

SeaClear2.0

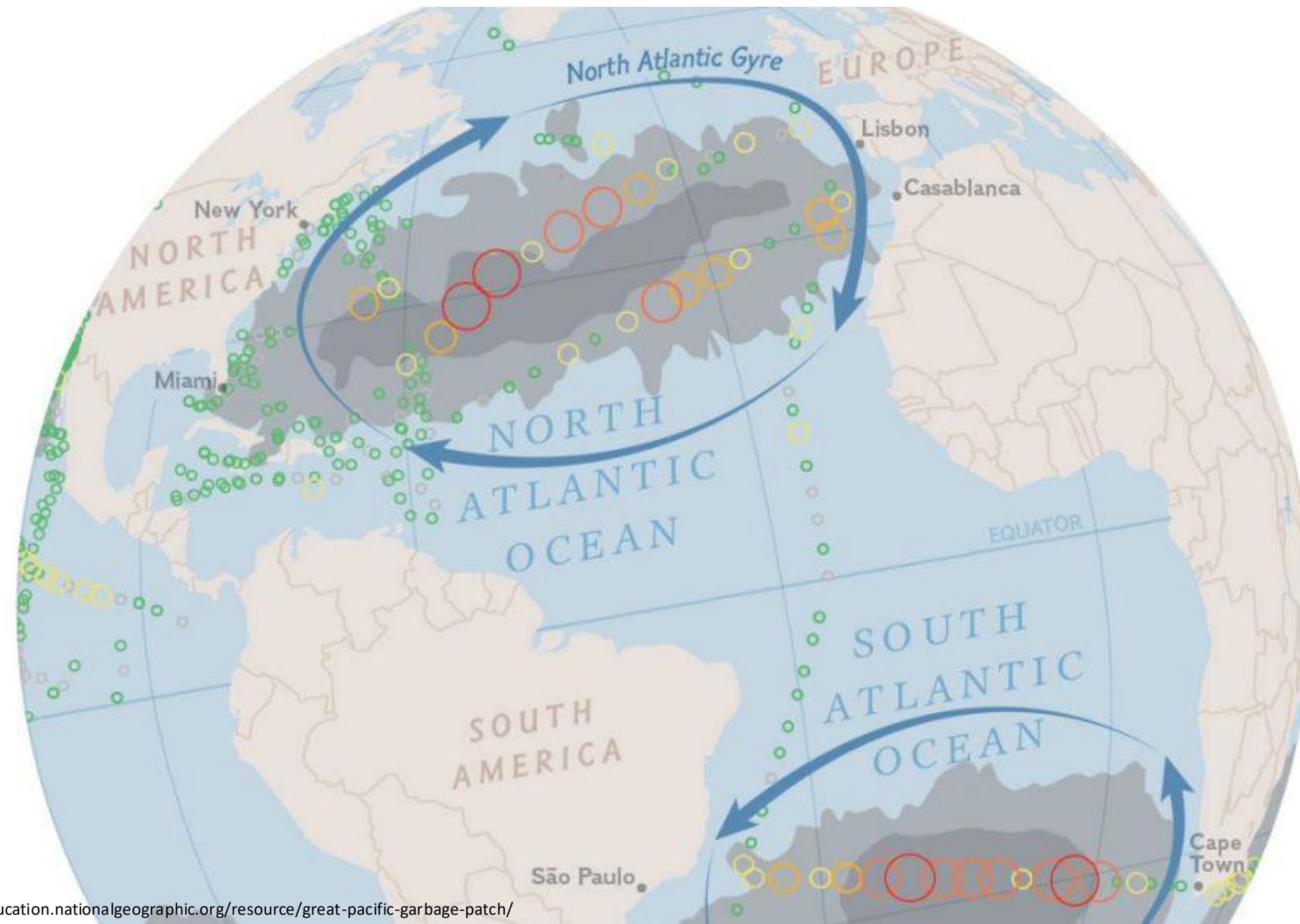
Scalable Full Cycle Marine Litter Remediation in the Mediterranean: Robotic and Participatory Solutions

