



7th Meeting of the S-100 Working Group

Report of the S-101 Project Team

Liz HAHESY on behalf of
S-101 PT Chair Thomas RICHARDSON

Agenda Item 3.6



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MEETINGS HELD DURING REPORTING PERIOD

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The S-101 Project Team has met once since HSSC14

1. S-101 PT 9 Nov 2022

The following sub groups have also met during the period

- DCEG Sub group
- Portrayal Sub Group
- Scales Sub Group
- Validation Checks Sub Group
- Test Dataset Sub Group



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PROGRESS DURING THE PERIOD 1

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- Significant progress has been made during the period to further develop the S-101 DCEG and Feature Catalogue
- Following the preparation of DCEG 1.0.2, further changes have been discussed including changes to support Portrayal improvements and feedback from work on S-101 Conversion
- This allowed draft 1.1.0 of the DCEG to be submitted to the S-101PT9 meeting where changes were endorsed and further changes including items resulting from the NCWG8 and ENCWG7 meetings were agreed
- We now have a stable baseline DCEG for testing and the corresponding Feature Catalogue is now being prepared by KHOA
- A review of the Data Product Specification has allowed a draft 1.1.0 version to be prepared reflecting S-100 5.0.0



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PROGRESS DURING THE PERIOD 2

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- Good progress has been made in developing new and improved symbology this allowed [PC 1.0.2](#) to be prepared in November
- Further changes from 1.0.2 and additional changes resulting from DCEG 1.1.0 will now be processed and PC 1.1.0 is expected by March 2023
- An initial set of [S-101 Test Datasets](#) has been created and work to expand these will now progress
- A baseline set of validation checks has been prepared for feedback and further development



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WAY FORWARD

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- The immediate focus is to complete and publish the 1.1.0 baseline, although the final components are in progress the main document, DCEG and FC will be ready for S-100WG endorsement very soon
- The focus will then shift to preparation of Test Datasets and providing support to enable effective and robust testing to support development of S-101
- The PT will then process proposals and feedback received from testing which will be included in version 1.2.0, this will allow further testing of changes before 2.0.0 is prepared
- We plan to hold two physical meetings during 2023 due to the focus on S-101 and the timeframes set out in the S-100 Roadmap



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CHALLENGES

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- Resources continue to limit progress and we are reliant on a limited group of active contributors and the special projects fund will be needed to progress some items, S-101PT will need to liaise with the S-164 sub group on test datasets
- Testing will need significant focus and resources in order to validate S-101 changes and provide evidence and input to allow S-101 2.0.0 to be prepared, delivering S-101 2.0.0 in 2024 allows a very limited period for testing
- The situation regarding S-98 is unclear and the PT seeks direction on what group will develop the S-98 catalogues and how these will be tested



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ISO 9001 CELL

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- Based on a Council 4 Decision, HSSC13 established an ISO 9001 cell focussed on the delivery of S-101 2.0.0
- The cell meets quarterly and consists of the HSSC Vice Chair, S-101PT Vice Chair and S-101 PT Chair
- Identified Risks and Opportunities were presented to HSSC 14 and this led to more focussed activity on the GI Registry, one outcome of this audit was to formally establish a Registry PT and promote its activity more widely (see Recommendation C)
- The ISO 9001 Cell update to S-101 PT9 can be found at the end of this presentation and the more detailed risks and opportunities can be found at the link below

[S-101PT9 2022 09.2 EN Manage Risks Opportunities S-101 PS OCT2022.pdf \(iho.int\)](#)



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OUTCOMES

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- The S-100WG is invited to:
 - a. note the progress made and seek S-100WG endorsement of S-101 1.1.0 components via WG letter in two parts
 - 1. Main Document, DCEG and Feature Catalogue – DEC 22
 - 2. Portrayal Catalogue, Validation Checks and Test Datasets – MAR 22
 - b. endorse the “way ahead” shown on the next two slides
 - c. escalate to HSSC the challenges highlighted
 - d. consider establishing a formal Project Team for the GI Registry



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S-101PT WAY AHEAD DEC 2022

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- S-100WG7 is requested to endorse the following documents
 - S-101 1.1.0 Product Specification
 - S-101 1.1.0 Data Classification and Encoding Guide
- Final 1.1.0 documents to be completed and S-100WG endorsement sought by WG letter March 2023
- S-101 PT to establish a feedback mechanism via a dedicated S-101 Resources web page
- S-101 PT to meet face to face twice during 2023 and focus on preparation of 1.2.0 and then 2.0.0 based on feedback received



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TIMELINE

2022

2023

2024

● S-100WG7 Dec 22

1.1.0
Implementation

● Feedback process in place Feb

Develop 1.2.0

S101PT10 Jun ●

Develop 2.0.0

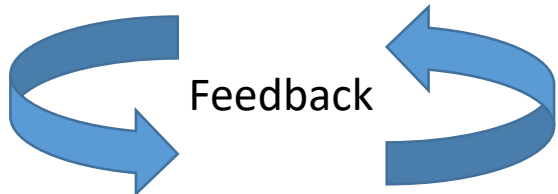
S101PT11 Sep ●

S-100WG 8 Oct ●

Finalise
2.0.0

● HSSC16 May?

