




## Teknologiske løsninger fra Fosen for nasjonal beredskap

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# Know more about us

-  Established in 2005
-  Brattørkaia, Trondheim and Vanvikan, Fosen
-  88 Employees
-  As of 2023, MR has delivered more than 150 autonomous systems.
-  Main markets are mapping/surveying, environmental monitoring, scientific and defence/security.
-  Export share: 80-90%







# Uncrewed Systems

## OCEAN SPACE ROBOTICS (USV/UAV)



## MARITIME AUTONOMY (Autonomous Navigation System)



COST-EFFECTIVE AND RISK-REDUCING MARITIME DATA ACQUISITION



# Our Uncrewed Surface Vessels (USV)

## Sheltered waters

The Otter  
(2m)



The Otter X  
(4.5m)

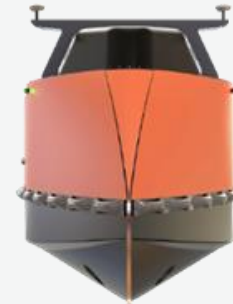


## Offshore/open waters

The Mariner  
(6m)



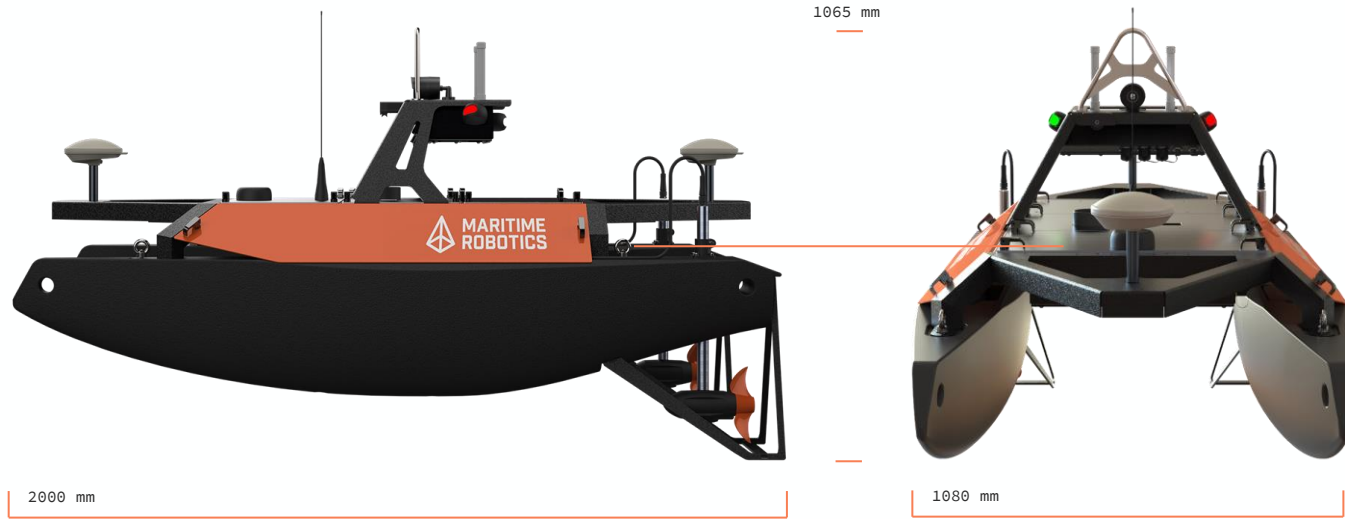
The Mariner X  
(9m)





# The Otter

The turn-key solution for cost-effective and precise mapping, surveying and monitoring of sheltered and enclosed waters.



## PRIMARY SPECIFICATIONS

Dry weight	Top speed*	Endurance*	Payload capacity*	Communication links	Situational awareness
<b>62 kg</b>	<b>6 kts</b>	<b>20 h</b>	<b>30 kg</b>	<b>5GHz MIMO radio / Wifi / 4G</b>	<b>Camera / AIS Class B</b>

\*Depending on conditions and payload integrations.

