



Portfolio of collaboration activities and synergies with other relevant research projects – interim update

Deliverable 1.5

WP1 Project Management



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<b>LEAD BENEFICIARY</b>	Delft University of Technology		
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Version	Description (Section, page number)	Author	Organisation short name
V0.1	First draft	Danitsja van Heusden	Delft University of Technology
V0.2	Review	Andrea Rubini	Water Europe
V0.2	Review	Dwani Venkataswamy Gowda	Water Europe
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V0.4	Review	Luuk Rietveld	Delft University of Technology
V1.0	Final version	Danitsja van Heusden	Delft University of Technology
V2.0	Final version	Danitsja van Heusden	Delft University of Technology

### Quality control

Author	Organisation short name	Role	Date
Danitsja van Heusden	Delft University of Technology	Deliverable Leader & Work Package Leader	24-10-2024
Andrea Rubini	Water Europe	Reviewer 1	29-10-2024
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Luuk Rietveld	Delft University of Technology	Scientific project coordinator	22-11-2024
D. van Heusden-van Winden	Delft University of Technology	Project coordinator	26-11-2024 & 17-04-2026 & 21-05-2026

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## Abbreviations

CA		Consortium Agreement
DCL		Demo Case Leader
DoA	-	Description of the Action
EAB		External Advisory Board
EC	-	European Commission
EU	-	European Union
GA	-	General Assembly
PC		Project Coordinator
SC		Steering Committee
WIE		Water Innovation Europe
WP	-	Work Package
WPL	-	Work Package Leader
ZP4W		ZeroPollution4Water

Short name	Participant organisation name
TUD	Delft University of Technology
RWTH	RWTH Aachen University
CEB	CEBEDEAU
NTUA	National Technical University of Athens
KWR	KWR Water Research Institute
WTNT	Stichting Waternet
HWL	Het waterlaboratorium
VEF	Veolia Eau France
EYDAP	Athens Water Supply and Sewerage Company
OLI	OliSens
OXY	Oxymem
ORV	Orvion
CHEM	CHEMITECH
WE	Water Europe
ALTIS	Altis Groupe SA
BNV	bNovate
VEHO	Veolia Holding Ceska Republika

## Introduction

Task 1.4: Coordination and collaboration with other relevant projects (TUD, KWR) [M1-M48] undertakes the coordination and collaboration activities with other relevant ongoing research projects (such as those funded under the same call) with the aim to identify and leverage synergies (e.g., common standards, compatible technology stacks, common policy briefs, common best practice guidelines).

This deliverable reports about the collecting and clustering collaboration activities with other relevant ongoing research projects that have been carried out. The results of this tasks will also be reported in the future D1.9 Final Portfolio of collaboration activities and synergies with other relevant research projects.

## 1. ZeroPollution4Water Cluster

The ZeroPollution4Water<sup>1</sup> (ZP4W) Cluster is an initiative originated from the coalition of seven different projects funded from two Horizon Europe 2022 call. The “sister founding” projects of the Cluster are as follows:

1. IntoDBP
2. UPWATER
3. H2OforAll
4. MAR2PROTECT
5. SafeCREW
6. NINFA -Cordis
7. ToDrinQ



Figure 1: ZeroPollution4Water projects

The objective and aim of the ZeroPollution4Water cluster are as follows:

*To contribute to the creation of a toxic-free environment and achieve a Water-Smart Society by addressing pollution challenges in air, water, and soil. Focused on the European Union's Zero Pollution ambition and the European Green Deal, the cluster aims to improve water quality, safeguard drinking water sources, and protect groundwater against the harmful impacts of global and climate change. By leveraging collaborative projects funded through Horizon 2020 and Horizon Europe, the cluster aims to develop*

<sup>1</sup> <https://zeropollution4water.eu/>

*advanced preventive and mitigating strategies, effective risk assessment and management systems, and innovative monitoring and treatment solutions for drinking water and groundwater.*

*The cluster aims to improve water quality, safeguard drinking water sources, and protect groundwater against the harmful impacts of global and climate change. By leveraging the collaboration and synergies between the collaborative projects funded through Horizon Europe, the cluster aims to develop advanced preventive and mitigating strategies, effective risk assessment and management systems, and innovative monitoring and treatment solutions for drinking water and groundwater.*

ZeroPollution4Water Cluster serve as mechanisms for collaboration, knowledge exchange, policy influence, and market uptake through:

- Internal collaboration & Synergy
- Cooperation with other projects & Initiatives
- Policy Shaping & Implementation
- Capitalization of Results & Communication
- Sharing Good Practices & Recommendations
- Market Uptake & Exploitation of Solutions

Based on thematic areas to support evidence- based implementation of European Green Deal Zero Pollution, the Cluster Work is currently organised in six Working Groups covering the variety and potential of the cluster members:

1. Management and Coordination
2. Communication
3. Technology and Innovation
4. Policy Advisory
5. Data Management and Sharing
6. From R&I to Impact

ToDrinQ contributed to the ZP4W by appointing WP Leaders with the right expertise to join one of the Working Groups above:

1. Management and Coordination
  - Danitsja van Heusden-van Winden (TU Delft)
  - Lydia Vamvakeridou-Lyroudia (KWR)
2. Communication
  - Serena Amico (WE)
  - Maria Mirachtsi (WE)
3. Technology and Innovation
  - Jean-François Gérard (CEB)
4. Policy Advisory
  - Loic Charpentier (WE)
5. Data Management and Sharing
  - Lydia Vamvakeridou-Lyroudia (KWR)
6. From R&I to Impact
  - Luuk Rietveld (TU Delft)

ToDrinQ representatives participated in ZP4W activities by presenting their expertise and role within ToDrinQ and exchange knowledge at ZP4W webinars:

### *1.1 Webinar: Technological Perspective: Analytics challenges in groundwater and drinking water*

**Objective:** To understand gaps and synergies amongst the projects

**Audience:** Internal ZP4W webinar attended by the drinking water projects IntoDBP, NINFA, UPWATER and ToDrinQ

**Date:** 4 March 2024

**Place:** Online

**ToDrinQ representative(s):** Jean-Francois Gerard (CEB).

**Contribution:** Presentation: 'Novel cost-effective water quality sensors' by Jean-Francois Gerard (CEB).

### *1.2 Webinar: Treatment Technologies*

**Objective:** To understand gaps and synergies amongst the projects

**Audience:** Internal ZP4W webinar attended by the drinking water projects H20forAll, MAR2PROTECT, NINFA, SafeCrew and ToDrinQ

**Date:** 8 July 2024

**Place:** Online

**ToDrinQ representative(s):** Carsten Bartels (RWTH)

**Contribution:** Presentation: 'Development of a compact water treatment system' by Carsten Bartels (RWTH)

### *1.3 Webinar: Decision Making Tools*

**Objective:** To understand gaps and synergies amongst the projects

**Audience:** Internal ZP4W webinar attended by the drinking water projects H20forALL IntoDBP, UPWATER, NINFA, SafeCREW, Mar2Protect, ToDrinQ

**Date:** 24 September 2024

**Place:** Online

**ToDrinQ representative(s):** Greg Kyritsakas (TU Delft)

**Contribution:** Presentation: 'ToDrinQ – WP6: design-support Tool for Flexible Drinking Water Treatment Plants' by Greg Kyritsakas (TU Delft)

### 1.4 Water Projects Europe 2023

**Objective:** Water Projects Europe (WPE) is a series of events of Water Europe made to learn from and build on the experience of innovating projects working on converging topics.

**Audience:** Public

**Date:** 19 October 2023

**Place:** Brussels, Belgium

**ToDrinQ representative(s):** Luuk Rietveld (TU Delft)

**Contribution:** Presentation 'TOolkit for aDaptable, Resilient INstallations securing high Quality drinking water' by Luuk Rietveld (TU Delft) for the ZeoPollution4Water Cluster

### 1.5 Water Innovation Europe (WIE) 2024

**Objective:** The ZeroPollution4Water (ZP4W) Cluster Workshop was a highlight of the overall event showcasing the great collaboration and transfer of knowledge that has been attained among the seven sister projects.

The ZeroPollution4Water Cluster Workshop aimed at connecting policymakers and project stakeholders for collaborative dialogue and knowledge sharing. The workshop explored the intersection of policy development and project practises from the experience of the case studies of the ZP4Water Cluster sister projects.

The event features the Inventory of the case studies from ZP4Water Cluster sister projects, offering insights into effective strategies and the first Policy Brief of the Cluster on "Preventing groundwater contamination and securing drinking water quality".

**Audience:** Public

**Date:** 17 June 2024

**Place:** Brussels, Belgium

**ToDrinQ representative(s):** Lydia S. Vamvakeridou-Lyroudia (KWR)

**Contribution:** Presentation 'TOolkit for aDaptable, Resilient INstallations securing high Quality drinking water' by Lydia S. Vamvakeridou-Lyroudia (KWR)

### 1.6 Joint Policy Brief

A joint policy brief about Drinking Water<sup>2</sup> and the Zero Pollution Action Plan has been drafted in collaboration with the ZP4W Cluster. This policy brief will be used as a base line for the D8.4 First policy brief about Drinking Water and the Zero Pollution Action Plan.

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<sup>2</sup> [https://zeropollution4water.eu/wp-content/uploads/2026/03/ZP4W\\_Deliverable\\_Policy-Brief-1.pdf](https://zeropollution4water.eu/wp-content/uploads/2026/03/ZP4W_Deliverable_Policy-Brief-1.pdf)

### *1.7 Case Study Inventory*

Contribution to the ZeroPollution4Water Case Study Inventory<sup>3</sup>. The inventory provides an overview of 32 case studies located in 18 countries, where groundbreaking research is being conducted within 7 Cluster projects funded under Horizon Europe (UpWater, Ninfa, H2OforAll, IntoDBP, SafeCrew, ToDrinQ and MAR2PROTECT).

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<sup>3</sup> [https://zeropollution4water.eu/wp-content/uploads/2025/03/zeropollution4water-cluster-JW0125006ENN\\_EC\\_CaseStudyOverview.pdf](https://zeropollution4water.eu/wp-content/uploads/2025/03/zeropollution4water-cluster-JW0125006ENN_EC_CaseStudyOverview.pdf)

## 2. ICT4Water Cluster

The ICT4Watercluster<sup>4</sup> is a hub for EU-funded research projects on ICT applied to water management. Currently, around 40 projects are members of the cluster, including ToDrinQ. These are both ongoing projects and projects that were members of the cluster before their completion. In the latter case, the ICT4Water continues to display links to the projects' webpages and to selected project outcomes (e.g. videos, IT tools open to the public). This permanent link between the cluster and the projects, even after their completion, helps showcasing project results and supports their dissemination and exploitation.



Figure 2: ICT4Water logo

ToDrinQ Scientific Project Coordinator Luuk Rietveld (TU Delft) submitted the application to join the ICT4Water cluster on 5 May 2024. On 7 June 2024, the ICT4Water cluster welcomed the ToDrinQ project and informed us about the social media platforms, quarterly newsletter, contact persons and cluster's action Groups.

ToDrinQ contributed several times to the ICT4Water cluster:

- **ICT4Water Newsletter - WIE23 ICT4Water cluster event special** 💧 | July 2023 - Special ICT4Water cluster event at WIE23  
7 July 2023  
Note from the editor with a warm welcome to the new ToDrinQ projects that joined the cluster
- **ICT4Water Quarterly Newsletter | September 2023**  
29 September 2023  
Toolkit for Adaptable, Resilient Installations Securing High Quality Drinking Water
- **ICT4Water Quarterly Newsletter | December 2023**  
8 December 2023  
ToDrinQ Consortium reunited in Switzerland for the 2 General Assembly
- **ICT4Water Newsletter | October 2024**  
18 October 2024  
ToDrinQ Project Video Released!  
ToDrinQ Project Review Meeting Held in Brussels to Advance Water Management Innovation

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<sup>4</sup> <https://ict4water.eu>

### 3. Contribution of Collaboration Activities to Task 1.4 Objectives

The collaboration activities reported in this interim deliverable directly support the objectives of Task 1.4: Coordination and collaboration with other relevant projects, as defined in the Description of Action. Task 1.4 aims to identify, establish, and leverage synergies with ongoing European projects funded under the same call in order to enhance scientific coherence, avoid duplication of effort, align research outputs, and increase impact.

Participation in the ZeroPollution4Water and ICT4Water clusters provided a structured mechanisms for collaboration, enabling ToDrinQ to exchange knowledge, validate tools and technologies, and position its results within a broader European context. Rather than functioning as isolated communication and dissemination activities, the reported webinars, workshops, and joint outputs served as forums for two-way learning and knowledge exchange, strategic alignment, and co-creation.

Thematic webinars organised within the ZeroPollution4Water cluster had a direct benefit for ToDrinQ. These events enabled the consortium to benchmark its technological developments, identify gaps and complementarities and enhance the validation process.

Several key synergies were identified and actively leveraged through the reported collaboration activities:

- Technological and Methodological Synergies
- Monitoring technologies
- Treatment strategies
- Risk-based and decision-support approaches
- Policy Synergies
- Impact Synergies
- Dissemination Synergies

## 4. Conclusion and Outlook

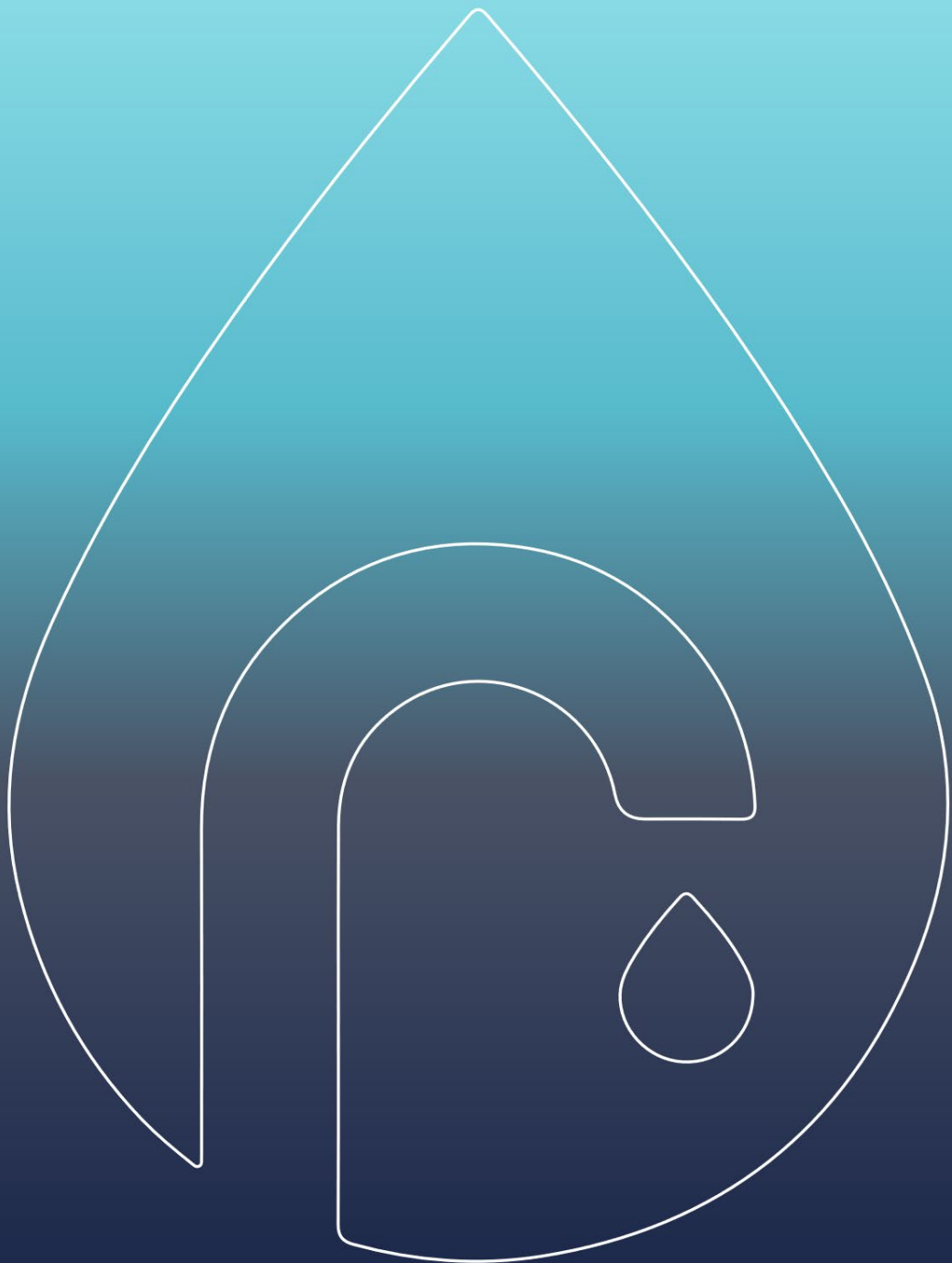
This interim update of Deliverable D1.5 provides an overview of the collaboration activities and synergies that ToDrinQ has established with other relevant European research and innovation initiatives to date. The activities described demonstrate that ToDrinQ is well embedded in key European clusters, in particular the ZeroPollution4Water and ICT4Water Clusters, and is actively contributing to joint knowledge exchange, strategic dialogue, and the co-creation of shared outputs such as policy briefs, case study inventories, and thematic webinars.

Looking ahead, ToDrinQ will continue to actively engage with these clusters throughout the remainder of the project. Future collaboration efforts will focus on deepening thematic synergies, further contributing to joint policy-oriented outputs, and exploitation of project results. Emphasis will be placed on final technical developments, policy advice, market uptake and knowledge sharing with stakeholders.

## Annexes

*Webinar: Technological Perspective: Analytics challenges in  
groundwater and drinking water*

Presentation: 'Novel cost-effective water quality sensors' by Jean-Francois (CEB).