Claudia Hertel-ten Eikelder
Hamburg Port Authority AöR

LSSTF
25 June 2026

Global Challenge – Marine Litter

- 25 million tonnes of plastic waste in our oceans globally (Isobe & Iwasaki, 2022)
- Each year roughly 600.000 t are added just in European Waters



PART OF THE
EU MISSIONS

RESTORE OUR OCEAN & WATERS

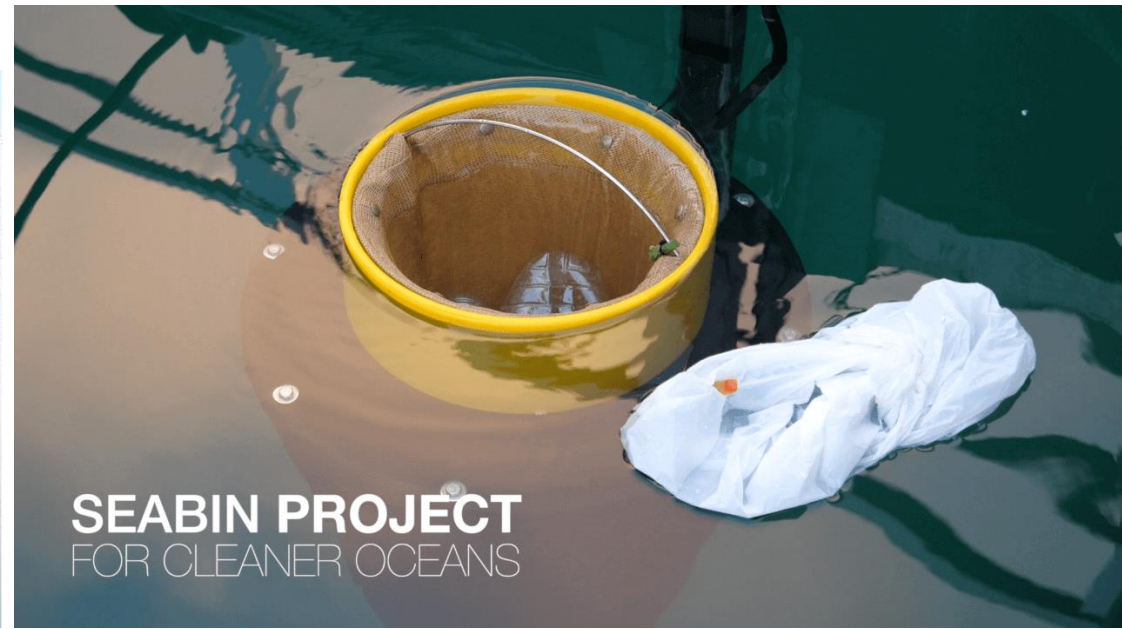
© European Union, 2021. All rights reserved