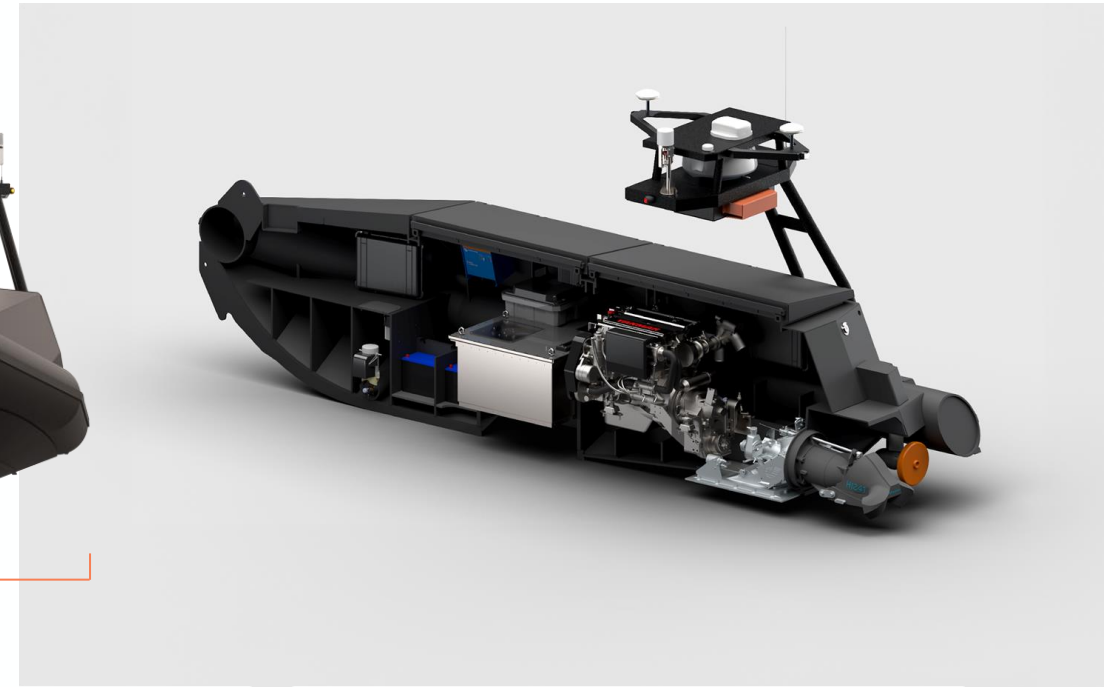
## OPTIONAL

Additional communication links	Data capturing software	Enhanced situational awareness
<b>MBR / VHF</b>	<b>SeaCapture</b>	<b>SeaSight</b>



# The Mariner

The multi-purpose platform built on years of industry experience and designed to excel in environmental monitoring, maritime surveillance, and high-quality data acquisition in both shallow and deep waters.



## PRIMARY SPECIFICATIONS

Dry weight  
**2000 kg**

Top speed\*  
**25 kts**

Fuel capacity\*  
**20 h**

Payload capacity\*  
**30 kg**

High-bandwidth communication  
**LTE (4G)**

Situational awareness  
**Camera / AIS Class B / Radar**

\*Depending on conditions and payload integrations.

## OPTIONAL

Additional communication links  
**MBR / Starlink**

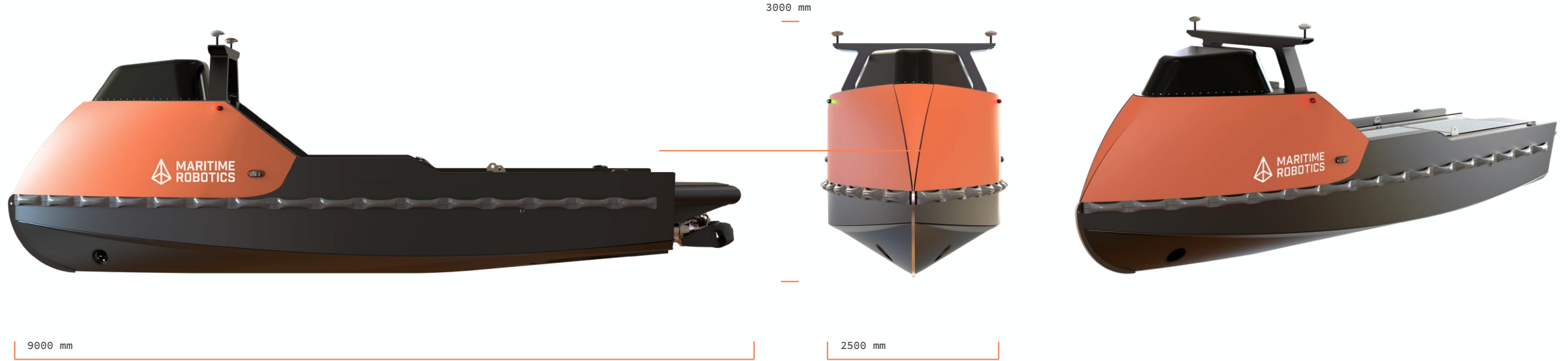
Data capturing software  
**SeaCapture**

