

Engineering Weekly Report 8/6/2020 - 8/13/2020

Executive Council Notes

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Individual Activities

- Francois Cazenave
- Mark Chaffey
 - 902001.99 - 4K ROV Camera Development
 - Working toward a comprehensive design review in collaboration with DeepSea.
 - Optical adapter design is now truly complete with new glass specifications (previous glass was not available) and the glass lenses have been quoted.
 - Optical adapter cell detailed mechanical design is complete with all spacers, etc. and out for fabrication quote from specialty optical assembler.
 - Chassis design is complete and I have conducted extensive thermal modeling using SolidWorks flow simulation to make sure that the camera system will meet requirements of surface operation in GOC waters. SolidWorks Flow is a powerful tool but as always, requires very careful attention to the inputs.
 - As noted previously, 20! Domes have been received and test units have successfully passed final polishing, chemical hardening and non-reflective coating.
 - Life cycle pressure testing of a test dome is about to begin.
 - With chassis thermal modeling complete, the next major task is end-to-end telemetry verification testing prior to design review.
- Danelle Cline
 - Out of Office
 - Off Fridays for summer duration
- Duane Edgington
 - 901603 - Video TAG: Vis Ocean Chng
 - Telluride Neuromorphic Engineering Workshop. Virtual. Aug 3-7 lectures and discussions. Aug 13 - Sept 11 team implementation projects. One project team is focusing on few-shot and on-line learning.
 - 901915 - Improving MBARI Data Impa
 - Reading AWS Developer Guide on Authorization and Security
 - 902005 - VARS Annotation Assistance
 - Tri-weekly intern meetings. Presentation Aug 12.
 - Overhead
 - Group meeting, department meeting. Intern presentations.
 - Out of Office
 - Aug 3 - 7. Telluride Neuromorphic Engineering Workshop. Virtual.
 - Aug 14. Vacation.
 - Aug 23 -28. ECCV. Virtual conference. Workshops, tutorials and presentations.
- Jon Erickson
 - 800139 - EyeRIS
 - Parts and more parts.
 - 901217 - Chemical Sensor Program

- Working on a tube design with Amalga Composites for ISUS-APEX.
 - 901800 - LRAUV Payload & Support
 - The Airmar altimeter is going into test with Erik
 - 901809 - Deep Sea Bioinspiration
 - Mounting parts for version 4. Waiting on the remote head parts in the shop[for version 8.
- Kevin Gomes
 - 300057 - Mooring Maint
 - Starting to prep the SSDS side of things for the upcoming mooring turn
 - 901009 - CANON
 - Some cleanup support and restart work on data catalog
 - Improving the tracking database to TimeZero data flow on the Rachel Carson
 - 901205 - ESP SURF Center
 - More migration from services to esp-portal in an effort to migrate off CentOS 6
 - 901915 - Improving MBARI Data Impa
 - Working on data catalog portion to test how well it will hold up to support image data management for UAV project.
 - Overhead
 - Had an unauthorized access (and use by bitcoin miners) of our AWS infrastructure. Working with AWS to clean up and implement policies and procedures to lessen the chance of it happening again.
 - More work on weekly reports setting up list server to use to distribute reports.
 - Some overhead both in AWS and Slack for closing up items for interns
 - Working to move an effort along to finally choose an authentication provider
 - Reviewing IEEE paper: "Decomposition of Monolithic Applications into Context-Aware Systems: A Systematic Mapping Study"
 - A little more proposal related overhead (hours scenarios)
 - Out of Office
 - Aug 3-5: Vacation
- Andy Hamilton
- Kent Headley
 - 901101 - Ocean Imaging
 - Tested release of a Terrain Relative Nav (TRN) client component that we hope to integrate onto Sentry for the upcoming Axial volcano mapping expedition. The TRN client enables the Sentry control system to receive real-time updates from MB-System with an embedded MBARI/Stanford TRN engine instance. MB-System provides filtered multibeam bathymetry and navigation. The TRN engine uses the filtered data to locate the vehicle on map. An estimate of location in the form of an offset is provided that may be used by a control system to direct the vehicle.
 - WHOI is working to integrate the TRN client with their control system using ROS. It's not 100% certain it'll happen on this cruise, but the plan is to run with a mission with TRN enabled, which may optionally be used to close the control system navigation loop.
 - The scientific context is that MBARI and WHOI are performing annual surveys of the Axial volcano to make high resolution maps of changes to this (large) geologically active region. TRN and MB-System enable the surveys to be conducted without installing navigation infrastructure. Recent TRN research by Steve Rock's PhD students is focused on algorithms for dealing with terrain that has changed since the map was made.
 - 901803 - Carbon Wave Glider Development
 - Bringing up a DIC controller board to share with PMEL
 - Shared firmware repo with PMEL collaborators
 - Overhead

