Implementing e-Navigation; a qualified view on the future of eNav

Implementing e-Navigation (S1,S2,S4,S5)
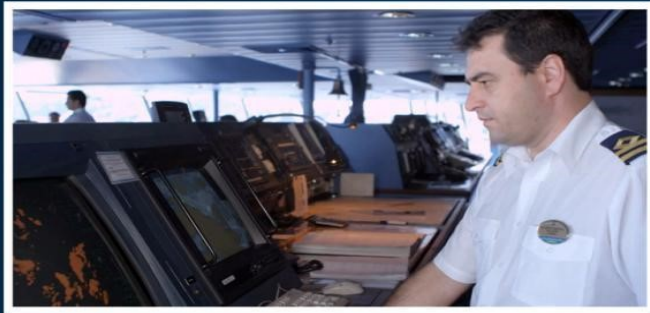
The approach

- The e-navigation Strategy Implementation Plan (**SIP**)

- Strategy Implementation Plan for the five prioritized e-navigation solutions

  - **S1: improved, harmonized and user-friendly bridge design including S-mode;**
  - S2: means for standardized and automated reporting;
  - S3: improved reliability, resilience and integrity of bridge equipment and navigation information;
  - **S4: integration and presentation of available information in graphical displays**
    received via communication equipment; and
  - **S5: improved Communication of VTS Service Portfolio**

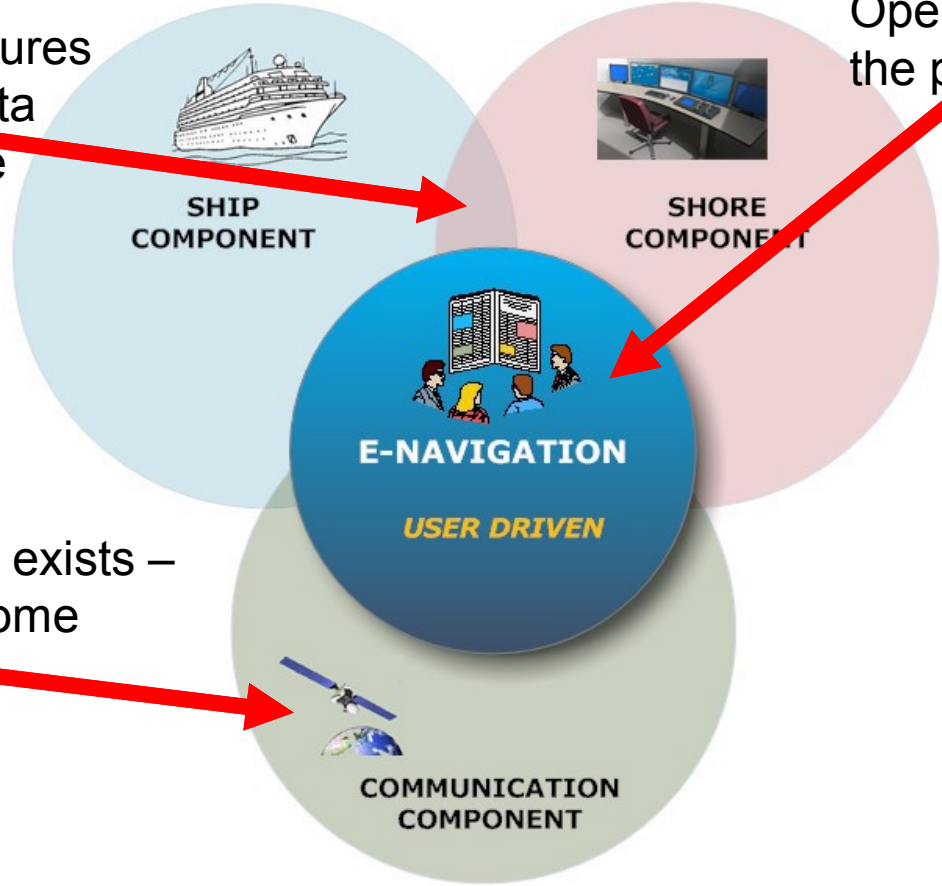 *Here are some examples…………*

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Key components

Framework, procedures and harmonized data language – the glue

Operational description – the platform

Several solutions exists – and new will become available

SHIP COMPONENT

SHORE COMPONENT

E-NAVIGATION
USER DRIVEN

COMMUNICATION COMPONENT

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OPENBRIDGE - Harmonized exchange of information shore-ship and interoperability (S1,S4,S5)

OPENBRIDGE

Figur 1. OPENBRIDGE skal muliggjøre kostnadseffektive brukervennlige multileverandør bruersuer.

