

# Rolls-Royce Marine Cyber Security

**Bli en sikkerhetsbevisst leverandør  
– noen ønsker og krav**

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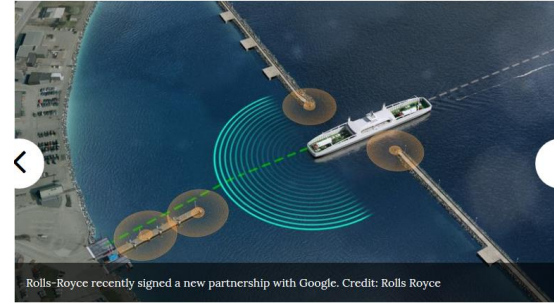
**Trusted to deliver excellence**



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# Agenda

- Where are we and the Marine industry heading (video)
- Some opportunities/challenges/threats  
*Marine 4.0 :Creating the digital landscape*
- How to address these opportunities/challenges/threats
- Way forward



Rolls-Royce recently signed a new partnership with Google. Credit: Rolls Royce



Rolls-Royce teams up with Google on AI-driven ship awareness



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# A comprehensive range of products

## SHIP DESIGN



- Offshore supply and service vessels
- Offshore exploration and production vessels
- Cargo, container and passenger vessels
- Fishing vessels
- Naval vessels

## DECK MACHINERY



- Anchor handling and mooring winches
- Safer deck operations
- Handling systems for subsea, seismic and oceanography
- Positioning mooring
- Fishing winches
- Naval deck machinery

## AUTOMATION & CONTROL



- Unified Bridge
- Propulsion control
- Dynamic Positioning
- Automation systems
- Electrical power systems

## ENGINES & GAS TURBINES



- Diesel and gas propulsion engines and generator sets
- Gas turbines

## PROPULSION & MOTION CONTROL



- Propellers and thrusters
- Rudders
- Steering gear
- Stabilizations

More than 4000 employees

Norge 1.600 + 700 (engines) | Finland 500 | Sverige 200 | RoW 2.000



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# Marine 4.0 – future vision



Film: [Sisu](#)



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# Some opportunities/challenges/threats

## Marine 4.0: Creating the Digital Landscape



**SIMULATION CENTRE**  
*Virtual prototyping of solutions using Real-Physics environment.*



**DATA ENABLED VESSELS**



1100  
1010  
0101

1100  
1010  
0101

**FLEET OPERATIONS CENTRE**  
*"Intelligent Service" centre where informed decisions are taken real time in response to Insights.*

**ANALYTICS CENTRE**  
*where data is Insights.*

Anti-Submarine Warfare (ASW) Continuous Trail Un



**REMOTE OPERATIONS CENTRE**  
*"Automated Operations" centre where remote/autonomous vessels are piloted and provided operational tasking.*

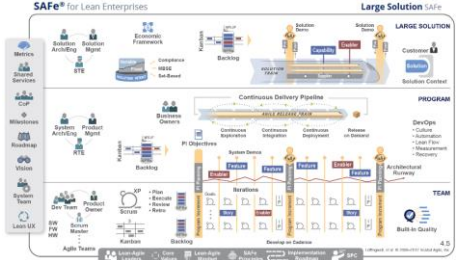
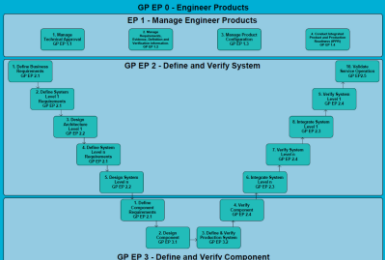
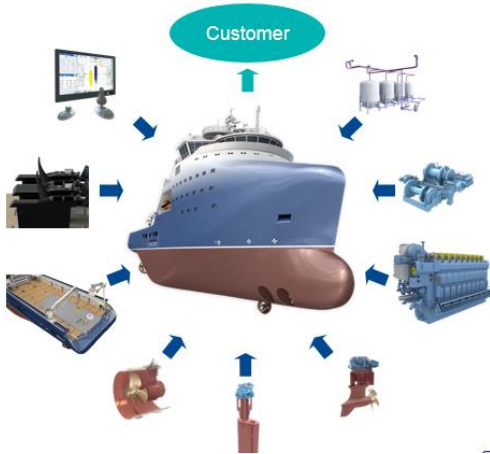
Joint Demonstration with DARPA  
Towed Airborne Lift of Naval Systems (TALONS)  
September 2016



# How to address these opportunities/challenges/threats

## How to address these opportunities/challenges/threats

- Product lifecycle?
  - Organizational? (R&D, Engineering, Services, ...)
  - System integration/interfaces ?
- Building the vessels?
  - Transport, preservation, storage, commissioning.....
- Securing data assets, what to control, how..
  - Integrity, confidentiality and availability
- Services & operations ?
- Business RISK/opportunity register?
- Internal operations ?





# Way forward

- Complex environment
- New opportunities/challenges/threats
- Involves all in the Marine Industry

*Establish arena to share and grow  
“Best practice” in Cyber Security*

*“Marine Cyber Security Forum”*



**Cyber  
Security**



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# Our maritime heritage – as foundation for future growth



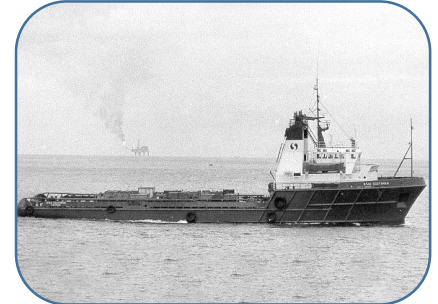
*The Gokstad Viking ship  
(890)*



*Polar research and  
sealers (1800)*



*Herring fishing – Ålesund  
(1959)*



*Stad Scotsman  
(1974)*

*State-of-the-art cyber-security program*





Thank you for your attention!



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