Towards autonomous ships

Oskar Levander, VP Innovation, Rolls-Royce Marine

Marine Board of the National Academies, Spring Meeting

Woods Hole, 7.6.2016

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Disruptive change

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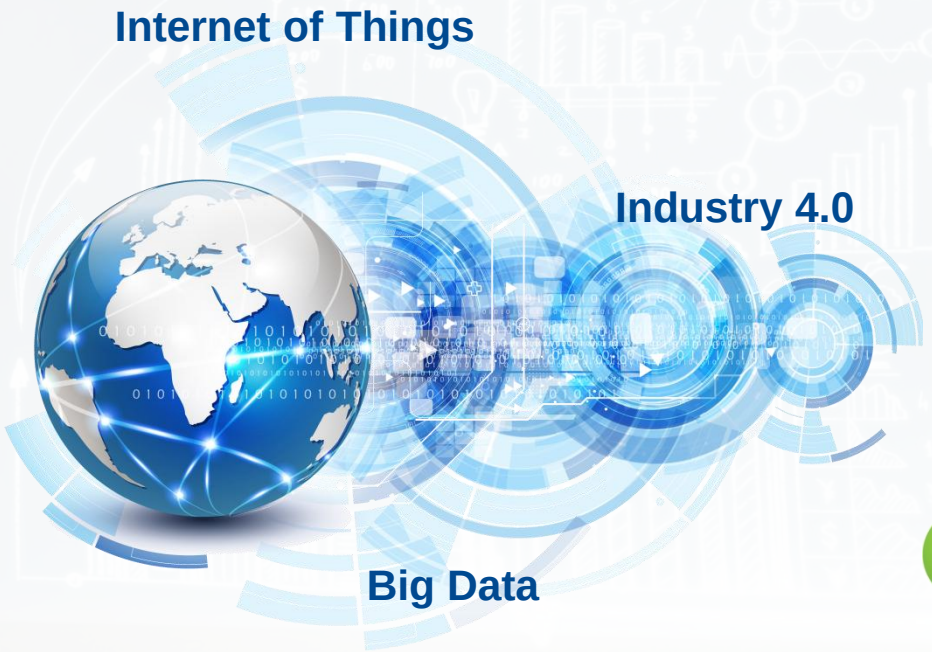
Digitalization – Disruptive change



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Digitalization in marine market

The dawn of the Ship Intelligence era

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What is Ship intelligence

Asset management

Optimisation & decision support

Remote & Autonomous operations

OBJECT DETECTION

INTERNET OF THINGS

SATELLITE COMMUNICATIONS

BIG DATA

AUTOMATION & ROBOTICS

APPLICATIONS & CLOUD

Enabling technologies

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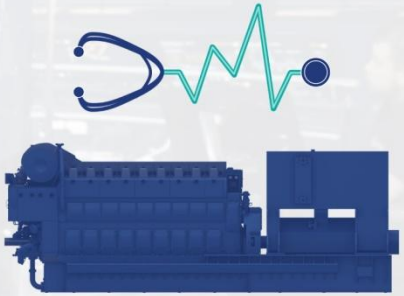
Shipping trends - Operation

Shipping trends - Management

Asset management



Health management

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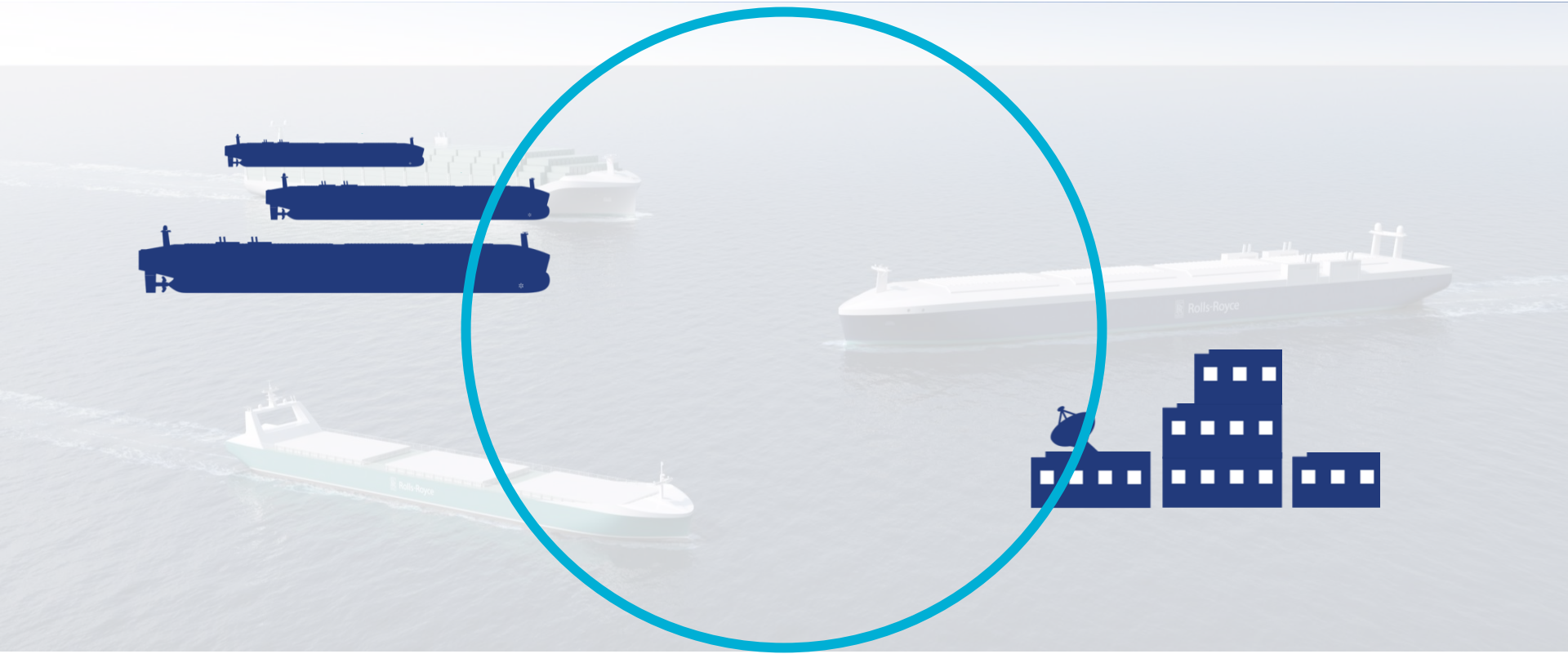
Integrating ship and shore



