IVR Annual Congress — Lyon

# SEAFAR

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Former Director Vessel Traffic &
Water Management, Rijkswaterstaat

# Who is Seafar

**Who we are**

- Belgian (Antwerp-based) technology & operations company
- Pioneer in **remote-controlled and remote-assisted inland navigation**
- Operating a **Remote Operations Centre (ROC)** with real vessels under commercial pressure
- **Nancy Scheijven** — Strategic Business Director

**What we do**

- Enable vessels to be operated **remotely and more efficiently**
- Combine **technology, trained operators, and operational procedures**
- Support shipowners in addressing **crew shortages and cost pressure**

## Proof points

| | |
|---|---|
| **30,000+** | operational hours in real conditions |
| **55+** | vessels equipped (~500 in owner fleets) |
| **5** | Remote Operation Centres — BE, NL, DE |
| **6 years** | of commercial remote navigation |
| **Phase 3** | crew reduction live in Flanders |

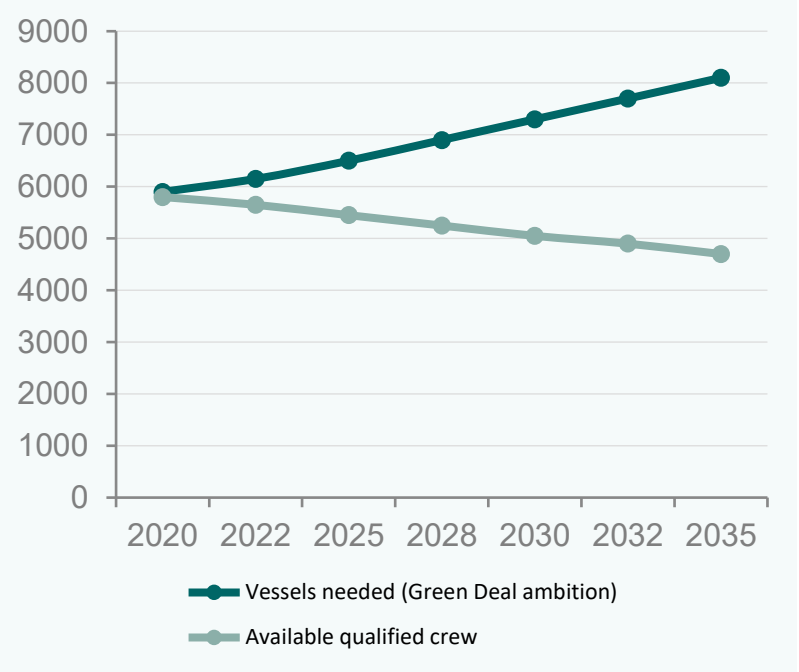
# Remote Operations and Logistics

# Why remote operations matter: the workforce gap

## Our vision is to centralise and optimise workforce via remote operations.

EU Green Deal: +25% waterborne freight by 2030,
+50% waterborne freight by 2050.
Each year, available qualified crew decreases. Technology bridges the gap:

- Enhancing **competitiveness** of waterborne transport
- Reducing **operational costs** via onboard crew reduction
- Strengthening the **business case** for green investments
- **Centralising operators** and increasing efficiency and safety




**Bridging the gap with Seafar technology**

# Remote operations is more than technology

**We are not scaling technology — we are scaling an operating model**

## Technology

**Proven ✓**

Vehicle Control System, sensor fusion, 4G/5G/satellite, AI object detection, Azure cloud. All production-grade and running commercially.

## People

**Adapting !**

From captain → remote operator. From single vessel → multi-vessel supervision. New skills: situational awareness, decision-making from shore.

## Regulation

**Lagging X**

Built for onboard presence. No unified ROC framework yet. Liability unclear. Not one regulator — a system of regulators.

