



Inventory Management with Roundabout DataBase

Connor Ahearn and Hannah Brewer

Inventory Management in Oceanographic Facilities

We have had problems that you all can relate to:

- “Where’s that _____?” (instrument, gear box, ship???)
- “How did we do this before?”

Motivations - Efforts to maintain and track Inventory were varied and inconsistent. Opportunities to further leverage our knowledge were lost. Existing industry solutions were insufficient

Challenges - inventing a new, operable/reliable database is not just about transferring the “catalogue” in somebody’s hard drives/spreadsheets to digital...it involves a lot of communication, almost working on shifting work culture a bit.

After some evaluation of available products, we began an Open Source Software Project!

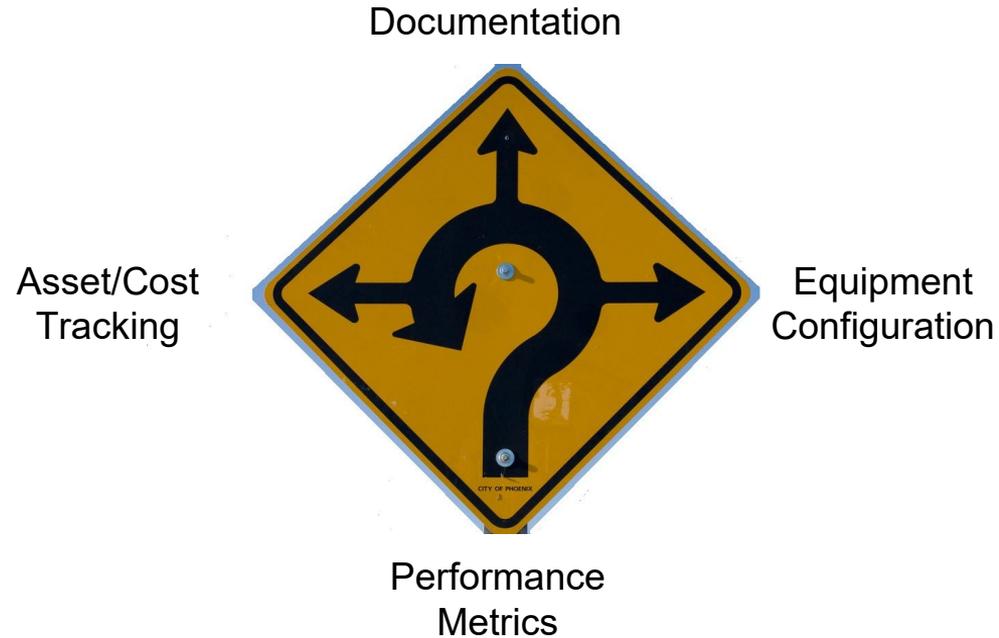
Starting Points

We came at this with certain needs,

- Tracking
- Documentation
- Metadata Management

But there are lots of starting points

- Cost Analysis
- Performance Metrics



What is Roundabout?

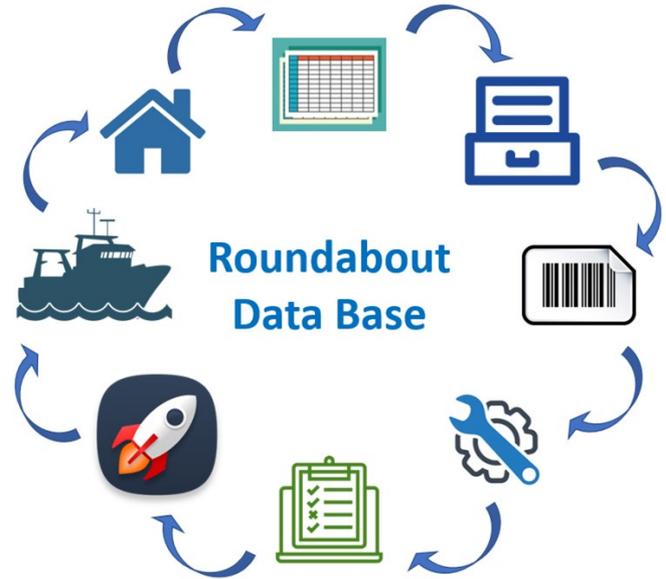
A way to collect and organize electronic records of high-value equipment

- Tracks history of individual inventory items
- Maintains equipment records, including subassemblies, to any level of detail
- Interactive, searchable, importable/exportable

Roundabout DataBase (RDB)

We care about the **LIFECYCLE** of our equipment. To track this we begin with the premise that we must know ***WHAT*** we have and ***WHERE*** it is.

