



KONGSBERG

DIGITALIZATION

Transforming the Maritime Industry

Bent Erik Bjørkli

VP Digital Performance, KM

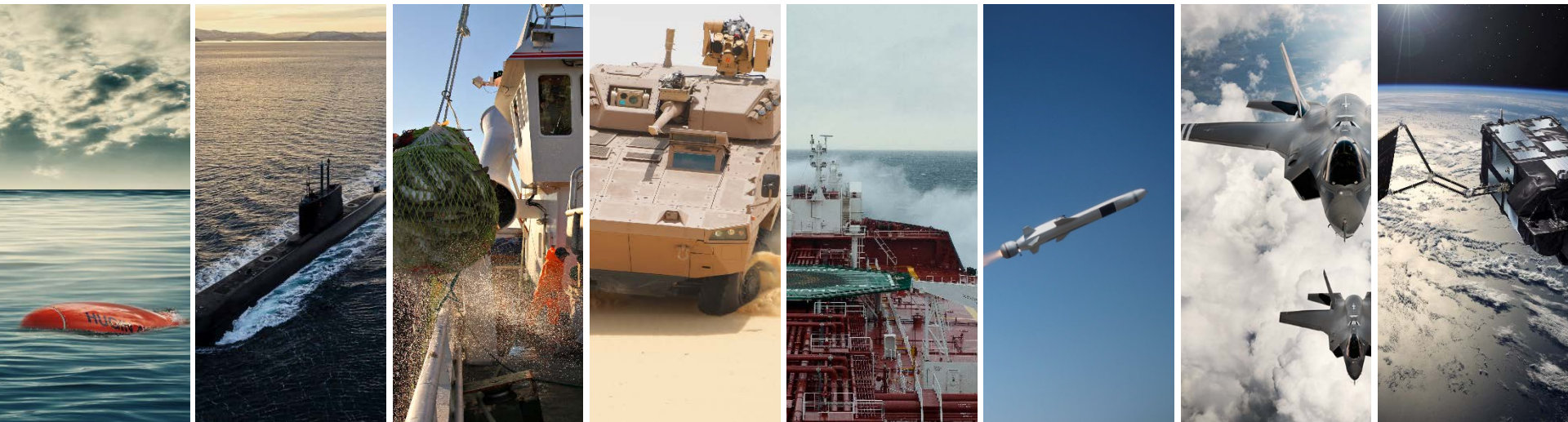
Matt Duke

VP Digital Platform, KDI



Καλωσόρισμα
Velkommen

200 YEARS OF TECHNOLOGY INNOVATION



From deep sea to outer space

OUR INDUSTRIES



KONGSBERG



DEFENCE

Modern product portfolio with world leading positions in defence and aerospace niches



SPACE & SURVEILLANCE

Niche products and solutions to the entire value chain; from launch to data download services



SEABORN TRANSPORTATION

Scalable automation and control, safety, energy management, navigation and cargo handling solutions



OFFSHORE, OIL & GAS

A global supplier of integrated automation and control systems and engineering services



INDUSTRIAL DIGITALIZATION

Staying ahead of the curve on industrial software solutions for efficient operations



SUBSEA TECHNOLOGY

Marine robotics and underwater sensor systems for naval applications, fishery, offshore operations and underwater science

DIGITALIZATION INTENSIFIES

The industrial internet is changing the maritime landscape



KONGSBERG

DNV·GL

Certificate No:
TAA00001FR

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Control system and/or communication components with verified security capabilities

with type designation(s)

