

9th HSSC MEETING

Ottawa, Canada November 7-10, 2017

Report of the S-100wg to HSSC 9

S-100 Working Group

Submitted by:	Chair, S-100wg
Related Documents:	List of Actions HSSC9-03B
Related Projects:	NA

Chair:	Julia Powell, NOAA
Vice Chair:	Yong BAEK, KHOA
Secretary:	Vacant
Member States:	Argentina, Australia , Belgium, Brazil , Canada , China , Denmark , Ecuador, Egypt, Estonia, Finland , France , Germany , India, Italy , Indonesia , Japan , Republic of Korea , Netherlands , Norway , Poland, Portugal, Russian Federation , Singapore, South Africa, Sweden , United Kingdom , Ukraine, United States of America .
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1 Meetings Held During Reporting Period

- a. S-100WG02 – March 2017, Genoa, Italy
- b. S-100WG Test Strategy Meeting 5 - September 2017, Arlington, Virginia

2 Work Program

Progress continues on the work items assigned by HSSC8 as follows:

2.1 Maintain and Extend S-100 “IHO Universal Hydrographic Data Model” (A.1)

The S100WG published edition 3.0.0 of S-100 in June 2017. As part of its work program, the working group continues to receive proposals to either correct, clarify or extend S-100 for use by developers of S-100 based product specifications. Because S-100 was never intended to be a static standard and changes as new product specifications are developed the S100WG has recommended that it follows the following timeline in regards to a publication cycle for the next editions of S-100.

Month/Year	Action	Notes
April 2018	Final Consideration of proposals for the next edition of S-100	S100WG3
May 2018	Notification to HSSC10 of a new edition of S-100	
Early 2019	Publication of next edition of S-100	Edition 4.0.0 (have proposals that extend S-100)
March/April 2020	Final Consideration of proposal for next edition	
May 2020	Notification to HSSC12 of a new edition of S-100	
Early 2021	Publication of the next edition of S-100	

By establishing and publishing a timeline for publication of S-100, this lets the wider community know when the last date that proposals can be submitted to the S100WG for consideration in the next edition. Currently, the proposed publication cycle is set at two years, but as more product specifications are published and S-100 further stabilizes, it is anticipated that it may move to a three year cycle.

Several proposals that are under current consideration are modifications to metadata, GML, and the inclusion of the Lua Scripting language for portrayal.

ACTION REQUIRED: HSSC9 approve the proposed publication cycle of S-100.

2.2 Development of an S-100 Interoperability Specification (A.2)

Work continues on the S-100 Interoperability Specification. This specification provides a machine readable catalogue that navigation systems can use to harmonize the portrayal of different types of datasets. Draft Edition 1.0.0 was completed in August 2017, and is currently undergoing review by the S-100WG.

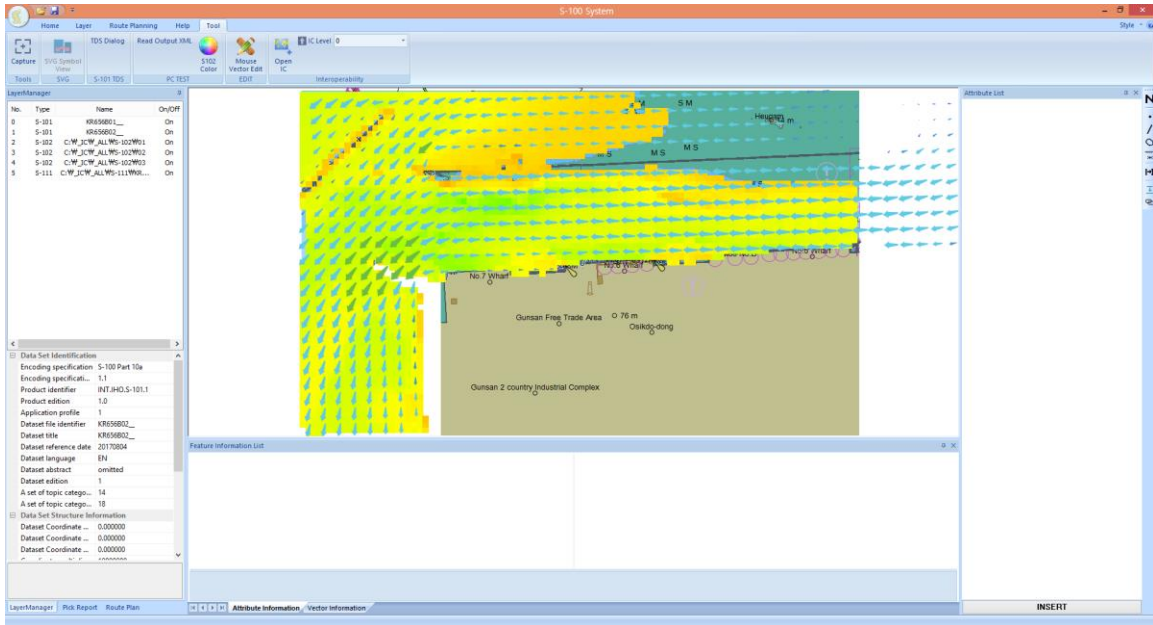


Figure 1 - Example of S-101, S-102 and S-111 without any interoperability rules applied

