

Kent Headley

Week 30

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
- Out of Office
 - Sep 21-24: Oceans conference

Week 29

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - graphics update meeting w Tom and Dave
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
 - proposal review
 - misc admin
- Out of Office
 - Sep 21-24: Oceans conference

Week 28

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - Some testing of Cerulean sonar driver, and trying to understand
- Overhead

- proposal review
- ocean soundscape demo setup w/ new computer (for Jennifer Gray visit)
- misc admin
- Out of Office
 - Sep 21-24: Oceans conference

Week 27

- 300057 - Mooring Maintenance
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- 902204 - Scalable Robotics
 - Spent Tue-Wed with Blue Boat, working out the Cerulean sonar device discovery and connection protocols, some of which is undocumented, and the folks at Cerulean wouldn't disclose. Wireshark to the rescue, and kudos to Johann for configuring the Blue Boat to accommodate testing.
- Overhead
 - Proposal reading, labor spreadsheet updates
 - misc admin
- Out of Office
 - Sep 21-24: Oceans conference

Week 26

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
 - test planning w. Knute and Bryan
 - reviewing utils related to ZMQ pub/sub and fan control, potentially useful for tank test troubleshooting.
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - Chatted w Dave re code review, TRN, Axial etc.
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - wrote util to convert svlog to LCM and generate MB1 from LCM log
 - wrote a little test code to help reverse engineer the Cerulean discovery protocol
 - made an initial grid/map of the blue boat survey (20260614) w/o extrinsics
 - generated LCM bathy data from svlog
 - merged LCM bathy with nav/attitude log
 - generated MB1 log from combined LCM log

- used MB-System to generate grid
- Still work to do to incorporate extrinsics and evaluate actual validity/quality of map
- Overhead
 - DOEST ocean soundscape demo
 - proposal review, process prep
 - Code review for libtrnav, MB-System
 - misc admin
- Out of Office
 - Sep 21-24: Oceans conference

Week 25

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - code review for MB-System PR. Interesting case where a PR was generated largely by Claude AI, which did some questionable things.
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - working on Cerulean BB data
- Overhead
 - DOEST prep
 - 2027 budget
 - misc admin
- Out of Office
 - Sep 21-24: Oceans conference

Week 24

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
- Out of Office
 - n/a

Week 23

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
 - working with Tad re Dorado acomms telemetry from LayeredControl
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
 - ran some BRS script sims
 - took a look at OASIS date issue on BRS; suspect dead coin cell (confirmation pending)
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - wrote cerulean sonar reader; tested with log files so far.
 - working on driver application, logging, publishing, etc.
 - Some email exchange with Cerulean tech support, but not finding the responses to be super helpful.
- Overhead
 - Soundscape demo: minor updates; have dual-screen kiosk working, but not demo ready. It's a bit sluggish on the RPi. Will use single touchscreen for DOEST. The dual screen kiosk mode renders the X11 based virtual keyboard (for debugging) unusable. figured out terminal based solution using wrldctl and ydotool to send keystrokes (i.e. for reloading pages), but a keyboard/mouse are currently needed to manage the kiosk windows - would not be suitable for a production system.
- Out of Office
 - n/a

Week 22

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
 - Chatted w/ Erik re Reson and other hyperion drivers; looking for 2026 time to begin driver work
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - Looking at Cerulean sonar protocols and logging
 - Thread re oculus sonar and network traffic
- Overhead
 - Developed dual-monitor prototype for ocean soundscape demo with new visualizer and pin-drop feature. Splits content into a touchscreen (control,input) and larger monitor (view, output). A bit sluggish on the

raspberry pi, but it proves the concept, and exposes some challenges for a turnkey system (automating two kiosk mode browser instances with IPC).

- Input for proposals
- Misc admin
- Out of Office
 - n/a

Week 21

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- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
- Out of Office
 - n/a

Week 20

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
 - Last week, Erik and Tad ran some tests at sea using the updated Dorado layered control stack: a new Box behavior and a mission using the real-time clock start/end conditions. There were a couple of minor issues (now resolved), and the missions were otherwise successful. This body of code is aimed at enabling longer multi-day I2MAP missions that require the vehicle to transit to a site, loiter, then start a mission at a specified time of day. Now that the updates have been exercised successfully in isolation, the next step is to combine them in a scaled down version of a production mission.
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - In a meeting with Tom and Dave last week, Tom presented some details of the MB-System Qt/VTK implementation
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - Reviewing
- Overhead
 - Hyperion update meeting
 - Prep for budgets, proposal review

- Ocean Soundscape demo for DOEST with John Ryan
- Out of Office
 - n/a

Week 19

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
- Out of Office
 - n/a

Week 18

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
 - prepping layered control tests for next week
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - meet w/ Tom O re MB-Systems graphics architecture
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
 - working with John Ryan on ocean sound demo
 - budget, proposal process
 - review process
 - misc admin
- Out of Office
 - n/a

