
WÄRTSILÄ
WÄRTSILÄ WILL SHAPE OUT THE GLOBAL
SMART MARINE ECOSYSTEM

# OPTIMIZATION

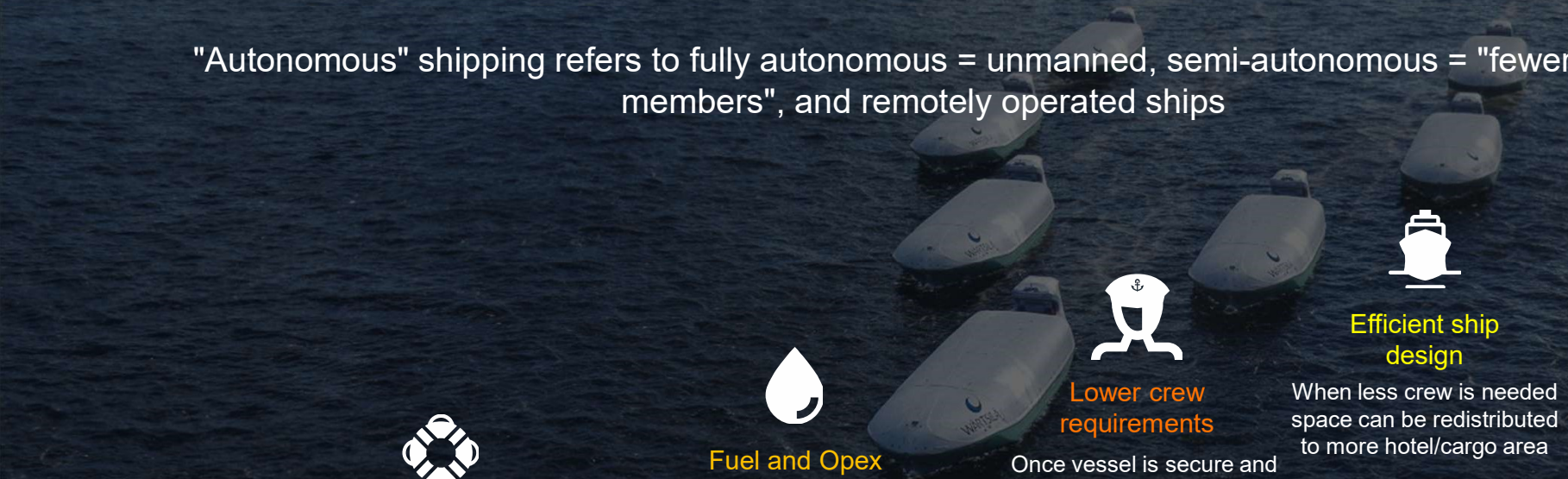
"Optimization" means we help our customers reduce waste, e.g., excess fuel use, poor asset utilization

It can take place at component, vessel, voyage, and fleet level

Examples of levers we can pull to optimize are to influence route, speed, arrival time at port, and trim


# TOWARDS AUTONOMY

"Autonomous" shipping refers to fully autonomous = unmanned, semi-autonomous = "fewer crew members", and remotely operated ships



