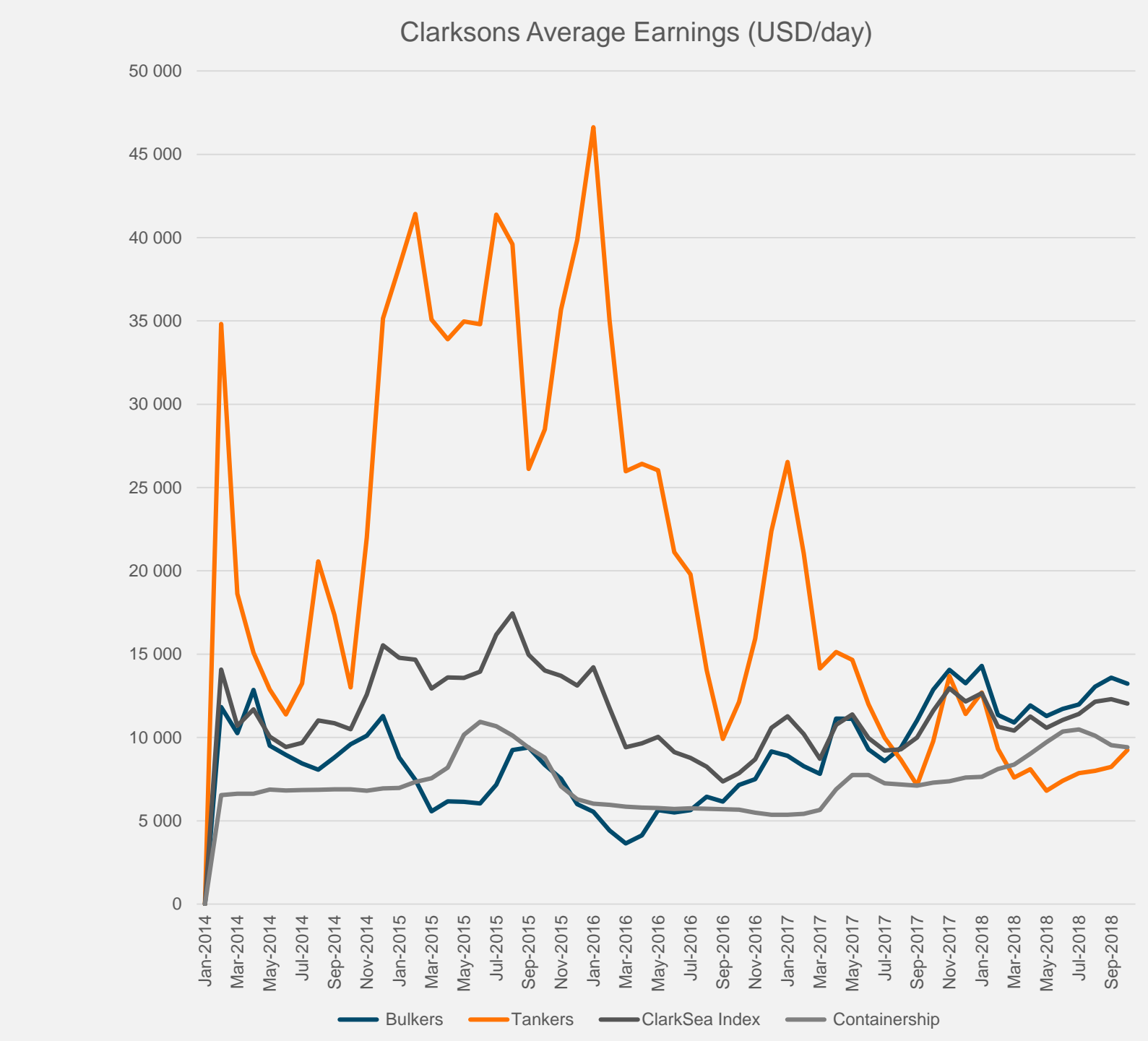
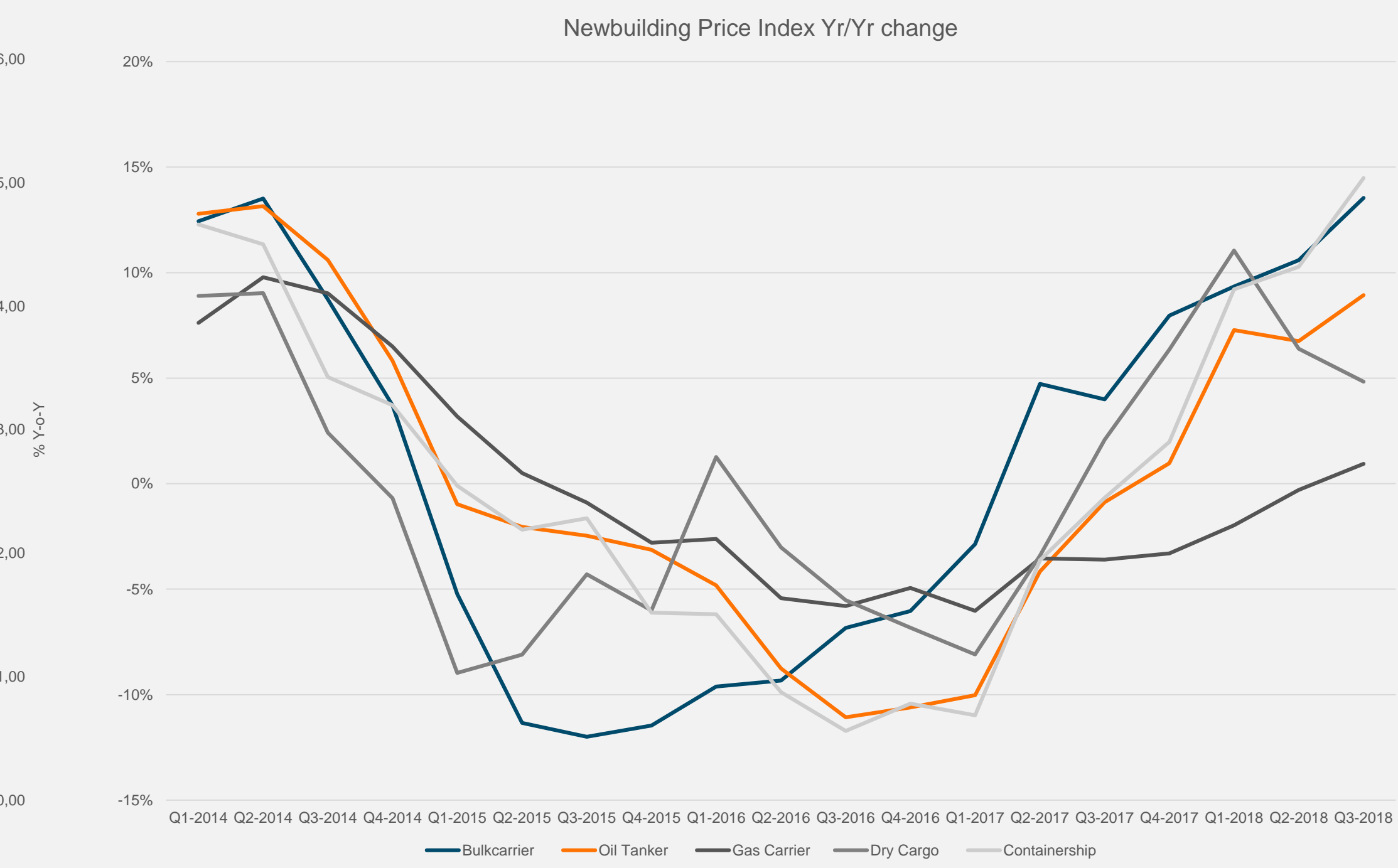
