

NIPWG report and recommendations

Submitted by:	NIPWG
Related Documents:	Minutes of the 7th NIPWG Meeting, Tallinn
Related Projects:	S-100 product specifications

Chair:	Jens SCHRÖDER-FÜRSTENBERG, BSH, GE
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Member States:	Argentina, Brazil, Canada, Denmark, Estonia, Finland, France, Germany, Japan, India, Italy, Republic of Korea, Netherlands, Norway, Poland, Russian Federation, South Africa, Spain, Sweden, UK, USA, (and IHB),
Expert Contributor Organisations:	Anthropocene Institute, CARIS, CIRM, EEC, IHMA; IIC, KRISO, NV Chats Germany, NOVACO, NTOU, University of New Hampshire, Portolan Sciences,

Meetings Held During Reporting Period (Work Plan section K)

NIPWG7, 25 Nov – 29 Nov 2019 Tallinn, Estonia

NIPWG VTC, held as multi-sessional virtual meetings in July, August and September 2020

Next Planned Meeting

NIPWG8, 22-26 March 2021, either virtually, hybrid or Monaco

Work Programme according to the HSSC Work Plan 2019-2020 for NIPWG and associated HSSC action items

Current work is on track against the HSSC Work Plan- Expect Action Item 11/39, all HSSC action items either are completed as scheduled or are ongoing.

Product Specifications development progress**S-122 (Marine Protected Area) and S-123 (Radio Services)** (Work Plan section F)

The first HO initiated and party completed the production of S-122 and S-123 data sets. Challenges in the provision of information, which spatial crosses the EEZ were identified. An appropriate paper was provided to the WEND WG for further consideration.

Further HOs have expressed their interest in starting the production within the next reporting period. The missing production environment is a challenge though.

Taking into account that S-100 compliant ECDIS systems are not available yet, these potential products could only be used in appropriate GIS applications.

Although the provision of S-122 and S-123 information in ECDIS systems is not time pressing, and although the provision of portrayal is optional in the S-100 edition on which these product specifications are based on, IEC informed NIPWG that portrayal instructions must be provided if this information should be somehow be displayed in ECDIS.

This request justifies the further enhancement of the S-122 and S-123 product specifications. This work should be done in conjunction with the intended revision in 2021 and should be contracted.

S-125 (Navigational Services) (Work Plan section F, J)

The S-125 development will be based on the S-201 product specification and will be done by IALA on behalf of the NIPWG. The S-125 product specification will contain information in addition to those already covered by S-101.

The data stream concept described the provision of data from S-201 through S-125 to S-101.

S-126 (Physical Environment) (Work Plan section F)

The S-126 product specification is progressing.

The intended work will be on the data model side and portrayal side. No additional funds for contracting out the development of the necessary product specification parts will be requested until 2024. A detailed Product Specification description is provided in Annex C.

S-127 (Traffic Management) (Work Plan section F)

Version 1.0.0 of the product specification has been endorsed by HSSC and is under the new Resolution 2/2007 life cycle regime.

Several tests have been conducted to assess the appropriateness of the specification against real HO data. The tests confirmed that the tested parts of the data model are fit for purpose and that semi-automatic generation of data sets is possible. Test further deliver demand for further product specification improvement. Therefore, the year 2022/2023 is the new intended release date for version 2.x.x.

Data model harmonisation between S-101 and S-127 took place.

S-128 (Catalogue of Nautical Products) (Work Plan section F)

The work on S-128 is making good progress. Based on the current development status, HO's were invited to test the product specification and to provide comments. In addition, the developer checked the S-128 appropriateness for use in e-navigation environment. The work is ongoing. Assuming all comments will be successfully implemented, it is expected that an updated version could be released later in 2021.

S-128 can be the vehicle to provide up-to-date information of products and can have similar functions as the current S-63. A relevant paper on S-128 management issues was provided to WENDWG for consideration.

