roundabout db
MRP
WHOI Workflow
Parts + Subassemblies
Solution
Future
Designed to track the manufacturing and shipping of lots of widgets
MRP
Manufacturing Resource Planning

Returns are an exception and are treated like a failure
MRP
Manufacturing Resource Planning

Subassemblies are not tracked
Disassembly into inventory is difficult
WHOI workflow is specialized
A buoy is **assembled, deployed** to sea by boat, sits in water and records data, **recovered** by boat, taken apart, parts are tested and **refurbished**, parts that pass are reused, parts that don’t are replaced.
At WHOI:

We have no “customers”
At WHOI:

We have no “customers”

100% of our “products” come back
At WHOI:

We have no “customers”

100% of our “products” come back

They are disassembled
At WHOI:

We have no “customers”

100% of our “products” come back

They are disassembled

Subassemblies are tested
At WHOI:

We have no “customers”

100% of our “products” come back

They are disassembled

Subassemblies are tested

Decide if each part can be deployed
We care about each part:

Location
We care about each part:

Location

Parent+children
We care about each part:

Location
Parent+children
Configuration + Calibration
We care about each part:

Location
Parent+children
Configuration + Calibration
Documentation
We care about each part:

Location
Parent+children
Configuration + Calibration
Documentation
History
We care about each part:

Location
Parent+children
Configuration + Calibration
Documentation
History
Future
roundabout db

assemble → refurbish → deploy → recover
roundabout db

parts

location
parent+children
configuration
documentation
history
future
<table>
<thead>
<tr>
<th>Part template</th>
<th>Part name</th>
<th>Part number</th>
<th>Documentation</th>
<th>Cost</th>
<th>Refurb cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**Part type:**
- Mechanical
- Electrical
- Instruments
- Telemetry
An assembly template is a series of subassemblies of part templates that define a mooring.

In the case of gliders, AUV’s, ROV’s this would be renamed.
Part Types define custom fields that can be filled out for inventory:

**Electrical:** Test procedure, Firmware, Revision

**Mechanical:** refurb cost, refurb time

**Instrument:** Calibration, Configuration, Vendor ID, Vendor Info, Property Tags, Firmware

**Telemetry:** IEMI, SSID, MAC, MSISDN, IP Address, SIM#, RSN#, GSN, Firmware
A deployment is an assembly template that goes through deployment states: assembly, burn in, delivery, deployed, recovered.
“Can this part survive another deployment?”
roundabout db

Analytics (usage, combined data)
Asset Management
Automated Test Integration
Tablet/Phone support
roundabout db

refurbish → assemble → deploy → recover
Serial Number: 3709-02001-00000-20003
Old Serial Number: 3709-00260 SN0014
Part Number: 3709-02001-00000
Revision: A
Current Location: EA Incoming
Time at Sea: 0 days 0 hours 0 min

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
<th>Details</th>
<th>Person</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/14/19</td>
<td>Note 17:05</td>
<td>Notes from Fall 2018 Deployment: CE09OSSM-00008 (PSC 0014): Firmware incorrectly set. System still disables charging sources when percent charge &gt;= 100%. Had to remotely reset it to a percent charge of 24% (2018-11-16) to spoof it into keeping the charging sources connected. Lost ability to communicate between PSC and CPM on 2018-11-02 at 21:27 UTC. After that log is full of messages to the effect of &quot;ERROR_MSG psc_send_cmd [X], but no reply from PSC&quot;. Result was command to connect/disconnect the CVT was never processed and no more MFN data was recorded.</td>
<td>kpolitano</td>
<td>EA Incoming</td>
</tr>
<tr>
<td>6/14/19</td>
<td>Location 15:09</td>
<td>Moved to EA Incoming from At WHOI for refurb. Wind Turbine controllers were tested when coming in; both controllers correctly. No errors were found.</td>
<td>LucasP</td>
<td>EA Incoming</td>
</tr>
<tr>
<td>6/3/19</td>
<td>Location 14:23</td>
<td>Moved to At WHOI for refurb from CE Inventory ready.</td>
<td>kpolitano</td>
<td>At WHOI for refurb</td>
</tr>
</tbody>
</table>
PSC 2.0

