Ship Operations 4.0

MacGregor OnWatch Scout
See tomorrow. Today

Workshop „Maintenance & Repair“
29.10.2019

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Digital and New Business Transformation
MacGregor Group

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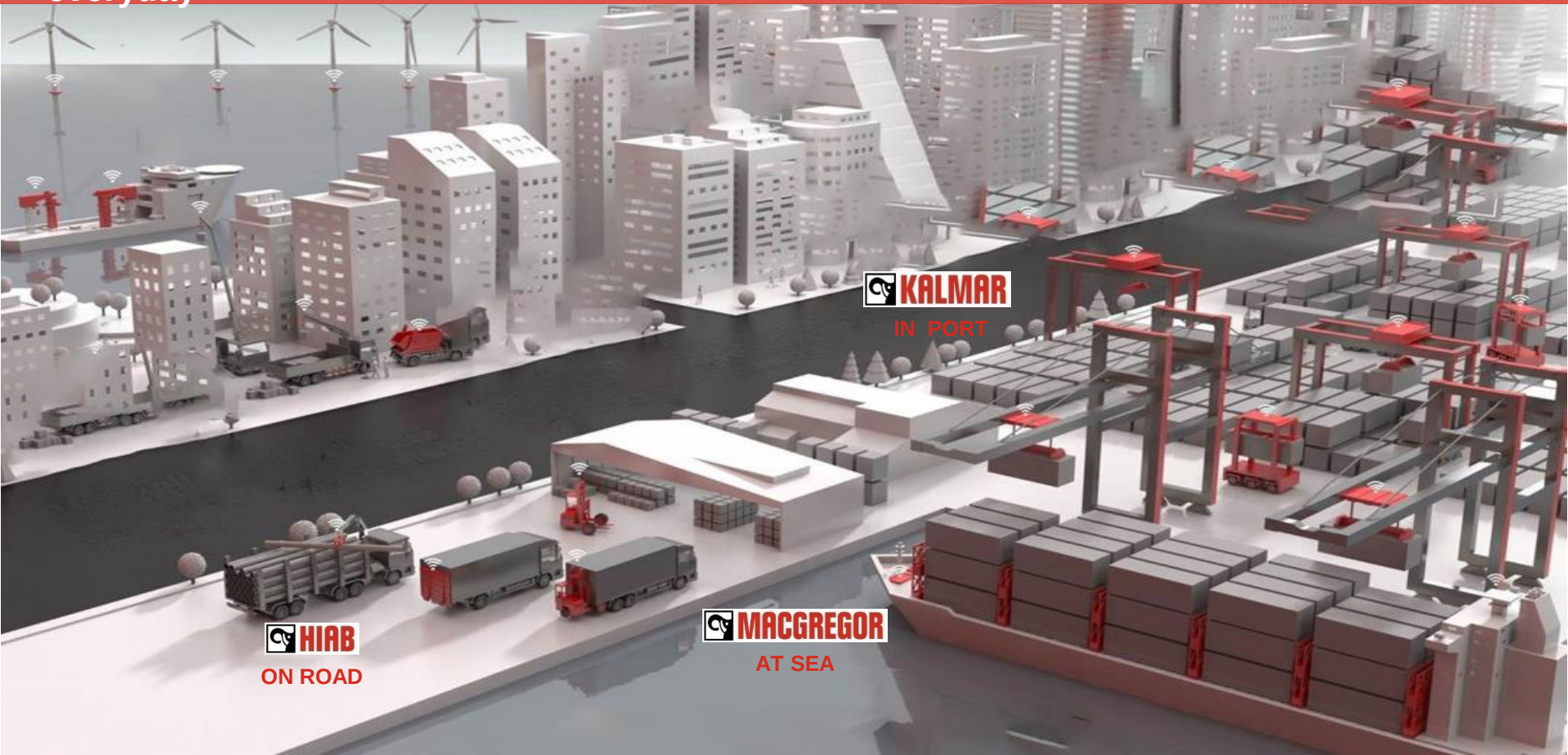
MacGregor is part of Cargotec

