



Australian Government

Australian Maritime Safety Authority

# **ARM 4 – Rapporteur Report M4**

## **e-Navigation - shore side**

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# Implementing e-Navigation ?

A large proportion of the development of e-navigation is already and will take place at IALA with key areas being:

- What information needs to be exchanged? (Maritime Services Portfolios or MSPs identified by IMO - mainly by IALA, with oversight by IHO)
- Harmonisation of services (use of IHO's S-100 Geospatial Information Registry as the Uniform Maritime Data Model)
- How should this information be exchanged? (setting up the newly-approved VHF Data Exchange System)
- The development of guidance on a variety of current-generation positioning, navigation and timing services

# Maritime Service Portfolios

## IMO's e-Navigation Strategy

- Implementation Plan (SIP) of 2014 included developing Maritime Services Portfolios
- In May 2016 IMO MSC will consider approval of a work item to define and harmonize MSPs

# The 16 initial Maritime Services Portfolios

	Service description
MSP1	VTs Information Service (INS)
MSP2	Navigation Assistance Service(NAS)
MSP3	Traffic Organization Service(TOS)
MSP4	Local Port Service (LPS)
MSP5	Maritime Safety Information (MSI) service
MSP6	Pilotage service
MSP7	Tugs service
MSP8	Vessel shore reporting
MSP9	Telemedical Maritime Assistance Service(TMAS)
MSP10	Maritime Assistance Service (MAS)
MSP11	Nautical Chart Service
MSP12	Nautical publications service
MSP13	Ice navigation service
MSP14	Meteorological information service
MSP15	Real-time hydrographic and environmental information services
MSP16	Search and Rescue(SAR) Service

# IALA's role in e-Navigation ?

- IALA needs to identify those MSPs to be developed and administered by IALA and liaise with relevant organisations where IALA has a supporting role e.g. IHO.
- The development task will include:
  - Defining operational/technical services within these MSPs, their request-fulfillment-relationships, their interdependencies and their quality parameters
  - Developing S-100 series Product Specifications

# ENAV (Mar'16)

- Drafted a road map for 2016 and beyond which clarifies these aspects and timeframes for development (refer ARM4-3.3.4)
- Changes were made to the current draft S-201 product specification (in relation to portrayal matters)
  - it was agreed that the current version of S-201 should not include a portrayal section, as its initial use is for data transfer between authorities, rather than directly to a display system
- Finalised a new draft guideline on the planning of e-navigation testbeds – this will be merged with the existing IALA Guideline on reporting of testbed results (No. 1107).

# The quest for resilient PNT

A maritime system to complement GNSS:

- ✓ Independent and dissimilar (low frequency, high power) to GNSS
- ✓ Similar levels of performance to GNSS
- ✓ Support all phases of navigation – [precision for berthing](#)

eLORAN trials in 2013 by Trinity House, UK :

- ✓ Successful demonstration of prototype system
- ✓ Automatic and seamless transition of critical applications

Recent approval of an IMO Performance Standard for multi-system PNT receivers

# IMO NCSR 3 (Mar'16) - highlights

- ✓ Recognition of Iridium mobile satellite system as GMDSS service provider (US submission)
- ✓ Progress towards recognition of GALILEO as a part of the World Wide Radio Navigation System
- ✓ Review and modernization of GMDSS – report of CG (USA)
- ✓ Work underway on guidelines for PNT processing unit (Germany)



# The Ranging (or R) Mode

- ✓ Terrestrial backup system based on ranging signals transmitted from MF radio beacons (DGPS) and AIS base stations
- ✓ Modifications would create a terrestrial backup in coastal waters, high density traffic and harbour approach areas
- ✓ Concept proved in 2015
- ✓ Development work underway in NW Europe and IALA



# VHF Data Exchange System (VDES)

VDES concept addresses the need for additional capacity for digital data exchange:

- ✓ protects the original function of AIS (collision avoidance, VTS tool & information transfer)
- ✓ provides data exchange capability with globally interoperability and availability



# VDES – what's next ?

From ITU:

- ✓ Participate in field trials
- ✓ Develop operational and technical standards at IALA, IEC, IMO and ITU
- ✓ IALA – already developing suite of documents (recommendations, guidelines, message structures, FAQs and user requirements)
- ✓ IMO to develop performance standard

# IHO's S-100 Geospatial Information Registry

- ✓ Published as an international standard in 2010.
- ✓ ISO-conformant registry
- ✓ Has many registers – for different user communities
- ✓ 2011: IMO agreement to use S-100 for e-navigation data exchange
- ✓ IALA developing 'product specifications' (data for technical and operational services)