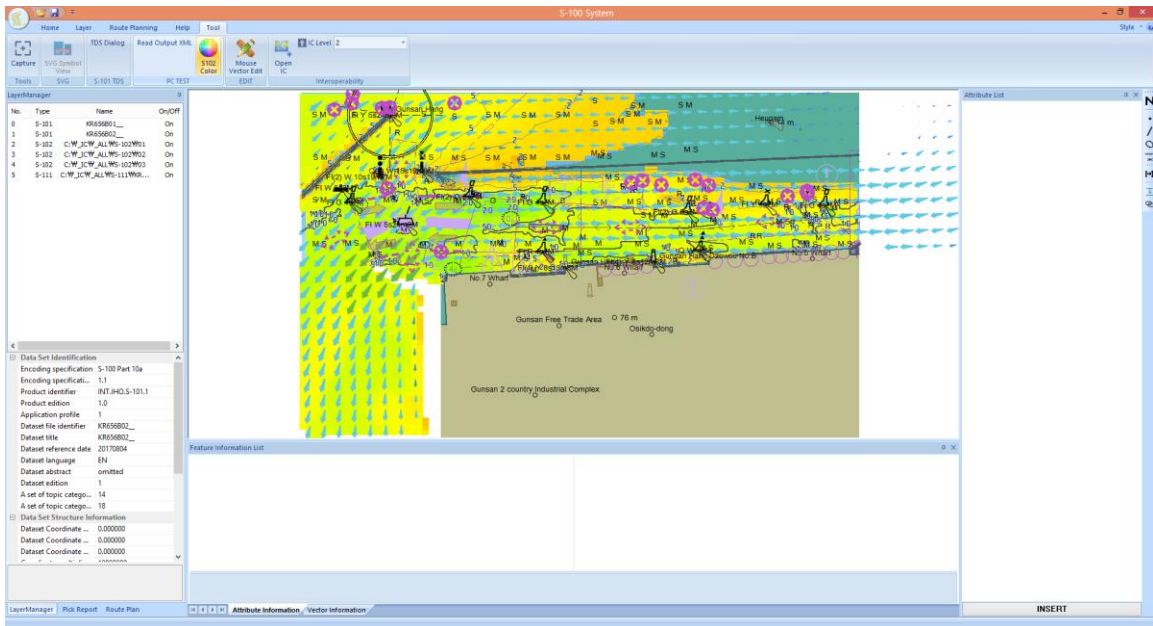


Figure 2 - Example of S-101, S-102 and S-111 with Interoperability rules applied

This specification is currently on track to be submitted to HSSC10 for approval of edition 1.0.0. Because, this specification specifies how different S-100 based datasets interact with each other. It is recommended that the S-100 Interoperability Specification be assigned an official product specification number. But since the specification itself does not produce any datasets,

consideration should be given to a new range of numbers in the IHO numbering system for these types of specifications.

ACTION REQUIRED: HSSC9 assign an S-100 product specification number to the S-100 Interoperability Specification

2.3 Develop the protection scheme (S-63 equivalent component, S-100 Part 14) of S-100 based-products (A.3)

The S-100WG has established a standing sub working group to handle the data protection elements of S-100. The group is slowly making progress on drafting the new elements required for S-100 such as the inclusion of service elements and multiple certification authorities. It is expected that the proposed revisions for S-100 will be submitted at S100WG3.

2.4 Maintain and Extend the S-99 “Operational Procedures for the Organization and Management of the S-100 GI Registry (B.1)

As part of the ongoing registry upgrades by the Republic of Korea, work has started on this action, however, it is not due to complete until 2018.

HSS6/16: S-100WG to implement the proposal of TSMAD related to the registration of Product Specifications and to draft the appropriate changes to the S-100 GI registry and S-99.

While it is the responsibility of the S100WG to implement the mechanisms of S-99, it is recommended that the maintenance and future revisions of S-99 be added to the HSSC work plan. The management of the IHO GI registry should occur at a higher level than the S100WG as the registry is utilized by multiple IHO working groups and other liaison organizations.

ACTION REQUIRED: HSSC9 add the Maintenance of S-99 to the HSSC Work plan and the S-100WG renames B.1 to implement the technical aspects of S-99 for the management of the S-100 GI Registry.

2.5 Establish a cross-domain Control Body and an Executive Control Body for the IHO Registry and an Expert Group for the Hydro Domain (B.2)

At the S100WG2 meeting in Genoa, the chair raised the issue of establishing a cross-domain control body and executive control body for the IHO Registry and an expert group for the hydro domain. The S100WG proposed that the expert group for the hydro domain be comprised of equal membership from both the S-101 project team and NIPWG. This will ensure continues harmonization of proposals that are submitted to the hydro domain.

After careful consideration, the S100WG chair recommends that the establishment of the cross-domain control body and executive control body be transferred to the HSSC work plan. The control body and executive control body are comprised of members from different working groups under HSSC and thus the establishment and management of this activity should be at a higher level than the S100WG. The S100WG

will continue to remain responsible for the technical aspects of the GI Registry and the development and maintenance of the underlying models.

ACTION REQUIRED: HSSC9 add the establishment of a cross-domain Control Body and Executive Control body to the HSSC work plan and remove the item from the S-100WG.

Note: It is recommended that this function be added to the IHO Register Manager's portfolio.

B.2 should then read as follows:

B.2 Establish and maintain an expert group for the hydro domain.

2.6 Update the S-100 GI Register to edition 2.0.0 (3.0.0) and re-build the web interfaces (C.1)

Work was completed on the main portion of the S-100 GI Register in 2017 and is currently available for use in by developers of S-100 based product specifications. The Republic of Korea is in the process of enhancing the capabilities of the S-100 GI Register to include a mechanism for registering product specifications and testing draft version of the product specifications.

2.7 Connect the S-100 Feature Catalogue Builder to the S-100 GI Register (C.2)

The Republic of Korea has completed the connections of the S-100 Feature Catalogue Builder to the S-100 GI Register. The S100WG is currently coordinating with ROK on how to make the Feature Catalogue Builder available to product specification developers.

