PPA FRIGATE

BORN TO BE INNOVATIVE, FLEXIBLE AND RESPONSIVE

FINCANTIERI

PPA FRIGATE: A SHIP DESIGNED TO BE THE STATE OF THE ART OVER TIME

Operational scenarios are continuously evolving. Emerging warfare domains, like asymmetric and seabed warfare, add new threats and challenges to modern Navies. Aerial drones, hypersonic missiles, EM weapons, loitering munitions, and unmanned underwater vehicles require vessels to have resources for an appropriate and scalable response. Fincantieri's answer, driven by the visionary Italian Navy requirements, is the PPA Frigate, a multipurpose combat vessel marking an evolutionary leap and ready to embrace future innovation trajectories. A smart digital vessel quickly adaptable and reconfigurable, designed to shorten critical processes like the engagement chain, and to optimize personnel and resources. Groundbreaking extensive use of digitalization makes PPA Frigate a hub for digital innovation.

USHERING IN A NEW ERA IN NAVAL TECHNOLOGY

A key innovation of the PPA Frigate is the Operational Combat Center (OCC) – the brain of the ship, integrating the Command Information Center (CIC), the Operating Combat Bridge (OCB) and the Advanced Cockpit System (ACS) in a single area.
All the smart multifunctional consoles are interchangeable and on duty according to the intensity of threat level.

THE NAVAL COCKPIT: A TACTICAL GAME CHANGER

One of the standout features of the ship is the Naval Cockpit, a significant leap forward in vessel management.
Designed to meet the Italian Navy's need for an intuitive and highly efficient ship management tool, the Naval Cockpit merges sailing and combat functions into a streamlined interface. It allows seamless control with a minimal crew, reducing complexity while enhancing operational readiness.

Drawing inspiration from aviation technology, and based on aeronautical concepts, the Naval Cockpit is an integrated system located in the bridge that far surpasses traditional designs. Two officers, pilot and co-pilot, operate the ship's navigation, platform systems, and combat functions via advanced digital consoles. The cockpit integrates sensors, weapon systems, and communication technologies, allowing for rapid and coordinated responses to any threat.

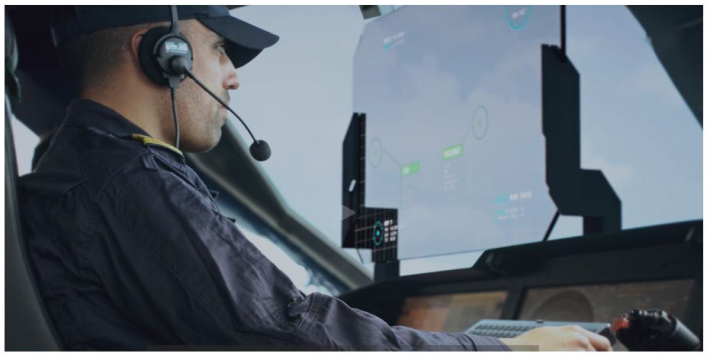
COMPREHENSIVE SHIP MANAGEMENT SYSTEM (SMS)

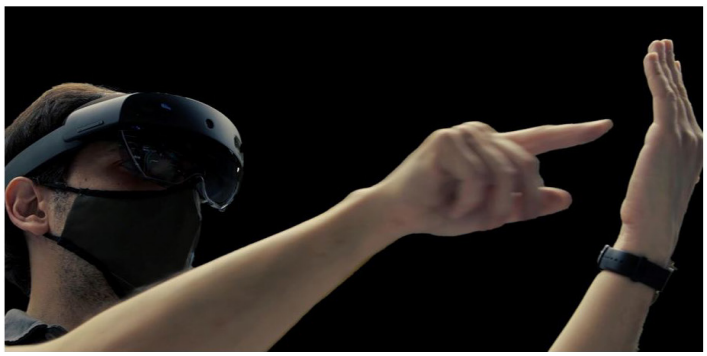
At the heart of the PPA Frigate is the Ship Management System (SMS), acting as backbone of the ship, managing platform systems, navigation system, control, monitoring and decision-making.

SMS represents a new paradigm in naval ship design optimizing the control of all platform systems, allowing battle damage control and recovery, electric consumption management and saving, as well as enabling advanced data processing and decision support. The PPA Frigate SMS is developed by Fincantieri and represents a state of the art product, internationally recognized, with the potential for future developments, like microservices, the PPA Frigate is at the forefront of naval digitalisation.

