Teledyne Marine Technologies

Examining Opportunities for Private Public Partnerships

Dan Shropshire, Vice President Business Development and Program Execution

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Teledyne Technologies

Advanced Solutions for Mission-Critical Applications

INSTRUMENTATION

Monitoring and control instruments for marine, environmental, industrial and other applications, as well as electronic test and measurement equipment.

DIGITAL IMAGING

High-performance sensors, cameras and systems, within the visible, infrared, ultraviolet and X-ray spectra for use in industrial, aerospace, government and medical applications, as well as micro electro-mechanical systems.

AEROSPACE AND DEFENSE

Sophisticated electronic components and subsystems and communications products, including defense electronics, data acquisition and communications equipment for air transport and business aircraft, harsh environment interconnects, and components and subsystems for wireless and satellite communications.

ENGINEERED SYSTEMS

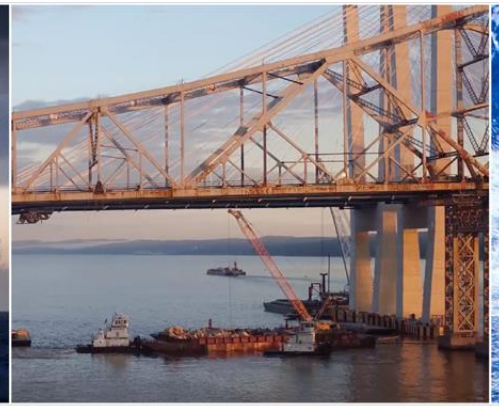
Innovative systems engineering and integration and advanced technology development as well as complex manufacturing solutions for defense, space, environmental and energy applications.

Teledyne Marine

Serving the Needs of Major Markets

ENERGY

INFRASTRUCTURE



OCEANOGRAPHIC

DEFENSE/SECURITY

MARINE LIFE

Teledyne Marine

Technology Verticals

SEISMIC

AG Geophysical • Bolt
Geophysical Instruments
Real Time Systems

IMAGING

BlueView • Bowtech
Odom Hydrographic
PDS • RESON

INSTRUMENTS

Benthos • Cormon
RD Instruments • TSS

INTERCONNECT

DGO • Impulse
Impulse PDM • ODI
Storm Cable • VariSystems

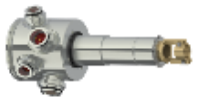
VEHICLES

Gavia • Oceanscience
SeaBotix • Webb Research

Teledyne Marine Verticals

INTERCONNECT




- AG Geophysical
- DGO
- Impulse
- ODI
- Storm Cable
- VariSystems

SEISMIC

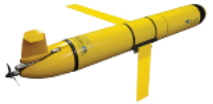




- AG Geophysical
- Bolt
- Geophysical Instruments
- Real Time Systems

VEHICLES



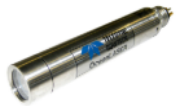


- Benthos
- Gavia
- Oceanscience
- SeaBotix
- Webb Research

IMAGING







- Blueview
- Bowtech
- CARIS
- Odom Hydropahic
- PDS
- RESON

INSTRUMENTS





- Benthos
- CDL
- Cormon
- Oceanscience
- RD Instruments
- TSS

Purpose:

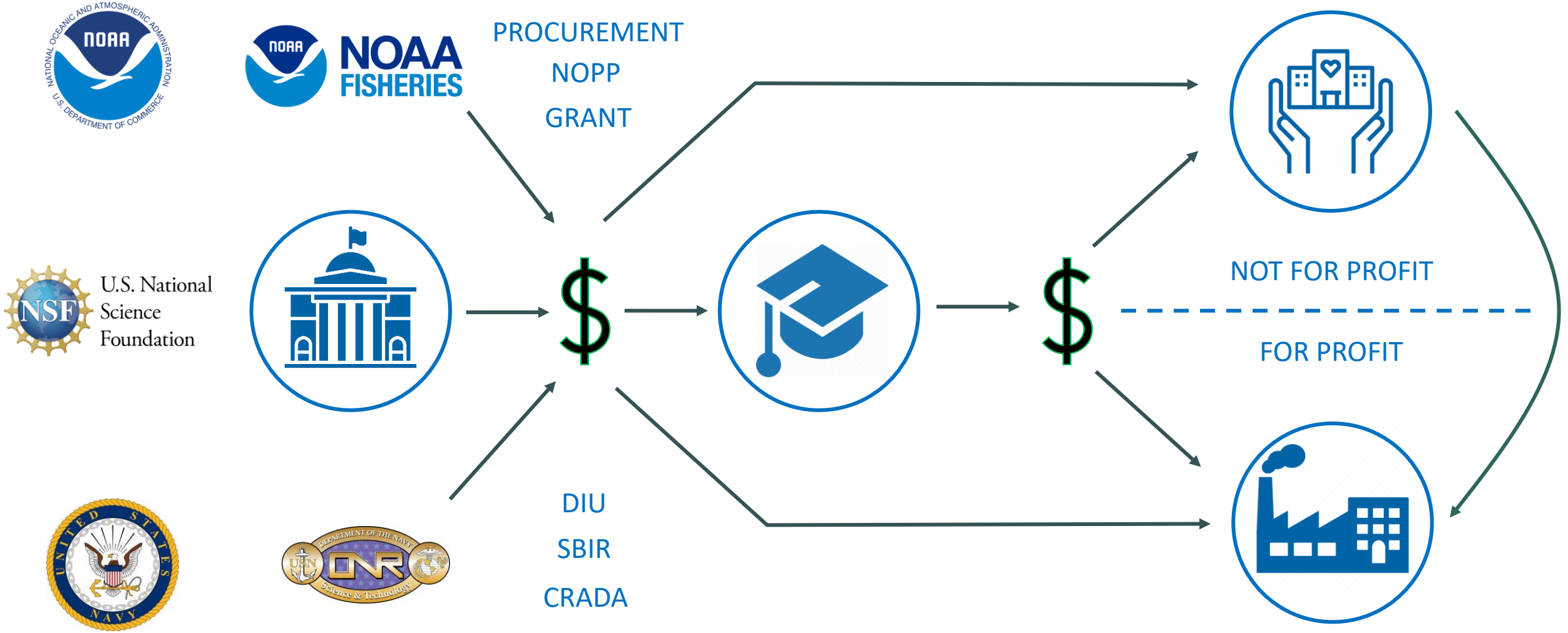
The purpose of this meeting will be to examine barriers, challenges, and potential mechanisms that **expand opportunities for public-private partnerships** by engaging external input from Government and Industry.

Question:

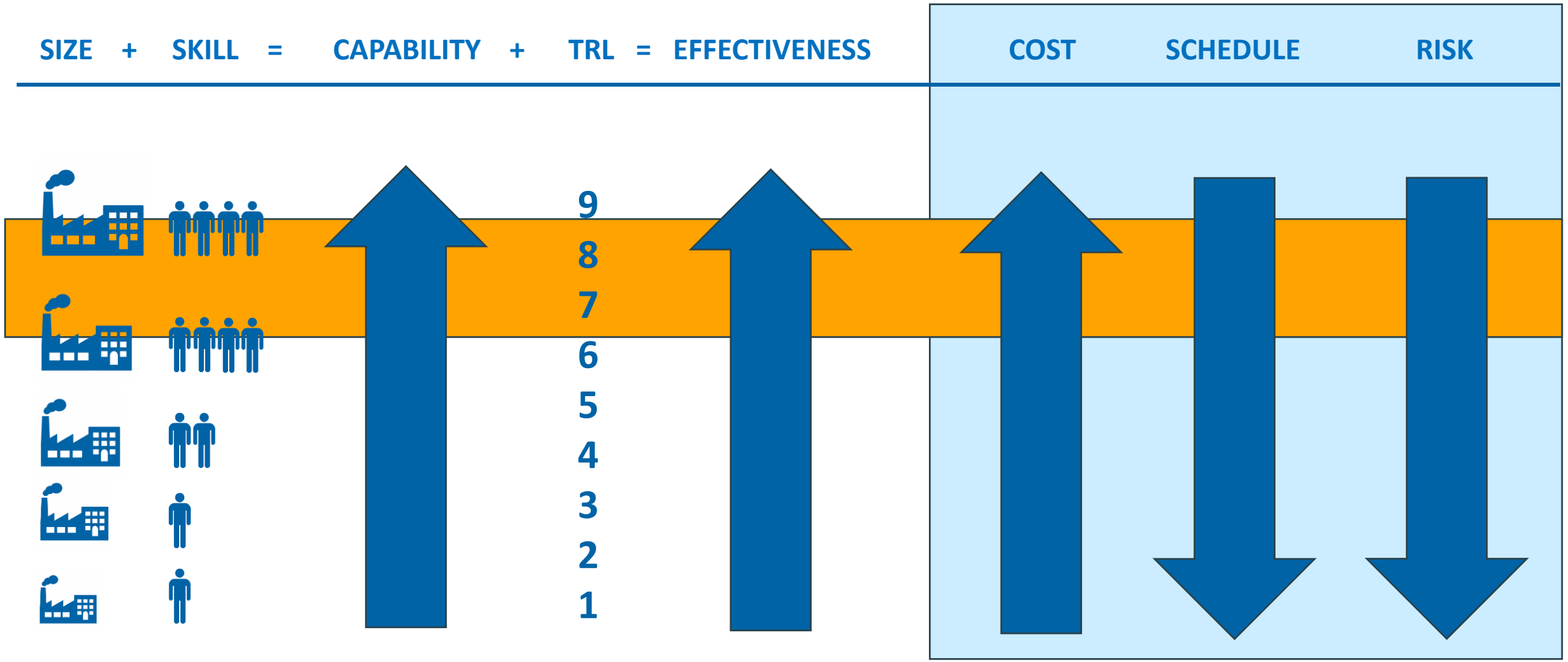
So, how do we expand opportunities for public-private partnerships?