Cargotec optimises global cargo flows to create sustainable customer value and a better everyday



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Designed to perform with the sea

MacGregor Smart
Enhancing customer operations through innovative digital solutions

Predict
Detect conditions and predict the future for improved reliability

Safeguard
Safeguard your cargo, operations and people

Optimise
Optimise your assets and operational performance

Automate
Automate for improved efficiency and safety

STEPS TOWARDS INTELLIGENT SHIPPING & AUTONOMOUS OPERATIONS

Customer survey 2018
"we believe in digital possibilities, but please make it practical and take us at the hand"

MacGregor – Shaping the offshore and marine industries with technical solutions

Hatch covers

Cranes

RoRo equipment

Terminal solutions

Self-unloaders

Offshore load handling

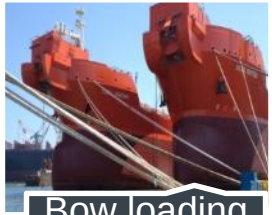
Container lashing

Deck machinery

Steering gear

Mooring Systems

Offloading systems


Bow loading systems

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And digital products and services

Carnival Fleet Operation Center in Hamburg, Picture: Carnival Maritime GmbH

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Driving Digitalization in the maritime industry using the example of a comprehensive predictive maintenance platform

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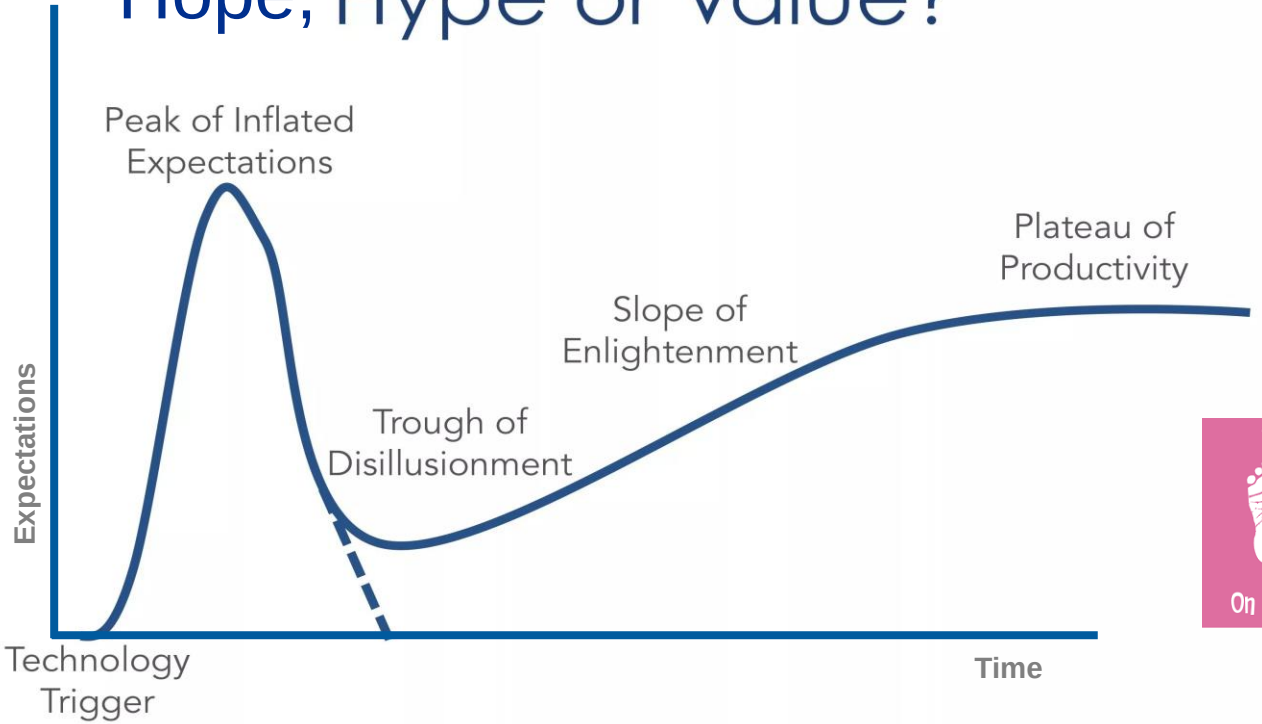
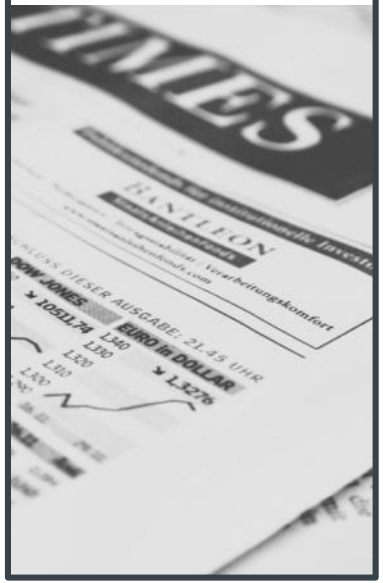
Hope, Hype or Value?



