JORES JOINT RESEARCH PROJECT:

NUMERICAL METHODS VALIDATION

FOR DESIGNING AND BUILDING MORE ADVANCED

AND ENERGY EFFICIENT SHIPS

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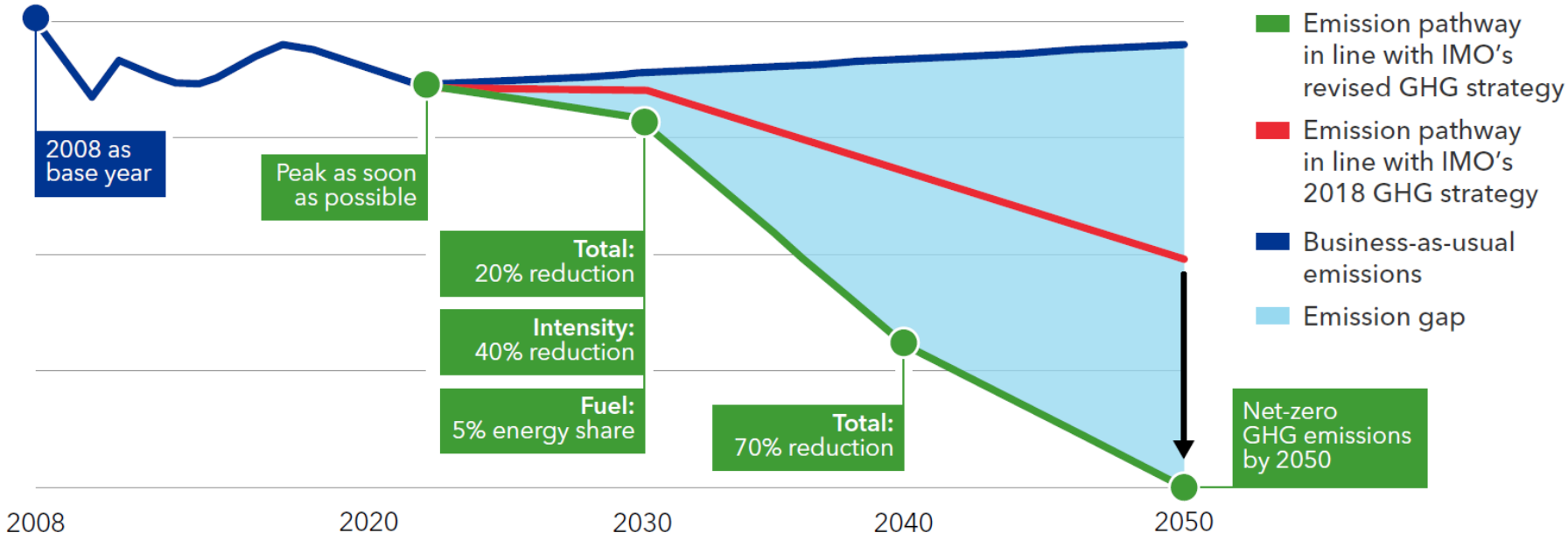
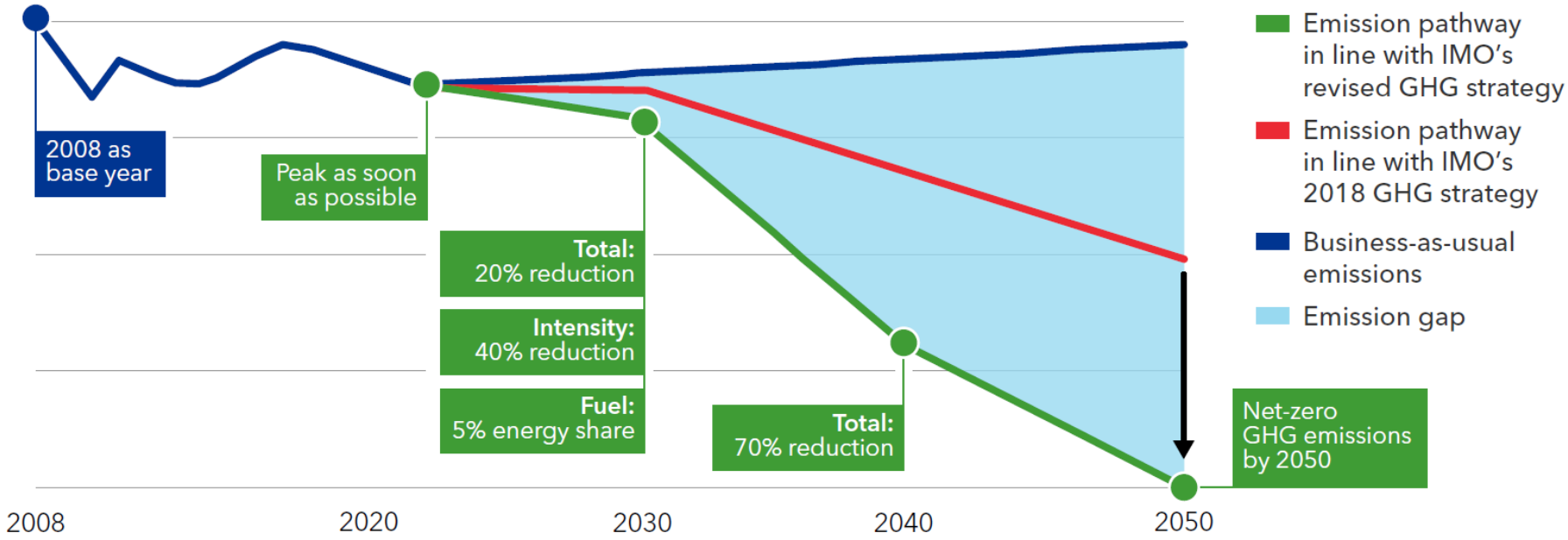
The revised IMO GHG strategy



