

500055 - VARS, M3/RS, DSG

Week 52

1. Brian Schlining
 - a. Updated all ancillary applications to use the new https endpoints.

Week 51

1. Brian Schlining
 - a. Addressing change requests from the video lab for the new VARS query.

Week 50

1. Brian Schlining
 - a. [Finished importing ML inference](#) for a batch of Ventana dives. [Import code](#) seems pretty bomber, so handing it off to the video lab so they can run it.
 - b. New release of mlviz to video lab that includes a script for pushing ML annotations into VARS. (mlviz-0.0.18)
 - c. Added SSL/HTTPS to the nginx proxies on [dsg.mbari.org](#), [m3.shore.mbari.org](#). Updated many/most/almost all(?) services and applications to use https. Also updated all pointers to data in the various VARS databases to use https.
 - d. Additional refinements to the [new VARS Query](#). With https in place, I was able to add image downloads as an option for the search results.
 - e. Set up a new Mac Ultra Studio and [threw together some code](#) to support transcoding dives recorded as 4k HEVC to HD h.264.
 - f. Consolidating client codes for the services for better reuse. Migrating the annosaurus client from VARS Annotation into [annosaurus-java-sdk](#). Started working with on the oni-client-sdk for the VARS Knowledgebase too.

Week 49

1. Brian Schlining
 - a. Migrated publishing of artifacts from Sonatype OSSHR to Maven Central Repository and republished updated libraries (Note: Getting Maven to work with new Maven Central was super easy. Gradle, not so much, but I found this plugin that worked: <https://github.com/medivh-project/medivh-publisher>):
 - i. [Uuid-gen](#)
 - ii. [Vcr4j](#)
 - iii. [Commons](#)
 - iv. [Annosaurus-java-sdk](#)
 - v. [imgfx](#)

- b. I currently use hand-built libraries for accessing microservices. Did an investigation of using [openapi generator](#) and [kiota](#) to evaluate them for generating client SDKs from openapi docs. Currently starting integration testing with Kiota using <https://github.com/mbari-org/annosaurus-java-sdk>.
- c. Some refinements to the new VARS Query at <http://m3.shore.mbari.org/query/query>
- d. Set up an SSL/HTTPS server for debugging SSL issues in VARS tools at <https://gehenna.shore.mbari.org/>.
- e. Set up a test environment for the new DSG (which requires SSL) at <https://gehenna.shore.mbari.org/kbeditor>
- f. [New release of VARS annotation](#) with fixes to support SSL.
- g. Investigation for performance of different computers for video transcoding. tl;dr, the number of media engines (i.e. hardware encoders/decoders for specified codecs) is the biggest factor in performance. The winner was the Mac M2 Ultra Studio running about twice as fast as the next contender, Mac M4 Pro.

Week 48

- 1. Duane Edgington
 - a. Team meeting last week. Discussed metrics and animal track benchmark (tracking animals is different from tracking people...)
- 2. Brian Schlining
 - a. Updated the new VARS Query based on video lab feedback.
 - i. <http://m3.shore.mbari.org/query>
 - ii. <https://github.com/mbari-org/vars-query-vue>
 - b. Setting up gehenna for integration testing of VARS Apps against secured endpoints (SSL).
 - c. Integration testing of new VARS KB web interface.
 - d. [Testing different computers for transcoding speed](#). Mac Studio w/ M2 Ultra for the win

Week 47

- 1. Duane Edgington
 - a. Team meeting. Discussion of performance metrics.
- 2. Brian Schlining
 - a. Working through issues with the [new KB web app](#) (ReactJS) with deploying behind a proxy.
 - b. Changes to [Oni](#) to support the new KB app
 - c. Continuing to refine the [new VARS Query](#) based on video lab feedback
 - d. Database replication between the Rachel Carson and the shore side database is failing in a spectacular fashion. Working with IS to unwind the data.
 - e. Starting work to secure all the video related microservices with SSL.

