

Sharing intentions promises inland navigation to become more safe and efficient

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Abstract

Can the speedy implementation of trackpilots in Inland shipping be helpful to communicate on intentions? And would sharing intentions increase safety and efficiency on the fairway?

These questions have been answered during a simulator study by Dutch Maritime Research Institute MARIN, a study carried out on behalf of Rijkswaterstaat. In the study, all three known suppliers of track pilot systems participated. Since a trackpilot, if on use, knows where the ship will be in the near future, as well as it tries to keep the ship on the intended track, it might be an ideal way to get hold of the track information.

During the simulation, three simulator rooms were used in one combined environment. In eight scenarios, with and without sharing intentions, the behavior of the skippers was observed. Also questionnaires and an eye tracking device was used to gather information.

MARIN observed that the skippers needed help with the systems in the beginning, but quickly learned to use it in their benefit resulting in more anticipating sailing behavior and less VHF communication.

The researchers concluded that Intention sharing could improve safety and efficiency on inland waters, by supporting situational awareness [1]. Intent sharing can be viewed as a new set of eyes, which is most useful in low visibility conditions.

However, there are risks as well. Due to the task transfer of sailing from skipper to a (track control) system, there is a risk of lowered situational awareness and out-of-the-loop problems, overreliance on the system, and risk-compensation behavior because skippers are aware that their intended route can be seen by the surrounding traffic.

The results of the survey are promising, especially since implementation of the concept is at reach. If all three suppliers of trackpilots will keep cooperating, the concept could be introduced largely bottom up. Further work to safely implement Intention sharing and reap the potential of using trackpilots is expected to start in spring 2023.



Figure 1: Simulation with the Tresco track pilot in use. Argonics and Shipping Technology also participated in the experiment

Literature

- [1] MARIN commissioned by Rijkswaterstaat: Digital Intention sharing, Simulation study on the benefits of intention sharing, Wageningen (2022), report number 33281-1-MO-rev.2, <https://open.rws.nl/overige-publicaties/2022/digital-intention-sharing-simulation/>