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| From: ENAV Committee | ARM4-3.4.1 (ENAV18-14.1.3) |
| To: VTS and ARM Committees | 18 March 2016 |

LIAISON NOTE

Future Work items identified in the ACCSEAS Legacy Report

# INTRODUCTION

The ENAV Committee would like to inform the VTS and ARM Committees of identified Future Work items to be included in the ENAV Committee’s work program.

# DISCUSSION

At the 18th session of the ENAV Committee, the Future Work items in the ACCSEAS Legacy Report (Annex C) were reviewed and a number of these items were identified as future work items for the ENAV Committee.

A summary of these items and intended actions are provided for information in the attached annex.

Future Work items 67, 70, 73, and 74 were identified as potentially relevant to the VTS and ARM Committees.

# ACTION REQUESTED

1. The VTS and ARM Committees are invited to note the presented information.
2. The VTS Committee is invited to specifically consider inclusion of FW-67, 70, 73, and 74 in its work program.
3. The ARM Committee is invited to specifically consider inclusion of FW-67, 70, and 73 in its work program.

future work items FOR ENAV COMMITTEE From the ACCSEAS Legacy Report (Annex C)

| **Topic** | **Number** | **Future Work** | **Action** | **Working Group** |
| --- | --- | --- | --- | --- |
| **Consequences of e-Navigation** | FW-1 | Administrations, organizations and competent authorities to investigate and determine. collectively (transnational) or individually (national), the consequences of the (future) implementation of e -Navigation taking into account the list of common accepted consequences of e-Navigation (section 2.1.5 of the Legacy Report) on regional and national level, including undertaking a risk analysis (“what if, what if not”) and a cost/benefit analysis. | Prepare an IALA Recommendation | Joint work by WG1 & WG2; WG1 Lead |
| **Communications and Publications as legacy ACCSEAS** | FW-5 | Beneficiaries of the ACCSEAS project are strongly invited, in conjunction with the relevant Guidelines by IMO and IALA, for sharing the testbed results on a central public website [www.enavigation.net](http://www.enavigation.net/) (currently hosted by the Danish Maritime Authority). | Ongoing work by WG2 | WG2 |
| **IMO Strategy Implementation Plan (SIP) after results of actions initiated by IMO/MSC94 and MSC95** | FW-14 | Consequently prior to decisions for and the actual implementation of e-Navigation (Sub-) Solutions as identified in general and particularly by ACCSEAS - as the results provided and final approval by IMO/MSC95 will take place after the ACCSEAS projects ends - further work may be necessary in order to bring the tables mentioned in the sections 6.7.1 and following and as reflected in the “ACCSEAS Baseline and priorities Report” as well as relevant parts of the “ACCSEAS Architecture Report” (e.g. mapping) in line with the results of the actions initiated by IMO/MSC94 and MSC95. | Mapping exercise to identify tasks and associated solutions (identified in the IMO SIP) relevant to IALA’s e-Navigation strategy. | WG2 (start by ENAV19) |
| **Dissemination of ACCSEAS work as building blocks and input to EU Interreg projects, other EU projects and programs** | FW-15 | Dissemination of the relevant work and results of ACCSEAS to EfficienSea 2.0 as building blocks for the further development of for instance the Maritime Cloud, Maritime Safety Information, Route exchange and Route Advice, Automated FAL reporting, digital shore based Infrastructure, Resilient PNT. | N/A |  |
| **e-Navigation Architecture and Standards** | FW-35 | The mapping results and considerations of the candidate solutions reflected in the sections 3.3 until 3.9 of the “ACCSEAS e-Navigation Architecture Report” shall be noted and kept under review once the relevant implementation aspects of these solutions progresses. | These mapping results and considerations can be used as a practical approach to provide the context of ICT solutions in e-Navigation/SMTS. | Relevant WGs and for inclusion in the IALA e-Navigation strategy |
|  | FW-38 | Considering the massive efforts needed to set up all the generic meta-level service descriptions to be contained in any (generic) MSPs Registry and considering also the fact that e-Navigation is most desired by those regions where there is a high demand due to the traffic situation present and future like in the NSR, *it appears prudent to start with setting up a NSR MSPs Registry as a first step for a much broader international development to come and finally replace the NSR MSPs Registry.* | As part of the IALA e-Navigation strategy (under development) a global MSP-registry should be considered and discussed. | Request PAP for concept, then WG4 |