- Proposals
 - Misc admin
- Rich Henthorn
 - 901618 - Pelagic-Benthic Coupling
 - SES MARS configuration setup and test on the MARS Wet-node simulator
 - Benthic Larvae In-situ Sampler (BLISS) setup and test
 - Meeting
 - 901800 - LRAUV Payload & Support
 - Obstacle Avoidance DeltaT data logger
 - 901904.99 - Coral Camera System
 - Meeting
 - Overhead
 - Phase 1 resource balancing
 - Meeting
 - Out of Office
 - Aug 18 and 19: Carson cruise to MARS to deploy SES and BLISS
 - Oct 27 to Nov 5: WF cruise to Sta. M
- Brett Hobson
- Scott Jensen
 - 901205 - ESP SURF Center
 - Put together test of power supply to be used on the SailDrone deployment
 - Created drawings of the bulkhead connector pinouts that will be used with the Flower Pot instrument housing that will be deployed on SailDrone.
 - 901405 - PowerBuoy Development
 - New set of power electronics are in and have been calibrated and tested.
 - Working on the first revision of the Load Dump Switch that will deal with the inductance in the power delivery.
 - 901805 - Coastal Biogeochemical Sensing
 - npHOx is slowly taking shape with a first layout going into review.
 - Overhead
 - Used training from earlier this year to layout a PCB using PCB editor. Our resident expert says a few more boards and I might be proficient:)
 - Out of Office
 - Current schedule is Sunday-Tuesday
- Brent Jones
 - 901112 - Change in MB & CA Current
 - Hotwash of CPF performance during CANON. Locating bugs, assessing performance, processing data, etc
 - 901800 - LRAUV Payload & Support
 - Initial bench test of payload power and comms to LRAUV. SUCCESS FIRST TIME!!!
 - 901805 - Coastal Biogeochemical Sensing
 - Continuing to pilot 2 pH Spray gliders
 - Overhead
 - Mentoring intern
 - meetings
 - Out of Office
 - Took friday 8/7 off to go backpacking
- Chad Kecy
- Brian Kieft
 - 300082 - DMO Support - Wave Glider

- Assisted with geolocation of Rover
 - Hacked up a temporary script to get around a CCU issue preventing backseat control
- 600034 - Control Tech - Rock
 - Preparing for next run at Portuguese ledge which will involve relative positions between two vehicles
- 708158 - DHS Y6
 - Assisted Noa with some WHOI micromodem questions and configuration issues
- 901009 - CANON
 - Assisted with deployment of REACT PCO2 vehicles. Will check status on them again today.
- 901800 - LRAUV Payload & Support
 - Working on current estimator derived from DVL measurements while underway
- 902009 - AUV UI
 - Met with team to incorporate our corporate partner Sliced Bread and continue on with the next phase of testing
- Denis Klimov
 - 901800 - LRAUV Payload & Support
 - PAR sensor boards: 3 boards tested, and 2 boards need IC replacement due to too high voltage offset.
 - 901809 - Deep Sea Bioinspiration
 - Helping with interns (Brooke Pauken and Jill Alexander) presentations dry-run
 - Overhead
 - Tested BEDS Bridge Board using Nucleo development board; it provided a response so the board is back to Elecia White for code debugging.
- Eric Martin
 - Out of Office
 - I am at MBARI Mon, Tues, and Friday
 - Vacation days on thursday when available.
- Thom Maughan
 - 901009 - CANON
 - Working with intern Raksha, mostly review of slides. Nate Truelove did a fantastic job with Raksha while I was on vacation.
 - 901805 - Coastal Biogeochemical Sensing
 - Checkout and failure diag of MFET/MCAP
 - MpHOx board test procedure / testing of 38 boards. Will try to offload some of this testing to Joseph. Boards are testing well so far.
 - Meetings with Joseph and Yui. Yui outlined project needs for 2H2020
 - 902000 - Multi-Spectral StealthCam
 - LED Driver board bringup. Step 1: JTAG interface cable to burn bootloader - regretting not pushing to use a connector that is compatible with Atmel-ICE.
 - 902004 - Planktivore
 - Looking into carrier boards and camera interface options for Xavier NX, if we can get two USB 3 connections that would be ideal. Contacting ConnectTech to see what it would take to modify one of their carriers. Also researching global shutter machine vision cameras for other interface options.
 - Installed Solidworks free viewer.
 - Hunting for contractor options for housing.
 - 901713 - Nearshore FOCE
 - Cable for Aanderaa conductivity sensor to PC for config of sensor is ready except for DB9.
 - Overhead

