




VOICE OF THE
 **CEANS**
SCIENTIFIC

A project by





VOICE OF THE OCEANS

SCIENTIFIC

GOALS



1

INVESTIGATE the water quality and biogeochemistry of the oceans

2

In association to **drone-flights and satellite remote sensing**, a broader area of the oceans will be covered

3

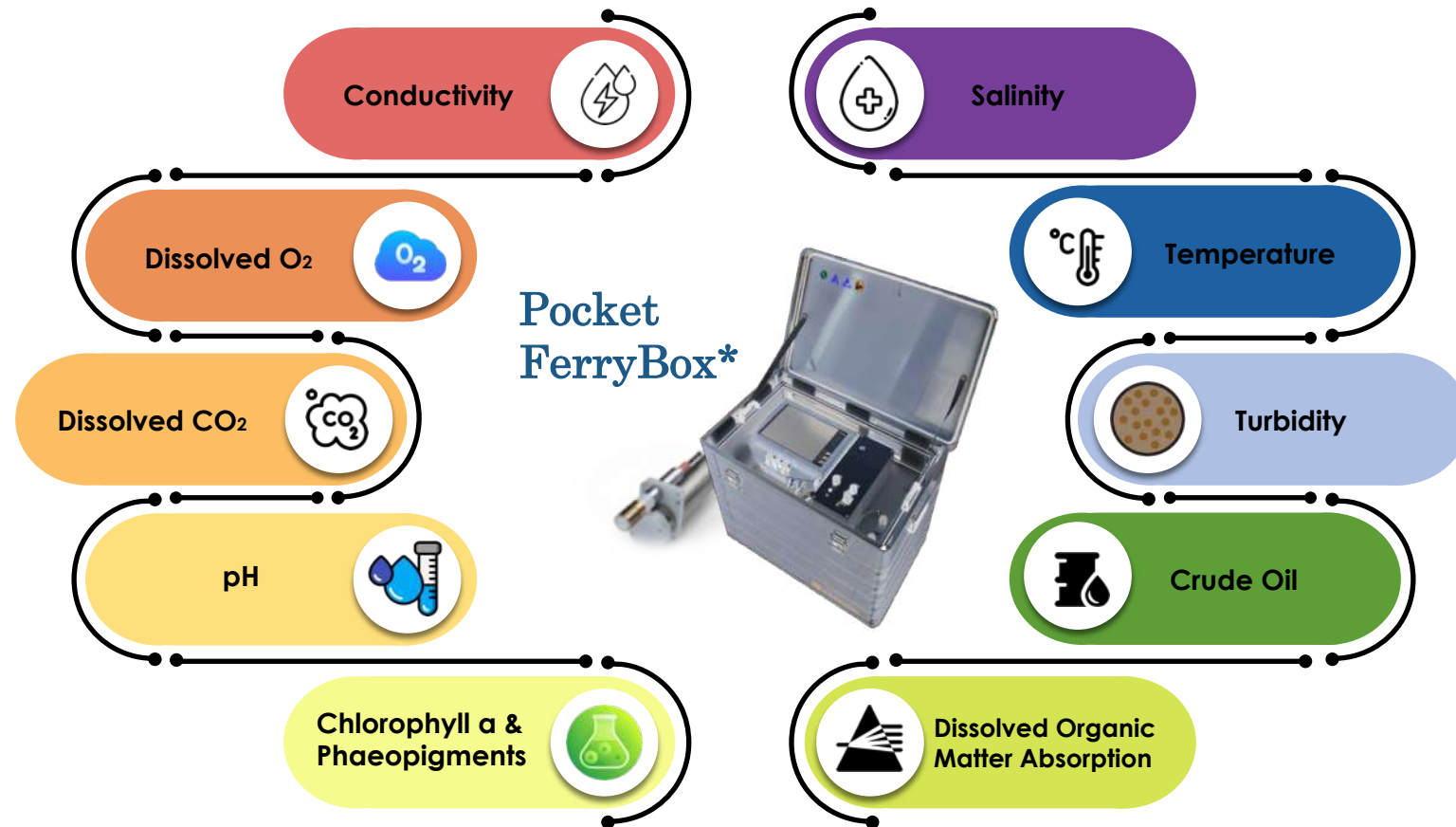
BUILD a **global network** to advocate and protect our oceans **against** the prevalence of a **plastic-based society** – **Hub Voice of the Oceans**



