CF 10/2/6

KYSTVERKET

The SESAME project 1 [and 2]

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Norwegian Coastal Administration

– Vi tar ansvar for sjøvegen

What is the SESAME Straits project?

SESAME Straits –

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

Clear synergies between the MEH project and e-Navigation

A Project with 10 Work Packages

SESAME Straits - partners

SESAME Straits e-Navigation Intelligent Ship Traffic Management

- **Project members**: MPA, NCA, RCN, Vestfold University, Navtor, Marintek, SimPlus, KONGSBERG
- **Country Agreement:** Singapore/Norway R&D MoU
- **Funding - MAROFF programme**: Budget approx. NOK 25 mil
- **Project Owner**: Kongsberg Norcontrol IT

MPA SINGAPORE

SIMPLUS make smarter decisions

KYSTVERKET

KONGSBERG

The Research Council of Norway

HSN

MARINTEK

NAVTOR

SESAME Straits - objectives

SESAME Straits
e-Navigation
Intelligent Ship Traffic Management

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

SESAME Straits – existing systems today

SESAME Straits e-Navigation Intelligent Ship Traffic Management

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)

SESAME Straits – New systems

SESAME Straits
e-Navigation
Intelligent Ship Traffic Management

Cooperative decision support and shared situation awareness

Planning station | ARPA/ECDIS

Ship/Shore data communication

VHF voice/AIS

Cooperative decision support and shared situation awareness

C-Scope VTS with decision support

Shipping provided by International Chamber of Shipping (ICS)

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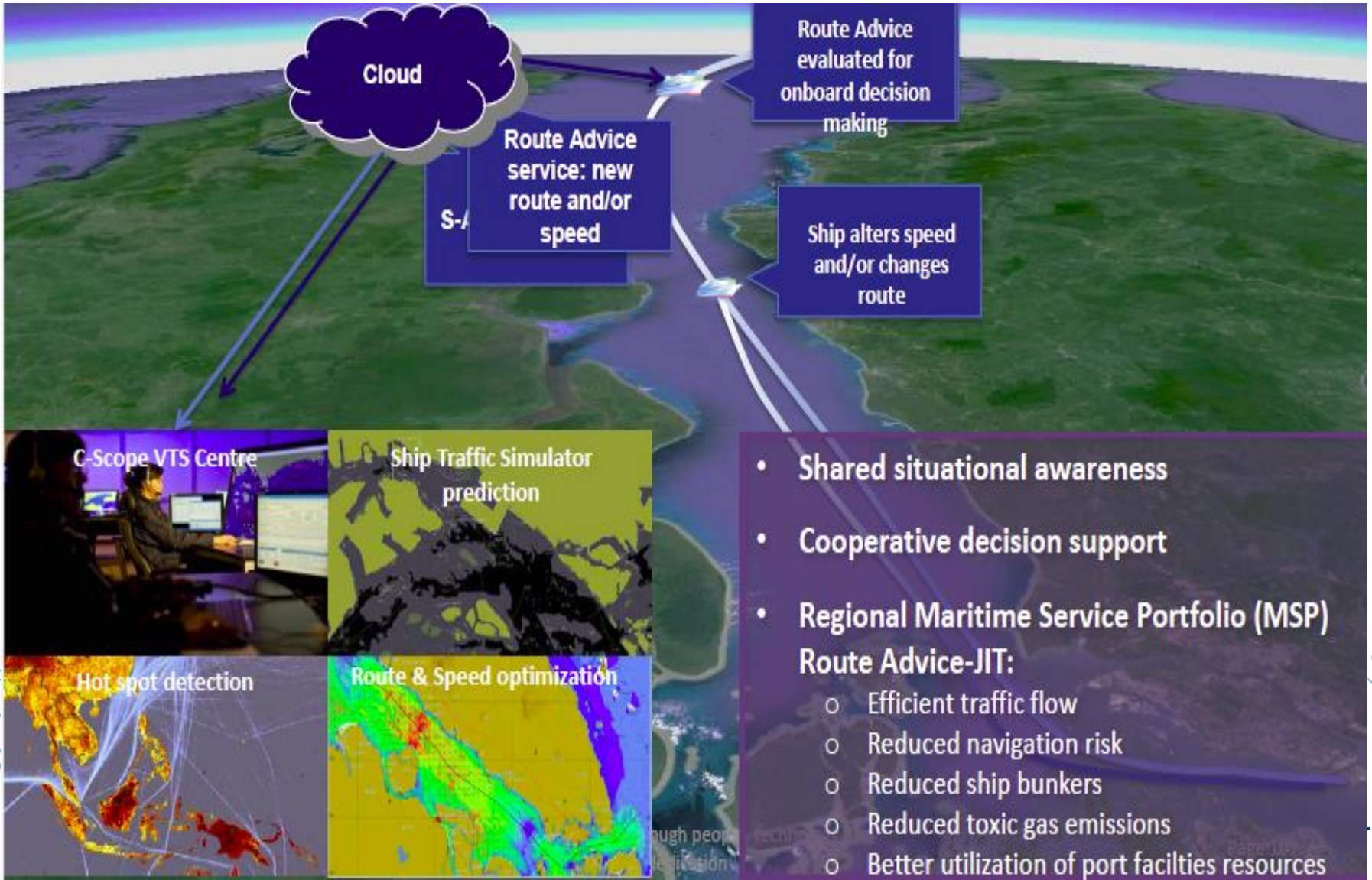
Operational Concept



