

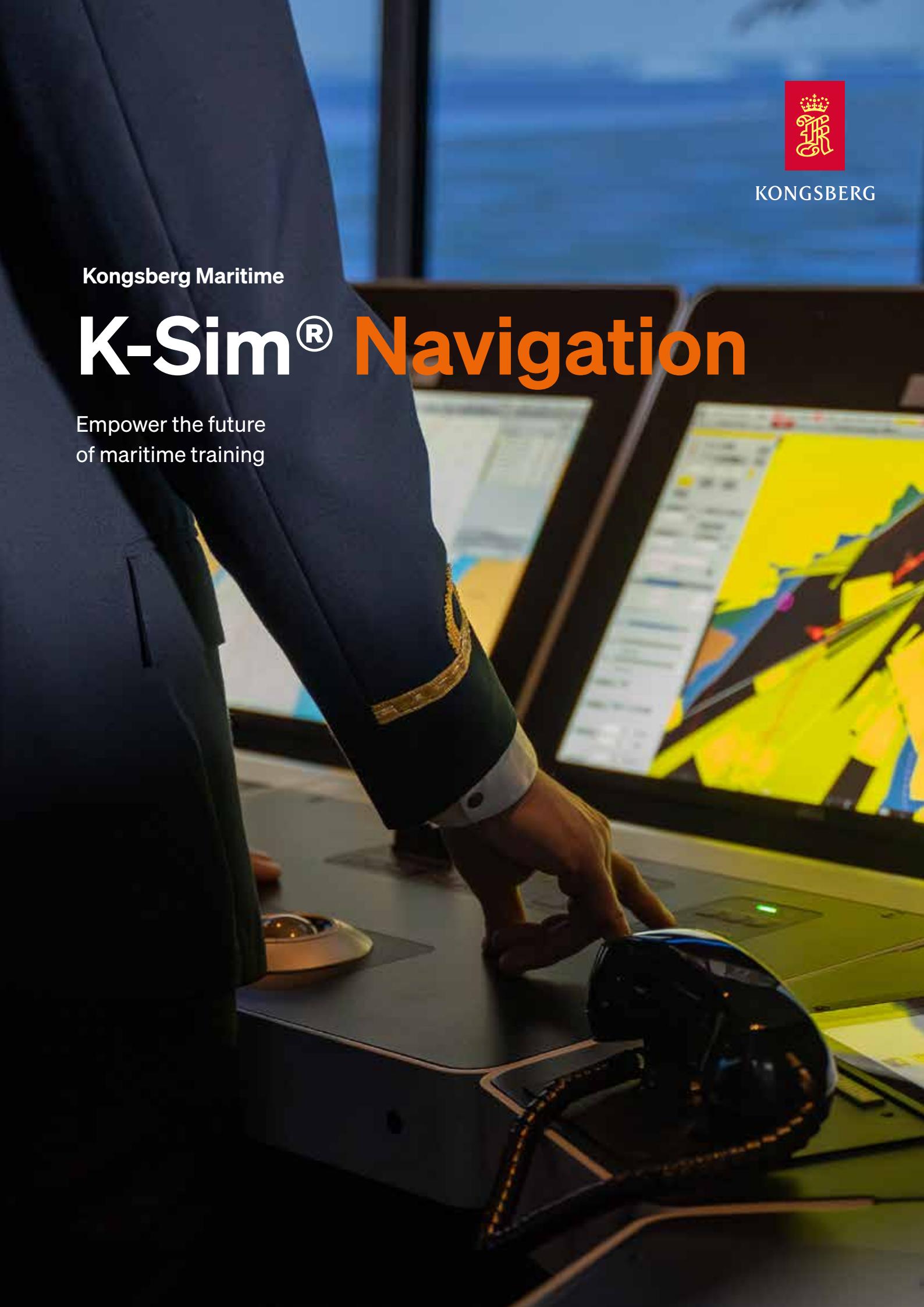


KONGSBERG

Kongsberg Maritime

# K-Sim® Navigation

Empower the future  
of maritime training



Maritime Simulation

# Kongsberg Maritime

## Shaping the maritime future

Kongsberg Maritime is a global leader in sustainable maritime innovation.

