

Engineering Weekly Report 2/22/2024 - 2/29/2024

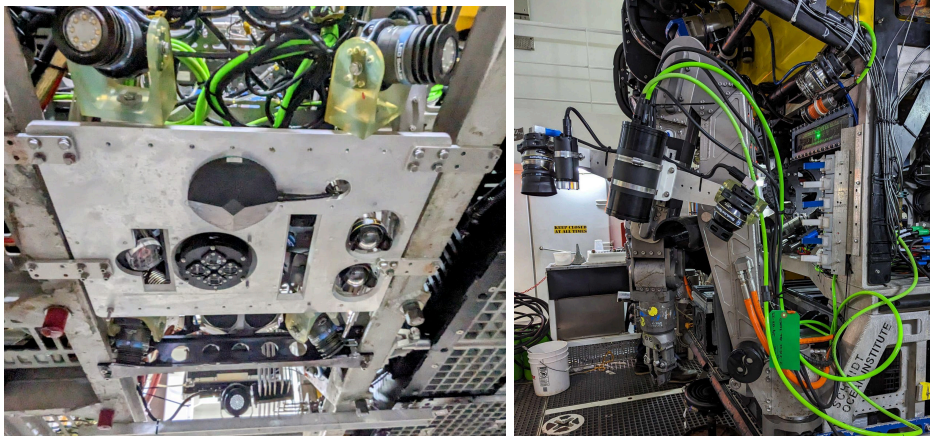
<https://docs.mbari.org/internal/projects/Engineering/Weeklies/2024/>

Executive Council Notes

- **902204 - Scalable Robotics (Troni)** The lab participated in the 2024 Ocean Sciences Meeting last week demonstrating technology developments that can be of use to the science community. Four posters and one e-lightning talk were given:
 - *“3D Open HSI AI Cam: Scalable Underwater Hyperspectral Imaging Using Open Source Hardware, Data and Software”*
 - *“Addressing the Challenges of 1-cm Resolution Seafloor Mapping: A SLAM-Based Navigation and Alignment Method”*
 - *“Sea Surface Event Detection and Localization with Ships of Opportunity Using Multimodal Perception and Navigation Sensors: Towards Tasking for Subsea Autonomous Systems”*
 - *“Scalable Low-Cost Visual-Inertial SLAM for Widespread Underwater Mapping and Navigation with Inspection-Class ROVs”*
 - *“MOLA AUV: Toward scalable ocean science with precision control and localization of agile autonomous underwater vehicles and deep learning enhanced perception”*

Presenting authors respectively include Paul Roberts, David Caress, Eric Martin, Sebastián Rodríguez & Kevin Barnard, and Giancarlo Troni. Many more authors contributed to the work from within MBARI and through collaborations at GIM Robotics.

Also, hot on the heels of OSM 2024 Giancarlo Troni and Sebastián Rodríguez have departed for a 20 day expedition aboard the R/V Falkor (too) to use the scalable mapping toolset from ROV Subastian. Below are a few pictures of the integrated equipment. Operations begin this Thursday, February 29th. The integration was featured on [X this past Wednesday](#).



