A coordinated approach on E-Navigation

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E-Navigation underway 2016

**LEADING THE WAY,
MAKING A DIFFERENCE**

INTERTANKO

Structure

- About INTERTANKO

- Introduction

- INTERTANKOs view on the coordinated approach

- Moving forward

About
INTERTANKO

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204 FULL MEMBERS

3077 VESSELS OWNED AND OPERATED

5 REGIONAL PANELS

1 ASSOCIATION **45** YEARS

12 WORKING COMMITTEES

283 ASSOCIATE MEMBERS

OVER **270** MILLION DWT

ABS Quality Evaluations Inc.
Management System Certification
ISO 9001:2008

International Association of Independent Tanker Owners

Non-governmental org
est. 1970 in Oslo

Strict membership criteria

Members in 42 countries

Champion - Advisor - Forum

Observer Status at IMO, IOPC, UNFCCC, OECD, UNCTAD

Oslo - London - Washington Singapore - Brussels

Our committees

- DOCUMENTARY COMMITTEE
- WORLDSCALE AND MARKETS COMMITTEE
- VETTING COMMITTEE
- INSURANCE AND LEGAL COMMITTEE
- HUMAN ELEMENT IN SHIPPING COMMITTEE
- ASSOCIATE MEMBERS COMMITTEE
- CHEMICAL TANKER COMMITTEE
- CHEMICAL TANKER SUB-COMMITTEE AMERICAS
- ENVIRONMENTAL COMMITTEE
- SAFETY AND TECHNICAL COMMITTEE
- BUNKER SUB-COMMITTEE
- INTERTANKO OFFSHORE TANKER COMMITTEE

Our Goals

Zero fatalities

Zero pollution

Zero detentions

Introduction

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Accidental oil pollution from tankers

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000 ts spilt — bn tonne miles

Chart axes: Left axis (000 ts spilt) 0.0, 0.7, 1.4, 2.1, 2.8, 3.5. Right axis (bn tonne miles) 0, 26,000, 52,000, 78,000, 104,000, 130,000. Categories: 1970s, 1980s, 1990s, 2000s, 2010s*

Legend: 1000 ts spilled; bn tonnes miles transported

Bar labels: - 63% (1980s), -3% (1990s), -82% (2000s), -70% (2010s*)

