

A composite image showing a snowy mountain range. In the foreground, there are wind turbines on a rocky island. To the left, an offshore oil rig is visible in the water. In the background, a city with modern buildings is nestled at the base of the mountains. The sky is blue with some clouds, and a small airplane is visible in the upper left. A satellite or drone is visible in the upper right.

EOSC AND DIGITAL TWINS, DESTINE+DTO: ILIAD, AQUAINFRA, DTO-BIOFLOW, EDITO

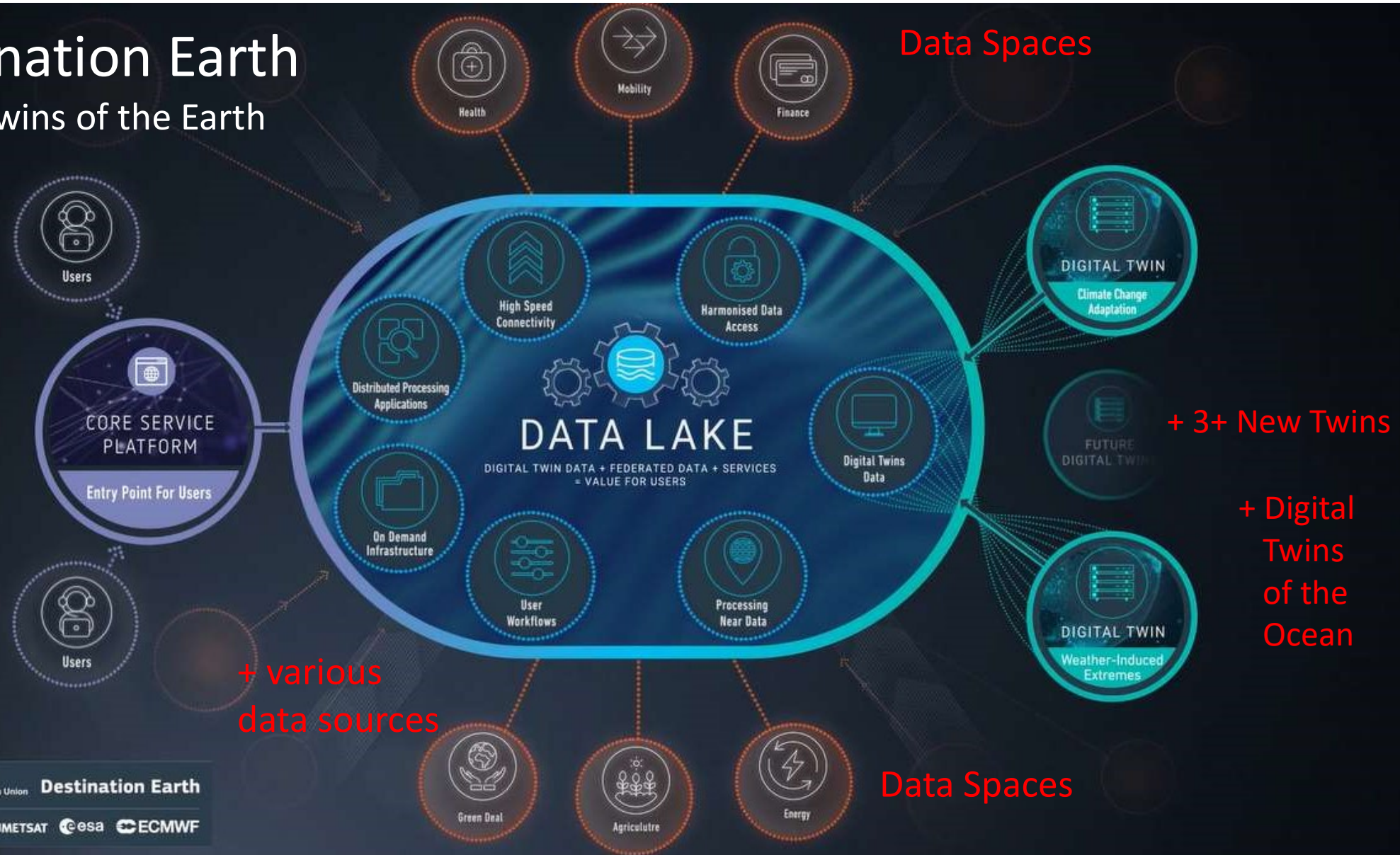
Arne.J.Berre@sintef.no

EOSC Symposium 2024

Berlin, October 22nd, 2024

Destination Earth

Digital Twins of the Earth



Digital Twins of the Ocean (and Waters)

(Part of UN Ocean Decade-2030)

eOSC | AqualNFRA

ILIAD is part of a vibrant ever evolving ecosystem of digital twins, including its great variety of resources ranging from data providers, cloud services, ocean modeling, biodiversity, data spaces all organized by a plethora of institutions and projects in Europe and beyond.



