

Paper for Consideration by TSMAD

S-101 Draft Implementation and Transition Plan

Submitted by:	S-101 Work Item Leader, Jeppesen
Executive Summary:	S-101 represents a major step forward for ENC's, however, in order for a successful transition from S-57 to S-101 TSMAD needs to look at a realistic approach as a way for both OEM's and Hydrographic Offices to move towards S-101.
Related Documents:	S-101 Product Specification
Related Projects:	N/A

Introduction / Background

Over the past several years TSMAD has worked to develop the new S-101 ENC Product Specification. In doing so it has taken a phased approach towards its development in order properly manage its development and set out completion milestones. As of January 2012, TSMAD has made considerable progress towards completion of S-101 and is still on track to finalize the S-101 Product Specification and its ancillary documentation by the end of 2012. In order to realize a completed product specification the following documentation must be finalized prior to submission to the IHO for approval.

1. S-101 Main Product Specification and the following annexes
 - a. Data Classification and Encoding Guide
 - b. S-101 Feature Catalogue
 - c. S-101 Portrayal Catalogue
 - d. S-101 Business Rules

The above is limited to the key components of S-101 – but does not include the S-101 checks, which was decided at TSMAD 22 that it will be a part of S-58. Nor does it include the S-101 test data set. One thing that TSMAD may want to consider is the removal of the business rules annex from S-101 and create a separate document for these as there may be additional business rules that are developed during the implementation phase and if the rules were contained within S-101, any changes would require a new version of the Product Specification.

Another component of S-101 project is the S-57 to S-101 Data converter, which is not considered part of the Product Specification itself. The converter will be made available with the S-101 Product Specification to assist in the implementation phase.

As S-101 version 1.0.0 is nearing completion, a number of uncertainties to how major components fit within the larger scheme of things have arisen. Questions on how the convertor fit, concerns about the convertors ability to work when converting S-57 data into S-101 data when considering major improvements and changes in S-101. How SI/SD fit with the convertor, the S-101 flat (complete) files and so forth.

This paper proposes that a planned and communicated timeline for both the initial implementation of S-101 and the full transition to S-101 to give stakeholders a clear idea of how TSMAD plan to move into the future.

Analysis/Discussion

S-101 Implementation

Noting that TSMAD still needs to complete the final package and is on track for the end of 2012, there needs to be preliminary discussion regarding the IHO approval process and then a draft implementation

plan so the entire IHO community knows when to expect they can see S-101 data to the public and is usable within S-100 enabled ECDIS.

If TSMAD holds to its current completion schedule of December 2012, it is foreseen that the IHO approval process would be as follows:

Mid 2013 – HSSC approval

Note that this would have to be done via HSSC letter as S-101 will not be completed before its 2012 meeting.

Late 2013 – IHO Member State Approval

Note this would be done via IHO Circular Letter

Once the IHO Member states have approved S-101, then the implementation phase would commence. It is considered that there would be three separate dates depending on who is using S-101. At a minimum there are three user bases that need to be concerned with implementation of S-101. They are:

ENC production systems

ECDIS manufacturers

Hydrographic Offices and their Service Providers

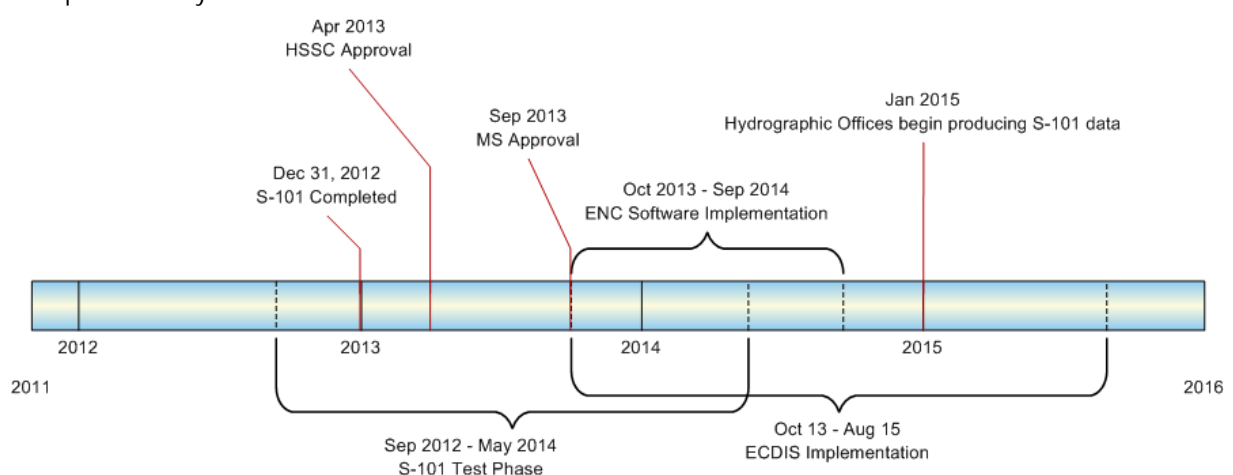
The proposed implementation target dates are as follows:

