



An overview of the **E**uropean **D**igital **T**win of the **O**cean



Marina TONANI
EDITO partners



Funded by the Horizon 2020
Framework Programme of the
European Union

A large whale is swimming horizontally in the upper half of the frame, its tail visible on the left. Below the whale, a diver in a blue wetsuit is floating vertically. The background is a deep blue ocean with light reflecting off the surface.

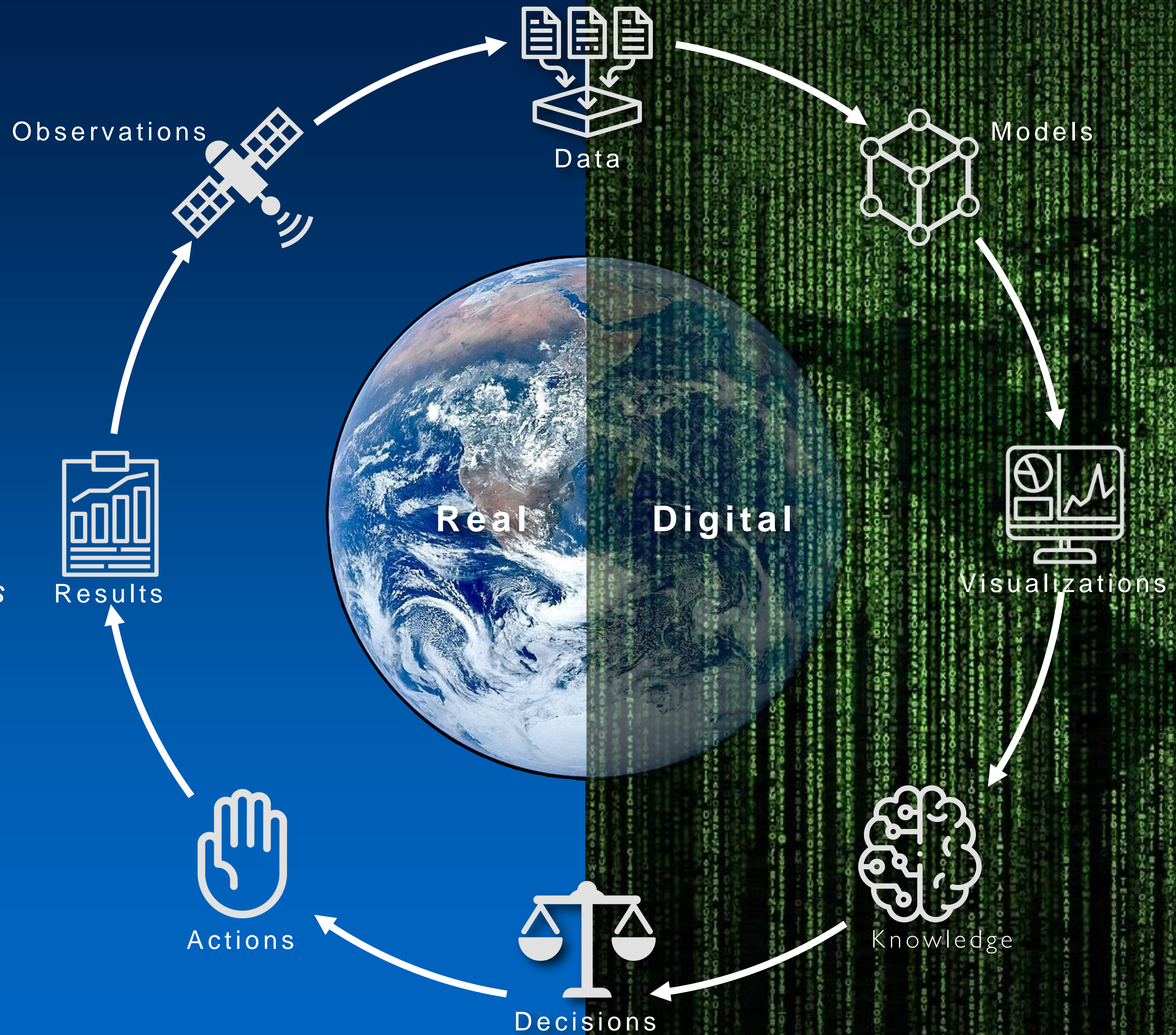
The Ocean We Need for the Future We Want



