Report of the Workshop
on the
Global Sharing of Maritime Data

EXECUTIVE SUMMARY

A workshop on the subject of the Global Sharing of Maritime Data was held at IALA between 12 and 15 September 2011. The workshop was attended by 58 delegates representing 23 countries.

A series of 29 presentations were given under five broad headings:

- Sharing Data in 2011;
- User needs and applications;
- Use cases;
- Legal, security and policy;
- Technical solutions.

The workshop then broke into 3 Working Groups to discuss and then produce guidance under the headings of: User Needs; Legal, policy and security; Technical solutions.

The list of delegates is at ANNEX A and the workshop programme is at ANNEX B

The workshop produced a draft Guideline that requires further work and will be reviewed by PAP before being submitted to the IALA Council. The workshop also produced 9 conclusions, which are at ANNEX D.

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IALA Workshop on the Global Sharing of Maritime Data

1   INTRODUCTION

A workshop on the subject of the Global Sharing of Maritime Data was held at IALA between 12 and 15 September 2011. The workshop was attended by 58 delegates representing 23 countries.

A list of participants is included at ANNEX A.

2   SESSION 1 - OPENING

Chaired by Mr Gary Prosser, Secretary-General of IALA.

The Secretary-General welcomed everyone to the workshop and the new IALA offices. He said that it was impressive to have attracted 58 delegates from the around the world and that this must have something to do with the high quality selection of speakers. He went on to say that the topic under discussion was very important and that he hoped that useful documentation would result from the workshop.

Administrative and health and safety information was provided by Dr Mike Hadley, IALA Technical Co-ordination Manager.

A list of delegates is at ANNEX A and the workshop programme is at ANNEX B

3   SESSION 2 – SHARING DATA IN 2011

Chaired by Mr Gary Prosser, Secretary General, IALA

3.1   Introduction to IALA Net, RAdm Jean-Charles Leclair, IALA IMO representative

Abstract of presentation

IALA-NET is a near real time maritime data exchange service, provided through the Internet. It is a worldwide service available only to national competent authorities who provide maritime data from their area of responsibility in exchange for data from other participants.

However, AIS is a VHF broadcasting system that everyone can listen with an AIS receiver. It is why, despite the negative reaction of the Maritime Safety Committee of IMO, several private/commercial companies monitor the maritime traffic on a global mode and made the information available on internet, usually for money, but in some case for free.

As traffic monitoring includes security, safety, protection of marine environment and traffic organization missions, IALA had considered important that the Authorities in charge have their own system which can respond to their own needs.

IALA-NET is based on 3 server centres in China, Denmark and USA to strengthen the system redundancy and availability. These centres are nearly evenly spaced in time-zones facilitating 24 hour maintenance and help-desk personnel on workdays. The system can be run at low costs supported by the three countries having a server. For the time being Denmark is supported most of the cost and participation in IALA-NET is free of charge.

In the future, it is intended to organize the storage of historical data and to develop the system using other sources of information, including satellites AIS, radars, etc. Already, the IALA Council has agreed the creation of a second branch of IALA-NET for countries having satellite AIS information. IALA-NET can now offer them to exchange their information between them and doing so considerably increase their capacity.

It would be helpful if documentation could be produced to stimulate a debate in IMO on its current policy towards the sharing of AIS data.

The key points of the presentation were:

1   IALA-NET is a near real time maritime data exchange service, provided through the Internet.

2   It is a worldwide service, today based on AIS, available only to national competent authorities who provide maritime data from their area of responsibility in exchange for data from other participants.

3   AIS is a VHF broadcasting system that everyone can listen with an AIS receiver, which allows, several private/commercial companies to monitor the maritime traffic on a global mode.

4   IALA consider important that the Authorities in charge of security, safety, protection of marine environment and traffic organization missions, have their own system which can respond to their own needs.

5   In the future, it is intended to organize the storage of historical data and to develop the system using other sources of information, including satellites AIS, radars, etc.

3.2   Maritime Safety & Security Information System (MSSIS) – Cdr James Feldkamp, United States Navy

Abstract of presentation

The Maritime Safety and Security and Safety Information System (MSSIS) is a near real-time information program that utilizes non-classified data transmitted by the Automatic Identification System (AIS) mandated by the International Maritime Organization to be placed aboard commercial ships above 300 gross tons. This network assists partners with the capability to detect, track, identify, display and share information on cooperative surface vessels through the AIS data feed.

Since 2008, NMCO has increased partner nation participation from 35 nations to 68 (Japan came on line Aug 2011).

Currently, MSSIS, covers approximately 250,000 miles of coastline, processes over 50 million position reports and persistently monitors over 45,000 ships a day transiting the maritime domain. MSSIS continues to be the base line to provide partner nations the ability to participate with the United States to improve MSA and the ability to prevent transnational crimes and increase safety, security and stability in the maritime domain.

As the consulting arm to the IMO, IALA provides an opportunity to bring member nations, along with additional IMO nations that have AIS authority, into IALA.NET. In conjunction, with MSSIS this greater information sharing architecture could provide a more robust MSA network.

A live feed of MSSIS data was available for demonstration and MSSIS brochures were available.

The key points of the presentation were:

1   Benefits of sharing non-classified AIS information

2   International legitimacy

3   Regional partners enhance regional solutions

4   More advocates for information sharing the better

3.3   SafeSeaNet – Capt. Jon Leon Ervik, Norwegian Coastal Administration

Abstract of presentation

The Norwegian Coastal Administration (NCA) is the responsible authority for maritime safety along the Norwegian coast, including the management and sustainable development of the coastal zone as well as preparedness and response to acute pollution.

Ships entering Norwegian waters are required to report arrival and departure information to several national authorities. These reporting operations have been time-consuming both for mariners as well as shore-based personnel.

The European Parliament through Council of 27 June 2002 established a Community vessel traffic monitoring and information system called SafeSeaNet (SSN), through the Directive 2002/59/EC as amended. In the Norwegian Parliament White Paper 2004/2005 the Norwegian Coastal Administration was appointed with the task of coordinating the development of a national reporting system on behalf of Norwegian authorities. Accordingly, the Norwegian Coastal Administration established SafeSeaNet Norway in 2005.

The establishment of SafeSeaNet-Norway as a national ship reporting system was the first step towards simplifying reporting and information between ships and shore-based facilities.

Since the establishment of SafeSeaNet-Norway, a process of replacing current national reporting schemes, such as Customs, Armed Forces and Border Control (Police) has been initiated, in order to make ship reporting more seamless and smooth for all stakeholders involved. The inclusion of notifications to Customs and Border Control also requires non-SOLAS ships to report through SafeSeaNet-Norway.

As competent authority for VTS, SSN, AIS, LRIT, S-AIS and other sensors. The NCA has participated in several projects at a national and international level

The system is used on an operational day-to-day environment in five VTS`s and the North Atlantic regional server.

The key points of the presentation were:

1   The need and use of information

2   Link to e-navigation

3   Single Window

4   Development

3.4   Satellite AIS – No need to share – Capt. Robert Tremlett, exactEarth

Abstract of presentation

The presentation provides an outline of the infrastructure that is required to provide AIS from satellites, and typical application areas for using it. It then compares AIS to S-AIS from the data sharing perspective explaining the fundamental difference between the two technologies. Finally, it justifies why satellite AIS is not as a rule appropriate for sharing but does suggests areas where mechanisms should be investigated to provide data in event of emergencies or Aid.

The key points of the presentation were:

1   What is satellite AIS?

2   What can S-AIS used for?

3   Fundamental difference between AIS and S-AIS.

4   Why S-AIS needs to be licensed.

5   Call for Need of Mechanisms for provision of S-AIS in Emergencies and for AID.

3.5   Discussion

It was stated that, having been presented with 4 systems and 4 networks, interoperability is important but do commercial considerations militate against this. It was also asked if the systems would comply with the planned Maritime Data Standard (MDS)? Responding comments included the fact that SafeSeaNet streams its information such that local systems can use it and develop their own functionality. Two speakers acknowledged that commercial considerations do come into play. With regard to compliance it was said that IALA Net complies with the developing MDS and that MSSIS operates on a Government – Government level.

At this stage it was asserted that commercial companies have no difficulty in sharing their data but that they do require fair recompense for the investment made in gathering it.

The number of 68 nations participating in MSSIS was held to be impressive, especially as one seems to meet lawyers at every turn. In response it was said that diplomacy takes time, nations have to reconcile their own structures with MSSIS and, of course, the lawyers' queries have to be answered.