Week 46

1. Brian Schlining
 - a. Released an early-beta of the [on-line VARS Query](http://m3.shore.mbari.org/query/) at <http://m3.shore.mbari.org/query/>. The new query provides easy access to the video for annotations.
 - b. Working with Paul Rogers to get a test deployment of the new on-line VARS Knowledgebase Editor running. See <https://github.com/mbari-org/kb/pull/1>

Week 45

1. Brian Schlining
 - a. Working on the [VARS Query web interface](#).

Week 44

1. Kevin Barnard
 - a. Fixed issue with erroneous track reactivation in ultralytics causing tracking failures in some videos
 - b. Ran detection & tracking on D1460 with MBARI 452k YOLOv8 model; packaged for VL review

Week 43

1. Kevin Barnard
 - a. Began investigating issue in ultralytics BoTSORT tracker code encountering non-positive-definite covariance matrix in Kalman filter
 - b. Ran detection & tracking with MBARI 452k YOLOv8 model, packaged and loaded tracks from V4423 and V4430 into VARS
 - c. Ran detection & tracking on D1460 with MBARI 452k YOLOv8
2. Brian Schlining
 - a. [Added an endpoint to annosaurus to support ad-hoc queries](#). This should remove the need for applications, like vars-query or vars-gridview, to have direct access to the database.
 - b. Met with Paul Rogers to discuss the [new knowledgebase web app](#). We were still running into CORS issues. [I've fixed them](#) and added [a test page to verify CORS is working](#) in the future. I'll be setting up a server to run the latest snapshots of the kb app for the video lab to test later today.
 - c. Trying out prototypes for new VARS Query. Testing projects include: vanilla JS/HTML (no build tool), vanilla JS/HTML with Vite, and Vue 3.
 - d. [ML loads into VARS](#)

Week 42

1. Duane Edgington
 - a. Team meeting

2. Brian Schlining
 - a. [Adding support of ad-hoc queries in the annotation microservice](#)
 - b. Addressed issues with some CORS-related nits in the m3-quickstart project that need to be addressed for Paul Rogers work on the new VARS KB Web interface

Week 41

1. Brian Schlining
 - a. [Adding support for ad-hoc queries in the annotation microservice.](#)
 - b. Investigating some CORS related nits in the [m3-quickstart](#) project that need to be addressed for Paul Rogers work on the [new VARS KB web interface](#).

Week 40

1. Brian Schlining
 - a. Updates to [Oni's API](#) and [CORS handling](#) to support the KB web interface development.
 - b. [Loaded V4423 and V4430 ML generated annotations into VARS](#). Shoutout to Lonny and Kevin B on their on-going work on the ML pipeline.

Week 39

1. Brian Schlining
 - a. Updated m3-quickstart config to add CORS to support the new kb ui development by Paul Rogers

Week 38

1. Kevin Barnard
 - a. Packaged V4426 and V4430 MBARI 452k YOLOv8 tracking runs for ingest to VARS
2. Brian Schlining
 - a. Met with Paul Rogers to review work on new KB interface.
 - b. Testing feasibility of using no-build/web components for new web interface for querying VARS.

Week 37

1. Brian Schlining
 - a. Investigating the feasibility of developing “framework-less” web apps using plain old JavaScript, HTML, CSS and web components. No build step!

Week 36

1. Duane Edgington

- a. Researching literature on MOT tracking metrics (especially underwater/drone applications), as tasked by the team

Week 35

1. Duane Edgington
 - a. Project team meeting focused on metrics

Week 33

1. Brian Schlining
 - a. Added release [CJ](#) to most of the VARS services.
 - b. Updated dependencies for all VARS services and published new releases. This includes testing against hibernate 6.6.x.
 - c. Meeting to discuss DSG and Query revamp.
 - d. Fixed doc generation in [Oni](#)

Week 32

1. Duane Edgington
 - a. Team meeting 8/7/2024. Focus on ML metrics. Follow-up meeting to be scheduled.
2. Brian Schlining
 - a. The new knowledgebase service, [Oni](#), is deployed and the old vars-kb-server and vars-user-servers have been retired. Api docs at <http://portal.shore.mbari.org:7070/docs/>
 - b. Updated the [ship's docker stacks to use Oni](#) and deployed it to Rachel Carson

Week 31

1. Brian Schlining
 - a. Prepping new kb service, [Oni](#), for deployment at MBARI

Week 29

1. Kevin Barnard
 - a. Designed and implemented ultralytics inference for local Docker and Amazon SageMaker Processing detection & tracking pipeline for new YOLOv8 models

Week 28

1. Duane Edgington
 - a. Plan to generate new YOLOv5 model scrubbed. The lab generated a YOLOv8x6 1280 model on Ultralytics and is evaluating that model's performance.
2. Brian Schlining