2.8 Develop web-interfaces to propose new symbology to the S-100 Portrayal Register (C.3)

As part of the ongoing work related to the rebuilding of the S100 GI Register, ROK has developed new interfaces to propose new symbology. The only remaining issue is that the functionality of the new interfaces have not been tested using new symbols developed by product specification developers. It is expected that as more specification consider and develop new symbology, these new websites will be used in real situations and then any issues that arise will be resolved.

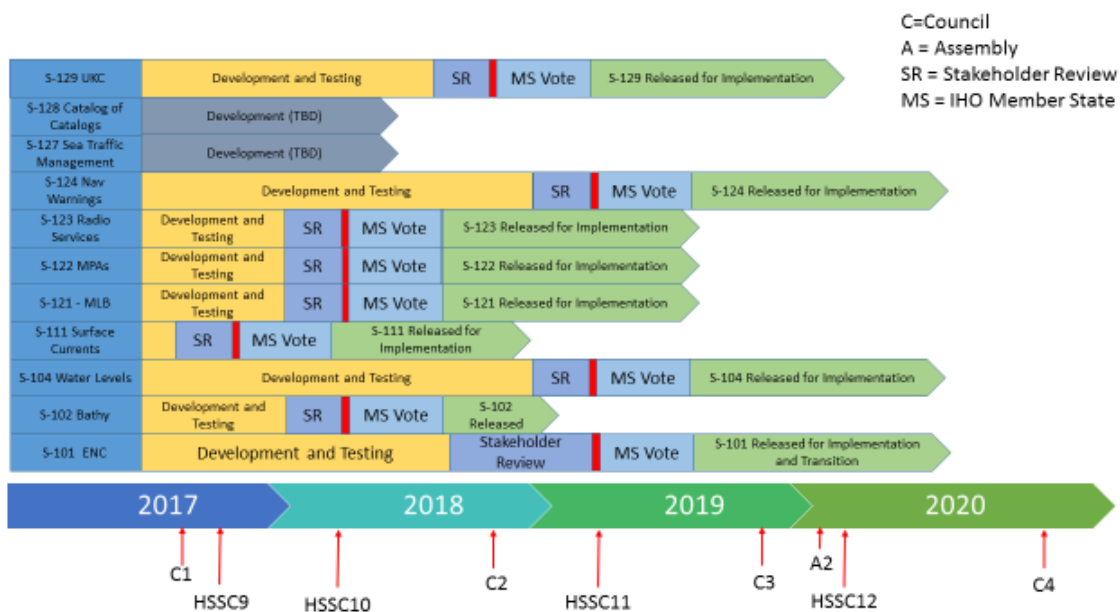
2.9 Update and Maintain the Portrayal Catalogue Builder (C.4)

Much of 2017 has been spent connecting the IHO Portrayal Catalogue Builder to the new infrastructure. Due to time constraints, the S100WG chair has not been able to fully test the new connections to ensure that S-100 Portrayal Catalogues can be built. The ability to produce portrayal catalogues for S-100 product specifications is one of the major roadblocks to finalizing S-101 and other product specifications. The S100WG recommends that HSSC task the IHO to direct special project funds to fund a contractor to build the first iteration of the S-101 portrayal catalogue, document any issues and then fund fixes and potential enhancements to the PCB.

ACTION REQUIRED: Utilize IHO Special Project funds to build the first iteration of the S-101 portrayal catalogue and potential fixes and enhancements to the PCB

2.10 Review the S-100 Master Plan Annually (D.1)

Even though the S-100WG did not do a comprehensive review of the S-100 Master Plan in 2017, the S100WG chair intends to do a holistic review of the S-100 Master plan for HSSC10. This will include the addition of an S-100 roll out plan for the various product specifications that are under development. As an office exercise, the S100WG chair was asked to develop a draft S-100 Rollout that documents the challenges that each product specification has and potential mitigation strategies. (Annex A) One of the key deliverables was the following timeline that shows the various product specifications under development and the potential targets for publication. This holistic look shows that many specifications are due for completion in 2019.



Many of these specifications would be the first edition, and traditionally a first edition specification is not fully implemented, but used by implementers to begin development and find the gaps in the specification.

In addition, it has become clear that the S-100 web page on the IHO website, needs to be revamped to include a repository for the different product specifications that are under development. This repository would include the feature and portrayal catalogues and test data so that system developers have a single place to download information regarding the various product specifications.

2.11 Review the S-101 Value Added Roadmap annually (D.2)

There are no recommended changes at this time.

2.12 S-101 ENC Product Specification (D.3)

S-101 is the new Electronic Navigational Chart product specification that is based on S-100. The intent of S-101 is to utilize the flexibility of S-100 to allow the IHO and Member States to respond to the changing needs of the mariner. S-101 will include machine readable feature catalogues and portrayal catalogues that will facilitate updating of changes to shipboard systems.

2.12.1 S-101 Progress

S-101 is a multi-part product specification when put together will form the basis for the creation and display of Electronic Navigational Charts. The major components of S-101 and their current status are as follows

S-101 Component	Current Status	Comment
Main Document	Testing Baseline – June 2015	<ul style="list-style-type: none"> Sent out for stakeholder review in September 2014 and final comments incorporated into the testing baseline
Data Classification and Encoding Guide	Baselined – June 2016	
8211 Annex	Testing Baseline – June 2015	<ul style="list-style-type: none"> New Items have been registered in the GI Registry. Changes to the DCEG will undergo a controlled proposal process in order to manage change effectively.
Feature Catalogue	Testing Baseline – June 2015	<ul style="list-style-type: none"> Awaiting the FCB connection to the GI Registry to create a new version that contains the new DCEG items.
Portrayal Catalogue	Partial Baseline – July 2015	<ul style="list-style-type: none"> Caris has created a partial portrayal catalogue using the elements from S-52 in the S-100 format. There is still more work to be done once the S-100 Register is operational. NOAA has funded work on baselining the S-52 CSPs into XSLT 1.0 that will be part of the Portrayal Catalogue
Implementation Guidance	In Progress	Will continue to be refined during the S-101 test bed process
Validation Checks	In Progress	<ul style="list-style-type: none"> Denmark has taken the lead to develop the S-101 Validation Checks

S-101 progress has been slow during this reporting period. Much of this is due to waiting for the S-100 Infrastructure to be updated for use. Once the GI Registry and the FCB is operational a new Feature Catalogue will be created and the Portrayal Catalogue Builder will be tested to create the S-101 Portrayal Catalogue. This will then be made available on Basecamp to the S-100 Stakeholder community for testing and development.

