

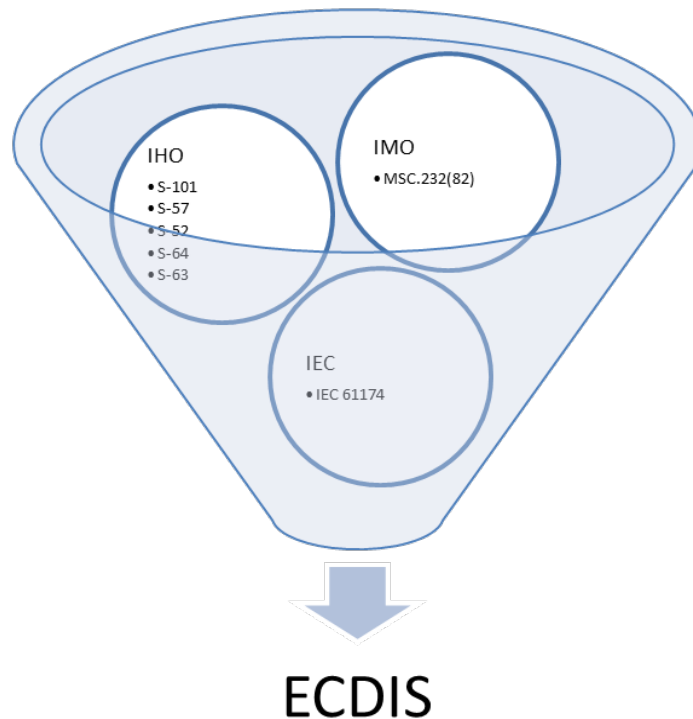
Paper for Consideration by TSMAD and DIPWG

Potential Impacts of S-101 on IEC 61174 and IMO MSC.232(82)

Submitted by:	S-101 Work Item Leader
Executive Summary:	This paper scopes out the potential impacts that S-101 may have on both IEC 61174 and IMO.232(82) and invites TSMAD and DIPWG to formulate a strategy that can be taken to HSSC.
Related Documents:	S-101, IEC 61174, IMO MSC.232(82)
Related Projects:	

Introduction / Background

As S-101 is progressing through the development stage and into the testing stage, it is important that TSMAD and DIPWG consider the impacts that S-101 may have on other ECDIS related standards that are outside the control of the IHO standards development process.



In particular, there are two standards that directly affect ECDIS:

- International Maritime Organisation MSC.232(82) – Revised Performance Standards for Electronic Chart Display and Information Systems
- International Electrotechnical Commission IEC 61174 – Maritime navigation and radiocommunication equipment and systems – Electronic chart display and information system (ECDIS) – Operational and performance requirement, methods of testing and required test results.

Analysis/Discussion

In order to assess the impacts that S-101 may have on these two standards, a preliminary assessment was made to determine the extent to which the standards reference the existing IHO ENC standards (S-57, S-52, S-64).

IMO MSC.232(82)

IMO MSC.232(82) is a performance standard, which by definition outlines the requirements that are needed for an ECDIS. S-101 will have very little impact on this standard. The key item is that IMO defines the following for Chart Information:

The chart information to be used in ECDIS should be the latest edition, as corrected by official updates of that issued by or on the authority of a Government, government-authorized Hydrographic Office or other relevant government institution, and conform to IHO standards.

The IHO standards are only incorporated as references to S-52, S-57 and S-63. In addition, since the requirements for ECDIS remain unchanged, the only change that would need to be made to this document is to include S-101 as a reference to IHO standards.

IEC 61174

S-101 will have a major impact on IEC 61174. Currently, IEC 61174 references S-52 in at least 87 instances and provides tests for each of these clauses in order for an ECDIS to be type approved. A preliminary mapping is provided in Annex A. This mapping traces the IEC clause to the S-52 reference and notes if it is included in some form into S-101. It may either be in the main product specification, portrayal catalogue or in the business rule annex.

NOTE: The mapping to S-101 clauses has not yet been completed.

The key issue is that S-101 will directly incorporate appropriate portions of S-52 into the S-101 product specification and therefore at a minimum, additional references will need to be made to S-101. However, while all the general concepts of S-52 remains in S-101, some of the information may now be in the portrayal catalogue and not explicitly stated in the product specification. Also, some concepts have been simplified (such as display loading and unloading) and the new corresponding reference in S-101 may be more difficult to identify.

