# HARNESSING THE PANGEO ECOSYSTEM FOR DELIVERING THE CLOUD-BASED GLOBAL FISH TRACKING SYSTEM

## AUTHORS

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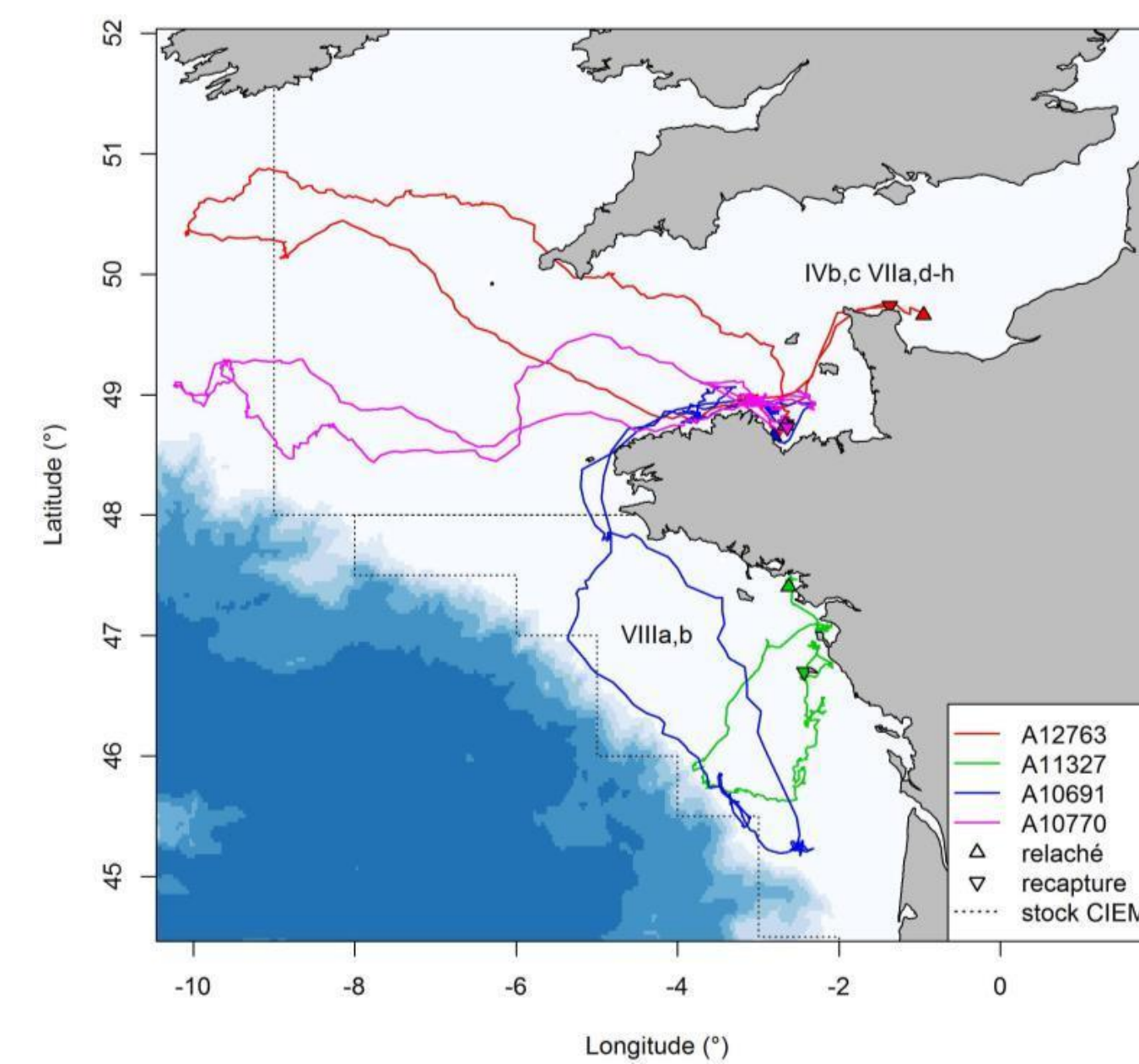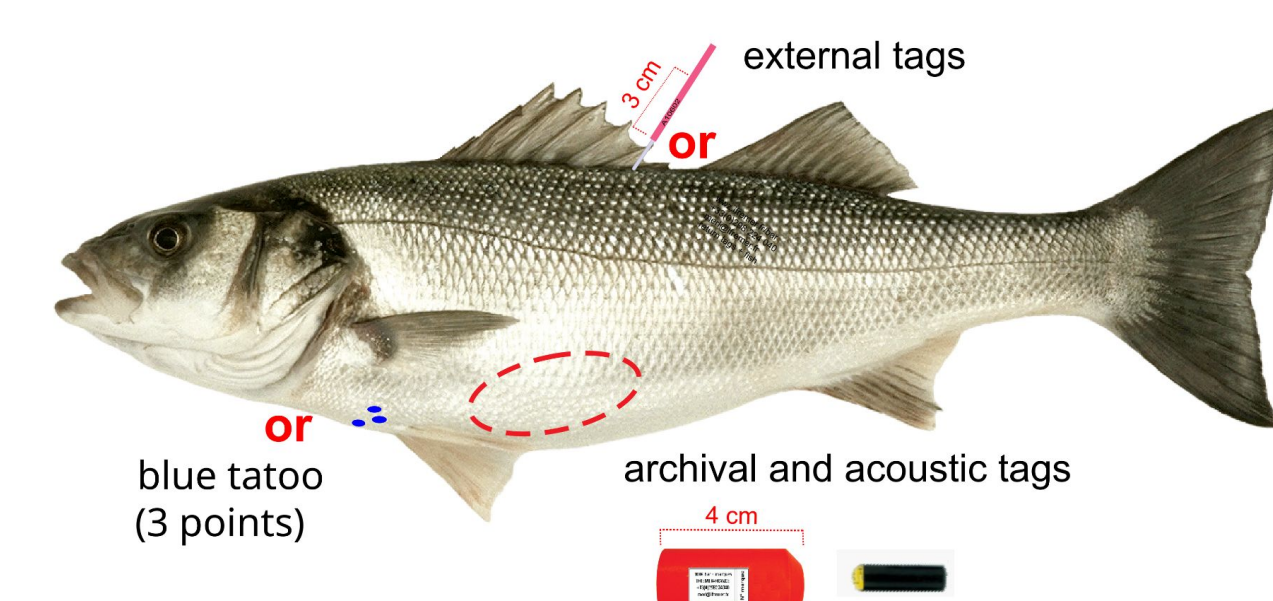[1] Development Seed, Lisbon, Portugal