Total: Well-to-wake GHG emissions; **Intensity:** CO_2 emitted per transport work; **Fuel:** Uptake of zero or near-zero GHG technologies, fuels and/or energy sources



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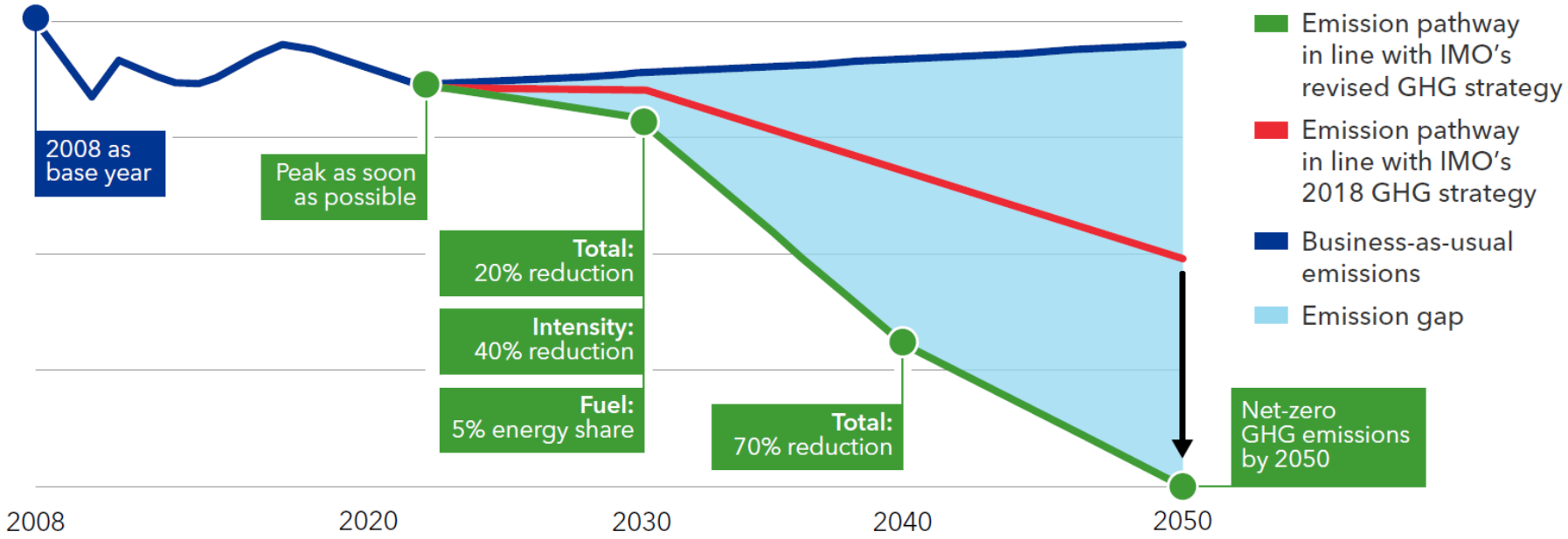
DNV Maritime forecast to 2050