Enhanced situational awareness  
**SeaSight / AIS Class A / VHF**



# The Mariner X

The highly customizable payload platform built for offshore and coastal applications.



## PRIMARY SPECIFICATIONS

Dry weight  
**5000 kg**

Top speed\*  
**12 kts**

Fuel capacity\*  
**25 days**

Payload capacity\*  
**1200 kg**

High-bandwidth communication  
**LTE (4G)**

Situational awareness  
**Camera / AIS Class B / Radar**

\*Depending on conditions and payload integrations.

## OPTIONAL

Additional communication links  
**MBR / Starlink**

Data capturing software  
**SeaCapture**

Enhanced situational awareness  
**SeaSight / AIS Class A / VHF**



# USV conversion system



**CONVERSION  
SYSTEM**



USV Conversion System consists of an  
mediate **Communications System** and a  
enabling Unmanned Surface operations



# Sjøbjørn USV

Norwegian Navy 100 + of these vessels

Can easily be converted to USV

More than 30 knots

More than 500 kg payload

More than 500 nm with extra fuel tanks









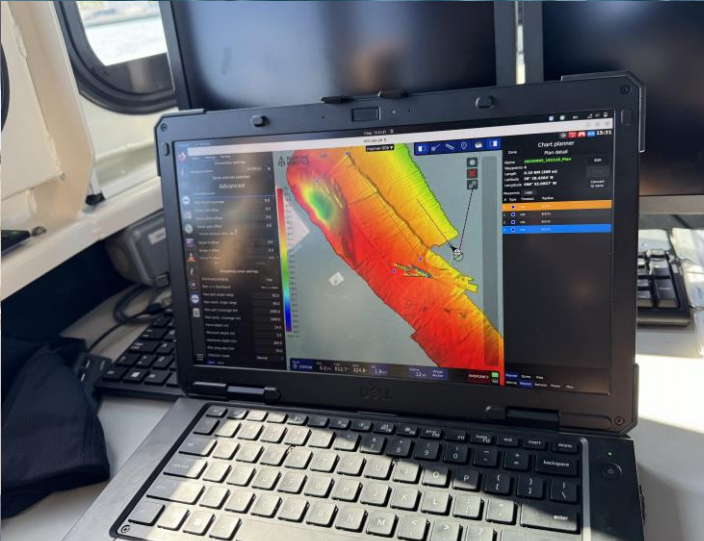




# REPMUS











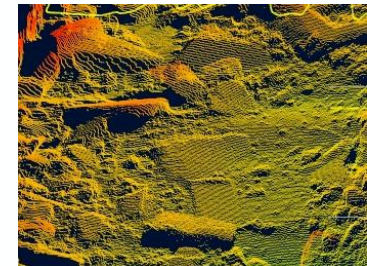
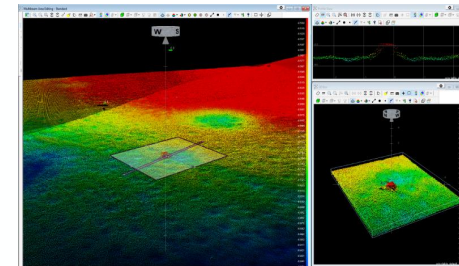
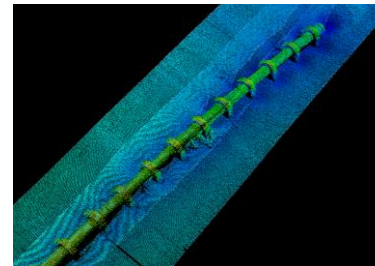
# Compact near shore drones with sonar equipment, software and training. Inclusive "GPS denied navigation"



