KYSTVERKET

Coastal Management – Maritime Safety – Preparedness

The e-Navigation evolution

Jon Leon Ervik
Head of Pilotage and VTS Department

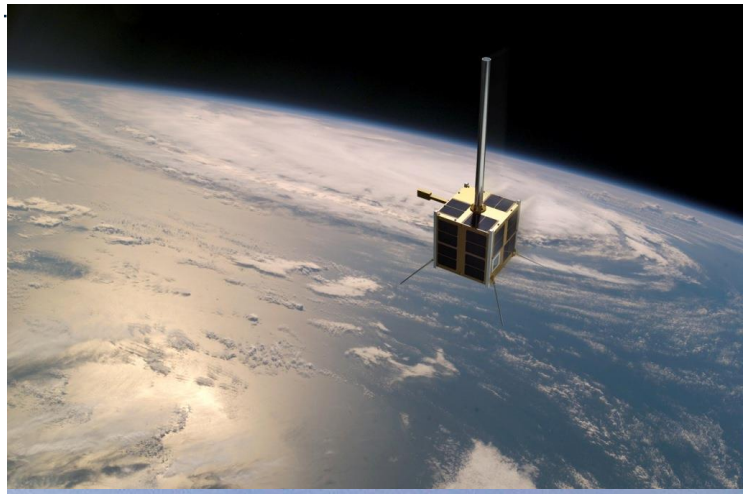
– Vi tar ansvar for sjøvegen

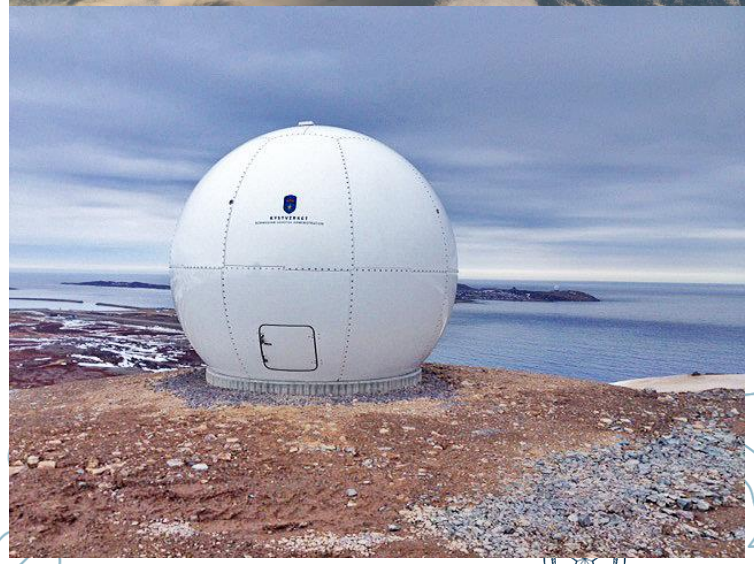
Main areas of responsibility

- Maritime safety.
- Maritime infrastructure.
- Transport planning and coastal zone management.
- Emergency response to acute pollution.

Information and Reporting Services

- Map service (Kystinfo)
- Navigational warnings (NAVCO)
- Radio navigation (DGPS)
- Ground-based AIS
- Satelite-based AIS
- Long-Range Identification and Tracking (LRIT)
- Messaging service SafeSeaNet Norway
- Wave and Current notifications
- Ice Service





Opportunities in e-navigation

E-navigation is the harmonised collection, integration, exchange, presentation and analysis of maritime information onboard and ashore by electronic means to enhance berth to berth navigation and related services, for safety and security at sea and protection of the marine environment.

5 Agreed e-Navigation Solutions

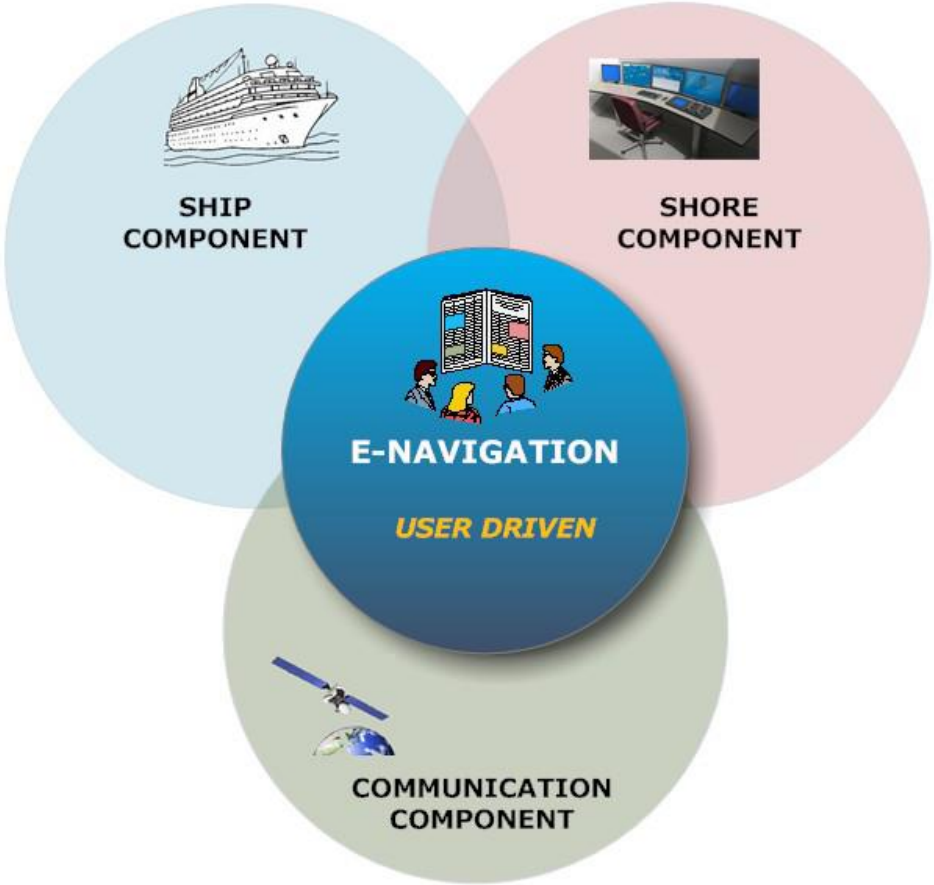
Solution S1	Improved, harmonized and user-friendly bridge design
Solution S2	Means for standardized and automated reporting
Solution S3	Improved reliability, resilience and integrity of bridge equipment and navigation information
Solution S4	Integration and presentation of available information in graphical displays received via communication equipment.
Solution S9	Improved Communication of VTS Service Portfolio.

Maritime Service Portfolios

MSP1	VTS Information Service (IS)
MSP2	Navigational Assistance Service (NAS)
MSP3	Traffic Organization Service (TOS)
MSP4	Local Port Service (LPS)
MSP5	Maritime Safety Information (MSI) Service
MSP6	Pilotage Service
MSP7	Tugs Service
MSP8	Vessel Shore Reporting