### Increased safety

Less human errors will decrease amount of accidents and mistakes

### Fuel and Opex savings

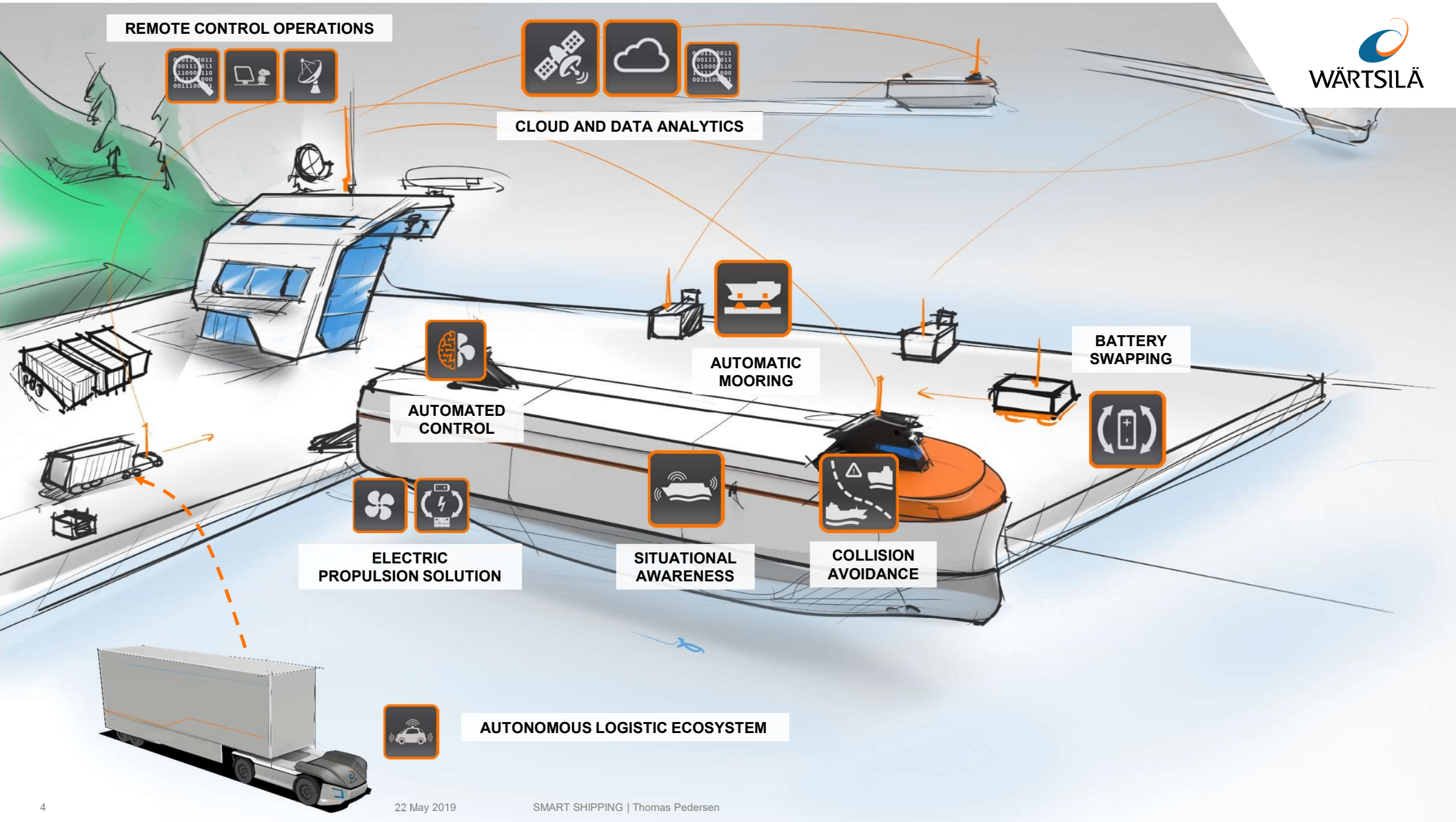
Autonomy is 100% compliant to optimization advices and sail in most efficient manner

### Lower crew requirements

Once vessel is secure and sail efficiently there is opportunity to reduce crew

### Efficient ship design

When less crew is needed space can be redistributed to more hotel/cargo area


REMOTE CONTROL OPERATIONS
CLOUD AND DATA ANALYTICS
AUTOMATIC MOORING
BATTERY SWAPPING
AUTOMATED CONTROL
ELECTRIC PROPULSION SOLUTION
SITUATIONAL AWARENESS
COLLISION AVOIDANCE
AUTONOMOUS LOGISTIC ECOSYSTEM

