

**NIPWG report and recommendations**

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

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<b>Member States:</b>	Argentina, Brazil, Denmark, Estonia, Finland, France, Germany, Japan, India, Italy, Republic of Korea, Netherlands, Norway, Poland, Russian Federation, South Africa, Spain, Sweden, UK, USA, (and IHB),
<b>Expert Contributor Organisations:</b>	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

**Next Planned Meeting**  
NIPWG8, 21–25 September 2020, Brest, France

**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 have been 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 partly completed the production of S-122 and S-123 data sets. Challenges in the provision of information, which spatially 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 currently on hold. NIPWG is pleased to provide a description of the product specification scope and seeks HSSC endorsement to resume the development.

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.

Scope of Product Specification:

This Product Specification describes marine and terrestrial topography, prevailing, seasonal and hazardous current, tides, weather, and other environmental conditions. Marine Physical Environment information may be considered supplementary additional information that complements the S-101 ENC. A comprehensive 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 version 1.0.0 could be released later in 2020.

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 to discuss funds for contracting out the further product specification development in 2024 at the earliest. A detailed Product Specification description is provided in Annex C.

**Scope of Product Specification:**

This Product Specification provides information requested for berth-to-berth route voyage planning. It provides information of on harbour and mooring facilities (including pontoons), of small craft facilities and of docking facilities. Duplications of S-101 ENC features are appropriate if they are necessary to provide a logical connectivity between the S-101 ENC content and the information of in this product specification. Further information, such as berthing assistance, medical service, fire fighting facilities, waste disposal facilities, supplies and repairs should be provided if considered as appropriate. A comprehensive 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. Their potential content has been assessed. The result is 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 is intended. A redline version and a clean version are provided under HSSC 12-05.3B.

The main corrections are:

- making the provision of Underkeel Clearance Management Systems information possible;
- replacing "nautical publications" by "nautical publications information";
- making the provision of seismic activity information and information on magnetic anomalies possible; and
- deletion of the list of currently published Mariners' Routeing Guides..

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.

#### ***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 initiate 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 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 continuation of the S-126 (Marine Physical Environment) product specification development;
3. the start of the work on S-1xx (Marine Harbour Infrastructure) product specification development;
4. the proposed S-49 (Mariners' Routing Guide) Edition 2.1.0 and task the IHO Secretariat to circulate the document to MS for approval;
5. the freezing of S-49 Edition 2.1.0 after MS approval.

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.

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

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

**Annex A**  
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**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 (IHO Task 2.3)
G	Develop high level specifications for maritime services as defined by IMO in the context of e-navigation covering the needs of 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 2.5.3)
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)
D.1	Monitor and assess proposals for amending S-12	M	Next meeting	2014	Permanent	O	
E.1	Develop proposals for amending S-49	M	Next meeting	2019	Permanent	O	
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	



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)
F.2	Investigate the interaction between Marine Protected Area Product and ENC in ECDIS	H	Next meeting	2015	Permanent	O	Chair/Sec
F.3	Model the NP data where required.	H	Next meeting	2004	Permanent	O	Chair/Sec
F.4	Review of objects and attributes. Propose amendments to HYDRO	H	Next meeting	2004	Permanent	O	Chair/Sec
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
F.8.1.4	For Marine Physical Environment	M	next NIPWG	2013		P	Chair/Sec
F.8.1.5	Catalog of nautical products	H	next NIPWG	2016	2021	O	Chair/Sec
F.8.1.6	For Harbour Infrastructure	M	next meetin	2019		O	Chair/Sec
F.8.2	Draft Data Classification and Encoding Guides						
F.8.2.1	For Marine Navigational Services	M		-		P	Chair/Sec
F.8.2.2	For Physical Environment	M	Next meeting	-	-	P	Chair/Sec
F.8.2.3	For Digital Catalog of Nautical Product	H	Next meeting	2016	2021	O	Chair/Sec
F.8.2.4	For Harbour Infrastructure	M	Next meeting			P	Chair/Sec
F.8.2	Monitor and Maintain NIPWG Product Specification	H	Next meeting	2019	2021	O	Chair/Sec
G.1	Monitor the requirements for, and provision of, nautical information in e-navigation test-beds Produce NP1 sample					C	

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)
	data sets						
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
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	
I.1	Maintain and extend resolutions in M-3 relating to Nautical Publications	M	Next meeting	2012	Permanent	O	Chair/Sec NIPWG
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
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
J.4	Liaise with IRCC						
J.4.1	Liaise with WWNWS Sub-Committee	M			Permanent	O	Chair/Sec NIPWG
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	M		2015	Permanent	O	Chair/Sec NIPWG

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)
	(IHMA)						
J.5.3	Liaise with International Cable Protection Committee (ICPC)	L		2016	Permanent	O	Chair/Sec NIPWG

**Meetings (Task K)**

<b>Date</b>	<b>Location</b>	<b>Activity</b>
21 – 25 Sept 2020	Brest, France	NIPWG8
Sept 2021	Monaco	NIPWG9
Sept 2022	Niteroi, Brazil (invitation confirmed)	NIPWG10
Sept 2023	Monaco	NIPWG11

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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"> <li>1. Wide area—Covers ocean basin or other geographic feature.</li> <li>2. Small area—Covers individual ports.</li> </ol>
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"> <li>1. Water and weather related descriptions and warnings based on historical information</li> <li>2. Physical descriptions of the coast, approach, seabed, landmarks, natural features and points of interest.</li> </ol>
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 2020 NIPWG starts researches, data model, etc. 2024 Product Specification development starts 2026 Product Specification version 1 ready and goes into 2/2007 circle

<b>Product Specification description (Harbour Infrastructure)</b>	
<b>Action</b>	<b>Description</b>
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"> <li>1. Land-based infrastructure</li> <li>2. Water-based infrastructure.</li> </ol> <p>Each of these categories can further be subdivided into</p> <p><b>Physical Infrastructure</b></p> <ol style="list-style-type: none"> <li>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).</li> <li>2. Storage yards/warehouses—Size, availability, location, cargo capability.</li> <li>3. Cranes—Type (container, rubber tire gantry, rail mounted, forklifts), safe working loads, capacity, number available.</li> <li>4. Other cargo loading/unloading—Conveyor belts, liquid/solid bulk transfer capability (type of cargo, loading rates)</li> </ol> <p>Repair facilities—Dry docks, floating docks, floating cranes, repair yards (including vessel parameters).</p> <p><b>Service Infrastructure:</b></p> <ol style="list-style-type: none"> <li>1. Stevedores/other dockworkers.</li> <li>2. Line handlers.</li> <li>3. Bunkers.</li> <li>4. Fresh water.</li> <li>5. Trash removal.</li> <li>6. CHT services.</li> <li>7. Shore power.</li> <li>8. Types of repairs.</li> <li>9. Communications availability.</li> <li>10. Medical/dental facilities.</li> <li>11. Truck/rail availability.</li> </ol>

	<p>12. Ship Sanitation Control Certificates (SSCC)  13. Ship Sanitation Control Exemption Certificates (SSCEC)</p> <p>The Product Specification content can cover official Nautical Publications information as well as information issued by the competent harbour authority.</p>
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	<p>NCWG  S-101 PT</p> <p>S-102 and S-129 may be if water depths information is needed</p>
Budget	<p>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.</p>
Schedule	<p>Based on state of currents development  2020 NIPWG starts researches, data model, etc.  2024 Product Specification development starts  2026 Product Specification version 1 ready and goes into 2/2007 circle</p>