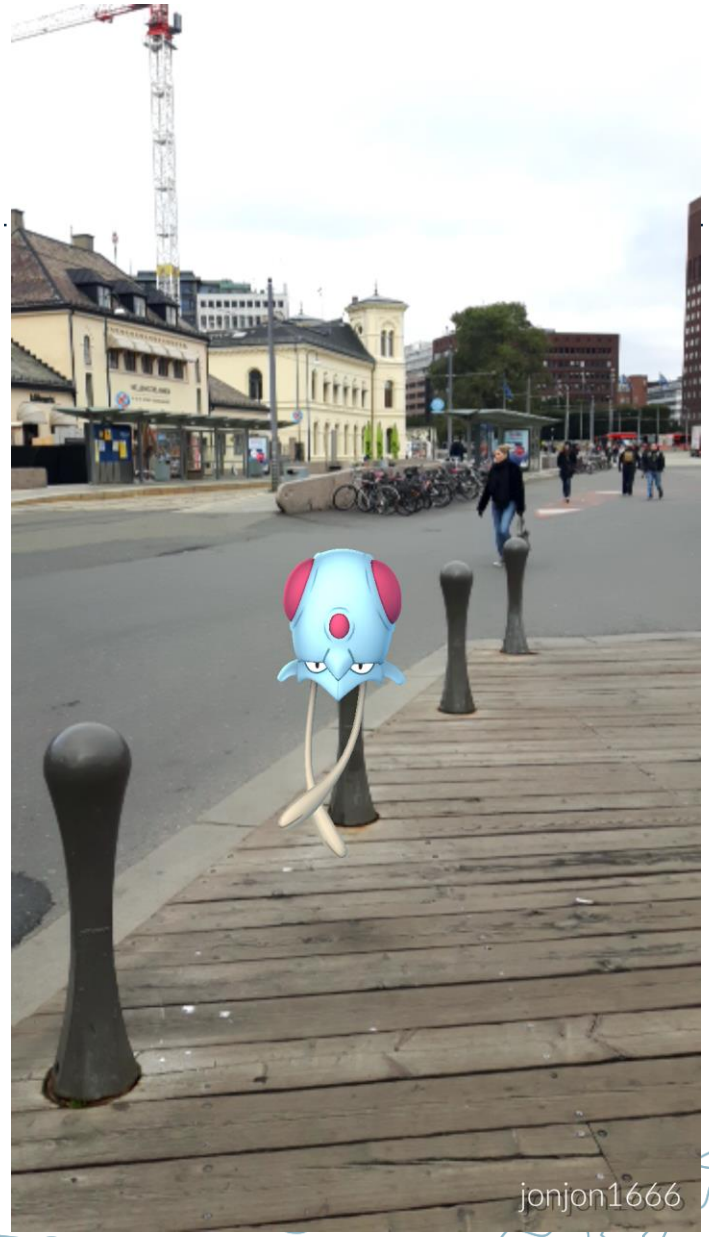
MSP9	Telemedical Maritime Assistance Service
MSP10	Maritime Assistance Service (MAS)
MSP11	Nautical Chart Service
MSP12	Nautical Publications Service
MSP13	Ice Navigation Service
MSP14	Meteorological Information Service
MSP15	Real-Time Hydrographic and Environmental Information Services
MSP16	Search and Rescue (SAR) Service

Key Components of e-Navigation



Development ?

Technical opportunities ?



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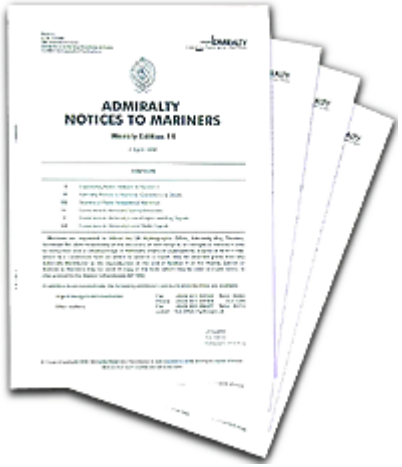
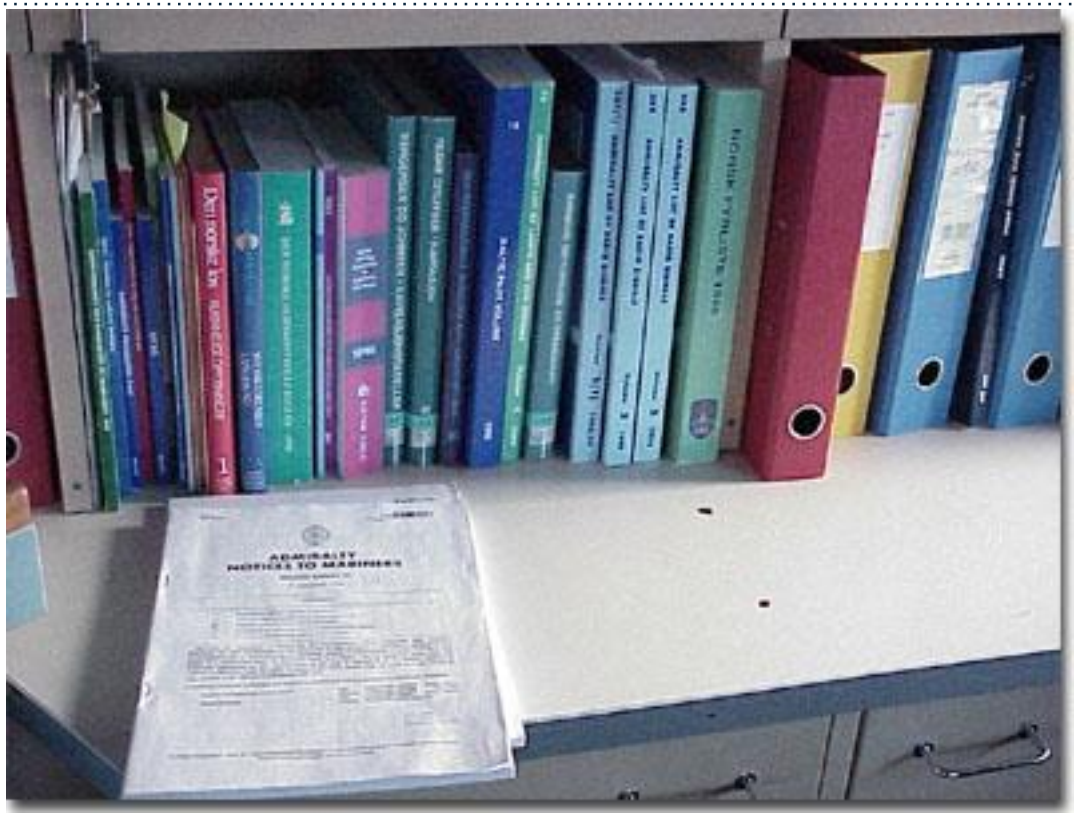
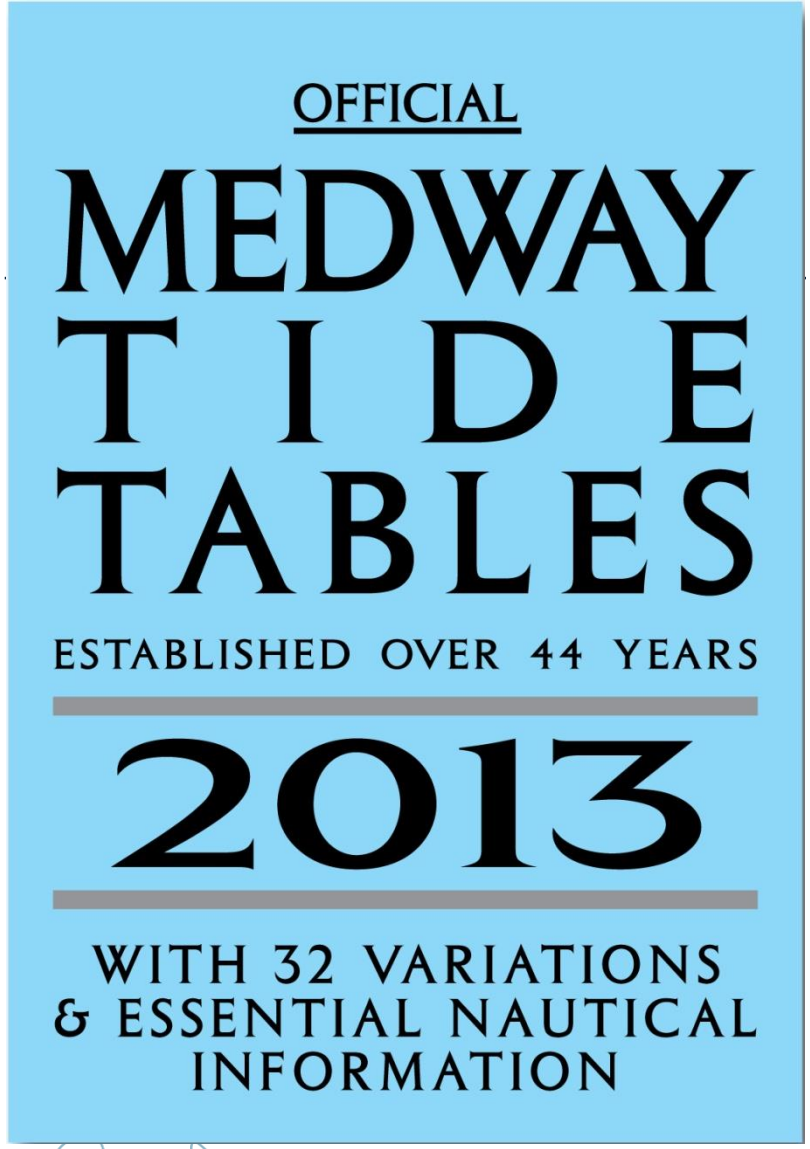
User friendly?



MSP 12 – nautical publications

User-friendly?