Week 17

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics

- Overhead
- Out of Office
 - Apr 17 - Rachel Carson Caress/Troni LASS cruise
 - Apr 20-24 (personal travel, available by phone/online)

Week 16

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - Fixed issue resulting in incorrect beam count in published MB1 records. The issue was a bookkeeping error, in which beams were not checked for flags and incorrectly included in the output count.
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - Fixed issue in mbtrnpp that was causing anomalous behavior in mb1stream
 - Looks like the pipeline I'd intended to try out this week on the cruise won't work: it's not intended for use with the Reson sonar.
 - While testing mb1stream on linux, found potential issue in lcm 1.5.2 cmake (build breaks on find_package(lcm)); filed issue and potential fix with LCM developers.
- Overhead
 - John Ryan inquired about interactive whale sound keyboard, and mentioned that Thom Maughan may have done something like this. Will find out and maybe see what I can do.
 - Met w/ Brent Jones re cell/satellite solutions for OASIS telemetry. We're looking at a cell modem and driver that Paul Barter (Cawthron) uses with OASIS in New Zealand, along with other potential ideas.
 - Attended proposal workshop
 - Misc admin
- Out of Office
 - Apr 17 - Rachel Carson Caress/Troni LASS cruise
 - Apr 20-24 (personal travel, available by phone/online)

Week 15

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
 - UW APL is shipping the remaining MARS hardware spares, and the team has effectively moved on.
- 901007 - Benthic Biology & Ecology

- 901101 - Seafloor Mapping
 - met w/ Tom O re MB-Systems graphics port to get an overview of the architecture (Qt, VTK, C++), and reviewing the existing codebase
 - Dave C gave me some pointers on using mbeditviz, and we discussed the graphics port and related build issues.
 - Posted significant update to TRN code; primarily a refactoring of the LCM front-end for using TRN in an ROV context, along with various bug fixes and some updates to initialization in TRN Client classes.
- 901221 - Midwater Time Series
 - pending test opportunity for layered control updates
- 902204 - Scalable Robotics
 - Using MB-System to process Norbit data from the March cruise. Mostly this is an exercise to help develop a tool chain/pipeline that could be used on the Falkor, and also to become familiar with the MB-System graphical tools
- Overhead
 - Hyperion meeting
 - directors dialog
 - misc admin
- Out of Office
 - Apr 17 - Rachel Carson Caress/Troni LASS cruise
 - Apr 20-24 (personal travel, available by phone/online)

Week 14

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - submitted pull request with a refactor of an LCM front end for TRN, along with bug fixes and some cleanup of TRN client initialization.
 - Reviewing Tom O's notes on the graphical update, and learning about the new architectural components, e.g. VTK and underlying graphics standards/implementations WebGPU, Metal, Vulkan, etc.
 - trying out some of the MB-System graphical tools using MiniROV scalable robotics (SR) sonar data. This will help refine the SR processing pipeline, as well as help me understand the MB-System graphical tools better.
- 901221 - Midwater Time Series
 - pending test date for updates to layered control macro feature
- 902204 - Scalable Robotics
 - fixed a bug in the oculus simulator: message protocol version not initialized before connecting, causing failure to send messages to Oculus Viewpoint and SDK sonar viewer app.

- Ported the SDK sonar app to ubuntu 24; was thinking it might be a good base for an update, but it turns out to be somewhat buggy and lacks a lot of features that are in the Oculus Viewpoint software.
- Overhead
- Out of Office
 - Apr 20-24 (personal travel, available by phone/online)

Week 13

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
 - Tested refactoring of layered control macro code, and sent a write up and new scripts to DMO for testing at sea.
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - Learning mb-system tools (e.g. editing) to understand sonar data pipeline into mapping.
 - Profiling two implementations of an LCM log merge tool to compare memory and CPU use
- Overhead
 - Strategic planning meeting
 - Misc admin
- Out of Office

Week 12

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
 - Before doing a test of dorado layered control modifications to support macros, Erik suggested a simple test I hadn't previously done. It turned up a priority management issue that, while OK for the planned test, was critical enough to postpone testing until the code could be refactored (~3+ days focused effort, including effort to speed up the build/sim environment). A refactored version is being tested. It addresses the priority issue, simplifies the logic, and makes the use of macros more flexible.
It has some limitations (macros are currently mutually exclusive), though it may not be a limitation in practice, given current use cases.
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series

- 902204 - Scalable Robotics
 - Shore support for Giancarlo's Packard cruise to Sponge Ridge. The weather was often marginal, but they got a lot of work in at alternative sites. My role was to better understand a workflow using MB-System and tools developed by Akshay H and Mauro C to validate and process Norbit multibeam data. I converted data successfully and (less so) attempted to generate grids/maps
The objective is to help develop a complete pipeline for making maps products using data from ScalableRobotics platforms like MiniROV and BlueBoat.
- Overhead
 - Matt Schultz contacted me and Kevin G about the possibility of transitioning support of the DMO asset scheduling system to MBARI (currently maintained by a third-party)
 - Strategic Ideas meeting
 - Engr Meeting
 - Hyperion meeting
 - Met w/ Steve Rock, LRAUV folks re TRN, Gazebo sim
 - Misc Admin, drop-in meetings
- Out of Office