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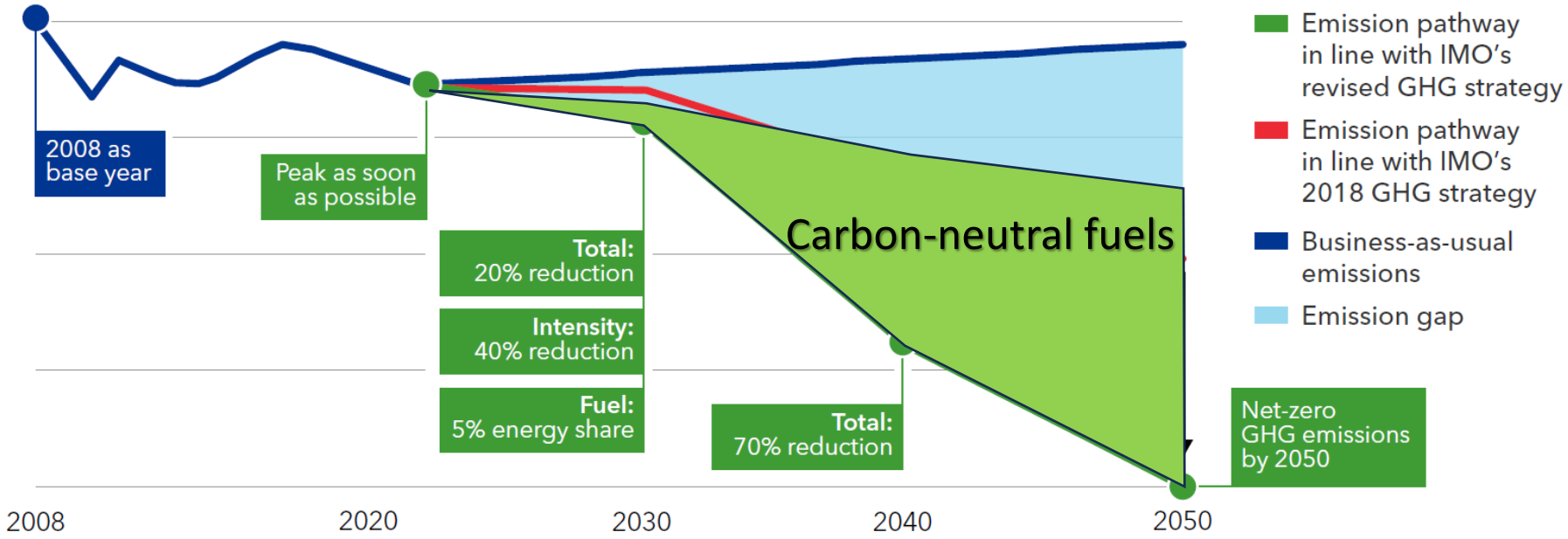

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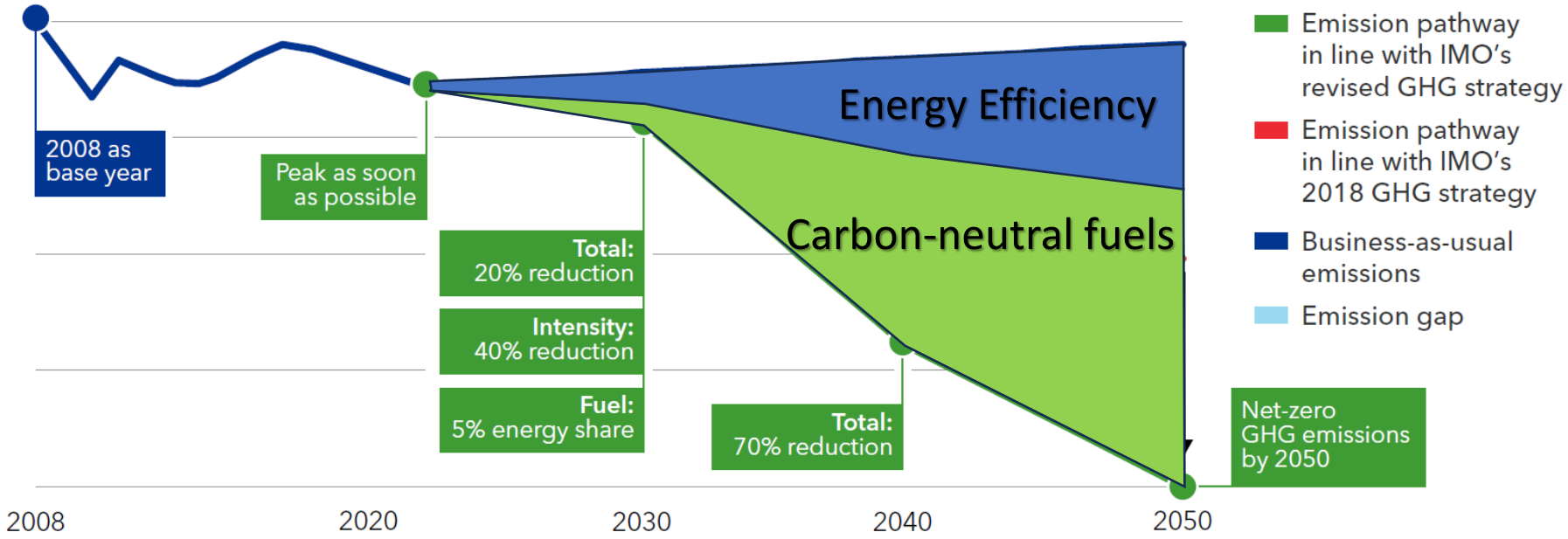