19		0411	1.1
		1031	4.8
	M	1629	1.4
		2242	4.9
20		0458	1.4
		1123	4.6
	TU	1718	1.7
		2338	4.7
21		0551	1.7
		1222	4.5
	W	1816	1.9

User-friendly?

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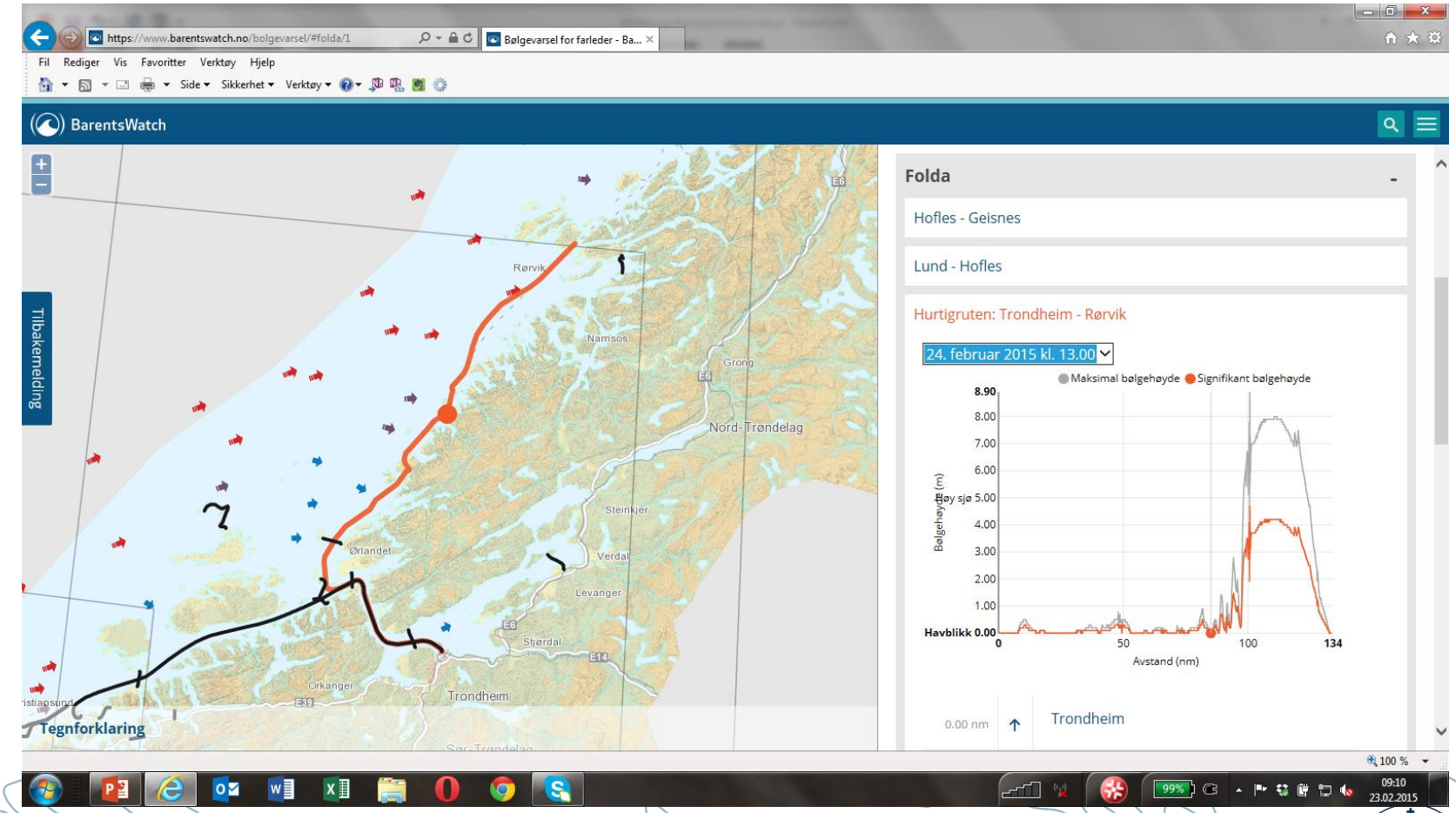
Wave forecast



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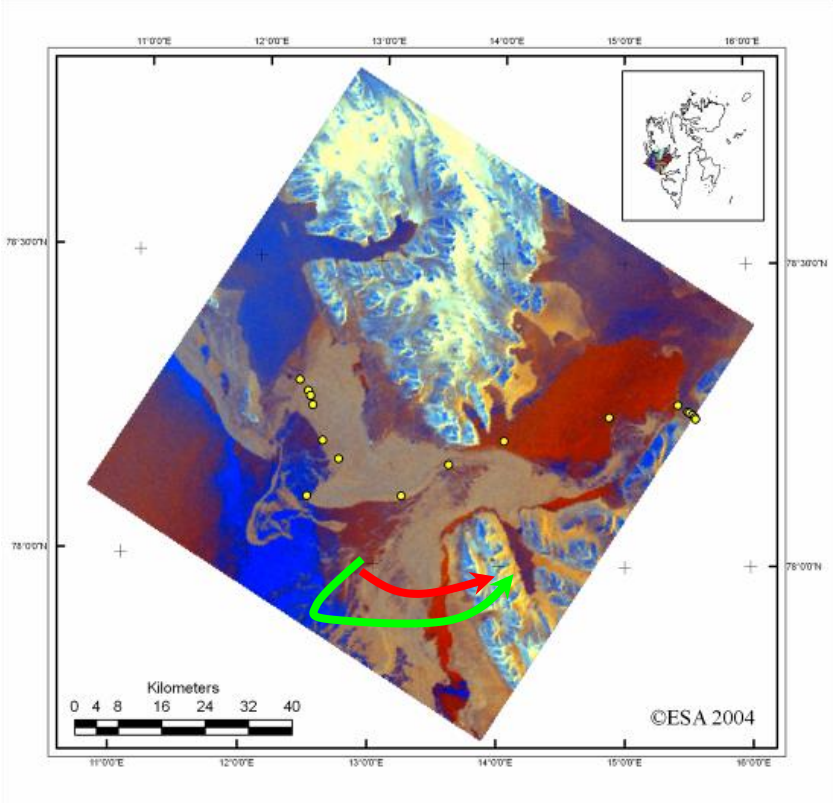
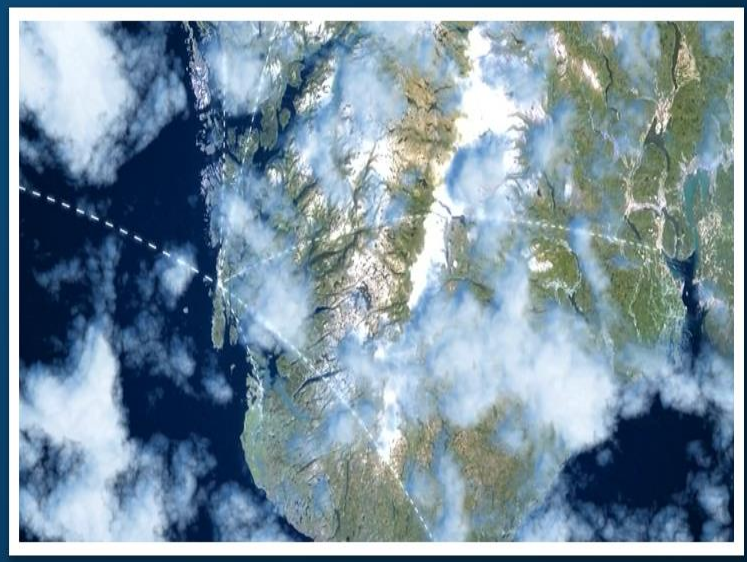
Ship routing in ice waters reduces fuel, emissions and risks