There was a query about the time delay imposed on commercial AIS data, to which it was said that if you pay for the service it was understood that there is no dely. This led to a comment about there being a need for IMO to decide what is reasonable and legal when making AIS data available. It was hoped that WG2 would be able to discuss this issue.

Returning to the subject of interoperability, it was stated that its importance has been recognised in Project Mona Lisa and that the issue is being worked on.

The Secretary-General said that it would be helpful to have some guidance about when and how AIS data should be made available.

4   SESSION 3 – SHARING DATA IN 2011

Chaired by Dr Nick Ward, GLA R&RNAV.

4.1   Meteorological data – Mr David Thomas, World Meteorological Organisation

Abstract of presentation

WMO Members services to mariners are facilitated through a coordinated combination of programs. Observations from the integrated Global Observing System (GOS) and partner organizations such as the Global Ocean Observing System (GOOS), are processed to prepare products and numerical prediction guidance under the Global Data-processing and Forecasting System (GDPFS). This information is used by the Marine Services Program to provide services directly to mariners or to other service providers. The WMO Information System (WIS) is the underlying component for collecting and sharing information by WMO Member states and territories. WIS will be a key enabler for the future enhancements to services from the WMO community to marine and ocean community in this process. Its principles of interoperability and service orientated architecture may also be applicable to Global Marine Data Sharing.

WMO, through its Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), has been developing an IMO/WMO Worldwide Met-ocean Information and Warning Service (WWMIWS) that complements the existing IMO/IHO Worldwide Navigational Warning Services (WWNWS IMO resolution A.706(17)). Along with these efforts, WMO continues working to further define the required met-ocean variables/information to feed the e-Navigation.

The key points of the presentation were:

1   This presentation will highlight the benefits of Service Orientated Architecture for building interoperable information systems.

2   It is hoped to obtain feedback regarding the product specification (definition/standards for compatible formats) for meteorological information to support e-Navigation.

4.2   Exchanging hydrographic and safety data – Capt. Robert Ward, International Hydrographic Office

Abstract of presentation

Access to hydrographic data is fundamental to any human activity conducted in, on or under the sea.

The IHO is the principal intergovernmental organization concerning hydrographic geospatial information. Over its 90-year history, the IHO has been encouraging all governments, especially those of coastal States, to improve both the quality and the availability of global hydrographic information.

The IHO has ensured that hydrographic information is available through standardised nautical charts. It has established global digital data standards that enable hydrographic data to be exchanged and used between States and between other users. Currently, the principal data exchange standard is S-57; in future it will be S-100. S-100 has been recognised by the IMO and IALA as having the potential to be used as a data exchange standard for other data providers in the maritime domain – especially in relation to e-Navigation.

The ability or willingness of governments to allow hydrographic data to be made freely available are governed by a number of factors including the status of a government as an authoritative source, resultant exposure to liability and the nexus between providing data in the public good versus cost recovery principles and the prevention of allowing private benefits to be gained from data obtained with publicly funds.

The key points of the presentation were:

1   the fundamental nature of hydrographic data

2   access, interoperability and standards

3   current IHO standards

4   access to government data:

   a.   legal, policy and security

   b.   quality and reliability

4.3   Exchanging route data – Mr Ulf Swedburg, Swedish Maritime Administration & Mr Peter Berglund – SAAB TransponderTech

Abstract of presentation

The next generation in route planning at sea will be similar to the ATC systems (Air Traffic Control or Automatic Train Control)

Individual Green Routes for all ships will be elaborated and monitored from VTM centres

Green Routes is a new methodology and a real shift of paradigm in terms of how to plan and elaborate routes at sea. Today there´s a necessity to stay within the static separations zones (TSS areas) often with long way around and the planning is normally full ahead and all ships, using the same waypoints, are squeezed together in limited TSS areas.

Green Routes executes dynamic planning, taking into consideration not only the shortest way depending of the traffic situation but also the better care of the environment

Green Routes provides captains with route and speed recommendations, containing important data relevant for the actual route to be followed. Data included streamed in real time; weather, current, tide, ice, NAVwarnings, depth surveys, traffic and real time information of next berth and cargo handling schedules.

Green Routes will reduce costs, increase safety and security by being optimized in terms of time and fuel consumption and related reduction of emissions.

Project Mona Lisa brochures were available for the delegates after the presentation.

The key points of the presentation were:

1   Exchange of data from ship to shore and ship to ship.

2   Route construction.

3   Improved Situation awareness.

4   Reduction of fuel and emissions.

5   Dynamic separation systems.

4.4   Use of IALA net in e-Navigation - Dr Nick Ward, General Lighthouse Authorities of the United Kingdom and Ireland

Abstract of presentation

e-Navigation is the 'harmonized collection, integration, exchange and presentation of maritime information'. Position and identification of vessels are probably the most important pieces of information and that is what IALA-NET provides.

- Giving the watch officer onboard the ship and the VTS operator ashore a complete and accurate picture of what vessels are where and where they are going will be crucial to the success of e-Navigation.

IALA-NET has the potential to meet the data sharing requirements of e-Navigation and offers a universal approach to standardised sharing of vessel location and identification data.

The key points of the presentation were:

1   Position and identification are the most important pieces of information.

2   That is what IALA-NET provides.

3   Complete and accurate picture.

4   IALA-NET has the potential to meet the data sharing requirements of e-Navigation.

5   Offers a universal approach to standardised sharing of vessel location and identification data.

4.5   Discussion

The comments and questions focussed almost entirely on Project Mona Lisa. The naming of Open Sea Shore Based Pilotage was queries and it was agreed that Navigation Assistance service might be a better term. An offer to share the experience gained by Norway in this area was made.

It was observed that new systems generally seek to correct errors perceived in existing systems and it was then asked what consideration had been given to identifying new challenges? In reply it was stated that several issues had already been identified and that Mona Lisa is a three year project, during which it was expected to solve them.

It was said that the term Motorways of the Sea is an EU sponsored concept and that it had no relationship with the concept of Marine Highways.

Compliance with rules governing the fitting and use of AIS promoted some discussion, in which was said that VTS operators will be key to ensuring compliance with traffic in their area. The only sanction currently was the use of Port State Control.

The need for the checking of deck officers' qualifications was queried and it emerged that the background was Swedish concern that such certificates as Pilotage Exemption Certificates (PEC) were valid and that their misuse might be leading to a loss of revenue. The only sure check, currently, is a physical check. Thus the project was testing an automatic checking system with the data being transmitted via AIS. The current thinking is that this data would need to be encrypted.

The final question dealt with data authenticity and data liability. These were recognised as challenges that need to be surmounted. It was observed that considerations such as these lead to encryption of data when using the internet. It was also said that resistance to sharing data can be

stimulated by thoughts of liability and a realisation that examination of data provided could reveal the poor data quality control measures in use by the provider.

5 SESSION 4 – USER NEEDS AND APPLICATIONS

Chaired by RAdm Jean Charles Leclair, IALA.

5.1 Risk Analysis – Mr Ómar Frits Eriksson, Danish Maritime Safety Administration

Abstract of presentation

Examples of waterway modelling and risk analysis using the IALA IWRAP Risk Assessment Tool were given. IWRAP models are based on AIS data such as those exchanged through IALA-NET. Some theoretical background was given and the so-called Causation Factors were introduced and discussed. In conclusion, the possibility of detecting collisions and rear miss collisions using IALA-Net were discussed.

The key points of the presentation were:

1 IWRAP is a useful tool for waterway modelling and Risk Assessment.

2 There is a need for high granularity AIS data when conducting Risk Analysis.

3 Statistical data on casualties are useful for estimating Causation Factors.

4 It may be feasible to include a service for automatic detection of collisions and near miss collisions as part of IALA-NET.

5.2 Coastal Marine Spatial Planning – Mr Mike Sollosi, United States Coast Guard

Abstract of presentation

Coastal Marine Spatial Planning (CSMP) is an effort to apply forward planning to accommodate and integrate a wide variety of services and uses of the marine environment. CSMP is data and information intensive. The presentation explained CSMP and described its data needs.

The key points of the presentation were:

1 What is Coastal Marine Spatial Planning?

2 Why do it?

3 What are the data needs of CSMP?

5.3 Data Exchange in e-Maritime – Mr Christos Pipitsoulis, European Commission (DGMOVE)

Abstract of presentation

It presents working ideas on e-Maritime user needs and applications, and a strategy towards standardisation.