Individual Activities

- Michael Anderson
- Kevin Barnard
 - 901809 - Deep Sea Bioinspiration

- Attended Ocean Sciences Meeting; presented on DeepSTARia work (DO31A-07)
- 902002 - FathomNet
 - Prioritized issues on community feedback GitHub repo
 - Fixed WoRMS API client bug in fathomnet-py
- 902204 - Scalable Robotics
 - Presented MiniROV SLAM poster in place of Sebastián
 - Wrote JPEG proxy process within lcm-websocket-server for Dial
- Out of Office
 - OSM Feb 18, 2024 – Feb 23, 2024
- Francois Cazenave
 - 901405 - Wave-Energy Conversion for Oceanographic Applications
 - Preparing for PTO test
 - Tether order
 - 902106 - Niobicon-Based AUV Docking Development
 - Designing brackets for LRAUV Pontus
 - Working on cable and hose replacement
- Danelle Cline
 - 901103 - Biodiversity and Biooptics of Zooplankton
 - Working on REDIS workflow for automated processing
 - 901502 - Passive Acoustic Sensing
 - Finished PBP audio metadata extraction. Pending review of [PR](#).
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations, and Outreach
 - OSM e-poster presentation. Minor changes to SDCAT.
 - 902204 - Scalable Robotics
 - Finished sightwire watchdog pipeline for stereo data ingest with simulated video stream using REDIS timeseries.
 - Overhead
 - Reviewed Tarun Sharma (2023 summer intern) CVPR paper.
 - Out of Office
 - Leave Feb 29, March 1/ care for son following surgery
- Duane Edgington
 - 500055 - VARS, M3/RS, DSG
 - Continued support of the new mbari401k model – running test videos for the videolab.
 - Created localization distribution plot, and plot of mAP50 per localization, to share with the team.
 - Start build of ECS stack today with new mbari401k model
 - Overhead
 - Final review of Tarun Sharma paper, for submission to CVPR workshop by March 1.
 - Out of Office
 - Feb 27 - 28. Sick
 - Feb 29, 2024. Personal
 - March 28 - April 12, 2024. Vacation UTC+3
 - April 12 - 21, 2024. EGU UTC+2
 - June 10 - 21, 2024. Vacation UTC-8
 - Oct 21 - Nov 8, 2024. Vacation UTC+1
- Jon Erickson
- Kevin Gomes
 - Overhead
 - Working on web application for MiniROV DiveLog entry
 - Board meeting activities

- Out of Office
 - March 12-21: Vacation
 - March 25-29: Data Council Conference: Austin, TX
- Andy Hamilton
- Kent Headley
 - 902204 - Scalable Robotics
 - Integrating M3 UDP support into MB-System (though priority is lower as it may not be supported on Falkor due to network topology)
 - Overhead
 - Attend dorado MVC meeting
 - Helping DJ with programming valve controller boards
 - Consult w/ Enoch re MRS/BRS, locate relevant doc
 - Help w/ Irauv docking debug
 - Out of Office
 - 2/28 after 14:30
 - 3/1 WFH, off line ~12:30-2:30
- Rich Henthorn
 - 300078 - DMO Support - AUV
 - Multi/Sequential mission use-cases
 - 902305 - Event Detection Using the Sedimentation Event Sensor
 - Installing serial board on new controller
 - Building and testing kernel updates for controller
 - 902401 - Geo-Sense
 - Weekly meeting
 - 902405 - Precision Control Technologies
 - TRN - CoNav integration
 - Out of Office
 - Mar 5 - Rachel Carson
 - Mar 18 - 21: Vacation and WFH
- Brett Hobson
- Irene Hu
 - 901805 - Coastal Biogeochemical Sensing Program
 - mpHox revB sent out for fab, Jose ordering parts
 - Discussions and information gathering re: MSC
 - 901904 - Deep-Sea Coral-Sponge Community Observatory
 - Finished troubleshooting pucks (half the LEDs have flipped pinout)
 - Started setting up and organizing software environment
 - Electronics design review
 - Out of Office
 - May 3-15: Taiwan
- Scott Jensen
 - Out of Office
 - April 5-9 vacation
 - June 17-21 vacation
 - July 18-23 vacation
 - July 24-29 vacation
- Brent Jones
 - 901009 - CANON
 - Pressure tested EPOS4 SIPPER controller
 - Begin PCB layout for EPOS4 controller