OTTER USV

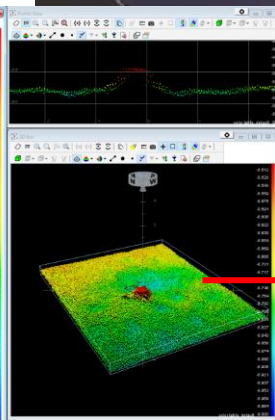
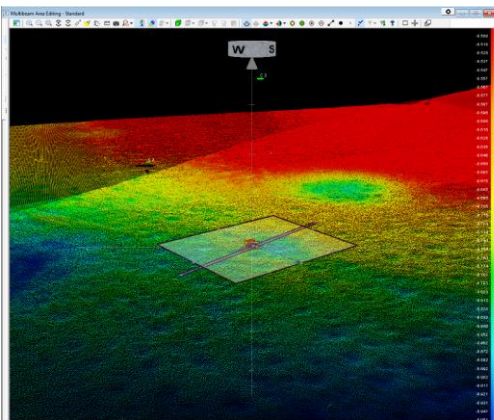
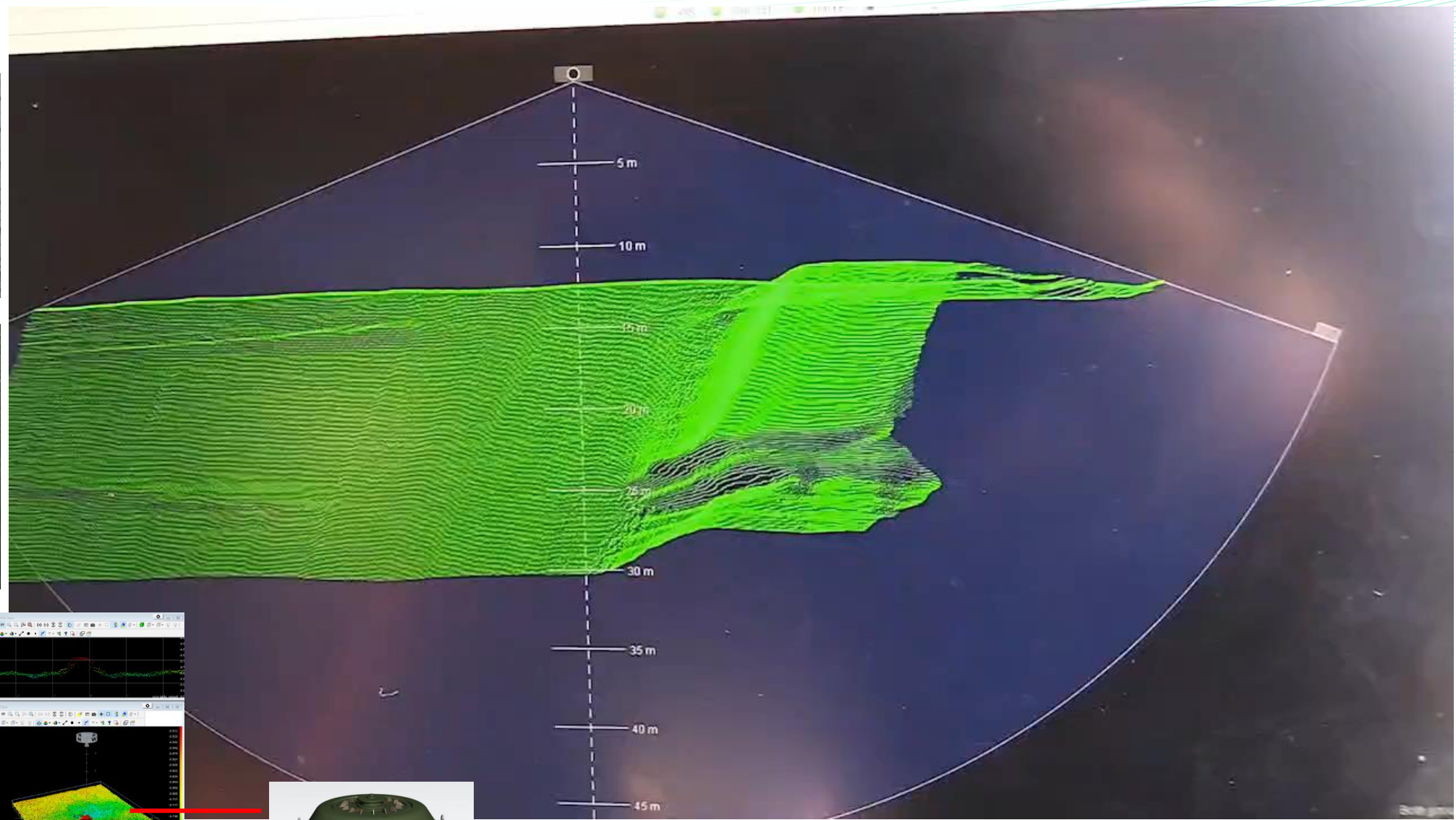


