

Transforming Ocean Science: Fostering a Network for Cooperative Science Research on Commercial Ships (Science RoCS)

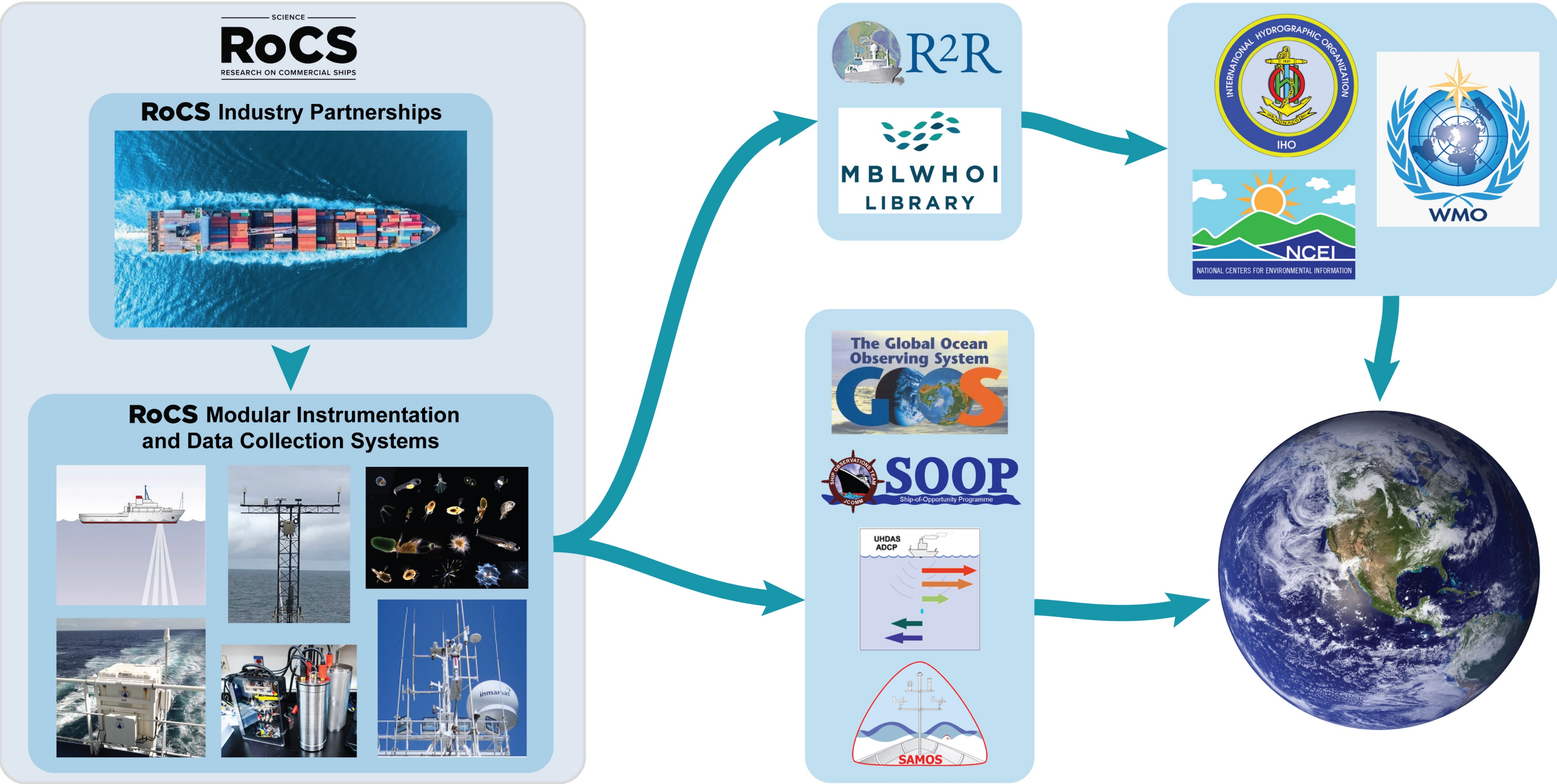
Kerry Strom¹, Leah Trafford McRaven¹, Magdalena Andres¹, Alison Macdonald¹, Laura Stolp¹, Jules Hummon², Tom Rossby³ & Julian Herndon⁴

