Paper for Consideration by S-101 PT9

S-101 Documentation Changes

Submitted by:	S-101PT Chair
Executive Summary:	This paper considers a different approach to the maintenance of S-101PT documents. Noting that the IHO secretariat is a key stakeholder and as this is at the conceptual stage this paper simply seeks S-101PT endorsement to explore this further.
Related Documents:	S-101 Edition 1.1.0 ENCWG 4-06.2 Github proposal for S-58 to ENCWG 4 in 2019
Related Projects:	S-100

1. One of the goals of S-100 has been to make information more machine readable and support the proliferation of more data product specifications to support the efficient exchange of a wider range of data. Although the Feature and Portrayal Catalogues are machine readable large documents for human use are still required. Current management of these documents is done with word processing software. This paper suggests that the volume of documentation and the need to be able to track changes means it's time for a new approach.

Analysis/Discussion

2. The documentation of the S-101 Product Specification currently consists of a series of Microsoft Word documents along with the machine-readable Portrayal and Feature Catalogues. A summary is included at Annex A of this document. Maintenance of large word documents becomes very cumbersome and the chances of errors and document corruption increase. Secondly given the various interrelations and the ongoing maintenance of these documents Word provides limited tracking capabilities. The HSSC recently created the ISO 9001 cell which has focussed on S-101 and has identified the following risk;

. *Traceability of changes: documents are established, shared and enriched by WG in a word format, which makes the rigorous monitoring of contributions complex. As an example, DCEG is now a document of about 600 pages.*

3. As a community IHO and its HSSC working groups have begun to use Github in most instance this has been in a limited way but in others such as with the PC the management of changes to resources can tracked. One option for documents such as the DCEG and product specification would be to hold them as mark down documents within a Github repository. This way changes could be managed through Github and the document outputs derived from this mark down content.

Some considerations that would need further consideration.

1. Which format should be used? A markdown format seems appropriate.
2. What new software would be needed?
3. Would training be needed or as a minimum some sort of guide?

4. Would a convention or guideline be useful to ensure consistency?
5. What overall effort would be needed to move to this approach and what would be the overall resource impact for IHO secretariat and PTs/WGs?
6. Can documents be automatically converted to markdown?

Some benefits can be envisaged from this approach.

1. Documents will be easier to work with than the current word versions
2. It should be possible to trace changes back to a source item this could allow feedback from testbeds to be linked to changes to the standard
3. Changes resulting from updates to other standards like S-100 would be much easier to identify
4. There is reduced need to edit formatting of the document if the outputs are generated from markdown
5. There would be much easier visibility of changes compared with current redline documents and change logs
6. This approach would better support internationalisation (providing versions in different languages) and potentially this could be semi-automated. The FR version of the UOC has been moved to Latex.
7. It would be possible to derive management information to track progress and inform resource planning. Noting the work of the ISO cell established by HSSC, some example PowerBI reports based on the Portrayal Catalogue are shown in figure 1 below.

