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# NAVAL SYSTEMS



For more than 200 years, KONGSBERG has been an industry leader developing world class products, always adapting in order to shape the future. Based on our proud history and centuries of innovation, KONGSBERG has delivered strategic competence and products to our partners in the Naval domain, worldwide, since the 1960s. Our core competences are System Integration, Combat Management Systems, Navigation and Sonar Processing for both surface ships and submarines. Being an independent System Integrator, KONGSBERG has integrated more 3rd party equipment than most, and uses well proven methods to ensure low risk and low cost integration of user preferred equipment.

KONGSBERG works closely with the Royal Norwegian Navy (RNoN) and the Norwegian Defence Research Establishment (NDRE) to embrace user experience and cutting edge technology in our products.

Preparing for the future, KONGSBERG has taken a key role in the design and use of autonomous ships and operations both for commercial and military customers.

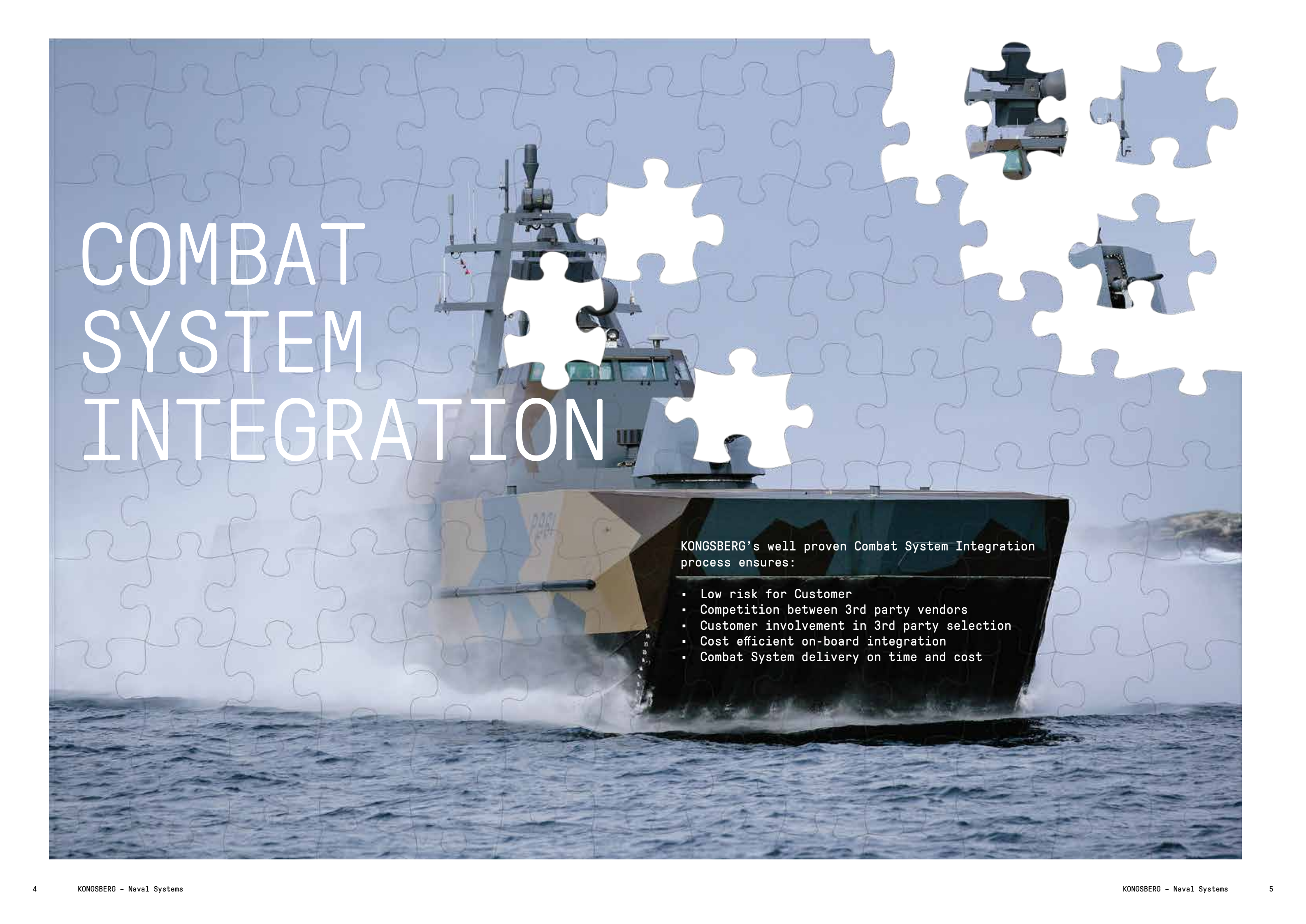
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Photo: Elias Engevik/Forsvaret



