



KONGSBERG

Ship Intelligence Solutions

Technology and Autonomy

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(Integrated Solutions – Seaborne & PAX)



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Business Areas

KONGSBERG is a global technology powerhouse



KONGSBERG MARITIME

Thousands of ships, vessels and offshore installations depend on Kongsberg Maritime for safety, operational efficiency and sustainability, wherever they are. Our technology is exploring the sea and the vast opportunities hidden within.



Trusted by
30,000+ vessels



Employees
7,000 people



16.0 BNOK
Revenues



117 offices in
34 countries



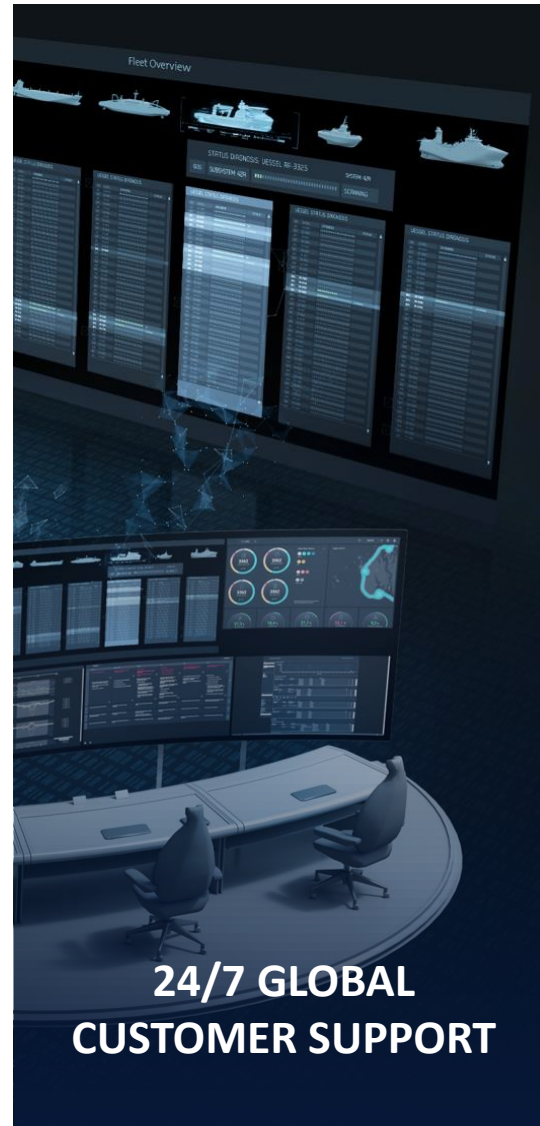
Experience
80+ years



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Kongsberg Maritime

Technology for a
greener ocean space





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The Environmental Challenge – and Solutions

Scenario: The Shipping Industry

Global vessel emissions

15% of all NO_x

3,1% of all CO₂

13% of all SO_x

Nearly 70% of ship emissions occur within 400km of land.

Solutions to reduce emissions

Minimise energy consumption

Operate at lower speed
Reduce the distance

Use clean energy

Sun power
Bio fuels
LNG

Maximise energy conversion efficiency

Engine efficiency
Electric system efficiency



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Customer Challenges

ENVIRONMENT

Reducing the environmental footprint of the operation

INEFFICIENCY

Use of human resources for tasks that can be automated

SAFETY

Navigational safety compromised by poor situational awareness

HUMAN FACTOR

Increased cognitive load of the onboard crew

RECRUITMENT

Challenges to recruit in a non attractive industry

COMPETITION

Hard to differentiate and find a competitive advantage

HAZARDS

Hazardous working environments for human operators

HUMAN FACTOR

Fatigue resulting in human error

OPERATION

OPEX heavy operations



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New technology brings Solutions