Cooperation between industrial competitors

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What is the SESAME Straits project?

MS5 MS 3 TOS

SESAME Straits –

Secure,
Efficient and
SAfe maritime traffic
Manag**E**ment in the
Straits of Malacca and Singapore

SESAME Straits e-Navigatio
Intelligent Ship
Traffic Managemer

Clear synergies between the MEH project and e-Navigation

– Vi tar ansvar for sjøvegen

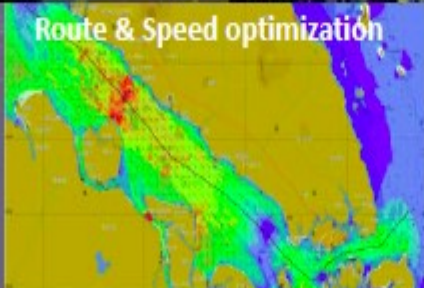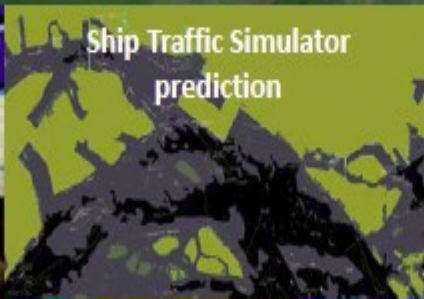KYSTVERKET

SESAME Straits - objectives

The primary objective is to **develop** and **validate** shared situational awareness and cooperative decision making between ship's bridge team and shore based Vessel Traffic Service (VTS) personnel.

Secondary objectives are:

- Just In Time arrival within a Regional Maritime Service Portfolio
- Use existing systems/equipment as far as possible

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Operational Concept

The SESAME Straits e-Navigation test bed project

- Demonstrated that shared situational awareness and cooperative decision making between ship and shore is possible as a means of organizing vessel traffic in a Ship Traffic Management System (STMS).

- Demonstrated this by developing and testing at sea five demonstrators:

  1. Shore-based VTS system with a route monitor web client,

  2. Ship-based ECDIS,

  3. Ship-based planning station,

  4. Shore-based Ship Traffic Simulator, and

  5. VDES transponder

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SESAME Straits – existing systems today

Planning station	ARPA/ECDIS

VHF voice/AIS

C-Scope VTS with decision support

Shipping provided by
International Chamber of Shipping
(ICS)

C-Scope VTS system provided by
the Maritime and Port Authority
of Singapore (MPA)

SC⬡PE

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SESAME Straits – New systems
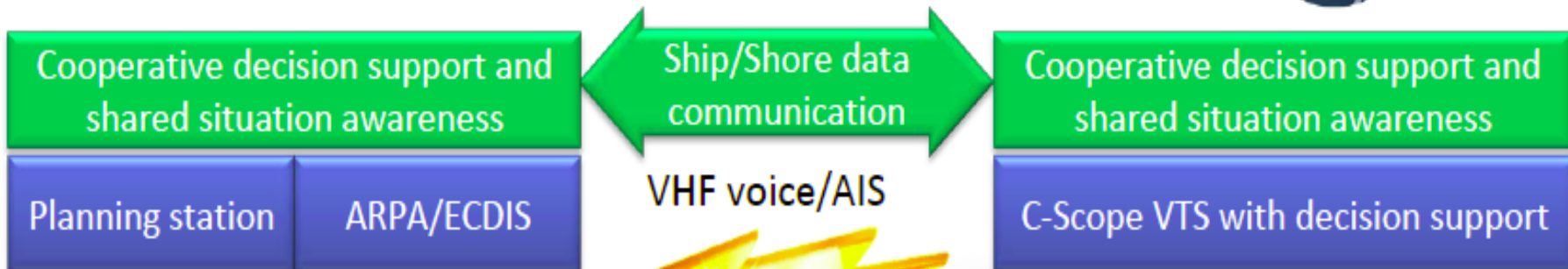
Cooperative decision support and shared situation awareness