# COMBAT SYSTEM INTEGRATION

KONGSBERG's well proven Combat System Integration process ensures:

- Low risk for Customer
- Competition between 3rd party vendors
- Customer involvement in 3rd party selection
- Cost efficient on-board integration
- Combat System delivery on time and cost

# SUBMARINES

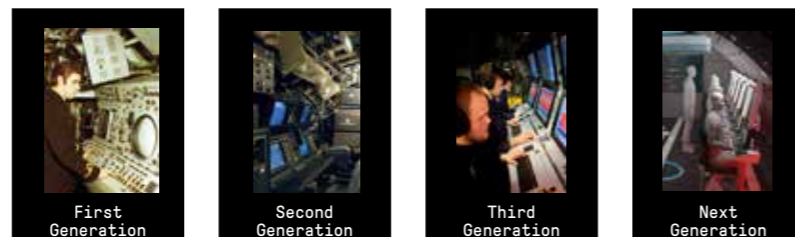
KONGSBERG is a leading provider of mission critical systems for the conventional submarine fleet worldwide. Our suite of systems consists of Combat System Integration (CSI), Combat Management System (CMS), Combat Navigation System (CNS) and Sonar Processing Systems.



## Combat Management System

KONGSBERG has developed and delivered Combat Management Systems (CMS) to submarines for the Royal Norwegian Navy and international customers since the 1970's. Together with our customers and partners, KONGSBERG is currently working on the next (4th) generation of Combat Management Systems for the fleet of diesel electric submarines.

During all these years, integrating user-selected sensors, sub-systems and weapons has been a key factor in order to deliver a reliable Combat System to our partners. KONGSBERG's concept for Combat System Integration (CSI) enables us to identify and mitigate risks long before the final assembly at the shipyard.