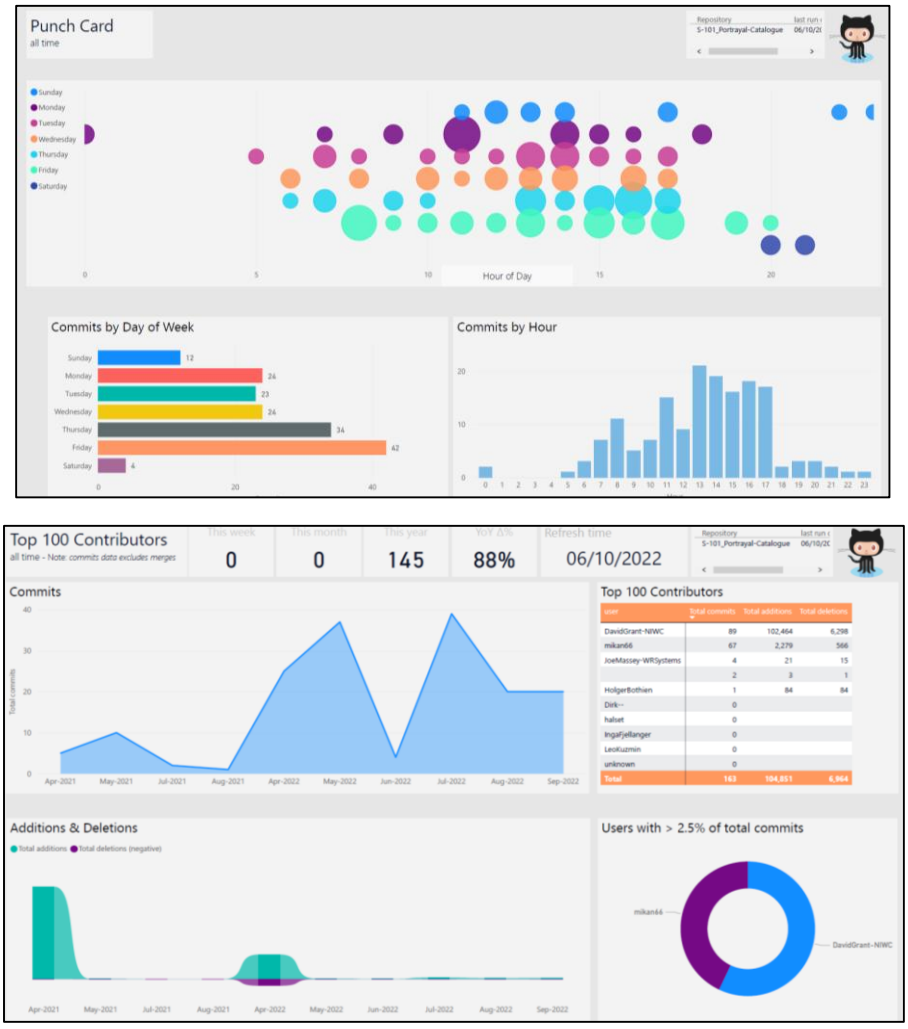

Figure 1 – Sample PowerBI reports based on Portrayal Catalogue Github

4. Noting that further work is needed to understand the detailed solution including the full impacts of adopting this approach the S-101 PT is invited to discuss and seek to achieve consensus on whether this proposal warrants further exploration.

Summary of concept;

- Move S-101 documents to management in Github repositories using a mark down format to hold content and generate document outputs from this content.

- Potentially merge into a single Github repository for S-101 for ease of tracking. This would support tracking of all actions and activity in once place.

- The details of any solution including how existing documents could be automatically migrated requires further investigation.

- A timeframe for this transition would need to be developed but the S-101 Product Specification could be used as a test case.

Recommendations

A. S-101PT to engage with the IHO Secretariat to develop this thinking further.

B. S-101PT chair to raise this concept with the S-100WG and invite them to consider a paper to HSSC15

Annex A Summary of S-101 Component Elements

Short Name	Title	Current Format	Comments
DPS	IHO Electronic Navigational Chart Product Specification	MS Word	It would seem logical to move this document to a markdown approach in a Github. At 90 or so pages this could be done with 1.1.0 on a trial basis.
Annex A DCEG	Data Classification and Encoding Guide	MS Word (15MB approx.)	It would seem logical to move this document to a markdown approach in a Github. However as much of the content is sourced from the XML feature catalogue how to integrate the two sources rather than duplicate should be explored.
Annex B	Data Product Format (encoding)	MS Word (part of main document)	As for the DPS see above.
Annex C	Validation Checks	MS Excel Spreadsheet	It would seem logical to move this document to a markdown approach in a Github, but these checks are still evolving.
FC	Feature Catalogue	.XML (S-100 Part 5)	Dependent on GI Registry and currently maintained using Feature Catalogue Builder.
PC	Portrayal Catalogue	Lua/XML (S-100 Part 9) GITHUB	Dependent on GI Registry currently maintained in a Github repository.
TDS	Test Datasets	Cells held in a Github LINK	These datasets will be folded into S-164 in future.