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RePo MAN

Remote support for
maritime navigation

Remote Pilotage

The RePo MAN project focuses on leveraging modern technology to enhance the safety and efficiency of maritime pilotage. Traditionally, maritime pilots face significant risks when boarding vessels, especially in harsh weather conditions. This project aims to address these risks by implementing remote pilotage systems, allowing pilots to guide ships from shore-based facilities using advanced technologies.

The primary use case of the project involves remote pilotage, where pilots can control and guide ships without being physically present on the vessel. This approach is supported by extensive data collected from the ship, including navigational, environmental, and operational information, which is transmitted to a shore-based pilotage center. A critical component of the remote pilotage process is the establishment of a trusting relationship between the pilot and the ship's captain. This trust is built through reliable communication channels, seamless connectivity, and the clear presentation of navigational data. Interviews with pilots and captains were conducted to understand their needs and ensure the system supports effective communication and decision-making.

The project identified several benefits of remote pilotage, including enhanced safety by reducing the need for pilots to physically board vessels, improved navigation safety through advanced situational awareness, and potential cost savings and environmental benefits by eliminating the fossil-fuel-based pilot transfer processes. However, the project also recognized challenges such as the loss of sensory feedback that pilots experience onboard and the need for robust and reliable communication systems to maintain trust and effectiveness.

Initial tests of different technology options for visualization and interaction were conducted to support the setup of these
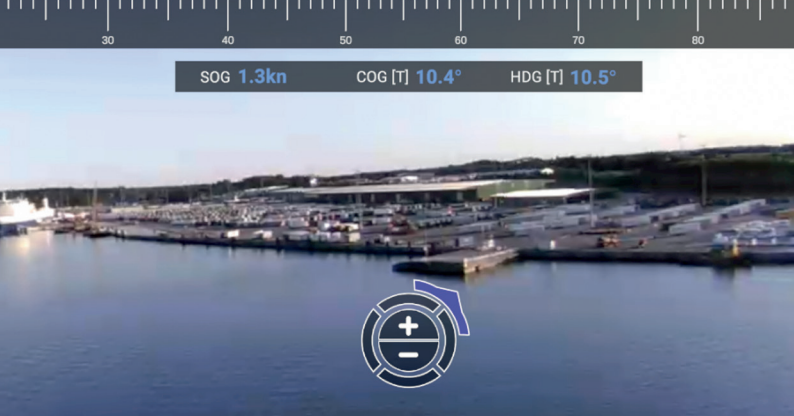
Interface of the desktop application with nautical chart and 360°-video stream.

systems in a safe and interactive manner. Results from a peer group of experienced nautical professionals indicated that both classical desktop and immersive mixed reality systems reached comparable usability scores and good situational awareness levels, suggesting their suitability in principle.

Future work will focus on refining the application, ensuring it meets the diverse needs of maritime professionals. This includes enhancements like high-resolution cameras for clearer images, advanced display technologies to reduce eye fatigue, and consistent hand tracking for AR and VR systems. Additionally, ensuring stable and reliable AR overlays will provide essential navigational data, improving the overall remote pilotage experience. By addressing these areas, the Remote Pilotage Technology system can effectively support remote operations, enhancing both safety and efficiency.

Contact

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