| **Multi Source Positioning Service (MSPS)** | FW-39 | S-100 Product Specifications will be required to be developed for data provided by Technical Services and the Operational Services provided by the Multi-Source Positioning Service. The first step will be the development of data models for the following:  1. Vessel positioning information  2. eLoran ASF data  3. eLoran transmitter almanac data  4. Medium Frequency (MF) R-Mode Transmitter Almanac Data Model  5. AIS (VHF) R-Mode Transmitter Almanac Data Model  6. Differential-Loran Reference Station almanac data | Ongoing | WG4 & WG5, with coordination by WG1 |
|  | FW-40 | *Collaborative Navigation*. With “Collaborative Navigation” the aim would be to take advantage of the availability of the Maritime Cloud to share radio navigation system calibration data (for example eLoran ASFs) with shore-side databases and other vessels. The ACCSEAS Multi-Source Receiver contains all the necessary components to make propagation data measurements that are vital to the functioning of terrestrial radio navigation systems. This data may be collected during normal operations of the receiver installed aboard vessels going about their business. | Further development of collaborative navigation needed. | WG5 |
|  | FW-44 | It would be appropriate to investigate the type approval of a multi-source PNT radio navigation receiver for the ready installation aboard vessels intending to the test MSPS. | IALA may support on the subject the development within RTCM, CIRM and IEC | WG5 providing necessary information and monitoring development. |
|  | FW-46 | Within IALA to further develop and finalize a Guideline on the performance of eLoran services. | Work is already underway on this. | WG5 |
| **Ranging Mode (R-Mode) PNT** | FW-48 | Opportunities for other R-Mode testbeds outside Europe should be explored (taking into account the growing international interest for R-Mode) with the aim to prove usability in different environments worldwide. A partnership with the US Coastguard and the Australian Maritime Safety Agency (AMSA) should be considered. R-Mode testbeds within the scope of the EfficienSea 2.0 project should be explored. | Interest was shown by the mentioned and other administrations. | IALA to keep the membership informed via the IALA Bulletin and the testbed website. |
|  | FW -49 | Future work on the development of R-Mode using MF transmissions from IALA radio beacons shall be done involving the following topics:  • measuring the influence of sky wave and other environmental variations  • measuring the influence of transmitter and receiver setup  • assessment of various R-Mode solutions (based on R-Mode feasibility study) | To incorporate in the work plan 2014-2018 and beyond as proposed by the intersessional meeting (Feb, 2016). | WG5 |
|  | FW-50 | Explore the opportunities to set up and enlarge the testbeds to include transmissions from AIS shore infrastructure. Further tests are needed to show that a full position solution is possible with the technology, providing improved resilience to PNT required onboard vessels. This would be world first for the technology. Opportunities are recognized to use the technology in combination with Real Time Kinematic (RTK) positioning networks, not only covering harbour approaches, port areas and inland waterways, but also providing a candidate Resilient PNT solutions for other transport modalities such as road and rail. | To incorporate in the work plan 2014-2018 and beyond as proposed by the intersessional meeting (Feb, 2016). | WG5 |
|  | FW-54 | Within IALA to develop a Guideline on the performance of R-Mode services. | Guideline to be developed. | WG5 |
| **Absolute Radar Positioning** | FW -55 | To employ the “passive” radar technique, for example, that developed by Russell Technologies, an early version of which was implemented in Vancouver in the 1980s. This system relies on the addition of an interface box to the already existing ship’s radar and cheaper “passive” reflectors rather than e-Racons. The system can even learn the pattern of already existing infrastructure around a port, removing the need for shore-side reflectors altogether. Further work could investigate this latter, more cost-effective method. | Awareness of work ongoing in other forums and maintain a watching brief. | WG5 |
