

Maritime Service Suite (MSS) Latest Development on Maritime Traffic Management System

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Speaker

After serving 18 years in The Royal Netherlands Navy, Pieter joined Saab (or previously named “HITT Holland Institute of Traffic Technology B.V.”) and started his second career in the Vessel Traffic Services (VTS) domain.

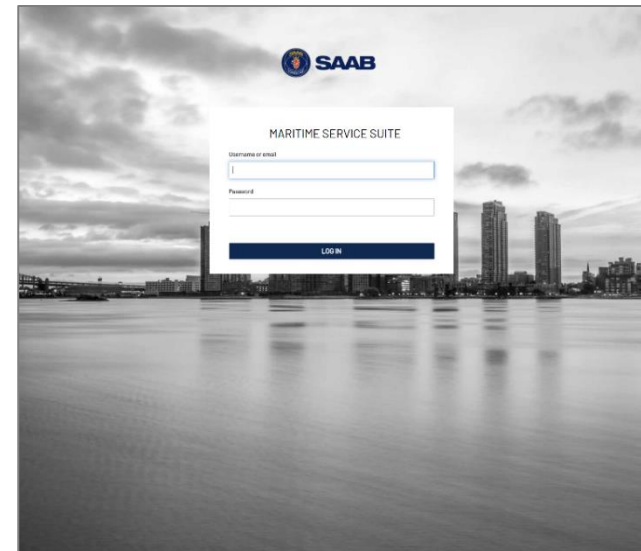
In the last 20 years, Pieter is active in VTS business in Europe, South America and Asia. As a permanent resident in Hong Kong, Pieter has witnessed the deployment and development of the 2nd and 3rd generation of Hong Kong VTS System.



Pieter van Vrijberghe de Coningh
Managing Director
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Agenda

- Introduction to Maritime Traffic Management - VTS
- Why & What of MSS (Maritime Service Suite)
- MSS Software Feature Look & Feel
- Demo MSS



Introduction to Maritime Traffic Management - VTS



What is VTS?



- Vessel Traffic Services (VTS) contribute to safety of life at sea, safety and efficiency of navigation and protection of the marine environment, adjacent shore areas, work sites and offshore installations from possible adverse effects of maritime traffic.
- Governments may establish VTS when, in their opinion, the volume of traffic or the degree of risk justifies such services.

Purpose of VTS

- Provision of timely and relevant information on factors that may influence the ship's movements and assist onboard decision making.
- Monitoring and management of ship traffic to ensure the safety and efficiency of ship movements.
- Responding to developing unsafe situations.



How do we implement VTS?



Source: Website of Hong Kong Marine Department



Source: globalfishingwatch.org



Source: gcaptain.com

How do we implement VTS?

HOW ABOUT NOW?

Introduction to Maritime Traffic Management - VTS





Traffic Display



RDF



AIS



Radar



Electro-Optical Systems



Meteo



VHF



Processing & Networking

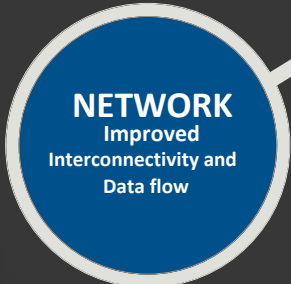
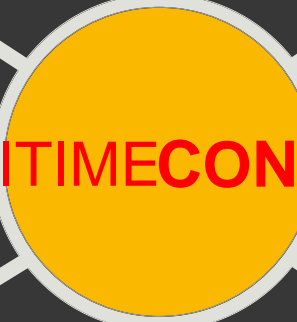
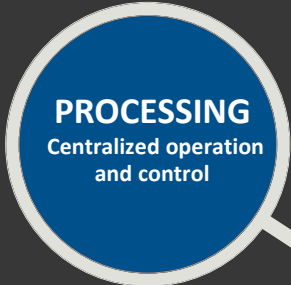
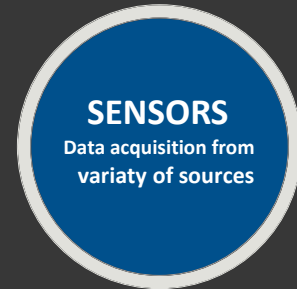


CMS



PORTCONTROL™

COMPANY RESTRICTED | NOT EXPORT CONTROLLED | NOT CLASSIFIED
Your Name | Document Identification | Issue 1



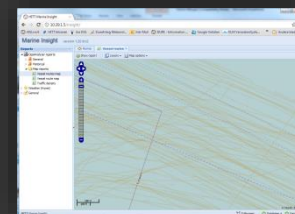
Record & Replay



Opsview



IVEF & other Interfaces



Traffic Analysis



SAAB

Why & What of MSS (Maritime Service Suite)



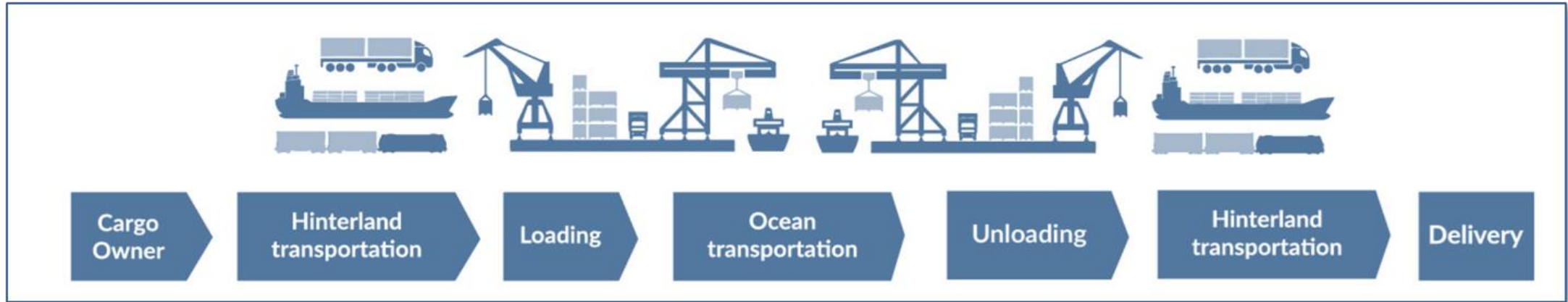
VTS the traffic orchestrator

- Holistic View of the ports traffic and waterway infrastructure
- Provider of information related to traffic, traffic planning and the waterway infrastructure
- Facilitating collaborative planning of the traffic based on the individual stakeholder's interests
 - Ship owners
 - Terminal owners
 - Service providers
 - Port authority, Lock/Bridge Operator
- Guardian of the Safety, Security & Environmental demands

“The set of efforts (measures, provisions, services and related functions) which, within a given area and under specified circumstances, intend to minimize risks for Safety, security and the environment, whilst maximizing the efficiency of waterborne and connecting nodes of transport. Thus VTMISS is defined as: Services that intend to respond to public and private demand for facilitating Vessel Traffic Management”

