

DQWG 10 - Proposal submitted by Australia

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Consideration of the validity of a three tier data quality model against existing ENC and shipping patterns (including an alternative proposal to directly address known CATZOC deficiencies)

In any development process an essential step is to validate the work against expected outcomes. So this may sound rather blunt, but I suggest an item that must be discussed is whether the direction taken by this group so far is going to produce anything useful. The solution that has been developed by DQWG results in over 98% of the world's coastal waters (let alone the deep ocean waters) being shown as 'red' under a three tier system – it will very quickly be discounted as meaningless by mariners as soon as they realise that ships can and have navigated those waters in near perfect safety for many years, so the one time they stray into waters that are dangerous, they will simply ignore the warning.

Validation of DQWG 8&9 three tier model

I have done this validation against real-world data twice – once against all coastal waters in the Australian Charting Area (I don't think anybody believed me), and once against most of the world's coastal waters. The latter is a real-world test based upon the ENC being used by two ships undertaking world cruises during 2015 – the ship's captains picked the ENC they required; they were not picked by me to drive a particular outcome (and I excluded AU ENC as well). The voyages include ENC for New Zealand, South America, all the Mediterranean, European coast and English Channel, Baltic, most of Asia, and a few areas off Canada and USA. Within this selection, I also picked two subsets – the English Channel and the Singapore / Malacca Straits.

Regrettably, the one thing I can say with confidence is that the model developed so far is so heavily biased towards identifying perfect surveys within ports that it is absolutely useless everywhere else. To be specific, for vessels going around the world, over 98% of the coastal waters would be classified as low quality ('Red' or whatever colour is chosen), leaving ships somehow trying to identify the dodgy areas from the dangerous areas. This simply not possible when they would have all been made to look the same under the DQWG 8&9 model. This result also completely contradicts the objective evidence that there are over 50,000 ships undertaking international voyages each year – none ran aground or sank because they misunderstood the existing data quality indicator systems, so we have to ask whether a problem even exists. Notably, even the 2012 report on which this is based identifies that the preferred source of quality information in port is the ship's pilot, not the ENC / chart, so if a three tier solution needs to be introduced, then it has to work well for areas where pilots are not embarked, or where the ship's master doesn't already have strong local knowledge based on repeat visits.

Alternative proposals

We always identified that getting the criteria for Good, Fair and Low would be the most challenging part – getting acceptance from HSSC and Member States – but I can guarantee the solution so far will not be accepted, as it is so wildly different from the objective evidence. I have therefore drafted a circular letter to be sent out via the IHB to seek Member State input. Within it, I have proposed four different options, including:

- Proposal 1 - Identify and fix the things perceived as wrong with CATZOC (not much, simple to do)

- Proposals 2 to 4 - Three increasingly tight specifications for Good, Fair and Low, based on current documented safety management systems in use within the cruise industry, based on “unlikely to affect surface navigation”, and based on the criteria developed so far by DQWG.

Recommended approach

In considering these options, please bear in mind, the task presented to DQWG was not specifically to develop a three tier model, it was to:

“investigate ways of ensuring that ECDIS displays provide a clear warning or indication to the mariner on the quality of the underlying survey data, through appropriate use of the attribute CATZOC (Category of Zone Of Confidence) and/or improvement of the existing display capabilities (IHO Task 2.5.2 refers)”.

I think its time to stand back and look at this again, as everyone has been seduced by the idea of developing an entirely new system, which would probably only come on line once all users were actually familiar with CATZOC, with transition and the need for retraining actually doing more harm than good. Instead, I strongly suggest we focus on Proposal 1:

- Better access to CATZOC explanation (Source and ZOC Diagrams are explained on every single chart, but CATZOC is not explained on any ENC, so of course it isn't well understood.) We should address this directly by introducing Pick-reports, as we have heard at several DQWG meetings how difficult it is to educate mariners – so lets put the information directly in front of them, where and when they need it most.
- Develop simple plain English (and other) explanations for use by mariners, then put it in those Pick-reports (yes, it would be easy)
- There is absolutely no guidance on converting legacy survey metadata to ZOC (and over the last few years I have heard some great examples of hydrographic offices getting it wrong then incorrectly blaming the system -Australia has been doing this for at least 15 years so has all the considerations available)
- Mariners absolutely do not want to be forced to drill down to find the additional information which may help them differentiate different uncertainty parameters – they have enough trouble with the vast array of menu structures in different ECDIS even now.

How do I know all this? By getting practicing mariners to try them in an ECDIS Bridge simulator and during one-on-one discussions with over 100 current, practicing master mariners on advanced pilotage re-qualification courses since December last year (ranging from the Master of the Queen Mary, bulk crude oil tankers to coastal and port pilots).

Attachments

I realise this is potentially a very big change in direction, but I think it is absolutely essential that the four proposals so far are considered in the light of real-world trials and feedback. I have attached:

- A draft circular letter, which includes four proposals plus analysis of each option against English Channel / Singapore & Malacca Straits / world cruises
- Individual analysis of all the coastal ENC of the individual producer nations covered by the ‘world cruise’.
- Decision trees for options 2, 3 and 4 (4 is the most restrictive and is the one developed during DQWG 8 and 9, - but which I strongly recommend be discarded as impractical in the real-world)