| **The Maritime Cloud** | FW-59 | Further development of the Service Registry is required for facilitation and implementation of the Maritime Service Portfolio (MSP) concept by providing a repository for the specification of operational and technical services and provisioned service instances. The service registry is intended to span all maritime services, not only digital services, thereby making it a single reference point for provision and discovery. The Service Specification Standard finally will have to be determined. | To be considered | Involvement of WG1, WG3 and WG4 |
|  | FW-60 | The need for the establishment of the Maritime Identity in the Maritime Identity Registry and its benefits shall be further promoted and clarified for international support and acceptance. | To be considered | Involvement of WG1, WG3 and WG4 |
|  | FW-61 | The current considerations on issues such as ‘Governance’ and ‘Operations” (use of one or more global datacentres and existing infrastructures, as well as the presumed interactions between ship and shore) require further research and the establishment of understanding and support internationally. | The subject should be further discussed and consequences of the proposed governance shall be clarified. | This may be beyond IALA’s remit, but from IALA’s perspective to be considered by the ENAV Committee, PAP and LAP. |
| **Route Topology Model (RTM)** | FW -67 | Introduce ACCSEAS NSR-RTM as an example in the relevant international and European fora with the aim to produce Recommendations and Guidelines on the development, implementation and use of RTM in conjunction with other instruments and explore the opportunities for support and acceptance of a generic RTM in support to the various identified developments (e.g. SMTS, e-Navigation, e-Maritime, TEN-T). | Review the collection of applications of RTM (Ch5 of 18.10.8.3) and assess their potential for IALA’s domain (this includes the FW68 item). | The operational aspects by VTS and ARM Committees.  The technical aspects by the ENAV Committee. |
|  | FW -68 | In order to be reliably used by different stakeholders and users, even to the extent of using a NSR-RTM for navigation, the NSR-RTM work needs to be re-done after ACCSEAS taking into account the following considerations. By doing this, the NSR may create benefit for itself but also provide relevant input to pan- European projects and initiatives. The relevant proposals for future work as reflected in Appendix C (sections 11.1 and following) of the document “ACCSEAS North Sea Region Route Topology Model (NSR- RTM) - Description and contribution to an international generic RTM definition”, April 2015, should be taken into account and considered. | N/A |  |
|  | FW-70 | Further explored after ACCSEAS should be:  • Integration of RTM into ‘e-Navigation’: Adaptable advance route planning.  • Relationship between routes and collision avoidance: Can there be introduced wrong behavior due to route designations?  • Difference between strategic and tactical use of RTM  • Assessment of safety impact for navigational use of RTM | To be further considered | ARM and VTS Committees and other relevant projects, such as STM, SESAME, and EfficienSea2.0 |
| **Maritime Safety Information/Notice to Mariners Service** | FW -71 | The developments on the MSI/NM service shall be continued under the EU project EfficienSea 2.0 and/or other related e-Navigation projects. The feedback and conclusions as reflected in section 6 of the ACCSEAS document “Service Description: Maritime Safety Information/Notice to Mariners Service”, April 2015, shall be incorporated in this future work. | Under development | WG1 and WG4 |
| **Intended Route Service** | FW -72 | The Intended Route service shall be further developed in the EU projects EfficienSea 2.0 and MonaLisa 2.0 and/or in other related e-Navigation projects. The feedback as reflected in section 4 of the ACCSEAS document “Service Description: Tactical Exchange of Intended Routes”, April 2015, shall be taken into account. | Under development | WG1 and WG4 |
| **Harmonized Data Exchange – Employing the Inter- VTS Exchange Format (IVEF)** | FW-73 | The service should be further develop, tested in conjunction with the Maritime Cloud and prepared for operational implementation. | Under development | ENAV WG1 and WG4, as well as in VTS and ARM Committees |
|  | FW-74 | An IALA Guideline on IVEF should be reviewed and amended according to this new service. Awareness of the availability of the service should be increased among potential stakeholders. | To be considered, possibly joint work item ENAV and VTS | VTS Committee |