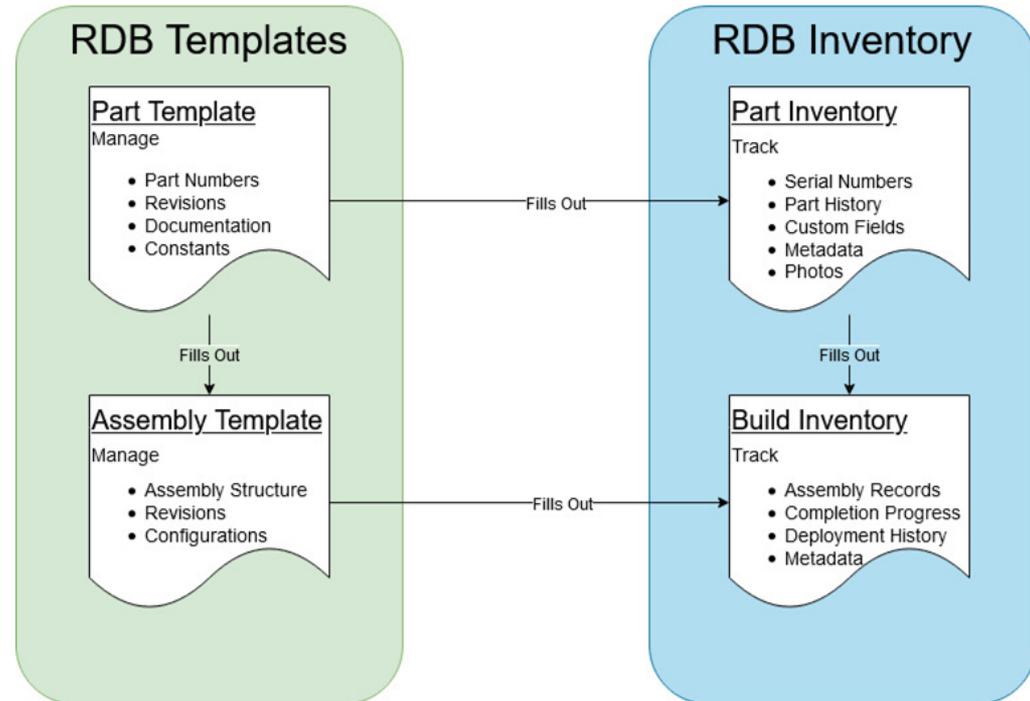
In the world of Roundabout, all inventory must have two things: a Serial Number and a Location