European Digital Twin of the Ocean

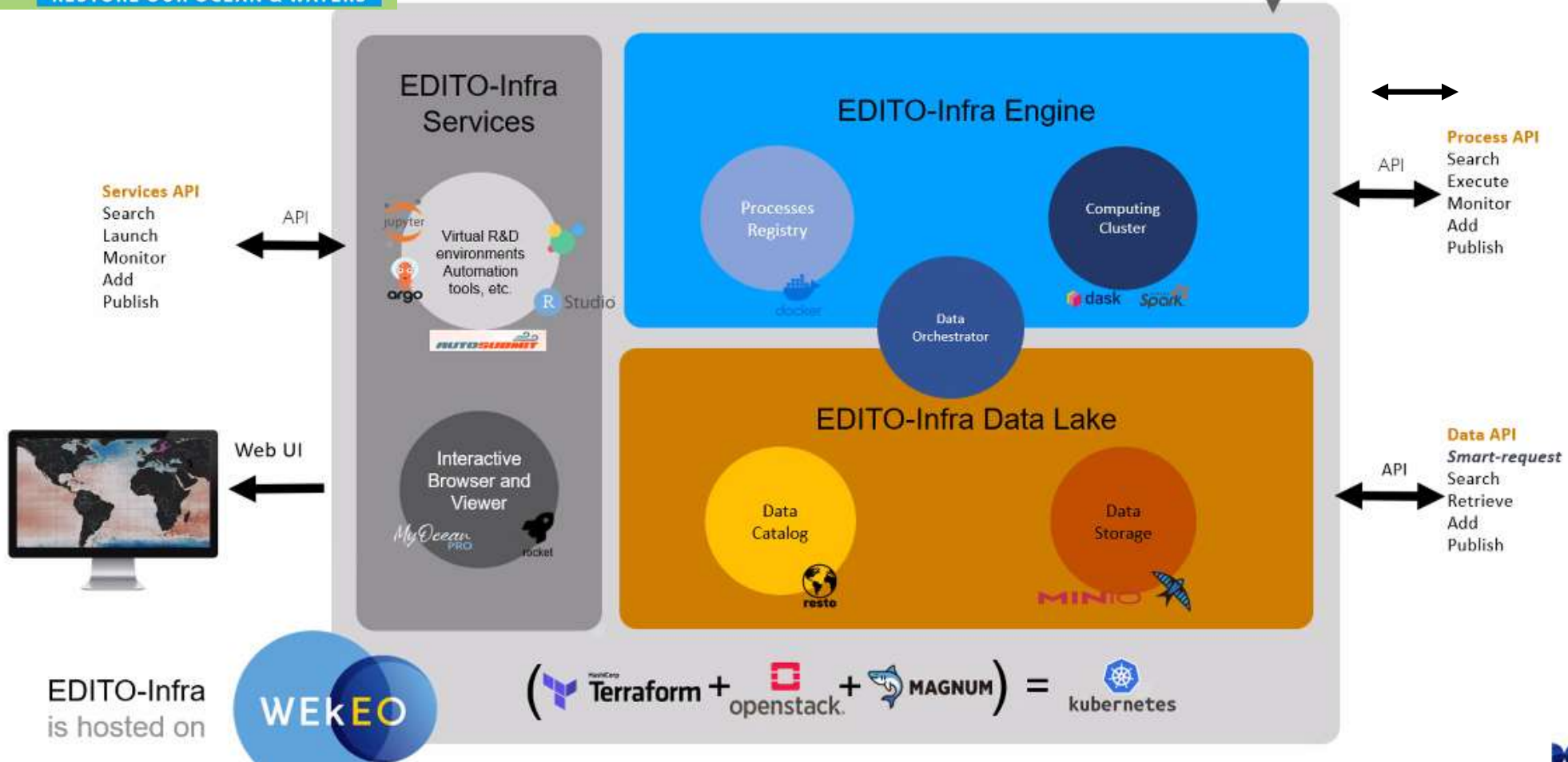
A leap in ocean knowledge and sustainable action