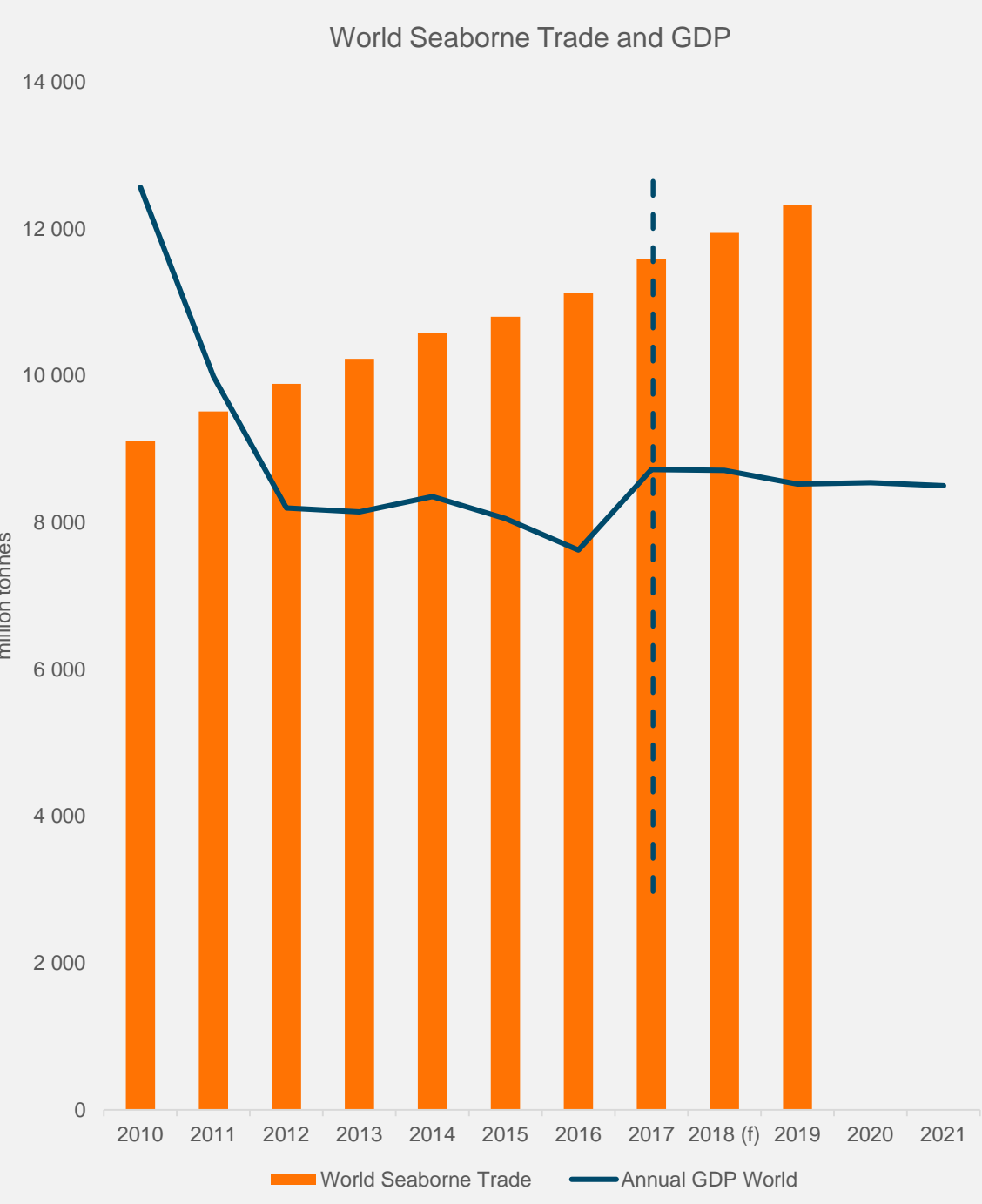