Due to a position change at their home organization, the current S-101 Project Team lead (who is also the S100WG Chair) is unable to devote the time needed to progress S-101 forward.

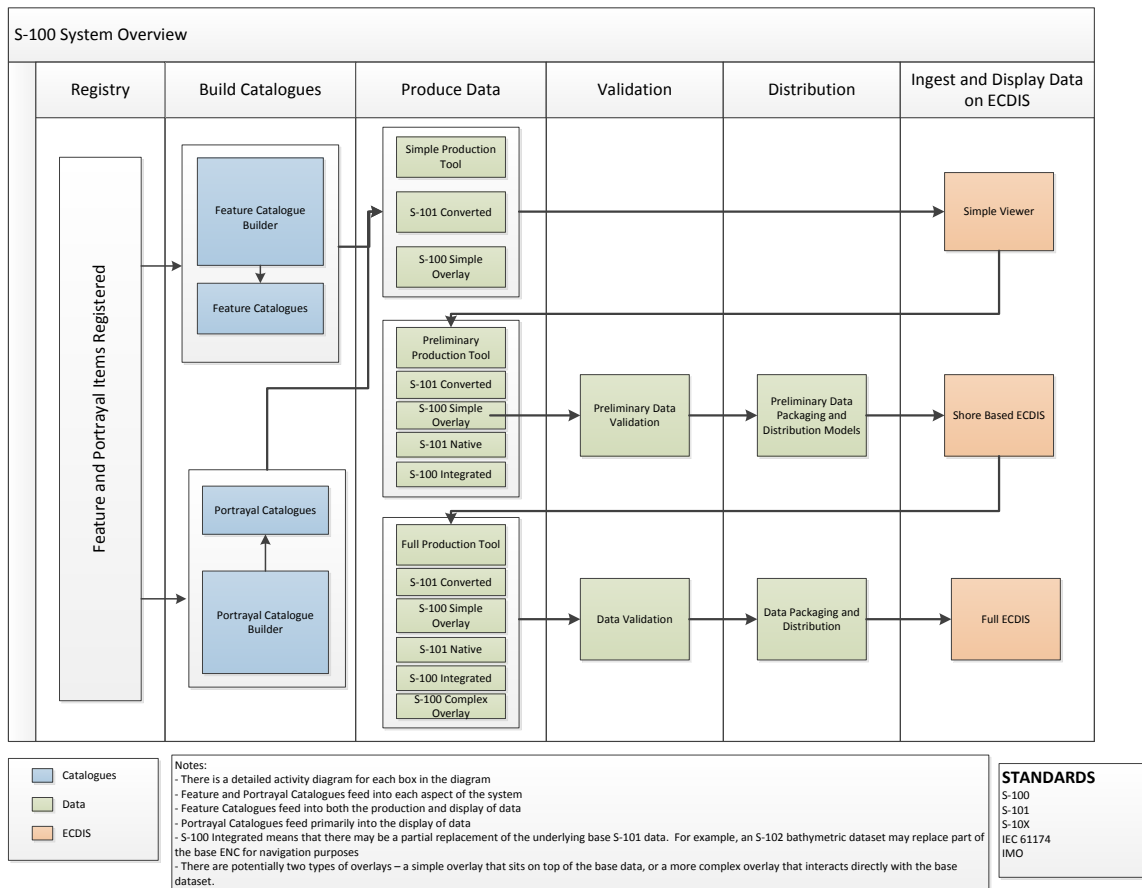
ACTION REQUIRED: Member States consider nominating a new S-101 Project Team Lead