"e-Maritime" will describe and set the necessary capabilities and conditions that will enable the maritime transport sector to operate in an environment where the information is exchanged readily, securely and supported by reliable information systems. Interoperability is critical. Standards, being the main route to interoperability, are essential to realise the e-Maritime concept.

"e-Maritime" is structured around application domains within which benefits will be demonstrated in real life situations for business and administrations. These applications create a focus on specific stakeholders needs and facilitate building on interoperability related standards and solutions already produced in these sectors. Standards reviews, definitions and developments need to be organised for each of the e-Maritime domains.

The first step is the definition of a common minimum level of functionality required to ensure seamless and effortless exchange of information between the stakeholders. This will include specifications for a common data exchange environment for applications – independent of technologies and their evolutions. Interoperability with existing systems, in particular those mandated by EU legislation, has to be ensured.

The key points of the presentation were:

1 Standardisation is a key mechanism to interoperability and to lower the operational of the users.

2 The User needs and the required functionalities set the standardisation requirements.

3 Standards reviews, definitions and developments need to be organised for each of the e-Maritime application domains.

4 There is a need for policies, as basis for legislation or incentives, and emphasis on actions to define standards.

5.4 Accident Investigation – Captain Nick Beer, Marine Accident Investigators' International Forum

Abstract of presentation

Each marine casualty offers a unique opportunity to learn safety lessons that will benefit the maritime community as a whole. A successful investigation requires open and transparent co-operation and data sharing between all the interested parties. Despite the encouragement afforded by successive relevant IMO Resolutions, in the past, data sharing after a marine casualty has been problematic. Now, new relevant mandatory requirements and recommended practices are contained in the Casualty Investigation Code and, for European Member States, in the Accident Investigation Directive, giving new hope of a cohesive and workable international approach. The presentation will explore the problems of the past and the future opportunities, explaining the present legislative position, why data sharing is essential and the difficulties still facing investigators.

The key points of the presentation were:

1 The essential need for data sharing during a casualty investigation and the benefits to be obtained.

2 The legal background and present position with respect to international co-operation and information exchange after an accident.

3 The potential clash between national legal requirements and international obligations.

4 Examples of information that needs to be shared with other interested parties.

5.5 Discussion

It was suggested that although IWRAP is useful it needs further development, looking towards IMO's FSA approach, e-navigation, risk control options and recognition of consequences. It was noted that DNV have produced causation factors that include such factors as ship's age, the quality of the crew. This was acknowledged and it was stressed that risk analysis is extremely complex. However, it should be recognised that risk includes recognition of consequence. It should also be recognised that the situation becomes even more complex if one considers situations such as fire on board and machinery failure. Nonetheless although IWRAP Mk2 is under continuous development it is thought to be a sound basis on which to start.

With regard to recognition at IMO, it was noted that a recent S/N Circular had endorsed the use of IALA Risk Management Toolbox and that it is anticipated that its use could become part of the auditors' requirement in the IMO's mandatory reporting scheme.

It was stated that Norway has developed an electronic risk assessment system and it was agreed that mutual discussions with IALA would be beneficial.

A caution was raised about false / erroneously entered data in AIS. This was recognised but it was thought that the earlier high level of incorrect data was now diminishing and there were ways of checking the validity of some of the data transmitted by AIS. For the moment, if IWRAP could produce results within an order of magnitude of reality that would be satisfactory. That said, when IWRAP had been used to evaluate major waterways it had produced extremely accurate results.

It was then asked if DG Move is working with project INSPIRE. The answer was yes and that project INSPIRE is part of the e-Maritime task force.

6 SESSION 5 – USE CASES / ENFORCEMENT

Chaired by Mr Mike Sollosi, USCG.

6.1 Fisheries – Mr Tor Glistrup, Norwegian Directorate of Fisheries

Abstract of presentation

The Directorate of Fisheries work against illegal fishing, within Norway's 200 mile Exclusive Economic Zone (NEEZ), contributes to international co-operation against illegal fishing and crime at sea connected to fishing activity together with national control bodies and other countries.

The presentation gives a short overview on the use of sources such as VMS, AIS, LRIT, Lloyds list international Shipspotter and others that are used for surveillance of fishing vessel activity and also how this has been used in analysing fishing activity.

The key points of the presentation were:

1   Task of Directorate of Fisheries.

2   The problem of Illegal fishing (IUU fishing).

3   Short Historical view on VMS use in IUU surveillance and control.

4   Practical use of sensors in surveillance and analyses of fishing activity.

5   Crime at sea based on fishing vessel activity. UNODC work and challenges.

6.2 Environment – Mr Nick Lemon, Australian Maritime Safety Authority

Abstract of presentation

It is important that up to date environmental and other data is available for the effective management of incidents involving pollution to the marine environment. This includes instances when enforcement of environmental legislation is necessary. This presentation covers information sources and uses, and collaboration between authorities. Some suggestions are made about the need for sharing environmental data internationally.

The key points of the presentation were:

1   Hazards that shipping can present to the marine environment.

2   Analysis and mitigation of risks posed by shipping.

3   Response to a marine environment pollution incident.

4   Guidance on the protection of data would promote trust.

6.3 Co-operative VTS – M Jean-Jacques Morvant, DGITM/DAM/SM1

Abstract of presentation

The presentation began with coverage of the rules and regulations governing the CROSS system, which was followed by a description of the mission of the CROSS Traffic Monitoring System. The increasing level of traffic was highlighted, both in number and the volume of dangerous cargo being carried. The cross-Channel traffic is also high and one must not forget the fishermen and the swimmers.

The background to the formation of CROSS was covered, starting with the grounding of the Torrey Canyon in 1967 and running up to the grounding of the Tricolour. Cross has found it necessary to intervene in potential close quarter situations approximately 60 times per year and has had to deal with 6 major incidents in the past 3 years.

In conclusion it was stated that CROSS had a part to play in:

- Ensuring safer, more secure operations.

- Boosting economic growth.

- Developing digital security

The key points of the presentation were:

1   Environmental data sources.

2   Vessel tracking information (maritime domain awareness).

3   Incident response.

4   Incident investigation.

5   Collaboration with other parties and information sharing.

6.4   Use of shared data – Captain Ulf Svedburg – SMA

Abstract of presentation

HELCOM, its formation under the Copenhagen Declaration and its geographical coverage were introduced. This led to a description of HELCOM's architecture and its use of the internet. This was followed by examples of AIS data usage and concluded with he experience gained from operating HELCOM and the plans for the future.

The key points of the presentation were:

1   Use of AIS data.

2   HELCOM passage lines.

3   Does 'tidying up' traffic flows necessarily make them safer?

6.5   Discussion

Further information on the operation of DUKC was offered and two presentations have been added to the output from the meeting.

It was confirmed that AMSA has investigated the use of S-AIS for pollution investigation. The differences in the situations in the Great Barrier Reef, the Baltic and the Channel were noted and it was acknowledged that AMSA could have something to learn from the operations in the other areas. However, it was pointed out that conditions varied with traffic was funnelled through narrow channel in both the Torres Strait and the Great Barrier Reef and a wide range of activities being pursued off Australia's NW coast. Given the scale of coverage required in Australia the use of S-AIS will be helpful and the application of water space management is being investigated.

It was then asked if the introduction of the Class B AIS transponder has affected analysis. In reply it was said that DaMSA's current approach for heavy traffic areas is to concentrate on the larger ships as the consequences of incidents involving them tend to be greater, although it was acknowledged that the consequences for small vessels could be high too; this is an area for further work.

Finally, it was suggested that with the rising volume of AIS data, it would soon be necessary to provide more space for its transmission.

7   SESSION 6 – USE CASES

Chaired by Mr Ómar Frits Eriksson, DaMSA.

7.1   West Indian Ocean Marine Highway Project (WIOMHP) – Jean Laporte, SHOM on behalf of RAdm Neil Guy, South African Navy

Abstract of presentation

The Western Indian Ocean Marine Highway, together with the Malacca Strait Marine Highway, is a US$ 26 M test project supported by most international maritime organisations (IMO, IHO, IALA, etc.) and a number of donors coordinated by the World Bank, with a view to preserve the coastal and marine environments. It comprises two main objectives: prevent ship contamination and strengthen the riparian states capacity to respond to oil spills.

Most of the project targets are well on the way or have been completed and the project should be terminated at the end of 2012 and possibly followed by a second phase.

The WIOMH project organisation and results have been considered successful enough by the World Bank to be submitted to the Union for the Mediterranean for consideration, and a new Marine Highway is being envisaged between Gibraltar and the Suez Canal.