KONGSBERG's solutions in practice

**Zero emission
container feeder**



**Autonomous
ferries**



**From diesel
to LNG**



**Digital Platform
Ecosystem**



**Battery ferries with
auto-crossing**



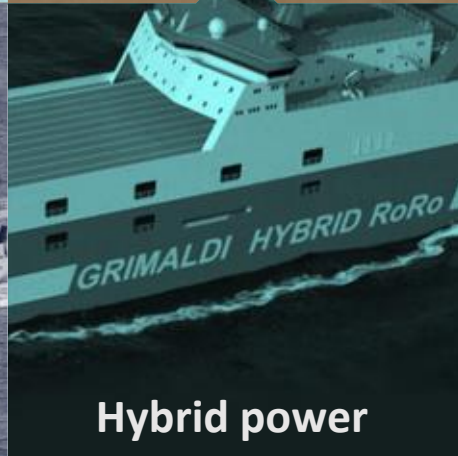
Vessel Insight



Scientific Research



Hybrid power



Green energy



**Offshore fish
farming**





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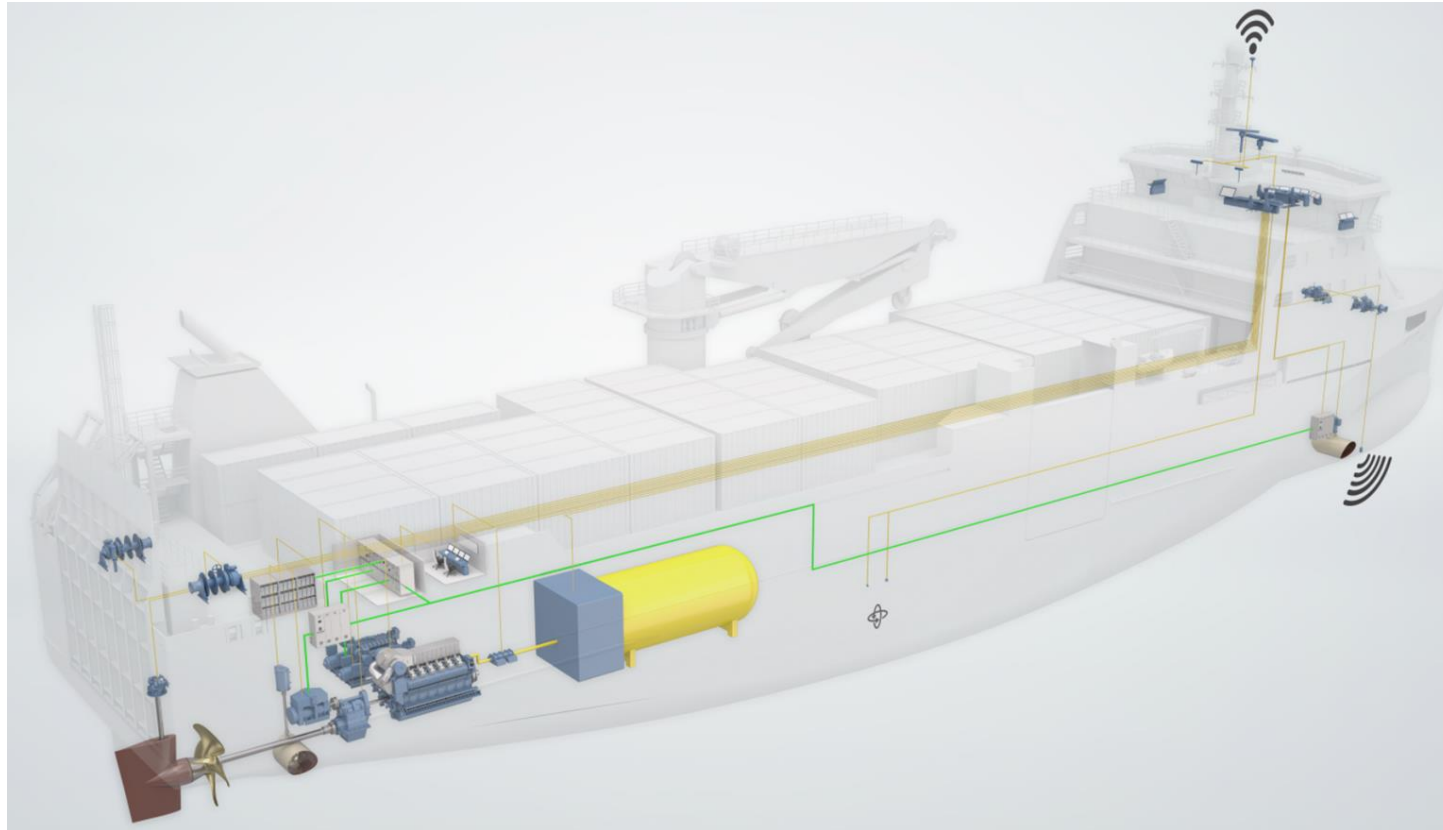
Maximizing performance by providing
THE FULL PICTURE