Kongsberg Remote Services and Data Exchange

Issued to

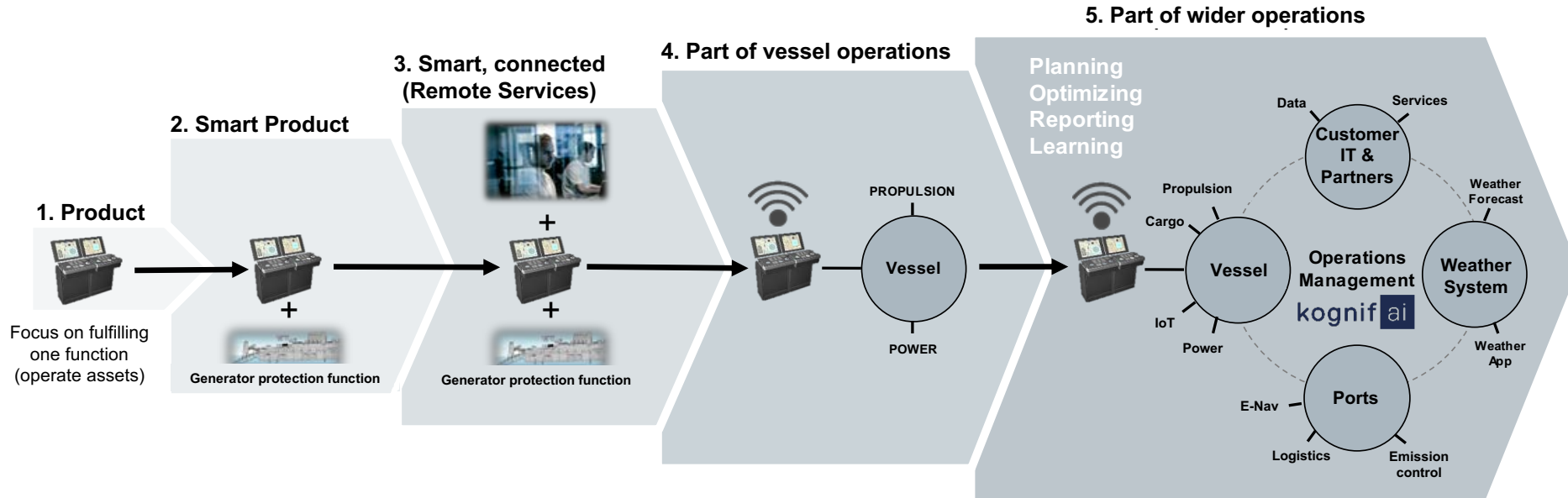
Kongsberg Maritime AS

KONGSBERG, Norway



DIGITALIZATION DRIVING NEW INDUSTRY BOUNDARIES *

Example of the Automation product in the Maritime Market Segment



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

REMOTE OR AUTONOMOUS OPERATIONS



KONGSBERG



Sea Launch

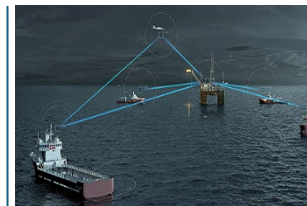
Remote control of DP system from Command Vessel

Autonomous Underwater Vehicles



Global Customer Support

Expanded offering of associated services and support - competitive asset management, life cycle support and remote services



Maritime Broadband Radio

The Maritime Broadband Radio is developed for use in maritime applications where digital high-speed reliable communication and data transfer are crucial for efficient and safe operations



Yara Birkeland

The world's first zero emission, autonomous container feeder

1999

2007

2015

2018

KSAT

World leading ground station provider for Low Earth Orbit (LEO) satellites



Joint Strike Missile / Naval Strike Missile

50 years of experience from a variety of missile programs



Kongsberg Protech Systems

World leading provider of remote weapon systems. Awarded the CROWS II (Common Remotely Operated Weapon Station) contract by the US Army.



Remote Tower

Avinor and KONGSBERG enters into agreement on the world's largest investment for remote towers



18.11.2017

WORLD CLASS - through people, technology and dedication

Page 7

DATA DRIVEN DECISIONS



KONGSBERG



VESSEL & FLEET PERFORMANCE

*Energy management
Awareness of Fleet
Performance through
Benchmarking, compliant to
rules and regulations*

Deck logbook report

Vessel : Kongsberg Testship
Date : 13. apr 2015
Status : Signed by JJ

Company IMO : 1234567
IMO : 1234567
Printed : 14. apr 2015 13:51



KONGSBERG



K-Fleet Voyage - 4.1.12

File Edit View Options Tools Help

Working voyage

Voyage no.: 2016001 Start date: 01.01.2016 00:00 Departure port: Jureng/Singapore
End date: <ongoing> Arrival port: Year change 2016-2017

Port Registration

Port: Ras al Mshab
Berth:
Reason for Call: Loading/Discharging/Bunkering ☐ EU Port

Latitude: 28.50N Longitude: 048.37E Time Zone:
ETA: 22.12.2016 12:00 Conf. arrival:
Berthed: 23.12.2016 18:00 Conf. berth:
Departed: 23.12.2016 23:00 Conf. departure:

Vessel status upon arrival

Condition: Laden
Calc. distance: 3240 [nm]
Bill of Lading Cargo Quantity: 1200 [m3]
Cargo Description:
Agent:
Notes:

Port Bunker (tonnes)

Edit Arrival ROB Edit bunkering Edit departure ROB

Fuel type	Arrival ROB	Bunkered	Departure ROB
HFO	670,00	1000,00	1668,00
LFO			
HDO			
LSO	212,00		460,00

Port Forms

Form name	Description	Changed
Arrival Report		16.03.2017 13:35:13
Notice of Readiness		16.03.2017 13:35:27
Departure Report		16.03.2017 13:35:39

Preceding Leg	Port Name	Port Code	Arrival time	Berth time	Departure time
38	Year change 2016-2017	N/A			
37	Ras al Mshab	SA RAM	22.12.2016 12:00 (ETA)	23.12.2016 16:00	23.12.2016 23:00
36	Port Said East	EG PSE	14.12.2016 19:00	14.12.2016 19:45	14.12.2016 23:00
35	Cartagena	ES CAR	11.12.2016 12:00	11.12.2016 12:45	12.12.2016 08:00
34	Rotterdam	NL RTM	05.12.2016 10:30	06.12.2016 11:30	07.12.2016 14:00
33	Sjursjøa/Oslo	NO SJU	01.12.2016 07:30	01.12.2016 08:30	02.12.2016 09:00
32	Testling		26.11.2016 13:35	26.11.2016 14:50	27.11.2016 18:30
31	Port Said East	EG PSE	16.11.2016 05:30	16.11.2016 06:30	16.11.2016 13:00
30	Ras al Mshab	SA RAM	13.10.2016 12:00	14.10.2016 16:00	07.11.2016 10:00
29	Port Said East	EG PSE	05.10.2016 19:00	05.10.2016 19:45	05.10.2016 23:00
28	Cartagena	ES CAR	02.10.2016 17:00	02.10.2016 17:45	03.10.2016 08:00