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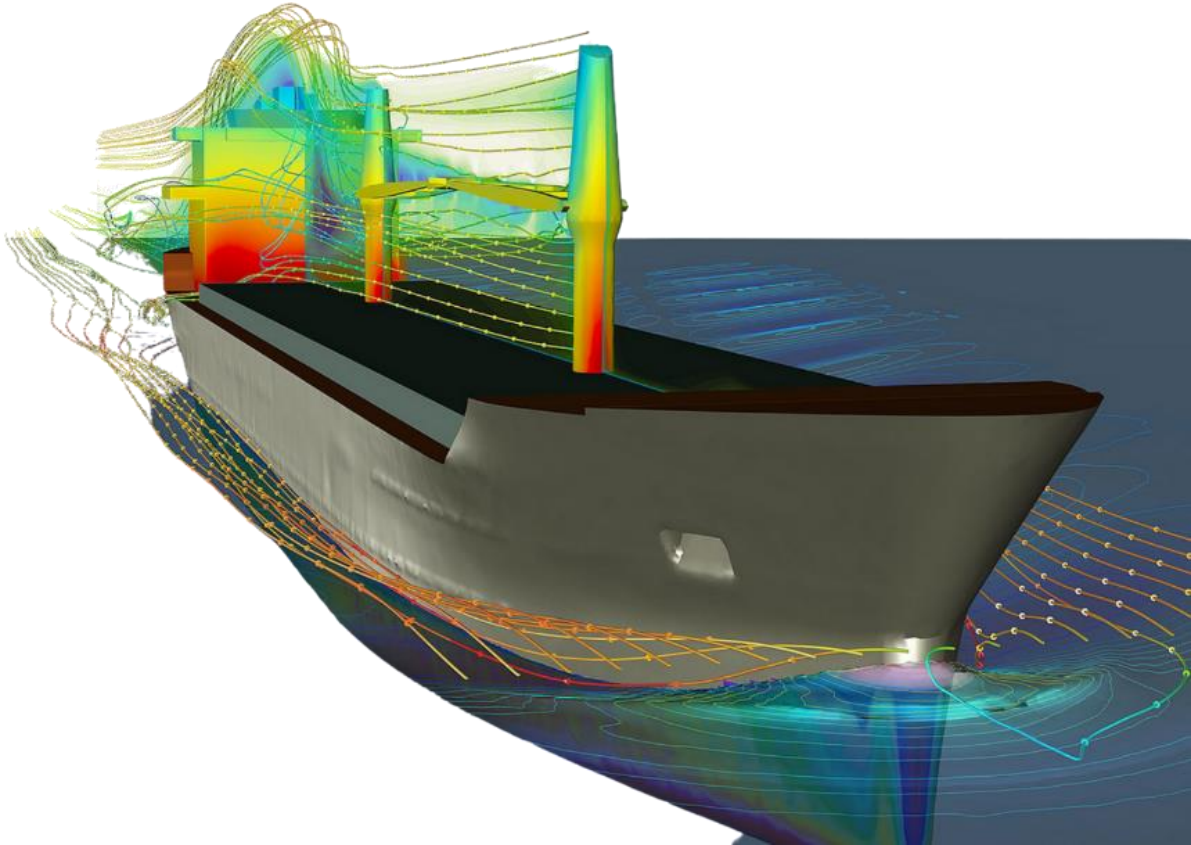
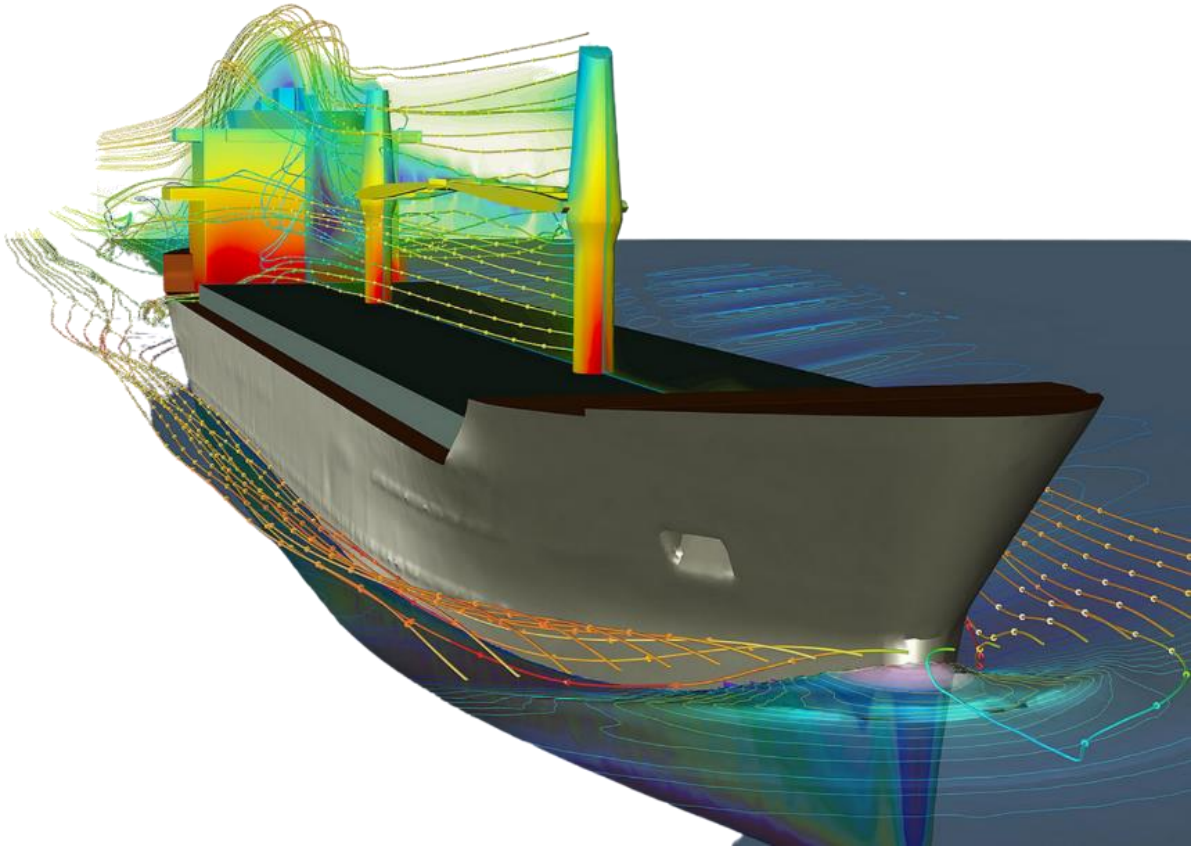
Digitalisation gives a great opportunity to address the Energy Efficiency challenge