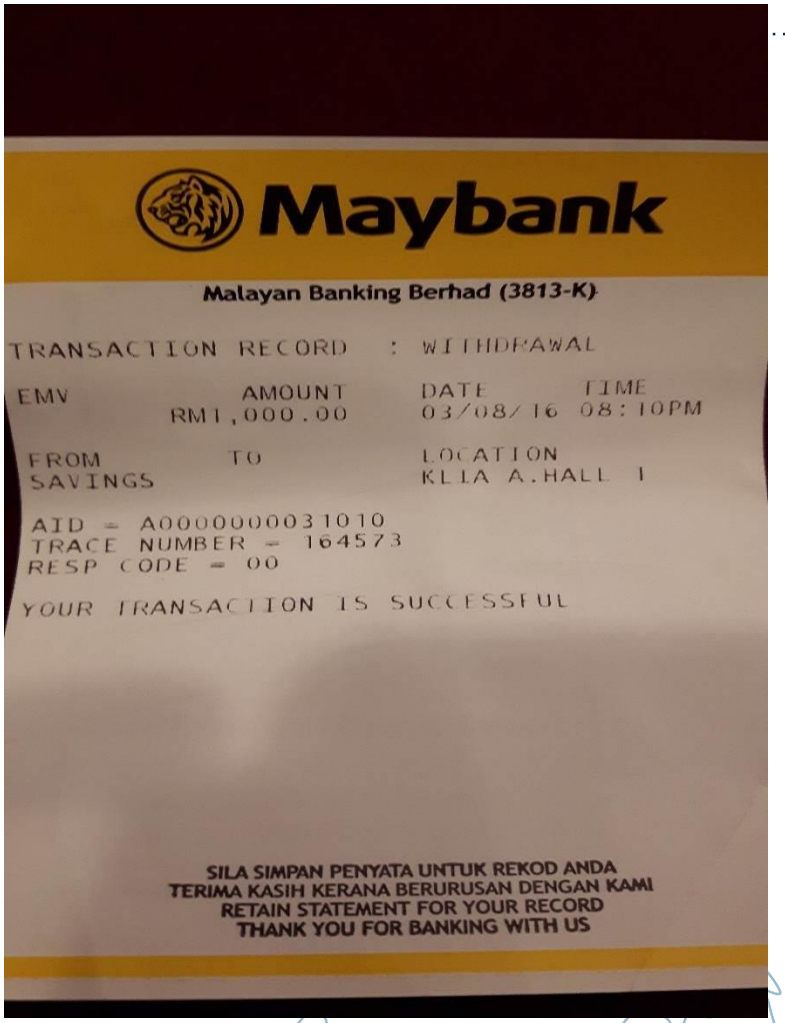


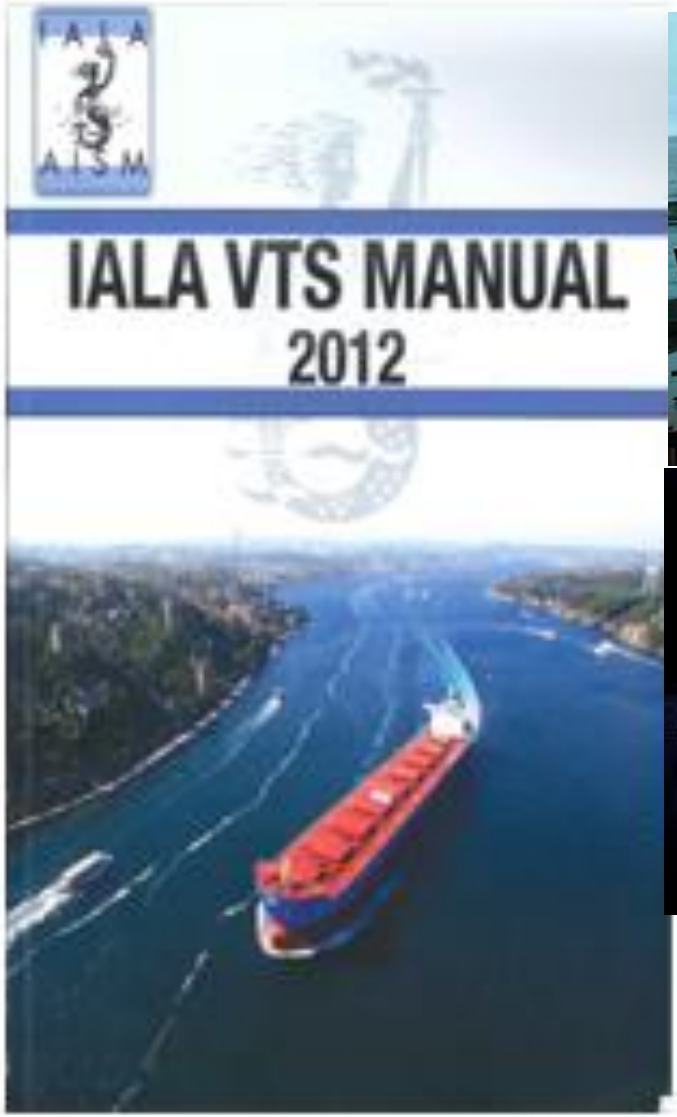
Planned route through the ice
6 hours
Actual route around the ice
3 hours



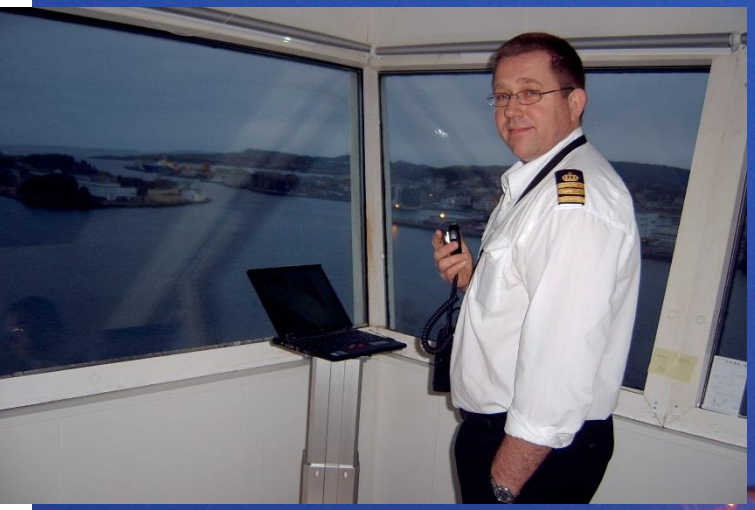
Interaction

by electronic means ?




IALA
AISM
IALA VTS MANUAL
2012

PPU as a practical example



ECDIS mode: HO ENC vector chart (norwegian pilots display WGS 1984(Global Definition) Cylindrical (Mercator)) Monitoring (Battery 36%)
Overscale: (X2.3) 1: 5 332
02/16/2008 08:55:58(-01)
GPS ADX PPU DATA
Lat: 59 25.171N
Lon: 005 14.033E
Offset: (0.000', 0.000')
HDG: 332.0 (0.000')
STW: N/A
COG: 328.7
SOG: 2.4 Kts
Drift: 0.1 kts / 241°
ROT: -1.2 degr/min°
Tide: 0.49m falling
Wpt: Kråkeflu
XTE: 0.01 Starboard
B/R: 330° 0.27 nm
TTG: 00:06:49
ETA: 02/16 09:02:48(-01)
Nxt: 319° 1.65 nm
Kråkeflu
ETA: 02/16 09:02:48(-01)
Dist: 0.27 / 44.92
Safety contour
Specified 15 Selected 20 (T. 6m)
Acknowledge
CPA-TCPA alarm
STW alarm
N/A N/A
R/B: N/A
CPA: N/A
TCPA: N/A
S/C: N/A
Lat: 59 25.360N
Lon: 005 13.935E
SC: 0.20 nm 345.1
319° 1.65 nm
Kråkeflu
NORTHERN COMRADE
339° 0.49 nm
SILEX
TUG MEGA MAMMUT
ALVHEIM
BELOS
BB OCEAN
Åkerøya
321° 0.34 nm

Modern bridge?

