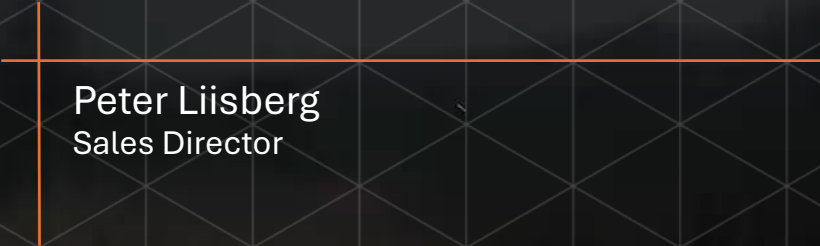


# Presentation for AFP

The Cube System – Payloads and Handling System

A graphic consisting of two thin orange lines forming a crosshair. One line is vertical and the other is horizontal, intersecting at the top-left corner of the text area.

Peter Liisberg  
Sales Director



## WHO

Peter Liisberg  
Sales Director  
Responsible for Marketing  
Trained as a sergeant in the Danish  
Defence within Reconnaissance



**SH Defence**  
**Danish maritime defence company**



**Launch and Recovery  
Systems**



**Containerized  
Mission Modules and  
Handling Systems**

The Danish Navy



A bit of history.



# **Modularity is a proven concept**

Modules for Harpoon and Sea Sparrow missiles, torpedo launchers, two 76mm OTO Malare and Rheinmetall Millennium gun, ASW and MCM modules and different boat davits.

Still in operation after 40 years  
By the Royal Danish Navy



**FRIGATE**  
Three Iver Huitfeldt-class



**SUPPORT SHIP**  
Two Absalon-class

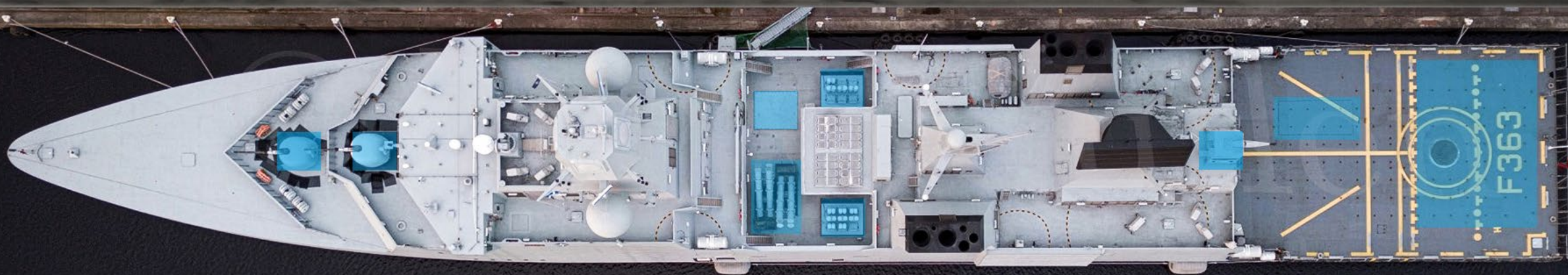


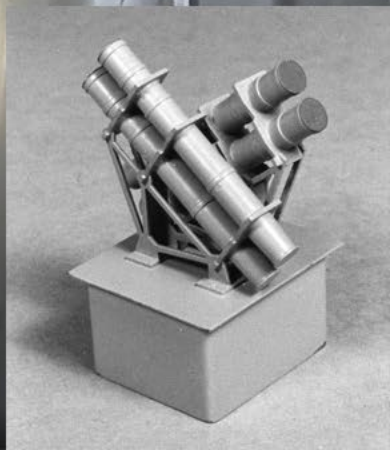
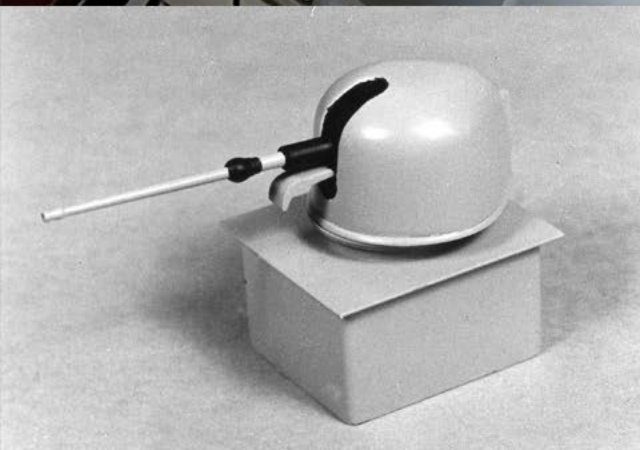
**ARCTIC OPV**  
Three Knud Rasmussen-class

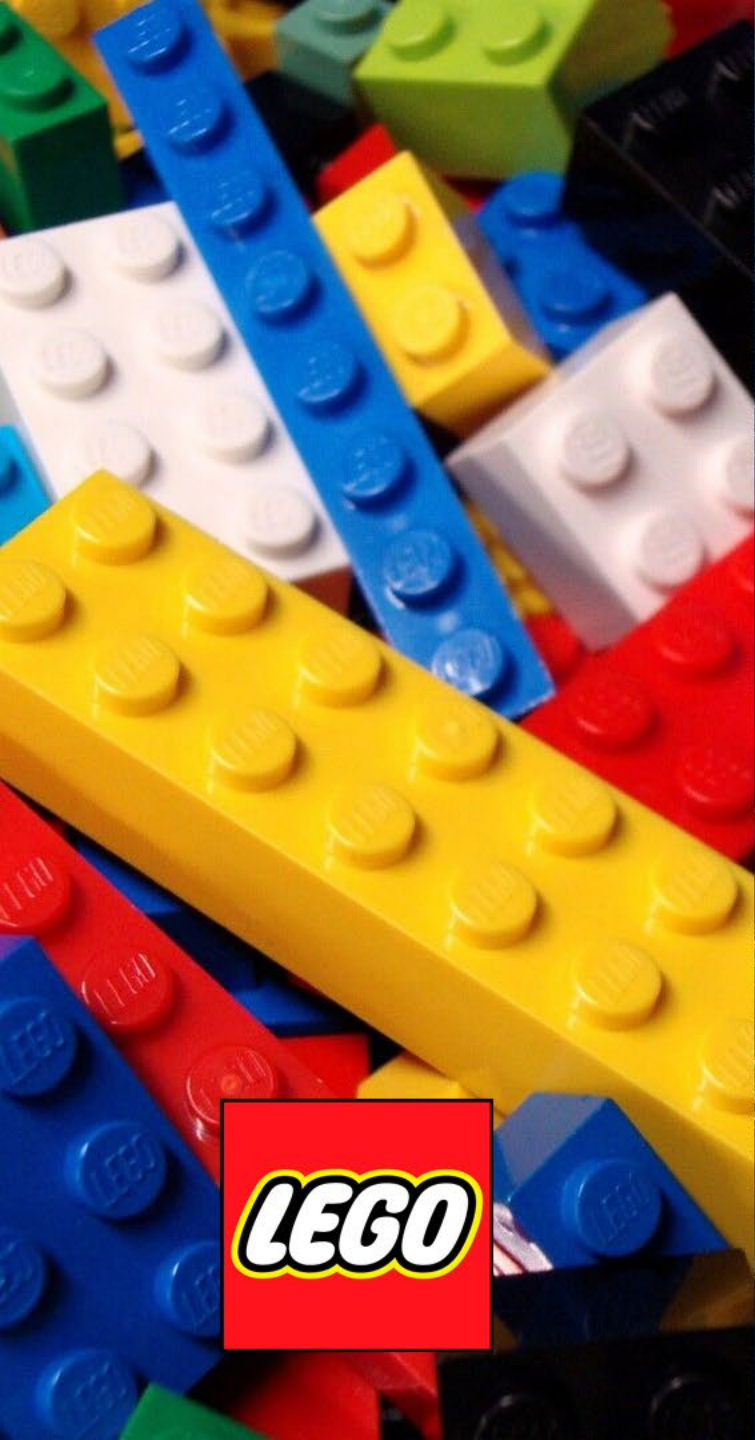




Modules for Harpoon and Sea Sparrow missiles, torpedo launchers, two 76mm OTO Malare and Rheinmetall Millennium gun, ASW and MCM modules and different boat davits.



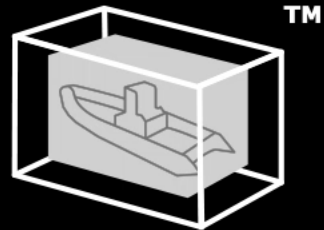




Our heritage lies in bricks that must fit together



**MÆRSK**



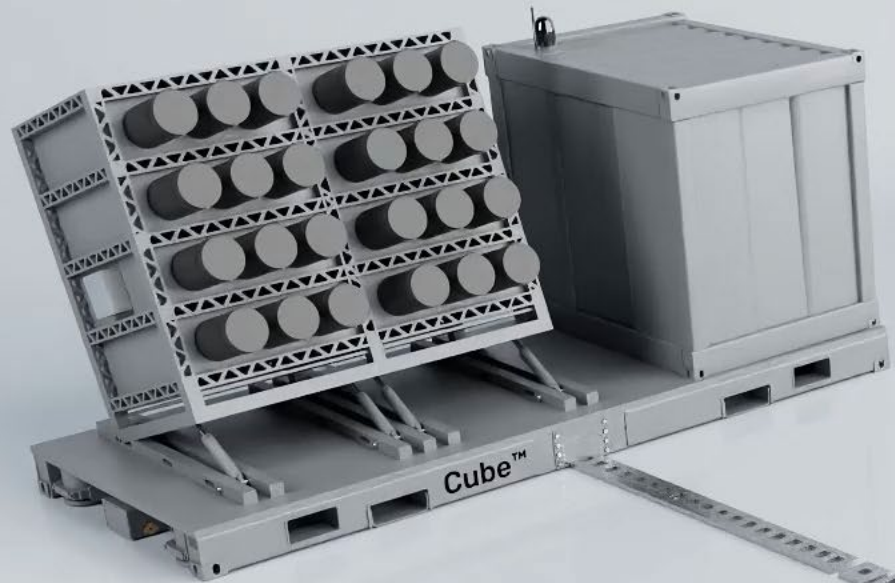
TM

# The Cube<sup>TM</sup>

Multi-Mission Modules for  
Coast guard, SAR and Navy vessels

Fully compliant with NATO STANAG 4830 / ANEP-99 - Design and Interface Standards for Containerized Mission Modules





Cube™

# Onboard module handling

Remotely Operated Hydraulic Twistlocks





# Onboard module handling

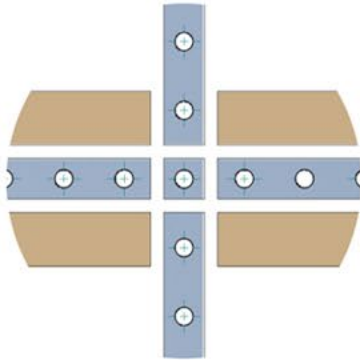
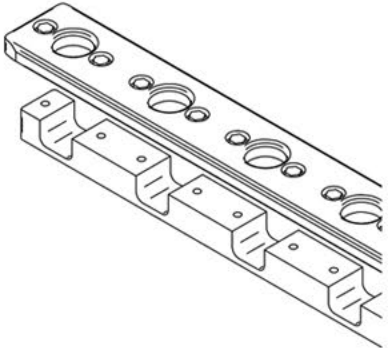
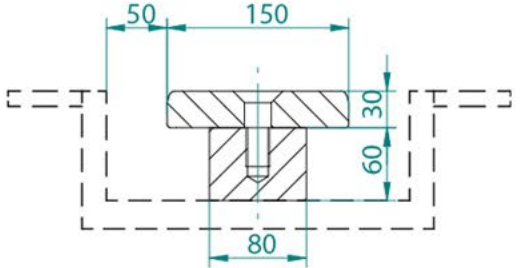
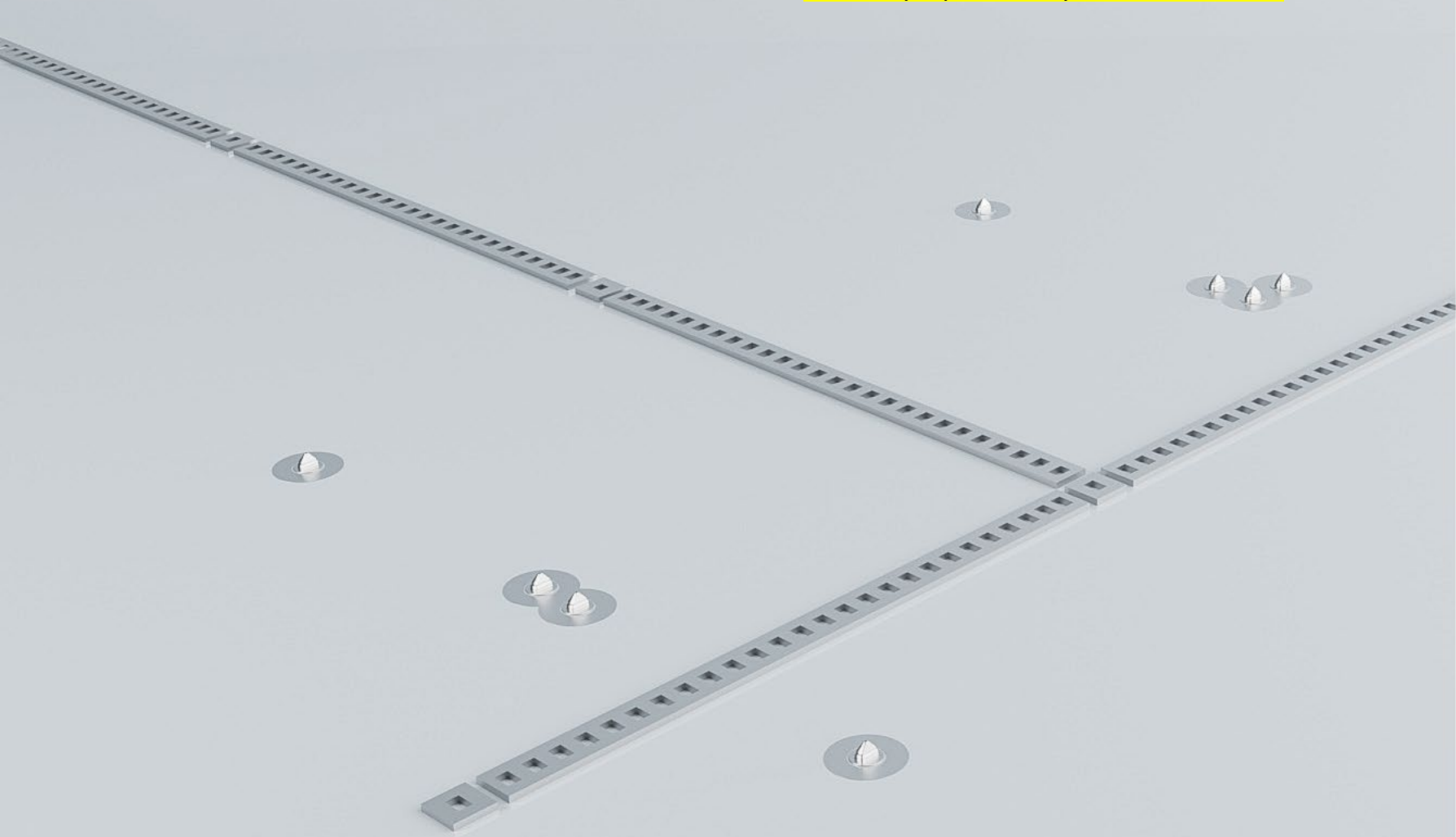
Base Frame placed on Remotely Operated Hydraulic Twistlocks