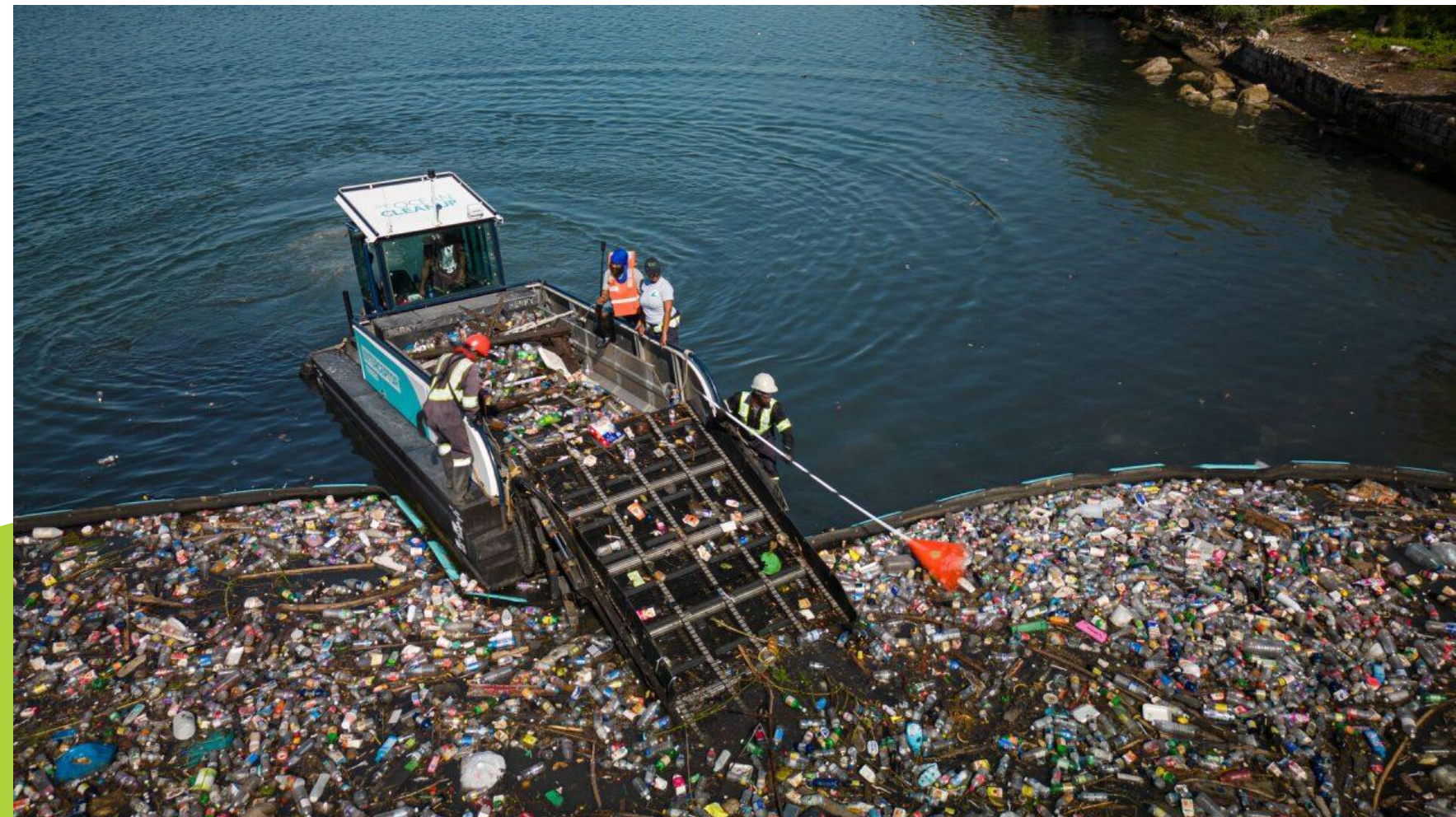
Co-funded by
the European Union



Solutions for the water surface....



SEABIN PROJECT
FOR CLEANER OCEANS





EU MISSIONS

RESTORE OUR OCEAN AND WATERS



...but over 90% of this pollution accumulates on the seafloor



Co-funded by
the European Union

SeaClear2.0 is co-funded by the European Union under the Horizon Europe Programme (Grant Agreement 101093822). Views and opinions expressed are those of the author(s) and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