Digitalisation gives a great opportunity to address the Energy Efficiency challenge

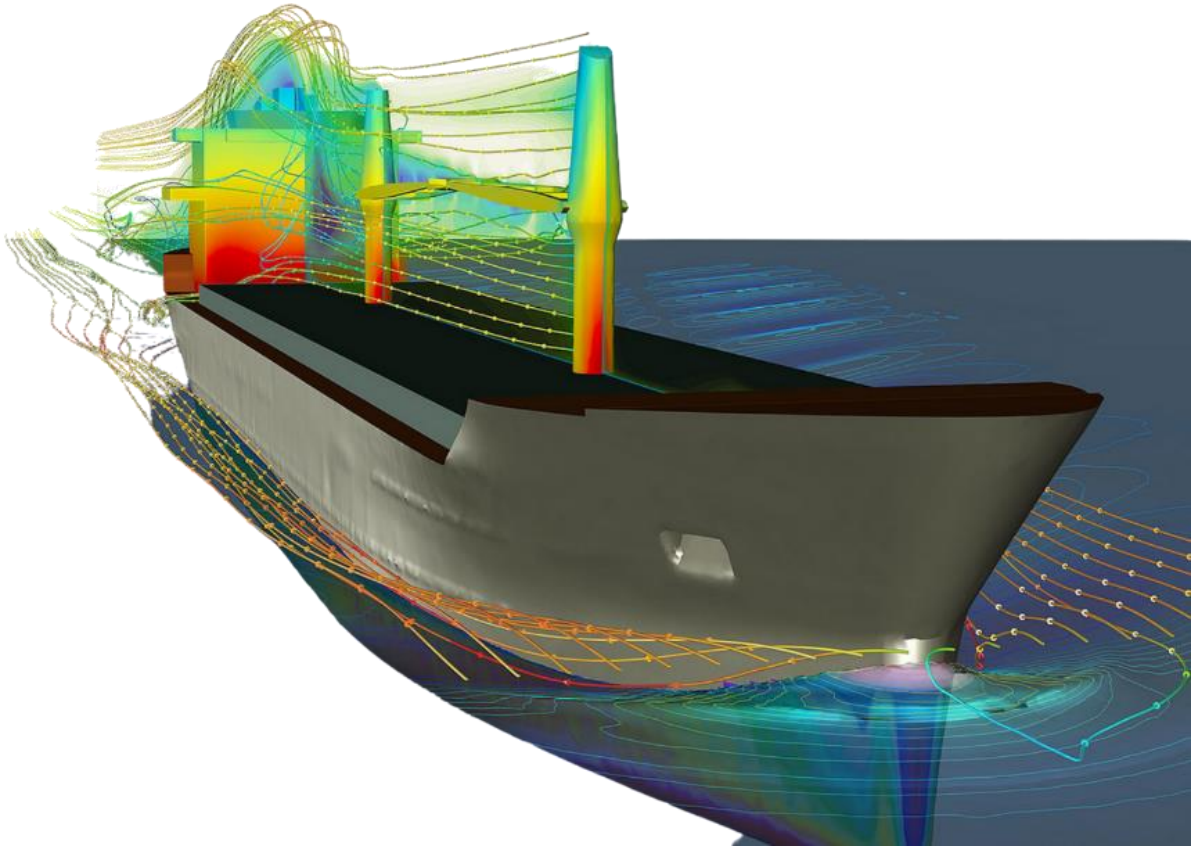
We could not make it 50 years ago



Digitalisation gives a great opportunity to address the Energy Efficiency challenge

We could not make it 50 years ago

We have all the necessary tools now



What can we do?

What can we do?

~~Propeller optimisation~~

What can we do?