- a. While deploying our new Knowledgebase service, [Oni](#), I discovered that [JDBC and Java's new virtual threads don't play well together](#). Virtual threads don't yet play well with connection pools, like [HikariCP](#), with the result that virtual threads will eventually not be able to acquire a db connection. Without a connection pool, virtual threads will basically run a DOS attack on your own database. I've switched out the underlying service in Oni [from Helidon Webserver to vertx](#).
- b. Beginning work with Paul on the new Knowledgebase web interface

Week 27

1. Brian Schlining
 - a. Completed [first phase of development](#) of the new knowledgebase service, [Oni](#). It's been tested as a drop-in replacement for the vars-user and vars-kb services. This will allow us to drop the 25 year old vars kb application and replace it with a more modern app. We're pulling together requirements for an external contractor to work on a new web interface for managing the knowledgebase data. It's been integrated into a portable vars web stack at <https://github.com/mbari-org/m3-quickstart/tree/feature/oni> for the external contractors use.
 - b. Addressed UI issues in vars annotation. ([#173](#), [#179](#)). Investigating issue [#174](#). Published [new VARS annotation releases](#)
 - c. Working on migrating the external deep-sea guide from ione (Centos 7) to klaia (ubuntu).
 - d. Updated [pythia](#) with Lonny's latest yolov8 model

Week 26

1. Kevin Barnard
 - a. Tweaked dfg-tool to allow for invalid imaged moments
2. Brian Schlining
 - a. Wrapping up development of the VARS knowledgebase service at <https://github.com/mbari-org/oni>. Integration tests for SQL Server are done and beginning postgres tests. Hopefully, in the next few days we can hand it off to external contractors for the development of a web interface.

Week 25

1. Brian Schlining
 - a. [Working on oni](#)

Week 24

1. Brian Schlining
 - a. Continuing work on <https://github.com/mbari-org/oni>
 - b. Discussions with Paul Rogers on a UI for Oni

Week 23

1. Danelle Cline
 - a. Closed clustering tasks; Kevin has addressed. Thanks, Kevin!
2. Brian Schlining
 - a. Continuing work on <https://github.com/mbari-org/oni>
 - b. Discussions with Paul Rogers for contract work on KB/Oni user interface.

Week 22

1. Brian Schlining
 - a. Migrated Mini ROV annotations to the shore database.
 - b. Continuing work on the VARS KB replacement at <https://github.com/mbari-org/oni>

Week 21

1. Brian Schlining
 - a. Continuing work on the knowledgebase replacement at <https://github.com/mbari-org/oni>

Week 20

1. Duane Edgington
 - a. Testing deepsea-ai ecsshutdown command
2. Brian Schlining
 - a. Continuing work on the knowledgebase replacement at <https://github.com/mbari-org/oni>

Week 19

1. Danelle Cline
 - a. Added [ecsshutdown](#) command to support clean shutdown of elastic clusters
2. Duane Edgington
 - a. Preparing to test ecsprocess shutdown
3. Brian Schlining
 - a. Working on retiring the [old VARS knowledgebase](#) and [user account services](#), as well as the [knowledgebase maintenance app](#). The first phase is a [new web service](#), the second phase will be a web interface for editing and maintaining the knowledge base data.

Week 18

1. Kevin Barnard
 - a. Rewrote dfg-tool extract and upload scripts – now testing
2. Brian Schlining
 - a. [Migration code for postgres is done](#)

- b. [Added yolov8](#) support to [Pythia](#)
- c. Started work on major updates to the VARS Knowledgebase and User services. They are in a new project named [ONI \(Organism naming infrastructure\)](#).
- d. Added [CI/CD to m3-support](#)

Week 17

- 1. Kevin Barnard
 - a. Rewrote dfg-tool

Week 16

- 1. Brian Schlining
 - a. Updated [Pythia to support yolov8](#). Testing revealed a bug in [djl](#), but the dev's [quickly fixed it](#). Pythia 0.1.1 has been released.
 - b. Imported ML for dives V4455, V4512, and V4513 into VARS using [a new pipeline](#).
 - c. Upgraded [tapemigration](#) and [m3-merge](#) to work with the latest services.
 - d. Met with Nancy to work out a roadmap for development of an updated knowledge base app. Started laying out a code base for the new kb services.