Ship/Shore data communication

Cooperative decision support and shared situation awareness

| Planning station | ARPA/ECDIS |

VHF voice/AIS

C-Scope VTS with decision support

Shipping provided by International Chamber of Shipping (ICS)

C-Scope VTS system provided by the Maritime and Port Authority of Singapore (MPA)

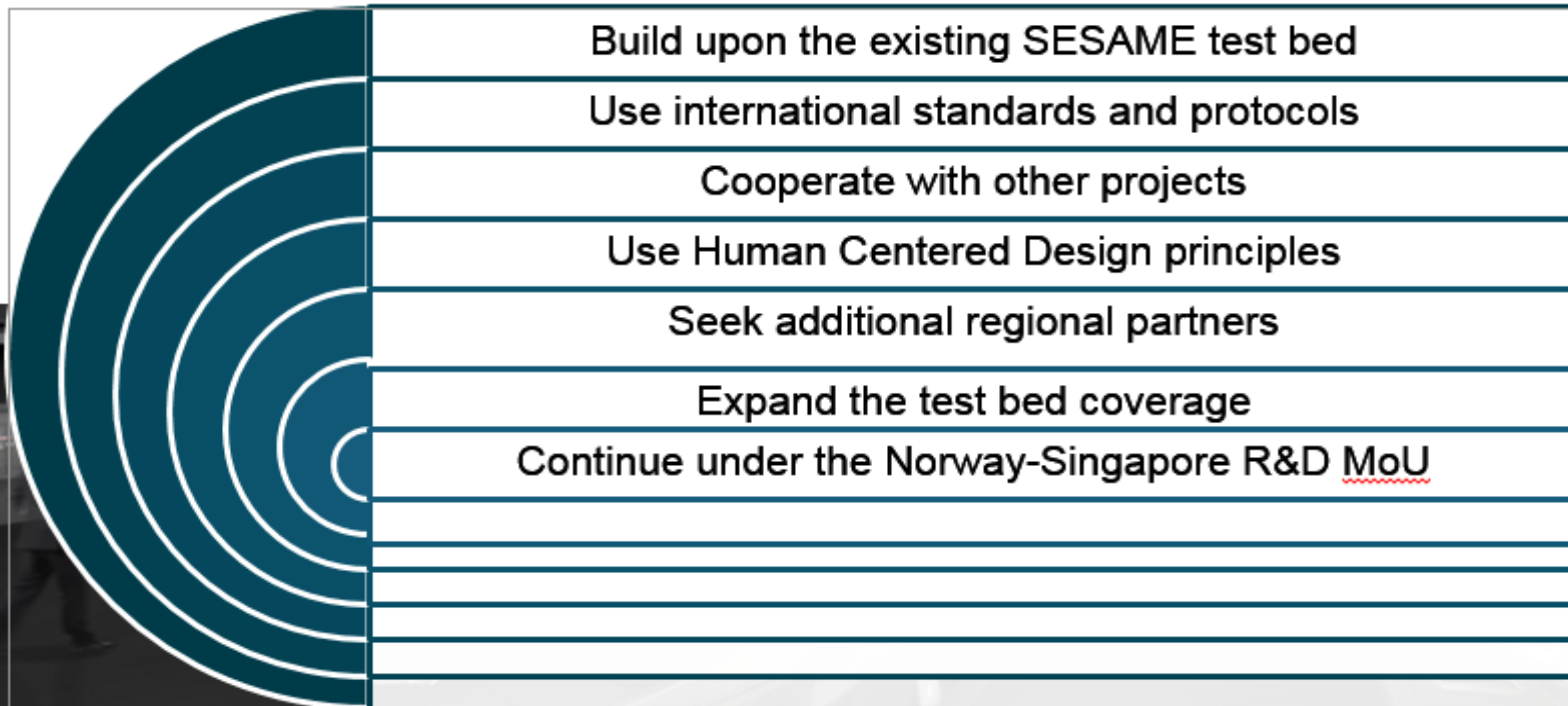– Vi tar ansvar for sjøvegen

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The Success

- The SESAME project demonstrated that predicting possible vessel traffic hot-spots in congested waterways is possible, and that new strategies to avoid such congestions can be used to improve safety and increase efficient traffic flow, enabling "Just-in-time" arrival of vessels, and reducing the environmental footprint.
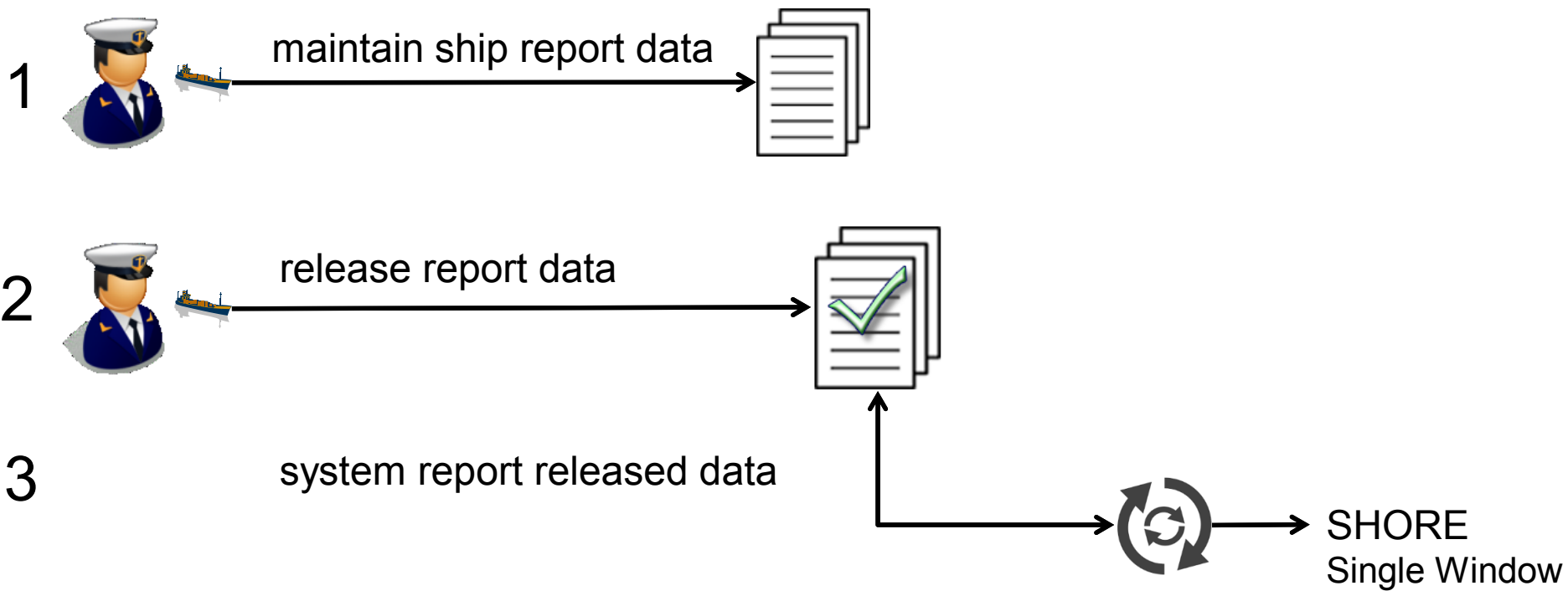
SESAME 2

Guiding principles

SESAME Straits · e-Navigation Intelligent Ship Traffic Management

Build upon the existing SESAME test bed
Use international standards and protocols
Cooperate with other projects
Use Human Centered Design principles
Seek additional regional partners
Expand the test bed coverage
Continue under the Norway-Singapore R&D MoU

