

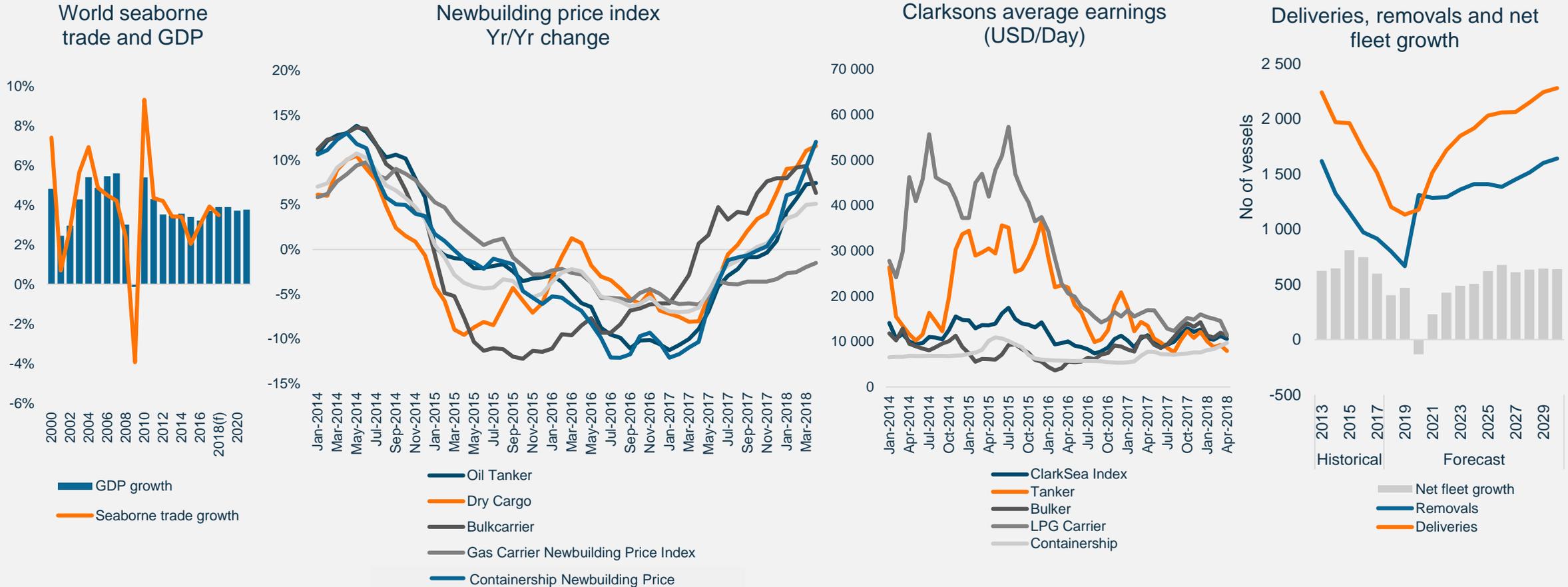
**Capital Markets**  
**Day 2018**

# MARINE SOLUTIONS: GROWTH THROUGH A SMART MARINE ECOSYSTEM

Roger Holm,  
President, Marine Solutions & Executive Vice President

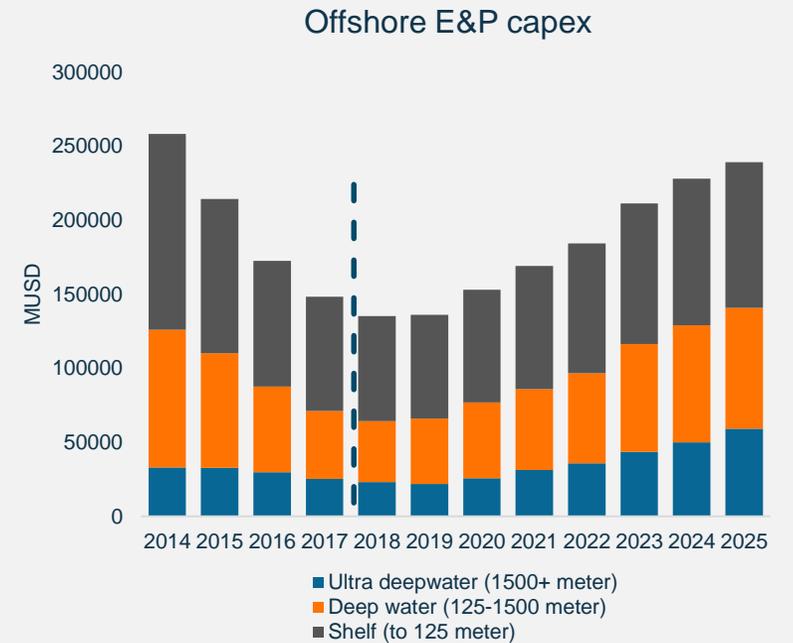
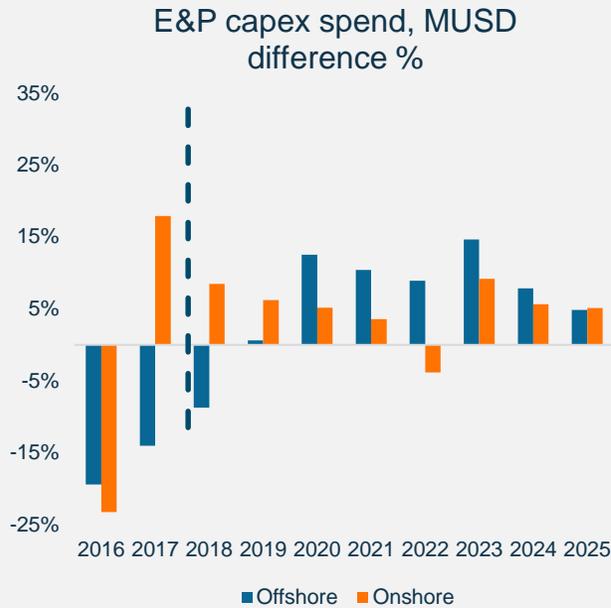