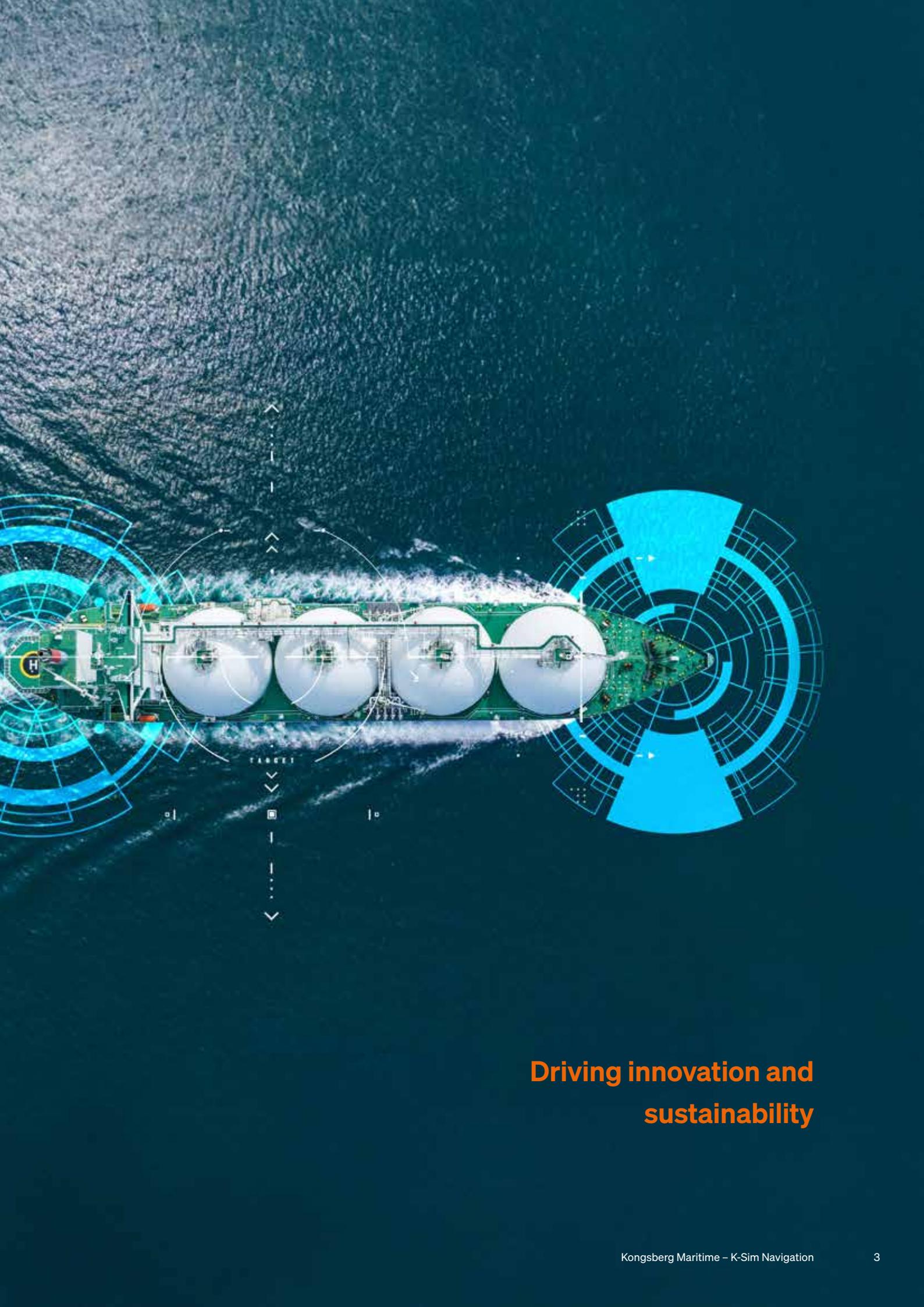
We deliver safe, efficient, and long-term performance across a wide range of ocean space markets - from passenger to cargo, from fishing to complex naval and offshore energy solutions.

With pioneering digital solutions and seamless integration, we help the maritime industry optimise operations, reduce emissions, and move toward a decarbonised future. Our commitment to technological advancements keep us at the forefront of ocean space expertise, driving progress and shaping a greener, more connected maritime world.

