

# Ship Intelligence

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Meriteollisuuden tulevaisuusverstaas – 13.10. 2015

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# Teknologiaateollisuuden Strategia 2015 - 2019

## TEKNOLOGIATEOLLISUUS RY:N STRATEGIA 2015-2019

**TYÖMARKKINAT  
UUDISTUVAT**  
jäsenyritystemme  
parhaaksi



**SUOMI**  
HOUKUTTELEVAKSI  
teknologiayrityksille,  
investoinnit kasvuun

**YRITYKSEMME  
KASVAVAT  
KANNATTAVASTI**  
intoa ja taitoa jakaen



**UUDISTUVA  
TEKNOLOGIATEOLLISUUS  
MENESTYY  
KANSAINVÄLISESTI**

**UUDISTUMME  
ITSE**  
tuloksekkaasti



§ €

Teknologiaateollisuuden  
**MERKITTÄVYYS  
TUNNUSTETAAN  
PÄÄTÖKSENTEOSSA**



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# Information Technology



*The dawn of the Ship Intelligence era*



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# Ship Intelligence

## REMOTE CONTROL/OPERATION

- Monitoring & Control
- Navigation & Piloting
- Operation of payload systems

## DECISION SUPPORT

- Navigation (e.g. Routing)
- Situational awareness
- Collision avoidance
- Safety support

## NAVIGATION & POSITIONING

- Situation awareness & Sensing
- Dynamic Positioning & Auto pilot
- E-Navigation

## OPERATIONS OPTIMISATION

- Onboard energy optimisation
- Fleet optimisation
- Revenue optimisation

## ONBOARD AUTOMATION

- Automatic reporting
- Automatic systems (e.g. Mooring)
- Robotics
- Full autonomous operation

## CONDITION MANAGEMENT

- Health monitoring
- Self diagnostics
- Smart maintenance schemes
- Remote support
- Maintenance robots



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# Data Usage Today

Offerings to customers:

- Equipment health monitoring
- Energy management services
- Marine Care offerings (predictive maintenance)
- Operational performance reporting
- Input to Onboard Vessel Optimization functionalities
- Data analytics to build vessel and fleet performance optimization consultancy business



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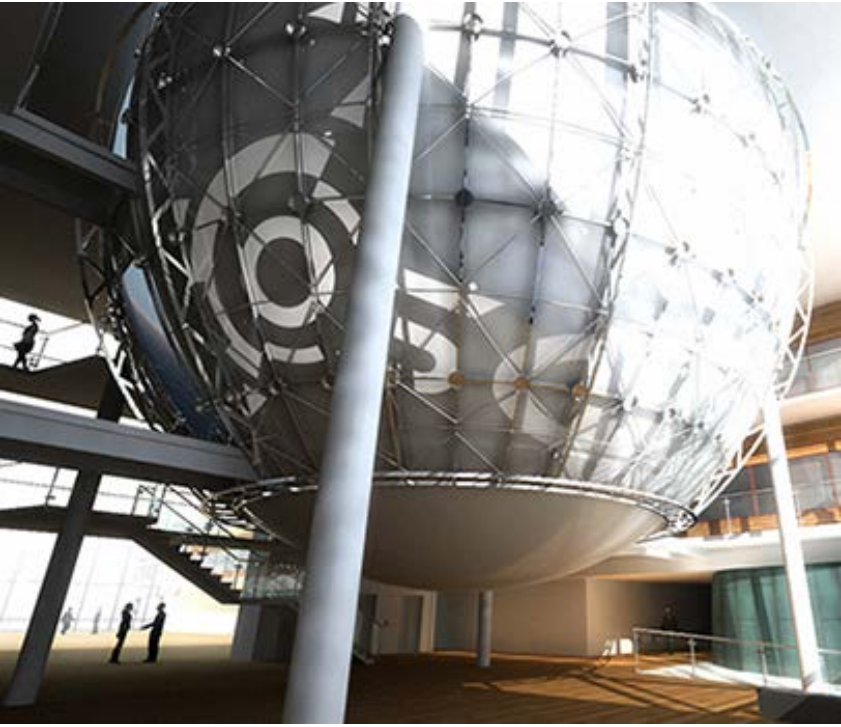
# Rolls-Royce Capability - Aerospace

