

## | Prof. Harsha Rathnaweera, „Digitalization in the education of water professionals – project Digiwater”

### DIGIWATER – an Erasmus+ Capacity building in higher education project with EWA

The European Commission works towards linking the physical and digital world for water solutions, tackling the societal challenges of water availability, quality, and climate-change-related impacts, while the water industry goes through a digital revolution.

"Digital water" is an important concept that underlies the vision of Water Europe, based on the projected development of a world in which networks that interconnect control and monitoring systems of processes related to water, sensors, transducers, generate large amounts of data. These data, when used by innovative artificial intelligence systems, can help make decisions that could have a significant impact at all levels of government, from the level of control of simple processes to the level of governance at the European level. Thus, "digital water" is now seen not as an "option", but as an "imperative".

Knowledge Alliances of the Erasmus+ program focuses on transnational, structured and result-driven collaborative initiatives, notably between higher education and business. Six universities and



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six SMEs from Norway, Germany, Belgium, Romania, Cyprus and Turkey, jointly with EWA have seen the need and the potential for strengthening the European water sector through better preparation of the decision-makers, the innovators and engineers of tomorrow by utilising the collaboration between universities and SMEs. A consortium was established to share common goals and work towards mutually beneficial results and outcomes. Our project proposal on the Digitalisation of water industry by innovative graduate water education (DIGIWATER) was among the 30 projects selected for funding after considering 217 applications by Erasmus+.

The project is progressing well and in 2022 we have conducted an innovation camp with students and resource persons at KU Leuven. And in 2023 we will hold the second innovation camp in Istanbul and intend to complete the project by the end of 2023.



## DIGIWATER

DIGIWATER project aims to develop new, innovative, and multidisciplinary approaches to teaching and learning by using multidisciplinary curricula integrated with digital learning tools and virtual facilities like sharing labs/software with access to cloud systems and Problem Based Learning. Better graduate training will stimulate entrepreneurship and entrepreneurial skills of higher education teaching staff and company staff using Innovation Camps and will facilitate the exchange, flow, and co-creation of knowledge by creating inter-stakeholder courses, integrating academic, corporate learning, and professional development for external specialists.

### Digitalisation of water industry by innovative graduate water education (DIGIWATER)

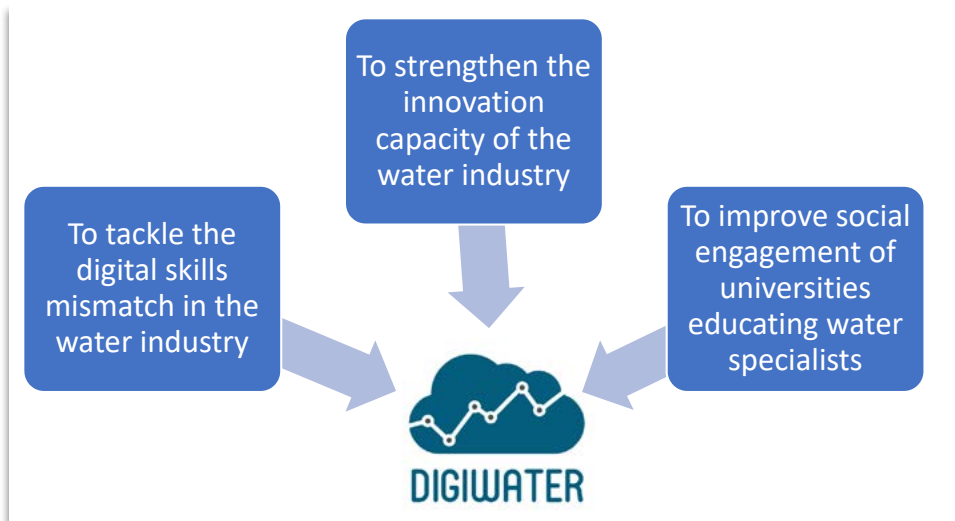
#### **Ambition:**

to foster digital innovation in the water sector by showcasing in water and parallel sectors (e.g. energy), building IT skillsets to water professionals, mainstreaming technology entrepreneurs into the water sector, connecting the water sector with related industries and resource issues, such as energy, health and agricultural production and ecosystems and changing conservative, cautious perceptions and shift future water leaders from late to early adopters of innovations and ideas.

#### **Objectives:**

- (1) to develop new, innovative, and multidisciplinary approaches to teaching and learning by using multidisciplinary curricula integrated with digital learning tools and virtual facilities like sharing of labs/software with access in cloud systems and Problem Based Learning
- (2) to stimulate entrepreneurship and entrepreneurial skills of higher education teaching staff and company staff using Innovation Camps and
- (3) to facilitate the exchange, flow and co-creation of knowledge by creating inter-stakeholder courses integrating academic, corporate learning and professional development for external specialists.