The key points of the presentation were:

1   Definition of a Marine Highway.

2   The WIOMHP progress and achievements.

3   Follow-up and lessons learnt.

4   An example of WIOMHP technical experiment: the Marine space chart.

5   A WIOMHP distant consequence: the Southern Mediterranean Marine Highway.

7.2   The application of IALA Net in China – Mr Lu Yongqiang and Hou Anjian, China Maritime Safety Administration

Abstract of presentation

Base on the IALA-NET data, China MSA is developing a new application system. This system can provide chart management, AIS target searching, history data analysis, AIS target grouping, IS message broadcasting service, Area Statistics and 3D Virtual port displaying. Especially introduce the 3D Virtual port displaying; the voyager can know the port information by view the media of 3D Virtual port from Internet. In the future, AIS target data can be used into 3d virtual simulation. Though the system is still on testing, China MSA is making great efforts to promote the development of IALA-NET.

The application system which showed in the presentation is developed by Shanghai NavStar technologies Co. This company provides solution of AIS network system, and developed many application software for China MSA, such as using in ECDIS, VTMIS , vessels management , Maritime investigation and so on.

The key points of the presentation were:

1   IALA-NET Data application

2   3D virtual port

7.3   Sharing data between VTS Centres – Mr René Hoogendoorn, HITT Traffic

Abstract of presentation

This presentation introduced the main elements of IALA Recommendation V-145 on Inter-VTS Exchange Format Service, which was recently approved. It considers the change in architecture of VTS systems to accommodate data sharing. The concepts of "Domain of Interest" and "Domain of Responsibility" were introduced to guide data sharing agreements. The IVEF data model and exchange format for the vessel traffic surveillance image were outlined. Finally, the architecture to control the information flow was explained.

The key points of the presentation were:

1   Common Data Format.

2   Traffic Image Distribution.

3   Domain of Responsibility/Interest.

7.4   What the user wants – Lt Mayumi Arita, Japanese Coast Guard, on behalf of Cdr Hideki Noguchi

Abstract of presentation

The Global Sharing of Maritime Data, such as by IALA-NET, will be a key to the future of e-Navigation. However, Japan Coast Guard does not participate in the system, although Japan Coast Guard operates the nation-wide AIS shore based network and gathered the AIS data.

This presentation introduces results of a questionnaire survey of the commercial sector, such as shipping companies and shipping agents in Japan. The survey was conducted by the Japanese government regarding the usage of the government gathered AIS data. The results showed what prevents Japan Coast Guard from participating in the system and what would be needed for facilitating the participation in and the expansion of the Global Sharing of Maritime Data.

The key points of the presentation were:

1   The present situation of JCG regarding AIS data.

2   The results of a questionnaire survey regarding the gathering of AIS data in Japan.

3   The requirement for participation in and expansion of date sharing.

7.5   Discussion

There was a question about the validity of certain messages used in IVEF, which it was agreed would be answered 'off line'.

The apparent contradiction in JCG's current view that AIS data does not need to be exchanged and its recent (August 2011) joining of MSSIS was raised. This could not be fully answered and it was agreed that the point would be referred back to JCG.

It was then asked that if the current view about the sensitivity of AIS data at IMO were to be modified, would this encourage JCG to exchange AIS data. This question too would be referred to JCG.

It was then observed that many countries do not have a full understanding of AIS and, not for the first time in the workshop, it was suggested that there is a debate to be had about IMO's latest stated view on the exchange of AIS data.

8   SESSION 7 – LEGAL, SECURITY AND POLICY

Chaired by Mr Bill Cairns, United States Coast Guard.

8.1   Towards an integrated maritime data environment – M Gaetan Fabritius, Collecte Localisation Satellites (CLS)

Abstract of presentation

Space offers today several capabilities for maritime security and safety applications, from observation or communication solutions. Within the communication solutions the successful implementation in 2008 of the Long Range Identification & Tracking (LRIT) system has been a great achievement for the maritime community, providing for the first time maritime authorities with a global picture of the worldwide maritime traffic. In parallel, the recent technical achievements on the space capture of Automatic Identification System (AIS) information today open new perspectives for global ship tracking activities.

As a first step, this presentation aims at proposing an objective comparison between 2 complementary systems (LRIT and AIS collection by space). Such a comparison will be made relying on operational experience and feedbacks from the LRIT environment and experimental pilot projects using today available SAT-AIS capabilities. Then, the presentation will illustrate added value of combining these two systems with other EO assets, on several use cases: maritime surveillance, search & Rescue, Piracy and illegal fishing detection. Today, CLS is in charge of the implementation of a SAT-AIS Data Processing Centre for the European Maritime Safety Agency (EMSA) and European Space Agency (ESA), which will also be introduced in the presentation.

SAT-AIS is indeed a key technology for Maritime Domain Awareness for the years to come.

The key points of the presentation were:

1   SAT-AIS

2   LRIT

3   CISE (Common Information Sharing Environment)

4   EO (Earth Observation)

8.2   Integrity aspects of data security – Mr Staffan Nordlöf, Kongsberg Norcontrol IT AS

Abstract of presentation

The presentation highlights a number of issues concerning information integrity related to the maritime domain and e-Navigation in particular. Starting with the actual definition of the subject and thereafter illustrating some specific concerns and examples. General aspects on integrity checking are given as well as some examples illustrating specific scenarios.

The key points of the presentation were:

1   What is integrity?

2   The Information chain.

3   e-Navigation challenges.

4   Integrity checking and issues.

8.3   Legal aspects of remote sensing activities – Prof. Dr Lesley Jane Smith, Leuphana University Lüneburg

Abstract of presentation

The presentation discusses how the current vessel tracking systems based on AIS and satellite generated data can be looked at from a legal perspective. It discusses whether current satellite data policies can serve as suitable prototypes for developing AIS-satellite vessel tracking data policies in this field. With an increase in the providers of data tracking tools expected, decisions are needed on issues such as data control, data availability, access and use. Not only does this need timely discussion about the content of such policies; these must be agreed at the appropriate international level; while national regulatory systems already dictate which authorities have access, data is often provided in practice on the basis of simple exchange. This means brining the various satellite operators and international maritime authorities together. Overlaying different sources of data leads to new data products, requiring new decisions about their control. Not all satellite data policies allow re-use of their data for further processing. It is important to consider not only legitimate uses, but also misuses and user communities that genuinely require information. Signal and tracking systems raise questions of legitimate ownership, access and use. The talk highlights select satellite data policy provisions and reflects on synergies that may be gained from these sources in an era where the internet, smart phone applications and freedom of information rules permit a high degree of access to (non-secure) information.

The key points of the presentation were:

1   Status of AIS and satellite-derived data.

2   Ownership and access to data.

3   Developing coherent policies for accessing vessel tracking data at international level.

4   SLA's.

5   Data integrity.

8.4   US policy on sharing AIS data – Lt Cdr Mike McBrady, United States Coast Guard

Abstract of presentation

The presentation summarizes the U.S. Coast Guard's approach to the use of AIS data to achieve Maritime Domain Awareness in support of maritime safety, security and stewardship objectives. The agencies current AIS data sharing policy is described and several examples of enhanced interagency and international collaboration resulting in improved mission performance are discussed.

The key points of the presentation were:

1   AIS vs. Nationwide AIS.

2   Use of AIS in support of Maritime Domain Awareness.

3   U.S. Coast Guard Data Sharing Policy.

4   Interagency and Intergovernmental AIS Data Sharing Success Stories.

8.5   Discussion

There was a discussion about the ability of the USCG to release the AIS data that it holds to third parties. It was explained that the current operation, involving S-AIS, is in an R&D phase for which specific release terms had been agreed with the S-AIS data providers.

It was clear from Professor Smith's presentation that there is much to learn about the legal aspects of releasing maritime data and that the conditions under which it has been provided originally need to be understood.

It was then observed that releasing data provided by some countries could be contrary to that country's national legislation governing data release.

There was then an observation that until AIS data is encrypted there is no practical way to stop anyone gathering AIS data.

9   SESSION 8 – TECHNICAL SOLUTIONS

Chaired by Dr Nick Ward, GLA R&RNAV.

9.1   Data Exchange Technology – Mr Poul Bondo Andersen, Gatehouse

Abstract of presentation

Based on experiences gained through work some of the maritime administrations around the world a need has been identified for providing a uniform and consistent method for distributing data between authorities based on mutual trust and secure data connections.

