IHO MASS PT S100 Gap Analysis

Member State/Organization	Canada
S100 Standard Reviewed	S-128
Maturity of Standard	Reasonably mature at V1.0 (issued 2022)
S100 Standard Chair	NIPWG –S128– Eivind Mong (Can) – Eivind.mong@dfo-mpo.gc.ca

Issue/Requirement (take from Spreadsheet)	Issue addressed?	More cnontent?	Gap in standard?	Potential Solution/s	Ease to implement?
MASS will require the natural language data in publications, charts (pick reports) and MSI to be made machine readable and interpretable. Natural language is difficult for machines to read and interpret, we need to move to a feature and attribute model for all aspects of data for MASS. This will also need to cover meta data for the actual data.	☐	☐	✓	Mostly metadata information, and in a predefined list (enumeration) of choice options. There are still some free text fields. Figure 6.2: Feature type, catalogue elements, copyright: text Information type, nauticalproduct, contactinstructions: text Figure 6.3: Complex attribute type, defaultlocale, character encoding : text Complex attribute type, defaultlocale, country : text (…) It is specified in table 7.1 that «CharacterString» can be used.	Moderately

			That text might not be hard to decipher by a machine when it is simple words (like a location), but could be an issue if sentences, or longer description are involved. Need to make sure the free text fields are for human consumption and not machine, and/or easy to decipher by machine without interpretation, and/or not mandatory information. A question is: Why do you need something for human and not machine, especially in a context of degree 4 of autonomy, where no human will be involved in the whole process.	
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.	☐	☐	✓	Some standards have a high update frequency, and synchronizing national catalogues (S-128) to their update rate will not be possible (e.g surface currents S-111 and water-levels S-104: observation and forecast). It was discussed (for a future version)to have a note (specific filed) mentioning of the update rate for such standards. Also some standards have an unpredictable nature and therefore an unpredictable update rate, since they are prompted by unforeseeable events, but have a large amount of update. (e.g NAV warns S-124, weather info S-4XX). In that case it was discussed (for a future version) that a note (specific field) should warn the mariner of the irregular interval of upcoming	Mod erate ly

			updates, and maybe an interval period to which the mariner should inquire for updates.	
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.	☐	☐ ✓	S-128 compresses well but will still be an issue for normal connectivity. In 11.2 it is mentioned that CPN datasets shall not exceed 20MB, and update datasets shall not exceed 500kB.	Easy

Description (high level):

- Catalogue of Nautical Products (CNP) datasets describe the availability of paper charts, ENCs and other nautical products, applications for navigational purposes, online services and e-Navigation services. This includes their issue date, status, producing agency, and coverage.

From discussion with Eivind:

- S-128 was 1st developed to be a catalogue for human, to be put on a website and easily converted into pdf. It is mostly machine readable in its present form, but there are a couple of gaps to be fully machine readable (WG aware of that). It is intended for all products and services.
- S-128 could be used for the S-63 (encryption) readme file to know what is the latest version of the standard.
- Hydrographic offices will not be solely responsible for all S100 standards, many national organizations will likely be involved in producing the different standards. It is not yet a given that there will be only 1 S-128 catalogue per nation. For logistical reason, to have more than 1 catalogue per nation will be a challenge for mariners and MASS. There will need to be a lateral integration.
- The distribution of S-128 : machine discoverable might be an issue (multi-organizations). MCP vs RENCs.

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- In conjunction with the issues and requirements spreadsheet, use the attached template and use one template per standard you are looking at (i.e. if you have 2, then you will create 2 forms). ✔
- Enter the information at the top of the form to capture your country or organisation, the S100 standard you have assessed, the maturity of that standard and who is the chair of the standard WG or PT. ✔
- Look at all of the issues captured and assess against your standard. I have suggested the appropriate standard per issue, but that is from my own understanding and I may have missed something, so please be thorough. ✔
- Ensure you find out the current state of the standard/s you have been assigned, for example S101 is undergoing review, so I will ensure that UK speaks to the chair of the S101 PT to make sure that the latest version is assessed as the new changes may address some of the concerns. ✔
- Ascertain if each issue or requirement from the spreadsheet, relevant for your standard is either met and no further action is needed, the standard caters for the issue but HOs may want to consider adding more content (example more land based contours) or is unmet and therefore there is a gap identified in the standards. ✔
- Please have a go at suggesting a solution for the problem that will address the gap. Be as detailed as you can be, for example there is an issue with natural language text and it not being machine readable, but please don't put a simple statement that says "make all data machine readable". Our job is to help the respective WGs and PTs. ✔
- Also use the pulldown to assess whether the solution you have identified is "Easy", "Moderately" or "Hard" to implement. ✔