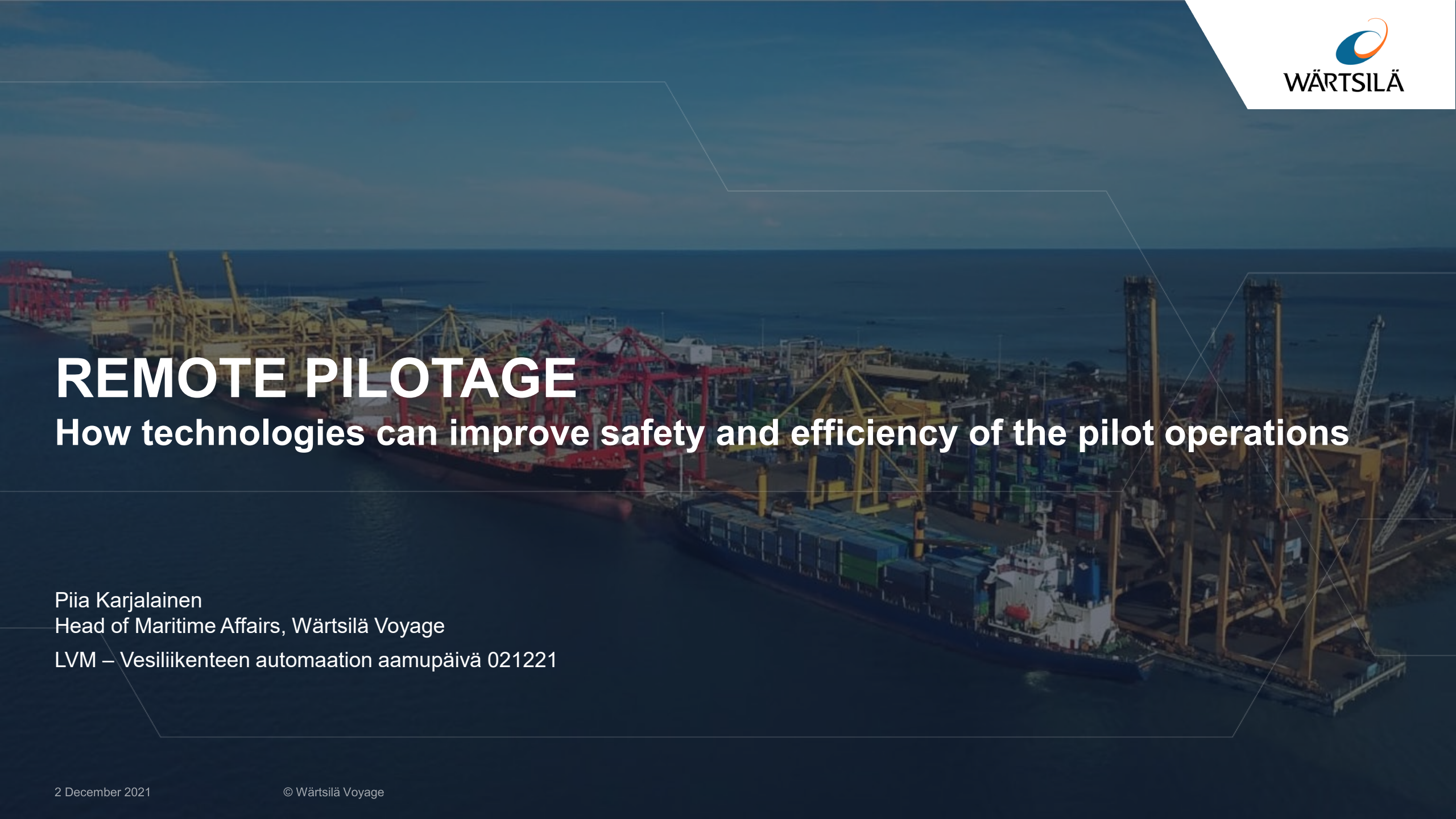

REMOTE PILOTAGE

How technologies can improve safety and efficiency of the pilot operations

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BEAUTY OF MARINE PILOT JOB