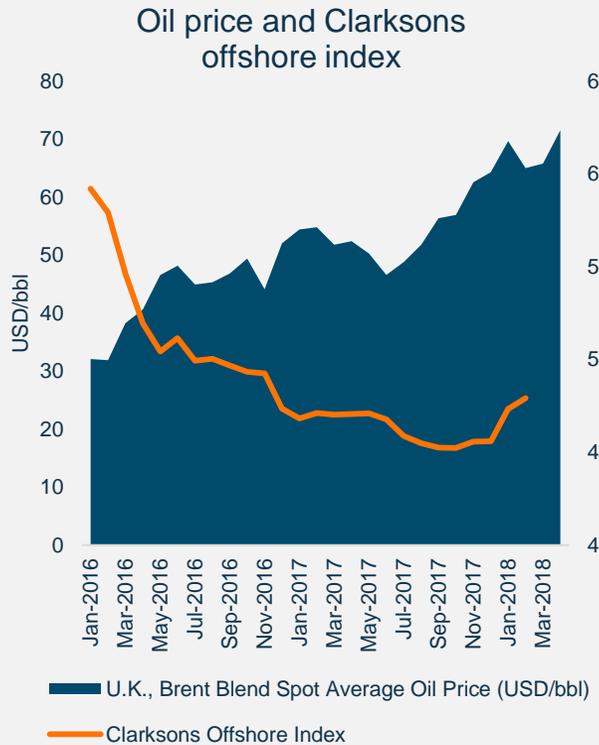


# Positive global economic conditions support shipping tonnage demand growth, while political and regulatory uncertainty limit the market recovery



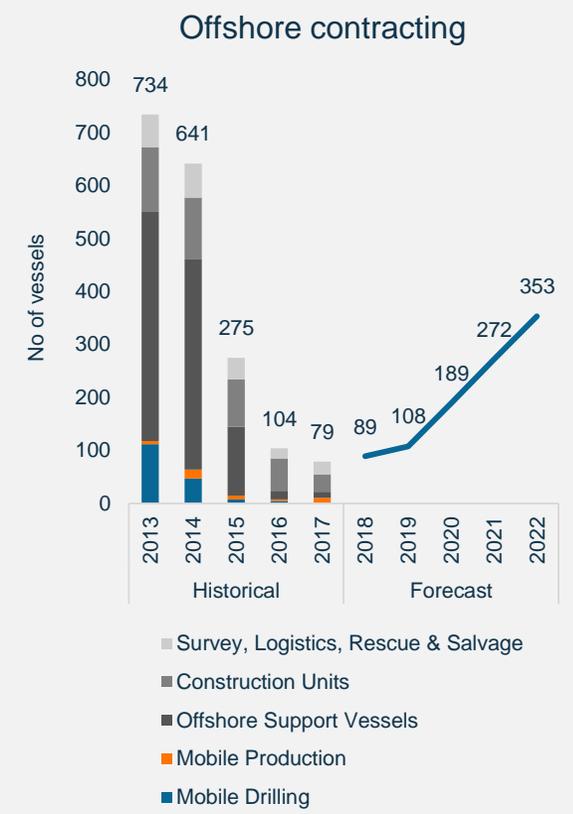
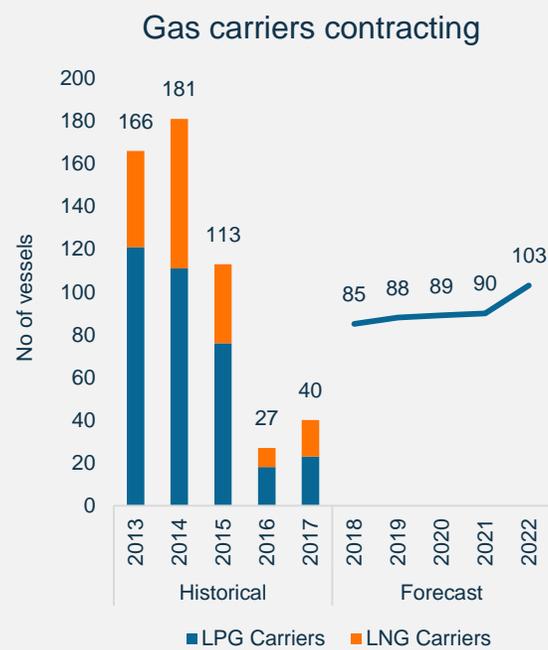
Source: Clarksons Platou