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The Full Picture – Scope of Supply

Vessel Capability



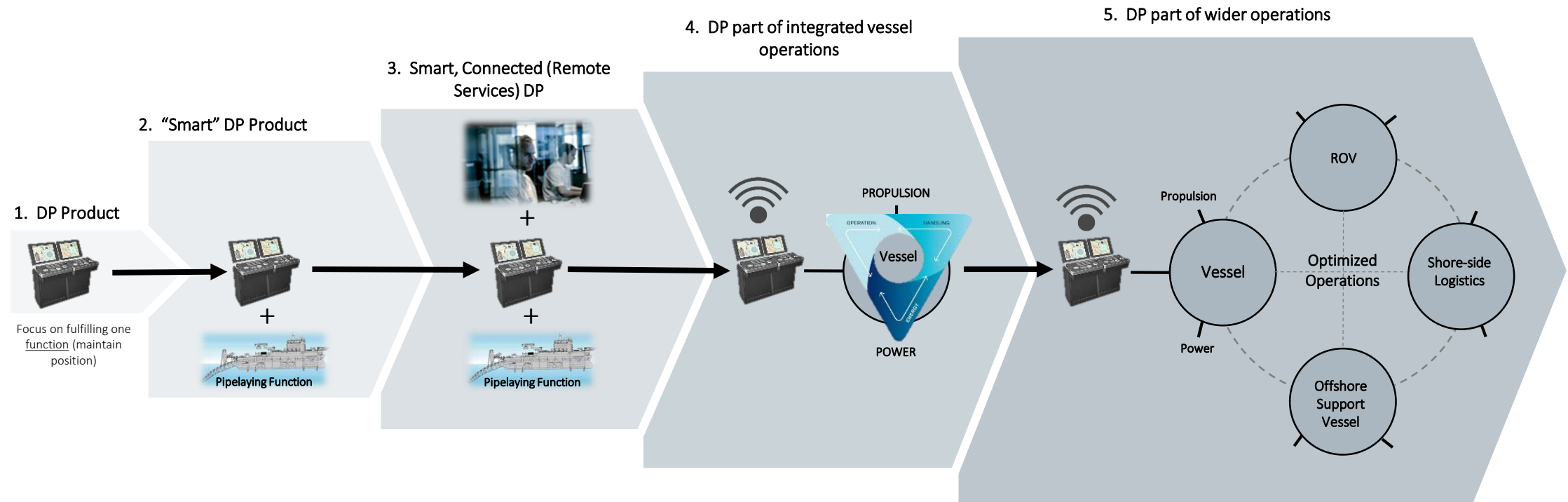
- Bridge
- Automation
- Safety & Comfort
- Propulsion & maneuvering
- Steering & stabilisation
- Energy distribution & storage
- Anchor & mooring deck machinery
- Remote services
- Ship design



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Smart and Connected systems - Ship Intelligence

