Notes

WILL HYDROGRAPHIC GEOSPATIAL DATA PASS THE "FITNESS TO USE" TEST

By Dr M. Osborne and J. Pepper (*OceanWise*)

OceanWise provided a news item in August 2017 for Hydro International (Reference), outlining the work of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM) and reported on the presentation to its 7th Session given by the then Secretary-General of the International Hydrographic Organization (IHO), Robert Ward; the Committee of Experts endorsed the terms of reference for establishing a Working Group on Marine Geospatial Information (UN-WGMGI). It seems timely to now provide an update.

UN-GGIM aims to address global challenges relating to how geospatial information is created, managed and utilised. The UN seeks to overcome these challenges by improving access to fit for purpose geospatial information and it to be an essential enabler to meeting the global community's Sustainable Development Goals (SDGs, Reference). UN SDG 14 refers to Life Below Water, and several other SDGs, have a marine component (Figure 1).

Figure 1: *The 17 United Nations Sustainable Development Goals (Reference)*

 The terms of reference of the newly formed UN-WGMGI are focussed at a policy level, raising awareness and highlighting the importance of reliable, timely and fit for purpose marine geospatial information to support the administration, management and governance of the marine environment. To deliver this, the working group is encouraging the use of internationally agreed frameworks, systems and standards, to improve the relationships between people and the marine environment, and to support the committee of experts to develop the availability of high quality and reliable regional capacity building initiatives, under the UN-GGIM's wider mantra of 'nobody left behind'.

It is no coincidence that the objectives of the UN-WGMGI mirror those of the IHO Marine Spatial Data Infrastructures (MSDI) Working Group (MSDIWG). Established in 2007, the MSDIWG has done much to promote and foster the wider use, and re-use, of hydrographic data and information. The IHO Publication C-17 document first published in 2009 provides an excellent reference text for those wanting to know more about MSDI (Reference). In 2016, the Open Geospatial Consortium (OGC)

Marine Domain Working Group was established to act as a focal point for OGC activities and to present interoperability requirements, use cases, pilots, and implementations of OGC standards within the marine geospatial community. As with the UN-WGMGI, this group helps to build understanding between the marine and geospatial communities. As an example of how this is being achieved, one of the outputs from the recent inaugural face to face meeting of UN-WGMGI in Busan, Republic of Korea in early March (Figure 2) was to ask OGC to compile a non-technical guide on the different standards and their role in SDI.

Figure 2: participants of the 1st Meeting of the Working Group on Marine Geospatial Information (WGMGI) of the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)

The fact that the aims of the these three working groups are so closely aligned is of great benefit as witnessed at the first joint meeting, when it was agreed to pursue these aims, and in doing so thereby create a common set of objectives, and joined up work-plan, supported by the technical capability of the OGC and the weight of the UN in influencing policy at a national level. The first meeting of the UN WGMGI marked a major milestone in the evolution of marine geospatial information management and re-use.

With the backing of the UN, and links to the OGC, the hydrographic community now has more reason than ever to pursue an agenda much wider than just safety of navigation. This means that this community should make their data more freely available and be encouraged to move towards managing it and making it available in such a way so as to support a wider range of products and services developed by industry, such as those provided by OceanWise, aimed at non-traditional markets such as spatial planning, conservation, aquaculture, leisure and tourism).

MSDI is often seen as something separate from a national hydrographic office's main purpose of providing nautical charting and publications. This viewpoint could not be farther from the truth, as all the basic principles of MSDI - to manage data centrally, to consistent standards, and improving how data and information is exchanged between stakeholders - applies equally to navigational safety as it does to any other application area, be it marine spatial planning and licensing, or emergency planning and response. Figure 3 presents the four pillars of MSDI.

For national hydrographic offices, this new way of working represents a real challenge. Not only do they have to educate their workforces, adapt their processes and traditional ways of working to make data, not product, central to their operations, but they also need to assess which types of geospatial information they are responsible for, and which other data authorities they need to

connect with. If national hydrographic offices embrace this new way of working, they will form part of an overall 'marine geospatial data ecosystem'. The issues of data quality (see Table 1), lifecycle and ultimately governance are key success factors so that they as data originators, value added resellers, and an expanding range of users will be much better off, and the goals of the UN-GGIM can be met.

Figure 3: The Four Pillars of Marine Spatial Data Infrastructure (MSDI, Reference)

Table 1 - The seven characteristics that define data quality (DAMA International, Reference):

1.	Accuracy and Precision
2.	Legitimacy and Validity
3.	Reliability and Consistency
4.	Timeliness and Relevance
5.	Completeness and Comprehensiveness
6.	Availability and Accessibility
7.	Granularity and Uniqueness.

There is much work still to do, but already some key issues are being identified that provide the evidence for further work. Making existing product data more easily accessible as a legitimate means to accessing marine geospatial information can only go so far, but it is start. There are so many reasons why a nautical chart is not fit for any other purpose than navigation; shoal-bias, discontinuities across chart boundaries and features that are removed or modified for reasons of safety are just a few. These are issues of data quality (see Table 1) and need to be addressed in terms of creating products and services that meet the exact needs of users. The temptation to make navigation product data, or the source data such as individual hydrographic surveys, more accessible is to miss the point. The former can be misleading, and the latter can result in significant amount of data processing requiring specialist software to get the data in a fit state to use in GIS for example. What is required is a coordinated effort to create a range of products and services that have an authoritative and comprehensive base and that are fit for purpose for the application they are designed to support. Navigation is one such application, but there are many others, as users of OceanWise marine mapping data will testify.

This all emphasises, even more strongly, the need for fundamental change and improvement in how marine geospatial information is viewed and managed. The first meeting of the UN-WGMGI made this point loud and clear. Let's hope it will go from strength to strength and we can continue to build a hydrographic marine geospatial information community that is forward thinking, inclusive, responsive and meets the aims of the UN-GGIM and beyond.

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