# Despite higher oil prices, US onshore production growth delays the offshore recovery



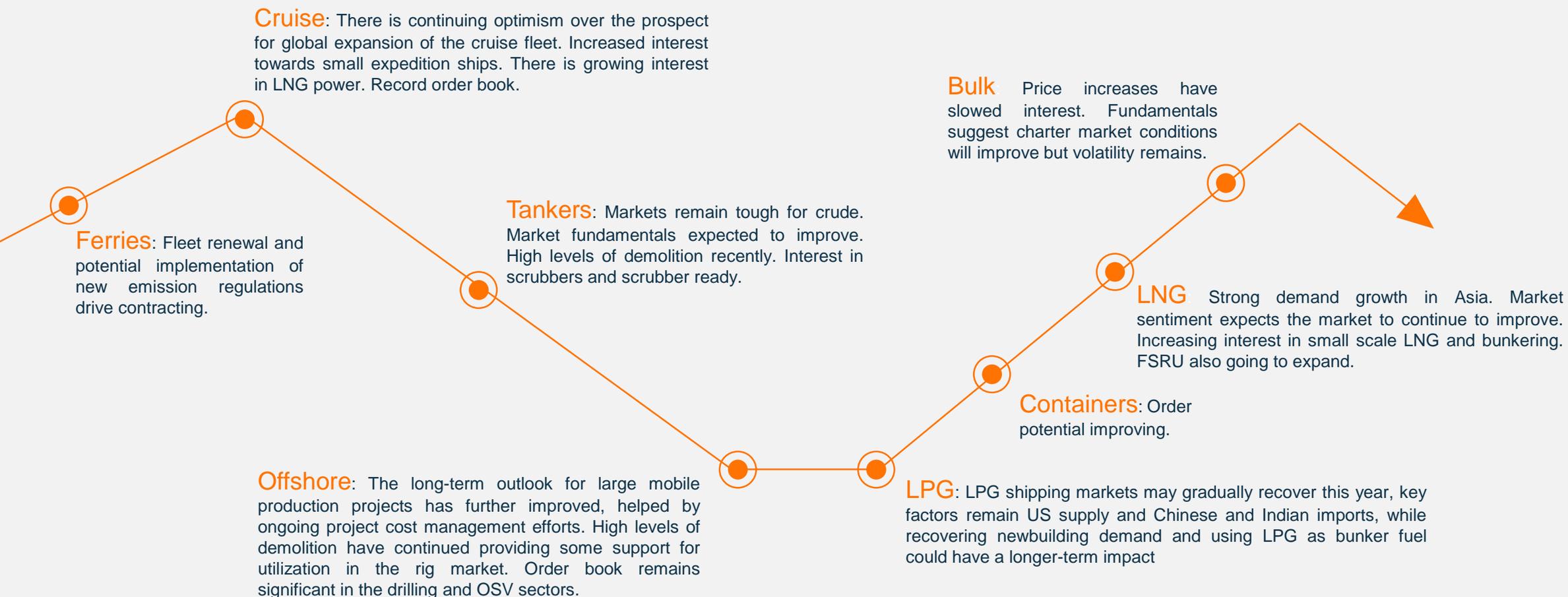
Source: Clarksons Platou, Rystad Energy

# General market sentiment is cautiously optimistic



Source: Clarksons Platou, Wärtsilä Internal Analysis

## Drivers and sentiment vary in different vessel segments

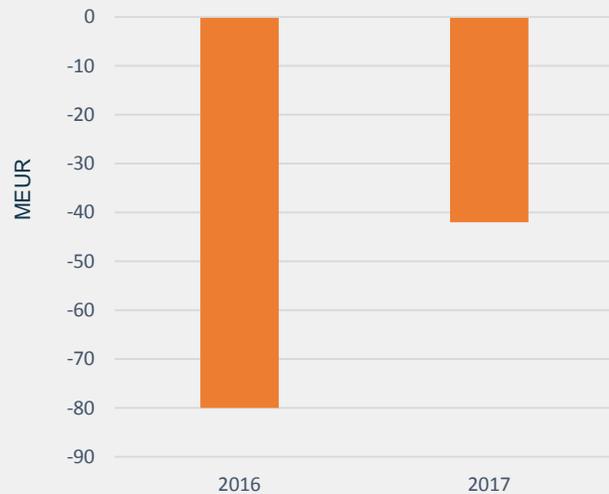


Source: Marine Solutions BI internal analysis, Clarkson Platou

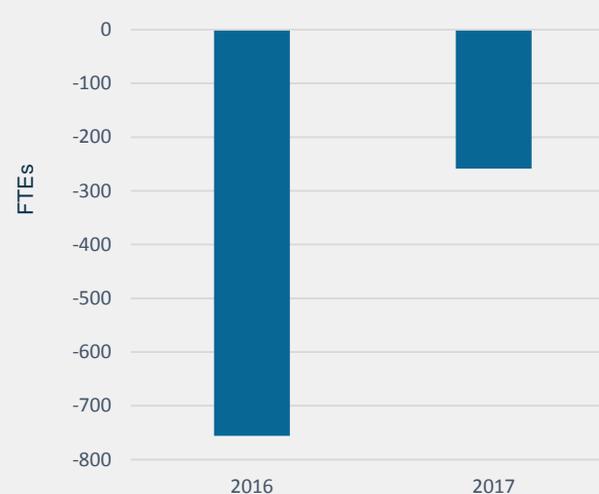
# Transforming our operations to meet market requirements

## Realignment and operational excellence has significantly improved our competitiveness...

Capacity cost decreased with  
~120 MEUR over the past two years



FTEs decreased with ~1,000 FTEs  
over the past two years



## ...and we have new targets for further improvements

Lead time reduction  
achieved (2016–2018)

Production  
lead time -20%

Main assembly  
lead time -25%

Standard  
hours/MW -32%

Targets for further optimisation (2017–2020)

**Machine stop  
reduction**  
**40%**

By enabling Predictive  
Maintenance

**Defect  
reduction**  
**15%**

Less internal mistakes due to  
reworking or bad recording  
of data.

**WIP  
reduction**  
**30%**

By a better resources utilisation  
& flexible planning

**Reduction In  
energy usage**  
**25%**

By smart energy  
management systems

**Reduction of survey  
costs**  
**30%**

By means of remote survey &  
data streaming

**Ease new products  
introduction**  
**20%**

By enabling production data  
analytics about issues and  
production set up

\* Example from one factory

## Marine power solutions

### Top player

Gas carriers  
Cruise & ferry  
Offshore

- Power supply
- Power conversion
- Propulsion,
- Exhaust treatment

### Mid-player

Special vessels

### Challenger

Navy  
Traditional merchant



## Processing solutions

### Top player

Gas carriers

- Water & waste
- Flow solutions
- Gas solutions

### Mid-player

Special vessels

### Challenger

Traditional merchant



## Voyage solutions

### Top player

Cruise & ferry  
Traditional merchant  
Ports  
Academy

- Automation, navigation & communication
- Entertainment systems
- Simulation & training solutions
- Fleet operations solutions
- Ship traffic control solutions
- Special products