Definition VTMISS (Hadley, 2001)

The Buzz Words



- “Digitization” of the maritime transport chain
- “Smart Ports”, “Connected Ports”, “Door-to-door” cargo management
- “Collaborative Decision Making”, “Waste reduction”
- “Eco system” , “Autonomous” shipping
- “Artificial Intelligence”
- “Decoupling”, “Just in time delivery”, “Robustness of transport chain”



Challenges ahead

Handle more vessels with the same infrastructure



Accidents & Incidents must come down



Traffic must become more predictable and punctual



Reduce travel & turn around time and costs for shipping lines



All information must be secure, available and accurate



All stakeholders need to be informed



Environment will become a driver



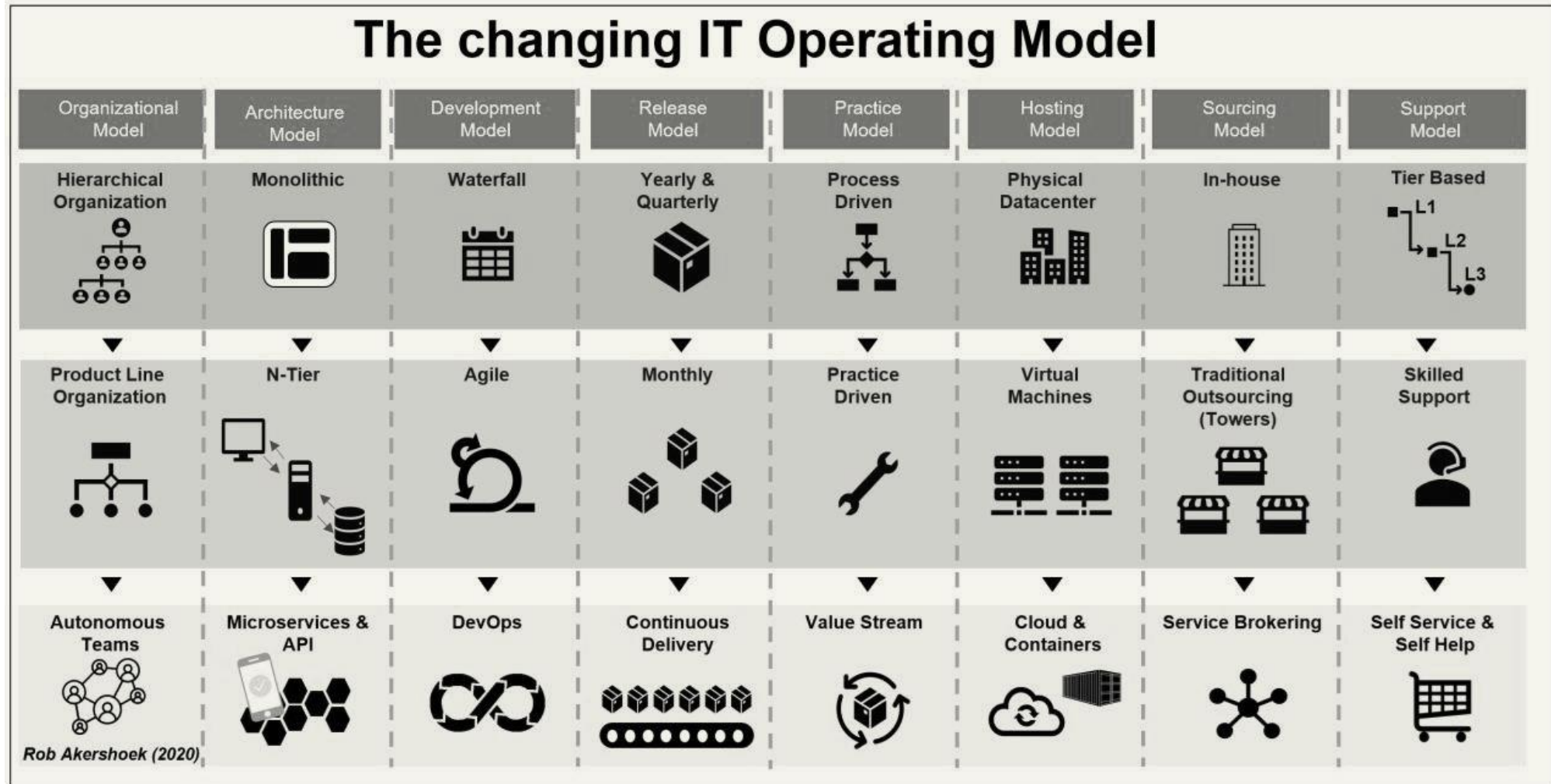
Everybody needs to be "connected"



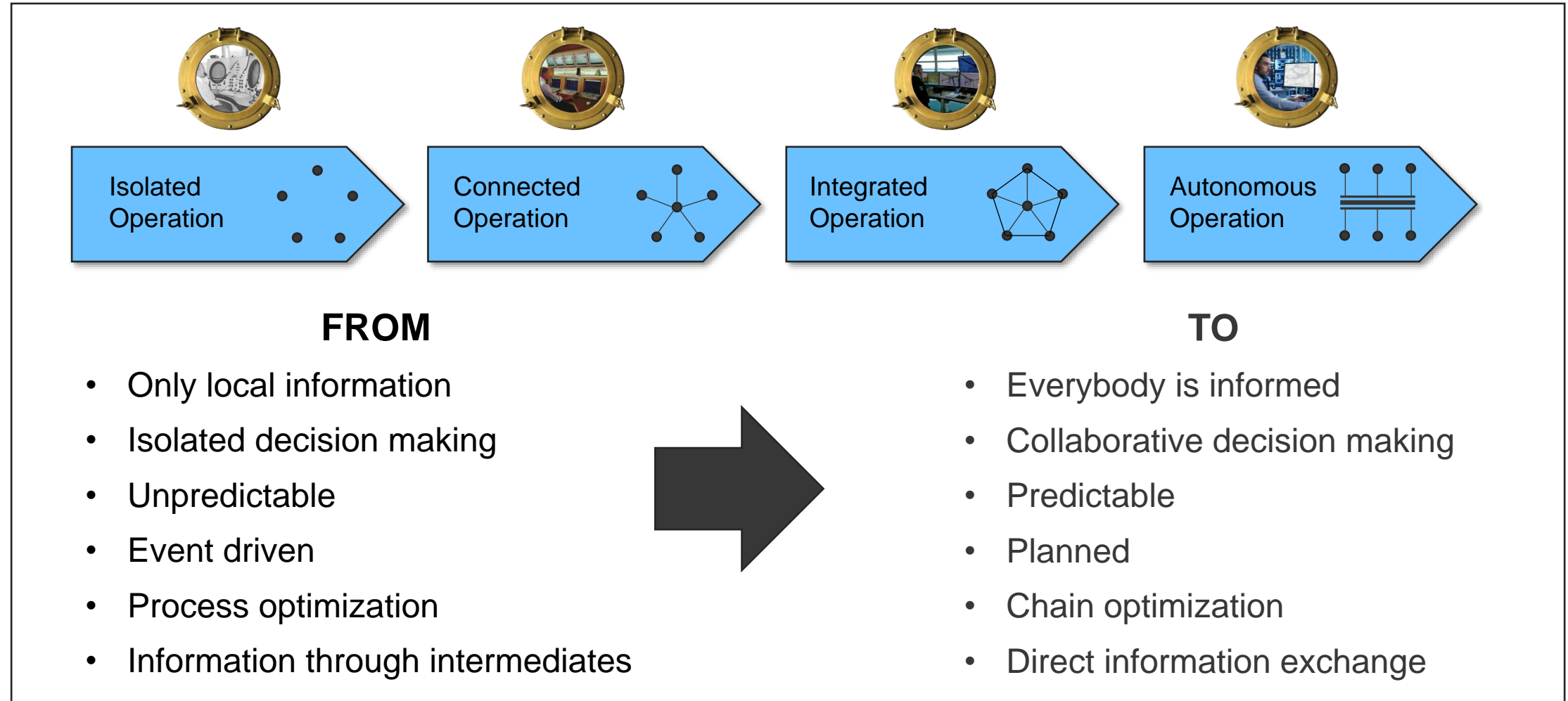
When is next pandemic?



