THE DISRUPTIVE POWER OF DATA AND TECHNOLOGY

A new era of the maritime industry

Roger Holm,
President, Marine Solutions & Executive Vice President
Predicted global economic growth support seaborne trade demand, while political and regulatory uncertainty limit the market recovery.
General market sentiment is cautiously optimistic

- Merchant contracting
  - Tankers
  - Bulk Carriers
  - Containerships
  - Other Merchant

- Gas carrier contracting
  - LPG
  - LNG

- Cruise & Ferry contracting
  - Ferry
  - Cruise

- Offshore contracting
  - Survey, Logistics, Rescue & Salvage
  - Construction Units
  - Offshore Support Vessels
  - Mobile Production
  - Mobile Drilling

Source: Clarksons Platou, Wärtsilä Internal Analysis
MARINE FACT SHEET

90% of world trade

Global shipping fuel bill around $100 billion

Fuel costs can represent even up to 50% of total ship operating costs

+ 2,000 Amount of new vessels built yearly

+ 1,000 Amount of new yearly contracts

Sources: Clarkson's, Wood Mackenzie, Bloomberg, Wärtsilä internal analysis
Environmental legislation creating growth opportunities

- **2016**
  - NOx Tier III in NECA (North America)
  - Amended IMO MEPC.227(64)

- **2017**
  - IMO Ballast Water Management Convention
  - IMO Polar Code

- **2018**
  - Inert Gas System mandatory for newbuild tankers above 8,000 DWT as of 1 January 2018

- **2019**
  - Global 0.5% SOx limit reviewed

- **2020**
  - Global cap 0.5% SOx
  - North sea and Baltic sea become NECA

- **2025**
  - NOx Tier III proposed for North Europe
  - Requirements for sewage discharges in the Baltic Sea

- **2050**
  - Carbon emissions halved
The essence of Smart Marine
Smart Marine Ecosystem

Connecting Smart Vessels

Energy Management
- Holistic energy & emission management tailored to specific operations
- Integrated hybrid solutions with multiple power sources & energy storage

Asset Management
- Remote ship performance optimisation
- Condition-based maintenance
- Fleet coordination
- PBL agreements
- Digital Twin

Voyage Management
- Advanced speed & route optimisation
- Ship-to-port data exchange
- Remote & automated operations
- Situational awareness

to Smart Ports
SMART VESSELS

SUSTAINABLE

SAFE

RELIABLE

EFFICIENT
THE FUTURE OF MARITIME OPERATIONS
TURNING TECHNOLOGY INTO SOLUTIONS
WÄRTSILÄ HY inside the module
TOWARDS A HYBRID ECOSYSTEM

Engines

Power drives

Energy management

Batteries

Fuel cells
OPTIMAL LOADING

Max engine output
Optimal fuel consumption

Charging
Discharging
THE FUTURE OF NAVIGATION

IntelliTug

Remote Operations

San Diego
8,000 km / 5,000 mi

Automated Vessel Operations

AI-based Applications
- Advanced Routing
- Collision Avoidance
- Anomaly Detection
AUTOMATED VESSEL OPERATIONS
VOYAGE OPTIMISATION
CASE:
5,500 TEU Containership
Distance: 1,150 Nautical Miles

* Assuming average SFOC: 230 g/kwh
** Assuming fuel price: 300 EUR/t

Saving per voyage with just-in-time arrival:
74.5 tons of fuel*
22,200 EUR**
JUST-IN-TIME ARRIVAL AT PORT OF SINGAPORE

1,600,000 T
CO2 emissions cut

540,000 T
fuel reduction

160,000,000 €
fuel bill savings

SAFETY thanks to reduced congestion
We can’t do this alone. Nobody can.
An Oceanic Awakening
THANK YOU.