Project Conclusions

- Three technology legs are necessary for e-Navigation: ship systems, shore-based systems, and communications systems. These three must work together in an integrated and harmonised way to exchange and present safety and security information for safe navigation of vessels, berth to berth. Therefore:
- The SESAME Straits project has demonstrated that the e-Navigation concept is viable. Information can be exchanged ship to shore using both VDES and a cloud solution.

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

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.

For more information

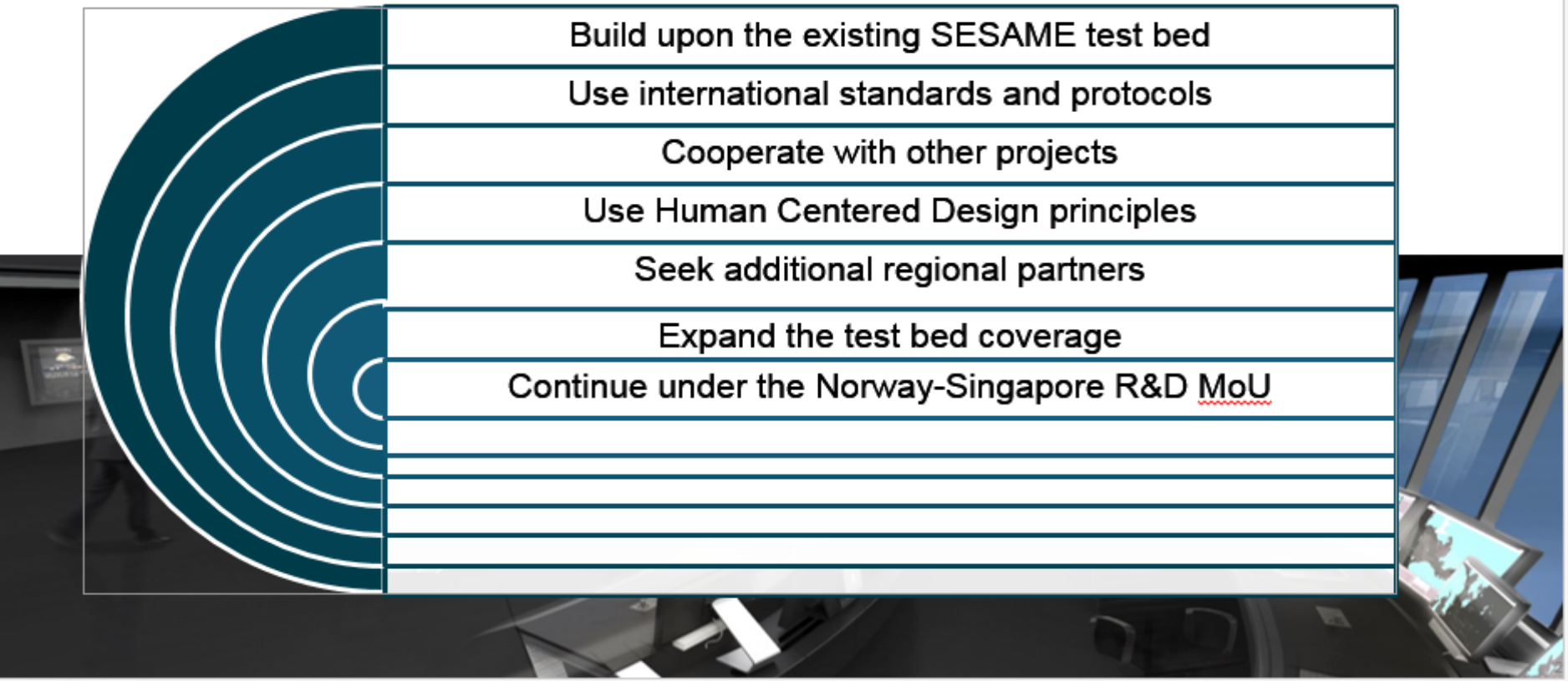
SESAME Straits e-Navigation Intelligent Ship Traffic Management

