

La Spezia, October 23, 2025

DEEP presentation event

The DEEP system – General overview

DEEP is a modular, scalable, and cyber-secure “system of systems” designed for the protection, development and in-service maintenance of critical underwater infrastructures, as well as for the monitoring and safeguarding of the marine environment.

The first DEEP has been installed for demonstration purposes at the Naval Support and Experimentation Center (CSSN) of the Italian Navy in La Spezia, integrating four key components:

1. **an acoustic barrier** (Early Warning System – EWS) that acts as an alarm system, capable of detecting the presence of potential intruders within the monitored water volume and tracking their position. The EWS is based on state-of-the-art fiber optic hydrophone sensors and can be installed up to 100 km from the asset to be protected;
2. **a team of autonomous underwater drones** (AUVs) for anomaly and potential threat detection, as well as for mapping the seabed and infrastructure. The vehicles are equipped with acoustic, optical and environmental sensors, as well as real-time computing capabilities;
3. **the command and control software** (Underwater Management System – UMS), which integrates and fuses the data collected from sensors and drones, enabling rapid and effective overall management of the solution;
4. **an AI-based data analysis and recognition system**, which enables accurate image processing and recognition of elements present on the seabed.

DEEP ensures the real-time protection, development and in-service maintenance of critical underwater infrastructures such as submarine pipelines, electrical cables and telecommunications cables. Furthermore, if installed in more confined environments, the system can perform the same functions for ports and offshore installations.

DEEP leverages Fincantieri’s advanced technologies and a national supply chain of SMEs and universities, offering a tailor-made end-to-end solution for both civil and defense needs. Its architecture is based on resilience, modularity and security (safety & cyber), ensuring operational continuity and adaptability even in hostile environments and under complex threat conditions.

Thanks to its modular design, DEEP can also integrate autonomous surface vehicles such as SAND (Unmanned Surface Vehicle – USV by IDS, a Fincantieri subsidiary) and advanced anti-drone sensors like OMEGA360 (a Fincantieri product), extending surveillance and protection to the above-surface domain as well. Automated logic, artificial intelligence applications, and an advanced human-machine interface reduce operational workload and increase responsiveness and effectiveness.

The DEEP system – technical details

1. EWS – Early Warning System

The EWS is a passive barrier of fiber optic hydrophones, designed to detect underwater intrusions. It can operate in a fully passive mode or, when paired with an active acoustic source (mounted on a USV or placed on the seabed), as a receiver for precise target tracking.

In the configuration set up at the CSSN, the EWS consists of four tripods, each equipped with four fiber optic hydrophones capable of detecting and locating acoustic sources in the audio band (but adaptable to other sources), minimizing false alarms and maximizing the probability of detection. Each tripod can be installed on the seabed at depths of 300 meters or more and at distances of up to 100 km from the coastal station.

The hydrophones, connected via fiber optic joints, ensure the scalability and modularity of the barrier. High-performance submarine cables and optical connectors provide resilience in extreme conditions and reduce maintenance costs.

All devices are connected to the UMS through a dedicated management subsystem and optical interrogator, ensuring reliable and high-fidelity transmission of acoustic signals over long distances.

Through advanced processing, triangulation and data fusion algorithms, the EWS identifies potential threats and sends alerts to the UMS, functioning as a modern underwater electronic defense system.

2. Autonomous Underwater Vehicles (AUV)

The DEEP drones are the Small Unmanned Underwater Vehicles (S-UUV) of the X300 family developed by GraalTech.

These compact AUVs (length <3 m, weight <50 kg) are equipped with advanced payloads including:

- Side Scan Sonar (SSS) for seabed monitoring;
- Forward Looking Sonar (FLS) for obstacle avoidance and target detection;
- optical cameras with LED systems;
- multiparametric probes for environmental monitoring;
- acoustic modems and repeaters for localization and communication;
- Iridium/Silvus/Wi-Fi terminals for long-range data exchange.

Onboard AI logic enables real-time anomaly detection, Automatic Target Recognition (ATR) and classification of potential threats, as well as monitoring of environmental conditions (sound velocity profiles, turbidity, presence of Posidonia or pollutants).

Thanks to their versatility, the X300 AUVs can also be equipped with a fiber optic link, providing real-time HD video in complex environments with precise maneuverability.

3. UMS – Underwater Management System

Developed by IDS, a Fincantieri subsidiary, the UMS is the cognitive and decision-making core of DEEP. In addition to ensuring effective and efficient management of unmanned vehicle missions, it serves as a comprehensive command and control platform for the underwater domain, capable of

operating in GPS-denied environments with limited communications, and integrating autonomous decision-making algorithms onboard unmanned vehicles.