Conclusions

As a result of this preliminary assessment, it was noted that IMO only needed additional references to the ECDIS Performance Standards for S-101, while IEC 61174 will need to incorporate additional references and some additional tests for S-101 functionality – such as the ability to update the feature and portrayal catalogues.

It should be noted, that at this time, the scope of changes that may be needed to IEC 61174 are an unknown variable. However, based on a preliminary assessment, it may require that the standard be re-opened for updating, rather than making changes via the maintenance cycle.

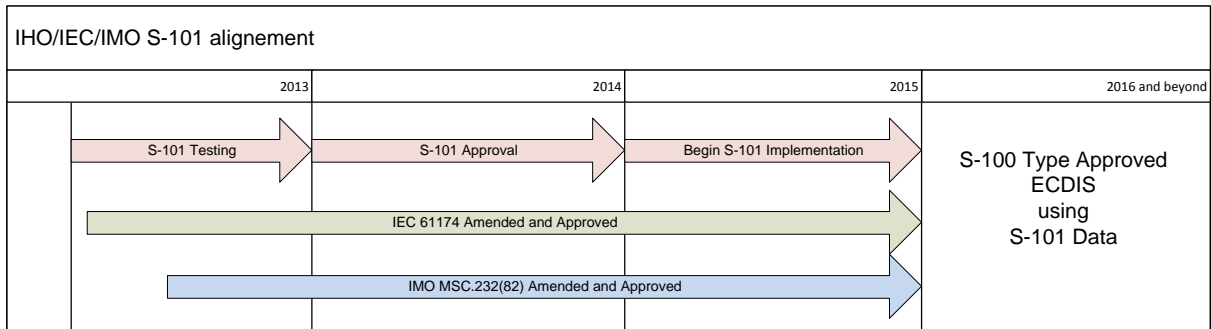
Recommendations

It is recommended that either the IHO or a Member State inform the IMO of these potential impacts against IMO MSC.282(82) and that IHO or a Member State also inform IEC of these potential impacts. An effort should be made to align the next IEC 61174 release with the release of S-101 to ensure that there is an appropriate IEC standard against which S-100 based ECDIS may be type approved.

Justification and Impacts

Both the IMO Performance Standard and IEC 61174 must be updated to reflect that ENC's produced under S-101 are also considered to be official charts; otherwise, S-101 will be useless. It is important to time the development and release of S-101 to align with the release with the updated IMO and IEC standards.

Proposed Standards Alignment timeline



Dates are only notional

Action Required of TSMAD and DIPWG

The TSMAD and DIPWG are invited to:

- a. note this this report
- b. discuss other S-101 implications
- c. agree to progress this to HSSC

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
1: Scope	N/A		N/A		Need to add S-101 reference
2: Normative References	N/A		N/A		Need to add S-101 reference
3: Terms, definitions, and Abbreviations	N/A		N/A		Various definitions refer to S-57 and S-52
3.1.2: CIE colour calibration	S-52 appendix 2		Add definition	Definition	Need to continue to include colour calibration in S-101 or does this go someplace else?
3.1.4: Compilation Scale	N/A		N/A	Definition for compilation scale	This concept has been replaced by display scale and the use of minimum and maximum display scales
3.1.5: corrupted data	N/A		N/A		Refers to S-57
3.1.11: Display Scale	N/A		N/A	Definition	S-101 may have a different concept of display scale - which is based on radar ranges
3.1.14: ENC cell	N/A		N/A	Definition	In S-101 this is now a dataset, refers to S-57
3.1.15: ENC data	N/A		N/A	Definition	
3.1.16: ENC test data set	N/A		N/A	definition	Refers to S-57 and S-52
3.1.22: Presentation Library	S-52 appendix 2		N/A	Definition	Refers to S-52. Will need to point to S-101 and the S-101 portrayal catalogue
4: Minimum operational and performance requirements	N/A		N/A		
4.1: General	N/A		N/A	Refers back to General IMO requirements	
4.2: ECDIS Definitions	N/A		N/A	Refers back to S-32	

