



4TH ANNUAL FERRY SAFETY AND TECHNOLOGY CONFERENCE, MARCH 21, 2018

Electric ferries and the use of data

Technology & Decision Making

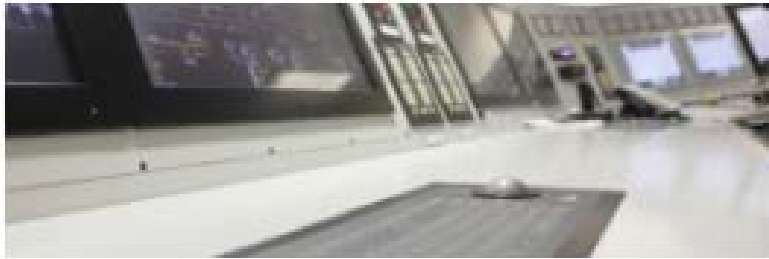
Ryan Bishop, Sales Director NAM

ABB Marine & Ports

Total integrated offer for the marine market

Digital Solutions

Integrated marine automation and marine software and analytics



Power Generation & Distribution

Power Generation and Distribution, Onboard DC Grid and Dynamic AC



Propulsion

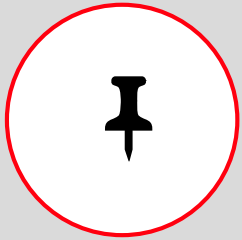
Electric Propulsion Azipod® propulsion and Thruster units