Example of Dynamic Positioning (DP) System



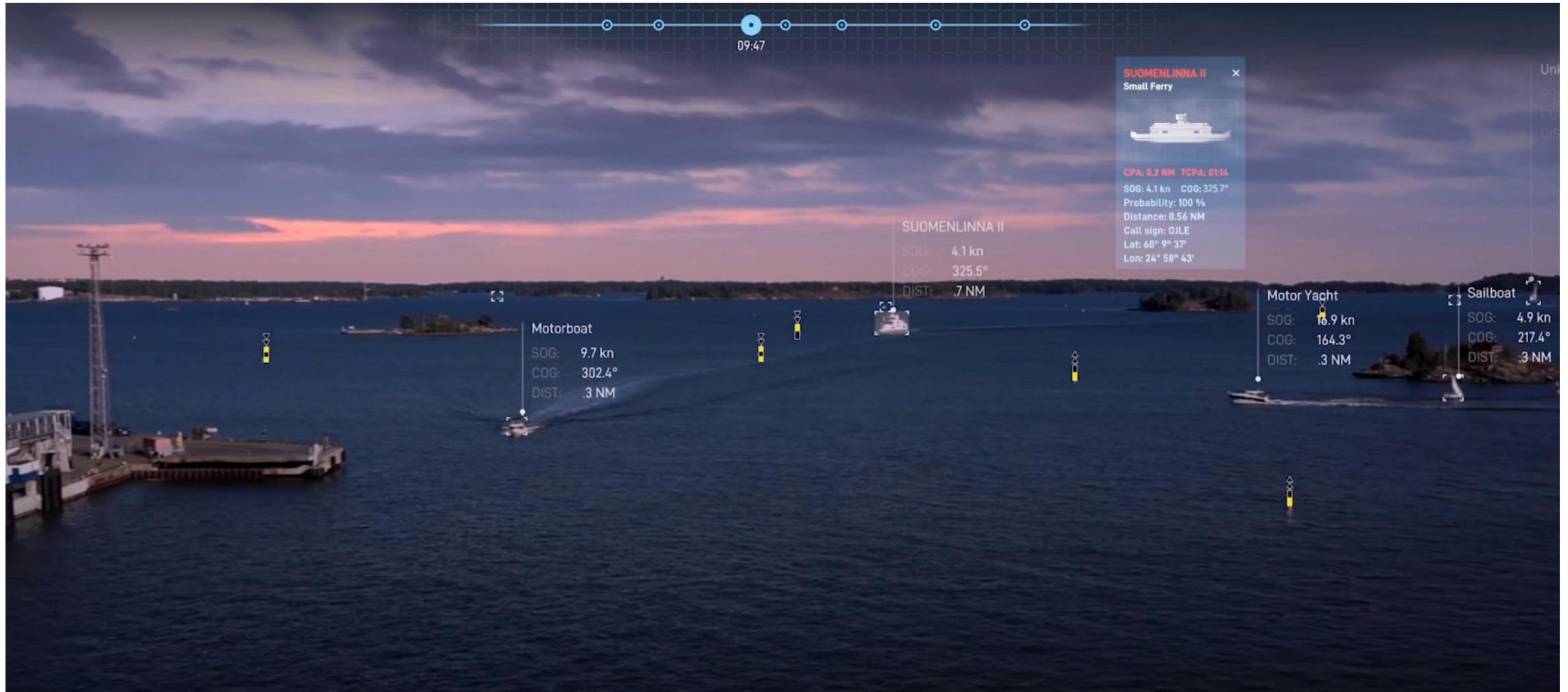
* Adapted from HBR article from Michael E. Porter and James E. Heppelmann "How Smart, Connected Products Are Transforming Competition", Nov. 2014