- 902311 - Power Generation Onboard Wire Walker
 - Continuing designing piston/cylinder
- Chad Key
 - Out of Office
 - Jan. 22- Potential Jury Duty
 - Out of office on Fridays
- Brian Kieft
 - Out of Office
 - 04/04-04/10 (CST)
 - 04/15-04/19 (GMT+8)
 - 06/03-06/18 (GMT+1)
- Denis Klimov
 - 901112 - Monterey Bay Time Series
 - The repair/ update of IFCB with the bigger needle is underway.
 - 901809 - Deep Sea Bioinspiration
 - The air-bubbling setup for the Minions project, with bubbles to be used as the imaging objects was set and run in the Test Tank, but found inferior. We have some ideas for an improved setup, using a longer tube with micro-holes, but have not had a chance of testing this idea yet.
 - 902101 - LRAUV Technology Development
 - The PAR sensor assembly procedure had been updated to include polishing of the sensor housing inside and outside, as well as rebuilding the front-end with optics base and two O-rings, since the sensors we have already have 'some miles' on them. This also required tooling for grinding and polishing. One sensor was rebuilt using the updated procedure and currently under testing.
- Eric Martin
 - 300078 - DMO Support - AUV
 - Phins INS connector plan with ASO
 - MVC discussion
 - Valvecontroller SW consult
 - 901101 - Seafloor Mapping
 - 3D at Depth Call showed first signs schedule may be slipping.
 - Starting integration work:
 - Board mfg plan
 - Cabling changes
 - Imagenex integration
 - Trade study of new OAS sonar w/ 902204
 - 901405 - Wave-Energy Conversion for Oceanographic Applications
 - Spot Tracker updates inquiry
 - 901911 - ROVVR
 - HMC meetings, looking at new rackmount options
 - 902204 - Scalable Robotics
 - Lots of work at OSM presenting last week.
 - Sprint kickoff, closing out Paragon work with GIM and setting up next efforts involving Mola
- Thom Maughan
 - Out of Office
 - Feb 15 - 16 Vacation
 - Feb 18 - 23 OSM24
 - Apr 5 - 10 Eclipse
- Mike McCann
 - Out of Office

- Feb 21-22 Vacation
- Rob McEwen
 - 902101 - LRAUV Docking
 - Upgraded simulated DAT delay code to a delay queue.
 - Simulated various delay durations.
 - Results are promising, but still not a close match to the data.
 - Will try adding navigation error next.
- Paul McGill
 - 300070 - DMO Support - Ventana
 - Helped DJ with ROV power problem
 - 701147.99 - MARS IV Node Upgrade
 - Dealing with no-cost extension for UW
 - 901902 - Unoccupied Aerial Vehicles for Science, Operations and Outreach
 - Repaired broken telemetry antenna
 - 901904 - Deep-Sea Coral-Sponge Community Observatory
 - Attended Irene's design review
 - 902304 - Piscivore Cam
 - Investigating camera recording software
 - 902401 - Geo-Sense
 - Designing Deep-Sea Connect for Geo-Sense
 - Ordering connectors
- Enoch Nicholson
 - 706008 - READI-Net
 - 2024 ARWS (new name?) design. Valve layout, skeleton design
 - 901007 - Benthic Biology & Ecology
 - Hydraulic pump testing & schematic drawing prior to leak testing chambers
 - 902306 - SINKER
 - Reassembling instrument prior to cruise
- Tom O'Reilly
- Mike Risi
 - 200105 - Core Navigation - MDUC
 - Finishing up overlay process
 - Working with Drew on trying to move some processes to UDP
 - Compiling process configuration list for Doc Ricketts integration
 - 300062 - DMO Support - Doc Ricketts
 - Misc. pan and tilt support
 - Working with Drew on navproc/Doc Ricketts setup in building D.
 - 901101 - Seafloor Mapping
 - Adding configurable IP settings to rev C. trigger board
 - Finished integration and test of BME280 for trigger board
 - 902405 - Precision Control Technologies
 - Finalizing contractors agreement
 - Out of Office
 - Offsite on Tuesday and Friday
 - January 16 - January 19, 2024
 - February 22, 2024
 - March 4 - March 8, 2024
 - May 20 - May 24, 2024
- Paul Roberts
 - 901809 - Deep Sea Bioinspiration