EDITOInfra
European Digital Twin Ocean

EDITOModelLab



EDITO-Infra architecture and stack



ILIAD DIGITAL TWINS OF THE OCEAN

EUROPEAN
**GREEN
DEAL**



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 Monitoring



Aquaculture & Harmful
Algae, Water Quality &
Ship Traffic



ocean-twin.eu

 /oceantwin

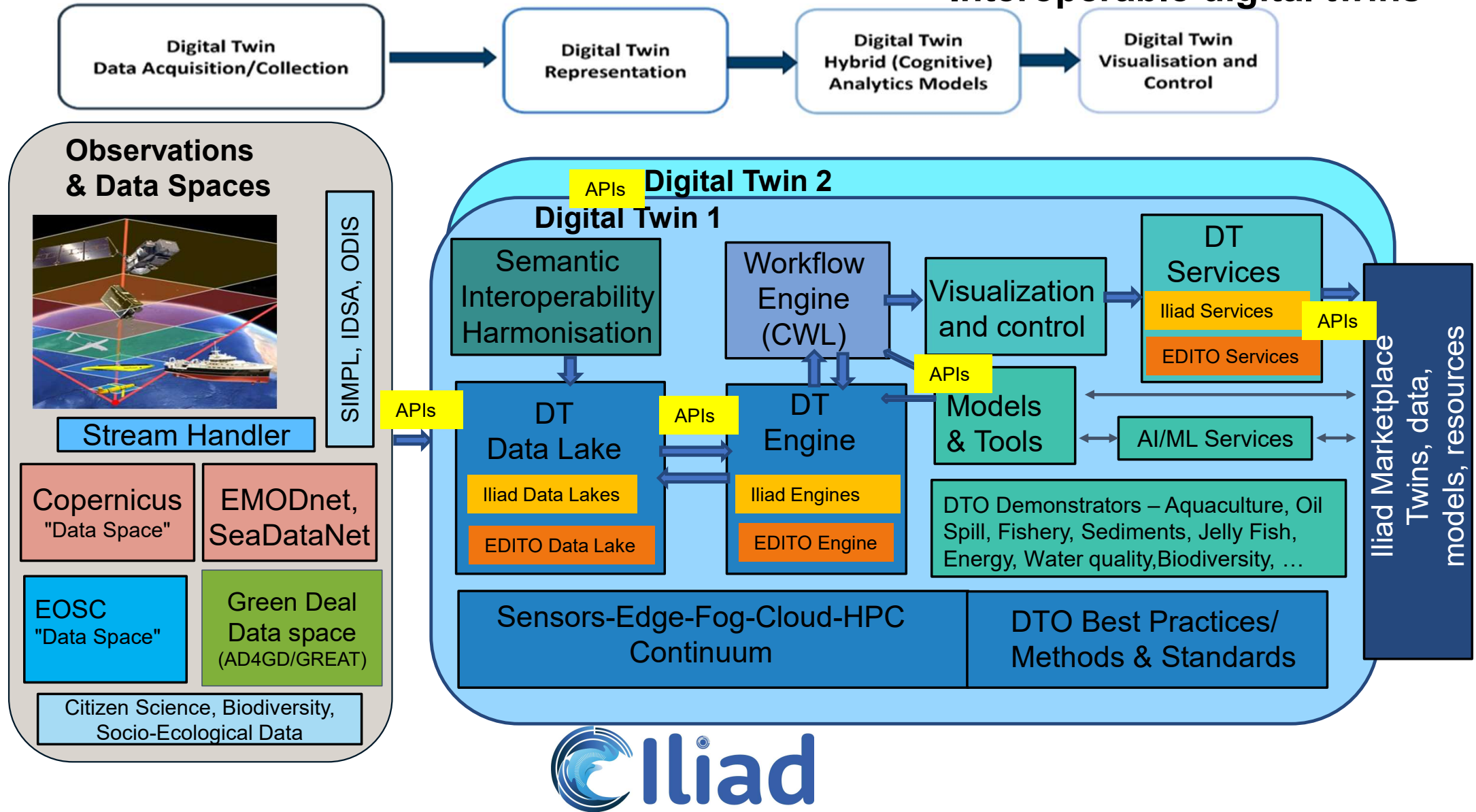
 @ocean_twin

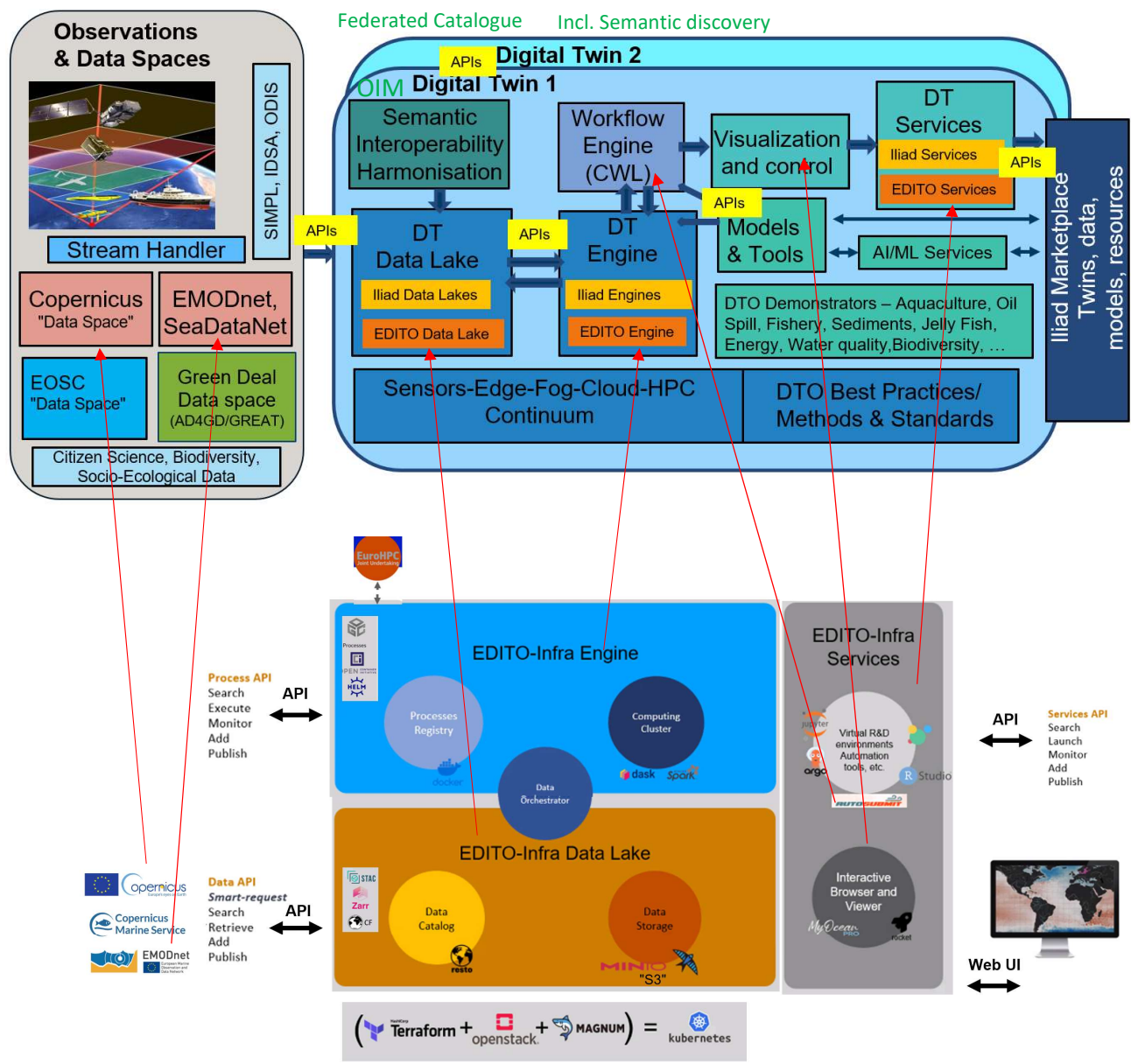


Pilot group	Pilot lead	Pilot name	Iliad DTO Results - Sensors, Data, Services, Components																					
			WP2-1: Ex. data sources/data bases, ODIS, SeaDataNet, ...	WP2-2: Sensor data capabilities	WP2-3: Providing Operational pilot data/base	WP2-4: Using EMODNet, CMEMS, EDITO ...	WP3-1/2: Citizen Science services	WP3-3/4/5: Citizen Science Apps	WP4.1: Federated Catalogue and Identity	WP4.2: Ocean Information Model - OIM	WP4.3: Semantic discovery	WP4.4: Ocean DS-DTO Data Lake - OGCAPIs, STAC, EDITO, ODP	WP4.5: Semantic APIs (OGC), EDR, ...	