Free boat cruises every day

A lot of physical exercises

Always getting fresh air

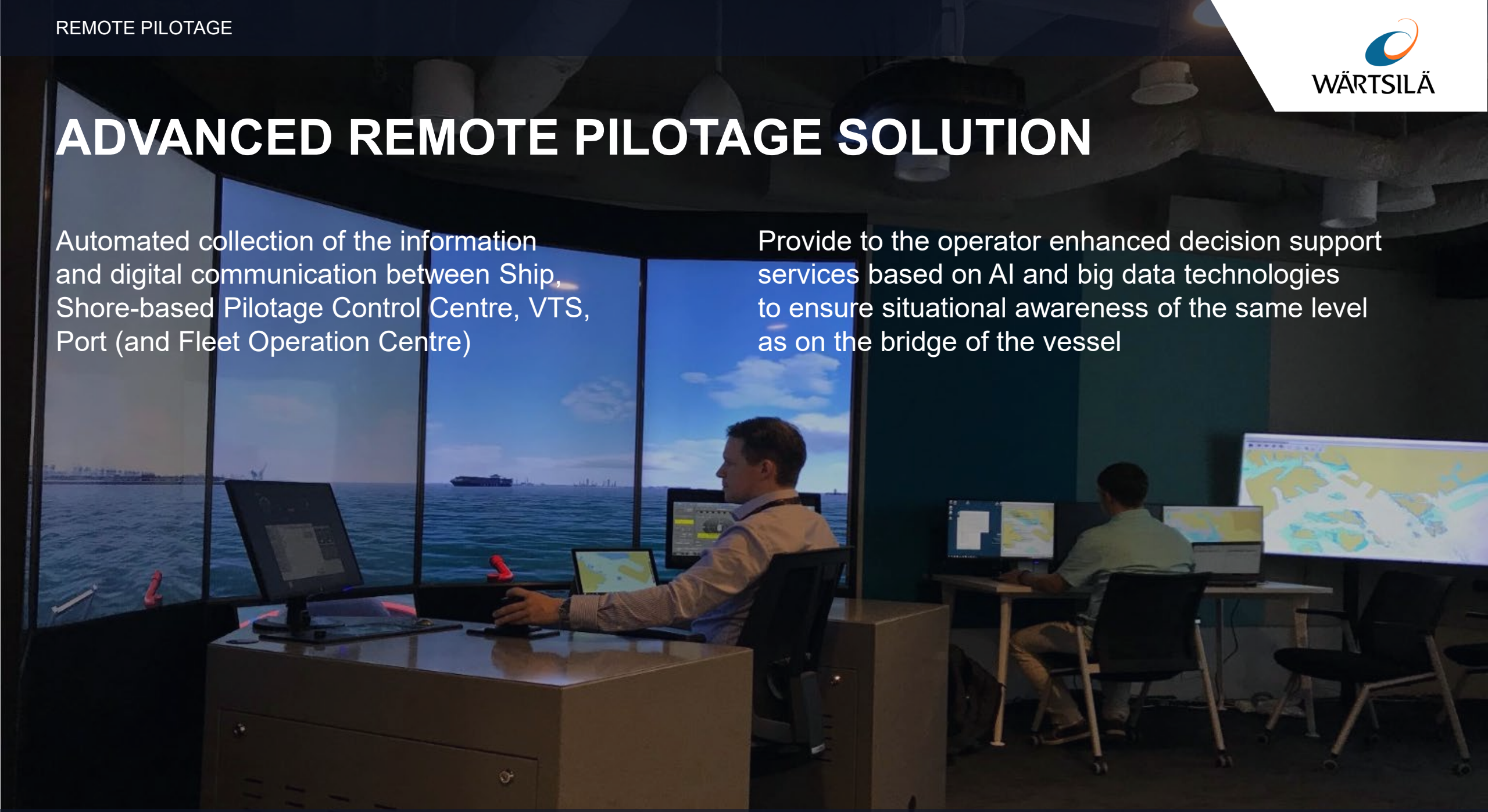
SO WHY NOT MAKING PILOTAGE REMOTE FROM THE SHORE?