The Gartner Hype Curve, 1995

Specific characteristics of maritime digitalization

Market



Connectivity

System Integration

Global Legislation

The 2020s will be the shipping's first fully data enabled decade

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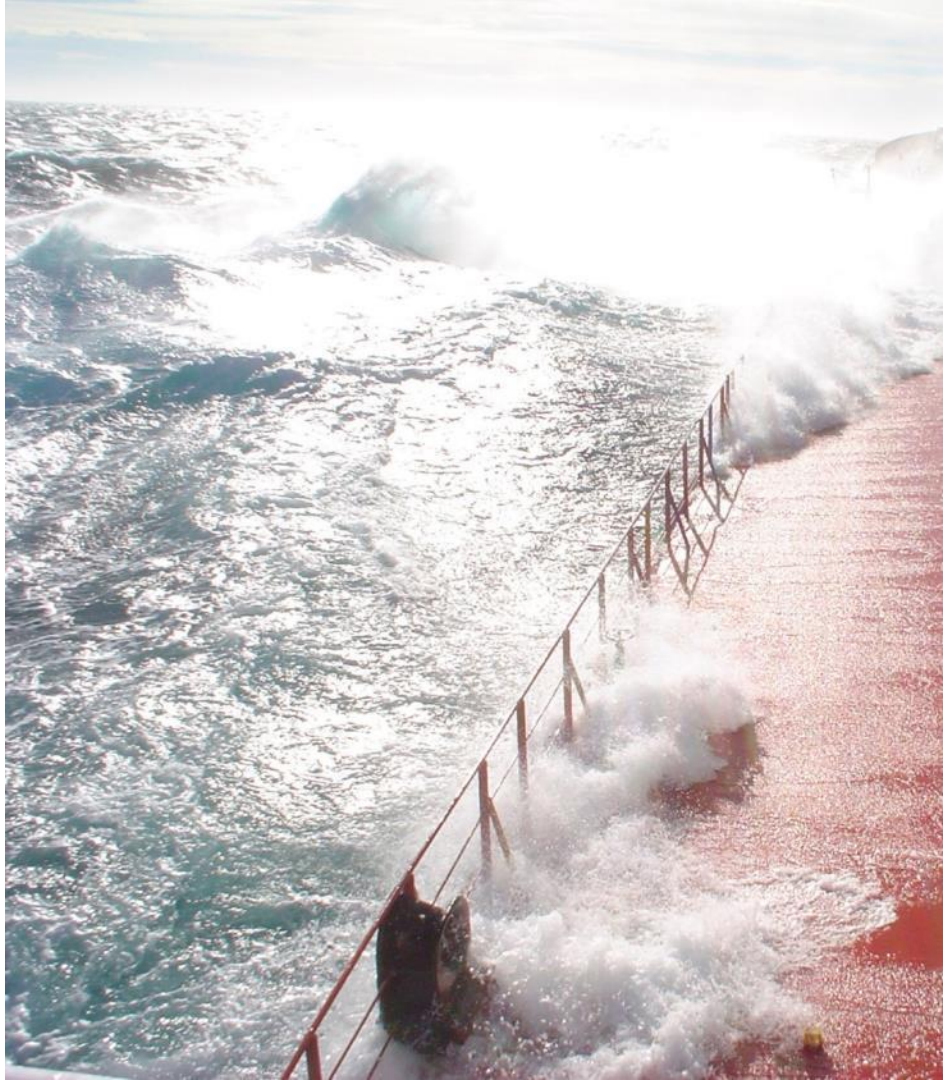
Our customer‘s challenges

