



Co-funded by the  
European Union

Members of:



**Natural co-propulsion for ships:  
sailing towards a sustainable future**

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**bound4blue**



# MARITIME INDUSTRY SEEKS COSTS AND POLLUTION REDUCTION



Tighter environmental  
legislation



Higher fuel prices





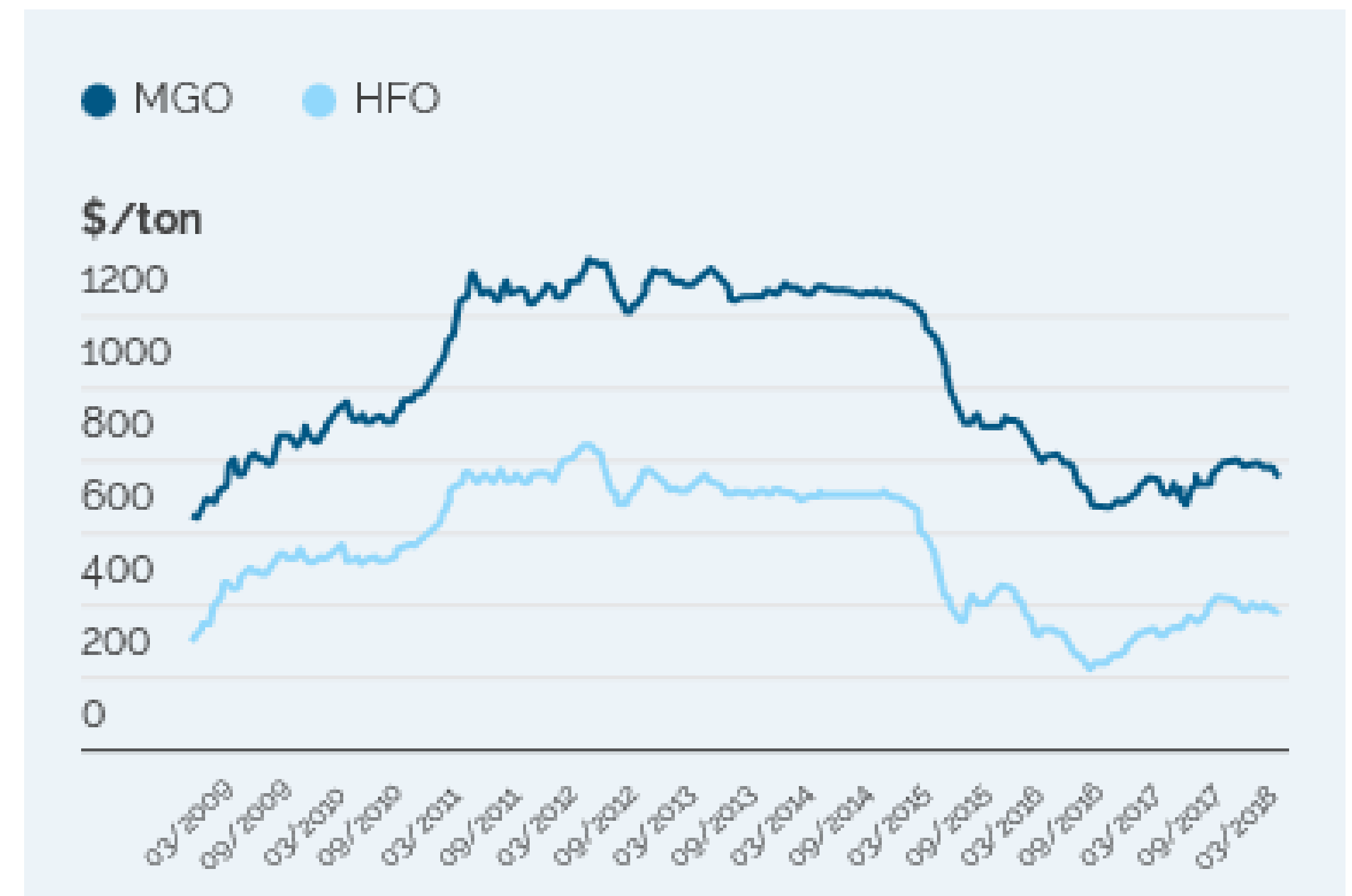
# SO<sub>x</sub> EMISSIONS

Reduce, **by 2020** Sulphur  
content in fuel:

from  
**3.5%**  
Heavy Fuel  
Oil (HFO)