Pilotage authorities will reduce the costs

Pilots will not risk their lives

Shipowners will pay less pilots fees

ADVANCED REMOTE PILOTAGE SOLUTION

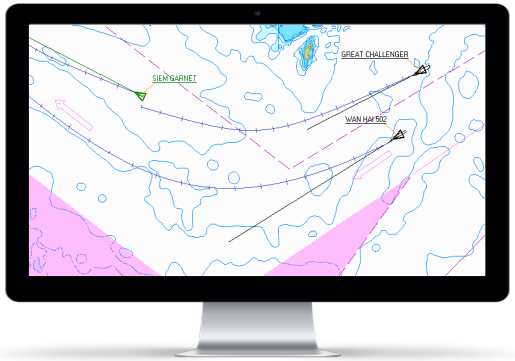


Automated collection of the information and digital communication between Ship, Shore-based Pilotage Control Centre, VTS, Port (and Fleet Operation Centre)

Provide to the operator enhanced decision support services based on AI and big data technologies to ensure situational awareness of the same level as on the bridge of the vessel

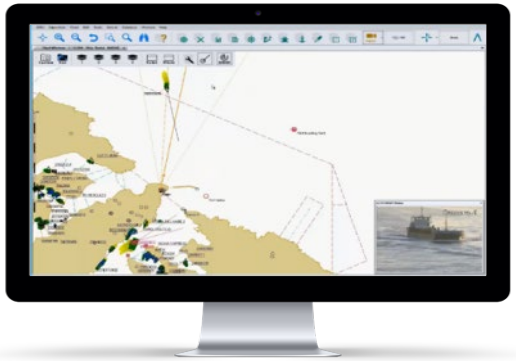
OVERVIEW

REMOTE PILOT DECISION SUPPORT TOOLS



AI Decision Support

Prediction of collision and grounding



Common Operational Picture

Real Time Monitoring of the ships traffic

Virtual Boarding

Accurate positioning of the vessel

Virtual Reality View

3D Simulation of captain view

REMOTE PILOTAGE SIMULATION TRIALS BY ISTLAB

Intelligent Shipping Technology test Laboratory ISTLAB is a novel testing environment for maritime community to test new maritime applications and to make shipping safer

ISTLAB-project is a platform for building and commissioning the environment continues until end of year 2021

ISTLAB

Navigation data Finnish Geospatial Institute	**Environmental data** Finnish Meteorological Institute	**Smart buoys** Finnish Transport Infrastructure Agency
Simulation and training support Winnova	**Bathymetric modelling and data feed** Traficom	**Target group for testing substance** Finnpilot Pilotage
Radar imaging, situational overview VTS Finland	**Data management and processing, project coordination** SAMK	**Port facility intelligence** Port of Romania

STEPS FORWARD

Successful remote pilotage appears to demand:

- Shared situation awareness between actors
- High-quality connectivity
- Sufficient skill level from piloted vessel crew
- Communication protocol that enhances crew feeling of pilot engagement
- Standardised data sharing protocols and interfaces
- Operational framework that determines actions taken during piloting
- Organizational framework that support achievement and upholding of the above

To make it happen, let's work with

- Bringing digital (**connectivity**) and physical infrastructure (**smart fairways**) to the level enabling the remote pilotage operations (investments + funding needed)