NEW FRONTIERS OF DIGITAL APPLICATIONS: AUGMENTED REALITY

Augmented Reality is extensively used within the vessels to significantly enhance operational effectiveness, training and maintenance, with additional improvement already planned to maximally exploit this technology.

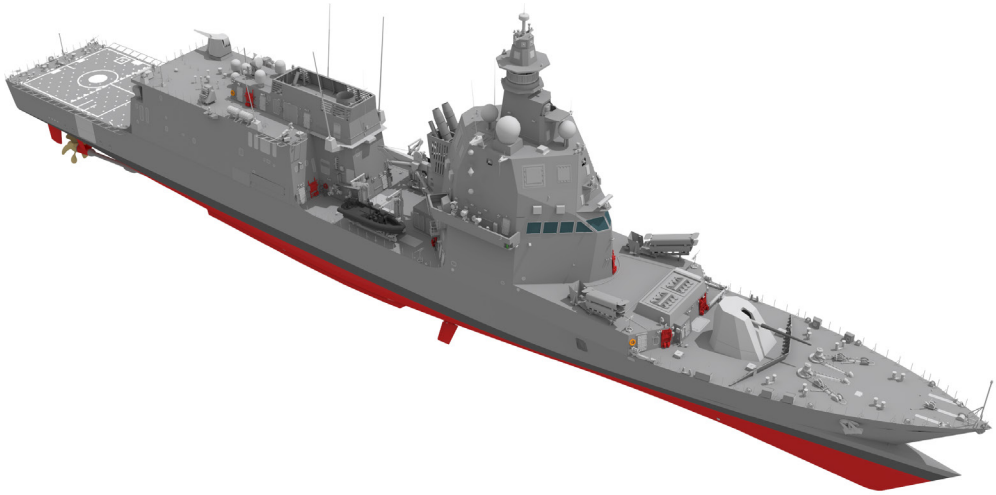




LETHALITY AND DEFENCE

PPA Frigate is capable to perform a broad range of mission profiles:

- Anti-Submarine Warfare (ASW)
- Anti-air Warfare (AAW)
- Anti-Surface Warfare (ASuW)
- Special Forces Operations (SOF)
- Strike Operations
- Maritime humanitarian and disaster relief operations
- Coastal/offshore surveillance
- Sea Line of Communication (SLOC) Protection
- Exclusive Economic Zone (EEZ) protection
- Intelligence, Target acquisition and Reconnaissance (ISR)
- Anti-piracy, constabulary and anti-pollution operations
- Joint and Combined operations

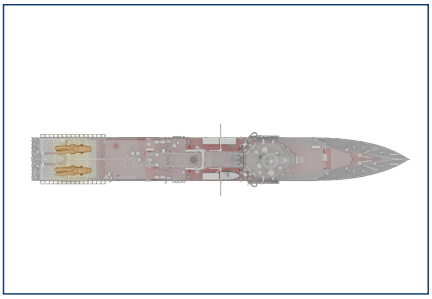


PPA Frigate is equipped with the following systems:

- 1 Bridge Console Cockpit
- 2 Navigation Radar
- 1 KRONOS QUAD (C-Band)
- AAW/ASW Decoy Launching System
- Torpedo detection sonar
- Torpedo Launching System
- Bathytermograph
- 1+1 IFF with Conformal Array + transponder
- 1 Navigation System
- 1 Fire Control System
- 2 Quick Pointing Device System PNTS
- 1 76/62 MCG
- 1 127/64 LCG
- 2 25 mm SCG
- 1 Automatic Ammo Dept. AAD
- 1 Surface-to-air Missile
- 1 EW System (RESM + CESM + RECM)
- Surface to SurfaceMissile System
- Undewater Telephone
- Command Support System
- Short Range Artillery
- DSS-IRST 3 Detection Heads and 4 Search Heads
- 1 Diver Detection Sonar
- 1 CMS
- 2 Long Range Acoustic Device
- 1 External Communications
- 1 Internal Communication System

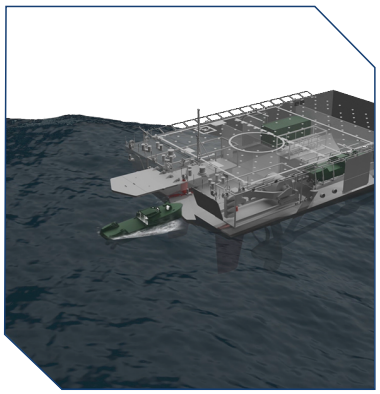
The Combat Management System is the latest evolution of the one equipping all vessels of the Italian Navy and utilizes an ‘open’ system architecture to facilitate integration of new sensors and weapons throughout a ship’s life.