Let’s start by looking at how partnerships are funded now.

Program Funding



Partnership Effectiveness



Slocum Glider Defense Programs - US

Photo by Rebecca Eckhoff

LBS-G

- Fully operational supporting the Fleet
- USN procured over 200 Slocum glider
- Awarded 10-year LBS-G Follow-on
  Incumbent 2009 - 2031
- 108 glider surge in summer ‘18 and ~100 in 2021

Other programs

- Approximately 350 Slocum Gliders delivered to various USN programs

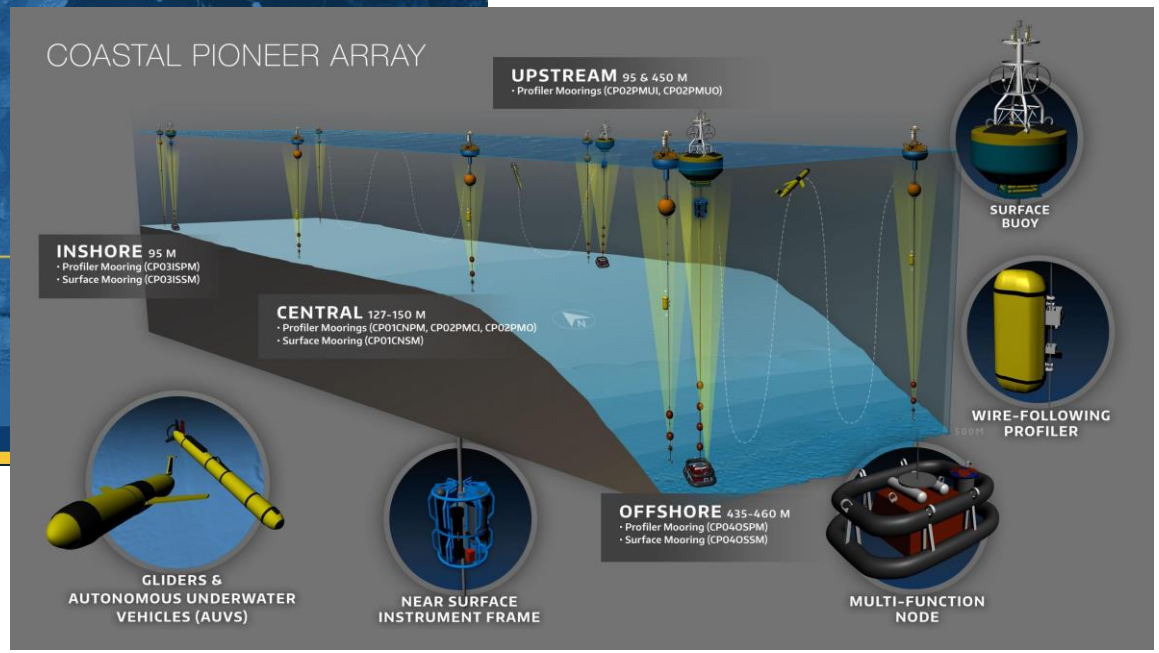
So, what else has worked?

Q: What successes could serve as a model for future public-private partnerships?
Examples of what is working or what has not worked in the past

