Input paper for the following Committee(s): check as appropriate Purpose of paper:

**x** ARM **□** ENG **□** PAP **x** Input

**x** ENAV **□** VTS **x** Information

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Technical Domain / Task Number 2 3.1. / 3.1.1 – 3.1.9 & 3.1.14 & 3.1.16

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Working Paper

Coordination of PNT-relevant developments dealing with requirements on as well as provision and utilization of PNT-relevant services such as SBAS, DGNSS, eLoran, R-Mode,…

# Summary

The document addresses the seen necessity to coordinate PNT-relevant developments dealing with requirements on as well as provision and utilization of PNT-relevant services.

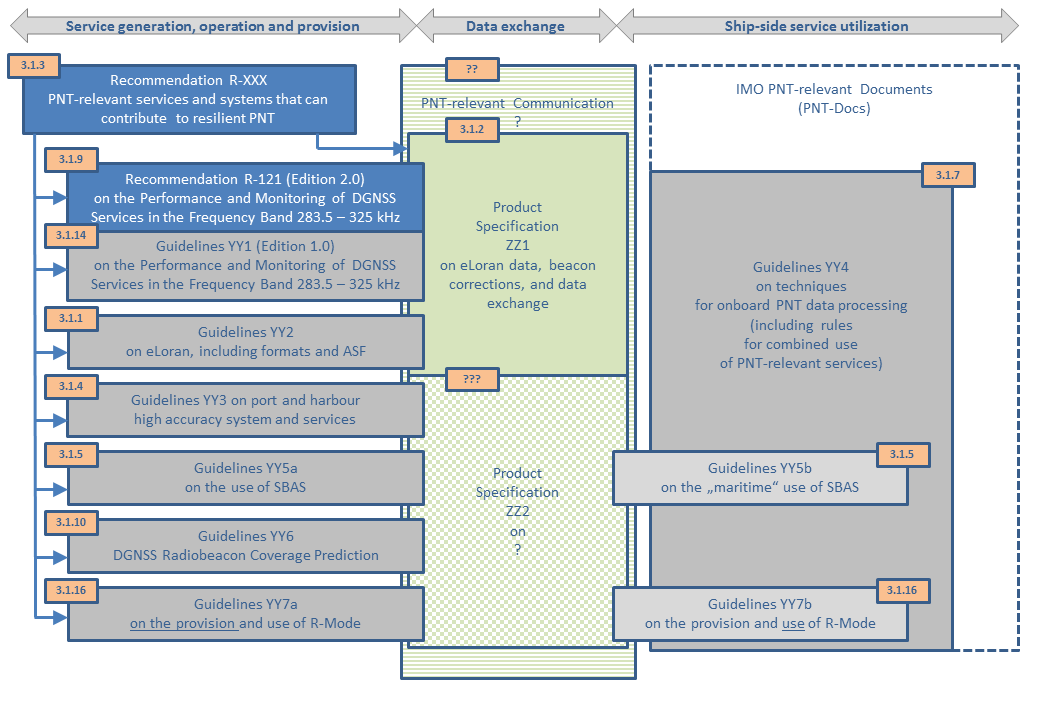
## Purpose of the document

The maritime PNT System is considered as required overlay of satellite based, ashore and aboard components, whose integrated use ensures the demand-driven provision of ships’ position, navigation, and time (PNT) data and assigned integrity data (PNT system and data integrity) to applications during all phases of vessel navigation in a timely, complete and unambiguous manner. In this context the resilient onboard provision of position, navigation, and time data (PNT) could be considered as generalized objective of the maritime PNT system. This has been emphasized by the IMO e-navigation strategy, solution S3 “Improved reliability, resilience and integrity of bridge equipment and navigation information” and assigned risk control option RCO5 “Improved reliability and resilience of onboard PNT systems”. As a result of this, a variety of development activities has been realized or initiated in the last years to improve the reliability and resilience of the maritime PNT system.

The present working program of IALA eNav Committee [ENAV17-7.2] contains several tasks intended as IALA’s contribution for the further enhancement of the maritime PNT system and listed in the strategic technical domain 3.1 “Resilient PNT shore services - DGPS, e-Loran, other...”. Corresponding IALA’s purpose – provision of effective and harmonised marine Aids to Navigation services – the contributions are focussed on the provision of PNT-relevant services taking into account technological progress and evolving needs.

