



Application of AI for water data management - Introduction of Waterverse

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Water Data Management Ecosystem for Water Data Spaces

PROJECT INFO

- Topic: **HORIZON-CL4-2021-DATA-01-03**— *Technologies for data management (AI, Data and Robotics Partnership)*
- Start Date: **01 October 2022**
- End Date: 30 September 2025
- Total cost: € 5 253 964,65
- EU contribution: € 4 510 509,90

MISSION

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*

CONSORTIUM

- **17 partners** from **10 EU countries**
 - 6 RTOs
 - 7 SMEs
 - 1 large industry
 - 3 NPOs



OBJECTIVES

SO1. Actively engage stakeholders

- Assess the **gaps** and **needs** in water sector
- Organise **Multi-Stakeholder Forums (MSF)**
- Analyse **data management** and **heterogeneity challenges**
- Reduce the entry **barriers to data spaces**

SO2. Implement the Water Data Management Ecosystem (WDME)

- Create an **extendable, distributed, and user-friendly** ecosystem
- Build upon **data space components** and **assets** already available from **FIWARE** and **IDSA**
- Integrate **Smart Data Model** initiative
- Deploy **AI-based tools** for data fairness, data quality and integrity, data validation

SO3. Setup and demonstrate the WDME

- Implement and demonstrate of WDME through **2 evaluation cycles** in **6 diverse pilot areas**
- Implement and monitor evaluation plans for **co-designed data sharing processes**
- Provide data management **guidelines** and **recommendations**

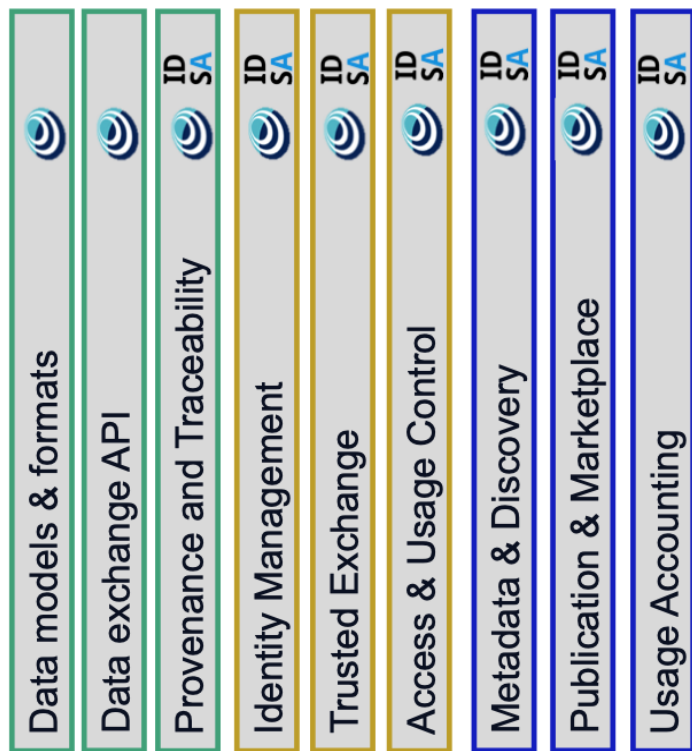
SO4. Ensure security and energy efficiency of the WDME

- Implement CTI techniques to guarantee **Confidentiality, Integrity and Availability (CIA triad)** on the data management systems
- Establish a precursor, **energy-efficient approach** based on ML technologies

SO5. Indicators for assessing FAIRness of data

- Define the concepts for **FAIR Digital Objects** and **FAIR Ecosystems**
- Deliver **guidelines, recommendation, metrics, and tools** to generate **assessment reports** of the **FAIR maturity level**
- Apply **FAIR + MELODA5 principles** to improve the open data reusability

