

# Intention sharing

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# Development: the upswing of the trackpilot

- > Trackpilot:
  - Gives a sailing track to the destination
  - Manouvres the ship as much as possible on that track
- > A trackpilot knows where and when the ship will be
- > End 2022, ca. 600 trackpilots were implemented in Western Europe
- > Three (known) producers:

argonics





## Research question to MARIN

- > Would sharing of sailing intentions be beneficial for the safety and efficiency on the fairway?



# MARIN: Literature study

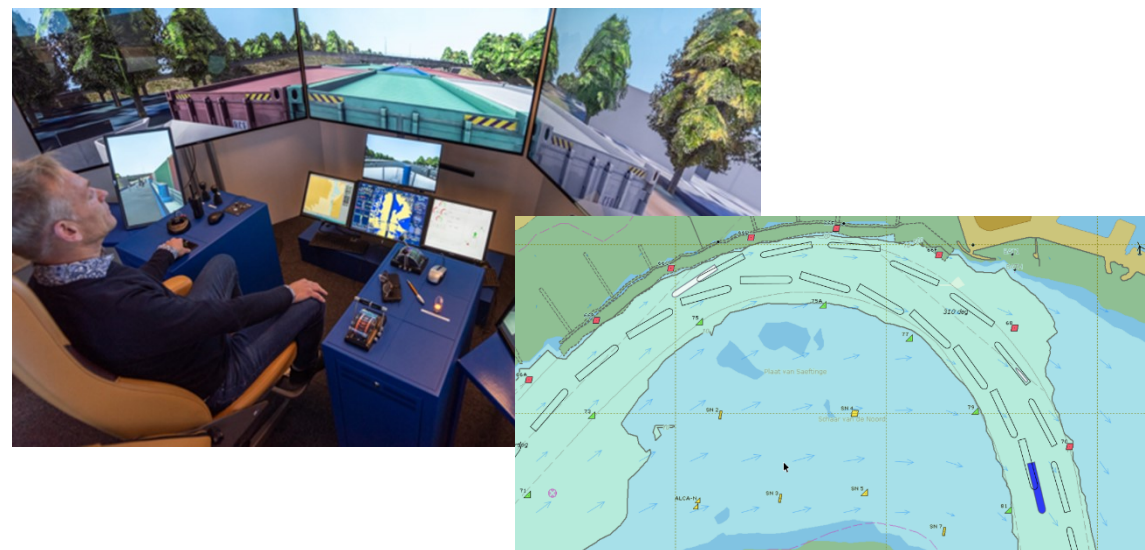
- › Concept is far from new: (Efficiensea, Monalisa 1, Accseas, Monalisa 2, Efficiensea 2, STM Validation, STM Balt Safe)
- › For application in sea shipping
- › Concepts tested on strat. & tactical level
- › HMI rather complex
- › Beneficial for safety
- › Preference for VDES above MC



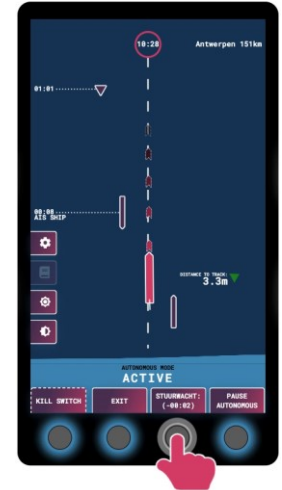


# Intention sharing: setting up a simulator study

- › Starting points:
  - Intention sharing on inland waters
  - Join in on the development of the trackpilots and involve suppliers
  - Leave the HMI to the suppliers
  - Test with the help of simulators