Crew shortage
Freight rates
Fuel price
Safety
Piracy



MacGregor development areas

Operations Optimization

Cargo stowage planning

Vessel performance monitoring

Fleet optimization (navis)

Condition Management

Health monitoring

Maintenance planning

Remote support

Decision Support

Cargo operations

Situational awareness

Safety support

Onboard Automation

Automated reports

Automation of systems

Remote control and autonomy

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Maritime Gateway and Maritime Data Engine: to make most out of your systems data and to enable intelligent services

- Data accessible onboard and in cloud
- Gain insight on equipment performance and how equipment efficiencies
- Seamless integration of VDR facilities
- Standardized data collection (OPC architecture allow integration and collaboration between systems from different manufacturers
- Lowest costs routing via satellite or mobile
- **Security is an integrated part of the solution.** The OPC-UA protocol is used for transfer of vessel data protecting against unauthorised access, sabotage, intrusion, and modification.
- **No maintenance required**

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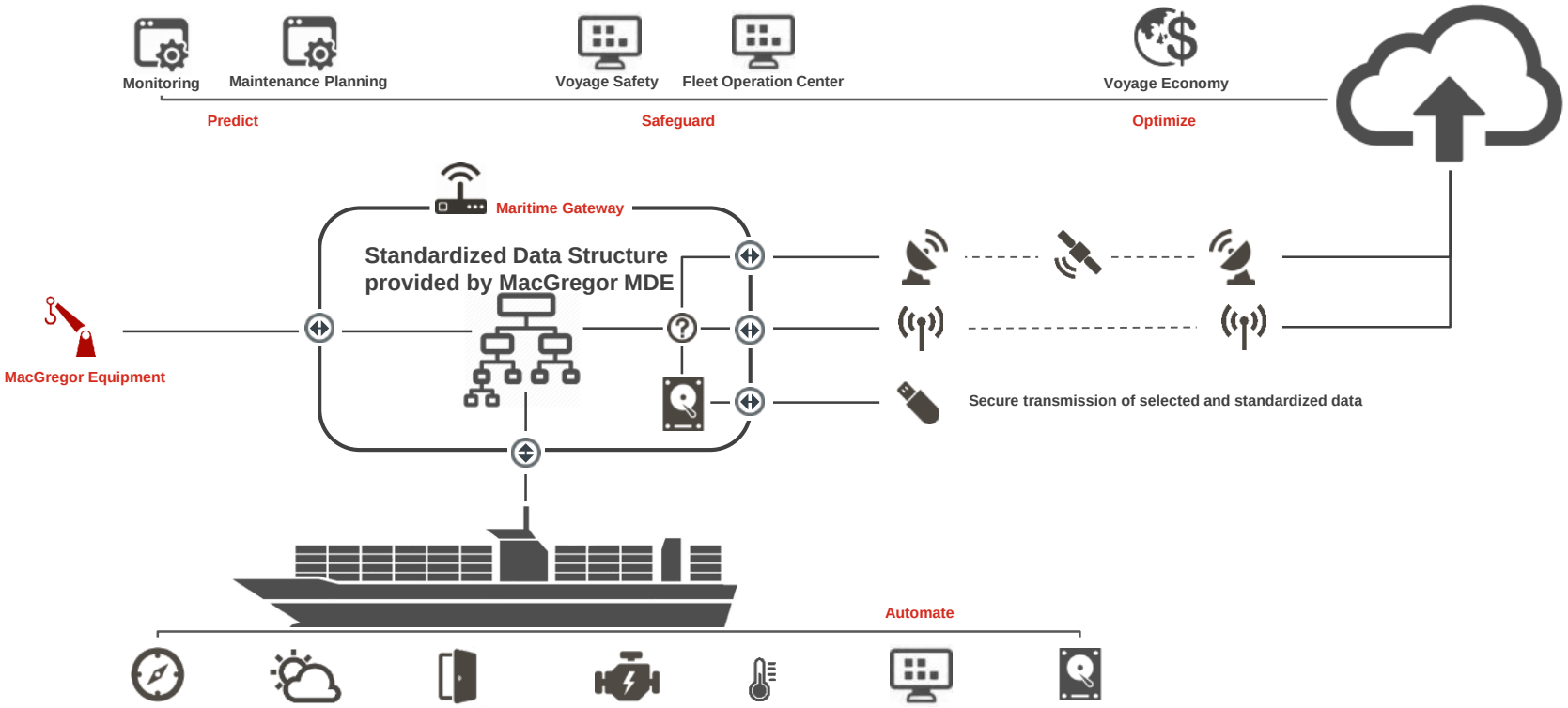
Connectivity infrastructure enabling remote services