→

to  
**0.5%**  
Marine Gas  
Oil (MGO)





# CO<sub>2</sub> EMISSIONS

## IMO CO<sub>2</sub> emission Goals & Strategy

*approved in April 2018*

Reduce **total** CO<sub>2</sub> emissions

**50%** by 2050  
*compared to 2008*

Reduce CO<sub>2</sub> emissions per  
**transport work** (tonnes·NM)

**40%** by 2030  
*compared to 2008*

**70%** by 2050  
*compared to 2008*

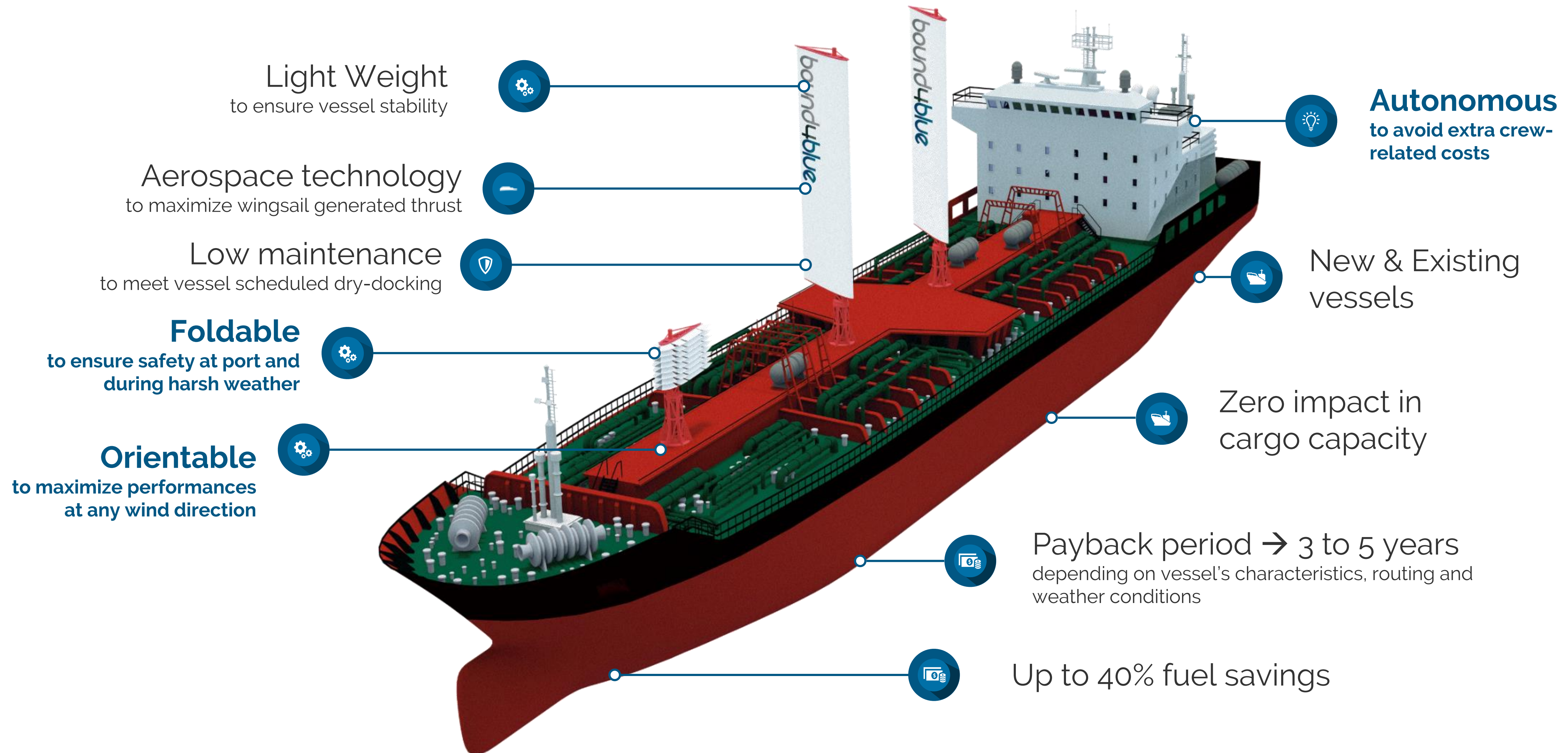