  ➢ Supports remote pilotage but also several other smart services

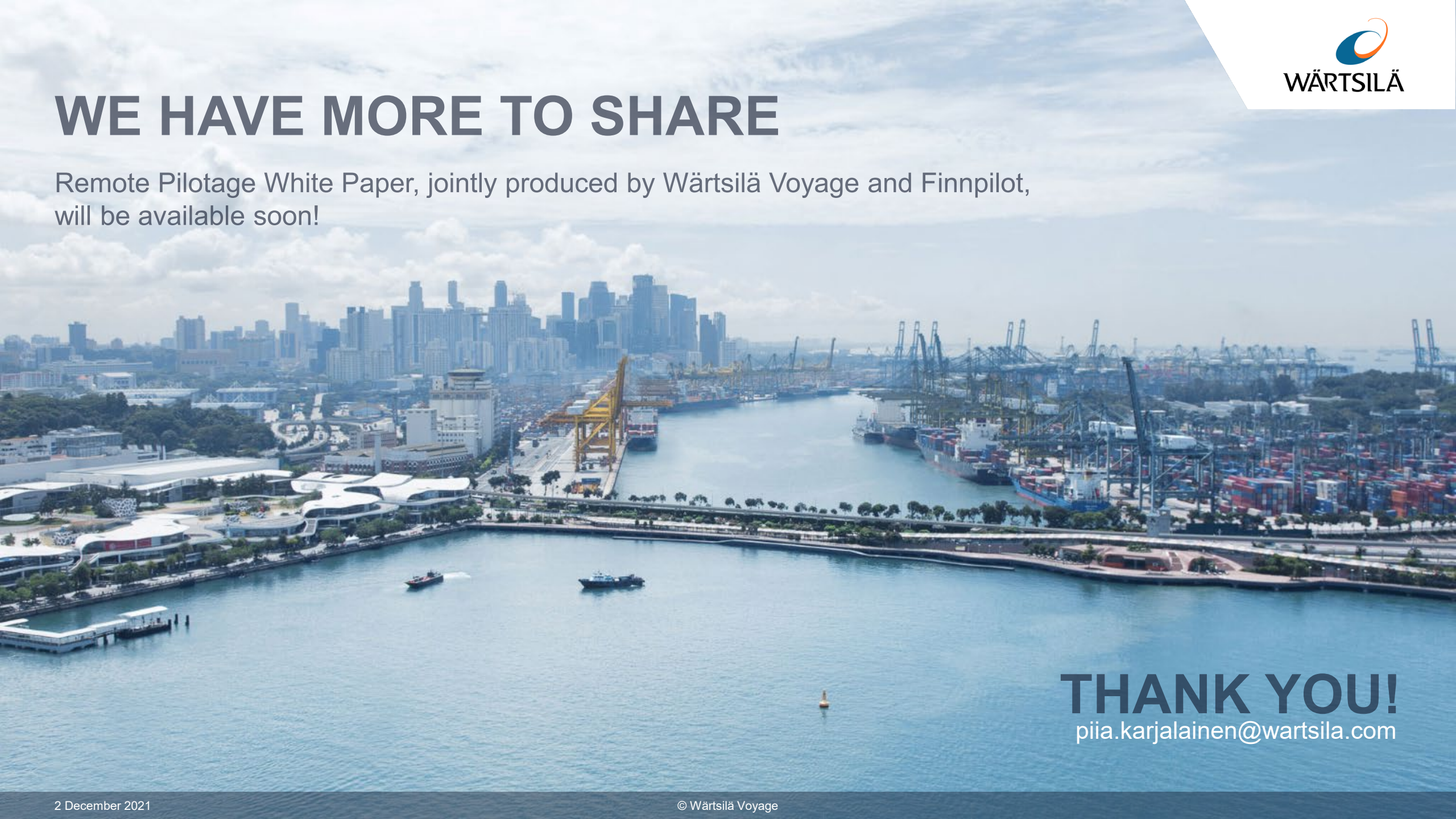
- Creating **"lingua franca"** (for data sharing and communication protocols) to ensure scalability and high service level in various environments

  ➢ Scalability and cost efficiency is a key also for customers (shipowners / operators)

- Creating **demonstrators** supporting readiness and trust

WE HAVE MORE TO SHARE

Remote Pilotage White Paper, jointly produced by Wärtsilä Voyage and Finnpilot, will be available soon!



THANK YOU!

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Wärtsilä Voyage radically transforms how vessels perform their voyage by leveraging the latest digital technologies, to deliver a step-change in safety, efficiency, reliability and emissions.

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