S-1xx (Marine Harbour Infrastructure) (Work Plan section F)

The Marine Harbour Infrastructure product specification is currently the last product specification, which needs to be developed under the remit of NIPWG. NIPWG keeps a close liaison with the International Harbour Master Association and with the International PortCDM Council to keep their information reflected. Furthermore, current M-3 resolutions will be checked to harmonise the recommended information provision and the presentation in the Marine Harbour Infrastructure.

It has been recognised that the development of this product specification will be time consuming; noting that interests of various stakeholders should be taken into account. It is therefore proposed to use an approach similar to S-126 (Marine Physical Environment). Work will be done on the data model and portrayal side first. Having reached a sufficient level of maturity, NIPWG will approach HSSC in 2022 to discuss funds for contracting out the further product specification development in 2023. A detailed Product Specification description is provided in Annex C.

Development of remaining product specification under the remit of NIPWG

Based on the initial list of product specifications to be developed by NIPWG, Marine Service, Digital Mariners' Routeing Guide and Social/Political are the remaining specifications. The assessment of the potential content resulted in conclusion that a separate production of these product specifications is not necessary. Either other product specifications provide the content or the necessity to provide particular content has been overtaken by events (associated M-3 amendments).

NIPWG recommends combining Marine Services, Social/Political and Harbour Infrastructure information in a product specification named "Marine Harbour Information".

The product specifications "Digital Mariner Routeing Guide", "Marine Services" and "Social/Political" initially proposed by HSSC 5 will become superfluous.

That means the list of product specifications under the remit of NIPWG is:

- S-122 (Marine Protected Area)
- S-123 (Marine Radio Services)
- S-125 (Marine Navigational Services)
- S-126 (Marine Physical Environment)
- S-127 (Marine Traffic Management)
- S-128 (Catalogue of Nautical Products)
- S-1xx (Marine Harbour Infrastructure)

Maintaining IHO Standards under NIPWG responsibility (Work Plan section D, E,)

Maintain Publication S-12 "Standardization of List of Lights and Fog Signals"

No requests to amend S-12 were raised in 2019. The content provided in S-12 is considered as appropriate and as fit for purpose.

Maintain Publication S-49 "Recommendations concerning Mariners' Routeing Guides" (MRG)

A revision of S-49 was done and has successfully passed the Member State Approval process. NIPWG recommends freezing S-49 with version 2.1.0. Taking into account that MRG information will be provided by S-100 compliant product specifications in a near future, it is expected that no new printed MRG will be issued.

Amendments to M-3

Following proposed M-3 amendment has successfully passed the Member State Approval process:

- Resolution 7/2009 as amended Time Reference

Provision of S-100 Architecture

The S-100WG Test Strategy Meeting (TSM) discussed the latest version of the architectural display and provided comments. TSM emphasised that using the terms front/back-of-bridge use is inappropriate and may cause misinterpretation. Rather, they recommend replacing these terms by the terms "Route Planning Mode" and "Route Monitoring Mode" respectively to be consistent with the terms used by the IMO.

The TSM also discussed whether the division of product specifications in two different modes is still appropriate and reflects the current way of providing information on board, taking account the new possibilities offered by the Interoperability Specification. They recommend to display all Product Specifications on one ECDIS screen and to assign different interoperability levels.

The NIPWG7 meeting discussed the TSM comments and appreciated the TSM recommendations. NIPWG7 decided to amend the overarching architecture of S-100 based product specifications accordingly.

The latest version is provided under HSSC 12-05.3C.

Any Other Items of Note

DQWG data model harmonisation test tool

DQWG developed a tool to check data model harmonisation between various product specifications. They tested the status of the data models used in various NIPWG product specifications and provided NIPWG a list of results. NIPWG plans to use the test results in updates of the relevant product specifications. The test results emphasises the importance of harmonised data model elements when interoperability is an issue.

In addition, NIPWG experts assessed the test results and provided feedback to DQWG aiming to improve the test tool.

NtM XML Development

NIPWG experts enhanced the developed common XML structure to enable the exchange of tables in corrections. A further 1.5 days' workshop, as approved by HSSC11, will be held if more HOs are able to provide an NtM output according to the common XML. The Italian HO kindly offered Genoa as the location. However, the intended date cannot be determined yet.