THE DISRUPTIVE POWER OF DATA AND TECHNOLOGY

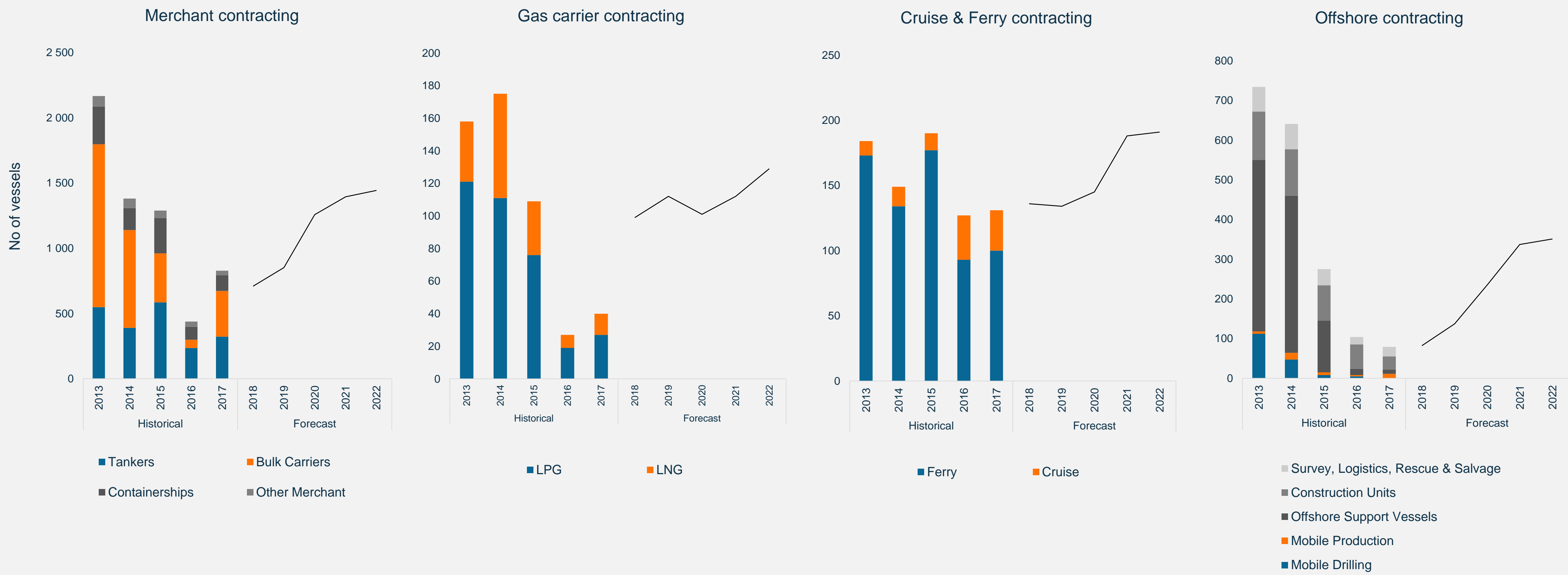
A new era of the maritime industry

Roger Holm,
President, Marine Solutions & Executive Vice President

Predicted global economic growth support seaborne trade demand, while political and regulatory uncertainty limit the market recovery

