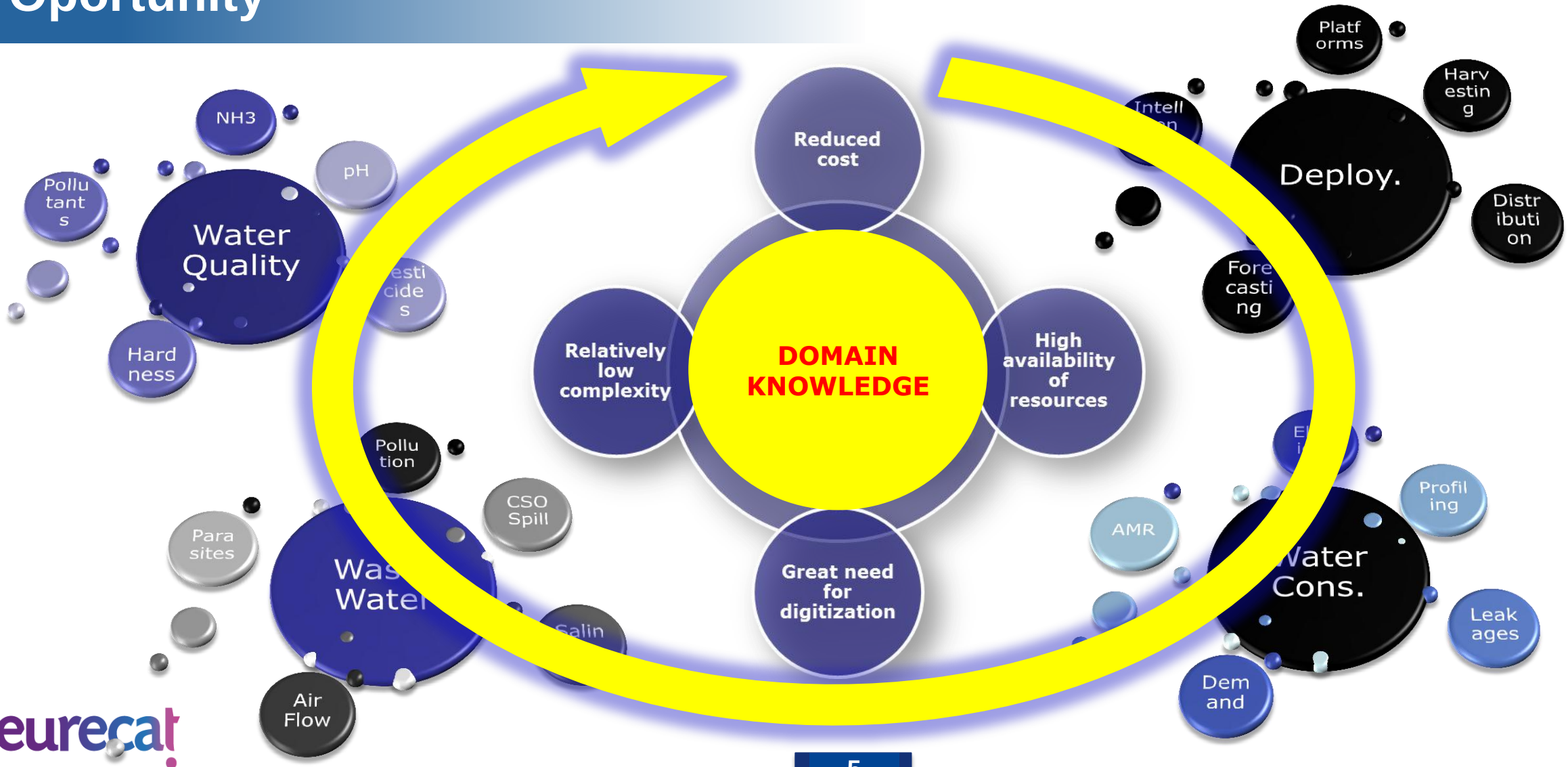

European Commission
Rain
Condensation
Scarcity
Pipes
Purification
Deposits
Groundwater
Desalination
Domestic Distribution
Waste Water Systems
Climate Change
Demographics
People
Process
Operational Efficiency
Technology