~~Propeller optimisation~~

~~Hull optimisation~~

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~~Hull optimisation~~

~~Energy Saving Device (ESD) optimisation~~

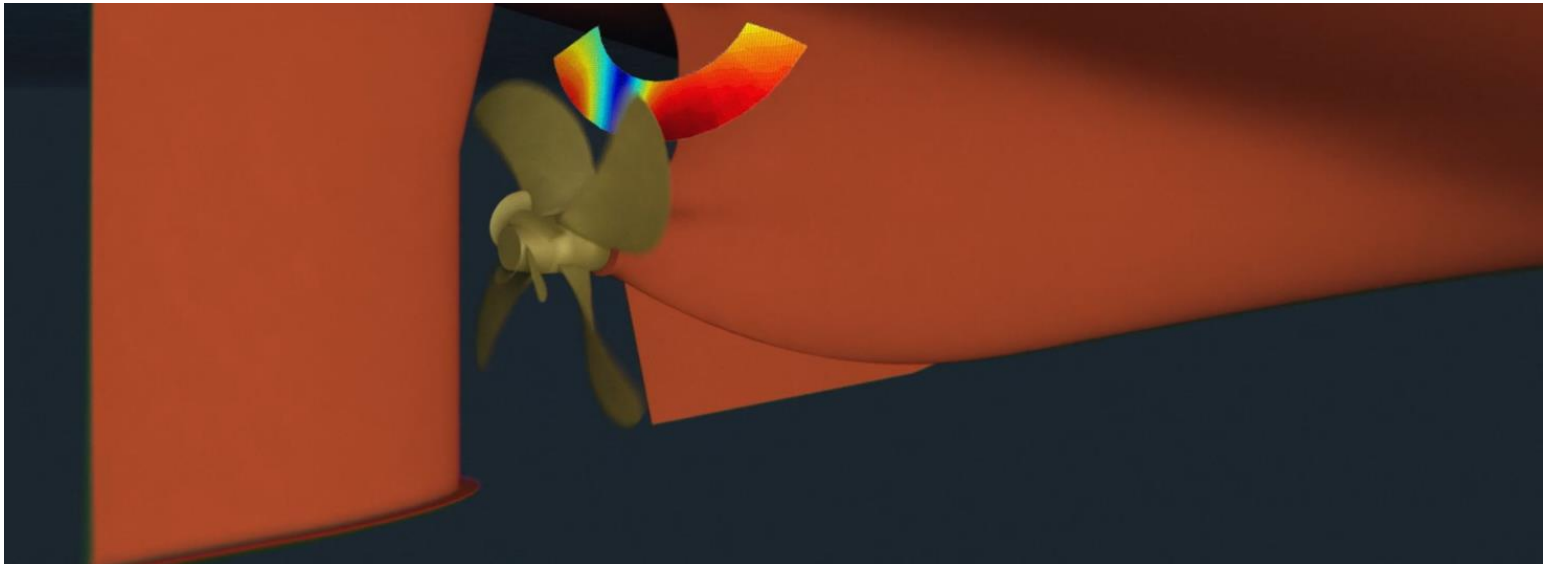
What can we do?

~~Propeller optimisation~~

~~Hull optimisation~~

~~Energy Saving Device (ESD) optimisation~~

Optimisation of the entire system (Hull + Propeller + ESD etc)



What can we do?

What can we do?

~~Optimisation for contractual (ideal) sea trials condition~~

What can we do?

~~Optimisation for contractual (ideal) sea trials condition~~

Optimisation for real sea condition

What can we do?

What can we do?

~~Optimisation for smooth hull and propeller~~

What can we do?

~~Optimisation for smooth hull and propeller~~

Optimisation for real conditions of hull and propeller

What can we do?

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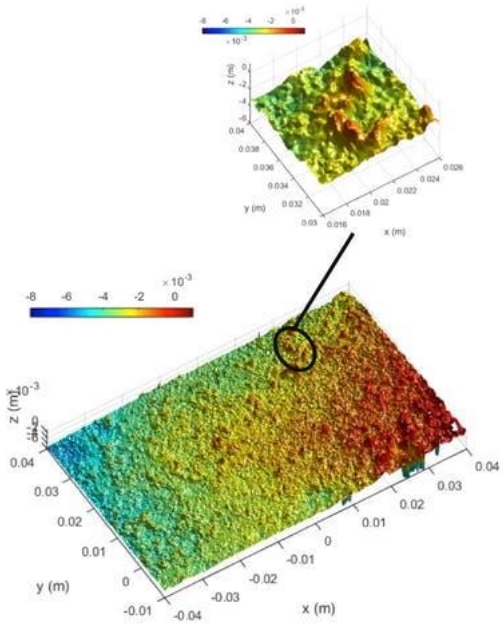
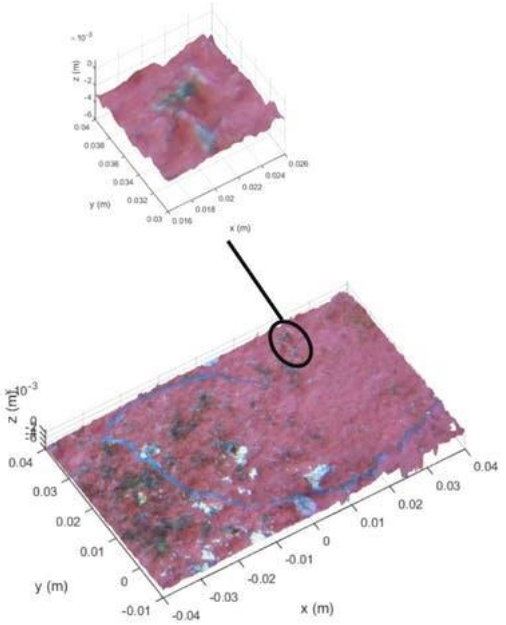
Optimisation for real conditions of hull and propeller





Happy days?