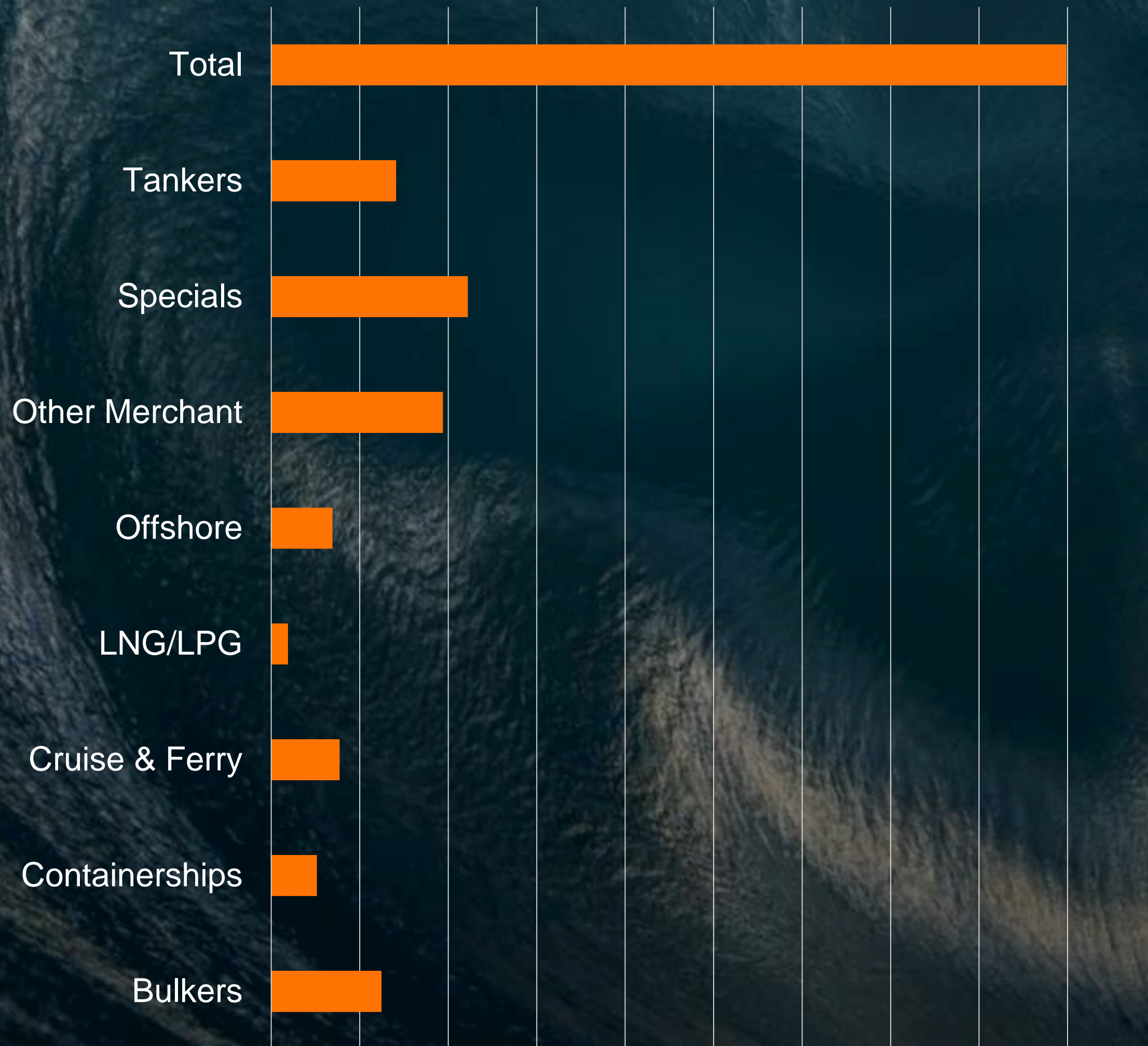


General market sentiment is cautiously optimistic



MARINE FACT SHEET

MAIN SHIP TYPES



90% of world trade



Global shipping fuel bill around
\$100 billion



Fuel costs can represent even up
to **50% of total ship operating
costs**

+ 2 000

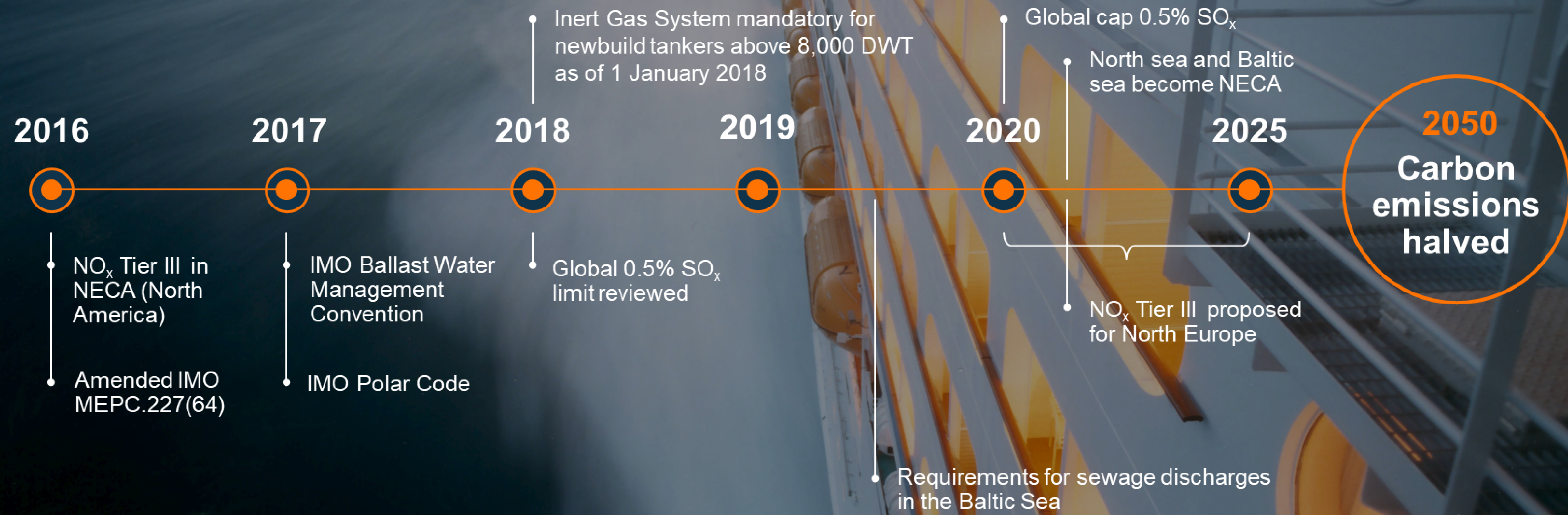
Amount of **new vessels**
built yearly

+ 1 000

Amount of new yearly **contracts**



Environmental legislation creating growth opportunities



The essence of Smart Marine



Smart Marine Ecosystem

Connecting Smart Vessels

Energy Management

- Holistic energy & emission management tailored to specific operations
- Integrated hybrid solutions with multiple power sources & energy storage

Asset Management

- Remote ship performance optimisation
- Condition-based maintenance
- Fleet coordination
- PBL agreements
- Digital Twin

Voyage Management

- Advanced speed & route optimisation
- Ship-to-port data exchange
- Remote & automated operations
- Situational awareness