2.13 Monitor the implementation of the 1st draft of the S-101 Product Specification (D.4)

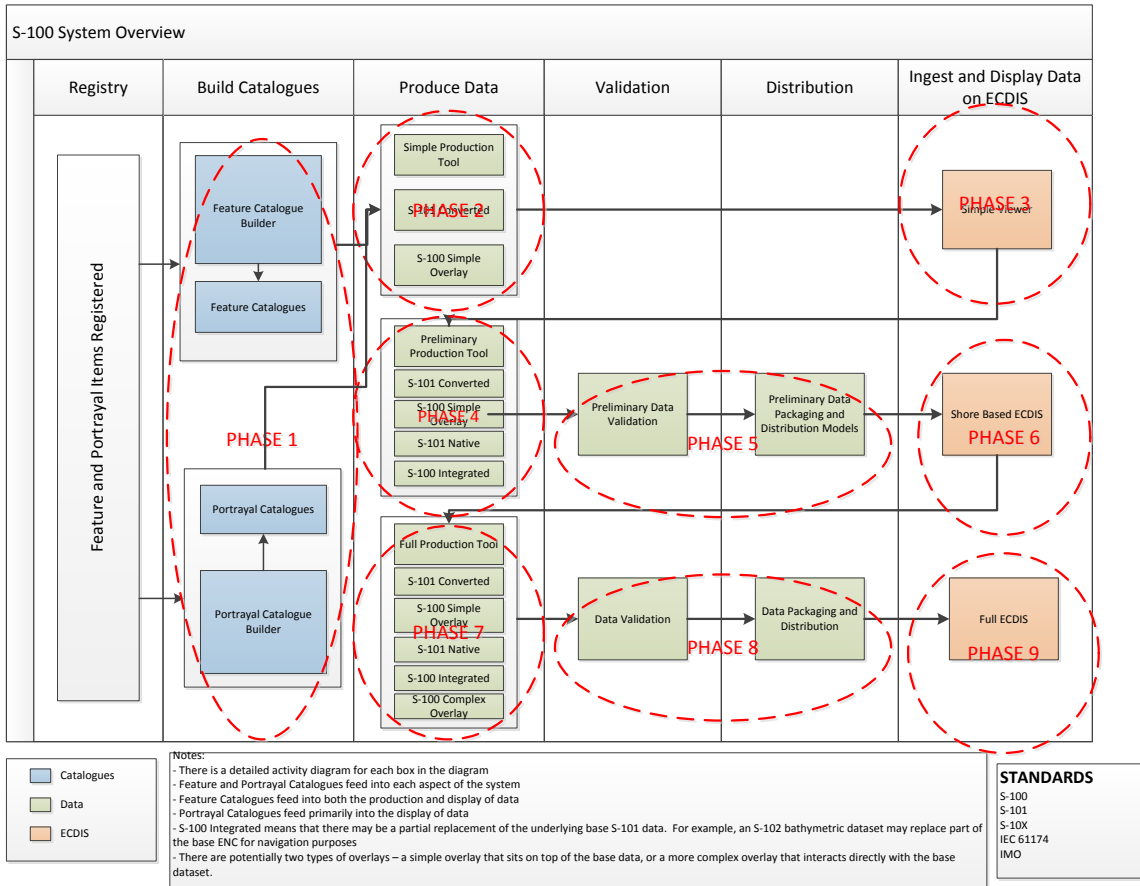
This is currently a planned activity. As the S-100 Test Bed matures, S-101 will be tested throughout each phase of the test bed.

2.14 Develop an S-100/S-101 Test Strategy and Test bed (D.5)

Before the IHO Member States can approve S-101 as a functional standard, it must undergo a rigorous testing process that will require the implementation of test bed projects. It is important to understand that these test beds will need to be S-100 based, capable of testing other product specifications which can be either supplementary to S-101 ENC's or non-related GIS applications. The overarching test bed strategy is depicted in the following figure which shows the logical progression from catalogue creation to use within an ECDIS.



However, in order to manage the complexity of the testing process it has been divided into nine phases that cover the entire end-to-end process as depicted in the following diagram.



Breaking out the testing through phases allows for the iterative development of future ECDIS as a system by gradually expanding requirements and the different types of test scenarios that are needed to validate S-101 as a functional standard.

#	Phase Name	Status	Comment
1A	Feature Catalogue Builder	Completed	<ul style="list-style-type: none"> Development done by KHOA S-100 Test Cases Written
1B	Portrayal Catalogue Builder	Completed	<ul style="list-style-type: none"> Developed under IHO Secretariat B Contract S-100 Test Cases Written
2	Simple Production Tool	In Progress	<ul style="list-style-type: none"> S-57 to S-101 Convertor Joint NOAA/ESRI initiative
3	Simple Viewer	In Progress	<ul style="list-style-type: none"> S-100 Test Cases Written ROK Simple Viewer SPAWAR Simple Viewer
4	Preliminary Production Tool	In Progress	<ul style="list-style-type: none"> ROK has developed a tool to produce S-101 updates for testing

5	Preliminary Data Validation and Packaging	Not Started	• Initial Scoping Required
6	Shore Based ECDIS	Not Started	• Initial Scoping Completed
7	Full Production Tool	Not Started	• Initial Scoping Required
8	Data Validation and Packaging	Not Started	• Initial Scoping Required
9	Full ECDIS	Not Started	• Initial Scoping Required

The outcome of testing will also enable a more detailed impact study, as prescribed by IHO Resolution 2/2007 on principles and procedures for making changes to IHO technical standards and specifications, and will provide a clear picture of the effects on the various stakeholders involved in the eventual introduction of S-101.

Work is still ongoing regarding the S-100 Test bed. At this time there are several S-100 simple viewers under development, such as those by ROK and SPAWAR. The latest edition of the S-57 to S-101 convertor has been released and there are several initiatives to develop additional S-101 test datasets to support functional testing. A subset of the S-100 WG meets each September to review the status of the test bed.

One of the key items that the S-100 test bed has been focusing on in 2017 is optimizing portrayal and the development of the S-100 Interoperability Specification.

2.15 S-102 (D.6)

During S-100WG2 the S-102 project team held a break-out session to discuss requirements to finalize version 2.0.0 of the S-102 product specification in preparation for submission to HSSC10. To complete version 2.0.0 the project team focused discussions on elements influencing the creation and portrayal of S-102 data, as well as requirements to support current and future S-100 interoperability studies. Topics discussed included coordinate reference systems, recommended grid resolutions, tiling schemes, file size limits, gridding methodology, and variable resolution gridding. At the close of the break-out session multiple team members agreed to work over the summer months to test the various parameters discussed that will impact S-102 production. The results of the testing effort were recently received and is being consolidated for dissemination to the project team this fall.

The project team has also initiated development of a script to convert Bathymetric Attributed Grid, or BAG, into an S-100 compliant S-102 dataset. Completion of the script is expected by the close of calendar year 2017.

2.16 Develop a Product Specification for Under Keel Clearance Management (UKCM) Information (D.7)

The Under Keel Clearance Management Project Team continues to make progress on developing S-129. The project team held an official meeting in conjunction with the S100WG2 meeting and then an ad hoc meeting in Jeju, ROK, in conjunction with e-Navigation Asia Pacific. The project team is currently working on the underlying data model to depict no-go areas and routes with tidal windows on the navigation display derived from the calculations of the UKCM. Some members of the Project Team are working testing the data model. The target completion year remains 2018.