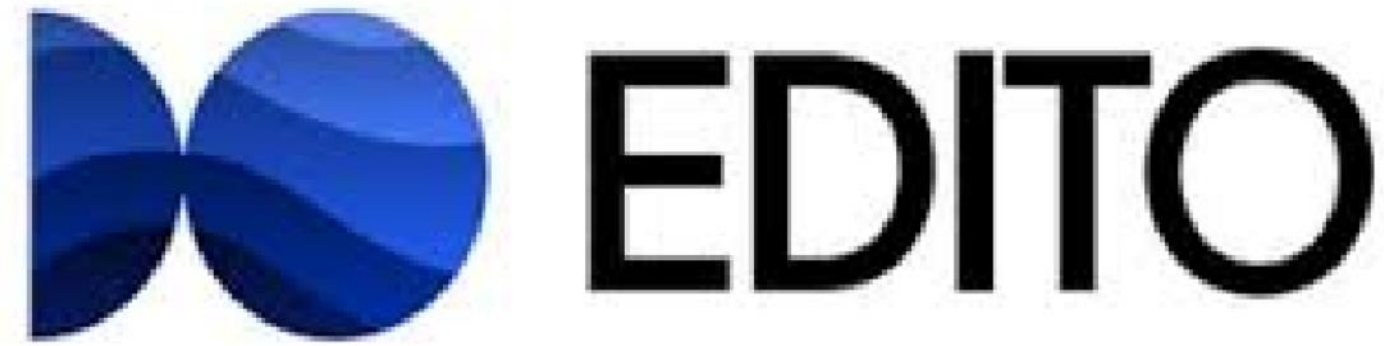
2021 United Nations Decade
2030 of Ocean Science
for Sustainable Development

What is a Digital Twin of the Ocean ?

An interactive replica of the ocean designed to simulate future scenarios and support better decision-making



European Commission & Marine Knowledge



Ocean Observation initiative



AtlantOS



AAORIA



The **European** platform for **discovering, visualizing, and leveraging** products and knowledge to **power digital twins of the ocean**



European Digital Twin of the Ocean



Funded by the Horizon 2020
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European Union

<https://dive.edito.eu/>



Oct 2022

Mar 2025

Sep 2028

 EDITO Infra

 EDITO 2

 EDITO ModelLab

Jan 2023

Dec 2025



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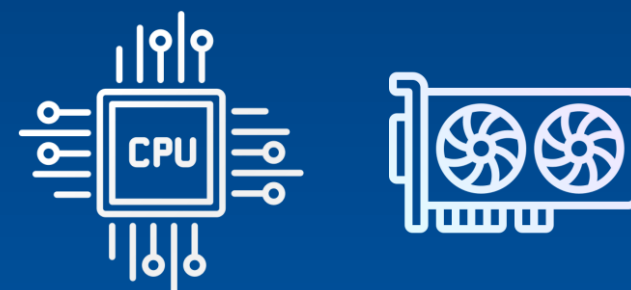
Data