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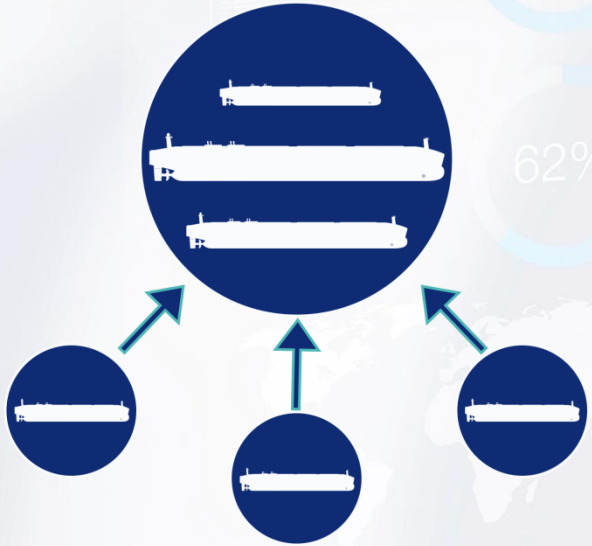
Shipping trends - Business

Consolidation



New Players & Digital alliance

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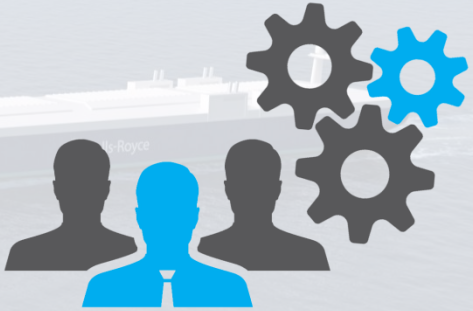
New roles in shipping?

Owning

Running the business

Managing



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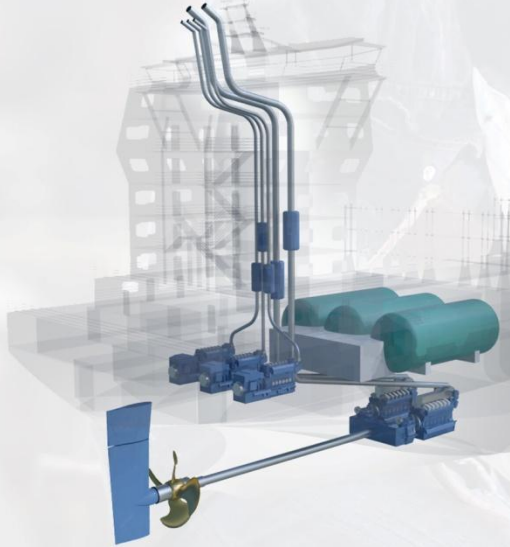
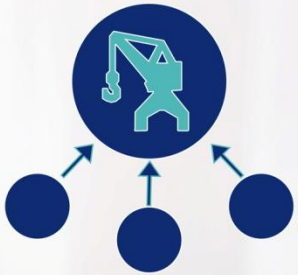
Shipping trends - Construction



System Integrator

Shipyard consolidations



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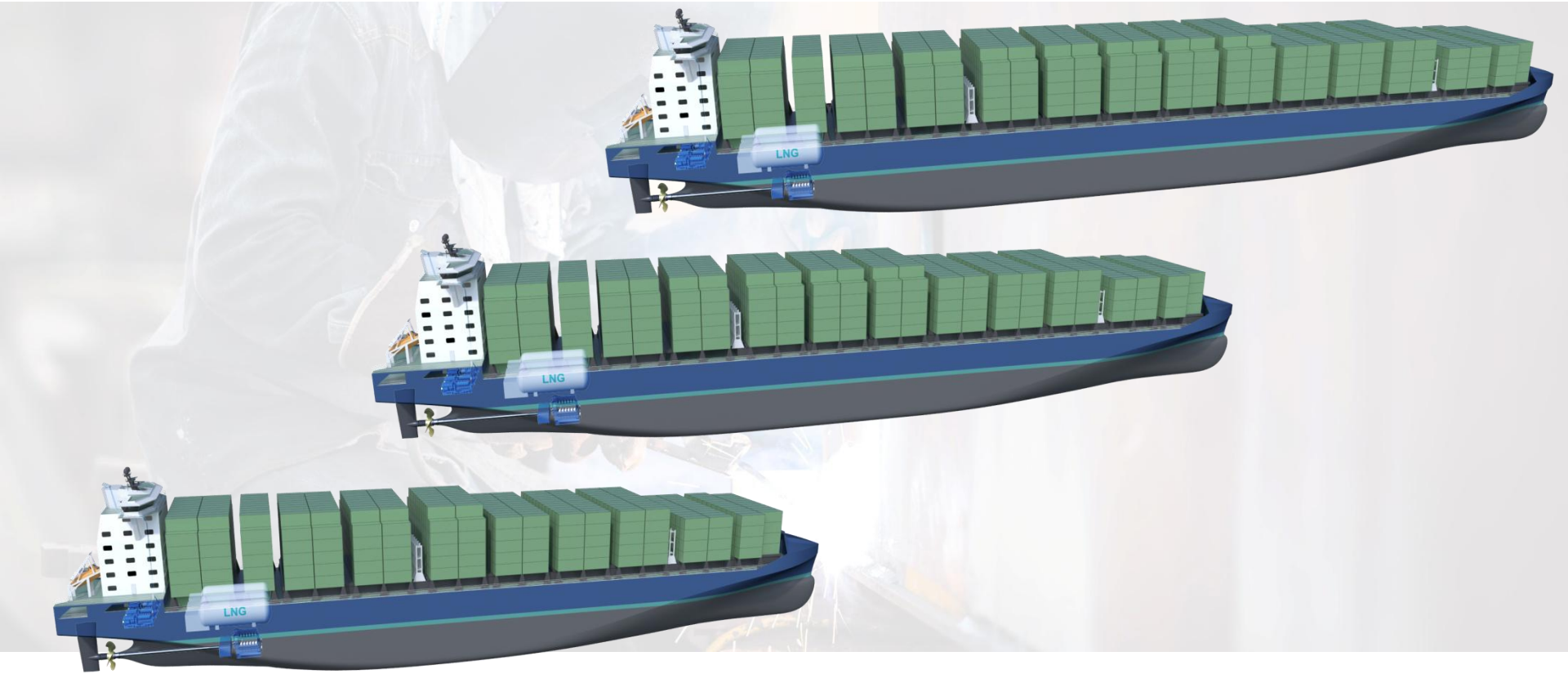
Shipping trends - Construction