A world map showing global wind patterns. The map uses a color scale from blue (low wind speed) to yellow and orange (high wind speed). Major wind belts are visible, including the trade winds and westerlies. A semi-transparent white banner is overlaid across the middle of the map.

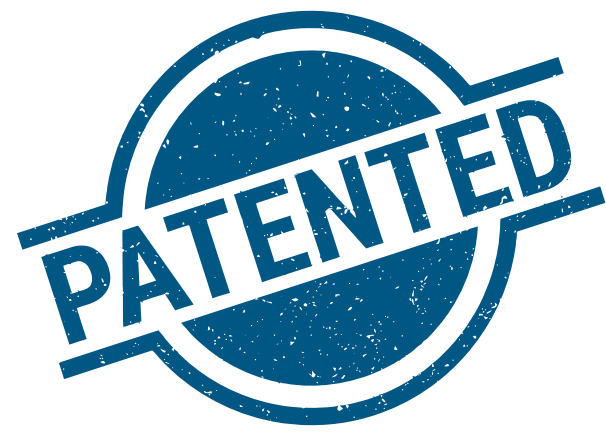
# SOLUTION **WIND-ASSISTED PROPULSION**



# FOLDABLE WINGSAIL









# WINGSAIL READY TO BE INSTALLED

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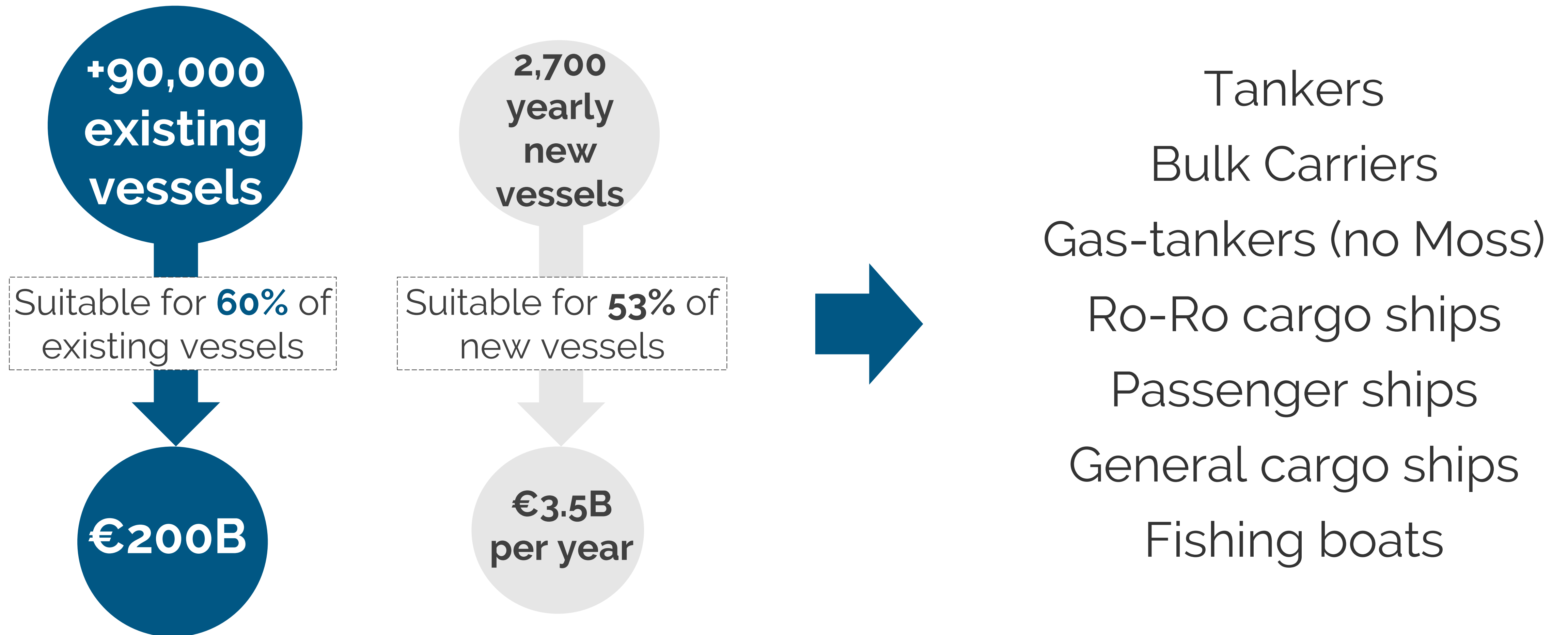