# Onboard module handling

Remotely Operated Hydraulic Twistlocks



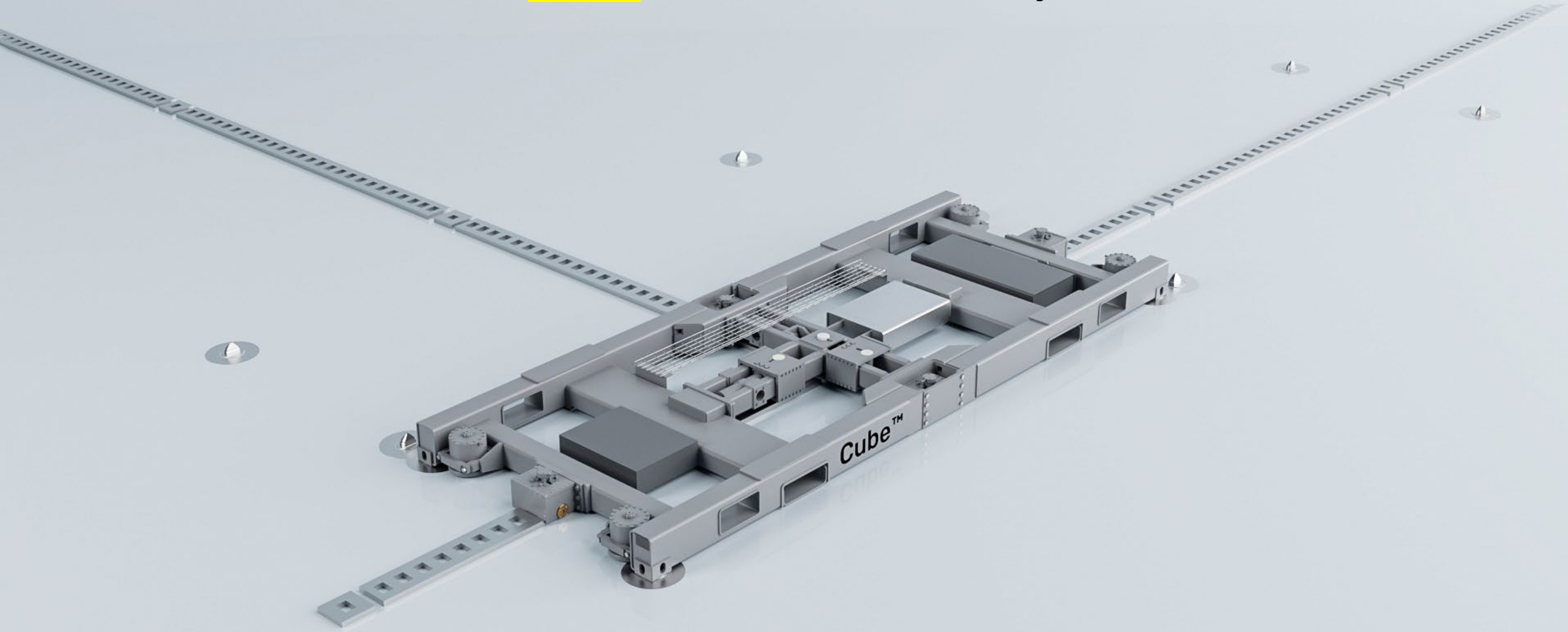
## Onboard module handling

Base Frame on Sea State Skidding System secured with Twistlocks

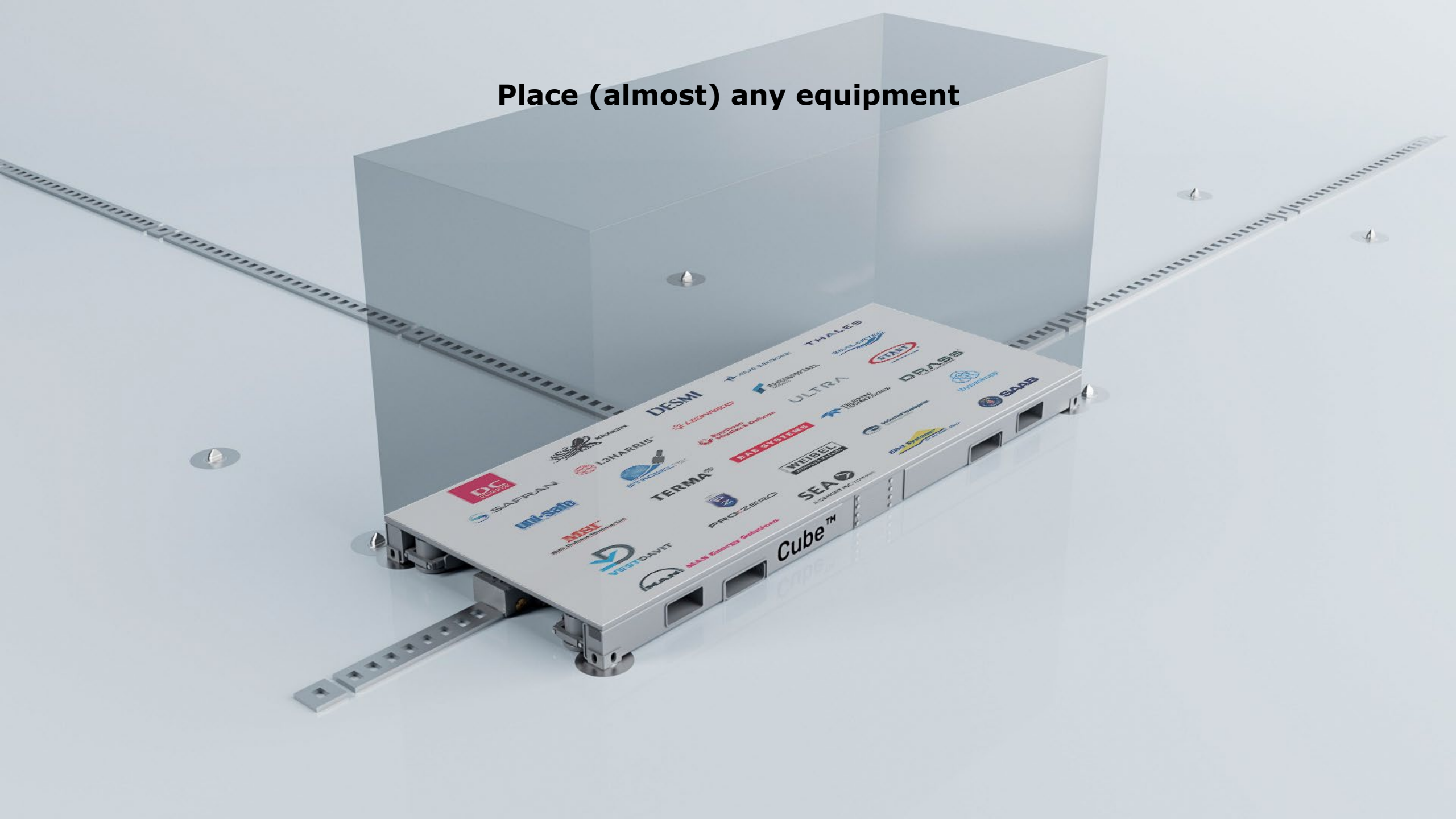


# Onboard module handling

Base Frame with built-in mover for autonomous handling



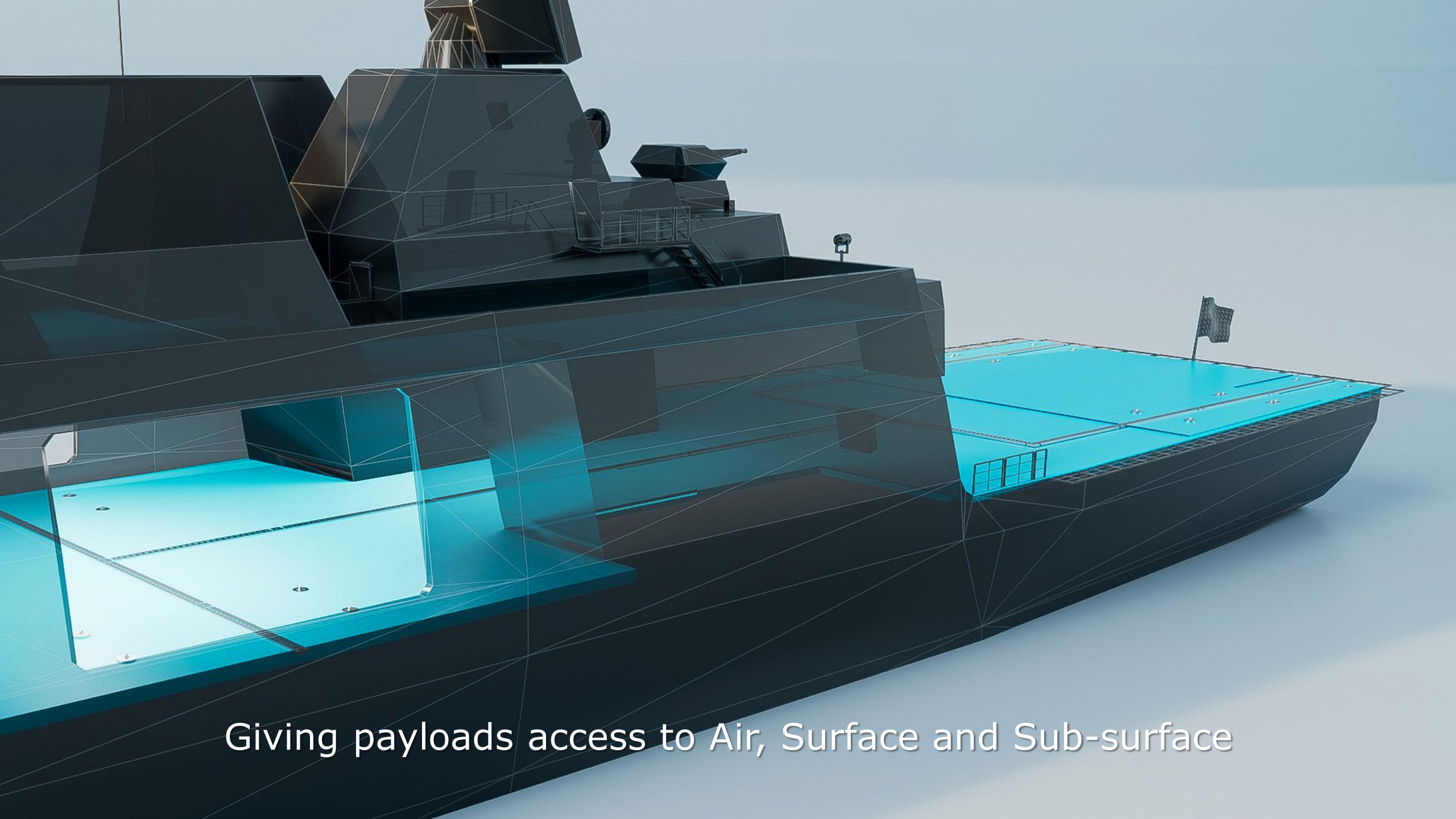
Place (almost) any equipment



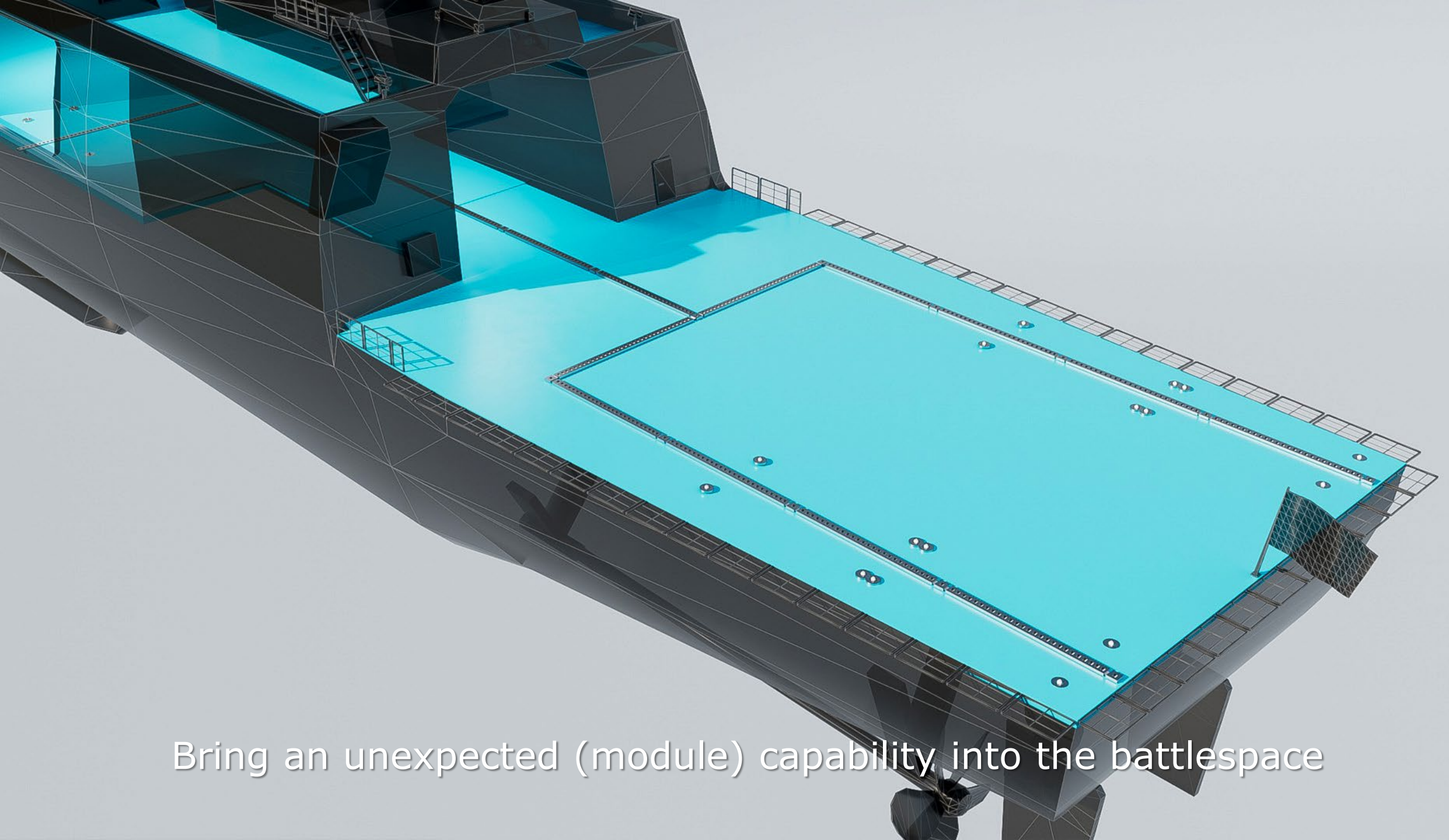
# Onboard module handling

Base Frame on Sea State Skidding System





Giving payloads access to Air, Surface and Sub-surface



Bring an unexpected (module) capability into the battlespace

# Cube™ -ID

## Cube-ID data

Cube ID no.:  
 Cube s/n:  
 Cube Mission:  
 Cube Size:  
 Weight:  
 CoG:  
 DangerZone:

## ANEP-99 data

CCTV  
 WH Lights on/off  
 RED Lights on/off  
 GR Lights on/off

## Cube-Connect data

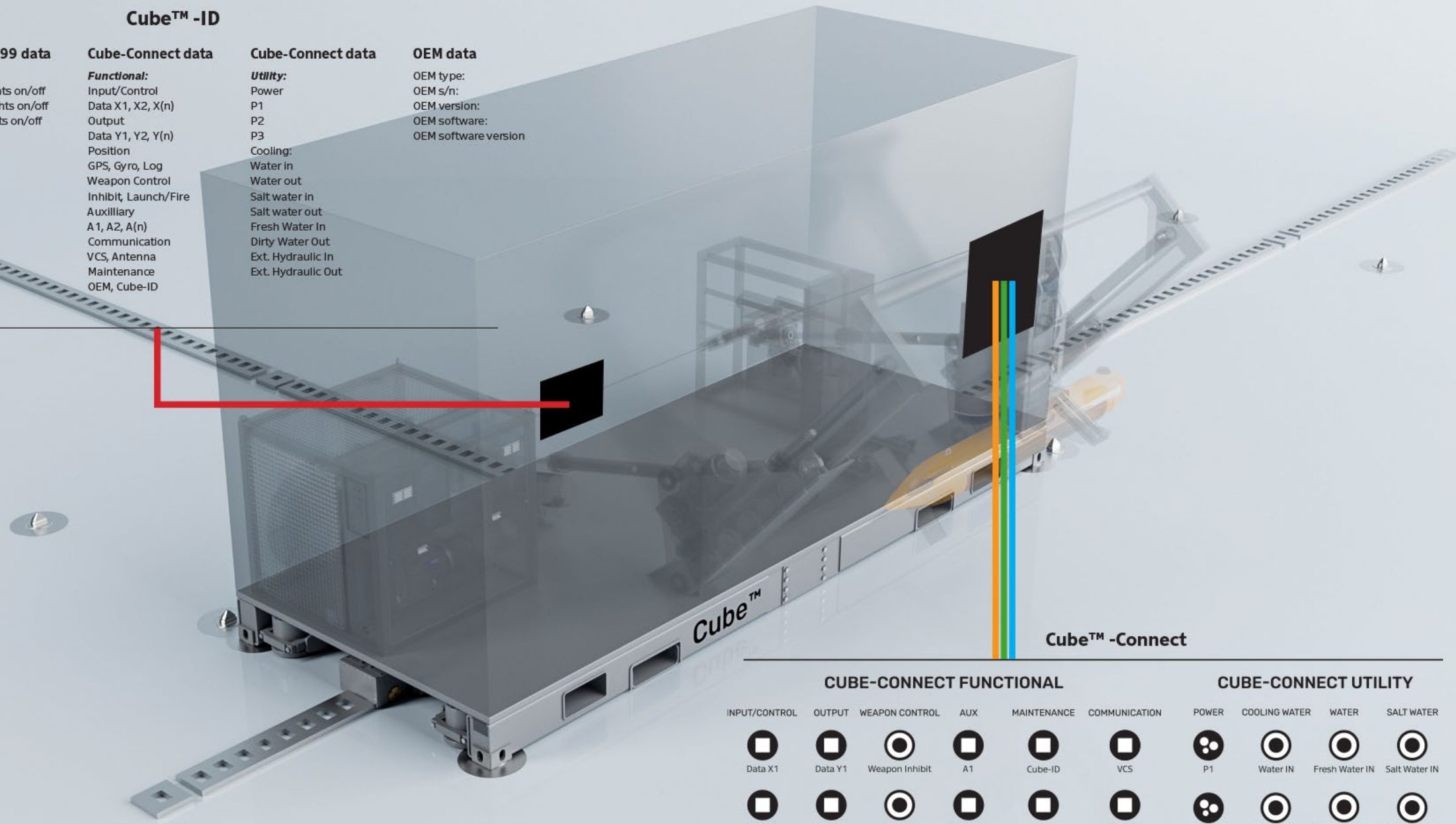
**Functional:**  
 Input/Control  
 Data X1, X2, X(n)  
 Output  
 Data Y1, Y2, Y(n)  
 Position  
 GPS, Gyro, Log  
 Weapon Control  
 Inhibit, Launch/Fire  
 Auxilliary  
 A 1, A2, A(n)  
 Communication  
 VCS, Antenna  
 Maintenance  
 OEM, Cube-ID

## Cube-Connect data

**Utility:**  
 Power  
 P1  
 P2  
 P3  
 Cooling:  
 Water In  
 Water out  
 Salt water in  
 Salt water out  
 Fresh Water In  
 Dirty Water Out  
 Ext. Hydraulic In  
 Ext. Hydraulic Out