+



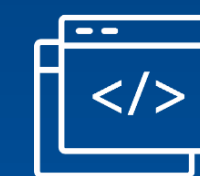
Models

+



Computing
resources

+



Services

+



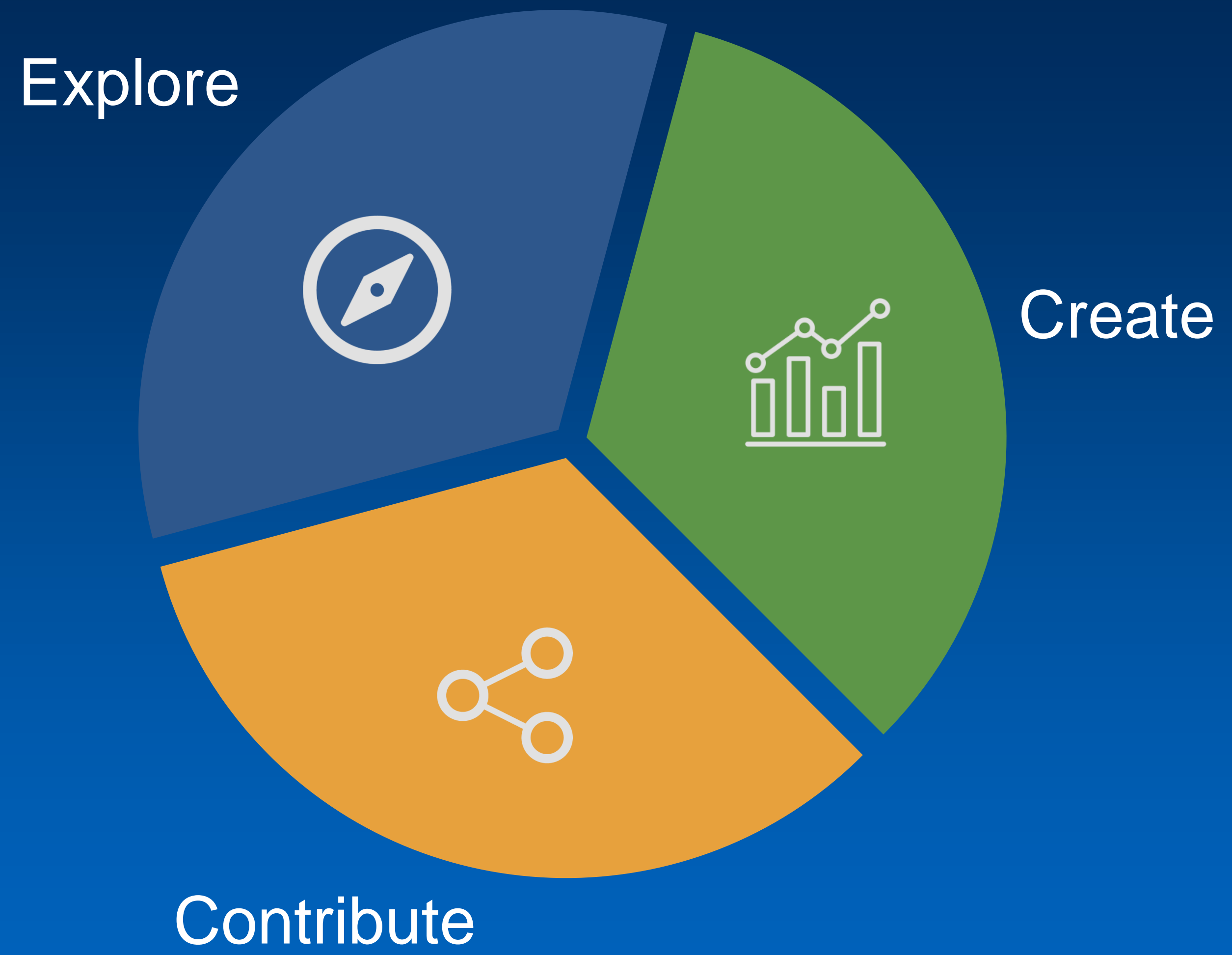
On demand
processing



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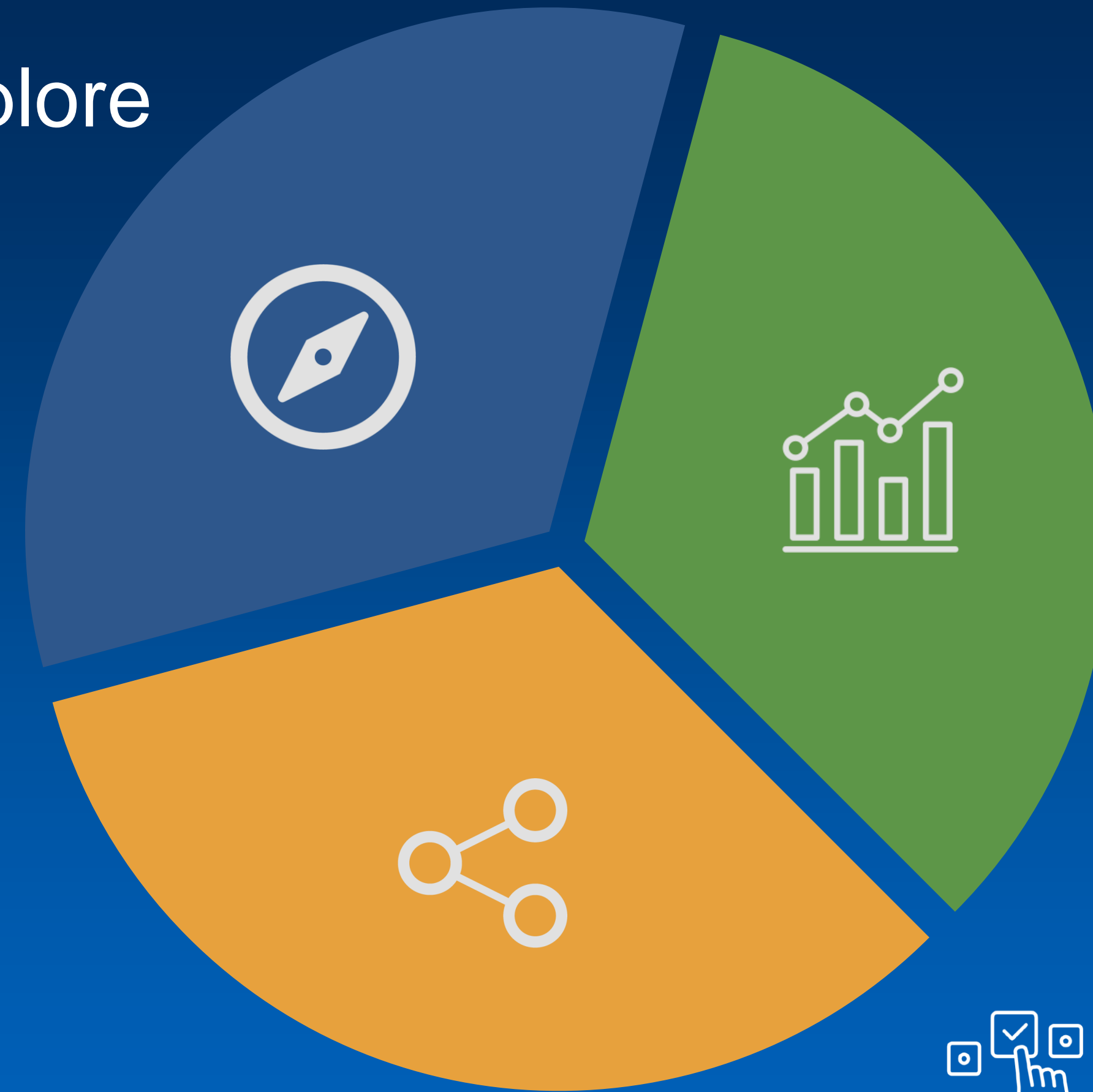
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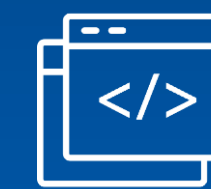
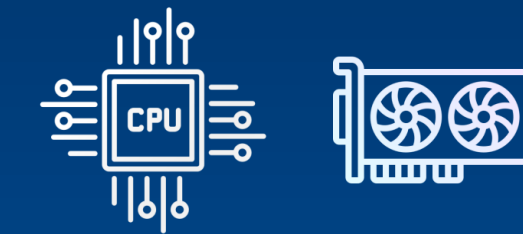




Explore



Create



Contribute

<https://dive.edito.eu/>



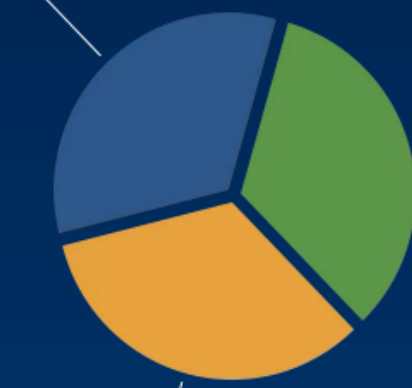
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Explore