SeaBat T51 sonar



Data recovered from the USV

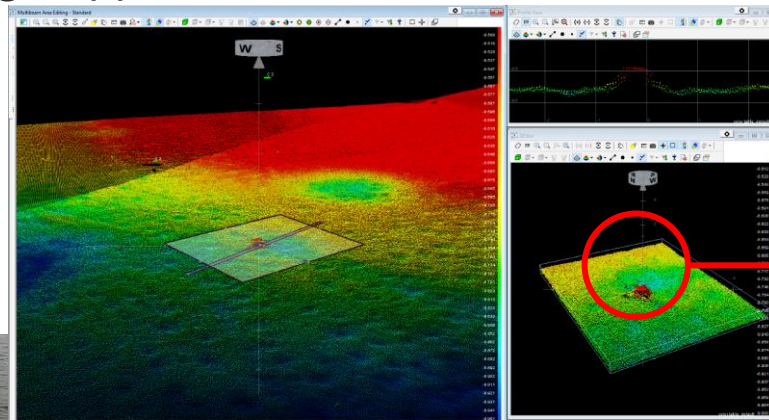




- ▼ Ukraine request for donation (KOV-16615): 6x Mariner USV with sonar, ISR and GPS denied navigation
- ▼ USVs for the Black Sea, survey for mines and other threats, update sea maps, clear sea routes

### Bigger (6m) and more robust USV

- Capable of blue water operation
- Modular design, easy to maintain
- C2 Software system for planning and operation
- Training, support and documentation



### Sensor Systems

- SeaBat T51, SeaBat F50 Imaging sonar for search and detection
- Camera EO/IR system
- "GPS Denied" Navigation system
- Advanced Compute Unit, target detection/tracking (export version)
- Training, support and documentation



Western Manta mine



MDM-2 legacy mine (Russian)



