

OPEN NAVIGATION SURFACE WORKING GROUP

MEETING  
SUMMARY

2012-05-15

Canadian Hydrographic Conference

DRAFT VERSION

2012-05-16

## 1 Introduction

This document details the result of the meeting held at 0830EST on 2012-05-15 to continue development for a new release of the library. The meeting was held in conjunction with the Canadian Hydrographic Conference 2012, using facilities kindly arranged by Rob Hare of the Canadian Hydrographic Service. 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' (i.e., release V1.6 of the library).

## 2 Summary of Discussion

### 2.1 Follow up on 1.5.0FR

#### 2.1.1 XML Support Library and API Extensions

As a consequence of the update to the new XML schema in 1.5 (to update to the current ISO standards), the NAVO-supplied, optional, XML library distributed with 1.5 was outdated: changes to the structure of the XML schema means that the library will no longer parse compliant metadata from a new BAG. The group discussed how this might be rectified, and avoided in the future. Ladner suggested that it would be possible to provide a common API, incorporated into the standard library that allowed for user-level specification of appropriate metadata, and mapped it into the appropriate structure. The group agreed that this was plausible, although it would need to have a mechanism to allow for extensions to be added, since some of the vendors also add information to the metadata that is not necessarily standard. (This will also allow vendors that currently generate the metadata through a separate process to add their pre-constructed data using the extension mechanism.) Ladner agreed to provide, for review, an analysis of the components of the current schema that could be incorporated in a generic API model, and how it would be possible to provide the extension mechanism required. (**ACTION: LADNER.**)

A secondary issue in the XML structure as currently implemented is that many of the fields are free-text, and therefore open to interpretation. The group discussed whether we should consider providing a document that would indicate appropriate contents for such fields. There did not seem to be any evidence that this is a current issue, however, and the group considered it sufficient, for now, to simply provide better examples of appropriate metadata, possibly from hydrographic authorities if available, as part of the distribution, or from the project website. See 2.2.4.

#### 2.1.2 Projection Information and EPSG Codes

The group discussed a request from QPS to consider the inclusion of EPSG projection codes in the WKT projection information currently stored in the XML metadata in a BAG. The advantage of doing so is that these codes are unique to the projection system that they encode, and therefore are much faster (and much less prone to error) to interpret than the WKT equivalent. However, there are projections that do not have an EPSG code, and there is no reliable method to ensure (without appropriate pre-conditions) that a given WKT string is exactly an EPSG equivalent. (That is, a WKT is easy to generate from an EPSG code, but not vice versa.)

The group therefore agreed that while having an EPSG code would be extremely useful, it could not be made mandatory (in case an equivalent does not exist for the particular projection system) and could not be relied upon as an alternative to the WKT (since not everyone uses or can translate EPSG codes). A separate concern is showing that a WKT and associated EPSG code are actually equivalent. Since there is no known method to make this completely automatic, the group agreed that the only viable option was to rely

on producers making sure that the WKT is generated from the EPSG code on construction (if the EPSG code is being used) and then require that it be preserved later.

## 2.2 Development Priorities for 1.6.0FR

### 2.2.1 *Build System*

The build systems for current versions of the BAG library started from a common source, but have diverged over time. The group felt that this was not ideal, and that therefore a common build system, which was more readily maintainable, was a target for 1.6.

The group considered a number of different possible build systems, and concluded that either cmake (<http://www.cmake.org>) or even simple makefiles might be possible. There was some doubt, however, as to the compatibility of these methods with the various build systems, and therefore the group felt that there might be some more investigation required (**ACTION: VAN DUZEE**), and testing later of whichever solution is selected (**ACTION: ALL**).

### 2.2.2 *Third Party Library Builds*

The BAG library requires the use of a number of third-party libraries; currently these are distributed with, and build as a part of, the library distribution. Several members of the group have reported, however, that making this work with larger projects is difficult when those projects include the same version of the third-party libraries, or more especially when there are different versions of the same libraries. This makes the integration of BAG with larger projects more problematic than required.