Explore



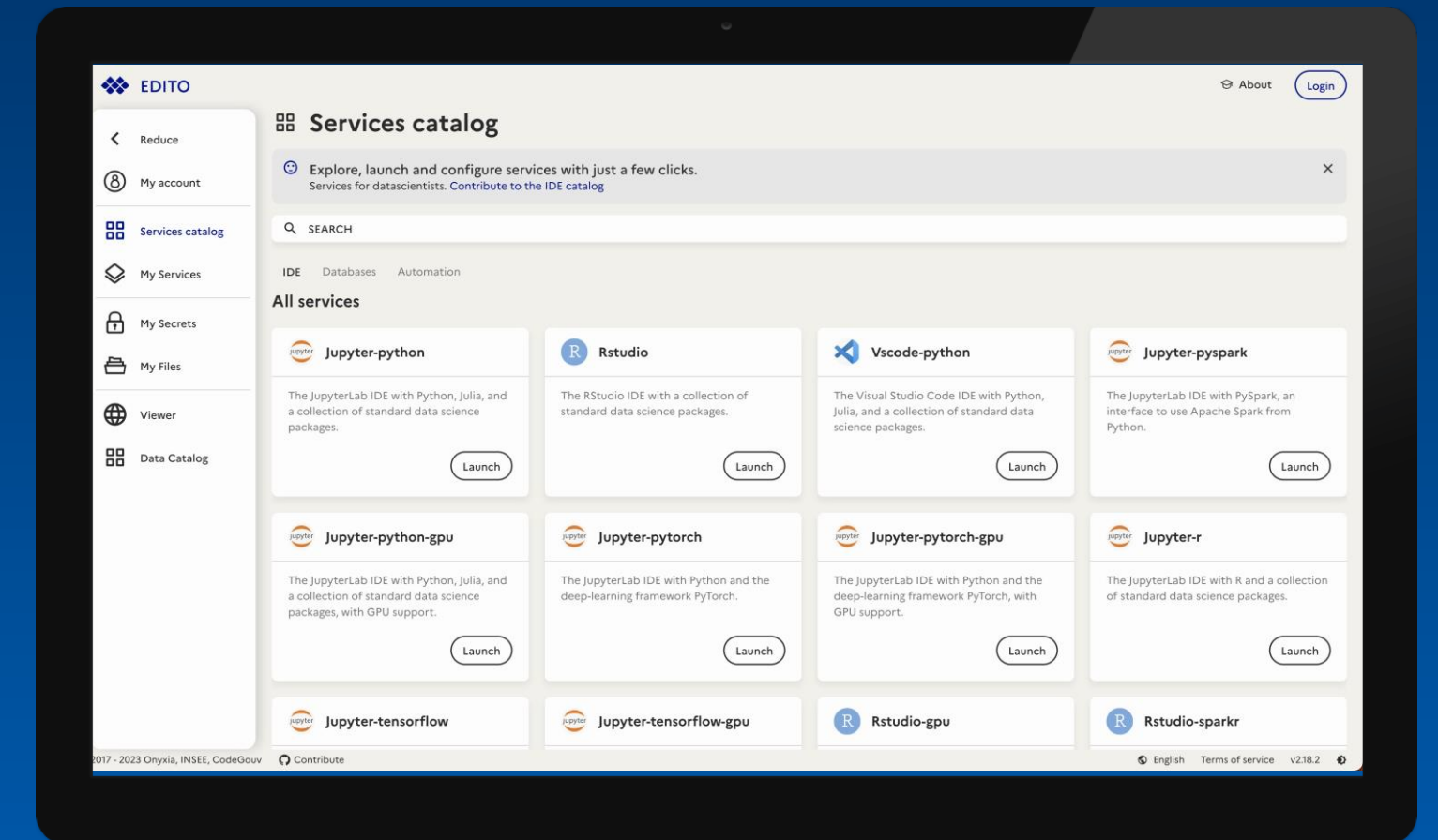
Create

Contribute



Viewer

EDITO Web User Interfaces



Datalab

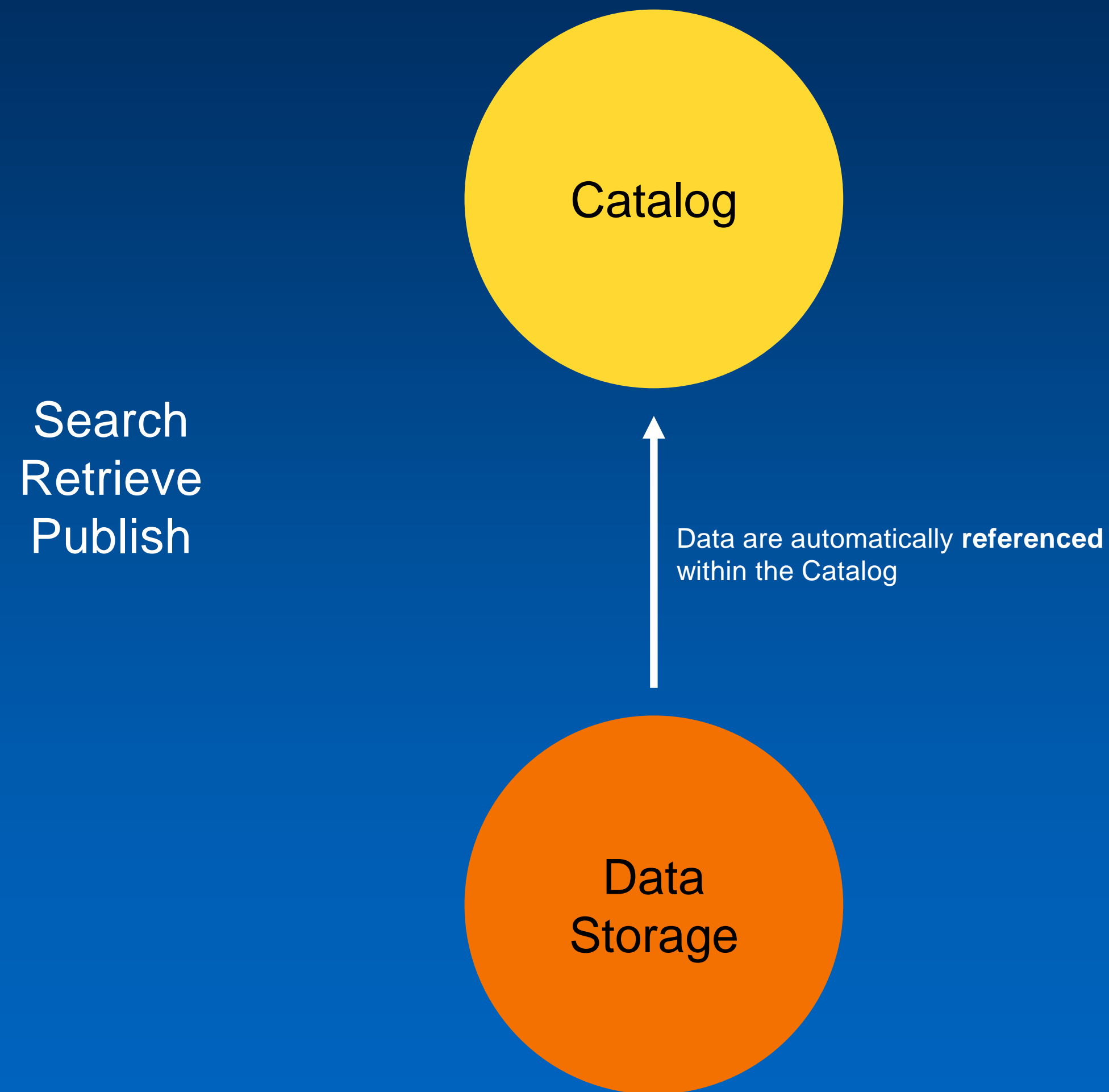


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EDITO Data Lake



Search **API** conforms to **STAC**

Data storage on **S3** buckets

EDITO core catalog includes **Copernicus Marine Service** and **EMODNET** data