Serial Number: 3709-02001-00000-20003

Old Serial Number: 3709-00260 SN0014

Part Number: 3709-02001-00000

Revision: A

Current Location: EA Incoming

Time at Sea: 0 days 0 hours 0 min

**History**

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/14/19</td>
<td>Note</td>
<td>Notes from Fall 2018 Deployment: CE09OSSM-00008 (PSC 0014): Firmware incorrectly set. System still disables charging sources when percent charge &gt;= 100%. Had to remotely reset it to a percent charge of 24% (2018-11-16) to spoof it into keeping the charging sources connected. Lost ability to communicate between PSC and CPM on 2018-11-02 at 21:27 UTC. After that log is full of messages to the effect of &quot;ERROR_MSG psc_send_cmd [X], but no reply from PSC&quot;. Result was command to connect/disconnect the CVT was never processed and no more MFN data was recorded.</td>
</tr>
<tr>
<td>6/14/19</td>
<td>Location Change</td>
<td>Moved to EA Incoming from At WHOI for refurb. Wind Turbine controllers were tested when coming in; both controllers correctly. No errors were found.</td>
</tr>
</tbody>
</table>
ENDURANCE INSHORE SURFACE BUOY WELL END CAP ASSEMBLY

Serial Number: 3605-00018-00001-00016

Old Serial Number: 0016 (3605-20018)

Part Number: 3605-00018-00001

Revision: E

Current Location: At WHOI for refurb

Time at Sea: 0 days 0 hours 0 min

<table>
<thead>
<tr>
<th>Date</th>
<th>Action</th>
<th>Details</th>
<th>Person</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>5/30/19</td>
<td>Location</td>
<td>Moved to At WHOI for refurb from CE Inventory ready.</td>
<td>kpolitano</td>
<td>At WHOI for refurb</td>
</tr>
<tr>
<td>5/30/19</td>
<td>Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/28/19</td>
<td>Note</td>
<td>During initial power &amp; coms testing no gps data could be seen. It was</td>
<td>kpolitano</td>
<td>CE Inventory</td>
</tr>
<tr>
<td>2/28/19</td>
<td></td>
<td>found that no power is reaching the port, despite it being on. Toggling</td>
<td></td>
<td>ready</td>
</tr>
<tr>
<td></td>
<td></td>
<td>power on/off and restarting the dcl didn't help. Chased the wires and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>didn't find any loose connections. The rest of the ports on the end</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>cap test fine.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2/21/19</td>
<td>Location</td>
<td>Moved to CE Inventory ready from From WHOI. Arrived on flatbed shipment</td>
<td>kpolitano</td>
<td>CE Inventory</td>
</tr>
<tr>
<td>2/21/19</td>
<td>Change</td>
<td></td>
<td></td>
<td>ready</td>
</tr>
<tr>
<td></td>
<td></td>
<td>on 2/18/19.</td>
<td></td>
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</table>
CPM / DCL BOTTLE ASSEMBLY, NSIF

Serial Number: 3703-00274-00001-00012

Old Serial Number: 0012

Part Number: 3703-00274-00001

Revision: G

Current Location: At WHOI for refurb

Time at Sea: 0 days 0 hours 0 min

3/7/19 16:35  Note  During power/coms testing it was discovered that ethernet port JC114 was bent. This caused coms to cut in and out - if you wiggled the plug you could cause them to turn on/off depending on the direction you pushed. Bottle was overnighted back to WHOI on 3/7/19.
Serial Number: 3703-00272-00001-00035

Old Serial Number: 0035

Part Number: 3703-00272-00001

Revision: H

Current Location: CE Inventory ready

Time at Sea: 0 days 0 hours 0 min

<table>
<thead>
<tr>
<th>Document</th>
<th>Document Type</th>
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<tbody>
<tr>
<td>DCL BOTTLE ASSEMBLY, NSIF</td>
<td>Design</td>
</tr>
<tr>
<td>3407-20300</td>
<td>Incoming Inspection Checklist, 3703-00272 Bottle</td>
</tr>
<tr>
<td>3407-20320</td>
<td>Final Closing Inspection Checklist, 3703-00272 Bottle</td>
</tr>
<tr>
<td>3407-21121</td>
<td>NSIF DCL Bottle Test</td>
</tr>
<tr>
<td>3704-20310</td>
<td>Pre-Closing Quality Assurance Checklist, 3703-00272 Bottle</td>
</tr>
</tbody>
</table>