Goal 1

INVESTIGATE the water quality and biogeochemistry of the oceans

- ▶ **A highly sustained and efficient autonomus monitoring system** will be installed on board to fast survey and accompany the expedition
- ▶ **High resolution observations of contrasting places with the goal of showing the damages suffered by the oceans** and its biogeochemistry



* Oceanographic parameters to be collected during the expedition

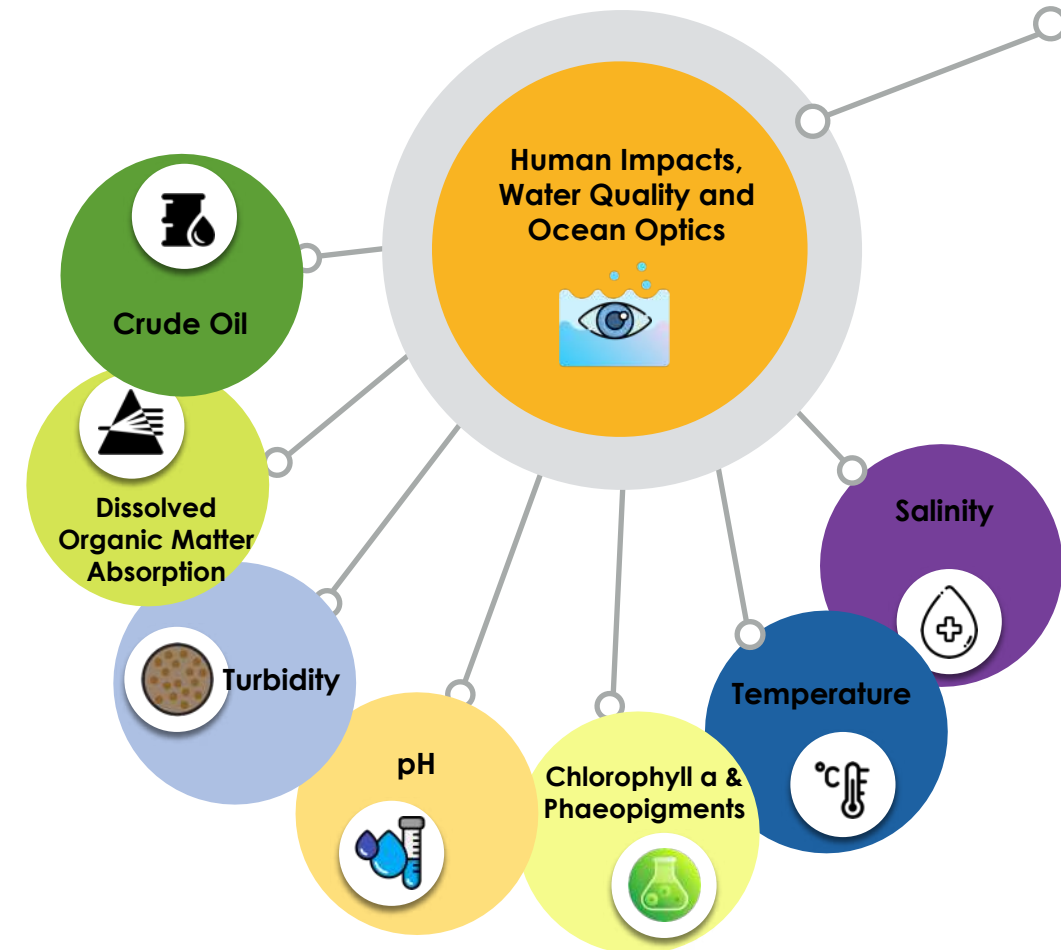
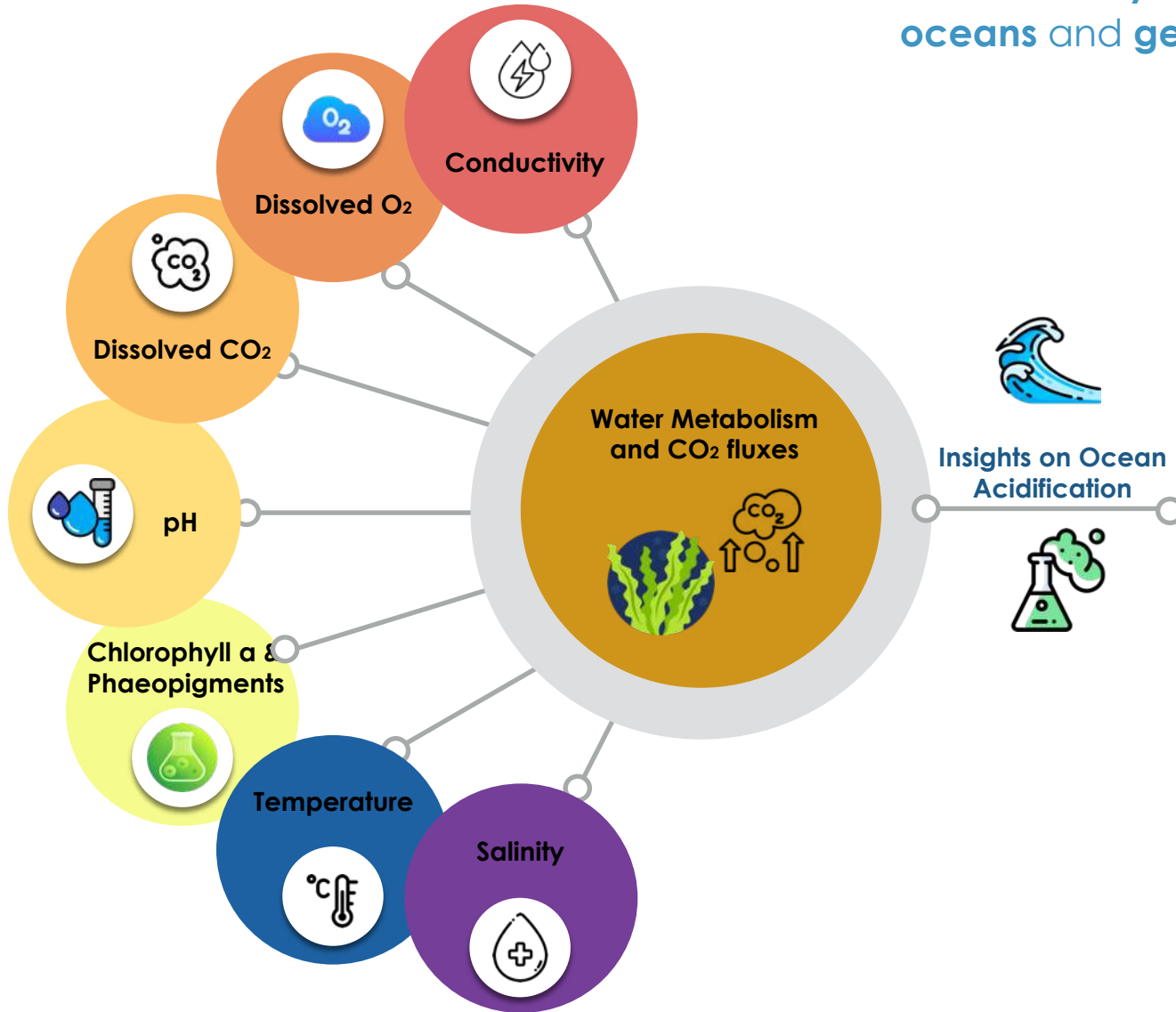
* Manufactured by the German company 4H Jena Engineering GmbH