Week 15

- 1. Kevin Barnard
 - a. Continued implementing changes for digital frame grab tool to support VL
- 2. Brian Schlining
 - a. Used [kiota](#) to auto-generate client SDKs from Annosaurus' [openapi spec](#) and sorted out how to handle authentication. Client and instructions are at <https://github.com/mbari-org/annoclient>. I'm working on an SDK for all the services at <https://github.com/mbari-org/m3-java-sdk>.
 - b. Modified the ML visualization and loader pipelines to allow users to omit leading and trailing portions of each track from analysis. Also added a feature to dump out processed data as CSV files for analysis. <https://github.com/mbari-org/vars-feedback/issues/110>. Released to [mlviz-0.0.15.zip](#)
 - c. Investigating bugs in the VARS Annotation app

Week 14

- 1. Brian Schlining
 - a. Used [kiota](#) to generate a [client SDK](#) from [Annosaurus' openapi spec](#). Still working through some authorization details. This is promising as kiota could make it very quick and easy for us to generate clients from any API.
 - b. Removing the use of [JFoenix](#) library from [VARS Annotation](#). JFoenix is not actively maintained and seems to be causing some runtime issues with VARS Annotation.

- c. Upgrade [panoptes](#) to Scala 3 and migrate from javax to jakarta api.
- d. Reworked and updated the stand-alone VARS systems for the two mini-ROV annotation stations. Replaced SQL Server with Postgres and [standardized the installation for any workstation](#). Integration test with the new stuff.
- e. [Import recent ML generated annotations](#)

Week 13

1. Kevin Barnard
 - a. Investigated interruption in VARS services on Mar 21, 2024
 - b. Suggested potential approaches to rapid non-framegrabbed frame-level annotation → bounding box annotation workflow
2. Duane Edgington
 - a. Processed inference on four dives for Lonny and Kris, deepsea-ai ecsprocess. Fixed permissions bug on Doris. Need to debug a video submission which was processed multiple times.
 - b. Walked Lonny and Kris through “do it yourself” session on submitting inference jobs from Doris.
 - c. Generated CheatSheet for Lonny and Kris to augment the documentation and README.
3. Mike McCann
 - a. Wrote add_nav4dlogr_records.py script to add missing ROV nav data to the log files
 - b. Replaced 202406[4-5]rovctdlogr.dat.gz and 202406[4-5]shipnavlogr.dat.gz files

Week 12

1. Duane Edgington
 - a. Ready to present analysis of mbari401k training run and model performance to video lab and project team, when they meet and are ready.
2. Brian Schlining
 - a. Working through issues and improvements to VARS to better support machine learning data cleanup. (See [#47](#), [#155](#), [#53](#), [#174](#), [annosaurus 1.0.10](#))
 - b. Released new builds of [Mondrian](#) targeting the recently updated services.
 - c. Looking into updating [Charybdis](#) to better support DSG work

Week 11

1. Duane Edgington
 - a. Review metadata from training mbari401k (confusion matrix, localization distribution, class mAP50s, etc)
2. Brian Schlining
 - a. Provided builds of VARS Query for Mac CPUs against the new database. (<http://m3.shore.mbari.org/apps/>)

- b. Updated all ML [visualization tools](#) and [loaders](#) to accommodate prores/mov files. (Previously, everything was written just for h264/h265/mp4.)
- c. Pushed ML proposals into VARS for [V4422](#), [V4465](#), and [V4394](#). V4394 is our first midwater analysis run!
- d. Updating the [VARS KB app](#) build for the new database.
- e. Updated the [image classification service](#) to the video lab's latest "mbari-401k" model. Also updated the service to the latest version of pytorch. You can try it out at <http://perceptron.shore.mbari.org:8080/>
- f. Finally squashed some performance issues in [VARS Annotation](#) (v2.0.6) after the database migration and service upgrades.
- g. Updated <http://m3.shore.mbari.org/> with the swagger-docs for services (if they have them).

Week 10

- 1. Danelle Cline
 - a. Added support for adjustable disk allocation and longer timeouts to handle processing master video with larger YOLOv5 1280 models
- 2. Duane Edgington
 - a. Completed AWS ECS runs using DeepSea-AI ecsprocess of i2MAP, Ventana master video files, and Ventana mezzanine files, for Kris W. and Lonny L. Pushed output track files to DeepSea-AI repo on titan.
- 3. Brian Schlining
 - a. Tuning performance of recently updated services. Instrumented the services with prometheus metrics (for both [annotations](#) and [media](#)). Installed a [prometheus](#) server to collect the metrics and a [grafana](#) server for visualizing them.
 - b. Working on outstanding bugs in vars-annotation.
 - c. Modified the [view-raw-in-sharktopoda](#) to visualize ML output on ProRes files.
 - d. Consolidated the [docs](#) for the m3-support project.
 - e. Updated the VARS services and applications on the Rachel Carson to the new stack.