Partners found that the current digital water transformation status of academia, the government, and the private sector, is considered to be at a moderate level. The level of training of the personnel in supporting the digital water transformation, in general, seems to be higher in academia and the private sector. Geographic Information Systems (GIS), simulations tools and sensors are the most widely used tools, in contrast to virtual reality technologies and Artificial Intelligence, which are almost not used.

It was also confirmed that considering the level of interdependency and the cooperation between the various sectors, there is consent as it being moderate to low, and it is believed that the government and the technology providers have the most crucial role in achieving the digital water transformation process.



*DIGIWATER 1<sup>st</sup> physical meeting in November 2021, Norway © Digiwater*

The lack of funding is the most important barrier for all the sectors, followed by the lack of specialised human resources in the Academic sector, the current management policies in the government sector, and the hardware/software and network deficiencies and data limitations in the private sector.

A survey among several stakeholders has highlighted the need for better preparing the newly recruited water specialists for entering the water industry, as well as the need for an accessible and user-friendly database. Advanced monitoring technologies and intelligent equipment are mostly needed by the Academic sector. Each sector believes it will benefit from the digitalisation in a different way, and the fact that the academics are interested in upgrading their current curricula, which will lead to better preparing the future water specialists for entering the water industry, is also an important factor towards a successful digital transformation, which is an ambition of the DIGIWATER project.



**DIGIWATER Facts:**

Period: 2021-2023  
Grant: 1 million €  
web: <http://waterharmony.net/digiwater/>

**Universities:**

Norwegian University of Life Sciences, Norway (Coordinator)  
University of Applied Sciences Ostwestfalen Lippe, Germany  
Katholieke Universiteit Leuven, Belgium  
University of Galati, Romania  
University of Cyprus, Cyprus  
Istanbul Technical University, Turkey

**SMEs:**

DOSCON, Norway  
Stadtentwaesserungsbetrieb, Germany  
SumAqua, Belgium  
Smartech Automation SRL, Romania  
I.A.CO Environmental And Water Consultants Ltd  
Memsis Environmental Technology R & D Co.Lt, Turkey

**Umbrella organisation:**

European Water Association EWA



## Harsha Ratnaweera – DIGIWATER: A success story in the realm of Digitalisation in water higher education

**April 2024**

Digitalisation emerges as a viable solution in water industry and management, therefore promoting the uptake of the digital tools and technologies is a must including AI, data analytics, and IoT. Digital transformation is changing the job market and requiring new skill sets; therefore, systemic change is required to reach the full potential of this transformation. Reforming and evolving the programs in water higher education comes a critical element in this change to reflect on and react to these updates. Creating new programs enables the future young water professionals to acquire the necessary skills and competences to fully embrace this digital era.

The European Commission has presented a set of possible actions, initiatives and funding opportunities to boost the development of digital skills at all levels of education and training. The European Commission also works towards linking the physical and digital world for water solutions, tackling the societal challenges of water availability, quality, and climate-change-related impacts, while the water industry goes through a digital revolution.



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To contribute to the ongoing efforts and adapt to needs of the water industry, DIGIWATER was approved for funding from the Erasmus+ Knowledge Alliances IN 2021. Since 2014, Knowledge Alliances have helped strengthen Europe's capacity to innovate and to support the modernisation of Europe's higher education systems.

Today and after almost three years of running DIGIWATER, the project is coming to its conclusion on 30<sup>th</sup> April 2024. The project has brought together six universities six SMEs. The European Water Association (EWA) as an umbrella organisation coordinated the dissemination activities.