Our simulation technology is widely embraced by maritime research and training centers worldwide, serving as a foundational tool for training both students and crew members. Moreover, it supports advanced studies in critical domains such as human factors, fuel consumption, emission reduction, port development, operational verification, digital twins, and the pioneering field of autonomous shipping operations.

[www.kongsberg.com/maritime](http://www.kongsberg.com/maritime)





**Driving innovation and  
sustainability**



#### Enhancing Maritime Training with VR

K-Sim Navigation can be equipped with Virtual Reality (VR) binoculars and bridge wing view, offered as a fully-integrated headset solution.

## Empower the maritime future

With over 200 years of innovation and cutting-edge technologies supporting more than 30,000 vessels worldwide, we enable safer, smarter, and more sustainable maritime operations. Built on this legacy of expertise, we have developed K-Sim® Navigation - the next-generation ship's bridge simulator for high-quality and integrated training, advanced studies and decision support.

### K-Sim Navigation offers:

- **Real-Time Simulation** – Supports everything from mandatory STCW training to advanced team-based operations.
- **High-Impact Training** – Build critical skills, enhance safety, and improve operational performance
- **Intuitive Instructor Tools** – A user-friendly interface for delivering effective training at all levels.
- **Scalable & Future-Proof** – Easily upgraded with new modules, vessels, and integrated systems.
- **Operational Decision Support** – Ideal for pre-mission planning, feasibility studies, and R&D.
- **Human Factor Studies** - Used for studies of operator fatigue, situational awareness and communication

### Compliant with standards & regulations

K-Sim Navigation complies with the following international standards and regulations:

- the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW, regulation 1/12)
- DNV's standard DNVGL-ST-0033 for training
- IMCA Guidance on the Use of Simulators; C 014 Rev.2 K-Sim

With K-Sim Navigation, the next generation of seafarers gains the skills, confidence, and experience needed to drive safer, more efficient and sustainable vessel operations.

# World-class simulation technology

## Comprehensive and flexible solution

K-SimNavigation delivers unmatched realism and flexibility in training. Designed to build competence for even the most advanced operations, it features a wide range of ship models, seamless geographical sailing areas, realistic ship behaviour, equipment and design as onboard and a cutting-edge visual system -making it the most comprehensive bridge simulator available.

## Fully equipped for realistic training

A full mission K-Sim Navigation installation ensures hands-on, high-fidelity training. It can be customized to any vessel's bridge design such as cruise ships, tankers, tug- boats, offshore vessels and navy vessels, with additional controls and instrumentation that look, feel, and function like real onboard systems. To enhance realism and specialization, the bridge simulator can integrate systems like for example K-Pos Dynamic Positioning (DP) for certified DPO training.

## Realistic vessel behavior

Train with lifelike vessel motions of six degrees of freedom, dynamic loading, ballast control, and real-time interactions. Our physics engine ensures accurate simulation of mooring lines, winch loads, tug operations, and even 3D hull collisions making the training scenario as close to real life as possible.

## Customizable SMART objects

Instructors can tailor ship models with custom names, logos, loading states, and deck equipment. Add cranes, winches, or avatars for safety and communication drills, perfect for complex, scenario-based training.

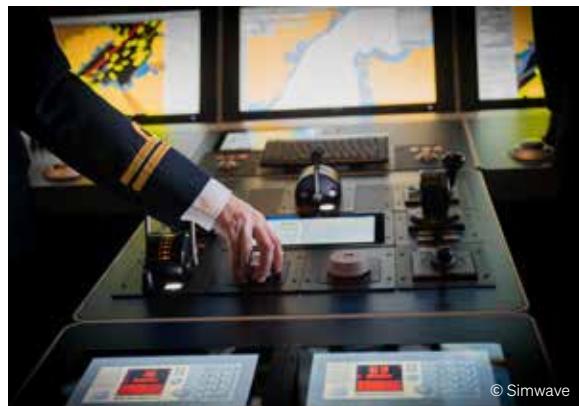
## Detailed and realistic training areas

K-Sim Navigation includes a seamless global sailing area for the simulated vessel, which includes radar, charts, depth, and buoy data. The Student Field Chart tool enables custom environments, supporting mission-specific training with the highest level of visual fidelity.

## Immersive visual experience

K-SimNavigation's advanced SeaView visual system delivers exceptional realism in detail, motion, and depth perception. The sea, vessels, environments, and any weather condition come vividly to life across a wide range of geographic sailing areas tailored to your training needs.