Slide 4

Project Consortium



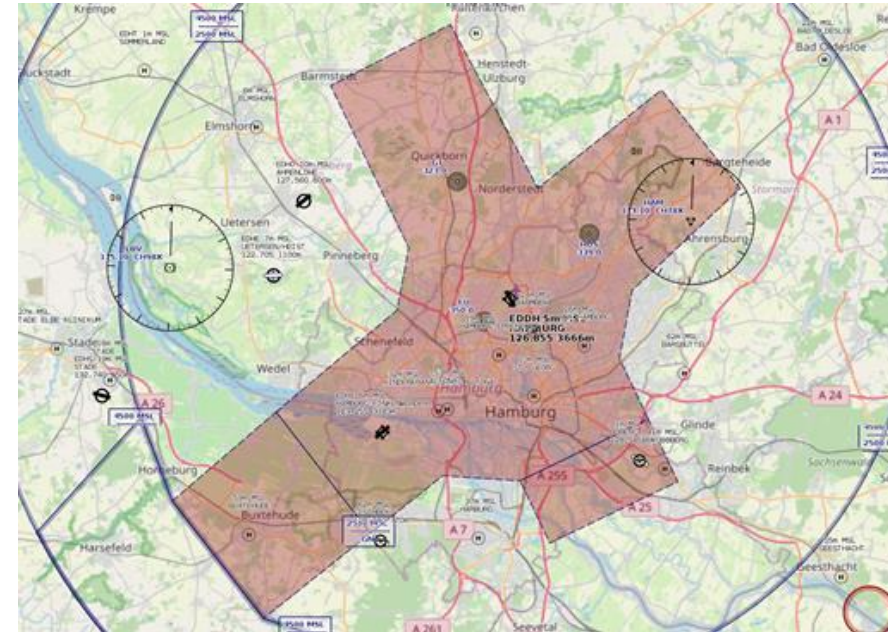
- 13 Partners
- Duration: 01.2023 – 12.2026
- Budget: € 7,97 Mio. , 100% EU





The Role of HPA

- End user perspective
- Real time test location
- Dissemination of information



SeaClear2.0 Pilots and Demonstrations



3 full system demonstrations:

- Marseille, France
- Dubrovnik, Croatia
- Tarragona, Spain

3 pilots (selected system parts):

- Hamburg, Germany
- Larnaca, Cyprus
- Venice, Italy

5 associated region projects:

- Reclaim project, Norway
- Mermaid project, Greece
- Symbiosis project, Sweden
- Plastic Dialogue project, Georgia
- Ghost Net Hunters project, Turkiye



PART OF THE
EU MISSIONS

RESTORE OUR OCEAN & WATERS

© European Union, 2021. All rights reserved

Co-funded by
the European Union





Objective - Prevent & reduce marine litter pollution in the Mediterranean through:

Scaling up the SeaClear2.0 system

for effective monitoring & collection of seafloor and surface litter

Solutions

for litter valorization via better sorting & recycling

Accelerating solution uptake

by demonstrating its scalability & replicability

Novel dimensions in policy-making

by providing evidence for new legislation & effective implementation of existing rules

Community activation, empowerment & participatory practices

to identify site-specific measures for preventing and reducing marine litter



PART OF THE
EU MISSIONS

RESTORE OUR OCEAN & WATERS

© European Union, 2021. All rights reserved

Co-funded by
the European Union



The SeaClear2.0 System

SeaHAWK UAV: tethered to SeaCAT. Facilitates litter hotspot identification & robotic system localisation.