## OEM data

OEM type:  
 OEM s/n:  
 OEM version:  
 OEM software:  
 OEM software version



## Cube™ -Connect

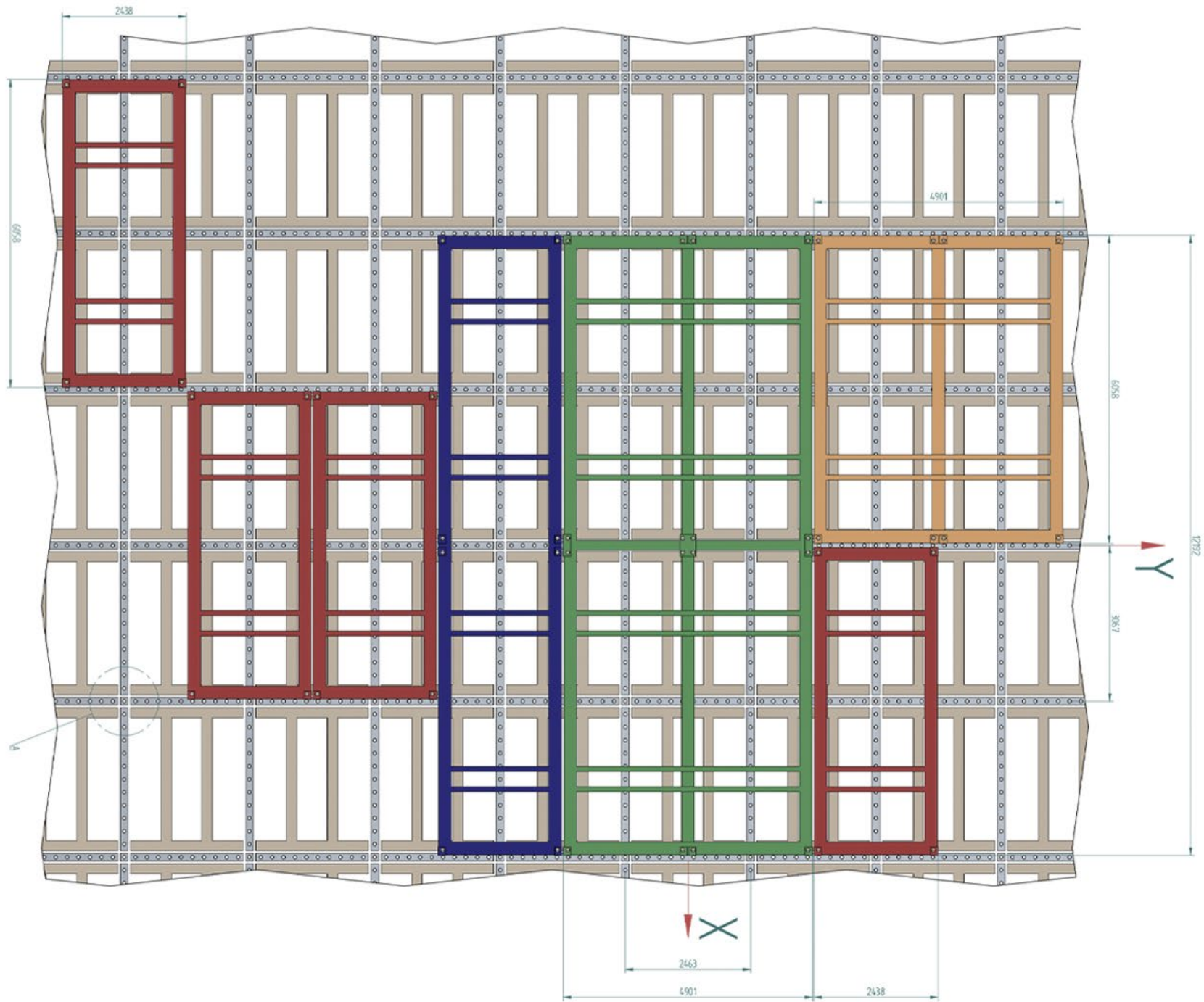
### CUBE-CONNECT FUNCTIONAL

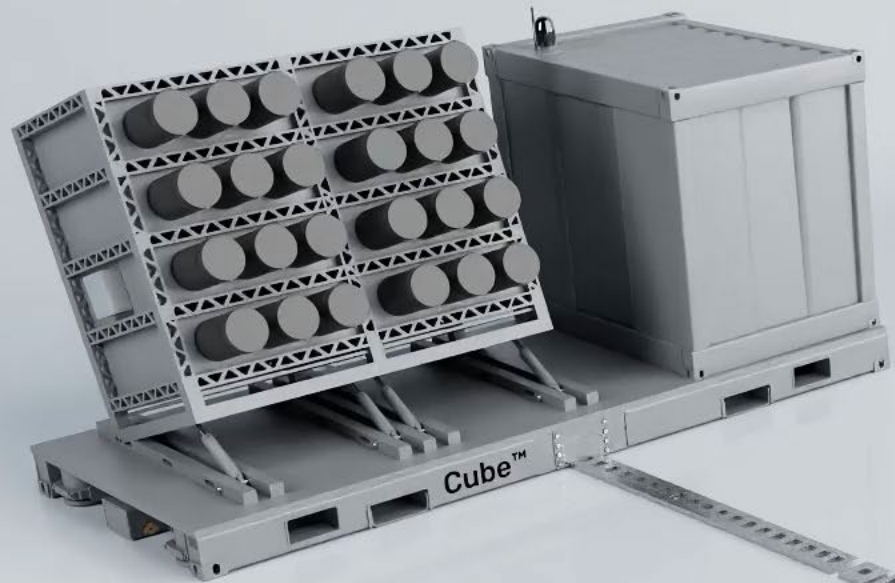
INPUT/CONTROL	OUTPUT	WEAPON CONTROL	AUX	MAINTENANCE	COMMUNICATION
Data X1	Data Y1	Weapon Inhibit	A1	Cube-ID	VCS
Data X2	Data Y2	Launch/Fire	A2	OEM	Antenna
Data X3	Data Y3	Weapon AUX	A3	POSITION	
				GPS/GYRO/LOG	

### CUBE-CONNECT UTILITY

POWER	COOLING WATER	WATER	SALT WATER
P1	Water IN	Fresh Water IN	Salt Water IN
P2	Water OUT	Dirty Water OUT	Salt Water OUT
P3			







Cube™

The following Ship designers are presenting their future Multi-mission platforms using The Cube System





## **CASE – NTV 130**

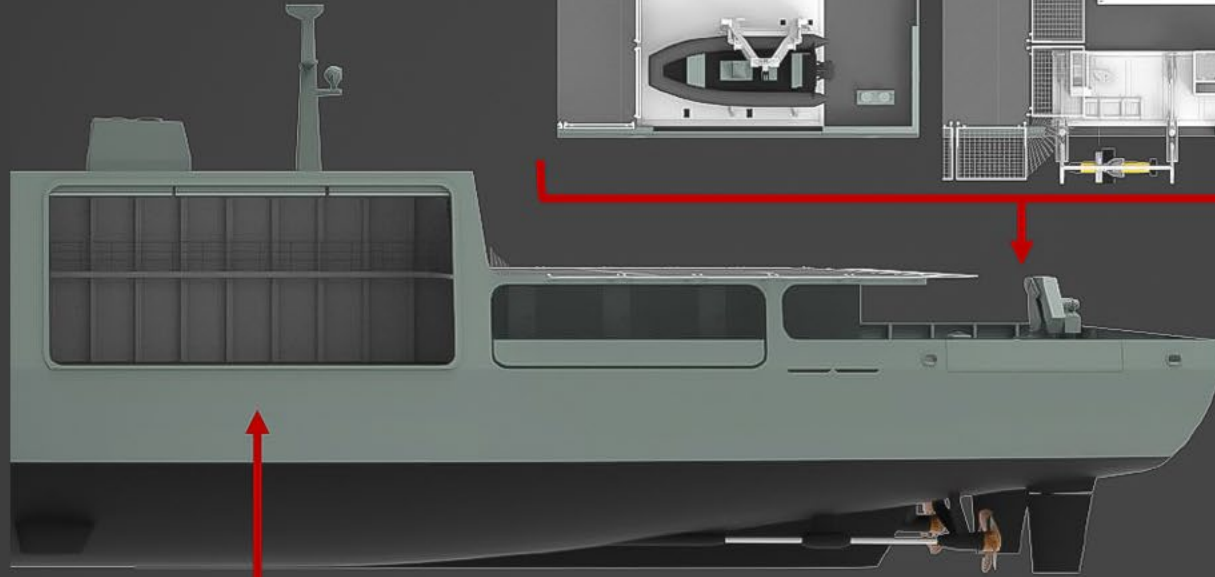
**Logistics, operational support and reconnaissance**





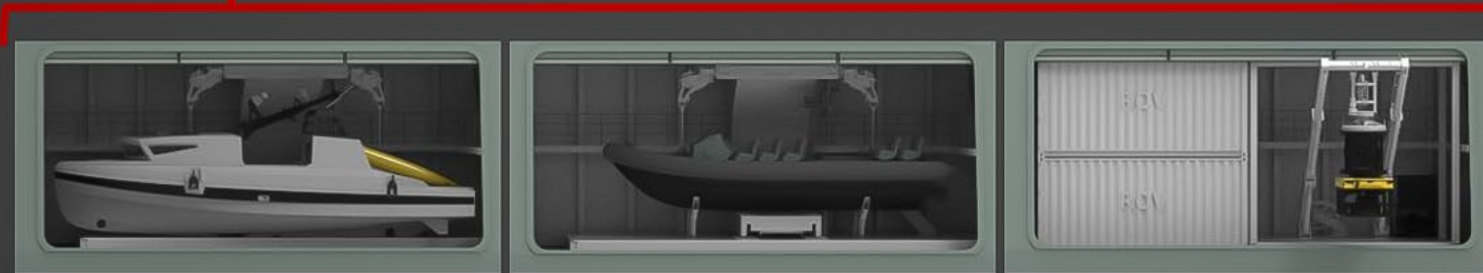
CAPABLE.  
**FLEXIBLE.**  
DEPLOYABLE.

TYPICAL MODULAR MISSION DECK LOADOUTS



Modular Mission Packages

- Thales Pathmaster MCM
- Fleet Diving Support
- Route Survey
- Seabed Intervention
- ROV/AUV/UAV/USV Ops
- TAS and VDS Sonar Systems
- Specialized Embarked Craft



TYPICAL MODULAR MISSION BAY LOADOUTS







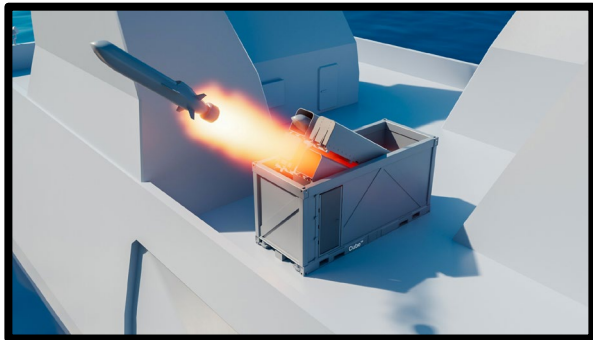
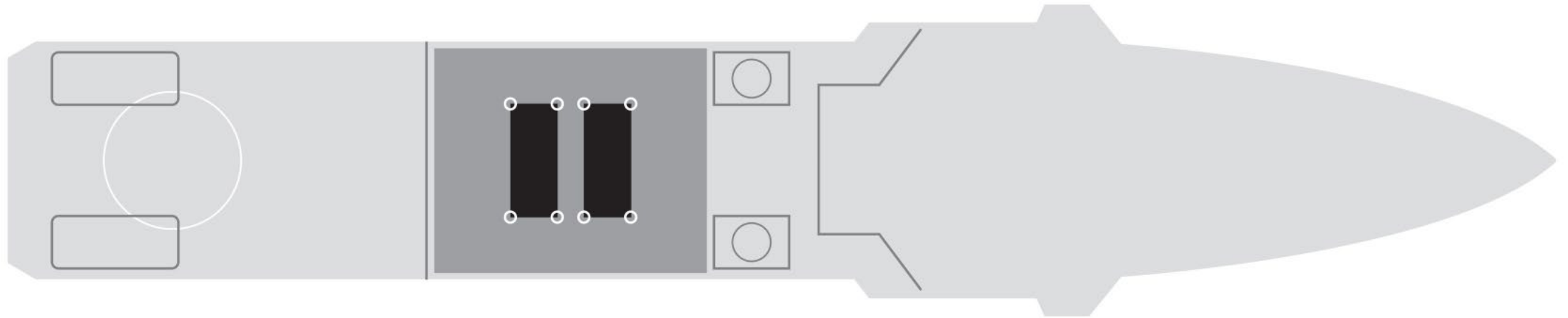
Top mission deck

Flight deck

Quarterdeck

# Flexible deck handling

Top mission deck

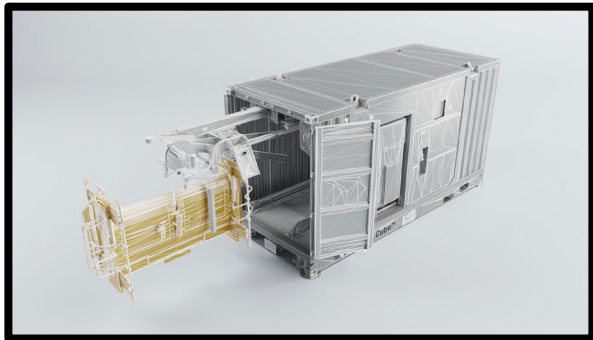
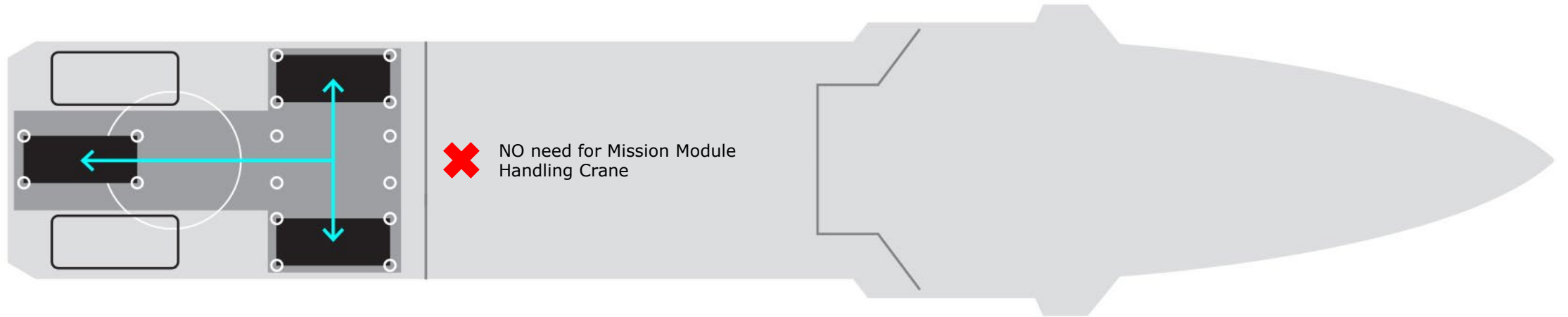


Deck layout:  
Cube™ **Hydraulic Twistlock**: Single = 8 pcs.  
Approx. Weight = **1T** (8x105kg/pcs)

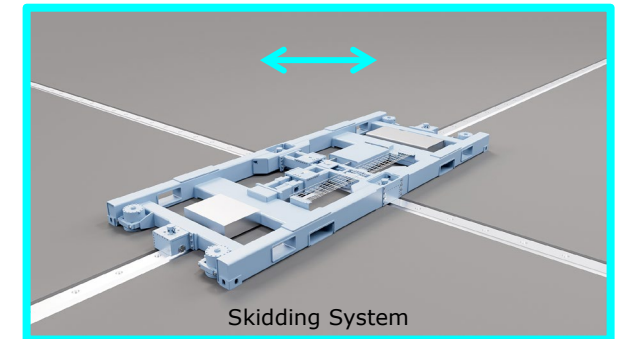


# Flexible deck handling

Flight deck

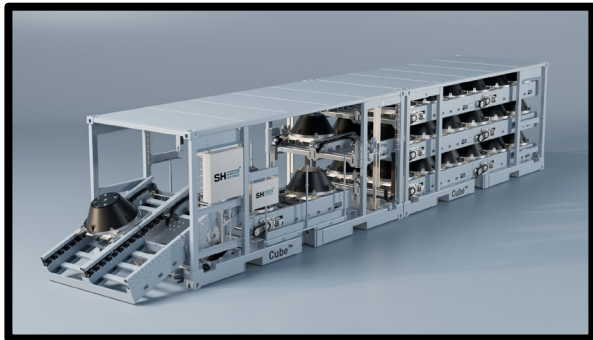


Deck layout:  
Cube™ Hydraulic Twistlock: Single = 16 pcs.  
Approx. Weight = 1.7T (16x105kg/pcs)  
  
Cube™ Skidding System: 20m + 10m  
Approx. Weight = 1.8T (30mx60kg/m)



# Flexible deck handling

Quarterdeck



Deck layout:  
Cube™ **Hydraulic Twistlock**: Single = 12 pcs. / Double = 8 pcs.  
Approx. Weight = **2.1T** (20x105kg/pcs)

Cube™ **Skidding System**: 2x20m + 10m  
Approx. Weight = **3T** (50mx60kg/m)





**Mission:** Onboard Handling system  
**Name:** Cube™ Sea State Skidding System  
**Company:** SH Defence  
**Integration:** Shipyard / SH Defence

**Price:** On the following page

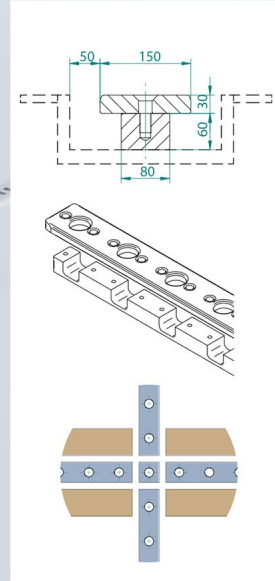
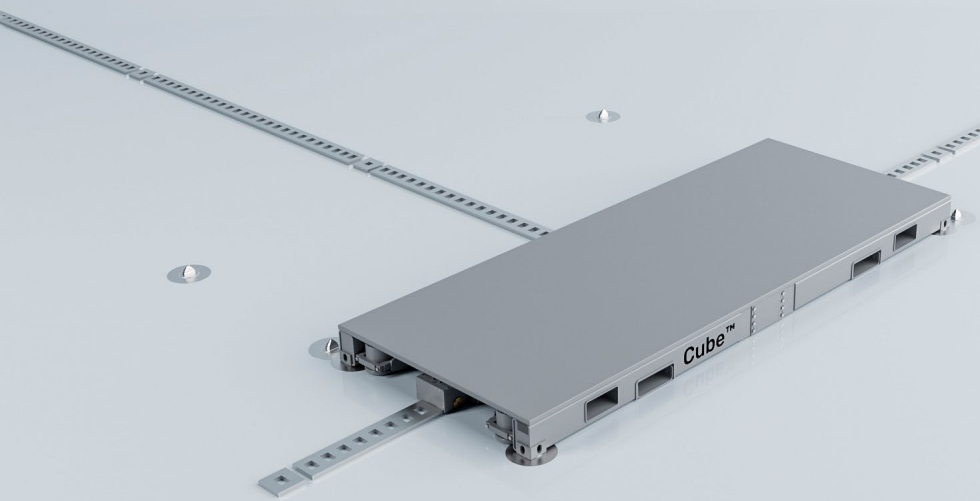


The Sea State skidding system allows moving Cube™ compatible modules around on the open deck or inside the hangar. It is mission bay compatible and can work together with the hydraulic-driven twist lock system.