For an enhanced training experience, we can also offer a Virtual Reality (VR) headset with fully-integrated VR binoculars and bridge wing view.



# Optimise the learning experience

At Kongsberg Maritime, we're committed to making high-quality maritime training accessible. That's why K-Sim Navigation can be fit to any training objective and budget.

From compact, PC-based simulators to fully equipped forward bridge configurations on six-degrees-of-freedom motion platforms, our systems are designed to replicate any vessel and grow with your needs



## Cloud-based training anytime & anywhere

With our cloud-based K-Sim Connect platform as an add-on to any simulation configuration at the training institute, students can access areas of the K-Sim Navigation simulation remotely—anytime, anywhere—making it easier to enhance basic skills in specific topics, like route-planning and ECDIS.

## Comprehensive training possibilities

K-Sim® Navigation is purpose-built to develop best practices and build the competence required for even the most demanding maritime operations. It supports hands-on training across a wide range of scenarios and vessel types, helping crews master both routine tasks and emergency responses.

### Training Applications Include:

- Navigation and integrated bridge operations
- Ship handling and manoeuvring
- Bridge watchkeeping and communication (GMDSS)
- Vessel interaction and environmental conditions
- Squat and bank effect awareness
- Ice navigation and ice management
- Tug and tow operations
- Familiarization with onboard systems
- Dynamic Positioning (via K-Pos® DP integration)
- Emergency response and crisis management

## Powerful platform for Research & Development

Beyond training, K-Sim Navigation is a versatile tool for testing, validation, and innovation. It supports a wide range of R&D applications, including:

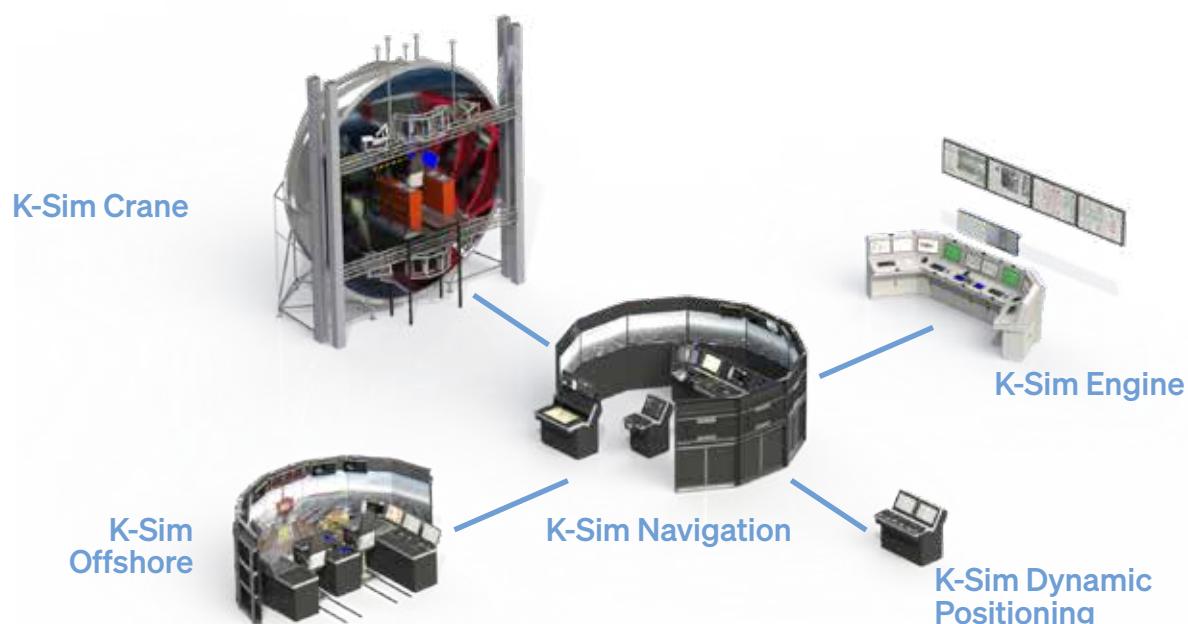
- Engineering studies and fast prototyping
- Concept and procedure testing
- Vessel behaviour and fuel efficiency analysis
- Crew competence and fatigue assessment
- Port, fairway, and infrastructure development
- Remote and autonomous vessel studies