The main Anti Air Warfare (AAW) and Anti-Surface Warfare (ASuW) sensor is the Kronos Quad Radar in C Band, able to provide outstanding performance in range and accuracy. The SAAM ESD based on the ASTER missiles provides Local Area and Area Defence and unique AAW capability.

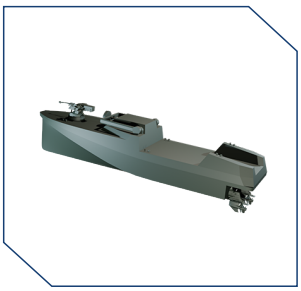


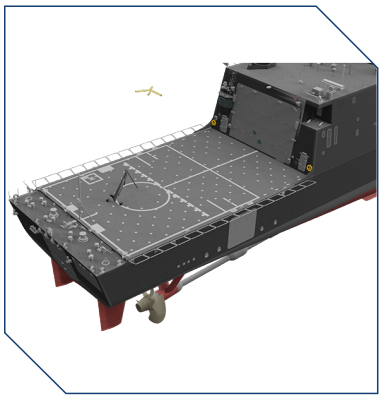
The helo suite forms an important part of the ASW component and allows the embarkation of 1x AW101 + 1x NH90 or 2x NH90 helicopters with the following benefits:

- Improvement of ASW and ASuW capabilities
- Improvement of AAW by early warning heliborne against slow movers
- Improvement of lethality by heliborne weapons
- oft kills by heliborne ECM
- Two helos 24h air coverage

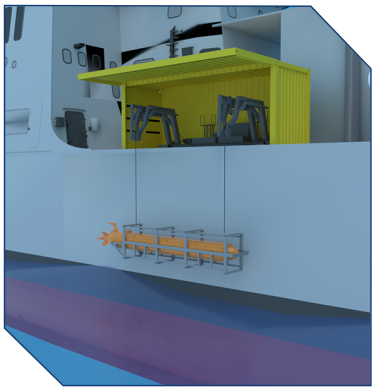


SURFACES DRONES

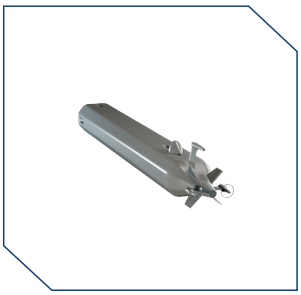




AIR DRONES



UNDERWATER DRONES

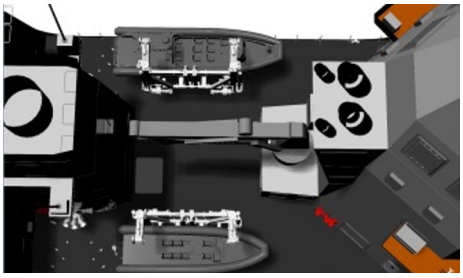


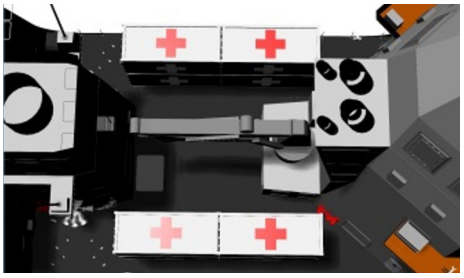
Capacity to extend the operative scenario awareness

