Report of the Nautical Information Provision WG (NIPWG)

Submitted by:	Jens SCHRÖDER-FÜRSTENBERG, GE
Related Documents:	Minutes of the 18th SNPWG meeting (1–4 Dec 2014), Cadiz, Spain Minutes of the 1st NIPWG meeting (29 June–3 July), Monaco http://www.iho.int/mtg_docs/com_wg/HSSC/HSSC6/LIST%20OF%20ACTIONS%20FROM%20HSSC6_30July2015_export.pdf
Related Projects:	

Chair:	Jens SCHRÖDER-FÜRSTENBERG, BSH, GE
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Secretary (acting):	Tom LOEPER, NOAA, U.S.
Member States:	Argentina, Brazil, Denmark, Estonia, Finland, France, Germany, Japan, India, Itlay, Republic of Korea, Netherlands, Norway, Poland, Russian Federation, South Africa, Spain, Sweden, UK, USA, (and IHB),
Expert Contributor Organisations:	CARIS, Interschalt, Jeppesen, KRISO, NOVACO, Snowflake, University of New Hampshire

Meetings Held During Reporting Period
SNPWG18, 1–4 December 2014, IHM Cadiz, Spain
NIPWG1, 29 June–3 July, Monaco

Next Planned Meeting
NIPWG2, 21–25 March 2016, tentatively Cambridge, UK (alternatively Monaco)

Work Program

Data Modeling
The classification of the whole range of text based nautical publication content as semantic entities is the crucial prerequisite for any form of modern management of this information. A comprehensive catalogue of attributable features has been created. This catalogue has the ambition to cover the information elements of the following publications exhaustively and unambiguously:

- Sailing Directions;
- List of Radio Signals;
- List of Lights;
- List of Buoys and Beacon;
- Mariners' Handbook;
- Routeing Guides;
- Notices to Mariners (Publications correction).

The resulting catalogue as a collection of features and attributes is now ready to be listed within the Geospatial Information (GI) Registry. Extensions and modifications of the data model will be considered by the WG if the Product Specification development requires this.

The group is still engaged in data model harmonisation with the S-101 Data Classification and Encoding Guide (DCEG) sub working group.
Knowing that the S-101 DCEG April 2014 base line version is being used for the S-101 testing phase and that further amendments to the S-101 data model may be required according to the outcome of the

tests, the data model harmonisation is ongoing by exchanging views on potential harmonisation candidates effecting S-101, S-122 and further NPUB product specifications.
Examples:
Proposals on harmonisation of the data model for textual information and for contact details are under discussion. For these two information chunks the NIPWG data model is more comprehensive and provides better access to the information. The S-100WG is investigating how useful this data model is for S-101 purpose.
NIPWG is discussing adopting the current S-101 solution for „vessel speed limit" which is less complex and simpler than the NIPWG model and may be a useful interim step towards the complex data model.

Furthermore, a discussion is ongoing on the most effective use of the data model parts stored in the S-100 Registry. The intention is that e.g. a particular set of attributes (sub-attributes and enumerates) pertaining to a feature suits the requirements for different WGs. A Product Specification, then, can bind the whole set of attributes or subsets for the Product Specification purpose.

The IHO Geospatial Information (GI) Registry, GI Registers
The IHO maintains an on-line GI Registry with associated GI Registers. The registers are the repositories for all features, information object classes, attributes and complex attributes which are under the responsibility of the relevant register owner. The NIPWG is the owner of the NPUB register.

Although various suggestions have been made by the SNPWG at HSSC5 to improve the GI Registry performance, the GI Registry has remained in the previous status during the last reporting period.
It is still not possible to incorporate elements to the relevant register in a sufficient way. Neither the "sandbox" nor the bulk loading functions are available (see HSSC5-05.4A).

NIPWG progress in populating elements to the NPUP register is limited because of this lack of progress with the GI registry. NIPWG wishes to highlight to HSSC7 that the lack of resource with sufficient knowledge of registry management is limiting progress.