## Integrated crew training possibilities

K-Sim Navigation supports a wide range of courses, including Bridge- and Crew Resource Management. Connected with other K-Sim simulators like Engine Room, Cargo Handling, DP, Offshore Crane, and others the system enables full interdepartmental team training supporting key human factor skills development, such as:

- Situational awareness
- Teamwork and communication
- Ship-to-shore coordination
- Leadership and decision-making
- Efficient communication



## An ocean of training possibilities

Experience limitless training scenarios with K-Sim Navigation. Featuring a diverse fleet of vessels, advanced navigation aids, realistic geographical areas, and fully dynamic environments with changing weather and time of day, it delivers unmatched realism and flexibility for maritime training.



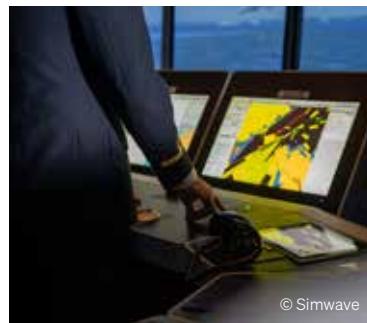


## Navigation

K-Sim Navigation facilitates navigation training at different times of day in various geographical areas, waters and weather conditions.

### Key Features and Training Capabilities:

- Safe navigational watch and situational awareness
- Use of electronic navigational aids for accurate position fixing
- Hands-on experience with bridge equipment and instrumentation to ensure safe navigation
- Dynamic weather modeling, incl. wind, wave, and tide polygons, for authentic scenario creation



## RADAR/ARPA

Both simulated and commercially available radar and ARPA displays can be integrated in K-Sim Navigation, replicating onboard functionality with the same precision and responsiveness. Our radar simulation accounts for key operator settings such as pulse length, tuning, and range selection, ensuring a realistic user experience. The system meets radar/ARPA performance standards, including:

- Transit power (T/X)
- Scan rate
- Pulse repetition frequency (PRF) and pulse length
- Beam width and noise
- Offsets and lobes and indirect echo



## ECDIS

K-Sim Navigation supports training in line with IMO Model Course 1.27 and STCW Code requirements ensuring navigational watch officers gain skills to operate Electronic Chart Display and Information Systems (ECDIS) safely and effectively. Training capabilities include:

- ECDIS system familiarization
- Safe navigation using all available ECDIS functions
- Understanding the capabilities and limitations of ECDIS
- Proficiency in interpretation and analysing ECDIS data
- Managing system procedures, files and operational settings



## Communication

To support realistic training between crew members, other vessels, VTS stations, and pilot boarding areas, K-Sim Navigation includes a full suite of communication systems:

- VHF and MF/HF radios with Digital Selective Calling (DSC)
- Narrow Band Direct Printing (NBDP) and Inmarsat for global coverage (GMDSS)
- Intra-ship systems including Intercom, PA, and UHF radios
- Flexible audio setups with handsets, stalk microphones, or headsets



## Bridge watchkeeping

The K-Sim Navigation is designed for watch keeping training for all bridge personnel. Operational equipment may include wing stations, binocular with bearing read-out as well, as well as a classic Pelorus.

All possible weather conditions are available: day/night with transition; fog and fog banks, local weather, rain, snow, hail, all including drift and local setting. A quadraphonic sound system enhances the realism.

## Ship handling & manouevring

The bridge can be equipped with all necessary instrumentation and controls to support maneuver training for various vessels in scenarios like:

- Free maneuvering
- Berthing and unberthing
- Mooring and unmooring
- Maneuvering using anchors
- Maneuvering using thrusters
- Maneuvering using tugs
- Maneuvering with mooring lines affixed to jetty, buoy, or platform
- Maneuvering with Dynamic Positioning (DP)



## Towing and tugging

K-Sim Navigation can be configured to support vessel towing, and the training scenario can include one or multiple towing vessels. It facilitates both individual competency training, but also CRM training involving e.g. vessel- and tow master, winch- and crane operator, and other crew. This allows crew to conduct:

- Cost-efficient mission planning
- Risk-analysis
- Procedural and mission rehearsal
- Emergency response and preparedness



## Pilotage

Realistic pilot training for guiding vessels safely into or out of ports, or whenever navigation may be considered hazardous due to bad weather, challenging fairway conditions.