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## INTRODUCTION

- In our DestinE use case we will develop the Global Fish Tracking System (GFTS) based on the Digital Twin of the Ocean

- We will use state of the art modeling techniques combined with large scale cloud computing to estimate the movement of tagged fish.

- We will also develop a Decision Support Tool, exposing the massive modeling data in an intuitive way for decision makers.

**Fish track model**
Based on biologging data of individual fish and the ocean around them
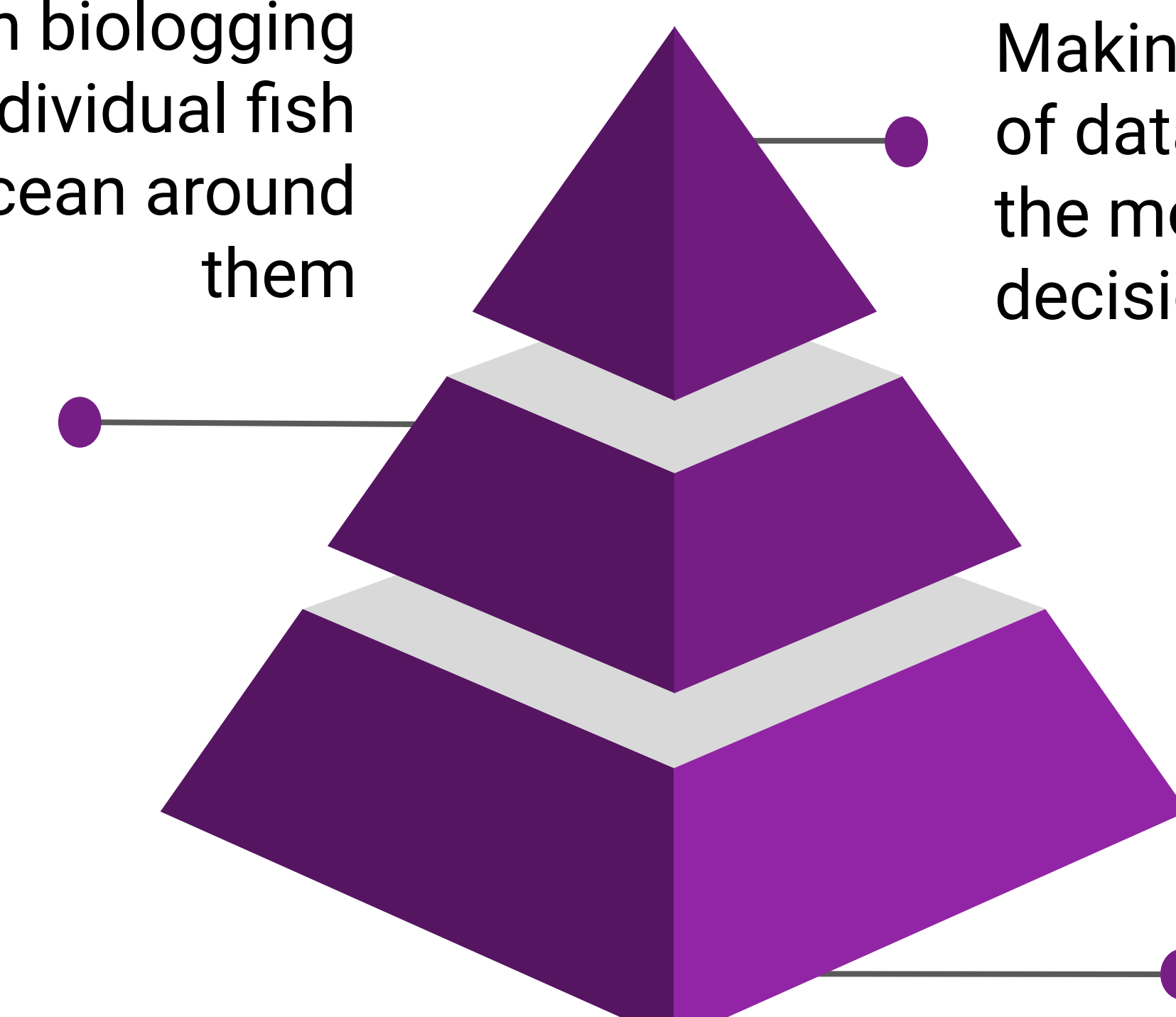
**Decision Support Tool**
Making the vast amount of data generated by the model useful to decision makers.

