



FRESHWATER
COMPETENCE
CENTRE



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Research Council
of Finland

HYDRO-RI-Platform

**A national freshwater infra with
leading and emerging instrument
and monitoring technologies**

10.12.2024



HYDRO-RI-Platform

- **Mission** of HYDRO-RI-Platform (FIRI, non-roadmap infrastructure) is to test the latest water research sensors and conduct science based on new types of data, to understand the changes in freshwater reserves in a changing climate and hydrology.
- **A competence center of the water sector for boreal and subarctic river and lake environments was formed**, to solve environmental issues (e.g. erosion, flooding, water quality) of these fragile environments

→ Freshwater Competence Centre, providing

- **A pool of unique instruments** with various autonomous under- and above-water platforms measuring hydrology, water quality and physical aspects of our water reserves.
- Networking opportunities for R&D companies related to freshwater and academic collaborations
- High academic quality scientific publications

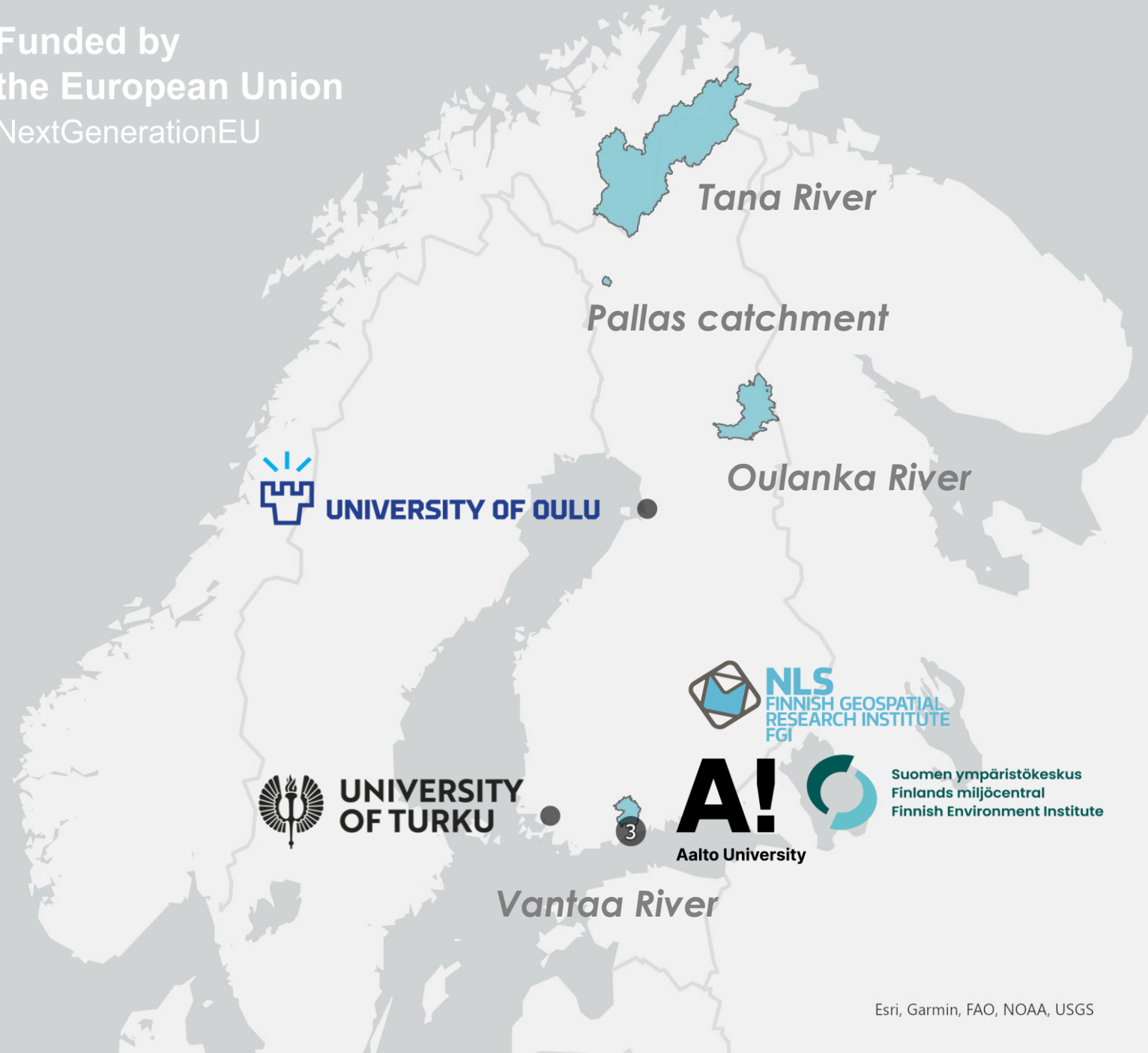


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OUR SUPERSITES



HYDRO-RI Platform - mobile infrastructure and services for all to tackle climate change and infrastructure sustainability



Unmanned surface vehicles
(University of Turku & Aalto & Oulu)



Unique sensors for mapping
and measuring (FGI)



Underwater drones
(Aalto university and SYKE)



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Images: Ville kankare,
Annukka Pekkarinen,
Eliisa Lotsari



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TIETO 1

- Flow through system tackles gas fluxes
- A new solution for high quality and spatially dense data from ponds to coastal areas



ENVISTATION

- Semi-automatic remote controlled field laboratory trailer for testing and validating continuous field measurement devices



Images: Jari Silander

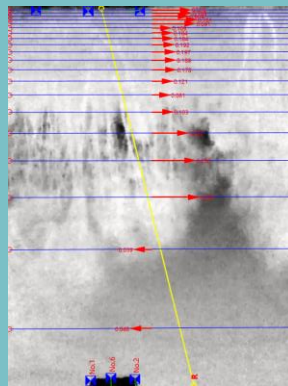


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In-Situ sensors



Camera systems for river velocity and ice monitoring (Aalto)



Picarro isotope analyser for tracing water movement continuously (University of Oulu)



ADV for flow velocity and direction (Univ. of Turku)

Images: Annukka Pekkarinen, University of Oulu, Henri Heiskanen (Aalto University)



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Impact and wider usability of the HYDRO-RI-Platform equipment, data and their outcomes

- The mobile sensor systems enable faster and geographically wider measurements of the catchment areas, as the sensor systems are possible to move to the sites wherever and whenever needed.
- Continuous, static measurement stations installed to measure hydrology and water quality in real-time
- Remote sensing systems (drones, underwater drones and static camera systems) enable efficient data collection of surface waters
- The calibration data for modelling and future predictions has been enhanced: more accurate scenarios under changing environmental and climatic conditions.
- We are open for new openings for application of the infrastructure, with companies, societal actors and researchers, for enhancing monitoring and securing water resources.



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THANK YOU

Main partners

University of Turku

University of Oulu

Aalto University

Finnish Geospatial Research Institute FGI

Finnish Environment Institute Syke



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