Automatic Reporting principle

1   maintain ship report data

2   release report data

3   system report released data

SHORE
Single Window

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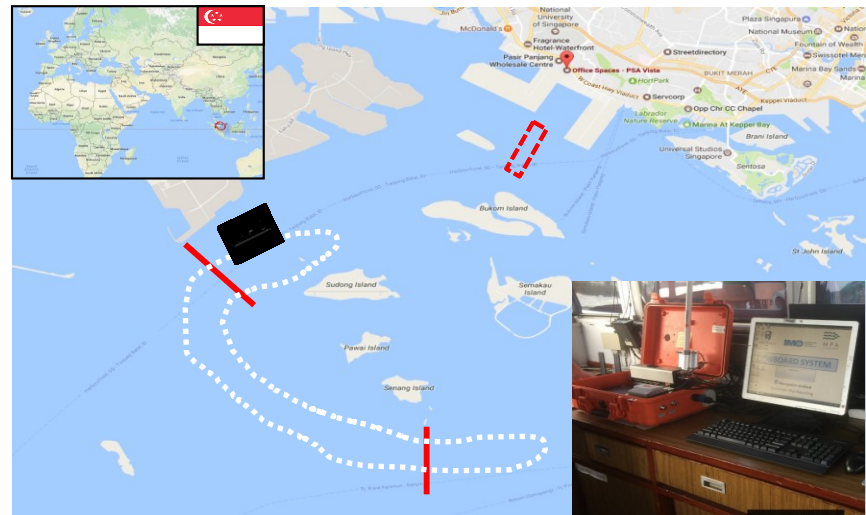
Automatic Reporting, Singapore

Singapore   - February 2017
- 2nd generation HW/SW/concept
- VDES and mobile communication
- Ship^{2}Shore

Results from the trials

Summary of the VDES results	
Overall success rate for reports in the testbed	
Overall (all reports submitted)	83,3 %
Manual submitted reports	84,3 %
Automatic submitted reports	80,0 %

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Findings

✓ Results from the testbeds shows that Automatic Reporting is feasible and a part of the future

✓ Single Window central element when it comes to reporting

✓ Solutions such as VDES* will solve communications needs for *Automatic Reporting*

✓ Technical and operational concepts for reporting needs to be further explored and developed