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Goals of ship intelligence

Integrated transport systems

Transparent business performance

Data to value

Efficient and safe operations

Automated and Streamlined functions

Health and performance

Personnel management

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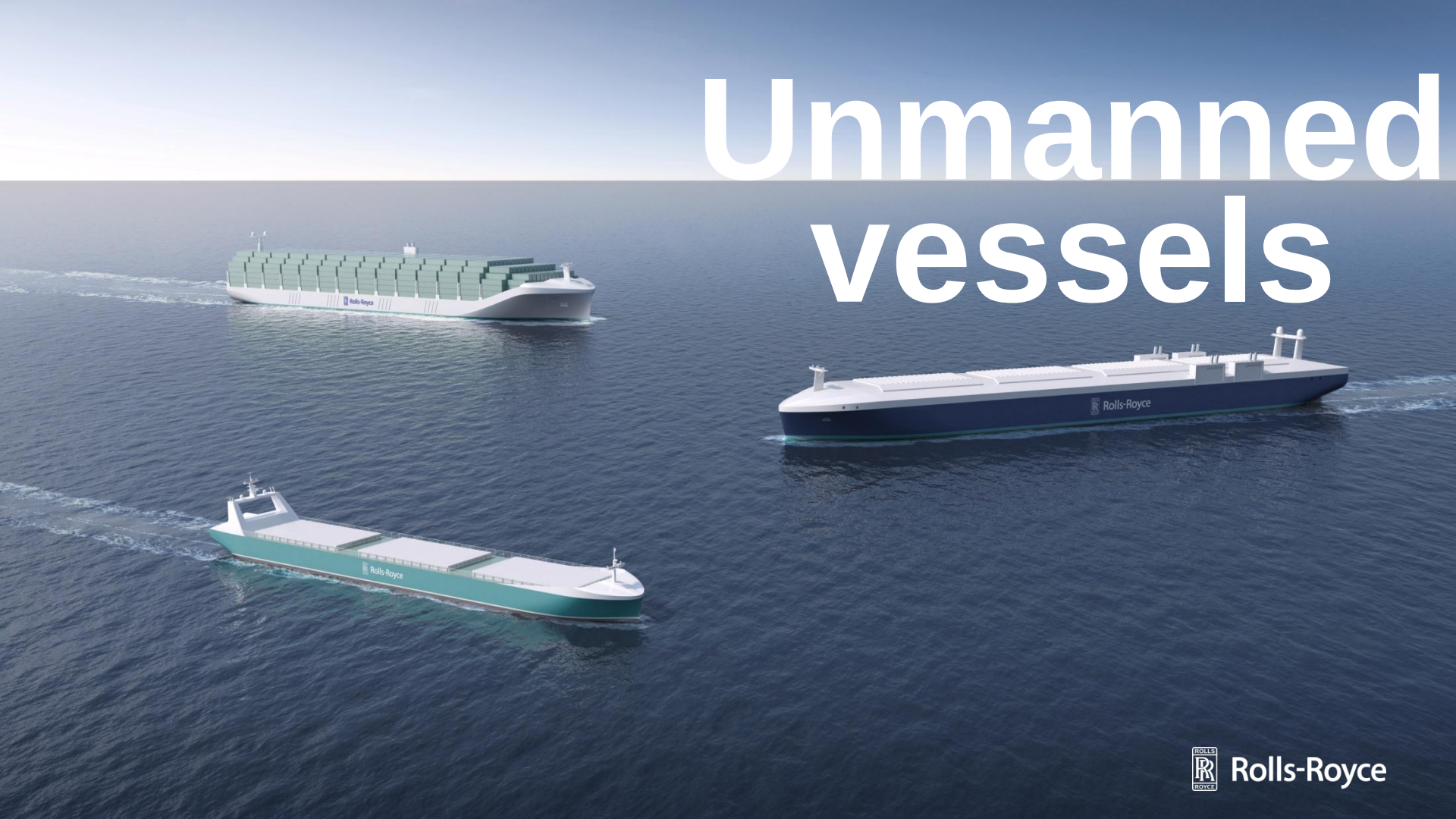
Unmanned vessels



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Unmanned trend in society

It is not IF, but WHEN…

Why Unmanned

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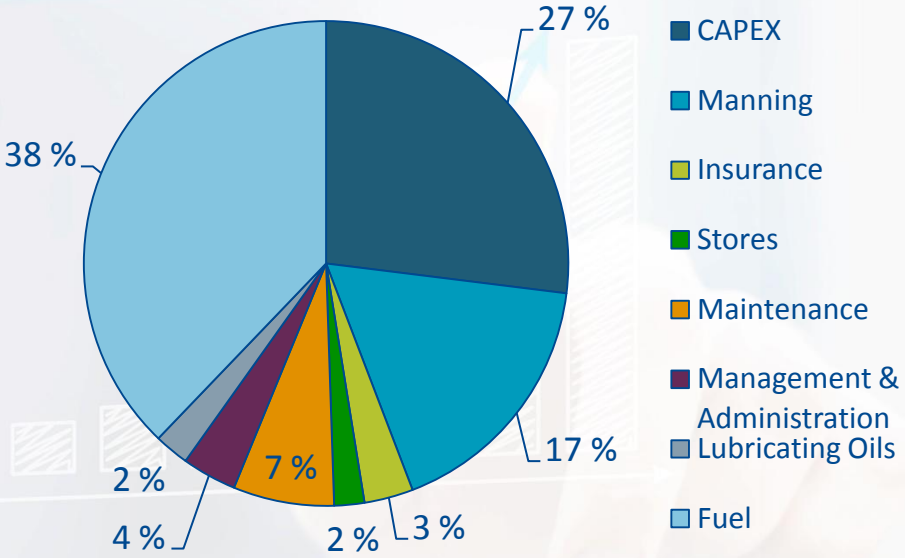
Cost structure