1: Woods Hole Oceanographic Institution, 2: University of Hawaii, 3: University of Rhode Island & 4: University of Washington-CICOES



Abstract

Science RoCS envisions a future where scientific data collection on commercial ships is the new industry standard, providing regular and repeat measurements across oceans, including remote regions, on scales not otherwise accessible to the scientific community and society at large.



ABSTRACT

CHALLENGES

VISION

CONNECTIONS

OPPORTUNITIES

COLLABORATORS

REFERENCES

- Howe B.M., et al., 2019. <https://doi.org/10.3389/fmars.2019.00426>
- Petersen, W. and F. Colijn, 2017. http://eurogoos.eu/download/publications/EuroGOOS_Ferrvbox_whitepaper_2017.pdf
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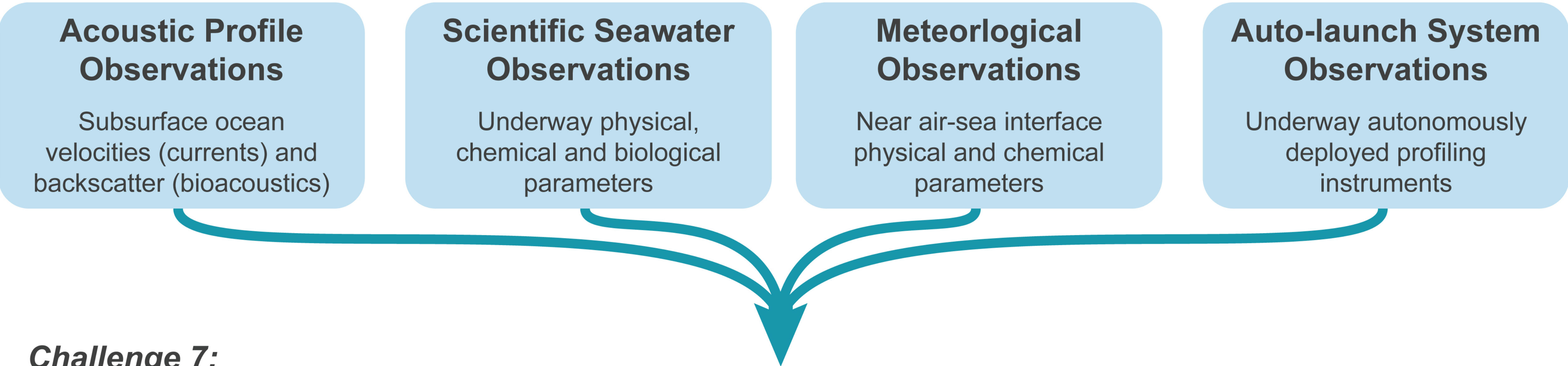
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Challenges addressed

In four interdisciplinary domains, Science RoCS aims to address three UN Ocean Decade Challenges



Challenge 7:

Develop **Essential Infrastructure** to support the ocean observing system and deliver actionable data products

Challenge 9:

Streamline **Foundational** products to ensure equitable access to data, information, knowledge and technology

Challenge 5:

Deliver **Knowledge and Solutions** to enhance understanding of the ocean-climate nexus and generate solutions

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Vision & transformative impact

Design a framework

that, when fully-implemented across a fleet of vessels & routes, will make scientific observations on commercial ships the new industry standard