✓ Focus on standards, harmonisation and security

✓ SESAME 1 is good platform for the development of SESAME 2

*along with other types of technology

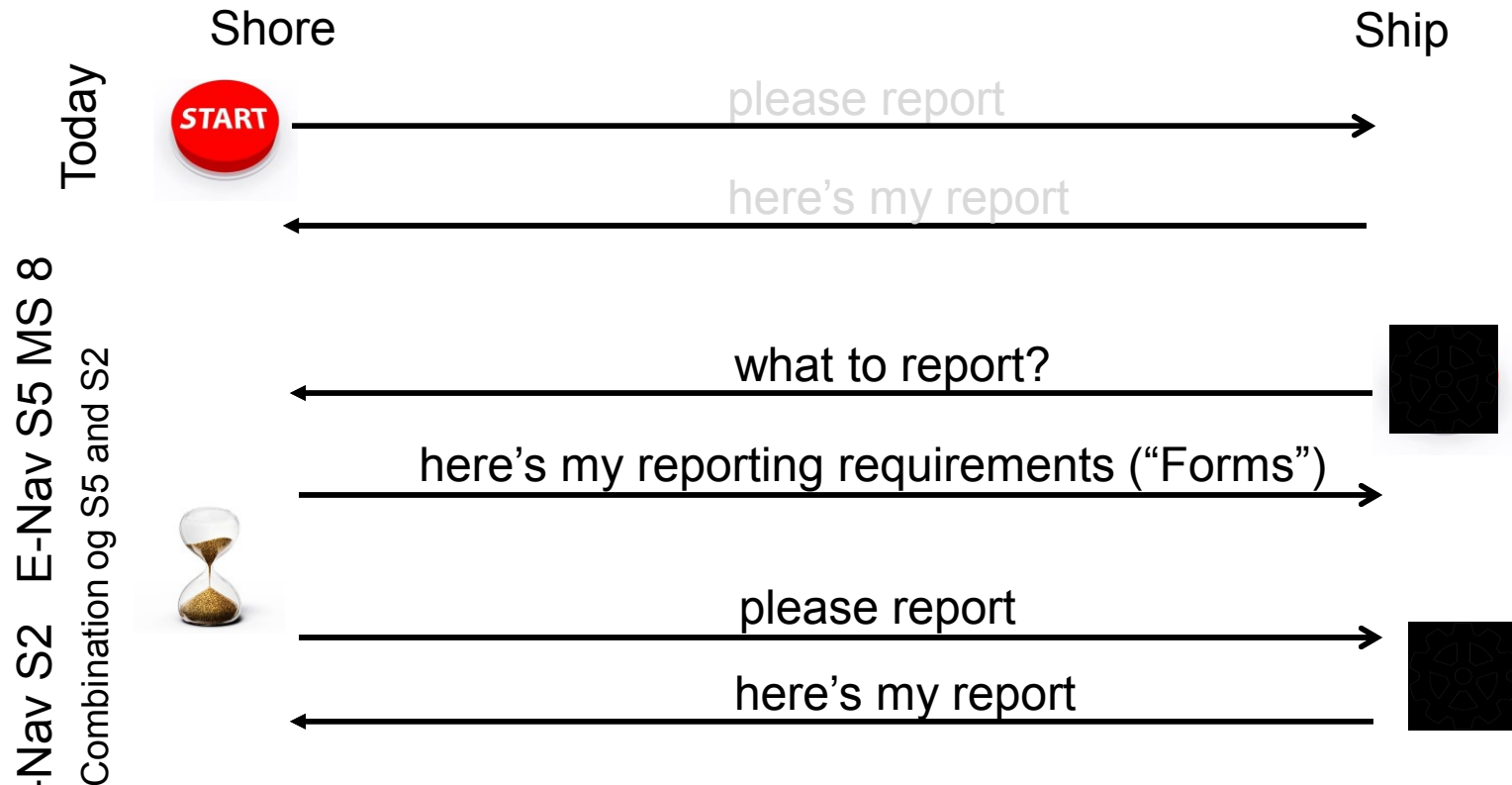– Vi tar ansvar for sjøvegen

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Way forward of a SESAME 2 project