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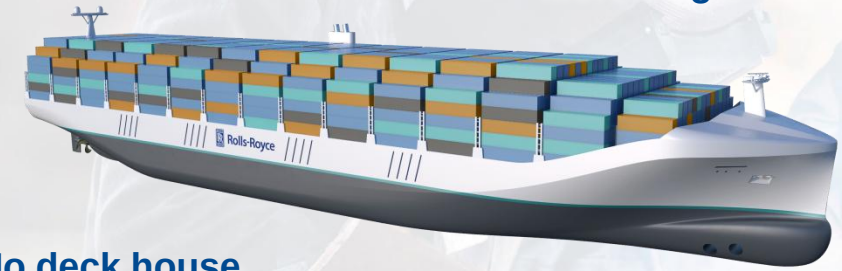
Remote controlled ships - Features

More cargo



Lower power demand

No deck house

No hotel systems

Redundant machinery

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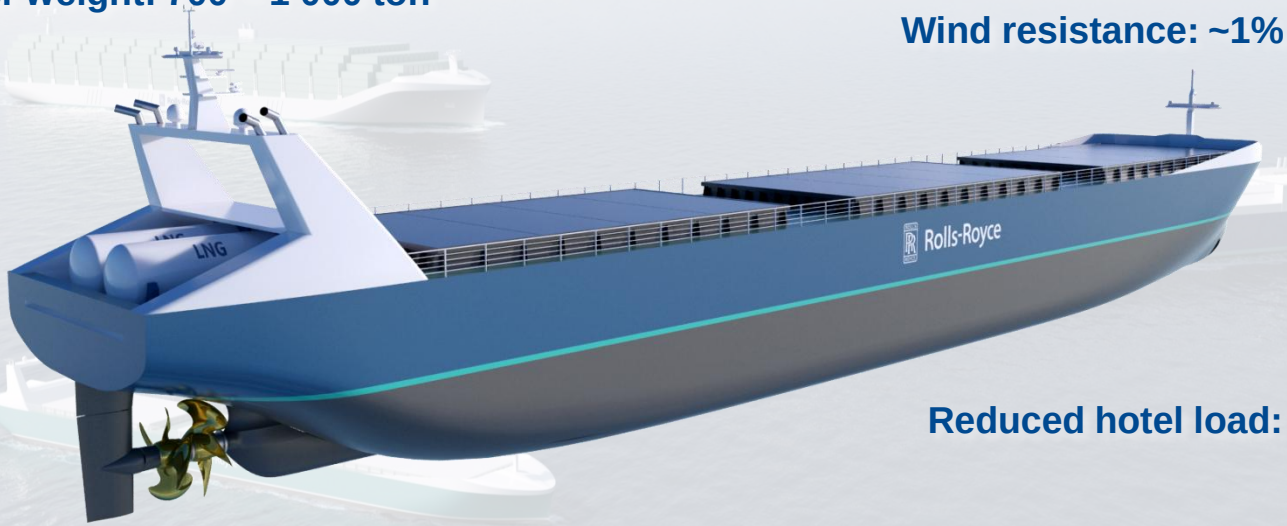
Energy reduction

Lower operating speed?

Lower weight: 700 – 1 000 ton

Wind resistance: ~1% saving



Reduced hotel load: 200 – 270 kW

- 10-15%

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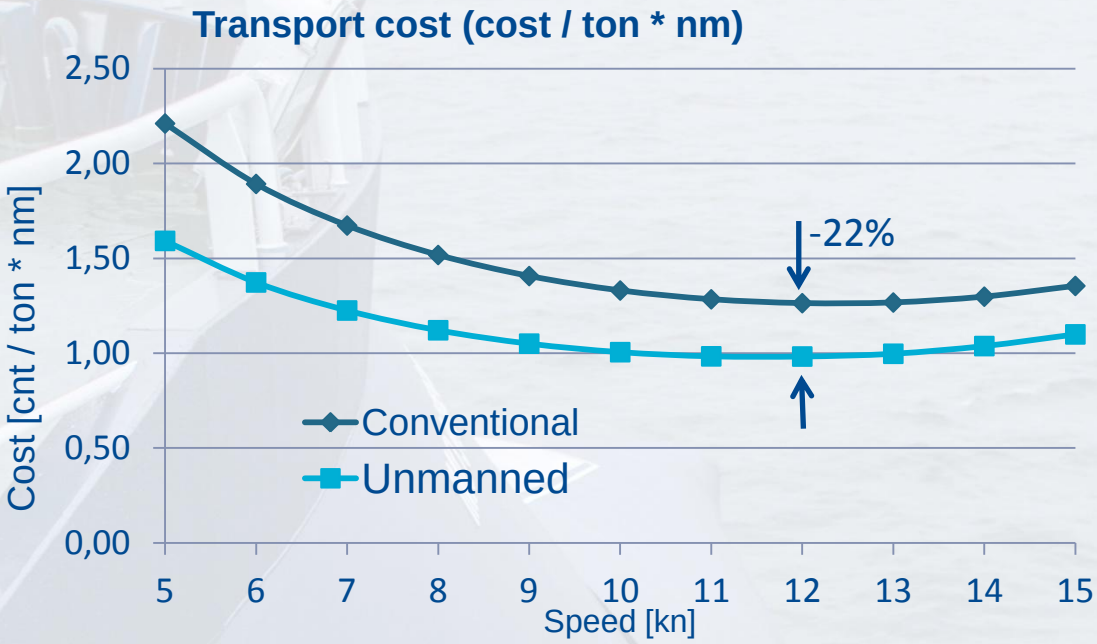
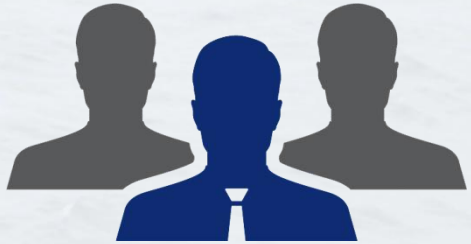
Cost - Transport