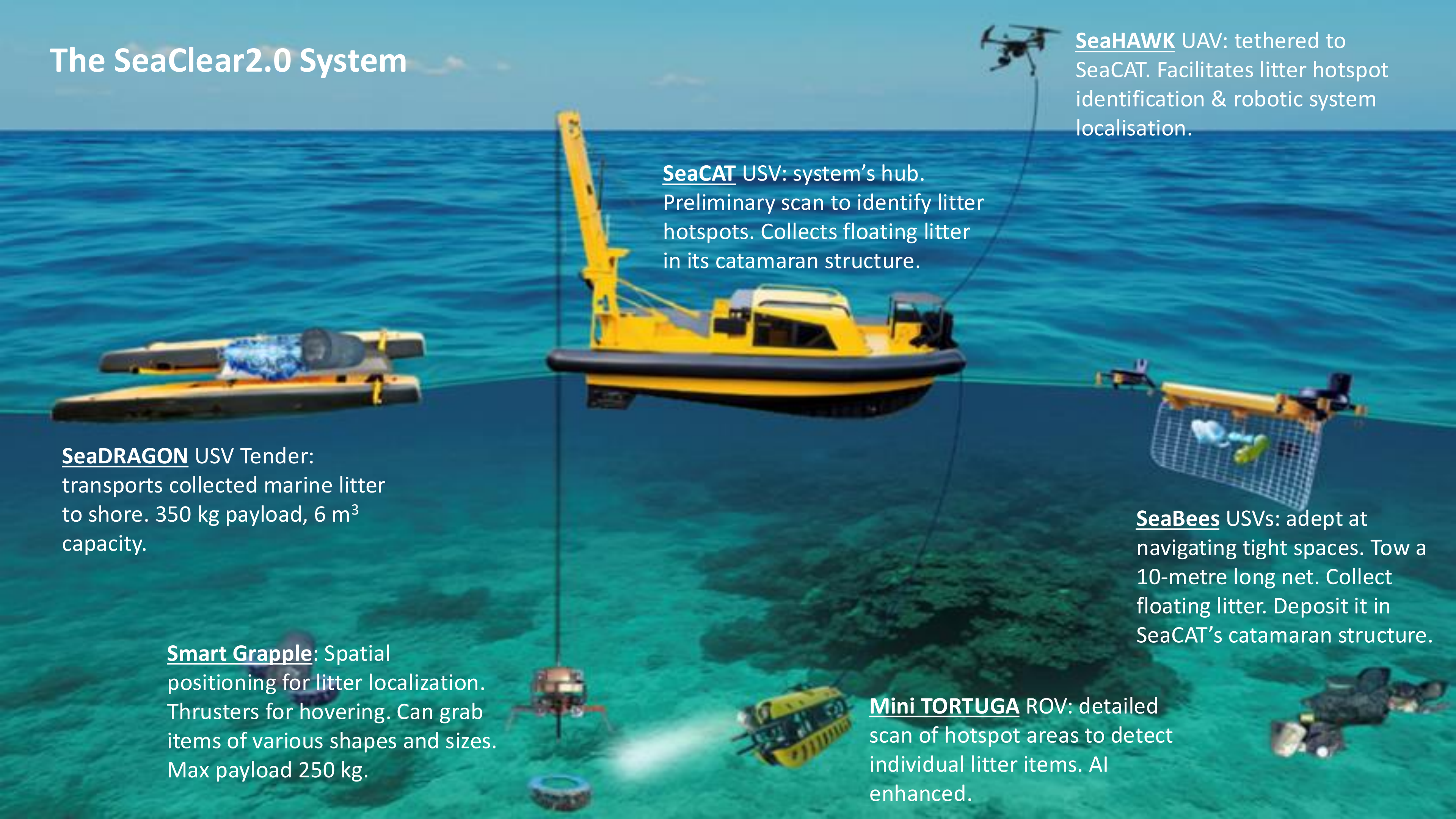
SeaCAT USV: system's hub. Preliminary scan to identify litter hotspots. Collects floating litter in its catamaran structure.

SeaDRAGON USV Tender: transports collected marine litter to shore. 350 kg payload, 6 m³ capacity.

Smart Grapple: Spatial positioning for litter localization. Thrusters for hovering. Can grab items of various shapes and sizes. Max payload 250 kg.

