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!
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
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
OBSIC Timeline

- June 2018: Roundabout Introduced to OBSIC
- Part Numbering and Naming Scheme Created

- January 2019: Started Entering Inventory into Database
- Majority of Part Templates and Assemblies Created

- January 2020: Manager Appointed
- First Development Ideas Presented
- Established Assembly Practices

- December 2020: Deployed and Recovered First Group of Instruments in Roundabout
- Majority of Instruments Entered into Roundabout
- More In-depth Documentation Practices Established
Transition from Excel Spreadsheets to Roundabout Database

<table>
<thead>
<tr>
<th>Serial to Ethernet Converter - 230001-010A-20001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q330 - 200001-010A-20014</td>
</tr>
<tr>
<td>Q330, Auxiliary - 021008-010A-20001</td>
</tr>
<tr>
<td>Q330, External GPS - 021006-010A-20001</td>
</tr>
<tr>
<td>Q330, Power - 021015-010A-20014</td>
</tr>
<tr>
<td>Q330, Q-Net - 021011-010A-20001</td>
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<tr>
<td>Q330, Serial - 021007-010A-20001</td>
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<tr>
<td>Ethernet Switch - 230002-010A-20001</td>
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<tr>
<td>PCB, Acoustic Release - 120019-010A-20001</td>
</tr>
<tr>
<td>PCB, ARRA, Auxiliary Control Board - 120003-010A-20001</td>
</tr>
<tr>
<td>PCB, ARRA, Lander Board - 120005-010A-20001</td>
</tr>
<tr>
<td>PCB, Chip Scale Atomic Clock Interface Board - 120004-010A-20001</td>
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<tr>
<td>Baler 44 - 200000-010A-20001</td>
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<tr>
<td>Battery, ARRA, Keep Alive - 180001-010A-20001</td>
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<tr>
<td>Assembly, ARRA Battery Tube - 150001-010A-20001</td>
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<tr>
<td>Assembly, ARRA Frame - 320003-010A-20001</td>
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<tr>
<td>Assembly, ARRA Acquisition Tube - 150002-010A-20001</td>
</tr>
<tr>
<td>ARRA Acquisition Tube - 300004-010A-20003</td>
</tr>
<tr>
<td>ARRA Acquisition Tube Blank End Cap - 300005-010A-20003</td>
</tr>
<tr>
<td>ARRA Acquisition Tube Connector End Cap - 300006-010A-20003</td>
</tr>
<tr>
<td>Total Time in Field: 0 days 0 hours 0 min</td>
</tr>
</tbody>
</table>

- **Serial Number**: 200001-010A-20014
- **Print Barcode**: [Image]
- **Old Serial Number**: 0100001418DC0559
- **Part Number**: 200001-010A
- **Revision**: A
- **Current Location**: Boettcher_GOFAR_Leg1
- **Current Build**: T101 - Boettcher Leg 1 ARRA System Rev 1
- **Parent Assembly**: [Image]
Roundabout Flexibility

**Builds**
- Land
  - Assemble Here
  - Boettcher_Leg1_DeMob
  - Boettcher_Leg2_Prepare
  - Lizarralde_Leg1_Prepare
  - RoundAbout Testing
    - -20001 - Test Part Number
    - Test 3 - Test System with Unknown Guralp Type
    - Test 2 - Test System with Guralp
    - Test 1 - Guralp Passive Leveling System
  - Storage Containers
  - Unallocated
    - Worthington_Leg1
    - Worthington_Leg1_Prepare
  - Out for Repair
  - Sea
  - Retired

**Cable, ARRA, Q330, Power**

Serial Number: 0210013-010A-20001

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**

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/28/20</td>
<td>Test</td>
<td>Incoming Test: Pass.</td>
</tr>
<tr>
<td>03:01</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Broader Impacts

- Team Communication
- Consistent Workflow
- Consistent Practices
- Better Understanding of Different Individual Workstyles
- Bridge Building
- Overall Lab Organization

Roundabout Database
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](https://github.com/WHOIGit/ooicgsn-roundabout)
- Get in touch - [rdb@whoi.edu](mailto:rdb@whoi.edu)
  - Connor Ahearn - [cahearn@whoi.edu](mailto:cahearn@whoi.edu)
  - Hannah Brewer - [hbrewer@whoi.edu](mailto: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

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