OCEAN OBSERVATORIES INITIATIVE

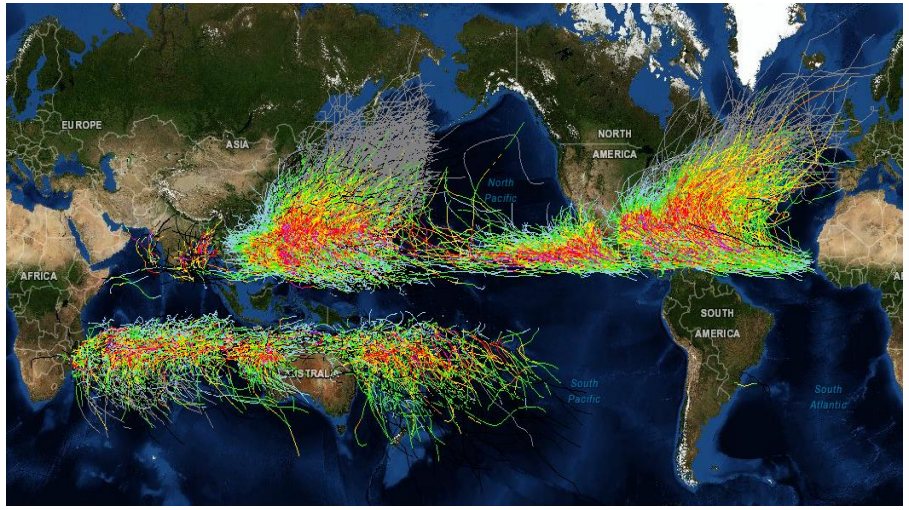
U.S. National Science Foundation

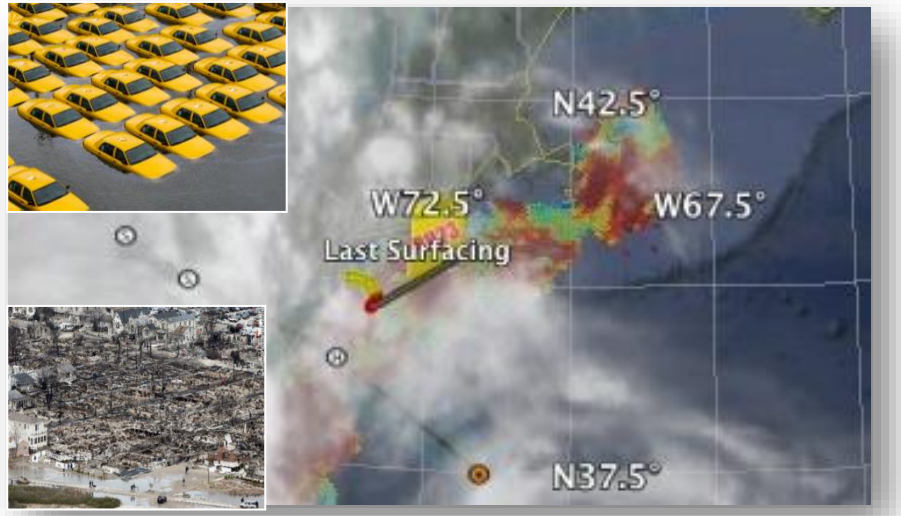
Sustained data for a changing ocean

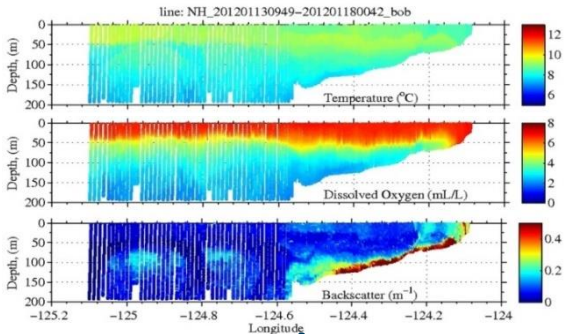


TELEDYNE MARINE Everywhereyoulook™

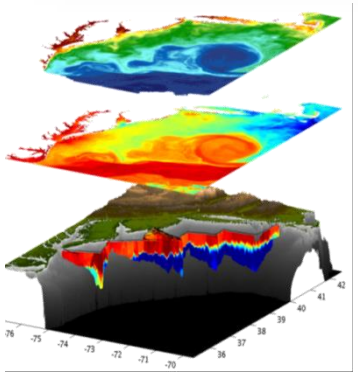
Storm Gliders

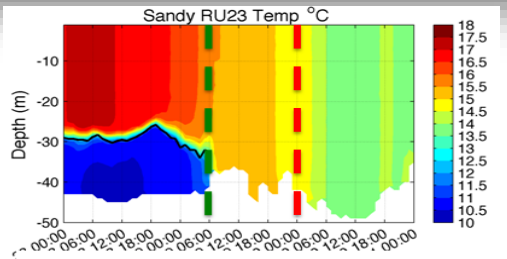


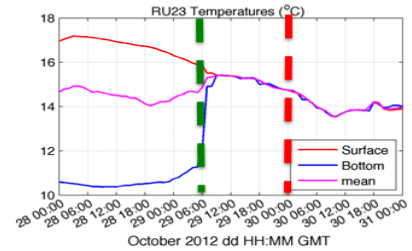




Hurricane Irene







Glider derived ocean mixed layer data have been shown to significantly reduce storm intensity error bars.