99.9999% of oil transported safely
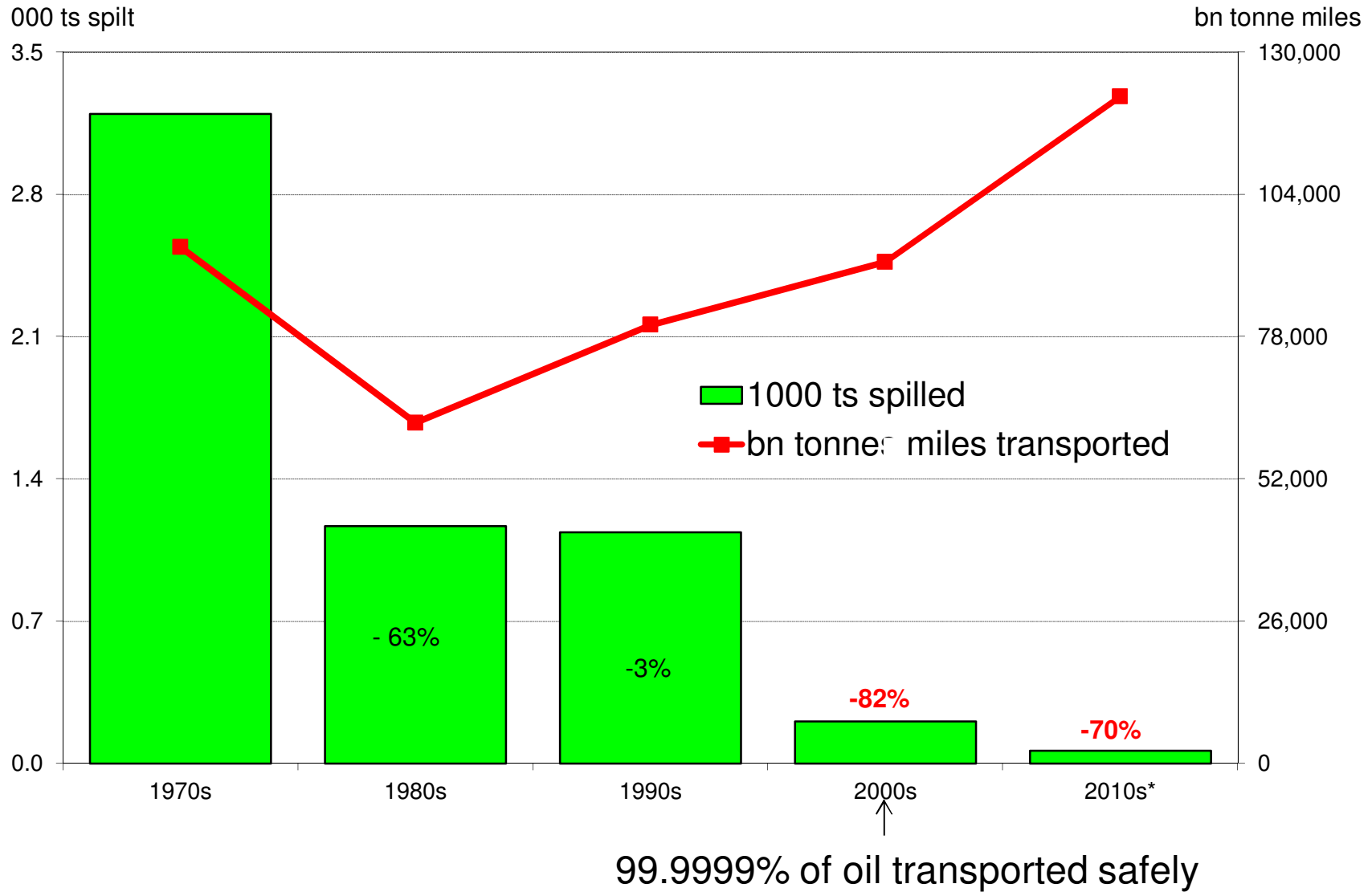
Leading the way; making a difference

Source: ITOPF/Fearnleys/ Lloyd's List Intelligence   *2010s = projection based on 5 years