- 13,000 gas turbines in service
- 72% covered by TotalCare
- Real time monitoring
- Complex data streamed from engine sensors
- Typical Trent engine – measuring 20 performance parameters (e.g. vibration, oil pressure, temperature etc..)
- Engines have 20+ year life
- We analyse fleet-wide data
- Knowledge builds capability for next generation of engines



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# Ship Crew Training & Simulators



# Unified Bridge



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# Unified Bridge



Common look and feel



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# oX – Operating Experience

P MAIN PROPELLION



P MAIN TRANSFER 1



Augmented Navigation  
Adjusting HUD graphics



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# oX – Situational Awareness

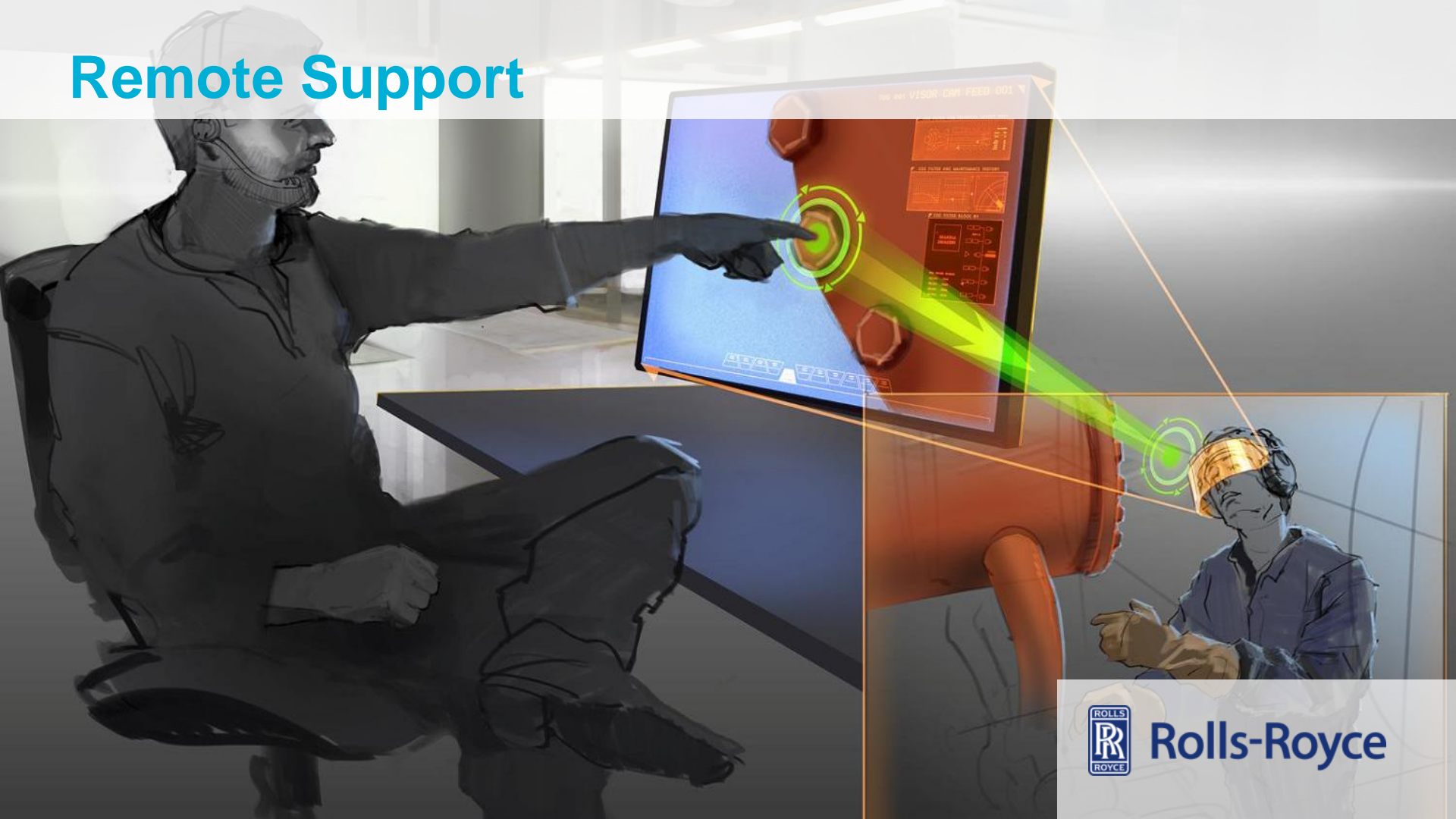
Augmented Assistance

Remote Operated Sub-Systems



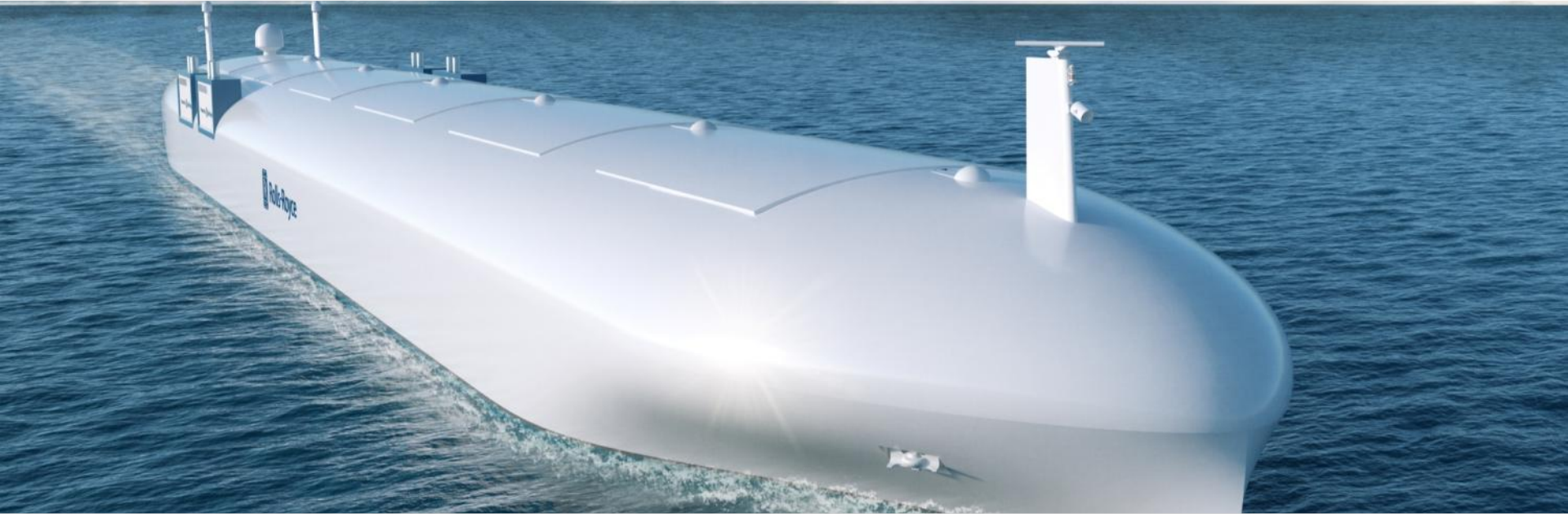
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# Remote Support



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# Unmanned Remote Controlled Ships



*Making ship transport more efficient and safe!*



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# Remote Controlled Ships - Features

**No deck house**

**More cargo**

**New possibilities**

- New layouts
- Rethinking the ship design

**Lower costs**

**No hotel systems**

- Water production
- Water heating
- AC
- Sewage treatment
- Etc...