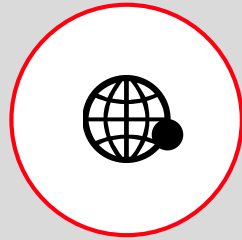
Electric, digital and connected

Maximizing the full potential in shipping

SHIP OPERATION



Positioning



Navigation

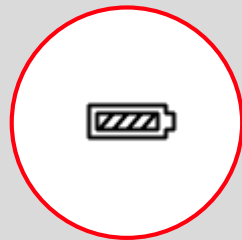


Automation

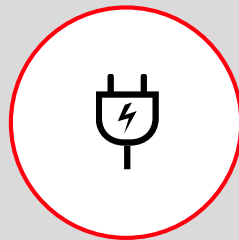
POWER TRAIN



Propulsion

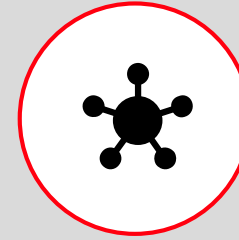


Electric or hybrid

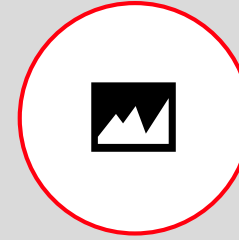


Charging

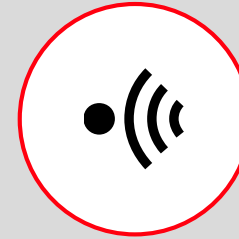
DIGITAL AND CONNECTED



Connectivity and cloud



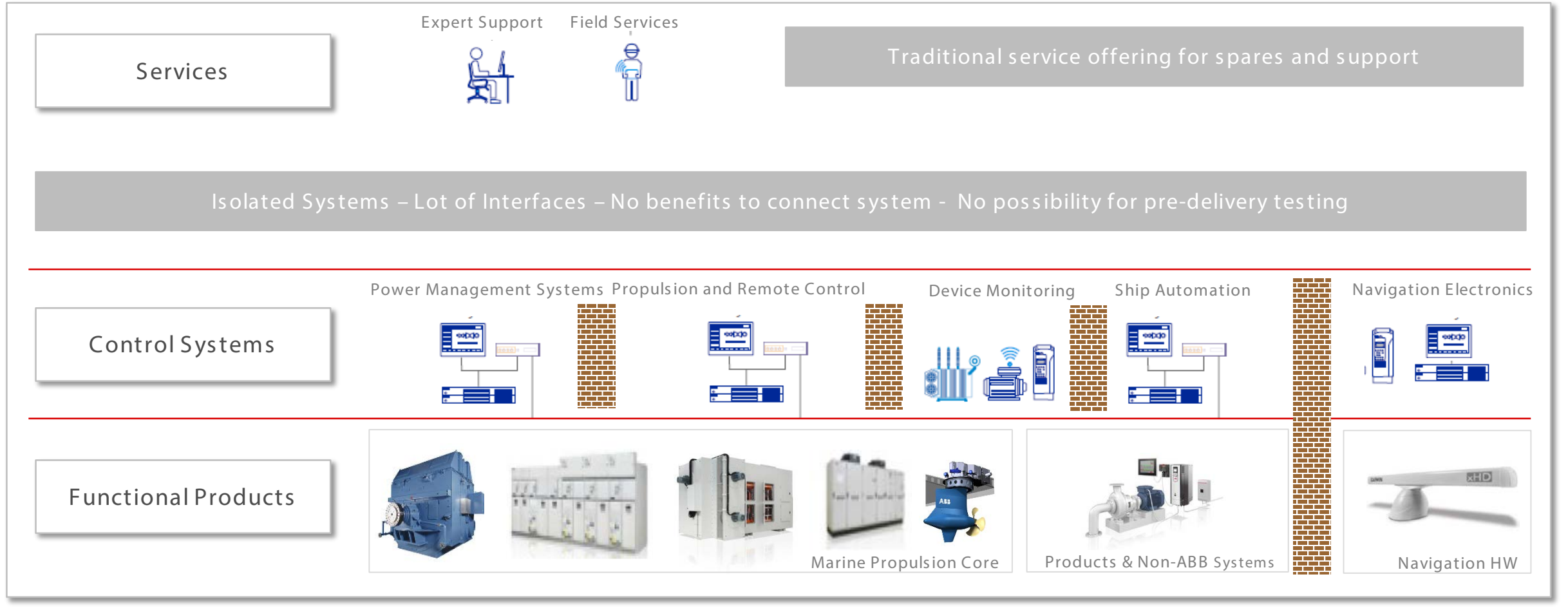
Analytics



Shore side operations

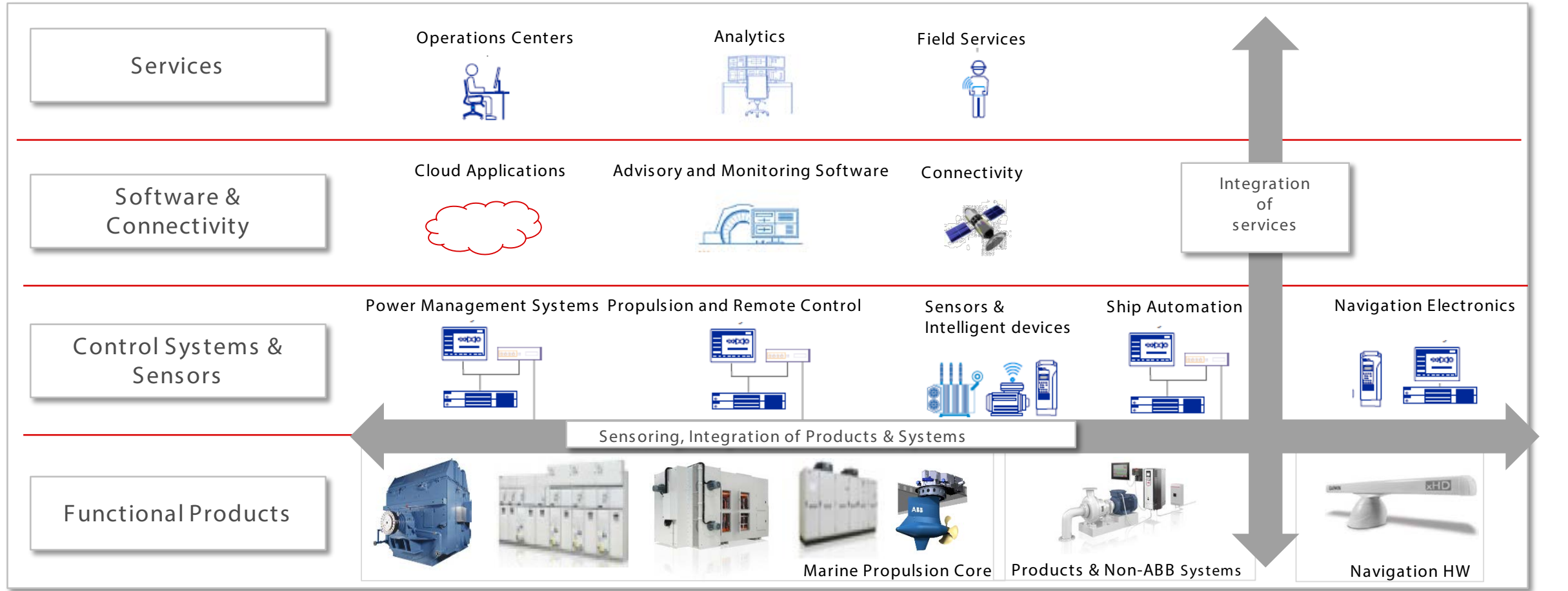
Ship

Thinking Traditional



A formerly conservative industry is changing the way it operates

This requires integration and digitalization from bridge to propeller



How can data help in the Marine Market?