to Smart Ports



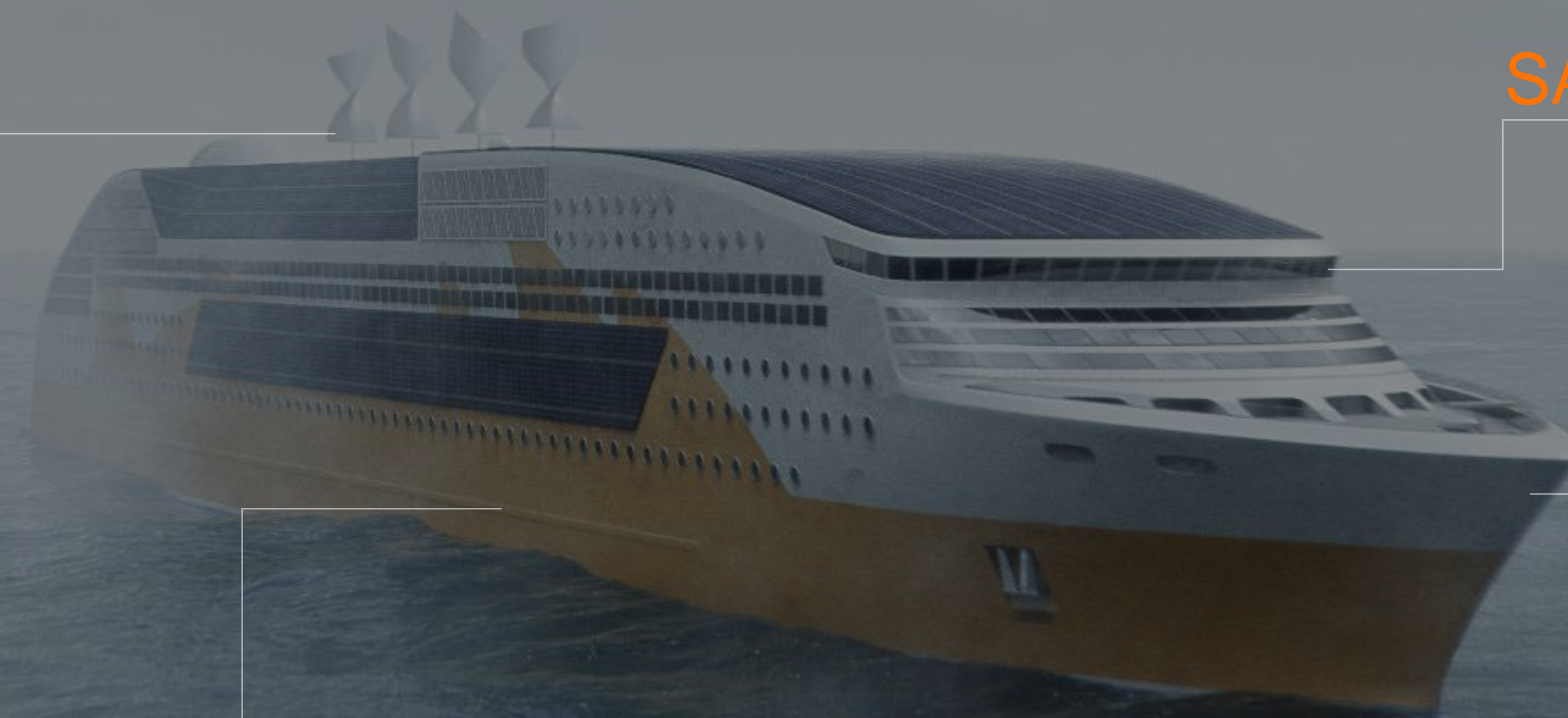
SMART VESSELS

SUSTAINABLE

SAFE

RELIABLE

EFFICIENT





THE FUTURE OF MARITIME OPERATIONS



eniram
A WÄRTSILÄ COMPANY

GUIDANCE
MARINE
A WÄRTSILÄ COMPANY

TRANSAS



BLOCKCHAIN



SIMULATION



ARTIFICIAL
INTELLIGENCE



BIG DATA



CLOUD COMPUTING



ADVANCED ROBOTICS



AUGMENTED REALITY



SYSTEM INTEGRATION



INTERNET OF THINGS



CYBERSECURITY



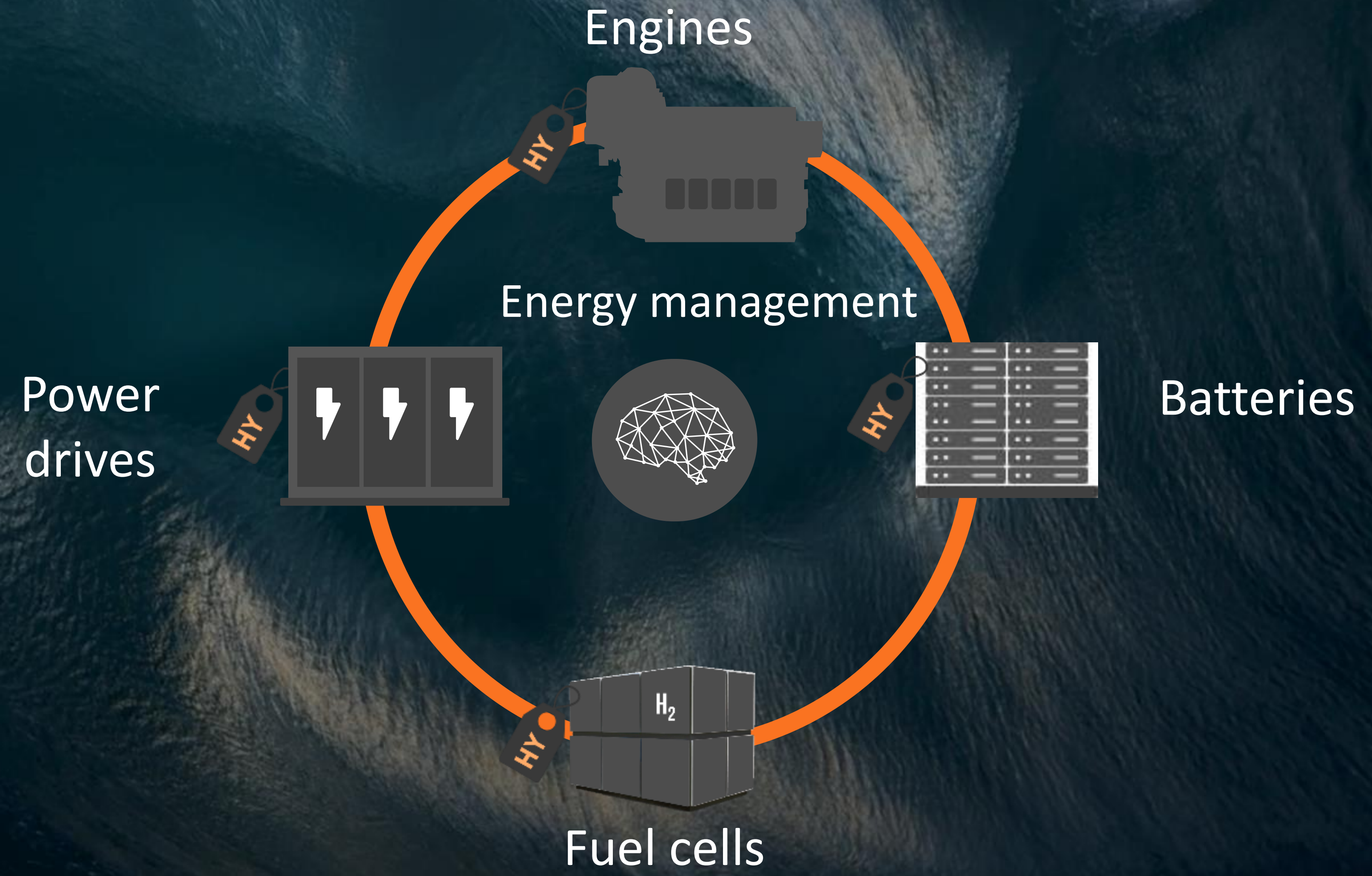
PREDICTIVE
ANALYTICS



ADDITIVE
MANUFACTURING

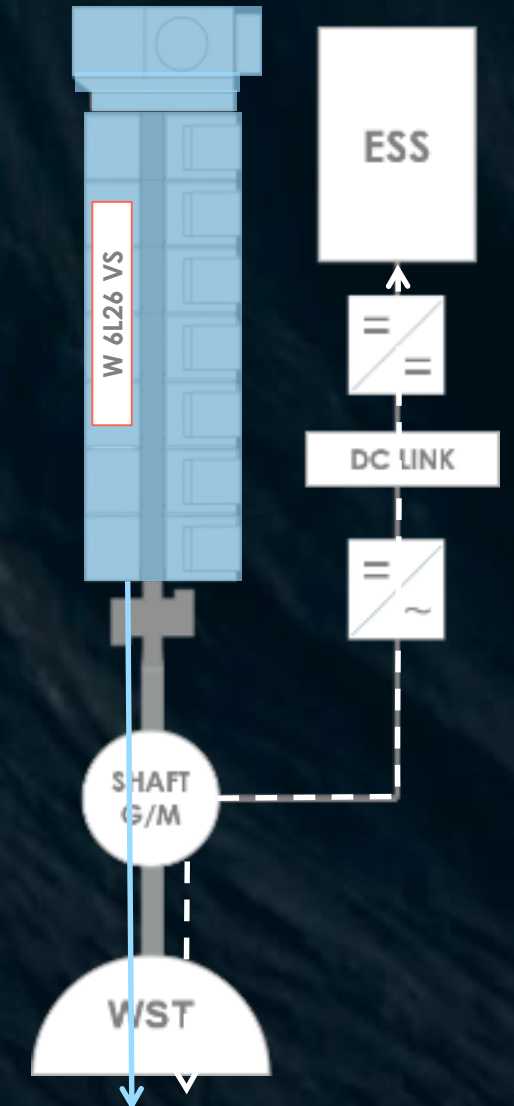
