# DORIS: DEEP OCEAN RESEARCH AND IMAGING SYSTEM

The Deep Ocean Research & Imaging System (DORIS) is a cutting-edge, low-cost deep sea camera that will revolutionize deep ocean exploration with affordable technology designed for global accessibility. DORIS addresses today's limitations in deep-sea research, where costly, complex technology restricts exploration to just a handful of nations and researchers. Funded in part by NOAA's Ocean Technology Transition program, DORIS is developed in partnership with Blue Robotics, leveraging their expertise in designing, prototyping, and manufacturing advanced low-cost deep-sea systems.

Low-Cost, High-Impact
DORIS is engineered to dramatically expand deep ocean access with low-cost, user-friendly systems capable of reaching depths of 6,000 meters. At an unprecedented target base price of less than $7,000 per system, DORIS is designed to leverage modularity, allowing users to interchange various operational and sensing modules and enable researchers worldwide at varying levels of capability. Its intuitive design requires no specialized engineering expertise, and each system is supported by a robust graphical user interface that simplifies mission planning and data retrieval. The untethered system is compact enough to be deployed from a small boat.
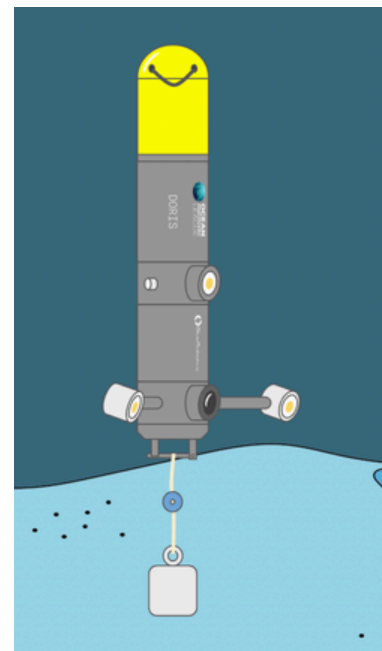
DORIS conceptual illustration.

Each first-generation DORIS system will include:

- Core Module: Integrated navigation, wifi and satellite communication, and data/video logging system.
- Battery Module: 24 hours of continuous deployment and image recording.
- Camera and Lighting Modules: High-resolution 4K video and still imaging capabilities optimized for low-light, deep-sea environments.
- Environmental Sensors: CTD (Conductivity, Temperature, Depth) and CO_2/O_2 sensing technologies.
- Drop-Lander Configuration: Release mechanism designed for minimal environmental impact.

Future enhancements and modules include bait arms, buoyancy engines, altimeters, and passive hydrophones and will incorporate user feedback, significantly broadening operational capabilities and applications. The post-processing of visual data can utilize FathomNet—an AI-driven cloud platform co-founded by ODL—where DORIS users can upload video and sensor data for rapid analysis and annotation.

ODL aims to build capacity, offering comprehensive support—from training and resources to operational assistance—to ensure successful deployments for researchers at every stage. DORIS-generated data will allow for exponentially more deep-sea visual observations and fill crucial gaps, encourage large-scale collaboration, and enable cost-effective, scalable observations and surveys.

Pathway to Scale
Following user feedback and refinement of the first-generation system, ODL plans to work with Blue Robotics to commercialize DORIS by developing second-generation systems equipped with additional modules to maximize global research impact. By 2027-2028, our goal is to scale production substantially, leveraging Blue Robotics' supply chain and high-volume manufacturing capability to provide DORIS systems at low cost to paying customers and subsidized researchers worldwide. By expanding access to the deep ocean, DORIS will dramatically accelerate the exploration and understanding of our ocean.

ABOUT OCEAN DISCOVERY LEAGUE

Founded by deep-sea explorer Dr. Katy Croff Bell, Ocean Discovery League's mission is to accelerate deep-ocean exploration by developing accessible systems to broaden the community of those who explore and understand the deep sea. ODL is developing a strategic approach to expand the area of the seafloor that is explored, mapped, and characterized while reducing expenses by creating lower-cost, easier-to-use tools and technology. These actions, along with a more targeted approach to selecting exploration locations, will expand deep ocean exploration to a broader community of explorers.

ABOUT BLUE ROBOTICS

Blue Robotics' mission is to make affordable, high-quality components and systems for marine robotics. They design and manufacture over 350 unique products—including thrusters, sensors, electronics, and two flagship systems: the BlueROV2 underwater vehicle and BlueBoat surface vessel. With a team of 65 people based in California, British Columbia, Santa Cantarina, and other locations around the world, the company combines global manufacturing of machined, molded, and electronic parts with in-house assembly, rigorous quality control, and rapid order fulfillment from their Torrance, California facility. Blue Robotics actively supports marine robotics education through comprehensive online guides, annually processes over 8,000 orders, and provides worldwide shipping.

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Interested in working with us? Please reach out!

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