Development of the Marine Protected Area (MPA) Product Specification (S-122)
Progress has been made with the drafted different components of the MPA ProdSpec:

- the ProdSpec core document experienced an update according to the latest S-100 Edition,
- the application schema is stable and maintained according to the outcome of the harmonisation between the S-101 and S-122 data model,
- the Feature Catalogue is stable and will be updated if the application schema is finalised. KRISO (Republic of Korea) is assisting NIPWG in building the MPA Feature Catalogue (FC) with a special Feature Catalogue Builder (FCB) outside the IHO GI Registry.
- the Data Classification and Encoding Guide (DCEG) is under the WG review. The completion of the data part depends on the progress of the S-101 and S-122 data model harmonisation.

Completion of the portrayal catalogue section and the data quality section of the main text is pending the contributions by NCWG (or the project team if HSSC endorse the establishement) and DQWG respectively.

The S-122 test data samples are stable and one test data sample is maintained according to the latest developments.

Development of the Radio Services Product Specification (S-123)
The test data sample has been reviewed several times by the SNPWG/NIPWG and it is considered as stable. The application scheme is drafted. A revision of the underlying data model is scheduled for the next NIPWG meeting in March 2016.

Development of the Navigational Services Product Specification (S-125),
The development of this ProdSpec has been reactiviated. It is expected to review the first draft test data sample by the next NIPWG meeting in March 2016.

Development of the Physical Environment Product Specification (S-126) and the Traffic Management Product Specification (S-127)
The test data sample has been reviewed several times by the SNPWG/NIPWG and both test data samples are considered as ready for use.

Development of the remaining NPUB Product Specifications
The production schedules for the data samples for Marine Service, Harbour Infrastructure and Social/Political are undetermined for the time being.

Product Specification "Catalogue of Nautical Products"
The NIPWG is proposing the development of a new product Specification, named "Catalogue of Nautical Products". The Product Specification will provide solutions for the exchange of lists of products between Member States and other users, namely mariners aboard.
This product specification will be one of the backbones for the e-navigation Maritime Service Portfolios -
- (MSP 11) nautical chart service and
- (MSP 12) nautical publications service;
by providing the S-100 based infrastructure for the selection of the an appropriate product or service.
It is further proposed to assign the product specification number S-128 to this product.

Maintenance of IHO Standards and Miscellaneous Publications
HSSC assigned to NIPWG the maintenance responsibility or the following IHO standards:

- S-12 (Standardization of List of Lights and Fog Signals),
- S-49 (Standardization of Mariners' Routeing Guide).

The NIPWG plans to contribute to the following IHO standards and miscellaneous publications on request or if considered necessary:

- M-3 (Resolutions of the IHO) IHO Programme2 Section 2.4,
- S-100 (IHO Universal Hydrographic Data Model),
- S-32 (Hydrographic Dictionary),
- S-64 (IHO Test Data Sets for ECDIS) Similar to chart content as part of the ENC test data, the NIPWG plans to integrate NP3-type nautical publication content into the test data sets.

NPUB and IMO e-Nav solutions
A gap between the current Maritime Service Portfolios (MSP) and the Work plan item H "Develop a test and implementation plan for the development of the MSP "hydrographic services"" exists. It is well known that the MSPs are not adopted by the IMO in their current form. Further improvements have been requested by the IMO MSC and it is expected that the IMO will discuss a revised version during the 2016 NCSR and MSC sessions.
Considering the current MSP status and the 2016 IMO activities, the NIPWG decided not to proceed with work plan item H. Although no work is planned under item H for the time being, it is planned to revise this work plan item according to the IMO development.

Various prototype services are likely to be developed within e-navigation projects such as EfficienSea2. NIPWG will monitor such projects to maintain awareness of issues and potential significance to the MSP development.

The NIPWG1 meeting discussed the drafted MSPs and specified the MSPs on which the WG could provide support in particular. Those are:
- (MSP 5) Maritime Safety Information (MSI) service;
- (MSP 11) nautical chart service;
- (MSP 12) nautical publications service;
- (MSP 15) real-time hydrographic and environmental information services.