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
4.3: Display of SENC information	N/A		N/A		
4.3.1: SENC	N/A		N/A		Need to add S-101 reference
4.3.2: Warning Indication	N/A		N/A		
4.3.3: categories of display	N/A		N/A	Refers back to General IMO requirements	
4.3.4: Safety Contour	N/A		N/A	refers back to IMO requirements	
4.3.5 Safety Depth	N/A		N/A	refers back to IMO requirements	
4.3.6: Information content	N/A		N/A		Refers to S-64
4.3.7: Verification and updates	N/A		N/A	refers back to IMO requirements	S-101 does improve update information
4.3.8: Information about chart objects	N/A		N/A	refers back to IMO requirements	
4.3.9: Display Scale	N/A		N/A	refers back to IMO requirements	S-101 aligns scales to radar ranges
4.4: Provisioning of Chart Information	N/A		N/A		
4.4.1: Contents of the SENC	S-52 6.3 (c)	3.1.7c		Helps identify the date and origin of the ENC	Need to retain in S-101?
4.4.2: Updates	N/A		N/A	refers back to IMO requirements	General reference to IHO standards
4.5: Scale	N/A		N/A	refers back to IMO requirements	
4.6: Display of other Navigational Information	N/A		N/A	refers back to IMO requirements	

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
4.7: Display mode and generation of neighbouring area	N/A		N/A	refers back to IMO requirements	
4.8: Colours and Symbols	S-52 appendix 2		N/A	refers back to IMO requirements	References would need to be updated to include S-101
4.9: Display requirements	N/A		N/A		
4.9.3: Colour and Resolution	S-52 appendix 2		N/A	refers back to IMO requirements	References would need to be updated to include S-101
4.10: Route planning, monitoring and voyage recording	N/A		N/A	refers back to IMO requirements	
4.11: Calculations and Accuracy	N/A		N/A	refers back to IMO requirements	
4.12: Connections with other equipment	N/A		N/A	refers back to IMO requirements	
4.13: Performance tests, malfunction alarms and indications	N/A		N/A	refers back to IMO requirements	
4.14: Back-up arrangements	N/A		N/A	refers back to IMO requirements	
4.15: Power supply:	N/A		N/A	refers back to IMO requirements	
4.16: Software maintenance	N/A		N/A		This would be the clause that allows for the exchangeable FC and PC
5: Requirements contained in IHO special publications					
5.1: Content and structure of Chart data	S-52/3.1(a)	None			Update to include S-101 S-52 ed 6.0 did not carry this forward as it is the IMO PS

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
	S-52/3.3(b)	None			S-52 ed 6.0 did not carry this forward as it is the IMO PS
	S-52/3.3(a)	None			S-52 ed 6.0 did not carry this forward as it is the IMO PS
	S-52/3.4(b)(1)	None			S-52 ed 6.0 did not carry this forward as it is the IMO PS
	S-52/3.4(B)(2)	None			S-52 ed 6.0 did not carry this forward as it is the IMO PS
	S-52/3.4(b)(3)	None			Over specified in superseded editions of S-52 and there for deleted from ed. 6.0. Note that in S-101 a cell is a dataset
5.2: Priority of Chart display	S-52/5.3(a)	2.3.2a	Yes		Retain clause - although is this a portrayal catalogue thing
5.3 Display of chart Information					
5.3.1 Scale and navigation purpose	S-52/6.3 (a)	3.2.3(8a)	Yes		Retain - but would need re-wording as the concept has changed
	S-52/6.3(b)	3.1.7.2	Yes		Retain - but would need re-wording as the concept has changed
	S-52/6.3c	3.1.7.3	Yes		Retain - but would need re-wording as the concept has changed
	S-52/6.3(d)	3.2.3(8b)	Yes		Retain - but would need re-wording as the concept has changed S-52 ed reference is 3.2.3(8b)

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
	S-52/6.3e	None			Over specified in superceded editions of S-52 and therefore removed from S-52 ed 6.0 - IMO PS 232/A12.3 refers instead
	S-52/6.3(g)	3.2.3(9)	Yes		Retain
5.3.2: Text	S-52 appendix2/(3.1.5)	3.1.5	YES		retain
5.3.3 Units and Legend	S-52/6.5	2.3.1g	YES		Retain
5.4: Display Functions					
5.4.1: Object information	S-52 appendix 2/3.1.9	3.1.9	YES		retain
	S-52/3.1(d)	2.3.1e	Yes		retain Pick report?
	S-52 appendix 2/2.3.3c	2.3.3c	Yes		retain presentation library reference?
5.4.2: Navigational information	S-52 appendix 2/3.1.2.1.6(d)	3.1.2.1.6(d)			retain
5.4.3: Safety Contour					
5.4.3.1: Default safety contour	S-52/3.4c	3.2.2(1)	Yes	IMO says 30m	retain
	S-52 appendix 2/3.2.2(1)	3.2.2(1)	Yes	IMO says 30m	retain
5.4.3.2: Information to the mariner	S-52/3.4c				
	S-52 appendix 2/3.2.2(1)	3.2.2(1)	Yes		retain
5.4.4: Navigational Calculations	S-52/7.1(a)	None			Over specified in superceded editions of S-52 and therefore removed from S-52 ed 6.0 - IMO PS 232/A12.3 refers instead