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Not really! Unfortunately, digital technologies require validation!

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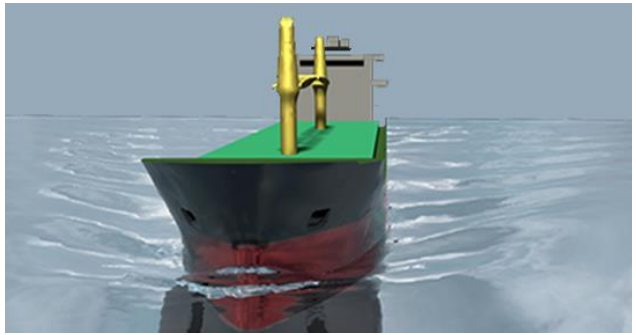
Computational
Fluid Dynamics



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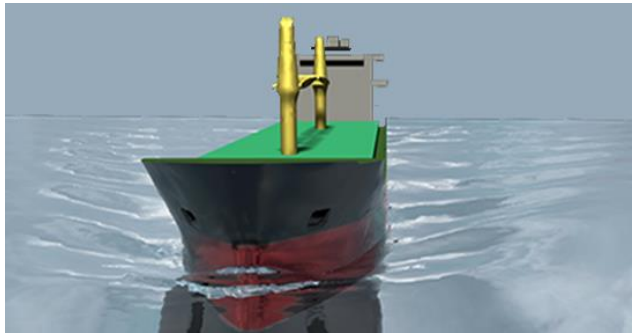

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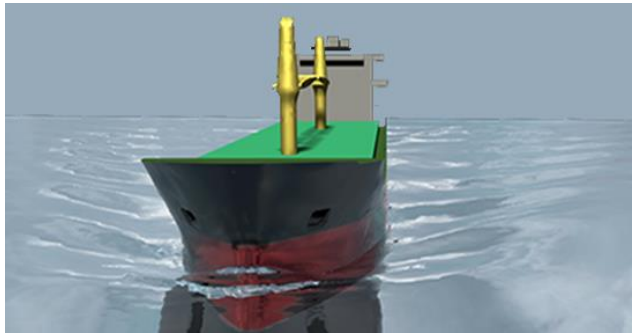
Ship design

Computational Fluid Dynamics



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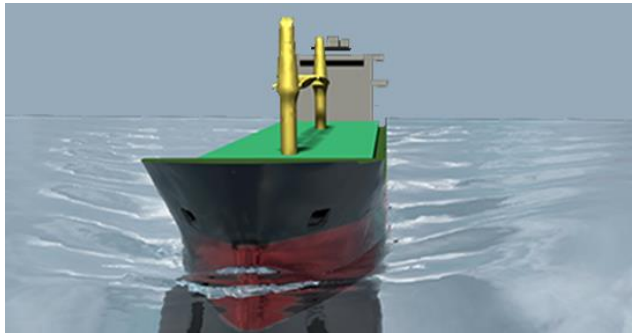

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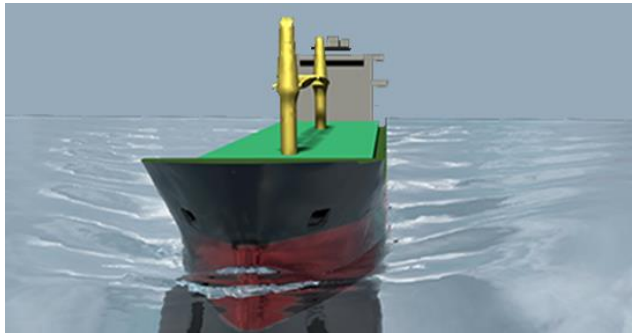

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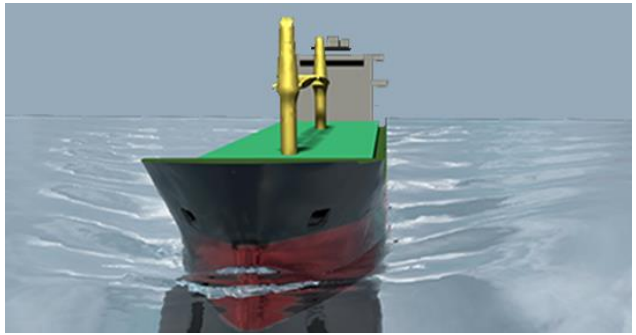
Better Ship design