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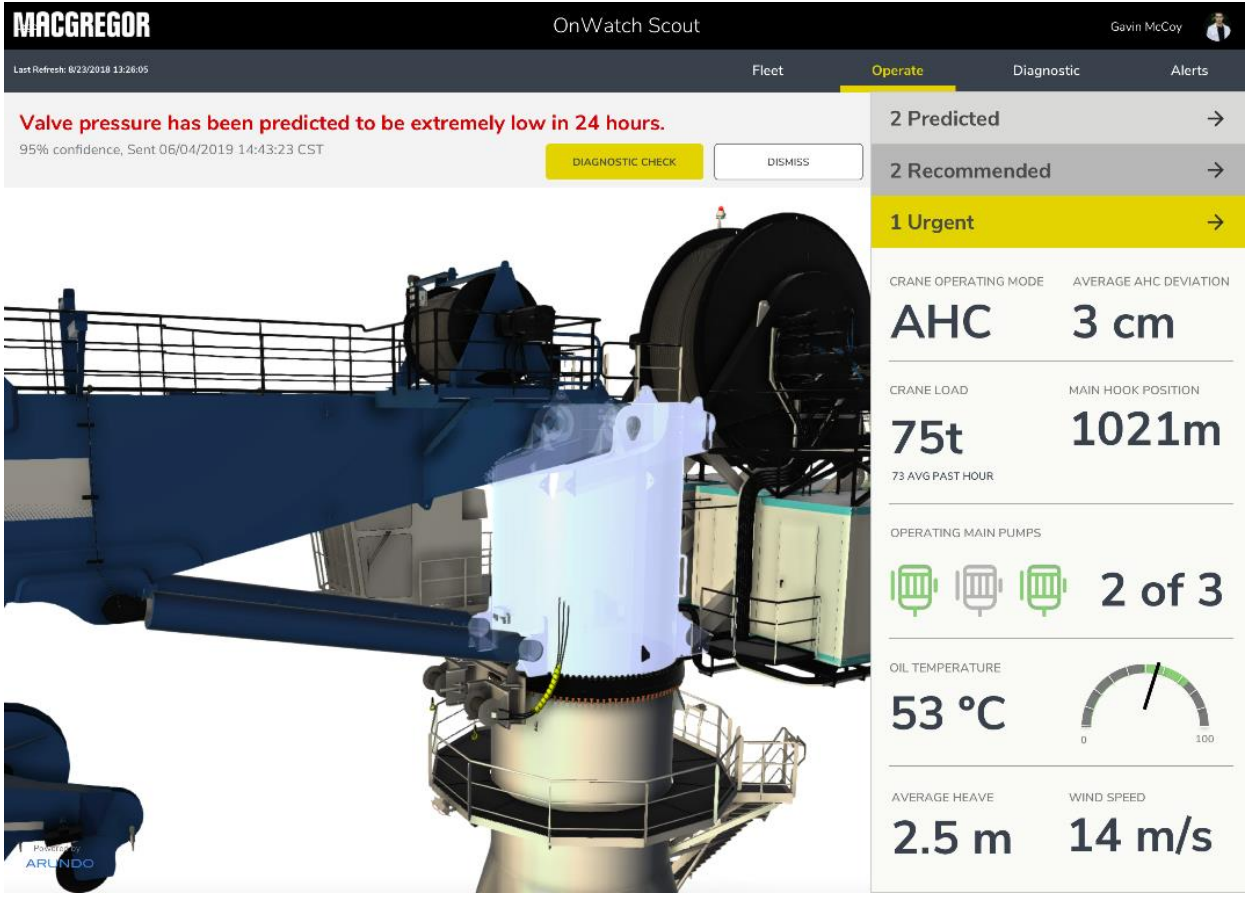
Condition Monitoring Systems enabling remote services