**Communications**

**New level of Automation**

**Redundant machinery**

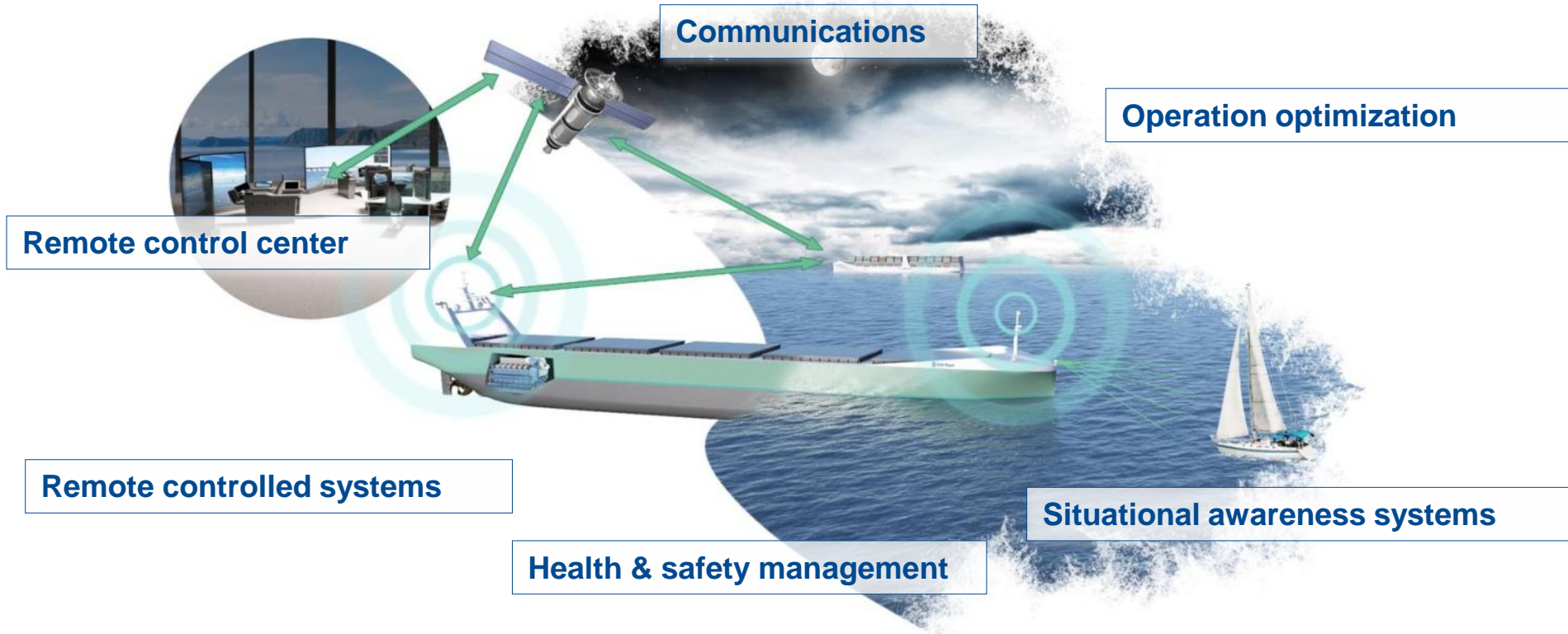
**Lower power demand**

- Lower resistance from reduced LWT
- Lower hotel load
- Etc...



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# Key Development Areas



# International Regulatory Obstacles

2015

Examples of conflicts with present international rules and regulations

2020

SOLAS  
Ch. IV 12

COLREG  
Pt. A-B

SOLAS  
Ch.V Reg 11,  
14, 22, 33, 44,  
...

2025

SUA  
Art.3-8

SOLAS

REISSUE  
2024?

STCW  
Ch.III

ILO C179-180

2030

GMDDSS,

Ship  
Registration  
Convention

UNCLOS  
Art. 94,  
ISM Code,  
SALVAGE  
Ch.2

2035

ISPS  
code

Remote machinery control

Remote watch-keeping

Fleet monitoring & control

Remote machinery monitoring

Automated ship-shore administration

Remote deep sea navigation

Autonomous deep sea navigation

Remote machinery diagnostics

Machine collision avoidance

Shore-side Bridge Proxy



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# Digitaalinen murros

- ICT ja data tukitoiminnosta ydinliiketoiminnaksi
- Datatn hyödyntäminen
- loE
- Tuotteista palveluun – teknologian avulla
- Tähtää korkealle – ja aina maailmanlaajuisesti!
- Liittoudu ja käytä todellisia osajia – eivät löydy yrityksestäsi!
- Luota siihen, että lainsäädäntö muuttuu oikeaan suuntaan
- Tee roadmap ja lähdet nopeasti liikkeelle
- Muuta liiketoimintasi itse tai joku muu tekee Uberit alallesi



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# Conclusions

*We are at the dawn of the  
Ship Intelligence era*



*Unmanned ships will be the most fundamental  
change in shipping that we will experience*



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A white ferry boat is sailing on a calm blue sea. In the background, there are large, rugged mountains under a clear blue sky with some light clouds. The text is overlaid on the image in a blue, sans-serif font. The quote is enclosed in large, light blue quotation marks.

“The best way to  
predict the future  
is to **create**  
the future”