### Mid-player

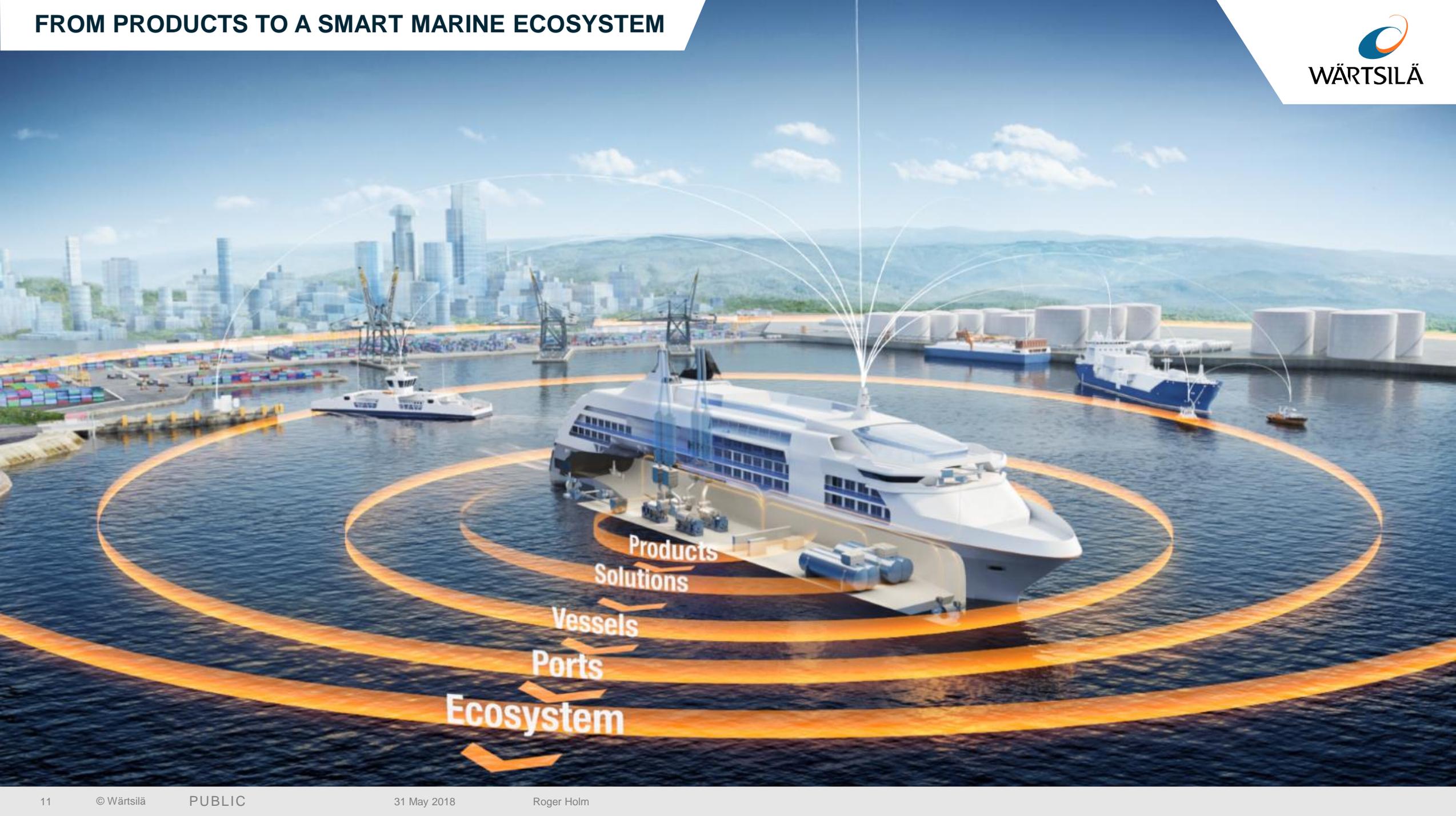
Special vessels

### Challenger

Navy



# Leading the industry transformation towards a Smart Marine Ecosystem

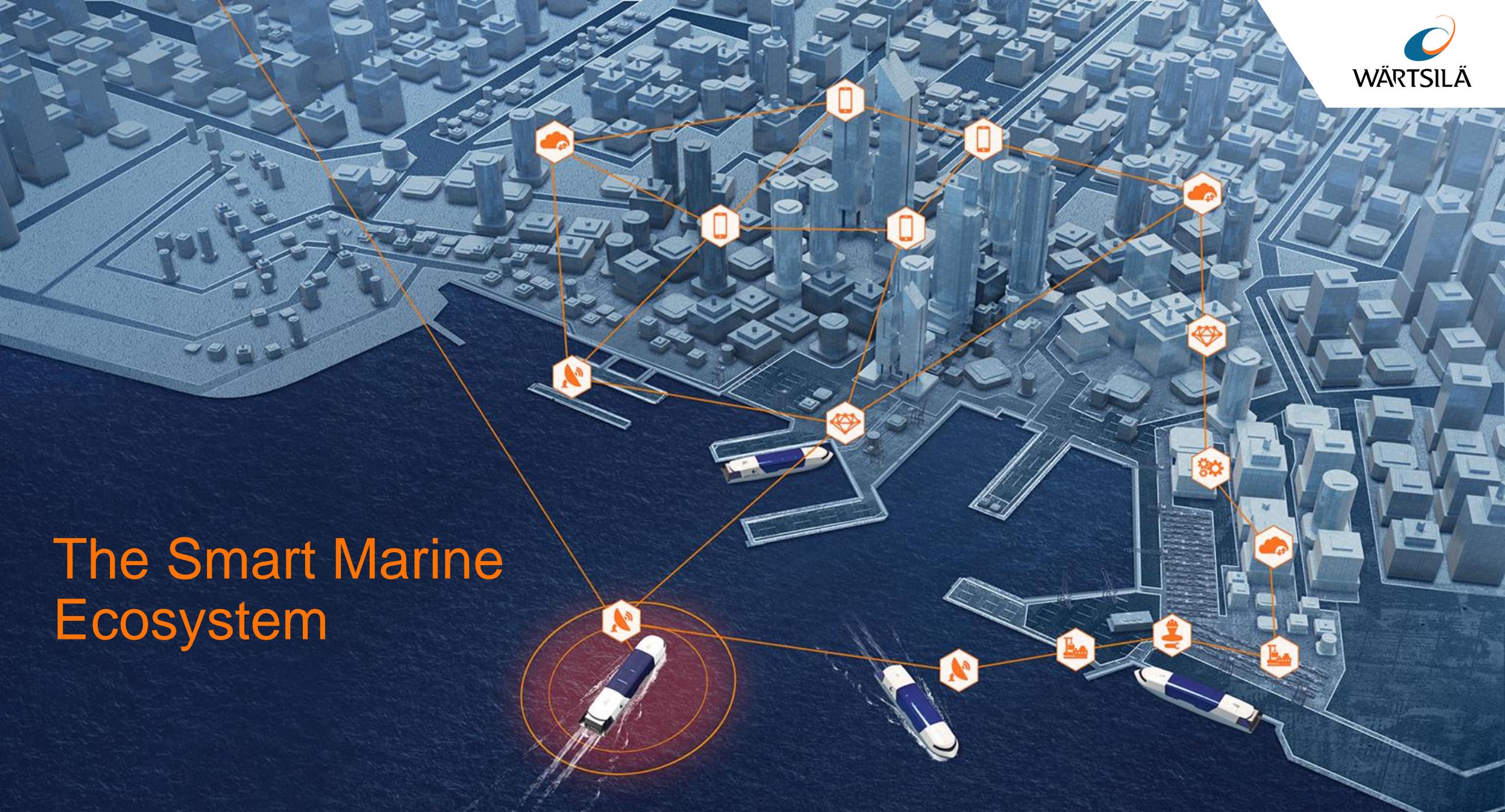


## 20 BEUR waste is incurred annually from poor fuel efficiency & time at terminal

	Fuel efficiency	Time at Terminal
 Offshore	0.2 BEUR	0.7 BEUR
 Cruise	0.5 BEUR	-
 Ferry	1.3 BEUR	-
 Gas Carrier	0.3 BEUR	1.0 BEUR
 Containership	14.5 BEUR	2.1 BEUR

Total global shipping fuel bill of roughly 100 BEUR today

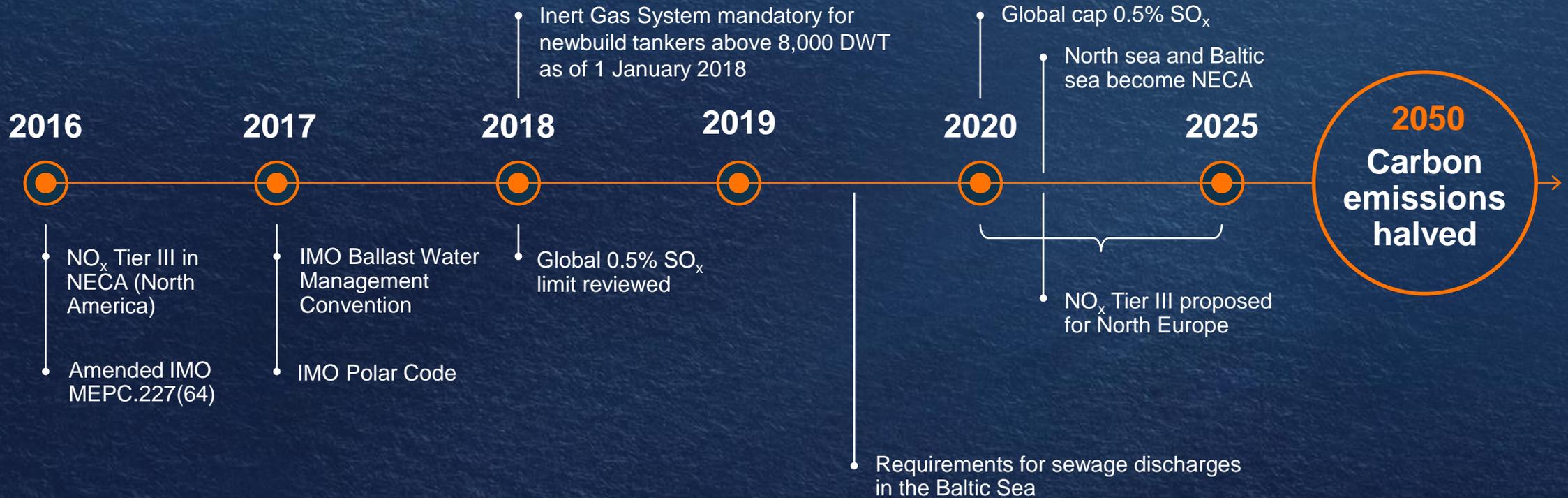
# The Smart Marine Ecosystem



# Towards a **zero emission** future

Eliminating sources of waste through digitalisation

# Environmental legislation creating growth opportunities



FOSSIL  
FUELS

EMISSIONS AND  
HIGH FUEL  
CONSUMPTION

ROUTE BASED  
ON HUMAN  
EXPERIENCE

MANUAL  
OPERATIONS

RISK OF  
ACCIDENTS

SHORT TERM  
PLANNING

PRESCRIPTIVE  
MAINTENANCE

OPERATIONAL  
DOWNTIME &  
REPAIR COSTS

WAITING TIME AND  
INEFFICIENCIES  
AT PORT

PORT  
CONGESTION

Saving per voyage with just-in-time arrival:

# 74.5 tons of fuel\*

# 22,200 EUR\*\*



CASE:  
5,500 TEU Containership  
Distance: 1,150 Nautical Miles

\* Assuming average SFOC : 230 g/kwh

\*\* Assuming fuel price: 300 EUR/t



Smart Energy Management

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Navigation & Intelligent Automation

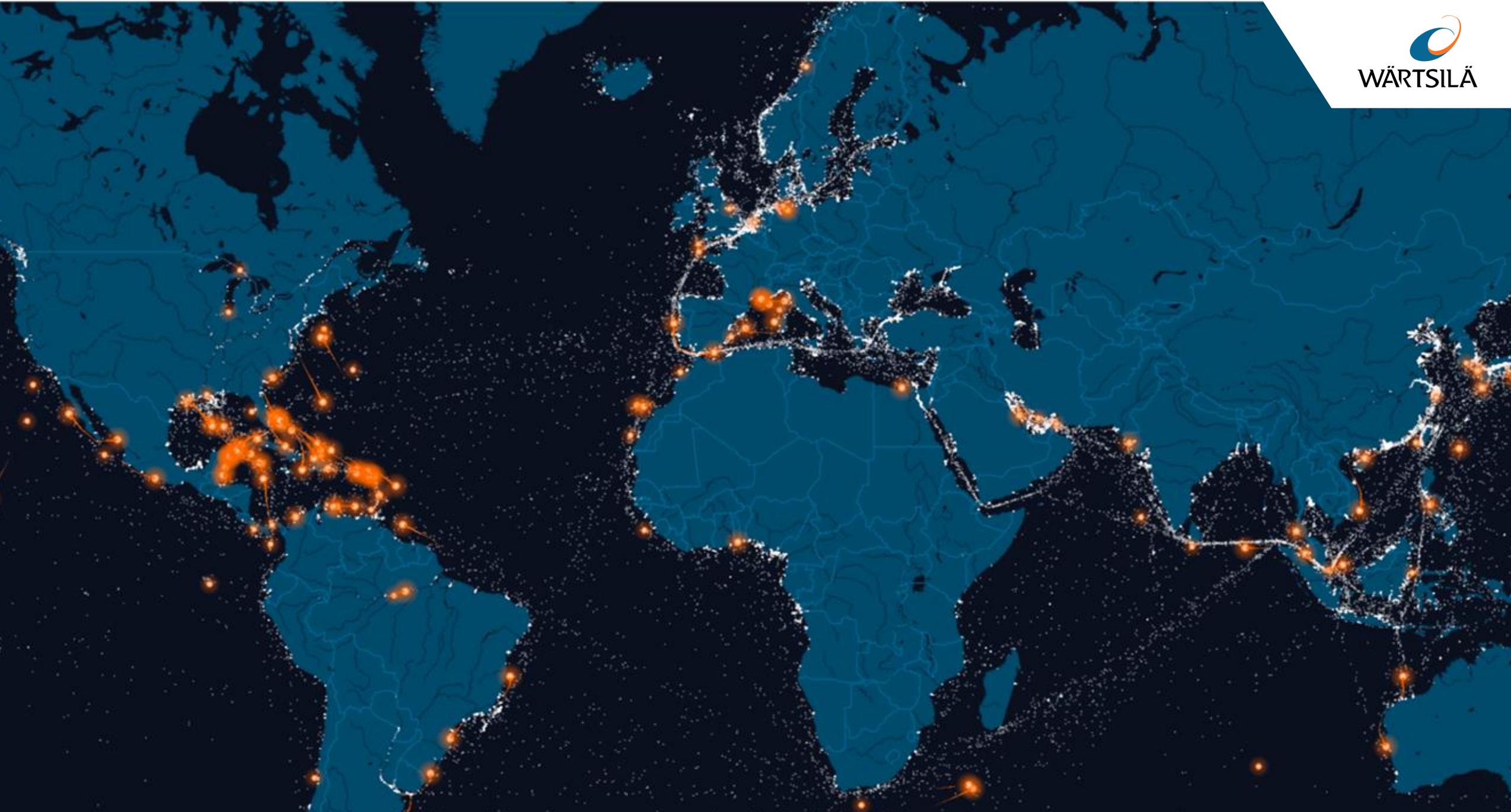
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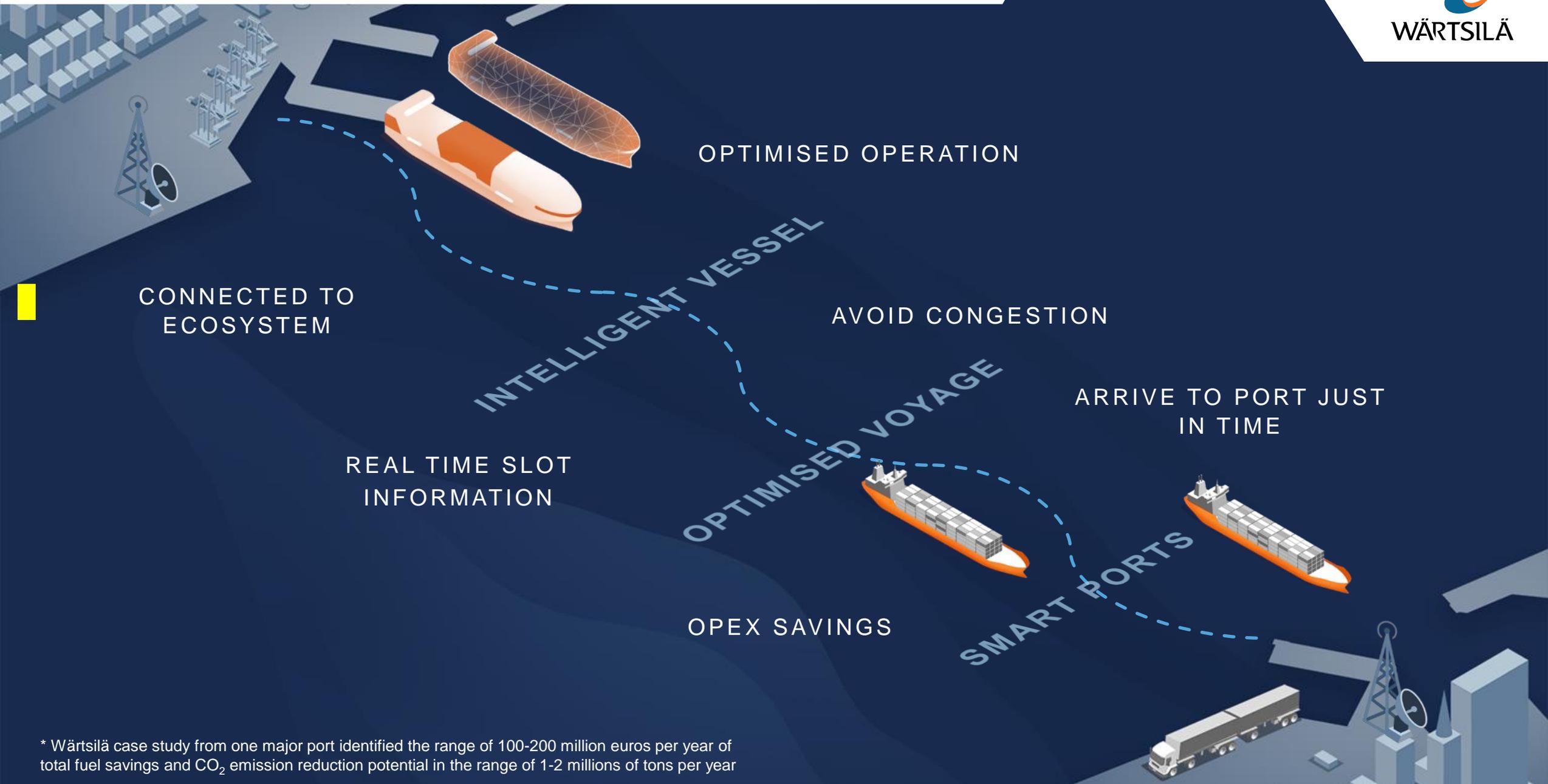