Goal 1



With the **FerryBox** we will **observe the oceans** and **get answers** on...

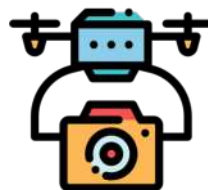




Goal 2

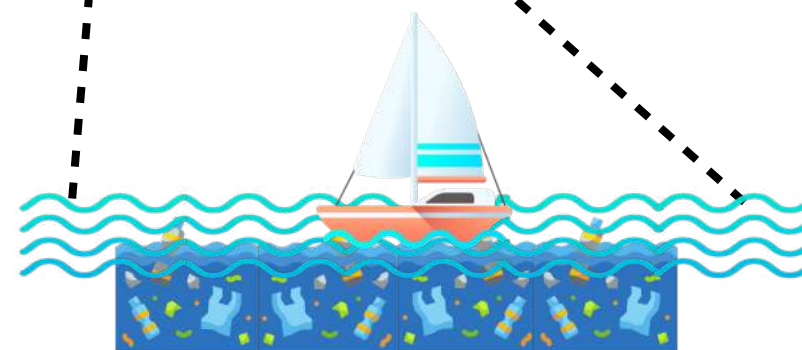
In association to **drone-flights** and satellite remote sensing, a broader area of the oceans will be covered