➢ Digitalization, Automation and Single Window

- ✓ Further explore concepts for ship reporting
- ✓ Use experience to further develop Automatic Reporting
- ✓ Harmonisation
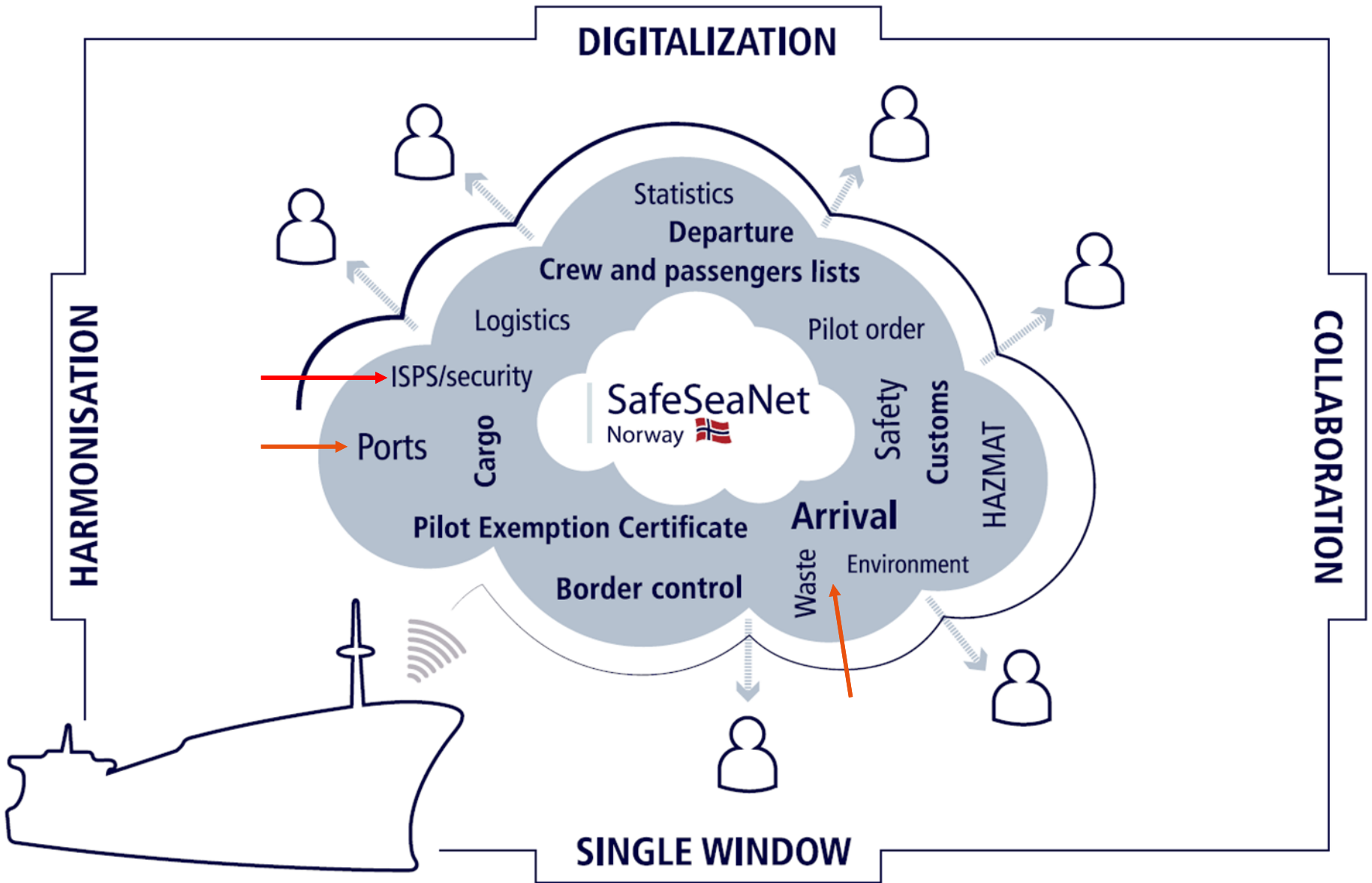- ✓ Integration
- ✓ Test beds (full scale)