20 000 dwt general cargo vessel





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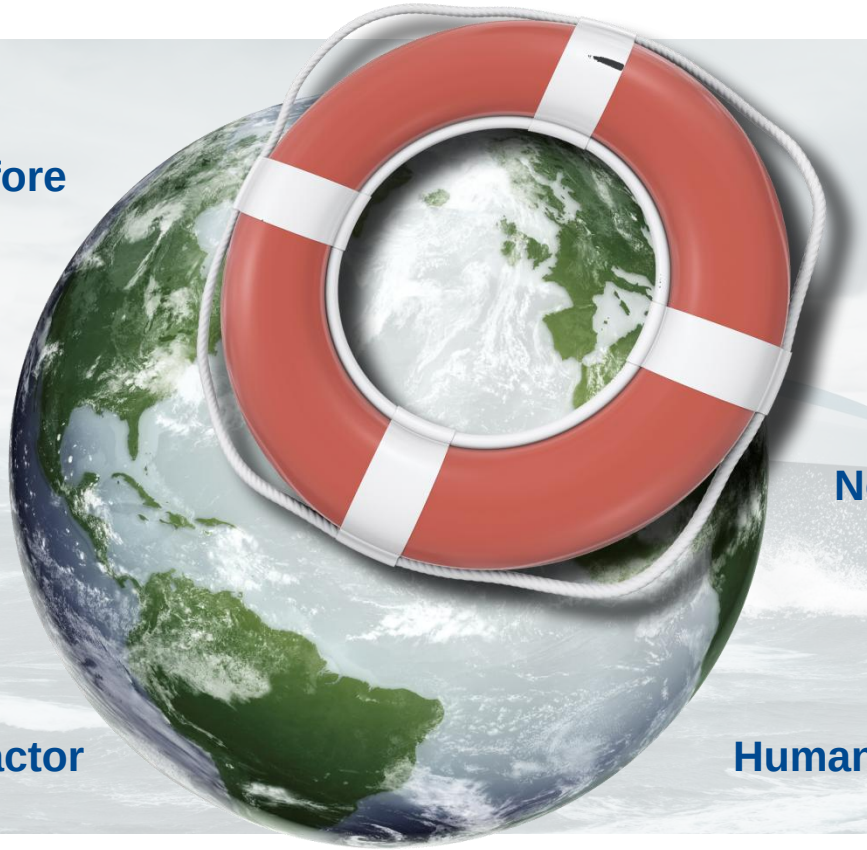
Safety



Safer than before

Fewer accidents

No piracy victims

Human error factor

Humans away from danger

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What is safe?

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Cyber security

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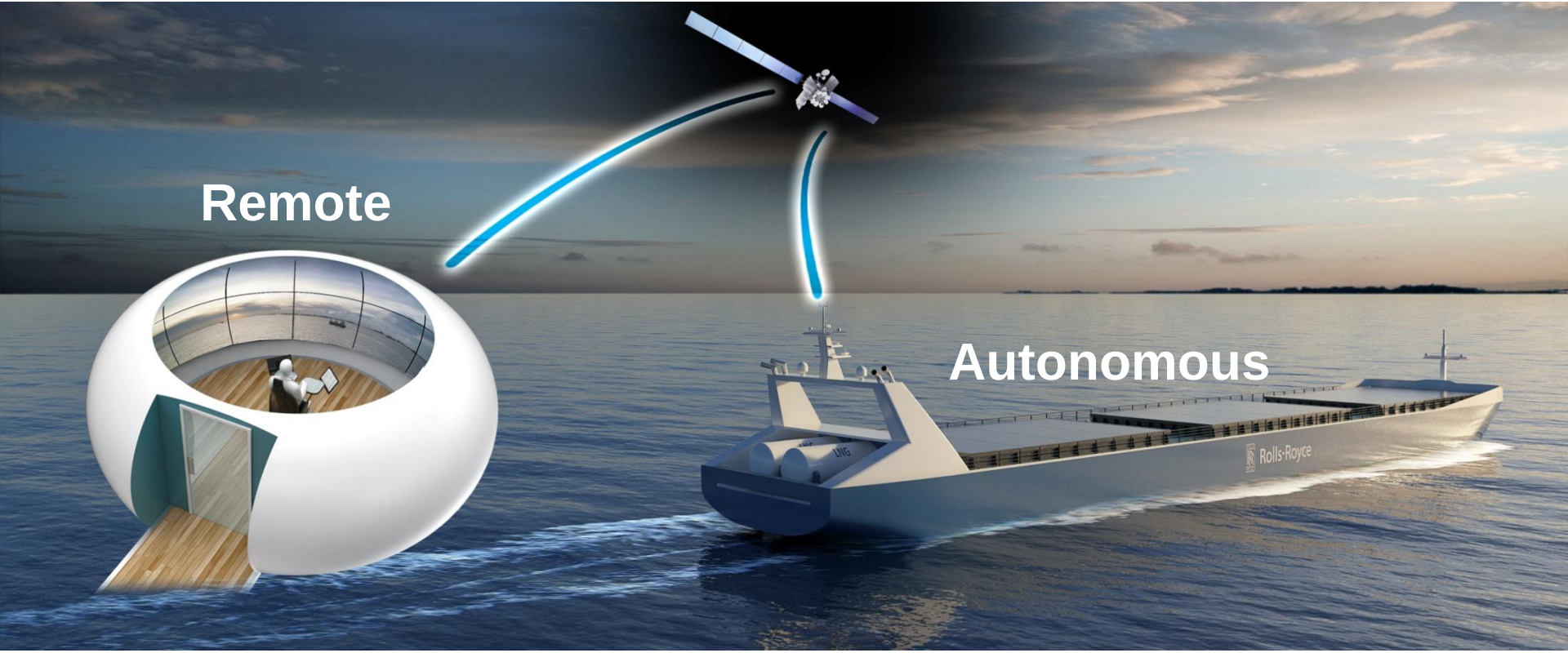
Remote and autonomous operation