The Evolving Digital Delivery Model

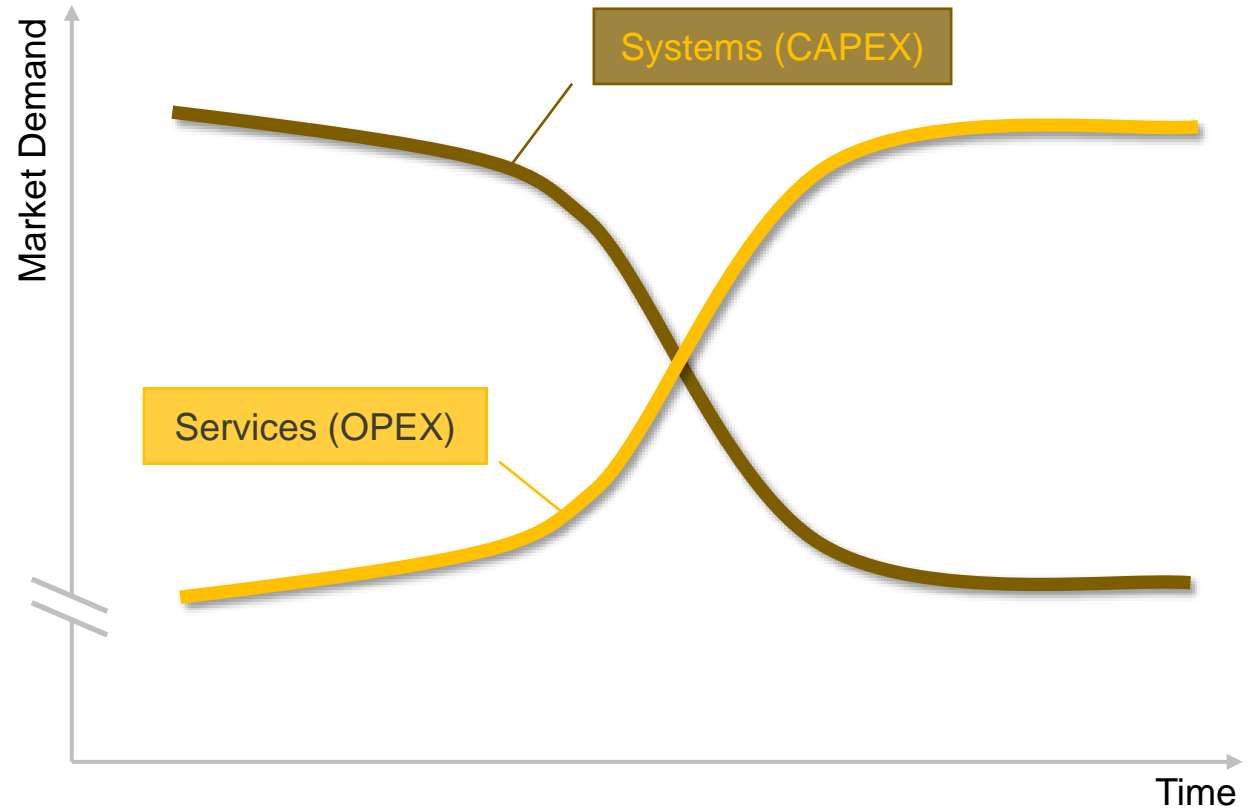


Changing Operation



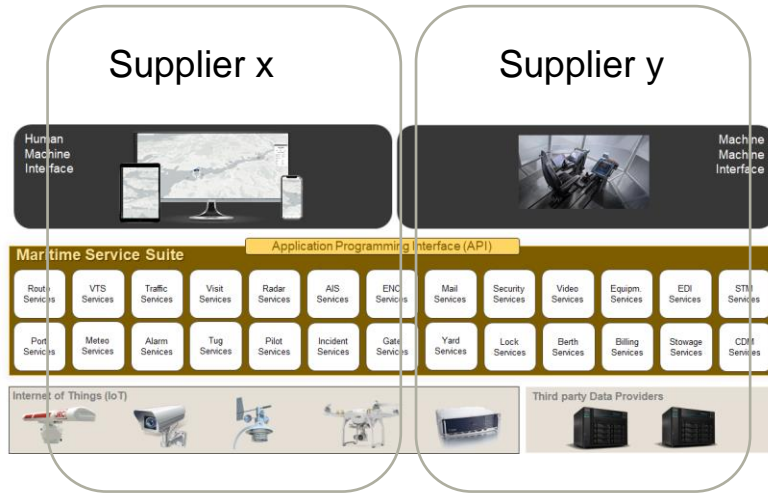
Business Models

- Gradual shift of business models
 - Forecasted growth services
 - Declining demand systems
- More flexibility
 - Functionality
 - Business models
- More customer value
- Continuous improvements
- Less vendor lock-in, open solution
- Lower cost, OPEX driven