SESAME Straits Project

Final Report

[SESAME 2]

Guiding principles



Background and ambition

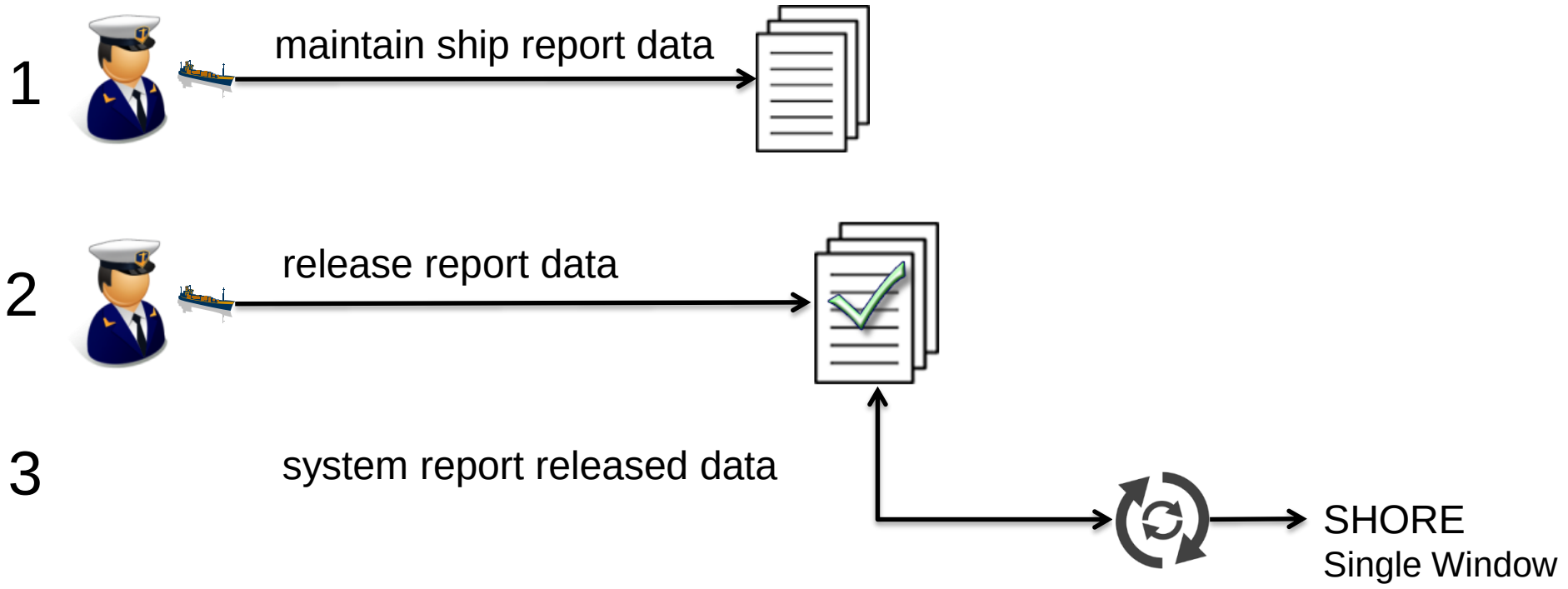
- The e-navigation Strategy Implementation Plan (**SIP**)