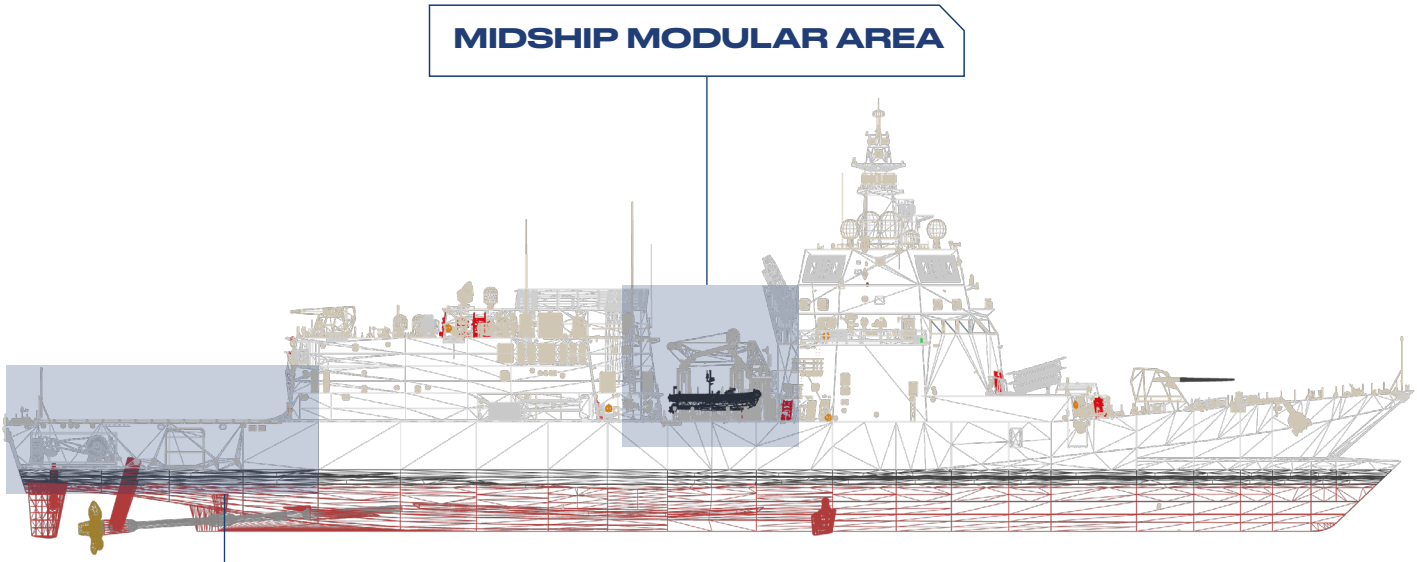
RECONFIGURABILITY AND PAY LOAD CAPABILITY

The PPA Frigate design includes two modular areas (one amidships and one astern, below the flight deck) capable to receive the so-called “additional mission modules”.

The ship reconfigurability represents a unique feature to face evolving scenarios. The ability to carry various types of payloads, with autonomous load/unload, effectively enhance the capabilities of PPA Frigate, for any kind of mission.



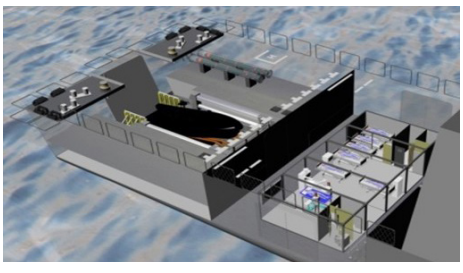


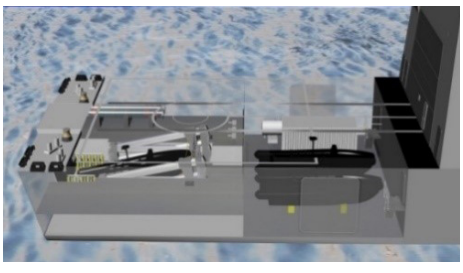


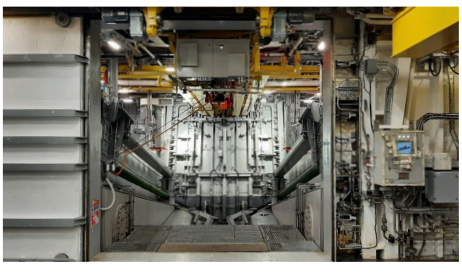
The modular areas allow to further expand ship’s capabilities over time, fitting on board new generation equipment (such as unmanned systems, electronic warfare equipment, etc.).

Alternative set of mission modules can also include options for HADR operations (Humanitarian Aids and Disaster Recovery - i.e., field hospitals, additional sleeping quarters, etc.).

The central modular area (amidships) is sized to host up to eight ISO 1C containers. A davit double-arm folding crane is used to launch and recover boats up to 11 meters long. RHIB’s can be launched and recovered through a stern ramp.