It has been recongnised that NIPWG product specifications intend to provide static information. This information would be helpful for the mariner to access a particular service. The product specifications which support the live data stream from the data originator to the mariner are not on NIPWG scope yet. A close liaison with the developers of such product specifications is under consideration and is reflected in the NIPWG work plan.

Progress on HSSC Action Items

Follow up HSSC1/8. Develop Marine Environment Protection Programme (MEPP) based on S-100.
The Marine Protected Area Product Specification (S-122) comprising all mandated components defined by S-100 is nearing completion. The completion of the portrayal section and the data quality section depends on contributions by other HSSC WGs (or project teams if HSSC7 endorses the employment). In addition to the said incomplete sections, the completion date of the MPA ProdSpec depends also on the data model harmonsation process between the S-101 and S-122 which is in progress.
Thus, an estimate completion data for the S-122 cannot be determined for the time being.

Since it was confirmed by the TSMAD that an interaction between different products, namely the multiple use of identical geometry features, is not being supported by the latest S-100 edition 2.0 a, the NIPWG considers the provision of the S-122 as a stand-alone product and as an overlay to the ENC background.

Due to the fact that the Marine Protected Area Product Specification is aiming to regulate the traffic in those specific areas, the product specification will be integrated into the Traffic Management Product Specification (S-127) in the future as well.

Some MPA sample test data is being used by other HSSC WGs for testing purposes. Results of the tests may have influence to the future S-100 development.

HSSC6/24 NIPWG to monitor IALA activities on Aids to Navigation data transfer (S-201) and report to HSSC
IALA recognise the value of using Navigation Unique Identifiers as it will

- assist in the development and maintenance of enhanced data exchange applications for ship to ship, ship to shore, shore to ship, and shore to shore in the context of e-Navigation;
- assist administrations in the efficient delivery of Marine Safety Information (MSI);
- use of unique universal identifiers reduces the administrative burden associated with the maintenance associated with international list of lights numbers and other navigation products.

The latest IALA discussion led to a wider solution which includes Aids to Navigation, Vessel Traffic Services and Waterways. The outcome of the discussion is reflected in the April 2015 version of the "IALA Recommendation on Use of Navigation Unique Identifiers".
IALA further recognised that the use of Unique Identifiers may go beyond the IALA responsibility and thus, the Unique Identifier use must be fully and comprehensively supported by S-100.
The S-100 Edition 2.0.0 numbers 10b-9.7 and 11-7.4 provide only a very general statement on the use of such identifiers. Especially, number 11-7.4 refers to ProdSpecs where the use of persistant unique identifiers and location based identifiers should be discussed. That would open the door for misinterpretation and misunderstanding.

IALA approached NIPWG to invite HSSC to assign the task to the S100WG to develop a scheme for the use of Persistant Unique Identifiers (PUI) within S-100. The IALA ENAV committee continues to explore options for the definition and use of PUIs.

HSSC6/25 NIPWG to stand up a project team to develop the portrayal of data quality categories in collaboration with S-100WG and NCWG.
The project team finished the work in time and presented the results and recommendations to NIPWG1. The NIPWG is fully aware that the portrayal of cartographic features is not supported by their ToR and the work plan. Consequently, the results of the project team have been forwarded to the NCWG for further consideration.

Follow up HSSC4/26. Prepare a master plan for developing electronic nautical publications, with priority assigned to defining data models and product contents in order to coordinate the scheduling of deliverables with the implementation of S-101.

SNPWG reviewed all NPUB features which are currently stored in the SNPWG wiki and assigned the features to the NPUB Product Specifications. The sequence and the road map details of the development of the NPUB Product Specifications depend on specific contributions by other HSSC working groups.