# 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
- …

# Oportunity


Reduced cost
High availability of resources
Great need for digitization
Relatively low complexity
DOMAIN KNOWLEDGE
Water Quality
NH3
pH
Pollu tant s
Hard ness
esti cide s
Deploy.
Platf orms
Harv estin g
Distr ibuti on
Fore casti ng
Intell
Water Cons.
Profil ing
Leak ages
AMR
Dem and
Was Wate
Pollu tion
CSO Spill
Para sites
Salin
Air Flow

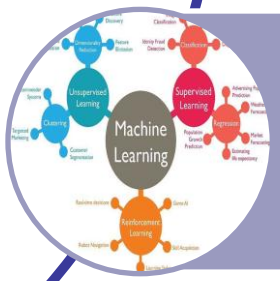
# Smart sensors: Delivering pervasive benefits

**Smart Sensors**

**Combine IoT and AI to provide real-time data and feedback**

***Predictive:*** Real-time data can be analyzed to determine when a large piece of machinery or equipment will break down, enabling the failure to be prevented through proactive intervention.

***Prescriptive:*** Intelligent sensors can suggest *immediate* action at the edges of the organization, thus avoiding outages and even disasters.



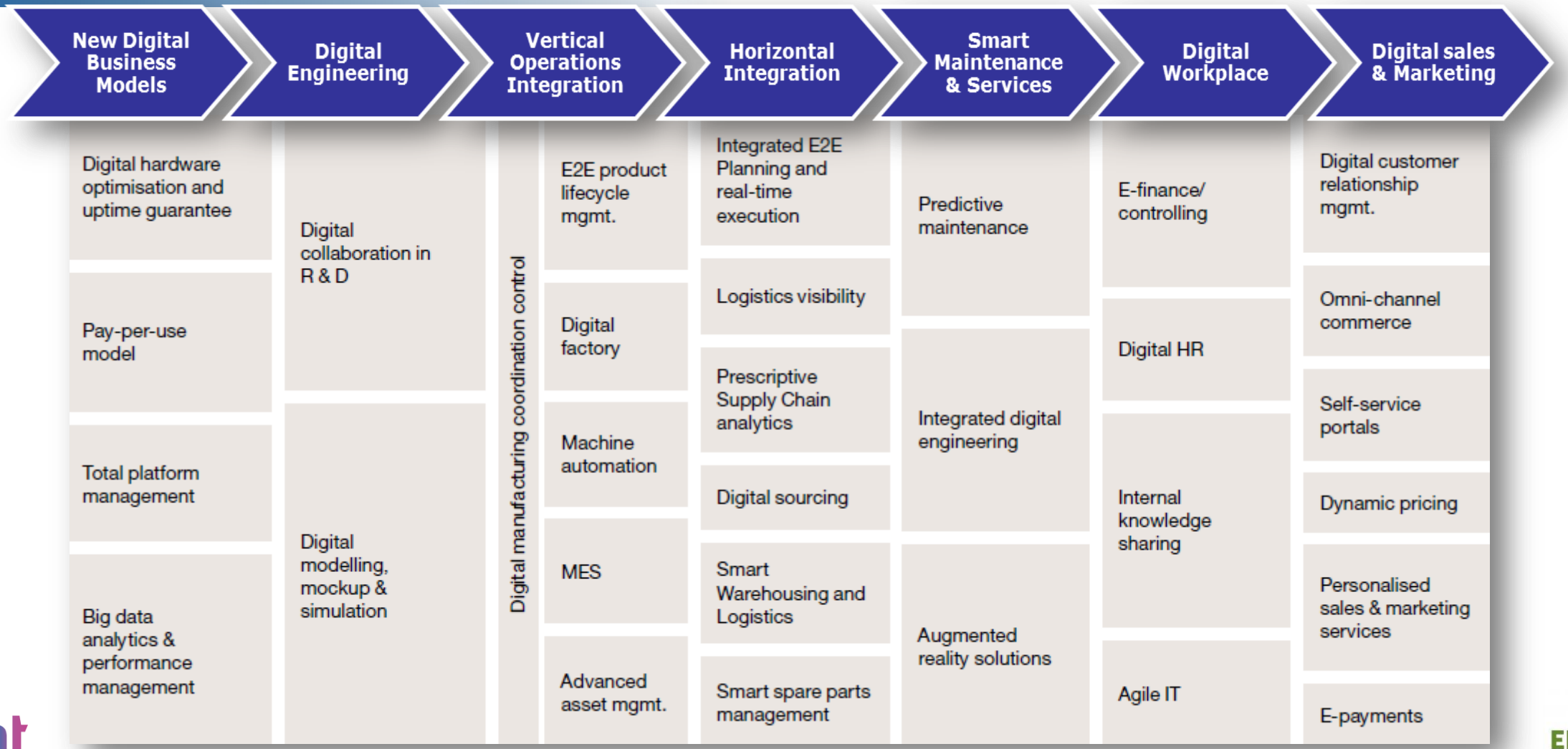

***Adaptive/autonomous:*** Continuous data feeds from sensors can enable systems to learn the right actions to take autonomously.

# IoT – Distrubited Interoperable Intelligence

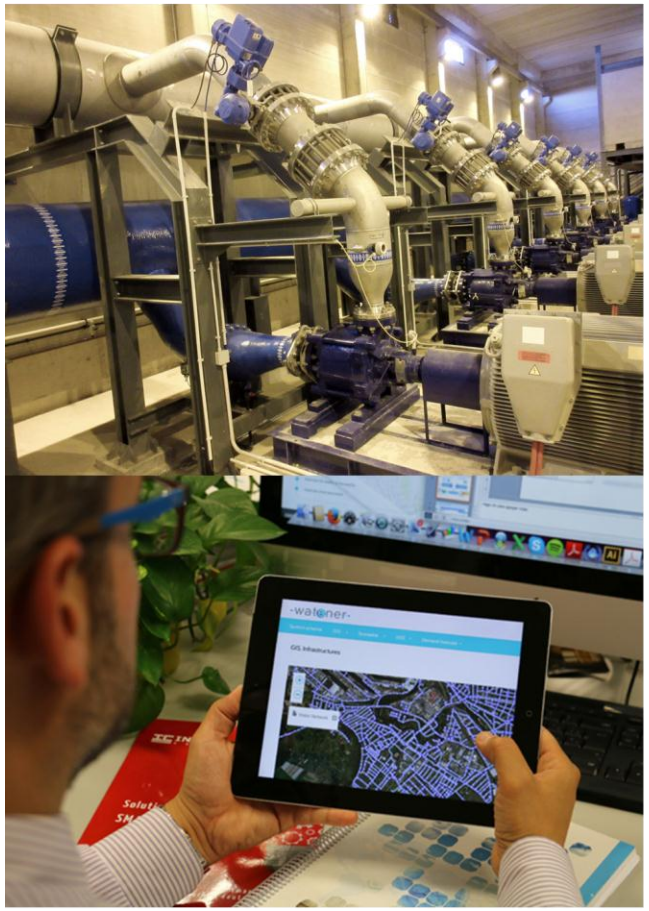
| Connected Objects | Networks | Analytics | Platforms | Application |
|---|---|---|---|---|
| • Embedded Systems<br>• Smart Water Sensors<br>• Smart Pumps & valves<br>• Virtual Water Objects | • Wireless networks<br>• 5G Networks<br>• Gateways | • Big Data (Hybrid) adoption<br>• Knowledge/Data - driven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