Feedback



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SUB GROUP SUMMARY

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Sub-Group Name	Lead	Activities (link to working area)	2022 Focus
DCEG Sub-Group	Jeff Wootton (IHO Sec)	Defining the data model and encoding guidance as provided in the DCEG document. https://github.com/iho-ohi/S-101-Documentation-and-FC/issues	Preparation of Feature Catalogue 1.0.2 and further review of change proposals.
Portrayal Sub-Group	Alvaro Sanchez (AU)	Defining the symbols and portrayal rules defined in the S-101 Portrayal Catalogue and contributing to the ECDIS functions/requirements. https://github.com/S-101-Portrayal-subWG/Working-Documents/issues	Develop new symbols and rules. Prepare Portrayal Catalogue to support S-101 1.1.0.
Validation Sub-Group	Tom Richardson (UK) (New lead sought)	Drafting of validation checks for S-101 and more generally defining checks for S-100 to support all product specifications. https://github.com/iho-ohi/S-101-Documentation-and-FC/issues	Develop and review validation checks for S-101 reflecting S-100 5.0.0 and associated Catalogues.
Scales Sub-Group	Christian Mouden (FR)	https://github.com/iho-ohi/S-101-Documentation-and-FC/issues	Provide guidance in S-101 documentation for Data Producers, on how to organize their S-101 ENCs schemes.
Dataset Load/Unload Strategy Sub-Group	Christian Mouden (FR)	https://github.com/iho-ohi/S-101-Documentation-and-FC/issues	Review and refine the loading strategy description in S-101 documentation.
Test Dataset Sub-Group	Lead Sought	To specify and coordinate the production of test datasets to support the development and testing of S-101. https://github.com/iho-ohi/S-101-Test-Datasets	Design and prepare test datasets to support Portrayal changes based on current and planned Feature Catalogues.

HSSC ISO 9001 cell

Update





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MAIN PURPOSE

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- Council 4, agreed to experiment on the application of the ISO 9001 principles on a couple of Strategic Plan targets (one per Committee to be proposed).
- HSSC 13 meeting agreed that the ISO 9001 principles will be experimented on the development of the Product Specification for ENC S-101 ed. 2.0.0.
- An HSSC ISO 9001 Cell has been established with development, monitoring and risk management objectives.
- The “HSSC ISO 9001 cell” is composed of the DQWG chair, 1-2 experts of ISO 9001, S-101 Project Control Officer (PCO – S101PT Vice Chair) and HSSC vice chair.



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HSSC ISO 9001 CELL

- Meets 4 times a year
- Met 2 times in 2022 (March & September)
- Next meeting planned for February 2023
- Presented risks and opportunities for the first time at HSSC14 (May 2022)