Figure 1 is an initial draft to illustrate the seen dependencies between the several development activities of WG 5 (IALA ENAV Committee) and to elaborate the demand on internal as well external coordination.

1. PNT-relevant development activities and their dependencies



## Related documents

* ENAV Committee Work Plan 2014-2018 ENAV17-7.2 (formerly ENAV 16-14.1.19)
* ENAV Work Programme task register ENAV17-7.1 (formerly ENAV 16-14.1.20)
* PNT-relevant working documents:
  + enav17\_13\_5\_enav16\_14\_2\_44\_wg5\_draft\_guideline\_on\_techniques\_used\_for\_on\_board\_pnt\_data\_processing.docx
  + enav17\_13\_4\_enav16\_14\_2\_43\_wg5\_draft\_guideline\_on\_use\_of\_sbas.docx
  + enav17\_13\_2\_enav16\_14\_2\_41\_wg5\_draft\_recommendation\_on\_pnt\_relevant\_services\_and\_systems.docx
  + enav17\_13\_1\_enav16\_14\_2\_40\_wg5\_draft\_guideline\_on\_eloran\_service\_provision.docx
  + further intended documents see figure 1
* “DRAFT GUIDELINES FOR SHIPBORNE POSITION, NAVIGATION, AND TIMING (DATA PROCESSING) UNIT”, under development for NCSR/MSC

# Subjects of coordination and consolidation

Currently following subjects have been identified:

* The DGNSS Service in the frequency band 283.5 – 325 KHz (R-121; Guideline 1112 (YY1)) has been developed and deployed to ensure that requirements on positioning and integrity evaluation can be met for ship’s navigation in coastal areas. This DGNSS service is also a PNT-relevant service contributing to resilient PNT and should be considered in R-XXX (task 3.1.3). For this purpose a bilateral referencing between both recommendations becomes necessary.
* Existing or planned guidelines dealing with service provision and operation (YY1, YY2, YY3, YY5a and YY7a) will also describe or reference the products of services in form of data and signal specifications. Aimed product specification (e.g. ZZ1) can be considered as summary of technical detailed specifications of service’s data products. Therefore the coordination should ensure the compliance between guidelines (YYY) and product specifications (ZZZ). Furthermore it makes sense to clarify, if the product specification ZZ1 should be restricted on data output of eLoran and IALA Beacon DGNSS or extended to all PNT-relevant services (ZZ1 and ZZ2).
* A harmonized structure of guidelines dealing with service provision and operation (YY1, YY2, YY3, YY5a and YY7a) could improve the familiarization of maritime authorities with these guidelines. It is proposed to prove, if the structure of guideline YY1 is a sufficient approach for structuring.
* Existing or planned guidelines dealing with service provision and operation (YY1, YY2, YY3, YY5a and YY7a) include often recommendations for service application (e.g. YY5b and YY7b) to achieve an effective onboard utilization of service’s data products (see as example the GNSS interface control documents). These recommendations can be considered as IALA’s contribution to IMO documents dealing with PNT-relevant equipment and data processing (PNT-Docs). However, the demand on mutual coordination between both, service provision and service application, becomes necessary towards enhanced and coordinated integrity monitoring for resilient provision of PNT data.
* The guideline on techniques for onboard PNT data processing (task 3.1.7) summarizes all corresponding recommendations dealing with individual service application. This implicates that compliance between this guideline (YY4) and individual guidelines on service provision and operation (YY1, YY2, YY3, YY5 and YY7) should be ensured.
* Furthermore, the guideline (YY4) could act as exclusive focal point for mutual consolidation between service provision and utilization in relation to methodological and technical aspects of data processing techniques. In this context the guideline establishes the needed framework to elaborate and consolidate also aspects of alternative and complementary use of PNT-relevant services. Therefore the guideline on techniques for onboard data processing should be considered as IALA’s contribution to IMO’s document dealing with onboard PNT data processing (PNT-Docs).

# Action requested of the Committee

The Committee is requested to:

1. note the information provided,
2. support the internal and external coordination of work item 3.1.

1. Leave open if uncertain [↑](#footnote-ref-1)