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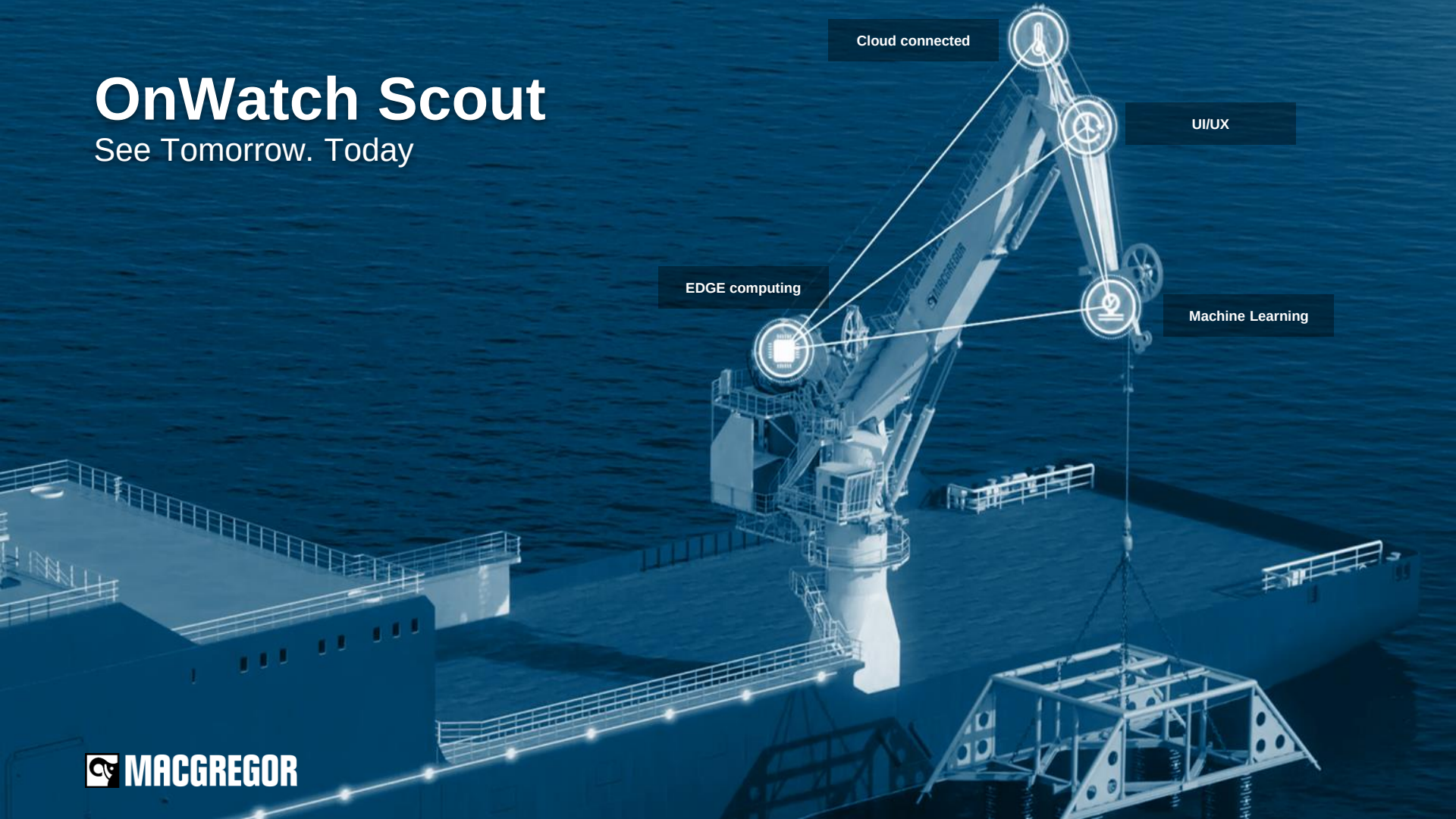