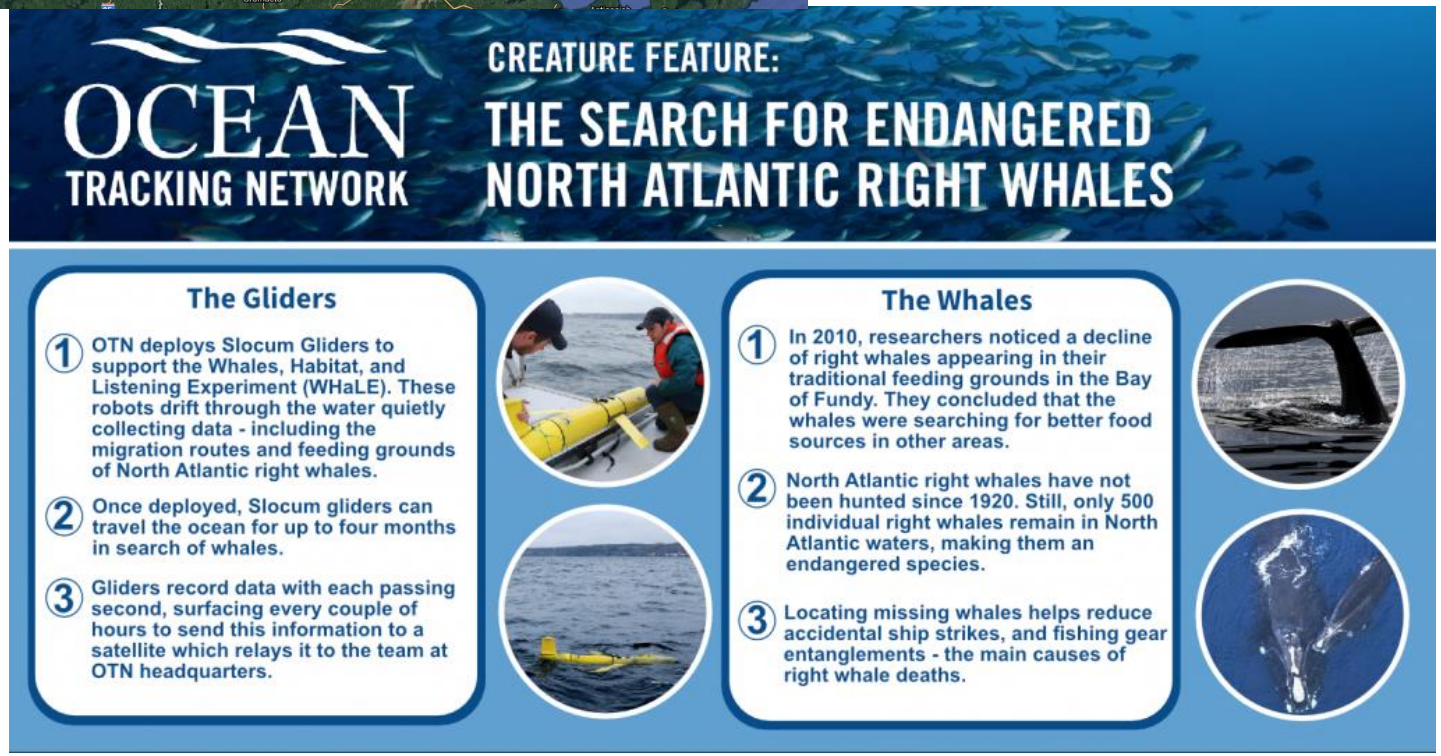
RUTGERS

GLIDERS ADDED TO FLEET OF TOOLS TO MONITOR AND PROTECT ENDANGERED NORTH ATLANTIC RIGHT WHALES

Written with staff contributions from the Ocean Tracking Network, the University of New Brunswick and Transport Canada - July 22, 2021

A 3G Slocum underwater glider will add additional monitoring power thanks to a new federal investment. (Nicolas Winkler photo)

