ILIAD Digital Twins of the Ocean: a suite of thematic twins informing European and global policies

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Location: European Maritime Board ECOP webinar

Date: March 13th 2024

CONTENT

- What is a digital twin of the ocean?

- Iliad in a sea shell
    - The Iliad concept and approach
    - Iliad thematic digital twins of the ocean

- The Iliad architecture
    - What does interoperable twins mean?

- Iliad Innovation Booster

About Iliad

▶ Full name: Integrated Digital Framework for Comprehensive Maritime Data and Information Services

▶ Coordinator: Netcompany-Intrasoft

▶ Grant Agreement No: 101037643
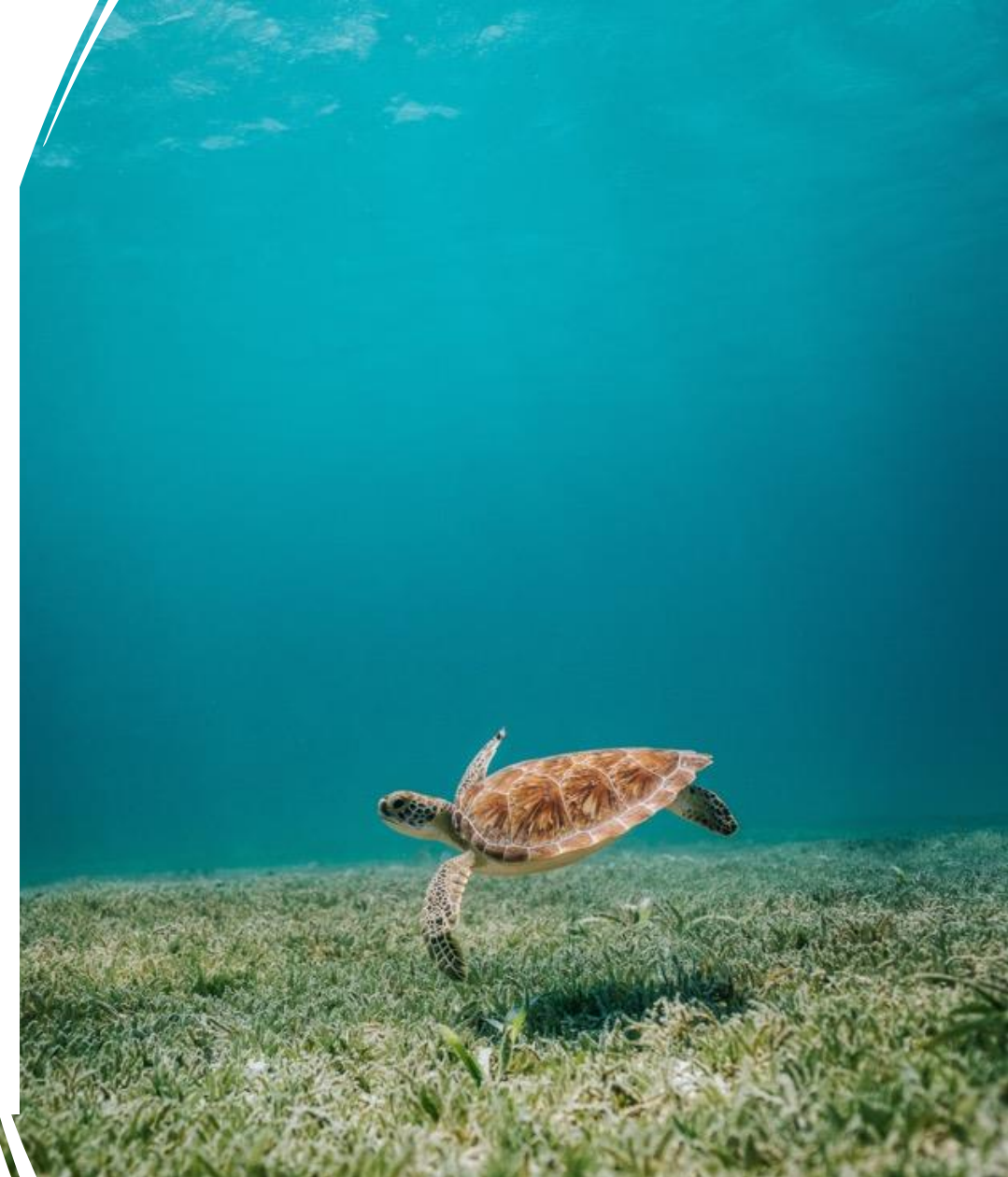
▶ Project start date: 1. February 2022