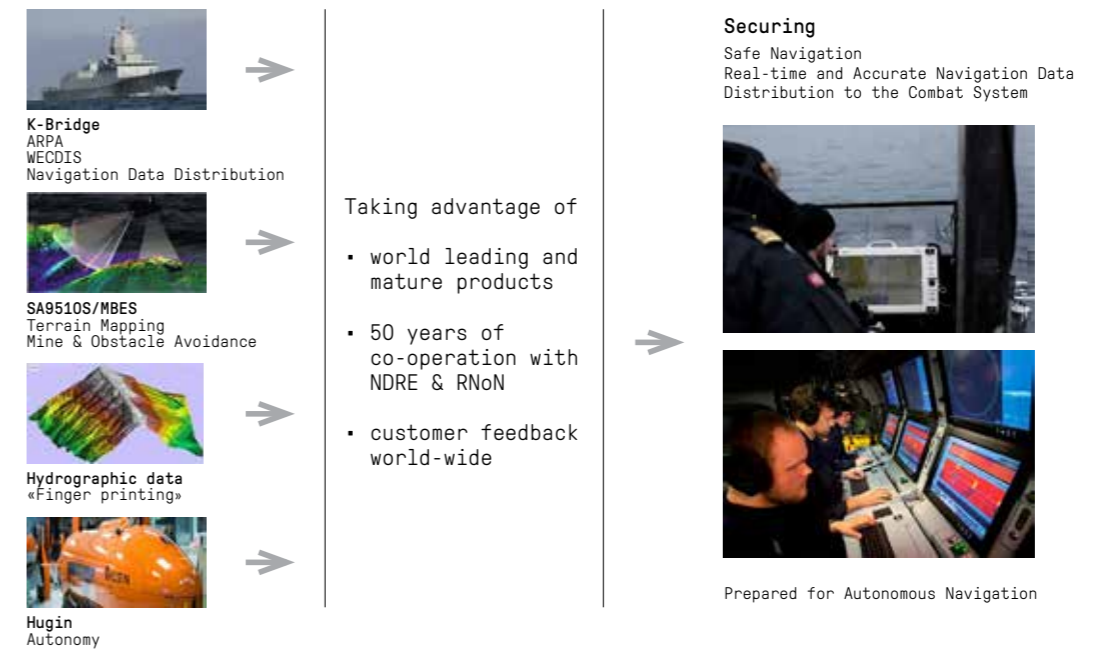


One Proven Philosophy - Four Generations of Combat Management Systems

## Combat Navigation System

The Combat Navigation System (CNS) is built on KONGSBERG's extensive experience from Merchant Marine and Navies worldwide. CNS is compliant to the international ARPA, ECDIS and WECDIS standards. It provides passive terrestrial navigation and Data Distribution for rapid and reliable distribution of accurate data to CMS and other sub-systems.

### Combat Navigation System



## Sonar Processing System

KONGSBERG Sonar Processing System (SPS) provides the best possible situational awareness of the surface environment and underwater threats. With open system standards and COTS architecture the system is well suited for future upgrades and maintenance.

SPS also controls active sonar transmissions for Bottom Mapping and Mine Avoidance Sonars. It can also be interfaced to any kind of passive sonar arrays:

On the chosen sonar array, SPS performs advanced parallel signal processing like:

- Conventional beamforming
- Adaptive beamforming
- Subspace beamforming (MUSIC based)

This advanced processing combined with world class tracking and Target Motion Analysis (TMA) capabilities results in detection at longer range and with higher confidence than with comparable systems.



# SURFACE SHIPS

Based on Norway's unique strategic position as a coastal nation, and in close cooperation with the Royal Norwegian Navy and the Norwegian Defence Research Establishment, KONGSBERG is delivering systems and solutions for surface ships in all types of challenging environments.

The core of our Combat Navigation System (CNS) and Combat Management System (CMS) are common for all classes of ships, ranging from submarines through Coast Guards and OPVs to Frigates.

The CMS manages all warfare areas; Anti Submarine Warfare (ASW), Anti Surface Warfare (ASuW) and Anti Air Warfare (AAW), including a well proven integration with AEGIS.

As an independent combat system integrator, KONGSBERG has over the last 5 decades integrated Sensor- and Weapon-systems from all major suppliers world-wide into our CMS.



