



KONGSBERG

# REPORT ON IALA WORKSHOP ON SHORE-BASED MARITIME SERVICES FROM THEORY TO PRACTICAL USE

Lisbon – Portugal, 24 to 26 May 2016

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# Report of the IALA Workshop

## On

### SHORE-BASED MARITIME SERVICES FROM THEORY TO PRACTICAL USE

### Executive Summary

An IALA workshop on the subject of the Shore-based Maritime Services from Theory to Practical Use with subtitle Who Will Do What and When? was hosted by the Portuguese Lighthouse Authority and Norwegian Coastal Administration and supported by Kongsberg in Lisbon, Portugal from 24 and 26 May 2016.

The workshop was attended by 61 delegates, representing 19 countries and 5 international organisations (see ANNEX C).

The workshop was structured with presentations on relevant topics on day 1 followed by working group sessions on day 2. Output work was reviewed and conclusions were agreed on day 3.

The workshop generated seven conclusions.

1. The draft IALA Guideline on MSPs should be coordinated with other relevant international organisations and be proposed as a starting point to develop IMO guidelines supporting the output on MSPs agreed at MSC96.
2. IALA should participate in the IMO-IHO Harmonization Group on Data Modelling (HGDM), using as a baseline IHOs S-100 standard framework to harmonise and standardise formats for the collection, exchange and distribution of data, processes and procedures for the collection and development of open standard interfaces.
3. IALA should define the format and structure for those MSPs within the remit of IALA, engaging with other organisations as required. Development of some other MSPs will require IALA to engage with the responsible authorities / service definition owners.
4. The current list of 16 MSPs requires further refinement and should not be seen as the definitive/ finalised list of MSPs.
5. Phased implementation should be used to further develop and implement MSPs, with the first phase being based on existing technology and systems and the second phase being introduction of additional equipment based on benefit rather than mandate.
6. Security, including shipborne, cyber and shore-side, should be taken into account in the development and deployment of MSPs.
7. Product specification developers across all domains should promulgate draft and completed S-100 product specifications to make them available from a single location on the S-100 GI registry on the IHO web site.

The workshop further developed the draft IALA Guideline on MSPs and prepared a revised template of the matrix for development of MSPs related to VTS. The workshop discussed and defined responsible organisations and contributors / users that should contribute to the development and practical implementation of MSPs.

The output documents were forwarded to the ENAV and VTS Committees in Autumn 2016 session for further development and completion.

Attendees enjoyed a welcome reception on day 1 and a workshop dinner on day 2 hosted by Kongsberg.

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# IALA WORKSHOP ON SHORE-BASED MARITIME SERVICES FROM THEORY TO PRACTIAL USE

## 1. INTRODUCTION

A workshop on the subject of the Shore-based Maritime Services from Theory to Practical Use with subtitle who will do what and when? was hosted by the Portuguese Lighthouse Authority and the Norwegian Coastal Administration and supported by Kongsberg in Lisbon, Portugal from 24 and 26 May 2016. The workshop was attended by 61 delegates representing 19 countries and 5 international organisations.



A list of participants is at ANNEX C.

## 2. OVERALL PROGRAMME

The overall programme is shown in the following table.

Tuesday 24 <sup>th</sup> May	Wednesday 25 <sup>th</sup> May	Thursday 26 <sup>th</sup> May
Registration	Technical session 5 Working Groups on MSP delivery roadmap, plan for moving from testbeds to operational status and IALA Guideline on MSPs	Session 9 Presentation and discussion of Working Groups output
Session 1 Opening of the Workshop		
Break	Break	Break
Technical Session 2 IMO and Maritime Service Portfolios	Technical session 6 Working Groups on MSP delivery roadmap, plan for moving from testbeds to operational status and IALA Guideline on MSPs	Session 10 Workshop conclusions & Closing of Workshop
Lunch	Lunch	
Technical Session 3 Maritime Service Portfolio Development and Present Status	Technical session 7 Working Groups on MSP delivery roadmap, plan for moving from testbeds to operational status and IALA Guideline on MSPs	
Break	Break	
Technical Session 4 MSP requirements - What needs to be done – Who, What, When?	Technical session 8 Working Groups on MSP delivery roadmap, plan for moving from testbeds to operational status and IALA Guideline on MSPs	
Welcome reception	Workshop dinner	

### 3. CONCLUSIONS

Following a discussion of the conclusions, the workshop agreed to the following seven conclusions:

1. The draft IALA Guideline on MSPs should be coordinated with other relevant international organisations and be proposed as a starting point to develop IMO guidelines supporting the output on MSPs agreed at MSC96.
2. IALA should participate in the IMO-IHO Harmonization Group on Data Modelling (HGDM), using as a baseline IHOs S-100 standard framework to harmonise and standardise formats for the collection, exchange and distribution of data, processes and procedures for the collection and development of open standard interfaces.
3. IALA should define the format and structure for those MSPs within the remit of IALA, engaging with other organisations as required. Development of some other MSPs will require IALA to engage with the responsible authorities / service definition owners.
4. The current list of 16 MSPs requires further refinement and should not be seen as the definitive/ finalised list of MSPs.
5. Phased implementation should be used to further develop and implement MSPs, with the first phase being based on existing technology and systems and the second phase being introduction of additional equipment based on benefit rather than mandate.
6. Security, including shipborne, cyber and shore-side, should be taken into account in the development and deployment of MSPs.
7. Product specification developers across all domains should promulgate draft and completed S-100 product specifications to make them available from a single location on the S-100 GI registry on the IHO web site.

## Annexes to the Report

### ANNEX A OPENING OF THE WORKSHOP AND TECHNICAL SESSIONS

#### 4. SESSION 1 - OPENING

Chaired by Jon Leon Ervik, Norwegian Coastal Administration, Norway, and Chairman of the IALA ENAV Committee Working Group 4.

All presentations form part of the output of the workshop.

##### 4.1 Address by Francis Zachariae, Secretary-General of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA)

Francis Zachariae, IALA Secretary-General, welcomed all the participants. Recalling the decision at MSC96 for a new output on MSPs, he noted the timeliness of the workshop and remarked that, in e-navigation, everyone wants to be coordinated but nobody wants to coordinate. While the IMO is the obvious global coordinator, the task presents difficulties due to the organisation structure. IALA supports the proposal for a joint IMO/IHO Harmonization Group on Data Modelling (HGDM). He provided a short demonstration of apps that are freely available on the internet that he uses in his leisure sailing.



He thanked the Portuguese Lighthouse Authority and the Norwegian Coastal Administration for generously hosting the workshop and Kongsberg for their support. He thanked the steering group and chairs for their work and attention to detail. He noted the excellent line-up of speakers and participants. Thanking all in advance for the work of the week, he hoped that all participants would have a successful workshop.

##### 4.2 Address by Carlos Soares, Director of Portuguese Lighthouse Authority

Capt. Carlos Soares, Director of the Portuguese Lighthouse Authority, welcomed all attendees with great pleasure. Noting the importance of e-navigation and the long history of support for IALA from the Portuguese Lighthouse Authority, he reminded participants of the importance of timely and good quality information to the mariner. To achieve this coordination is essential for service providers, with MSPs being a good example of how information can be provided by responsible organisations ensuring coordination and quality. He noted the very large sea area for which the Portuguese Lighthouse Authority is responsible and the even larger SAR area and the challenges that arise.