WP4.6: Streamhandler	WP5-1: AI and Analytics services- including CWL	WP5-2: Model Integration services	WP5-3: Data Assimilation and Data-driven surrogate models	WP5-4: Thematic modelling services	WP5-5: ML Services for pattern discovery and event detection	WP5-6: User-defined analytics and event subscription service	WP6-3: Performance and Dashboards	WP6-4: Geo-Data Visualization	WP6-5: Immersive, Interactive Visualization (V/AR)	
A-Reference (8)	Responsible	Pilot name																						
A	NTNU/SOCEAN	03 Water quality - Environmental pollution monitoring	X	X	X	X	(x)	X	X	X	X	(x)	X	X	X	X	X	(x)	X	X	X	X	(x)	
A	FORTH	04.01 Oil Spill Coastal Cretan Sea	X	X	X	X		(x)	(x)	(x)		X	X	X	X	X	X					X	X	
A	DUTH	04.02 Oil Spill Thracian Sea	X	X	X	X	X	(x)	X		(x)		X	(x)	(x)	X	X	X				(x)	(x)	
A	SOCEAN	07.01 Aquaculture - Norway	X		(x)	(x)		(x)	(x)	(x)		(x)	X		X	(x)	(x)	(x)	(x)	X	X	(x)		
A	ILVO	08.01 Fisheries NS	X	(x)		X		(x)	(x)	(x)				X	X	X	(x)	X	X					
A	UoH	10.01 Jellyfish (Swarm Forecast)					X	X	(x)	X	X		X		(x)		X							
A	FORTH	11.02 Harbour safety - ship routing, Heraklion	X	X	X	X		(x)	(x)	(x)		X	X	X	X	X	X	X				X	X	
A	WAVEC	12.01 Wind Farm/Energy maintenance & operations	X			X		(x)	(x)	(x)	(x)		(x)			X	X	(x)	(x)	(x)	(x)	X	X	