2.17 Develop S-121 Product Specification for Maritime Limits and boundaries (D.8)

IHO S-121 describes how to encode and exchange digital maritime limits and boundaries, and the associated juridical zones as described under the United Nations Convention on the Law of the Sea (UNCLOS). The specification was developed as part of a request from the UN Division for Oceans and Law of the Sea (DOALOS), and enables member States to meet their obligation to depositing their maritime limits and boundaries.

Under UNCLOS States are able to deposit their Maritime Limits and Boundaries using either charts or lists of coordinates so S-121 requires encodings which can support differing member State requirements using an accessible and comprehensive format.

As it stands the S121 project team has built a data model that can feed three main use cases

- (1) Support for the deposit of member states Maritime Limits and Boundaries to DOALOS (a human-computer readable format).
- (2) Support for exchange of maritime limits and boundaries data between member states.
- (3) Support for production of charts for use in S-101 and S-57 navigation system.

The project team in the last year 9 months has consolidated and agreed on the core features of the model. The model was refined following a comprehensive review in May 2017. The current version of the model will be exposed for discussion in the upcoming meeting (20th-21st September 2017) to address both the core feature attributes and the remaining part of the standard which provides the integration with ISO19152. This allows for the administration Party, Roles, Rights, Restrictions, Responsibilities associated with Maritime Limits and Boundaries.

With the recent changes and increased interest in the standard, a website (www.s-121.com) was built to raise awareness, improve communications and facilitate access to the current advancements made by the project team. As of September 2017, the team has:

- (1) Built the conceptual model
- (2) An example case of a data model implementation

The immediate priorities are to:

- (1) Agree the latest iteration of the model with all stakeholders
- (2) Refining the deposit exchange format. More work will have to be done in creating and refining the exchange formats in the next few months
- (3) Begin discussions on symbology for all use cases.
- (4) Consider metadata and exchange set creation
- (5) Start test bed creation with 3rd party software vendors and suppliers.

It is hoped that shortly after the next meeting in December that the standard will reach a significant milestone allowing it to enter a pilot stage. This will be in conjunction with the OGC and will involve participation by industry participants as well as member States in a test bed project.

It is expected that shortly after the meeting in December, that the S121PT will be able to produce further recommendations and submissions to the S100WG.

2.18 Establishment of the ENC display SubWG (new D.9)

At the S100WG2 and ENCMWG2, France presented a paper on the improvement of ENC's display on ECDIS in both the S-57 and S-101 context. The paper proposed that this subWG be comprised of members from the S100, NIPWG and NCWG working groups. At present 12 member states have volunteered to participate via correspondence to work on display issues related to ENCs. This work will help inform revised portrayal in S-101.

ACTION REQUIRED: HSSC approve the establishment of “transversal” ENC Display subWG to concentrate on the improvement of ENC display and establish ToRs for this subWG.

2.19 Monitor the development of other related international standards (E.1)

Various members of the S-100 working group also participate in the development of other related international standards and regularly report back on relevant developments.

2.20 Monitor and coordinate interactions with OGC and IOGP, to ensure proper harmonization in the development of standards (E.2)

The S100WG continues to coordinate with the Marine DWG of the OGC. At the S100WG2 meeting, the issue of semantic web standards was proposed to the S100WG as a result of an action from HSSC8/18. The semantic web is designed to provide online data that can be used by computer programs rather than humans. The S100WG was receptive to the proposals outlined in the paper and agreed that it complemented the proposal to extend the GI Registry into a feature concept dictionary, but that the work was better suited to be further developed by the OGC Marine DWG.

As to the International Oil and Gas Producers, the Chair of the S-100WG is not aware of any current activity.

2.21 Liaise with IHO subsidiary bodies and subordinate organs (F.1)

S-100WG continues to coordinate with other IHO working groups on building S-100 compliant product specifications and submits activity reports to various IHO working groups. As part of this liaison activity the IHO [Secretariat](#) has set up a project management site called Basecamp. This allows for the creation of specific tasks and a repository for working documents that are too large to exchange via email.

2.22 Liaise with non-IHO constituents (F.2)

2.22.1 IALA

S-100 members continue to coordinate with IALA. Representatives from the IALA E-NAV working group regularly attend the S100WG and Focus Group meetings.

IALA has submitted proposals on session oriented services and marine resource identifiers to the S100WG for consideration. The S100WG concluded that a new part will need to be developed for S-100 to identify the services that require streaming and for IALA to submit the new part at S100WG3.

Additionally, the S100WG plans to adopt the Marine Resource Identifier concept and has identified the clauses in S-100 that will need to be modified. In addition the IHO will need to register for the namespace to properly implement this concept.

ACTION REQUIRED: HSSC task the IHO to register to the um:mm:iho name space and task the S100WG to establish a management process for the namespace once it has been registered.

2.22.2 ISO

The IHO [Secretariat](#) continues to send a representative to ISO meetings [and](#). ~~The IHB then~~ informs the S-100 working group of changes to ISO standards that may impact S-100.

2.22.3 JCOMM

JCOMM continues to make progress on developing S-411 (Ice Information) and S-412 (Weather Information).