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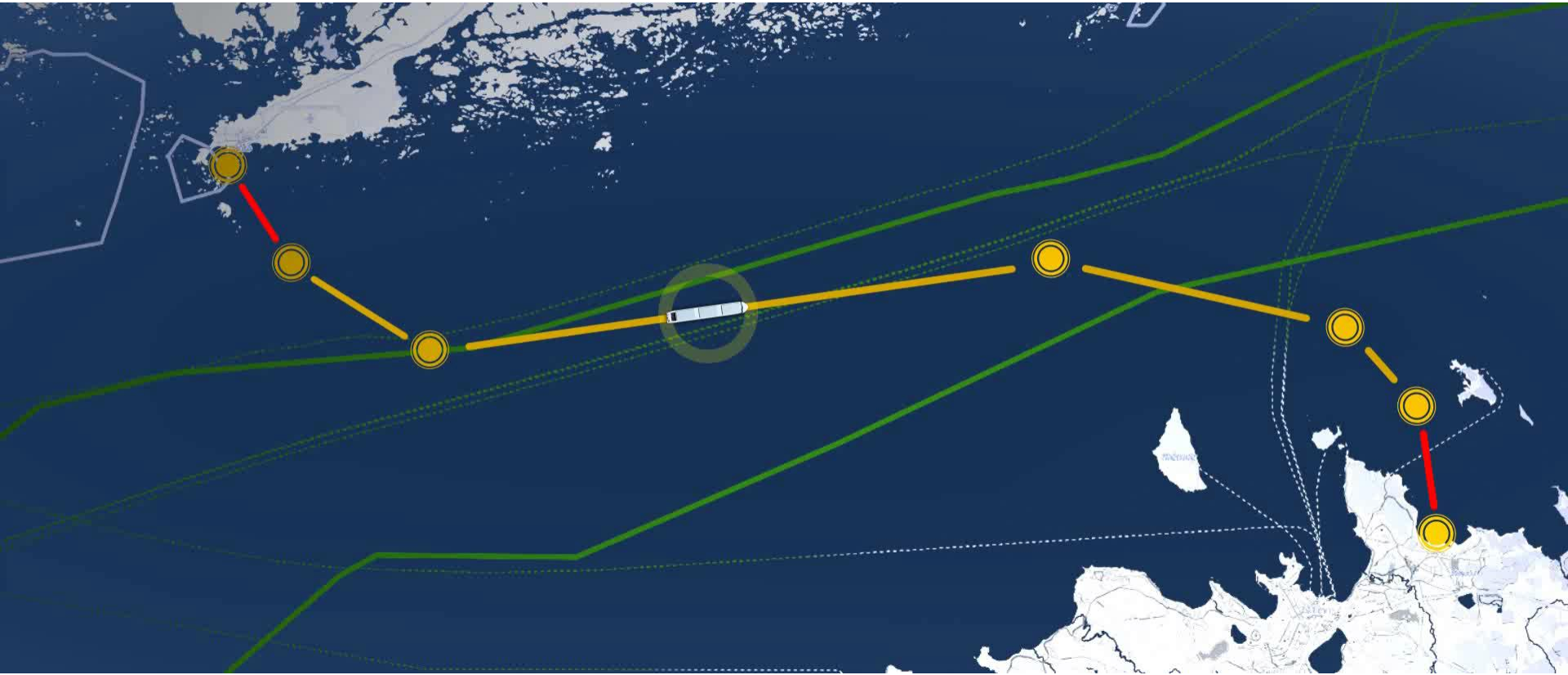
Remote and autonomous operation



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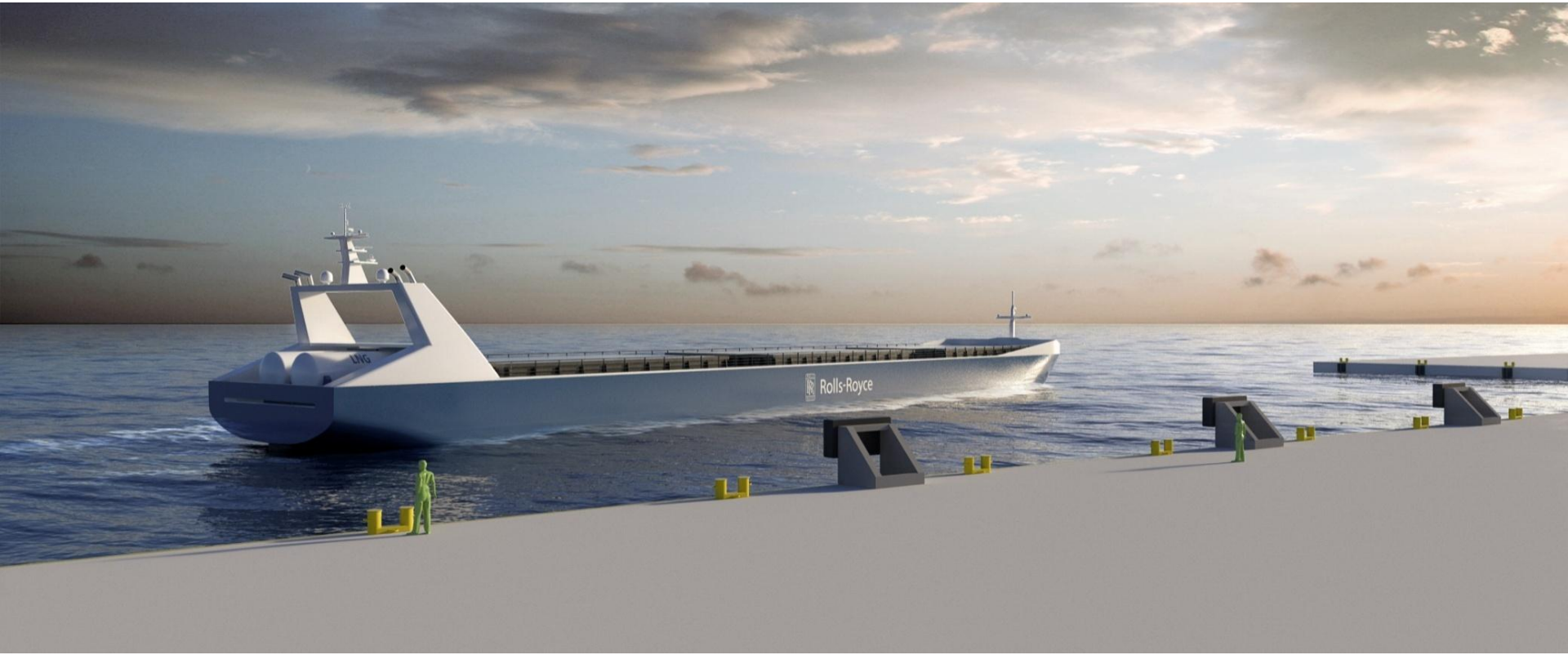
Remote control in port