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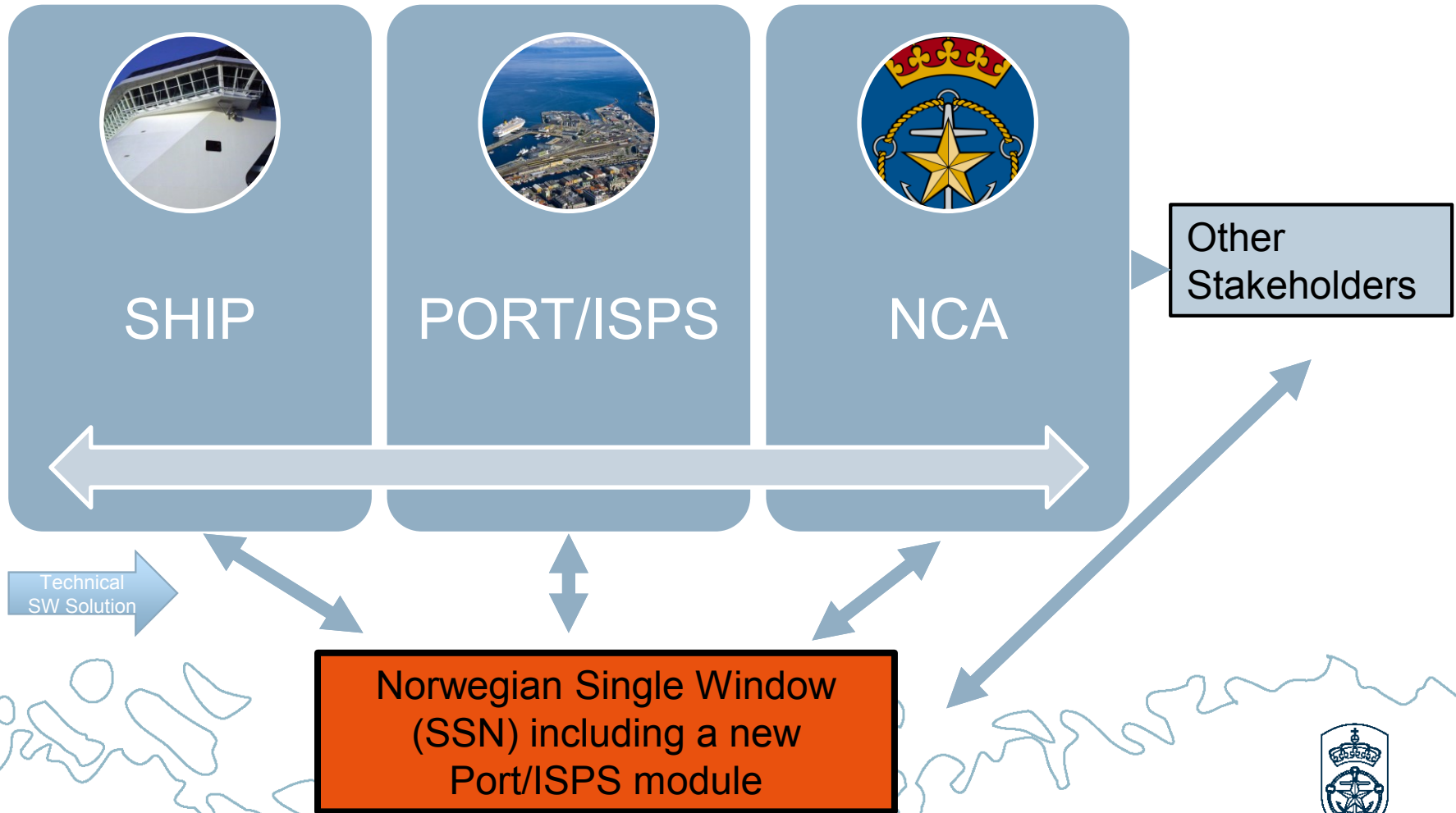
Way forward *tomorrow* could be......