Foster mutually beneficial relationships

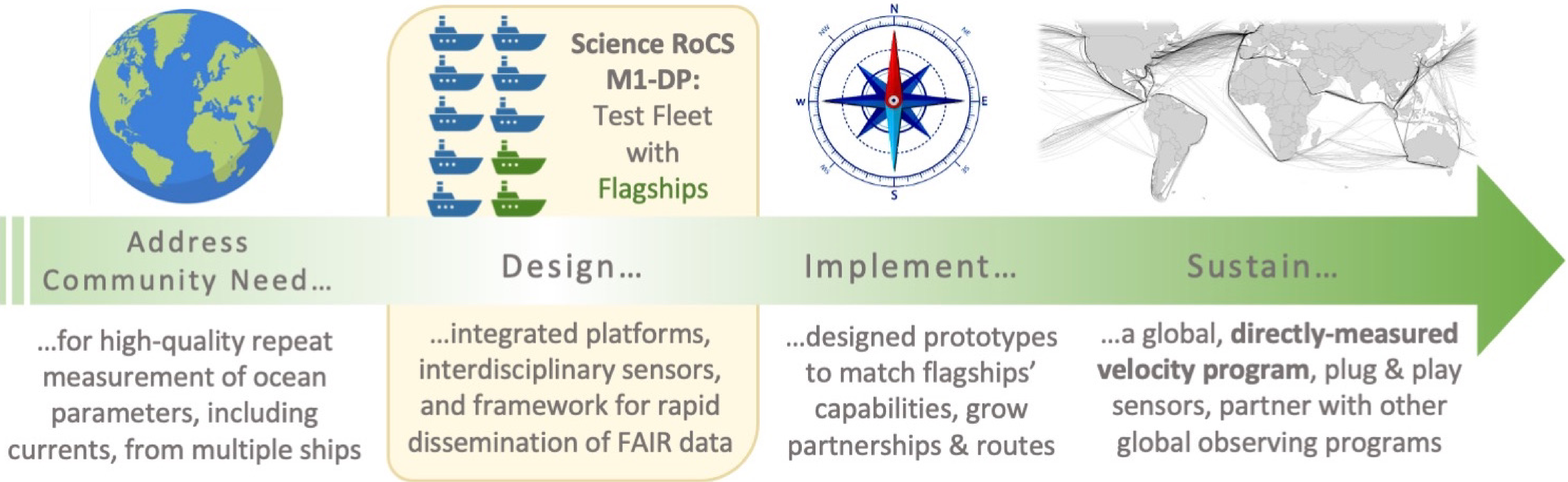
between ship owners and the scientific community

Create a culture

that encourages development of sensors and technologies optimized for use on vessels in regular traffic