Identify

- Problems
- Failures
- Risks

Determine

- Cause
- Possible remedies
- Best Action

Act

- Make changes in response to problems/ failures/ risks

How does digitalization work in the real world?

Scene #1 – Captain onboard Ferry in Helsinki

Problem

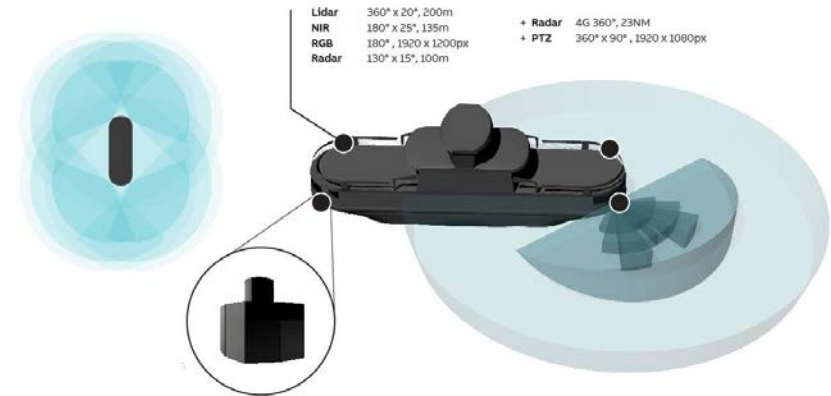
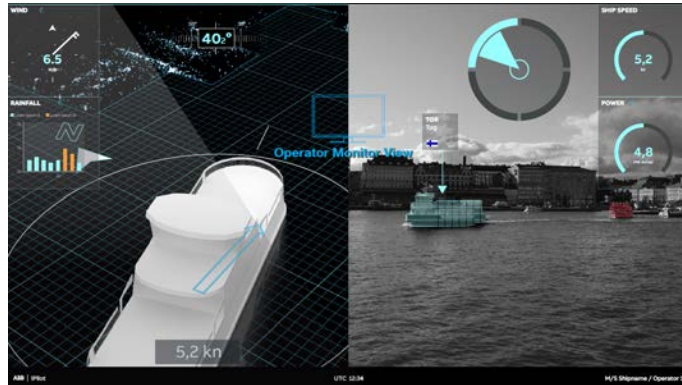
Weather: causing issues with visibility and unpredictable currents
Heavy traffic causing navigation issues

Operational Concern

Navigation and docking is more complex due to overwhelming information from Radars, limited visuals coming from isolated systems.