The Mover unit, a key component of the Sea State Skidding System features a moving cylinder for longitudinal movement, one for transverse movement, and three hydraulic-operated lock pins.

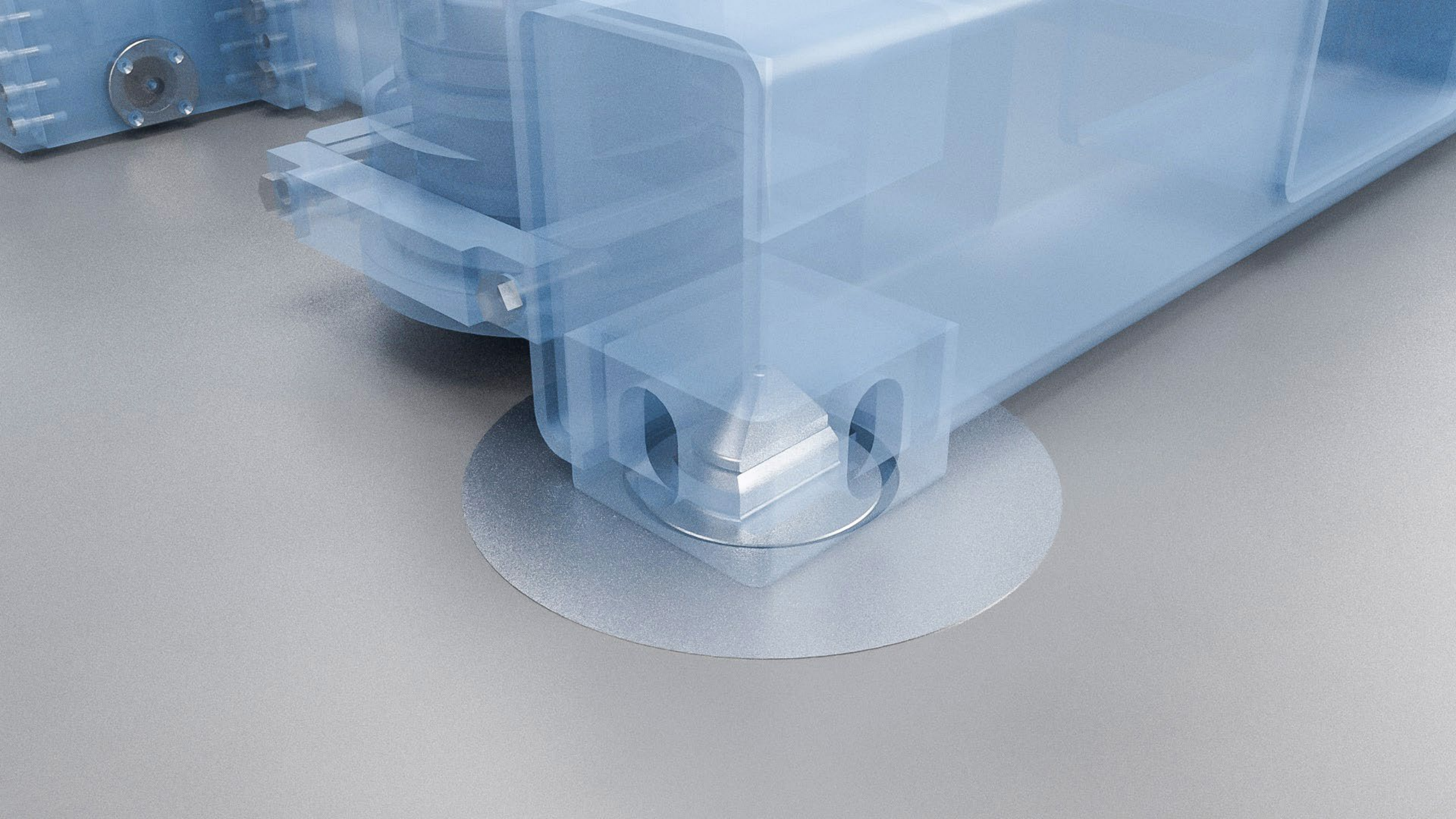
The operational maximum accelerations are horizontal, 0.5 g, and vertical, 0.8 g. The maximum roll angle is 22.5 deg.

The expected moving speed will be 2-2.5 m/min with modules weighing 15 Tons or less.



# Flexible deck handling





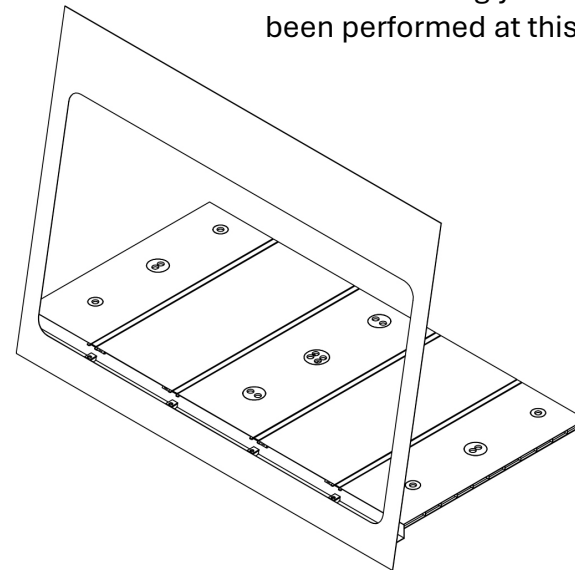


**Mission:** Onboard Handling system  
**Name:** Cube™ Hydraulic Twistlock System  
**Company:** SH Defence  
**Integration:** Shipyard / SH Defence

**Price:** On the following page

The Cube Twist Lock System for securing payloads consists of remotely operated hydraulic twist locks (with a remote lock indicator) integrated into the deck structure, arranged in groups of 4 each matching a 20ft container. The total number of twist locks for a mission bay is up to  $4 \times 4 = 16$ .

Shock qualification of shipboard equipment.  
Depending on requirements, ship construction and classification society, SH Defence believes that the Twistlock System can be authorized accordingly. However, these tests have not been performed at this time.







**Mission:** Onboard Handling system  
**Name:** Cube™ Sea State Skidding System  
**Company:** SH Defence  
**Integration:** Shipyard / SH Defence

Flight deck

Top mission deck

Quarterdeck

**Top mission deck**

Twistlocks = 8 pcs  
 HPU = 1  
 Control panels = 1

Example ROM Price: USD 227.695

**Flight deck**

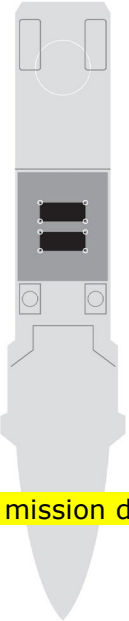
Sea State Skidding Rail = 20m + 10m  
 Twistlocks = 16 pcs  
 HPU + Hydraulic hose = 1  
 Control panels = 1

Example ROM Price: USD 443.156

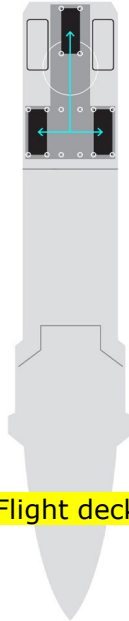
**Quarterdeck**

Sea State Skidding Rail = 2x 20m + 10m  
 Twistlocks = 20 pcs  
 HPU + Hydraulic hose = 1  
 Control panels = 1

Example ROM Price: USD 570.578



Top mission deck



Flight deck



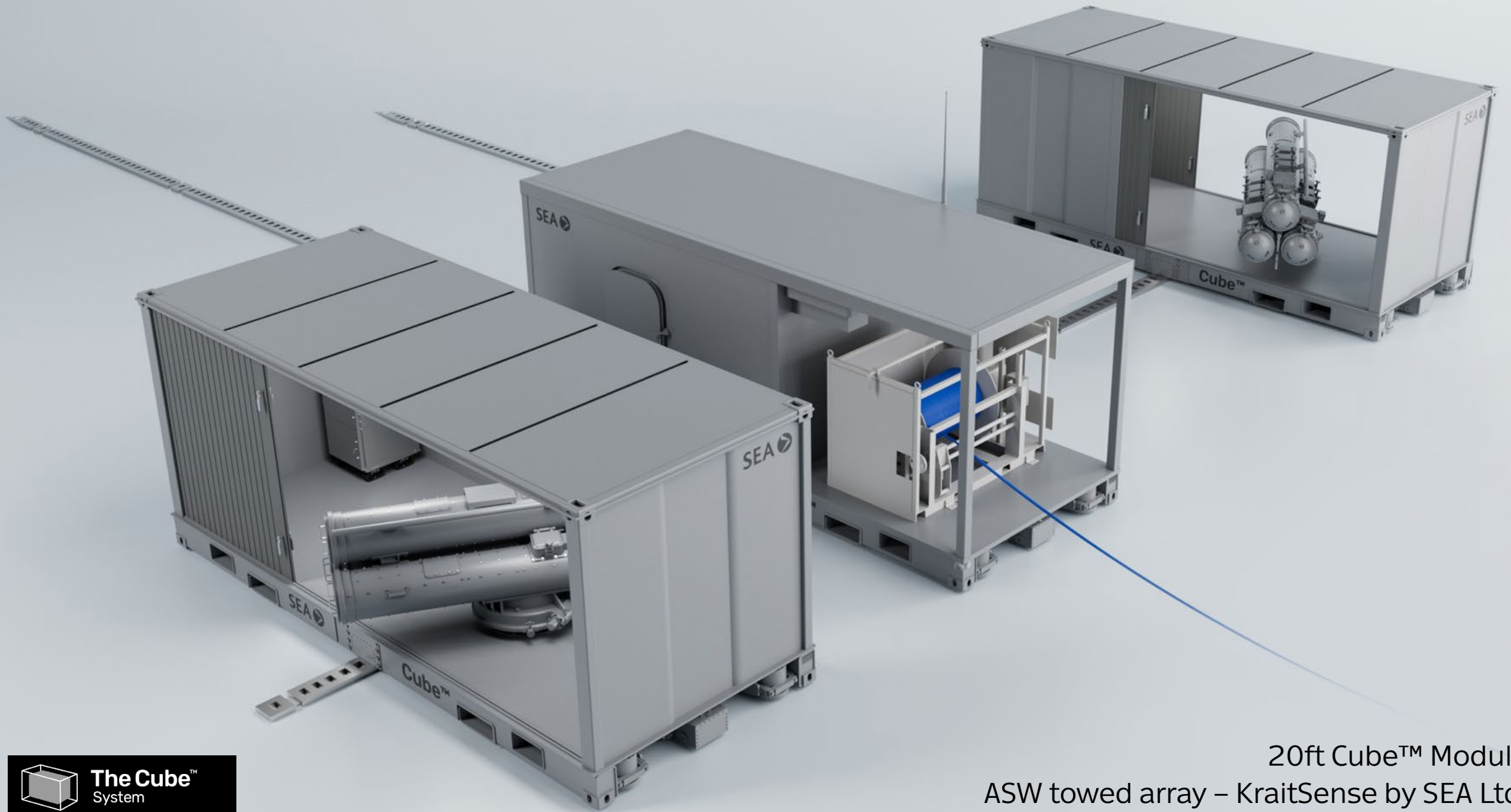
Quarterdeck

# Interchangeable mission modules

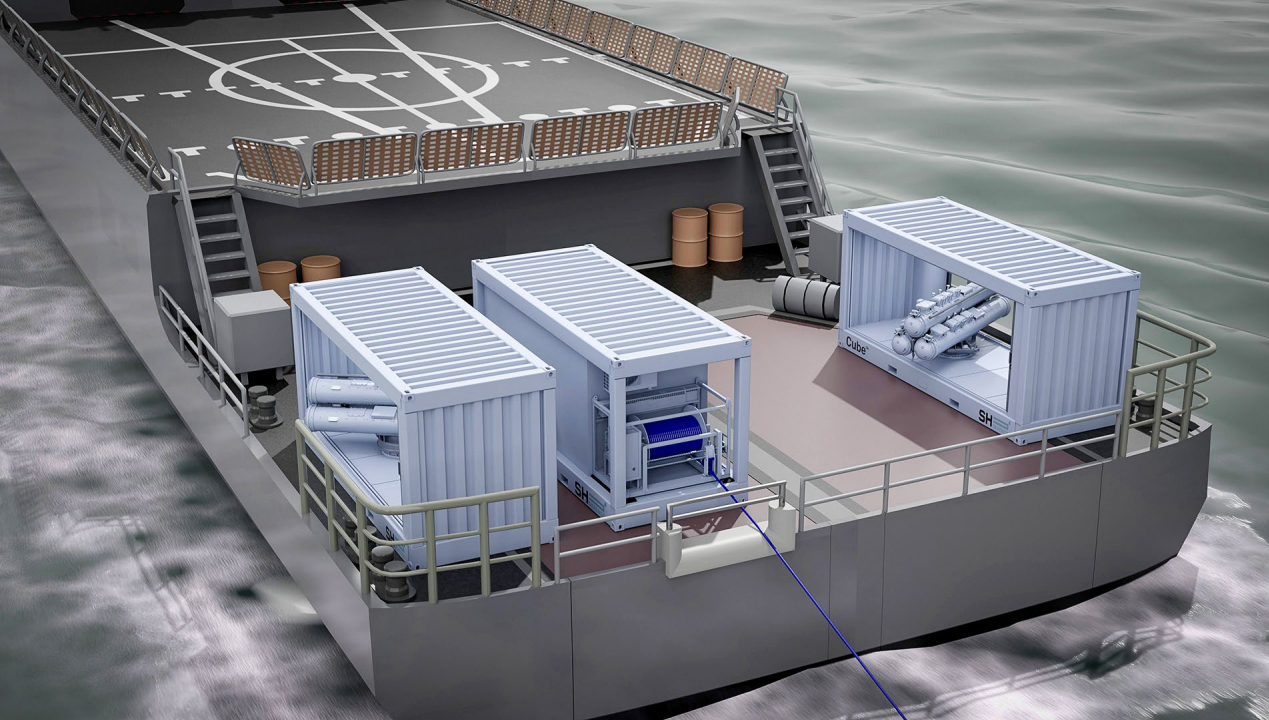


## **Modularity is a feature of (almost) all future naval ship designs**

1. New ships can be built *for* but not *with* capabilities
2. Keeping up with technological development
3. A ship is built to last 30-40 yrs but equipment might last 36 months
4. Counter new threats faster
5. Bring an unexpected (module) capability into the battlespace
6. Rapid mission assignment and interchangeability between platforms
7. No more welding of equipment onto the deck structure
8. Repair and replace broken equipment without long and costly yard stays
9. Train at the Naval base



20ft Cube™ Module  
ASW towed array – KraitSense by SEA Ltd.



**Mission:** ASW module

**Name:** Kraith Sense

**Company:** SEA (Systems Engineering & Assessment)

**Prime:** SEA

**Integration:** SH Defence

**Price** ASW module: Approx. USD 5.8 million

**Price** integration: Approx. USD 950.000 million

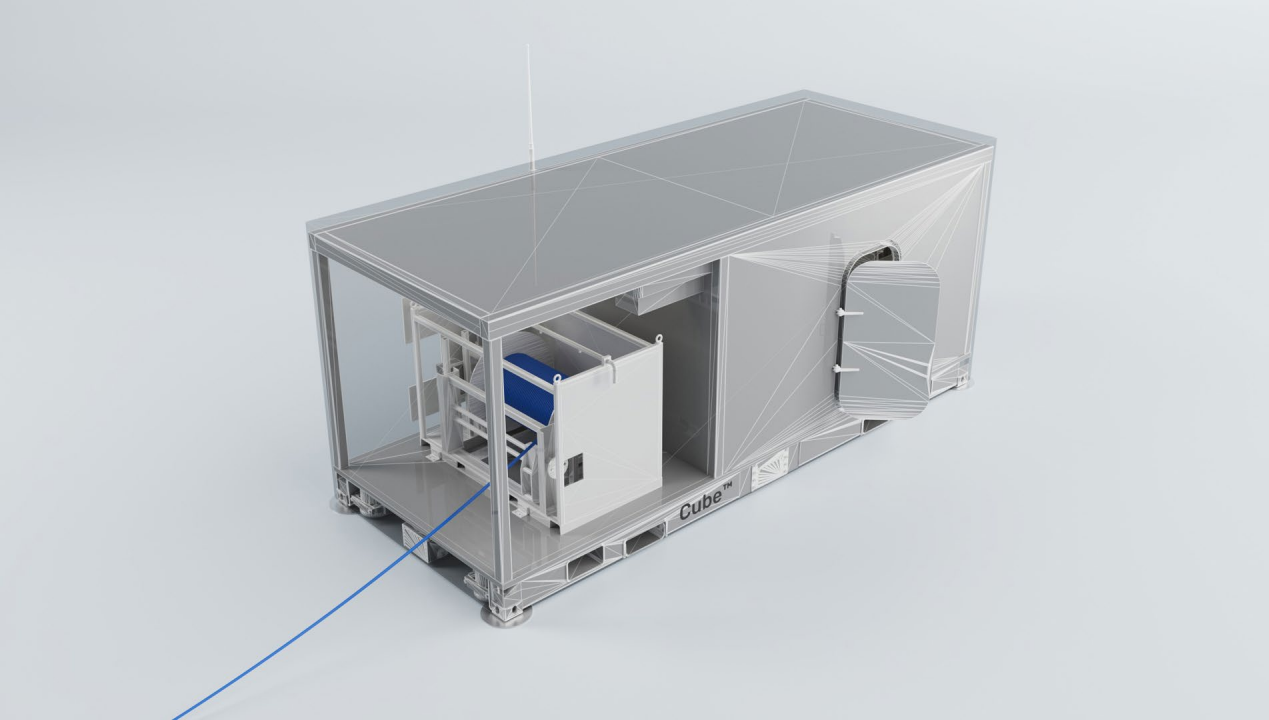
The prices are indicative and must be negotiated with the equipment supplier. ILS and Standard approvals and documentation are not included.

ASW System for non-specialist platforms such as OPVs

A complete, lightweight passive ASW system, which is designed to give smaller, non-specialist platforms such as OPVs, a leading ASW capability.