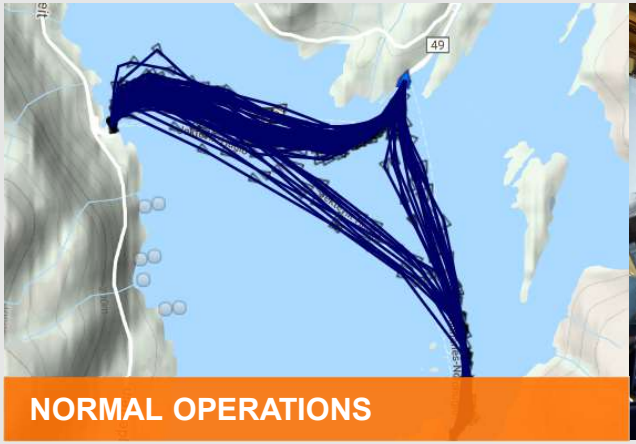

WÄRTSILÄ
Cases towards autonomous

## Value prop:

- Enables operations otherwise not possible
- Enables the technical capability to move crew members ashore
- Enables a “manual control mode” for vessels without navigational crew onboard

## Examples

- Gulfmark OSV remotely controlled at North Sea from San Diego




NORMAL OPERATIONS


AUTOMATIC TRIALS

## Auto-docking and crossing:

- Automated crossing and docking of ship
- Captain in the loop

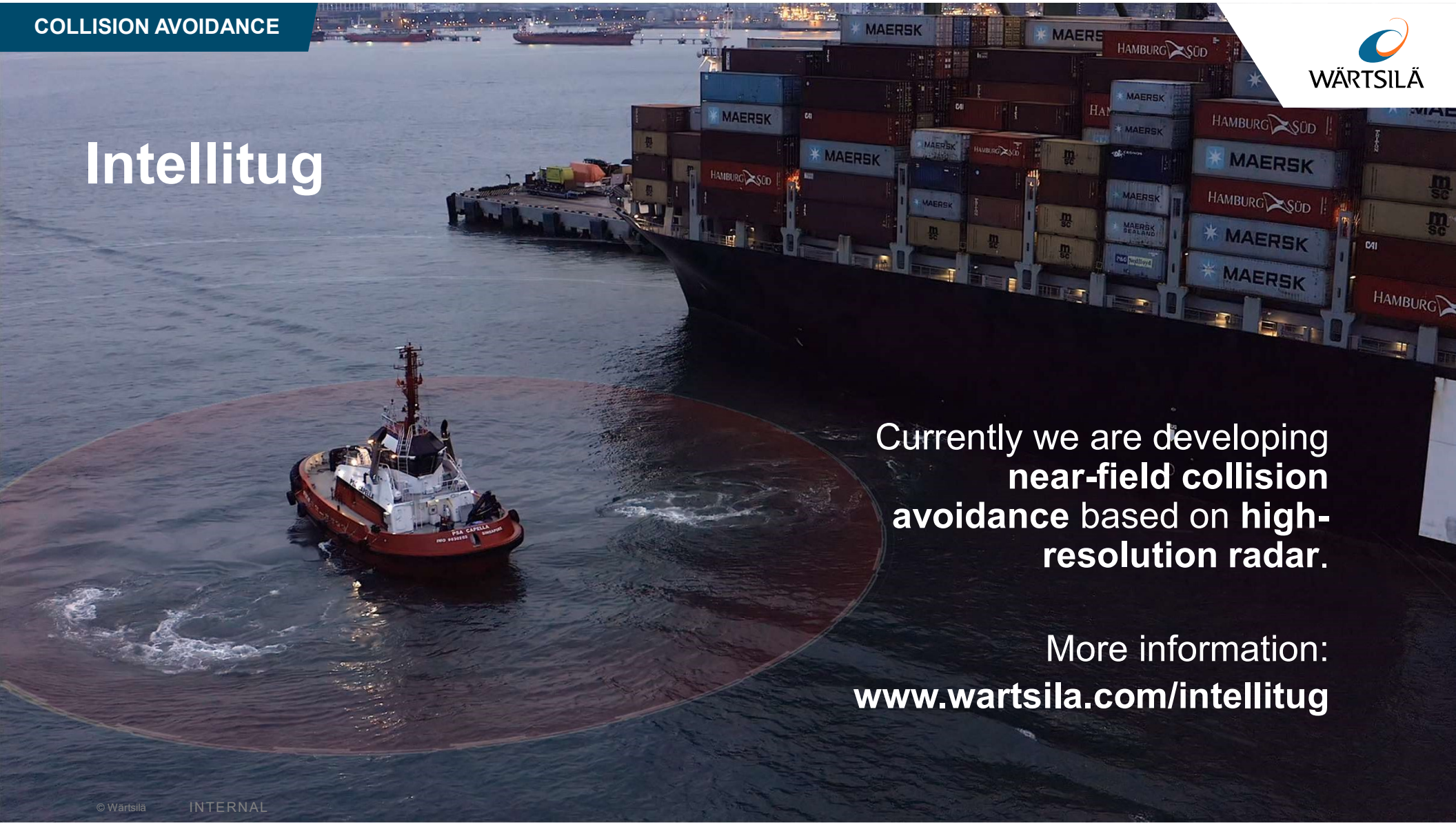
## Value prop:

- Reduced maneuver time results in significant fuel reductions
- Copy your best captain all the time
- Uniform execution and energy consumption

Video link: **https://youtu.be/8uedSwkeaUg**

WÄRTSILÄ

# Intellitug




Currently we are developing **near-field collision avoidance** based on **high-resolution radar**.

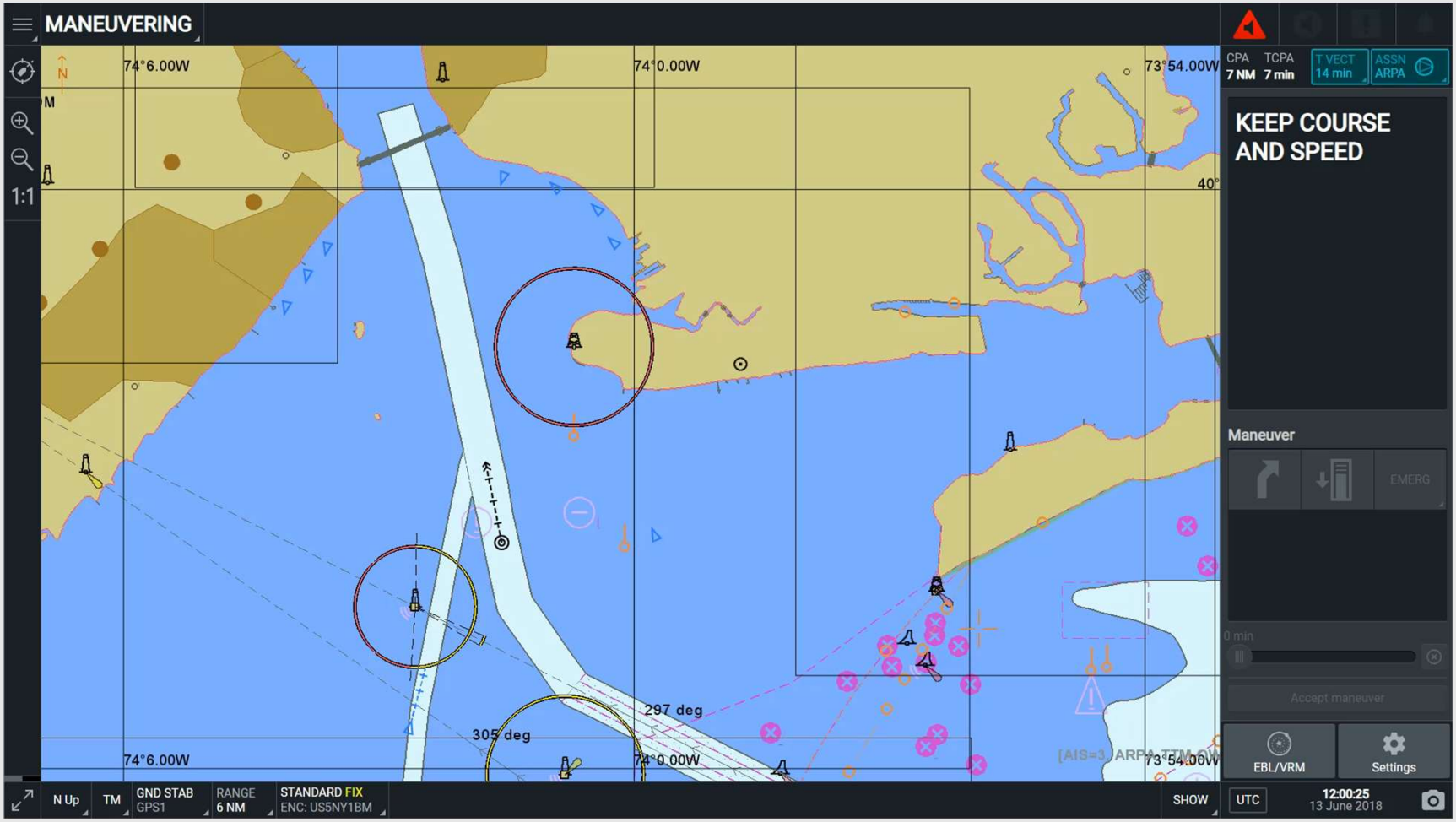
More information:
**www.wartsila.com/intellitug**