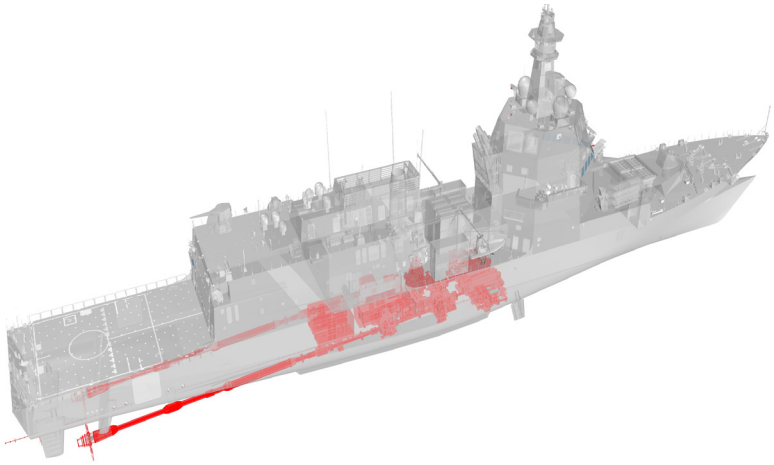


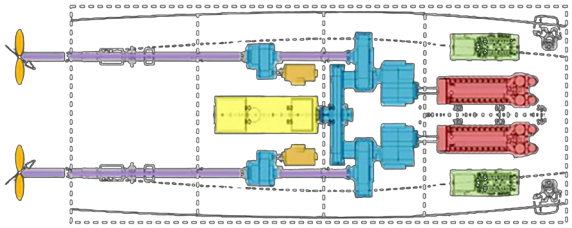
PROPULSION

The propulsion configuration is a CODAGOL (COmbined Diesel And Gas Or Electric) architecture.

It is based on one LM 2500+G4 gas turbine (32 MW), two MTU 20V 8000 M91L diesel engines (10 MW each), a cross-connected reduction gear and two electric motors (1.35 MW each) connected to the shafts by means of two auxiliary reduction gears.

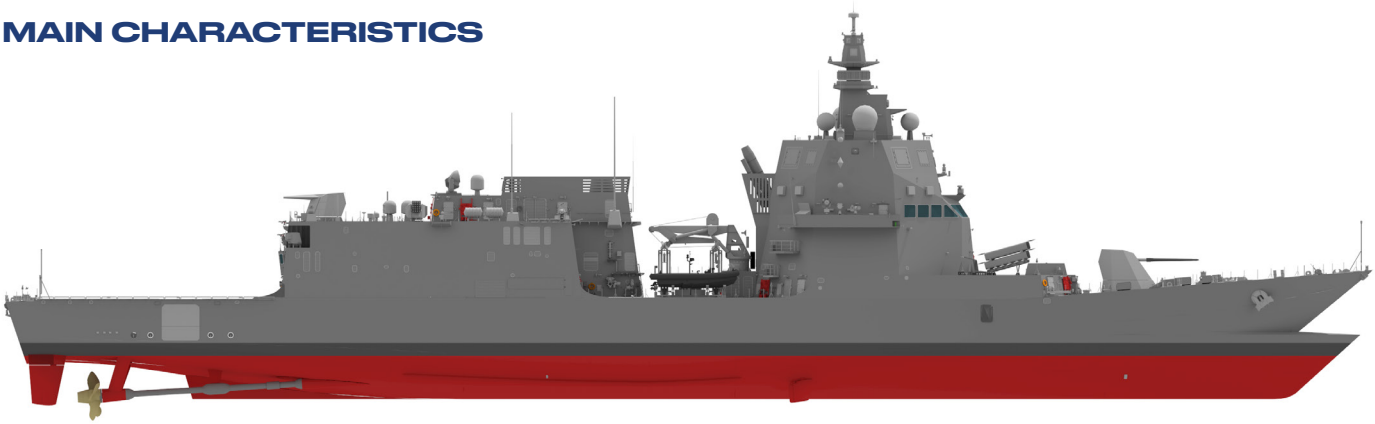
When the ship sails at loitering speed (less than 10 Knots) for a long period, the electric configuration permits to shut off the main propulsion diesels, avoiding them to work at very low load.