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Situational Awareness

Real-time presentation of the surroundings, with augmented reality

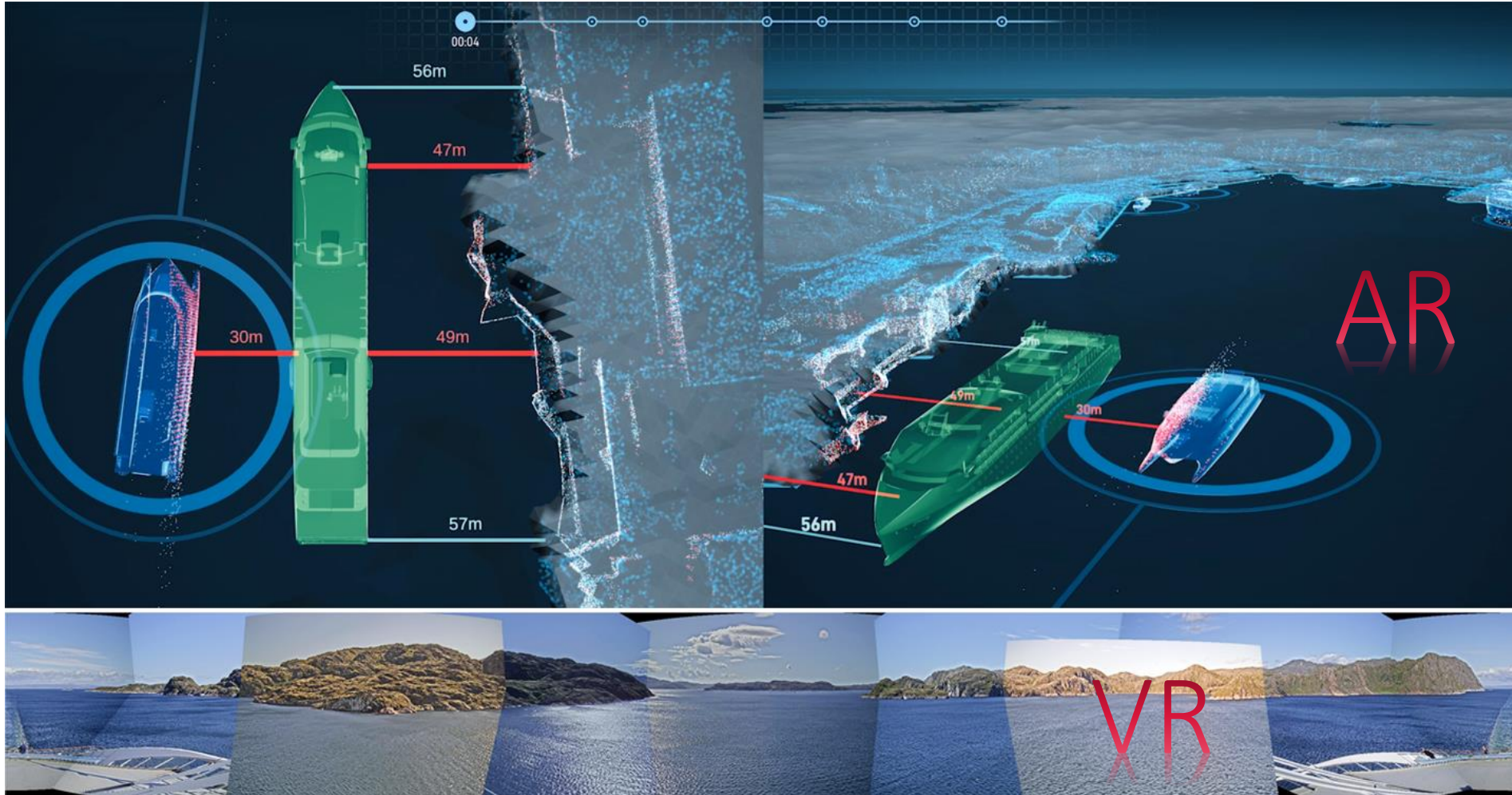




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Situational Awareness

Birds-eye view





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Digitalization