Capt. Soares concluded by wishing every success at the workshop and an enjoyable stay in Lisbon for all participants.

##### 4.3 Administrative and safety information

Administrative and safety information was provided by Seamus Doyle, IALA.

##### 4.4 Keynote address

The keynote address was presented by Gilles Bessero, Director of the International Hydrographic Organization (IHO).

###### 4.4.1 Presentation abstract

As defined by the International Maritime Organization (IMO), e-navigation is “the harmonized collection, integration, exchange, presentation and analysis of marine information on board and ashore by electronic means to enhance berth to berth navigation and related services for safety and security at sea and protection of the marine environment”. In 2010 the conceptual development of the e-navigation architecture identified the requirement that shore-based operators provide “harmonised shore-based operational services” such as Search and Rescue (SAR), Vessel Traffic Services (VTS), Port



and Maritime Safety Information Services. This led to the introduction in 2011 of the notion of “Maritime Service Portfolio (MSP)” which “defines and describes the set of operational and technical services and their level of service provided by a stakeholder in a given sea area, waterway, or port, as appropriate.”

The e-navigation Strategy Implementation Plan (SIP) adopted by the IMO Maritime Safety Committee in 2014 identified MSPs as the means of providing electronic information in a harmonised way and proposes a provisional list of MSPs. The further development of the MSPs is one of the eighteen tasks of the SIP. Mr Bessero reviewed the different aspects and issues that may need to be considered to develop and implement the concept of MSPs.

#### 4.4.2 The key points of the presentation were:

1. Overview of the concept of MSP.
2. Inventory of the relevant aspect and issues that may need to be considered when moving from theory to practical use.

#### 4.5 IMO e-navigation process update

The presentation was made by John Erik Hagen, Norwegian Coastal Administration.

##### 4.5.1 Presentation abstract

John Erik Hagen provided a brief background of the identification of Maritime Service Portfolios (MSPs) and informed about the latest decision provided by the IMO Maritime Safety Committee (MSC 96) on the further IMO work on MSPs.



##### 4.5.2 The key points of the presentation were:

1. Background of the identification of MSPs.
2. IMO MSC96 update on MSPs.

### 5. SESSION 2 – IMO AND MARITIME SERVICE PORTFOLIOS

Chaired by Steve Guest, Kongsberg Norcontrol, UK.

#### 5.1 Presentation: The use of electronic information for pilotage

The presentation was made by Simon Pelletier, IMPA, Canada.

##### 5.1.1 Presentation abstract

Capt. Pelletier discussed how pilotage fits into the concept of Maritime Service Portfolios, how pilots are primarily consumers, rather than providers, of information and services from shore, and the type of electronic information that pilots use in the course of their duties, including via portable pilot units (PPUs).



##### 5.1.2 The key points of the presentation were:

1. IMO's concepts of "Maritime Service Portfolios" and "Shore-Based Maritime Services", and pilotage.
2. The use of electronic information by pilots.
3. Pilots' experience with PPU's.

#### 5.2 Presentation: Delivery of ocean/atmosphere information to users

The presentation was made by Jürgen Holfort, BSH/JCOMM, Germany.

### 5.2.1 Presentation abstract

Led by the e-navigation idea of incorporating a multitude of information in one system, the ice services of the world started the development of ice information for ECDIS some years ago, which culminated with the S-100 based S-411 standard adopted in 2014. Most ice charts are now operationally available in this format, although there is still no officially approved ECDIS for this data. The similar S-412 weather overlay is still in development and, although probably not totally finalised for approved ECDIS, will be usable in other GIS systems in the near future. Regarding oceanographic parameters, there are efforts to make tidal information (S-104), surface currents (S-111) and water level data (S-112) available in similar form. These standardisations will help to develop data interfaces, but the related ways of how to deliver the information to users must be addressed, taking into account low-bandwidth communications at sea and system integrity.



### 5.2.2 The key points of the presentation were:

1. Ice information in an S-100 based format is already operationally available.
2. An S-100 based weather overlay is in development.
3. There are efforts to make oceanographic parameters available also.
4. For users at sea there are still bandwidth limitations in the data delivery.

## 5.3 Presentation: Nautical Publications: Past, Present and S-100

The presentation was made by Edward Hosken, UKHO, UK.

### 5.3.1 Presentation abstract

Information to help seafarers travel safely and successfully has existed since before the development of nautical charts. Such textual, diagrammatic and image information continues to be used along-side charts to provide the additional information necessary for planning and executing voyages.

Edward Hosken provided a brief description of the range of official publications produced by Hydrographic Offices, highlighting their status and importance with regard to international regulations. The format of past and present books was followed by a description of the work of the International Hydrographic Organization (IHO) Nautical Information Provision working group (NIPWG), with particular reference to developments within S-100, the IHO Universal Hydrographic Data Model, and its application to Maritime Service Portfolios.



### 5.3.2 The key points of the presentation were:

1. Use of Nautical Publications.
2. Status of Nautical Publications (SOLAS).
3. Focus of the IHO Nautical Information Provision Working Group.
4. Format of Nautical Publications (paper to digital to data).
5. Application of S-100 : IHO Universal Hydrographic Data Model.

## 5.4 Presentation: VDES latest developments and usability

The presentation was made by Cato Eliasen, Kongsberg Seatex, Norway.

### 5.4.1 Presentation abstract

The standardisation and development of the VDES is showing good progress, although there was a little setback in connection with frequency allocation for satellite based VDE at WRC-15. It is expected that the frequencies will be allocated at WRC-19. Testing, performed by different companies with support from authorities, in parallel with the standardisation process in IALA ENAV Committee WG3 is helping progress. The modulation for VDE is



established and should give an idea of available bandwidth for messages/traffic over the channel. It is important that the services are designed according to available bandwidth.

The focus on cyber security in the maritime industry has led to a focus on authentication and the need for a Public Key Infrastructure (PKI) in connection with the VDE channel. PKI for VDE is one of the subjects in an ongoing Norwegian communications project.

Focus in the IMO e-navigation project on Human Machine Interface (HMI) and Human Centred Design (HCD) led to the discussion on the role and need for a Minimum Keyboard and Display (MKD) for VDES in the Tokyo meeting in February. Experience from AIS, and a future goal of Integrated Navigation System (INS), resulted in removal of the MKD for VDES and instead focusing on interface towards existing HMI in an INS solution.

#### 5.4.2 The key points of the presentation were:

1. Terrestrial VDES.
2. Human-Machine interface in e-navigation.

### 5.5 Harmonized display of navigation information received via communications equipment

The topic was presented by Svein David Medhaug, Norwegian Maritime Authority, Norway.