B-Inspireplication (14)																								
B	Genillard	02 Aquaculture Risk Metrics Norway (AqRM)	X		(x)	(x)		(x)	X		(x)		(x)			X					X	X		
B	UoH	04.03 Oil Spill - Israel/Mediterranean - Haifa	X			(x)			(x)														X	
B	TalTech	06.01 Coastal Sediment Transport, Estonia		X	X				(x)								X							
B	UoH	06.02 Coastal Sediments and Harbor safety, Haifa port		X	X				(x)									X						
B	AMA	07.03 Aquaculture - Italy (MusseIs)		X	(x)	X							X											
B	AGIR	07.04 Aquaculture - Morocco							X	X										X				
B	TerraSigna	08.02 Fisheries - Black Sea	X	X	X				(x)	X	(x)						X	X					X	
A	UoH	10.02 Seascape ecology and biodiversity	X	(x)	(x)				X					X			X							
B	RAMANI	10.03 HAOPs (Next Port of Call Risk Assessment)						(x)	(x)	X		(x)				X	X	X						
A	TUV	11.01 Harbour safety Varna port		(x)				X					X			X	X							
B	CEA	12.02 Wind Energy - Project Review Tool							X								X	X					X	
A	UEDIN	13.01 Tidal Energy	X	(x)	(x)	X			(x)	(x)				X			X		(x)					
B	EWP	13.02 Wave Energy		X	X				(x)	(x)				X			X				(x)			
B	UoH	21 Cultural Heritage - Israel	X						(x)								X				(x)			

