



19th IALA Conference 2018

Incheon, Republic of Korea

ABSTRACT SUBMISSION — SOUMISSION DE RESUME

Topic No. : / Sujet n° : 6 - r-mode or / ou

proposed topic / sujet proposé:

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ABSTRACT / RESUME: R-Mode Testbed at Baltic Sea

The western part of the Baltic Sea between Germany, Poland, Sweden, and Denmark is a challenging area for maritime navigation due to its high traffic density, crossing waterways, ice in the winter, and several ports along the coastline. Furthermore, the four mentioned countries nearly enclose this part of the Baltic Sea that the distance between the coastlines is about 200 km. Recalling the size of service area for IALA beacons of usually 100 to 300 km and there locations along the coastline, this area is perfectly suited to make first R-Mode trials with a larger number of R-Mode enabled beacons. Here the multiple overlapping of beacon service area together with small distances of beacons promises an excellent geometry for a terrestrial backup system.

This paper will describe the planned process to setup an R-Mode testbed covering an area of approximately 70,000 km² between Kiel, Rostock (both Germany), Danzig (Poland), Kalmar, and Halmstad (both Sweden). Based on the IALA R-Mode roadmap from 2016 key issues were identified from the topics of signal design, multipath mitigation, time synchronisation, ranging, and positioning which will be addressed during the time of three year testbed development process. Beside the usage of beacons as source for navigational signals of opportunity also AIS will be proven theoretically and practically.