

OPEN NAVIGATION SURFACE WORKING GROUP

MEETING SUMMARY

2020-02-25

Canadian Hydrographic Conference
Québec City, Canada

FINAL VERSION

2020-03-18

1 Introduction

This document details the result of the meeting held on 2020-02-25 to continue development and maintenance of the library. The meeting was held at the Canadian Hydrographic Conference in Québec City, Canada. The summary of all meetings and teleconferences of the Open Navigation Surface Working Group (ONSWG) can be obtained from the project's web-site, <http://www.opennavsurf.org>. For a list of participants, see section 4.

In the following, names of people with action items are shown in **BOLD SMALL CAPS**; expected deadline release dates are shown **in red**. Sizes of variables are indicated by 'U' for unsigned, 'S' for signed, 'F' for floating-point, and a size in bits (e.g., U8 is an eight-bit unsigned integer, F64 is a 64-bit (double precision) floating-point number). Data sizes are given in bytes (B) with the usual convention that the SI multipliers are taken to mean multiples of $2^{10}B$ (i.e., $1kB = 2^{10}B = 1024B$). The acronym 'CR' means 'Candidate Release' (i.e., a release of the library for comments) and 'FR' means 'Full Release'.

2 Summary of Discussion

2.1 Prior Actions

The intersessional actions from the last two meetings (2019-03-20, US Hydrographic Conference; 2019-10-16, by teleconference) not already clearly complete were reviewed:

1. Refinement storage working group report [**Rice**]. This was discussed in more detail as part of the formal agenda; see Section 2.6 [completed].
2. Test framework decision [**Calder**]. Voting showed a very slight preference for the Catch2 framework [completed].
3. Review separation surface implementation in new API [**Paton**]. No representation from QPS to report [continued and marked **"critical"** for release of v 2.0] [**ACTION: PATON**].
4. Remove BeeCrypt as a mandatory requirement [**Calder**]. This has been completed in v 2.0 development stream [completed]. See also Section 2.2.
5. Format Specification Document conversion [**Calder**]. The FSD has now been converted into Markdown for the GitHub wiki implementation, and uploaded [completed]. See also Section 2.3.

2.2 Digital Signature Scheme Project

Rice and **Ling** reported that as part of the v 2.0 development chain currently being sponsored by **NOAA**, the requirement to use BeeCrypt as part of the library has removed, primarily due to compatibility issues with the library, which is no longer maintained actively. Since the release of v 2.0 is imminent (see Section 2.4), it was agreed that no further action was required on this topic.

The discussion highlighted, however, that v 2.0 also removed the facility to have any Digital Signature Scheme (DSS) applied to the BAG files, which is still a requirement of the BAG format. In discussion, the motivation for this was that the facility was, historically, generally unused. Calder noted that the DSS was part of the original specification for BAG files, and although a demonstration implementation has been part of the library since 2006, a full implementation would require a formal sponsor since someone needs to provide root-certificate authentication (i.e., to become a Certificate Authority, CA). Typically, this would be either a commercial vendor, or a government source.

Potential sources of CA chains were discussed, with national hydrographic offices (HO), and the IHO suggested. The feeling of the group was that it might be simpler to have national HOs manage this effort internally, due to complexities of international agreements for these services.

Since S-100 in general, and S-102 in particular, have requirements for a DSS of some kind, it was felt, however, that there needed to continue to be a facility to implement this in BAG files. **Arsenault** noted that he had, at some point, built an alternative implementation for the DSS in BAG using a better supported library, and that this might provide a more stable implementation for the future. Since the DSS is added outside of the HDF-5 structure, the group concluded that it might be useful to have this as an auxiliary library in the ONS system, rather than as a core part of the library; this would allow it to be used for other binary

files in the S-100 system, for example, making it a useful demonstration tool. The group agreed to investigate adoption **Arsenault**'s implementation as a separate project, therefore [ACTION: CALDER, ARSENAULT].

2.3 Format Specification Document

Calder reported that the Format Specification Document (FSD) for the project had been converted to Markdown files to be used in the wiki on GitHub. The goal of this conversion was to make it easier for the files to be updated. Calder requested review of the current files, based on v 1.6.3, since they were a direct conversion of the Word document source, and therefore could do with editing to better reflect changes in the code, and the new format [ACTION: ALL].

The group then discussed how this form of documentation should be handled when new versions of the library are constructed, the basic problem being that there needs to be a mechanism to freeze the version of FSD appropriate to the library and archive it so that it is memorialized. A number of suggestions were made, including keeping the FSD in the main library and linking from the wiki, or taking a snap-shot of the wiki files when the release for the library is made. The group agreed, however, that some further investigation of smooth mechanisms for this was required [ACTION: CALDER, MASETTI].

2.4 Development of v 2.0 API, and Release Date

Rice provided an update of the development of the v 2.0 API currently being undertaken by **Teledyne CARIS** with funding from **NOAA**. The current estimate is that approximately 75% of the work is complete (including the metadata layers, Section 2.5); outstanding items include the addition of a Python interface through SWIG, which is underway.

