

OPEN NAVIGATION SURFACE WORKING GROUP

TELECONFERENCE SUMMARY

2009-06-12

Hosted by SAIC Teleconferences

DRAFT VERSION

2009-06-12

1 Introduction

This document details the result of the teleconference held at 1000EST on 2009-06-12 to follow up on discussion about development of the project during the Shallow Survey 2008 conference, and to establish a plan for a new release of the library. The meeting was kindly hosted by Shannon Byrne using the Science Applications International Corporation's teleconference facility. 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 5.

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' (i.e., release V1.2 of the library).

2 Summary of Discussion

2.1 Follow up on Shallow Survey 2008 Meeting

2.1.1 Use of EPSG Projection Strings

The group agreed at Shallow Survey 2008 that it would be beneficial to phase out the GeoTrans library dependency in the library, and introduce EPSG projection strings as a means to summarize all of the projection information required to georeference the BAG data. EPSG strings are used directly in the PROJ.4 projection library, but the group agreed that it would be better for the library to be agnostic with respect to the particular projection library that is being used. Since the library currently does not use GeoTrans except for some definitions, this is not expected to be a major change to the structure.

Progress on this has been stalled by other calls on participant time, but the task is expected to be fairly simple once begun. The goal is to have this as part of the next release of the library as discussed in section 2.3.3 below. The action on this is continued. (Action: **PATON**.)

2.1.2 Nominal Depth Layer in BAG

NAVOCEANO had previously requested that the BAG format be extended to allow 'Nominal Depth' to be an option for the depth layer in the HDF5 file. 'Nominal Depth' is used in some instances to provide a depth layer that is adjusted to a particular assumed speed of sound for vertical beam echosounders. The intent is that the asset deploying the echosounder does not have to adjust the speed of sound assumed in the instrument to follow the variations in the current location, but instead can assume a fixed sound speed under the assumption that the charts are pre-adjusted to match. Typically, this is 1500 m/s or 4800 ft/s (for older echosounders, equivalent to 1463.04 m/s), but could be any convenient value.

Although the adjustments to the code to support this (i.e., the inclusion of an XML element to indicate the contents of the depth layer) are expected to be small, the group agreed that the implications for the library were much more significant. In particular, if older versions of the library are not to report incorrect information, it is essential that:

1. The library version must be stepped so that previous versions of the library would refuse to read data from newer versions where the depth might be subject to interpretation. This is required because the library now has to read the metadata in order to determine the disposition of the depth layer prior to reporting data to the user; older versions of the library did not do this, and therefore might inappropriately report nominal depth as true depth.
2. Addition of a new element in the XML metadata is required to indicate the disposition of the depth layer. The proposal had suggested an enumerated list with elements 'True Depth' (meaning corrected for refraction and reporting depth to datum assuming new measurements do the same), 'Nominal at 1500 m/s', 'Nominal at 1463.04 m/s (4800 ft/s)', 'Corrected via Carter's Tables', 'Corrected via Matthew's Tables' and 'Unknown'. There is no ordinal sequencing between the

members of the enumerated list, and it is left up to the Application Layer to take appropriate action in resetting this value when combining data with different corrections.

3. Addition of a new API call to extract the appropriate metadata record indicating the depth interpretation value.
4. Modification of the current API call for depth to check the depth interpretation, and refuse to provide data with an appropriate error code should the depth layer be anything other than true depth. This preserves the current behavior of the library where the implicit assumption is that all depths are fully corrected and represented to datum.
5. Addition of a new API call to explicitly recover depth along with an enumerated type indicating what sort of depth is being reported. This should hopefully become the default usage of the library in the future, but ensures that the library satisfies the Principle of Least Surprise.

The group agreed that this modification is acceptable as stated above, and that this is a primary driver in constructing a new release of the library.

Progress on this has been stalled by other calls on participant time, and the action is continued. (Action: **LADNER**.)

2.1.3 *Compression in HDF5*

The US National Geophysical Data Center (NGDC) reports that BAG files provided to them by the US National Ocean Service are typically very sparse and therefore while large as provided, compress very well with conventional lossless compression tools such as WinZip/GNU Zip. The group had discussed previously the use of compression within the HDF5 files used to implement the BAG structure, but had postponed application pending performance tests. Ladner reported that in trials within NAVOCEANO they did not see significant performance penalties with compression in this context, and offered to provide a document describing the tests. (Action: **LADNER**.) The group therefore agreed that although some testing is probably still indicated, compression natively in HDF5 should be adopted for the next release. (Action: **PATON**.)