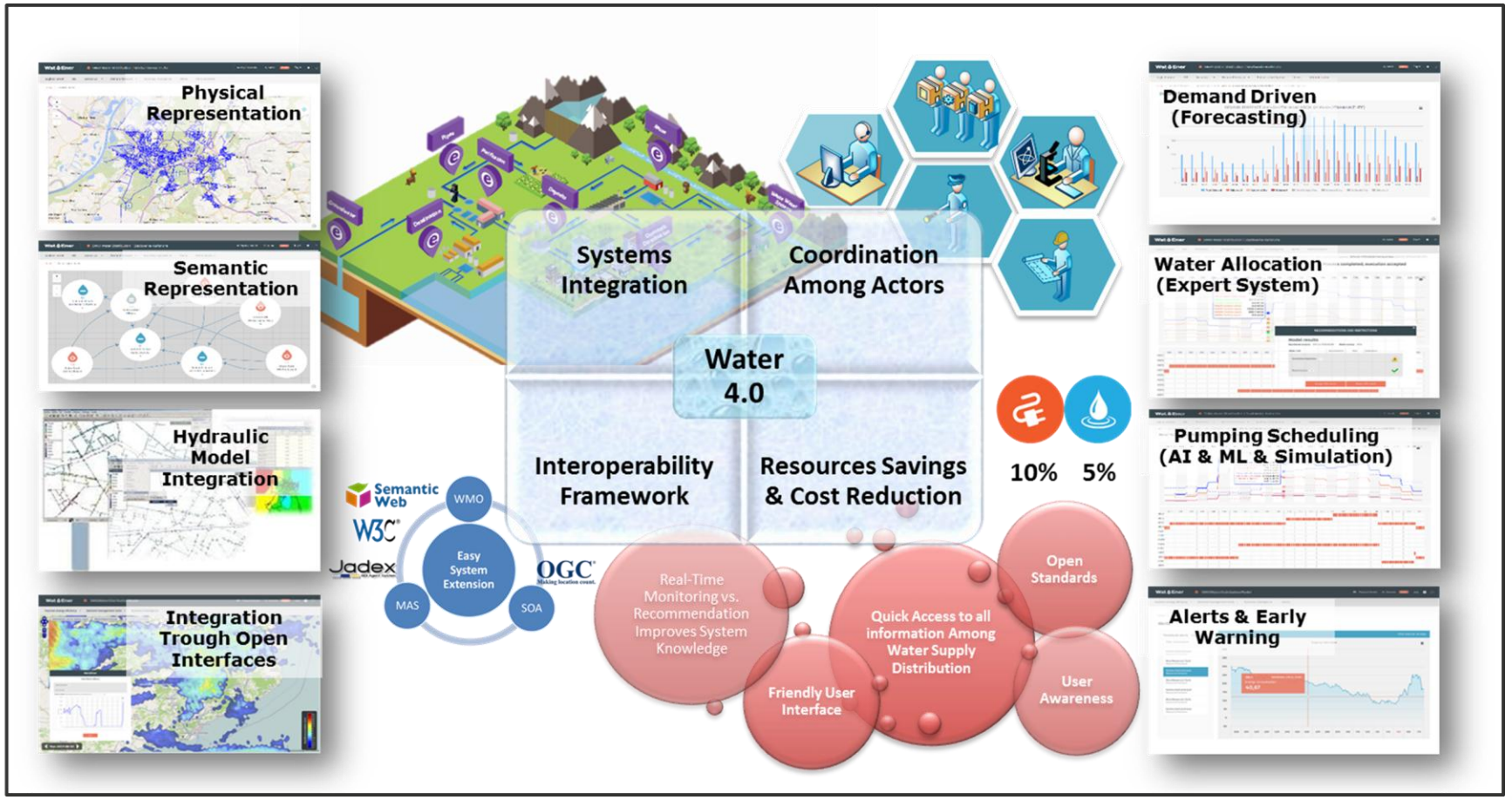
**Water Standards and Data Harmonization schemes**

# Ecosystem approach



# ICT4Water




Physical Representation
Semantic Representation
Hydraulic Model Integration
Integration Trough Open Interfaces
Systems Integration
Coordination Among Actors
Water 4.0
Interoperability Framework
Resources Savings & Cost Reduction
10%
5%
Semantic Web
W3C
Jadex
WMO
Easy System Extension
MAS
SOA
OGC
Real-Time Monitoring vs. Recommendation Improves System Knowledge
Friendly User Interface
Quick Access to all information Among Water Supply Distribution
Open Standards
User Awareness
Demand Driven (Forecasting)
Water Allocation (Expert System)
Pumping Scheduling (AI & ML & Simulation)
Alerts & Early Warning

# Be prepared

# Partners

Ecosystem approach

Prepare for IoT & Digital Water

Enable connectivity

Promote Interoperability

“Smart everything everywhere”

Data privacy and information security

# How


Map your Digital Strategy
1
Create Initial Pilot Projects
2
Define the capabilities you need
3
Become a virtuoso un data analytics
4
Transform into a digital company
5
Actively plan an ecosystem approach
6

# Questions?

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# Thank you!

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