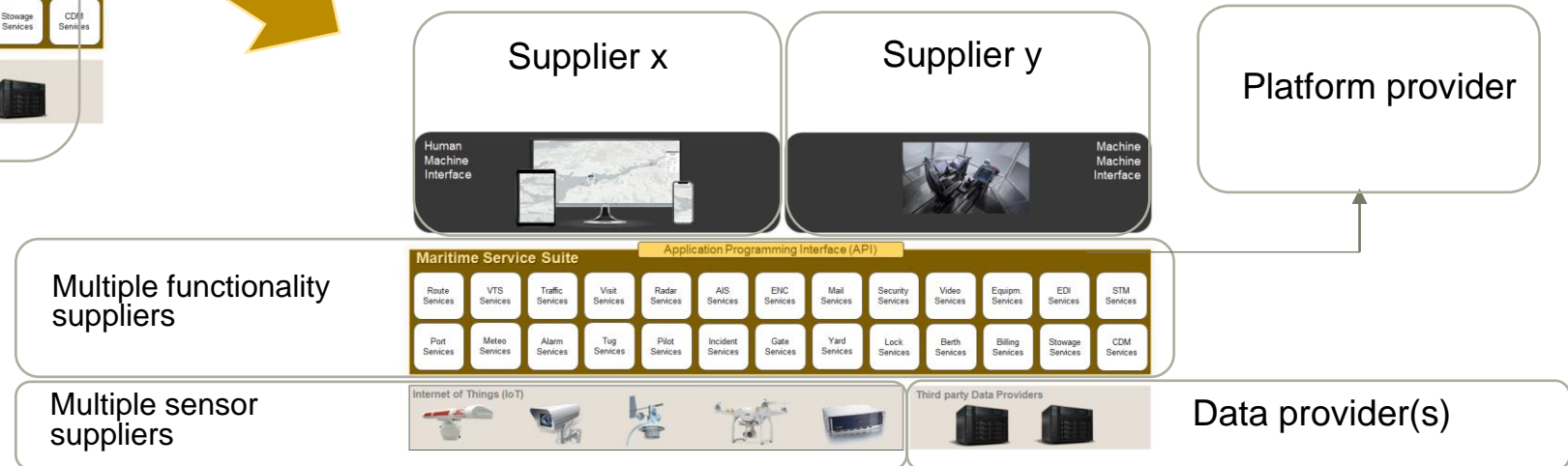


The role of turn key system provider

Now, used to be ...



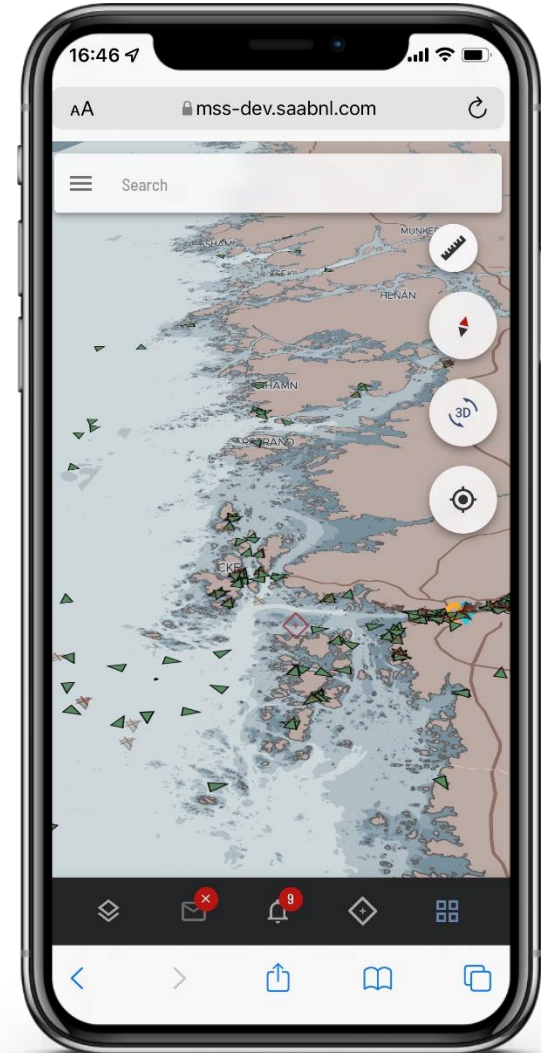
Customer can be supplier/provider as well



..... will gradually change to

What is MSS?

- A Suite of Maritime micro services,
 - Autonomous business services
 - Cloud natively developed
- Services are available as
 - API (Machine to Machine)
 - Web front-end (Machine – Human)
- Services offer maximum flexibility
- Gradually replaces current product lines
- Technology can be applied to on premise solutions as well
- Services all business models



MSS services

Human
Machine
Interface



Machine
Machine
Interface



Maritime Service Suite

Application Programming Interface (API)