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
	S-52/7.1(b)	None			Over specified in superceded editions of S-52 and therefore removed from S-52 ed 6.0 - IMO PS 232/A12.3 refers instead
5.4.5: Date-dependant ENC objects	S-52 appendix 2 Annex A Part 1, 8.4.1	Presentation Library	Yes, S-57 PEREND, PERSTA etc...		retain - update to the use of dateRange
5.5: Supplementary display functions					
5.5.1: Additional mariner's information	S-52 appendix 2/2.3.1(b)	2.3.1b	yes		retain
5.5.2 Additional non-HO information					
5.5.2.1: Additional Display functions	S-52/7.2 (f)	2.3.1a	Yes		retain
5.5.2.2: No data	S-52/3.4(a)	2.3.1c2	Yes		retain
	S-52 appendix 2/3.2.3(14)				retain - refer to portryal catalogue
	S-52 appendix 2/3.2.3 (13a) and (13b)	3.2.3(13a)	Yes		retain - refer to portryal catalogue
5.5.2.3: Unknown object	S-52 appendix 2/3.1.3	3.1.3	Yes		retain
5.5.2.4: Text Information				refers back to IEC 61174 clause 5.4.1	Need to add additional guidance regarding text rotation and the display of text - this is in the main part of S-101

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
5.5.3: tidal adjustment	S-52/7.2(g)	1.2(h)	YES - but added language that if the ECDIS has capabilities to integrate an S-10x tide PS then it may display the adjusted tide using an offset		retain - although we are discussing a tidal product specification that will allow tide adjusted heights to be displayed as an offset
5.6: Use of the presentation library					
5.6.1: Presentation Library	S-52 appendix 2/1.2.3				retain - refer back to the portryal catalogue
	S-52 appendix 2/3.1.4	3.1.4	Yes		retain - refer back to the portryal catalogue
5.6.2: Test diagrams	S-52 appendix 2/5.2.5	C.3.1.2	Yes		retain - refer back to the portryal catalogue
5.7: Display Characteristics					
5.7.1: Display Base	S-52/7.2	5.1	Yes		retain
	S-52/7.2(a)	2.3.1(g)	YES		What is in the legend
	S-52/7.2(b)	2.3.1e	Yes		retain
5.7.2: Navigators Notes	S-52/7.2c	None			Over specified in superseded editions of S-52 and therefore deleted from S-52 ed 6.0. Related test in IEC 61174 is not affected
5.8: Performace Requirements					
5.8.1: Redraw	S52/8(a)	5.1	Yes		retain
	S-52 appendix 2/2.2.3	5.1	Yes		retain

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
5.8.2: Resolution	S-52/8c	5.1	Yes		retain
5.8.3: Symbols	S-52 appendix 2/3.5.1	3.5.1	N/A This is all portrayal catalogue		This is all contained in the portrayal catalogue. refer back to the portrayal catalogue
	S-52 appendix 2/3.2.1(2)	3.2.1(2)	Yes		retain - refer back to the portrayal catalogue - although there will only be one set of symbols instead of two
5.8.4: Number of Colours	S-52/8c	5.1	Yes		retain
5.8.5: Brightness and contrast	S-52 appendix 2/4.1.4	4.2.4.2	Yes		IEC 61174 update ref to clause 4.2.4.2
	S-52 appendix 2/4.1.5	5.2.3.1	Yes		retain?
	S-52 appendix 2/5.2.3.1	5.2.3.1	Yes		retain - refer to the portrayal catalogue
	S-52 appendix 2/5.2.3.1	5.2.3.1	Yes		retain - refer to the portrayal catalogue
	S-52 appendix 2/4.1.5	4.2.4	YES		retain - refer to the portrayal catalogue
5.9: Ergonomic Requirements					
5.9.1: Mode and orientation	S-52 appendix 2/3.2.3(10)	3.2.3(10)	Yes		retain
5.9.2: Windows	S-52 appendix 2/3.4.2	3.4.2	Yes		retain
5.9.3: Mariners information panel	S-52 appendix 2/3.4.3	3.4.3	Yes		retain
	S-52 appendix 2/4.1.5	4.2.4	yes		retain
5.10: Update of chart information					
5.10.1: General	General		General		Need to update references to S-101

