

# Engineering Weekly Report 4/1/2021 - 4/8/2021

## Executive Council Notes

- 902101 LRAUV
  - The lab is busy preparing the fleet of vehicles for upcoming deployments over the next few weeks:
    - CANON with Brizo+ESP, EcoHAB with Makai+ESP+SPR and Pontus+Biolum and Daphne, Rock's Multi-vehicle (3) position sharing with Tethys, Pontus and Brizo, Low-altitude obstacle avoidance with Pontus and Bio-acoustics testing with Triton and finally AUV docking tank tests with Tethys.
- 901911 ROVVR & 902012 Telepresence
  - Eric Martin and Ben Erwin gave presentations wednesday during a session at the annual meeting of the Scientific Ocean Vehicle alliance on Telepresence and VR Camera projects, respectively.

## Individual Activities

- Francois Cazenave
- Mark Chaffey
  - 300082 - DMO Support - Wave Glider
    - Helped Tom with port assignments and general setup and trouble shooting.
  - 902001.99 - 4K ROV Camera Development
    - Finishing final rackbox mechanical drawings.
    - Had one 3D printed part that was not robust enough - sent out for re-manufacture in CNC aluminum.
    - Test fitting chassis parts against Sony PCB's. Sent alignment cone to DSP&L for test fit.
    - Test bed for SW development built up thanks to Jose & Co.
    - Paul Roberts working on calibration fixturing.
  - Out of Office
    - Will be OoF May 1 - 22 and unavailable.
- Danelle Cline
  - Out of Office
    - March 29-April 2nd. I will be off-the-grid for a good part of this.
- Duane Edgington
  - 901603 - Video TAG: Visualizing Ocean Change
    - NOAA AIASI monthly telecon April 5. Benjamin Woodward from CVIsion gave a presentation on their system implementation for analysis of benthic video transects conducted by NOAA NMFS RV Henry B. Bigelo ("Bigelo cruise"). NOAA team evaluating Cloud Strategy (Randy Cutter and colleague Sam Woodman) presented their evaluation of GCP sandboxes.
  - 902005 - VARS Annotation Assistance
    - Continuing exploration of Cloudwatch metric streams to harvest sagemaker and S3 instance costs
    - CSUMB capstone project team meeting April 7
  - Out of Office
    - NVIDIA GTC virtual conference April 12 - 16
- Jon Erickson
  - 701145 - Penguin Hotspots
    - Modeling Paul's shield box for clearances in the pressure case.

- 902010 - Mesopelagic LRAUV
  - Changing drive train sizes driven by Mag Coupling change.
- Overhead
  - Print check for MARS MVC
- Kevin Gomes
  - 300057 - Mooring Maintenance
    - Some troubleshooting for M1
    - Updated SSDS due to Metsys replacement at M1
  - 901009 - CANON
    - Wrote script to publish WireWalker locations to the ODSS
    - Working on Geoserver and a layer for CANON experiment for WaveGlider sampling locations for John R.
    - Some LRAUV support for the CANON experiment
    - Other CANON related support
  - Overhead
    - Group meeting
    - Knowledge transfer with Rich (navproc/DM/MARS)
    - Meeting with Todd W to talk multimedia room stuff in new Bldg G.
    - Weekly meeting with Todd R
    - AWS Support
  - Out of Office
    - April 7: Out of Office
    - May 12-24: Vacation
    - June 21-25: Vacation
- Andy Hamilton
- Kent Headley
  - 600034 - Precision Control Technologies for ROVs and AUVs
    - Gathering requirements and approaches to TRN filtering in simulation
    - Discussion w. Rich, Rob and Steve re TRN filtering in simulation
    - Bug fixes to libtrnav build
    - Code review/merge for UDP multicast
  - 901803 - Carbon Wave Glider Development
    - Quarterly status meeting w/ PMEL to discuss steps forward
    - Installed firmware updates
  - Overhead
    - PE Interview: Giancarlo Troni
    - Working on engineering hiring plan section on hiring and recruitment
    - SRSC: no activity this week
    - Chiming in on OA mooring data recovery
    - (off the clock) Working w/ Paul M. on Loop and Cross software refactor concept and state machine (in progress)
  - Out of Office
    - Tue 5/25 - medical (late a. m.)
- Rich Henthorn
  - 600034 - Precision Control Technologies for ROVs and AUVs
    - Multibeam Simulation meeting
    - OA and TRN debugging
  - 800139 - EyeRIS
    - Updating ELI application
  - 901618 - Pelagic-Benthic Coupling