The presentation will provide insight to an E.U. sponsored project 'Mona Lisa' which will provide an application for handling secure data communication between authorities which includes authentication and encryption for some of the standard protocols that are available.

The key points of the presentation were:

1   Data Communication

2   Authentication

3   Encryption

9.2   Data Exchange Standards – Dr Nick Ward, GLA R&RNAV

Abstract of presentation

The first of the high-level generic user needs for e-Navigation identified at IMO NAV 54 was a Common Maritime Information/Data Structure.

This information should be provided in an internationally agreed common data structure. Exchange of digital information requires international standards - information automatically compiled and automatically understood.

Relevant systems and standards already exist and IALA Guideline 1072 on Aids to Navigation Information Exchange & Presentation identifies standards and advises on implementation.

The key points of the presentation were:

1   Common Maritime Information/Data Structure.

2   Internationally agreed common data structure;

3   Information automatically compiled and automatically understood;

4   Relevant systems and standards already exist;

5   IALA Guideline 1072 identifies standards and advises on implementation.

9.3   SafeSeaNet / Single Window – Mr Jarle Hauge, Norwegian Coastal Directorate

Abstract of presentation

The presentation is based upon the Norwegian efforts to establish a message and exchange system for ship reporting. Based upon the European Safe Sea Net (SSN), Norway established SSN in 2005 and the national single window (SSN-Norway) in 2009.

The presentation explained the reporting obligations for ships entering Norwegian waters and ports. The current implementation of the system emphasizes on the regulatory reporting requirements (Electronic Port Clearance), more than fulfilling information requirements related to international trade. Currently the system handles on average over 7000 ship reports every month.

An important concept within the system is the concept of the Voyage object. Having the voyage as the central object it is possible to lodge all the information that are associated with the ship call to ports and to any port in the future, this way keeping track of ship call and cargo history on a particular ship.

Another important system concept is the Wizard approach, where the reporting are Purpose and Role based.

The presentation also dealt with the technical solution for message exchange within Norway, and explained communication towards EU systems using defined XML schemas.

The key points of the presentation were:

1   Scope of implementation.

2   Reporting and system concepts.

3   Information collection and exchange.

4   Technical solution.

9.4   Overview of current technical approaches – Mr George Best, ORBCOMM

Abstract of presentation

The presentation deals with the various technologies that are available in the maritime world that monitor shipping and provide an assortment of data that can be fused or combined with data for various shipping agencies around the world. From security to environmental, vessel management to search and rescue, the exchange of data already exists and examples of these exchanges are briefly explained

The key points of the presentation were:

1   Assortment of technologies and services.

2   Levels of exchange of data.

3   Examples of fusion and blending of data.

9.5   Integrating VTS Systems – Dr Francesco Frau, SELEX Sistemi Integrati

Abstract of presentation

The main lesson learnt from the installation of widely distributed VTS integrated systems, is the mandatory need to select from all the information existing at all the levels of the system, the essential parts to be distributed.

External Systems' integration is performed in order to enable VTMS operators to manipulate heterogeneous data as if they were local to the System. In the same way the relevant data generated internally are exported to remote External Systems with receiver-defined format characteristics and flow timing.

Example of VTMS System data flow that have been integrated from external systems are:

- NMEA application-layer protocol over (secured) TCP/IP data streams,

- SOAP-based web-services with authentication and TLS protection.

The data flow can be conveniently based on web-services, on condition to protect the information by means of secure authentication mechanism, encapsulated into TLS tunnels to provide both data confidentiality and integrity.

The whole networked architecture of the Integrated VTS Systems developed by SELEX Sistemi Integrati have been leaded from the installed systems toward an open framework compatible with the existing standards and therefore ready to exchange data with all the other standardized systems through the existing infrastructures such as IALA-NET.

The key points of the presentation were:

1 Data sharing in an integrated system is only apparently easier than among heterogeneous elements,

2 Selection of the information available to build the best 'Common Operational Picture',

3 Discussion on the optimal architecture of an integrated system to reconcile the need to share much more data with the limited bandwidth available,

4 Extend the concept of 'sensors sharing' beyond the coastline.

9.6 Discussion

Two questions were asked of Selex Sistemi Integrati.

What range is achieved for oil spill detection, to which the answer was typically 16 – 20nm

What is the business model for sharing radar information between ships and shore. The response was that this functionality is currently aimed at anti-piracy and is operational in Yemen. It is not currently part of a commercial undertaking and is not contemplated for oil spill detection.

10 SESSIONS 9 – 12 – WORKING GROUPS

The sessions were co-ordinated by Mr Ómar Frits Eriksson.

As many delegates, especially presenters were no able to attend the workshop for the four days, the number available for the Working groups was reduced. A list of Working Group participants is at ANNEX A.

At an initial briefing, the scene was set by a short presentation on the RAMBOLL Free Flow Model and an introduction to the current guidance (IALA Recommendation E-142 on Maritime Data Sharing 'IALA-NET'.

The workshop delegates then split up into three Working Groups, to work on three topics:

Working Group 1   User needs   Chaired by Mr Mike Sollosi, USCG

Working Group 2   Legal, policy & security   Chaired by Mr Bill Cairns, USCG

Working Group 3   Technical solutions   Chaired by Dr Nick Ward, GLA R&RNAV &

                                                       Mr Ómar Frits Eriksson

In discussion it was agreed that the Working groups should focus on the exchange of both data and information, rather than just exchanging data, as this would influence their work.

11 SESSION 13 – PLENARY

Chaired by Mr Ómar Frits Eriksson, DaMSA.

Ómar Frits Eriksson ran through the activities that still had to be completed, beginning with a review of the draft Guideline and then a review of the draft workshop report. He explained that, at the end of the workshop, the draft Guideline would not be complete. Once the document had been edited for formatting, **it would be posted on the FTP server and be open to comments from**

delegates until 30 September 2011 (mike.hadley@iala-aism.org). Anyone forwarding comments via changes to the draft document were asked to do so using track changes.

A revised version would then be reviewed by the IALA Policy Advisory Panel (PAP), which would decide whether the document was suitable for submission to the IALA Council or, if not, what further work is required and who should undertake it.

The structure of the draft Guideline was then introduced before the Working Group Chairmen spoke to their specific sections, explaining their approach to the work. A detailed review took place, with the document being revised in the light of comments made from the floor.

The result was briefly reviewed by the Chairman, encouraging the provision of additional comment and highlighting significant points and areas already identified as requiring additional work.

The workshop then reviewed the draft conclusions and the workshop report. The workshop conclusions are at ANNEX D.

It was agreed that the issue of the need to review the current policy at IMO regarding the distribution of AIS data would be undertaken by the e-Navigation Committee. Mr Bill Cairns undertook to act as a focal point for those not attending the Committee.

This concluded the work of the workshop.

12   SESSION 14 – PLENARY

Chaired by Mr Ómar Frits Eriksson, DaMSA.

The Chairman expressed his satisfaction at the results achieved and his gratitude for the hard work that had gone into achieving them.

The Secretary-General remarked on the importance of the work undertaken and expressed his gratitude for what had been achieved. He first thanked DaMSA for raising the suggestion for the workshop, before thanking the speakers, delegates, Chairman and Chairs of the Working Groups and the Secretariat for what had clearly been a successful and enjoyable workshop. He then wished everyone a safe journey home.

ANNEX A   LIST OF DELEGATES

Australia   Australian Maritime Safety Administration (AMSA)
Mr Nick Lemon
G.P.O. Box 2181
Canberra, ACT 2601
Australia

Phone:	+61 2 62795656
Fax:	+61 2 417297415
e-mail	nick.lemon@amsa.com.au

OMC International (Europe) Ltd.