The system contains a low-profile sonar sensor, KraitArray, handling equipment, processing hardware and software as well as an interactive user control station to view, analyse, report sonar contact information

- Underwater threat detection
- Easy ship fit
- Small diameter
- Low weight & drag
- Low power consumption

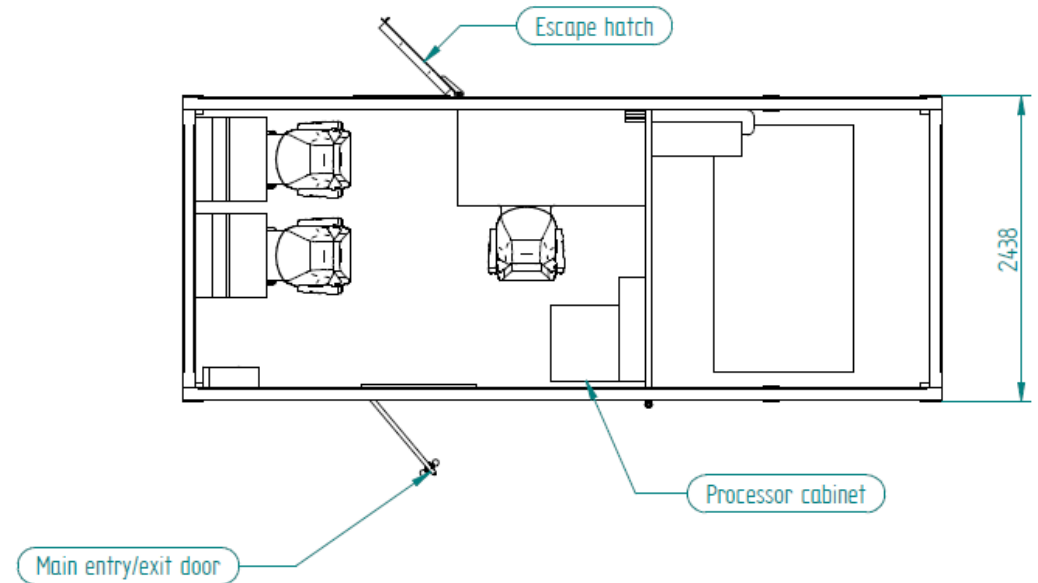
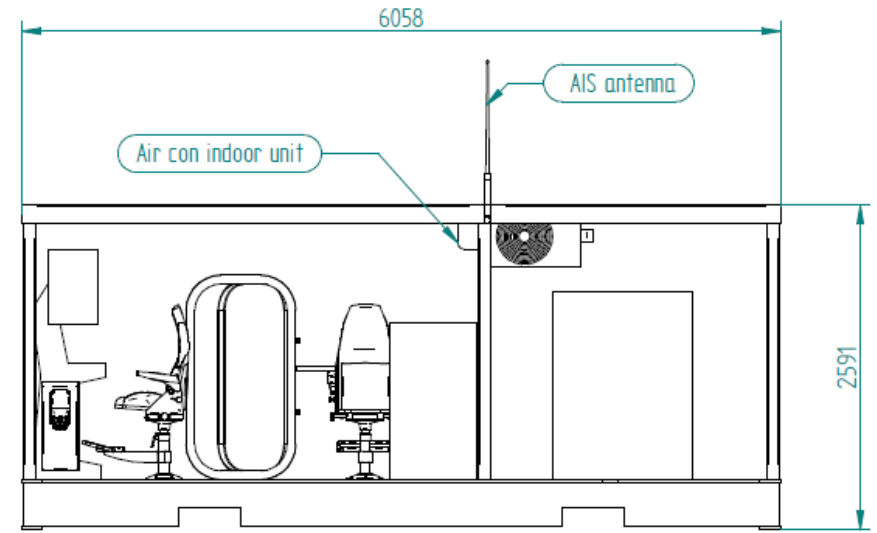
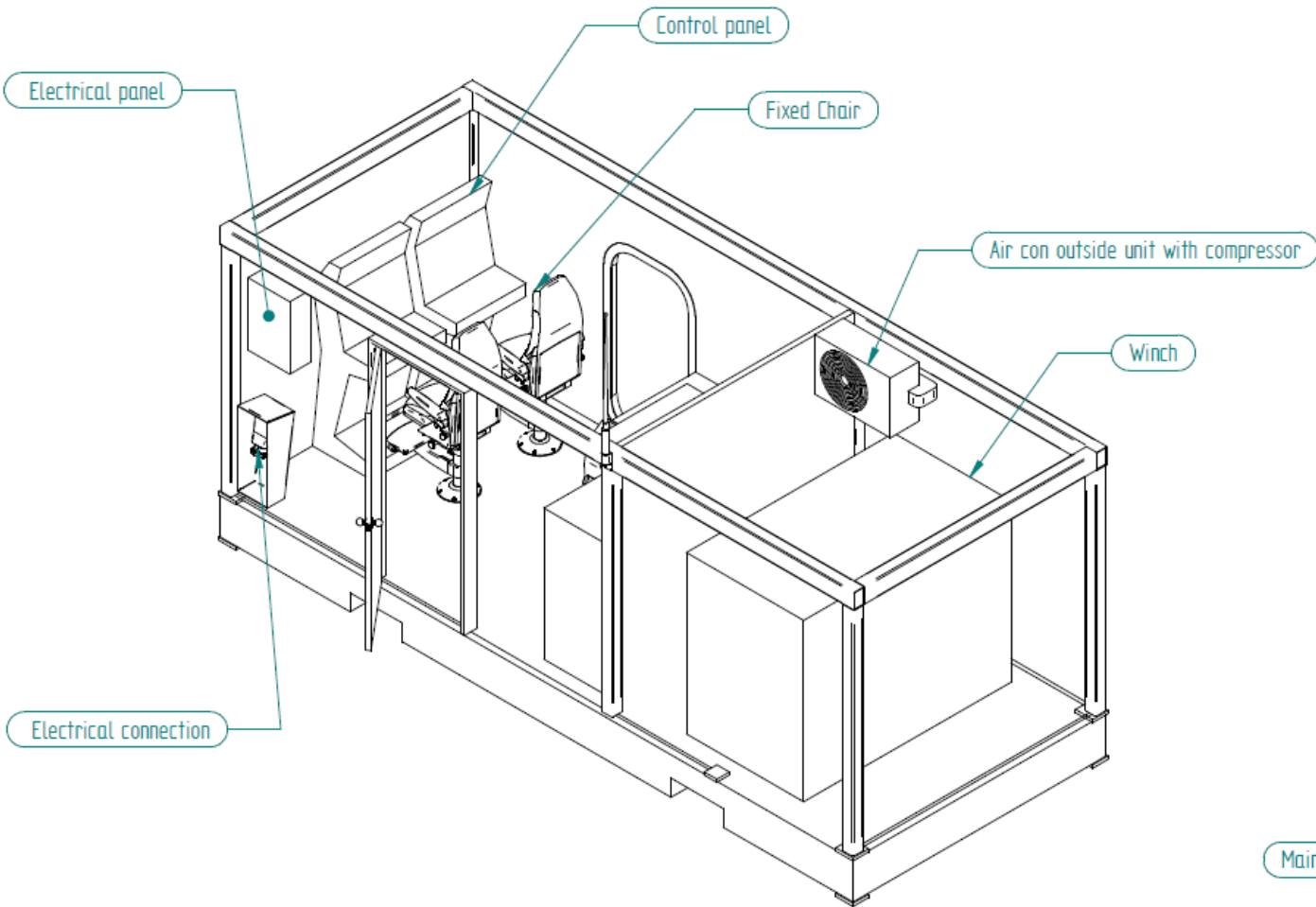




+



A COHORT PLC COMPANY

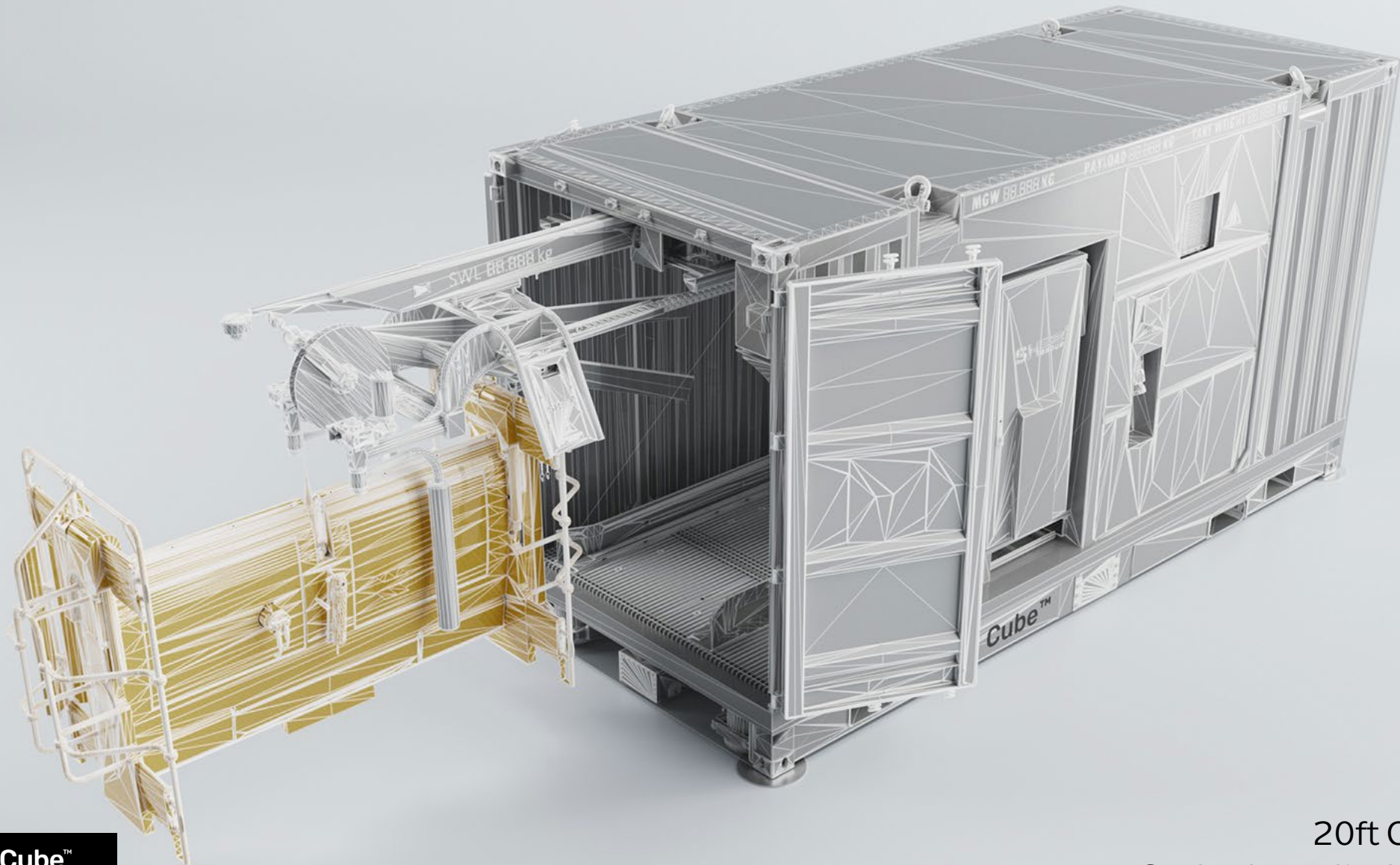


IN THE  
DEVELOPMENT



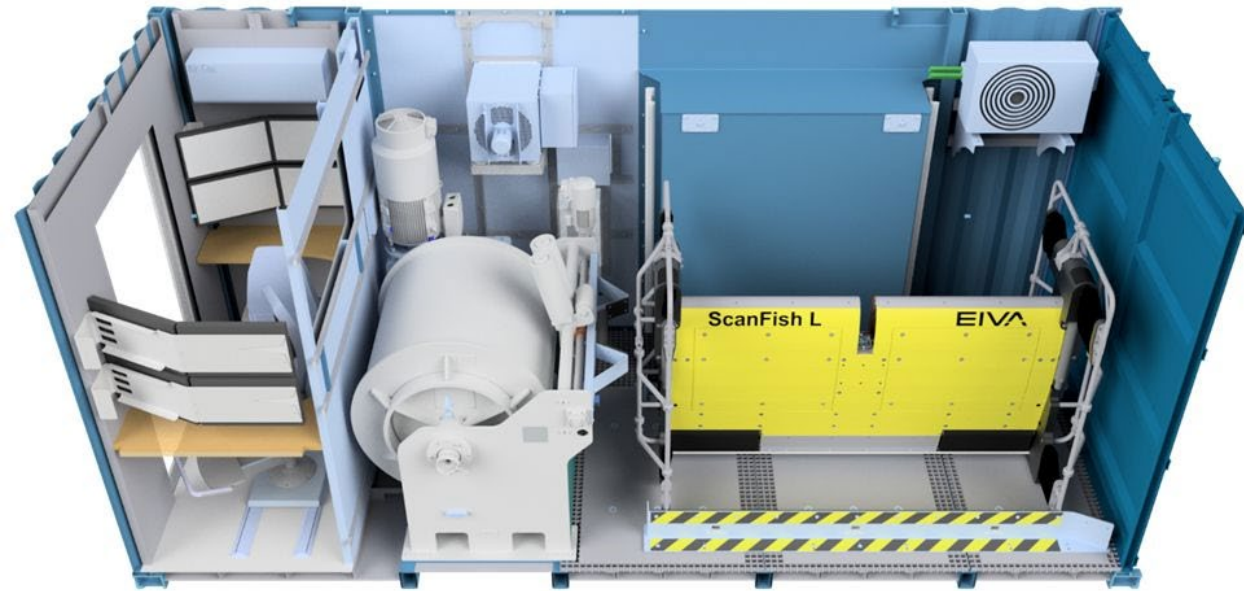
Cube™ Module

Thales CAPTAS 2+4 In the early development stage



20ft Cube™ Module  
Seabed monitoring by EIVA A/S





**Mission:** MCM - Mine Countermeasures

**Name:** ROTV - Remotely Operated Towed Vehicle

**Company:** EIVA (Part of Forcys)

**Prime:** EIVA

**Integration:** SH Defence

**ROM Price** MCM tool: Approx. USD 5.75 million

**ROM Price** Module/Integration: Approx. USD 1.2 million

The prices are indicative and must be negotiated with the equipment supplier. ILS and Standard approvals and documentation are not included.

### Towed Array Sonar

The EIVA ScanFish remotely operated towed vehicle (ROTV) models can follow the seabed, keep a fixed depth, or undulate up and down through the water. A multi-aperture sonar specifically designed for mine-hunting operations in the littoral.

Specs.:

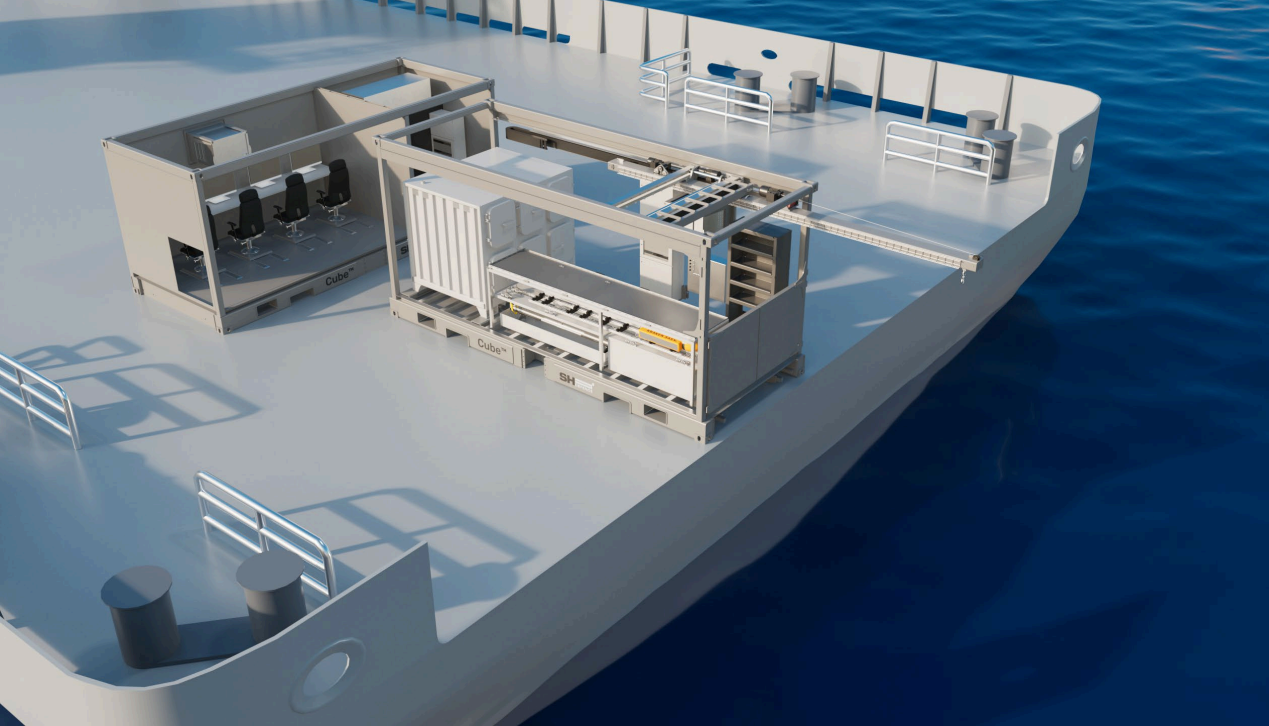
Weight: 14.6T

SWL (as shown): 850kg

Winch SWL: 3.5T

Work station: Two man





**Mission:** MCM - Mine Countermeasures

**Name:** Remote Minehunting and Disposal System (RMDS)

**Company:** Kraken Robotics

**Prime:** Kraken Robotics

**Integration:** SH Defence

**ROM Price** MCM tool: AUV and SeaFox (mine disposal)  
sold separately

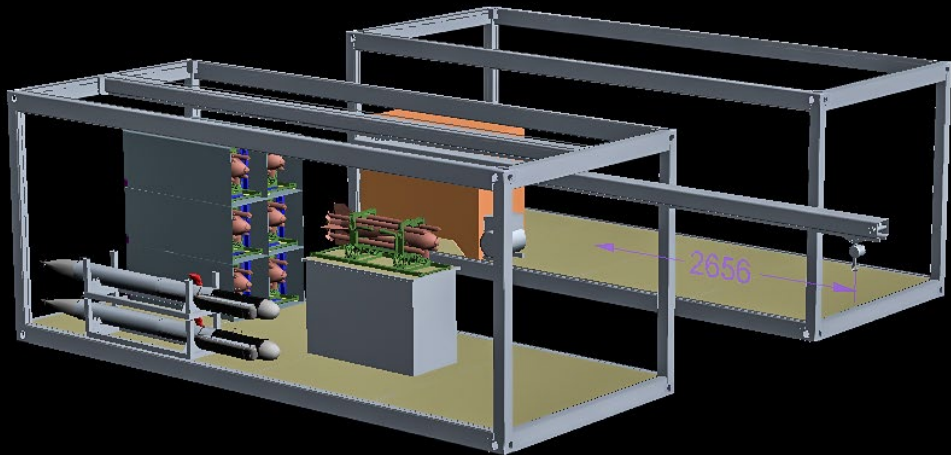
**ROM Price** Module/Integration: Approx. USD 1.7 million

The prices are indicative and must be negotiated with the equipment supplier. ILS and Standard approvals and documentation are not included.