Drone-flights



* Manufactured by the American company Headwall Photonics

A **HyperSpectral Camera** coupled to a drone will take periodic flights to collect **information of light interaction** on the water surface



Algorithms for the detection of plastic pollution

Goal 1



Inter-Calibration

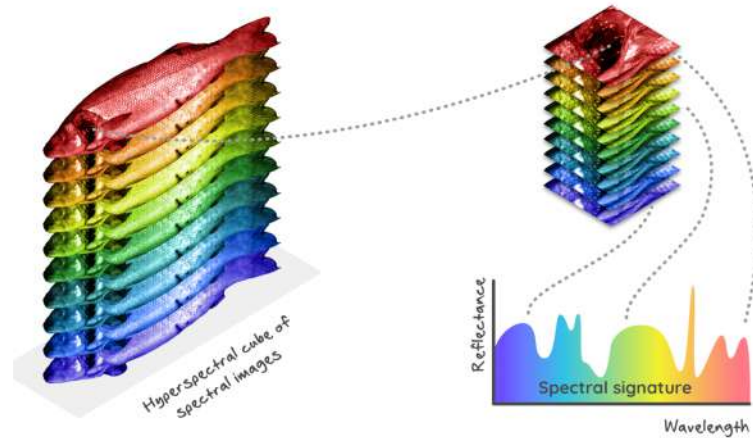


Goal 2



Algorithms for the detection of plastic pollution

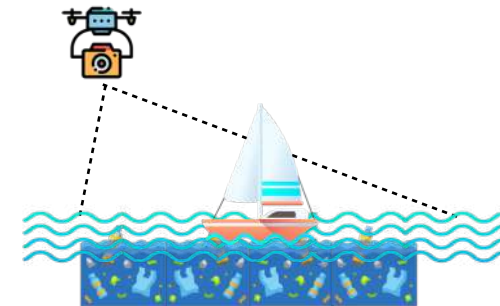
Every object has a *Spectral Signature*



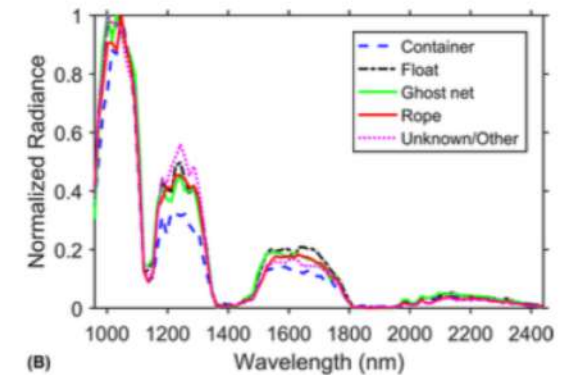
Inter-Calibration of sensors
via *Spectral Signature of the plastic material*