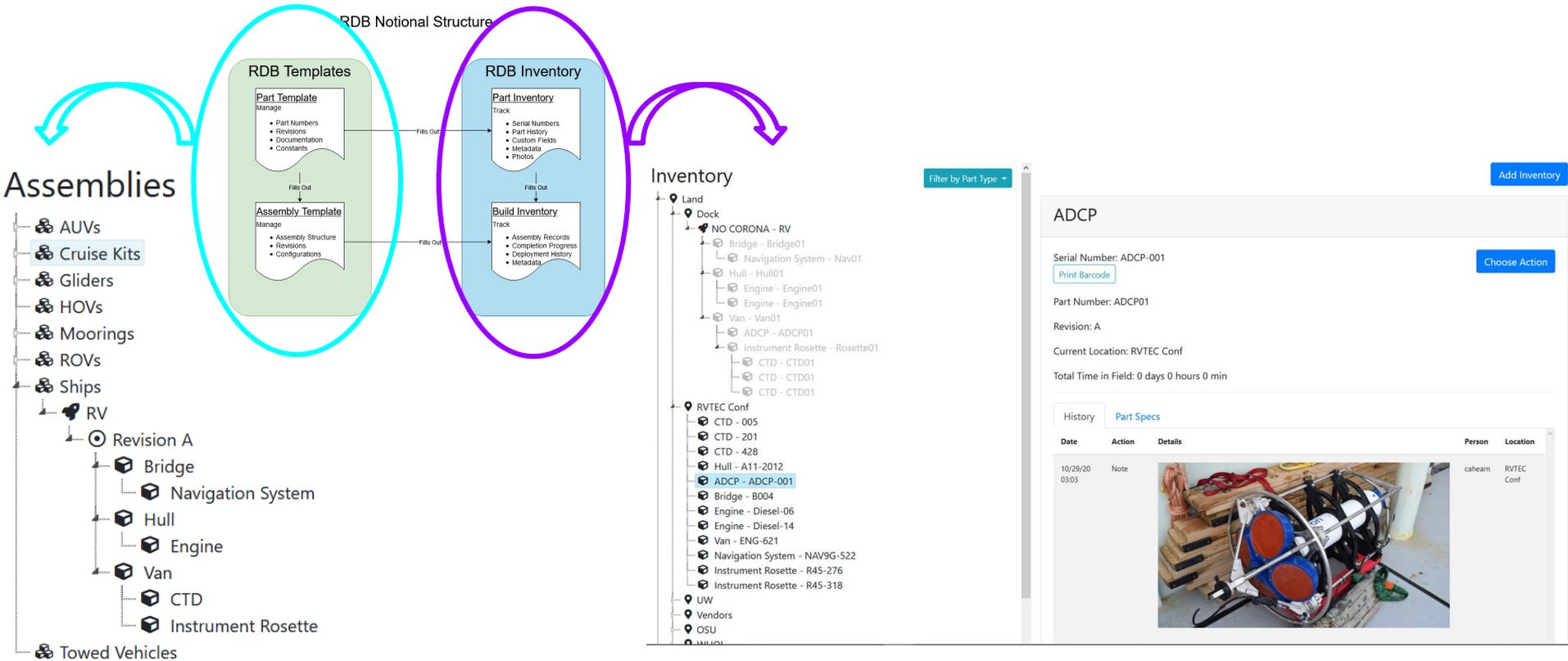
Useful Features of RDB

- Subassemblies
- History
- Revisions
- Custom Fields
- Costs
- Manuals
- Configurations
- Refurb Cycle
- Metadata

RDB Notional Structure



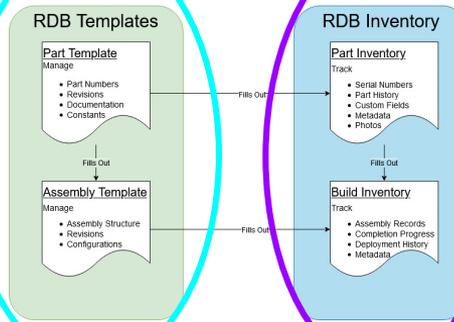
Demo



Assemblies

- 🔧 AUVs
- 🔧 Cruise Kits
- 🔧 Gliders
- 🔧 HOVs
- 🔧 Moorings
- 🔧 ROVs
- 🔧 Ships
- 🔧 RV
 - 🔍 Revision A
 - 🔧 Bridge
 - 🔧 Navigation System
 - 🔧 Hull
 - 🔧 Engine
 - 🔧 Van
 - 🔧 CTD
 - 🔧 Instrument Rosette
- 🔧 Towed Vehicles

RDB Notional Structure



Inventory

- 📍 Land
 - 📍 Dock
 - 📍 NO CORONA - RV
 - 📍 Bridge - Bridge01
 - 📍 Navigation System - Nav01
 - 📍 Hull - Hull01
 - 📍 Engine - Engine01
 - 📍 Engine - Engine01
 - 📍 Van - Van01
 - 📍 ADCP - ADCP01
 - 📍 Instrument Rosette - Rosette01
 - 📍 CTD - CTD01
 - 📍 CTD - CTD01
 - 📍 CTD - CTD01
- 📍 RVTEC Conf
 - 📍 CTD - 005
 - 📍 CTD - 201
 - 📍 CTD - 428
 - 📍 Hull - A11-2012
 - 📍 ADCP - ADCP-001
 - 📍 Bridge - B004
 - 📍 Engine - Diesel-06
 - 📍 Engine - Diesel-14
 - 📍 Van - ENG-621
 - 📍 Navigation System - NAV9G-522
 - 📍 Instrument Rosette - R45-276
 - 📍 Instrument Rosette - R45-318
- 📍 UW
- 📍 Vendors
- 📍 OSU
- 📍 MURI