## WP#3 Novel cost-effective water quality sensors

Main partners:

KWR, CEBEDEAU

Olisens, Orvion, BNovate

Research Centres

Private & commercial Cies



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the European Union



ZeroPollution4Water  
CLUSTER

- WP Objectives: development of novel water quality sensors for DW
- Online or onsite , automated (as much as possible) & high frequency of measurements,
  - cost effective/ measure
- Final goals
  - early warning,
  - better DW quality – monitoring for resilience to changes, for small and remote plants
  - generation of data (use of soft sensors & AI)

## Performances on demosite



- 4 min / test
- < 1kg
- 15 minutes training
- No CMR reagent



**Nitrate**  
**8%\***  
 162 measurements

**Nitrate**  
**8%\***  
 41 measurements

**Chloride**  
**11%\***  
 94 measurements

**Chloride**  
 Protocole of measurement  
 to be adapted to local water

\*% : Average of  $\left( \frac{\text{IonSens value} - \text{Reference value by ICP}}{\text{Reference value by ICP}} * 100 \right)$



*Performances on demosite*



Beaune

**Lead**

on water plant production

< LOQ

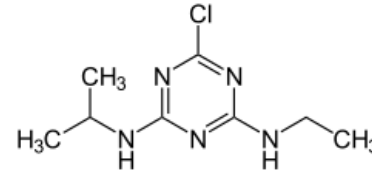
11 measurements

on distribution network

**11%\***

5 measurements

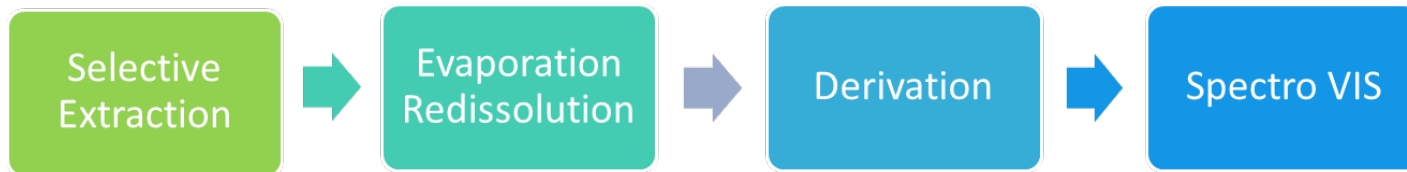
\*% : Average of  $\left( \frac{\text{IonSens value} - \text{Reference value by ICP}}{\text{Reference value by ICP} * 100} \right)$



- **Portable (onsite) or online ?**
- **Limit of quantification (LOQ) :** 0,1 µg/L seems achivable
- **Specifity of measurement :**  
Atrazine + metabolite + other chlorinated atrazine  
(Global measurement)

## Questions of the use?

- **Identify what is the right 'use case'...**
  - Evaluate saturation of activ carbon filter ?
  - Detect accidental pollution ?
  - Other ?
- LOQ, Specificity
- CapEx / OpEx
- Level of qualification of operators (level of robotisation)
- Exposition to CMR reagent
- Duration of measurement



## Development of an onsite system for monitoring faecal pollution (ORV & KWR)

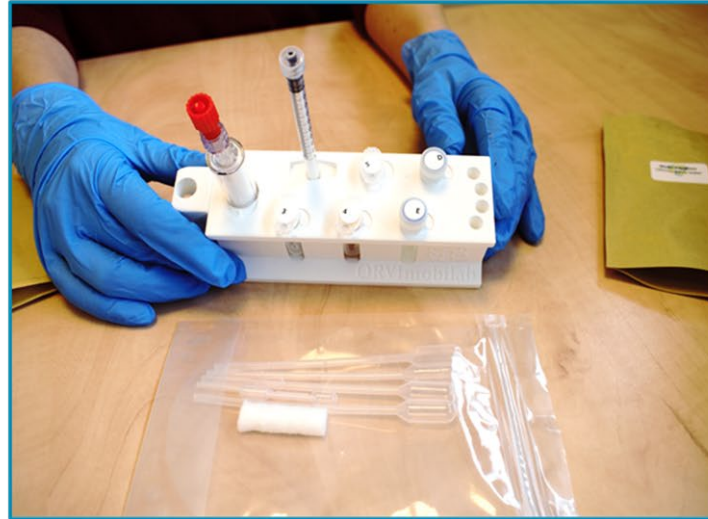
Orvion Udetect® -existing

- ✓ ID & Q bacteria **within 2 hours** in field/on site
- ✓ Usable by **operators** after short training
- ✓ **No cooling required.** After filtration, samples can be stored 1 week
- ✓ **No electricity required** other than for thermocycler (car batt).

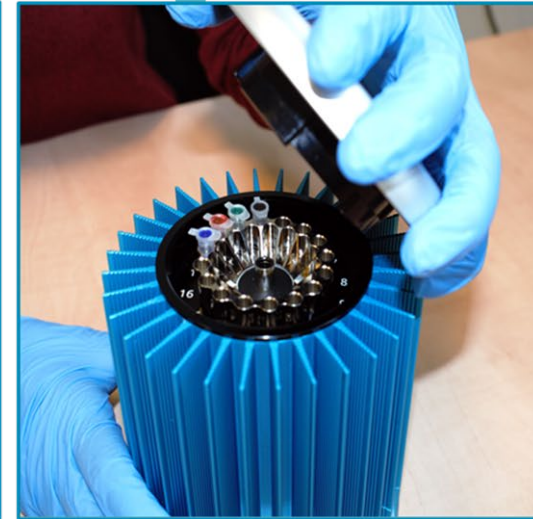




Filtration  
(± 10 min)



DNA isolation  
(± 20 min)



qPCR analysis  
(± 50 min)

## Technology goals

- ✓ Lower detection limit (goal: 10 cells/L)
- ✓ Improve & simplify standard protocol
- ✓ Develop & test Semi-automated Udetect

## Development of online sensor for bacteriological quality by FlowCytometry

### Continuous surveillance of the microbiological quality



**BactoLink**, remote access solution.  
Fully developed.

#### Under development:

- Upgrade of the electronics improving instrument usability while increasing the system's overall analytical power.
- Data analysis tools.
- UV disinfection monitoring solution.



Development of a multipurpose automated sample processing and concentration tool **GOALS**

**Pre-treatment**

Optimize sample purification and filtration  
*removal of inhibitors, non target cells, suspended solids*

**Preservation**

Maintain sample quality  
*preserve cell numbers and cell integrity*

**Concentrating**

Detect rare biological contaminants and/or pathogens.  
*decrease the detection limit*

[1] Flat plate CF



[2] Flat plate CF + vibration



[3] Hollow fiber CF



- *Tests show the possibility to concentrate bacterial cultures (in clean water!) 100 times with a negligible effect on cell viability, while staying within a reasonable filtration time frame (<1h)*
- *Validation with qPCR and flow cytometry*

- Questions
- 1. Define the exact needs for the sensors vs costs
  - real need online?, real need full automated?
  - reasonable and useful response time , useful frequency of measures
  - Limit of Detection (according to the norms)
  
- 2. Recognition of new technologies
  - How to be recognized as standardized measures? To be integrated in the legislation ?
  - example : for bacteriological quality – Plate counting vs new technologies

THANK YOU



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[www.todrinq.eu](http://www.todrinq.eu)



[ToDrinQ\\_eu](https://twitter.com/ToDrinQ_eu)



[ToDrinQ\\_eu](https://www.linkedin.com/company/ToDrinQ_eu)



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*Webinar: Treatment Technologies*

Presentation: 'Development of a compact water treatment system' by Carsten Bartels (RWTH)



# Development of a compact water treatment system

Including membrane-base biofilm systems

*Carsten Bartels, M.Sc.*

*Institute of Environmental Engineering (ISA)- RWTH Aachen*

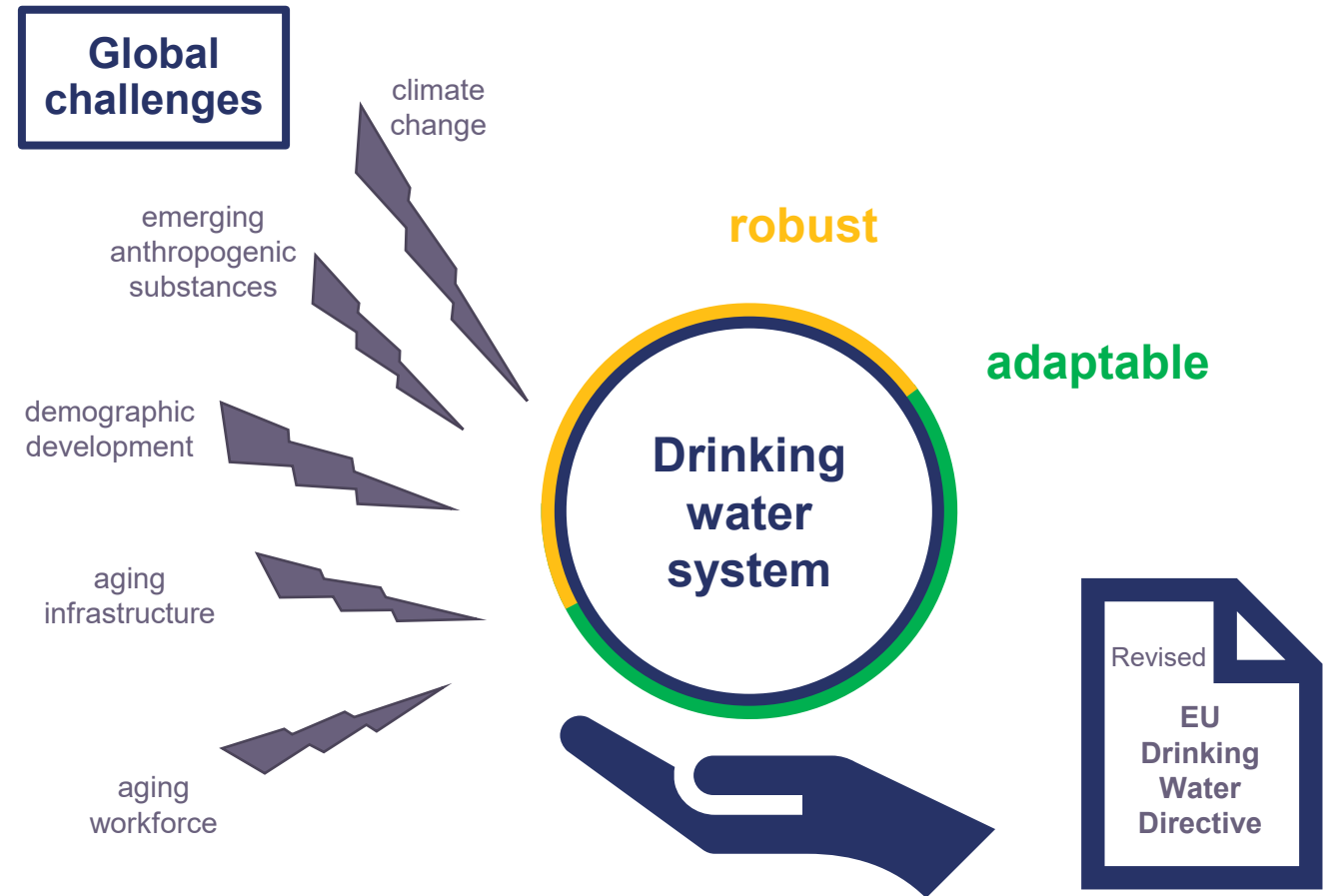


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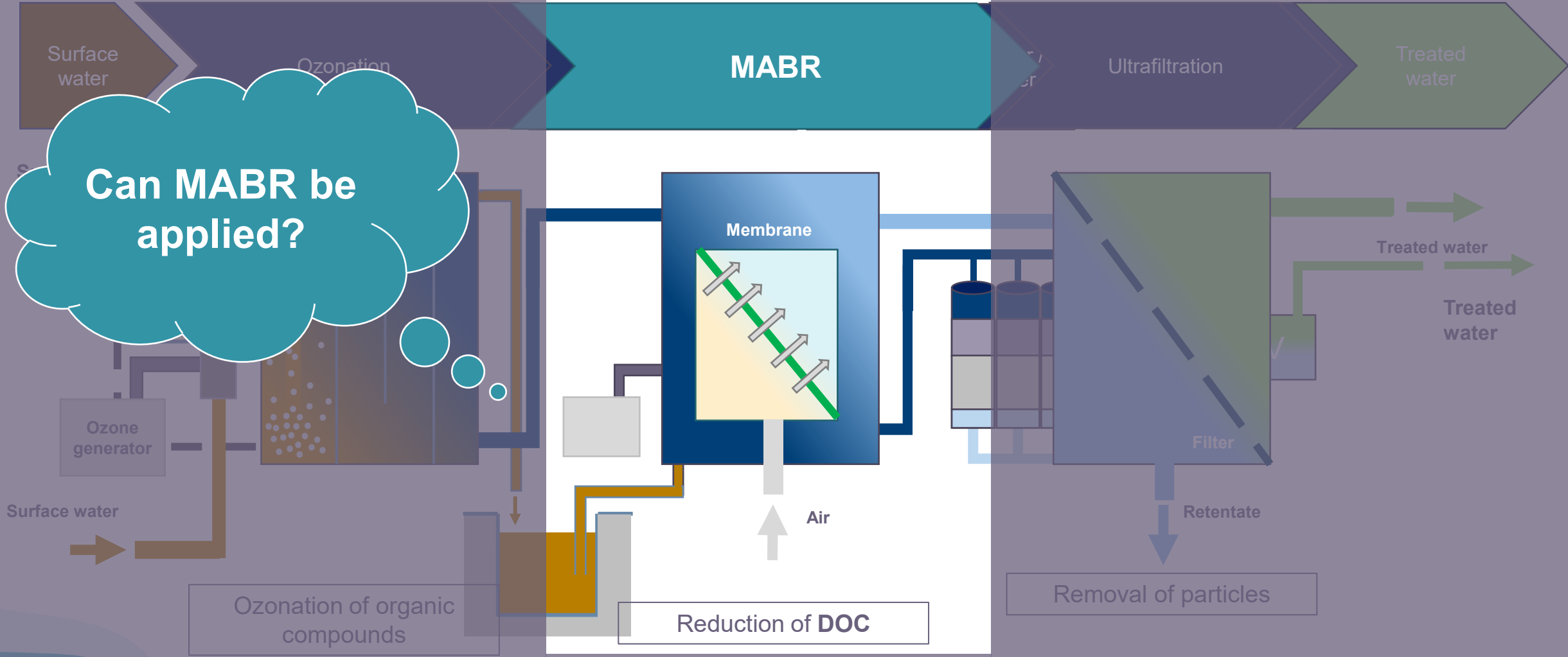
**Task:**

Development of a **compact** water treatment system including **membrane-base biofilm systems**





# Process intensification





# Membrane Aerated Biofilm Reactor - MABR

## Advantages:



Cheaper than conventional treatment



Easy installation



Robust in operation

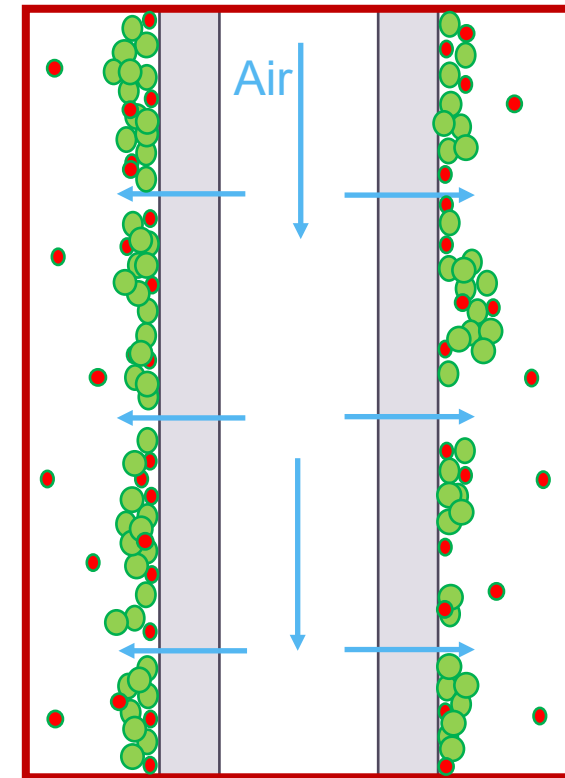


intensified biological treatment



reduction of organic micropollutants

Single fiber





# Challenges



High substrate concentrations  
(high DOC and COD)



Is MABR applicable?

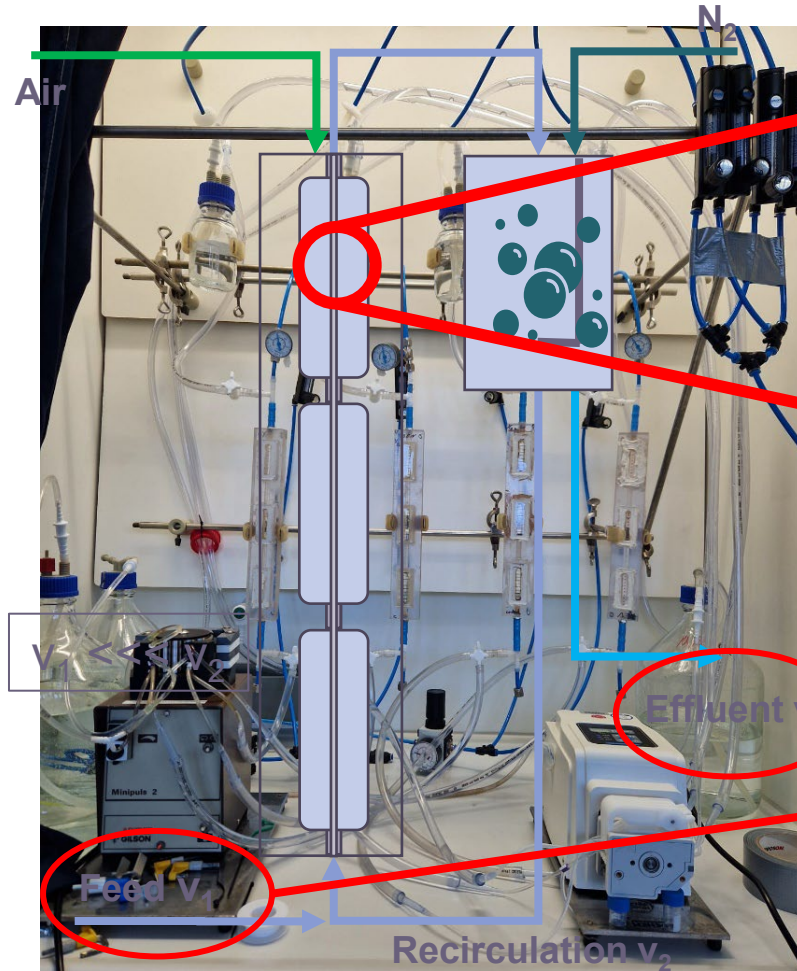
Will biofilm (per-) form?

Is the application feasible?

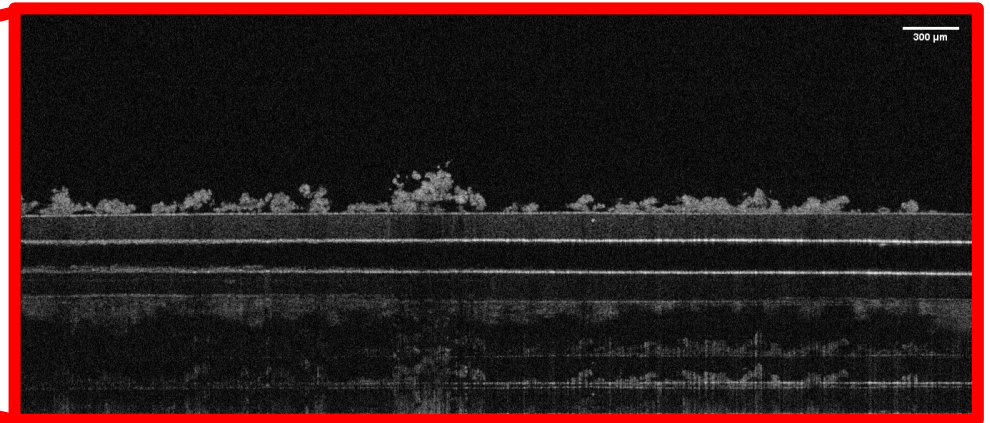
How can the system be improved?