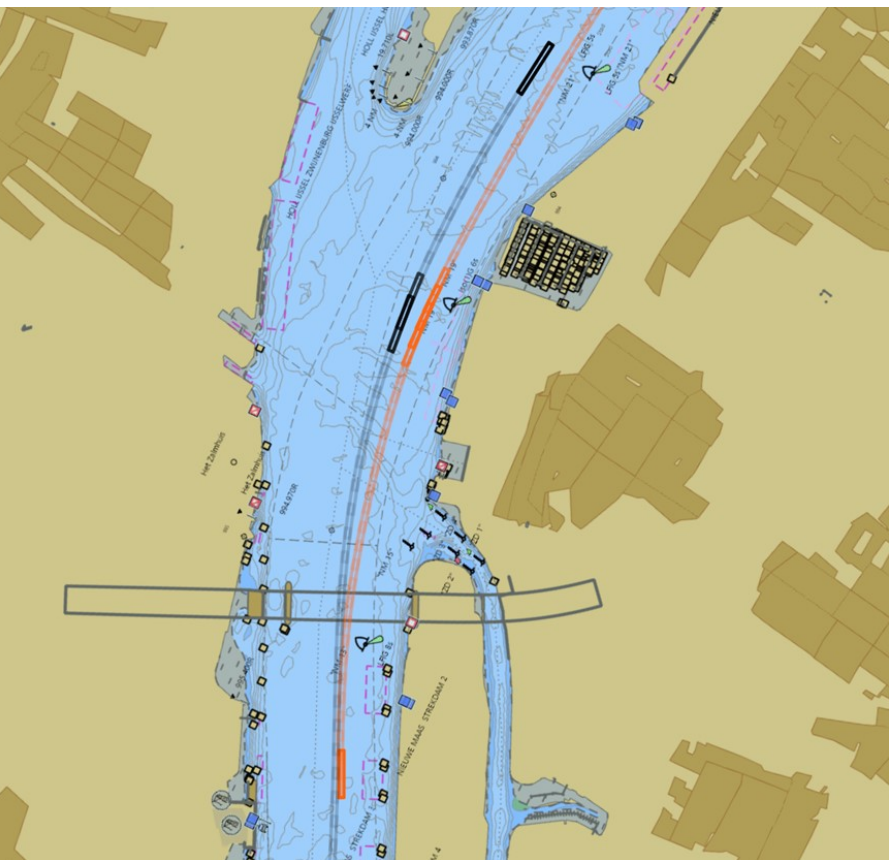
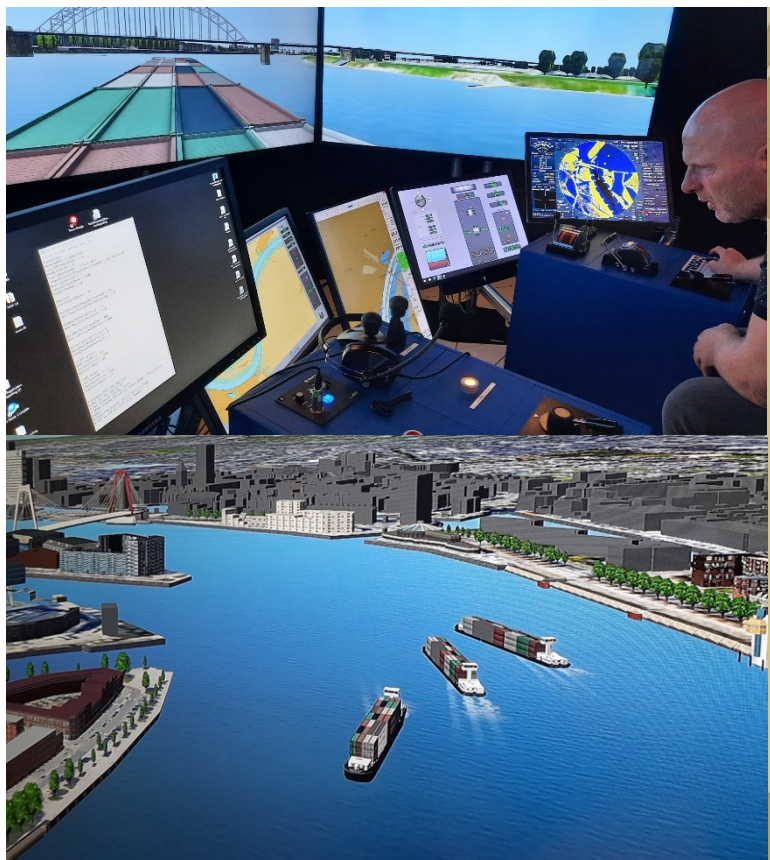
# Sharing intentions – project partners

- > Participating trackpilot suppliers:
  - Shipping Technology
  - Agonics
  - Tresco
- > They developed:
  - Disseminating data on intentions out of their trackpilot
  - Showing the intentions of participating other ships on their trackpilot





# Simulations at MARIN -1-





## Simulaties bij MARIN -2-

- > 2 days
- > 3 simulators in one common world
- > 8 scenarios from realistic to less realistic
- > 6 skippers sailing the same scenarios, both with and without sharing sailing intentions
- > A short learning period for the skippers
- > Sailing on the trackpilot as much as possible, changing speed whenever necessary



## Survey results - observations

- > Skippers needed help to learn to use the system
- > During the simulations, sharing intentions was used better more and more
- > Skippers did anticipate more with intention sharing
- > They used VHF less
- > Skippers may assume that other traffic may react on their information





# Survey results

- › Sharing intentions has the potential to cope with traffic situations more safe and more efficient:
  - It supports situational awareness
  - It gives a pair of extra eyes, especially in poor visibility situations
  - It changes the navigation task
- › When taken into account:
  - The dependency that might occur
  - unjustified trust in the system
  - Assumptions about how other traffic will react when you share intentions



# Recommendation to the use of the trackpilot

- › Build a safety case, containing
  - Performance criteria
  - Risk inventory and assessment
  - Human performance assessment
- › Verify the safety case
- › Create a 'best practice' for HMI and control of the HMI



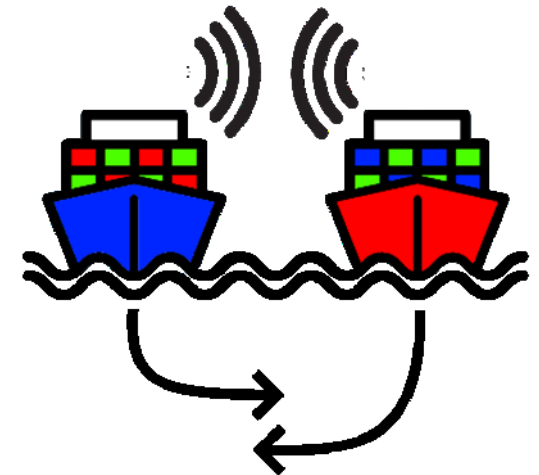
# Recommendation to Intention sharing

- › Define an operational concept
  - Support situational awareness with the projection of intentions
  - Define operational procedures for intention sharing
- › Create a well designed userinterface
  - Only show relevant information
  - Let the user be in control
  - Take care information shown is very clear
  - Create an adequate error handling



# Follow up

- › Best practice trackpilots
- › Implementation of Intention sharing:
  - Take a step back and document goals, means and limitations
  - Specify the requirements for information and security
  - Define an adequate information exchange protocol
  - Finalise the concept and carry out a real life pilot project







# Questions & discussion