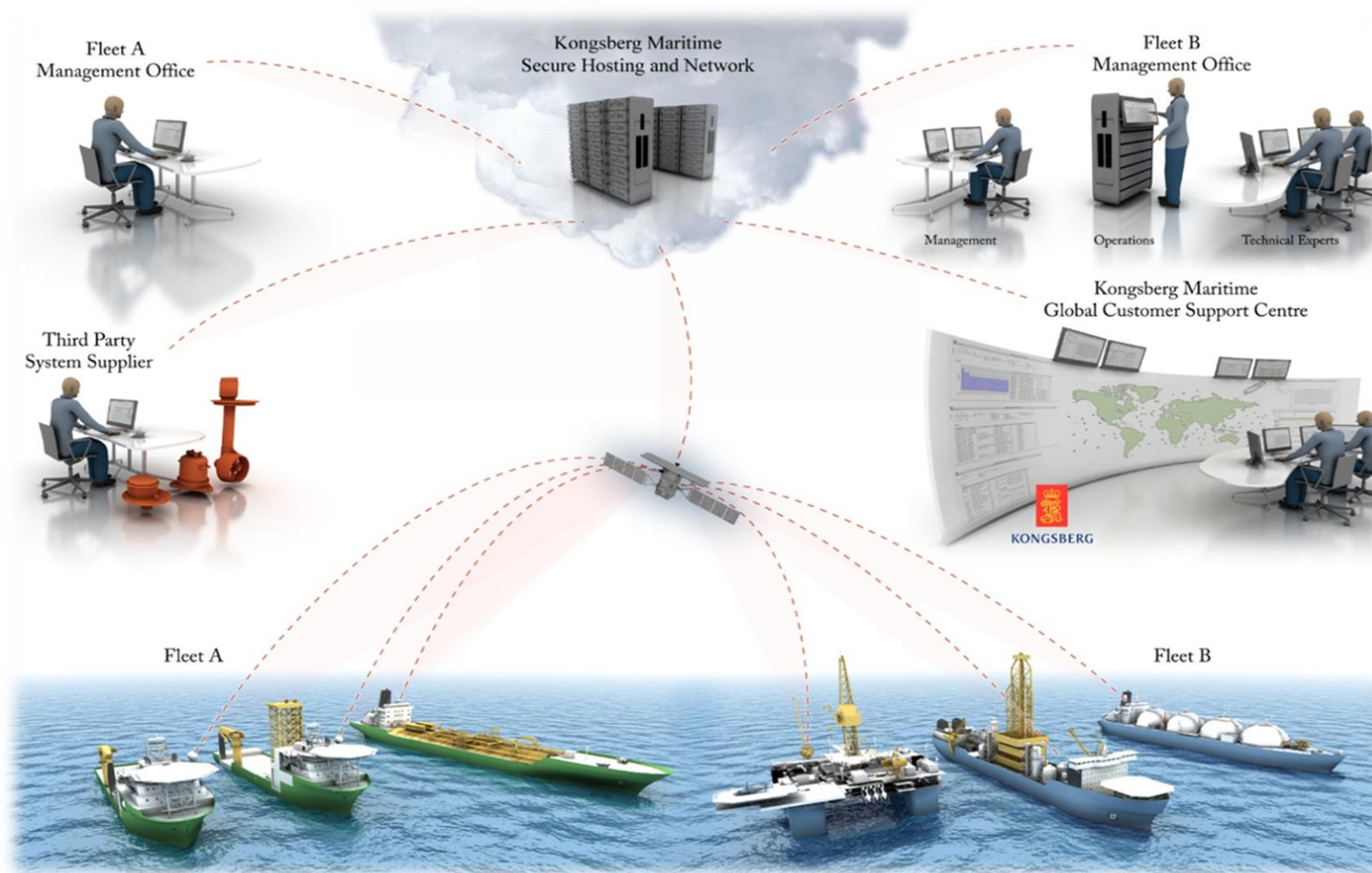




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Digitalization

Offshore - Onshore Principle





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Digitalization

Unique Position

1

Access to data

- Quality of data in advanced control systems delivered
- Security
- Remote Services