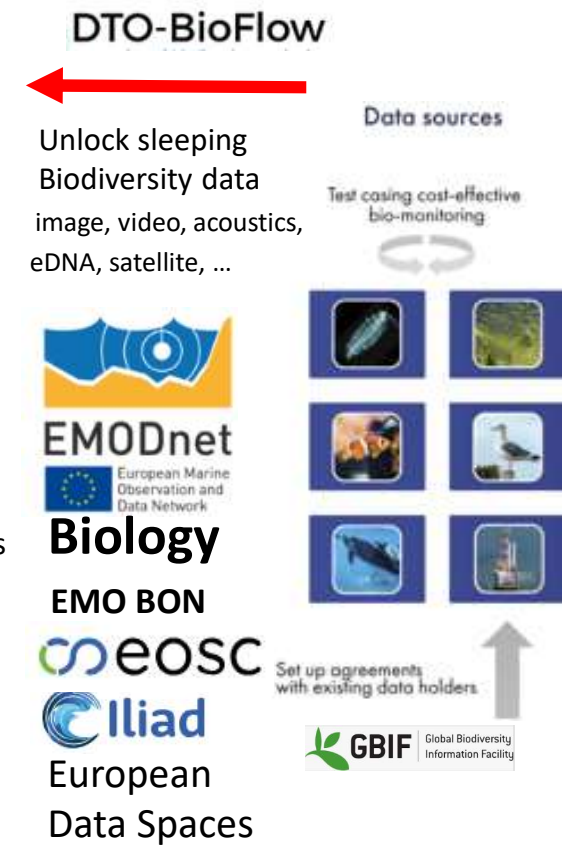
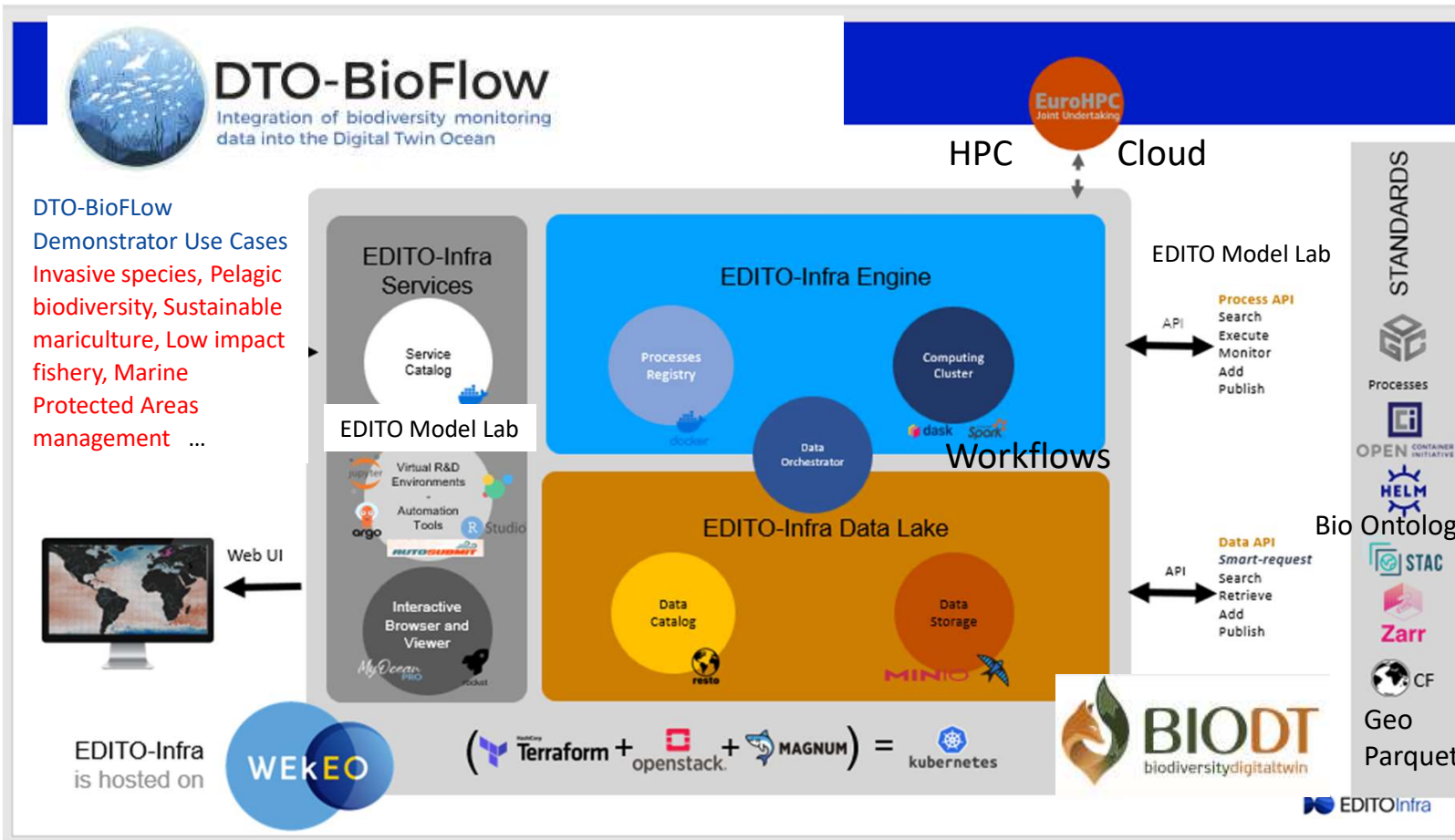