# The technology behind Seafar

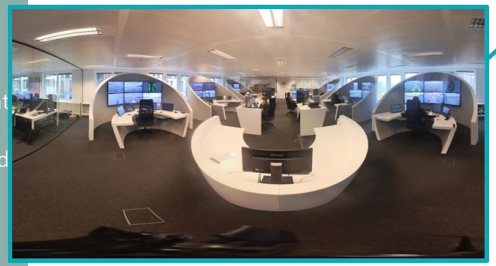
Seafar enables automated, sustainable waterborne logistics by combining the skills of remote operators with autonomous technologies

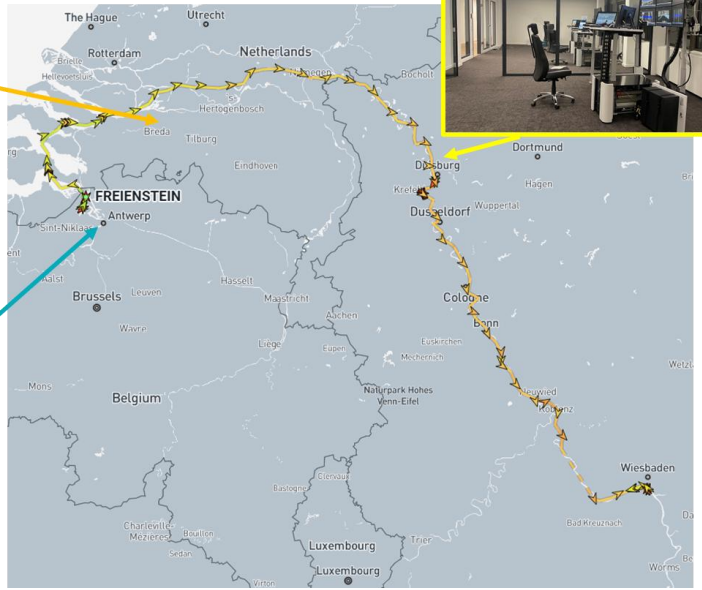
**SEAFAR SOLUTION**

Platform technology connecting captains and vessels into one digital network via Remote Operations Centers (ROCs) to enable captains to operate vessels from shore

Advantages

- Sustainable shore-based jobs
- Attracts younger talent to inland shipping
- Promotes diversity and inclusivity





**PERFORMANT CREWING**

Seafar technology allowing to reduce crew on board, optimizing crew structures

- Solves crew shortage
- Strengthens the business case for inland shipping
- Unlocks investment capacity for green technologies
- Driving the greenification of the sector in line with the Green Deal goals

# People in the centre of the operations

Our remote operator sailing remotely from Duisburg, Germany

# Regulatory landscape — country by country (May 2026)

| Country / Regime | Phase 2 (nav. assistance) | Phase 3 (crew reduction) | ROC framework | Status |
|---|---|---|---|---|
| Flanders (DVW) | ✓ Operational | ✓ Operational (permanent regime since Jan 2026) | ✓ Shipping Decree Art. 70 | **Pioneer** |
| Netherlands (RWS / ILT) | ✓ BPR basis (Jan 2025) | ✗ No procedure for vessels >20m | ◐ Safety case process only | **In progress** |
| Germany (GDWS / WSV) | ✓ Operational (Rhine) | ⚙ Art.1.28 being amended | ◐ Project-based; ROC must be in DE | **Adapting** |
| Switzerland | ✓ Operational (Rhine) | ⚙ Scenario E proposal published | ◐ Case-by-case | **Proposal ready** |
| CCNR (Rhine) | ✓ Levels 0–5 defined (2018) | ⚙ Phase 3 conditions on Apr 2026 agenda | ⚙ PIANC WG working on standards | **Actively moving** |

# Insurance — a regulatory milestone

## Our operations are fully insured — including remote mode

Seafar has secured P&I and hull & machinery (H&M) insurance that explicitly covers remote operation mode — including situations where the master operates from a shore-based ROC rather than being physically present onboard.

