**AUSTRALIA’S CONTRIBUTION TO THE DEVELOPMENT OF**

**THE IMO E-NAVIGATION STRATEGY IMPLEMENTATION PLAN**

1 The implementation plan should identify responsibilities to the appropriate parties, IMO, other international organizations, States, users and industry, as well as timelines for implementation actions and reviews.

**IHO** should commence work, as soon as possible, on S-100 e-navigation data dictionaries. (Data dictionaries are like the International Code of Signals alphanumeric code, where whoever receives a message, regardless of language, knows what it means).

In practical terms, this means that both the receiving and sending equipment must be loaded with the data libraries containing these standardised data dictionaries. This will result in a ubiquitous communicator that everyone can use. It is vital for VDES to function efficiently and in a ‘language-independent’ manner.

It will enable the e-navigation community to have a seamless autonomous communication means. In other words, everybody can speak with everybody else. However, this will have a major impact on equipment manufacturers.

Estimated timing for IHO to complete work – 3 years

**IALA**

IALA should workshop the concept of VMAS and consider the components and processes required to enable VMAS.

IALA should also explore any linkages with VTS, aids to navigation, in particular electronic aids to navigation, and any integration issues between VMAS and physical aids to navigation.

**IMO**

As VMAS will impact on SAR, GMDSS, VTS and ship reporting and routeing systems, IMO should coordinate the ‘project’ and liaise closely with other international bodies as regards their roles and responsibilities

IMO should consider VMAS as a replacement to ship reporting systems – be they recommendatory, mandatory or IMO-adopted.

In order to assess individual ship risk in administrations’ waters comprehensively, dynamic and static info on individual ships (such as ship cargo and voyage, speed, routeing information) is required. Some of this information often resides with coastal port or flag state.

A mechanism should be established to:

Identify and locate where this info is held

Enable the exchange of this info as and when required

IMO need to develop a performance standard ASAP, followed by an IEC Test Standard. Some manufacturers have indicated that all that will be required to change AIS to VDES will be a firmware upgrade on modern AIS equipment

**ITU**

Noting that NAV has been invited (by the IMO Secretariat) to consider the developments in relation to VDES, it is important for NAV to understand the critical nature of the work of WP 5B of ITU to facilitate securing of frequencies for the VDES.

There will be buy-in required from relevant shipping organisations. For example, INTERTANKO has been working with its membership to establish a ‘virtual arrival’ system concept, which considers the relationship between fuel savings and demurrage. There are other practical aspects of optimal time of arrival (OTA) that need to be considered.

2 A stable and realistic implementation plan will create forward enthusiasm and momentum for e-navigation across the maritime sector. The implementation plan should identify responsibilities and appropriate methods of delivery.

Implementation of the strategy will also need to take into account promotion of the e-navigation concept to key stakeholder and user groups.

AVMAS has manifold benefits – reduction in risk, improvement in safety, protection of the environment, increased efficiency, and cost savings.

However, the over-riding legal aspects of advice offered by AVMAS and the associated obligations and responsibilities needs to be ascertained. For example, where will responsibilities lie when advice is (or is not) taken, and an incident happens (or does not happen). This could be a catalyst to resolve the wider problem of advice being given without any associated responsibility for that advice.

3 A structured approach will be required to capture evolving user needs, making use of the existing agreed methodology, to incorporate any ensuing changes into the strategy and implementation plan.

If there is a move to ‘advise’ ships at sea re their speed, there are implications for ship and engine design, ships routeing systems, bridge teams may need to be retrained. There are UNCLOS, SOLAS. MARPOL, STCW and COLREG implications.

4 The strategy implementation plan should include priorities for deliverables, resource management and a schedule for implementation and the continual assessment of user needs. The deployment of any new technologies should be based on a systematic assessment of how the technology can best meet defined and evolving user needs. Cooperation with relevant maritime test beds and other projects should be maintained throughout the implementation process in order to benefit from synergies.

AVMAS is a concept and structure …it is adaptable and is not technology specific.

5 The SIP should contain chapters detailing the work required to bring into being each of the identified e-navigation solutions and their corresponding RCOs. This will involve identification of regulatory and technical requirements to be undertaken. A further topic to cover will be the monitoring of any significant changes to training regimes.

VMAS / AusSeaNet or SouthSeaNet fits under both RCO 4 & 6.