FIWARE and IDSA Technology building blocks for Data Spaces

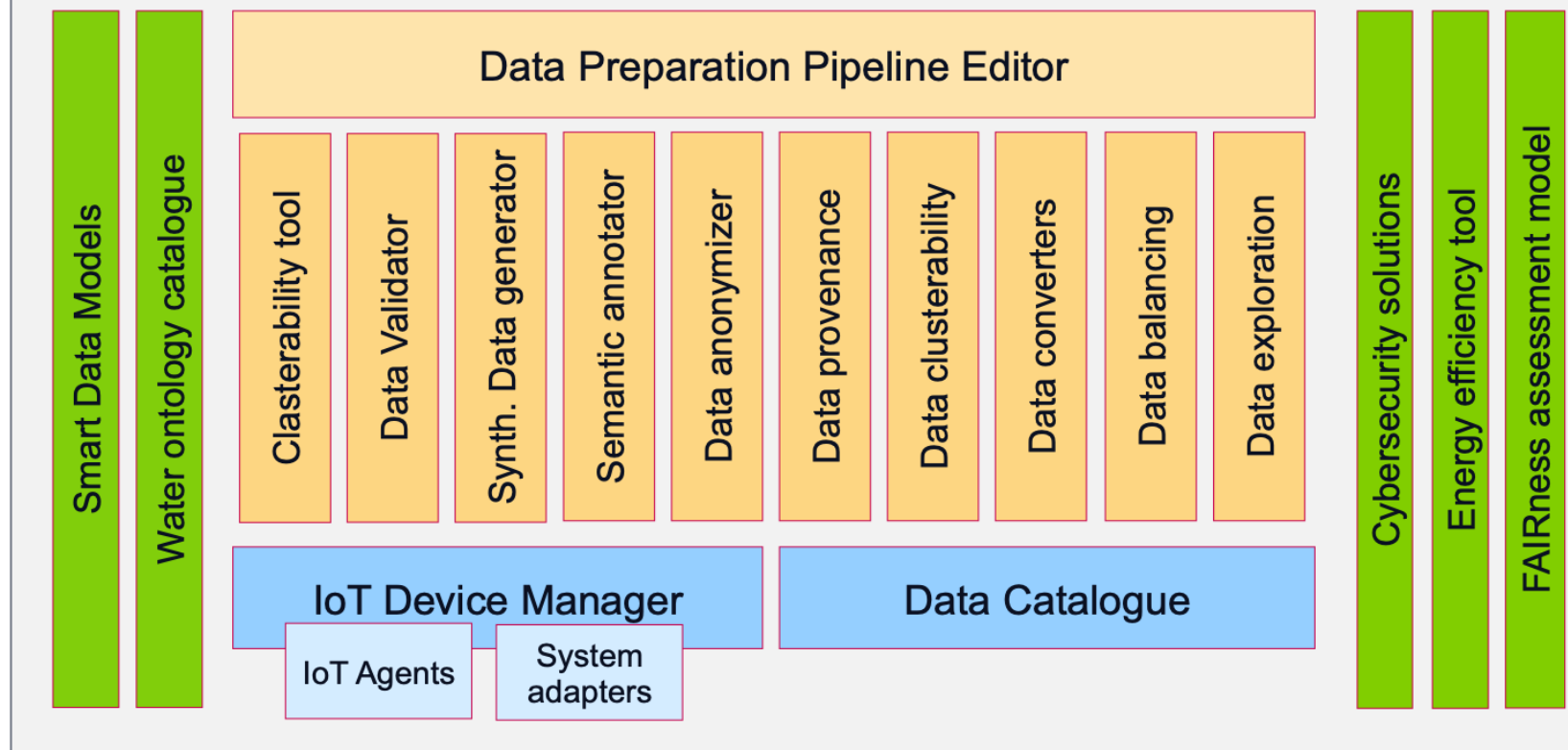


Data Interoperability

Data Sovereignty

Data Value Creation

WATERVERSE Data Management Ecosystem



IoT networks,
sensors, robots,
actuators



Satellite,
weather



Vertical solutions
(flow mgmt.,
leakage control)



Open Data


Data discovery & collection

Data preparation

Added value resources


- + Advances in IoT and Smart/Remote sensors
- + Big data – heterogeneous sources
- + Precision-based AI analytics
- + Advanced sensing and modelling technologies
- + Semantic representation/reasoning & Smart Data Models
- + AI for BI processes

Technology





- Unified **WDME** for effective data management:
 - ✓ Data preparation
 - ✓ Data quality and integrity improvement
 - ✓ Data discovery & collection
 - ✓ Data FAIRness
- Energy-efficient approach based on ML technologies
- Advanced cybersecurity solutions

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- + Hydraulic Modeling 1.0 to **2.0** using AI, IoT,...
- Fragmentation of the key actors, tailor-made solutions
- Lack of standardization (industry-wide)
- Data exchange and interoperability issues are challenging
- Reluctant to adopt open-source solutions
- Global integrated P/C security context is missing
- Small (economically) market size
- Lack of references in EU legislation to standards
- Other social and environmental limitations...

Water Sector




THANK YOU

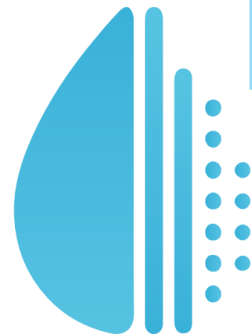


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