DALHOUSIE UNIVERSITY



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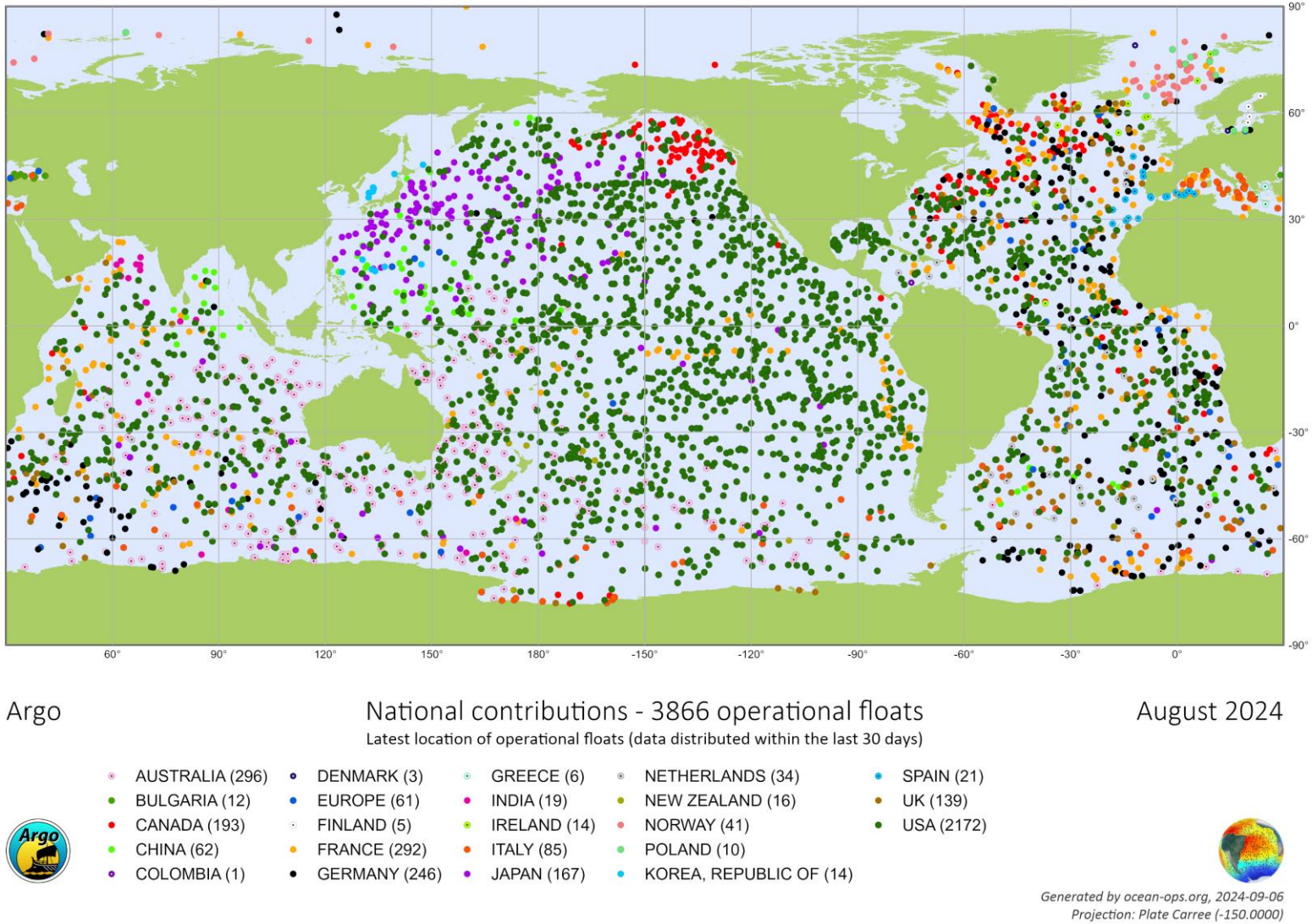
Global Argo Program



Argo

National contributions - 3866 operational floats

Latest location of operational floats (data distributed within the last 30 days)

August 2024

AUSTRALIA (296)	DENMARK (3)	GREECE (6)	NETHERLANDS (34)	SPAIN (21)
BULGARIA (12)	EUROPE (61)	INDIA (19)	NEW ZEALAND (16)	UK (139)
CANADA (193)	FINLAND (5)	IRELAND (14)	NORWAY (41)	USA (2172)
CHINA (62)	FRANCE (292)	ITALY (85)	POLAND (10)	
COLOMBIA (1)	GERMANY (246)	JAPAN (167)	KOREA, REPUBLIC OF (14)	

Generated by ocean-ops.org, 2024-09-06
Projection: Plate Carree (-150.0000)

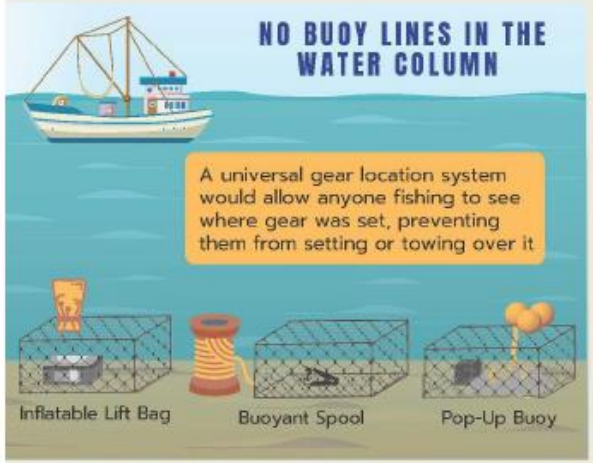
Acoustic Communication

Application Example

Benthos Modem Acoustic Trigger used in Ropeless On-Demand Fishing

On-Demand Fishing Gear
Improved with industry input

WHAT IS ON-DEMAND GEAR (AKA ROPELESS/BUOYLESS GEAR)?