Built to host Analysis-Ready Cloud-Optimized (**ARCO**) data and metadata

Build and **share** your own catalog

Store and share your own data

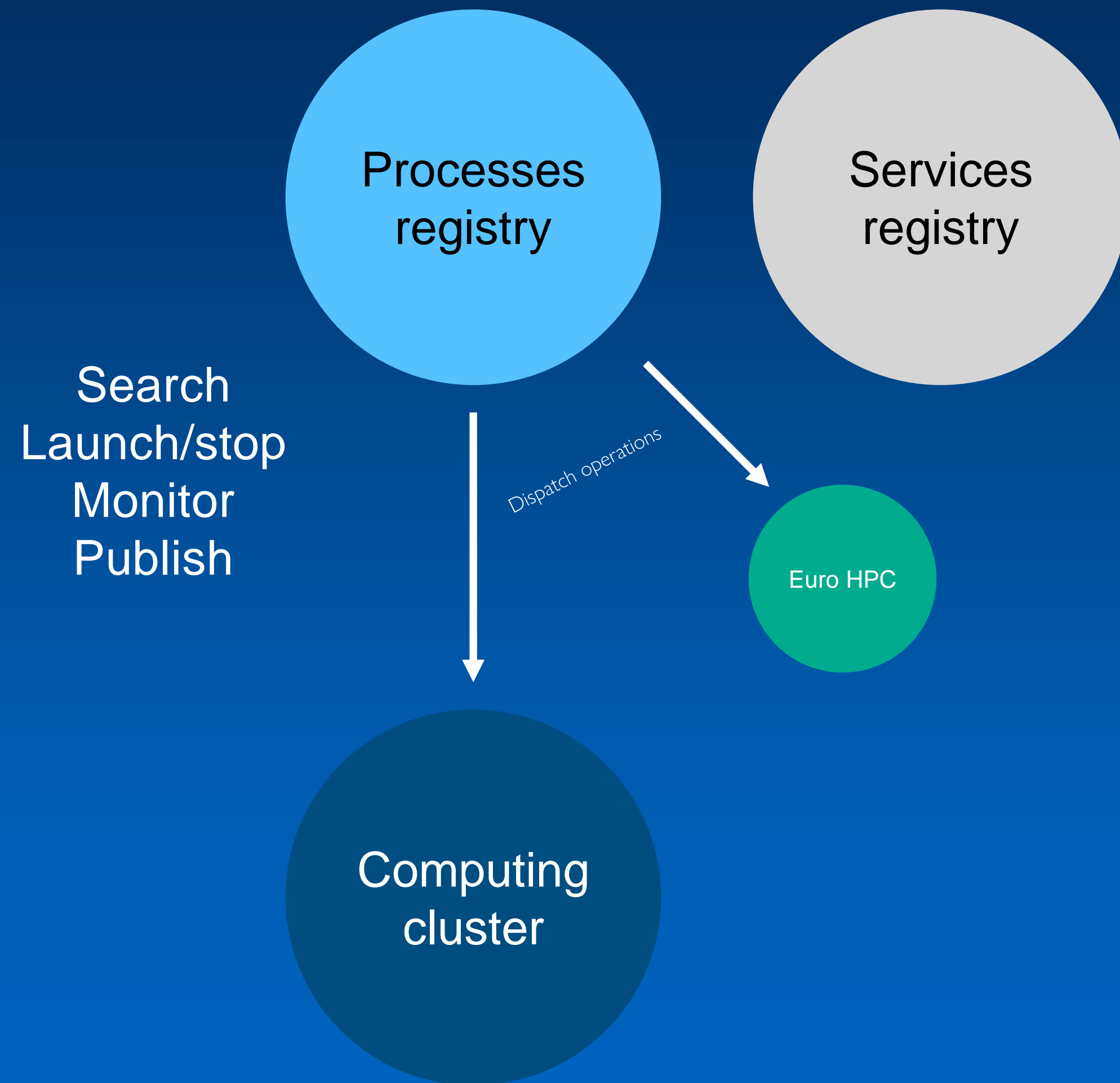
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EDITO Engine



A **process** is a temporary operation that takes **input** data and **transforms** it into **output** data

Processes can be triggered through **OGC API - Processes** standard

A **service** is an application accessible through an **url**. It can be launched for a limited period of time (e.g. Jupyter) or permanently (e.g. **What-If-Scenario**)

Users can **publish** process and/or services or **build** services on top of existing processes (e.g. build an UI to trigger a regridding process)