Tanker incidents (all types and sizes)
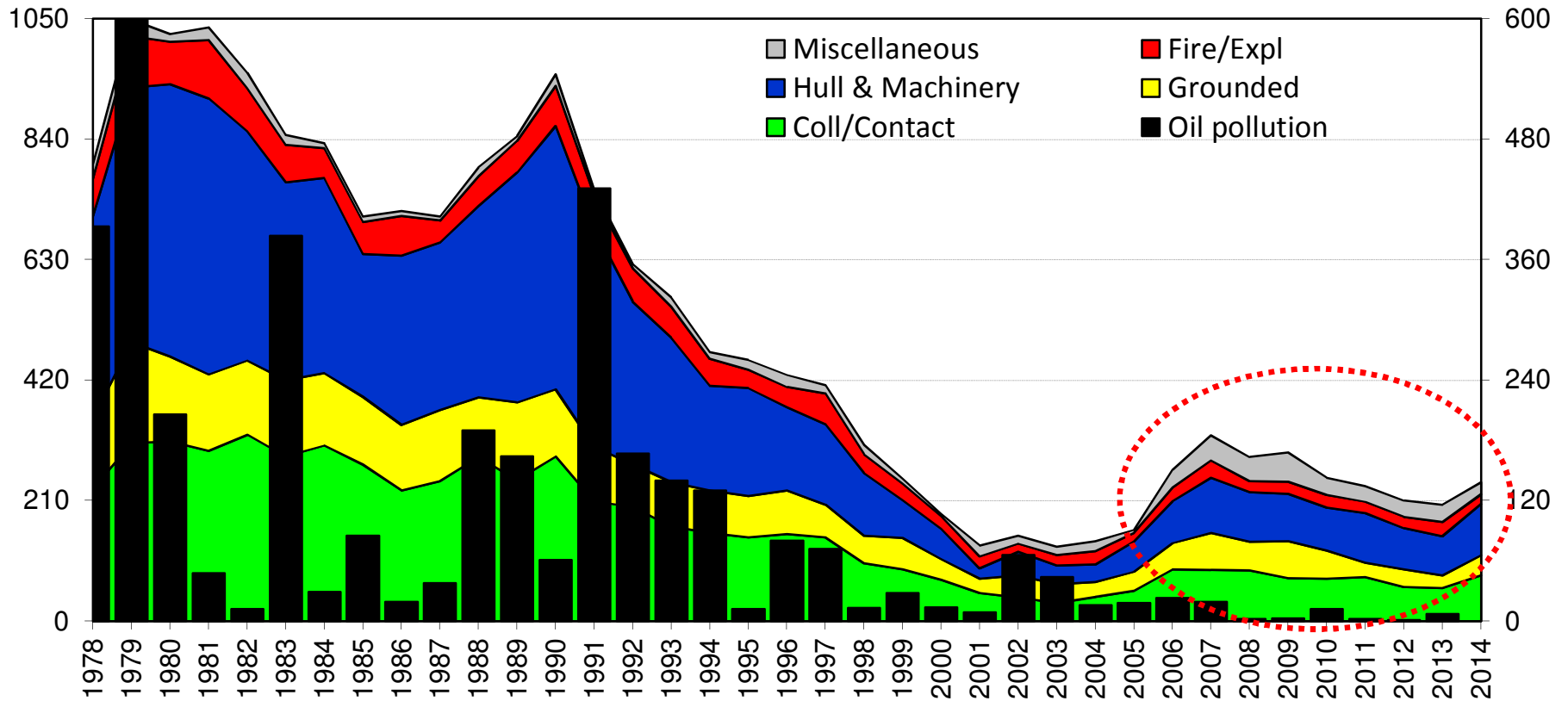
Source: LMIU & ITOPF
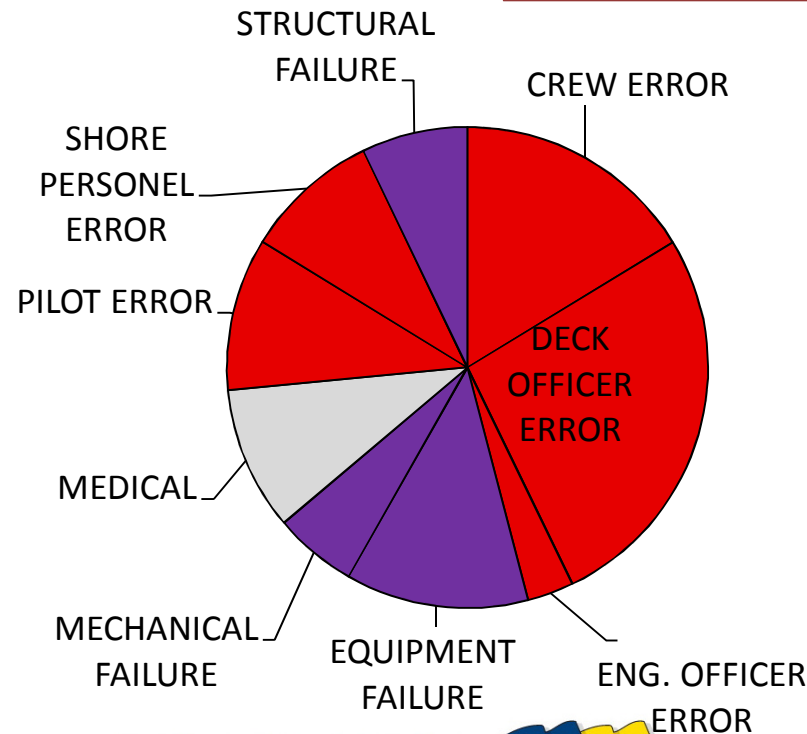
Stubborn Human Element

We still have accidents and incidents at an unacceptable level

- Collisions
- Groundings

How can E-Navigation assist in protection rather than the other way around...