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
5.10.1.1: Integration of updates	S-52 appendix 1/3.4.1c				retain - update to new method (it might be in the main PS)
	S-52 appendix 2/2.3.4	2.3.4	YES		retain
	S-52/4(a)	None			Over specified in superseded editions of S-52 and therefore deleted from S-52 ed 6.0. Related test in IEC 61174 is not affected
5.10.1.2: Recall for Display	S-52 appendix 1/3.4.1e				retain - update to new method
5.10.1.3: Log File	S-52 appendix 1/3.4 (H)				retain
5.10.1.4: Update applied out of sequence	S-52 Appendix 1/3.4(i)				retain
5.10.2: Manual update					
5.10.2.1: Keying and symbology	S-52 appendix 1/3.4.3 (a)				retain
5.10.2.2: Indications and Alarms	S-52 appendix 1/3.4.3 (b)				retain
5.10.2.3: Presentation	S-52 appendix 1/3.4.3				retain
	S-52 appendix 2/2.3.4		Yes		retain
	S-52 appendix 1/3.4.3 (e)				retain
5.10.3: Semi Automatic update	S-52 appendix 1/3.4.2(a(ii))				retain - also references S-57
5.10.4: Reception of Updates	S-52 appendix 1/3.4.2(b(ii))				retain
5.10.5: Sequence Check	S-52 appendix 1/3.4.2c				retain - also references S-57
5.10.6: Consistency check	S-52 appendix 1/3.4.2(d)				retain

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
5.10.7: Geographic Applicability	S-52 appendix 1/3.4.2(e)				retain
5.10.8: Summary Report	S-52 appendix 1/3.4.2(f)				retain
5.10.9: Review of ENC updates	S-52 appendix 1/3.4.2(g)				retain
5.10.10: Modification of updates	S-52 appendix 1/3.4.2(h)				retain
6: Methods for Testing and required Test Results					
6.4.3: Required test items	S-52 Appendix 2				refers to S-52 and S-64, update to include S-101
6.5: Initial Data tests					
6.5.1: Presentation Library					Tests would be the same - but with additional tests to test the portrayal and feature catalogue loading and updating process
6.5.2: ENC					Tests would be the same - some additional tests for S-101 ENCs and the use of the expanded discovery metadata
6.5.3: Encrypted ENC					Tests would be the same
6.7: Visual requirements					
6.7.1 Symbols	S-52 Appendix 2/3.1.3	3.1.3	Yes		tests would be the same, some additional tests
6.7.3: Colour Calibration	S-52 Appendix 2/5.2.3.1	5.2.3.1	Yes		retain?

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
	S-52 Appendix 2 Annex B 5.5				retain?
6.8.3: All other information					Change the check to find new features in the S-101 feature catalogue... not ESSA and PSSA
6.8.5: Additional display functions	S-52 appendix 2/2.3.1b +c	2.3.1b+c	Yes		retain?
	S-52 appendix 2/8.5.2	Annex A, Part I, 8.7.2	Yes		retain?
6.8.6:Scale and Navigation Purpose			Yes		Needs to revisit the tests as the concept is different in S-101 - there is no navigation purpose
6.8.10: Object Information					Need to revisit the tests as the names have changed and should test things like the attribute for display name, information types etc...
6.8.15: Automatic Updates					
6.8.15.1: Receipt - installation and application					retain tests
6.8.15.2: Display -show and verify					Need to change slightly as we have added attribution to make it easier to display what was updated
6.8.15.3: Records and logs					retain tests
6.8.16: Manual updates					retain tests

IEC Clause	S-52 IEC Reference	S-52 Ed. 6.0 reference	S-101	Description	Comments
6.9.2: Route Planning					Add a test to display data across the 180 degree line. Add a test for polar data. IHO will supply the appropriate data
6.10: Software Maintenance					Add tests for the updating and maintenance of the Feature and Portrayal Catalogues. As this should be considered data
Annex M: Elements of an electronic chart database					This is an informative annex, and the information would be in the portrayal catalogue