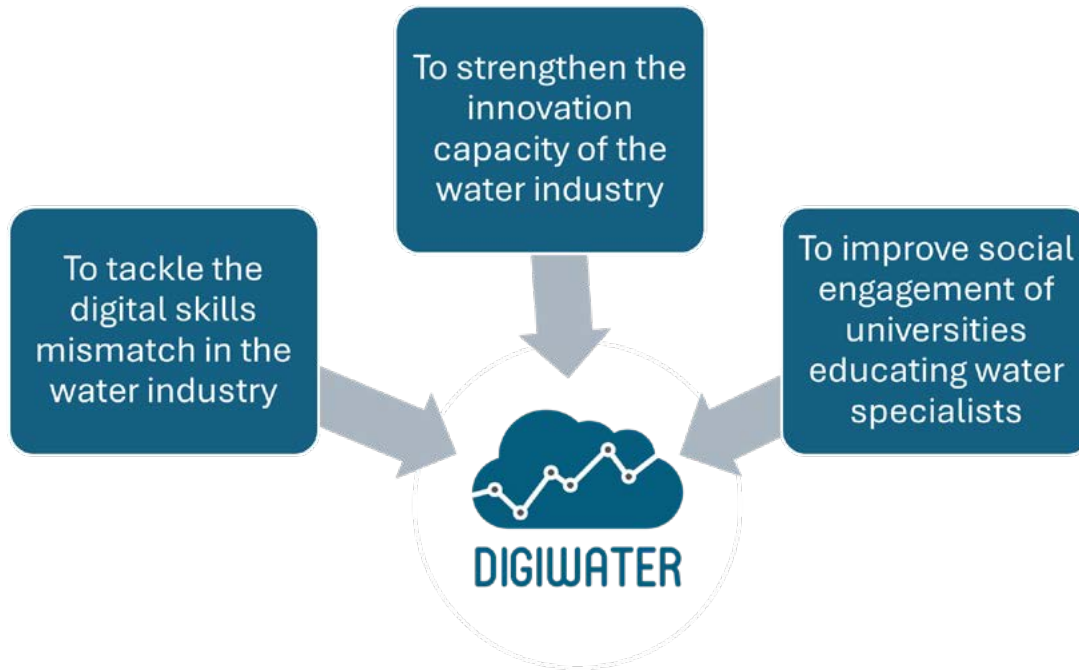




ning tools and virtual facilities with access in cloud systems and Problem Based Learning; (2) to stimulate entrepreneurship and entrepreneurial skills of higher education teaching staff and company staff using Innovation Camps and (3) to facilitate the exchange, flow and co-creation of knowledge by creating inter-stakeholder courses integrating academic, corporate learning and professional development for external specialists.

The ambition was to foster digital innovation in the water sector by showcasing in water and parallel sectors (e.g. energy), building IT skill sets to water professionals, mainstreaming technology entrepreneurs into water sector, connecting the water sector with related industries and resource issues, and shift future water leaders from late to early adopters of new innovations and ideas. This consortium worked together (1) to develop new, innovative and multidisciplinary approaches to teaching and learning by using multidisciplinary curricula integrated with digital lear-





## Innovation camp



### DIGIWATER results:

- Eight workshops with different topics on digitalization to promote digital skills among partners staff and students.
- Digital Water e-learning platform which you can visit here: Digiwater Platform ([ucy.ac.cy](http://ucy.ac.cy))
- Two innovation camps to promote the engagement of students.
- Five demo cases as a part of the Digital Water Living Lab to promote the engagement of end-users.

### DIGIWATER foreseen impacts:

The main target groups are TG1 (future water professionals), TG2 (water professionals), TG3 (water educators), TG4 (technology entrepreneurs), TG5 (local communities), TG6 (the Water industry), TG7 (European community at large).

DIGIWATER consortium recognizes the following impacts resulting from its work:

Impacts	
Short-term	Long-term
Development of skills and competences necessary to support digitalization of water industry	Growing generation of water professionals leading digital transformation of water industry
Update of knowledge and competences towards 'smartening of the water system'	Support of digital transformation in the industry, rather than resistance
Upgraded curricula, improvement of teaching styles by modern tools and resources	Enhancing smart specialisation for water in higher education
Reduction of research costs and quicker implementation of innovations in the market	Sustainable of Open Innovation in the industry
Growing specific opportunities that can be realised in practice	Growing positive changes based on regional innovation ecosystems
Transfer of positive impacts of digitalization from other industries	Skills match between water engineers and process control specialists
Digitalization of water enterprises	Highly competitive European water sector and attractive water-related higher education

### Sustainability actions:

In order to ensure that DIGIWATER goals are achieved, and long-term impacts are delivered, the consortium has planned to sustain the results beyond the project time by:

- Mainstreaming Innovation Camp practices by university staff members trained in the project and motivated to continue this practice beyond the project together with innovative enterprises
- Incorporation of curricula and lecture materials, revised to reflect the needs of the industry and future employers, into study programs of partner universities and professional extension life-long learning programs of enterprises
- Initiating innovative ideas that can be developed further beyond the project and establishing innovation and entrepreneurship as a culture among the students in the water sector.
- Connecting with other European projects and initiatives such as SMART4ENV ( ).



### **DIGIWATER Facts:**

Period: 2021-2024

Grant: 1 million €

web: <https://waterharmony.net/projects/digiwater-2/>

### **Universities:**

Norwegian University of Life Sciences, Norway (Coordinator)

University of Applied Sciences Ostwestfalen Lippe, Germany

Katholieke Universiteit Leuven, Belgium

University of Galati, Romania

University of Cyprus, Cyprus

Istanbul Technical University, Turkey

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