The modular and scalable design enables multi-domain interoperability, with real-time data exchange between naval and land-based command and control systems. The UMS supports multi-vehicle mission management, including planning, monitoring, task assignment and interaction with LARS (Launch and Recovery Systems, produced by Remazel, a Fincantieri subsidiary) for the deployment, recovery and recharging of UUVs (Unmanned Underwater Vehicles), ensuring the effective use of fleets in extended or distributed missions.

Through multisource data fusion, the UMS compiles and maintains situational awareness, simplifying operator supervision via an intuitive human-machine interface. Predictive logic and dynamic resource allocation further enhance mission effectiveness.

The command and control system can be integrated into a 20-foot ISO-standard container, equipped with heterogeneous communications (wired and wireless), ensuring secure connectivity (via encryption algorithms) with sensors and drones, and broadband/low-latency satellite links to external command and control nodes.

Based on hardware redundancy and a microservices software architecture, the UMS is reliable, scalable and adaptable to specific operational requirements.

4. AI-based system

The drones are equipped with advanced artificial intelligence algorithms that enable accurate image processing and so-called “Automatic Target Recognition” (ATR), that is the automatic recognition of targets. This advanced technology uses sensors and algorithms to autonomously detect, classify and identify specific objects (targets) in real time.

Growth potential

DEEP is designed for continuous evolution and scalability. In addition to underwater protection, it can integrate:

- SAND – Surface Advanced Naval Drone, which serves as a mobile hub for AUV deployment, a communication gateway, and a soft/hard-kill drone against asymmetric threats;
- dedicated Launch and Recovery Systems (LARS) for optimized deployment, recovery and maintenance of the UUV team;
- the OMEGA360 radar, an advanced X-band volumetric radar with digital beamforming, capable of detecting, tracking and classifying low-signature aerial threats, including NATO class I drones (i.e., nano, micro, and mini types), in coastal and maritime scenarios.

This adaptability makes DEEP a multi-domain protection framework, extending its effectiveness to surface and aerial threats as well.

Operational scenarios

DEEP is applicable to a wide range of operational contexts, from the protection of critical infrastructure (pipelines, cables, offshore platforms, ports) to environmental monitoring.

It provides 24/7 surveillance through passive detection of suspicious activities, triggering automated or operator-managed responses via the UMS. According to the rules of engagement, AUVs are deployed to track, identify and neutralize intruders, or to conduct environmental and infrastructure inspections.

In addition to security tasks, DEEP supports environmental resilience missions: seabed mapping, monitoring of sensitive habitats, detection of morphological changes and assessment of pollution risks.

Through real-time mission adaptation, the UMS ensures operational continuity, dynamically coordinating assets and guaranteeing both security and sustainability in maritime domains.

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Fincantieri – Positioning in the Underwater sector

In a scenario where 95% of global orders for new ships are moved from West to East, **shipbuilding is back as a geopolitical priority guaranteeing security and sovereignty** due to a global race on defense capabilities. Fincantieri anticipated these trends, emerging as the largest shipbuilder outside Asia and global leader in complex vessels.

Indeed, the Group is evolving its business mix to support growth and profitability, with **the underwater sector set to double its annual revenues by 2027** and continue to grow in the following years, with higher margins and stronger cash conversion thanks to new technologies.

At the same time, on Cruise, Fincantieri is setting up a sustainable business model for self-financing, counting on a strategic slot allocation of order books, thus supporting an healthy cash flow cycle amongst the ships.

In the Naval market, approx. € 20 billion worth of high-probability commercial opportunities have been identified, highlighting the significant potential that Fincantieri is well-positioned to seize. The company has the capability to be flexible in managing production capabilities allocation across divisions. In Europe, Fincantieri could nearly double its naval vessel production capacity by leveraging its hybrid Italian shipyards as well as its operations in Romania and Vietnam. In the US, the company is able to scale up its operations to underpin both current programs (“Constellation”) and new opportunities (e.g., icebreakers and cable layers) and can count on the distinctive ability to localize to pursue regional export opportunities. **These strengths enable Fincantieri to effectively meet growing demand in the Naval sector, thanks to its versatile global footprint.**

On Underwater, **Fincantieri is leveraging its unique expertise** in conventional technologies (e.g. submarines, effectors, sonars) to expand into a broader underwater ecosystem, combining conventional products with innovative technologies, extending applications beyond defense into dual-use and commercial domains and providing comprehensive and innovative solutions for a wide range of clients.

Underwater global scenario

Underwater is emerging as the new global geopolitical domain, a **crossroad between new needs and tech acceleration**. While 80% of the seafloor and 98% of the abyssal seabed remain unexplored (Mars and Jupiter surfaces are better known than our seabed), most of human well-being relies on underwater assets and resources. Consider that in the next century 40% of food will come from the

seafloor, while oil, gas, minerals and rare earth elements will continue to play a crucial role. With the transition to green energy, offshore wind (approximately 12 GW of capacity additions in 2025) and floating solar farms have become critical. Global data traffic heavily depends on subsea cables, which will span 1.7 million kilometers around the globe by 2027. The global electricity market is projected to be worth approximately € 25 billion in 2028, with the APAC region and Europe driving 60% of global demand.