The following road map gives a rough orientation for the different Product Specification components for Radio Services (S-123):

	Start	End	Duration in days	
(S-123) Radio Services	01.01.2013	31.12.2016	1440	
NP1 Data sample ProdSpec	01.01.2013	06.06.2013	155	stable
Application Schema	01.07.2013	14.02.2014	43	Draft version
Feature Catalogue	01.10.2013	Open		Dependent on FCB software availability
Portrayal spec		Open		to develop , dependent on NCWG contribution
Portrayal catalogue		Open		to develop , dependent on NCWG contribution
Data quality		Open		dependent on DQWG contribution
DCEG	01.05.2014	Open		Pending on S-101 DCEG progress
Test Bed				not yet defined

The test sample data sets for the following Product Specifications are on a stable status:
(S-126) Physical Environment, and
(S-127) Traffic Management.

Due to the presence of new WG members, it can be confirmed that the development of the first data sample draft of the (S-125) Navigational Services has been re-activated and that the first version is expected to be delivered by the next NIPWG meeting in March 2016.

The road map for further steps of the development after the completion of test data sets for the S-126 and S-127 Product Specifications cannot be estimated at this stage. Future progress will be largely influenced by the experiences to be gained drafting the MPA and Radio Services Product Specifications.

Any Other Items of Note

Lack of personal resources

The more technical details that should be added to the Product Specification draft, the more a lack of personal resources appears. The current composition of the working group (mainly mariners) is not able to proceed with the technical development without external support. Especially, the lack of knowledge on how various Product Specifications would be work together in an S-100 environment is a serious problem which the group is confronted with. A proposed solution is the establishment of Project Teams to undertake the completion of a product specification once the NIPWG has developed the product specifications to a certain level of maturity.

Context features

Initially, the idea behind the introduction of context features into a Product Specification was to provide a basic cartographic background to the Product Specification data if the data is being displayed on other electronic devices than ECDIS.
Considering the used GML profile and the uncertainties in the use of S-101 features in other applications, the additional delivery of context features is no longer on focus.
It is assumed that each of the NIPWG Product Specification should be displayed on an ECDIS screen with an underlying ENC as a background.
Due to the use of the GML profile, the NIPWG Product Specification data can be integrated in other GIS applications as well.

Strategy of implementing NPUB information into future ECDIS systems

Taking into account that the IMO is developing the e-navigation concept further, and considering that the provision of nautical information would be harmonised, the NIPWG is still trying to initiate discussions on how this nautical information will be forwarded from the data producer to the end user.
Knowing that the development of sufficient S-100 test beds and respective production tools, and knowing that the release of the S-101 product specification may require some years more development time, the collection of issues require a mid-term solution.

The replacement of printed nautical publications by a database which would be able to reproduce the content and thus, the fulfilment of the carriage requirement, is fully supported by SOLAS Chapter V.
Thus, under the SOLAS Chapter V umbrella, the use of S-100 conformant NPUB Product Specifications on board is fully supported.
Considering that the producing agencies/offices do not provide all NPUB information in a harmonised way, it should be discussed with the member states which NPUB products or set of products are intended to replace which printed nautical publications.

Similar to ENCs, a set of further standards which support the NPUB product data check, the data portrayal, the data protection and the data delivery may need to be established.
Taking into account that some of the referred document require an IMO engagement, the IEC should be contacted sufficiently long in advance to discuss how the future ECDIS systems should manage the digital NPUB products and in particular, whether it is expected to trigger alarms/indications etc. based on NPUB information and thus, whether the ECDIS Performance Standards may require amendments.

e-Nav test bed is using NPUB features and attributes

The e-Nav test bed initiated by the Republic of Korea is using the MPA data model for their purposes.

Development of test data sets

The test data sets for the Product Specifications which are under development have reached various levels of maturity. The content has been defined as stable for:

S-122 Marine Protected Area
S-123 Radio Services,
S-126 Physical Environment, and
S-127 Traffic Management.

Test data sets are crucial components of the product specification development. A reference describing the style, layout, information density of nautical publications has been developed. This is the first time that such a work is being done for publications and that can be compared with the development process of the INT1 chart.
A uniform structure of the test data sets is also important for the future development of S-64 parts which could be applicable for nautical publications components.