Drone-flights will happen to
detect plastic particles in the
Ocean water



Including plastic litter

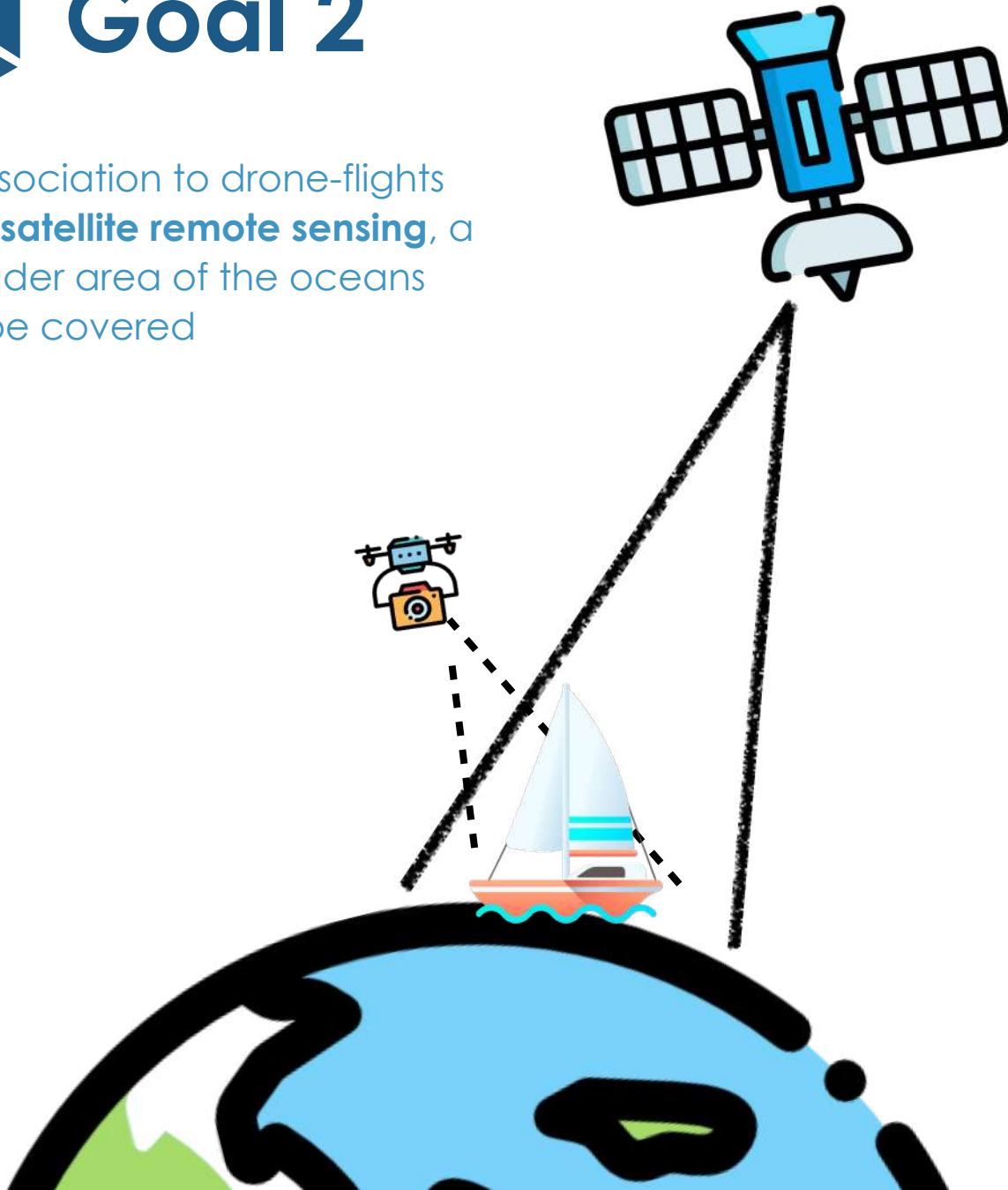




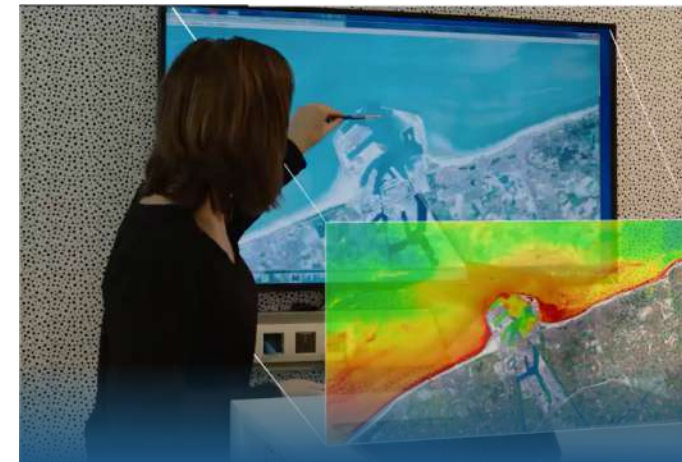
Goal 2



In association to drone-flights and **satellite remote sensing**, a broader area of the oceans will be covered



- ▶ **Largest observable** oceanic coverage
- ▶ Comparison of **marine environments**
- ▶ **Satellite algorithms calibration**
- ▶ **High resolution** acquisition of **data to improve climatic model prediction**