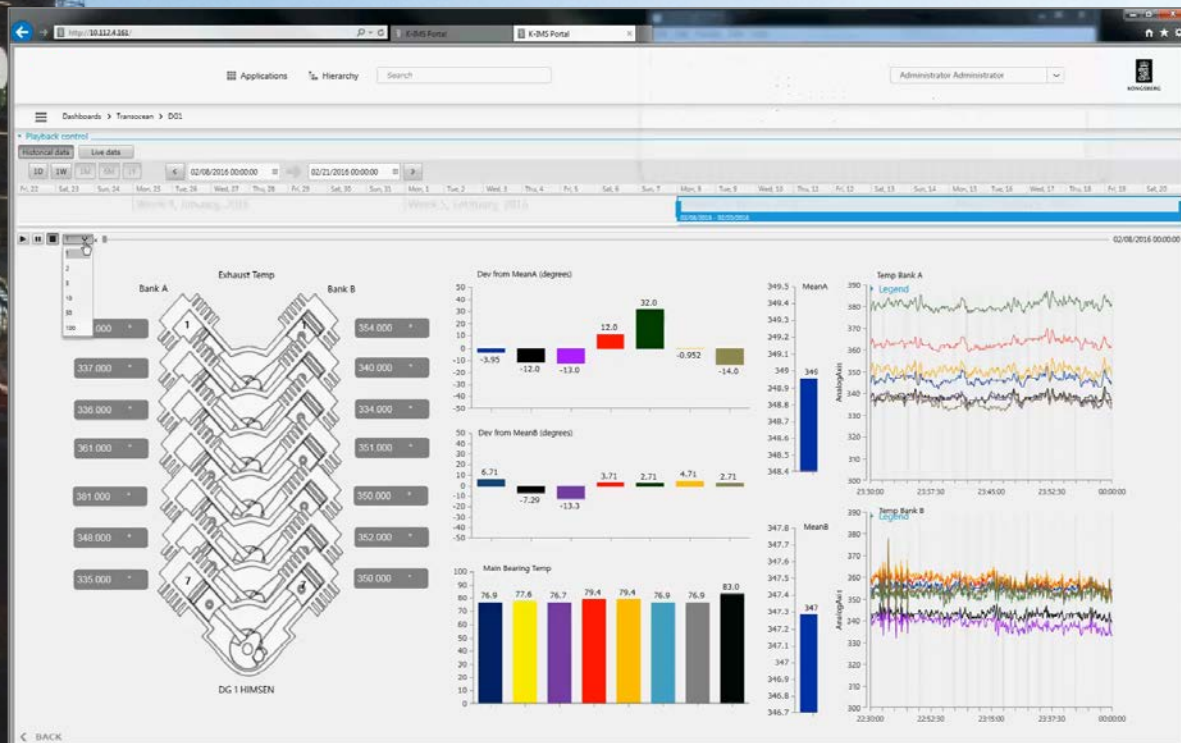
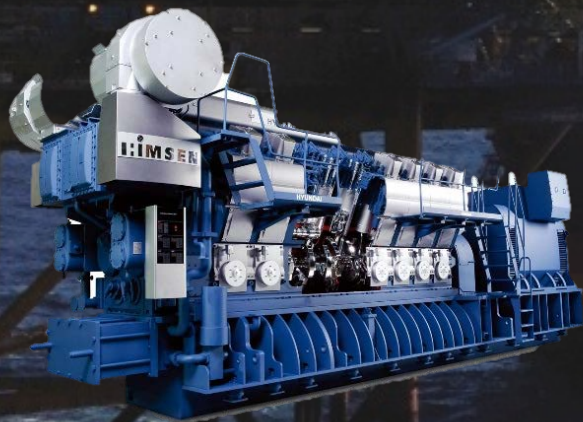
Vessel name: M/T Kongsberg



KONGSBERG

CONDITION MONITORING

Enable Condition Based Maintenance (CBM) and Condition Base Surveying



DIGITALIZATION ENABLING AUTONOMY

Achieve value at every step



KONGSBERG



**Supporting crew reductions
and enabling digital twins**



**Reduced service cost and
utilize onshore expertise**



**Enabling IoT based decision
support applications**



Autonomous Operations

- More advanced automation
- Mission planning
- Decision making
- Situational Awareness



Remote Services enabling knowledge- embedded operations

- Remote diagnostics
- Preventive maintenance
- Fleet benchmarking



Connected

- Interconnected equipment
- Ship-to-Shore communication
- Remote support
- Information Management System



KONGSBERG

WORLD CLASS

THROUGH PEOPLE, TECHNOLOGY AND DEDICATION