#### 5.5.1 Presentation abstract

The Guideline for Harmonized Display for Navigation Information received via communication equipment arose from the 5(6) prioritised solutions which came out of the IMO Strategic Implementation Plan (SIP). Norway was asked at NCSR 3 to correspond on an informal guideline with delivery date of NCSR4. The guideline, which is one of six solutions and a planned output on the High Level Action Plan (HLAP) of the IMO, has a due date at end of 2017. This guideline will harmonise and display information received and hopefully will also aim to form a standard for information transmitted interoperably between equipment on-board. The work on the guideline has just begun and it is not yet known where it will exactly end.



The guideline will include;

1. standardised symbology;
2. standardised format of text;
3. the use of a common maritime data structure, based on the work of IHO and their S-100 data structure;
4. the provision of mapping for specific services to specific regions;
5. routing and filtering of the information;
6. alert functionality when necessary in line with current bridge alert management standards;
7. human element and ergonomic design principles to ensure useful presentation and prevent information overload;
8. reference to other IMO Performance Standards such as the Presentation of Navigation-Related Information on Shipborne Navigational Displays (resolution MSC 191(79)).

#### 5.5.2 The key points of the presentation were:

1. Draft Guideline Harmonized Display for Navigation Information received via Communication Equipment.
2. Harmonisation of displays.
3. User-friendly operation.
4. Human centred Design.

### 5.5.3 Discussion

Responding to a query regarding consistency of symbology and compliance with IALA Guideline 1105 on portrayal, Mr Medhaug agreed that there were lots of questions and assumptions in the Guideline for Harmonized Display for Navigation but that harmonization will be the key. He confirmed that the Guideline for Harmonized Display for Navigation complies with the IMO guide on symbology and text.

It was noted that Norway will coordinate the IMO Correspondence Group on the Guideline for Harmonised Display for Navigation Information received via Communication Equipment for submission NCSR4.

## 6. SESSION 3 – MARITIME SERVICE PORTFOLIO DEVELOPMENT AND PRESENT STATUS

This session was chaired by John Erik Hagen, Norwegian Coastal Administration, Norway.

### 6.1 Presentation: IALA development of MSPs

The topic was presented by Jon Leon Ervik, Norwegian Coastal Administration, Norway.

#### 6.1.1 Presentation abstract

IALA members have been involved in the development of e-navigation in the IMO from the beginning. The work on e-navigation in IALA has contributed to this development. One of the concepts is to move from paper and analogue based information to digital information.

In the future, shore side authorities will communicate digital information to vessels via a set of services called a maritime service portfolio. This information could be presented on a user friendly graphical display when needed. IALA has started the development of a Guideline for practical and operational implementation of e-navigation services.



Capt Ervik presented the work carried out in IALA to date and discussed some issues related to further development.

#### 6.1.2 The key points of the presentation were:

1. IALA work in operational MSPs.
2. Guideline for practical and operational implementation.
3. Issues for further development of MSPs.

### 6.2 Presentation: Use of MSPs in VTS – information

The topic was presented by Mike Sollosi, US Coast Guard, USA.

#### 6.2.1 Presentation abstract

Mr Sollosi addressed the use of Maritime Service Portfolios in Vessel Traffic Services and proposed a way ahead for IALA to work in conjunction with the IMO and VTS Authorities to deliver VTS focused MSPs for the three types of service provided by a VTS.

The key points of the presentation were:

1. MSPs defined.
2. The role of IMO in delivering MSPs.
3. IALA's role in support of MSPs.
4. VTS tasks and services relevant to MSPs.
5. A proposed way ahead



#### 6.2.2 Discussion

In discussion, Mr Sollosi clarified that the VTS Authority considered in his presentation was not a specific authority but a collective term for VTS stakeholders.

### 6.3 Presentation: SAR use of MSPs

The topic was presented by Keith Oliver, Maritime and Coastguard Agency (MCA), UK.

#### 6.3.1 Presentation abstract

Recognising the 10 Coastguard missions of Search and Rescue, Vessel Monitoring, Pollution response, Maritime Safety, Maritime Security and Disaster Response are delivered using different national models, there is an environment where interaction between vessels and shore authorities will increase.



Currently for Search and Rescue there is the opportunity to ‘project’ Search Areas using the AIS VDL enabling all AIS equipped services and air SAR assets to see the same picture.

As technologies develop, particularly those of a non – maritime nature, the challenges for those responding increase, whilst needing to maintain traditional GMDSS services for commercial vessels.

#### 6.3.2 The key points of the presentation were:

- 1 Coastguard functions – The broader picture.
- 2 Use of AIS functions other than Vessel Monitoring.
- 3 Opportunities of future technology in SAR.

#### 6.3.3 Discussion

In discussion Mr Oliver clarified that the operational zones referred to in his presentation were set up to equalise the number of incidents per zone.

Noting that it is important to get information to SAR services as soon as possible it was observed that 172 pieces of information are typically required to be provided for an SAR incident.

It was suggested that the ready availability of VTS usable technologies may provide an opportunity to deliver e-navigation results quickly in the VTS area.

### 6.4 Presentation: Human centred design (HCD) – from user requirements to testbeds

The topic was presented by Thomas Porathe, Norwegian University of Science and Technology (NTNU), Norway.

#### 6.4.1 Presentation abstract

Human interaction with complex technology is a problem. Prior to World War II it was often a question of picking the right people to fit the machine: small enough and non-claustrophobic for submarines, or with coordination and motor skills for airplanes. As early technology was scarce, there was an abundance of people to choose from. The Second World War changed that. Complexity and presence of technology grew rapidly and availability of men became a limiting factor. Technology needed to adapt to fit the human, instead of the other way round. Ergonomics and later Human-Centred Design (HCD) became necessary for safe and efficient operation.



Today however, as technology evolves, the HCD process needs to be ongoing. Computerisation has led to increased complexity and automation where humans sometimes are left out of the loop. As an example, the UK Maritime Accident Investigation Board (MAIB) in 2014 wrote “this is the third grounding investigated by MAIB where watchkeeper’s failure to use an ECDIS properly has been identified as one of the causal factors.” There is still a need to fit people to the task (through training) but increasingly it will need to fit the task to the people.

As e-navigation evolves technology risks becoming even more complex. Prof Porathe explained and exemplified the HCD process and encouraged that HCD be included in e-navigation systems.

#### 6.4.2 The key points of the presentation were:

- 1 A Human-Centred Design process is necessary for safe and efficient operation in an evolving e-navigation world.
- 2 Ford's stronger and faster horse: innovation is still possible.
- 3 HCD is easy and anyone can do it.
- 4 A few method points to take away.

#### 6.5 Discussion

In discussion it was observed that ECDIS default setting should be suitable for all users using a default setting such as S-mode.

It was considered that training requirement can arise from unexpected sources and the human factor should be considered in competency assessment and improvement.

ECDIS will always require training while intuitive systems which require very little training create a risk of deskilling.

It was noted that purchasers of ECDIS systems evaluate tenders on a large number of technical characteristics and capability that is not used in practice, resulting in supplied systems having ten times the necessary capability.

It was observed that, while the age profile of users is often considered to impact on adoption of e-navigation systems, older people may take a little more training but then adopt new technology enthusiastically.

### 7. SESSION 4 – MSP REQUIREMENTS - WHAT NEEDS TO BE DONE – WHO, WHAT, WHEN?

The session was chaired by Thomas Christensen, Danish Maritime Authority (DMA), Denmark.