Route
Services

VTS
Services

Traffic
Services

Visit
Services

Radar
Services

AIS
Services

ENC
Services

Mail
Services

Security
Services

Video
Services

Equipm.
Services

EDI
Services

STM
Services

Port
Services

Meteo
Services

Alarm
Services

Tug
Services

Pilot
Services

Incident
Services

Gate
Services

Yard
Services

Lock
Services

Berth
Services

Billing
Services

Stowage
Services

CDM
Services

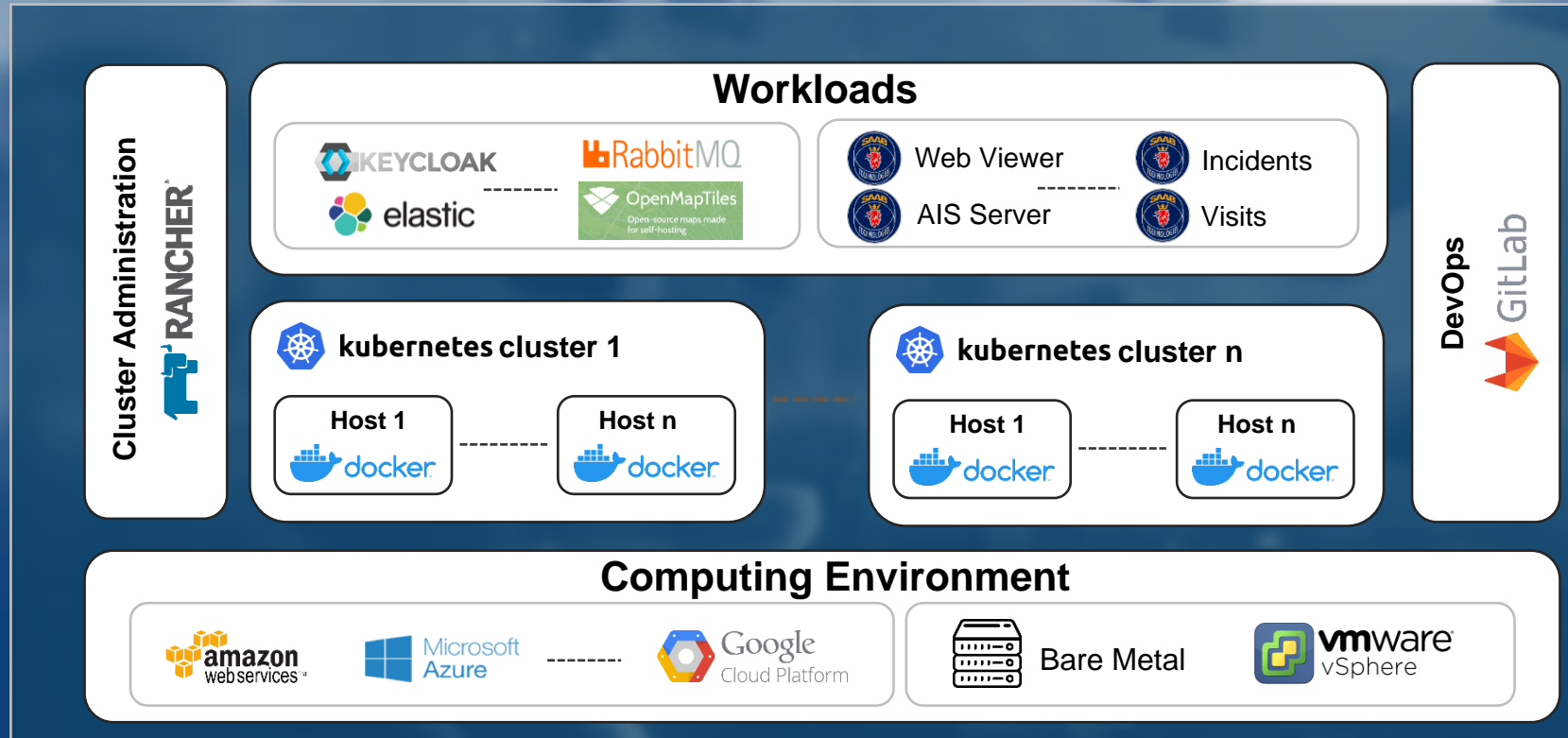
Internet of Things (IoT)



Third party Data Providers



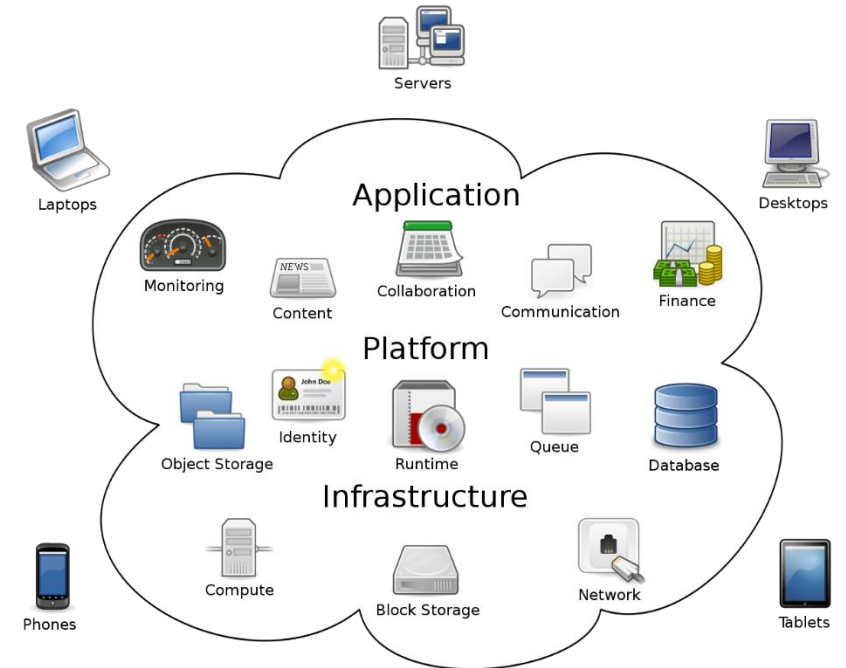
Cloud Native Architecture



Hardware Scaling, Host Scaling & Workload Scaling
Load Balancing & Resilience Management

Clouds

- Cloud computing is the on-demand availability of computer system resources
- Clouds can be on premise (Private)
- Clouds can be outsourced to cloud providers (Public)
- Cloud technology enables focus on services
- Clouds stream lines management and IT tasks
- Clouds promotes open architectures



(Picture from Wikipedia)

Security Importance

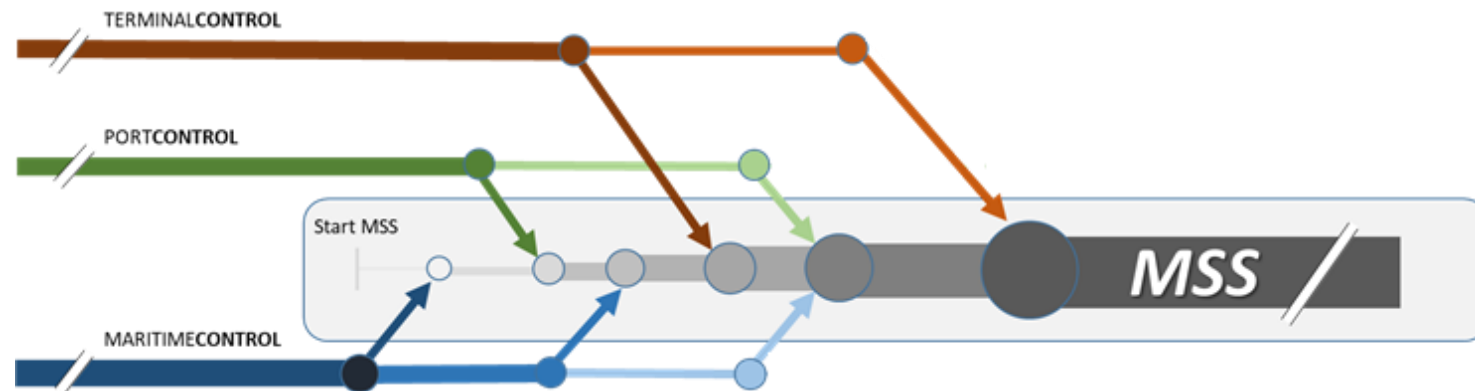
- All services and endpoints are encrypted using TLS/SSL and certificates.
- Container registry makes use of https.
- Certificates and credentials are stored into the kubernetes credential store, moved to vault later.
- Only access to cluster via Ingress-controller/LB.
- Container scanning on vulnerabilities.
- CIS benchmark will be executed on the kubernetes infrastructure
- Comply with "Kubernetes Hardening Guidance" S/N U/OO/168286-21 issued by CISA (Cybersecurity and Infrastructure Security Agency) and NSA (National Security Agency)



Product Consolidation

The Maritime Service Suite is a suite of microservices which will replace the three current product lines in Saab Maritime Traffic Management, i.e.