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GANTT CHART

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✦	Apply stakeholder's feedback and upload S-101 PC 1.0.0 to Github for peer review	20 days	Fri 25/03/22	Tue 21/04/22	8	NIWLC	No
✦	S-101 PC 1.0.0 Peer review process in Github	33 days	Fri 22/04/22	Tue 07/06/22	9	ALL	No
✦	Apply peer review corrections and complete final PC 1.0.0 draft	13 days	Wed 08/06/22	Fri 24/06/22	10	NIWLC	No
✦	Process Registry changes resulting from the development of new symbology	23 days	Mon 27/06/22	Wed 27/07/22	11	IHO Secretariat	No
📁	Publish S-101 Portrayal Catalogue 1.1.0 in GI Registry	42 days	Thu 28/07/22	Fri 23/09/22	12	IHO Secretariat	Yes
📁	Approval of S-101 Validation Checks compliant with version 1.1.0			Fri 23/09/22		S-101 Project Team	Yes
📁	Endorsement of S-100 5.0.0 by HSSC	3 days	Tue 03/05/22	Thu 05/05/22			Yes
✦	Approval of DCEG 1.1.0	60 days	Fri 06/05/22	Thu 28/07/22	15	S-101 Project Team	Yes
📁	Submit S-101 version 1.1.0 for S100WG approval	66 days	Mon 26/09/22	Mon 26/12/22	18,14,16	S101PT Chair	Yes
✦	Publish S-101 Feature catalogue 1.1.0 in GI Registry	1 day	Fri 29/07/22	Fri 29/07/22	16,15	IHO Secretariat	Yes
✦	Perform portrayal gap analysis between FC/DCEG S-101 1.1.0 & PC 1.0.0	30 days	Fri 29/07/22	Thu 08/09/22	18,16	S-101 Portrayal subWG	No
✦	Follow 'Portrayal changes workflow' to develop and approve new symbology that enables the creation of S-101 PC 1.1.0 Draft	90 days	Fri 09/09/22	Thu 12/01/23	19	IHO Secretariat	No
✦	Upload S-101 PC 1.1.0 Draft to Github for peer review	1 day	Fri 13/01/23	Fri 13/01/23			
✦	S-101 PC 1.1.0 Peer review process in Github	15 days	Mon 16/01/23	Fri 13/01/23			
✦	Apply Peer review corrections and complete S-101 PC 1.1.0 Draft	13 days	Mon 06/02/23	Fri 13/01/23			
✦	Process Registry changes resulting from the development of new symbology	23 days	Thu 23/02/23	Fri 13/01/23			
📁	Publish S-101 Portrayal Catalogue 1.1.0 in GI Registry	15 days?	Tue 28/03/23	Fri 13/01/23			
✦	S-101 1.2.0 - Exchange Catalogue						
✦	S-101 1.2.0 - Data protection (compression, encryption and digital signatures)						
📁	Publication of S-98 version 1.0.0	3 days	Tue 03/05/22	Tue 03/05/22			
📁	Interoperability catalogue	60 days?	Fri 06/05/22	Fri 06/05/22			
📁	Publish S-101 Alerts and Indications Catalogue 1.0.0 (??)	60 days?	Fri 06/05/22	Fri 06/05/22			

Publish 'Incomplete' Draft PC (0.9.x) in IF
Start: Tue 02/03/21 ID: 3
Finish: Tue 01/06/22 Dur: 66 days
Res: IHO Secretariat, NIWLC

Finalise portrayal impact assessment of n
Start: Thu 15/10/20 ID: 4
Finish: Tue 02/11/22 Dur: 274 days
Res: S-101 Portrayal subWG

Update Rules and develop draft symbols
Start: Wed 03/11/22 ID: 5
Finish: Tue 28/12/22 Dur: 40 days
Res: KHOA[50%], NIWLC[50%]

Present portrayal changes recommenda
Start: Wed 08/12/22 ID: 6
Finish: Thu 09/12/22 Dur: 2 days
Res: S-101PT Vice-Chair

Submit new symbology for stakeholder
Start: Fri 10/12/21 ID: 7
Finish: Fri 17/12/21 Dur: 6 days
Res: S-101PT Vice-Chair

New symbology - Stakeholders review p
Start: Mon 20/12/22 ID: 8
Finish: Thu 24/03/22 Dur: 69 days
Res: NCWG, S100TSWG

Apply stakeholder's feedback and nd upl
Start: Fri 25/03/22 ID: 9
Finish: Thu 21/04/22 Dur: 20 days
Res: NIWLC

Approval of S-101 Validation
Checks compliant with version 1.1.0
Milestone Date:
ID: 14

Submit S-101 version 1.1.0 for
S100WG approval
Milestone Date: Mon 26/09/22
ID: 17

Endorsement of S-100 5.0.0 by
HSSC
Milestone Date: Tue 03/05/22
ID: 15

Approval of DCEG 1.1.0
Milestone Date: Fri 06/05/22
ID: 16

Perform portrayal gap analysis between
Start: Fri 29/07/22 ID: 19
Finish: Thu 08/09/22 Dur: 30 days
Res: S-101 Portrayal subWG

Publish S-101 Feature catalogue
1.1.0 in GI Registry
Milestone Date: Fri 29/07/22
ID: 18



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RISKS AND OPPORTUNITIES

Manage risks and opportunities of S-101 product specification

3. Risks

If Evaluation = high or medium								
Description	Origin	Impact	Evaluation*	Date of review**	Actions to reduce risk	Resp. For action	Effectiveness of the action	Action taken and date
Lack of available human resources	internal		High	Sep 2022	-Raise awareness among MS on the importance of allocating the necessary resources	HSSC	Targeted communication to MS	Chair action PLANNED S-101PT Letter 5 of 2021 sought volunteers and indications of capacity. (13012022) Some improvement in contributions but pool of active contributors remains insufficient
Delay to draft & validate the different components mandatory for TRL 2,3,4	internal							
Delay in reviewing S-101 (EC Encoding)	internal							