**Digital Twin of the Ocean**
Cutting edge models will be combined with the highly detailed simulations from the DestinE ocean data.
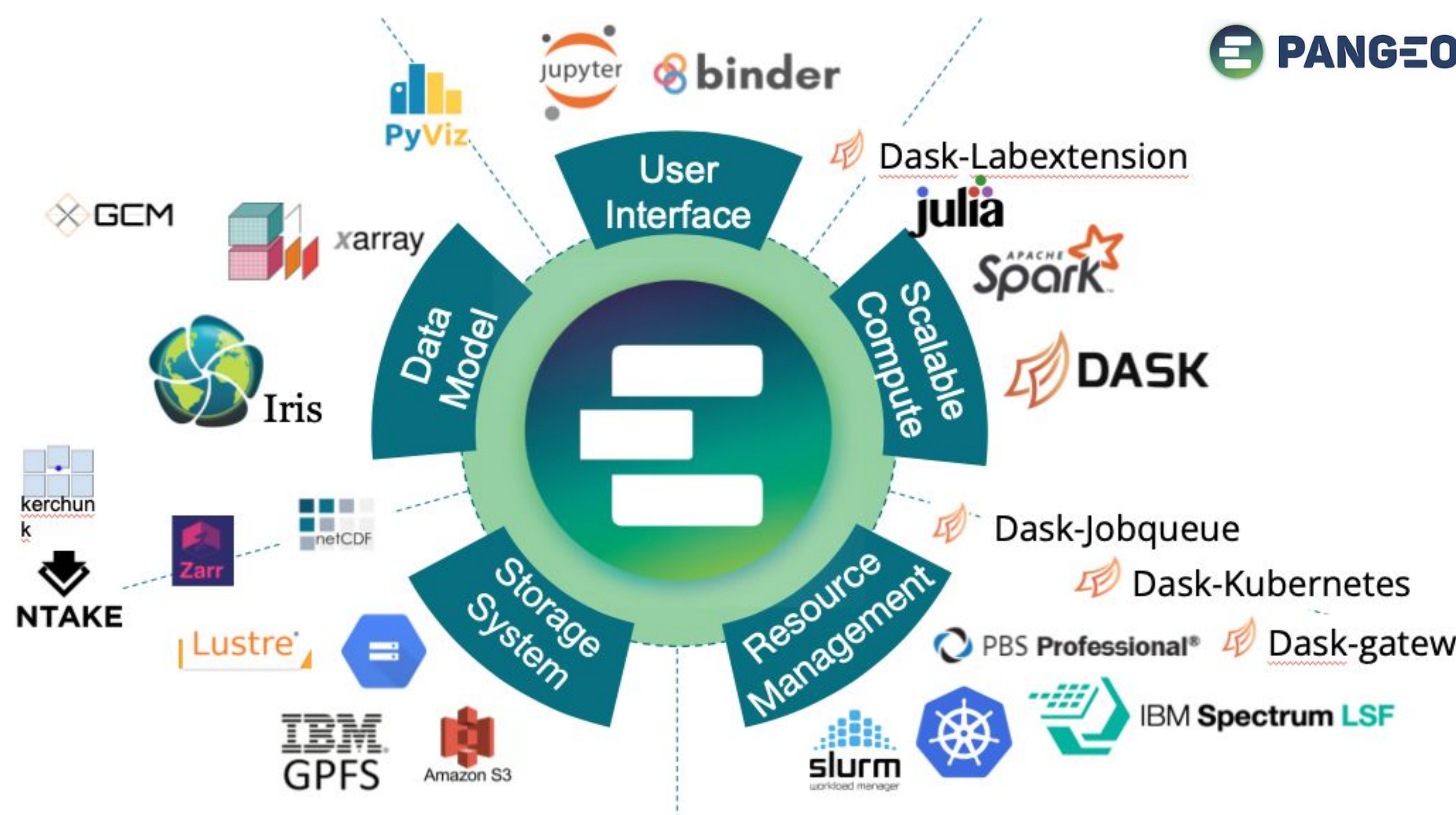
## FISH TRACKING

- We will reconstruct fish movement based on biologging data collected by Ifremer.

- Biologging involves attaching small devices to animals to track their behavior and gather environmental data. This method is crucial because tracking fish directly underwater is very challenging.

- To achieve this, we will use models to geolocate fish by utilizing temperature and pressure data from the biologging devices and comparing them with ocean temperature and bathymetry from the digital twins as reference data.

## PANGEO ECOSYSTEM

- Our project will rely heavily on the pangeo software stack for large-scale cloud-based computation of fish tracks.

- The Pangeo ecosystem was created by a community of engineers and geoscientists specifically to address big data geoscience challenges.