#### 7.1 Presentation: Maritime Service Definition Language (MSDL)

The topic was presented by Thomas Christensen, Danish Maritime Authority (DMA), Denmark.

##### 7.1.1 Presentation abstract

Thomas Christensen explained how the Maritime Cloud could provide the means for a harmonised way of specifying services and a mechanism for storing service specifications and service instances as well as a means of finding services based on various criteria such as location.



##### 7.1.2 The key points of the presentation were:

- 1 Use of the Maritime Cloud in MSPs.

##### 7.1.3 Discussion

It was noted that the Maritime Cloud does not inherently affect attributes of services and attributes such as accuracy is a function of the relevant service.

#### 7.2 Presentation: MSPs in the SMART project

The topic was presented by Deuk-Jae Cho, Korea Research Institute of Ships and Ocean Engineering (KRISO), Korea.

### 7.2.1 Presentation abstract

The Korean e-navigation SMART-Navigation Project is to improve maritime safety in Korean waters following the IMO e-navigation plan. According to the statistics of the last five years, there are about 412 accidents per year involving common ships in Korean waters. On the other hand, there are about 1074 accidents per year involving fishing boats. Considering the ratio of the number of accidents to the number of total ships, the ratio of fishing boats is less than that of common ships. However, the important thing is the absolute number of accidents.



The main objective of the SMART-Navigation Project is to develop services for the safety of fishing boats or small ships in Korean waters. The project considers technologies or tasks for IMO e-navigation at the same time. Dr Cho introduced MSPs in the SMART-Navigation Project for the safety of all ships in Korean waters and the harmonisation with the IMO e-navigation plan.

### 7.2.2 The key points of the presentation were:

- 2 SMART-Navigation.
- 3 Maritime Safety.
- 4 Maritime Services.

## 7.3 Presentation: SESAME Project in Straits of Malacca and Singapore

The topic was presented by Steve Guest, Kongsberg Norcontol, UK.

### 7.3.1 Presentation abstract

The SESAME Straits project (Secure, Efficient, and Safe maritime traffic Management in the Straits of Malacca and Singapore) aims to utilise the IMO e-navigation concept in order to reduce the problem of traffic hot-spots. SESAME Straits will make it possible to predict possible vessel traffic hot-spots in congested waterways and offers new strategies to avoid such congestions. This will improve the safety of vessel traffic and enable "just-in-time" arrival of vessels, improving the efficiency of existing infrastructure, and reducing the environmental footprint.



The SESAME Straits concept will be tested in the most utilised waterways in the world, the Straits of Malacca and Singapore. However, the concept will be developed so that it can be deployed in any waterway where there is traffic congestion.

The SESAME project serves as a highly important testbed for the IMO's e-navigation concept. It intends to test various aspects of e-navigation and to facilitate the implementation of e-navigation solutions in the maritime domain. For this reason the project has guidance from the Straits e-Navigation Alliance (SENA) High Level Advisory Board (HLAB), which consists of members from IMO, IHO, IALA, ICS, BIMCO, CIRM, as well as the maritime administrations of Indonesia, Malaysia, Norway and Singapore. The SENA proposed the Ship Traffic Management Project (STMS), which includes the SESAME Straits project.

### 7.3.2 The key points of the presentation were:

- 1 International collaboration.
- 2 E-Navigation test-bed in the Straits of Malacca and Singapore.
- 3 Shared situational awareness.
- 4 Collaborative decision making.

## 7.4 Presentation: The use of MSPs in Industry

The presentation author was Michael Bergmann, Director Maritime Industry at Jeppesen & President of CIRM.

The topic was presented by Richard Doherty, Comité International Radio-Maritime (CIRM), UK.

#### 7.4.1 Presentation abstract

Richard Doherty looked at the development of Maritime Service Portfolios (MSPs) from the point of view of the manufacturers and service providers who are members of CIRM, considering the role that these companies play within the overall MSP infrastructure. The presentation emphasised the need for globally harmonised MSPs built on a standardised data exchange format, to avoid incompatibility between regional solutions.



#### 7.4.2 The key points of the presentation were:

- 5 MSP infrastructure must be built upon a standardised data exchange format.
- 6 CIRM members will utilise standardisation to develop the components that will support MSPs.
- 7 Standardisation will support globally harmonised MSPs, avoiding regional incompatibility.

#### 7.4.3 Discussion

In discussion it was noted that the definition of S-Mode has been clarified at IMO and stakeholders now support the concept of S-Mode.

Following last week's decision at the IMO MSC 96 meeting, where the MSP output was approved for IMO's post-biennial agenda (2018-2019) work will not start in IMO until NCSR6 and a loose correspondence group comprising the Nautical Institute, AMSA and Korea will be coordinated by AMSA to prepare for NCSR6.

### 7.5 Presentation: Development of MSPs in Canada

The topic was presented by Pierre D'Arcy, Canada Coast Guard, Canada.

#### 7.5.1 Presentation abstract

The Canadian e-Navigation Concept is based on the different phases of a voyage (preparation of the sailing plan, voyage, post-voyage analysis) and aims to provide the required information during each phase. In order to help prepare the sailing plan, a national consultation was undertaken with marine stakeholders to collect data and information they required in each Canadian region. This information was regrouped into a User's Needs Matrix and served to develop the Maritime Information Portal. The Portal is based on the Single Window Approach and facilitates the retrieval of information in the region of interest.



Provision of information during the voyage in an electronic format can be done through AIS Messages. As the Canadian Coast Guard is the owner of the terrestrial AIS Network, they propose to other data providers to use this network whenever possible to broadcast their data. By doing so, the proliferation of AIS land-based stations which may potentially interfere with the AIS time slot allocations is limited. In 2015, a national AIS messages survey was distributed to Canadian Marine Pilots and Shipping companies to identify which data they would like to receive through AIS while on board and at what rate. Over 200 participants responded to the survey which will serve to develop a consistent national work plan among official data providers.

#### 7.5.2 The key points of the presentation were:

- 1 Identification of users requirements for data via AIS.
- 2 Close collaboration with marine stakeholders at each development and implementation phase of the Canadian e-Navigation Concept.

#### 7.5.3 Discussion

In discussion it was confirmed that the Arctic testbed described can be used to provide input to WRC-19 re the VDES.

It was noted that the ESA are also involved with satellite VDES and have issued a tender on 24<sup>th</sup> May 2016 to initiate work in this area.

## 8. SESSIONS 5 TO 8 - WORKING GROUPS

The workshop broke into three Working Groups (WG) to progress the draft Guideline on MSPs, to prepare a roadmap for MSP delivery in IALA, to draft a plan for moving from testbed and best practice to operational concepts and to develop a roles and responsibility table for producing MSPs.

WG1	Roadmap for MSP delivery in IALA and what can be expected from other organisations / contributors. Plan for moving from testbed and best practice to operational concepts.	Leader: Mike Sollosi
WG2	Methodology for producing MSPs for IALA members also including a holistic service portfolio Who will do what and when (roles and responsibility table)	Leader: Richard Doherty
WG3	Framework and structure for an IALA guideline on MSP	Leader: Michael Rambaut

The working groups were requested to respond to the following questions.