IMO related work (Work Plan section G)

NIPWG continued the monitoring of the development of the IMO e-Navigation strategy. It further coordinates the IHO submission of the Maritime Services in context of e-navigation description under IHO to the IMO.

The IHO contribution to the EGDH needs to be harmonised. NIPWG stands ready to act as responsible IHO working group to monitor and contribute to EGDH discussions.

Test of product specifications and production of data sets

S-122 (Marine Protected Area) data are available for US and DE waters for testing purposes. According to the software maintenance circle the product specification passed the "Evolution" phase is now in the "Report" and "Request" phase. That needs active support from all HOs that intend to provide S-122 data in the future.

S-123 (Marine Radio Services) product specification will be tested by Spain, Canada, Netherlands and Germany. Same as for S-122, other Member States are invited to develop data sets and to report to NIPWG their findings.

Action item HSSC11/39 requested NIPWG, possibly in coordination with IRCC, to initiated a survey to seek Member State information on their intention to produce S-122 and S-123 data sets. NIPWG7 discussed this request in more detail. Considering the lack of sufficient production environment, and taking further into account the statements and timeline provided in IHO CL54/2019, NIPWG7 concluded to postpone this survey to a later date.

Conclusions and Recommended Actions

- The NIPWG activities are focussed
 - on making progress with the S-100 compliant NPUB Product Specifications development,
 - the development of test data sets for S-100 compliant NPUB Product Specifications
 - on developing proposals to amend the M-3 parts pertaining to nautical publications,

- on assessing the appropriateness of IHO Standards that NIPWG is responsible for maintaining,
- on the coordination of the IHO contributions to the IMO e-nav strategy,
- on the assessment of proportionate S-100 based products management.

Action required of HSSC

HSSC12 is invited to endorse:

1. the activity of NIPWG;
2. the freezing of S-49 Edition 2.1.0.

HSSC12 is further invited to confirm:

1. the revised list of Product Specifications under the remit of NIPWG;
2. the NIPWG responsibility to maintain the Architectural Display of Product Specifications under the remit of the IHO.
3. that responsible WGs should review the initial descriptions of “Maritime Services in context of e-navigation” under their remit if appropriate and to provide them to NIPWG for further action.
4. that NIPWG should coordinate IHO input to IMO’s EGDH.

HSSC12 is further invited to note this report and to endorse:

1. the continuance of the revised 2019-20 Work Plan as annexed.

HSSC 12 is further invited to allocate:

1. an S-1xx number to Marine Harbour Infrastructure Product Specification.

Annex A

Members List see

https://iho.int/uploads/user/Services%20and%20Standards/NIPWG/MISC/NIPWG_Members.pdf

Annex B**Work Plan**

NIPWG WORK PLAN 2019-20 (as discussed at NIPWG7)

Tasks

D	Maintain Publication S-12 “Standardization of List of Lights and Fog Signals” (IHO Task 2.8.1)
E	Maintain Publication S-49 “Recommendations concerning Mariners’ Routeing Guides” (IHO Task 2.8.3)
F	Establish and monitor, in liaison with the S-100WG, the project teams required to specify and develop nautical information layers for use in ECDIS (IHO Task 2.3)
G	Develop high level specifications for maritime services as defined by IMO in the context of e-navigation covering the provision of hydrographic services to mariners in accordance with the IMO e-navigation strategy implementation plan (IHO Task 2.5.2)
H	Develop a test and implementation plan for the development of the maritime services as defined by IMO (IHO Task 2.5.2)
I	Maintain IHO Resolutions in M-3 relating to Nautical Publications as required (IHO Task 2.1)
J	Liaise with other HSSC WGs and other IHO and international bodies (IHO Task 2.1.8)
K	Conduct the 2019 and 2020 meetings of the NIPWG and its sub-group(s) and project team(s) (IHO Task 2.1)