Typical training scenarios are:

- Pilotage and ship handling
- Bridge management
- Effective communication with the crew on shore and at tugs or other vessels in the area
- Port control
- Boarding & boarding emergencies



## Ice navigation

New STCW Polar Code requirements have increased the need for skills in ice navigation. The simulator can include objects, vessels and relevant geographical exercise areas with different types of ice and weather conditions to accommodate realistic ice navigational training, such as:

- Ship handling and navigation in various ice conditions
- Close proximity maneuvering and interaction between vessels
- Towing of icebergs



## Patrol and surveillance

The simulator is well suited for coastal surveillance, patrol- and boarder protection training. Surface vessels and airborne objects along with hostile targets can be used to prepare realistic training scenarios.

The system enables training such as:

- Formation keeping with multiple vessels
- Severe weather conditions
- Communication and reporting
- Multiple instructors for increased stress and object handling
- Dual season database

## High speed and RHIB

Configured as a high speed vessel or a RHIB cockpit, all sorts of RHIB operations including missions like law enforcement, emergency, search and rescue and anti-piracy training can be carried out. Examples of training options:

- Launching and recovery of the RHIB from a deck or port
- RHIB handling and maneuvering
- Mission planning and safety procedures
- Multi-vessel operations including anti-piracy and interdiction
- Emergency, search and rescue
- Station keeping and close proximity
- Communication between davit operator and RHIB

## Inland waterways

Training for ship handling in rivers and channels demands high simulation performance due to the demand for accuracy in drift, current, bank effects, ship-to-ship interaction. Advanced 3D-hull hydrodynamic vessel models, ensures realistic vessel behaviour in the various conditions. This makes the simulator ideal for reconstruction of incidents, in addition to training scenarios such as:

- Navigation and ship handling
- Vessel to vessel and vessel-to-bank interaction
- Squat and shallow water effects
- Communication procedures



## Dynamic Positioning (DP)

Integrated with K-Pos DP system, it is possible to conduct DP operator training according to DNV and Nautical Institute (NI) training and certification standards.

Typical DP training scenarios are:

- DP instrument/panel familiarization
- Maneuvering according to current, wind and waves
- Automatic station keeping
- Independent joystick control
- Failures on DP and DP reference systems
- Thruster performance/monitoring



## Vessel Traffic Services (VTS)

By including Kongsberg Norcontrol's VTS system, it is possible to conduct VTS operator training to improve safety and efficiency of vessel traffic and to protect the environment.

Typical training scenarios are:

- Procedures: IALA model courses; V-103/1 and V-103-2
- Cooperation between the ship and the shore
- Navigational decision making
- Management of traffic within a port or waterway
- Communication procedures



## Search And Rescue (SAR)

K-Sim Navigation facilitates realistic Search And Rescue (SAR) operations including launch and recovery of helicopters from support vessels.

A full range of targets such as damaged vessels, aircrafts, oil spill, life buoys and life rafts, man overboard, buoyant smoke and various other objects can be delivered to conduct SAR training scenarios with maximum realism.



## Bridge Resource Management (BRM)

K-Sim Navigation is the perfect tool for BRM training with focus on casualty prevention and human errors to reduce risk at sea. Officers can be trained in handling escalating situations, improve teamwork, leadership, communication, decision-making and resource management.

Typical training scenarios include:

- Decision making
- Situational awareness and human errors
- Effective communication
- Planning & prioritization
- Leadership and team work
- Cultural awareness
- Stress and workload management

## Crisis management

K-Sim Navigation is excellent to prepare crew and emergency management personnel for unexpected events. The system provides action planning and training for crises where decision making, quick response, interaction and communication are critical.

K-Sim Navigation features a wealth of emergency training scenarios, including multiple vessels and operations involving the launch and recovery of helicopters from support vessels. It provides a full range of modeled objects, such as damaged ships, oil slicks, icebergs, life rafts, man over board, smoke and flares.

