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The ENC Product Specification Debate

S-57 Edition 3.1 and its ENC Product Specification Edition 2.0 has been frozen for more than four years. An S-57 Edition 4.0 data transfer standard (not an ENC prod spec) is being developed for release not earlier than 2006. Various product specifications may then be developed using Edition 4.0,
covering such things as Hydrographic Data Survey Content, Navigational Publications, WEB Feature and Mapping Services, etc.

However, any new ENC Product Specification based on S-57 Edition 4.0 cannot be introduced until some time later and only then with a general consensus between the IHO and the wider ECDIS stakeholder community, including OEMs, software houses, IMO, and others.

Whilst S-57 Edition 3.1 ENCs have proven more than adequate for safe navigation, there are many known problems caused by the necessity to freeze the standard. These have generally been solved by developing workarounds which have not always been in the best interests of the user or navigational safety. This also creates future implications for producers if and when the standard changes. Some examples of this are:

- Using feature objects/attributes which are not always appropriate for the real world they represent. Recent examples are Archipelagic Sea Lanes (ASLs), Extra Sensitive and Particularly Sensitive Sea Areas (ESSAs and PSSAs).
- Use of the attribute INFORM to act as a pseudo attribute which forfeits its potential to influence presentation.
- Over use of cautionary areas to cater for anomalies which cannot easily be encoded using normal feature objects. One example being areas of minimal bathymetric information. A specific group 1 feature should be designed and used rather than using a combination of a guesstimated depth area in combination with a caution area which uses INFORM to modify it further.

There are numerous other instances, too many to document here.

Conversely, if the standard is changed without due consideration to the various stakeholders, this too can cause considerable problems. Some examples of this are:

- costly changes to ECDIS software including type approval
- significant problems retro fitting vessels especially those who may not have maintenance agreements
- changes to production software and the logistics of reissuing new editions of ENCs
- potential problems maintaining multiple versions
- detriment to the drive towards world ENC coverage

How can we solve these issues and define short and long term strategies for maintaining the standard?

Any solution can only be successful with the full cooperation of the industry stakeholders. Therefore it is logical that this group should play the leading role in any discussion and future strategy.

Accordingly, we now need some robust and constructive discussion on how and when (if ever) we might move to either an Edition 3.? or 4.0 ENC. Such discussion needs to look at the current limitations of the Edition 3.1 ENC prod spec and the potential advantages of an Edition 3.? or 4.0 ENC. It also needs to look at issues such as backwards compatibility, supportability, duplication of formats, etc, etc.

The following bullets are an attempt to provoke healthy debate and are not solutions endorsed by CHRIS or TSMAD.

What if Edition 3.1 and its ENC PS was divorced from S-57 and became its own standard?

- S-57 Edition 4.0 will add new capabilities like imagery and gridded data plus 3D. Do we actually need these to improve the existing use of ENCs for navigation?
- Would it be better to develop specific applications for situations where more sophisticated data and presentation are required.
- Real time elements like tides, currents etc could be implemented now using existing formats, but with added functionality.
- Could we produce an edition 3.2 which includes all the maintenance corrections and any new feature, at the same time redesigning the structure so that a layered approach is introduced. Any subsequent changes being added to layers which overlay the basic data e.g. gridded data or raster imagery.
- Could we use a mixture of both ISO/IEC 8211 and GML?
- What about a better way of handling versioning? Could we inform the user which edition he was using, rather than hardwire checks.

What if we made the leap to S-57 4.0

- Would a staged approach be best? Introduce a basic ENC PS including existing functionality using 4.0 model and introduce GML as the transfer mechanism. Subsequent versions will gradually introduce the more exotic functionality.
- Is there a way to develop an independent core kernel which could be updated easily and delivered/installed via CD or the Web. Potential type approval issues, but would be very cost effective for OEMS without forfeiting their ability to individualise their product.
- How would we deal with two flavours of ENC and for how long? Conversion from 3.1 to 4.0 may be possible, but producers supplying both would need 2 separate distributions.