Mr Jonathon Pearce
6 Paterson Street
Abbotsford
Melbourne Victoria
Australia

Phone:	+61 3 9412 6500
Fax:	+61 3 9415 9105
Mobile phone:	+44 7833517006
e-mail	jonp@omc-international.com

Bulgaria   **Bulgarian Ports Infrastructure Company**

Mr Kiril Ivanov
69 Schichenski
Prohod Sofia
Bulgaria

Phone:	+359 52 687 970
Fax:	+359 52 632 832
Mobile phone:	+359 889 83 4339
e-mail:	k.ivanov@bgports.bg

Canada   **exactEarth**

Mr. Robert Tremlett
60 Struck Ct
Cambridge, ON
N1R 8L2
Canada

Phone:	+ 1 519 620 5867
Mobile phone:	+44 7809 496 447
e-mail:	robert.tremlett@exctearth.com

China   **China Maritime Safety Administration**
Mr Lu Yongqiang
190 Siping Road
Shanghai 200086
China

Phone:	+ 86 21 65684921
Mobile phone:	+ 86 1350193757
e-mail:	lyq0404@126.com

China Maritime Safety Administration
Mr Hou Anjian
Jiefang South Road N°369
Hexi District, Tianjin
China

Phone: + 86 022 5887 6907
Mobile phone: + 86 186 0261 6907
e-mail

Denmark   **Danish Maritime Safety Administration**

Mr Omar Frits Eriksson
Overgaden Oven Vandet 62B
P.O. Box 1919
DK-1023 Copenhagen K
Denmark

Phone: +45 32 689 598
Fax: +45 32 689 634
Mobile phone: +45 21 676 644
e-mail: ofe@frv.dk

Danish Maritime Safety Administration

Mr. Peter Dam
Overgaden Oven Vandet 62 B
P. O. Box 1919
1023 Kobenhavn K
Denmark

Phone: + 45 32 689 500
Fax: + 45 32 574 341
e-mail: ped@frv.dk

Admiral Danish Fleet Headquarters

Capt. Jorgen Brandt
Sylowsvej 8
DK-4220 Korsor
Denmark

Phone: + 45 58 37 68 68
Fax: + 45 58 37 28 15
Mobile phone: + 45 40 15 29 18
e-mail: boss@mil.dk

GateHouse

Mr. Poul Bondo
Lindholm Brygge 31
DK-9400 Norresundby
Denmark

Phone: + 45 32 689 500
Fax: + 45 32 574 341
e-mail: pba@gatehouse.dk

EU	**European Commission**

Mr Christos Pipitsoulis
Directorate-General for Energy and Transport
Office: DM28 03/13
1049 Brussels
Belgium

Phone: +32 2 296 34 86
Fax: +32 2 296 34 65
e-mail: christos.pipitsoulis@ec.europa.eu

Ecuador	**Navy Oceanographic Institute**

Lt. Jorge Torres
Av 25 de Julio
Via al Puerto Maritimo
Base Naval Sur
Ecuador

Phone: +593 42 48 13 00 ext. 2120
Mobile phone: +593 90 77 59 43
e-mail: jorgetorres_79@hotmail.com

Estonia	**Estonian Maritime Administration**

Mr Alar Siht
Valge 4
11413 Tallinn
Estonia

Phone: +372 6205 580
Fax: +372 6205 586
Mobile phone: +372 5043 835
e-mail: alar.siht@vta.ee

France	**CETMEF**

Mr. Yann Guichoux
155 rue Pierre Bouguer
29280 Plouzance
France

Phone: + 33 (0)2 98 05 88 03
Fax: + 33 (0)2 98 05 67 67
e-mail   yann.guichoux@developpement-durable.gouv.fr

DGITM/DAM/SM11

Mr Jean-Jacques Morvant
DGITM/DAM/SM1
92055 La Défense cedex
France

Phone: +33 (0)1 40 81 73 88
e-mail: jean-jacques.morvant@developpement-durable.gouv.fr

CLS

Mr. Gaetan Fabritius
8-10 rue Hermès – Parc Technologique du Canal
31520 Ramonville St Agne
France

Phone: + 33 (0)5 61 39 37 02
Fax: + 33 (0)5 61 39 47 97
e-mail: g.fabritius@cls.fr

CLS

Mr. Etienne Klein
8-10 rue Hermès – Parc Technologique du Canal
31520 Ramonville St Agne
France

Phone: + 33 (0)5 61 39 37 02
Fax: + 33 (0)5 61 39 47 97
Mobile phone:
e-mail: eklein@cls.fr

AXSMarine

Mr. Youri Simolak
80 rue Taitbout
75009 Paris
France

Phone: + 33 (0)1 53 43 05 71
Fax: + 33 (0)1 53 43 05 73
e-mail: support@axsmarine.com

Germany   **Leuphana University Luneburg**

Prof. Lesley Jane Smith
Weber-Steinhaus & Smith, Bremen
Baumwollboerse
Bremen 28195
Germany

Phone: + 49 421 63 93 60
e-mail: ljsmith@barkhof.uni-bremen.de

Ireland	**Department of Transport, Tourism and Sport**	

Mr Pat Clery
Irish Coast Guard
Leeson Lane
Dublin 2
Ireland

Phone: +353 1 662 0922
Mobile phone: +353 87 74 70 653
e-mail: patclery@transport.ie

Commissioners of Irish Lights

Captain Robert McCabe
Harbour Road
Dun Laghoaire
Co. Dublin
Ireland

Phone: +353 1 271 5541
Fax: +353 1 2715 564
Mobile phone: +353 87 968 2537
e-mail: r.mccabe@cil.ie

Italy   **Italian Coast Guard**

Mr Paolo Renzi
Viale Dell'Arte 16
00144 Roma
Italy

Phone: +39 06 59 08 34 66
Fax: +39 06 59 08 41 22
Mobile phone: +39 33 96 64 77 50
e-mail: paolo.renzi@mit.gov.it

Selex Integrated Systems

Mr Francesco Frau
Via Tiburtina 1231
00131 Roma
Italy

Phone: +39 06 4150 2012
Fax: +39 06 4150 47 33
Mobile phone: +39 335 78 59 656
e-mail: ffrau@alice.it

Japan   **Japan Coast Guard**

Lt Mayumi Arita
c/o IALA-AISM
10 rue des Gaudines
78100 Saint Germain en Laye
France

Phone: +33 (0)1 34 51 70 01
Fax: +33 (0)1 34 51 82 05
e-mail: mayumi.arita@iala-aism.org

Republic of Korea	**ETRI Research Institute**

Mr Byung-gil Lee
161 Gajeong-Dong
Yuseong-Gu
Daejeon 305-350
Republic of Korea

Phone:	+82 42 860 1689
Fax:	+82 42 860 1471
Mobile phone:	+82 10 5397 7686
e-mail:	bglee@etri.re.kr

Netherlands	**Ministry of Infrastructure for the Environment**

Mr Pieter Paap
P O Box 5044
2600 Delft
The Netherlands

Mobile phone:	+ 31 6 466 36 190
e-mail:	pieter.paap@rws.nl

HITT Traffic

Mr René Hogendoorn
P O Box 717
7300 AS Apeldoorn
The Netherlands

Phone:	+ 31 55 543 25 59
Mobile phone:	+ 31 610 925 412
e-mail:	r.hogendoorn@hitt.nl

Norway	**Norwegian Coastal Administration**

Capt. Jon Leon Ervik
Maritime Safety Department
Service Box 2
6002 Alesund
Norway

Phone:	+47 52 73 33 12
Fax:	+47 52 73 32 01
Mobile phone:	+47 991 68 15 38
e-mail:	jon.leon.ervik@kystverket.no

Norwegian Coastal Administration

Mr. Jarle Hauge
P O Box 466
NO-5501 Haugesund
Norway

Phone:	+47 52 73 32 00
Fax:	+47 52 73 33 01
Mobile phone:	+47 951 60 530
e-mail:	jarle.hauge@kystverket.no

Norwegian Coastal Administration

Mr. Bjornar Kleppe
Maritime Safety Department
Kongesn gt 11
6002 Alesund
Norway

Phone: +47 70 23 10 81
Mobile phone: +47 90028347
e-mail: bjornar.kleppe@kystverket.no

Kongsberg Norcontrol IT AS

Mr. Staffan Nordlof
Box 1024
NO-3194 Horten
Norway

Phone: +47 33 08 48 54
Mobile phone: +47 974 10 881
e-mail: staffan.nordlof@kongsberg.com

Directorate of Fisheries

Mr. Tor Glistrup
Service Box 2
6002 Alesund
Norway

Mobile phone: +47 468 12 096
e-mail: tor.glistrup@fiskeridir.no

Spain   **SASEMAR**

Mr. Alfonso Ruiz de Lobera
Calle Fruela 3
28011 Madrid
Spain

Phone: +34 91 755 91 00
Fax: +34 91 755 91 09
e-mail: alfonsorl@sasemar.es

ORBCOMM

Mr George Best
Apartado Correos 54
Esporles 07190
Spain

Phone: +34 971 61 14 28
e-mail: best.george@orbcomm.com

Sweden	**Swedish Maritime Administration**

Mr Ulf Svedberg
Coordinator R&D
S- 601 78 Norrköping
Sweden

Phone:	+46 10 47 84 897
Mobile phone:	+46 708 66 66 62
e-mail:	ulf.svedberg@sjofartsverket.se