Week 11

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
 - Last week, tested prototype fan control with Ethernet IO module hardware; was able to verify that protocol works.
 - Fan control still pending final logic design/implementation, but can demonstrate basic functionality. It's not certain that it will be needed, so deferring completion.
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - Worked with Tom O to address build MB-System build issue (libproj v9.8 introduced a variable name that collides with termios baud macro B0)
 - Added updates to MB-System trndev to address build issues with LCM v1.5.2 and fix a couple of parsing bugs.
 - Have a large PR pending
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - set up map processing tools for this week's sponge ridge expedition
 - providing remote support for Norbit sonar processing
- Overhead
 - misc admin

- Out of Office

Week 10

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
- Out of Office

Week 9

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - Testing code, syncing across repos, and submitting pull request for large-ish TRN change set, first to libtrnav, then MB-System.
Changes primarily related to LCM front end for TRN on ROV, but also includes some updates to TerrainNav and client subclasses.
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - Reviewing mbs-tools (sonar log conversion by Mauro C); I may operate/support this on the upcoming Packard Cruise either onboard or remotely.
- Overhead
- Out of Office

Week 8

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
 - Worked on a fan monitor app, now ~80% complete (developed as personal interest) to enable a secondary fan in the event of primary fan failure (overtemp).
The underlying foundations are of general use: MARS message pub/sub test tools, and a driver library for the ethernet IO modules that control the fans.
It's not certain whether we'll need it, as passive cooling measures are

proving very effective; if so, it's in a state that could be completed fairly quickly.

- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
 - studying MB-System processing pipeline as it relates to Tom O'Reilly's work and Scalable Robotics.
 - Attended compensation review presentation
 - Went on paragon AUV recovery
 - misc admin
- Out of Office

Week 7

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
- Out of Office

Week 6

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
 - laying some groundwork for fan monitor software in connection with the MARS node cooling updates. If required, the software would detect overheating in the event of a fan failure and enable a redundant fan. It's not certain we'll need it if passive heat sinks can provide enough
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
 - review meetings, wrap up
- Out of Office

Week 5

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
 - Team meeting re system cooling, integration, deployment schedule
 - Will defer Mar deployment to address cooling issues: some redundancy in the cooling system is needed, along with additional cooling capacity.
 - Potential need for a little software to respond to temperature alarm conditions, e.g. detect failure, enable aux fans.
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - Refactoring ROV TRN (LCM front end for TRN) continues
 - Tested basic data flow using a portuguese ledge DVL data set from a LASS cruise. Fixed a few issues in refactored plug-in and processing code. TRN performance is not good in that data, but data flow is OK after resolving a number of issues.
 - Eliminated a lot of unnecessary code from TrnClient, and did some initialization cleanup in base classes TerrainNav and TerrainNavClient.
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - Looking at possible areas of contribution, timing for 2026
- Overhead
 - Review meetings, prep
- Out of Office

Week 4

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - Refactoring LCM TRN front end (TRN for ROV); in progress
 - Checked in change set to libtrnav and MB-System affecting TRN particle filter noise floor and drift std deviation, per Steve Rock
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
 - Review prep, mostly
- Out of Office

Week 3

- 300057 - Mooring Maintenance

- 300078 - DMO Support - AUV
- 701147 - MARS O&M
 - Worked with Bryan and Knute to install and test the new SSD image.
 - Put together a spreadsheet to track various SSDs and disk images used for MARS. It includes a lookup area that provides a printable summary to store with devices (e.g. spares).
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
 - Finally resolved a bug that I chased for a couple of weeks. The issue manifested as segfaults caused when some (but not all) references to a particular object were invalid, as most of its data members appeared to be shifted 8 bytes in memory. Furthermore, when it occurred seems to be affected by when the first references were made.
The root cause turned out to be that the class in question was both compiled with application sources, and linked in a library. However, the compilation options - one of which included an extra class data member - were different for the library and the application code.
This created conflicting (and context-dependent) references for the object memory layout at run time, and hilarity ensued.
Shout out to Tom, Brent, and Dave for their fine debugging ideas.
 - Resuming the refactoring effort sidetracked by the deep bug-chasing rabbit hole.
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
 - project kickoff meeting
- Overhead
 - Annual review prep (mostly)
 - hyperion meeting
 - misc admin
- Out of Office

Week 2

- 300057 - Mooring Maintenance
- 300078 - DMO Support - AUV
- 701147 - MARS O&M
- 901007 - Benthic Biology & Ecology
- 901101 - Seafloor Mapping
- 901221 - Midwater Time Series
- 902204 - Scalable Robotics
- Overhead
- Out of Office