Modern day bridge

1. Fire Detection Panel
2. GPS, AIS and Speed Log Display
3. VHF radio
4. Rudder angle indicator
5. Electronic Charts Display & Information System (ECDIS)
6. Clinometer, Anemometer, Tachometer, Echo sounder
7. Radars (10cm and 3cm)
8. Engine controls
9. Switch panel (lighting etc)
10. Smoke alarm
11. Magnetic compass display
12. Search and Rescue transponder
13. Gyro compass
14. Steering stand

NAVTOR, NavStation ; On Board e-NAV services with **seamless data updating**

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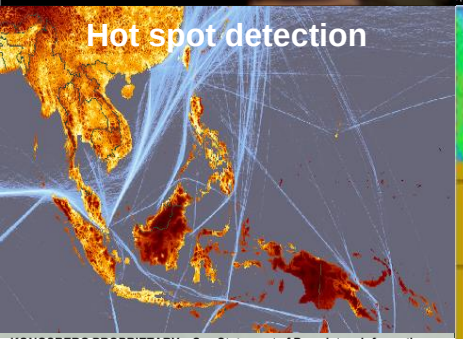
Future presentation of information

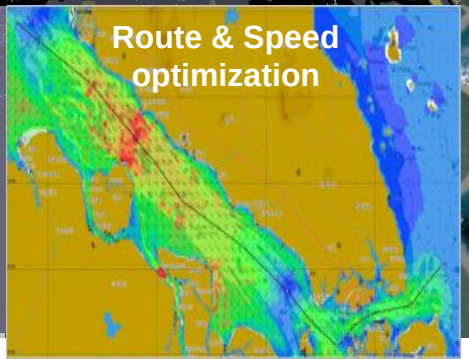
SESAME Straits

VTS suggestions evaluated

Suggestion for a new route and speed

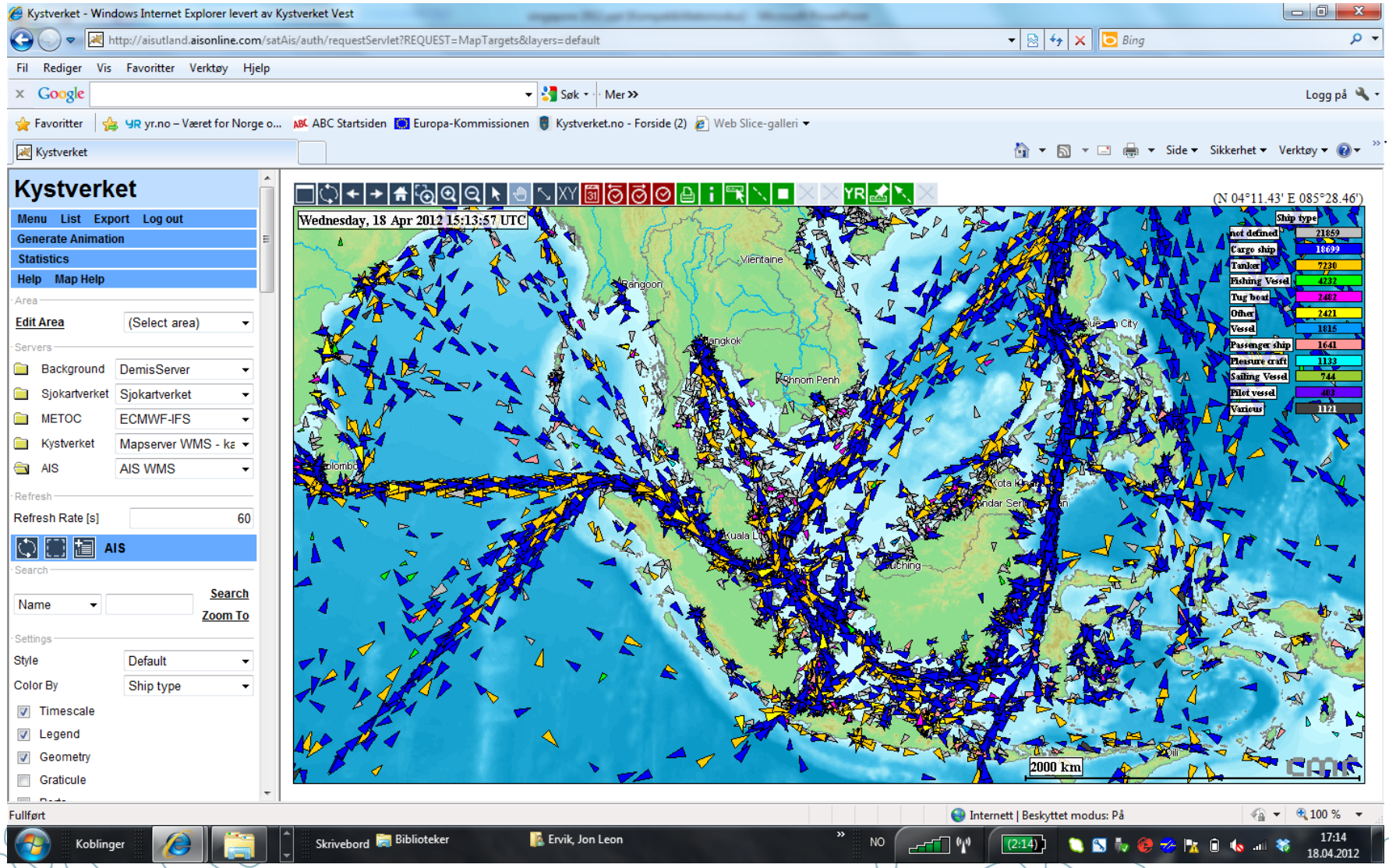
Ship reduces speed and changes route





- Shared situational awareness
- Collaborative decision support
- Just-in-time arrival
- Optimal transit speed
  - Reduced ship bunkers
  - Efficient traffic flow
  - Reduced navigation risk
  - Reduced fuel comsumption
  - Reduced CO2 emissions
  - Better utilization of port resources

KONGSBERG PROPRIETARY – See Statement of Proprietary Information



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SW- reporting
NTM
ETD
=
ATD
Single
Window
MSI
Ship
Ship Name: PINCHAT Call Sign: ZCEH3 IMO No: 9589164 Gross Tonnage: 44326 Length: 229 Ship Type: Bulk Carrier
Voyages
Departure
Arrival
Location
ETD
Location
ETA
Deliveries [?]
Actions [?]
Kirkenes
14.12.2014 13:00
Ijmuiden
19.12.2014 11:15

Ship

Ship Name: PINCHAT Call Sign: ZCEH3 IMO No: 9589164 Gross Tonnage: 44326 Length: 229 Ship Type: Bulk Carrier

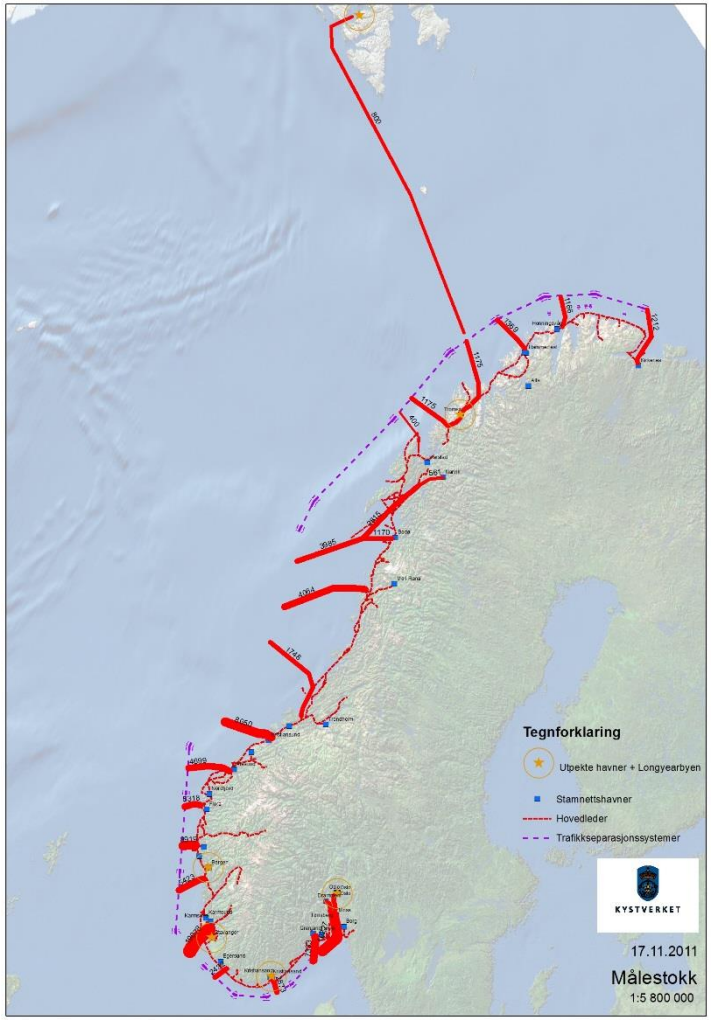
Voyages

Departure		Arrival			
Location	ETD	Location	ETA	Deliveries [?]	Actions [?]
Kirkenes	14.12.2014 13:00	Ijmuiden	19.12.2014 11:15		

NTM
Port information
MSI
Single Window
Ship
Ship Name: PINCHAT Call Sign: ZCEH3 IMO No: 9589164 Gross Tonnage: 44326 Length: 229 Ship Type: Bulk Carrier
Voyages
Departure
Arrival
Location
ETD
Location
ETA
Deliveries [?]
Actions [?]
Kirkenes
14.12.2014 13:00
Ijmuiden
19.12.2014 11:15