2

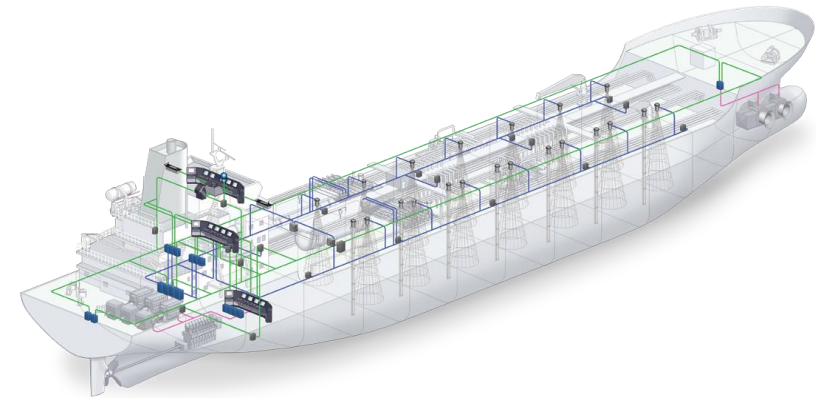
Digital platform

- Vessel Insight
- Open platform
- Ecosystem open to 3rd parties

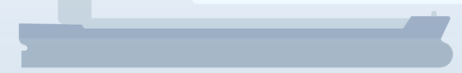
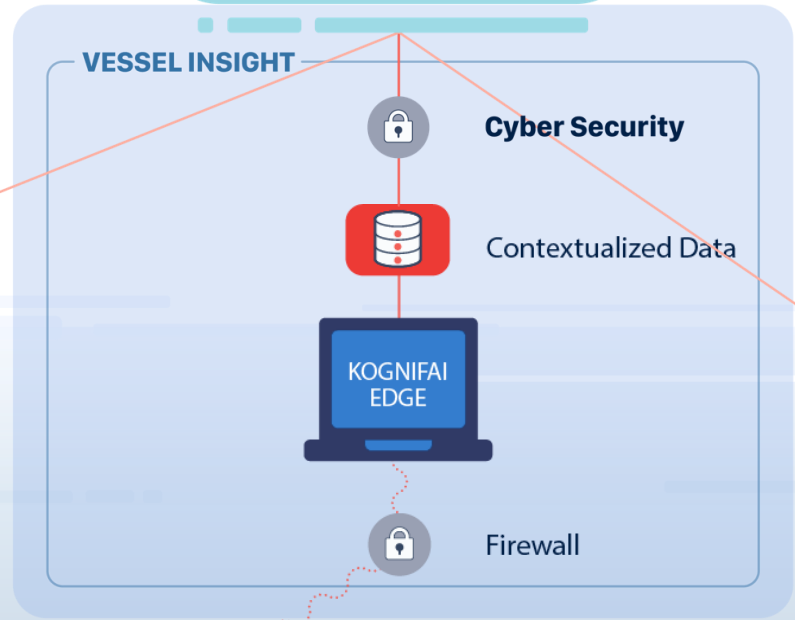
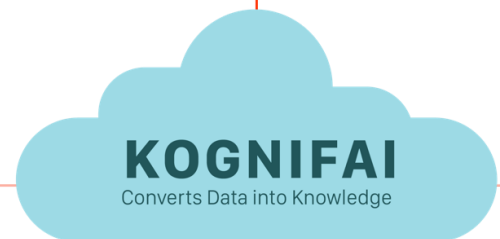
3

Domain knowledge

- Maritime and rotating machinery
- Inject expertise in the development of Applications
- Focus on customers operations









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Vessel Performance

Reducing your fleet's fuel and energy consumption, thereby reducing operational costs and emissions

- Fleet overview
- Vessel to vessel comparison
- Close to real-time monitoring of fleet and ship performance
- Easy overview of monthly, weekly, daily and performance operational data
- Voyage reports
- Individual equipment performance details
- Customizable dashboard
- Map overview with performance status





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Remote services





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Remote Operation Centre (ROC)

- Technical Ship Management
- Document and Quality systems
- Monitoring
- Intervention
- Optimization of operation through data collection and analytics
- Efficient Overall Logistics





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World-leading sales, service & support network

Over 30,000 vessels operate with KONGSBERG systems on board. Supporting them is serious business.

Our scope and expertise provides enormous benefit to our customers.





Our history,
experience and
technology
competence
makes the
difference



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Thank you!