Filter by Part Type ▾

Add Inventory

ADCP

Serial Number: ADCP-001

[Print Barcode](#)

Choose Action

Part Number: ADCP01

Revision: A

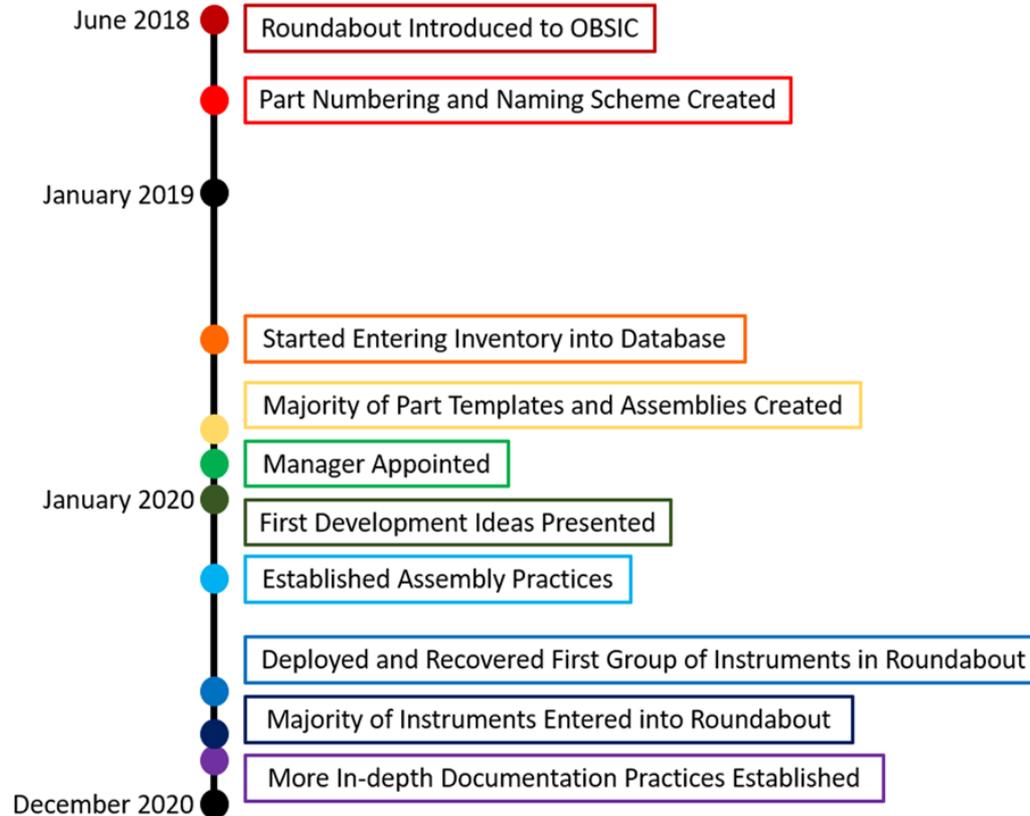
Current Location: RVTEC Conf

Total Time in Field: 0 days 0 hours 0 min

History [Part Specs](#)