Conclusions and Recommended Actions

- The NIPWG activities were focussed on making progress with the NP3-type NPUB Product Specifications development.
- The given schedules depend on the development progress of other HSSC WGs and Project Teams including, but not limited to NCWG, DQWG and S100WG.
- The establishment of a project team focussing on the investigation and development of the S-122 portrayal section is necessary because it may have effects on the display of the S-101 and other navigational information on an ECDIS screen.

Action Required of HSSC
HSSC7 is invited to endorse:

1. the transition from SNPWG to NIPWG,
2. the continued activity of NIPWG.
3. the implementation of the development of the Catalogue of Nautical Products product specification into the NIPWG work plan.

HSSC7 is further invited to confirm:

1. the proposed development schedule for
    a. the Marine Protected Area Product Specification (S-122).
    b. the Radio Service Product Specification (S-123).
2. the number (S-128) to the “Catalogue of Nautical Products”.

HSSC7 is further invited to assign:

1. the development of a Peristant Unique Identifier scheme for S-100 to the S100WG.

HSSC7 is further invited to note this report and to endorse:

1. the continuance of the 2015-16 Work Plan.

ANNEX A to the NIPWG Report

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NIPWG WORK PLAN 2016-17

NIPWG Tasks

D	Maintain Publication S-12 “Standardization of List of Lights and Fog Signals” (IHO Task 2.6.3.2)
E	Maintain Publication S-49 “Recommendations concerning Mariners’ Routeing Guides” (IHO Task 2.3.2.7)
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 2.6.2)
G	Develop high level specifications for a combined Marine Service Portfolio (MSP) covering the provision of hydrographic services to mariners in accordance with the IMO e-navigation strategy implementation plan
H	Develop a test and implementation plan for the development of the MSP “hydrographic services”
I	Maintain IHO Resolutions in M-3 relating to Nautical Publications as required (IHO Task 2.6.3.1)
J	Liaise with other HSSC WGs and other IHO and international bodies
K	Conduct the 2016 and 2017 meetings of the NIPWG and its sub-group(s) and project team(s) (IHO Tasks 2.3.1 and 2.6.1)

Work items

Work item[1]	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			S-12	In close liaison with IALA; see J.4

Work item[1]	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.1	Assess the progress and perspectives of developing specifications for NP data layers in ECDIS and propose the way forward for consideration by HSSC	H							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	M		2015	Permanent	O	Chair/Sec		In close liaison with the S-100 WG
F.3	Model the NP data where required.	H	Next meeting	2004	Permanent	O	Chair/Sec		S-100 related. To be included in NPUBS domain of the FCD Register
F.4	Review of objects and attributes	H	Next meeting	2004	Permanent	O	Chair/Sec		S-100 related.
F.5	Propose amendments to HYDRO domain of the FCD Register	H		2005	Permanent	O	Chair/Sec		S-100 related. To be included in the FCD register

Work item[1]	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.6	Propose amendments to AtoN domain of the FCD Register	H	Next meeting	2014	2017	O	Chair/Sec	S-125	To improve the current definitions and attribute values at the FCD register
F.7	Populate the NPUBS do-main of the FCD Register	H		2006	Permanent	O	Chair/Sec		S-100 related. Awaiting Registry improvements
F.8.1	Develop S-12n - Nautical Information Product Specification								Liaise with WWNWS-Sub committee
F.8.1.1	For Radio Services	H		2012		O	Chair/Sec	S-123	

F.8.1.2	For Navigational services	H		2013		O	Chair/Sec	S-125	
F.8.1.3	For Traffic management	H		2013		O	Chair/Sec	S-127	
F.8.1.3.1	For Marine Protected Areas	H		2011	2018	O	Chair/Sec	S-122	Awaiting completion Feature Catalogue Builder, data model harmonization between S-101 and S-122, portrayal and quality parts
F.8.1.4	For Physical environment	H	12/2014	2013	2016	O	Chair/Sec	S-126	