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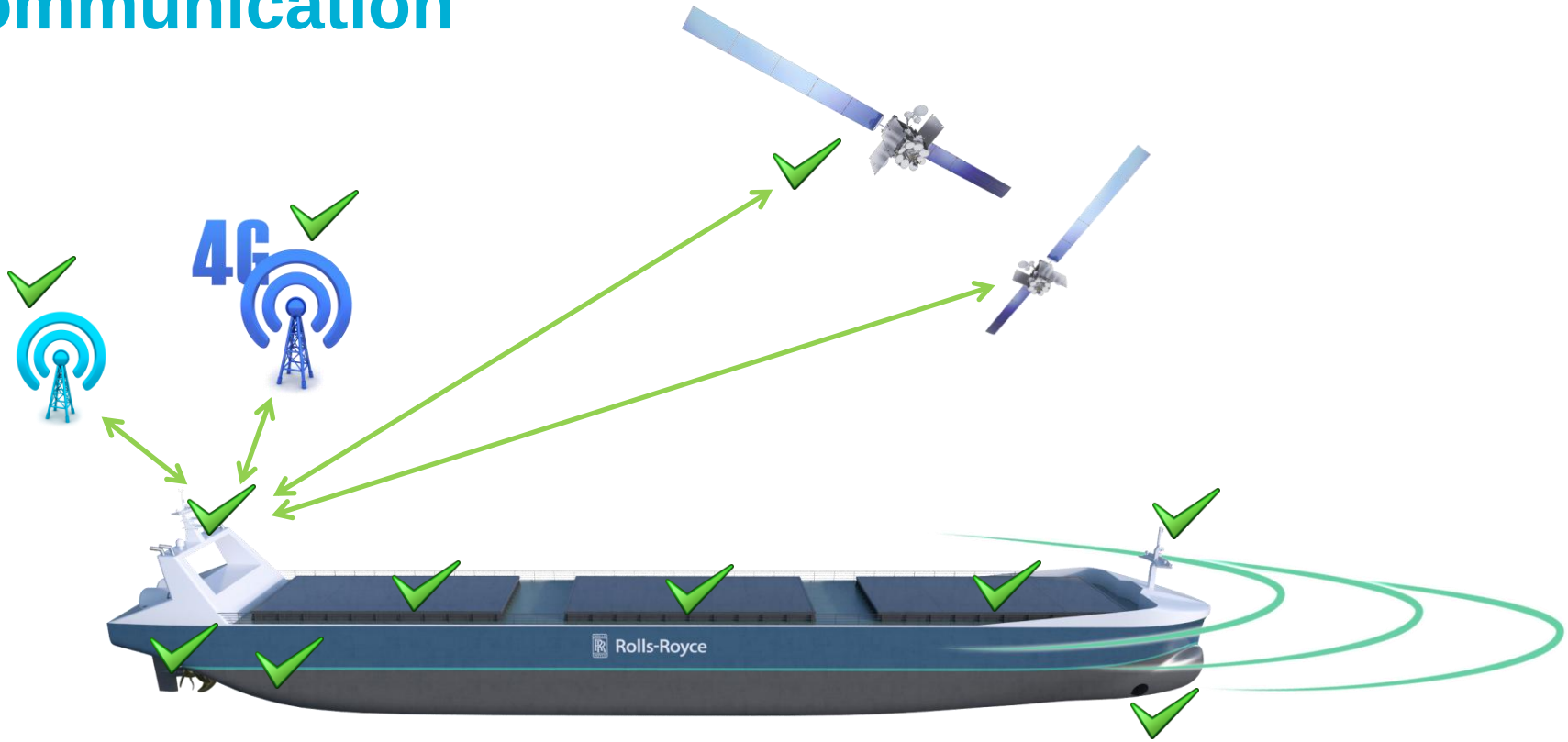
Communication



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Remote Operation Center

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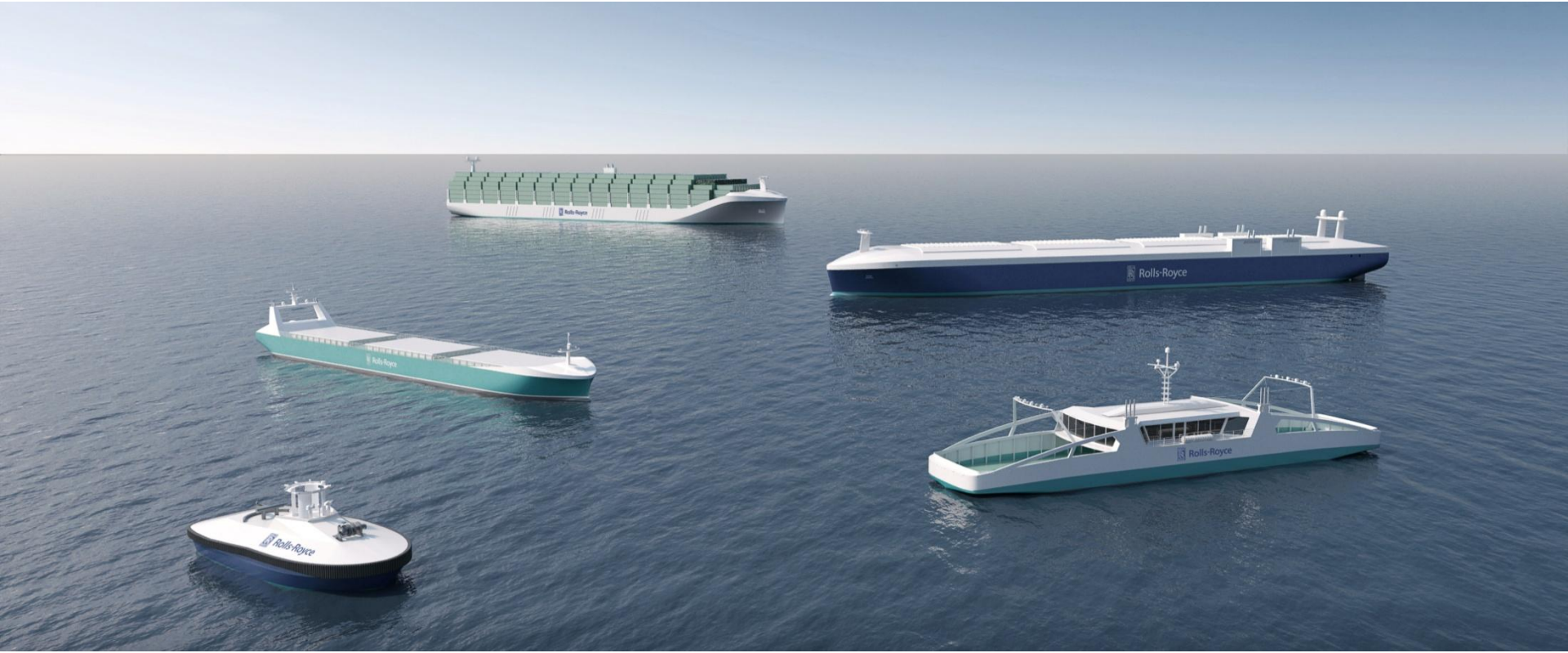
Leading the development