Disruptive approach

Low cost data acquisition

Usual oceanographic expeditions cost daily between:
~35k to 85k US\$ per day

Methodology

Innovative approach to oceanographic and climatic **data acquisition**:

Integration of *in situ* measurements and dual remote sensing

Spatial Resolution

Oceanographic projects commonly **lack on spatial resolution**

Communication

The **Schurmann Family** is **expert in** communicating and **sharing their vision and observations** on the World

Better Ocean Advocacy



VOICE OF THE OCEANS

SCIENTIFIC ONLINE

CONSTANT **ALERT** ON ENVIRONMENTAL
DATA OBTAINED ONBOARD



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Scientific Presence in the Expedition

A **rigorous validation** will take place with **technical maintenance** and **sensors validation/calibration** **every 3 months**

Scientists will be on board periodically to **collect more biological samples** to be analyzed in laboratories on land





VOICE OF THE OCEANS HUB

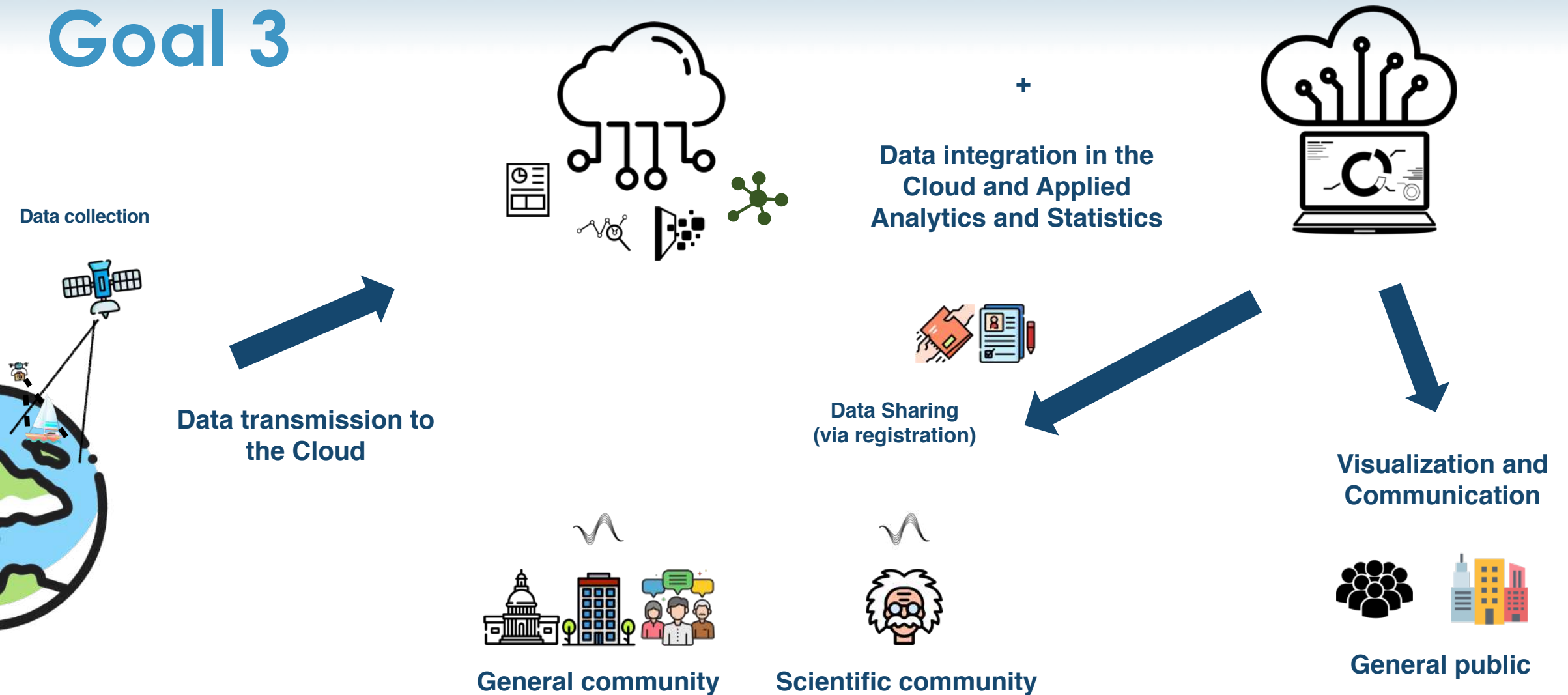
Goal 3

Uniting **scientists, environmentalists, entrepreneurs, NGOs, institutions, organizations and governments** to observe, advocate, protect and conserve our oceans