Work item[1]	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
G.1	Monitor the requirements for and provision of nautical information in e-navigation test-beds Produce NP1 sample data sets	M							According to the tasks assigned by HSSC4. Collection of information to be modelled
G.1.1	For Radio Services	H		2012	2014	C	Chair/Sec	S-123	
G.1.2	For Navigational services	H		2012	2017	O	Chair/Sec	S-125	
G.1.3	For Traffic management	H		2012	2015	C	Chair/Sec	S-127	
G.1.4	For Physical environment	H		2013	2015	C	Chair/Sec	S-126	
G.2	Set up a test bed ECDIS	M		-	-	P	Chair/Sec		To be considered in liaison with S-100WG

G.3	Rules and guidelines for displaying nautical information in ECDIS and in combined Marine Service Portfolios								
G.3.1	Develop basic display rules for NP data intended for use in ECDIS (NP3)	M		2008	2016*	O	Chair/Sec	S-52	Close co-operation with NCWG and S-100WG required *end date depends on NCWG schedule

Work item[1]	**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**
G.3.2	Develop guidelines showing how navigation information received by communications equipment can be displayed in a harmonised way and what equipment functionality is necessary.	M		2015	2019	P		S-52	e-nav IMO Strategy Implementation Plan, Task T13 (HSSC6-07.1A refers)

G.4	Initiate consideration of the architecture of the MSP "hydrographic services"	M		2013		O	Chair NIPWG		To be considered in the context of the IMO e-navigation strategy implementation plan e-nav IMO Strategy Implementation Plan, Task T17 (HSSC6-07.1A refers).
G.5	Contribute to considering the future of paper charts in the perspective of the establishment of MSPs	M		2014					Subject to request from NCWG
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 scheduled due to harmonization of M3 information and potential ProdSpecs content
J.0	Liaise with the NCWG				Permanent	O	Chair/Sec NIPWG		Establish joint project teams as required

Work item[1]	**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.1	Liaise with the ENCWG	H			Permanent	O	Chair/Sec NIPWG		
J.2	Liaise with the S-100WG	H			Permanent	O	Chair/Sec NIPWG		Establish joint project teams as required
J.2.1	Draft Data Capture and Encoding Guides								Document for NPs similar to Use of the Object Catalogue

J.2.1.1	For Marine Protected Areas	H	Next meeting	2011	2016	O	Chair/Sec	S-122	To be harmonized with S-101 DCEG
J.2.1.2	For Radio Services	M		2015		P	Chair/Sec	S-123	Depends on modelling progress
J.2.3	Draft Product Specification								
J.2.3.1	For Radio Services	H		2014		O	Chair/Sec	S-123	
J.2.3.2	For Navigational services	H		-		P	Chair/Sec	S-125	
J.2.3.3	For Traffic management	H		2011		O	Chair/Sec	S-127	The start date is in-line with the MPA ProdSpec development
J.2.3.4	For Marine Protected Areas	H	Next meeting	2011	2017	O	Chair/Sec	S-122	
J.2.3.5	For Physical environment	H		-	-	P	Chair/Sec	S-126	

Work item[1]	**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.3	Liaise with other HSSC WG	H		2004	Permanent	O	Chair/Sec NIPWG		Including DPSWG, DQWG, TWCWG, etc.
J.4	Liaise with IALA e-Nav Committee	H		2013	Permanent	O	Chair/Sec NIPWG		As advised by HSSC4 (in liaison with S-100WG).

J.5	Liaise with other inter-national bodies which contributes to nautical information	H		2015	Permanent	O	Chair/Sec NIPWG		
J.5.1	International Harbour Master Association	H		2015	Permanent	O	Chair/Sec NIPWG		Considering AVANTI develop-ment

Meetings (Task K)

Date	Location	Activity
7-11 Apr 2014	Rostock, Germany	SNPWG 17
1-4 Dec 2014	Cadiz, Spain	SNPWG 18
29 June – 3 July 2015	IHB, Monaco	NIPWG-1
21-25 March 2016	IHB, Monaco (Tentatively Cambridge. UK)	NIPWG-2
2017	TBD	NIPWG-3

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