Photo: Kongsberg Maritime



Photo: Elias Engevik/Forsvaret

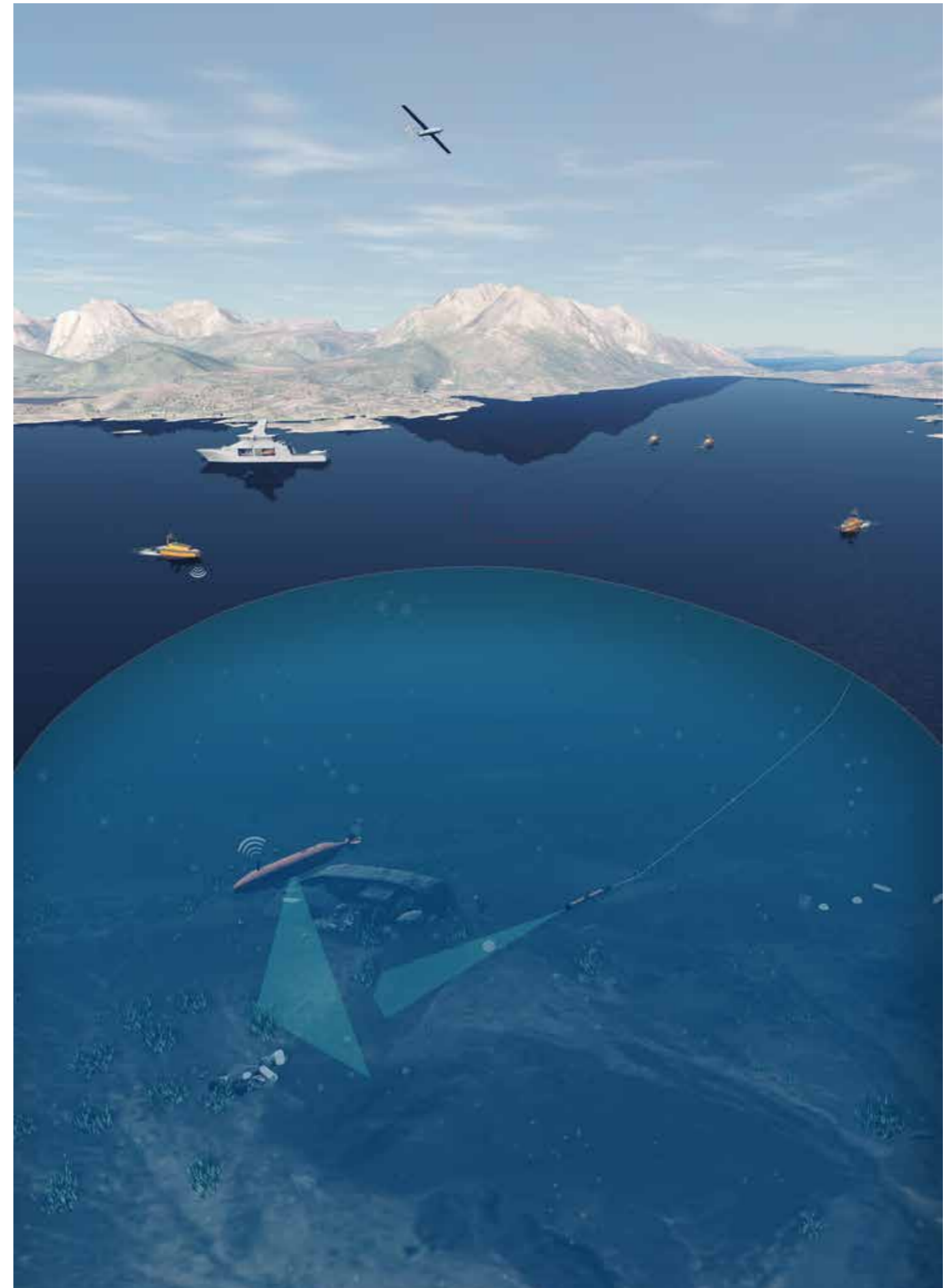
# MMCM

KONGSBERG has a long history in the Maritime Mine Counter Measure (MMCM) domain. Our product portfolio capacity and products are best visualized through the Royal Norwegian Navy Oksøy Class MCMV set of systems from the MCM C2 & mission planning systems, the HUGIN Autonomous Underwater Vehicle (AUV), the Minesniper Mine inspection and one-shot disposal system, all with on-board support systems such as Launch and Recovery Systems (LARS).

In Norway the on-going tri-party collaboration between the armed forces, the Norwegian Defence Research Establishment and Industry will develop a sovereign capability fully Autonomous Maritime MCM capacity providing safe stand-off distance to all vessels and personnel in the MMCM taskforce. KONGSBERG is the national industry lead for this effort.



Photo: Frederick A. Bakken/Forsvaret



# NAVAL TRAINING

The need for efficient and effective high-quality training of naval personnel will continue to increase over the next decade as operational requirements and equipment capabilities continually evolve. Simulator training in highly-realistic operational scenarios presents a shorter route to competency and force readiness. Trainers and scenarios can be specifically tailored to allow warfighters to prepare for every situation from important procedural training to challenging, high-stress, combat missions where learned reactions are critical to survival.

KONGSBERG's PROTEUS Simulation and Synthetic Environment is highly responsive to the demands of the operational requirements and can be customized to provide on-demand training ranging from dedicated, single-operator, part-task training, through team and sub-team training and up to large fleet and task force synthetic training in live, virtual, constructive federated environment.



# NAVAL CUSTOMER SUPPORT

Our Naval Customer Support organization supports navies in preparation for operations, in transit to operations and during operations.

#### What we do

- Maintenance, repair and overhaul (MRO) of delivered equipment and systems
- Upgrades of delivered systems (engineering) throughout the life cycle

#### How we do it

- Long term agreements secures resources and domain competence
- Factory based test stands available at our engineering facility for all delivered systems
- Service personel available 24/7 at site

#### Where we are

- Located at our main office in Kongsberg
- Site office located at naval base Haakonsværn and other required naval sites domestic and abroad



Photo: Elias Engevik/Forsvaret

# WORLDWIDE OPERATIONS

KONGSBERG is an international corporation with strong Norwegian roots. Collaboration with our customers, partners and suppliers, and a commitment to understand the context where our technology is applied, are important driving forces behind the corporation's international development and growth.