▶ Project end date: 31. January 2025

▶ Duration of project in months: 36

▶ Overall budget: 18 956 630 EURO

▶ EU contribution: 17 046 230 EURO

▶ Partners: 56 + 2 linked third parties

European Green Deal

HORIZON 2020

DIGITAL TWINS

Iliad's Digital Twin of the Ocean provides a virtual environment representing the ocean, capable of running complex, predictive management scenarios. The innovative system integrates across discipline, sensors, models, and digital infrastructures.

Interoperable, data-intensive, and cost-effective Digital Twins of the Ocean

ILIAD IN A SEASHELL

Enabling an ecosystem of interoperable digital twins for the ocean trough:

- Connecting to *existing* ocean data infrastructures
- Enhance ocean data infrastructures with *additional* observation technologies and citizen science

Create an open marketplace accessible for all providers and users by:

- Development of *innovative methods* in open frameworks and platforms
- Enable model *evaluations & comparisons* for many Earth science applications from weather, energy, aquaculture to climate and more

Provide solutions to address future societal challenges by:

- Assembling a broad and diverse *user community* of existing and new users,
- Supporting the communities in testing and using the project's *innovative technological solutions*

THE ILIAD APPROACH & CONCEPTS

The ocean is vast and complex. It consists of geophysical, biological and numerous interaction between its components and human activity.

To reflect this complexity of **European digital twin of the ocean**, the EU, its members and associates are developing a core infrastructure, Modelling capacity and implementations in local and sector /thematic twins.
This ecosystem of twins and its components are referred to as the European digital ocean twin.

Iliad partnership being part of this dynamic ecosystem is working closely with other projects and initiatives (public & private) to ensure **alignment** by using similar standards, APIs, best practices etc.

Iliad partnership is working towards the implementation of **interoperable** systems, services and assets.
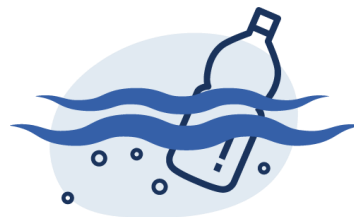
ILIAD DIGITAL TWIN**S** OF THE OCEAN

Existing Wind Farm Capacity

Ocean Energy Potential

Coastal Sediment Transport

Plastic Pollution Monitoring
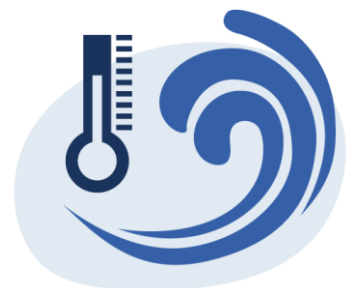
Oils Spill Simulation