### Remote Minehunting and Disposal System (RMDS)

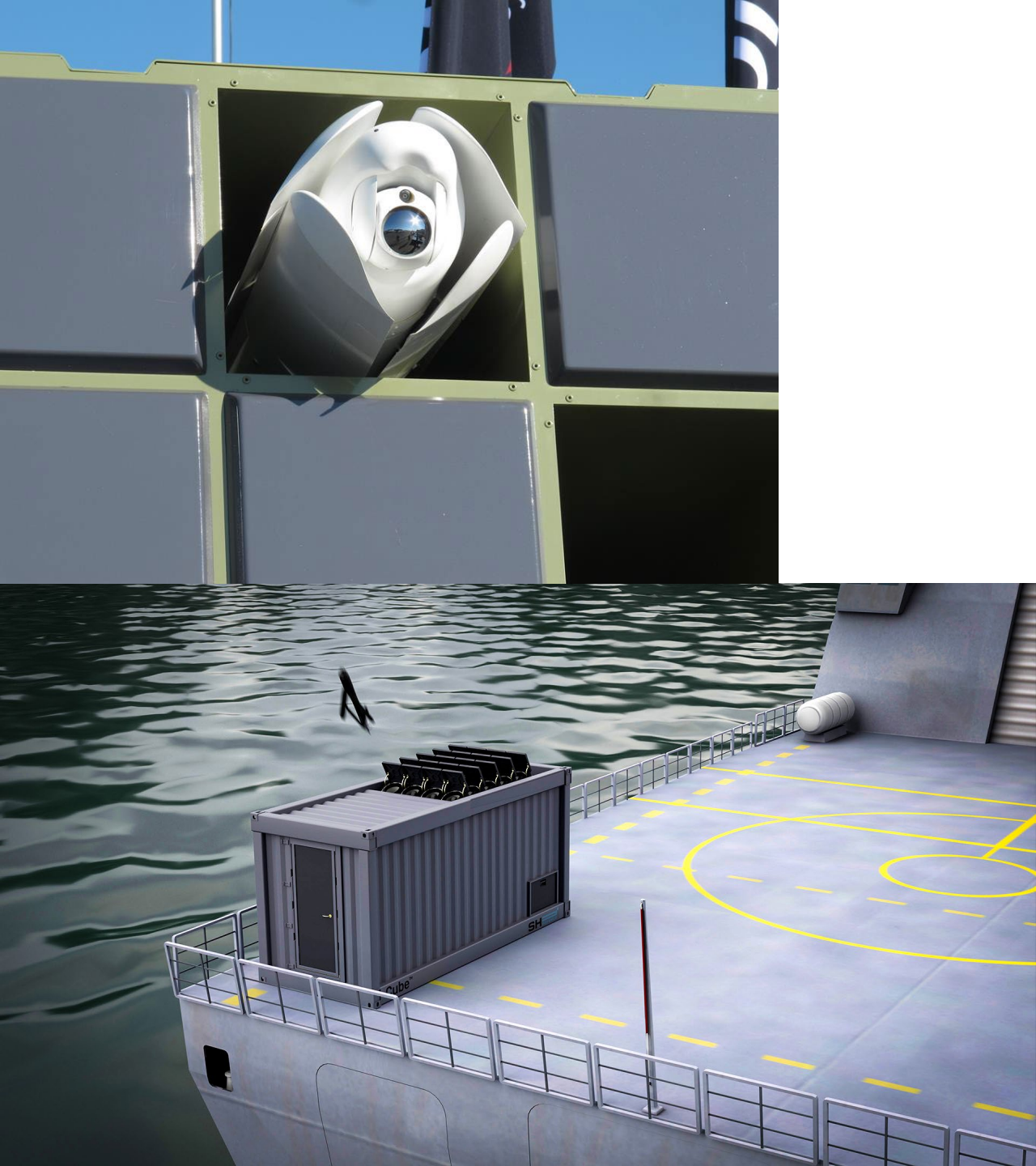
This mine hunter capability is a stand-alone system that includes several suppliers: a C2 container and Launch and recovery system from SH Defence, a REMUS AUV from HII with a multi-sensor platform from Kraken Robotic Systems, and a SeaFox from ThyssenKrupp AG.

The mine disposal system can be put on any prepared naval vessel, Coast Guard vessel, or commercial ship.





20ft Cube™ Module  
Loitering munition from UVision



**Mission:** Loitering Munitions and Drones

**Name:** HERO 120

**Company:** Uvision

**Prime:** Uvision

**Integration:** SH Defence

**ROM Price** Loitering Munition module: USD 8-10 million

**ROM Price** Module/Integration: Approx. USD 1.5 million

The prices are indicative and must be negotiated with the equipment supplier. ILS and Standard approvals and documentation are not included.

Loitering munitions offer significant tactical advantages for warships, enhancing their operational capabilities through extended range, precision targeting, cost-effectiveness, and versatility. Beneficial for engaging smaller or less critical targets.

Specs.:

Weight: 14.5 kg

Warhead: 4.5 kg

Range: 60+ km

Endurance: 60 min.

Also in dialogue with

**Uvision**  
Smart Loitering Systems

**AV**  
AeroVironment™

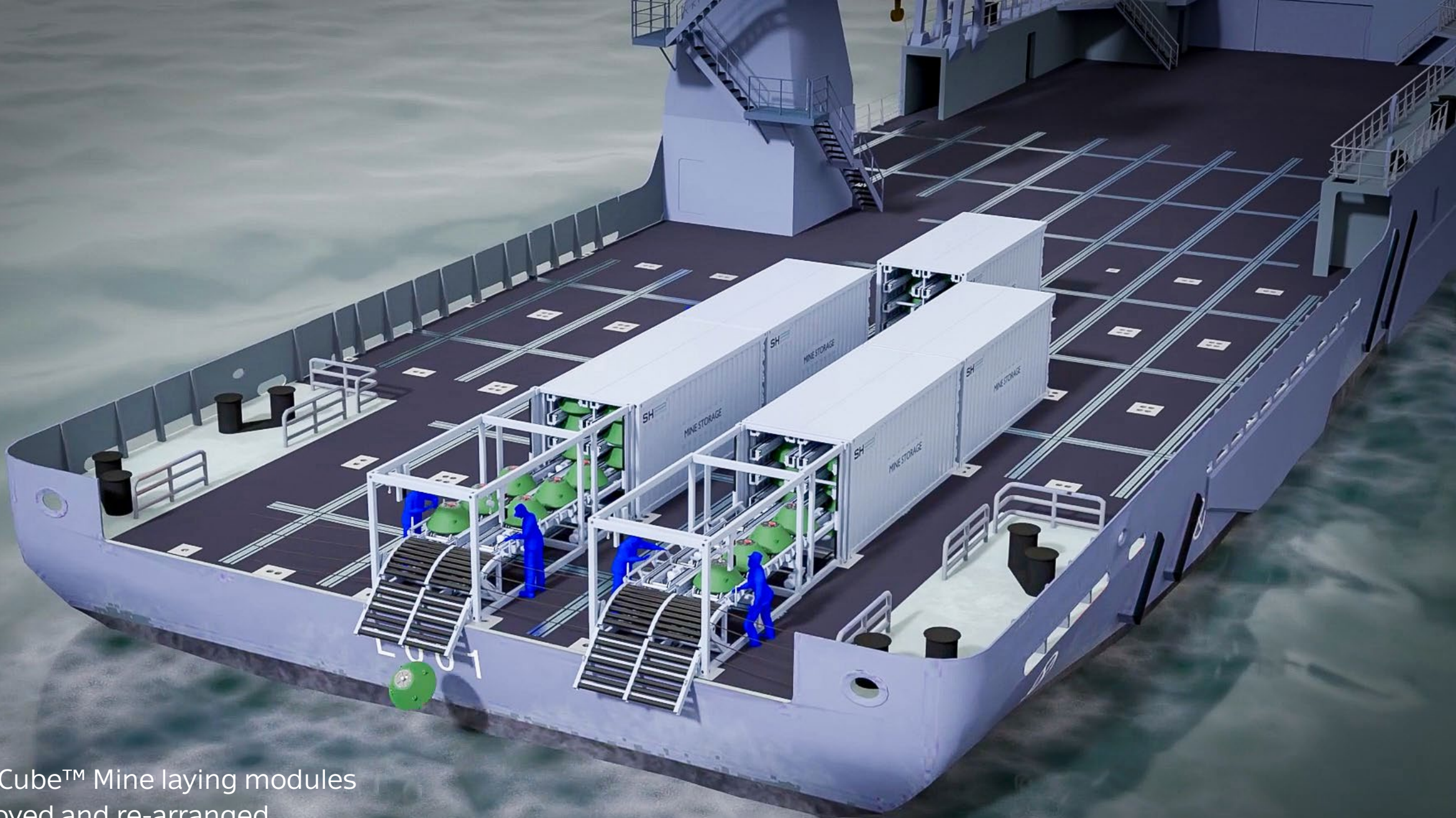
# TERMA<sup>®</sup>



SCANTER  
6000



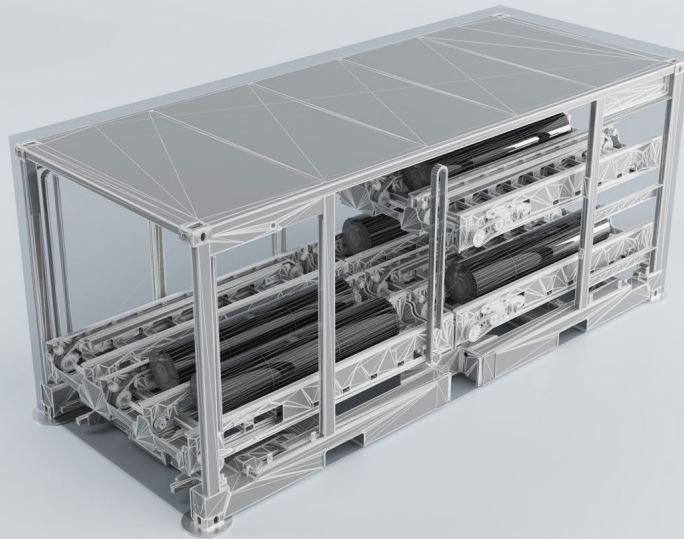
20ft Cube™ Module  
Naval Surveillance Radar by Terma