Date	Action	Details	Person	Location
10/29/20	Note		cahearn	RVTEC Conf

OBSIC Timeline



Transition from Excel Spreadsheets to Roundabout Database

The screenshot displays the Roundabout Database interface. On the left, a BOM tree is shown under the assembly 'T101 - Boettcher Leg 1 ARRA System Rev 1'. The tree lists various components, with 'Q330 - 200001-010A-20014' highlighted in blue. On the right, the detailed view for part 'Q330' is shown. This view includes fields for 'Serial Number: 200001-010A-20014', 'Old Serial Number: 0100001418DC0559', 'Part Number: 200001-010A', and 'Revision: A'. It also shows 'Current Location: Boettcher_GOFAR_Leg1', 'Current Build: T101 - Boettcher Leg 1 ARRA System Rev 1', and 'Total Time in Field: 0 days 0 hours 0 min'. The 'Parent Assembly' is identified as 'Assembly, ARRA Battery Tube - 150001-010A-20001'. Below these fields are three tabs: 'History', 'Assigned Destination', and 'Part Specs'. The 'Part Specs' tab is active, showing 'Part Type: COTS, Acquisition', 'Unit Cost: \$0.00', 'Refurbishment Cost: \$0.00', and 'Current Inventory: 99'. Further down, it lists 'Baler IP: 204.101', 'Firmware Version: 1.146', and 'MAC: F2:3F:14:18:DC:05'. A vertical table of contents on the far right lists page numbers from 44 to 11.

T101 - Boettcher Leg 1 ARRA System Rev 1

- Assembly, ARRA Battery Tube - 150001-010A-20001
 - ARRA Frame - 320003-010A-20001
 - Assembly, ARRA Acquisition Tube - 150002-010A-20001
 - ARRA Acquisition Tube - 300004-010A-20003
 - ARRA Acquisition Tube Blank End Cap - 300005-010A-20003
 - ARRA Acquisition Tube Connector End Cap - 300006-010A-20003
 - Baler 44 - 200002-010A-20001
 - Battery, ARRA, Keep Alive - 180001-010A-20001
 - Cable, Q330, Auxiliary - 021008-010A-20001
 - Cable, Q330, External GPS - 021006-010A-20001
 - Cable, Q330, Power - 021015-010A-20014
 - Cable, Q330, Q-Net - 021011-010A-20001
 - Cable, Q330, Serial - 021007-010A-20001
 - Ethernet Switch - 230002-010A-20001
 - PCB, Acoustic Release - 120019-010A-20001
 - PCB, ARRA, Auxiliary Control Board - 120003-010A-20001
 - PCB, ARRA, Lander Board - 120005-010A-20001
 - PCB, Chip Scale Atomic Clock Interface Board - 120004-010A-20001
 - Q330 - 200001-010A-20014**
 - Serial to Ethernet Converter - 230001-010A-20001

Roundabout Flexibility

Builds

- Land
 - Assemble Here
 - Boettcher_Leg1_DeMob
 - Boettcher_Leg2_Prep
 - Lizarralde_Leg1_Prep
 - RoundAbout Testing
 - 20001 - Test Part Number
 - Test 3 - Test System with Unknown Guralp Type
 - Test 2 - Test System with Guralp **Deployed - Test**
 - Test 1 - Guralp Passive Leveling System **Recovered - Test**
 - Storage Containers
 - Unallocated
 - Worthington_Leg1
 - Worthington_Leg1_Prep
- Out for Repair
- Sea
- Retired

Cable, ARRA, Q330, Power

Serial Number: 0210013-010A-20001

[Print Barcode](#)