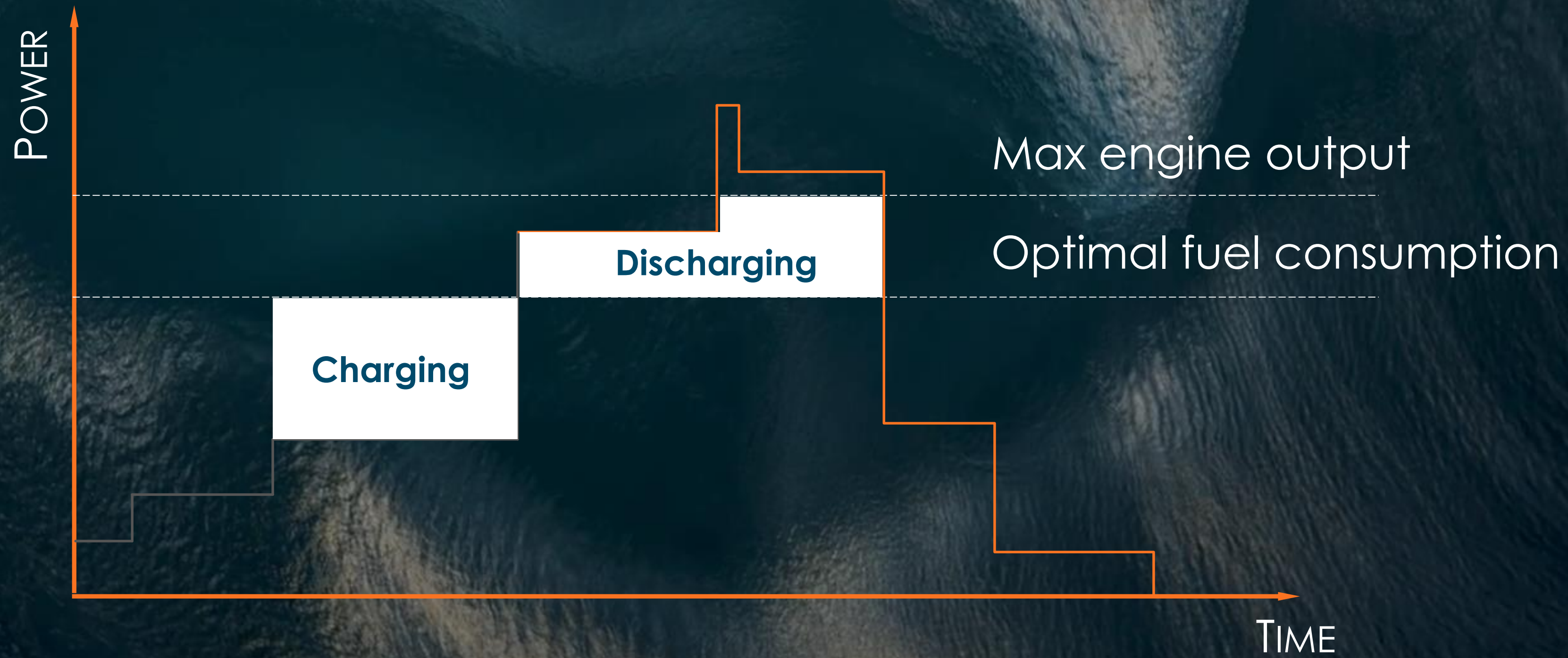
TURNING TECHNOLOGY INTO SOLUTIONS

TOWARDS A HYBRID ECOSYSTEM





OPTIMAL LOADING



THE FUTURE OF NAVIGATION

IntelliTug



Remote Operations



Automated Vessel Operations



AI-based Applications

- Advanced Routing
 - Collision Avoidance
 - Anomaly Detection
- 



AUTOMATED VESSEL OPERATIONS

VOYAGE OPTIMISATION



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

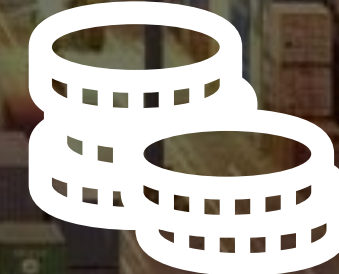
JUST-IN-TIME ARRIVAL AT PORT OF SINGAPORE



1 600 000 T
CO2 emissions cut




540 000 T
fuel reduction



160 000 000 €
fuel bill savings



SAFETY
thanks to reduced
congestion

A close-up photograph of a woman with long, dark hair blowing in the wind. She is wearing a bright orange, textured knit sweater. Her eyes are closed, and her expression is serene. The background is a soft, out-of-focus landscape with a bright light source, possibly the sun, creating a hazy, atmospheric effect. The text "We can't do this alone. Nobody can." is overlaid in white, sans-serif font on the left side of the image.

We can't do
this alone.
Nobody can.

An Oceanic Awakening



THANK YOU.