# Approach

Bench scale



Optical coherence tomography (OCT)



Structural development  
→ thickness  
→ roughness

Sampling  
→ DOC removal

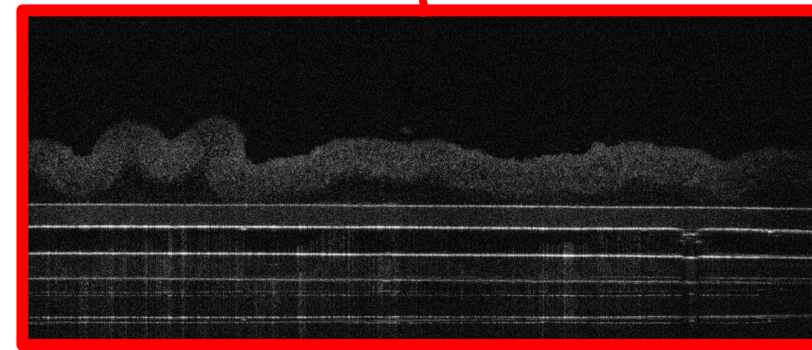
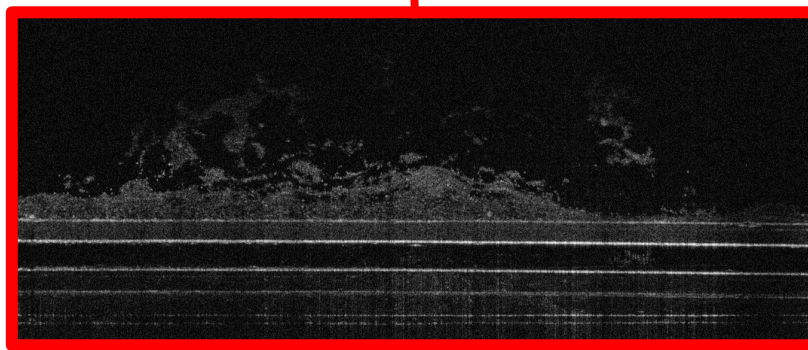
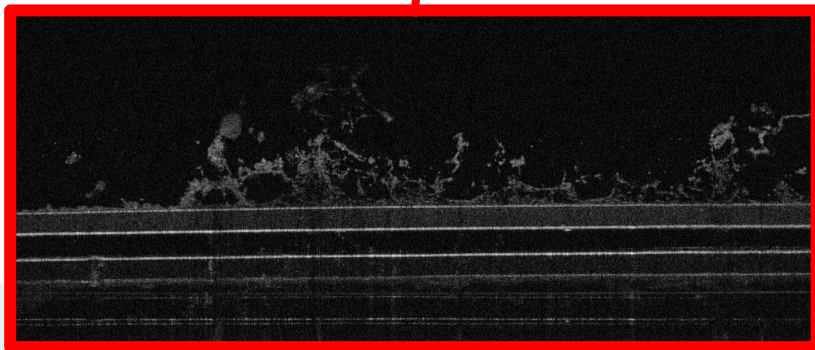
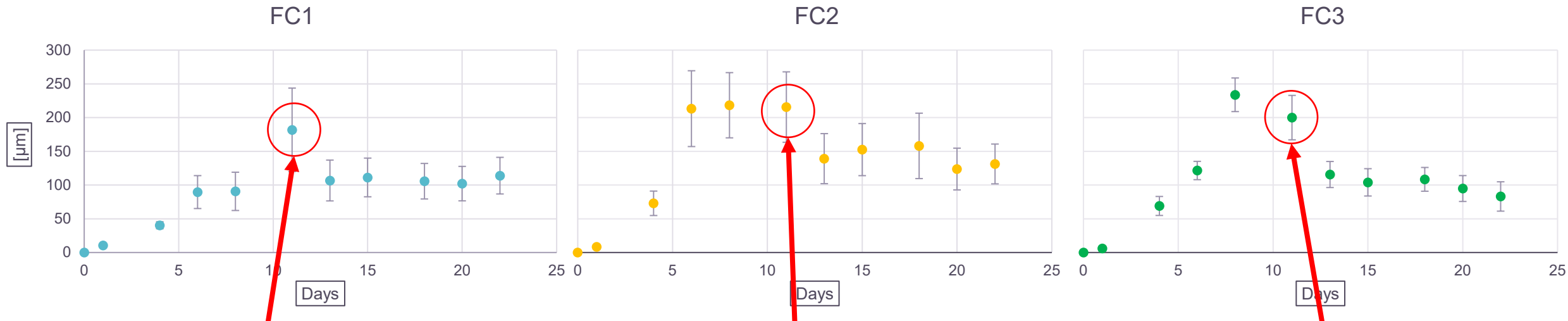


# Preliminary results – Biofilm growth

DOC ~ 5 mg/L

Will biofilm form? - YES

Biofilm thickness in  $\mu\text{m}$



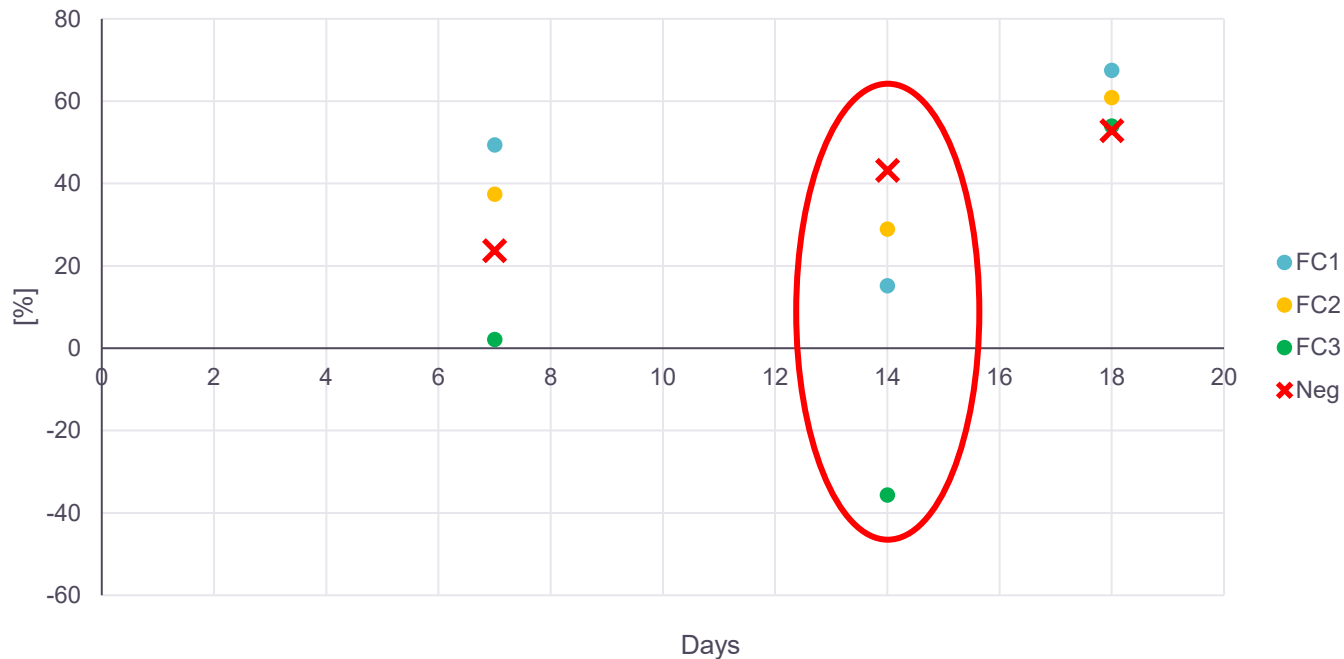


# Preliminary results

DOC ~ 5 mg/L

Will biofilm perform? - TBD

DOC – Removal in %



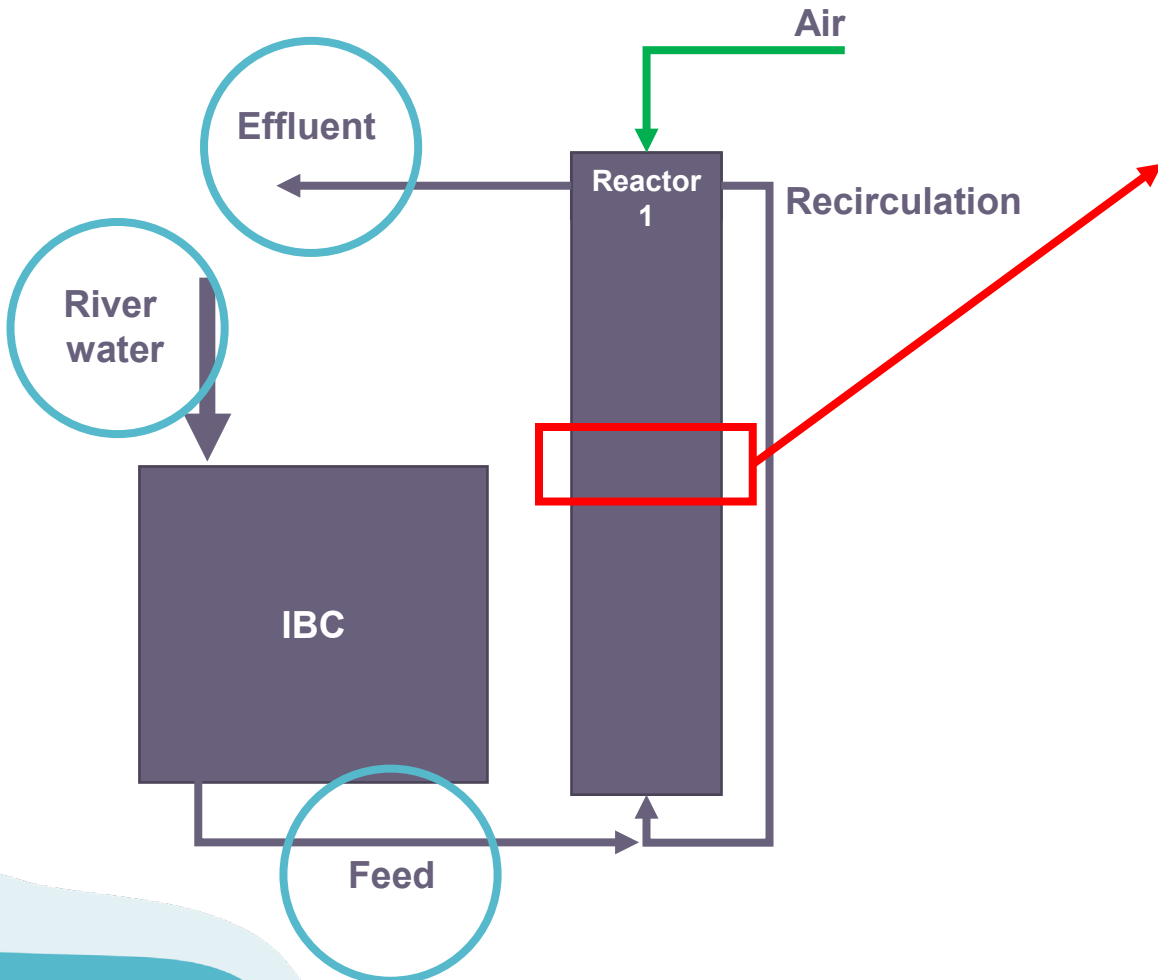
Area of the system >>> Area of one fiber [ $\sim 70\text{mm}^2$ ]

Negative control **not** containing a fiber

DOC removal of the system



# Approach



Day 0



Day 61



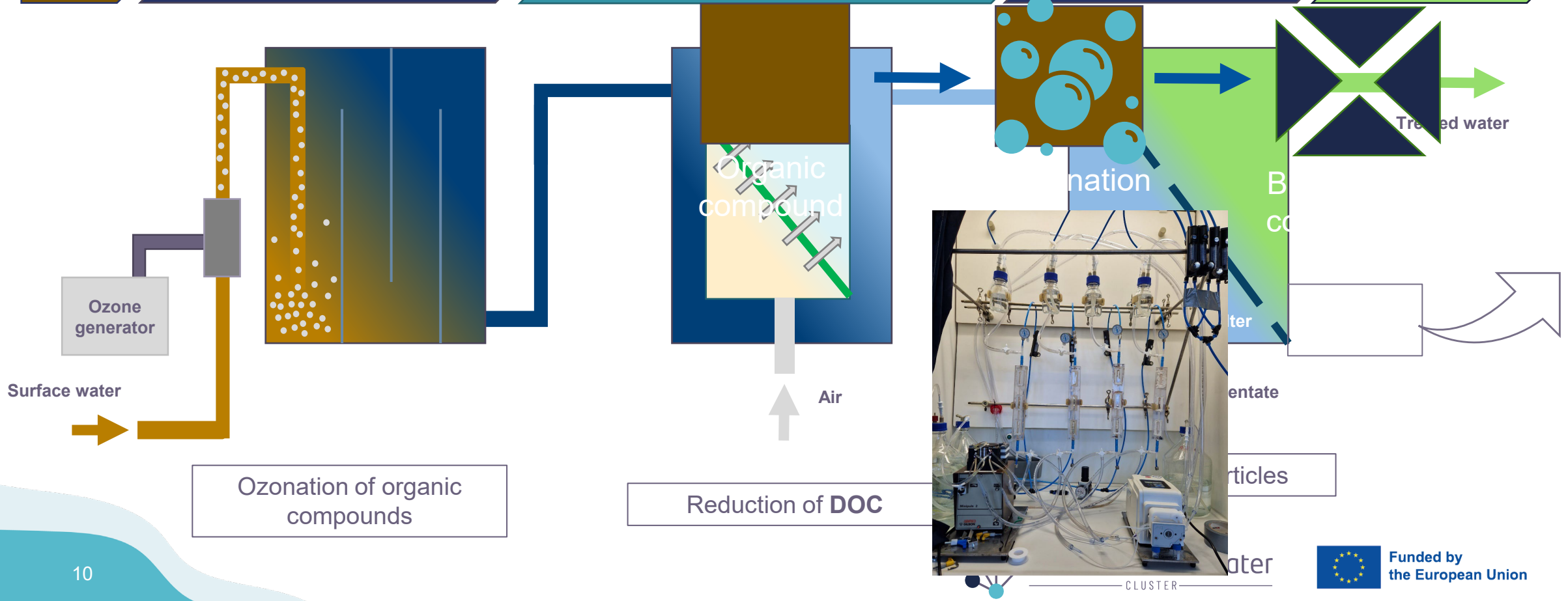
## Measurements

- COD
- Total Nitrogen
- (Phosphate)
- (Nitrite/Nitrate)





# Process intensification





## Contact information

**Project: ToDrinQ**

**WP: No. 5 Advanced, cost-effective drinking water treatment**

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Funded by  
the European Union

*Webinar: Decision Making Tools*

Presentation: 'ToDriNQ – WP6: design-support Tool for Flexible Drinking Water Treatment Plants' by Greg Kyritsakas (TU Delft)



ZeroPollution4Water  
CLUSTER

## ToDrinQ - WP6: Design-support Tool for Flexible Drinking Water Treatment Plants

Greg Kyritsakas, TU Delft



# ToDrinQ at a glance

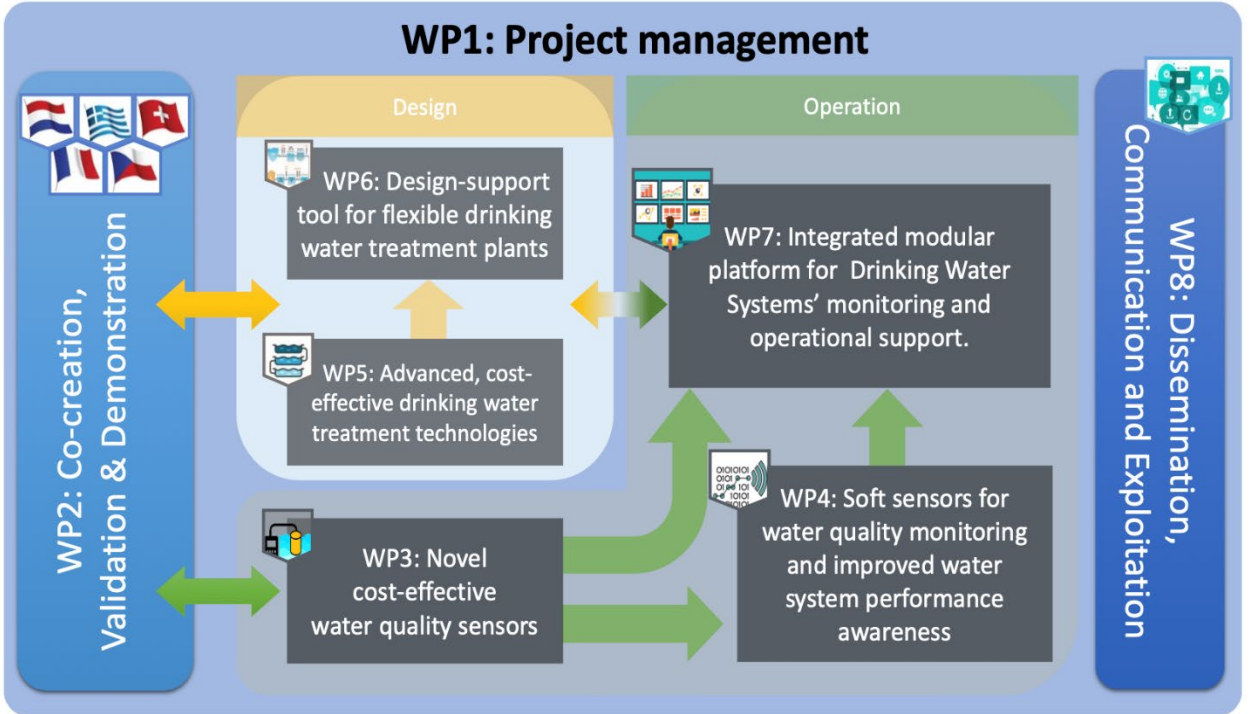


Partners

- Tu Delft
- ISA
- CEBEDEAU
- KWR
- VEOLIA
- EYAAΠ
- OllSens
- O.X.Y.M.E.M.
- Orvion
- CHEMTEC
- Water Europe

Associated Partners

- Het Waterlaboratorium
- ALTIS
- bNovate



[www.todrinq.eu](http://www.todrinq.eu)

# WP6 Design-support tool for flexible, small-scale drinking water treatment plants

## Overview

- **Aim**/General Objective: To provide a design-support tool (DST) for flexible/adaptable DWTPs.
- Specific **objectives** :
  - To **identify** and characterize treatment **technologies** and treatment **trains** applicable for drinking water treatment plants (DWTPs)
  - To define **key design components** related to **uncertainties** and goals when designing DWTPs
  - To develop a **tool (DST)** that can identify optimal design alternatives making DWTPs more flexible.
- WP Leader: Lydia Vamvakeridou-Lyroudia (KWR)
- Involved **Partners**: TUD, RWTH, NTUA, WTNT, VEF, VEOCZ, EYDAP
- End **users**: **Water utilities** for the preliminary design of drinking water treatment plants.

# WP6 Design-support tool for flexible, small-scale drinking water treatment plants

## Design Support Tool

The tool will generate and evaluate:

- Alternative **treatment steps** required for a variation of drinking water sources
- Alternative **treatment technologies** per treatment step.
- Alternative **treatment trains** based on the selected treatment technologies, the costs and the environmental impact
- The overall footprint of the selected treatment trains.