© Wärtsilä INTERNAL

## Long range collision avoidance

- 15-20 minutes reliable ship trajectory prediction for the area
- Identification of safety distance parameters applicable for the area
- Prediction of potential collision and grounding events
- Recommendations of safe & efficient maneuvers to avoid collisions
- Near miss detection and reporting capability

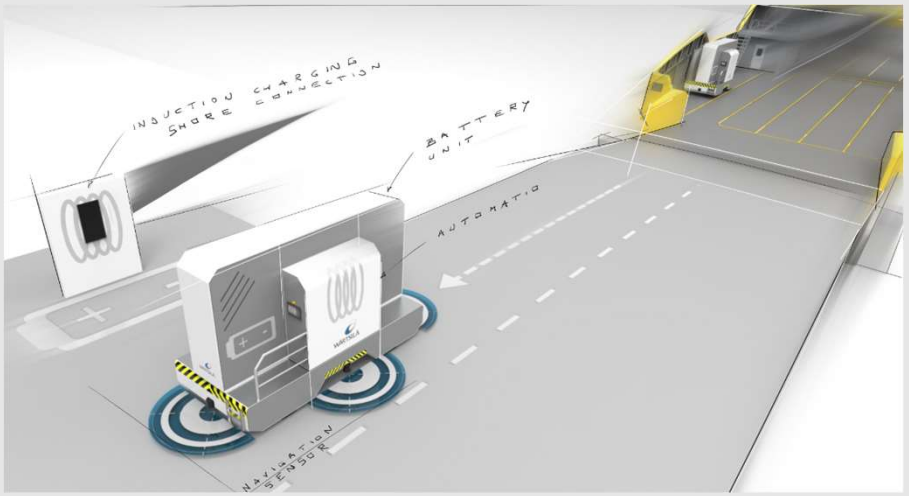
# COLLISION AVOIDANCE



## ELECTRIC CHARGING SOLUTIONS

Inductive and plug charging solutions developed and tested onboard Folgefonn,

Combined with vacuum mooring




Slow charging self driving battery design concept

Hypothesis Testing

THANK YOU