# COMPETITORS & BUSINESS CASE

	bound4blue Foldable wingsail	Competitor #1 Rotor	Competitor #2 Kite
			
Is it foldable?	✓	✗	✓
Is it 100% automated?	✓	✓	✓
Expected range of fuel savings	Up to 40%	Up to 25%	Up to 20%
Maintenance costs	++	+++++	++++
Average payback periods	< 5 years	+ 5 years	+ 5 years



# MARKET

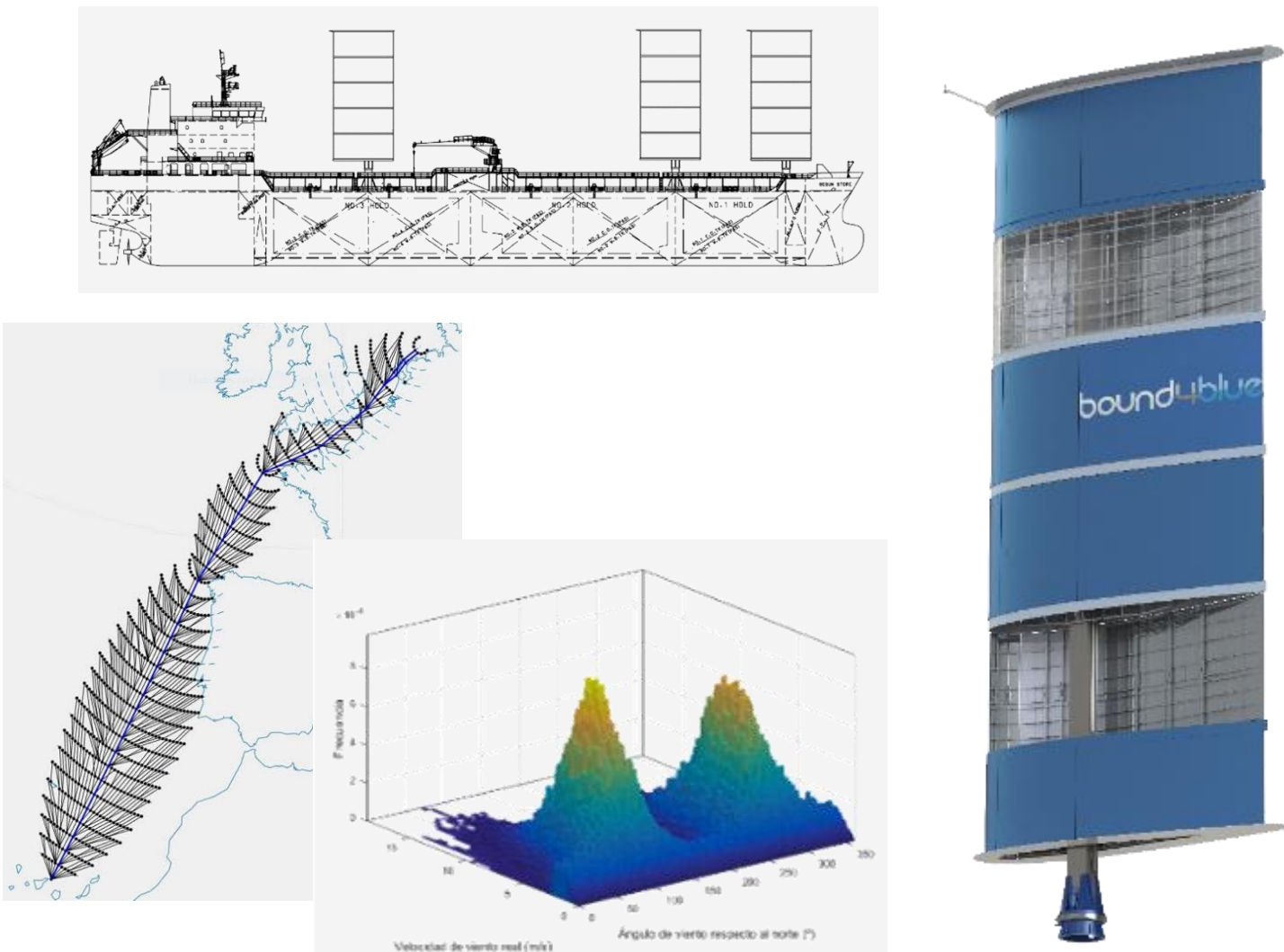




# BUSINESS MODEL (i.e. Europe)

bound4blue

Engineering  
Project Management  
Quality Assurance



CYTECMA EBM

DEGIMA  
NAVAL ENERGETICO INDUSTRIAL CIVIL

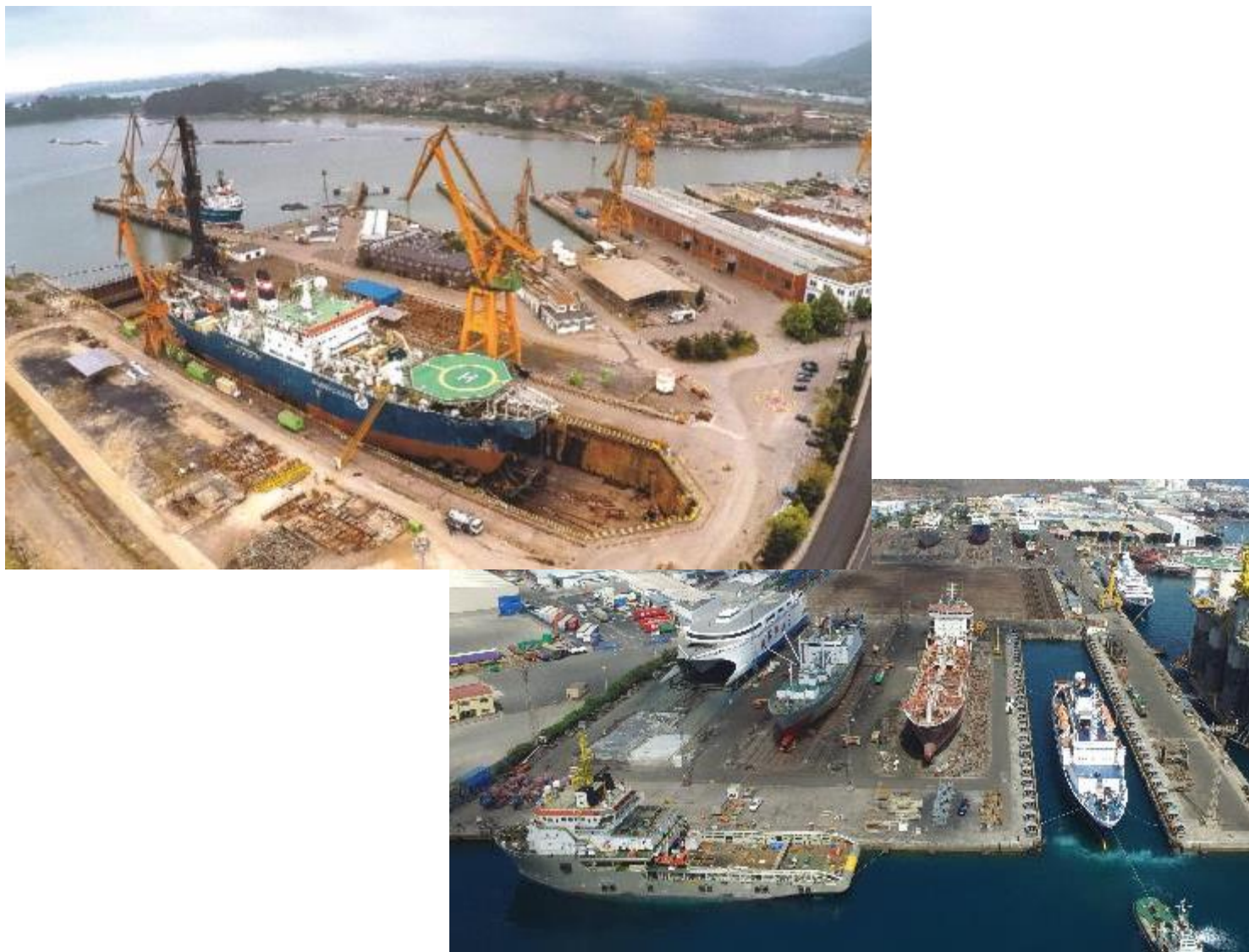