Pie chart labels: STRUCTURAL FAILURE, CREW ERROR, SHORE PERSONEL ERROR, PILOT ERROR, DECK OFFICER ERROR, MEDICAL, MECHANICAL FAILURE, EQUIPMENT FAILURE, ENG. OFFICER ERROR

UK P&I CLUB

Tanker Masters time in rank 2009-2014

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sample size 515

40 % Masters < 5 yrs in rank

5 yrs — 10 yrs — 15 yrs — 20 yrs

Number of Masters (y-axis: 0 to 50)

Values: 46, 46, 32, 40, 42, 31, 26, 20, 20, 22, 8, 11, 6, 10, 16, 4, 9, 2, 4, 2, 1, 2, 2, 0, 2, 4

Years in rank (x-axis: 1 to 25)

Less ← Experience → More
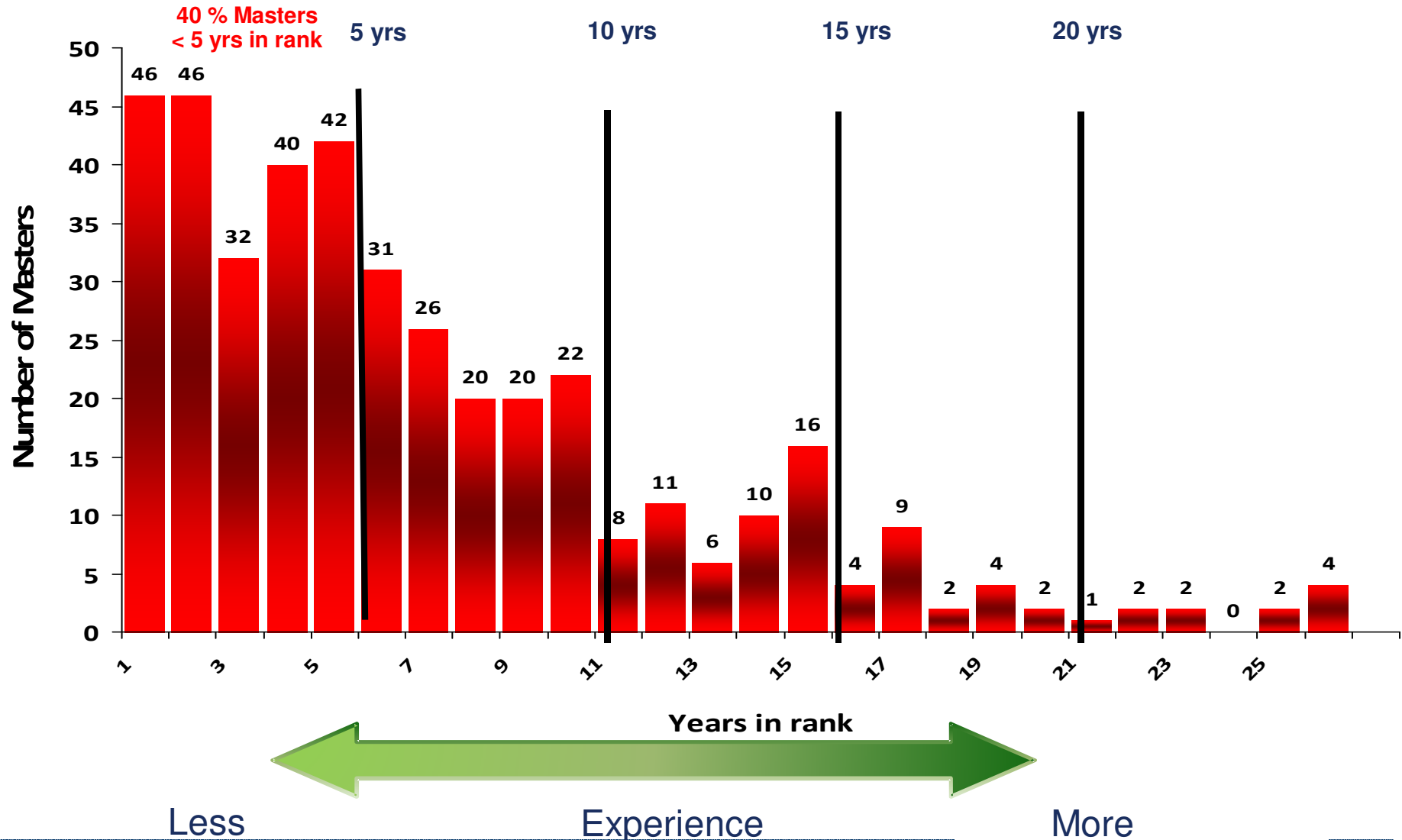
Leading the way; making a difference