Insurance For Marine & Maritime Activities

Jellyfish Swarm Forecast

Harbour Safety

Met Ocean Hind, Now & Forecast

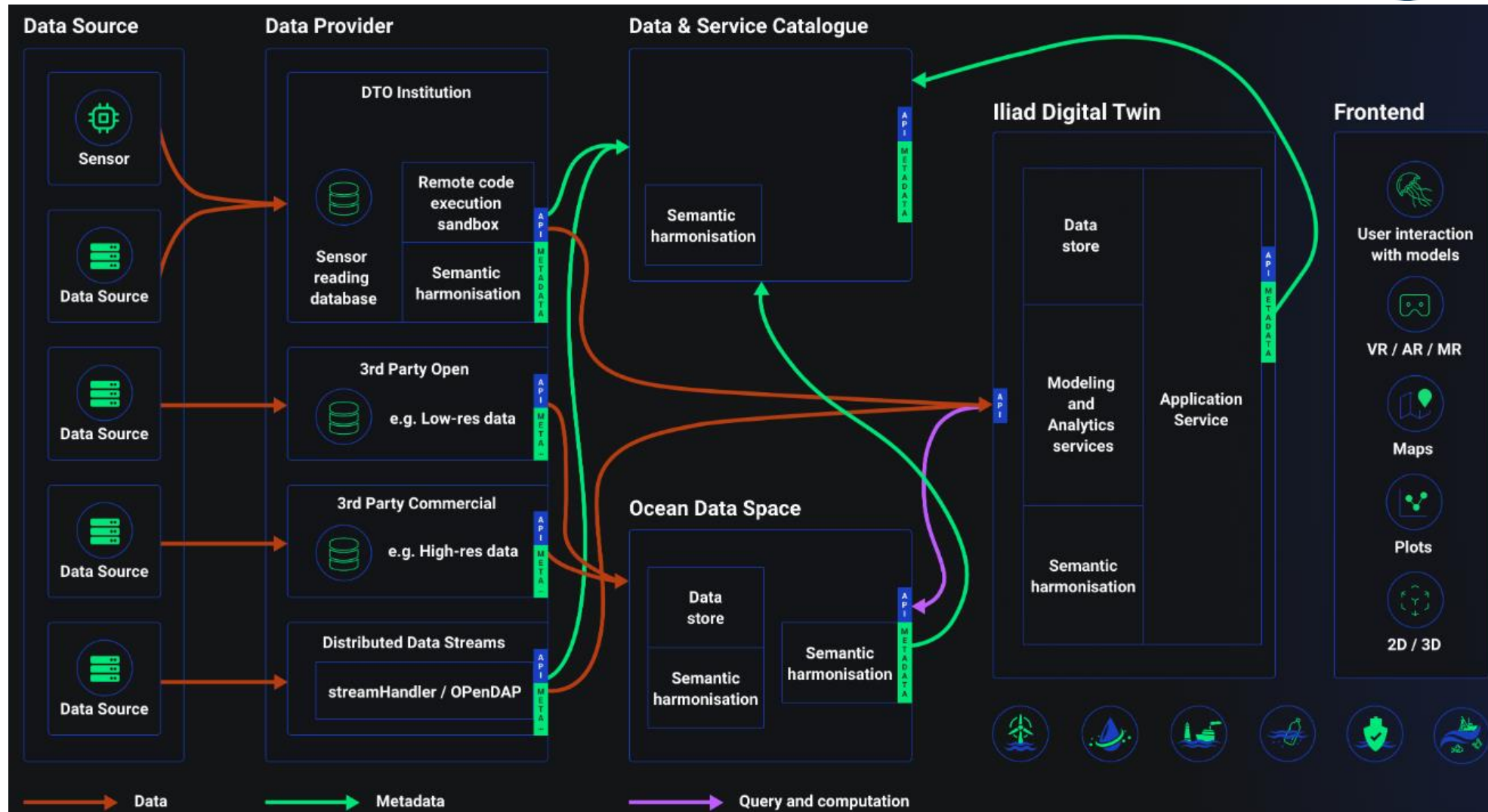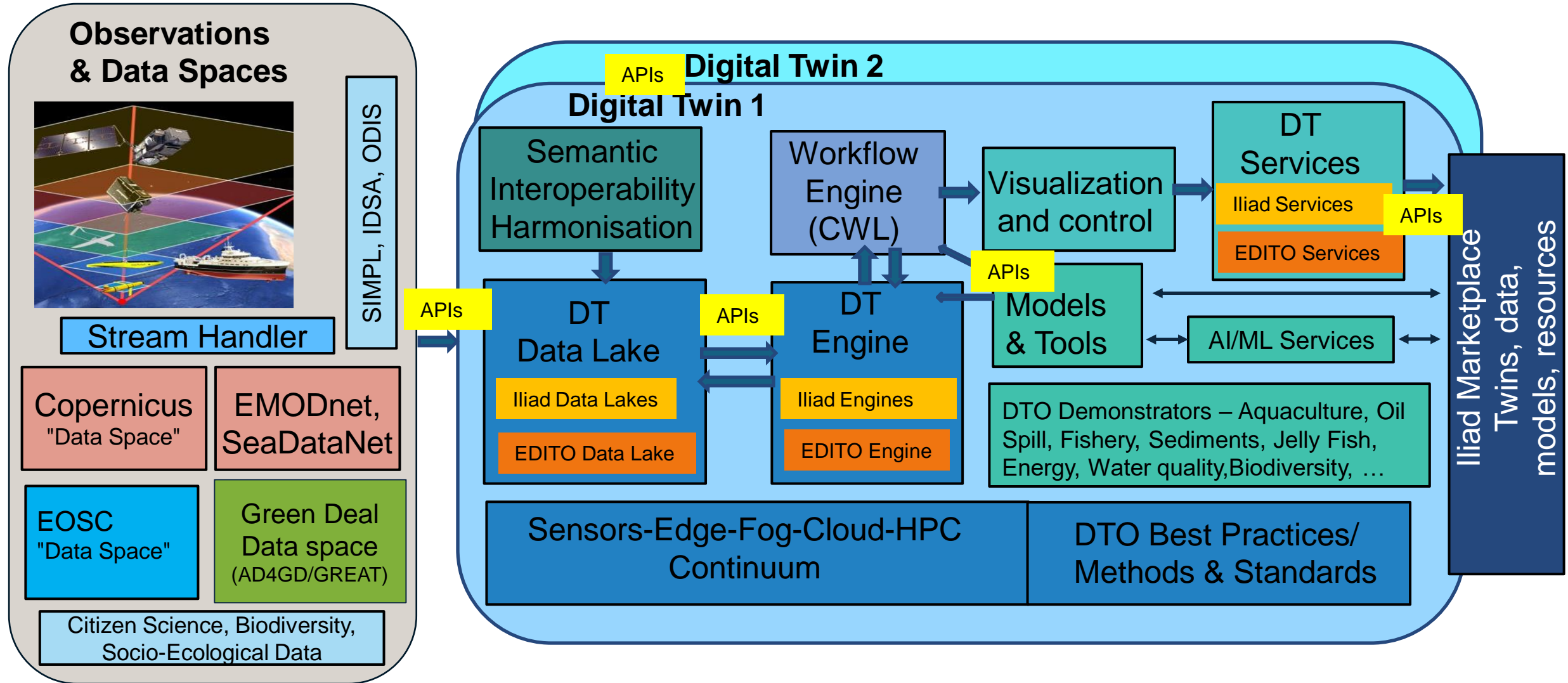Fisheries Productivity & Sustainable Aquaculture