POSSIBLE ASSETS (P MAX)	SPEED (KNOTS)
Full Electric (2x1.35 MV)	10
2 Diesel Engeenes (2x10 MV)	25
1 Tag (32 MV)	27
Codag (2x10 MV - 32 MV)	32

MAIN CHARACTERISTICS



Length overall	143.0 m
Max breadth	16.5 m
Draft	5.2 m
Full Load Displacement	6.000 + t
Max speed (CODAG mode)	32 kn
Max speed (Diesel mode)	25 kn
Max speed (Electric mode)	10 kn
Range at Cruise speed	> 5000 nm

AN ENHANCED VERSION PPA FRIGATE: PPA EVO

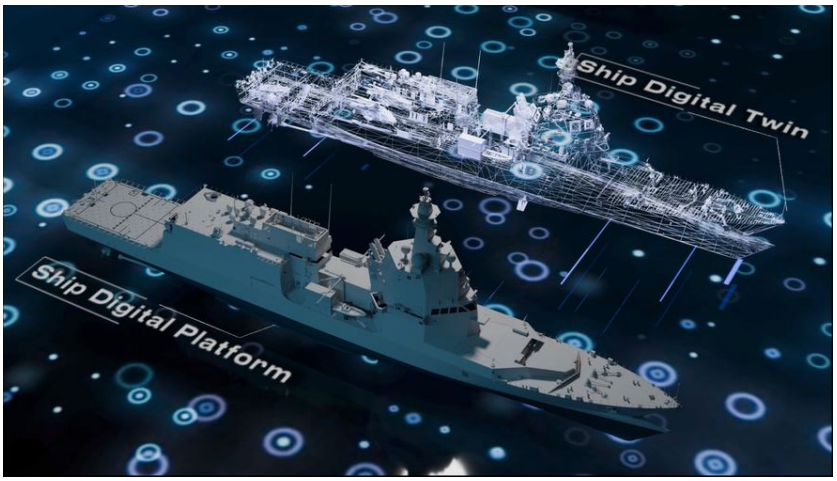
PPA EVO is not a new design of a new ship, but an enhanced version of the PPA in service with the Italian Navy thank to the grow capability of PPA platform. This evolution was made possible thanks to the feedback given by the Italian Navy and to adapt the PPA concept to emerging threats.

This version, extremely modular and versatile, is supposed to meet harder threats faced during operations and cope with future ones in taking more account of underwater, anti-air, and anti-drone warfare.

The PPA EVO warfare is strongly reinforced by the installation of up to 64 missile vertical launchers, 8 anti-ship missiles in addition to the two 76mm guns, secondary guns 30/40mm CIWS placed on each side of the upper deck and torpedo tubes, will complete this powerful configuration.

To detect and counter unmanned systems, the Omega360 radar and direct energy weapon (DEW) can be fitted.

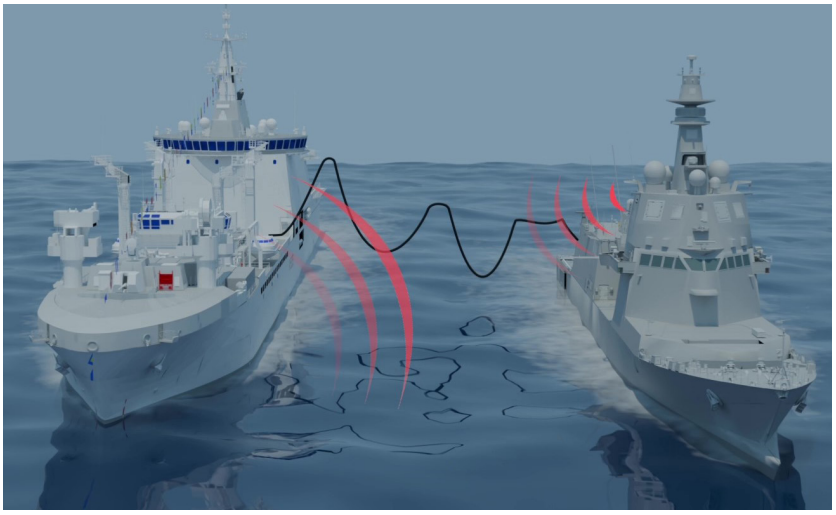
FROM DIGITAL PLATFORM TO DIGITAL TWIN



The transition from a digital platform to a full digital twin brings significant benefits across all phases of the ship's lifecycle:

- De-risk during ship building
- Training environment for crew
- Collect data from the field, data analysis and simulations of ship behaviour
- Data analysis to optimize predictive maintenance
- Design, implement, test and download of new applications during the ship life
- Ship operation simulations

MANOEUVRING SUPPORT



A new support tool designed to enhance safety and precision during complex maritime operations. Ideal for tasks such as at-sea refurbishment and accurate ship positioning within convoys, it ensures optimal control, reduced risk, and reliable performance in the most demanding conditions.

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