Human factor

- With todays ECDIS, officers make mistakes

- E-Navigation will add to the complexity

- More information must not mean more complex solutions – in fact, we need simpler systems to operate, with the added information!

How do we achieve that?

Human factor contnd.

- **High Workload situations**
  - Ability to assist the navigator more actively in situations when the workload is high.
  - Navigation assistance, when will we see suggestions based on autonomous ship theories
  - Alarms.... Do they warn us when we actually need them? Or do they cry wolf most of the time?

- **Fatigue and Complacency**
  - A number of accidents has been due to the low workload and complacency
  - Ability to make a navigator, as an example, to take more active participation

Cyber Security

- Cyber security is an important threat
- Ships are global and mobile operators
- International approach more fitting for shipping sector
- ISPS code requests vessels to take account of all security threats, including cyber security
- Guidance developed by BIMCO, ICS, INTERTANKO and INTERCARGO – to be submitted to IMO
- BUILD SECURITY IN TO DEVELOPING SYSTEMS

The coordinated approach

What:

- INTERTANKO members will use the added value that E-navigation enables to enhance safety of navigation and security for seafarers and vessels. It is of outmost importance that the underlying purpose for any new development, is that it simplifies and enables safer and possibly more environmental friendly shipping. The human element and the seafarer that use the systems must always be kept in mind when engineering new systems.

How:

- Thru member feedback thru our committees and working groups INTERTANKO can give direct feedback and suggestions from the end users. INTERTANKO as organisation will continue to actively participate in and with a coordinated approach.