SAAB Transpondertech AB

Mr Peter Berglung
Technical Director
Lasblecksgatan 3, Linkoping
Sweden

Phone:	+46 10 47 84 897
Mobile phone:	+46 708 66 66 62
e-mail:	peter.berglung@transpondertech.se

Switzerland	**World Meteorological Organisation (WMO**)

Mr David Thomas
7bis avenue de la Paix
Case Postale 2300
CH-1211 Genève 2
Switzerland

Phone:	+41 22 730 82 41
Mobile phone:	+41 79 425 59 62
e-mail:	dthomas@wmo.int

UK	**MCA Corporate Support (ICT)**

Mr Robert Townsend
Bay 3/1 Spring Place
105 Commercial Road
Southampton SO15 1EG
UK

Phone:	+44 2380 839 683
Fax:	+44 2380 329 429
Mobile phone:	+44 7995 287 836
e-mail:	robert.townsend@mcga.gov.uk

GLA - R&NAV

Dr. Nick Ward
12 Mariners Drive
Swanage
Dorset BH19 2SJ
UK

Phone:	+ 44 1929 426 021
Mobile phone:	+44 7795 367050
e-mail:	nick.ward@r-rnav.org

POLESTAR

Mr Richard Doherty
4th floor, Compass House
22 Redan Place
London W2 4SA
UK

Phone: +44 207 313 7406
Fax: +44 207 313 7401
Mobile phone: +44 78 78 444 827
e-mail: doherty@polestarglobal.com

Marine Accident Investigators International Forum (MAIIF)

Mr. Nicholas Beer
Wisteria Cottage
Hamworthy
Salisbury SP5 2DS
UK

Phone: +44 1794 390 698
Mobile phone: +44 7500 365 351
e-mail: tech@maiif.org

Meteorological Office

Mr Nick Ashton
UK Meteorological Office
FitzRoy Road
Exeter
Devon
EX1 3PB
UK

Phone: +44 1392 885680
e-mail: nick.ashton@metoffice.gov.uk

USA   **U.S. Coast Guard**

Mr. William Cairns
Commandant (CG-54132)
2100 2nd Street SW
Washington DC 20593
USA

Phone: +1 202 372 1557
Fax: +1 202 372 1930
Mobile phone: +1 202 230 8069
e-mail: william.r.cairns@uscg.mil

U.S. Coast Guard (CG-5413)

Mr Mike Sollosi
2100 2nd Street SW
Washington DC 20593-0001
USA

Phone: +1 202 372 1545
Fax: +1 202 372 1930
e-mail: mike.m.sollosi@uscg.mil

US Coast Guard (CG-761)

Lt Cdr Mike McBrady
2100 2nd Street SW
Washington DC 20593-7359
USA

Phone: +1 202 372 2652
Fax: +1 202 372 2902
Mobile phone: +1 202 360 0425
e-mail: mike.t.mcbrady@uscg.mil

National Maritime Domain Awareness Coordination Office (NMCO)

Cdr James Feldkamp
3000 S.Randolph St. No.358
Arlington, Virginia 22206
USA

Phone: +1 202 372 3081
Mobile phone: +1 541 510 5148
e-mail: James.l.feldkamp@uscg.mil

ORBCOMM

Mr Gregory Flessate
22265 Pacific Blvd
Dulles, VA 20166
Spain

Phone: +34 971 61 14 28
e-mail: gregory.flessate@orbcomm.com

Vietnam

Vietnam Maritime Safety North

Mr Ngoc Duc Duong
Maritime Safety Department
282 Da Nang Str.
Hai Phong City
Vietnam

Phone: +84 31 3550 685
Fax: +84 31 3550 797
Mobile phone: +84 90 400 3456
e-mail: ngocduc@vms-north.vn

Vietnam Maritime Safety North

Mr Van Thuan Luu
282 Da Nang Str.
Hai Phong City
Vietnam

Phone: +84 31 3586 918
Fax: +84 31 3550 797
Mobile phone: +84 90 34 37 093
e-mail: vms_office@hn.vnn.vn

Vietnam Maritime Safety North

Mr Sy Tung Pham
80 Trang Hung Dao
Hanoi
Vietnam

Phone: +84 313 568 659
Mobile: +84 913 366 828
e-mail: vms_office@hn.vnn.vn

Vietnam Maritime Safety Authority South

Mr Van Thuan Nguyen
N° 10-3 Thang 2 Str.
Vungtan City
Vietnam

Phone: +84 (0)64 385 44 57
Fax: +84 (0)64 385 83 12
Mobile phone: +84 (0)903 382 09 56
e-mail: nguyenvanthuan@vms_south.nv

Vietnam Maritime Safety Authority South

Mr Tieu Long Tran
N° 10-3 Thang 2 Street Ward 8
Vungtau City
Vietnam

Phone: +84 (0)988647748

FAX: +84 (0)64 385 83 12
e-mail: trantieulong@vms-south.vn

WORLD BANK MARINE HIGHWAY PROJECTS

Ingénieur Général Jean Laporte
(on behalf of RAdm Neil Guy, SAN)
SHOM / IGN
2 avenue Pasteur
94160 Saint Mandé
France

Phone: +33 1 53 66 97 84
Fax: +33 1 41 74 94 25
Mobile phone: +33 6 24 72 36 08
e-mail: jlaporte@shom.fr

IALA AISM

IALA, Secretary General

Mr Gary Prosser
10 rue des Gaudines
78100 Saint-Germain-en-Laye
France

Phone: +33 1 34 51 70 01
Fax: +33 1 34 51 82 05
e-mail: secgen@iala-aism.org

IALA, Accredited Representative to IMO

R-Adm. Jean-Charles Leclair
10 rue des Gaudines
78100 Saint Germain en Laye
France

Phone: +33 4 93 88 25 25
Mobile phone: +33 6 62 29 02 74
e-mail: jean-charles.leclair@iala-aism.org

IALA, Technical Co-ordination Manager

Dr. Mike Hadley
10 rue des Gaudines
78100 Saint Germain en Laye
France

Phone   +33 1 34 51 70 01
Fax   +33 1 34 51 82 05
e-mail   mike.hadley@iala-aism.org

Sister Organisations

Monaco   **International Hydrographic Organization**

Capt Robert Ward
4 Quai Antoine 1er
BP 445
MC-98011 Monaco cedex
Monaco

Phone: +377 93 10 81 01
Mobile phone: +33 6 23 46 30 88
e-mail: robert.ward@ihb.mc

UK   **CIRM - Comité International Radio Maritime**

Ms Frances Baskerville
Southbank House
Black Prince Road
London SE1 7S3
UK

Phone: +44 207 793 2264
e-mail: fb@cirm.org

ANNEX B   WORKSHOP PROGRAMME

IALA WORKSHOP ON THE GLOBAL SHARING OF MARITIME DATA

12 - 15 September, 2011

IALA
10 rue des Gaudines
78100 St Germain en Laye
France

Workshop Programme

DAY 1 - MONDAY 12 SEPTEMBER 2011

Time	Activity	
1300 - 1400	**Registration / Welcome tea or coffee**	
1400 - 1415	**Session 1 - Opening of the Workshop**	**Chair: Gary Prosser (IALA)**
	Welcome from IALA	Gary Prosser – Secretary-General IALA
	Administration (Health & Safety Brief)	Mike Hadley - Technical Co-ordination Manager IALA
1415 - 1545	**Session 2 - Sharing data in 2011**	**Chair: Gary Prosser**
1415 - 1435	Introduction to IALA Net	Jean-Charles Leclair – IMO Representative IALA
1435 - 1455	MSSIS	James Feldkamp - USN
1455 - 1515	SafeSeaNet & Single Window in Norway	Jon Leon Ervik - NCA
1515 - 1535	Satellite based AIS	Robert Tremlett – exactEarth
1535 - 1545	Discussion	
1545 - 1630	**Break**	
1630 - 1800	**Session 3 - Sharing data in 2011**	**Chair: Nick Ward**
1630 - 1650	WMO Information System	David Thomas – WMO
1650 - 1710	Exchanging hydrographic data	Robert Ward – IHO
1710 - 1730	Dynamic & proactive route planning – Project Mona Lisa	Ulf Svedberg – SMA Peter Berglung – SAAB Transpondertech
1730 - 1750	Use of IALA Net in e-Navigation	Nick Ward – GLA R&RNAV
1750 - 1800	Discussion	

1800 – 1900 Welcome reception at IALA (Drinks and Finger Buffet will be served) Free evening