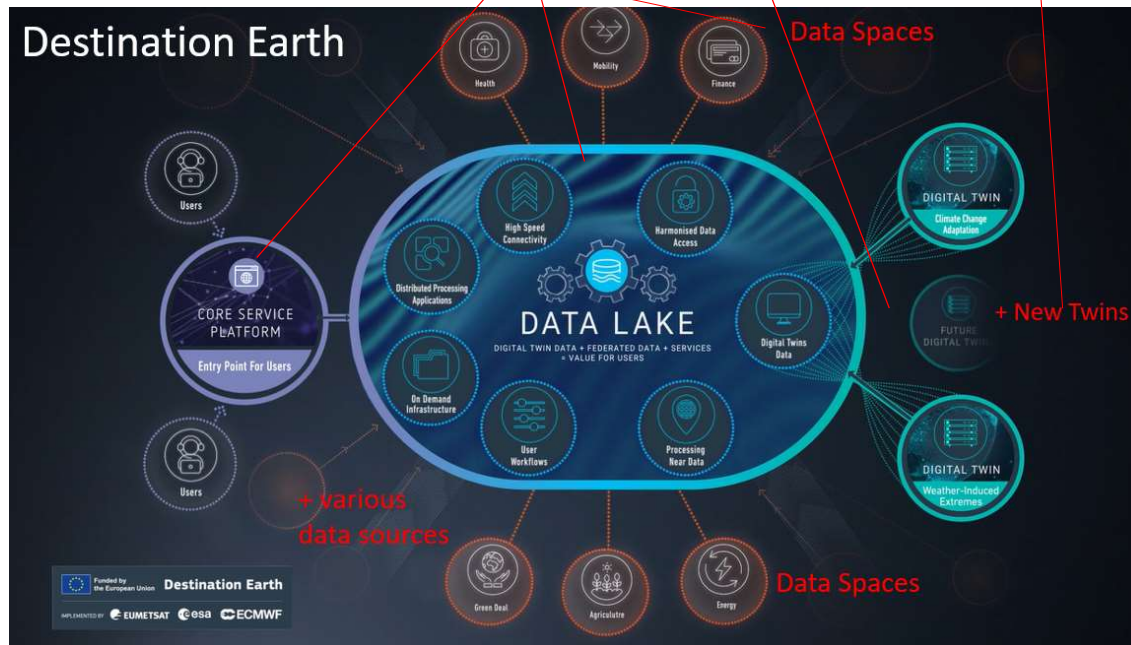
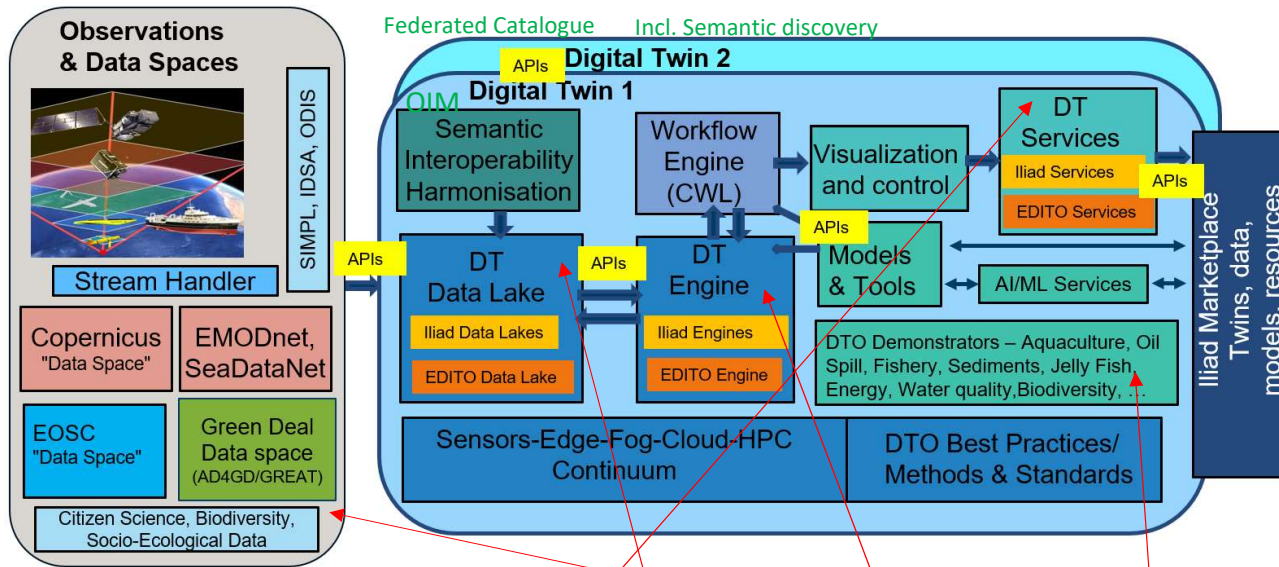
Interoperable digital twins