<https://dive.edito.eu>

DITTO decade program



DITTO
Digital Twins of the Ocean



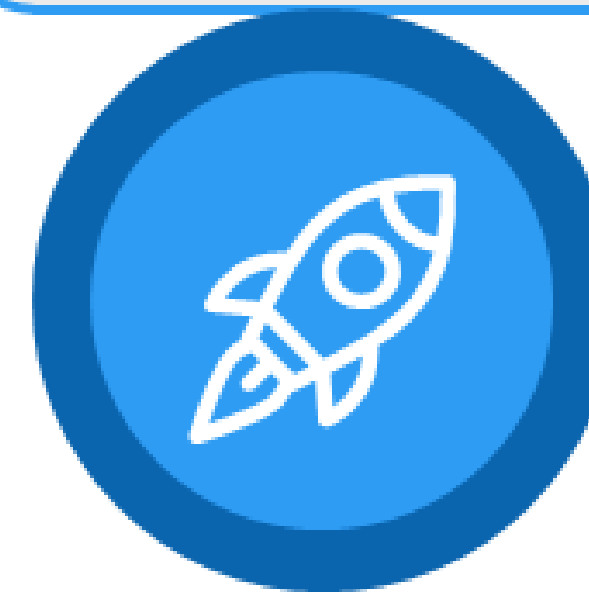
VISION

Digital Twin Ocean
to support
ocean protection
ocean governance
**a sustainable Blue
Economy**



MISSION

Develop and share
a **common
understanding** of
DTO,
Best practice,
Advanced **digital
framework** for DTO



AMBITION

DTO will enable to
address
WHAT IF questions
based on
shared data,
model,
knowledge



Thematic Working Groups and Use Cases are the two pillars for DITTO's activities

DITTO promotes co-design of twins, education and uptake to demonstrate the value in digital twins

<https://ditto-oceandecade.org>



2021 United Nations Decade
of Ocean Science
2030 for Sustainable Development



DITTO
Digital Twins of the Ocean



NEW GOVERNANCE 2024-2027



Co-chairs: Joanna Staneva, Fei Chai, Marina Tonani, Swadhin Behera

Steering Committee: 17 members from 14 countries



Irikomuni Zauisomue
University of Namibia



EDITO Marine Plastic Application



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EUROPEAN DIGITAL TWIN OCEAN

An application to combat marine plastic

Towards safeguarding marine environments
and coastal communities from plastic pollution



*1. Is EDITO planning to offer specific DTO services?
Or is it infrastructure for others to build their own DTO with?*

EDITO is first an infrastructure for others to **power** and **share** their own DTO.
It comes with **data** and **tools** to ease this process.

*2. Can we upload our own models and data?
Use this platform as method to collaborate?
Are there size and resource restrictions for data and models?*

You can do both! **Upload** your own **models** and **data**. Collaborate by **sharing data, process** and **knowledge**. Free tier (processing and data storage) is provided per user and project.

*3. When others upload data/models do we have access?
Can you make data private?*

It depends on the data/models access policy. **Privacy is handled** for every EDITO resources (i.e. data, processing and services). Users have full privacy management to their resources.

*4. What tools are included in their platform?
How is it different than just a data viewer?*

Many built-in tools are available, including popular datascience tools as well ocean-oriented tools (viewer, library, packages etc.). The content is not only about data viewer/renderer but also computation and automation. In addition, the users can add new tools on their own if their favorite ones is not already available.

5. What is the difference between EDITO and WEkEO?

WEkEO manages virtual machines and infrastructure, while EDITO orchestrates and automates containerized applications. It makes life easier for user to deploy their services and processes.

6. What are the costs involved if we wanted our access to continue?

The EDITO project remains non-profit. However, a project with extensive usage of EDITO resources (processing, storage) will be invoiced as such. The cost is still under discussion and will reflect the cost of the underlying hosting provider

7. What is the plan for EDITO? Is this the final stage or is more development planned?

Until February 2025, the platform was a proof-of-concept from the EDITO-Infra project. EC decided to fund the next phase of the platform for 3 years to consolidate the platform and reach production-readiness level. UX and API will evolve with respect to the community needs and requests.