## WP6 Structures and Tasks

- **Task 6.1 (Completed):** Identification of key characteristics of drinking water treatment technologies and their corresponding treatment trains Lead: TUD; Involved partners: KWR, RWTH, VEF, VEOCZ; Period: M1 – **M18**
- **Task 6.2 (Completed):** Identification of key factors and their uncertainty for designing DWTPs. Lead: KWR; Involved partners: TUD, RWTH, EYDAP, WTNT; Period: M1 – **M18**
- **Task 6.3:** Identification of key design goals. Lead: KWR; Involved partners: TUD; Period: M12 – **M24 (Ongoing in parallel with T6.1 and T6.2- to be finalised in M24)**
- **Task 6.4:** Development of the design-support tool. Lead: KWR; Involved partners: NTUA; Period: M24 – M48 **(Not started yet in PR1)**

# WP6 Progress and achievements

➤ **Achievement** (beyond the scope of Milestone MS04)- **first version of the DST already developed:**

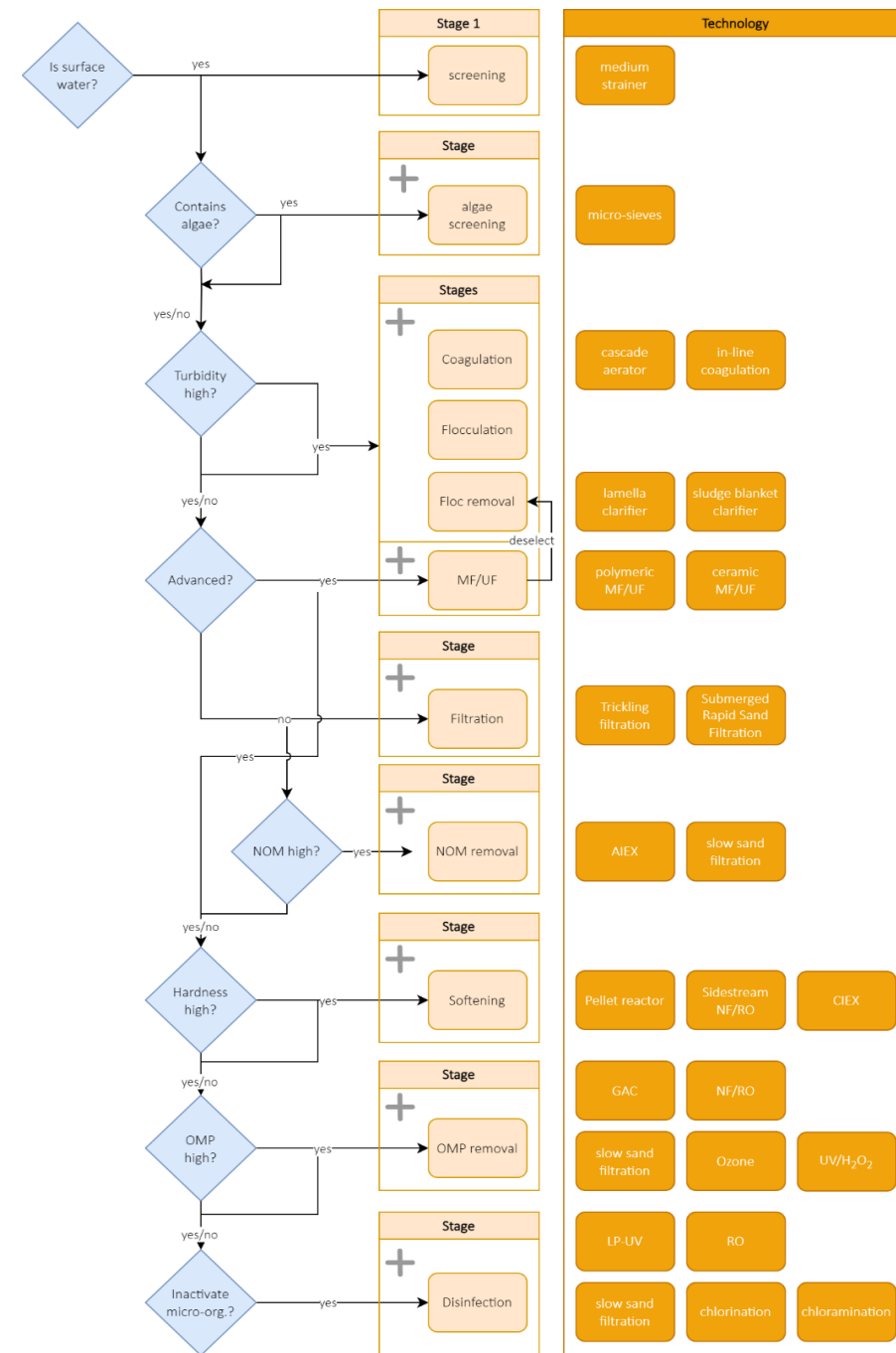
➤ **The framework and the (initial) version of the DST can be watched online (duration around 15 min):**

[Youtube video](#)

➤ **Data Used:**

- i) EYDAP (Yliki lake) water quality data
- ii) previous work (KWR database- available in Github)
- iii) Outputs of workshop about treatment trains – March 2023 at TUD

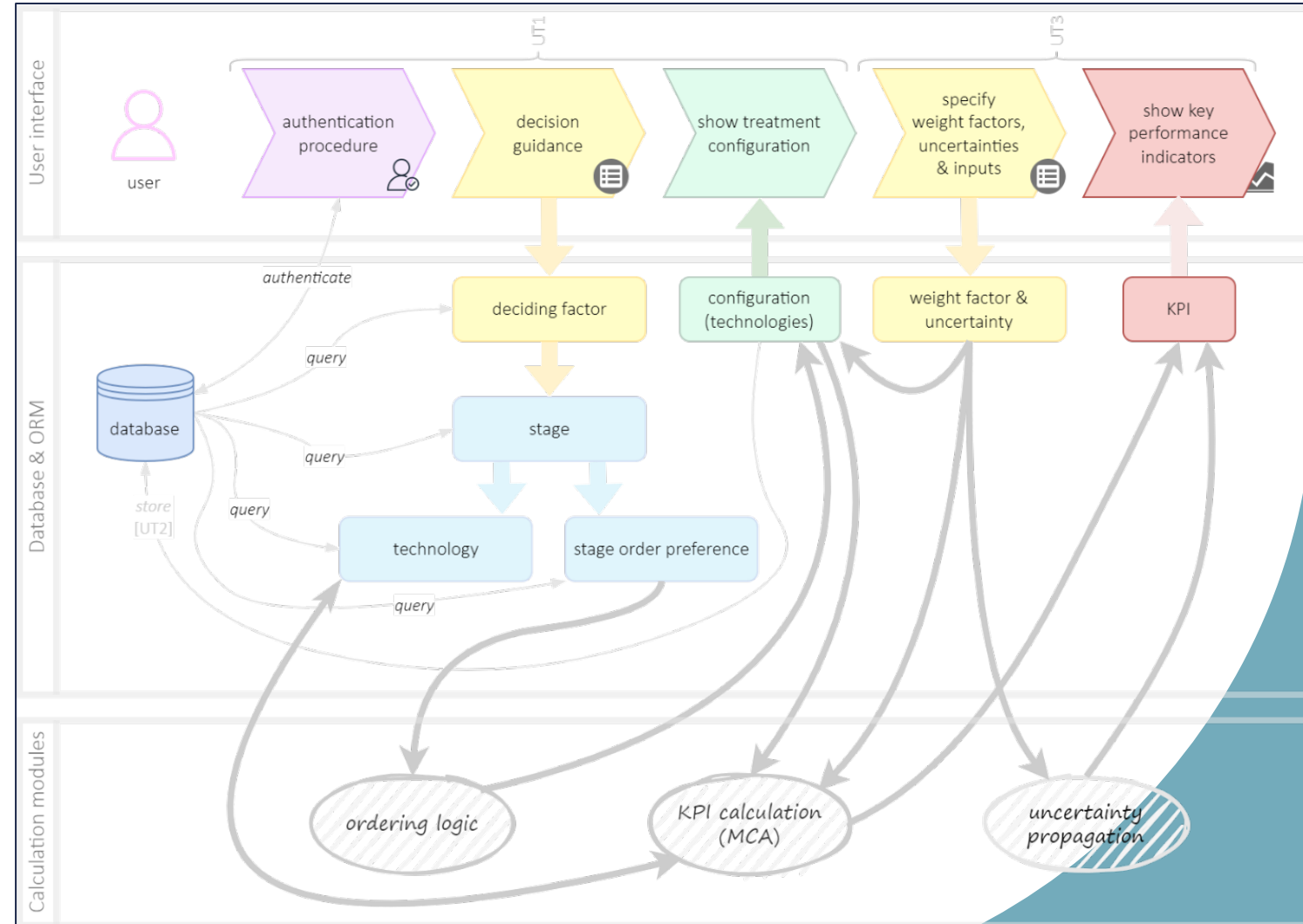
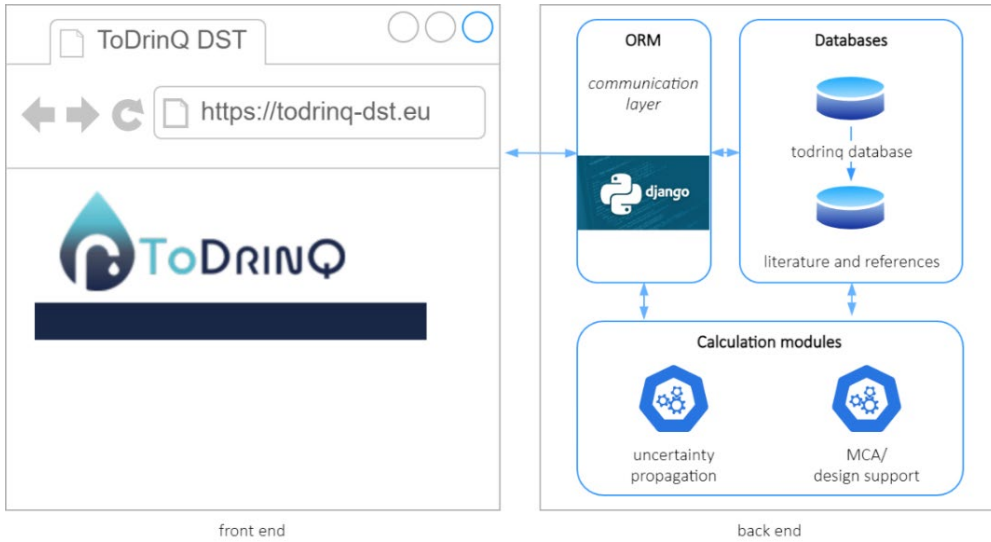
➤ Several points from T6.3 (e.g. specific design goals) already addressed in this DST version (as can be seen from the video)



## WP6 Main features of the DST (to be finalised in Tasks 6.3 and 6.4)

- **Automated procedure** for the identification of the treatment technologies and trains
- For **various water sources** (groundwater, surface water, river-bank water).
- The user has the option to **select from a range of technologies stored in the DST** based on the **source** water type and the **quality** of the water.
- Additional **uncertainty parameters** for each technology are quantified (apart from population, which is parametric), **complexity, robustness, flexibility** and the **environmental impact** and a **final score** is provided to the user.
- Four additional parameters calculated: **efficiency, footprint, head losses** and **total costs**.
- Full information regarding each **treatment train** that has been selected (out of the potential options). The user also has the **option to change** the treatment train based on the relative importance of the parameters.
- The current version is in **Python** and the upcoming version will be a **Django web** application to be hosted by KWR.

# WP6 DST Architecture (in development within T6.3 and T6.4)



## Deviations and Next Steps (related to T6.4)

- **Deviation:** Extension of Task 6.4 to M48 (already explained in previous slides)
- Next steps:
  - **Uncertainty:** more features and research on propagation, especially on water quality
  - New water quality **data** may be available from Yliki to be taken into consideration
  - More work on **costs (possible link with NL cost standard calculators), area footprint and environmental impact**
  - Transfer to **Django**
  - **Graphical User Interface (GUI)** version (with visuals) to be developed within T6.4.
  - **Validation** by the stakeholders (in Year 4)



**THANK YOU**

### *Water Projects Europe 2023*

Presentation: 'TOolkit for aDaptable, Resilient INstallations securing high Quality drinking water' by Luuk Rietveld (TU Delft)

# WATER PROJECTS EUROPE

## ZeroPollution4Water Cluster

 19 October 2023

 BluePoint, Brussels

# Project summary

- START DATE**  
01 December 2022
- DURATION**  
48 months
- BUDGET**  
3,994,479.75€
- PROJECT COORDINATOR**  
Delft University of Technology



### Partners

TU Delft + More info	ISA + More info	CEBEDEAU APPLY SCIENCE PROTECT WATER + More info	+ More info
KWR + More info	+ More info	VEOLIA + More info	VEOLIA + More info
EYDAP + More info	OliSens Water quality control in real time + More info	OXYMEM a DuPont brand + More info	Orvion + More info
CHEMI TEC Water and Environmental Technology + More info	Water Europe Technology & Innovation + More info		

### Associated Partners

Het Waterlaboratorium + More info	ALTIS + More info	bNovate TECHNOLOGIES + More info
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## Control at source: measures, methods, and tools

### At a glance: Objectives and concept

To support the **implementation** of the revised **Drinking Water Directive** (2023)- *Risk-based management approach*.

To enhance scientific and technical **knowledge** on drinking water quality protection monitoring, and treatment.

Development and testing of a modular innovation toolkit called the “**ToDrinQ Toolkit**”, including:

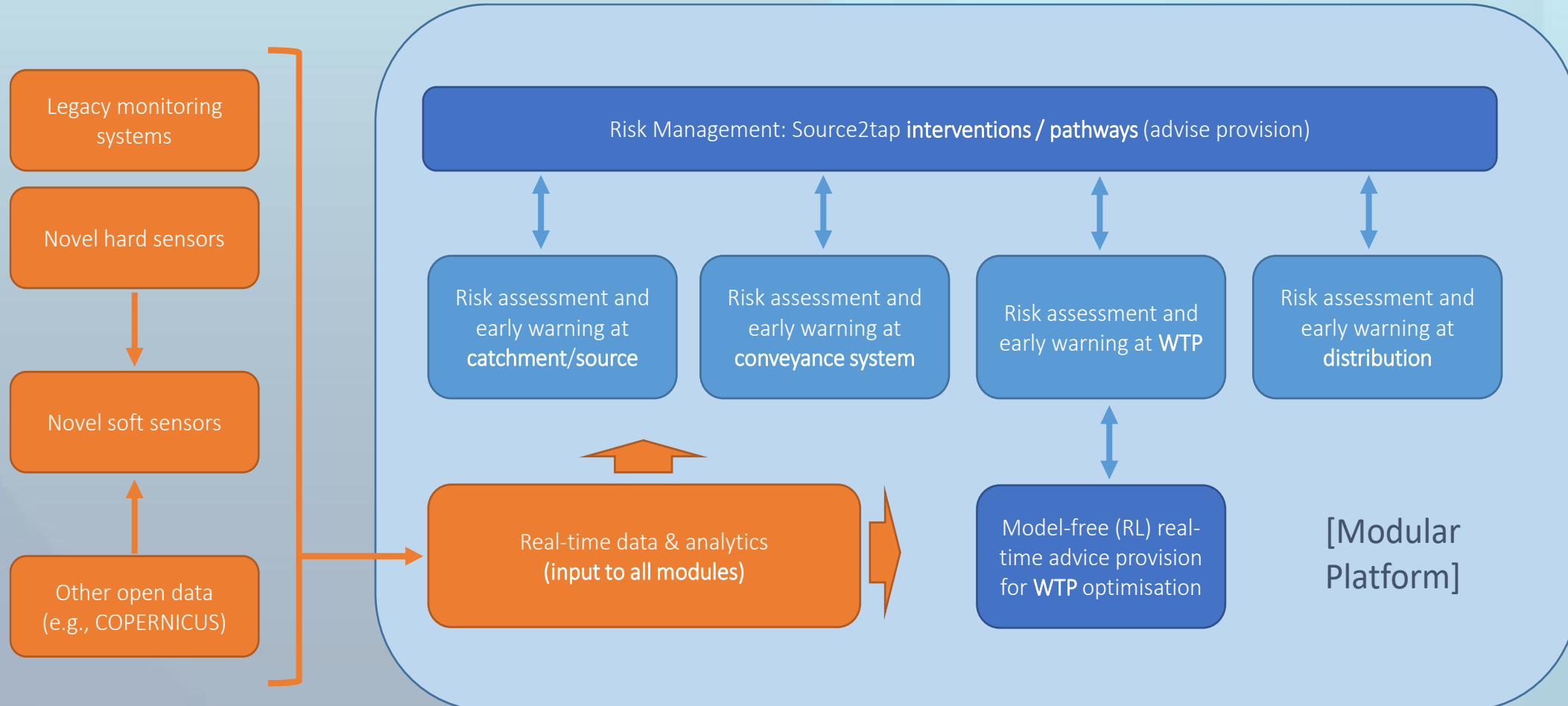
- ✓ Real-time **sensing** (including **soft sensors/AI**) and water quality **technologies**
- ✓ Innovative **treatment processes** for adaptable/flexible water treatment plants (including the **design** of **small plants**)
- ✓ Easy-to deploy **decision tools** and **platform**.