3 Progress on HSSC Action Items

AGEND A ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVEN T	STATUS (at 18 August 2017)
3. Matters arising from Minutes of 7th HSSC Meeting					
	E-navigation implementatio n	HSSC8/05 (Former HSSC7/37)	ENCWG and S-100WG to monitor any possible impact of the work on the agreed e-navigation outputs on ECDIS related standards and S-100 related standards respectively.		On-going
4. HSSC Administration					
5. Reports by HSSC Working Groups					
5.1 S-100 (S-100WG)					
		HSSC8/11	HSSC endorsed the draft Edition 3.0.0 of S-100. S-100WG Chair to provide a redline version and a clean copy to the IHO Secretariat. IHO Sec. to issue a CL to IHO Member States seeking their approval of the draft Edition 3.0.0 of S-100.	15 Dec. 2016 End of Dec. 2016	Decision DONE (IHO CL 15/2017 & CL 32/2017)

AGEND A ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVEN T	STATUS (at 18 August 2017)
		HSSC8/12	IHO Sec. in liaison with S-100WG to promote the operational status of the IHO S-100 Registry.	End of Dec. 2016	On going
		HSSC8/13	HSSC invited KHOA to consider supporting further development of S-100 Registers (Product Spec. and Data Producer Code Registers) and stabilization of the Feature Concept Dictionary and Portrayal Registers.	Dec. 2016	On going
		HSSC8/14	HSSC decided to establish: - a Cross-Domain Control Body and an Executive Control Body for the IHO Registry, - and an Expert Group for the HYDRO domain,		Decision See 2.3 of the S100WG Report
			and invited the S-100WG to propose their membership and TORs accordingly.	HSSC-9	

AGEND A ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVEN T	STATUS (at 18 August 2017)
		HSSC8/15	S-100WG, NIPWG to submit formal requests to the IHO Sec., through the HSSC Chair, for financial support from the IHO special project fund for the relevant items of their respective work plans.	NIPWG-3, S-100WG-2	DONE for NIPWG On-going for S-100WG
		HSSC8/16	HSSC requested the S-121 Project Team (<i>Maritime Limits and Boundaries</i>) to abide by its TORs and the current work plan agreed at HSSC-7, and to submit a draft Product Spec. for consideration by the S-100WG (by end of March 2017). Extension of the Product Spec. to be considered in the future, after approval of Ed. 1.0.0 of S-121 (<i>Maritime Limits and Boundaries</i>).	Report to HSSC-9	On-going – New target HSSC10
		HSSC8/17	HSSC allocated S-129 to the Product Spec. on Under Keel Clearance Management (UKCM) information and invited INTERTANKO to participate in the UKCM PT.		Decision Completed

AGEND A ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVEN T	STATUS (at 18 August 2017)
		HSSC8/18	FR invited to submit a proposal to the S-100WG on using Resource Description Framework (RDF) semantic web standards for further S-100 developments.	S-100WG2 , then report to HSSC-9	DONE
	S-101&IMO Performance Standards	HSSC8/19 (Former HSSC7/06)	S-100WG invited to investigate if S-101 ENC's will meet the current IMO Performance Standards so there is no need to consider proposing amendments to the IMO.	S-100WG2	On-Going
	S-101&IMO Performance Standards	HSSC8/20	HSSC to revisit the discussion on the above issue at an ECDIS/E-navigation Stakeholder Day after NCSR-4, subject to the outcome of the proposal to activate the IMO/IHO Harmonization Group on Data Modelling (HGDM).	HSSC-9	On-going
5.2 Data Protection Scheme (DPSWG)					

AGEND A ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVEN T	STATUS (at 18 August 2017)
	Protection Scheme	HSSC8/21	<p>HSSC decided to disband the DPSWG and to transfer to the S-100WG the development of the protection scheme (S-63 equivalent component) of S-100 based-products (amendment to the Work Plan made accordingly).</p> <p>HSSC decided to task the ENCWG for the maintenance and monitoring of the existing S-63 standard (amendment to the ENCWG TORs and Work Plan made accordingly).</p>	End of Nov. 2016	Decision
	Staffing and support	HSSC8/22	<p>S-100WG and ENCWG in liaison with the DPSWG (former) Chair to report on the resources and profiles necessary to address the work items in both groups, and define work packages that could be possibly out-sourced.</p>	HSSC-9	On-Going – edition 4.0.0 of S-100
7.3 IALA					

AGEND A ITEM	SUBJECT	ACTION No.	ACTIONS (in bold, action by)	TARGET DATE/EVEN T	STATUS (at 18 August 2017)
	Unique Identifiers, Data Streaming	HSSC8/58 (Former HSSC7/42)	IALA to submit its requirements on Maritime Resource Name scheme to the S-100WG, as well as additional input on data streaming requirements, then report to HSSC-9.	S-100WG2 HSSC-9	DONE
7.4 IEC					
	Liaison with TC80/WG17	HSSC8/59	S-100WG Chair to act as IHO liaison with the IEC/TC80/WG17		Decision
7.6 Inland ENC Harmonization Group (IEHG)					
	Portrayal Catalogue Builder, S-401	HSSC8/62	S-100WG Chair to liaise with IEHG for testing the Portrayal Catalogue Builder with S-401 (<i>Inland ENC</i>), as appropriate.	HSSC-9	On-going – still need to finish setting up the PCB

4 Problems Encountered

While the S100WG has managed to move forward on the stabilization of the S100 Registry and the establishment of the S100 Feature Catalogue Builder, the working group is still behind on operationalizing the S-100 Portrayal Catalogue Builder. The S100WG chair has been in consultation with the IHO on how to provide contract resources to move this forward.

The other major issue is that the current S-101 Project Team Lead does not have the time to continue moving progress forward on completing the specification. Currently, the S-101PT leader is also the S100WG chair, which requires a significant amount of time. Additionally, they have taken on a new role within their organization that limits the amount of time that can be spent on S-101 matters. It is recommended that HSSC issue out a CL calling for a new project team lead.

5 Recommendations

HSSC is invited to

- Approve the continued activity of the S-100WG work plan.

6 Justification and Impacts

Not applicable.

7 Action Required of HSSC

The HSSC is invited to

- Note this report and approve the continuance of the Work Plan.