SeaBat T51 sonar



SeaFLIR 240

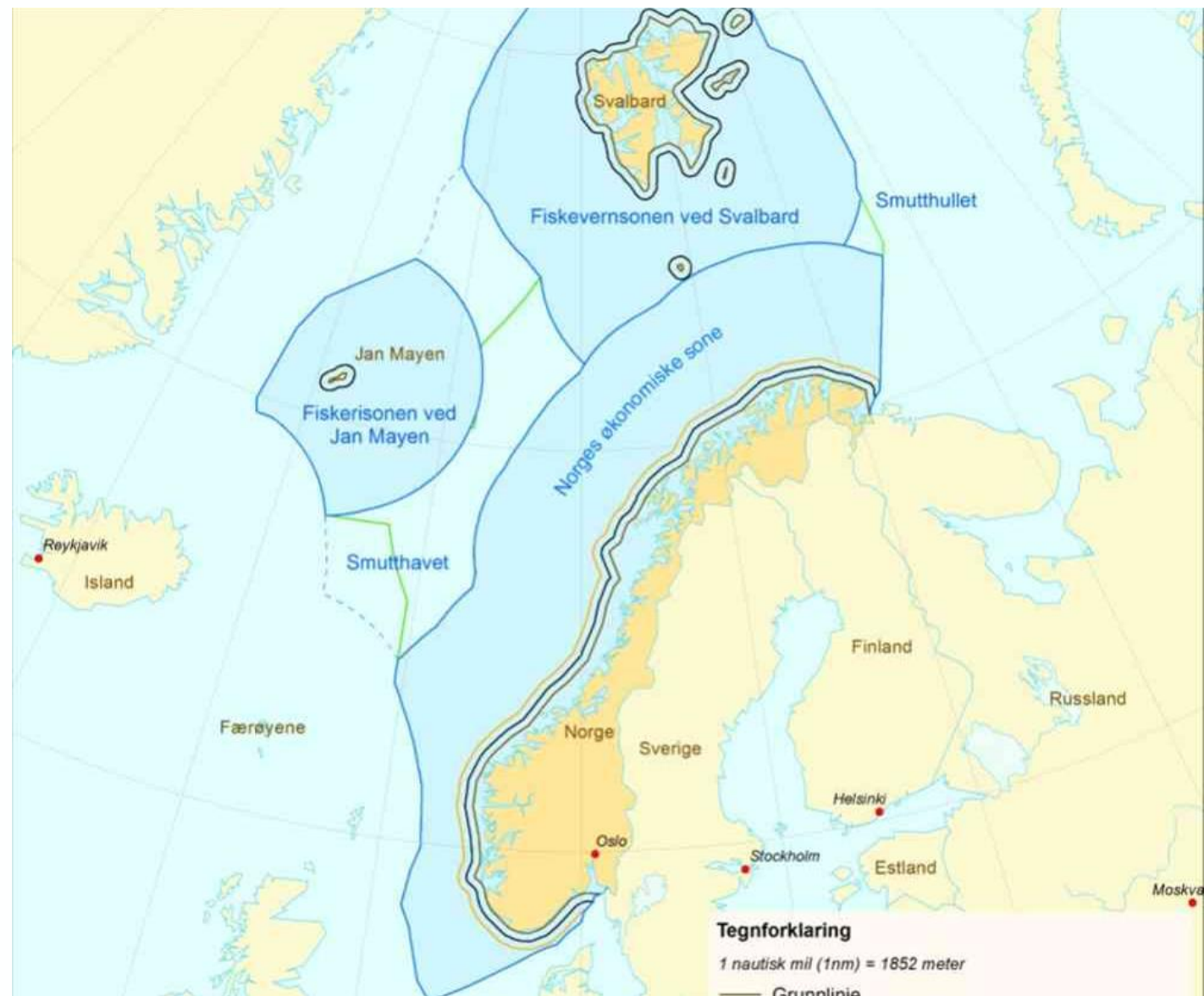


SeaBat F50 Imaging sonar



# Norges arealer

- 323 781 km<sup>2</sup> Norges samlet areal (land)
- 89 091 km<sup>2</sup> Indre farvann
- 56 367 km<sup>2</sup> Sjøteritorium
- 787 640 km<sup>2</sup> Norges økonomiske sone



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# Norges arealer

- Hva gir best sensordekning og tilstedeværelse?
- 9000km med kritisk undervannsinfrastruktur
  - 1700 timer/70 dager i 3 knop
  - 10 USVer - kartlegging hver uke
- Kostnader?
  - 3 nye kystvaktfartøy v.s. 50-100 USVer
  - Driftskostnader
- Utslipp?
- Optimalisere hastighet og minimere utslipp
- Hva vil være mest avskrekkende?





Ekstra +

Rapport:

# Forsvaret har mye å lære av ukrainske operasjoner i Svartehavet

# Dagens artikkel i TU

## Kortversjonen

- FFI-forsker Anders Løvik mener lærepunkter fra Ukraina-krigen, som bruk av autonome systemer og miner, kan overføres til Sjøforsvaret for bedre beskyttelse.
- Autonome ubemannede systemer, inkludert undervannsfarkoster, er viktige for fremtidig maritim forsvarsstrategi, men krever kompetanse og investeringer i teknologi.
- Løvik argumenterer for å kombinere store plattformer med autonome systemer for økt overlevelse og oppfordrer til kontinuerlige oppdateringer av fregatter for å møte fremtidens trusler.

**TU** Ledige stillinger Nyhetsbrev Nyhetsstudio Video [Abonner](#) [Innlogget](#)

**E24: 40.000 liter blodvann rett i sjøen** • 08:10

**Ny EU-kommissær vil kutte mer olje og gass** • 06:30

**Spotify mer verdt enn Equinor** • 04:30

**Regjeringen foreslår klima som bryter med Parisavtal** • I går, 20:22

**Rapport: Forsvaret har mye å lære av ukrainske operasjoner i Svartehavet**



 **MARITIME  
ROBOTICS**







**MARITIME  
ROBOTICS**

Enabling ocean  
space autonomy

**Thank you** for sailing  
this path with us!