- MaritimeControl/V3000 for VTS and Coastal Surveillance
- PortControl for Port Management
- TerminalControl for Terminal Management



Transition period

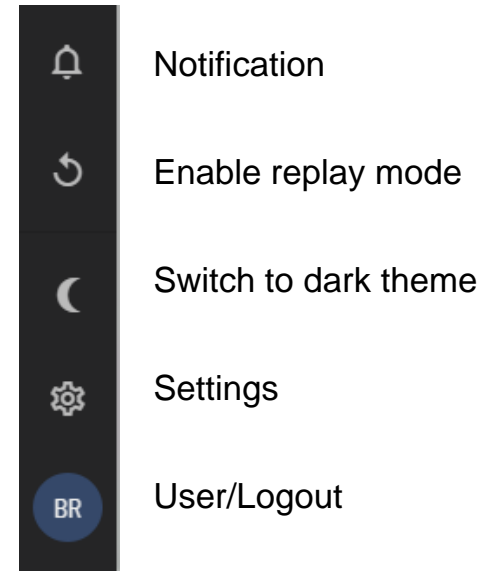
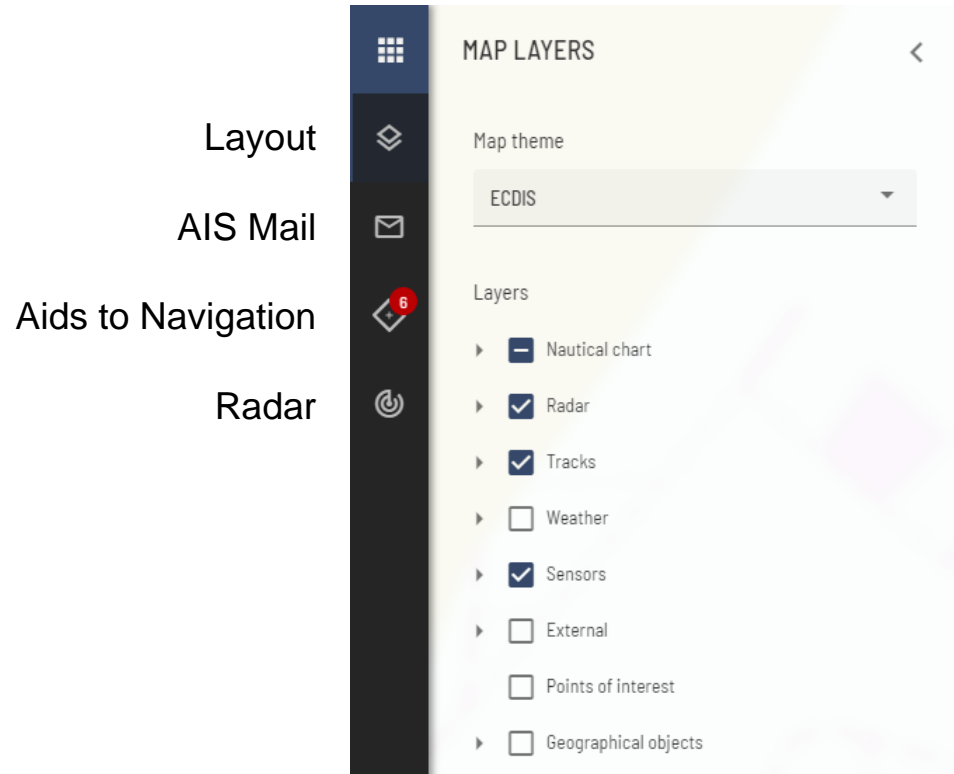
- Different approach for our existing and new customers required (only customers in Asia shown).
- Examples of existing customers:
 - Hong Kong Marine Department
 - Shanghai MSA
 - Ningbo-Zhoushan MSA
 - Fujian MSA
 - Jebel Ali
 - Port of Rotterdam
 - Port of Amsterdam
- Discuss/execute transition plans in coming years



