



## E-NAV: THE FUTURE OF WATERBORNE SHIPPING



### What is E-Nav?

“the collection, integration and display of maritime information aboard and ashore by electronic means to enhance berth-to-berth navigation and related services, safety and security at sea, and the protection of the marine environment” — International Maritime Organization (IMO) MSC 85/26/Add.1- 2008

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**In 2006, the IMO defined E-Nav** as “the collection, integration and display of maritime information aboard and ashore by electronic means to enhance berth-to-berth navigation and related services, safety and security at sea, and the protection of the marine environment.” Since then, the ECDIS has combined with AIS, ENC, Synthetic AtoN, and VTS. Developing systems include: Enhanced Marine Safety Information (eMSI) which synthesizes data from the USCG, NOAA, the National Geospatial Intelligence Agency (NGA), and USACE; River Information Services (RIS) which uses E-Nav for the most efficient utilization of the inland waterway system; Corridor Management or “Assured Lockage” which focus RIS on current information upon approaching locks; and eHydro which combines US Hydrographic Survey district data into a cloud-based GIS platform. The goal is linking all these systems together via GPS in a cloud-based internet platform to create “standardized geo-referenced points of interest throughout U.S. navigable waters.”

Our task was to promote E-Nav to US mariners. We looked at its development, attempts to globalize it, and the difficulties thus encountered. We discussed the maritime community’s resistance in terms of safety, security, and environmental issues. We surveyed E-Nav experts and found two major concerns. The first was that the technology may be oversold to younger mariners leading to an *increase* in maritime accidents from overreliance on E-Nav. Second, we found that E-Nav is being developed for “drone” or pilotless shipping, which mariners are resistant to. In response to these concerns, we developed a strategy for promoting E-Nav to American mariners related to the general outlook for it in the short and long term.

We found generally opposite attitudes towards E-Nav in the US and Europe. US mariners were more resistant to the emerging technologies; Europeans were less so. This was due to a more acute pilot shortage in Europe than in the US – although the issue is serious here as well – and the greater ease of recruiting a younger generation by promoting emerging internet-based technology. From the beginning, E-Nav was to be the integration of all maritime data into one global, universally accessible navigation platform. However, the development of proprietary European navigational databases has so far prevented this. Another effect of the European maritime labor shortage has been the shift of E-Nav away from enhancement of maritime skills to the replacement of mariners with “drone” shipping. These trends are the main barriers to full acceptance by American mariners.



Therefore, our strategy was to develop and promote a counter-narrative to both “E-Nav overreach” and drone shipping. This counter-narrative is a function of the general outlook for E-Nav in the short and long term. In the short term, fatal accidents involving US Navy vessels off the coast of Japan and in the Singapore Straits will focus attention on the necessity of “looking out the window” – as our respondents referred to traditional maritime skills – versus overreliance on screen data. In the long run, cybersecurity concerns can reinforce the US maritime preference for E-Nav as an enhancement rather than replacement of human navigation. Recent disruptions of maritime GPS systems due to weather events or deliberate attack, as was the case with A.P. Moller-Maersk earlier this year, have prompted a return to radio signaling as a backup to E-Nav. Both developments are openings for US mariners to develop a counter narrative to drone shipping: “the skills of human pilots are essential for safety and efficiency on the water.”

*Recent US Navy collisions off of Singapore and Japan highlight the purpose of E-Nav technologies: to facilitate the safety and security of mariners.*

Thematic Concentrations from E-nav Survey