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

  - S1: improved, harmonized and user-friendly bridge design;
  - **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

- Proposal at NCSR (3/10 from Singapore, Norway and Brazil) to establish a testbed for automatic and standardised ship reporting (2016). A successful report about the trials was presented to IMO in 2017.

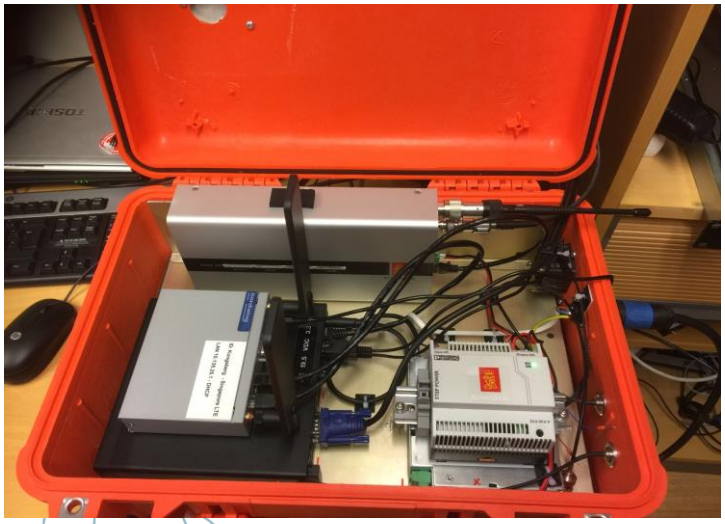
Automatic Reporting principle

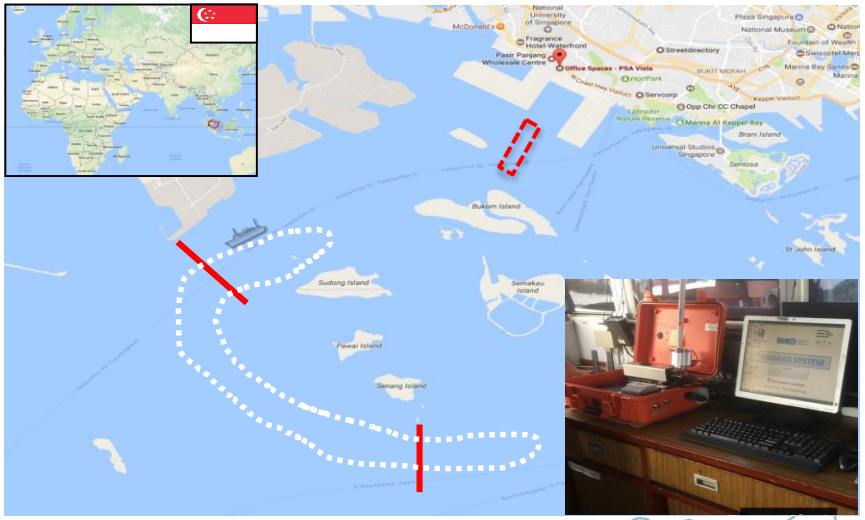


Automatic Reporting, Singapore

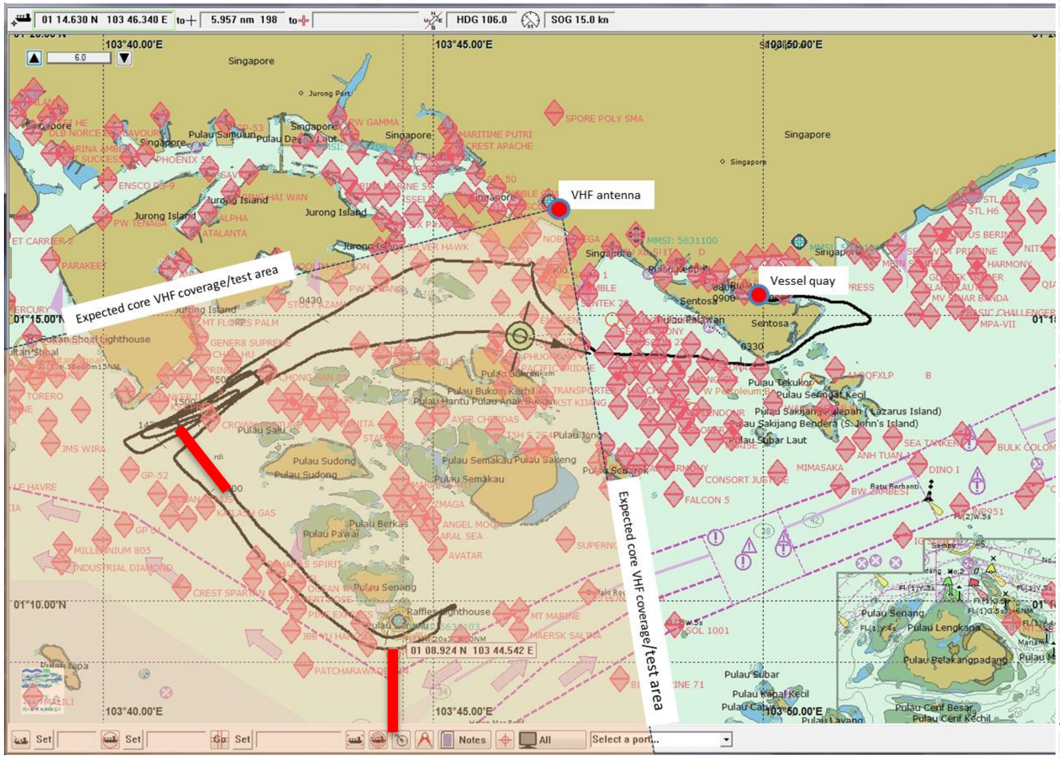
Singapore - February 2017

- 2nd generation HW/SW/concept
- VDES and mobile communication
- Ship²Shore





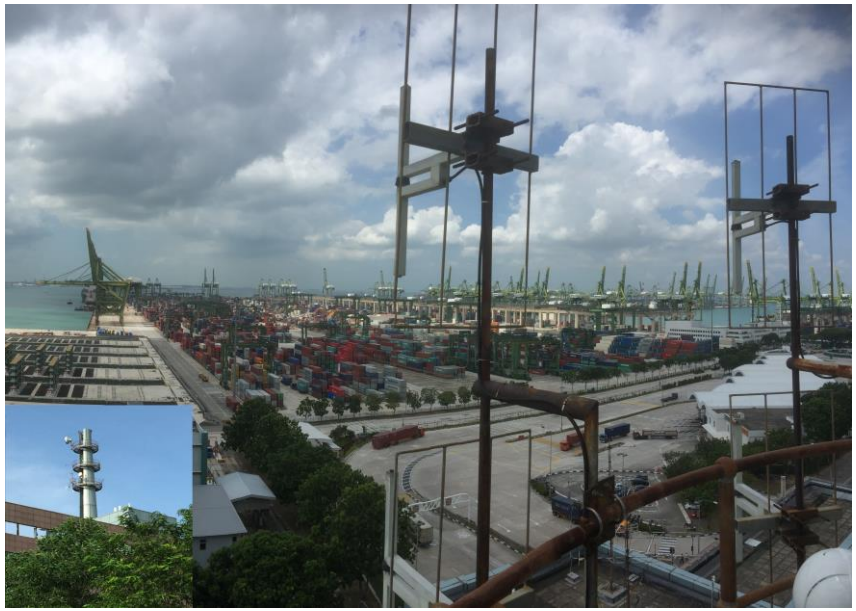
Trials 22nd February



11:25	Pre	test 1 Mata Ikan	N_OK	poor coverage
11:42	Pre	test 2 Mata Ikan	N_OK	poor coverage
11:44	Pre	test 3 Mata Ikan	N_OK	poor coverage