20ft Cube™ Mine laying modules  
deployed and re-arranged



20ft Mine **Launch** module



20ft Mine **Storage** module

**Mission:** Sea Mine laying

**Name:** Cube™ Sea Mine laying System

**Company:** SH Defence

**Prime:** SH Defence + Mine manufacturer:  
Rheinmetall, Forcit, SAES +

**ROM Price Mine Launch** module: Approx. USD 654.000

**Price Mine Storage** module: Approx. USD 551.000





2x 20ft Mine Laying **System** modules

**Mission:** Sea Mine laying

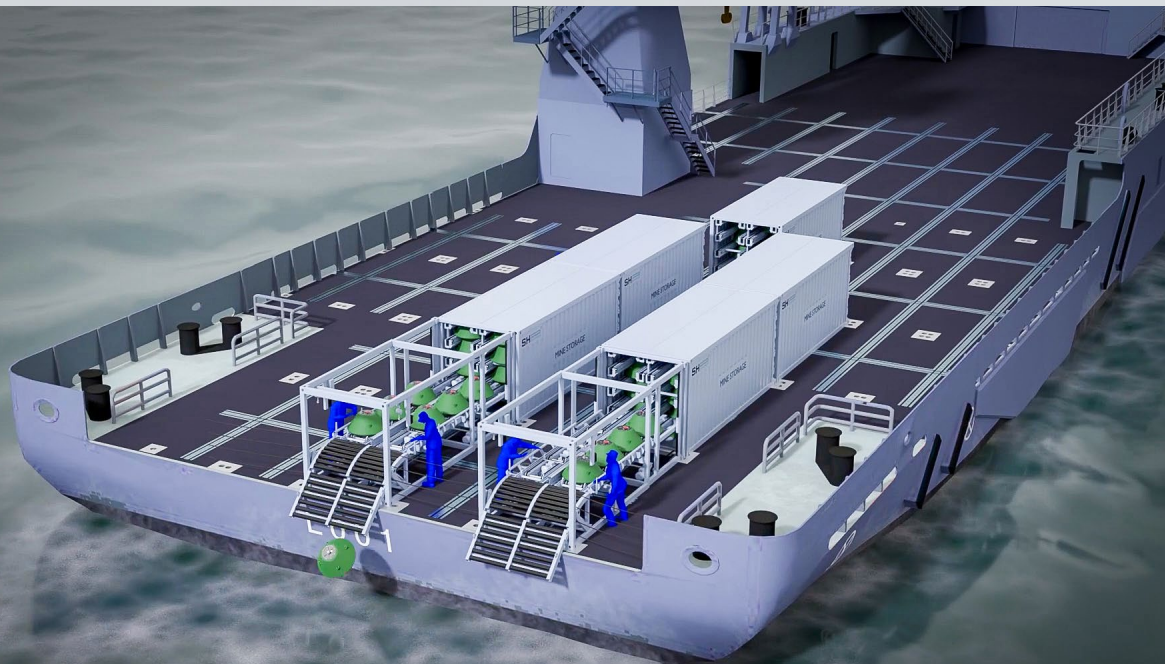
**Name:** Cube™ Sea Mine laying System

**Company:** SH Defence

**Prime:** SH Defence + Mine manufacturer:  
Rheinmetall, Forcit, SAES +

**ROM Price Mine Launch** module: Approx. USD 654.000

**Price Mine Storage** module: Approx. USD 551.000

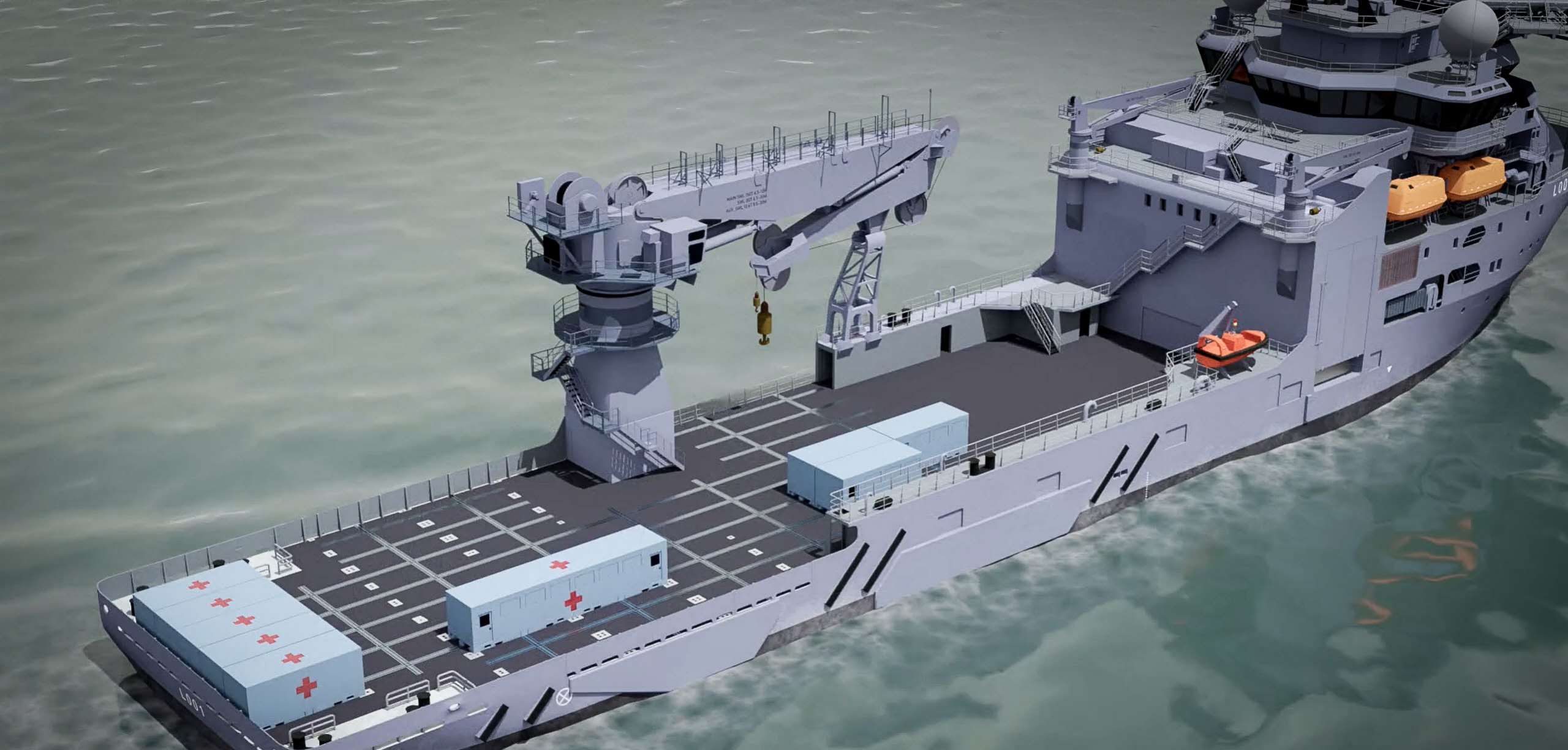




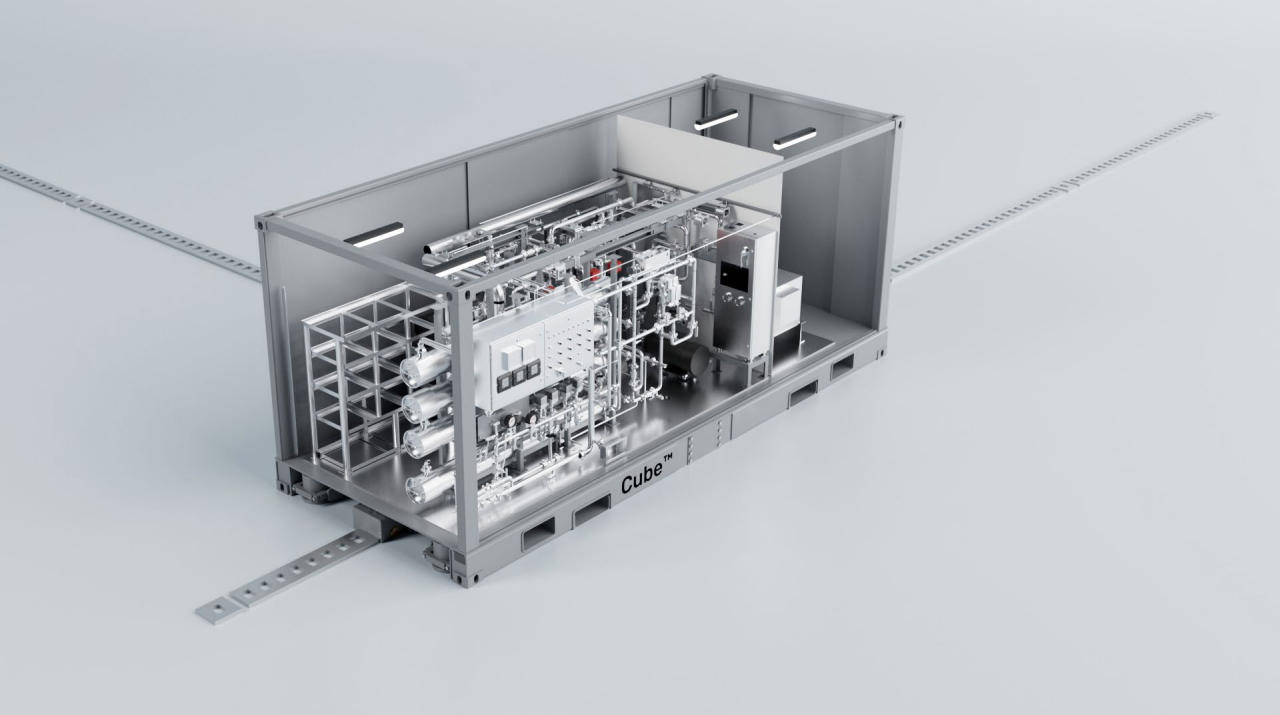


**SH** DEFENCE

Cube™



# Naval Disaster Relief Operations



**Mission:** Sea Water Desalination

**Name:** ROWPU

**Company:** Blu Metric Environmental

**Prime:** SH Defence

**Integration:** SH Defence

**Price** ROWPU module: Approx. USD 725.000

**Price** integration:

The prices are indicative and must be negotiated with the equipment supplier. ILS and Standard approvals and documentation are not included.

BluMetric currently supplies the Canadian Department of National Defense (DND). Delivering fresh drinking water within hours of set-up. One ROWPU can provide 150m<sup>3</sup>/day of drinking water, which is enough water for 3,000 people at an average consumption of 50 litres/day/person. The ROWPUs are used during military operations, humanitarian and disaster relief missions.

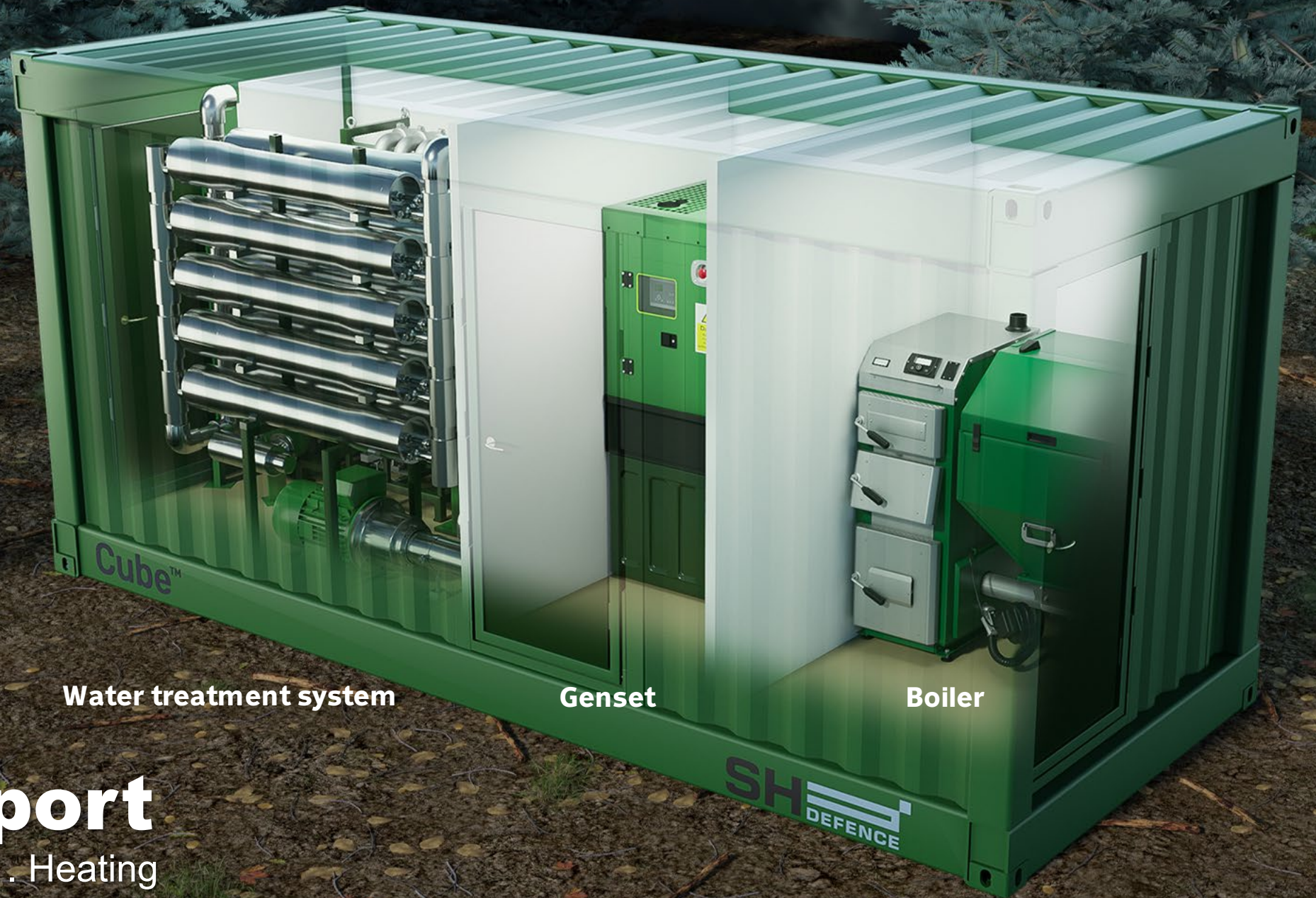
Key:

Fully self-contained in a 20' container

Onboard power through diesel generator/battery storage, plus local power (when available)

Reliable water purification (source water: fresh, brackish, salt, turbid)





Water treatment system

Genset

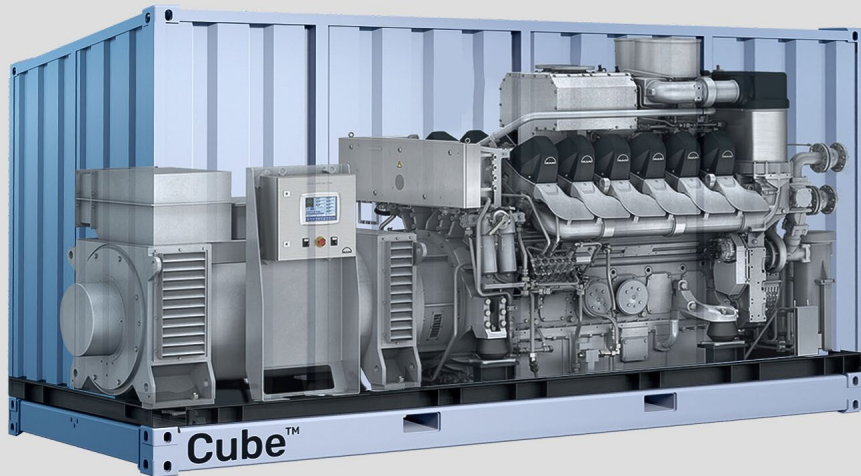
Boiler

# Life support

Clean water . Power . Heating



3-1 system



MAN175D - High-speed genset

**Mission:** Power System

**Name:** Life Support – Power and Heating

**Company:** SH Defence + Suppliers

**Prime:** SH Defence

**Integration:** SH Defence

**Price** Power System module: Approx. USD 1 million  
(Requirements?)

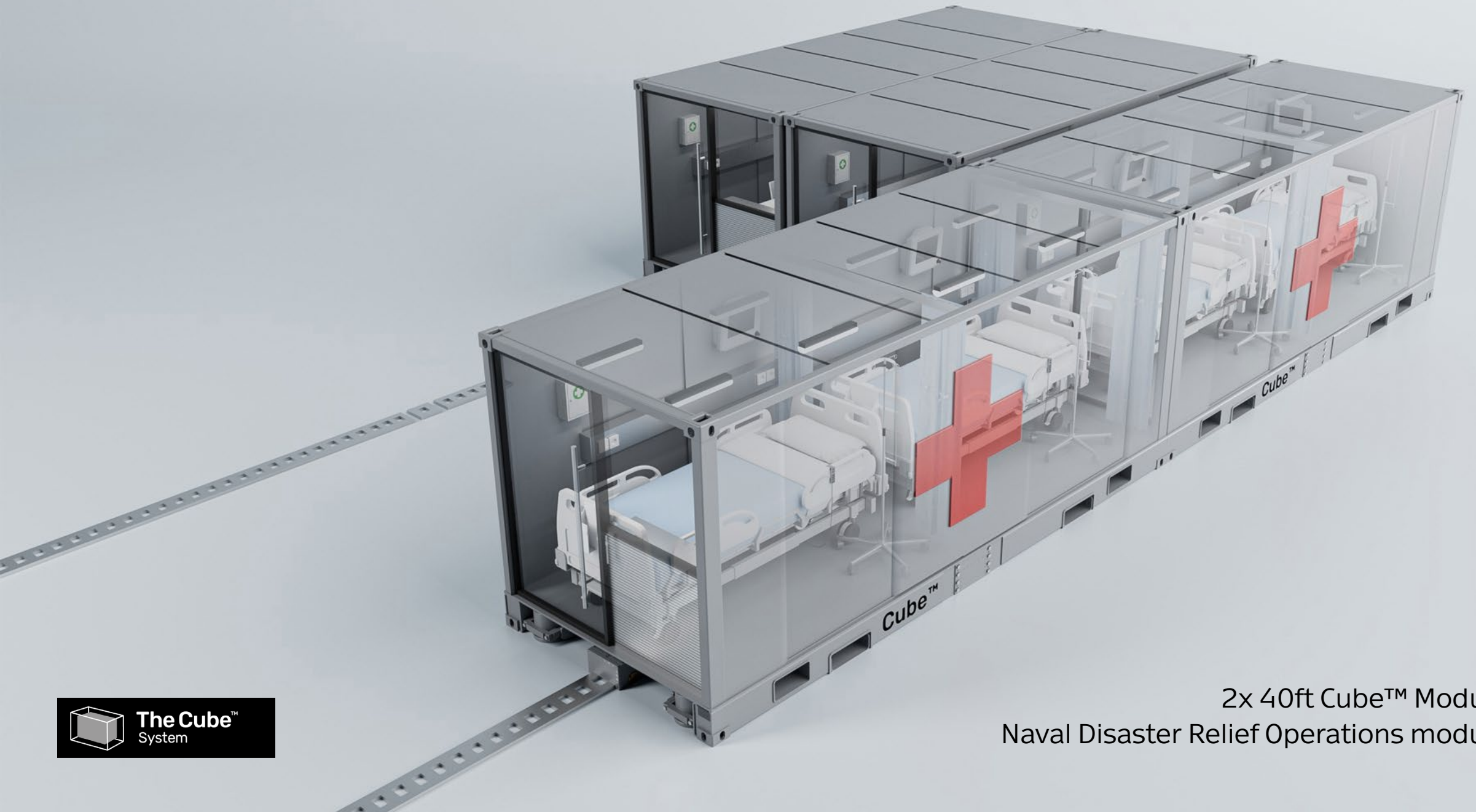
**Price** integration:

The prices are indicative and must be negotiated with the equipment supplier. ILS and Standard approvals and documentation are not included.

Stand-alone Generator Set, Solar Power System with battery power storage

Genset is designed to run at full capacity in land-based harsh environments. The Boiler system for heating houses, supply to hospitals or other mobile container solutions like offices, field kitchens and hospitals.



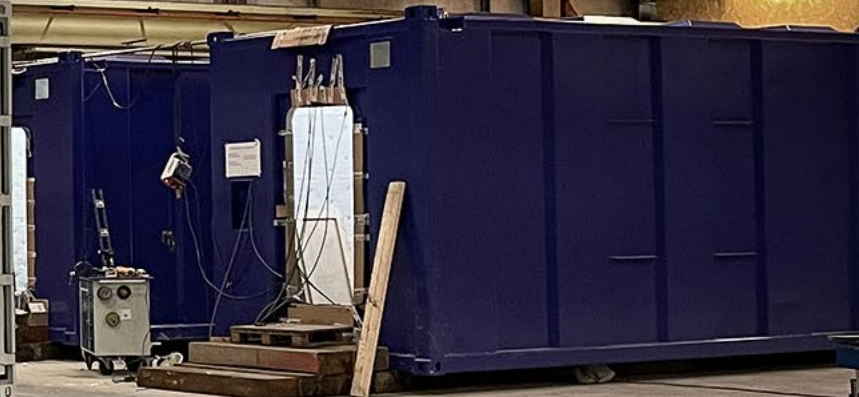
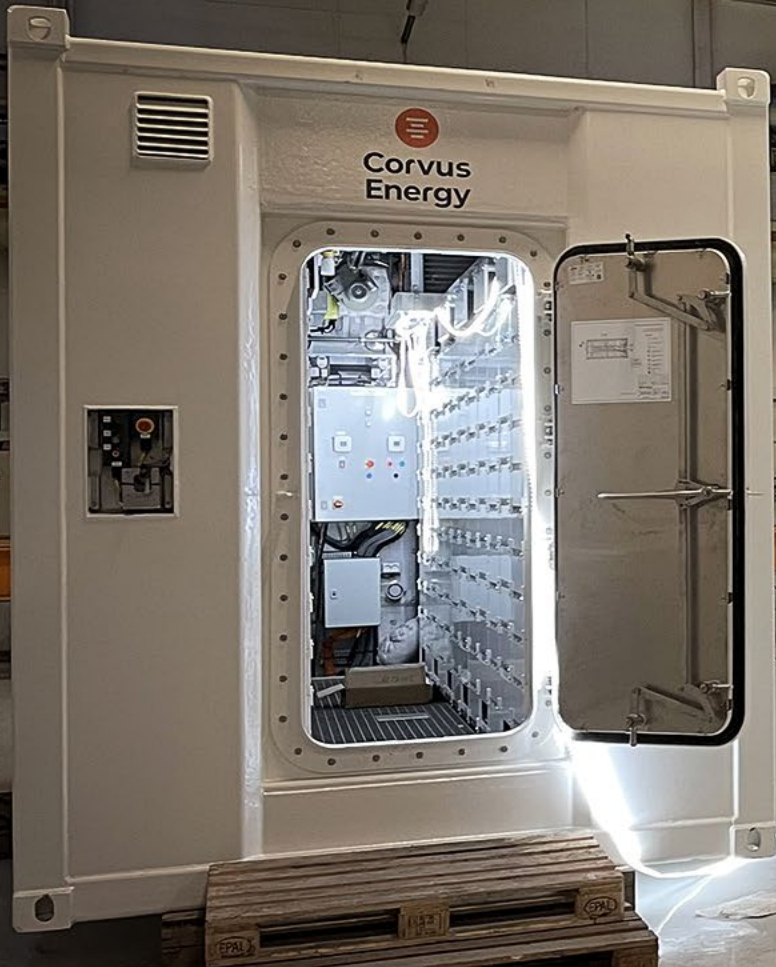


2x 40ft Cube™ Module  
Naval Disaster Relief Operations module



20ft or 40ft Cube™ Modules stacked  
Naval Disaster Relief Operations module / Submarine Rescue Systems