The group discussed the issue and agreed that it was important that the distribution contained all of the requirements to build the library (i.e., including all third-party libraries). We agreed, however, that we should provide the ability for the user to specify an alternative version of the third-party libraries as part of the build system. This will allow the integrators to use their own libraries, in whatever locations are required. The group discussed the difficulties of ensuring that the third-party libraries provided by an integrator were compatible at the API level with the libraries that were provided with the distribution. We concluded, however, that this was correctly the responsibility of the integrator, so long as we make clear the minimum requirements as part of the release. This action is correctly part of the build system, and should be rolled into that action (**ACTION: VAN DUZEE**).

During the discussion, Van Duzee suggested that there might be evidence of a custom version of one of the third-party library in the current distribution, or a mixture of two different versions of the same library. The group concluded that this is likely to be a mistake, and therefore should be a priority if it can be identified. Van Duzee agreed to investigate the paper trail on this and report (**ACTION: VAN DUZEE**).

### 2.2.3 *GDAL Integration Process*

The group discussed providing the interfaces to allow full BAG integration in GDAL as an optional download, but concluded that this is something that should be part of 1.7 (or later). It is also possible that this could be done by a third party (rather than ONSWG), and agreed that this should be encouraged.

### 2.2.4 *Provision of Sample Data Files*

As part of the testing, and by way of example for the XML structure of the metadata, the group agreed that having several test BAG files would be extremely useful. These should be, however, a separate download from the project website rather than being included in the standard distribution. Calder indicated that the website is capable of hosting example files with a little modification (**ACTION: CALDER**), and solicited example files (**ACTION: ALL**).

### 2.2.5 *Updates to the File Specification Documentation*

The group discussed the state of the current File Specification Document (FSD). Van Duzee indicated that the section on XML is quite out of date (since it relies on the previous definitions of the ISO structure), and needs to be either heavily modified or removed. The group agreed that it would be simpler to remove any component that was a part of the ISO specification, and retain only those extensions or modifications that are specific to BAG files in the FSD (**ACTION: VAN DUZEE**). The group also agreed that we needed to update the coverage of nominal depth surfaces (**ACTION: LADNER**) and auxiliary layers for vertical correc-

tors and survey-specific information that were added in versions up to 1.5 (**ACTION: McDONALD**). Due to the difficulty of versioning and merging Word documents, Calder agreed to take corrections to the current version and integrate them into a single version (**ACTION: CALDER**).

2.2.6 *Different Data Structures*

The group discussed again the potential to improve the data structure used internally through some form of tiling, or other meta-structure. We felt, however, that this is something that will have to be done at the stage where we change the data structure to support variable resolution grids, and therefore that this would be wasted effort at this stage.

2.2.7 *Timescales*

The group discussed the provision of a timescale for the release given the issues considered here. We agreed that a 2012-06/07 release date for version 1.5.x (to correct the XML issues) would be possible, pending confirmation by Ladner after examination of the XML issues (**ACTION: LADNER**). We also agreed that the 1.6 release, mostly to deal with build system issues, should be possible by 2012-10/11.

**3 Summary of Action Items and Dates**

The following actions and dates were agreed:

Person	Actions(s)	Section	Date
Calder	Modify website to support download of example data files	2.2.4	2012-06-01
	Integrate FSD modifications	2.2.5	2012-07
Ladner	Provide specification for proposed XML API	2.1.1	2012-06-01
	Provide FSD update for nominal depth layers and metadata	2.2.5	2012-07
	Confirm timescale for 1.5.x XML updates	2.2.7	2012-06-01
McDonald	Provide FSD update for vertical correction surfaces	2.2.5	2012-07
Van Duzee	Investigate build systems for cross-platform builds & report	2.2.1	2012-07
	Design third-party library specification for build system	2.2.2	2012-11
	Investigate potentially corrupted third-party library & report	2.2.2	2012-07
	Provide FSD update for XML additions relative to ISO	2.2.5	2012-07

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

**4 Participants**

- Kevin Byrd (NAVO)
- Brian Calder (CCOM/JHC)
- David Fabre (NAVO)
- Rob Hare (CHS)
- Wade Ladner (NAVO)
- Webb McDonald (SAIC Newport)
- Mark Paton (QPS)
- Glen Rice (NOAA)
- Jack Riley (NOAA)
- Mike Van Duzee (CARIS)