Work items

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.1	Monitor and assess proposals for amending S-12	M	Next meeting	2014	Permanent	O		S-12	In close liaison with IALA; see J.5.1
E.1	Develop proposals for amending S-49	M	Next meeting	2019	Permanent	O		S-49	Red-line version (Ver 2.1.0) to be provided to HSSC 12 for endorsement.
F.1	Assess the progress and perspectives of developing specifications for NP data and propose the way forward for consideration by HSSC	H		2015	Permanent	O			To be considered in the context of the IMO e-navigation strategy implementation. NIPWG to consider establishing one or more project team(s) in liaison with S-100WG as required (see J.2), in particular to continue the development of Product Specifications currently assigned to the NIPWG.
F.2	Investigate the interaction between Marine Protected Area Product and ENC in ECDIS	H	Next meeting	2015	Permanent	O	Chair/Sec		In close liaison with the S-100 WG

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
F.3	Model the NP data where required.	H	Next meeting	2004	Permanent	O	Chair/Sec		S-100 related. To be included in Hydro domain of the FCD Register.
F.4	Review of objects and attributes. Propose amendments to HYDRO	H	Next meeting	2004	Permanent	O	Chair/Sec		S-100 related. Incorporate in FCD Register if appropriate.
F.8.1	Develop S-12n - Nautical Information Product								
F.8.1.2	For Marine Navigational Services	L	next NIPWG meeting	2013		P	Chair/Sec	S-125	On Hold IALA offers to develop draft.
F.8.1.4	For Marine Physical Environment	M	next NIPWG	2013		PO	Chair/Sec	S-126	Investigatory work initiated, see
F.8.1.5	Catalog of nautical products	H	next NIPWG	2016	2021	O	Chair/Sec	S-128	Development continued by KHOA
F.8.1.6	For Harbour Infrastructure	M	next meetin	2019		Oe	Chair/Sec	S-12X	Investigatory work initiated, see action
F.8.2	Draft Data Classification and Encoding Guides								Document for NPs similar to Use of the Object Catalog

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
F.8.2.1	For Marine Navigational Services	M		-		P	Chair/Sec	S-125	In close liaison with IALA, see J.5.1
F.8.2.2	For Physical Environment	M	Next meeting	-	-	P	Chair/Sec	S-126	
F.8.2.3	For Digital Catalog of Nautical Product	H	Next meeting	2016	2021	O	Chair/Sec	S-128	In progress
F.8.2.4	For Harbour Infrastructure	M	Next meeting			P	Chair/Sec	S-12x	
F.8.2	Monitor and Maintain NIPWG Product Specification	H	Next meeting	2019	2021	O	Chair/Sec		S-122, S-123 and S-127 under 2 year revision cycle
G.1	Monitor the requirements for, and provision of, nautical information in e-navigation test-beds Produce NP1 sample data sets					C			According to the tasks assigned by HSSC4. Collection of information to be modelled
G.3	Rules and guidelines for displaying nautical information in ECDIS and in maritime services as defined by IMO								
G.3.1	Develop basic display principles for NP data intended for use in ECDIS (NP3)	M		2008		O	Chair/Sec		Close co-operation with NCWG and S-100WG required.

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
									Interoperability Spec to be considered.
G.3.2	Monitor and contribute to the development of IMO guidelines showing how navigation information received by communications equipment can be displayed in a harmonized way and what equipment functionality is necessary.	M		2015		O			e-nav IMO Strategy Implementation Plan, Task T13 (HSSC6-07.1A refers) Output number 5.2.6.2 of NCSR biennial agenda 2016-17 Completion date is unknown and dependent on the maturity of interoperability and portrayal frameworks For HSSC consideration
I.1	Maintain and extend resolutions in M-3 relating to Nautical Publications	M	Next meeting	2012	Permanent	O	Chair/Sec NIPWG	M-3	A review is required due for the harmonization of M-3 information and potential ProdSpecs content
J.3	Liaise with other HSSC WG	M		2004	Permanent	O	Chair/Sec NIPWG		
J.3.1	Liaise with the NCWG	M			Permanent	O	Chair/Sec NIPWG		Establish joint project teams as required and endorsed by HSSC.
J.3.2	Liaise with the ENCWG	M			Permanent	O	Chair/Sec NIPWG		
J.3.3	Liaise with the S-100WG	H			Permanent	O	Chair/Sec NIPWG		Establish joint project teams as required and endorsed by HSSC.
J.4	Liaise with IRCC								