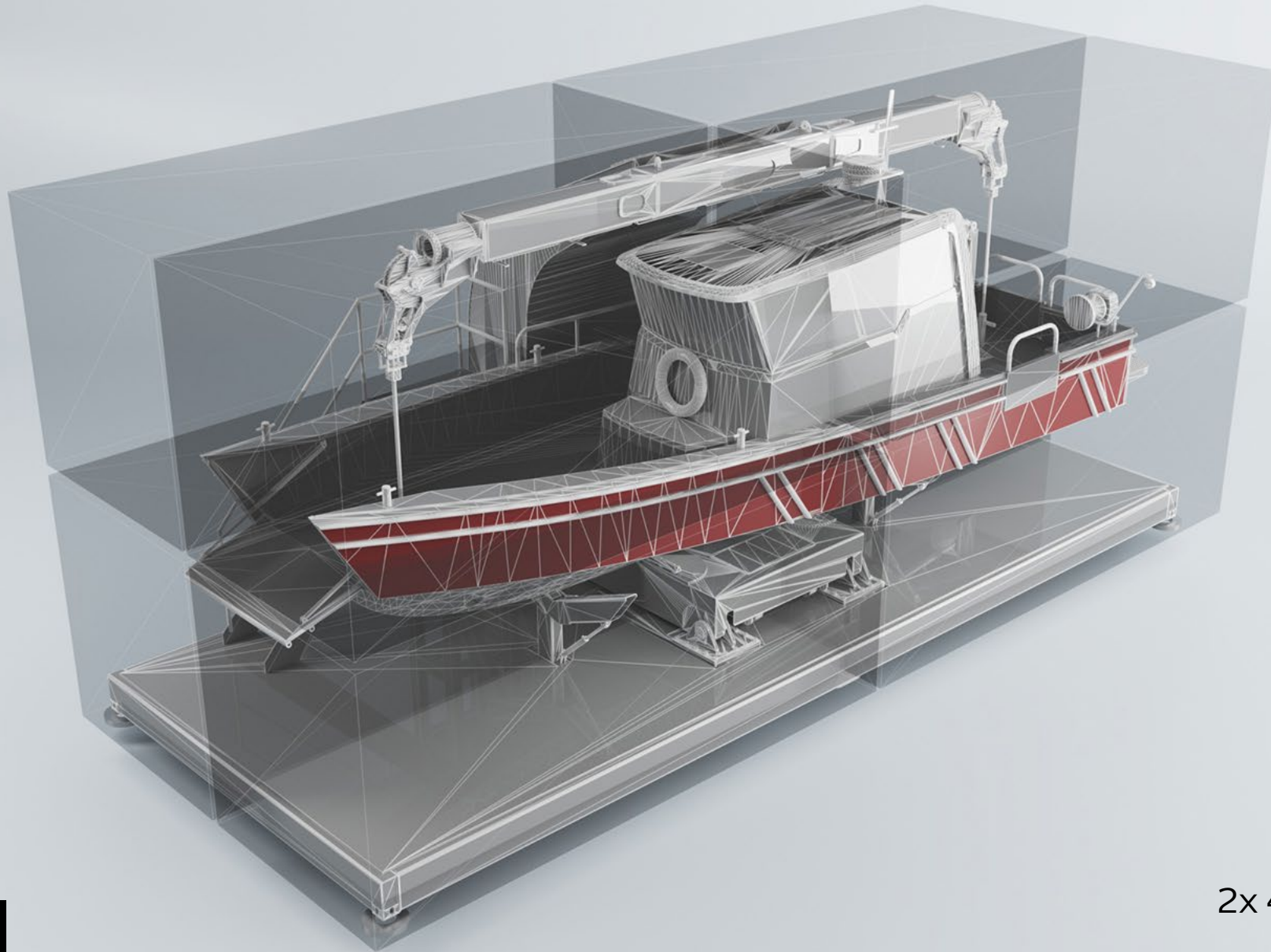




# BATTERY ROOM

Containerised battery and fuel cell solutions





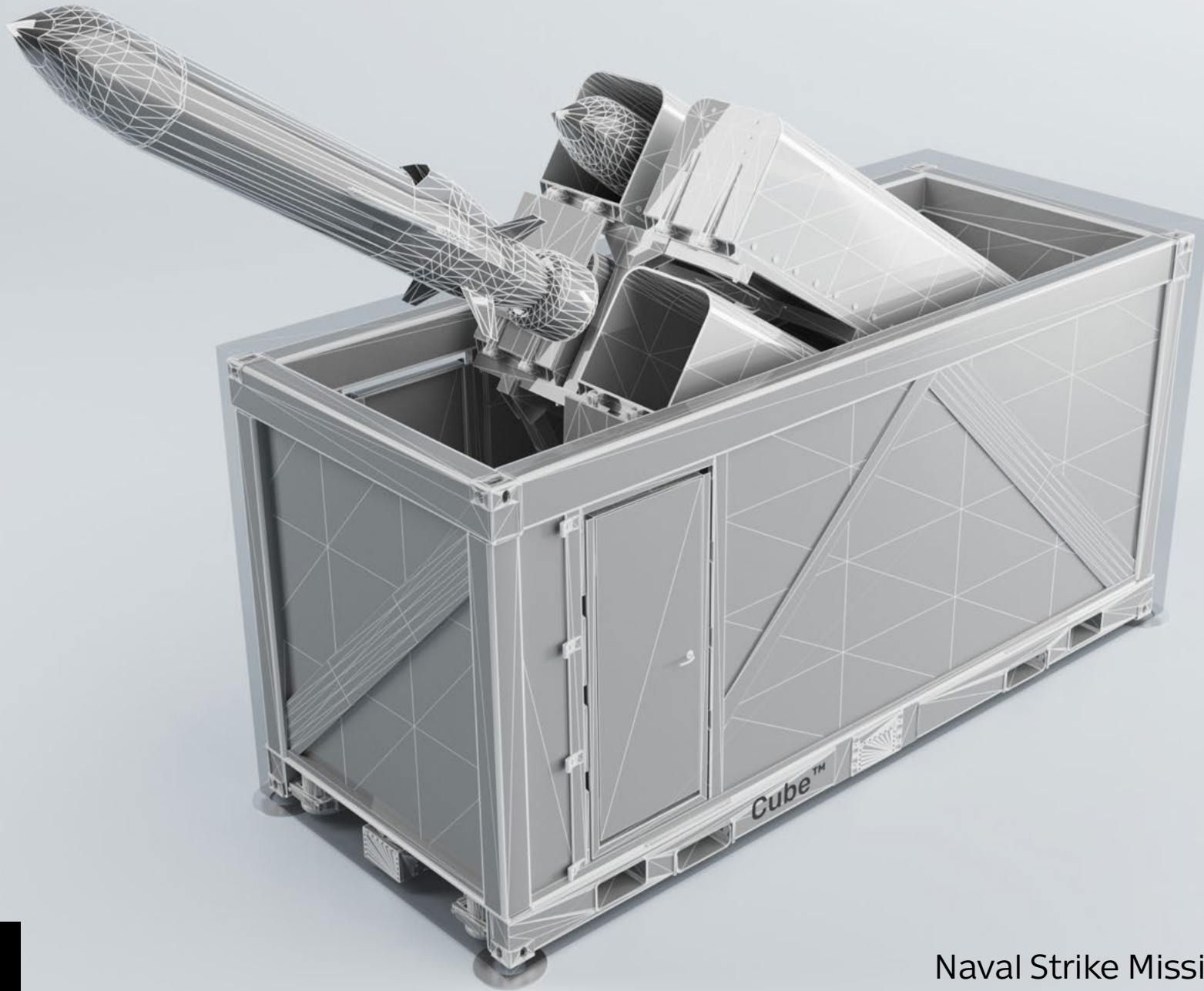
2x 40ft Cube™ Module  
Boat Davit System



2x 40ft Cube™ Module  
Boat Davit System



2x 40ft Cube™ Module  
Oil Containment System



20ft Cube™ Module  
Naval Strike Missile (NSM) by Kongsberg





**IN THE  
DEVELOPMENT**



**Mission:** Anti-ship missile  
**Name:** NSM – Naval Strike Missile  
**Company:** Kongsberg  
**Prime:** Kongsberg  
**Integration:** SH Defence

**Price NSM module:**  
**Price integration:** Approx. USD 656.000

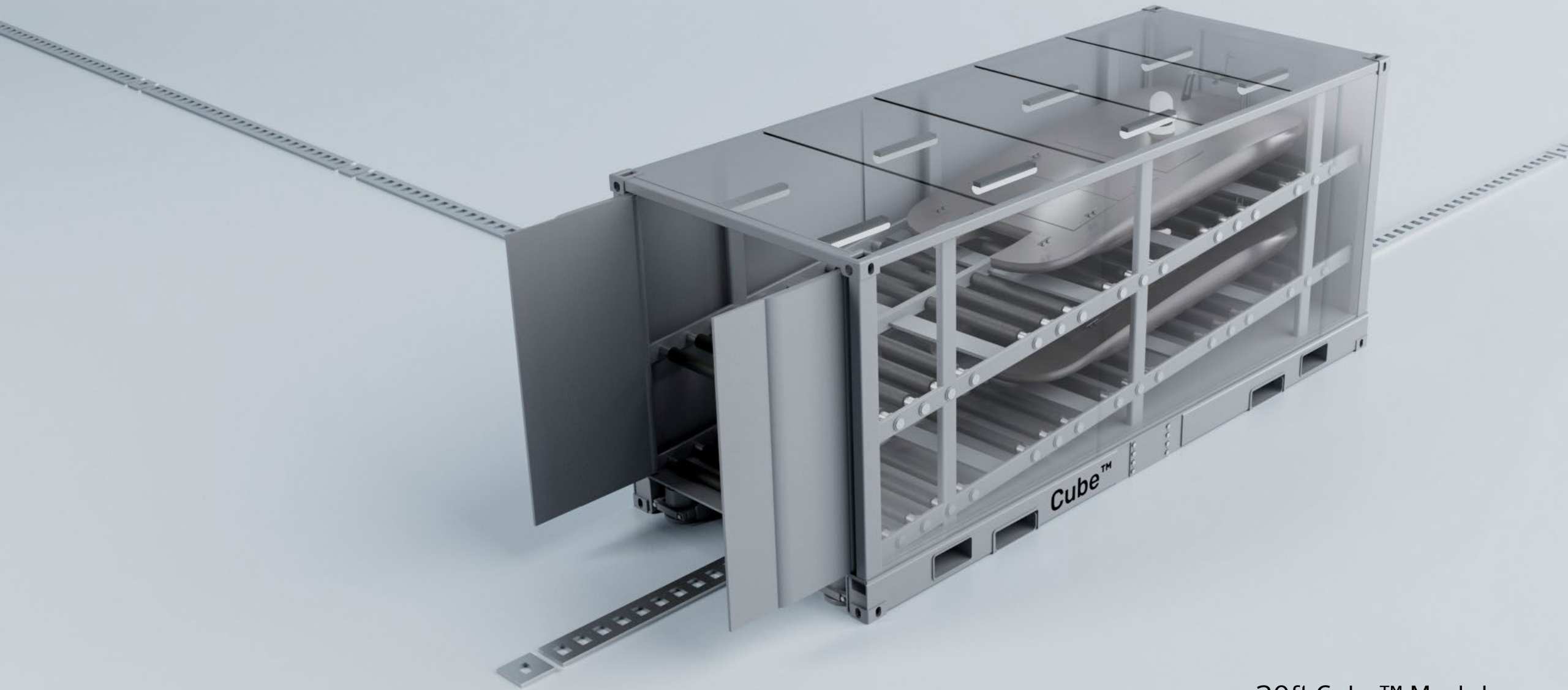
The prices are indicative and must be negotiated with the equipment supplier. ILS and Standard approvals and documentation are not included.

The Naval Strike Missile is a long-range, precision strike weapon that seeks and destroys enemy ships at distances greater than 100 nautical miles (185km).

The NSM is a very flexible system, which can be launched from a variety of platforms against a variety of targets on sea and land. The NSM is a fifth-generation anti-ship missile, produced by Kongsberg.

Specs.:  
Speed: High Subsonic  
Weight: 407 kg (897 lbs)  
Length: 3,96 m (156 inches)  
Range: >185 km (100 nm)





20ft Cube™ Module  
MANTAS USV – Unmanned Surface Vessel by MARTAC



**Mission:** Multi-role USV  
**Name:** T12 – Unmanned Surface Vessel  
**Company:** MATAAC  
**Prime:** MARTAC  
**Integration:** SH Defence

**Price** MANTAS T12: N/A  
**Price** integration: N/A

The prices are indicative and must be negotiated with the equipment supplier. ILS and Standard approvals and documentation are not included.

A solid system for littoral environments, hosted from a mothership. Deployable from shore, ship or boat with supporting launch and recovery equipment.

Mine Countermeasure  
Search and Rescue  
Security Monitoring  
ISR Swarm  
EW/SIGINT  
Shallow and Deep Water Mine Countermeasure  
Swarming Operations

Specs.:  
Length: 12 ft (3.6 m)  
Max Payload: 140 lbs (64 kg)  
Powertrain: Electric  
Burst Speed: 30+ kts



**MARTAC**  
Beyond Human Capability



**Mission:** C-UAS - Counter Unmanned Aerial Systems  
**Name:** Seahawk Paladin System  
**Company:** SEA (Systems Engineering & Assessment)  
**Prime:** SEA  
**Integration:** SH Defence

**ROM Price** N/A

The prices are indicative and must be negotiated with the equipment supplier. ILS and Standard approvals and documentation are not included.

Modular and Scalable C-UAS system.

Capable of engaging multiple types of surface and air threats the MSI-DS SEAHAWK DS A3 system is optimised for combating small boat swarm attacks with highly accurate and precise gunfire. station to view, analyse, report sonar contact information

- MK 38
- Underwater threat detection
- Easy ship fit
- Small diameter
- Low weight & drag
- Low power consumption

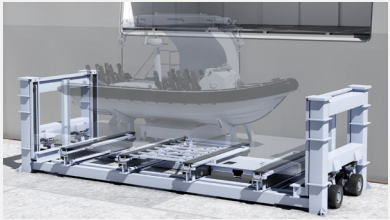


**MSI**<sup>TM</sup>  
**MSI-Defence Systems Ltd**

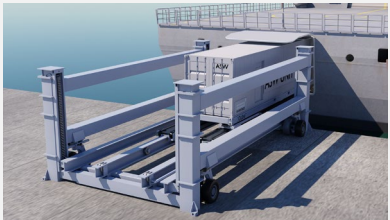


# The Cube™ System

## Onshore Handling



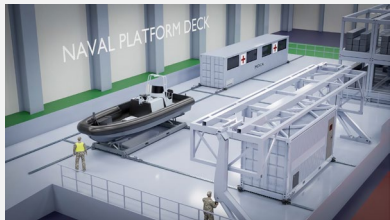
Mobile Side loader



Mobile Stern loader

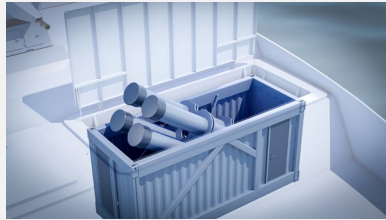


Container/ Cube loader system

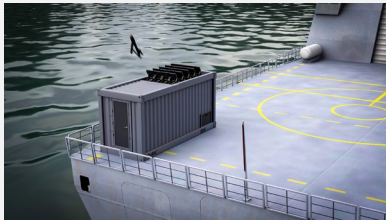


Facility for Storage, Test, Maintenance

## Cube modules



Naval warfare

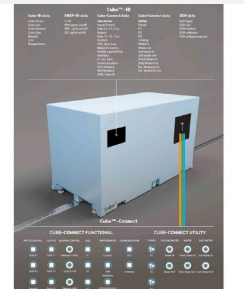
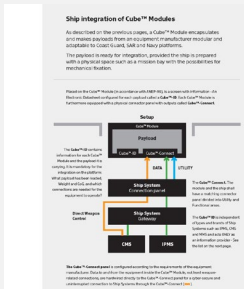


Maritime Interdictions



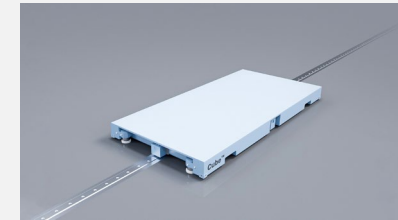
Disaster relief  
Oil Spill Recovery  
Search and Rescue

## Integration to Ship system



Cube ID  
Cube Connect

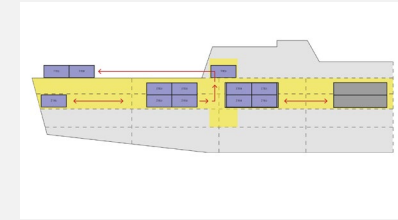
## Onboard Handling



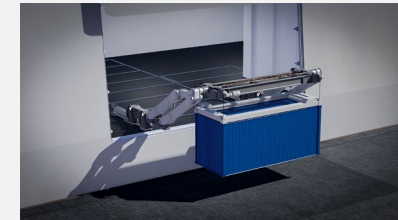
Cube Skidding System



Mission bay doors and Twistlocks



Elevators and infrastructure



Side davit

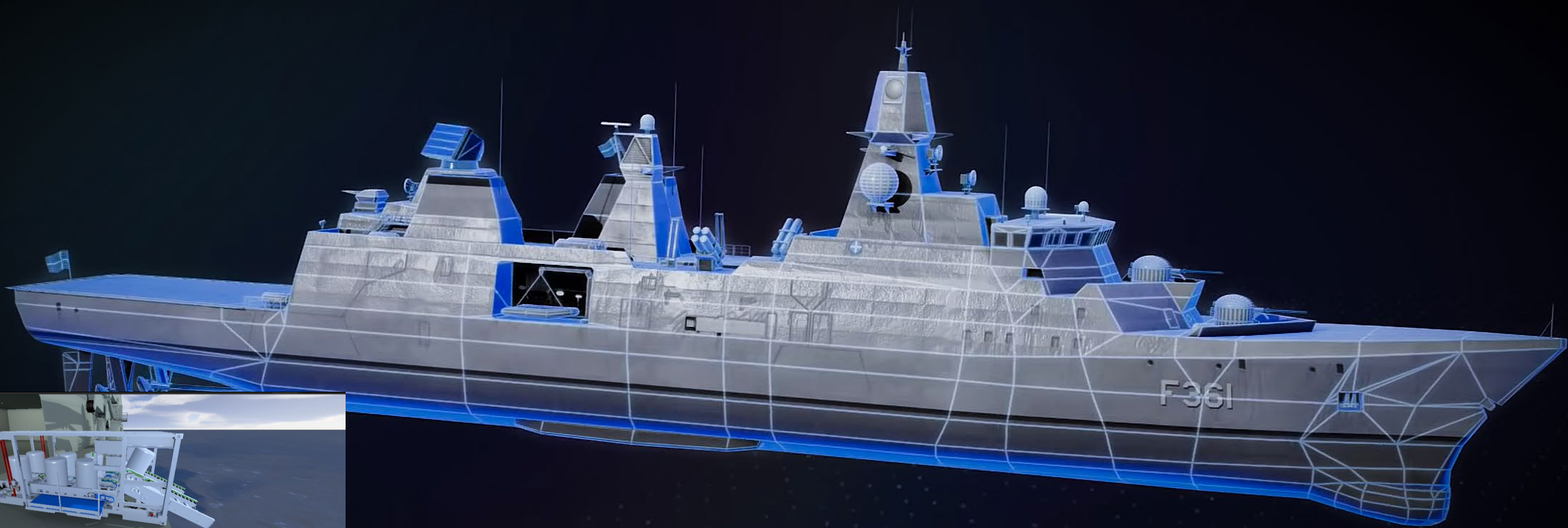
**TEST AND TRAINING  
FACILITY FOR  
PODS/CUBE MODULES**



# Training with real equipment

Maintenace

# DIGITAL TWIN



# Thank you!

For your time and patience and hopefully  
see you again at our Stand at ADAS



**Happy holiday and Independence Day**