A fishermen could choose:

BOTTOM STOWED LINE

1: The buoy line is coiled with the fishing apparatus

2: A fishermen "calls" the Buoyant Spool or Pop-Up buoy to the surface using an acoustic release

or

NO BUOY LINES

1: The fishing gear is attached to an Inflatable Lift Bag on the ocean floor

2: An acoustic trigger cues the bag's inflation, allowing the trap to float to the surface

WHY IS ON-DEMAND GEAR NECESSARY?

CURRENTLY

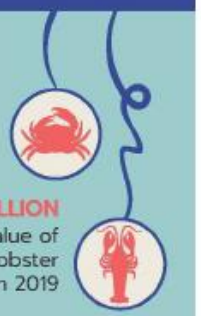
Fixed gear fisheries set traps, pots, barrels, or nets on the ocean bottom marked with lines attached to surface buoys or floats- It may be hours, days, or weeks before retrieval

CONSEQUENCE

Protected species may become entangled causing fishermen to lose gear and face increased regulatory restrictions as well as closures of rich fishing grounds

~ 1.2 MILLION buoy lines fished along the US coast

~ $630 MILLION Ex-vessel value of American lobster fishery in 2019

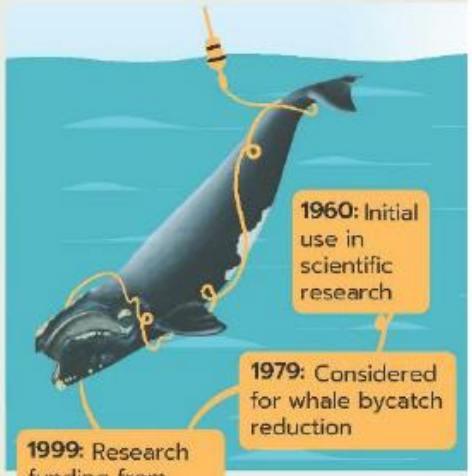


BENEFITS ENDANGERED WHALES

< 370 Remaining North Atlantic right whales

> 86% of North Atlantic right whales have been entangled at least once

> 67 North Atlantic right whales accidentally killed by US fisheries since 2010



1960: Initial use in scientific research

1979: Considered for whale bycatch reduction

1999: Research funding from National Oceanic and Atmospheric Administration

TRIAL RESULTS

Initial trials indicate

- Acoustic retrieval systems work
- Mechanical interruptions, including snags in lines, are being addressed with fishing industry feedback
- Initial testing suggests gear loss may be reduced as on-demand gear is less likely to move in storms
- Training is key to success

2018: Ropeless Consortium established and Canadian lobster and crab fisheries start testing gear

2019: Gear location Apps are developed and at sea trials begin

2020: Testing expands to US lobster fishery while Canadian fisheries begin commercial use of on-demand gear

FINAL STEPS TO COMMERCIAL USE

- Development of a universal gear detection system
- Establishment of training programs
- Implementation of mass production to realize economies of scale
- Investment by government and private sector for development and subsidies

Get started at Ropeless.org

What has been successful?

- Aligning with Teledyne corporate goals (profit, market growth)
- Use of Commercial Off the Shelf Technology and COTS with customization
- Partnering with academics and research institutions has advanced technology
- Including industry members on scientific teams and committees driving program direction
- Non-profits driving innovation by brining together government, industry and philanthropies

What could make this more successful?

- Funding mechanisms to purchase COTS or modified COTS direct from mid and large public manufacturers
- Teaming relationships to provide services to include O&M
- Inclusion of industry partners in government road mapping and planning
- Published technology **roadmap** stating government needs 3 years out

Questions

Q: How can the private sector support effective adoption of novel ocean technologies by government agencies?
A: Awareness, need to be aware of what is available / in work, and need to make it profitable and / or meet company mission objectives.

Q: What can the ocean agencies and departments do to better harness the innovation occurring in the private sector?
A: First off, influence the technology. Companies will build what they think industry wants without direction. Become aware – industry days / demonstrations. Make it simple. Set up simple procurement strategies. Direct buys.

Q: What challenges exist with respect to entering into public-private partnerships and how could new models address them? What would new models look like? Would the executive branch have the power to enact them, or would a change in legislation be required?
A: Challenges existing around IP and data rights as well as fairness in competition. New models should include direct purchases of COTS or slightly modified COTS products which provides IP protection for industry and with partnerships on O&M.