Shore　　　　　　　　　　　　　　　　　　**Ship**

Today

please report →

← here's my report

E-Nav S2　E-Nav S5 MS 8　Combination og S5 and S2

← what to report?

here's my reporting requirements ("Forms") →

please report →

← here's my report

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DIGITALIZATION

HARMONISATION

COLLABORATION

Statistics

Departure

Crew and passengers lists

Logistics

Pilot order

ISPS/security

Cargo

SafeSeaNet
Norway

Safety

Customs

HAZMAT

Ports

Pilot Exemption Certificate

Arrival

Border control

Waste

Environment

SINGLE WINDOW

Port/ISPS (International Ship and Port Facilities Security Code) Data Exchange (S2, S5)

SHIP

PORT/ISPS

NCA

Other Stakeholders

Technical SW Solution

Norwegian Single Window (SSN) including a new Port/ISPS module

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e-Nav testbed – STM og SEASAME Route Exchange (MS 3 TOS) & MSI (MS 5)

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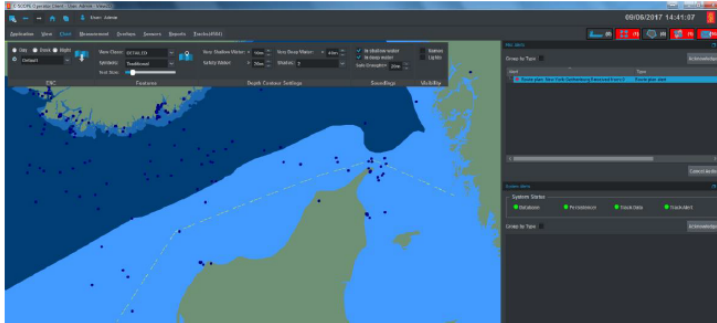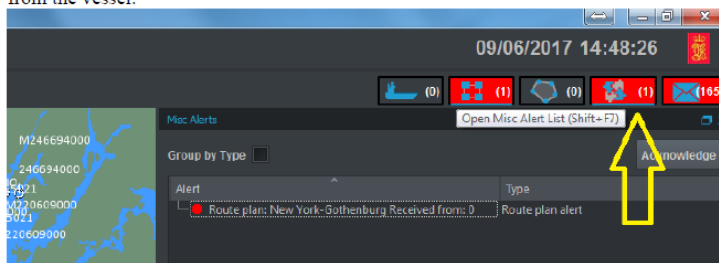
- Route Exchange

- TOS and Monitoring «Just In Time arrival»

- STM text message function

- STM polygone in S-124 format

View on the future of e-Nav

"The future depends on what you do today."
Mahatma Gandhi

www.artechouse.com

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Thank you for your attention!

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