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Smart Ports





\* Wärtsilä case study from one major port identified the range of 100-200 million euros per year of total fuel savings and CO<sub>2</sub> emission reduction potential in the range of 1-2 millions of tons per year



# Our **customers** view on future shipping

**“Making shipping a cleaner, more effective way of transporting goods.”**

The main ecological and economical features compared to traditional vessels:

- CO<sub>2</sub> eq. reduced by more than 42%
- NOx reduction of 80%
- SOx and particles almost entirely eliminated
- Use of VOC as fuel reduces bunkering of 40%
- Reduce machinery running hours of 29%
- Reduce overall fuel consumption of 10%





**“A mutually beneficial partnership.”**

Norwegian ro-ro passenger ship  
Folgefonn, owned by ferry operator  
Norled.

Autodocking is one of the first steps in  
fully autonomous shipping.

Wärtsilä’s autodocking technology  
delivers notable benefits to operators.  
These include:

- improved safety
- less wear and tear
- greater efficiency in docking



**“Creating the world’s fastest and most reactive tug models.”**

SeaWays has worked closely with Transas over the past 10 years.

- 360° TugSim- the most advanced in the world
- Simulation benefits: realistic exercises, improved safety, time and fuel savings
- Training benefits: enables to operate the company assets with greater efficiency and vastly reduce fuel burn and carbon emissions



"Growth is at no time by mere chance; it is the result of forces working together."

THANK YOU



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