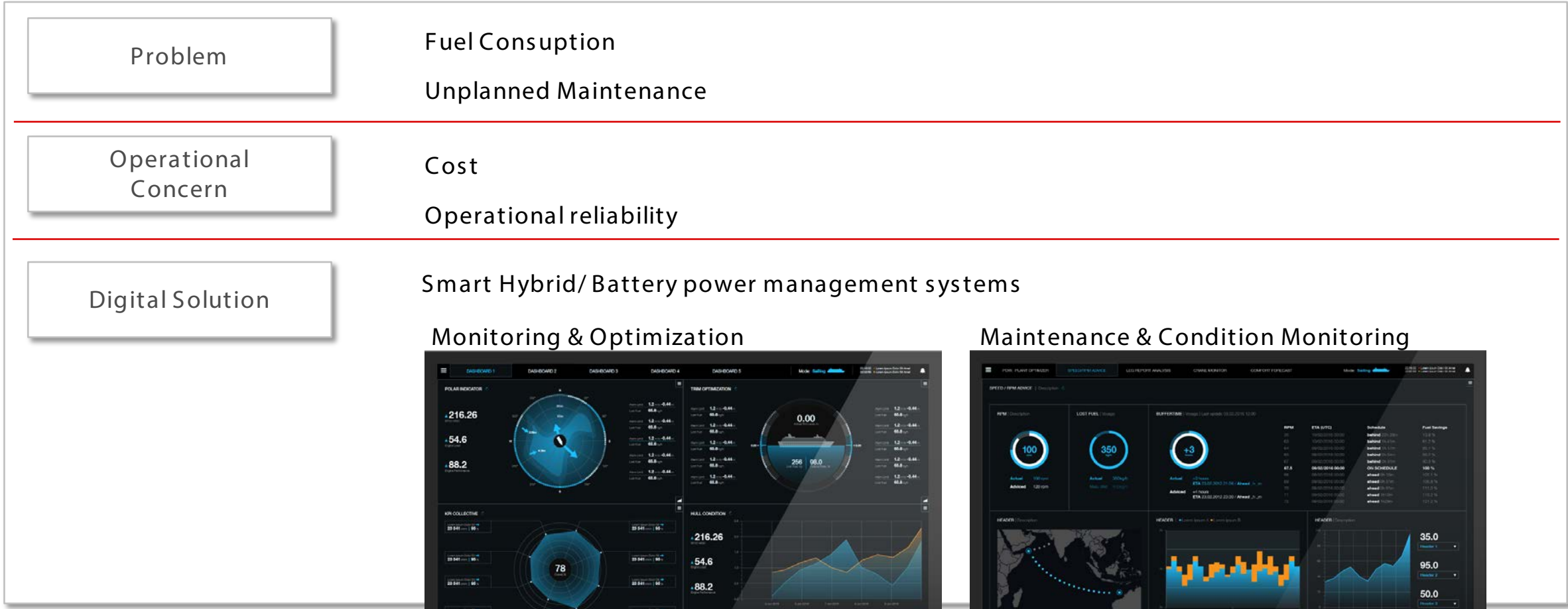
Digital Solution

Augmented reality system to improve situational awareness



How does digitalization work in the real world?

Scene #2 – Port Engineer



How does digitalization work in the real world?

Scene #1 – Captain onboard Ferry in Helsinki

Problem

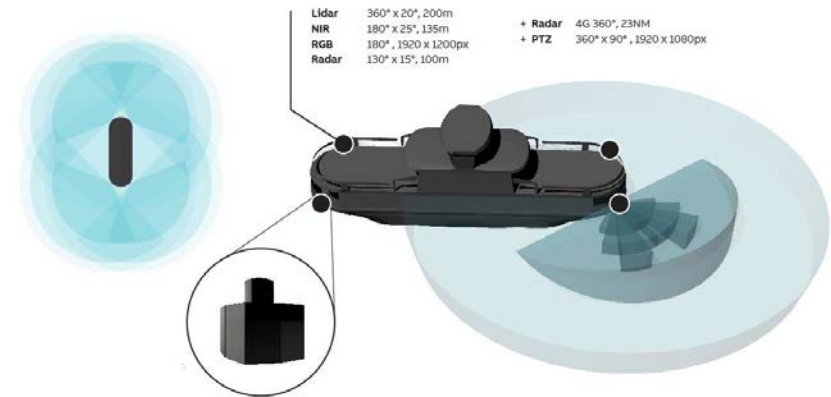
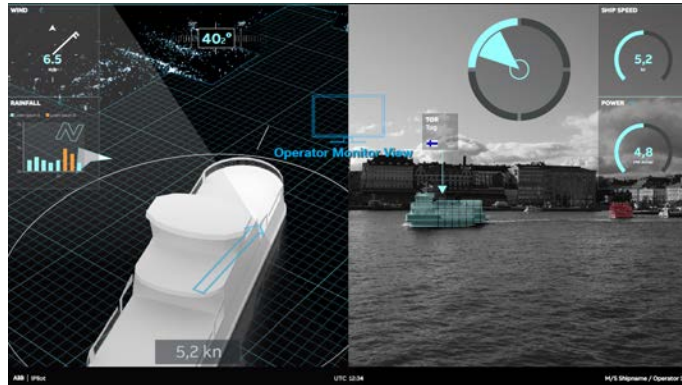
Weather causing visual and current issues
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Digital Solution

Augmented reality system to improve situational awareness



Why to Choose A Total Integrated Solution?

Benefits for Owner - User Experience

- Uniform look and feel for all ABB systems
- Fast access to key information
- Quick and easy way of navigating the mimics without losing the overview
- Boosting operator's situation awareness and correct response
- Harmonic and hierarchical layout
- Day, high contrast and night color palettes



Why to Choose A Total Integrated Solution?

Power & Propulsion & Automation Integration Synergies for Shipyard

Interfaces between MSB, PMS, Propulsion Drives, Azipod XO and Automation – Approx. 1500IO's – are engineered, tested and pre-commissioned in-house by ABB

For the yard this means:

- ✓ Significant Risk, Resource and Time reductions in integration work for electrical and automation system
- ✓ Reduced cabling and minimized installation effort due to IEC61850 connectivity
- ✓ Shortened commissioning time and sea trials
- ✓ PMS integrated in Automation – For this scope estimated interface between standalone PMS and IAS approx. 600 IOs
- ✓ Multisystem integration utilized – E.g. Propulsion Drive Control and IAS approx. 200IOs

Additional Benefits:

- ✓ Single point of contact during project execution with highly experienced project management
- ✓ Changes required by class will be ABB's responsibility
- ✓ Simplified time synchronization. Alarms from propulsion, power and automation with exact time stamping