Wingsail manufacture



ASTANDER

ASTICAN

Wingsail integration on  
the vessel





A grayscale photograph showing a hand holding a ruler against a technical drawing on a table. The drawing includes various lines, arrows, and text. The hand is positioned on the left side of the frame, with the index finger pointing towards the ruler. The ruler is marked in inches and centimeters. The technical drawing features a large rectangle with dashed lines, a north arrow pointing upwards, and several smaller rectangles and lines. The text 'PLANTA ALTISSIMO' is visible at the top of the drawing. The overall scene suggests a professional or academic setting, such as an architect's office or a classroom.

# A REAL MARKET NEED **ONGOING PROJECTS**



# INTEGRATIONS IN 2019

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## OR.PA.GU

40 m longliner fishing vessel

8x20 m wingsail

Shipyard (Panamá)

Sea trials (Pacific Ocean)

Funded by the shipowner





# INTEGRATIONS IN 2019

## La Fura dels Baus

60 m dry-bulk vessel

8x20 m wingsail

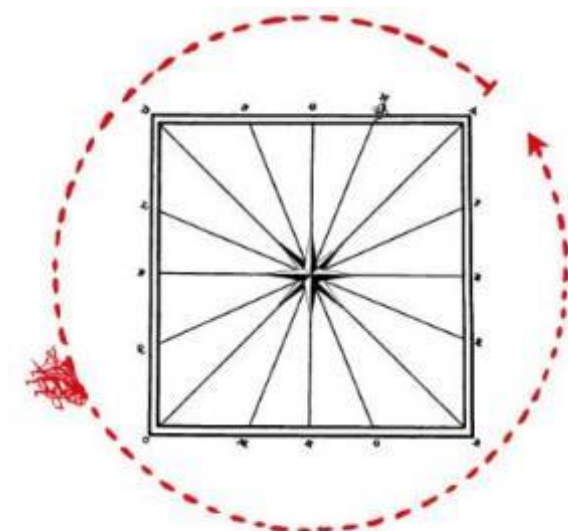
Shipyard (Astander – Spain)

Sea trials (Cantabrian Sea)