HUB

Goal 3



Data collection

Data transmission to the Cloud

Data integration in the Cloud and Applied Analytics and Statistics

Data Sharing (via registration)

Visualization and Communication

General community

Scientific community

General public

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HUB

5 V's of the BIG DATA

Volume

Multiple environmental parameters are to be analyzed every minute during the whole expedition

Velocity

Data to be collected and sent to the HUB at high speed

Variety

A variety of parameters will be collected and different sensors will produce different data formats

Veracity

Accurate, robust and high-quality data will be collected

Value

Valuable information to advocate and protect the Ocean against anthropogenic pressure

Advisory board (Brazilian members) 🇧🇷



Dr. Ronaldo Christofolleti Dr. Paulo Lana Dr. Rubens Lopes Dr. Ana Luiza Albuquerque Dr. Monica da Costa Dr. Vanessa Hatje Dr. Aurea Ciotti Dr. Frederico Brandini Dr. Eunice Machado Dr. Carla Carvalho

COMPOSED OF **14 RENOWNED SCIENTISTS** IN THE FIELD OF **MARINE SCIENCE** AND **SCIENTIFIC COMMUNICATION**

The **Scientific Advisory Board** integrates experienced professionals in a disruptive and inter-transdisciplinary approach to Marine Science

Advisory board (International members)



Dr. Alex Prast

Sweden / Brazil



Dr. Oliver Zielinski

Germany



Dr. Nicole Poulton

USA



*Dr. Joe
O'Callaghan*

New Zealand

Linköping University
Biogas Research Center
Universidade Federal do
Rio de Janeiro

University of Oldenburg
Research Center for Artificial
Intelligence

Bigelow Laboratory for Ocean
Sciences

NZ National Institute of Water and
Atmospheric Research

Scientific Partners (ongoing)

- * *Dr. Alexander Perez (Peru)*
Universidad Peruana Cayetano Heredia
- * *MSc. Pedro Moreira (Portugal)*
Oceanário de Lisboa
- * *MSc. Daniel Tremmel (Brazil)*
Universidade Federal Fluminense
- * *Dr. Maik Grunwald (Germany)*
4H Jena
- * *MSc. Felipe Braga de Lima (Brazil)*
Universidade Federal Fluminense
- * *Uwe Posner (Germany)*
4H Jena
- * *Túlio César Aguiar da Silva (Brazil)*
Universidade Federal Fluminense
- * *MSc. Gabriel Serrato Queiroz (Brazil)*
Universidade Federal de Santa Catarina

Products



ARRIVAL

DEPARTURE

1st Report & Scientific Paper
High resolution observations on the Brazilian Coast

Products

2nd Report & Scientific Paper

Observations on the USA
Atlantic Coast and Caribbean
Sea



Products

3rd Report & Scientific Paper
Observations from Equator to French Polynesia = 1st portion of the South Pacific ocean



DEPARTURE

ARRIVAL

Products

4th Report & Scientific Paper

Observations from French Polynesia to New Zealand = 2nd portion of the South Pacific ocean





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Timeline

Preparation
10 MONTHS

Expedition
26 MONTHS

Conclusion
3 MONTHS

Date of Departure
AUGUST 15th, 2021





VOICE OF THE OCEANS
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Deliverables

Production of special reports for national and international press conferences and scientific community

- **SCIENTIFIC REPORTS** (total of **5**, four partial and one final report)
- **SCIENTIFIC INDEX PUBLICATIONS** (total of **4** publications)

1st Report & Paper

High resolution observations on the **Brazilian Coast**

2nd Report & Paper

Observations on the **USA Atlantic Coast and Caribbean Sea**

3rd Report & Paper

Observations from **Equator to French Polynesia** = 1st portion of the **South Pacific ocean**

4th Report & Paper

Observations from **French Polynesia to New Zealand** = 2nd portion of the **South Pacific ocean**

5th Report

Final report on the entire expedition - **Final product**



“Science as the vehicle to sustain mental integrity”



INFINITO MARE

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