- EyeRIS on Scuba
 - 4-camera video output
- 901904 - Deep-Sea Coral-Sponge Community Observatory
 - Topside camera computer setup
 - Electrical design review
- 902004 - Planktivore
 - Deployment support
 - RIMS integration
- 902204 - Scalable Robotics
 - Falkor support
- 902306 - SINKER
 - Deployment support March 5 cruise
- Out of Office
 - March 30-April 7
 - April 14 April 20
- Brent Roman
 - 706008 - READI-Net
 - Provided cell service for Dock Test
 - Consulted with Scott Jensen on serial port options and Linux port naming
 - 901205 - ESP SURF Center
 - Implemented slow startup of 3G's sampling pump to avoid stalls due to stiction
 - Split config file into multiple so 3Gs don't need to read 2G config items
 - Fixed long-standing bug in 2G "long" mission skeleton
 - 901913 - Wet Wifi
 - Upgraded modems should arrive Thursday.
 - DQ2320 - McCloud River Salmon
 - Purchased Pivotal's Iridium service with free incoming calls & installed rooftop antenna, only to discover that Pivotal's service was voice only, no data (despite their claims to the contrary)
 - Ordered "open box" IP66 rated BGAN terminal – much faster than Iridium at similar cost
- Carlos Rueda
 - 901009 - CANON
 - Revisiting MXM implementation as I look into modernization efforts in other projects.
 - 901513 - Targeted Sampling by AUVs
 - Preparations and testing for a new tracking exercise (deployment postponed to next week)
 - 902101 - LRAUV Technology Development
 - More TethysL VSCode extension [improvements](#) to further facilitate conversions from xml. (Currently, the lrauv-mission repo has 152 xml scripts (and 111 tethysl ones).)
 - Merged PR by Mike Godin that incorporates `.t1` in the regression test script.
 - 902204 - Scalable Robotics
 - Dial: Setting up ingestion of image (binary) payloads per new scheme agreed with Kevin B.
 - Out of Office
 -
- Karen Salamy
 - 200103 - Core CTD Data - MDUC
 - Awaiting updates from Ed P.
 - 300057 - Mooring Maintenance
 - Weekly maintenance and performance checks.
 - 902101 - LRAUV Technology Development
 - Made some edits to the Measurement app for Dash5.
 - Overhead

- Updated VARS Database (M3_Annotations) to point to the new venus server.
 - Continuing with online React 18+ course work. Will continue this while on vacation as well.
- Out of Office
 - **Feb. 29 - Mar 10** - Trip to east coast for personal family reasons
 - On-campus 3 days/week (**T, W, TH**).
- Brian Schlining
 - 500055 - VARS, M3/RS, DSG
 - The renovation and update of the database and microservices introduced several network bottlenecks and database replication issues. These are being addressed before next week's Rachel Carson cruise. The release train is rolling with 4 releases of [annosaurus](#), 2 of [vampire-squid](#), 2 of [raziel](#), 1 of the [deep-sea guide prototype](#), 1 of [m3-merge](#), and 3 of [vars-annotation](#) in the last week.
 - Working through updating services and other applications that use VARS.
 - 901221 - Midwater Time Series
 - Investigated and resolved some issues with i2MAP 20170117 deployment's ancillary data.
 - 902002 - FathomNet
 - Triaging our [long list of community issues](#)
 - Deployed [v1.3.5](#) of <https://fathomnet.org/>
 - 902403 - Expedition DB Modern
 - A few weeks ago we met with MAAS Engineering about their [Marine Facilities Planning software](#). Brian is collecting questions and feedback for a follow up with MAAS.
 - 902404 - 5th Marine Imaging Workshop
 - Updates to <https://miw2024.org/>.
 - Overhead
 - Discussion with DARC about a [Heisenbug](#) in their annotation system.
- Alana Sherman
 - 902208 - Mini ROV Operations
 - Helping as needed with questions for the 20 ft van
 - Trying to get ship days lined up on Fulmar
 -
 - 902401 - Geo-Sense
 - Spent time getting the mutual NDA form written and signed
 - Trying to get Birns quote for cable and connector
 -
 - Overhead
 - Post doc selection committee prep
 - Design review for multi-spectral camera
 - Out of Office
 - Was in New Orleans at OSM 24 last week, presented poster on camera tripods
- George Stern
 - 902306 - SINKER
 - Completed schematic capture of battery module boards and began hand off for layout
 - Started review package for battery safety committee
 - Started battery module harnessing design
- Johann Voigtlander
 - 902208 - Mini ROV Operations
 - Sent out broken DSP&L for RMA
 - Completed wiring topside racks in 20' container