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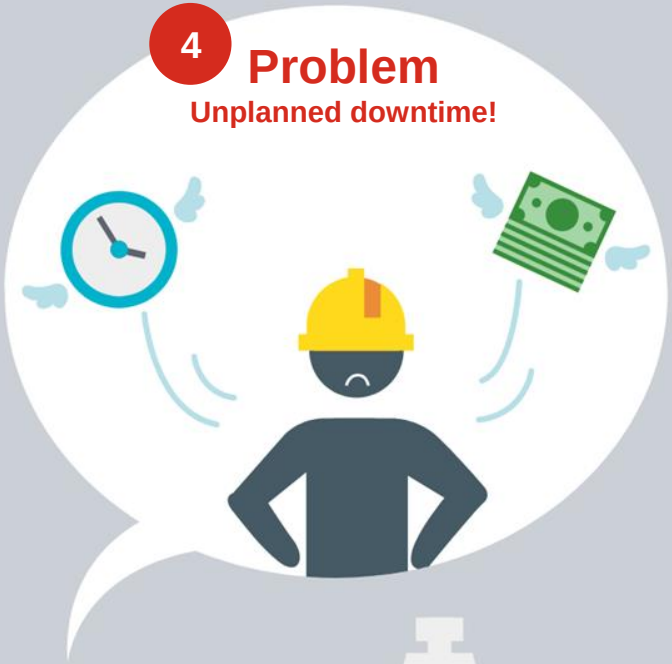
Customer Centric Development

with major Chinese and European owners

Customer Pain Points

1. Operations with **heavy** and **advanced** machinery
2. Emerging **failures not recognized**
3. **Component failure** can **stop** the entire **operation**