Q: What incentives could the government offer to attract partnership from industry?
A: Funded cooperative research opportunities (CRADA), NOPPs, IP. Seats on panels and steering committees.

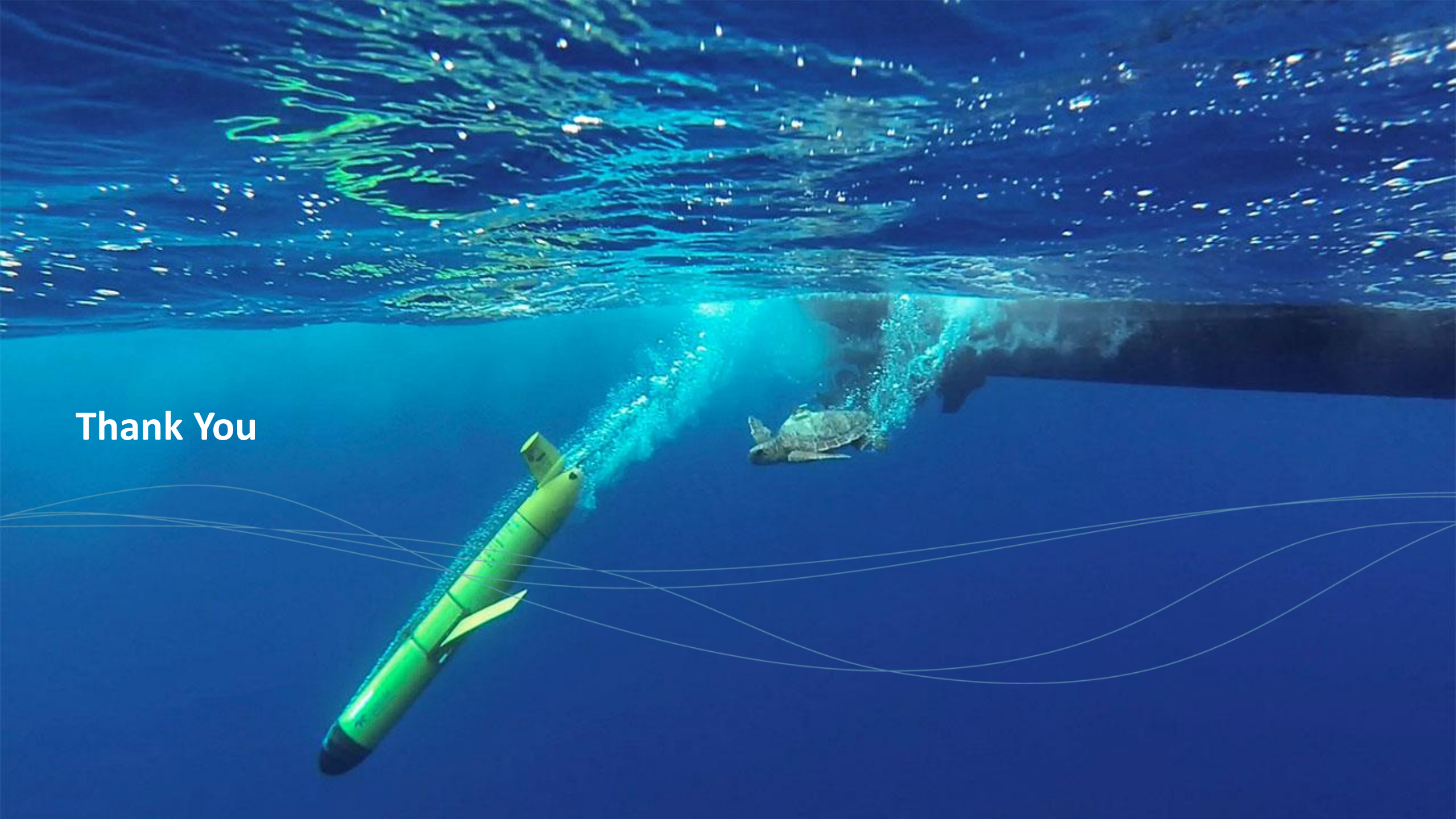
Some other items for consideration:

Q: Do you believe all agencies succeed/struggle equally or are there examples of significant differences and success?

- NSF – OOI and GO BGC
- Areas of the NAVY are better than others
- Direct purchase has been successful
- NOAA NOPPs ok, but more for academics

Q: Are there models beyond a grant process that could achieve greater participation by the private sector? What might they look like?

- More Sole Source Awards based on an available unique technology
- Cooperative R&D
- Must impact the roadmap, must make $s


Thank You