Week 9

- 1. Duane Edgington
 - a. Continued support of the new mbari401k model – running test videos for the videolab.
 - b. Created localization distribution plot, and plot of mAP50 per localization, to share with the team.
 - c. Start build of ECS stack today with new mbari401k model
- 2. Brian Schlining
 - a. 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.
- b. Working through updating services and other applications that use VARS.

Week 8

1. Duane Edgington
 - a. Continuing work on training mbari401k model. The ginormous split files (train/val/test) overflow storage space on VM DORIS, and test mbari networking. Split file created and pushed to AWS (IS was not happy with the bandwidth consumed) 2/20. 1 epoch successfully trained. Training continues 2/21...
2. Brian Schlining
 - a. Released renovated services. [Following up on remaining tasks](#). API docs are now at
 - i. Annosaurus - <http://portal.shore.mbari.org:8100/docs/>
 - ii. Vampire-squid - <http://portal.shore.mbari.org:8200/docs/>

Week 7

1. Duane Edgington
 - a. Assisting Lonny with training a model with new collected 402K dataset 1280 yolo5x6 on AWS using deepsea-ai. Successfully trained 1 epoch model demonstrating the toolchain is working. Team is retooling some of the localizations before we try again...
 - b. Team meeting 2/14
2. Brian Schlining
 - a. Prepping for major updates to [video asset](#) and [annotation database](#) scheduled for this Friday. All annotation systems will be down on Friday. In addition to [the system updates](#), we will be migrating the databases from perseus (SQL Server 2016) to venus (SQL Server 2022) Please do not annotate!!
 - b. Along with Nancy and Lonny, we've set up [target goals](#) and organized [tasks](#) for the team for this year.

Week 6

1. Duane Edgington
 - a. Team meeting Feb 7 (?)
2. Mike McCann
 - a. Fixed vfcbydive frame grab processing to now get position data from EMDB's REST API
3. Brian Schlining
 - a. Wrapping up integration tests for the backend renovation of the VARS services.
 - i. <https://github.com/mbari-org/annosaurus/pull/41>
 - ii. <https://github.com/mbari-org/annosaurus/issues/18>

- b. Running interactive tests with the VARS applications against the renovated services.

Week 5

1. Kevin Barnard
 - a. Support for VARS GridView issues
 - b. Reworking m3-download logic to support VL for next training data download
2. Brian Schlining
 - a. Writing integration tests for applications that will be affected [by the major updates to back end services](#) supporting video annotations.

Week 4

1. Kevin Barnard
 - a. Addressed issues with VARS GridView
 - i. Querying and downloading images dialogs → main window progress bar
 - ii. Trashme files opening with “open video” button
2. Duane Edgington
 - a. Working session to debug an issue with inference job workflow from DORIS. Resolved (update to gcloud package required). Testing 1/24/2024
3. Brian Schlining
 - a. Getting close to wrapping up [major updates to backend services](#)

Week 3

1. Kevin Barnard
 - a. Finished implementation and testing of JWT refresh in VARS GridView
2. Brian Schlining
 - a. Entering the home stretch for [the renovation of annosaurs internals](#). Currently, working on using [tapir](#) to [generate openapi docs so code and docs stay in sync going forward](#). Adding [tests for all endpoints](#) to look for subtle bugs.

Week 2

1. Kevin Barnard
 - a. Finished implementation of token refresh mechanic
 - b. Refactored VARS/M3 API client calls
2. Duane Edgington
 - a. Team meeting Jan 10.
3. Brian Schlining
 - a. The LTO recall apps have been failing. Brian did some troubleshooting and worked with IS to restore them.
 - b. [Adding extensive testing to the annotation service backend](#) against both SQL Server and Postgres

Week 1

1. Kevin Barnard
 - a. Set up monitoring for M3 services:
<http://rocinante.shore.mbari.org:3001/status/m3-prod>
2. Brian Schlining
 - a. Continued work on the [backend renovation of the annotation service](#). The current focus is on [switching from eclipselink to hibernate](#) to allow for history tracking via [envers](#); the switch has been done, but Brian is putting in unit tests for all database methods to verify everything is working as expected.