Proposed S-100 Working Group 2017-2018 Work plan

Tasks

A	Maintain and extend S-100 "IHO Universal Hydrographic Data Model" (IHO Task 2.2.2.2)
B	Maintain and extend S-99 "Operational Procedures for the Organization and Management of the S-100 Geospatial Information Registry" (IHO Task 2.2.2.9)
C	Maintain and extend the S-100 GI Registry (IHO Task 2.2.4)
D	Supervise/Advise and support the development and maintenance of S-100-based product specifications
E	Monitor the development of other related international standards
F	Provide outreach and technical assistance regarding the implementation of S-100 (IHO Task 2.2.5)
G	Maintain the S-100 section of the IHO website (IHO Task 2.2.2)
H	Conduct the 2017 and 2018 meetings of the S-100WG and its sub-group(s) and project team(s) (IHO Task 2.2.1)

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
A.1	Maintain and Extend S-100	H	HSSC 10	2010	Permanent	O	Julia Powell (NOAA)		draft Ed. 4.0.0 submitted to HSSC-10 in May 2019
A.2	Development of an S-100 Interoperability Specification	H	HSSC 9	2015	2018	O	Julia Powell (NOAA)		Draft Edition 1.0.0 submitted at HSSC-10 in May 2018

HSSC9-05.1A

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
A.3	Develop the protection scheme (S-63 equivalent component, S-100 Part 14) of S-100 based-products	M	HSSC 9	2016	2018	P	Jonathan Pritchard (UKHO)		Progress report and proposed timeline submitted at HSSC-9.
B.1	Update S-99 and the S-100 Registry pages for the registration of S-100 product specifications in accordance with HSSC6-05B rev1	M	HSSC 9	2015	2018	P	Julia Powell (NOAA)		
B.2	Establish and maintain and expert group for the hydro domain: -	M	S-100WG-2	2016	Permanent	P	Julia Powell (US)		Action HSSC8/14 (membership and TORs)
C.1	Update S-100 GI Register to edition 3.0.0 and re-build the web-interfaces	H	HSSC 9	2015	Permanent	O	Yong Baek (KHOA)		
C.2	Connect the S-100 Feature Catalogue Builder to the S-100 GI Register	H	HSSC 9	2015	Permanent	O	Yong Baek (KHOA)		
C.3	Develop and maintain web-interfaces to propose new symbology to the S-100 Portrayal Register	H	HSSC 9	2015	Permanent	O	Yong Baek (KHOA)		
C.4	Update and Maintain the Portrayal Catalogue Builder	H	HSSC-9		Permanent	O	IHO Secretariat		Action HSSC8/62
D.1	Review the S-100 Master Plan annually	M	HSSC 9	2014	Permanent	O	Julia Powell (NOAA)	S-100	Include monitoring the need to revise existing S-100-based PS (e.g. S-102) and or to develop new S-100-based PS.

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Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
D.2	Review the S-101 Value Added Roadmap annually	H	HSSC 9	2013	Permanent	O	Julia Powell (NOAA)	S-101	
D.3	Finalization of S-101 ENC Product Specification	H	HSSC 9	2015	2018/2019	O	Julia Powell (NOAA)		Draft Edition 1.0.0 to be submitted to HSSC9 or 10 pending resources
D.4	Monitor the implementation of the 1 st draft of S-101 ENC product specification	H	S-100WG-2	2015		P			Action HSSC8/19 (Impact on IMO Performance Standards?)
D.5	Develop an S-100/S-101 Test Strategy and Test Bed	H	HSSC 9	2013	Permanent	O	Julia Powell (NOAA)		
D.6	Develop Edition 2.0.0 of S-102 Bathymetric Content Specification.	H	HSSC 9	2014	2018	P	Dave Brazier (NAVO)		Submit draft Edition 2.0.0 to HSSC-10 (May 2018)
D.7	Develop S-129 Product Specification for Under keel Clearance Management (UKCM) Information.	M	HSSC-9	2016	2018	P	Nick Lemon (AMSA)		Decision HSSC8/17
D.8	Develop S-121 Product Specification for Maritime Limits and Boundaries	H	HSSC 9	2016	2018	O	Mark Alcock (Geoscience Australia)		Action HSSC8/16 Submit draft Edition 1.0.0 to HSSC-10
D.9	Formally establish an ENC Display SubWG	M	New	2017	2019	O	Christian Mouden (France)		In liaison with ENCMWG and NCWG
E.1	Monitor the development of other related international standards	M			Permanent	O	Julia Powell (NOAA)		
E.2	Monitor and coordinate interactions with OGC and IOGP, to ensure proper harmonization in the development of standards.	M		2016	Permanent	P			Standards such as IOGP SSDM SeabedML (Action HSSC6/37)

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Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
E.3	Monitor the development of the IMO guidance on maritime cyber security and advice on possible future actions	L	HSSC 9	2016	Permanent	P	Jonathan Pritchard (UKHO)		
F.1	Liaise with IHO subsidiary bodies and subordinate organs, e.g. WWNWS-SC, NIPWG, ENCWG, SCUFN, etc.	H			Permanent	O	Julia Powell (NOAA)		Establish joint project teams as required and support the UFN Project Team, see Doc. HSSC8-07.1C INF3
F.2	Liaise with non-IHO constituents, e.g. IALA E-nav Committee, IEHC, JCOMM Expert Teams, DGIWG, ISO, ICPC, marine navigation and GIS industry, etc.	H		2004	Permanent	O	Julia Powell (NOAA)		Clarification of the relations between IALA and IHO product specifications (e.g. sector lights modelling, encoding and portrayal in S-101 and S-201) Actions HSSC8/58, HSSC8/66
G.1	Maintain the S-100 section of the IHO website	H		2003	Permanent	O	Tony Pharaoh (IHO Sec.)		