ZeroPollution4Water Cluster: Project contribution to Risk Management Plans

Integrated modular platform, data and workflow



R&I gap: Horizon new Work Programme 2025-27

Improving the **design and operation** of water treatment plants,  
 Increase drinking water system **resilience**  
 Ensure **high-quality** drinking water, by  
 Minimizing **micropollutants, pathogens, and disinfection** by-products



5 Demo Cases



DEMO CASE 1  
Amsterdam, Netherlands



DEMO CASE 2  
Athens, Greece



DEMO CASE 3  
Val de Bagnes, Switzerland



DEMO CASE 4  
Beaune, France



DEMO CASE 5  
Prague, Czech Republic

## Contribution to the ZeroPollution4Water Cluster



WG 1: ZP4W Cluster Management and Coordination → WE

WG 2: Policy Advisory → WE

WG 3: Communication → WE

WG 4: Technology and Innovation → Technology providers, knowledge institutes and end-users

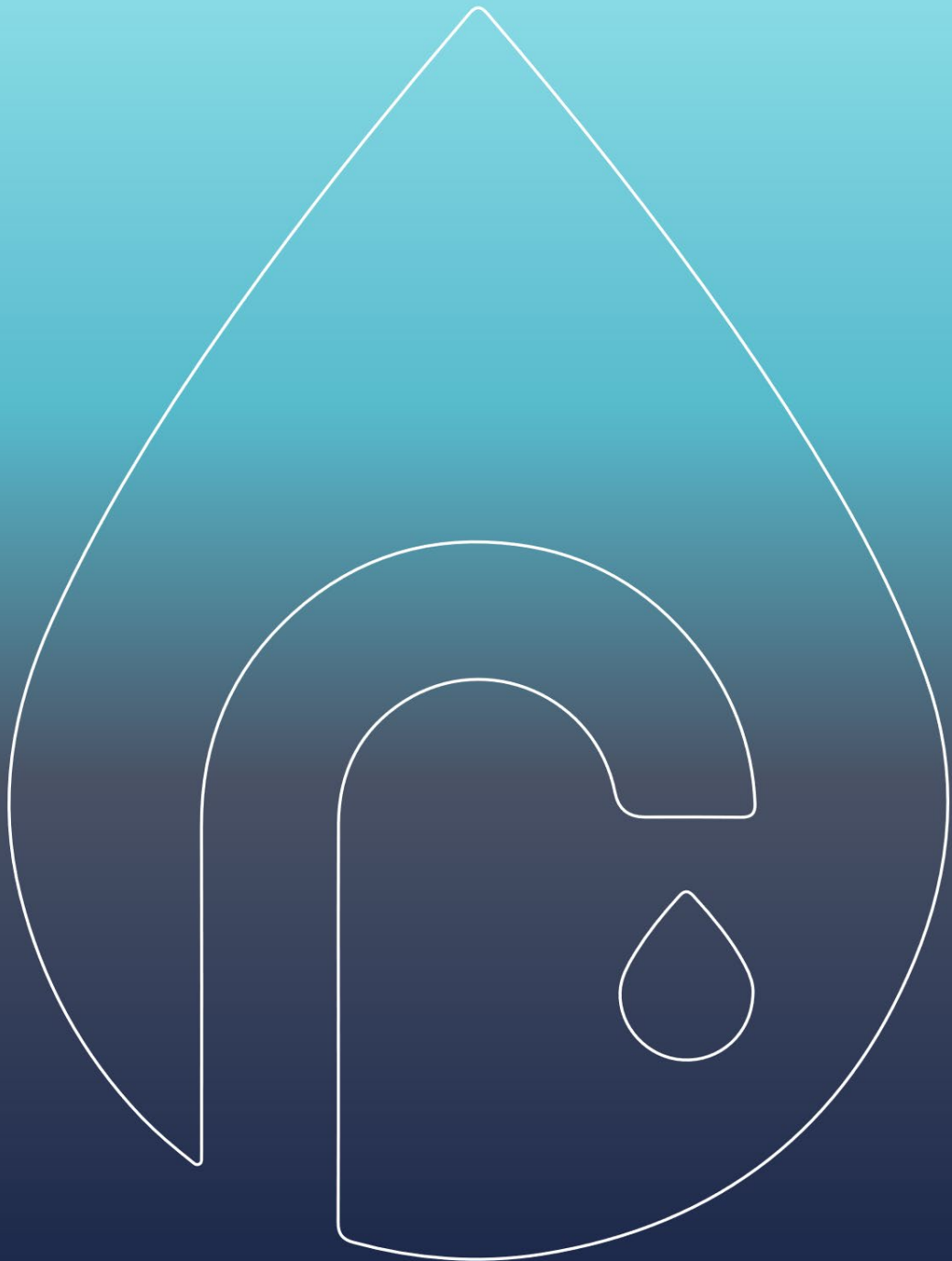
WG 5: Data Management and Sharing → TU Delft, All

WG 6: Zero Pollution for Water Market Uptake and Investments → TU Delft, All

Thank you!

### *Water Innovation Europe (WIE) 2024*

Presentation 'TOolkit for aDaptable, Resilient INstallations securing high Quality drinking water' by Lydia S. Vamvakeridou-Lyroudia (KWR)



TOolkit for aDaptable, Resilient INstallations  
securing high Quality drinking water

Lydia S. Vamvakeridou-Lyroudia (KWR)

Water Innovation Europe- Water and Health event

June 21, 2023



Funded by  
the European Union

## Key Facts: Budget, Dates, Partners



**START DATE**  
01 December 2022



**DURATION**  
48 months



**BUDGET**  
3,994,479.75€





**PROJECT COORDINATOR**  
Delft University of Technology






Partners

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Associated Partners

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## At a glance: Objectives and concept

- To support the **implementation** of the revised **Drinking Water Directive** (2023)- *Risk-based management approach*.
- To enhance scientific and technical **knowledge** on drinking water quality protection monitoring, and treatment.
- Development and testing of a modular innovation toolkit called the “**ToDrinQ Toolkit**” , including:
  - ✓ Real-time **sensing** (including **soft sensors/AI**) and water quality **technologies**
  - ✓ Innovative **treatment processes** for adaptable/flexible water treatment plants (including the **design of small plants**)
  - ✓ Easy-to deploy **decision tools** and **platform**.



## Aims and Demo Cases

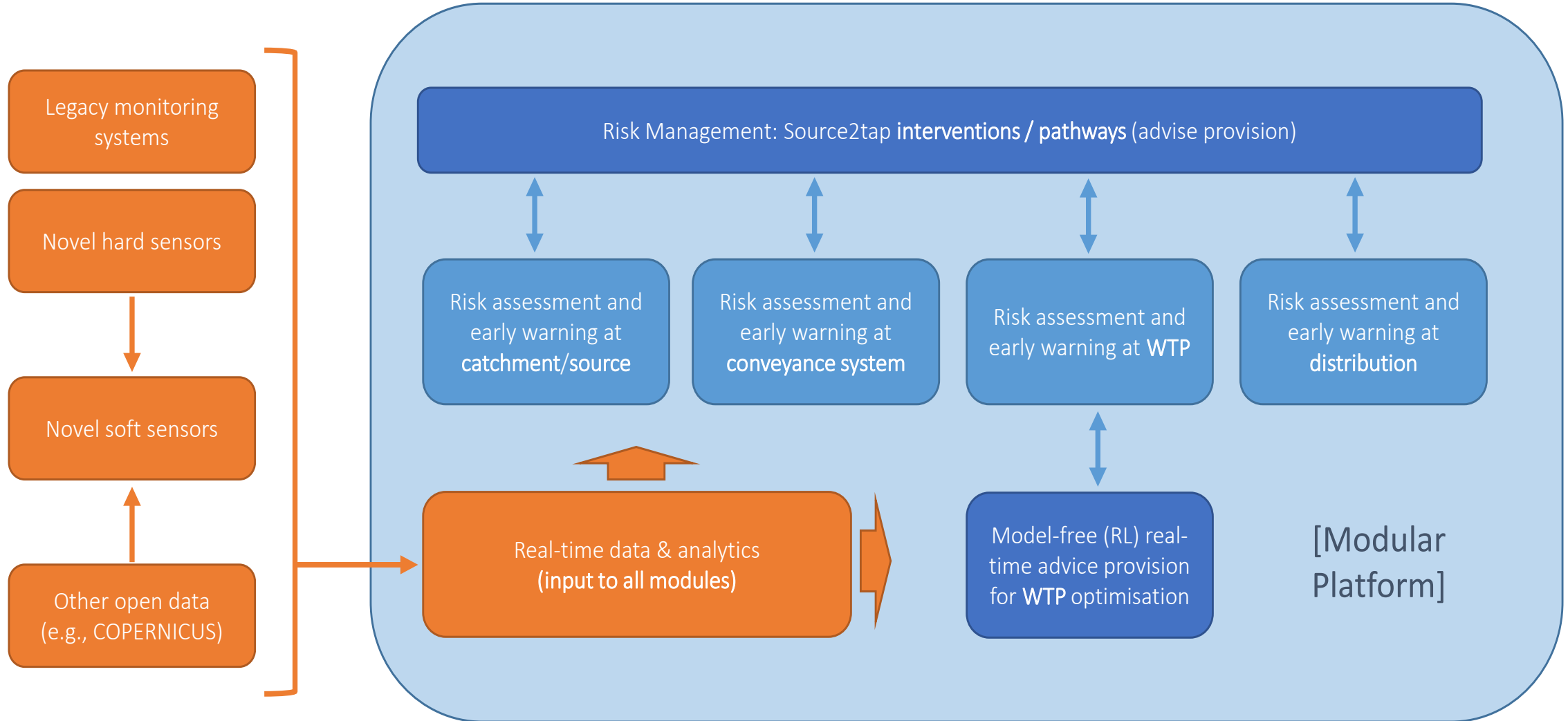
- Improving the **design and operation** of water treatment plants,
- increase drinking water system **resilience**
- ensure **high-quality** drinking water, by
- minimizing **micropollutants, pathogens, and disinfection** by-products



## Expected results:

- **Four** cost-effective water quality sensors and one **concentration/purification tool** to improve online monitoring of water quality from source to tap.
- **Ten** innovative soft sensors to measure unknown compounds in drinking water, improving situational awareness for treatment plants and distribution systems.
- **Two** advanced drinking water treatment processes offering cost-effective alternatives to conventional systems.
- Design-support tool for modular drinking water treatment plants to support the implementation of the revised Drinking Water Directive.
- Interoperable modular platform for monitoring and operational support, covering source water abstraction, conveyance, treatment, and distribution (**FIWARE compatible**).
- Extensive dissemination of ToDrinQ toolkit and knowledge base via **open access** repositories and **clustering** (ZeroPollution and ICT4WATER clusters)

## The integrated modular platform, data and workflow



THANK YOU



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*ICT4Water Newsletter - WIE23 ICT4Water cluster event  
special ♪ | July 2023 - Special ICT4Water cluster  
event at WIE23*

Note from the editor with a warm welcome to the new ToDrinQ projects that joined the cluster

**From:** [The ICT4Water team](#) on behalf of [The ICT4Water team](#)  
**To:** [Danitsja van Heusden-van Winden](#)  
**Subject:** ICT4Water Newsletter - WIE23 ICT4Water cluster event special  
**Date:** vrijdag 7 juli 2023 19:32:46

News, updates and events on smart water research

[View in browser](#)



## July 2023 - Special ICT4Water cluster event at WIE23

### ICT4Water Quarterly Newsletter

#### Note from the editor

On June 21, the ICT4Water cluster members gathered during a special session organised alongside the Water Innovation Europe conference in Brussels. It was a packed session, focusing on the link between digital water and EU policies. This edition of the newsletter includes a summary of the presentations given during that session. A flash report of the session, including all presentations, can be found [here](#) on the ICT4Water website.

We also give a warm welcome to the eight new projects that joined the cluster, being WATERVERSE, ARSINOE, IMPETUS, ULTIMATE, WATERLINE, PathoCERT, WATER-FUTURES and ToDriNQ.

We wish you a great summer!

The ICT4Water team



#### WIE2023 - ICT4Water cluster session

### EU policies related to Digital Water

**Violeta Kuzmickaite** (REA) presented the EU priorities and the commitments

to the Water Action Agenda.

She highlighted the [European Green Deal](#) where water is a cross-cutting issue and ICT4Water is explicitly mentioned. The evaluation of the [Water Framework Directive](#) results showed that both technical development and improved governance for water are needed to realise a boost in water efficiency.

The [Zero Pollution Action Plan](#) aims at the prevention and reduction of pollution to

water and oceans and facilitate remediation. Key legislative actions of the plan include, among other things, the revision of the [Urban Wastewater Treatment Directive](#) (UWWTD) and the revision of the list of the contaminants of emerging concern. Planned actions include the evaluation of the [Marine Strategy Framework Directive](#) and the evaluation of the [Bathing Water Directive](#).

Violeta highlighted the fact that [Cluster 6](#) is the biggest contributor of Horizon Europe programme for research and innovation to the European Green Deal. All of the Cluster's activities are targeting the Green Deal objectives and Cluster 6 relates to most of the elements of Green Deal. Water Research & Innovation is supported in Horizon Europe primarily through Cluster 6.



Violeta explained how ICT4Water can make an impact and urged projects to stay connected since collaboration in the cluster is important, just as feedback to policy-makers. For example, the [Zero Pollution Stakeholder Platform](#) links organisations from different domains like business, civil society, cities & regions, and academia. Water Europe is one of the five academic stakeholders, and ICT4Water cluster collaborating with Water Europe can make an impact with proposing guidances, recommendations and evidence-based success stories from case studies in achieving Zero Pollution ambition goals. Furthermore, at REA, when implementing the numerous H2020 and HE projects, there are several relevant ongoing clusters like [CIRSEAU](#), Zero Pollution 4 Water Cluster, Nexus Cluster, [Nature-Based Solutions Cluster Task force](#), EU-India Water Cluster, Green Deal Chemicals Cluster, and the Marine Litter Cluster. ICT4Water cluster must connect / link with them on relevant specific topics in order to generate an EU-wide impact for the digitalisation of water sector and for water efficiency, quality, security.

*The full flash report including the presentations can be found [here](#).*

**WIE2023 - ICT4Water cluster session**

**Green Deal Dataspace**

**Sotirios Kanellopoulos** (DG ENV)

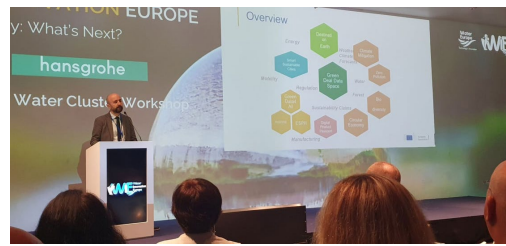
presented the **Green Deal Data Space** (GDSD), and the work DG ENV is doing in

this area. The GDSD is a cross-domain data space for projects and services and covers domains like Smart Sustainable Cities, Circular Economy, Climate Mitigation and Destination Earth. Water is linked to the Zero Pollution domain. Four classes of use-cases were presented:

- Digital Product Passport in value chains
- Data intermediaries
- Integration of 3<sup>rd</sup> party systems
- Digital twins

Sotirios asked the projects to focus more on sensitive data that needs to be unlocked to generate value. Milestones in the coming period are the Mayors's digital assembly, the **User Exchange Event DestinE**, and the **INSPIRE conference**. Outcomes from the current coordination and support actions are expected early 2024 and new calls for proposals are expected in the course of 2024. **DestinE** is expected to go live in the second quarter of 2024.

*The full flash report including the presentations can be found [here](#).*

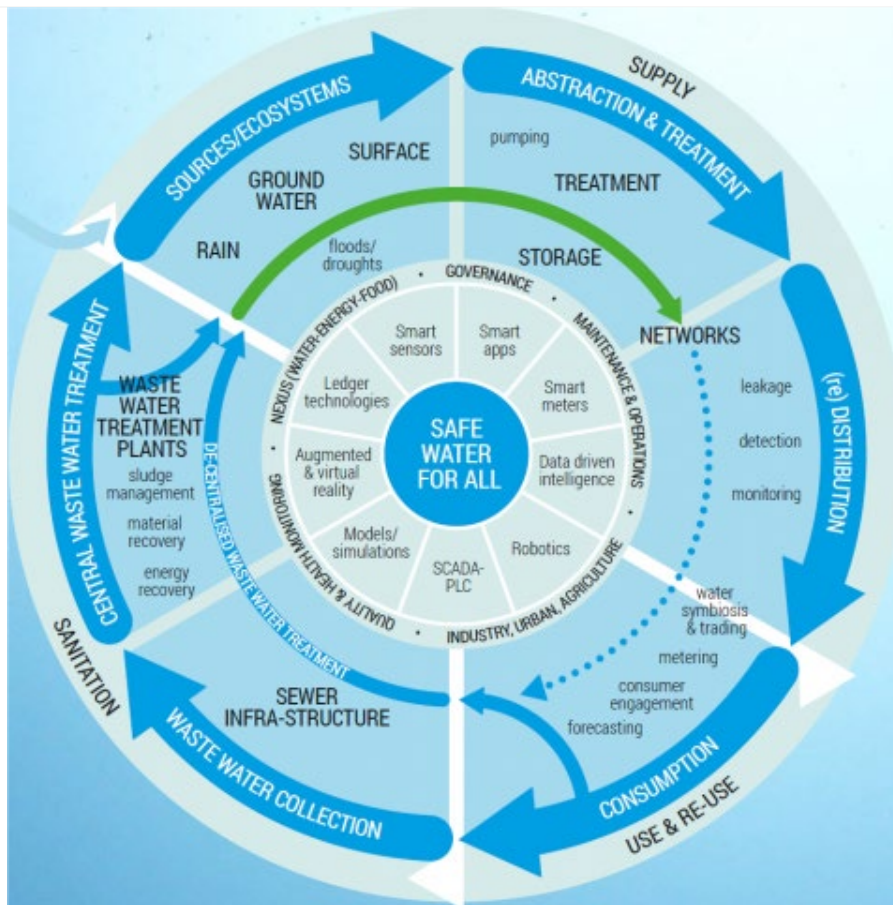


## WIE2023 - ICT4Water cluster session

### Presentation of the ICT4Water Cluster, its scope and thematic Action Groups

**Lydia S. Vamvakeridou-Lyroudia** (KWR

Water Research, ICT4Water AG coordinator) introduced the ICT4Water cluster and provided an overview of the history, activities, and achievements of the cluster. She emphasizes that the cluster is about projects and highlights the publications of the cluster. Finally, the six thematic Action Groups were presented.



The full flash report including the presentations can be found [here](#).

## WIE2023 - ICT4Water cluster session

### Digital Water and EU Policies- Challenges and prospects

Five of the Action Groups shortly presented their key actions and plans for the coming year and their main challenges related to EU water policies.



#### Action Group Enable Data Sharing (EDS): Xavier Domingo (Eurecat)

Key actions are:

- Development and extension of smart data models.
- Demonstrate value of data sharing in the water sector.

Main challenges and actions related to the policy landscape are:

- Enforce data sharing at the core of EU policies.
- Promote the uptake of standard data models and semantic interoperability.
- Coordination and Support actions on data governance, privacy and security concerns.

### **Action Group Intelligent and Smart Systems (ISS): Joep van den Broeke (KWR)**

Main topics addressed by Action Group ISS include AI, data analytics, smart sensors, and Decision Support Systems.

Main challenges related to the policy landscape are:

- Water domain governed by a myriad of directives and conventions.
- Recent directives move from traditional monitoring to risk-based approach.
- Directives do not stimulate dynamic / adaptive risk management with modern digital tools.

Key actions are:

- Development of a policy paper that analyses requirements in directives concerning monitoring and risk assessment, provides insights and recommendations how digital technologies can complement and further strengthen a risk-based approach, provides illustrations of using digital and smart technology enablers in risk-based approaches, using examples from ICT4WATER cluster projects, and identifies challenges to a transition to dynamic risk management.
- Update the DSS marketplace based on a new survey (include new projects, update on included projects).

### **Action Group Critical Infrastructure Protection (CIP): Rafael Gimenez (Cetaqua)**

Main topics addressed by Action Group CIP include providing digital solutions to strengthen the security and resilience of European Water Critical Infrastructures, technologies for risk management, building awareness and enable risk-informed decision making, and increasing water utilities organizational preparedness under crisis situations. As an example of critical infrastructure Rafael showed the damage to Ukraine's Nova Kakhovka dam.

Main challenges related to the policy landscape are:

- Encompass and highlight the role of Critical Infrastructure Protection and Resilience of water infrastructures to meet the objectives of the Water Framework Directive.
- Promote informed insight across the Water Community on the key European strategies and instruments on Critical Infrastructure Protection (as water infrastructure is one of them) and cybersecurity of water.
- Align cross-disciplinary efforts to accelerate research projects addressing the major challenges depicted by the Directive.