- Weekly meeting
  - Out of Office
    - Vacation days Mar 22 - Apr 2 (last week)
- Brett Hobson
- Scott Jensen
  - 901205 - ESP SURF Center
    - Exercising the solar power station after updates
  - 901405 - Wave-Energy Conversion for Oceanographic Applications
    - Submitted grant
  - 901805 - Coastal Biogeochemical Sensing
    - A little work on the nanopHOx bias circuit. Due to common mode ranges some of the bias point need to be adjusted
  - 902101 - LRAUV Technology Development and Fleet Operations
    - Entered schematic and prepared for board layout of next revision of thruster drive
  - Overhead
    - Supported building G programming questions
- Brent Jones
  - 901009 - CANON
    - Prepping Wire Walker mooring
    - Prepping RBR instrumentation on WW mooring
  - 901805 - Coastal Biogeochemical Sensing
    - Flying Spray 29 in support of Yui's lab
- Chad Keczy
- Brian Kieft
  - Out of Office
    - Apr 2-9 (vacation)
    - Jul 1-9 (vacation)
    - Aug 5-6 (vacation)
- Denis Klimov
  - 800139 - EyeRIS
    - Testing and qualifying LED strobes, thermal protection, and optical performance
  - 902101 - LRAUV Technology Development and Fleet Operations
    - Received magnets for LED light sources mounting, updating model, and McMaster order with parts for box modification.
- Diana LaScala-Gruenewald
  - 200103 - Core CTD Data - MDUC
    - Updated O2 flags
    - Weekly meeting
    - Review of stored procedures/functions/triggers for O2 data processing
  - 500055 - Video Annotation DM
    - Review of code from Brian
    - Code to flatten output for DSG concept distribution maps
- Eric Martin
  - 708167 - WEC Dynamics and Control
    - Trying to convert Umesh's code
  - 901101 - Seafloor Mapping
    - Sled moved to tank, testing tomorrow and next week.
    - Helping Chad with TCU issues as they arise.
  - 901206 - Coastal Profiling Float
    - Successful offshore test last friday with CPF003.

- Squashing minor bugs in mission.
- 901911 - ROVVR
  - SCOPE Team LCM testing support.
- 902100 - Telepresence on MBARI Research Vessels
  - Presentation at SOVA
  - Sat in for initial meeting with production company for June live event.
- 368000 - DMO AUV
  - Offshore Monday/Friday with Mapping AUVs
- Overhead
  - DMO AUV hiring committee
  - PE second round interviews
- Out of Office
  - Tuesdays until school is back in session.
- Thom Maughan
  - 901805 - Coastal Biogeochemical Sensing
    - Primary effort this week is on completing enhancement list for MpHOx/MFET, finding and fixing a few bugs by inspection, refactoring, testing, testing.
    - Found an issue with counter electrode current scaling - slack discussions with Yui and Scott
    - Setting up DAq board with BME280 and FRAM/Flash as nanoFET proxy
  - 902000 - Multi-Spectral StealthCam
    - Handed the Atmel ICE to tagConnect to PWM board cable assignment to James McClure.
  - 901713 - Nearshore FOCE
    - Supporting nsFOCE team, prep for durafet pressure test
    - MpHOx firmware release is needed by June
  - 902004 - Planktivore
    - Project prep to begin work after commits on other projects, discussions with Henry, Paul
    - Requested extension
  - Out of Office
    - Vacation 9 Mar 2021 (1 day)
    - Vacation 6,7,10 Apr (3 days)
    - Vacation 31 May - 4 Jun (5 days)
    - Vacation 14-18 Jun (5 days)
- Mike McCann
  - 901009 - CANON
    - Copied production databases & loadlogs to the new kraken2.shore.mbari.org server
    - Testing function & performance of new virtualized kraken2 server – so far it looks good
    - Preparing for April 2021 campaign data
- Rob McEwen
  - 901405 - Wave-Energy Conversion for Oceanographic Applications
    - Cleaning up Matlab code in preparation for port to real-time C code.
  - 902101 - LRAUV Technology Development and Fleet Operations
    - Used pre-existing Dorado simulation results to playback through LCM and verify that the LR version of the Obstacle Avoidance (OA) algorithm behaves correctly, at least in this one instance.
    - Adding debugging output to the LR-OA.
  - Out of Office
    - Taking one day of vacation per week for the next 6 weeks or so.
- Paul McGill
- Ed Mellinger
- Tom O'Reilly