This is a sector milestone: traditional P&I clubs historically did not cover remote operations as standard. The policy demonstrates maturity of the technology and the operational procedures.

### P&I coverage

Third-party liability covered during ROC operations

### H&M coverage

Hull & machinery damage covered in remote mode

### ROC operator liability

Shore-based operator liability explicitly included

⚠ Several P&I clubs are reviewing frameworks following Seafar's precedent — remote operations data is de-risking underwriting decisions.

# Safety records

**30,000+**

**remote operating hours**

~55 vessels, 6 years operational

**0**

**accidents caused by connection loss**

All connection events: Near Miss only

**<1×**

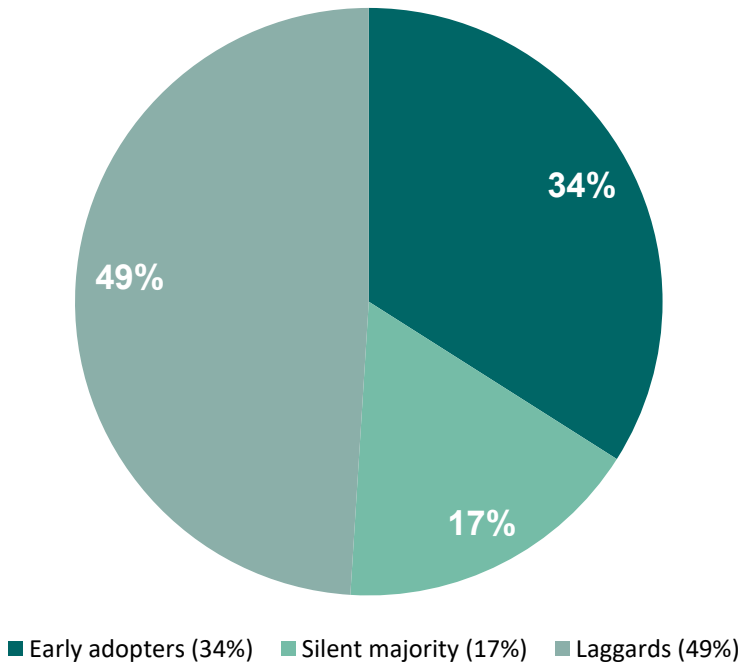
**per vessel per year**

Connection-related incident rate

*Every incident formally logged, root-cause analysed, corrective action defined. Full audit trail available for authorities.*

# Why legislation unlocks the majority

## 49% of Rhine shipowners will only move with formal regulation




### Early adopters (34%)

Larger corporate firms. Already working with Seafar. Move regardless of regulation — see it as competitive advantage and branding.

### Silent majority (17%)

Small NL & BE shipowners. Cautious interest. Need visible demonstrations, peer proof, and some institutional reassurance.

### Laggards (49%)

Small family-owned firms. Structural resistance — ageing fleet, limited capital, emotional attachment. Move only on clear legislation, harmonised standards, and liability certainty.

*Source: Al Amien et al. (2026), Transportation Research Interdisciplinary Perspectives — EU AUTOBarge / Horizon 2020*

# What needs to happen — three concrete asks

*Partnerships are the key to success — vessel owners invest, technology enables, government facilitates.*

1

## CCNR recommendation for Phase 3

A formal CCNR recommendation — not full legislation, but a recognised reference framework — gives national authorities in all Rhine states the legitimacy to grant Phase 3 derogations. This is precisely what 49% of shipowners need to make their investment decision.

2

## Harmonised ROC minimum standards

Every Seafar dossier is currently bespoke. Standardised criteria for ROC operations reduce barriers for shipowners, give insurers and banks a reference point, and make meaningful regulatory oversight possible across all Rhine states.