4. Opportunities

5. Performance indicators of S-101 PS process		
Progress on milestones from S-101 Ed 1.0.0 to Ed 2.0.0		
Goal	Monitor progress to meet deadlines	
Measurement field (KPI)	Milestones	Progress Status
	Submit Edition 1.1.0 for S100WG Approval by December 2022	On Track
	Submit Edition 2.0.0 for HSSC Endorsement by May 2024	At Risk
Method and presentation of results	GANTT Diagram	
Update periodicity	3 months	
Accountable	S101PT Chair & S100WG Chair	

					Effectiveness of the action	Action taken and date
Participation in the various Uses Cases organised in collaboration with the OEMs	Integrate feedbacks during development	Promote Uses cases	HSSC	-	Positive feedback from OEM Meeting deadlines (no extensive re-testing due to late consideration of feedbacks)	
Establish long term mariners review service agreement with IHO-Singapore Innovation laboratory in support of proposed new S-101 ECDIS portrayal and performance requirements in both, DF-ECDIS and post S-57 ENC retirement.	Objective, transparent and user driven process to accept/discard proposals related to the look and behavior of S-101 ENCs and the performance S-100 ECDIS.	Prepare and establish long term support task with clear workflows and agreed timeframes for reporting findings and recommendations. Action S-101PT8-11 also refers.	IHO Sec.	March 2022 (?)	Request are processed within agreed timeframes.	



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AUDIT OF THE OPERATION AND GOVERNANCE OF THE IHO REGISTRY

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HSSC noted the concerns raised by the HSSC ISO 9001 Cell on the resilience of the IHO GI Registry... and invited the IHO Secretariat in liaison with KHOA and the HSSC ISO 9001 Cell, to consider the recommendations provided in Appendix 2 of Doc. HSSC14-05.5B for a reliable and more robust situation in the long term.

HSSC Chair mentioned this resilience issue in the report to C-6

- Meeting between Nathalie Leidinger and KHOA/IHO Secretariat representatives occurred in September 2022. Focused on S-99 and KHOA/IHO MOU from 2018.
- The Audit was conducted in order to get a better understanding of the shortfalls and difficulties in the operation of the GI Registry and come up with recommendations.

MATURITY LEVEL ASSESSMENT OF PROCESSES

Process : Development and maintenance of the S-100 GI Registry		Date : 2 September 2022	
	Maturity Level	Evaluation	Rationale / Evidence
Continuous improvement (Level 5)	Each one proposes their needs and resources (including skills and budget) and makes its own periodic assessment	18 <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>	A report is done for the S-100 WG meeting and the HSSC. A process exists for standards evolutions with evaluation of the impact on the GI registry.
	Periodic objectives proposed by each one who defines and implements his or her personal action plan	17 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Done informally in a reactive way.
	Each one is a major player in monitoring and participating in innovation	16 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Strong implication and reactivity.
Efficiency (Level 4)	Individual progressive risk culture and self-optimisation of resources in relation to results	15 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	The GI Registry and associated tools is not sufficiently well understood by PS developers and MS representatives in general.
	Establishment and periodic monitoring of the budget in relation to the forecast. Monitoring of the dashboard structured into effectiveness and efficiency indicators.	14 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Done within KHOA annually.
	Knowledge of resource costs	13 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	No answer
Risks and opportunities (Level 4)	Risk analysis of products and projects	12 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	No answer
	Periodic analysis of process risks (in process reviews)	11 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	We don't have yet any op. PS
	Preliminary analysis of process risks: generation of preventive actions	10 <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	ISO cell + secretariat have a first meeting in September 2022. ISO cell members would participate to the workshop in December 2022.
Efficiency (Level 3)	Organised analysis of the dashboard and malfunctions (process review) and effective improvement actions	9 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	GI Registry subgroup is informal, no process review
	Pilot trained and aware of his role	8 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>	Register manager / System manager at secretariat. The roles are



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FINAL RECOMMENDATIONS

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1. Formalize, in a specific annex to the general MOU, the respective obligations of parties as regards the GI Registry. @ for consideration IHO Secretariat and KHOA.
2. Set up and formalize the **GI Registry Project Team**, subsidiary of the S-100WG dedicated to the development and maintenance of the GI Registry and make it active. Record and publicize the activity among WG and Domain Control Body when it is relevant in order to trigger a wider interest in the GI Registry. @ for consideration of S-100WG.
3. Organize regular meeting of DCB representatives and report in order to create a dynamic within this group, make their role visible and promote it, listen to their needs (training, documentation, ...). Establish the ECB as the IHO Secretariat. @ for consideration IHO Secretariat/Registry Manager.
4. Develop communication (including at strategic level) & training tools (“GI Registry for Dummies”, “Quick start for GI Registry”, ...). It will contribute to the necessary collective awareness of the importance of this tool. @ for consideration IHO Secretariat (subcontracting to be considered).