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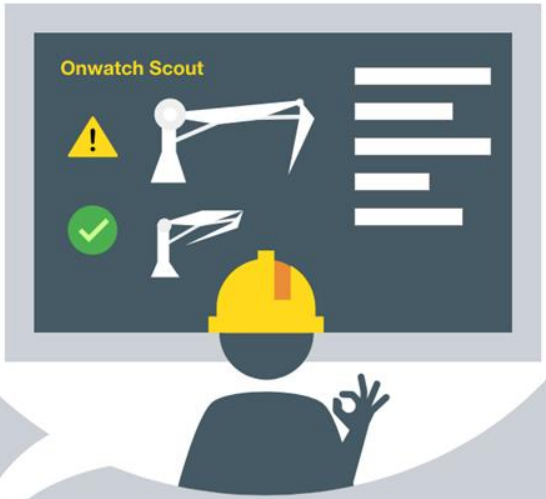
1. **Analyse** & **Predict** component condition
2. **Identify changes** that indicate risk of **failure**
3. **Minimise unplanned downtime** and more **effectively plan maintenance** activities

4

Solution

Analytics & Predictive Maintenance



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Predictive diagnostics takes data from multiple and varied sources, combines it, enabling the use of machine learning techniques to anticipate equipment failure before it happens

Global Portfolio Information
Life cycle data management
Sub-supplier data and manual data

Data from Sensors

Analytics & ML

Data Communication in Cloud

Customer Portal Actions & Status OnShore

Customer Portal Actions & Status EDGE Computing on Vessel

User Story

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Augmented Reality

Picture: © Microsoft

Digital product documentation

Overcoming language barriers

Automated service documentation

Enabling the vessel’s onboard crew to perform extensive maintenance tasks

Embedding telemaintenance service

Easing spare part ordering

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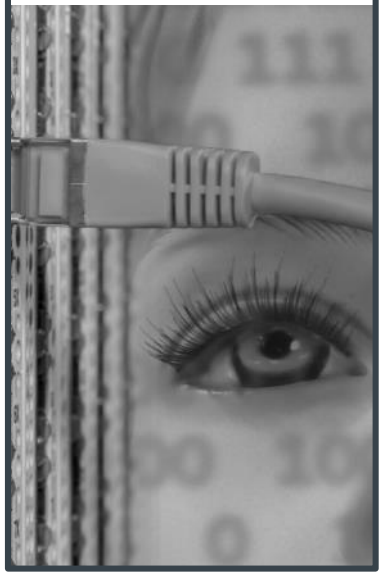
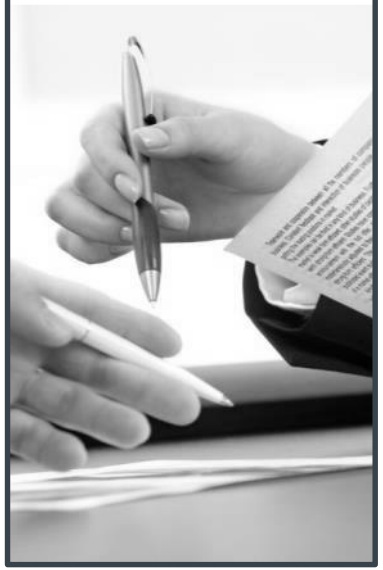
Our challenges on the way towards digital ship operations

IT-Infrastructure

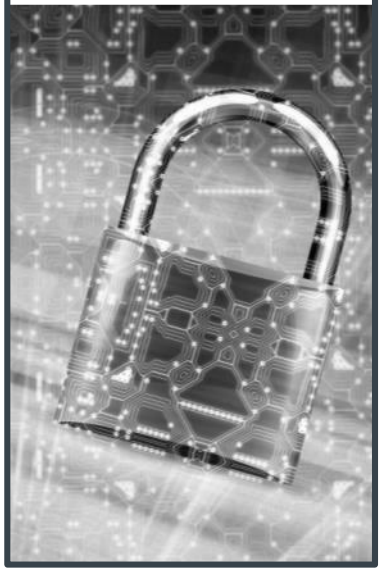


Organisation

Sales



Cybersecurity



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Collaboration & hard work – the way forward

CUSTOMER

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“If we disrupt, let’s disrupt together”

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