Key actions related to EU water policies are:

- Consolidate links with relevant initiatives on Data Sharing to integrate CIP data.
- Ensure the continuous addition of new relevant projects into the Action Group (e.g. PathoCERT, WATERVERSE).
- Publish white paper "Raising Awareness on Cybersecurity in the Water Sector".
- To establish the European Cluster for Securing Critical Infrastructures (ECSI)



### **Action Group Policies (POL): Richard Elelman (Eurecat)**

Main topics of the AG are Green Deal policies, circular economy, the political helix, citizen science, and Water-Energy-Food-Ecosystem-Public Health (WEFE+H) Nexus.

Main challenges related to the EU water policies are the need to:

- Upgrade policies to enhance real time, accurate, water monitoring.
- Technical standards and legislation related to digital water.
- Water security regulations.
- Data sharing, public data and privacy management policies.
- Policies for co-creation, citizen science and crowd sourcing.
- Integrate digital water components into water eGovernance.

Plans and actions related to EU water policies are:

- Promote with the EC the inclusion of mandatory real time water measurements and water quality monitoring.
- Investigate and work on the applicability and legally binding nature of specific technical standards for various water cycle domains.
- Continue upgrading legislation providing common sets of terms and conditions to be used.
- Promote legislation to enhance data exchange and data sharing across the WEFE+H Nexus.
- Develop and deploy data-intensive services for evidence-informed policymaking.

### **Action Group Business Models (BM): Eva Martinez (Isle Utilities)**

Action Group Business Models covers drivers, accelerators, and barriers for digitalization of water sector and market update, financing programs, next generation funds, EU taxonomy to accelerate digitalization, and trends, market needs, market readiness for digital solutions.

Main challenges related to the EU water policies are:

- How can policies accelerate the adoption of IT technologies and the Digital transformation by the water utilities?
- How the water policies change the business models in the water sector?
- How to include water energy nexus in the policies so new business models including both topics are encouraged?

Regarding current policies: Now we have available funds through the Recovery and Resilience Facility (RRF) on investments in the digitalisation of the water sector across Europe.

- Examples on the funding programs created for the water sector are shown in Italy and Spain.
- How are these funds impacting on the water sector? What is happening in other countries?

Plans and actions related to EU water policies are:

- Analysis and monitoring of digitalization of tenders and programs in Europe related to water: the objective is to 1) monitor the amount of funds and topics that are dedicated in each country to the digitalization of the water sector, 2) in which part of the water cycle these funds are allocated, critical areas identified, missing ones 3) outcomes of these funds and impact in the sector, creation of value.

This info is intended to be collected through the partners of the AG.

- Ensure the continuous addition of new relevant projects into the Action Group.

*The full flash report including the presentations can be found [here](#).*

**This year ICT4Water cluster family significantly enlarged with the new members. In the next section, 8 new member projects present themselves shortly.**

*The full flash report including the project presentations can be found [here](#).*



**ARSINOE**

**Climate-resilient regions through systemic solutions and innovations**

ARSINOE will apply a three-tier approach to address the growing complexity, interdependencies and

interconnectedness of modern societies and economies and propose climate change

adaptation solutions. This approach is showcased in nine demonstrators, as a proof-of-concept with regards to its applicability, replicability, potential and efficacy.



#### IMPETUS

### **Dynamic information management approach for the implementation of climate resilient adaptation packages in European regions**

Goal is to develop and validate a coherent multi-scale, multi-level and cross-sectoral climate change adaptation framework to accelerate the transition towards a climate-neutral and sustainable economy.



#### ULTIMATE

### **Industry water-utility symbiosis for a smarter water society**

The project contributes to the transition from a linear to a circular economy to make Europe and its industries less vulnerable. ULTIMATE collaborates with the CIRSEAU, ICT4Water and BIOREFINE clusters, and Water Europe.

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#### WATERLINE

### **Transforming advanced water skilling through the creation of a network of Extended Reality Water Emulative Centres**

WATERLINE's main aim is to create a European Digital Water Higher Education Institution Alliance, based on the quadruple helix model of innovation.



### PathoCERT

## Pathogen Contamination Emergency Response Technologies

PathoCERT project aims to strengthen the coordination capability of first responders in the event that they have to work in places where the risk of contamination via water is high.



### Water-Futures

## Smart Water Futures: designing the next generation of urban drinking water systems

The project, which is co-funded by the ERC Synergy Grant, will result in a theoretical and practical basis for a generic framework, together with applied research tools, that could support decisions for the provisioning of future water services to more than two-thirds of the world's population that is expected to inhabit our cities by 2050.



### ToDrinQ

## Toolkit for adaptable, resilient installations securing high quality

### drinking water

The project aims to improve the design and operation of water treatment plants, increase drinking water system resilience, and ensure high-quality drinking water by minimising micropollutants, pathogens and disinfection by-products.

### WATERVERSE

## Water Data Management



## Ecosystem for Water Data Spaces

With the advent of the 4th Industrial Revolution and the integration of ICT achievements in the water industry,

significant progress has been made towards the digitalisation of the water sector. This digital transition generates challenges that should be overcome so that water utilities can successfully pave the way for a smart water society. Tailor-made digital solutions applied in diverse sizes water utilities make the fragmented sector and difficult to establish industry-wide standards. The ageing water infrastructure along with the need for upgrading the data management processes can be both an obstacle and a lever in achieving greater transparency and efficient water management. Furthermore, the data-sharing trustworthiness and interoperability remain key challenges hindering the production processes to become long-term sustainable.

To overcome these challenges, **WATERVERSE** aims to develop a **Water Data Management Ecosystem (WDME)** for making data management practices and resources in the water sector **accessible, affordable, secure, FAIR, and easy to use**. WATERVERSE will set up a base for efficient Data Management, by encompassing cutting-edge technologies and **empowering data sharing, interoperability, and trustworthiness** by the utilisation of the data space components and building blocks already available from FIWARE and the International Data Spaces Association (IDSA). The adoption of **FAIR** and **Meloda 5** principles will create a trustworthy ecosystem fostering the intra and cross-sectoral data/information exchange. WATERVERSE will be setup and demonstrated in real environment with relevant and diverse case studies involving water sector stakeholders from 6 countries (Cyprus, Spain, Germany, the Netherlands, United Kingdom, Finland).

## Agenda

14-16 November: [IWA's Digital Water summit](#), Bilbao

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The projects in the ICT4Water cluster received funding from the European Union's LIFE, Horizon2020 or Horizon Europe research and innovation programme.



*ICT4Water Quarterly Newsletter | September 2023*

Toolkit for Adaptable, Resilient Installations Securing High Quality Drinking Water

**From:** [The ICT4Water team](#) on behalf of [The ICT4Water team](#)  
**To:** [Danitsja van Heusden-van Winden](#)  
**Subject:** ICT4Water Newsletter  
**Date:** vrijdag 29 september 2023 12:36:31

News, updates and events on smart water research

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September 2023

## ICT4Water Quarterly Newsletter

### Note from the editor

This summer Europe was heavily confronted with the effects of climate change. Some regions suffered from water scarcity due to the droughts, while others suffered from floods. There is a growing awareness that water needs to be higher on the agenda of EU policy makers .

35 members of the European Parliament and a representative from the European Economic and Social Committee (EESC) called for an EU Blue Deal while Water Europe unveiled its new manifesto, calling upon European policymakers to adopt a Water-Smart strategy for its next term.

Meanwhile our member projects and Action Groups continue working towards a water smart society. Read the contributions from member projects ToDrinQ, NINFA, ICARIA, SEA4VALUE, ARSINOE and SEDIMARK.

The ICT4Water team



ToDrinQ

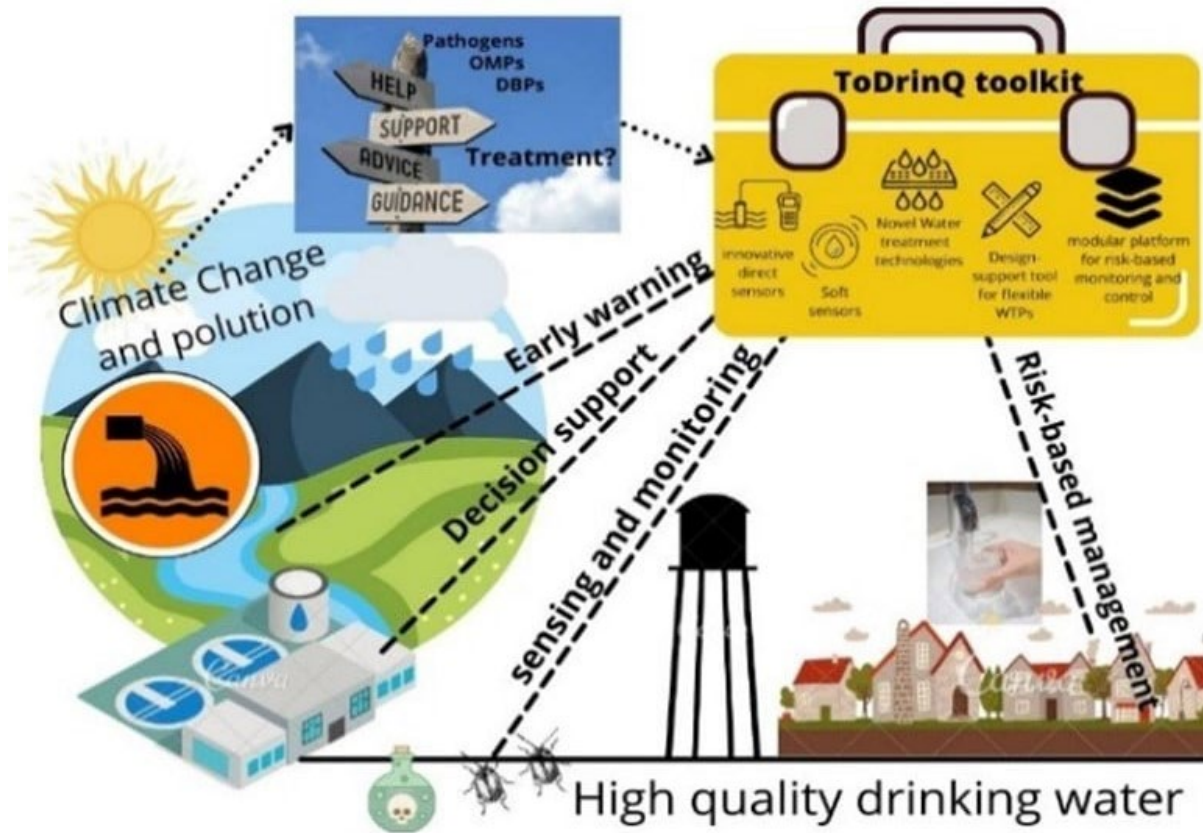
**Toolkit for Adaptable,  
Resilient Installations  
Securing High Quality**

### Drinking Water

Drinking water supply is confronted with global challenges including climate change, new emerging anthropogenic substances, demographic developments as well as aging infrastructure and workforce. Protecting drinking water from its sources to the consumer taps is key to increasing the resilience of drinking water systems.

ToDrinQ is an EU-funded project, with 17 partners from 8 different countries, that

aims at developing a toolkit of technologies, systems and decision tools that will improve overall water systems operations and secure high quality drinking water. The objective of ToDriQ is to support the implementation of the revised Drinking Water Directive and enhance scientific and technical knowledge on drinking water quality protection monitoring, and treatment. This is achieved through the development and testing of a modular innovation toolkit called the “ToDriQ Toolkit.”



The toolkit includes real-time sensing and water quality technologies, innovative treatment processes for adaptable plants, and easy-to-deploy decision tools. These ToDriQ innovations aim at improving the design and operation of water treatment plants, increase drinking water system resilience, and ensure high-quality drinking water while minimizing micropollutants, pathogens, and disinfection by-products.

For more information <https://ToDriQ.eu>

## NINFA

### NINFA case studies

In the NINFA project eight case studies will be examined, which have been carefully selected to cover nitrate vulnerable zones with different climates (the Netherlands and Murcia -Spain); areas with pesticides exceeding thresholds in GW (France); regions jeopardised by climate change both in terms of sea level rise (Ibiza -Spain-) and potential environmental and economic



impact (Barcelona province -Spain-); and international countries with poor access to safely managed drinking water (Mexico) and sanitation services (Colombia and Egypt)<sup>1</sup>.

Six of the eight case studies engaged in NINFA are secured by AQUALIA, as they are currently operated and managed by the company; while the other two are represented by members from the Advisory board. Working with such different sites will allow data and knowledge acquisition from different biogeographical and socio-economic areas, thus enriching the NINFA Platform. This heterogeneity will provide more reliability to the tool, which is especially important when considering climate change adaptation/mitigation strategies.

The data collected through the validation of monitoring, hydrogeological modelling, and water treatment technologies in the case studies will be used as a basis for the prototype of AI GW quality modelling for risk assessment.

More information in the NINFA website <https://ninfa-project.eu/>



ICARIA

## **A novel risk assessment framework for multi-hazard**

### **extreme events**

The [ICARIA project](#) (Improving Climate Resilience of Critical Assets) aims at promoting the use of a comprehensive asset-level modeling framework to achieve a better understanding about the climate-related impacts caused by complex, compound, and cascading disasters and the possible risk reduction provided by suitable, sustainable, and cost-effective adaptation solutions. ICARIA is funded by the program Horizon Europe.

AQUATEC (AGBAR group) is the leader of this project that involves 14 more partners from 5 different countries, such as Cetaqua, Water Technology Center in Spain, or the Centre of Water System of Exeter University, with extensive experience in the field of climate resilience research with special focus on water related hazards such as floods and droughts.

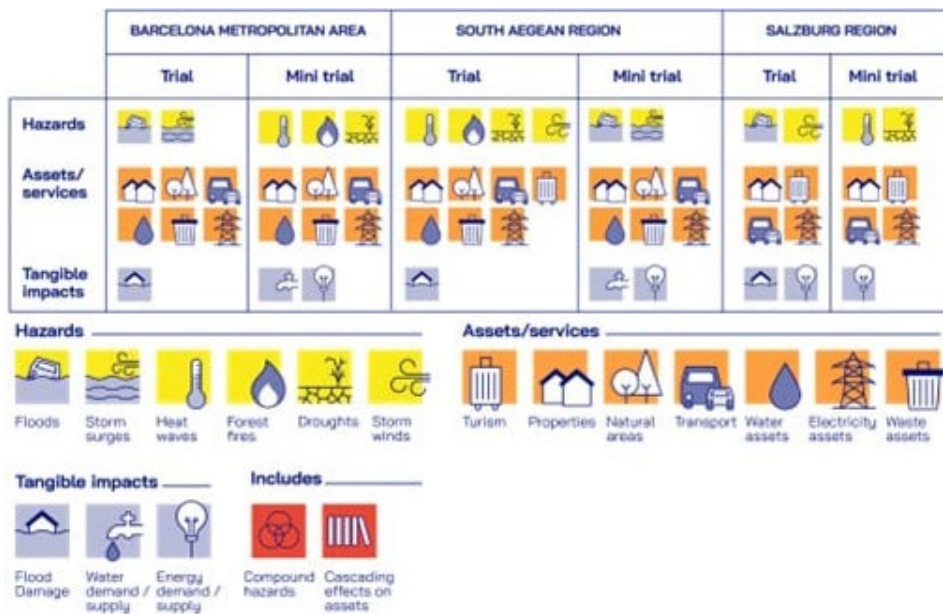
Over the last decades, a rise in the number of extreme weather events has been observed worldwide, many of those being related to water resources, causing major socio-economic impacts. Among all extreme events, multi-hazard events are becoming more and more relevant due to their higher complexity and the potential to multiply the associated impacts compared to single hazard models. For instance, the combined occurrence of storm surges and heavy rain can lead to larger floodings in coastal urban areas, or drought and heat wave conditions can increase the risk of forest fire occurrence.

Furthermore, the project will develop knowledge beyond the state of the art on investigating the joint probability of occurrence of multi-hazard events.

ICARIA will generate a whole new methodology to enable a wide range of decision

makers to evaluate the current climate resilience of specific assets and evaluate the most suitable, sustainable, and cost-effective adaptation solutions. Hence, the project focuses on supporting the decision making process to define mid- and long-term planification strategies to improve the assets' climatic resilience.

The project focused on three European Regions as Case Studies These include two Mediterranean coastal areas – Barcelona Metropolitan Area and the South Aegean Archipelago – and Salzburg, Austria, all facing severe climate challenges.



ICARIA follows in the footsteps of previous initiatives such as RESCCUE, a European research project led by AQUATEC and completed in 2020. Unlike its predecessor, ICARIA focuses more specifically on modeling and assessing climate impacts on critical infrastructure and their cascading effects on a regional scale. Remarkably, the tools and methods developed will pay special attention to the impact of multi-hazard extreme events on water related infrastructures as wells as on water resources availability.

More information available in the project website (<https://www.icaria-project.eu/>) and the recently published project position paper (<https://www.mdpi.com/2071-1050...>).

## Call for Blue Deal in open letter to EU

# CALL FOR AN EU Blue Deal



Water must become a top priority for the European Union. Without a Blue Deal there can't be a Green Deal. This is the urgent message of an open letter that was sent to the European Heads of State and Government by 35 Members of the European Parliament (MEP's) and a representative of the European Economic and Social Committee (EESC).

Read more at [Water News Europe](#).

## SEA4VALUE

### **SEA4VALUE Workshop - Critical Raw Materials from unconventional sources: Ensuring supply through Circular Economy.**



In the framework of the [SEA4VALUE project](#) (*Novel Technologies in Seawater Desalination Plants to Extract Minerals and Metals from Seawater Brines*), we are organising a workshop in Barcelona on 17 November 2023 (with the possibility of virtual participation).

The aim of this workshop is to promote networking and knowledge exchange between experts, policy makers and other stakeholders from the water sector, in particular desalination, as well as from the Critical Raw Materials (CRMs) sector. To this end, we have invited several European projects that promote the revalorization of minerals & metals, which will present the most relevant results that have been achieved so far.

On the other hand, there will be an interesting presentation by an expert on the revaluation of CRMs will be held and two round tables to discuss the recovery of

metals and minerals as an economic lever for desalination plants and what are the barriers and opportunities for CRMs in the market.

The event will conclude with a networking session and lunch at the same venue.

[REGISTRATION FORM](#)

**Workshop**  
**Critical Raw Materials from unconventional sources:  
Ensuring supply through  
Circular Economy.**

**SEA4  
VALUE**  
Mining value from brines

📅 **17 november**  
🕒 **10 am to 2 pm**  
📍 **Barcelona - Pending location**

Organised by:  **EWP**  
CATALAN WATER PARTNERSHIP

Co-organisers:  **ESCI**  
European Science  
Communication Institute

Supported by:  This project is funded by the European Union's  
Horizon 2020 research and innovation programme  
under grant agreement No 869703

## ARSINOE



## Climate-resilient regions through systemic solutions and innovation: discover ARSINOE

Acknowledging that climate change is complex and strongly connected to other global challenges, such as food security, water scarcity, biodiversity depletion and environmental degradation, it is insufficient to use traditional approaches to innovation that focus on one aspect of the problem. As a response, the [ARSINOE](#) project aims at shaping pathways to resilience by bringing together the SIA (Systems Innovation Approach) and the CIW (Climate Innovation Window) with the purpose to build an ecosystem for climate change adaptation solutions.