- 300082 - DMO Support - Wave Glider
  - Preparing 'Hotspot 3' payload for deployment on Wave Glider to support ECOHAB and CANON campaigns - integrated and tested new cellular modem, Benthos DAT and acoustic modem, Iridium satellite modem.
- 901513 - Targeted Sampling by AUVs
  - Developing and testing automatic acoustic relay function on Wave Glider "Hotspot 3" payload, which will automatically relay messages between LRAUVs and shore. Plan to test during CANON and ECOHAB campaigns
- Craig Okuda
  - Out of Office
    - Vacation day
- Doug Pargett
  - 881135 - 3G ESP Cartridge Redesign
    - Pressure tested the FrankenTower.
    - 1st run of new cartridge tests (on parts that we knew had manufacturing problems) showed check valve leaks.
  - 901205 - ESP SURF Center
    - Building up new bulkhead valve assembly with 3d printed frame. Several mods and new parts needed.
    - Reviewing G3 pump pulsing conditions.
- Ben Raanan
- Mike Risi
  - 200105 - Core Nav - MDUC
    - Cut over navproc on Rachel Carson to new code, hopefully for good
    - Updated corenav-rc-2 with latest OS, drivers and software and put it on the shore side simulator
    - Working on bringing corenav-sim up to date
  - 600034 - Precision Control Technologies for ROVs and AUVs
    - Working on rovs-control pilot interface
    - Implemented rate-limiting filters for the MiniROV mid-water code to avoid overworking the thrusters
    - Tested rate-limiting filter in test tank with mid-water tracking software
  - Out of Office
    - April 26-30: Ocean Imaging Cruise
    - May 3-7: Vacation
    - September 3-14: Ocean Imaging Cruise
    - Vacation on alternate Fridays
- Brent Roman
  - 901205 - ESP SURF Center
    - Last-minute, inadequate testing before ECOHAB
    - Finally bringing up replacement for 13 yr old ESPshore server.
  - 901913 - Demonstrating high-speed communication with a submerged AUV
    - Working with MBARI legal and OceanComm on loan of, possibly ITAR restricted, modems
- Carlos Rueda
  - 902005 - VARS Annotation Assistance
    - Completed the box resizing feature in Cthulhu; also added box repositioning/removal, and immediate editing mode upon annotation selection.
  - 902009 - AUV UI
    - Watched presentation/discussion about battery state/projection and vertical vehicle profile by Ben and Andy (UCSC). Good progress.
  - 902101 - LRAUV Technology Development and Fleet Operations