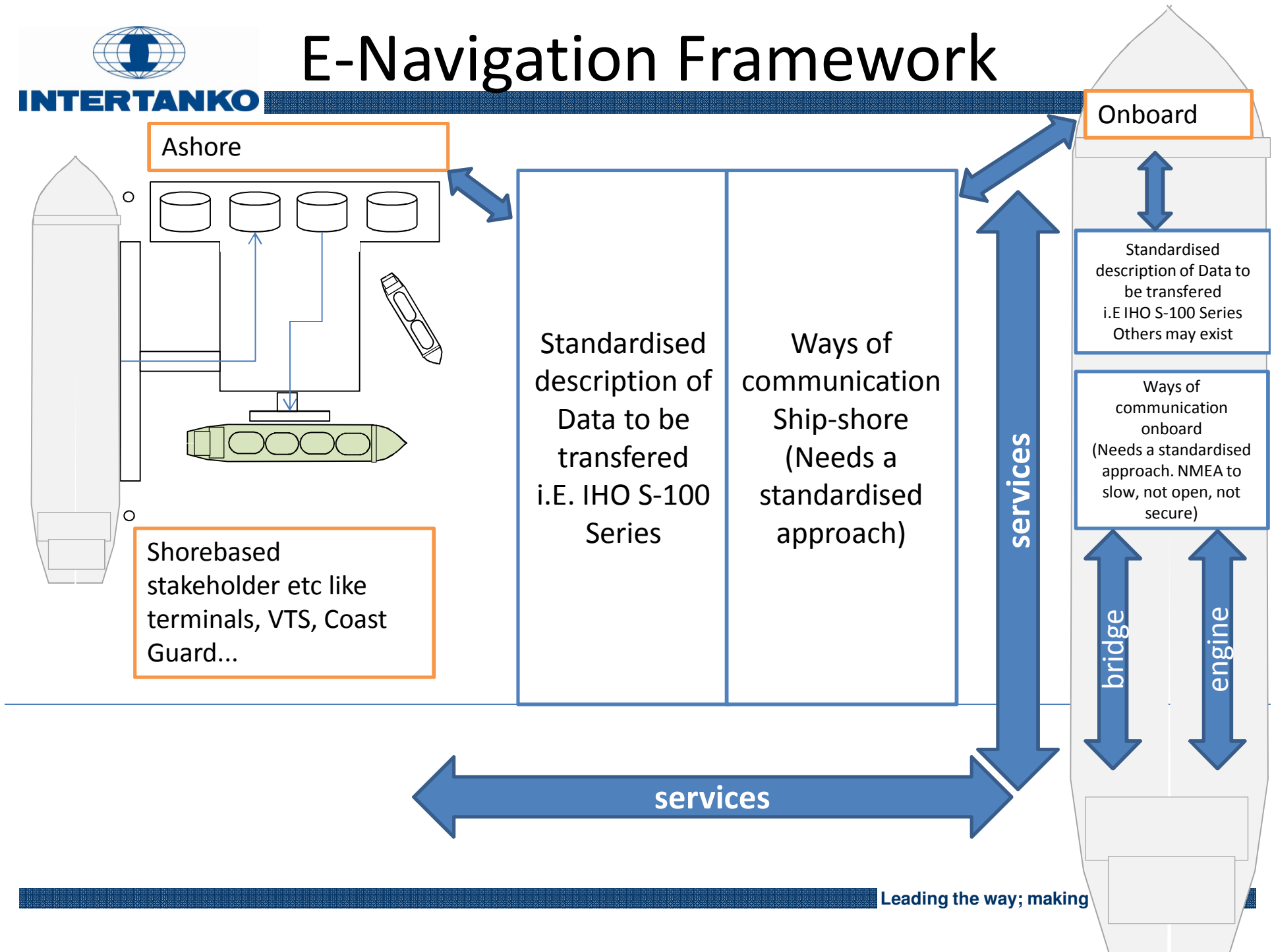**LEADING THE WAY,**
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E-Navigation Framework

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Onboard

Ashore

Shorebased stakeholder etc like terminals, VTS, Coast Guard...

Standardised description of Data to be transfered i.E. IHO S-100 Series

Ways of communication Ship-shore (Needs a standardised approach)

Standardised description of Data to be transfered i.E IHO S-100 Series Others may exist

Ways of communication onboard (Needs a standardised approach. NMEA to slow, not open, not secure)

services

services

bridge

engine

S-100 will support a greater variety of data sources, products and services

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Vessel layout
For compatibility
studies

Tanker
terminal
information

Port bye laws

Port
information

Sea ice

UNCLOS boundaries

Inland ENC

?

MIO

High density bathymetry

3D & temporal

Gridded data

Web services

AML

Future ENC (S-101)

Nautical Publications (S-102)

?

Route exchange

Radar image and data

S-100

How to join the S-100

- Is what you want already in the S-100 registry?
  - Then use it !