### Working Group 1

- Are the current MSPs suitable?
- Can the list of MSPs be divided into more practical and concrete services?
- Who should contribute and cooperate on specific standards (ref list)?
- Which area of IALA will provide information related to the standard?
- Do we identify any GAPS?
- Do we identify any overlap?
- Elements for testbed?

### Working Group 2

- Are the current MSPs suitable?
- Can the list of MSPs be divided into more practical and concrete services?
- Who should contribute and cooperate on specific standards (ref list)?
- Which standard listed, does IALA need?
- Which area of IALA will provide information related to the standard?
- Do we identify any GAPS?

### Working Group 3

- Is the structure of the draft Guideline suitable?
- Is the content holistic?
- Is the content operationally oriented?
- How to organise the services in practical and guiding chapters?
- Additional needs?
- Elements in the definitions?
- Contribution and cooperation with IHO and WMO?

## 9. SESSION 9 – REVIEW OF OUTPUT DOCUMENTATION

Chaired by Francis Zachariae, Secretary-General of IALA.

The outputs from the workshop will be submitted to the 19<sup>th</sup> session of the IALA ENAV Committee (ENAV19) in September 2016 where they will be progressed to completion.

### 9.1 Report of Working Group 1 - Roadmap for MSP delivery in IALA and what can be expected from other organisations / contributors.

The WG chair (Mike Sollosi) reported on progress in Working Group 1 (WG1).

Recognising there are geographic, regulatory, operational and organisational differences among VTS, MSPs can be developed with the flexibility to adapt to any VTS. The IALA VTS Committee has made considerable progress toward developing MSPs, such as Information Services (INS), Traffic Organisation Services (TOS) and Navigation Assistance Services (NAS). The Working Group offered recommendations to support the continued work of the VTS Committee.

The template in use by the VTS Committee is a useful tool to define the basic attributes and further details needed to refine MSPs. This template can also be used to further develop other MSPs. Once populated, the template can be used to develop product specifications and data modelling and form the basis for the determination of the needed technical infrastructure.

The WG recommended that the MSP template on INS be modified by dividing the basic MSP into three subdivisions: Safety, Infrastructure and Efficiency. Individual attributes could then be placed into these categories. NAS and TOS may need to be subdivided accordingly, with the recognition that INS is foundational to a VTS providing NAS and TOS. The WG also recommended that two columns be added following “Attributes” to list: (a) the lead standardisation organisation responsible for providing that attribute followed by (b) a column listing contributing organisations. A third additional column listing the organisation(s) responsible for providing the services described follows. A proposed revised template was provided to representatives from the VTS Committee.

The WG noted that there is significant overlap within the 16 MSPs among organisations responsible for providing a service or with an interest in the delivery of that service. The WG recommended that the VTS Committee determine, to the extent practical, the specific organisations with responsibility for or with an interest in various MSPs. The IMO/IHO Harmonization Group on Data Modelling should be activated and tasked to take a lead role in coordinating the development of MSPs amongst the various organisations. IALA is expected to contribute significantly to this effort. Coordinating bodies should jointly report progress to IMO/NCSR.

The WG expressed concern that the conceptual process for developing MSPs is untested. The WG therefore recommended that the VTS Committee, with direct input from other organizations, consider fully developing interdependent attributes from within MSP-1 with the aim to establish a completed service that can be used to validate this concept in a testbed. A completed, validated template is a significant step forward on the MSP development roadmap.

Regarding other potential testbeds, the WG notes that the IMO has established guidelines for testbeds and has invited member States and other organisations dealing with testbeds to report their results.

#### 9.1.1 Concerns and further recommendations:

The primary issue arising from the discussion was the need for further cooperation amongst responsible organisations in order to overcome the significant overlap within MSPs.

The cyber security of MSP content and delivery should also be taken into account in the forefront of MSP development and deployment.

Developments in the GMDSS modernisation project should be taken into account when deciding communications paths for MSP delivery. Likewise, GMDSS modernisation should consider the eventual deployment of e-Navigation in its design.

The WG expressed concern that there needs to be ample opportunities for VTS users to be contacted regarding the validity of the specific services being delivered through MSPs.

## 9.2 Report of Working Group 2 - Methodology for producing MSPs for IALA members

The WG chair (Richard Doherty) described the work of WG2.

The working group agreed that clearly MSPs 1, 2, and 3 fall under IALA's domain.

- MSP 1 – VTS Information Service (IS)
- MSP 2 – Navigational Assistance Service (NAS)
- MSP 3 – Traffic Organization Service (TOS)

The working group defined these MSPs with regard to the owners (those organisations responsible for defining the service), the contributors (those organisations contributing to service definition), the users of the service, the associated S-100 product specifications, and any gaps/overlaps. These definitions are included in workshop output document SBMS1-9.3.

There was some consideration of the other MSPs (those not under IALA's domain) and the working group discussed which organisation(s) should be the "owner" of those services, to ensure that their further development involves organisations with the relevant expertise.

The working group considered section 2 of the draft IALA Guideline on MSPs, drafting some body text on definitions and suggesting some modifications to the list of responsible authorities. This work is included in workshop output document SBMS1-9.2.

The working group agreed that:

1. In defining the MSPs, there should be a focus on the "low-hanging fruit" – those MSPs that can be expanded upon, which can then be used to demonstrate the principle.
2. There are three MSPs that clearly fall within IALA's domain, where IALA is the "Service definition owner" and has the expertise to fully develop/define the service. Development of some other MSPs will require IALA to engage with the responsible authorities / service definition owners.
3. Technical specifications of the services must be discussed/developed in an appropriate forum (for example, in the Harmonization Group on Data Modelling) – including a method for describing the services in the interest of harmonising the technical specifications.
4. The current list of 16 MSPs requires further refinement and should not be seen as the definitive/finalised list of MSPs. Some of the MSPs may need to be disaggregated, others may be merged. It was further noted that a number of additional MSPs beyond the original 16 have been named within the draft IALA Guideline on MSPs.
5. There appear to be some overlaps in the services listed. For example, the working group questioned the purpose/intent of MSP 7 (Tug Services) and felt that it might be more appropriate to include tug-related services under a related MSP, such as MSP 4 Local Port Services, or MSP 10 Maritime Assistance Service, rather than its own MSP.
6. As a significant example of a gap, security considerations are missing from the current proposed MSPs, including shipborne, cyber, shore-side.
7. There was some confusion over terminology – Maritime Service Portfolios vs. Maritime Services – clarity and consistency is needed.
8. It is difficult to map S-100 Product Specifications to MSPs when there is little detail available for many of them beyond a number and a title; furthermore, draft product specifications are difficult to obtain. It would be useful if the draft S-100 product specifications across all domains were available from a single location, and IHO is strongly recommended to address this issue.

9. “Users” of an MSP could include the service providers who make use of the MSP to deliver information, as well as the end-users that actually consume the data. In the end the group felt “consumers” was an appropriate term to use for “end-users”.

#### 9.2.1 Discussion

In discussion it was noted that IALA will engage with stakeholders in the development of MSPs. Service providers want to engage. The first step is to agree the standard.