11:49	Pre	test 4 Mata Ikan	N_OK	poor coverage ?
11:54	Pre	test 5 Mata Ikan	N_OK	
11:56	Pre	test 5 Mata Ikan	OK	
11:58	Pre	test 6 Mata Ikan	OK	
12:00	Pre	test 7 Mata Ikan	OK	
12:02	Pre	test 8 Mata Ikan	OK	(revised OK during debriefing)
12:04	Pre	test 8 Mata Ikan	OK	
12:10	Pre	test 9 Mata Ikan	OK	
12:15	Pre	test 10 Mata Ikan	OK	
12:20	Pre	test 11 Mata Ikan	OK	
12:25	Pre	test 12 Mata Ikan	OK	
12:30	Pre	test 13 Mata Ikan	OK	
12:35	Pre	test 14 Mata Ikan	OK	
12:40	Pre	test 15 Mata Ikan	N_OK	(unsure ?)
12:40	Pre	test 15 Mata Ikan	OK	
12:45	Pre	test 16 Mata Ikan	OK	
12:45	Pre	test 17 Mata Ikan	OK	by the line 1
12:50	AUT	test Line 1 Mata Ikan	N_OK	no automatic trigger, Line, not Polygon
13:10	Pre	test 18 Mata Ikan	OK	
13:15	Pre	test 19 Mata Ikan	OK	
13:20	Pre	test 20 Mata Ikan	OK	
13:20	Pre	test Line 2 Mata Ikan	OK	manual before line
13:30	AUT	test Line 1 Mata Ikan	N_OK	no automatic trigger, Line, not Polygon
13:35	Pre	test Line 2 Mata Ikan	OK	manual after line
14:07	AUT	test Line 1 Mata Ikan	OK	automatic, sailing North, Polygon, not Line
14:20	AUT	test Line 1 Mata Ikan	N_OK	no automatic trigger, no Timeout
14:37	AUT	test Line 1 Mata Ikan	N_OK	no automatic trigger, no Timeout
14:xx	AUT	test Line 1 Mata Ikan	N_OK	no automatic trigger, no Timeout
14:43	Pre	test 21 Mata Ikan	OK	around line 1
14:50	AUT	test Line 1 south	OK	automatic, sailing South, after restart service
14:57	Pre	test 22 Mata Ikan	OK	around line 1
15:01	AUT	test Line 1 Mata Ikan	OK	automatic, sailing North, after restart service

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 %



First Satellitt with VDES to be tested during [SESAME 2]

Conclusions

- ✓ 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]

