OPEN NAVIGATION SURFACE WORKING GROUP

MEETING
SUMMARY

2019-03-20
US Hydrographic Conference 2019

FINAL VERSION
2019-05-17

1 Introduction

This document details the result of the meeting held at 0800-0930 CST on 2019-03-20 to continue development and maintenance of the library. The meeting was held in conjunction with the U.S. Hydrographic Conference 2019, using facilities kindly arranged by Mike Nitska and Melissa Wood of the Hydrographic Society of America, the conference organizers. 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 meeting (2018-10-02, Shallow Survey 2018) were reviewed:

1. Coordinate development of NOAA metadata proposal. Done; see Section 2.5.
2. Confirm compatibility of HDF5 1.10. Continuing.
3. Implement HDF library upgrade during next release. Not yet required (see Action 2), therefore continued to next meeting.
4. Merge BeeCrypt-optional branch. Continuing (needs further testing on collateral changes in branch before merge).
5. Establish a GitHub group for main/sub-repositories. Done; needs testing on macOS and Windows (see Section 2.2).
6. Provide link from project website to repositories. Done.
7. Convert GSF into GitHub wiki format. Continuing.
8. Check no sub-library would preclude BSD license adoption. Done (see section 2.3).
9. Add license statement. Continuing (needed formal license adoption; see section 2.3).
10. Determine whether company names can be displayed on the website. Done (see section 2.4).

2.2 Library Maintenance

Having established a GitHub repository group for the project and sub-projects (such as the visualization tool, Section 2.1), the participants entertained a proposal to move the whole project from BitBucket to GitHub as the primary repository hosting service. After some discussion, the proposal was adopted unanimously, with **Calder** and **Masetti** agreeing to accept GitHub user IDs for inclusion into the access list for the new repository (**Action: Calder, Masetti**). Since all users will need to be migrated, e-mail warnings will be issued as required (**Action: Calder**).

2.3 Library Licensing

At the previous meeting, the participants acknowledged that a license was required for the library, and that the BSD three-term license was recommended. Following investigation on the licensing requirements of the sub-libraries (Section 2.1), the participants agreed to adoption of the BSD three-term license for the project. The license terms now need to be indicated on the website, in the source code, and the library distribution (**Action: Calder**).

2.4 Visibility of Participants

At the previous meeting, a suggestion was made that better visibility of users of the library would assist in the library (and project) being better accepted. The participants were asked to indicate whether their company or organization would allow this, and to provide logos/icons for inclusion in the website. Many of the participants were able to confirm this request, and the logos have been added to the project website

(http://opennavsurf.org/background.html). All other participants, not currently represented, are encouraged to indicate whether they want to be acknowledged on the website (**Action: All**).

2.5   NOAA Metadata Proposal

Following the initial proposal at the previous meeting, **Rice** outlined NOAA's proposal for extended metadata in the BAG file format. Specifically, this proposes a grid-formatted metadata layer (at the same resolution as the base elevation layer) which would provide keys into a key-value table that provided extra metadata for a region of the grid.

The participants agreed to add the proposed layer to the BAG specification, and then discussed some details of the implementation. The question of whether Digital Object Identifiers (DOIs) should be issued for some or all of the data (i.e., as part of the metadata description) was raised. The intent would be to provide a mechanism to reference the source, and potentially the license terms, for component data elements that were incorporated into the composite BAG. It remains unclear whether data licenses are required, and how the DOIs would be generated, but technically they could be included into the key-value table.

The next discussion was on the format of the key-value table entries, and specifically whether there should be a standard description of the contents. The initial expectation was for the extended layer to take advantage of the self-describing feature of HFD5 to allow for this, but it was pointed out that this would not allow for semantic meaning to be conveyed and might lead to complexity in interpretation of the contents of the metadata. A basic principle of the BAG format has always been to define as many things axiomatically as possible, specifically to simplify the interpretation of the data, and thereby to minimize the complexity of the supporting code. It was recommended, therefore, to have as much detail as possible in the definition of the key-value table.

Finally, the question of how the data should be made available to the user was discussed. The current library provides a variety of abstraction mechanisms that protect the user from having to deal with the complexity of the HDF library, although it would also be possible to provide references to the underlying HDF data structures to the user and allow them to directly manipulate the data. While there are merits to both approaches (the former simplifies interactions, the latter simplifies the supporting code, for example), the tenor of the discussion was generally that a more abstracted interface might be preferred.

The participants having agreed to support the addition of the layer to the BAG specification, the results of the discussion were commended to NOAA to help direct the development of the implementation (**Action: Rice**).

2.6   Library Development Priorities

Rice introduced the topic of what features should be considered for the future development of the library, and specifically what we would like to see modified in the API of the library, given the modifications that would be added through the resolution of the NOAA metadata extension layer. An initial suggestion was that NetCDF could be considered as an encoding for the BAG file, which might have the benefit of making it more accessible in certain tools. After some discussion, however, there was a consensus that the restrictions inherent in NetCDF would be problematic, and the use of NetCDF might also limit the ability to innovate on additions to the format given the standardization process required. The participants therefore agreed to postpone any further investigation of this matter pending research on the NetCDF limitations and advantages (**Action: Masetti, Rice**).

Other suggestions for development included: support for other languages (specifically Python); continuous integration development to ensure the library continues to build smoothly after modifications; a better CMake build structure for the library to make builds simpler (specifically using pre-built DLLs on Windows to avoid issues with library versioning); and better validation of the metadata in a BAG file (for example through a web service that could validate the contents of a BAG). **Rice** agreed to structure this conversation in the issue tracker of the GitHub repository with a target of developing options before the implementation period (**Action: Rice**).

3   Summary of Action Items and Dates

The following actions and dates were agreed:

Person	Actions(s)	Section	Date
Rice	Confirm compatibility of HDF5 1.10.	2.2	2019-06-30
Calder	Implement supported HDF5 library upgrade during library release.	2.2	2019-06-30
Calder	Merge BeeCrypt-optional development branch.	2.1	2019-06-30
Calder	Convert FSD into GitHub wiki format.	2.1	2019-06-30
Calder	Add license statement to project and website.	2.3	2019-06-30
All	Continue to encourage acknowledgement of users on the project website.	2.4	N/A
Calder, Masetti	Accept GitHub user IDs for addition to the primary and subsidiary repositories as required.	2.2	N/A
Calder	Invite current repository members to transition to GitHub repository.	2.2	N/A
Masetti, Rice	Investigate the advantages and limitations of using NetCDF as an encoding for the BAG file content.	2.6	2020-02-01
Rice	Provide issue tracker topics for development priorities in the GitHub repository	2.6	2019-04-30

4   Participants

Roland Arsenault (CCOM/JHC) [Teleconference]
David Brasier (NAVO)
Rick Brennan (NOAA)
Brian Calder (CCOM/JHC)
David Fabre (NAVO)
Burns Foster (CARIS)
Olivia Hauser (NOAA)
Russell Ives (NGA)
Stacey Johnson (NAVO)
Wade Ladner (NAVO)
John Lowell (NGA)
Giuseppe Masetti (CCOM/JHC)
Guy Noll (ESRI)
Danny Neville (QPS) [Teleconference]
Mark Paton (QPS) [Teleconference]
Julia Powell (NOAA)
Caitlyn Raines (ESRI)
Annie Raymond (NOAA)
Glen Rice (NOAA)
Byron Scott (Leidos)
Matt Thompson (NAVO)
Matt Wilson (QPS)