Co-funded by European Union



V CENTENARIO  
1ª VUELTA AL  
MUNDO

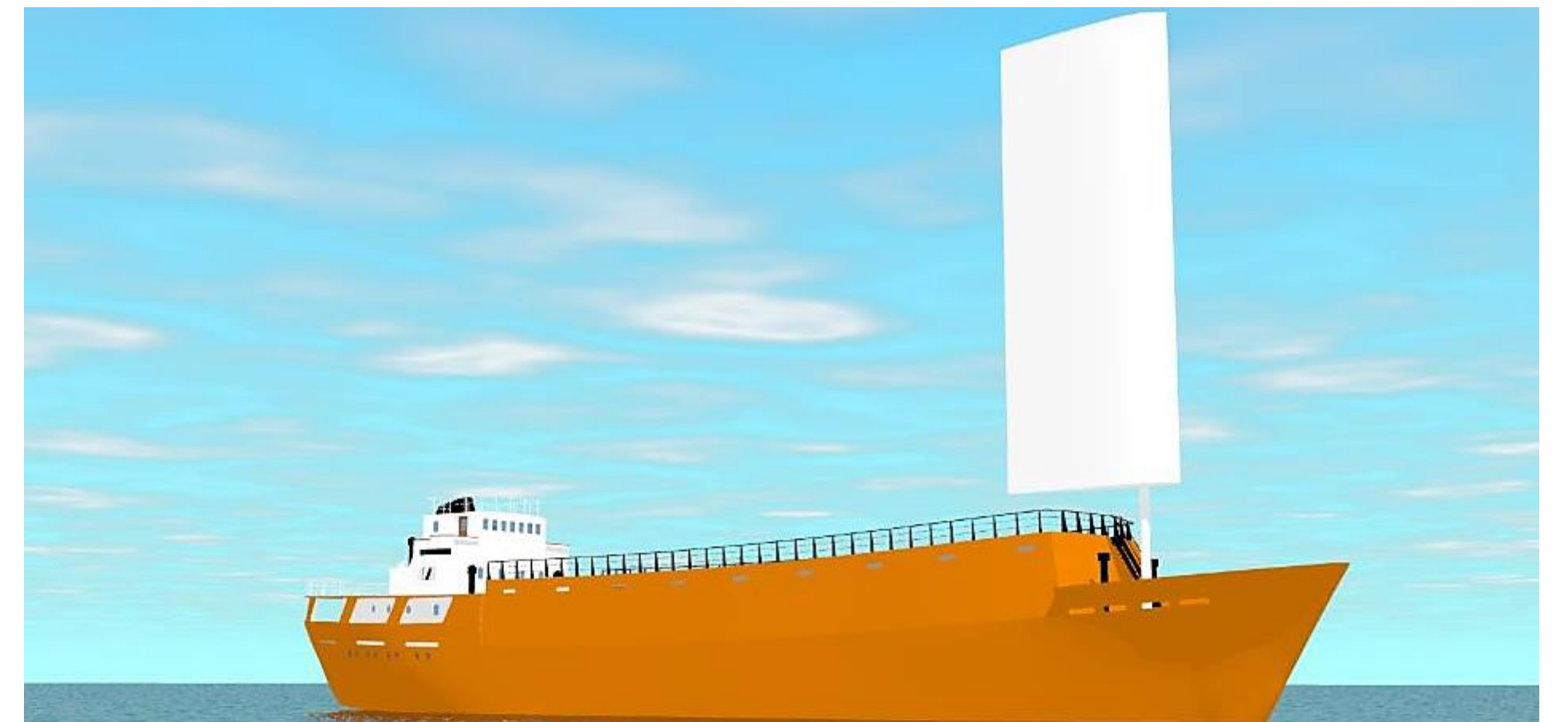


SPHÆRA MUNDI  
LA FURA DELS BAUS

500 años de la primera  
vuelta al mundo



Co-funded by the  
European Union







# BOUND4BLUE ABOUT US



# TEAM



We have worked at:

**BOMBARDIER**  
AÉRONAUTIQUE

**gmv**  
INNOVATING SOLUTIONS



**CSIC**  
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

**ADELTE**  
THE BOARDING COMPANY

**AIRBUS**

**Applus<sup>+</sup>**

**ABENGOA**

**MECALUX**

Our awards:



**FPdGi** Fundació Fundació  
Princesa de Girona

**MIT Technology Review**  
INNOVATORS  
UNDER 35





*Twenty years from now, you will be more disappointed by the things  
you didn't do than those you did. So throw off the bowlines. Sail  
away from safe harbour. Catch the trade winds in your sails.  
Explore. Dream. Discover.*

*Mark Twain*