ENC production systems: MS Approval date + 12 months

ECDIS manufactures: MS Approval date + 18 months

Hydrographic Offices: MS Approval +16 months

Note that for hydrographic offices they may use converted data or may produce S-101 directly from their production systems.



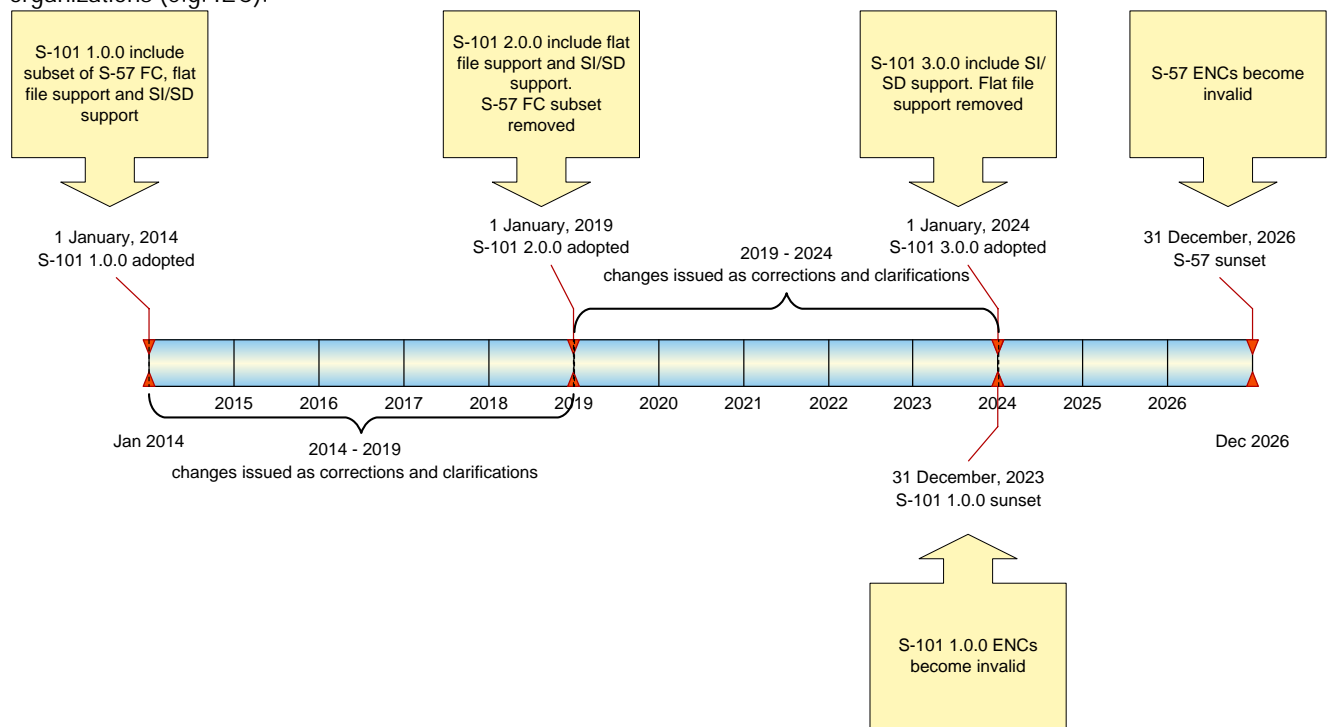
The above timeline only reflects the S-101 implementation phase. In addition, an S-101 test phase has been included to involve the stakeholders to test S-101 and, as much as possible, uncover any necessary changes to the Product Specification prior to implementation.