- *NOTE: past week, I mistakenly entered bullets for this project under “902102 - Multi-LRAUV Simulation Environment”*
  - Dash UI: Doing pending adjustments related with the recent “current position point cloud” feature; adjusting filter in TrackDB selection to find assets also by its abbreviation (one example, Wire walker, whose abbreviation is “WrWlkr” (and name, “WW\_205881”).
  - Adjustments in notification of LRAUV builds and XML validations.
  - TethysL: adjustments, fixes and refactoring in the language engine related to the command-line interface (CLI). Also adding some “syntax” spec files for various editors (vim, sublime, emacs) for purposes of syntax highlighting (see README in repo [mbari/tethysl-syntaxes](#)). This “syntax-CLI” combination is mainly intended as an initial general support for users while the more complete strategy based on the language server protocol ([LSP](#)) is put in place.
- Overhead
  - IE meeting. Discussion about “Software Engineering” position description.
  - Got my new laptop, with just basic standard software as intended; so I’ll be going through a lot of settings (env vars, aliases, etc.), many installs, and the setup of multiple bitbucket and github repository clones, how fun!
- Karen Salamy
  - 901101 - Seafloor Mapping
    - Will begin work on this project once Mike M. sets a work list for me.
  - Overhead
    - Continuing Onboarding of Oasis operations with Rich and Danelle. We diagnosed an M1 download issue this morning and M1 data is downloading again.
    - I built and configured the 202106 deployment setting for both M1 and M1-slave1 and am awaiting information from Jarod on the final instrument data list, etc for the upcoming June 14h deployment.
    - Still trying to diagnose the issue with the SVN client not being able to connect to the SVN repo on atlas via the kahuna server. All indications point to a permissions issue possibly between the client and possibly atlas. Hope to figure this out soon.
- Brian Schlining
  - 500055 - Video Annotation DM
    - Continuing to build components for the [new Deep-sea Guide](#). Example views:
      - <http://m3.shore.mbari.org/deepseaguide/#/dsg/concept/Grimptoteuthis>
      - <http://m3.shore.mbari.org/deepseaguide/#/dsg/imagetree/Grimptoteuthis>
      - <http://m3.shore.mbari.org/deepseaguide/#/dsg/annotations/Cydippida%20sp.%20A> (This view defaults to showing images tagged as being “good” or “select. Select the “all” filter to see all annotated images.
      - <http://m3.shore.mbari.org/deepseaguide/#/query> (Enter a search term to show results on the map)
  - 901618 - Pelagic-Benthic Coupling
    - Helped Crissy Huffard sort out Java path issues so she could get VARS running again
  - 901809 - Deep Sea Bioinspiration
    - Tested and reviewed stereo camera videos to ensure that their metadata was correct before registration with VARS. (And a note that individual projects can request to use VARS for their video data management)
  - 902002 - Fathomnet Detect and Classify
    - Tested [gridview](#) against the VARS databases/services. Created [documentation](#) for gridview users.
    - Working through embargo and image watermark discussions with our team, management, and the video lab.

- Working with Kakani on ways to [best visualize the VARS Knowledgebase](#) for a paper.
  - Fixed an issue with the [FathomNet](#) CSV parser.
- 902005 - VARS Annotation Assistance
  - Reviewed and tested Carlos' PRs for [Cthulhu](#)
  - Modified [vcr4j](#) libraries to work with latest Java versions.
- Overhead
  - Brian published the latest [polynote](#), an interactive Scala notebook created by Netflix, as a docker container.
  - Brian is involved with interviews for the Principal Engineer position.
  - [Continue to work](#) with CSUMB capstone students.
- Rich Schramm
  - Out of Office
    - 5/12 thru 5/14
- Alana Sherman
  - 901618 - Pelagic-Benthic Coupling
    - Weekly meeting
  - 901809 - Deep Sea Bioinspiration
    - Weekly meeting
  - 901904 - Deep-Sea Coral-Sponge Community Observatory
    - Pulling the pieces together for the macro camera, hope to start testing the wired chassis this week.
  - Overhead
    - Proposal reviews for DOE
    - Seminar for WHOI AOP&E department on Weds am
    - Seafloor processes PI hire interview