- Not in the registry ?
  - Then, find or become a submitting organization to :
    - propose a revision
    - propose something new
    - propose to establish a new domain

Why does very few, or any testbeds implement S-100 registries?

Communications on-board

- Today
  - NMEA; is not open(at least not latest version), slow, not secure, only scalable to a small extent
  - Manufacturer specific; Not open, secure?

- Tomorrow, need for ONE system that is:
  - Scalable
  - Fast
  - Open [source]
  - Secure
  - Use Internet of Things Technology??

Communications ship - shore

- A lot of efforts are ongoing in this area, examples are:
  - Efficiensea 2.0
  - Maritime cloud
  - Etc..

- However, a coordinated approach is needed to develop standard(s) for some concepts where then service providers can find a market for their products.
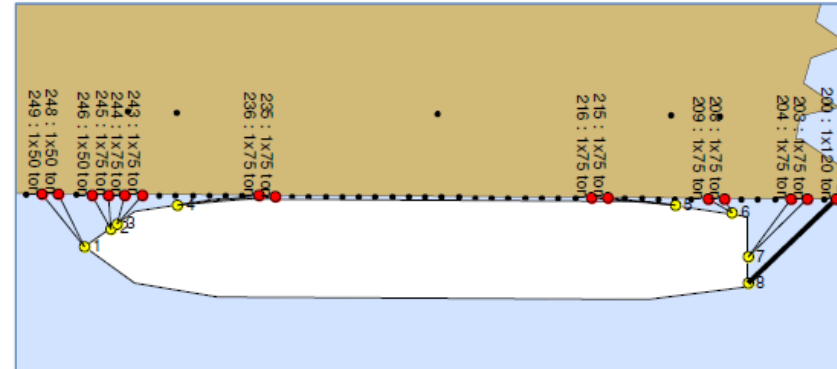
Moving forward

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Compatibility studies

- When will we see bollards accurately positioned on our charts in the ECDIS?

- And my vessel is properly laid out?

- We could then do mooring simulations before arrival... On our planning ECDIS?

- S-100 Registry for the implementation!

We could include everything at a tank terminal; Bollards, loading arms, lines, etc all with assosiated restrictions or limits