The IHO further needs to consider that the most important users for S-101, are the mariners. Their needs should be at the forefront of any implementation and transition discussions.

S-101 Transition

Timeline

The timeline below is a best guess proposal for how development will shape up in the future and includes a number of assumptions that are offered for TSMAD to consider. The assumptions are high level proposals aimed to start development for a transition plan. The dates proposed are best guesses based on the authors' view of the current situation with S-101 development, eNAV development and standards expected lifespan from other organizations (e.g. IEC).



S-101 1.0.0

It is suggested that the first version of S-101 is a very wide standard to allow for multiple adoption scenarios by hydrographic offices. It is proposed that S-101 include a subset of the S-57 feature catalogue to allow for easy conversion into S-101 from S-57 without having to stall S-101 specific development to account for the convertor's abilities or lack thereof. Furthermore, that S-101 includes support for S-101 flat (complete) files and SI/SD files. This allows hydrographic offices that want to be early adopters the possibility to jump from S-57 all the way to SI/SD if so desired. It could also be discussed if the list of SI/SD features should be limited initially to point and line only. It is also proposed that version 1 is given a stated life span of 10 years and a new version of S-101 will be issued 5 years after the release of version 1. Changes between version 1 and version 2 are limited to corrections and clarifications.

S-101 2.0.0

It is suggested that version 2 removes the S-57 subset as it should at this time no longer be necessary given that version 1 is available and can be used for another 5 years. Version 2 should also focus on any major additions for S-101 data, major corrections in flat files and SI/SD files, as well as enhancements to the SI/SD concept following the first 5 years of lessons from implementation. As with version 1, version 2 should have a communicated

expected lifespan of 10 years. Any new major developments needed for eNAV or other IHO transfer standards can also be introduced here.

S-101 3.0.0

It is suggested that version 3 removes the flat file support and allows only SI/SD since at this point there should be sufficient lessons learned from the previous versions of S-101 to only go with SI/SD. Also version 2 is valid for another 5 years allowing for further adaptation by late adopting hydrographic offices. Further corrections and enhancements to SI/SD can be introduced here, as well as other major developments needed for eNAV or other IHO standards.

S-57

Everyone knows S-57 cannot live forever; therefore the suggested date for sunset of S-57 is end of 2026 after 13 years of experience with S-101. At this time and probably sometime in advance, it is expected that all vessels using S-57 enabled equipment will have updated these systems. Hydrographic offices will no longer be obligated to produce S-57 ENC's past this date.

Other Considerations

While the IHO has control over S-101 and its approval process, it must be noted that ECDIS is not just dependent upon IHO standards, but also must rely on the IMO performance specification and IEC 61174 standard for type approval. Currently, these documents refer to S-57 and not S-101 and for ECDIS to remain valid, references to S-101 will need to be included in these documents. IEC 61174 is due for editing sometime in 2012 so it is possible to include S-101 specific references and tests (if needed) in this standard. However, for S-101 to be included in the IMO performance standard the IHO would need to request that IMO amend that document.

Conclusions

It should be noted that during the IHO approval process, TSMAD will continue with the development of the S-58 validation checks for S-101 and the improvement of the test data set and test beds.

The key item to note is that there will need to be an implementation plan and associated time lines for the S-101 user community in order to begin a smooth transition to S-101.

Justification and Impacts

While the development of S-101 is within the control of TSMAD, it should be noted that a slow approval process would delay the uptake of S-101. In addition, the draft implementation timelines that are proposed for the ENC software producers and ECDIS manufacturers must be vetted through that community to see if they are realistic goals.

Action Required of TSMAD

The TSMAD is invited to:

- a. note the draft implementation and transition timelines for S-101
- b. comment on the preliminary plan
- c. endorse these timelines for discussion at the next TSMAD/DIPWG meeting and HSSC4