RCO 4: Automated and standardized ship-shore reporting

The basis for RCO 4 include e-navigation sub-solutions 2.1, 2.2, 2.3 and 2.4 from the 2012 report of the CG to NAV 58 (page 25 of the report of the CG to NAV 59 refers)

RCO 6: Improved shore-based services

The basis for RCO 6 includes e-navigation sub-solutions: 4.1.3 and 9 from the 2012 report of the CG to NAV 58 (page 28 of the report of the CG to NAV 59 refers).

These RCOs are also addressed in the cost-benefit section of the CG report to NAV 59 (RCO 4 on page 33 and RCO 6 on page 35)

6 Additional research tools that could be used for further and more detailed analyses on particular e-navigation solutions should be considered.

AMSA has been presented with a high level outline of AVMAS. Further work on all aspects (i.e. communications and data exchange, infrastructure, policy and operational procedures, legal instruments, and communications and consultation with stakeholders) will be required.

7 The SIP will also need to cover transition planning, taking into account the phasing needed to deliver early benefits and to make the optimum use of existing systems and services in the short term. The plan should be phased such that the first phase can be achieved by fully integrating and standardizing existing technology and systems and using a reduced concept of operations. Subsequent phases should develop and implement any new technology that is required to deliver the preferred architecture and implement the overall concept of operations.

Migrating MASTREP to AVMAS hinges on the items listed in #6 above. Technology is the limiting factor. Therefore, currently, Option 2 (using existing communications means, including LRIT) would enable AMSA to:

* Monitor whether the current actions of a vessel pose a risk by:
  + Dynamic behaviour of the vessels,
  + Route of the vessel.
* Ascertain the level of risk posed;
  + By the type of cargo carried and
  + Status of Port State Control inspections.
  + Historic behaviour anomaly information.
* Provide advice to ships using their existing GMDSS communication fit[[1]](#footnote-1)

However, it would be necessary to develop to options 3 or 4 to enable AMSA to:-

* Use automatic and seamless language independent communications to provide advice directly to portrayal equipment.
  + Communications could only be in plain text or by voice and not by language independent means.
* Benefit from the ability to update and request information as comprehensively as would be the case with VDES.
  + Requests for additional information may be delayed, or not forthcoming.
* Use multihop protocols to extend range of terrestrial VDES
* Use VDES for communicating via satellite information to vessels within remote offshore and coastal areas of MASTREP.
* Have persistent coverage over remote areas of great environmental concern.

8 Also needed within the SIP are processes for review and capturing lessons learned. e-navigation is not a static concept, and that development of logical implementation phases will be ongoing as user requirements evolve and also as technology develops enabling more efficient and effective systems. However, it is critical that this development takes place around a stable set of core systems and functions configured to allow extension over time.

9 The responsibilities that come with IMO ownership and control of the concept include:

.1 development and maintenance of the vision;

.2 definition of the services including their scope in terms of users and geography, and the concept of operations;

The overall concept is good and evolutionary, building upon existing components or upon long-established principles.

For the ship, the concept is to provide support – but this needs caution and should not create any conflict of instructions or of responsibility.

Also for the ship, it will streamline reporting – but this needs caution that it does not also increase the amount of what is to be reported.

Industry needs to be consulted and taken along with these concepts.

.3 identification of responsibilities for the design, implementation, operation and enforcement of e-navigation, acknowledging the rights, obligations and limitations of flag States, coastal States, port States and the various authorities within those States;

.4 defining the transition to e-navigation in a phased approach, enabling the realization of early benefits and the reuse of existing and emerging equipment, systems and services;

.5 taking the lead in setting the performance standards appropriate for e-navigation covering all the dimensions of the system: ship borne, ashore and communications. These standards should be based on user needs and should encourage technology neutrality and interoperability of system components;

.6 ensuring that the concept accommodates and builds on existing maritime systems and funding programs;

.7 facilitating access to funding from international agencies, such as the World Bank, the regional Development Banks as well as international development funding;

.8 assessing and defining the training requirements associated with e-navigation and assisting the relevant bodies in developing and delivering the necessary training programs;

.9 monitor the implementation of the concept to ensure that contracting States are fulfilling their obligations and ensuring that e-navigation users within their jurisdiction are also complying with requirements; and

.10 leading and coordinating the external communications effort necessary to support the case for e-navigation.

10 In sum, the SIP will be a phased implementation schedule, including roadmaps to clarify common understanding necessary for the implementation.

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1. It should be noted that there would be no certainty whether that advice had been received, or seen by a the bridge team of a vessel, or indeed acted upon. [↑](#footnote-ref-1)