DTO-BioFlow





EOSC Resource Hub

- Publications
- Data
- Software
- Other Products
- Data Sources
- Training
- Interoperability Guidelines
- Tools

EOSC Core Services

File Sync & Share
Access enabled
[View Service >](#)

Virtual Machines
Access enabled
[View Service >](#)

Interactive Notebooks
Access enabled
[View Service >](#)

Cloud Container Platform
Access enabled
[View Service >](#)

Large File Transfer
Access enabled
[View Service >](#)

Bulk Data Transfer
Access enabled
[View Service >](#)

EOSC AAI

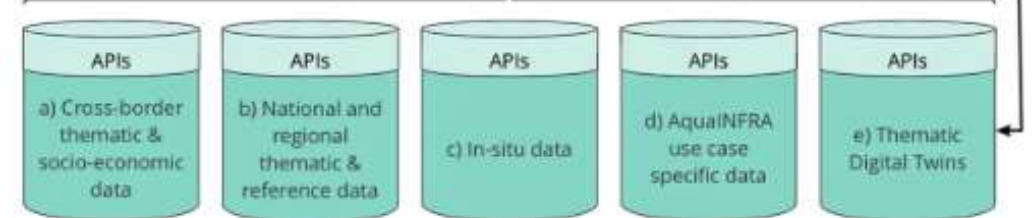
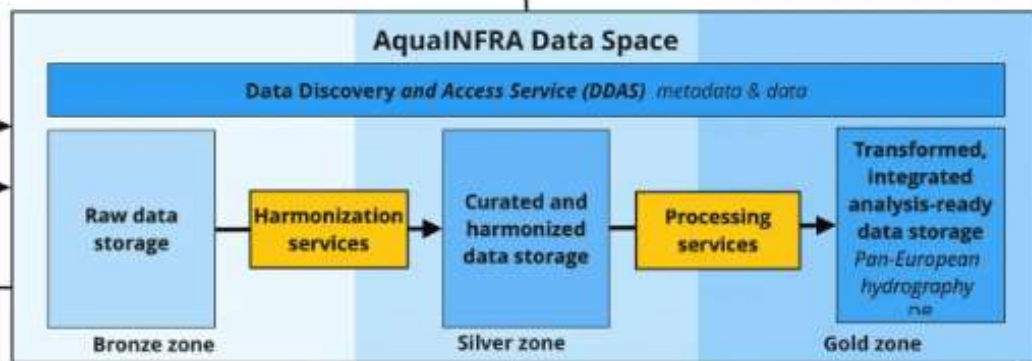
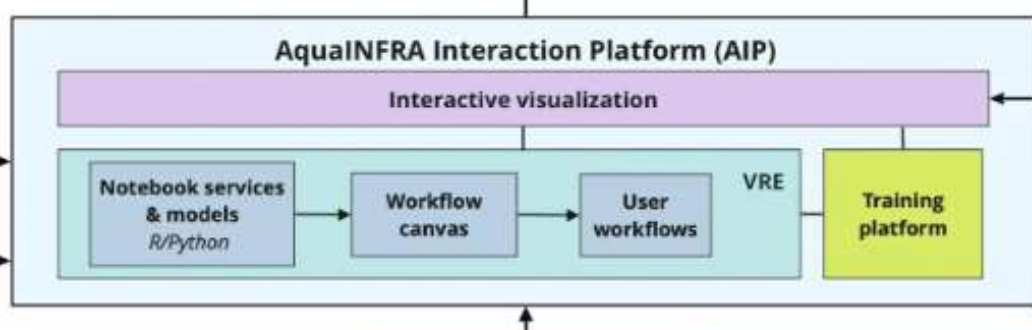
EOSC Integration

EOSC Exchange
storage/
compute/
cloud/
thematic data
services
EOSC Portal

EOSC-Core services
Resource
Catalogue
Marketplace
AAI
Federation
Order
Management
Helpdesk
Monitoring
Accounting

**Cross-domain
discovery
metadata**

ENVRI Community Fair-Ease



DTO Interoperability (ILIAD & EDITO)

DTO Viewers
e.g. Data Sphere

DTO Service Platform
AI/ML/DL
What-if scenarios

DTO Modelling Platform/ Hybrid models

DTO Marine Data Lake

SIMPL

AD4GD, GREAT
Green Deal
Data Space

- EDITO
- Infra/ML
- DTO-BioFlow
- BioDT
- Iliad DTOs
- InterTwin
- Destination Earth
- EuroHPC