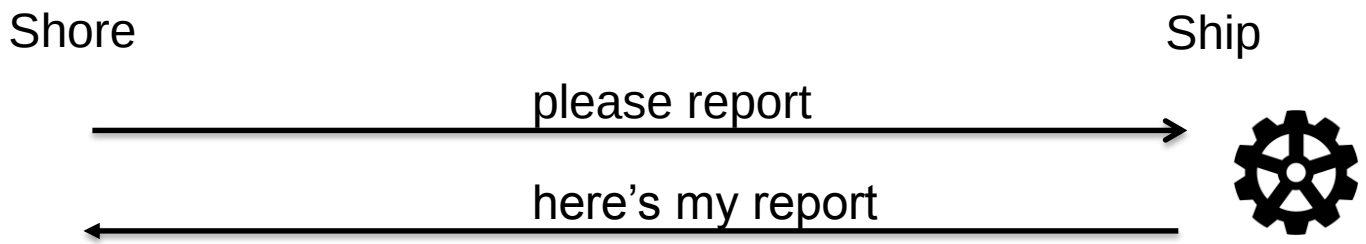
*along with other types of technology

Way forward of a [SESAME 2] project

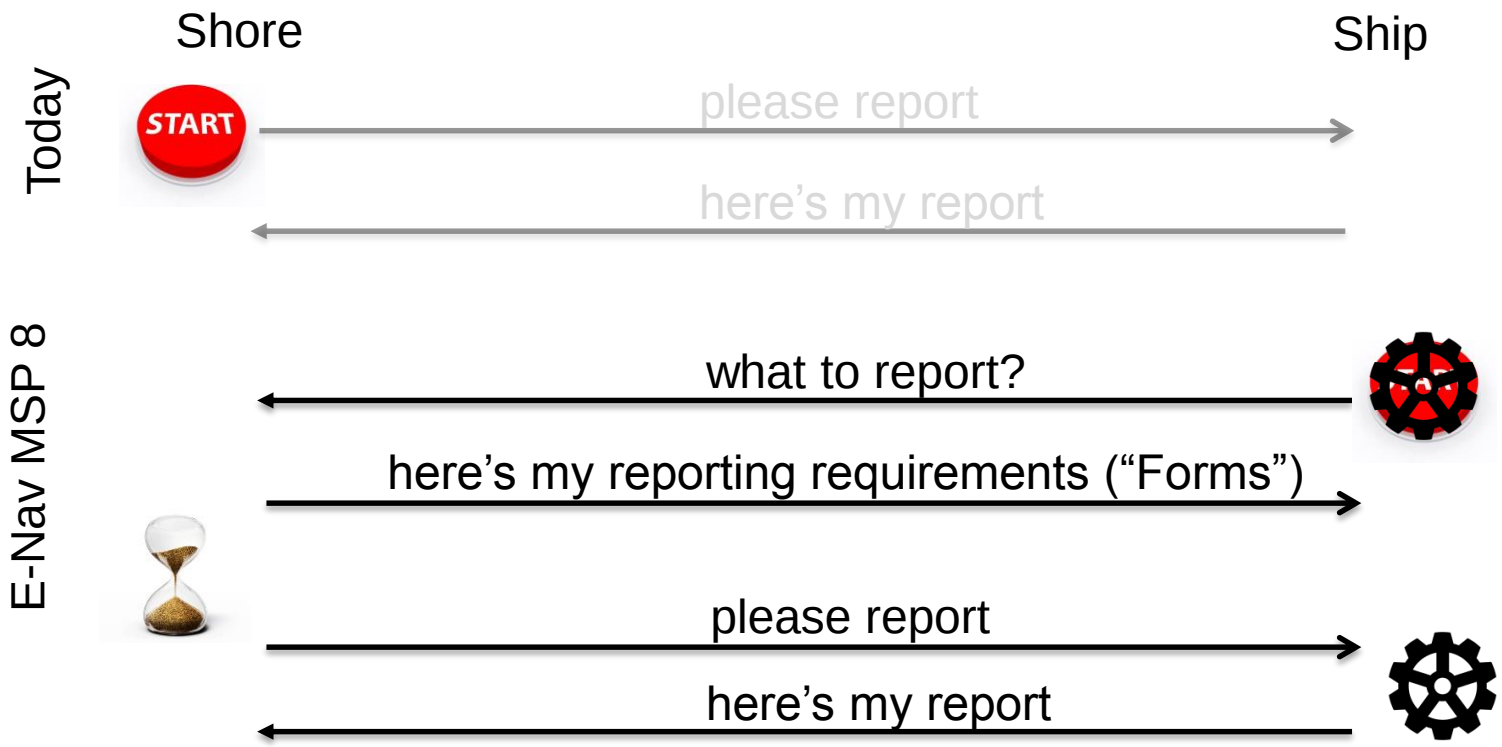
- Digitalization, Automation and Single Window

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

Way forward *today* has been….



Way forward *tomorrow* could be……



Thank you for your attention!

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