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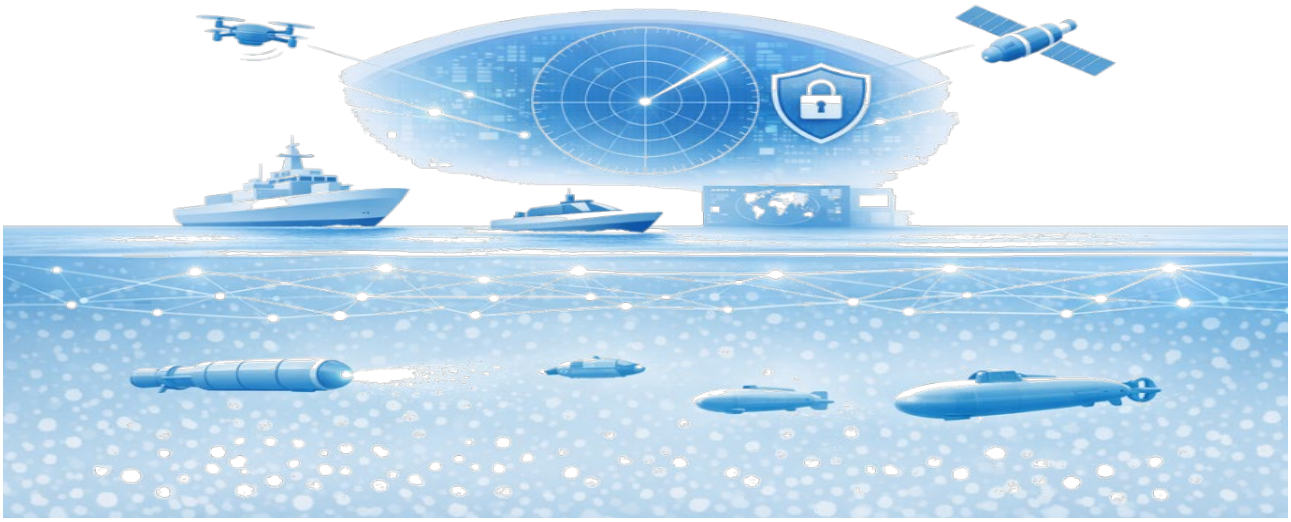

CapTech Maritime Strategic Research and Innovation Agenda (SRIA)

The maritime domain is undergoing rapid transformation driven by autonomous systems, digitalisation, growing threats to critical maritime infrastructure, and increasing activity in the underwater and seabed environment. The CapTech Maritime SRIA reflects the increasing complexity of maritime operations, the growing relevance of the underwater and seabed domain, and the accelerating importance of digitalisation, autonomy, resilience and interoperability in future naval capabilities. It provides the common framework for aligning European maritime defence research, technology and innovation with long-term capability needs. Built around the Overarching Strategic Research Agenda (OSRA), it links technological development with operational priorities and offers a structured basis for cooperation among Member States, defence industry and research organisations.

Objectives

The SRIA aims to identify and prioritise the main research and innovation needs of the maritime domain, transforming operational challenges into coordinated technological development priorities. It supports European navies by defining a shared vision for future capability development, strengthening coherence with the Capability Development Plan (CDP), and promoting collaborative R&T actions contributing to a resilient and competitive European Defence Technological and Industrial Base (EDTIB).

More specifically, the SRIA addresses key challenges such as underwater and seabed warfare, maritime situational awareness, autonomous systems, energy resilience, simulation and training, survivability, threat response and decision support.

To do so, it organises the maritime technology landscape into seven Technology Building Blocks (TBB) covering integrated communications and sensor networks, naval warfare simulation and training, platform modularity and survivability, energy resilience, extended autonomy and robotics, identifying and countering threats, and decision support in naval operations and maintenance.

These TBBs group together related technologies, operational needs and innovation priorities into common development areas that support future naval capabilities.

Methodology

The SRIA follows the OSRA methodology and connects research and technology efforts with future capability needs agreed by Member States. It combines capability priorities with contributions from the CapTech

community, ensuring that technological developments remain aligned with operational requirements. The framework also promotes cross-CapTech collaboration and supports alignment with EDA projects and broader European defence innovation initiatives.

The document is based on a review of the state of the art of maritime defence technologies, a gap analysis and the identification of priority technology areas. In the gap analysis, stakeholders identified the most significant shortfalls in underwater and seabed warfare, maritime domain awareness, advanced automation and robotics, identifying and countering threats, integrated maritime communication and distributed sensor networks, and AI and decision support.

Based on this assessment, the SRIA consolidates the maritime research landscape into seven Technology Building Blocks and complements them with dedicated roadmaps that define operational needs, maturity ambitions, critical factors and project proposals.

Key findings

The SRIA highlights that the maritime domain is facing a profound technological transformation. Traditional platform-centric approaches are no longer sufficient on their own, and future effectiveness increasingly depends on interconnected, data-driven and resilient systems capable of operating seamlessly across surface, air and underwater domains. Persistent gaps remain in underwater surveillance, seabed warfare, secure communications, autonomy, AI integration, real-time data fusion, interoperability and the protection of critical maritime infrastructure.

The analysis also shows that Europe benefits from a strong industrial and technological base, with recognised expertise in sensors, platforms and C4ISR, significant experience in unmanned maritime systems and anti-submarine warfare, and ongoing efforts in EU and NATO standardisation.

At the same time, weaknesses remain in fragmented system-of-systems standards, uneven maturity of underwater networks, and technical limitations in high-power energy systems and real-time data fusion.

Opportunities arise from the acceleration of emerging and disruptive technologies, particularly AI, advanced autonomy and the development of a common EU Naval Combat Cloud as a key enabler for future networked and data-driven naval operations, together with strong synergies with EDF funding. At the same time, evolving threats in areas such as seabed warfare, cyber operations and contested maritime environments continue to drive the need for sustained innovation and cooperation.

The SRIA also highlights the importance of strengthening European technological sovereignty by reducing critical dependencies in areas such as digital infrastructures, communications, microelectronics and critical raw materials.

Across the agenda, the SRIA stresses that future European naval capabilities will require stronger interoperability, greater digitalisation, more resilient and modular platforms, enhanced automation, improved simulation and training environments, and more robust decision-support systems. The associated annexes further translate these priorities into structured TBBs and detailed roadmaps, including linked capability priorities, relevant technologies, critical barriers, operational needs and candidate collaborative project proposals.

Outlook

The Maritime CapTech SRIA establishes a long-term framework for coordinated European action in maritime defence research and innovation. By linking technology gaps, operational priorities and roadmap-based development paths, it supports the preparation of future collaborative initiatives and helps alignment of investments towards technologies that are most relevant for future naval operations.

The SRIA is also intended to support future work in the context of EDA and the European Defence Fund, reinforcing the strategic coherence of European maritime capability development.

In this sense, the SRIA is not only a reference document for the CapTech Maritime community, but also a practical instrument to guide future cooperation, strengthen the EDTIB, foster open innovation and strategic autonomy, and contribute to the development of resilient, interoperable and future-ready European naval forces.

By fostering cooperation among Member States, industry and research organisations, the SRIA provides a shared pathway towards more capable, resilient and technologically sovereign European naval forces.