Within the ARSINOE ecosystem, pathways to solutions are co-created and co-designed by stakeholders, who can then select either existing CIW technologies, or technologies by new providers (or a combination) to form an innovation package. The approach is show-cased in [nine widely varied demonstrators](#), as a proof-of-concept with regards to its applicability, replicability, potential and efficacy. The project is led by Professor Chrysi Lapidou from the University of Thessaly, Greece, and gathers 41 partners from all across Europe. Learn more about the project and its latest advancements: <https://arsinoe-project.eu/>



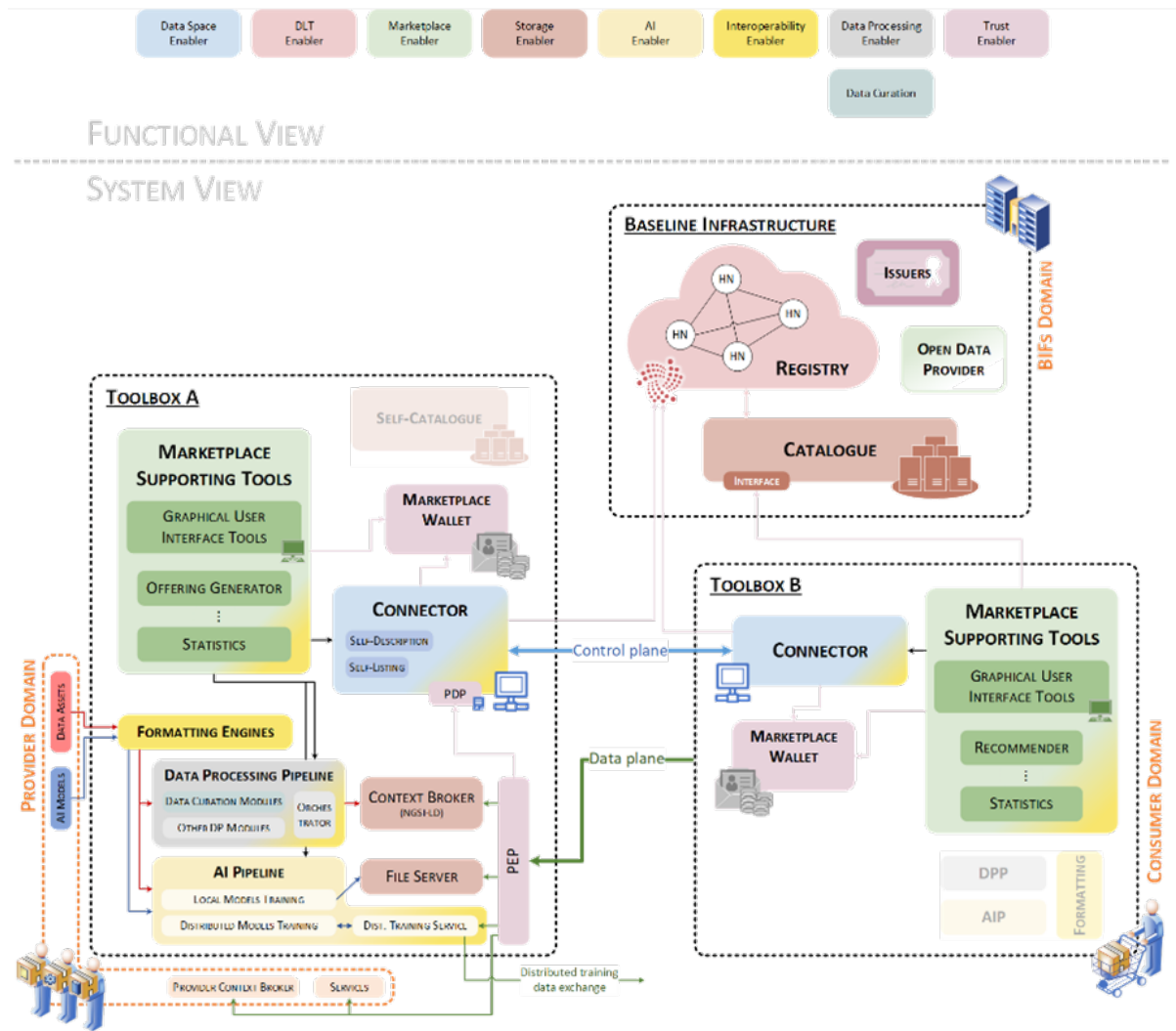
*Photo: ARSINOE consortium*

## SEDIMARK

### **SEDIMARK: Valorization of Trustworthy Sharing of Enriched Data**

SEDIMARK aims at designing and prototyping a secure decentralised and intelligent data and services marketplace that bridges remote data platforms and allows the efficient and privacy-preserving sharing of vast amounts of heterogeneous, high-quality, certified data and services supporting the common EU data spaces.





SEDIMARK ambitions to represent a certain impact on the dynamic data-agile economy context. To this extent, the project will offer methods and tools for distributed access control, decentralized identities, data integrity verification, data anonymisation and verifiable credentials, which will contribute towards the achievement of such more secure data-agile economy.

Moreover, as one of its most remarkable innovations, SEDIMARK will develop a complete toolset for improving the quality of heterogeneous data, with the employment of advanced AI techniques for data cleaning, enrichment, annotation de-biasing, and validation, including consideration of distributed architectures. The certified data providers will then use SEDIMARK tools to, once data is properly treated, align them to semantic models to get an improved interoperability of such heterogeneous data.

In the long term, the activities carried within SEDIMARK pursue to get certain results, being at the forefront the existence of a series of data marketplace services for data discovery, data linkage and recommendations, as well as the definition of proper business models for monetization and ethical data sharing schemes.

Mobility Digital Twin



Valorisation of energy consumption data

Urban bike mobility planning



Valorisation of water-related data

SEDIMARK does not focus on one particular domain but intends to design and prototype a secure decentralised and intelligent data and services marketplace that bridges remote data platforms and allows the efficient and privacy-preserving sharing of vast amounts of heterogeneous, high quality, certified data and services supporting the common EU data spaces. However, four use cases are included in the project to carry out real-world validation of the SEDIMARK marketplace. One of them, driven by EGM, will focus on 'water data' exploitation.



Water Europe

### EU Elections 2024: Water Europe community calls for a Water-Smart Strategy !

This month, Water Europe [unveiled its new manifesto](#), calling upon European policymakers to adopt a Water-Smart

strategy with a strong political accountability within the European Commission for its next term 2024-2029. Water is vital for all the strategic sectors in Europe, but our continent keeps facing growing water challenges. The European elections will be a key moment for shaping EU policies for the next five years and ensuring secure, sustainable and resilient water. Will we seize this opportunity? This is the moment to make progress towards a more sustainable, secure, and resilient future for water management in Europe and beyond. Read Water Europe's full Manifesto [here](#).

# NEW MANIFESTO

THE EUROPEAN UNION  
NEEDS AN AMBITIOUS  
WATER-SMART STRATEGY



## Agenda

14-16 November: [IWA's Digital Water summit](#), Bilbao

17 November: [SEA4VALUE workshop Critical Raw Materials from unconventional sources: Ensuring supply through Circular Economy](#), Barcelona



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### **BM-Change**

Torenallee 20, Eindhoven  
The Netherlands

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*ICT4Water Quarterly Newsletter | December 2023*

ToDriNq Consortium reunited in Switzerland for the 2 General Assembly

**From:** [BM-Change](#)  
**To:** [Danitsja van Heusden-van Winden](#)  
**Subject:** ICT4Water Newsletter October 2024  
**Date:** vrijdag 18 oktober 2024 10:21:05

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October 2024

## ICT4Water Quarterly Newsletter

Our cluster keeps growing! We welcome three new member projects: NIAGARA, RECREATE, and IDEATION. All three projects introduce themselves in this newsletter. Furthermore in this newsletter contributions from member projects MAR2PROTECT, ToDrinQ, H2OforAll and ARSINOE, and from Action Group Actor Engagement and Co-Creation.

We also want to draw your attention to a new [call for projects](#) from the European Commission under the Climate-Neutral and Smart Cities Mission. A total of EUR 98 million is available under this new call for project applications, with a deadline of 11 February 2025.

Happy reading,

The ICT4Water team

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## **IDEATION, a new European project set to advance technologies to integrating inland waters and ocean in a unique digital twin**

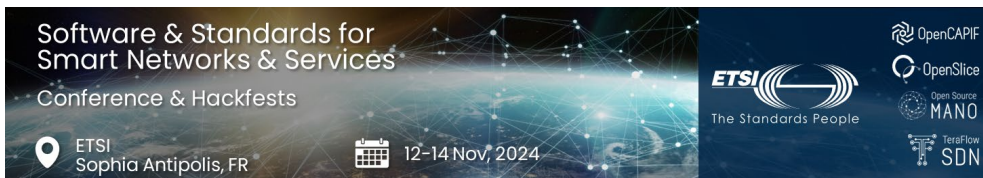
The IDEATION (InlanD watErs in the digitAI Twin Ocean) project has been officially launched, aiming to transform water management through digital technologies. Funded by the European Climate, Infrastructure, and Environment Executive Agency (CINEA) under Horizon Europe, IDEATION aims to provide the fundamentals for a digital twin, a real-time virtual representation of a physical system, for inland waters that will be integrated in the Digital Twin Ocean (DTO), creating a unified model of the hydrosphere.

The project kicked off in June 2024, with Cetaqua leading a consortium of eleven partners from across Europe, including leading research institutions, universities, and technological organizations, namely KWR, CERTH, Barcelona Supercomputing Center- Centro nacional de Supercomputacion, University of Cyprus (KIOS), Engineering ingegneria informatica, FIWARE Foundation, Water Europe, Fondazione Centro Euro-Mediterraneo sui Cambiamenti Climatici, Eidgenössische Forschungsanstalt and the University of Exeter.

The project's new website has also been launched, providing information about the project, and updates on its developments, events, and opportunities for stakeholder engagement. The project will actively involve diverse communities through Multi-Stakeholder Forums (MSFs) to ensure comprehensive participation. IDEATION's coordinator Eloisa Vargiu expressed her excitement, emphasizing the project's

potential to “make inland waters and ocean knowledge readily available to citizens, entrepreneurs, scientists, and policy-makers”.

For more information, visit [the website](#) and follow IDEATION on social media ([LinkedIn](#) and [X](#)).



## ETSI SNS4SNS event - Programme online, register now!

Have you registered for the [ETSI SNS4SNS event](#) on 12-14 November 2024 in ETSI, Sophia Antipolis, France?

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and learn how to contribute to ongoing initiatives, underlining the practical applications of the principles discussed during the conference.

- 19 [Demos](#) and 15 [Posters](#), showcasing innovative work in the following areas:
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- Research advancements in software and open source for smart networks and services,
- Collaborative frameworks between industry, academia, and open source communities.

**Join us as we navigate the interplay of software, standardization, and research, envisioning a future where collaboration across these domains paves the way for sustainable, inclusive, and interoperable communication networks and services.**

Should you need any further information, please contact [events@etsi.org](mailto:events@etsi.org).

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[Register now](#)



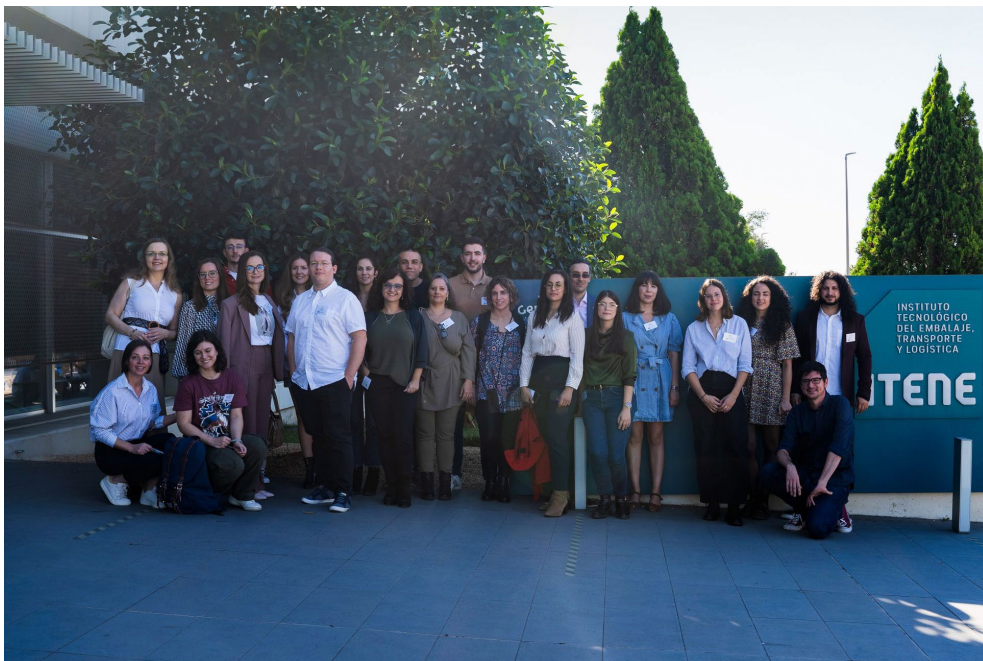
## **Advanced Water Solutions: The case of NIAGARA**

As pollutants from industrial and agricultural sources, pharmaceuticals, and microplastics continue to threaten our water supply, traditional detection and treatment

methods fall short. NIAGARA is an EU-funded project developing advanced solutions to tackle emerging water pollutants and protect drinking water quality. Focused on drinking water treatment plants, NIAGARA addresses the challenges of chemical and biological pollution through advanced monitoring, innovative removal technologies, and risk assessment.

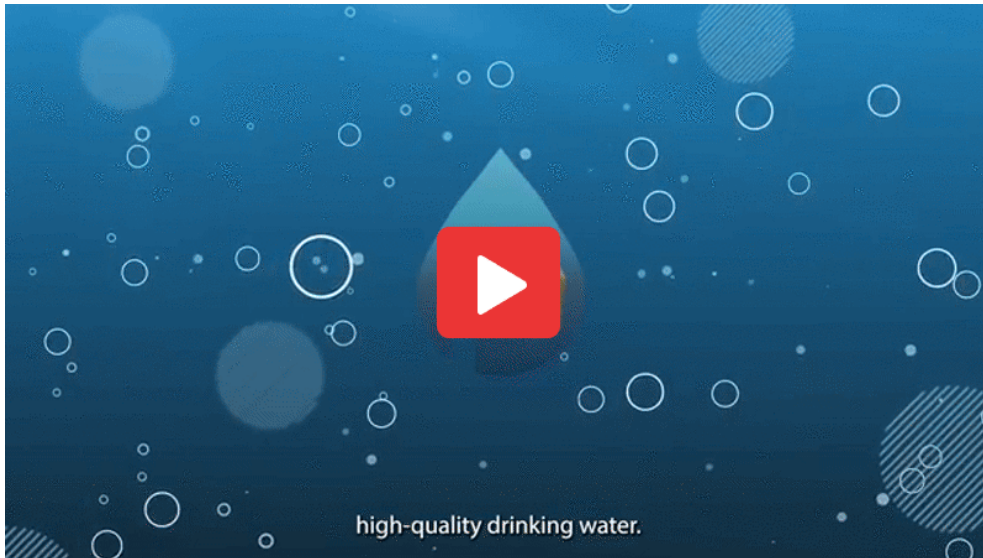
NIAGARA's holistic approach includes the development of multi-analyte biosensors for real-time monitoring, enzymatic degradation systems for pollutant removal, and the integration of UV/TiO<sub>2</sub> photocatalysis for effective disinfection. Beyond monitoring, the project's real-time risk management model, powered by Smooth Particle Hydrodynamics (SPH) aims to help drinking water treatment plants to predict and mitigate contamination risks.

For more information on how NIAGARA is aiding drinking water treatment plants to improve the ability to detect and eliminate chemical and biological contaminants, please visit the full article on the project's website: [NIAGARA Project: Addressing Drinking Water Pollution Crisis for Safer Water Solutions \(niagara-project.eu\)](https://niagara-project.eu)



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## ToDrinQ Project Video Released!



## The RECREATE project – Working towards a more water and climate resilient Europe

Communities across Europe are facing the impacts of climate change, many of which relate to stress on water supplies, including unprecedented droughts. To face these increasing impacts, the new Horizon Europe-funded project (GA# [101136598](#)) [RECREATE](#) is building a more resilient water supply through Alternative Water Resources. The four year project launched earlier this year in Manresa, Spain at the offices of [EURECAT](#), RECREATE represents a new opportunity for a water supply

better adapted to today's challenges.

RECREATE is engaging directly with four different case studies: North Holland (Netherlands), Kalundborg (Denmark), Syros (Greece), and the Costa Brava (Spain). Each brings a different bio-geographical and climate perspective to the work of RECREATE, offering the chance to explore different alternative water resources and practices ranging from rainwater harvesting, water reclamation, brackish groundwater, to desalination. By working with these case studies, RECREATE will produce an open-access repository focused on water management practices and alternatives, as well as a Digital Decision Support Framework based on AI, changing the state of the art for effective and resilient water systems at a local and regional level.

Read more about the project in our [press release](#) and you can follow our updates on our new [website](#) and social media platforms [X](#) and [LinkedIn](#).



**RECREATE consortium members at the project kickoff meeting at Eurecat office in Manresa, Spain in February 2024**

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EUROPEAN UNION

**EU MISSIONS**  
CLIMATE-NEUTRAL & SMART CITIES

FUNDING NEWS

**2024 NEW CALL OPEN**  
BUDGET AVAILABLE  
**€98 million**  
4 FUNDING TOPICS

#EUmissions #HorizonEU #MissionCities

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## Horizon Europe: EUR 98 million available for new Cities Mission call

The European Commission has launched a new call for projects to support research and innovation under the Climate-Neutral and Smart Cities

Mission: *Changing urban spaces and mindsets to accelerate the transition to climate neutrality*. Check their [website](#) for information about the calls and where to apply.



Winter School

MAR2 PROTECT

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No GA 101084084

Funded by the European Union

## Winter School 2024:

# Pioneering Solutions for Water Safety and Sustainability

From **November 25-26, 2024**, the **Winter School on Contaminants of Emerging Concern (CECs) and Disinfection By-Products (DBPs)** will take place at the **World of Wine (WOW)** in **Vila Nova de Gaia**, with the beautiful city of Porto as a backdrop. This premier event, supported by the **ZeroPollution4Water Cluster**, will tackle critical environmental challenges related to water safety and sustainability.

The Winter School will showcase the latest advancements in the occurrence, impact, and elimination of CECs, DBPs, and microbial contamination. Attendees will explore viable solutions for ensuring safe drinking water and alternative sources for agriculture. MAR2PROTECT will play a significant role in several roundtables covering critical topics such as **Technologies for the Control of DBPs, CECs, PFAs, Microplastics, ARB and ARGs, Real-Time Monitoring, and Digitalization**.

With a special focus on PhD students, this event offers unique opportunities to present research, engage with experts, and participate in workshops covering key topics like European Directives on Drinking Water, wastewater treatment, and publishing perspectives.

Expected to attract over **200 participants**, including researchers, professors, and professionals from across Europe, the Winter School will also feature an exhibition space for the latest water treatment technologies. It's the perfect platform for expanding your network and staying updated on water contamination research.