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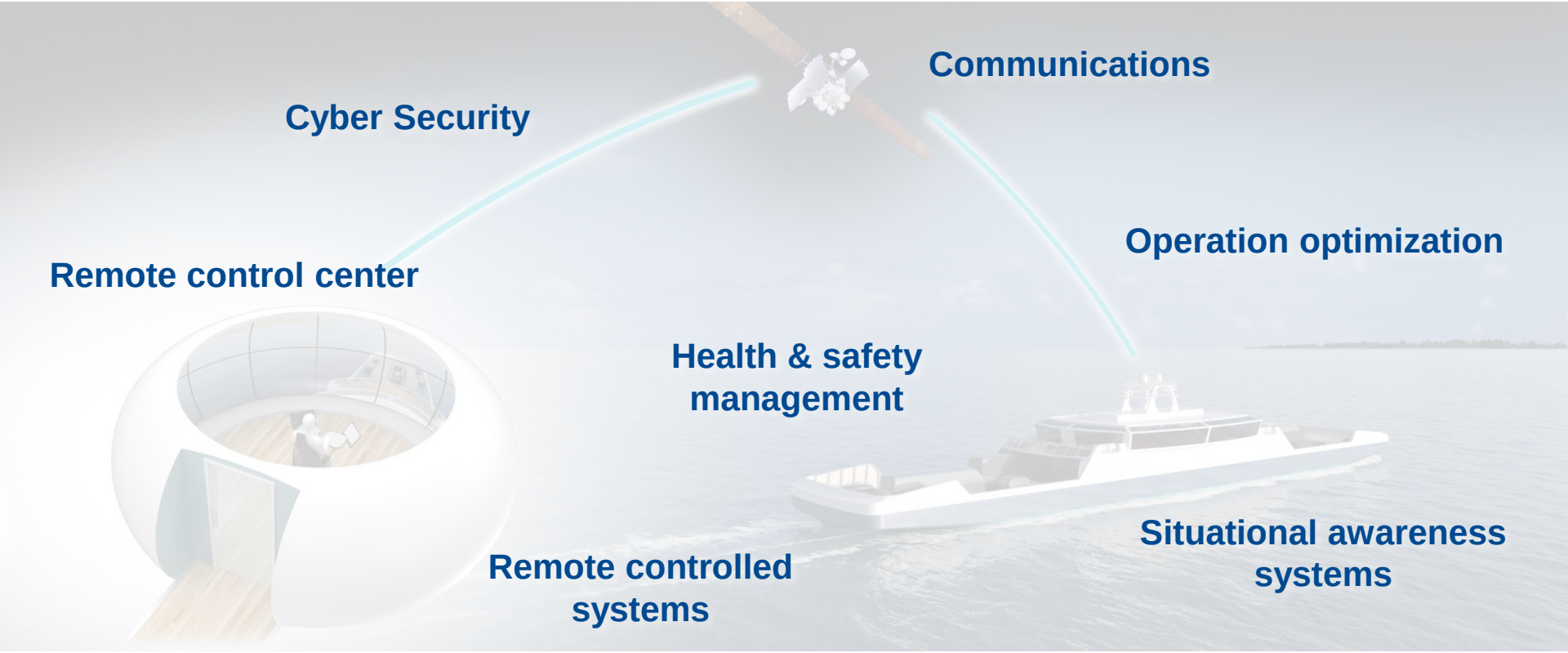
Development areas



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Rules and Regulations

DNV·GL

IMO

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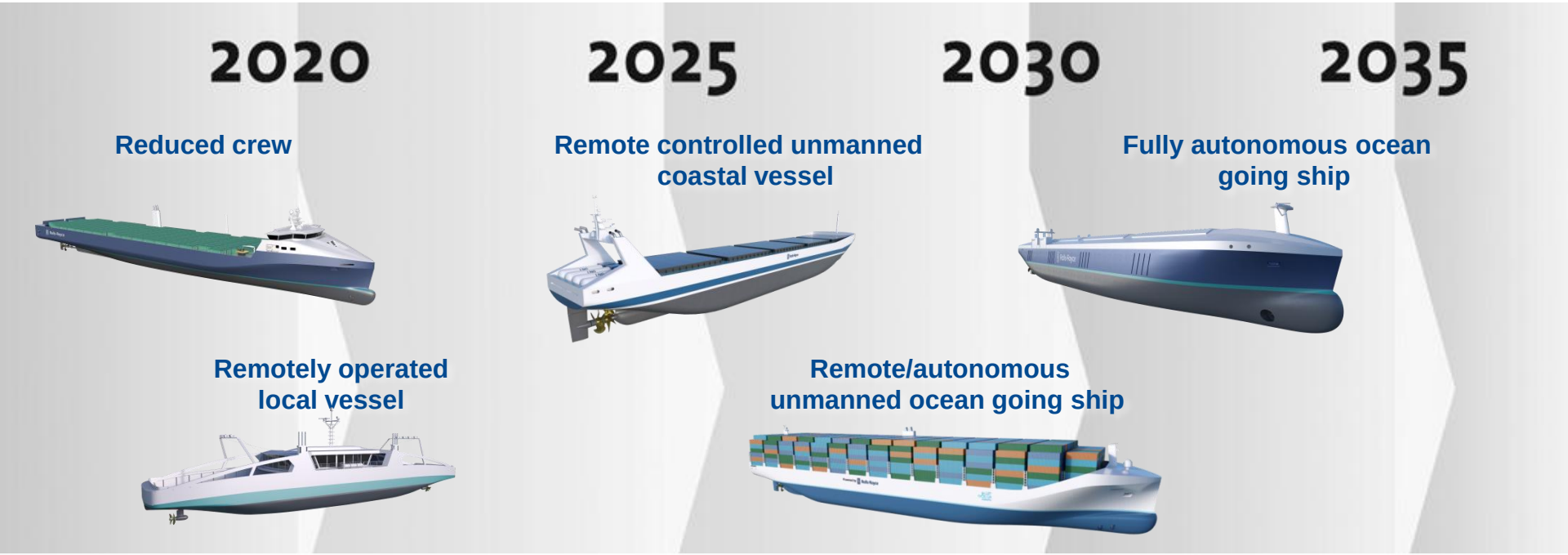
Legal aspects

Roadmap



Unmanned ships will start with local applications!

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First movers

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First movers

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The dawn of the ship intelligence era

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"The best way to predict the future is to **create** the future"
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