- To leverage the advancements in biodiversity research, we have developed a software package called "Pangeo-fish".
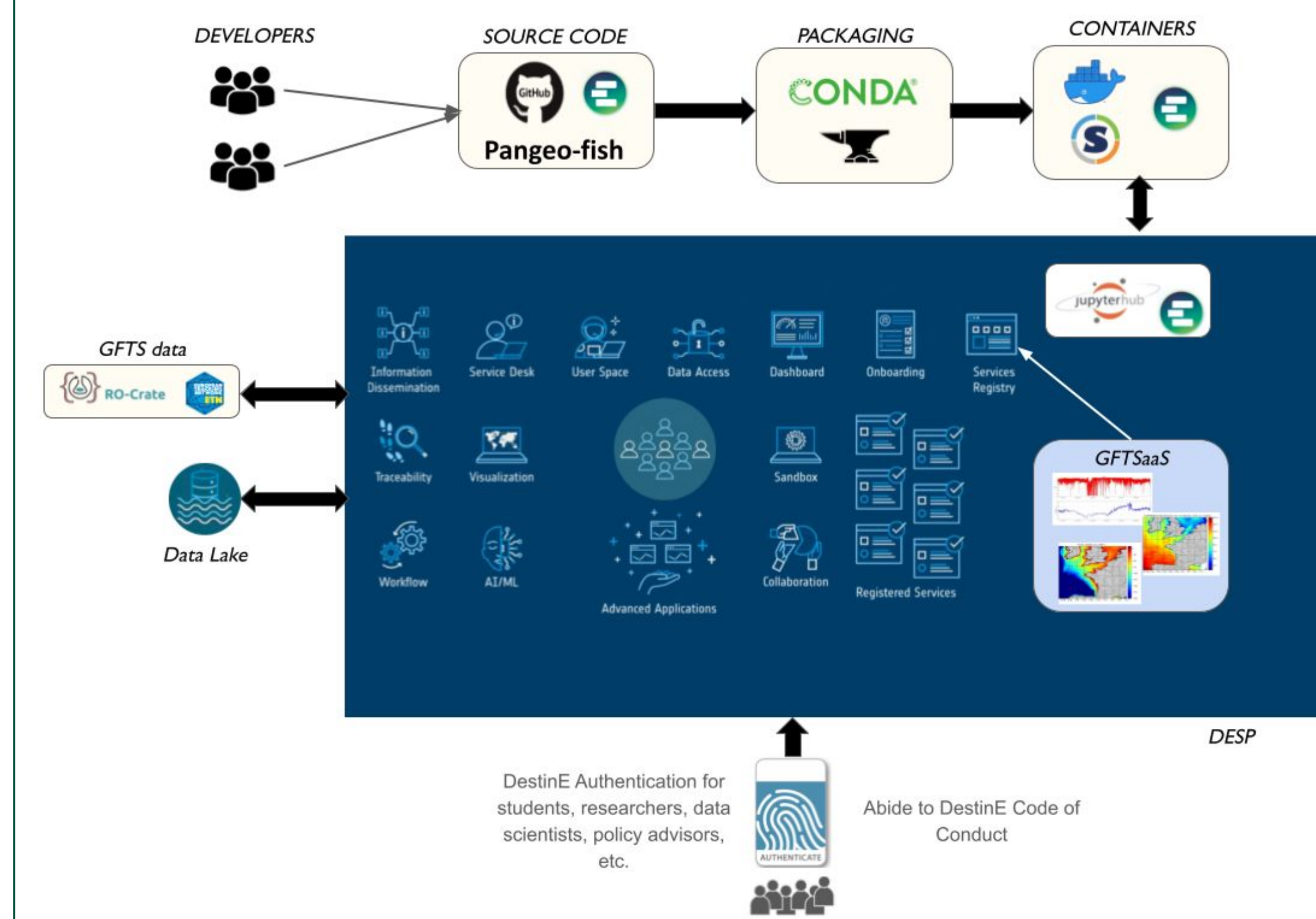
## DECISION SUPPORT TOOL

- Our project will develop specialized decision support tools for analyzing jointly fish tracking reconstructions.

- We will implement user-friendly data visualization tools for tracking fish movements and environmental parameters.