Bergen – hub for trade and tourism

Norwegian e-navigation strategy



– Vi tar ansvar for sjøvegen

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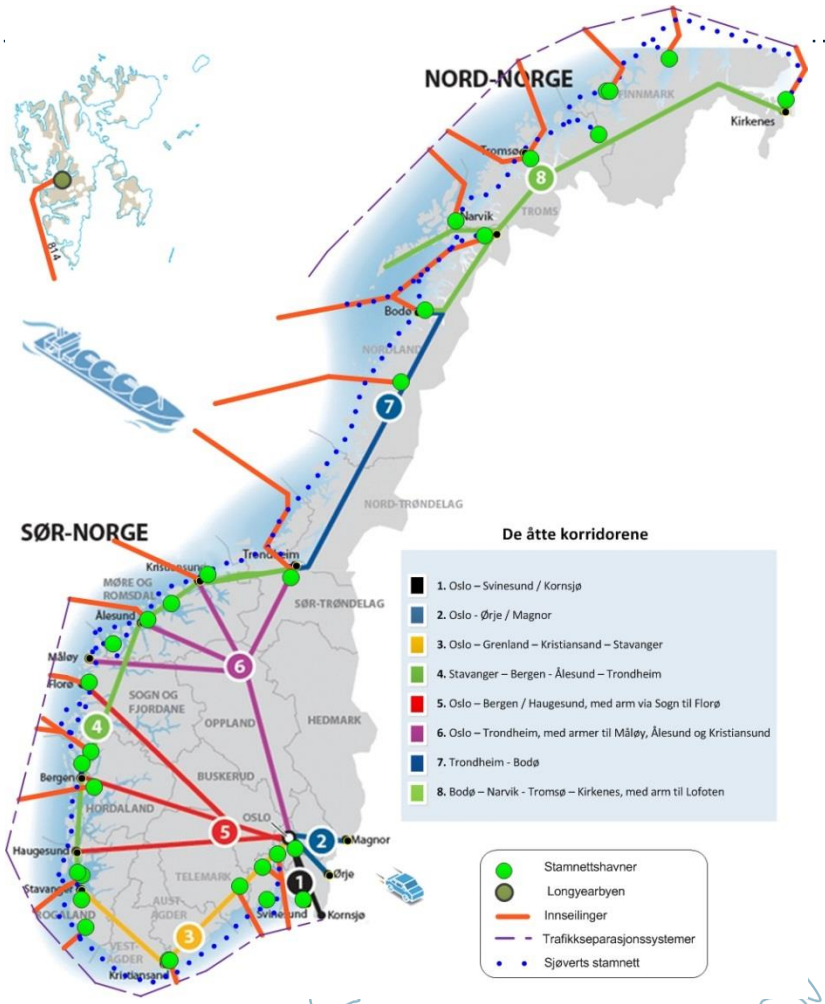
Multimodal transport



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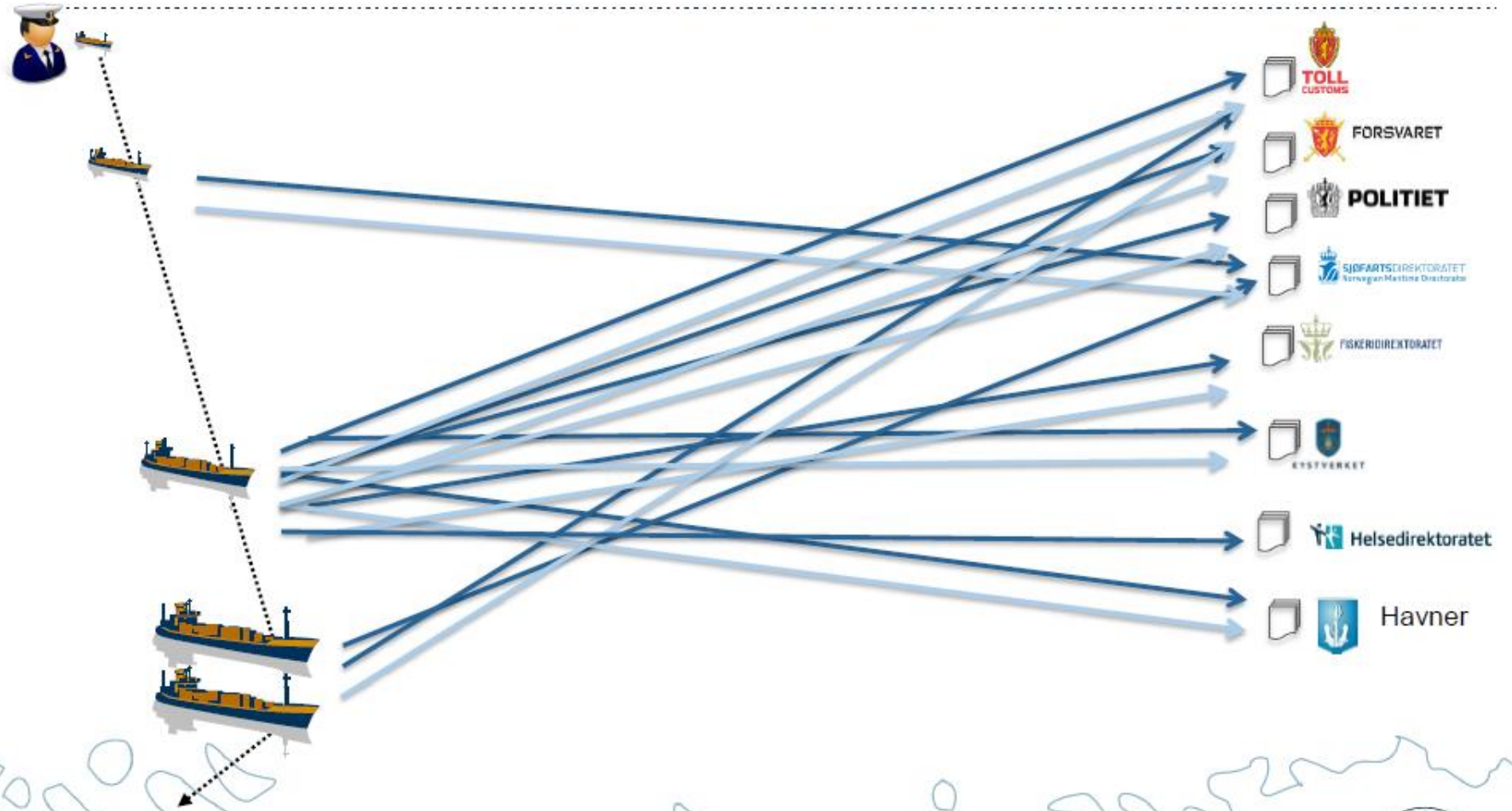
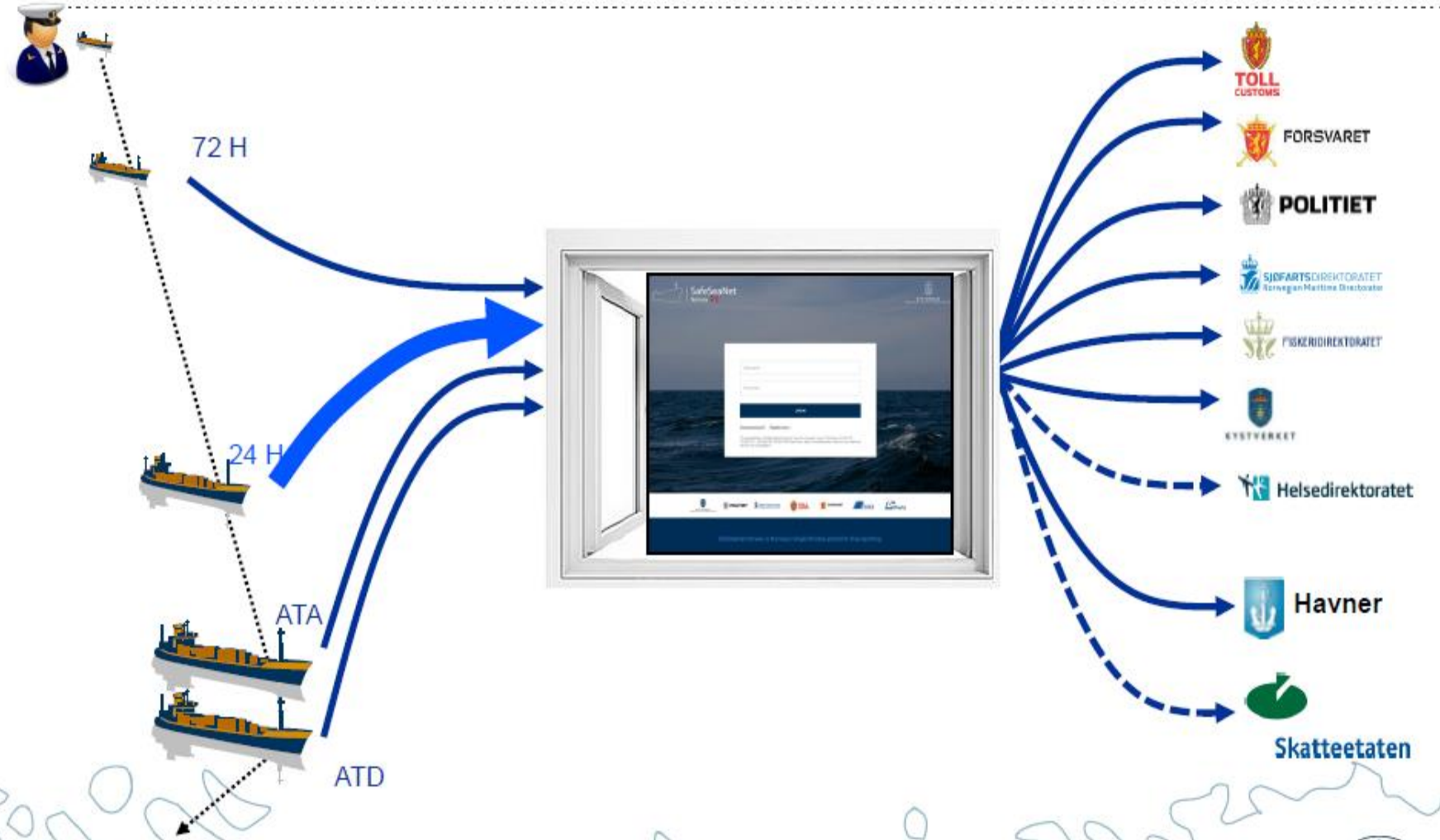
Before Single Window