2.2 **ASCII Readers for BAG Data**

NGDC are now providing BAG files through their web-based ordering system, and have had requests to make the data available as ASCII in addition to the native BAG format until such time as BAGs can be loaded into other packages, such as GIS products. Some success on this has been reported by LT(JG) Mark Frydrych, NOAA, who is currently assigned to NGDC; Calder suggested that we might like to have some information about this evident on the ONS website. After some discussion, however, it became evident that there is already a tool in the bagread.c code, currently distributed with the library, which can be used to dump data directly to ESRI grid files, with ASCII XML formatted metadata. What's more likely is that information on tools such as this need to be better advertised to avoid duplication of effort.

This led to a discussion of how this might be achieved. Ladner suggested, and the group agreed that a potential solution would be to have an 'related projects' page or link on the project website to allow us to advertise projects and products using the BAG code. This should make the information on what is available more readily accessible. This should happen in conjunction with the next release of the library. (Action: **CALDER**.)

2.3 **Release of New Library Version**

2.3.1 *Binary Builds for Release*

During the initial build phases of the project, the group concluded that wrapping binary releases of the distributions would be difficult to support in general. It now appears, however, that although most of the heavy users of the technology (typically the members of the ONSWG) build the source code from scratch, many more casual users find this process difficult and might benefit from a more direct installation process.

The group discussed the potential for doing a binary build release in conjunction with the next release of the library. Paton indicated that his company does nightly builds of their source tree, which includes the ONS library, for multiple platforms and platform configurations, and that he is willing to provide the builds for distribution if someone else is willing to do the packaging. Calder agreed to do the packaging, starting with the next release, so that the distribution binaries have header files and compiled libraries for Win32, Win64, Linux (32-bit and 64-bit) and Mac OS X. (Action: **PATON**, **CALDER**.)

2.3.2 *Addition of XML Library to Distribution*

NAVOCEANO had previously proposed the addition of a metadata support library to the project. This library allows reading and writing of the metadata XML so that the Application Layer does not have to do everything externally. Ladner proposed that this should be incorporated into the next release of the library, and the group did not have significant objections, although some review should be considered.

The group therefore has to review this material and test for any side effects before the candidate release. (Action: **ALL**.)

2.3.3 *Timescales*

The modifications discussed previously clearly indicate that a new release of the code is required. A proposed candidate release date of 2009-07-03 was agreed, with a two-week period for comments followed by a formal full release on 2009-07-17 subject to comments from the candidate. Releases will be managed through the ONS website as before.

3 Summary of Action Items and Dates

The following actions and dates were agreed:

Person	Actions(s)	Section	Date
All	Review metadata XML library additions for candidate	2.3.2	CR
Byrne	Arrange teleconference for next meeting	4	2009-07-01
Calder	Add section to website to support “Related Products”	2.2	FR
	Package binary builds for full release	2.3.1	FR
Ladner	Construct API changes for Nominal Depth layer	2.1.2	CR
	Provide information on performance with compression in HDF5	2.1.3	CR
Paton	Add support for EPSG projection strings & remove GeoTrans	2.1.1	CR
	Turn on compression support in HDF5	2.1.3	CR
	Provide binary builds of FR to Calder for packaging	2.3.1	FR

Dates above in red are those which would result in a significant impact on other activities were they to slip, and are therefore critical. The release dates agreed previously are:

- **Candidate:** 2009-07-03
- **Full:** 2009-07-17

4 Next Meeting

The next meeting of the group will be held by teleconference on 2009-07-03, time to be arranged, in order to formalize the release process. Details of connection number and passcode are to be arranged and distributed by e-mail to the development list. (Action: **BYRNE**.)

5 Participants

- Shannon Byrne (SAIC Newport)
- Brian Calder (CCOM/JHC)
- Wade Ladner (NAVOCEANO)
- Webb McDonald (SAIC Newport)
- Mark Paton (IVS Ltd)
- Jack Riley (NOAA)