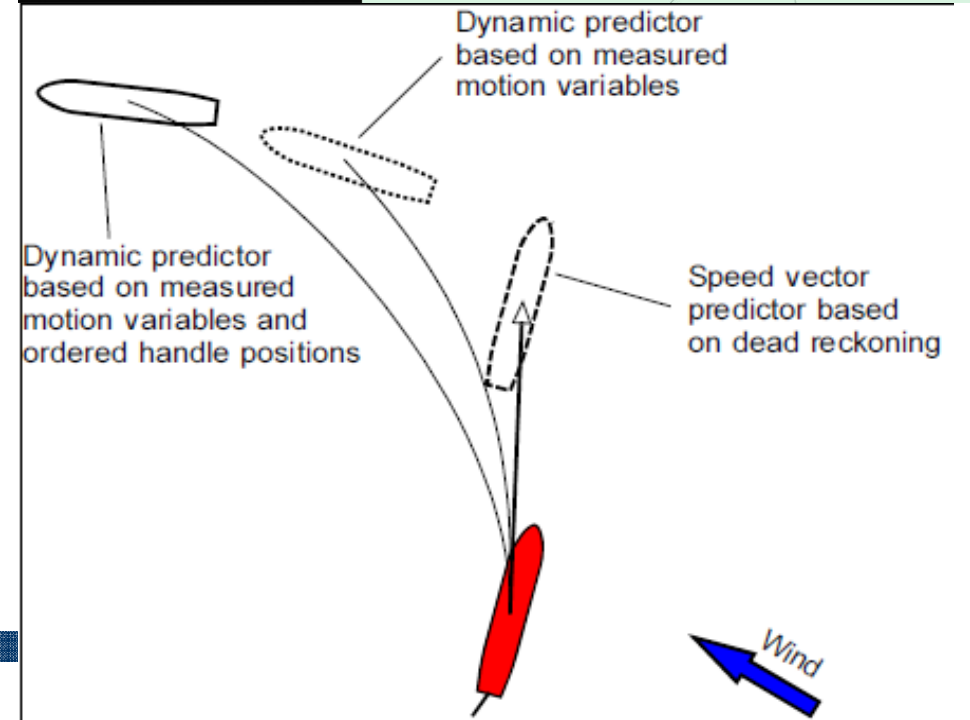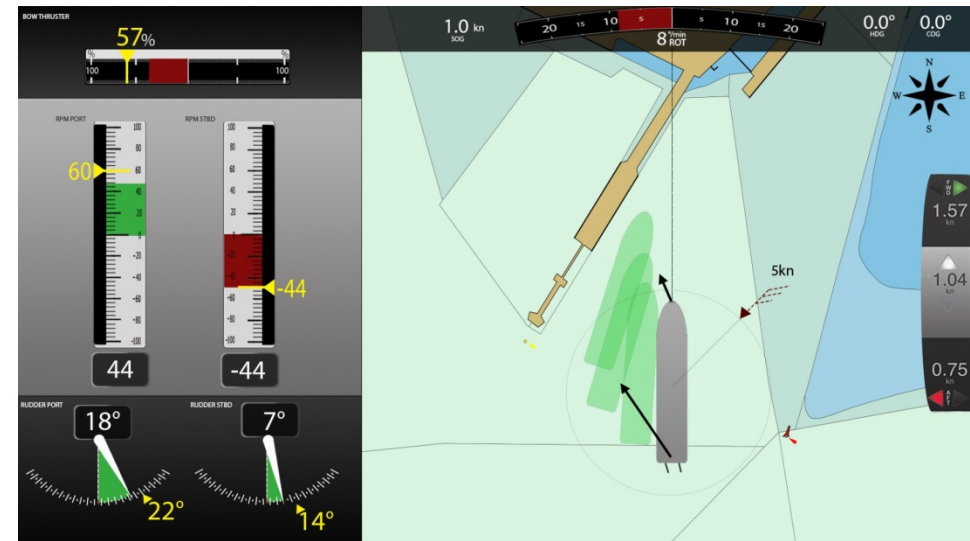We could include a ship layout hull form, moring positions, even mooring rope type, manifolds, tanks ullage...

Parties can then do due diligens and compatibility studies and even send real time data, using a standardized dataset

HydroDynamic predictor and conning

- An example….

- Few systems today have implemented the most advanced type of predictors wit the vessels hydrodynamics built in

- Could be extended with sensors on tugboats to get movement even with tugs connected

- Many accidents happens when tugs are connected and the pilot gives orders to the tugs in a local language

- S-100 Registry for the implementation!

Dynamic predictor based on measured motion variables

Dynamic predictor based on measured motion variables and ordered handle positions

Speed vector predictor based on dead reckoning

Wind

Supporting pilotage

- With an increasing amount of PPUs around, the crew will not have the same information as the pilot.

- INTERTANKO like to see solutions enabling the pilots to use the ships equipment, in a way that the pilot needs and requires.

- Remembering that a pilot will see every manufacturers systems... Standard displays for the pilots?!?

- S-100 Registry for the implementation!

Industry best practices

- The variations in the ECDIS industry today are not acceptable!

- Moving forward to E-navigation, we would like to see a change and more commonality/standardisation.

- Industry must work together

Finally

- Focus on the two ONLY really important things when taking E-Navigation to the next step:
  - ➢ **Zero Groundings**
  - ➢ **Zero Collisions**

- Think benefit for the navigator and ship safety when designing next generation of tools.

- Cyber security is becoming a concern for the industry - build in protection to the hardware and software!

Thank you

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Port of Gotheburg, Sweden: Photo: Johan Gahnström

More information?
INTERTANKO webpage;   www.intertanko.com/

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