Part Number: 021015-010A

Revision: A

Current Location: Land

Total Time in Field: 0 days 0 hours 0 min

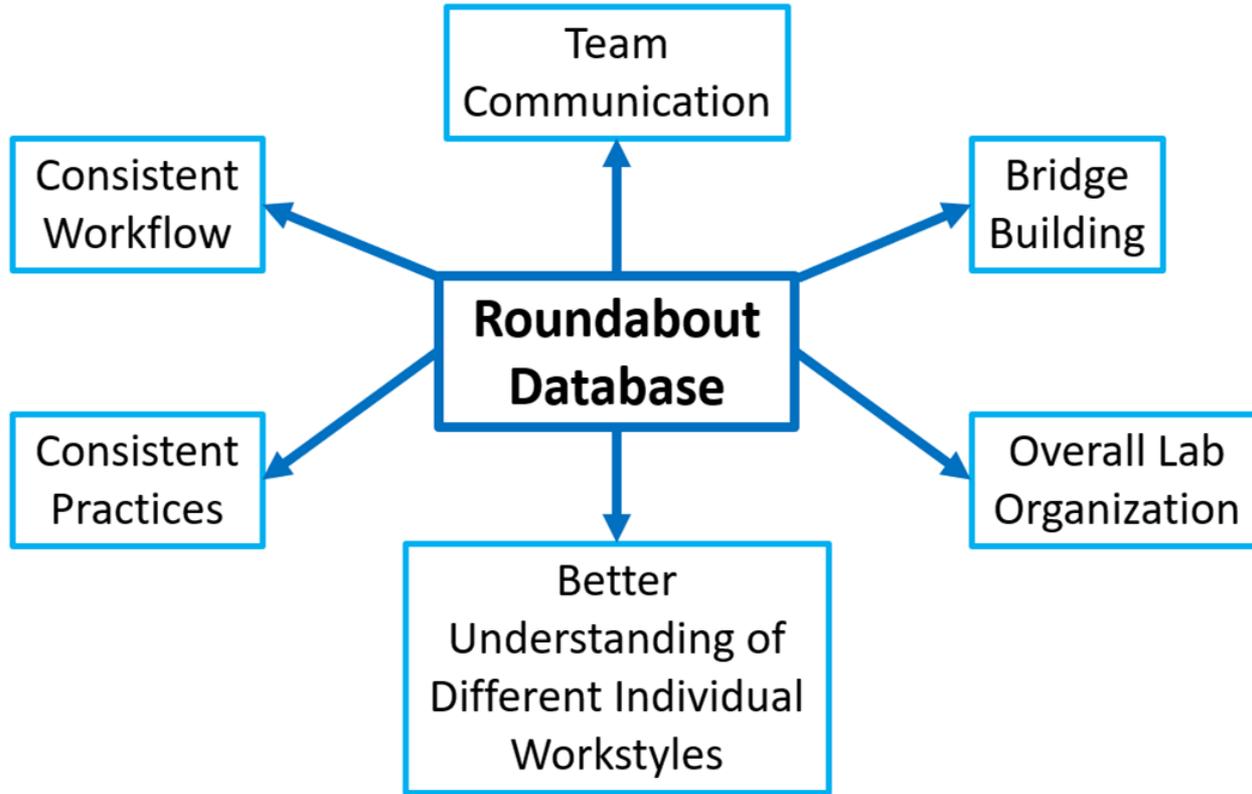
Current Test Status: **CableEye Test: Pass** **Pressure Test: Pass**

[History](#)

[Part Specs](#)

Date	Action	Details
10/28/20 03:01	Test	Incoming Test: Pass.

Broader Impacts



Meeting the Challenges of Integration

How do I RDB?

- Identify Coordinator / Configuration Manager / Point-Person
- Organizational Effort
 - Part numbering / Serialization
 - Locations
 - Clarifying Vocabulary
 - Metadata Requirements
 - Use in Field
- Staged Implementation
- Set Proper Expectations
- This is not a cure all, RDB only solves some of your problems.

Technical Considerations

Required Elements:

- Linux-based VM with Docker and Git
- 1 core, 8GB RAM, user-dependent storage reqs
- <https://github.com/WHOIGit/ooicgsn-roundabout>
- Get in touch - rdb@whoi.edu
 - Connor Ahearn - cahearn@whoi.edu
 - Hannah Brewer - hbrewer@whoi.edu

Where Do We Go From Here?

Development - Next Steps

- Expanding CSV Input/Output & API functions to provide Metadata for CI
- Field Testing “At-Sea” portability Feature
- Improving UI - Mobile version

Community Considerations

- CI Improvements
- Ship-to-Shore Data could be available
 - Must improve Internet Reliability

Acknowledgements

Thanks to the following WHOI team members for their dedication and support in advancing the Roundabout Project:

Masako Tominaga, Stephanie Petillo, Ethan Andrews, John Reine, Nick Symmonds, Mario Carloni, Sidney Batchelder, Joanne Koch, Rob Munier, Brian Kelly

Additionally, thank you to both the OOI and OBSIC team leaderships



WOODS HOLE
OCEANOGRAPHIC
INSTITUTION