DAY 2 - TUESDAY 13 SEPTEMBER 2011

Time	Activity	
0900 - 1030	**Session 4 – User needs & Applications**	**Chair: Jean-Charles Leclair (IALA)**
	Administrative Details (as required)	Mike Hadley
0900 - 0920	Risk Analysis	Ómar Frits Eriksson – DaMSA
0920 - 0940	Coastal Marine Spatial Planning	Mike Sollosi – USCG
0940 - 1000	Data exchange in e-Maritime	Christos Pipitsoulis – DGMove
1000 - 1020	Accident investigation	Nick Beer – MAIIF
1020 - 1030	Discussion	
1030 - 1100	**Break**	
1100 - 1230	**Session 5 – Use Cases / Enforcement**	**Chair: Mike Sollosi (USCG)**
1100 - 1120	Fisheries	Tor Glistrup - Norwegian Directorate of Fisheries
1120 - 1140	Environment	Nick Lemon - AMSA
1140 - 1200	Co-operative VTS	Jean-Jacques Morvant – DGITM/DAM/SM1
1200 - 1220	Use of shared AIS data	Omar Frits Eriksson – DaMSA
1220 - 1230	Discussion	
1230 - 1400	**Lunch**	
1400 - 1530	**Session 6 – Use Cases**	**Chair: Ómar Frits Eriksson (DaMSA)**
1400 - 1420	Western Indian Ocean Marine Highway	Jean Laporte – SHOM (on behalf of Neil Guy, WIOMHP Regional Co-ordinator)
1420 - 1440	The application of IALA net in China	Lu Yongqiang / Hou Anjian - China MSA
1440 - 1500	Sharing data between VTS centres	René Hogendoorn – HITT Traffic
1500 - 1520	What the user wants?	Mayumi Arita – JCG on behalf of Cdr Hideki Noguchi

Time	Activity	
1520 - 1530	Discussion	
1530 - 1600	**Break**	
1600 - 1730	**Session 7 – Legal, security & policy**	**Chair: Bill Cairns (USCG)**
1600 - 1620	Towards an integrated maritime data environment	Gaëtan Fabritius - CLS
1620 - 1640	Integrity aspects of data security	Staffan Nordlöf - Kongsberg Norcontrol
1640 - 1700	Legal aspects of remote sensing & data sharing	Lesley Jane Smith – Barkhof University
1700 - 1720	US AIS data sharing – policy & practice	Mike McBrady – USCG
1720 - 1730	Discussion	

Free evening

DAY 3 - WEDNESDAY 14 SEPTEMBER 2011

Time	Activity	
0900 - 1030	**Session 8 – Technical solutions**	**Chair: Nick Ward (GLA R&RNAV)**
	Administrative Details (as required)	Mike Hadley - IALA
0900 - 0920	Data exchange technologies	Poul Bondo Andersen - Gatehouse
0920 - 0940	Data exchange standards	Nick Ward – GLA R&RNAV
0940 - 1000	The establishment of a Single Window in Norway	Jarle Hauge – NCA
1000 - 1020	Overview of current technical approaches	George Best – ORBCOMM
1020 - 1040	Integrating VTS systems	Francesco Frau – SELEX Sistemi Integrati
1040 - 1045	Discussion	
1045 - 1115	**Break & Workshop Group Photograph**	
1115 - 1245	**Session 9 – Working Groups (WG)**	**Co-ordinator: Ómar Frits Eriksson (DaMSA)**
	WG1 – User needs	Mike Sollosi – USCG
	WG2 – Legal, policy & security	Bill Cairns – USCG
	WG3 – Technical solutions	Nick Ward – GLA R&RNAV
1245 - 1400	**Lunch**	
1400 - 1530	**Session 10 – Working Groups**	**Co-ordinator: Ómar Frits Eriksson (DaMSA)**
1530 - 1600	**Break**	
1600 - 1730	**Session 11 – Working Groups**	**Co-ordinator: Ómar Frits Eriksson (DaMSA)**

Workshop Dinner – Restaurant Côté Sud, Maisons-Laffitte
Transport provided from / to hotels – initial pickup (Hotel du Coq) 1900
Dress Code: Smart Casual

DAY 4 - THURSDAY 15 SEPTEMBER 2011

Time	Activity	
0900 -1030	**Session 12 – Working Groups**	**Co-ordinator: Ómar Frits Eriksson (DaMSA)**
	Administrative Details (as required)	Mike Hadley
1030 – 1100	**Break**	
1100 – 1230	**Session 13 – Plenary**	**Chair: Ómar Frits Eriksson (DaMSA)**
	Review draft documentation	
1300 – 1400	**Lunch**	
1400 – 1600	**Session 14 – Plenary**	**Chair: Ómar Frits Eriksson (DaMSA)**
1400 – 1515	Complete review of draft documentation	Ómar Frits Eriksson
1515 – 1545	Discussion & Workshop Debrief	Ómar Frits Eriksson
1545 – 1600	Closing of the workshop	Gary Prosser

ANNEX C   WORKING GROUP PARTICIPANTS

Working Group 1   User needs

	Name	Organisation / Country
1	Mike Sollosi (Chair)	United States Coast Guard
2	Frances Baskerville	CIRM
3	George Best	ORBCOMM, Spain
4	Jorgen Brandt	Great Belt VTS, Denmark
5	Patrick Clery	Irish Coast Guard
6	Peter Dam	DaMSA, Denmark
7	Richard Doherty	POLESTAR, UK
8	Alfonso Ruis de Lobera	SASEMAR, Spain
9	Robert McCabe	Commissioners of Irish Lights
10	Staffan Nordloff	Kongsberg Norcontrol IT, Norway
11	Pieter Paap	Netherlands Ministry of Infrastructure and the Environment
12	Jonathan Pearce	OMC International, Australia
13	Jorge Torres	INOCAR, Ecuador
14	Robert Ward	IHO
15	Lu Yongqiang	China MSA

Working Group 2   Legal, policy & security

	Name	Organisation / Country
1	Bill Cairns (Chair)	United States Coast Guard
2	Greg Flessate	ORBCOMM, USA
3	Bjørnar Kleppe	Norwegian Coastal Administration
4	Jean Laporte	SHOM, France
5	Jean-Charles Leclair	IALA
6	Mike McBrady	United States Coast Guard

Working Group 3   Operations

	Name	Organisation / Country
1	Nick Ward (co-Chair)	GLA R&RNAV, UK & Ireland
2	Ómar Frits Eriksson (co-Chair)	DaMSA, Denmark
3	Hou Anjian	China MSA
4	Lee Byung gil	ETRI, Republic of Korea
5	Yann Guichoux	CETMEF, France
6	Jarle Hauge	Kystverket, Norway
7	René Hogendoorn	HITT Traffic, the Netherlands
8	Kiril Ivanov	BPI Co., Bulgaria
9	Paolo Renzi	Italian Coast Guard
10	Alar Siht	Estonian Maritime Administration
11	Robert Townsend	MCA, UK

ANNEX D   WORKSHOP CONCLUSIONS

1   IALA plays an important role in supporting the maritime community with respect to safety of navigation, efficiency of maritime transport and protection of the environment.

2   Maritime Authorities and other stakeholders have a need for a variety of maritime data and information in order to fulfil their responsibilities in matters of safety, security, efficiency of maritime transport and protection of the marine environment.

3   Organisations that originate maritime data and information should develop policies for its dissemination and usage taking note of policies of the greater maritime community concerning the distribution and use of data. Such policies should aim at maximizing the benefit for maritime safety, efficiency of maritime transport, security and protection of the marine environment.

4   A better understanding of the legal implications of gathering and disseminating maritime data and information, and in particular satellite gathered, is needed.

5   There is a need to revisit internationally agreed principles regarding the sharing of AIS data.

6   Commercial services providing maritime data and information to maritime authorities play an important role in ensuring a high quality and reliable supply of such data and information.

7   There remains a need to support and enhance effective data exchange systems capable of exchanging important maritime real-time and historical data and information across national and regional boundaries for the benefit for maritime safety, efficiency of maritime transport, security and protection of the marine environment.

8   It is important to agree upon suitable data models ensuring a proper exchange of maritime data and information, and there is a further need for a Common Maritime Data Structure and associated S-100 registry.

9   Taking into account parallel developments in other similar systems IALA should continue the further development of IALA-NET supplying a variety of maritime data and information to its members supporting them in fulfilling their responsibilities in matters of safety, security, efficiency of maritime transport and protection of the marine environment.