Product specification developers across all domains should promulgate draft and completed S-100 product specifications to make them available from a single location on the S-100 GI registry on the IHO web site under S-100 process/ table of product specifications.

It was observed that S-66 is the one standard generating most calls to the MCA from colleges. It is in the list for review and rollout is expected in early 2017.

A clear definition of MSPs is necessary and the eventual number of MSPs may not be limited to 16.

### 9.3 Report of Working Group 3 – Framework and structure for an IALA guideline on MSP

The WG chair (Jon Leon Ervik) described the work of WG3.

The working group firstly considered a presentation from Mikael Hägg on a proposed definition for MSP 13 on the Ice navigation service. He identified a number of section titles which were possibly relevant to all MSPs these are: Objectives, Description, Operating nodes, Users, Stakeholders, Area of operation, Operating elements (information), Relationship with other MSPs and Examples.

The working group discussed what was to be displayed on board. However it was decided that this was already being decided by ongoing work at IMO.

The working group agreed that the Guideline on MSPs should be kept to an operational level.

The working group also examined the compatibility between MSPs in case of interaction in future systems. It was agreed that if properly structured and in accordance with IHO S-100 this should not be a problem.

After making some additions and corrections to section 1 of the draft Guideline on MSPs it was agreed that the draft met the criteria set out in the terms of reference for the WG.

The working group agreed that the advantage of the MSP system was that access to information acquired in this way was safe relative to just surfing the internet for information

The working group recommended that the draft IALA Guidelines on MSPs be proposed as a starting point to develop IMO guidelines supporting the output on MSPs agreed at MSC96.

The final task was to see if the existing MSP1 on VTS INS would meet the new section titles above. After moving some of the text into the new sections and adding some new text it was agreed that this was a good way forward.

Finally it was noticed that there were a lot of inter-relationships between MSP1 and others and it was clear that a decision should be taken about which services might collide and a matrix is proposed showing conflicts.

#### 9.3.1 Discussion

There is a risk of parallel working in the IALA Committees.

Noting the use of IS rather than INS, it was noted that existing acronyms should be used rather than generating new ones.

It was suggested that the MSP guideline contain an annex or a new general guideline on MSPs be generated to provide guidance on MSPs similar to that provided in V-119 for VTS

## 10. SESSIONS 10 – CONCLUSIONS AND CLOSING

Chaired by Jon Leon Ervik, Chairman IALA ENAV Committee Working Group 4.

## 10.1 Conclusions

Seven conclusions were agreed as listed in the main report.

Attendees were invited to advise the workshop if anyone had knowledge of any patents, including pending Patents, held either by themselves or by other organisations or individuals, the use of which may be required to practice or implement the content of IALA Documents being developed or worked on in the workshop. No patent issues were advised. It was stated that any information provided to the workshop could not be subject to intellectual property rights claims (IPR) unless the IPR was claimed at time of submission.

## 10.2 Discussion & Workshop Debrief

It was agreed that the workshop was a great success with good output. The workshop output will be forwarded to the ENAV and VTS Committees for further work.

## 10.3 Workshop report

Seamus Doyle noted that the workshop documents and photographs would be available on the workshop file sharing server on the ftpshore page of <http://www.iala-aism.org/file-sharing/> for one month. The draft workshop report was posted on the file share server and the final report will be posted within one week and will be available long term on the IALA website. It will be forwarded to ENAV19, VTS42, the Joint ENAV/ VTS Group in August and the IALA Council.

## 10.4 Closing of the seminar

Francis Zachariae thanked everyone for attending and working so hard. He thanked the members of the Portuguese Lighthouse Authority and the Norwegian Coastal Administration for their excellent hosting of the event, the steering group, session chairs and working group chairs, the sponsor, IALA Secretariat and the delegates for making the workshop such a success. Recalling the life lesson learned in his cadet days that the best learning is achieved when people complain and express confusion, he noted the excellent discussions and learning during the workshop and the ensuing benefit to all participants.

Mr Zachariae wished everyone a safe journey home and declared the workshop closed.

## ANNEX B      SOCIAL EVENTS

### 10.5      Welcome reception

On Tuesday 24<sup>th</sup> May, the delegates enjoyed a buffet reception to welcome delegates to the workshop at the Navy Museu de Marinha in Lisbon.

### 10.6      Buffet reception

On Wednesday 25<sup>th</sup> May, delegates enjoyed a workshop dinner hosted by Kongsberg Norcontrol at the Messe Cascais in Lisbon.

## ANNEX C

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**ANNEX D WORKING GROUP PARTICIPANTS**
**Working Group 1 Roadmap for MSP delivery in IALA**

	Name	Organisation / Country
1	Mike Sollosi (Chair)	US Coast Guard/ USA
2	Pierre D`Arcy	Canadian Coast Guard / Canada
3	Jean-Daniel Gilles	International Maritime Pilot's Association / France
4	Govind Kumar Gupta	Directorate General of Lighthouses & Lightships / India
5	Surendra Singh Yadav	Directorate General of Lighthouses & Lightships / India
6	Manoj Suthar	Aatash Norcontrol Ltd. / India
7	Jinofer Bhujwala	Aatash Norcontrol Ltd. / India
8	Jørgen Brandt	Great Belt VTS / Denmark
9	Jimmy Westermann	Great Belt VTS / Denmark
10	Gilles Bessero	IHO / Principality of Monaco
11	Rakesh Pandit	UK Maritime and Coastguard Agency / United Kingdom
12	Ed Verbeek	Netherlands Pilot Cooperation (NLC) / Netherlands
13	Pieter Paap	Ministry of Infrastructure and the Environment / Netherlands
14	João Calado	Signalis / France
15	Malin Dreijer	Norwegian Coastal Administration / Norway
16	Krzysztof Mendalka	Sprint S.A. / Poland

**Working Group 2 Methodology for producing MSPs for IALA members**

	Name	Organisation / Country
1	Richard Doherty	CIRM/ UK
2	Deuk-Jae Cho	KRISO/ Korea
3	Jye-jin Kim	KRISO/ Korea
4	Steve Guest	Kongsberg/ Norway
5	Keith Oliver	Maritime & Coastguard Agency/ UK
6	Thomas Christensen	DMA/ Denmark
7	Harald Asheim	Norwegian Coastal Administration/ Norway
8	Andrey Vorobiev	Chart World GmbH/ Germany
9	Jarle Hauge	Norwegian Coastal Administration/ Norway
10	Simon Pelletier	IMPA/ UK
11	Haakan Heurlin	Swedish Maritime Administration/ Sweden
12	Samuel Ong Huixiao	MPA/ Singapore

	Name	Organisation / Country
13	Chong Jia Chyuan	MPA/ Singapore
14	Esma Mekraoui	CLS/ France
15	Maria Mota	ESSP/ Spain
16	Jan Safar	GLA R&RNav of UK & Ireland / UK
17	Ernie Batty	IMIS Global/ UK
18	Edward Hosken	UK Hydrographic Office/ UK

