

# One Digital Health for OneAquaHealth: Bridging human health and wellness to interdisciplinary biodiversity preservation

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**Abstract.** The OneAquaHealth (OAH) Project seeks to demonstrate the high interconnection between the health of (blue and green) freshwater ecosystems and human health and well-being in urban contexts. In this workshop proposed by the European Federation for Medical Informatics One Digital Health Working Group, and the OAH project consortium, the ODH framework will be deployed to elaborate end-to-end processes that encompass the development of timely AI-based decision support systems for preserving biodiversity. Aiming at active participation of workshop participants, we will advance our understanding of the relevant indicators and design more robust experiments, also engaging young medical informaticians in this multidisciplinary research area.

**Keywords.** One Health, One Digital Health, Urban aquatic ecosystems, Citizen Science, public health informatics

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## **1. Introduction**

One Digital Health (ODH) sets out to unify Digital Health and One Health by introducing a conceptual framework that looks at health-related issues in an integrative way with clinical, epidemiological, behavioral, educational, and industrial perspectives. The main objective of ODH is to achieve a unified approach to the digital interpretation of the existing relationships between human, animal, and environmental domains [1-3]. ODH aims to leverage and contribute to a new wave of health technologies innovation, more particularly in the fields of (public) health informatics, environmental informatics [4], and digital ecology [5]. In this workshop supported by the European Federation for Medical Informatics (EFMI) One Digital Health Working Group (ODH WG), we will explore the deployment of the ODH paradigm within the context of the “OneAquaHealth” (OAH) Horizon Europe project – whose main goal is to demonstrate the high interconnection between (blue and green) freshwater ecosystems and human health and well-being in urban contexts. The novelty of our interdisciplinary effort in converging insights to One Health paradigm, ODH features, and aquatic ecosystems peculiarities, offers a unique opportunity to elaborate end-to-end processes that encompass the development of timely AI-based decision support systems for preserving biodiversity [6] via the improvement of healthcare policy-making, which relies in turn on educational and citizen engagement strategies (Citizen Science: [7]). The goals of the workshop will help build community connection and engagement in this vital area and map strategies for enabling principles to be foundational in public health informatics efforts.

## **2. Workshop Activities**

The 90 minutes of the workshop will be structured as follows:

### *2.1. Overview presentation (20 min)*

A brief overview presentation of the OneAquaHealth project and the ODH framework. It will highlight key design considerations of the research and development processes and partners efforts:

- Highlight the importance of the OAH project in a public health informatics perspective – involving relevant stakeholders to raise their awareness to the importance of urban streams and rivers and supporting them with adequate digital tools to guarantee environmental monitoring;
- Explore the concept of ODH Intervention in the process of developing a common and standardized early warning Environmental Surveillance System for urban aquatic ecosystems.

### *2.2. Breakout group discussions (40 min)*

Breakout group discussions to generate ideas and challenges based on the list of proposed human health and ecological indicators, along specific themes designing experiments. Attendees will be split in small groups (max 5/7 subjects) to foster discussions along the following themes that highlight the connections between the OAH project features and the ODH framework dimensions:

- empowering citizens and communities to actively monitoring the condition of the surrounding urban ecosystems, through (i) relevant and easy-to-use indicators from ecology, health risks, and wellness; (ii) standardized approaches and digital tools (*Citizen Science → Citizen Engagement and Education*);
- recovering of the status of ecosystem health in order to the mitigation or elimination of risks for human and animal health (*DSS-based Environmental Surveillance System → Human and Veterinary Healthcare; Environment*);
- technological transfer and scalability of the main project results to Small-Medium Businesses (SMEs) and industry → *Healthcare Industry 4.0*.

Each group discussion will be facilitated by one of the organizers and/or a presolicited volunteer. The facilitator will take notes on the discussion for the debrief.

### 2.3. Debrief and next steps (30 min)

The breakout groups will come back together for a debrief discussion facilitated by the workshop organizers. Each group's facilitator will report key points from the breakout discussions, followed by an open discussion to identify 2-3 key action items and next steps (e.g., multi-stage Delphi process), and take-home message.

## 3. Impact of Workshop

This workshop will promote the activities of the EFMI ODH WG engaging the EFMI community in the OneAquaHealth project. At the same time, the Medical informatics and digital health community members, and particularly students and young professionals (e.g., members of yEFMI) will be invited to join and be inspired towards key research problems at the intersection of human, animal, and environmental health.

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