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
J.4.1	Liaise with WWNWS Sub-Committee	M			Permanent	O	Chair/Sec NIPWG	S-124	Monitor developments of S-124 Project Team
J.4.2	Liaise with WENDWG	M		2019	Permanent	O	Chair/Sec NIPWG		
J.5	Liaise with other international bodies which contribute to nautical information	H		2015	Permanent	O	Chair/Sec NIPWG		
J.5.1	Liaise with IALA	H		2013	Permanent	O	Chair/Sec NIPWG		
J.5.2	Liaise with International Harbor Masters' Association (IHMA)	M		2015	Permanent	O	Chair/Sec NIPWG		IHMA attended the NIPWG 7
J.5.3	Liaise with International Cable Protection Committee (ICPC)	L		2016	Permanent	O	Chair/Sec NIPWG		

Meetings (Task K)

Date	Location	Activity
July, August, September 2020	Video Conferences	
March 2021	Virtually, hybrid or Monaco	NIPWG8
Sept 2022	Niteroi, Brazil (invitation confirmed)	NIPWG9
Sept 2023	Monaco	NIPWG10

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Top three work items:

- Initiate prototype implementation of existing S-12x products in an S-100 based environment to explore governance architecture and service delivery mechanism
- Develop S-12x nautical information Product Specifications
- Coordinate the IHO contributions to the definition and harmonisation of maritime services in context of e-navigation as defined by IMO within the remit of IHO

Annex C

Product Specification description (Marine Physical Environment)	
Action	Description
Product Specification number	S-126
Title	Marine Physical Environment
Abstract	<p>The Marine Physical Environment Product Specification provides historical information on the climate of an area, specifically the weather conditions (temperature, pressure, humidity, etc.) or oceanic phenomenon (currents, sea levels, water characteristics, etc.), of a region.</p> <p>Functionally, it is expected to aid in the identification of landmarks, entrances, hazards, and points of interest along a marked path – enriching the visuals shown on the nautical chart, as well as to help in decision making on how (and when) best to approach the desired port. The product specification contains the information used to understand both the dynamic environmental conditions that surround the mariner but also descriptions of the environment that cannot be rendered on a 2D chart without cognitive overload from symbols and chart clutter. It is also intended to aid the user in filtering and presenting the data only when necessary.</p> <p>The primary users would be the ship itself and the shipping company to use historical data for voyage planning (route, navigation safety, etc.) and to familiarize themselves with an area before entry. Secondary users would be academia and other researchers.</p> <p>The expected functionality would be Route Planning Mode (planning) use.</p>
Product Specification Scope	<p>The overall scope of the specification (at the historical level) can be two-fold</p> <ol style="list-style-type: none"> 1. Wide area—Covers ocean basin or other geographic feature. 2. Small area—Covers individual ports.
Justification	<p>The Marine Physical Environment Product Specification provides historical information on the climate of an area, specifically the weather conditions or oceanic phenomenon of a region.</p> <p>Within the Marine Physical Environment there are the following categories:</p> <ol style="list-style-type: none"> 1. Water and weather related descriptions and warnings based on historical information 2. Physical descriptions of the coast, approach, seabed, landmarks, natural features and points of interest.
Specification Interoperability	<p>Statistic surface current data and S-111 work in conjunction with one another to help expand the situational awareness of the physical dynamics of the water in a modeled area. Textual descriptions support where models are not available. Similarities apply to the S-104 data. An interoperability with S-124 (attribute Category of Physical condition) is possible.</p> <p>Weather descriptions could add value to the S-412, S-413 and S-414 data.</p> <p>Physical descriptions of the land/sub-water/natural features/cultural would interact with S-101 ENC features and areas.</p>
S-98 Applicability	Applicable to S-98 (Yes <input checked="" type="checkbox"/> or No <input type="checkbox"/>)
Cooperation with other HSSC WGs	<p>The following WGs could be useful in modelling historical data</p> <p>TWCWG</p> <p>S-101 PT</p>