Single Window reporting



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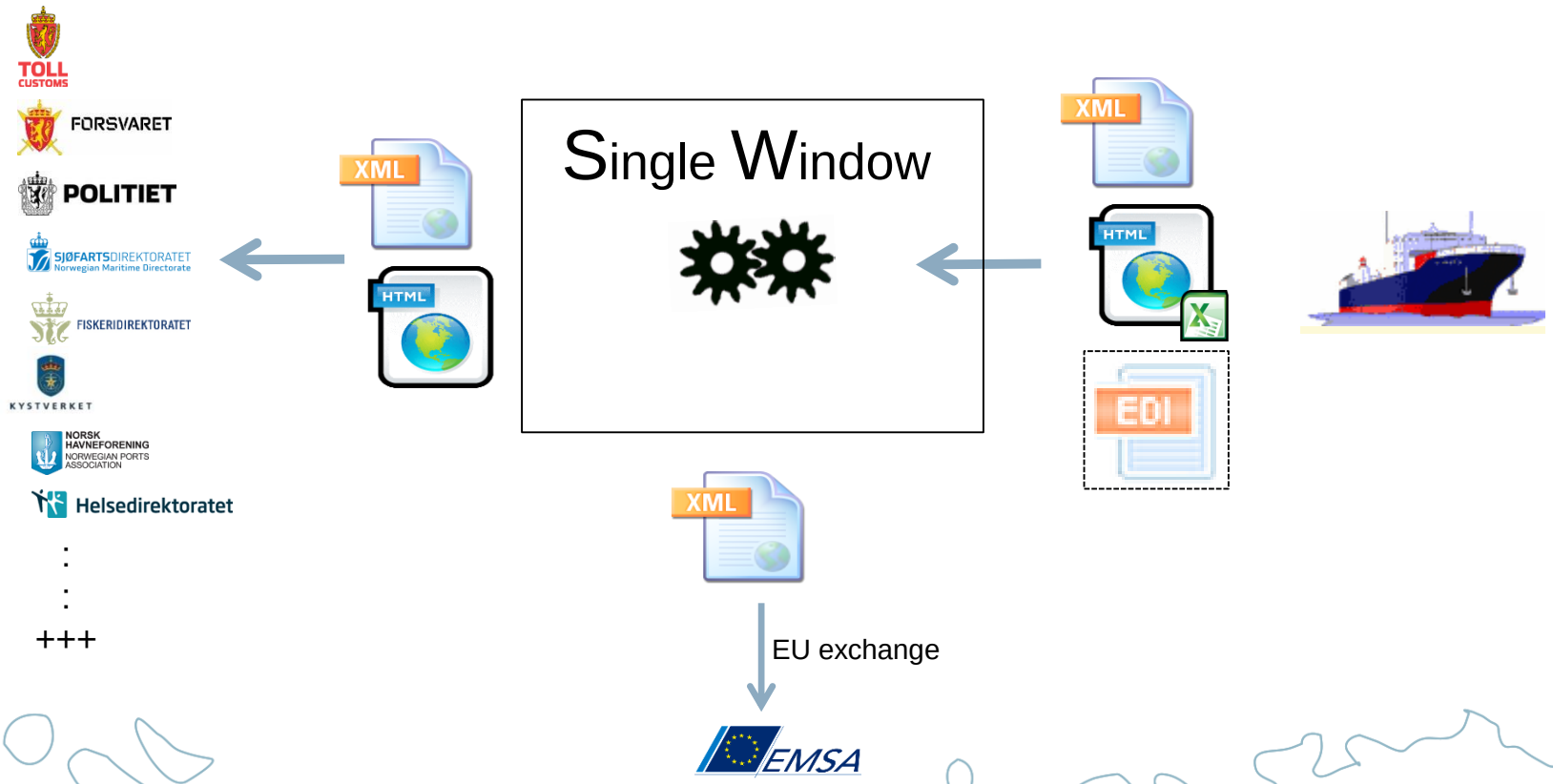
Input & Outputs