Thanks to its vertically integrated business model, Fincantieri is uniquely positioned to design, build, integrate and operate all the key components of a new Underwater ecosystem and can **lead this transformation and address new challenges across domains** by bringing the history, the assets, and the vision to lead the evolution, proving expertise across domains and applying a holistic approach.

Market and opportunities

Underwater appears to be a market comprising an ecosystem of technologies, which addresses a wide range of needs, from Defense (mine, submarine or seabed warfare) to dual-use (surveillance, patrolling, monitoring) to commercial (construction, repair, maintenance, deep sea mining, aquaculture). It is notable the growing role of dual-use players, recognized as better, cheaper and faster.

This overall global market is projected to be worth approx. € 50 billion per year, with **a yearly accessible Underwater market for Fincantieri equals to an average of € 22 billion**.

Multiple development factors are pushing for market leaders to emerge and **Fincantieri is the incumbent player taking the role of market Orchestrator**, targeting to be a “one stop shop” for the industry, supplying end-to-end turn-key solutions, vertically integrating “core technologies” and driving innovation.

Fincantieri's Underwater Hub

Fincantieri has already taken key strategic steps to take the Orchestrator role thanks to acquisitions and strategic partnerships, which have led to **the establishment of the new internal Underwater Hub** to drive business and product development and deliver a product portfolio able to address market needs.

The Underwater Hub wants to act as single-entry point for clients and push synergic tech development. It gathers:

1. Fincantieri and submarines historical expertise
2. WASS Submarine Systems S.p.A.
3. IDS – Ingegneria dei Sistemi S.p.A.
4. Remazel S.p.A.

1. **FINCANTIERI has a century-deep heritage and 25 years of experience on modern submarines**, underpinned by an Italian resilient, supply network. The current value proposition is based on three flagship products: the U212 NFS (Near Future Submarine), a cutting-edge conventional submarine, future backbone of Italy's underwater fleet and any other tier-1 Navy; S800, a multipurpose light carrier for agile littoral and blue-water operations, suitable to mid-large Navies' needs; LDAUV

(Large Displacement Autonomous Underwater Vehicles), a large autonomous underwater vehicle, enabling intelligence gathering and critical infrastructure protection.

2. WASS Submarine Systems is a global leader in the design and development of advanced underwater defense systems and a trusted global partner for Navies in UW defense technologies. With a team of approx. 480 highly skilled professionals, the company is synonymous with excellence, innovation, and cutting-edge technologies in the underwater sector.

Having become part of Fincantieri in 2025, WASS Submarine Systems' mission is to expand the Group's capabilities in high-complexity underwater devices, ensuring the implementation of the underwater strategy for the next industrial cycle.

WASS provides Underwater Defense Systems, completing the solutions with acoustic and detection technologies:

- Heavyweight and lightweight torpedoes
- Countermeasures: anti-torpedo defense systems for underwater and surface vessels
- Sonar: innovative sonar systems for military and civil applications.

The systems developed by WASS Submarine Systems represent technological excellence in the field of underwater defense. From the design of heavy and lightweight torpedoes to advanced sonar systems and mobile countermeasures, each product reflects a perfect balance of engineering innovation, state-of-the-art materials, and cutting-edge technologies.

Solutions such as the Black Scorpion and the Mine Hunting Sonar stand out for their high technological complexity, operational flexibility and reliability, meeting the needs of the world's most advanced navies. Thanks to an integrated approach and ongoing research, WASS ensures superior performance and solutions capable of operating in even the most challenging underwater scenarios.

3. IDS, part of Fincantieri Group, is an engineering and systems technologies company providing research, innovation and products in Electromagnetic Engineering, Satellite Communications, Robotics and Unmanned Systems, and Radar based safety and protection systems for civil and defense applications.

IDS – which represents the digital engine for next-gen underwater solutions - provides consulting services for high-tech engineering projects and in developing integrated hardware and software solutions, with a strong customer focus and is committed to meeting customer requirements with high quality innovative solutions.

IDS is currently focusing on flagship products that are the key enablers for the modular underwater solutions: the Underwater Management Systems, supporting multi-mission and multi-domain decision-making; and the first unmanned surface vehicle, a key enabler for modular underwater operations, by acting as a surface communication gateway and coordination node.

4. REMAZEL ENGINEERING is a global leader on heavy-weight equipment handling systems, with four core businesses with high underwater relevance: Offshore & Engineering projects, Cranes & Marine Equipment, Service & Aftersales and Combustion Systems. Remazel flagship projects

leverage 40+ years of Oil&Gas and Wind expertise. In particular, Remazel's product portfolio includes Launch and Recovery Systems (LARS) and Cable protection.