### Working Group 3      Draft IALA Guideline on MSP

	Name	Organisation / Country
1	Michael Rambaut (Chair)	Norwegian Coastal Administration / UK
2	Jon Leon Ervik	Norwegian Coastal Administration / Norway
3	Jürgen Holfort	WMO / Germany
4	Francis Zachariae	IALA / France
5	Rasmus Jensen	Danish Maritime Authority / Denmark
6	Cato Giil Eliassen	Kongsberg Seatex / Norway
7	Enzo Bettini	IMIS Global Limited / South Africa
8	Svein David Medhaug	Norwegian Coastal Administration / Norway
9	Ulrich Tagne	Norwegian Coastal Administration / Norway
10	Thomas Porathe	Norwegian Coastal Administration / Norway
11	Almir Zerem	Viktoría Swedish ICT / Sweden
12	Mikael Hagg	Swedish Maritime Administration / Sweden
13	Yousef Khalifa Al-Rahi	Arabian Maritime & Navigation Aids Services LLC / Sultanate of Oman
14	Yasser Bin Hamood Al Yahmadi	Arabian Maritime & Navigation Aids Services LLC / Sultanate of Oman
15	Nelson Santos Marques	Direção-Geral de Recursos Naturais (DGRM) / Portugal
16	Ana Faneca	Direção-Geral de Recursos Naturais (DGRM) / Portugal

DAY 1 – Tuesday, 24 May 2016

Time	Activity	
<b>0800 – 0900</b>	<b>Registration</b>	
<b>0900 - 1000</b>	<b>Session 1 - Opening of the Workshop</b>	<b>Chair: Jon Leon Ervik</b>
0900 - 0910	Welcome from IALA	Francis Zachariae, Secretary General IALA
0910 - 0920	Welcome from Portuguese Lighthouse Authority	Carlos Soares, Director of Portuguese Lighthouse Authority
0920 - 0925	Administration & Safety Briefing	Seamus Doyle, IALA
0925 - 0945	Keynote address	Gilles Bessero, IHO
0945 - 1005	IMO e-navigation process update	John Erik Hagen, NCA
1005 – 1015	Structure and objective of workshop	Jon Leon Ervik, NCA
<b>1015 – 1045</b>	<b>Break</b>	
<b>1045 - 1230</b>	<b>Session 2 – IMO and Maritime Service Portfolios</b>	<b>Chair: Steve Guest</b>
1045 - 1105	The use of electronic information for pilotage	Simon Pelletier, IMPA
1105 - 1125	Delivery of ocean/atmosphere information to users	Jürgen Holfort BSH/JCOMM
1125 - 1145	Nautical Publications: Past, Present and S-100	Edward Hosken, UKHO
1145 - 1205	VDES latest developments and usability	Cato Eliassen, Kongsberg Seatex
1205 - 1225	Harmonised display of navigation information received via communications equipment	Svein David Medhaug, Norwegian Maritime Authority
1225 - 1230	Discussion	Steve Guest
<b>1230 - 1400</b>	<b>Lunch</b>	
<b>1400 - 1530</b>	<b>Session 3 - Maritime Service Portfolio Development and Present Status</b>	<b>Chair: John Erik Hagen</b>
1400 - 1420	IALA development of MSPs	Jon Leon Ervik, NCA
1420 – 1440	Use of MSPs in VTS – information	Mike Sollosi, USA
1440 - 1500	SAR use of MSPs	Keith Oliver, MCA UK
1500 – 1520	Human centred design (HCD) – from user requirements to testbeds	Thomas Porathe, NTNU
1520 – 1530	Discussion	John Erik Hagen
<b>1530 - 1600</b>	<b>Break</b>	
<b>1600 - 1800</b>	<b>Session 4 – MSP requirements - What needs to be done – Who, What, When?</b>	<b>Chair: Thomas Christensen</b>
1600 – 1620	Using the Maritime Cloud for the MSP - Where are the Services and how do they look?	Thomas Christensen, DMA
1620 – 1640	MSPs in the SMART project	Deuk-Jae Cho, KRISO
1640 – 1700	SESAME Project in Straits of Malacca and Singapore	Steve Guest, Kongsberg Norcontrol
1700 – 1720	The use of MSPs in Industry	Richard Doherty, CIRM
1720 - 1740	Development of MSPs in Canada	Pierre D’Arcy, Canada Coast Guard
1740 – 1750	Group photo	
<b>1750 - 1815</b>	<b>Meeting of WG chairs for coordination</b>	
<b>1900 – 2200</b>	<b>Welcome Reception, Navy Museum in Lisbon, Dress code casual</b>	

DAY 2 – Wednesday, 25 May 2016

Time	Activity	
<b>0900 - 1030</b>	<b>Session 5 – Working Groups (WG)</b>	<b>Coordinator: Jon Leon Ervik</b>
0900 - 0915	Introduction to Working Group sessions	Jon Leon Ervik
0915 - 1030	WG1: Roadmap for MSP delivery in IALA and what can be expected from other organisations / contributors. Plan for moving from testbed and best practice to operational concepts.	Leader: Mike Sollosi
0930 - 1030	WG2: Methodology for producing MSPs for IALA members also including a holistic service portfolio Who will do what and when (Roles and responsibility table), standards required and gaps in services.	Leader: Richard Doherty
0930 - 1030	WG3: Framework and structure for an IALA guideline on MSPs	Leader: Jon Leon Ervik / Michael Rambaut
<b>1030 - 1100</b>	<b>Break</b>	
<b>1100 - 1230</b>	<b>Session 6 – Working Groups (WG)</b>	
1100 - 1230	WG1: Roadmap for MSP delivery in IALA and what can be expected from other organisations / contributors. Plan for moving from testbed and best practice to operational concepts.	Leader: Mike Sollosi
1100 - 1230	WG2: Methodology for producing MSPs for IALA members also including a holistic service portfolio Who will do what and when (Roles and responsibility table)	Leader: Richard Doherty
1100 - 1230	WG3: Framework and structure for an IALA guideline on MSP	Leader: Jon Leon Ervik / Michael Rambaut
<b>1230 - 1400</b>	<b>Lunch</b>	
<b>1400 - 1530</b>	<b>Session 7 - Working Groups (WG)</b>	
1400 - 1530	WG1: Roadmap for MSP delivery in IALA and what can be expected from other organisations / contributors. Plan for moving from testbed and best practice to operational concepts.	Leader: Mike Sollosi
1400 – 1530	WG2: Methodology for producing MSPs for IALA members also including a holistic service portfolio Who will do what and when (Roles and responsibility table)	Leader: Richard Doherty
1400 – 1530	WG3: Framework and structure for an IALA guideline on MSPs	Leader: Jon Leon Ervik / Michael Rambaut
<b>1530 – 1600</b>	<b>Break</b>	
<b>1600 – 1700</b>	<b>Session 8 – Working Groups (WG)</b>	
1600 – 1700	WG1: Roadmap for MSP delivery in IALA and what can be expected from other organisations / contributors. Plan for moving from testbed and best practice to operational concepts.	Leader: Mike Sollosi
1600 – 1700	WG2: Methodology for producing MSPs for IALA members also including a holistic service portfolio Who will do what and when (Roles and responsibility table)	Leader: Richard Doherty
1600 – 1700	WG3: Framework and structure for an IALA guideline on MSPs	Leader: Jon Leon Ervik / Michael Rambaut
<b>1700 - 1800</b>	<b>Meeting of WG chairs</b>	<b>Steering Group, WG + session chairs, Francis Zachariae, Seamus Doyle</b>
<b>1920 – 2300</b>	<b>Workshop Dinner, Messe Cascais (by bus), Dress code casual</b>	<b>Sponsored by Kongsberg</b>