….. building the complete Single Window solution

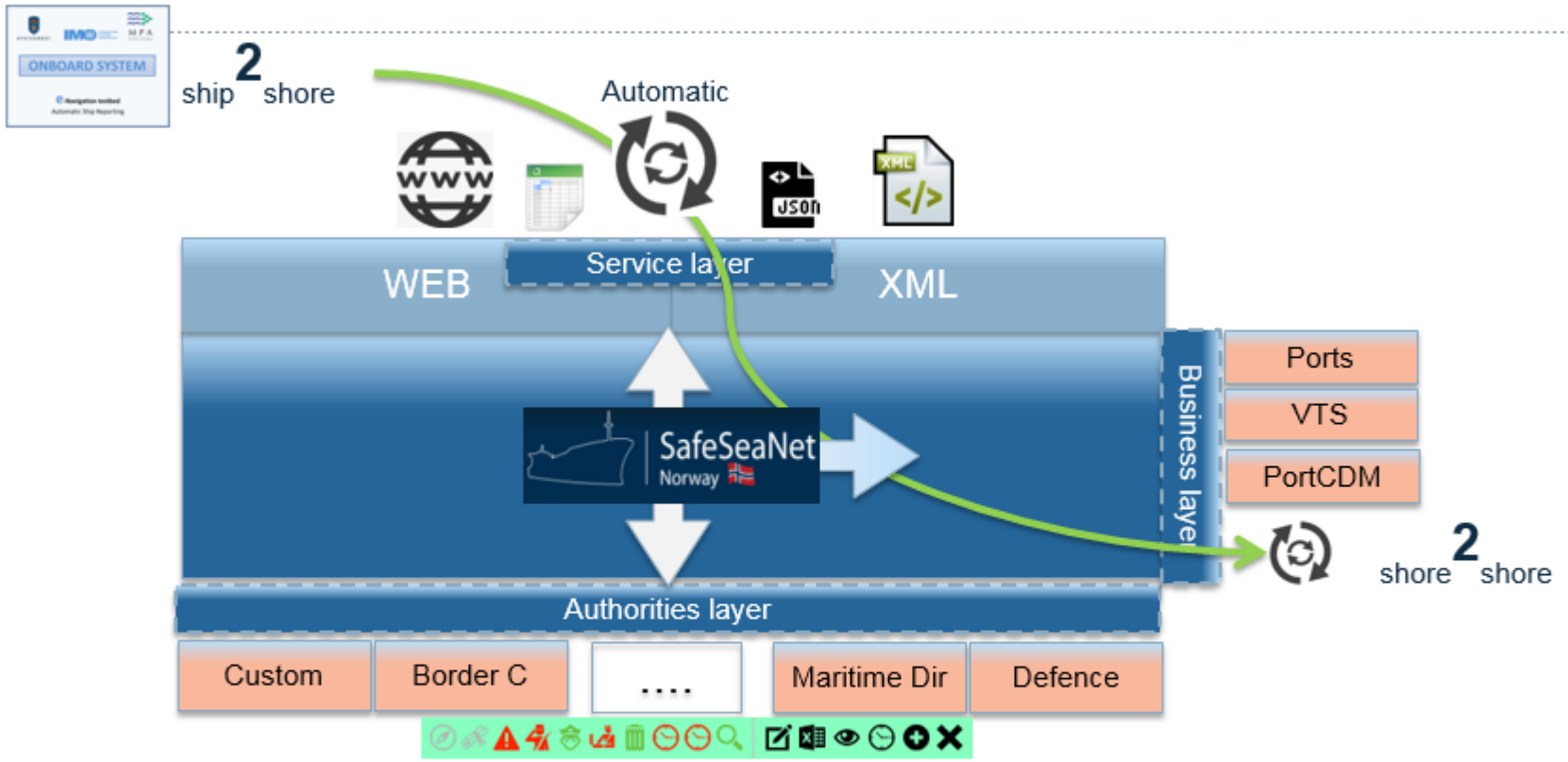


SafeSeaNet Norway – efficiency improvements

- Reduction in number of ship reports **245 000**
- Reduction in hours used to fill out ship reporting forms **245 000*** = *140 people working full-time*

* Estimated time for filling out reporting forms onboard and ashore: 60 minutes

Norwegian Single Window (SSNN)



KYSTVERKET
NORWEGIAN COASTAL ADMINISTRATION

– Vi tar ansvar for sjøvegen

KYSTVERKET

SafeSeaNet
– en viktig medspiller for effektive havner

Oversikt med ett tastetrykk

VÅGEN: Ketil Solvik-Olsen og Merete Eik imøteser en portal som gir oversikt over havneaktiviteten.

■ STEIN ROGER FOSSMO

Samferdselsminister Solvik-Olsen deltok i går på åpningen av en testversjon av PortCDM, et prosjekt som skal effektivisere havnedrift. Åpningen foregikk på cruiseskipet «Britannia».

– Dette er spennende, og vi er stolte av å være en del av dette EU-prosjektet. En slik portal er et sjøfartens flytårn, og gir full oversikt over all aktivitet i en havn med ett tastetrykk, sier havnedirektør Merete Eik til RA.

Felles portal

Alle aktører i en havn legger inn relevante data i portalen, hvor alle profesjonelle aktører har tilgang og oversikt.

– Resultatet blir en mer effektiv og attraktiv havn som kan gi brukerne bedre service, mener Eik, som sammen med sin stab har hatt noen aha-opplevelser allerede.

– Arbeidet har vært krevende, men vi har nå bedre oversikt over hvordan vi kan legge til rette for ulike behov. Jeg tror at når vi om ti års tid ser oss tilbake, vil vi spørre oss: «Hvordan greide vi oss uten PortCDM», sier Eik.

Nettbasert

Samferdselsministeren likte også det han så.

– Systemet er nettbasert, slik at det ikke er nødvendig for verken skip som «Britannia» eller havnevesenet å anskaffe nytt utstyr, sier Solvik-Olsen.

PORT CDM

■ Port Collaborative Decision Making (Port CDM) er et EU-finansiert system med en nettbasert portal for å koordinere aktiviteter i en havn. Profesjonelle aktører innen havnedrift legger inn relevante data for å gjøre driften av havnen best mulig.

PÅ CRUISESKIP: Samferdselsminister Ketil Solvik-Olsen og havnedirektør Merete Eik foran cruiseskipet «Britannia», der portalen PortCDM ble demonstrert. FOTO: STEIN ROGER FOSSMO

– Vi tar

VERKET

Benefits for the user

- Tailor-made information for the operation
- Standardization
- Functions on demand
- Scalability
- Reduction of work load
- Efficiency
- Reduction of equipment costs
- Cost effective operation (fuel material)

Benefits for the user

Benefits for the user

– Vi tar ansvar for sjøvegen

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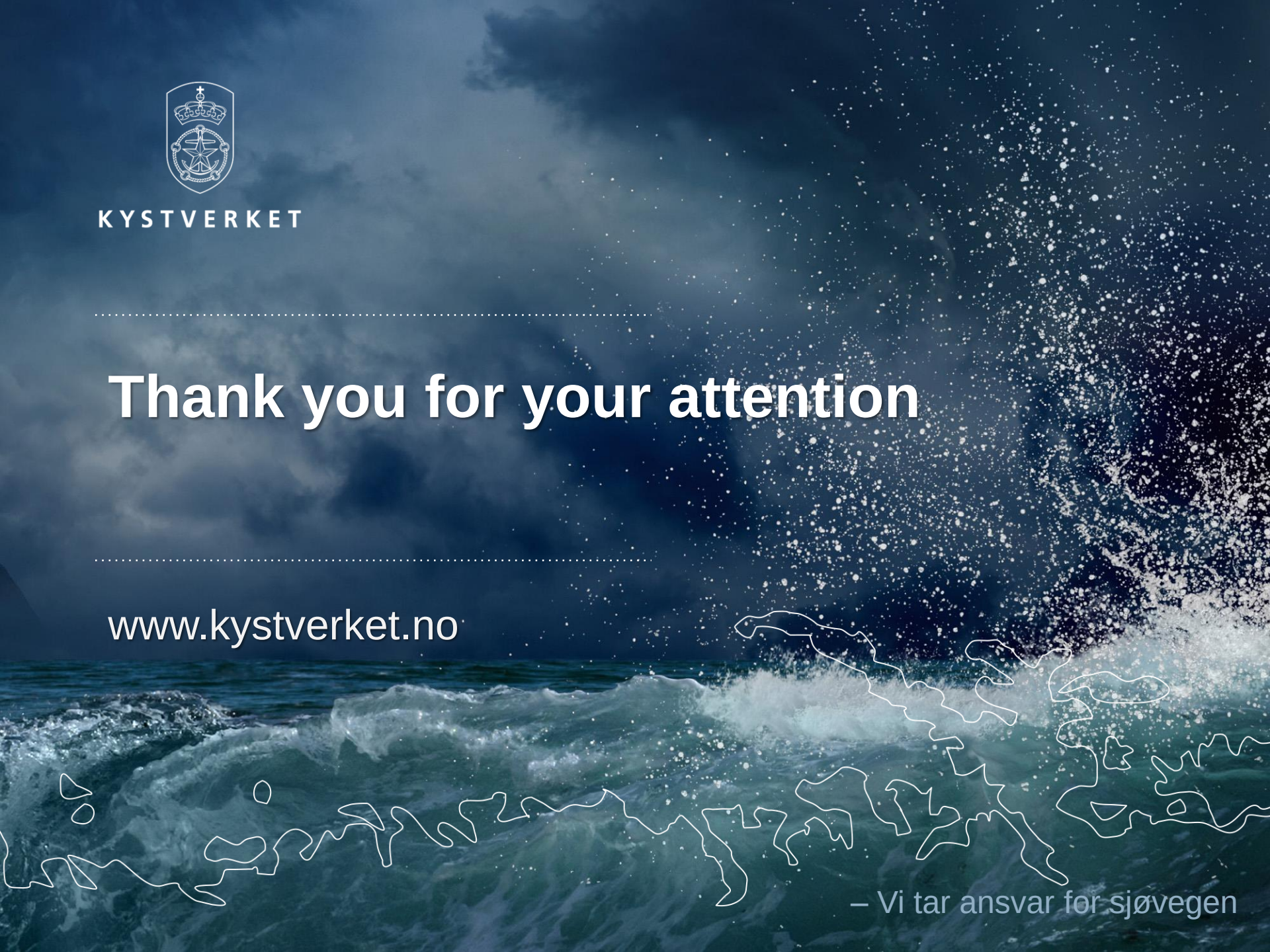
KYSTVERKET
Thank you for your attention
www.kystverket.no
– Vi tar ansvar for sjøvegen