Computational Fluid Dynamics



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Better Ship design

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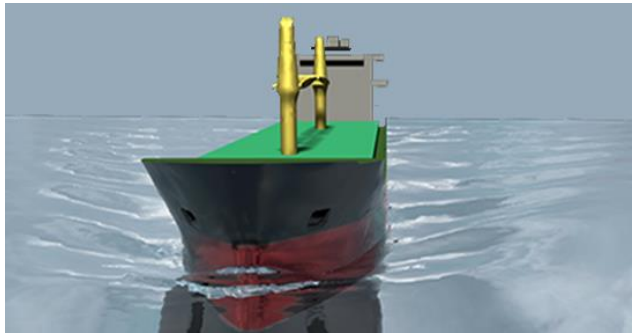

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Project Participants (50+ companies)

JoRes project – a global initiative to develop validation cases

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~~Governments funding~~

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~~European Union funding~~

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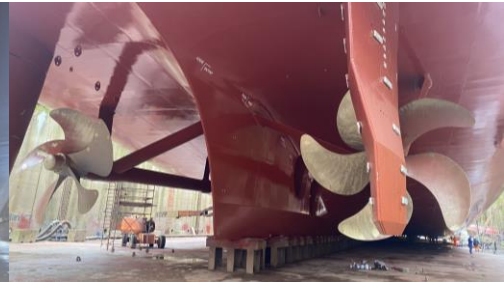
Project funded by the participants (1.5 million Euro)

Project Vessels

A general cargo vessel

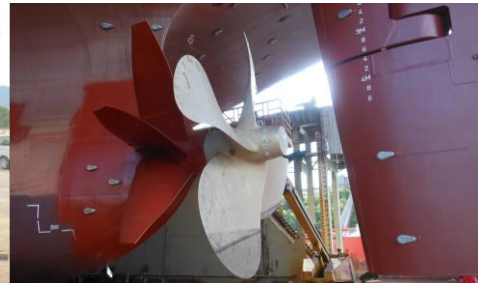
A tanker

A twin-screw ferry



A cruise liner

A tug boat



A bulk carrier

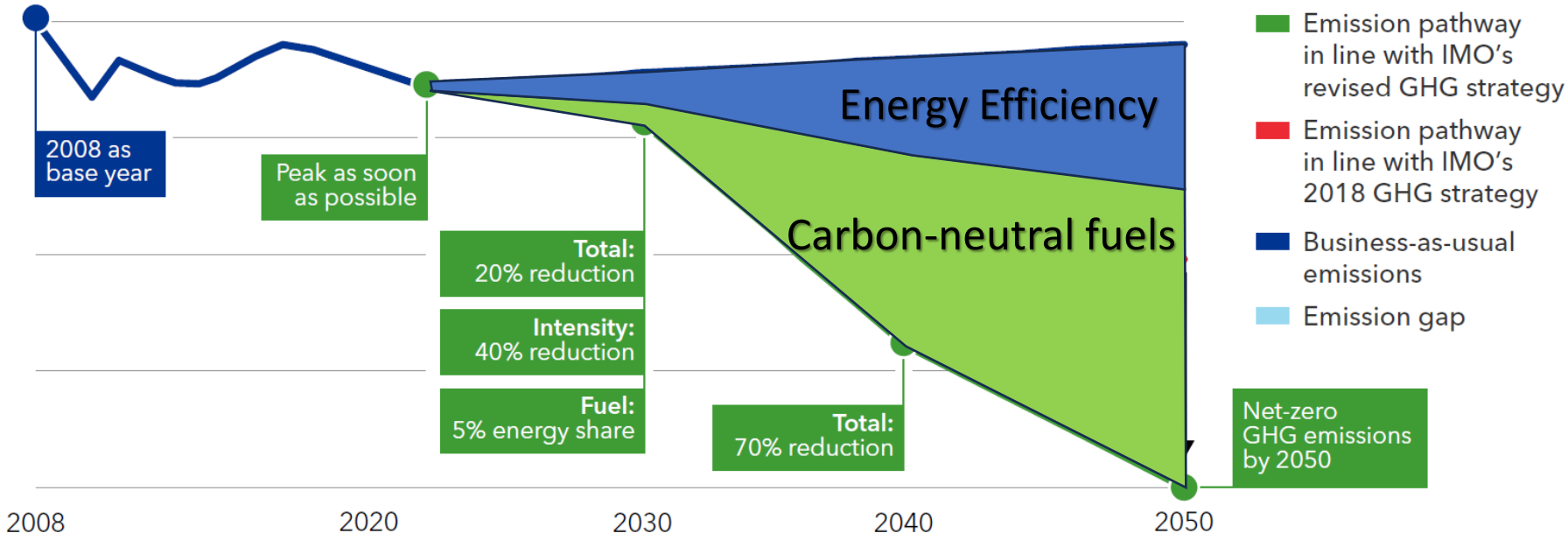
A vessel

A vessel

JoRes project – a global initiative to develop validation cases

All the results and geometry files will be available in the public domain in 2024

Together we can make it!



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