IHO MASS PT S100 Gap Analysis

Member State/Organization FINLAND Traficom

S100 Standard Reviewed S-102

Issue/Requirement (take from Spreadsheet)	**Issue addressed?**	**More content?**	**Gap in standard?**	**Potential Solution/s**	**Ease to implement?**
ALL: MASS will require more frequent or real-time updates of the data contained in the S100 products, which should be pushed from official sources that the vessels can 'listen' out for and update their navigational database and products automatically irrespective of where they are in the world. Event driven data updates and near real time updates will be required for MASS as MASS will always need to be up to date.	✓	☐	☐	This is not a problem from the S-102 perspective. The associated products are delivered only via network download.	Easy
COMMENTS of the S-102 Group: S-102PT concurs that this issue is not a problem from the S-102 perspective. Rather, it is an issue for producers, distributors, and maintainers of the distribution infrastructure.					

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ALL: The communication infrastructure necessary to sustain data exchange is not reliable and affordable today. Thought needs to be given to data packets sizes for data and updates for MASS.	✓	☐	☐	The S-102 can be applied for this purpose. It includes informative file-size limit of 10 MB.	Easy
COMMENTS of the S-102 Group: While communication infrastructure reliability is not uniquely an issue for S-102, it is nevertheless an issue. S-102PT concurs that thought needs to be given to data packet size as regards MASS.					

S-102: MASS will require full bathymetric coverage datasets/DTM, gaps in data will pose a problem for MASS.	✓	☐	☐	This is not a direct problem of the S-102. That is, the coastal states should ensure the availability of data within its administrative sea area. Depth data is also available in S-101 format and can be used to produce redundancy as needed. Additionally, it could be necessary to add the associated metadata into S-102 products.	Easy
COMMENTS of the S-102 Group: S-102PT concurs that gapless coverage is not a direct problem of S-102. At bottom, HOs will determine where they do or do not have S-102 coverage. While S-102 makes sense in fairways/approaches to harbours, shallow waterways, harbours, etc., it does not make sense in deep water (where S-101 would provide sufficient coverage for safe navigation).					
S-102: To avoid large volumes of bathymetric data (i.e. S102 gridded data), there is a need for conspicuous seabed features to be highlighted (such as sea mounts, obstacle or trenches) for use with Inertial Navigation Systems in GNSS denied environments. Similar to land based visually conspicuous objects captured in ENCs today.	✓	☐	☐	The current S-102 can be used for showing the seabed, including conspicuous seabed features. Highlighting and/or displaying selected features as individual objects (=vector data) is not possible within a gridded bathymetry product as S-102. For this purpose, another vector-based product should be utilized or developed.	Easy
COMMENTS of the S-102 Group: S-102PT concurs that no meaningful gap exists as regards this issue. **While we agree that vector (feature) data should not be stored in a raster product (such as S-102), we contend that the algorithms available in general image processing allow for sufficient derivation of feature data from the raster data. As such, another vector product (beyond S-101 and S-102) is not necessary.**					

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S-102: MASS will require certainty of seabed and associated features. High resolution data is great, but if it changes regularly, then that needs to be made clear and articulated in some way (example Humber estuary). Understanding when highly mobile seabed was last surveyed will also be important.	✓	☐	☐	The current S-102 already includes a cancellation mechanism, and the producer of data is responsible on its reliability. The application of the associated metadata could also applied to provide additional information. Rapidly changing data, such as migrating mud-banks, might require additional work or new products.	Easy
COMMENTS of the S-102 Group: S-102PT concurs that this issue is addressed well. In particular, S-102 Version 2.2.0 will introduce certain metadata elements to clarify and articulate such tendency for rapid geomorphological change.					

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ALL: MASS will require more geographical polygons to describe areas (such as speed restriction and constraints), with suitable attribution for MASS to interrogate and act appropriately. This information is often captured in text boxes, Sailing Directions or Pick Reports in natural language with very little geographic descriptors, making it impossible for MASS to interrogate, read and act upon. These could be created as instructional layers which are geographically location based containing attribution such as name of feature, type of feature, unique number, reason for speed restriction or constraint etc. in a machine readable format.	✓	☐	☐	This is not a problem for the S-102 perspective, as it is not a vector based product.	Easy
COMMENTS of the S-102 Group: S-102PT concurs that this issue is not within the remit of S-102. If descriptive text is not machine readable, it cannot be processed by MASS. Such issues are more the province of S-101 and product specifications such as S-126 (Marine Physical Environment).					