	S-102 PT WMO JCOMM
Budget	65,000 – 75,000 € in total. 40,000,-€ are preparation work belonging to NIPWG 25,000 – 35,000 € are sufficient for the pure product specification development.
Schedule	Based on state of currents development 2021 NIPWG starts researches, data model, etc. 2024 Product Specification development starts 2026 Product Specification version 1 ready and goes into 2/2007 circle

Product Specification description (Harbour Infrastructure)	
Action	Description
Product Specification number	S-130
Title	Marine Harbour Infrastructure
Abstract	<p>The Marine Harbour Infrastructure product intended use is to raise situational awareness before approaching a harbour.</p> <p>Knowing a priori the layout of the berths as well as the services offered for berthing procedure and alongside is important in the berth-to-berth route planning process for an efficient harbour call.</p> <p>Knowing all the services they need while at port are available and accessible as well as having a smooth transition into their berthing position.</p> <p>The data will be able to be filtered according to needs to help reduce the cognitive burden on the mariner and presented in a way that is compact, organised and easily accessible.</p> <p>This information is also useful for shipping companies, brokers and other in the industry to optimize their planning.</p>
Product Specification Scope	<p>The Marine Harbour Infrastructure describes relevant and data on harbour infrastructure, facilities and services in a harmonised form.</p> <p>The main source of the data is information from harbour masters.</p>
Justification	<p>This Product Specification was a choice listed in an earlier SNPWG survey but did not place high enough by survey respondents for development by SNPWG/NIPWG.</p> <p>Within the Marine Harbour Infrastructure there are the following categories:</p> <ol style="list-style-type: none"> 1. Land-based infrastructure 2. Water-based infrastructure. <p>Each of these categories can further be subdivided into</p> <p>Physical Infrastructure</p> <ol style="list-style-type: none"> 1. Berths—Length, width, height above water, depth alongside, cargo handled, vessel parameters (maximum size, loa, draft, beam, etc.), mooring fittings (chocks, bits, bollards, fairleads). 2. Storage yards/warehouses—Size, availability, location, cargo capability. 3. Cranes—Type (container, rubber tire gantry, rail mounted, forklifts), safe working loads, capacity, number available. 4. Other cargo loading/unloading—Conveyor belts, liquid/solid bulk transfer capability (type of cargo, loading rates) <p>Repair facilities—Dry docks, floating docks, floating cranes, repair yards (including vessel parameters).</p> <p>Service Infrastructure:</p> <ol style="list-style-type: none"> 1. Stevedores/other dockworkers. 2. Line handlers. 3. Bunkers. 4. Fresh water. 5. Trash removal. 6. CHT services. 7. Shore power. 8. Types of repairs. 9. Communications availability. 10. Medical/dental facilities. 11. Truck/rail availability.

	12. Ship Sanitation Control Certificates (SSCC) 13. Ship Sanitation Control Exemption Certificates (SSCEC) The Product Specification content can cover official Nautical Publications information as well as information issued by the competent harbour authority.
Specification Interoperability	S-101ENC will provide the most physical infrastructure information.
S-98 Applicability	Applicable to S-98 (Yes <input checked="" type="checkbox"/> or No <input type="checkbox"/>)
Cooperation with other HSSC WGs	NCWG S-101 PT S-102 and S-129 may be if water depths information is needed
Budget	55,000 – 65,000 € in total. 30,000 € are preparation work belonging to NIPWG 25,000 – 35,000 € are sufficient for the pure product specification development.
Schedule	Based on state of currents development 2020 NIPWG starts researches, data model, etc. 2023 Product Specification development starts 2024 Product Specification version 1 ready and goes into 2/2007 circle