Ballast Water Monitoing

Aquaculture & Harmful Algae, Water Quality & Ship Traffic

ILIAD SoS Architecture

ILIAD DIGITAL TWINS FEEDBACK CONCEPT

Data Sources
Data sources, satellites & sensors

DTO Institution
Sensor databases / Remote code execution sandbox

Open Data
e.g. Low-resolution data

Data Providers

Commercial Data
e.g. High-resolution data

Distributed Data Streams
streamHandler / OPenDAP

API
METADATA

Ocean Data Space

Modelling Services

Analytics Services

Semantic Harmonisation

Data Store

API
METADATA

Data & Service Catalogue

Iliad
Application Services

Interoperable digital twins

ILIAD POLICY IMPACT FACILITY - OBJECTIVES

a   Develop a set of **policy engagement tools** that can be used by the ILIAD policy network(s), ILIAD Academy, and other interested parties.

b   Engage key stakeholders to **assess the current state** and work to make progress on the goals of:
- DestinE (Destination Earth)
- Mission Starfish 2030 report
- European Green Deal
- UN Decade for Ocean Science in Sustainable Development
- UN SDGs

c   Facilitate **policy harmonization** between EU member states and non-EU countries, particularly signatories to regional and international marine-related agreements, e.g., the Barcelona Convention for the Med Sea, Bucharest Convention for the Black Sea, etc.

INNOVATION BOOSTER
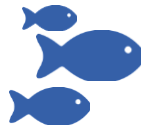
The ILIAD Policy Impact Facility ("PIF")

The ILIAD Academy

The ILIAD Citizen Science Apps

The ILIAD Blue Technology and Business Innovation Facility ("BTBIF")

The ILIAD Digital Blue Growth Hub

The ILIAD Marketplace

Thank You

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European Maritime Board ECOP webinar

13th March, 2024