Promote cross-disciplinary ocean science

by simultaneously collecting multiple data streams



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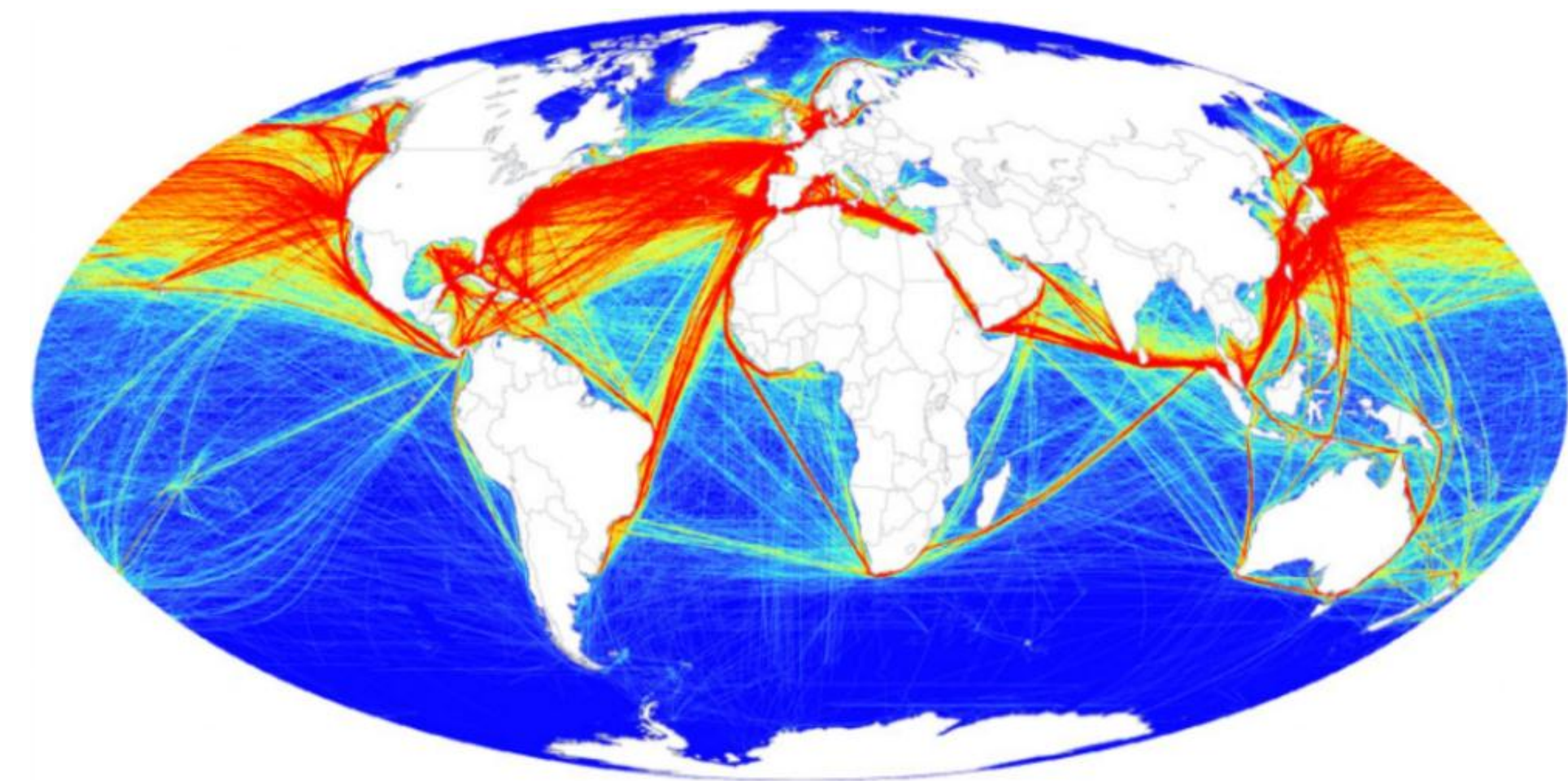
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Connections to sectors outside of traditional ocean science

The global shipping industry is undergoing a technological revolution and is showing a growing **commitment to good stewardship** of our oceans. Commercial companies have consistently supported investigators in use of their platforms for ocean observation.



Map from Halpern, B. S., et al., 2008.
<https://doi.org/10.1126/science.1149345>



Science RoCS aims to build on the success of the science community’s demonstrated partnerships with the commercial shipping industry by continuing to:

- **Connect** with additional potential industry partners
- **Form ties** to international shipping consortia
- **Identify** commercial routes of scientific interest
- **Compile information** about commercial sensor technology
- **Entrain** stakeholders
- **Identify** avenues for federal funding for scientific infrastructure