3

## Netherlands: activate the existing BPR basis

The exemption foundation already exists (BPR amendment, January 2025). Activate it for Phase 3 operations on Dutch waterways. The Netherlands has the largest Rhine fleet — 837 of 1,531 registered owners. There will always be risks … with or without remote operations

# Building a transparent, safe future for inland navigation — together.

**Documented**

Every incident logged.
Fully auditable.

**Insured**

P&I & H&M covered
for remote operations.

**Regulated**

Active co-creation
with all authorities.

**Scalable**

Pilot → fleet.
Infrastructure is ready.

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# Why fleet owners believe in this technology — and invest ahead of regulation

Raymond Berkhout
Former CEO Dari / Friend of Inland Shipping (NL)
Letter of Intent signatory — 1,350+ vessels

# Why we invest ahead of regulation

## The crew shortage is already painful

Qualified boatmasters are scarce today. Ageing is accelerating. Operators who don't innovate now may not be able to run their fleet in 5 years. Remote operations don't replace crew — they make crew sustainable.

## The OPEX case is real

Fuel analysis on the Volharding tanker fleet shows 54–56% fuel savings through just-in-time sailing enabled by remote navigation. Early adopters in scientific research project 30%+ total OPEX savings.

## First-mover advantage

Regulation will come. Those who invest now in technology, procedures and training will be ready to scale the moment legislation unlocks — others will be 3 years behind and face a steep learning curve.

## Collective voice shapes regulation

The Letter of Intent — 1,350+ vessels behind the same ambition — gives the sector a genuine voice with CCNR and national authorities. Individual shipowners cannot influence regulation; together, we can.

# What works — positive experiences from the field

### ✓ Better situational awareness

Multiple camera feeds, radar and AIS simultaneously visible from the ROC. In some situations, the remote operator has better information than someone physically on the bridge.

### ✓ Reduced fatigue, better decisions

Operators work fixed shore-based shifts and are fully rested at the start of each session. No more 12-hour watches on the water. Less fatigue means fewer errors.

### ✓ Faster incident coordination

The ROC has direct simultaneous communication with multiple authorities and parties. Incident coordination is measurably faster than traditional onboard-only channels.

### ✓ Data-driven improvement

Every voyage is logged. Every incident root-cause analysed. The fleet systematically gets safer and more efficient — by data and evidence, not by intuition.

# What we must honestly acknowledge — concerns we take seriously

*Watch closely*

## Connectivity is not always stable

We depend on telecom infrastructure we don't fully control. Technical message gaps occur more often than formal incidents. Robust redundancy is essential — and we are actively building it. Besides that, there areoperational procedures and training to deal with this topic

*Watch closely*

## Regulation still trails practice

Flanders permits Phase 3. The Netherlands / Germany does not yet. For shipowners wanting to invest, regulatory uncertainty is a real financial risk. That gap must close — and quickly.

*Monitor*

## Crew acceptance requires genuine effort

Not every boatmaster welcomes remote operations. Communication, training, and genuine involvement are non-negotiable. We are doing this — and know we need to keep improving.

*Monitor*

## Liability clarity is still evolving

Insurance is in place. But the full legal frameworks for liability in remote operations are not yet crystallised in every jurisdiction. Regulators and legal practitioners need to stay ahead.

# A message to fellow fleet owners

## Stop waiting. Start learning.

> *"The regulation is coming. The question is whether you will be ready for it — or running to catch up behind those who started earlier."*

> *"You don't have to commit to full autonomy. Start small: one vessel, one route, one ROC connection. Learn what it means for your specific operation before the regulation arrives."*

> *"Our sector has always said: we handle it ourselves. Here is the real chance to prove that — transparently, safely, and together. The Letter of Intent shows this is already happening."*

# We believe in this.
# Join the movement.

**Letter of Intent**

1,350+ vessels
behind the same ambition

**Proven operations**

30,000+ hours in
real conditions

**Insured & regulated**

Fully covered
and auditable

**Shape the norm**

Early movers write
the standard

seafar.eu