- We will enable data sharing and collaboration through cloud-based platforms and ensure scalability and adaptability for various fish species.
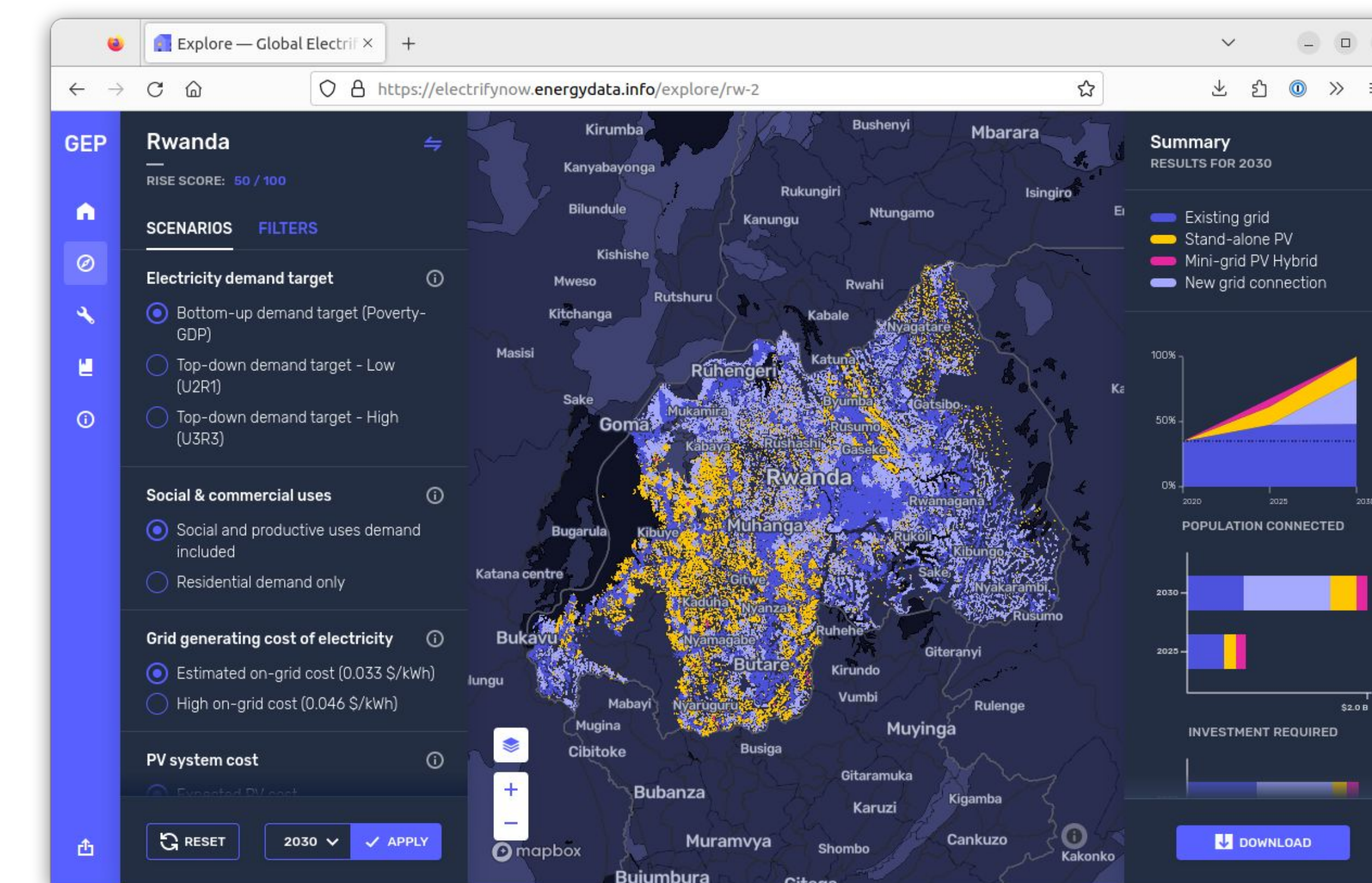
Placeholder image, the GFTS project is still under development

## DESP OPERATIONALIZATION

- We are planning to integrate the GFTS use case fully into the DESP platform, including:

  - Registration of Decision Support Tool as operational service

  - Leveraging the DESP Jupyter Hub to make pangeo-fish easily deployable and reusable by the community

## PROJECT PARTNERS

Ifremer · simula · developmentSEED · EGU General Assembly 2024