DAY 3 – Thursday, 26 May 2016

Time	Activity	
<b>0900 - 1030</b>	<b>Session 9 – Review of Output Documentation</b>	<b>Chair: Francis Zachariae</b>
0900 – 0930	Presentation of draft documentation WG1	Leader: Mike Sollosi
0930 – 1000	Presentation of draft documentation WG2	Leader: Richard Doherty
1000 – 1030	Presentation of draft documentation WG3	Leader: Michael Rambaut
<b>1030 - 1100</b>	<b>Break</b>	
<b>1100 - 1200</b>	<b>Session 10 – Plenary – Conclusions &amp; Closing</b>	<b>Chair: Jon Leon Ervik</b>
1100 – 1130	Conclusions from Workshop	Seamus Doyle
1130 – 1145	Discussion & Workshop Debrief	Jon Leon Ervik
1145 – 1200	Closing of the seminar	Francis Zachariae, IALA
<b>1200 - 1330</b>	<b>Buffet Lunch</b>	

## ANNEX F WORKSHOP INPUT PAPERS

Including the presentations made during sessions, the following papers were input to the seminar:

Paper number		Title / Author (if required)	Source	WG
SBMS1-	1.1	VDES WS 2016-02 Papers' list 20160209	IALA Secretariat	All
SBMS1-	1.2	Workshop Programme VDES Final	IALA Secretariat	All
SBMS1-	2.1	(ENAV18-14.2.5) draft IALA Guidelines on MSPs v-5N	ENAV18	All
SBMS1-	2.2	(ENAV18-14.2.26) WG3 Draft IALA road map	ENAV18	WG1
SBMS1-	2.3	(ENAV18-12.1) 20160210 letter IHB IALA-ENAV MSP final	ENAV18	WG2
SBMS1-	2.4	WG work definition summary - Workshop on Shore-based Maritime Services	IALA Secretariat	All
SBMS1-	2.5	WG1 statement of work	IALA Secretariat	WG1
SBMS1-	2.6	WG2 statement of work	IALA Secretariat	WG2
Presentation	1.1	1.1 Welcome address IALA	Francis Zachariae	
Presentation	1.2	Welcome address Portuga	Carlos Soares	
Presentation	1.3	Safety briefing and admin briefing	Seamus Doyle	
Presentation	1.4	Keynote address	Gilles Bessero	
Presentation	1.5	IMO e-navigation process update	John Erik Hagen	
Presentation	2.1	The use of electronic information for pilotage	Simon Pelletier	
Presentation	2.2	Delivery of ocean/atmosphere information to users	Jürgen Holfort	
Presentation	2.3	Nautical Publications - Past Present and S-100	Edward Hosken	
Presentation	2.4	VDES latest developments and usability	Cato Eliassen	
Presentation	2.5	2.5 Harmonised display of navigation information	Svein David Medhaug	
Presentation	3.1	IALA development of MSPs	Jon Leon Ervik	
Presentation	3.2	Use of MSPs in VTS – information	Mike Sollosi	
Presentation	3.3	SAR use of MSPs	Keith Oliver	
Presentation	3.4	Human centred design (HCD) – from user requirements to testbeds	Thomas Porathe	
Presentation	4.1	Using the Maritime Cloud for the MSP - Where are the Services and how do they look?	Thomas Christensen	
Presentation	4.2	MSPs in the SMART project	Deuk-Jae Cho	
Presentation	4.3	SESAME Project in Straits of Malacca and Singapore	Steve Guest	
Presentation	4.4	The use of MSPs in Industry	Richard Doherty	
Presentation	4.5	Development of MSPs in Canada	Pierre D’Arcy	

## ANNEX G WORKSHOP OUTPUT DOCUMENTS

Number		Title / Author (if required)	Source	Action
SBMS1-	9.1	VTS MSP Matrix - New Template V2	WG1	To ENAV19 To VTS42
SBMS1-	9.2	WG 2 Output 2 of 3 - draft IALA Guidelines on MSPs v5 Section 2	WG2	To ENAV19
SBMS1-	9.3	WG 2 Output 3 of 3 - Definition of MSP 1,2,3	WG2	To ENAV19
SBMS1-	9.4	ENAV18-14.2.5 draft IALA Guidelines on MSPs v-6 25 May	WG3	To ENAV19
SBMS1-	10.1	Report IALA Workshop on Shore-based Maritime Services from Theory to Practical Use	Secretariat	To ENAV19 To ENAV/ VTS Group To Council

1. Michael Rambaut is requested to amalgamate the draft Guideline on MSPs (SBMS1-9.4) from WG3 with section 6 of the Guideline on MSPs from WG2 (SBMS1-9.2) and to update the MSP sections in accordance with the agreed MSP section format and submit to ENAV19.
2. The Norwegian Coastal Administration is requested to produce a matrix showing services against MSPs for submission to ENAV19.
3. Jon Leon Ervik is requested to consider if a general guideline on MSPs similar to V-119 for VTS should be developed in the IALA ENAV Committee.
4. Council 60 approved e-NAV140 , Guideline 1113 and Guideline 1114 but noted that the ENAV Committee should monitor the Workshop outcomes and asses the continued validity of its documents in consequence.
5. The VTS Committee is requested to modify the MSP template on INS by dividing the basic MSP into three subdivisions: Safety, Infrastructure and Efficiency. Individual attributes could then be placed into these categories.
6. The VTS Committee is requested to consider that two columns be added following “Attributes” to list: (a) the lead standardization organization responsible for providing that attribute followed by (b) a column listing contributing organizations. A third additional column listing the organization(s) responsible for providing the services described then follows. A proposed revised template was provided to representatives from the VTS Committee.
7. The VTS Committee is requested to determine, to the extent practical, the specific organisations with responsibility for or an interest in various MSPs.
8. Considering concern that the conceptual process for developing MSPs is untested, the VTS Committee is requested to consider fully developing interdependent attributes from within MSP-1 with the aim of establishing a completed service that can be used to validate this concept in a testbed with direct input from other organizations.
9. The ENAV Committee is requested to consider the proposal that developments in the GMDSS modernisation project should be taken into account when deciding communications paths for MSP delivery. Likewise, GMDSS modernisation should consider the eventual deployment of e-Navigation in its design.
10. The IALA VTS Committee is requested to particularly note the content and recommendations in Section 9.1 of the report on the IALA Workshop on Shore-based Maritime Services from Theory to Practical Use.
11. The IALA ENG Committee is requested to particularly note the content and recommendations in Section 9 of the report on the IALA Workshop on Shore-based Maritime Services from Theory to Practical Use.
12. The Secretariat is requested to disburse the output documents in accordance with ANNEX G.



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