**S-100 Based Product Specifications**  
**Spécifications de produits basées sur la S-100**

No / N°	Title / Titre	Status / Etat	Edition (English version) (version anglaise)	Business Case Use Case <i>Justificatif</i> <i>Etude de cas</i>
Product Specifications being developed by the IHO (Numbers S-101 to 199) Spécifications de produits élaborées par l'OHI (Numéros S-101 à 199)				
S-101	Electronic Navigational Chart (ENC) / Cartes électroniques de navigation	Under Development En cours d'élaboration	<a href="#">S-101 Information Page</a>	<a href="#">Roadmap</a> <a href="#">Impact Study</a>
S-102	Bathymetric Surface / Surface bathymétrique	Published / Publié	<a href="#">Ed 1.0.0 (April 2012)</a>	<a href="#">Impact Study</a>
S-103	Sub-surface Navigation / Navigation sous la surface	Planned / Prévu		
S-104	Tidal Information for Surface Navigation / Information de marée pour la navigation de surface	Under Development En cours d'élaboration		
S-111	Surface Currents / Courants de surface	Under Development En cours d'élaboration	<a href="#">Working Draft 1.0</a>	<a href="#">Impact Study</a>
S-112	Dynamic Water Level Data / Données dynamiques de hauteur d'eau	Under Development En cours d'élaboration	<a href="#">Working Draft 0.0.0</a>	
S-121	Maritime Limits and Boundaries / Limites et frontières maritimes	Under Development En cours d'élaboration		<a href="#">Impact Study</a>
S-122	Marine Protected Areas / Aires marines protégées	Under Development En cours d'élaboration	<a href="#">S-122 Information Page</a>	<a href="#">NIPWG Wiki</a>
S-123	Radio Services / Services radio	Under Development En cours d'élaboration		
S-124	Navigational Warnings / Avertissements de navigation	Under Development En cours d'élaboration		<a href="#">Scenarios</a>
S-125	Navigational Services / Services de navigation	Under Development En cours d'élaboration		
S-126	Physical Environment / Environnement physique	Under Development En cours d'élaboration		
S-127	Traffic Management / Gestion du trafic	Under Development En cours d'élaboration		
S-128	Catalogues of Nautical Products / Catalogues de produits nautiques	Planned / Prévu		
S-1xx	Marine Services / Services maritimes	Planned / Prévu		
S-1xx	Digital Mariner Routing Guide / Guide numérique du navigateur sur l'organisation du trafic	Planned / Prévu		
S-1xx	Harbour Infrastructure / Infrastructure portuaire	Planned / Prévu		
S-1xx	(Social/Political) / (Social / Politique)	Planned / Prévu		

Product Specifications being developed by the <b>International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)</b> (Numbers S-201 to 299) <i>Spécifications de produits élaborées par l'Association internationale de signalisation maritime (AISM) (Numéros S-201 à 299)</i>				
S-201	Aid to Navigation Information / <i>Information sur les aides à la navigation</i>	Under development <i>En cours d'élaboration</i>		
S-210	Inter-VTS Exchange Format / <i>Format d'échange inter-STM</i>	Under development <i>En cours d'élaboration</i>		
S-230	Application Specific Messages / <i>Messages d'applications spécifiques</i>	Planned / <i>Prévu</i>		
S-240	DGNSS Station Almanac / <i>Almanach de station DGNSS</i>	Under development <i>En cours d'élaboration</i>		
S-245	eLoran ASF Data / <i>Données FAS eLoran</i>	Under development <i>En cours d'élaboration</i>		
S-246	eLoran Station Almanac / <i>Almanach de station eLoran</i>	Planned / <i>Prévu</i>		
Product Specifications being developed by the <b>Intergovernmental Oceanographic Commission (IOC)</b> (Numbers S-301 to 399) <i>Spécifications de produits élaborées par la Commission océanographique intergouvernementale (COI) (Numéros S-301 à 399)</i>				
Product Specifications being developed by <b>other Organizations</b> (Numbers from S-401) <i>Spécifications de produits élaborées par d'autres organisations (Numéros à partir de S-401)</i>				
S-401	Inland ENC ( <a href="#">Inland ENC Harmonization Group [IEHG]</a> ) / <i>ENC intérieures (Groupe d'harmonisation des ENC intérieures [IEHG])insère</i>	Under Development <i>En cours d'élaboration</i>		
S-411	Ice Information (WMO-IOC <a href="#">Joint Technical Commission for Oceanography and Marine Meteorology [JCOMM]</a> ) / <i>Information sur la glace (Commission technique mixte OMM-COI pour l'océanographie et la météorologie marine [JCOMM])</i>	Under Development <i>En cours d'élaboration</i>	<a href="#">Draft Ed 1.1.0 (June 2014)</a>	<a href="#">External Link</a>
S-412	Weather Overlay (JCOMM) / <i>Couche d'information météorologique (JCOMM)</i>	Under Development <i>En cours d'élaboration</i>		<a href="#">External Link</a>
	Last update / à jour : <b>09/03/2016</b>			



**Thank you for your attention !**

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