- Intern Techfest / Intern. Attending Intern symposium. Lessons learned with Gabe on remote techfest.
 - Discussions with management over the Bunkhouse rental, etc.
- Out of Office
 - Working remote. Travel quarantine ended 7 Aug 2020.
 - Trying to figure out a schedule for regular access to MBARI and to figure out lab space for Planktivore and Fluum testing.
- Mike McCann
 - 500055 - Video Annotation DM
 - Moving the vfcbydive code from seaspray to expanse – getting help from Pat on installing the required Perl modules
 - 901009 - CANON
 - Fixed fragment shader to more accurately represent color for the point visualization in the Spatial 3D view – still need to figure out the vertex shader to provide better depth perception
 - 901111 - AUV Infrastructure Supprt
 - Processed Dorado mission 220.218.03
 - 901800 - LRAUV Payload & Support
 - Reloaded the monthly databases between 2012 & 2019 to pick up more data following some upstream data processing code improvements
 - Pat added 200 GB to the postgresql data partition on <http://tethysviz.shore.mbari.org>
 - 901910 - Plankton Taxonomic GrpAUV
 - Loaded Monique's proxy data to the last diamond survey in stoqs_all_dorado
 - Planning with Monique and ops how to get config info to deal with sensor offsets and lag
 - 901221 - Midwater Time Series
 - Working on auv-python, which intersects with Plankton Proxy work
 - Overhead
 - Requested a Windows VM (strawbexpd) to test the Expd web app with Strawberry Perl
 - Attended via Zoom the SIGGRAPH Pioneers reception talk by Douglas Trumbull
 - Out of Office
 - Vacation days Monday & Tuesday 17-18 August 2020
- Rob McEwen
- Paul McGill
 - 901618 - Pelagic-Benthic Coupling
 - Finished modification and reassembly of larval sampling pump. Did bench testing and addressed a few problems. Set up flow rate recording system and ran system in Test Tank to identify optimal pumping rates.
 - 901803 - Carbon Wave Glider Development
 - Reviewed design documents to be shared with NOAA PMEL as part of our CRADA.
 - Out of Office
 - On vacation last Thu and Fri
- Ed Mellinger
- Tom O'Reilly
 - 901101 - Ocean Imaging
 - Released latest bathymetry grid viewer prototype to MB-System team for their feedback. We've been evaluating several software approaches to interactive viewing and editing of 3D bathymetry data, with criteria including flexible visualization, efficiency, programming effort required, maintainability and portability to different OS's. This latest C++ prototype utilizes 'Qt' and 'Visualization Toolkit' libraries - both built on OpenGL - and in my opinion best meets our criteria.
 - 901618 - Pelagic-Benthic Coupling

- Working with Paul McGill to implement the “loop-and-cross” acoustic geolocation method on the Wave Glider Hotspot. We believe this algorithm will be most efficient when we have a reasonable “fuzzy” initial guess of target location, to within a few hundred meters (e.g. for Benthic Rover at Station M). While implementing loop-and-cross I’ve modified and streamlined our existing Hotspot code, making it more extensible to future applications.
 - 901902 - Aerial Drones for Sci&MO
 - Preparing for software PDR on Thursday August 20, including conversations with Kudela lab and CENCOOS to coordinate data distribution and sharing between organizations. Refining data product generation software, from “raw” camera images to geolocated reprojected ‘geotiffs’ more suitable for quantitative analysis and distribution.
- Craig Okuda
 - 901007 - Benthic Biology & Ecology
 - Begin test assy of chamber flush valve actuator
 - 901803 - Carbon Wave Glider Development
 - System documentation
 - Refurbishing test system
 - Overhead
 - Test LRAUV antennas
 - Out of Office
 - Vacation day
- Doug Pargett
 - 901205 - ESP SURF Center
 - Replaced 3 toroid valves in the Honu instrument.
 - Found a major issue with the new pressure sensors that is due to a manufacturing change. Working on a fix, but trying to get mfg’s to talk to us about the options.
 - Requested parts from the machine shop.
 - Zoom Meetings
 - DQ1904 - NOPP Saildrone
 - Prepared the 3d printed FlowerPot housing for assembly.
 - Rebuilt a G3 pump for FlowerPot housing
 - Zoom Meeting
 - Overhead
 - Zoom Meeting
- Ben Raanan
- Mike Risi
 - 200105 - Core Nav - MDUC
 - Continuing work on pan and tilts for Doc Ricketts.
 - Looking into ZMQ interface to facilitate accessing data during cruises.
 - 600034 - Control Tech - Rock
 - Updated opencv to version 4 on home development machine. Updating code to work with new version.
 - 901809 - Deep Sea Bioinspiration
 - Helped MOB MiniROV for ML-Tracking tests on 8/10/2020 cruise. The cruise was canceled but I’m planning on doing some software testing in the test tank with Paul Roberts since MiniROV is currently configured for this work.
 - Out of Office
 - February 19-22: Ocean Imaging Cruise
 - March 9-12: Vacation
 - May 26-29: Vacation
 - June 29 - July 1: Vacation