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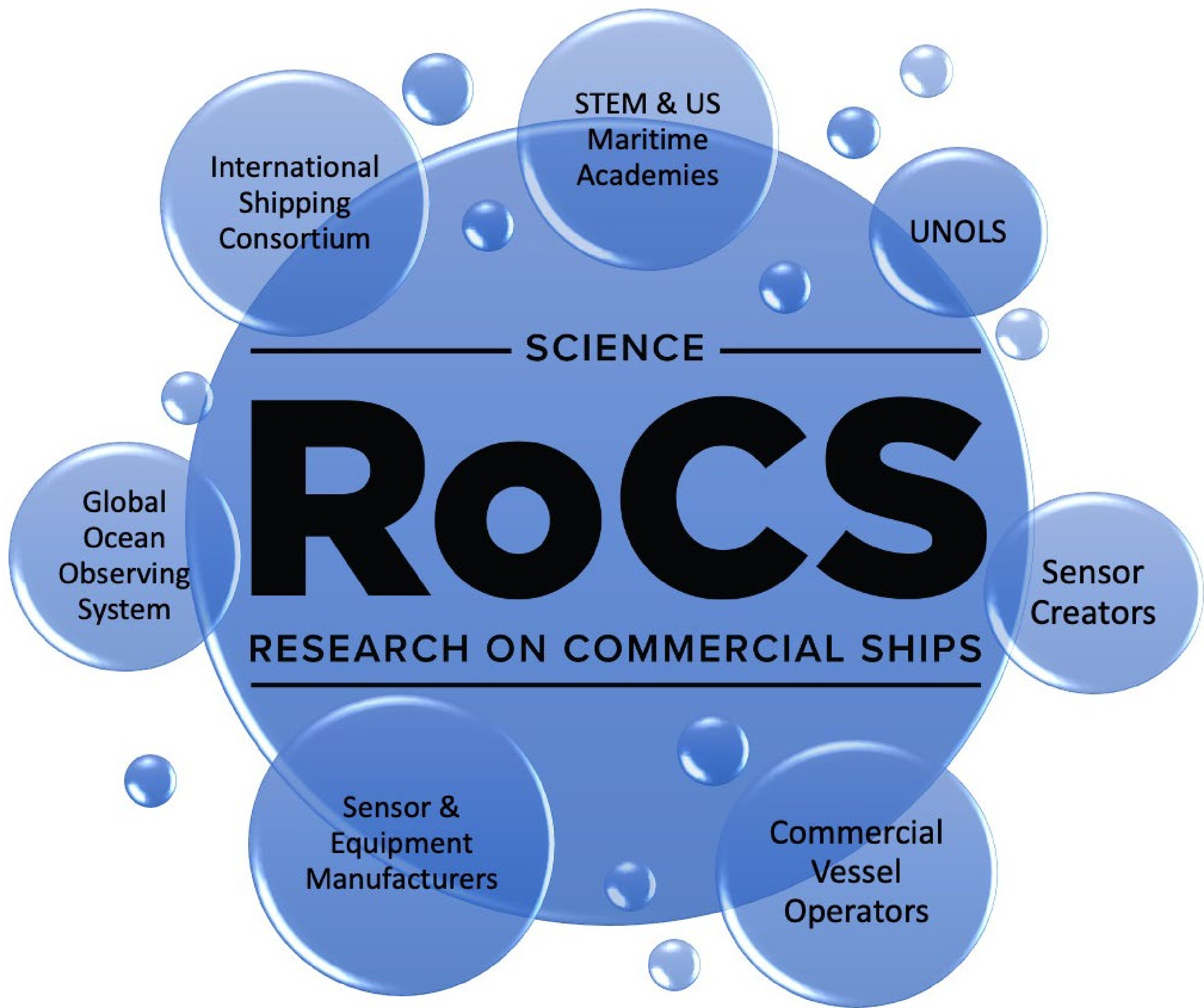
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Create opportunities for collaboration and capacity-building



Science RoCS will work in partnership with several entities to achieve a well coordinated, impactful, and sustainable structure that will:

- Leverage**
commercial vessel access to the sea
- Connect**
science & industry via the UNOLS portal
- Expand**
capabilities of existing data collection
- Link**
sensor developers to build for industry platforms
- Inspire**
STEM & maritime educators

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Collaborators...



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Academies



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COLUMBIA UNIVERSITY | EARTH INSTITUTE



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