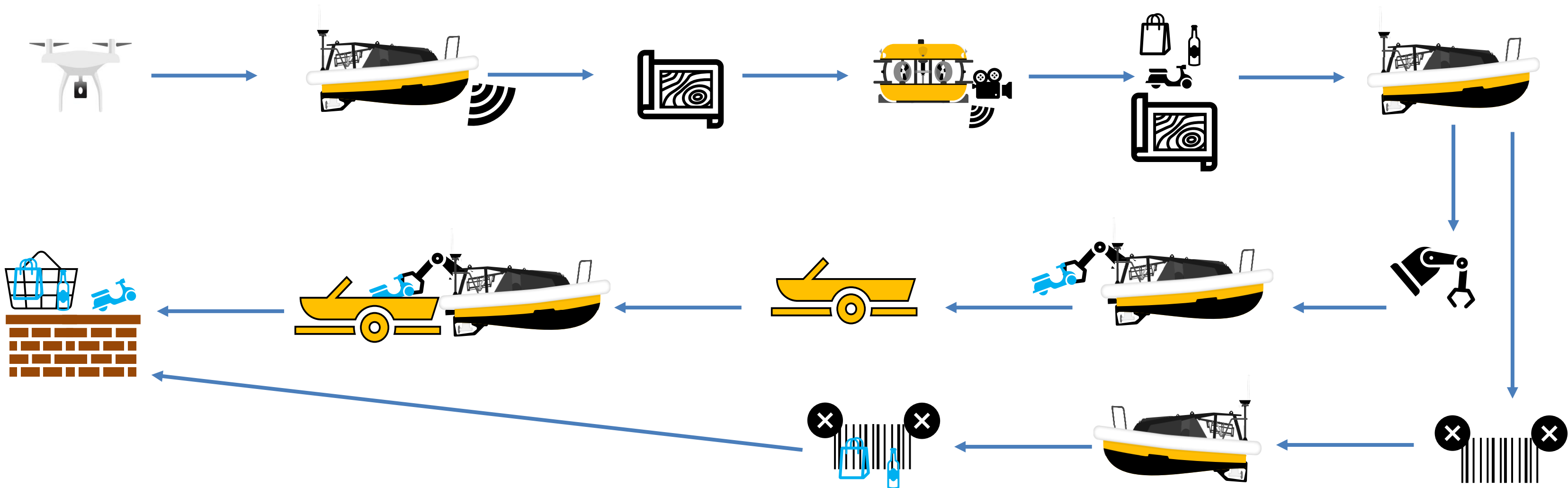
SeaBees USVs: adept at navigating tight spaces. Tow a 10-metre long net. Collect floating litter. Deposit it in SeaCAT's catamaran structure.

Mini TORTUGA ROV: detailed scan of hotspot areas to detect individual litter items. AI enhanced.





The process





PART OF THE
EU MISSIONS

RESTORE OUR OCEAN & WATERS

© European Union, 2021. All rights reserved

Co-funded by
the European Union









Contribution to Policymaking



Evidence-Based

Grounded in research and real stakeholder input.



Inclusive

Reflecting diverse perspectives from 200 stakeholders across 11 countries.



Impact-Driven

Turning insights into meaningful action.

1 INPUT



EU & International policies

Mapping key policy frameworks and documents affecting marine litter and technological innovation.



Participatory Stakeholder Workshops in 11 countries

Insights from stakeholders and practitioners

2 ANALYSIS



Loopholes, Barriers and Opportunities

Identifying what works, what doesn't, and where change is possible.



Common Attributes: Gaps and Needs

Synthesizing cross-country findings to uncover shared challenges and priorities.

3 OUTPUT



Policy Roundtable and Policy White Paper

Actionable, evidence-based recommendations to inform policy and drive meaningful change.



PART OF THE
EU MISSIONS

RESTORE OUR OCEAN & WATERS

© European Union, 2021. All rights reserved

Co-funded by
the European Union



Next steps



- Optimization of technology
- Final Demo in Tarragona in October 2026
- Finish Associated Regions Projects
- Policy Recommendations



Thank you



Claudia Hertel-ten Eikelder

Hamburg Port Authority

Claudia.hertel-tenEikelder@hpa.hamburg.de

Project coordinator:

Dr. Bart De Schutter, TU Delft

b.deschutter@tudelft.nl

Communications Lead:

Ms. Evi Stravrou, ISOTECH Ltd

digital@isotech.com.cy



PART OF THE

EU MISSIONS

RESTORE OUR OCEAN & WATERS

© European Union, 2021. All rights reserved

Co-funded by
the European Union