MSS Software Features Look & Feel

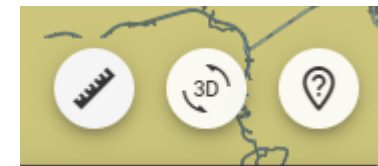


Menu on MSS



Range

Position information of cursor

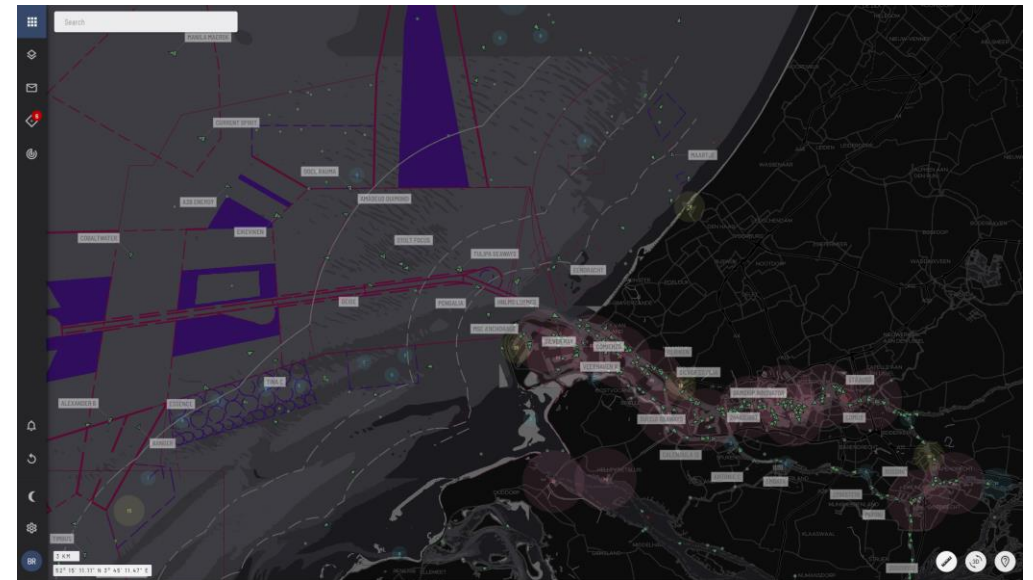


Draw distance bearing line

3D View

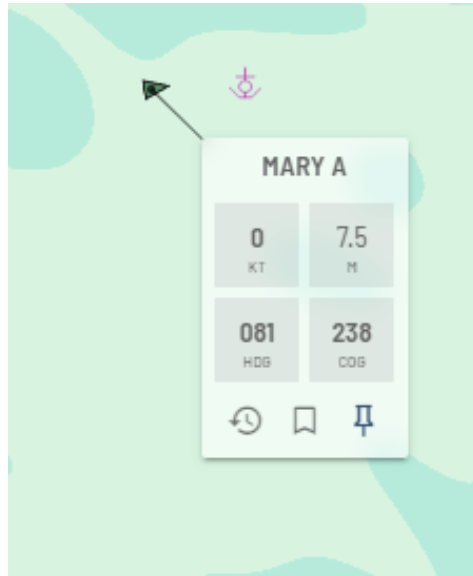
Map inspection tool

Map theme

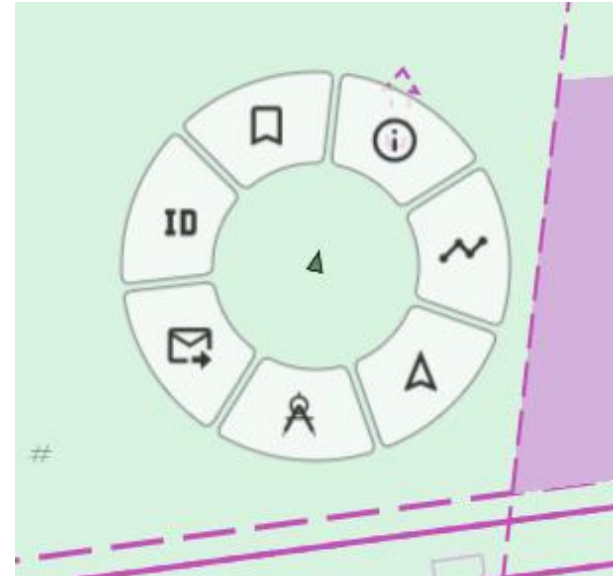


- ECDIS
- Light
- Dark

Menu for the tracks



- Ship Name
- Speed
- Draught
- Heading
- Course
- Historic Route
- Bookmark Track
- Pin the Label



- Identification
- AIS Mail
- Tools
- Follow Track
- Routes
- Show properties
- Bookmark the track