- September 30 - October 2: Vacation
 - October 12-17: Ocean Imaging Cruise
- Brent Roman
 - 901205 - ESP SURF Center
 - Set up thermal calibration with heating stage extracted from ESPtower
 - Compared thermal calibration from that stage with ESPhonu's
 - Tested new logic to retry leak checks when very slight leaks are indicated
 - Should eliminate false leaks reported due to plastic creeping
 - Found and fixed a couple minor, but long-standing bugs causing unneeded reinitialization
 - 901913 - Wet Wifi
 - Spoke with Brett Hobson about integration into a video LRAUV payload next year
 - Scheduled call with OceanComm to discuss integration in detail
 - DQ1904 - NOPP Saildrone
 - Still waiting on their VPN tests
 - Out of Office
 - At MBARI Tuesdays after 2PM
- Carlos Rueda
 - 901502 - Passive Acoustic Sensing
 - Submitted abstract to ASA (thanks John!).
 - Putting together a technical report about the various VQ/HMM experimentation exercises.
 - 901800 - LRAUV Payload & Support
 - Re-set up test environments on tethyscode and bufflehead with LRAUV/ESP simulators while preparing for [TETHYS-612](#) (a complete fresh 2-sample ESP exercise [here](#)). Reproducing and addressing the issues. Thanks Ben and Brent for your input.
 - Regular LRAUV meetings resumed.
 - 902009 - AUV UI
 - Work session with Jasmine, mainly focused on the Dash playback feature but also with aspects related with simulator and user accounts.
 - Overhead
 - Attended a couple of the intern presentations.
 - ESIP: Discussions related to an issue to display some ontologies with the pyLODE tool (most likely not an issue in the COR repository itself).
- Karen Salamy
 - 704109 - NavDORISS
 - Received PC104 Stack from Mike P. and Jim M. Had to spend some time re-configuring cable connections once returned. Have currently built the new Target image including Holograms 4.2 for the project camera. I brought home the project laptop to do some testing at home.
 - Overhead
 - Training for Apache Superset: Registered for online class (now set for September 14-15 @ 9AM EST). Filling out survey request for noblepro training group today.
 - Added to Seafloor Mapping project working with Jenny P. and Mike M.
 - Completed a phishing test for IS....
 - Out of Office
 - Will be working on MBARI campus ONLY on Tuesdays until further notice.
- Brian Schlining
 - 500055 - Video Annotation DM
 - Getting VARS public query up and running
 - Updating public image watermarking code from VARS to newer M3/VARS system.
 - 901221 - Midwater Time Series

- Wrote some Matlab code for quicklook plots using local AUV log files. This will allow the midwater lab to troubleshoot data issues with the AUV while at sea.
- 902002 - Fathomnet Detect and Classify
 - Studying up on OAuth 2.0 and OpenID Connect (... zzzzzzzz).
 - Investigating Otk, Auth0, Firebase, and <https://www.keycloak.org/>
- Overhead
 - Watching the virtual intern talks.
- Rich Schramm
 - Out of Office
 - Aug-10 -21 Vacation
- Alana Sherman
 - 901809 - Deep Sea Bioinspiration
 - Cruise prep and some demob for cancelled Flyer cruise
 - 901904.99 - Coral Camera System
 - Determined storage capabilities for the year long deployment of a7RIII
 - Looked into compression options
 - Looking into communications options through ROV that are smaller than having an ODI connector.
 - Beginning to work on system block diagram