The group discussed mechanisms for how to implement this development work as the next major release of the library after the remaining effort is completed (expected to be shortly). Due to the significance of the changes being contemplated, the feeling was that better engagement would be required to ensure that all of the users are comfortable with the new API before going ahead with the merge; this suggests that a slightly longer than average consultation period might be required for this release. **Calder** and **Rice** agreed to shepherd this effort [ACTION: CALDER, RICE].

The group discussed details of the next release, including the ability to use Python Notebooks to illustrate access norms for the data [ACTION: MASETTI], and the use of Travis CI for continuous integration in non-Windows environments [ACTION: LING].

2.5 Development of Metadata Layers

Rice provided an update on implementation of the Metadata Layer that NOAA requested as an optional layer in v 2.0, reporting that this is now feature-complete. A vote for formal adoption will be required, but since this is part of v 2.0, it will have to be organized at the same time as the vote for adoption of v 2.0 itself [ACTION: CALDER].

2.6 Report on Refinements Storage

Rice and **Masetti** provided a report on the actions of the Refinements Sub-WG, who were tasked with determining whether there was a better mechanism for storing variable-resolution refinements than the version adopted with v 1.6.0 (a simple linear array). The working group developed a number of scripts to examine different schemes for storage that would be more illustrative (i.e., match better the physical structure of the refinements, making them more logically accessed), but found that none of the methods attempted provided significant benefit when file size was included as part of the decision. The results of the analyses are documented in the project repository, which is linked in the GitHub site, and the Sub-WG consider the analysis complete with a recommendation not to change the current configuration at this time.

The group noted, however, that this recommendation is based on the assumption that the smallest file is necessarily the best, which may not be true in all circumstances, and into the future. It remains to be seen, therefore, whether further work is required on this topic.

2.7 Adoption of GitHub Pages for “Website” Alternative

Masetti provided a report on an effort to convert the current project website (a simple static HTML implementation) into source files that could be automatically converted into a website using the GitHub Pages

mechanism; the goal of this effort was to provide for a mechanism that is significantly simpler to keep up to date, and therefore which would allow for a better update tempo.

The group discussed the potential concerns for functionality that might be missing from implementing the website in this fashion, but no significant problems were envisioned. The group therefore approved the adoption of this mechanism *nem. con.* [**ACTION: CALDER, MASETTI**].

2.8 Working Group Process

The group conducted a limited discussion, due to time constraints, on better documentation of the norms of the Working Group's process, particularly with respect to visibility of decision-making (e.g., votes and discussion in the issue tracker for the wiki), and how decisions are expected to be made. The feeling of the group was not that the current process needed to be amended, just that it needed to be documented as the project has grown to a stage where the common understanding of expected behaviors cannot be in the memories of a small group of developers. Further discussion of this topic will likely be required at a future meeting [**ACTION: CALDER**].

2.9 AOCB

The Chair thanked all of the developers present, and their organizations, for finding the time to conduct the meeting, and the Conference organizers for providing the meeting space. Particular thanks were expressed for NOAA, who have been spearheading the majority of current development through the National Bathymetric Source project.

The group, finally, discussed encouraging the participants to think of GitHub as the primary communications mechanism for the project, since it allows for better visibility, push notifications of discussions, and permanent archive of the discussions that have taken place [**ACTION: ALL**].

3 Summary of Action Items and Dates

The following actions and dates were agreed:

Person	Actions(s)	Section	Date
Paton	Review separation surface implementation in new API	2.1/3	2020-05-29
Calder, Arsenault	Resurrect work on a DSS using a better-supported library, and make into a separate project within the ONS GitHub group.	2.2	2020-06-30
Calder, Masetti	Determine an appropriate mechanism for capturing the current state of the FSD documents when a release of the library occurs.	2.3	2020-05-29
Calder, Rice	Develop a plan for review and merge of v 2.0 API for the next major library release.	2.4	2020-05-01
Masetti	Provide Python Notebook examples for v 2.0 API BAG access.	2.4	2020-05-29
Ling	Integrate previous version of Travis CI implementation for continuous integration in non-Windows environments.	2.4	2020-05-29
Calder	Arrange Metadata Layer vote in conjunction with v 2.0 API vote.	2.5	2020-05-29
Calder, Masetti	Transition website from stand-alone server to GitHub Pages, and document update procedures.	2.7	2020-05-29
Calder	Schedule discussion of documentation of the WG's process at a future meeting.	2.8	2020-06-30
All	Encourage use of GitHub comments, wiki, and issue tracker as mechanisms for documentation of discussions, votes, and decisions.	2.9	N/A

4 Participants

Roland Arsenault (CCOM/JHC)
 Shannon Byrne (Leidos) [Zoom]
 Brian Calder (CCOM/JHC)
 Paul Donaldson (Leidos)
 Burns Foster (Teledyne CARIS)
 Casiano Koprowski (NOAA) [Zoom]
 Chris Ling (Teledyne CARIS) [Zoom]
 Damian Manda (NOAA)
 Giuseppe Masetti (CCOM/JHC; Danish Hydrographic Service)
 Glen Rice (NOAA)
 Jack Riley (NOAA) [Zoom]
 Matt Thompson (NAVOCEANO)