**Dates:** November 25-26, 2024

**Location:** World of Wine, Vila Nova de Gaia, Porto

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[Register here](#)



## Enhancing Water Resilience

# through Immersive Digital Tools

A research, conducted within the **Actor Engagement and Co-Creation Group**, focuses on cataloging and analyzing **immersive digital tools that have been developed or used by ICT4Water cluster members**. These tools, ranging from virtual reality systems to augmented reality applications, are pivotal in fostering enhanced engagement, decision-making, and collaboration in the digital water sector.

The study includes a comprehensive inventory of tools, assessing their functionality, interoperability, scalability, and overall impact. These insights not only inform future projects but also contribute to a scientific publication aimed at strengthening digital innovation in water management.

A key highlight of this work is the integration of feedback from cluster members, which has emphasized the need for user-friendly tools that offer robust support and training. We presented the results at the ICT4Water annual cluster meeting in Brussels on June 19, 2024, during the Water Innovation Europe event, and the findings will be published in a scientific journal or conference.



## Interactive demonstration: how floods impact critical infrastructure services in Torbay



# ToDrinQ Project Review Meeting Held in Brussels to Advance Water Management Innovation

Partners of the **ToDrinQ** project recently convened in Brussels for a key review meeting to assess progress and plan the next steps in developing innovative solutions for water management. The ToDrinQ project, funded by the European Union, aims to create a comprehensive toolkit of technologies, systems, and decision-making tools that will enhance water systems operations and secure high-quality drinking water for communities across Europe.

During the meeting, project partners from various sectors, including research, technology, and policy, came together to share insights, discuss challenges, and align strategies for the next phase of the project. The review highlighted significant advancements in developing innovative solutions that will help manage water resources more effectively, improve resilience against climate-related impacts, and ensure access to safe drinking water for all.

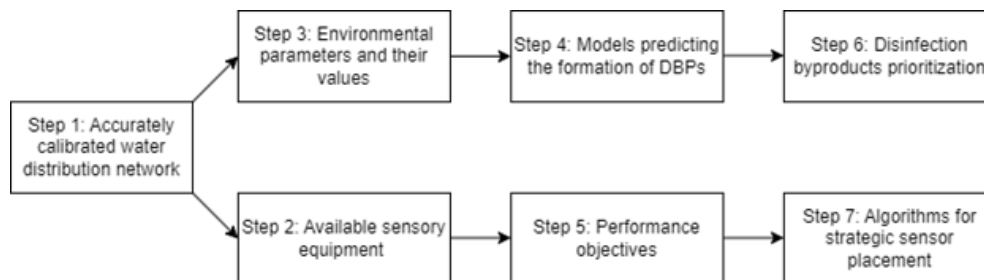
This collaborative effort marks an important milestone in achieving a smarter, more sustainable water future for Europe, aligning with broader EU goals for environmental protection, resource efficiency, and climate resilience.



## H2OforAll

# Intelligent placement of sensors in drinking water distribution networks

Providing clean drinking water to people worldwide is a challenging task due of the contaminants that tend to form in water distribution systems at any point in time, causing various health impacts to the consumers. An emerging contaminant family with not well-known effects on human body is the disinfection byproducts (DBPs) occurring in chlorinated drinking water. Due to the complexity of their formation, it is very challenging to monitor and detect DBPs in a water network. By placing sensors throughout the distribution system, it becomes feasible to monitor certain environmental parameters that affect their formation and identify locations in the network which have high probabilities for the detection of DBPs. The problem is complicated due to the large number of possible DBPs and the constrained number of sensors available, thus a clever approach needs to be followed, especially in cases where prioritization of DBPs needs to be considered. In this work, H2OforAll proposes a methodology for detecting DBPs, considering a real-world case study of a calibrated water distribution network in Coimbra, Portugal. Different algorithms are investigated to satisfy different performance objectives, aiming to locate the best possible locations for sensor placement, towards maximizing possible detection and minimizing overall impact of DBPs.



For more information, contact the project at:

Webpage: <https://h2oforall.eu/>

<https://twitter.com/PH2oforall>

<https://www.facebook.com/profile.php?id=100089523070928>

<https://www.linkedin.com/company/h2oforallproject/>

Email: [contact@h2oforall.eu](mailto:contact@h2oforall.eu)

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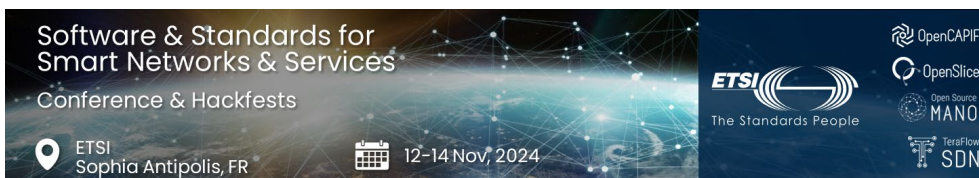
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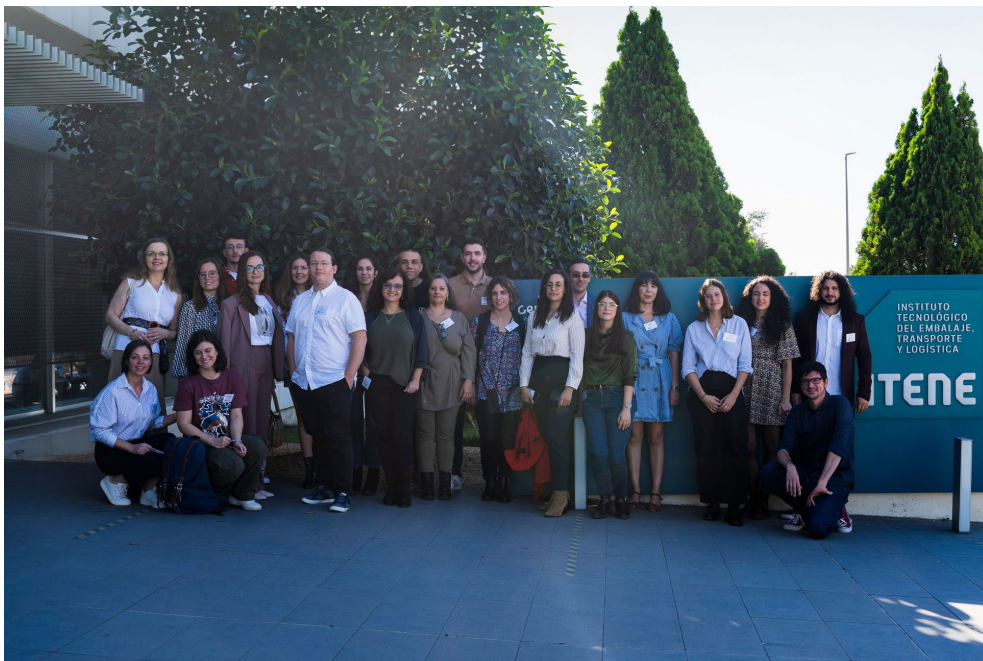
## **Advanced Water Solutions: The case of NIAGARA**

As pollutants from industrial and agricultural sources, pharmaceuticals, and microplastics continue to threaten our water supply, traditional detection and treatment

methods fall short. NIAGARA is an EU-funded project developing advanced solutions to tackle emerging water pollutants and protect drinking water quality. Focused on drinking water treatment plants, NIAGARA addresses the challenges of chemical and biological pollution through advanced monitoring, innovative removal technologies, and risk assessment.

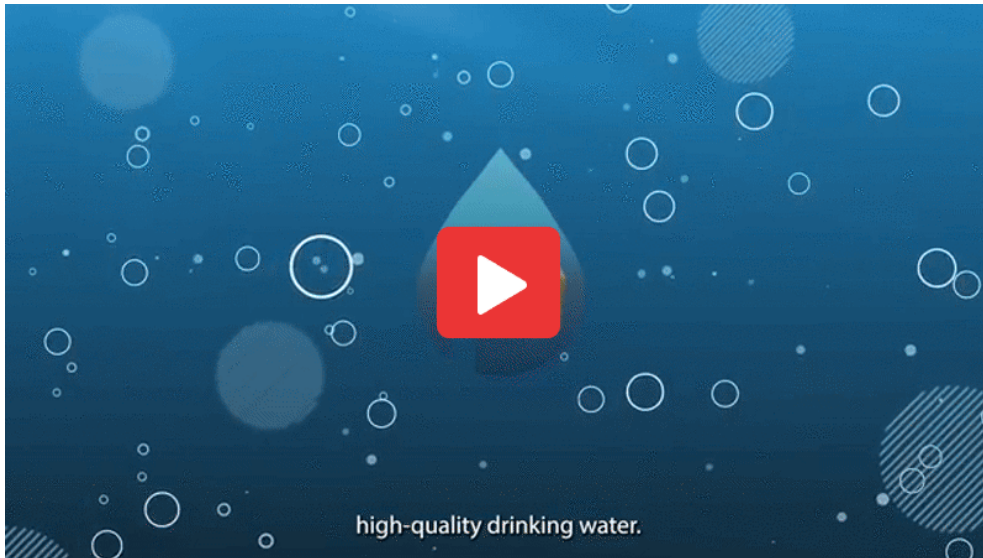
NIAGARA's holistic approach includes the development of multi-analyte biosensors for real-time monitoring, enzymatic degradation systems for pollutant removal, and the integration of UV/TiO<sub>2</sub> photocatalysis for effective disinfection. Beyond monitoring, the project's real-time risk management model, powered by Smooth Particle Hydrodynamics (SPH) aims to help drinking water treatment plants to predict and mitigate contamination risks.

For more information on how NIAGARA is aiding drinking water treatment plants to improve the ability to detect and eliminate chemical and biological contaminants, please visit the full article on the project's website: [NIAGARA Project: Addressing Drinking Water Pollution Crisis for Safer Water Solutions \(niagara-project.eu\)](https://niagara-project.eu)



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## ToDrinQ Project Video Released!



## The RECREATE project – Working towards a more water and climate resilient Europe

Communities across Europe are facing the impacts of climate change, many of which relate to stress on water supplies, including unprecedented droughts. To face these increasing impacts, the new Horizon Europe-funded project (GA# [101136598](#)) [RECREATE](#) is building a more resilient water supply through Alternative Water Resources. The four year project launched earlier this year in Manresa, Spain at the offices of [EURECAT](#), RECREATE represents a new opportunity for a water supply

better adapted to today's challenges.

RECREATE is engaging directly with four different case studies: North Holland (Netherlands), Kalundborg (Denmark), Syros (Greece), and the Costa Brava (Spain). Each brings a different bio-geographical and climate perspective to the work of RECREATE, offering the chance to explore different alternative water resources and practices ranging from rainwater harvesting, water reclamation, brackish groundwater, to desalination. By working with these case studies, RECREATE will produce an open-access repository focused on water management practices and alternatives, as well as a Digital Decision Support Framework based on AI, changing the state of the art for effective and resilient water systems at a local and regional level.

Read more about the project in our [press release](#) and you can follow our updates on our new [website](#) and social media platforms [X](#) and [LinkedIn](#).



**RECREATE consortium members at the project kickoff meeting at Eurecat office in Manresa, Spain in February 2024**

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EUROPEAN UNION

EU MISSIONS  
CLIMATE-NEUTRAL & SMART CITIES

FUNDING NEWS

2024 NEW CALL OPEN  
BUDGET AVAILABLE  
**€98 million**  
4 FUNDING TOPICS

#EUmissions #HorizonEU #MissionCities

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## Horizon Europe: EUR 98 million available for new Cities Mission call

The European Commission has launched a new call for projects to support research and innovation under the Climate-Neutral and Smart Cities

Mission: *Changing urban spaces and mindsets to accelerate the transition to climate neutrality*. Check their [website](#) for information about the calls and where to apply.



Winter School

MAR2 PROTECT

This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No GA 101084084

Funded by the European Union

## Winter School 2024:

# Pioneering Solutions for Water Safety and Sustainability

From **November 25-26, 2024**, the **Winter School on Contaminants of Emerging Concern (CECs) and Disinfection By-Products (DBPs)** will take place at the **World of Wine (WOW)** in **Vila Nova de Gaia**, with the beautiful city of Porto as a backdrop. This premier event, supported by the **ZeroPollution4Water Cluster**, will tackle critical environmental challenges related to water safety and sustainability.

The Winter School will showcase the latest advancements in the occurrence, impact, and elimination of CECs, DBPs, and microbial contamination. Attendees will explore viable solutions for ensuring safe drinking water and alternative sources for agriculture. MAR2PROTECT will play a significant role in several roundtables covering critical topics such as **Technologies for the Control of DBPs, CECs, PFAs, Microplastics, ARB and ARGs, Real-Time Monitoring, and Digitalization**.

With a special focus on PhD students, this event offers unique opportunities to present research, engage with experts, and participate in workshops covering key topics like European Directives on Drinking Water, wastewater treatment, and publishing perspectives.

Expected to attract over **200 participants**, including researchers, professors, and professionals from across Europe, the Winter School will also feature an exhibition space for the latest water treatment technologies. It's the perfect platform for expanding your network and staying updated on water contamination research.

**Dates:** November 25-26, 2024

**Location:** World of Wine, Vila Nova de Gaia, Porto

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[Register here](#)



## Enhancing Water Resilience

# through Immersive Digital Tools

A research, conducted within the **Actor Engagement and Co-Creation Group**, focuses on cataloging and analyzing **immersive digital tools that have been developed or used by ICT4Water cluster members**. These tools, ranging from virtual reality systems to augmented reality applications, are pivotal in fostering enhanced engagement, decision-making, and collaboration in the digital water sector.

The study includes a comprehensive inventory of tools, assessing their functionality, interoperability, scalability, and overall impact. These insights not only inform future projects but also contribute to a scientific publication aimed at strengthening digital innovation in water management.

A key highlight of this work is the integration of feedback from cluster members, which has emphasized the need for user-friendly tools that offer robust support and training. We presented the results at the ICT4Water annual cluster meeting in Brussels on June 19, 2024, during the Water Innovation Europe event, and the findings will be published in a scientific journal or conference.



## Interactive demonstration: how floods impact critical infrastructure services in Torbay



In the latest webinar entitled “EU Mission Community - Flood Resilience” taking place on the 26 September 2024, the ARSINOE web based interactive visualisation system was shown to demonstrate how a flood event could impact the cascading failure of Critical Infrastructure services in the town of Torbay.

The system uses a simulation engine beyond the state of the art that can analyse how a localised disruption (i.e. a flooded area) can directly impact critical nodes (i.e. a transformer) that will in turn indirectly impact other services. For example, that transformer malfunction would impact a broadband fiber cabinet, then disrupting the internet connection for a local GP Practice and a pharmacy – these would then have to close as they would not be able to consult online patient files. The demonstration did illustrate the co-dependency relationship between workforce and critical infrastructure (i.e. closing primary schools would prevent parents from going to work in hospitals, degrading the workforce availability and the resulting service).

This tool has attracted the attention of emergency operators from the Torbay town council, and a serious game version of it is being designed to help with preparedness for Torbay ward helpline operators that deal with vulnerable communities.

Finally, the cascading failure engine is being used to model other locations impacted by climate change such as the island of Tenerife, and the area of Eskifjörður in Iceland.



# ToDrinQ Project Review Meeting Held in Brussels to Advance Water Management Innovation

Partners of the **ToDrinQ** project recently convened in Brussels for a key review meeting to assess progress and plan the next steps in developing innovative solutions for water management. The ToDrinQ project, funded by the European Union, aims to create a comprehensive toolkit of technologies, systems, and decision-making tools that will enhance water systems operations and secure high-quality drinking water for communities across Europe.

During the meeting, project partners from various sectors, including research, technology, and policy, came together to share insights, discuss challenges, and align strategies for the next phase of the project. The review highlighted significant advancements in developing innovative solutions that will help manage water resources more effectively, improve resilience against climate-related impacts, and ensure access to safe drinking water for all.

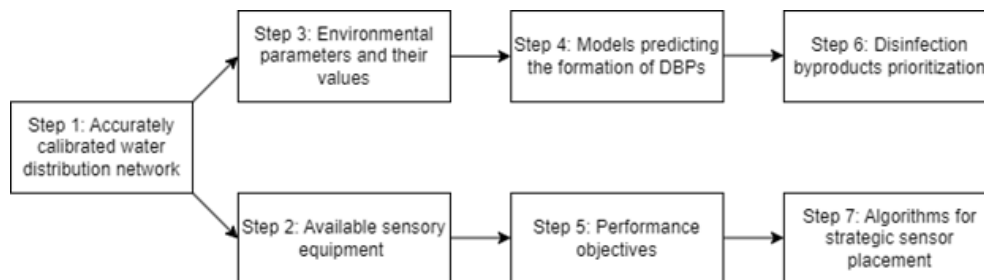
This collaborative effort marks an important milestone in achieving a smarter, more sustainable water future for Europe, aligning with broader EU goals for environmental protection, resource efficiency, and climate resilience.



## H2OforAll

# Intelligent placement of sensors in drinking water distribution networks

Providing clean drinking water to people worldwide is a challenging task due of the contaminants that tend to form in water distribution systems at any point in time, causing various health impacts to the consumers. An emerging contaminant family with not well-known effects on human body is the disinfection byproducts (DBPs) occurring in chlorinated drinking water. Due to the complexity of their formation, it is very challenging to monitor and detect DBPs in a water network. By placing sensors throughout the distribution system, it becomes feasible to monitor certain environmental parameters that affect their formation and identify locations in the network which have high probabilities for the detection of DBPs. The problem is complicated due to the large number of possible DBPs and the constrained number of sensors available, thus a clever approach needs to be followed, especially in cases where prioritization of DBPs needs to be considered. In this work, H2OforAll proposes a methodology for detecting DBPs, considering a real-world case study of a calibrated water distribution network in Coimbra, Portugal. Different algorithms are investigated to satisfy different performance objectives, aiming to locate the best possible locations for sensor placement, towards maximizing possible detection and minimizing overall impact of DBPs.



For more information, contact the project at:

Webpage: <https://h2oforall.eu/>

<https://twitter.com/PH2oforall>

<https://www.facebook.com/profile.php?id=100089523070928>

<https://www.linkedin.com/company/h2oforallproject/>

Email: [contact@h2oforall.eu](mailto:contact@h2oforall.eu)

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Netherlands

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The projects in the ICT4Water cluster received funding from the European Union's Horizon2020 or Horizon Europe research and innovation programme.



The revised EU Drinking Water Directive promotes a risk assessment and risk management approach for securing drinking water supply in the context of climate change and increased pollution. However, this approach is challenged by insufficient information that is available to operators, especially in real time, on compounds and organisms of emerging concern, such as pesticides, pharmaceuticals, disinfection by-products, heavy metals and pathogenic microorganisms. We argue that if drinking water treatment could leverage novel technologies and design philosophies, and more agile operational actions could be supported, drinking water supply systems could become more adaptable and robust without expensive infrastructural investments. In this context, ToDriNq develops and tests a compendium of modular, complementary, innovative solutions (the 'ToDriNq Toolkit') that provide new information and better support tools to operators and designers to adapt to (short- and long-term) changes in water quality, while obtaining high drinking water quality at the tap. ToDriNq develops novel real time sensing and water quality monitoring technologies, innovative treatment systems (especially suitable for small-scale/modular, adaptable treatment plants) and interoperable decision tools that support resilient, evidence-based treatment plant design and improved overall water system operational awareness and response.



**Funded by  
the European Union**