2D/3D View

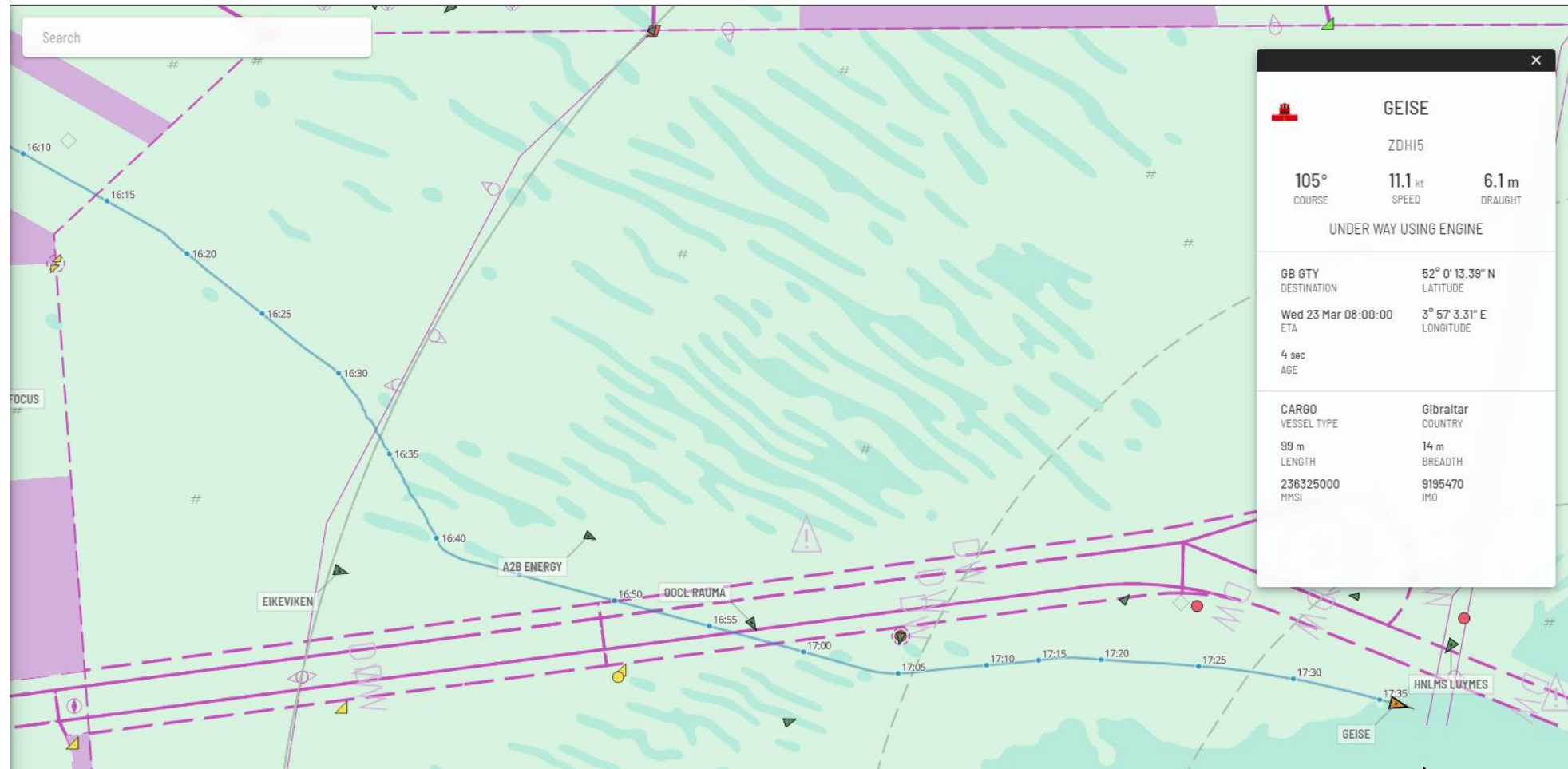


2D View

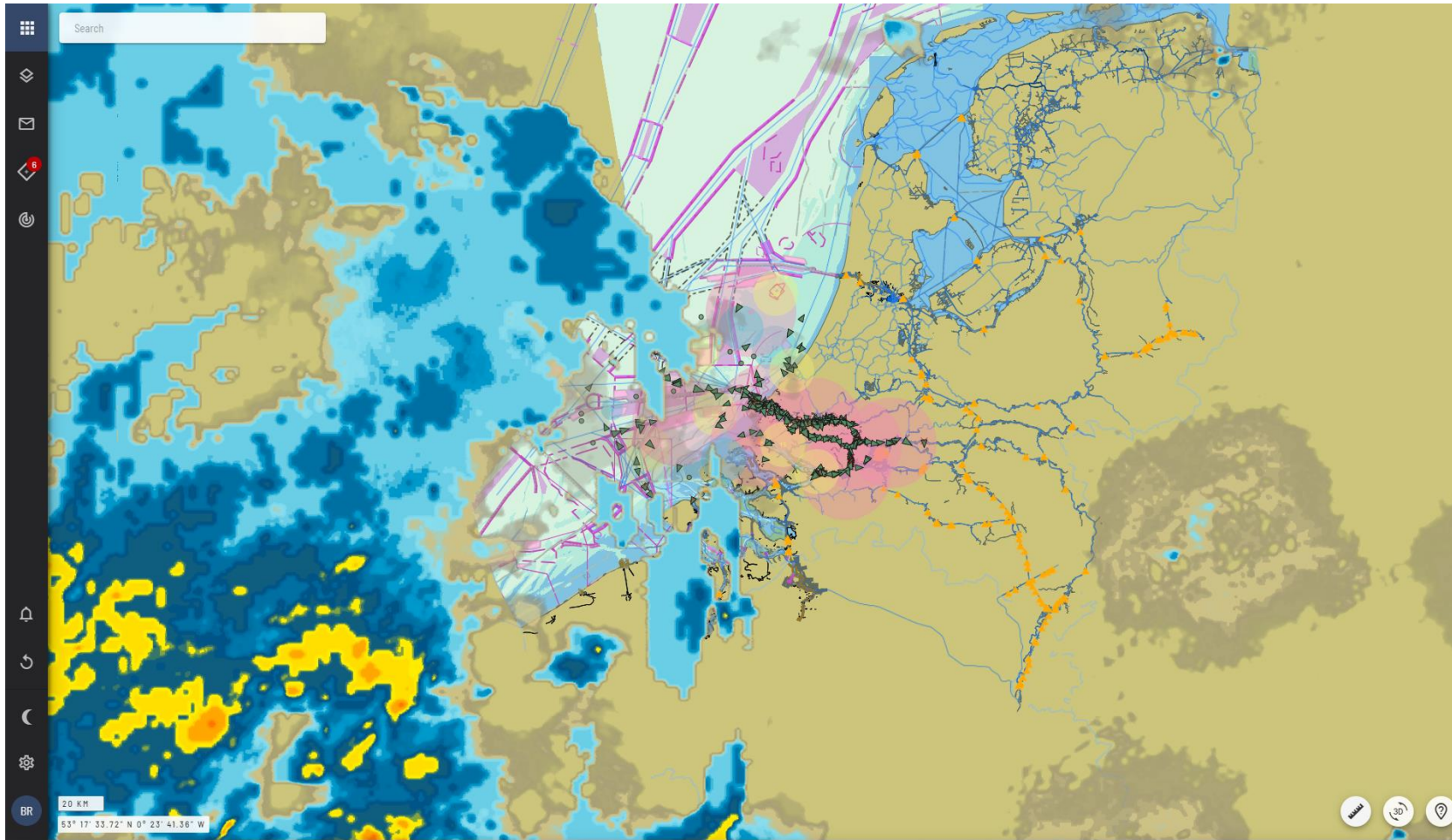
3D View



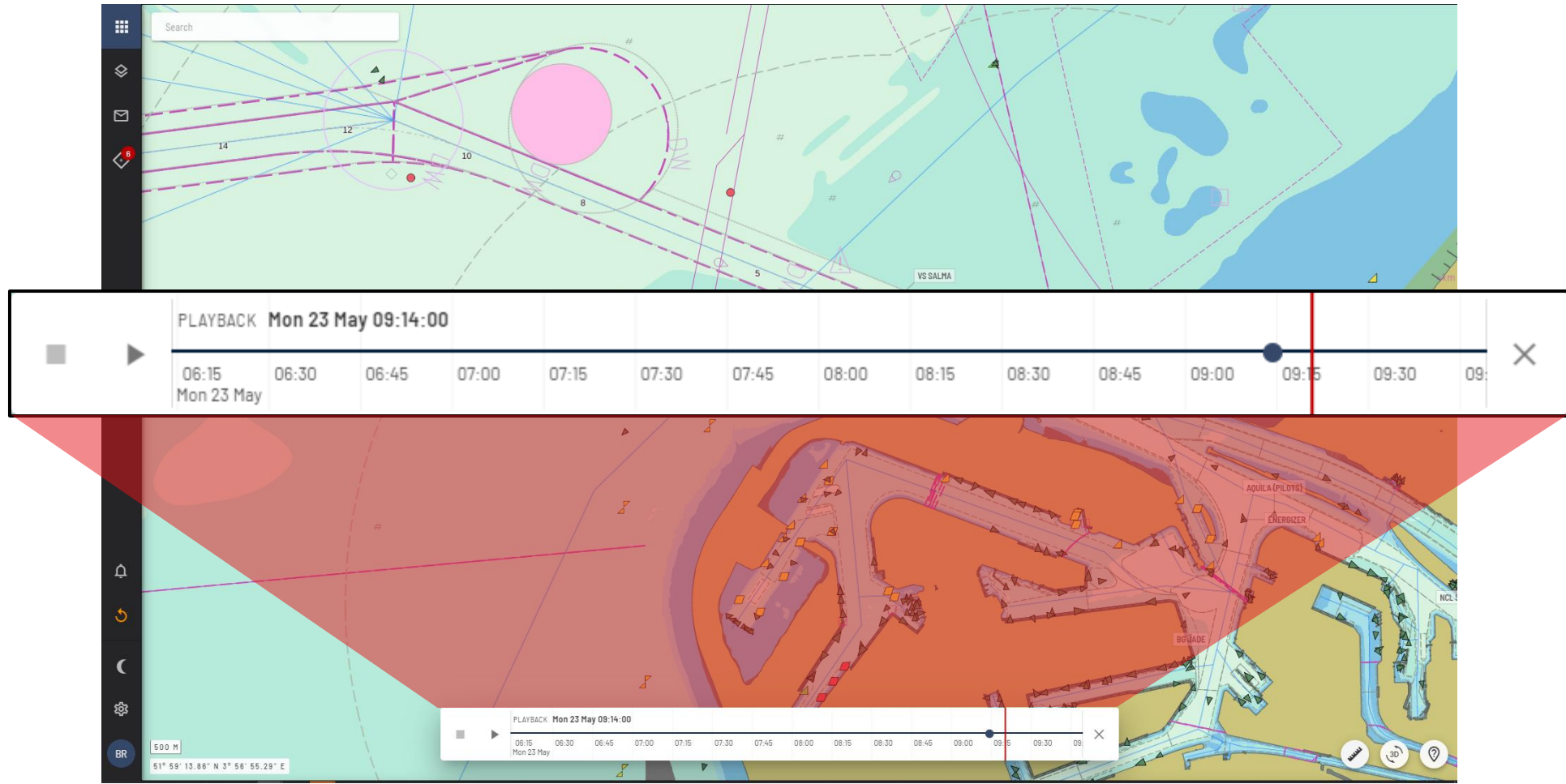
Show properties & Historic Route



Weather



Replay



Demo MSS



Thank you