## Naval training

K-Sim Navigation can be delivered with objects, vessels and exercise areas ideal for naval training, such as:

- Tactical maneuvers and combat tactics
- Navigation incl. ECDIS and celestial
- Mission planning
- Communication
- Replenishment at sea
- Formation sailing/convoy
- Anti-piracy and border protection
- Riverine interception
- Border patrol and port security
- Towing
- RHIB launch and recovery
- Team tactics and firearms proficiency

With the unique resume feature, exercises can be paused, resumed, or even rewound at any point. Instructors can step in to offer feedback, then pick up the simulation exactly where they left off, or return to an earlier moment to replay a scenario.





With the K-Sim Instructor system, monitoring, assessment and debriefing have never been easier.

## Provide objective assessment with our **Powerful Instructor System**

The K-Sim Navigation Instructor System is designed with the user experience at its core, providing instructors with a powerful, efficient, and intuitive platform for designing, controlling, and assessing customized training exercises for individuals and teams.

### Key features

- Customization of menus and pages for enhanced flexibility and user experience
- Configuration of student stations to define what information should be accessible and visible
- Easy-to-use route preparation and validation
- Modified ECDIS chart as a starting point for easy creation of a geographical area for the exercises
- Intuitive drag-and-drop function for selection of all exercise variables, including ship models
- Advanced Seagen GIS (Geographical Information System) tool for third party data import of currents, tides, waves and winds to create optimum realism
- Control of simulator actions derived from initiated variables and malfunctions e.g., extreme weather or power blackout.

- Guidance and feedback possibilities through triggers and e-coach messages during the exercise
- Underwater view to observe hull/seabed interaction, chains, wires and anchors

### Assessment and debriefing

All activity during the simulation is automatically recorded. Review and debrief sessions can include replaying selected segments or the entire exercise, allowing instructors to focus on specific learning objectives and performance outcomes.

### Unique 'resume' functionality

A unique 'resume' feature allows any exercise to be paused, resumed, or rewound at any time. If a student encounters difficulties, the instructor can pause the simulation to provide immediate guidance, continue, or return to an earlier point in time to replay and reinforce critical operations.

# Life Cycle Support - stay updated!

## Built for purpose – Supported for life

At Kongsberg Maritime, we don't just deliver advanced simulation systems—we support you every step of the way. Our Life Cycle Management services guide customers from initial design and installation to long-term operation, ensuring optimal system performance over time.

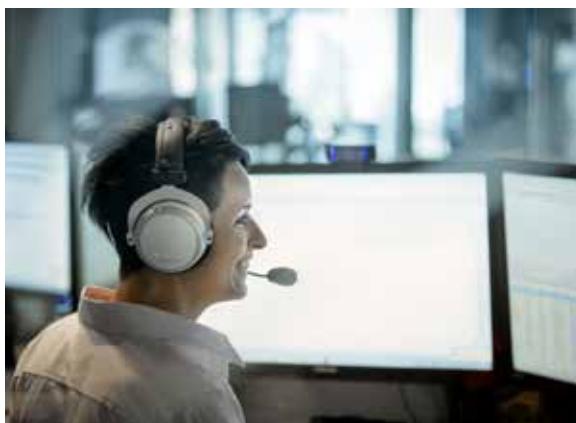
With deep in-house expertise in both system design and user operations, we develop purpose-built solutions that enhance efficiency, adaptability, and long-term value.

## Flexible, future-proof design

K-Sim Engine systems are engineered with maximum flexibility, allowing easy upgrades and the addition of new functions or control segments. This modular design ensures your simulator evolves with your training needs—step by step.

## Why choose Kongsberg Maritime?

- High system reliability
- Cost-effective life cycle support
- Simple, scalable upgrade paths
- World-class customer support



## Long-Term System Support Program

Our Long-Term System Support Program (LTSSP) offers tailored service packages to keep your system up to date and fully operational. Choose from Priority Support or Premium Customised Care, depending on your needs. Both options ensure peak system performance and peace of mind—so you can focus on delivering top-quality training.

## Instructor & technical training

Your people are your most valuable asset. We offer modular training programs for instructors and technical personnel to ensure they get the most from your K-Sim system—maximising safety, efficiency, and training outcomes.

Our systems are easy to install and maintain  
– supported by professionals either on-site or  
through remote connectivity. They are designed  
for optimal operational availability and allow for  
a favorable lifecycle expenditure.





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# We empower the future of maritime training

Please contact us if you would like more information about our K-Sim Navigation Simulator Solutions. **We are here to support you.**

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